Weatherford®

CML MESSENGER SHUTTLE
ARRAY INDUCTION
ELECTRIC LOG

COMPANY	SOURCE ENERGY
WELL	CONDIFF 8-22-5-23H
FIELD	SAUZEK
PROVINCE/COUNTY	SUMNER
COUNTRY/STATE	USA / KANSAS
LOCATION	SHL: 2246' FNL & 1477' FWL
	BHL: 2022' FSL & 1554' FWL

SEC	TWP	RGE	Other Services
8	33S	1E	MDN/MPD
			CMI

API Number 15-191-22669-01
Permit Number

Permanent Datum G.L., Elevation 1262 feet
Log Measured From KB
Drilling Measured From K.B. @ 17 FEET

Elevations:	feet
KB	1264.00
DF	1262.00
GL	1247.00

Date	23-FEB-2013			
Run Number	ONE			
Service Order	3539399			
Depth Driller	8011.00	feet		
Depth Logger	7975.00	feet		
First Reading	7972.00	feet		
Last Reading	4154.00	feet		
Casing Driller	4154.00	feet		
Casing Logger	4154.00	inches		
Bit Size	6.125			
Hole Fluid Type	WATER	lb/USg		
Density / Viscosity	8.40 lb/USg	27.00 CP		
PH / Fluid Loss	9.30	9.30		
Sample Source	FLOWLINE			
Rm @ Measured Temp	5.10 @ 41.0	ohm-m		
Rmf @ Measured Temp	4.308 @ 41.0	ohm-m		
Rmc @ Measured Temp	6.12 @ 41.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	1.72 @121.0	ohm-m		
Time Since Circulation	0 HOURS			
Max Recorded Temp	121.00	deg F		
Equipment / Base	18006	OKC		
Recorded By	D. ROWELL			
Witnessed By	J. CALDARO-BAIRD			

BOREHOLE RECORD

Last Edited: 23-FEB-2013 18:17

Bit Size inches	Depth From feet	Depth To feet
8.750	0.00	4197.00
6.125	4197.00	8011.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	4197.00	26.00

REMARKS

LOGGED WITH WLS VER 13.04.8492 SOFTWARE

WELL LOGGED USING MESSENGER METHOD OF DEPLOYMENT, AND MEMORY LOGGING SYSTEM

HARDWARE: MAI: ISA STANDOFF BELOW

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST

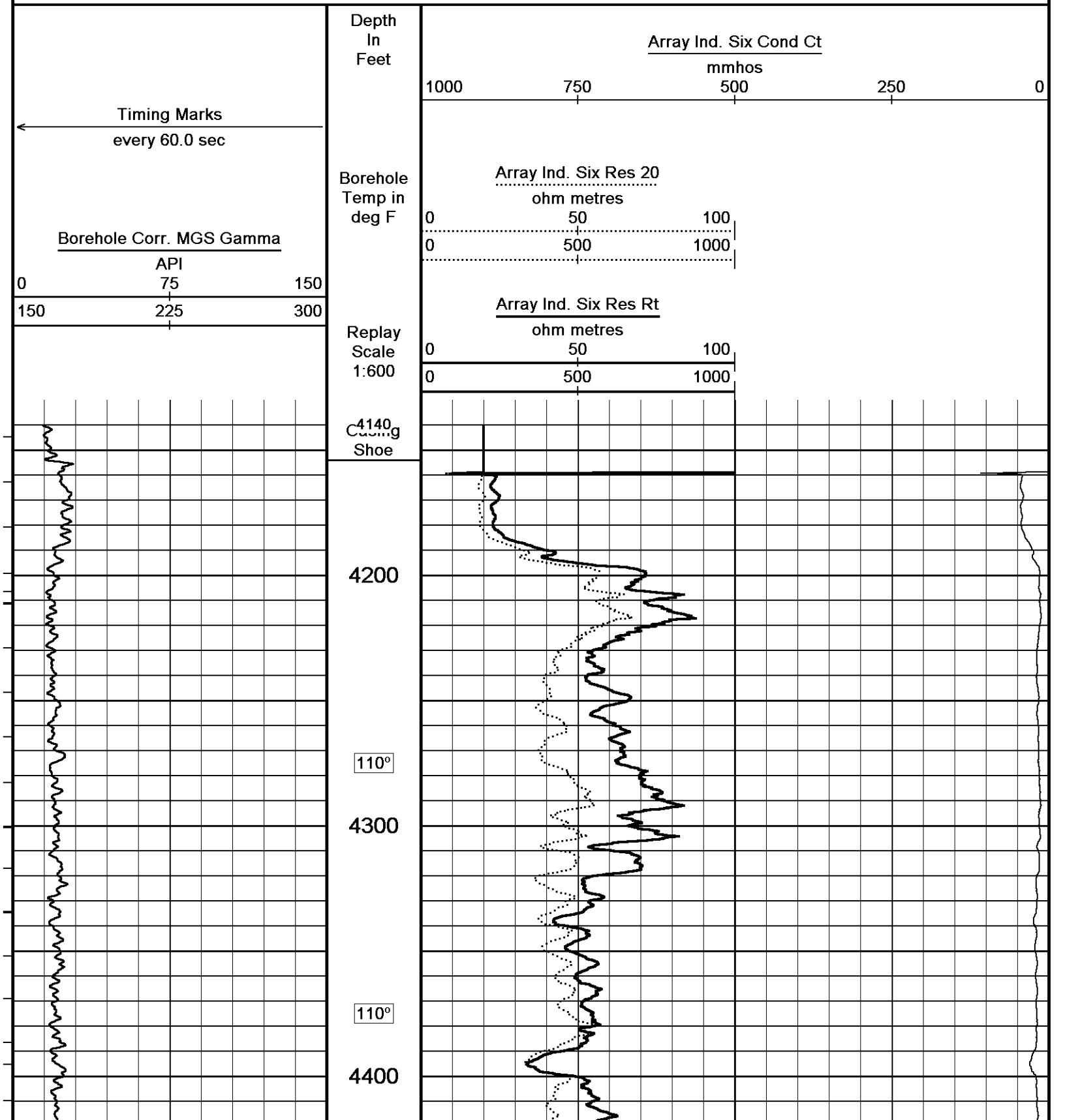
DRILL PIPE DEPTH DURING DEPLOYMENT:7871
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 7975

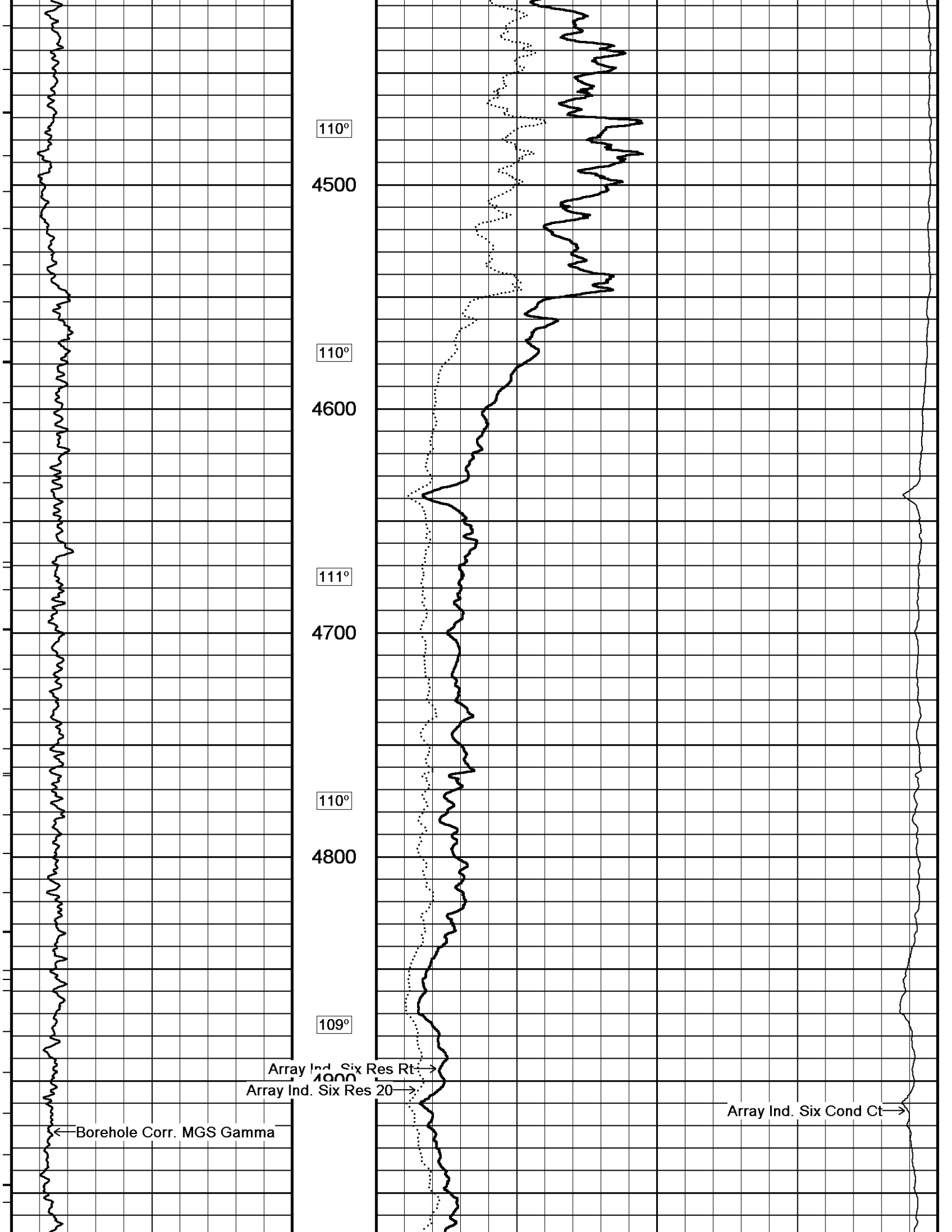
SERVICE ORDER #3539399
RIG: PISTOL #2
OPERATORS: C. ALEXANDER, K. CHAFFIN

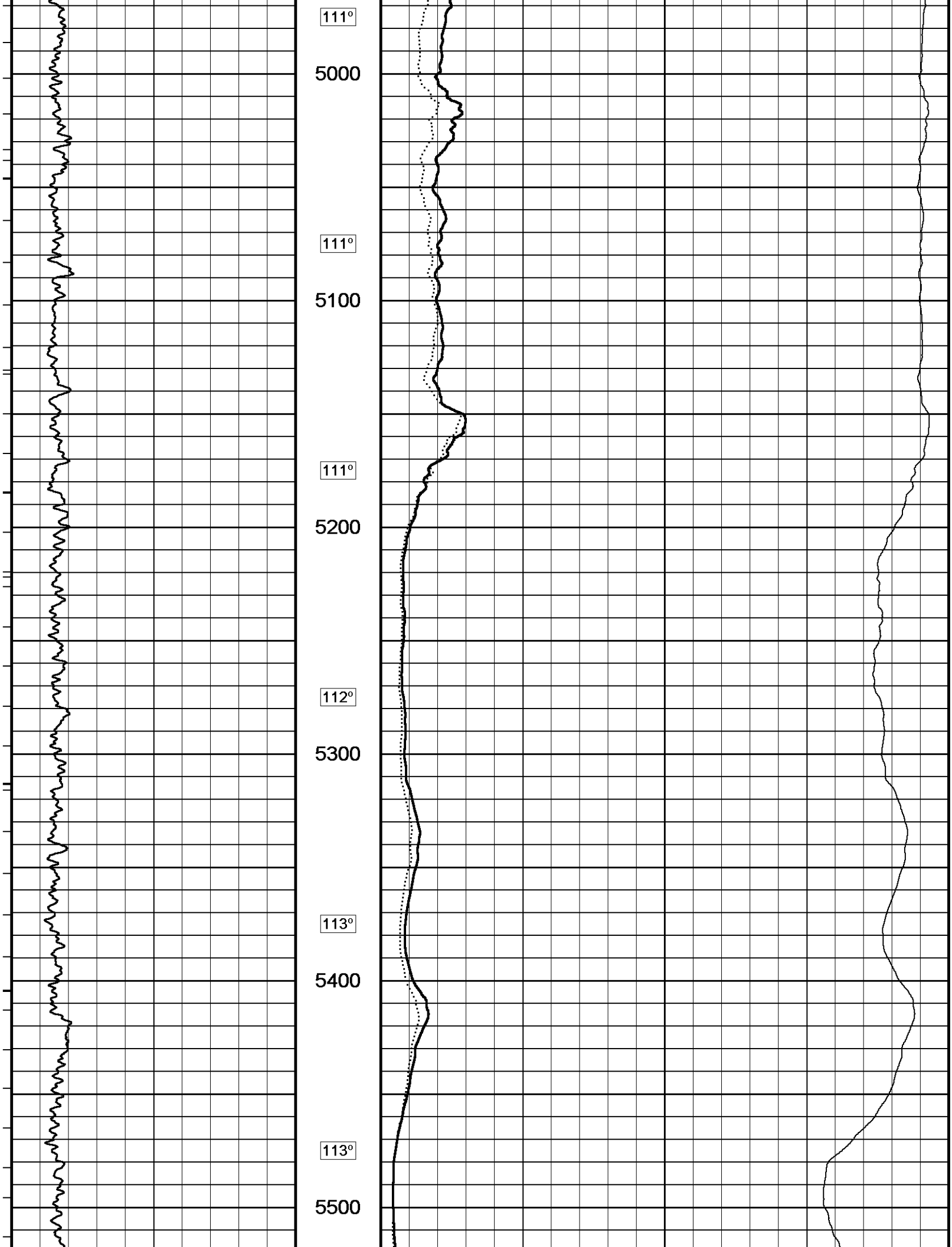
OPERATORS: C. ALEXANDER, R. CHAPLIN

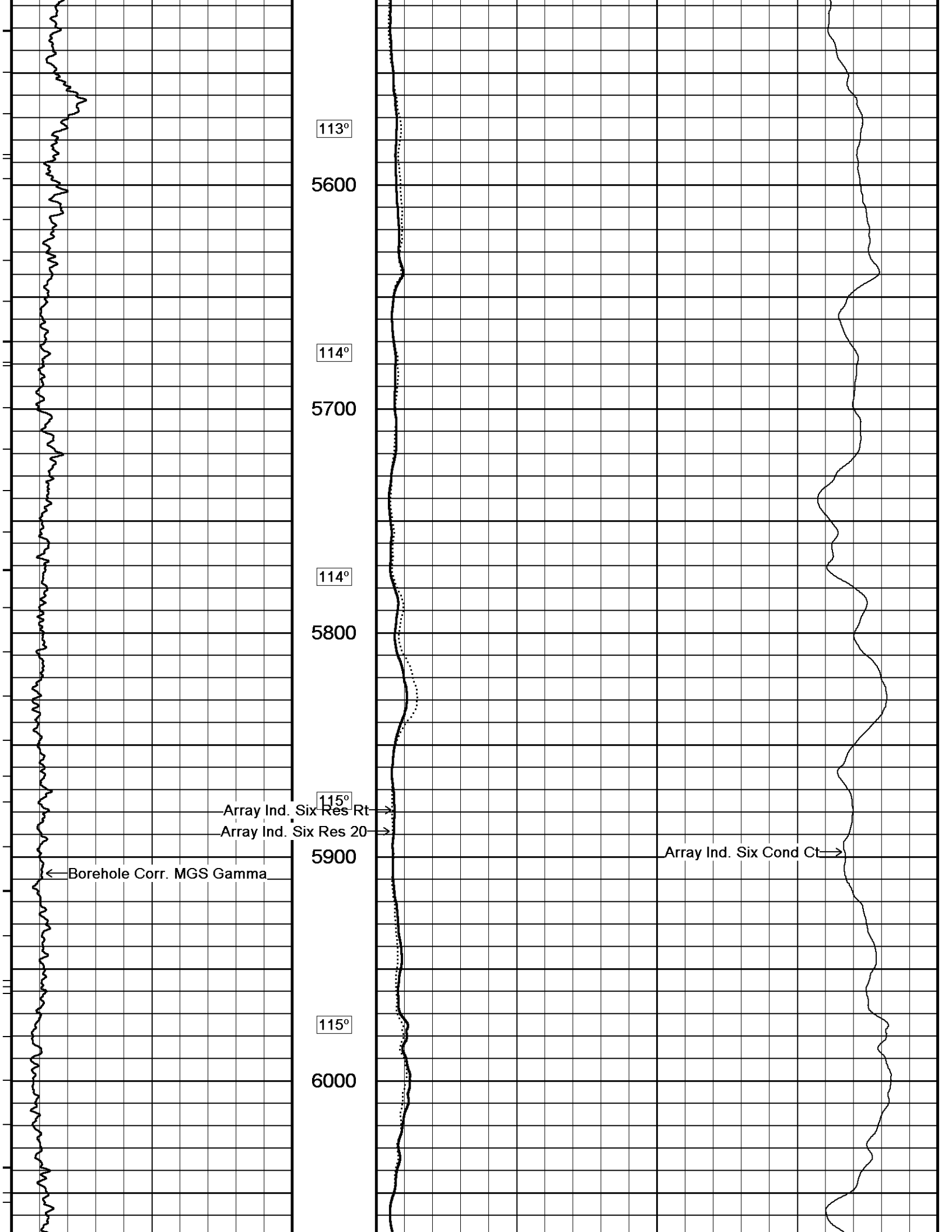
2 INCH MAIN LOG DSC

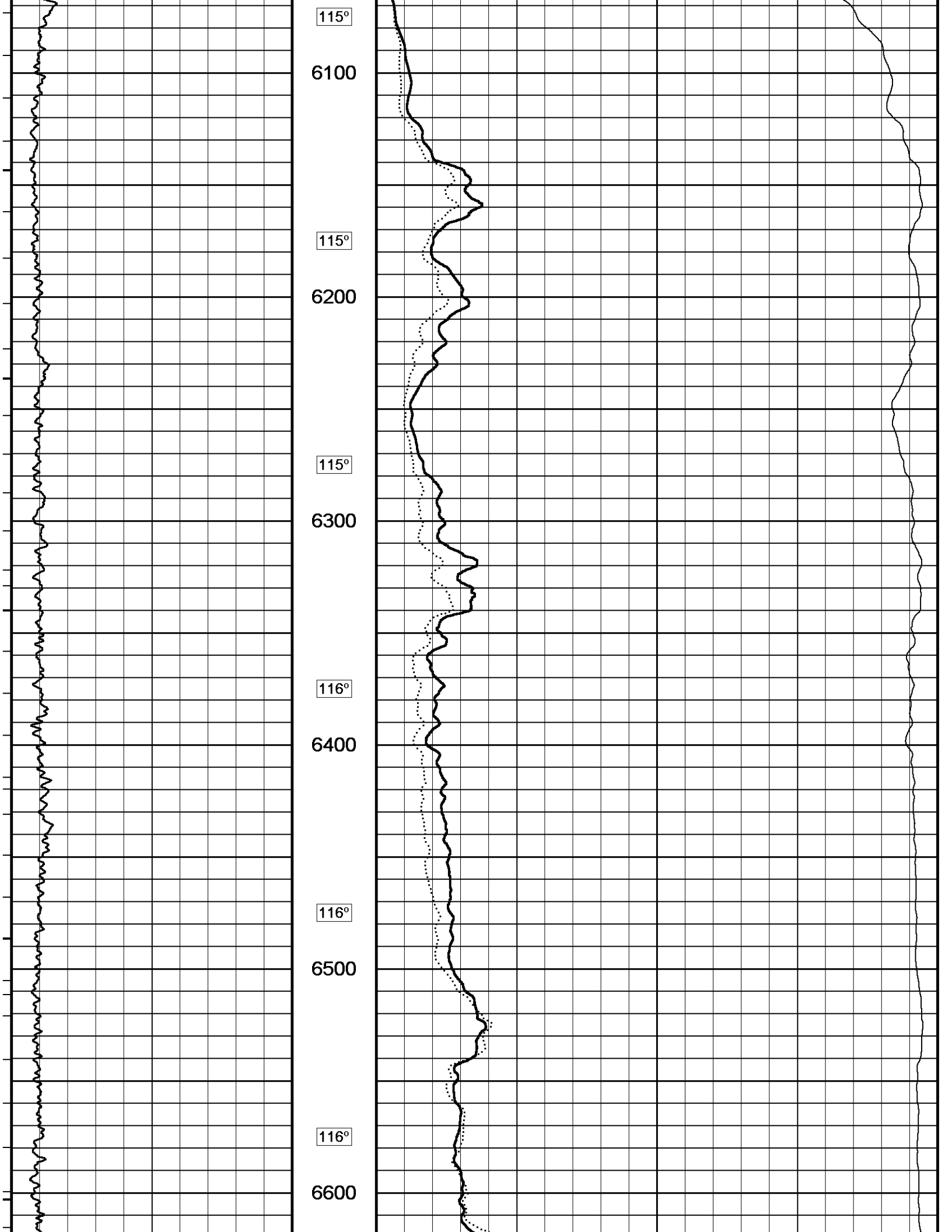
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-FEB-2013 01:42
Filename: C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 RTAP.dta
Recorded on 23-FEB-2013 21:45
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

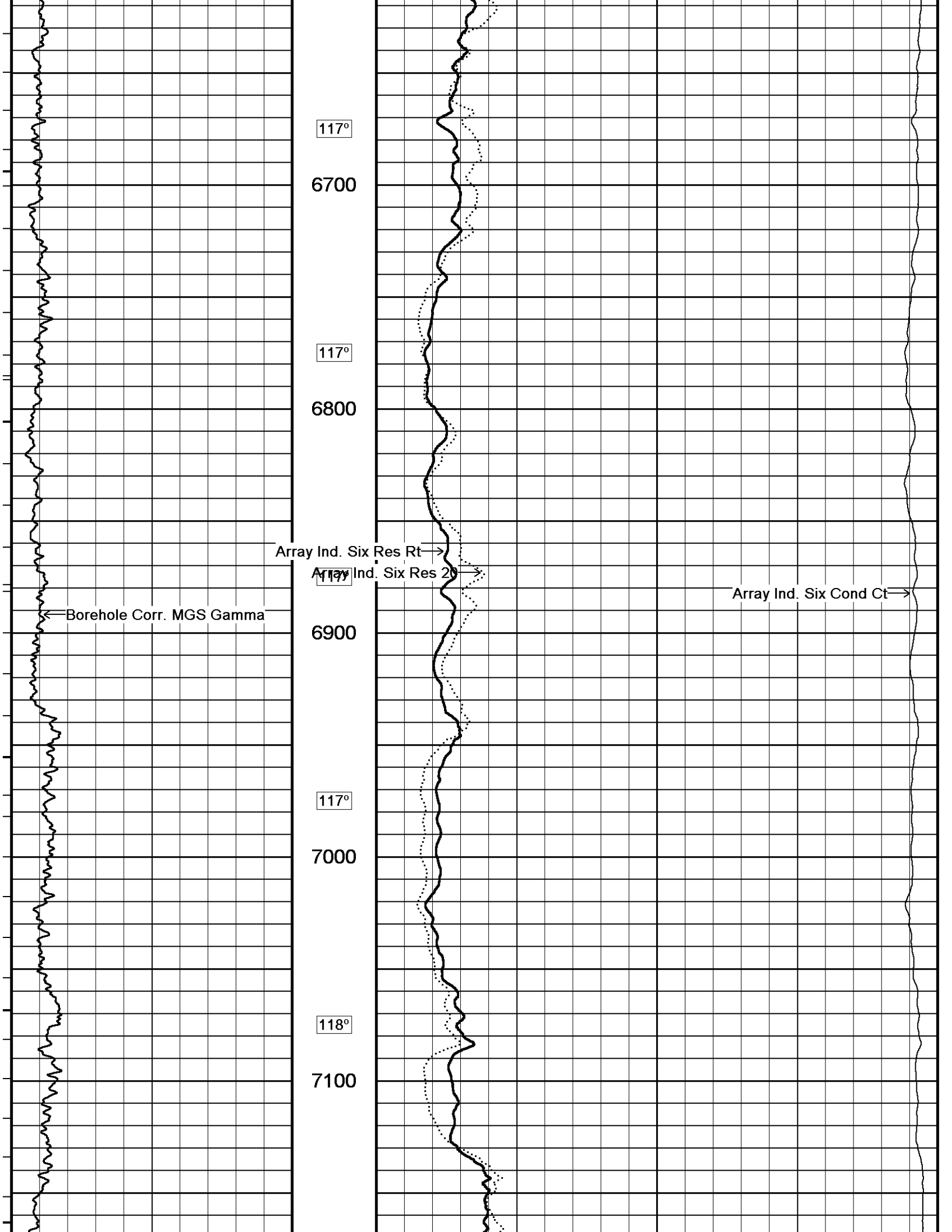


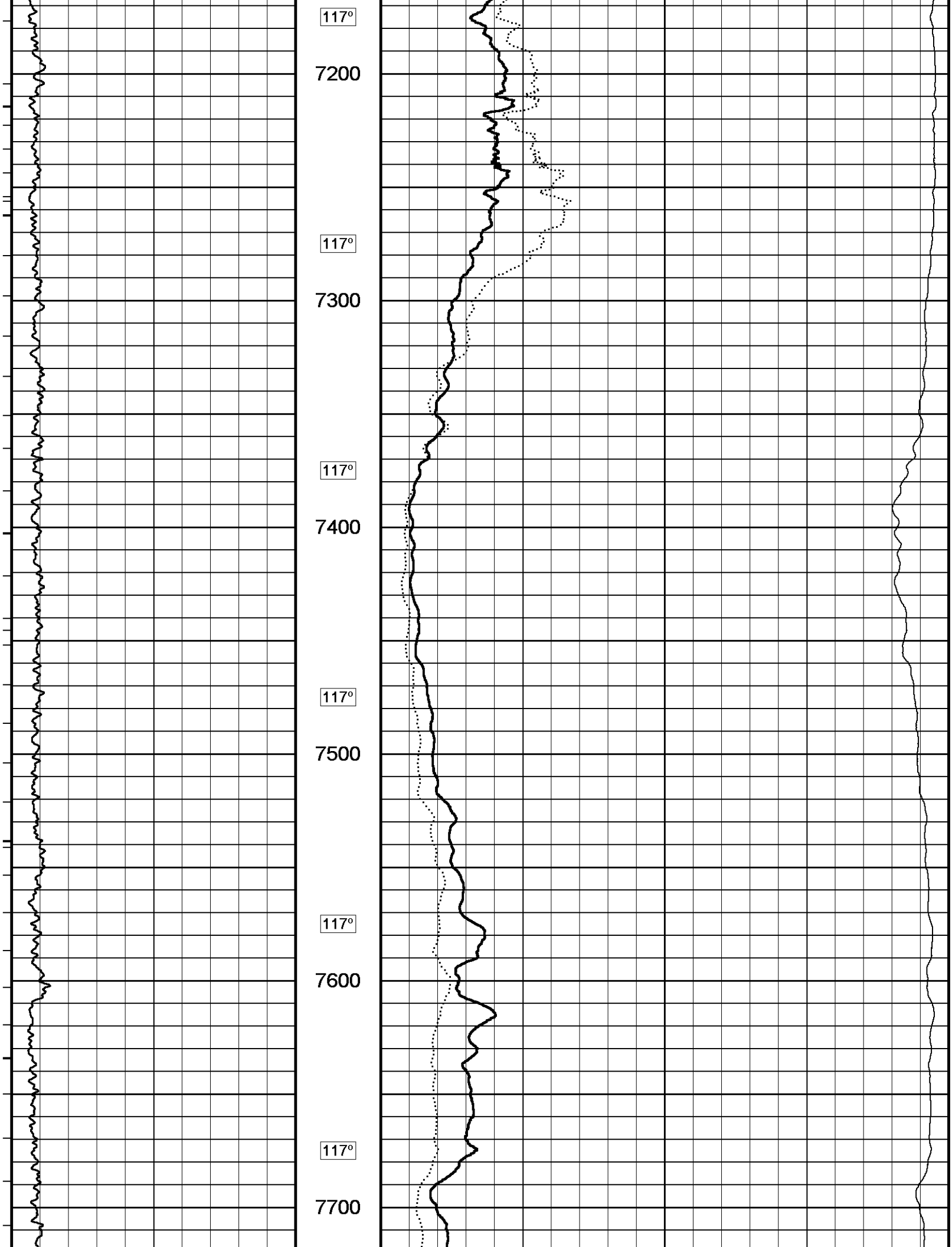

110°
4500
110°
4600
111°
4700
110°
4800
109°
Array Ind. Six Res Rt
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
Array Ind. Six Cond Ct

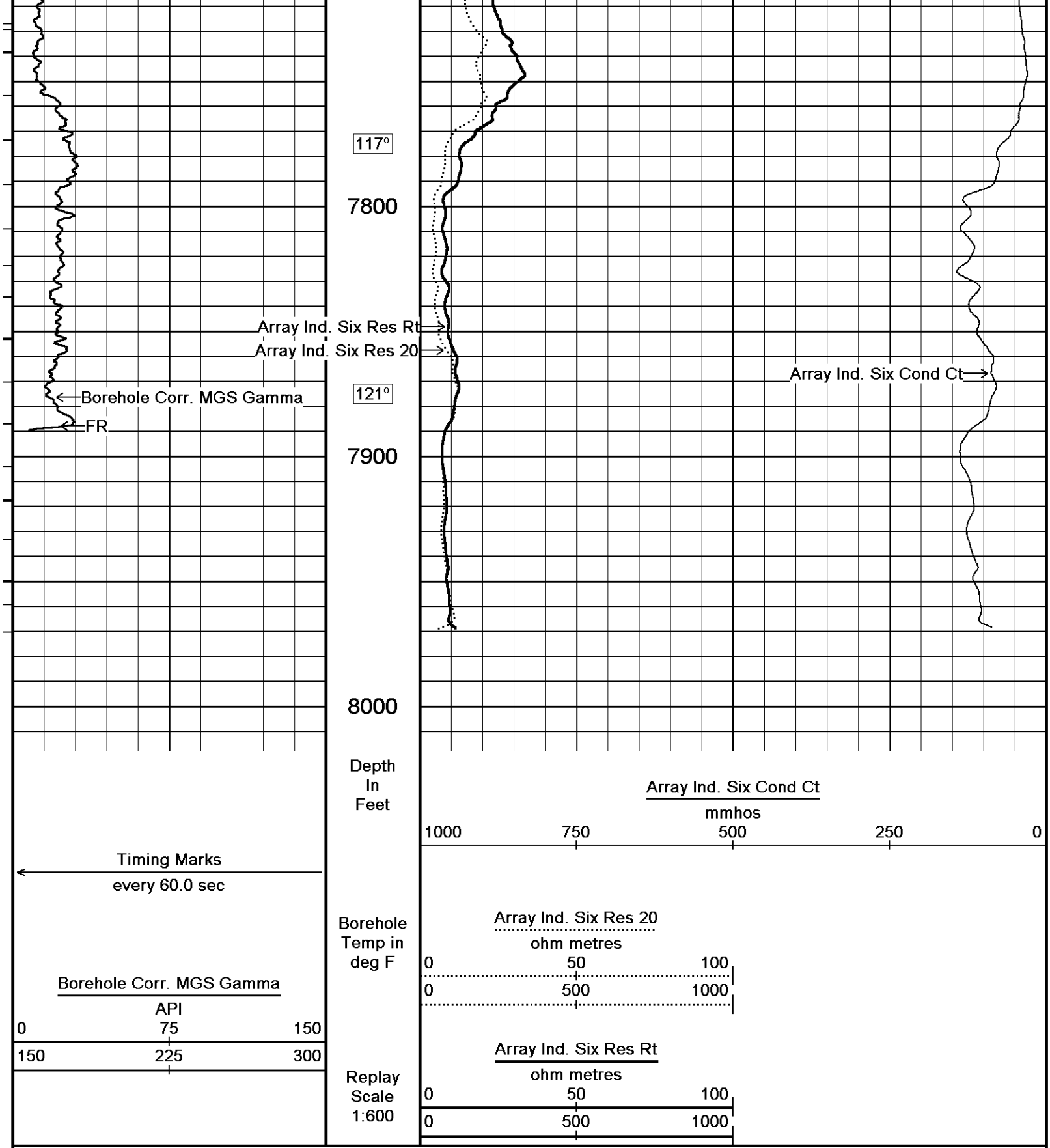

111°
5000
111°
5100
111°
5200
112°
5300
113°
5400
113°
5500


113°
5600
114°
5700
114°
5800
115°
Array Ind. Six Res Rt
Array Ind. Six Res 20
5900
Borehole Corr. MGS Gamma
Array Ind. Six Cond Ct
115°
6000


115°
6100
115°
6200
115°
6300
116°
6400
116°
6500
116°
6600


117°
6700
117°
6800
Array Ind. Six Res Rt
Array Ind. Six Res 20
117°
Array Ind. Six Cond Ct
Borehole Corr. MGS Gamma
6900
117°
7000
118°
7100


117°
7200
117°
7300
117°
7400
117°
7500
117°
7600
117°
7700

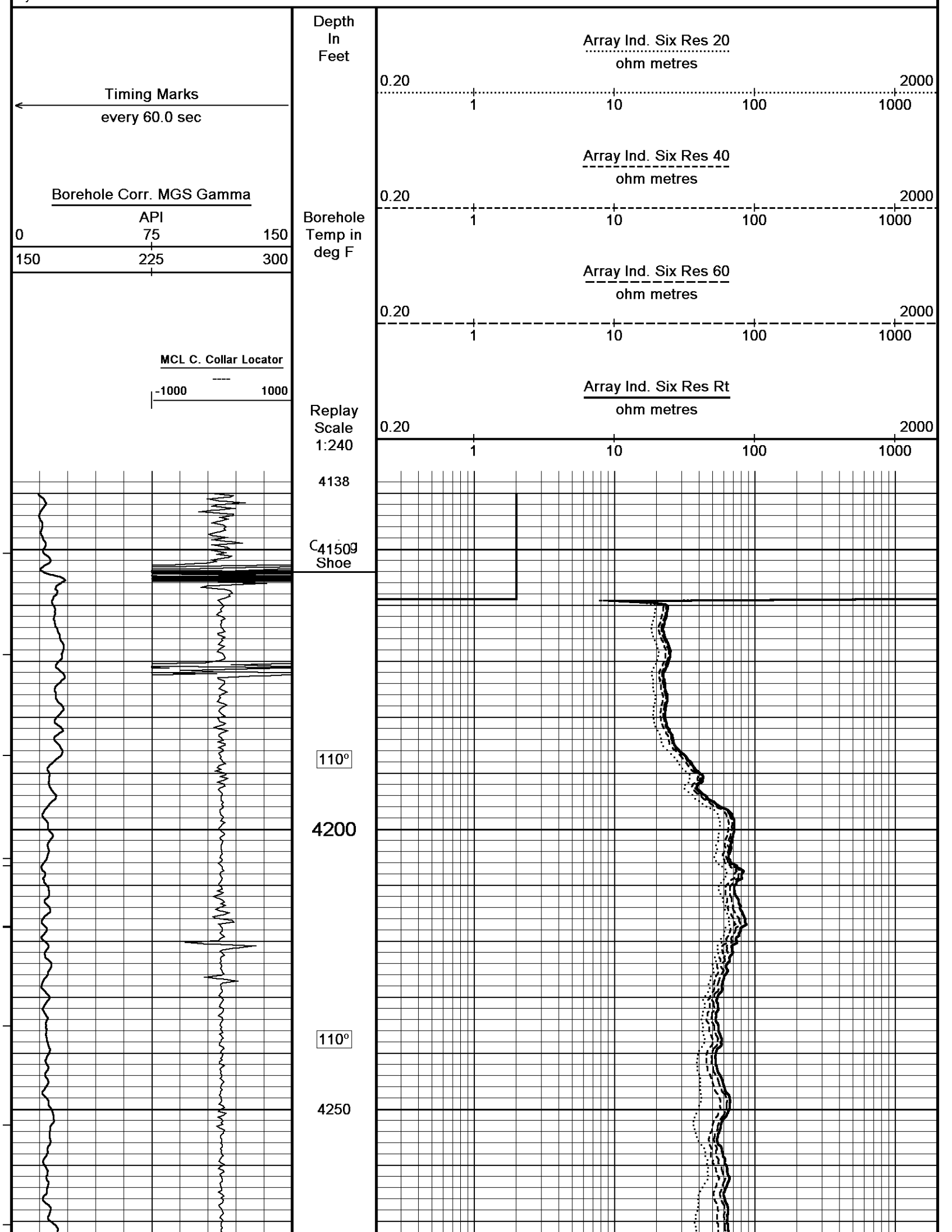


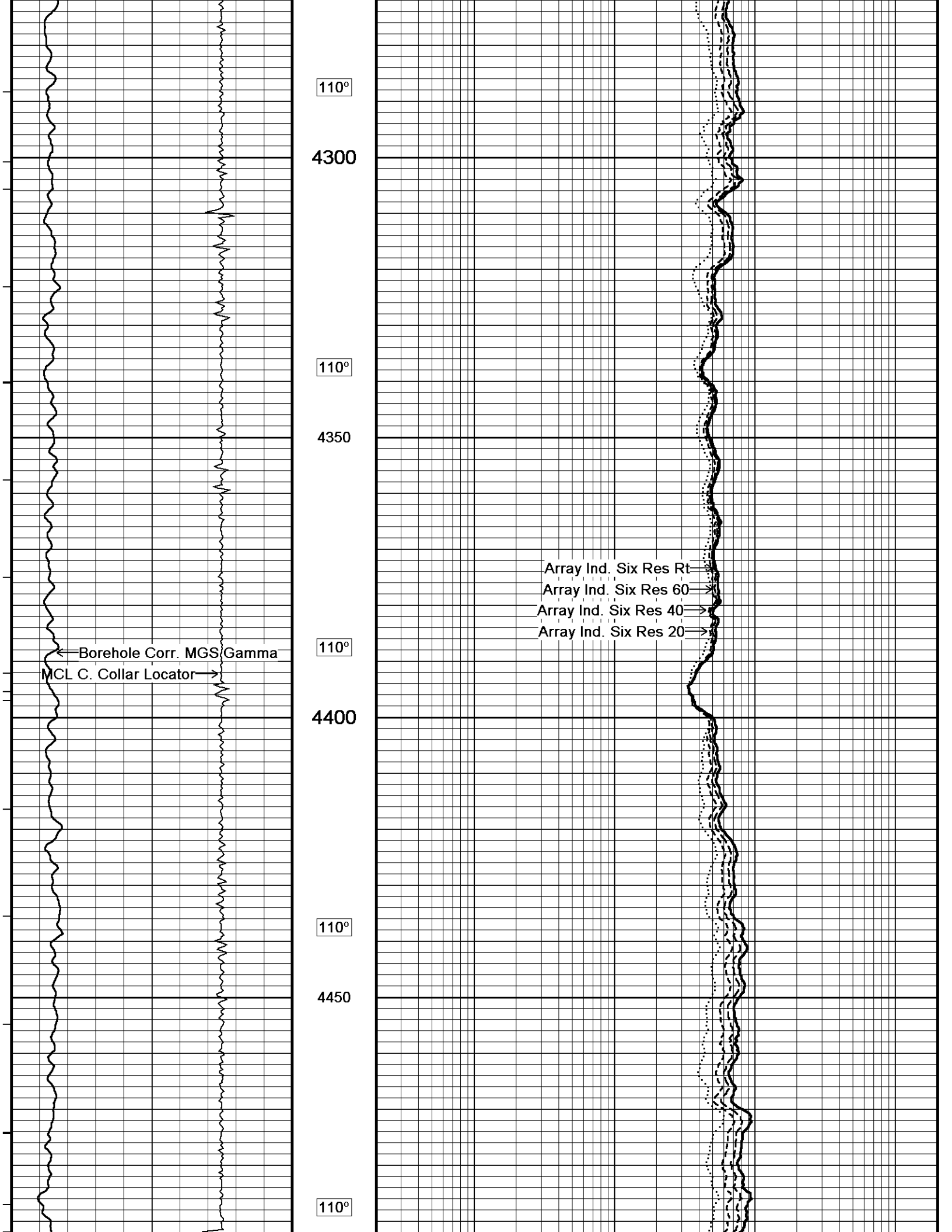
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-FEB-2013 01:42
Filename: C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 RTAP.dta
Recorded on 23-FEB-2013 21:45
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

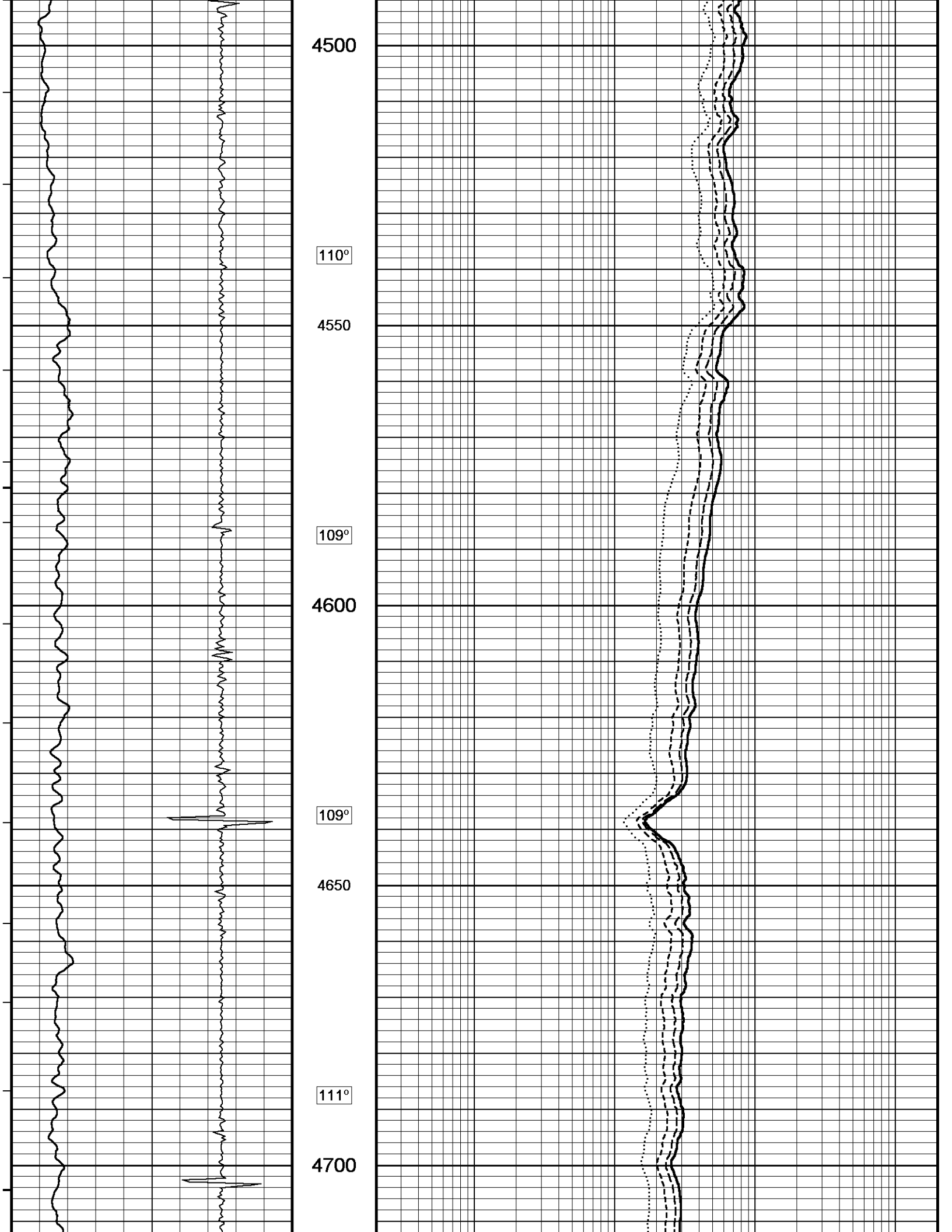
2 INCH MAIN LOG DSC

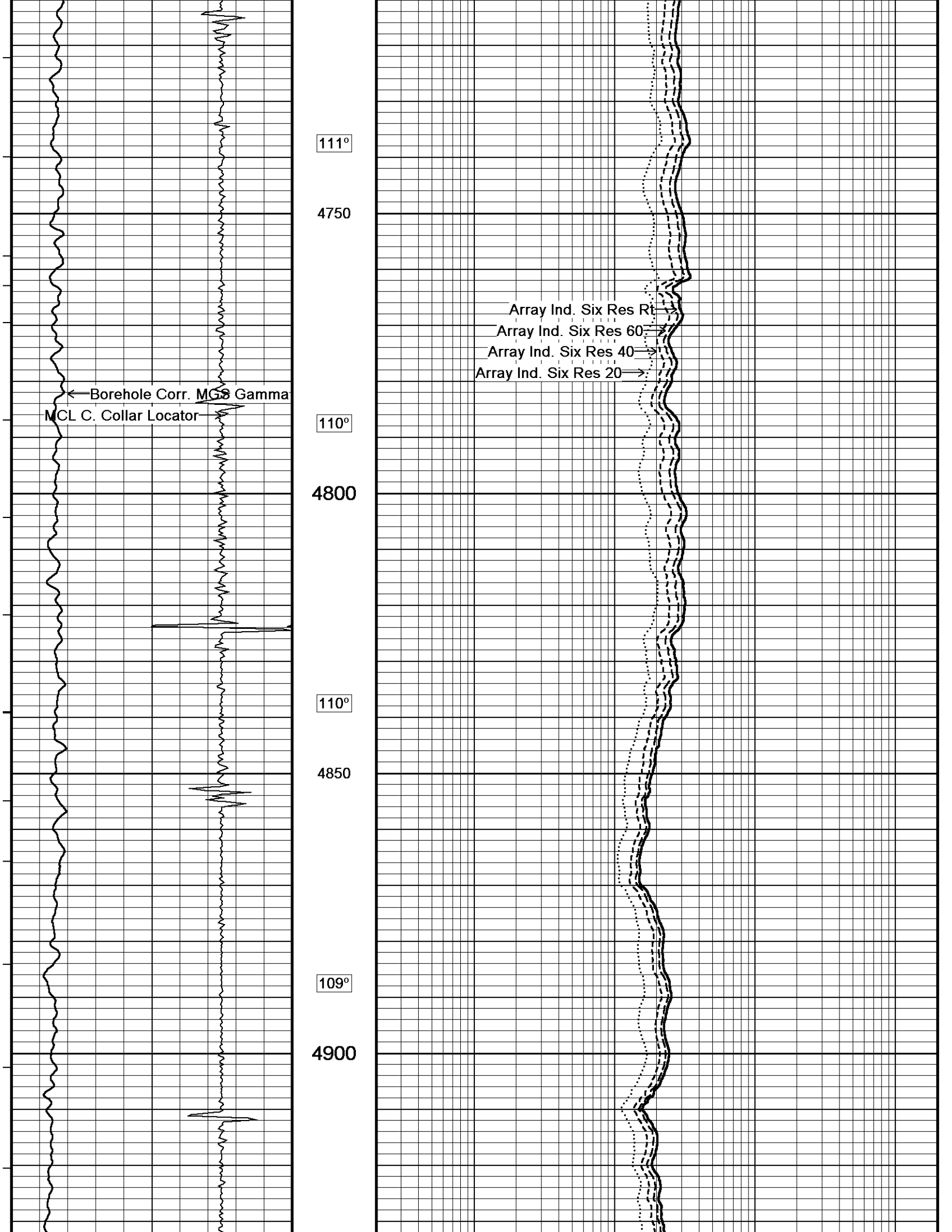
5 INCH MAIN LOG DSC

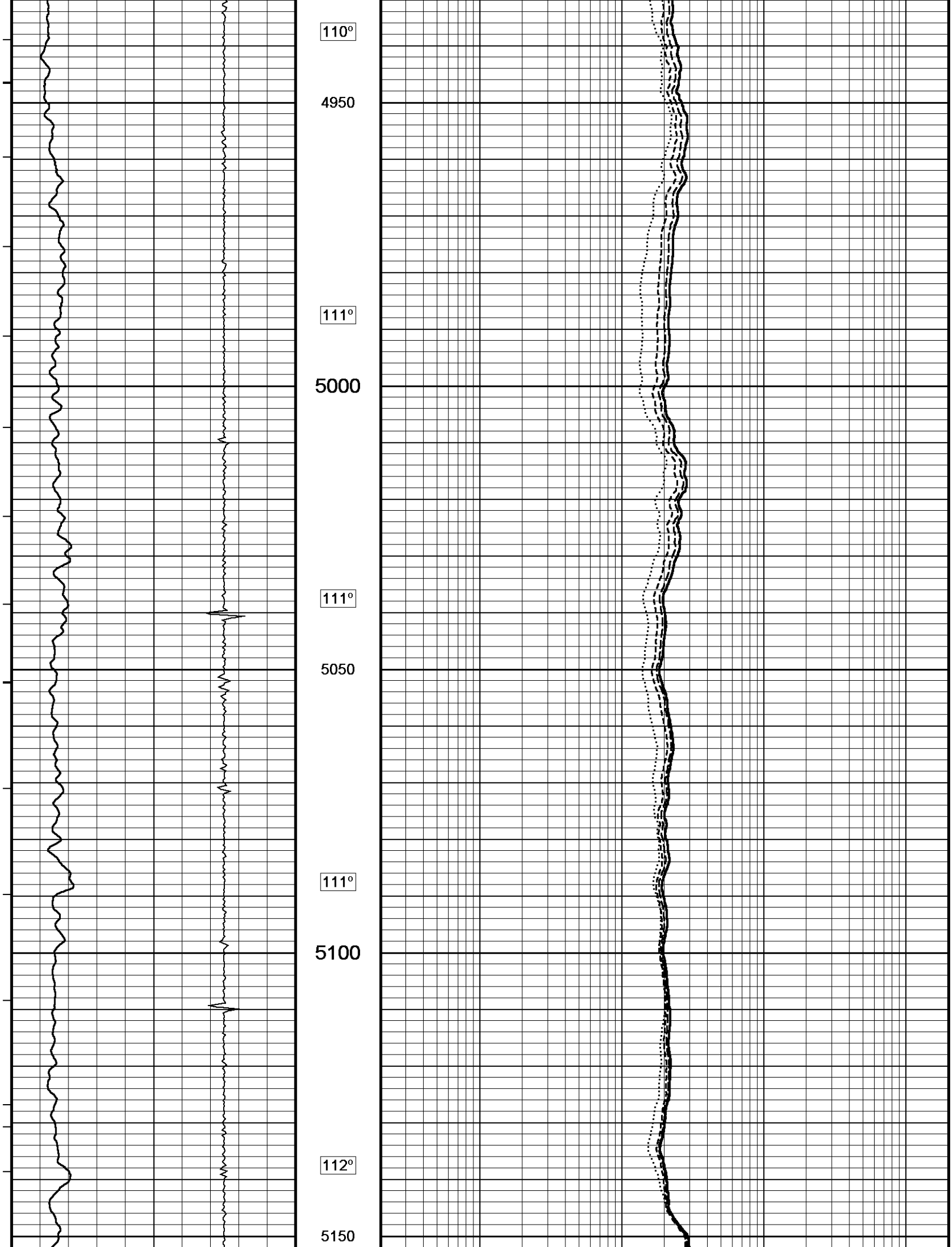
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-FEB-2013 01:42
Filename: C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 RTAP.dta
Recorded on 23-FEB-2013 21:45
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

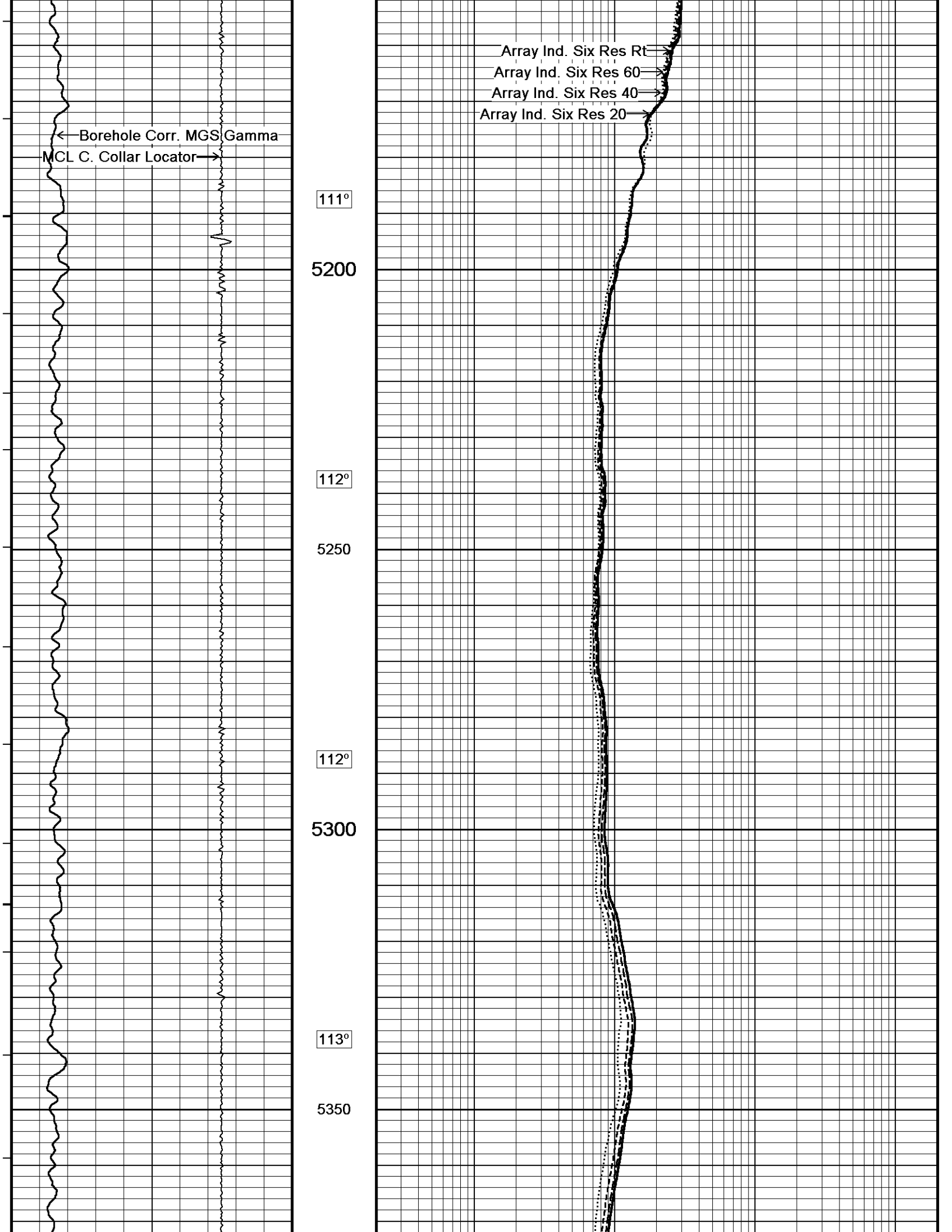

Timing Marks
every 60.0 sec
Borehole Corr. MGS Gamma
API
0
75
150
150
225
300
MCL C. Collar Locator
-1000
1000
Depth
In
Feet
Borehole
Temp in
deg F
Replay
Scale
1:240
4138
4150
Shoe
110°
4200
110°
4250
Array Ind. Six Res 20
ohm metres
0.20
2000
1
10
100
1000
Array Ind. Six Res 40
ohm metres
0.20
2000
1
10
100
1000
Array Ind. Six Res 60
ohm metres
0.20
2000
1
10
100
1000
Array Ind. Six Res Rt
ohm metres
0.20
2000
1
10
100
1000

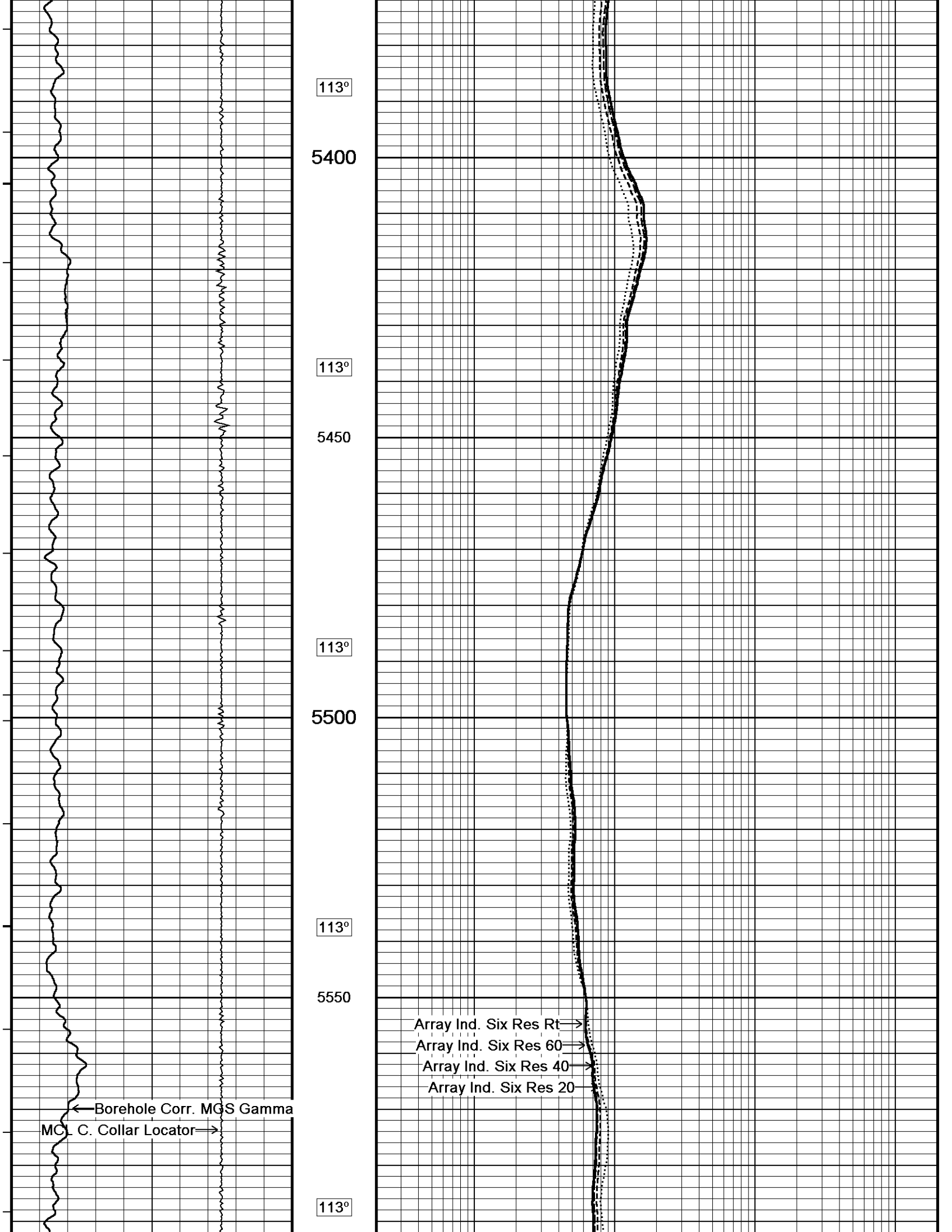

110°
4300
110°
4350
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator
110°
4400
110°
4450
110°

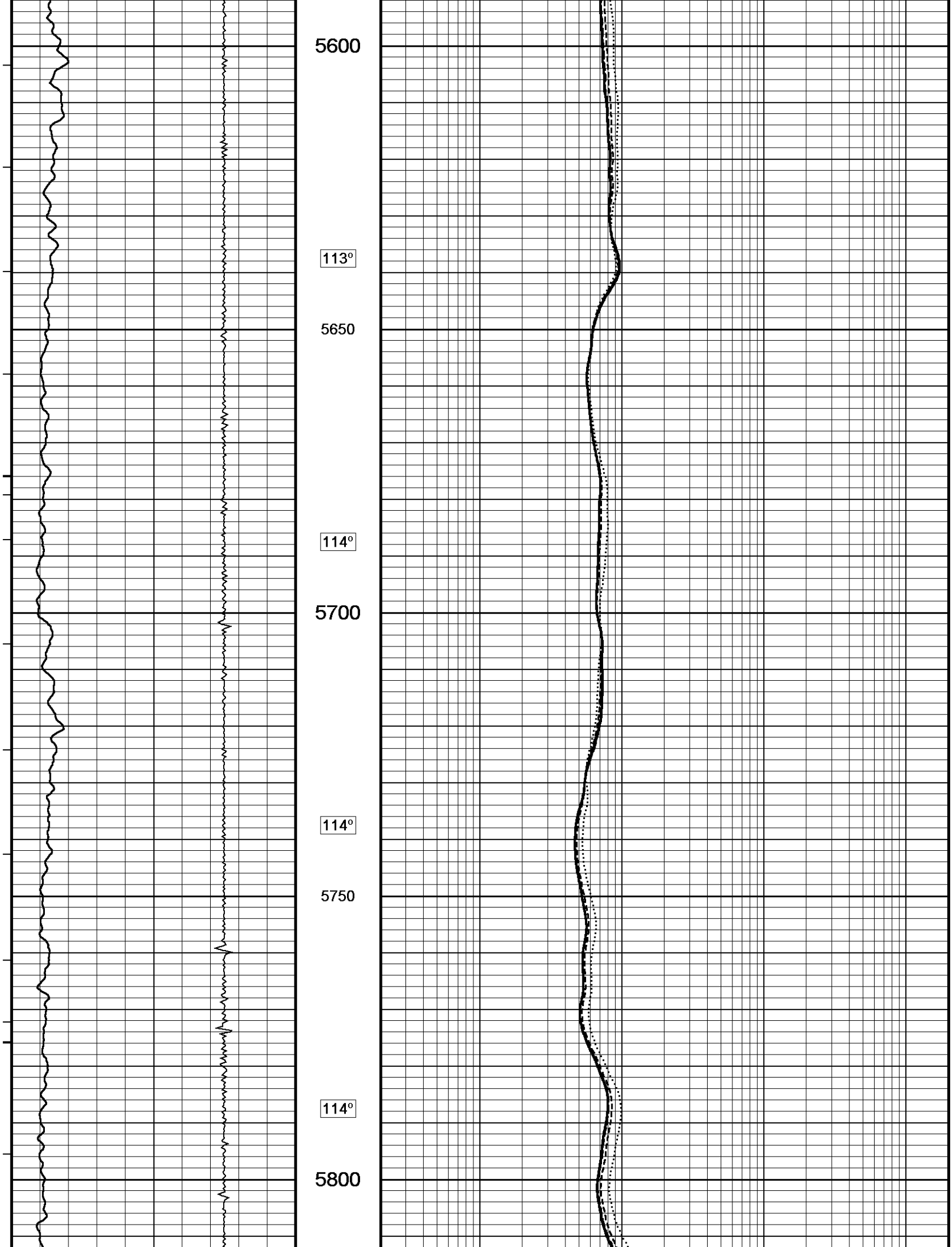

4500
110°
4550
109°
4600
109°
4650
111°
4700

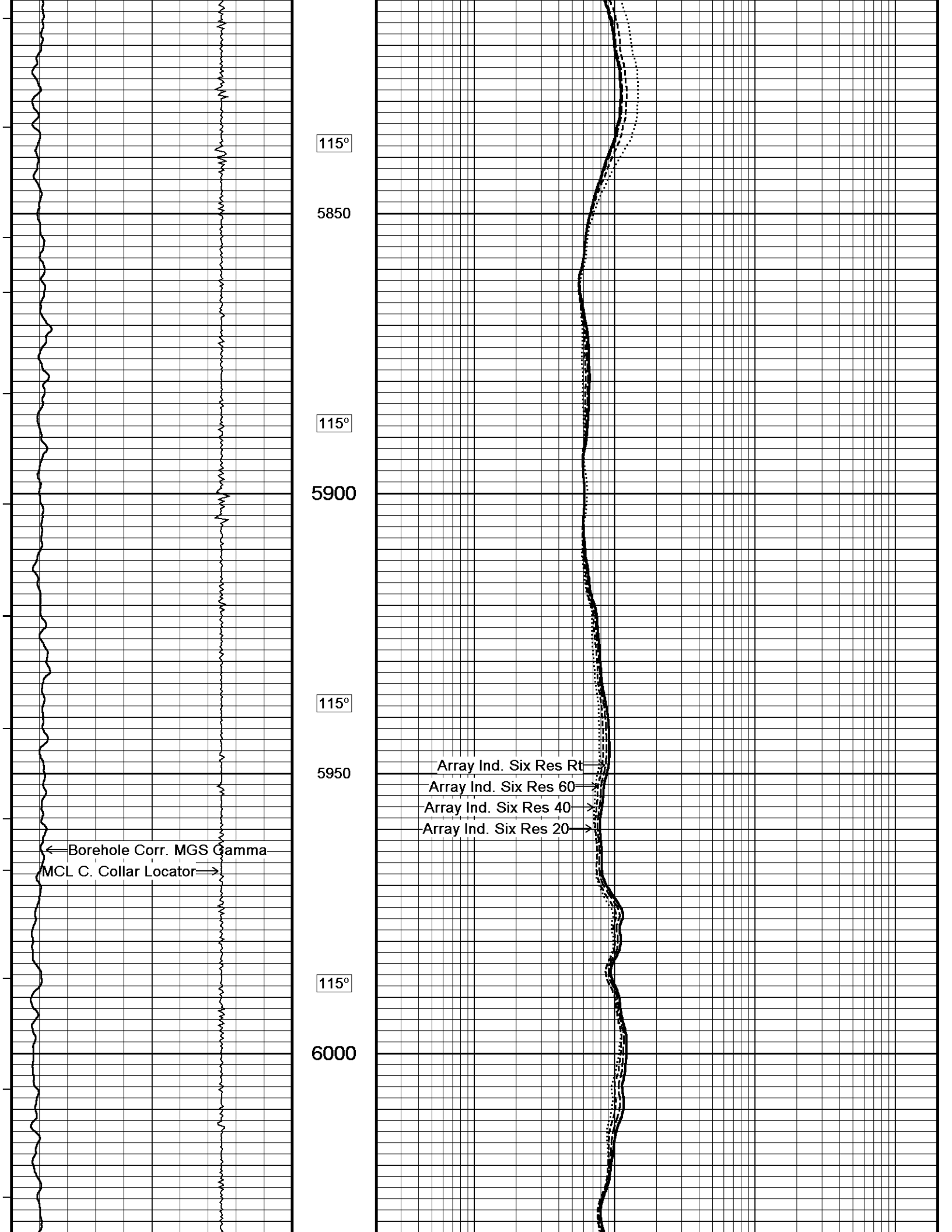

111°
4750
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator
110°
4800
110°
4850
109°
4900

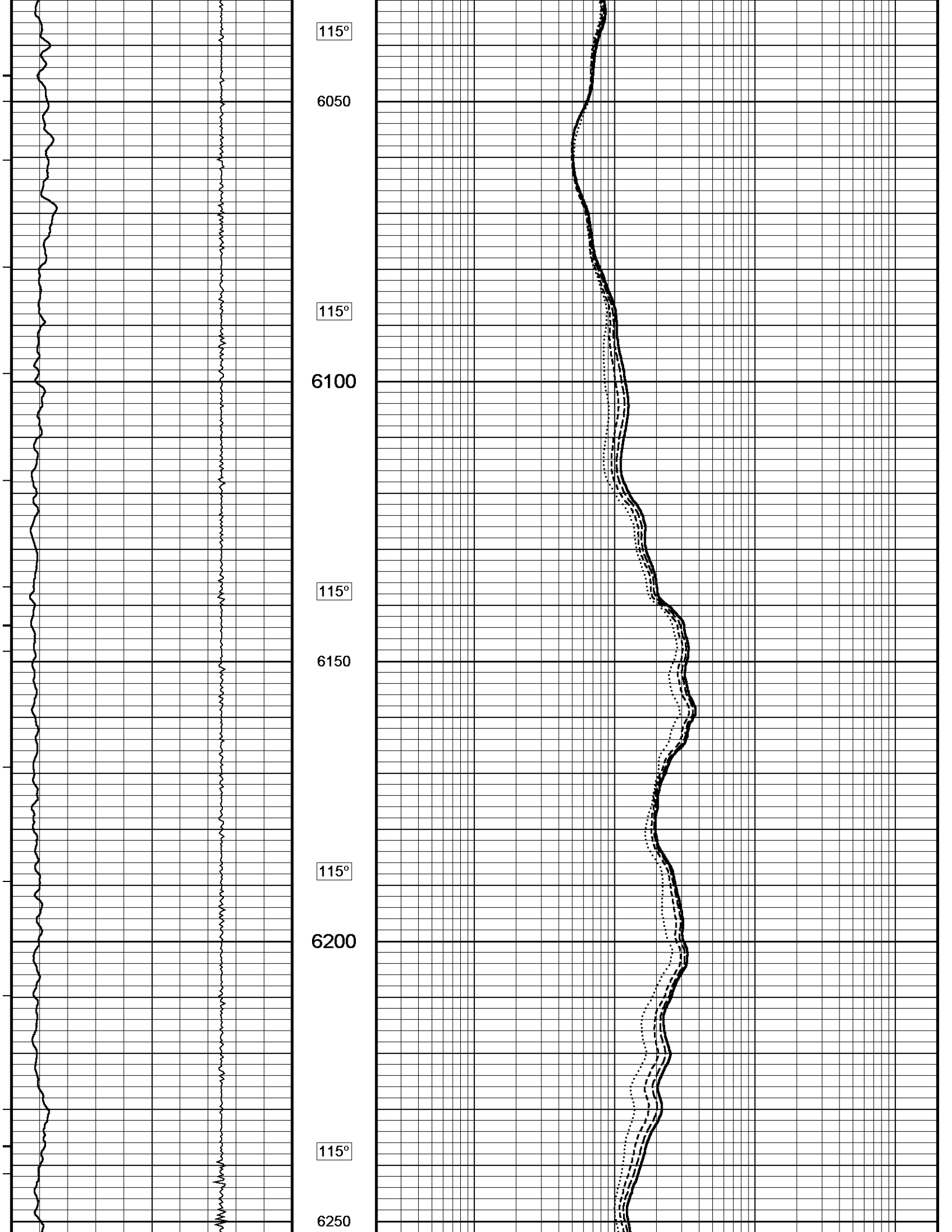

110°
4950
111°
5000
111°
5050
111°
5100
112°
5150

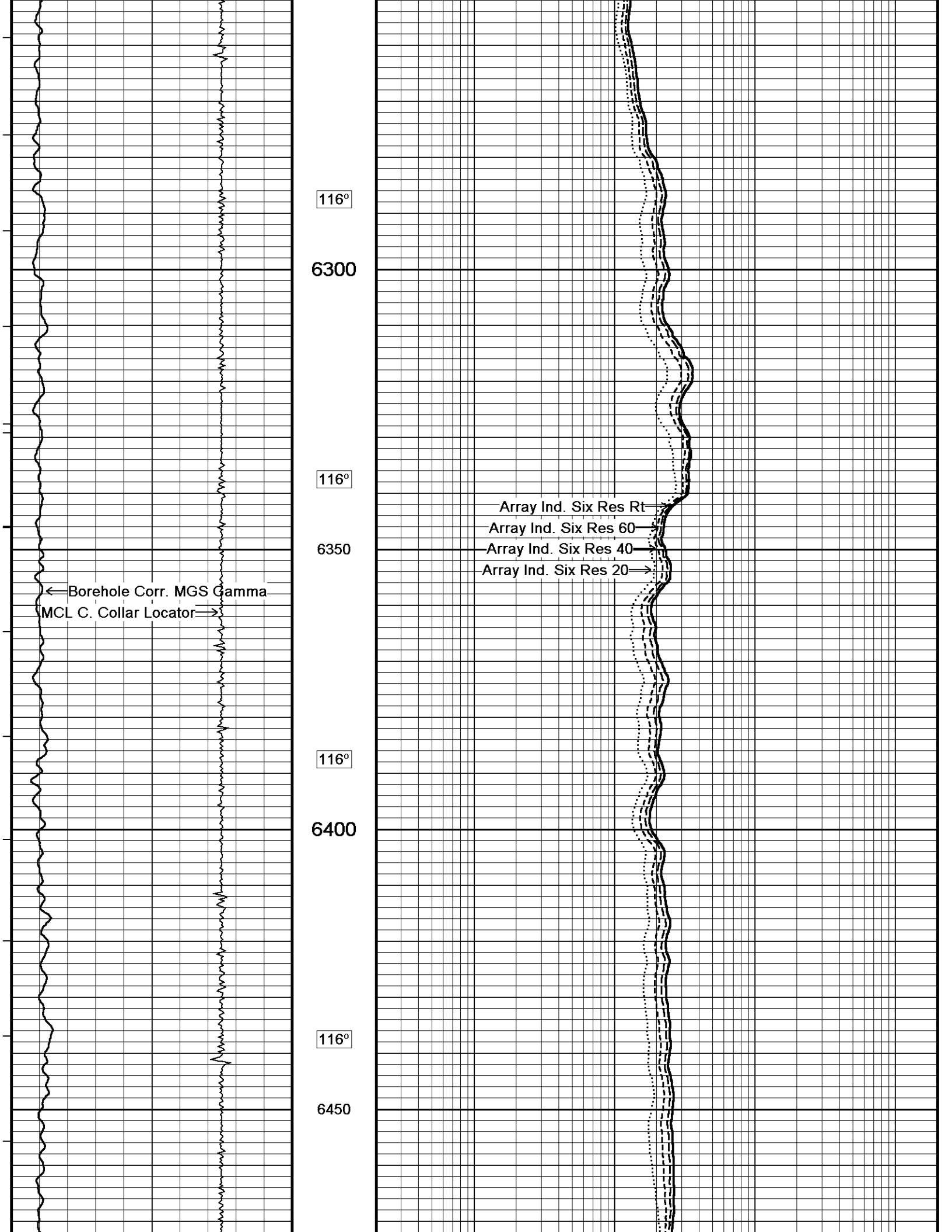

Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator
111°
5200
112°
5250
112°
5300
113°
5350

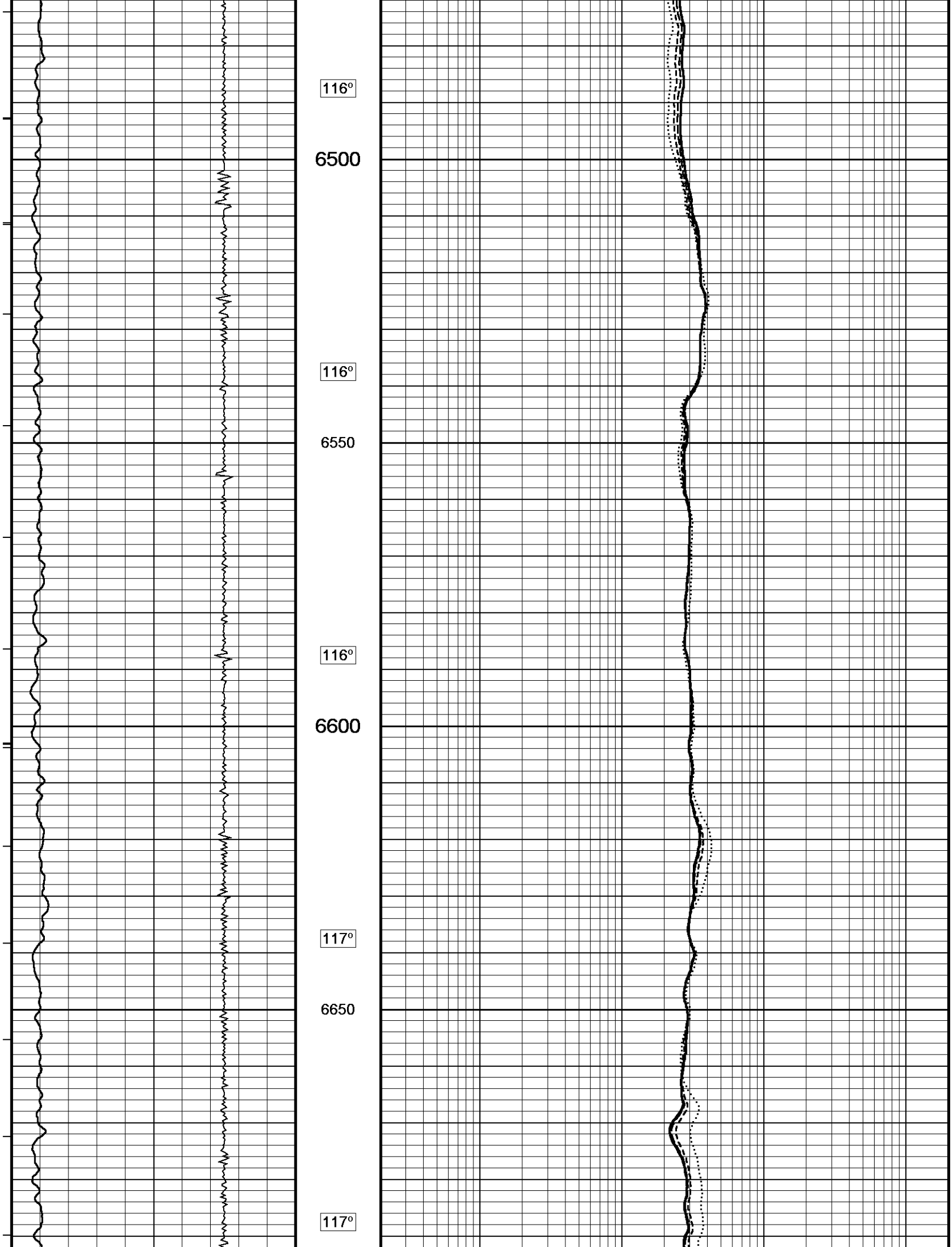

113°
5400
113°
5450
113°
5500
113°
5550
113°
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator

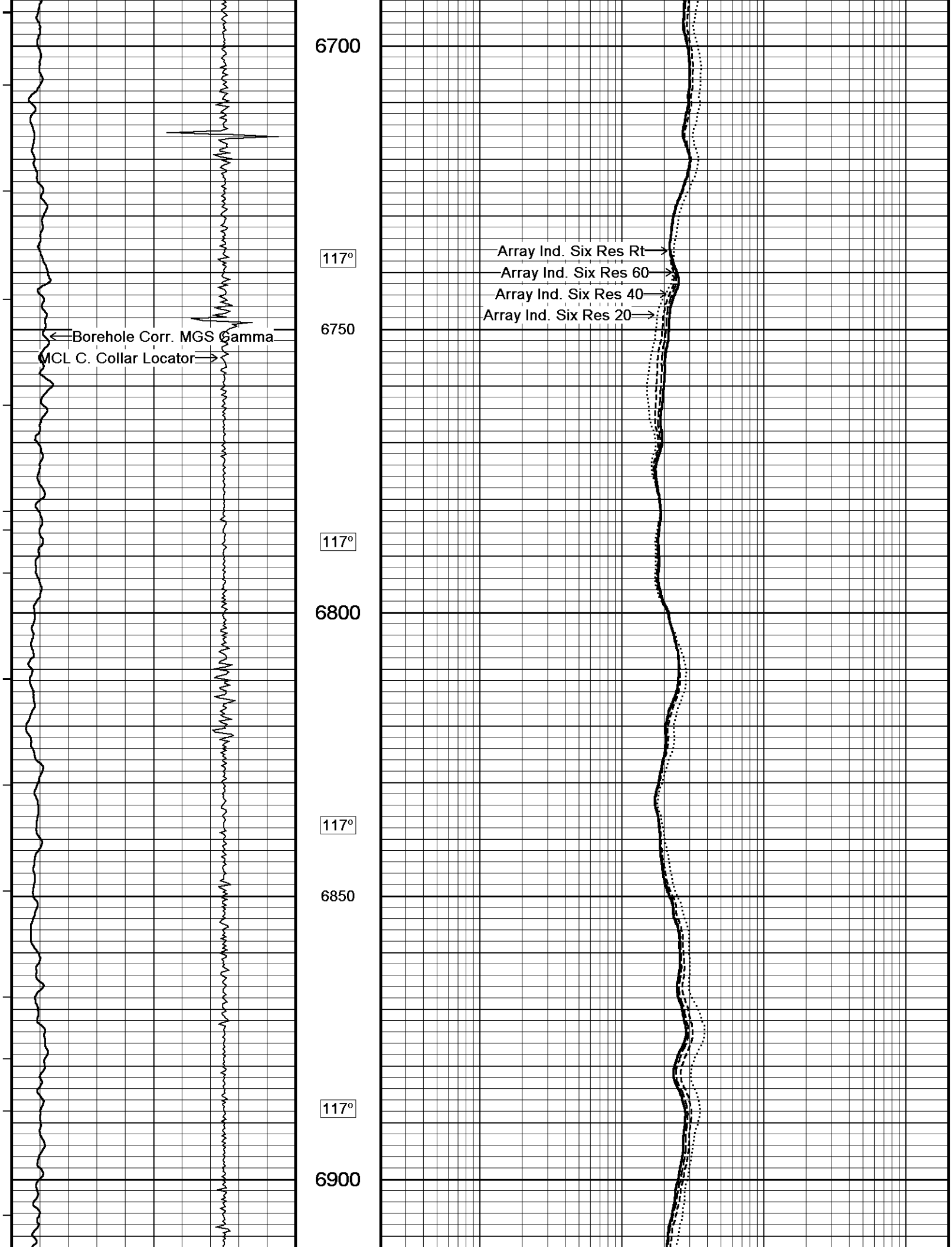

5600
113°
5650
114°
5700
114°
5750
114°
5800

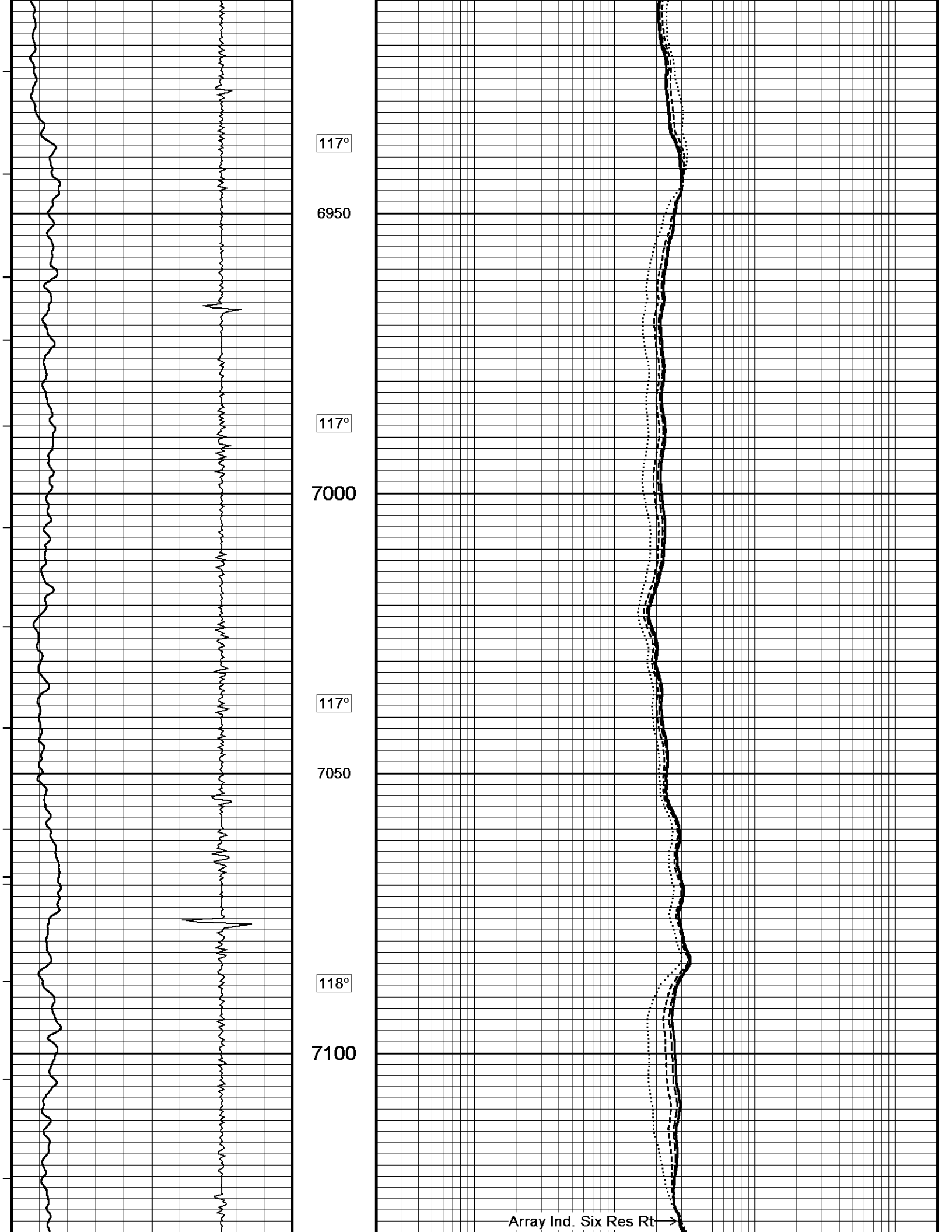

115°
5850
115°
5900
115°
5950
115°
6000
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator

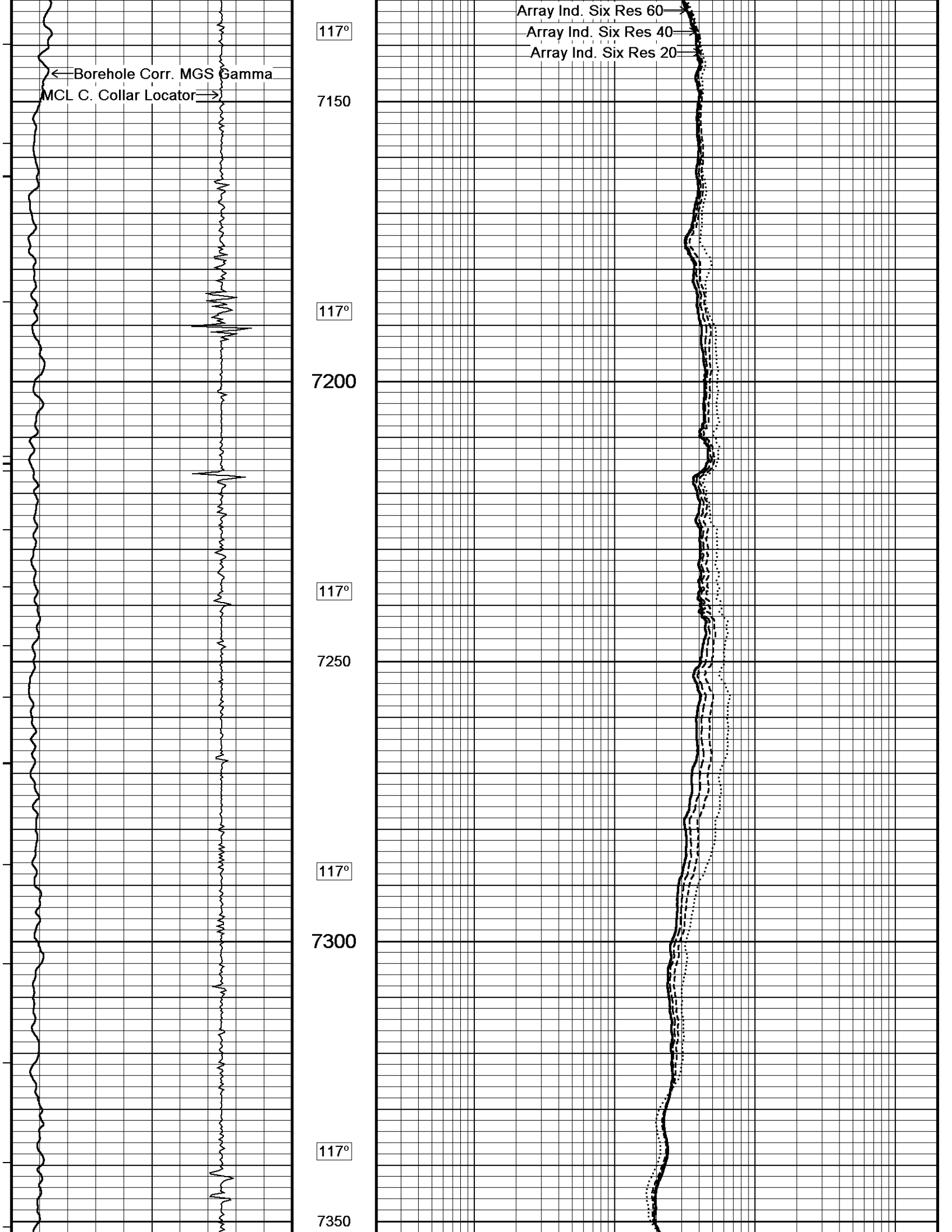

115°
6050
115°
6100
115°
6150
115°
6200
115°
6250

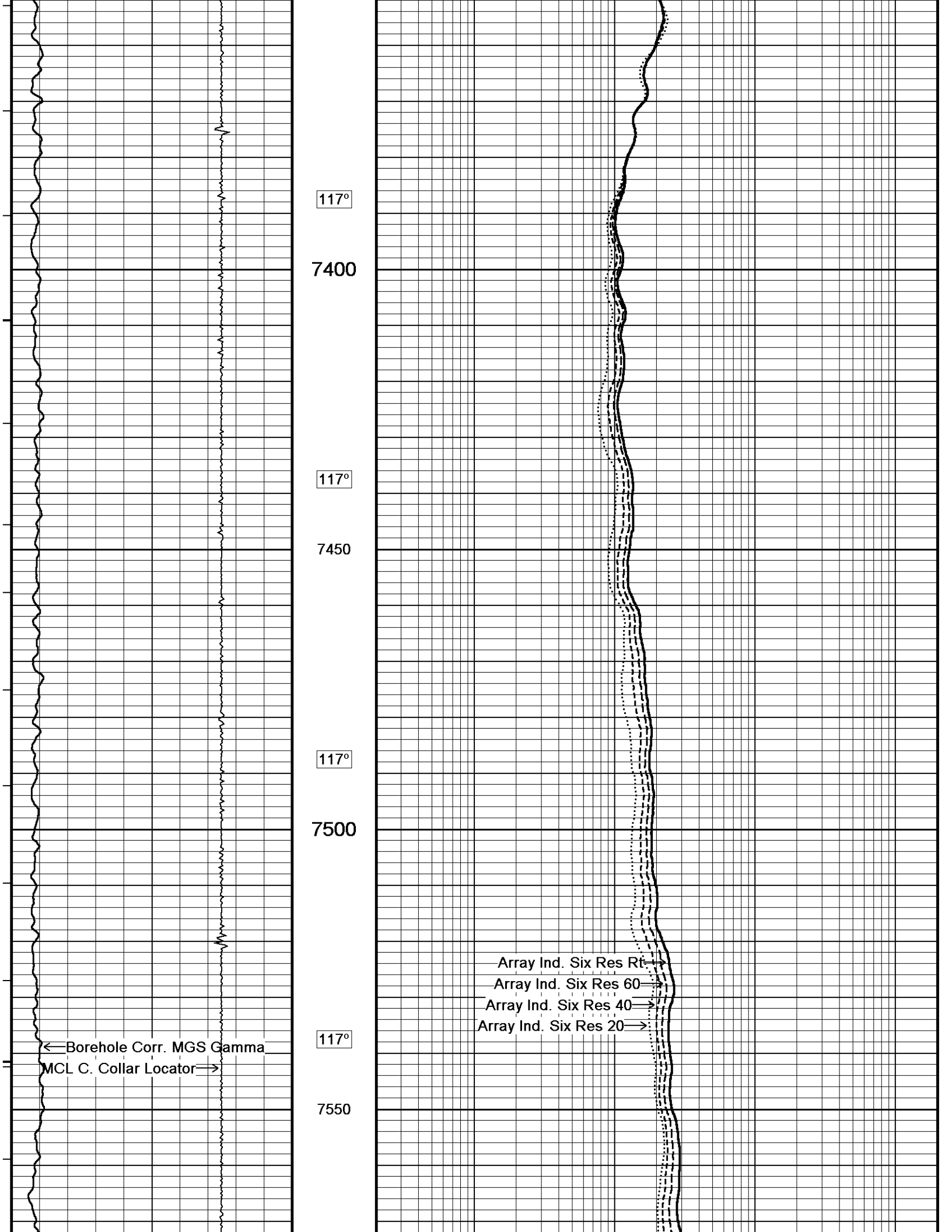

116°
6300
116°
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
6350
Borehole Corr. MGS Gamma
MCL C. Collar Locator
116°
6400
116°
6450

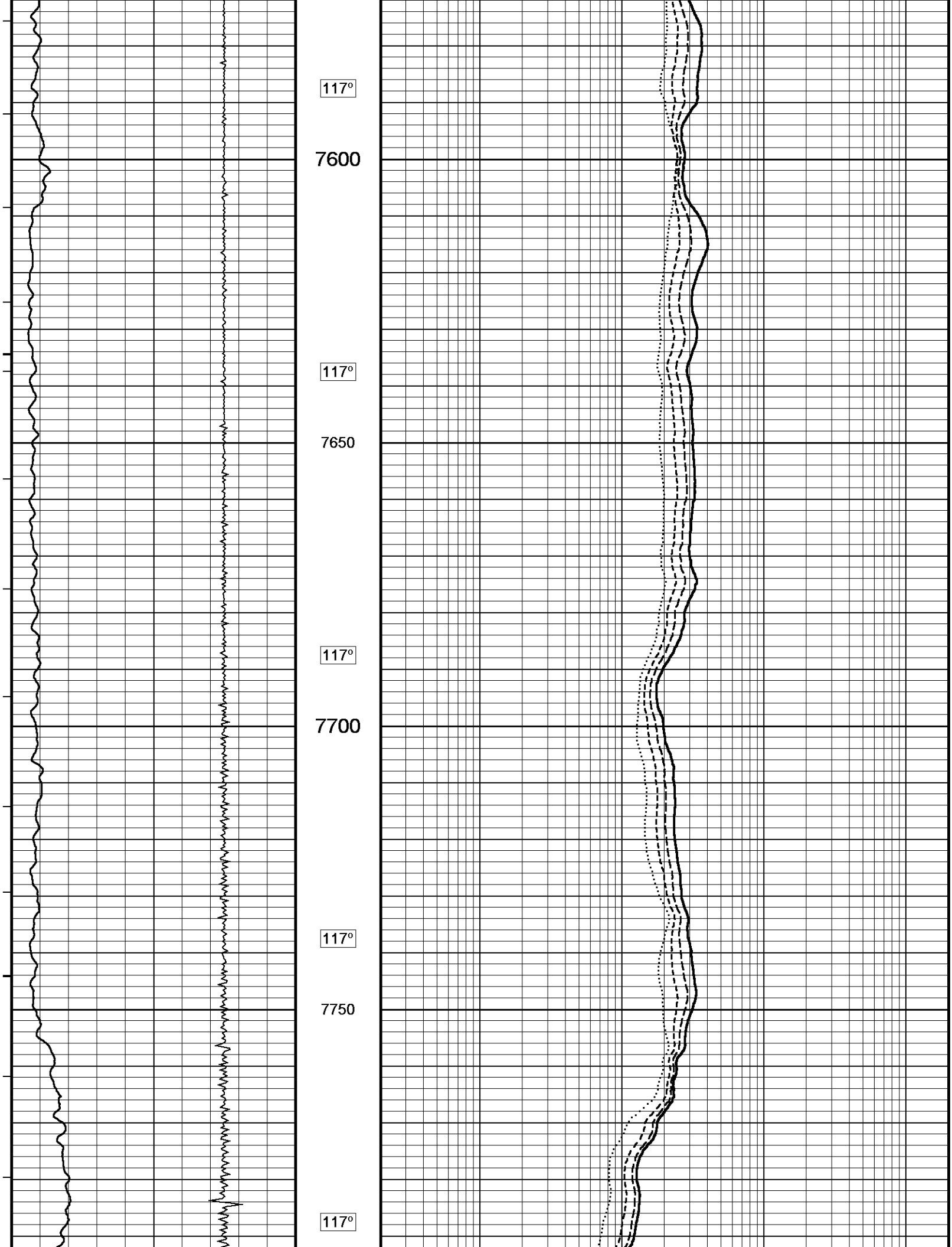

116°
6500
116°
6550
116°
6600
117°
6650
117°

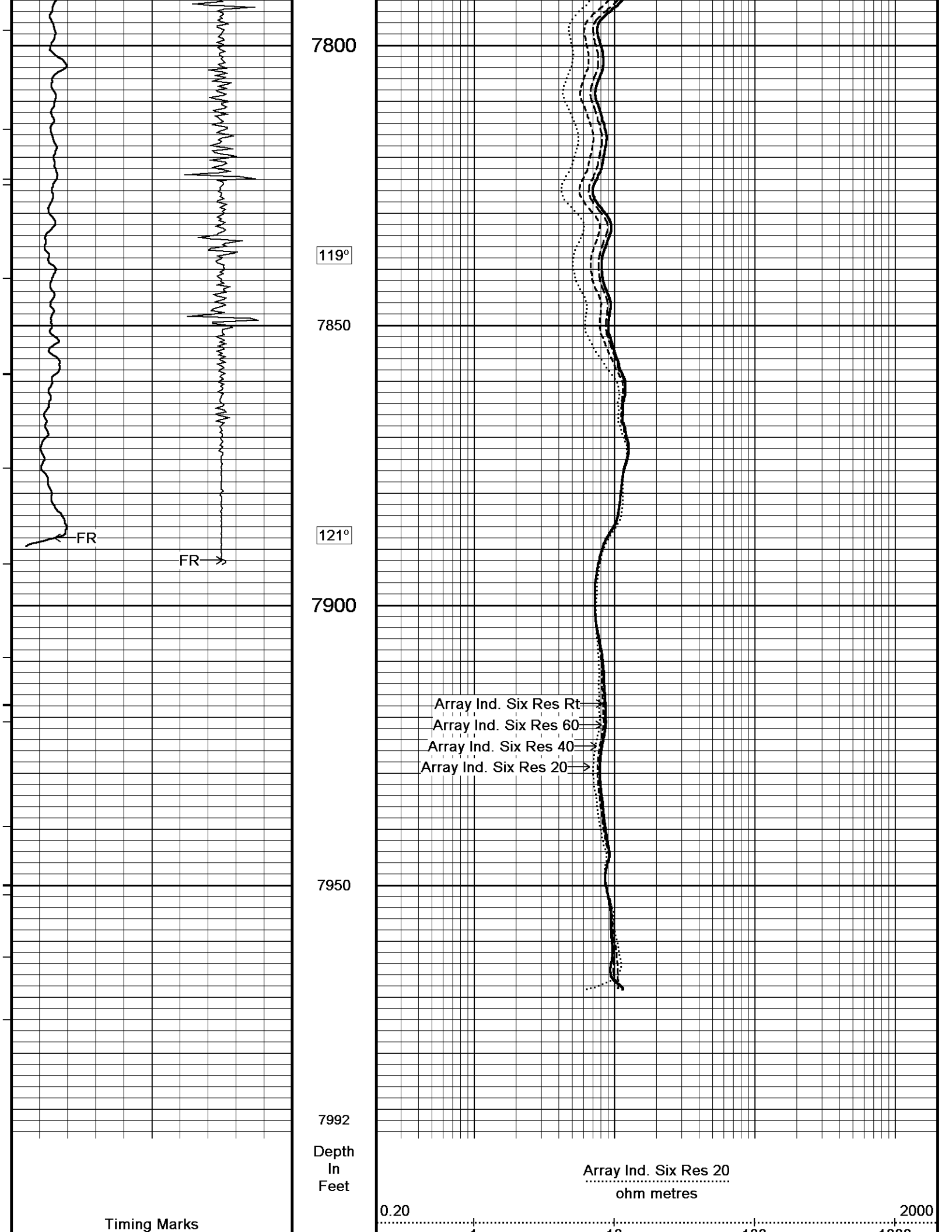

6700
117°
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
6750
Borehole Corr. MGS Gamma
MCL C. Collar Locator
117°
6800
117°
6850
117°
6900

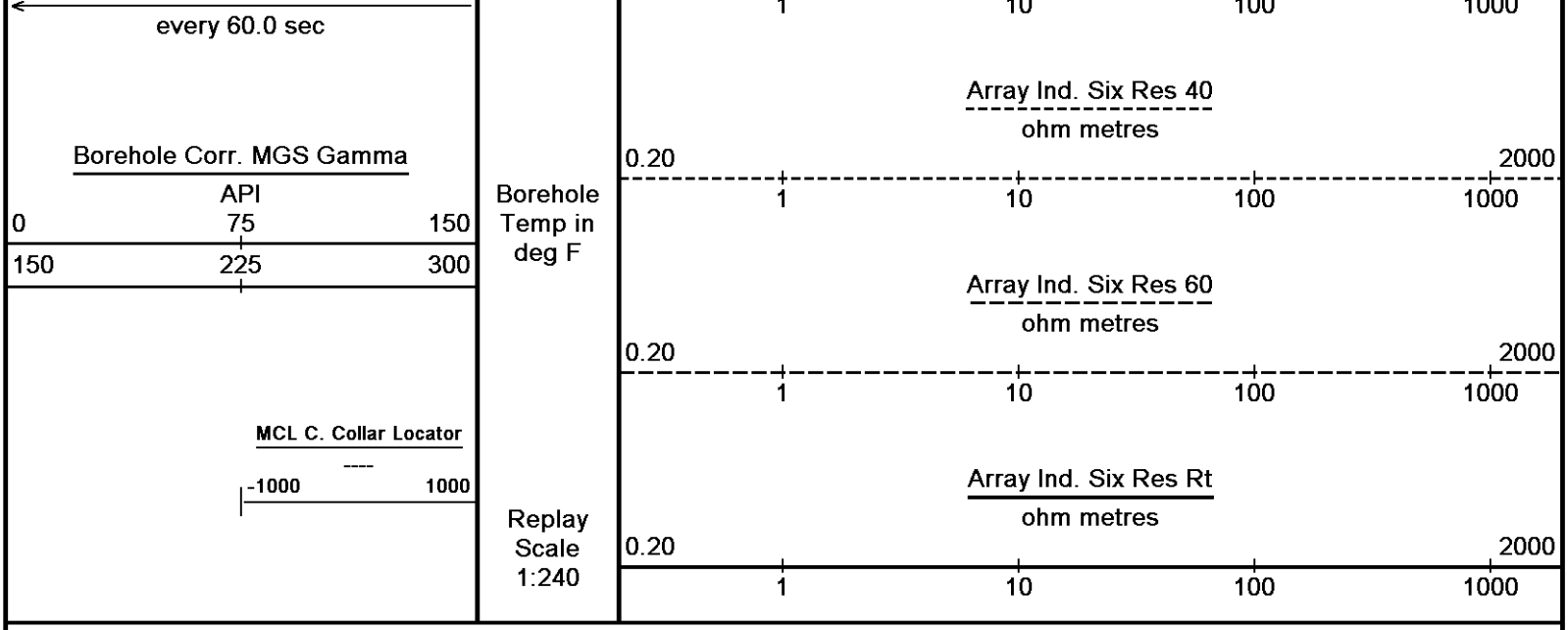

117°
6950
117°
7000
117°
7050
118°
7100
Array Ind. Six Res Rt


Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator
117°
7150
117°
7200
117°
117°
7250
117°
7300
117°
7350


117°
7400
117°
7450
117°
7500
117°
7550
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
MCL C. Collar Locator


117°
7600
117°
7650
117°
7700
117°
7750
117°


7800
119°
7850
121°
7900
7950
7992
FR
FR
Array Ind. Six Res Rt
Array Ind. Six Res 60
Array Ind. Six Res 40
Array Ind. Six Res 20
Depth
In
Feet
Timing Marks
Array Ind. Six Res 20
ohm metres
0.20
2000



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 24-FEB-2013 01:42

Filename: C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 RTAP.dta — Recorded on 23-FEB-2013 21:45

System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

5 INCH MAIN LOG DSC

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 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 23-FEB-2013,18:21

General Parameters		
Mud Resistivity	5.100	ohm-metres
Mud Resistivity Temperature	41.000	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 02-FEB-2013,08:19

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 22-FEB-2013,05:09

	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 22-FEB-2013,05:09

Pre-filter Length	11

SP Calibration MGS-C.J 136

Field Calibration on 22-FEB-2013,05:09

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

Gamma Calibration MGS-C.J 136

Field Calibration on 22-FEB-2013 05:09

	Measured	Calibrated (API)
Background	44	31
Calibrator (Gross)	1848	1292
Calibrator (Net)	1804	1261

Gamma Constants MGS-C.J 136

Last Edited on 23-FEB-2013,18:20

Gamma Calibrator Number	BLUE	
Mud Density	1.01	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN-B.J 388

Base Calibration on 20-FEB-2013 01:10
Field Check on 22-FEB-2013 05:13

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2965	87	3714	110
Ratio	34.094		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1263	1931
Ratio	0.654	

Field Check

	Calibrated (cps)	
	1264	1921
Ratio	0.647	

Neutron Constants MDN-B.J 388

Last Edited on 23-FEB-2013,18:20

Neutron Source Id	p31112b	
Neutron Jig Number	blue	
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	4.26	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

Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

Caliper Calibration MIE-A.J 233

Base Calibration on 22-FEB-2013 05:18
Field Calibration on 22-FEB-2013 05:19

Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	27635	26985	5.96
2	38181	37797	8.01
3	48664	47686	10.01
4	60719	59475	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	27327	23627	24282	26939	5.96
2	36604	32485	33227	35920	8.01
3	45176	40909	42459	45233	10.01
4	55357	51259	52967	55460	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)
6.02	6.02	5.96

Measured Pad 2 Caliper(in)	Measured Pad 4 Caliper(in)	Measured Pad 6 Caliper(in)	Measured Pad 8 Caliper(in)	Actual Caliper(in)
3.00	3.07	3.07	2.93	5.96

Caliper Constants MIE-A.J 233

Last Edited on 10-NOV-2012 06:39

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 14-JAN-2013,13:07

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

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 30-DEC-2012,14:46

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 12-FEB-2013,10:37

Sonde Configuration	Imager Mode	
Arm-Pad Kit	Normal Pads (12.25 in)	
Arm-Pad Kit Serial Number		
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 19-FEB-2013,09:58
Field Check on 22-FEB-2013 05:03

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)		Field Check (mmho/m)	
	Low	High	Low	High
1			10.9	3815.1
2			29.4	3532.0
3			26.9	2983.0
4			17.8	2098.7
Deep			14.7	1944.9
Medium			40.8	3889.5
Shallow			46.3	5238.0

Array Temperature	48.2	Deg F

Induction Constants MAI-A.A 158

Last Edited on 23-FEB-2013,18:21

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	0.0000	
Stand-off Fin Angle	60.00	degrees
Stand-off Fin Width	0.0000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MGS External Temperature	
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 22-FEB-2013,05:03

	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 22-FEB-2013,05:03

Pre-filter Length	11

Caliper Calibration MPD-C.J 435

Base Calibration on 19-FEB-2013 09:01
Field Calibration on 22-FEB-2013 05:27

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16700	4.01
2	26272	5.96
3	36352	7.98
4	46064	9.86
5	56816	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.96

Photo Density Calibration MPD-C.J 435

Base Calibration on 19-FEB-2013 09:19
Field Check on 22-FEB-2013 05:25

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	57217	27705	59869	31110
Reference 2	23705	2661	24557	2522

Field Check at Base

1288.7	1335.4

Field Check

1291.8	1331.5

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	232	1152		
Reference 1	23225	57010	0.412	0.369
Reference 2	6484	23557	0.279	0.271

Field Check at Base		
	231.7	1151.9
Field Check		
	235.0	1154.0

Density Constants MPD-C.J 435

Last Edited on 23-FEB-2013,18:20

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	1.01	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 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\LEGACY TOOLSTRING.dta

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

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 469 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 119 LG: 17.06 ft WT: 123.5 lb OD: 2.24 in

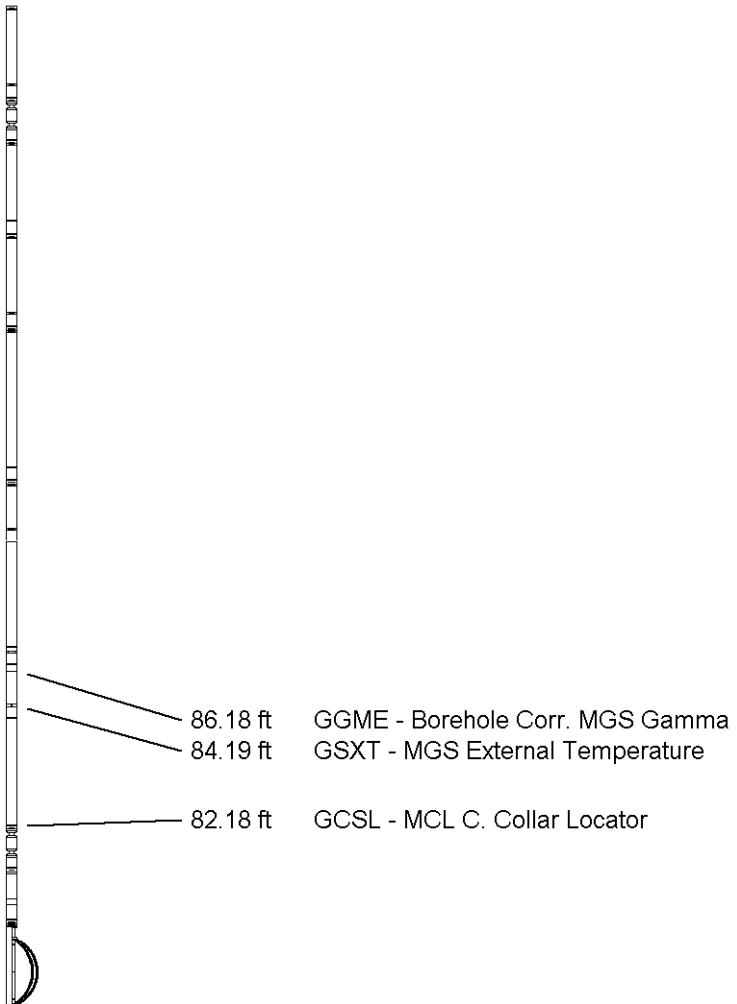
Compact Memory Sub E.B
MMS-E.B 167 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

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 41 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 388 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-C.J 435 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub
MIS-A.A 15 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 454 LG: 2.30 ft WT: 22.0 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

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 333 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

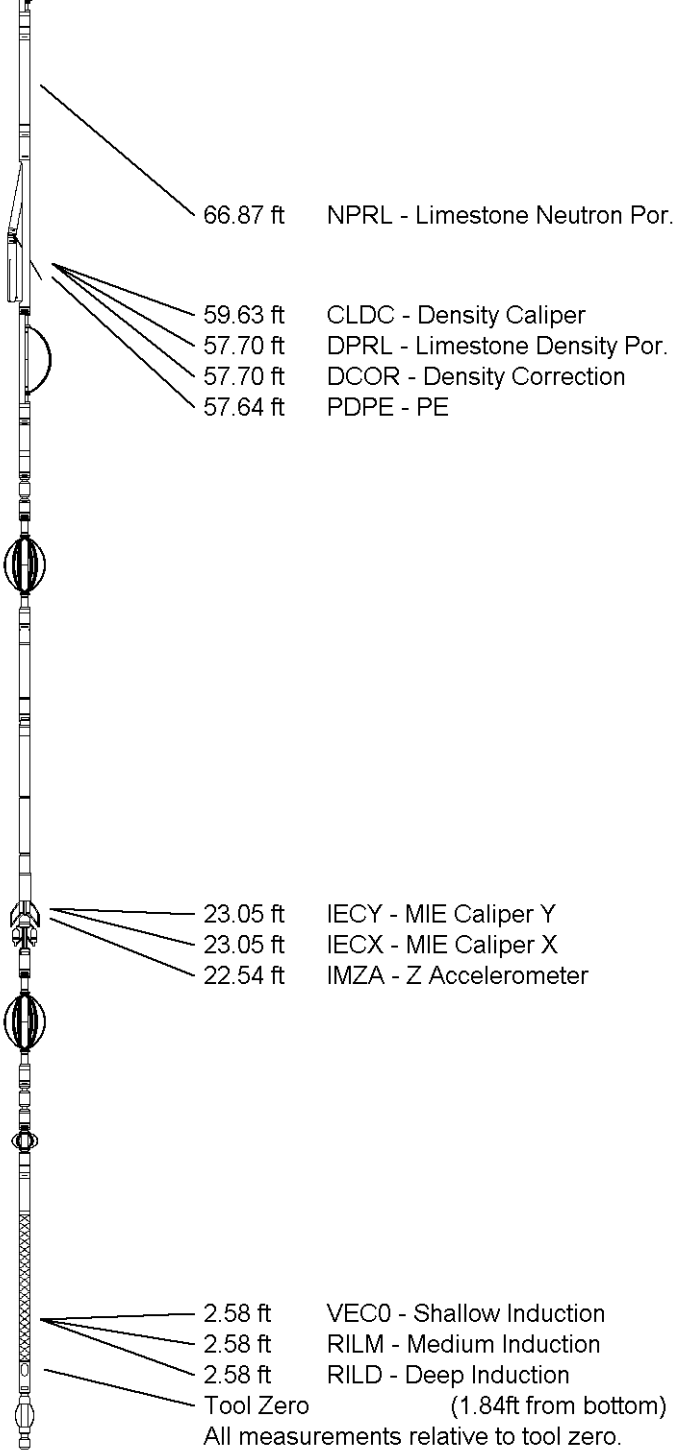
MIS-D.B Compact Inline Bowspring sub
MIS-D.B 606 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

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

Total Length: 148.10 ft Weight: 925.9 lb

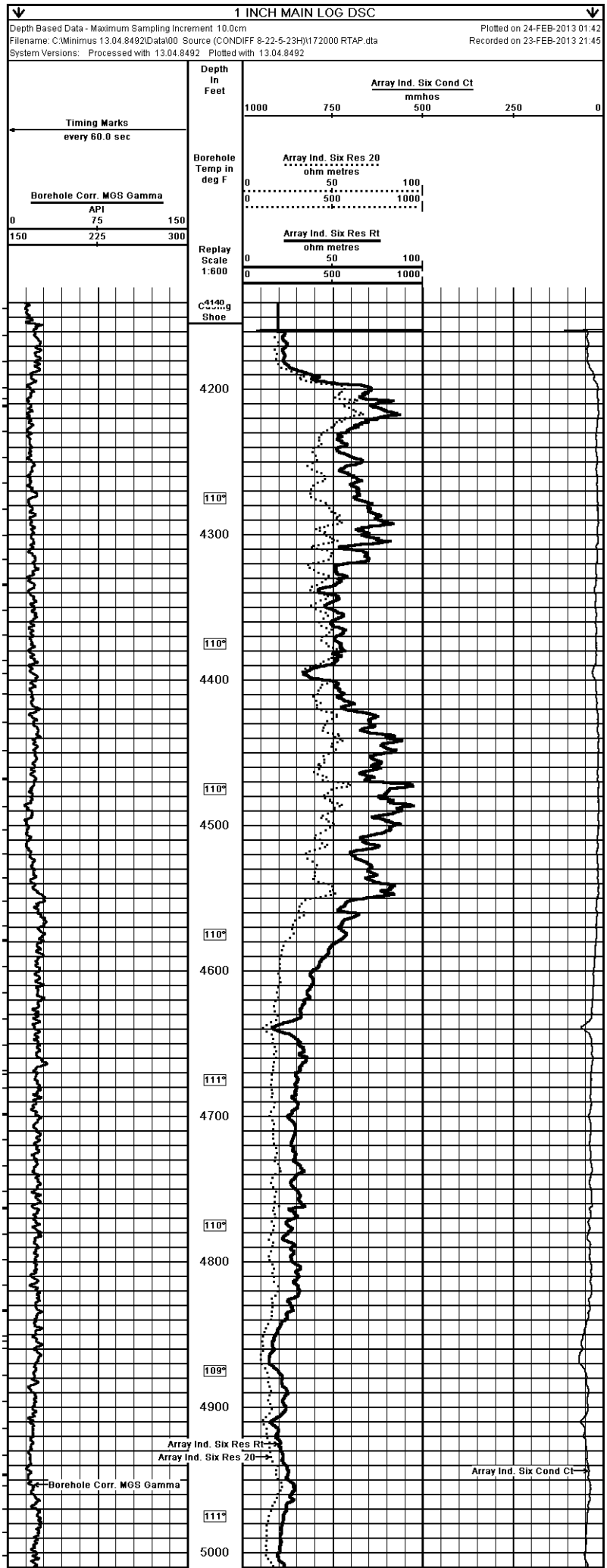


COMPANY	SOURCE ENERGY
WELL	CONDIFF 8-22-5-23H
FIELD	SAUZEK
PROVINCE/COUNTY	SUMNER
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	1264.00	feet	First Reading	7972.00	feet
Elevation Drill Floor	1262.00	feet	Depth Driller	8011.00	feet
Elevation Ground Level	1247.00	feet	Depth Logger	7975.00	feet

Weatherford®

CML MESSENGER SHUTTLE
ARRAY INDUCTION
ELECTRIC LOG


1 INCH MAIN LOG DSC
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 24-FEB-2013 01:42
Filename: C:\Minimus 13.04.8492\Data\00 Source (CONDIFF 8-22-5-23H)\172000 RTAP.dta
Recorded on 23-FEB-2013 21:45
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492
Timing Marks
every 60.0 sec
Borehole Corr. MGS Gamma
API
0 75 150
150 225 300
Depth In Feet
Borehole Temp in deg F
Replay Scale 1:600
Array Ind. Six Cond Ct
mmhos
1000 750 500 250 0
Array Ind. Six Res 20
ohm metres
0 50 100
0 500 1000
Array Ind. Six Res Rt
ohm metres
0 50 100
0 500 1000
4140g
Shoe
4200
110°
4300
110°
4400
110°
4500
110°
4600
111°
4700
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Borehole Corr. MGS Gamma
Array Ind. Six Cond Ct
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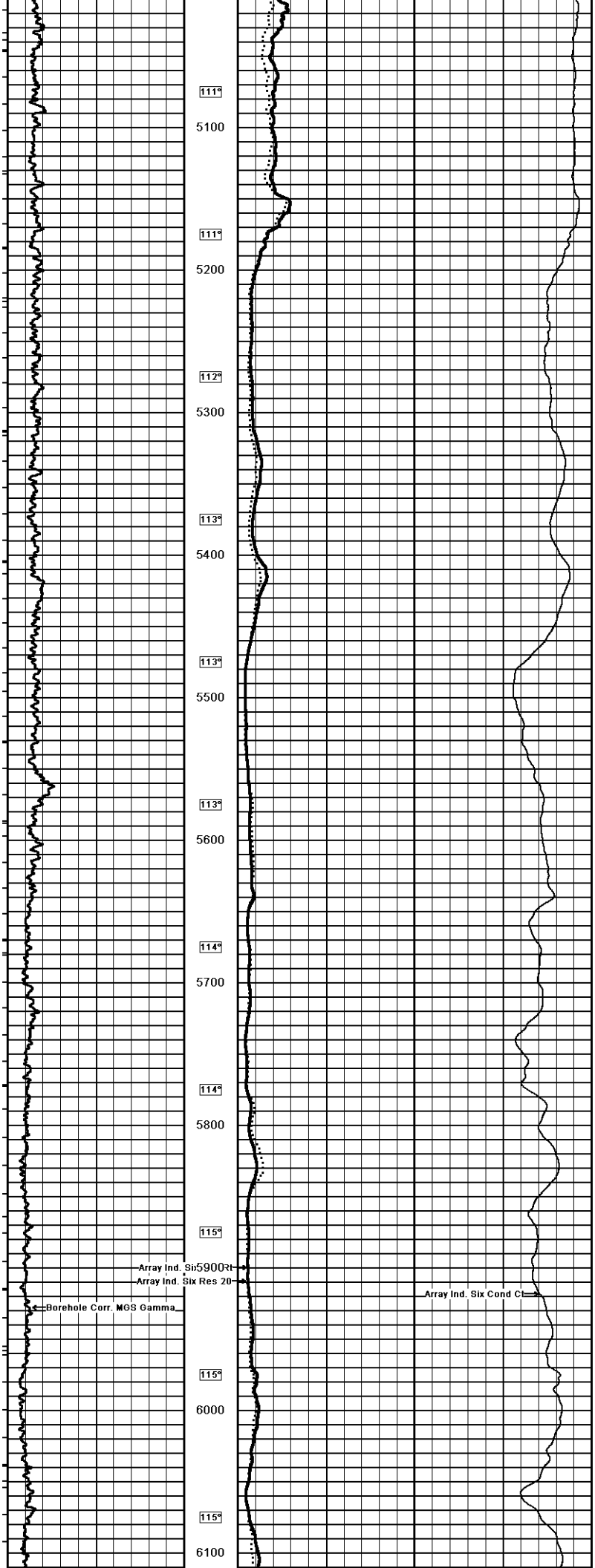
5000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5100
111°
5200
112°
5300
113°
5400
113°
5500
113°
5600
114°
5700
114°
5800
115°
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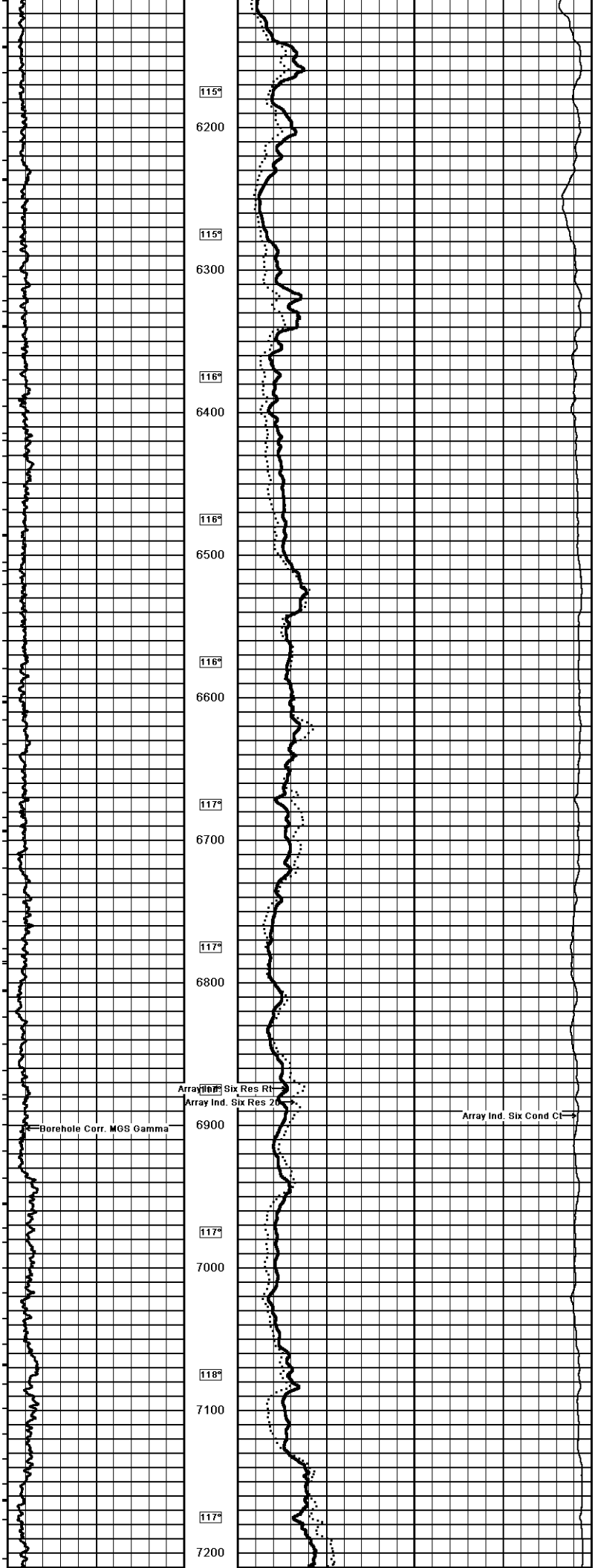
Array Ind. Six Res 20
Borehole Corr. MGS Gamma
Array Ind. Six Cond Ct
115°
6000
115°
6100


115°
6200
115°
6300
116°
6400
116°
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116°
6600
117°
6700
117°
6800
117°
6900
117°
7000
118°
7100
117°
7200
Array Ind. Six Res Rt
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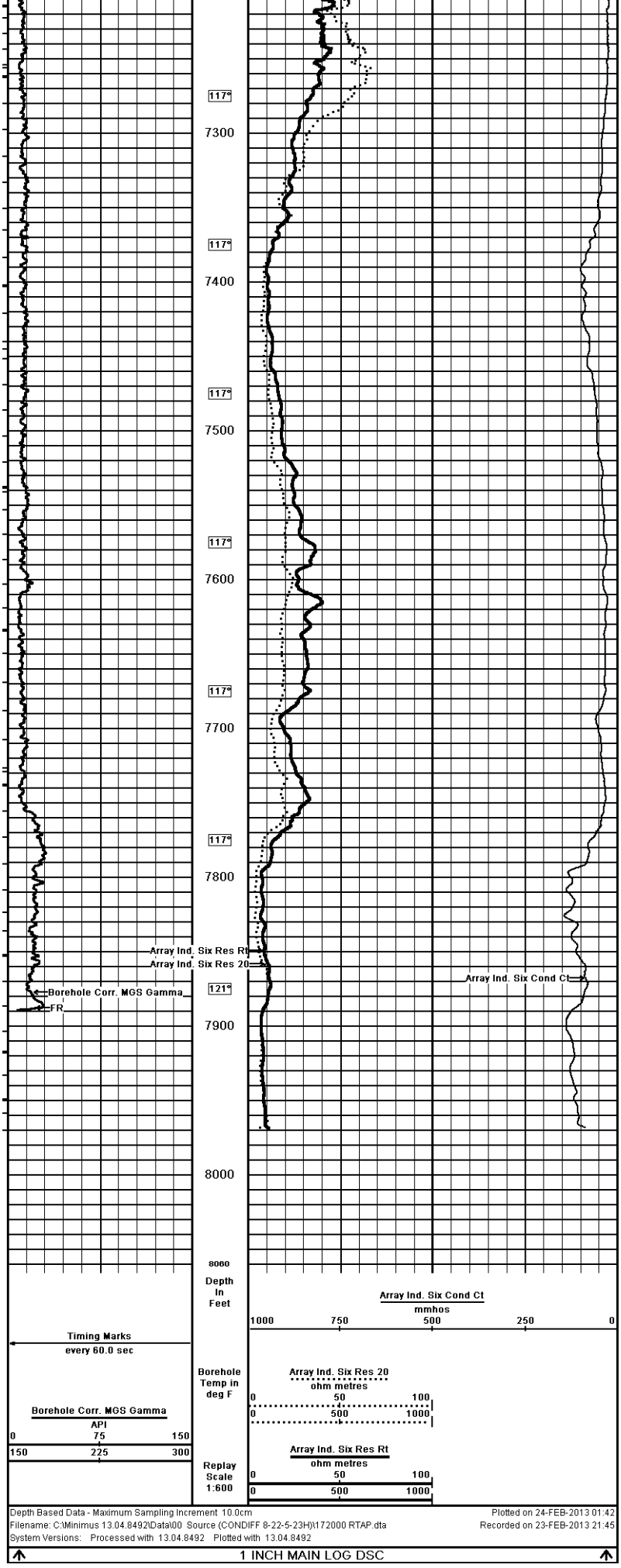
Borehole Corr. MGS Gamma
Array Ind. Six Cond Ct



COMPANY	SOURCE ENERGY
WELL	CONDIFF 8-22-5-23H
FIELD	SAUZEK

PROVINCE/COUNTY	SUMNER
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	1264.00	feet	First Reading	7972.00	feet
Elevation Drill Floor	1262.00	feet	Depth Driller	8011.00	feet
Elevation Ground Level	1247.00	feet	Depth Logger	7975.00	feet

Weatherford

CML MESSENGER SHUTTLE
ARRAY INDUCTION
ELECTRIC LOG