# NABORS
## COMPLETION & PRODUCTION SERVICES CO.

# DUAL INDUCTION LOG

Company MAI OIL OPERATIONS, INC.
Well HAMMEKE M #8
Field SYMS SE
County STAFFORD State KANSAS

Location: API # : 15-185-23893-00-00
765' FSL & 330' FWL
S2 - NW - SW - SW
SEC 22 TWP 21S RGE 12W

Other Services
CNL/CDL
MEL/SON

Permanent Datum GROUND LEVEL Elevation 1841
Log Measured From KELLY BUSHING 8' A.G.L.
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1849
D.F. 1847
G.L. 1841

Company MAI OIL OPERATIONS, INC.
Well HAMMEKE M #8
Field SYMS SE
County STAFFORD
State KANSAS

| | | | |
|---|---|---|---|
| Date | 820/14 | | |
| Run Number | ONE | | |
| Depth Driller | 3700 | | |
| Depth Logger | 3698 | | |
| Bottom Logged Interval | 3696 | | |
| Top Log Interval | 00 | | |
| Casing Driller | 8 5/8" @ 600 | | |
| Casing Logger | 603' | | |
| Bit Size | 7 7/8 | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 10,000 PPM | |
| Density / Viscosity | 9.2/43 | | |
| pH / Fluid Loss | 9.5/11.2 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | 1.20 @ 84F | | |
| Rmf @ Meas. Temp | 0.90 @ 84F | | |
| Rmc @ Meas. Temp | 1.44 @ 84F | | |
| Source of Rmf / Rmc | MEASURED | | |
| Rm @ BHT | 0.88 @ 113F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 113F | | |
| Equipment Number | 680 | | |
| Location | HAYS, KS. | | |
| Recorded By | IAN MABB | | |
| Witnessed By | WYATT URBAN | | |

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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.

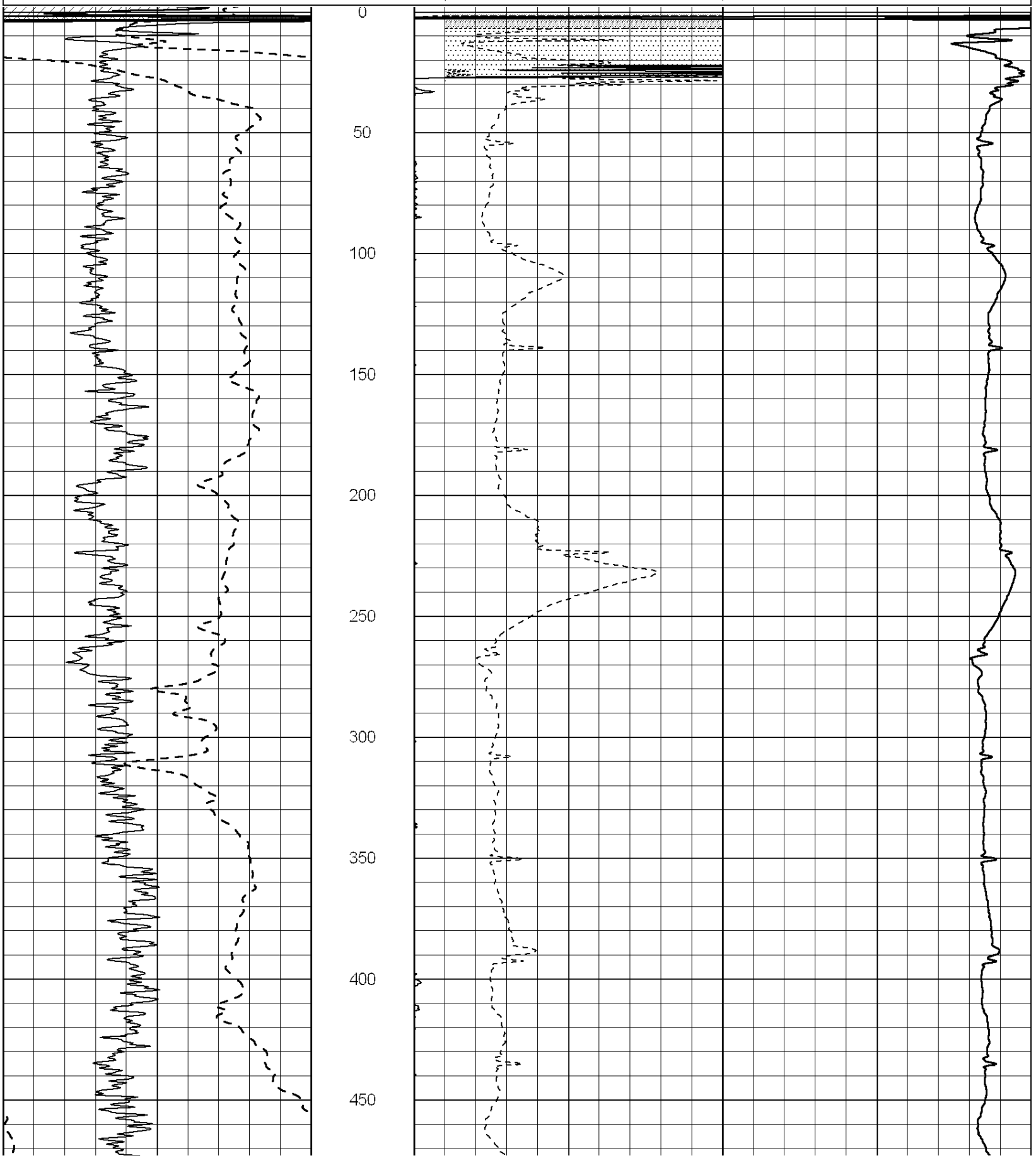
Comments

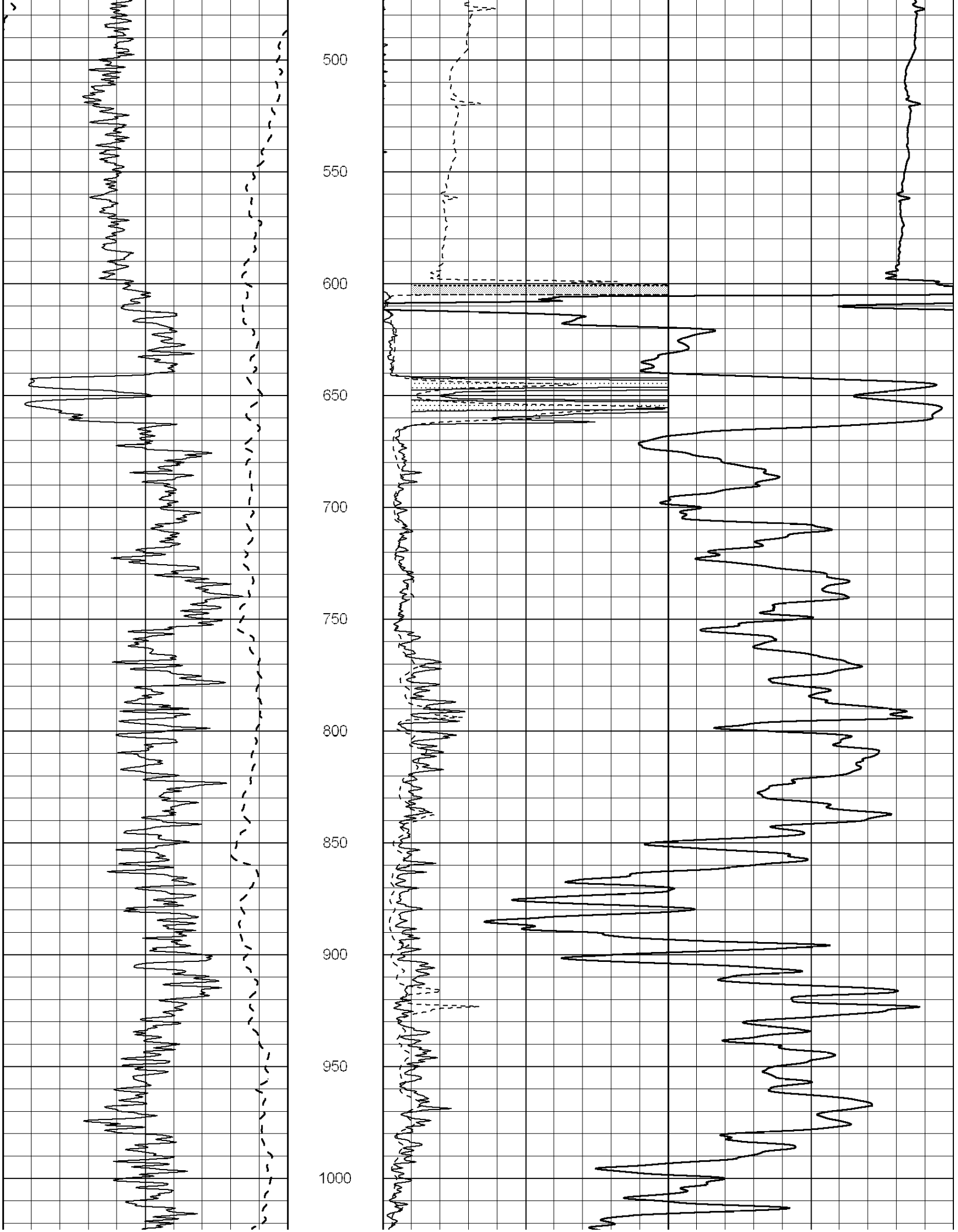
THANK YOU FOR USING NABORS COMPLETION & PRODUCTION SVCS. (785) 628-6395

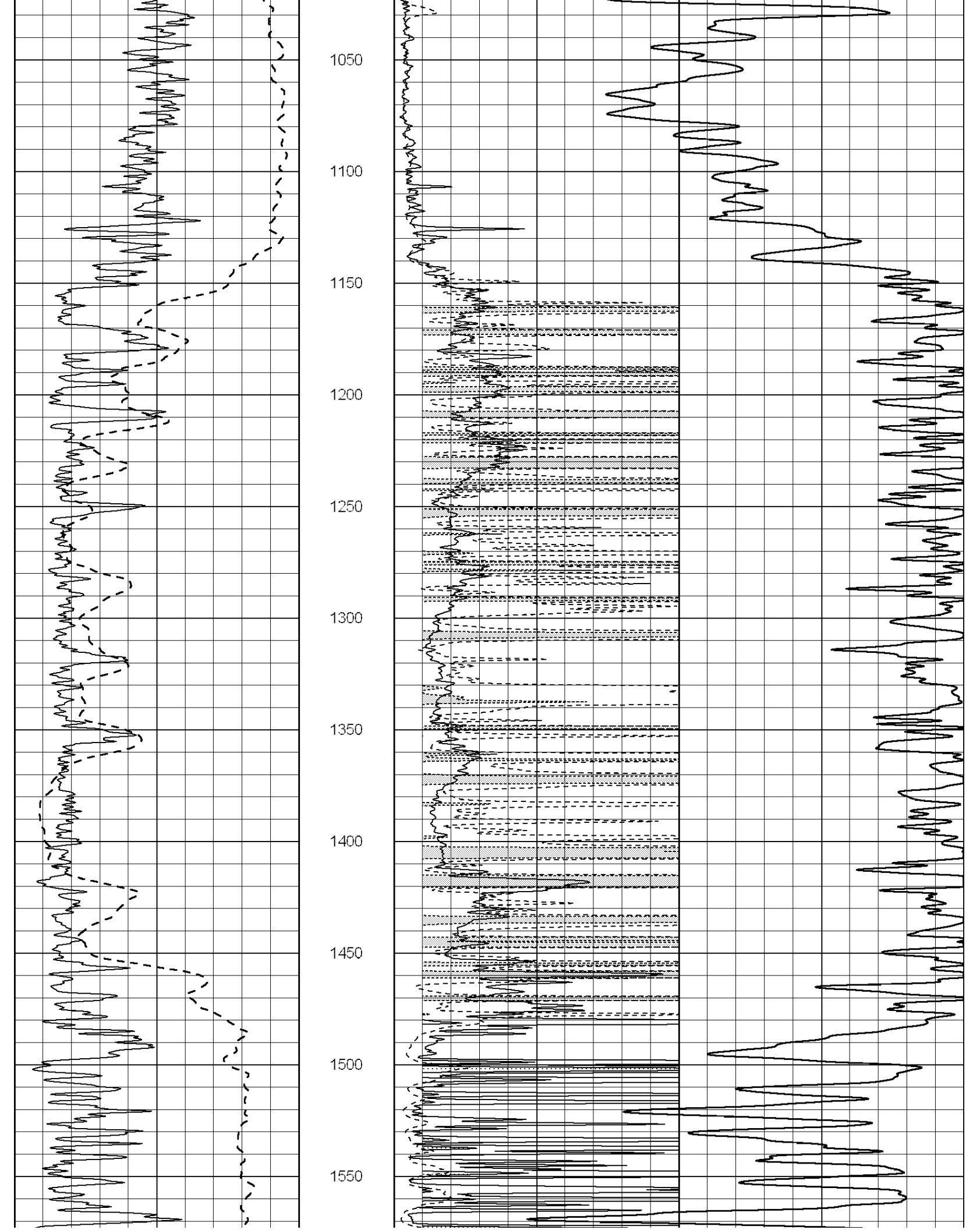
DIRECTIONS: ELLINWOOD, KS. - SOUTH TO THE COUNTY LINE - 3 MORE MILES SOUTH TO RD. 170 - WEST 2 MILES - NORTH INTO

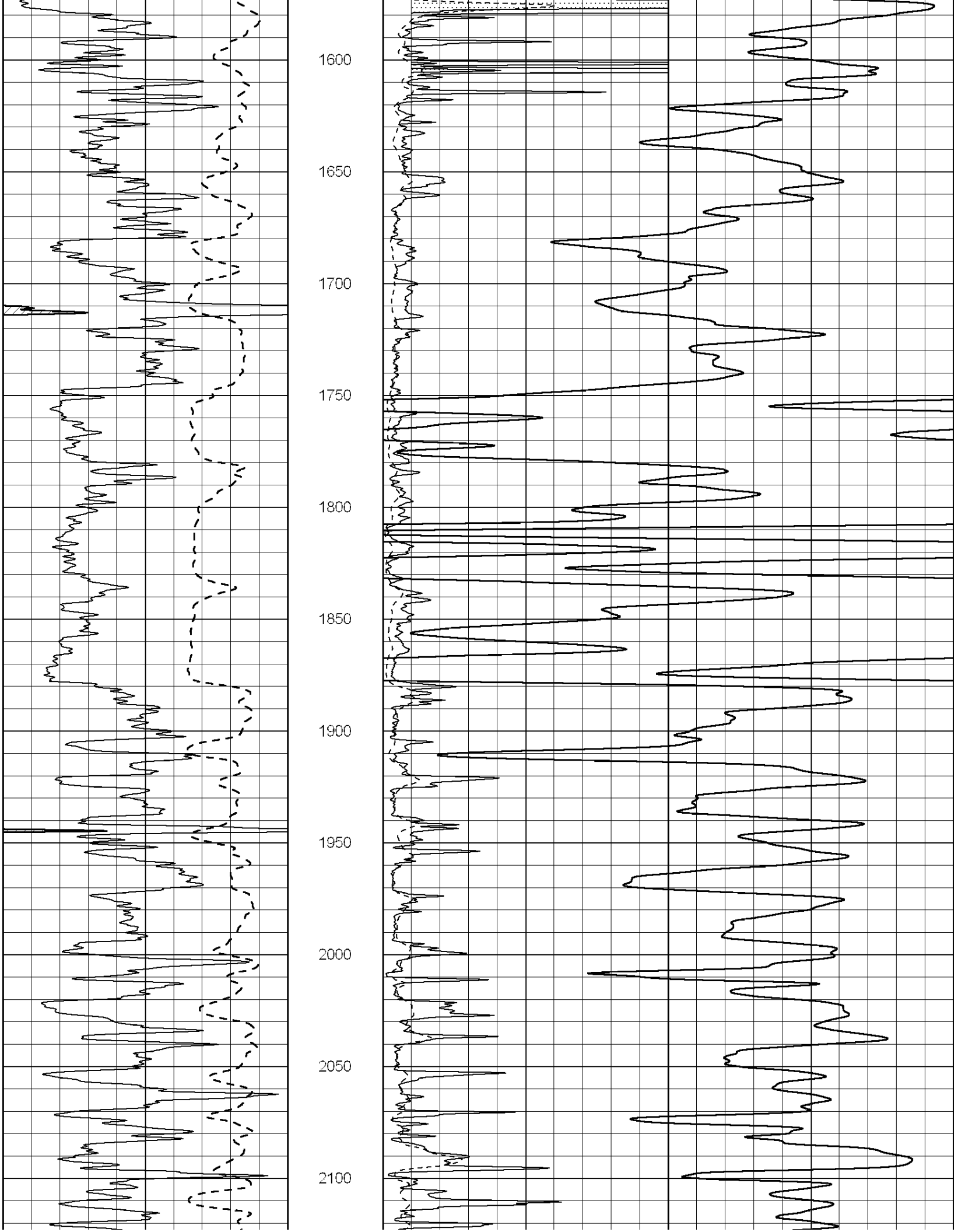
Database File: 25805ddn.db
Dataset Pathname: pass3.5
Presentation Format: _dil2
Dataset Creation: Wed Aug 20 11:27:24 2014 by Calc Open-Cased 090629

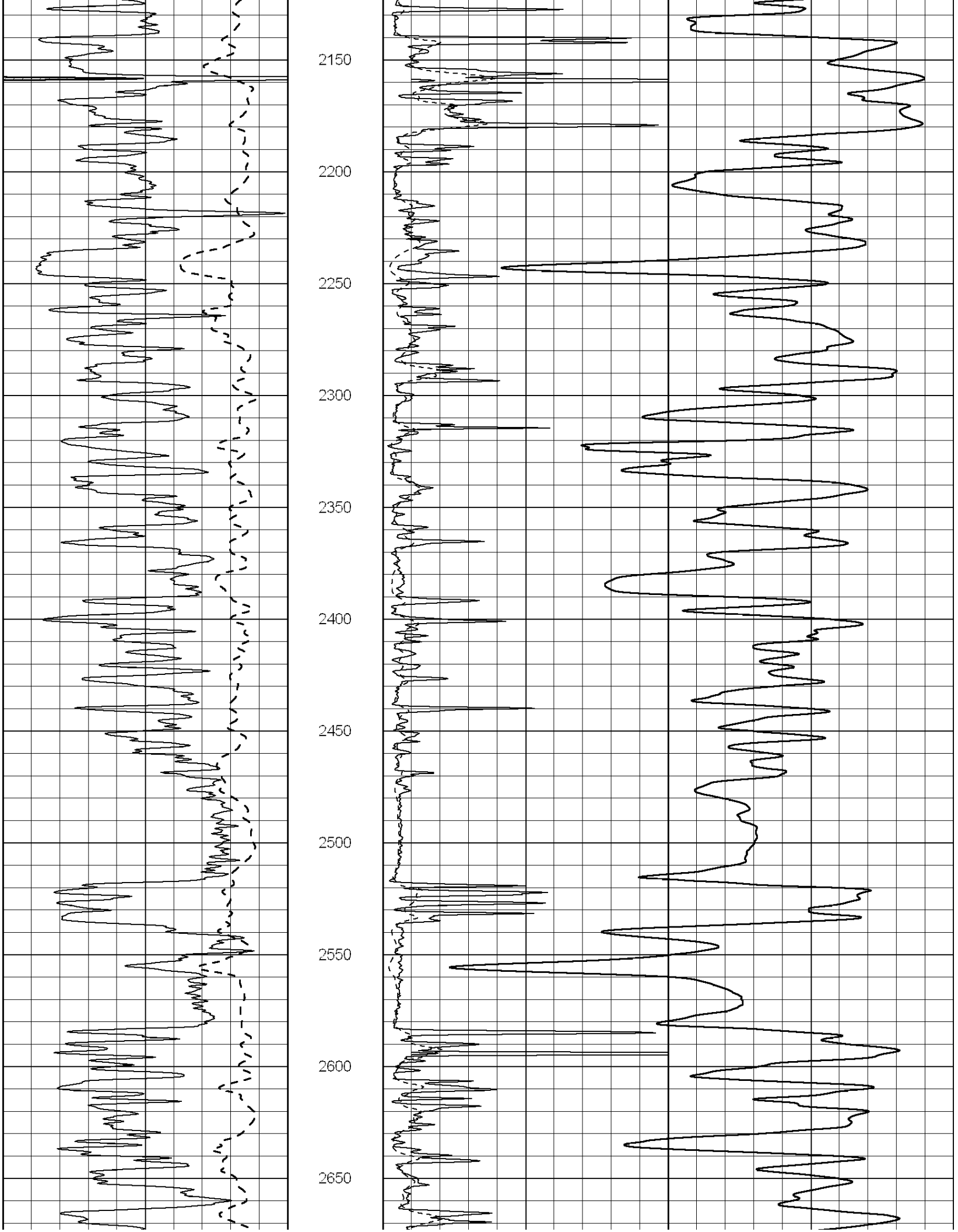
Charted by: Depth in Feet scaled 1:600

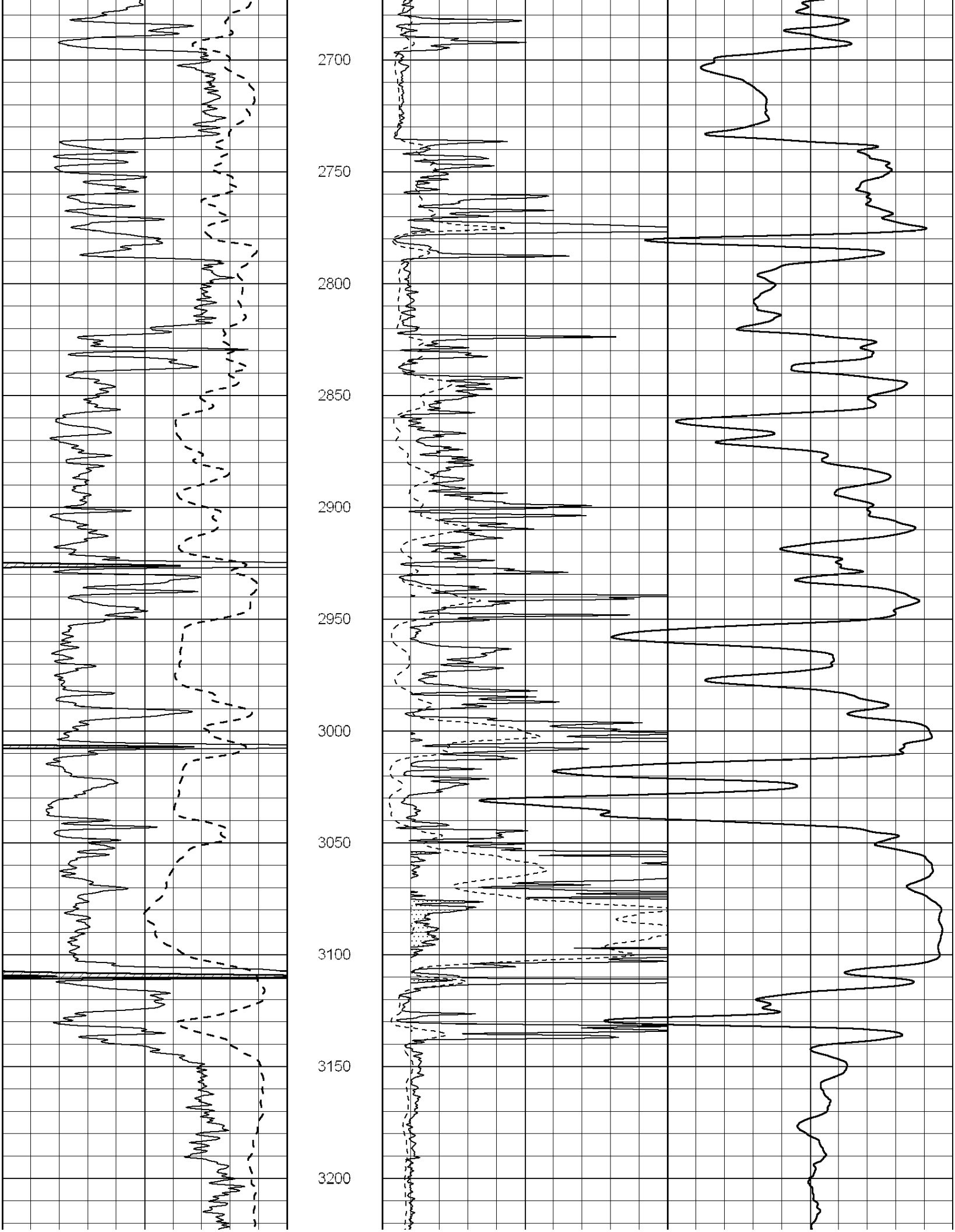


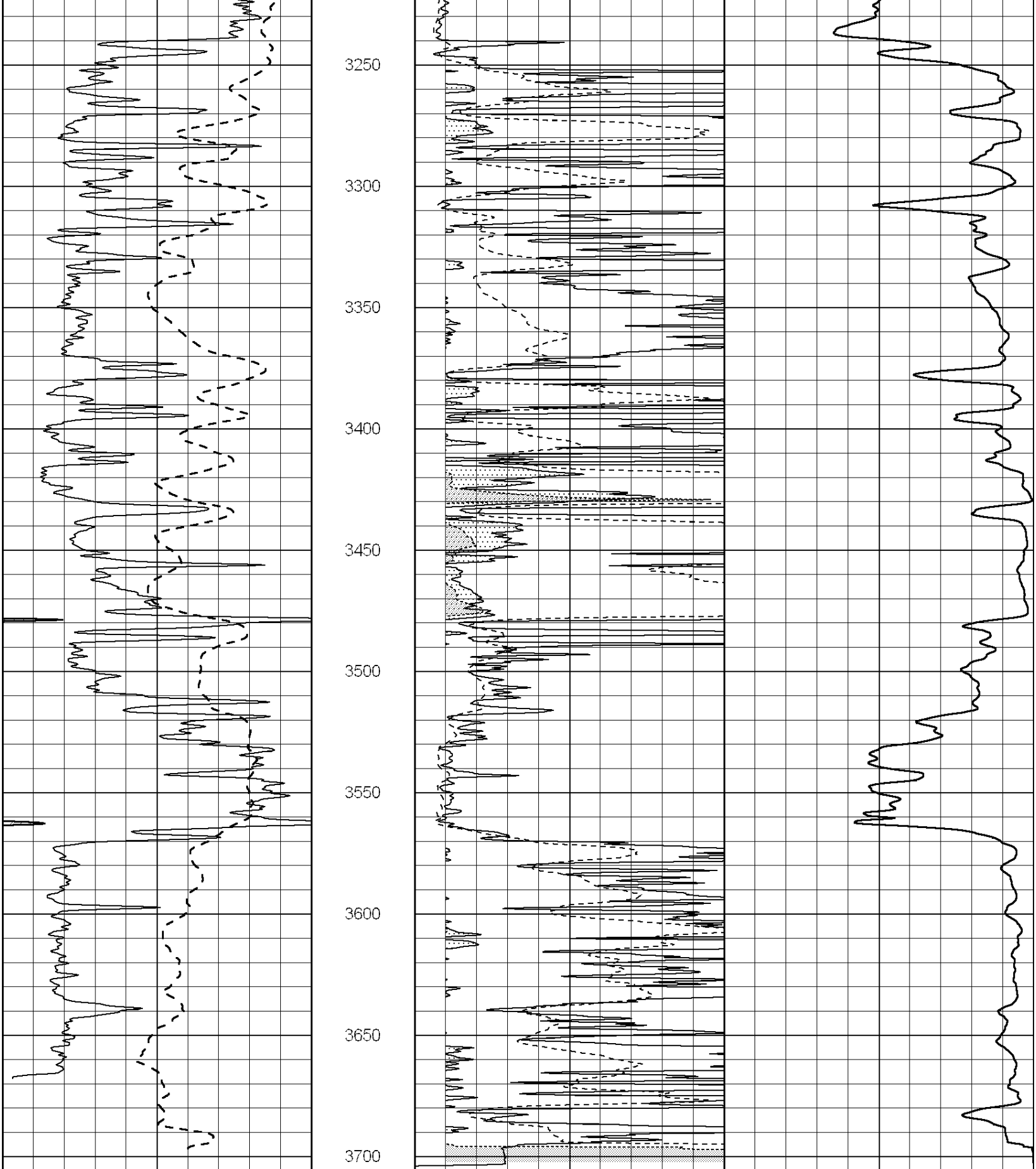

500
550
600
650
700
750
800
850
900
950
1000


1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550


1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100


2150
2200
2250
2300
2350
2400
2450
2500
2550
2600
2650

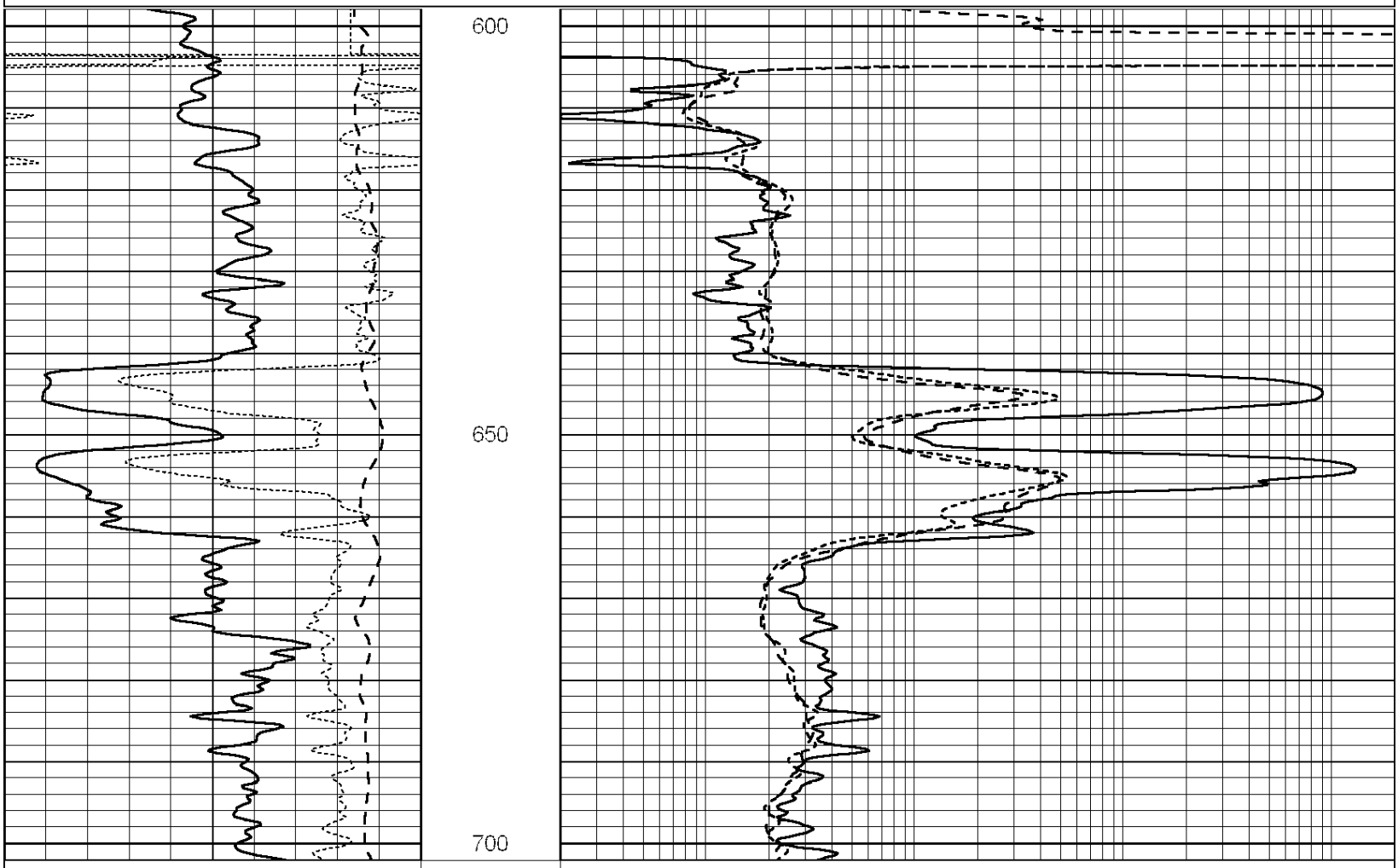

2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200


3250
3300
3350
3400
3450
3500
3550
3600
3650
3700
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

Database File: 25805ddn.db
Dataset Pathname: pass3.5
Presentation Format: _dil
Dataset Creation: Wed Aug 20 11:27:24 2014 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 |





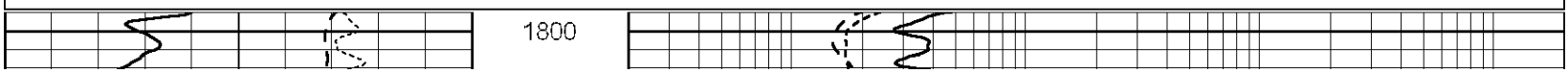
| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

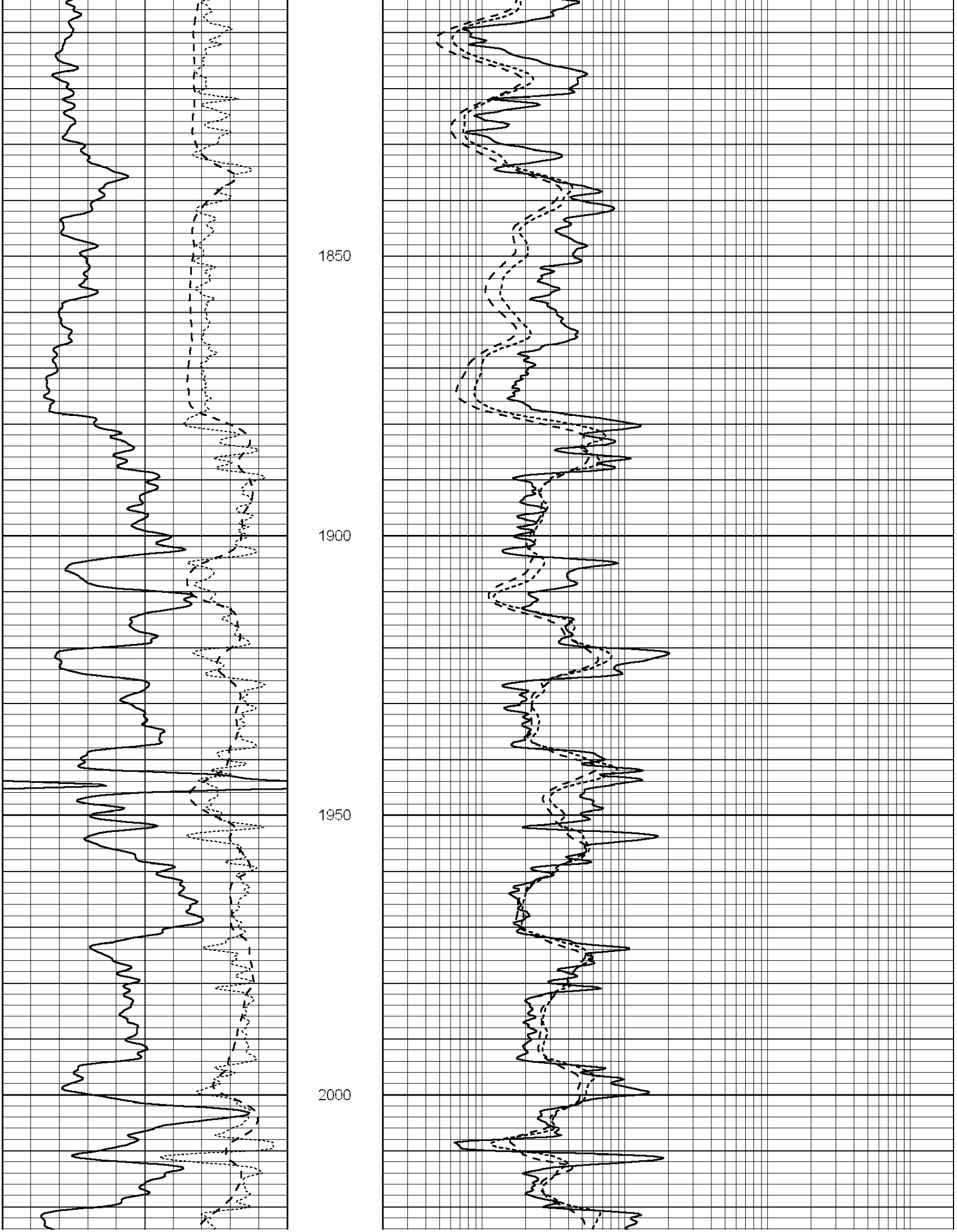
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |

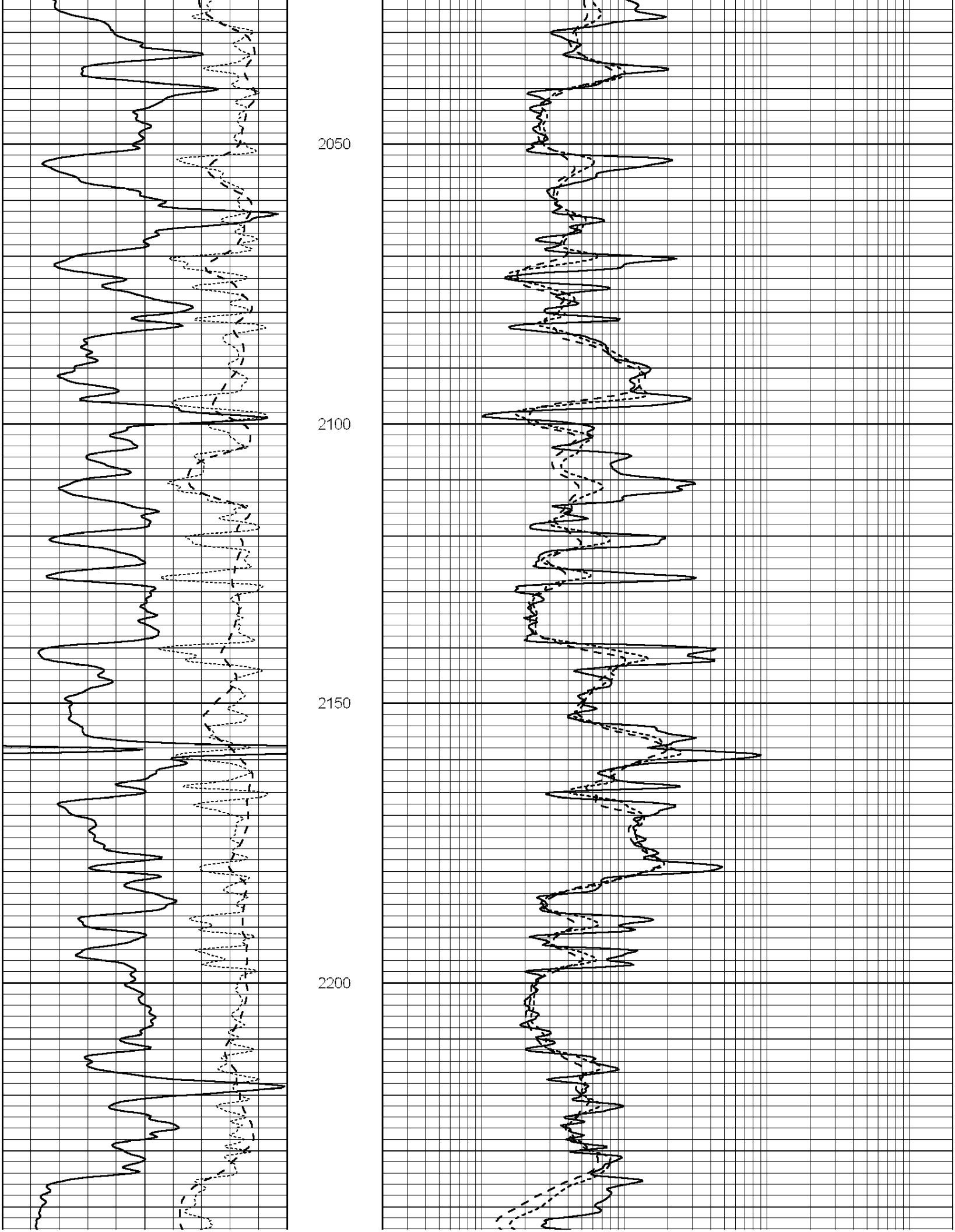

Database File: 25805ddn.db
Dataset Pathname: pass3.4
Presentation Format: _dil
Dataset Creation: Wed Aug 20 11:07:21 2014 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

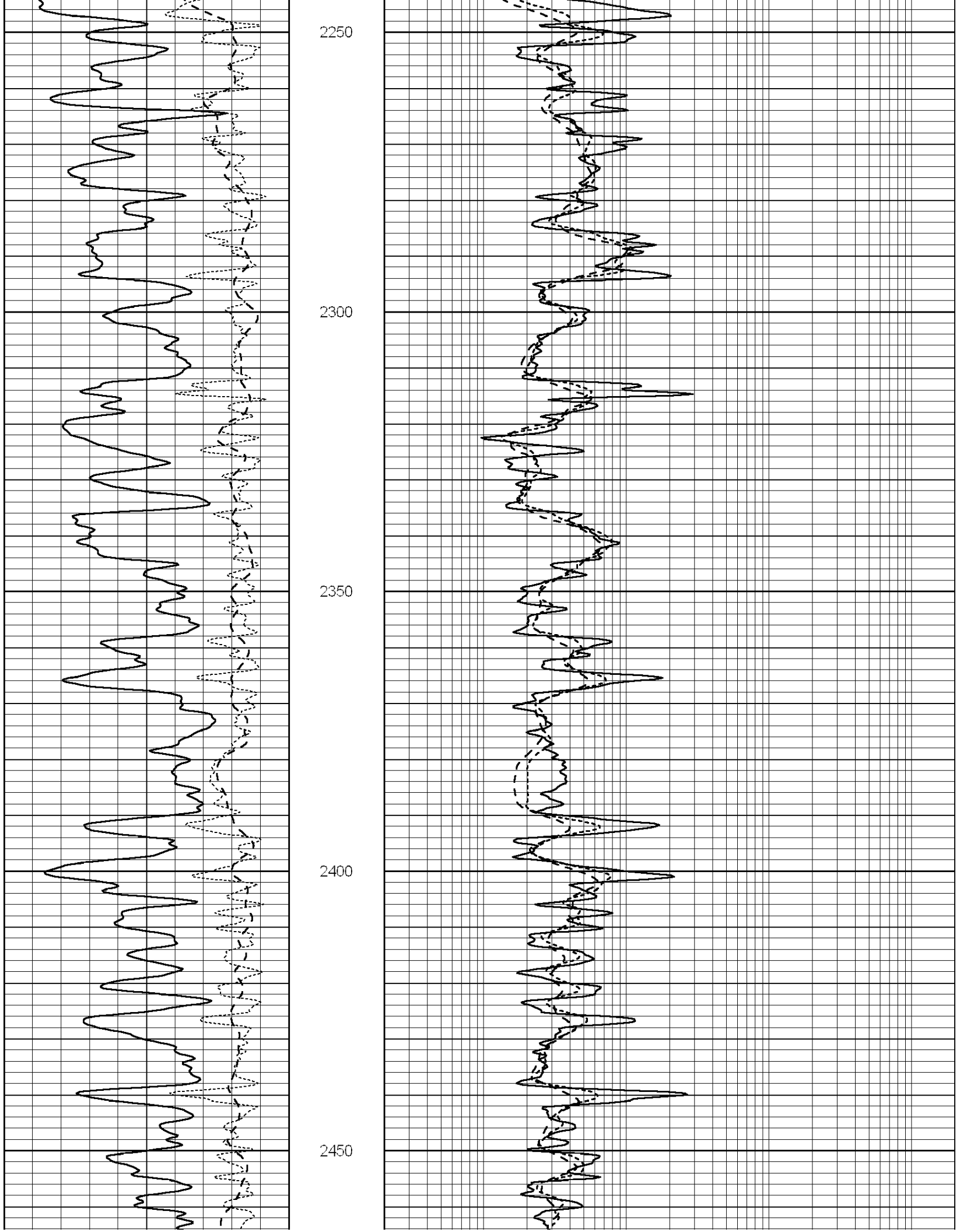

| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

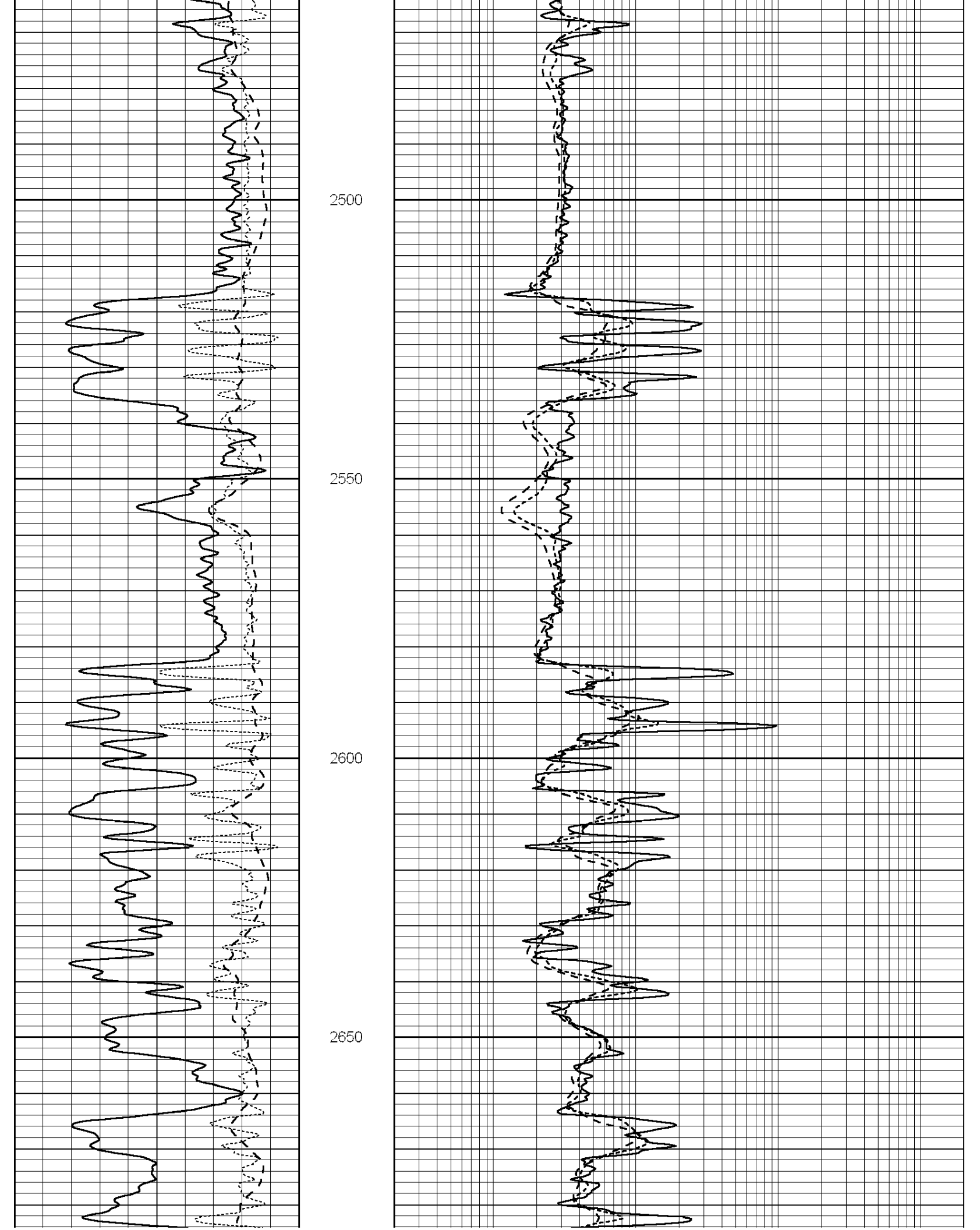
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |

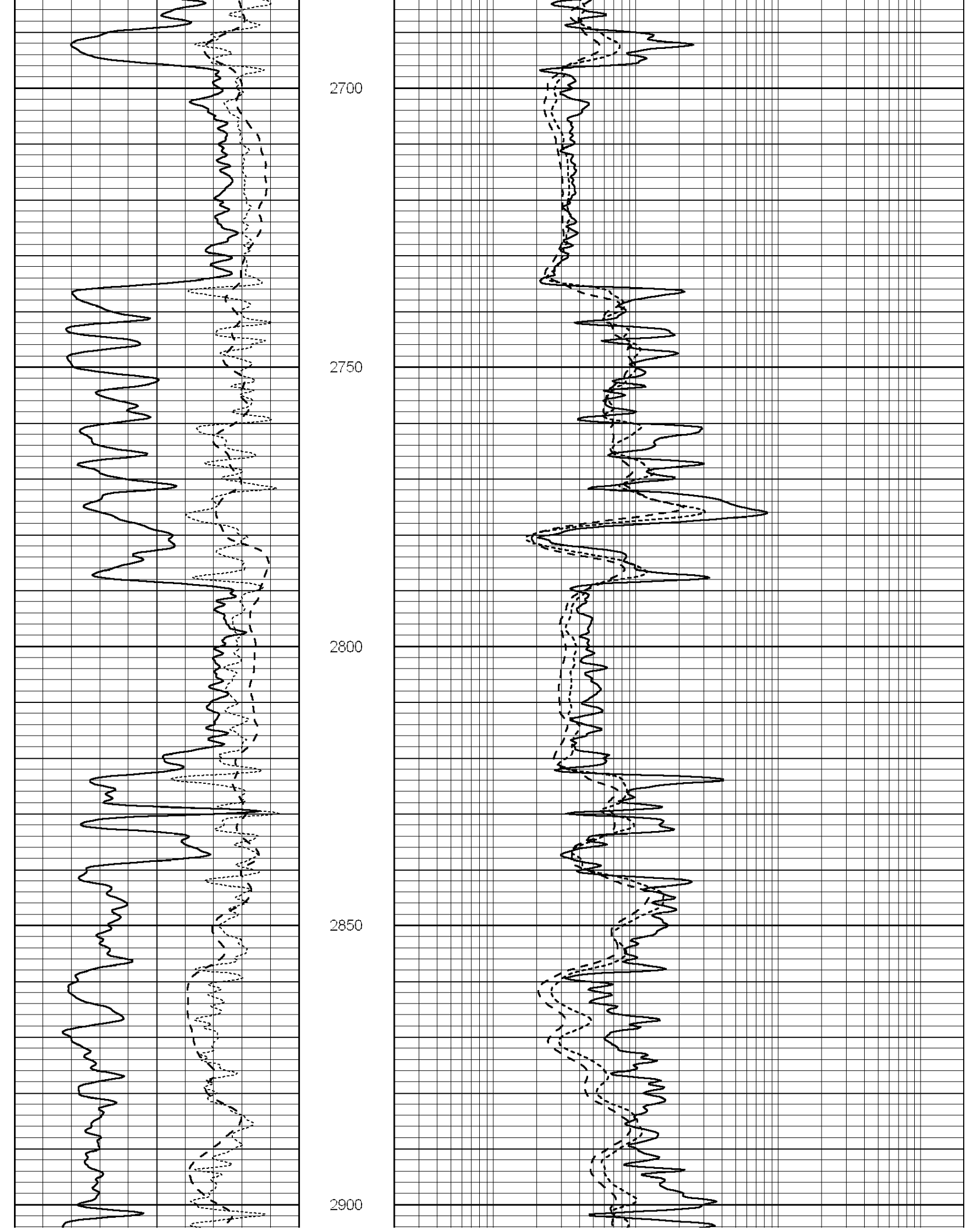



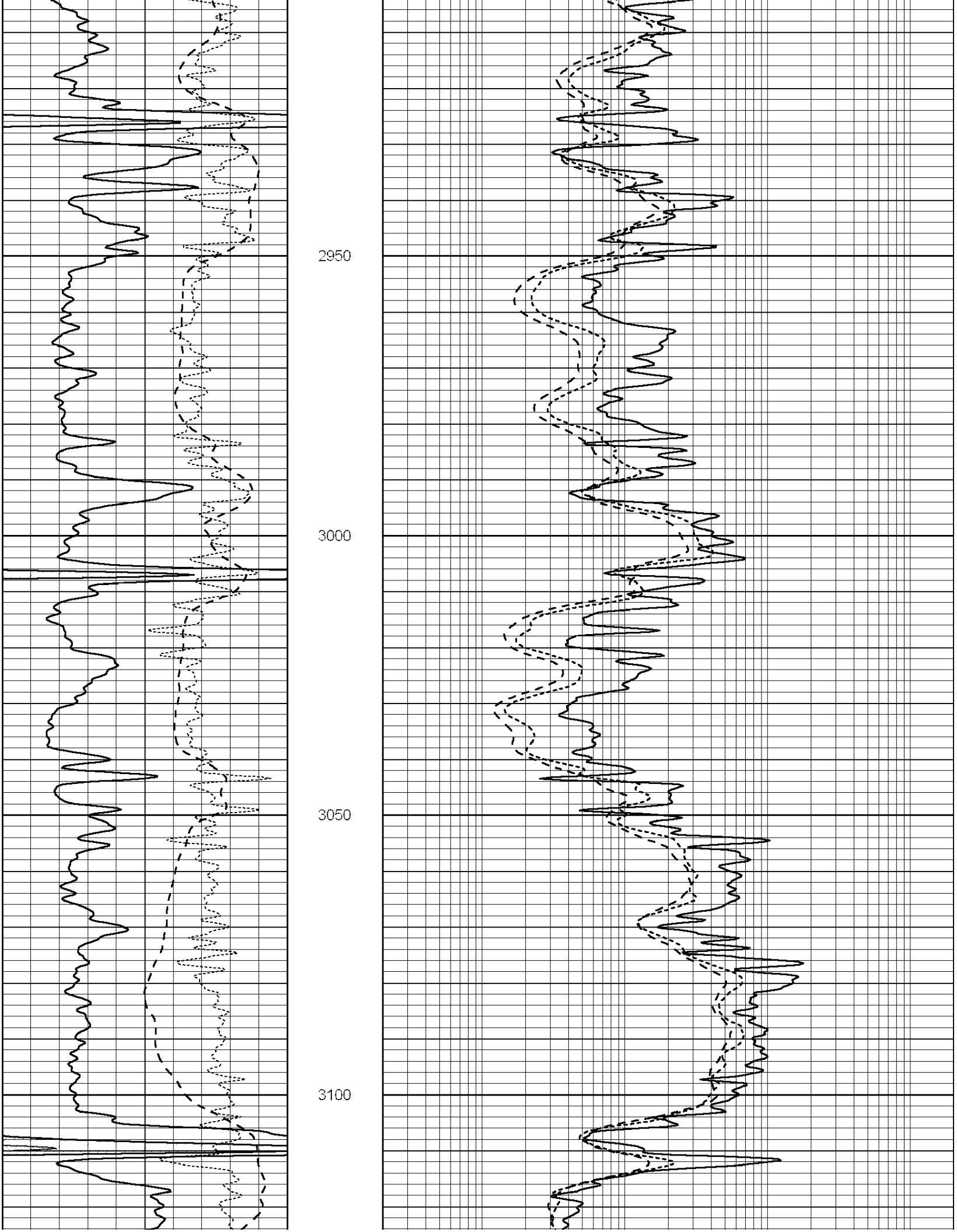

1850
1900
1950
2000

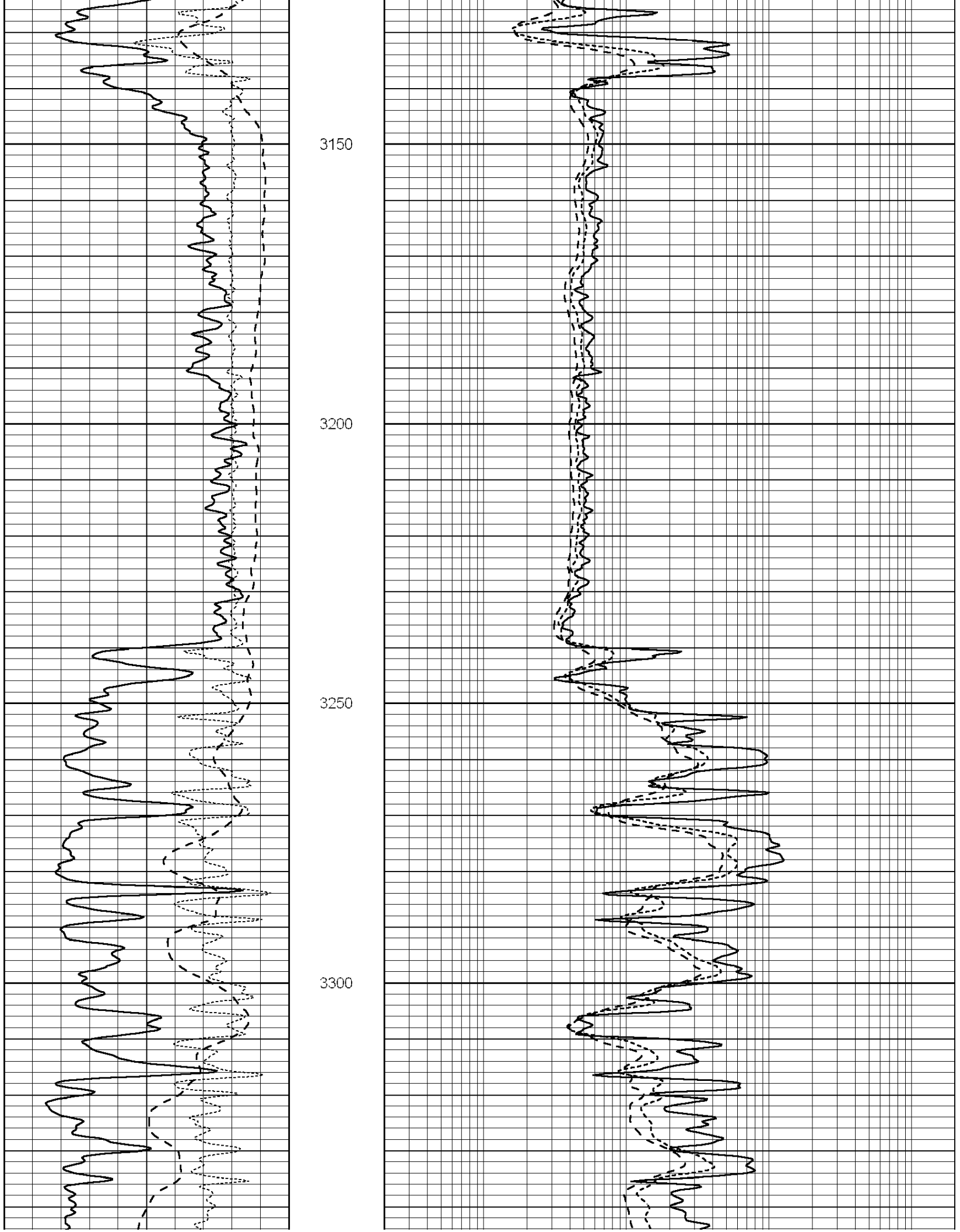

2050
2100
2150
2200

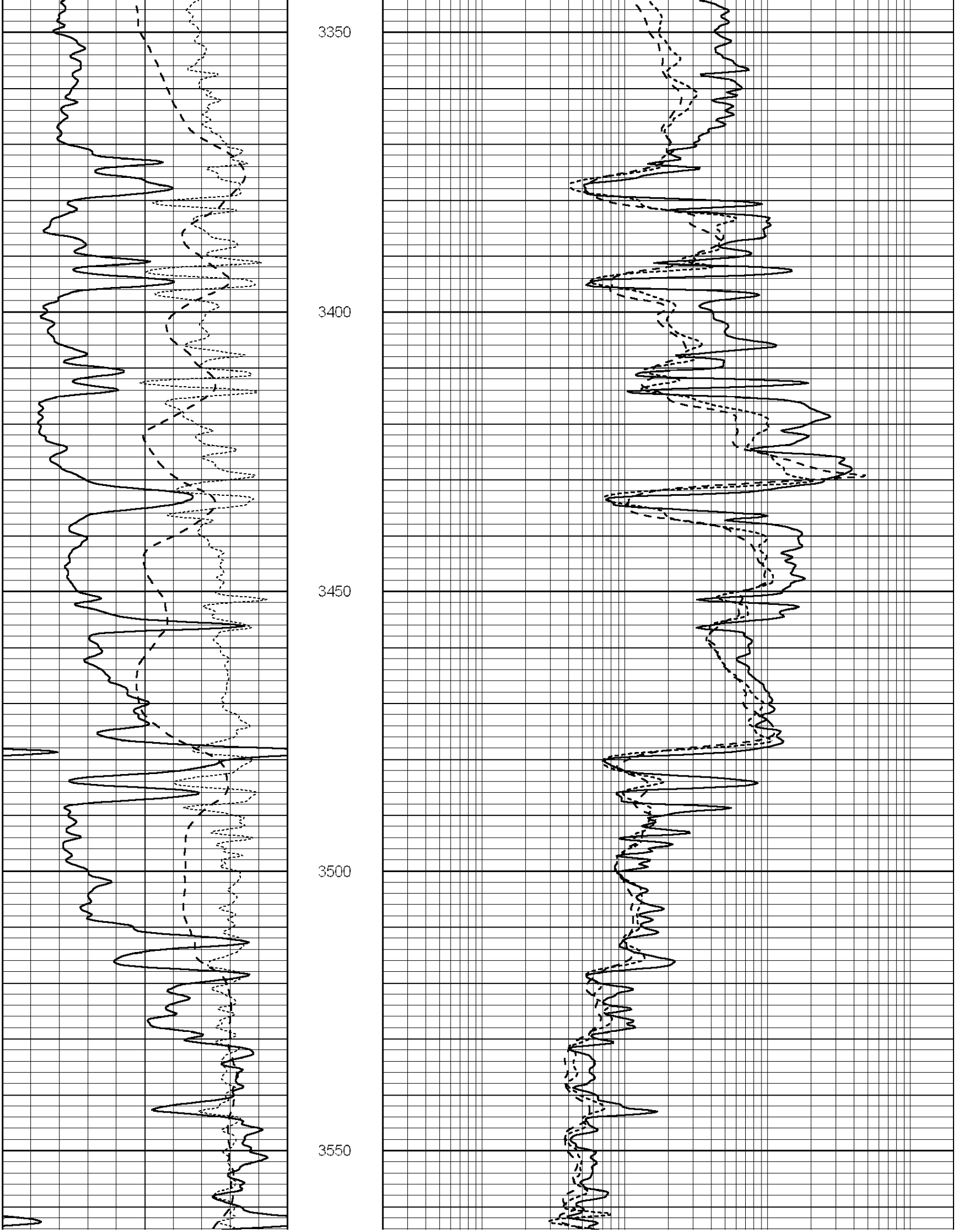

2250
2300
2350
2400
2450

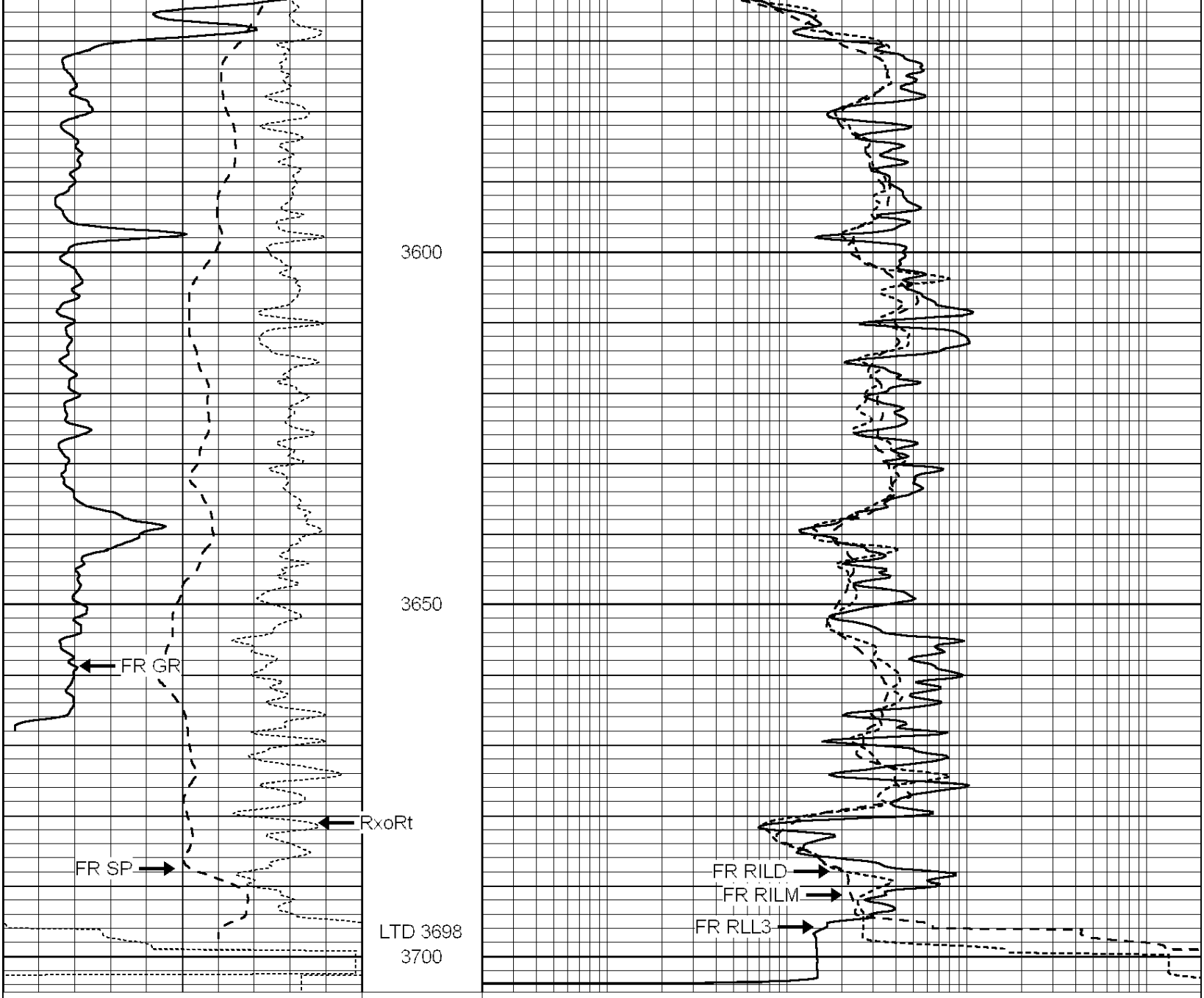

2500
2550
2600
2650


2700
2750
2800
2850
2900


2950
3000
3050
3100


3150
3200
3250
3300


3350
3400
3450
3500
3550




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

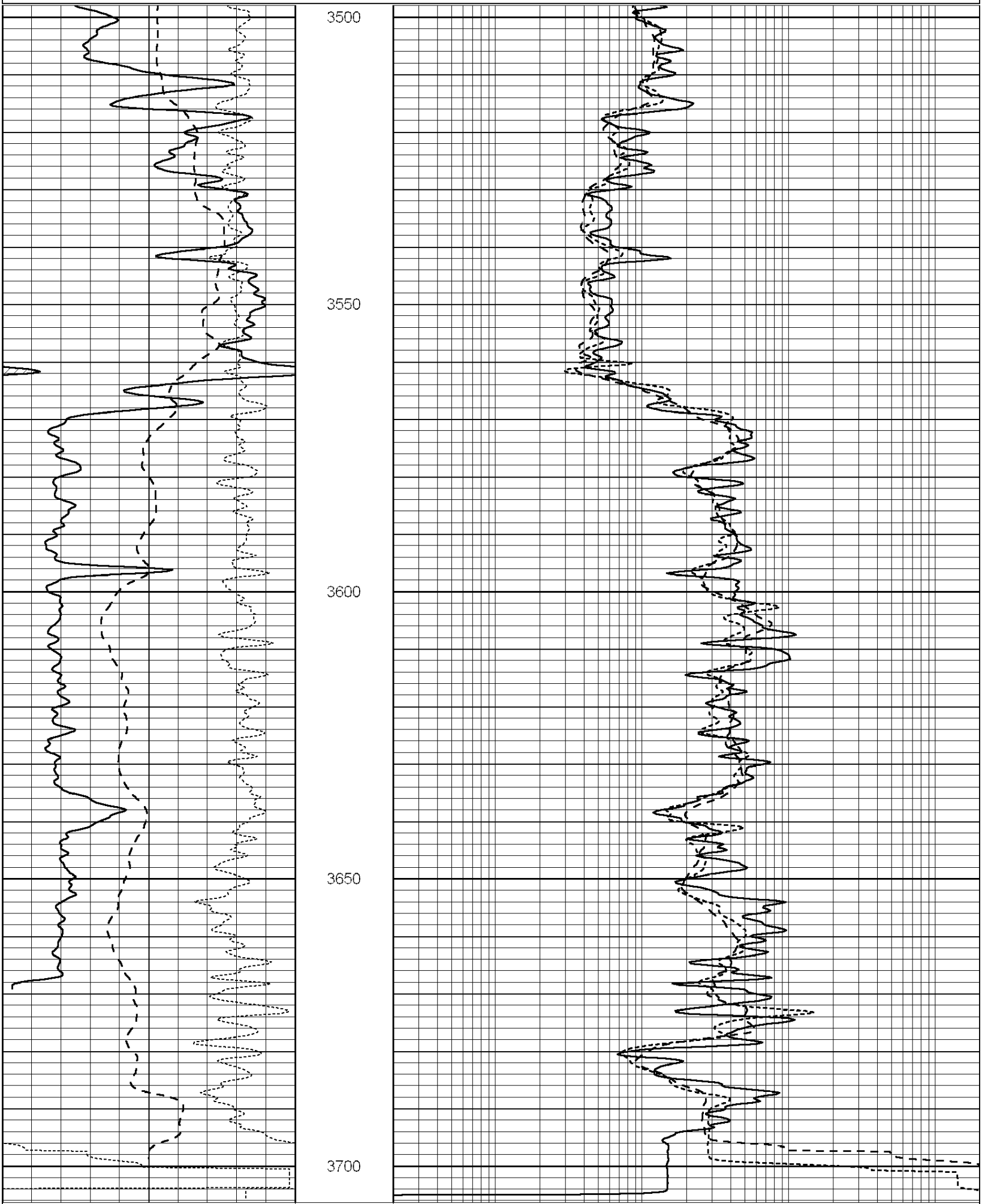
NABORS
COMPLETION & PRODUCTION SERVICES CO.

# REPEAT SECTION

Database File: 25805ddn.db
Dataset Pathname: pass2.1.6
Presentation Format: _dil
Dataset Creation: Wed Aug 20 10:14:54 2014 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 |


3500
3550
3600
3650
3700
0
GAMMA RAY (GAPI)
150
0.2
SHALLOW GUARD (Ohm-m)
2000

| | | |
|---|---|---|
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

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

## Calibration Report

Database File: 25805ddn.db
Dataset Pathname: pass3.5
Dataset Creation: Wed Aug 20 11:27:24 2014 by Calc Open-Cased 090629

## Dual Induction Calibration Report

Serial-Model: DIL3-GEAR
Performed: Sat May 17 16:06:41 2014

| | Readings | | | References | | | Results | |
|---|---|---|---|---|---|---|---|---|
| Loop: | Air | Loop | | Air | Loop | | m | b |
| Deep | 0.011 | 0.656 | V | 0.000 | 400.000 | mmho/m | 550.000 | 8.000 |
| Medium | 0.013 | 0.740 | V | 0.000 | 462.500 | mmho/m | 540.000 | -5.000 |
| Internal: | Zero | Cal | | Zero | Cal | | m | b |
| Deep | 0.002 | 0.645 | V | 0.000 | 400.000 | mmho/m | 560.000 | -1.071 |
| Medium | 0.007 | 0.740 | V | 0.000 | 462.500 | mmho/m | 540.000 | -4.000 |

## Compensated Density Calibration Report

Serial-Model: GEAR2-GEARHART
Source / Verifier: 147 / 147
Master Calibration Performed: Sun Jul 20 17:10:56 2014

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---|---|---|---|---|---|
| Magnesium | 1.710 | g/cc | 1042.05 | 508.01 | cps |
| Aluminum | 2.590 | g/cc | 237.55 | 354.09 | cps |

Spine Angle = 76.28 Density/Spine Ratio = 0.578

| | Size | | Reading | |
|---|---|---|---|---|
| Small Ring | 8.40 | in | 3.72 | V |
| Large Ring | 14.00 | in | 5.31 | V |

## Compensated Neutron Calibration Report

Serial Number: 080620
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: | 46001 | |
| Tool Model: | Probe1 | |
| Performed: | Sat Aug 02 01:56:52 2014 | |
| Calibrator Value: | 1.0 | GAPI |
| Background Reading: | 0.0 | cps |
| Calibrator Reading: | 1.0 | cps |
| Sensitivity: | 0.2600 | GAPI/cps |