



Weatherford[®]

CML MESSENGER SHUTTLE

ARRAY INDUCTION

LOG

COMPANY **SANDRIDGE ENERGY**
 WELL **SALLY 3420 2-12H**
 FIELD **COMANCHE PROSPECT**
 PROVINCE/COUNTY **COMANCHE**
 COUNTRY/STATE **USA / KANSAS**
 LOCATION **200' FNL & 2200' FWL**
NW NE NE NW

SEC 12 TWP 34S RGE 20W Other Services MDN/MPP
 API Number 15-033-21713
 Permit Number
 Permanent Datum G.L., Elevation 1791 feet
 Log Measured From DF
 Drilling Measured From DF @ 1809 FEET

Elevations: feet
 KB 1809.00
 DF 1809.00
 GL 1791.00

Date	10-MAY-2013	
Run Number	ONE	
Service Order	3539416	
Depth Driller	9599.00	feet
Depth Logger	9599.00	feet
First Reading	9564.00	feet
Last Reading	5706.00	feet
Casing Driller	5706.00	feet
Casing Logger	5706.00	inches
Bit Size	6.125	
Hole Fluid Type	WATER	lb/USg
Density / Viscosity	9.00 lb/USg	31.00 CP
PH / Fluid Loss	8.50	8.50
Sample Source	FLOWLINE	
Rm @ Measured Temp	1.60 @ 74.0	ohm-m
Rmf @ Measured Temp	1.28 @ 74.0	ohm-m
Rmc @ Measured Temp	1.92 @ 74.0	ohm-m
Source Rmf / Rmc	CALC	CALC
Rm @ BHT	0.925 @128.0	ohm-m
Time Since Circulation	1 HOUR	
Max Recorded Temp	128.00	deg F
Equipment / Base	18006	OKC
Recorded By	B.ALLEN	
Witnessed By	M.RODEN	W. SCOTT
AFE# / S.O.	DC128959	3539416

BOREHOLE RECORD

Last Edited: 10-MAY-2013 18:40

Bit Size inches	Depth From feet	Depth To feet
12.250	0.00	326.00
8.750	326.00	5706.00
6.125	5706.00	9599.00

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

MPD: 4"PROFILE PLATE, MIS-A SINGLE SPRING DECENTRALIZER BELOW

MDN: MISD DOUBLE SPRING DECENTRALIZER RAN ABOVE

2.71 G/CC DENSITY MATRIX USED TOCALCULATE POROSITY

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST

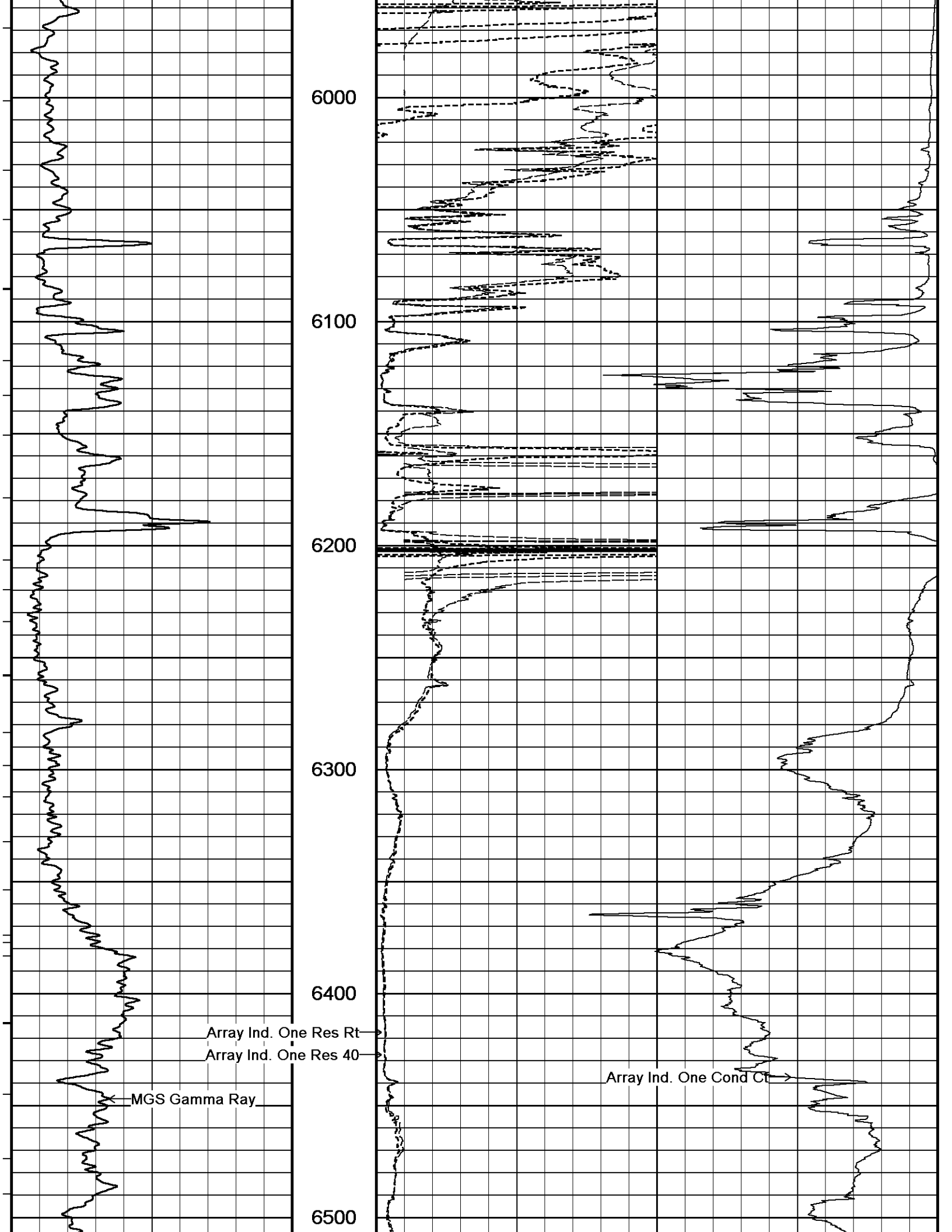
DRILL PIPE DEPTH DURING DEPLOYMENT - 9487

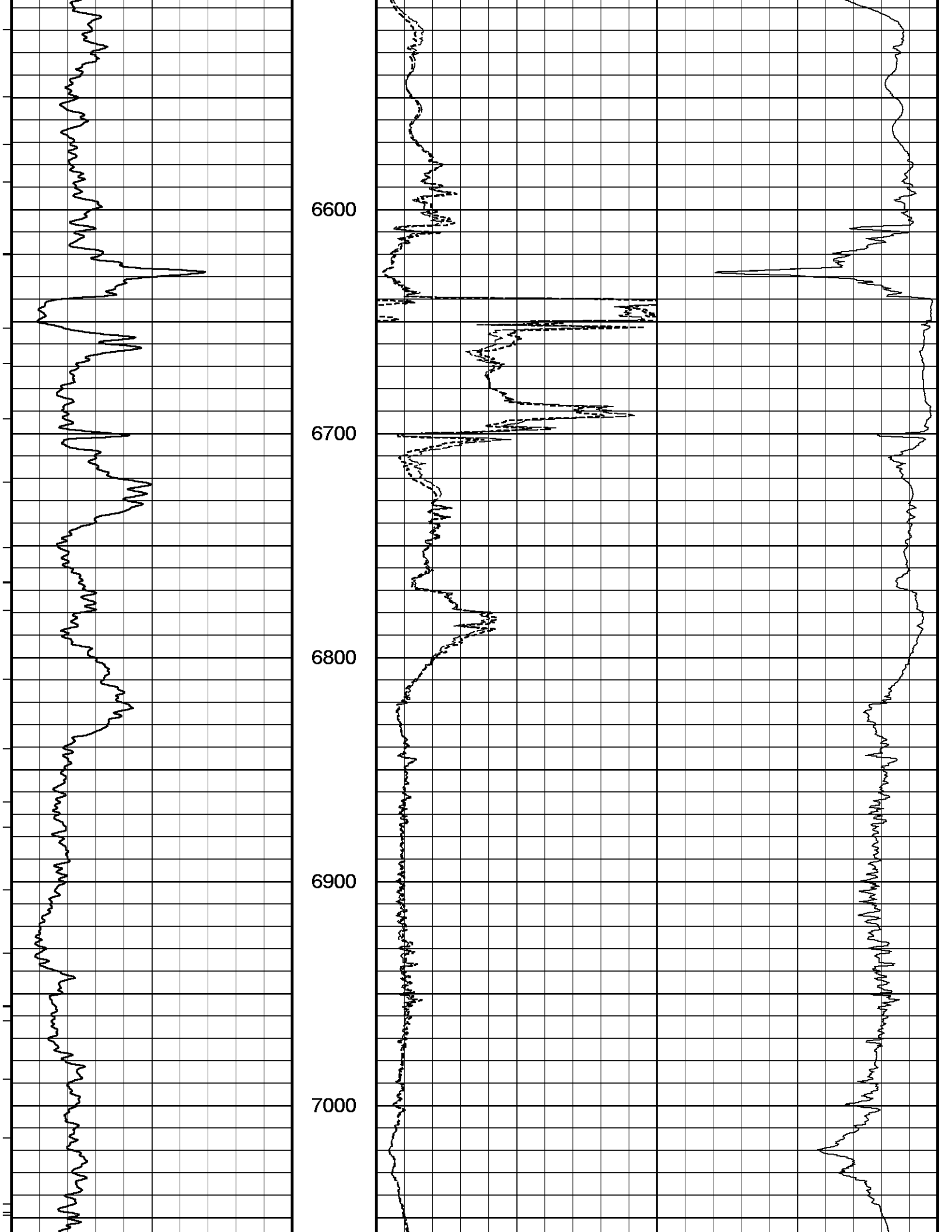
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 9570

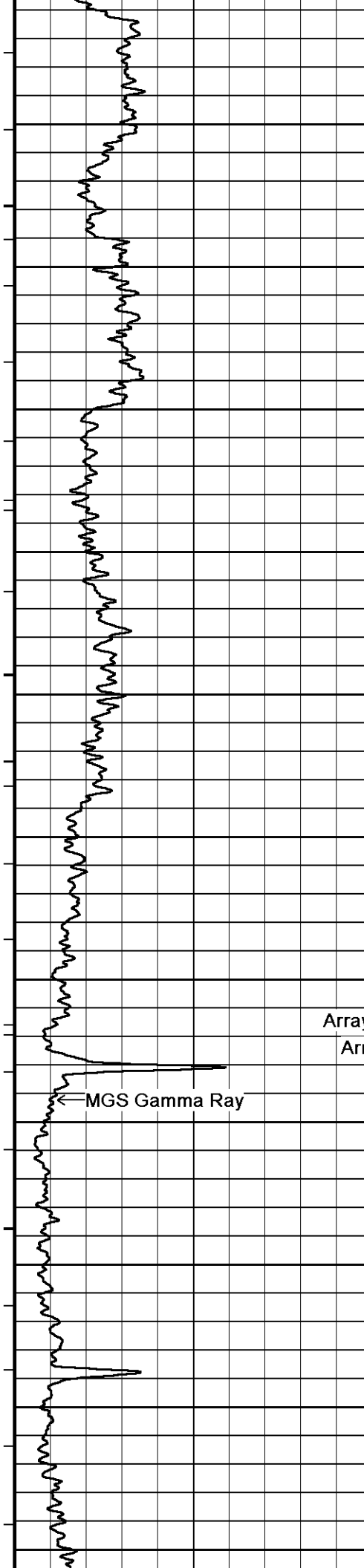
4.5" CASING USED TO CALCULATE AHV

SERVICE ORDER # 3539416

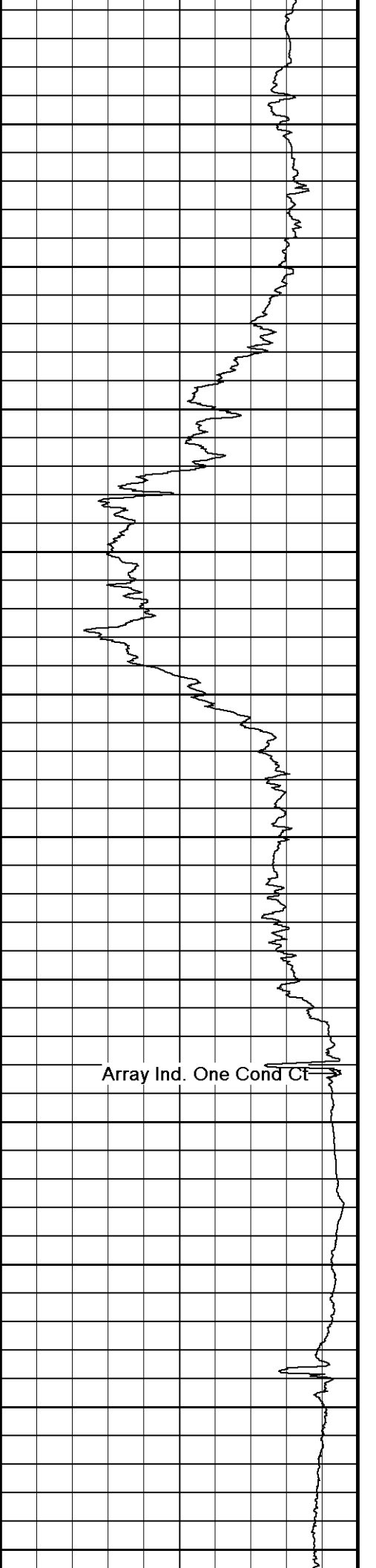
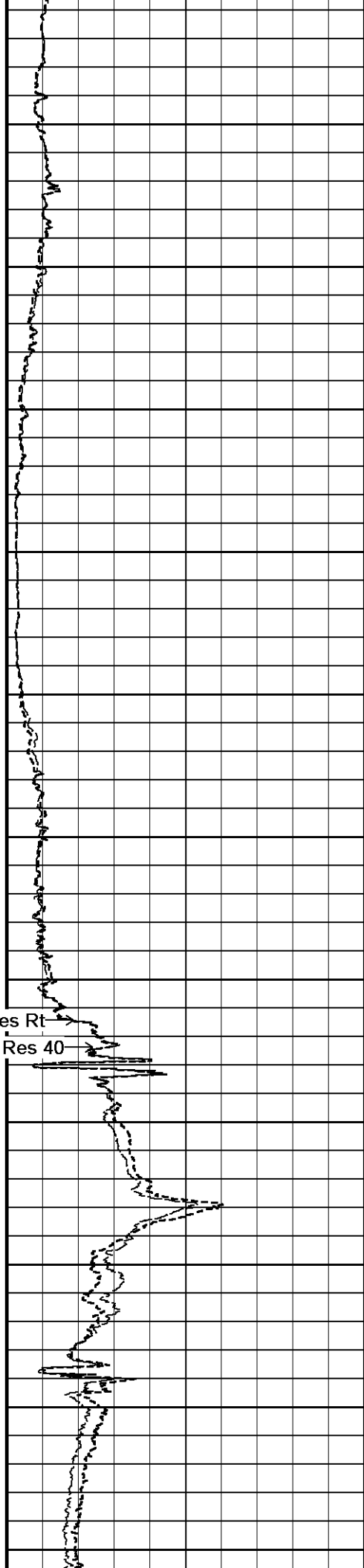
RIG: LARIAT 45







7100
7200
7300
7400
7500
7600

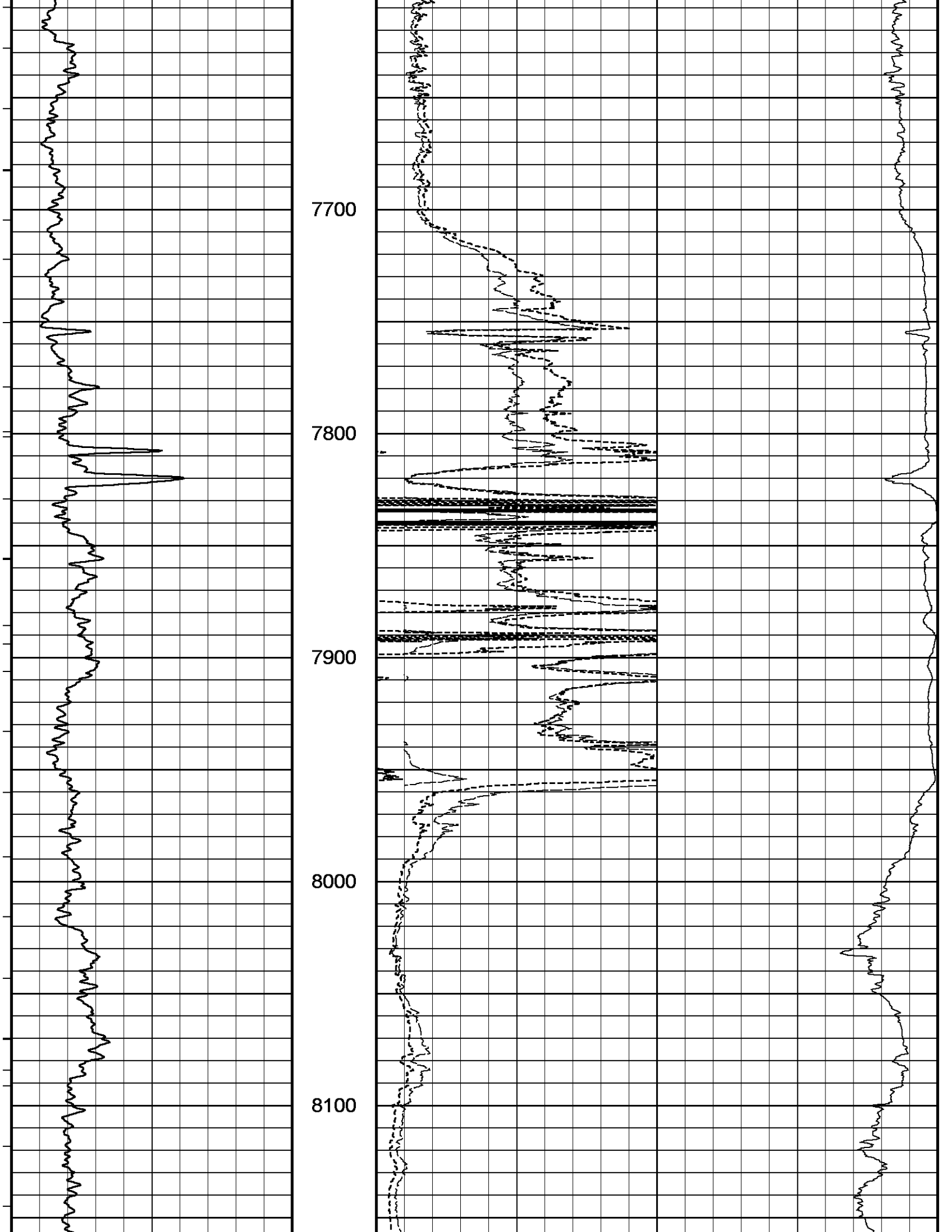


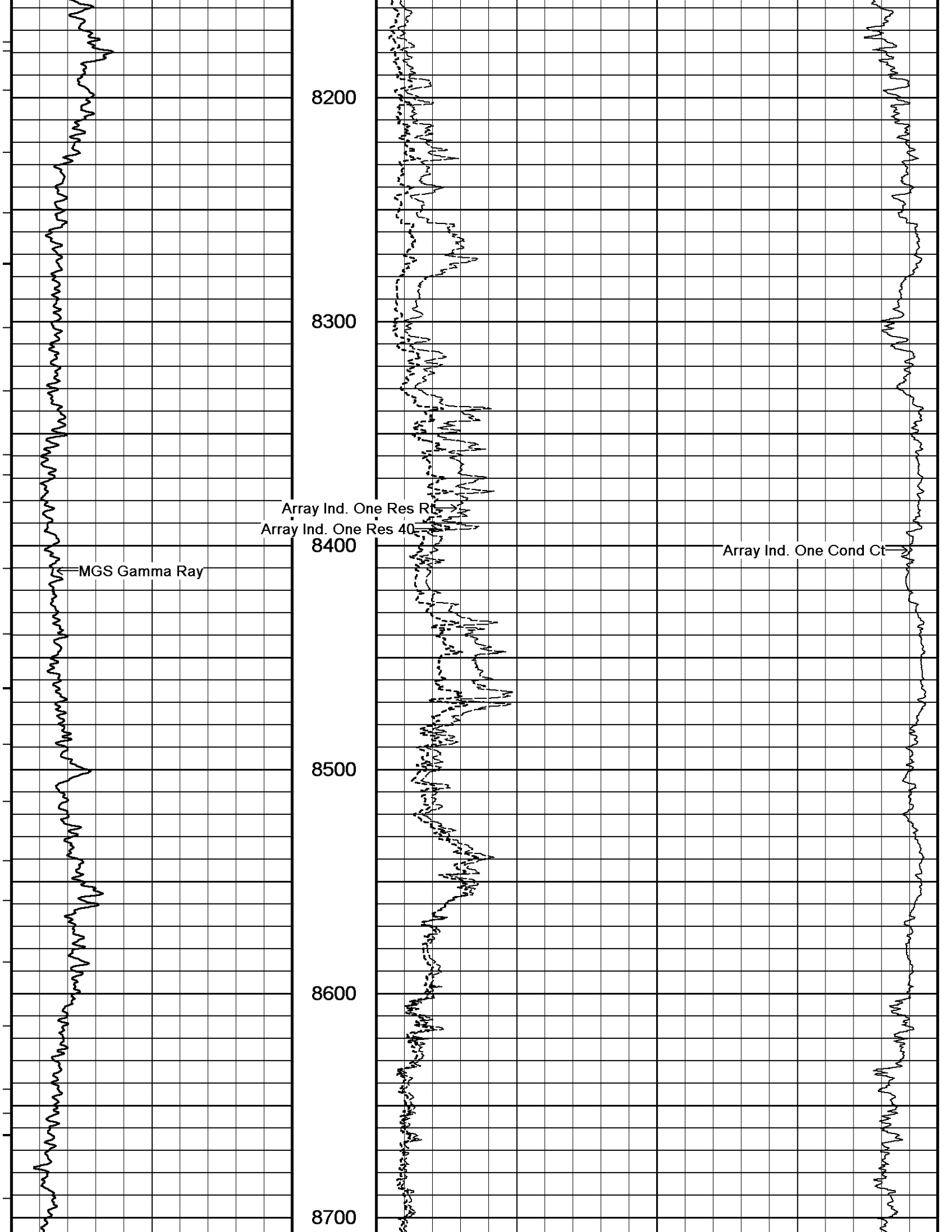
Array Ind. One Res Rt

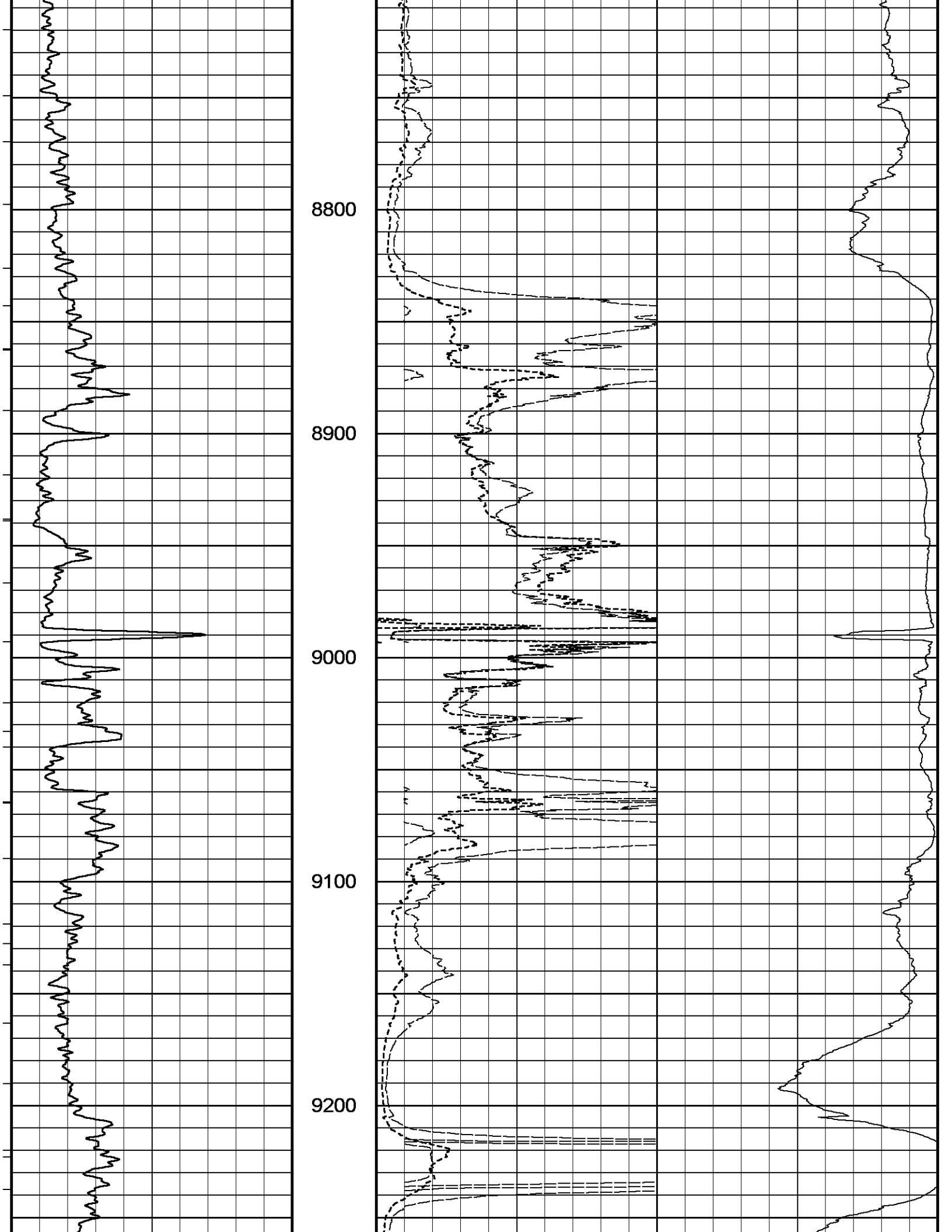
Array Ind. One Res 40

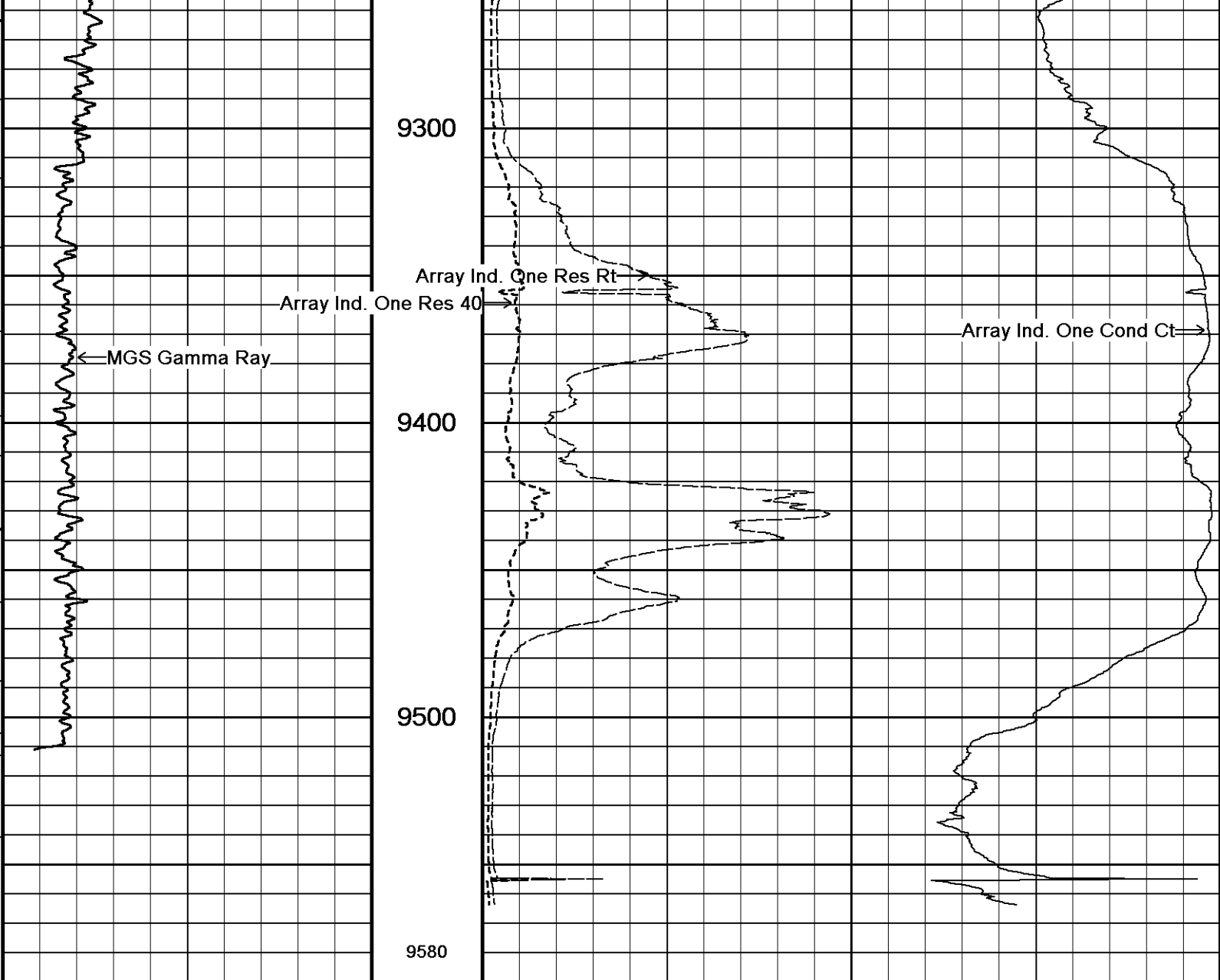
Array Ind. One Cond Ct

MGS Gamma Ray









Timing Marks every 60.0 sec

MGS Gamma Ray

0	75	150
150	225	300

Depth In Feet

Array Ind. One Cond Ct

1000	750	500	250	0
2000	1750	1500	1250	1000

ohm metres

0	50	100
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Array Ind. One Res Rt

0	50	100
0	500	1000

Replay Scale 1:600

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 11-MAY-2013 02:46
 Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta
 Recorded on 11-MAY-2013 01:31
 System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

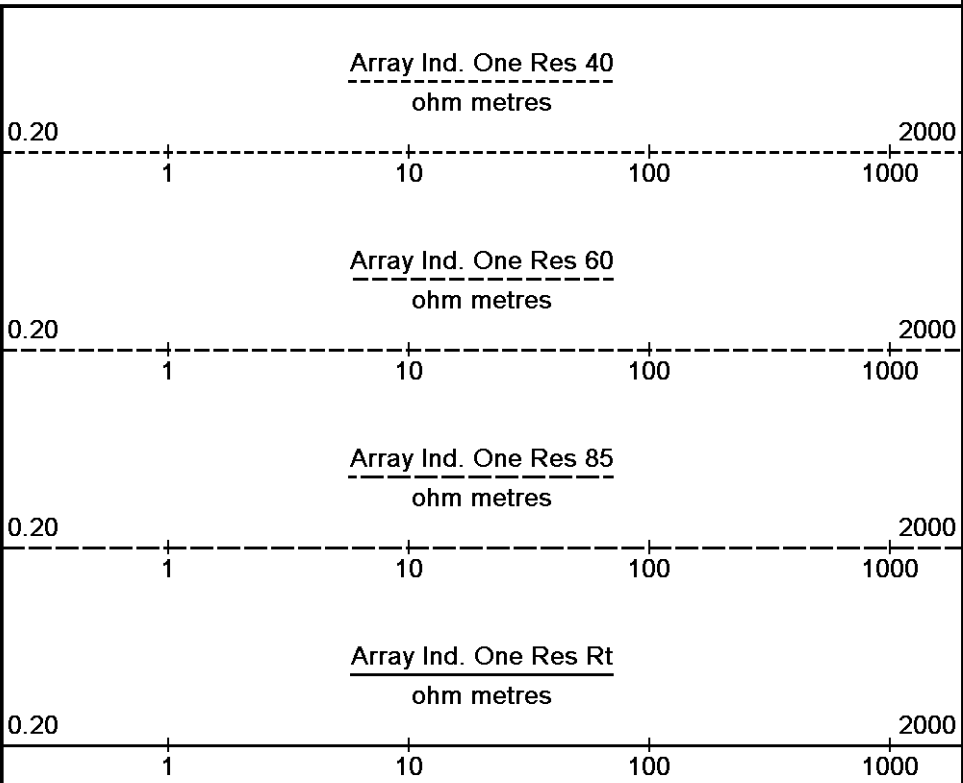
← Timing Marks every 60.0 sec

MGS Gamma Ray

0	API	150
	75	
150	225	300

Depth In Feet

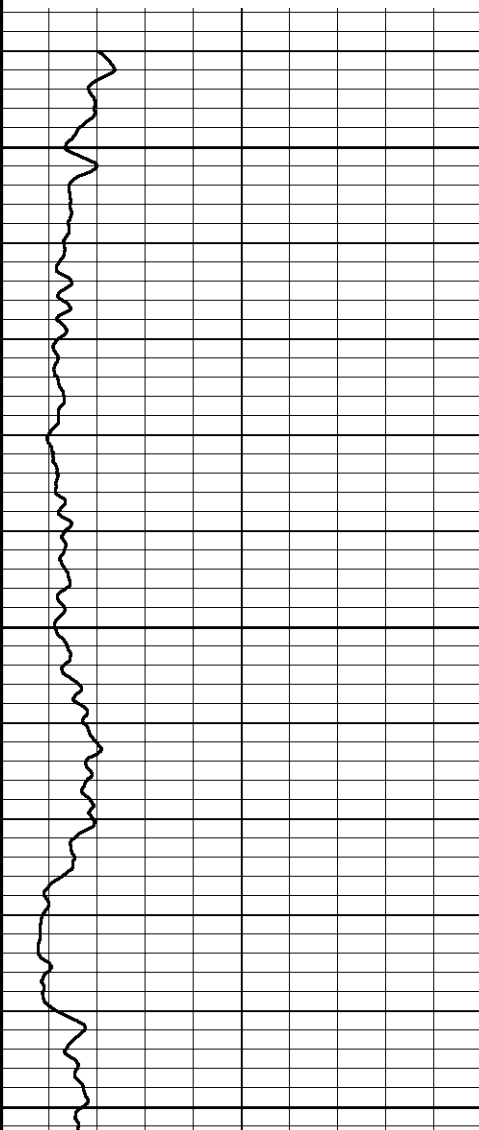
Borehole Temp in deg F



Replay Scale 1:240

5688

5700 casing Shoe

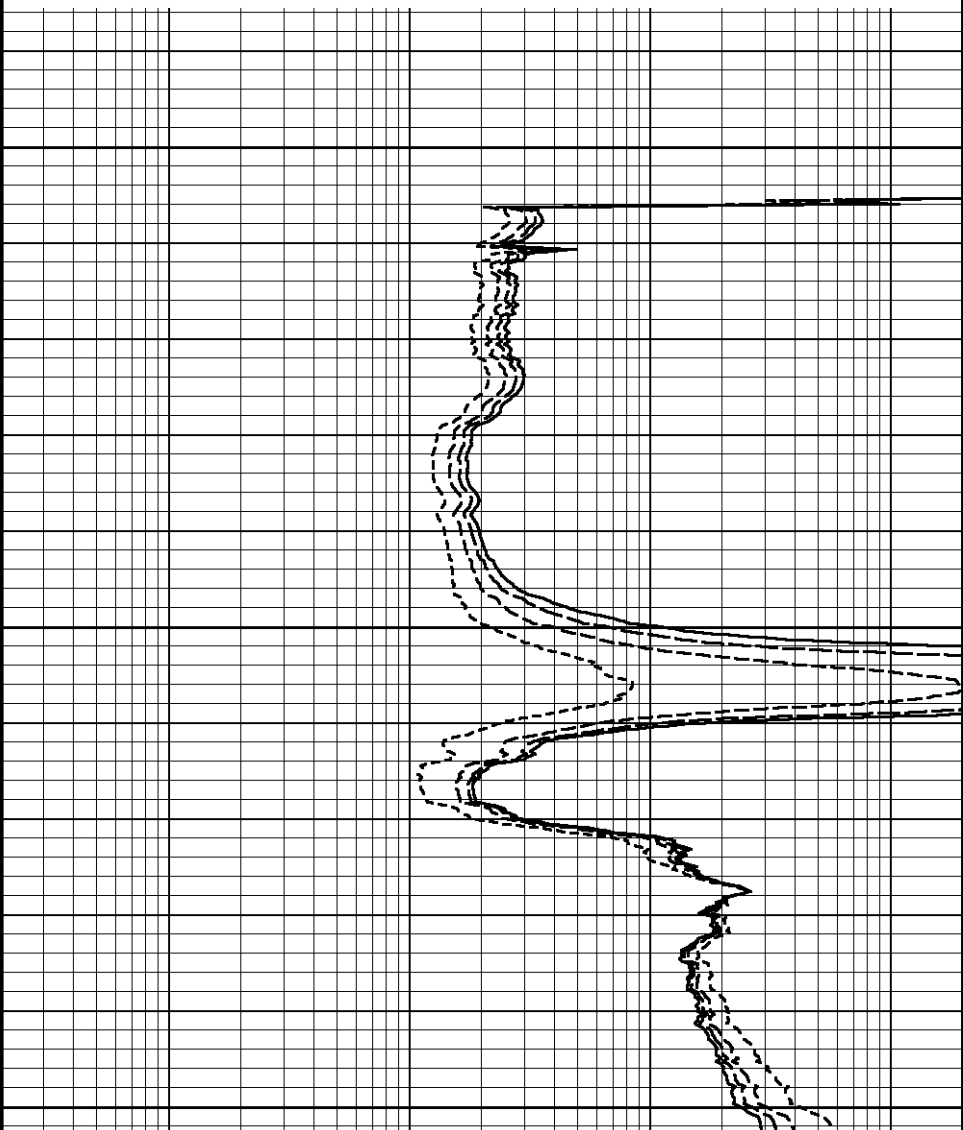


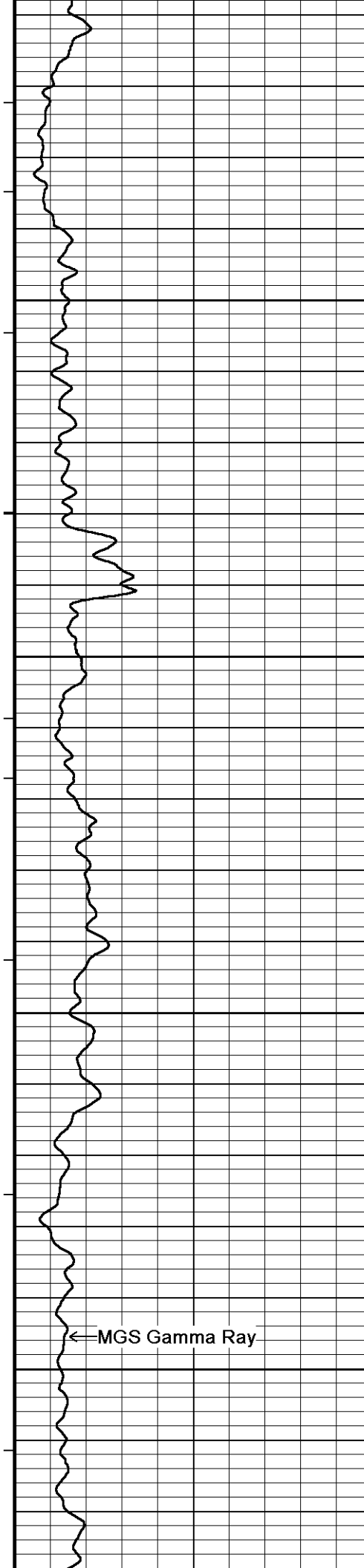
126°

5750

127°

5800





127°

5850

127°

5900

127°

5950

127°

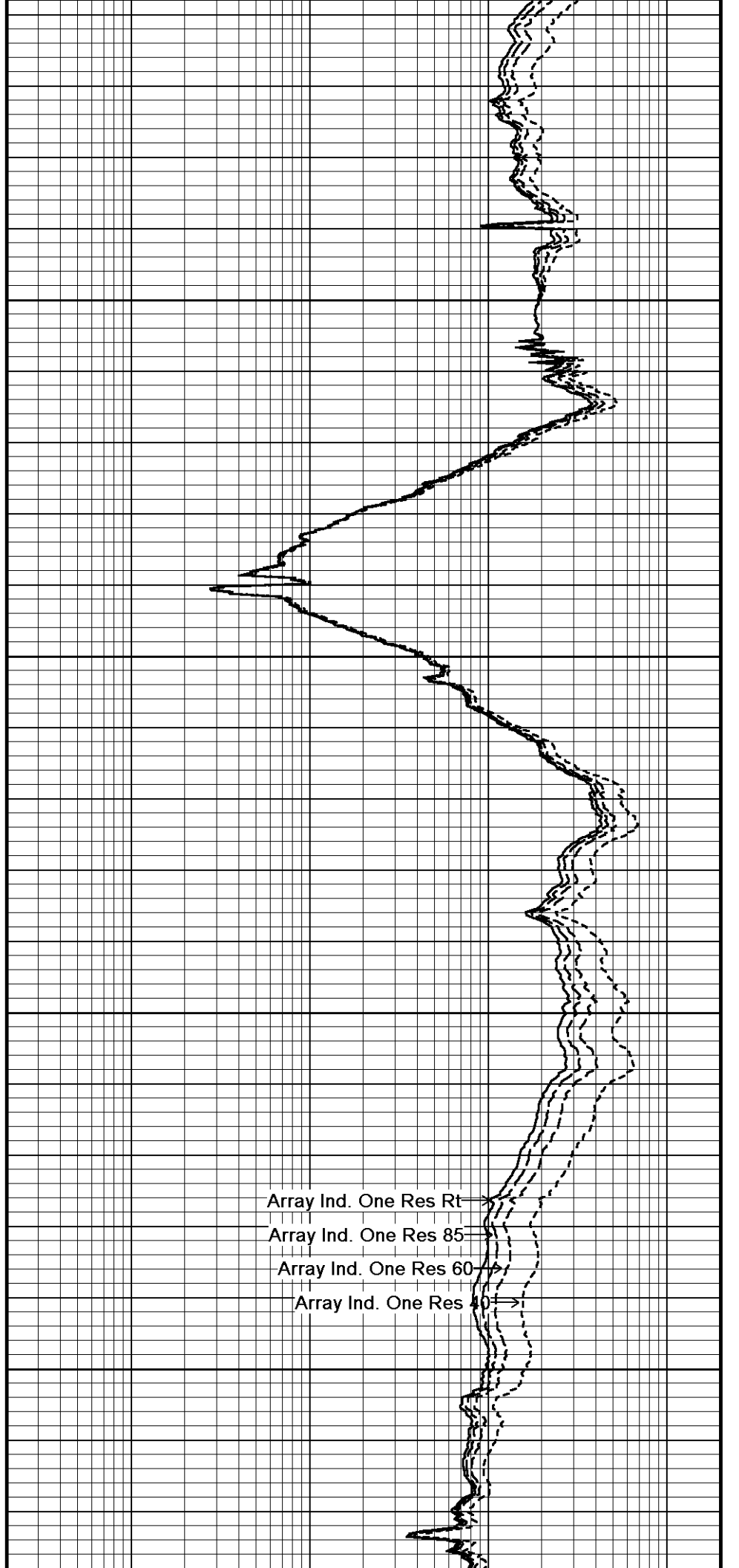
6000

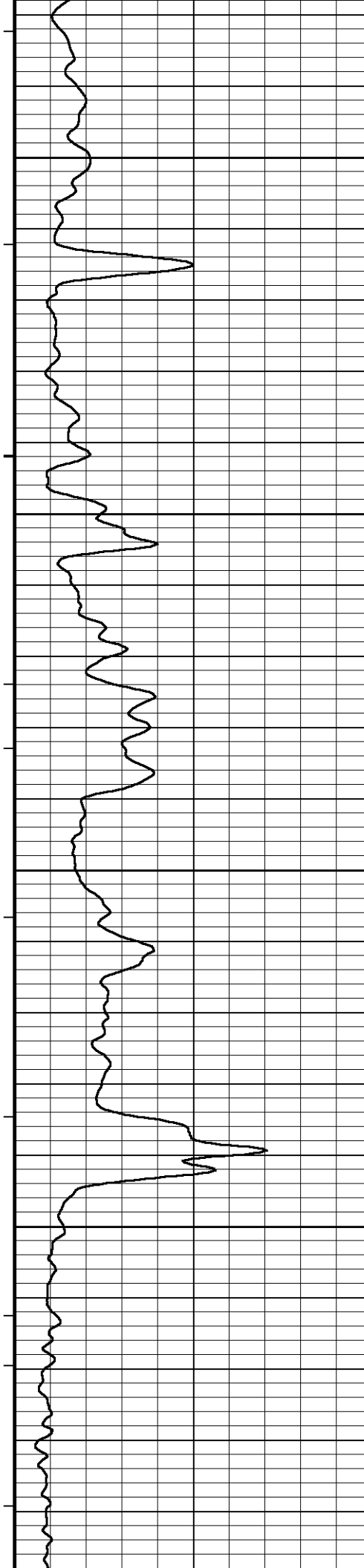
Array Ind. One Res Rt

Array Ind. One Res 85

Array Ind. One Res 60

Array Ind. One Res 40





127°

6050

127°

6100

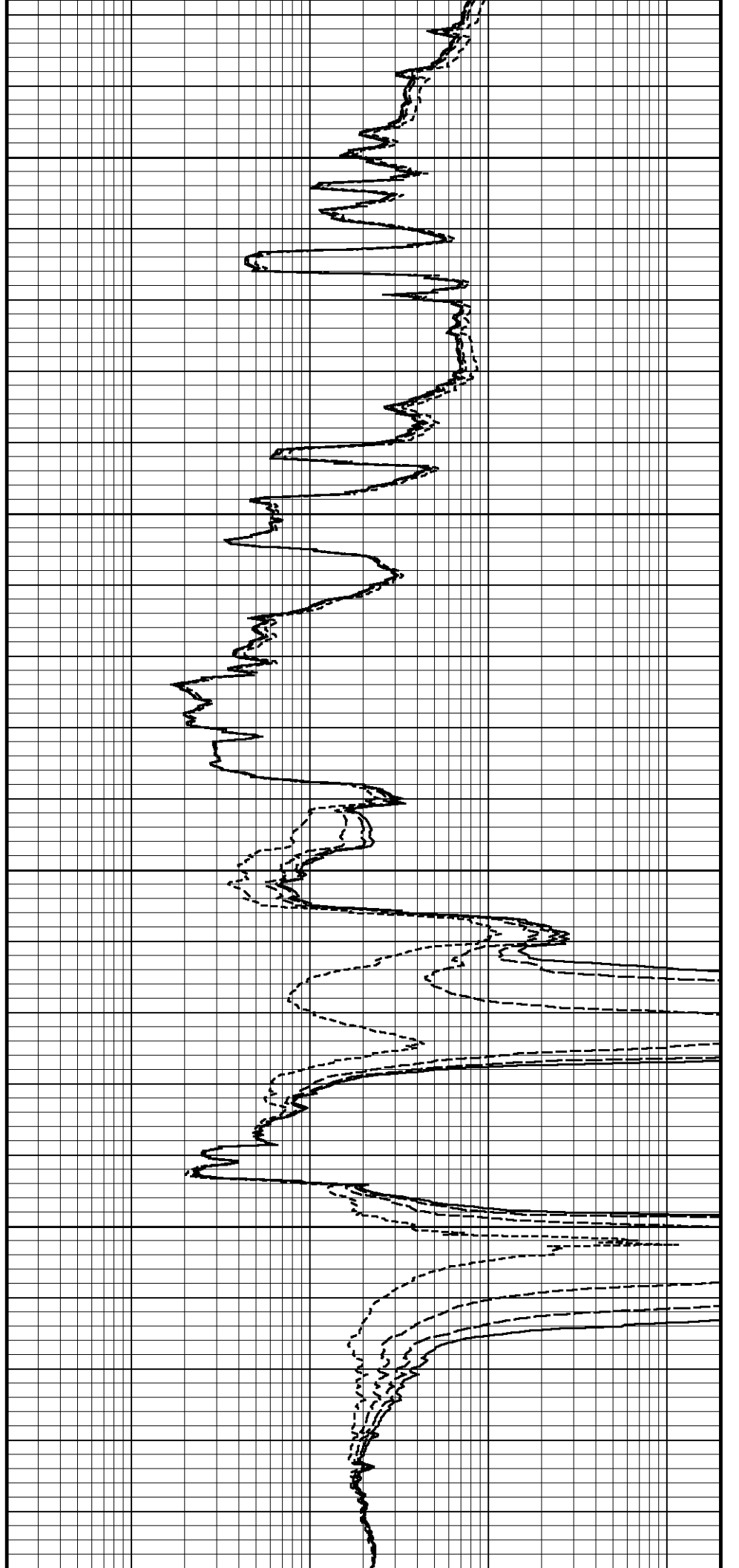
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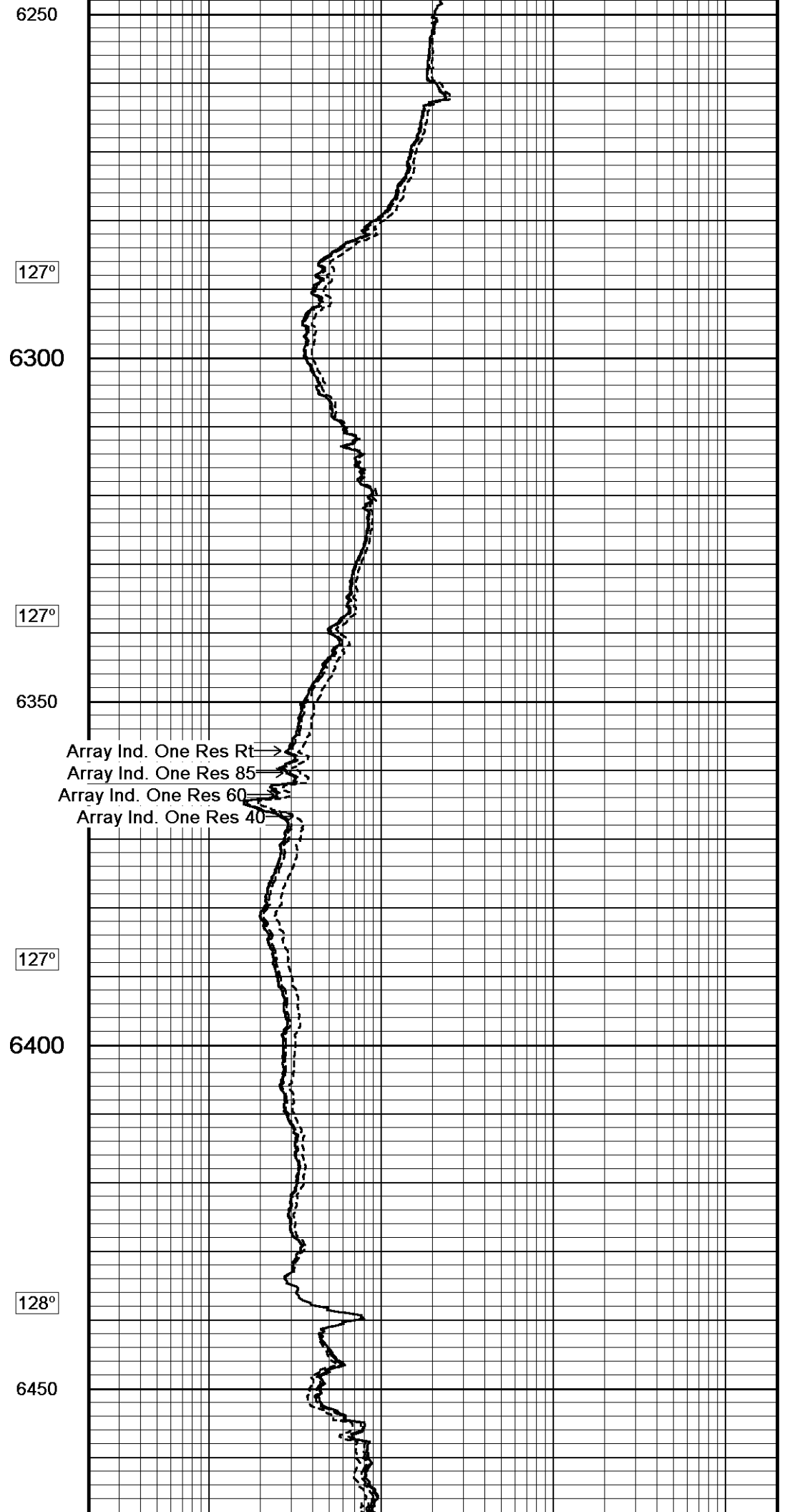
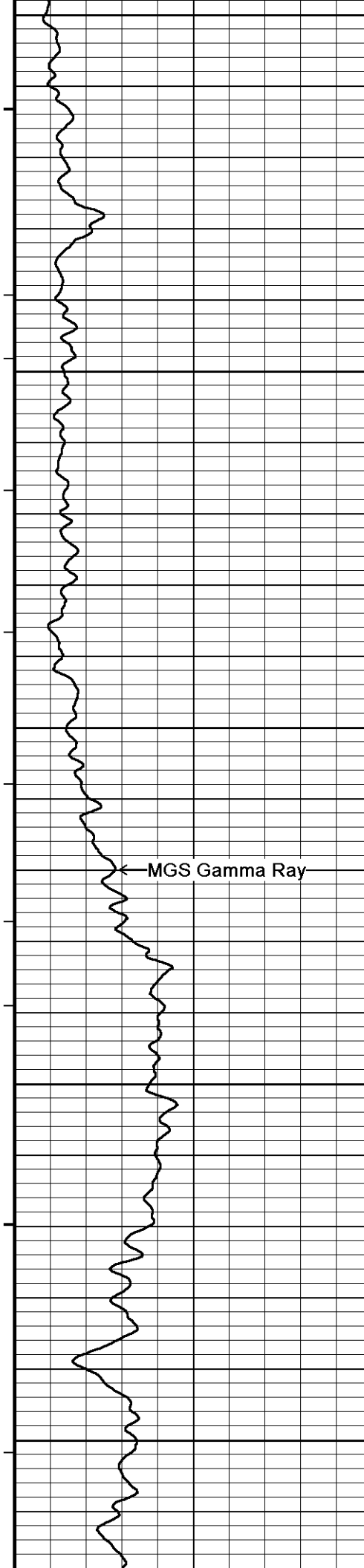
6150

127°

6200

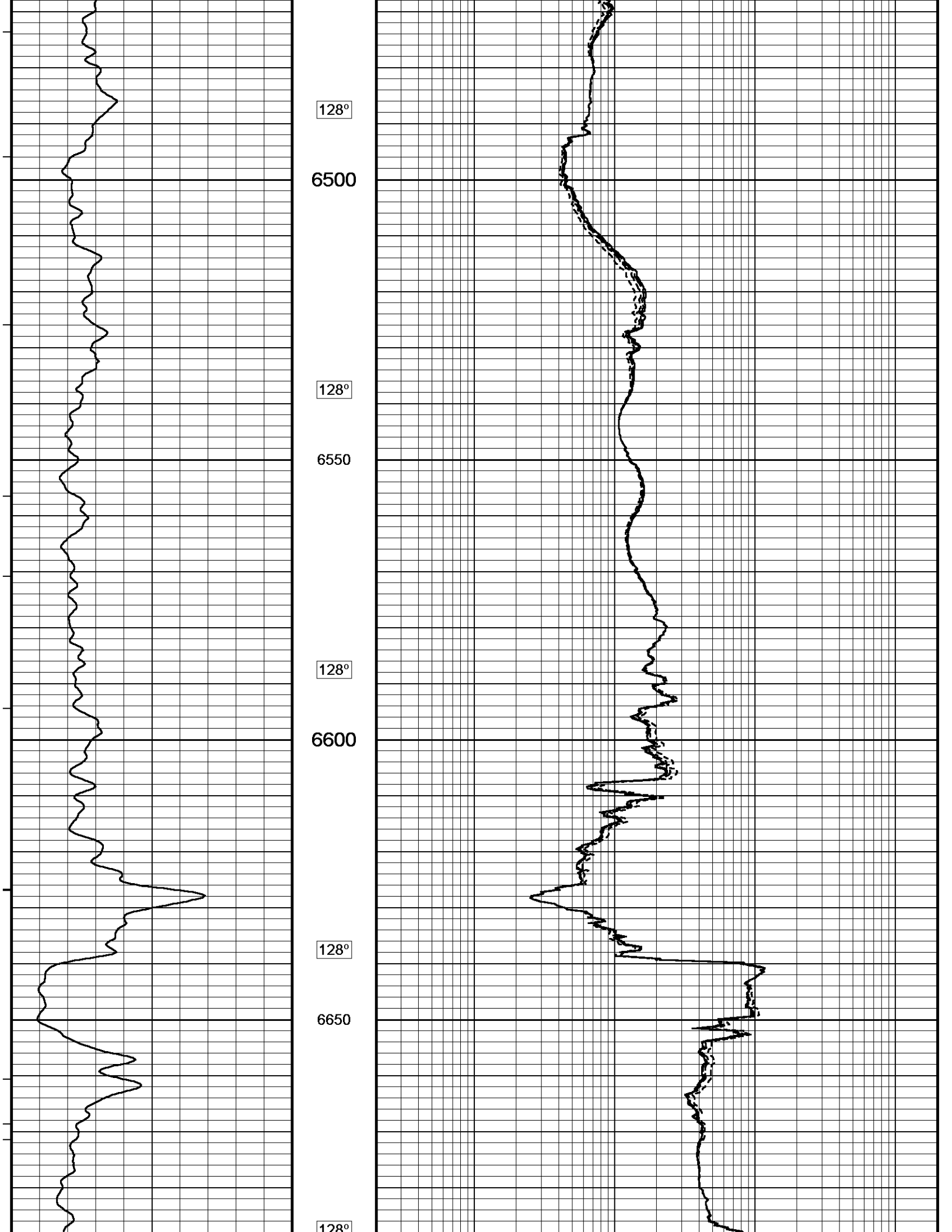
127°

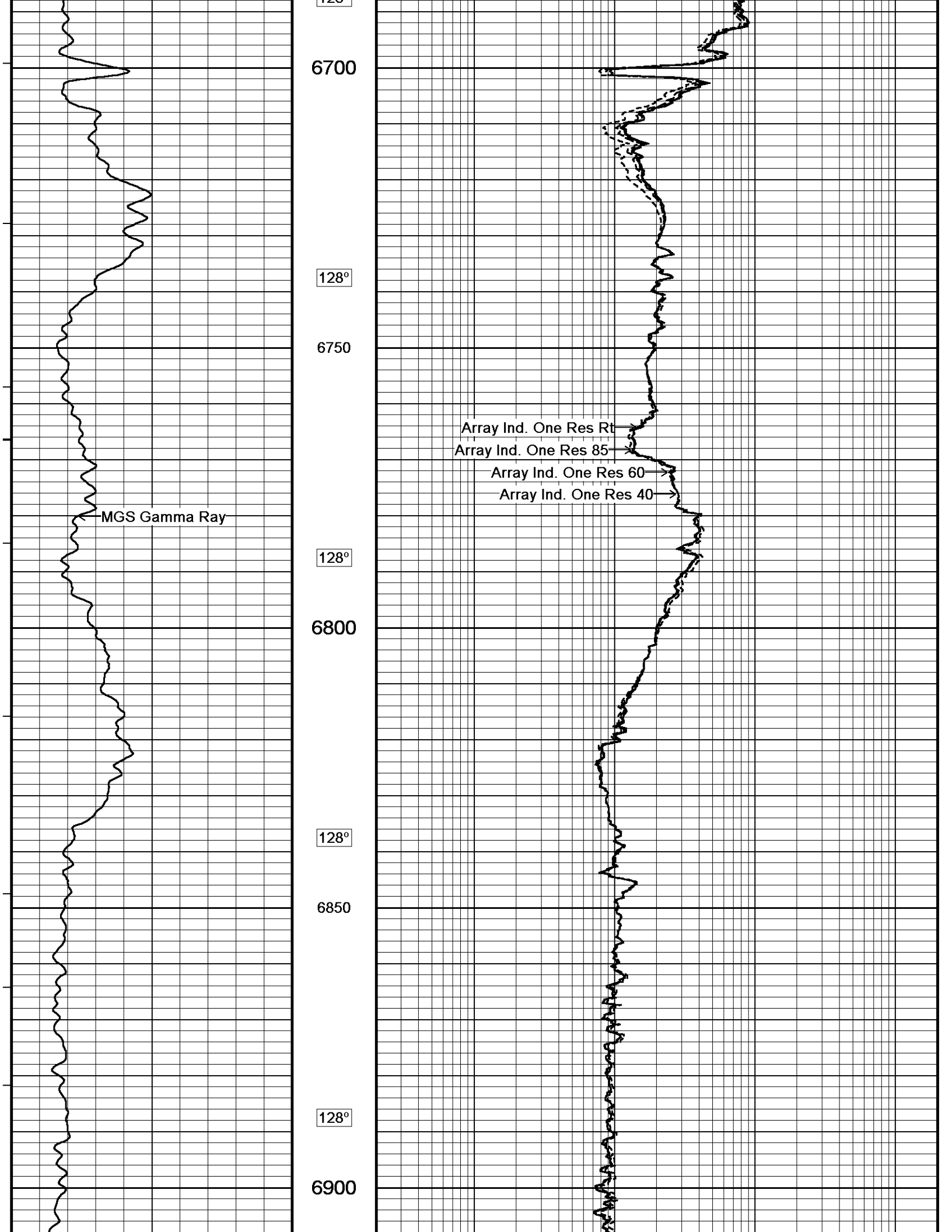


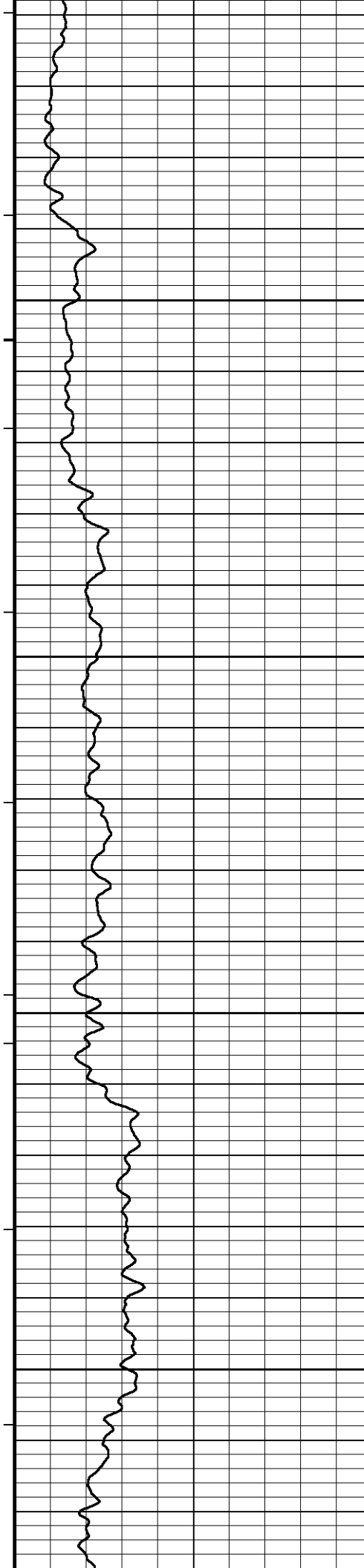


← MGS Gamma Ray

→ Array Ind. One Res Rt
→ Array Ind. One Res 85
→ Array Ind. One Res 60
→ Array Ind. One Res 40







128°

6950

128°

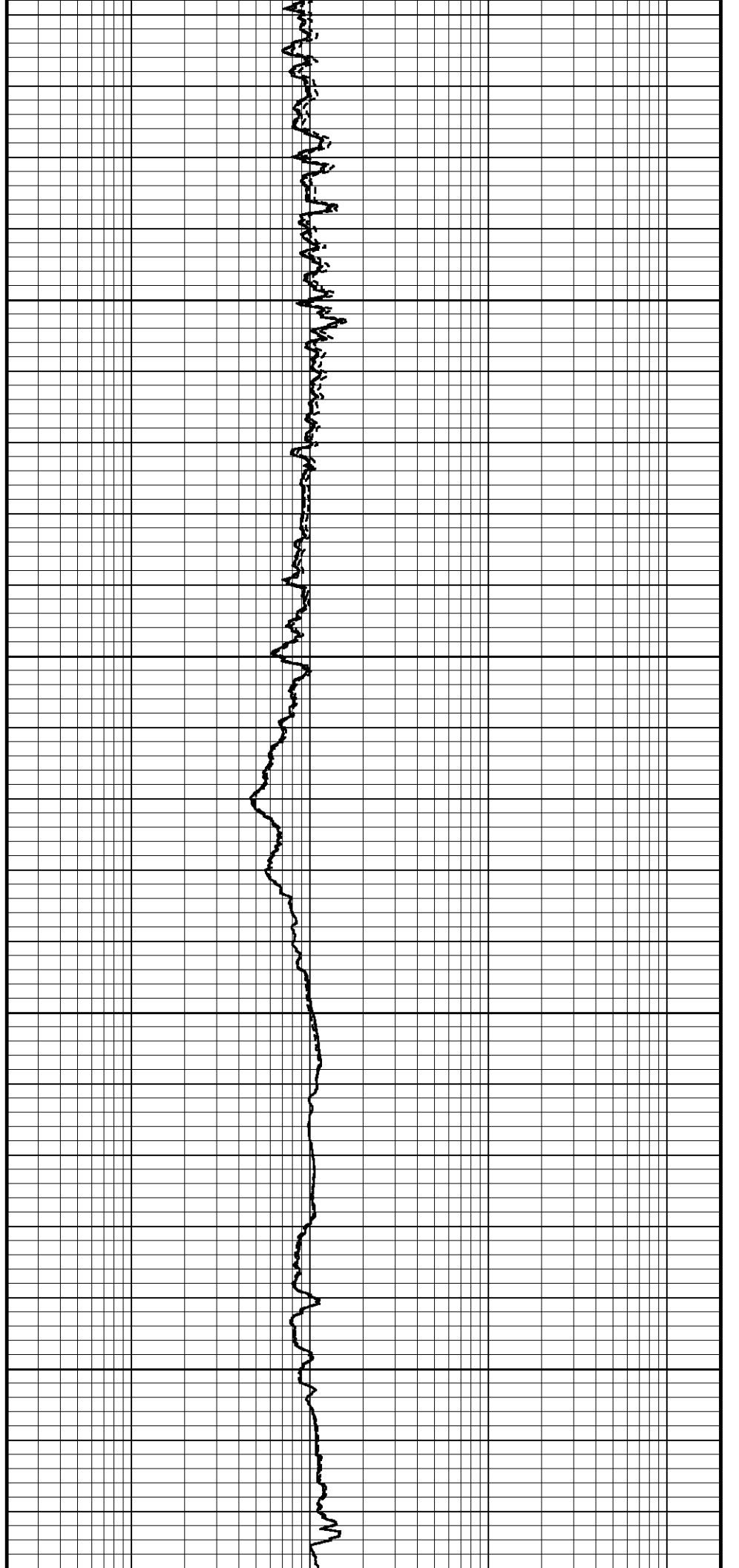
7000

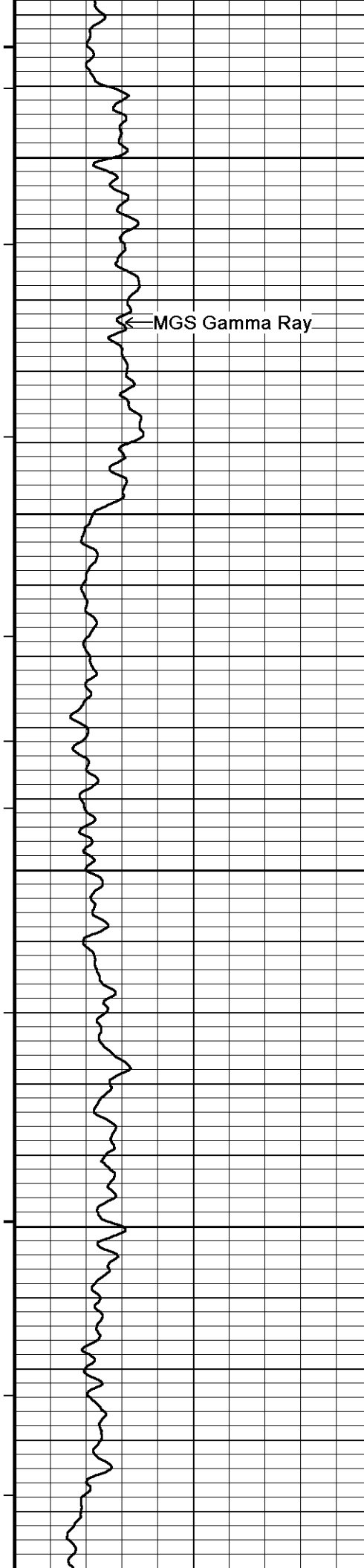
128°

7050

129°

7100





129°

7150

Array Ind. One Res Rt
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40

129°

7200

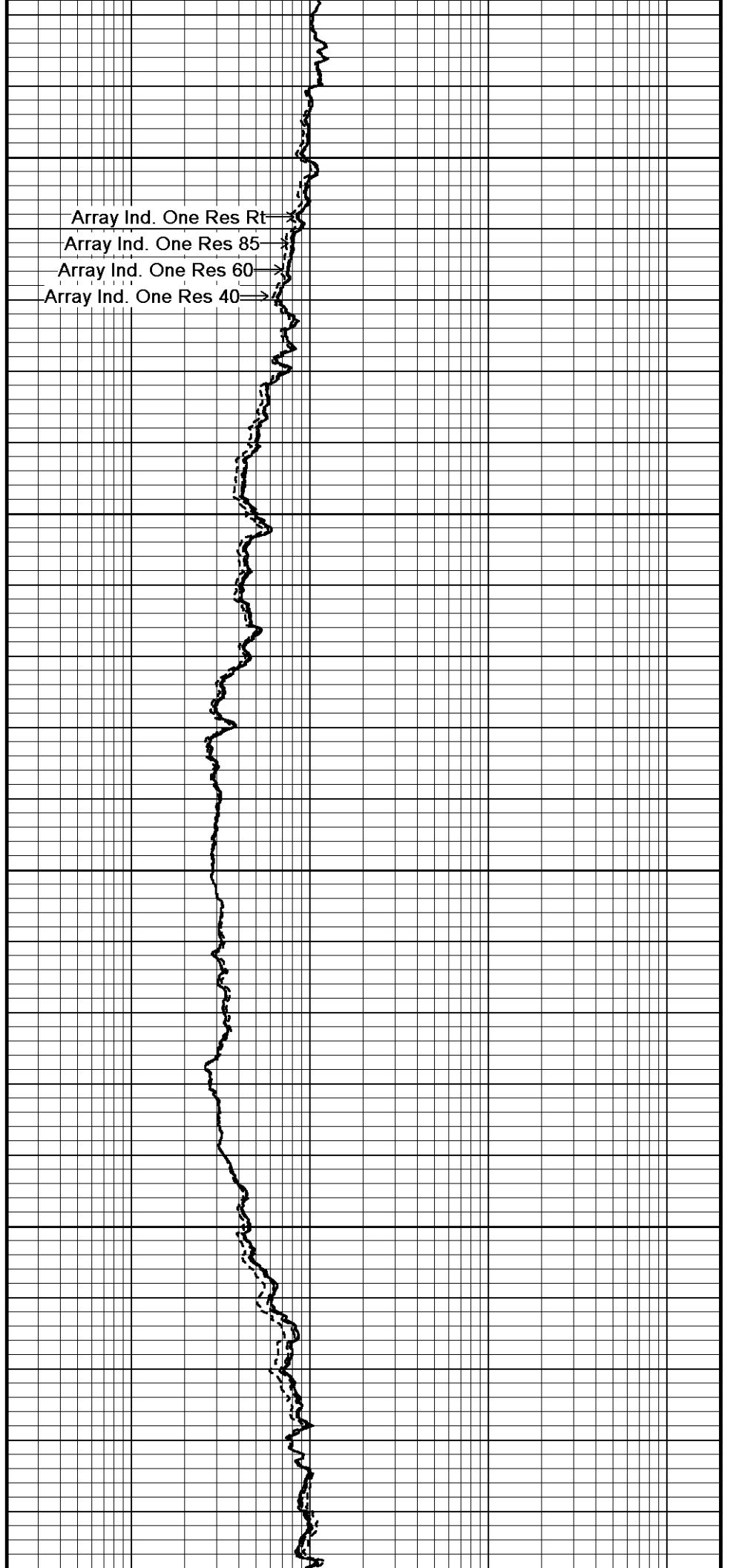
129°

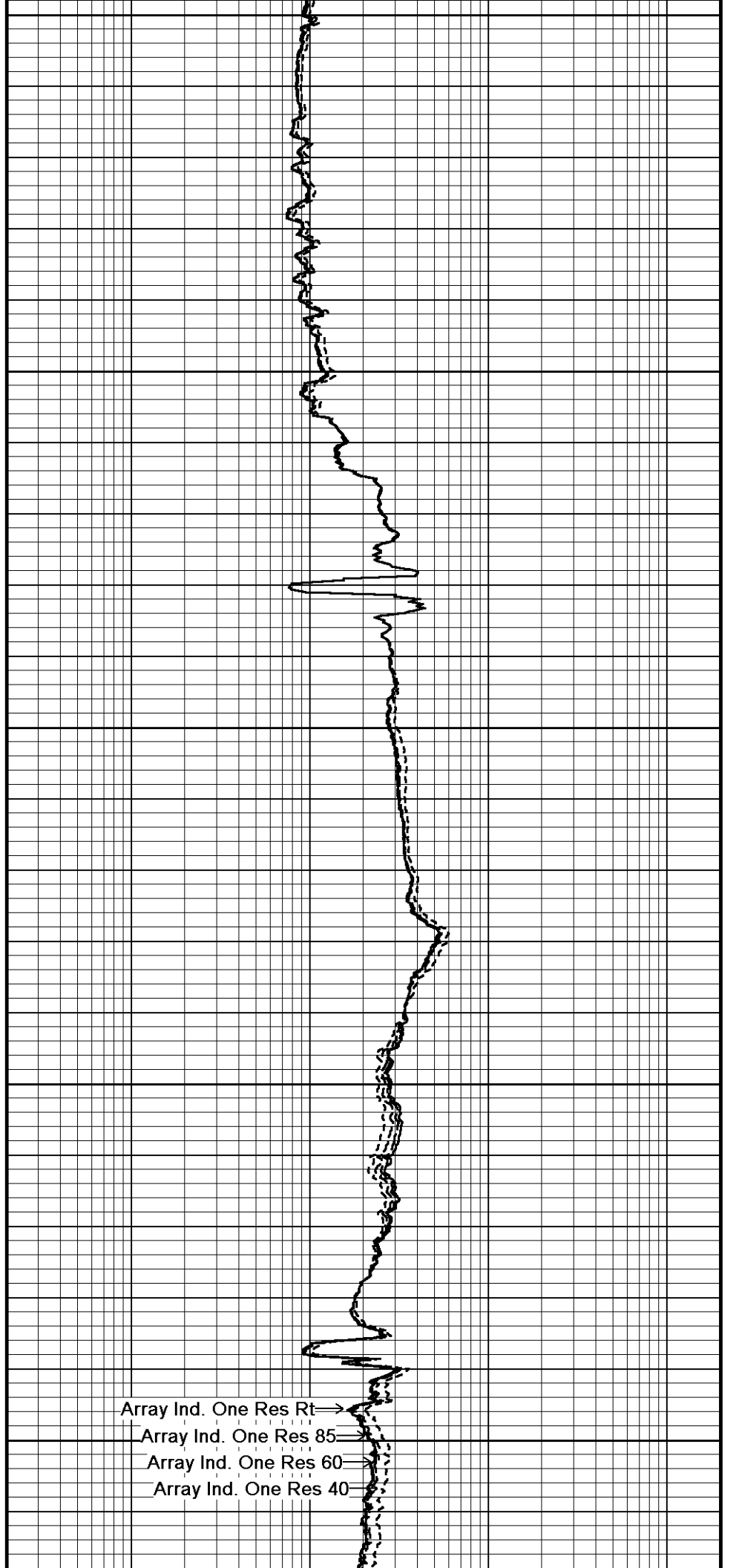
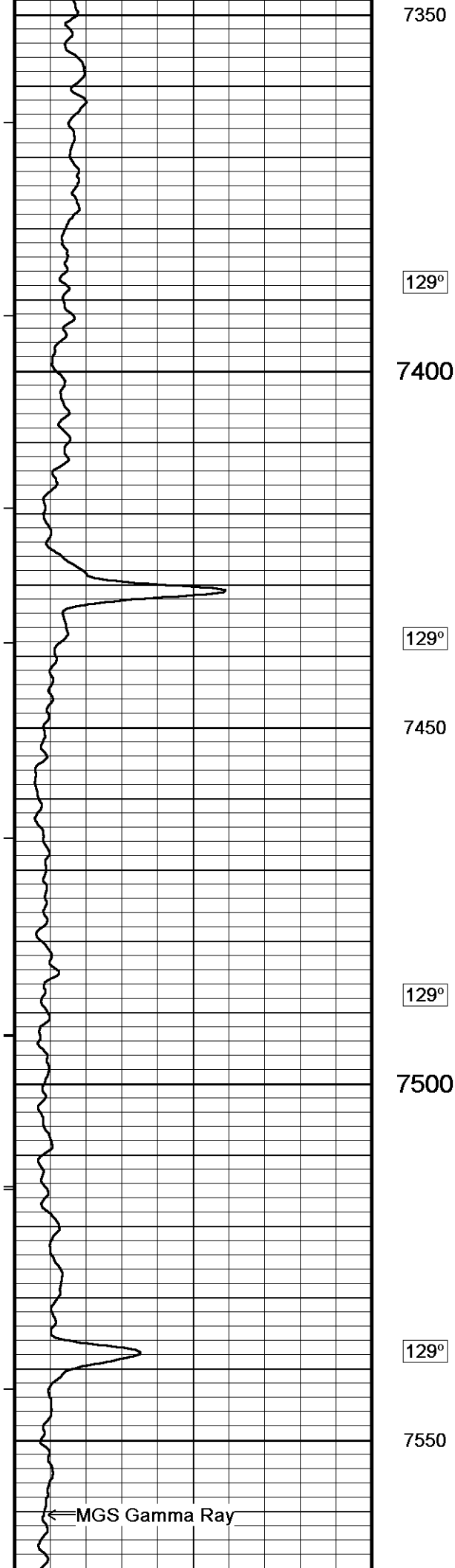
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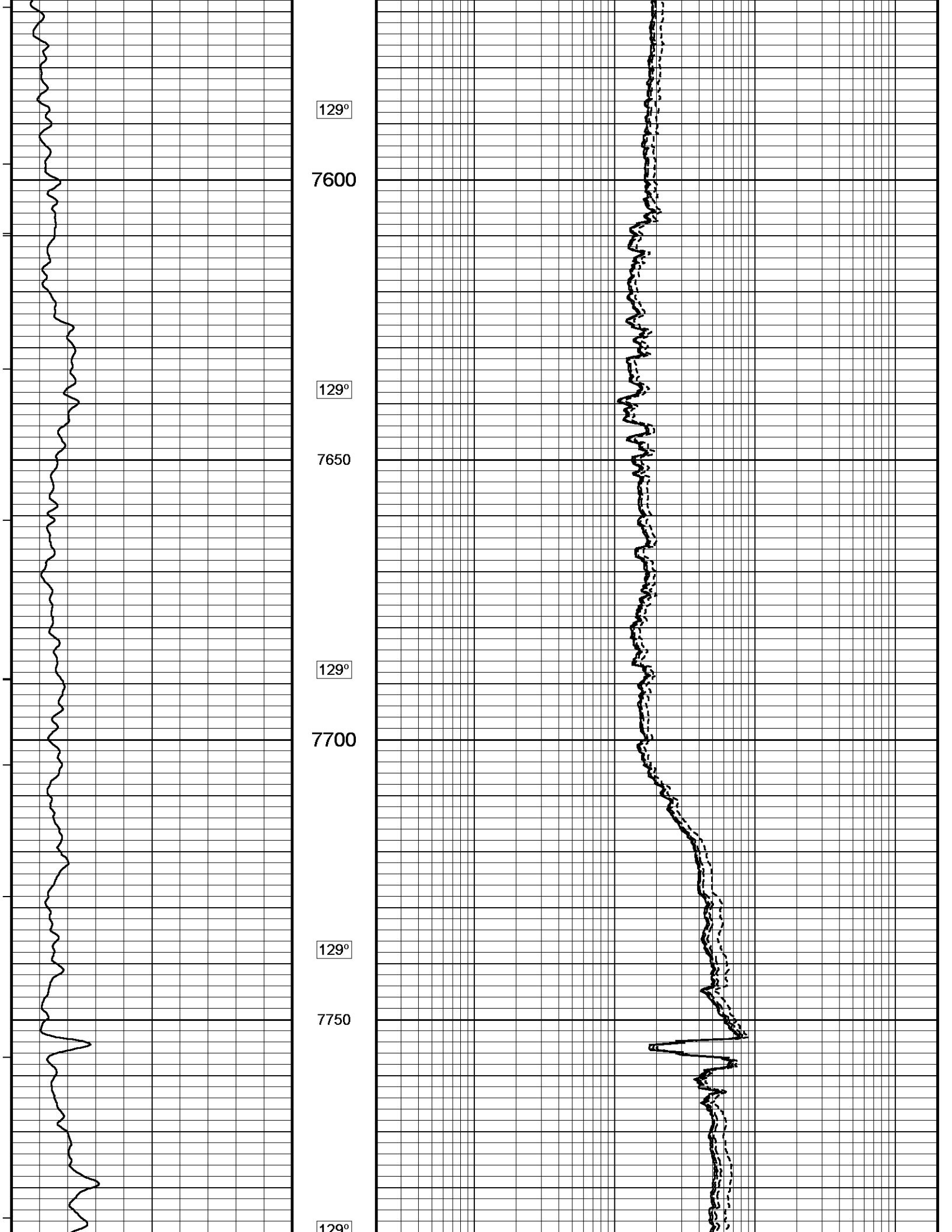
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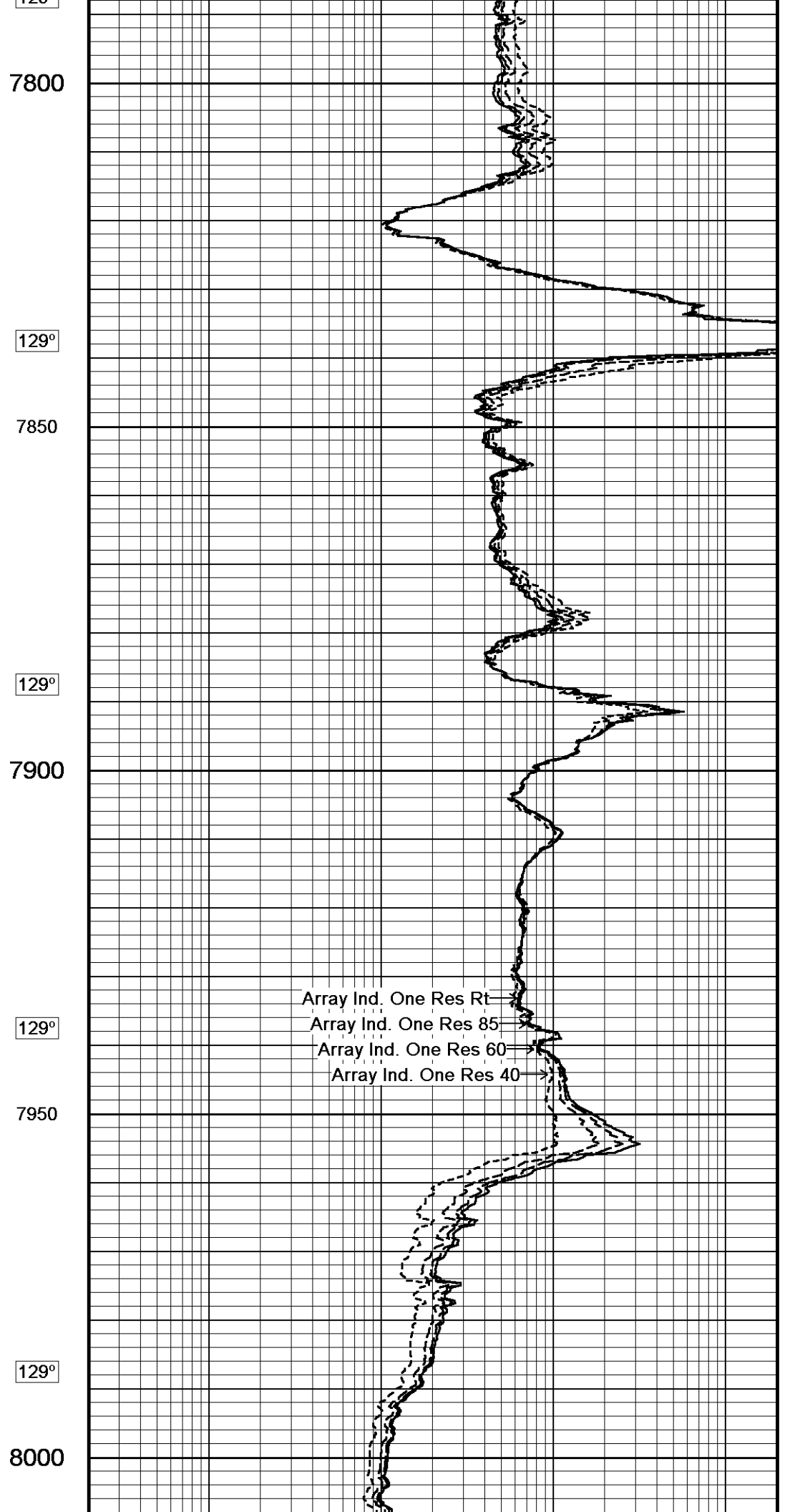
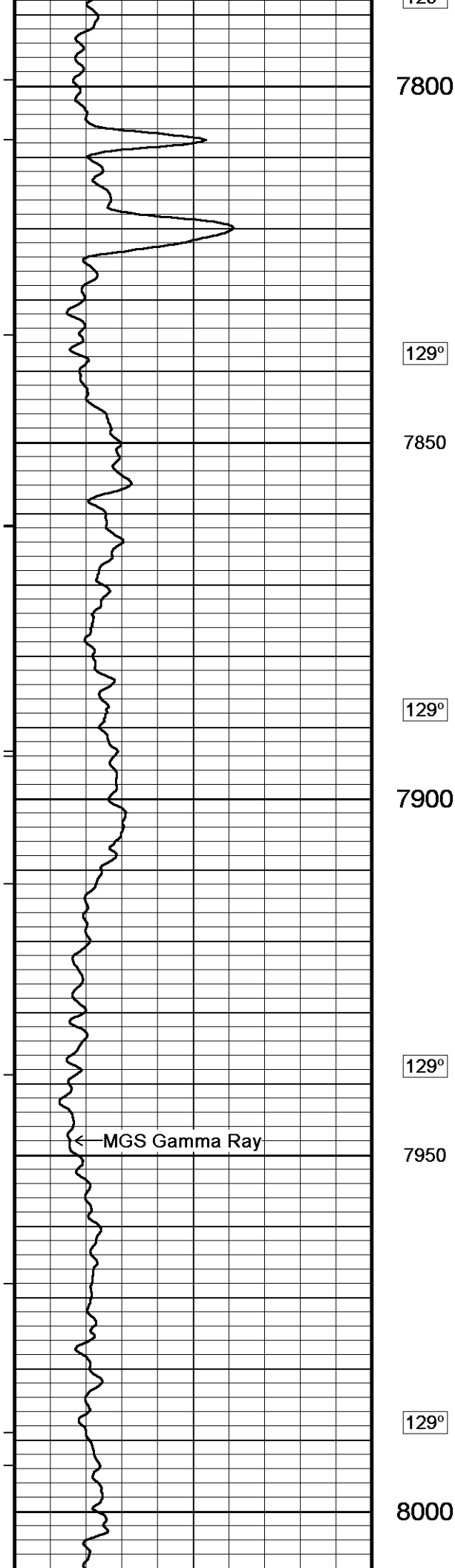
7300

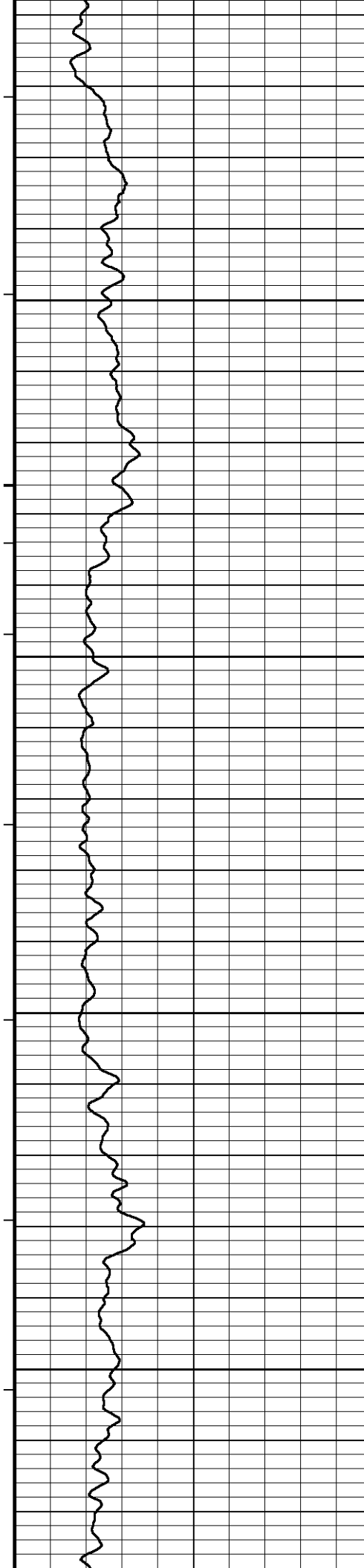
129°











129°

8050

129°

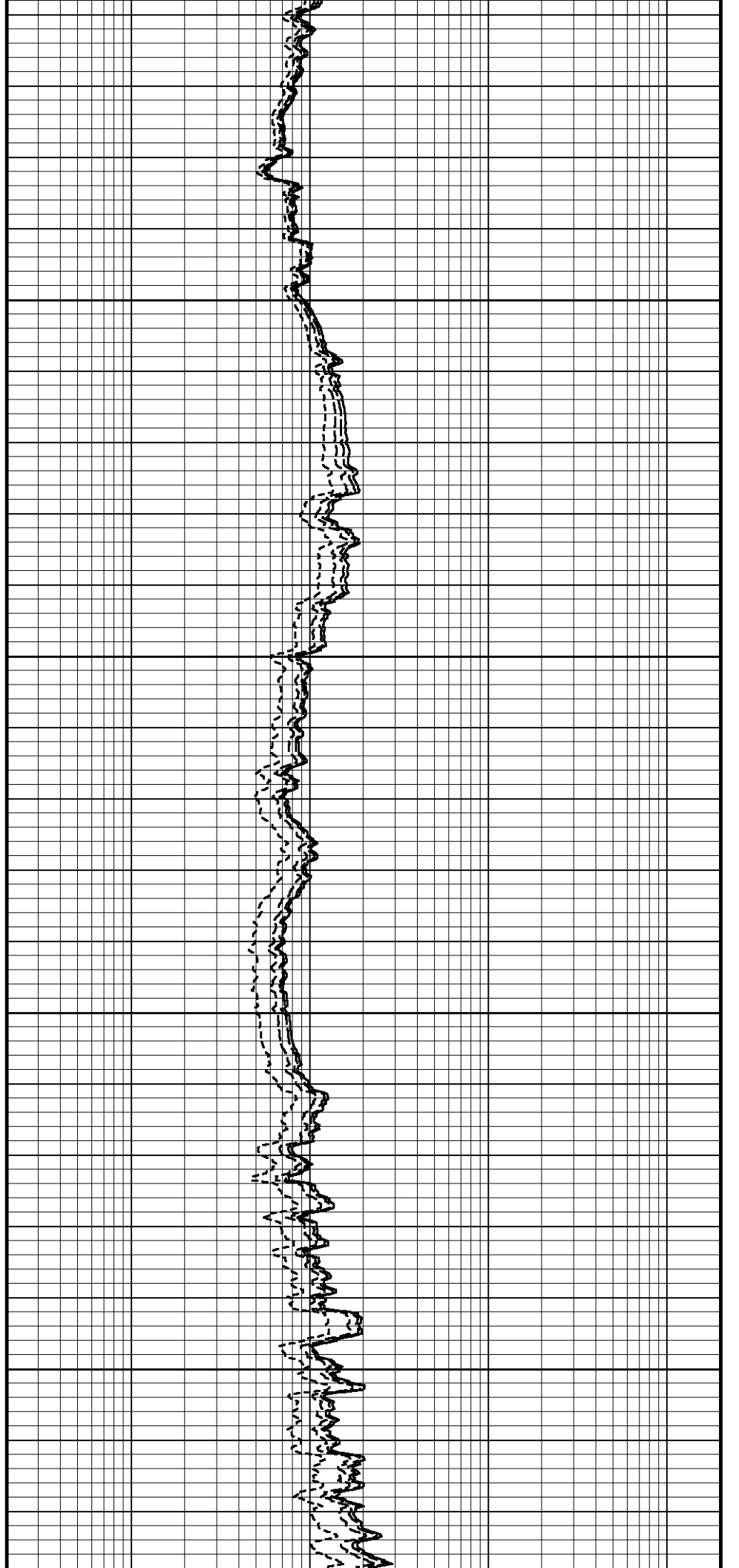
8100

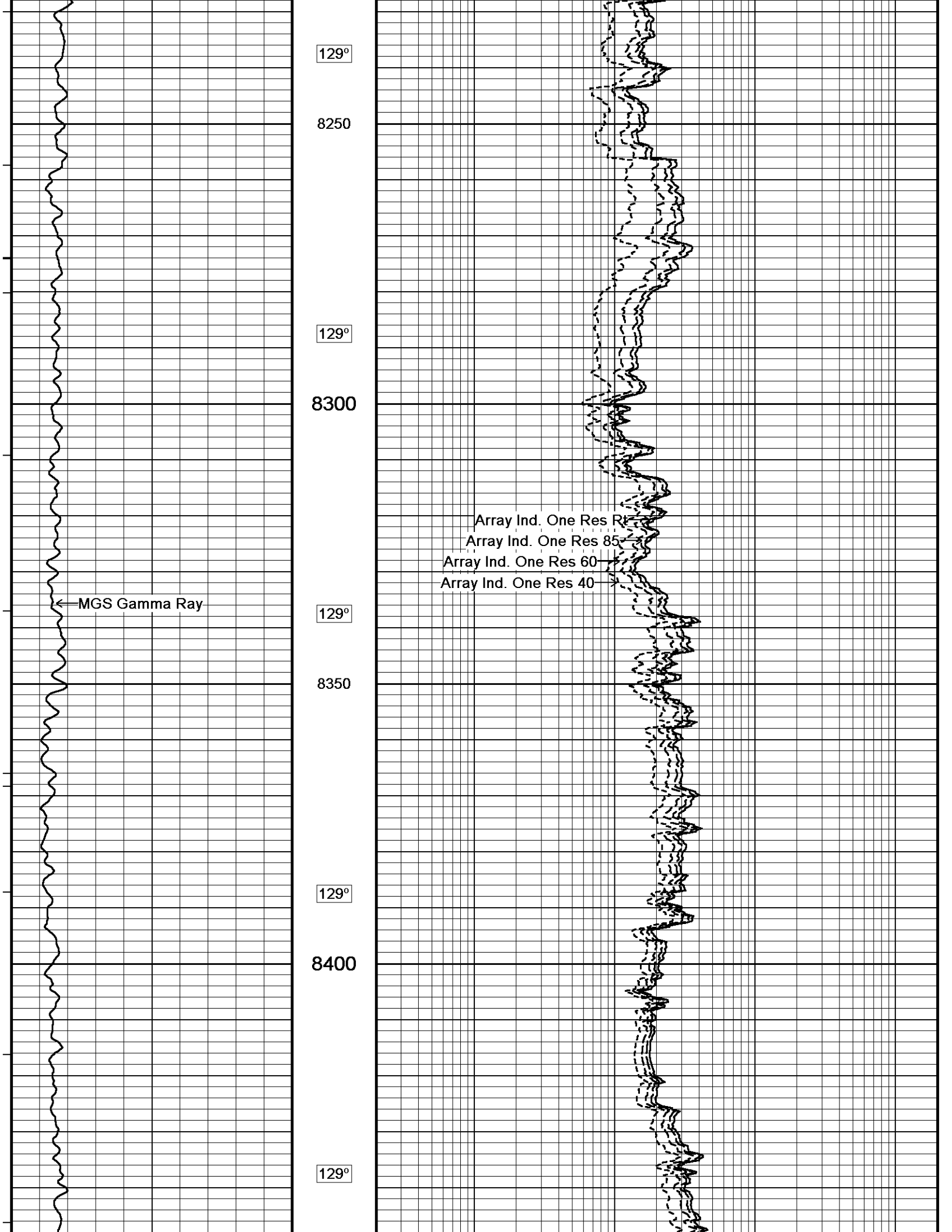
129°

8150

129°

8200





129°

8250

129°

8300

Array Ind. One Res R
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40

← MGS Gamma Ray

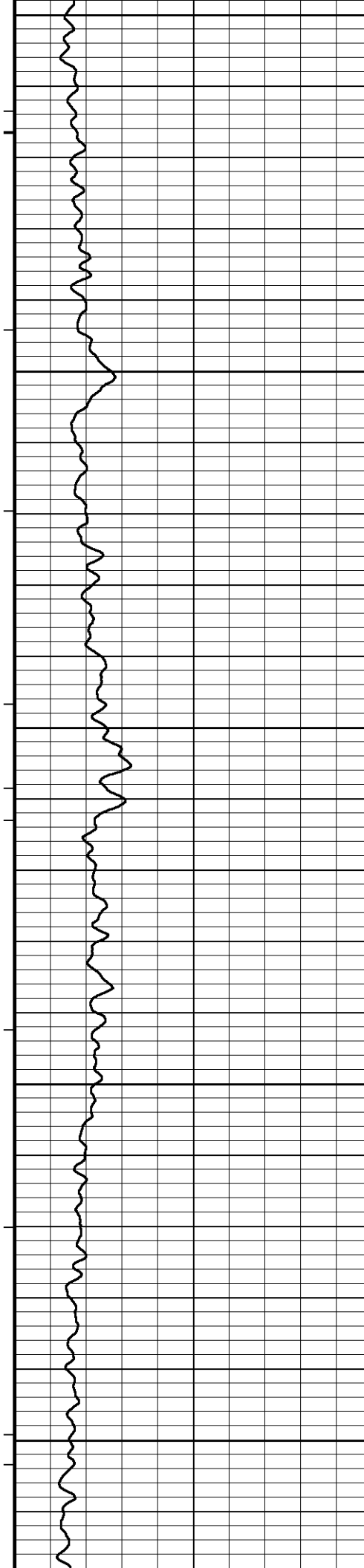
129°

8350

129°

8400

129°



8450

129°

8500

129°

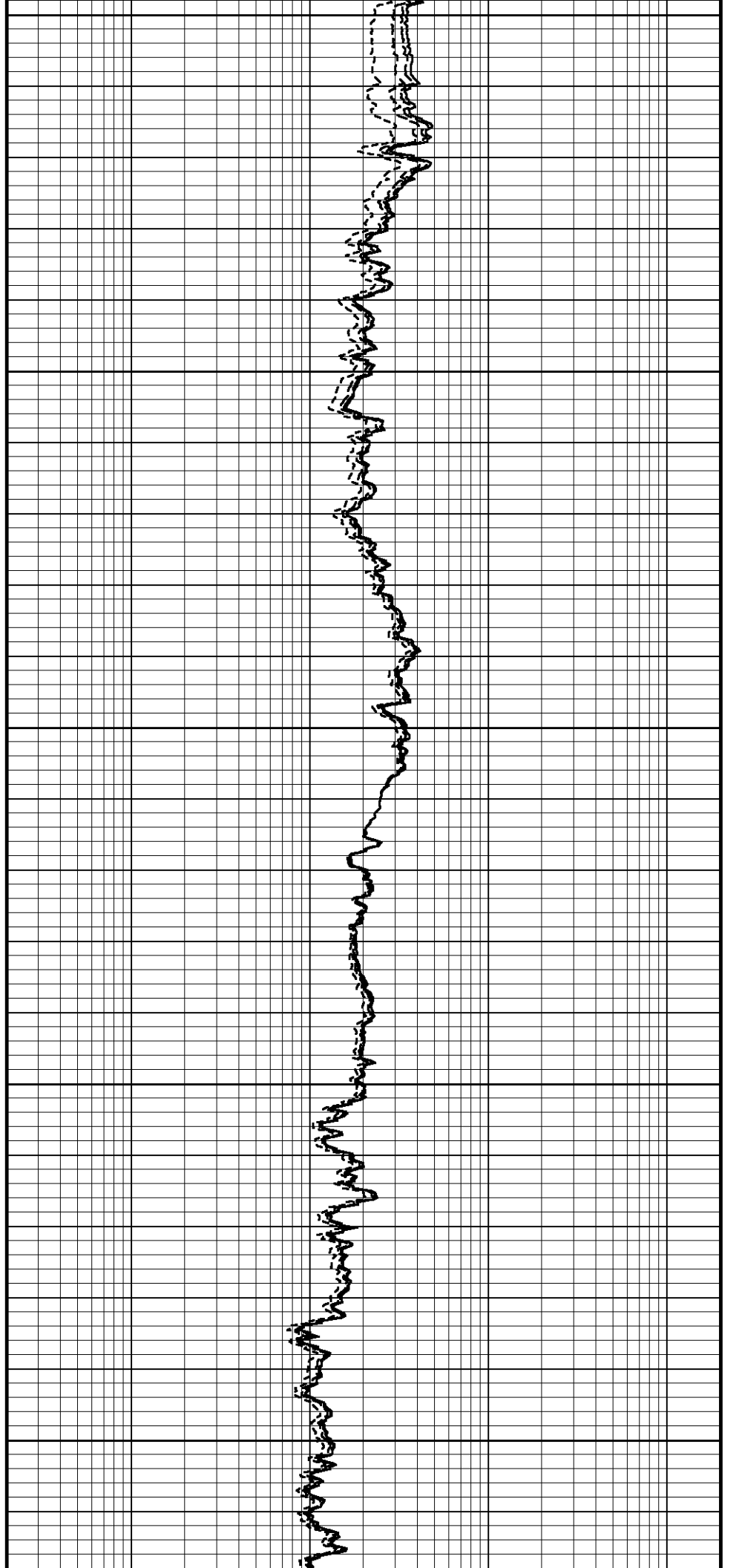
8550

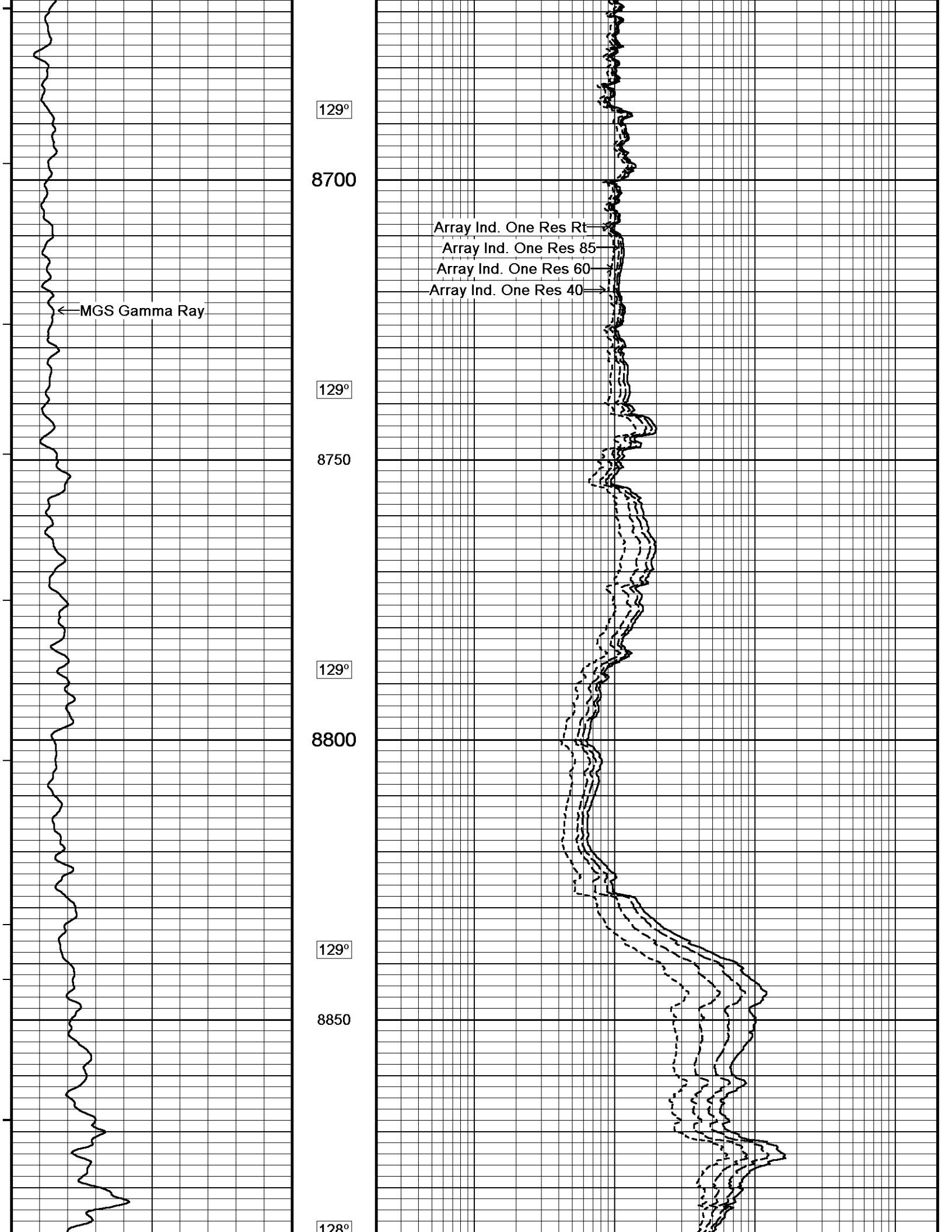
129°

8600

129°

8650





129°

8700

Array Ind. One Res Rt

Array Ind. One Res 85

Array Ind. One Res 60

Array Ind. One Res 40

← MGS Gamma Ray

129°

8750

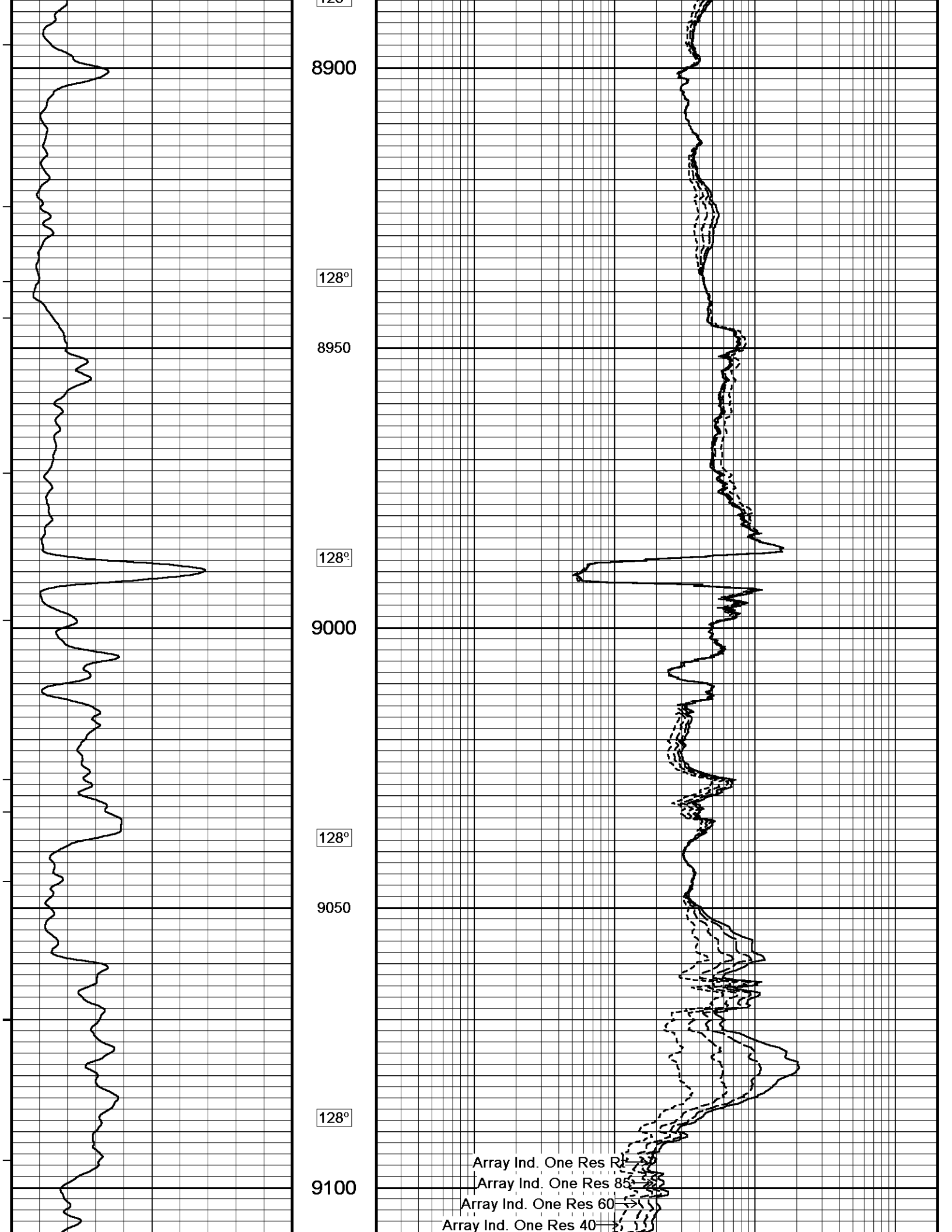
129°

8800

129°

8850

128°



8900

128°

8950

128°

9000

128°

9050

128°

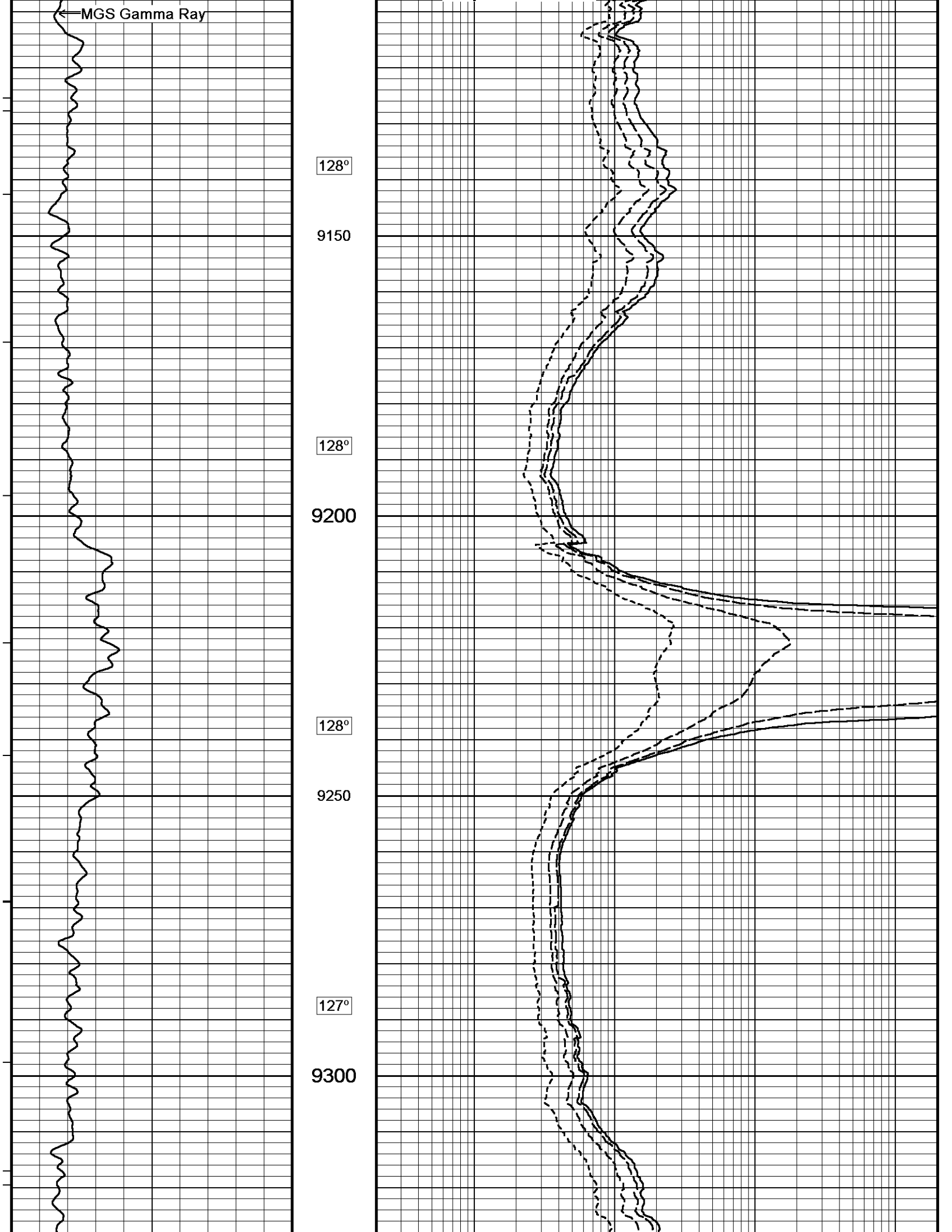
9100

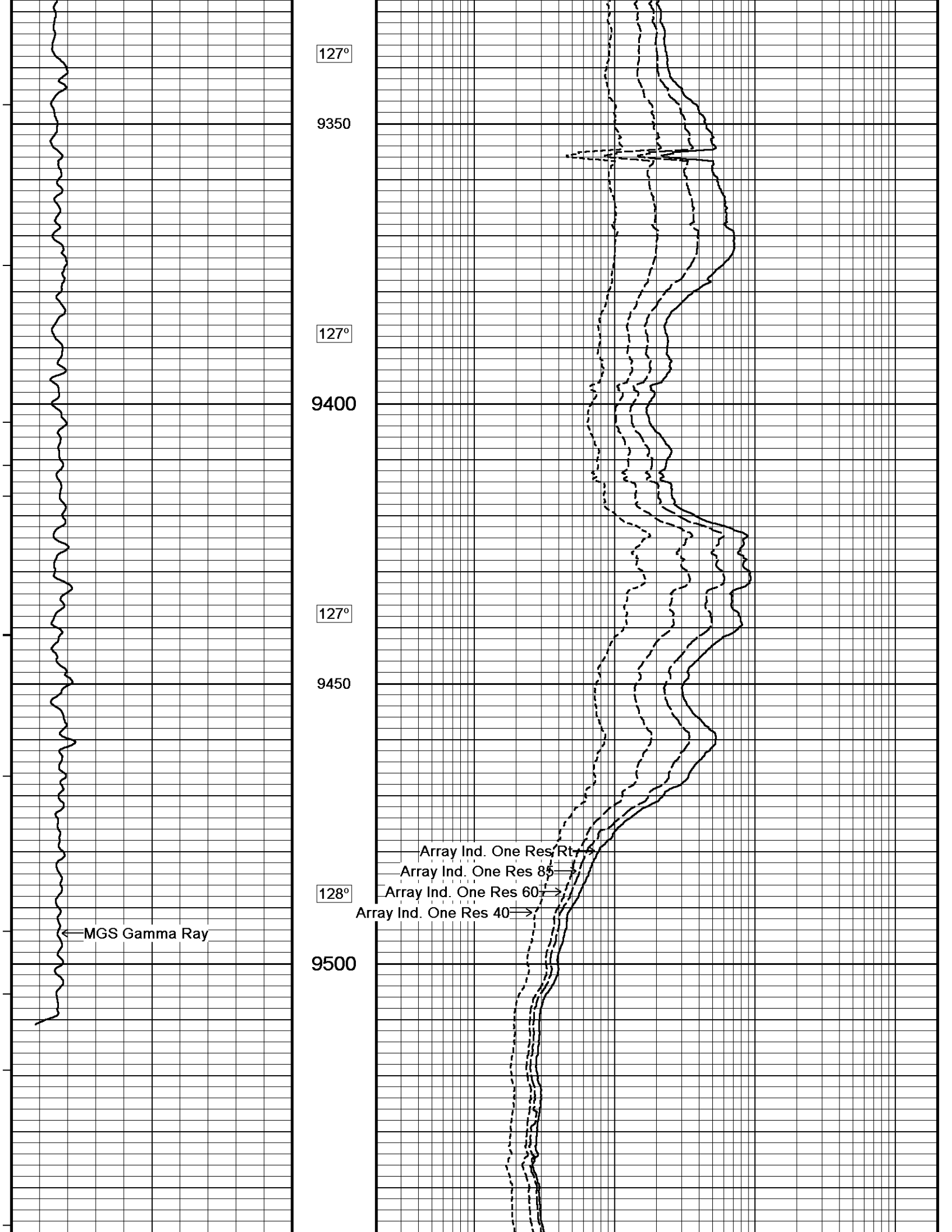
Array Ind. One Res R

Array Ind. One Res 85

Array Ind. One Res 60

Array Ind. One Res 40





127°

9350

127°

9400

127°

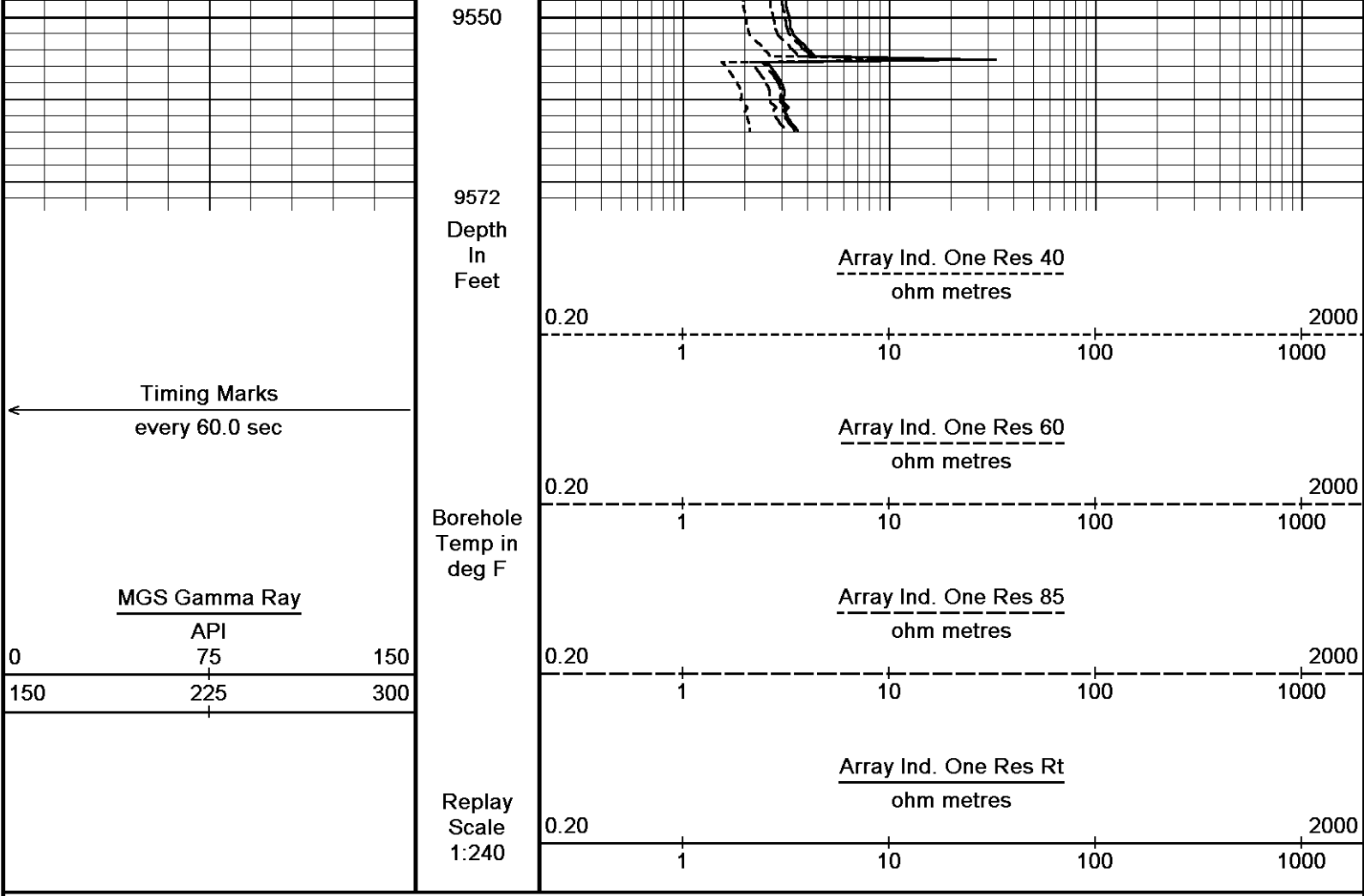
9450

128°

9500

MGS Gamma Ray

Array Ind. One Res Rt
Array Ind. One Res 85
Array Ind. One Res 60
Array Ind. One Res 40



Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 11-MAY-2013 02:46
 Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta Recorded on 11-MAY-2013 01:31
 System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

↑ DSC ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.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 11-MAY-2013,01:40

General Parameters		
Mud Resistivity	1.600	ohm-metres
Mud Resistivity Temperature	74.000	degrees F
Water Level	0.000	feet
Borehole Fluid 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	Density Caliper	
Rwa Parameters		
Porosity used	Limestone Density Por.	
Resistivity used	Array Ind. One 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 08-MAY-2013,00:52

	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 08-MAY-2013,00:52

Pre-filter Length	11
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SP Calibration MGS-C.J 136

Field Calibration on 08-MAY-2013,00:52

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

Gamma Calibration MGS-C.J 136

Field Calibration on 10-MAY-2013 04:53

	Measured	Calibrated (API)
Background	47	33
Calibrator (Gross)	1850	1294
Calibrator (Net)	1804	1261

Gamma Constants MGS-C.J 136

Last Edited on 10-MAY-2013,16:25

Gamma Calibrator Number	BLUE	
Mud Density	1.08	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 08-MAY-2013 00:49
Field Check on 10-MAY-2013 03:59

Base Calibration					
	Measured		Calibrated (cps)		
	Near	Far	Near	Far	
Ratio	2935	90	3714	110	
	32.709		33.764		
Field Calibrator at Base					
			Calibrated (cps)		
Ratio			1296	1890	
			0.685		
Field Check					
			Calibrated (cps)		
Ratio			1305	1902	
			0.686		

Neutron Constants MDN-B.J 390

Last Edited on 10-MAY-2013,03:53

p33312b

Neutron Source Id	blue	
Neutron Jig Number	No	
Epithermal Neutron	Density Caliper	
Caliper Source for Processing	0.00	inches
Stand-off	1.00	gm/cc
Mud Density	7.10	cu
Limestone Sigma	4.26	cu
Sandstone Sigma	4.70	cu
Dolomite Sigma	None	
Formation Pressure Source	N/A	kpsi
Formation Pressure	None	
Temperature Source	N/A	degrees F
Temperature	1.00	kppm
Mud Salinity	Not Applied	
Salinity Correction	None	
Formation Fluid Salinity Source	N/A	kppm
Formation Fluid Salinity	Not Applied	
Barite Mud Correction		

FE Calibration MFE-B.J 359

Base Calibration on 06-MAY-2013,03:37
Field Check on 10-MAY-2013 03:38

Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	960.4	126.8	
Base Check		280.9	
Field Check		280.9	

FE Constants MFE-B.J 359

Last Edited on 10-MAY-2013,03:37

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.	MGS External Temperature	
Stand-off	0.5	inches

Induction Calibration MAI-A.A 158

Base Calibration on 06-APR-2013,15:50
Field Check on 10-MAY-2013 03:31

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	0.0	0.0	11.1	3813.3	
2	0.0	0.0	28.6	3529.3	
3	0.0	0.0	26.0	2980.2	
4	0.0	0.0	17.2	2096.5	
Deep			14.2	1942.7	
Medium			39.5	3886.1	
Shallow			45.1	5234.9	
Array Temperature		0.0	68.0	Deg F	

Induction Constants MAI-A.A 158

Last Edited on 11-MAY-2013,01:40

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	

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 08-MAY-2013,00:40
	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 08-MAY-2013,00:40
Pre-filter Length	11	

Caliper Calibration MPD-C.J 395			Base Calibration on 12-APR-2013 12:45	Field Calibration on 10-MAY-2013 03:52
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	16915	4.01		
2	26128	5.96		
3	36016	7.98		
4	45536	9.86		
5	56240	11.88		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	5.95	5.96		

Photo Density Calibration MPD-C.J 395					Base Calibration on 12-APR-2013 13:04	Field Check on 10-MAY-2013 03:49
Density Calibration						
Base Calibration						
		Measured	Calibrated (sdu)			
	Near	Far	Near	Far		
Reference 1	54898	25312	59494	30754		
Reference 2	23577	2623	26390	2598		
Field Check at Base						
	1252.9	1430.5				
Field Check						
	1247.2	1428.2				

PE Calibration			
Base Calibration	Measured	Calibrated	

Base Calibration	measured	Calibrated		
	WS	WH	Ratio	Ratio
Background	225	1122		
Reference 1	23031	54699	0.426	0.367
Reference 2	6699	23434	0.290	0.270
Field Check at Base				
	225.3	1121.8		
Field Check				
	225.2	1116.6		

Density Constants MPD-C.J 395

Last Edited on 10-MAY-2013,16:25

Density Source Id	p21137b	
Nylon Calibrator Number	766	
Aluminium Calibrator Number	856	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.08	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:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta

Shuttle Running Tool 3.5")
SRT-A.A 70 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-F.A 200v Compact Battery Sub
MBS-F.A 112 LG: 10.61 ft WT: 70.5 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 68 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 456 LG: 2.17 ft WT: 24.3 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

MIS-A A Compact Inline Bowspring sub



61.76 ft GRGM - MGS Gamma Ray
59.77 ft GSXT - MGS External Temperature

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 395 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.B Compact Knuckle Joint
SKJ-E.B 469 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

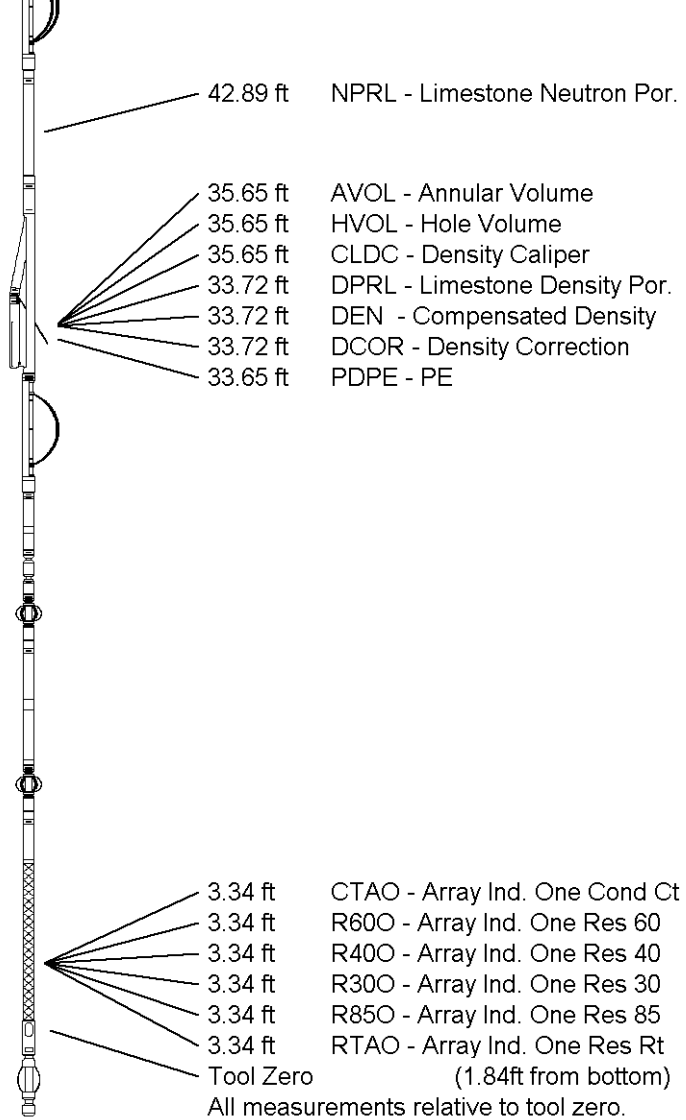
MIS-E.B Compact Inline Standoff sub
MIS-E.B 576 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric
MFE-B.J 359 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 573 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: 88.36 ft Weight: 637.1 lb



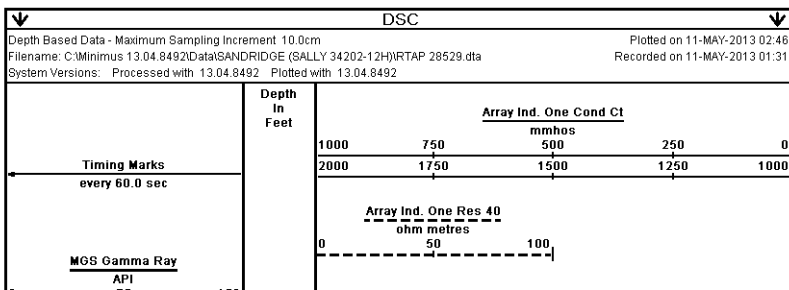
COMPANY SANDRIDGE ENERGY
WELL SALLY 3420 2-12H
FIELD COMANCHE PROSPECT
PROVINCE/COUNTY COMANCHE
COUNTRY/STATE USA / KANSAS

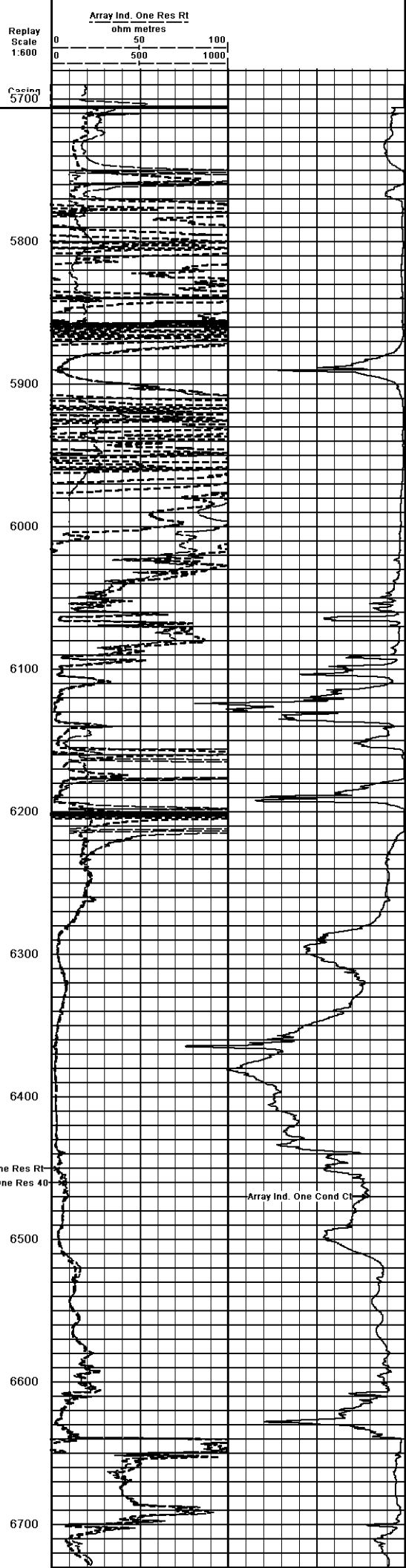
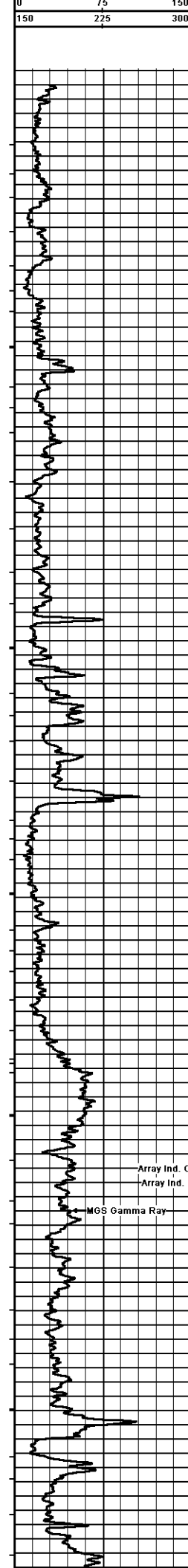
Elevation Kelly Bushing	1809.00	feet	First Reading	9564.00	feet
Elevation Drill Floor	1809.00	feet	Depth Driller	9599.00	feet
Elevation Ground Level	1791.00	feet	Depth Logger	9599.00	feet



CML MESSENGER SHUTTLE
ARRAY INDUCTION
LOG

Weatherford[®]





Replay Scale 1:600

Casing 5700

5800

5900

6000

6100

6200

6300

6400

6500

6600

6700

Array Ind. One Res Rt
ohm metres

0 50 100

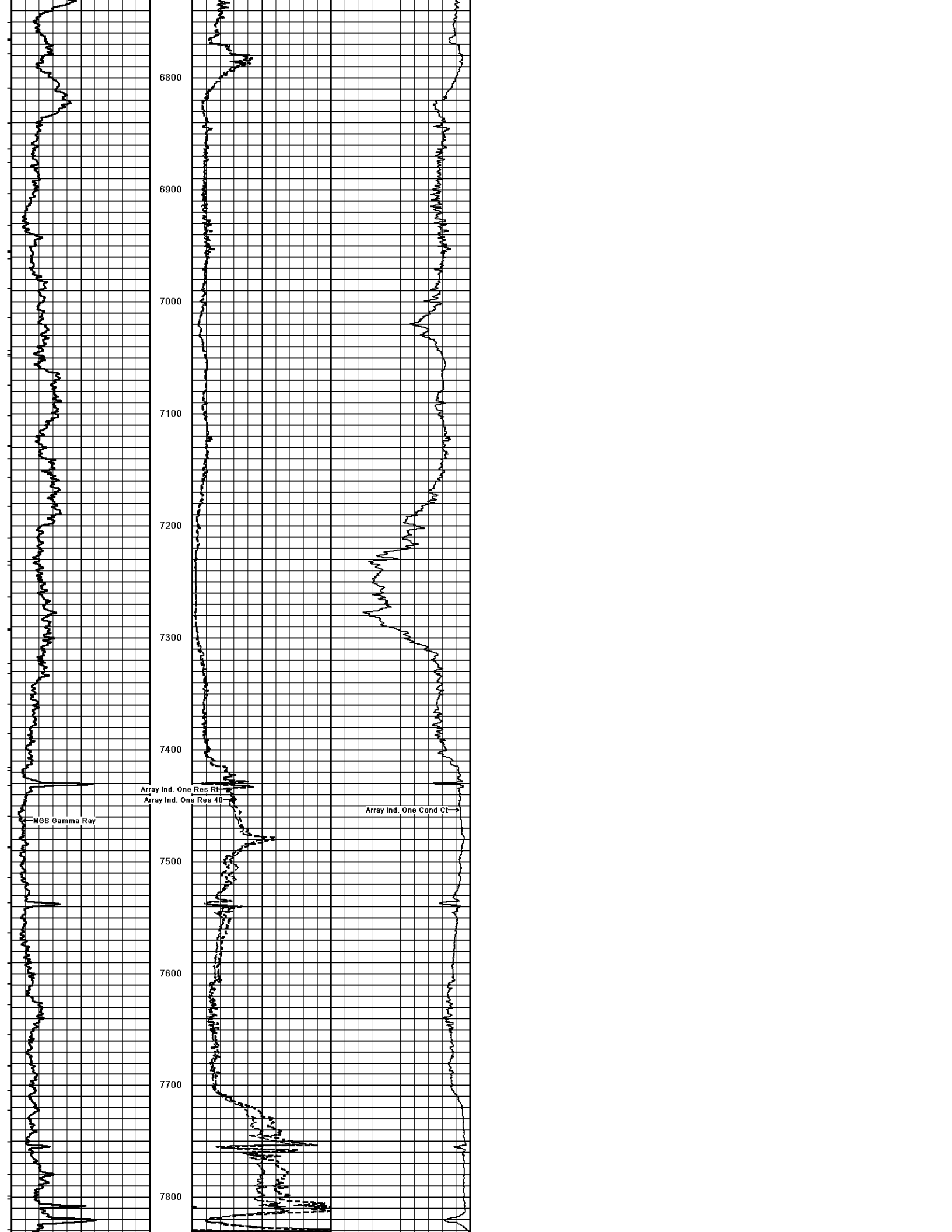
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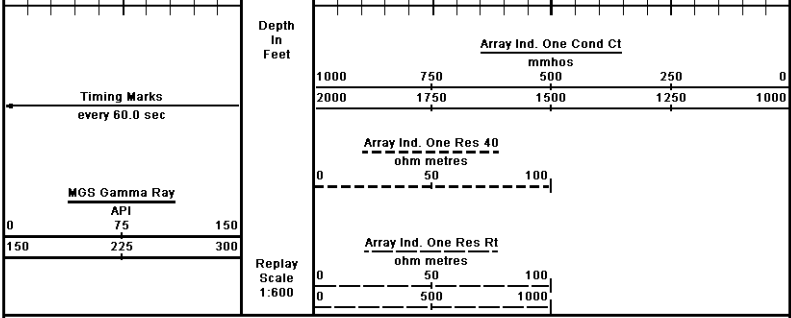
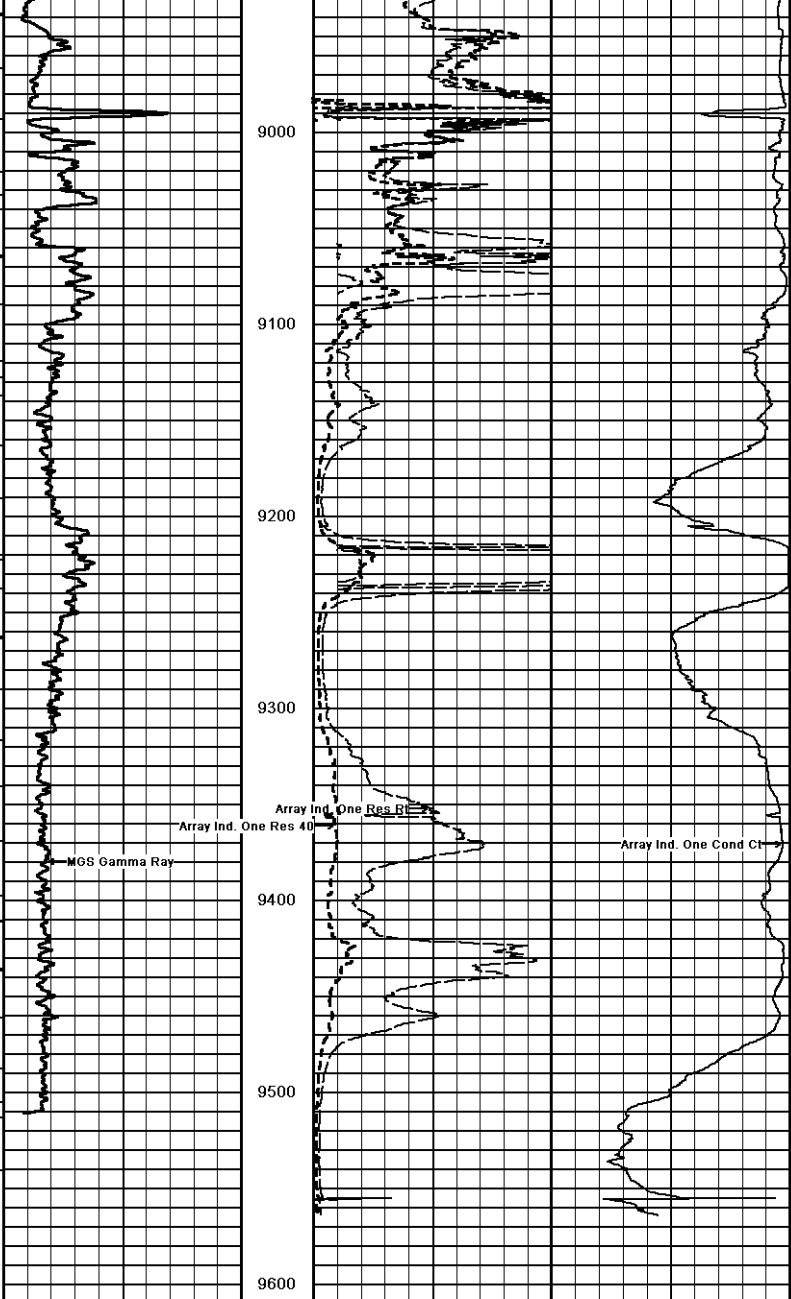
Array Ind. One Res Rt

Array Ind. One Res 40

MGS Gamma Ray

Array Ind. One Cond Ct






Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 11-MAY-2013 02:48
 Recorded on 11-MAY-2013 01:31
 System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

↑ DSC ↓

COMPANY	SANDRIDGE ENERGY				
WELL	SALLY 3420 2-12H				
FIELD	COMANCHE PROSPECT				
PROVINCE/COUNTY	COMANCHE				
COUNTRY/STATE	USA / KANSAS				
Elevation Kelly Bushing	1809.00	feet	First Reading	9564.00	feet
Elevation Drill Floor	1809.00	feet	Depth Driller	9599.00	feet
Elevation Ground Level	1791.00	feet	Depth Logger	9599.00	feet



CML MESSENGER SHUTTLE
 ARRAY INDUCTION
 LOG

