Weatherford®

# CML MESSENGER SHUTTLE
# ARRAY INDUCTION
# PHOTO DENSITY & NEUTRON LOG

| | |
|---|---|
| COMPANY | SEPCO |
| WELL | SIEGRIST 2207 7-1H |
| FIELD | WILDCAT |
| PROVINCE/COUNTY | RENO |
| COUNTRY/STATE | USA / KANSAS |
| LOCATION | 280' FSL & 235' FEL |

| SEC | TWP | RGE | Other Services |
|---|---|---|---|
| 7 | 22S | 7W | |

API Number 15155216240100
Permit Number

Permanent Datum G.L., Elevation 1602 feet
Log Measured From DF
Drilling Measured From D.F. @ 23 FEET

| Elevations: | feet |
|---|---|
| KB | 1625.00 |
| DF | 1625.00 |
| GL | 1602.00 |

| | | | | |
|---|---|---|---|---|
| Date | 07-APR-2013 | | | |
| Run Number | DESCENT 1 | | | |
| Service Order | 3539409 | | | |
| Depth Driller | 8020.00 | feet | | |
| Depth Logger | 8020.00 | feet | | |
| First Reading | 7988.00 | feet | | |
| Last Reading | 3880.00 | feet | | |
| Casing Driller | 3880.00 | feet | | |
| Casing Logger | 3880.00 | feet | | |
| Bit Size | 6.125 | inches | | |
| Hole Fluid Type | WATER | | | |
| Density / Viscosity | 8.50 g/c3 | 32.00 CP | | |
| PH / Fluid Loss | 7.90 | | | |
| Sample Source | FLOWLINE | | | |
| Rm @ Measured Temp | 2.0 @ 66.0 | ohm-m | | |
| Rmf @ Measured Temp | 2.05 @ 66.0 | ohm-m | | |
| Rmc @ Measured Temp | 2.60 @ 66.0 | ohm-m | | |
| Source Rmf / Rmc | MEASURED | MEASURED | | |
| Rm @ BHT | 1.18 @111.0 | ohm-m | | |
| Time Since Circulation | 0 HOURS | | | |
| Max Recorded Temp | 111.00 | deg F | | |
| Equipment / Base | 18006 | OKC | | |
| Recorded By | D. ROWELL | | | |
| Witnessed By | A. LATIFZAI | | | |
| AFE # | 30176614 | | | |

## BOREHOLE RECORD

Last Edited: 07-APR-2013 19:40

| Bit Size inches | Depth From feet | Depth To feet |
|---|---|---|
| 6.125 | 3880.00 | 8020.00 |

## CASING RECORD

| Type | Size inches | Depth From feet | Shoe Depth feet | Weight pounds/ft |
|---|---|---|---|---|
| INTERMED | 7.000 | 0.00 | 3880.00 | 26.00 |

## REMARKS

ALL LOGS WERE SET TO THE STRAP DEPTH

DRILL PIPE DEPTH DURING DEPLOYMENT: 7886
LOGGING TOOL DEPTH AFTER DEPLOYMENT:7990

4.5" PRODUCTION CASING WAS USED TO CALCULATE AHV

CL = 2750 mg/L
NaCL = 3776.99 ppm (2750*1.6488*.0833)

7" CASING
DENSITY CALIPER IN CASING READ 6.207 INCHES AND WAS CORRECTED 0.69
IMAGE CALIPERS WILL BE CORRECTED PER PROCESSING.

LAT : 38.145573
LONG: 98.125705

OPERATORS: S. WORLEY, K. CHAFFIN
S.O.# 3539409
RIGI: NABORS 180



## RUN 1 / DESCENT 1

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8723\Data\EMAILS\28817 RTAP.dta
System Versions: Processed with 13.04.8492 Plotted with 13.04.8723

Plotted on 08-APR-2013 09:05
Recorded on 07-APR-2013 18:18

Timing Marks
every 60.0 sec

Depth In Feet

Array Ind. Six Res 20
ohm metres
0.20 — 1 — 10 — 100 — 2000 — 1000

Limestone Neutron Por.
percent
45 — 15 — -15

Density Caliper
inches
4 — 9 — 14

Array Ind. Six Res 40
ohm metres
0.20 — 1 — 10 — 100 — 2000 — 1000

Density Correction
grams/cc
-0.25 — 0 — 0.25

Borehole Temp in deg F

MGS Gamma Ray
API
0 — 75 — 150
150 — 225 — 300

Array Ind. Six Res Rt
ohm metres
0.20 — 1 — 10 — 100 — 2000 — 1000

Compensated Density
grams/cc
1.95 — 2.45 — 2.95

Bit Size
inches
4 — 9 — 14

Replay Scale 1:240

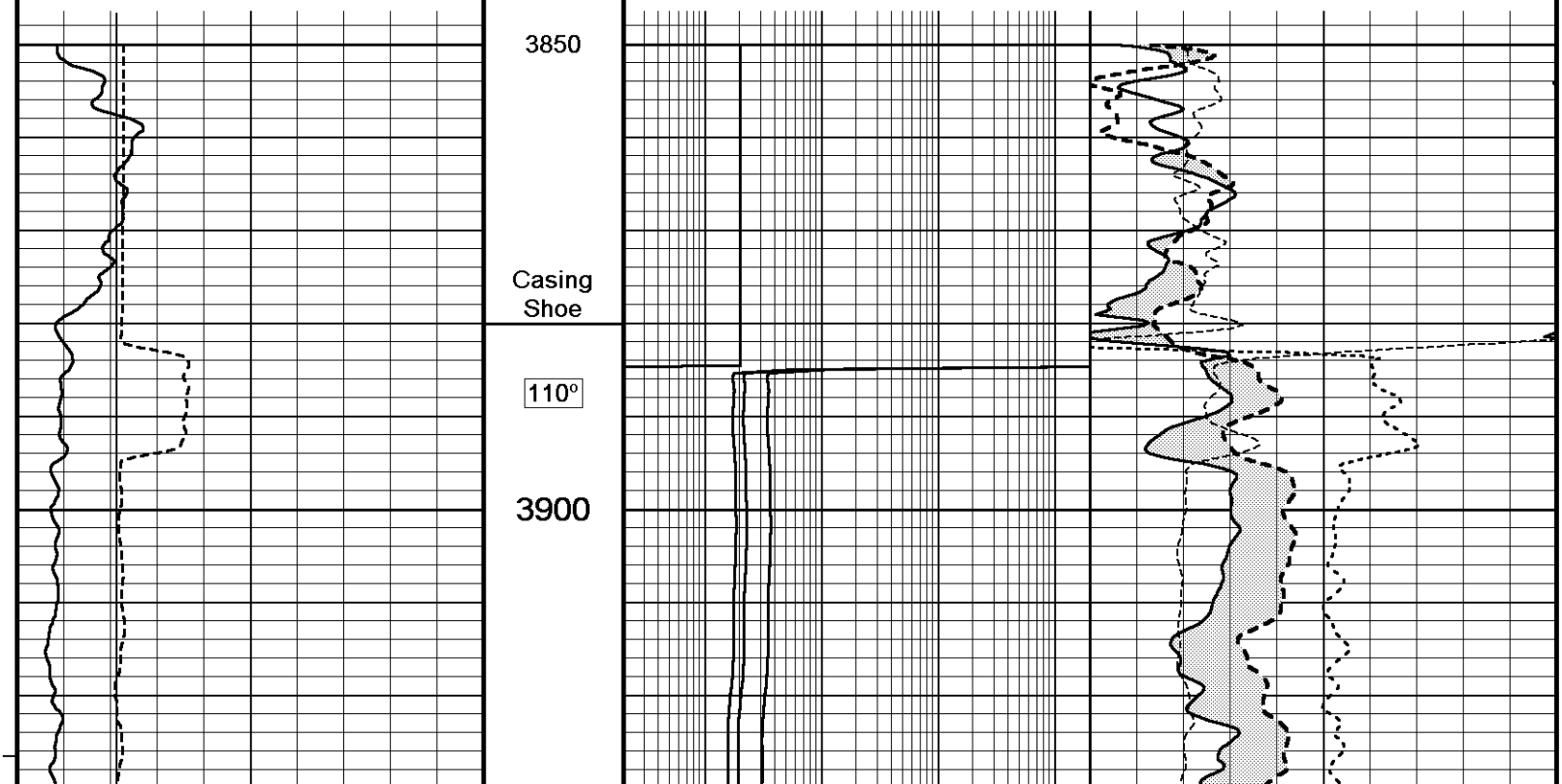
PE
barns/electron
0 — 5 — 10

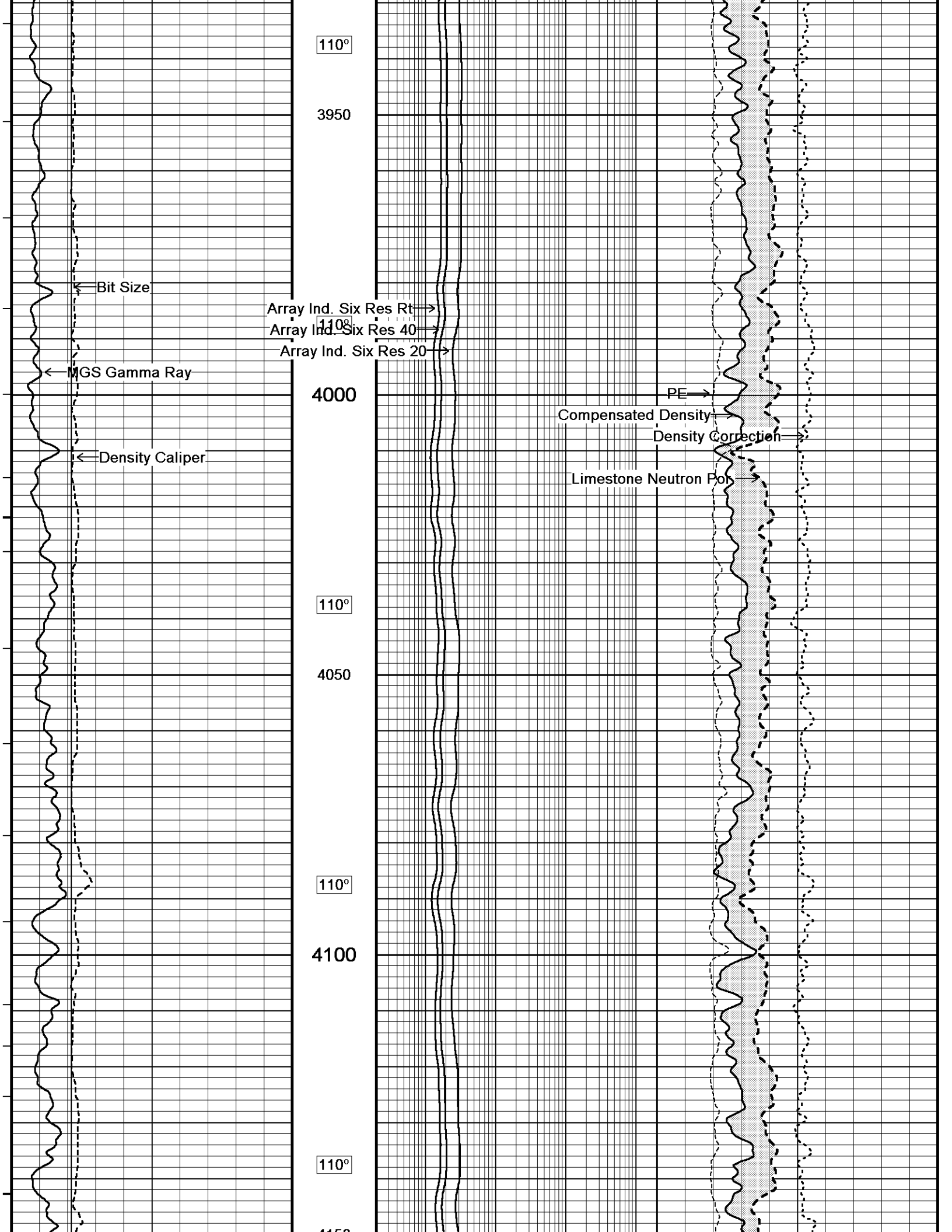
3850

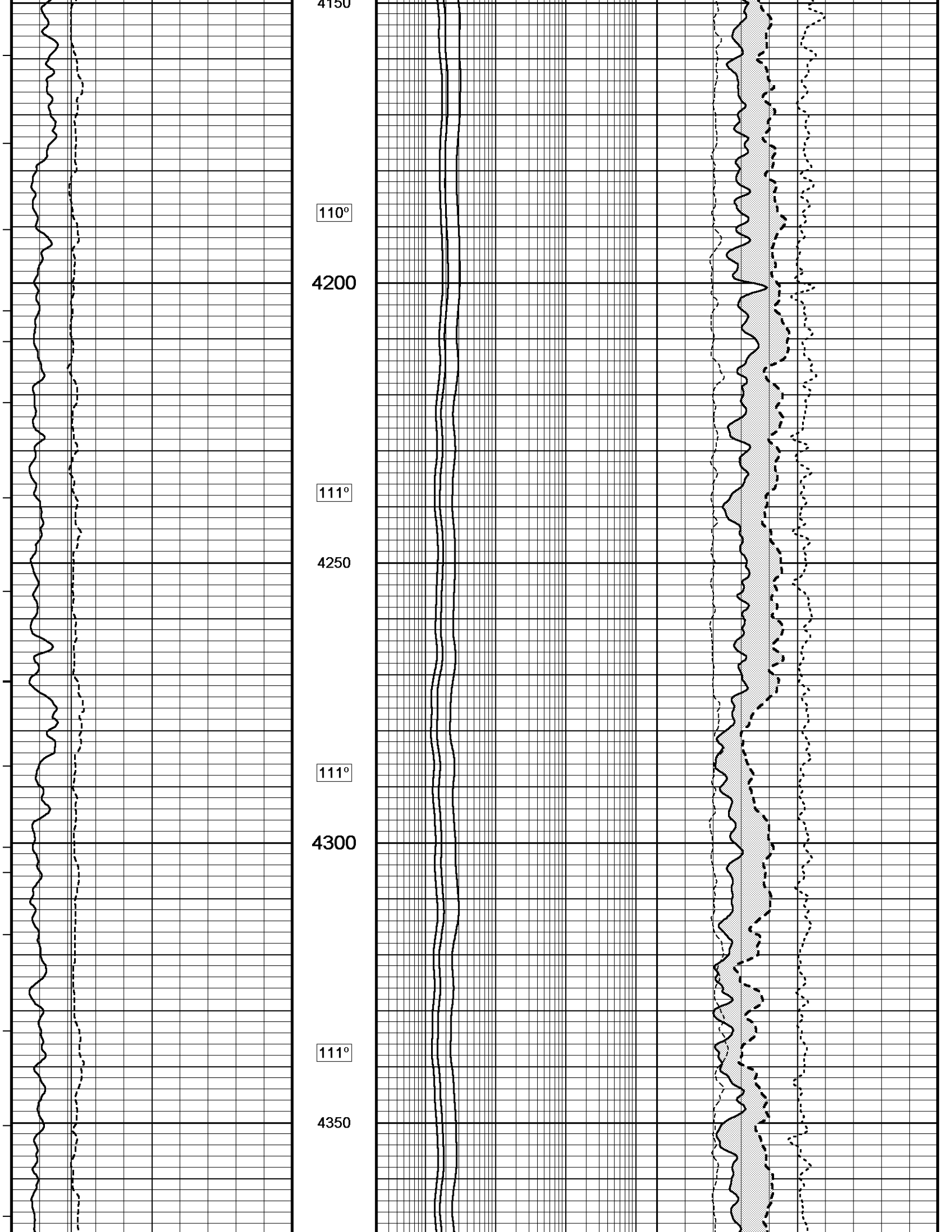
Casing Shoe

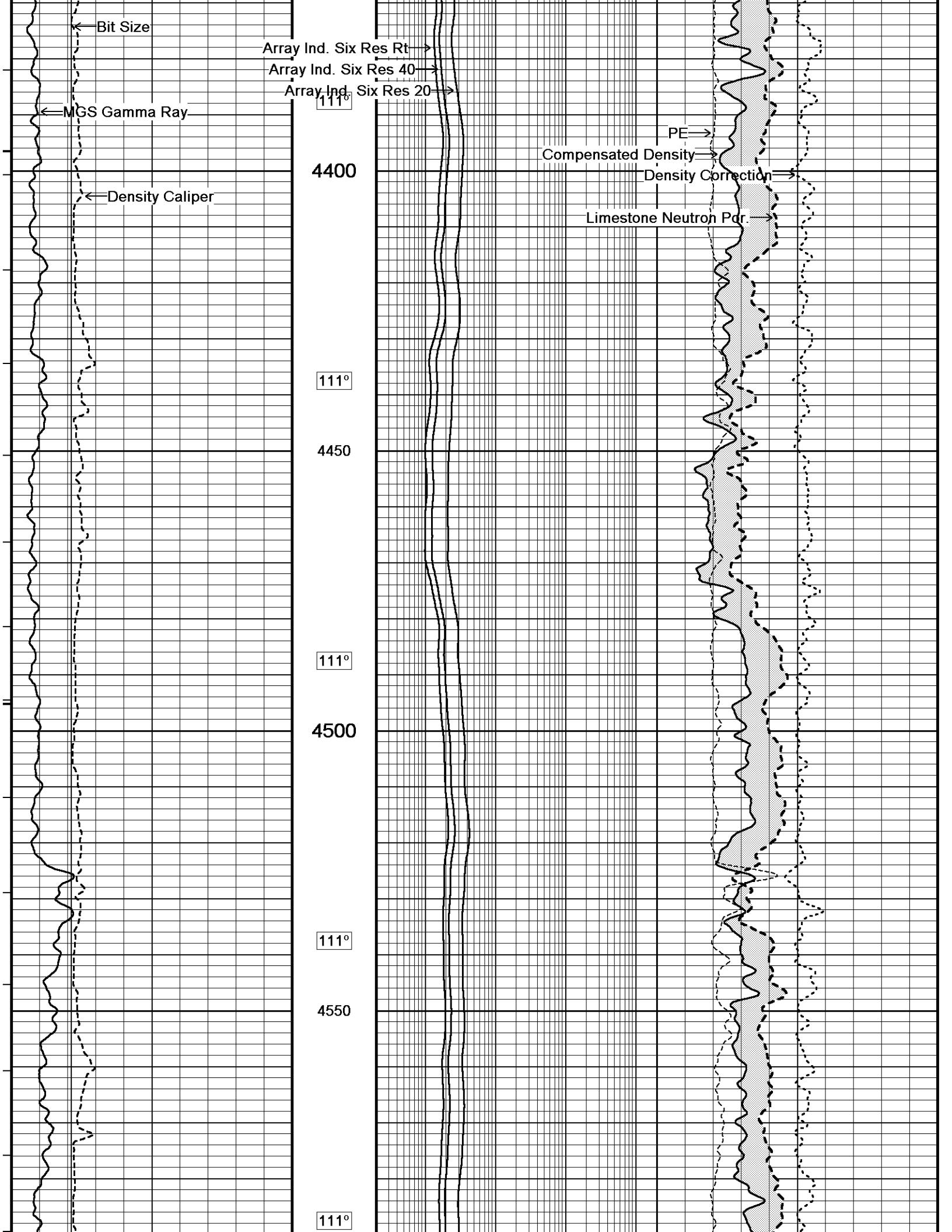
110°

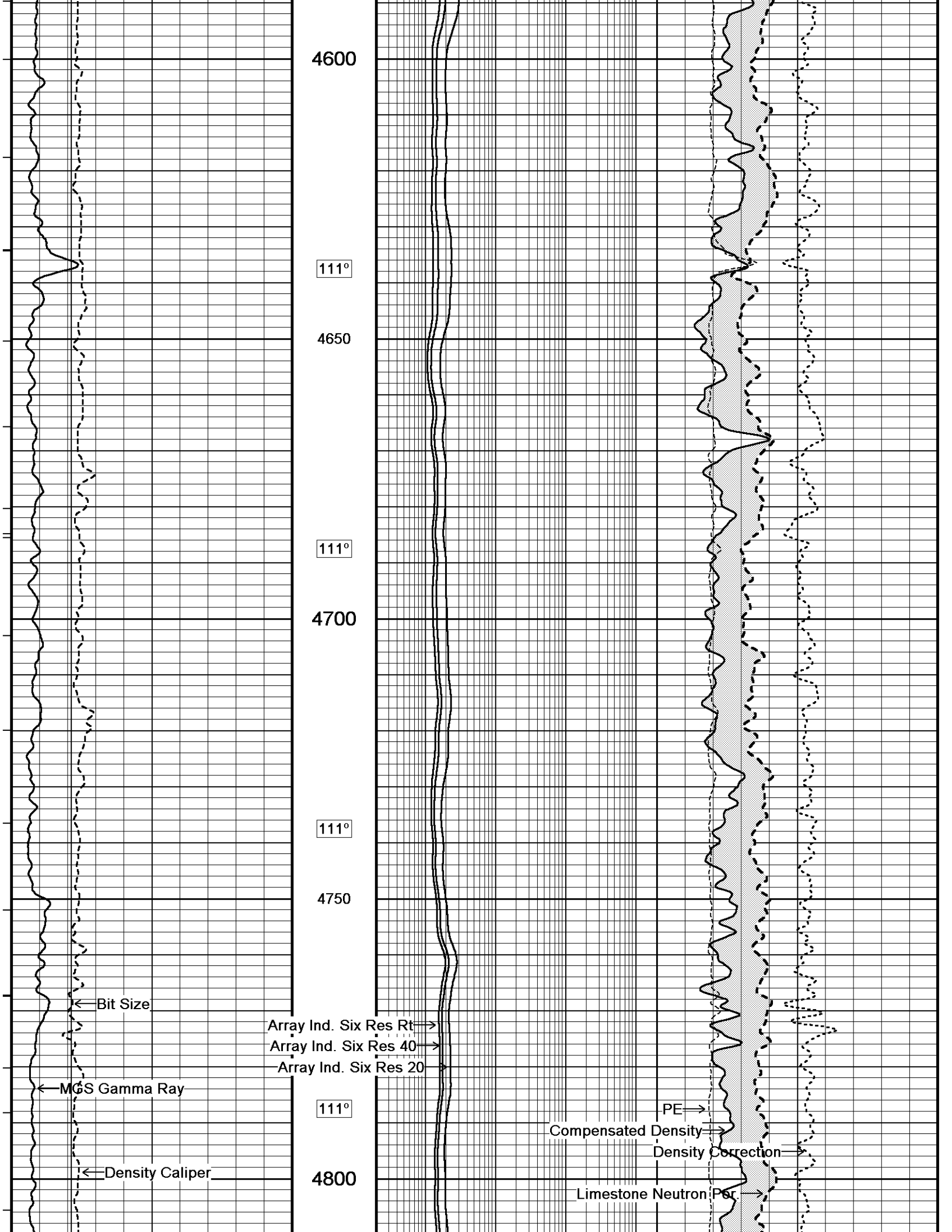
3900

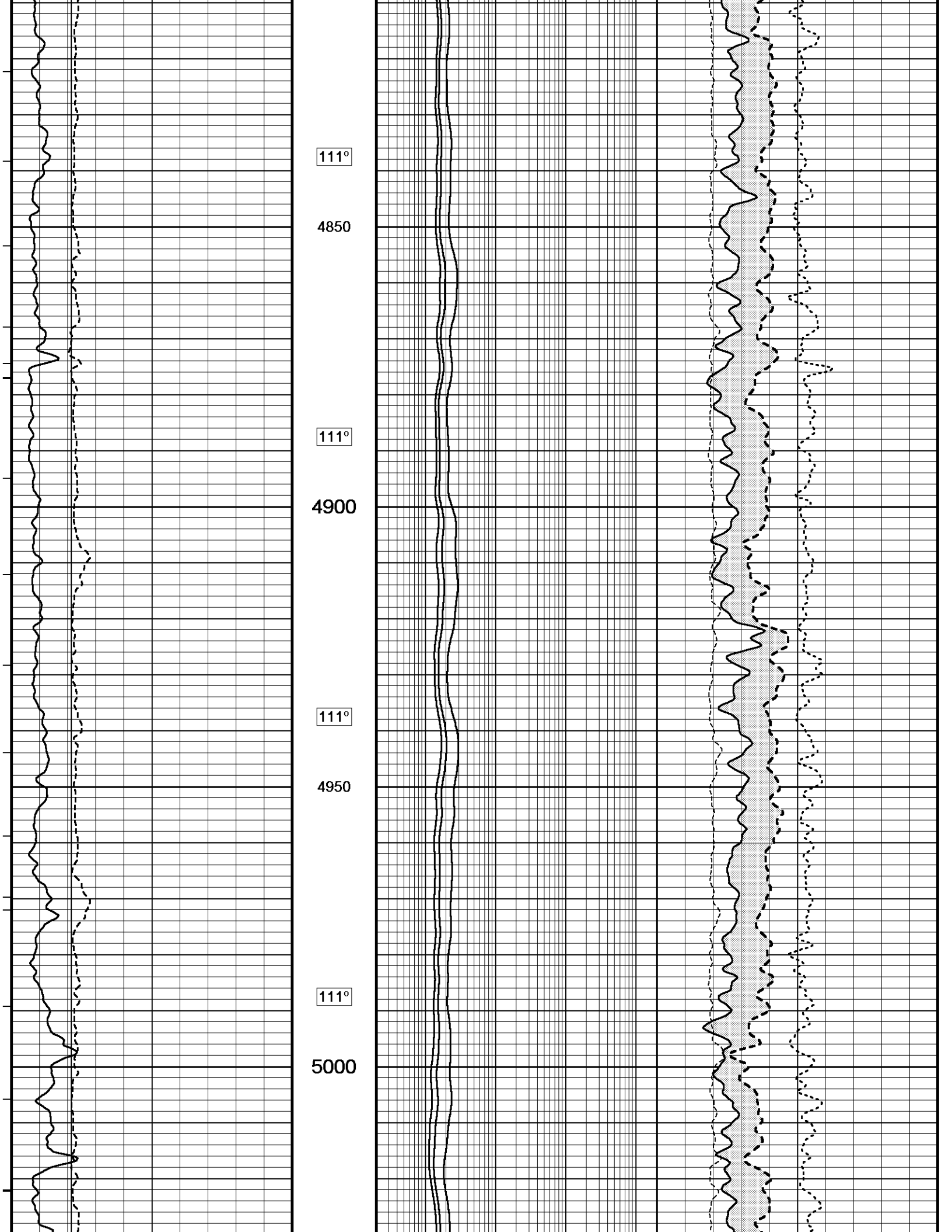


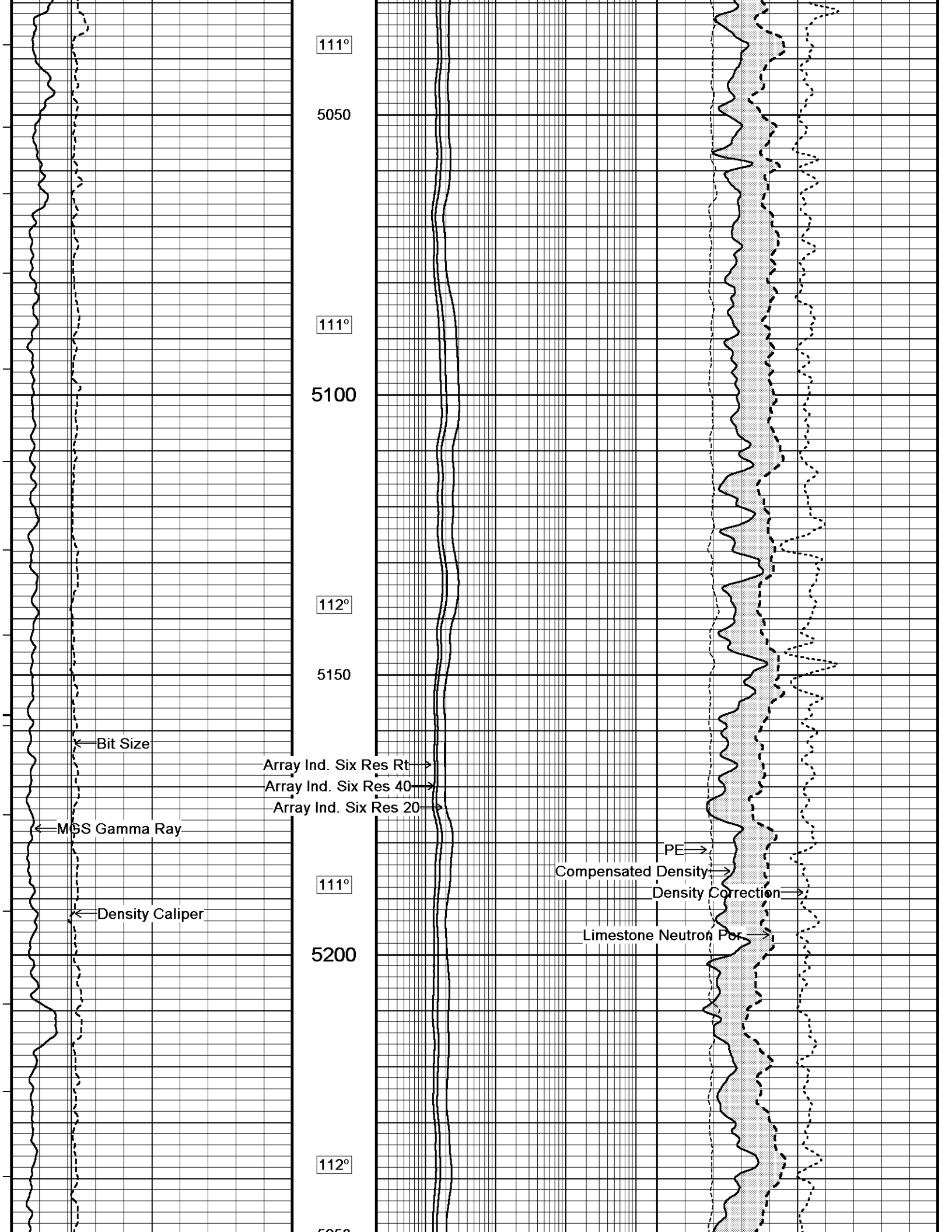

110°
3950
Bit Size
Array Ind. Six Res Rt
110°
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
4000
PE
Compensated Density
Density Correction
Density Caliper
Limestone Neutron Por
110°
4050
110°
4100
110°

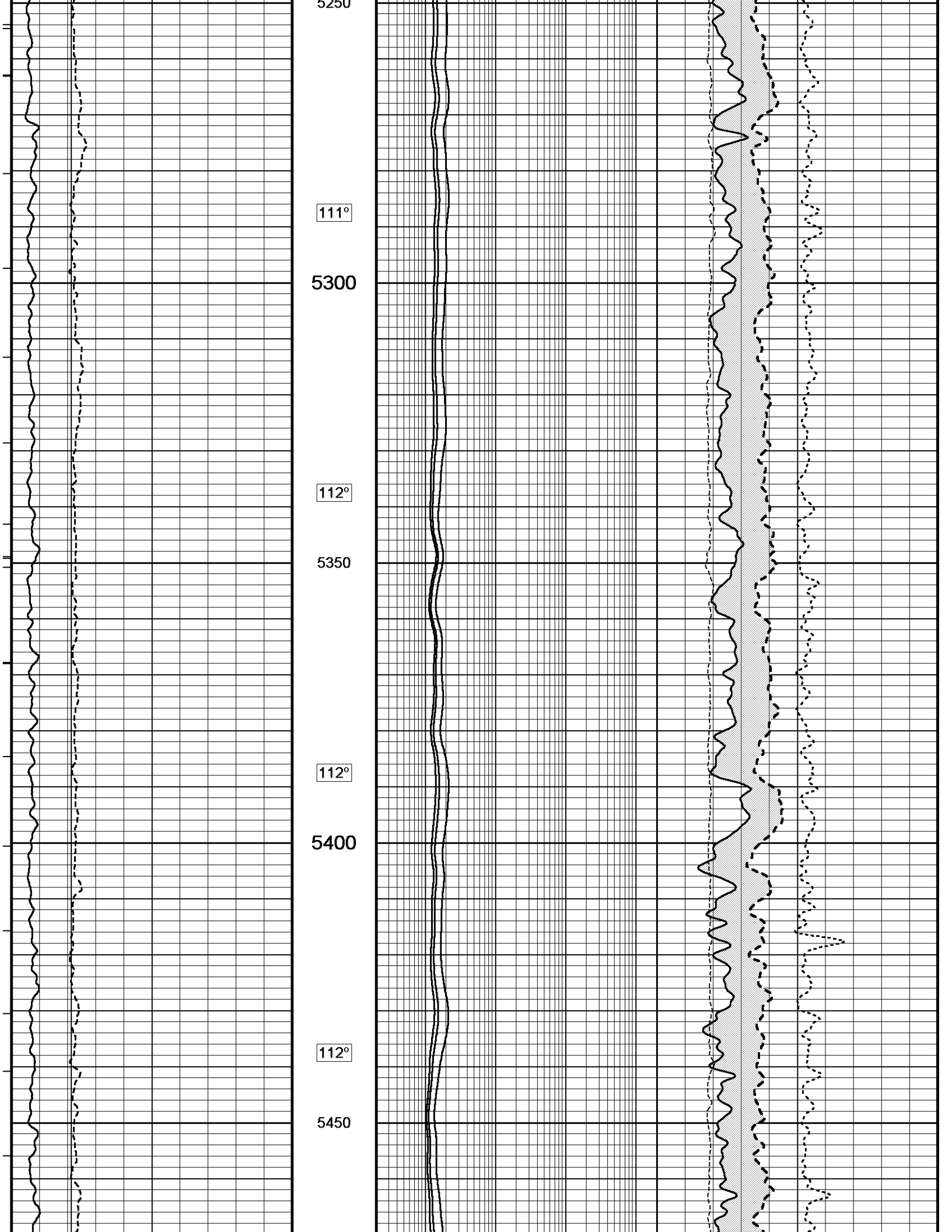

4150
110°
4200
111°
4250
111°
4300
111°
4350

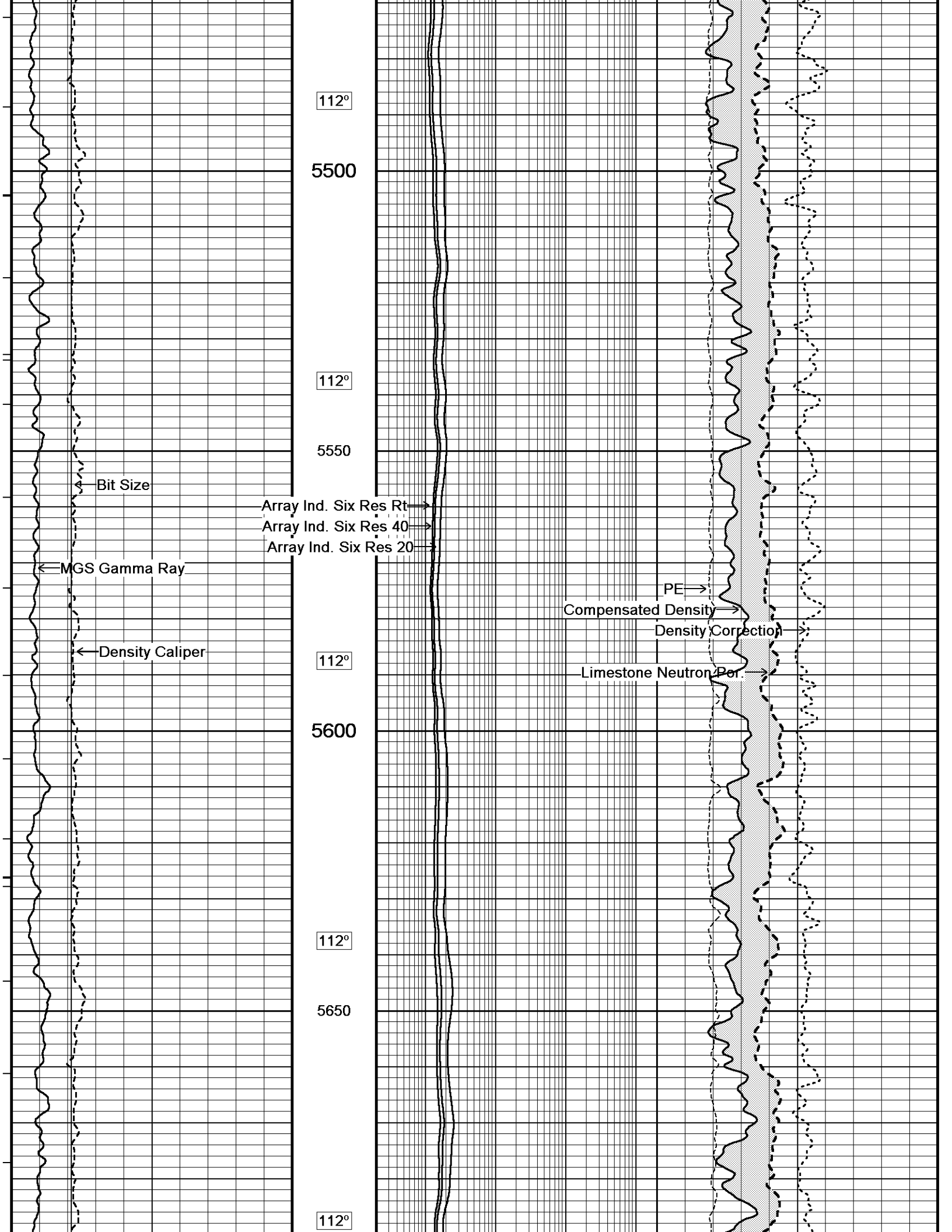

Bit Size
MGS Gamma Ray
Density Caliper
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
111°
4400
111°
4450
111°
4500
111°
4550
111°
PE
Compensated Density
Density Correction
Limestone Neutron Por.

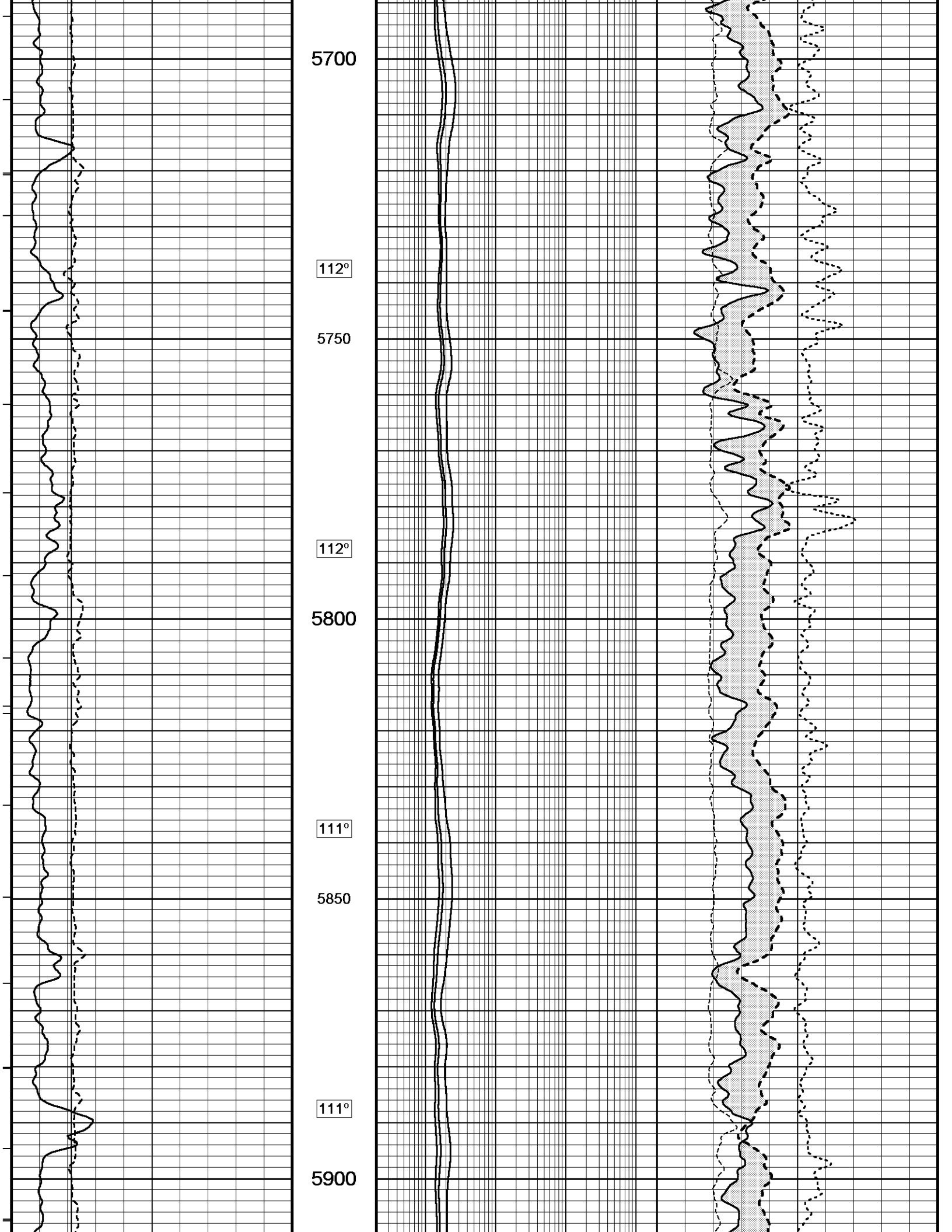

4600
111°
4650
111°
4700
111°
4750
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MCS Gamma Ray
111°
PE
Compensated Density
Density Correction
Density Caliper
4800
Limestone Neutron Por.

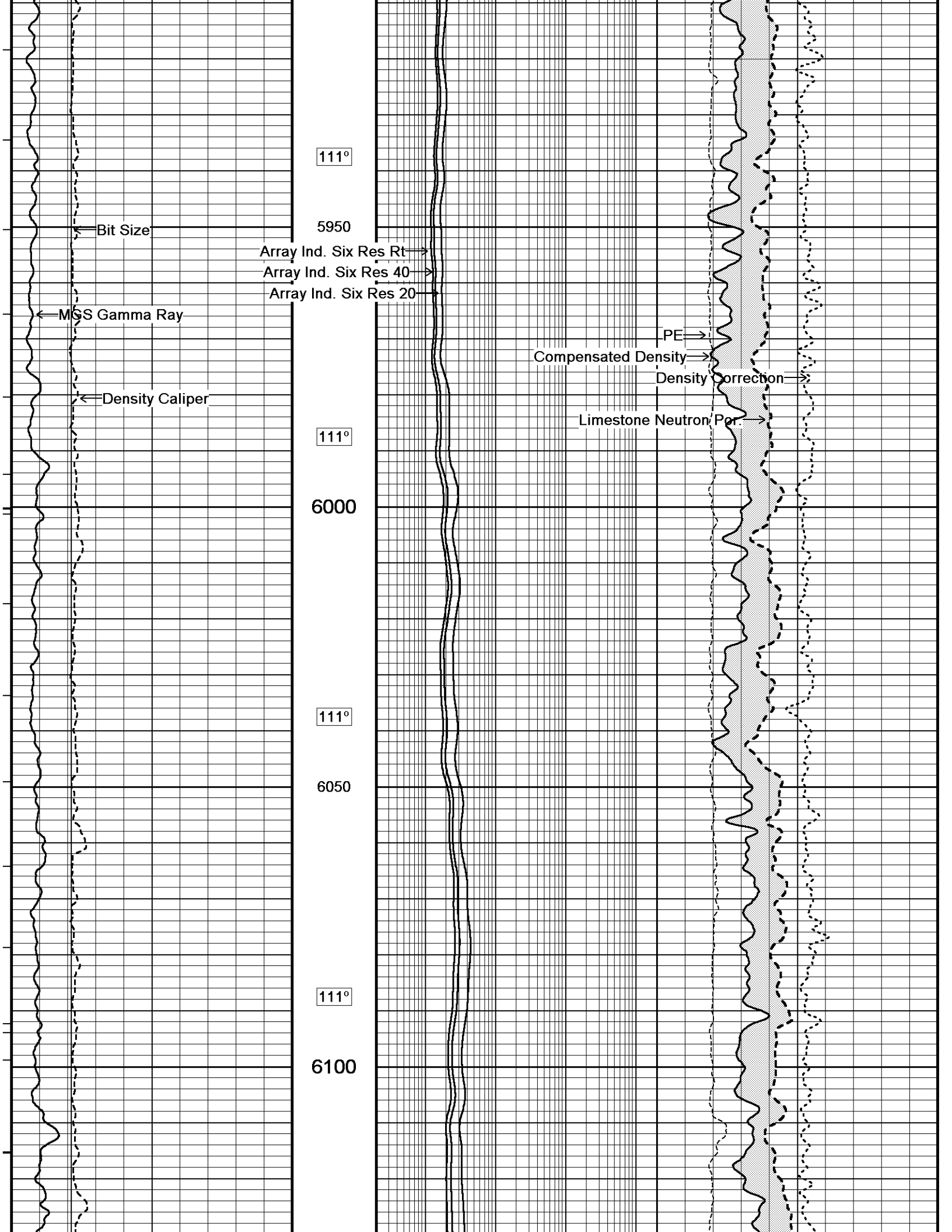

111°
4850
111°
4900
111°
4950
111°
5000

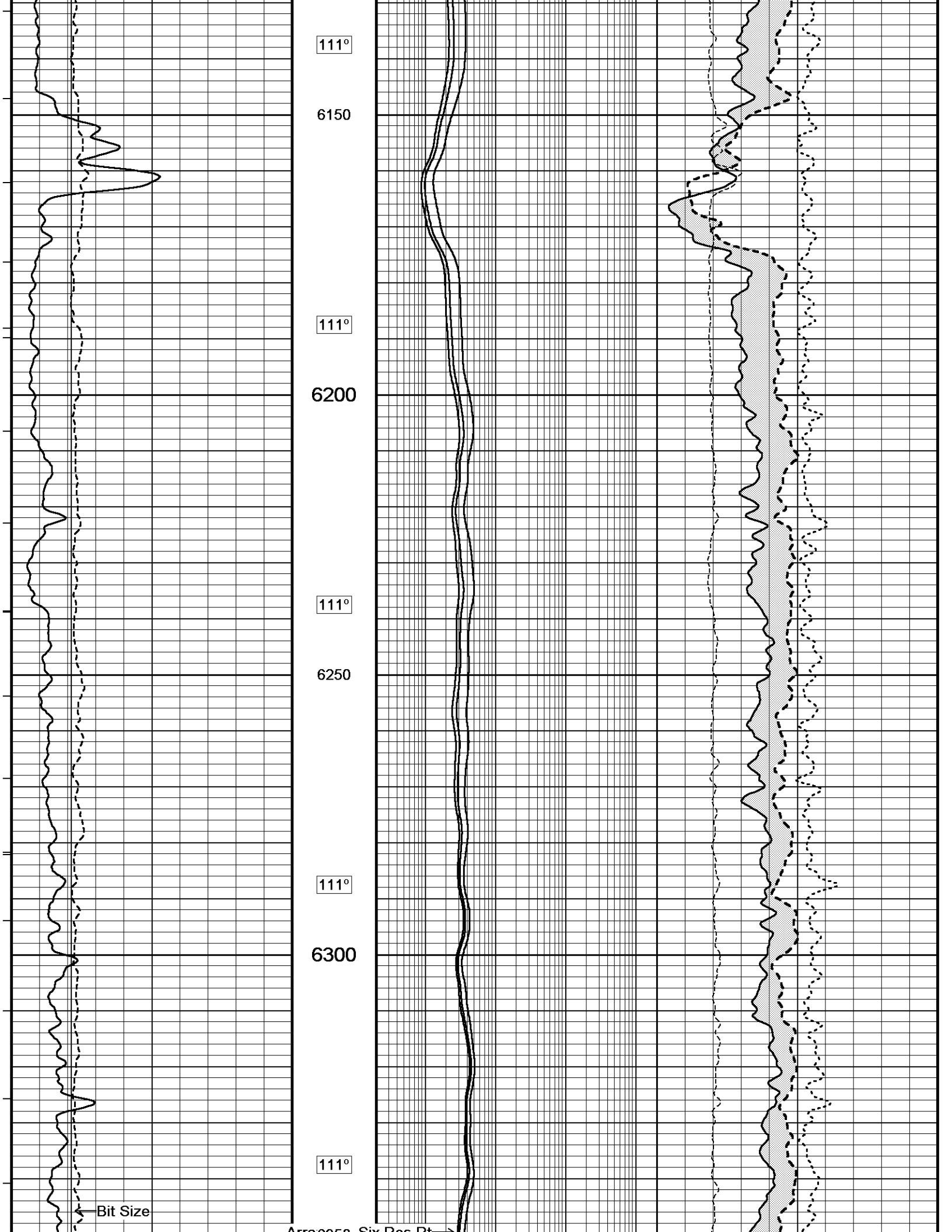

111°
5050
111°
5100
112°
5150
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
PE
Compensated Density
Density Correction
111°
Density Caliper
Limestone Neutron Por
5200
112°

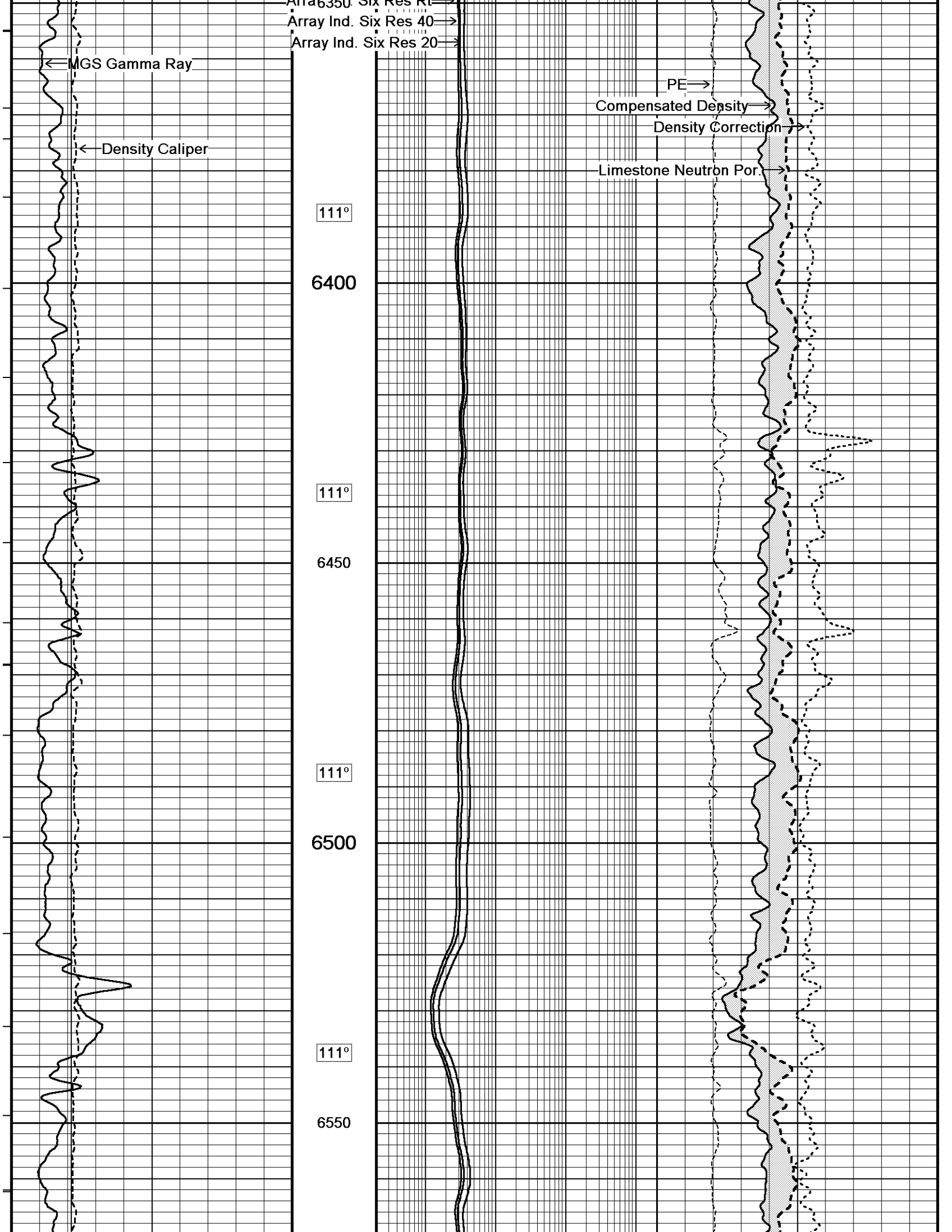

5250
111°
5300
112°
5350
112°
5400
112°
5450

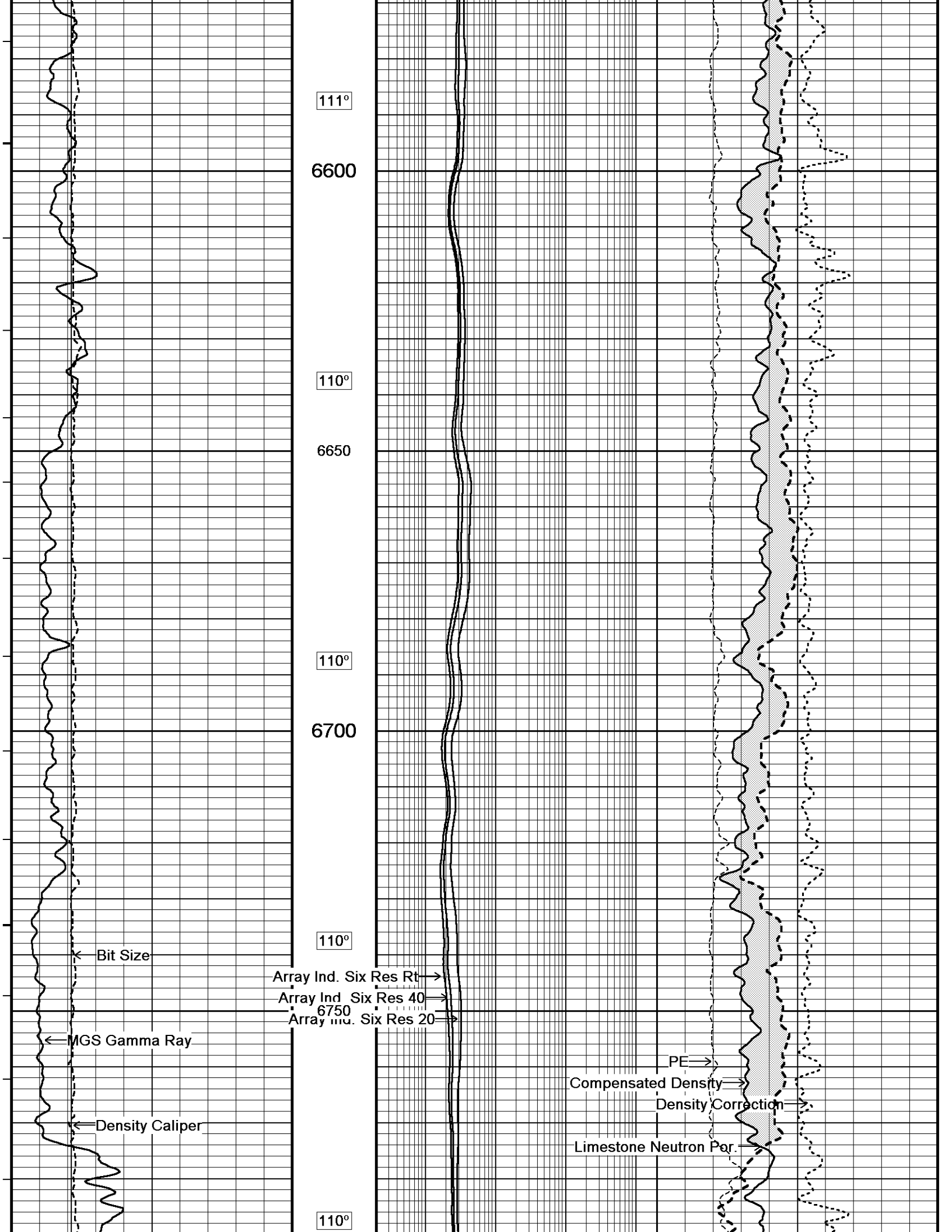

112°
5500
112°
5550
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
PE
Compensated Density
Density Correction
Density Caliper
112°
Limestone Neutron Por.
5600
112°
5650
112°

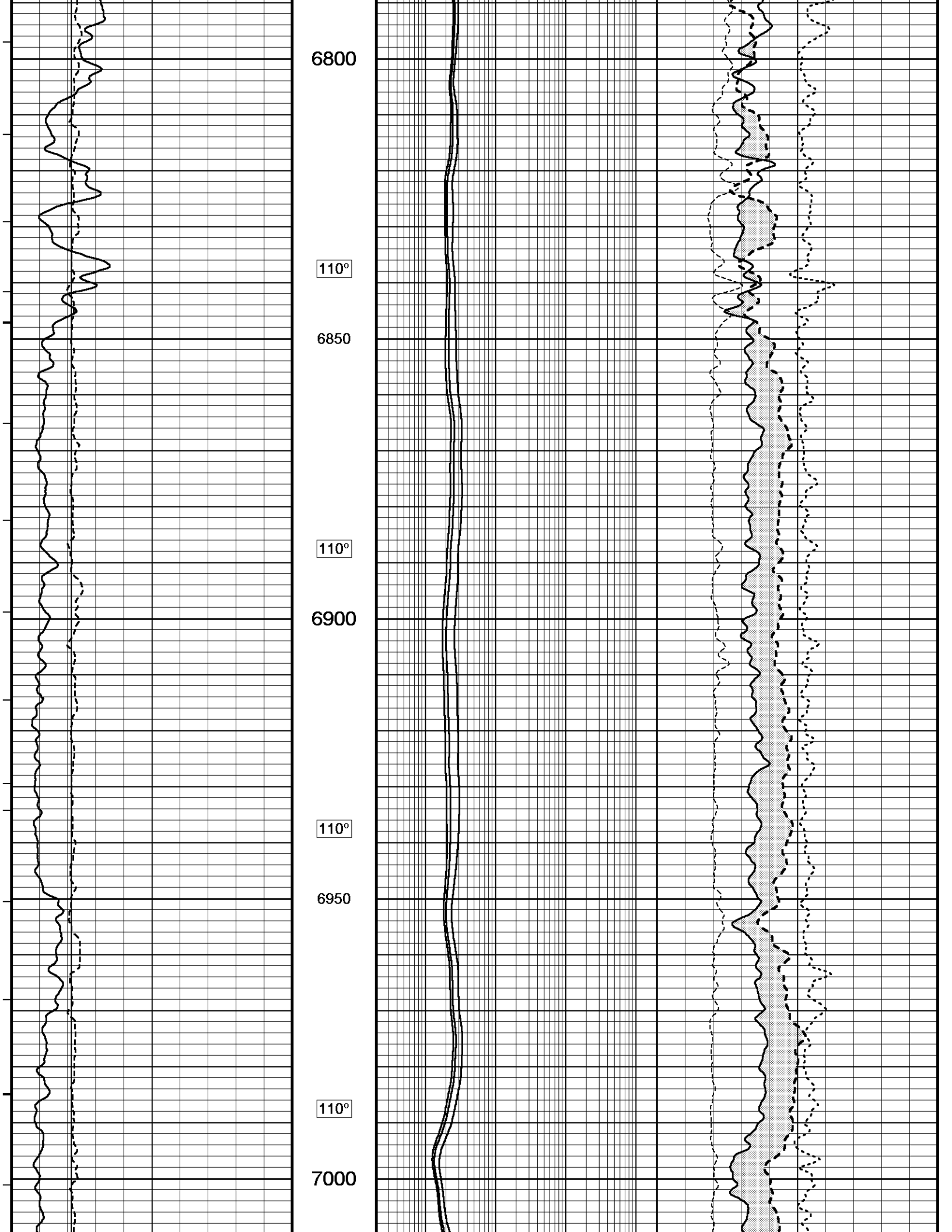

5700
112°
5750
112°
5800
111°
5850
111°
5900

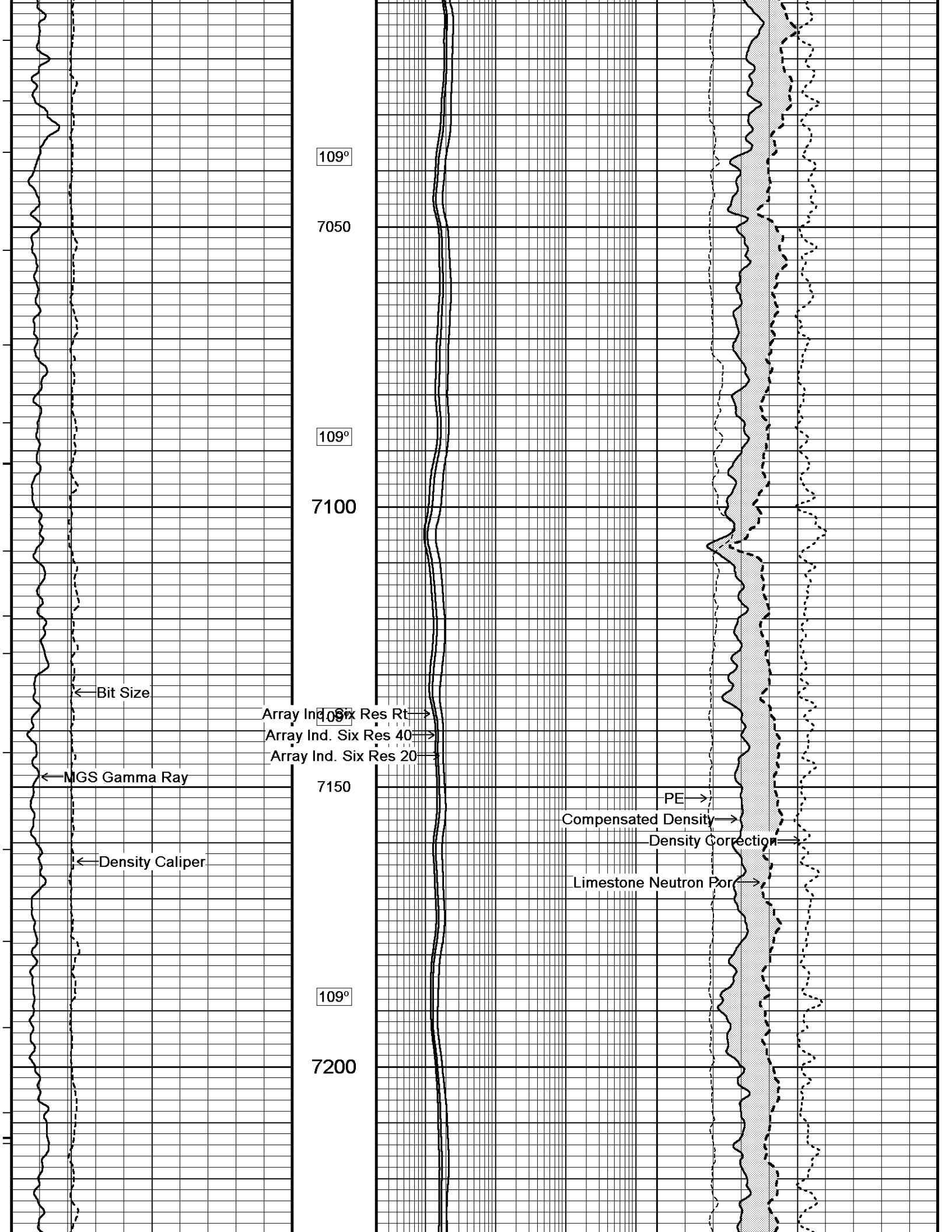

111°
5950
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
PE
Compensated Density
Density Correction
Density Caliper
Limestone Neutron Por.
111°
6000
111°
6050
111°
6100

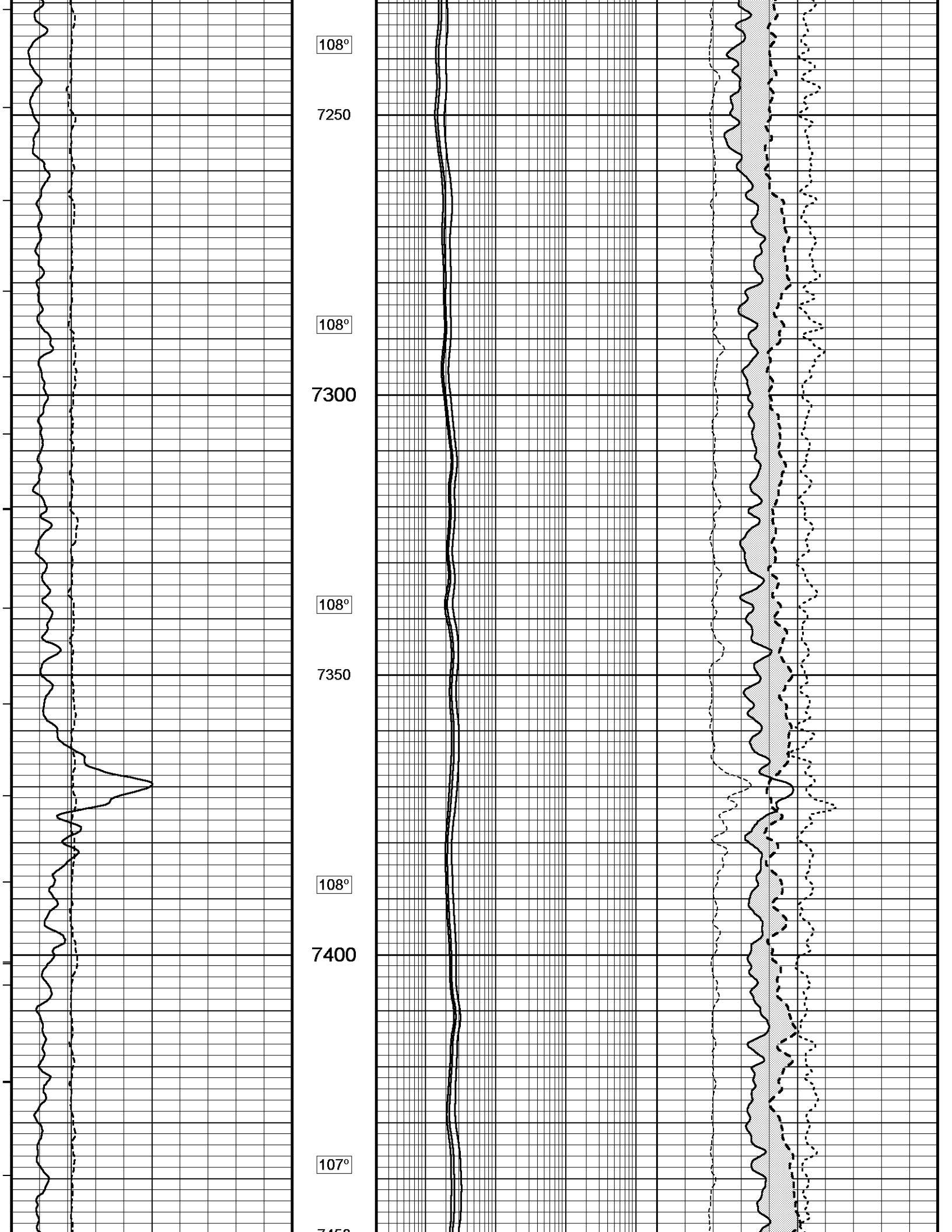

111°
6150
111°
6200
111°
6250
111°
6300
111°
Bit Size

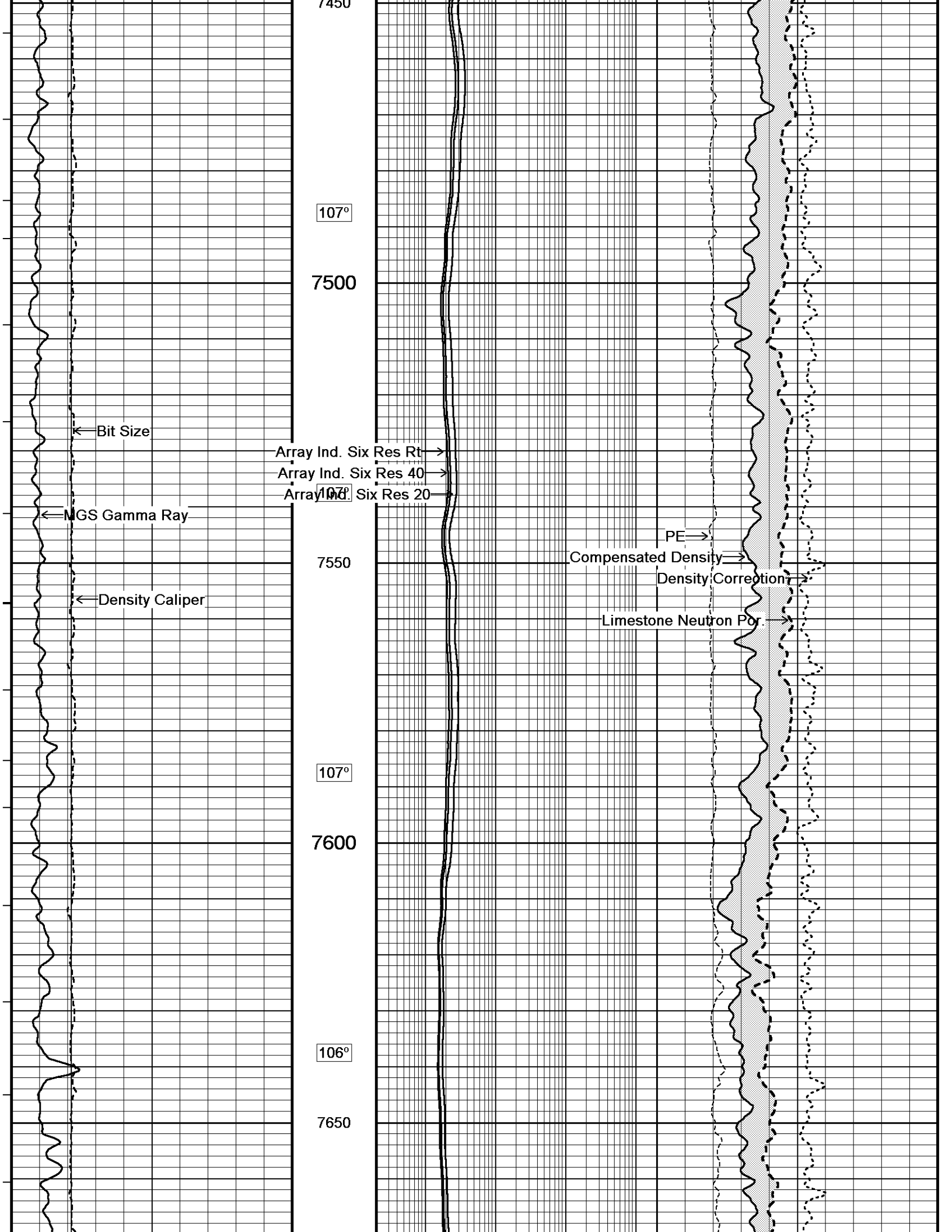

Array 6350 Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
Density Caliper
PE
Compensated Density
Density Correction
Limestone Neutron Por
111°
6400
111°
6450
111°
6500
111°
6550

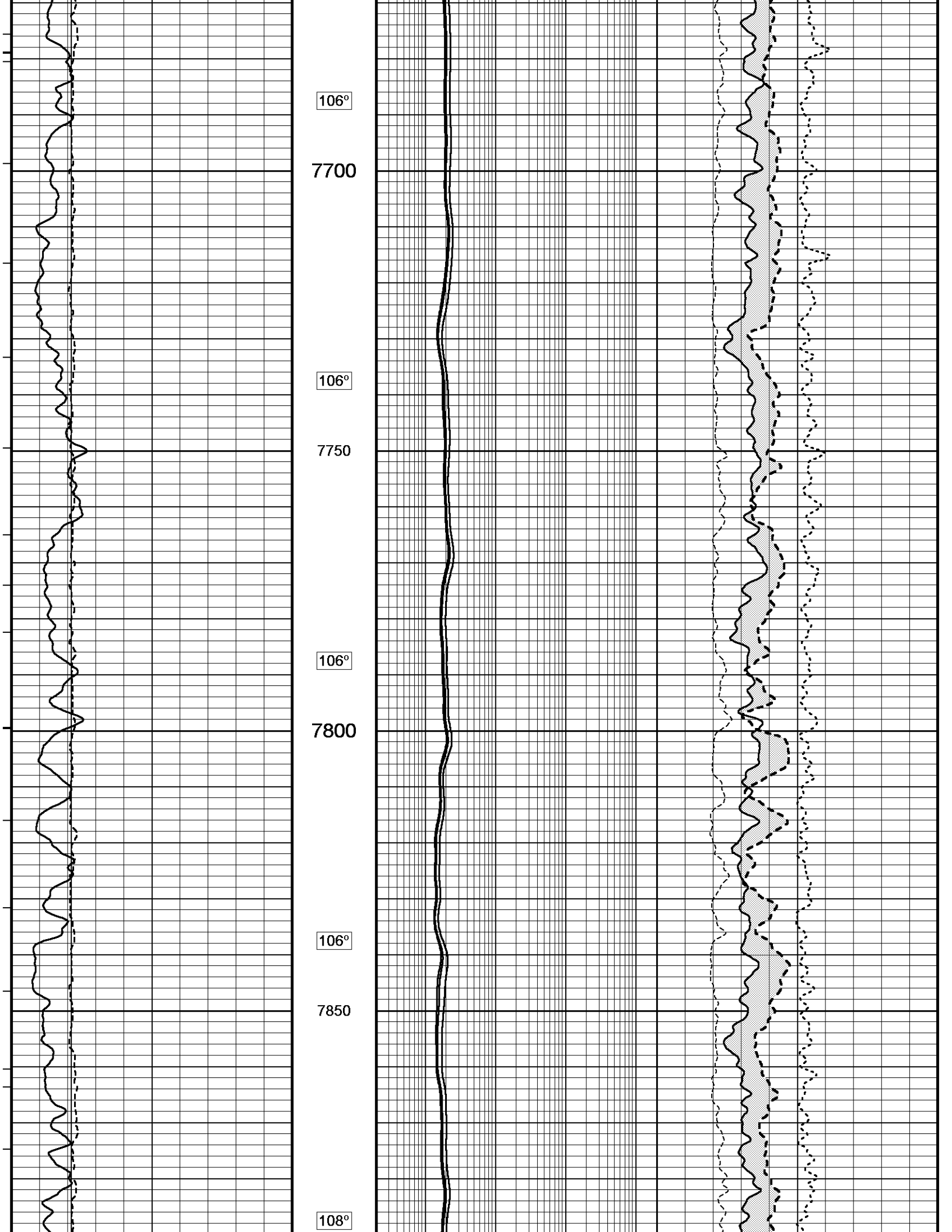

111°
6600
110°
6650
110°
6700
110°
6750
110°
Bit Size
MGS Gamma Ray
Density Caliper
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
PE
Compensated Density
Density Correction
Limestone Neutron Por.

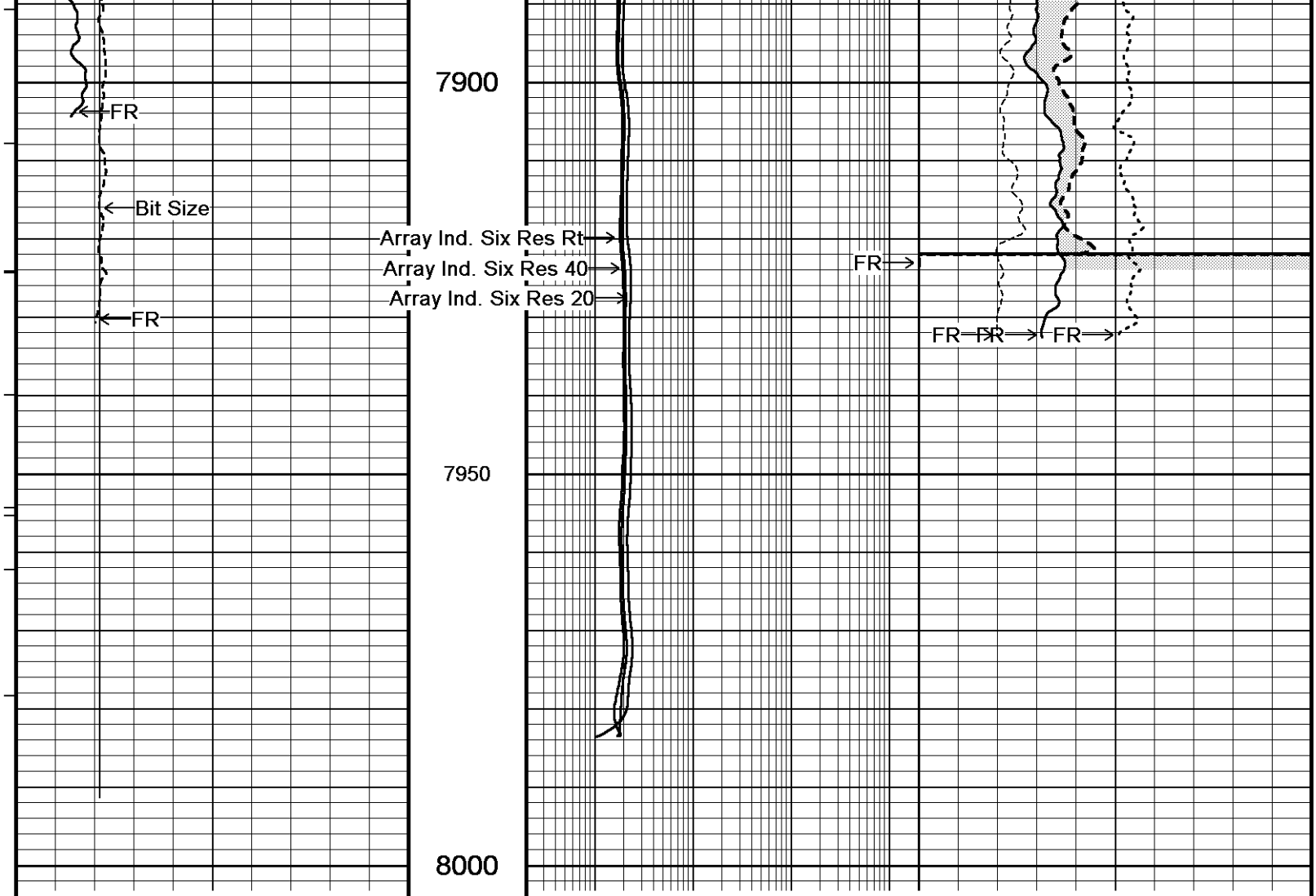

6800
110°
6850
110°
6900
110°
6950
110°
7000


109°
7050
109°
7100
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
7150
PE
Compensated Density
Density Correction
Density Caliper
Limestone Neutron Por
109°
7200


108°
7250
108°
7300
108°
7350
108°
7400
107°


7450
107°
7500
Bit Size
Array Ind. Six Res Rt
Array Ind. Six Res 40
107°
Array Ind. Six Res 20
MGS Gamma Ray
PE
Compensated Density
7550
Density Correction
Density Caliper
Limestone Neutron Por.
107°
7600
106°
7650


106°
7700
106°
7750
106°
7800
106°
7850
108°




Depth In Feet

Timing Marks
every 60.0 sec

Array Ind. Six Res 20
ohm metres
0.20 2000
1 10 100 1000

Limestone Neutron Por.
percent
45 15 -15

Density Caliper
inches
4 9 14

Array Ind. Six Res 40
ohm metres
0.20 2000
1 10 100 1000

Density Correction
grams/cc
-0.25 0 0.25

Borehole Temp in deg F

MGS Gamma Ray
API
0 75 150
150 225 300

Array Ind. Six Res Rt
ohm metres
0.20 2000
1 10 100 1000

Compensated Density
grams/cc
1.95 2.45 2.95

Bit Size
inches
4 9 14

PE
barns/electron
0 5 10

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8723\Data\EMAILS\28817 RTAP.dta
System Versions: Processed with 13.04.8492 Plotted with 13.04.8723

Plotted on 08-APR-2013 09:05
Recorded on 07-APR-2013 18:18

RUN 1 / DESCENT 1

RUN 1 / DESCENT 1

RUN 1 / DESCENT 1

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8723\Data\EMAILS\28817 RTAP.dta
System Versions: Processed with 13.04.8492 Plotted with 13.04.8723

Plotted on 08-APR-2013 09:05
Recorded on 07-APR-2013 18:18

Timing Marks
every 60.0 sec

Density Caliper
inches
4 9 14

MGS Gamma Ray
API
0 75 150
150 225 300

Bit Size
inches
4 9 14

Depth In Feet

Borehole Temp in deg F

Replay Scale 1:1200

Array Ind. Six Res 20
ohm metres
0.20 2000
1 10 100 1000

Array Ind. Six Res 40
ohm metres
0.20 2000
1 10 100 1000

Array Ind. Six Res Rt
ohm metres
0.20 2000
1 10 100 1000

Limestone Neutron Por.
percent
45 15 -15

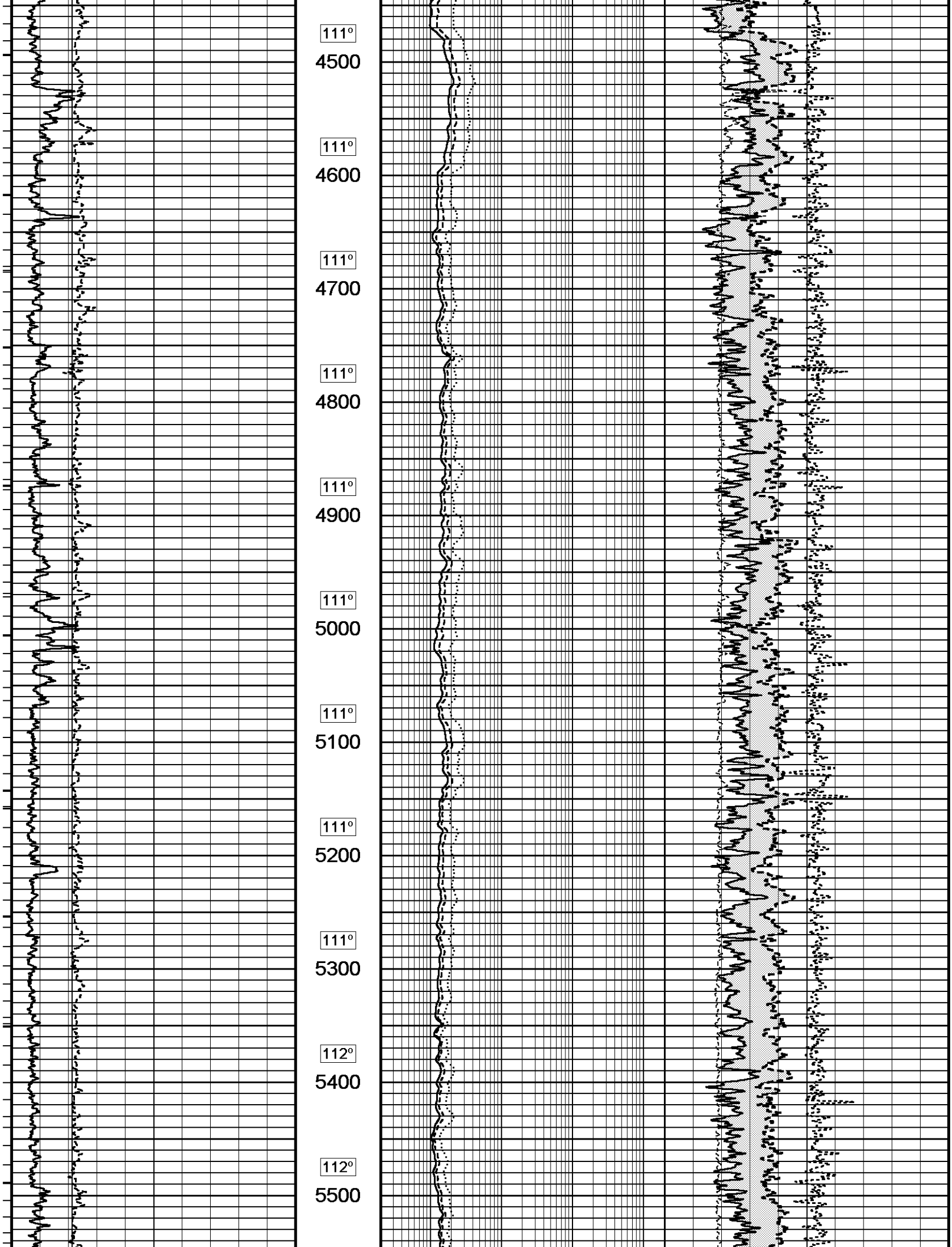
Density Correction
grams/cc
-0.25 0 0.25

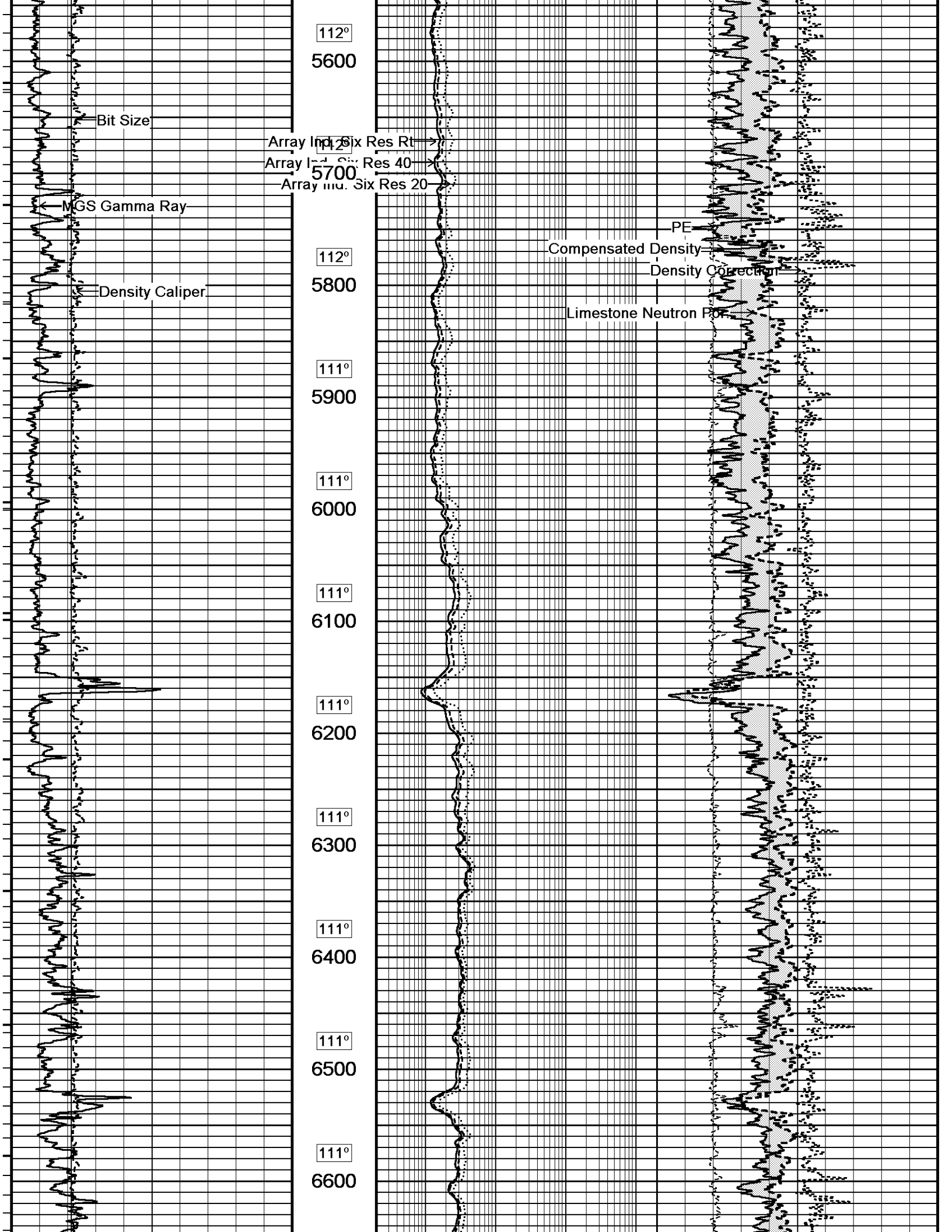
Compensated Density
grams/cc
1.95 2.45 2.95

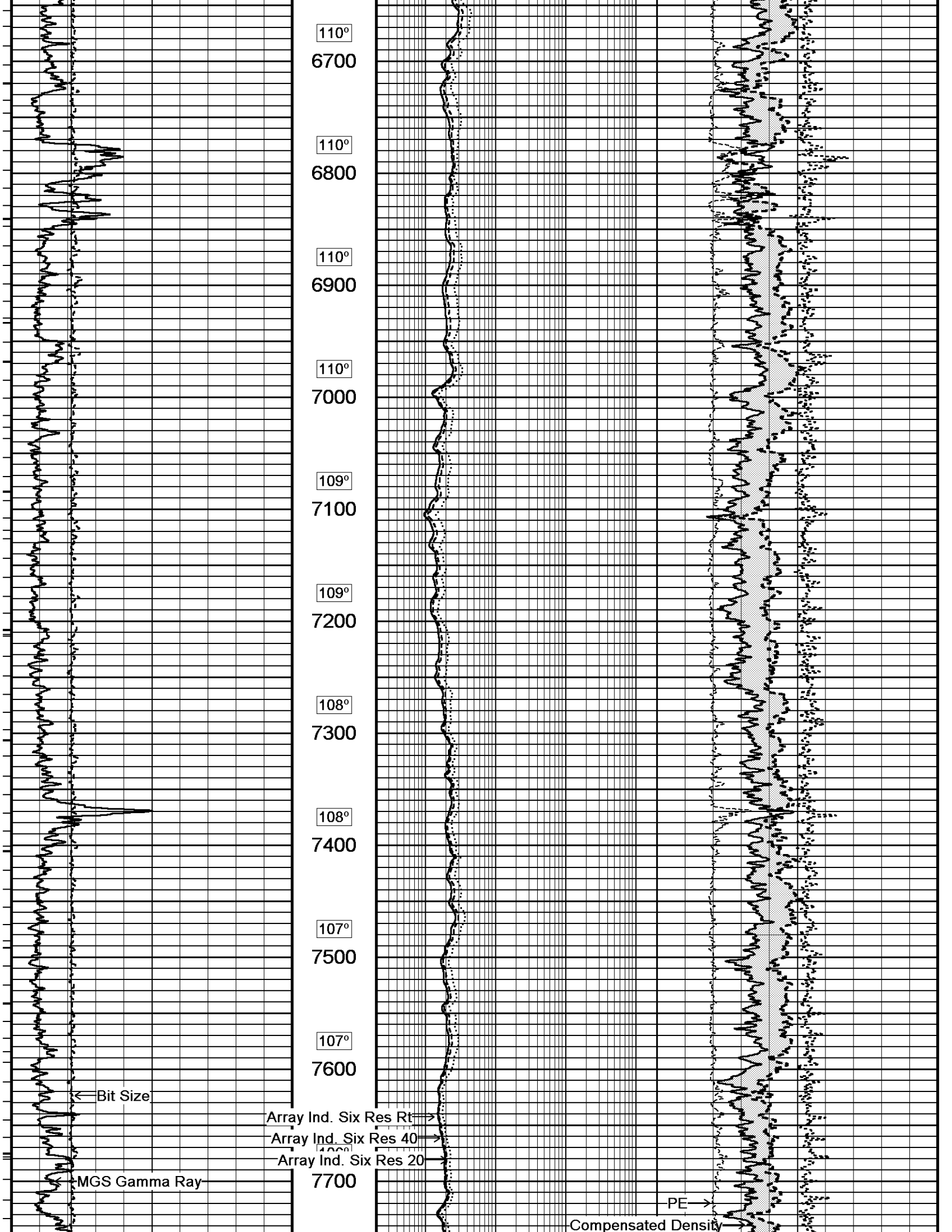
PE
barns/electron
0 5 10

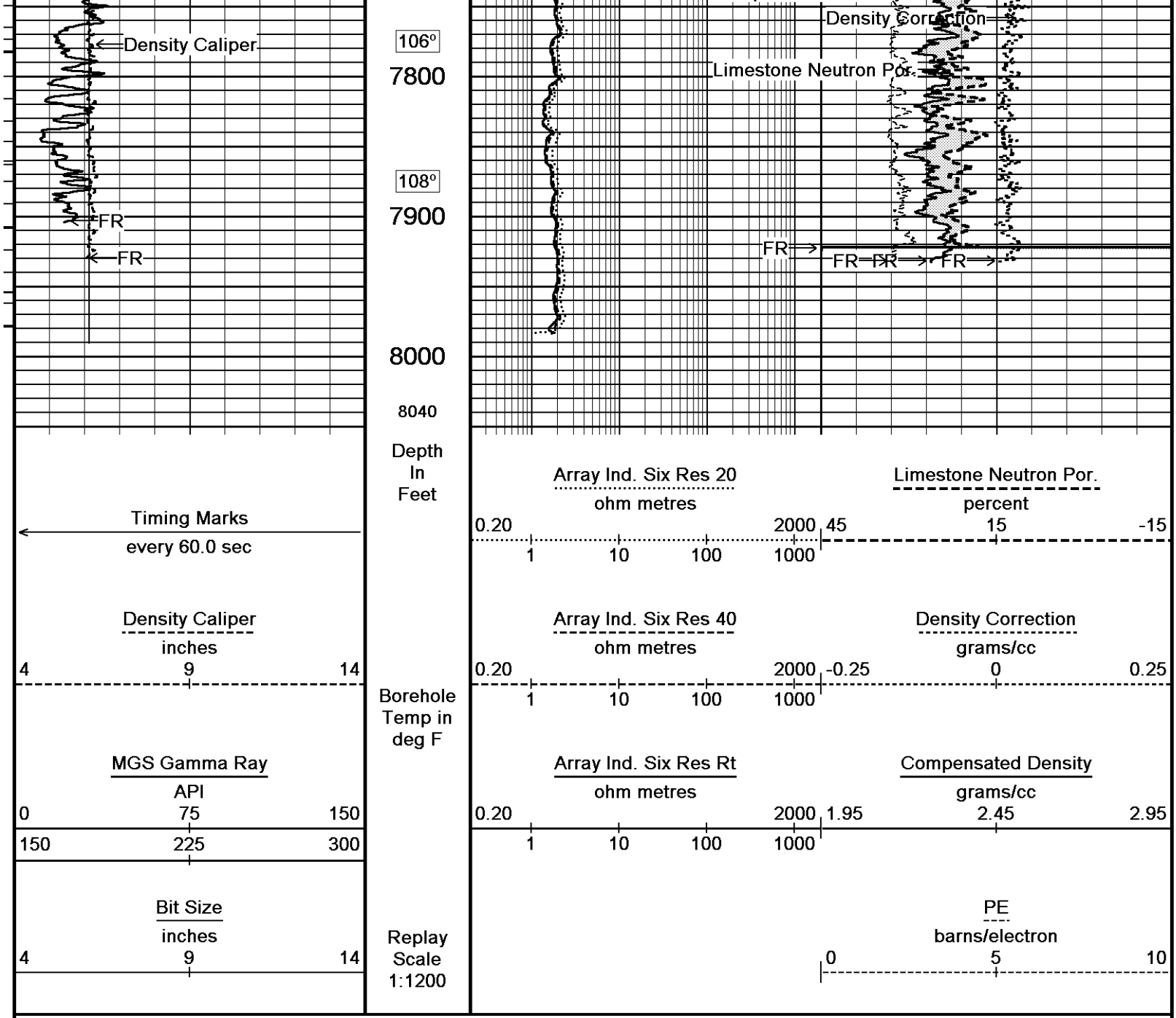
Limestone Neutron Por.

3850 Casing Shoe
3900
110°
4000
110°
4100
110°
4200
111°
4300
111°
4400


111°
4500
111°
4600
111°
4700
111°
4800
111°
4900
111°
5000
111°
5100
111°
5200
111°
5300
112°
5400
112°
5500


112°
5600
Bit Size
112°
5700
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
MGS Gamma Ray
PE
Compensated Density
Density Correction
112°
5800
Density Caliper
Limestone Neutron Por
111°
5900
111°
6000
111°
6100
111°
6200
111°
6300
111°
6400
111°
6500
111°
6600


110°
6700
110°
6800
110°
6900
110°
7000
109°
7100
109°
7200
108°
7300
108°
7400
107°
7500
107°
7600
7700
Bit Size
MGS Gamma Ray
Array Ind. Six Res Rt
Array Ind. Six Res 40
Array Ind. Six Res 20
PE
Compensated Density




Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 08-APR-2013 09:05
Filename: C:\Minimus 13.04.8723\Data\EMAILS\28817 RTAP.dta
Recorded on 07-APR-2013 18:18
System Versions: Processed with 13.04.8492 Plotted with 13.04.8723

RUN 1 / DESCENT 1

## BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8723\Data\EMAILS\28817 RTAP.dta

### Down-hole Tension Calibration All 000

Field Calibration on 24-FEB-2009 00:00

| Reading No | Measured | |
|---|---|---|
| 1 | 14953.75 | 0.00 |
| 2 | 17846.38 | 1500.00 |

### General Constants All 000

Last Edited on 07-APR-2013,20:12

General Parameters

| | | |
|---|---|---|
| Mud Resistivity | 2.000 | ohm-metres |
| Mud Resistivity Temperature | 66.000 | degrees F |
| Water Level | 0.000 | feet |
| Borehole Fluid Processing | Wet Hole | |

| | | |
|---|---|---|
| Hole/Annular Volume and Differential Caliper Parameters | | |
| HVOL Method | XY Caliper | |
| HVOL Caliper 1 | MIE Caliper X | |
| HVOL Caliper 2 | MIE Caliper Y | |
| Annular Volume Diameter | 4.500 | inches |
| Caliper for Differential Caliper | Density Caliper | |
| | | |
| Rwa Parameters | | |
| Porosity used | Limestone Density Por. | |
| Resistivity used | Array Ind. Six Res Rt | |
| RWA Constant A | 0.610 | |
| RWA Constant M | 2.150 | |

## Down-hole Tension Calibration SMS 0

Field Calibration on 05-SEP-2012,13:01

| Reading No | Measured | Calibrated (lbs) |
|---|---|---|
| 1 | 15152.07 | 0.00 |
| 2 | 18386.74 | 2000.00 |

## Strain Gauge Constants MMS-E.B 167

Last Edited on 07-APR-2013,21:02

| | | |
|---|---|---|
| Atmospheric Pressure | 14.70 | psi |
| Serial Number | 262784 | |
| Calibration Date | 21-Jan-2011 | |
| Base Check Date | | |
| Dead Weight Serial Number | 0 | |
| Dead Weight Gravitational Correction | 1.0 | |

| Temperature | 75.0 | | 150.0 | | 250.0 | | 350.0 | degrees F |
|---|---|---|---|---|---|---|---|---|
| Pressure psia | Inc. | Dec. | Inc. | Dec. | Inc. | Dec. | Inc. | Dec. |
| 0.0 | 0.038 | 0.038 | 0.049 | 0.049 | 0.063 | 0.063 | 0.077 | 0.078 |
| 3000.0 | 5.218 | 5.220 | 5.230 | 5.232 | 5.244 | 5.246 | 5.257 | 5.259 |
| 6000.0 | 10.409 | 10.412 | 10.422 | 10.425 | 10.436 | 10.440 | 10.447 | 10.452 |
| 9000.0 | 15.610 | 15.615 | 15.623 | 15.628 | 15.638 | 15.643 | 15.650 | 15.656 |
| 12000.0 | 20.823 | 20.826 | 20.837 | 20.841 | 20.853 | 20.857 | 20.866 | 20.869 |
| 15000.0 | 26.048 | | 26.064 | | 26.081 | | 26.093 | |

## High Resolution Temperature Calibration MGS-C.J 136

Field Calibration on 06-APR-2013,16:17

| | Measured | Calibrated(Deg F) |
|---|---|---|
| Lower | 0.00 | 0.00 |
| Upper | 0.00 | 0.00 |

## High Resolution Temperature Constants MGS-C.J 136

Last Edited on 06-APR-2013,16:17

| | |
|---|---|
| Pre-filter Length | 11 |

## SP Calibration MGS-C.J 136

Field Calibration on 06-APR-2013,16:17

| | Measured | Calibrated (mV) |
|---|---|---|
| Reference 1 | 102.2 | 98.7 |
| Reference 2 | -94.7 | -98.3 |

## Gamma Calibration MGS-C.J 136

Field Calibration on 06-APR-2013 16:17

| | Measured | Calibrated (API) |
|---|---|---|
| Background | 45 | 32 |
| Calibrator (Gross) | 1834 | 1293 |
| Calibrator (Net) | 1789 | 1261 |

## Gamma Constants MGS-C.J 136

Last Edited on 07-APR-2013,19:25

| | | |
|---|---|---|
| Gamma Calibrator Number | BLUE | |
| Mud Density | 1.02 | gm/cc |
| Caliper Source for Processing | Density Caliper | |
| Tool Position | Eccentred | |
| Concentration of KCl | 0.00 | kppm |

## Neutron Calibration MDN-B.J 390

Base Calibration on 06-APR-2013 14:54
Field Check on 06-APR-2013 16:31

Base Calibration

| | Measured | | Calibrated (cps) | |
|---|---|---|---|---|
| | Near | Far | Near | Far |
| | 2935 | 90 | 3714 | 110 |

| | | |
|---|---|---|
| Ratio | 32.709 | 33.764 |

| Field Calibrator at Base | Calibrated (cps) | |
|---|---|---|
| | 1296 | 1890 |
| Ratio | 0.685 | |

| Field Check | Calibrated (cps) | |
|---|---|---|
| | 1299 | 1924 |
| Ratio | 0.675 | |

## Neutron Constants MDN-B.J 390

Last Edited on 07-APR-2013,20:10

| | | |
|---|---|---|
| Neutron Source Id | p33312b | |
| Neutron Jig Number | blue | |
| Epithermal Neutron | No | |
| Caliper Source for Processing | Density Caliper | |
| Stand-off | 0.00 | inches |
| Mud Density | 1.02 | gm/cc |
| Limestone Sigma | 7.10 | cu |
| Sandstone Sigma | 4.26 | cu |
| Dolomite Sigma | 4.70 | cu |
| Formation Pressure Source | Constant Value | |
| Formation Pressure | 1.80 | kpsi |
| Temperature Source | Constant Value | |
| Temperature | 145.00 | degrees F |
| Mud Salinity | 1.21 | kppm |
| Salinity Correction | Applied | |
| Formation Fluid Salinity Source | Constant Value | |
| Formation Fluid Salinity | 140.00 | kppm |
| Barite Mud Correction | Not Applied | |

## Caliper Calibration MIE-A.J 233

Base Calibration on 06-APR-2013 16:24
Field Calibration on 07-APR-2013,19:16

Base Calibration

| Reading No | Pads 1-5 Meas. | Pads 3-7 Meas. | Calibrator Size (in) |
|---|---|---|---|
| 1 | 25617 | 26706 | 6.01 |
| 2 | 35964 | 37267 | 8.01 |
| 3 | 47183 | 48235 | 10.01 |
| 4 | 59198 | 59673 | 12.13 |
| 5 | 0 | 0 | 0.00 |

| Reading No | Pad 2 Meas. | Pad 4 Meas. | Pad 6 Meas. | Pad 8 Meas. | Calibrator Size (in) |
|---|---|---|---|---|---|
| 1 | 25557 | 27491 | 27058 | 25857 | 6.01 |
| 2 | 34415 | 36280 | 35382 | 34342 | 8.01 |
| 3 | 44090 | 44939 | 43101 | 43239 | 10.01 |
| 4 | 53884 | 55007 | 53617 | 53835 | 12.13 |
| 5 | 0 | 0 | 0 | 0 | 0.00 |

Field Calibration

| Measured Pads 1-5 Caliper(in) | Measured Pads 3-7 Caliper(in) | Actual Caliper(in) |
|---|---|---|
| 6.01 | 5.58 | 6.01 |

| Measured Pad 2 Caliper(in) | Measured Pad 4 Caliper(in) | Measured Pad 6 Caliper(in) | Measured Pad 8 Caliper(in) | Actual Caliper(in) |
|---|---|---|---|---|
| 3.16 | 2.98 | 2.90 | 3.06 | 6.01 |

## Caliper Constants MIE-A.J 233

Last Edited on 07-APR-2013,21:02

| | | |
|---|---|---|
| Caliper Difference for BRKT | 0.120 | inches |

## Accelerometer Parameters MIE-A.J 233

| Date Of Last Accelerometer Calibration | 11-JUL-2012,16:04 | |
|---|---|---|

| | X Accelerometer | Y Accelerometer | Z Accelerometer |
|---|---|---|---|
| Slope | -1.103264 | -1.116469 | -1.106207 |
| Offset | 0.010635 | 0.006475 | 0.004891 |

## Accelerometer Constants MIE-A.J 233

Last Edited on 07-APR-2013,21:04

| | |
|---|---|
| Accelerometer Calibrator Number | 000 |

Accelerometer Temperature Characterisation

X Accelerometer

| | | | | |
|---|---|---|---|---|
| Serial Number | 468 | | | |
| Calibration Date | 17-Dec-2007 | | | |
| | B0 | B1 | B2 | B3 |
| Bias(g) | 0.00000e+000 | -6.34516e-006 | -5.01333e-009 | 5.89860e-011 |
| | SF0 | SF1 | SF2 | SF3 |
| Scale Factor(mA/g) | 3.00000e+000 | 2.86986e-004 | 5.01603e-007 | 3.36551e-011 |

Y Accelerometer

| | | | | |
|---|---|---|---|---|
| Serial Number | 1073 | | | |
| Calibration Date | 02-May-2011 | | | |
| | B0 | B1 | B2 | B3 |
| Bias(g) | 0.00000e+000 | -1.04005e-005 | 2.19294e-008 | -1.31489e-010 |
| | SF0 | SF1 | SF2 | SF3 |
| Scale Factor(mA/g) | 3.00000e+000 | 2.69223e-004 | 2.39527e-007 | 9.12553e-010 |

Z Accelerometer

| | | | | |
|---|---|---|---|---|
| Serial Number | 977 | | | |
| Calibration Date | 20-Jan-2011 | | | |
| | B0 | B1 | B2 | B3 |
| Bias(g) | 0.00000e+000 | 1.86594e-005 | 1.00709e-008 | 3.83419e-011 |
| | SF0 | SF1 | SF2 | SF3 |
| Scale Factor(mA/g) | 3.00000e+000 | 2.74913e-004 | 2.75506e-007 | 1.29284e-009 |

## Magnetometer Parameters MIE-A.J 233

Date Of Last Magnetometer Calibration 28-NOV-2012,18:05

| | X Magnetometer | Y Magnetometer | Z Magnetometer |
|---|---|---|---|
| Slope | -1.000000 | -1.001739 | -0.998267 |
| Offset | -0.005746 | -0.010400 | 0.000941 |

## Magnetometer Constants MIE-A.J 233

Last Edited on

Magnetometer Calibrator Number 000

## Navigation Constants MIE-A.J 233

Last Edited on 07-APR-2013,20:59

Magnetic Declination 4.75 degrees East

## Imager Pad Check MIE-A.J 233

Field Check on

| | | | |
|---|---|---|---|
| Pad 1 | Pad Not Tested | Pad 5 | Pad Not Tested |
| Pad 2 | Pad Not Tested | Pad 6 | Pad Not Tested |
| Pad 3 | Pad Not Tested | Pad 7 | Pad Not Tested |
| Pad 4 | Pad Not Tested | Pad 8 | Pad Not Tested |

## Compact Micro Imager Constants MIE-A.J 233

Last Edited on 06-APR-2013,16:06

| | | |
|---|---|---|
| Sonde Configuration | Imager Mode | |
| Arm-Pad Kit | Normal Pads (12.25 in) | |
| Arm-Pad Kit Serial Number | N/A | |
| Centre Pad 1 Rotational Offset | 0.00 | degrees |
| Image/Borehole Ovality Reference | Azimuth of Pad 1 | |
| Non Active Buttons | Omit | |
| Search Angle | 0.00 | degrees |
| Correlation Interval | 3.28 | feet |
| Correlation Step | 1.64 | feet |
| Current Offset | 0.0000 | mAmp |
| Squasher Start | N/A | mAmp |
| Image Processing | Enabled | |

## Induction Calibration MAI-A.A 158

Base Calibration on 06-APR-2013,15:50
Field Check on 06-APR-2013 16:05

Base Calibration

| Test Loop Calibration | Measured | | Calibrated (mmho/m) | |
|---|---|---|---|---|
| Channel | Low | High | Low | High |
| 1 | 17.2 | 475.3 | 9.3 | 966.2 |
| 2 | 6.1 | 381.2 | 7.6 | 821.4 |
| 3 | 3.8 | 265.2 | 5.2 | 566.0 |
| 4 | 2.7 | 132.2 | 2.6 | 279.2 |

Array Temperature 22.3 Deg F

| Channel | Base Check (mmho/m) Low | Base Check (mmho/m) High | Field Check (mmho/m) Low | Field Check (mmho/m) High | |
|---|---|---|---|---|---|
| 1 | | | 13.2 | 3814.3 | |
| 2 | | | 30.4 | 3530.0 | |
| 3 | | | 27.6 | 2980.8 | |
| 4 | | | 18.2 | 2096.9 | |
| Deep | | | 15.2 | 1943.1 | |
| Medium | | | 41.4 | 3886.8 | |
| Shallow | | | 47.7 | 5235.7 | |
| Array Temperature | | | | 70.4 | Deg F |

## Induction Constants MAI-A.A 158

Last Edited on 07-APR-2013,20:11

| | | |
|---|---|---|
| Induction Model | RtAP-WBM | |
| Caliper for Borehole Corr. | Density Caliper | |
| Hole Size for Borehole Correction | N/A | inches |
| Tool Centred | No | |
| Stand-off Type | Fins | |
| Stand-off | 0.50 | inches |
| Number of Fins on Stand-off | 6.0000 | |
| Stand-off Fin Angle | 60.00 | degrees |
| Stand-off Fin Width | 0.0000 | inches |
| Borehole Corr. Rm Source | Temperature Corr | |
| Temp. for Rm Corr. | Borehole Temp. Unfilt. | |
| Squasher Start | 0.0020 | mhos/metre |
| Squasher Offset | N/A | mhos/metre |

Borehole Normalisation

| | | | |
|---|---|---|---|
| DRM1 | 0.0000 | DRC1 | 0.0000 |
| DRM2 | 0.0000 | DRC2 | 0.0000 |
| MRM1 | 0.0000 | MRC1 | 0.0000 |
| MRM2 | 0.0000 | MRC2 | 0.0000 |
| SRM1 | 0.0000 | SRC1 | 0.0000 |
| SRM2 | 0.0000 | SRC2 | 0.0000 |

Calibration Site Corrections

| | | |
|---|---|---|
| Channel 1 | 0.00 | mmhos/metre |
| Channel 2 | 0.00 | mmhos/metre |
| Channel 3 | 0.00 | mmhos/metre |
| Channel 4 | 0.00 | mmhos/metre |

Apparent Porosity and Water Saturation Constants

| | | |
|---|---|---|
| Archie Constant (A) | 1.00 | |
| Cementation Exponent (M) | 2.00 | |
| Saturation Exponent (N) | 2.00 | |
| Saturation of Water for Apor | 100.00 | percent |
| Resistivity of Water for Apor and Sw | 0.05 | ohm-m |
| Resistivity of Mud Filtrate for Sw | 0.00 | ohm-m |
| Source for Rt | 0.00 | |
| Source for Rxo | 0.00 | |

## High Resolution Temperature Calibration MAI-A.A 158

Field Calibration on 06-APR-2013,16:05

| | Measured | Calibrated(Deg F) |
|---|---|---|
| Lower | 0.00 | 0.00 |
| Upper | 0.00 | 0.00 |

## High Resolution Temperature Constants MAI-A.A 158

Last Edited on 06-APR-2013,16:05

| | |
|---|---|
| Pre-filter Length | 11 |

## Caliper Calibration MPD-C.J 393

Base Calibration on 05-APR-2013 10:07
Field Calibration on 07-APR-2013,19:09

Base Calibration

| Reading No | Measured | Calibrator Size (in) |
|---|---|---|
| 1 | 18832 | 4.01 |
| 2 | 26992 | 5.96 |
| 3 | 35520 | 7.98 |
| 4 | 43613 | 9.86 |
| 5 | 52560 | 11.88 |
| 6 | N/A | N/A |

Field Calibration

| Measured Caliper (in) | Actual Caliper (in) |
|---|---|
| 5.95 | 6.03 |

## Photo Density Calibration MPD-C.J 393

Base Calibration on 05-APR-2013 09:57
Field Check on 06-APR-2013 16:10

Density Calibration

| Base Calibration | Measured Near | Measured Far | Calibrated (sdu) Near | Calibrated (sdu) Far |
|---|---|---|---|---|
| Reference 1 | 57842 | 26401 | 59869 | 31110 |
| Reference 2 | 24614 | 2567 | 24557 | 2522 |
| Field Check at Base | 1206.7 | 1317.1 | | |
| Field Check | 1209.8 | 1320.4 | | |

PE Calibration

| Base Calibration | WS | Measured WH | Measured Ratio | Calibrated Ratio |
|---|---|---|---|---|
| Background | 221 | 1082 | | |
| Reference 1 | 25058 | 57644 | 0.439 | 0.369 |
| Reference 2 | 7310 | 24479 | 0.303 | 0.271 |
| Field Check at Base | 220.9 | 1082.0 | | |
| Field Check | 219.2 | 1086.3 | | |

## Density Constants MPD-C.J 393

Last Edited on 07-APR-2013,19:25

| | | |
|---|---|---|
| Density Source Id | P21137B | |
| Nylon Calibrator Number | 633 | |
| Aluminium Calibrator Number | 633 | |
| Density Shoe Profile | 4 inch | |
| Caliper Source for Processing | Density Caliper | |
| PE Correction to Density | Not Applied | |
| Mud Density | 1.02 | gm/cc |
| Mud Density Z/A Multiplier | 1.11 | |
| Mud Filtrate Density | 1.00 | gm/cc |
| Dry Hole Mud Filtrate Density | 1.00 | gm/cc |
| DNCT | 0.00 | gm/cc |
| CRCT | 0.00 | gm/cc |
| Density Z/A Correction | Hybrid | |

| Matrix Density (gm/cc) | Depth (ft) |
|---|---|
| 2.71 | |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | 0.00 |
| 0.00 | |

## DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8723\Data\EMAILS\28817 legacy.dta

RUNNING TOOL
MLK-A 1 LG: 4.87 ft WT: 30.9 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 135 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Spacer-Empty Battery

MLK-A 2 LG: 14.23 ft WT: 30.9 lb OD: 2.24 in

Spacer-Empty Battery
MLK-A 3 LG: 14.23 ft WT: 30.9 lb OD: 2.24 in

MBS-G.A 200v Compact Battery Sub
MBS-G.A 117 LG: 17.06 ft WT: 123.5 lb OD: 2.24 in

Compact Memory Sub E.B
MMS-E.B 167 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.
MTI-B.A 67 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma
MGS-C.J 136 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator
MCL-B.J 60 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 42 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor
SHA-F 33 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub
MIS-A.A 260 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron
MDN-B.J 390 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-C.J 393 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 591 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 435 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 159 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 707 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact MMI Memory Section
MIM-B.A 254 LG: 4.65 ft WT: 26.5 lb OD: 2.24 in

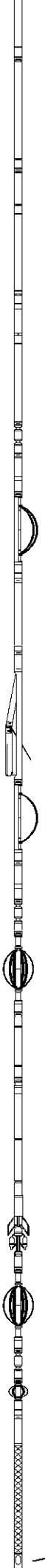
Compact MMI Electrode Section
MIE-A.J 233 LG: 13.96 ft WT: 99.2 lb OD: 4.09 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 606 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 584 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-B Compact Inline Standoff sub
MIS-B 27 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction
MAI-A.A 158 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in



Tool Zero (1.84ft from bottom)
All measurements relative to tool zero.

Total Length: 148.10 ft Weight: 925.9 lb

| | |
|---|---|
| COMPANY | SEPCO |
| WELL | SIEGRIST 2207 7-1H |
| FIELD | WILDCAT |
| PROVINCE/COUNTY | RENO |
| COUNTRY/STATE | USA / KANSAS |

| | | | | | |
|---|---|---|---|---|---|
| Elevation Kelly Bushing | 1625.00 | feet | First Reading | 7988.00 | feet |
| Elevation Drill Floor | 1625.00 | feet | Depth Driller | 8020.00 | feet |
| Elevation Ground Level | 1602.00 | feet | Depth Logger | 8020.00 | feet |

Weatherford®

CML MESSENGER SHUTTLE
ARRAY INDUCTION
PHOTO DENSITY & NEUTRON LOG