# DUAL INDUCTION LOG

Company PETROLEUM DEVELOPMENT COMPANY
Well ENGLER FARMS #1-14
Field
County KEARNEY State KANSAS

Location: API # : 15-093-21981-0000

1943' FNL & 906' FEL

SEC 14 TWP 22S RGE 35W

Other Services
CDL/CNL/PE
MEL/SON

Elevation
K.B. 3031
D.F. 3029
G.L. 3020

Permanent Datum GROUND LEVEL Elevation 3020
Log Measured From KELLY BUSHING 11' A.G.L
Drilling Measured From KELLY BUSHING

| | | | |
|---|---|---|---|
| Date | 4/19/21 | | |
| Run Number | ONE | | |
| Depth Driller | 5000 | | |
| Depth Logger | 5002 | | |
| Bottom Logged Interval | 5000 | | |
| Top Log Interval | 00 | | |
| Casing Driller | 8 5/8" @ 1838' | | |
| Casing Logger | 1828' | | |
| Bit Size | 7 7/8 | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 4700 PPM | |
| Density / Viscosity | 9.3/56 | | |
| pH / Fluid Loss | 10.5/7.6 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | .90 @ 60F | | |
| Rmf @ Meas. Temp | .67 @ 60F | | |
| Rmc @ Meas. Temp | 1.08 @ 60F | | |
| Source of Rmf / Rmc | MEASUREMENT | | |
| Rm @ BHT | .43 @ 125F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | //// | | |
| Maximum Recorded Temperature | 125F | | |
| Equipment Number | 3802 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | JASON CAPPELLUCCI | | |
| Witnessed By | KEN LeBLANC | COLE HINDS | |

Company PETROLEUM DEVELOPMENT COMPANY
Well ENGLER FARMS #1-14
Field
County KEARNEY
State KANSAS

<<< Fold Here >>>



Comments

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

DIRECTIONS

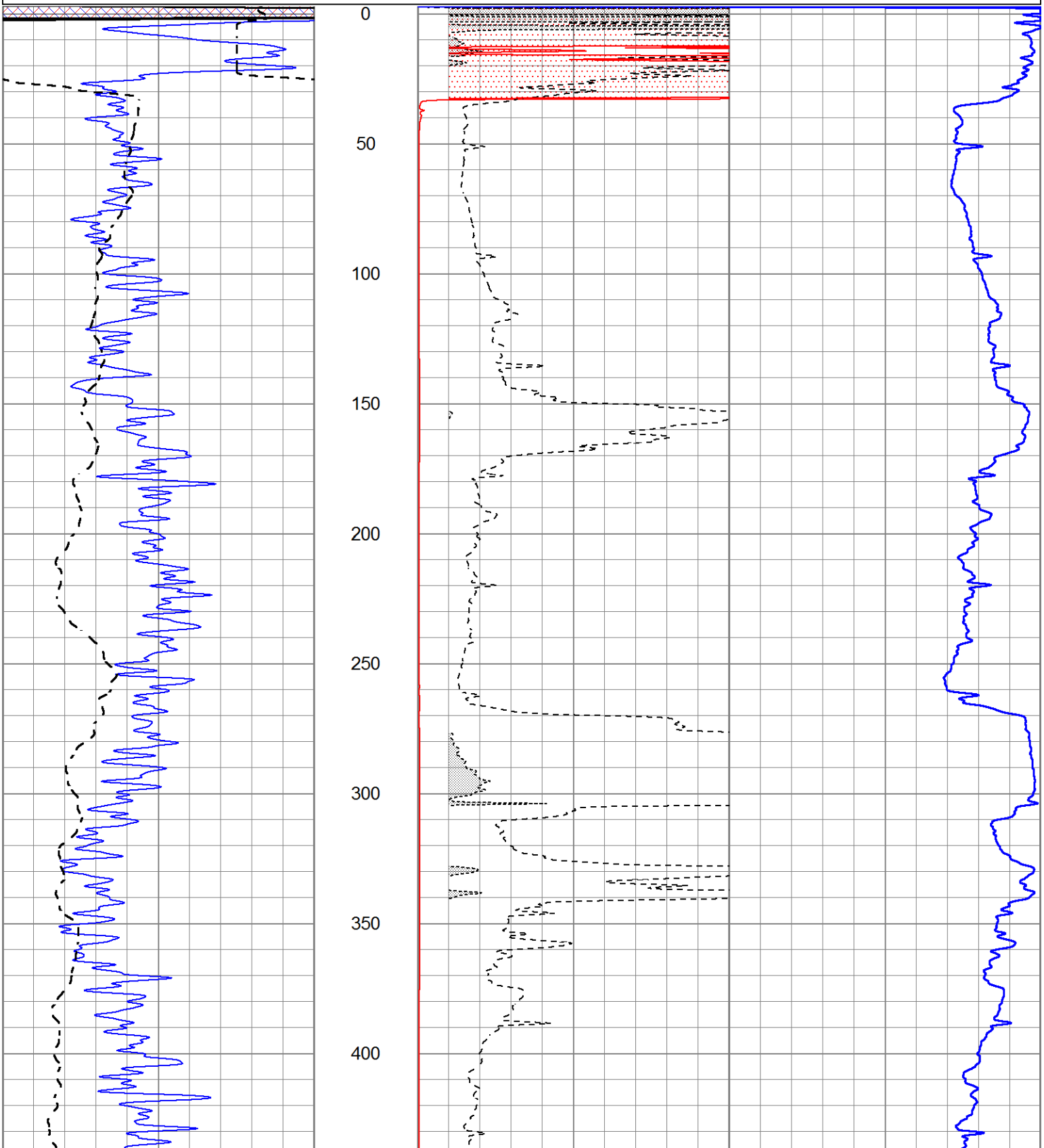
GARDEN CITY, KS. - WEST ON HWY 50 TO COUNTY LINE - 1 WEST TO AA RD.
9 1/2 NORTH - WEST INTO

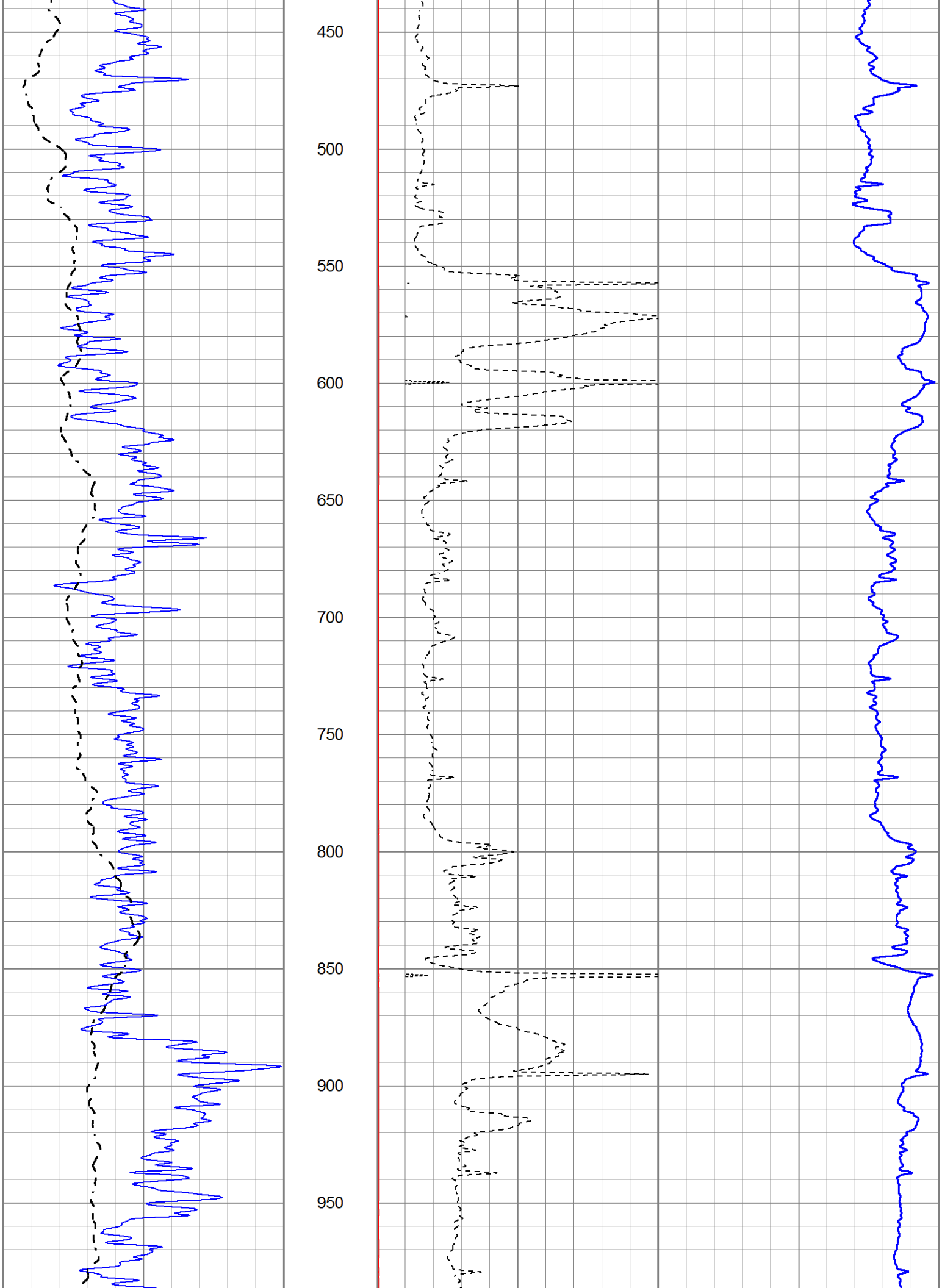
MAIN SECTION

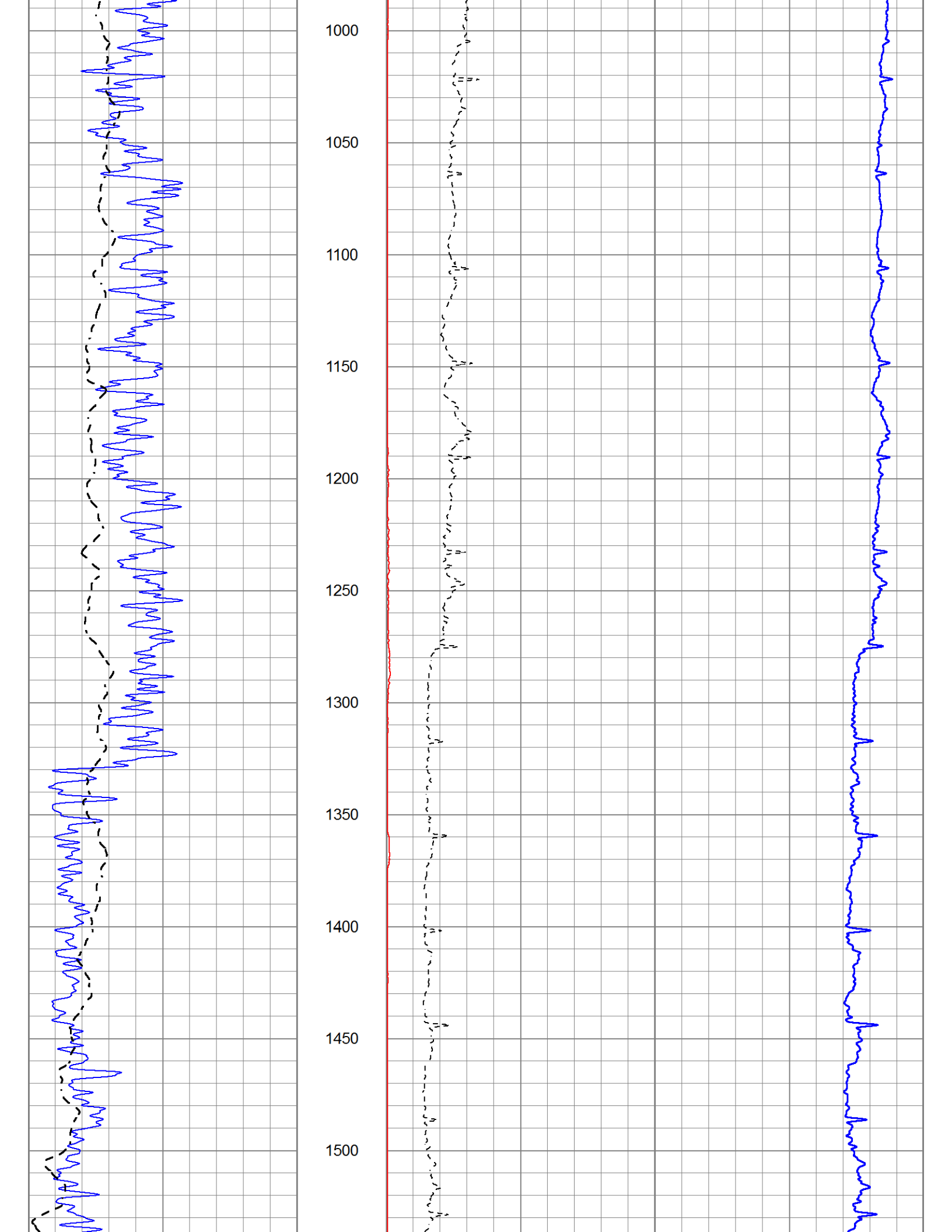
| | |
|---|---|
| Database File | 5214pe.db |
| Dataset Pathname | pass4.3 |
| Presentation Format | _dil2 |
| Dataset Creation | Mon Apr 19 19:15:40 2021 |
| Charted by | Depth in Feet scaled 1:600 |

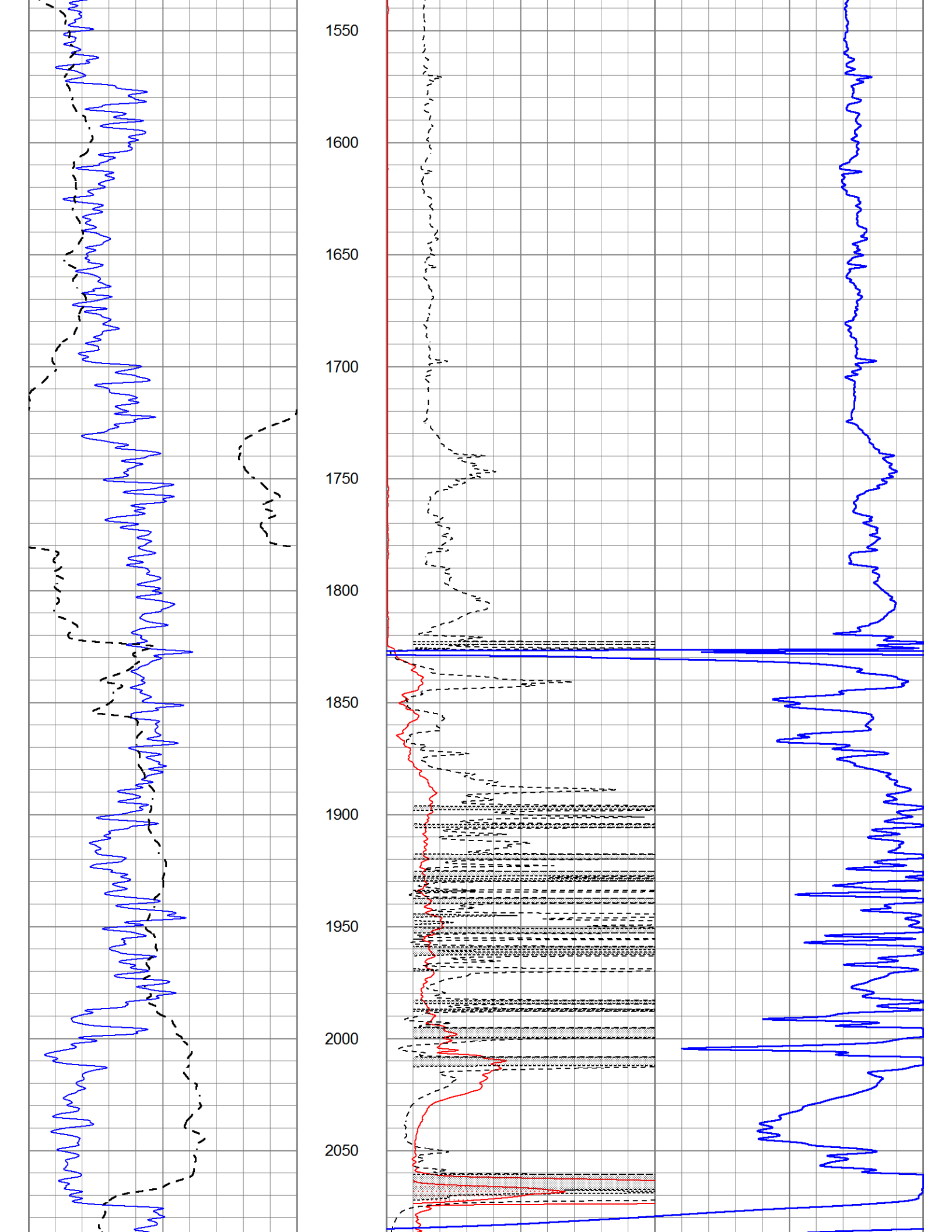
| | | |
|---|---|---|
| 0 | Gamma Ray (GAPI) | 150 |
| -100 | SP (mV) | 100 |

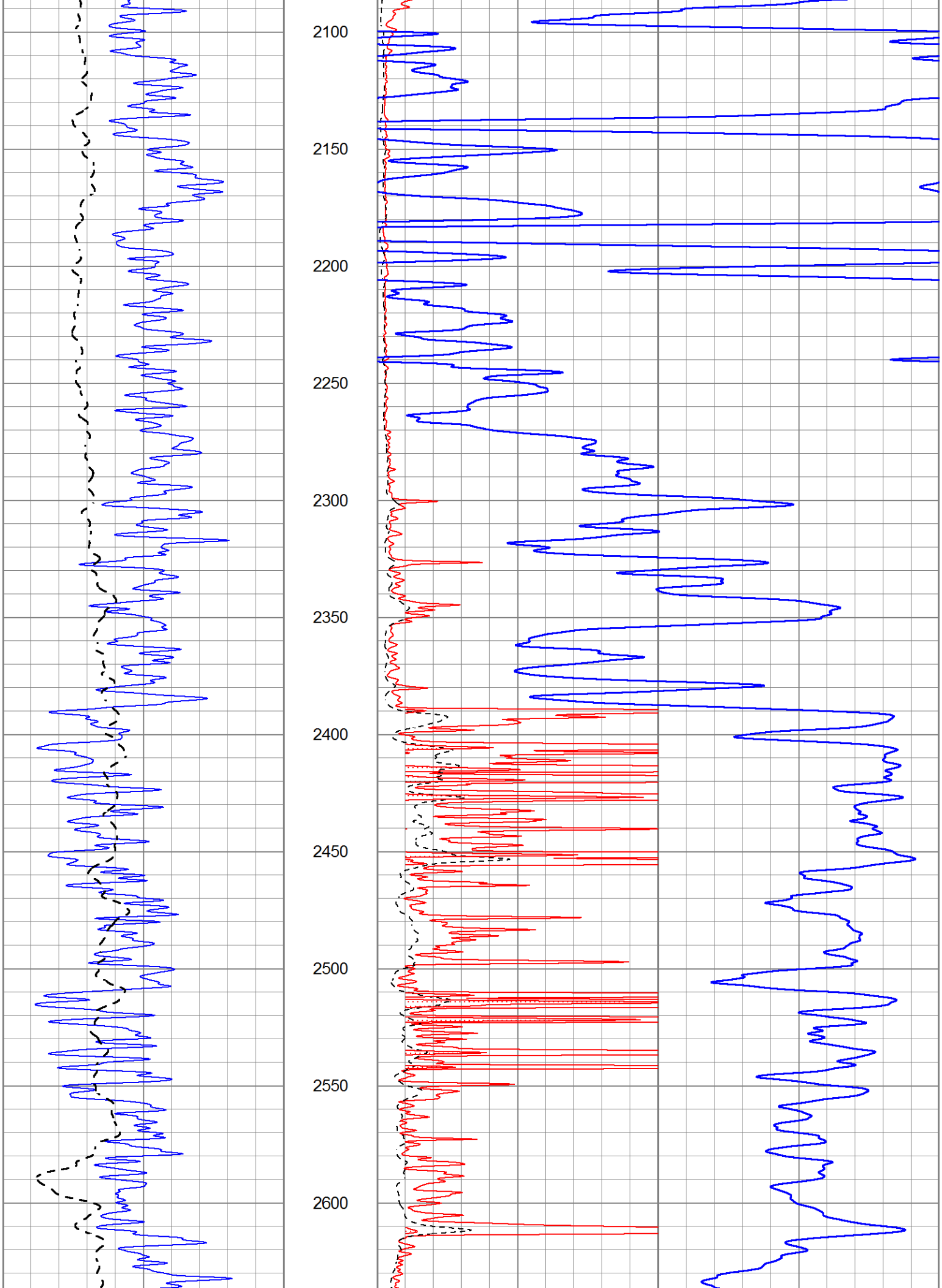
| | | |
|---|---|---|
| 1000 | CILD (mmho/m) | 0 |
| 0 | RLL3 (Ohm-m) | 50 |
| 0 | Deep Induction (Ohm-m) | 50 |
| 50 | RILD X10 (Ohm-m) | 500 |
| 50 | RLL3 X10 (Ohm-m) | 500 |

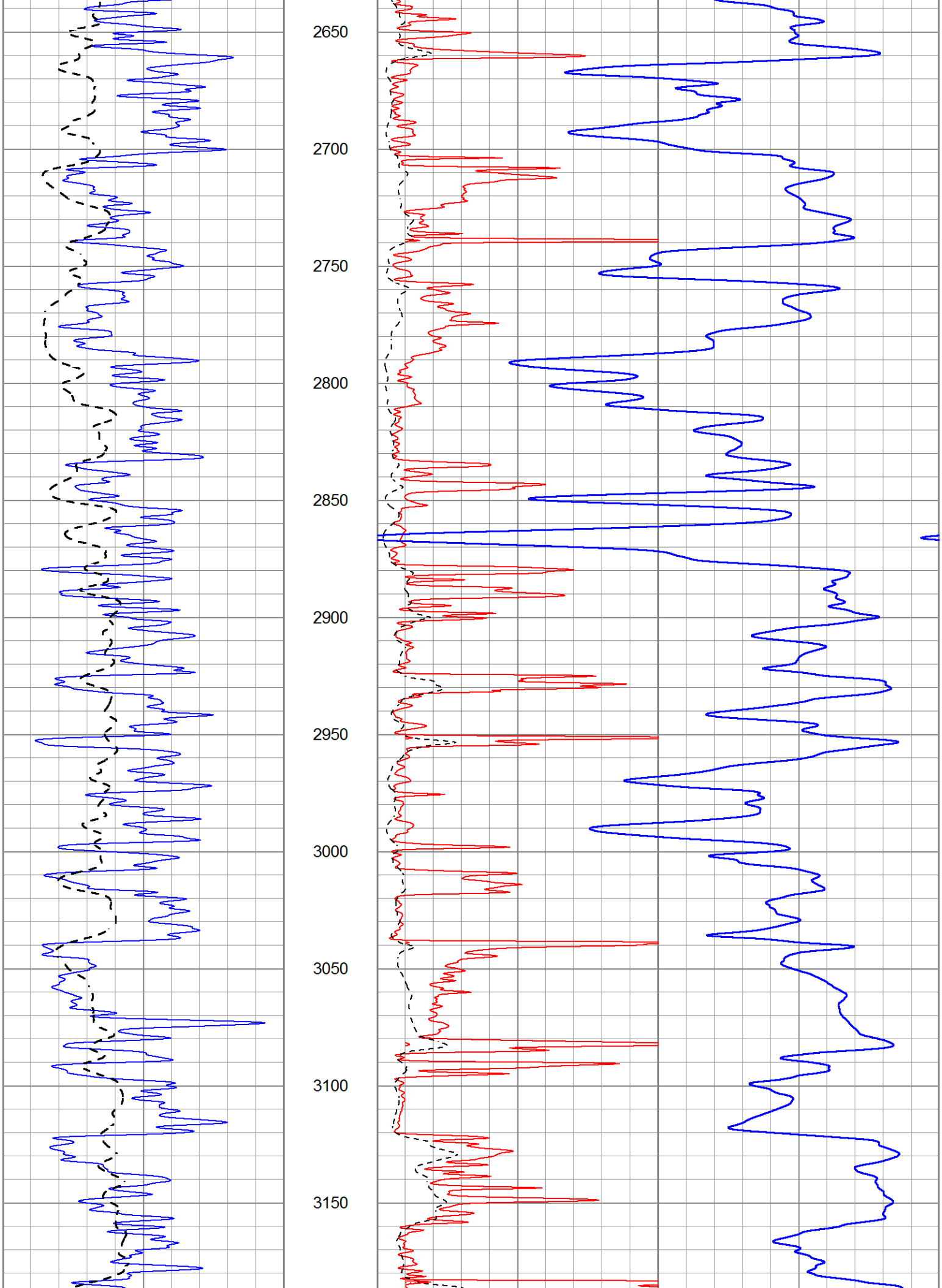


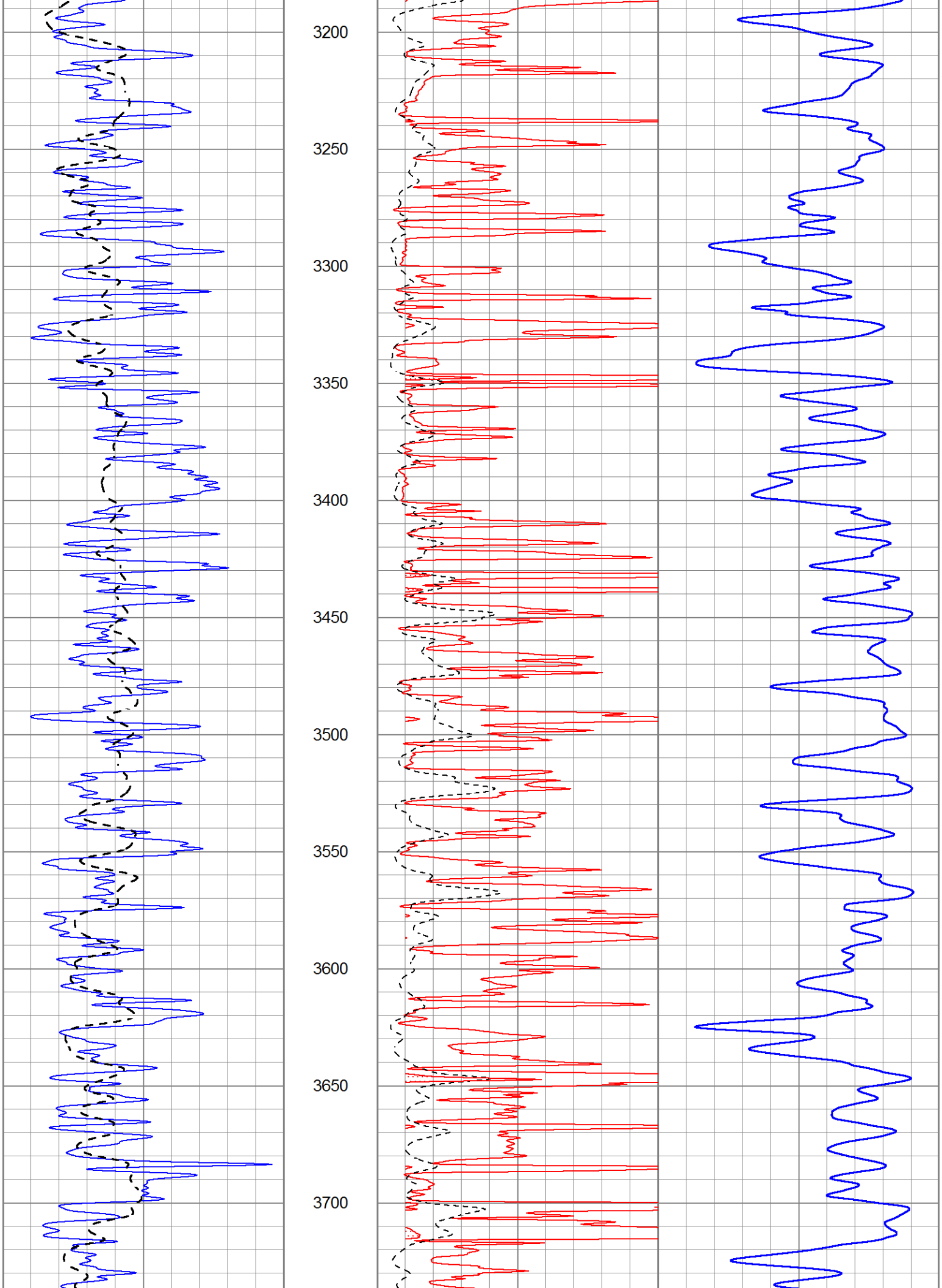

450
500
550
600
650
700
750
800
850
900
950

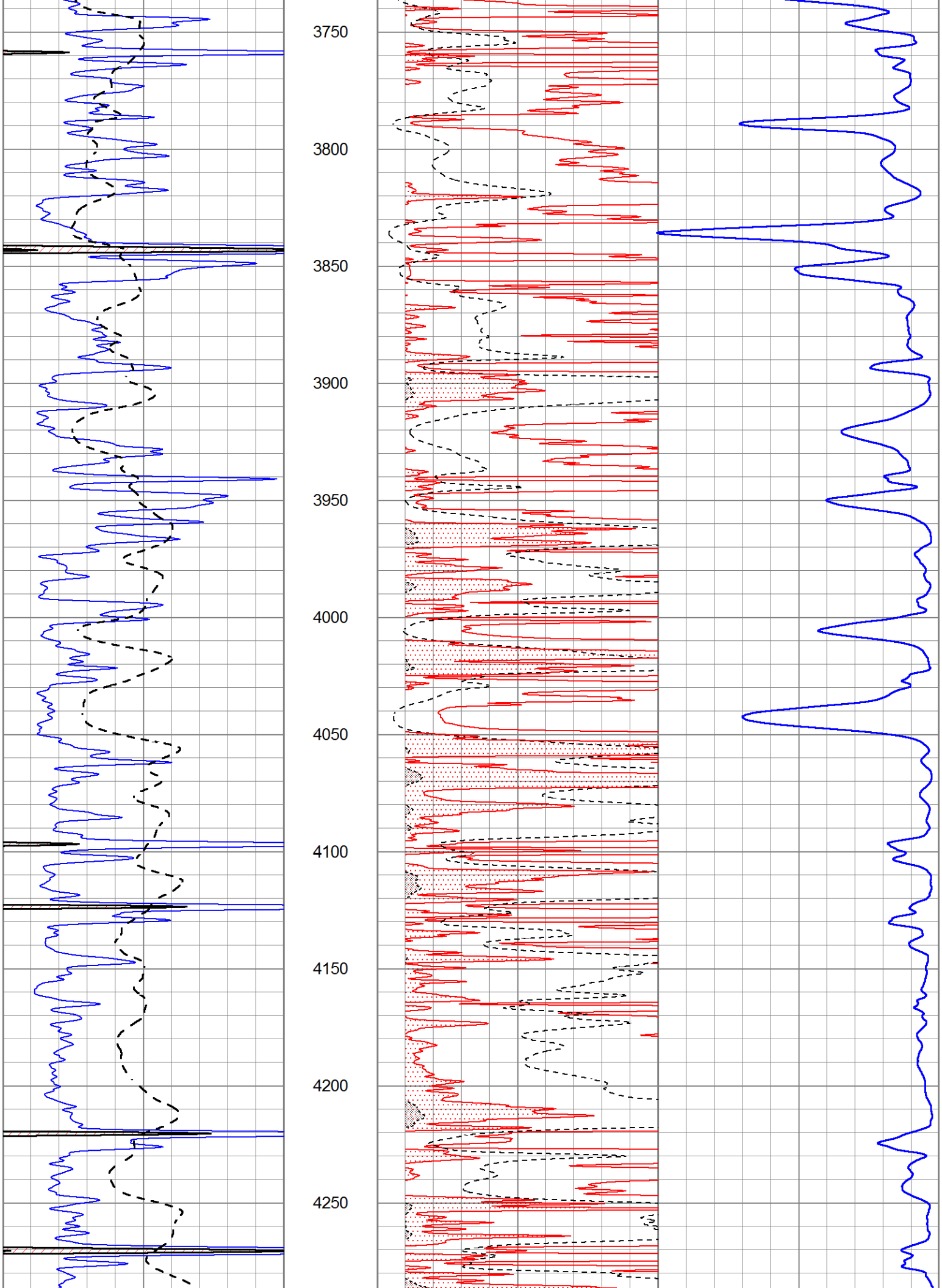

1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500

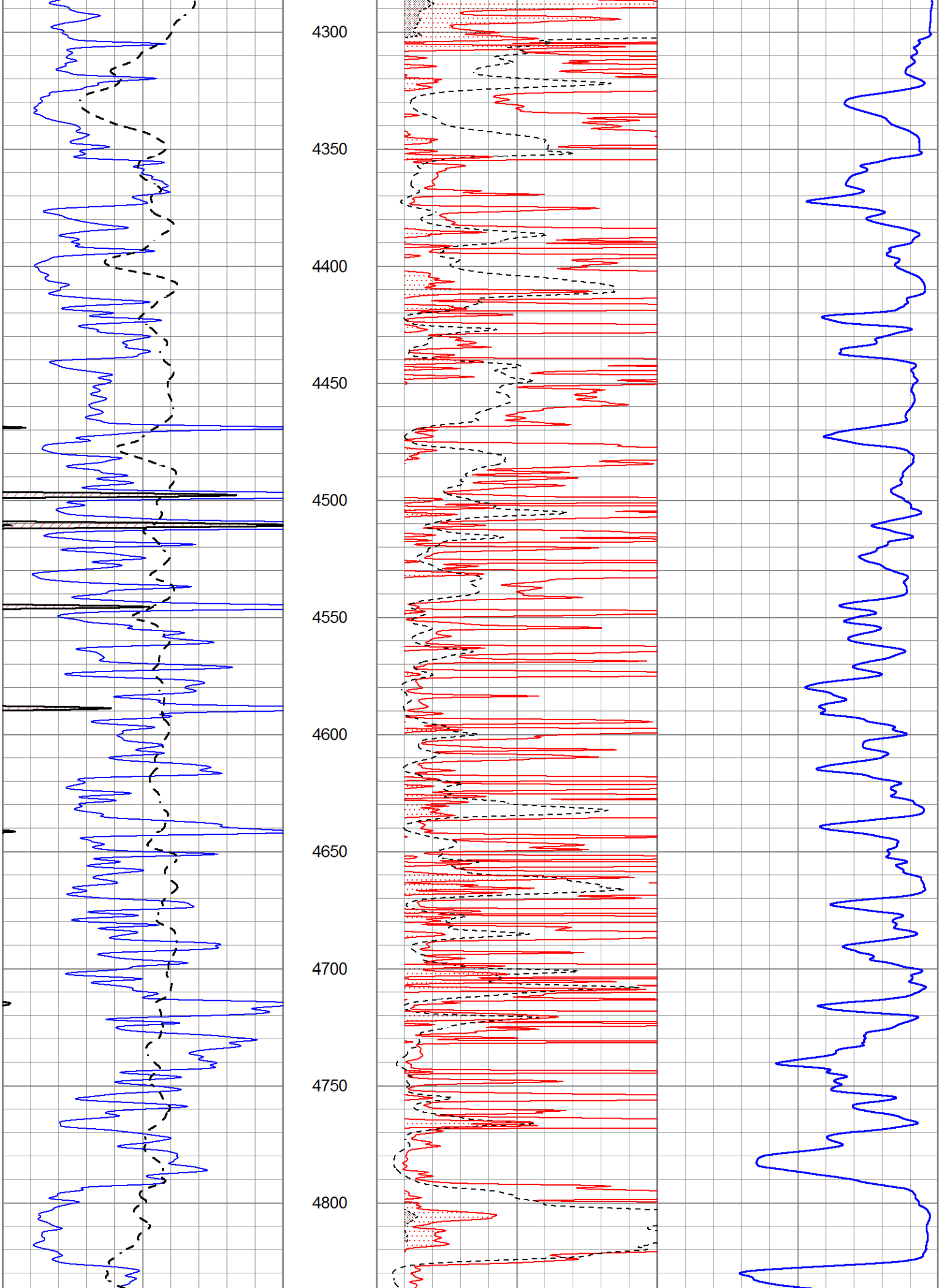

1550
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050


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


3750
3800
3850
3900
3950
4000
4050
4100
4150
4200
4250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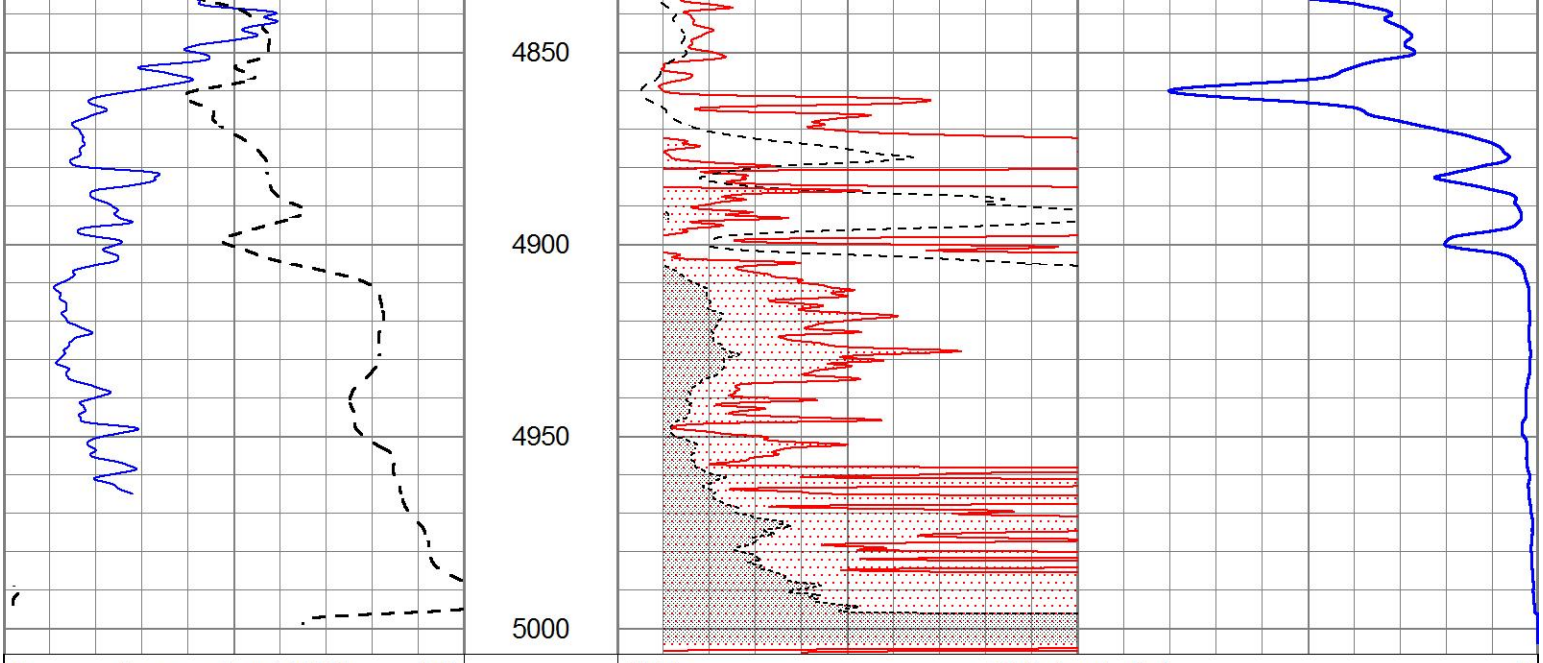
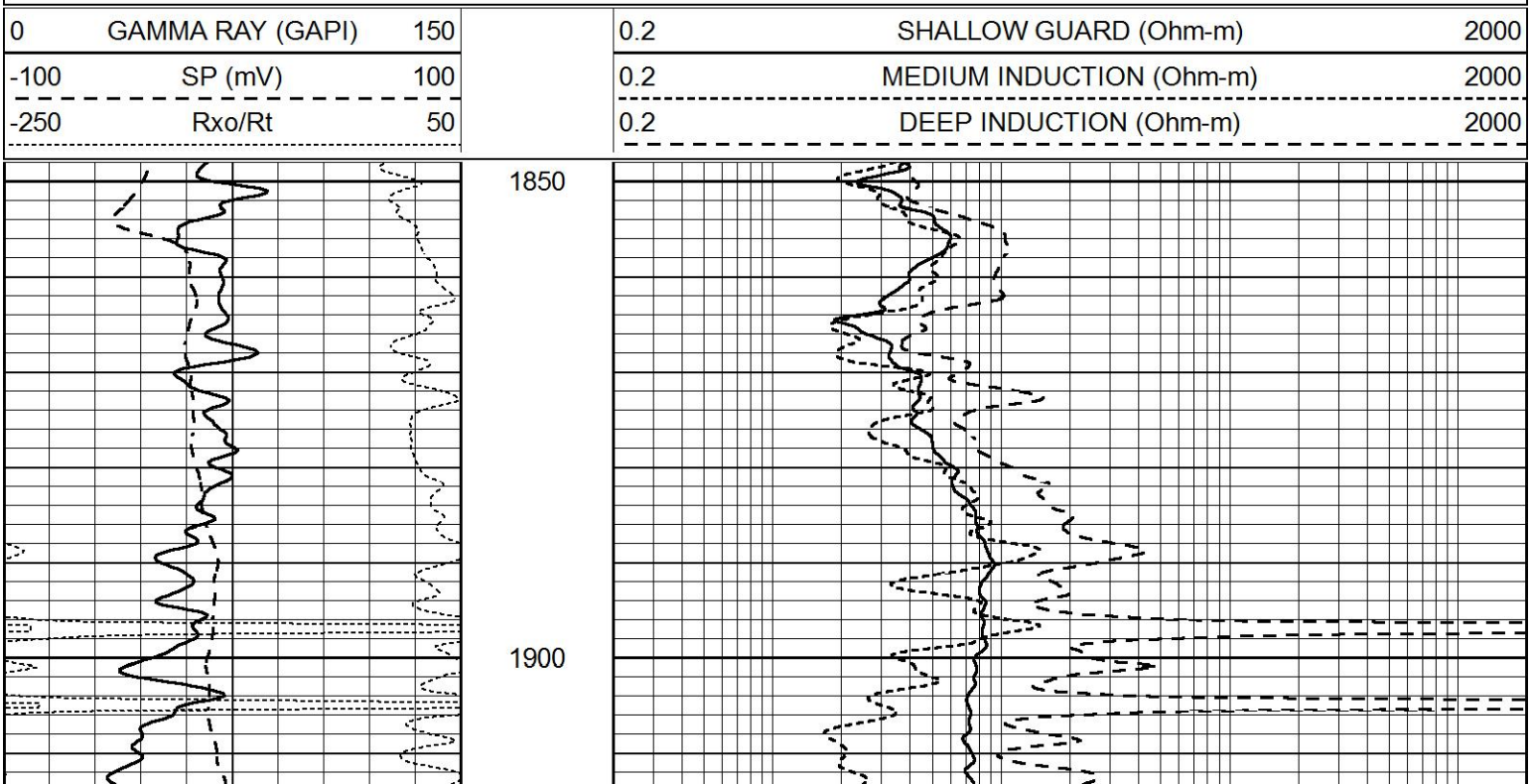
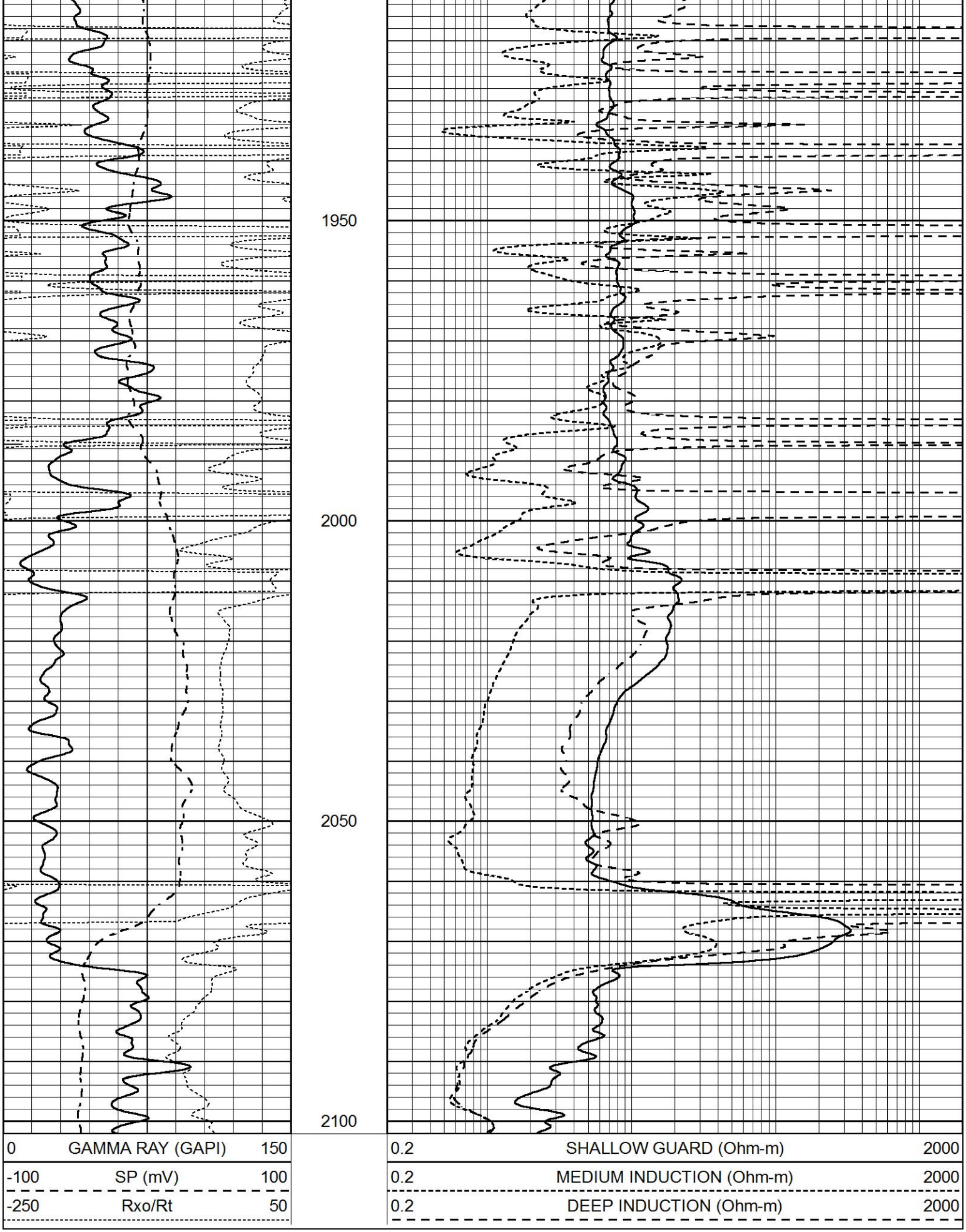
4350
4400
4450
4500
4550
4600
4650
4700
4750
4800




# ANHYDRITE

| | |
|---|---|
| Database File | 5214pe.db |
| Dataset Pathname | pass4.2 |
| Presentation Format | _dil |
| Dataset Creation | Mon Apr 19 18:46:11 2021 |
| Charted by | Depth in Feet scaled 1:240 |





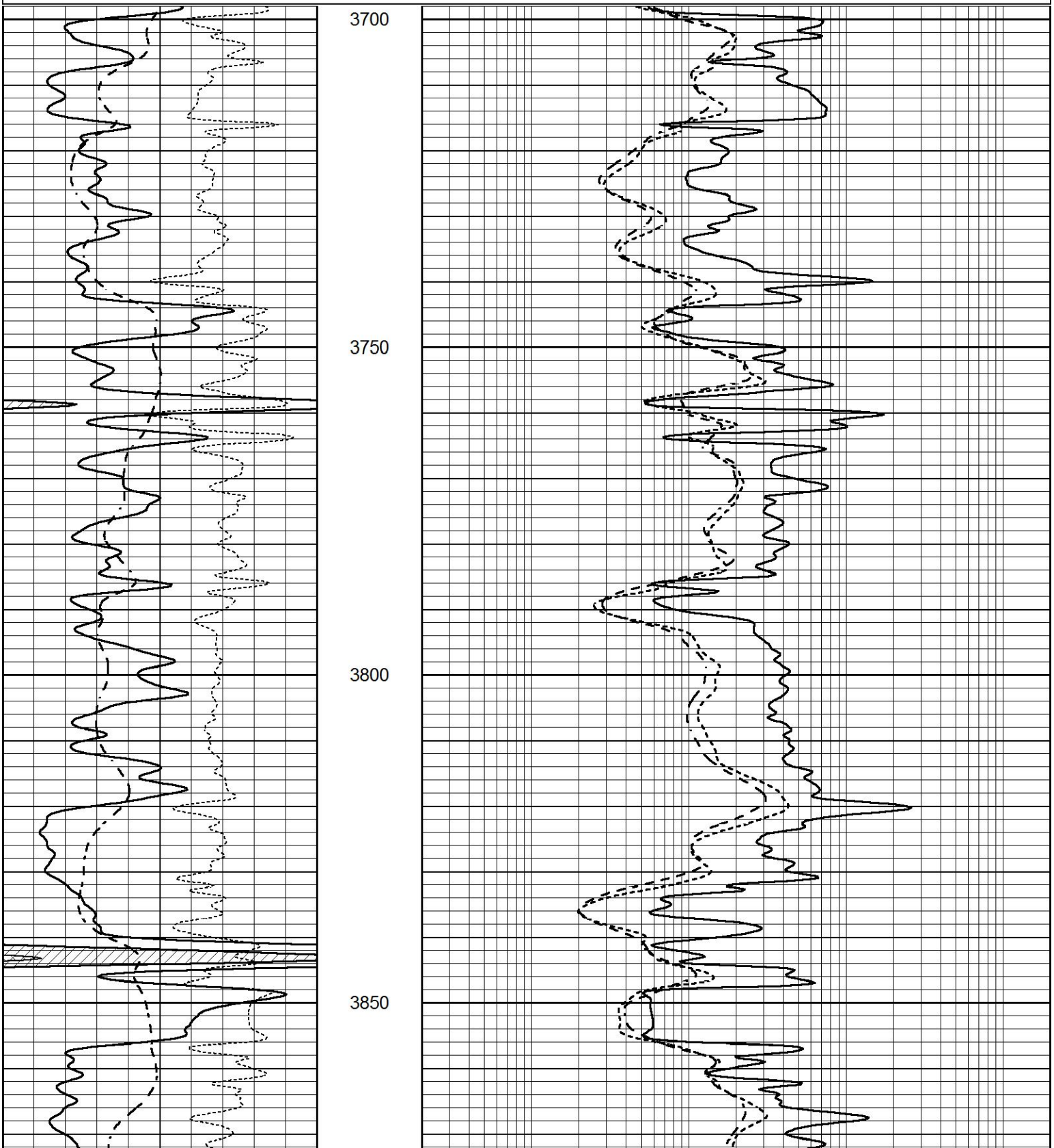

# MAIN SECTION

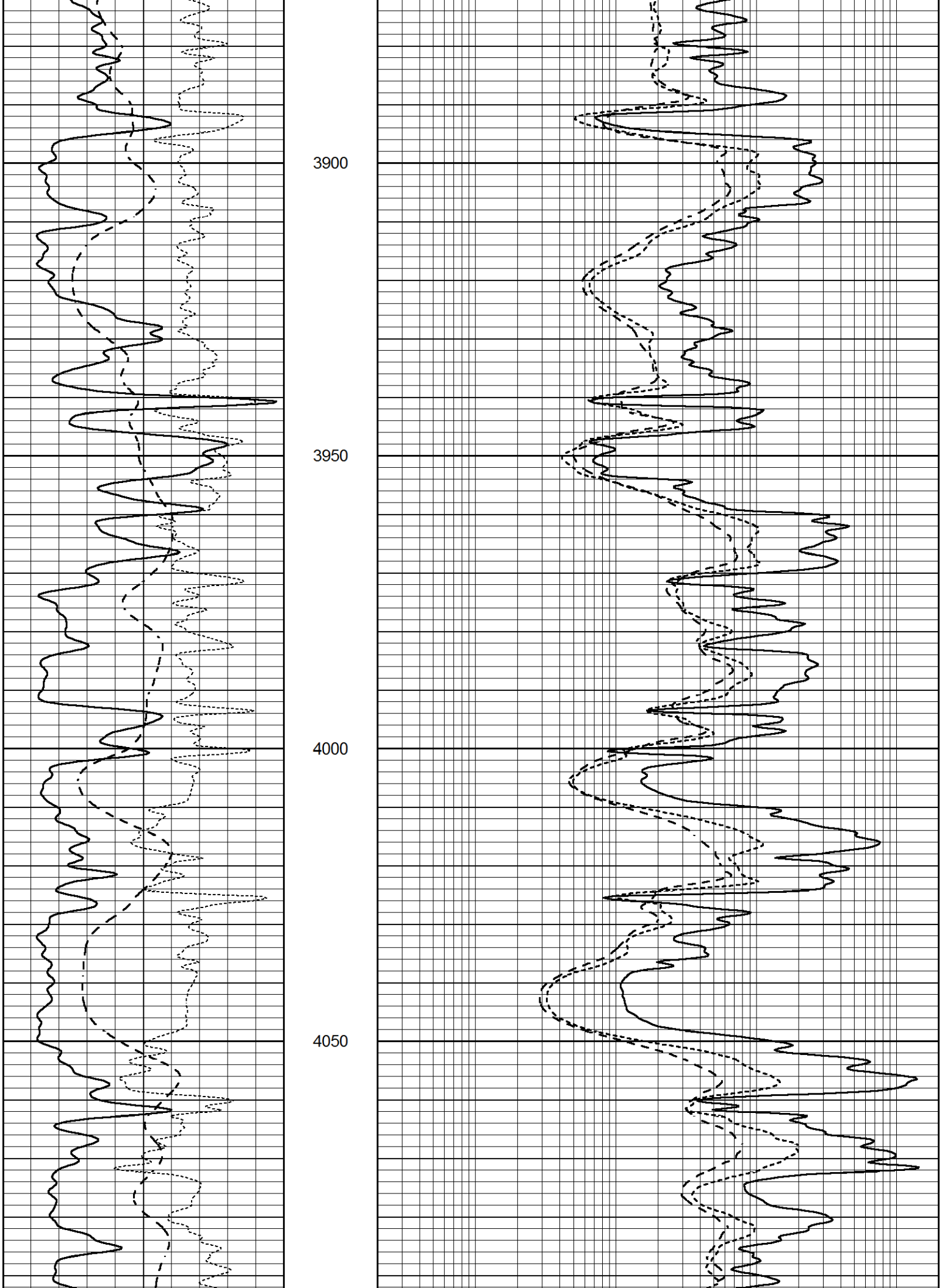
# MAIN SECTION

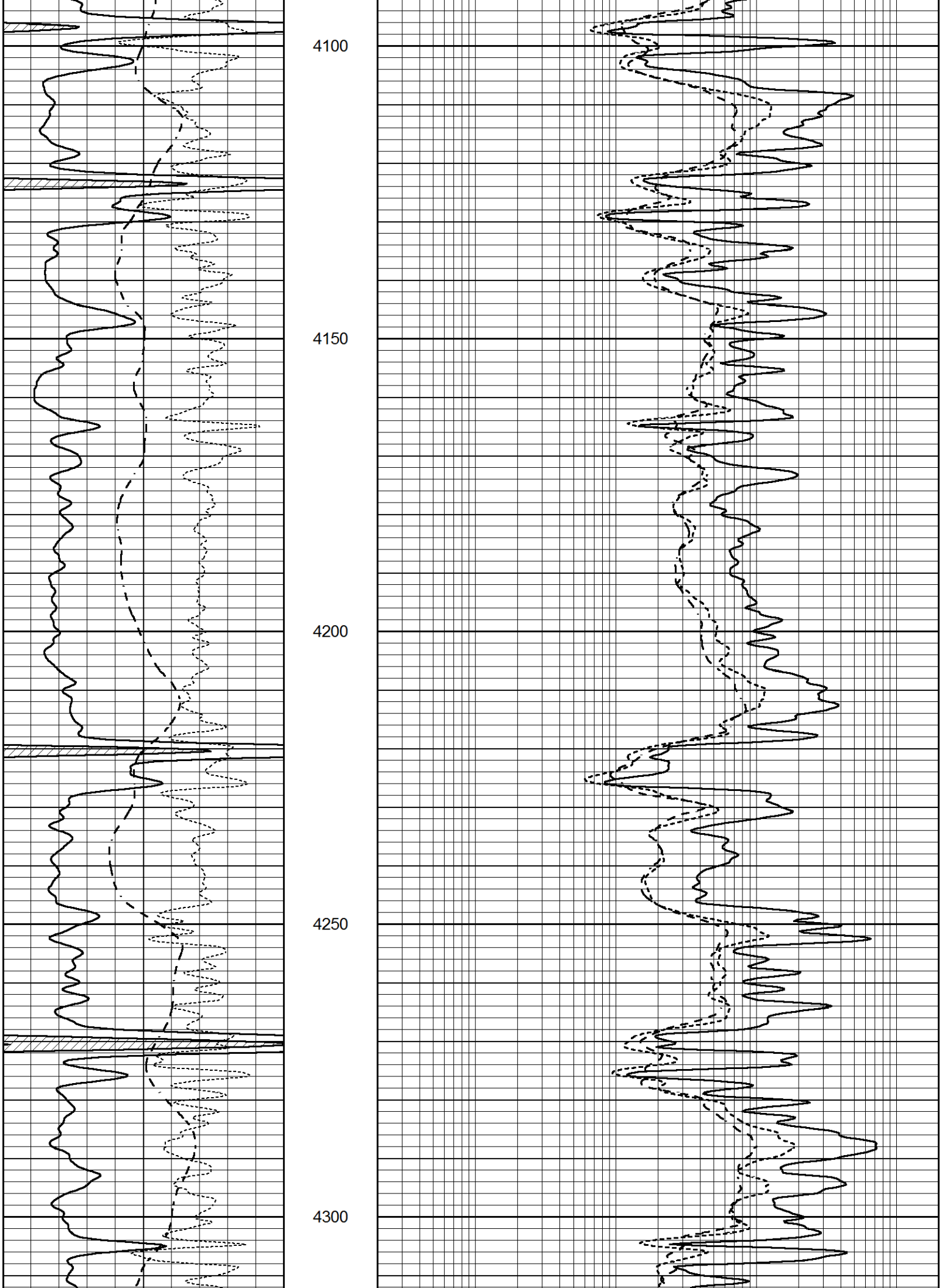
| | |
|---|---|
| Database File | 5214pe.db |
| Dataset Pathname | pass4.1 |
| Presentation Format | _dil |
| Dataset Creation | Mon Apr 19 18:30:14 2021 |
| Charted by | Depth in Feet scaled 1:240 |

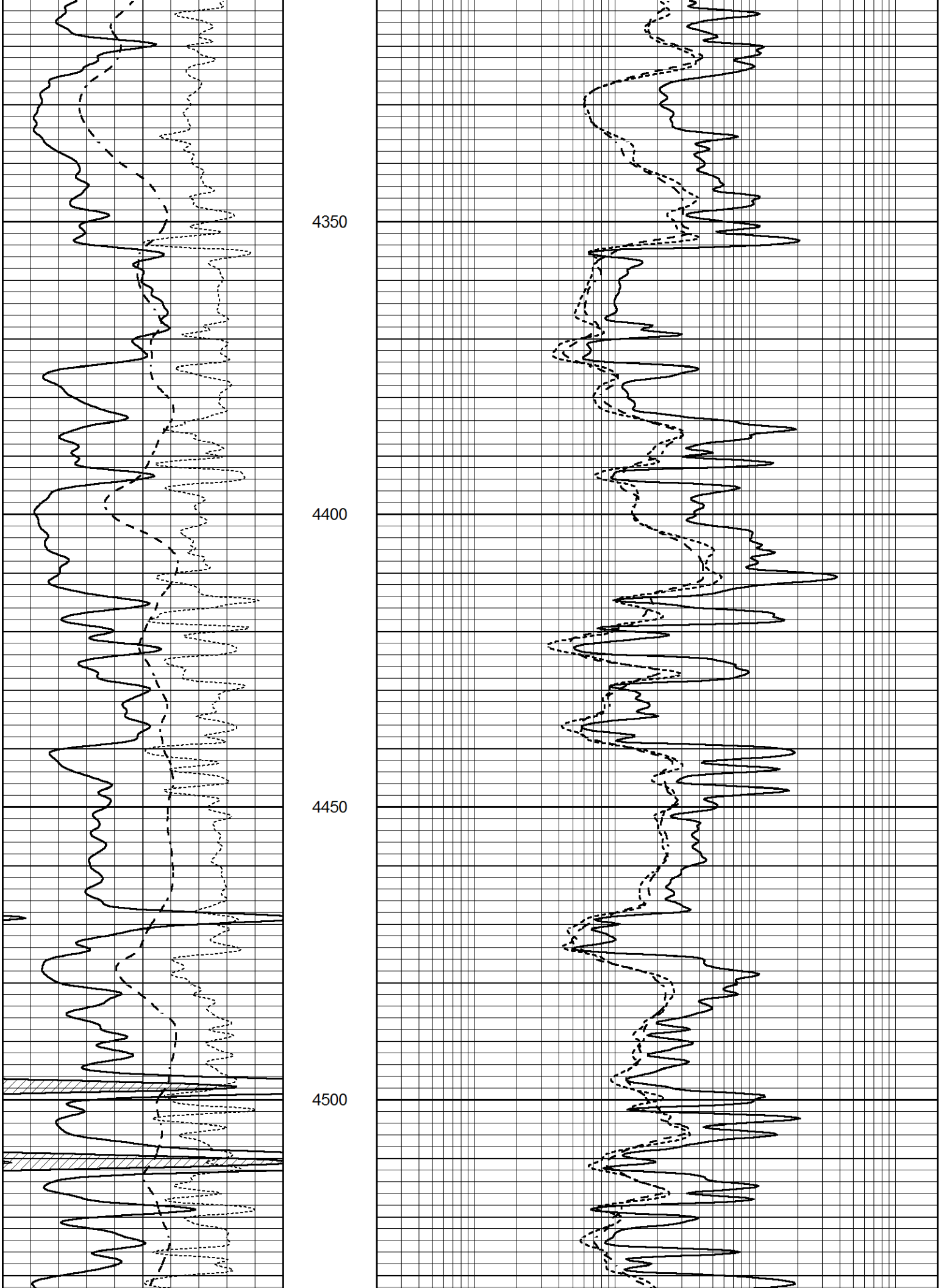
| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | Rxo/Rt | 50 |

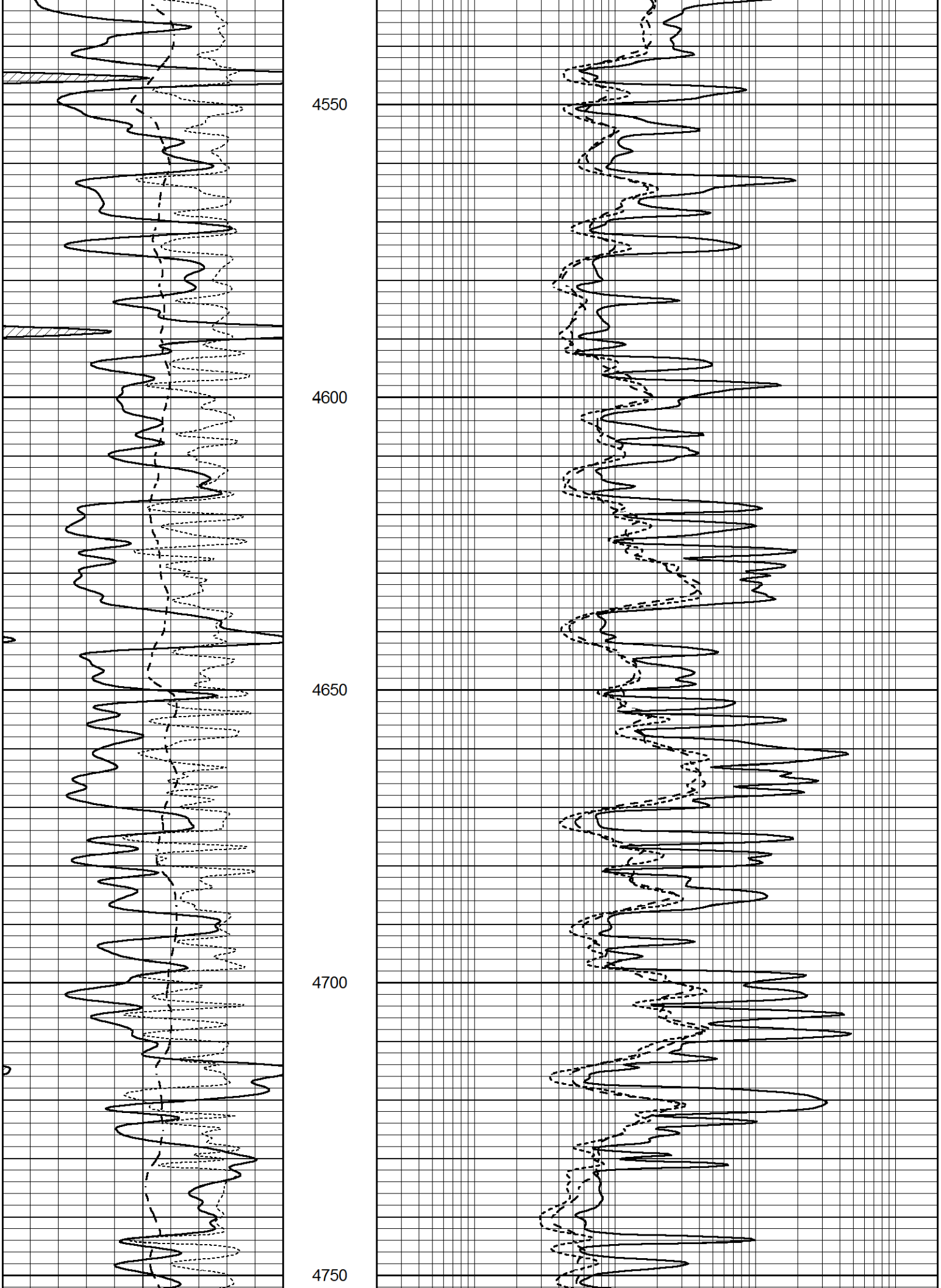
| | | |
|---|---|---|
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |

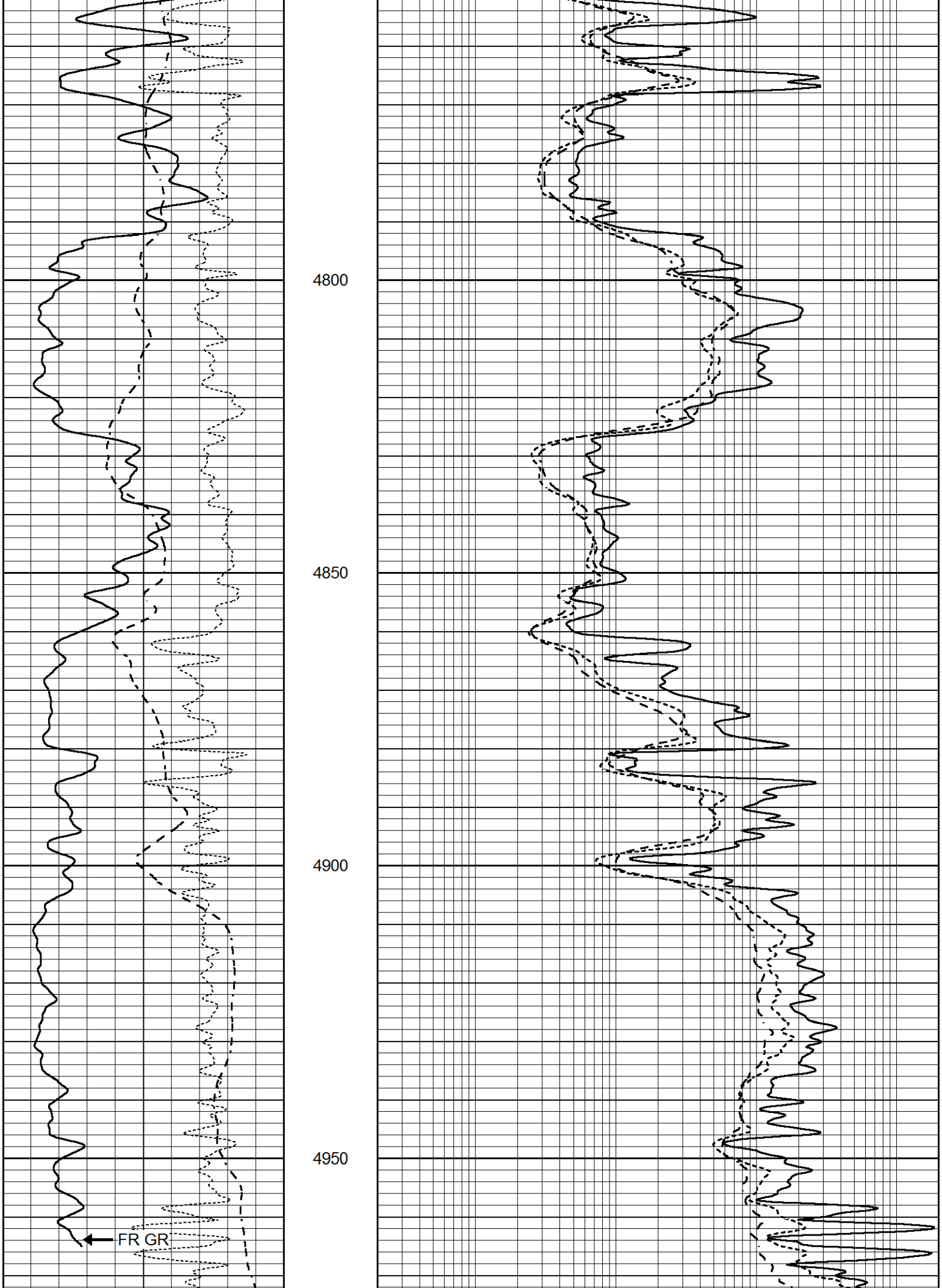


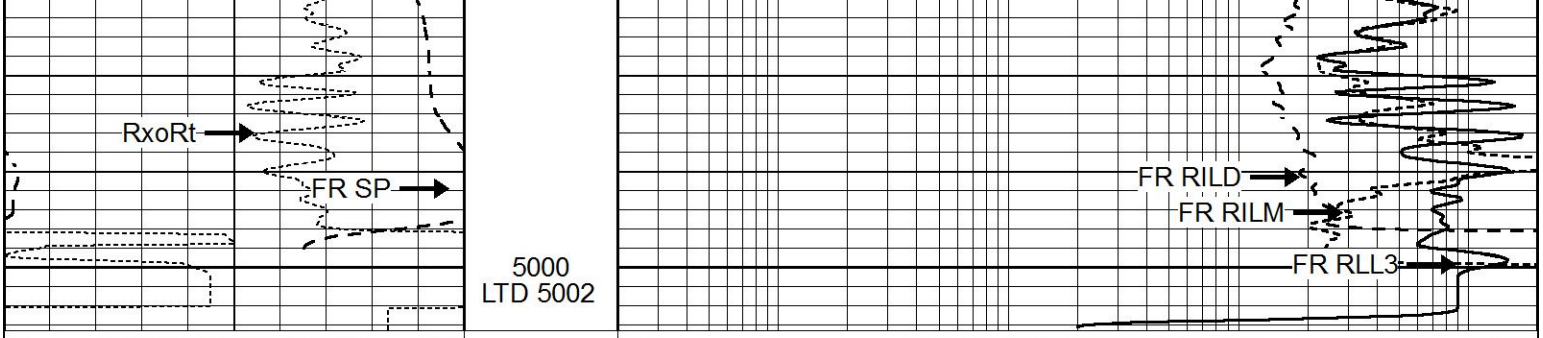

3900
3950
4000
4050


4100
4150
4200
4250
4300


4350
4400
4450
4500


4550
4600
4650
4700
4750


4800
4850
4900
4950
FR GR




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

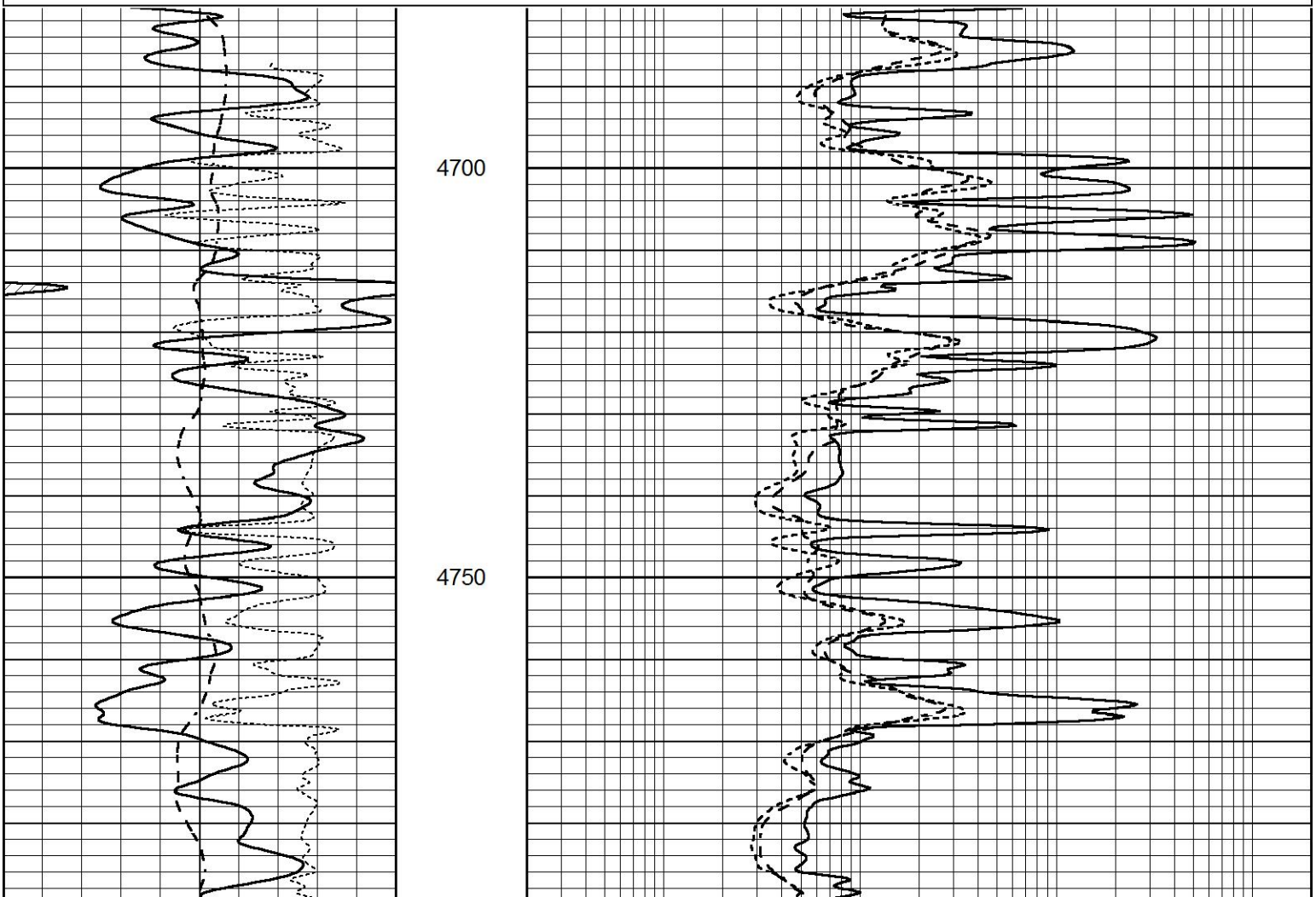
| 0.2 | SHALLOW GUARD (Ohm-m) | 2000 |
|---|---|---|
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |

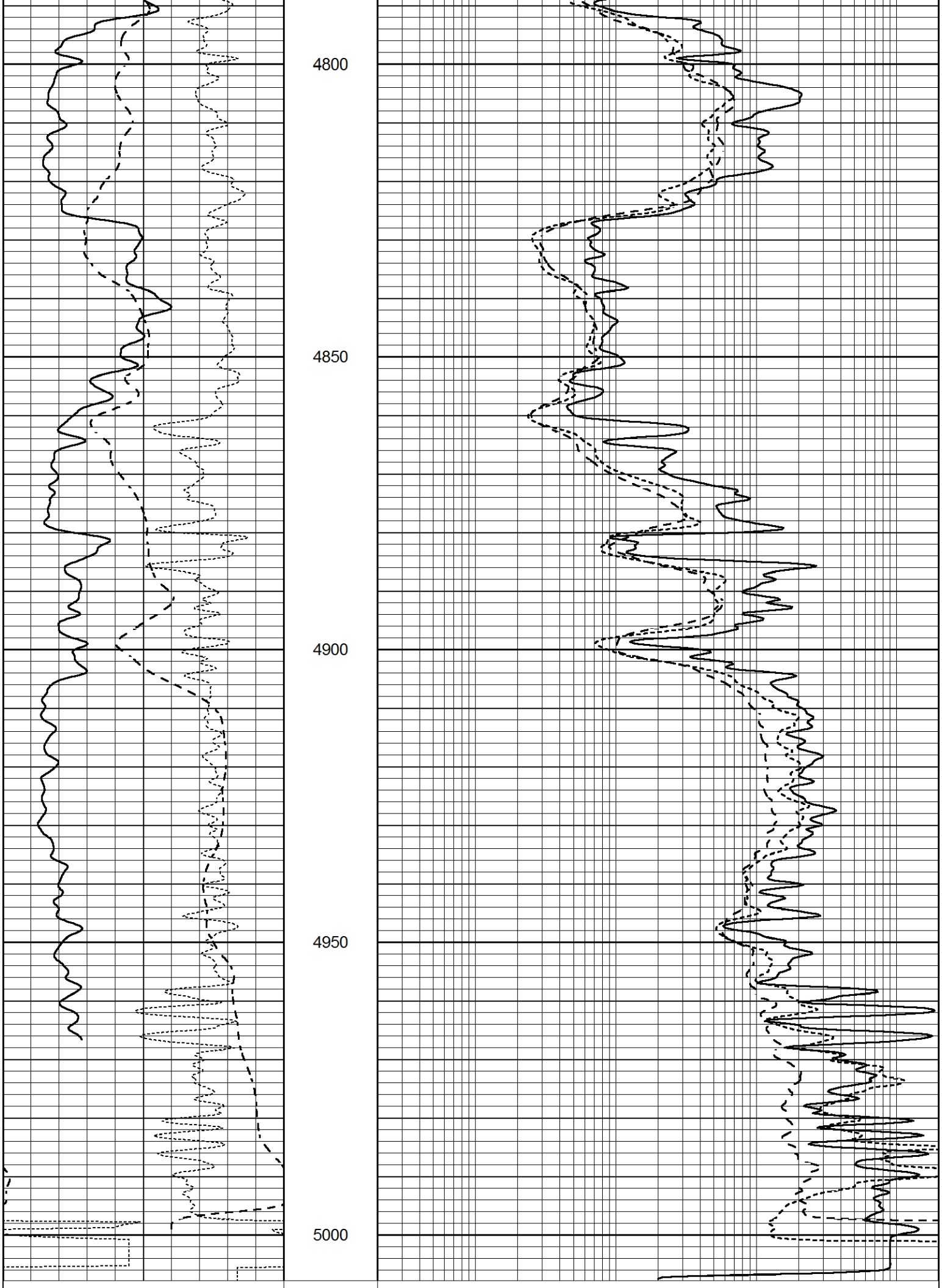
# REPEAT SECTION

| | |
|---|---|
| Database File | 5214pe.db |
| Dataset Pathname | pass2.1 |
| Presentation Format | _dil |
| Dataset Creation | Mon Apr 19 18:04:11 2021 |
| 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 |




4800
4850
4900
4950
5000

| | | |
|---|---|---|
| 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 5214pe.db
Dataset Pathname pass2.1
Dataset Creation Mon Apr 19 18:04:11 2021

## Dual Induction Calibration Report

Serial-Model: FW1410-55-Probe
Surface Cal Performed: Tue Feb 19 11:44:18 2019
Downhole Cal Performed: Tue Feb 19 11:44:24 2019
After Survey Verification Performed: Tue Feb 19 11:44:27 2019

### 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: 140703
Model: V4_10P
Source Number: 74GBq-19

### Master Calibration

Performed: Wed Dec 02 12:04:44 2020

| | Background | Aluminum | Magnesium | |
|---|---|---|---|---|
| Window 1 | 595.38 | 5386.50 | 23898.92 | cps |
| Window 2 | 52.78 | 1248.21 | 5993.75 | cps |
| Window 4 | 251.36 | 1200.30 | 5155.55 | cps |
| Window 5 | 545.15 | 9066.30 | 17240.12 | cps |
| Window 6 | 43.35 | 1491.73 | 2929.24 | cps |

| | | | | |
|---|---|---|---|---|
| Window 8 | 258.76 | 2917.82 | 5450.26 | cps |
| Bulk Density | - | 2.6020 | 1.6830 | g/cc |
| Pe | - | 3.0000 | 2.5070 | b/e |

LS Alpha: : -1.8726 SS Alpha: : -0.7656 LS CPE: : 1.0742
LS Beta: : 127345.0723 SS Beta: : 20293.3834 SS CPE: : 1.5427

Before Survey Backround 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 Dec 02 12:04:44 2020

| Results Readings | | References (in) | | | |
|---|---|---|---|---|---|
| Low | High | Low | High | Gain | Offset |
| 8003.0 | 11159.9 | 8.0 | 14.0 | 0.0 | -7.2 |

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: | 7 | |
| Tool Model: | Probe1 | |
| Performed: | Tue Jan 19 17:50:08 2021 | |
| Calibrator Value: | 1.0 | GAPI |
| Background Reading: | 0.0 | cps |
| Calibrator Reading: | 1.0 | cps |
| Sensitivity: | 0.5300 | GAPI/cps |