



**Weatherford**<sup>®</sup>

**CML MESSENGER SHUTTLE  
ARRAY INDUCTION  
FOCUSED ELECTRIC LOG**

COMPANY **SANDRIDGE ENERGY**  
WELL **UNRUH 2629 1-17H**  
FIELD **MONGER**  
PROVINCE/COUNTY **GRAY**  
COUNTRY/STATE **USA / KANSAS**  
LOCATION **SHL: 220' FSL & 400' FWL  
BHL: 330' FNL & 400' FWL**

SEC **17** TWP **26S** RGE **29W** Other Services  
MPD/MDN  
API Number **15-069-20387-01** SGS  
Permit Number  
Permanent Datum G.L., Elevation 2760 feet  
Log Measured From DF  
Drilling Measured From D.F. @ 20 FEET

Elevations: KB 2780.00  
DF 2780.00  
GL 2760.00

Date	10-SEP-2012
Run Number	ONE
Depth Driller	9320.00 feet
Depth Logger	9320.00 feet
First Reading	9315.00 feet
Last Reading	3500.00 feet
Casing Driller	5364.00 feet
Casing Logger	5364.00 feet
Bit Size	6.125 inches
Hole Fluid Type	WATER
Density / Viscosity	9.00 lb/USg 34.00 CP
PH / Fluid Loss	8.00 15.60 ml/30Min
Sample Source	FLOWLINE
Rm @ Measured Temp	1.50 @ 80.0 ohm-m
Rmf @ Measured Temp	1.20 @ 80.0 ohm-m
Rmc @ Measured Temp	1.80 @ 80.0 ohm-m
Source Rmf / Rmc	CALC CALC
Rm @ BHT	0.96 @ 124.0 ohm-m
Time Since Circulation	0 HOURS
Max Recorded Temp	124.00 deg F
Equipment Name	COMPACT
Equipment / Base	18006 OKC
Recorded By	D. ROWELL
Witnessed By	W. SCOTT
S.O.# / AFE	3531693 / DC12325

**BOREHOLE RECORD**

Last Edited: 10-SEP-2012 08:30

Bit Size inches	Depth From feet	Depth To feet
6.125	5364.00	9320.00

**CASING RECORD**

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	5364.00	26.00

**REMARKS**

LOGGED WITH WLS VER 13.03 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

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST

DRILL PIPE DEPTH DURING DEPLOYMENT - 9215  
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 9315

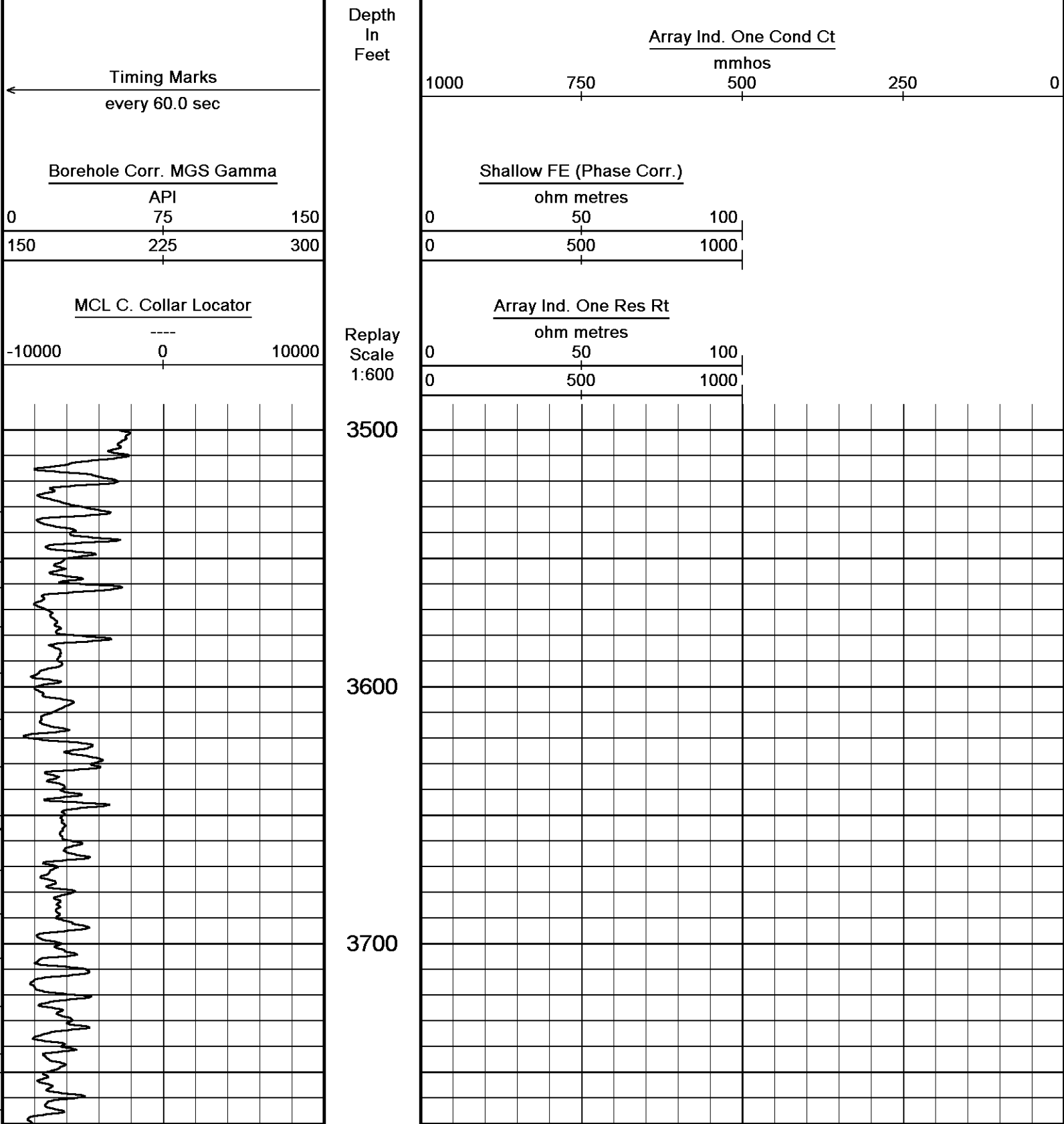
SERVICE ORDER # 3531693  
RIG: LARIAT 20

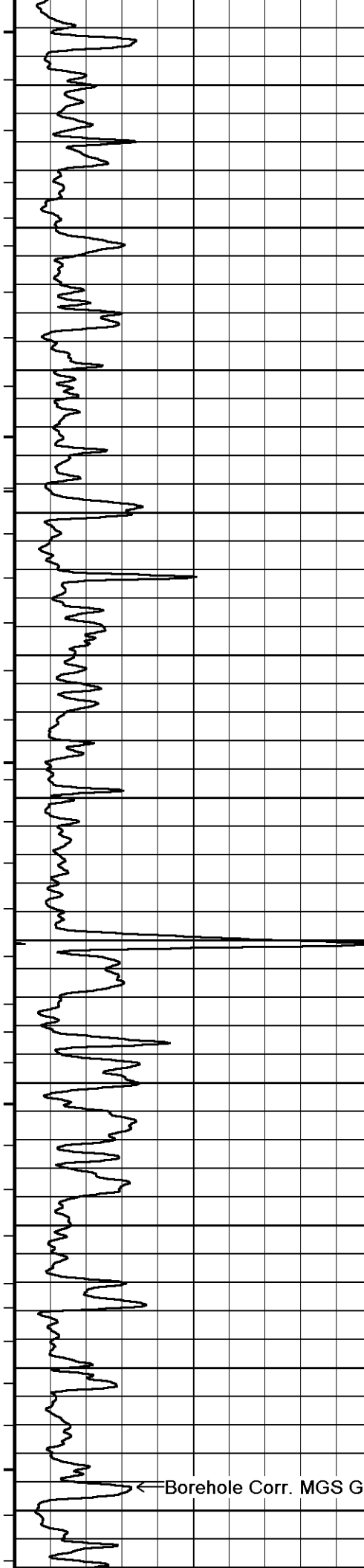
OPERATORS: R BRADSHAW B BALLINGER

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.

**DSC**

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 10-SEP-2012 10:54  
 Filename: C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 RTAP.dta Recorded on 10-SEP-2012 10:17  
 System Versions: Processed with 13.03.7779 Plotted with 13.03.7779





3800

3900

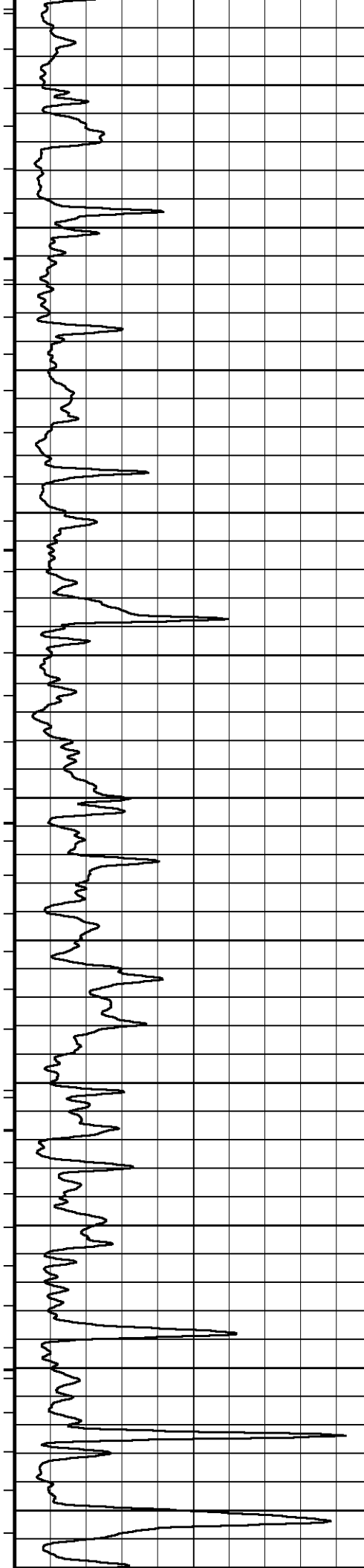
4000

4100

4200

4300

← Borehole Corr. MGS Gamma



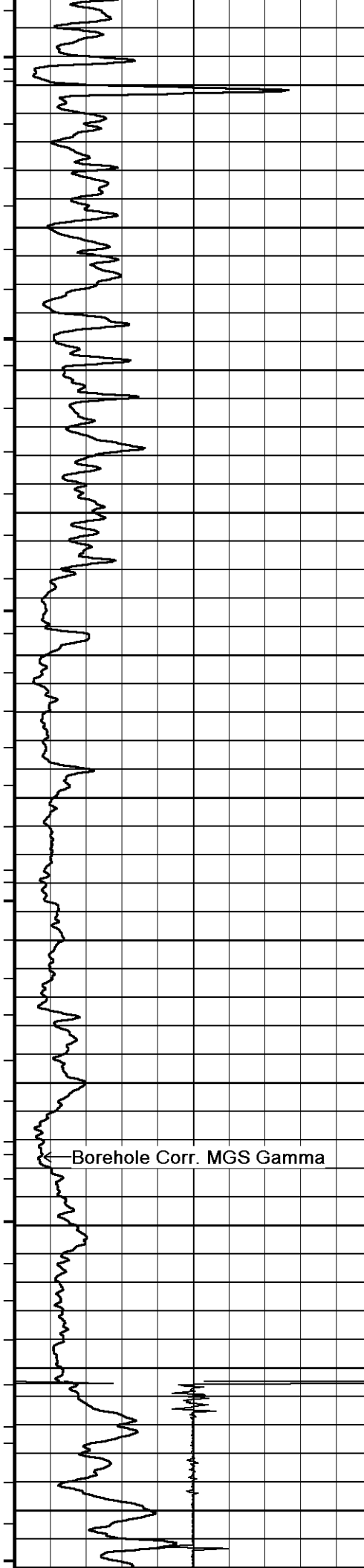
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4500

4600

4700

4800



4900

5000

5100

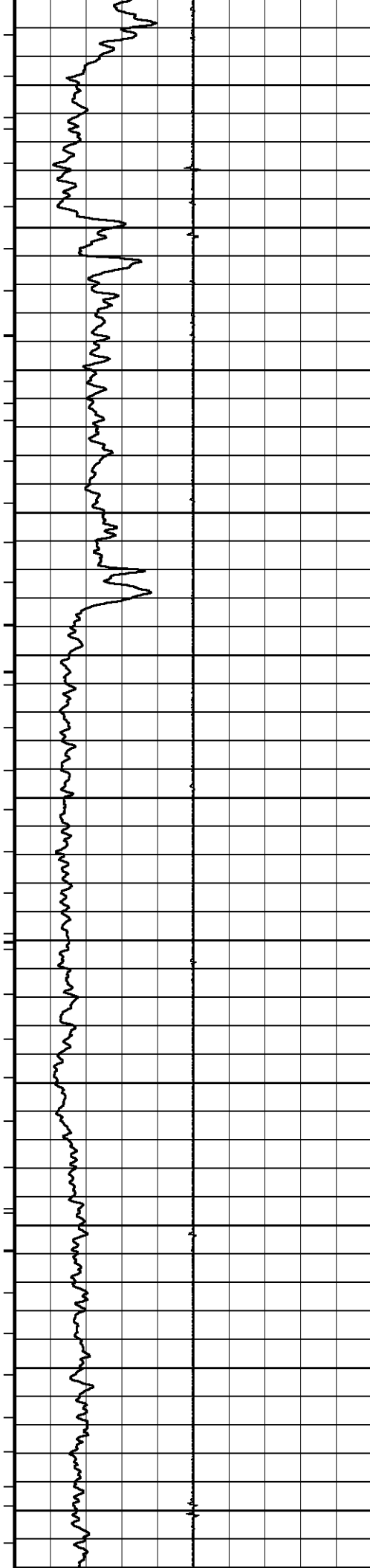
5200

5300

Casing  
Shoe

5400

Borehole Corr. MGS Gamma



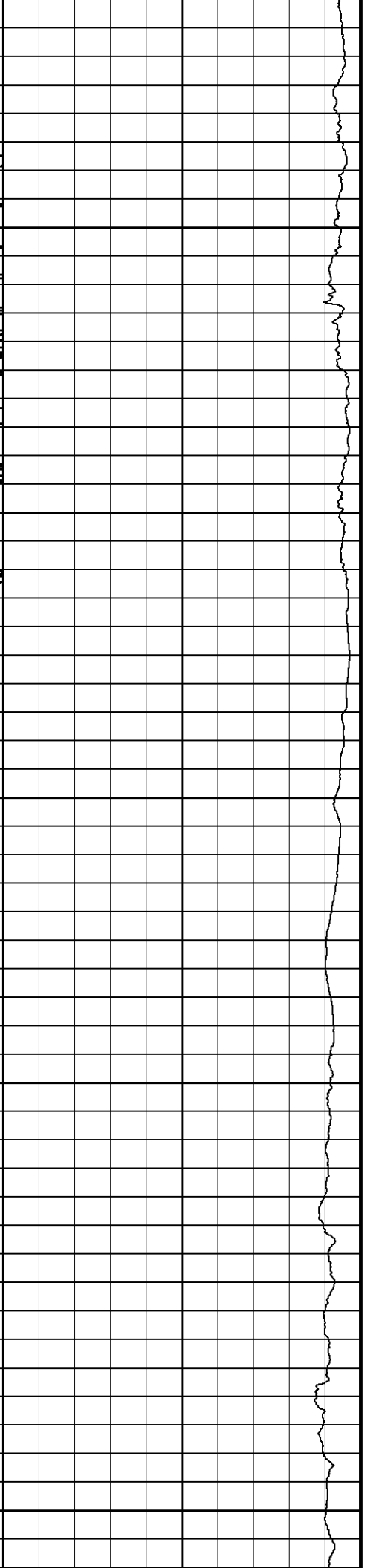
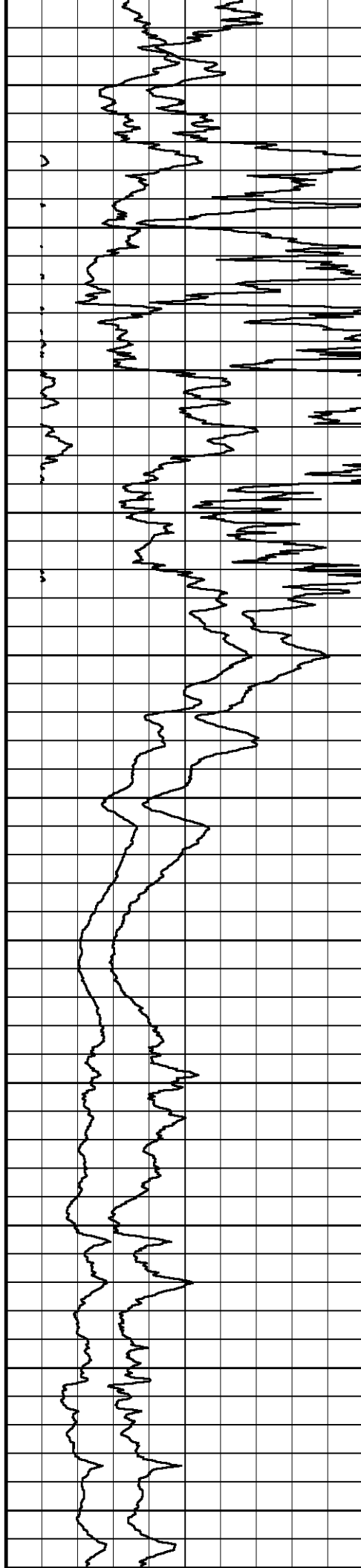
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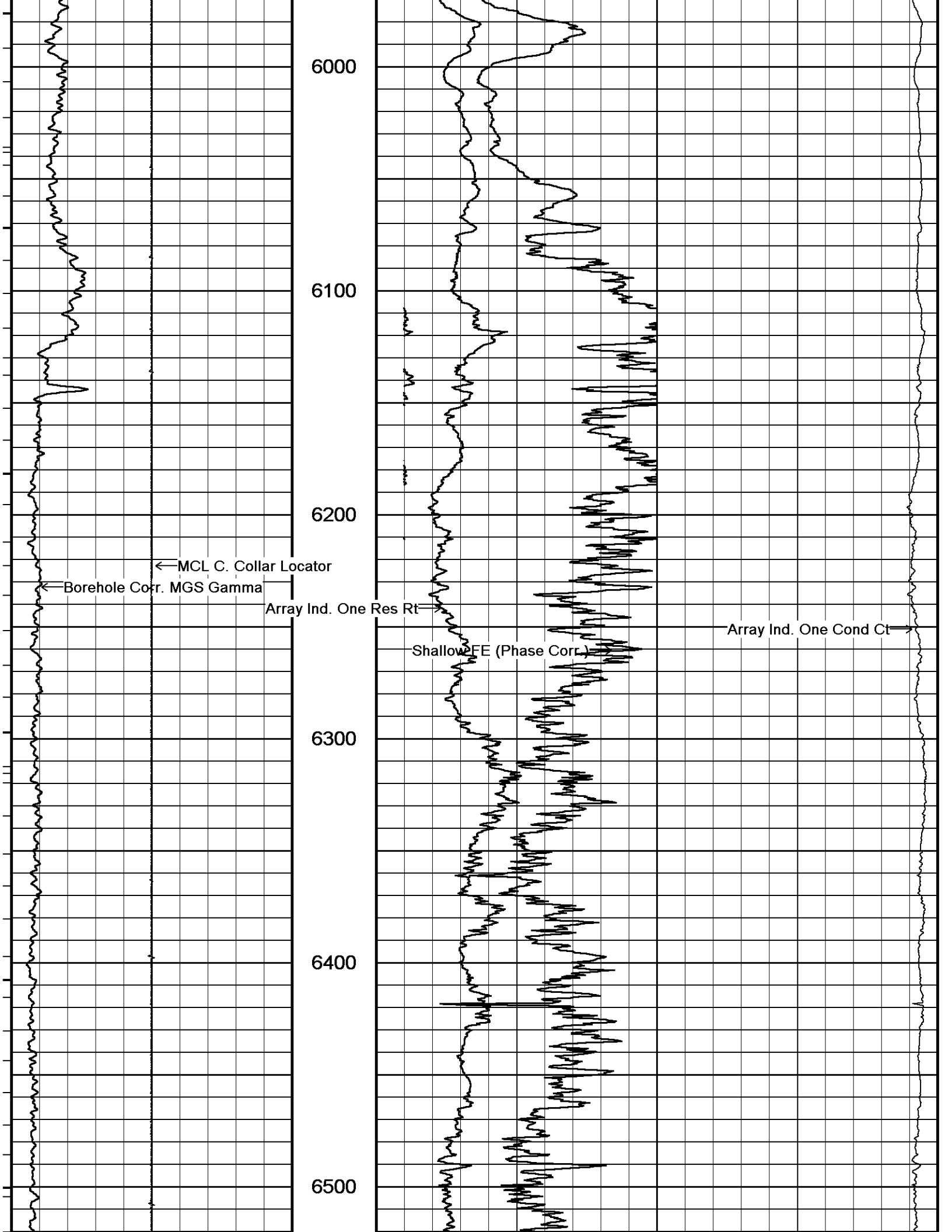
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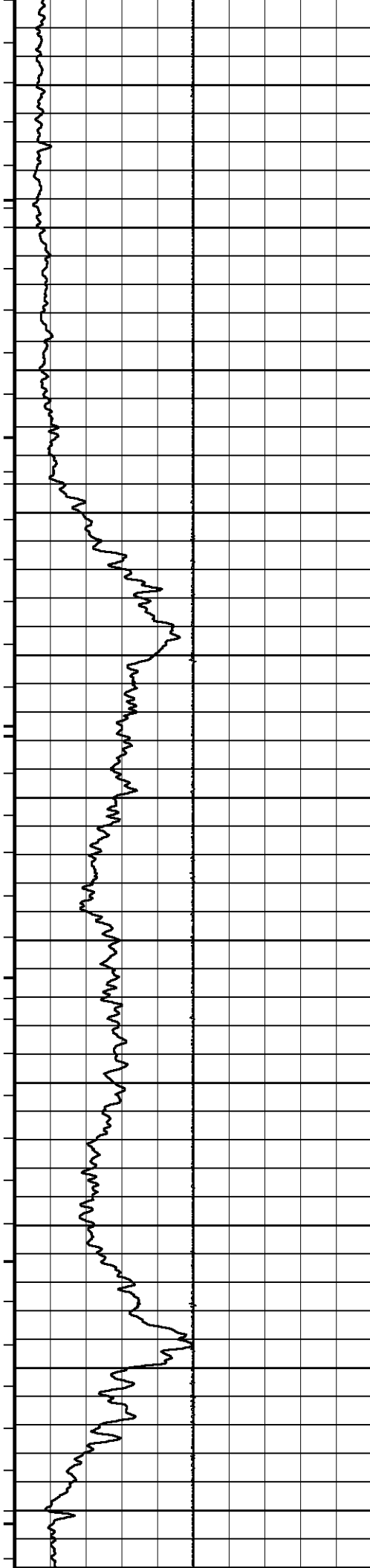
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5800

5900







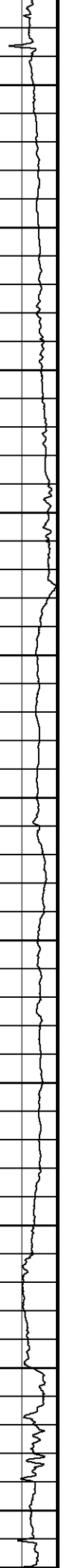
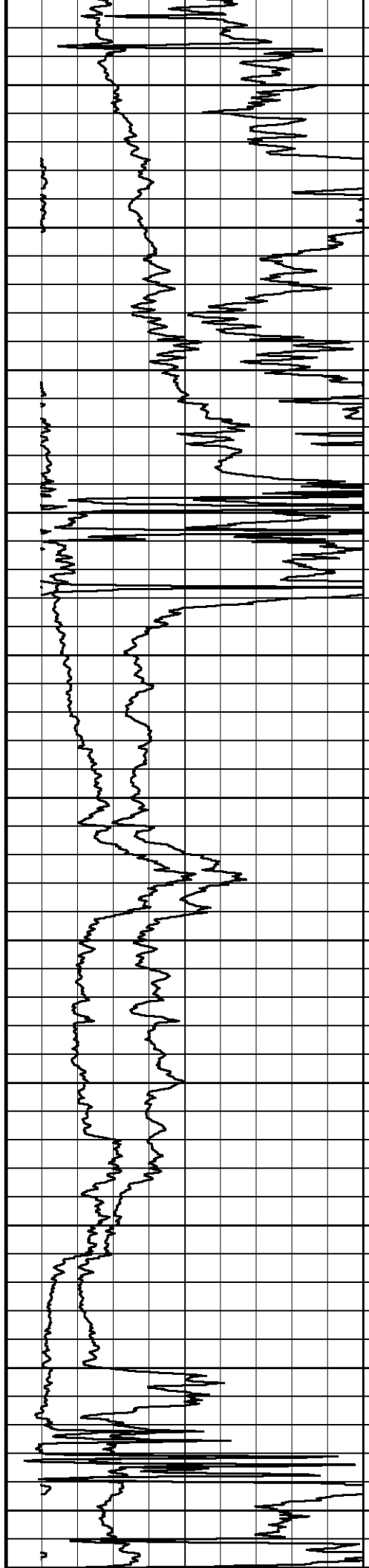
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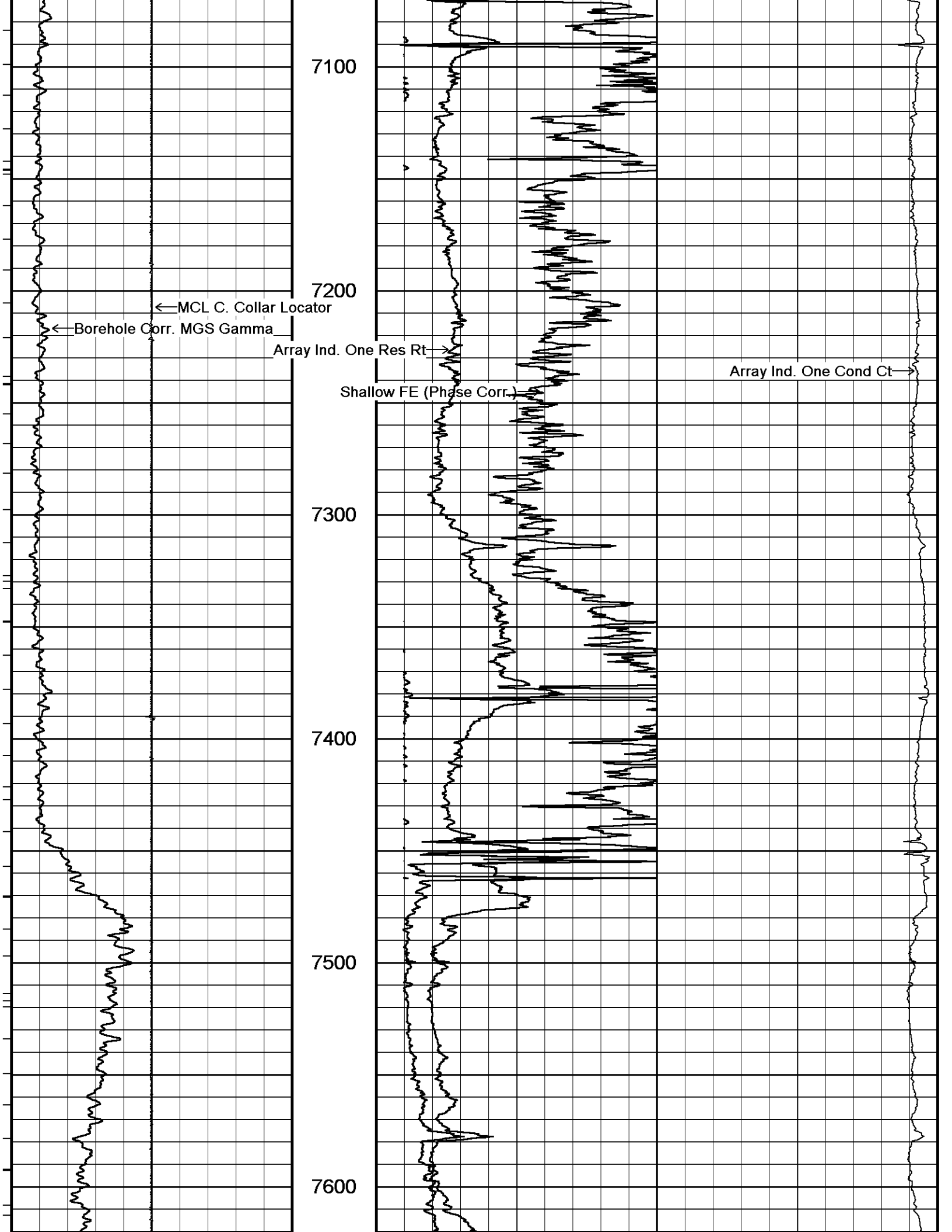
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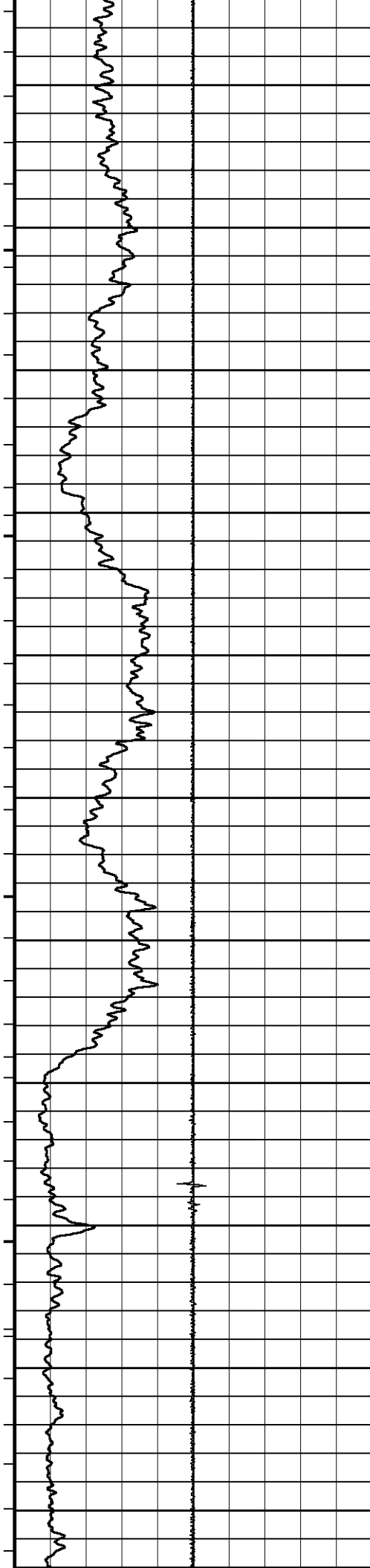
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6900

7000







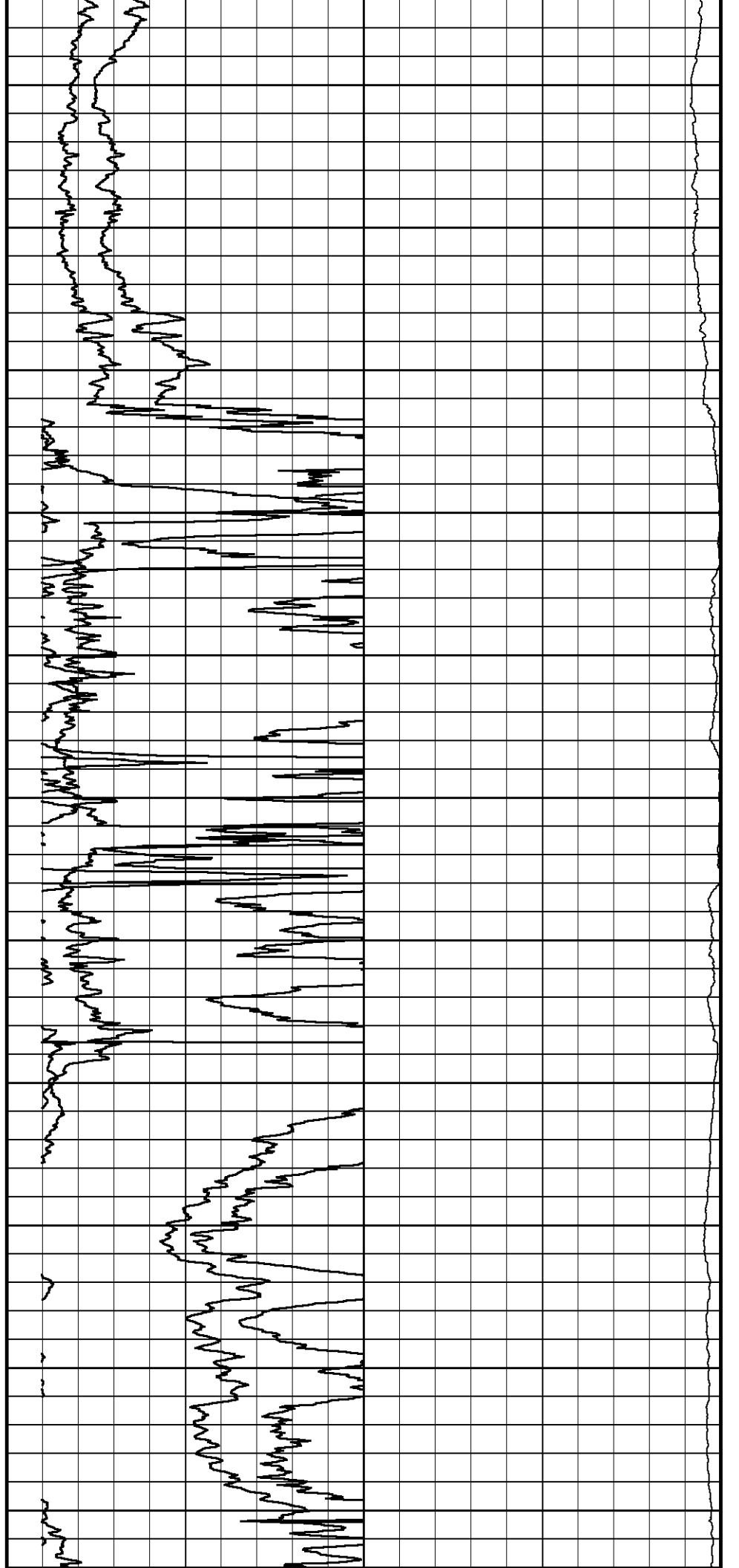
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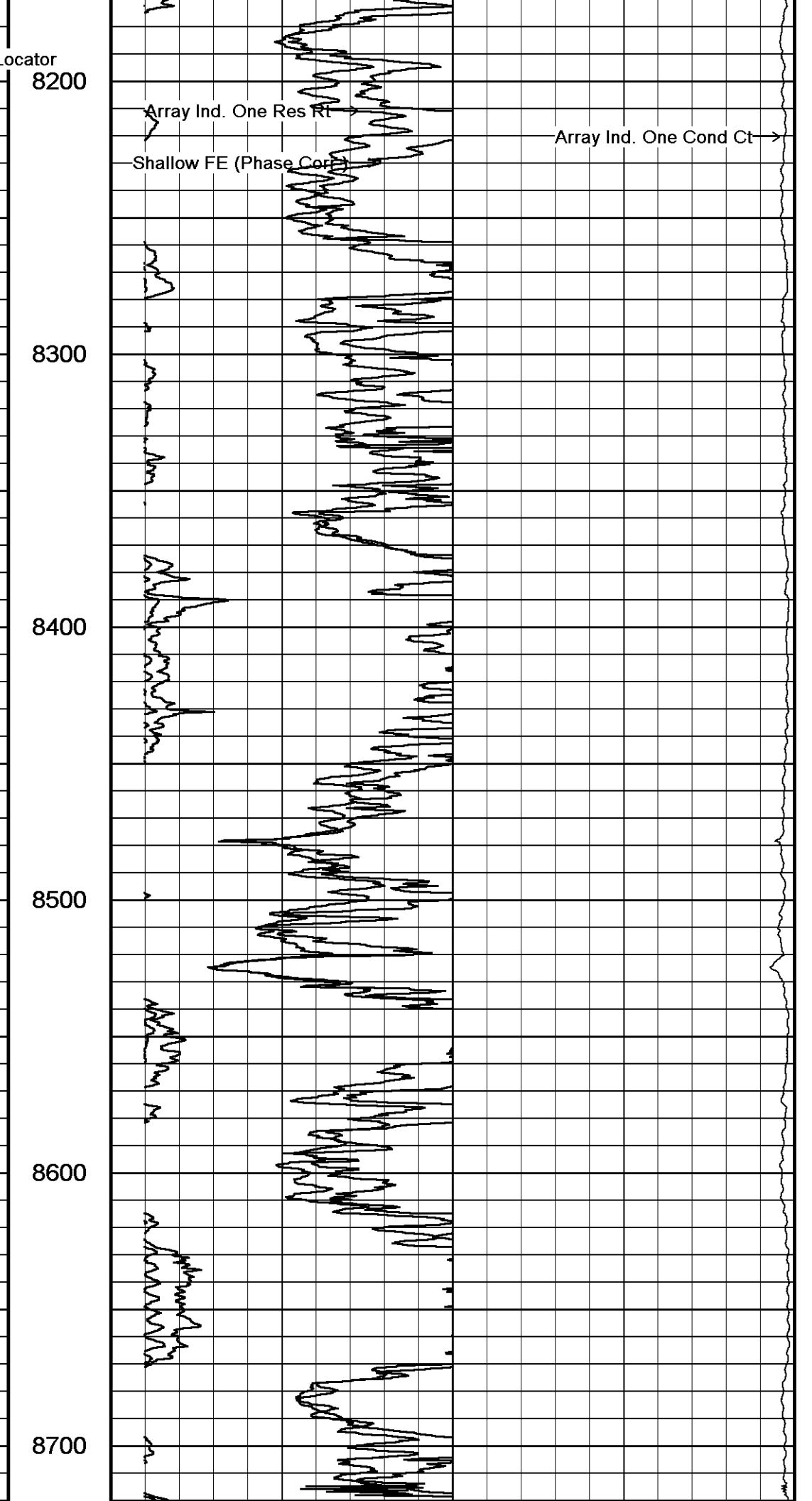
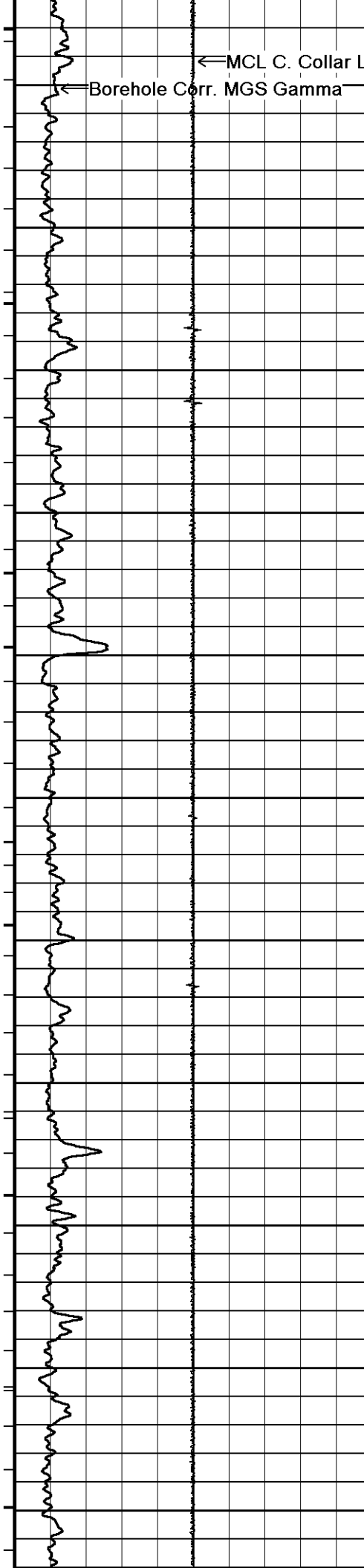
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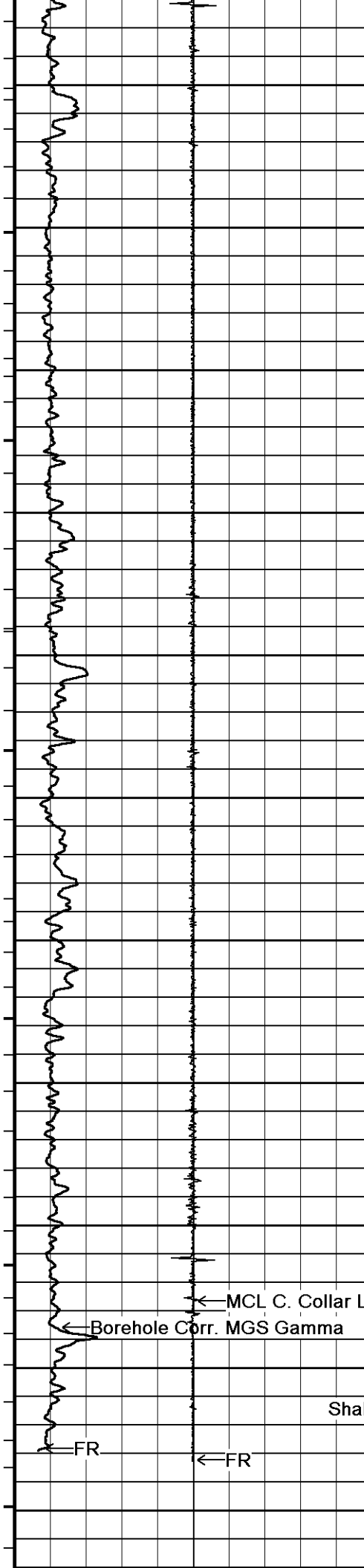
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8000

8100







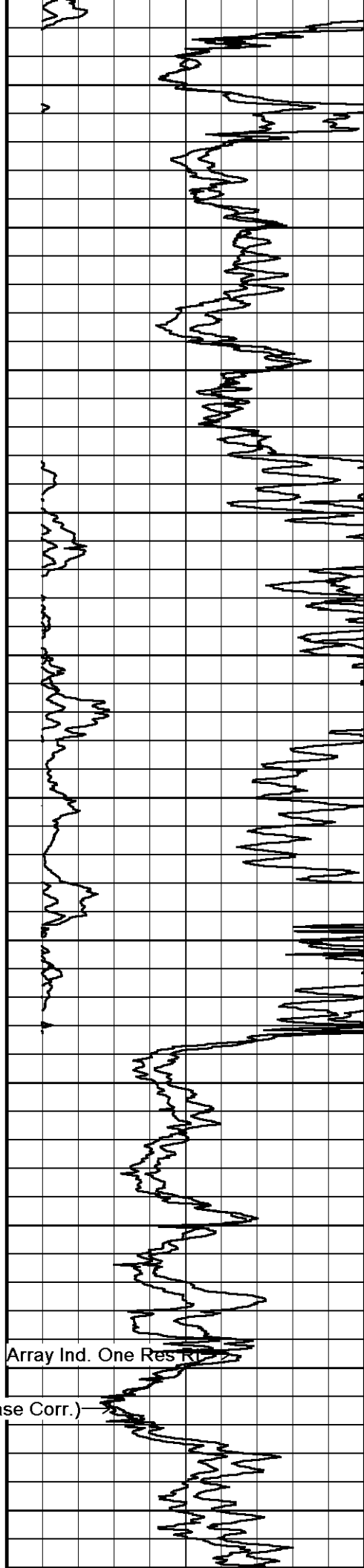
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8900

9000

9100

9200



Array Ind. One Res R1

Shallow FE (Phase Corr.)

Array Ind. One Cond Ct

← MCL C. Collar Locator

← Borehole Corr. MGS Gamma

FR ← FR

Timing Marks  
every 60.0 sec

Borehole Corr. MGS Gamma

0	API	150
	75	
150	225	300

MCL C. Collar Locator

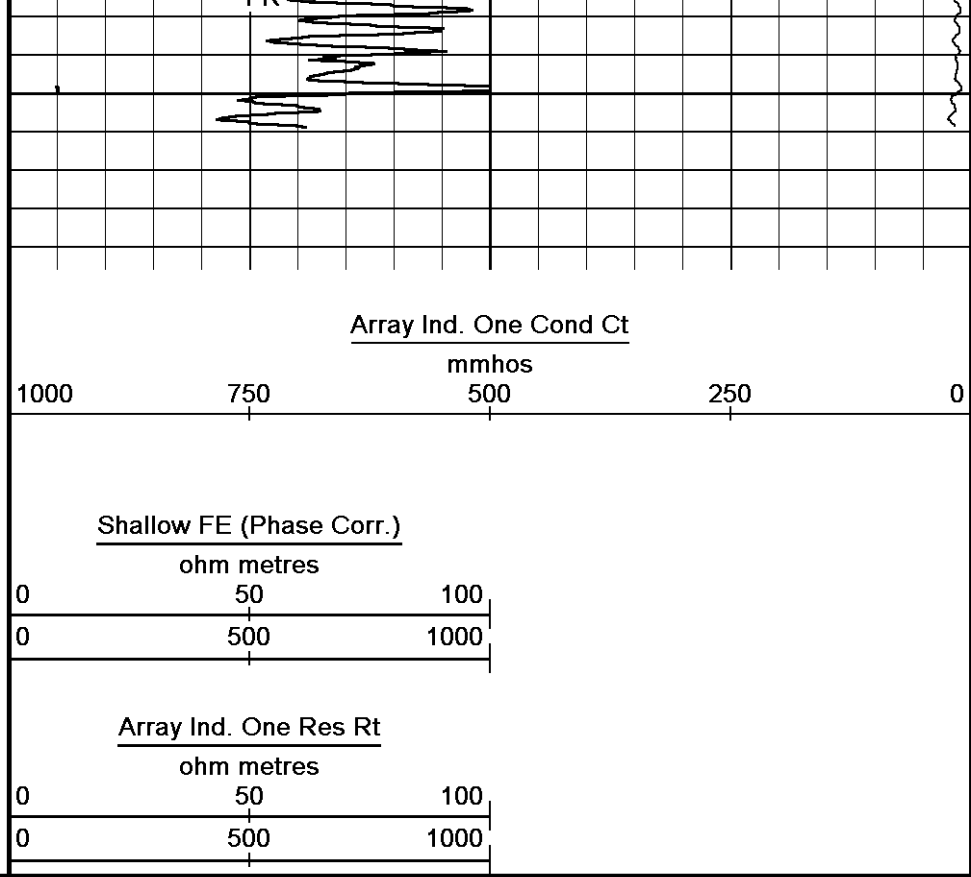
-10000	0	10000
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9300

9340

Depth  
In  
Feet

Replay  
Scale  
1:600



Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 10-SEP-2012 10:54  
 Filename: C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 RTAP.dta Recorded on 10-SEP-2012 10:17  
 System Versions: Processed with 13.03.7779 Plotted with 13.03.7779

↑ DSC ↑

↓ DSC ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 10-SEP-2012 10:54  
 Filename: C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 RTAP.dta Recorded on 10-SEP-2012 10:17  
 System Versions: Processed with 13.03.7779 Plotted with 13.03.7779

Timing Marks  
every 60.0 sec

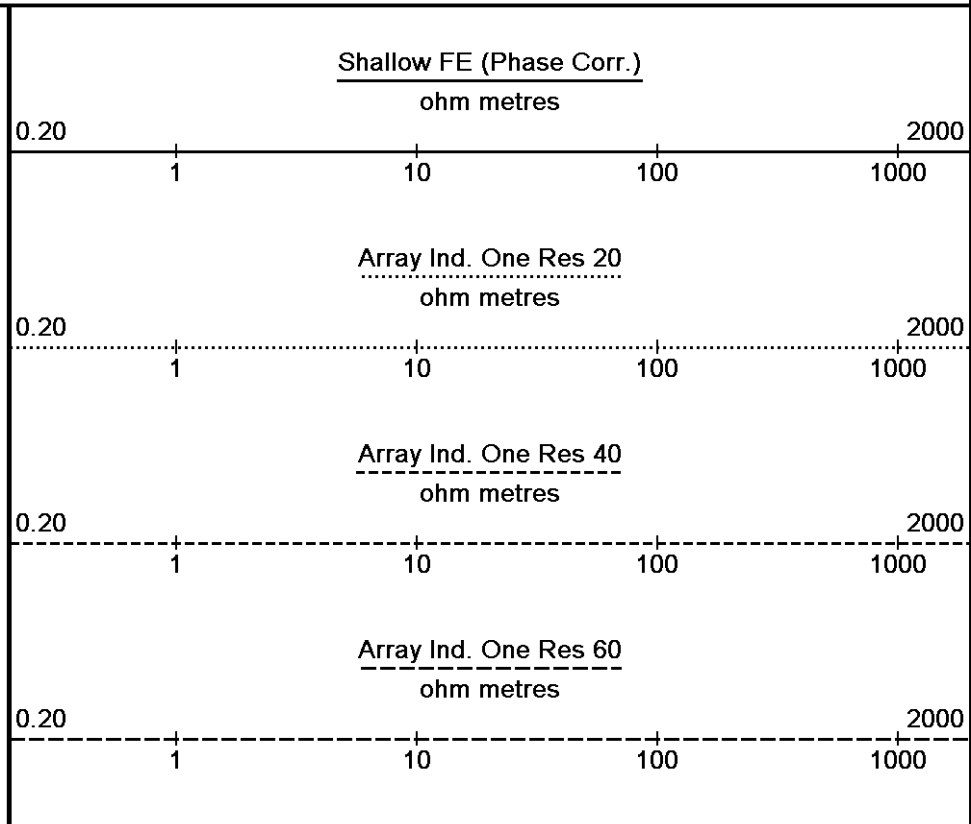
Borehole Corr. MGS Gamma

0	API	150
	75	
150	225	300

MCL C. Collar Locator

-10000	0	10000
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Depth  
In  
Feet



Replay  
Scale  
1:240

ohm metres  
0.20 1 10 100 2000

5338

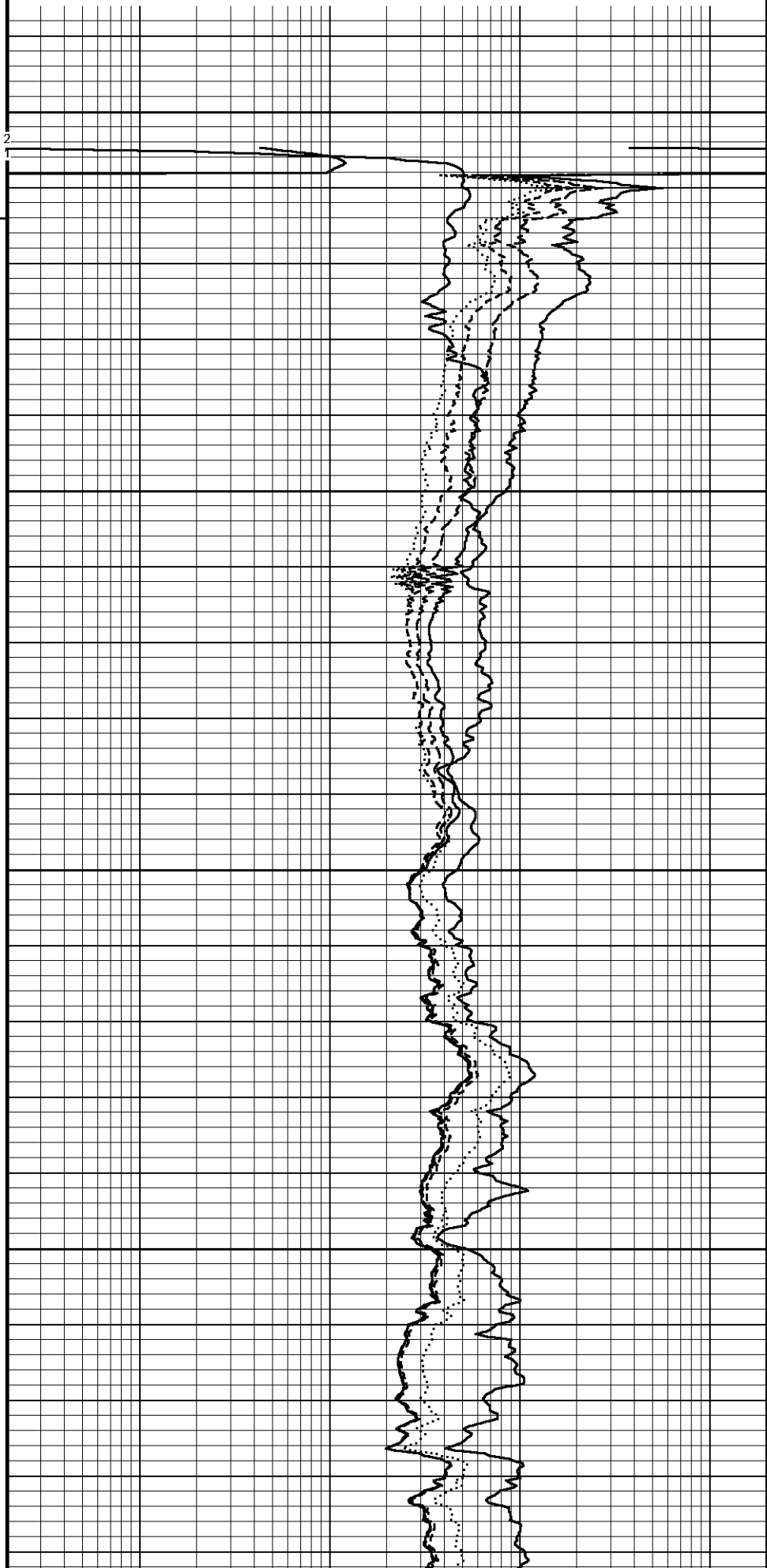
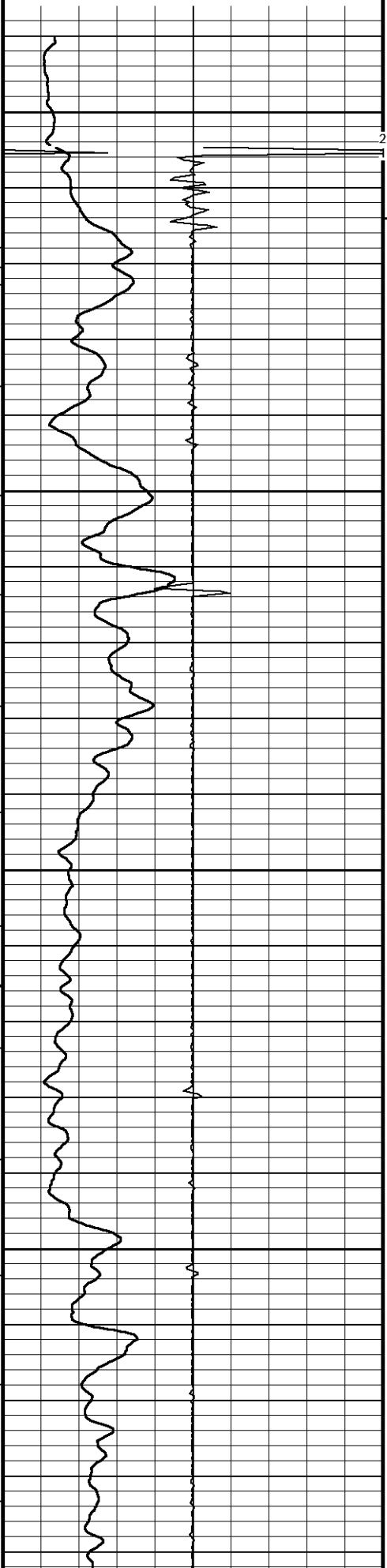
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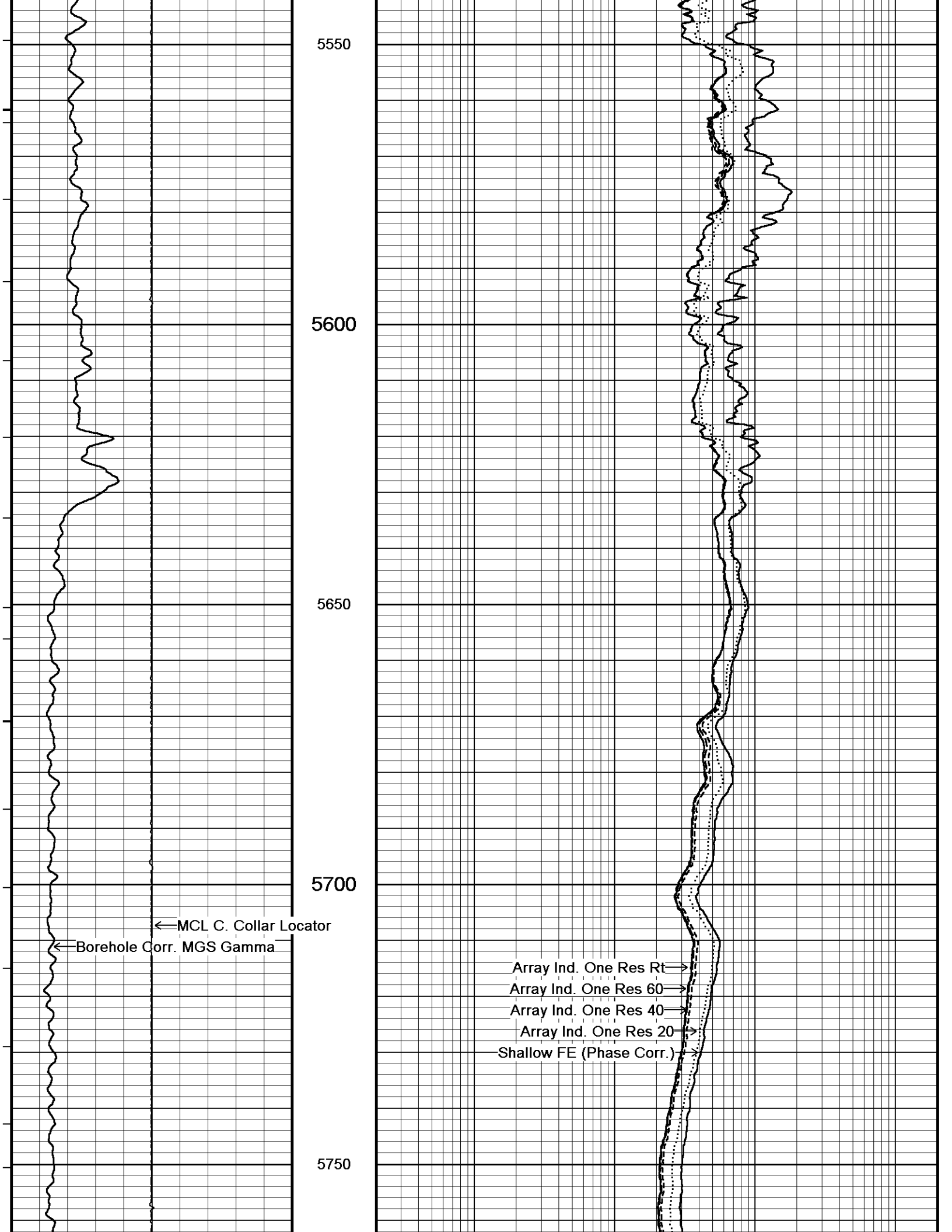
Casing  
Shoe

5400

5450

5500





5550

5600

5650

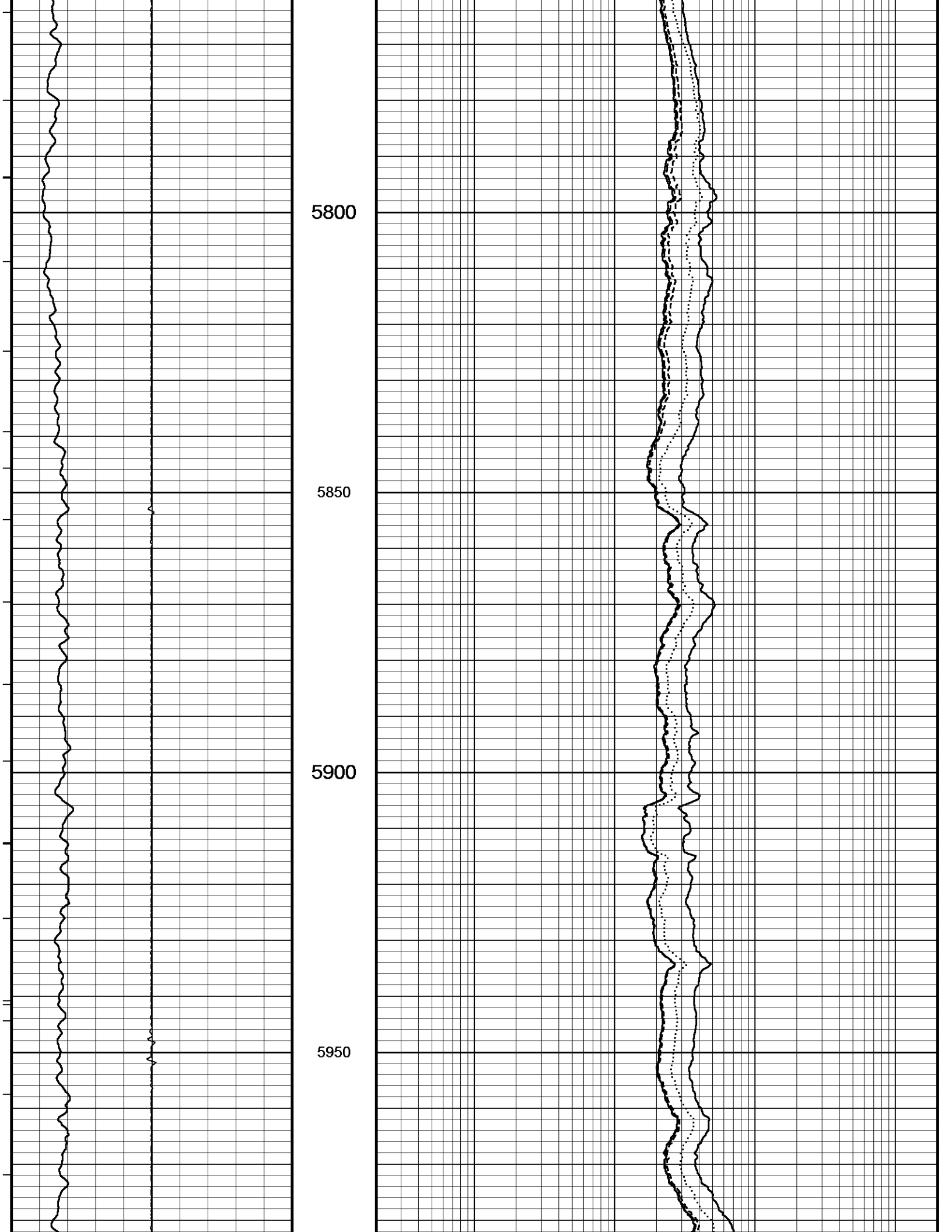
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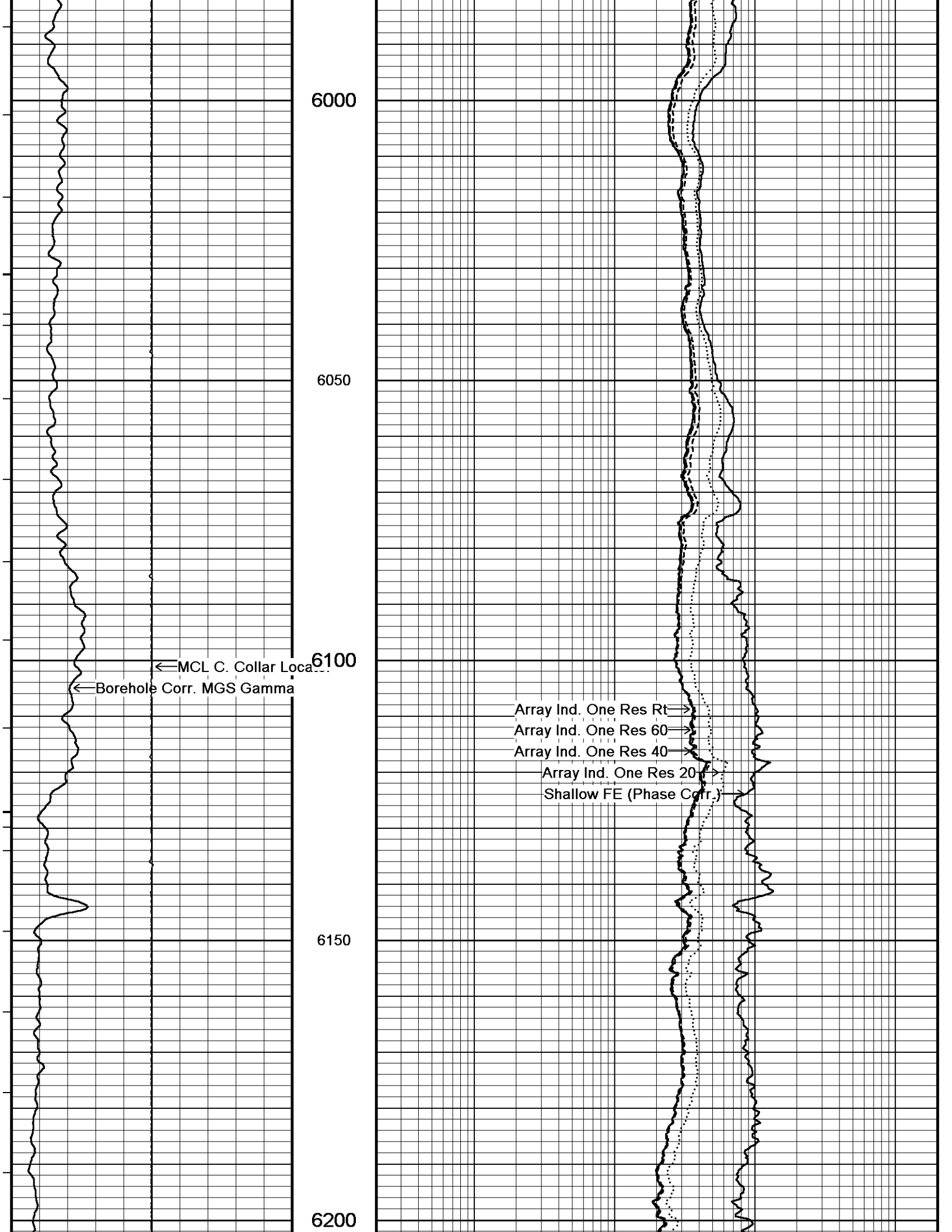
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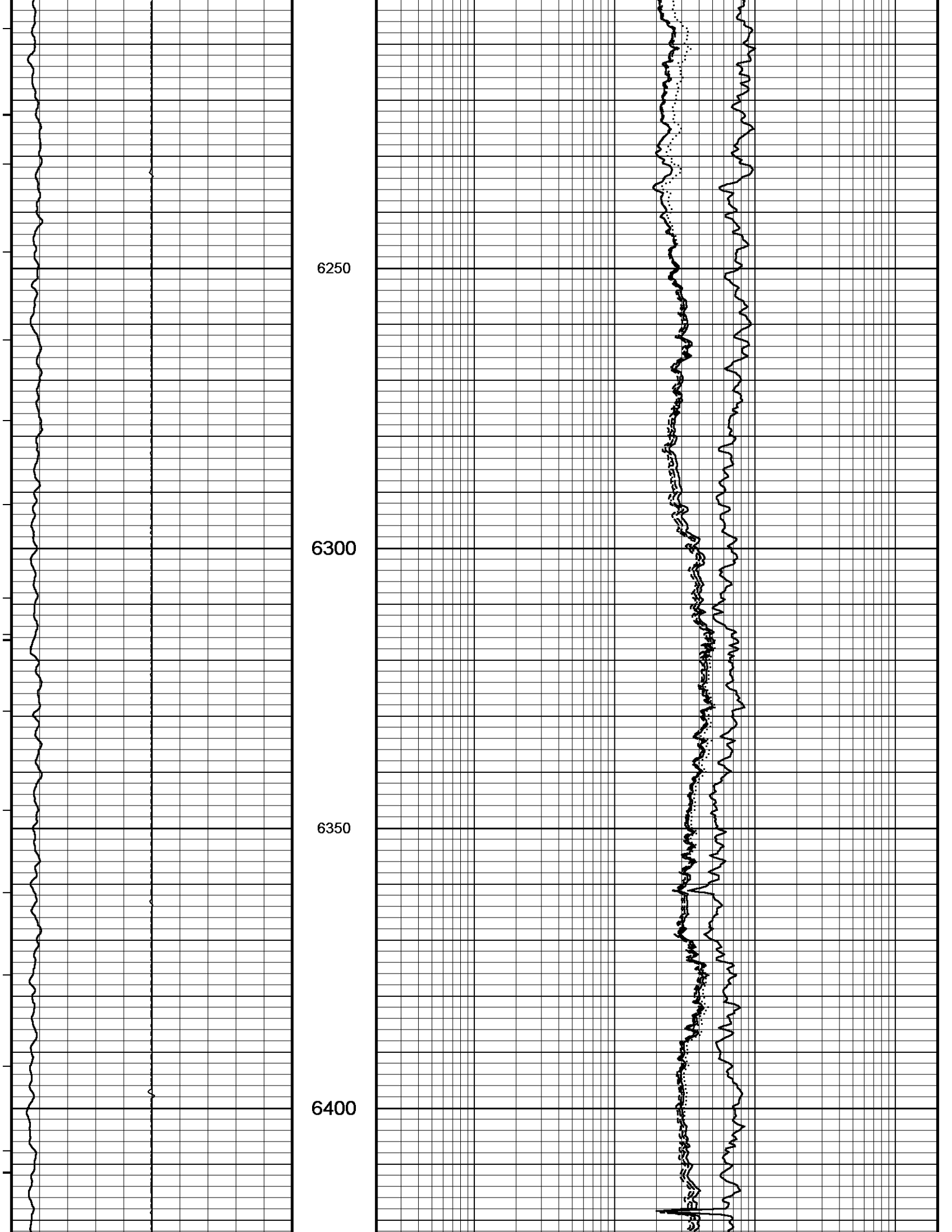
← MCL C. Collar Locator

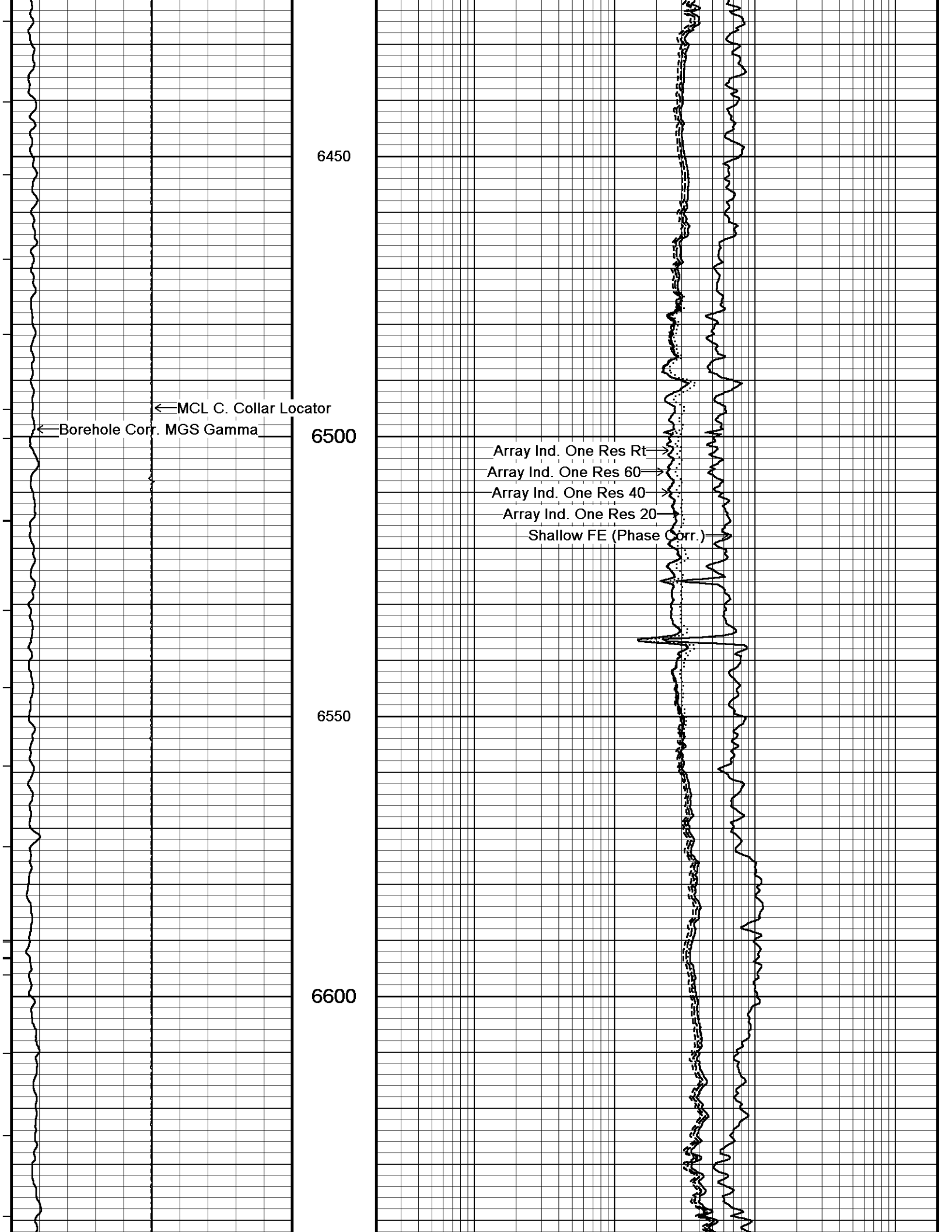
← Borehole Corr. MGS Gamma

Array Ind. One Res Rt →  
Array Ind. One Res 60 →  
Array Ind. One Res 40 →  
Array Ind. One Res 20 →  
Shallow FE (Phase Corr.) →









6450

← MCL C. Collar Locator

← Borehole Corr. MGS Gamma

6500

Array Ind. One Res Rt →

Array Ind. One Res 60 →

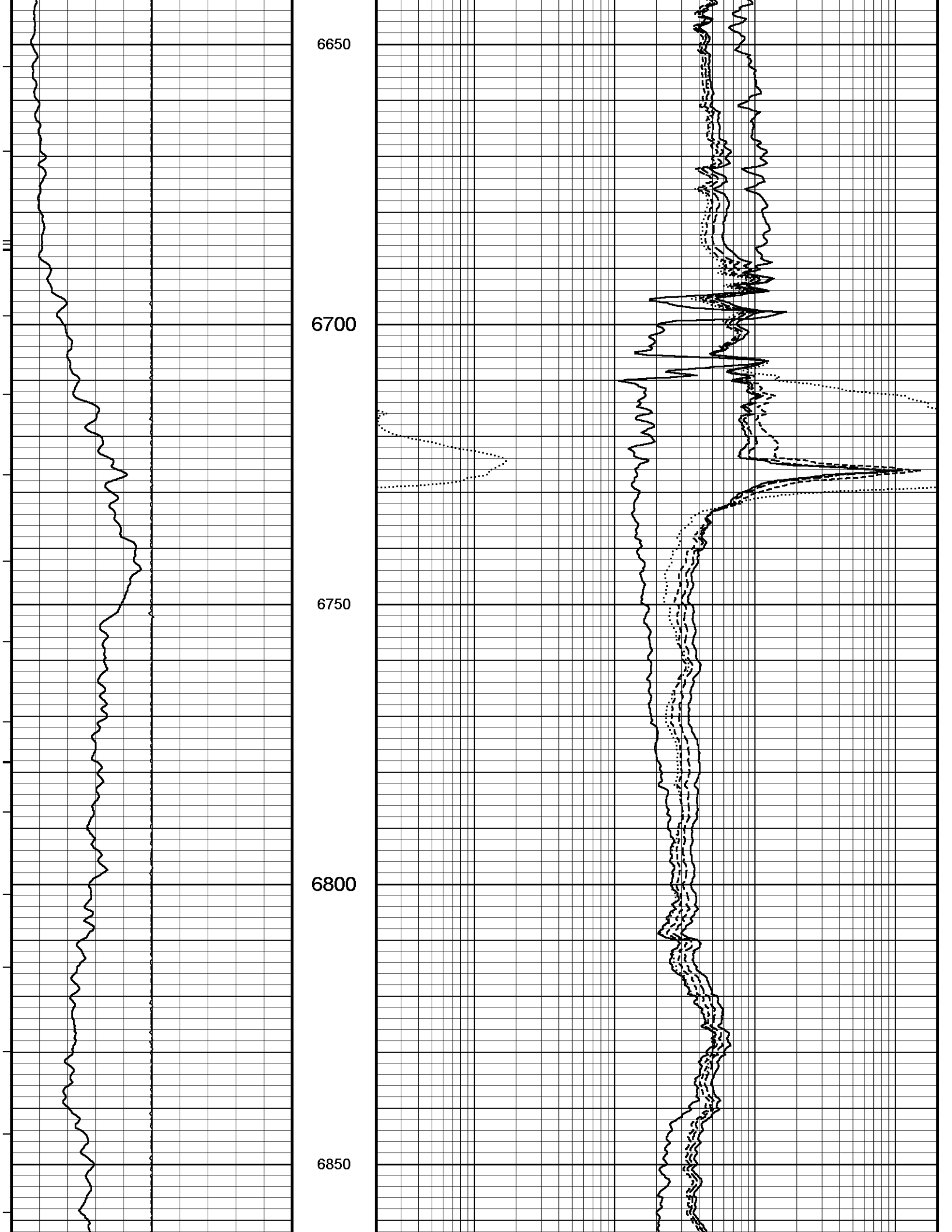
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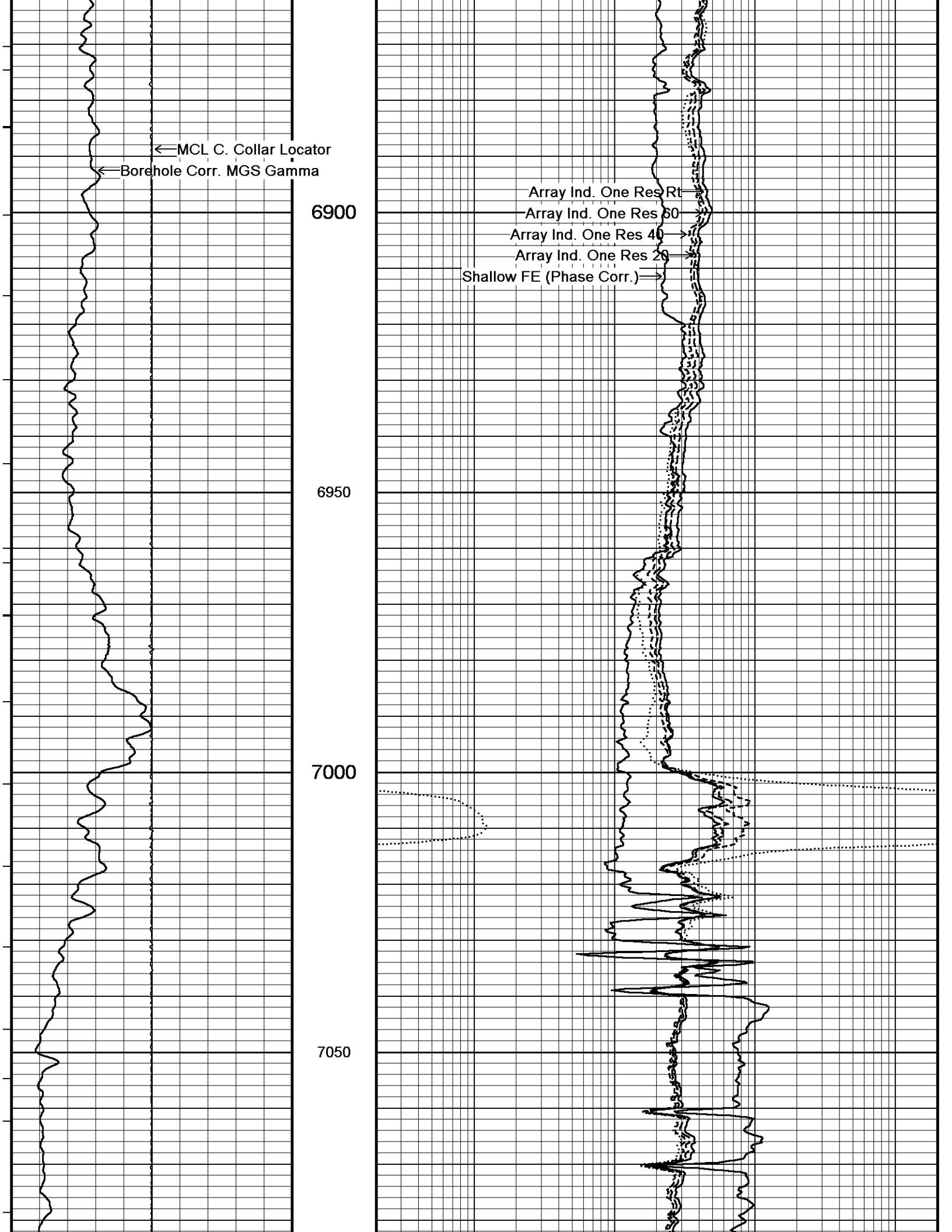
Array Ind. One Res 20 →

Shallow FE (Phase Corr.) →

6550

6600





← MCL C. Collar Locator

← Borehole Corr. MGS Gamma

6900

Array Ind. One Res Rt

Array Ind. One Res 60

Array Ind. One Res 40

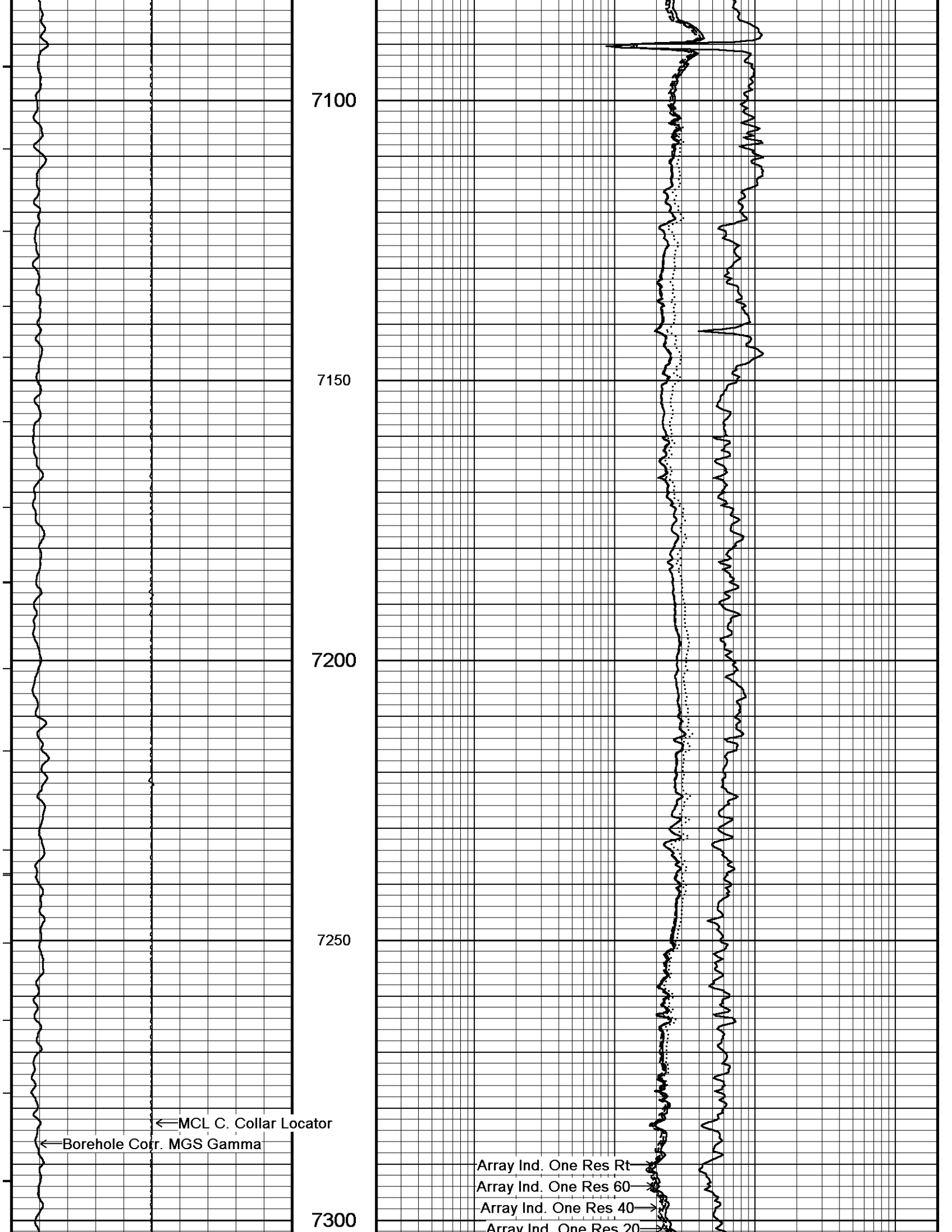
Array Ind. One Res 20

Shallow FE (Phase Corr.)

6950

7000

7050



7100

7150

7200

7250

7300

← MCL C. Collar Locator

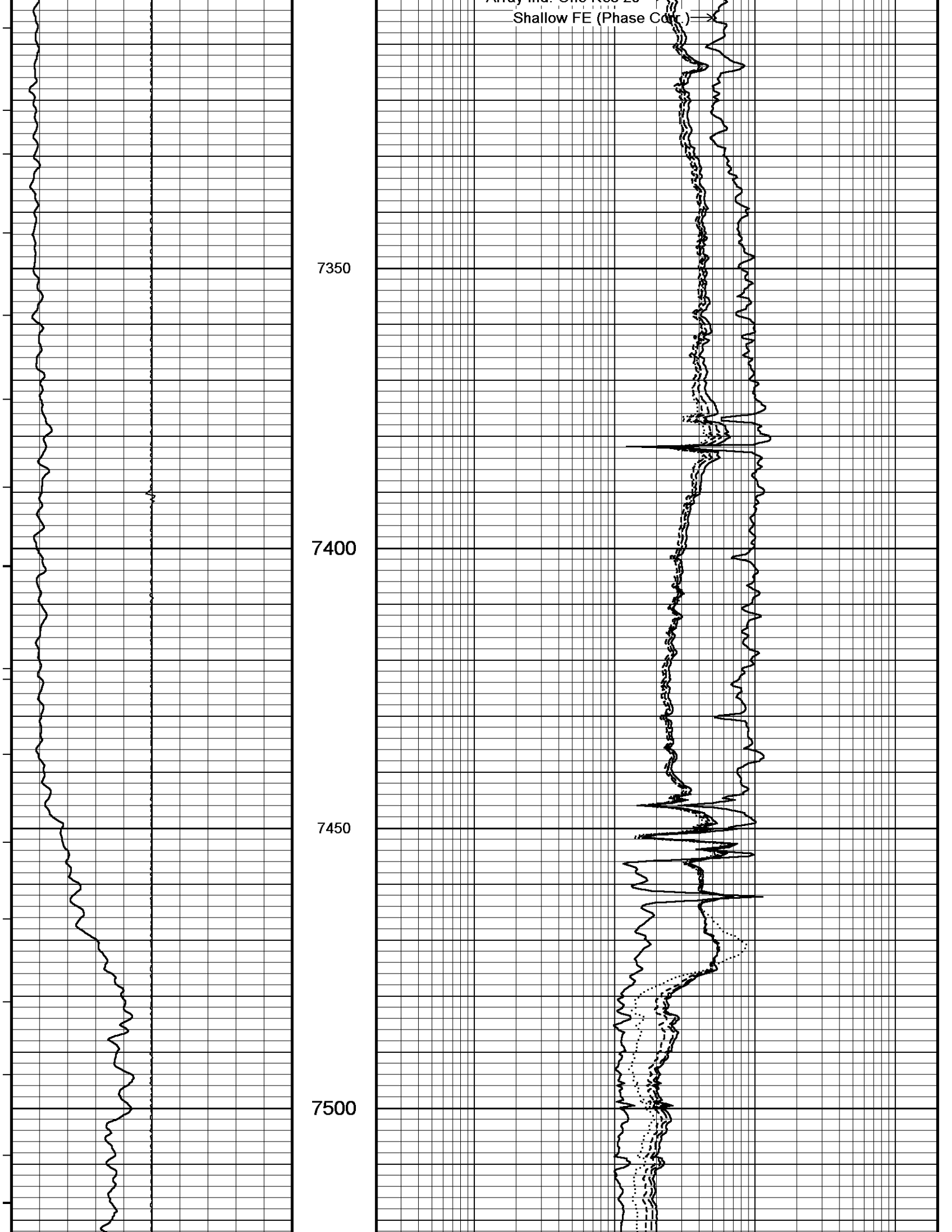
← Borehole Corr. MGS Gamma

Array Ind. One Res Rt

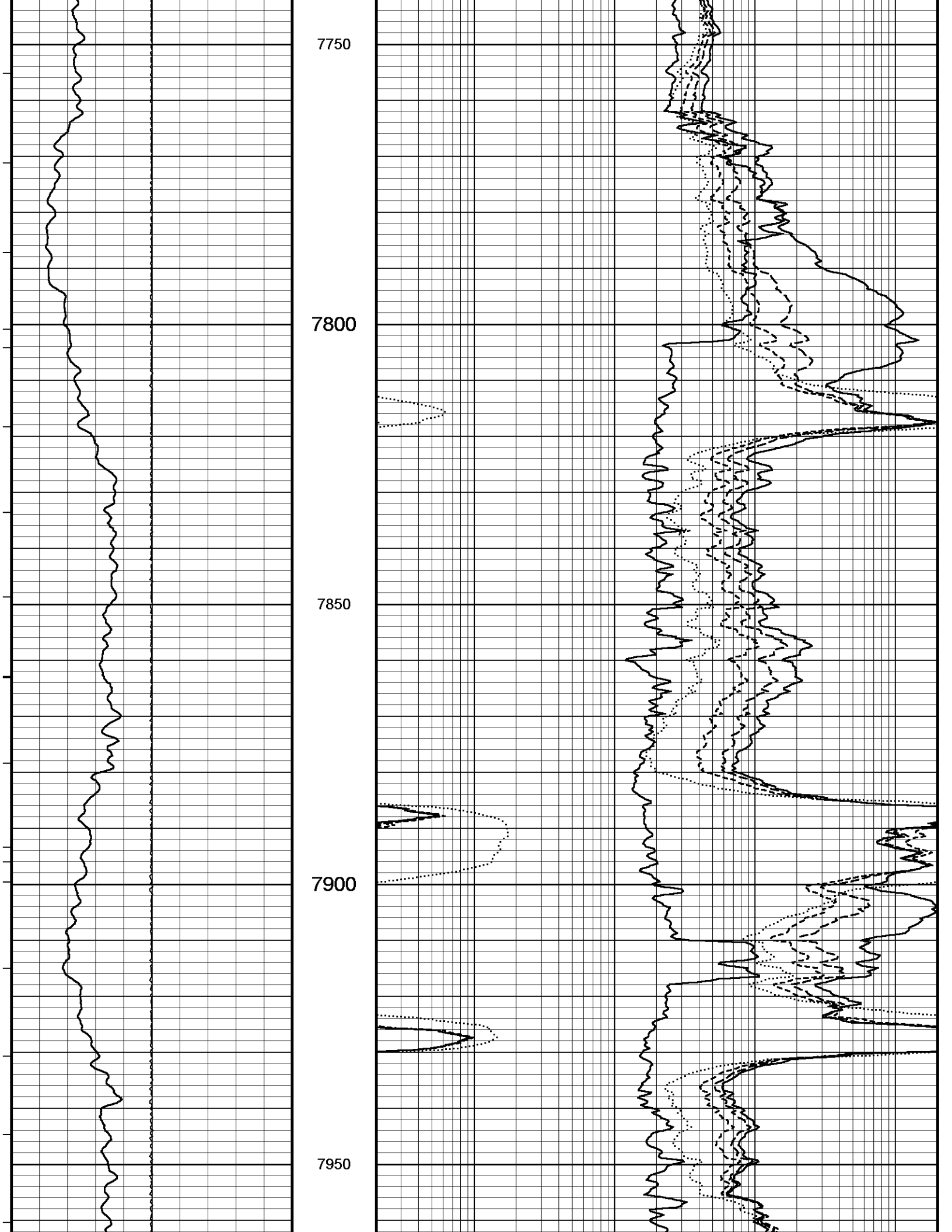
Array Ind. One Res 60

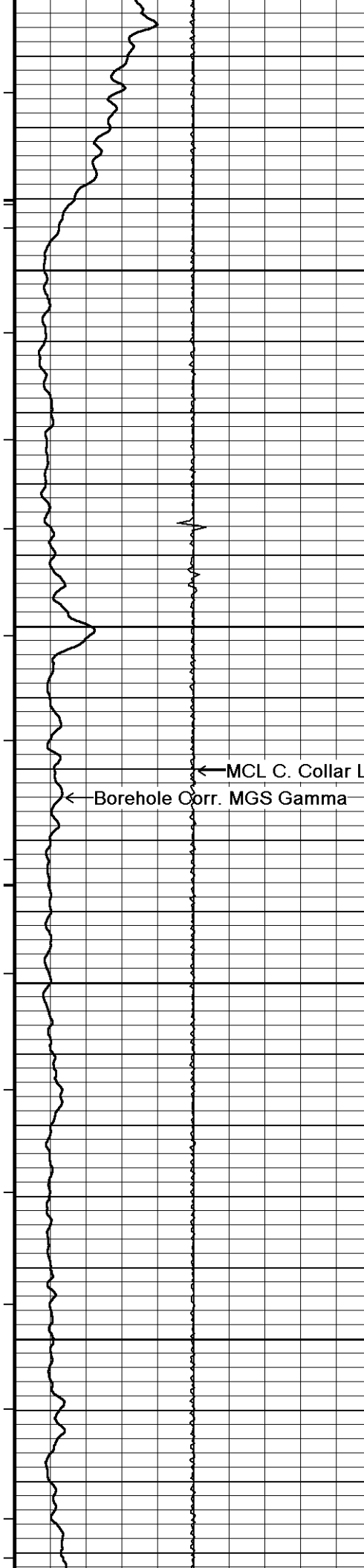
Array Ind. One Res 40

Array Ind. One Res 20









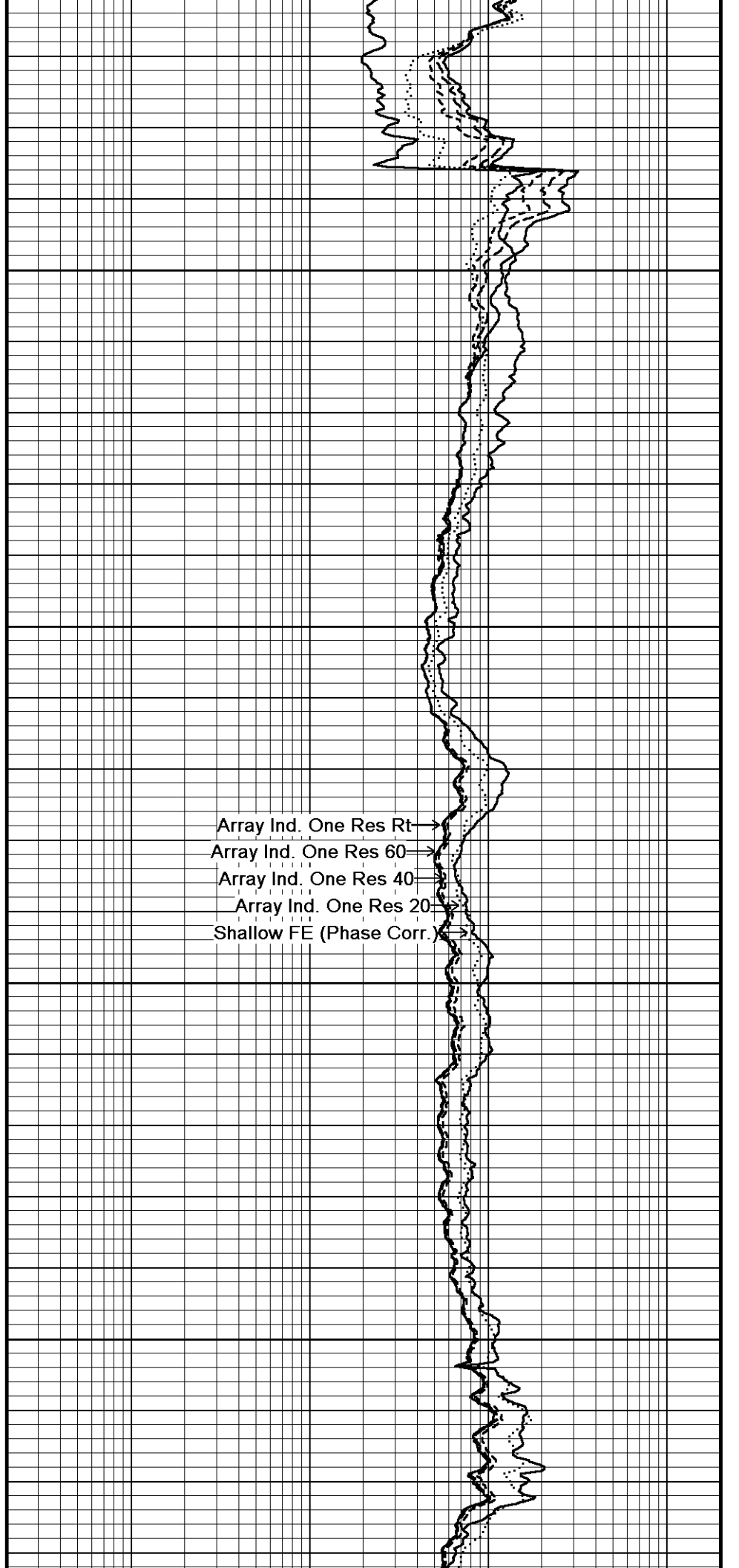
8000

8050

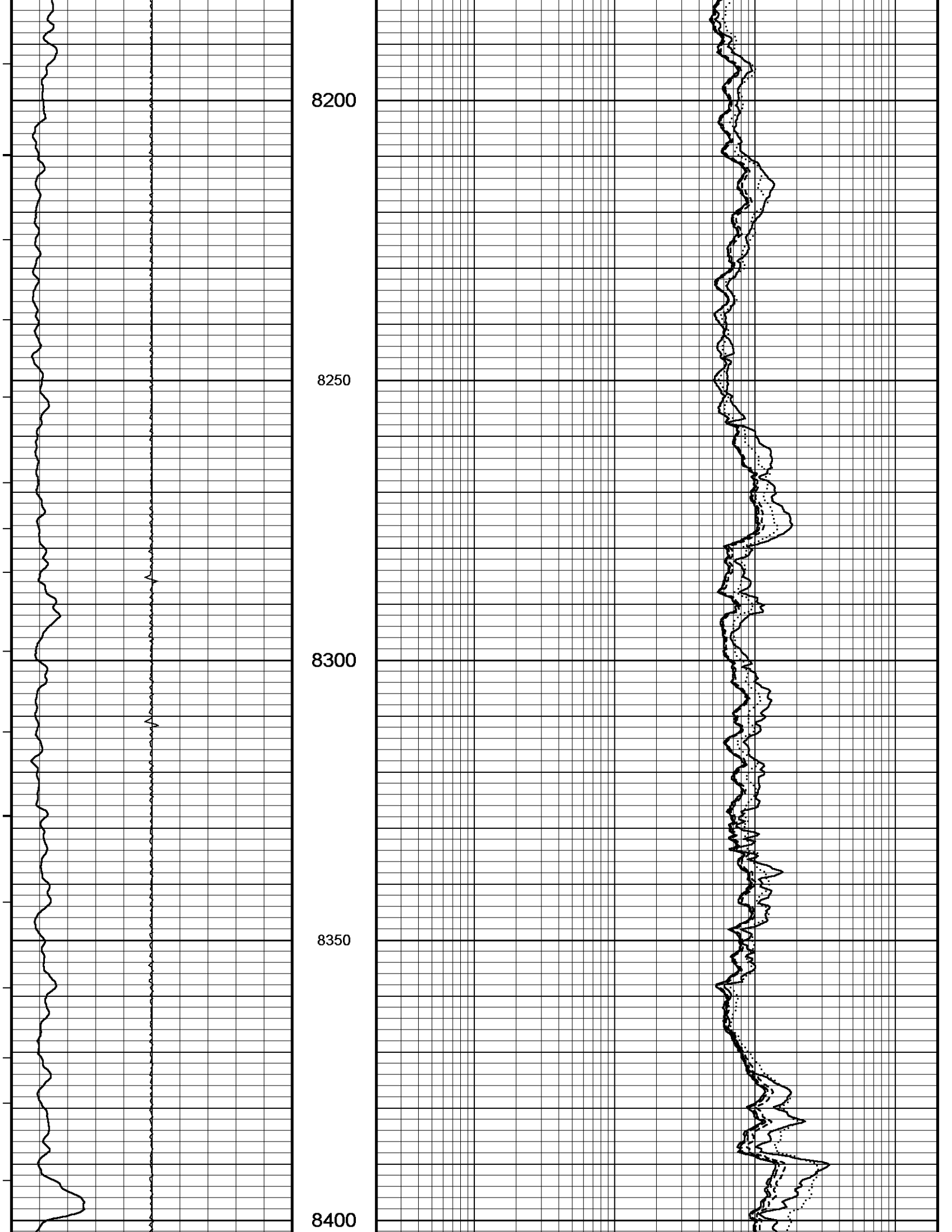
8100

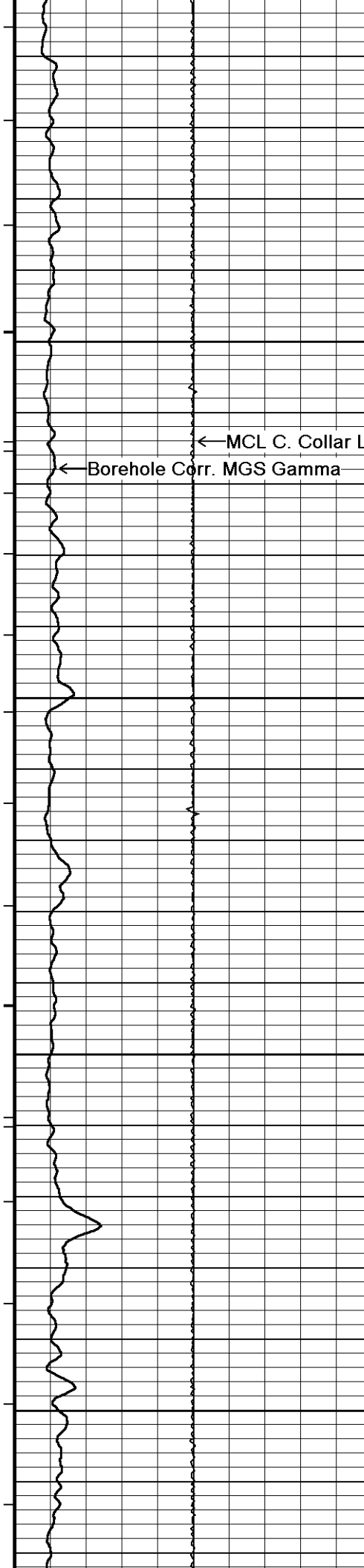
8150

← MCL C. Collar Locator  
← Borehole Corr. MGS Gamma



Array Ind. One Res Rt →  
Array Ind. One Res 60 →  
Array Ind. One Res 40 →  
Array Ind. One Res 20 →  
Shallow FE (Phase Corr.) →





8450

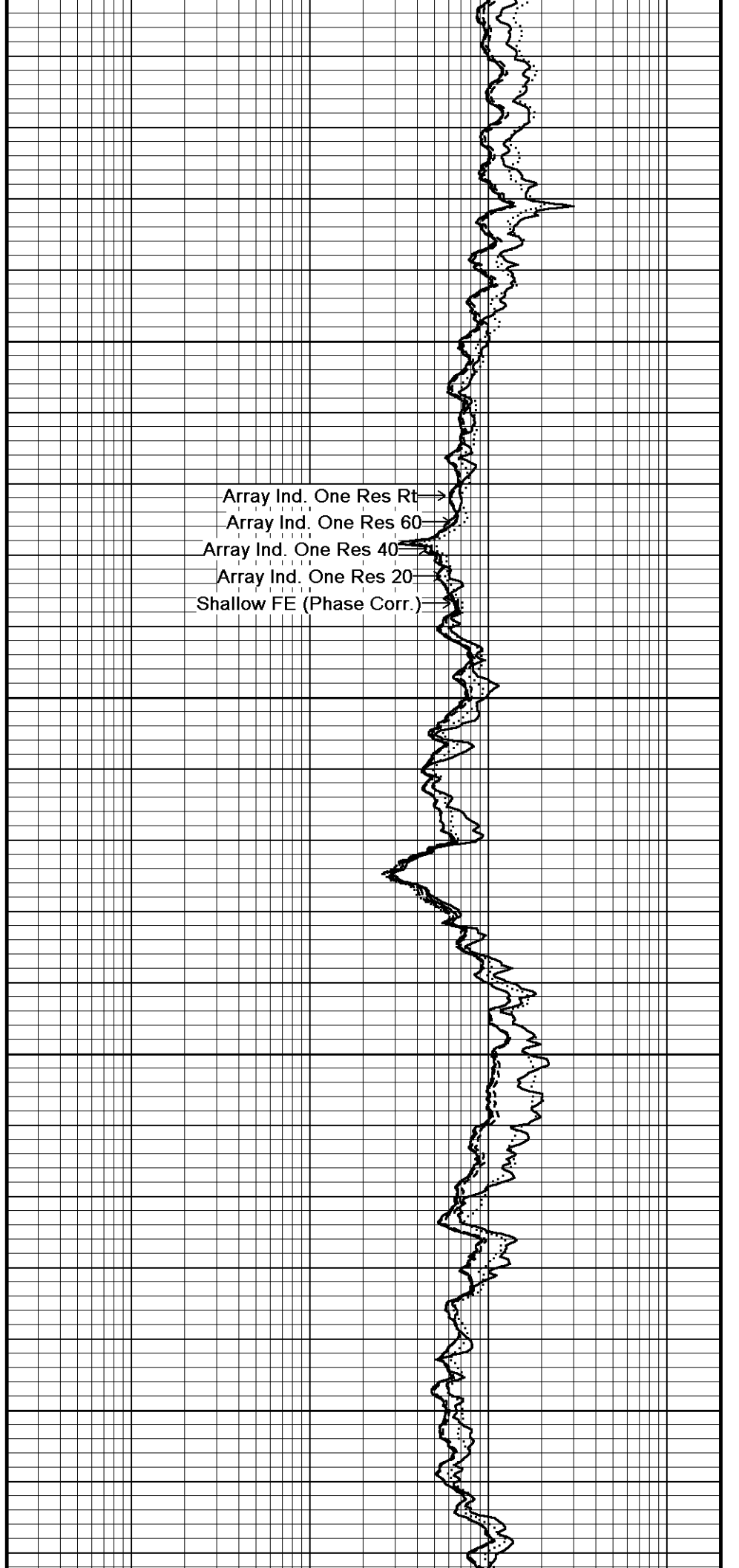
← MCL C. Collar Locator

← Borehole Corr. MGS Gamma

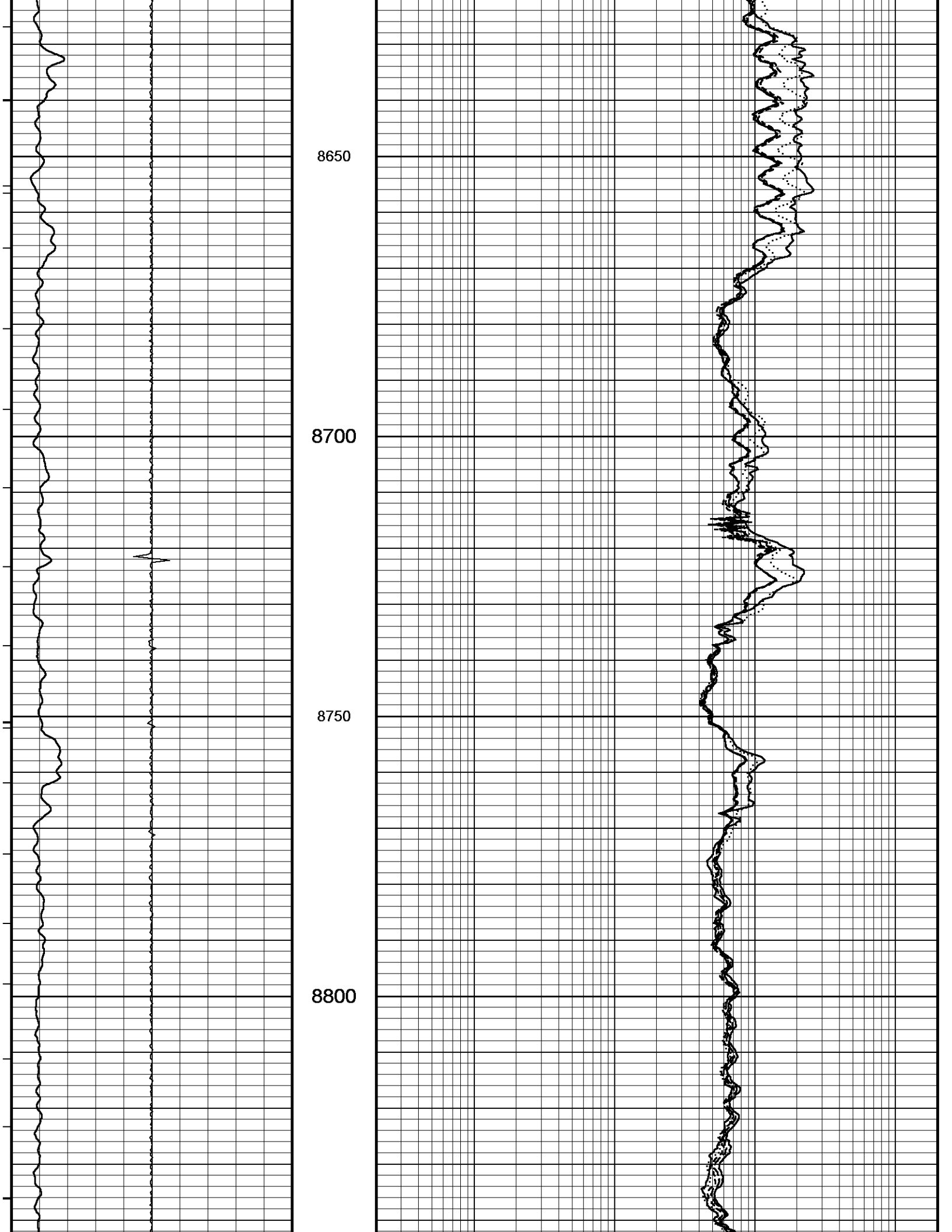
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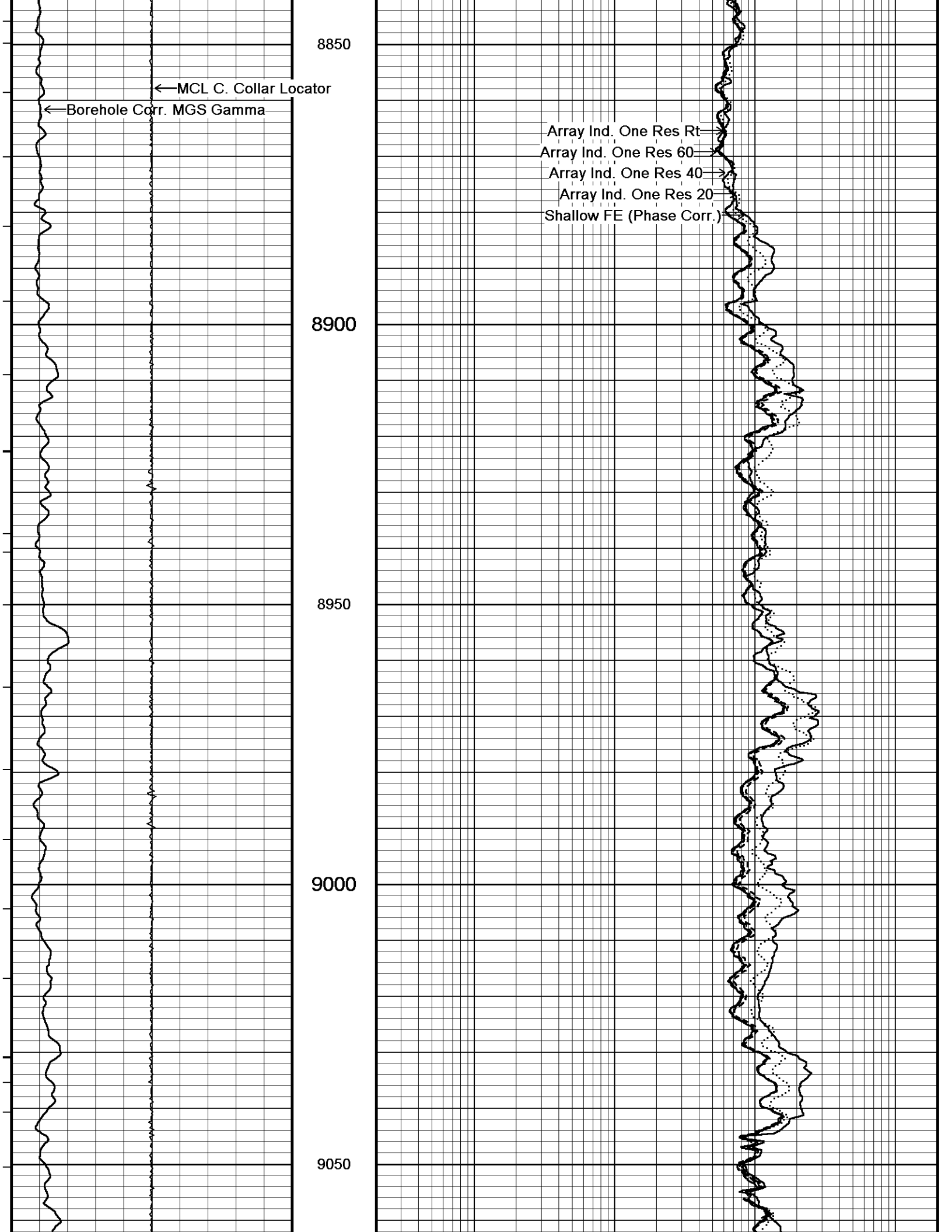
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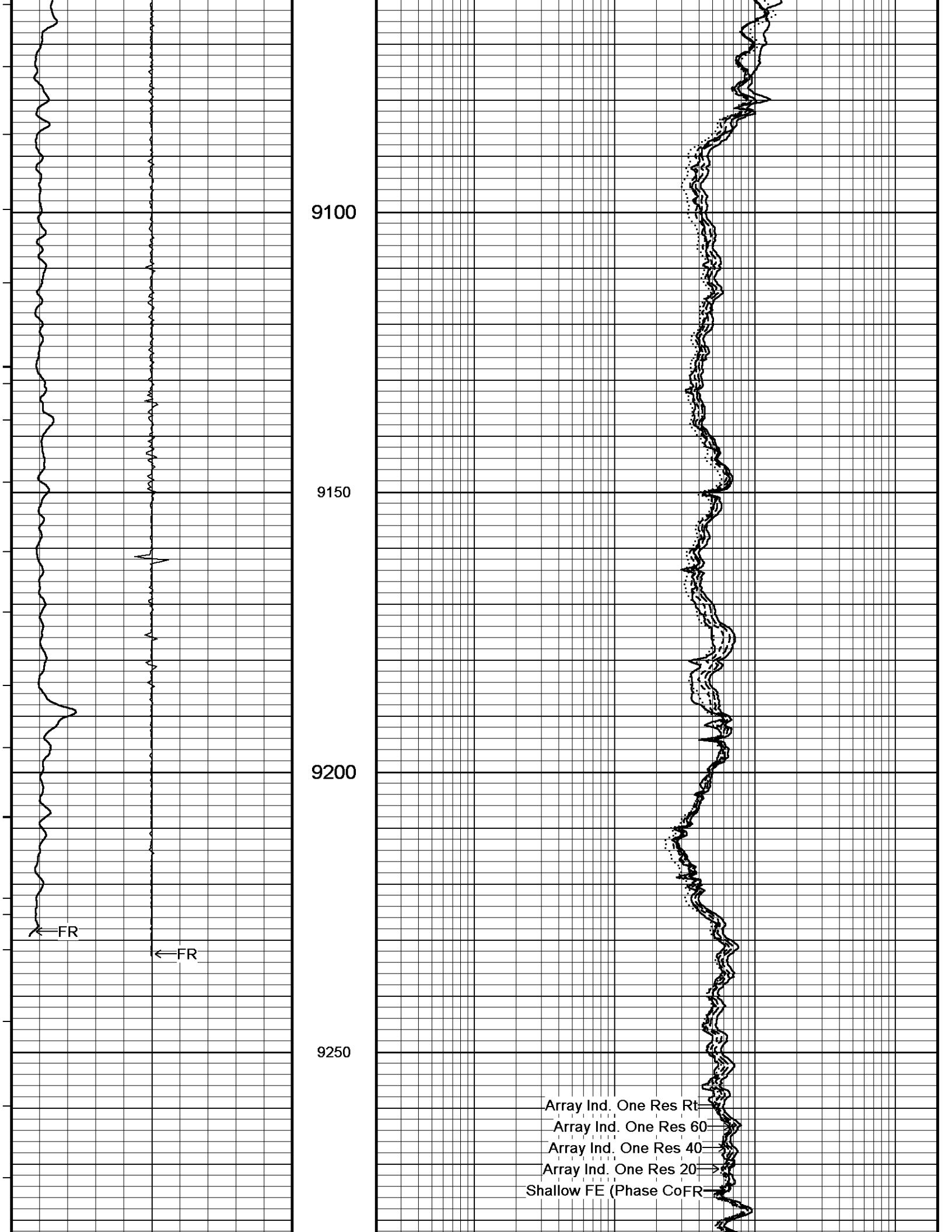
8600



Array Ind. One Res Rt →  
Array Ind. One Res 60 →  
Array Ind. One Res 40 →  
Array Ind. One Res 20 →  
Shallow FE (Phase Corr.) →

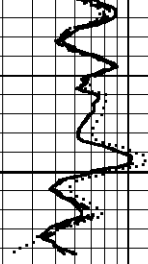






9300

9328  
Depth  
In  
Feet



Timing Marks  
every 60.0 sec

Borehole Corr. MGS Gamma

API

75

225

0 150

150 300

MCL C. Collar Locator

0

-10000 10000

Replay  
Scale  
1:240

Shallow FE (Phase Corr.)  
ohm metres

0.20 2000

1 10 100 1000

Array Ind. One Res 20  
ohm metres

0.20 2000

1 10 100 1000

Array Ind. One Res 40  
ohm metres

0.20 2000

1 10 100 1000

Array Ind. One Res 60  
ohm metres

0.20 2000

1 10 100 1000

Array Ind. One Res Rt  
ohm metres

0.20 2000

1 10 100 1000

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 10-SEP-2012 10:54

Filename: C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 RTAP.dta

Recorded on 10-SEP-2012 10:17

System Versions: Processed with 13.03.7779 Plotted with 13.03.7779



DSC



### BEFORE SURVEY CALIBRATION

C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 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 10-SEP-2012,08:59

##### General Parameters

Mud Resistivity	1.500	ohm-metres
Mud Resistivity Temperature	80.000	degrees F
Water Level	0.000	feet
Density/Neutron Processing		
Wet Hole		

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 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 29-MAR-2011 00:00

Reading No	Measured	
1	15152.07	0.00
2	19175.97	2000.00

Strain Gauge Constants MMS-E.B 167

Last Edited on 03-AUG-2012 11:54

Atmospheric Pressure 14.70 psi  
 Serial Number 0  
 Calibration Date 000000000000  
 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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10000.0	0.000		0.000		0.000		0.000		

Gamma Calibration MGS-C.J 135

Field Calibration on 03-SEP-2012 09:00

	Measured	Calibrated (API)
Background	85	56
Calibrator (Gross)	1453	953
Calibrator (Net)	1368	897

Gamma Constants MGS-C.J 135

Last Edited on 10-SEP-2012,08:54

Gamma Calibrator Number  
 Mud Density 1.08 gm/cc  
 Caliper Source for Processing Density Caliper  
 Tool Position Eccentred  
 Concentration of KCl 0.00 kppm

High Resolution Temperature Constants MGS-C.J 135

Last Edited on

Pre-filter Length 11

Neutron Calibration MDN-B.J 390

Base Calibration on 10-AUG-2012 02:10  
 Field Check on 16-AUG-2012,11:36

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2974	91	3714	110
	32.653		33.764	

Field Calibrator at Base

	Calibrated (cps)
Ratio	1236 1843
	0.671

Field Check

	Calibrated (cps)
Ratio	1290 1898
	0.680

Neutron Source Id	P31112B	
Neutron Jig Number	5917NC	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.08	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	Constant Value	
Temperature	20.00	degrees F
Mud Salinity	1.00	kppm
Salinity Correction	Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 329

Base Calibration on 31-AUG-2012 13:33  
Field Check on 31-AUG-2012 14:02

Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	961.8	126.8	
Base Check		281.9	
Field Check		282.0	

FE Constants MFE-B.J 329

Last Edited on 07-SEP-2012,03:21

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

High Resolution Temperature Calibration MAI-B.J 389

Field Calibration on 19-OCT-2011 09:44

	Measured	Calibrated(Deg F)	
Lower	10.00	50.00	
Upper	100.00	212.00	

High Resolution Temperature Constants MAI-B.J 389

Last Edited on

Pre-filter Length	11
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Induction Calibration MAI-B.J 389

Base Calibration on 01-SEP-2012,07:44  
Field Check on 05-SEP-2012 07:29

Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	16.7	465.5	9.3	966.2	
2	6.4	384.0	7.6	821.4	
3	3.1	258.9	5.2	566.0	
4	1.8	133.7	2.6	279.2	
Array Temperature	78.1		Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1			14.5	3894.6	
2			29.5	3506.1	
3			29.4	3047.2	
4			19.7	2061.7	
Deep			19.1	2011.6	
Medium			42.3	4001.0	
Shallow			42.3	5448.2	

Shallow  
Array Temperature

42.5 5148.2  
80.7 Deg F

Induction Constants MAI-B.J 389

Last Edited on 10-SEP-2012,08:58

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.	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	

Caliper Calibration MPD-C.J 393

Base Calibration on 31-AUG-2012 15:06

Field Calibration on 31-AUG-2012 15:06

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17903	4.01
2	26102	5.96
3	34623	7.98
4	42800	9.86
5	51872	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.97	5.96

Photo Density Calibration MPD-C.J 393

Base Calibration on 31-AUG-2012 17:21

Field Check on 05-SEP-2012 07:33

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	58443	27289	59869	31110
Reference 2	24170	2616	24557	2522

Field Check at Base

1220.9	1338.4
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Field Check

1222.0	1343.8
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PE Calibration

Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	227	1101		
Reference 1	25332	58248	0.439	0.369
Reference 2	7158	24033	0.302	0.271
Field Check at Base				
	227.1	1101.3		
Field Check				
	223.5	1100.6		

Density Constants MPD-C.J 393

Last Edited on 10-SEP-2012,08:54

Density Source Id	p31112b		
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	1.08	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		

Spectral Gamma Calibration SGS-E.J 170

Base Calibration on 26-MAR-2012 22:31  
Field Calibration on 26-MAR-2012 22:03

Base Calibration						
Potassium Calibrator						
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	
Background	80.0	23.7	2.4	1.0	1.3	
Calibrator (Gross)	205.8	107.5	23.2	0.9	1.4	
Calibrator (Net)	125.8	83.7	20.8	-0.1	0.1	
Concentrations	K %		U ppm	Th ppm		
	5.8		0.0	0.0		
Uranium Calibrator						
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	
Background	80.0	23.7	2.4	1.0	1.3	
Calibrator (Gross)	480.0	163.5	14.5	7.8	4.1	
Calibrator (Net)	400.0	139.8	12.1	6.8	2.8	
Concentrations	K %		U ppm	Th ppm		
	0.0		14.8	0.0		
Thorium Calibrator						
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	
Background	80.0	23.7	2.4	1.0	1.3	
Calibrator (Gross)	394.8	138.7	11.4	6.2	14.7	
Calibrator (Net)	314.7	115.0	9.1	5.2	13.5	
Concentrations	K %		U ppm	Th ppm		
	0.0		0.0	44.3		
Mixture Calibrator						
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5	

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	918.4	363.2	44.9	13.6	18.2
Calibrator (Net)	838.4	339.5	42.5	12.6	16.9

**Field Calibration**

**Gamma Ray**

	Measured	Calibrated (API)
Background	113	23
Calibrator (Gross)	1362	273
Calibrator (Net)	1250	250

**Mixture Calibrator**

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	80.0	23.7	2.4	1.0	1.3
Calibrator (Gross)	918.4	363.2	44.9	13.6	18.2
Calibrator (Net)	838.4	339.5	42.5	12.6	16.9

**Spectral Gamma Constants SGS-E.J 170**

Last Edited on 10-SEP-2012,08:55

Background Calibrator Number	0	
Mixture Calibrator Number	147-1	
Potassium Calibrator Number	148-1	
Uranium Calibrator Number	150-1	
Thorium Calibrator Number	149-1	
Mud Density	1.08	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

**DOWNHOLE EQUIPMENT**

C:\Minimus 13.03.7779\Data\SDRGE (UNRUH 2629 1-17H)\34701 RTAP.dta

Compact Linker (Shuttle Running Tool 3.5  
MLK-A 1 LG: 4.87 ft WT: 30.9 lb OD: 2.52 in

Compact Linker (MBS-D.A 400v Compact Bat  
MLK-A 2 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

Compact Linker (MBS-D.A 400v Compact Bat  
MLK-A 3 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

MBS-G.A 200v Compact Battery Sub  
MBS-G.A 135 LG: 16.66 ft WT: 132.3 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 135 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-E.A Compact Knuckle Joint  
SKJ-E.A 166 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-H Compact Swivel Head Adaptor  
SHA-H 167 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub  
MIS-D.B 596 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in



86.35 ft GGME - Borehole Corr. MGS Gamma  
84.36 ft GSXT - MGS External Temperature  
82.34 ft GCSL - MCL C. Collar Locator

Compact Neutron  
MDN-B.J 393 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 603 LG: 5.70 ft WT: 33.1 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

SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 472 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 577 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric  
MFE-B.J 329 LG: 6.05 ft WT: 48.5 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

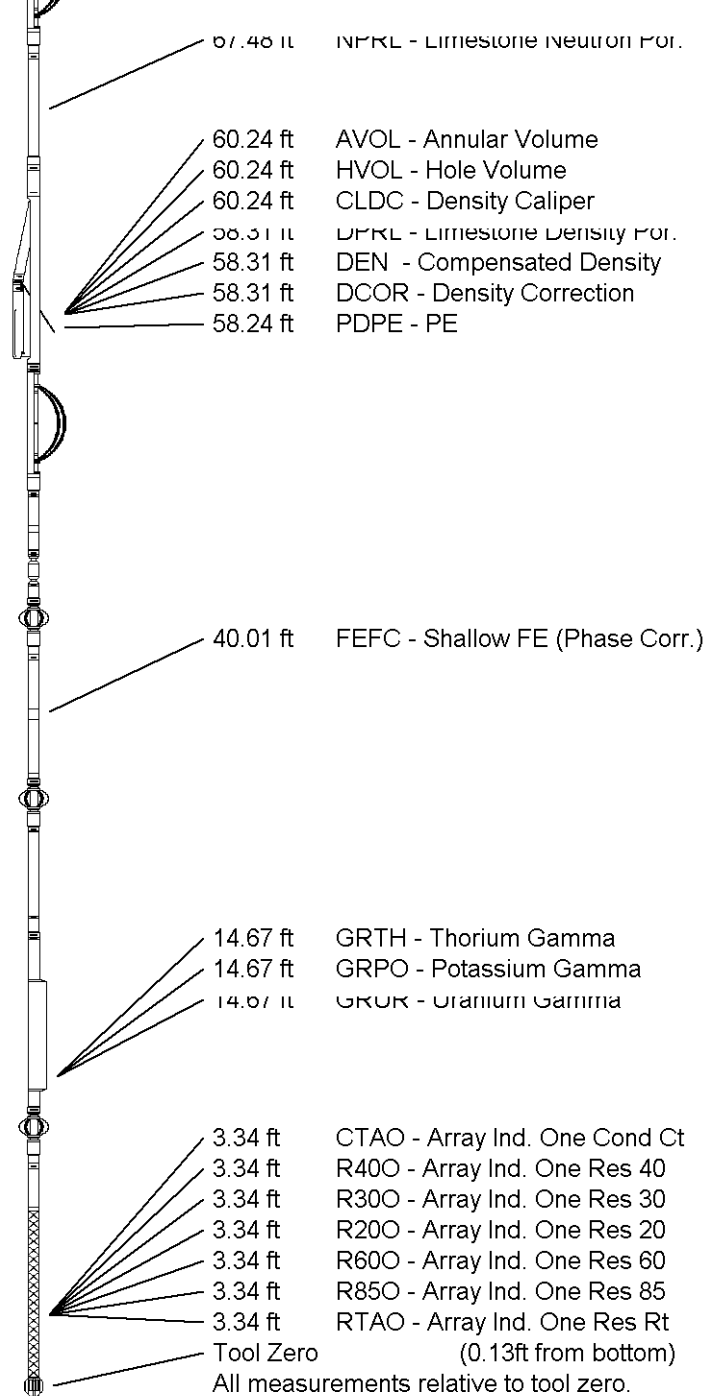
Compact Linker (MBS-D.A 400v Compact Bat  
MLK-A 4 LG: 14.24 ft WT: 30.9 lb OD: 2.24 in

Spectral Gamma Ray Sub  
SGS-E.J 170 LG: 7.78 ft WT: 105.8 lb OD: 3.54 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-B.J 389 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 144.02 ft Weight: 910.5 lb



<b>COMPANY</b>	<b>SANDRIDGE ENERGY</b>
<b>WELL</b>	<b>UNRUH 2629 1-17H</b>
<b>FIELD</b>	<b>MONGER</b>
<b>PROVINCE/COUNTY</b>	<b>GRAY</b>
<b>COUNTRY/STATE</b>	<b>USA / KANSAS</b>

Elevation Kelly Bushing	2780.00	feet	First Reading	9315.00	feet
Elevation Drill Floor	2780.00	feet	Depth Driller	9320.00	feet
Elevation Ground Level	2760.00	feet	Depth Logger	9320.00	feet



**Weatherford®**

**CML MESSENGER SHUTTLE  
ARRAY INDUCTION  
FOCUSED ELECTRIC LOG**

Timing Marks  
every 60.0 sec

Borehole Corr. MGS Gamma  
API  
0 75 150  
150 225 300

Depth  
In  
Feet

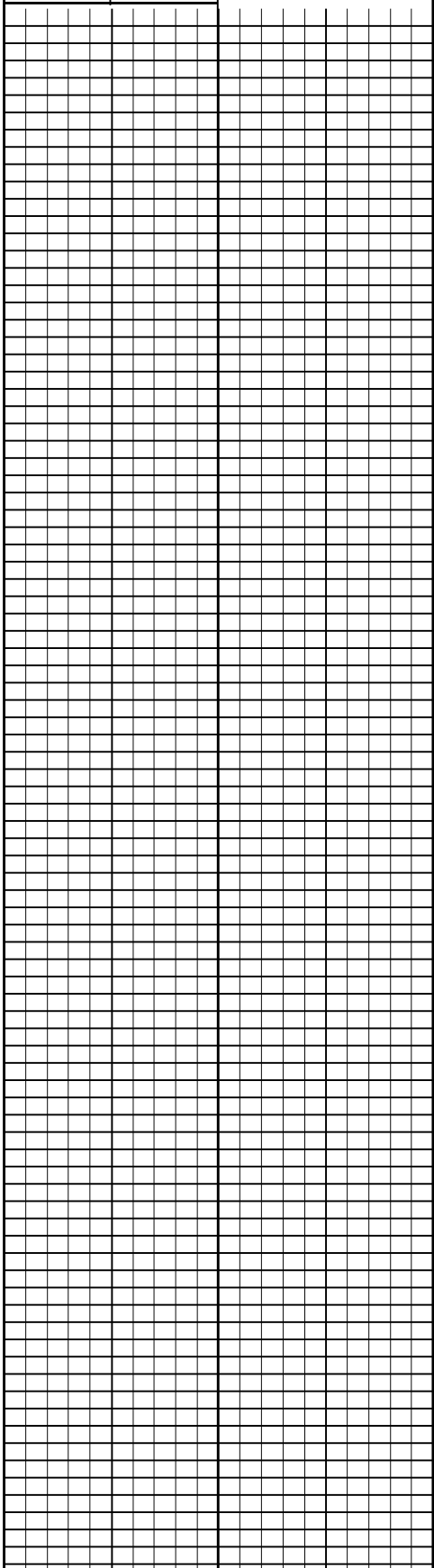
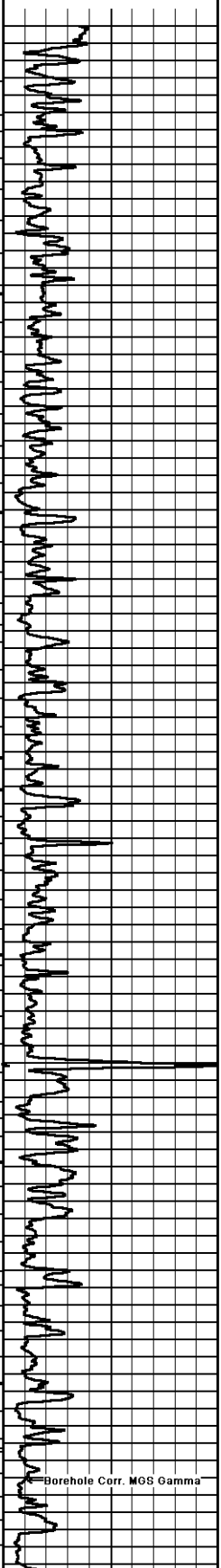
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mmhos  
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Shallow FE (Phase Corr.)  
ohm metres  
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0 500 1000

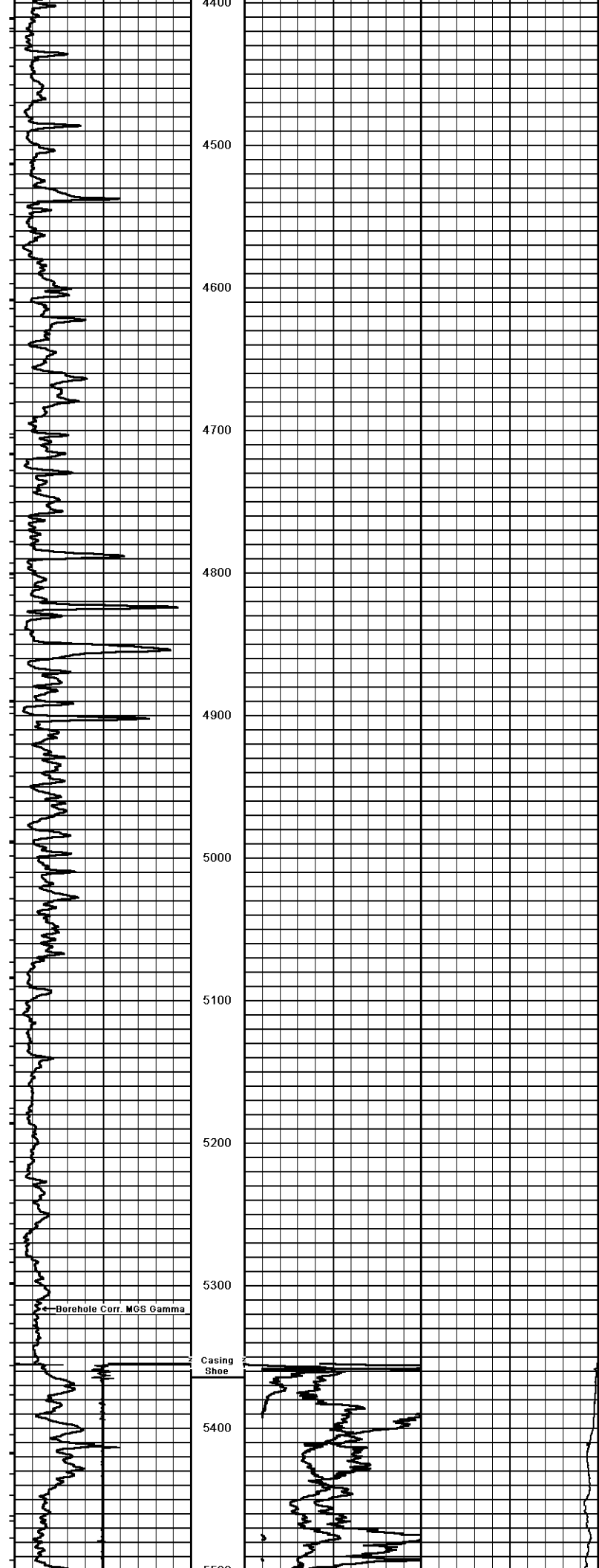
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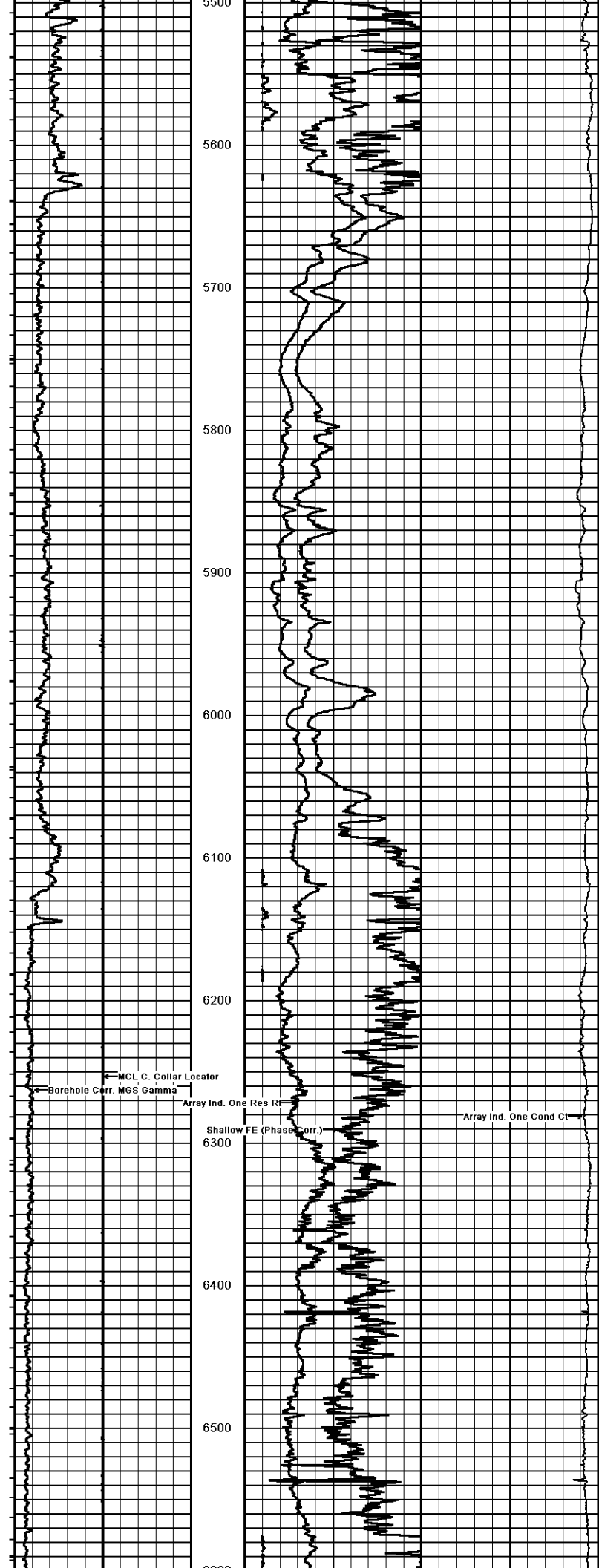
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ohm metres  
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0 500 1000

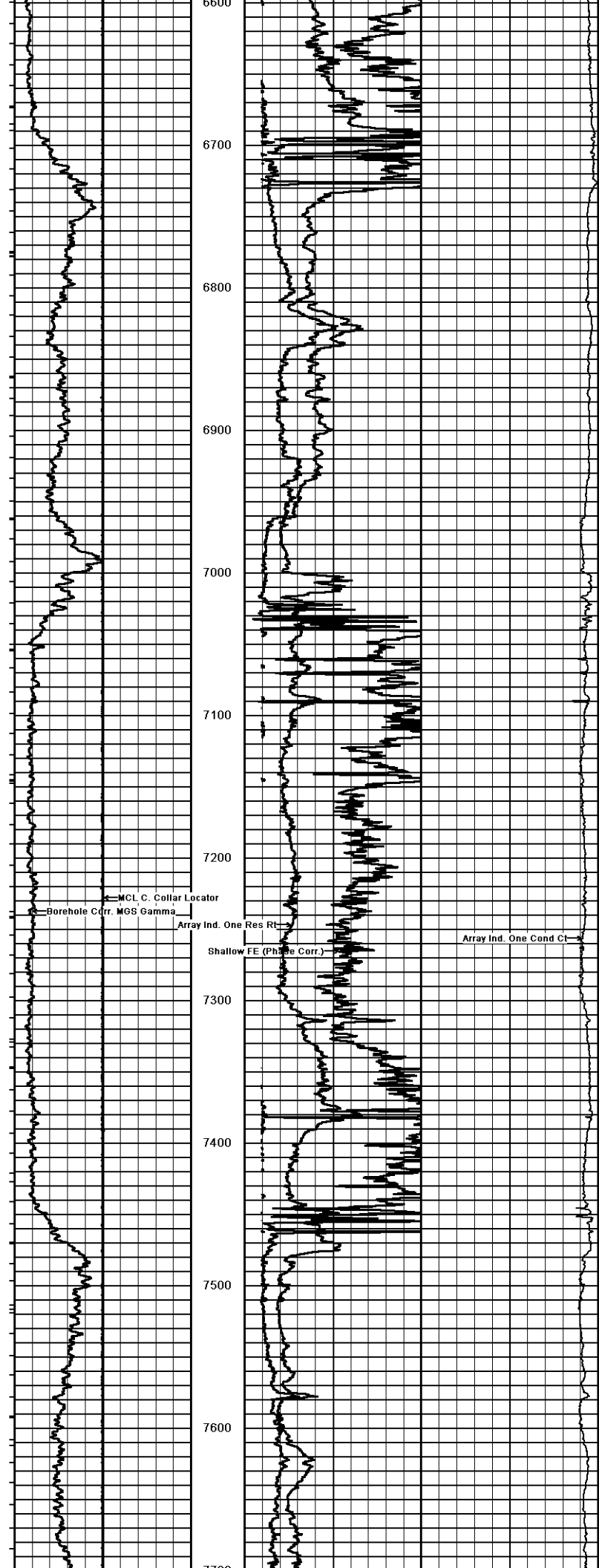
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Scale  
1:600

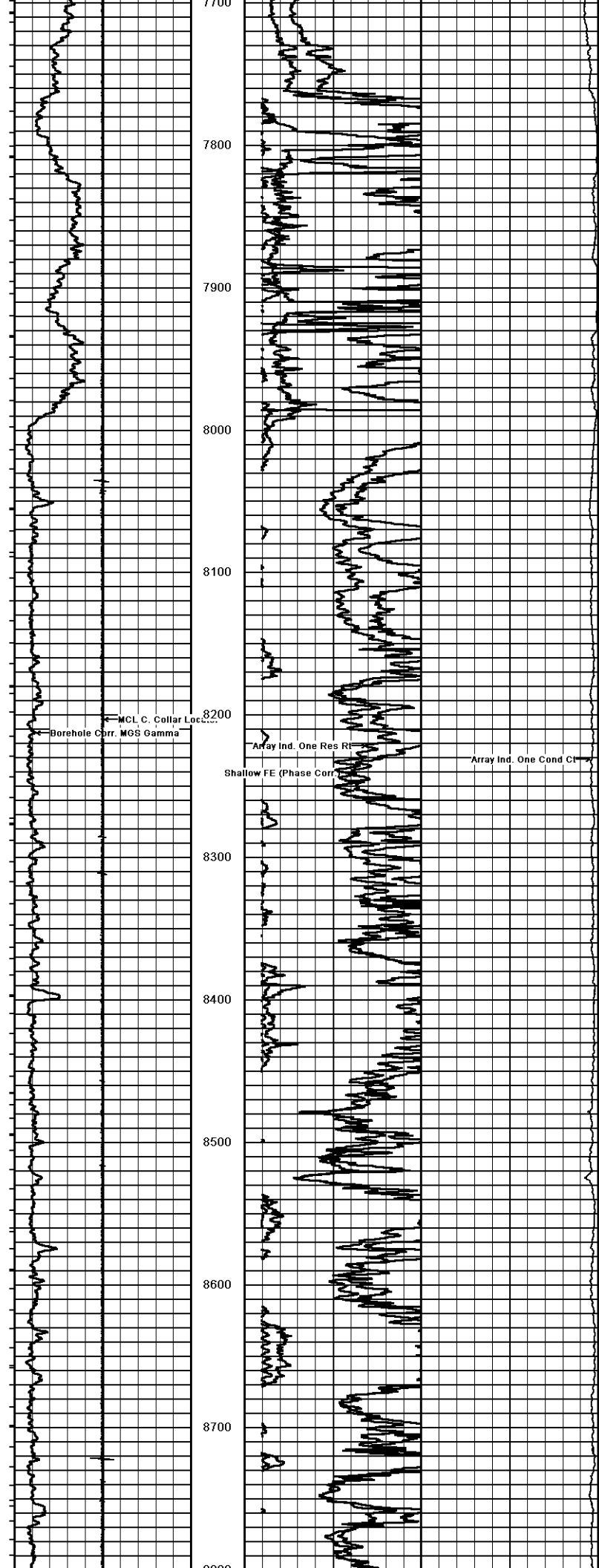


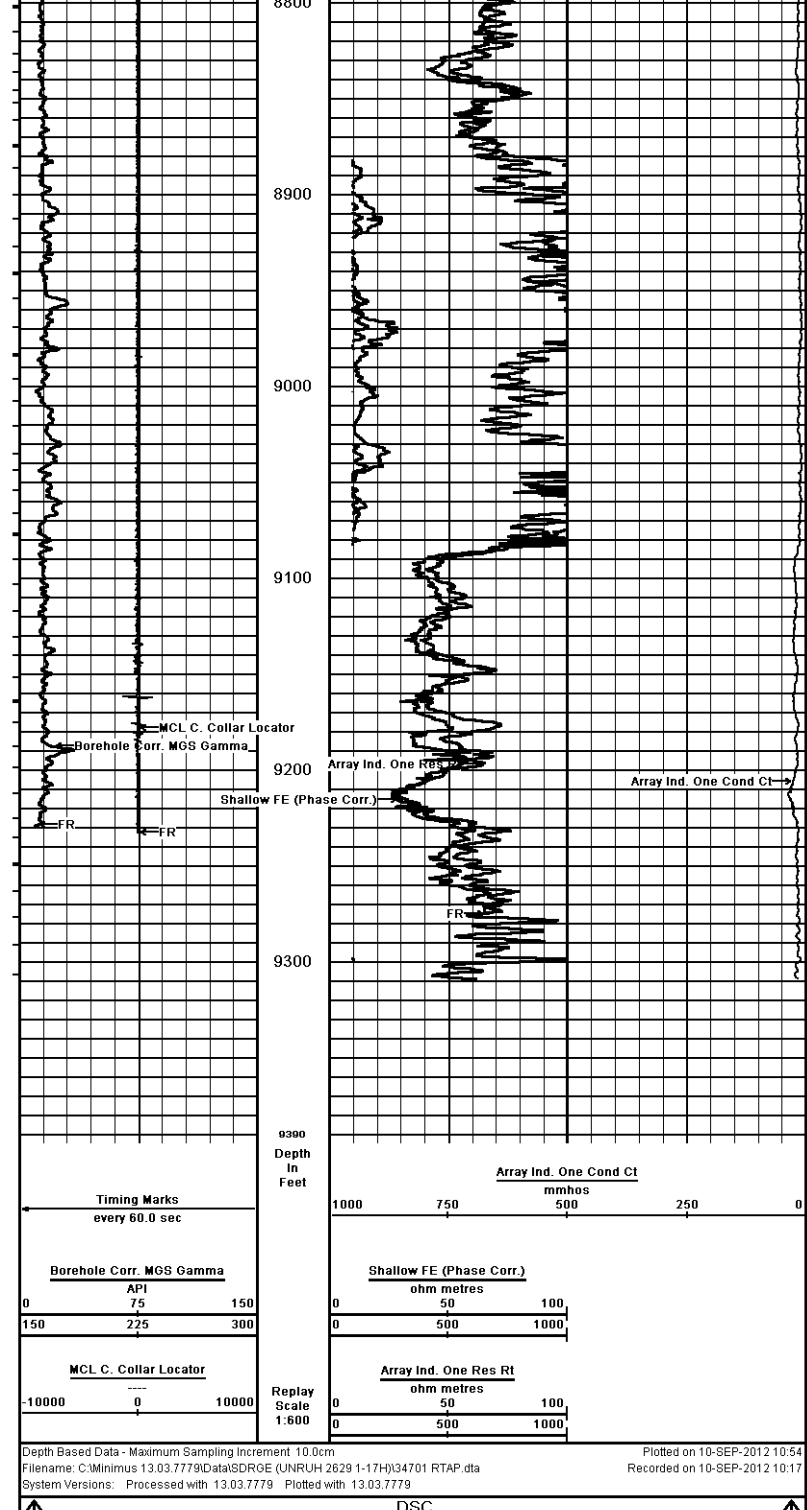
Borehole Corr. MGS Gamma












COMPANY	SANDRIDGE ENERGY				
WELL	UNRUH 2629 1-17H				
FIELD	MONGER				
PROVINCE/COUNTY	GRAY				
COUNTRY/STATE	USA / KANSAS				
Elevation Kelly Bushing	2780.00	feet	First Reading	9315.00	feet
Elevation Drill Floor	2780.00	feet	Depth Driller	9320.00	feet
Elevation Ground Level	2760.00	feet	Depth Logger	9320.00	feet
 <b>CML MESSENGER SHUTTLE</b> <b>ARRAY INDUCTION</b> <b>FOCUSED ELECTRIC LOG</b>					