



**Weatherford**

ARRAY INDUCTION / RSFE  
PHOTO DENSITY / NEUTRON  
GAMMA RAY LOG

COMPANY TAOS RESOURCES OPERATING COMPANY  
WELL WMU #12  
FIELD WEST MADDIX  
PROVINCE/COUNTY COWLEY  
COUNTRY/STATE U.S.A. / KANSAS  
LOCATION 4950' FSL & 5115' FEL  
W/2 NW NW NW

SEC 2 TWP 33S RGE 5E Other Services  
API Number 15-035-24518 MSS  
Permit Number MML

Permanent Datum GL, Elevation 1290 feet  
Log Measured From KB Elevations: KB 1298.00  
Drilling Measured From KB DF 1296.00  
GL 1290.00

Date	25-AUG-2013		
Run Number	ONE		
Service Order	3540216		
Depth Driller	3650.00	feet	
Depth Logger	3652.00	feet	
First Reading	3648.00	feet	
Last Reading	240.00	feet	
Casing Driller	225.00	feet	
Casing Logger	240.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	WBM		
Density / Viscosity	9.30 lb/USg	35.00 CP	
PH / Fluid Loss	10.00	12.40 ml/30Min	
Sample Source	MUD RETURN		
Rm @ Measured Temp	1.20 @102.0	ohm-m	
Rmf @ Measured Temp	0.96 @102.0	ohm-m	
Rmc @ Measured Temp	1.44 @102.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	1.02 @120.0	ohm-m	
Time Since Circulation	TWO HOURS		
Max Recorded Temp	120.00	deg F	
Equipment / Base	13039	OKC	
Recorded By	R. POGUE		
Witnessed By	MARK SEELY		

BOREHOLE RECORD Last Edited: 25-AUG-2013 06:44

Bit Size	Depth From	Depth To
inches	feet	feet
7.875	225.00	3650.00

CASING RECORD

Type	Size	Depth From	Shoe Depth	Weight
	inches	feet	feet	pounds/ft
SURFACE	8.625	0.00	225.00	24.00

REMARKS

WLS 13.04.8723  
DEPTH CONTROL: CALIBRATED MEASURING WHEEL  
TOOLS RAN: MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION  
HARDWARE:  
MAI: TWO 0.5 INCH STANDOFFS USED.  
MFE: ONE 0.5 INCH STANDOFF USED.  
MDN: DUAL NEUTRON BOW SPRINGS USED.  
MSS: THREE 0.5 INCH STANDOFFS USED.

WCS: THREE 6.5 INCH PRODUCTION CASING.  
 MPD: 8 INCH PROFILE PLATE USED.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

COMPANY REPRESENTATIVE REPORTED TIGHT SPOTS AT 2404' AND 1440'.

REPEAT SECTION RAN IN HIGH RESOLUTION MODE AT GEOLOGIST MARK SEELY'S REQUEST.

GEOLOGIST WANTED PE SCALE CHANGED FROM 0-10 TO 0-6.

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 1215 CU.FT.

ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING =655 CU.FT.

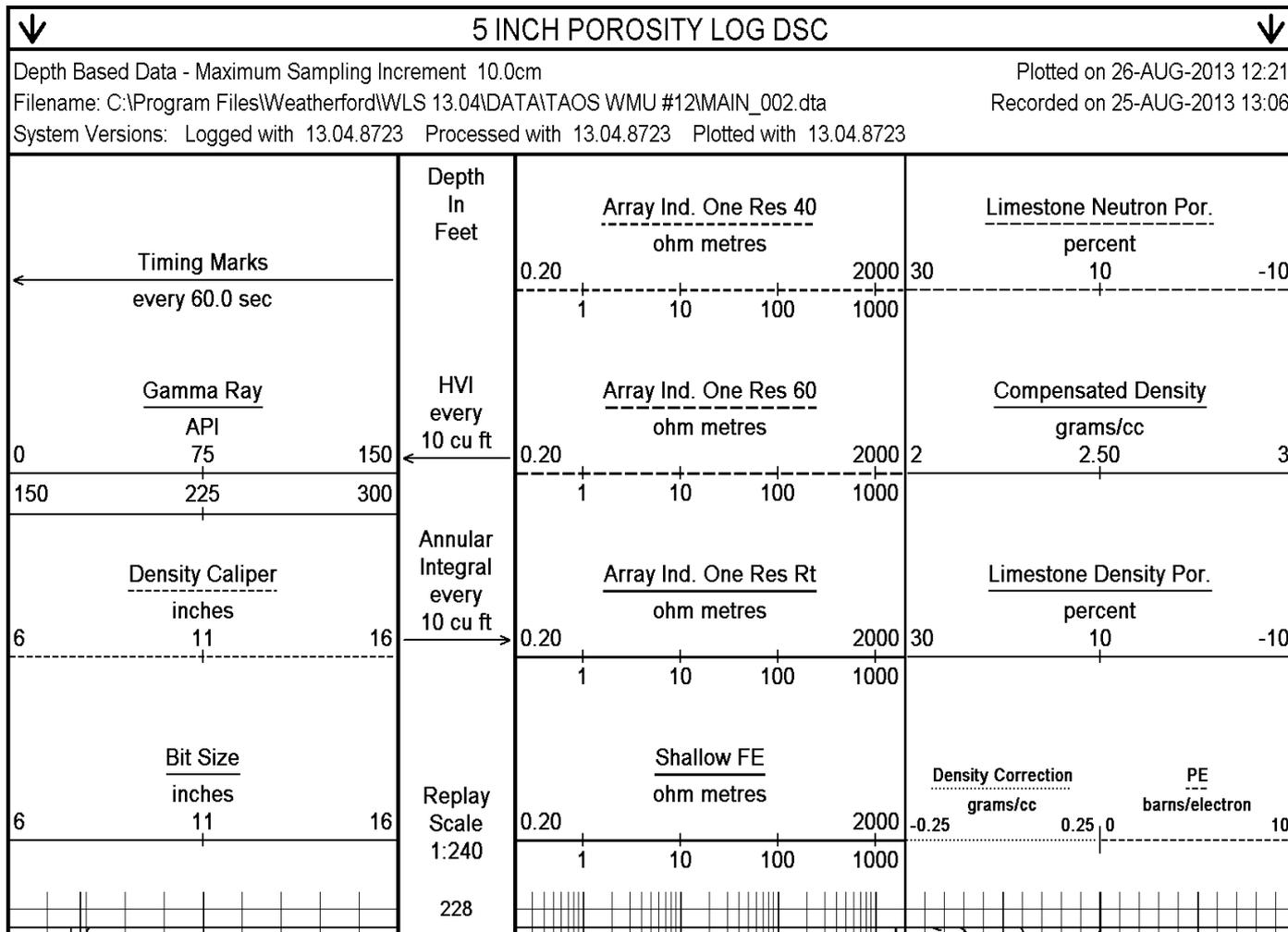
SERVICE ORDER # 3540216

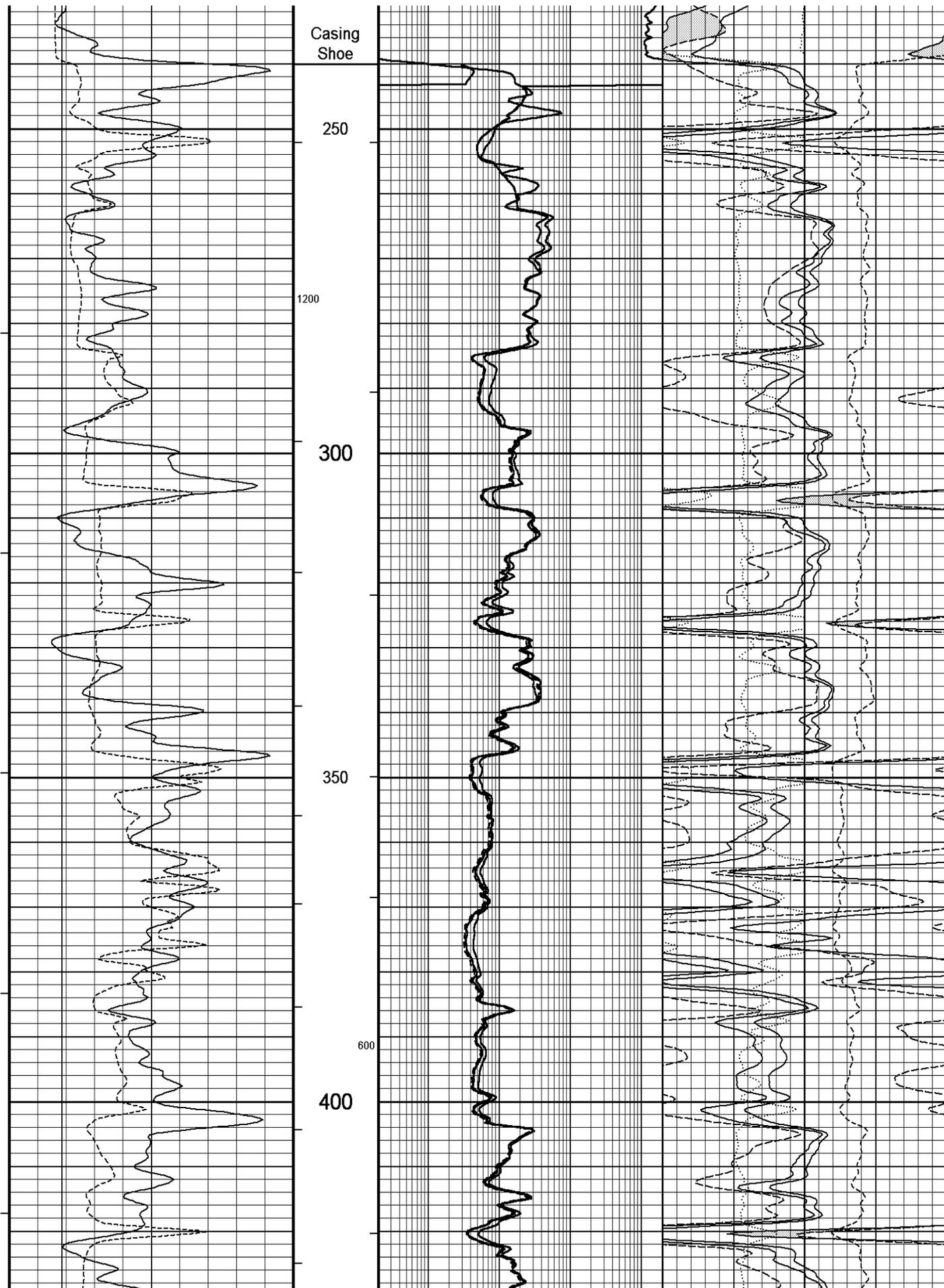
RIG:FOSSIL #2

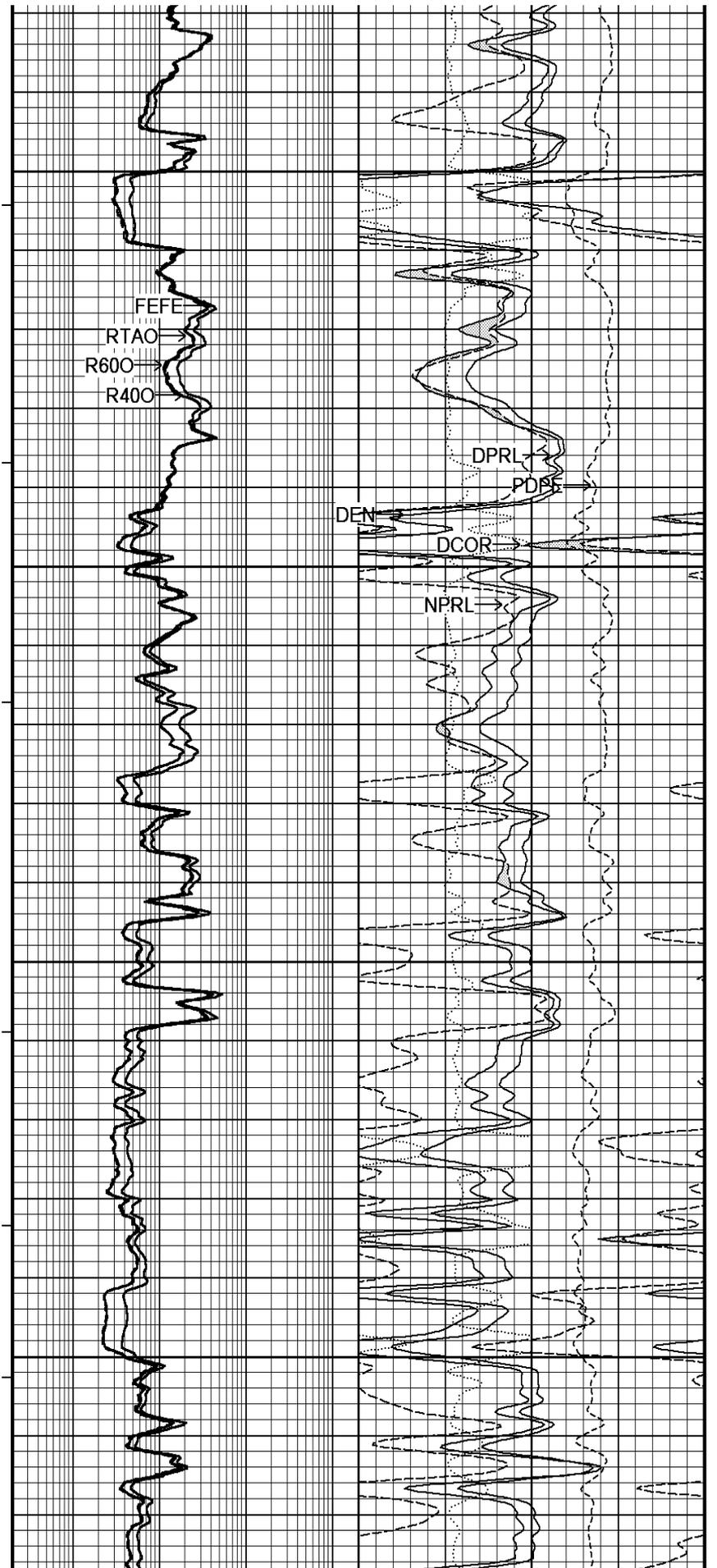
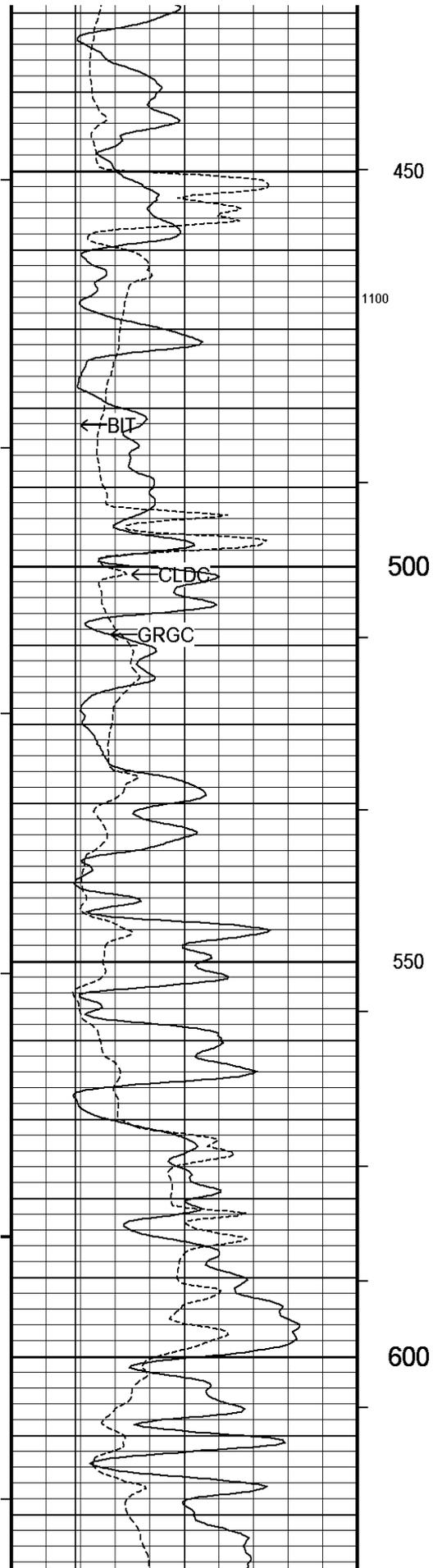
OPERATOR(S):J. TURNER

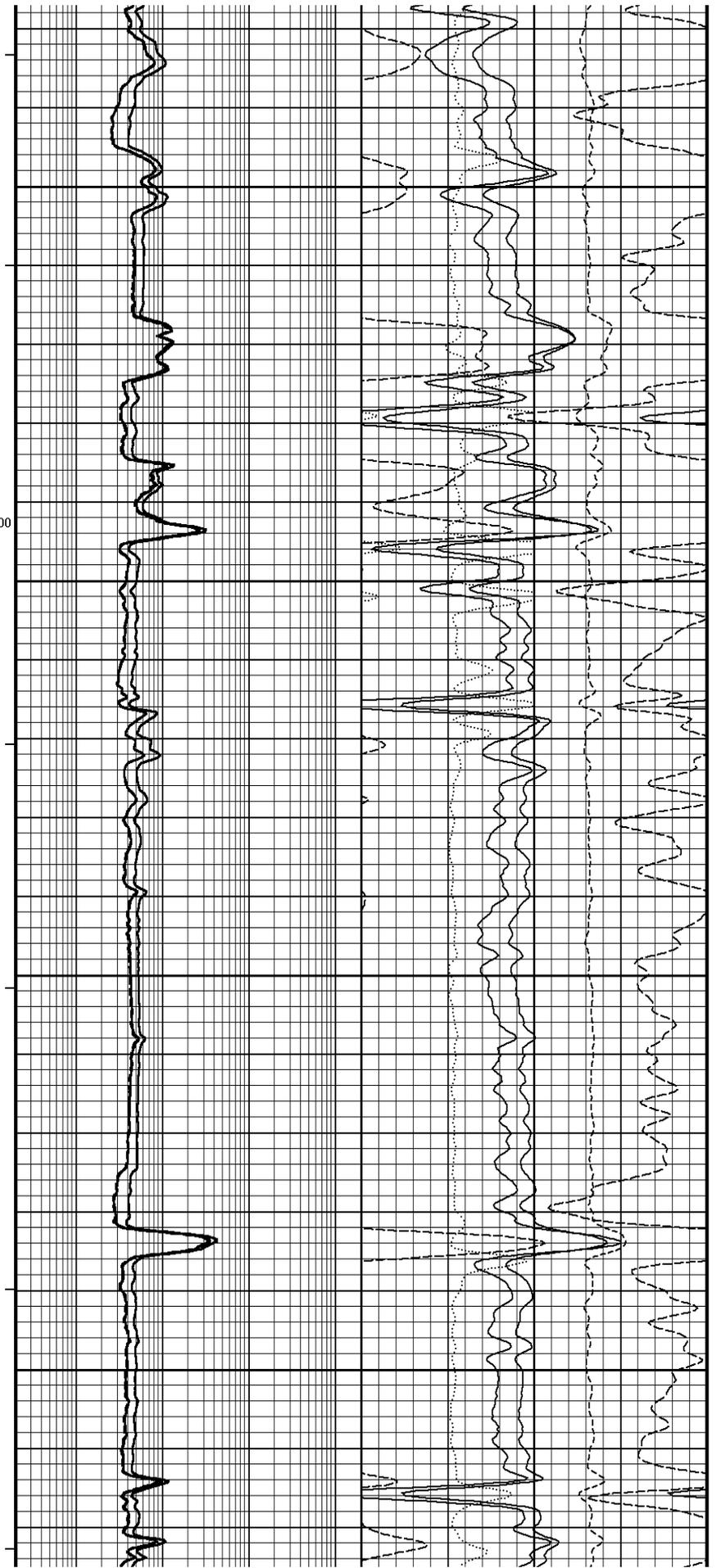
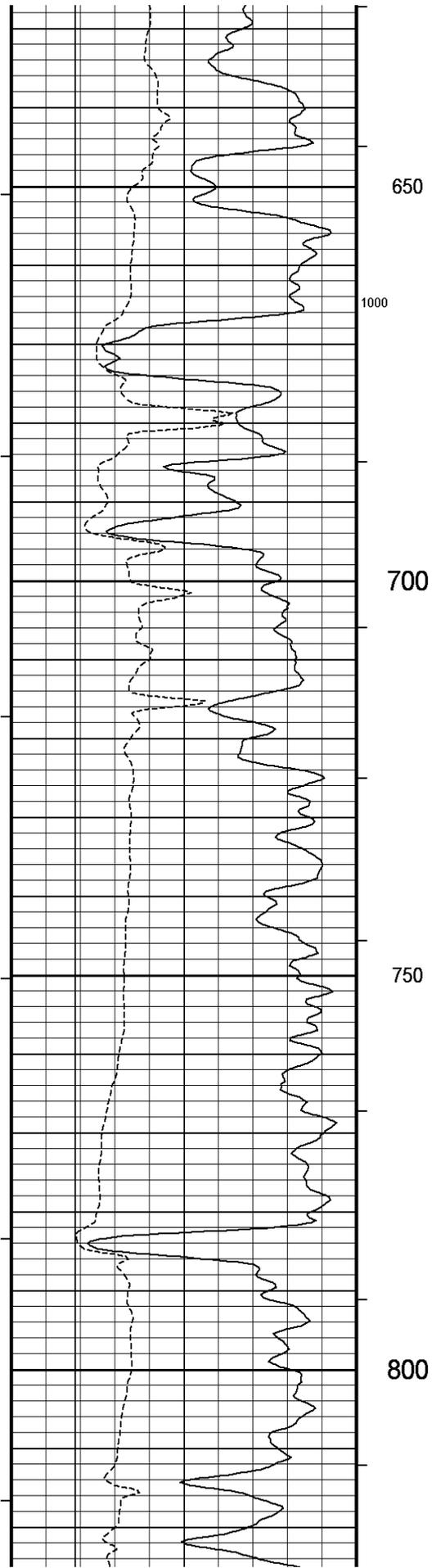
\*WASHOUTS AND HOLE RUGOSITY WILL AFFECT LOG QAULTY AND REPEATABILITY\*

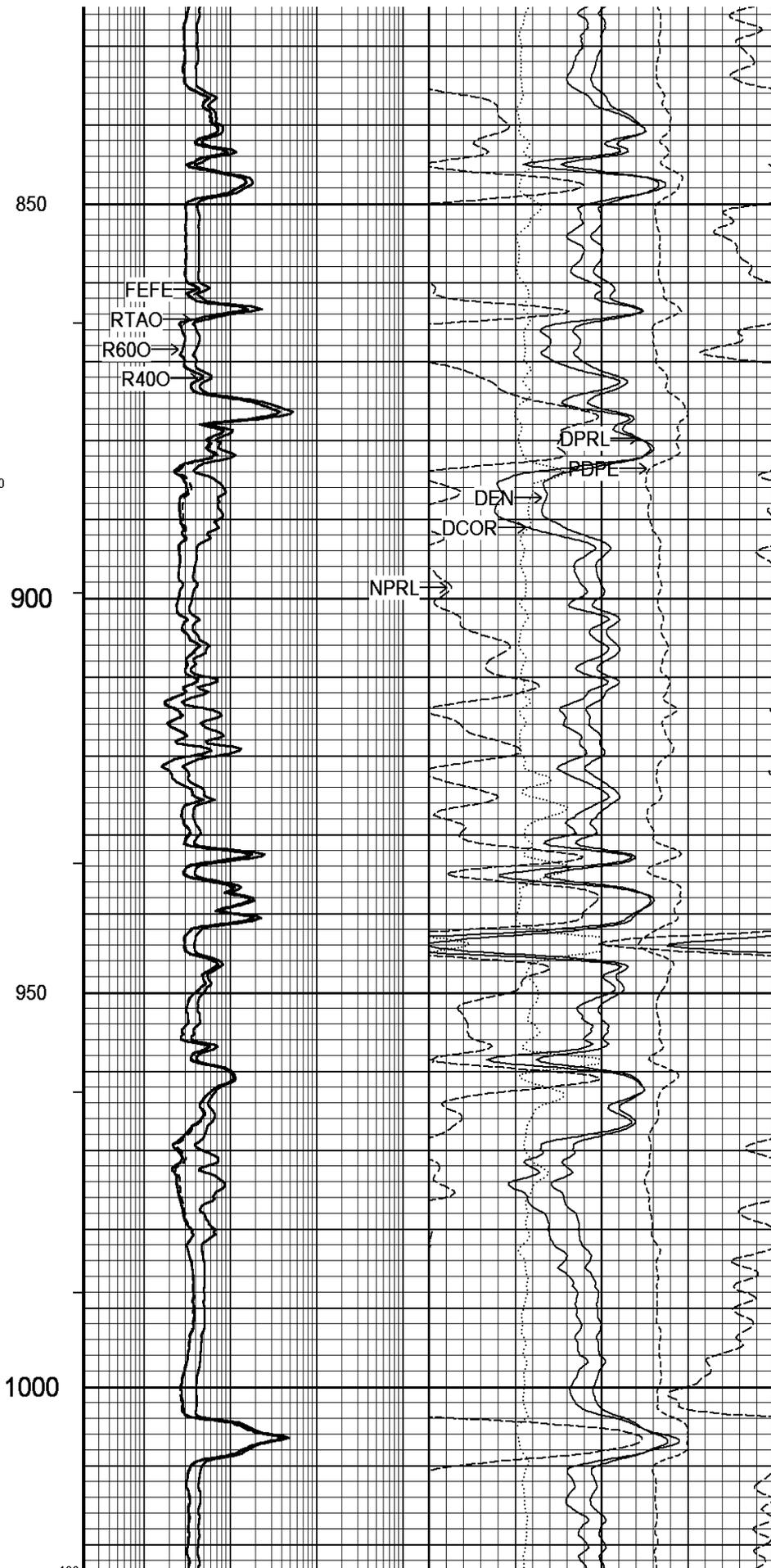
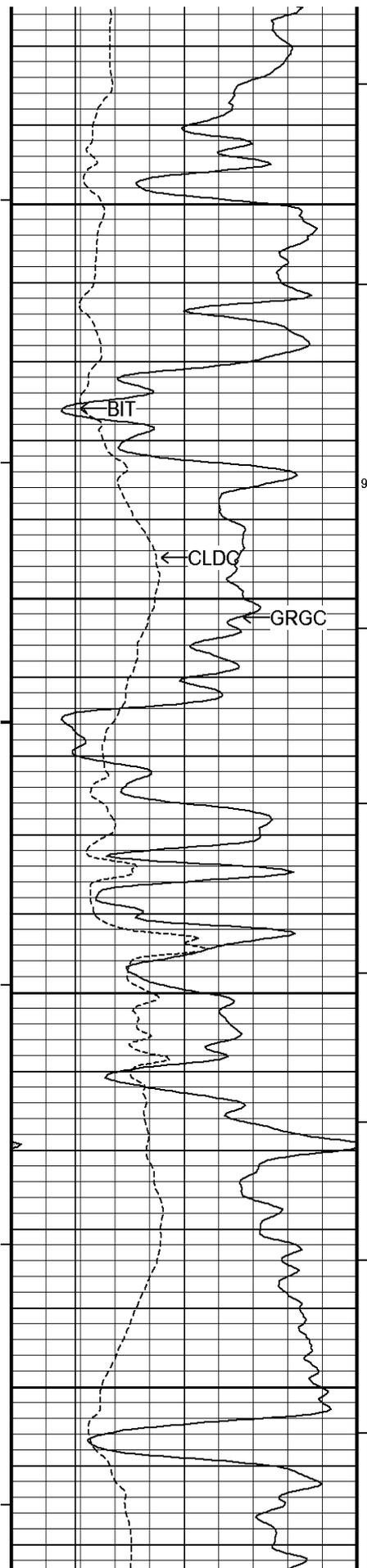
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

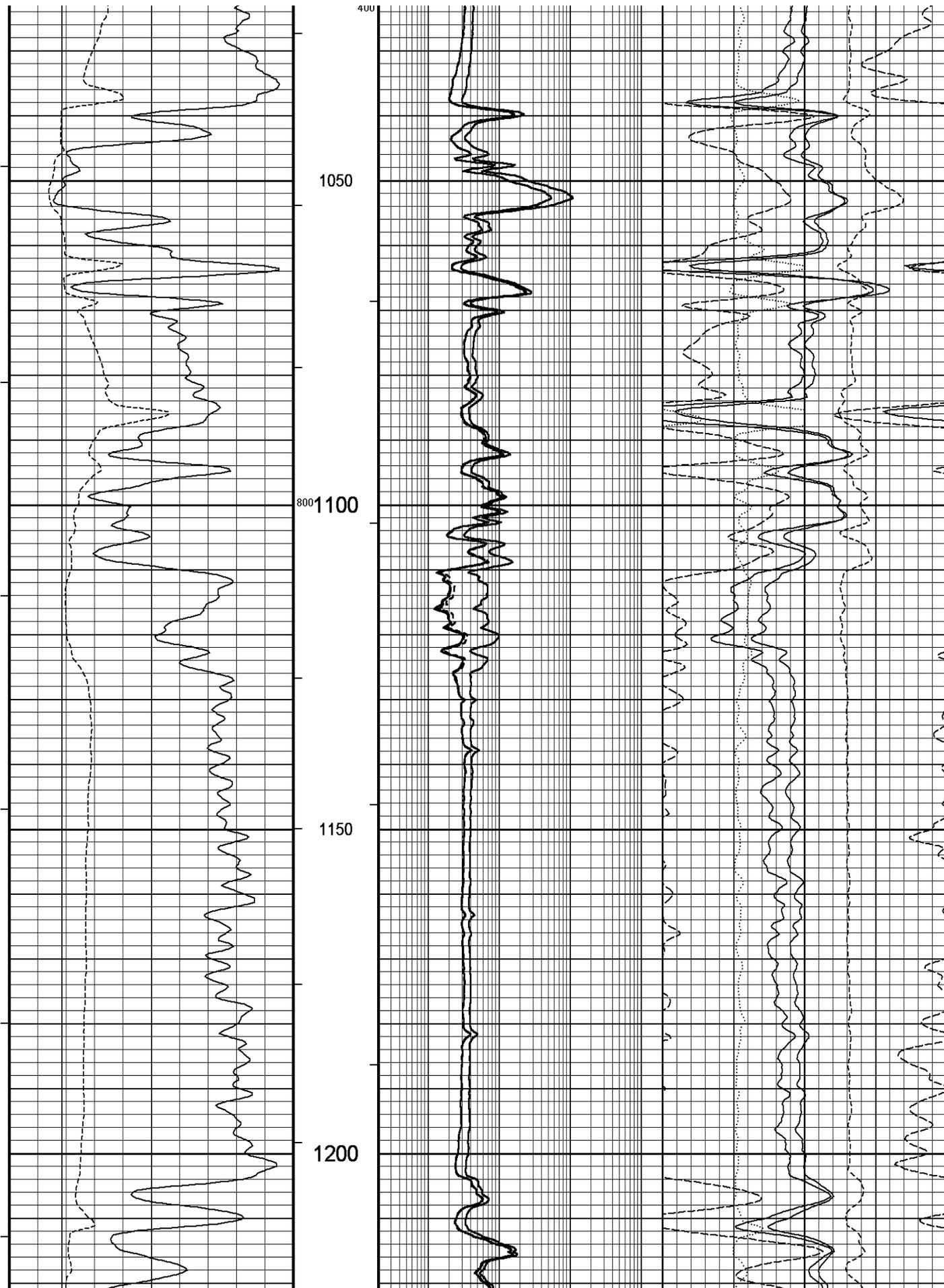


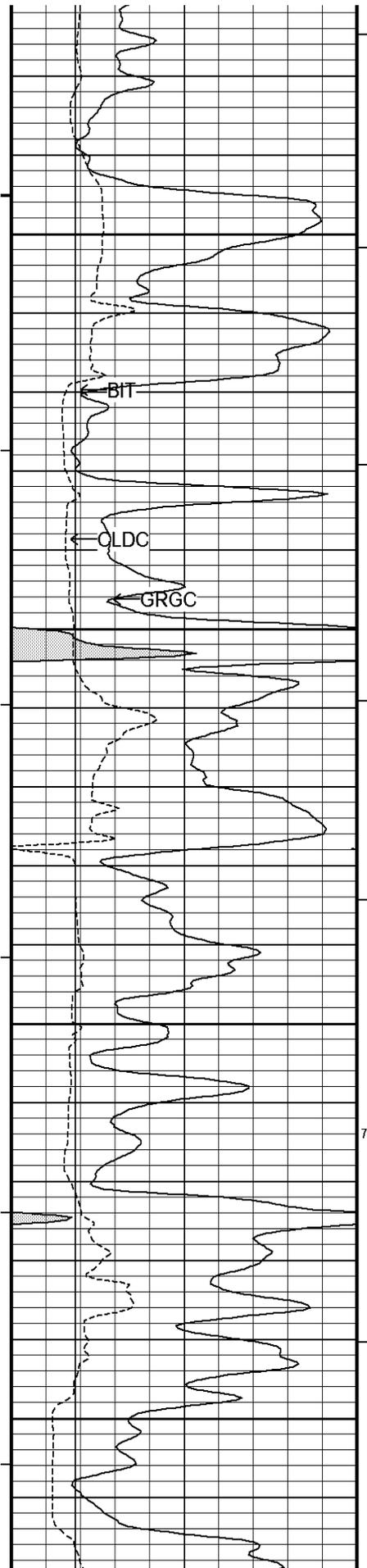












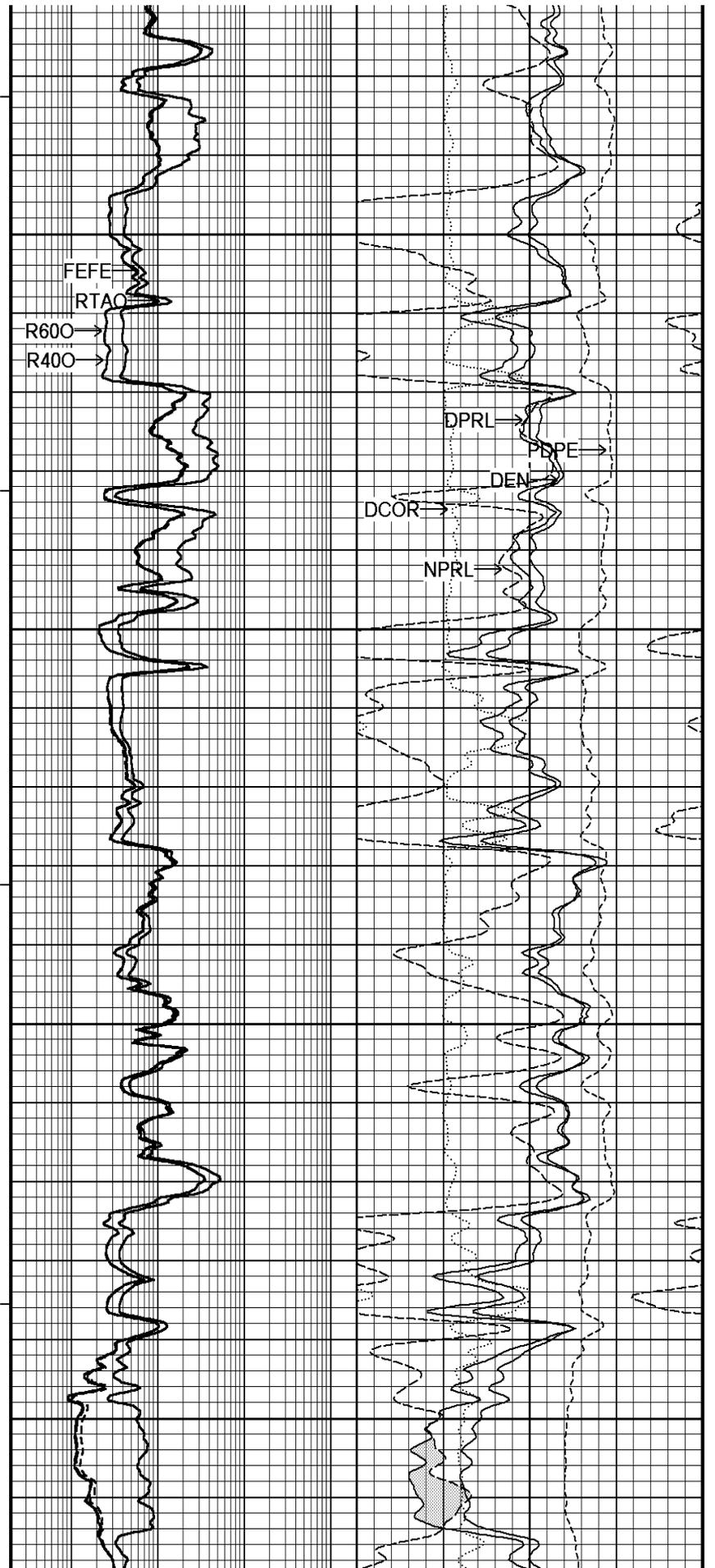
1250

1300

1350

700

1400



FEFE

RTAO

R600

R400

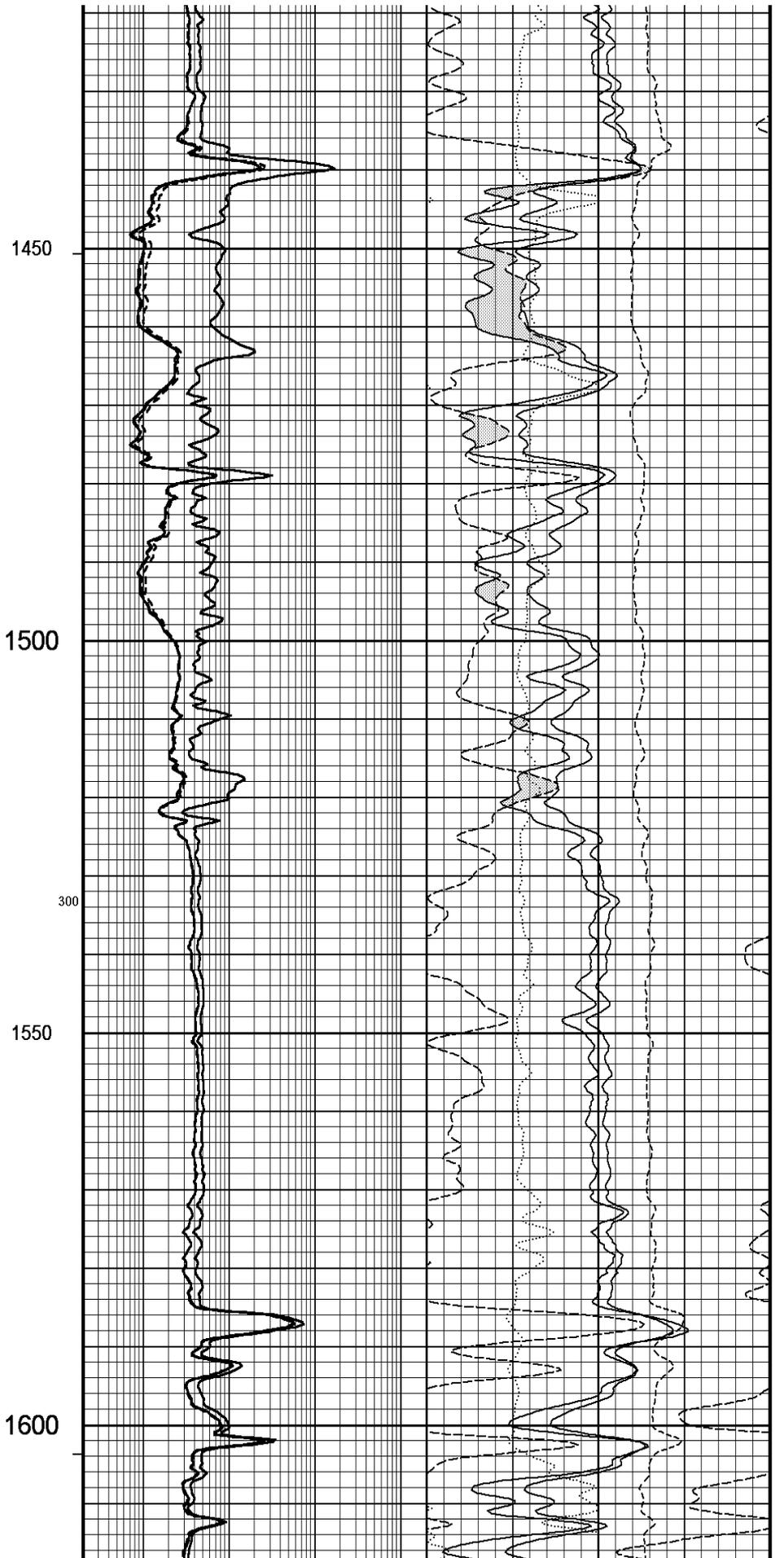
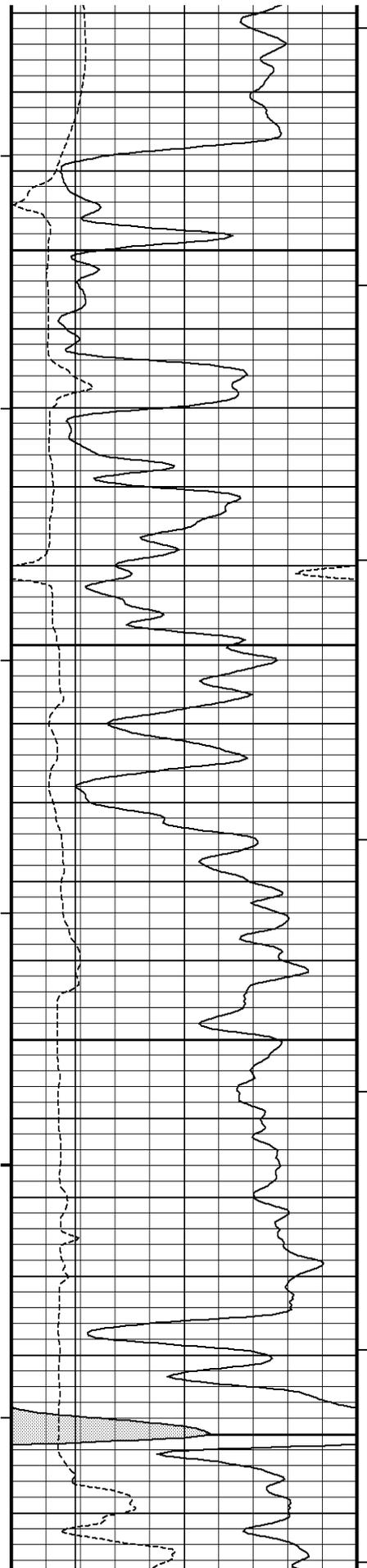
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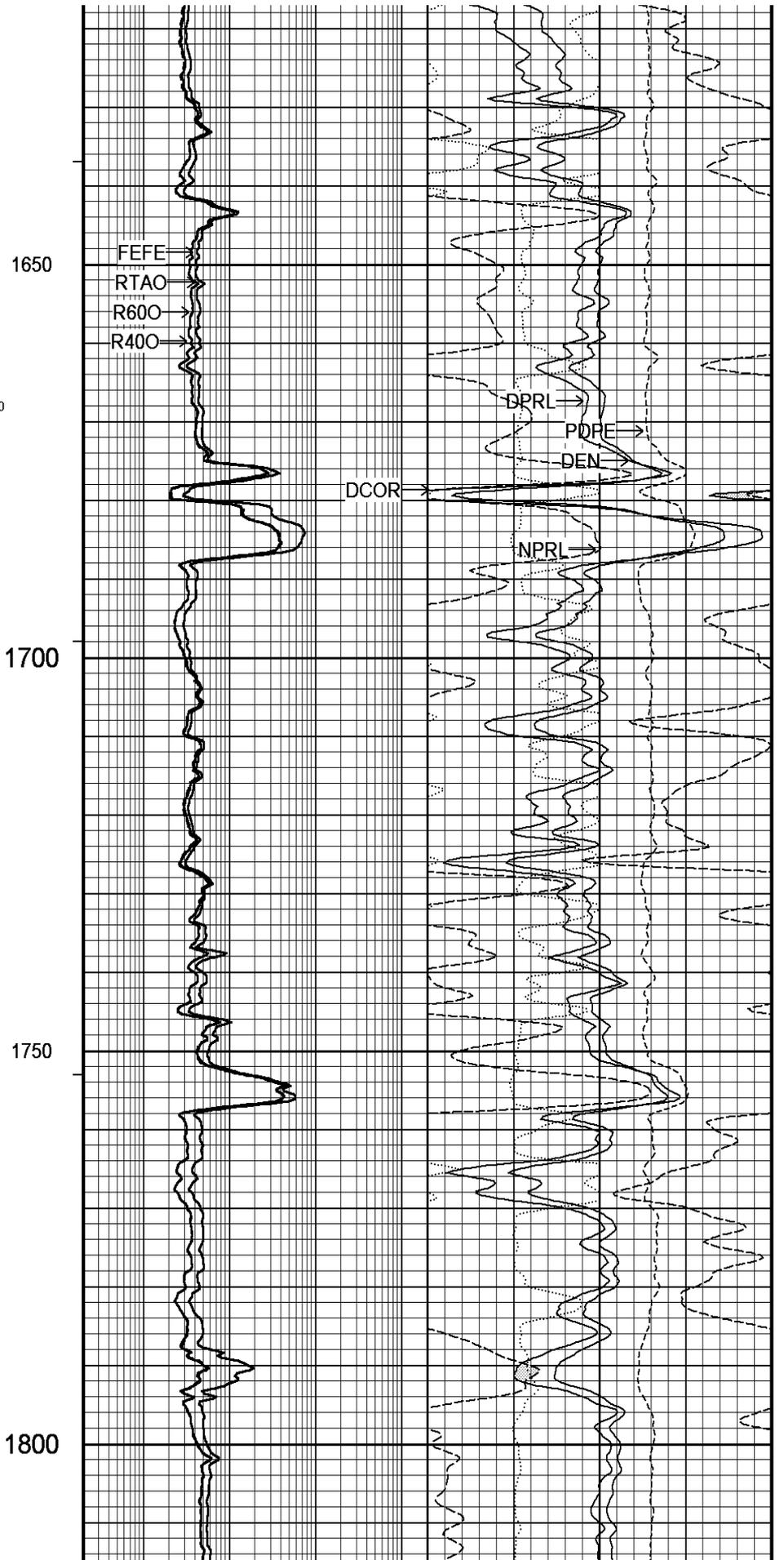
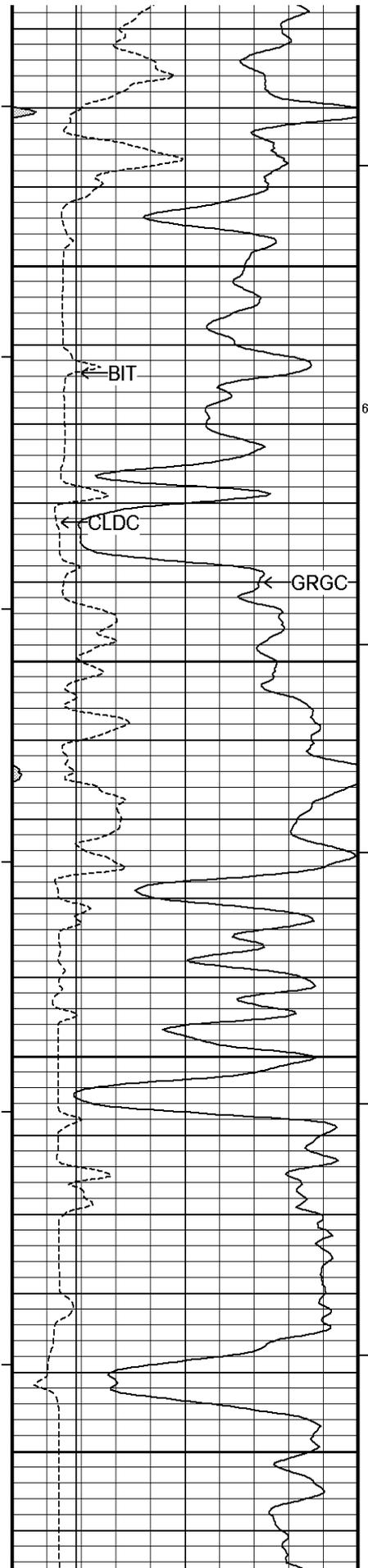
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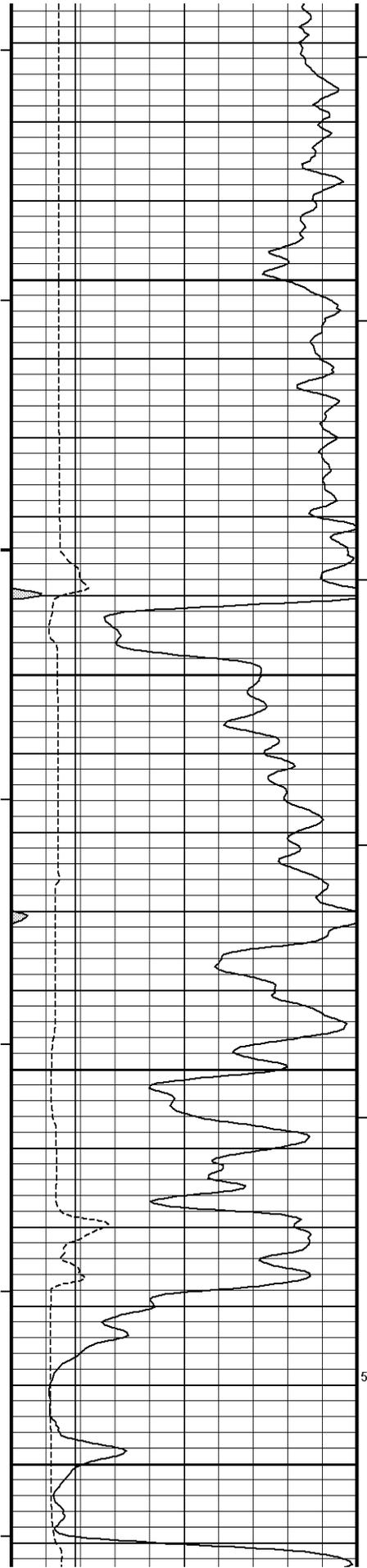
DEN

DCOR

NPRL







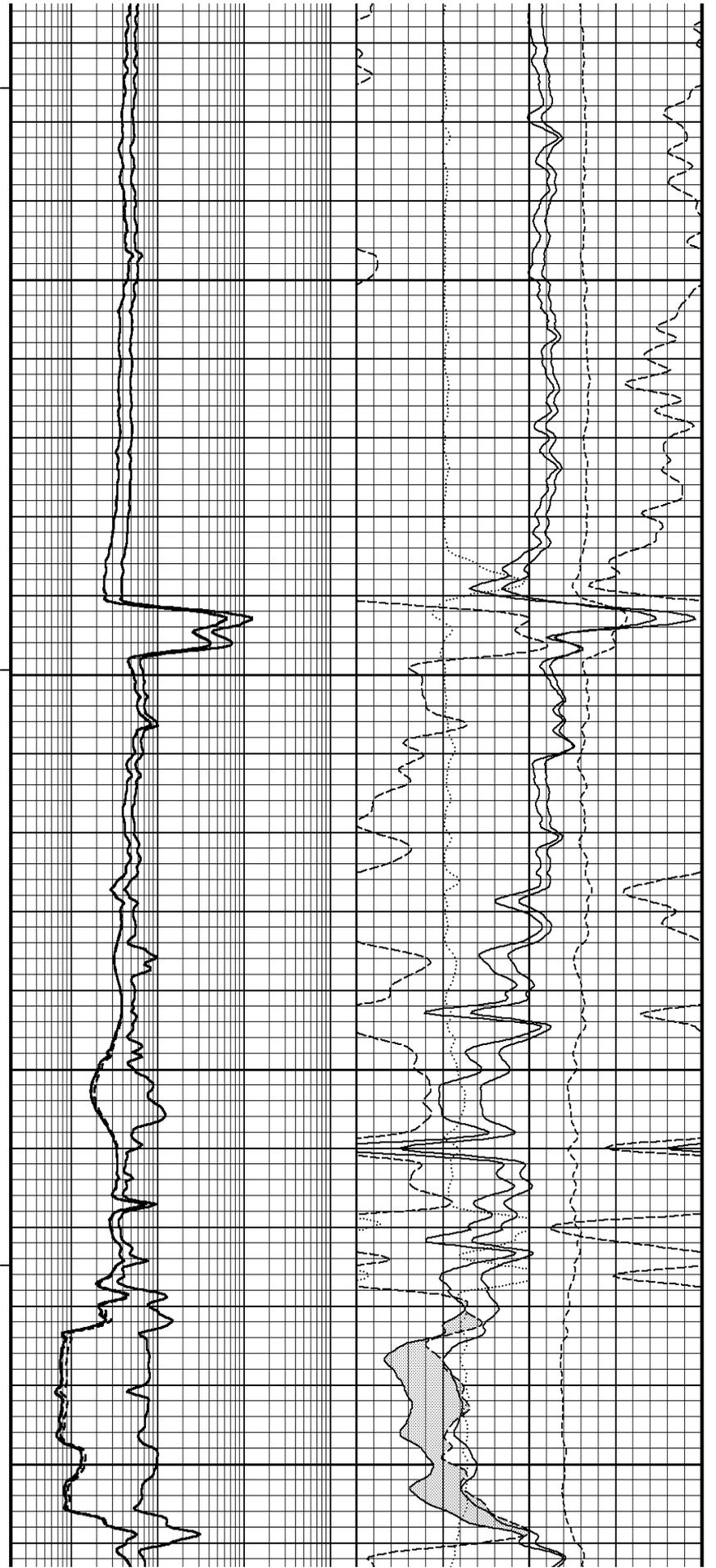
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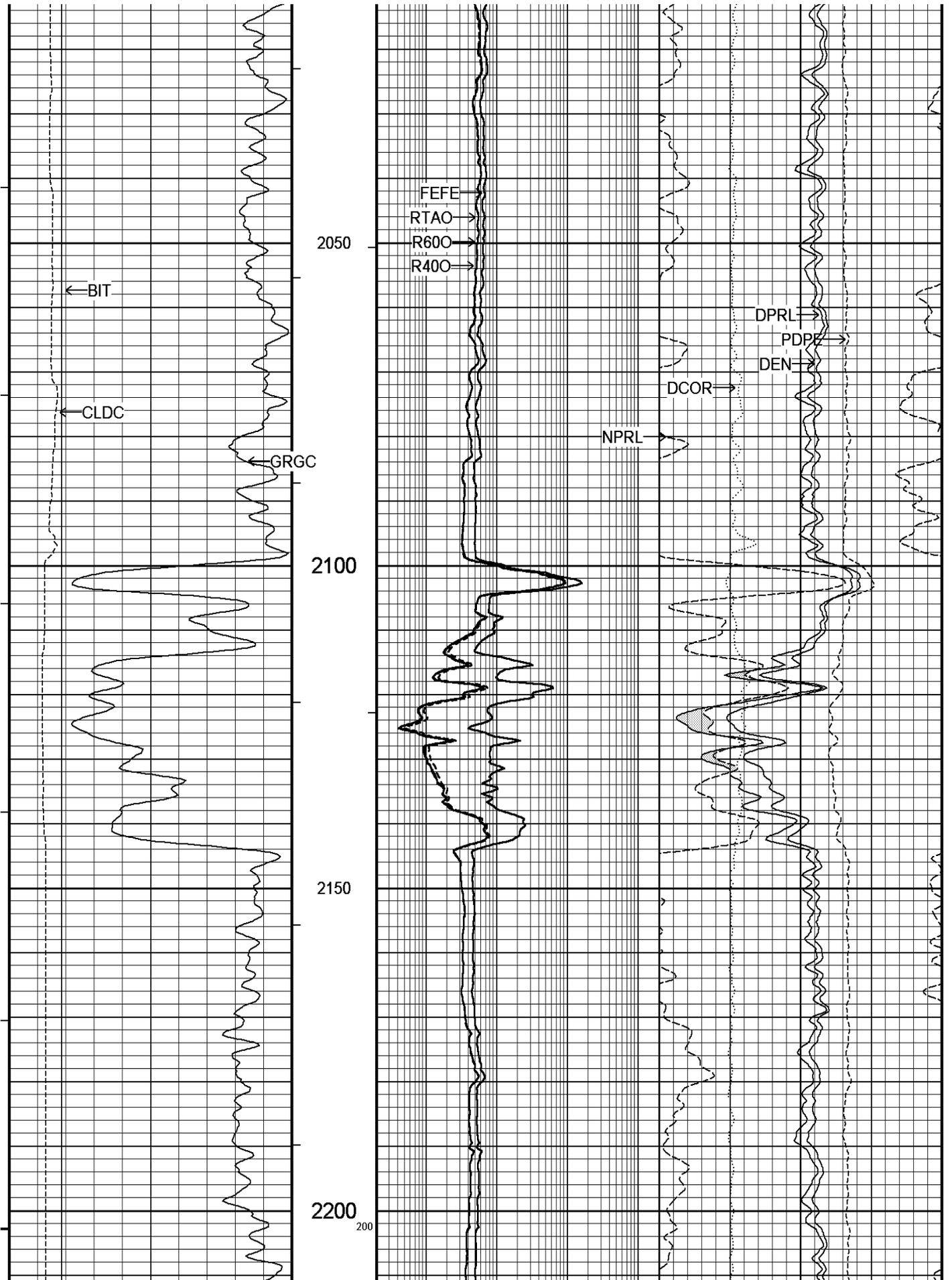
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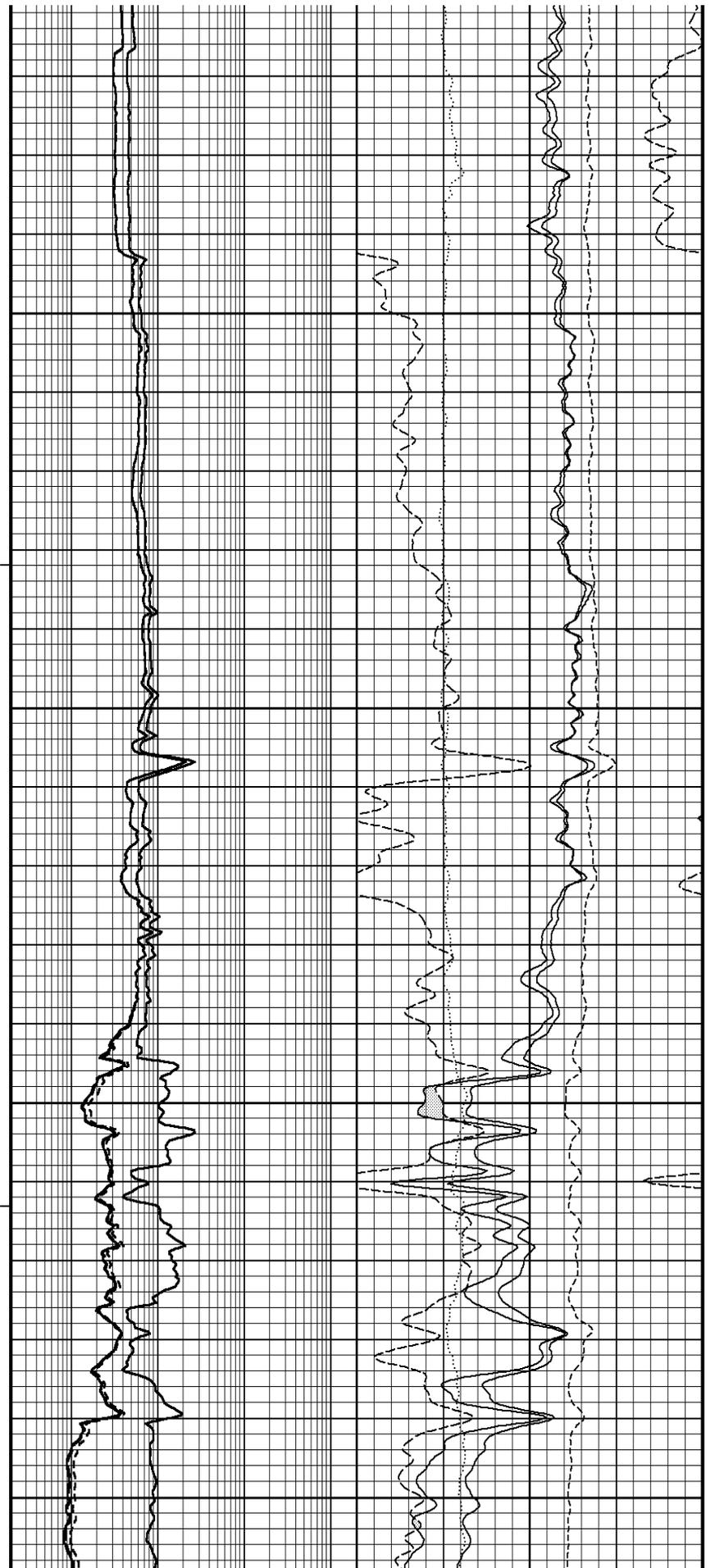
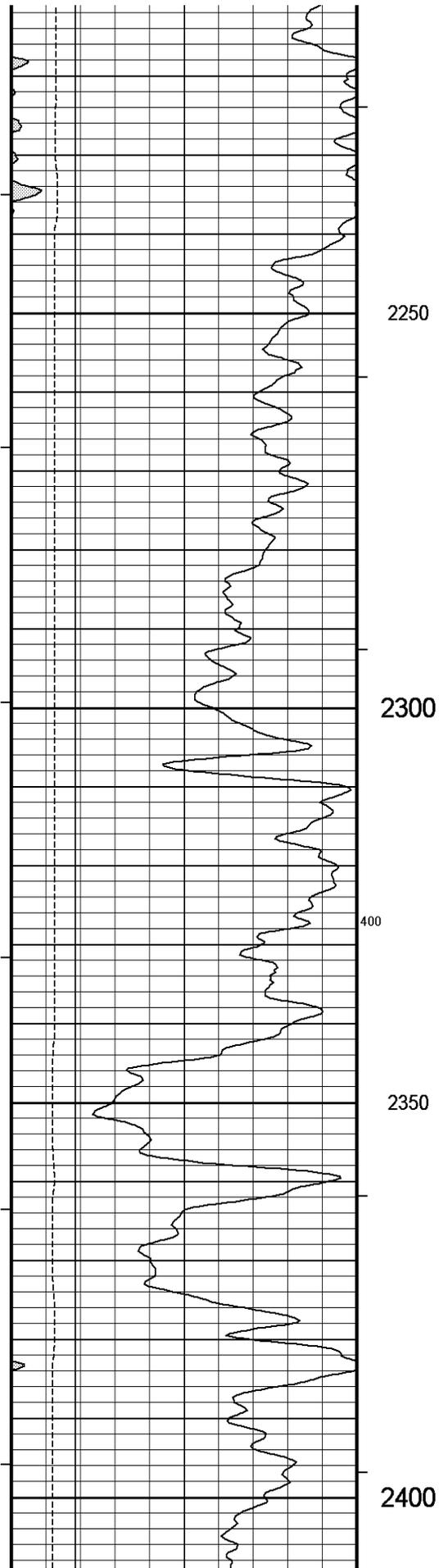
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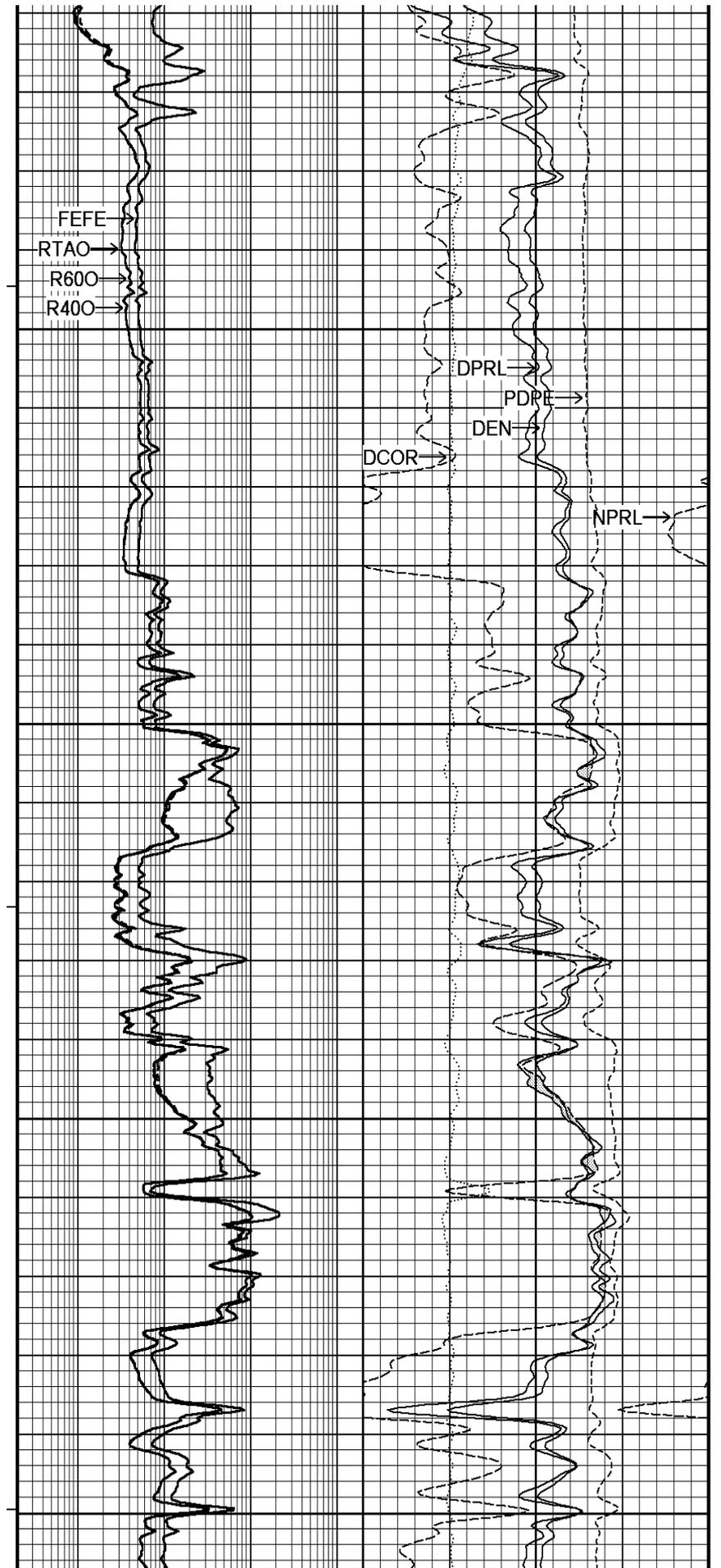
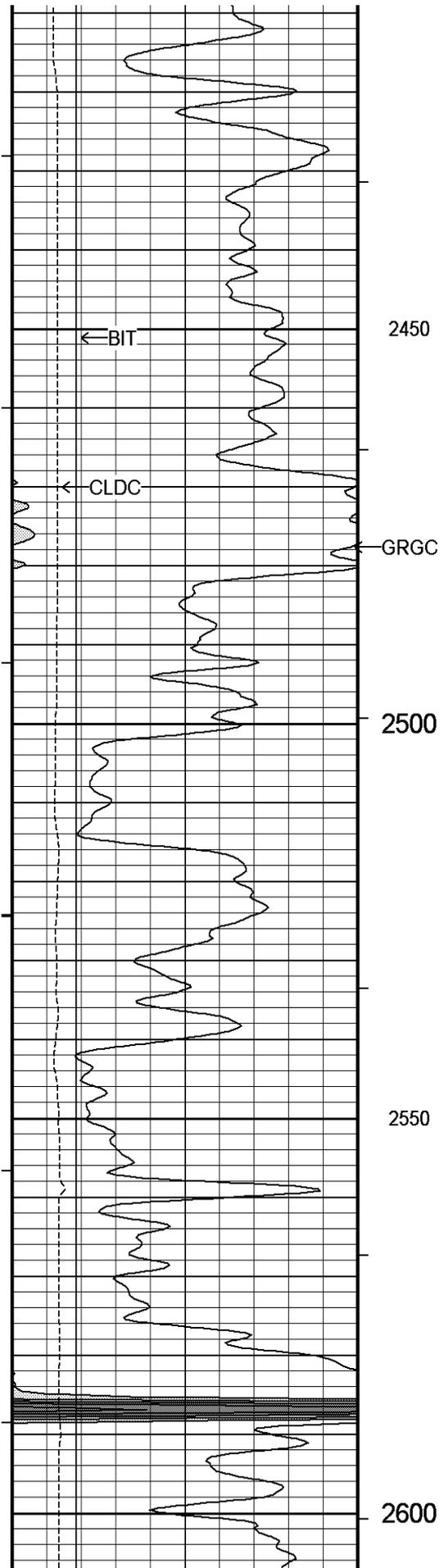
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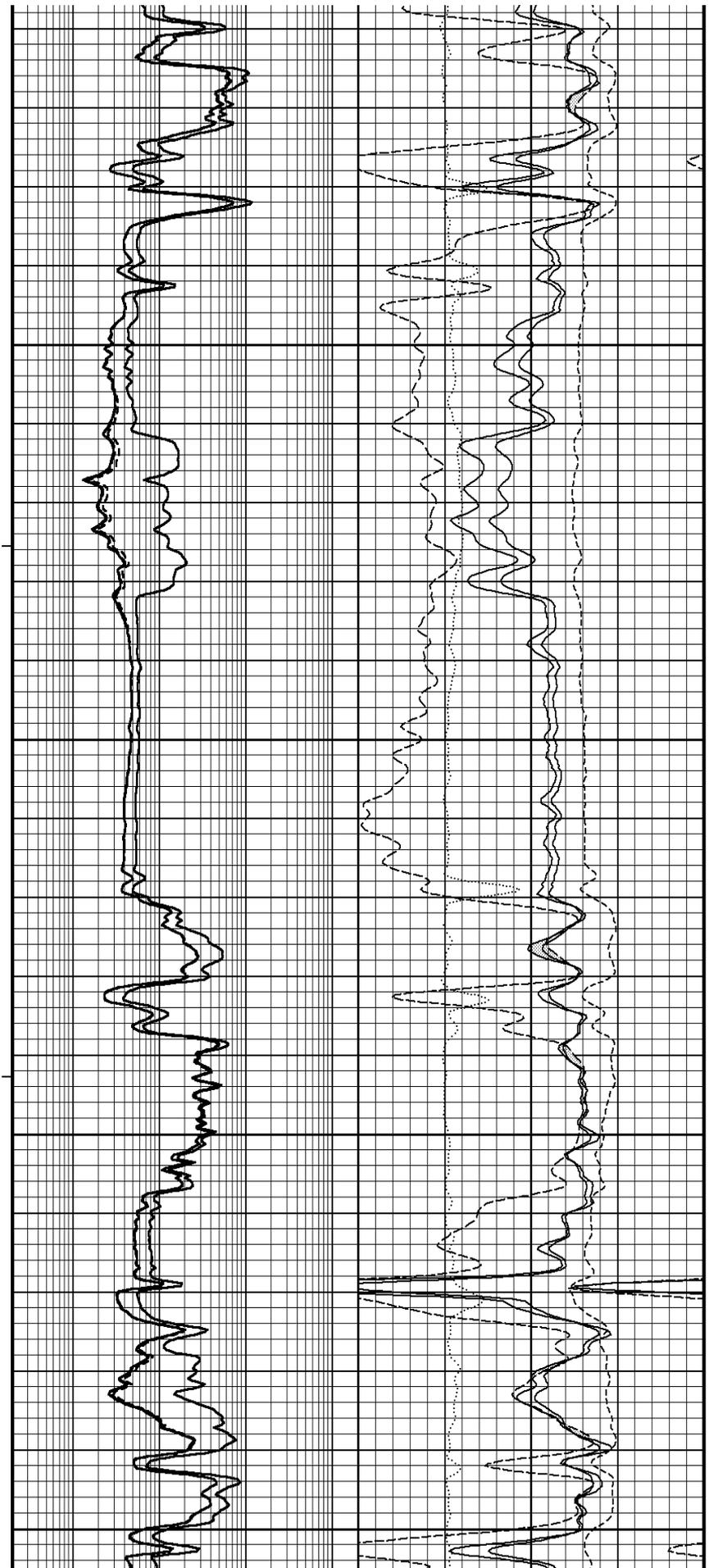
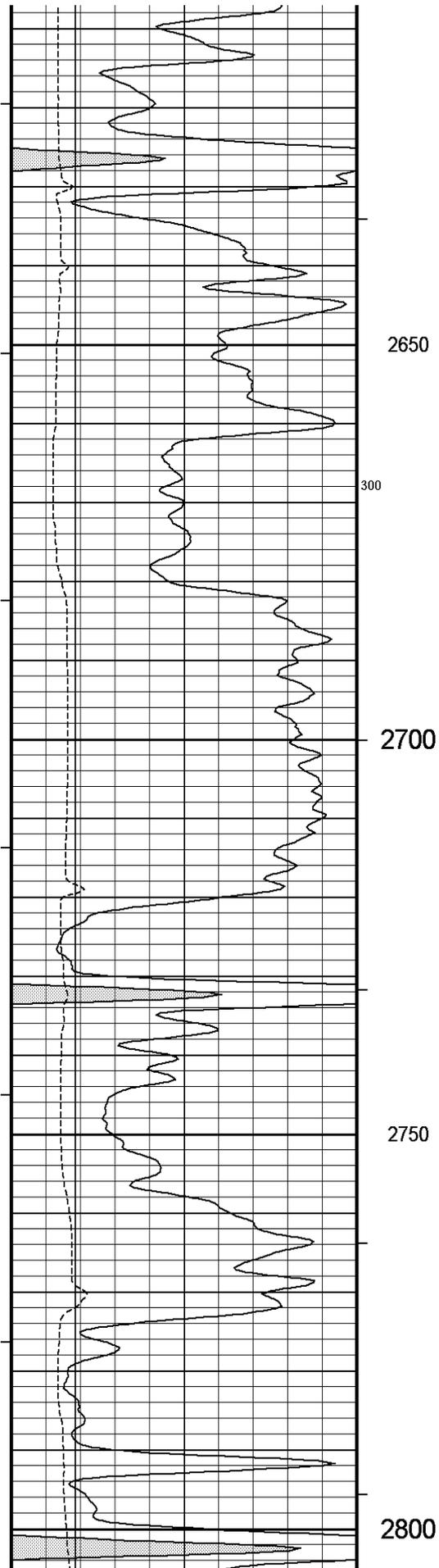
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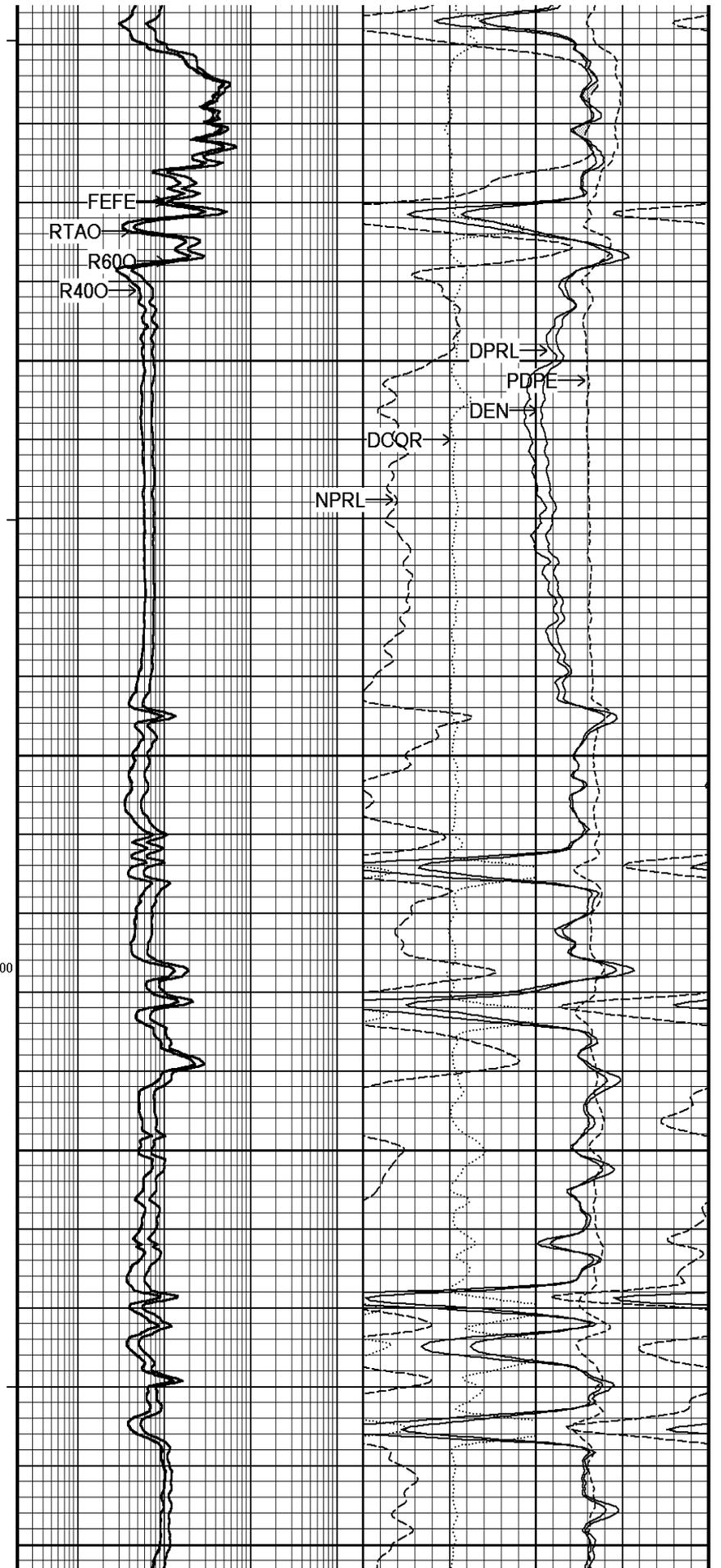
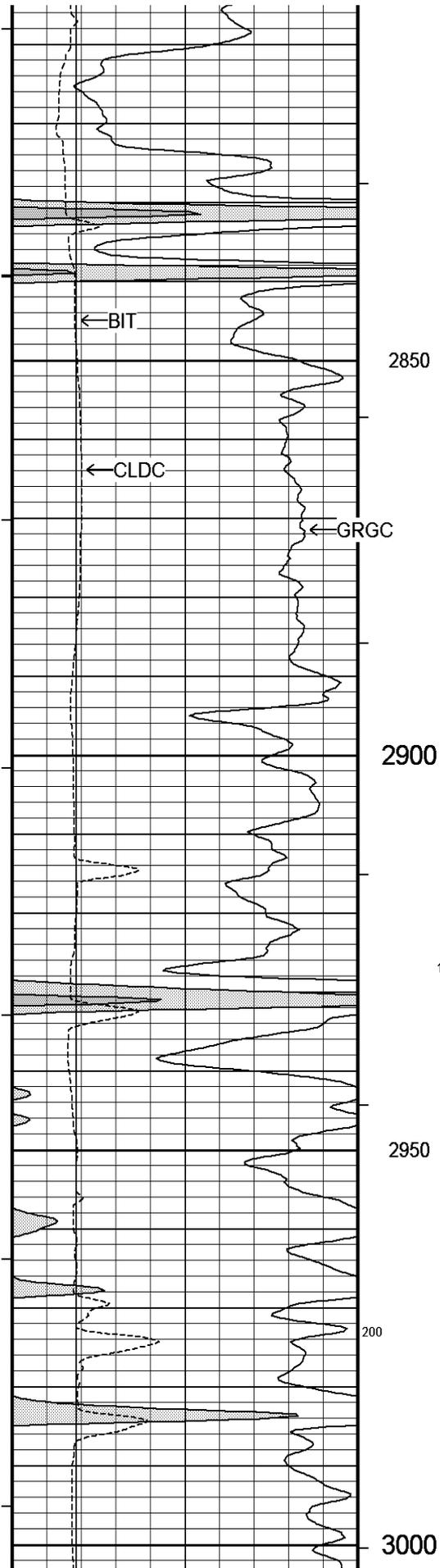


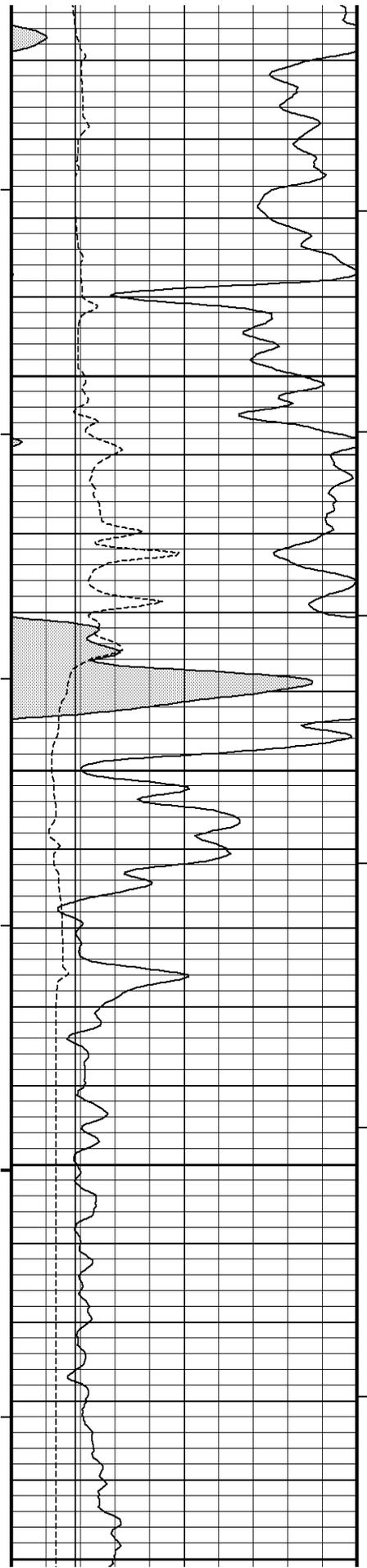










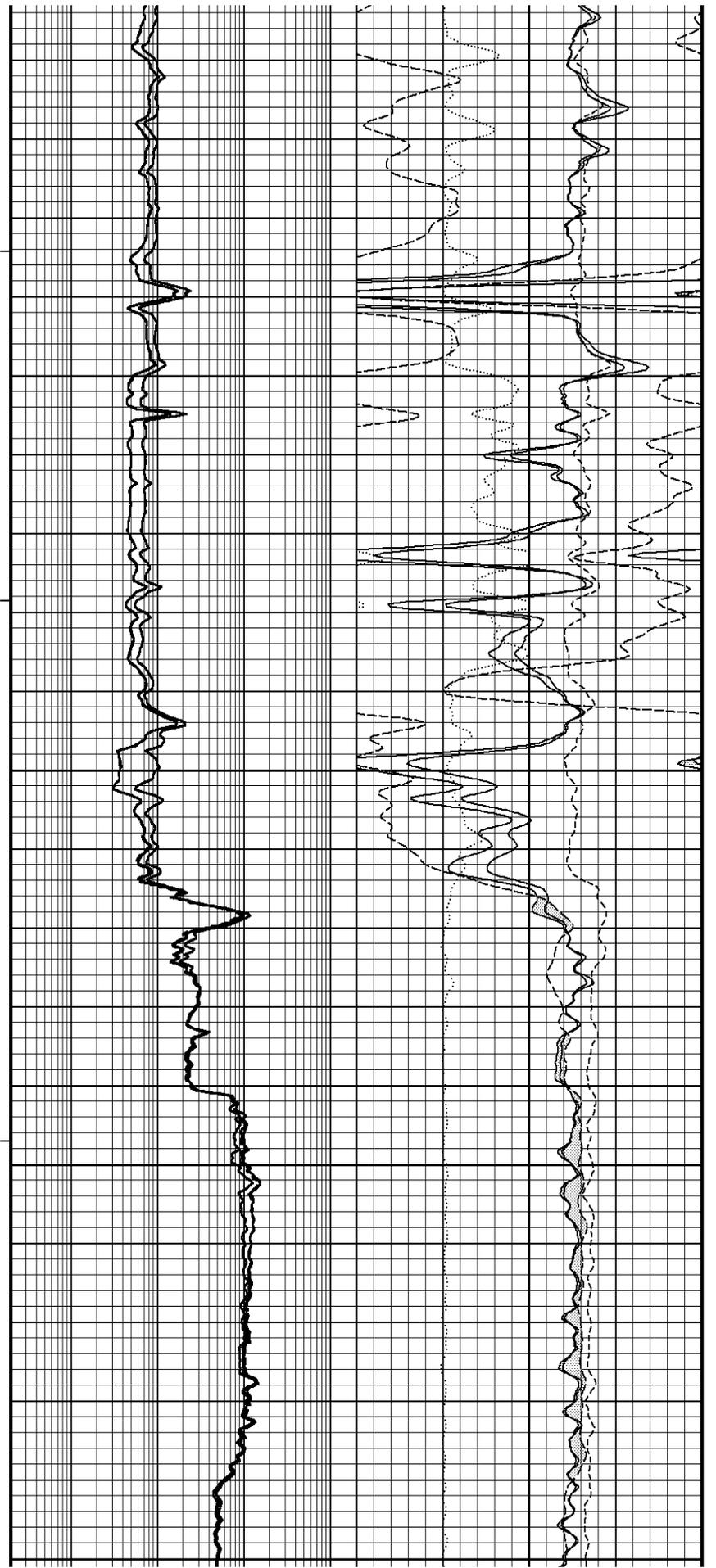


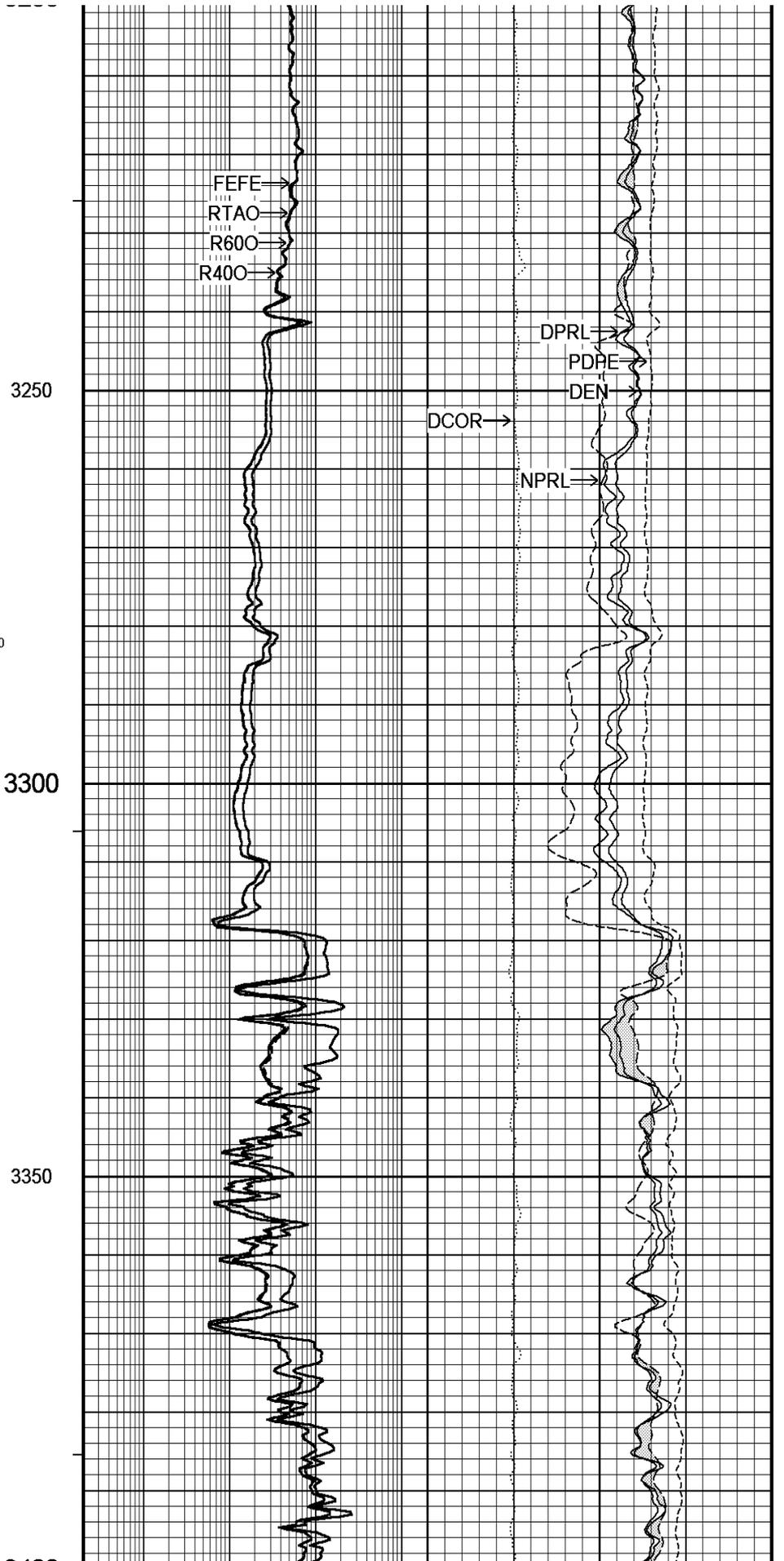
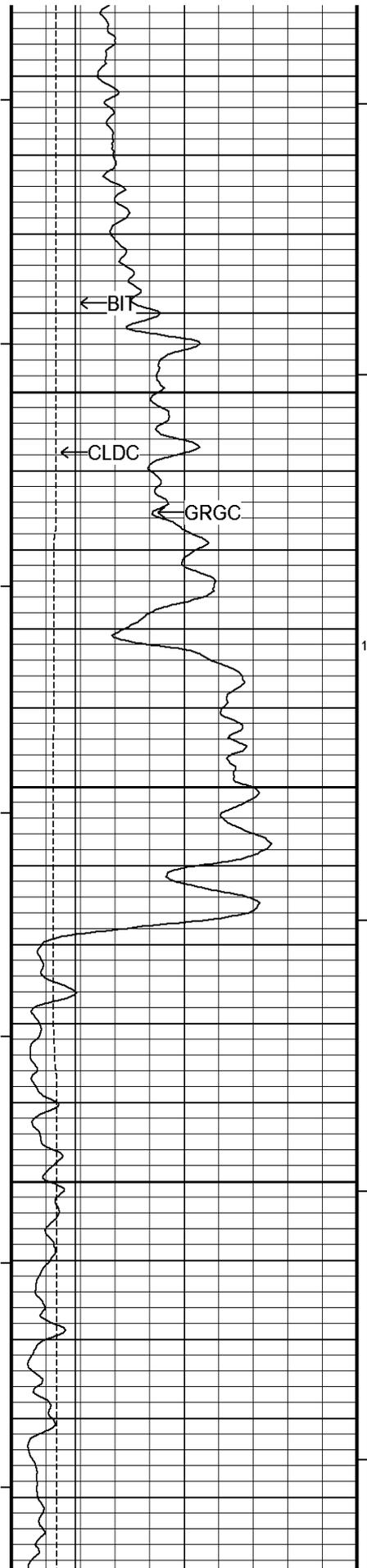
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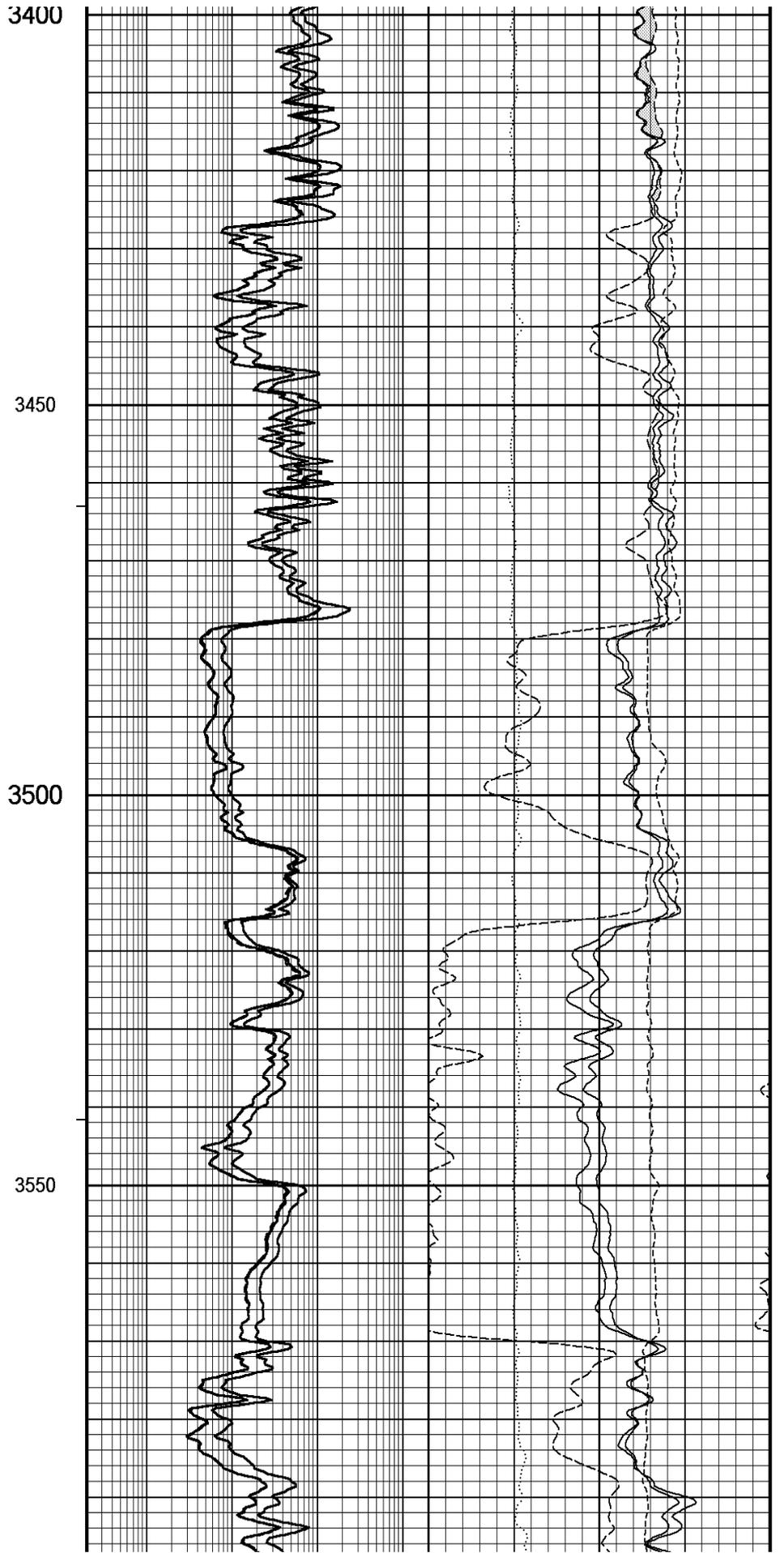
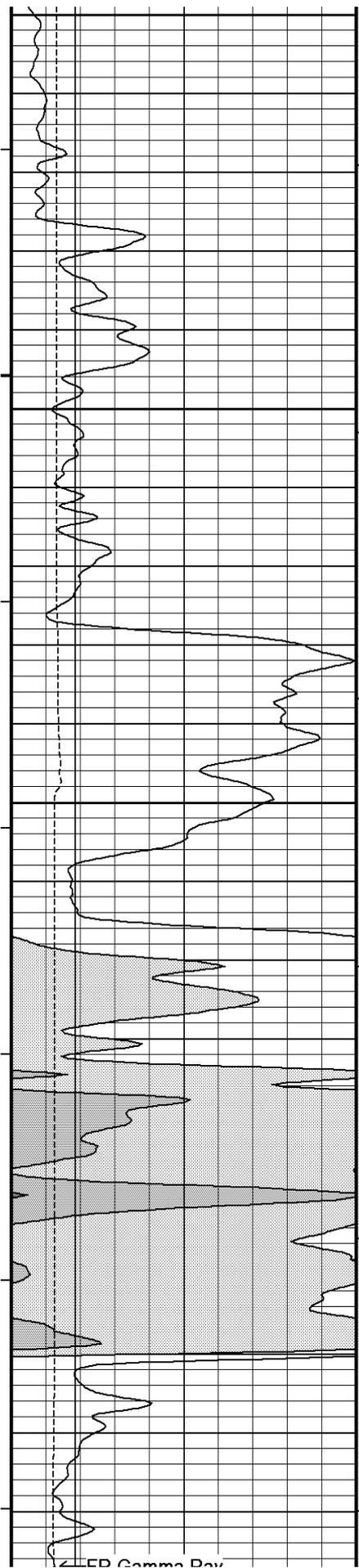
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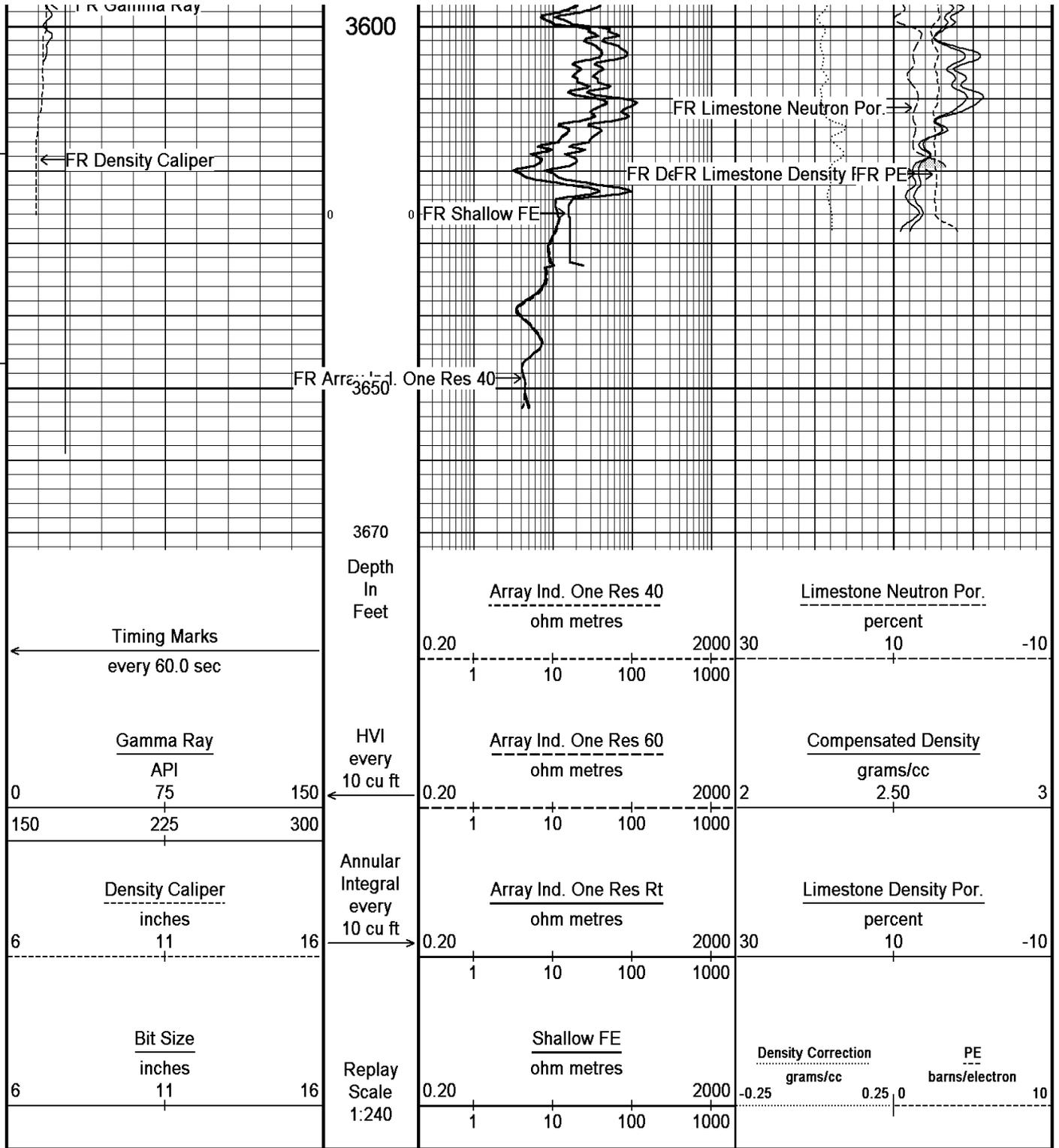
3150

3200









Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 26-AUG-2013 12:21

Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN\_002.dta

Recorded on 25-AUG-2013 13:06

System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723

↑ 5 INCH POROSITY LOG DSC ↑

↓ HIGH RESOLUTION SECTION DSC ↓

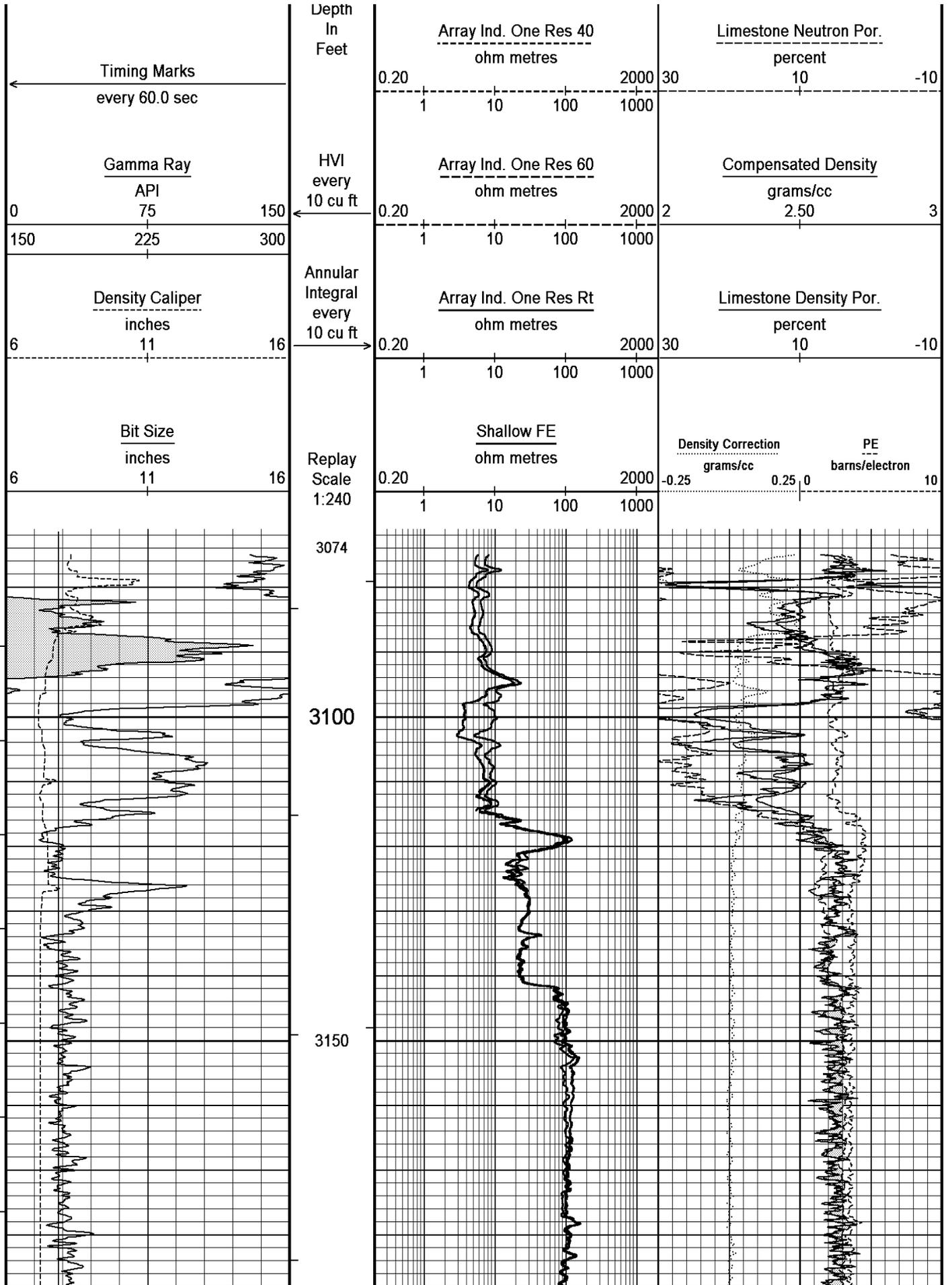
Depth Based Data - Maximum Sampling Increment 2.5cm

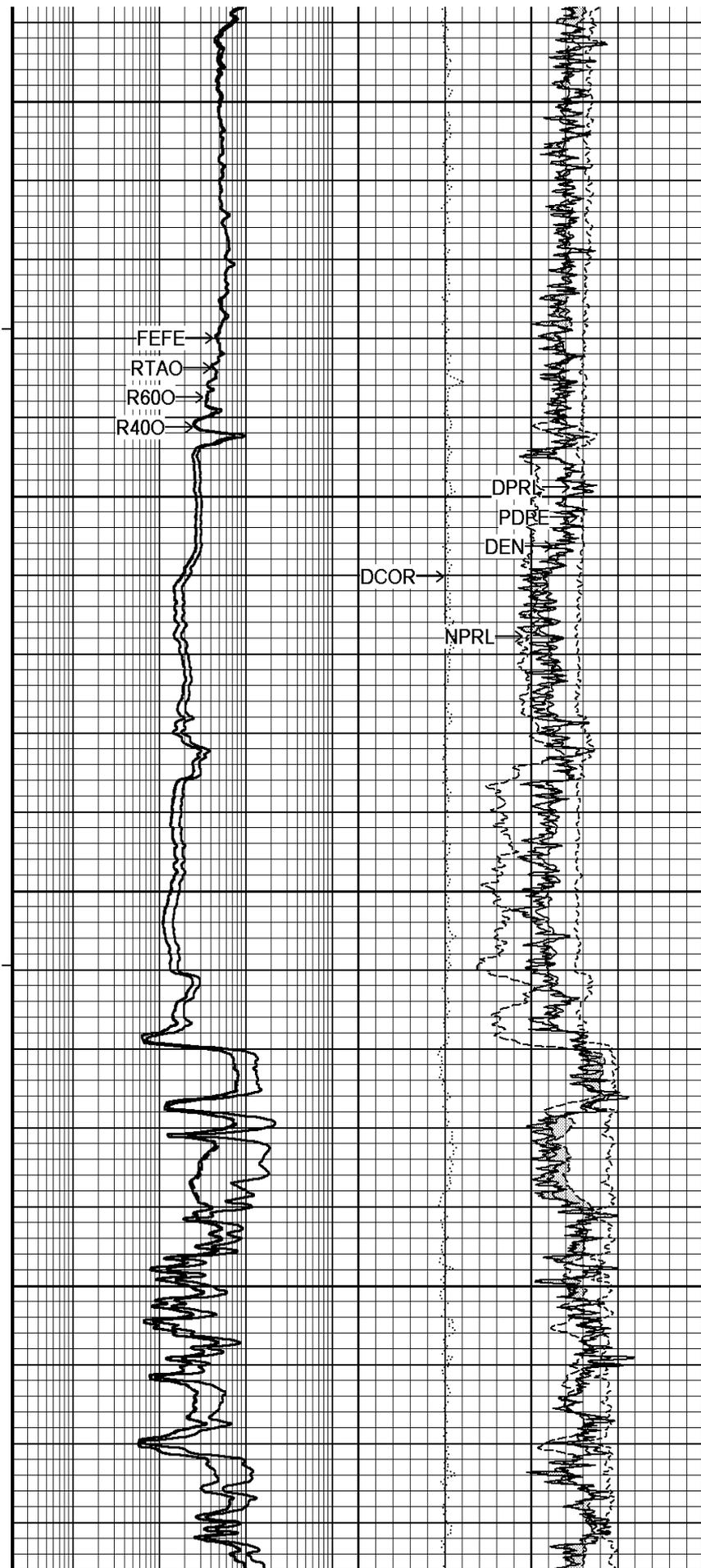
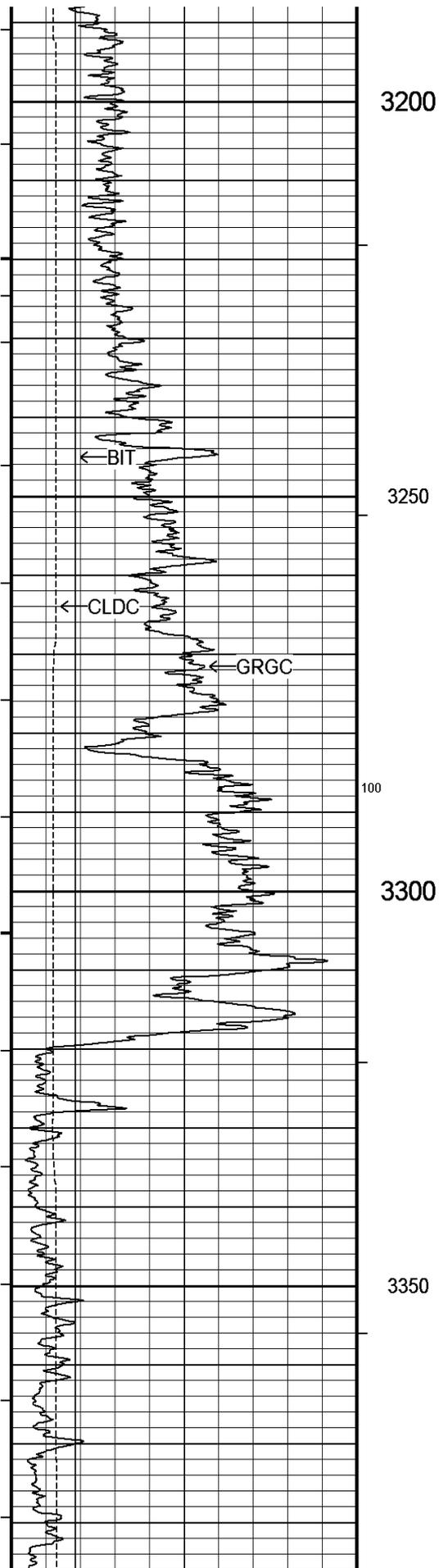
Plotted on 26-AUG-2013 12:21

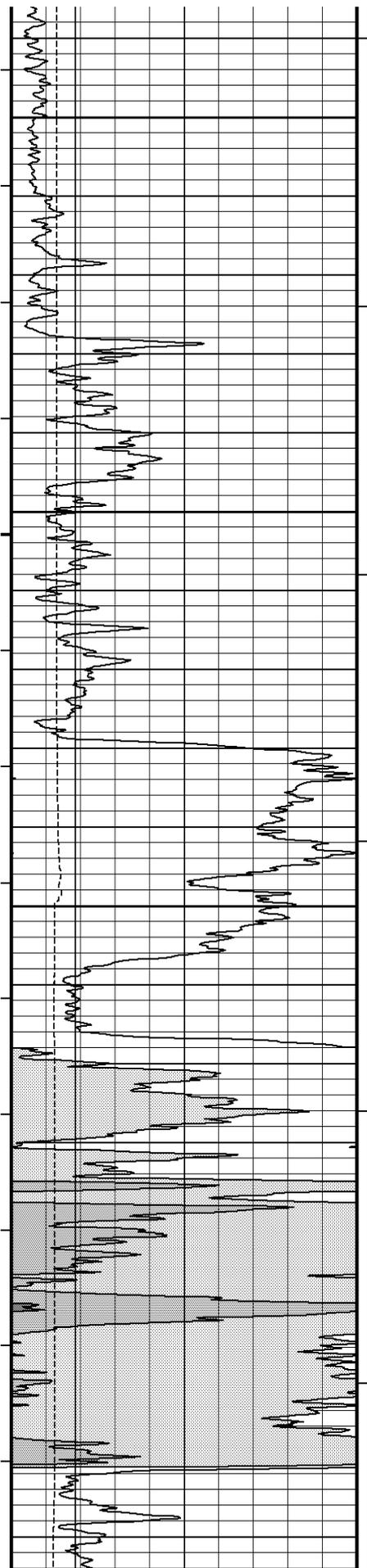
Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN\_001.dta

Recorded on 25-AUG-2013 12:13

System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723





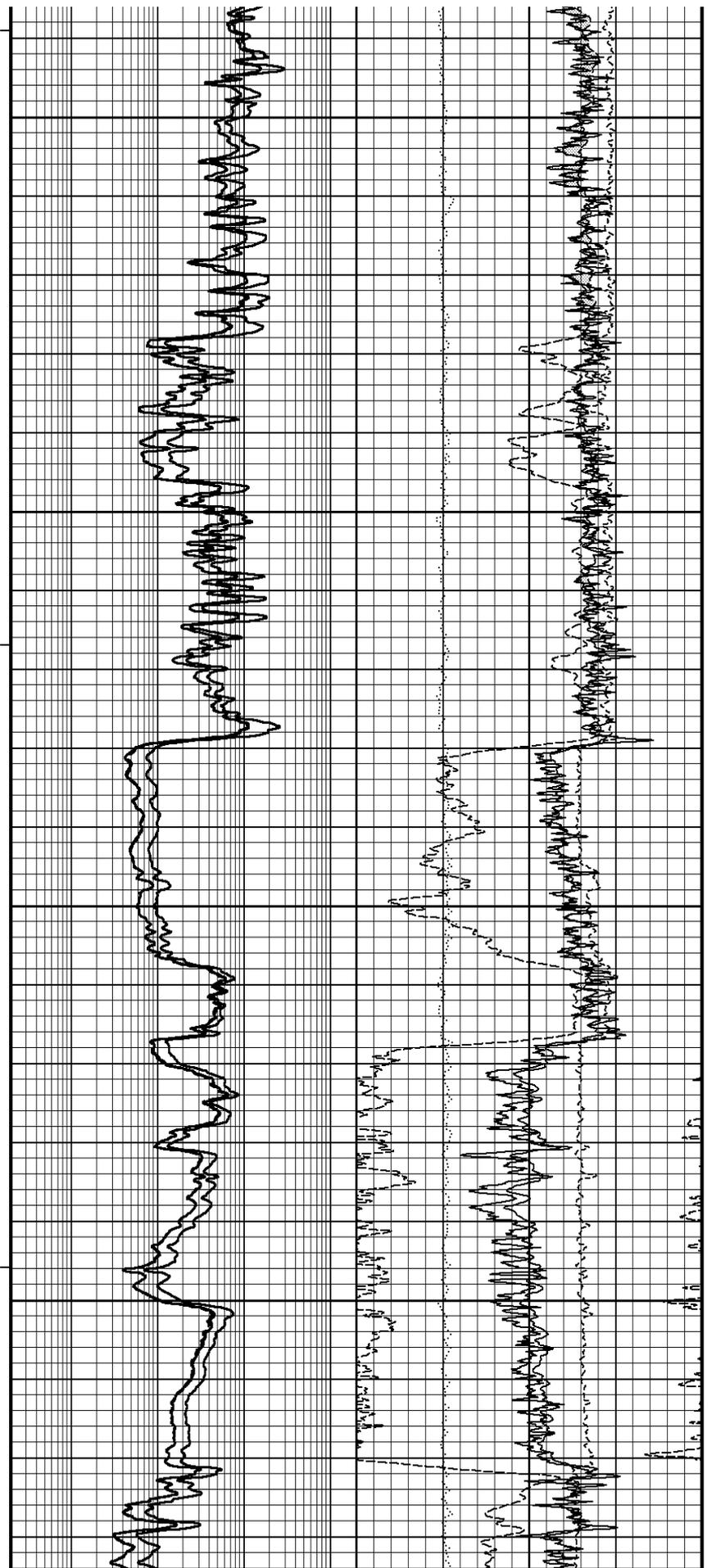


3400

3450

3500

3550

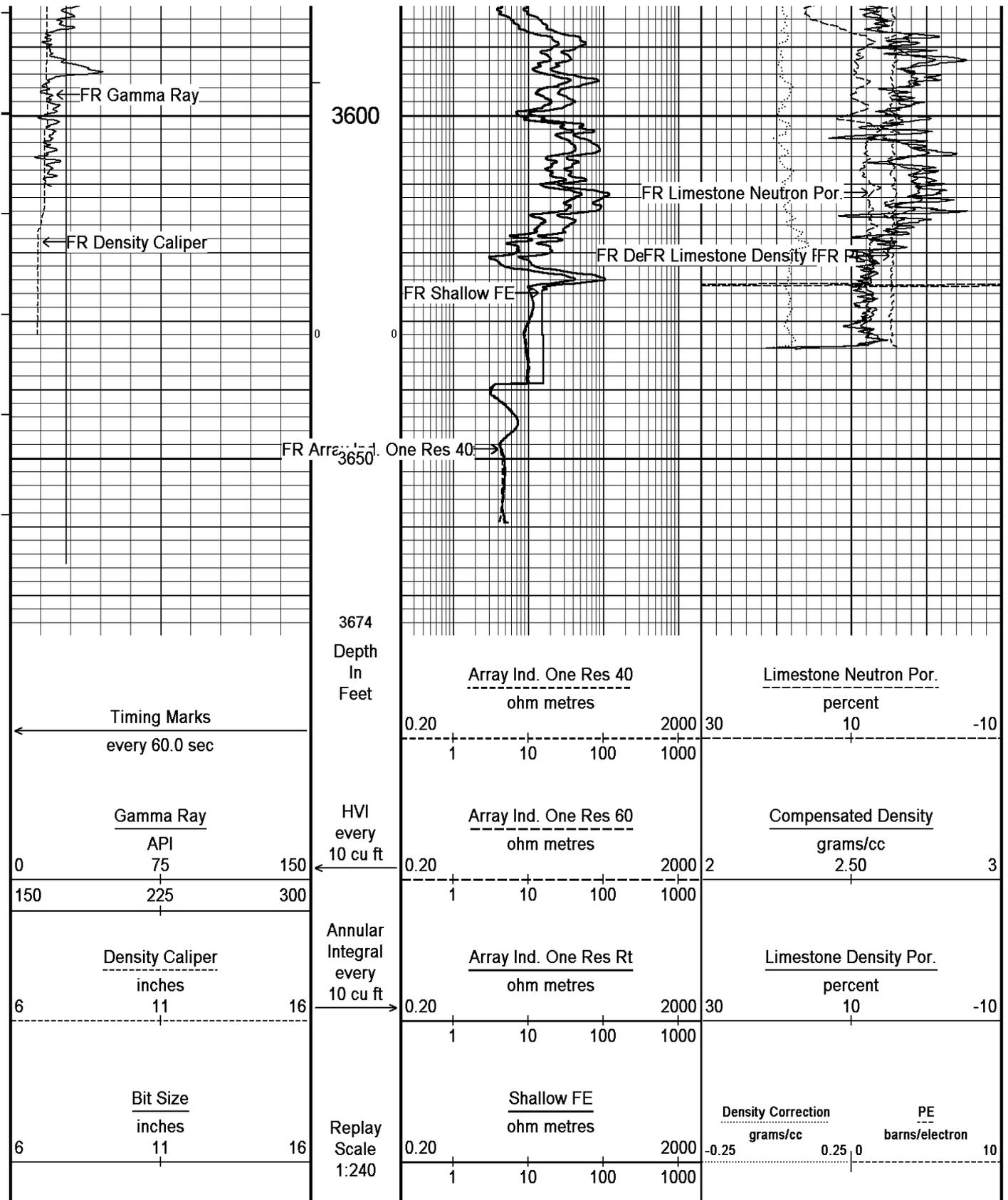


3400

3450

3500

3550



Depth Based Data - Maximum Sampling Increment 2.5cm

Plotted on 26-AUG-2013 12:21

Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN\_001.dta

Recorded on 25-AUG-2013 12:13

System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723

↑ HIGH RESOLUTION SECTION DSC ↑

REPEAT SECTION HIGH RESOLUTION DSC

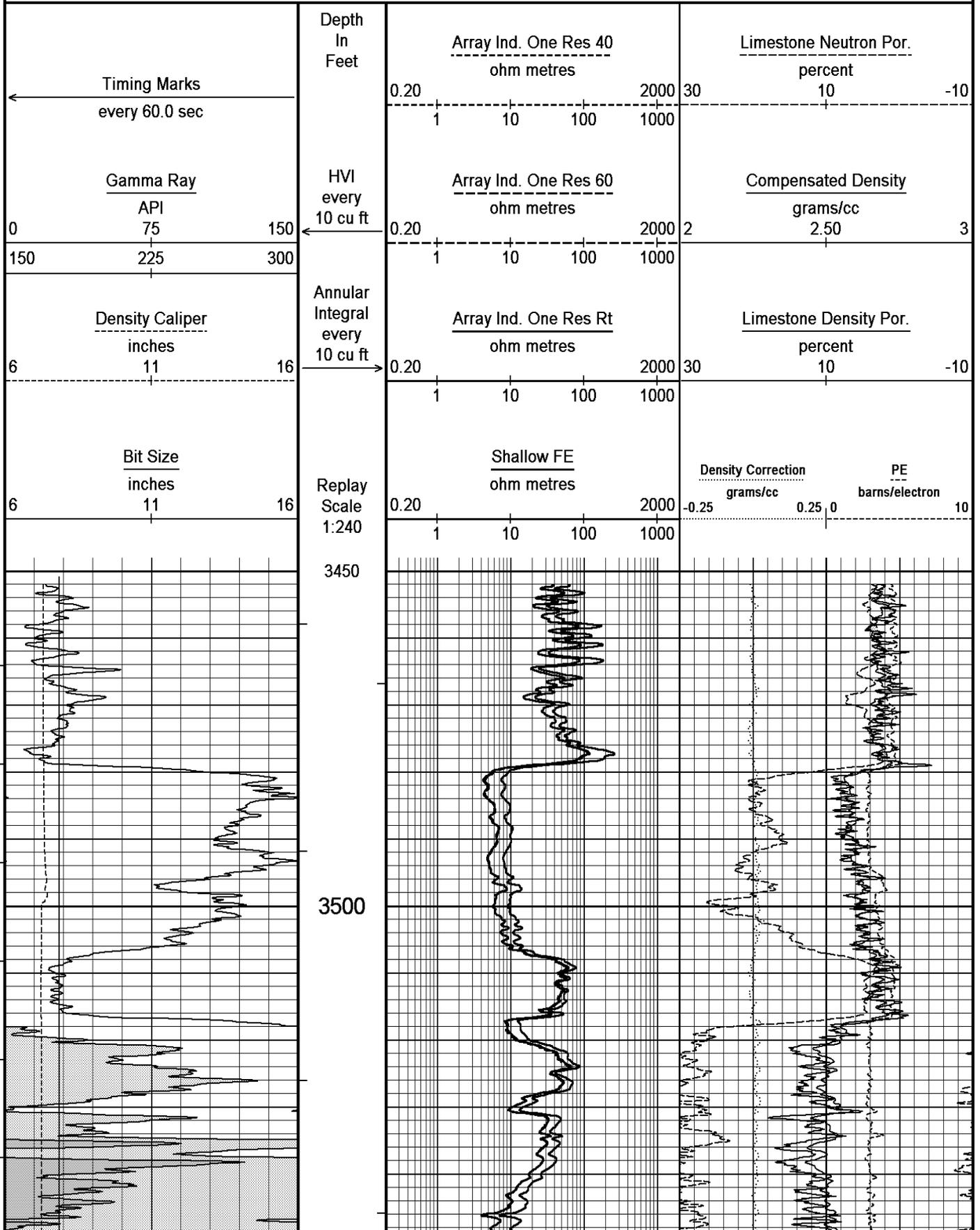
Depth Based Data - Maximum Sampling Increment 2.5cm

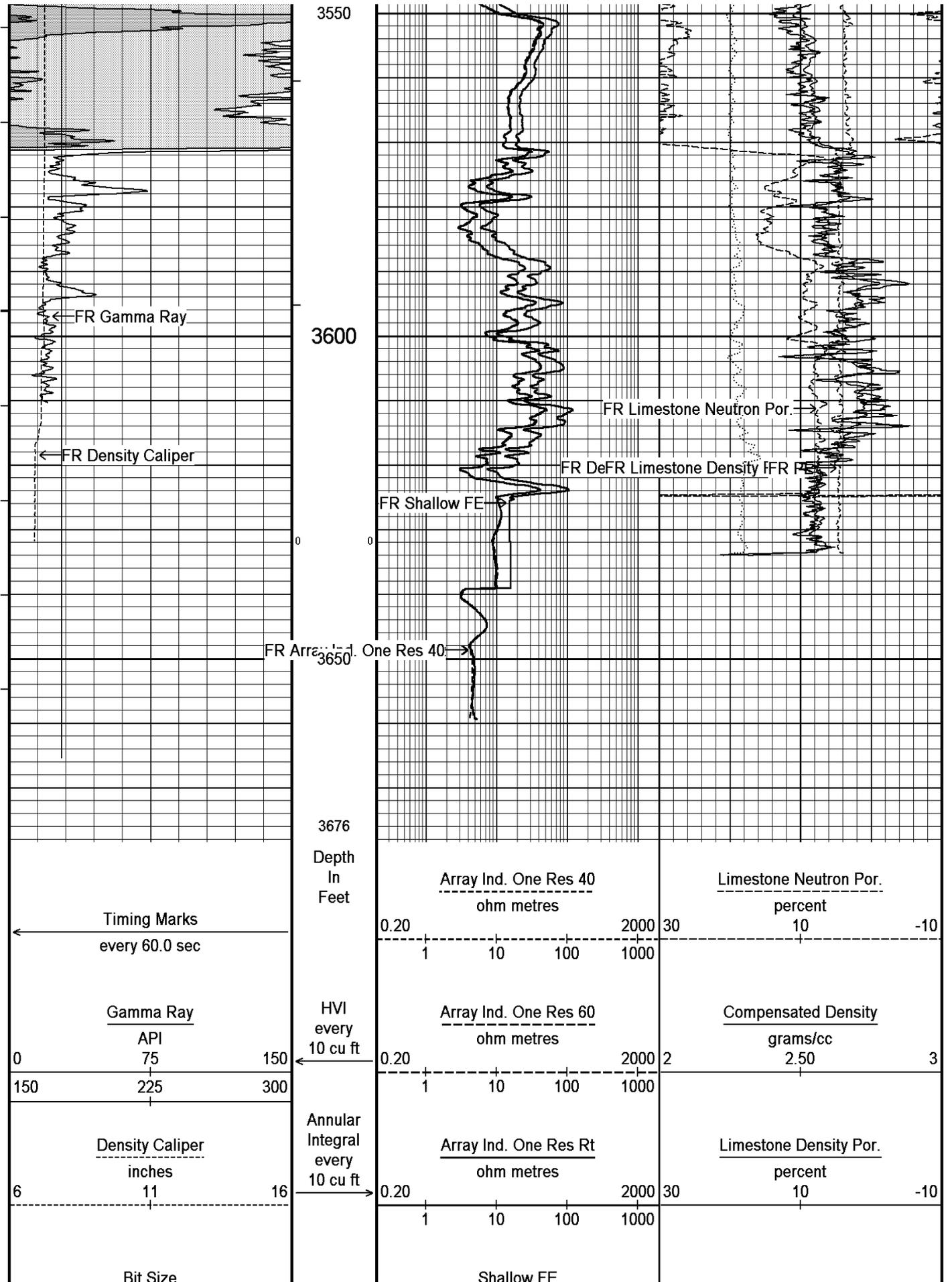
Plotted on 26-AUG-2013 12:21

Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN\_001.dta

Recorded on 25-AUG-2013 12:13

System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723





6	inches 11	16	Replay Scale 1:240	0.20	ohm metres	2000	Density Correction grams/cc	PE barns/electron	10
				1	10	100	-0.25	0.25	0

Depth Based Data - Maximum Sampling Increment 2.5cm Plotted on 26-AUG-2013 12:21  
 Filename: C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN\_001.dta Recorded on 25-AUG-2013 12:13  
 System Versions: Logged with 13.04.8723 Processed with 13.04.8723 Plotted with 13.04.8723

↑ REPEAT SECTION HIGH RESOLUTION DSC ↑

BEFORE SURVEY CALIBRATION			
C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN.dta			
General Constants All 000		Last Edited on 25-AUG-2013,07:07	
General Parameters			
Mud Resistivity	1.200	ohm-metres	
Mud Resistivity Temperature	102.000	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	5.500	inches	
Caliper for Differential Caliper	None		
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 16-AUG-2013 22:35	
Reading No	Measured	Calibrated (lbs)	
1	13751.97	0.00	
2	13766.18	365.00	
Gamma Calibration MCG-D.K 431		Field Calibration on 25-AUG-2013 02:25	
	Measured	Calibrated (API)	
Background	37	25	
Calibrator (Gross)	1068	721	
Calibrator (Net)	1030	696	
Gamma Constants MCG-D.K 431		Last Edited on 25-AUG-2013,07:08	
Gamma Calibrator Number	36		
Mud Density	1.11	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
SP Calibration MCG-D.K 431		Field Calibration on 25-AUG-2013,02:25	
	Measured	Calibrated (mV)	
Reference 1	100.0	100.0	
Reference 2	-100.0	-100.0	
High Resolution Temperature Calibration MCG-D.K 431		Field Calibration on 25-AUG-2013,02:26	
	Measured	Calibrated (Deg F)	

	measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	100.00	100.00		
High Resolution Temperature Constants MCG-D.K 431			Last Edited on 25-AUG-2013,02:26	
Pre-filter Length	11			
Micro Normal and Micro Inverse Calibration MML-A 2			Base Calibration on 09-AUG-2013,09:41 Field Check on 25-AUG-2013 02:20	
Base Calibration				
	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	11.9	59.2	5.0	25.0
Micro Inverse	15.6	77.6	5.0	25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	63.9		63.9	
Micro Inverse	48.7		48.7	
Micro Normal and Micro Inverse Constants MML-A 2			Last Edited on 25-AUG-2013,02:19	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159			
Micro Normal K Factor	1.0000			
Micro Inverse K Factor	1.0000			
Standoff Offset	N/A		inches	
Caliper Calibration MML-A 2			Base Calibration on 09-AUG-2013,09:43 Field Calibration on 25-AUG-2013 02:18	
Base Calibration				
Reading No	Measured		Calibrator Size (in)	
1	15353		5.96	
2	18765		7.98	
3	22117		9.94	
4	26012		11.90	
5	0		0.00	
6	N/A		N/A	
Field Calibration				
	Measured Caliper (in)		Actual Caliper (in)	
	10.03		9.94	
Neutron Calibration MDN-A.A 11			Base Calibration on 19-AUG-2013 09:51 Field Check on 25-AUG-2013 02:30	
Base Calibration				
	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3523	109	3714	110
Ratio	32.319		33.764	
Field Calibrator at Base			Calibrated (cps)	
			2056	2974
Ratio			0.691	
Field Check			Calibrated (cps)	
			2086	2978
Ratio			0.693	
Neutron Constants MDN-A.A 11			Last Edited on 25-AUG-2013,02:26	
Neutron Source Id	N1054			
Neutron Jig Number	N639			
Epithermal Neutron	No			
Caliper Source for Processing	Density Caliper			
Stand-off	0.00		inches	
Mud Density	1.02		gm/cc	

Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	MCG External Temperature	
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	

FE Calibration MFE-A.A 20

Base Calibration on 09-AUG-2013,09:29  
Field Check on 25-AUG-2013 02:09

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	9.9	1.3
Reference 2	974.9	126.8
Base Check		280.8
Field Check		280.8

FE Constants MFE-A.A 20

Last Edited on 25-AUG-2013,02:08

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	0.0	inches

Sonic Constants MSS-C.A 147

Last Edited on 25-AUG-2013,02:07

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	

Peak Amplitude Source

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A			
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)	
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	0.00	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No		
Use 4' Waveform to derive TR	No		
Use 5' Waveform to derive TR	No		
Use 6' Waveform to derive TR	No		
3' Waveform Discriminator Level	0.30	mV	
4' Waveform Discriminator Level	0.30	mV	
5' Waveform Discriminator Level	0.15	mV	
6' Waveform Discriminator Level	0.15	mV	
3' Waveform Filter			
4' Waveform Filter			
5' Waveform Filter			
6' Waveform Filter			
Semblance Level	0.50		
Semblance Window Width	120.00	micro-sec	
Sonic 1 Despiker	100.00	micro-sec/ft	
Sonic 2 Despiker	100.00	micro-sec/ft	

Induction Calibration MAI-A.A 169

Base Calibration on 24-JUL-2013,13:18  
Field Check on 25-AUG-2013 02:05

Base Calibration

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	17.8	485.7	9.3	966.2
2	6.3	393.9	7.6	821.4
3	3.5	265.5	5.2	566.0
4	2.3	135.1	2.6	279.2

Array Temperature 75.2 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			12.3	3764.2
2			29.3	3445.3
3			28.0	2999.6
4			18.6	2064.4
Deep			16.7	2001.0
Medium			41.5	3919.8
Shallow			44.2	5030.0

Array Temperature 85.7 Deg F

Induction Constants MAI-A.A 169

Last Edited on 25-AUG-2013,02:03

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 Km Corr.	MCG 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 169

Field Calibration on 25-AUG-2013,02:06

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

High Resolution Temperature Constants MAI-A.A 169

Last Edited on 25-AUG-2013,02:06

Pre-filter Length 11

Caliper Calibration MPD-B 120

Base Calibration on 09-AUG-2013,09:36

Field Calibration on 25-AUG-2013 02:16

Base Calibration	Measured	Calibrator Size (in)
Reading No		
1	29968	5.96
2	38864	7.98
3	47488	9.94
4	56240	11.90
5	0	0.00
6	N/A	N/A

Field Calibration	Measured Caliper (in)	Actual Caliper (in)
	8.05	7.99

Photo Density Calibration MPD-B 120

Base Calibration on 09-AUG-2013,09:31

Field Check on 25-AUG-2013 02:14

Density Calibration	Measured		Calibrated (sdu)	
Base Calibration	Near	Far	Near	Far
Reference 1	58860	29049	59869	31110
Reference 2	23971	2571	24557	2522

Field Check at Base  
1000.4 1257.3

Field Check

1000.2    1249.4

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	176	872		
Reference 1	20738	58662	0.356	0.369
Reference 2	6007	23833	0.254	0.271
Field Check at Base				
	176.2	872.1		
Field Check				
	179.4	873.5		

Density Constants MPD-B 120

Last Edited on 25-AUG-2013,07:08

Density Source Id	P56135B	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.11	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	

DOWNHOLE EQUIPMENT

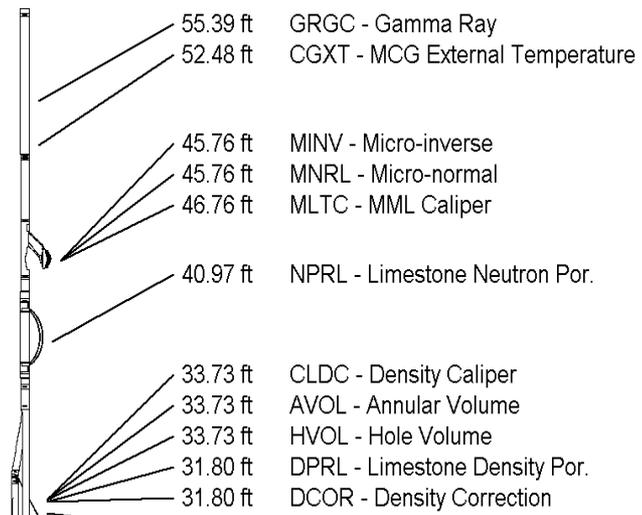
C:\Program Files\Weatherford\WLS 13.04\DATA\TAOS WMU #12\MAIN.dta

Compact Comms Gamma  
MCG-D.K 431 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log  
MML-A 2 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron  
MDN-A.A 11 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-B 120 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

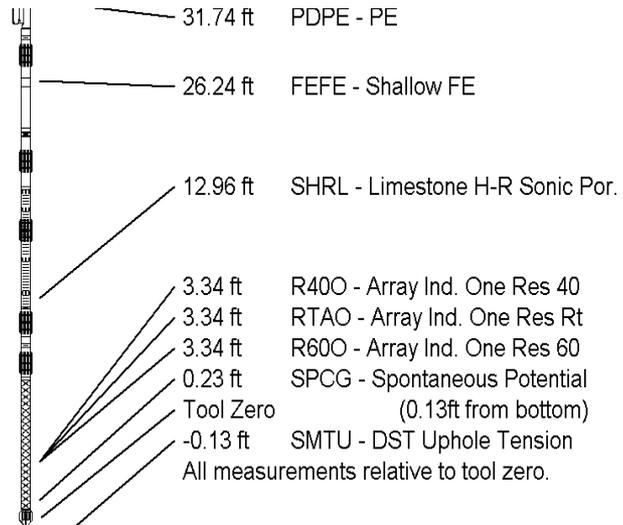


Compact Focussed Electric  
MFE-A.A 20 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic  
MSS-C.A 147 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction  
MAI-A.A 169 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 60.68 ft Weight: 456.4 lb



COMPANY	TAOS RESOURCES OPERATING COMPANY
WELL	WMU #12
FIELD	WEST MADDIX
PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1298.00	feet	First Reading	3648.00	feet
Elevation Drill Floor	1296.00	feet	Depth Driller	3650.00	feet
Elevation Ground Level	1290.00	feet	Depth Logger	3652.00	feet



**Weatherford**<sup>®</sup>

ARRAY INDUCTION / RSFE  
PHOTO DENSITY / NEUTRON  
GAMMA RAY LOG