



Weatherford

MICRORESISTIVITY LOG



| | | | |
|---|-----------------|----------------------|----------------|
| COMPANY | | GRAND MESA OPERATING | |
| WELL | | DIRKS #1-4 | |
| FIELD | | WILDCAT | |
| PROVINCE/COUNTY | | SCOTT | |
| COUNTRY/STATE | | U.S.A. / KANSAS | |
| LOCATION | | 1168' FSL & 969' FWL | |
| SEC | TWP | RGE | Other Services |
| 4 | 16S | 33W | MAI/MFE |
| API Number | 15-171-20812 | | MDN/MPD |
| Permit Number | MSS | | |
| Permanent Datum G.L., Elevation 3063 feet | | | |
| Log Measured From K.B. @ 5 FEET above Permanent Datum | | | |
| Drilling Measured From K.B. | | | |
| Date | 22-JUN-2011 | | Elevations: |
| Run Number | ONE | | KB 3068.00 |
| Depth Driller | 4870.00 | | DF 3066.00 |
| Depth Logger | 4867.00 | | GL 3063.00 |
| First Reading | 4819.00 | | |
| Last Reading | 3600.00 | | |
| Casing Driller | 222.00 | | |
| Casing Logger | 222.00 | | |
| Bit Size | 7.875 | | inches |
| Hole Fluid Type | CHEMICAL | | |
| Density / Viscosity | 9.20 lb/USg | 56.00 CP | |
| PH / Fluid Loss | 10.50 | 8.80 ml/30Min | |
| Sample Source | FLOWLINE | | |
| Rm @ Measured Temp | 0.45 @ 93.0 | ohm-m | |
| Rmf @ Measured Temp | 0.36 @ 93.0 | ohm-m | |
| Rmc @ Measured Temp | 0.54 @ 93.0 | ohm-m | |
| Source Rmf / Rmc | CALC | CALC | |
| Rm @ BHT | 0.36 @ 115.0 | ohm-m | |
| Time Since Circulation | 2 HOURS | | |
| Max Recorded Temp | 115.00 | deg F | |
| Equipment Name | COMPACT | | |
| Equipment / Base | 13057 | LIB | |
| Recorded By | R. HOFFMAN | | |
| Witnessed By | STEVE STRIBLING | | |
| S.O. # / JOB # | 3529167 | | LB11-139 |

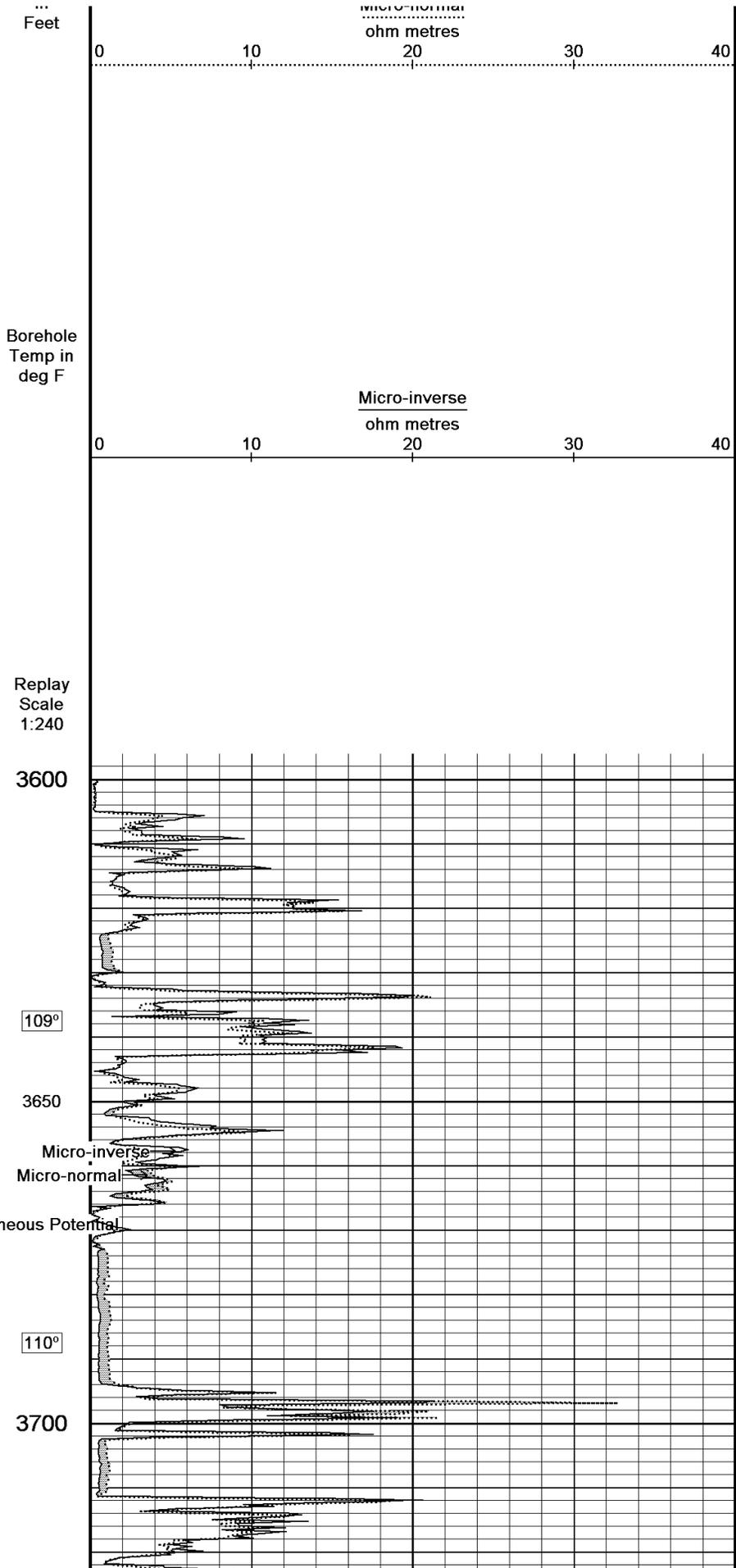
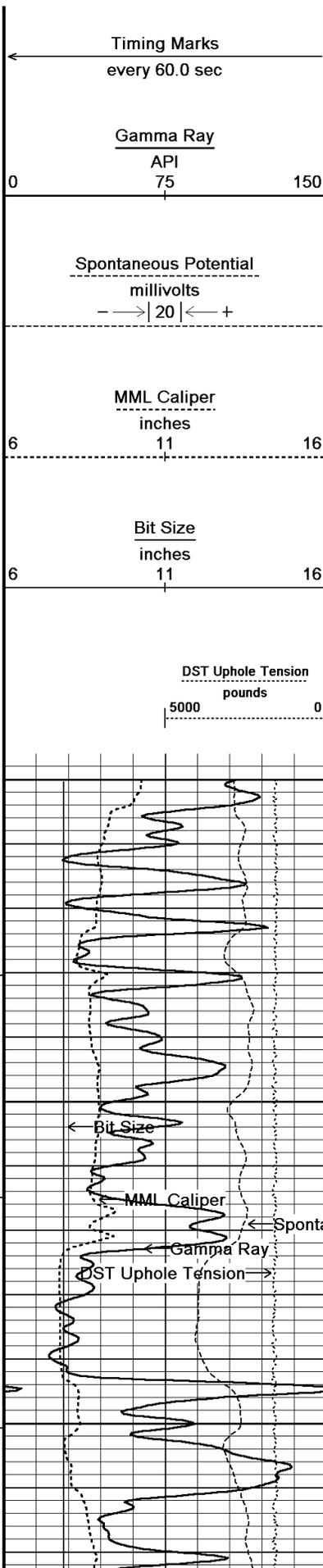
| BOREHOLE RECORD | | | Last Edited: 23-JUN-2011 05:45 | |
|-----------------|------------|------------|--------------------------------|-----------|
| Bit Size | Depth From | Depth To | | |
| inches | feet | feet | | |
| 7.875 | 222.00 | 4867.00 | | |
| CASING RECORD | | | | |
| Type | Size | Depth From | Shoe Depth | Weight |
| | inches | feet | feet | pounds/ft |
| SURFACE | 8.625 | 0.00 | 222.00 | 24.00 |

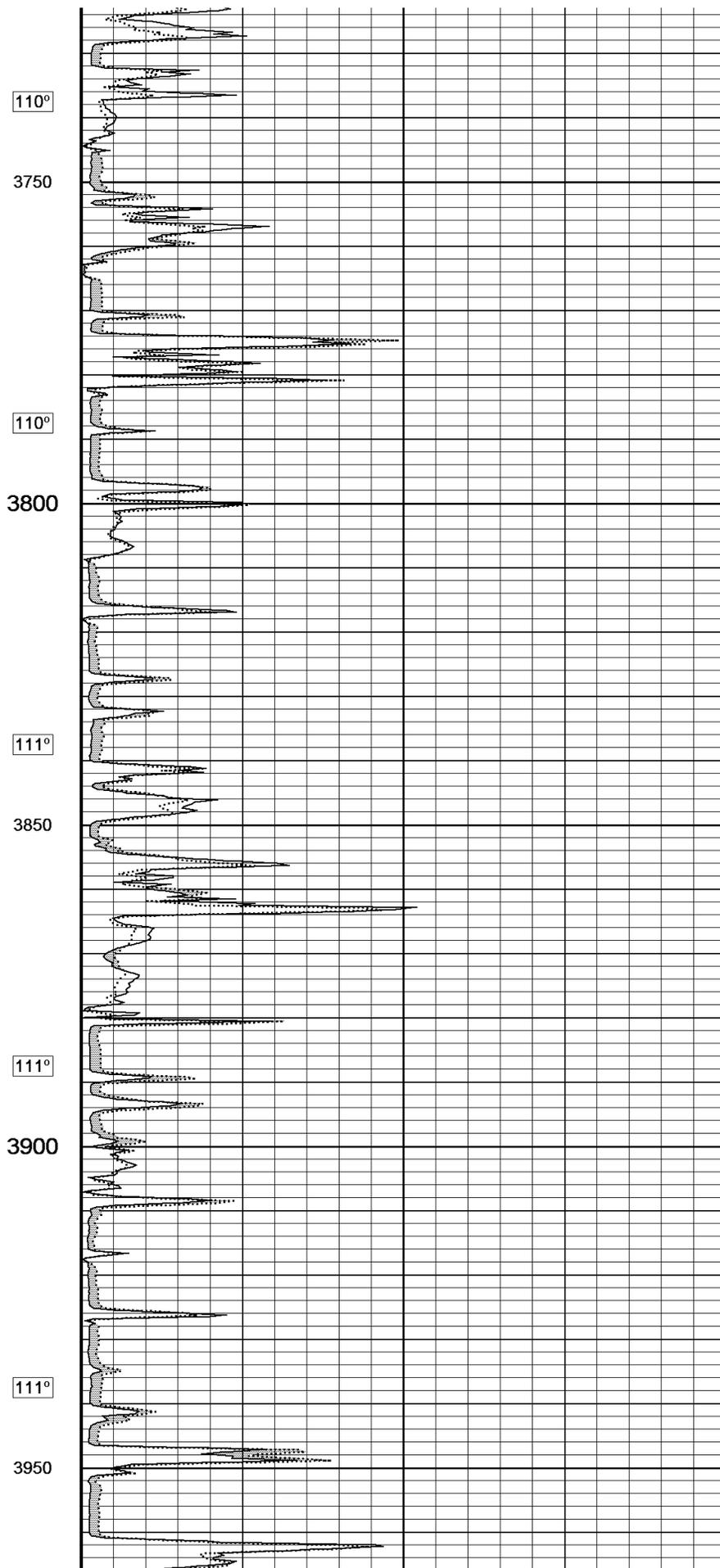
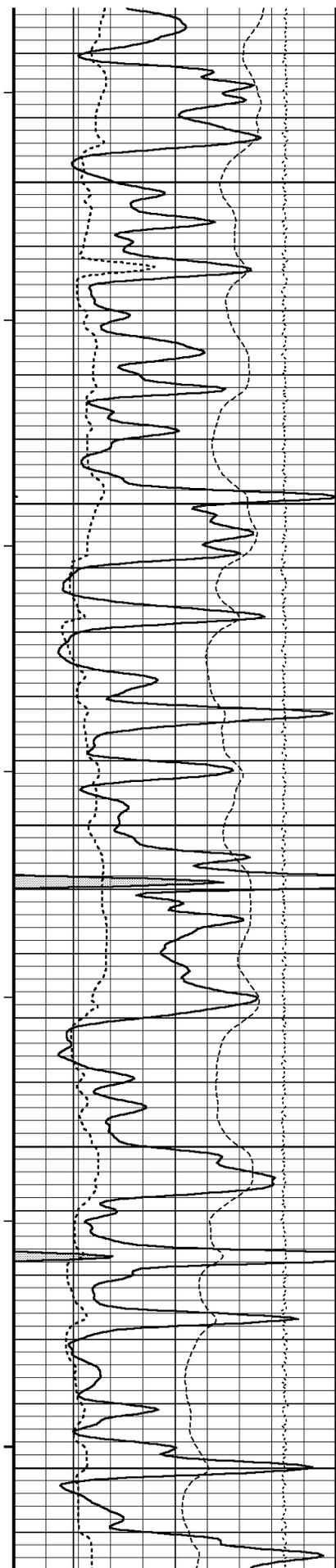
REMARKS

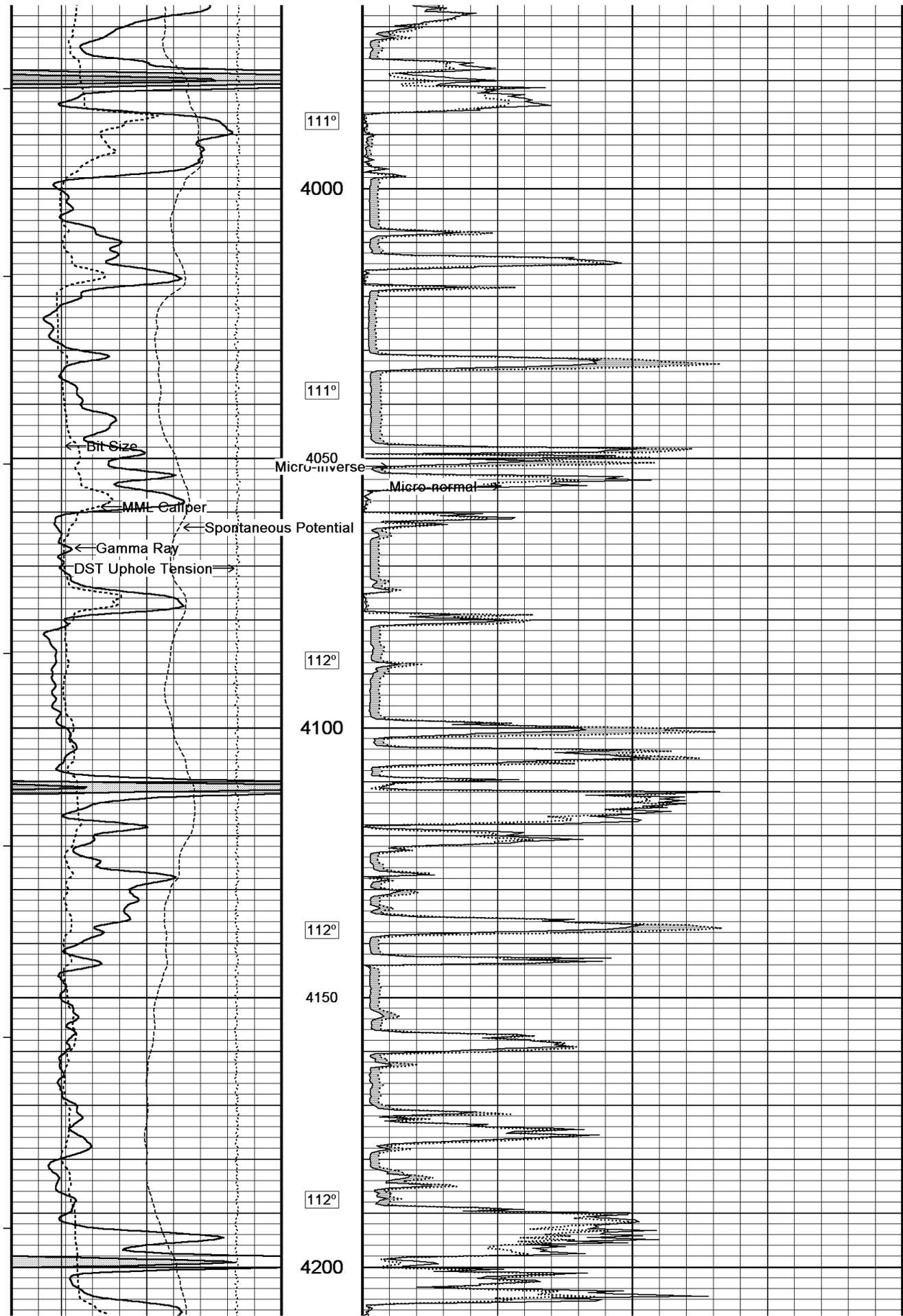
Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MAI, MSS.
 Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE MSS and MAI 0.5 inch standoffs used.
 2.71 g/cc Limestone Density Matrix used to calculate porosity.
 Sonic porosity calculated using a Limestone scale (47.5 usec/ft).
 All intervals logged and scaled per customer's request.
 Annular volume with 5.5 inch production casing= 301 cu. ft.
 Service order #3529167
 Rig: Murfin #24
 Engineer: R. Hoffman
 Operator(s): N. Adame

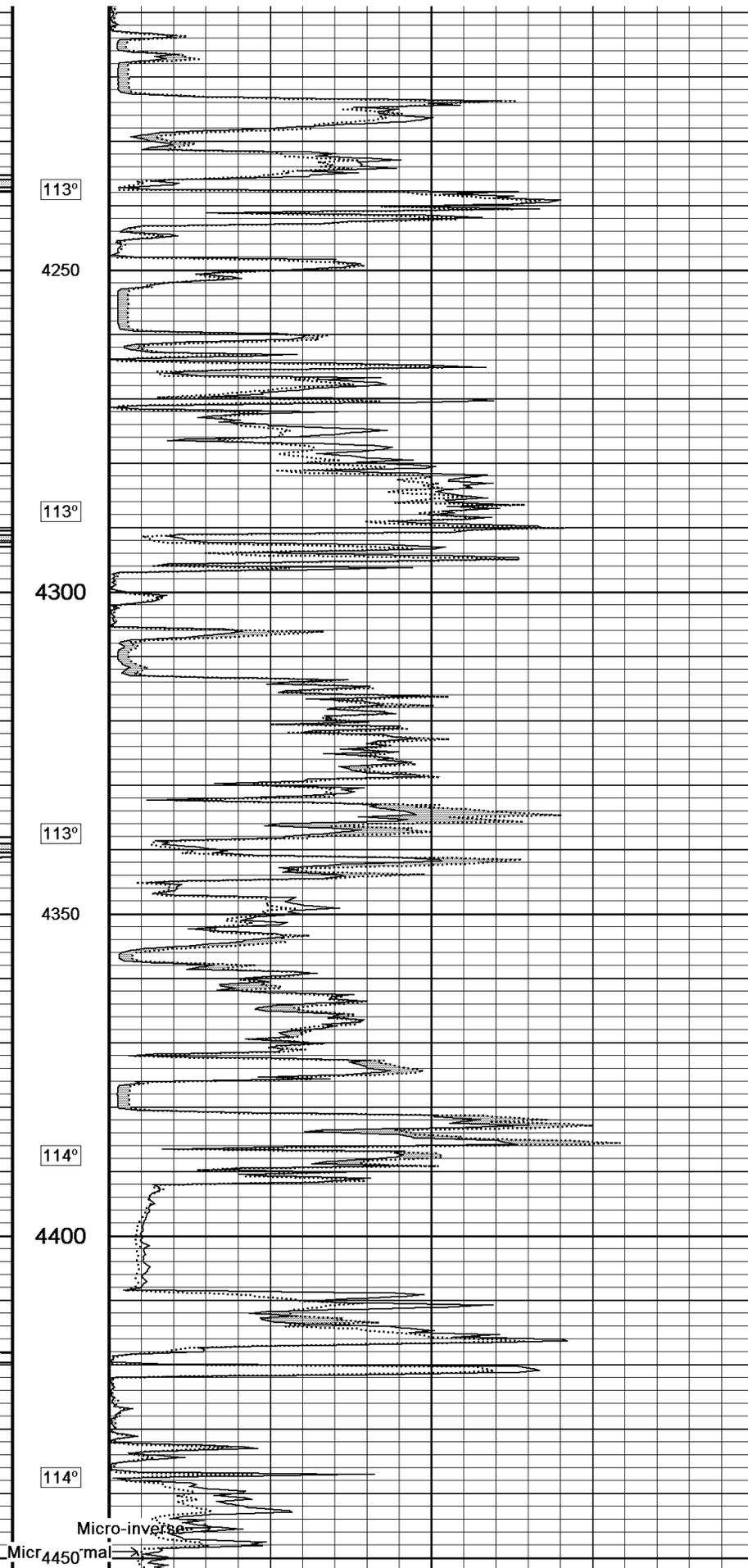
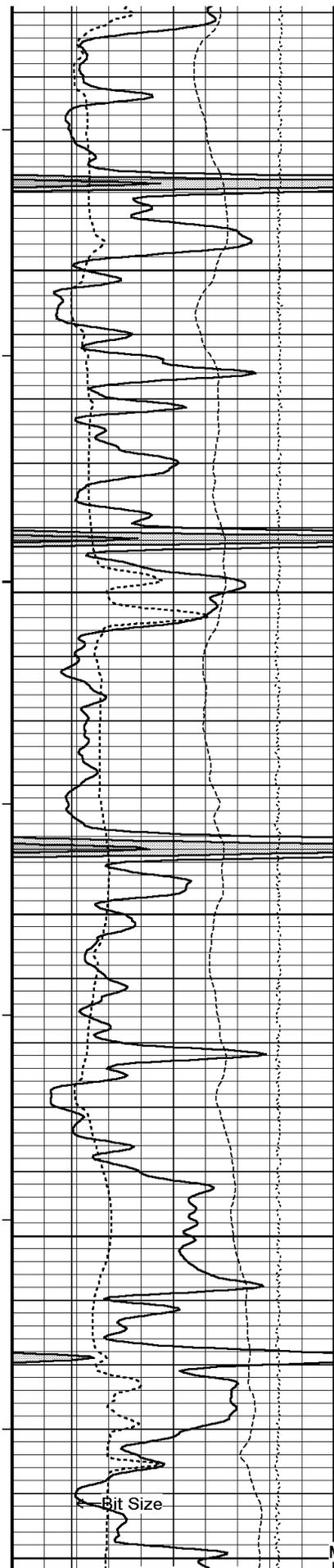
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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 in our price schedule.

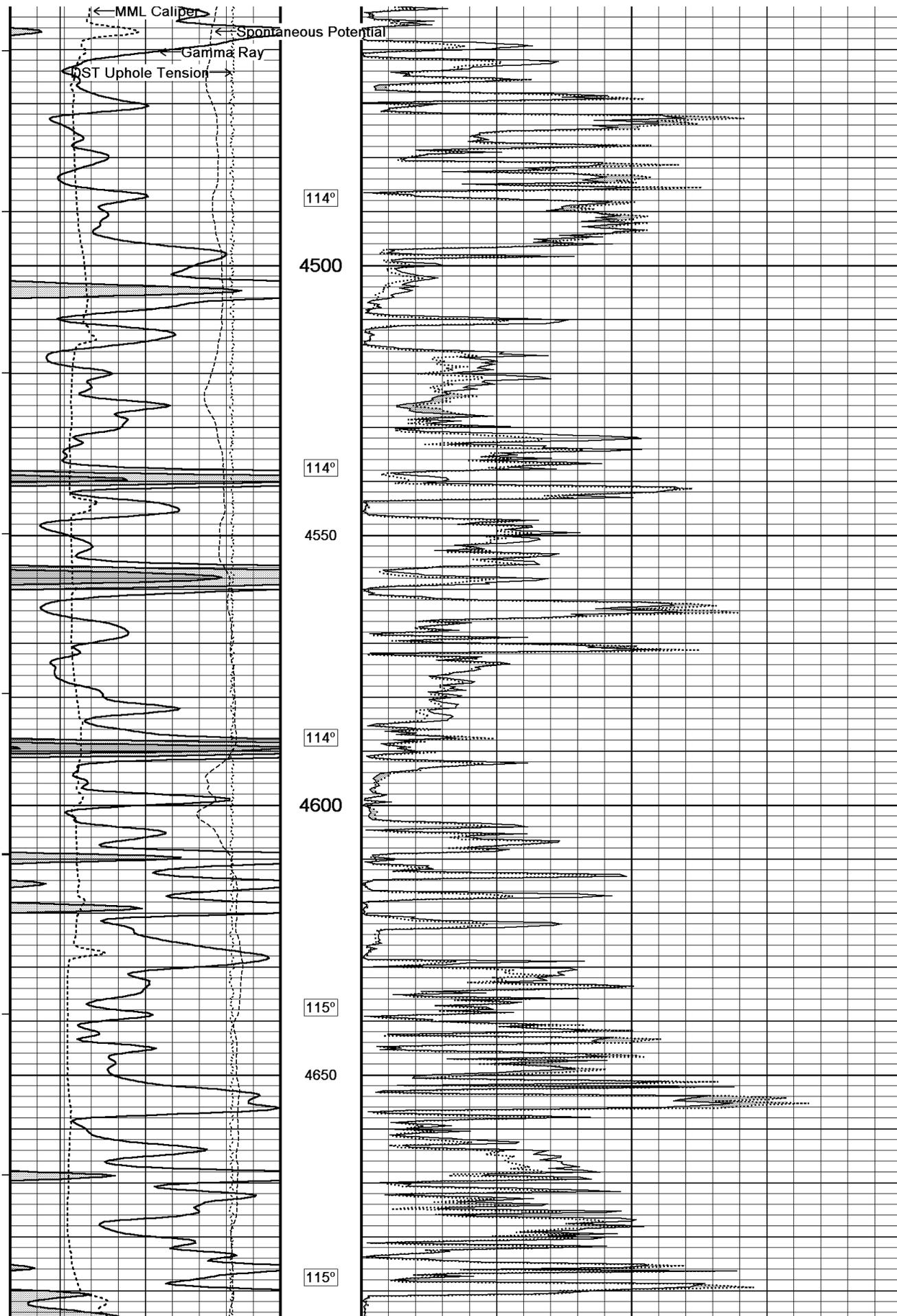
| 5 INCH MAIN PASS | |
|--|-------------------------------|
| Depth Based Data - Maximum Sampling Increment 10.0cm | Plotted on 23-JUN-2011 05:54 |
| Filename: C:\Minimus 11.02.3186\Data\Grand Mesa Dirks #1-4\Grand Mesa Dirks #1-4_002.dta | Recorded on 23-JUN-2011 02:56 |
| System Versions: Logged with 11.02.3186 | Plotted with 11.02.3186 |
| Depth in | Micro-normal |

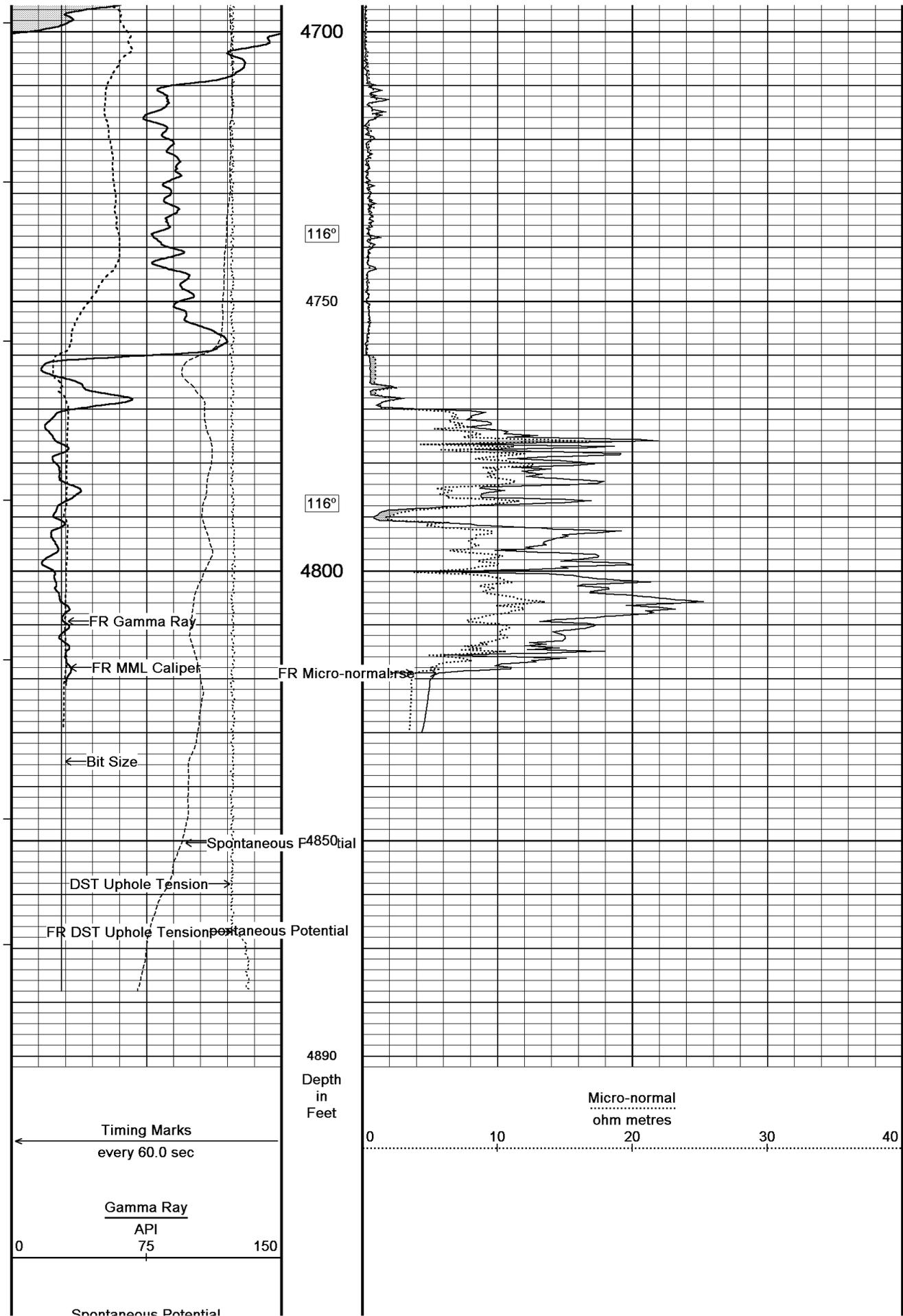


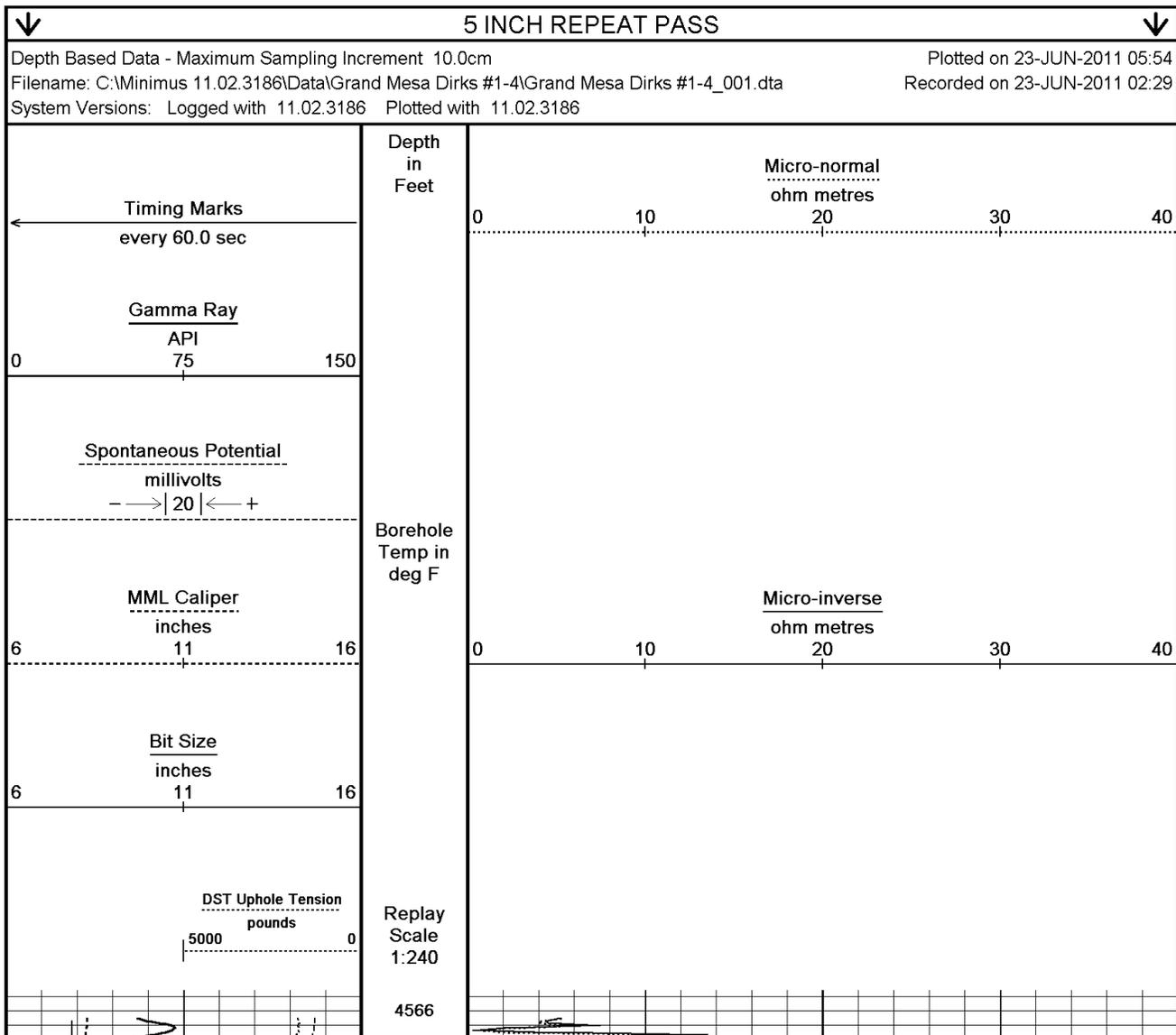
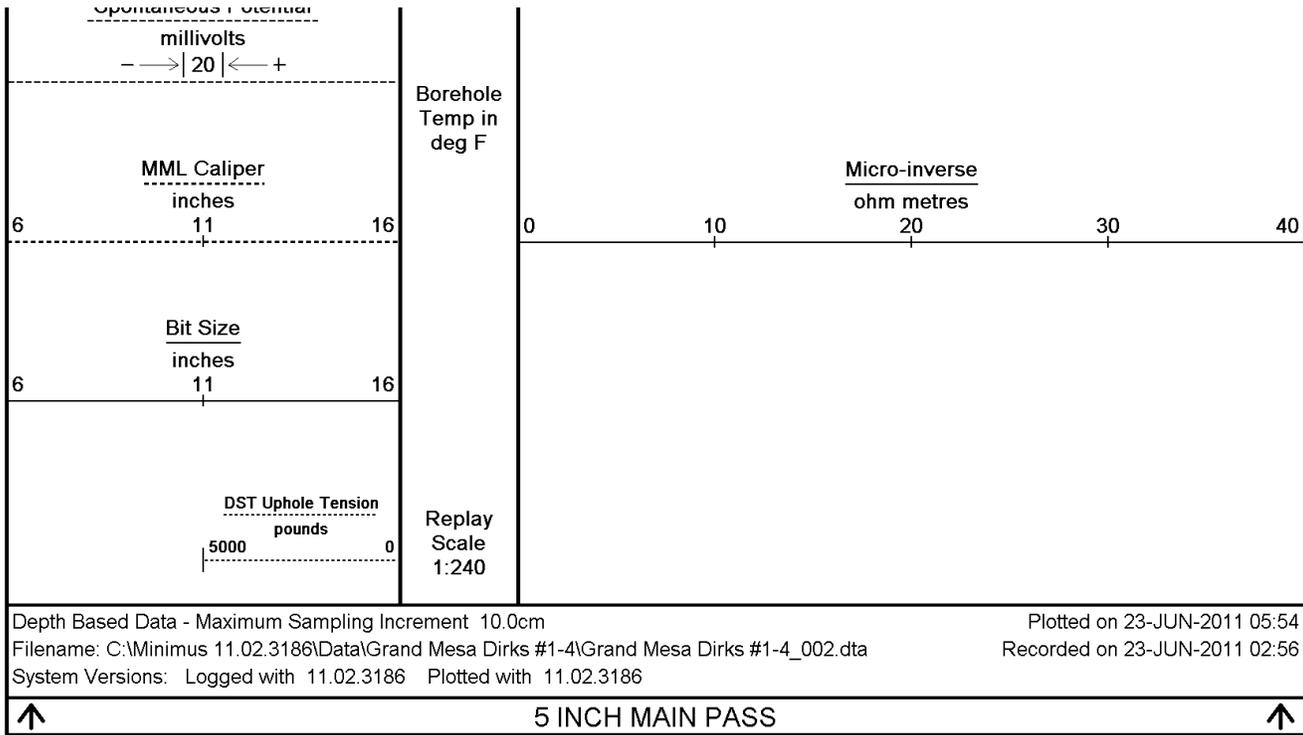


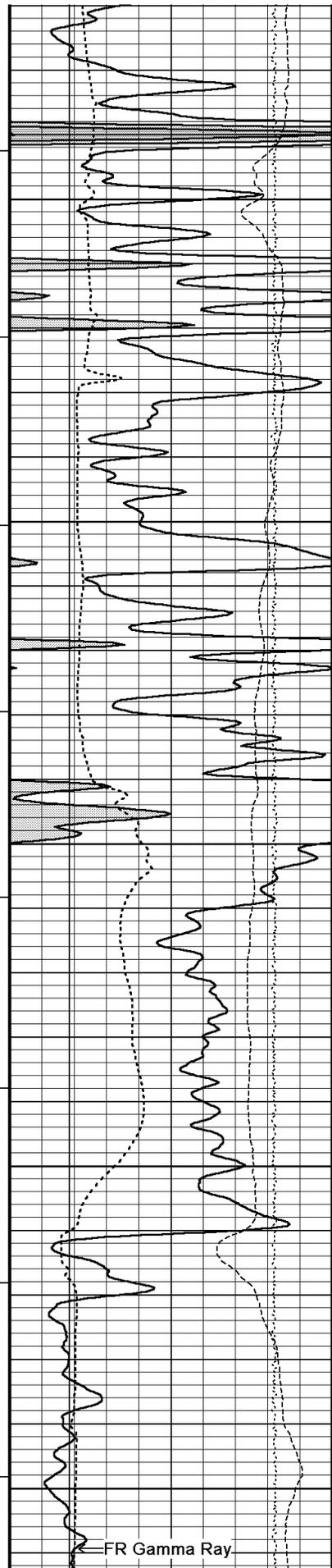












4600

114°

4650

114°

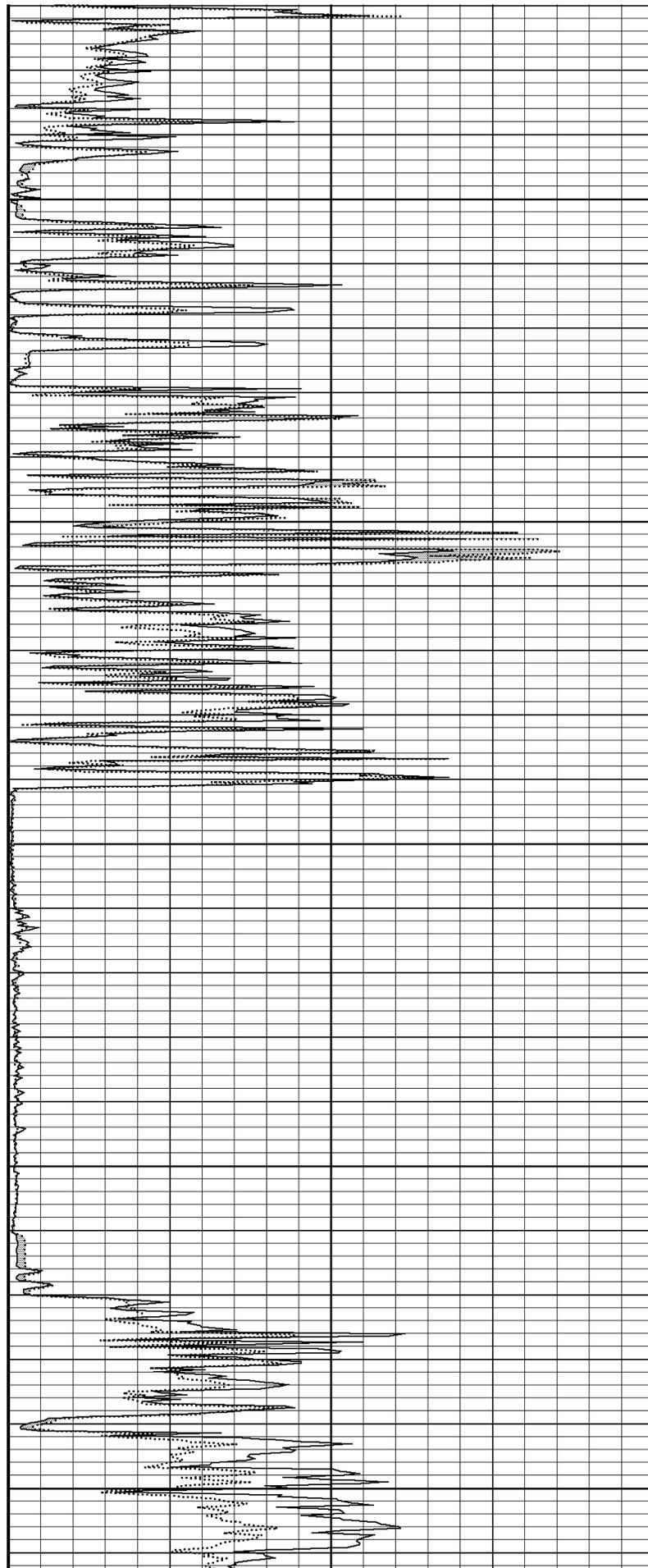
4700

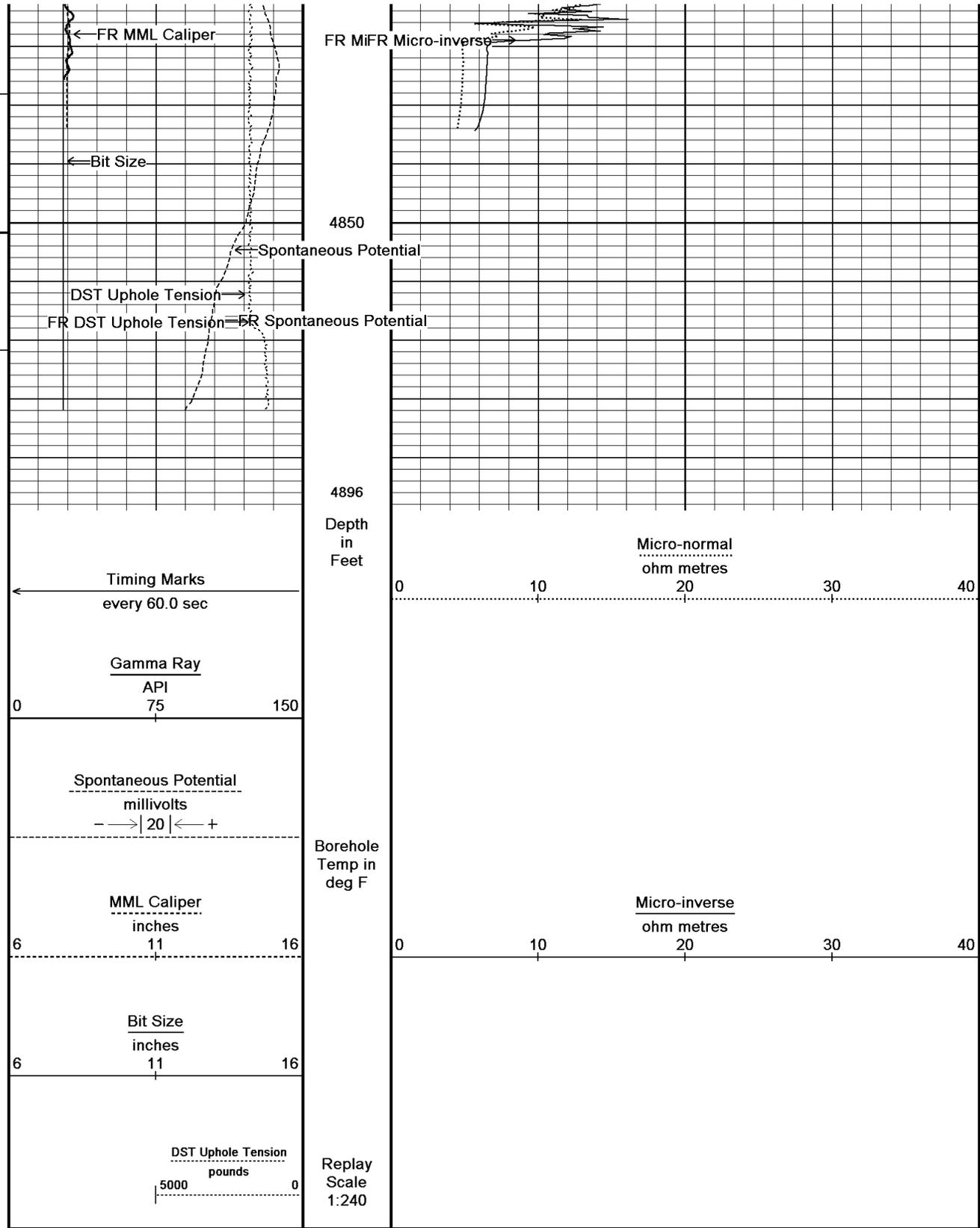
115°

4750

116°

4800





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 23-JUN-2011 05:54
 Filename: C:\Minimus 11.02.3186\Data\Grand Mesa Dirks #1-4\Grand Mesa Dirks #1-4_001.dta Recorded on 23-JUN-2011 02:29
 System Versions: Logged with 11.02.3186 Plotted with 11.02.3186

↑ 5 INCH REPEAT PASS ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 11.02.3186\Data\Grand Mesa Dirks #1-4\Grand Mesa Dirks #1-4_002.dta
 General Constants All 000 Last Edited on 22-11-2011 23:31

General Parameters
 Mud Resistivity 0.450 ohm-metres
 Mud Resistivity Temperature 93.000 degrees F
 Water Level 0.000 feet
 Density/Neutron Processing Wet Hole

Hole/Annular Volume and Differential Caliper Parameters
 HVOL Method Single Caliper
 HVOL Caliper 1 Density Caliper
 HVOL Caliper 2 N/A
 Annular Volume Diameter 5.500 inches
 Caliper for Differential Caliper Density Caliper

Rwa Parameters
 Porosity used Base Density Porosity
 Resistivity used Array Ind. One Res Rt
 RWA Constant A 0.610
 RWA Constant M 2.150

Gamma Calibration MCG-B 34 Field Calibration on 15-JUN-2011 08:26

| | Measured | Calibrated (API) |
|--------------------|----------|------------------|
| Background | 57 | 39 |
| Calibrator (Gross) | 1112 | 764 |
| Calibrator (Net) | 1055 | 725 |

Gamma Constants MCG-B 34 Last Edited on 22-JUN-2011,23:30

Gamma Calibrator Number grc38
 Mud Density 1.10 gm/cc
 Caliper Source for Processing Density Caliper
 Tool Position Eccentred
 Concentration of KCl 0.00 kppm

High Resolution Temperature Calibration MCG-B 34 Field Calibration on 05-MAR-2011,23:56

| | Measured | Calibrated(Deg F) |
|-------|----------|-------------------|
| Lower | 50.00 | 50.00 |
| Upper | 75.00 | 75.00 |

High Resolution Temperature Constants MCG-B 34 Last Edited on

Pre-filter Length 11

Caliper Calibration MML-A 4 Base Calibration on 16-MAY-2011 09:38
Field Calibration on 15-JUN-2011 08:44

Base Calibration

| Reading No | Measured | Calibrator Size (in) |
|------------|----------|----------------------|
| 1 | 14953 | 5.98 |
| 2 | 18280 | 7.97 |
| 3 | 21656 | 9.86 |
| 4 | 25588 | 11.92 |
| 5 | 0 | 0.00 |
| 6 | N/A | N/A |

Field Calibration

| Measured Caliper (in) | Actual Caliper (in) |
|-----------------------|---------------------|
| 6.01 | 5.98 |

Micro Normal and Micro Inverse Calibration MML-A 4 Base Calibration on 16-MAY-2011 09:23
Field Check on 15-JUN-2011 08:27

Base Calibration

| Channel | Measured | | Calibrated (ohm-m) | |
|---------------|------------|------------|--------------------|------------|
| | Resistor 1 | Resistor 2 | Resistor 1 | Resistor 2 |
| Micro Normal | 12.1 | 60.1 | 2.6 | 12.8 |
| Micro Inverse | 15.6 | 78.3 | 1.7 | 8.4 |

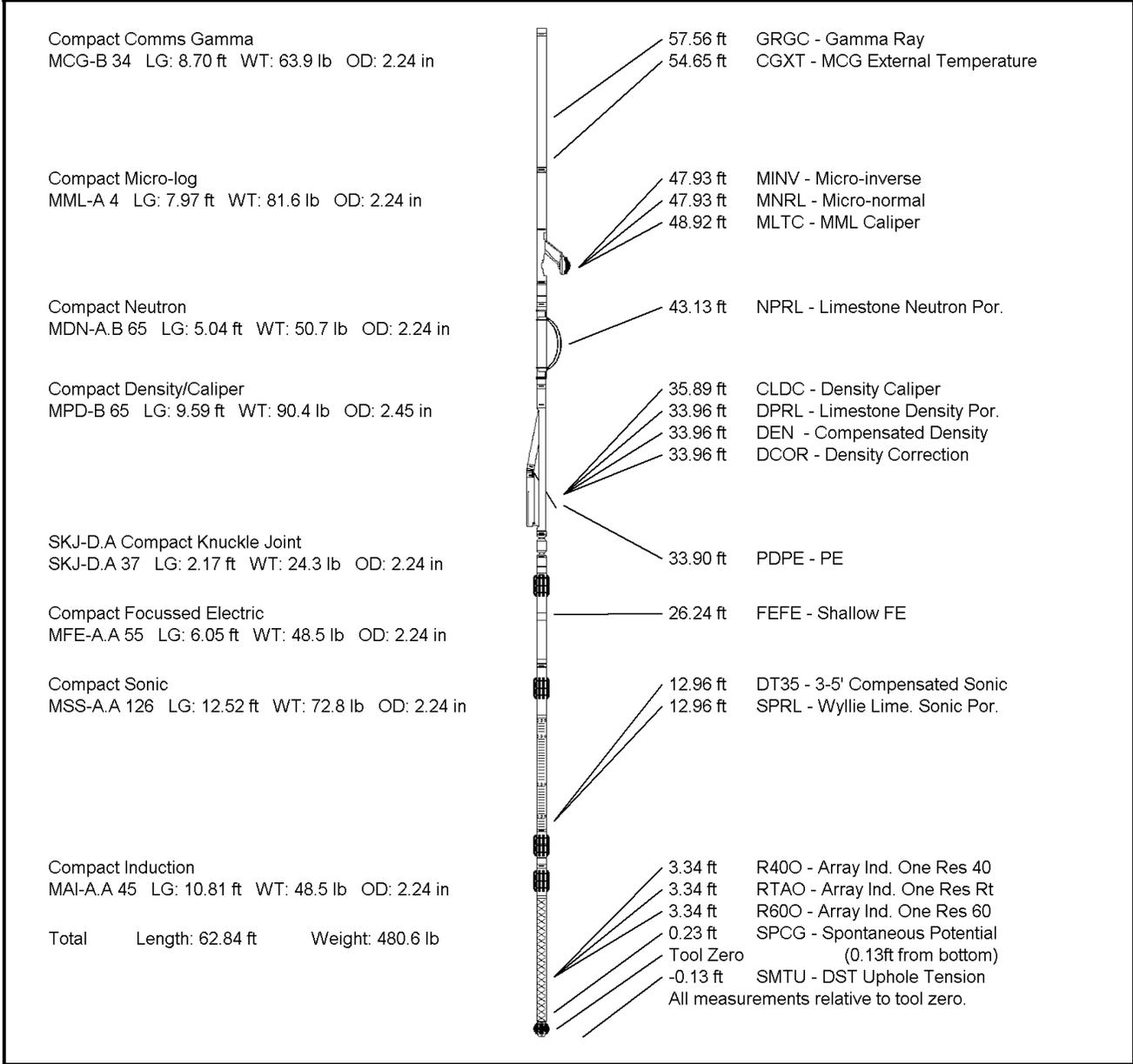
| Channel | Base Check (ohm-m) | Field Check (ohm-m) |
|---------------|--------------------|---------------------|
| Micro Normal | 32.2 | 32.2 |
| Micro Inverse | 16.3 | 16.3 |

Micro Normal and Micro Inverse Constants MML-A 4 Last Edited on 19-JUN-2011,16:09

Pad Type 8-12 in Soft Rubber Inflatable 006-9011-159
 Micro Normal K Factor 0.5110
 Micro Inverse K Factor 0.3380
 Standoff Offset N/A inches

DOWNHOLE EQUIPMENT

C:\Minimus 11.02.3186\Data\Grand Mesa Dirks #1-4\Grand Mesa Dirks #1-4_002.dta



| | | | | | |
|-------------------------|-----------------------------|------|---------------|---------|------|
| COMPANY | GRAND MESA OPERATING | | | | |
| WELL | DIRKS #1-4 | | | | |
| FIELD | WILDCAT | | | | |
| PROVINCE/COUNTY | SCOTT | | | | |
| COUNTRY/STATE | U.S.A. / KANSAS | | | | |
| Elevation Kelly Bushing | 3068.00 | feet | First Reading | 4819.00 | feet |
| Elevation Drill Floor | 3066.00 | feet | Depth Driller | 4870.00 | feet |
| Elevation Ground Level | 3063.00 | feet | Depth Logger | 4867.00 | feet |



Weatherford®

MICRORESISTIVITY LOG

