# COMPENSATED DENSITY / NEUTRON LOG

Company L.D. DRILLING, INC.
Well #1-4 CRYSTAL
Field WILDCAT
County ELLIS State KANSAS
Location: API # : 15-051-26945-0000
740' FSL & 2380' FWL
SE - NE - SE - SW
SEC 4 TWP 11S RGE 16W

Other Services
DIL/MEL

Elevation
K.B. 1859
D.F. 1857
G.L. 1854

Permanent Datum GROUND LEVEL Elevation 1854
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING

| | | | |
|---|---|---|---|
| Date | 4/23/19 | | |
| Run Number | ONE | | |
| Depth Driller | 3594 | | |
| Depth Logger | 3595 | | |
| Bottom Logged Interval | 3571 | | |
| Top Log Interval | 2700 | | |
| Casing Driller | 8 5/8"@261' | | |
| Casing Logger | 261 | | |
| Bit Size | 7 7/8" | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 5,200 PPM | |
| Density / Viscosity | 9.3/46 | | |
| pH / Fluid Loss | 10.0/8.8 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | .400@80F | | |
| Rmf @ Meas. Temp | .300@80F | | |
| Rmc @ Meas. Temp | .480@80F | | |
| Source of Rmf / Rmc | MEASUREMENT | | |
| Rm @ BHT | .286@112F | | |
| Time Circulation Stopped | 2 HOURS | | |
| Time Logger on Bottom | 11:45 P.M. | | |
| Maximum Recorded Temperature | 112F | | |
| Equipment Number | 922339 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | JEFF LUEBBERS | | |
| Witnessed By | KIM SHOEMAKER | | |

<<< Fold Here >>>



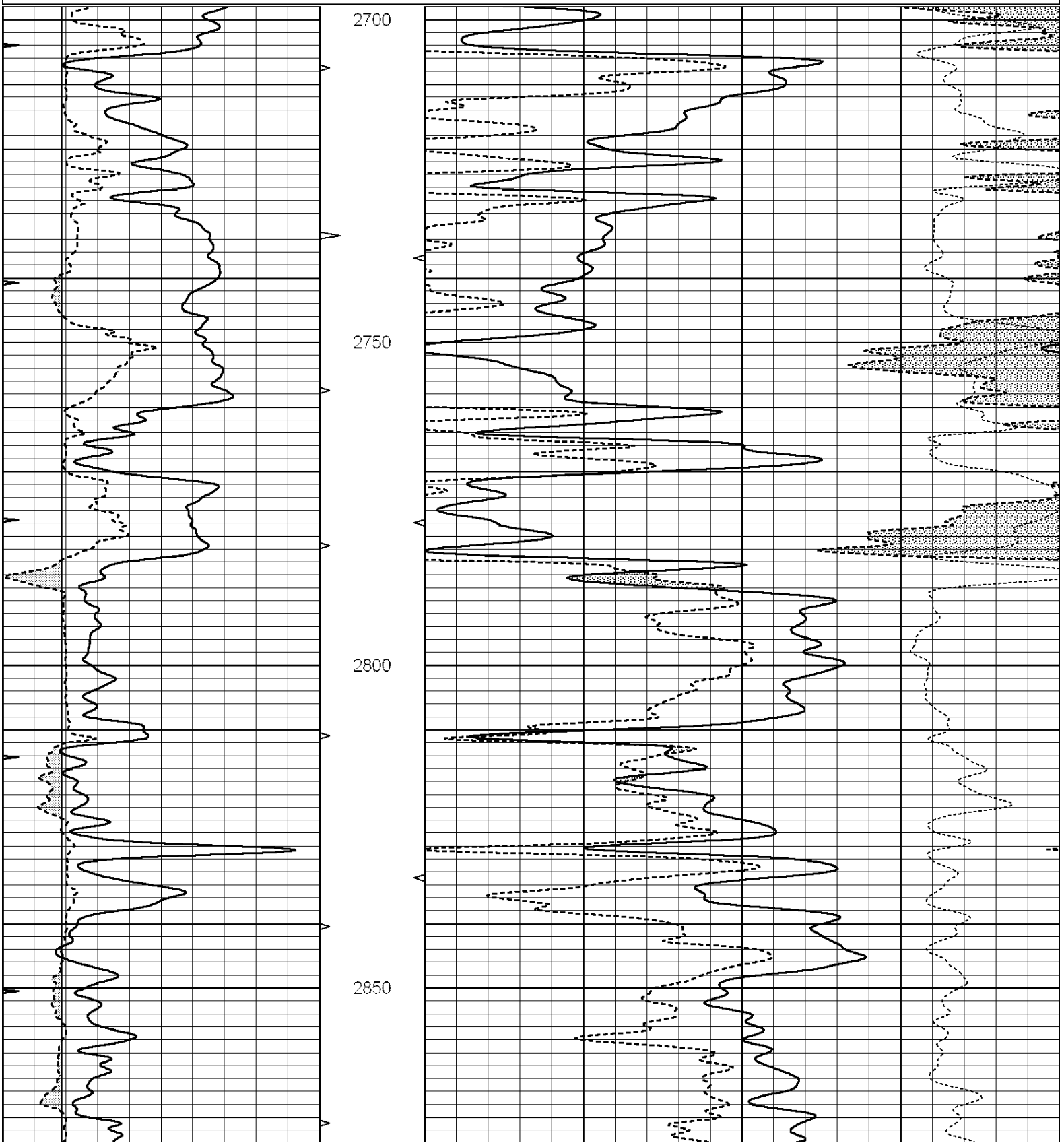
Comments

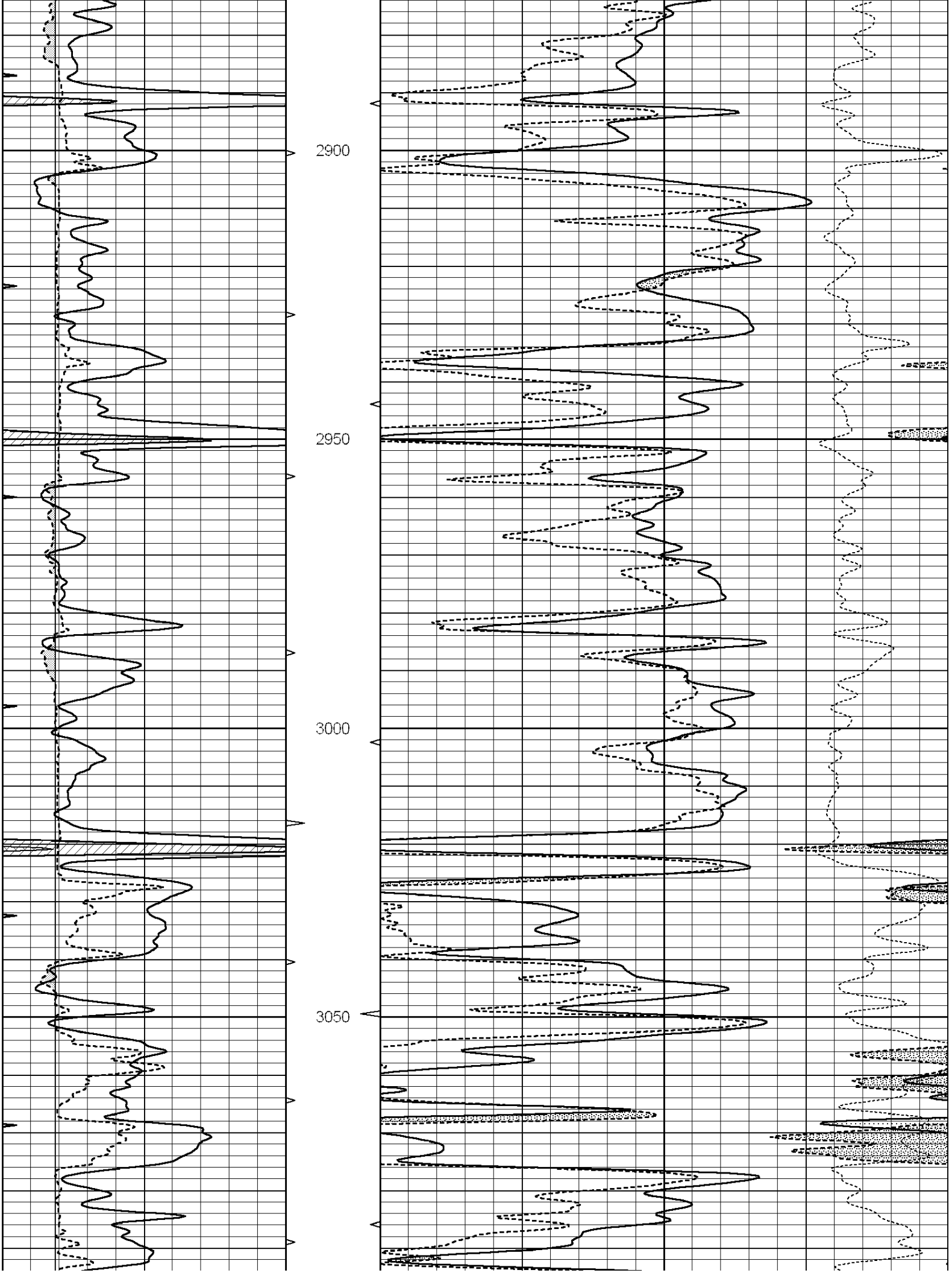
THANK YOU FOR USING ELI WIRELINE HAYS, KANSAS (785) 628-6395
DIRECTIONS
HAYS, KS., N. ON HWY 183 TO "RIVER RD.", 11E. TO T, 2N. ON VINCENT RD. FOLLOW CURVES, E. INTO GATE

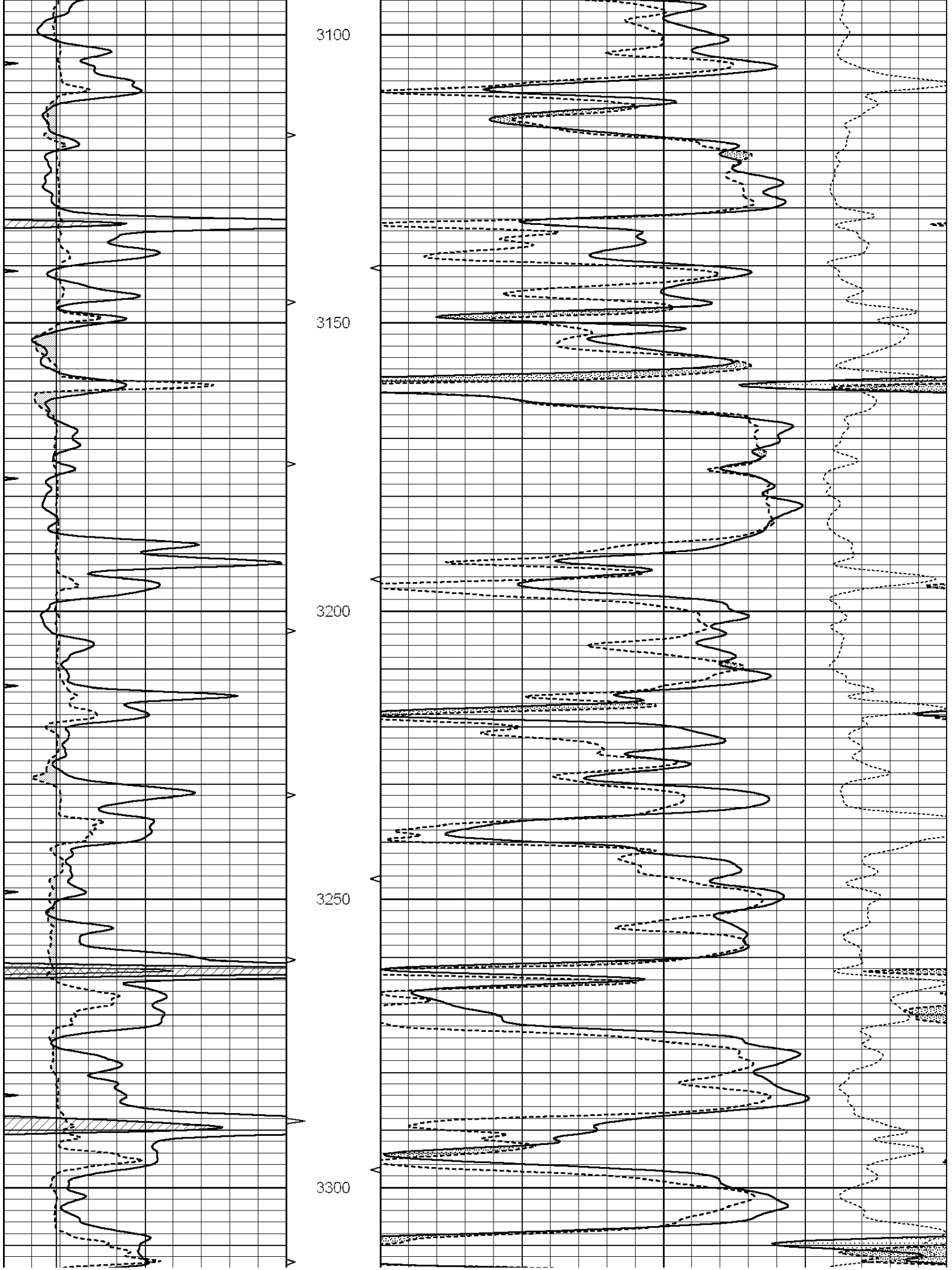
# MAIN SECTION

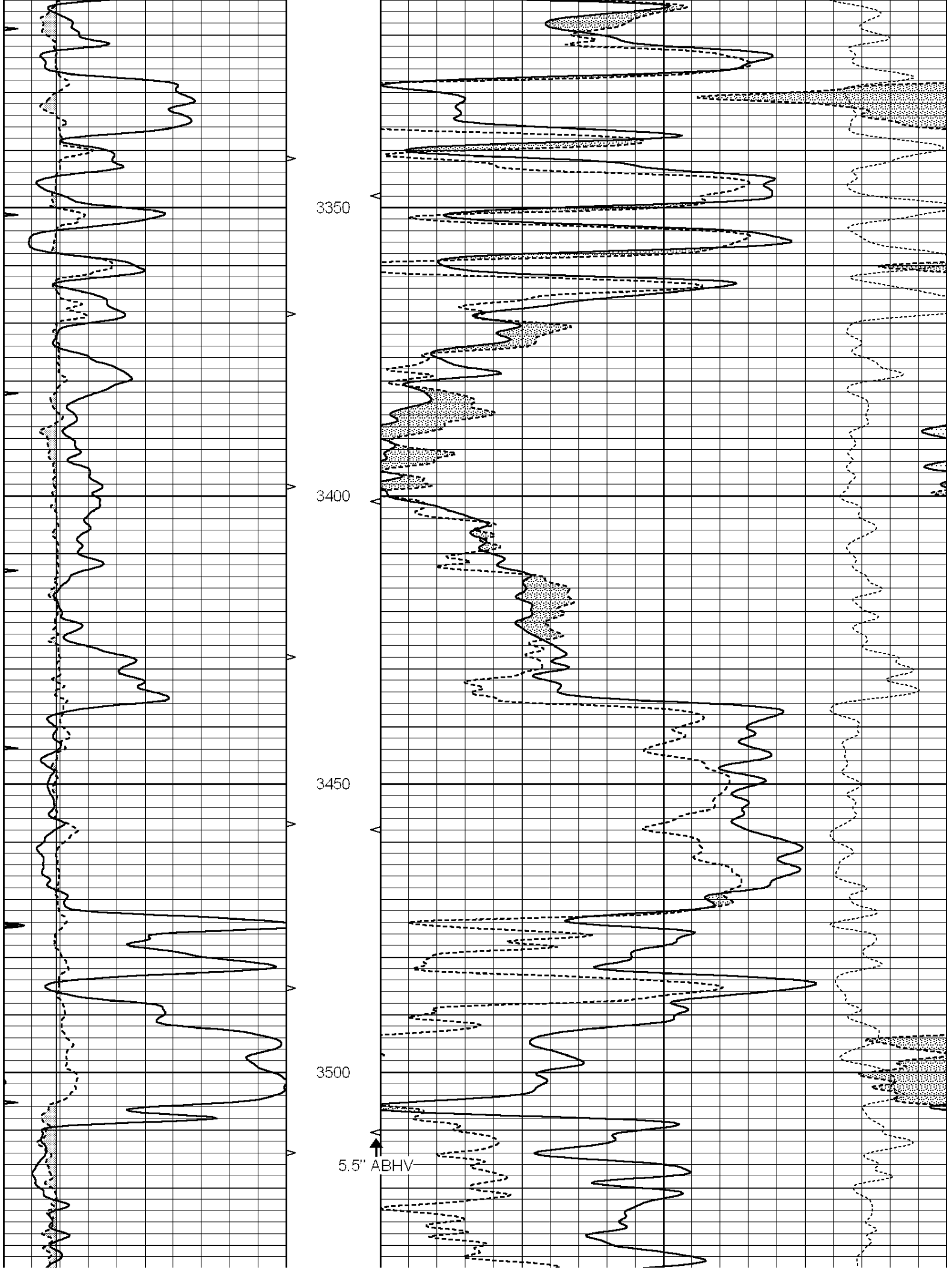
| | |
|---|---|
| Database File: | 3615ddn.db |
| Dataset Pathname: | pass3.8 |
| Presentation Format: | den_neu |
| Dataset Creation: | Thu Apr 25 00:46:38 2019 |
| Charted by: | Depth in Feet scaled 1:240 |

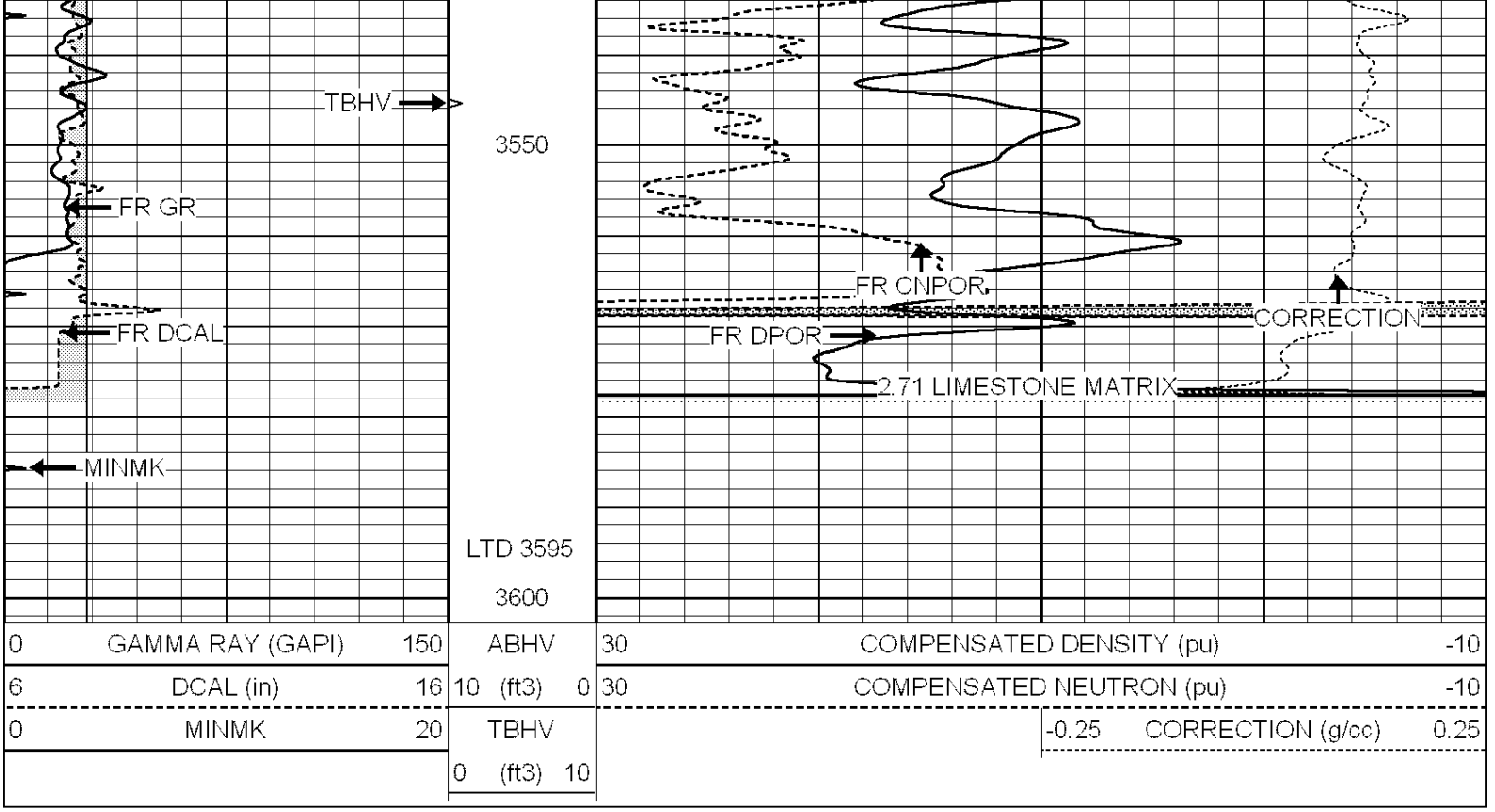
| | | |
|---|---|---|
| 0 GAMMA RAY (GAPI) 150 | ABHV | 30 COMPENSATED DENSITY (pu) -10 |
| 6 DCAL (in) 16 | 10 (ft3) 0 | 30 COMPENSATED NEUTRON (pu) -10 |
| 0 MINMK 20 | TBHV | -0.25 CORRECTION (g/cc) 0.25 |
| | 0 (ft3) 10 | |




2900
2950
3000
3050


3100
3150
3200
3250
3300

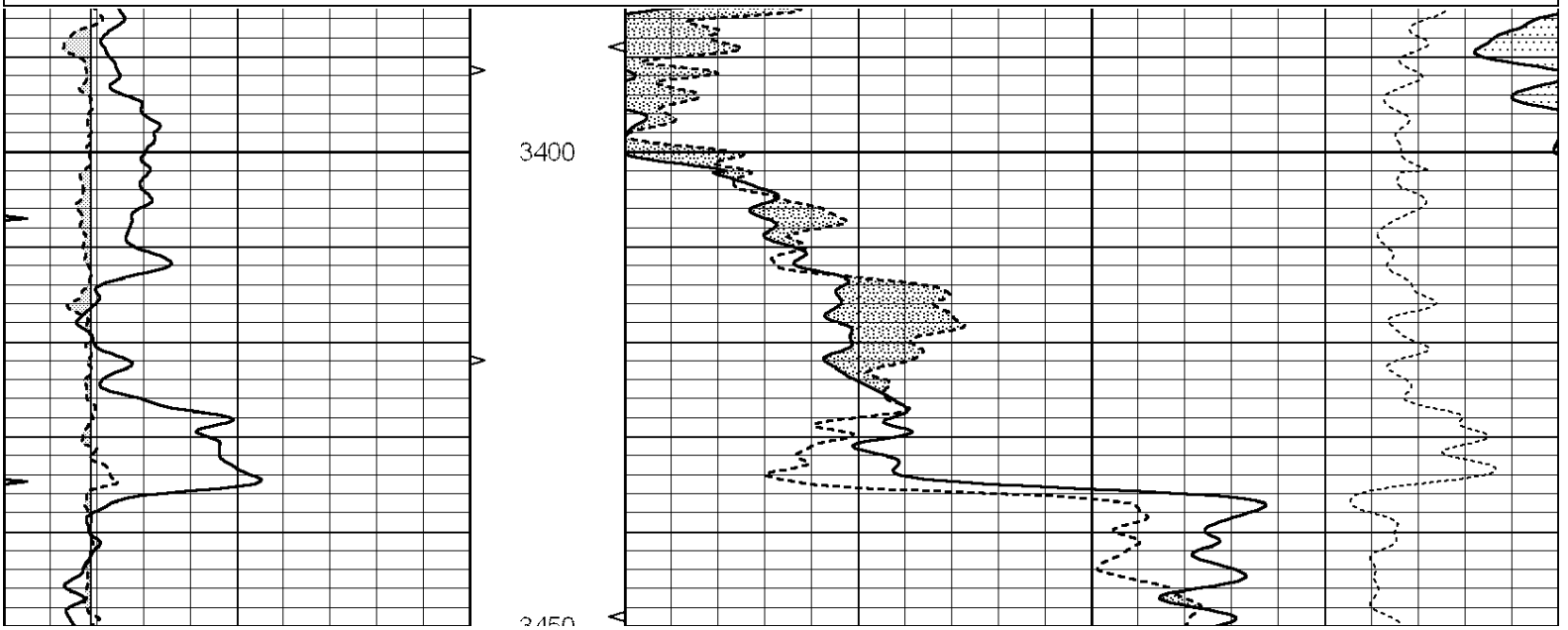

3350
3400
3450
3500
5.5" ABHV

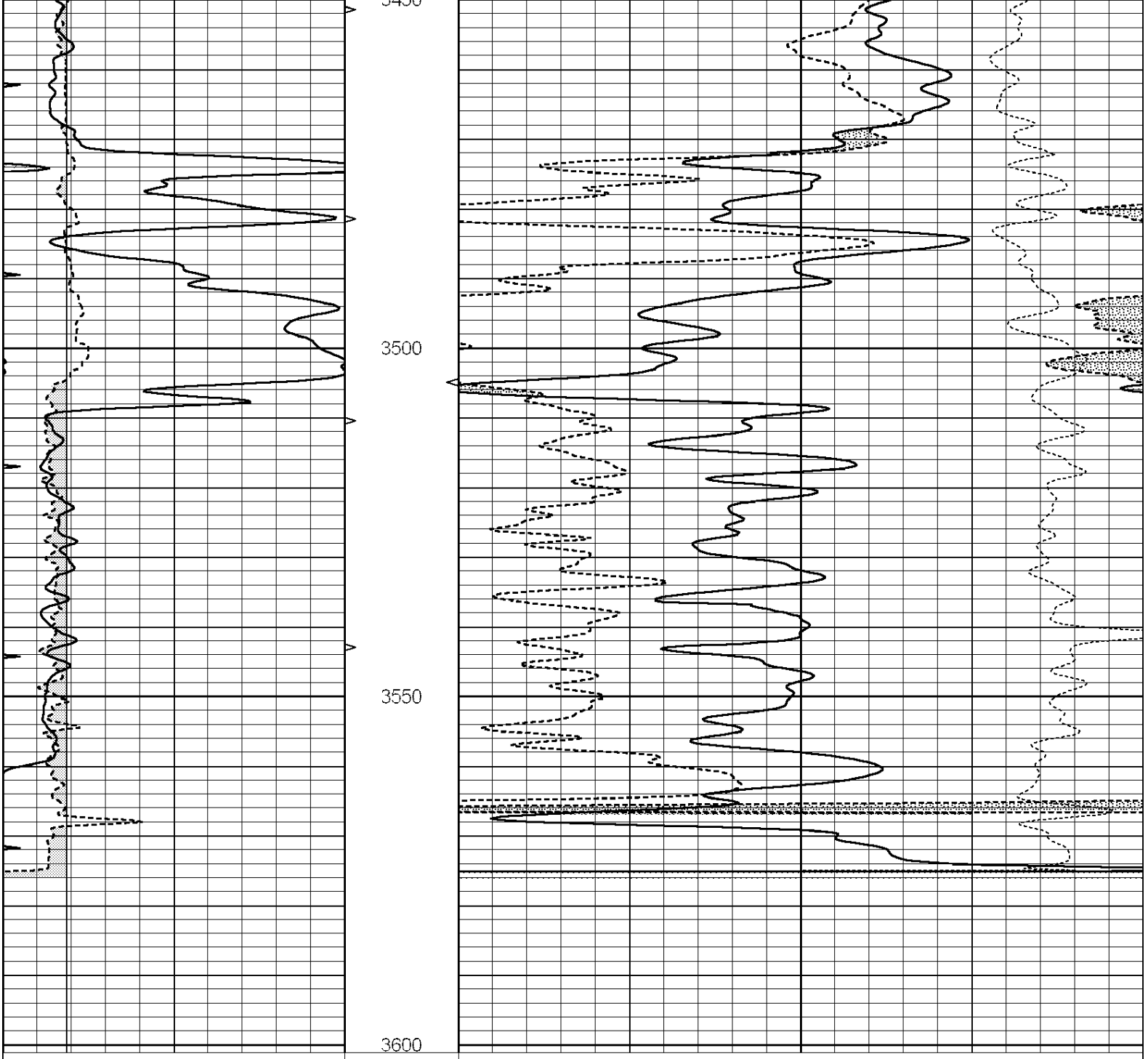



# REPEAT SECTION

Database File: 3615ddn.db
Dataset Pathname: pass2.4R
Presentation Format: den_neu
Dataset Creation: Thu Apr 25 01:20:04 2019
Charted by: Depth in Feet scaled 1:240

0 GAMMA RAY (GAPI) 150
ABHV
30 COMPENSATED DENSITY (pu) -10
6 DCAL (in) 16
10 (ft3) 0
30 COMPENSATED NEUTRON (pu) -10
0 MINMK 20
TBHV
-0.25 CORRECTION (g/cc) 0.25
0 (ft3) 10



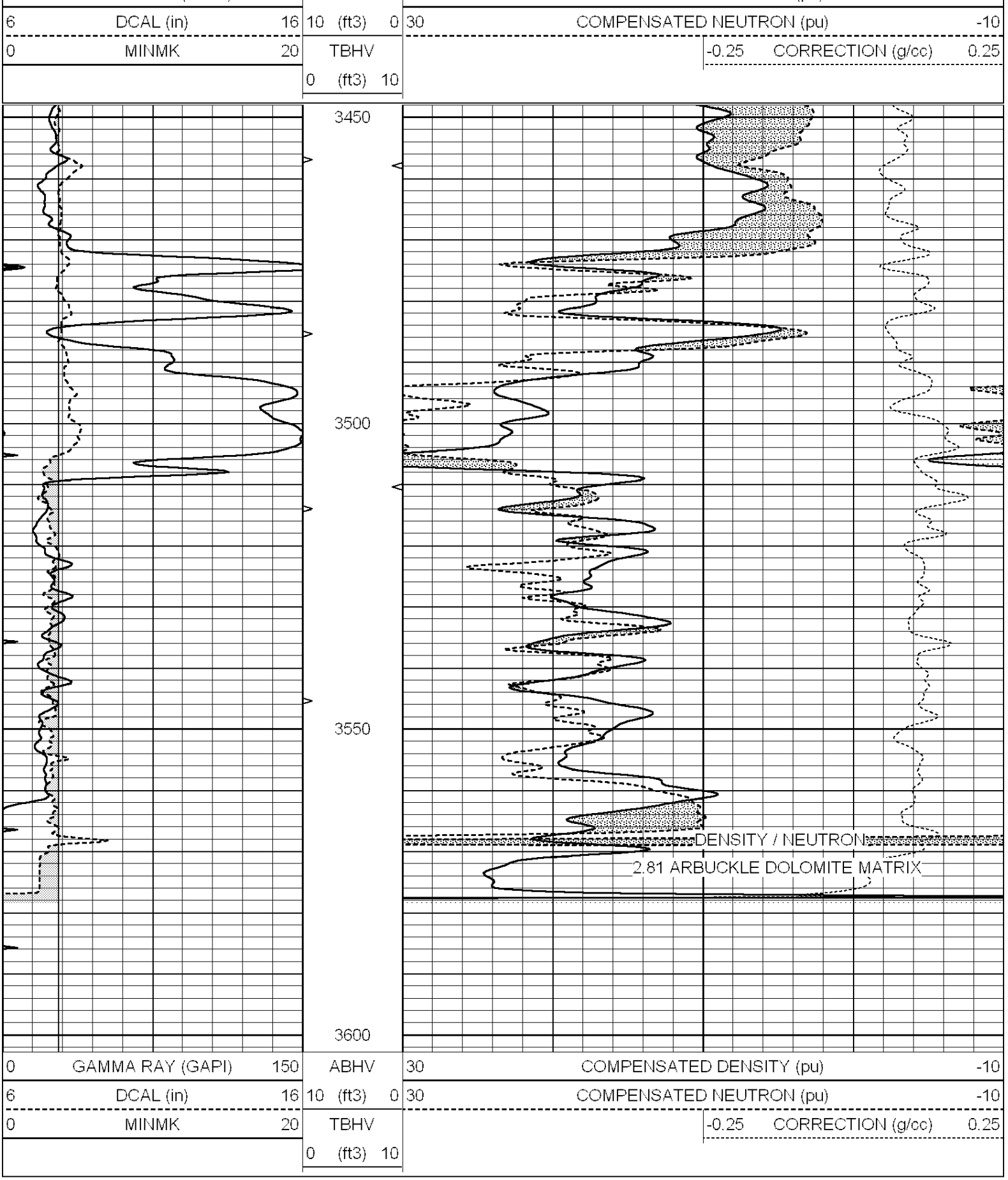



| | | | | |
|---|---|---|---|---|
| 0 GAMMA RAY (GAPI) 150 | ABHV | 30 COMPENSATED DENSITY (pu) -10 | | |
| 6 DCAL (in) 16 | 10 (ft3) 0 | 30 COMPENSATED NEUTRON (pu) -10 | | |
| 0 MINMK 20 | TBHV | | -0.25 CORRECTION (g/cc) 0.25 | |
| | 0 (ft3) 10 | | | |

# DOLOMITE MATRIX

| | |
|---|---|
| Database File: | 3615ddn.db |
| Dataset Pathname: | pass2.4D |
| Presentation Format: | den_neu |
| Dataset Creation: | Thu Apr 25 00:22:19 2019 |
| Charted by: | Depth in Feet scaled 1:240 |


| | | | | |
|---|---|---|---|---|
| 0 GAMMA RAY (GAPI) 150 | ABHV | 30 COMPENSATED DENSITY (pu) -10 | | |
| 6 DCAL (in) 16 | 10 (ft3) 0 | 30 COMPENSATED NEUTRON (pu) -10 | | |
| 0 MINMK 20 | TBHV | | -0.25 CORRECTION (g/cc) 0.25 | |
| | 0 (ft3) 10 | | | |




Calibration Report

Database File: 1598ddn.db
Dataset Pathname: pass4
Dataset Creation: Wed Aug 30 02:13:00 2017 by Log SOC 120430

Dual Induction Calibration Report

| | |
|---|---|
| Serial-Model: | PROBE7-DILG |
| Surface Cal Performed: | Wed Aug 30 00:06:33 2017 |
| 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 | 620.000 | 0.000 |
| Medium | 0.039 | 0.728 | V | 0.000 | 464.000 | mmho/m | 675.000 | -44.000 |
| 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

Master Calibration — Performed Mon Aug 21 11:27:42 2017

| | Background | Magnesium | Aluminum | Sandstone | |
|---|---|---|---|---|---|
| Window 1 | 837.1 | 10632.5 | 2945.1 | 12110.1 | cps |
| Window 2 | 772.0 | 9117.4 | 2570.1 | 10197.3 | cps |
| Window 3 | 631.7 | 4669.0 | 1481.9 | 5042.9 | cps |
| Window 4 | 187.0 | 187.5 | 185.9 | 189.9 | cps |
| Long Space | 0.0 | 8345.4 | 1798.1 | 9425.3 | cps |
| Short Space | 1.1 | 1927.9 | 1285.9 | 2050.2 | cps |
| Rho | | 1.7100 | 2.5960 | 1.3800 | g/cc |
| Pe | | 0.0000 | 2.5700 | 1.5500 | |

| | | | | | |
|---|---|---|---|---|---|
| Rib Angle | : 45.2 | Rib Slope | : 1.008 | Density/Spine Ratio | : 0.558 |
| Spine Angle | : 75.2 | Spine Slope | : 3.790 | Spine Intercept | : -19.6 |

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: 070808
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: 070558
Tool Model: OPEN_GR
Performed: Wed May 31 00:09:32 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.2800 GAPI/cps