



SUPERIOR
Hays,
Kansas

**COMPENSATED
DENSITY / NEUTRON
LOG**

Company PIONEER RESOURCES
Well KNOPP #4
Field WILDCAT
County LOGAN
State KANSAS

Company PIONEER RESOURCES
Well KNOPP #4
Field WILDCAT
County LOGAN State KANSAS

Location: API # : 15-109-21084-0000
335' FNL & 335' FWL
SE - NW - NW - NW
SEC 13 TWP 14S RGE 32W
Permanent Datum GROUND LEVEL Elevation 2816
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING
Other Services DIL/MEL
Elevation K.B. 2821
D.F. 2819
G.L. 2816

| | | | |
|------------------------------|---------------|---------------------|--|
| Date | 5/16/12 | | |
| Run Number | ONE | | |
| Depth Driller | 4570 | | |
| Depth Logger | 4572 | | |
| Bottom Logged Interval | 4548 | | |
| Top Log Interval | 3500 | | |
| Casing Driller | 8 5/8"@220' | | |
| Casing Logger | 220 | | |
| Bit Size | 7 7/8" | | |
| Type Fluid in Hole | CHEMICAL MUD | CHLORIDES 5,000 PPM | |
| Density / Viscosity | 9.2/66 | | |
| pH / Fluid Loss | 10.0/9.8 | | |
| Source of Sample | FLOWLINE | | |
| Rm @ Meas. Temp | .600@90F | | |
| Rmt @ Meas. Temp | .450@90F | | |
| Rmc @ Meas. Temp | .720@90F | | |
| Source of Rmf / Rmc | MEASUREMENT | | |
| Rm @ BHT | .448@121F | | |
| Time Circulation Stopped | 2.5 HOURS | | |
| Time Logger on Bottom | 6:15 A.M. | | |
| Maximum Recorded Temperature | 121F | | |
| Equipment Number | 4010 | | |
| Location | HAYS, KANSAS | | |
| Recorded By | JEFF LUEBBERS | | |
| Witnessed By | STEVE MURPHY | | |

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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 SING SUPERIOR WELL SERVICE HAYS, KANSAS (785) 628-6395
DIRECTIONS
OAKLEY, KS. (OLD 40 & HWY 83 JUNCTION) 20S. ON HWY 83 TO "JAYHAWK RD.", 1E., 3/4N., E. INTO

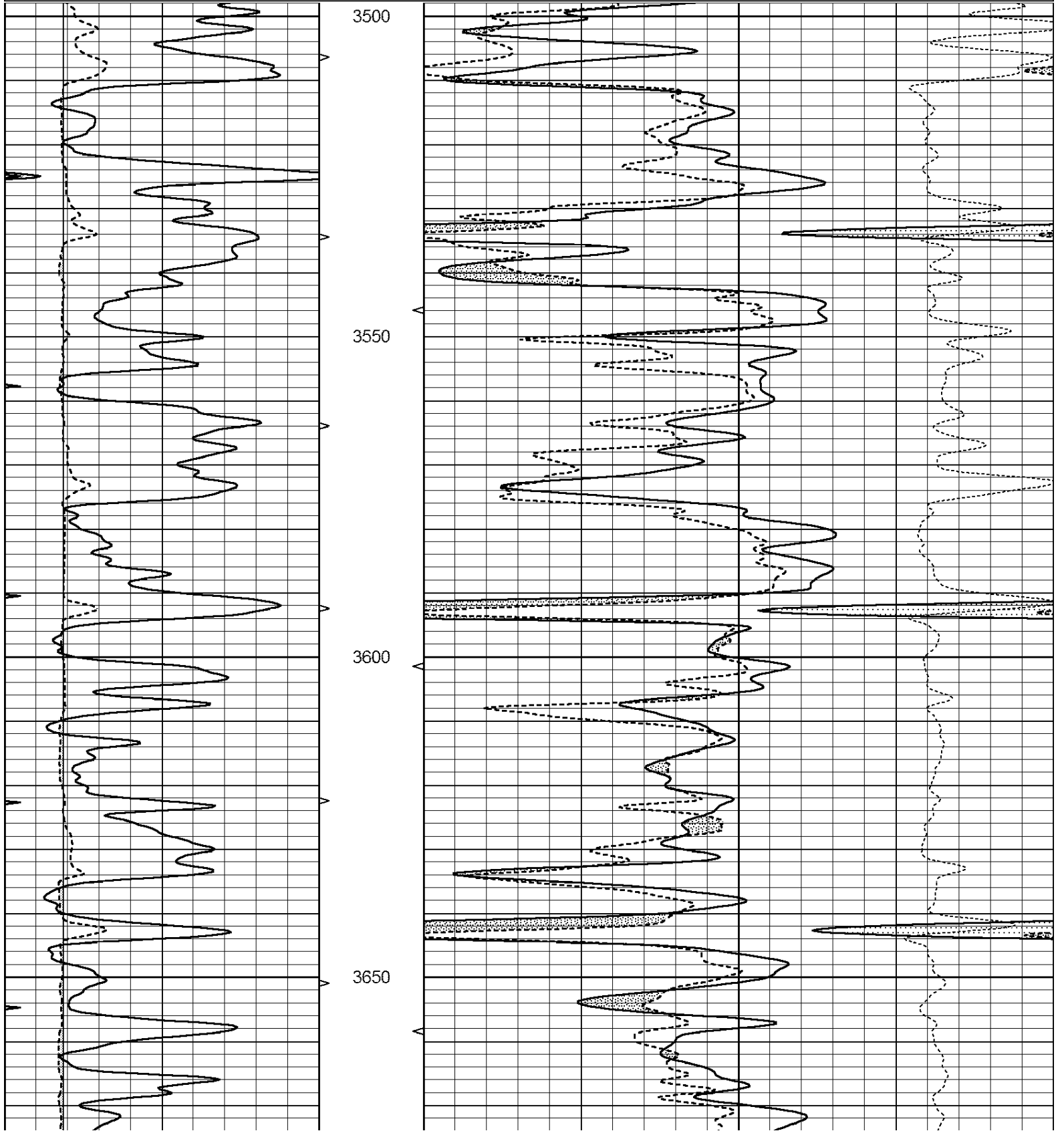


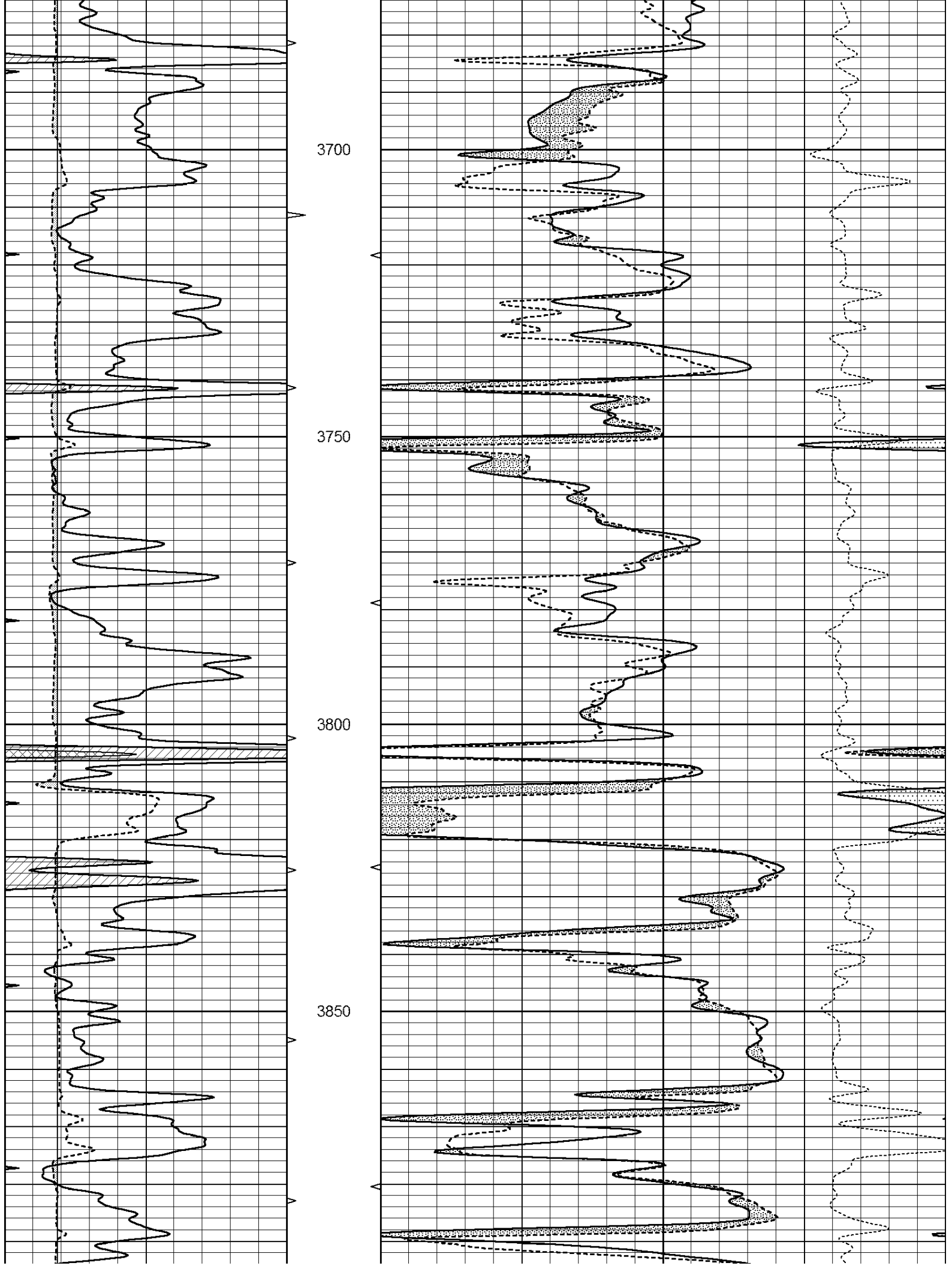
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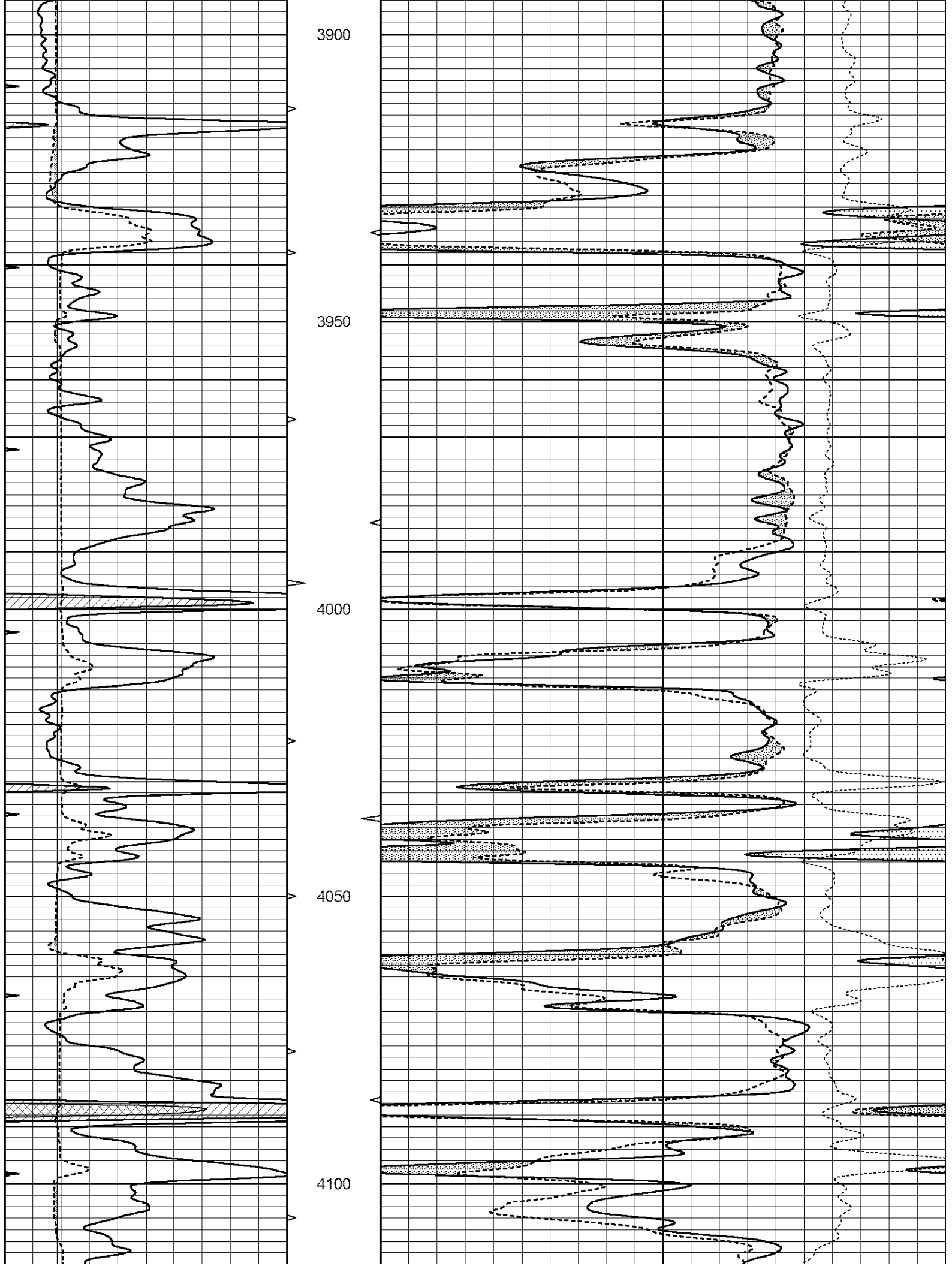
MAIN SECTION

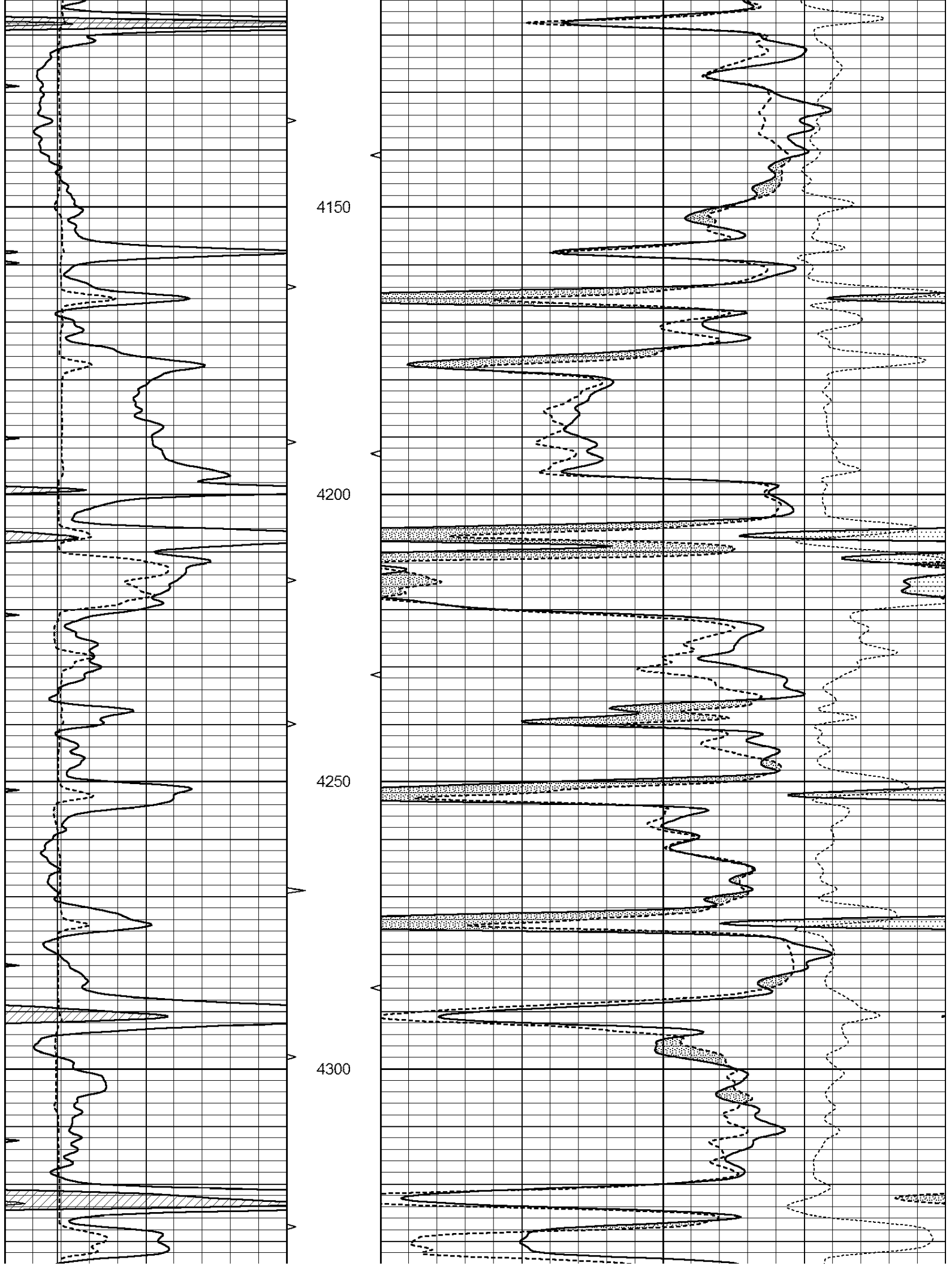
Database File: 408768ddn.db
 Dataset Pathname: pass3.10
 Presentation Format: den_neu
 Dataset Creation: Wed May 16 08:05:30 2012 by Calc Open-Cased 110302
 Charted by: Depth in Feet scaled 1:240

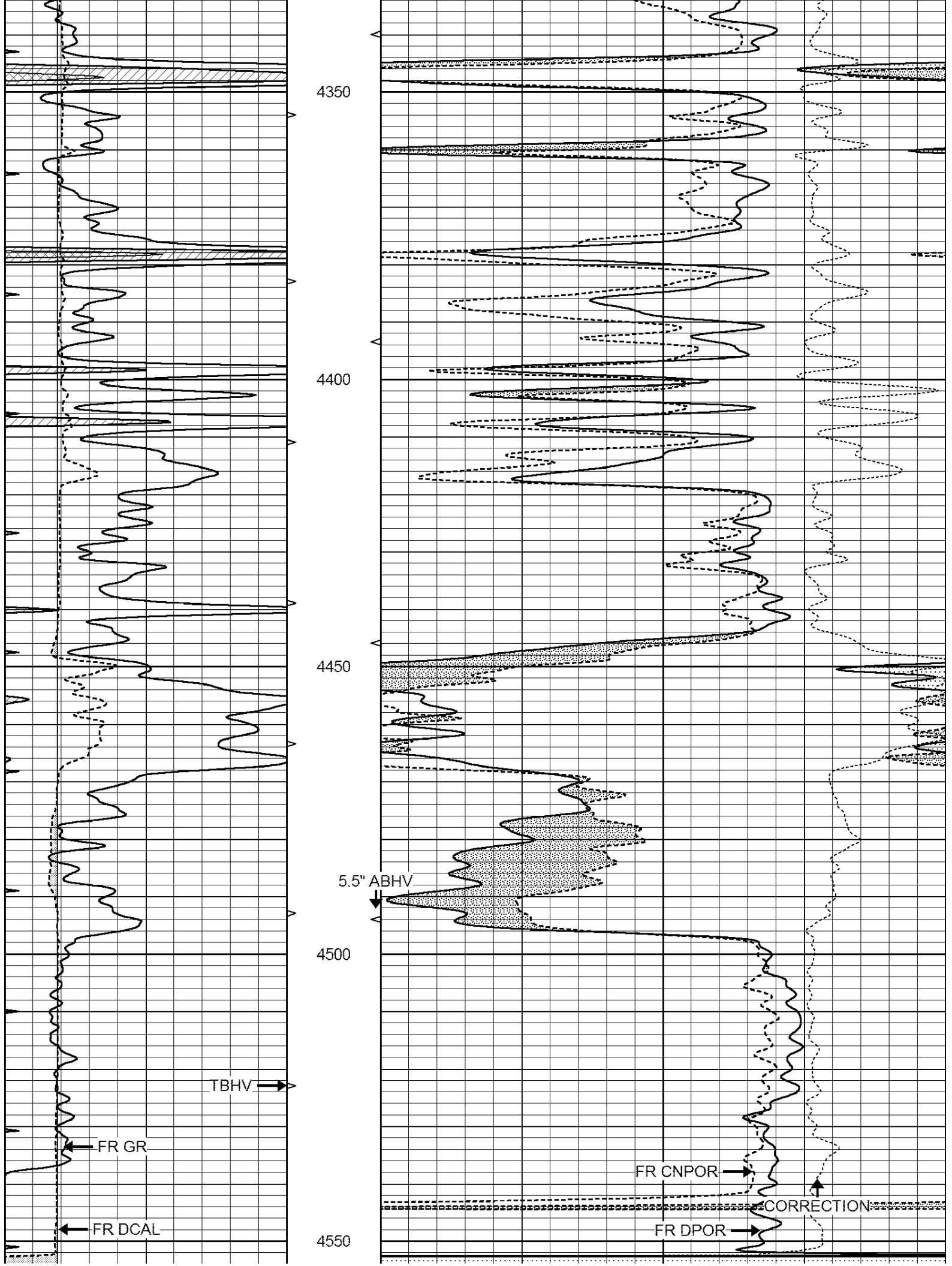
| | | | | | | |
|---|------------------|-----|----------|------|--------------------------|------|
| 0 | GAMMA RAY (GAPI) | 150 | ABHV | 30 | COMPENSATED DENSITY (pu) | -10 |
| 6 | CALIPER (in) | 16 | 10 (ft3) | 0 30 | COMPENSATED NEUTRON (pu) | -10 |
| 0 | MINMK | 20 | TBHV | | -0.25 CORRECTION (g/cc)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











| | | | | | | | | |
|---------|------------------|------------|----------|-----------------------|--------------------------|--------------------------|-------------------|------|
| | | | | 2.71 LIMESTONE MATRIX | | | | |
| ← MINMK | | LTD 4572 | | | | | | |
| 0 | GAMMA RAY (GAPI) | 150 | ABHV | 30 | COMPENSATED DENSITY (pu) | -10 | | |
| 6 | CALIPER (in) | 16 | 10 (ft3) | 0 | 30 | COMPENSATED NEUTRON (pu) | -10 | |
| 0 | MINMK | 20 | TBHV | | | -0.25 | CORRECTION (g/cc) | 0.25 |
| | | 0 (ft3) 10 | | | | | | |

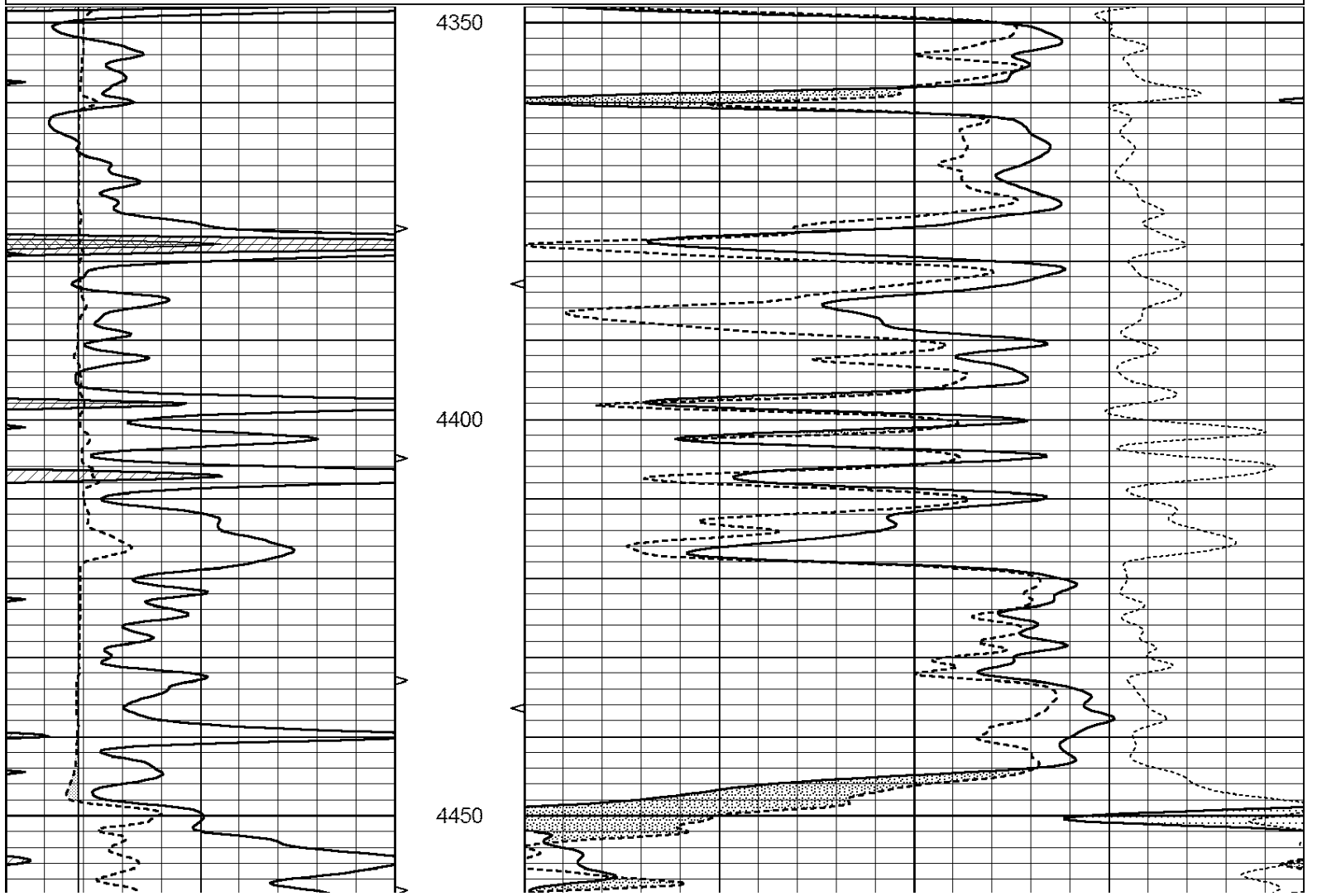


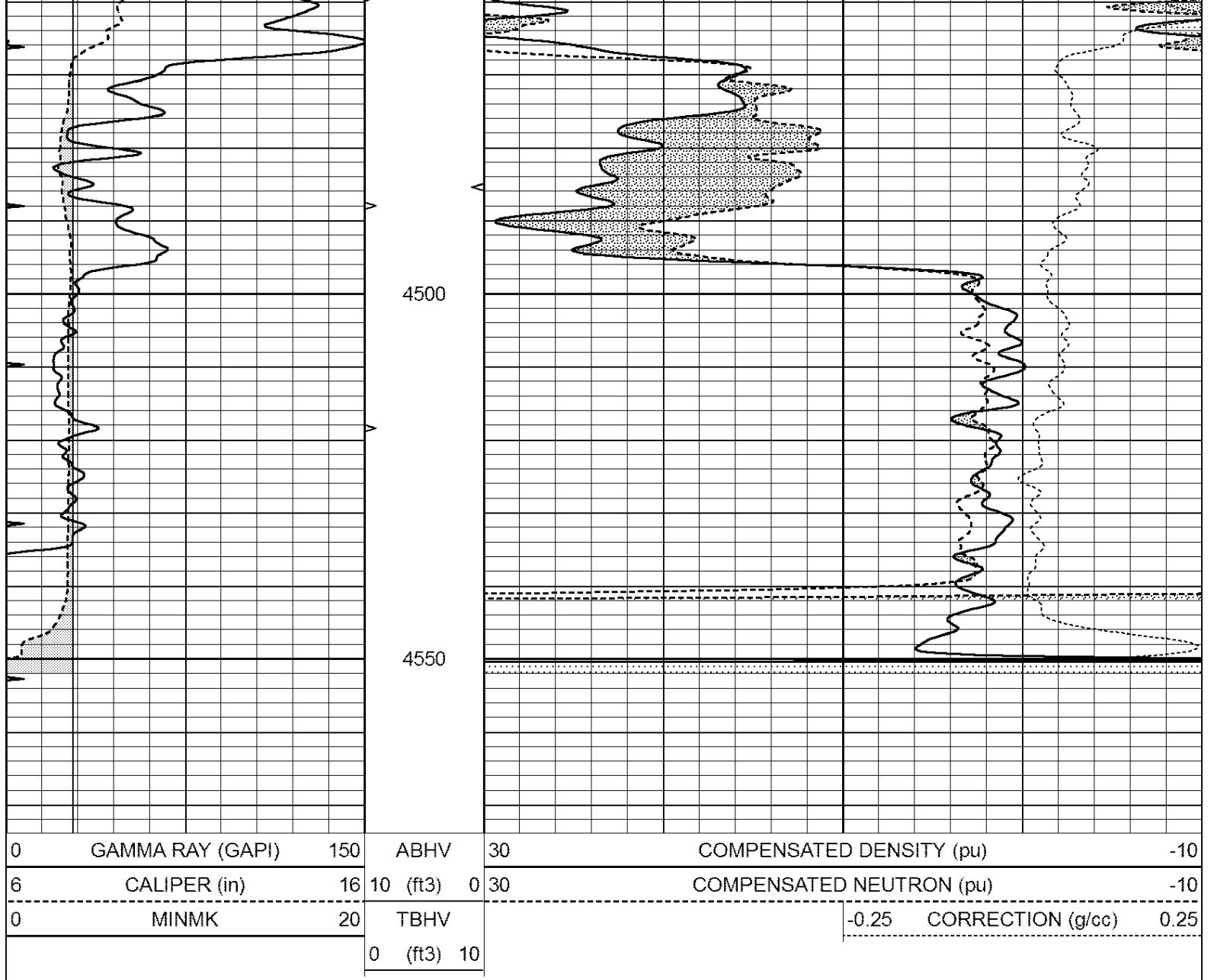
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REPEAT SECTION

Database File: 408768ddn.db
 Dataset Pathname: pass2.4
 Presentation Format: den_neu
 Dataset Creation: Wed May 16 08:13:24 2012 by Calc Open-Cased 110302
 Charted by: Depth in Feet scaled 1:240

| | | | | | | | | |
|---|------------------|------------|----------|----|--------------------------|--------------------------|-------------------|------|
| 0 | GAMMA RAY (GAPI) | 150 | ABHV | 30 | COMPENSATED DENSITY (pu) | -10 | | |
| 6 | CALIPER (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: 408768ddn.db
 Dataset Pathname: pass3.10
 Dataset Creation: Wed May 16 08:05:30 2012 by Calc Open-Cased 110302

Dual Induction Calibration Report

Serial-Model: DIL4-GEAR
 Performed: Mon May 14 21:35:43 2012

| Loop: | Readings | | | | References | | Results | |
|-----------|----------|-------|---|-------|------------|--------|---------|---------|
| | Air | Loop | | | Air | Loop | m | b |
| Deep | 0.008 | 0.666 | V | 0.000 | 400.000 | mmho/m | 570.000 | -2.000 |
| Medium | -0.003 | 0.769 | V | 0.000 | 462.500 | mmho/m | 560.000 | -3.000 |
| Internal: | Zero | Cal | | Zero | Cal | | m | b |
| Deep | 0.013 | 0.651 | V | 0.000 | 400.000 | mmho/m | 627.541 | -8.365 |
| Medium | 0.020 | 0.754 | V | 0.000 | 462.500 | mmho/m | 630.311 | -12.549 |

Litho Density Calibration Report
 Serial: 003N Model: PRB
 Performed Tue Sep 08 14:14:44 2009

Litho Density Calibration

| | Background | Magnesium | Aluminum | Sandstone | |
|-------------|------------|-------------|----------|---------------------|---------|
| Window 1 | 2042.6 | 12312.8 | 4225.8 | 13758.4 | cps |
| Window 2 | 1855.8 | 10134.7 | 3624.2 | 11113.1 | cps |
| Window 3 | 1639.4 | 6760.2 | 2716.3 | 7260.3 | cps |
| Window 4 | 466.4 | 469.2 | 466.1 | 476.5 | cps |
| Long Space | 0.0 | 8278.9 | 1768.4 | 9257.4 | cps |
| Short Space | 2.2 | 2377.3 | 1544.1 | 2574.2 | cps |
| Rho | | 1.7100 | 2.5900 | 1.3800 | g/cc |
| Pe | | | 2.5700 | 1.5500 | |
| Rib Angle | : 44.4 | Rib Slope | : 0.979 | Density/Spine Ratio | : 0.549 |
| Spine Angle | : 74.4 | Spine Slope | : 3.577 | Spine Intercept | : -18.8 |

Caliper

| | Readings | Reference | |
|----------|-----------|-----------|--------------|
| Low Ref | 3.4 | 7.9 | |
| High Ref | 5.5 | 15.0 | |
| | Gain: 3.4 | | Offset: -3.5 |

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: 070559
 Tool Model: OPEN_GR
 Performed: Wed May 16 05:29:35 2012

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.3000 GAPI/cps