# DUAL INDUCTION LOG

Company HARTMAN OIL CO., INC.
Well WILKONSON #1-32
Field N/A
County BUTLER State KANSAS
Location: API # : 15-015-24121-00-00
1966' FNL & 1882' FEL
SEC 32 TWP 24S RGE 3E
Permanent Datum GROUND LEVEL Elevation 1351
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING

Other Services: CDL/CNL/MEL

Elevation: K.B. 1356, D.F. 1354, G.L. 1351

| Date | 04/10/19 | | |
|---|---|---|---|
| Run Number | ONE | | |
| Depth Driller | 3290 | | |
| Depth Logger | 3322 | | |
| Bottom Logged Interval | 3321 | | |
| Top Log Interval | 00 | | |
| Casing Driller | 8 5/8" @ 257 | | |
| Casing Logger | 257 | | |
| Bit Size | 7 7/8" | | |
| Type Fluid in Hole | CHEMICAL MUD | | |
| Density / Viscosity | 9.4/49 | | |
| pH / Fluid Loss | 11.0/8.0 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | .7@72 | | |
| Rmf @ Meas. Temp | .53@72 | | |
| Rmc @ Meas. Temp | .84@72 | | |
| Source of Rmf / Rmc | MEASURED | | |
| Rm @ BHT | .46@110 | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | //// | | |
| Maximum Recorded Temperature | 110F | | |
| Equipment Number | 1523 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | GUS PFANENSTIEL | | |
| Witnessed By | CHRIS PETERS | | |

<<< Fold Here >>>



Comments

THANK YOU FOR USING ELI WIRELINE, HAYS, KS. (785) 628-6395

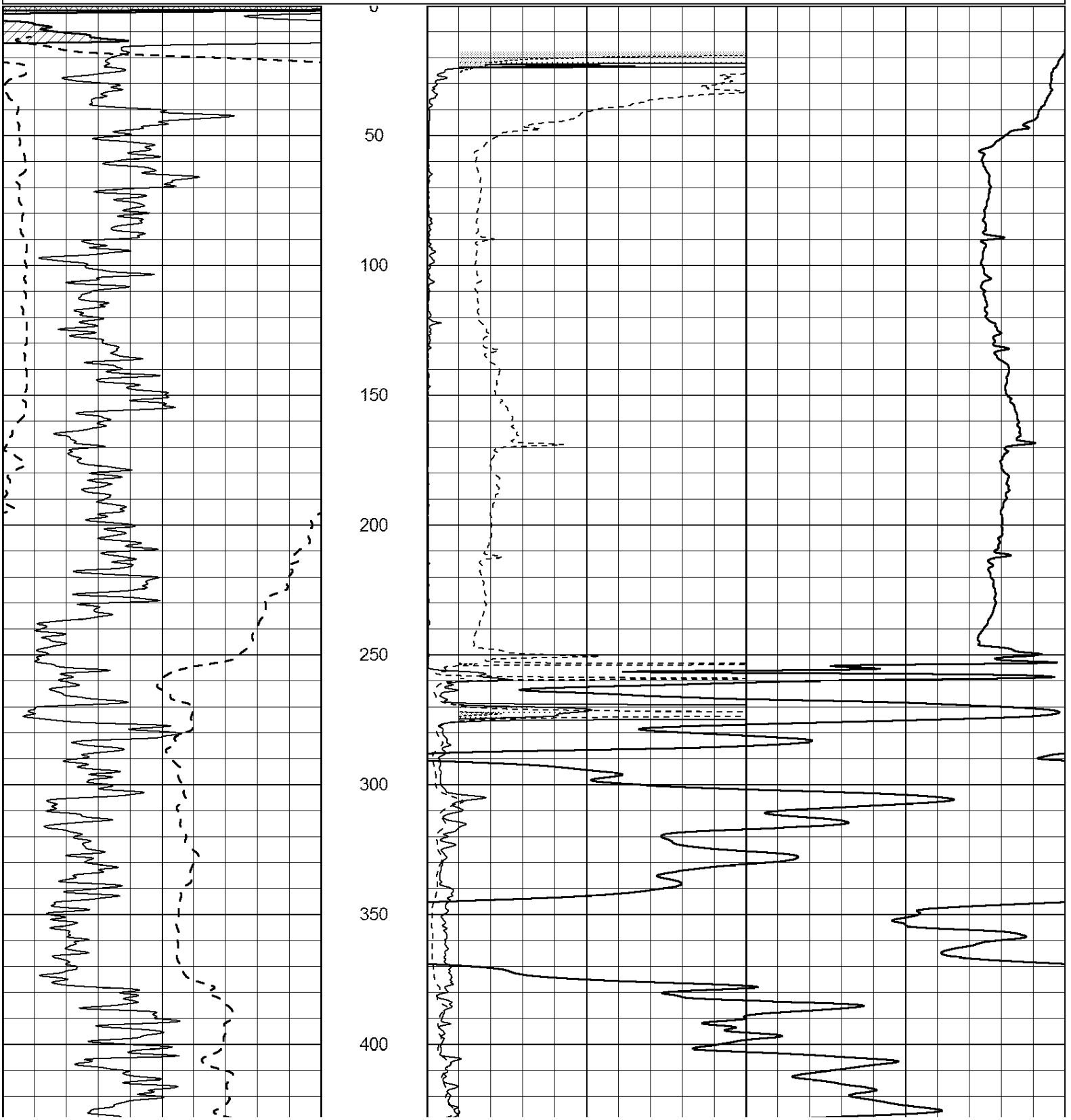
DIRECTIONS
WHITEWATER EAST TO BUTLER RD., SOUTH 2 MILES
1/2 EAST, SOUTH INTO.

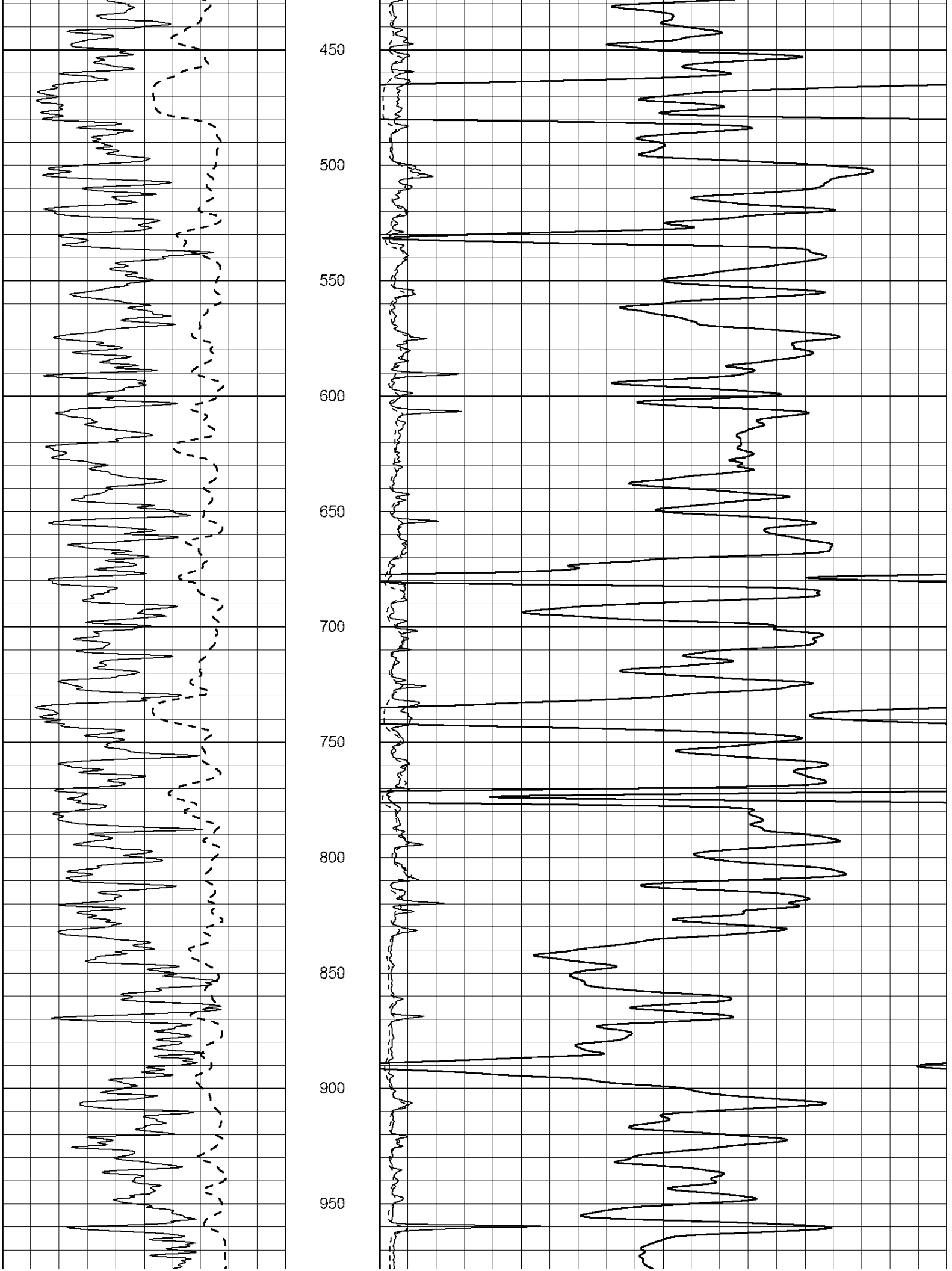
# MAIN PASS

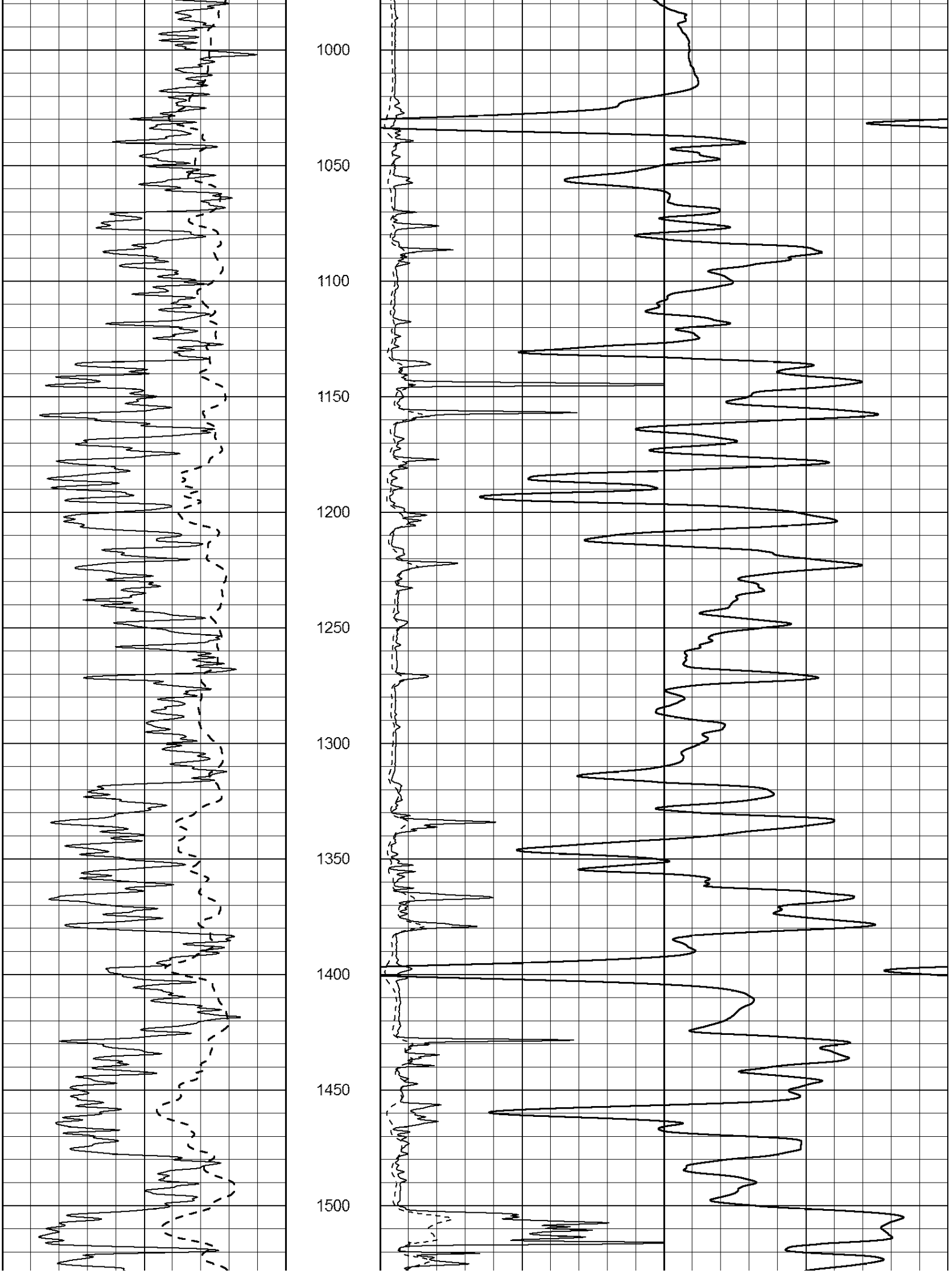
Database File: 3496pe.db
Dataset Pathname: pass3.1
Presentation Format: _dil2
Dataset Creation: Wed Apr 10 06:09:44 2019
Charted by: Depth in Feet scaled 1:600

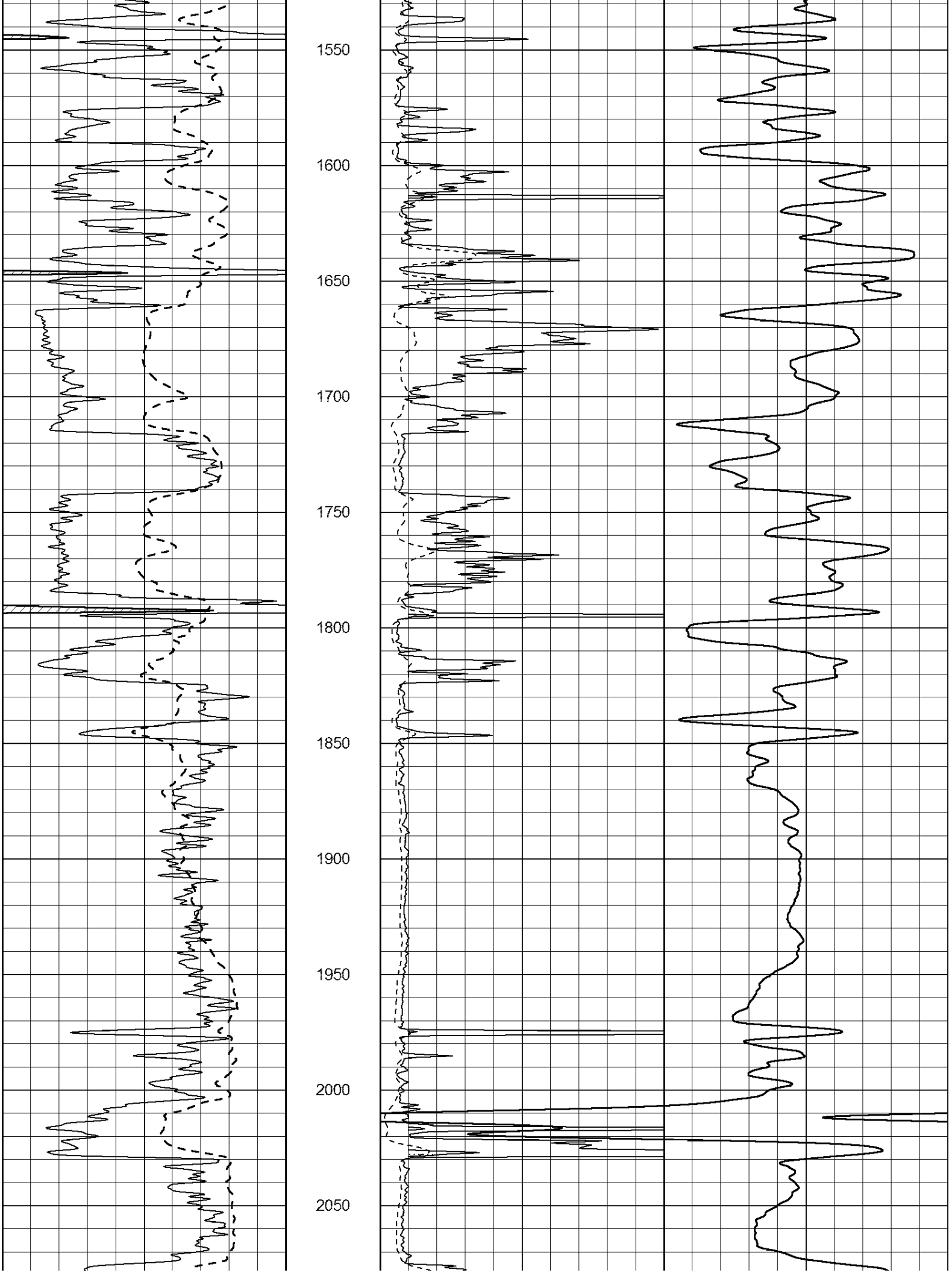
| | | |
|---|---|---|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | SP (mV) | 100 |

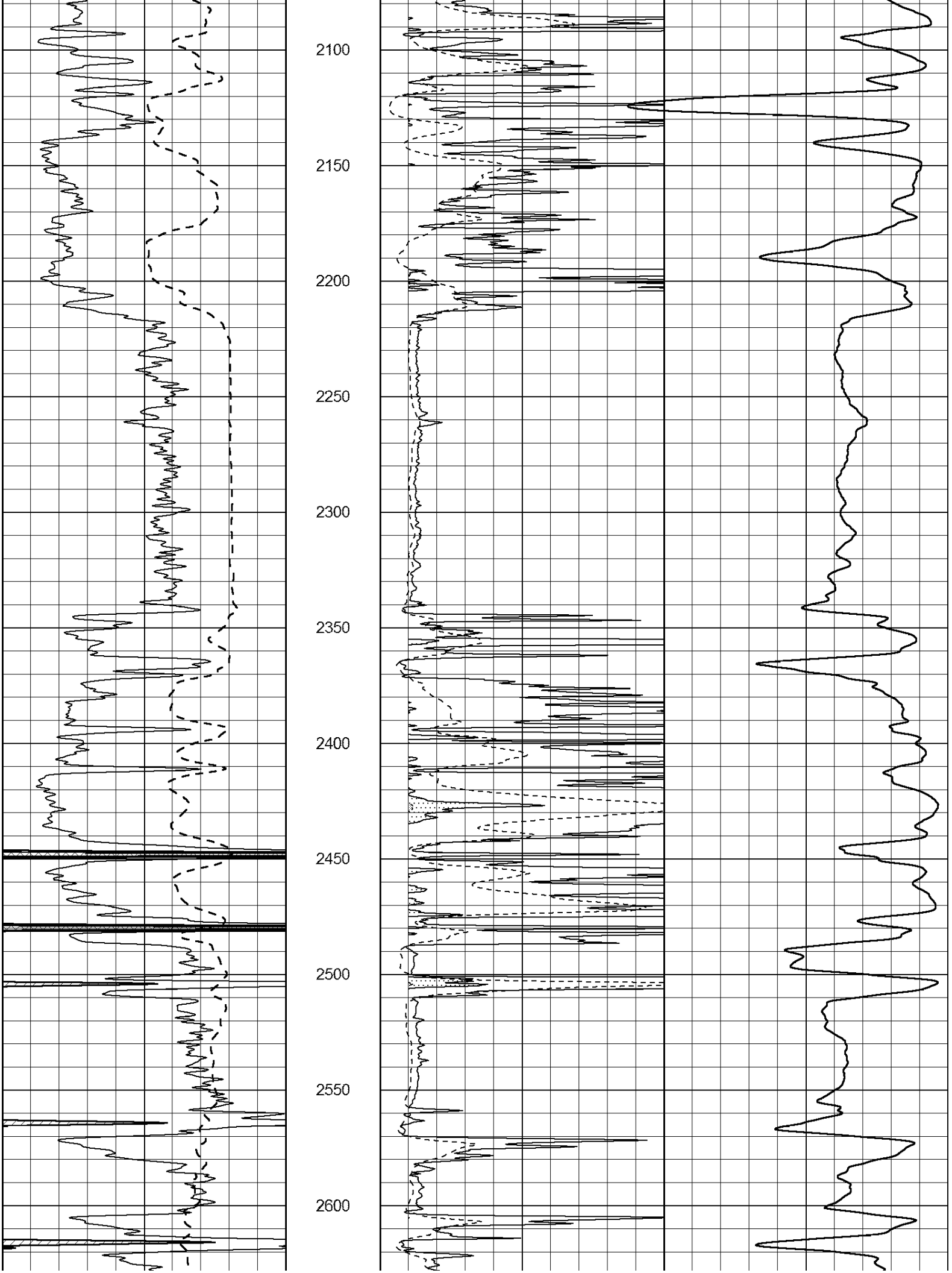
| | | |
|---|---|---|
| 0 | RLL3 (Ohm-m) | 50 |
| 0 | RILD (Ohm-m) | 50 |
| 1000 | CILD (mmho/m) | 0 |
| 50 | RILD X10 (Ohm-m) | 500 |
| 50 | RLL3 X10 (Ohm-m) | 500 |

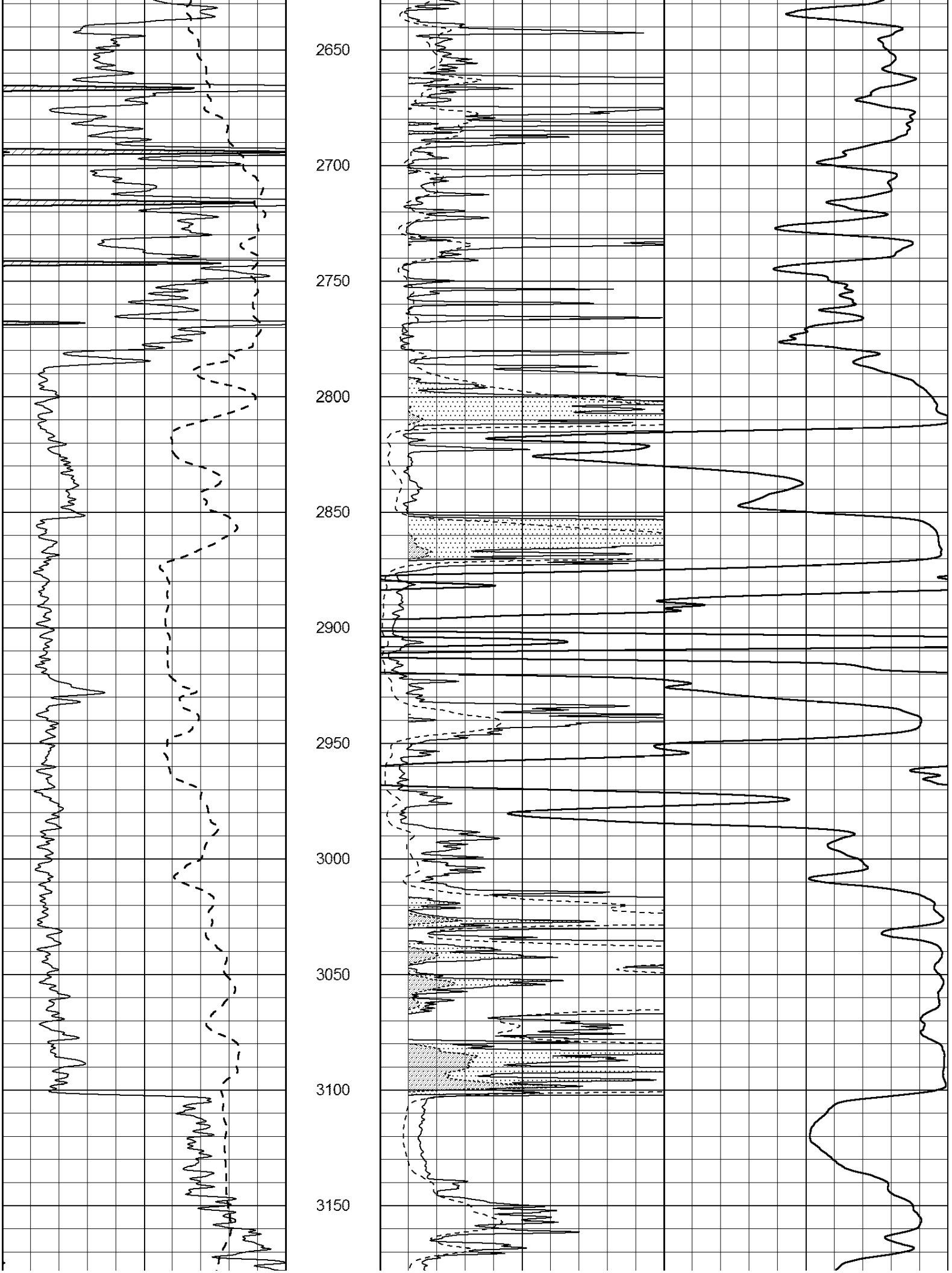


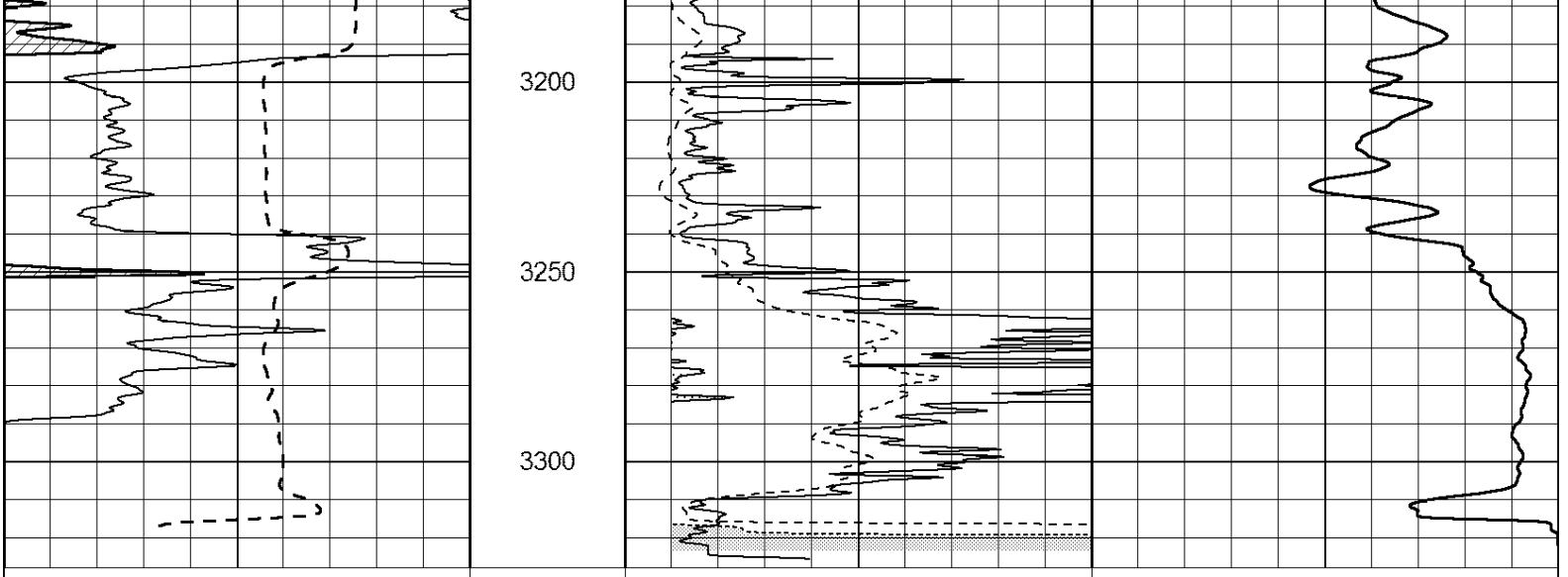

450
500
550
600
650
700
750
800
850
900
950


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




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

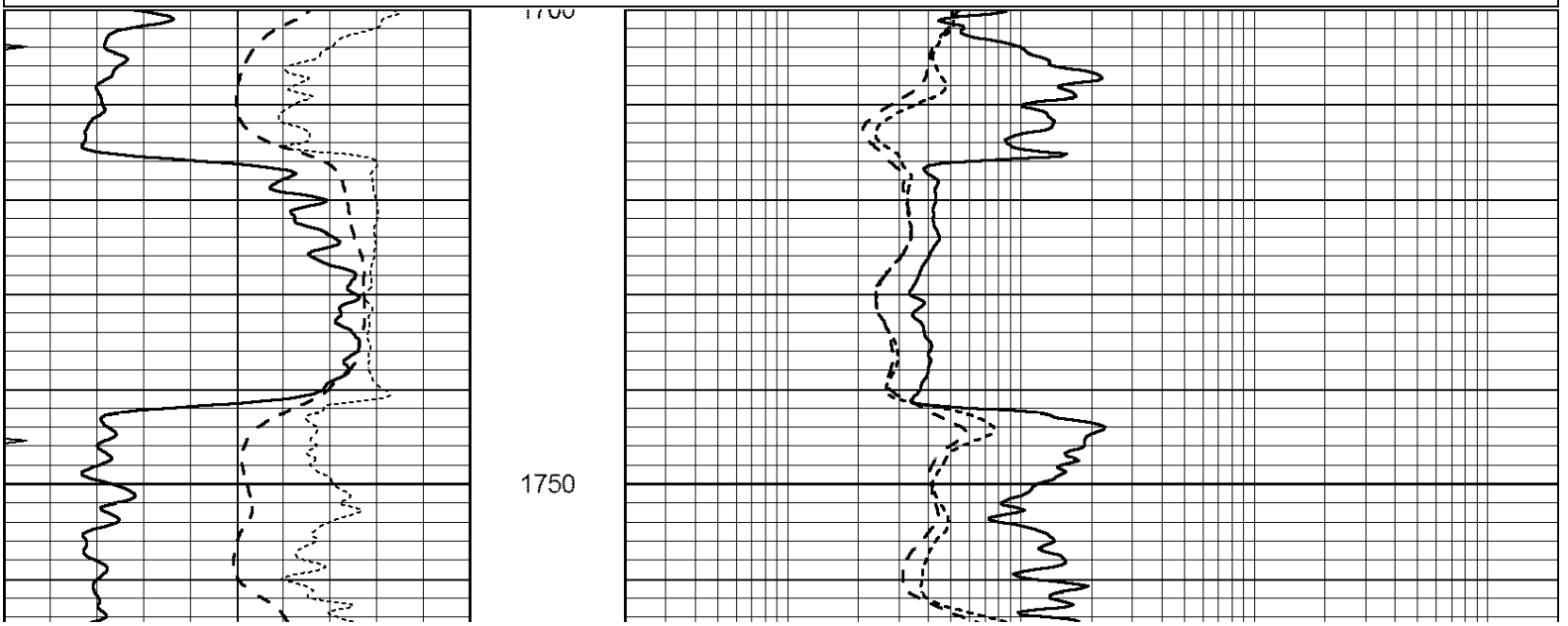
| | | |
|---|---|---|
| 0 | RLL3 (Ohm-m) | 50 |
| 0 | RILD (Ohm-m) | 50 |
| 1000 | CILD (mmho/m) | 0 |
| 50 | RILD X10 (Ohm-m) | 500 |
| 50 | RLL3 X10 (Ohm-m) | 500 |

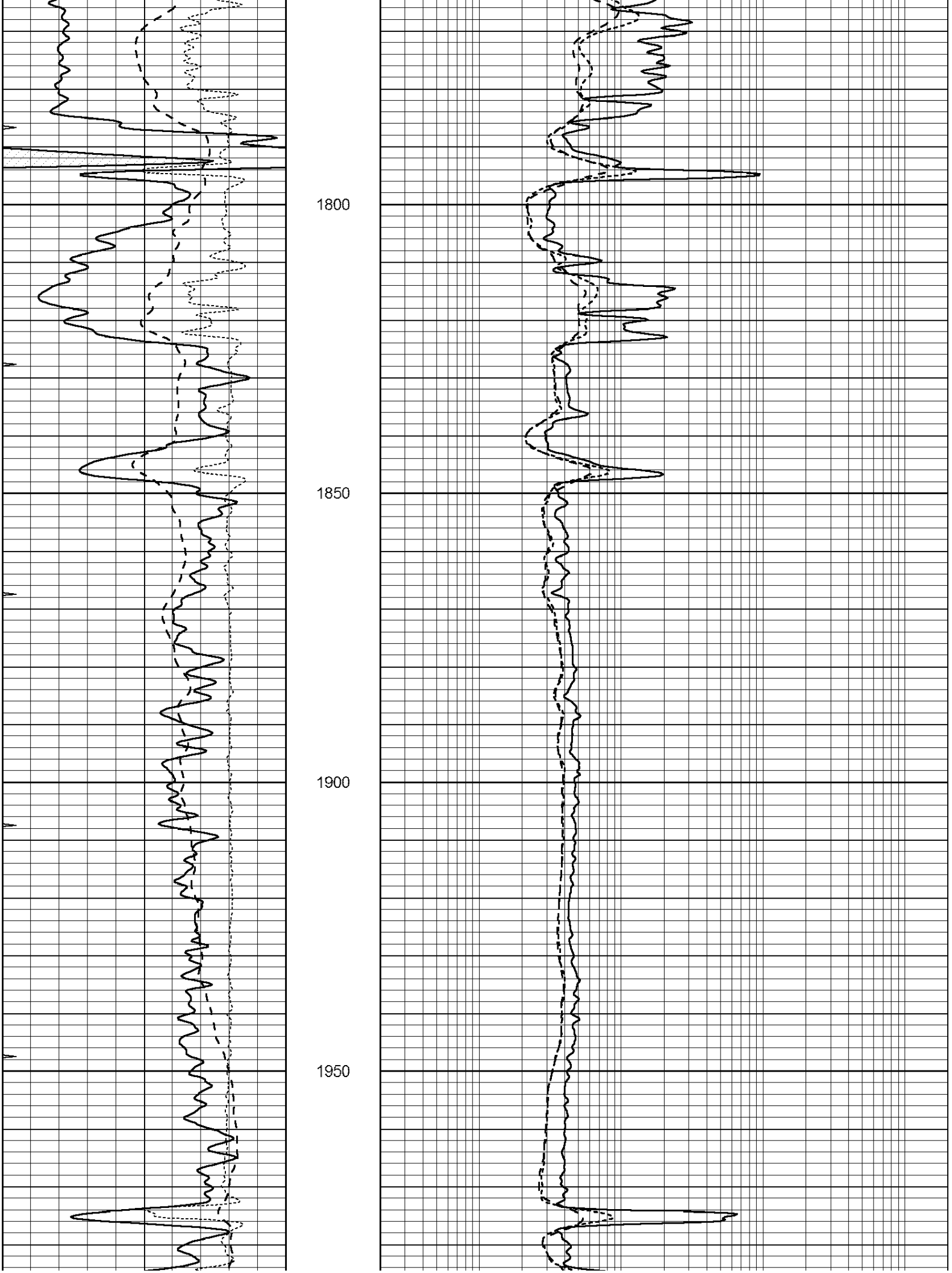
# MAIN PASS

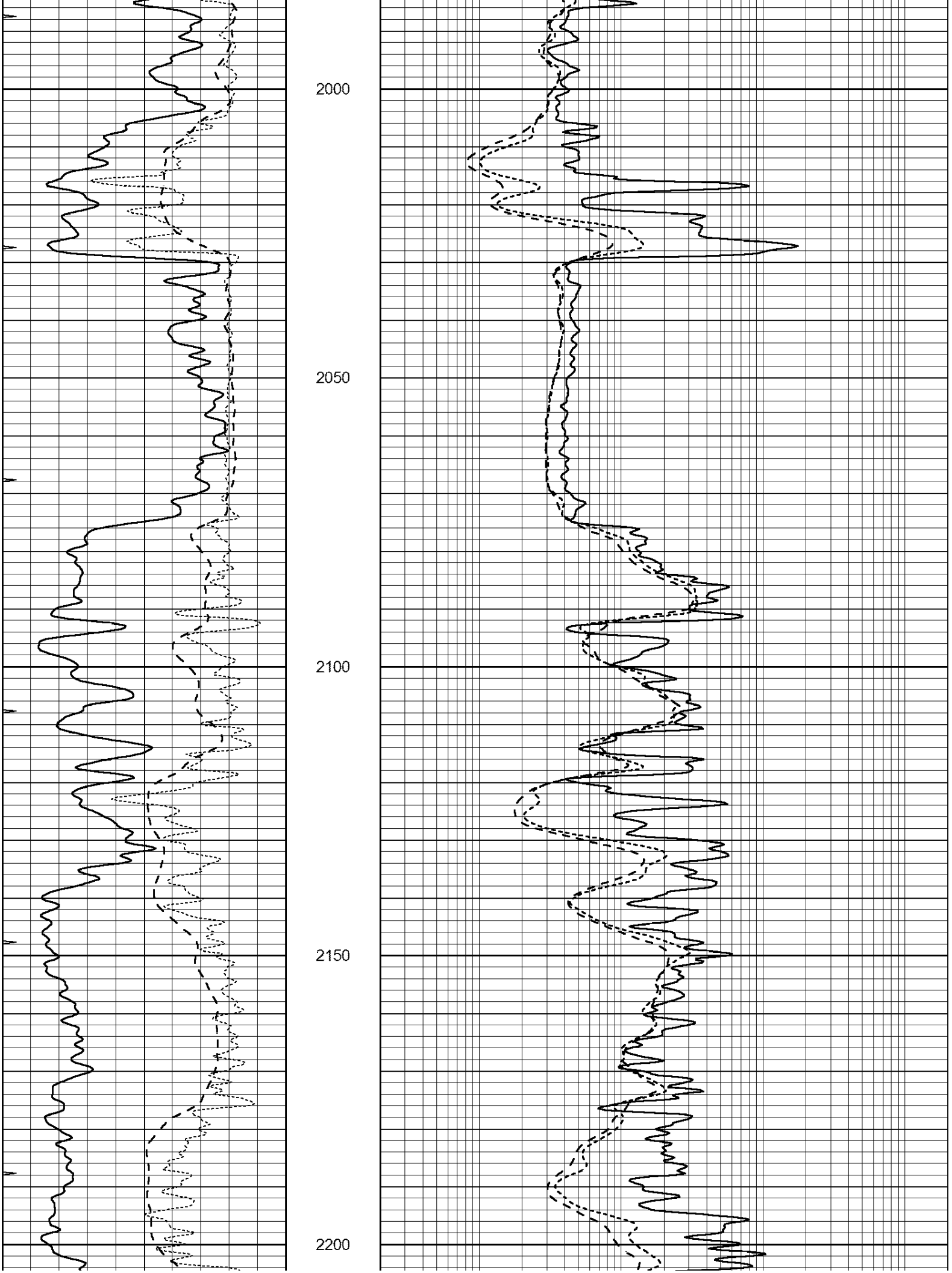
Database File: 3496pe.db
Dataset Pathname: pass3.1
Presentation Format: _dil
Dataset Creation: Wed Apr 10 06:09:44 2019
Charted by: Depth in Feet scaled 1:240

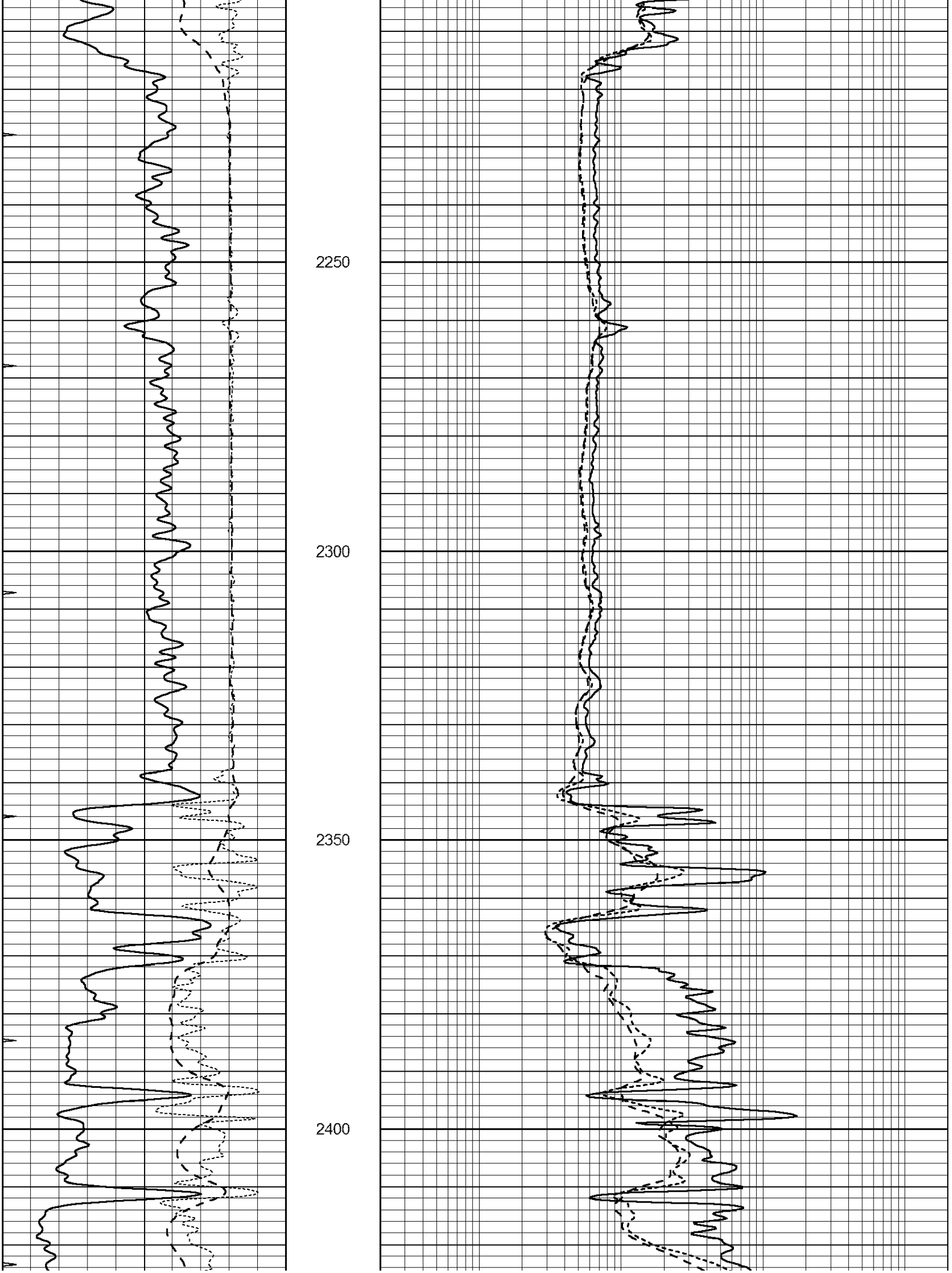
| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |
| 0 | MINMK | 20 |

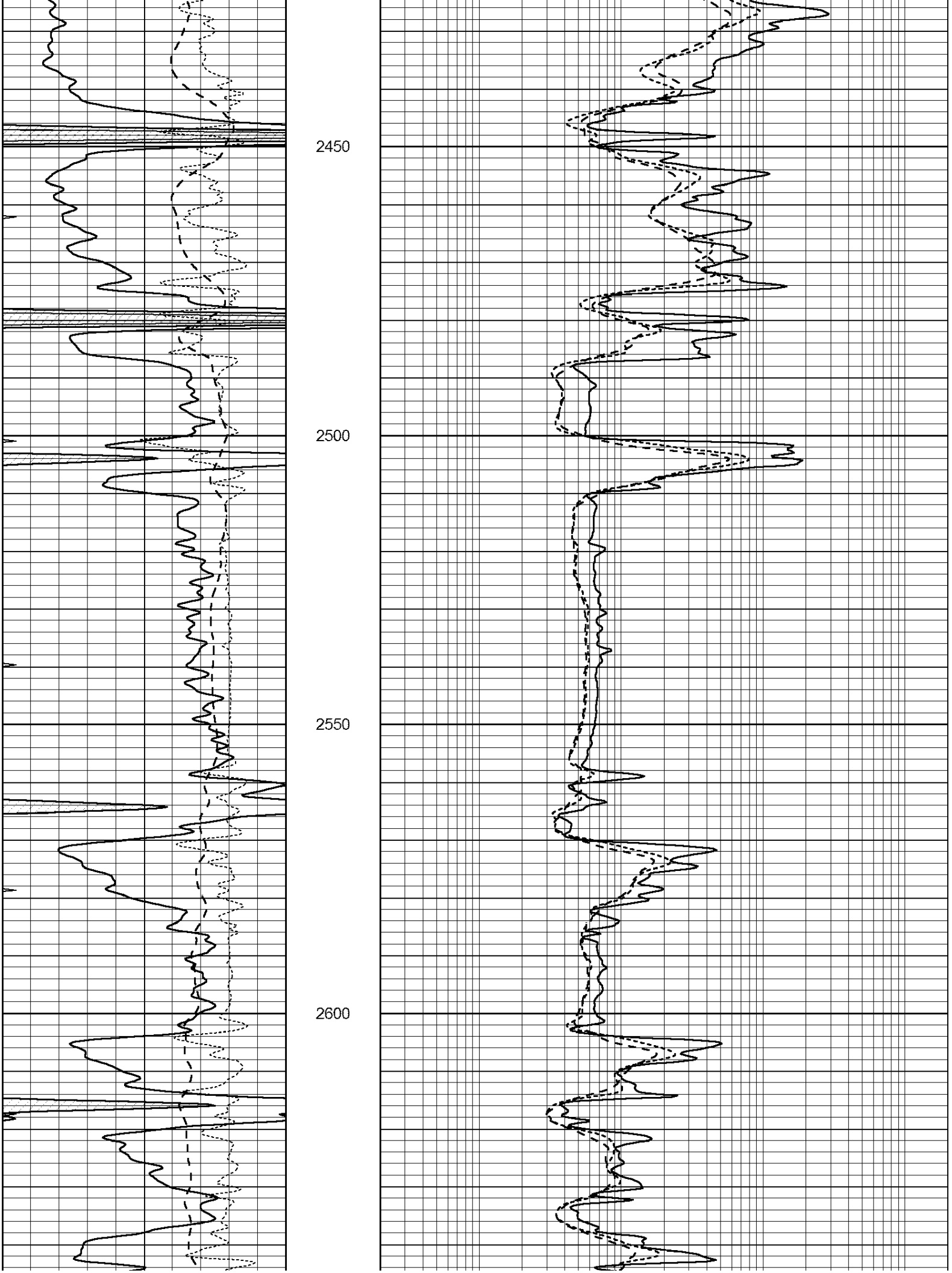
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

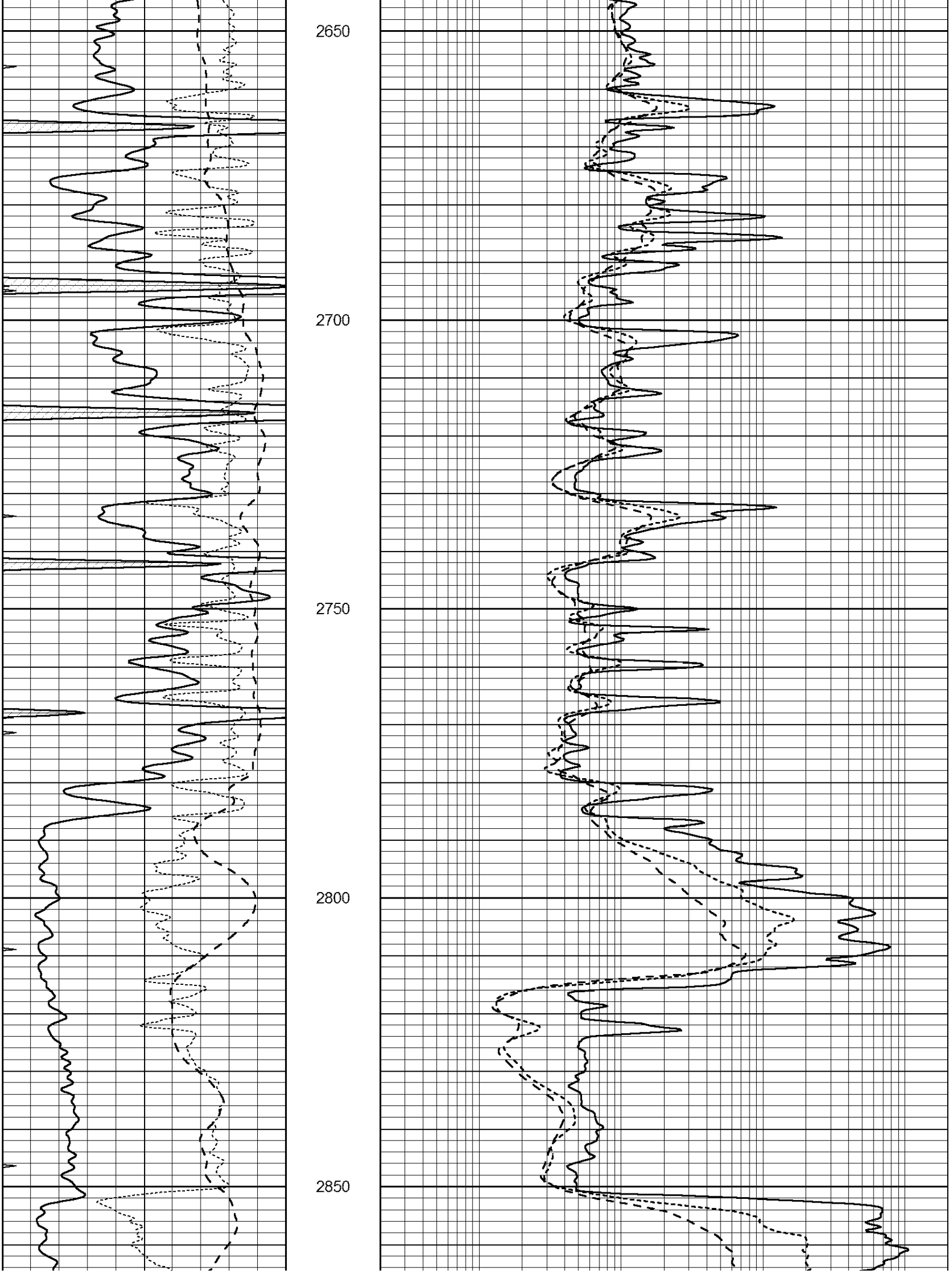


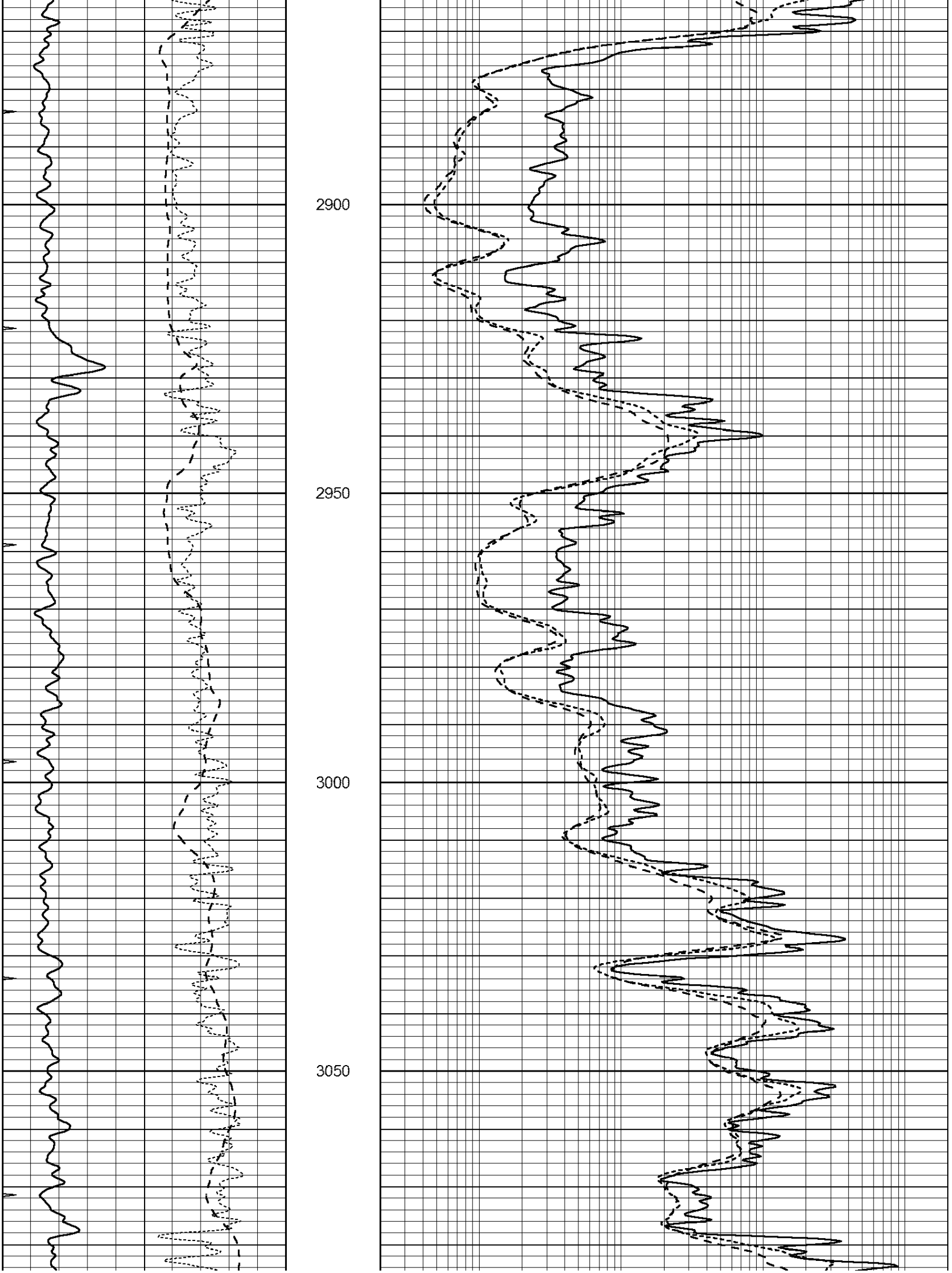

1800
1850
1900
1950

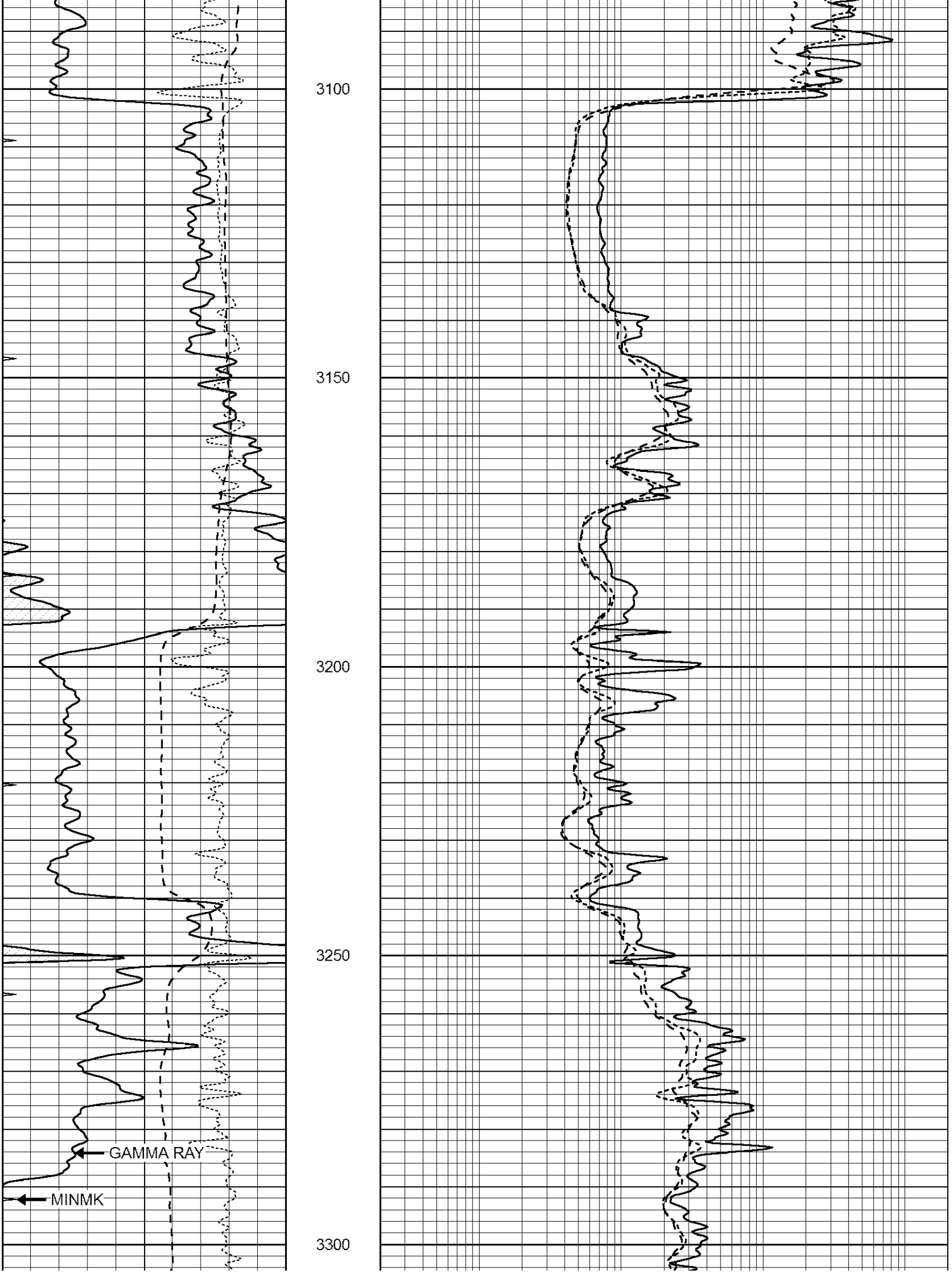

2000
2050
2100
2150
2200

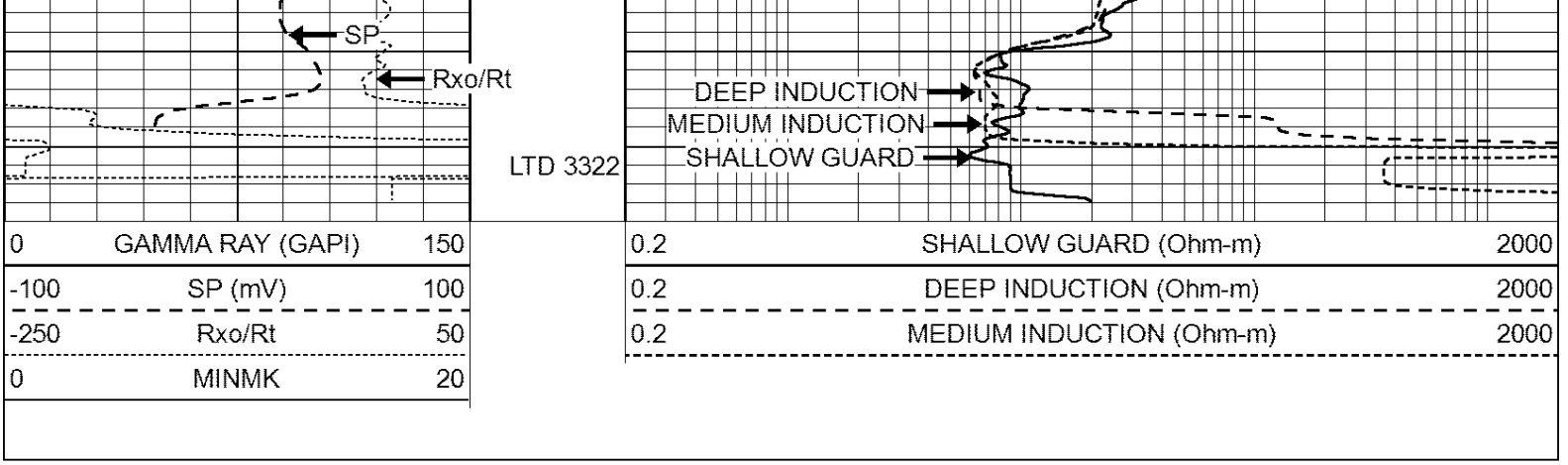

2250
2300
2350
2400


2450
2500
2550
2600


2650
2700
2750
2800
2850


2900
2950
3000
3050


3100
3150
3200
3250
3300
GAMMA RAY
MINMK




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

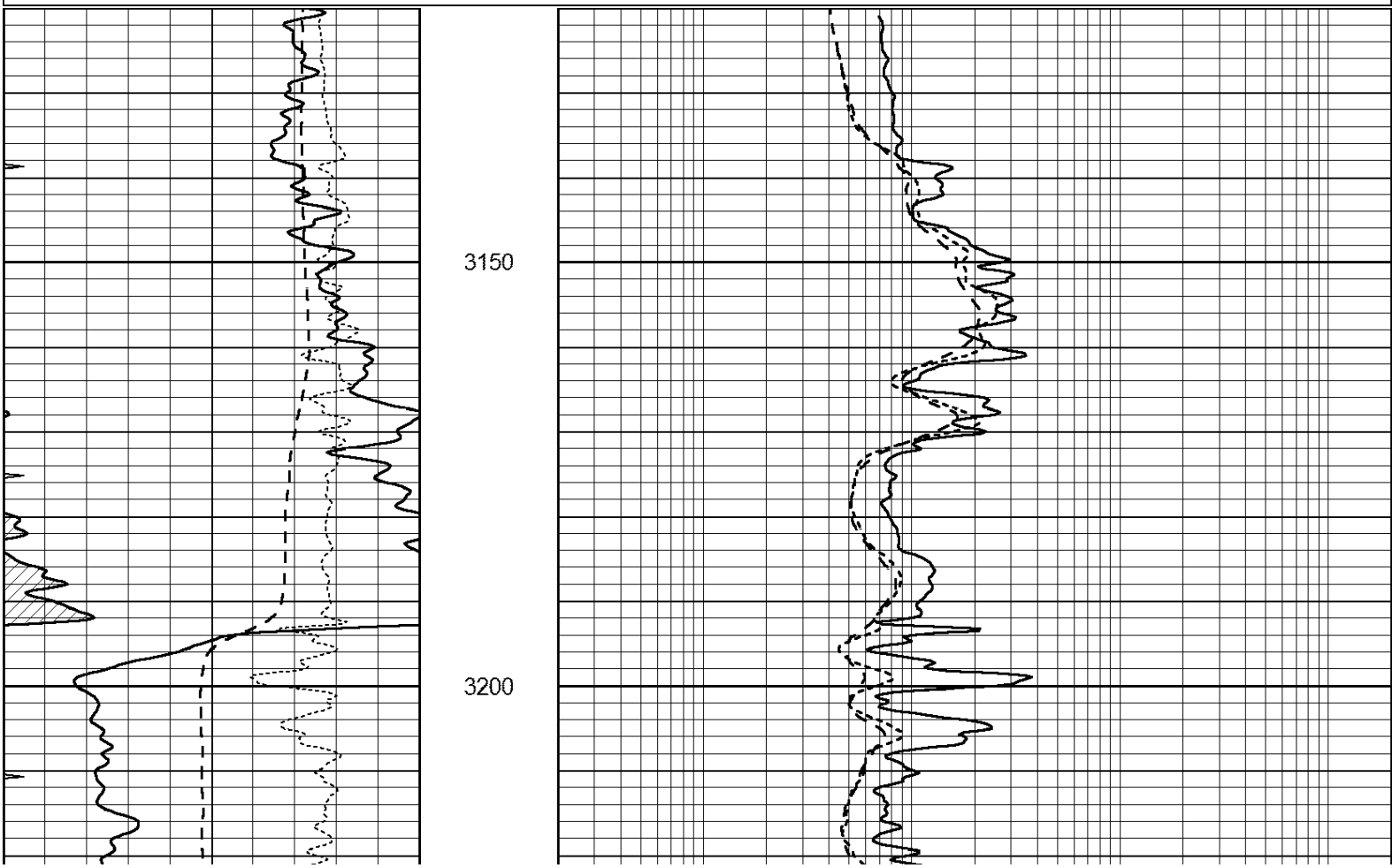
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

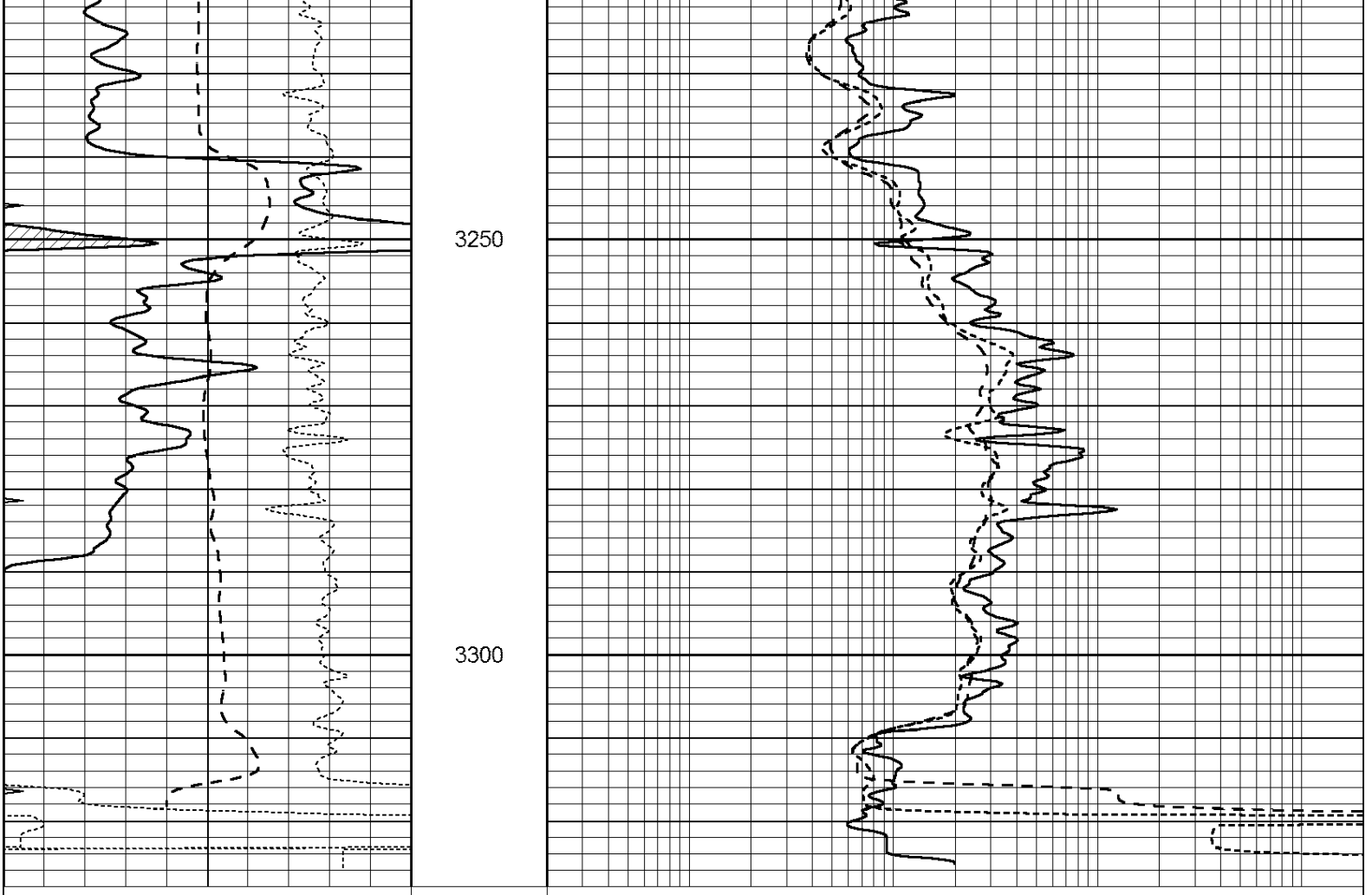
# REPEAT SECTION

Database File: 3496pe.db
Dataset Pathname: pass2.1
Presentation Format: _dil
Dataset Creation: Wed Apr 10 06:26:08 2019
Charted by: Depth in Feet scaled 1:240

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






## Calibration Report

Database File: 3496pe.db
Dataset Pathname: pass2.1
Dataset Creation: Wed Apr 10 06:26:08 2019

### Dual Induction Calibration Report

Serial-Model: PROBE8-DILG
Surface Cal Performed: Mon Sep 10 14:28:35 2018
Downhole Cal Performed: Mon Sep 10 14:28:38 2018
After Survey Verification Performed: Mon Sep 10 14:28:40 2018

Surface Calibration

| | Readings | | | References | | | Results | |
|---|---|---|---|---|---|---|---|---|
| Loop: | Air | Loop | | Air | Loop | | m | b |
| Deep | 0.015 | 0.648 | V | 0.000 | 400.000 | mmho/m | 620.000 | 0.000 |
| Medium | 0.029 | 0.796 | V | 0.000 | 464.000 | mmho/m | 590.000 | -12.000 |
| 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

Deshmukh 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 | | |

## Litho Density Calibration Report
Serial: 001N Model: PRB

Master Calibration — Performed Fri Feb 22 10:21:38 2019

| | Background | Magnesium | Aluminum | Sandstone | |
|---|---|---|---|---|---|
| Window 1 | 1650.2 | 7609.7 | 2906.5 | 8386.5 | cps |
| Window 2 | 1538.2 | 6635.9 | 2614.4 | 7212.4 | cps |
| Window 3 | 1257.0 | 3718.7 | 1765.8 | 3927.1 | cps |
| Window 4 | 376.8 | 375.6 | 373.4 | 374.5 | cps |
| Long Space | 0.0 | 5097.7 | 1076.2 | 5674.2 | cps |
| Short Space | 2.8 | 1704.3 | 1106.3 | 1723.6 | cps |
| Rho | | 1.7100 | 2.5900 | 1.3800 | g/cc |
| Pe | | 0.0000 | 2.5700 | 1.5500 | |

| | | | | | |
|---|---|---|---|---|---|
| Rib Angle | : 44.5 | Rib Slope | : 0.982 | Density/Spine Ratio | : 0.545 |
| Spine Angle | : 74.5 | Spine Slope | : 3.599 | Spine Intercept | : -18.2 |

Before Survey Verification — Performed Wed Dec 31 18:00:00 1969

| | | | | | |
|---|---|---|---|---|---|
| Window 1 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 2 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 3 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 4 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Long Space | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Short Space | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Measured Rho | | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Correction | | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Pe | | | 0.0000 | 0.0000 | |

After Survey Verification — Performed Wed Dec 31 18:00:00 1969

| | | | | | |
|---|---|---|---|---|---|
| Window 1 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 2 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 3 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Window 4 | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Long Space | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Short Space | 0.0 | 0.0 | 0.0 | 0.0 | cps |
| Measured Rho | | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Correction | | 0.0000 | 0.0000 | 0.0000 | g/cc |
| Measured Pe | | | 0.0000 | 0.0000 | |

## 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 |

### PRE-SURVEY VERIFICATION

| | Detector | Readings | | Measured | | Target | |
|---|---|---|---|---|---|---|---|
| 1) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | pu |
| 2) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | |
| 3) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | |

### POST-SURVEY VERIFICATION

| | Detector | Readings | | Measured | | Target | |
|---|---|---|---|---|---|---|---|
| 1) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | pu |
| 2) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | pu |
| 3) | Short Space | | cps | | | | |
| | Long Space | | cps | | pu | | pu |

## Gamma Ray Calibration Report

Serial Number: GR6
Tool Model: OPEN
Performed: Mon Sep 10 14:29:23 2018

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 276.0 cps

Sensitivity: 0.5500 GAPI/cps