



**Weatherford**<sup>®</sup>

**CML MESSENGER SHUTTLE  
COMPACT PHOTO DENSITY  
COMPENSATED NEUTRON**

COMPANY Sandridge Energy  
WELL Sean 3119 2-18H

FIELD

PROVINCE/COUNTY Comanche

COUNTRY/STATE U.S.A. / Oklahoma

LOCATION 250' FNL & 900' FEL

SEC 19 TWP 31S RGE 19W Other Services MAI

API Number 15-033-21652

Permit Number Permanent Datum G.L., Elevation 2181 feet

Log Measured From KB

Drilling Measured From K.B. @ 18 FEET

Date 26-JUL-2012

Run Number ONE

Depth Driller 10066.00

Depth Logger 10063.00

First Reading 9997.00

Last Reading 5100.00

Casing Driller 5623.00

Casing Logger 5604.00

Bit Size 6.125

Hole Fluid Type WBM

Density / Viscosity 8.60 g/c3

PH / Fluid Loss 8.50

Sample Source FLOWLINE

Rm @ Measured Temp 1.06 @ 86.0

Rmf @ Measured Temp 0.85 @ 86.0

Rmc @ Measured Temp 1.27 @ 86.0

Source Rmf / Rmc CALC

Rm @ BHT 0.69 @ 132.0

Time Since Circulation 1 HOUR

Max Recorded Temp 132.00

Equipment Name COMPACT

Equipment / Base 18077 OKC

Recorded By STEVEN TOTTEY

Witnessed By KATHY GENTRY

S.O. # / AFE # 3536726

Elevations:  
KB 2201.00  
DF 2200.00  
GL 2181.00

### BOREHOLE RECORD

Last Edited: 27-JUL-2012 23:10

Bit Size inches	Depth From feet	Depth To feet
6.125	5623.00	10066.00

### CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTER	7.000	0.00	5623.00	23.00

### REMARKS

TOOLS RAN: 200V SRT-69,MBS-115,SKJ-207,MMSE158,SHA-167,MTI-061,  
MGS-136,MCL-069,SKJ-479,SHA-431,MIS-606,MDN-391,MPD-394,MIS-275,SHA-434,SKJ-478,MISB 336, MFE-175,MISB-336,MAI-392 RAN  
IN COMBINATION

HARDWARE: MAI: MIS-B 0.5" STANDOFF USED ABOVE MAI, ISA 0.5" STANDOFF USED BELOW MAI.

MDN: MIS-A DOUBLE BOWSPRING USED ABOVE MDN.

MPD: 4INCH PROFILE PLATE USED, MIS-A SINGLE BOWSPRING USED BELOW MPD

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY  
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

DRILL PIPE DEPTH DURING DEPLOYMENT: 9938  
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 10028

ANNULAR HOLE VOLUME CALCULATED USING WITH 4.5 INCH PRODUCTION CASING

SERVICE ORDER # 3536726

RIG: LARAIT #45

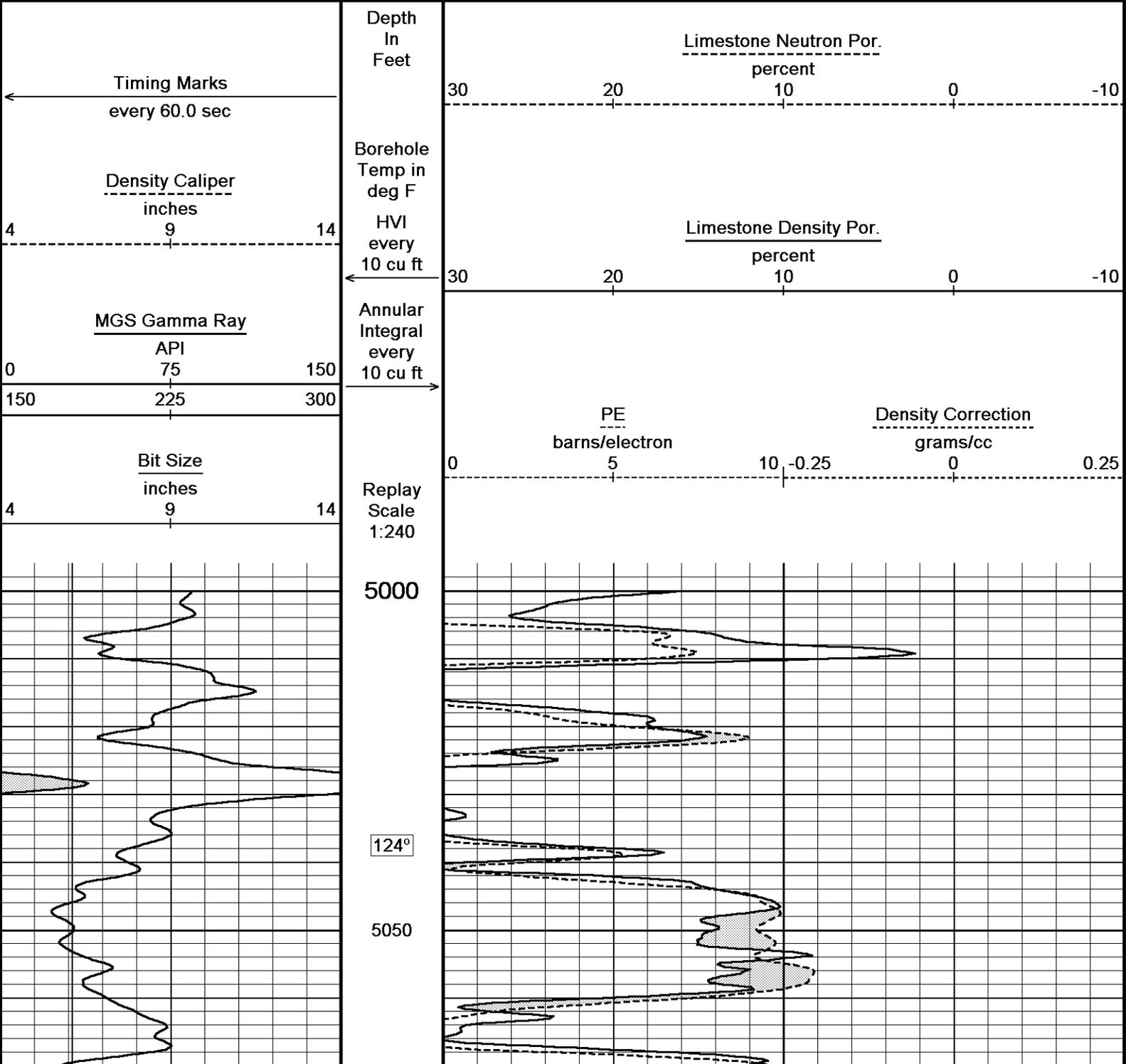
OPERATOR(S): P. BURGER AND MAX

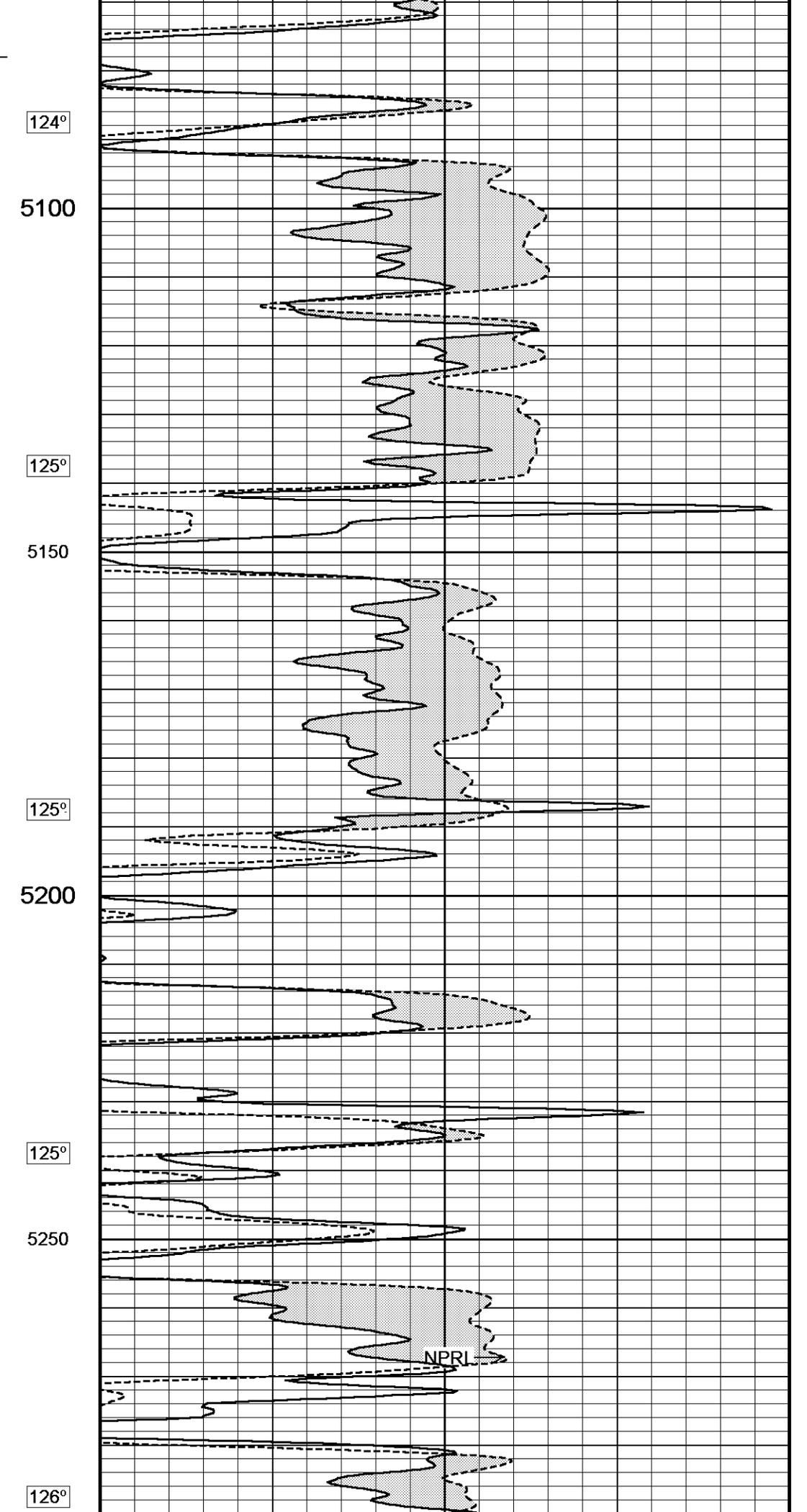
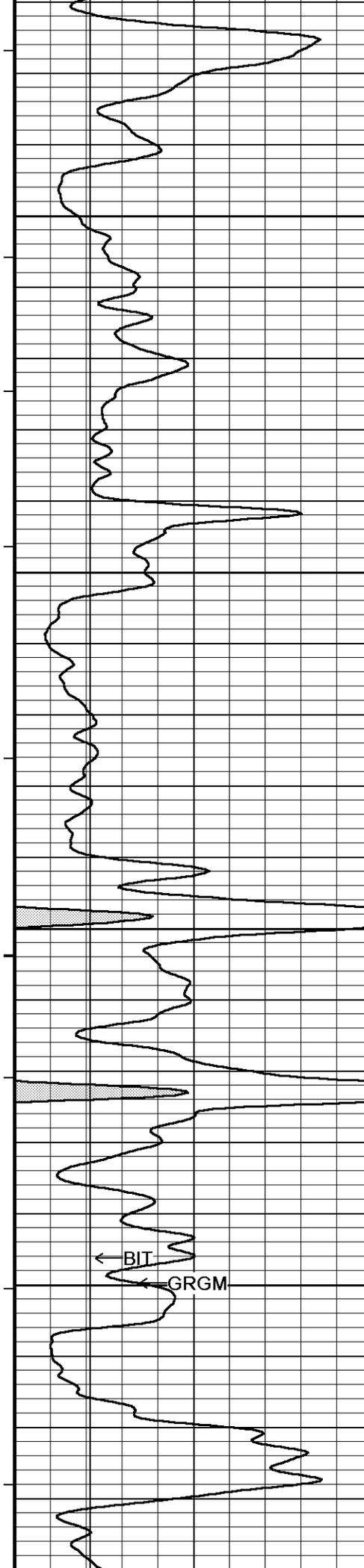
HOLE RUGOSITY MAY AFFECT LOG QUALITY.

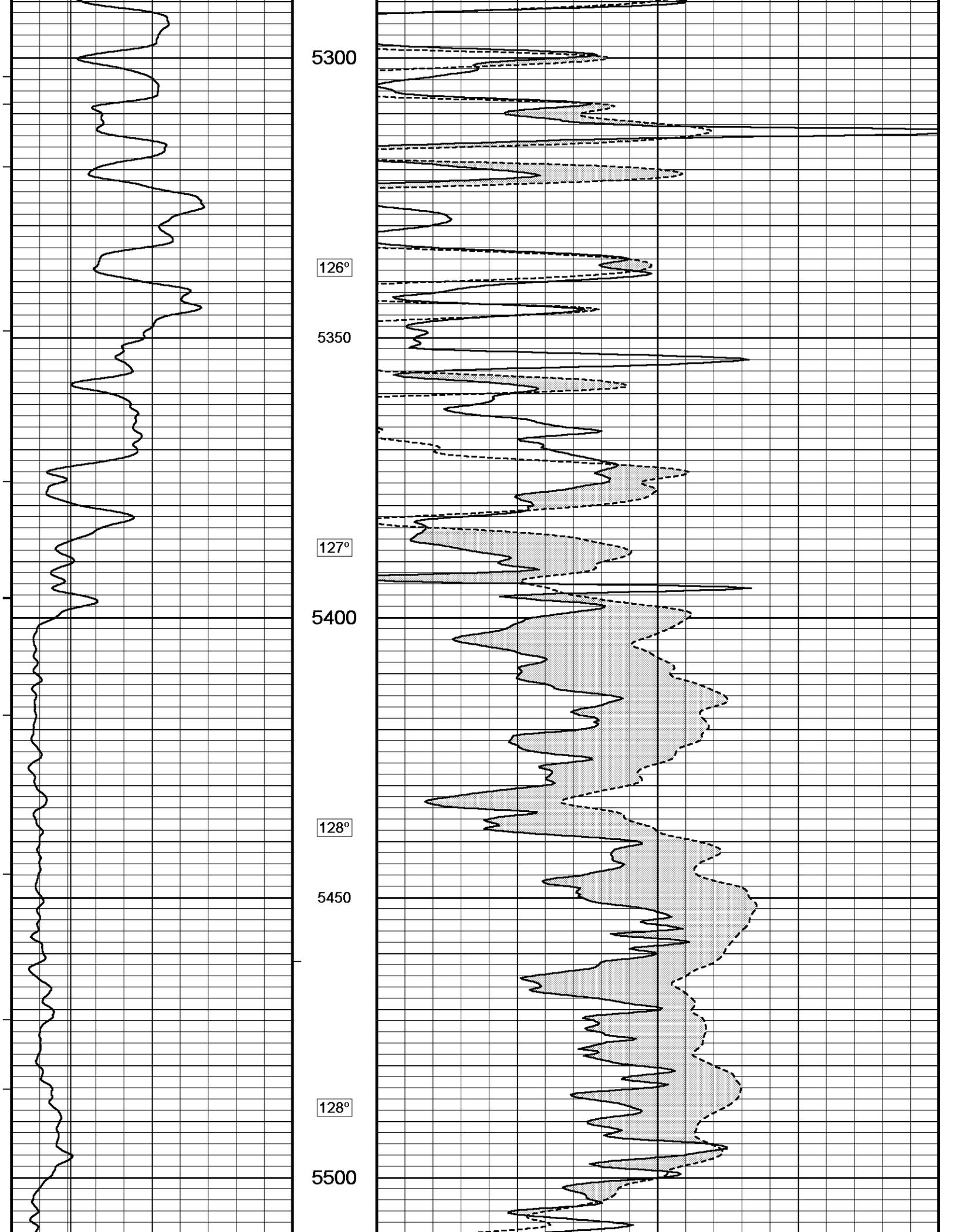
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

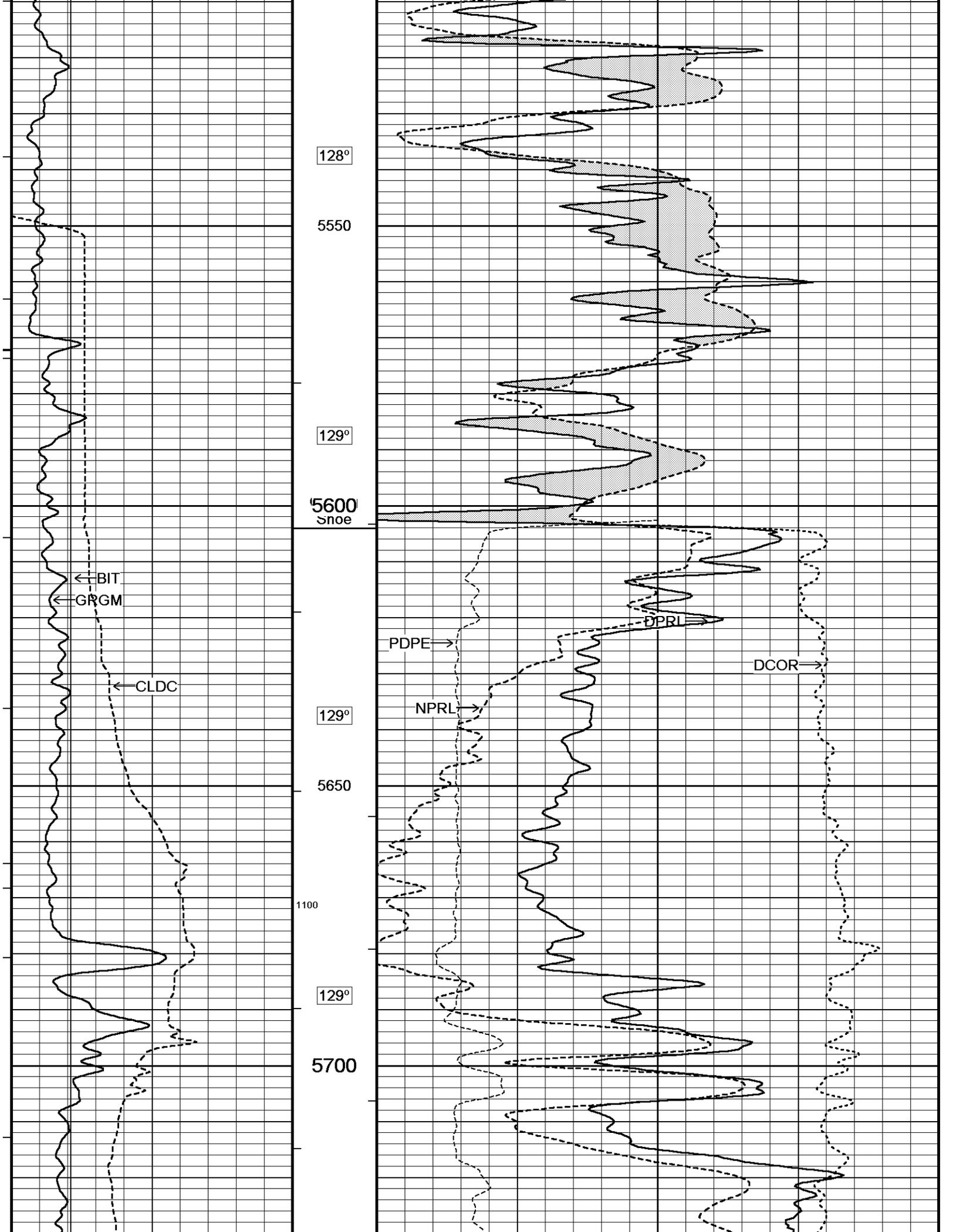
### 5 INCH MAIN LOG

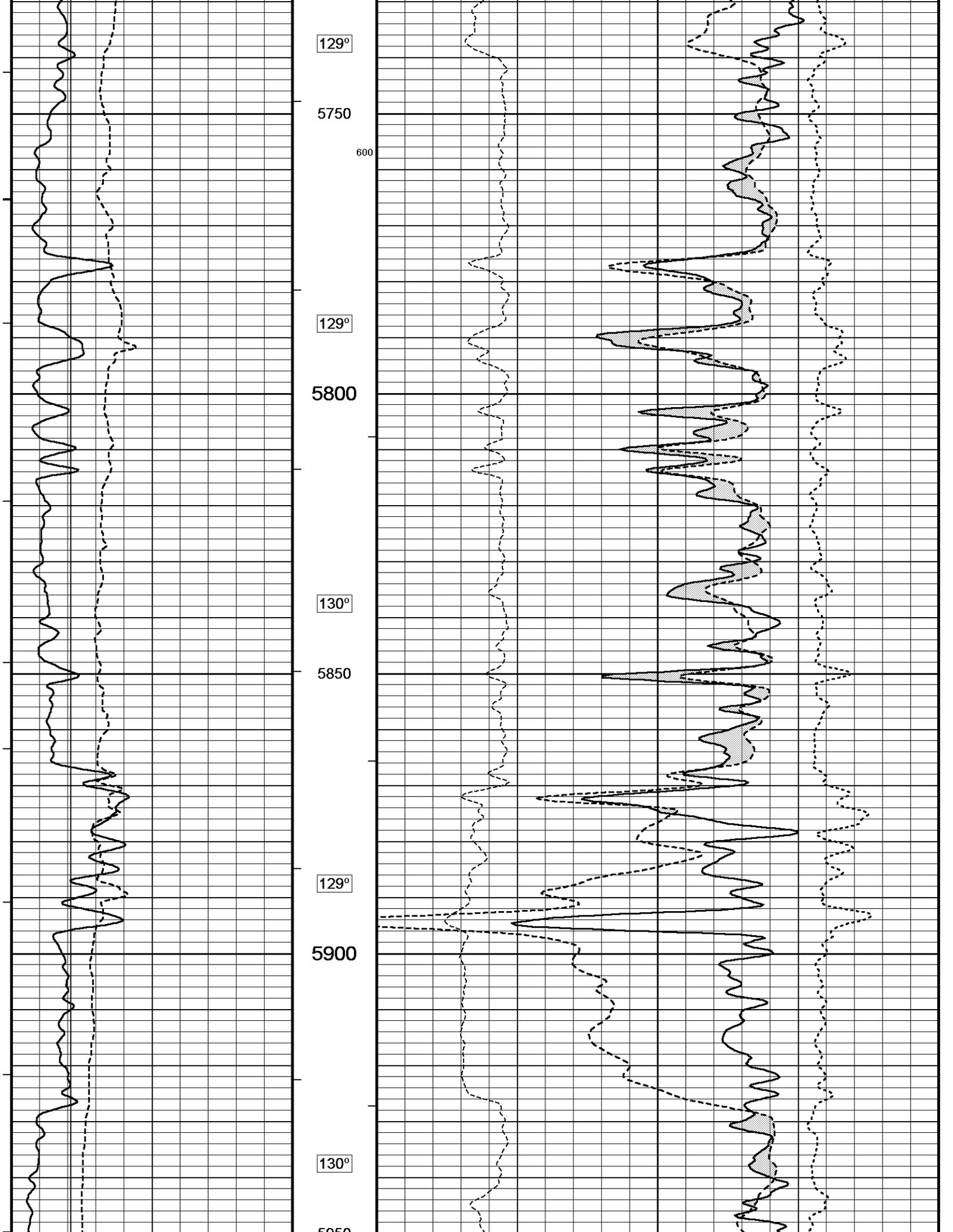
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 Filename: C:\Data\SANDRIDGE SEAN 3119 2-18H\rtap sandridge depth.dta Recorded on 27-JUL-2012 22:25  
 System Versions: Processed with 13.02.6600 Plotted with 13.02.6600

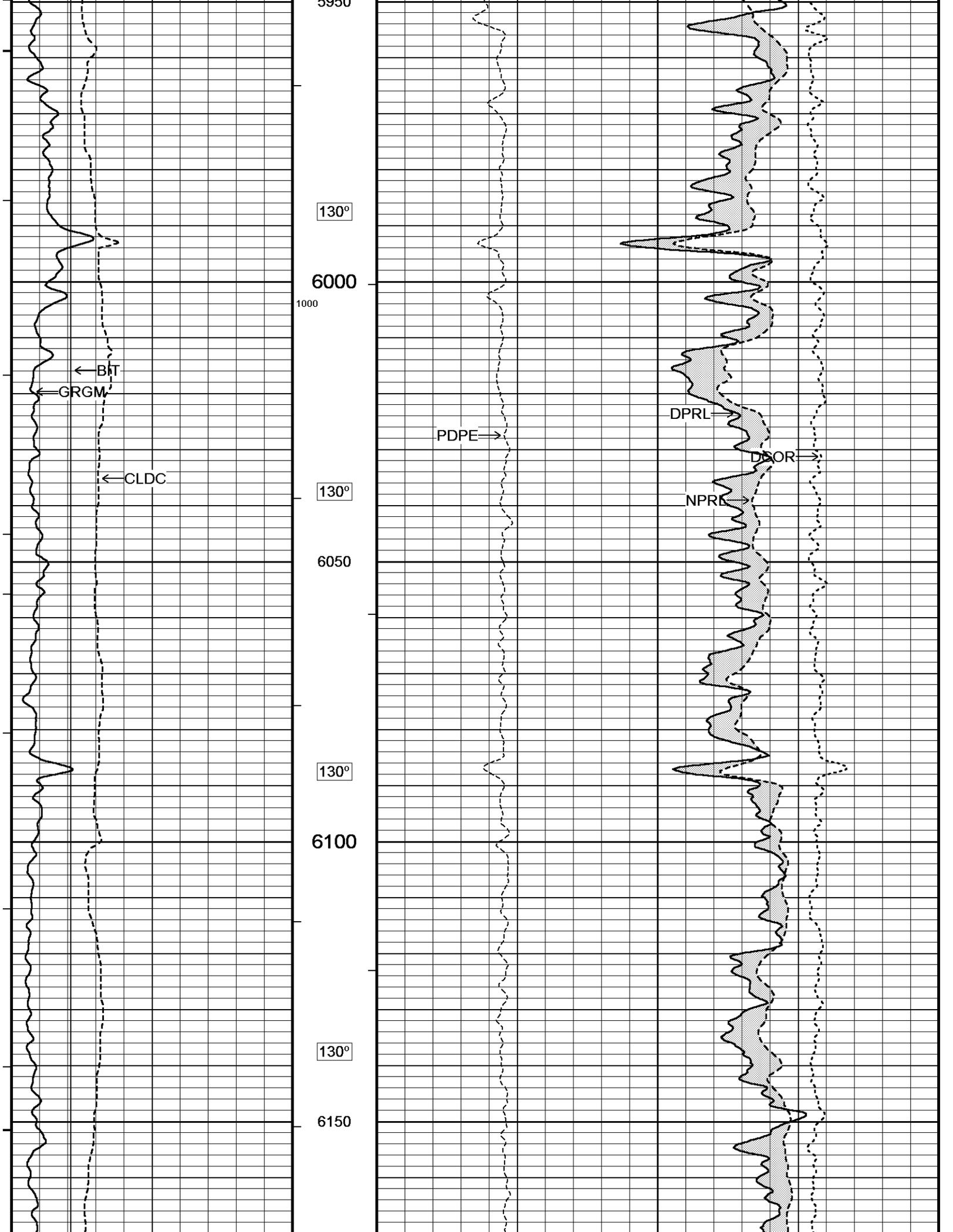


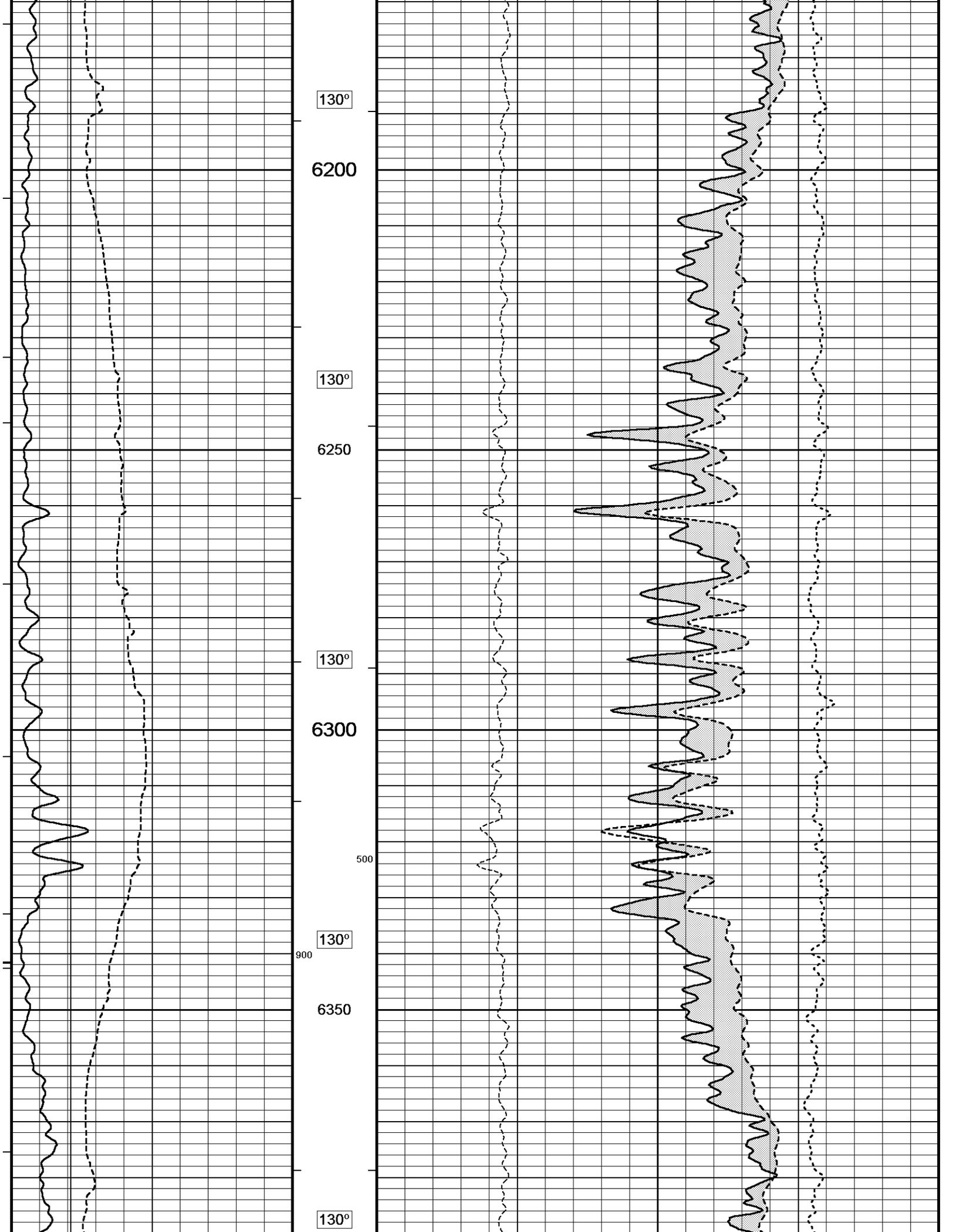


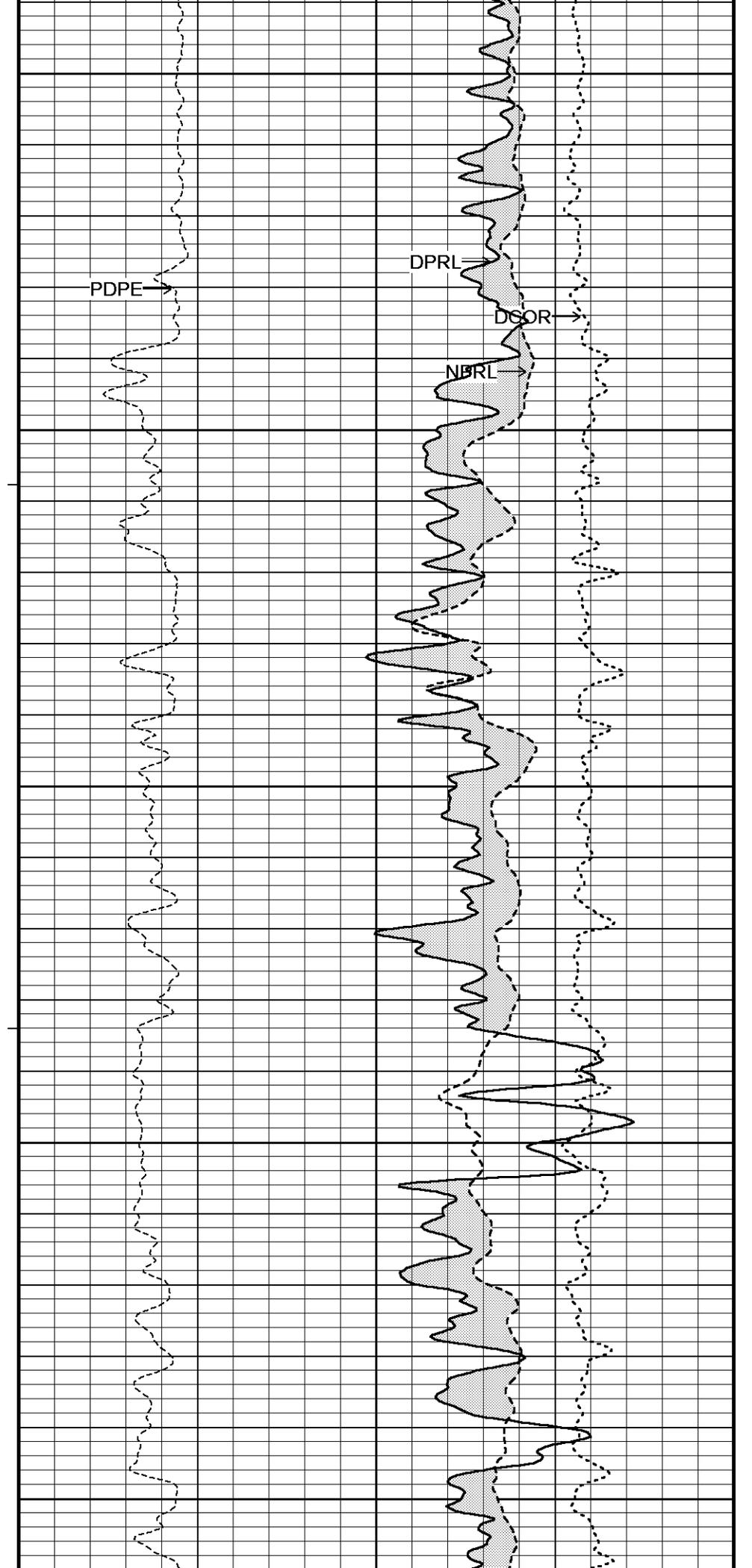
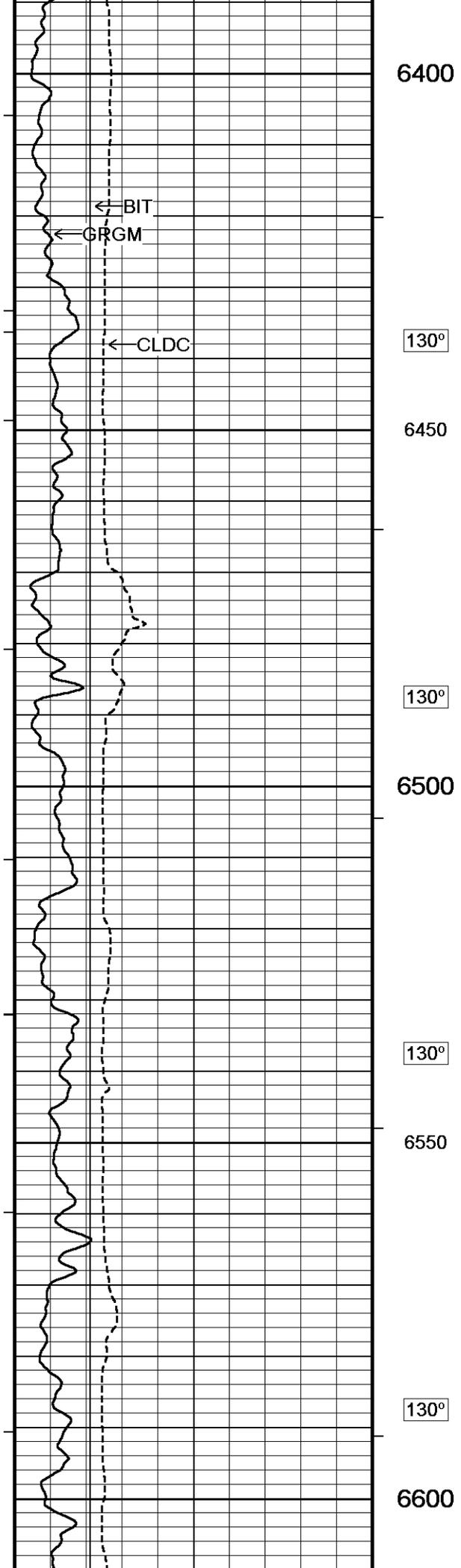


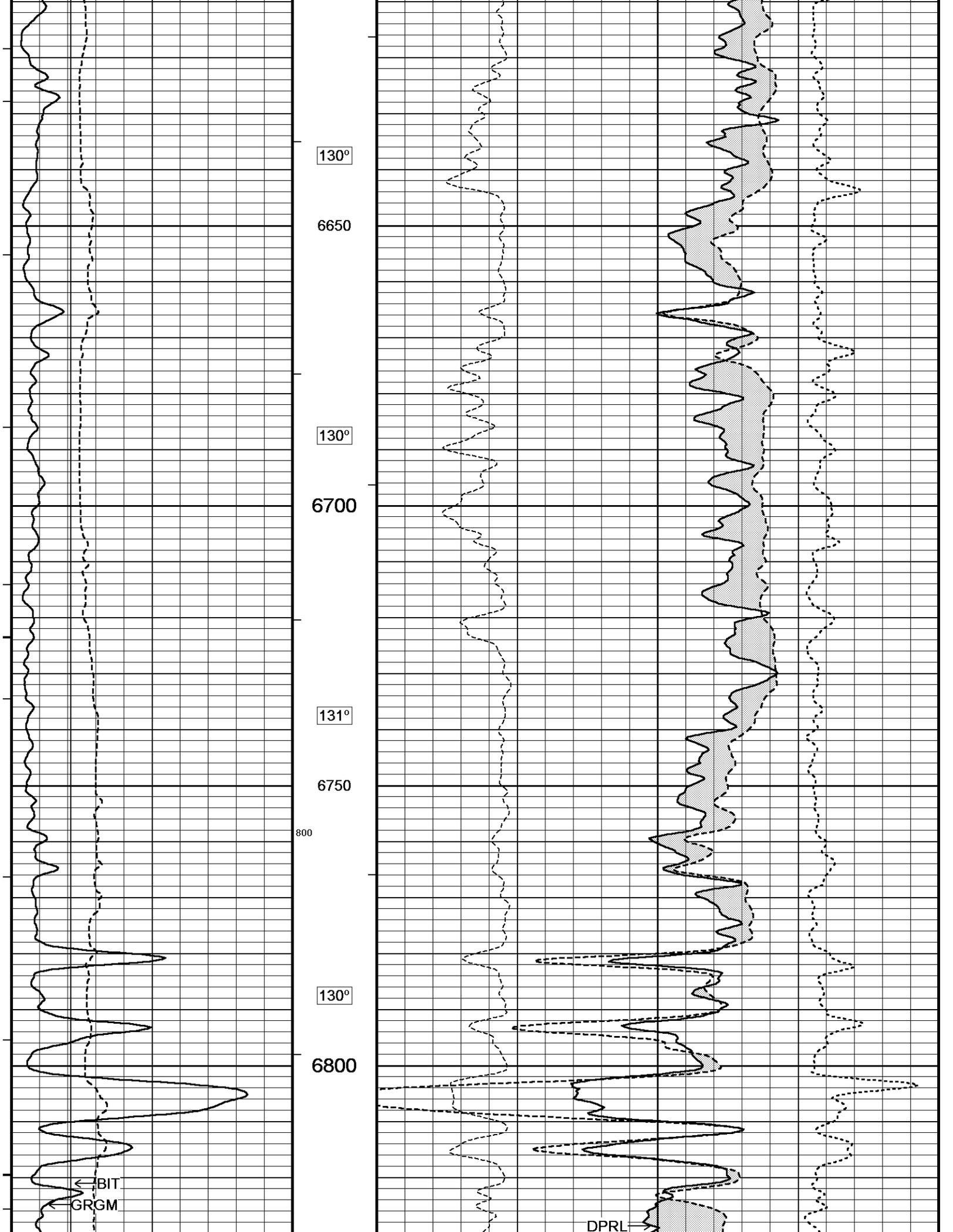


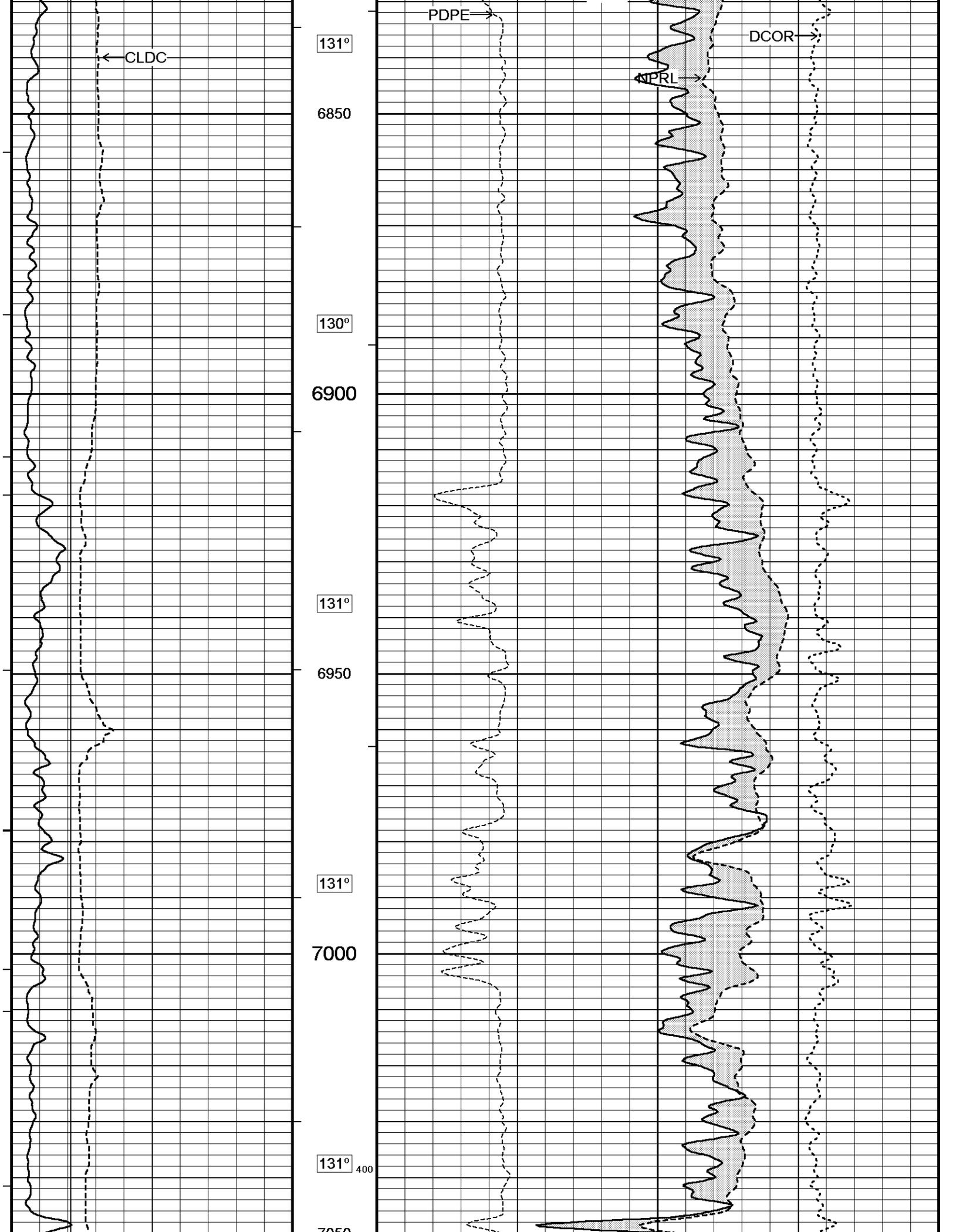


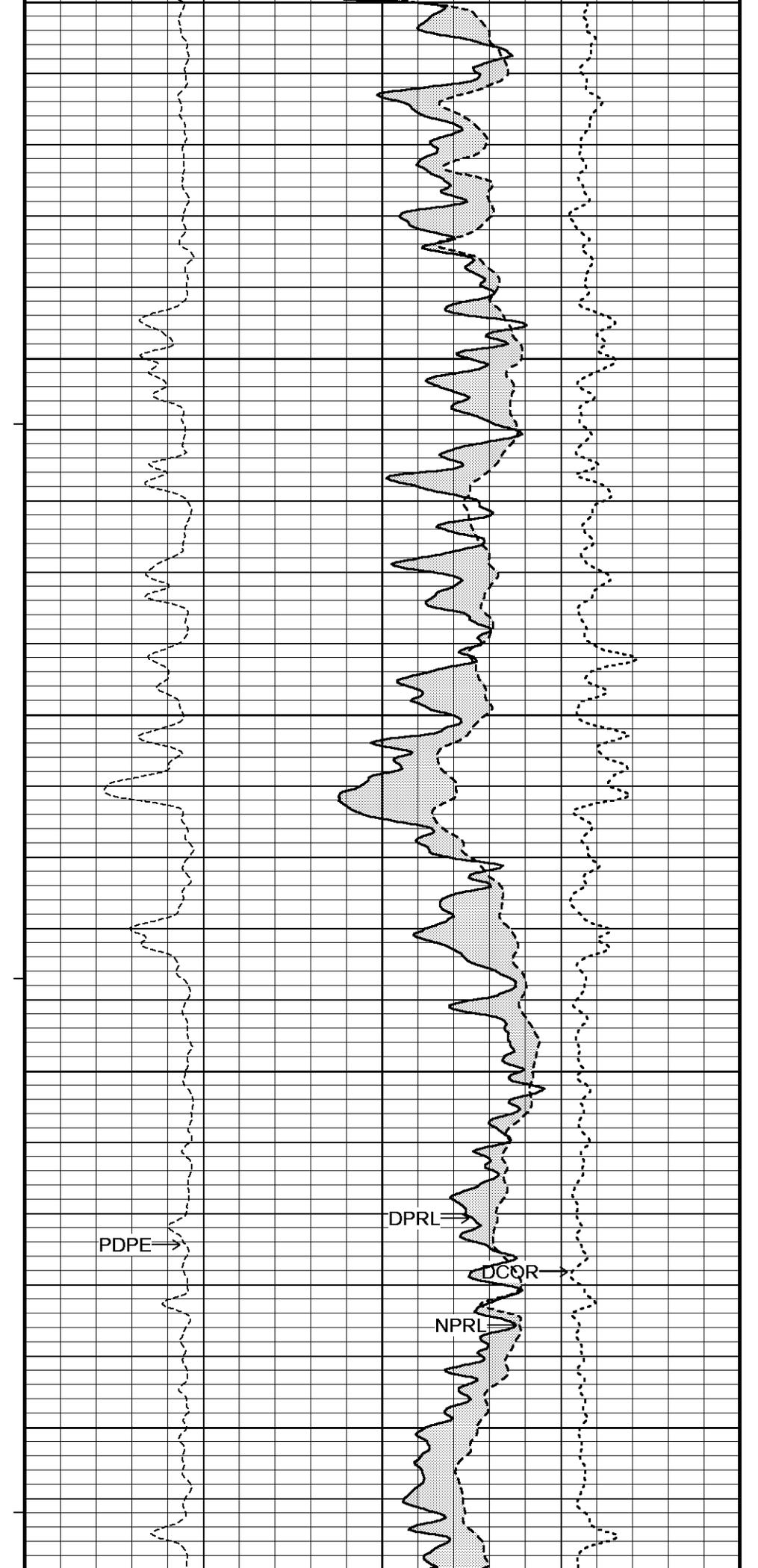
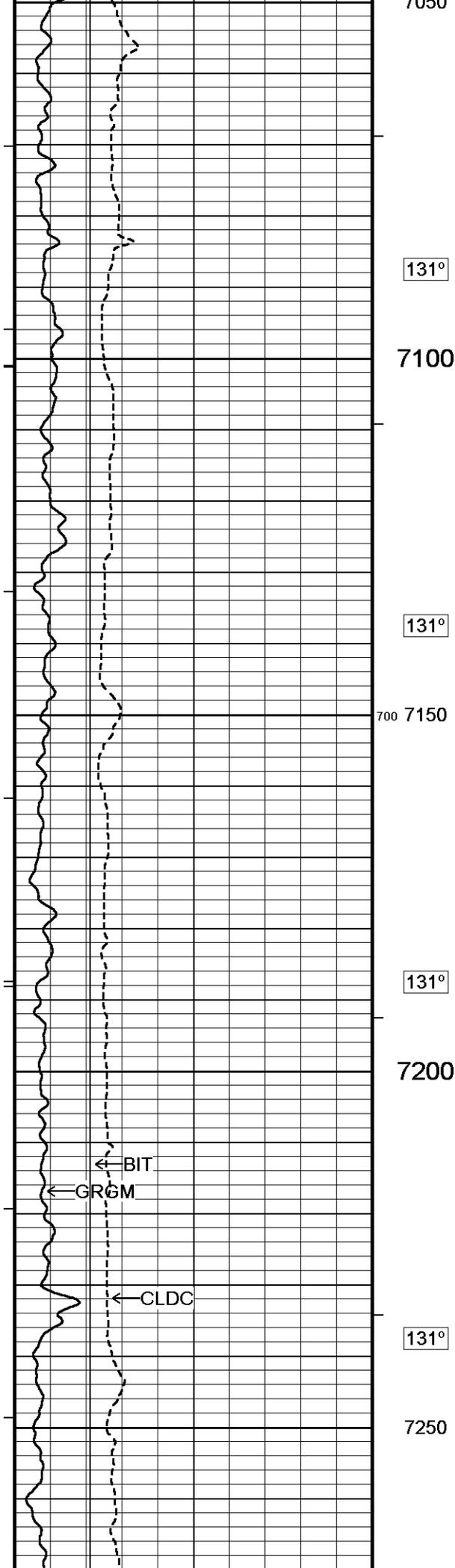


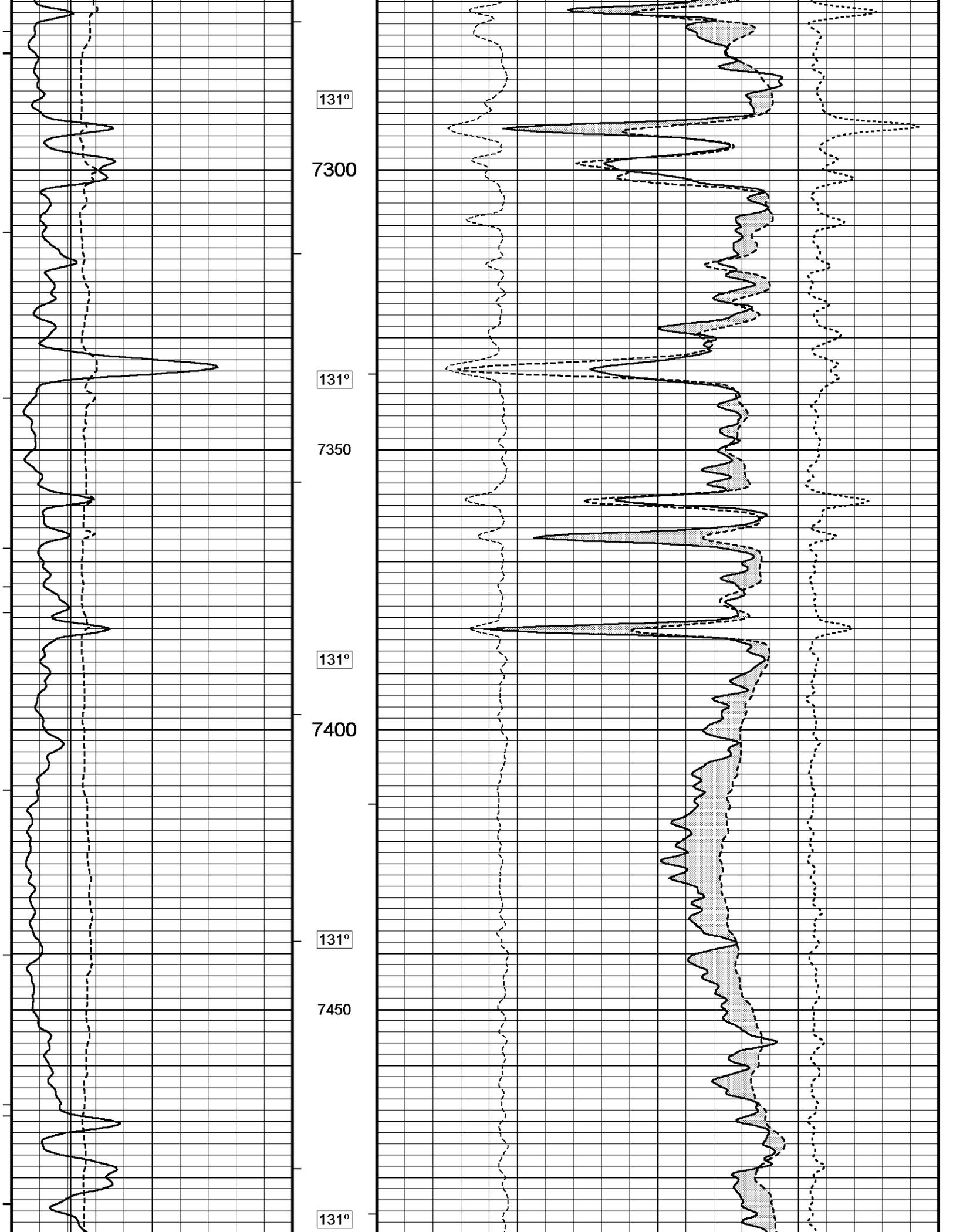


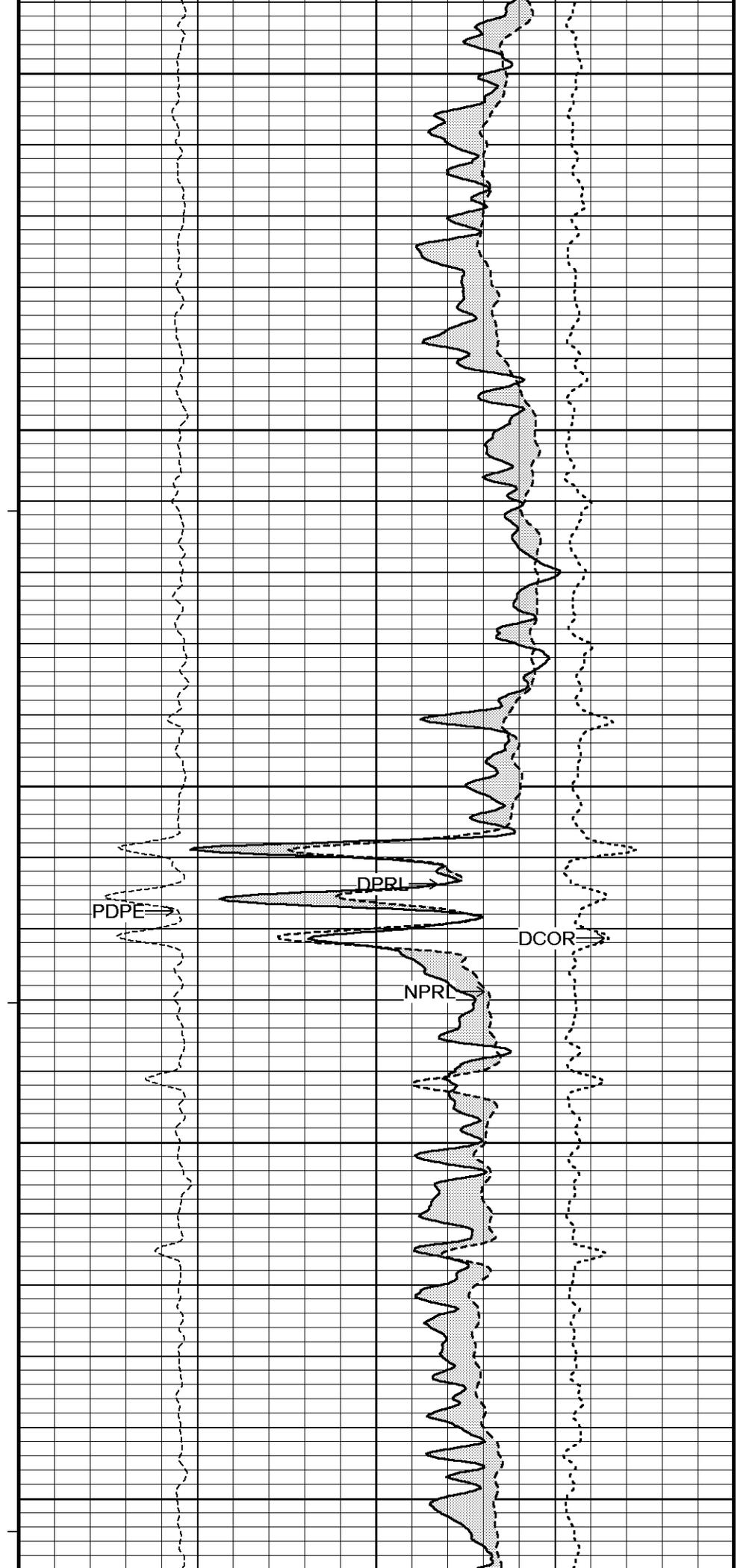
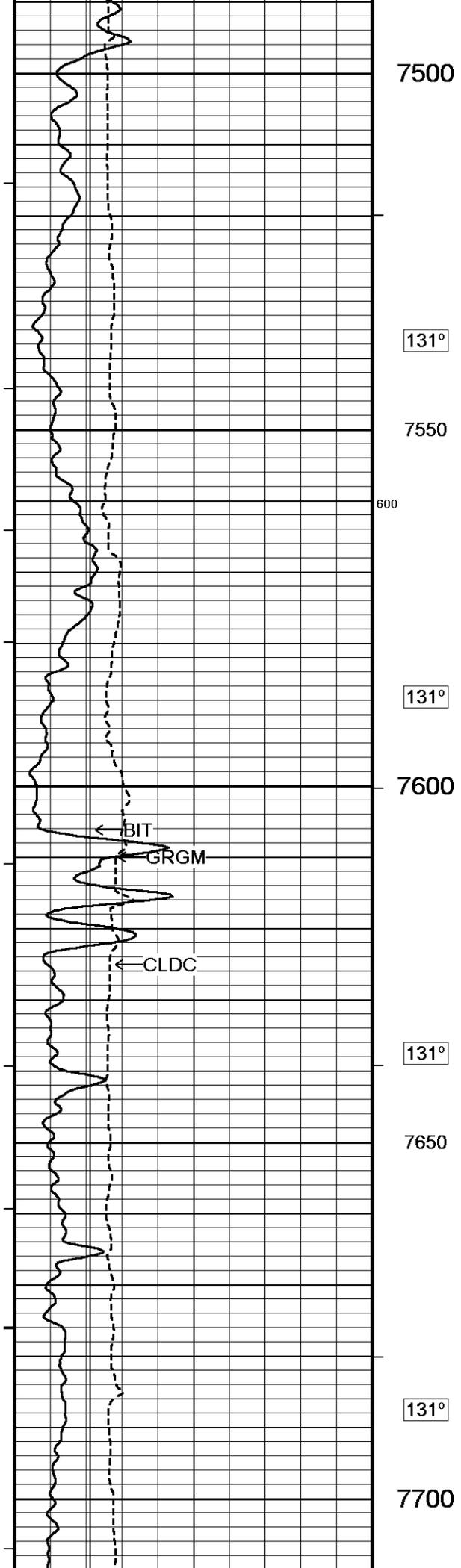


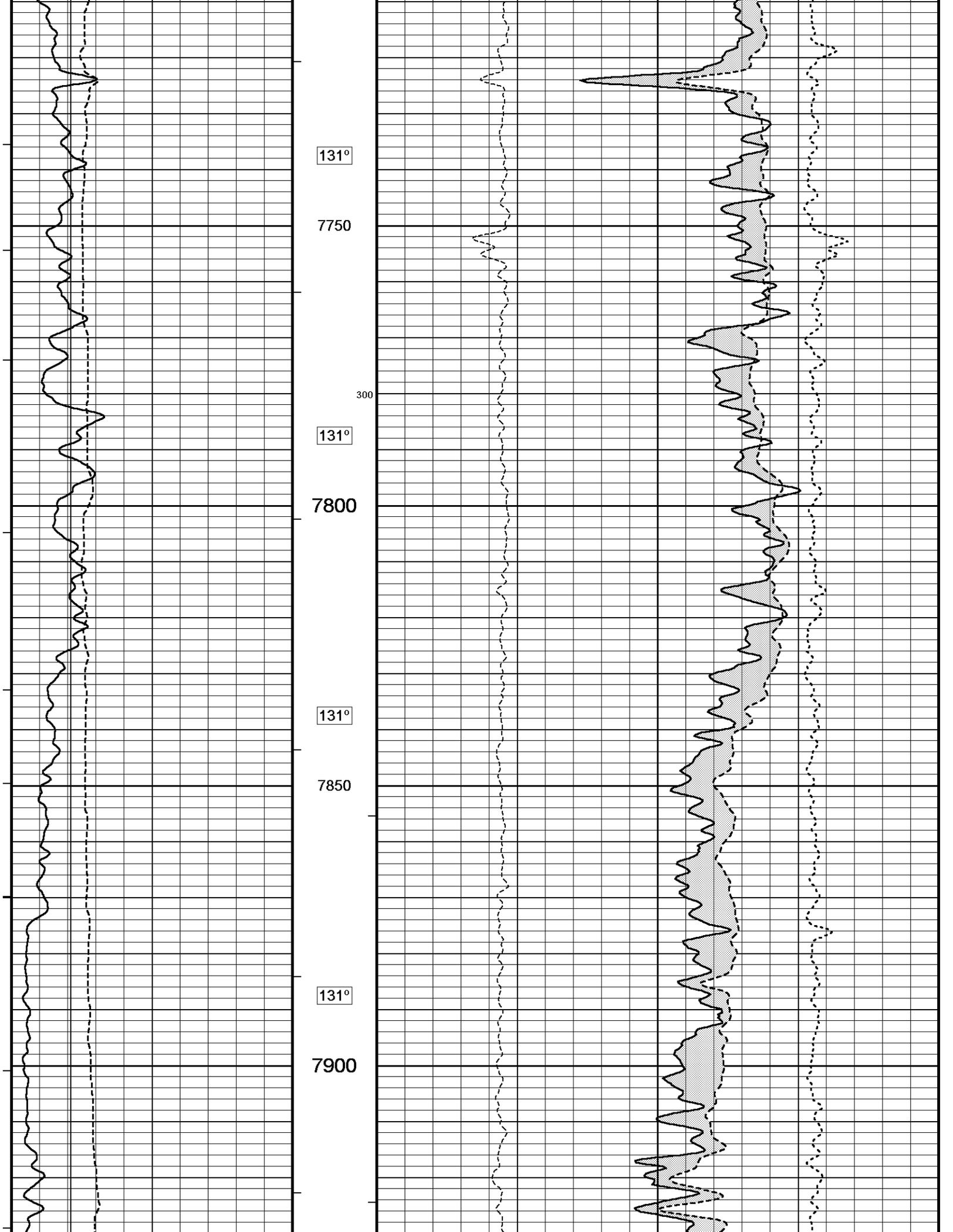


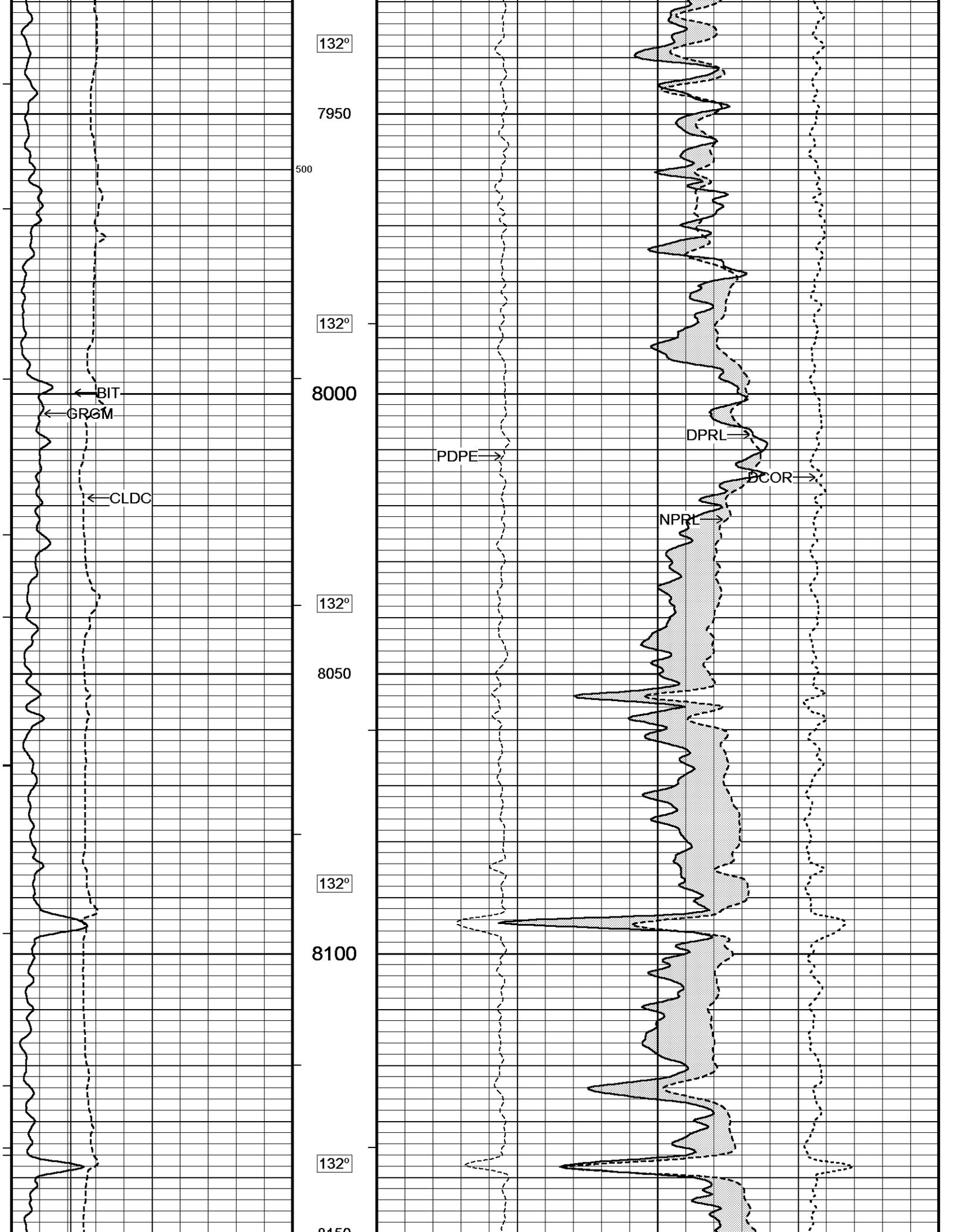


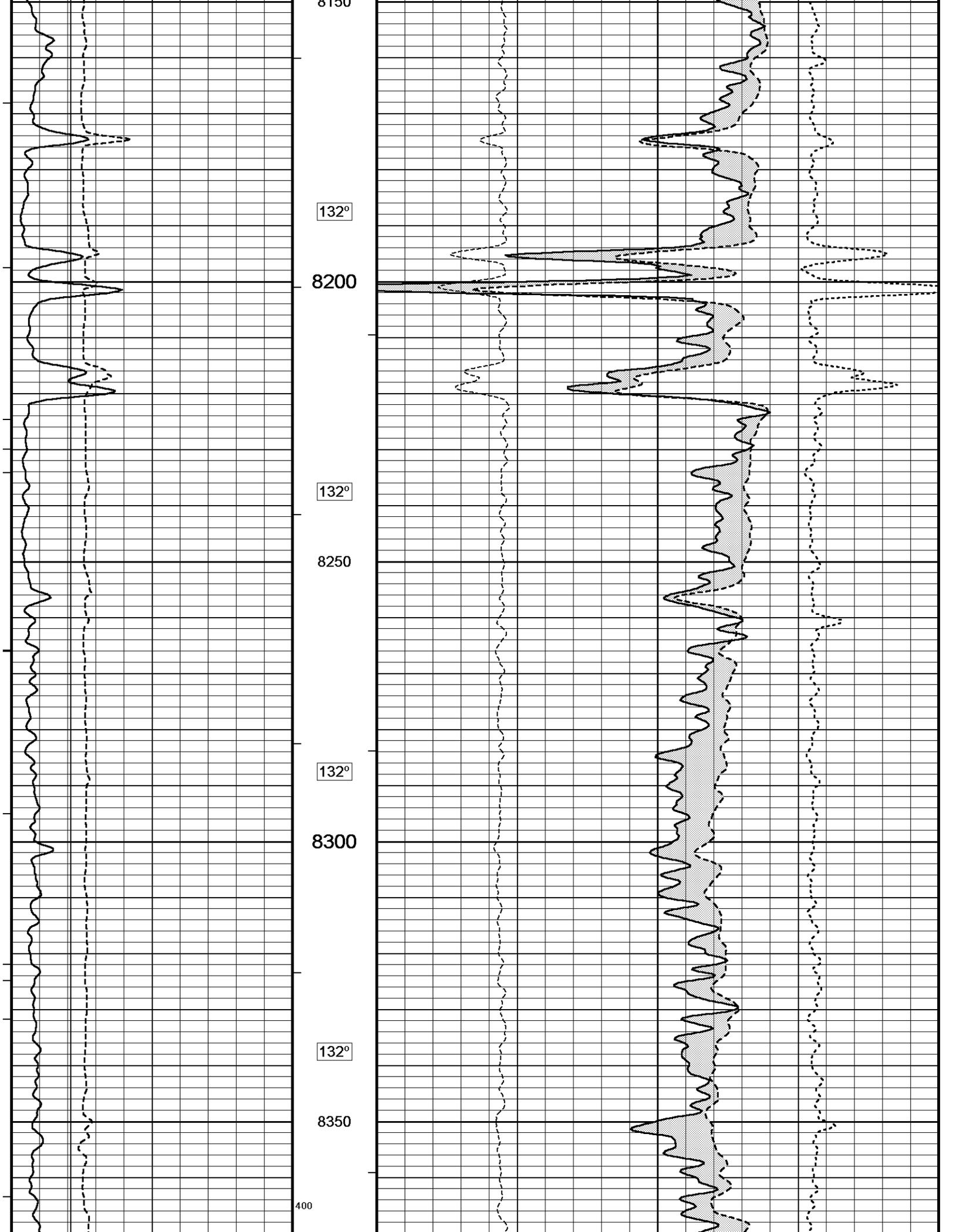


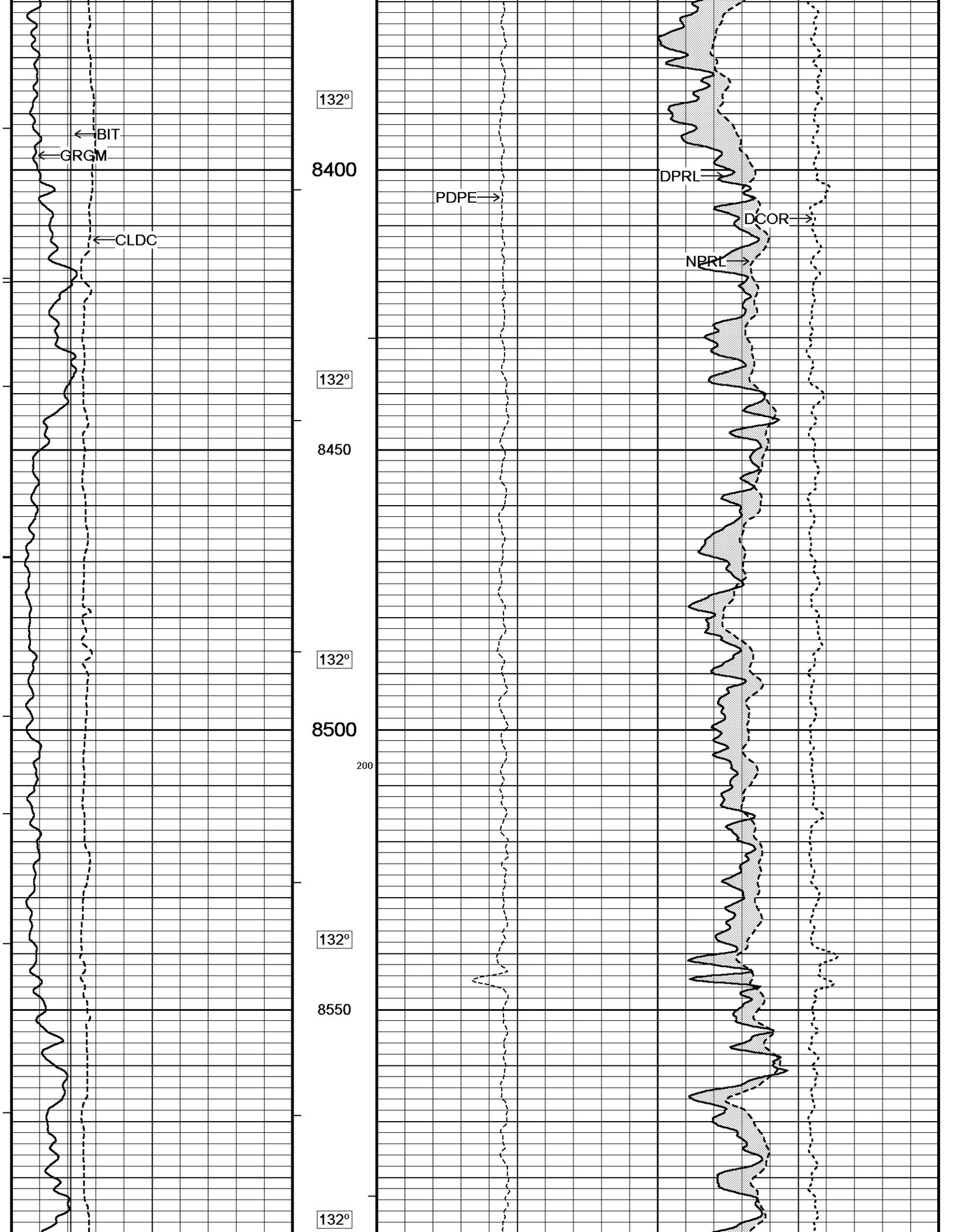


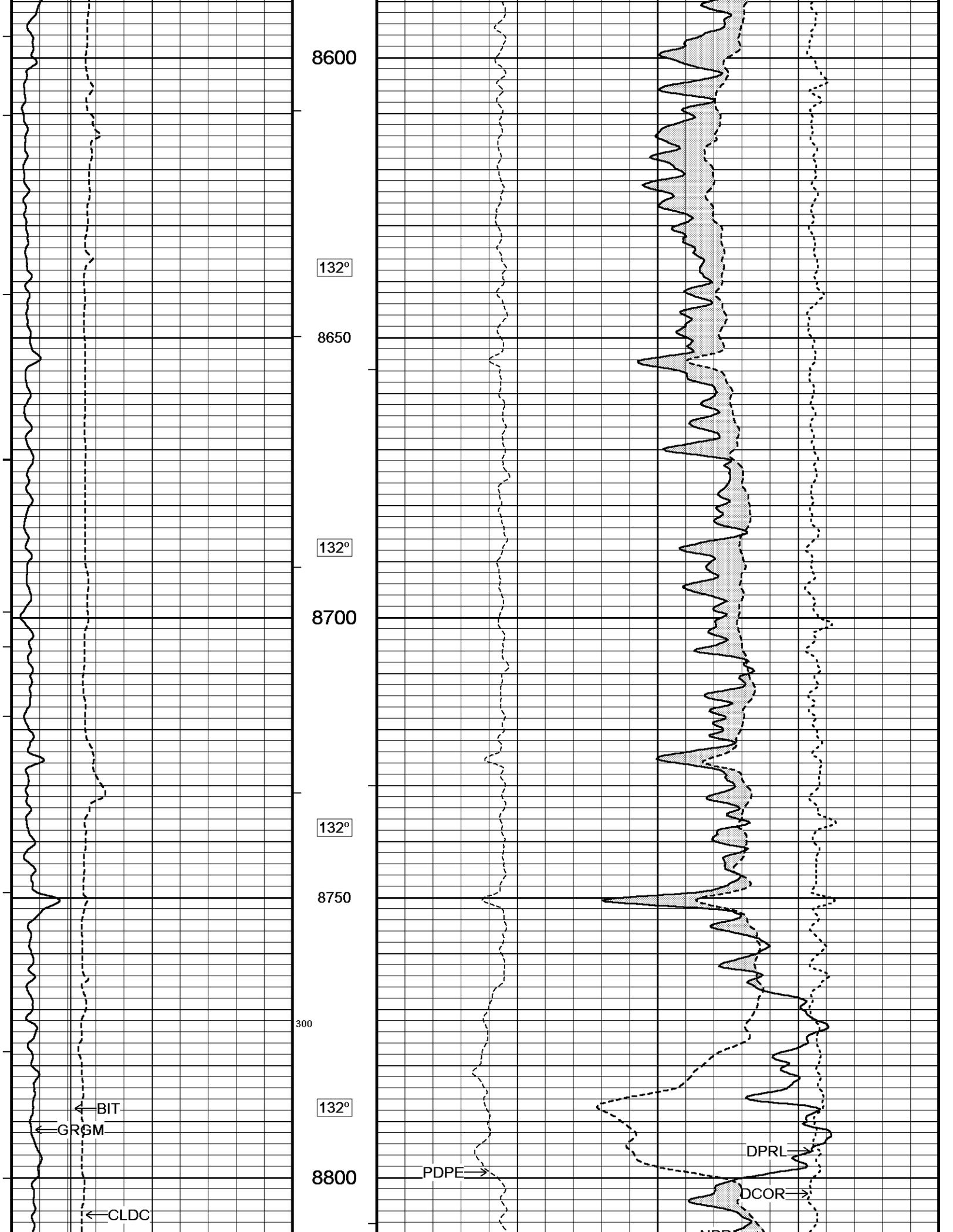


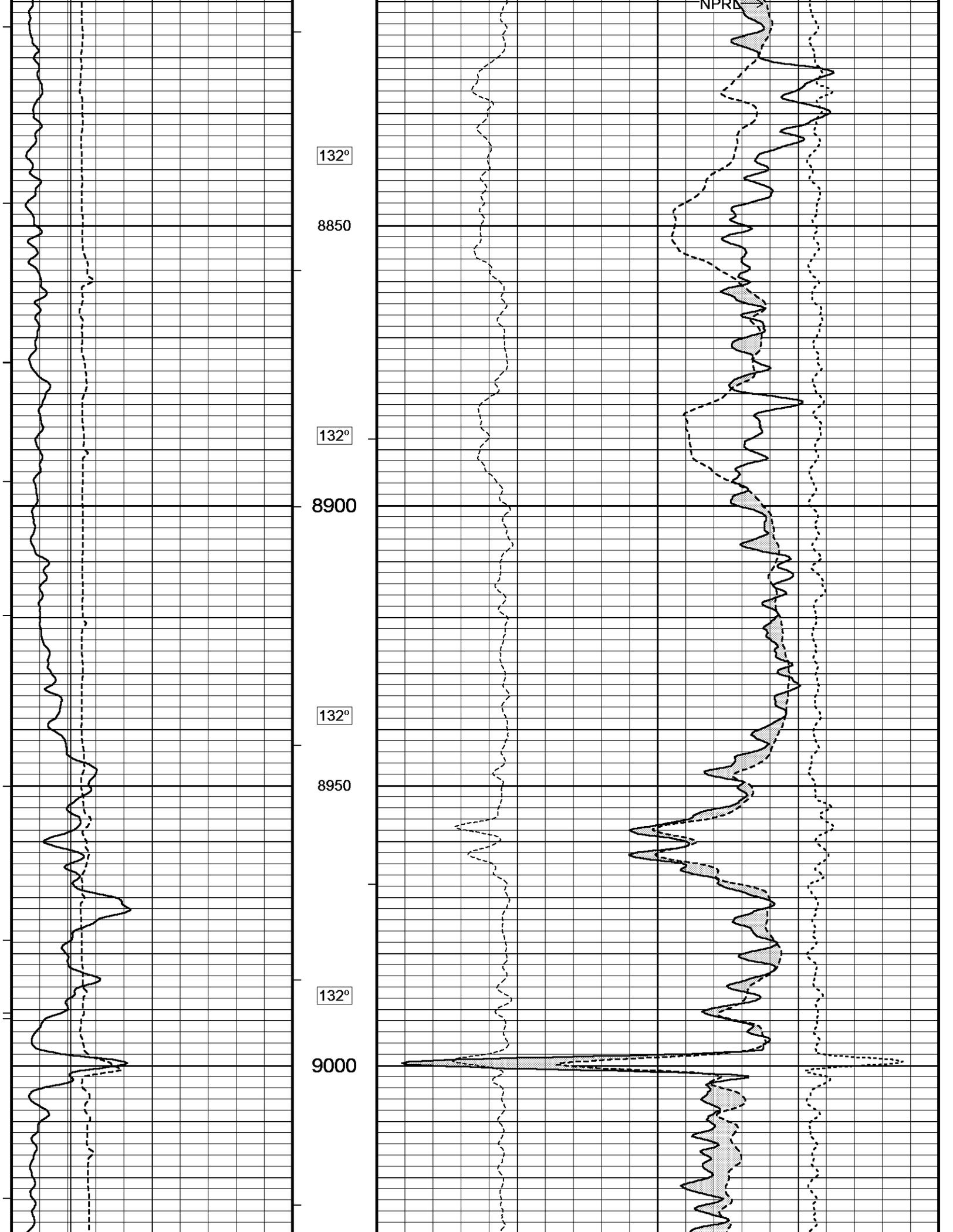


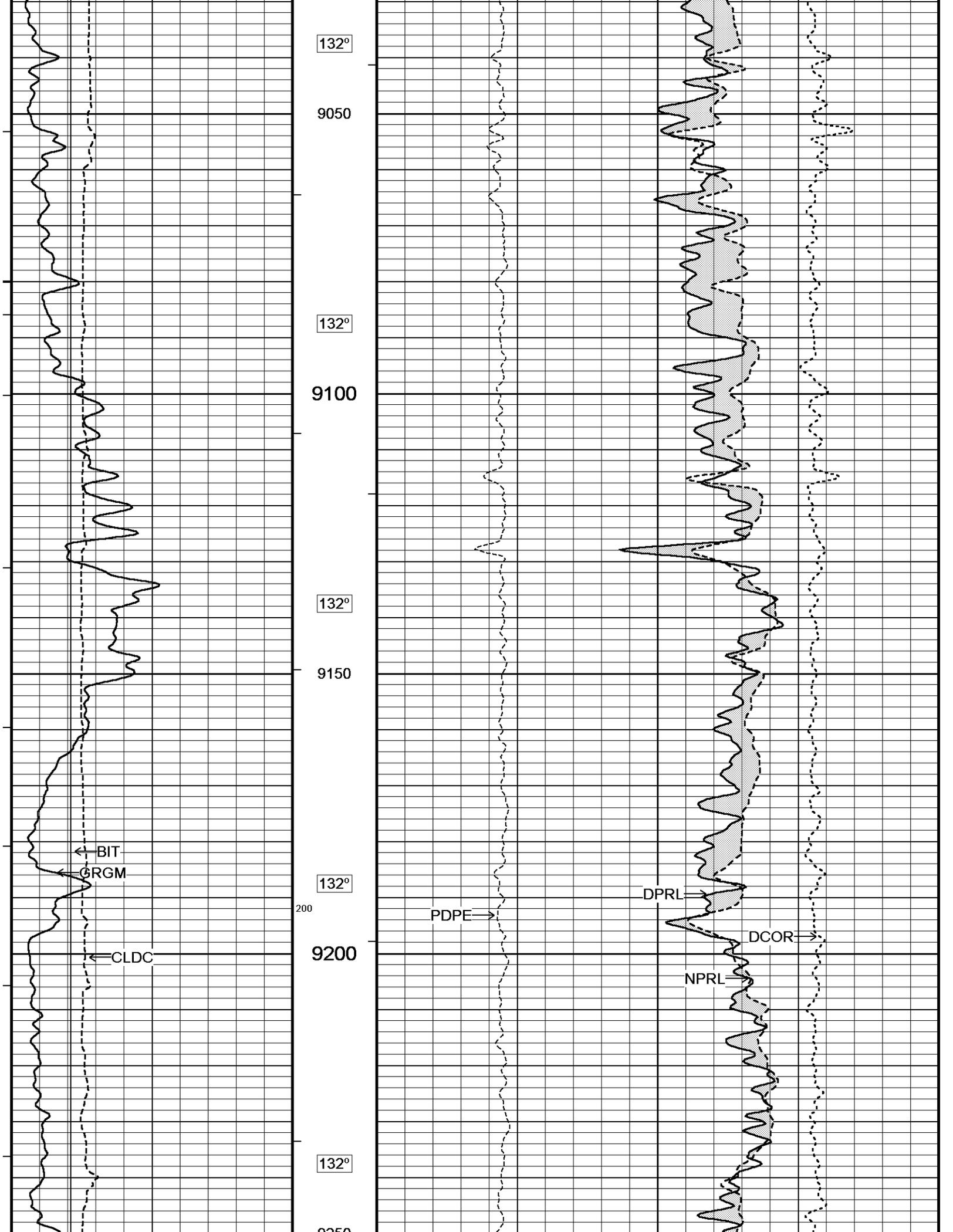


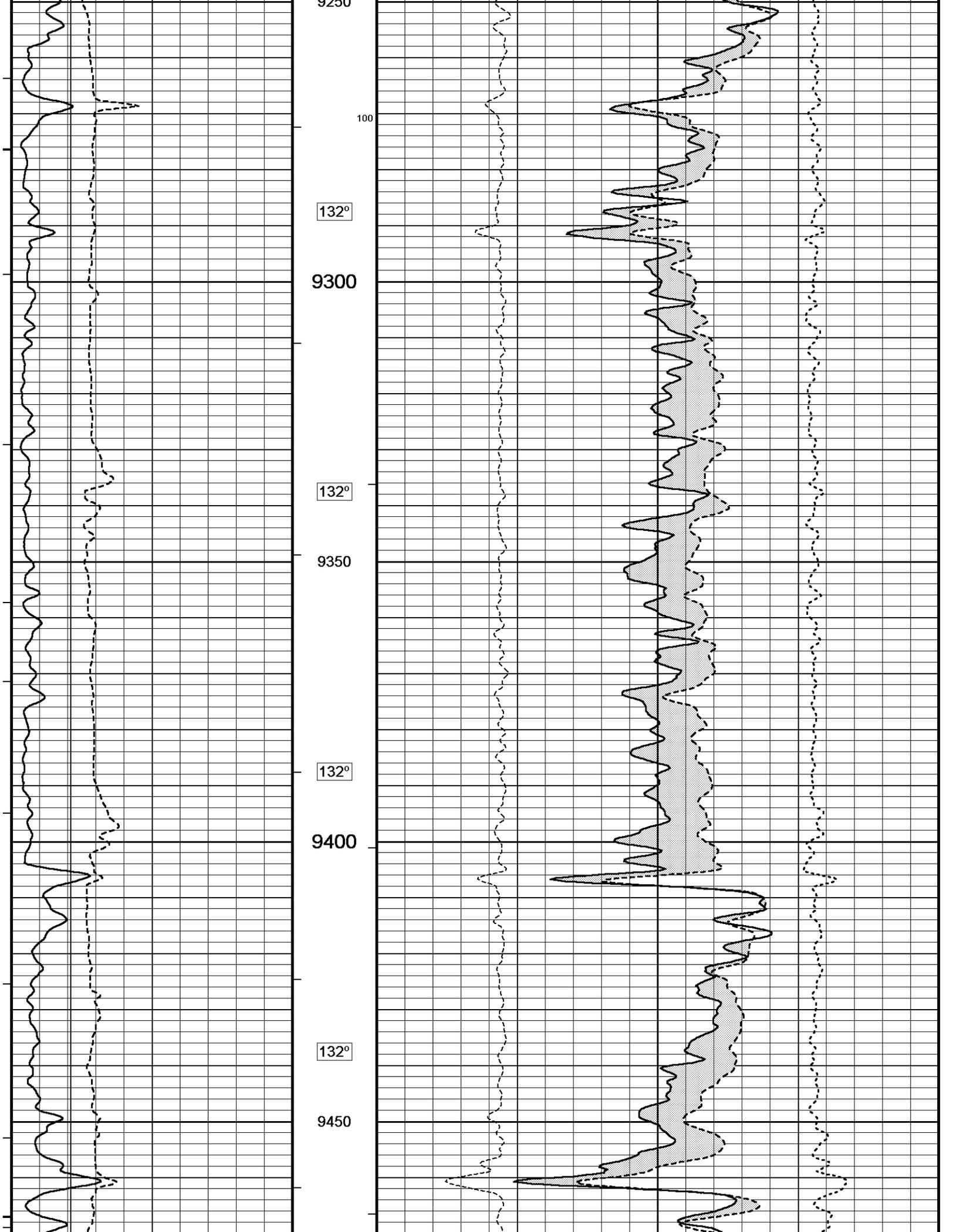


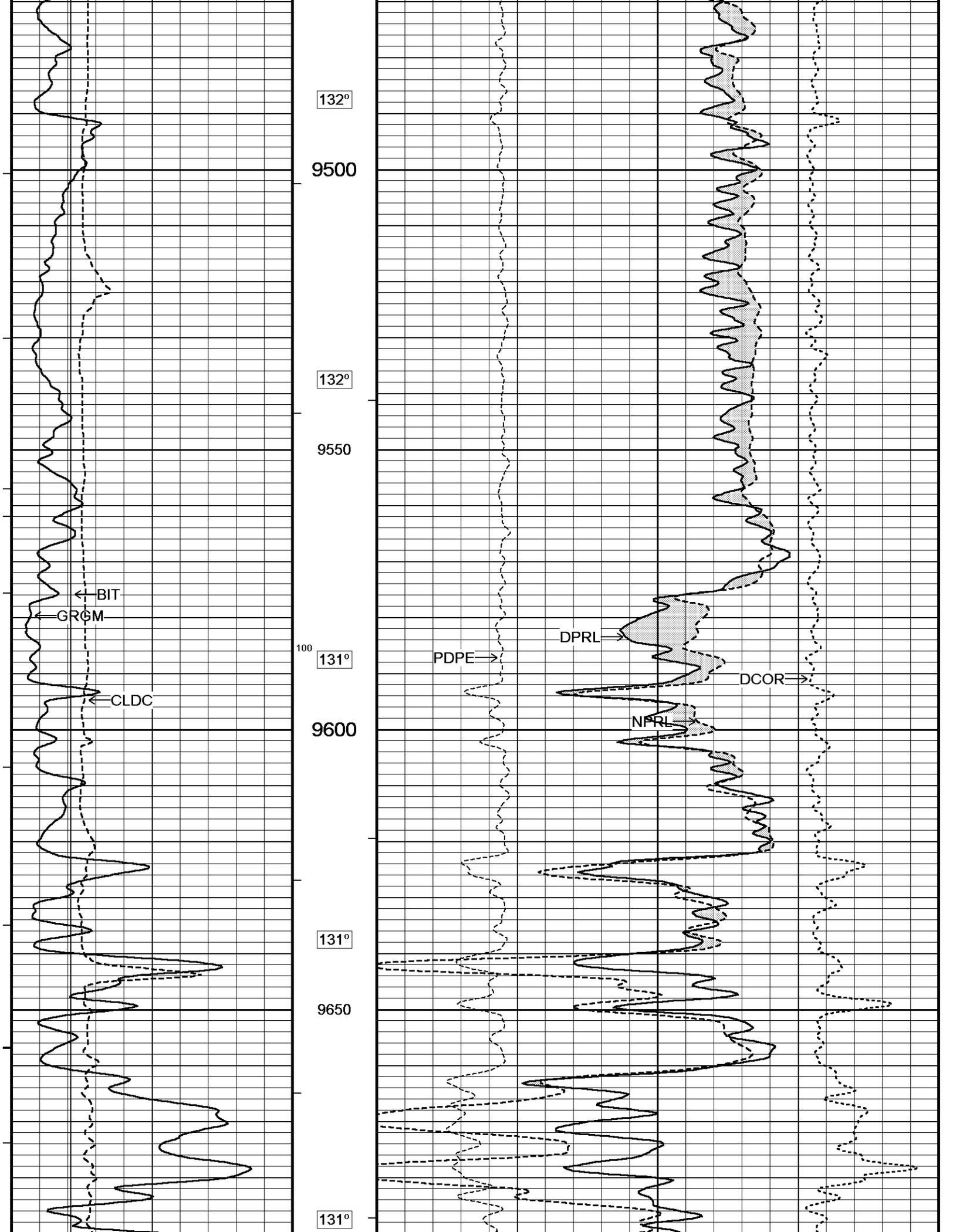


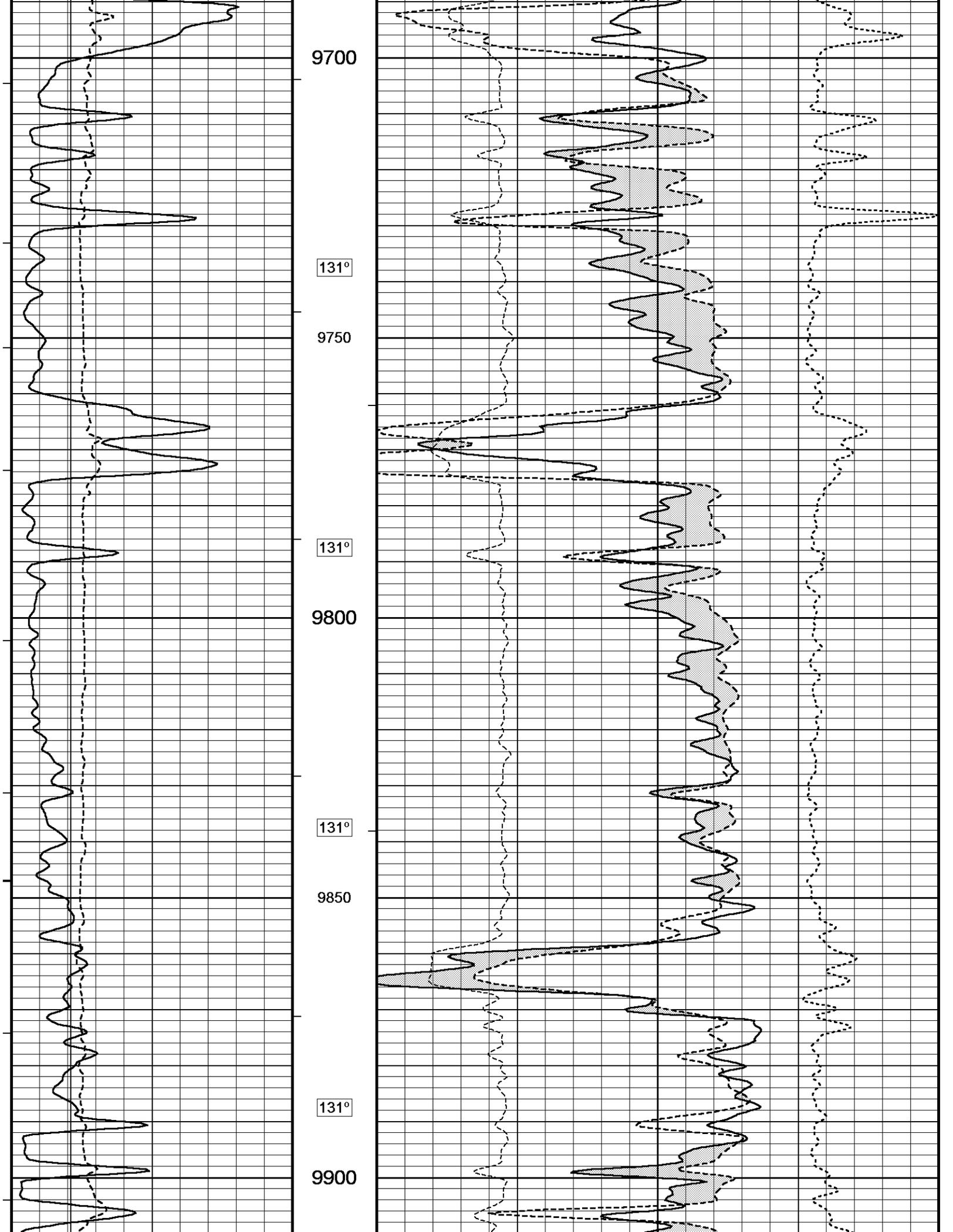


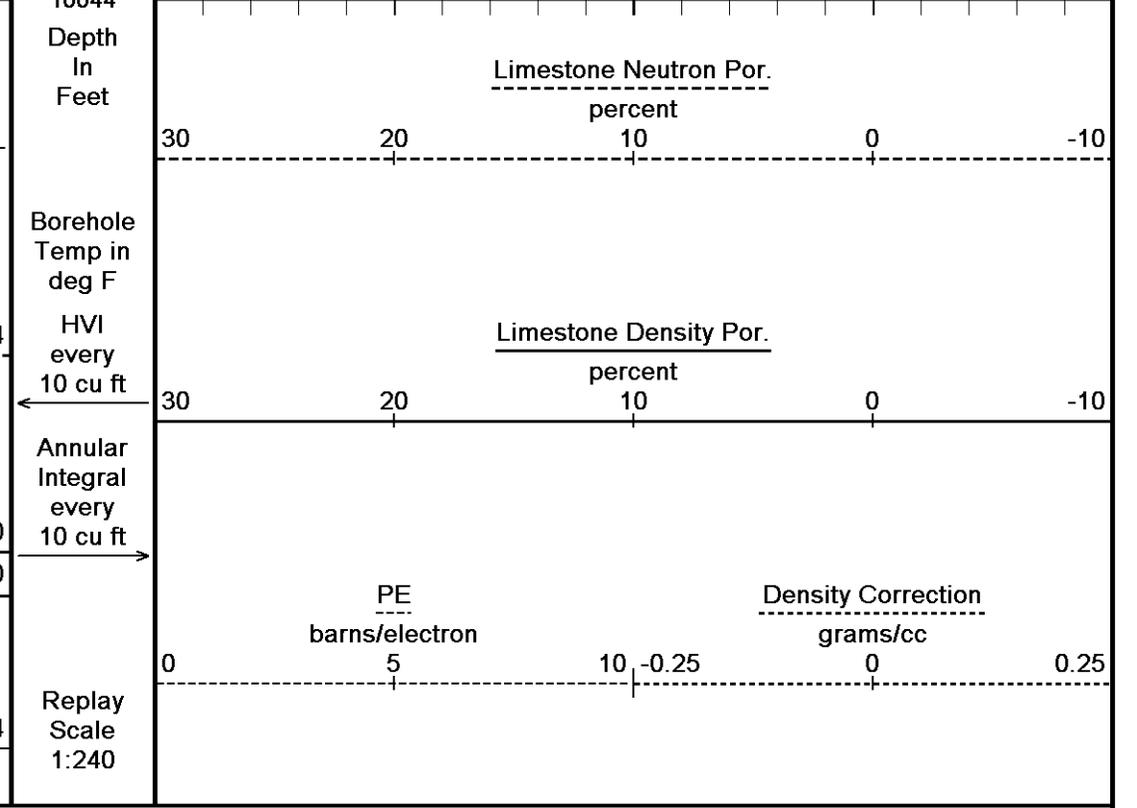
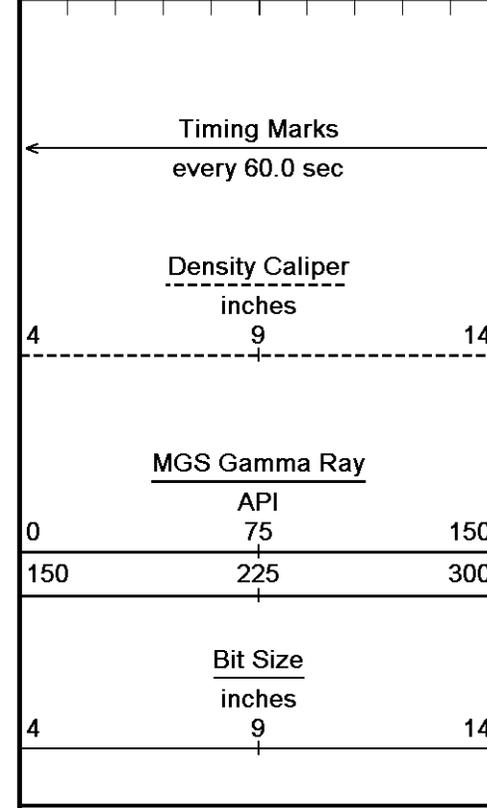
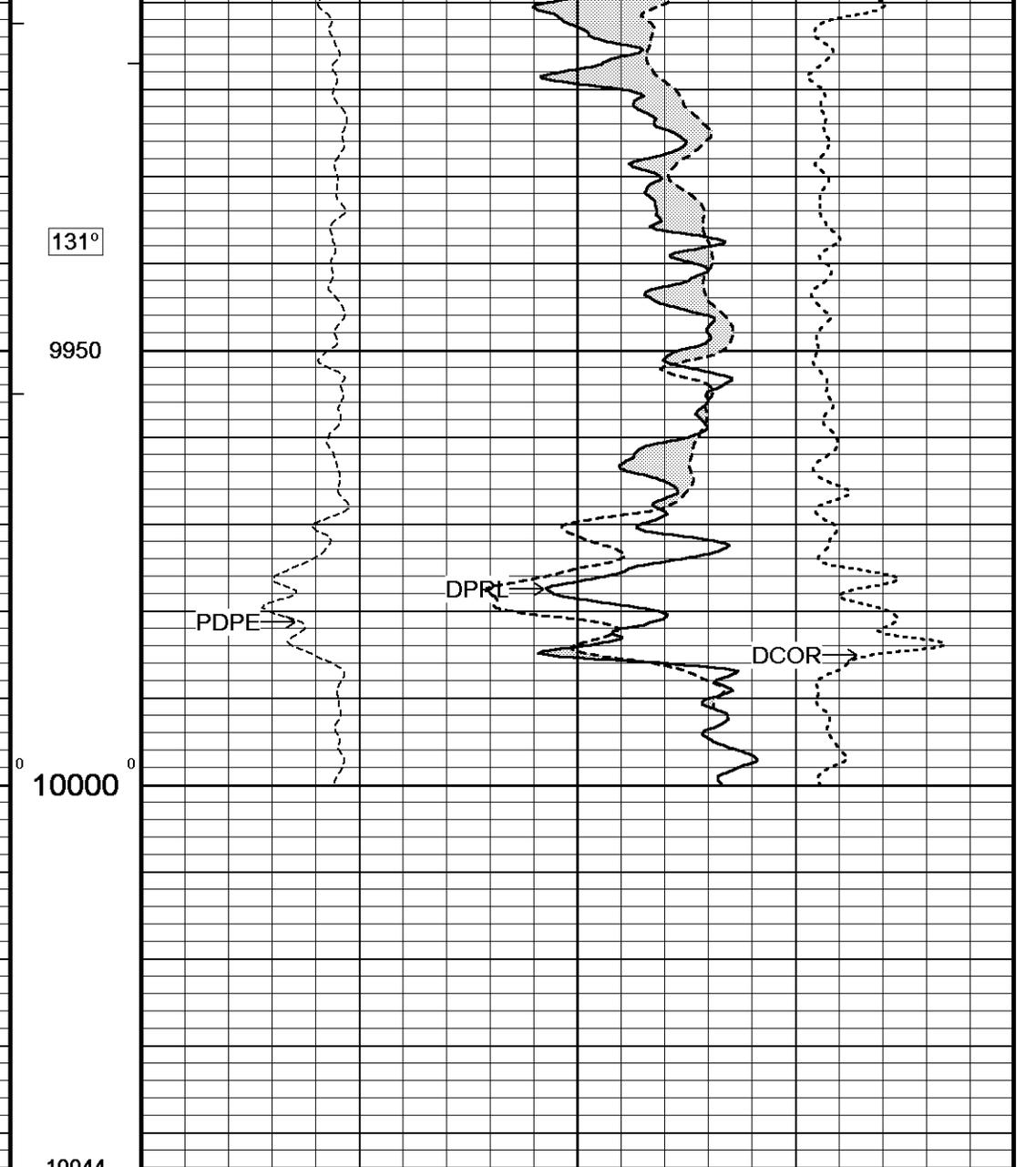
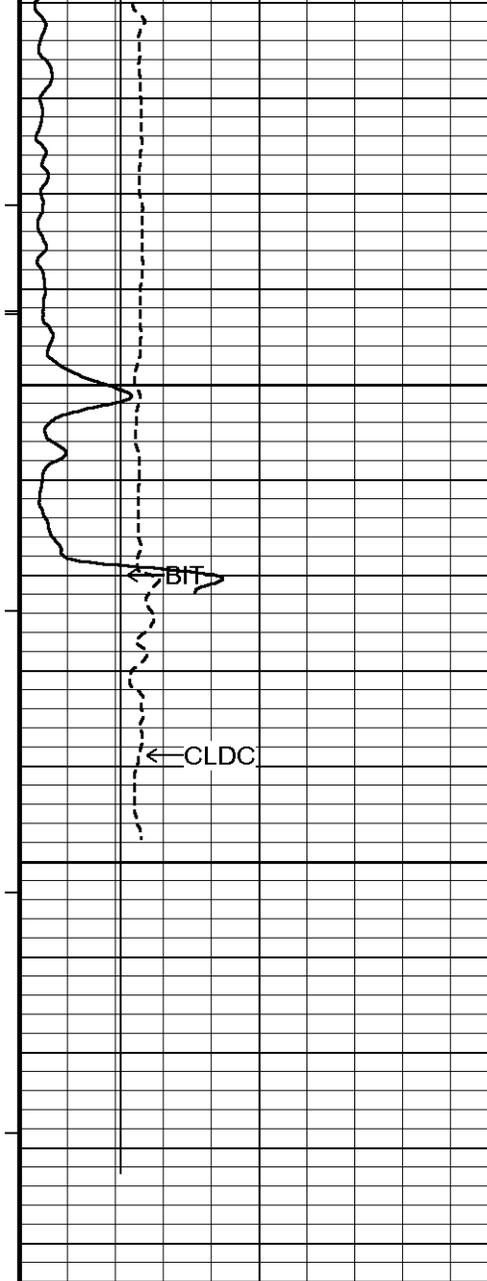












5 INCH MAIN LOG

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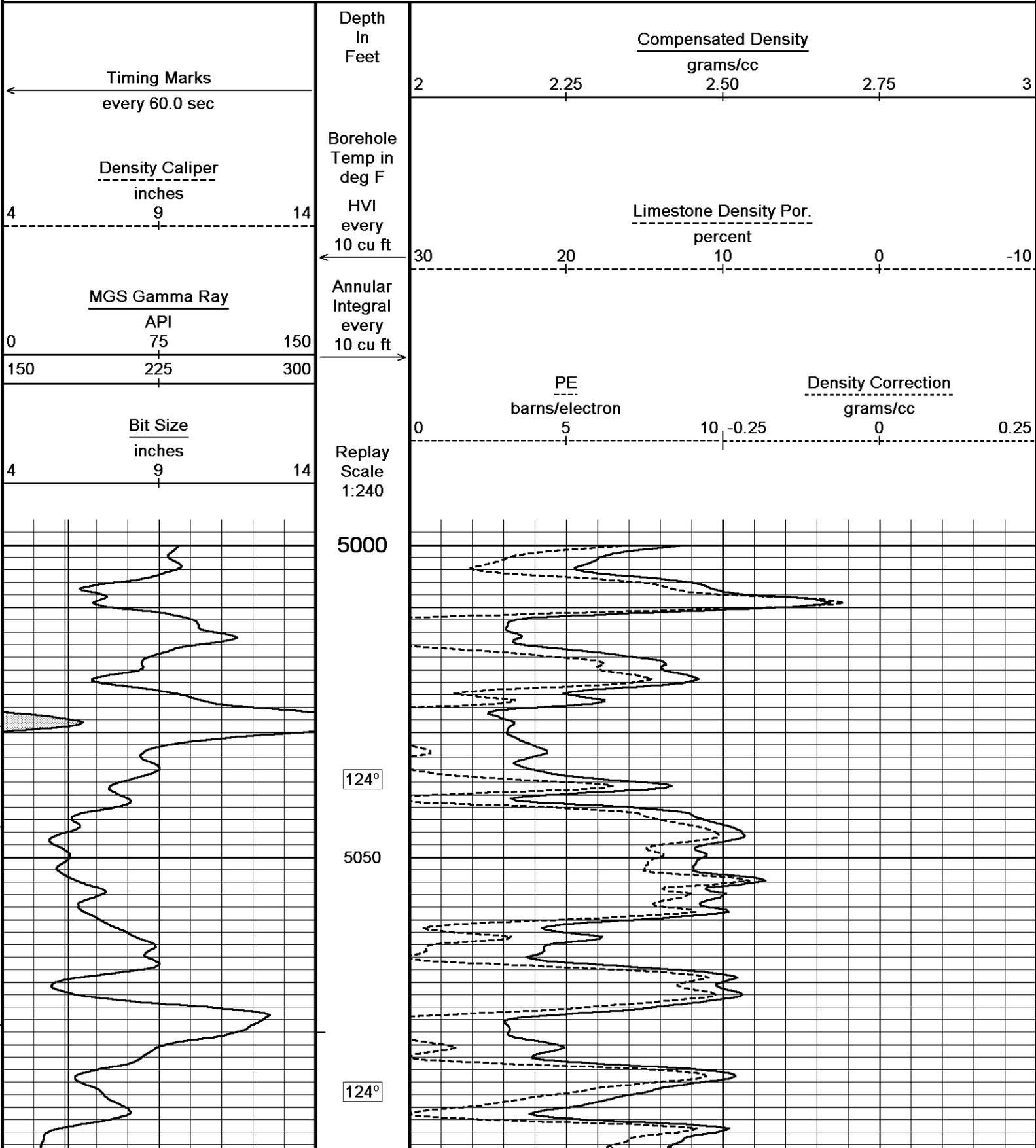
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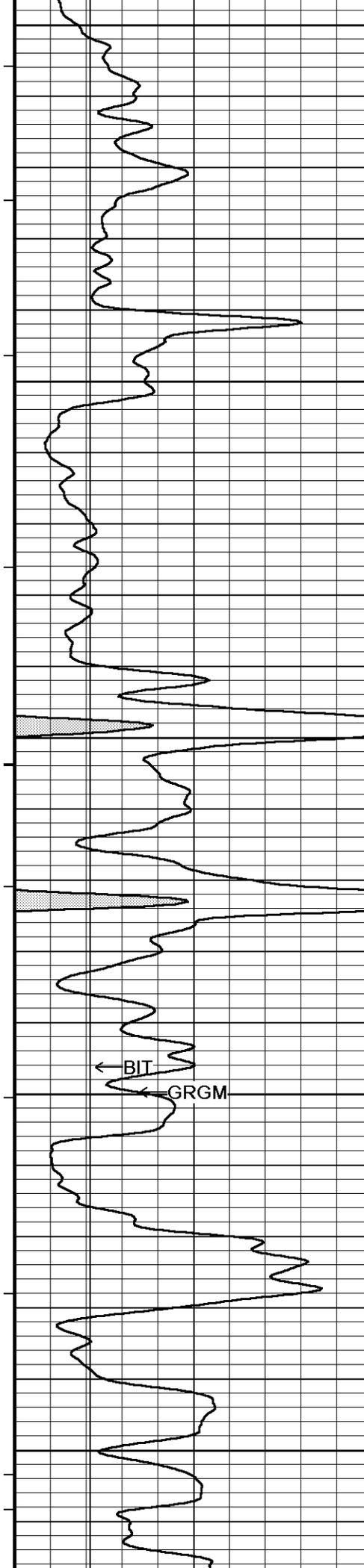
Plotted on 27-JUL-2012 23:21

Filename: C:\Data\SANDRIDGE SEAN 3119 2-18H\rtap sandridge depth.dta

Recorded on 27-JUL-2012 22:25

System Versions: Processed with 13.02.6600 Plotted with 13.02.6600





5100

125°

5150

125°

5200

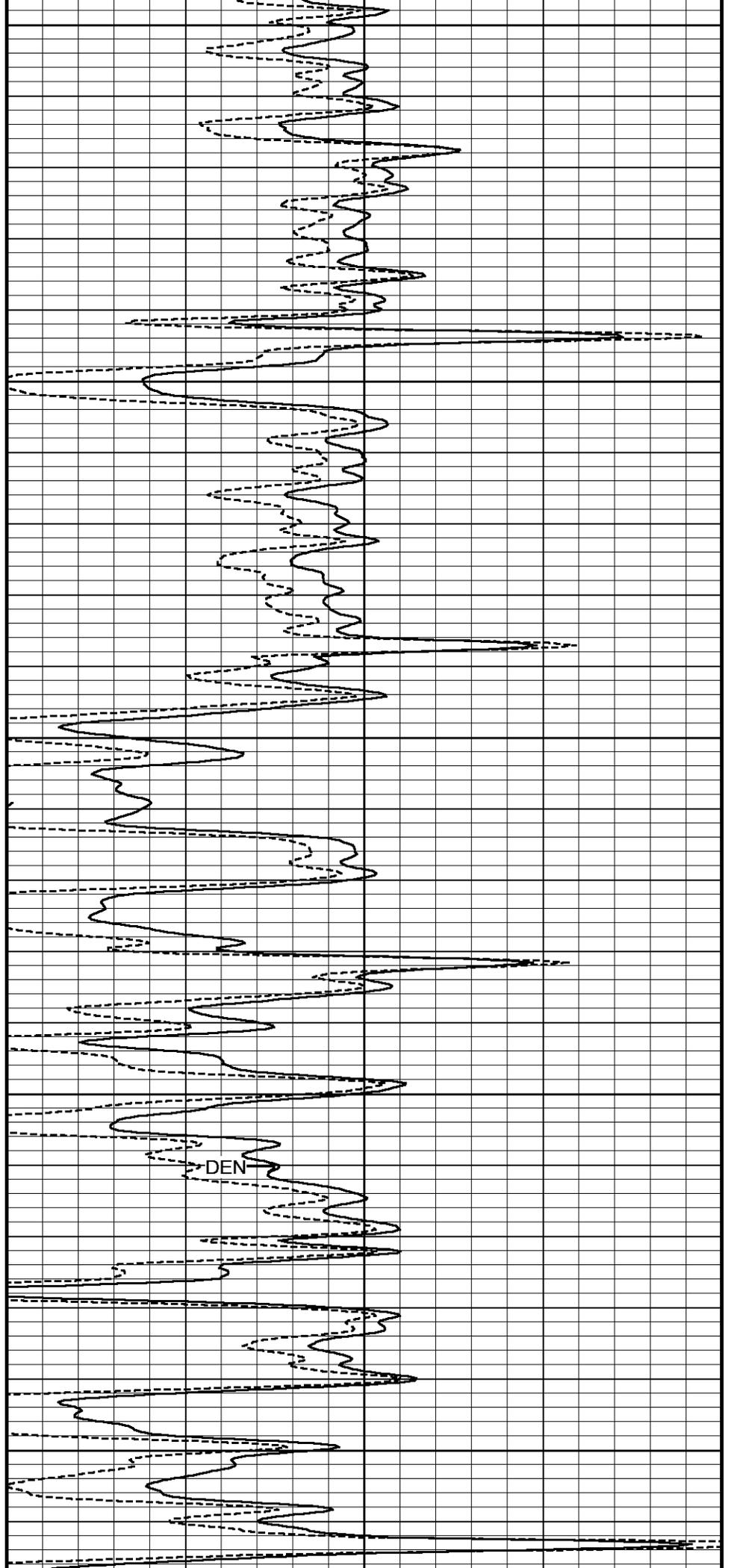
125°

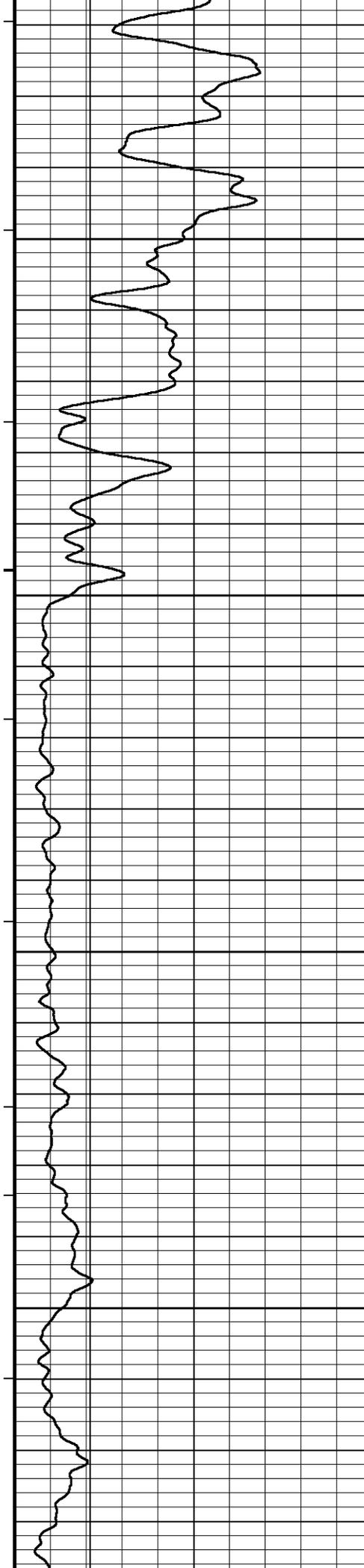
5250

DEN

126°

5300





126°

5350

127°

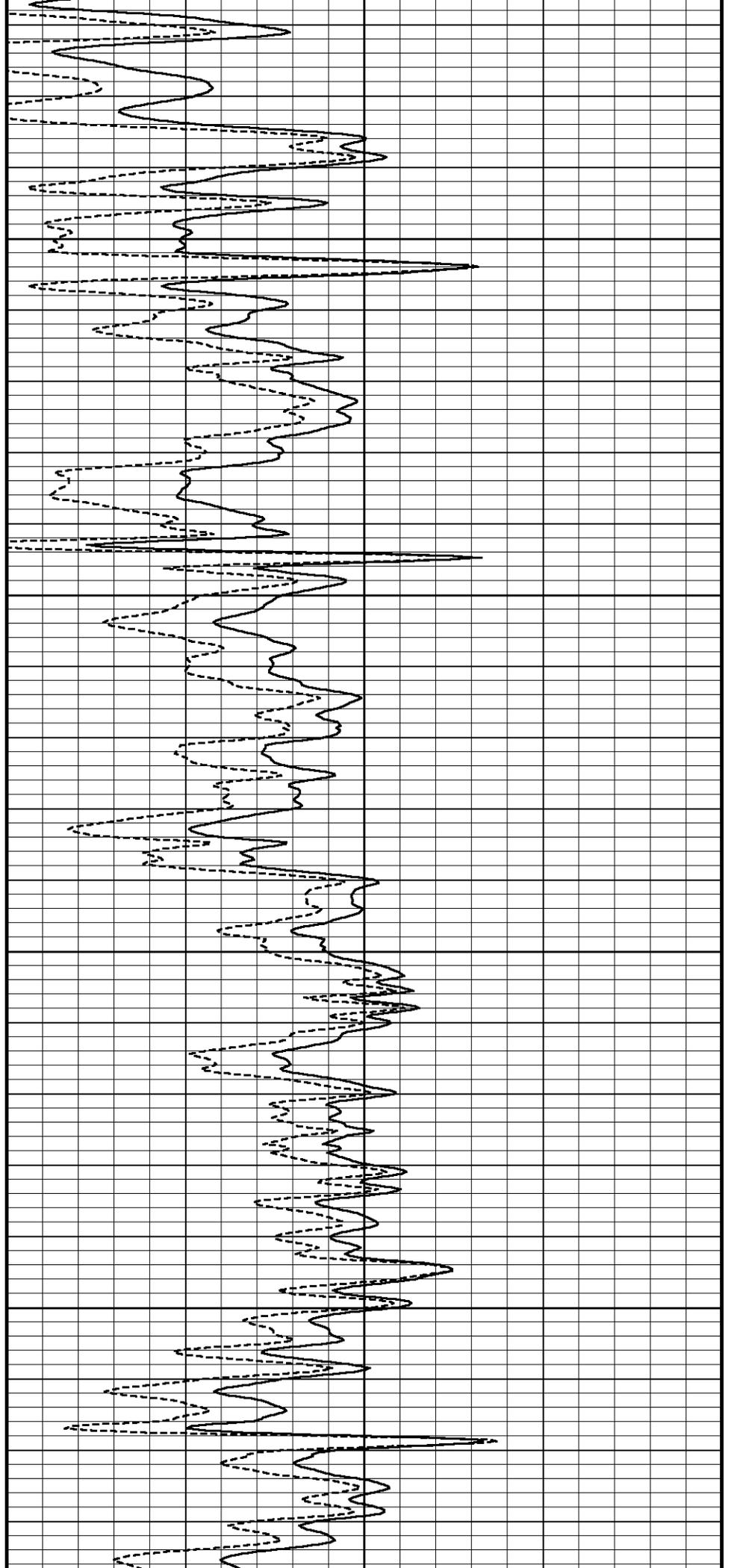
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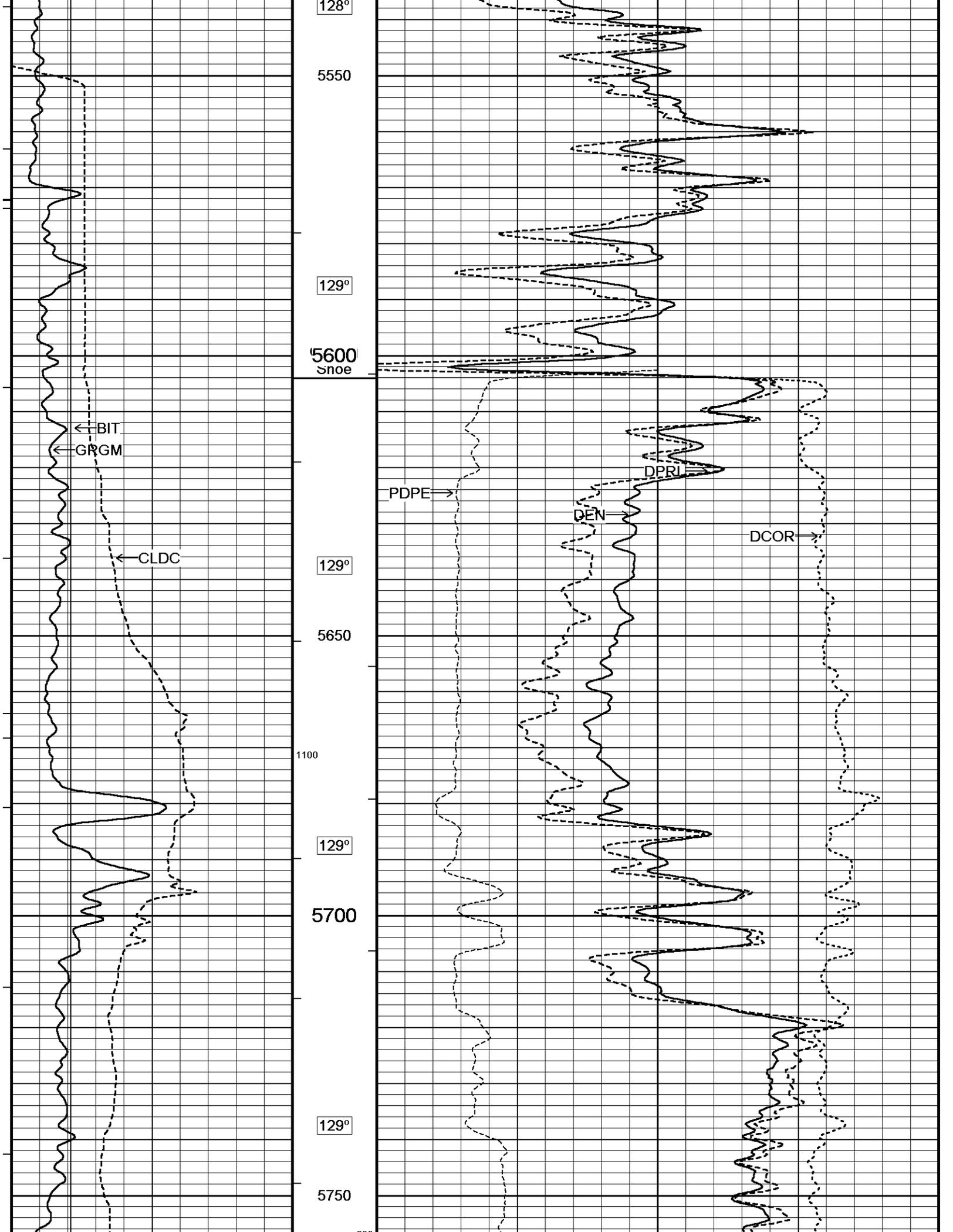
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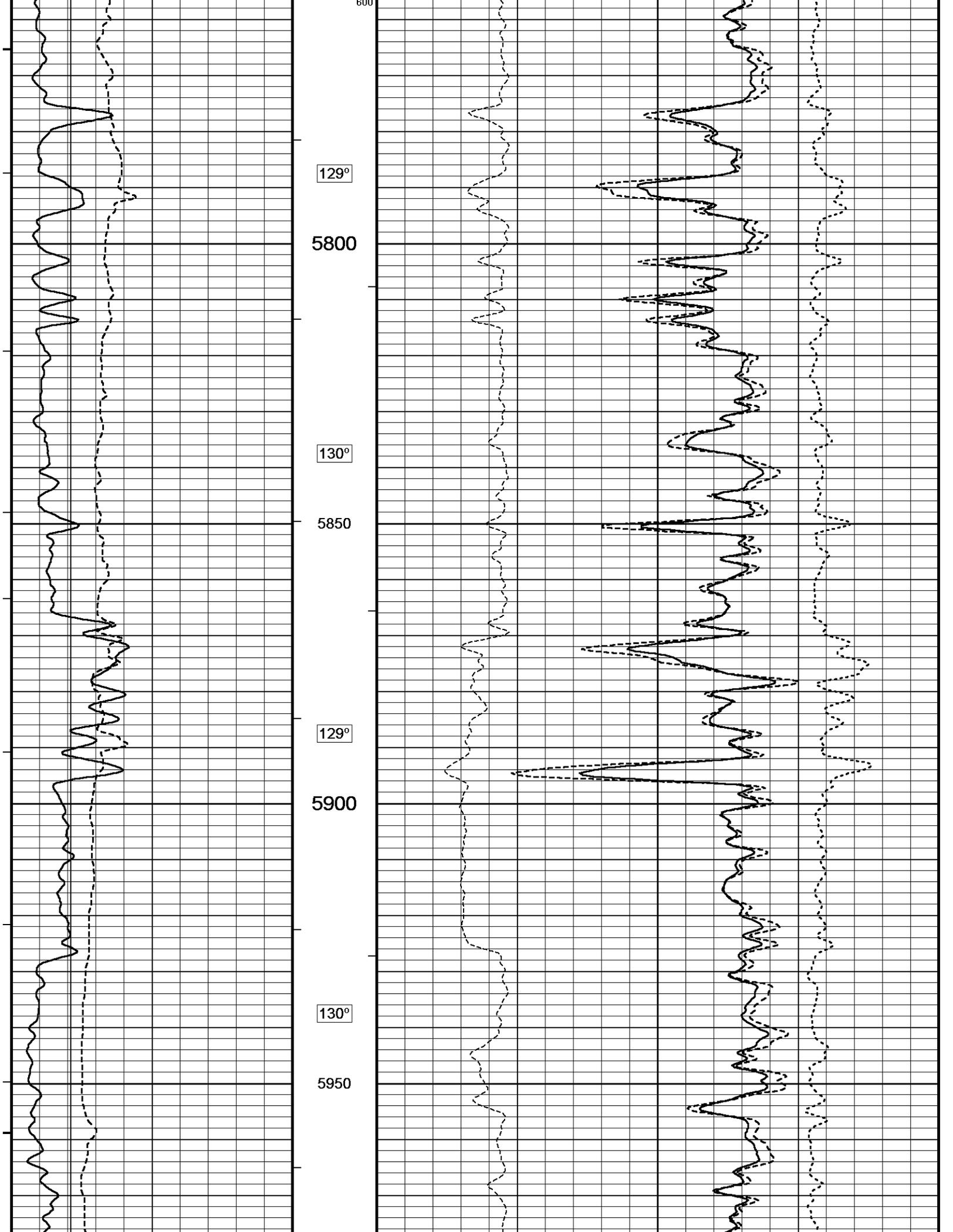
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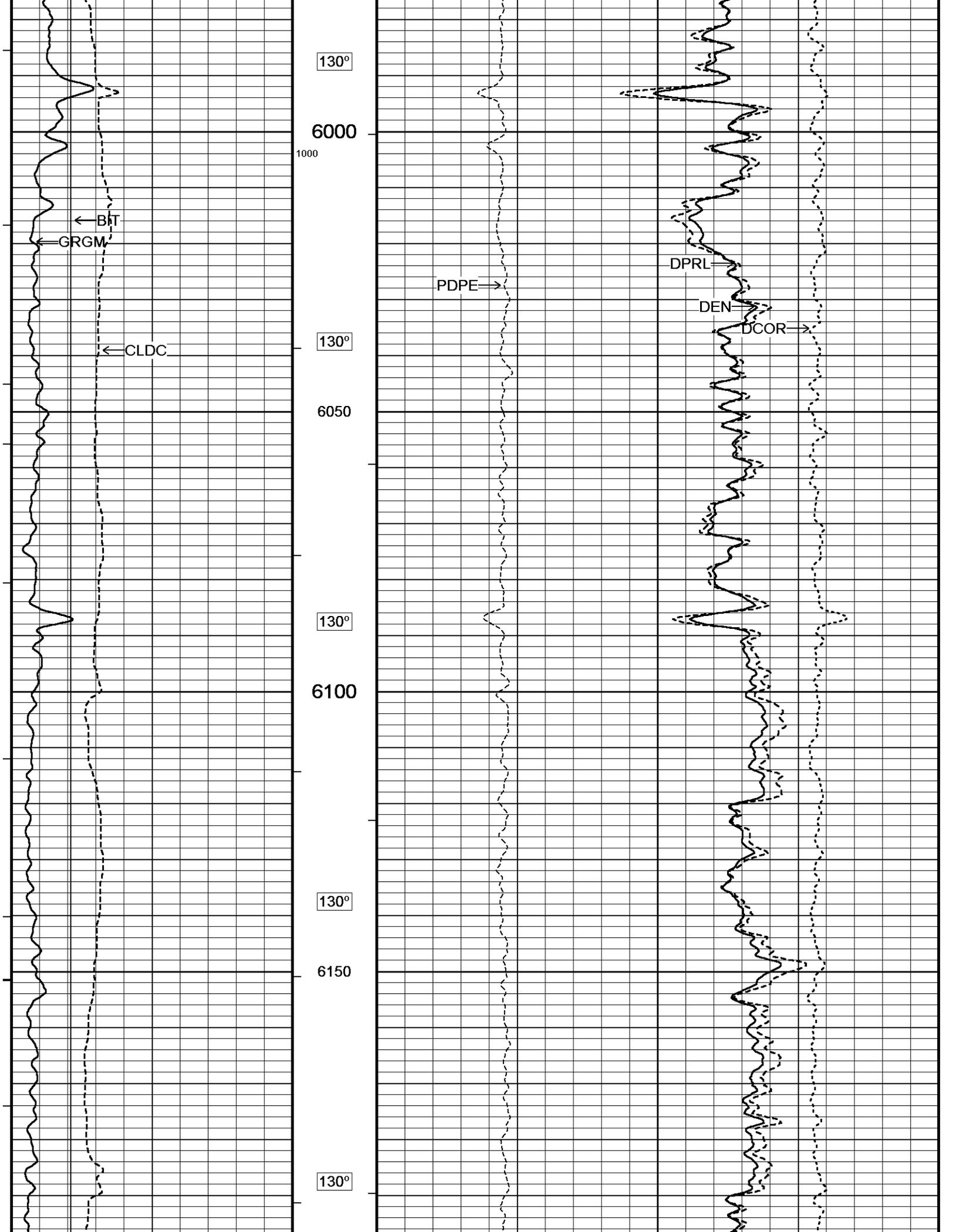
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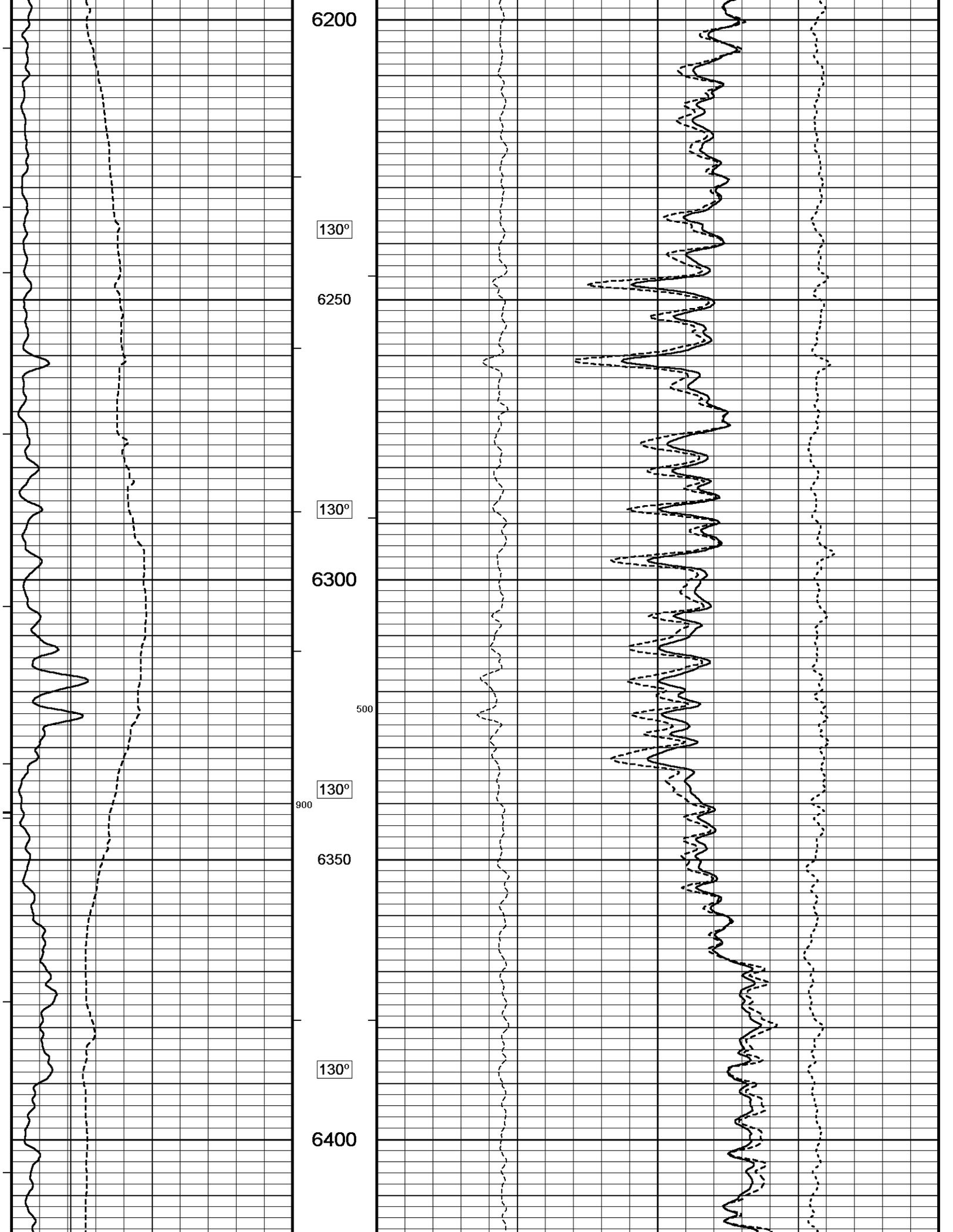
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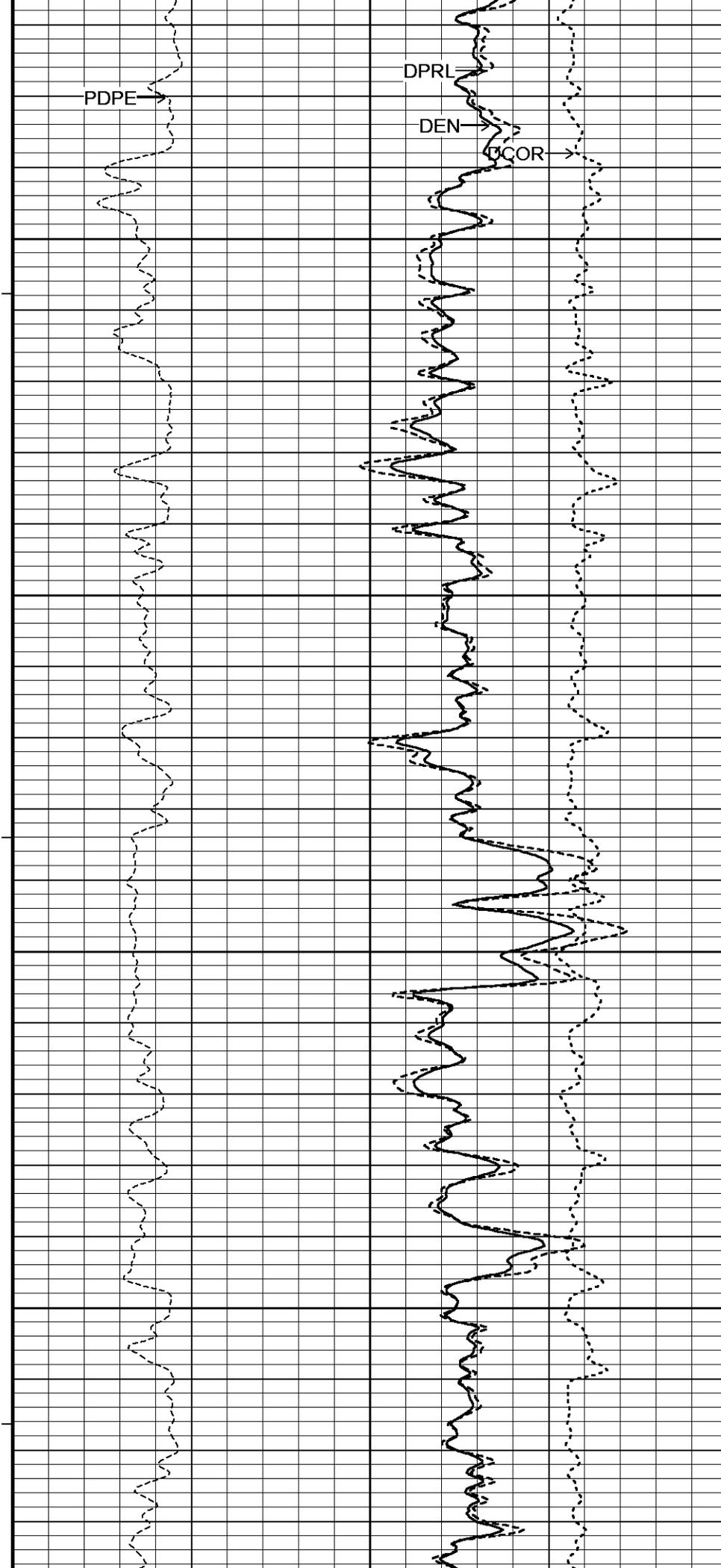
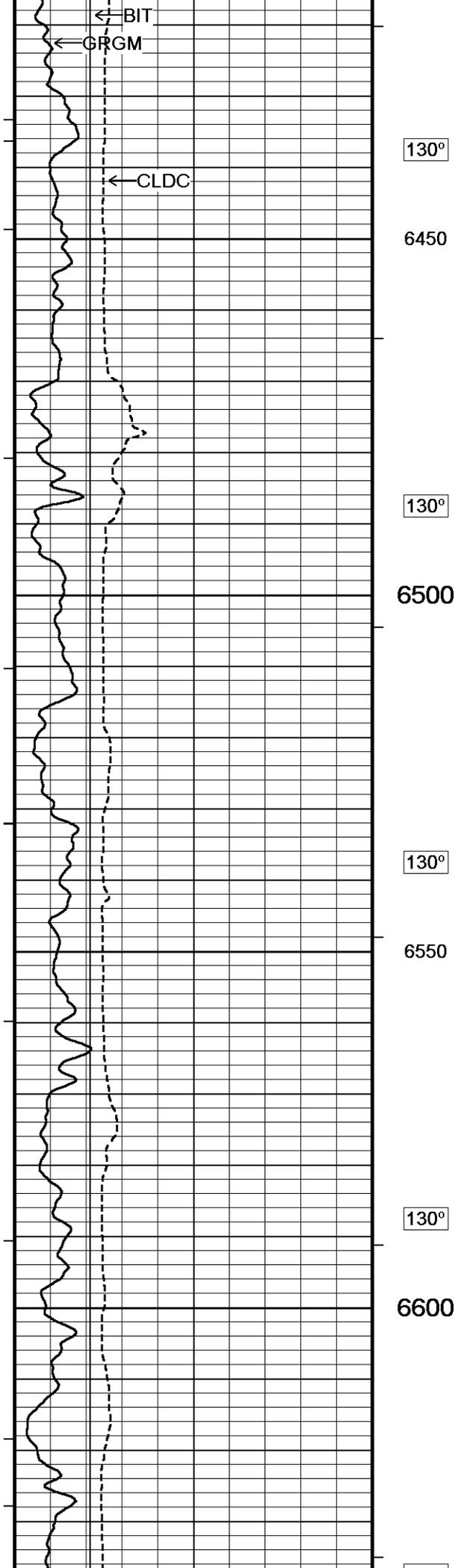


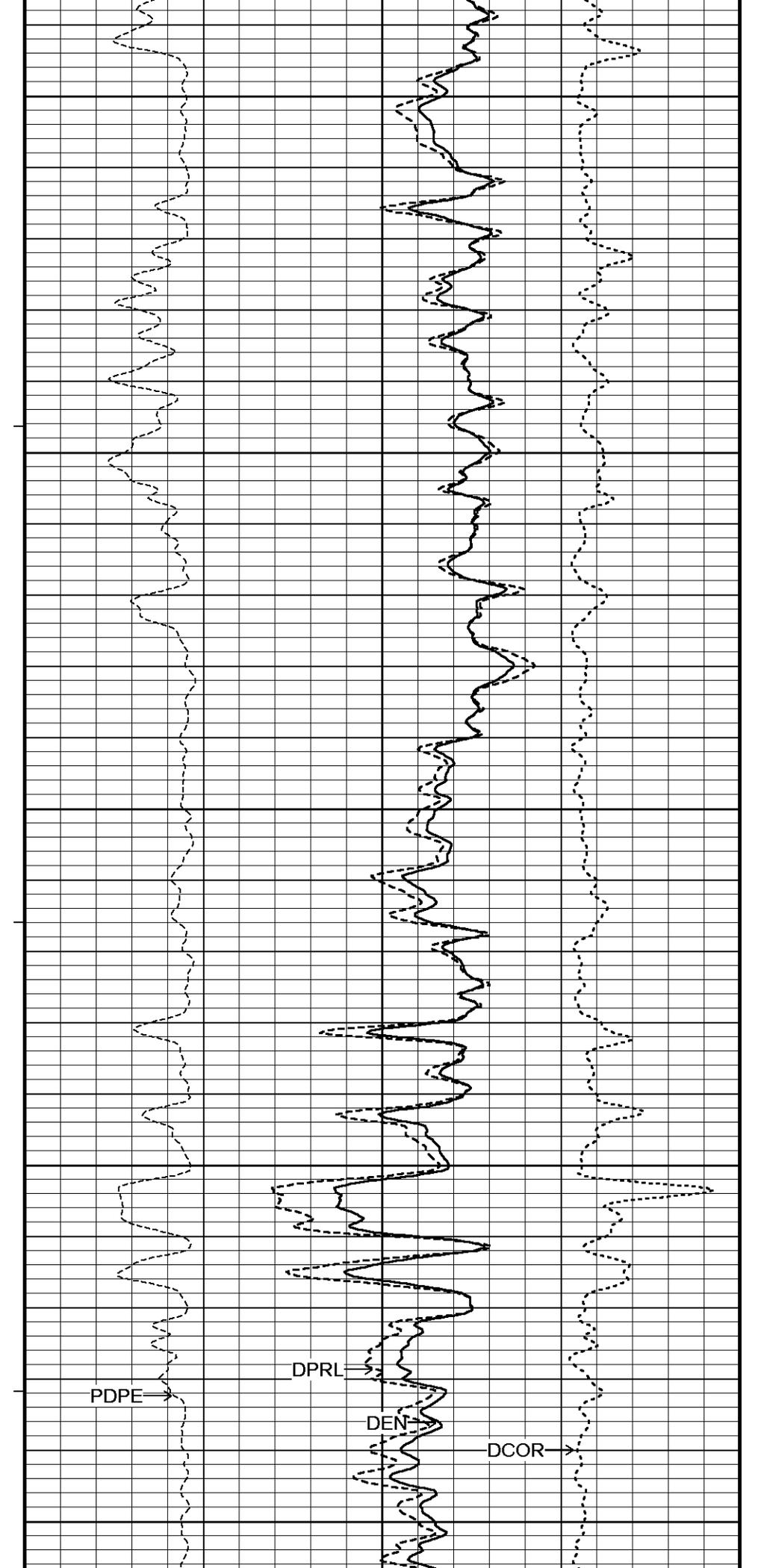
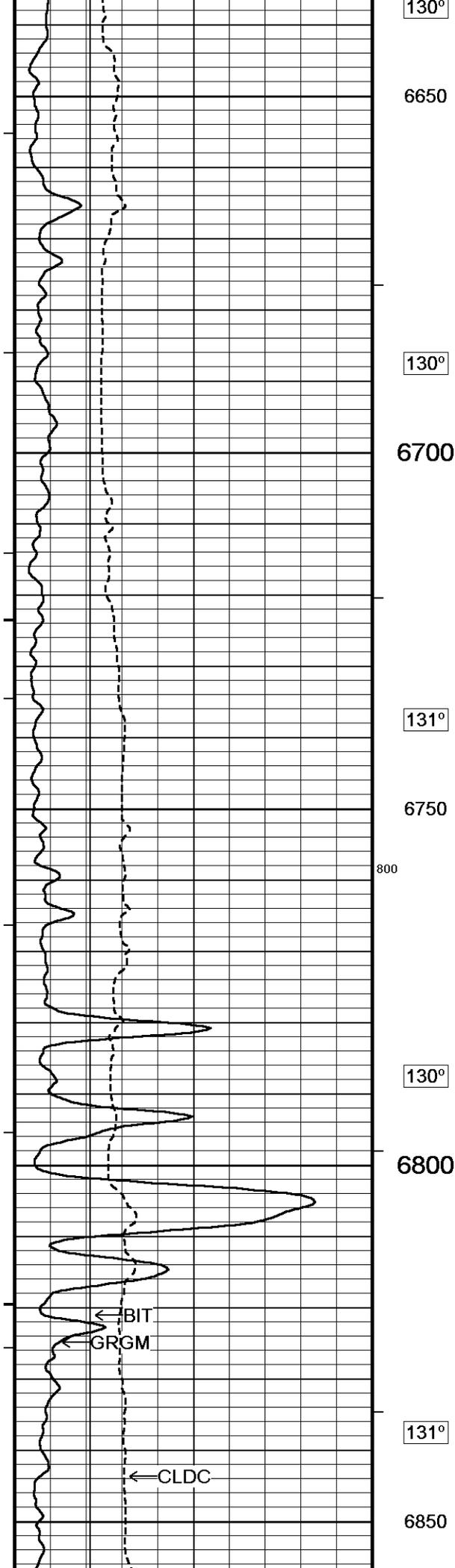


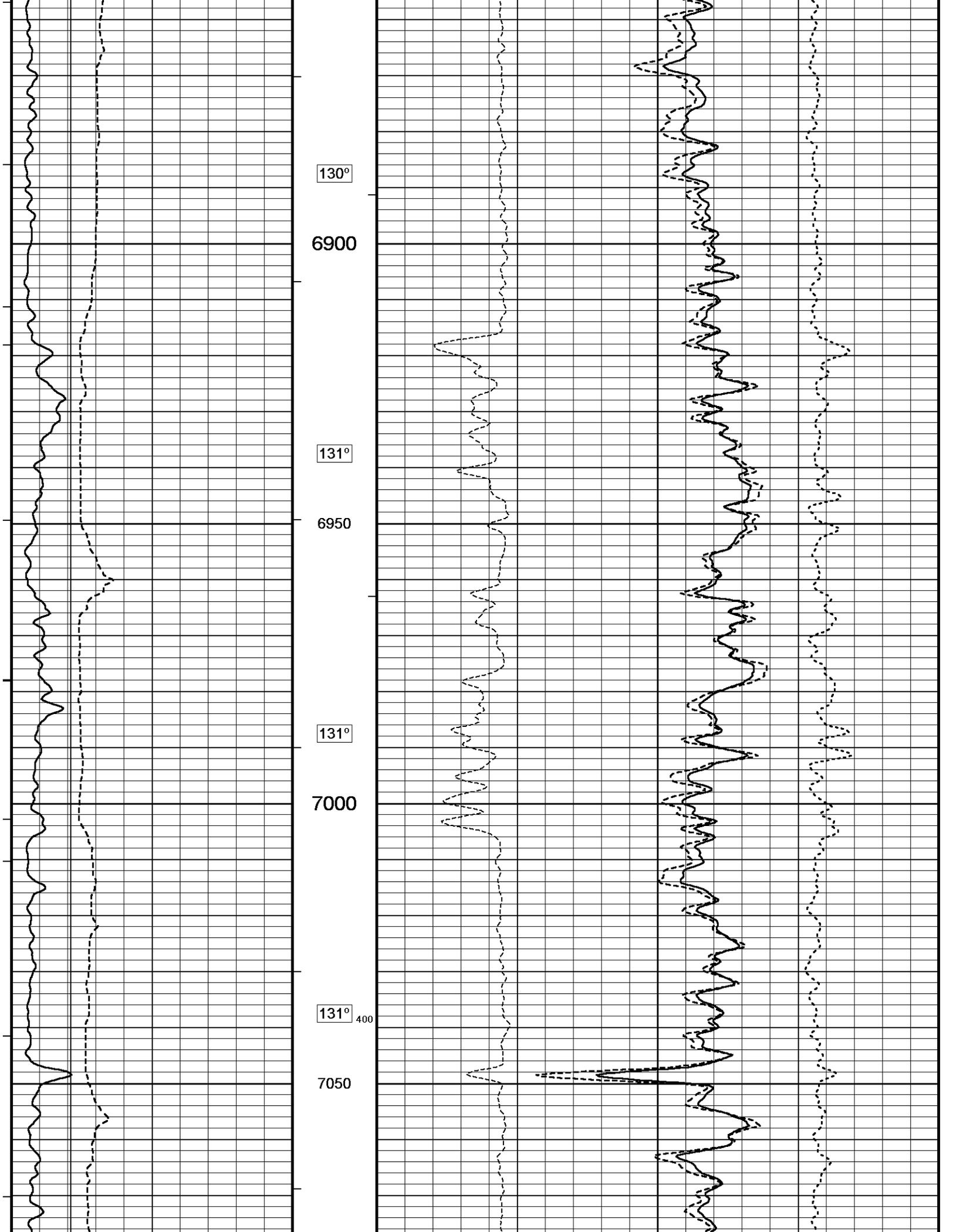


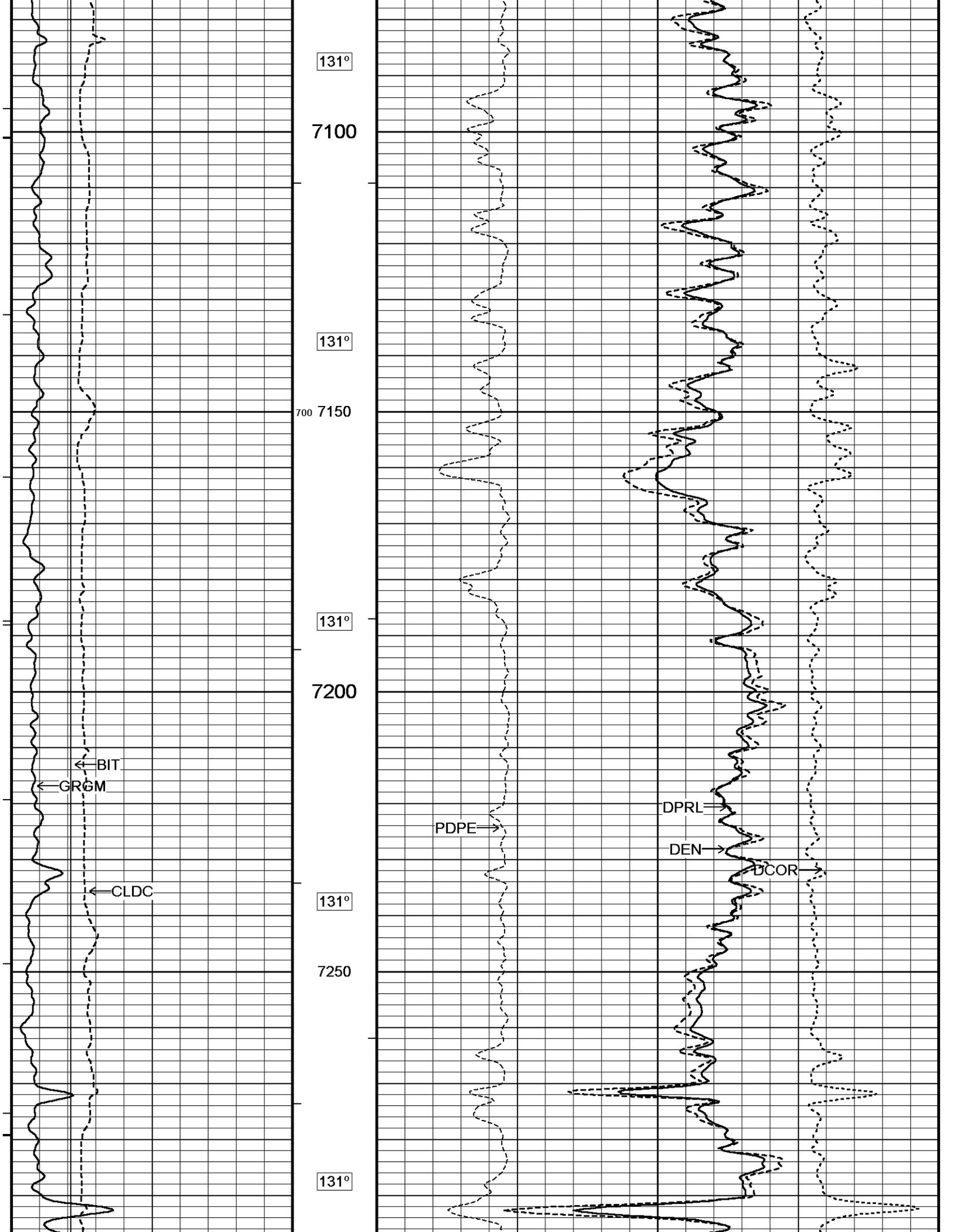


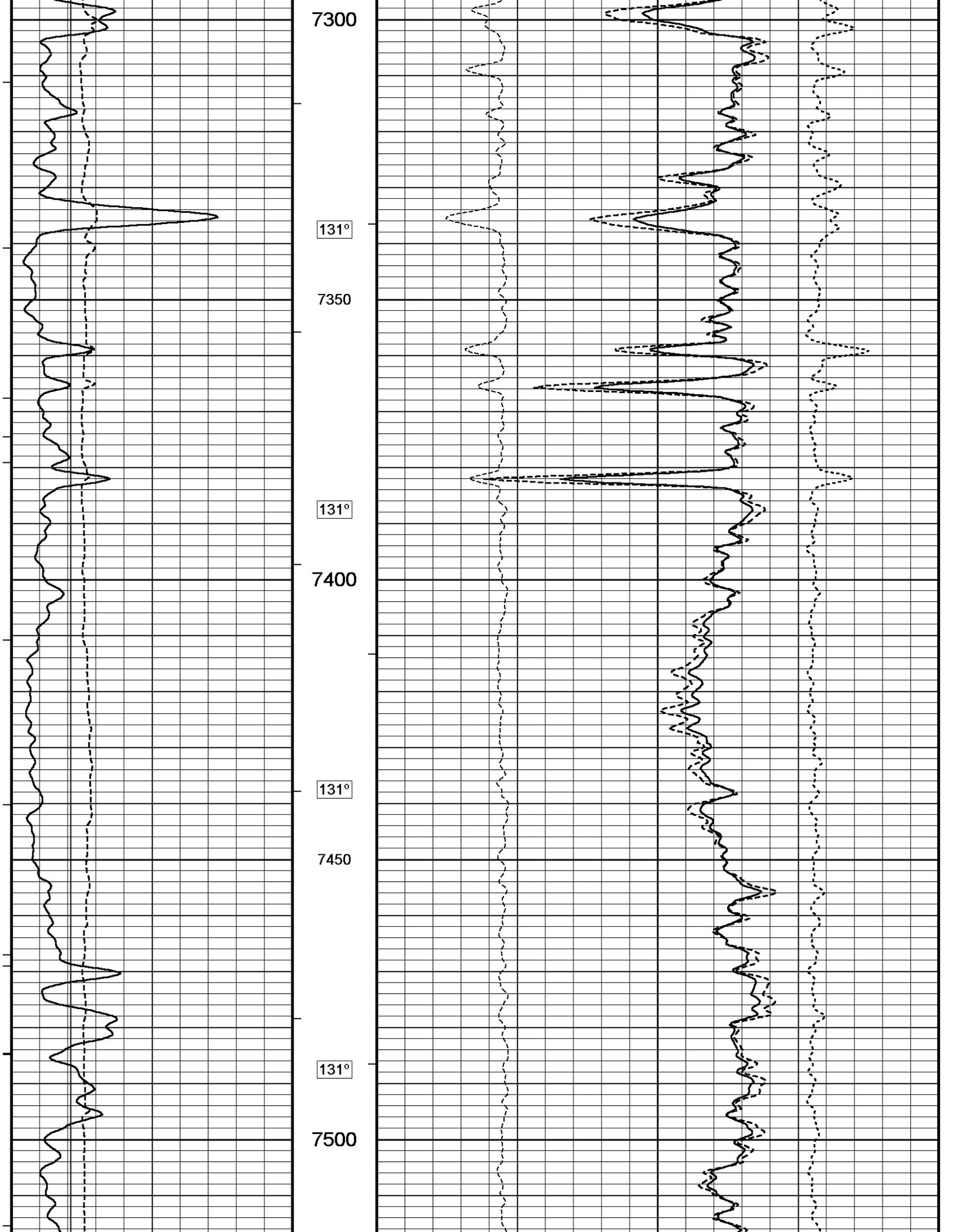


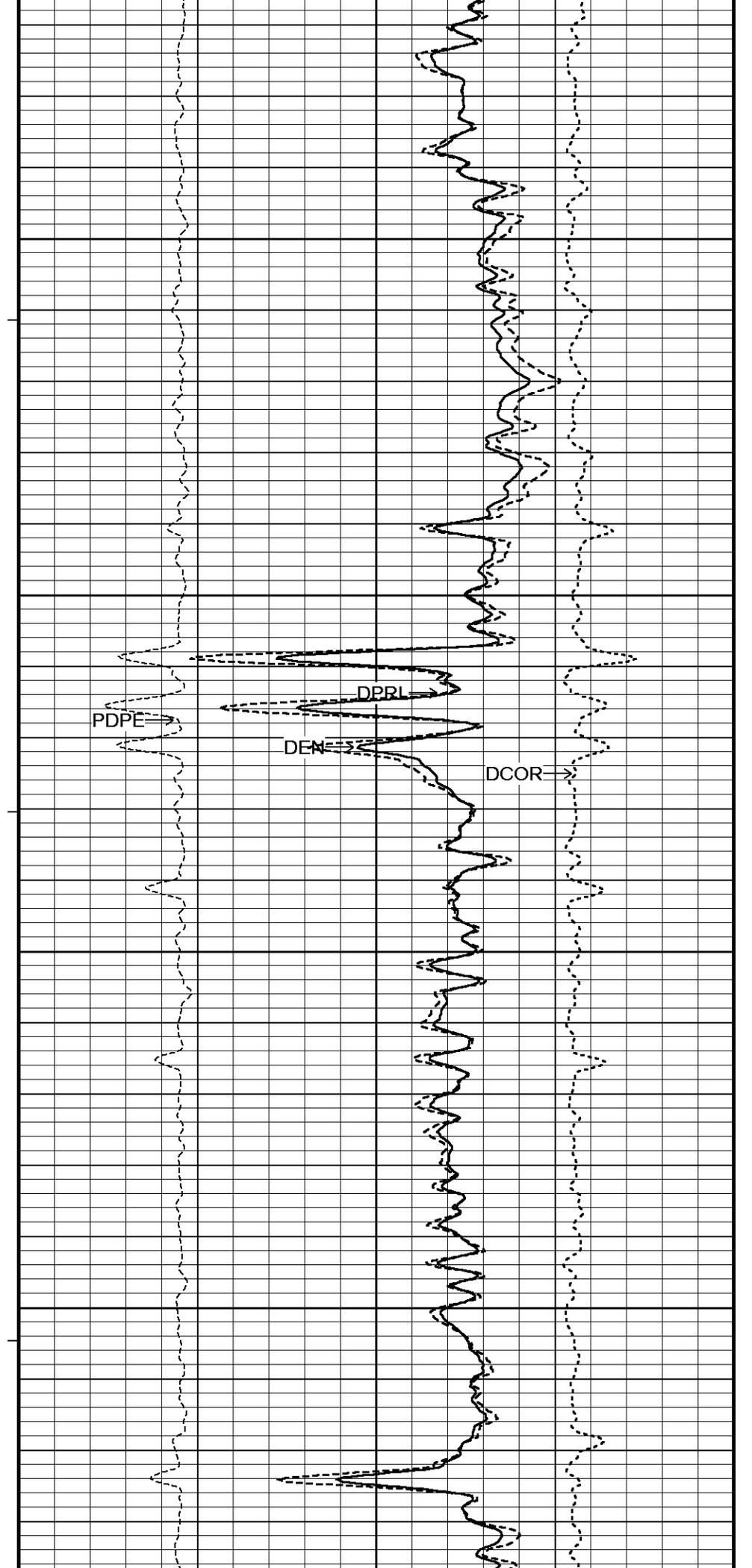
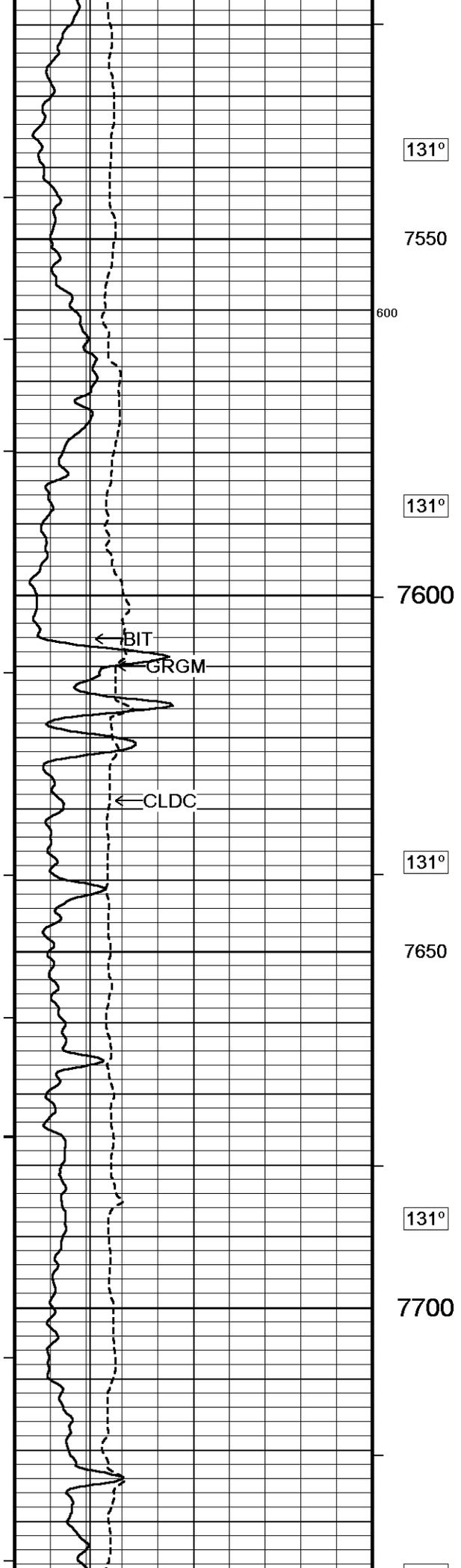


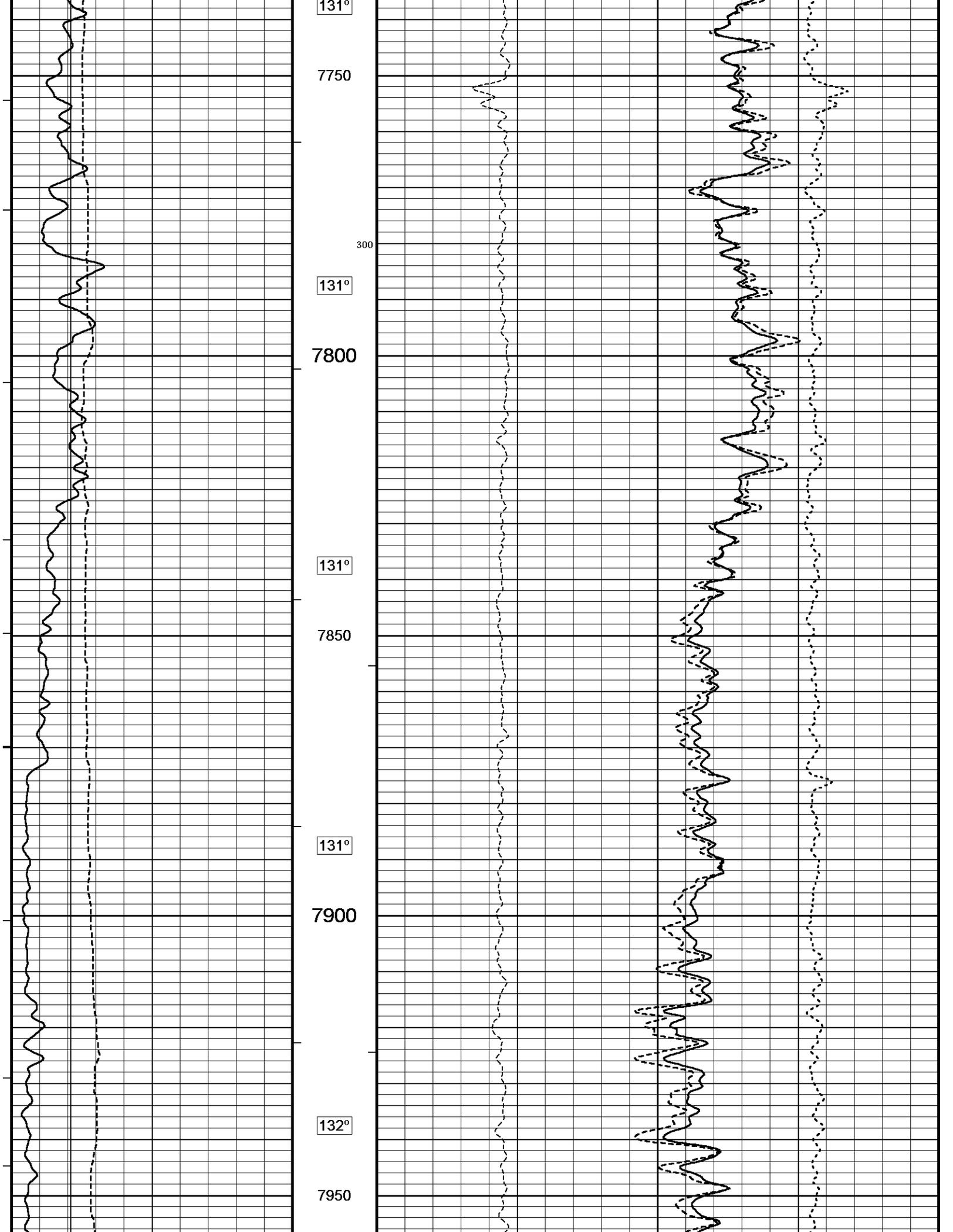


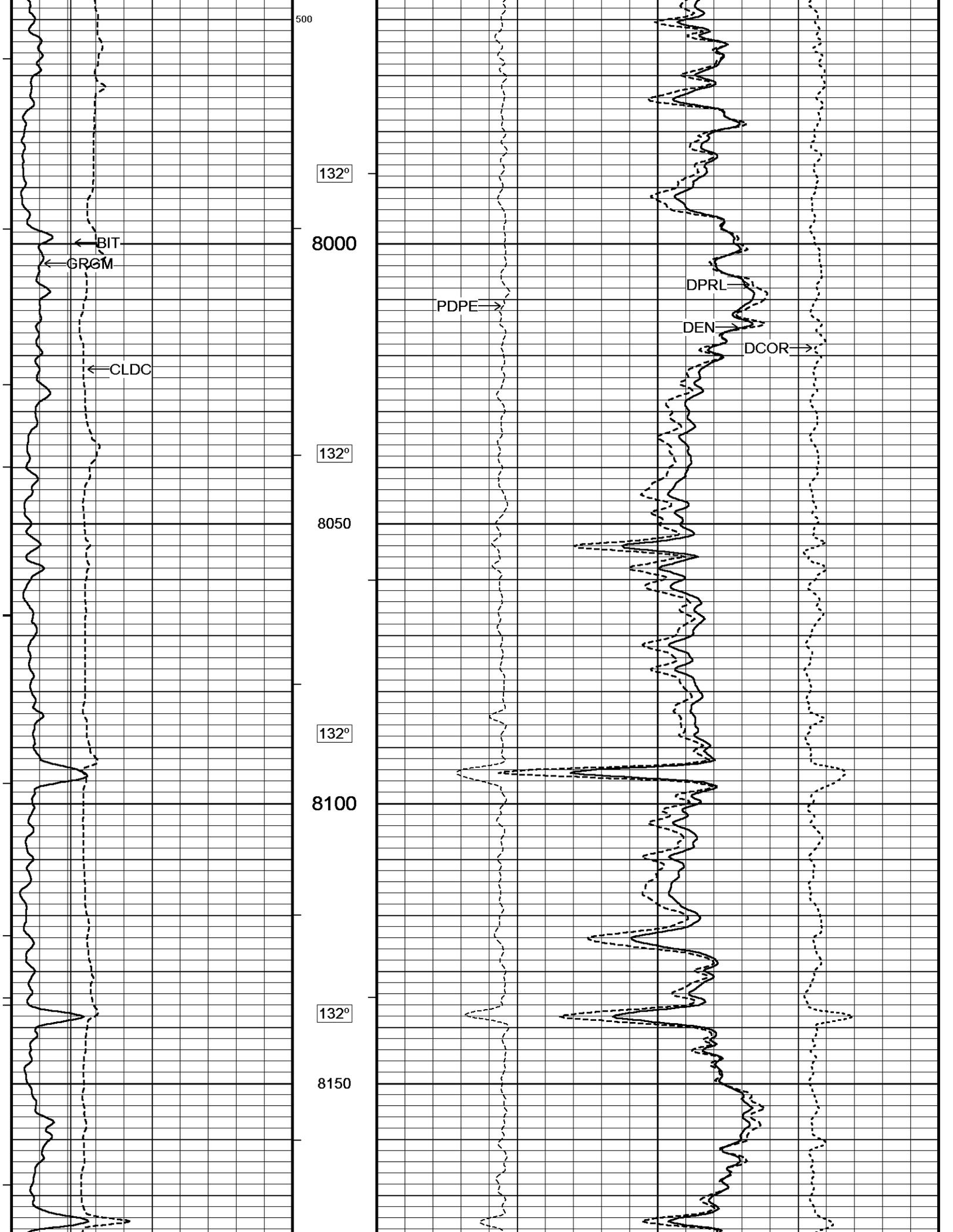


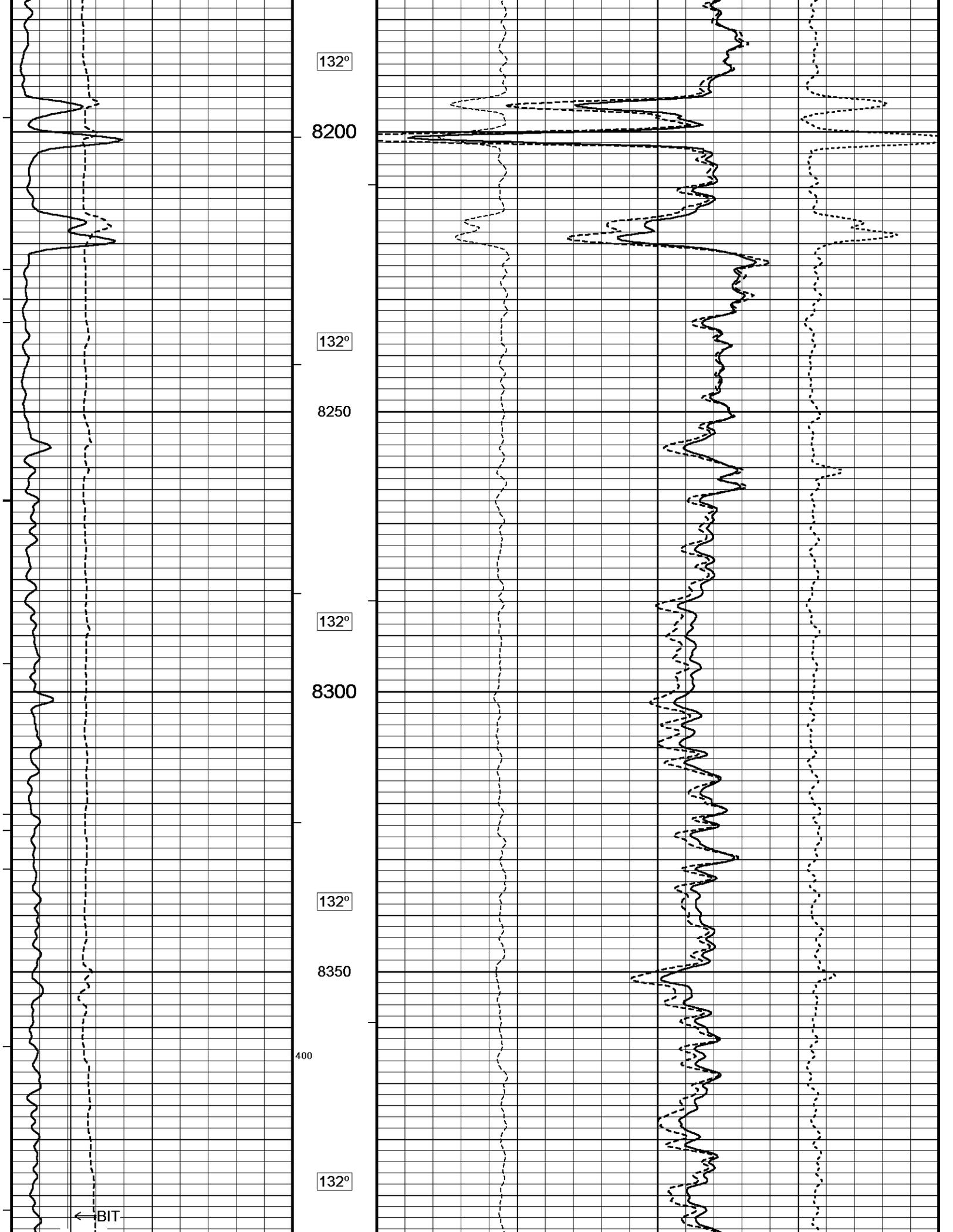


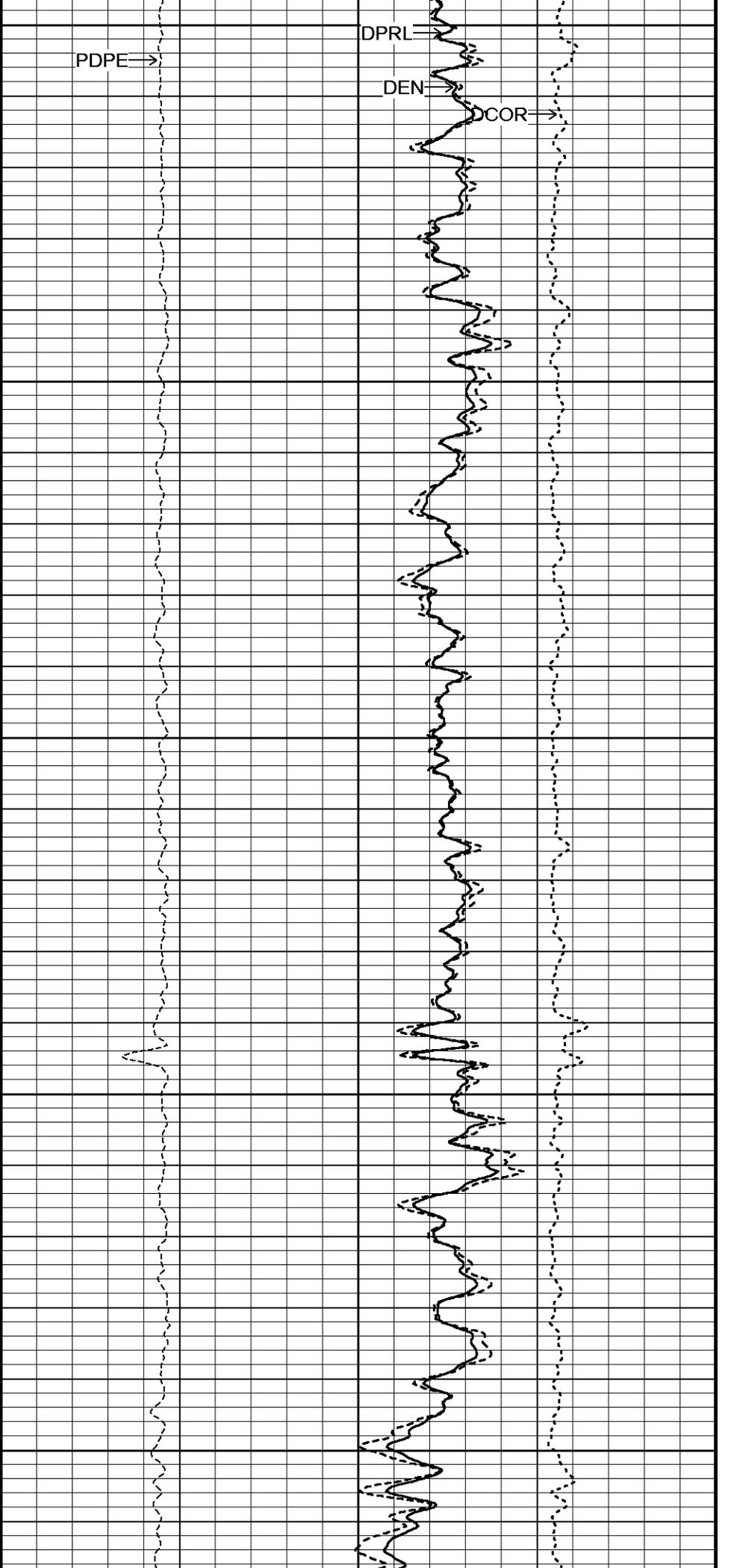
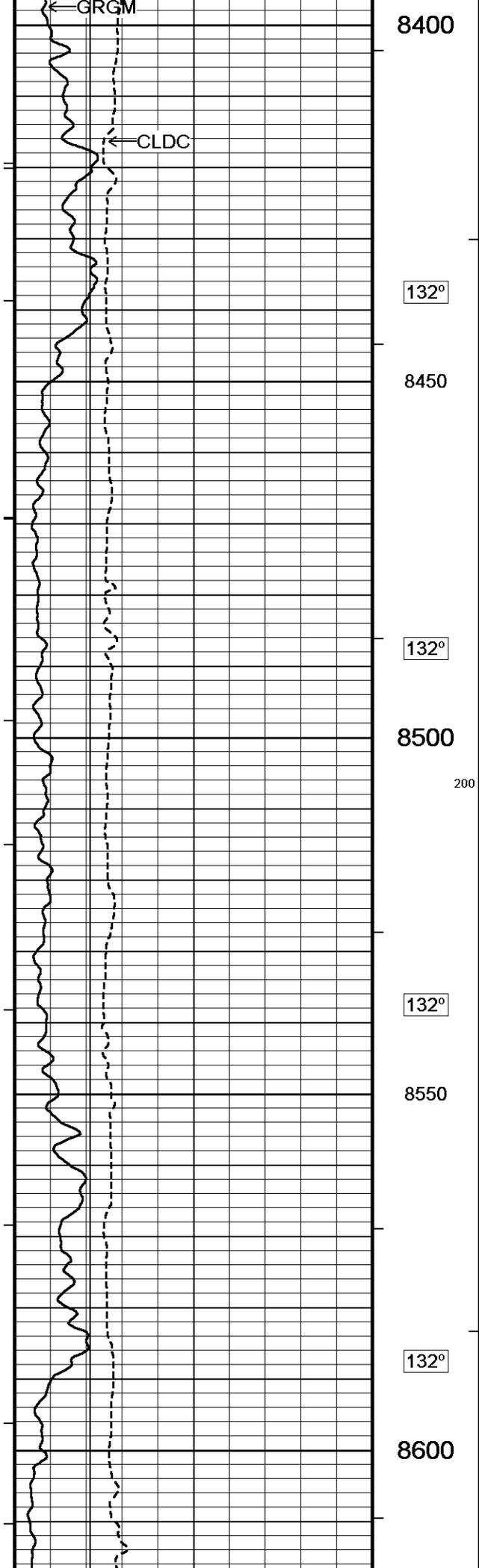


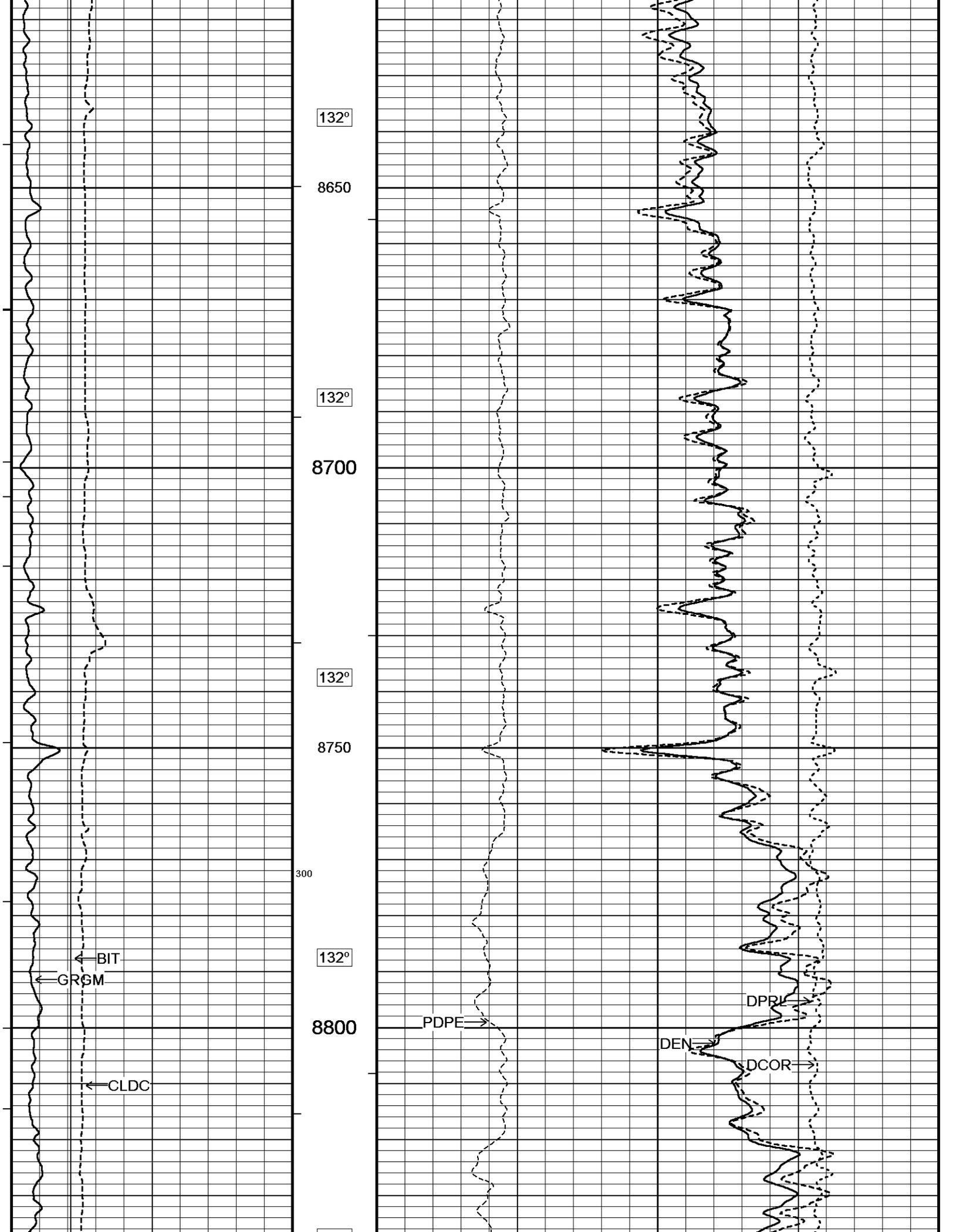


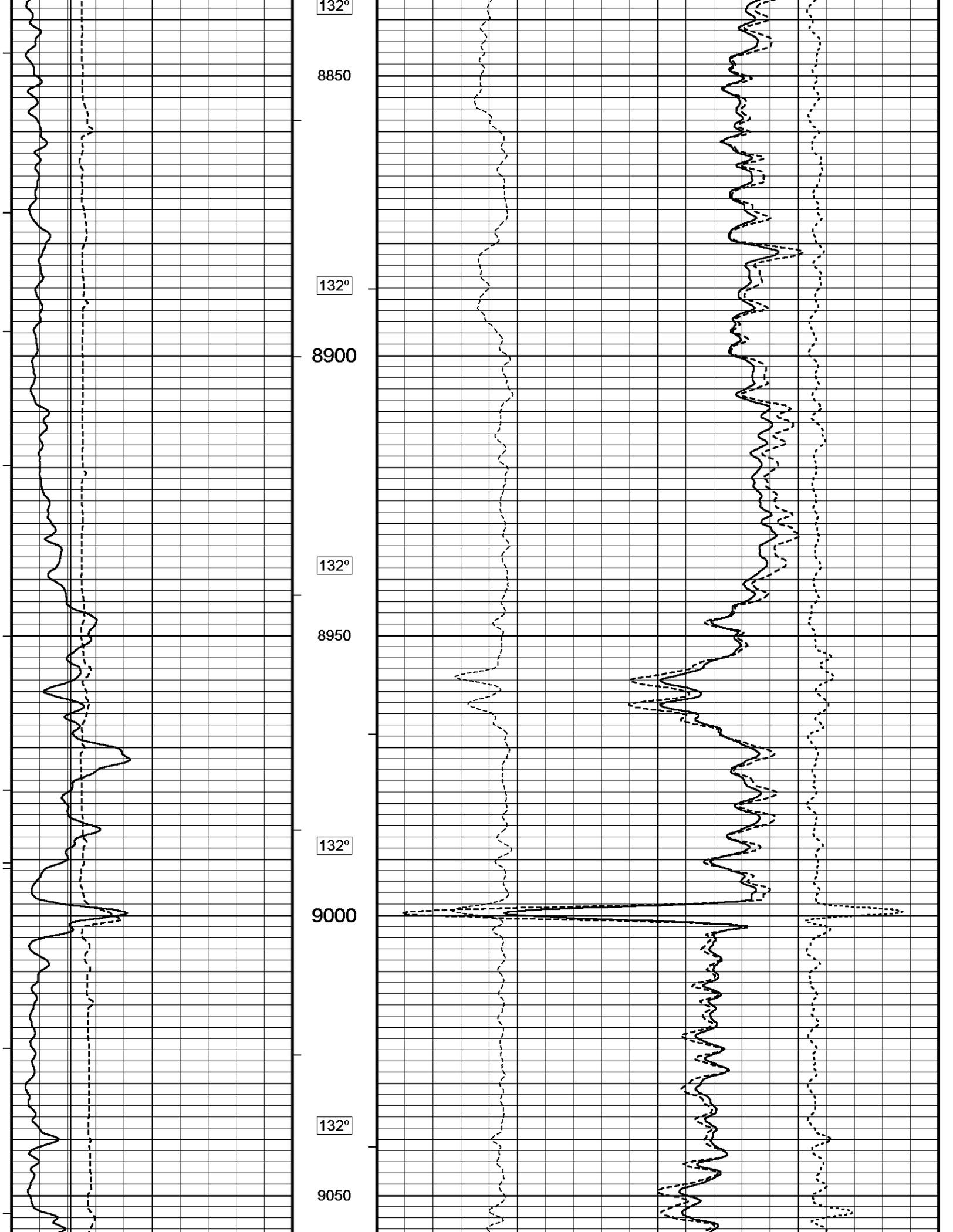


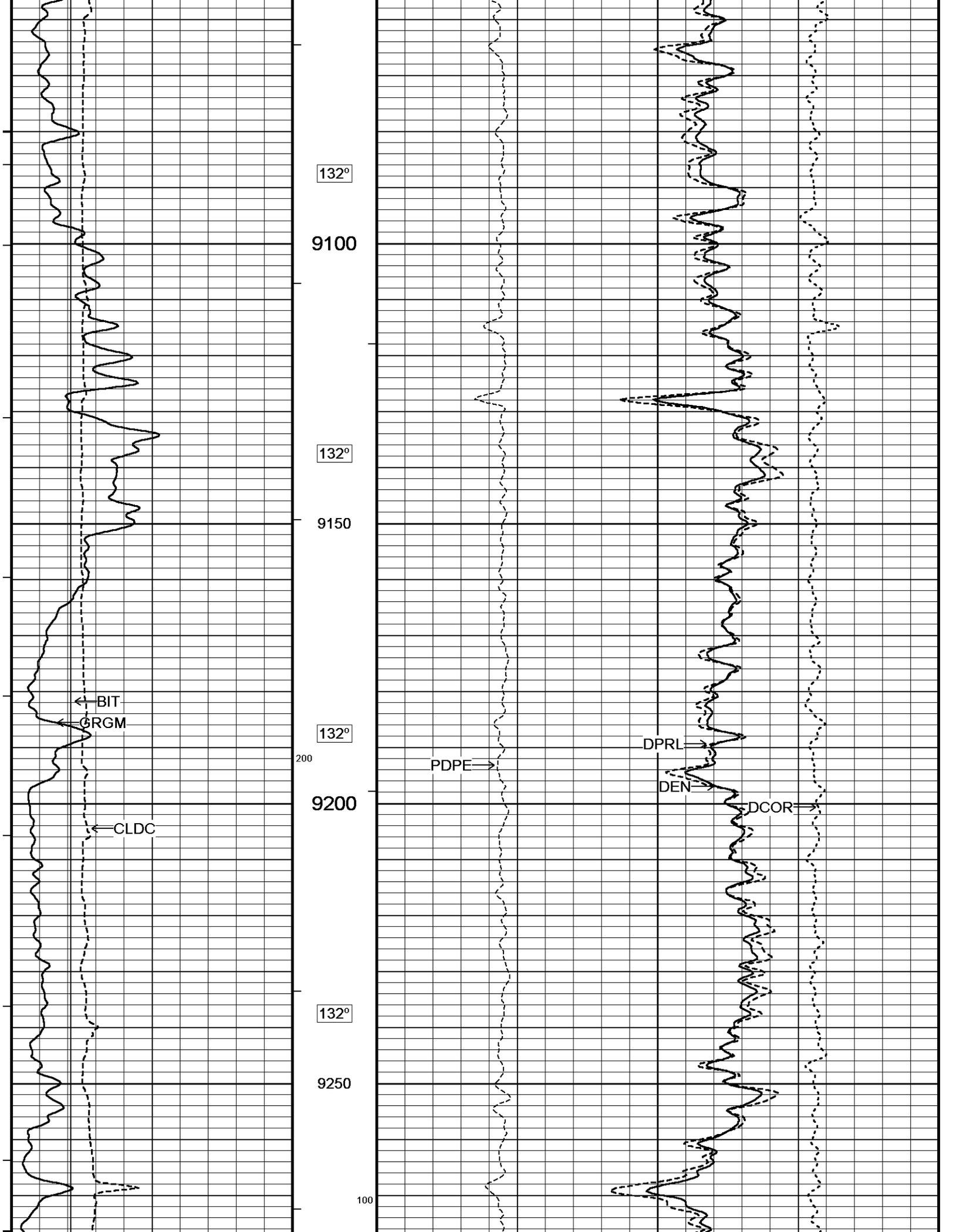


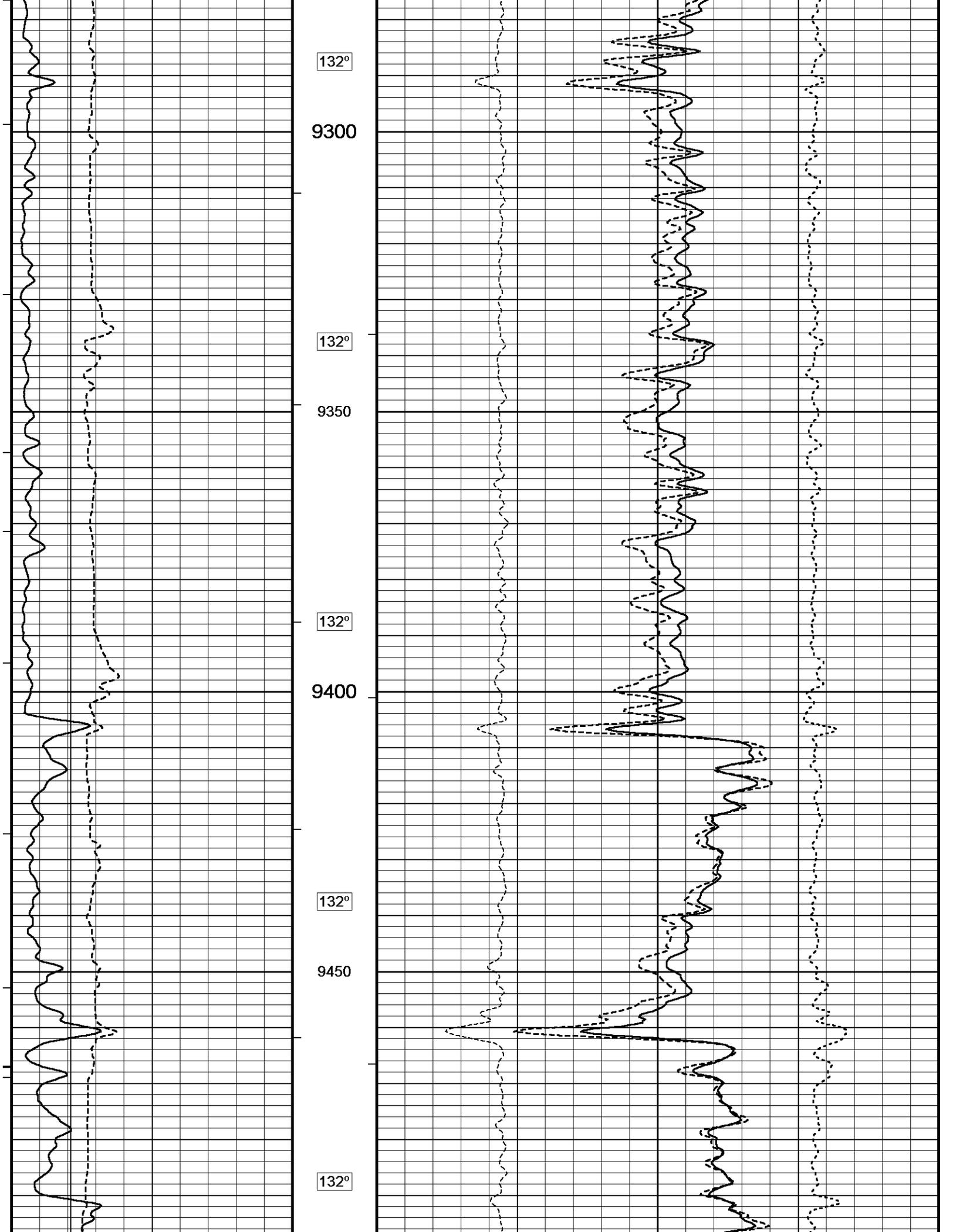


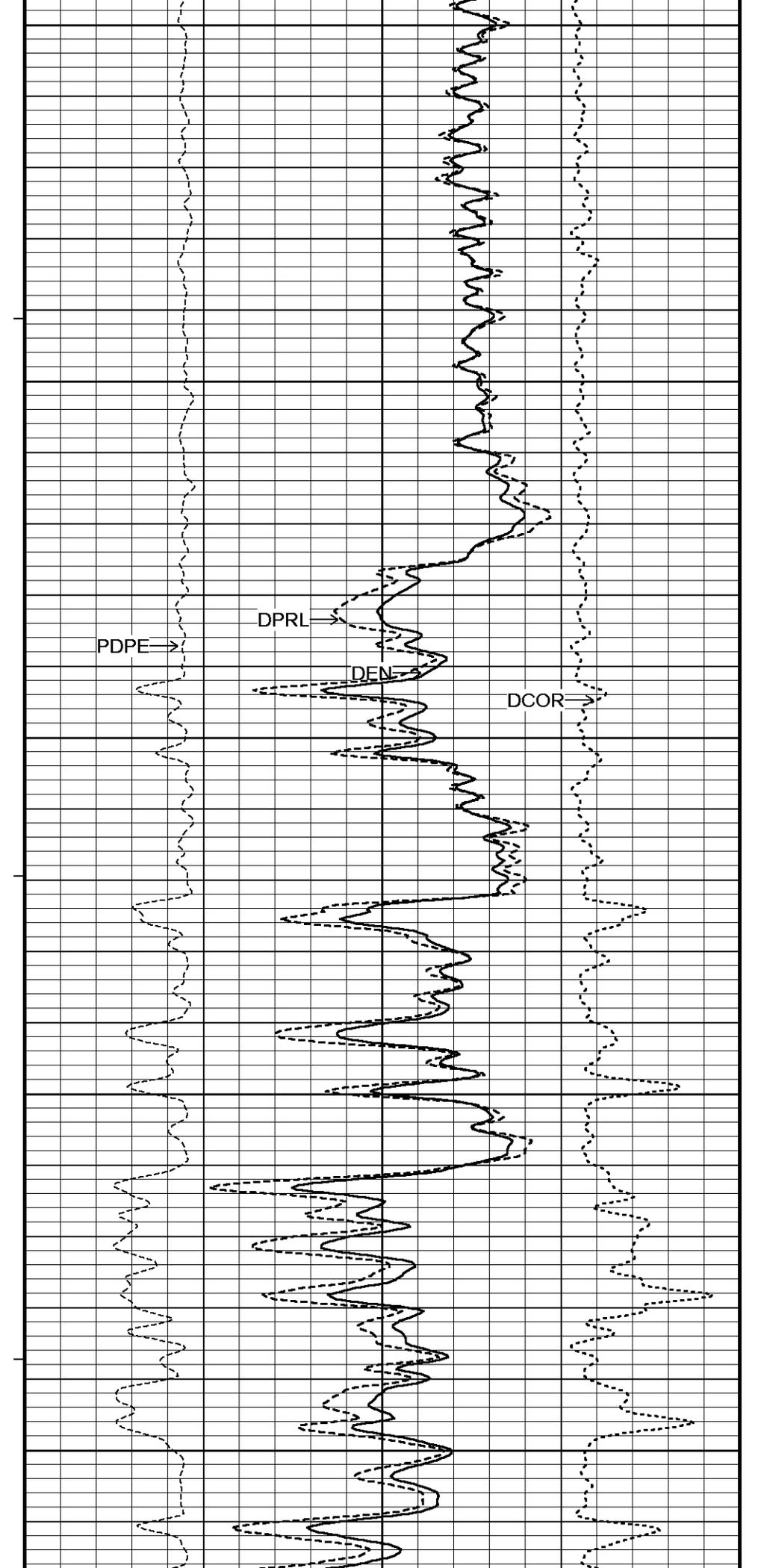
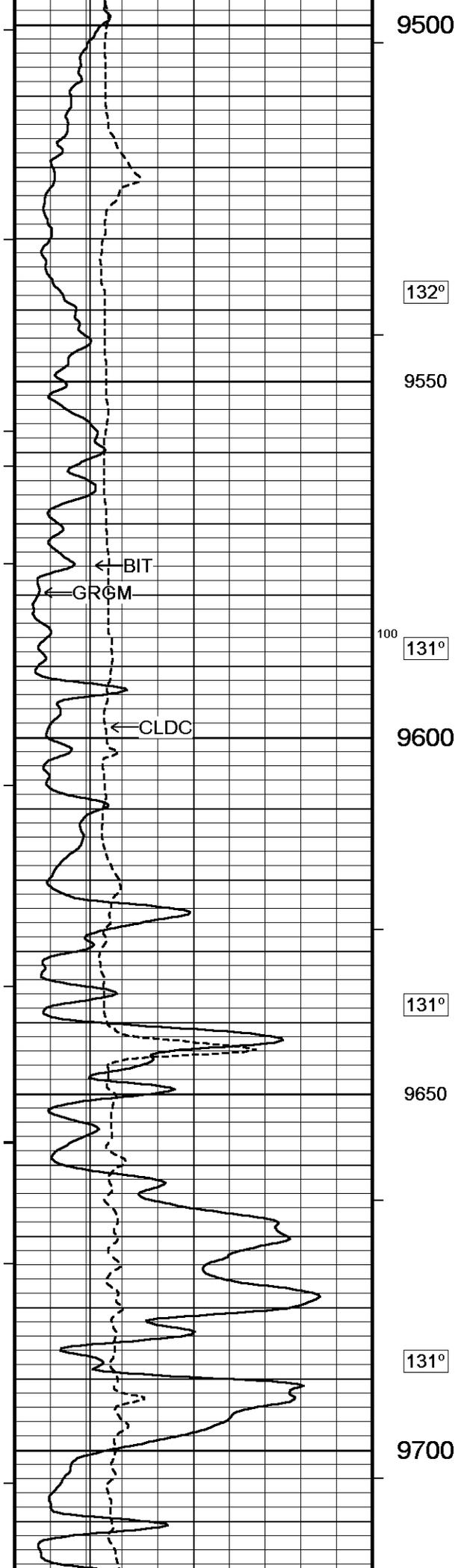


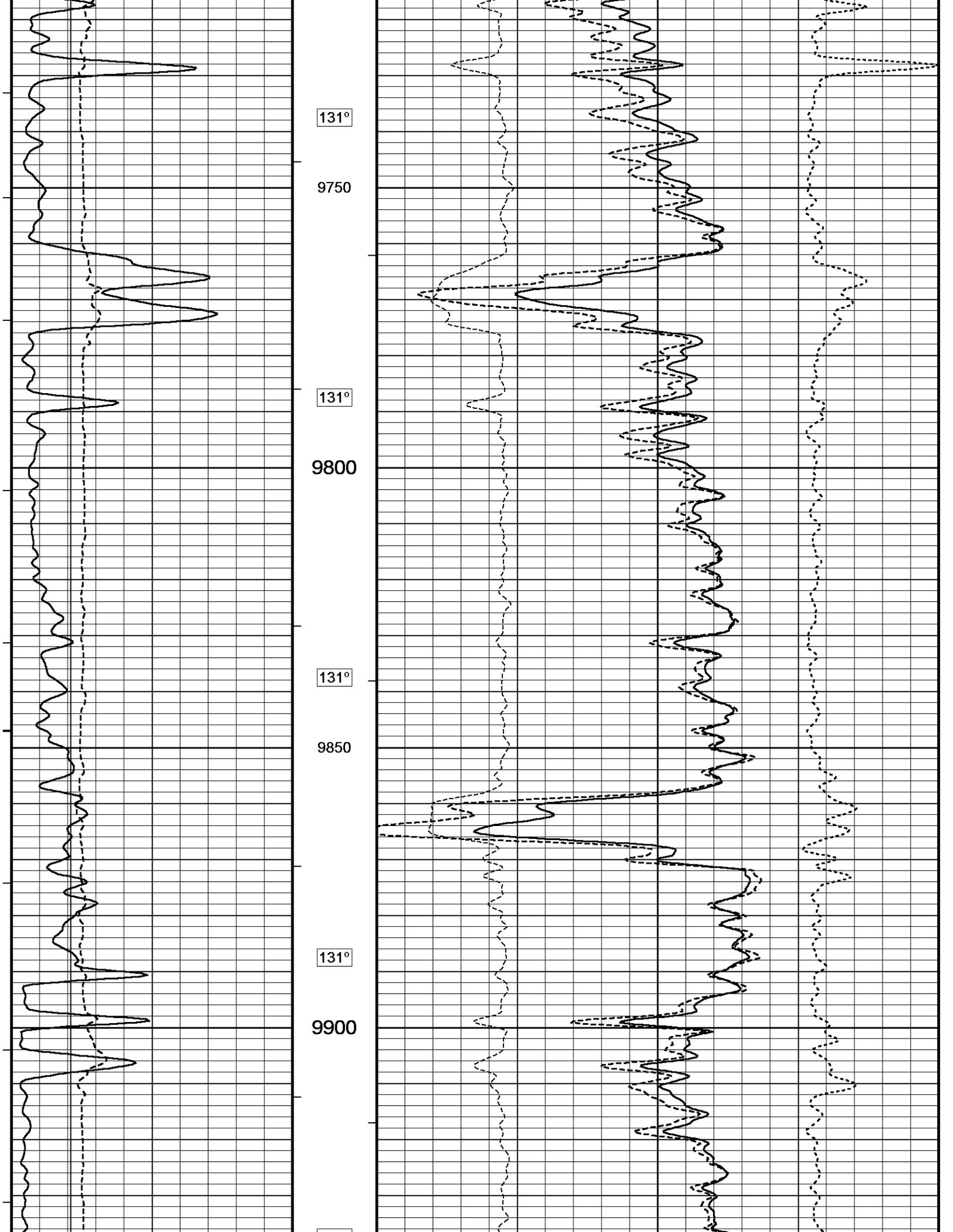


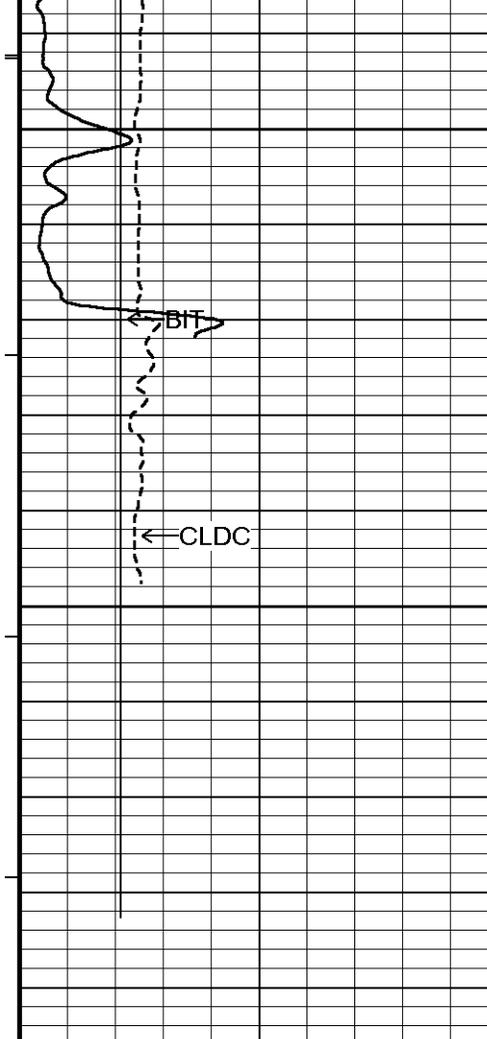










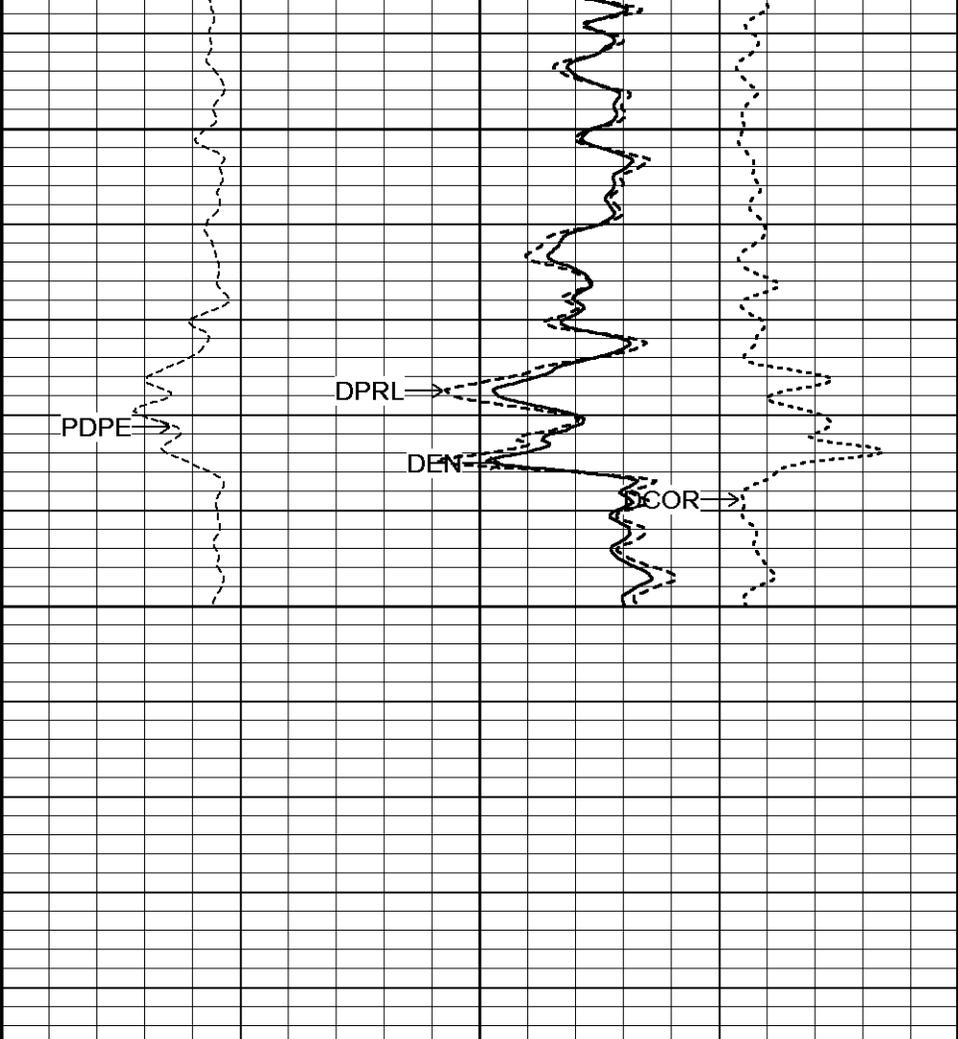


131°

9950

10000

10044  
Depth  
In  
Feet



Timing Marks  
every 60.0 sec

Density Caliper  
inches

4 9 14

MGs Gamma Ray  
API

0 75 150

150 225 300

Bit Size  
inches

4 9 14

Borehole  
Temp in  
deg F

HVI  
every  
10 cu ft

Annular  
Integral  
every  
10 cu ft

Replay  
Scale  
1:240

Compensated Density  
grams/cc

2 2.25 2.50 2.75 3

Limestone Density Por.  
percent

30 20 10 0 -10

PE barns/electron

Density Correction  
grams/cc

0 5 10 -0.25 0 0.25

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Filename: C:\Data\SANDRIDGE SEAN 3119 2-18H\tap sandridge depth.dta  
 System Versions: Processed with 13.02.6600 Plotted with 13.02.6600  
 Plotted on 27-JUL-2012 23:21  
 Recorded on 27-JUL-2012 22:25

↑ 5 INCH MAIN LOG ↑

BEFORE SURVEY CALIBRATION

General Constants All 000

Last Edited on 27-JUL-2012,22:37

General Parameters

Mud Resistivity 0.560 ohm-metres  
 Mud Resistivity Temperature 84.000 degrees F  
 Water Level 0.000 feet  
 Density/Neutron Processing Wet Hole

Hole/Annular Volume and Differential Caliper Parameters

HVOL Method Single Caliper  
 HVOL Caliper 1 Density Caliper  
 HVOL Caliper 2 N/A  
 Annular Volume Diameter 4.500 inches  
 Caliper for Differential Caliper Density Caliper

Rwa Parameters

Porosity used Base Density Porosity  
 Resistivity used Array Ind. Six Res Rt  
 RWA Constant A 0.610  
 RWA Constant M 2.150

Strain Gauge Constants MMS-E.B 166

Last Edited on 05-JUL-2012,15:52

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		0.000

MMS Parameters MMS-E.B 166

Last Edited on 31-AUG-2011 11:09

Logging Parameters

Firmware Version 2v40  
 Caliper Open On MAI  
 Caliper Open Delay 0.0 minutes  
 Caliper Closed On Unknown  
 Caliper Closed Delay N/A minutes  
 Sample Rate 1.00 seconds  
 Use Deep Sleep No  
 Delay Deep Sleep N/A  
 Deep Sleep Wake Time N/A minutes  
 Deep Sleep Wake on Temperature N/A  
 Deep Sleep Wake Temperature N/A degrees C  
 Deep Sleep Wake on Pressure N/A  
 Deep Sleep Wake Pressure N/A psi  
 MMI Pad Pressure 0.0

Release Parameters

Pulse Duration Base Level 10.0 seconds  
 Pulse Duration Transition Time 5.0 seconds  
 Pulse Duration Status Pulse From 10.0 seconds  
 Pulse Duration Caliper Close From 35.0 seconds  
 Pulse Duration Caliper Open From 50.0 seconds  
 Pulse Duration Release Pulse From 70.0 seconds  
 Pulse Duration Release Pulse To 100.0 seconds  
 Pulse Release Duration 30.0 seconds  
 Pulse Discriminator Pressure Band 96.0 seconds  
 Pulse Pressure Discriminator 213.0 seconds  
 Use Negative Pulsing No

Good Status Reply Open Hole	65535.0	seconds
Good Status Reply Cased Hole	10.0	seconds
Bad Status Reply	25.0	seconds
Status Pulse To	15.0	seconds
Caliper Close To	0.0	seconds
Caliper Open To	55.0	seconds

Configuration

MMS,MPD,MPD,MAI

Gamma Calibration MGS-C.J 134

Field Calibration on 26-JUL-2012,10:09

	Measured	Calibrated (API)
Background	78	56
Calibrator (Gross)	1037	752
Calibrator (Net)	960	696

Gamma Constants MGS-C.J 134

Last Edited on 23-MAR-2012 02:12

Gamma Calibrator Number	696	
Mud Density	1.03	gm/cc
Caliper Source for Processing	Bit Size	
Tool Position	Centred	
Concentration of KCl	0.00	kppm

High Resolution Temperature Constants MGS-C.J 134

Last Edited on

Pre-filter Length	11
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Neutron Calibration MDN-B.J 391

Base Calibration on 02-FEB-2012 17:34

Field Check on 26-JUL-2012,10:08

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3186	96	3714	110
	33.156		33.764	

Field Calibrator at Base

Calibrated (cps)

Ratio	2267	3463
	0.655	

Field Check

Calibrated (cps)

Ratio	2043	3377
	0.605	

Neutron Constants MDN-B.J 391

Last Edited on 21-JUN-2012,23:53

Neutron Source Id	N1055	
Neutron Jig Number	N639	
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	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	None	
Temperature	N/A	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 363

Base Calibration on 29-JUN-2012 13:12

Field Check on 27-JUL-2012 07:30

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.1	126.8

Base Check 281.8

Field Check 282.0

FE Constants MFE-B.J 363

Last Edited on 29-JUN-2012,13:06

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

Induction Calibration MAI-B.J 426

Base Calibration on 23-JUL-2012,23:22

Field Check on 27-JUL-2012 07:29

Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	15.8	449.0	9.3	966.2	
2	5.8	359.2	7.6	821.4	
3	3.3	245.2	5.2	566.0	
4	1.8	127.2	2.6	279.2	

Array Temperature 75.2 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	16.6	4035.2
2	0.0	0.0	32.2	3745.5
3	0.0	0.0	30.1	3220.2
4	0.0	0.0	20.4	2168.3
Deep	0.0	0.0	18.3	2068.2
Medium	0.0	0.0	43.7	4278.4
Shallow	0.0	0.0	48.3	5579.9

Array Temperature 0.0 84.4 Deg F

Induction Constants MAI-B.J 426

Last Edited on 27-JUL-2012,22:37

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Constant Value	
Hole Size for Borehole Correction	6.125	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.00	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	Constant Value	
Temp. for Rm Corr.	N/A	
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 Constants MAI-B.J 426

Last Edited on

Pre-filter Length 11

Caliper Calibration MPD-B 166

Base Calibration on 20-JUL-2012,11:40  
Field Calibration on 20-JUL-2012 11:45

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	11102	4.02
2	20537	5.96
3	30848	8.03
4	41232	10.02
5	51982	12.01
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.91	7.98

Photo Density Calibration MPD-B 166

Base Calibration on 20-JUL-2012,10:36  
Field Check on 27-JUL-2012 07:36

Density Calibration					
Base Calibration		Measured		Calibrated (sdu)	
	Near	Far	Near	Far	
Reference 1	49845	22463	59869	31110	
Reference 2	20737	2400	24557	2522	

Field Check at Base  
1190.7 1364.5

Field Check  
1187.1 1360.5

PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	215	1064		
Reference 1	19934	49660	0.406	0.369
Reference 2	5690	20604	0.280	0.271

Field Check at Base  
215.4 1064.3

Field Check  
215.7 1062.8

Density Constants MPD-B 166

Last Edited on 23-JUL-2012,00:17

Density Source Id	236	
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	1.00	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 (m)
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:\Data\SANDRIDGE SEAN 3119 2-18H\rtap sandridge depth.dta

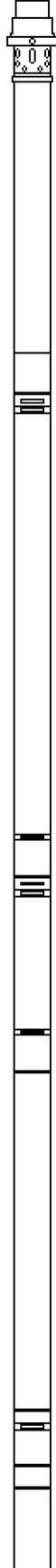
Shuttle Running Tool 3.5" )  
SRT-A.A 59 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-G.A 200v Compact Battery Sub  
MBS-G.A 116 LG: 10.22 ft WT: 66.1 lb OD: 2.24 in

Compact Memory Sub E.B  
MMS-E.B 166 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.  
MTI-B.A 62 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma  
MGS-C.J 134 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in



61.76 ft GRGM - MGS Gamma Ray

Compact Collar Locator  
MCL-B.J 72 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

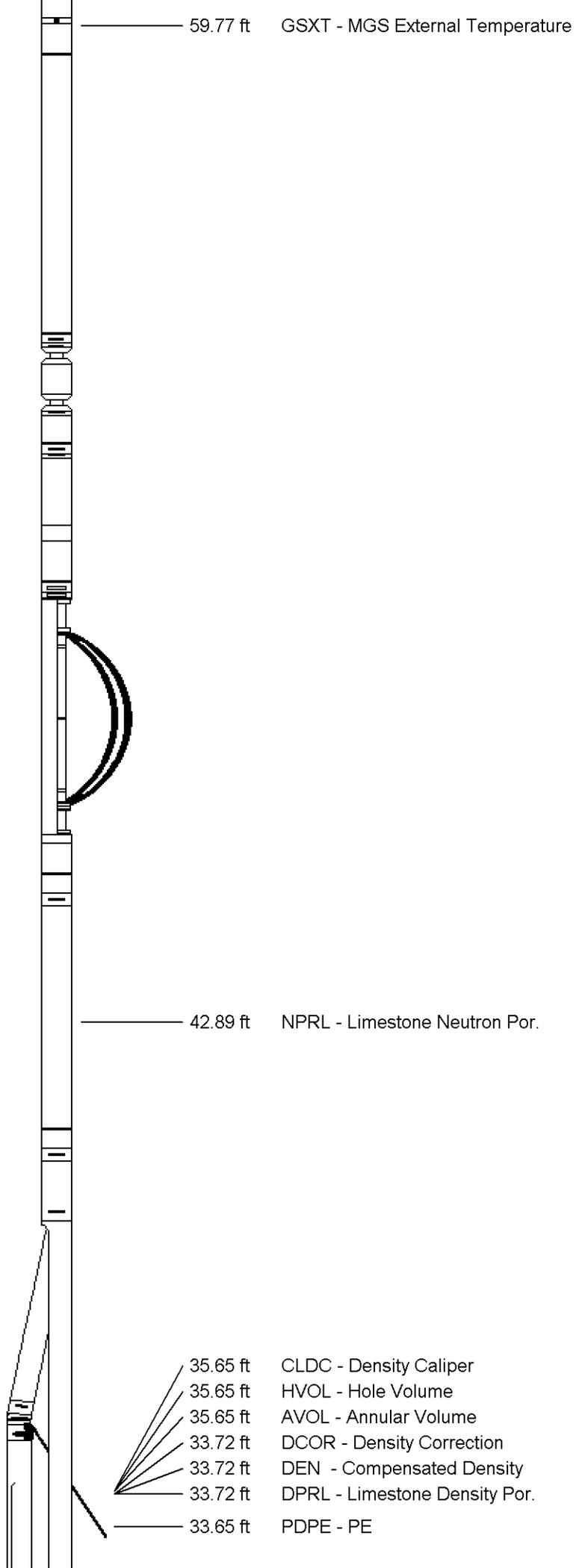
SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 474 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 434 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.A Compact Inline Bowspring sub  
MIS-D.A 310 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron  
MDN-B.J 391 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-B 166 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in



59.77 ft GSXT - MGS External Temperature

42.89 ft NPRL - Limestone Neutron Por.

35.65 ft CLDC - Density Caliper

35.65 ft HVOL - Hole Volume

35.65 ft AVOL - Annular Volume

33.72 ft DCOR - Density Correction

33.72 ft DEN - Compensated Density

33.72 ft DPRL - Limestone Density Por.

33.65 ft PDPE - PE

MIS-A.A Compact Inline Bowspring sub  
MIS-A.A 275 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 431 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

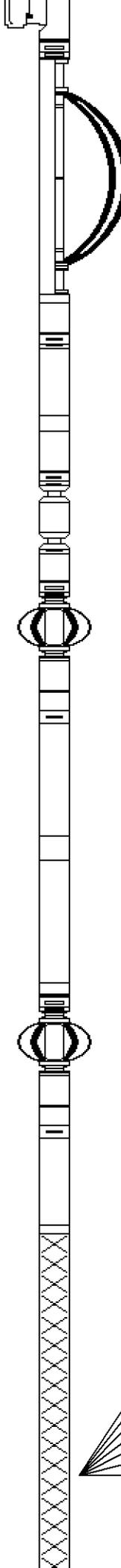
SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 478 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 597 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric  
MFE-B.J 363 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 580 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction  
MAI-B.J 426 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in



- 3.34 ft CTAF - Array Ind. Four Cond Ct
- 3.34 ft R20F - Array Ind. Four Res 20
- 3.34 ft R30F - Array Ind. Four Res 30
- 3.34 ft R40F - Array Ind. Four Res 40
- 3.34 ft R60F - Array Ind. Four Res 60
- 3.34 ft R85F - Array Ind. Four Res 85
- 3.34 ft RTAF - Array Ind. Four Res Rt



Tool Zero

(0.13ft from bottom)

Total Length: 86.25 ft Weight: 632.7 lb

All measurements relative to tool zero.

COMPANY Sandridge Energy  
 WELL Sean 3119 2-18H  
 FIELD  
 PROVINCE/COUNTY Comanche  
 COUNTRY/STATE U.S.A. / Oklahoma

Elevation Kelly Bushing	2201.00	feet	First Reading	9997.00	feet
Elevation Drill Floor	2200.00	feet	Depth Driller	10066.00	feet
Elevation Ground Level	2181.00	feet	Depth Logger	10063.00	feet



**Weatherford**<sup>®</sup>

CML MESSENGER SHUTTLE  
 COMPACT PHOTO DENSITY  
 COMPENSATED NEUTRON