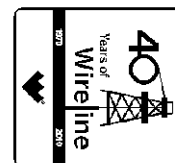


**Weatherford****ARRAY INDUCTION  
LOG**

COMPANY **WEXPRO COMPANY**  
WELL **JACKS DRAW UNIT 18**  
FIELD **POWDER WASH**  
PROVINCE/COUNTY **MOFFAT**  
COUNTRY/STATE **U.S.A. / COLORADO**  
LOCATION **SHL: 933' FNL & 1503' FWL**



SEC **28** TWP **12N** RGE **97W** Other Services  
API Number **05-081-07635** MPD/MDN

Permit Number  
Permanent Datum G.L., Elevation 6570 feet  
Log Measured From KB  
Drilling Measured From K.B.

Elevations: feet  
KB 6599.00  
DF 6598.00  
GL 6570.00

Date	10-NOV-2011	
Run Number	ONE	
Depth Driller	9087.00	feet
Depth Logger	9087.00	feet
First Reading	9070.00	feet
Last Reading	1525.00	feet
Casing Driller	1523.00	feet
Casing Logger	1525.00	feet
Bit Size	7.875	inches
Hole Fluid Type	LSND	
Density / Viscosity	10.40 lb/USg	39.00 CP
PH / Fluid Loss	9.90	6.80 ml/30Min
Sample Source	FLOWLINE	
Rm @ Measured Temp	1.50 @ 74.7	ohm-m
Rmf @ Measured Temp	1.20 @ 74.7	ohm-m
Rmc @ Measured Temp	1.80 @ 74.7	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.761 @151.0	ohm-m
Time Since Circulation	0.5 HOURS	
Max Recorded Temp	151.00	deg F
Equipment Name	COMPACT	
Equipment / Base	18063	CASPER
Recorded By	J. BOON	
Witnessed By	R. BUSH	

**BOREHOLE RECORD**

Last Edited: 10-NOV-2011 06:52

Bit Size inches	Depth From feet	Depth To feet
7.875	1523.00	9087.00

**CASING RECORD**

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	9.625	0.00	1523.00	36.00

**REMARKS**

SOFTWARE VERSION USED: 11.03.4044

TOOLS CONVEYED VIA CML WELL SHUTTLE

ALL DEPTHS RECORDED WITH WEATHERFORD PASON DEPTH SYSTEM  
ALL DEPTHS CORRECTED TO DRILLER'S STRAP DEPTH

MCG, MDN, MPD, MFE, MAI RAN IN COMBINATION

HARDWARE USED: SEE TOOL DIAGRAM

CUSTOMER'S SCALES USED AND INTERVALS LOGGED

4.5 INCH PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUME.  
ANNULAR HOLE VOLUME: 2360 CUBIC FEET  
HOLE VOLUME: 3180 CUBIC FEET

BOREHOLE SIZE AND RUGOSITY WILL AFFECT DATA QUALITY

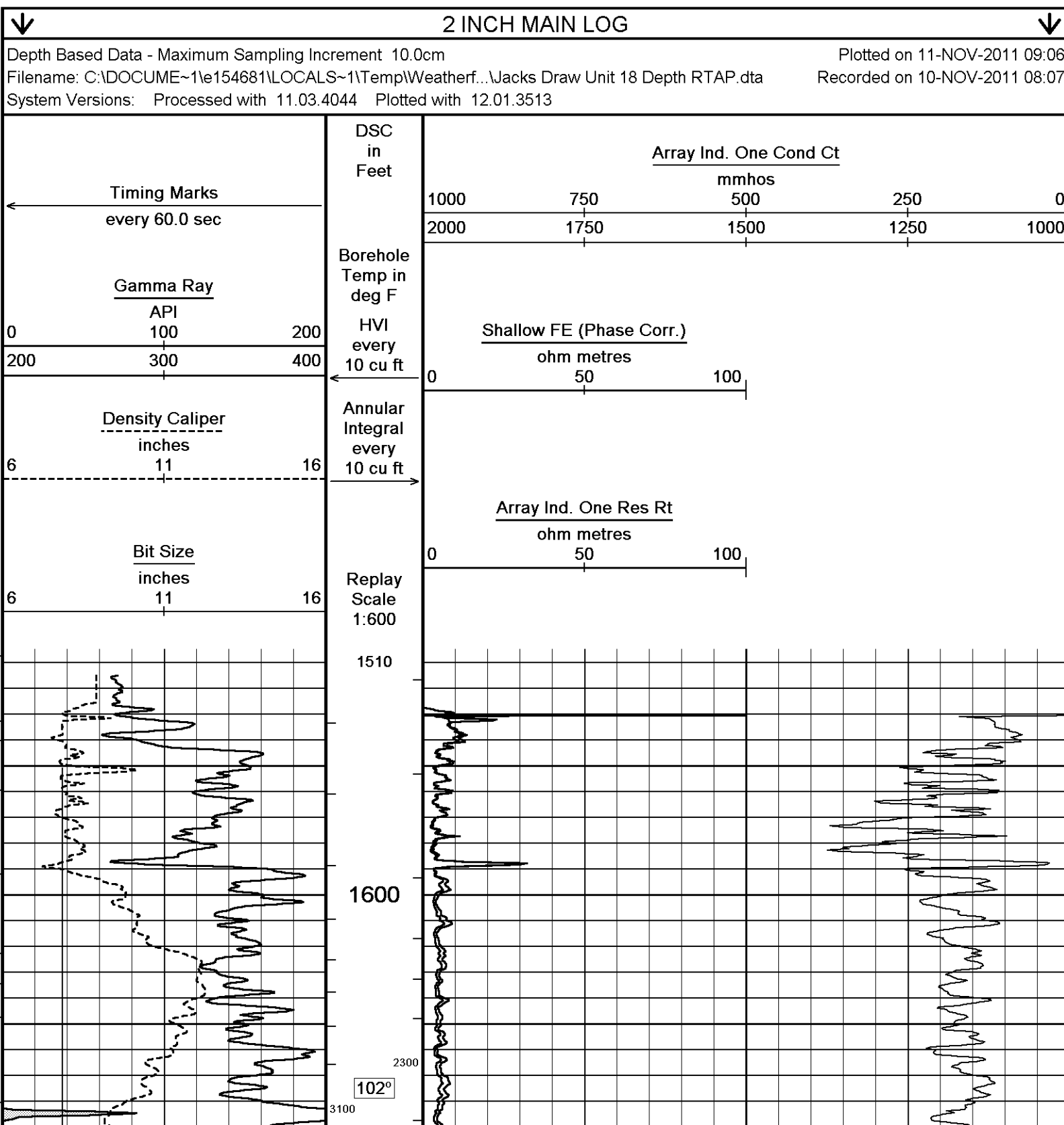
BOREHOLE SIZE AND LOGGING WILL AFFECT DATA QUALITY. READS PROPERLY IN GAUGE SECTIONS OF BOREHOLE

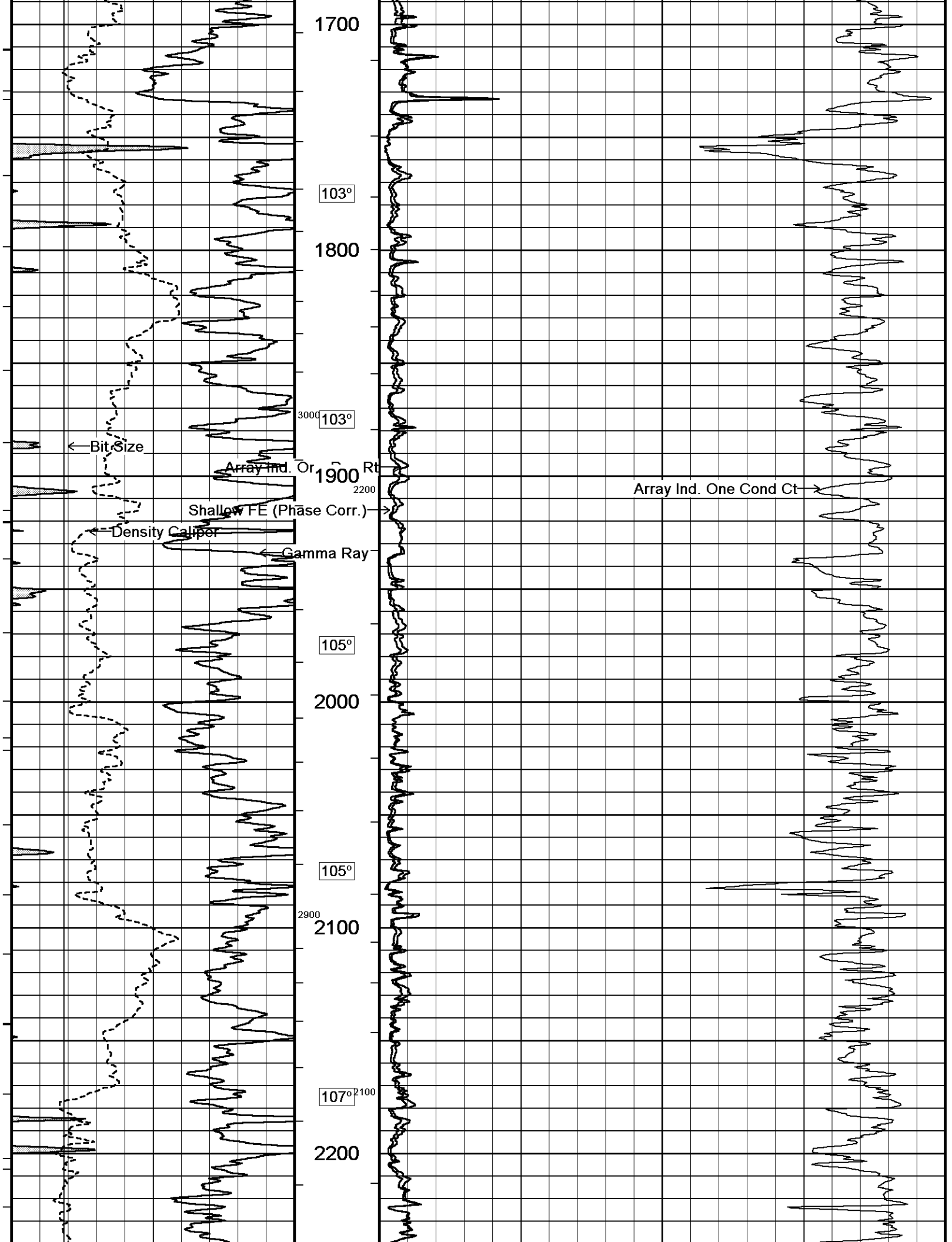
TIGHT PULLS WILL AFFECT DATA QUALITY

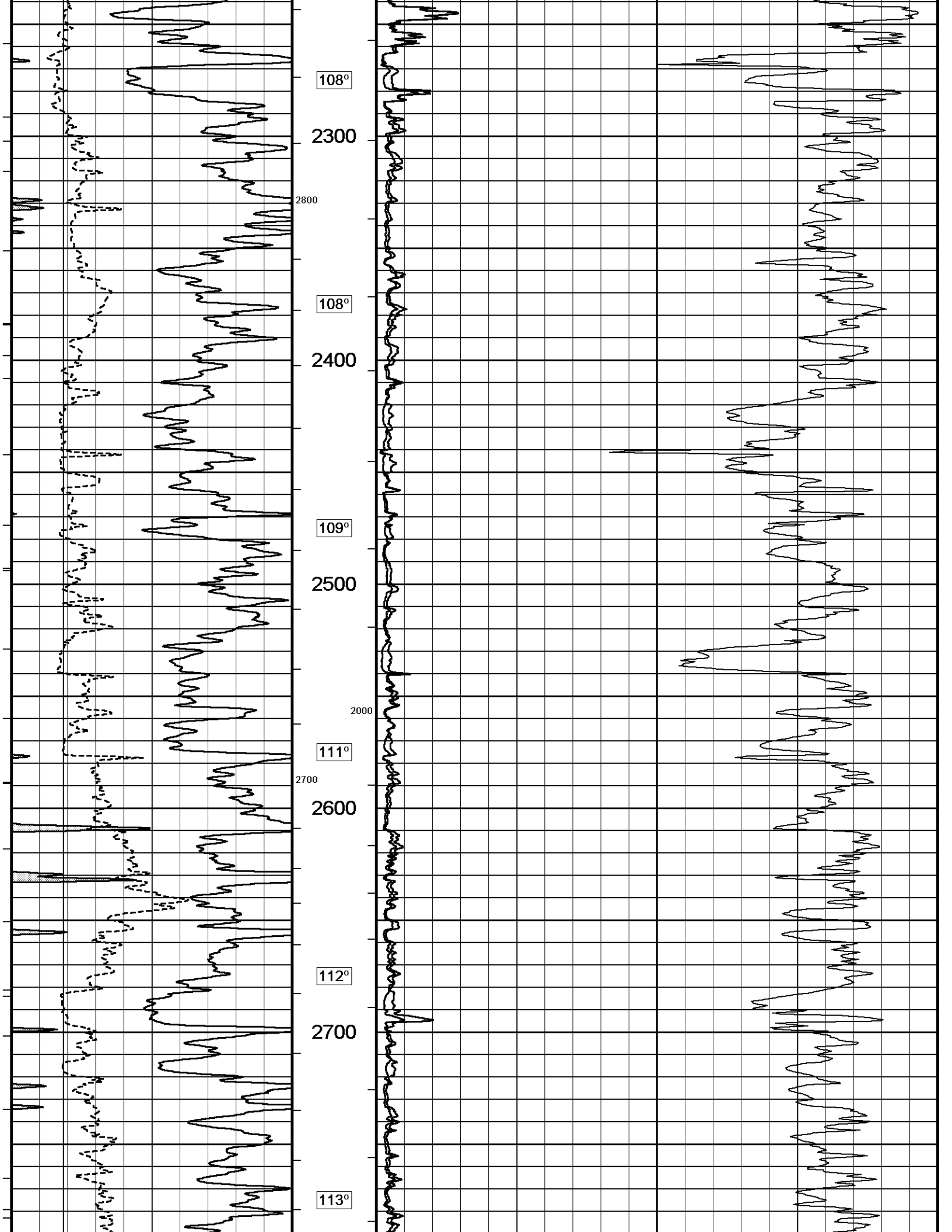
RIG: SST 88

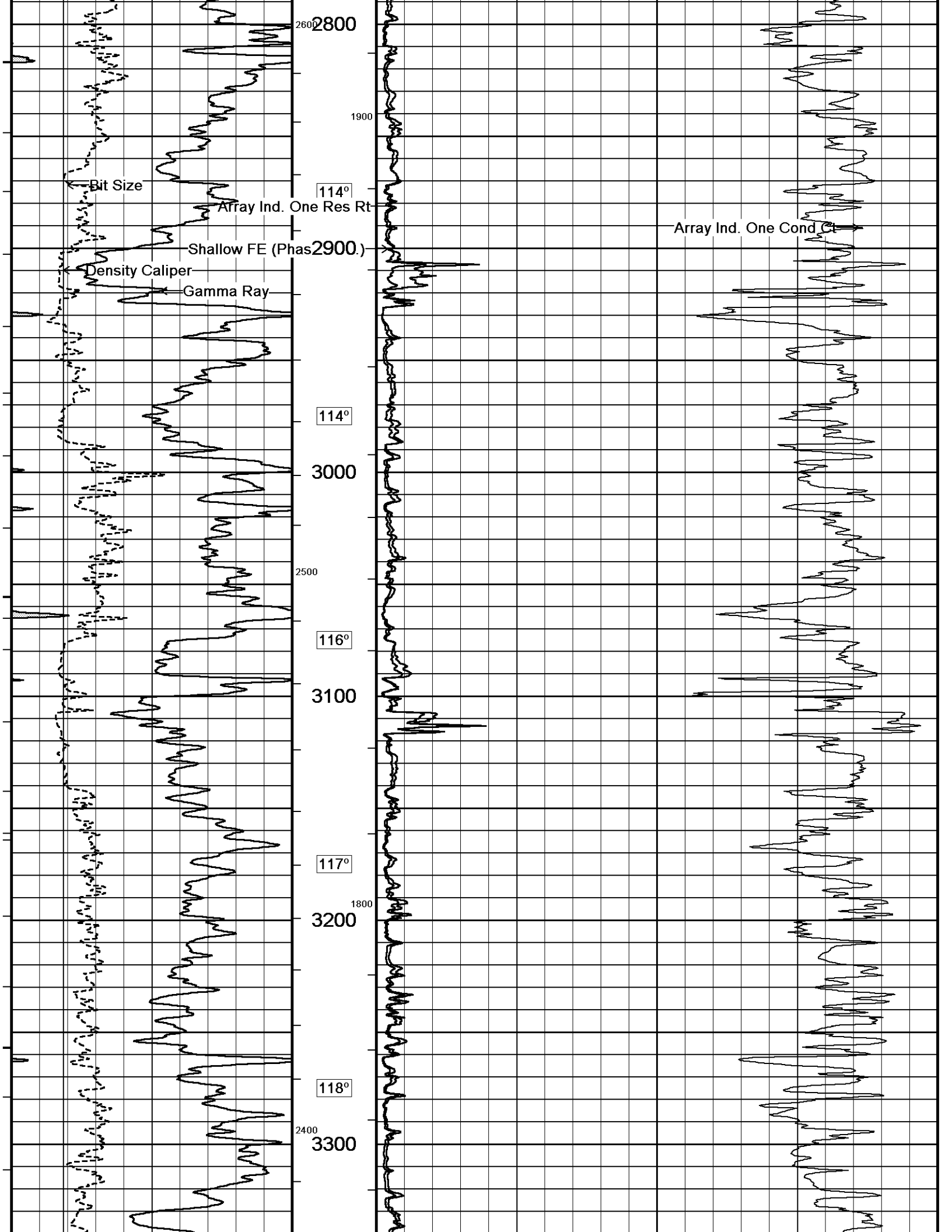
SERVICE ORDER #3529618

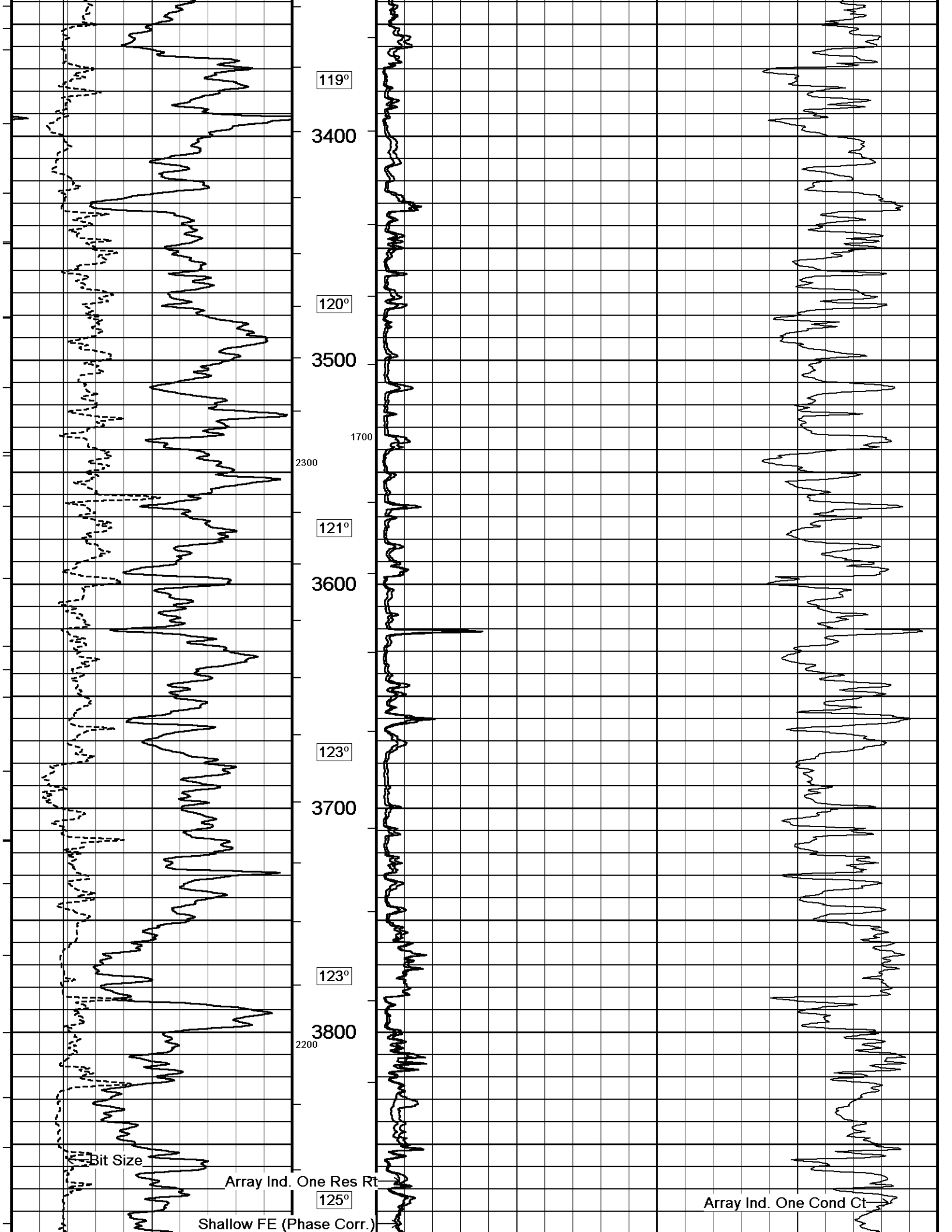
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

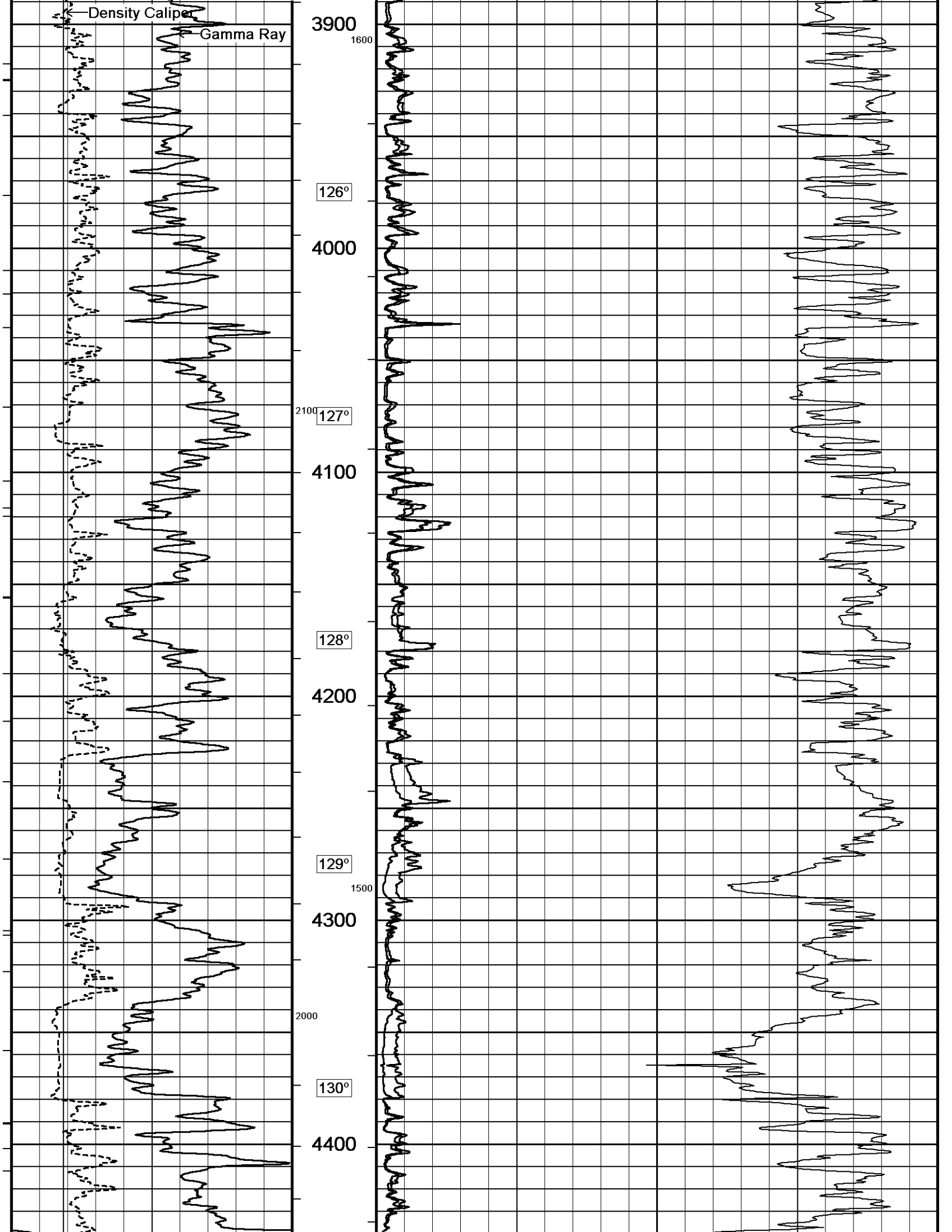


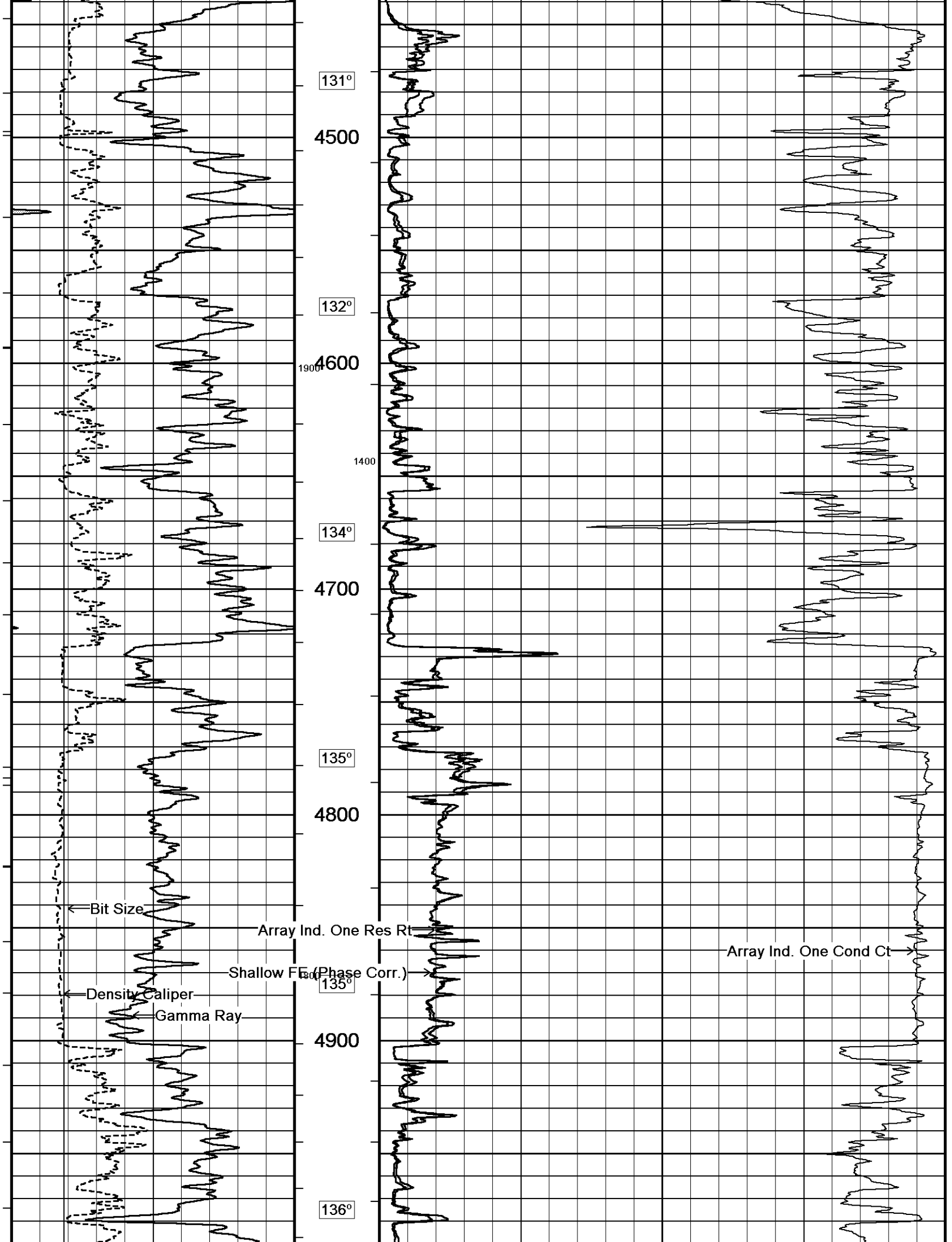




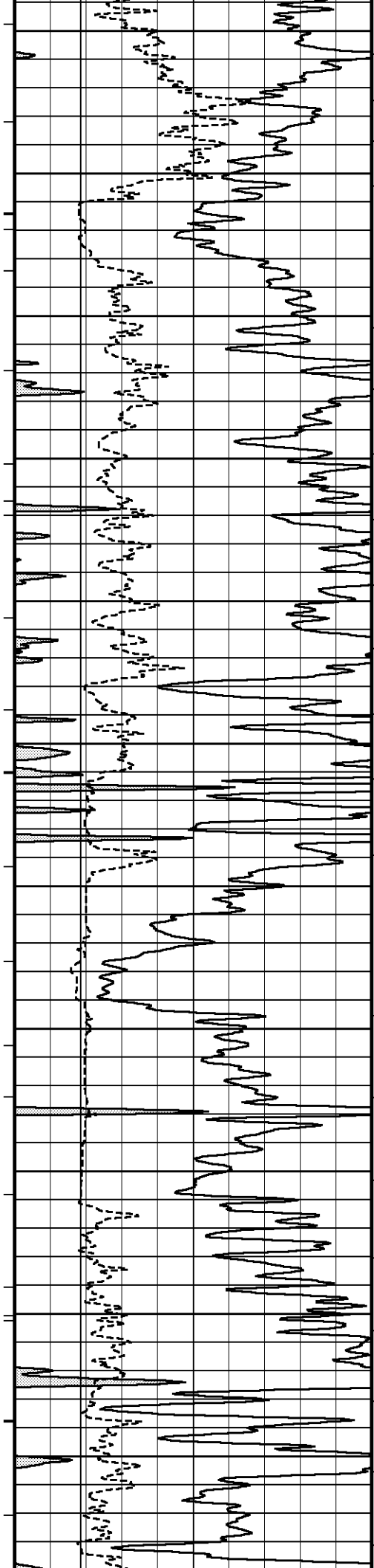




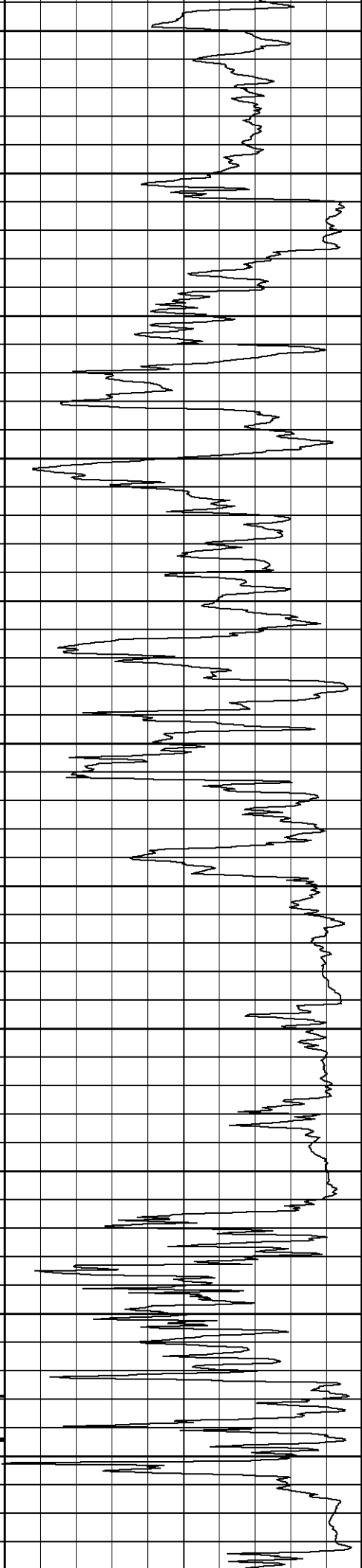
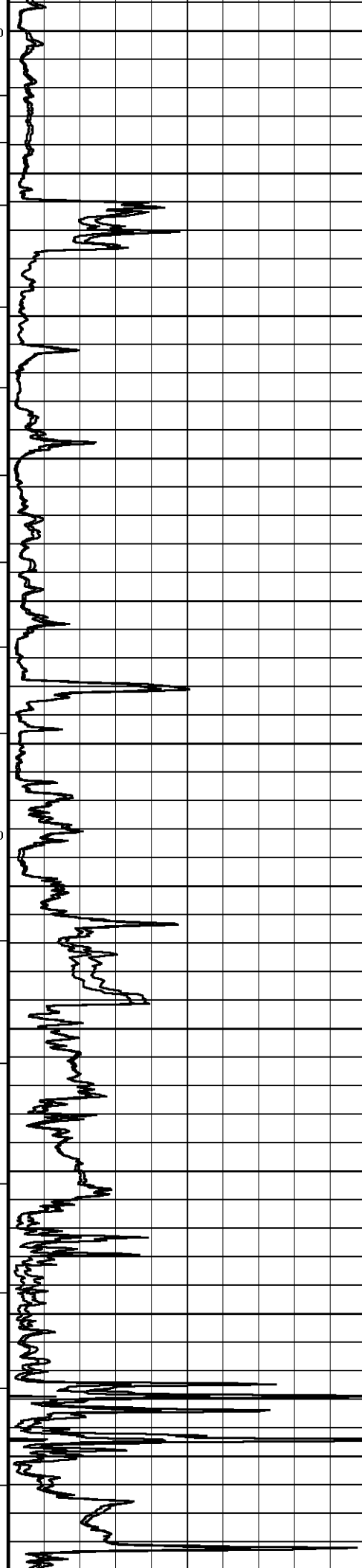


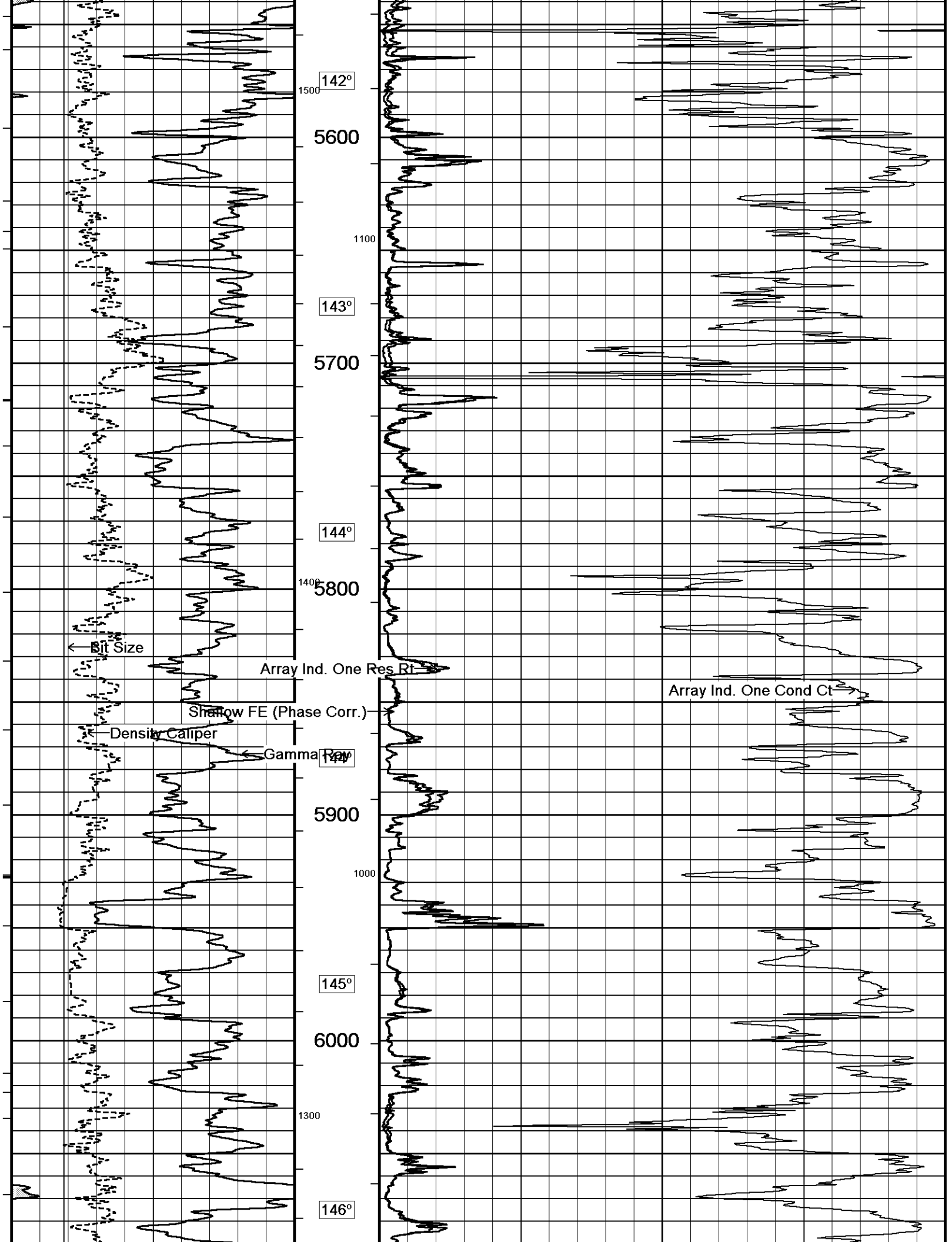


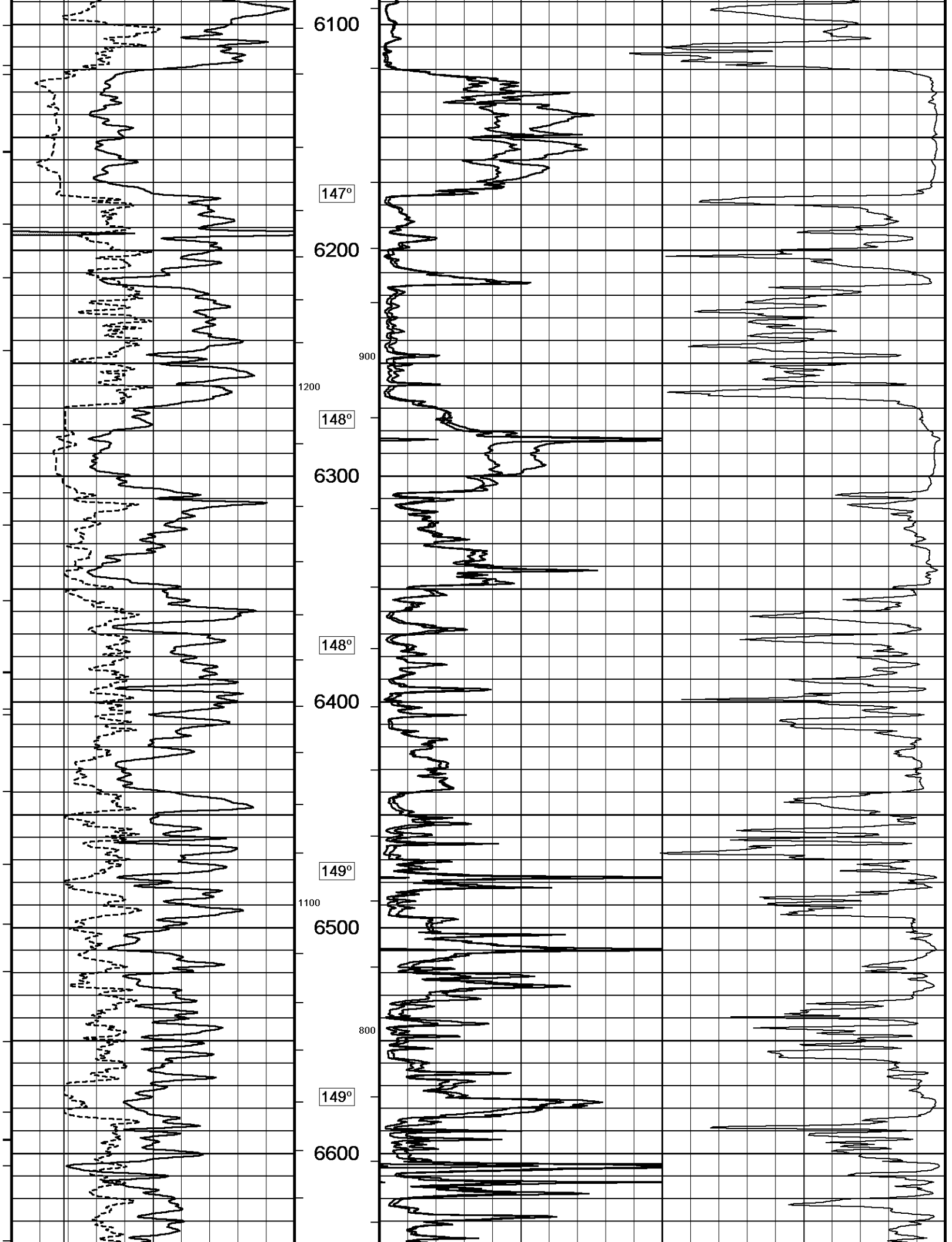


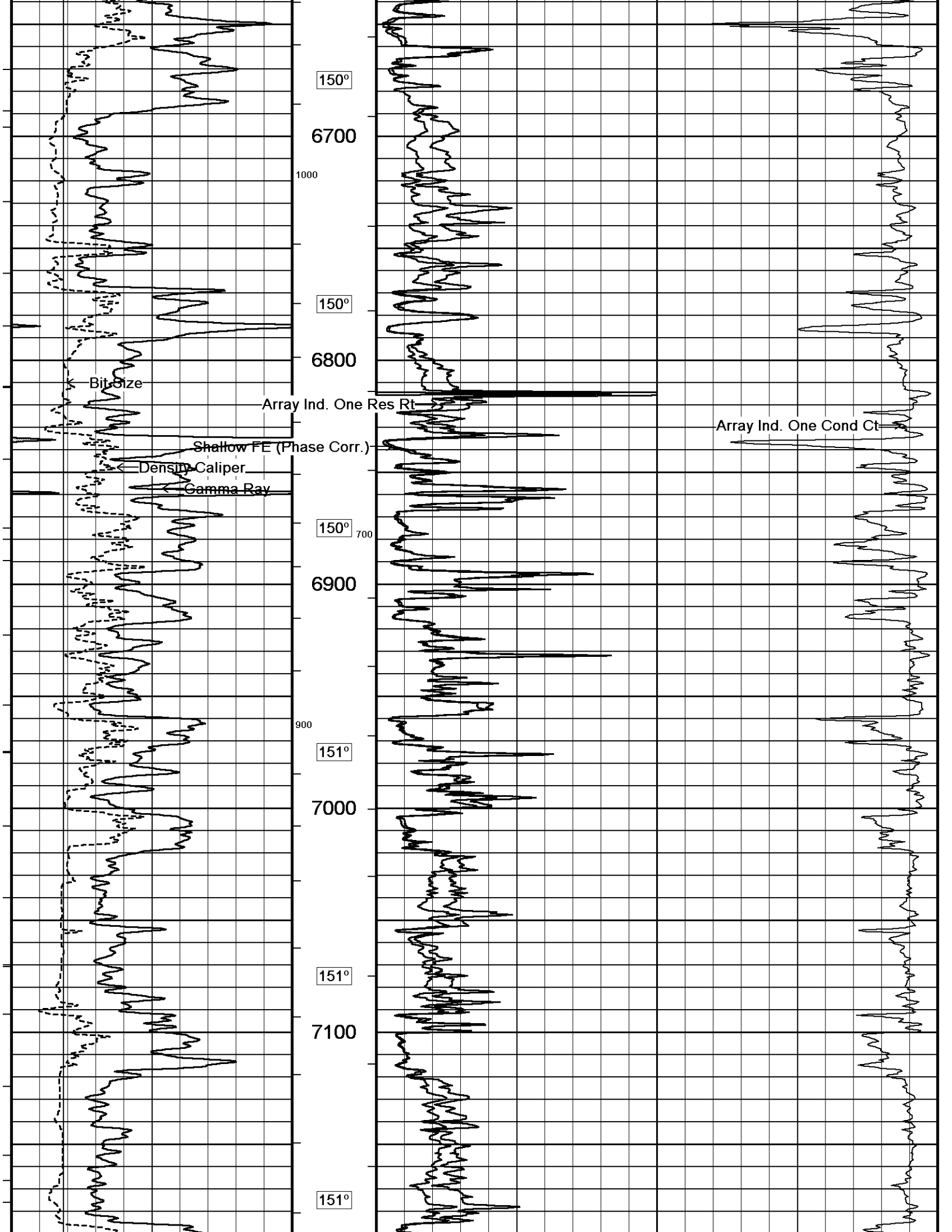


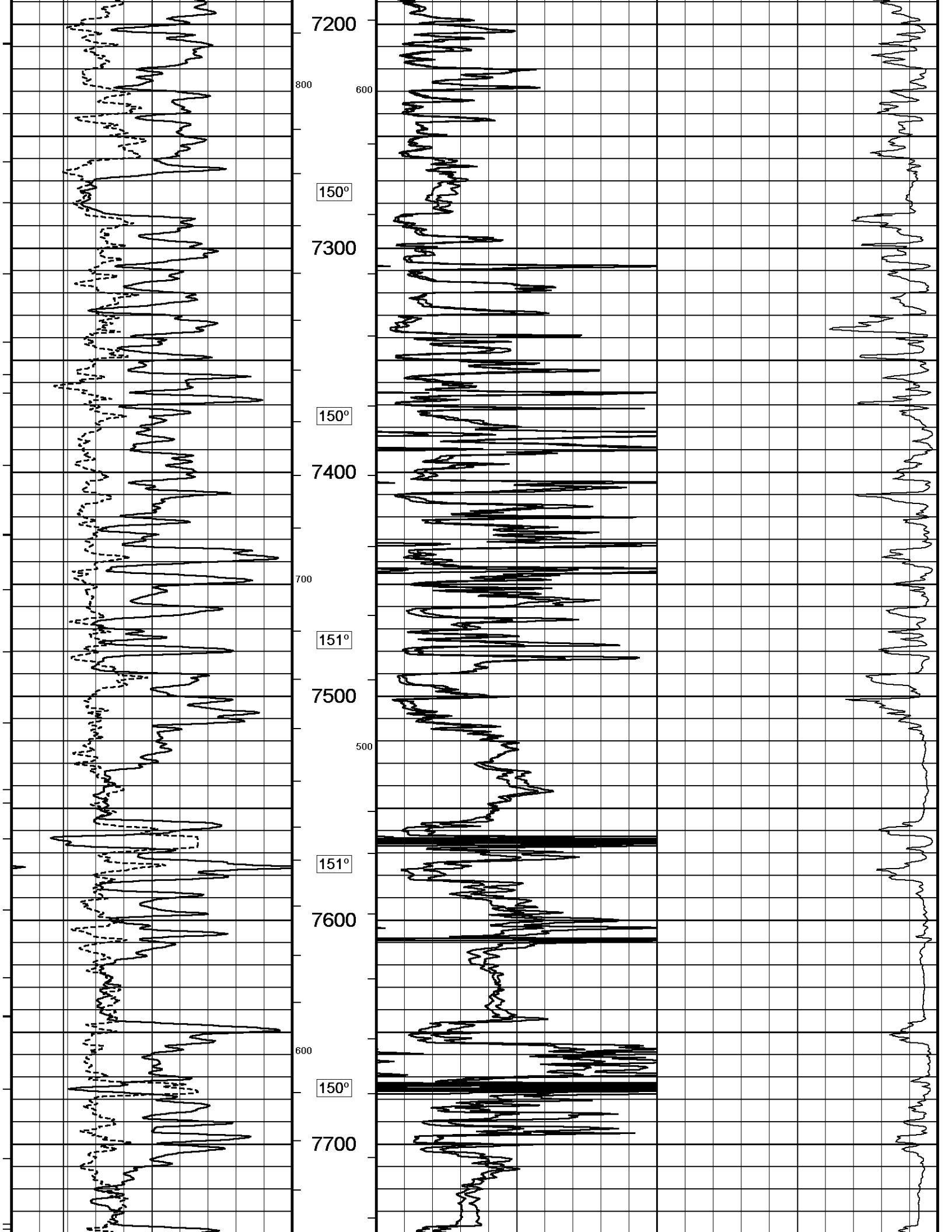
5000<sup>300</sup>  
1700  
5100  
138°  
5200  
138°  
5300  
1200  
139°  
1600  
5400  
141°  
5500  
141°

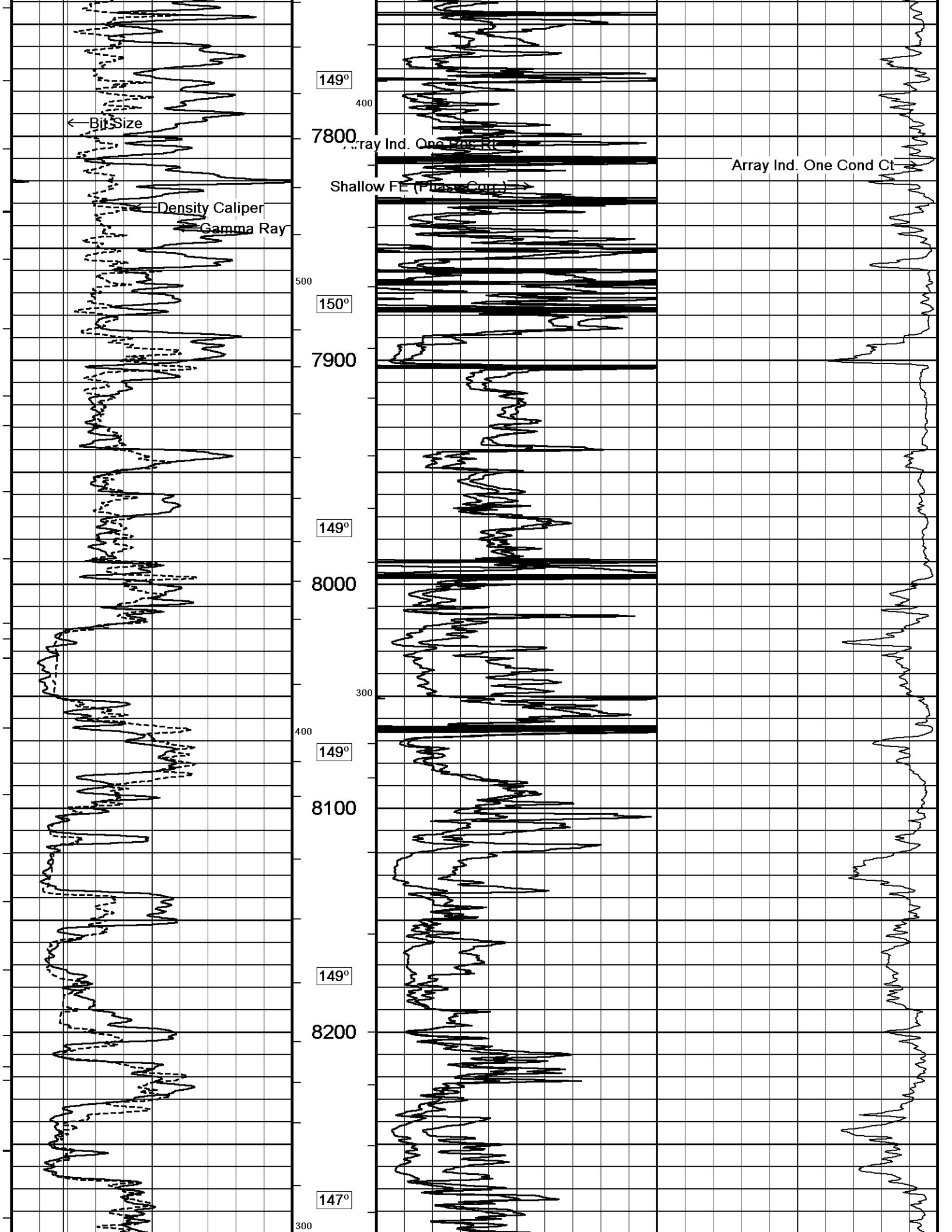


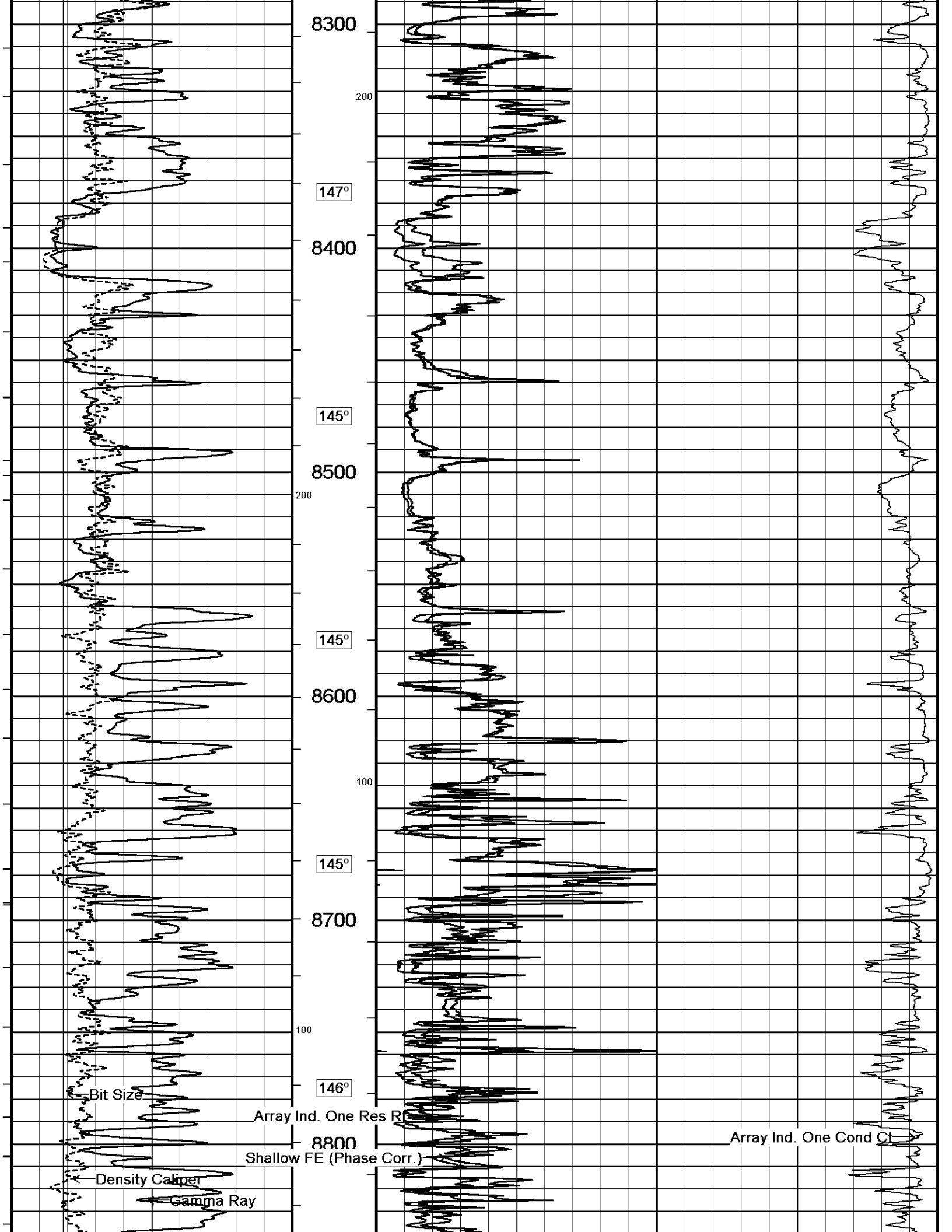


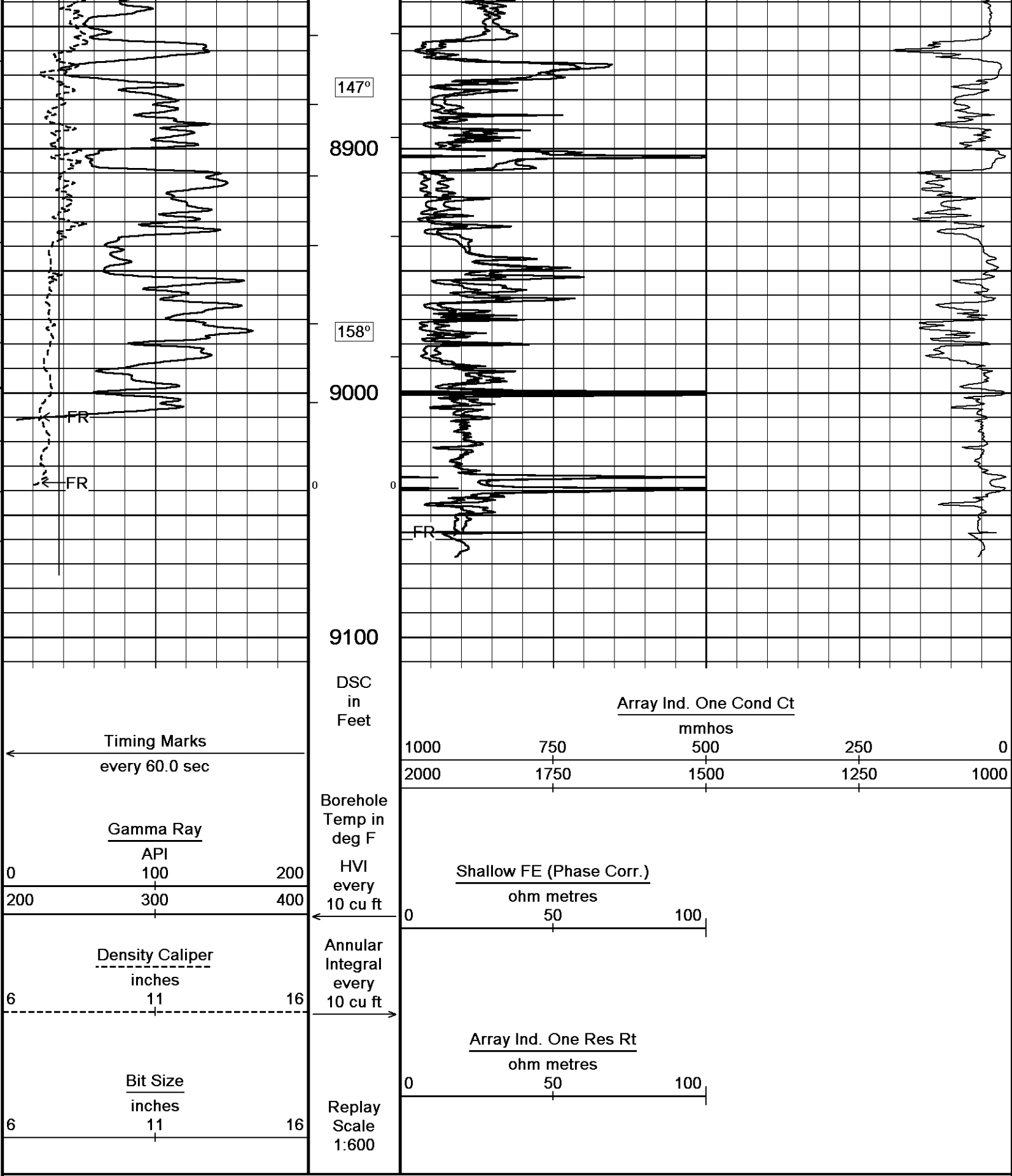










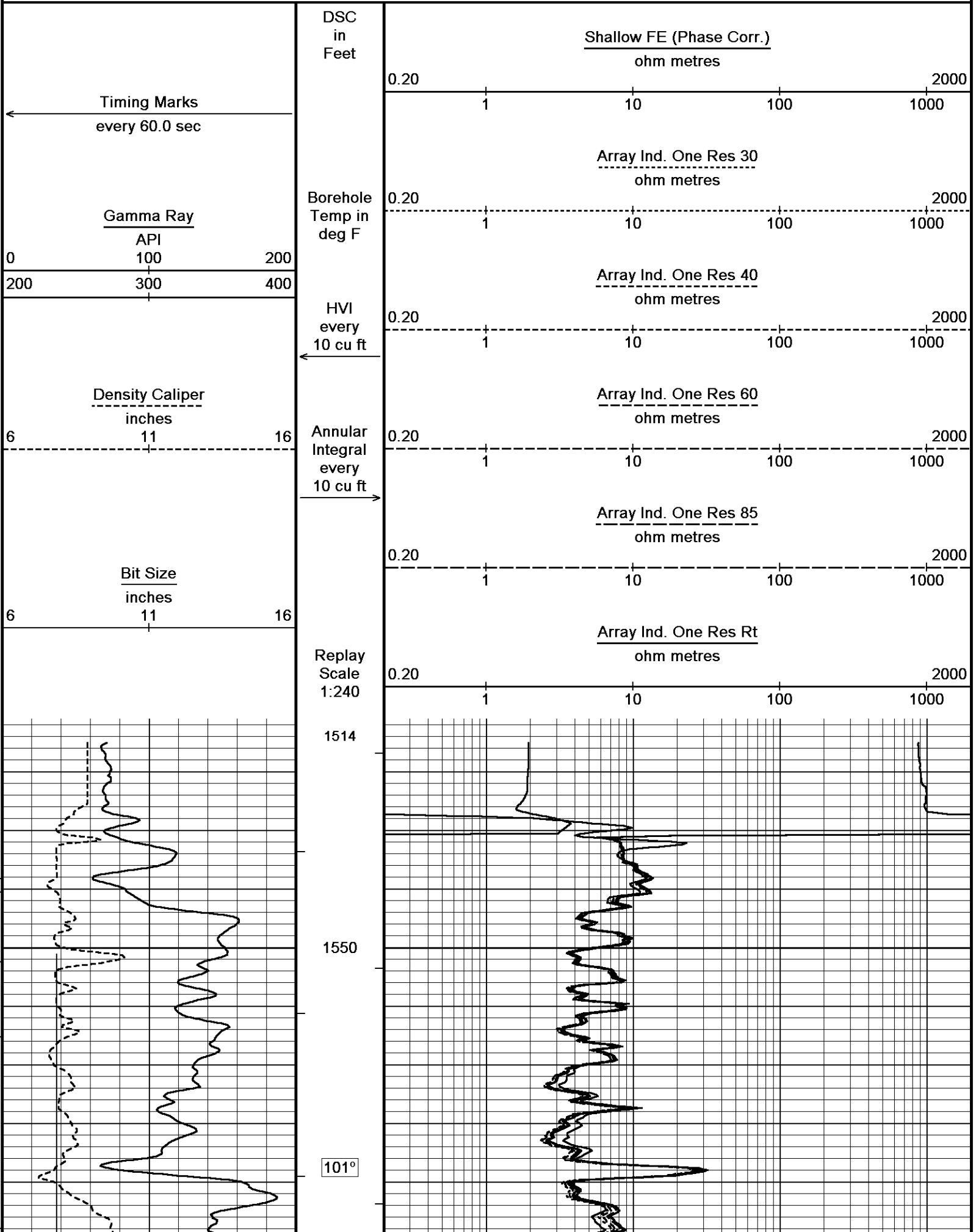


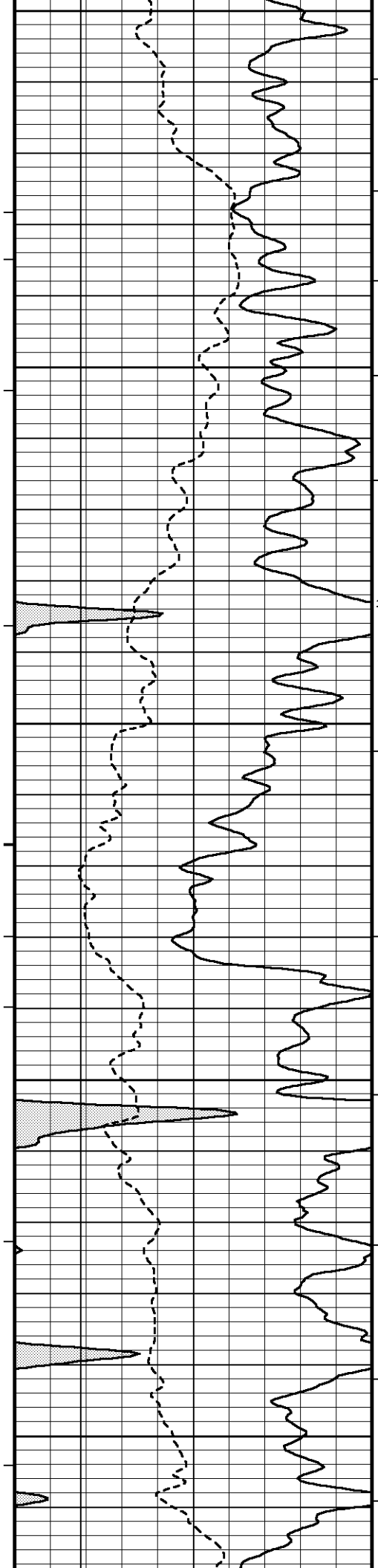
Depth Based Data - Maximum Sampling Increment 10.0cm  
Filename: C:\DOCUME~1\154681\LOCALS~1\Temp\Weatherf...\Jacks Draw Unit 18 Depth RTAP.dta  
System Versions: Processed with 11.03.4044 Plotted with 12.01.3513  
Plotted on 11-NOV-2011 09:06  
Recorded on 10-NOV-2011 08:07

↑ 2 INCH MAIN LOG ↑

↓ 5 INCH MAIN LOG ↓







1600  
1650  
1700  
1750  
1800

1600

101°

1650

2300

3100

102°

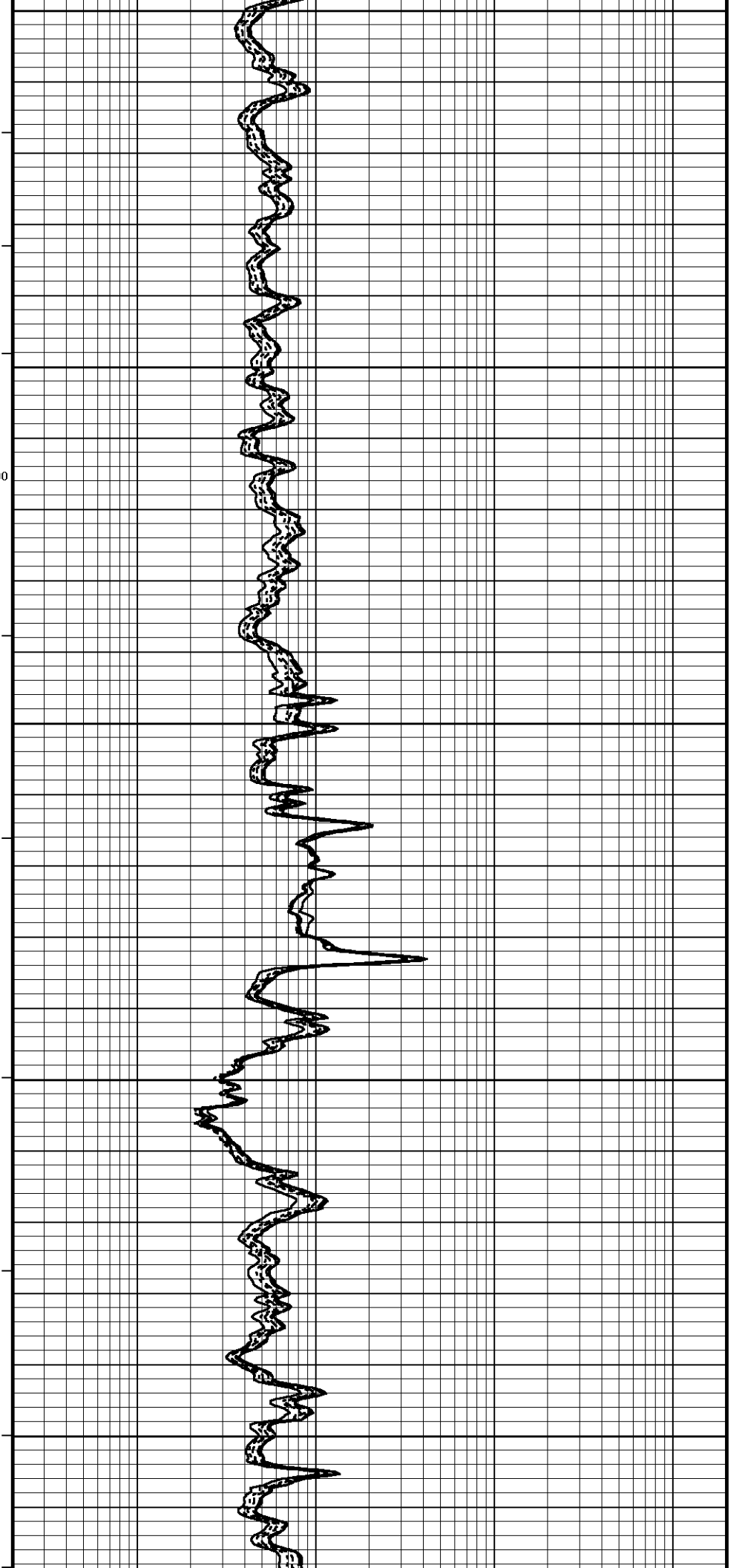
1700

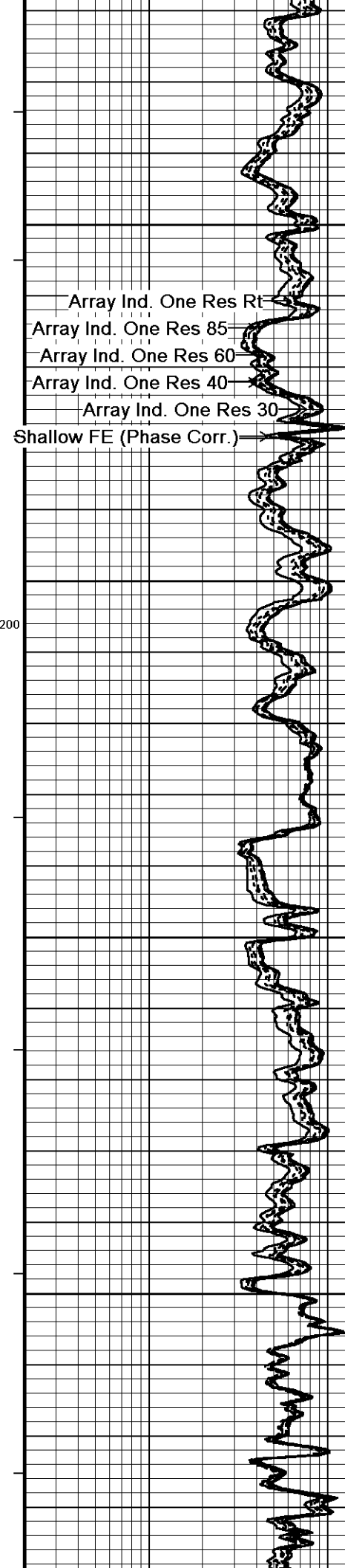
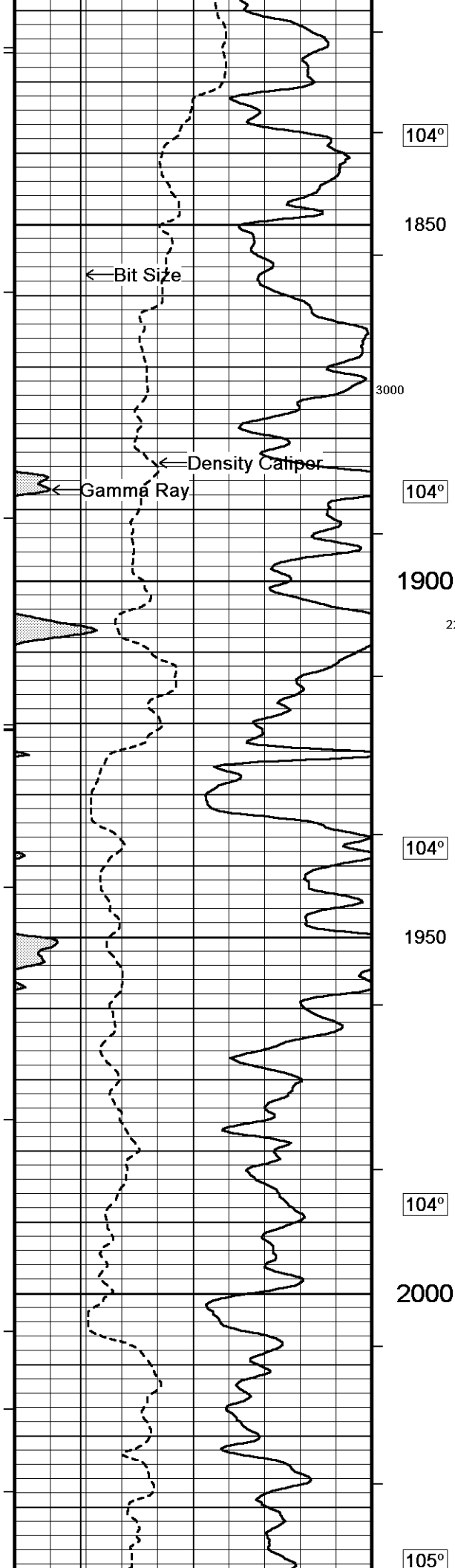
103°

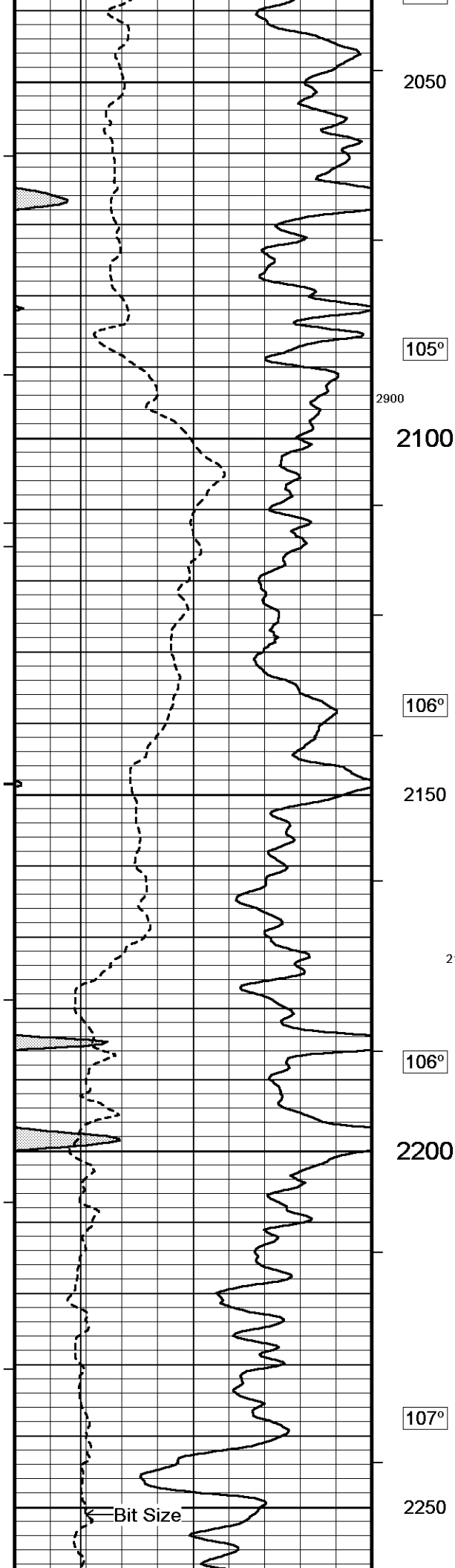
1750

103°

1800







2050

105°

2900

2100

106°

2150

2100

106°

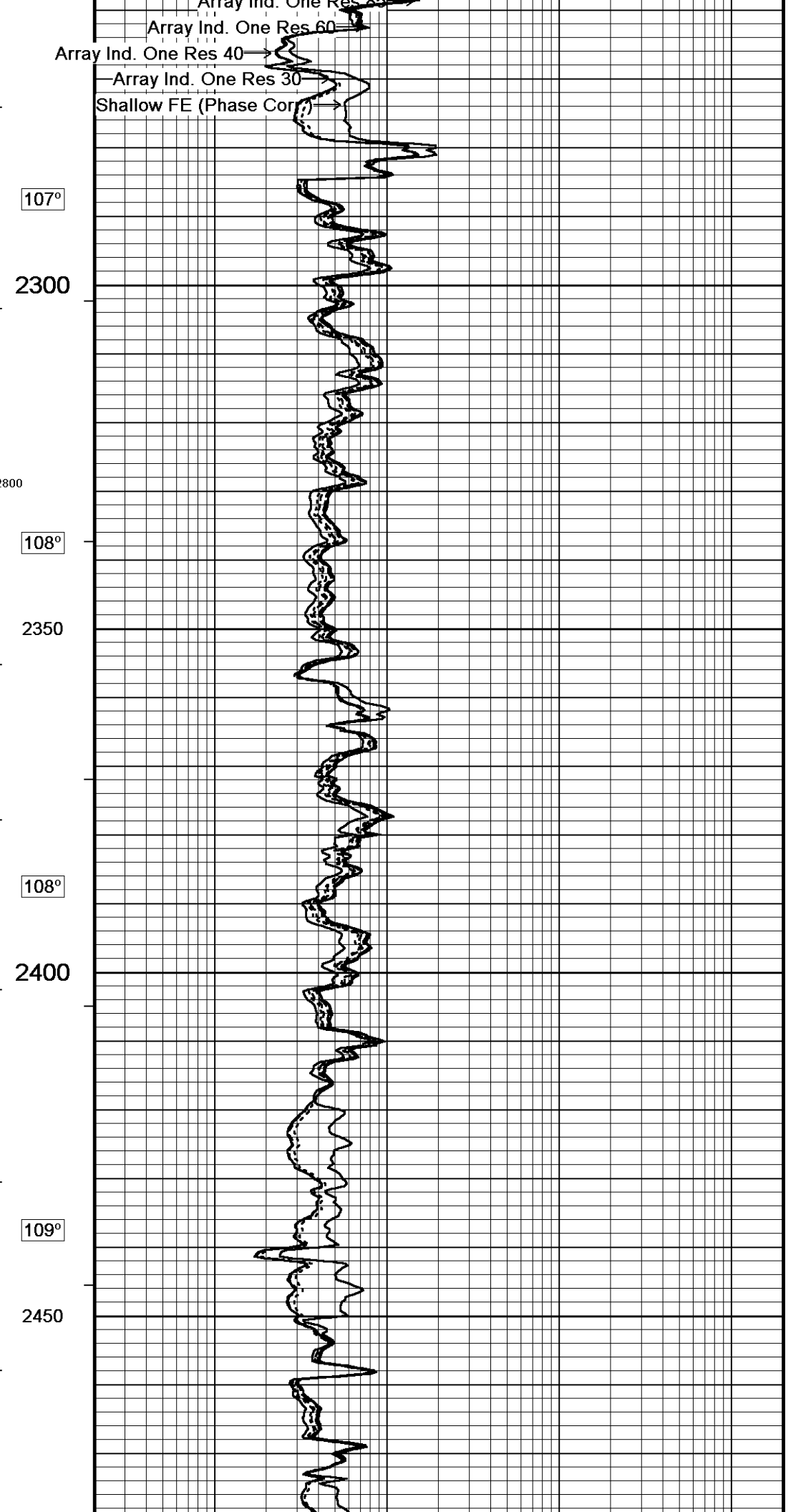
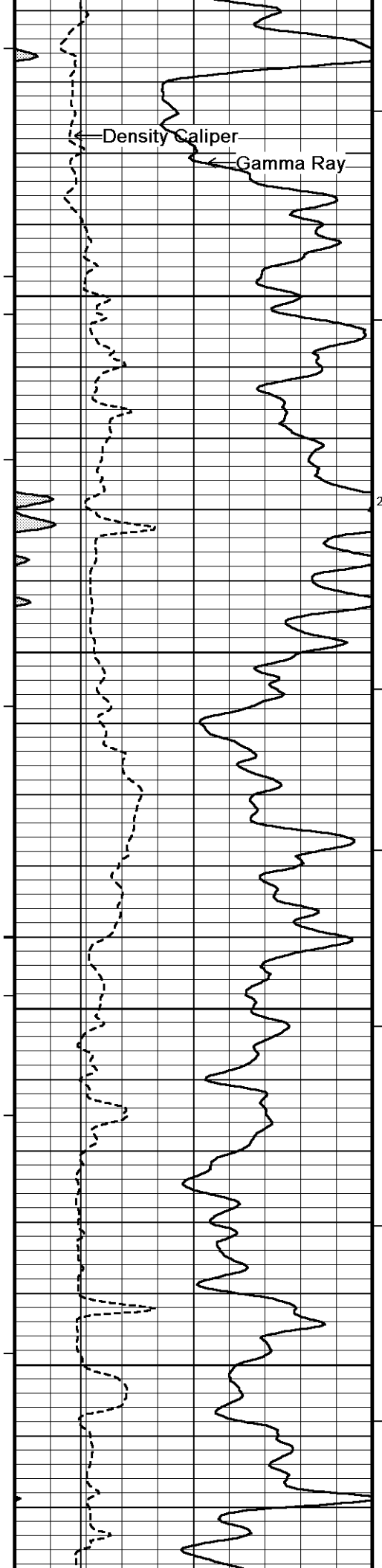
2200

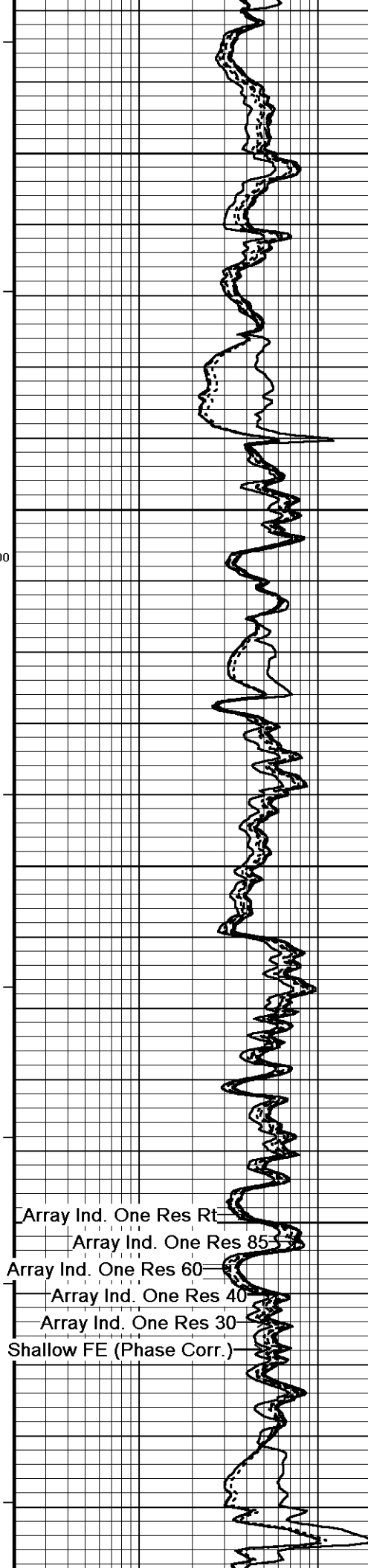
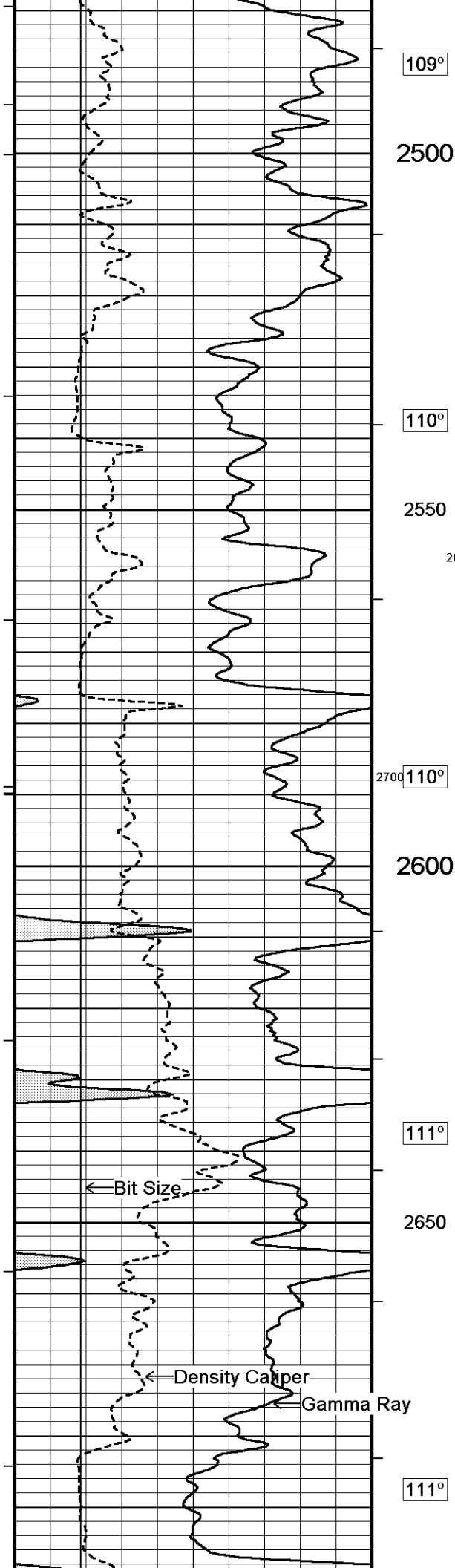
107°

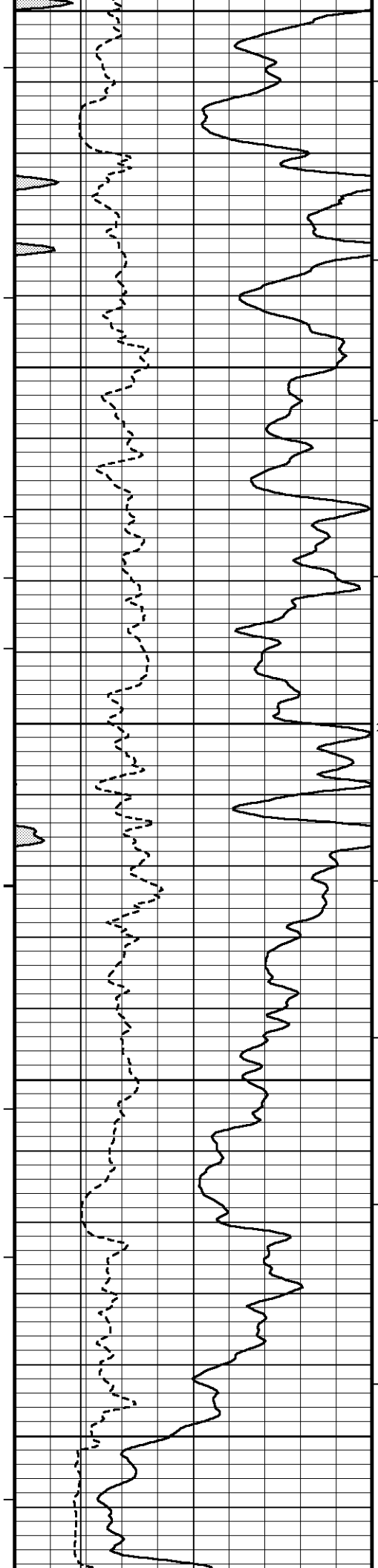
2250

Array Ind. One Res Rt

Array Ind. One Res Rt







2700

112°

2750

113°

2800

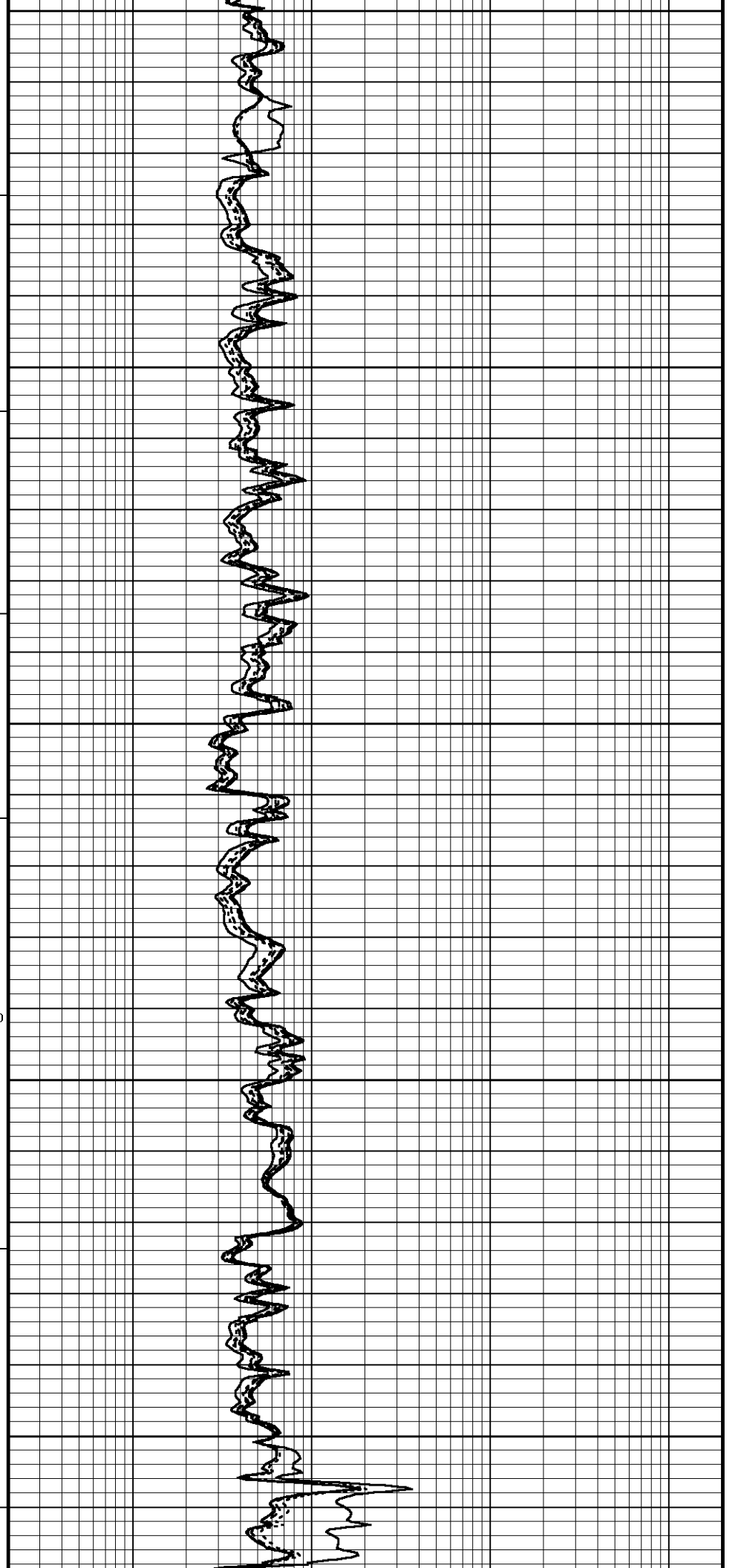
113°

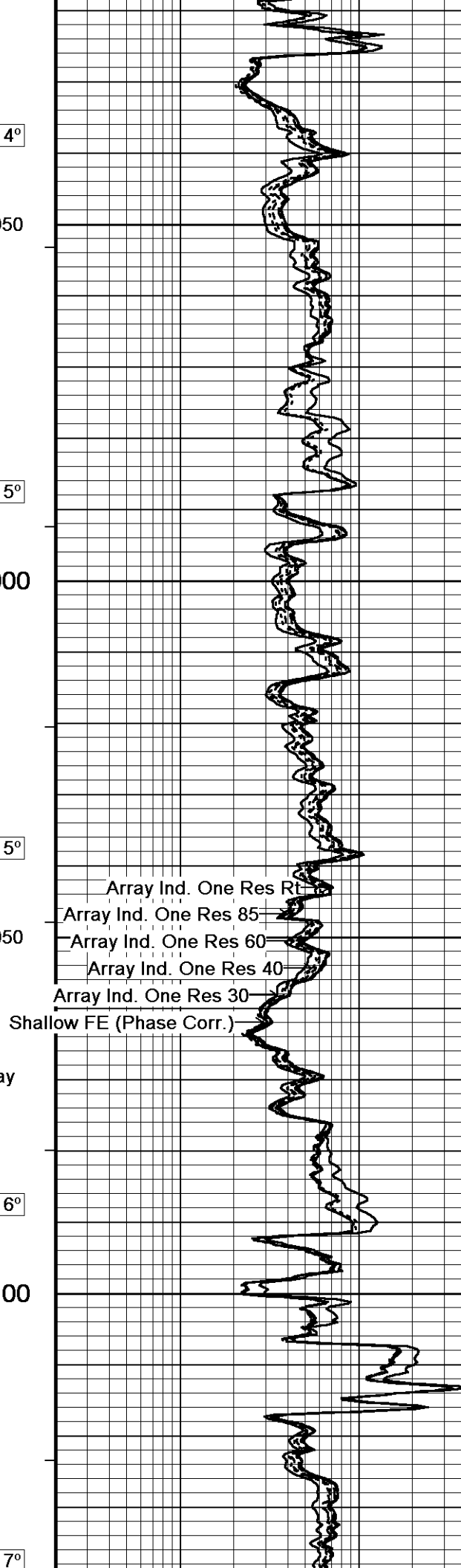
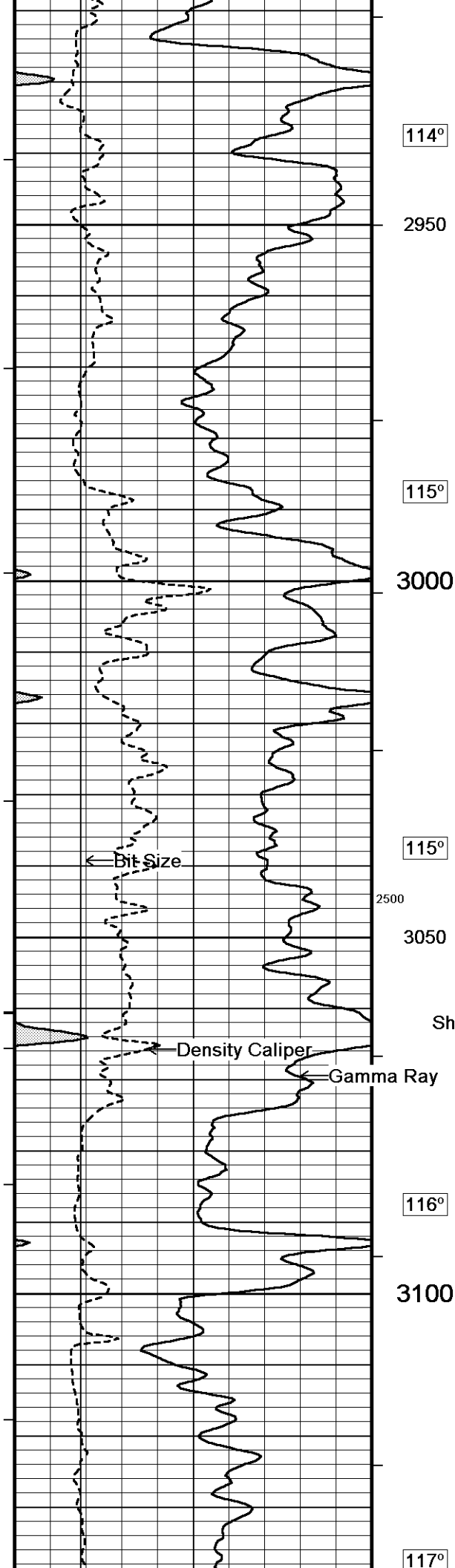
1900

2850

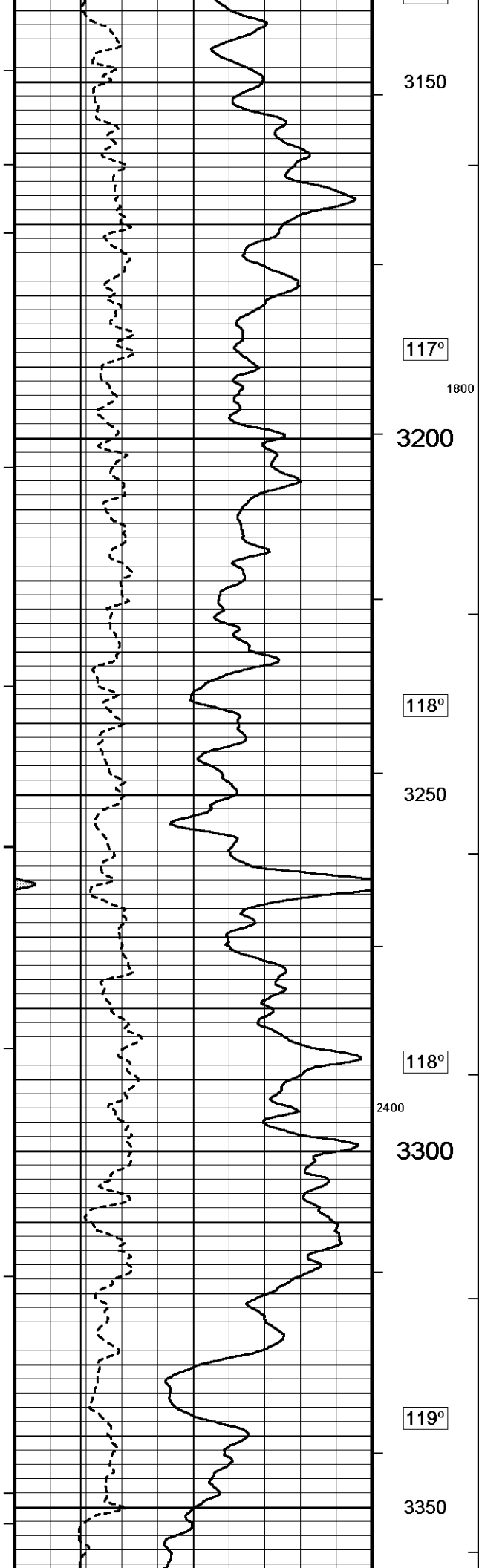
114°

2900









3150

117°

1800

3200

118°

3250

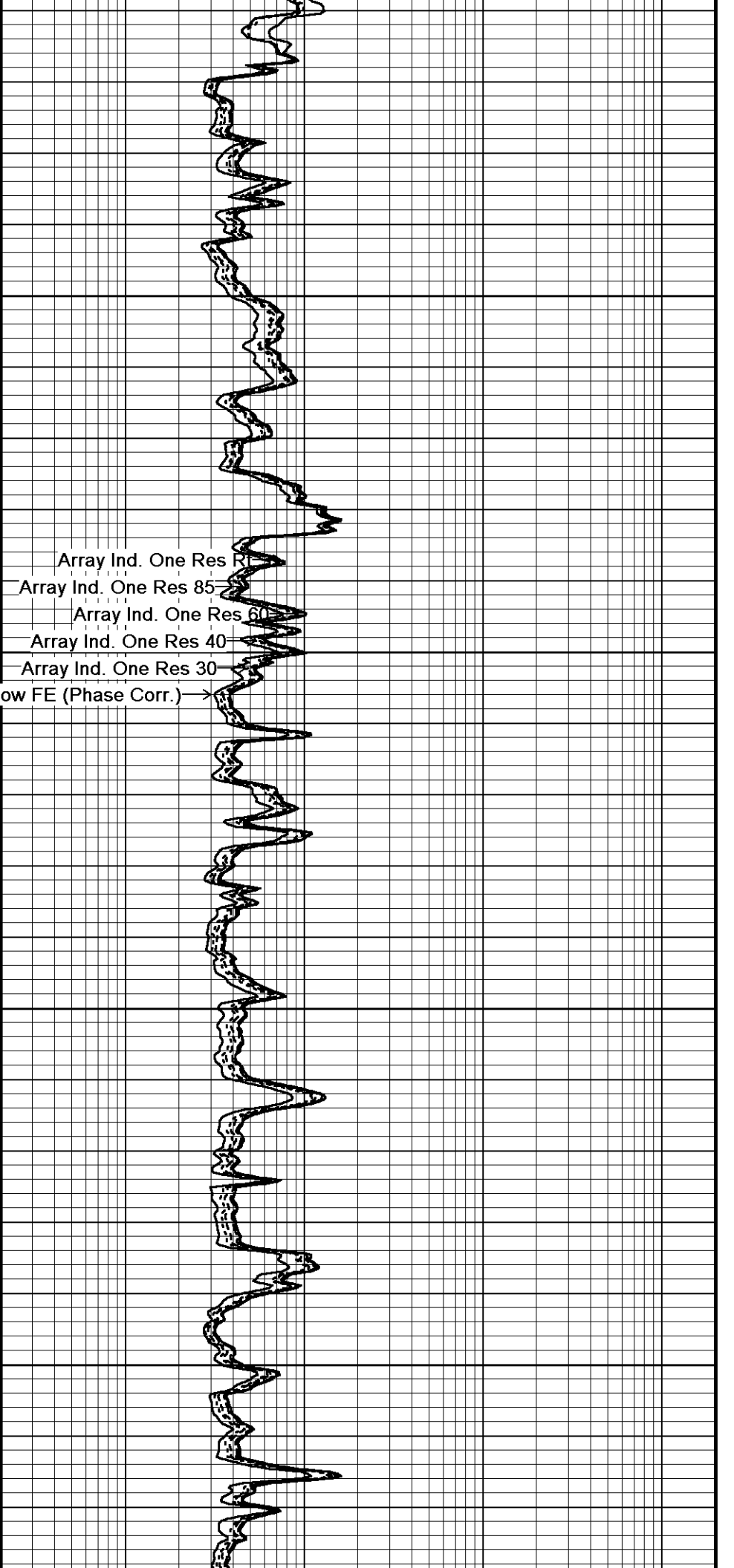
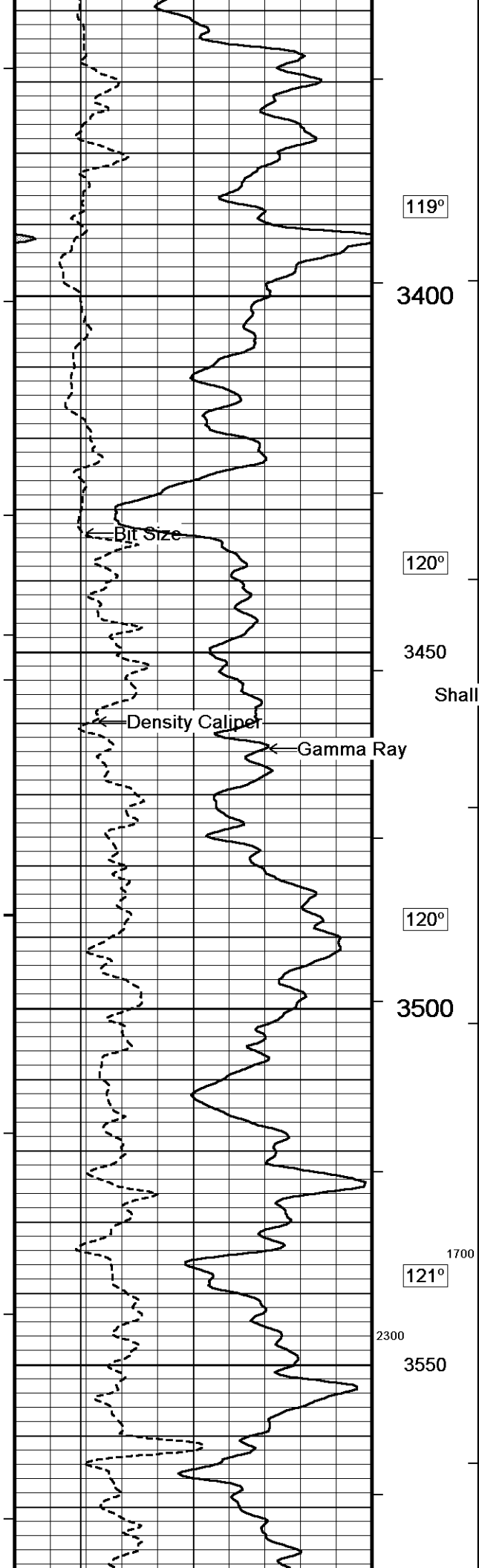
118°

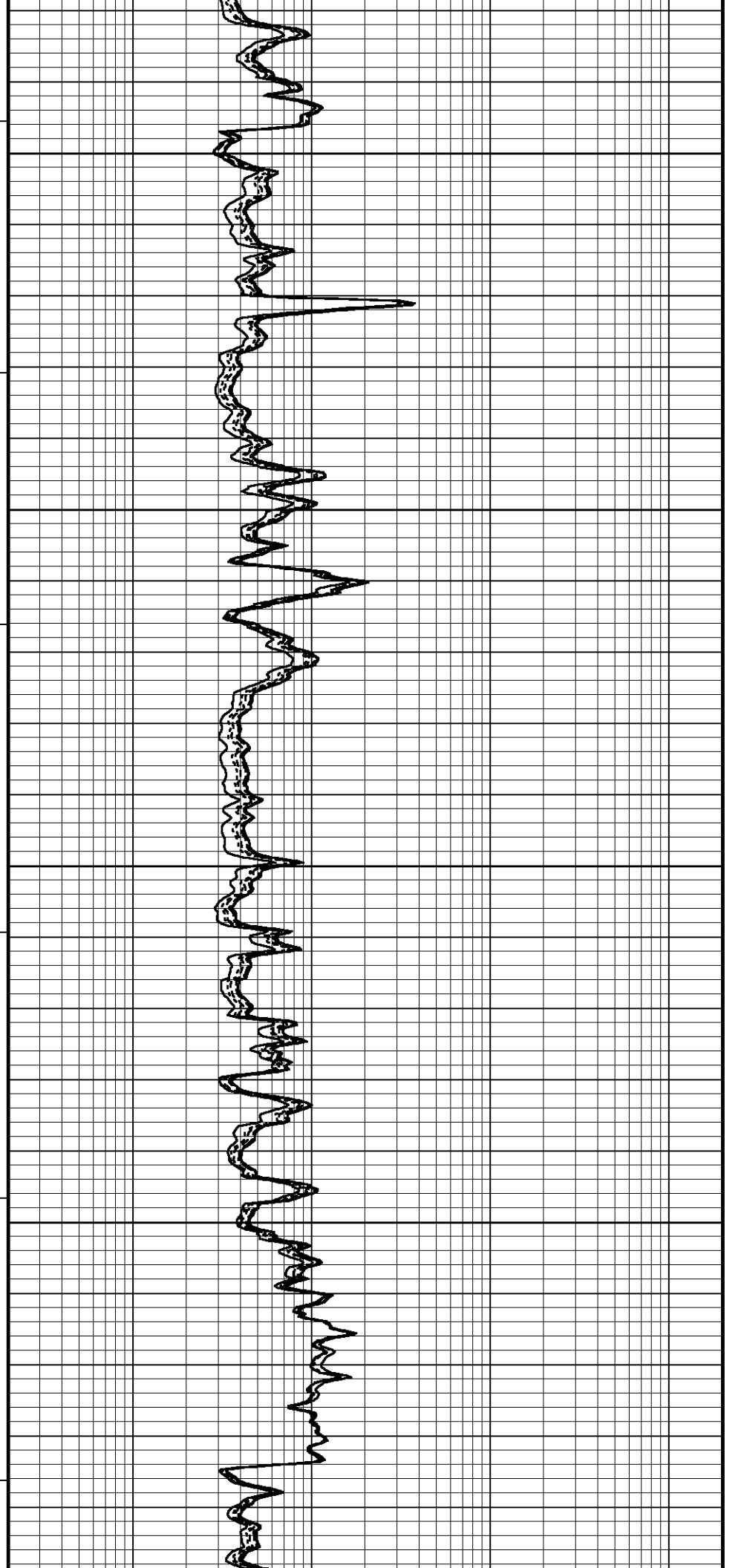
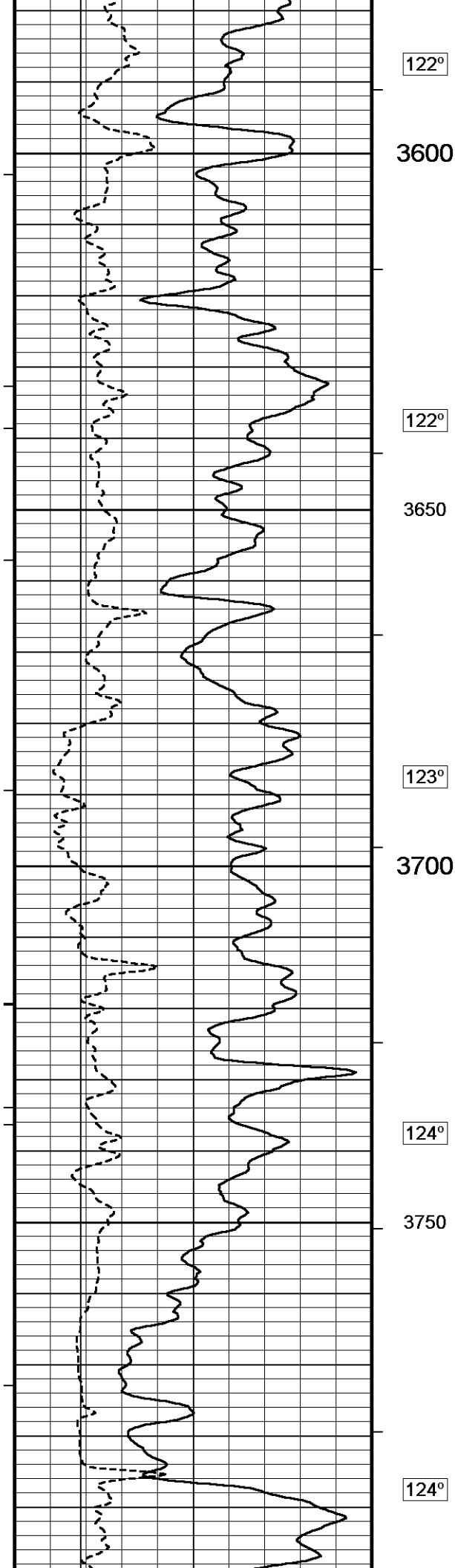
2400

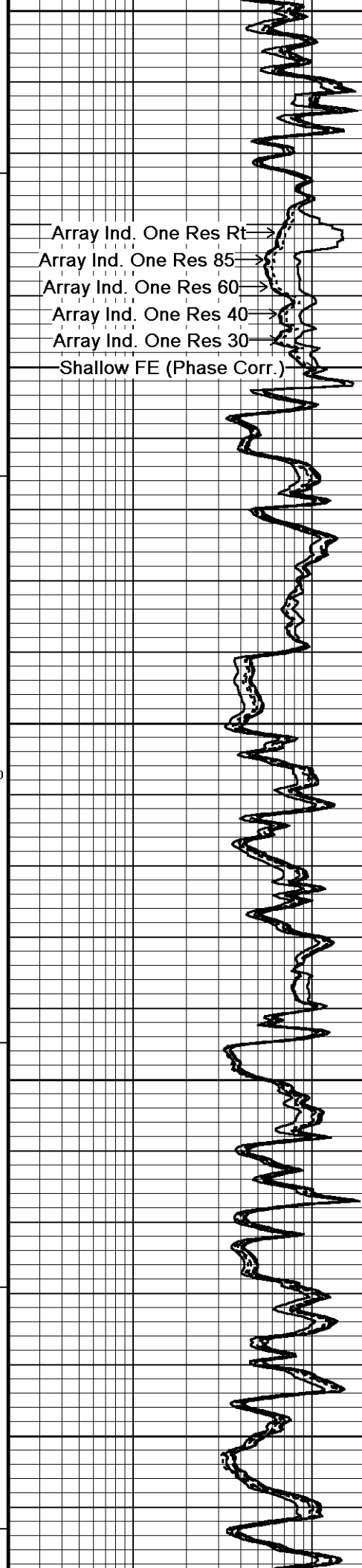
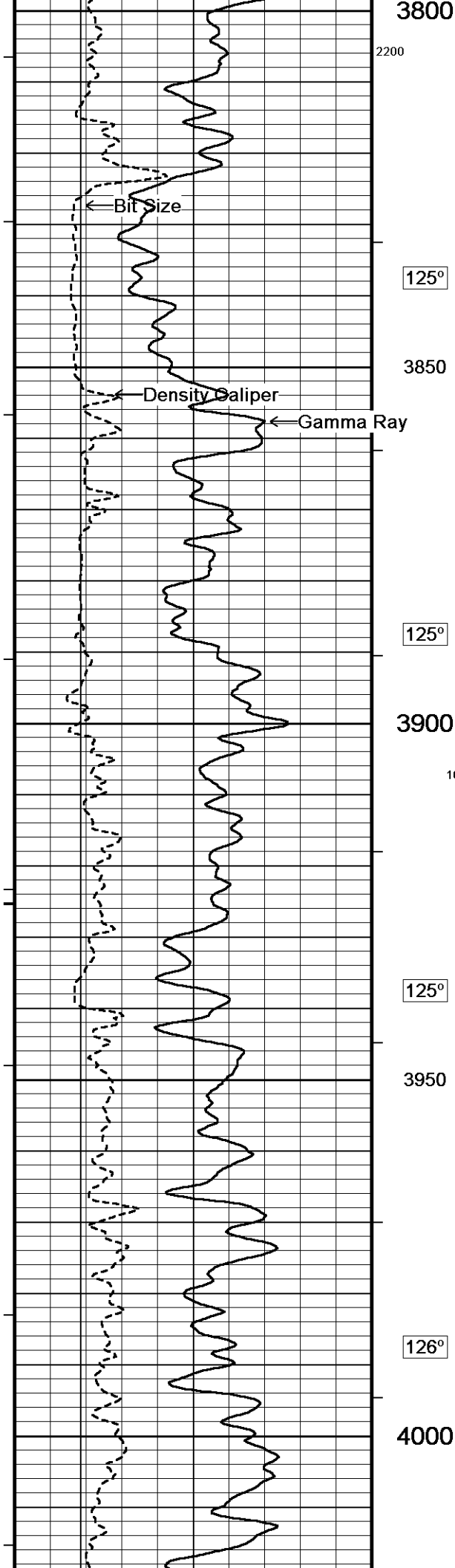
3300

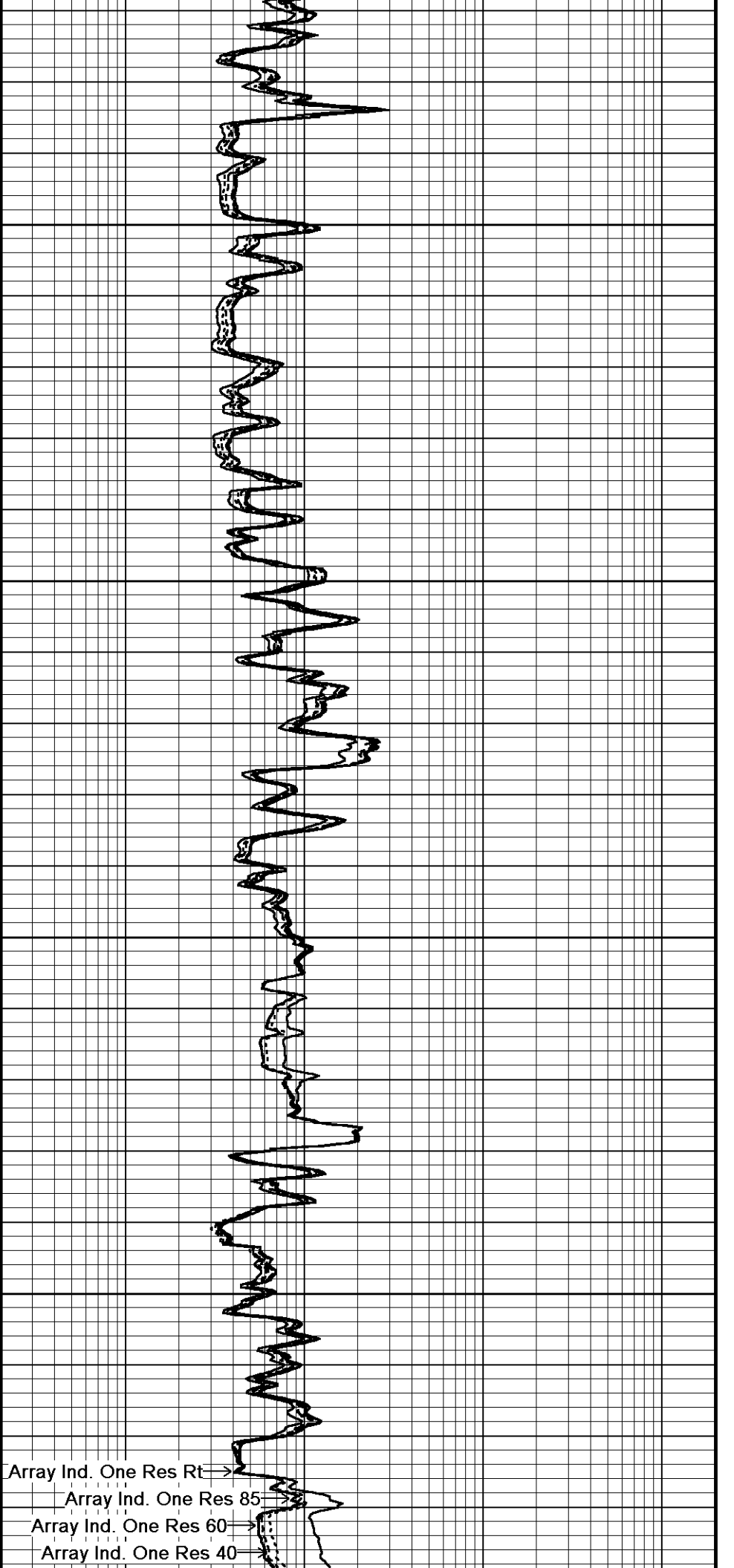
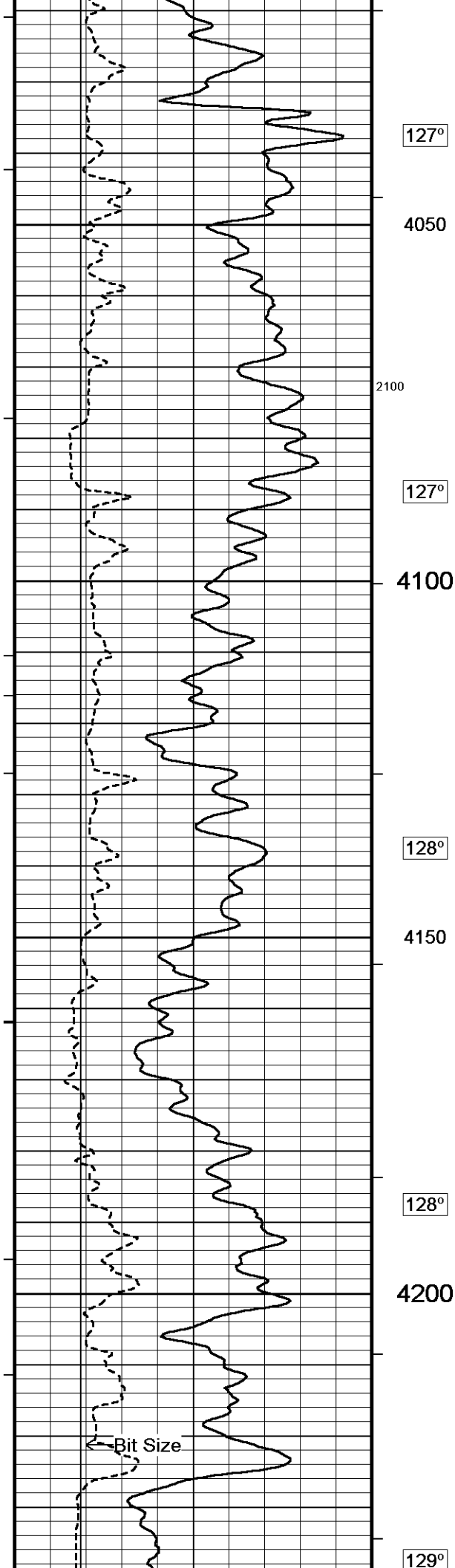
119°

3350









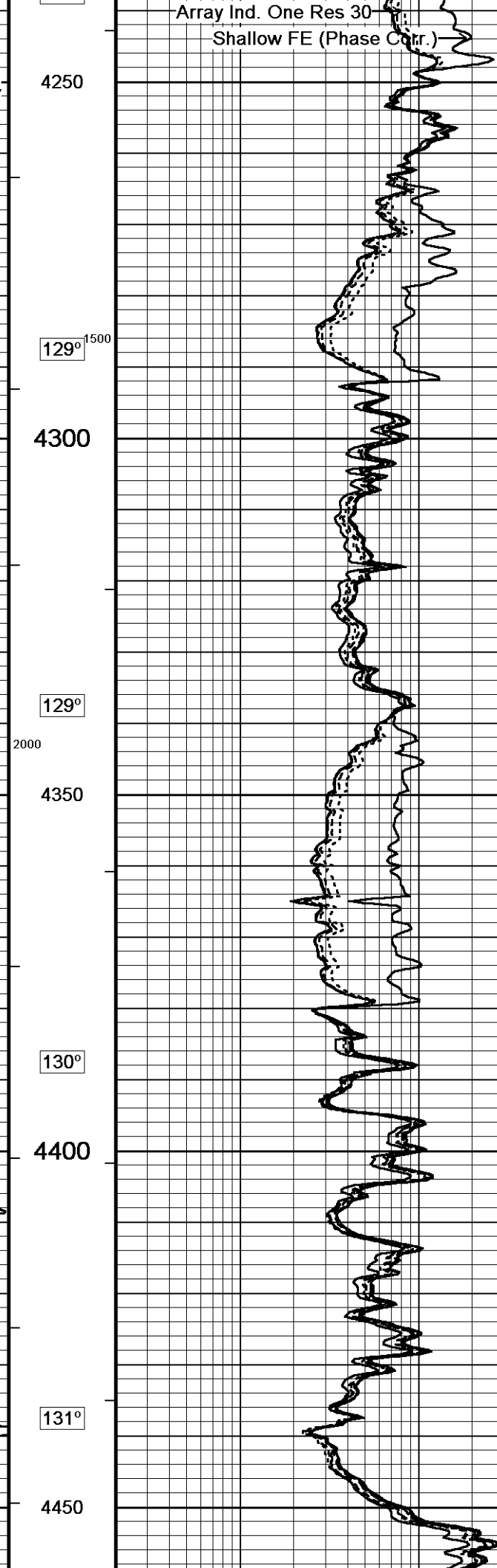
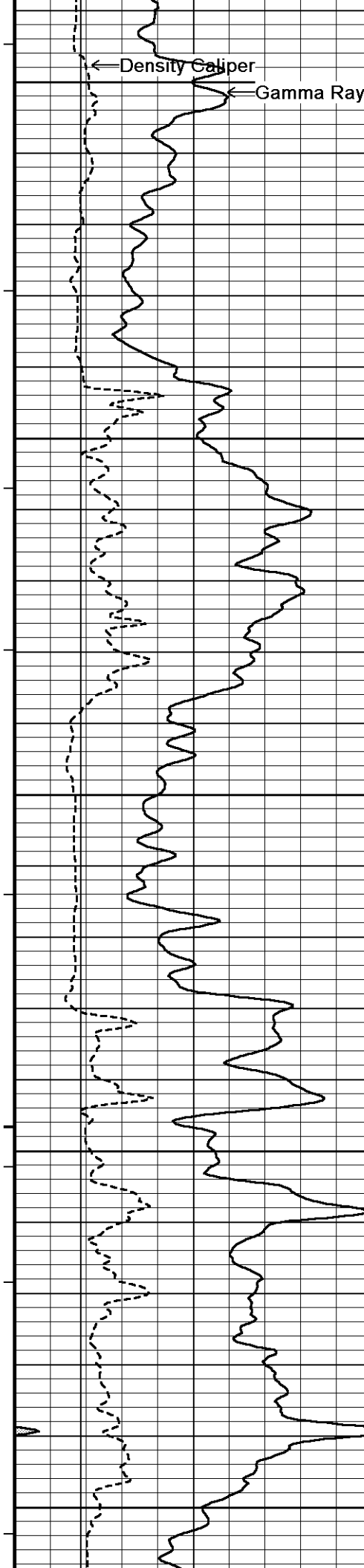
Bit Size

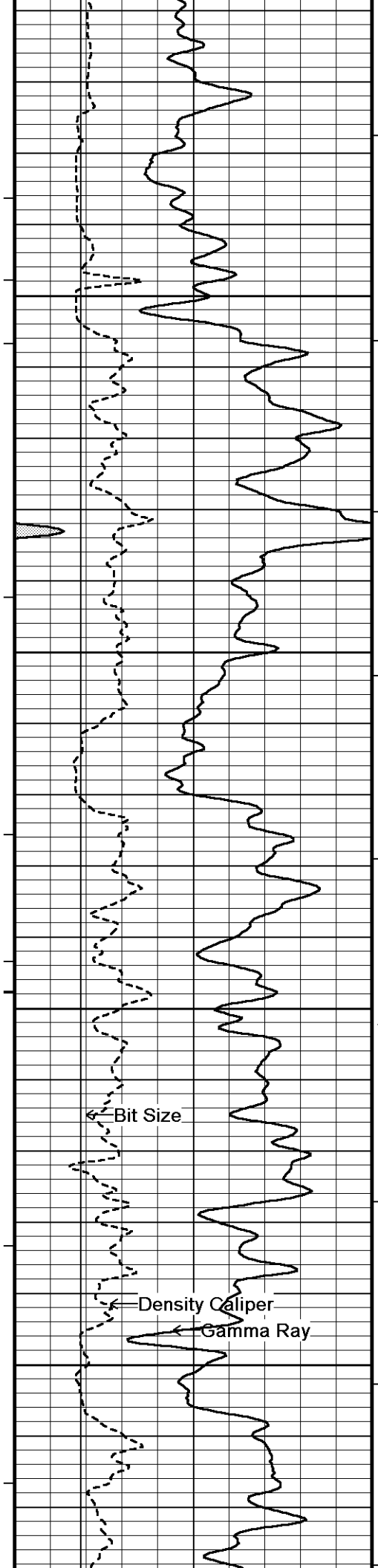
Array Ind. One Res Rt →

Array Ind. One Res 85 →

Array Ind. One Res 60 →

Array Ind. One Res 40 →





132°

4500

132°

4550

133°

4600

1900

Bit Size

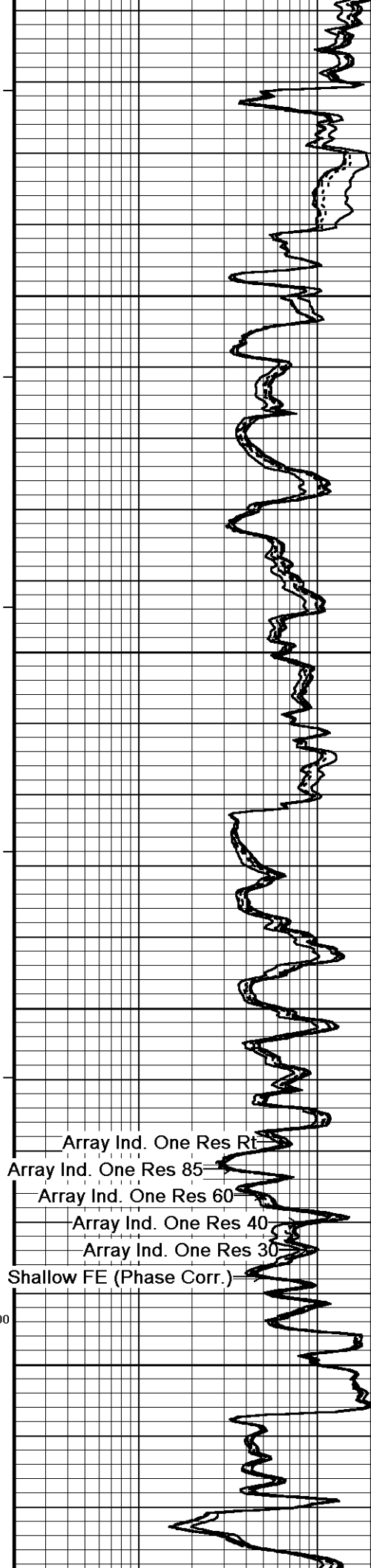
Density Caliper

Gamma Ray

134°

1400

4650



Array Ind. One Res Rt

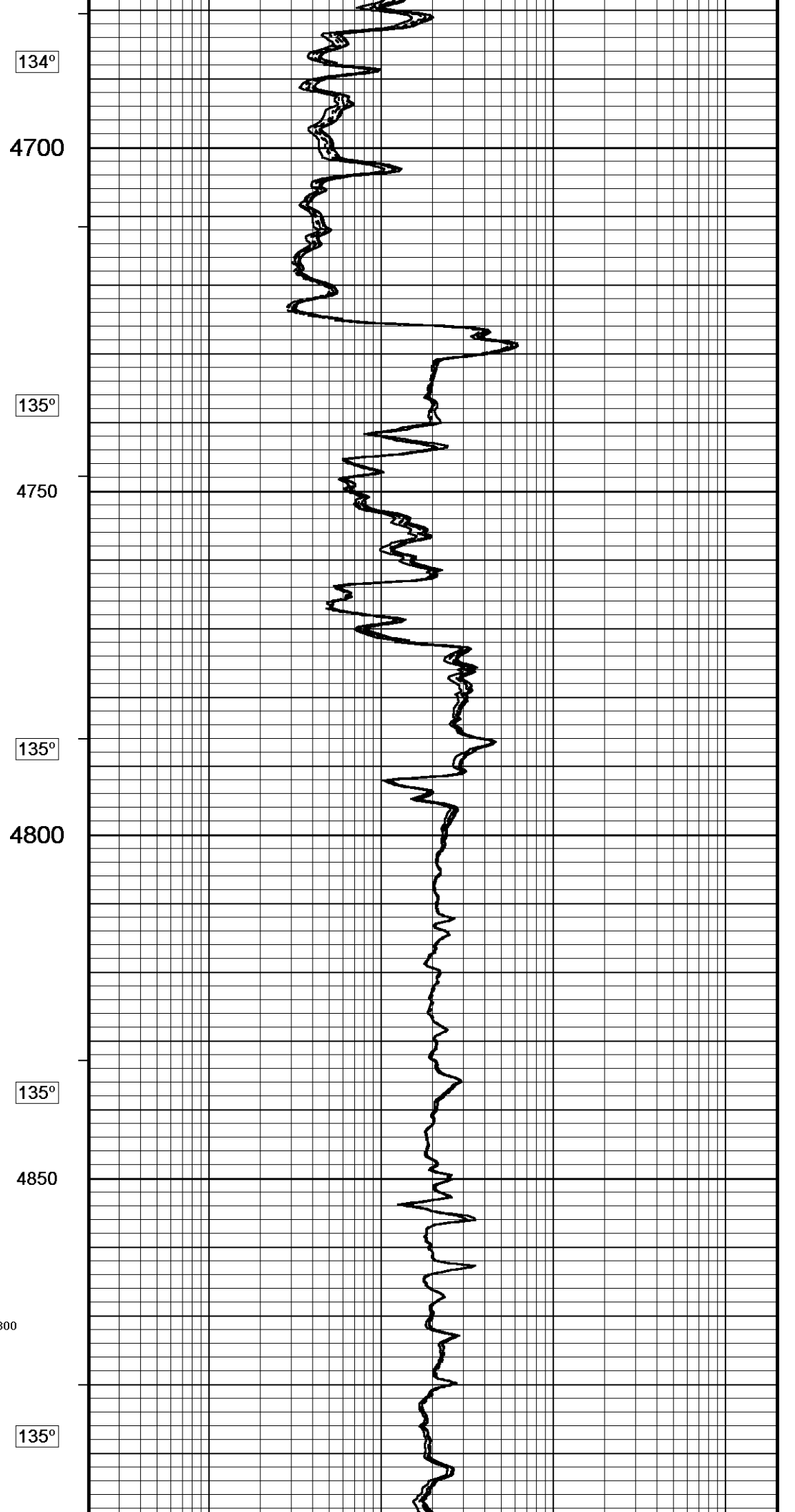
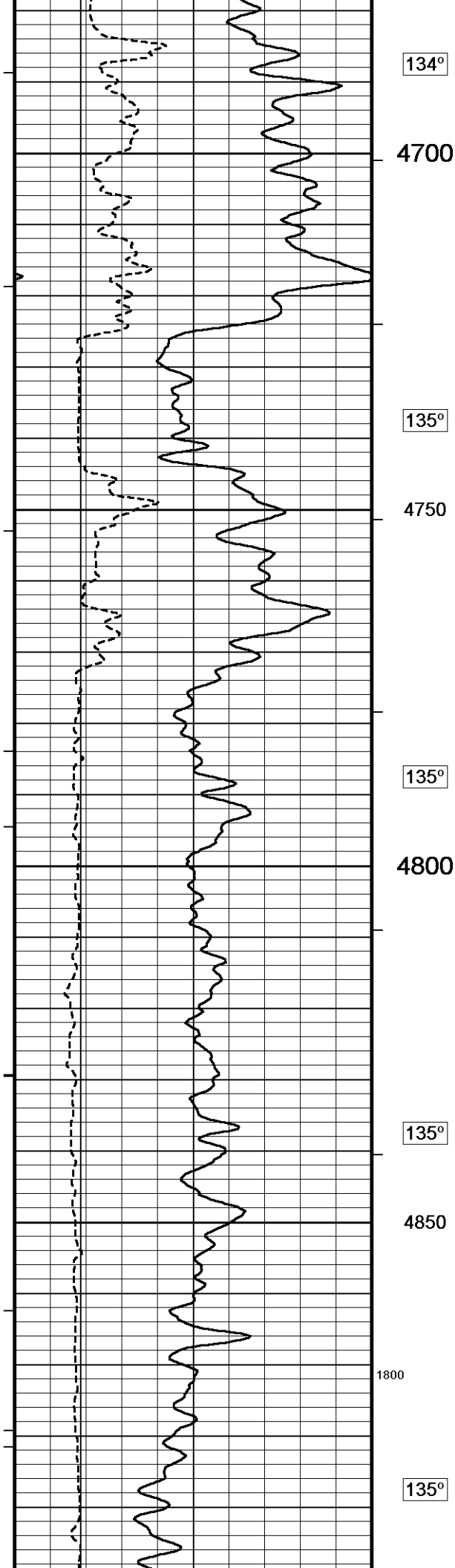
Array Ind. One Res 85

Array Ind. One Res 60

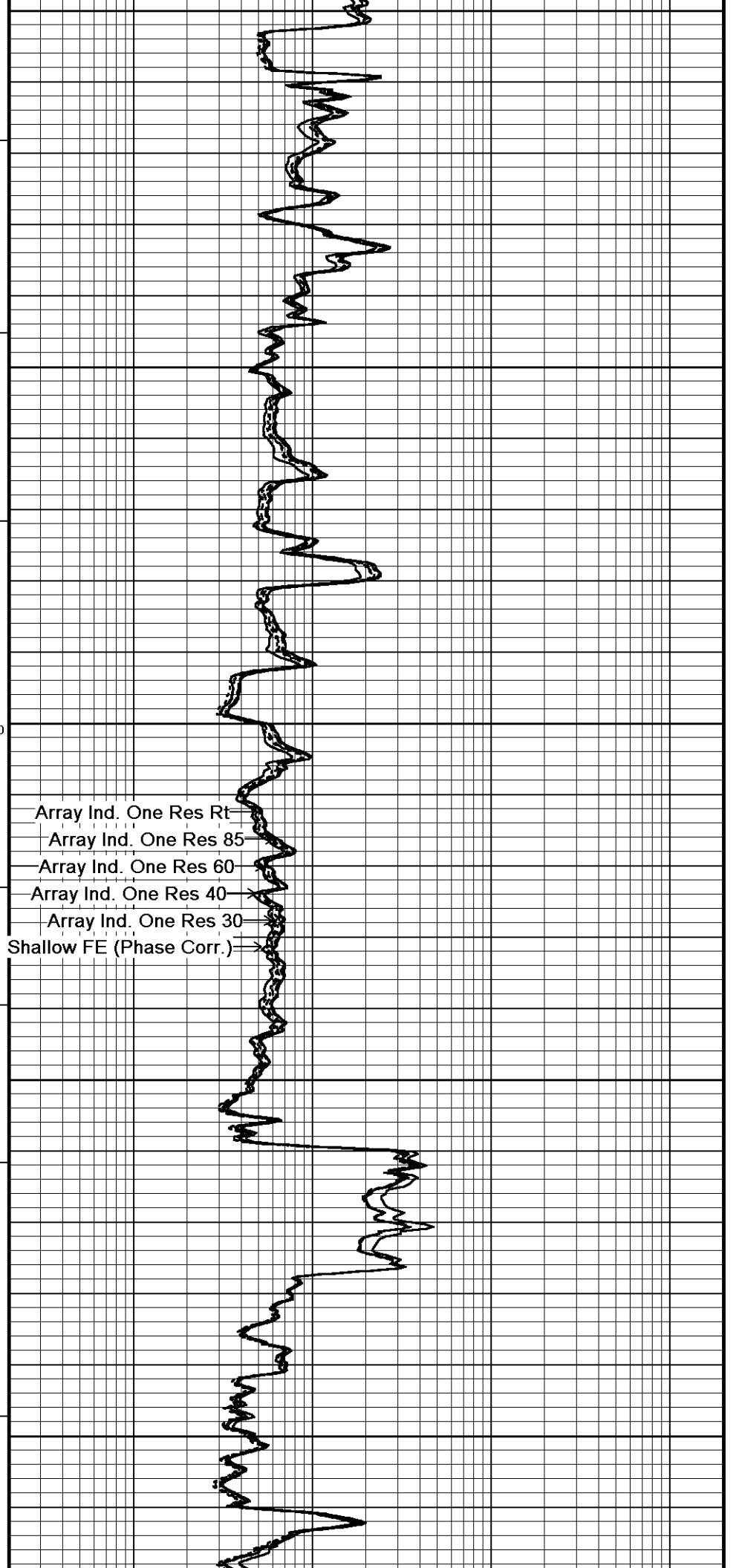
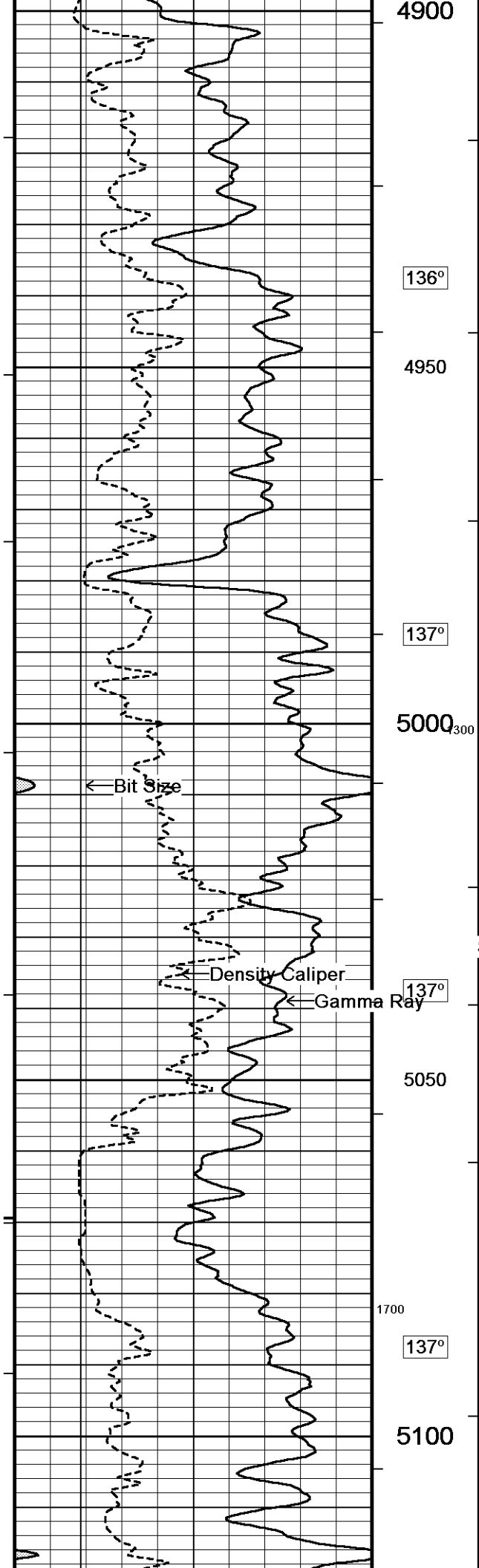
Array Ind. One Res 40

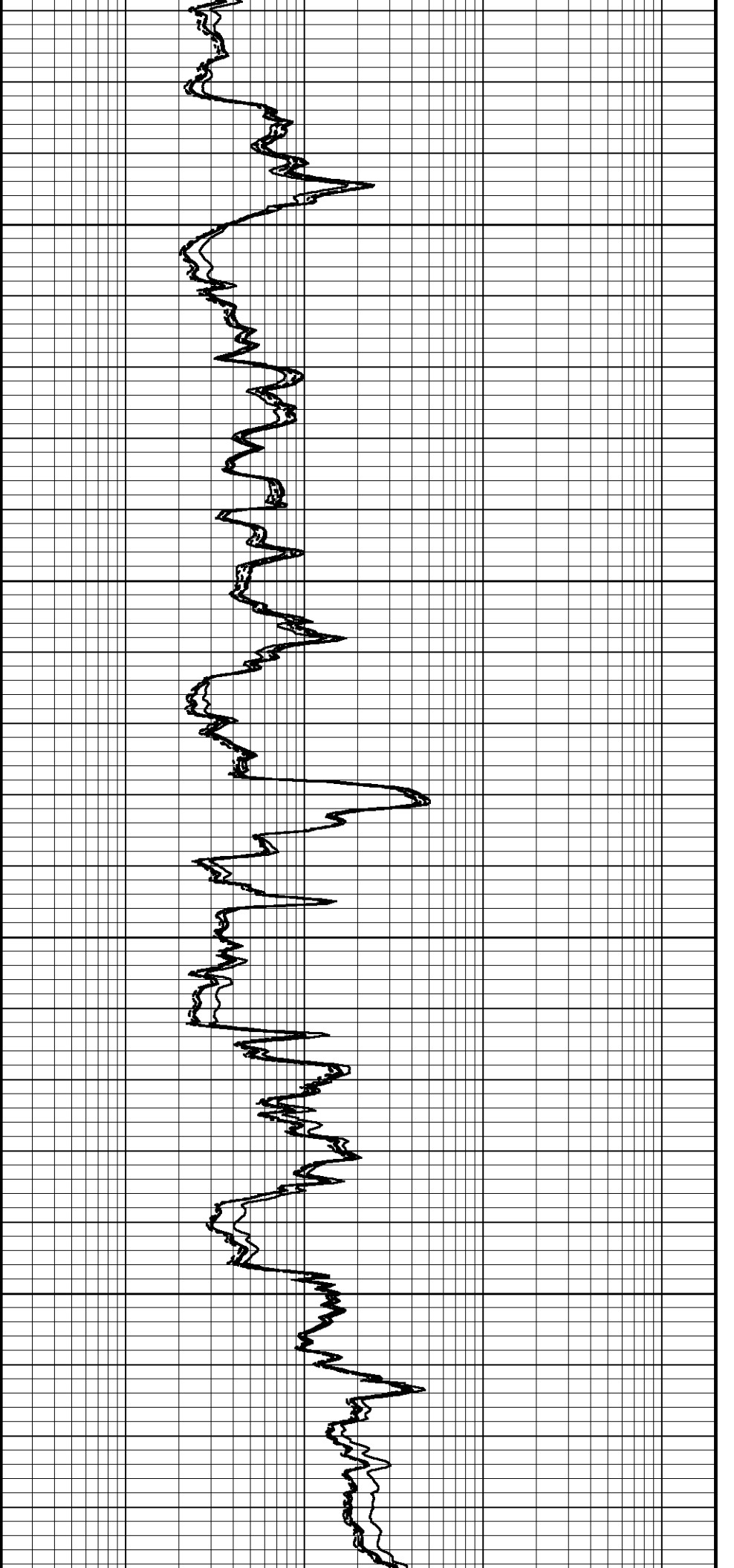
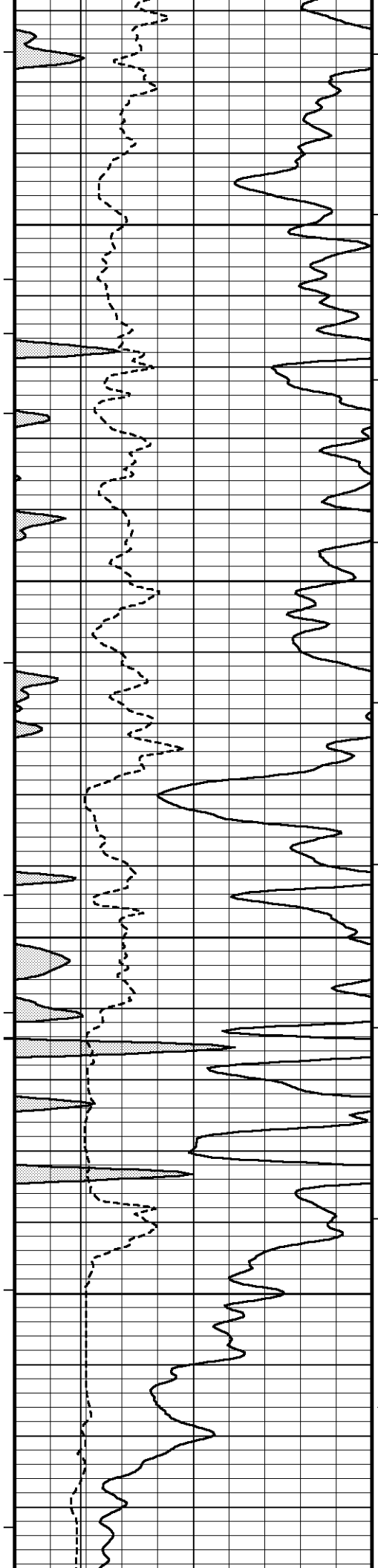
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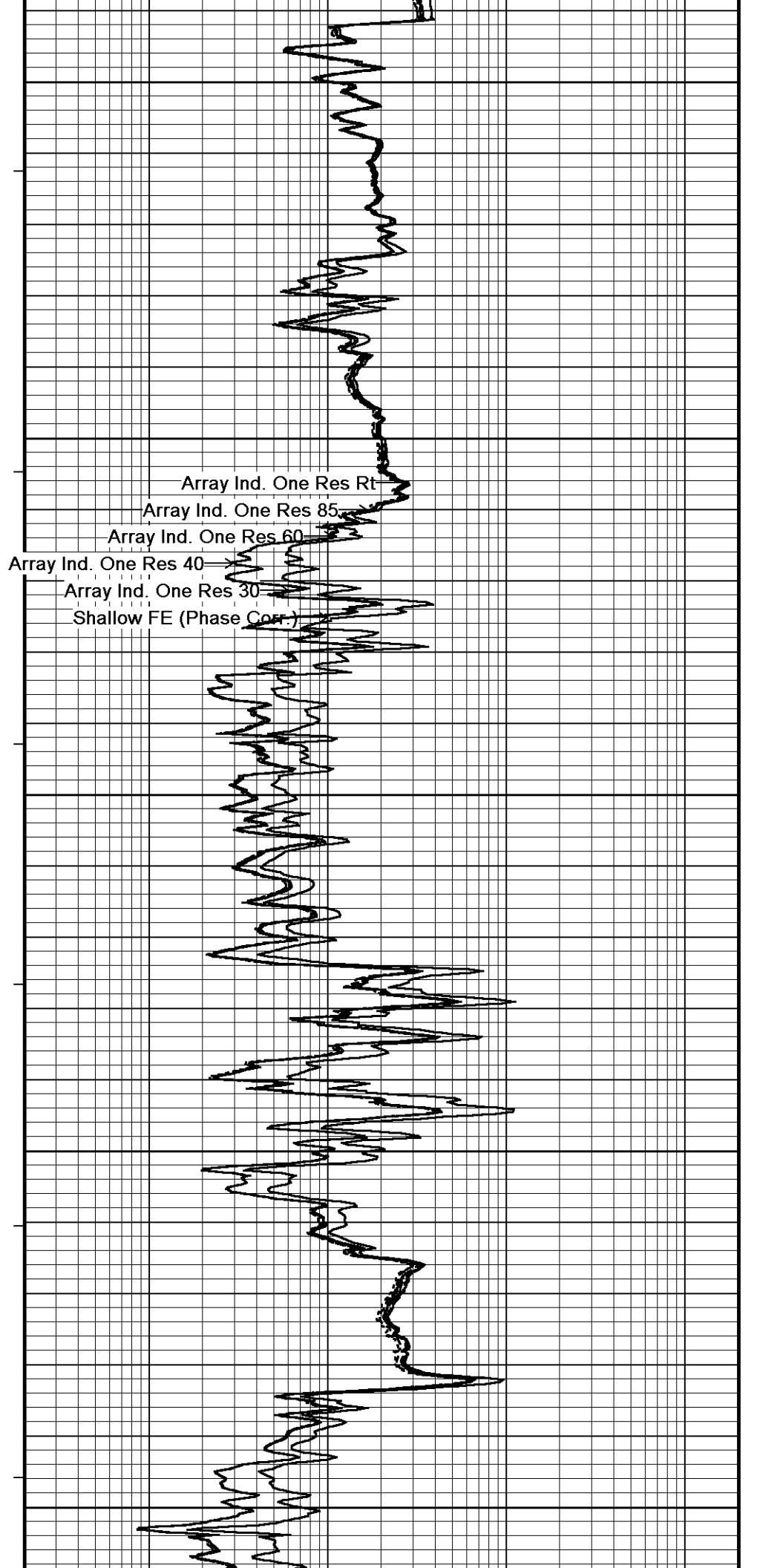
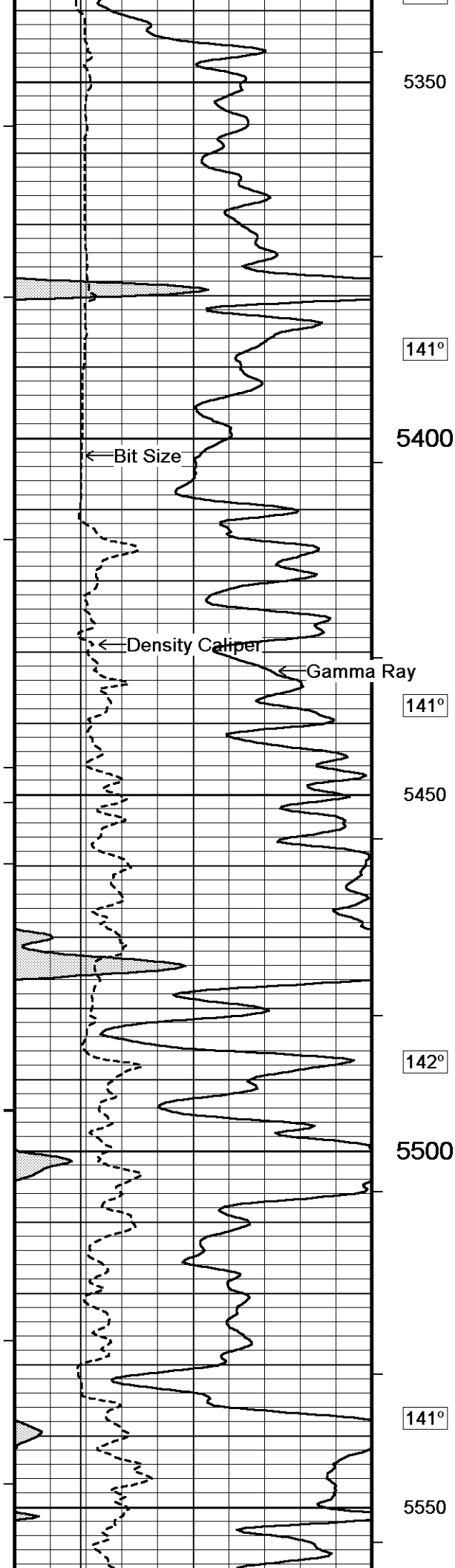
Shallow FE (Phase Corr.)

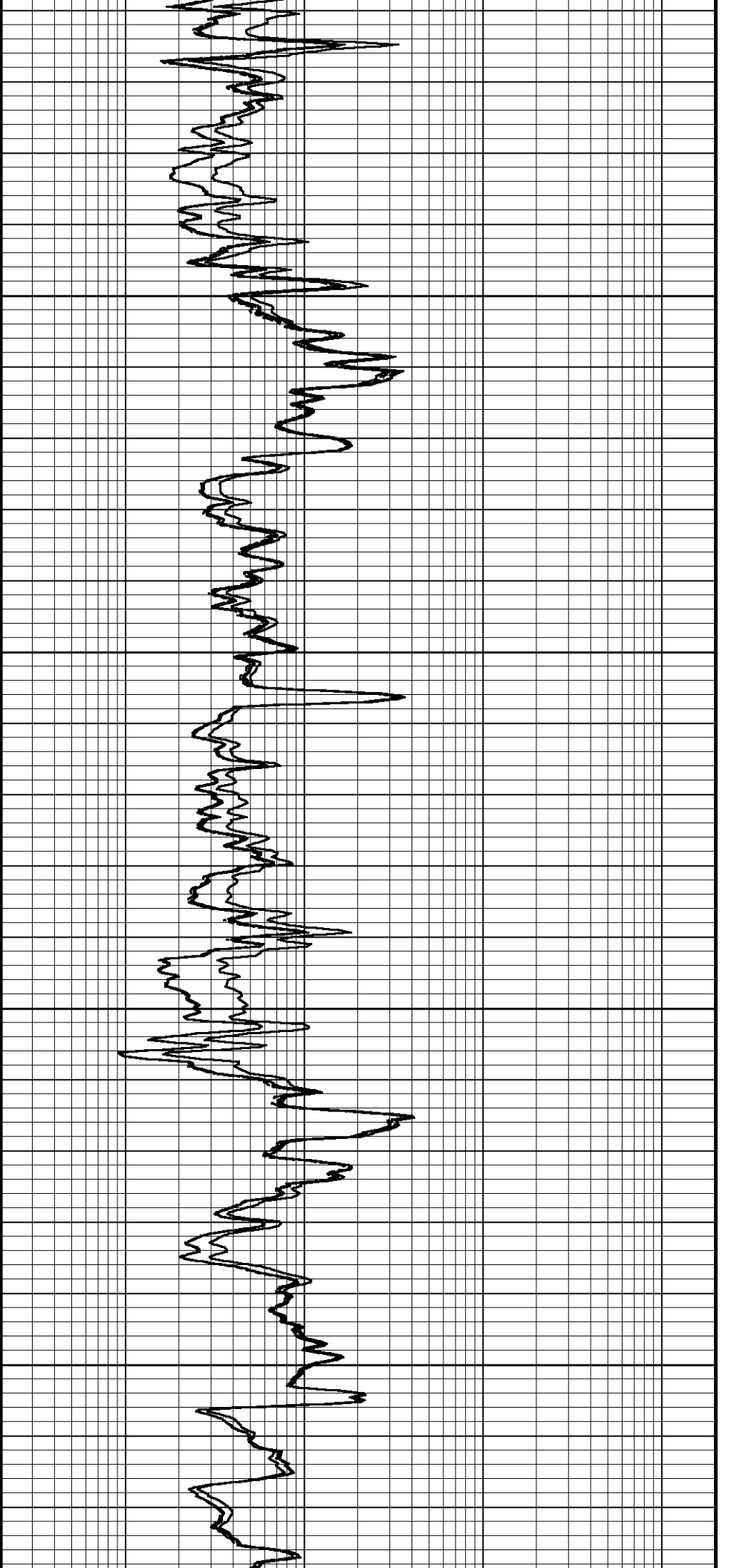
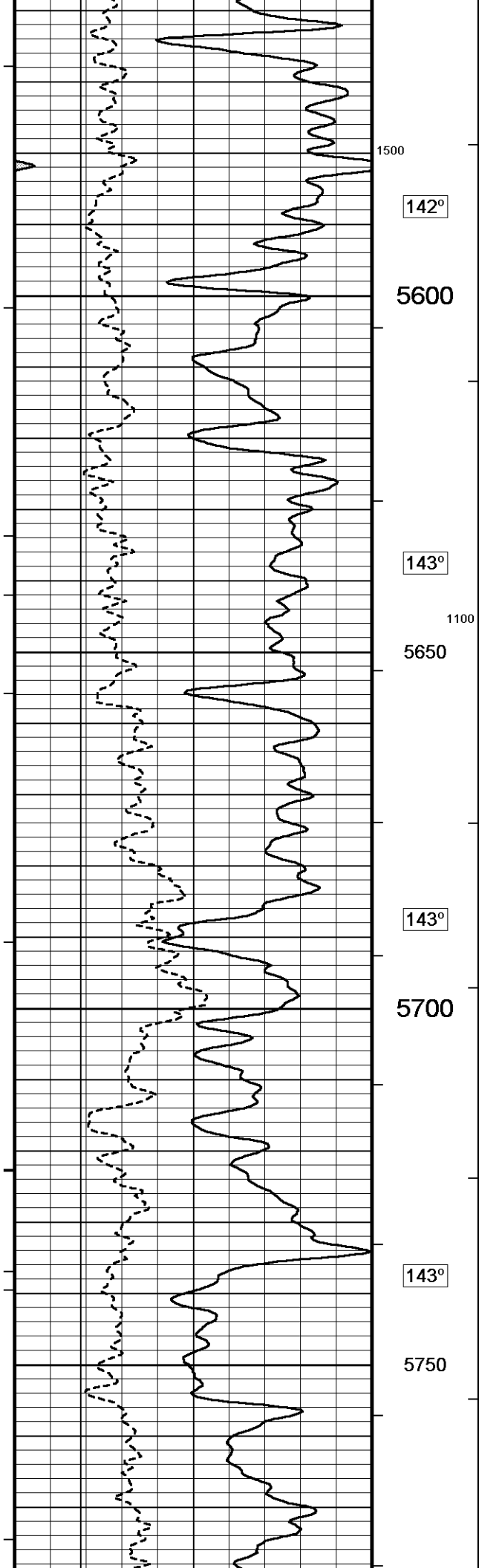


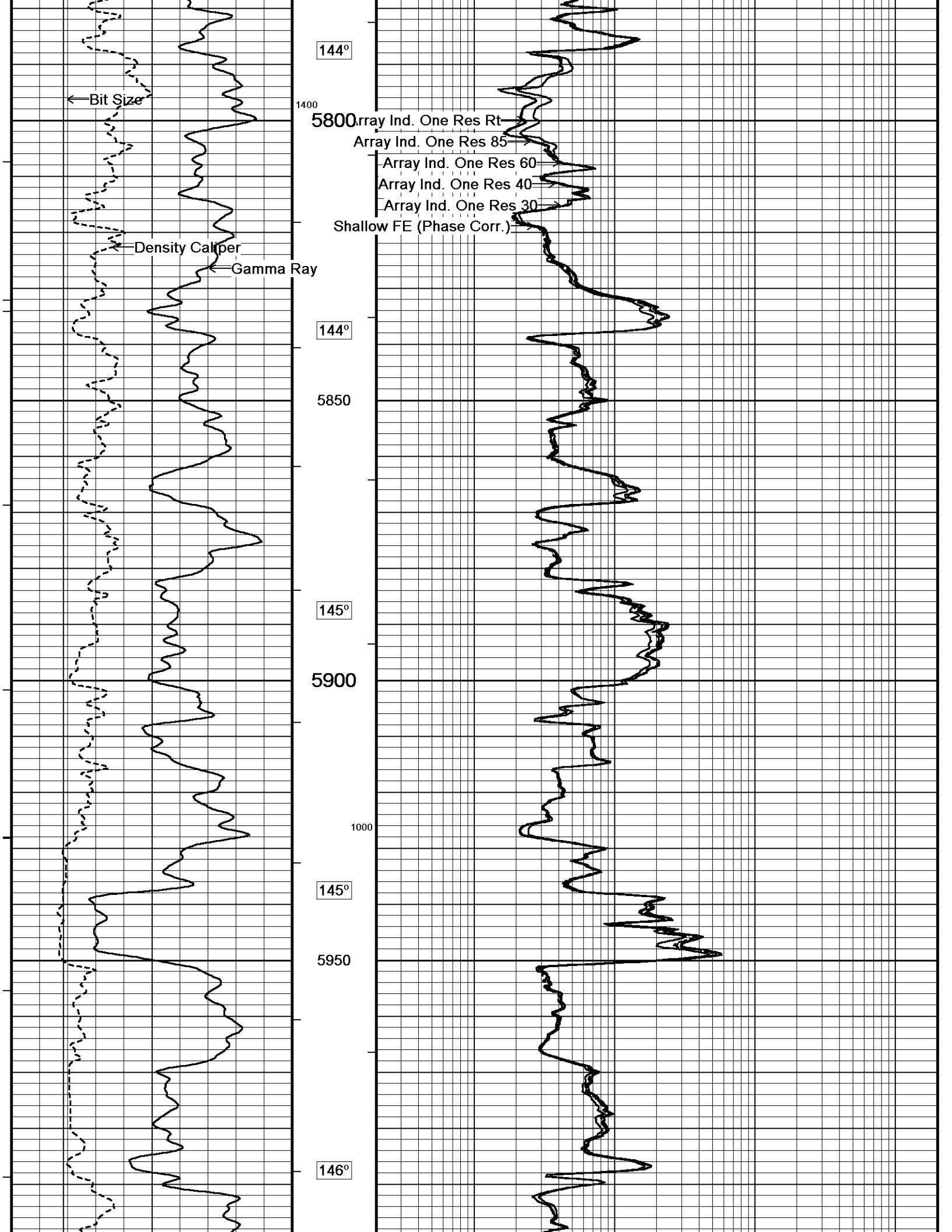


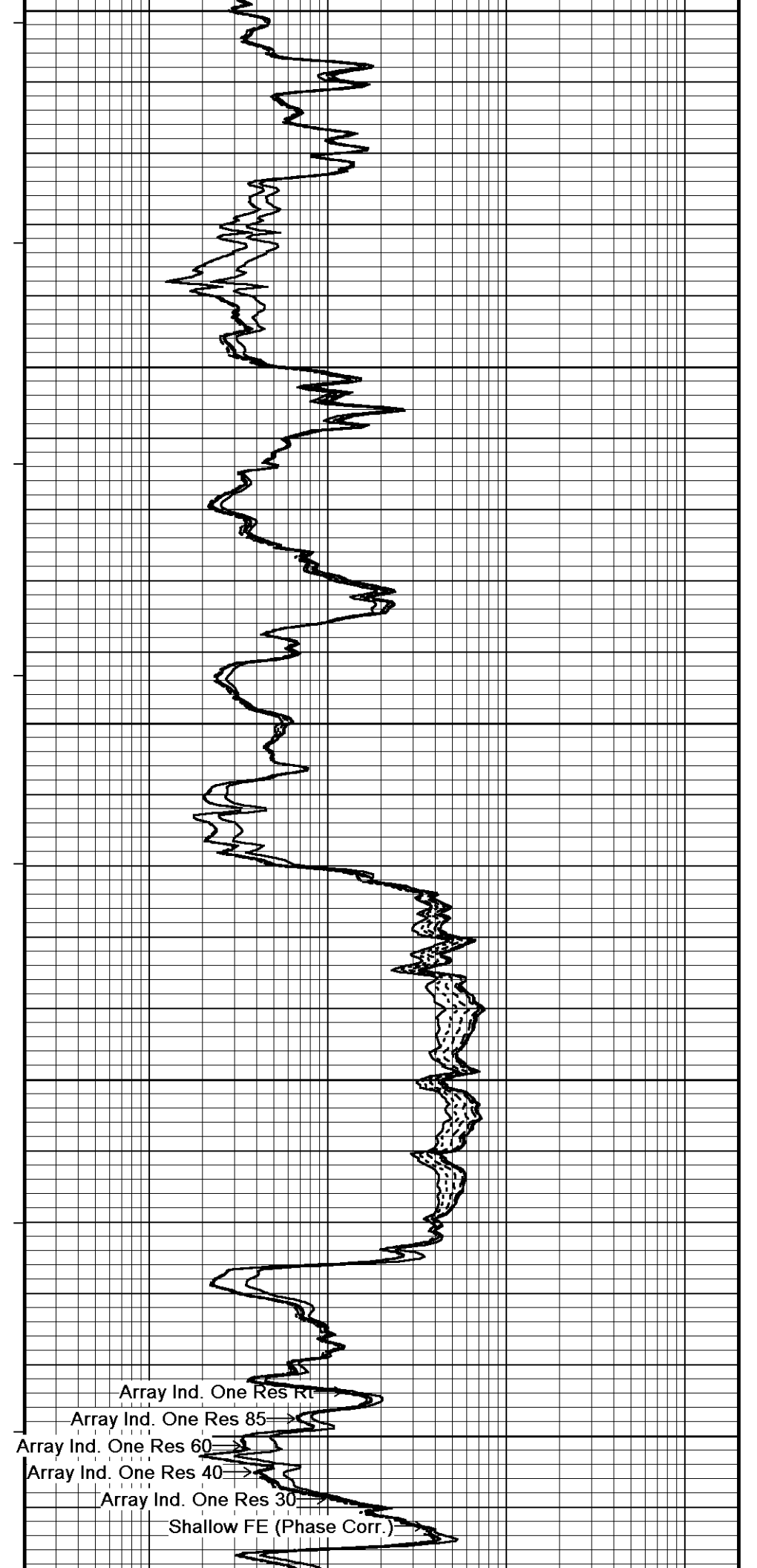
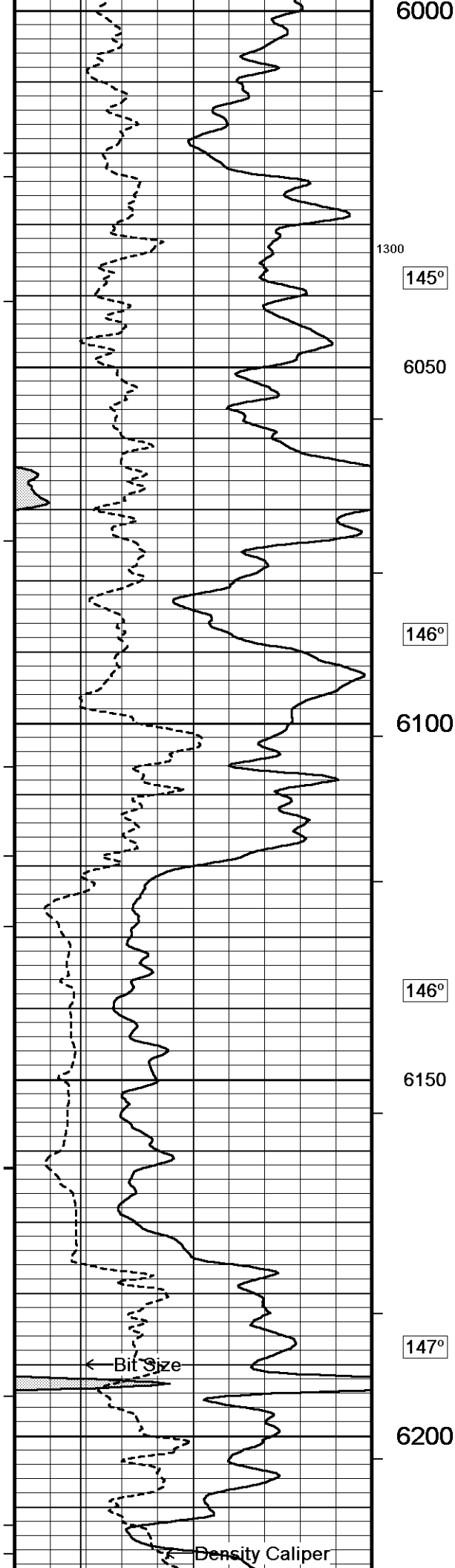


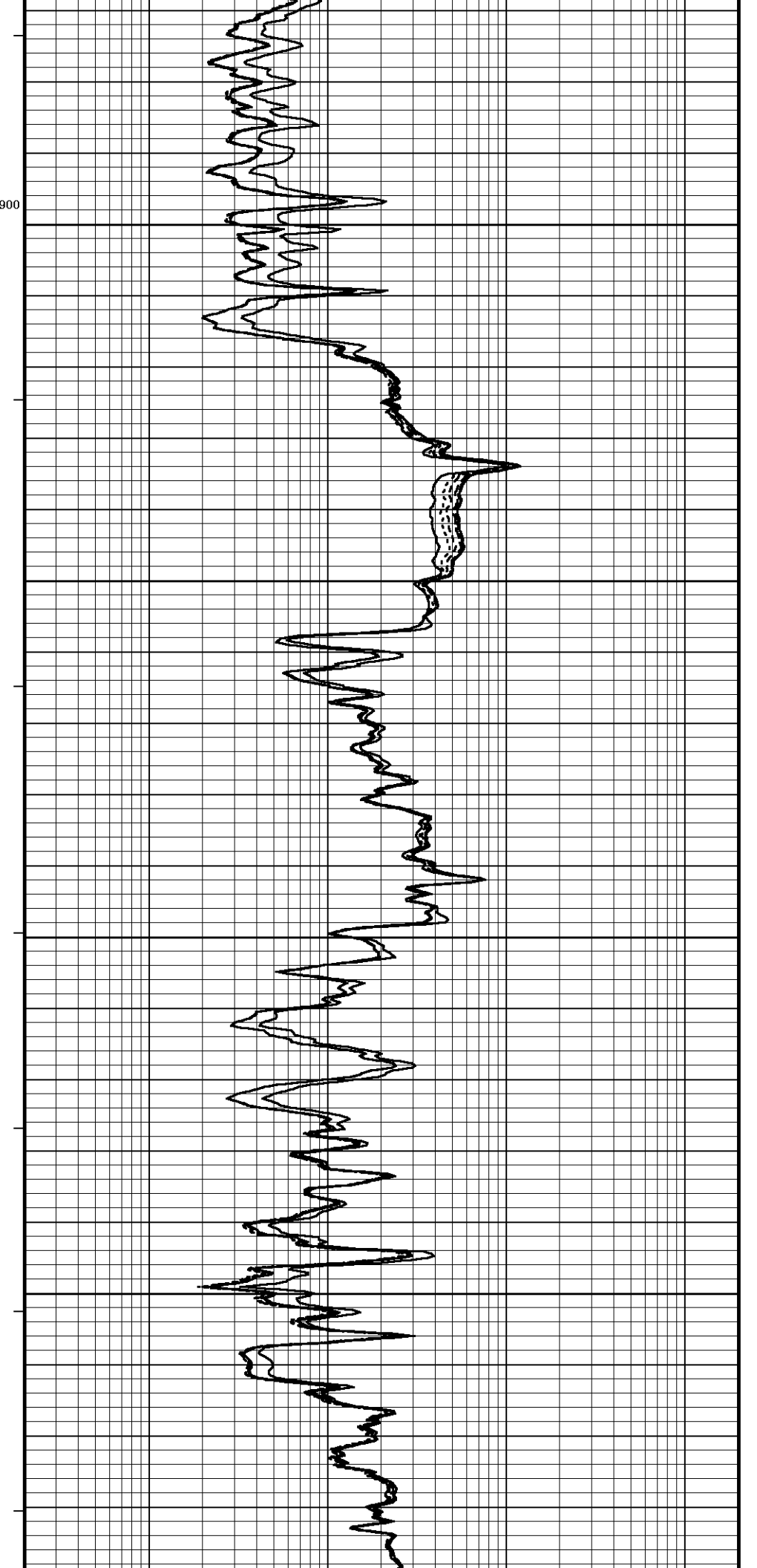
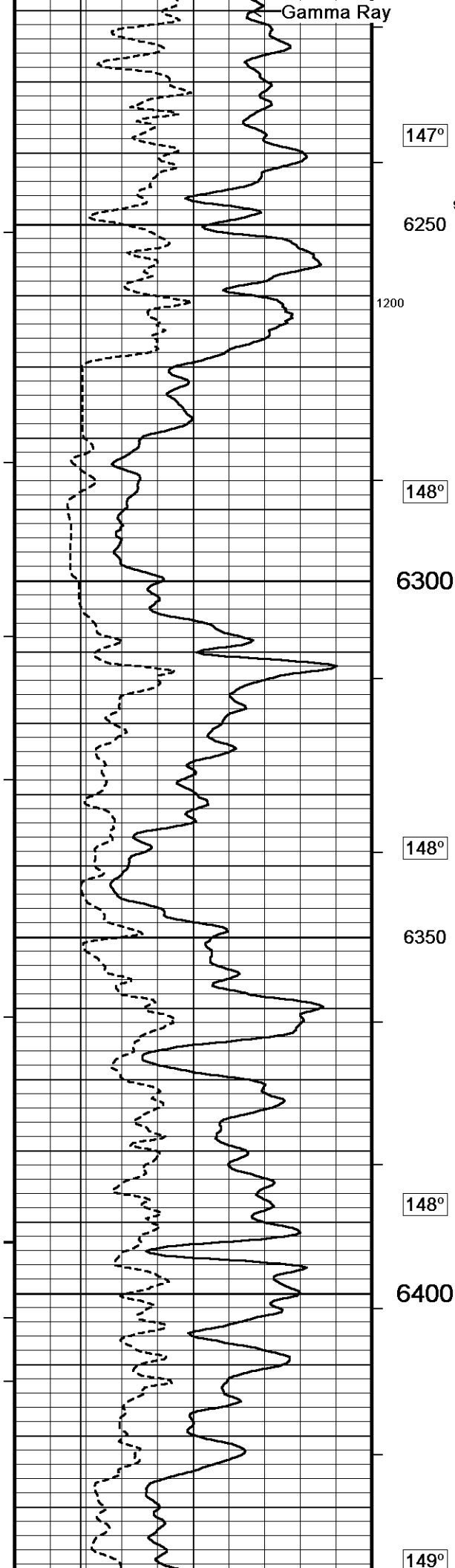


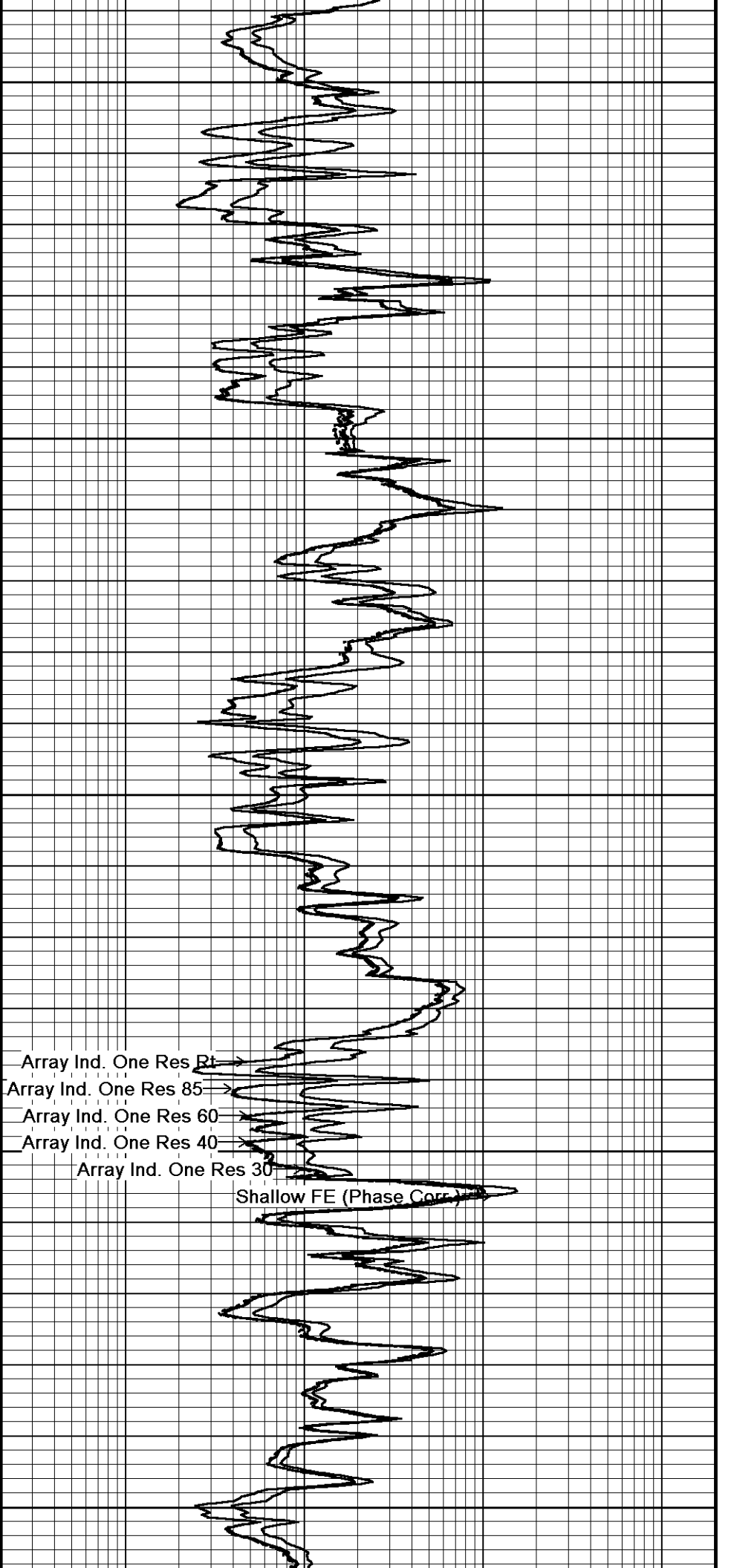
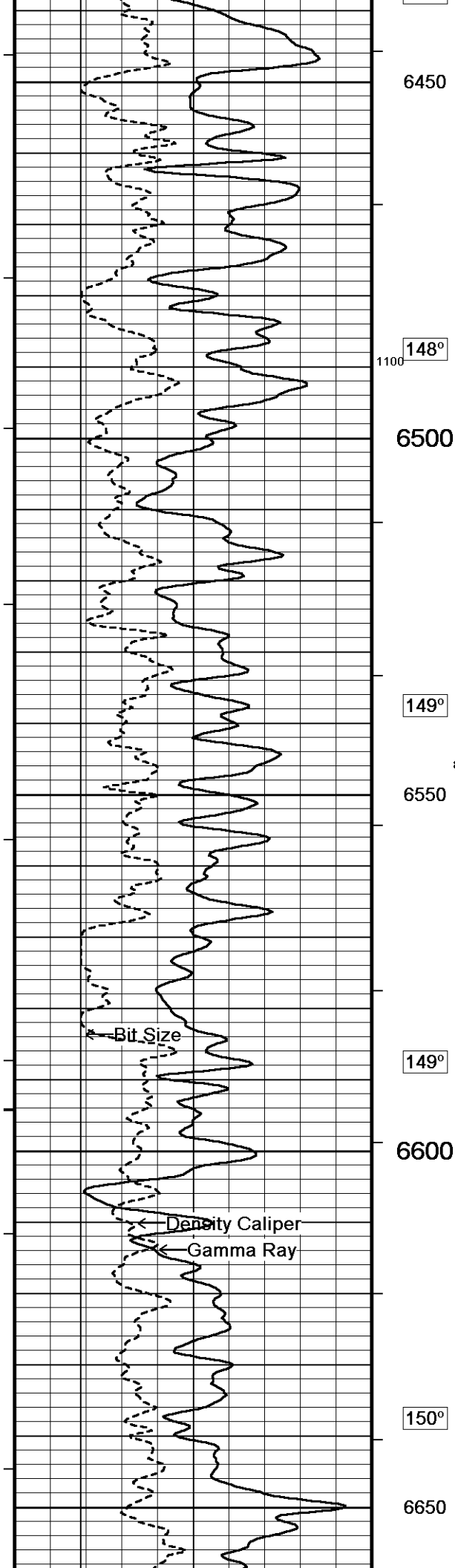




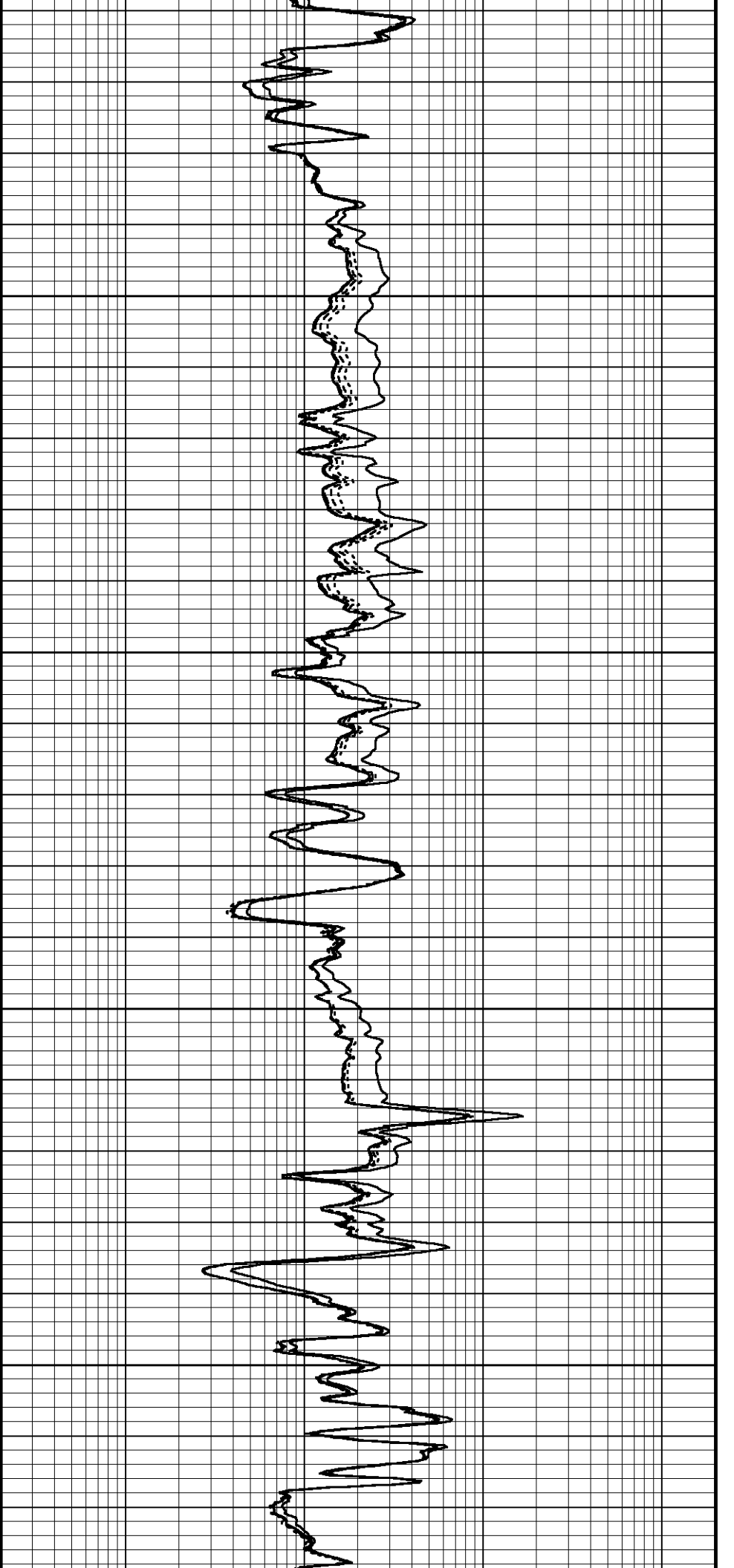
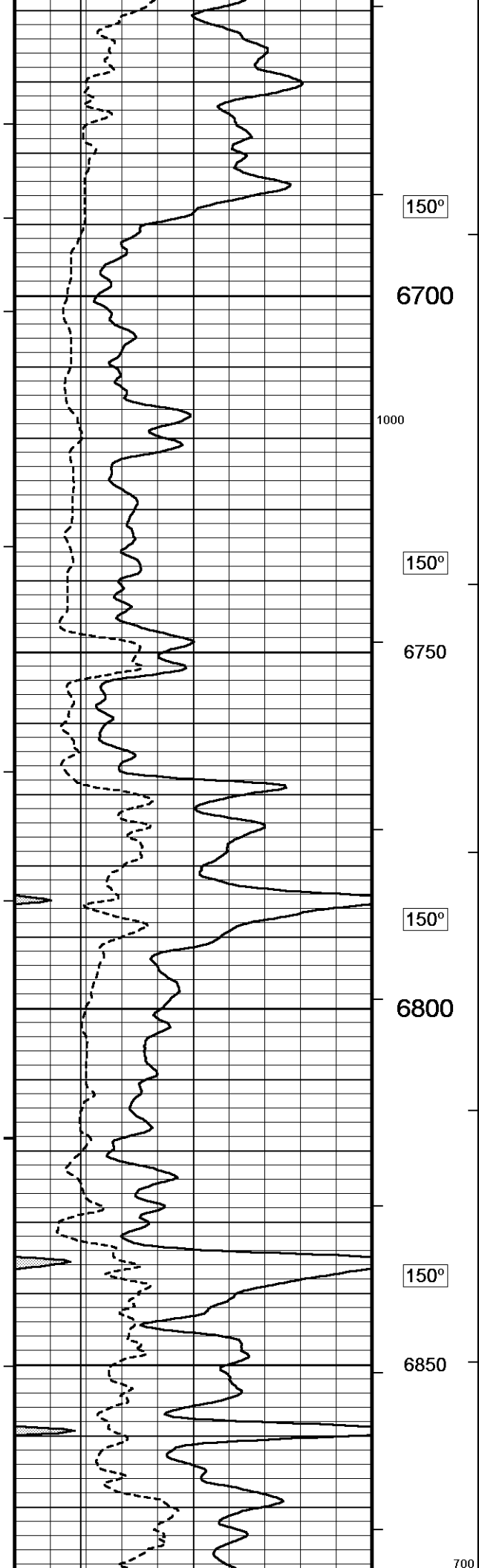


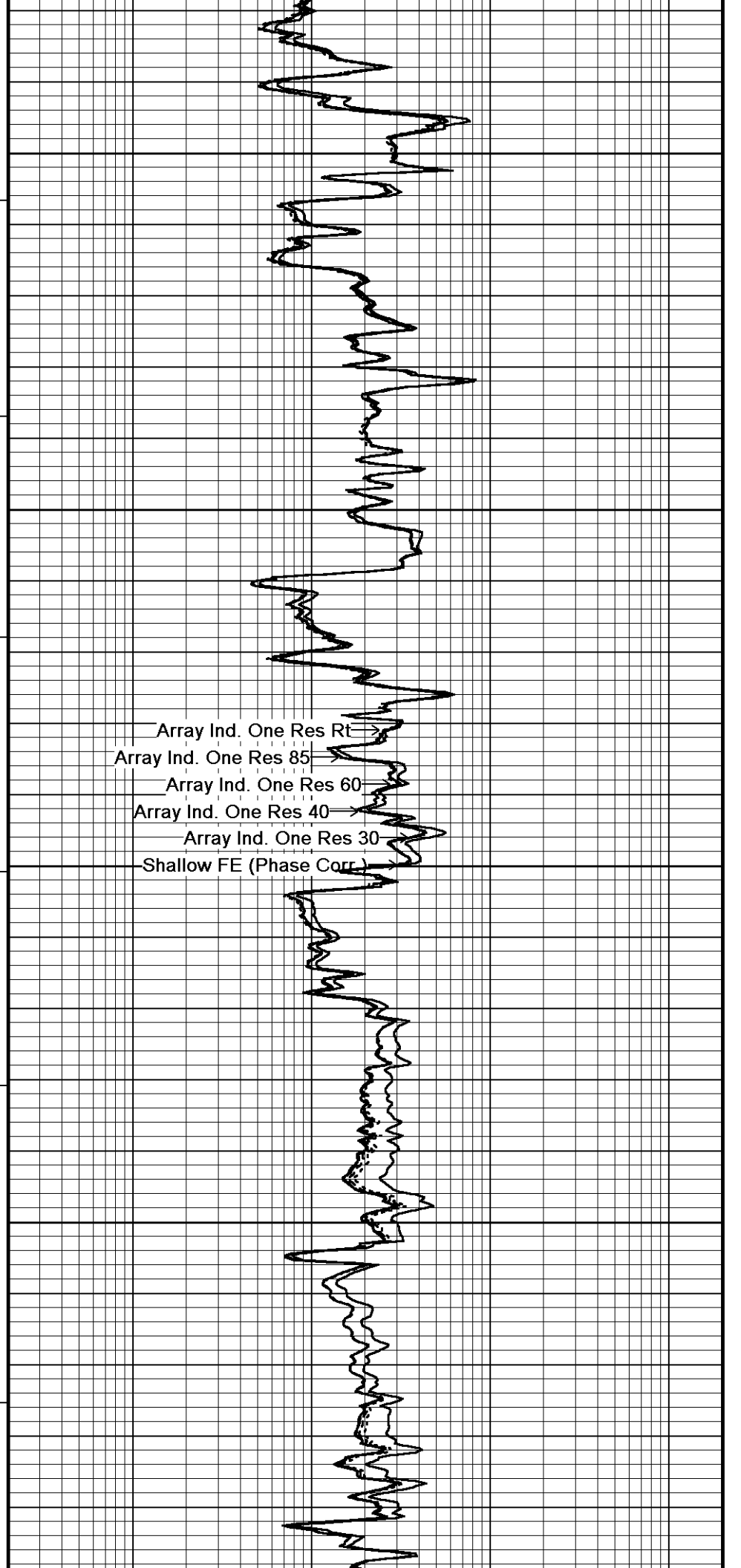
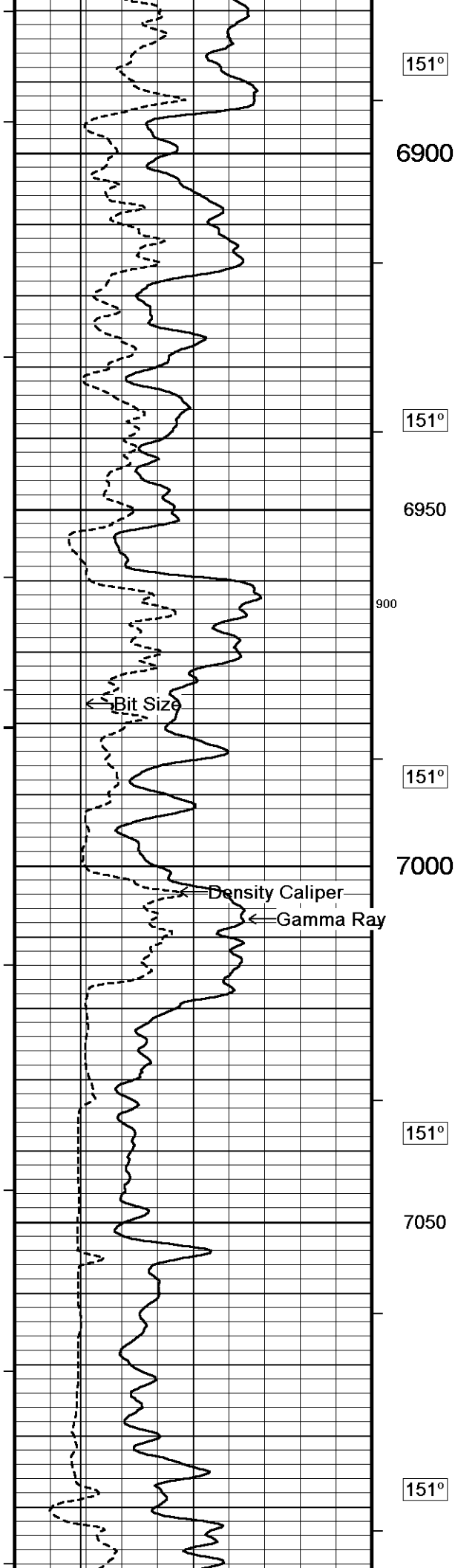


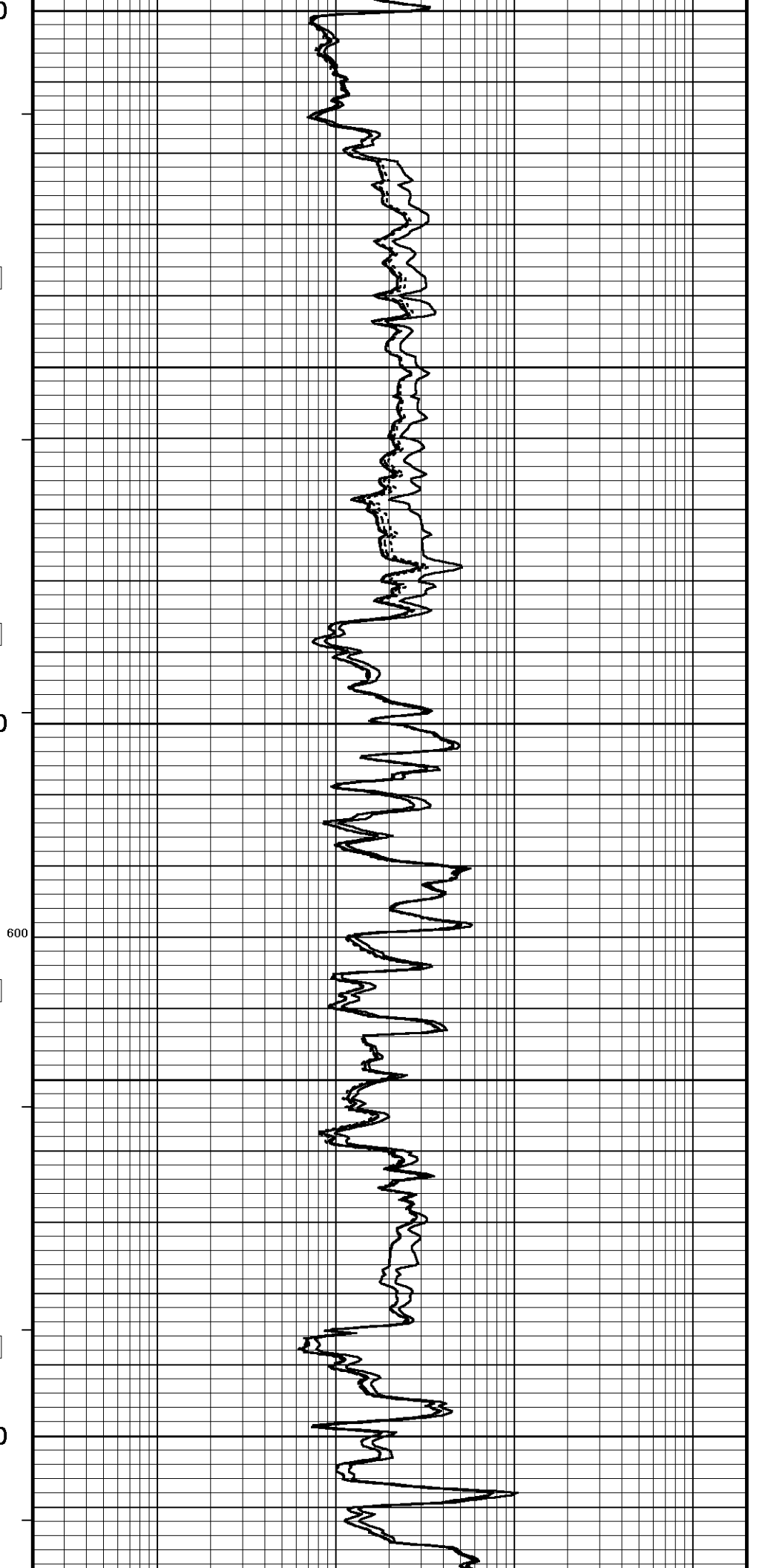
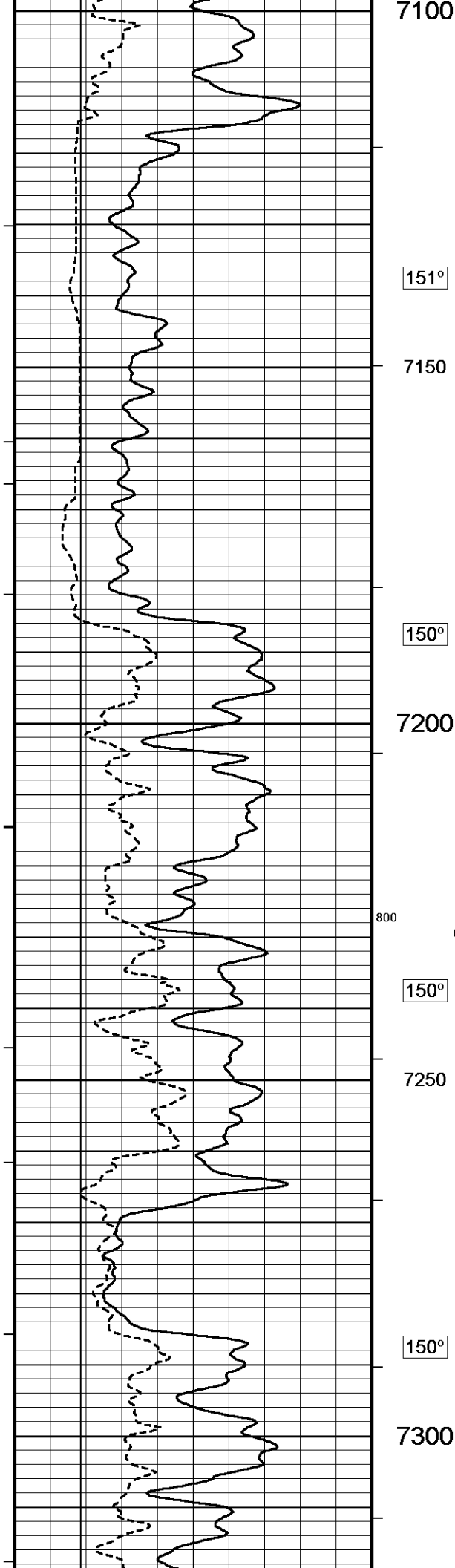


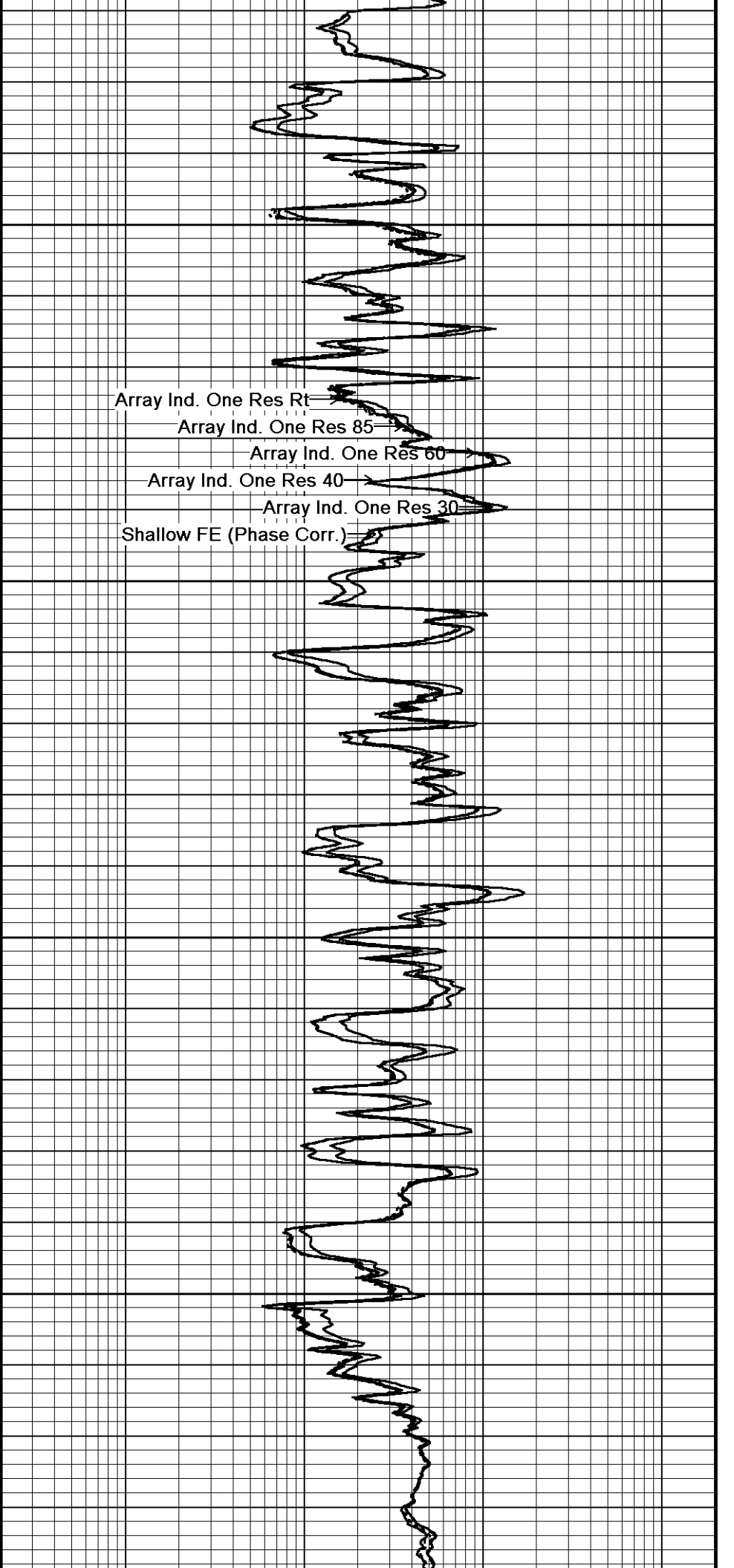
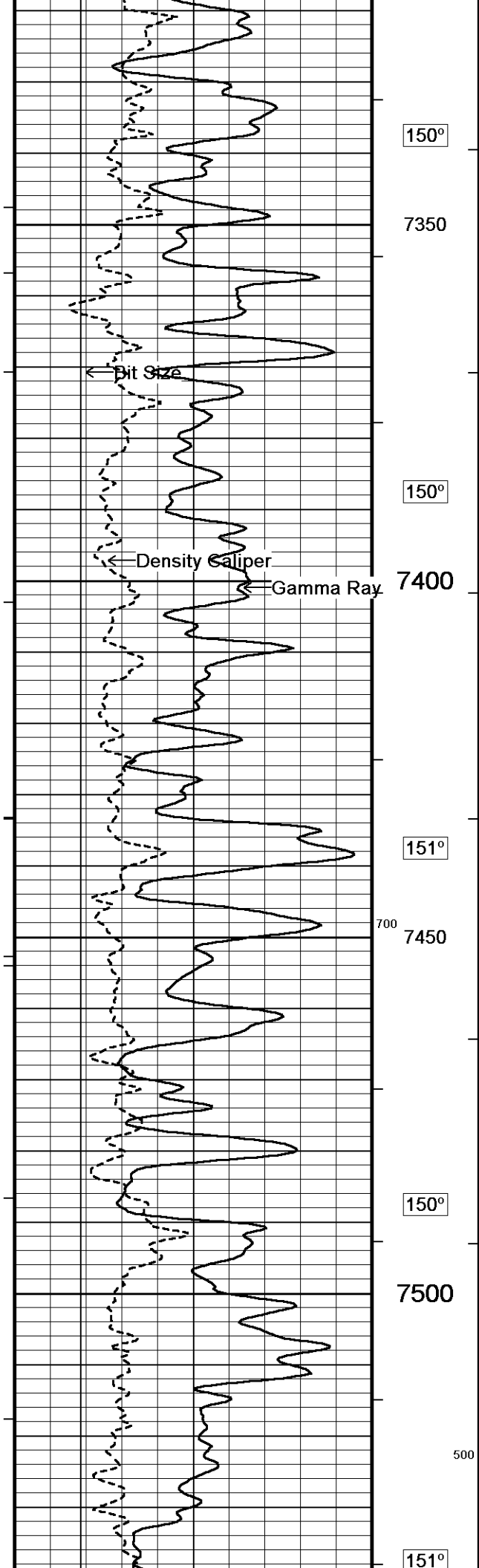


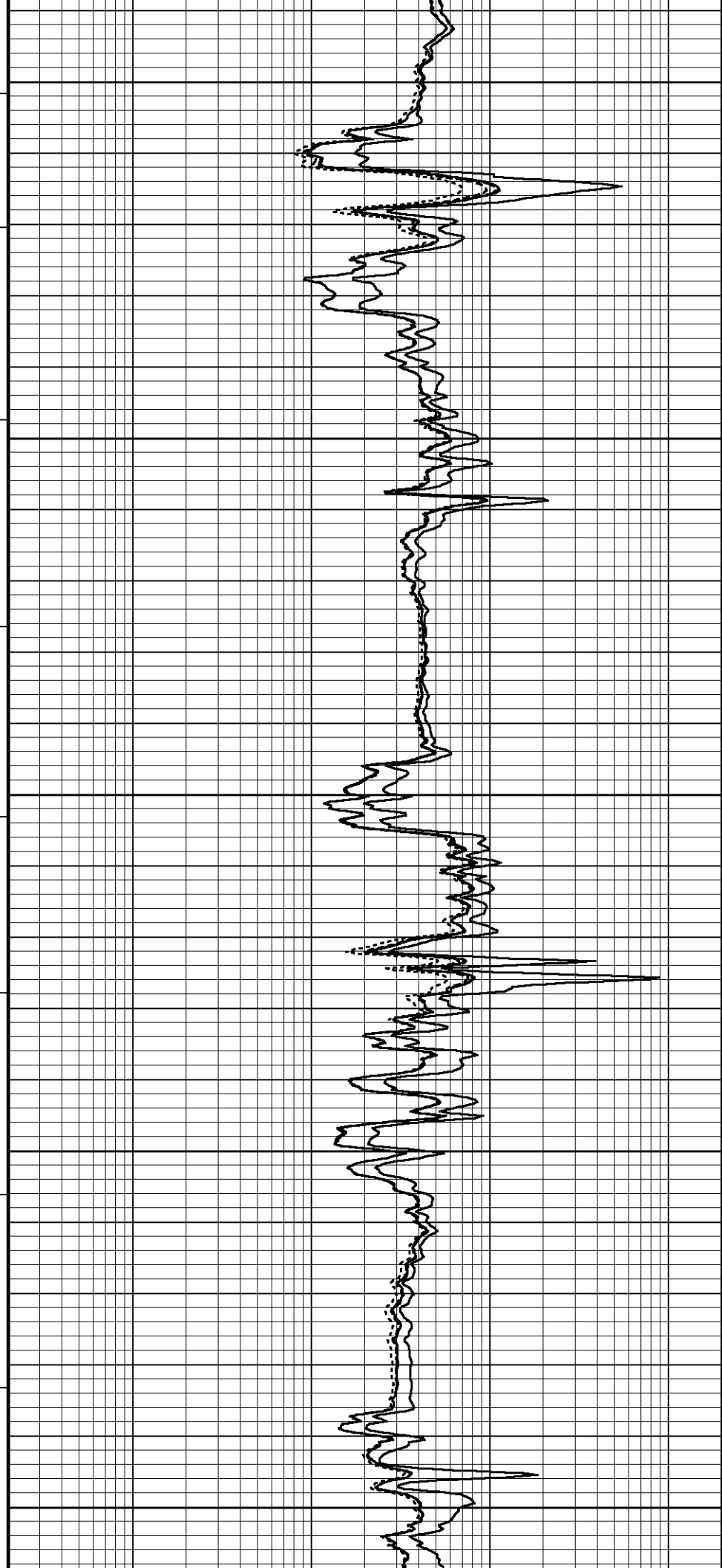
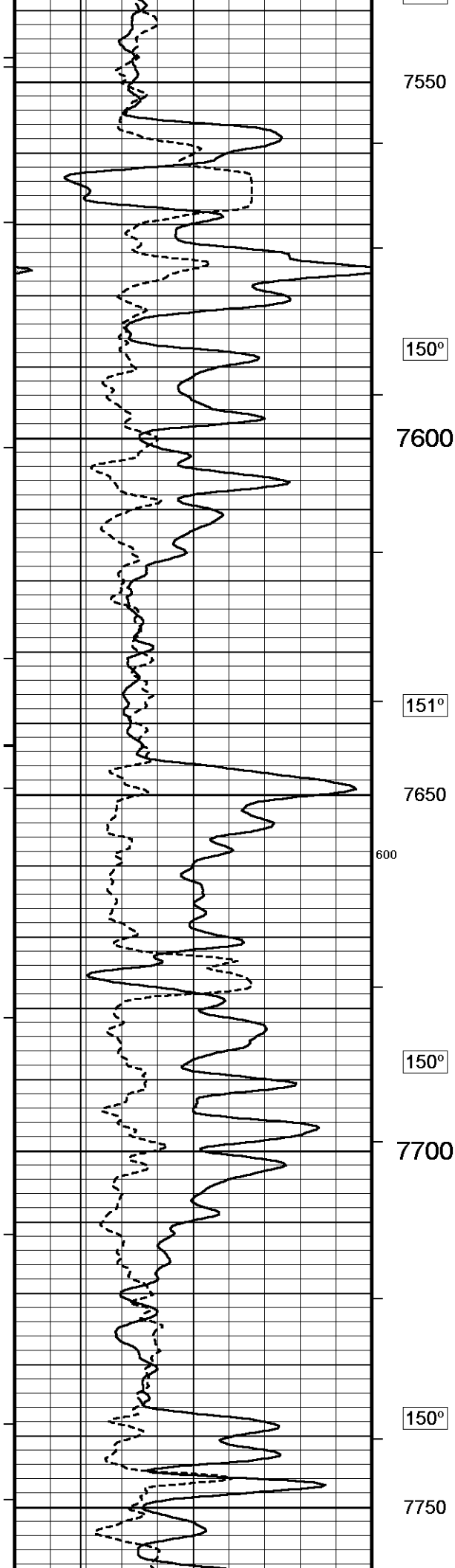


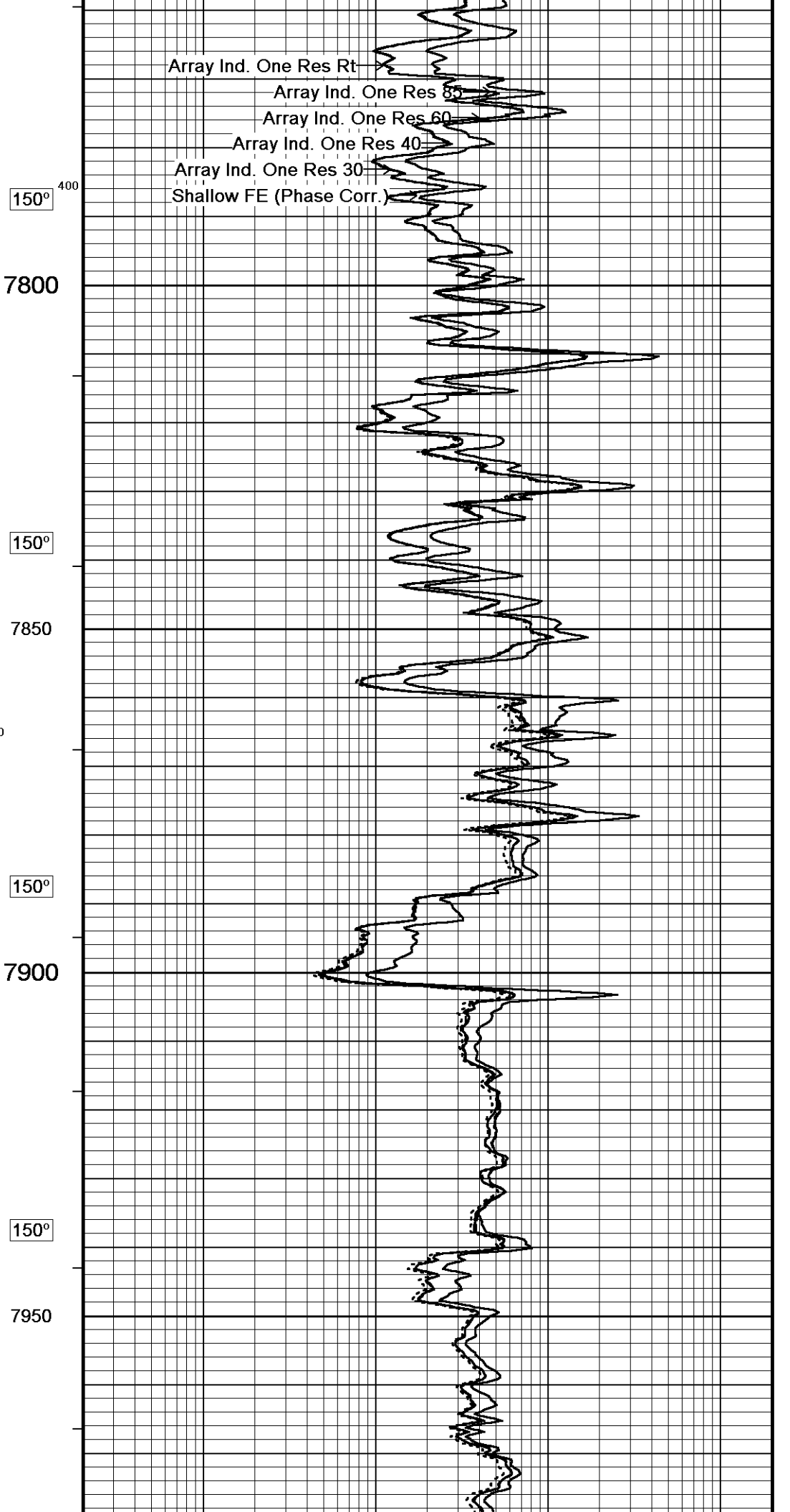
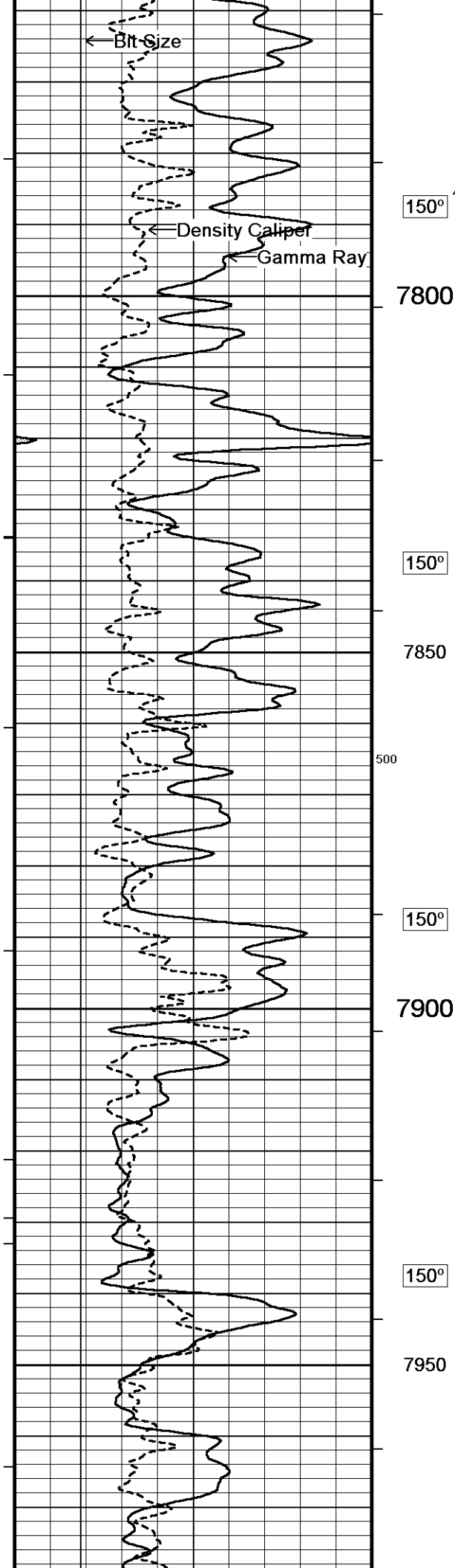


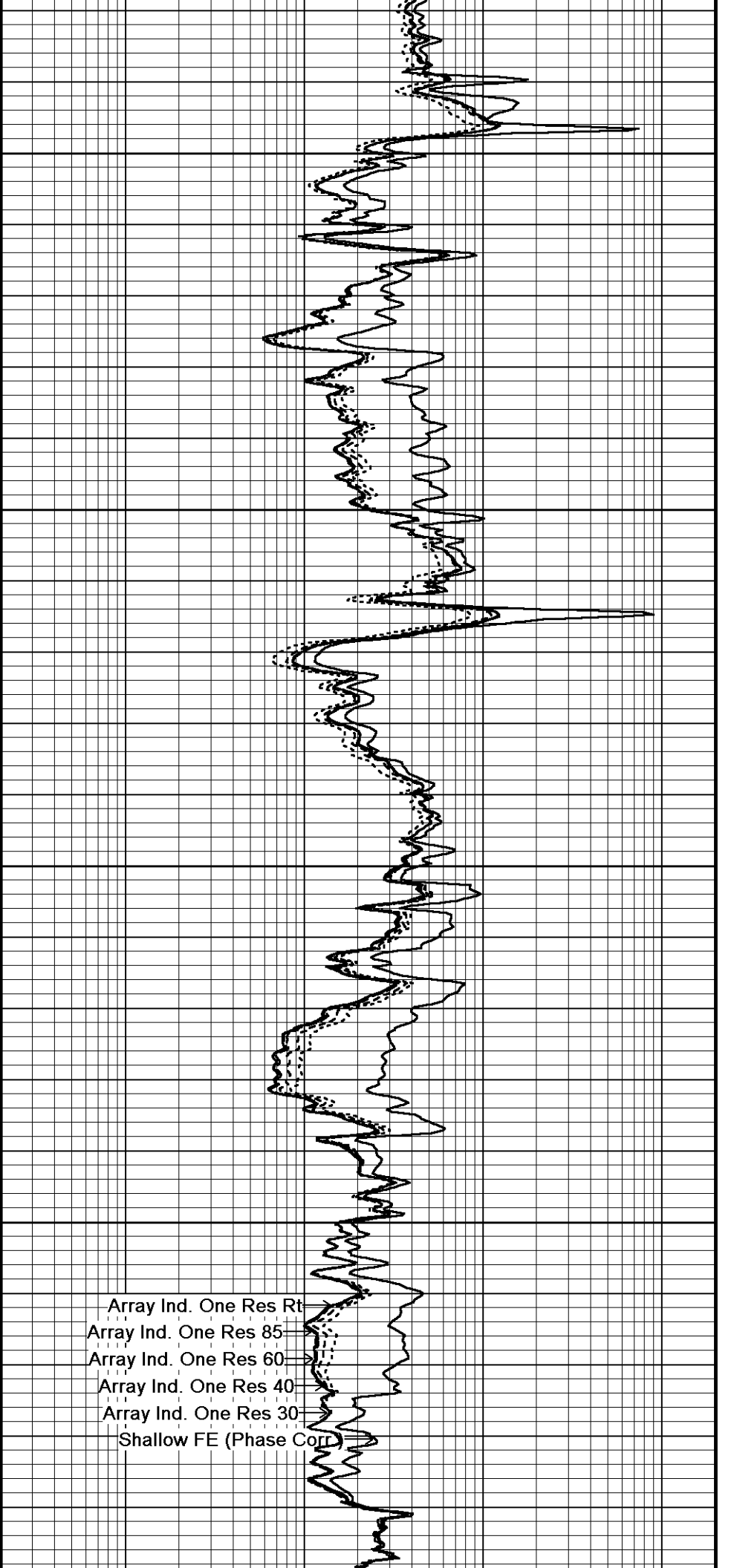
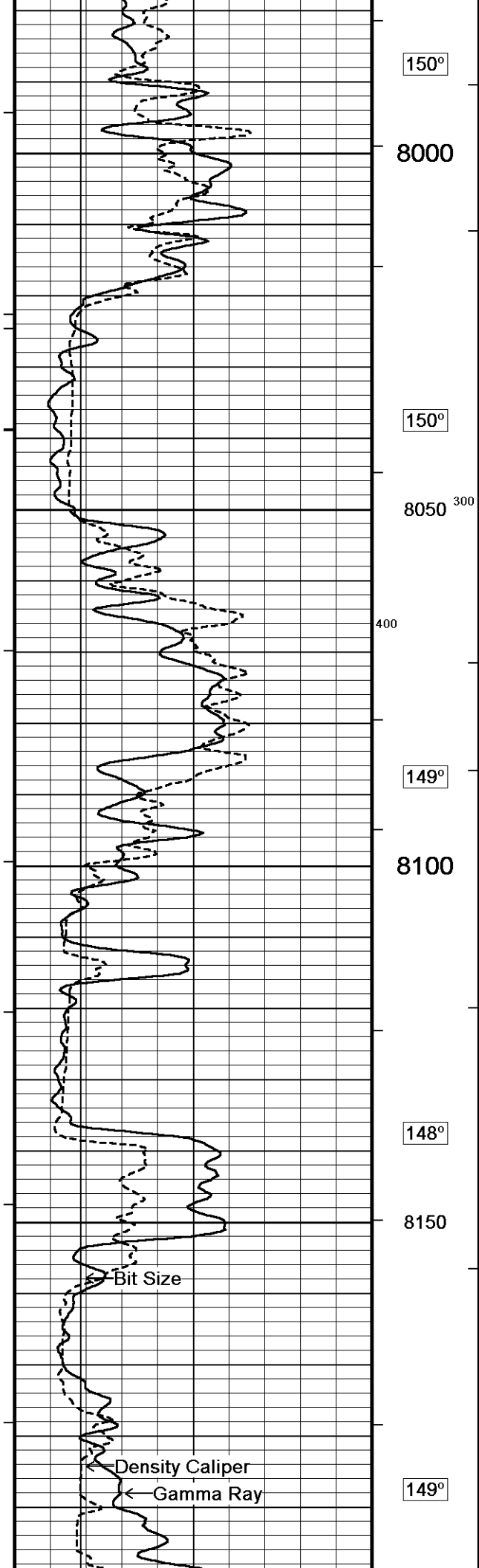


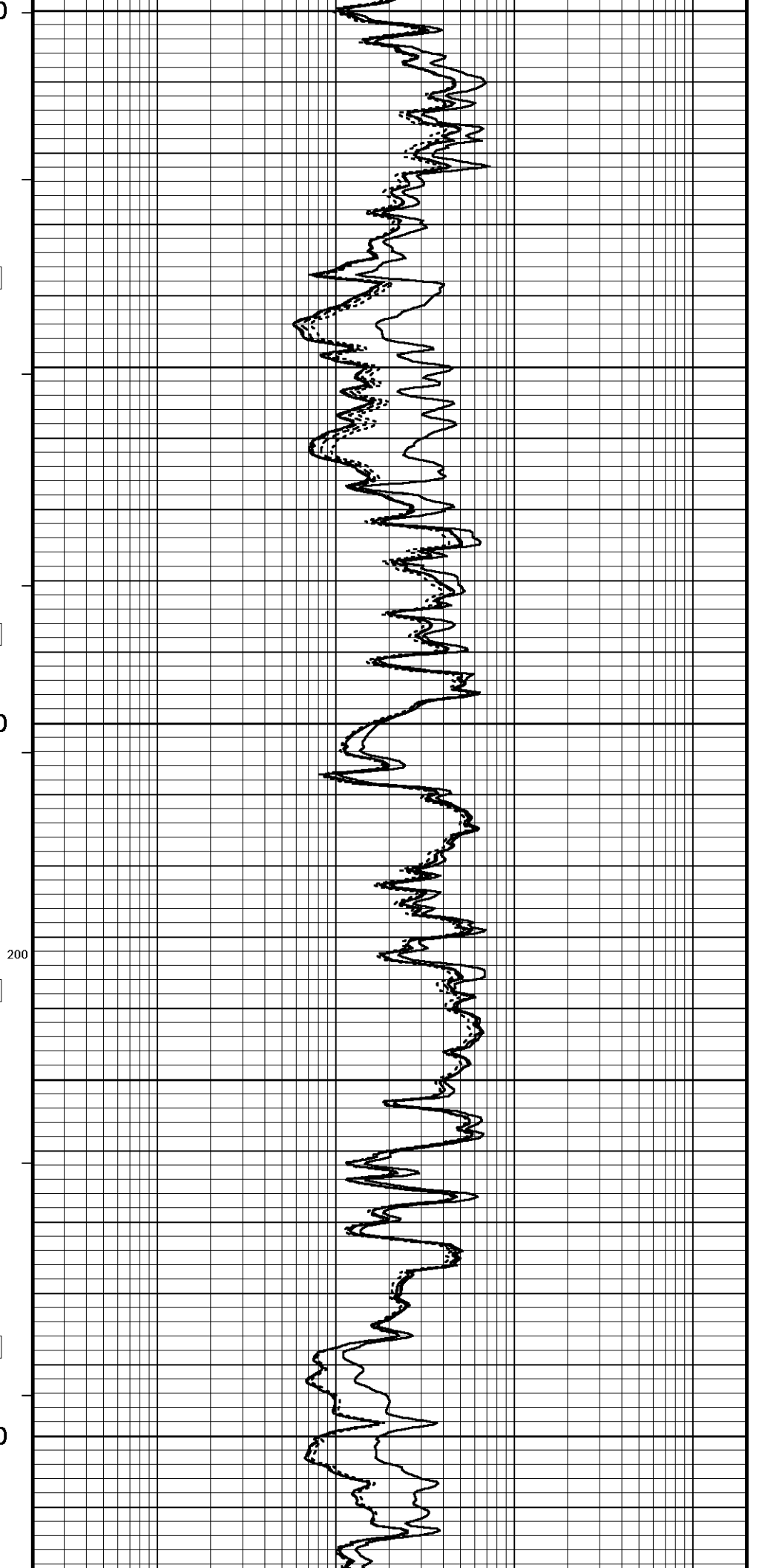
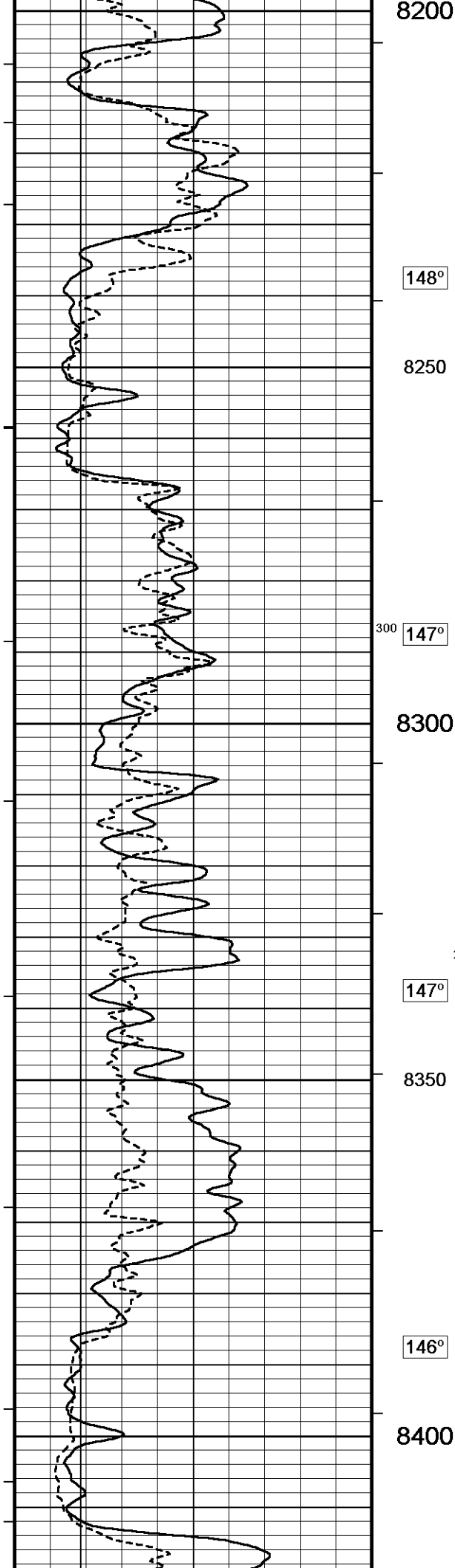




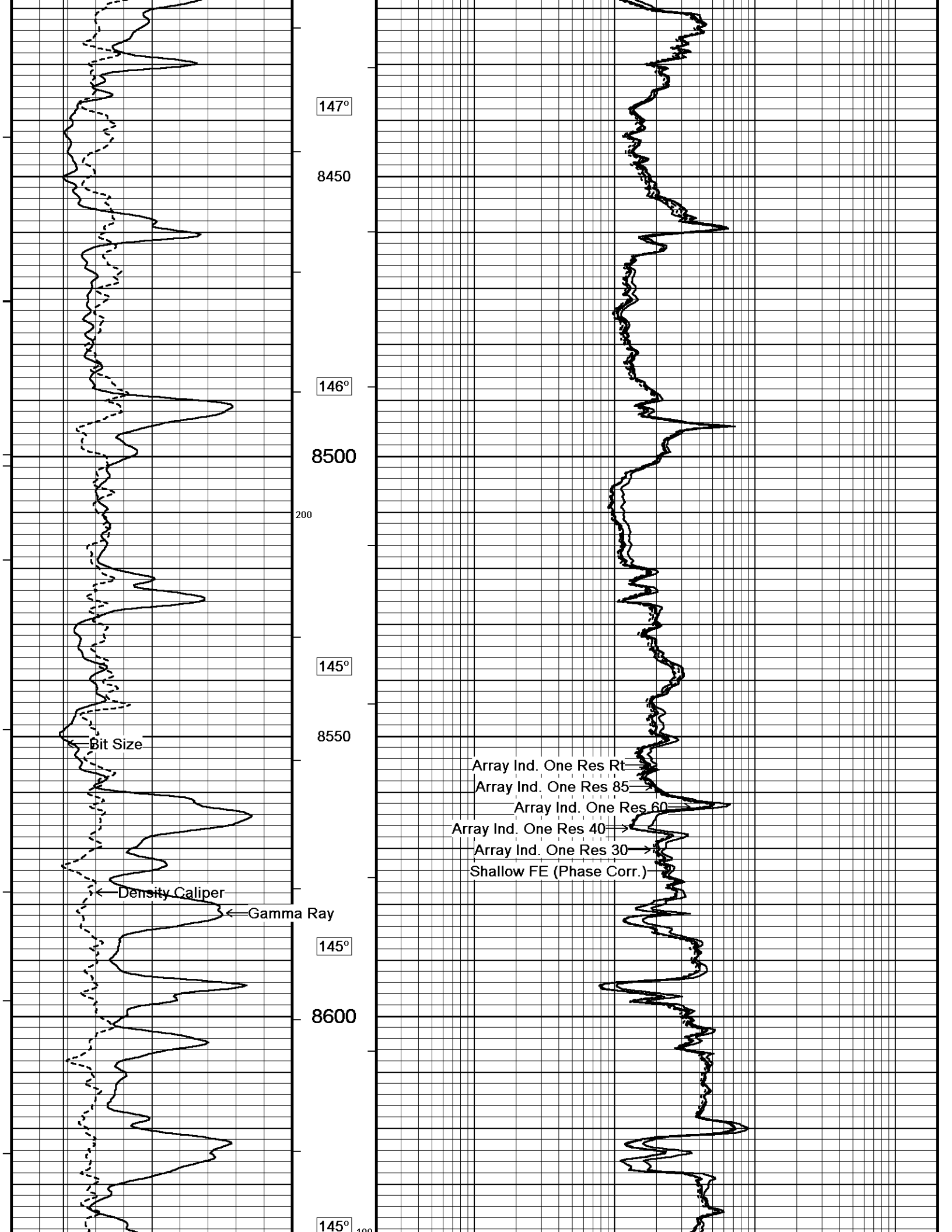


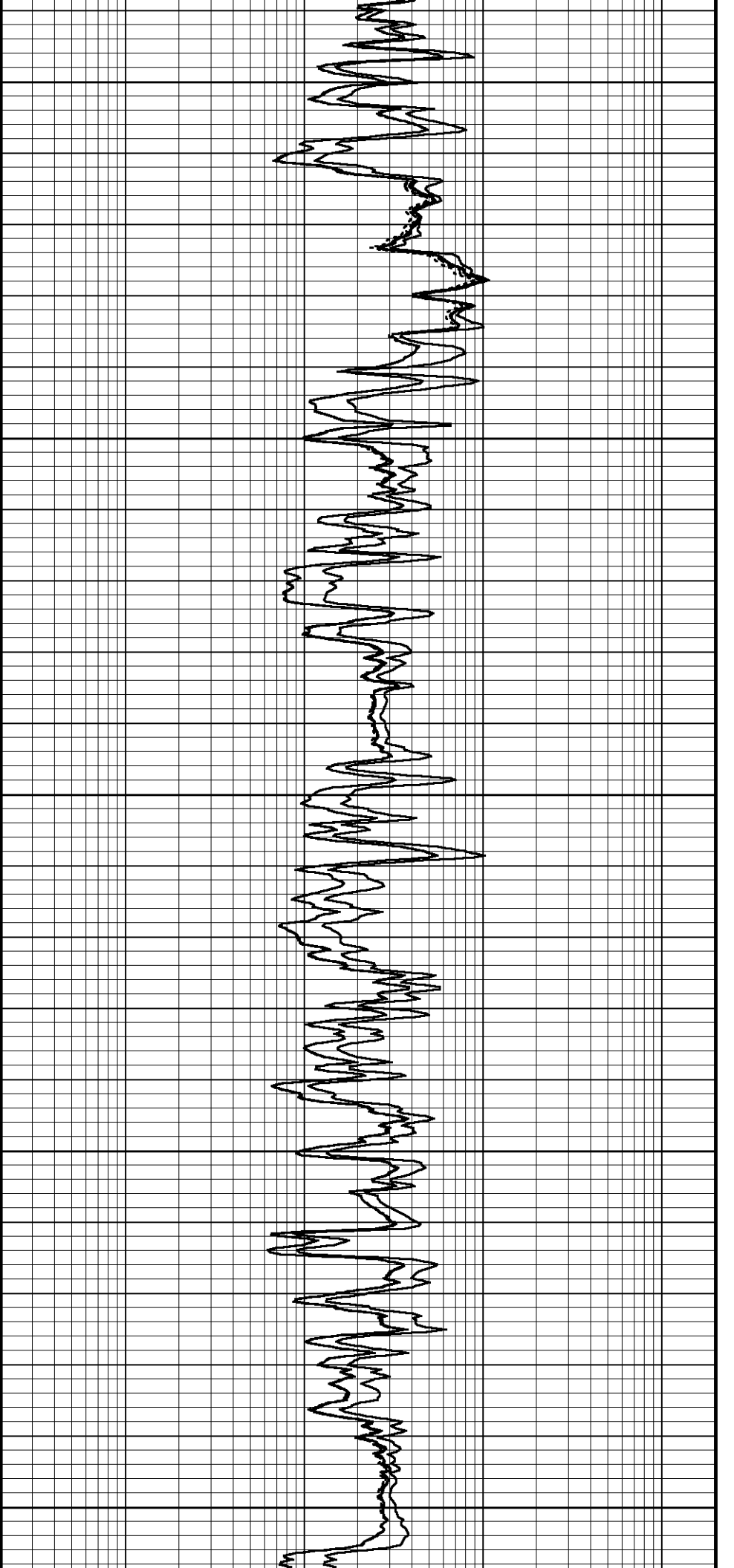
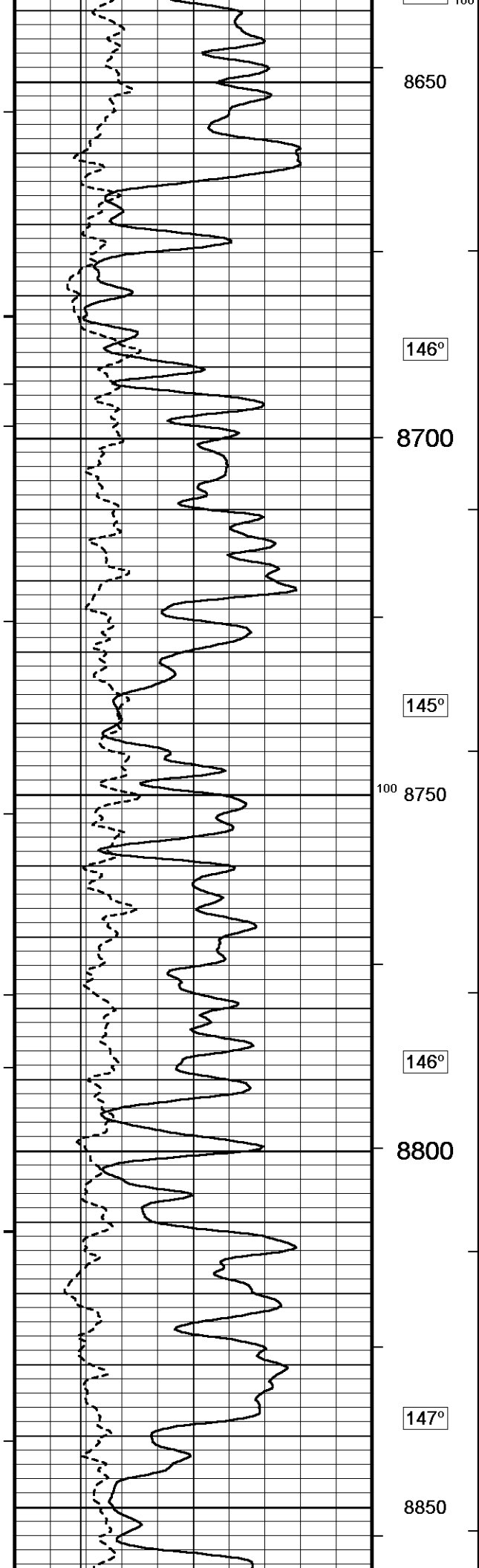


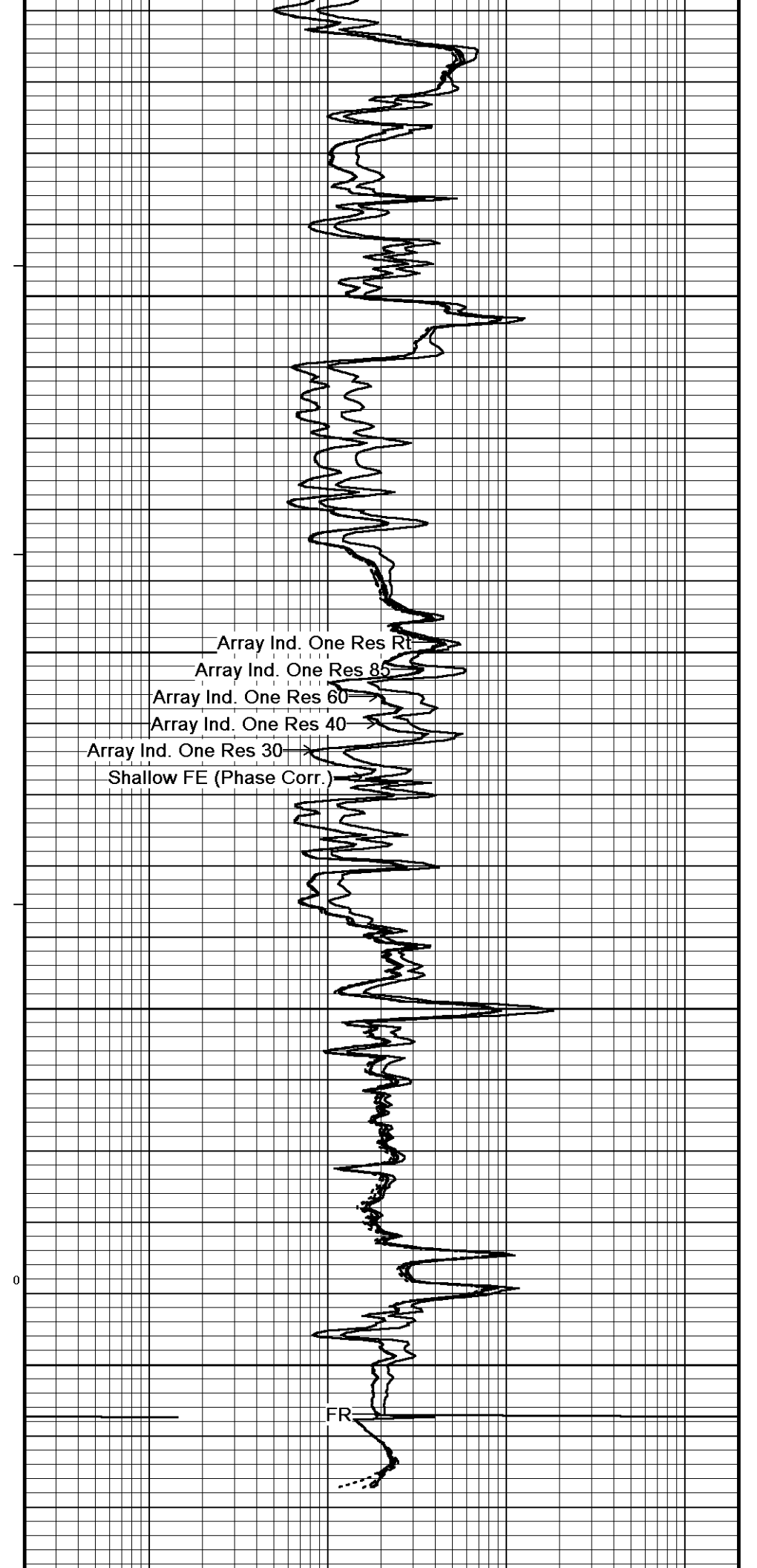
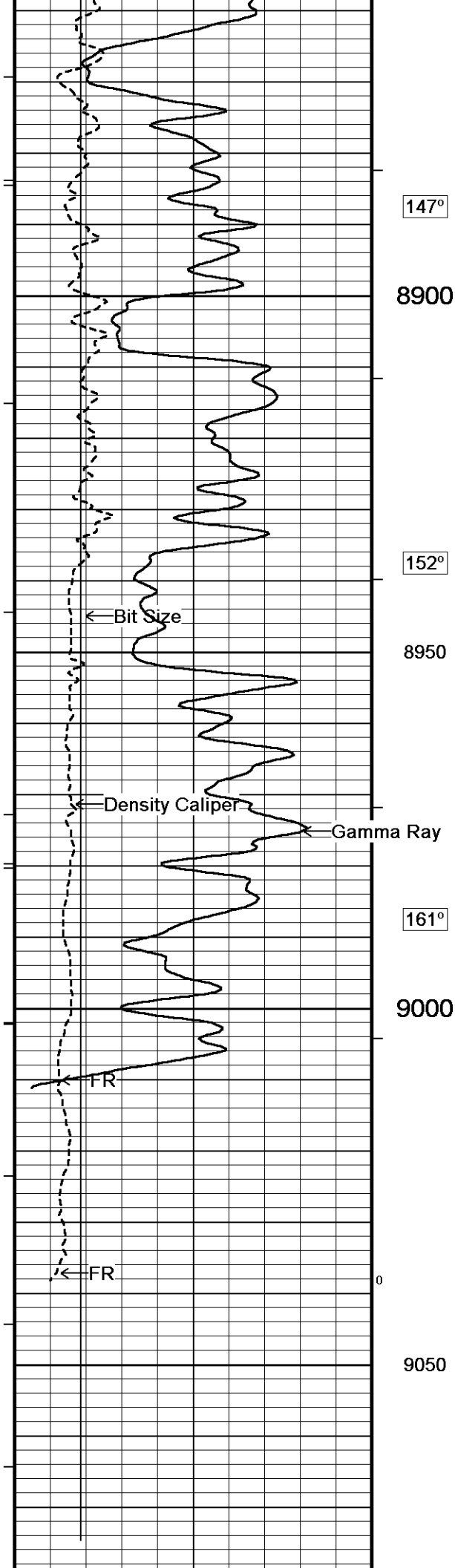


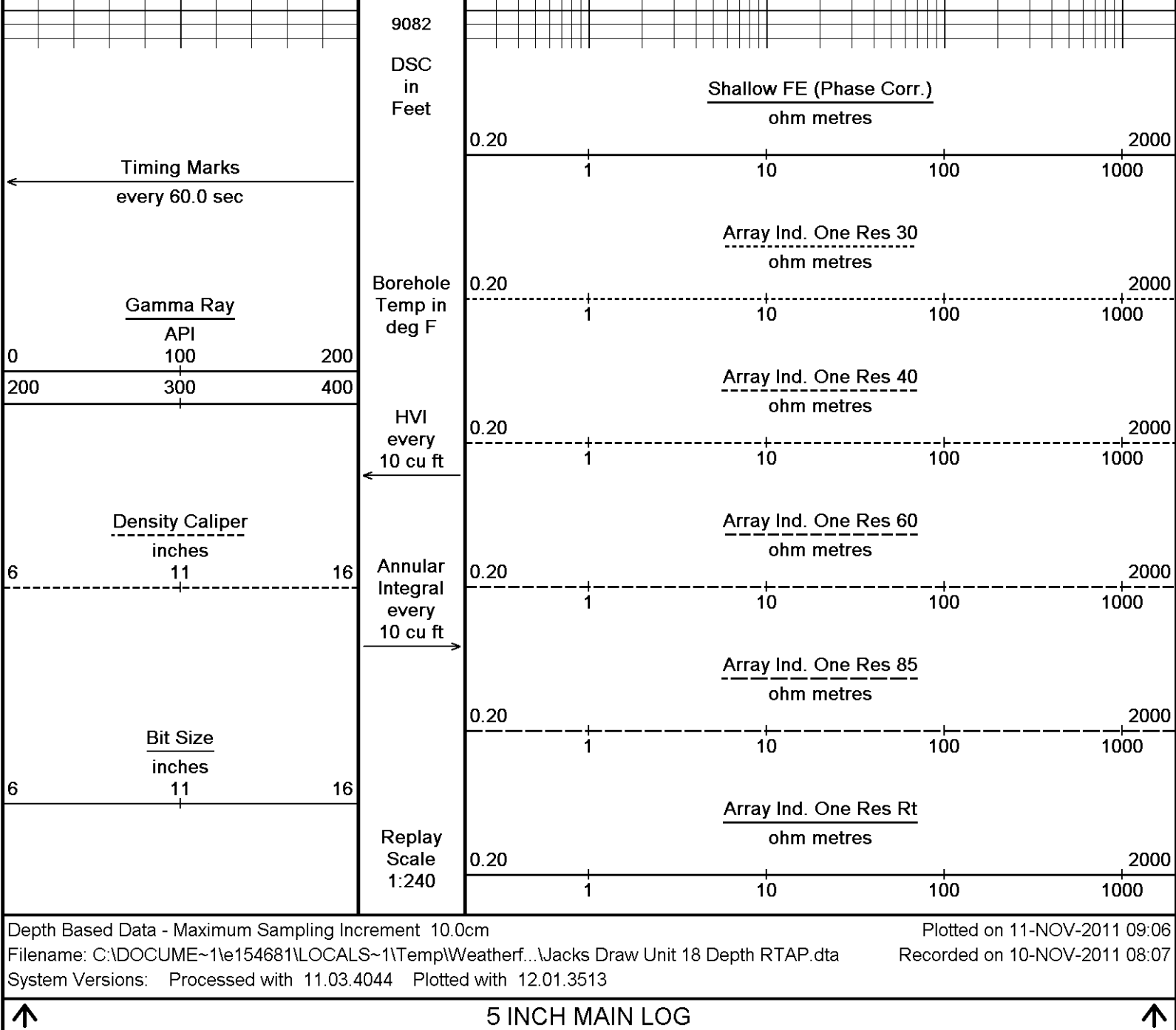












BEFORE SURVEY CALIBRATION		
C:\DOCUME~1\154681\LOCALS~1\Temp\Weatherford PreView\0\Jacks Draw Unit 18 Depth RTAP.dta		
General Constants All 000		Last Edited on 10-NOV-2011 08:49
General Parameters		
Mud Resistivity	1.500	ohm-metres
Mud Resistivity Temperature	74.700	degrees F
Water Level	0.000	feet
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	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. Four Res Rt	
RWA Constant A	0.610	

RWA Constant A		0.010	
RWA Constant M		2.150	
Down-hole Tension Calibration SMS 0			Field Calibration on 08-OCT-2007 10:22
Reading No	Measured	Calibrated (lbs)	
1	15585.87	0.00	
2	15586.05	0.10	
High Resolution Temperature Calibration MCG-D.J 423			Field Calibration on 27-AUG-2011 10:48
	Measured	Calibrated(Deg F)	
Lower	0.00	0.00	
Upper	50.00	50.00	
High Resolution Temperature Constants MCG-D.J 423			Last Edited on
Pre-filter Length	11		
SP Calibration MCG-D.J 423			Field Calibration on 27-AUG-2011 10:48
	Measured	Calibrated (mV)	
Reference 1	100.0	100.0	
Reference 2	-100.0	-100.0	
Gamma Calibration MCG-D.J 423			Field Calibration on 09-NOV-2011 13:40
	Measured	Calibrated (API)	
Background	157	108	
Calibrator (Gross)	935	642	
Calibrator (Net)	778	534	
Gamma Constants MCG-D.J 423			Last Edited on 10-NOV-2011 06:36
Gamma Calibrator Number	GRCC225		
Mud Density	1.00	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
Neutron Calibration MDN-B.A 275			Base Calibration on 19-OCT-2011 17:41 Field Check on 09-NOV-2011 13:19
Base Calibration			
	Measured	Calibrated (cps)	
	Near Far	Near Far	
	2934 90	3714 110	
Ratio	32.540	33.764	
Field Calibrator at Base			
		Calibrated (cps)	
		2415 3509	
Ratio		0.688	
Field Check			
		Calibrated (cps)	
		2319 3391	
Ratio		0.684	
Neutron Constants MDN-B.A 275			Last Edited on 10-NOV-2011 06:37
Neutron Source Id	P31131B		
Neutron Jig Number	NEC C 057		
Epithermal Neutron	No		
Caliper Source for Processing	Density Caliper		
Stand-off	0.00	inches	
Mud Density	1.00	gm/cc	
Limestone Sigma	7.10	cu	
Sandstone Sigma	7.00	cu	
Dolomite Sigma	4.70	cu	
Formation Pressure Source	None		
Formation Pressure	N/A	kpsi	
Temperature Source	None		
Temperature	N/A	degrees F	
Mud Salinity	0.00	kppm	
Formation Fluid Salinity Source	None		
Formation Fluid Salinity	N/A	kppm	
Formation Fluid Salinity	N/A		

## FE Calibration MFE-B.J 310

Base Calibration on 10-OCT-2011 18:45

Field Check on 09-NOV-2011 13:29

## Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.2	126.8
Base Check		280.4
Field Check		280.7

## FE Constants MFE-B.J 310

Last Edited on 10-NOV-2011 06:38

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

## High Resolution Temperature Calibration MAI-B.A 219

Field Calibration on 09-NOV-2011 13:04

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

## High Resolution Temperature Constants MAI-B.A 219

Last Edited on

Pre-filter Length	11
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## Induction Calibration MAI-B.A 219

Base Calibration on 12-AUG-2011 20:22

Field Check on 09-NOV-2011 13:03

## Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		17.4	478.1	9.3	966.2
2		5.8	380.3	7.6	821.4
3		3.5	258.5	5.2	566.0
4		1.9	136.0	2.6	279.2

Array Temperature	77.2	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	10.2	3794.3
2	0.0	0.0	30.4	3538.8
3	0.0	0.0	28.3	3057.6
4	0.0	0.0	19.2	2029.6
Deep	0.0	0.0	16.2	1949.9
Medium	0.0	0.0	42.6	4090.5
Shallow	0.0	0.0	46.8	5285.5

Array Temperature	0.0	33.4	Deg F
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## Induction Constants MAI-B.A 219

Last Edited on 10-NOV-2011 08:49

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	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre

Borehole Normalisation

# Corehole 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	

## Caliper Calibration MPD-C.J 376

Base Calibration on 01-NOV-2011 17:18  
Field Calibration on 10-NOV-2011 08:57

### Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16672	4.01
2	26192	5.97
3	35920	7.96
4	45648	9.86
5	56743	11.92
6	N/A	N/A

### Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.94	7.96

## Photo Density Calibration MPD-C.J 376

Base Calibration on 01-NOV-2011 17:07  
Field Check on 09-NOV-2011 13:08

### Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	53680	17984	53167	19331
Reference 2	25200	2711	25116	2544

### Field Check at Base

1239.8	1402.5
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### Field Check

1228.1	1401.8
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### PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	223	1107		
Reference 1	18811	53490	0.355	0.320
Reference 2	7185	25056	0.291	0.273

### Field Check at Base

223.3	1107.5
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### Field Check

224.2	1098.9
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## Density Constants MPD-C.J 376

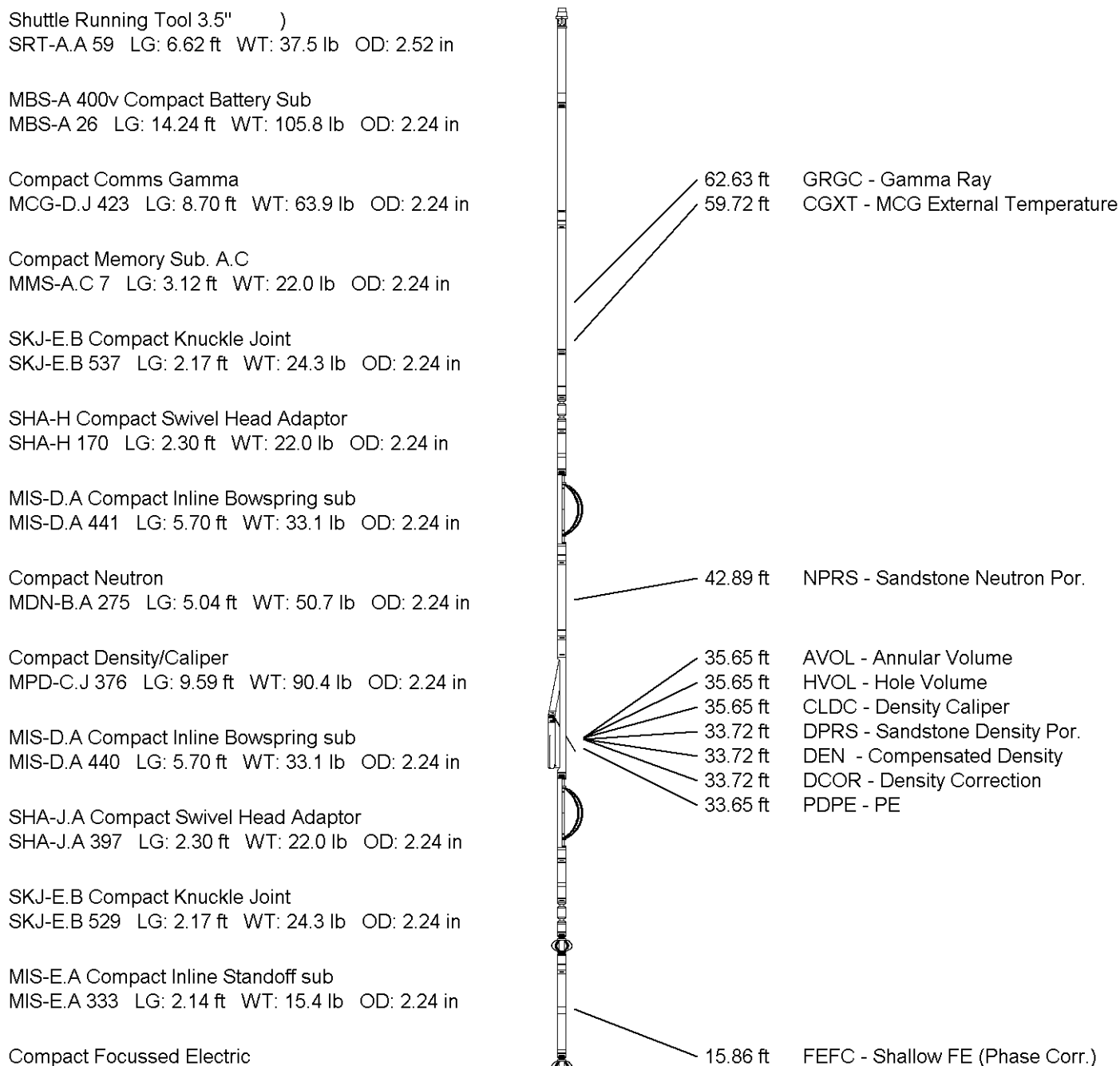
Last Edited on 10-NOV-2011 06:37

Density Source Id	P21136B
Nylon Calibrator Number	535
Aluminium Calibrator Number	535
Density Shoe Profile	4 inch

Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.25	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	
0.00	0.00	

## DOWNHOLE EQUIPMENT

C:\DOCUME~1\154681\LOCALS~1\Temp\Weatherford PreView\0\Jacks Draw Unit 18 Depth RTAP.dta





Total      Length: 90.49 ft      Weight: 657.0 lb



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

COMPANY	WEXPRO COMPANY
WELL	JACKS DRAW UNIT 18
FIELD	POWDER WASH
PROVINCE/COUNTY	MOFFAT
COUNTRY/STATE	U.S.A. / COLORADO

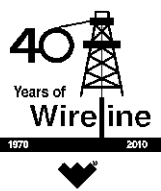
Elevation Kelly Bushing	6599.00	feet
Elevation Drill Floor	6598.00	feet
Elevation Ground Level	6570.00	feet

First Reading	9070.00	feet
Depth Driller	9087.00	feet
Depth Logger	9087.00	feet

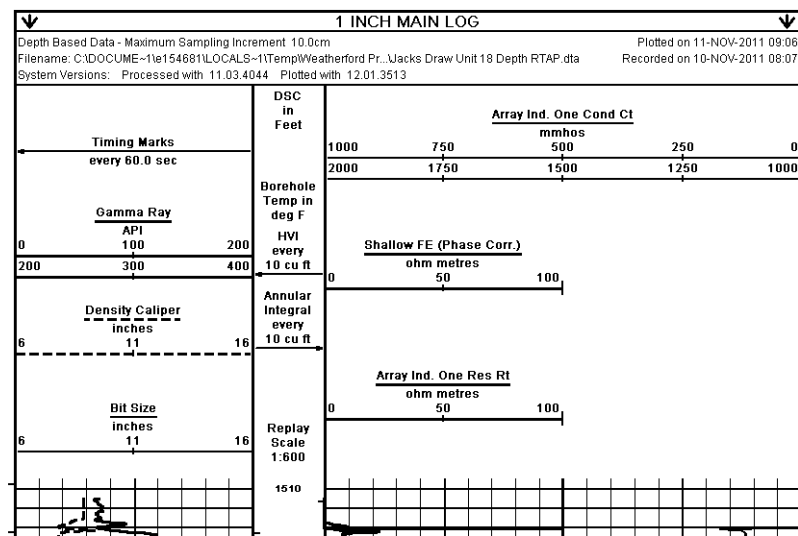


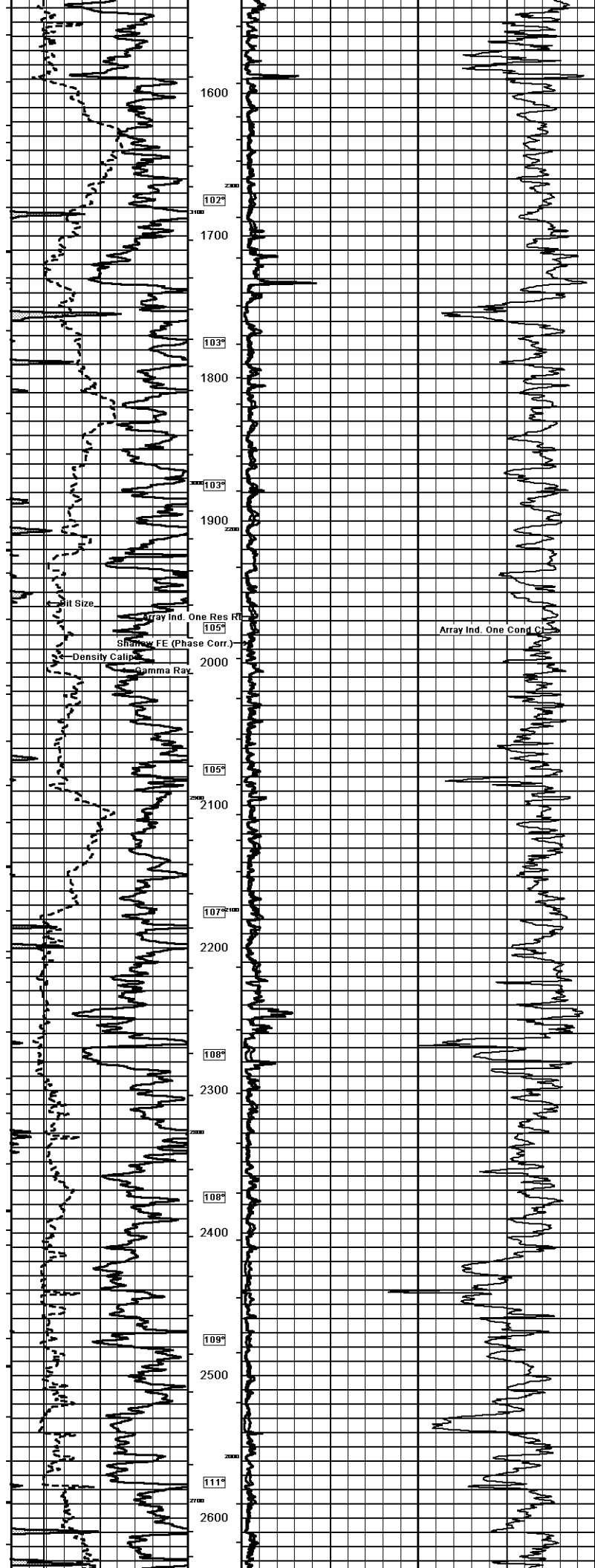
# ARRAY INDUCTION LOG

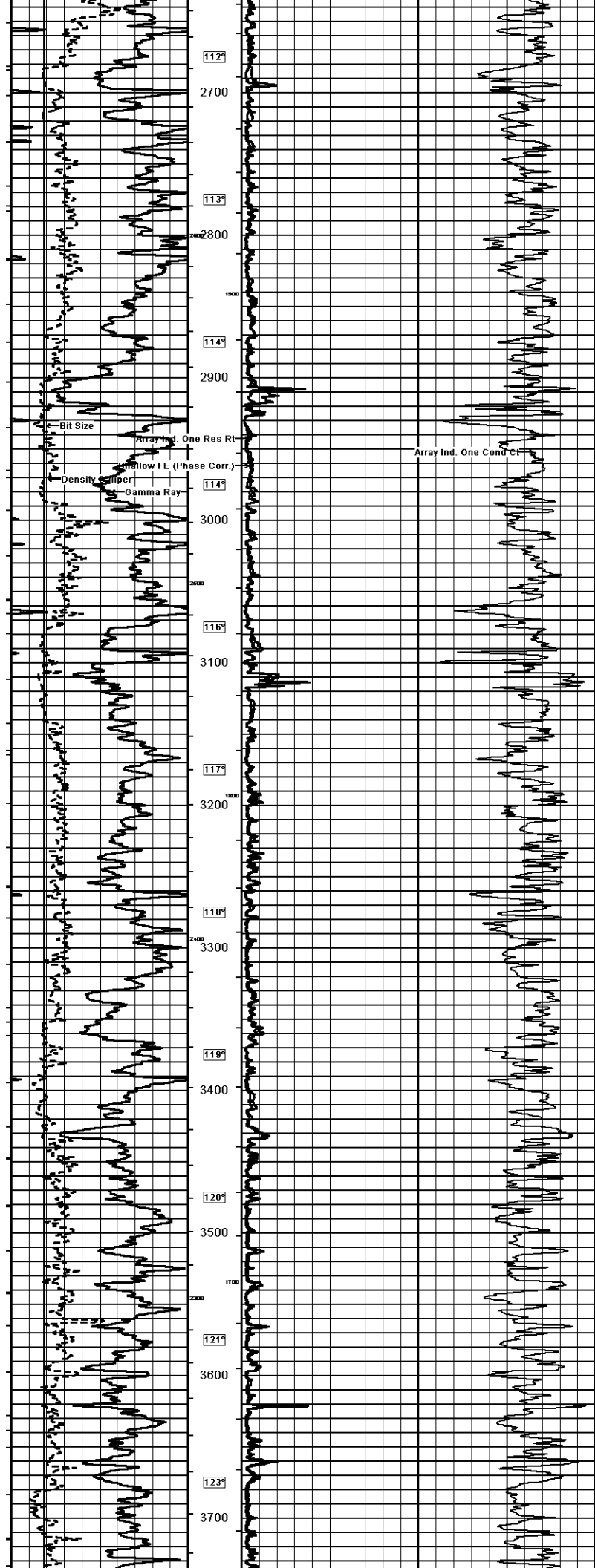
# Weatherford®

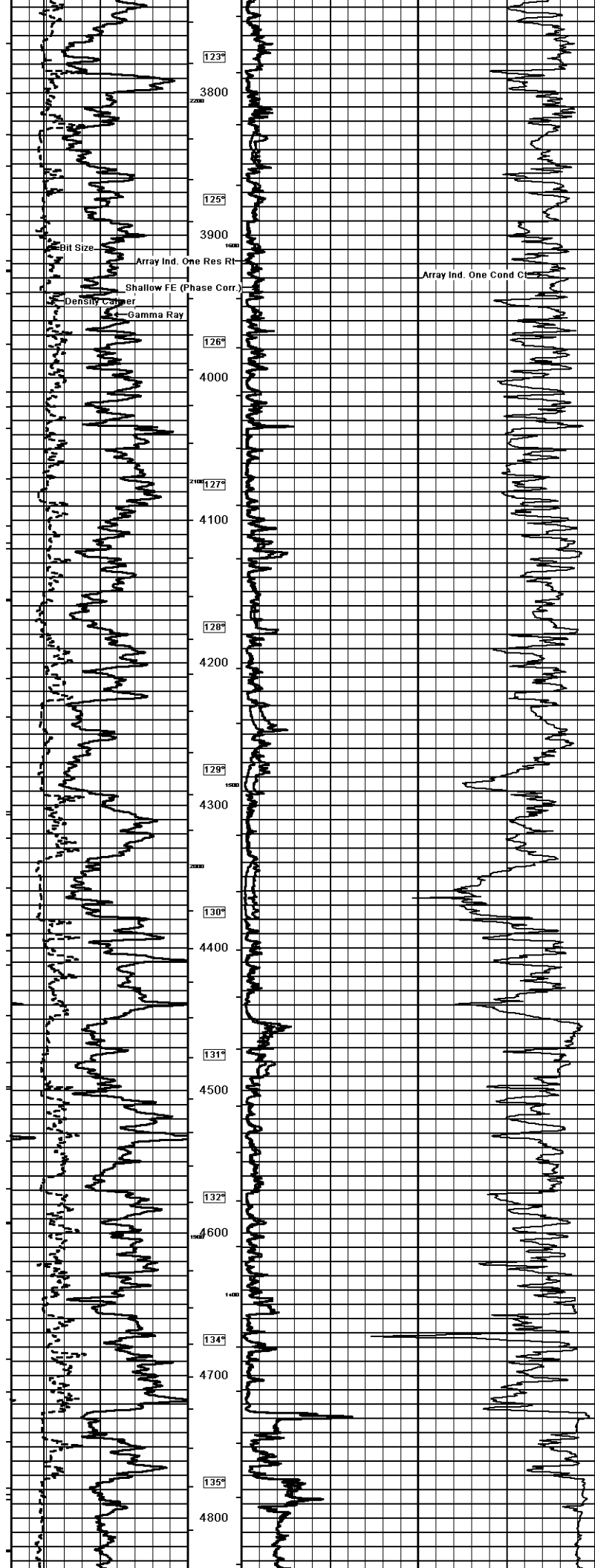


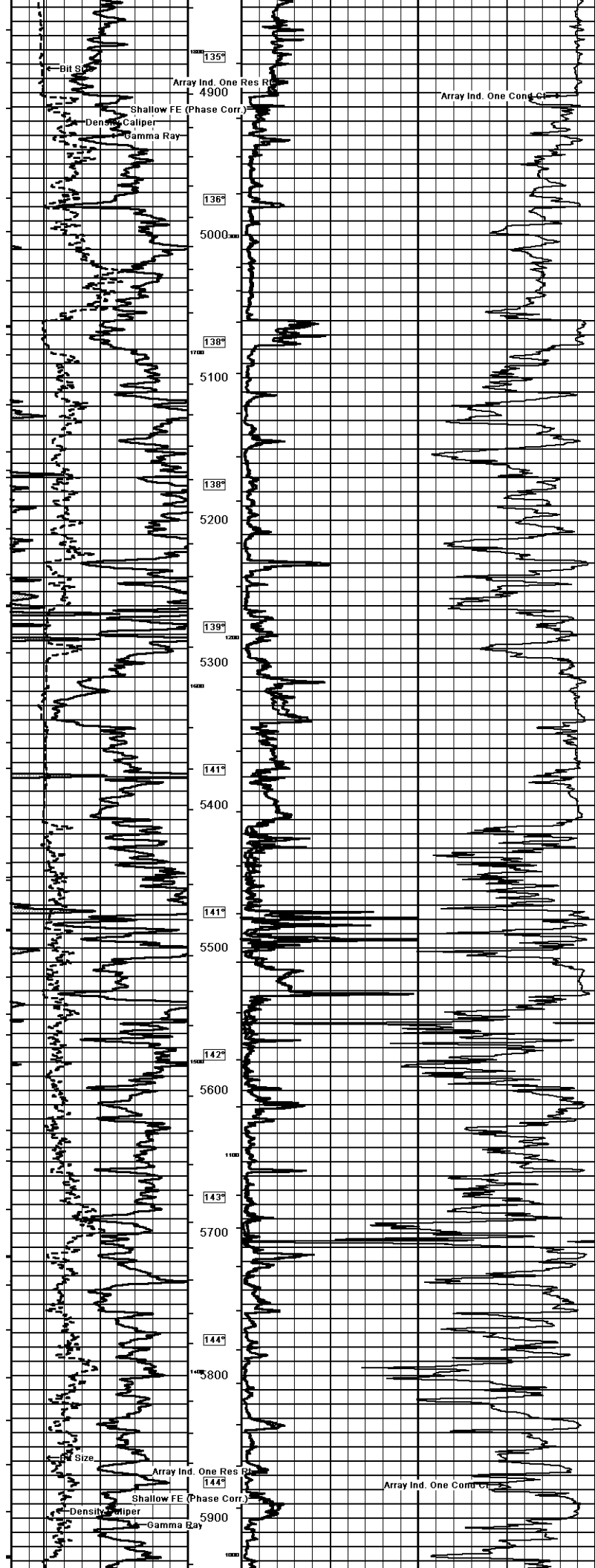
Weatherford		ARRAY INDUCTION LOG	
COMPANY WELL FIELD PROVINCE/COUNTY COUNTRY/STATE LOCATION		WEXPRO COMPANY JACKS DRAW UNIT 18 POWDER WASH MOFFAT U.S.A. / COLORADO SHL 933 FNL & 150D3 FWL	
SEC	TMP	RCE	Other Services
Z18	12N	9TW	MFDOWN
API Number 05-081-07355			
Permit Number			
Permanent Datum O.L. Elevation 6570 feet		Elevations: Top 6590 feet Base 6588 ft TP 6570.00m	
Log Measured From 1KB			
Drilling Measured From 1KB			
Date	10-NOV-2011		
Run Number	ONE		
Depth Driller	9087.00	feet	
Depth Logger	9087.00	feet	
Last Reading	9070.00	feet	
Casing Driller	1525.00	feet	
Casing Logger	1525.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	LSND		
Density/Viscosity	10.40 lbbl/usg	39.00 CP	
pH / Fluid Loss	9.90	6.80 ml/20min	
Sample Source	FLOWLINE		
Run @ Measured Temp	1.50 @ 74.7	ohm-in	
Run @ Measured Temp	1.20 @ 74.7	ohm-in	
Source Root/Rinc	1.80 @ 74.7	ohm-in	
CALC		CALC	
Run @ BHT	0.761 @ 151.0	ohm-in	
Time Since Circulation	05 HOURS		
Data Recorded Temp	151.00	deg F	
COMPACT			
Equipment Name	180B3	CASPER	
Recorded By	J BOON		
Witnessed By	R. BUSH		

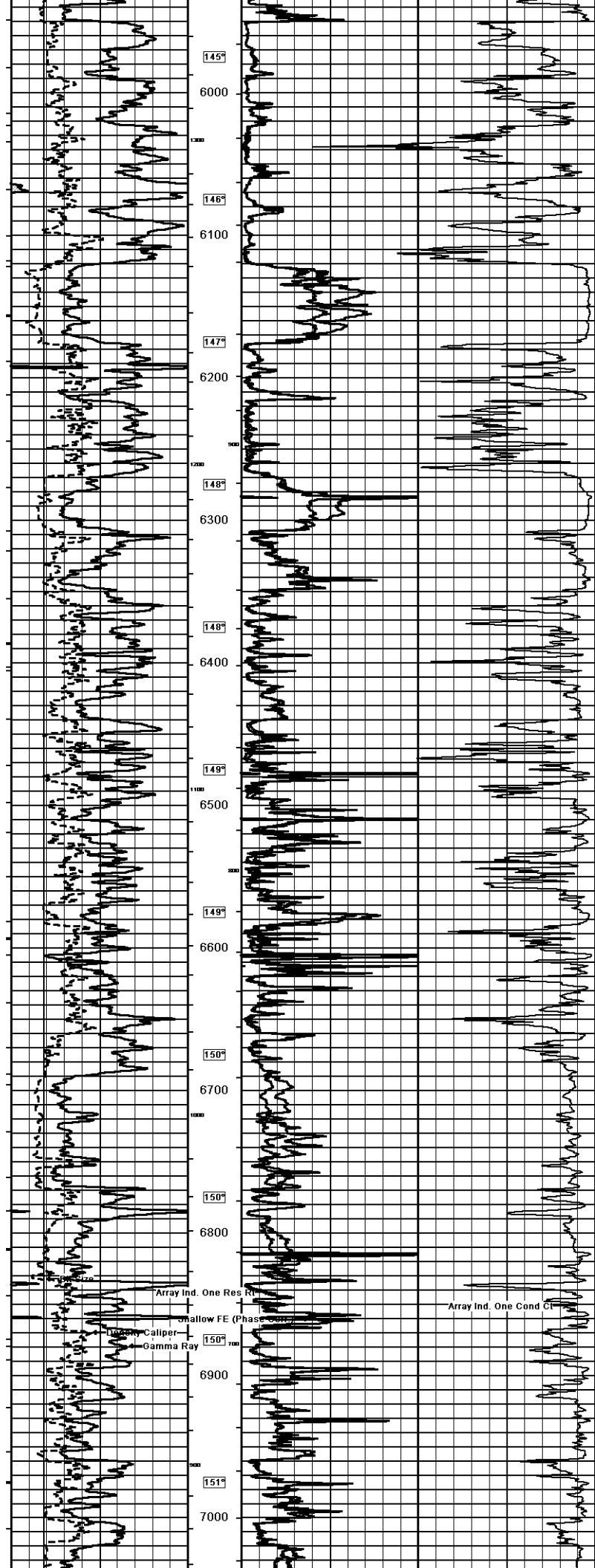


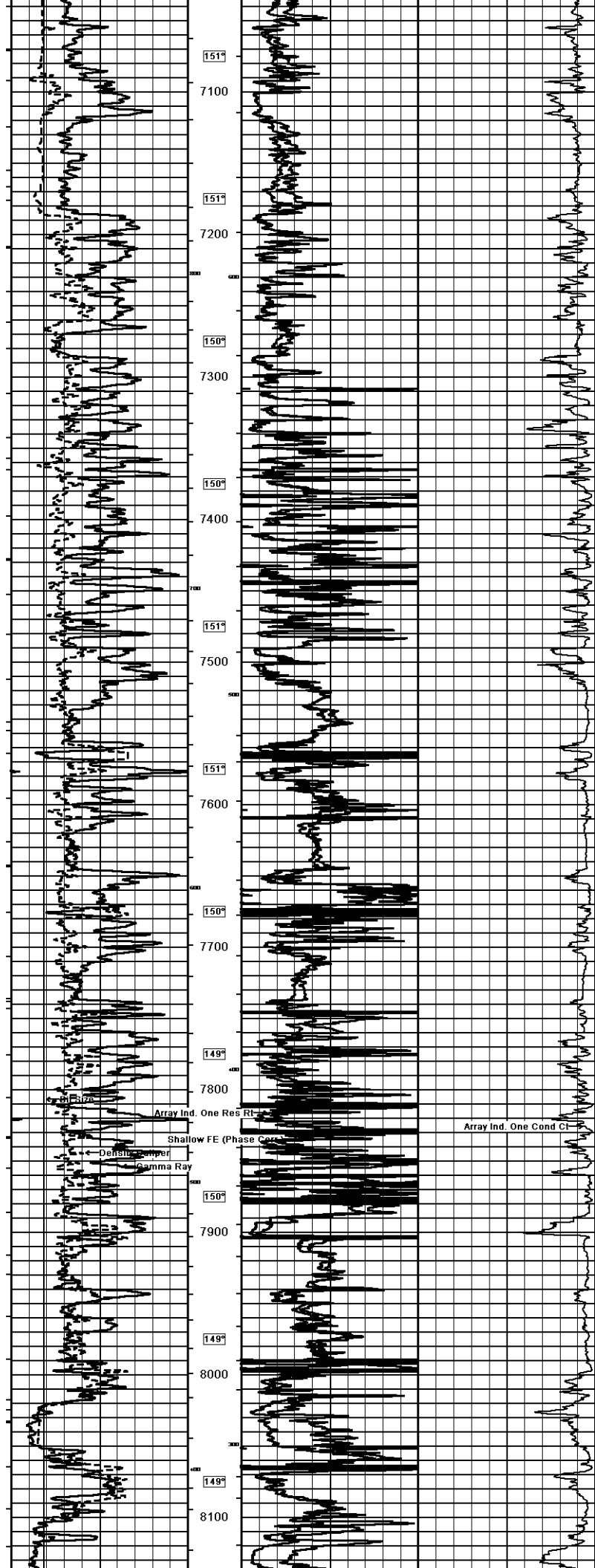












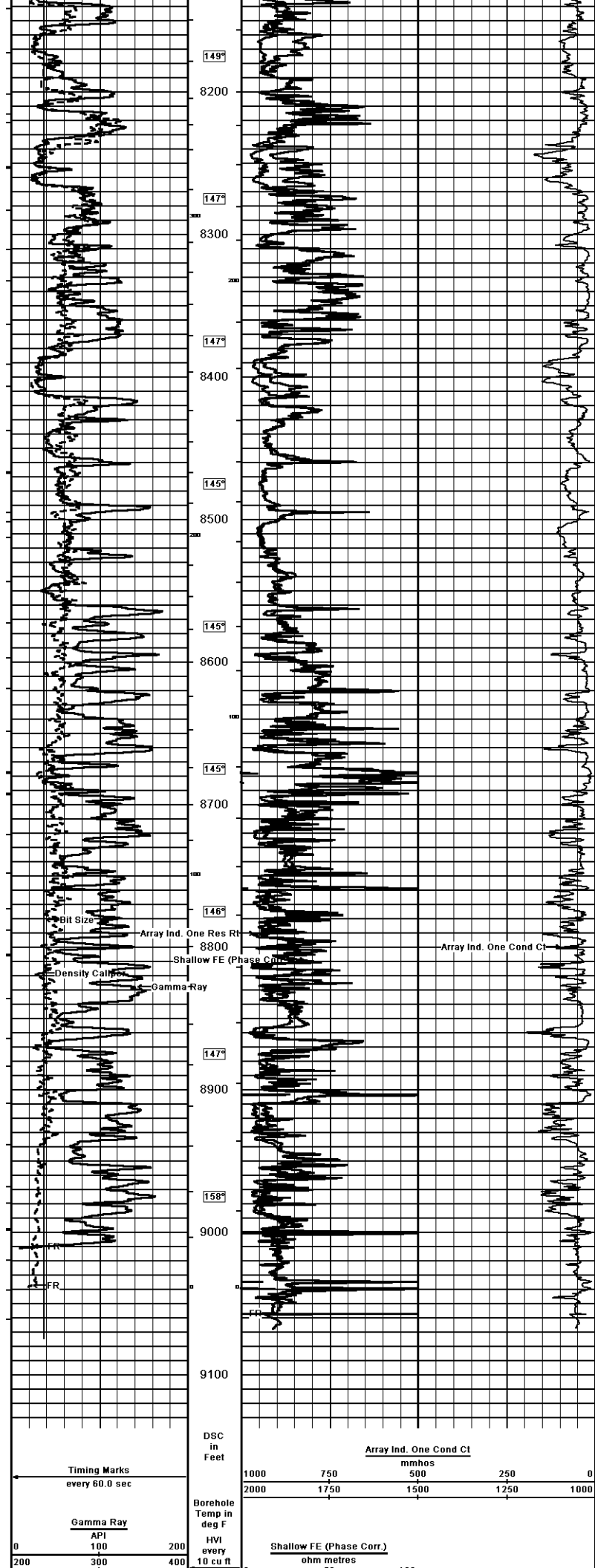
Array Ind. One Res RT

Shallow FE (Phase Cont)

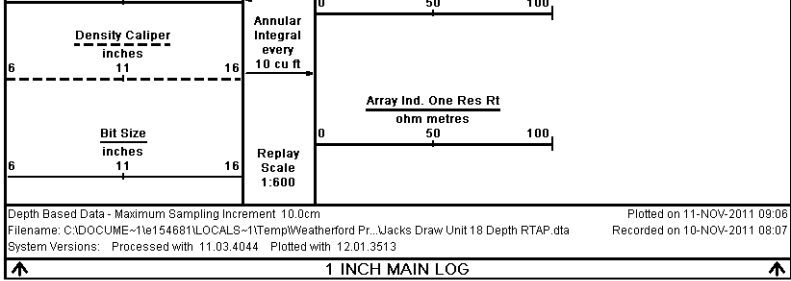
Density Log

Gamma Ray


Array Ind. One Cond C







COMPANY		WEXPRO COMPANY			
WELL		JACKS DRAW UNIT 18			
FIELD		POWDER WASH			
PROVINCE/COUNTY		MOFFAT			
COUNTRY/STATE		U.S.A. / COLORADO			
Elevation Kelly Bushing	6599.00	feet	First Reading	9070.00	feet
Elevation Drill Floor	6598.00	feet	Depth Driller	9087.00	feet
Elevation Ground Level	6570.00	feet	Depth Logger	9087.00	feet



ARRAY INDUCTION  
LOG

40

Wireline