# NABORS
## COMPLETION & PRODUCTION SERVICES CO.

# DUAL INDUCTION LOG

Company ETERNITY EXPLORATION, LLC.
Well BETTY WERTH #4
Field GURK NORTH
County GRAHAM State KANSAS

Company ETERNITY EXPLORATION, LLC.
Well BETTY WERTH #4
Field GURK NORTH
County GRAHAM
State KANSAS

Location: API # : 15-065-23933-00-00

2170' FNL & 1650' FEL
N2 - SE - SW - NE

SEC 7 TWP 10S RGE 25W

Other Services
CNL/CDL

Permanent Datum GROUND LEVEL Elevation 2528
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING

Elevation
K.B. 2533
D.F. 2531
G.L. 2528

| | | | |
|---|---|---|---|
| Date | 6/4/13 | | |
| Run Number | ONE | | |
| Depth Driller | 4075 | | |
| Depth Logger | 4074 | | |
| Bottom Logged Interval | 4072 | | |
| Top Log Interval | 00 | | |
| Casing Driller | 218 | | |
| Casing Logger | 217 | | |
| Bit Size | 7.875 | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 3,100 | |
| Density / Viscosity | 9.2 / 54 | | |
| pH / Fluid Loss | 10.0 / 8.4 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | 0.80 @ 86F | | |
| Rmf @ Meas. Temp | 0.60 @ 86F | | |
| Rmc @ Meas. Temp | 0.96 @ 86F | | |
| Source of Rmf / Rmc | MEASURED | | |
| Rm @ BHT | 0.58 @ 117F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | | | |
| Maximum Recorded Temperature | 117F | | |
| Equipment Number | 860 | | |
| Location | HAYS, KS. | | |
| Recorded By | IAN MABB | | |
| Witnessed By | WYATT URBAN | CARLO UGOLINI | |

<<< Fold Here >>>

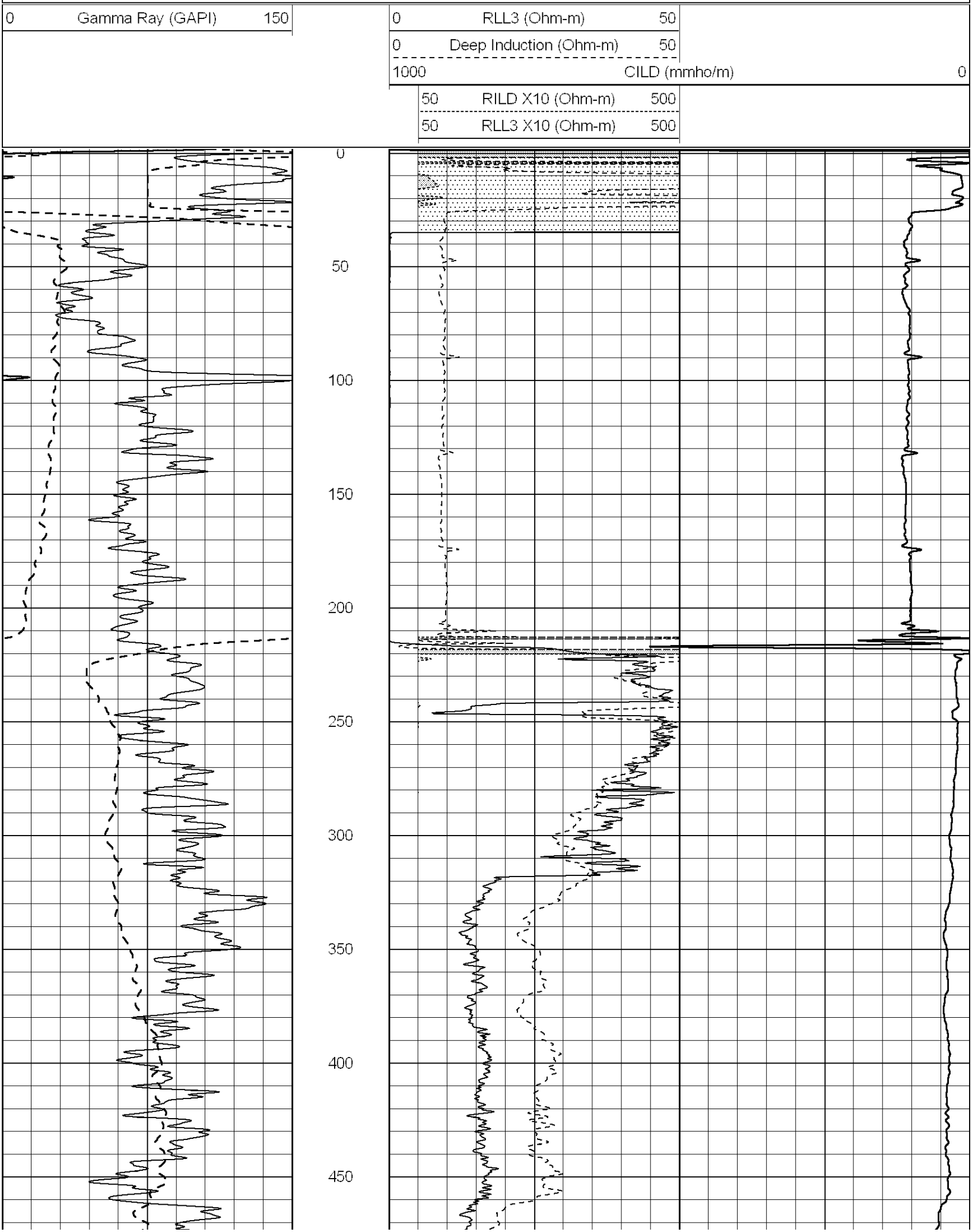


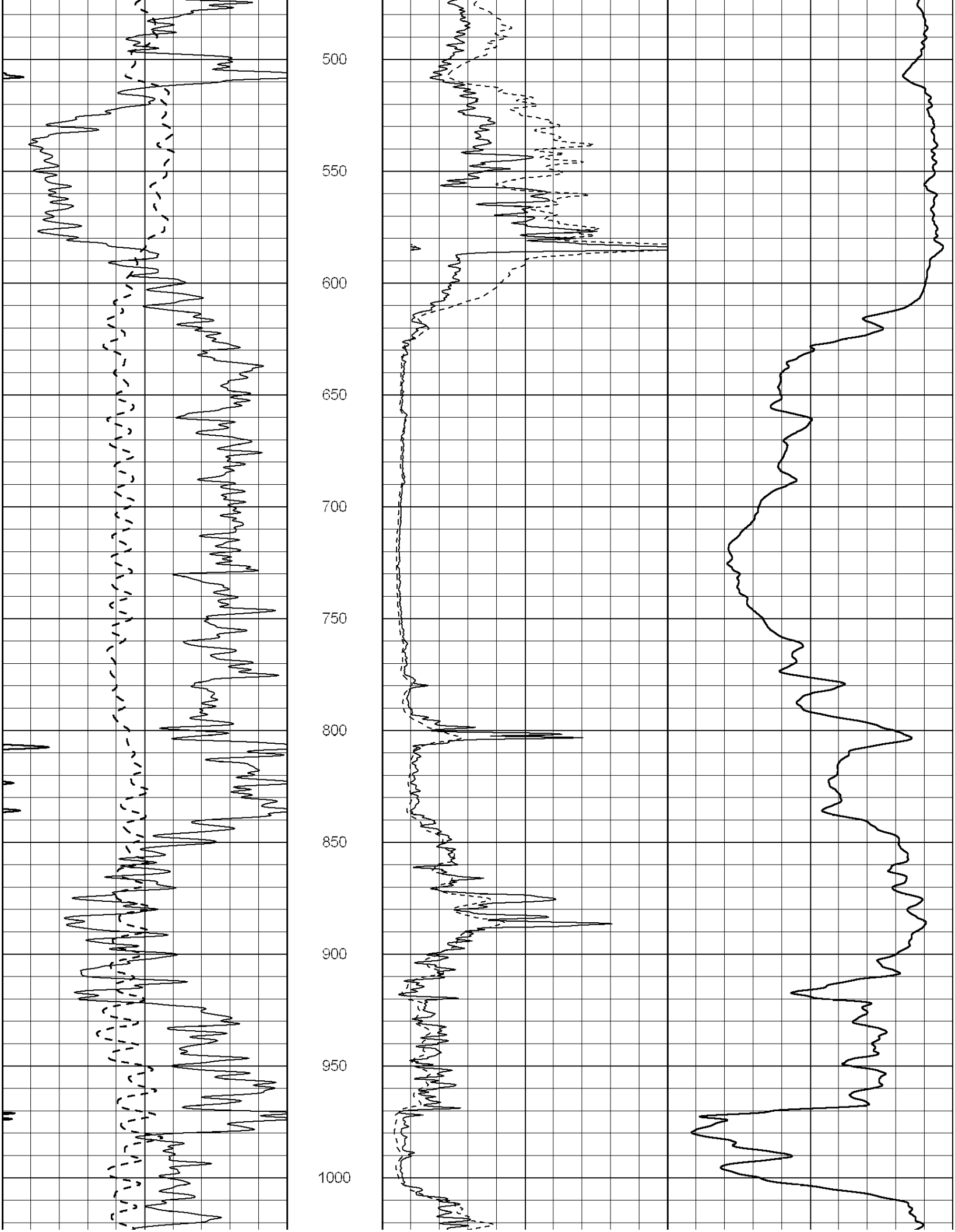
Comments

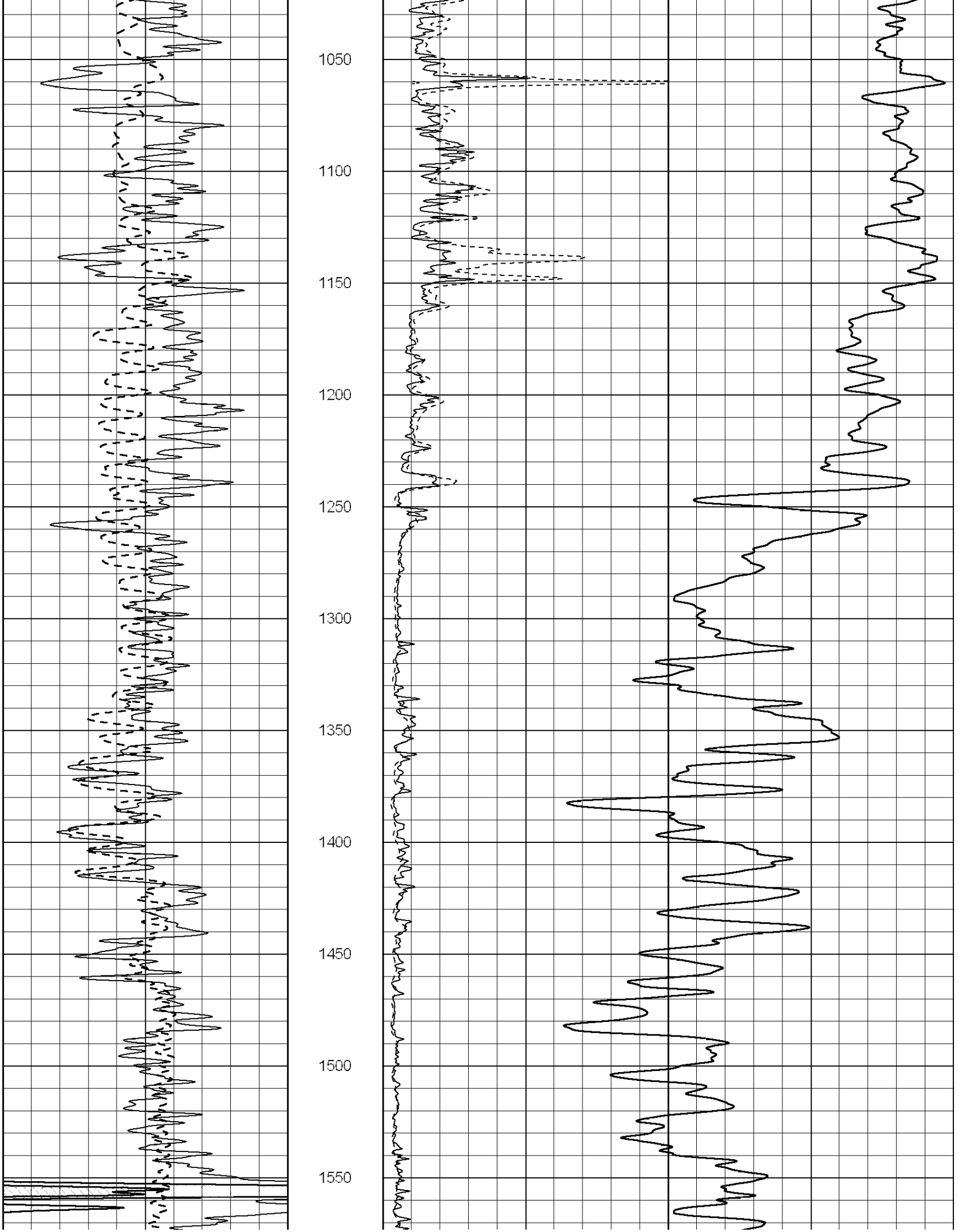
NABORS COMPLETION & PRODUCTION SERVICES
785-628-6395
THANK YOU FOR YOUR BUSINESS
DIRECTIONS: ST. PETER, KS. - 1 MILE NORTH TO RD. F WEST TO THE END OF THE ROAD - FOLLOW LEASE RD. WEST 1/2 MILE SOUTH INTO

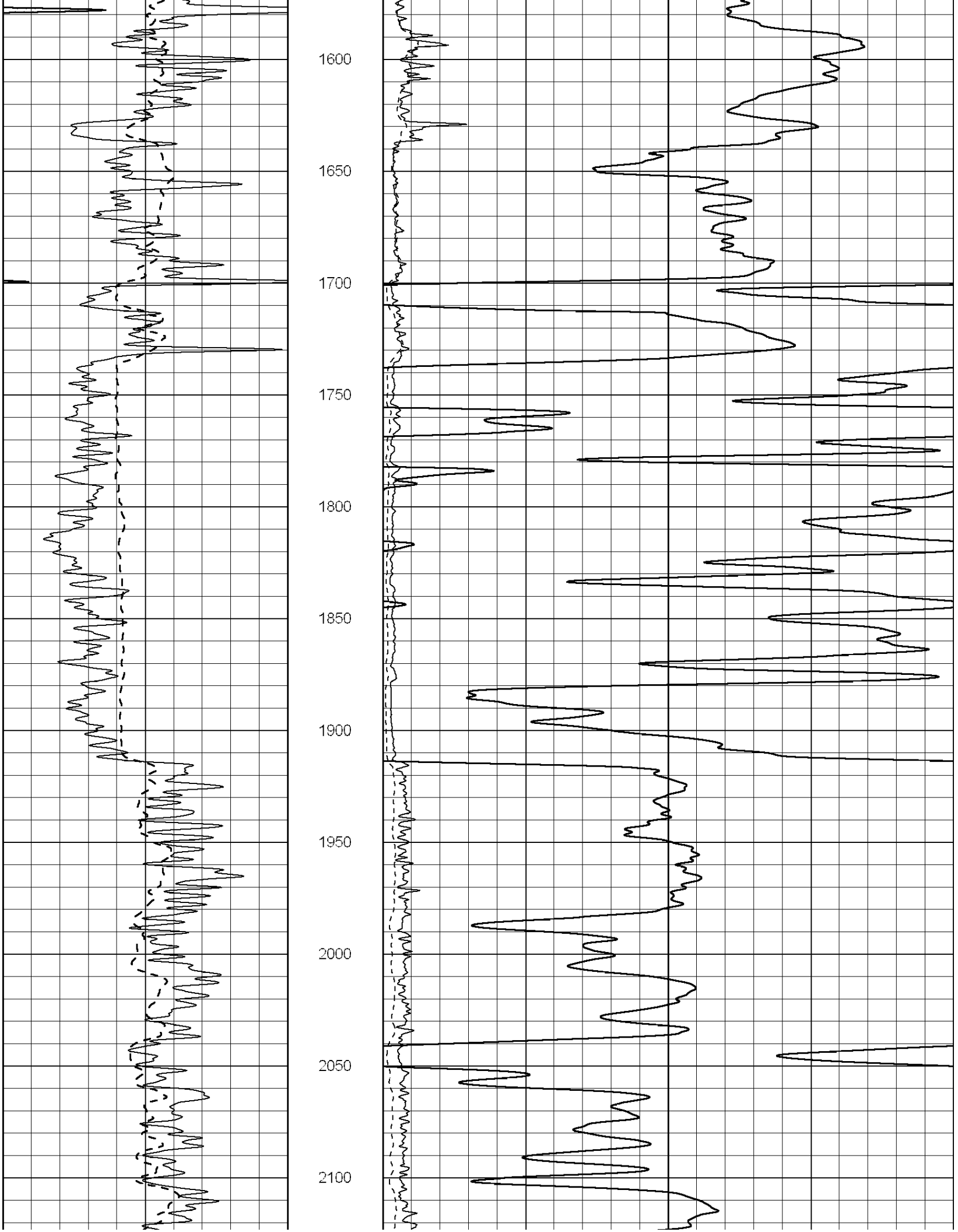
Database File: 010186ddn.db
Dataset Pathname: pass3.2
Presentation Format: _dil2
Dataset Creation: Tue Jun 04 07:01:54 2013 by Calc Open-Cased 090629

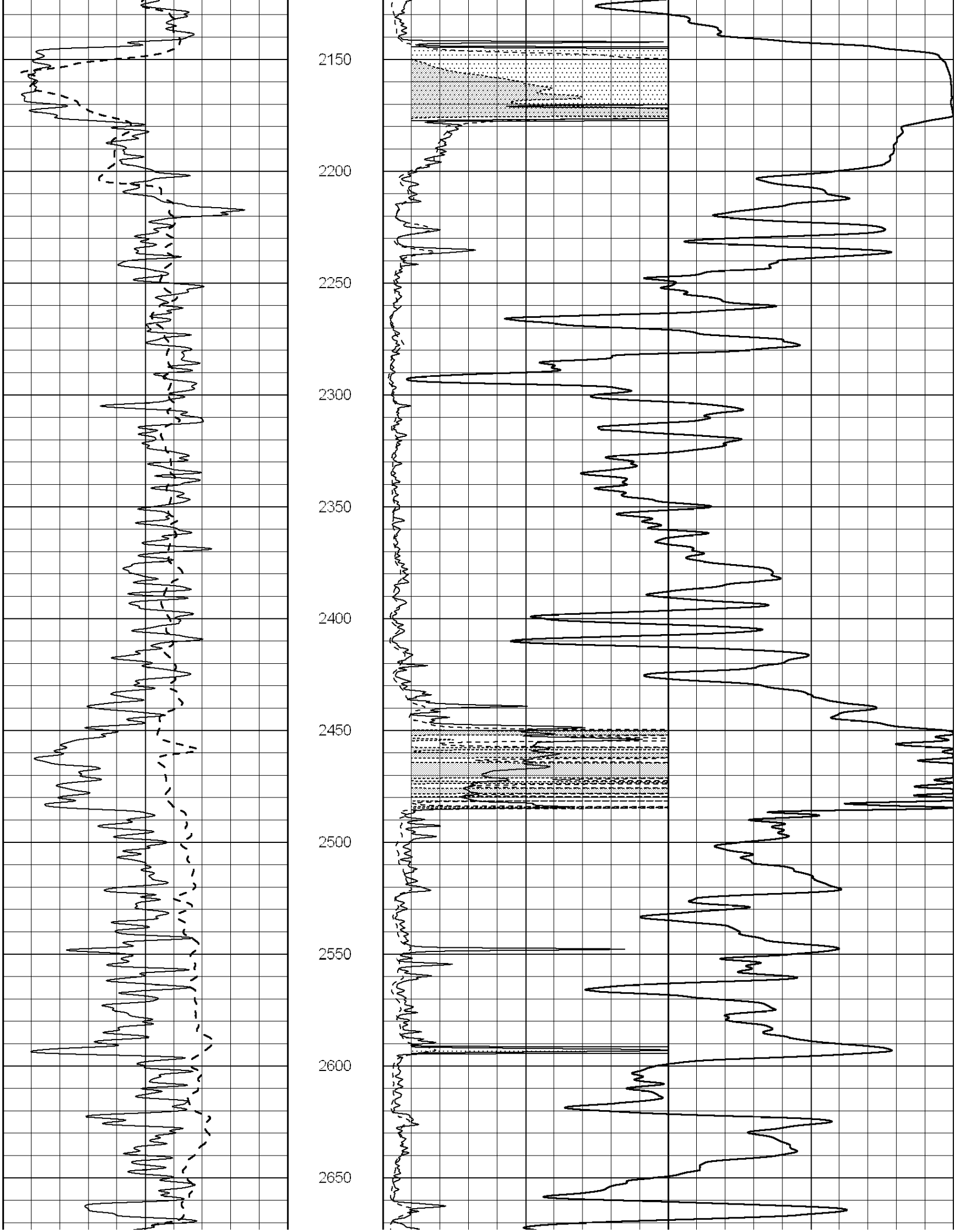
Charted by: Depth in Feet scaled 1:600

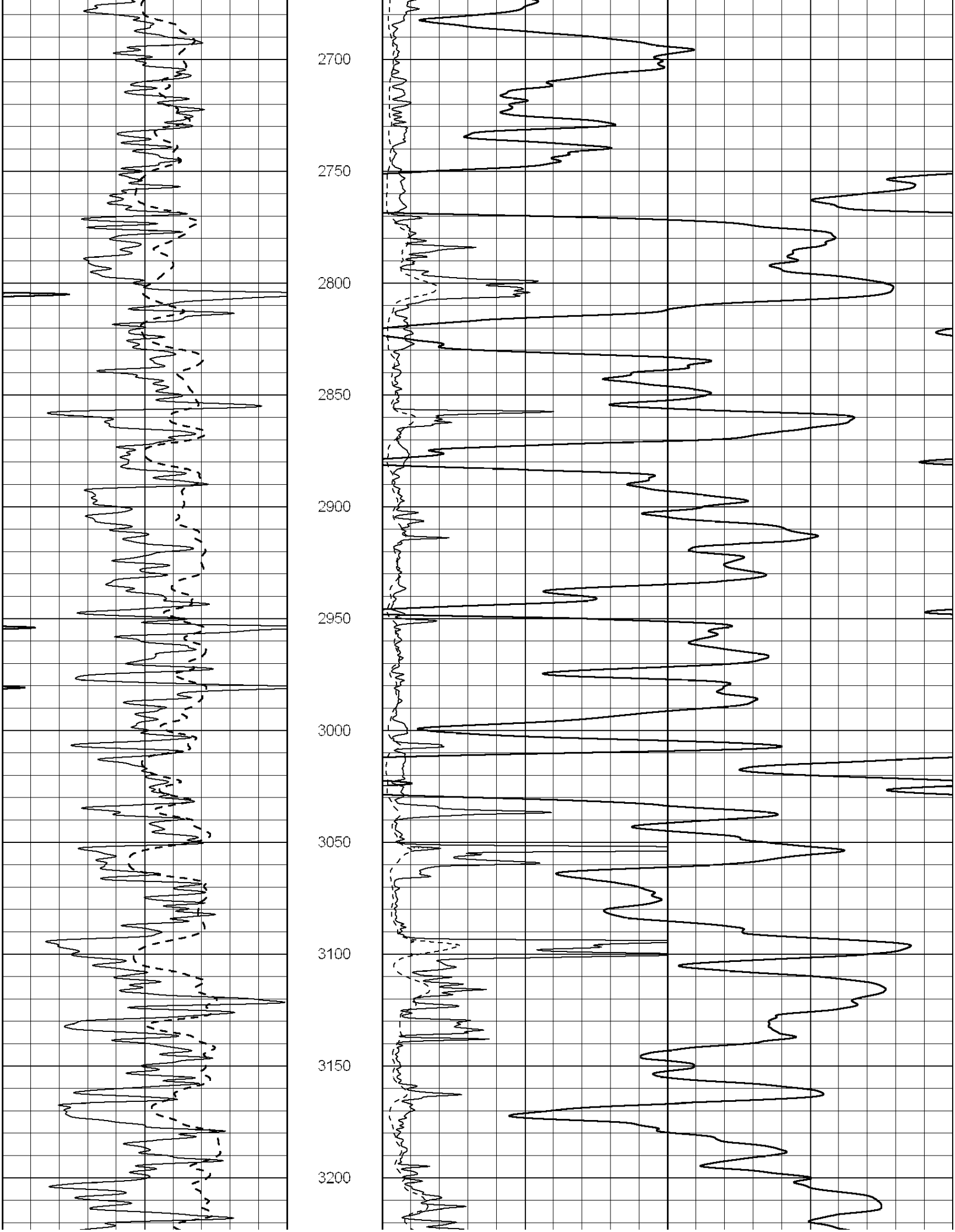


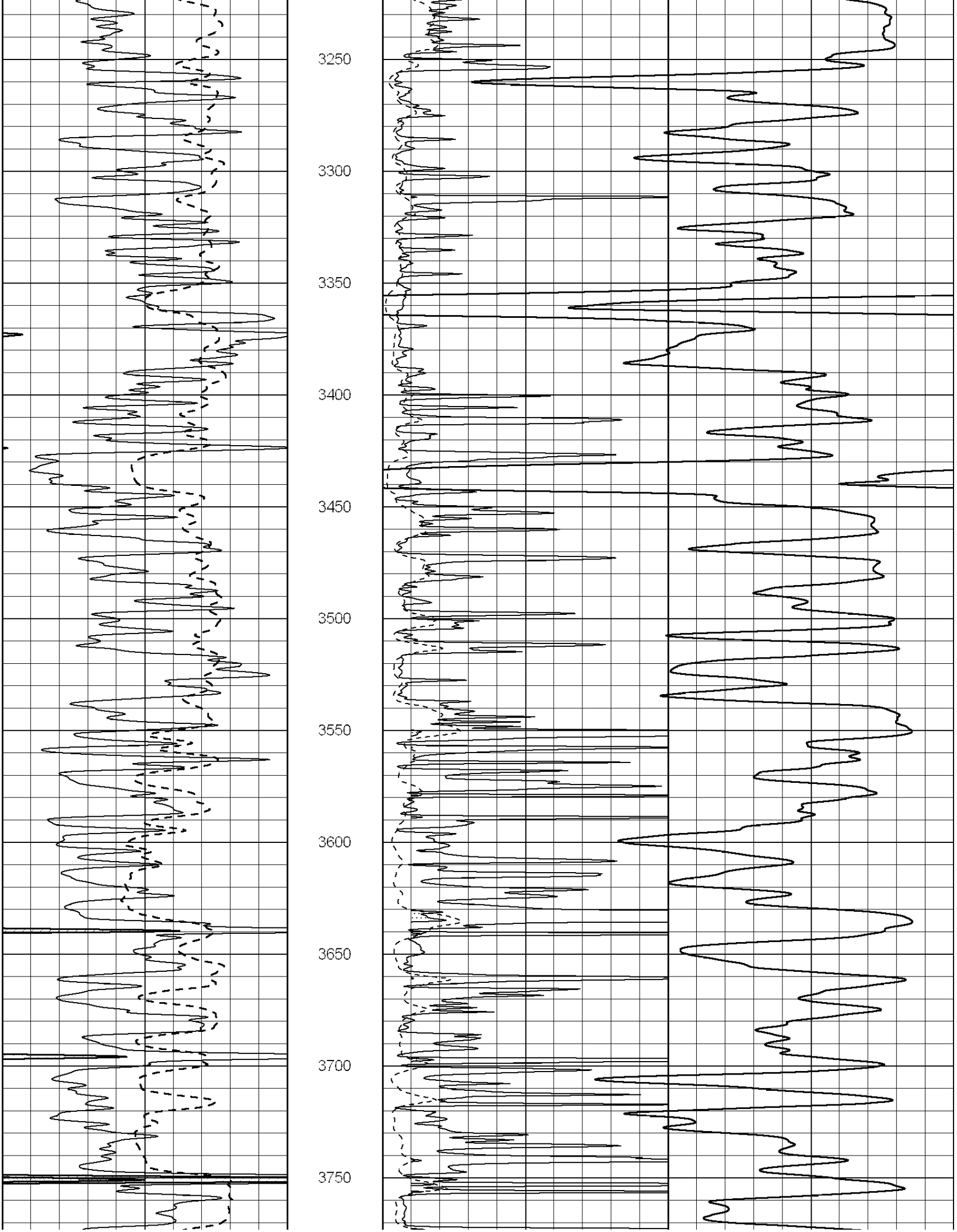

500
550
600
650
700
750
800
850
900
950
1000

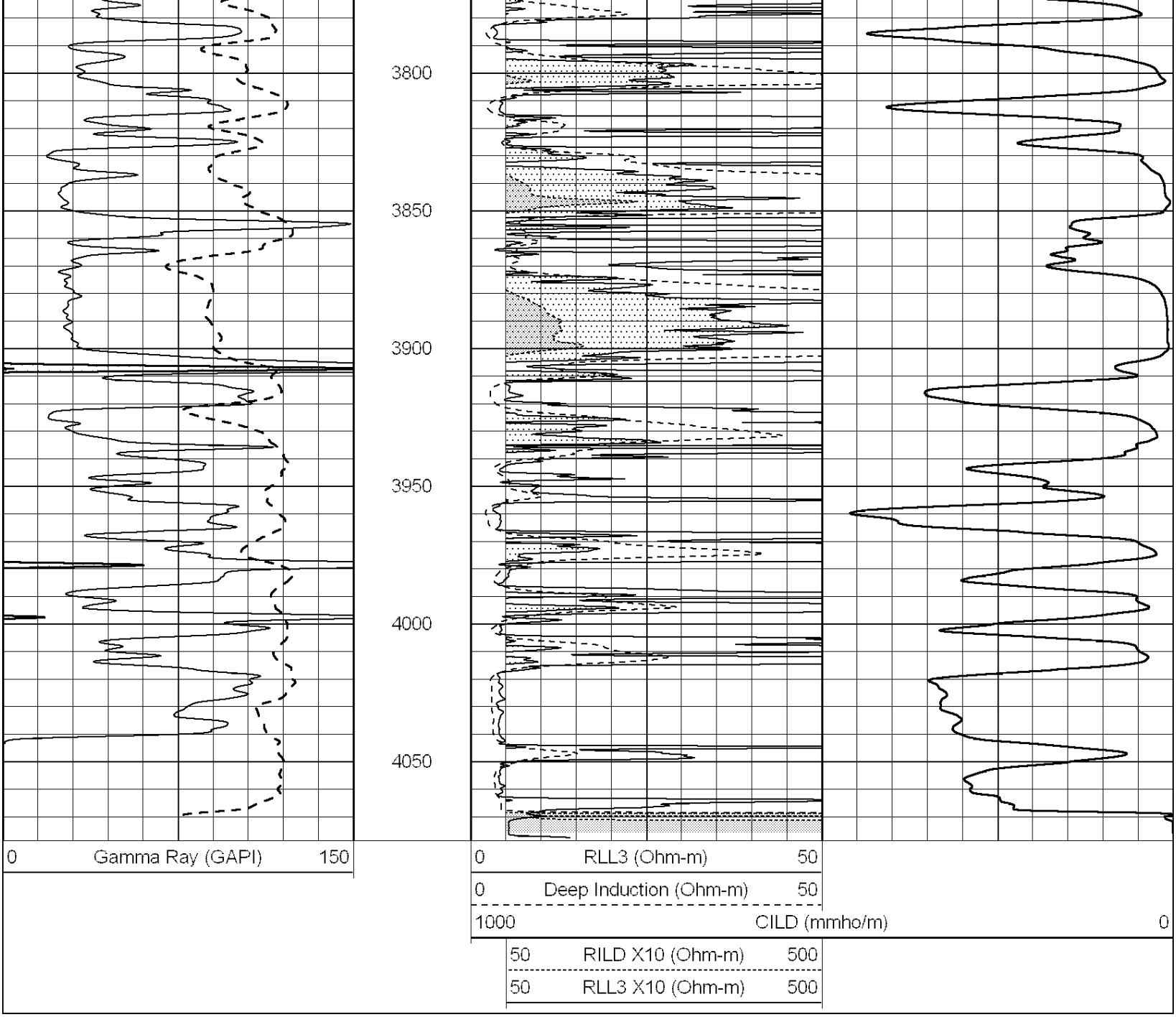

1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550


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

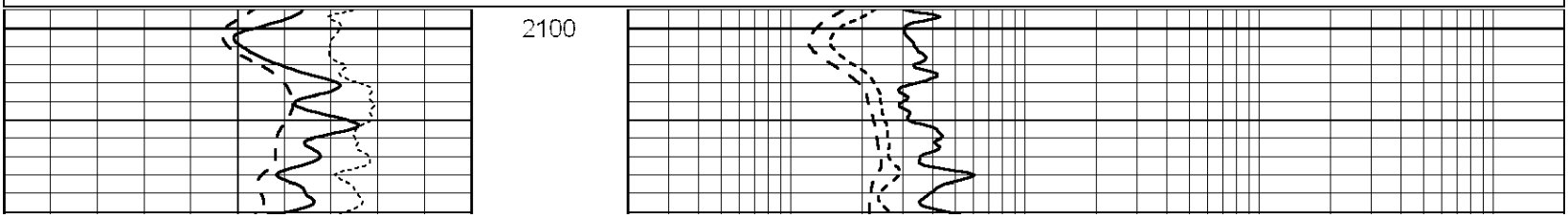

3250
3300
3350
3400
3450
3500
3550
3600
3650
3700
3750

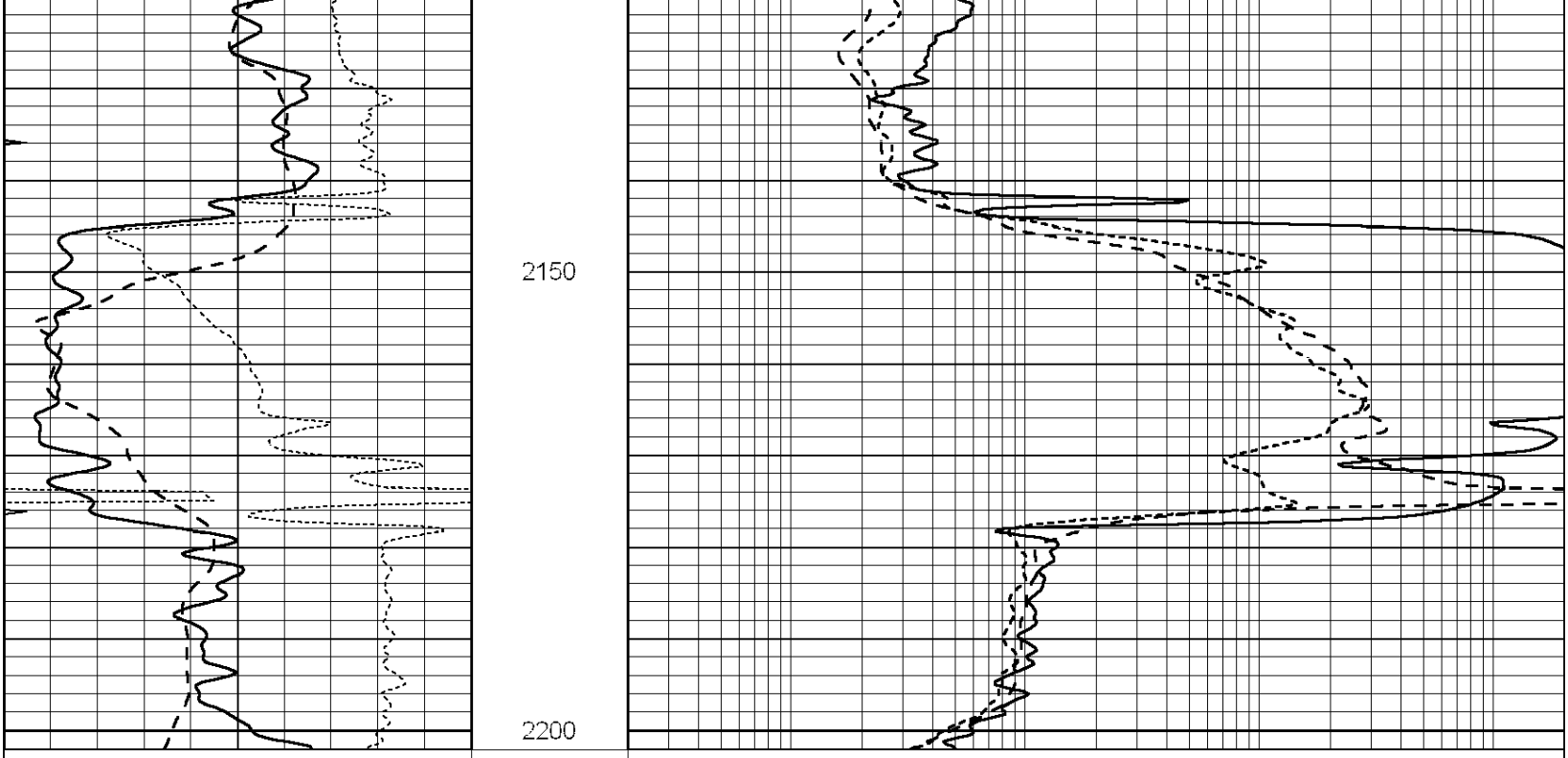



Database File: 010186ddn.db
Dataset Pathname: pass3.2
Presentation Format: _dil
Dataset Creation: Tue Jun 04 07:01:54 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

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

| | | |
|---|---|---|
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |





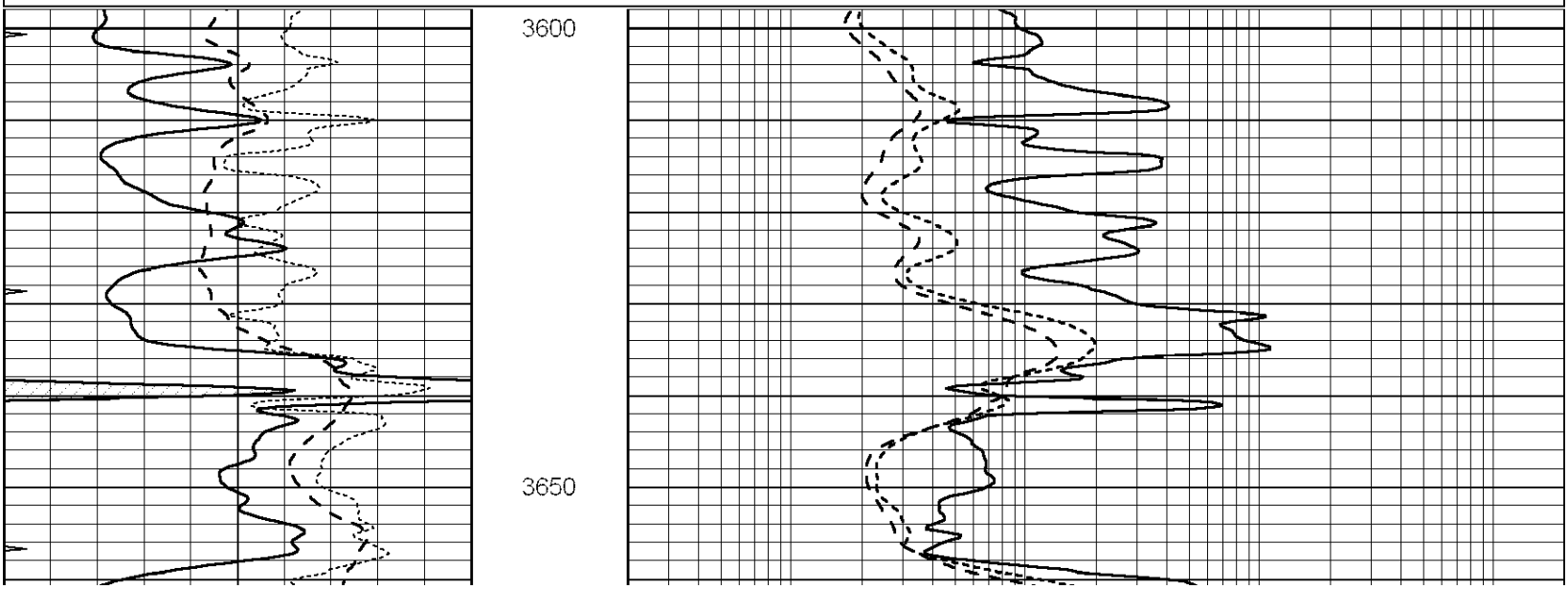

| | | |
|---|---|---|
| 0 | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV) | 100 |
| -250 | RxoRt | 50 |
| 0 | MINMK | 20 |

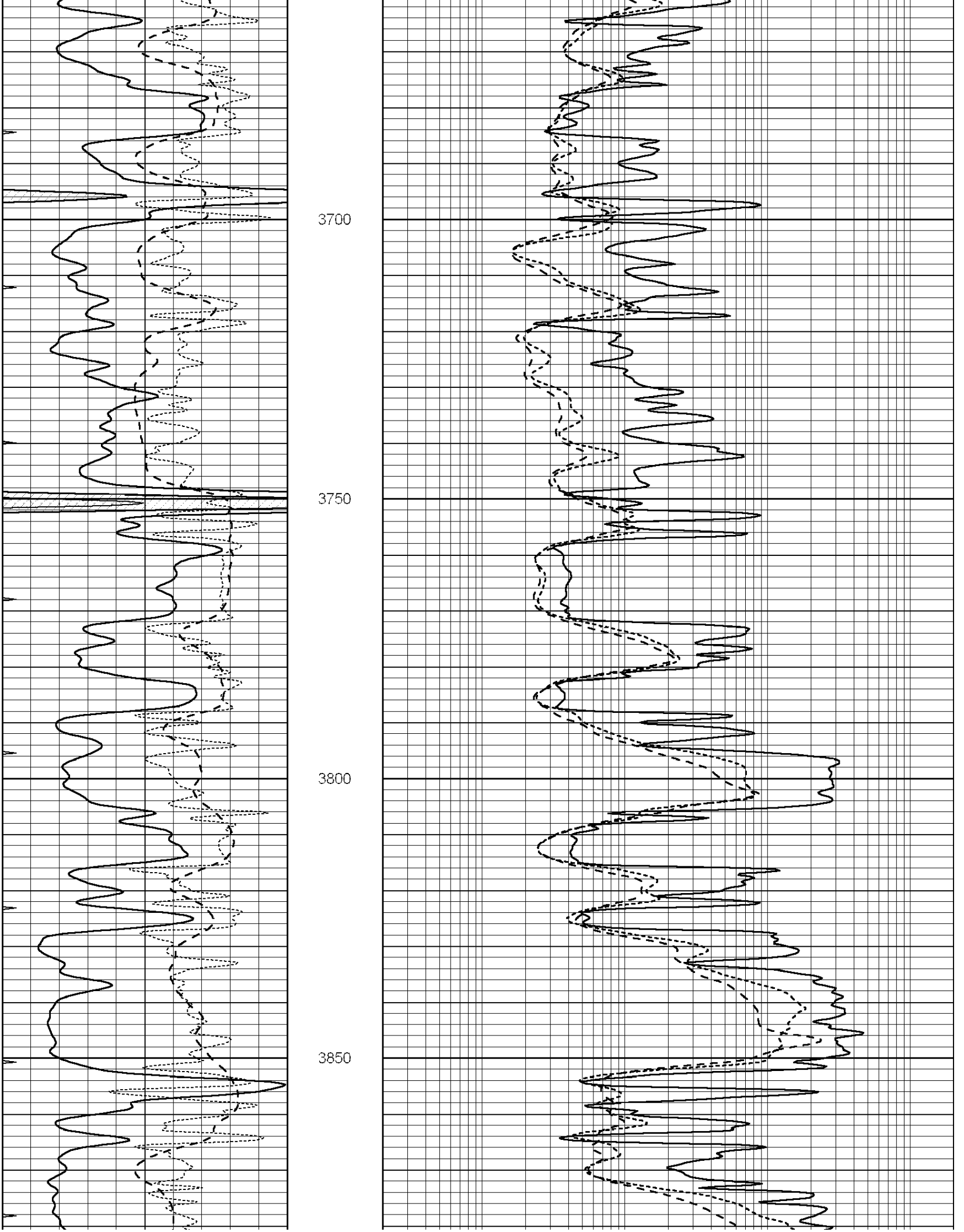
| | | |
|---|---|---|
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

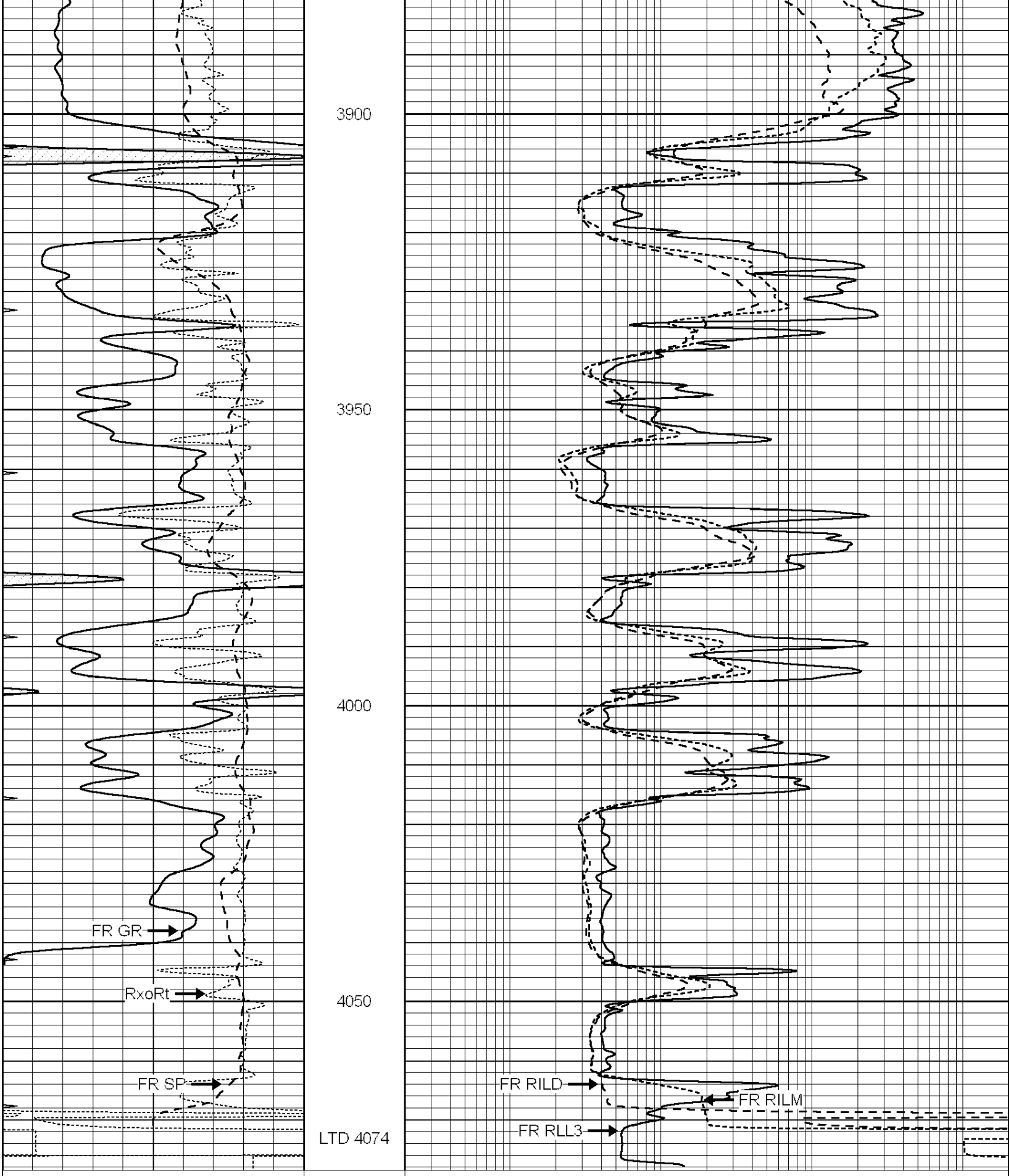
| | |
|---|---|
| Database File: | 010186ddn.db |
| Dataset Pathname: | pass3.1 |
| Presentation Format: | _dil |
| Dataset Creation: | Tue Jun 04 06:21:32 2013 by Calc Open-Cased 090629 |
| Charted by: | Depth in Feet scaled 1:240 |


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

| | | |
|---|---|---|
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |


3700
3750
3800
3850




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

| | | |
|---|---|---|
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

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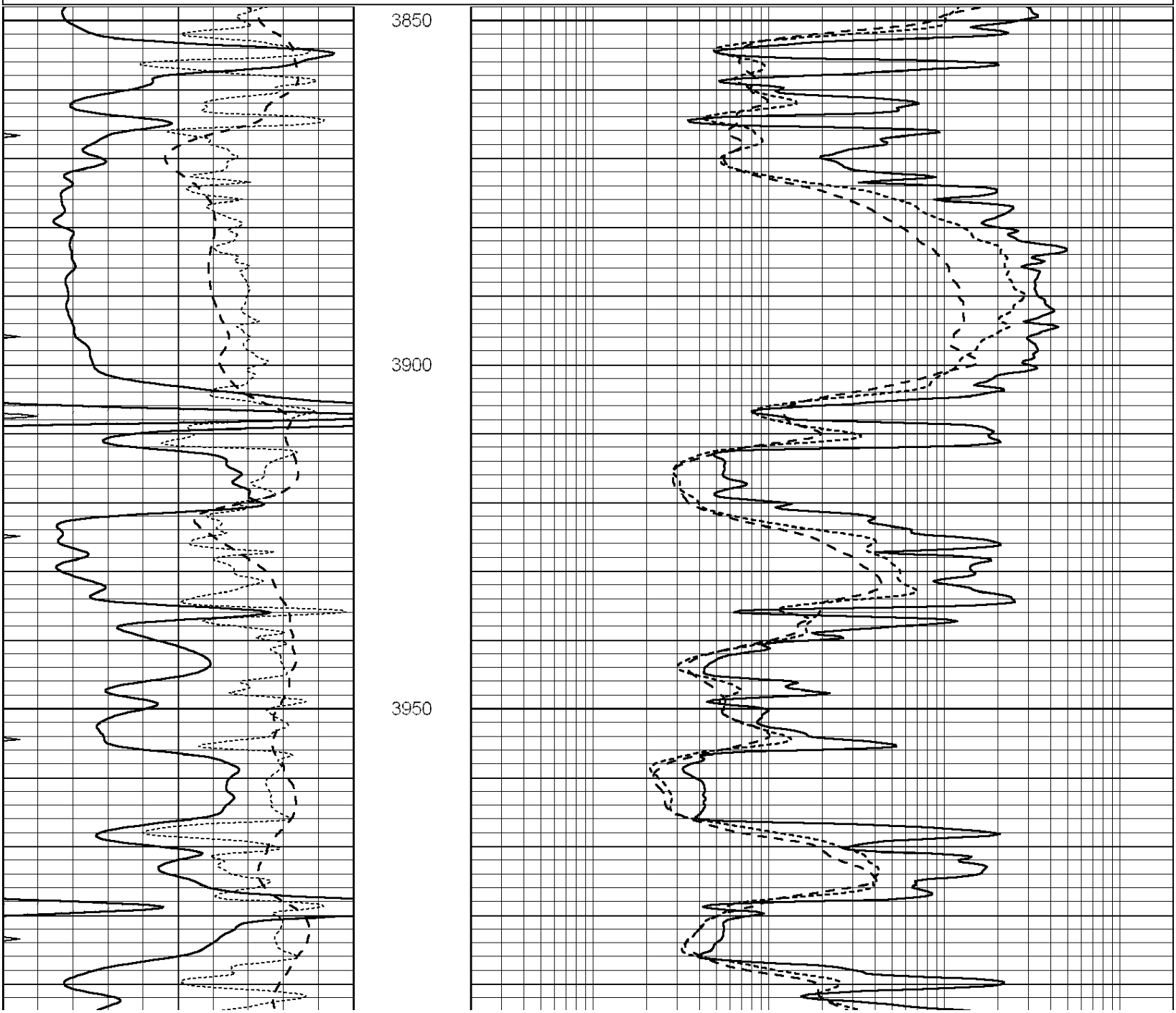
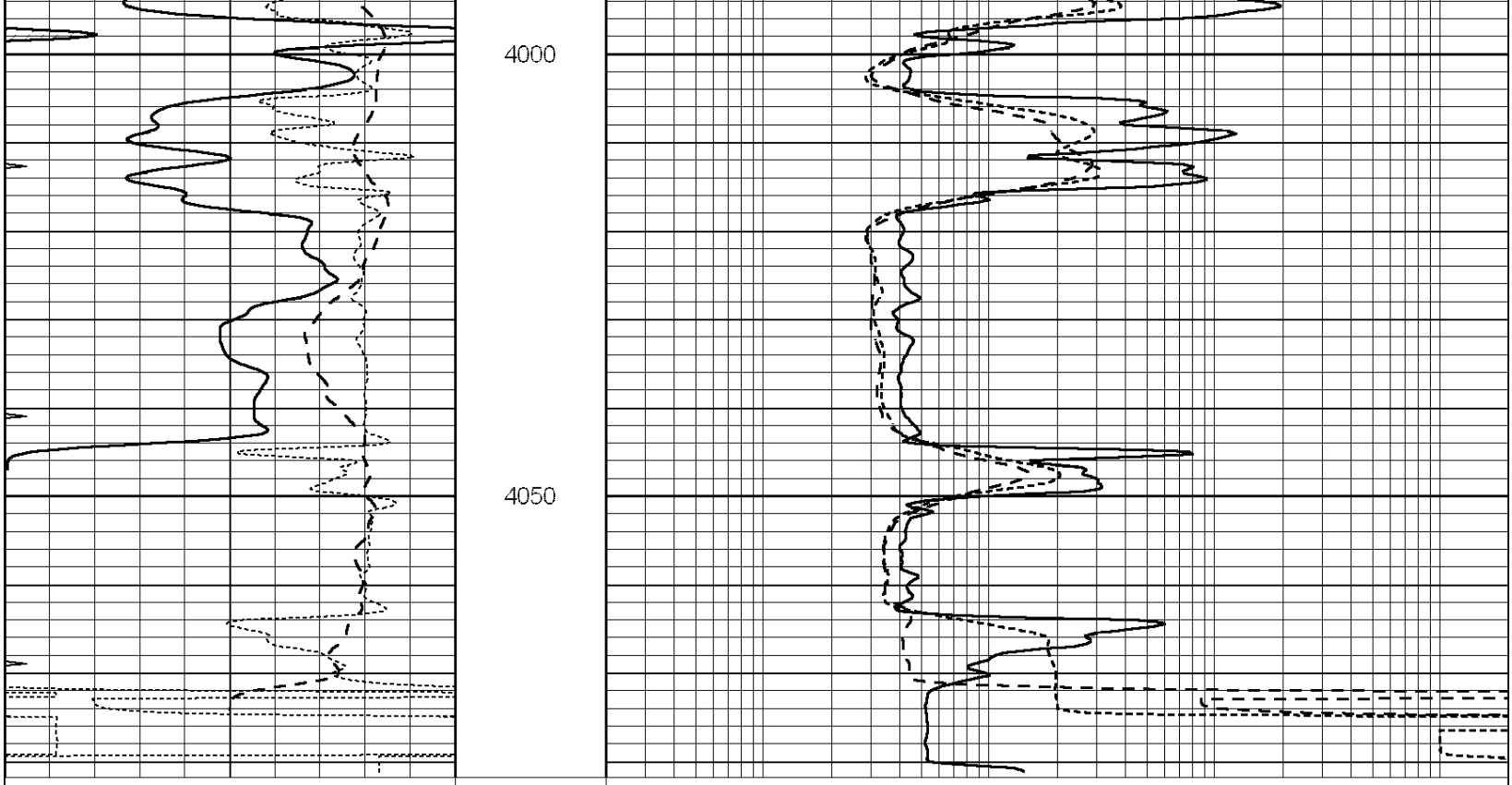
# REPEAT SECTION

| | |
|---|---|
| Database File: | 010186ddn.db |
| Dataset Pathname: | pass2.4 |
| Presentation Format: | _dil |
| Dataset Creation: | Tue Jun 04 06:06:14 2013 by Calc Open-Cased 090629 |
| Charted by: | Depth in Feet scaled 1:240 |

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

| | | |
|---|---|---|
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m) | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |






## Calibration Report

Database File: 010186ddn.db
Dataset Pathname: pass3.2
Dataset Creation: Tue Jun 04 07:01:54 2013 by Calc Open-Cased 090629

## Dual Induction Calibration Report

| | |
|---|---|
| Serial-Model: | PROBE7-DILG |
| Surface Cal Performed: | Sun May 19 13:30:40 2013 |
| Downhole Cal Performed: | Sat Jan 19 19:51:38 2013 |
| After Survey Verification Performed: | Sat Jan 19 19:51:38 2013 |

### Surface Calibration

| | Readings | | | References | | | Results | |
|---|---|---|---|---|---|---|---|---|
| Loop: | Air | Loop | | Air | Loop | | m | b |
| Deep | 0.793 | 0.790 | V | 0.000 | 400.000 | mmho/m | 620.000 | 7.000 |
| Medium | 0.992 | 1.002 | V | 0.000 | 464.000 | mmho/m | 660.000 | -38.000 |
| Internal: | Zero | Cal | | Zero | Cal | | m | b |
| Deep | 0.041 | 0.642 | V | 0.000 | 400.000 | mmho/m | 664.874 | -27.011 |
| Medium | 0.035 | 0.802 | V | 0.000 | 464.000 | mmho/m | 604.936 | -21.367 |

### Downhole Calibration

| | Readings | | | References | | | Results | |
|---|---|---|---|---|---|---|---|---|
| | Zero | Cal | | Zero | Cal | | m' | b' |
| Deep | 135384.000 | 27094.500 | mmho/m | 135400.000 | 27082.400 | mmho/m | 1.000 | -19.259 |
| Medium | -47330.100 | -9381.740 | mmho/m | -47327.100 | -9389.280 | mmho/m | 1.000 | -10.154 |

| | | | | | | |
|---|---|---|---|---|---|---|
| LL3 | 7.322 | V | 1400.000 | Ohm-m | | |
| | 0.038 | V | 20.000 | Ohm-m | | |
| | -7.273 | V | 4000.000 | mmho-m | | |

After Survey Verification

| | Readings | | | Targets | | | Results | |
|---|---|---|---|---|---|---|---|---|
| | Zero | Cal | | Zero | Cal | | m' | b' |
| Deep | 0.000 | 0.000 | mmho/m | 135384.000 | 27094.500 | mmho/m | 1.000 | 0.000 |
| Medium | 0.000 | 0.000 | mmho/m | -47330.100 | -9381.740 | mmho/m | 1.000 | 0.000 |
| LL3 | | 0.000 | Ohm-m | | 1400.000 | Ohm-m | | |
| | | 0.000 | Ohm-m | | 20.000 | Ohm-m | | |
| | | 0.000 | mmho-m | | 4000.000 | mmho-m | | |

## Compensated Density Calibration Report

| | |
|---|---|
| Serial-Model: | GEAR1-GEARHART |
| Source / Verifier: | 147 / 147 |
| Master Calibration Performed: | Mon May 13 17:25:39 2013 |

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---|---|---|---|---|---|
| Magnesium | 1.710 | g/cc | 1205.77 | 610.74 | cps |
| Aluminum | 2.600 | g/cc | 271.21 | 419.72 | cps |

Spine Angle = 75.89 Density/Spine Ratio = 0.579

| | Size | | Reading | |
|---|---|---|---|---|
| Small Ring | 7.70 | in | 4.69 | V |
| Large Ring | 14.00 | in | 6.52 | V |

## Compensated Neutron Calibration Report

| | |
|---|---|
| Serial Number: | NEU_4I |
| 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: | GR1 | |
| Tool Model: | OPEN | |
| Performed: | Fri May 31 12:01:32 2013 | |
| Calibrator Value: | 1.0 | GAPI |
| Background Reading: | 0.0 | cps |
| Calibrator Reading: | 1.0 | cps |
| Sensitivity: | 0.9500 | GAPI/cps |