



**Weatherford**

**CML IMPULSE SHUTTLE  
COMPACT PHOTO DENSITY  
COMPENSATED NEUTRON LOG**

COMPANY SANDRIDGE EXPLORATION & PRODUCTION LLC

WELL FREY 3508 1-8H

FIELD BOUSE

PROVINCE/COUNTY HARPER

COUNTRY/STATE USA / KANSAS

LOCATION NE NW NW NE 200FNL & 2010' FEL

PERMIT NUMBER AFE# DC14211

SEC 8 TWP 35S RGE 8W Other Services

Latitude 37.02102 MA/UMFE

Longitude -98.20581

API Number 15077220890100

Permanent Datum GL, Elevation 1237 feet

Log Measured From KB

Drilling Measured From KB @ 15' AGL

Elevations:  
KB 1252.00  
DF 1252.00  
GL 1237.00

Date 13-OCT-2014

Run Number ONE

Service Order 3648-100378911

Depth Driller 9315.00 feet

Depth Logger 9225.00 feet

First Reading 9200.00 feet

Last Reading 3350.00 feet

Casing Driller 5626.00 feet

Casing Logger 5624.00 feet

Bit Size 6.125 inches

Hole Fluid Type WATER

Density / Viscosity 9.00 lb/USg 30.00 CP

PH / Fluid Loss 10.50 32.00 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 2.50 @ 91.0 ohm-m

Rmf @ Measured Temp 2.0 @ 91.0 ohm-m

Rmc @ Measured Temp 3.0 @ 91.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 1.69 @138.0 ohm-m

Time Since Circulation 1 HOUR

Max Recorded Temp 138.00 deg F

Equipment / Base 18108 OKC

Recorded By GUTHMUELLER

Witnessed By R TICHENOR

E BEEMER

**BOREHOLE RECORD**

Last Edited: 13-OCT-2014 13:58

| Bit Size<br>inches | Depth From<br>feet | Depth To<br>feet |
|--------------------|--------------------|------------------|
| 12.250             | 0.00               | 784.00           |
| 8.750              | 784.00             | 5631.00          |
| 6.125              | 5631.00            | 9315.00          |

**CASING RECORD**

| Type  | Size<br>inches | Depth From<br>feet | Shoe Depth<br>feet | Weight<br>pounds/ft |
|-------|----------------|--------------------|--------------------|---------------------|
| SURF  | 9.625          | 0.00               | 784.00             | 36.00               |
| INTER | 7.000          | 0.00               | 5626.00            | 26.00               |

**REMARKS**

LOGGED WITH WLS\_14.03.4558

LOGGED USING IMPULSE METHOD OF DEPLOYMENT AND MEMORY LOGGING SYSTEM  
LOGGED WITH ADVANTAGE DEPTH SYSTEM, CORRECTED BACK TO PIPE STRAP

LOGGING STRING: SMR-152,SER-220,MBSF-115,MMSE-166, MTI-150,MGS-135,MCL-060, MISE-789,MFE-396,MISE564,  
SKJ-728,SHA-594,MISD-816,MDN-480,MPD-472,MISD-817,SHA-438,SKJ-455,MISD-579,MAI-502

HARDWARE: MAI: MISE 0.5 INCH STANDOFF ON AND 0.5 INCH STANDOFF BELOW  
MPD: 4" PROFILE PLATE, MISD SINGLE BOWSPRING DECENTRALIZER BELOW  
MDN: MISD DOUBLE BOWSPRING DECENTRALIZER ABOVE  
MFE: MISE 0.5 INCH STANDOFF ABOVE AND BELOW

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

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST  
 ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH CASING  
 CHLORIDES =4500 PPM

DRILL PIPE DEPTH DURING DEPLOYMENT - 9126  
 LOGGING TOOL DEPTH AFTER DEPLOYMENT - 9227

RIG: HWD #8

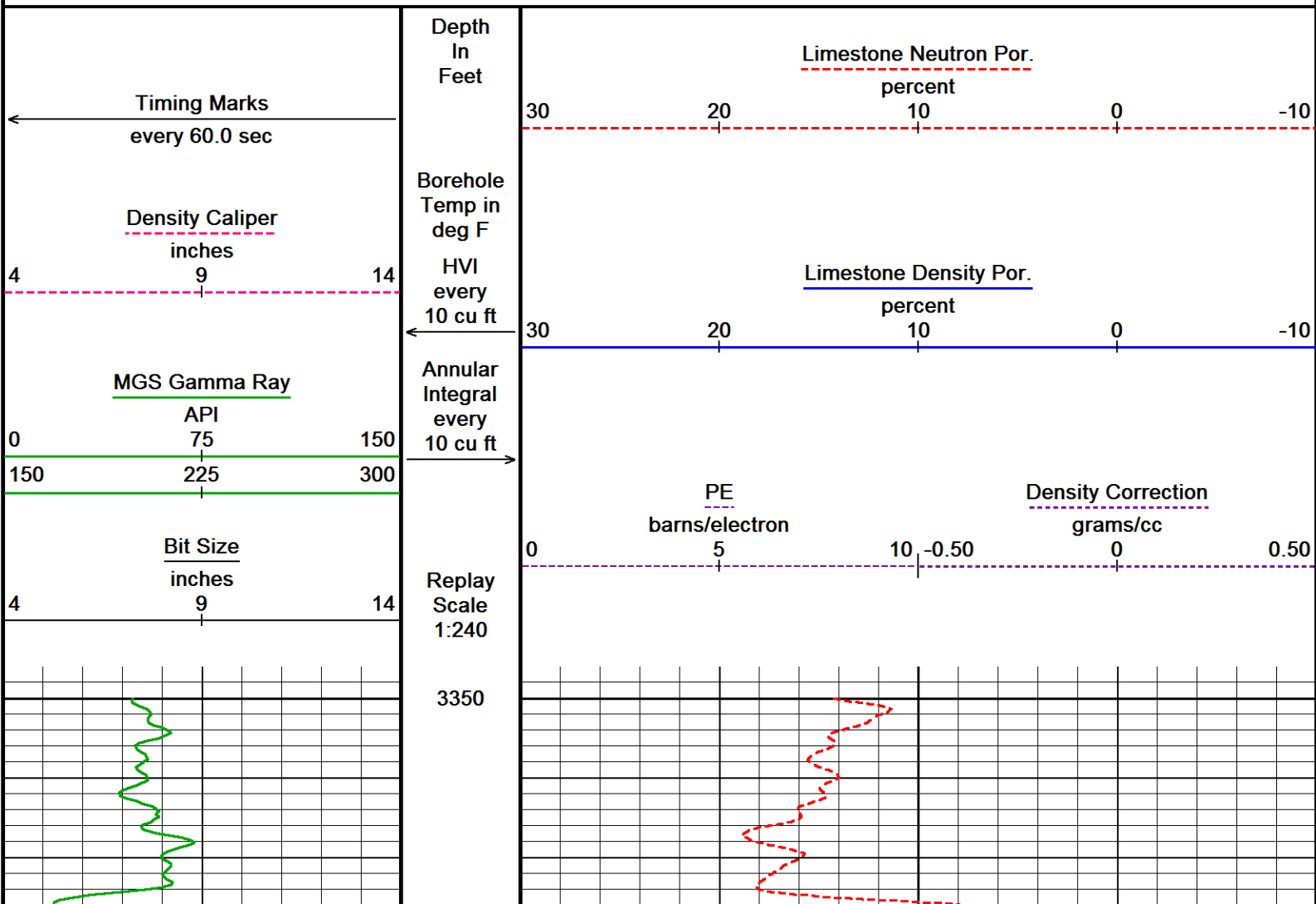
OPERATORS: R BRADSHAW, C HAWKINS

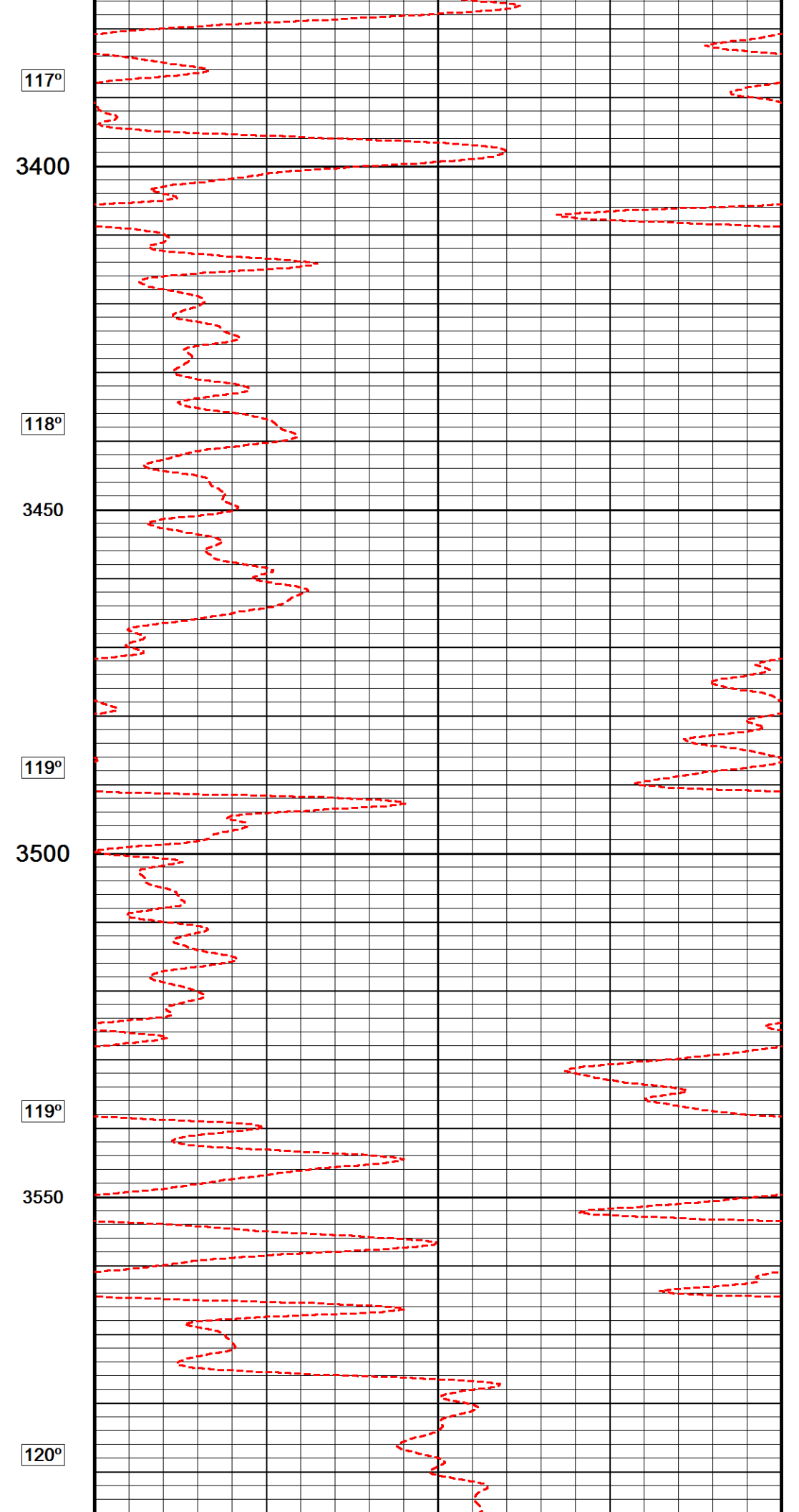
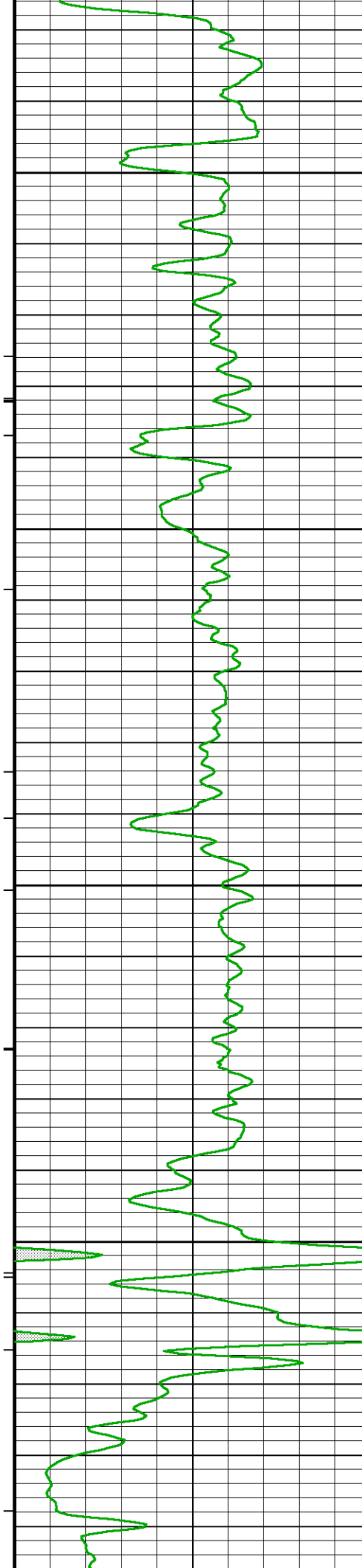
\* UNABLE TO REACH TD DUE TO HOLE CONDITIONS, DEPLOYED 88 FEET OFF BOTTOM\*  
 \*\* LOG RESPONSES EFFECTED BY HOLE RUGOSITY\*\*

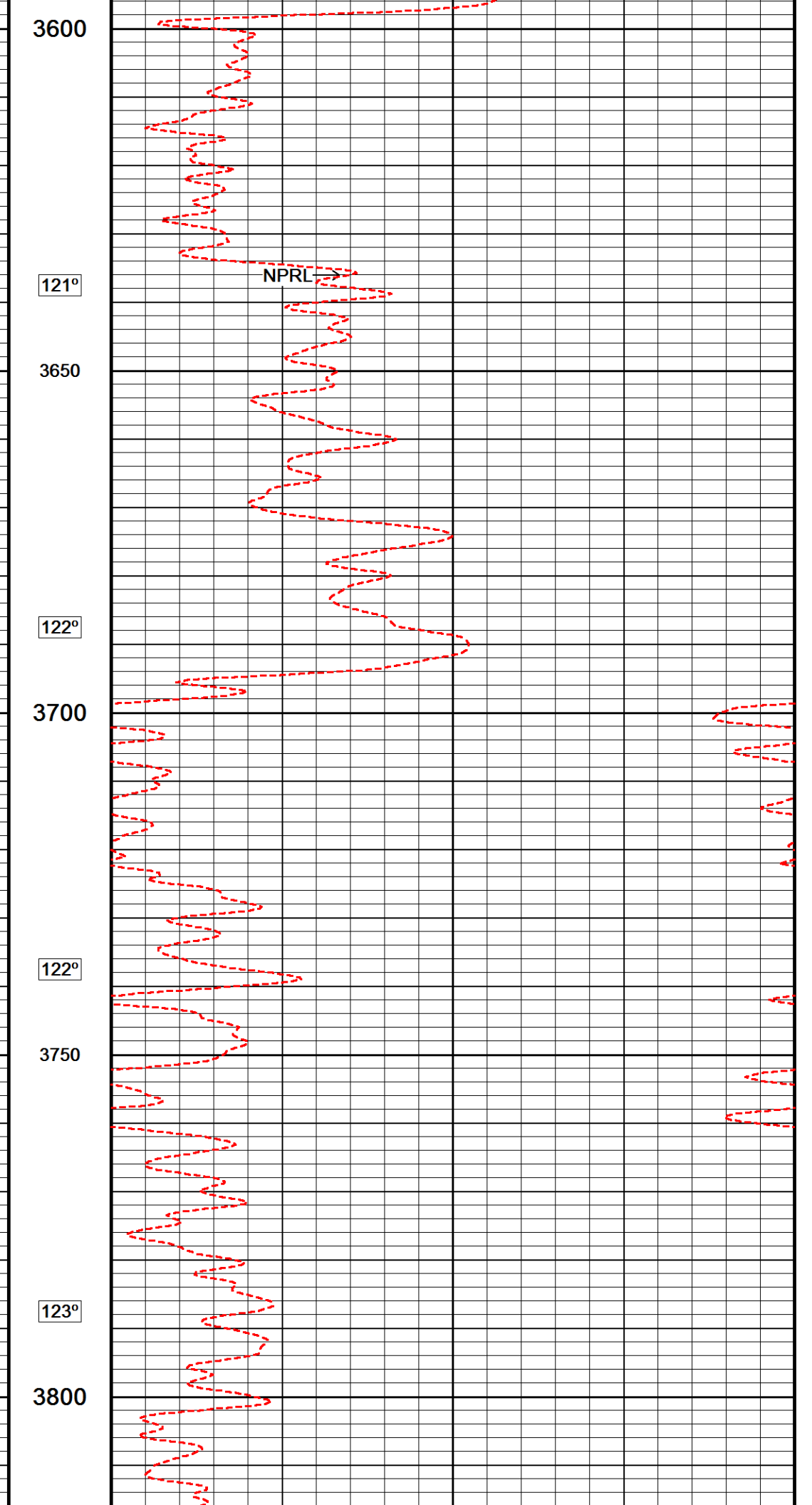
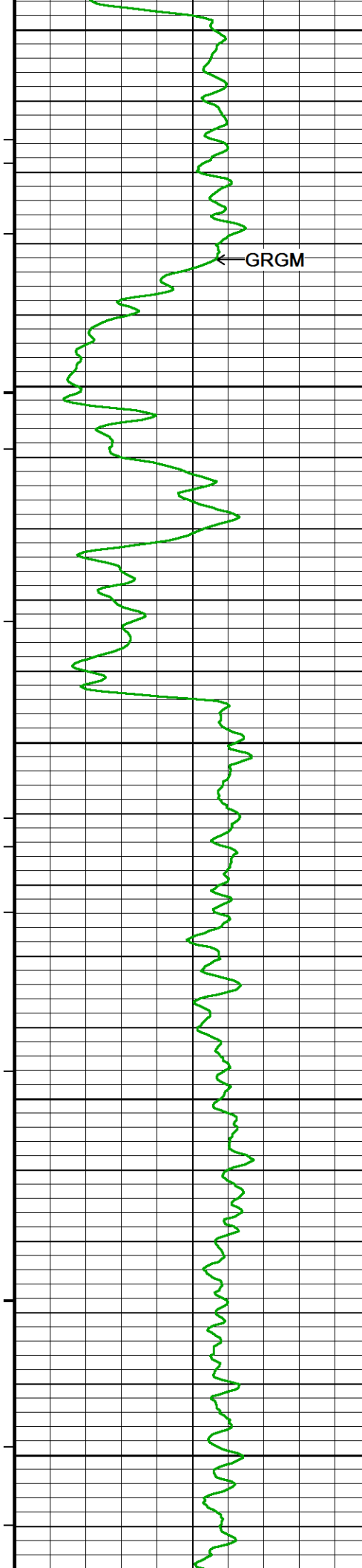
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

**5 INCH MAIN LOG**

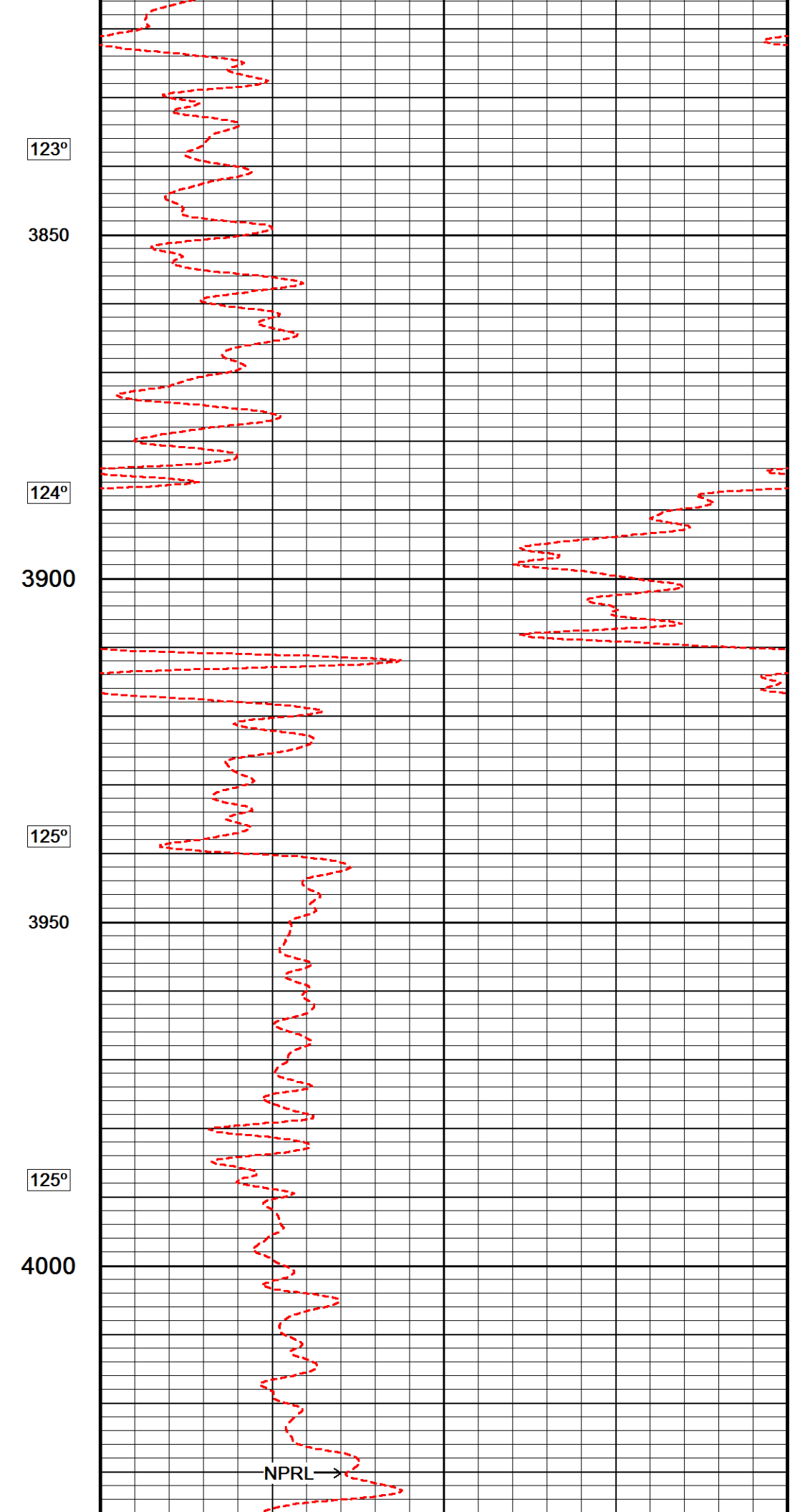
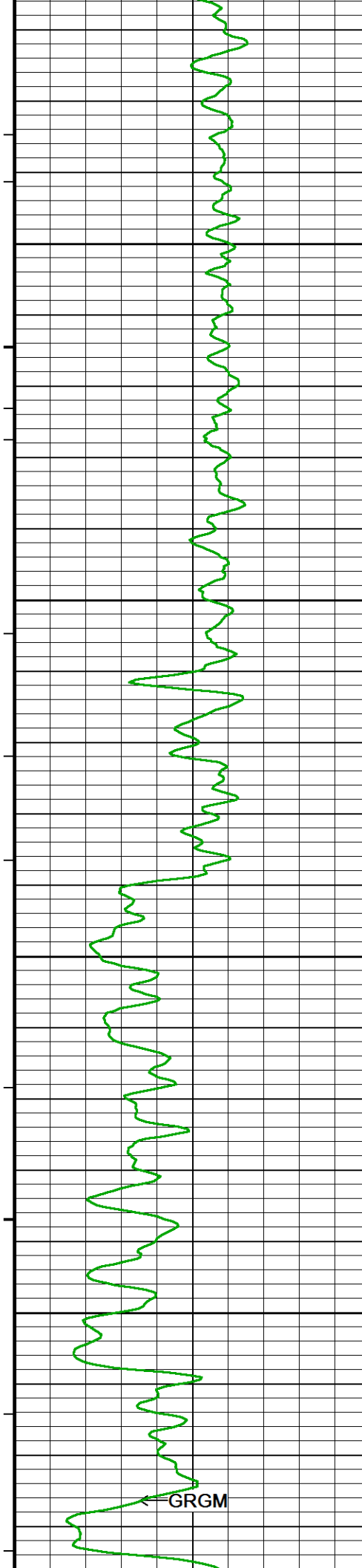
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 31-DEC-2014 12:03  
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 System Versions: Logged with 14.03.4558 Processed with 14.03.4558 Plotted with 14.05.5335

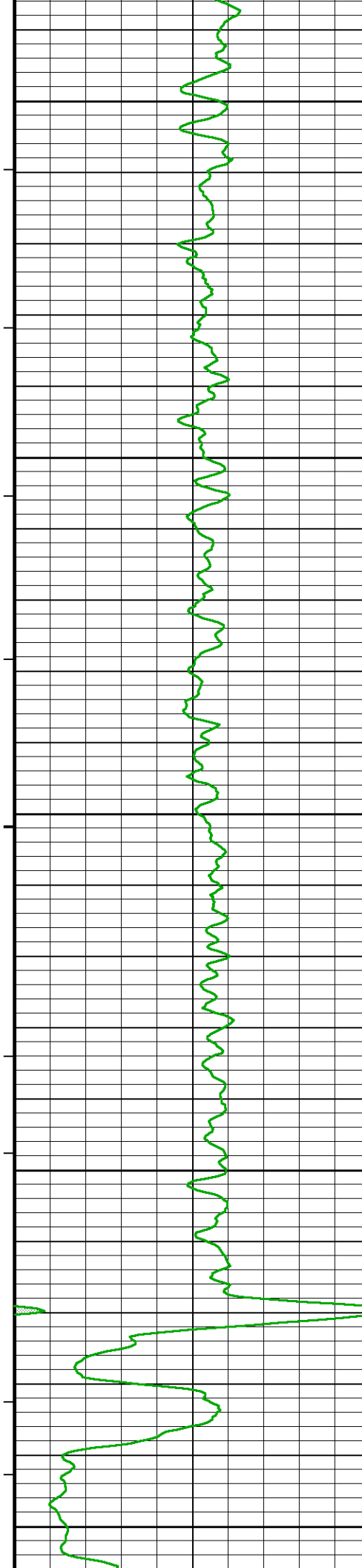












126°

4050

127°

4100

128°

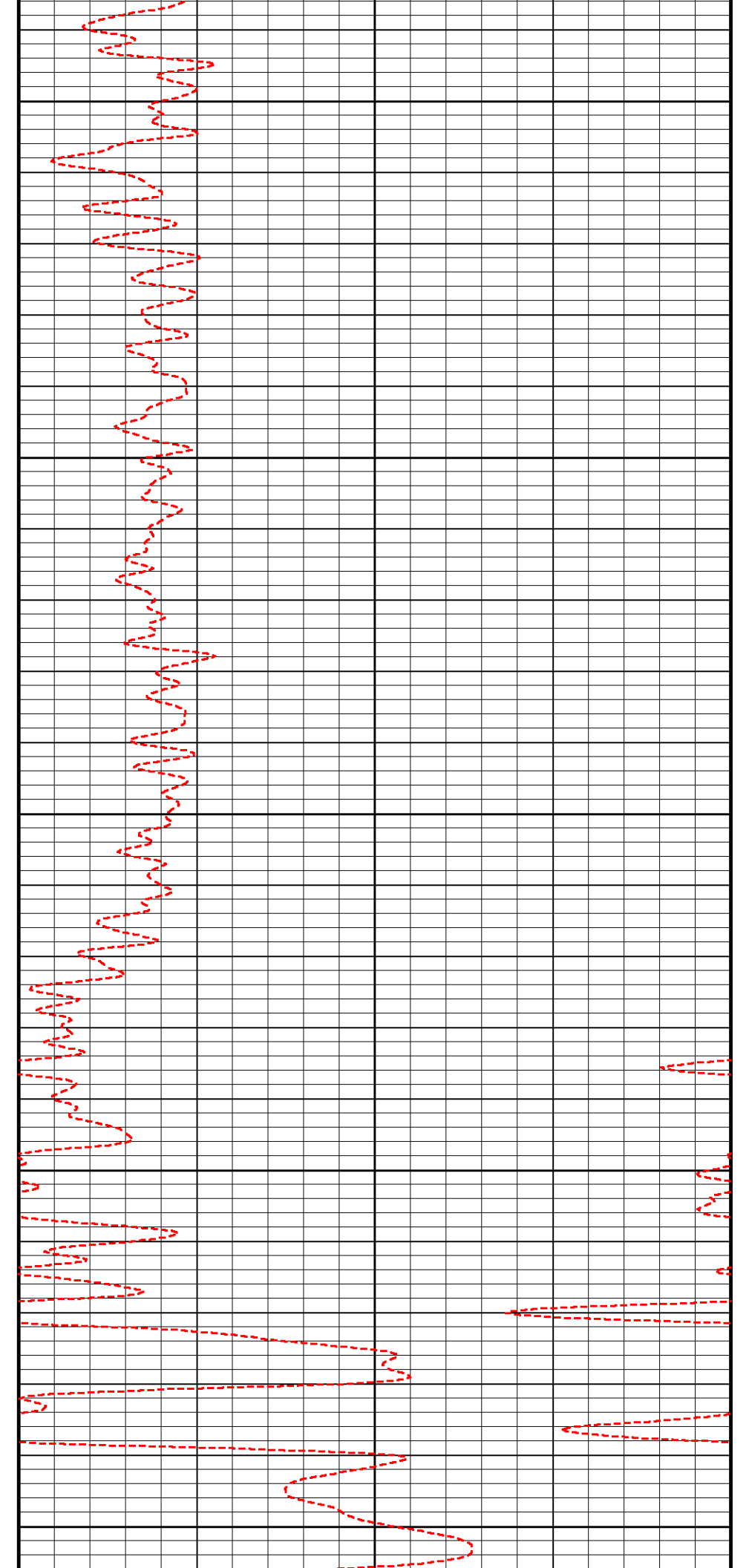
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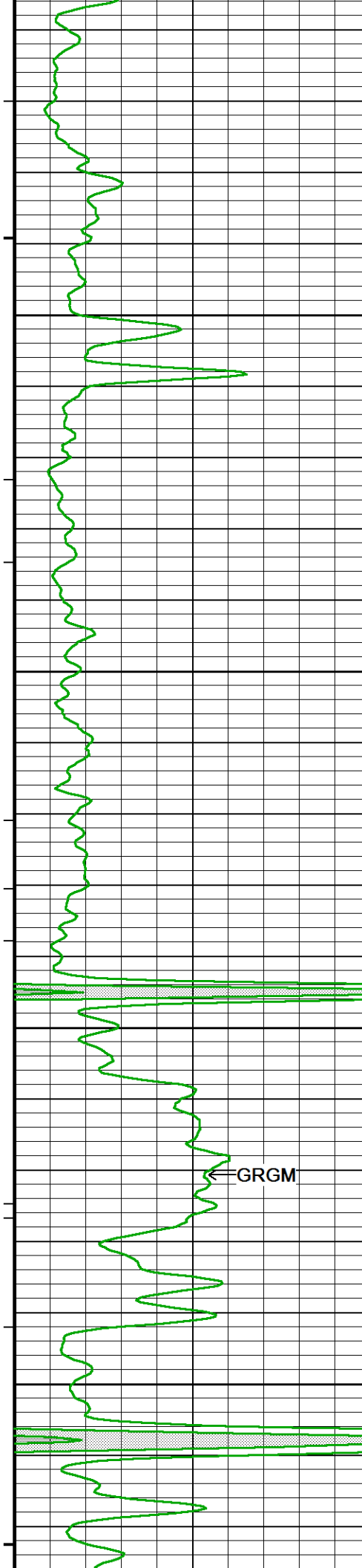
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4200

129°

4250





129°

4300

130°

4350

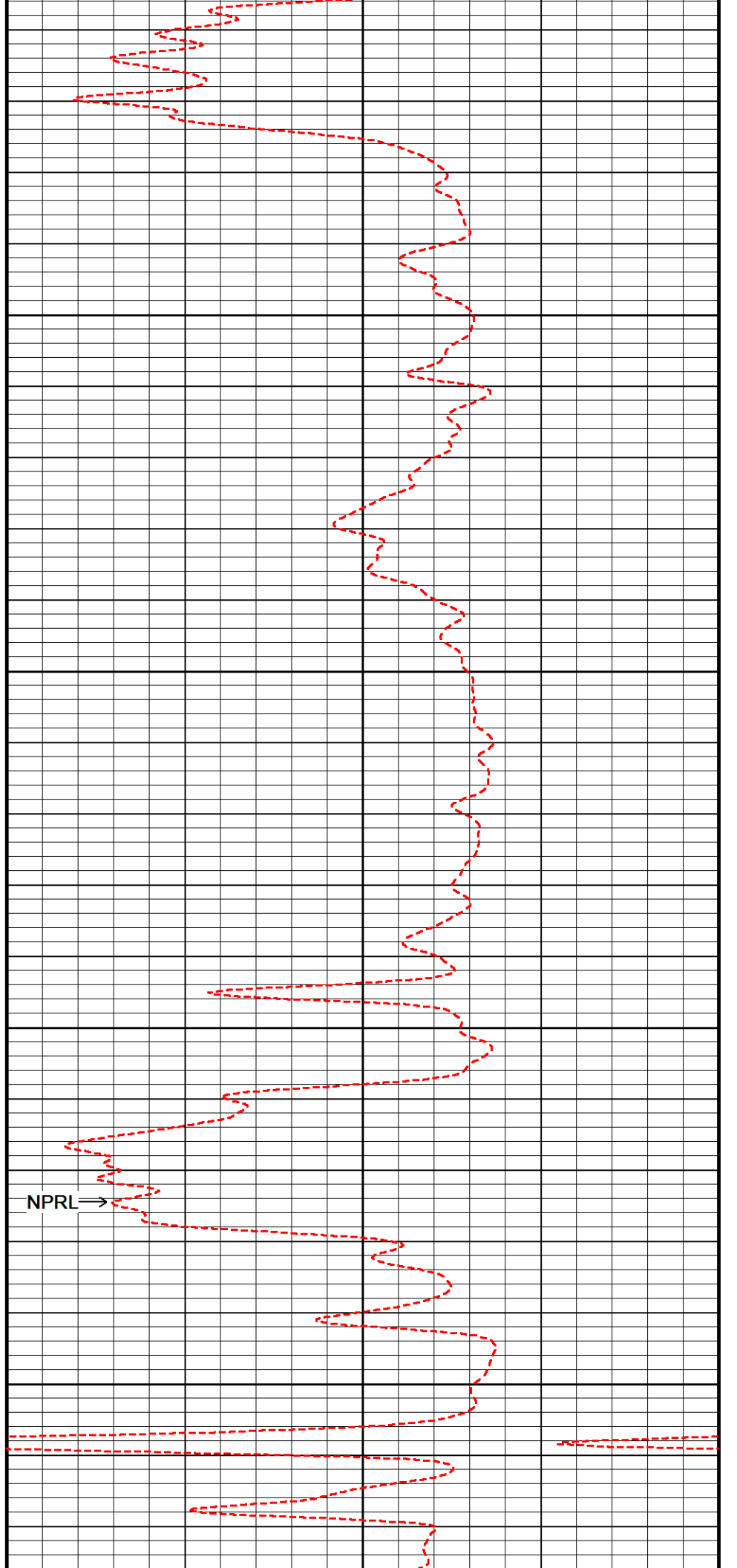
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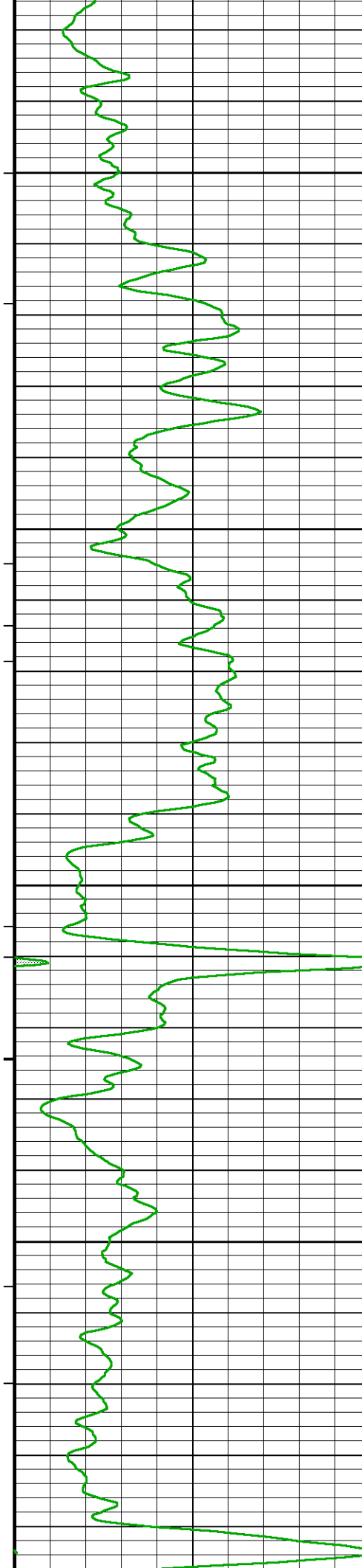
GRGM

130°

4450



NPRL



131°

4500

131°

4550

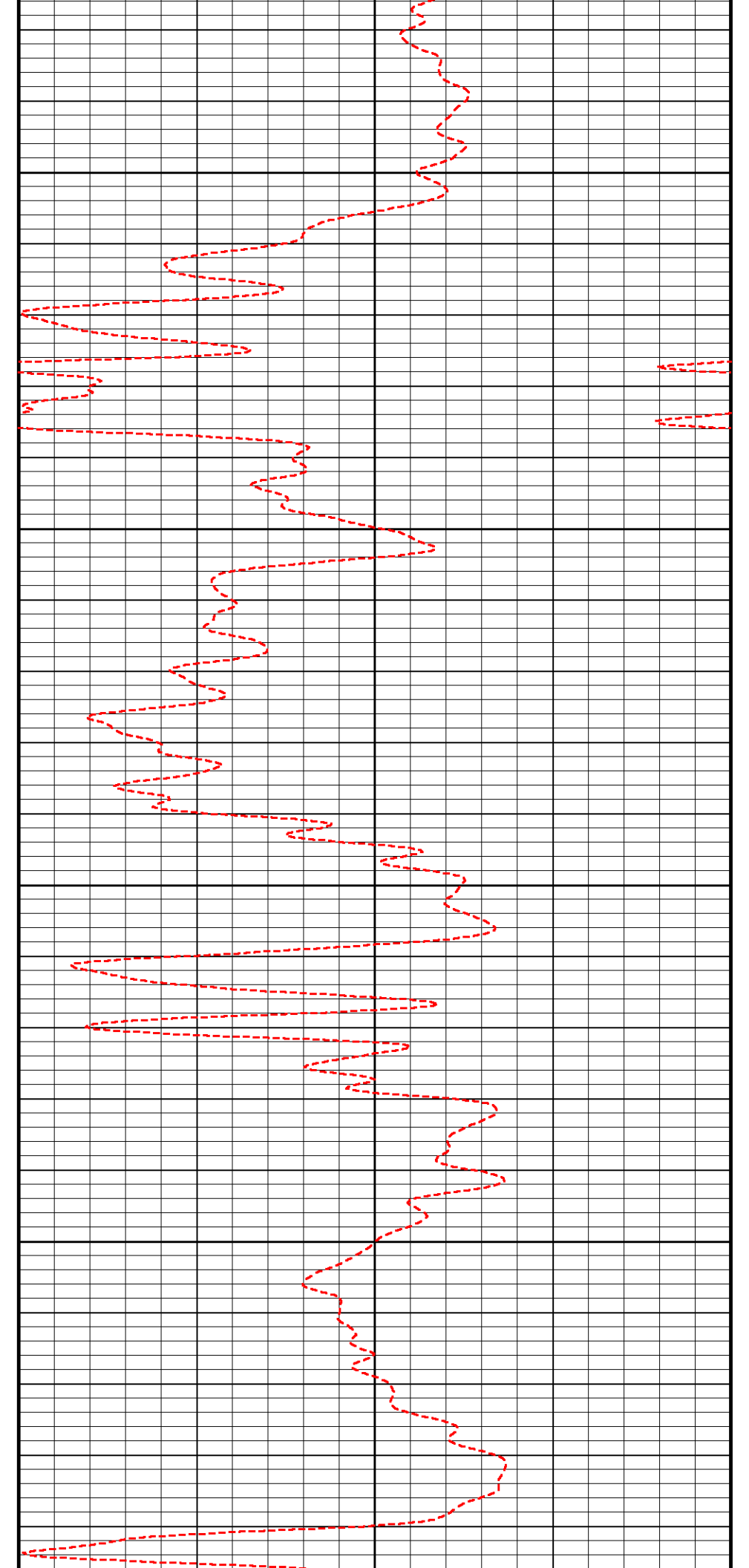
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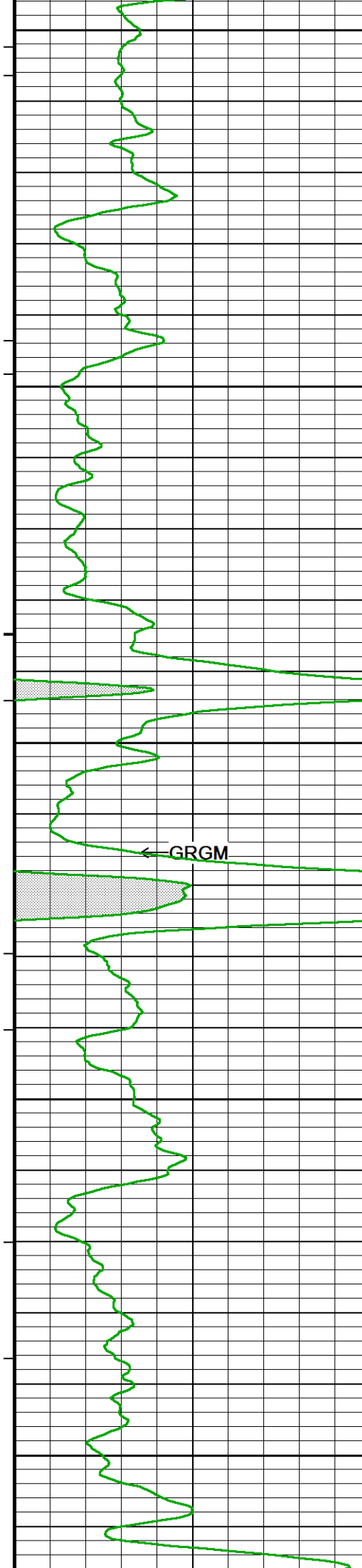
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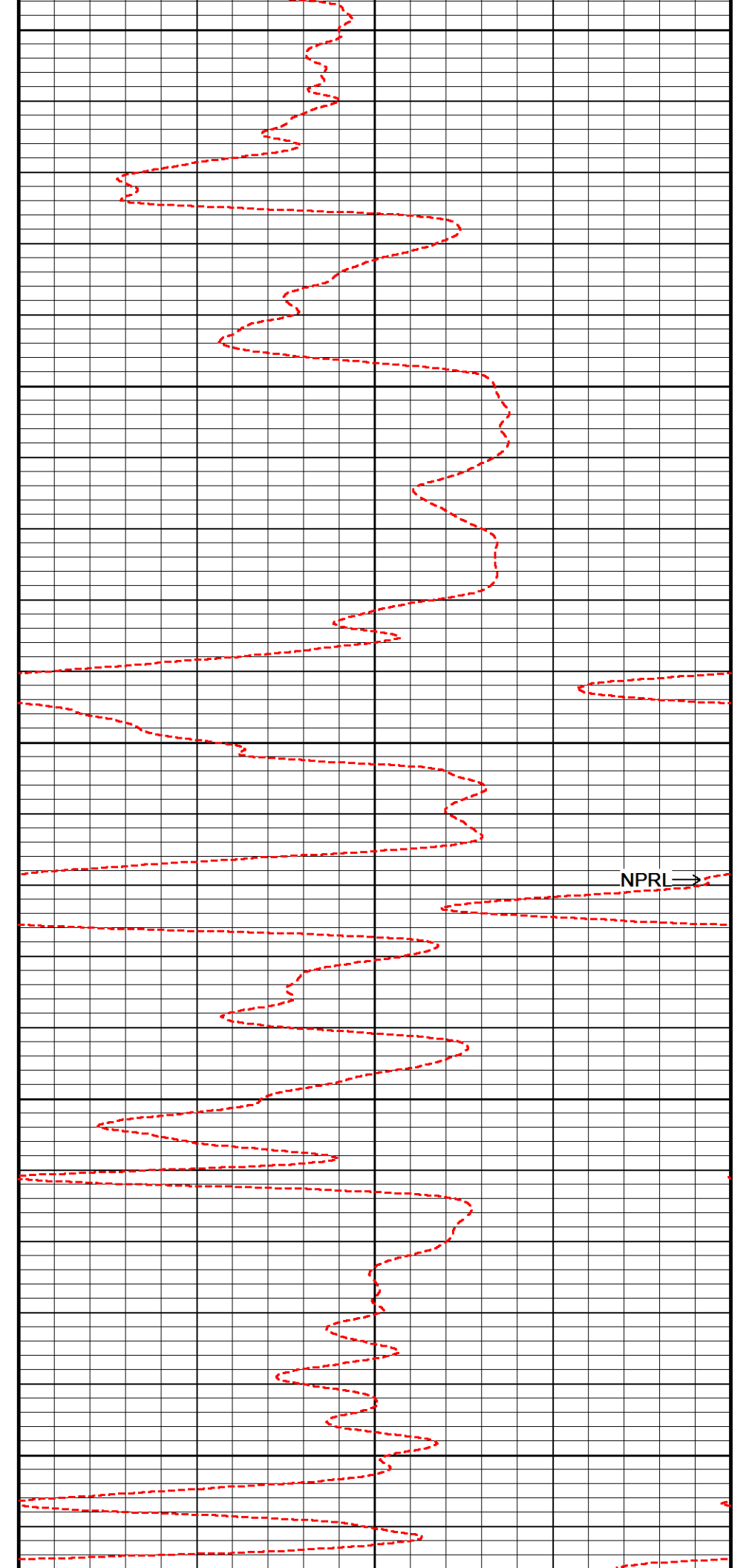
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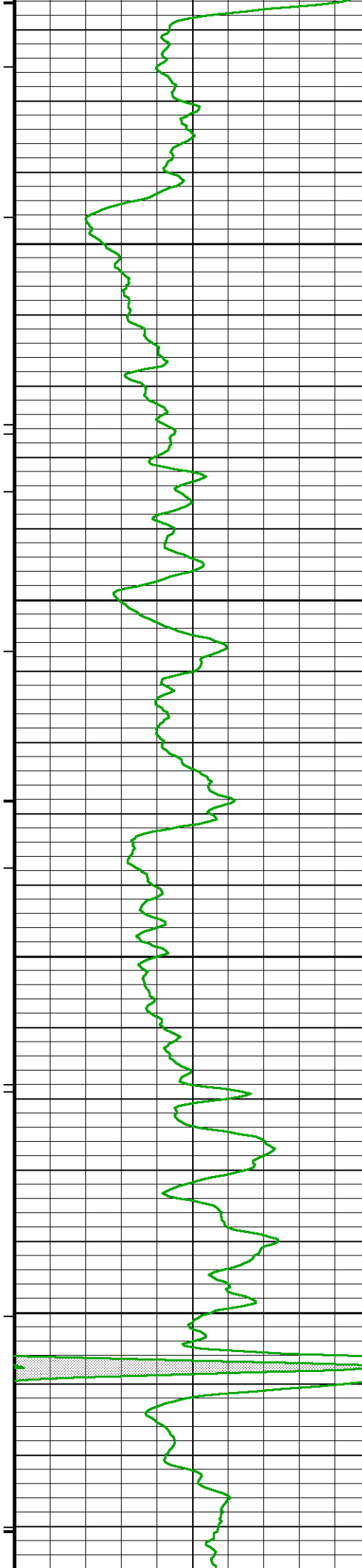
132°





4700  
132°  
4750  
132°  
4800  
133°  
4850  
133°  
4900





133°

4950

133°

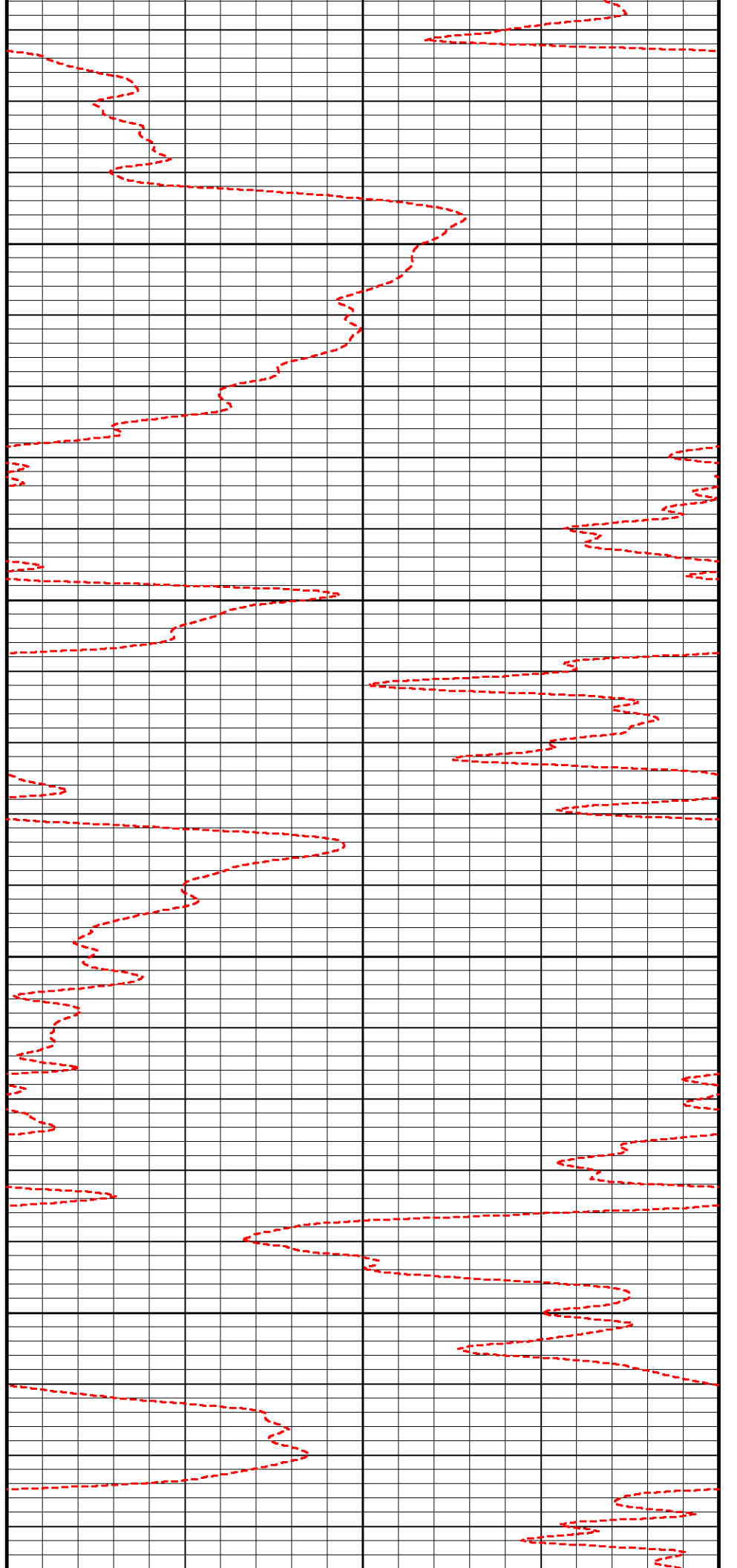
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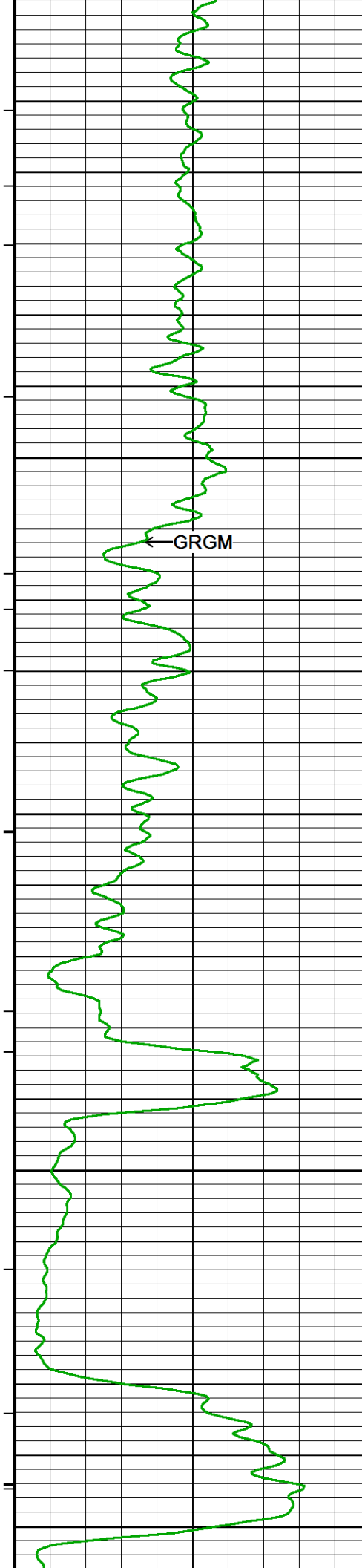
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5050

134°

5100





134°

5150

134°

5200

135°

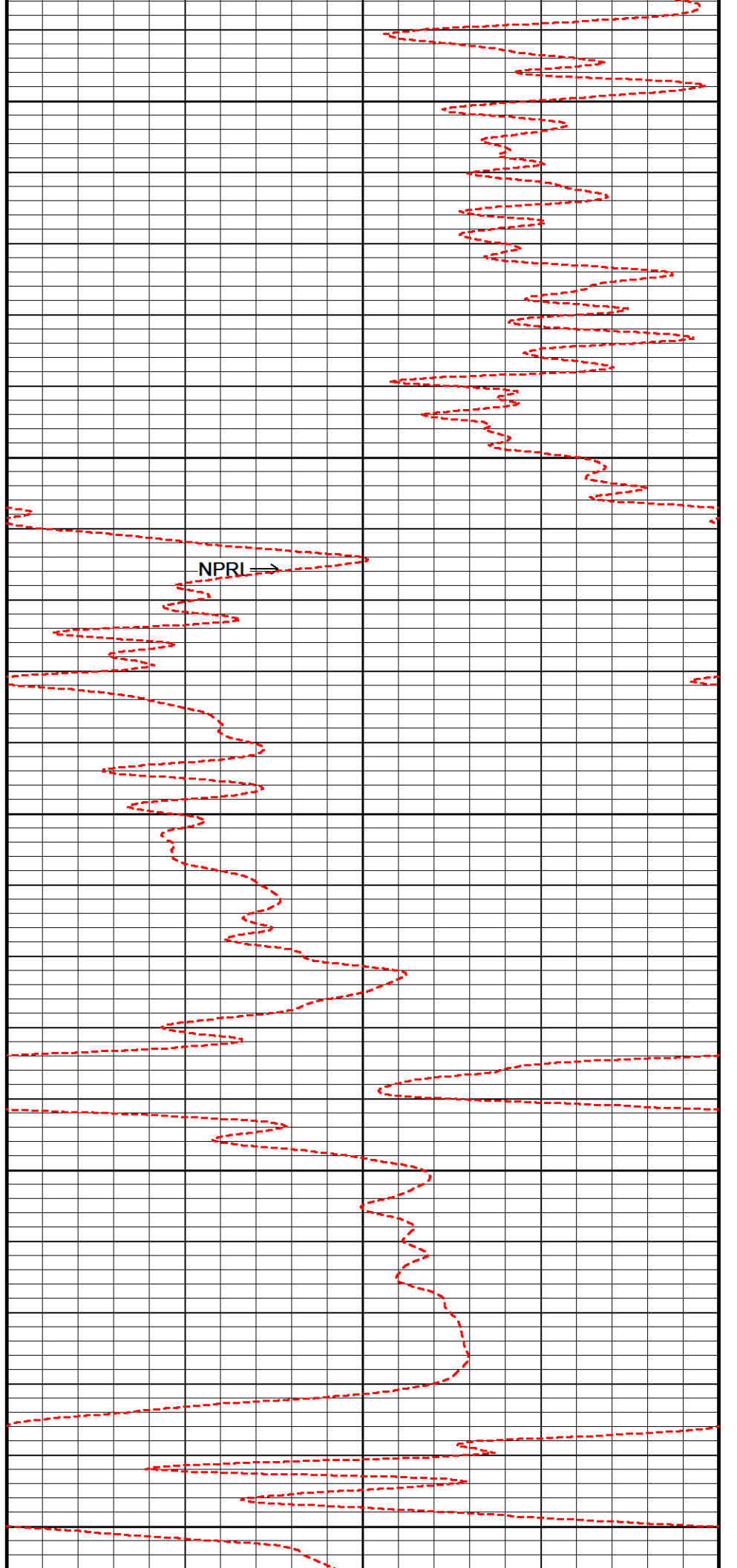
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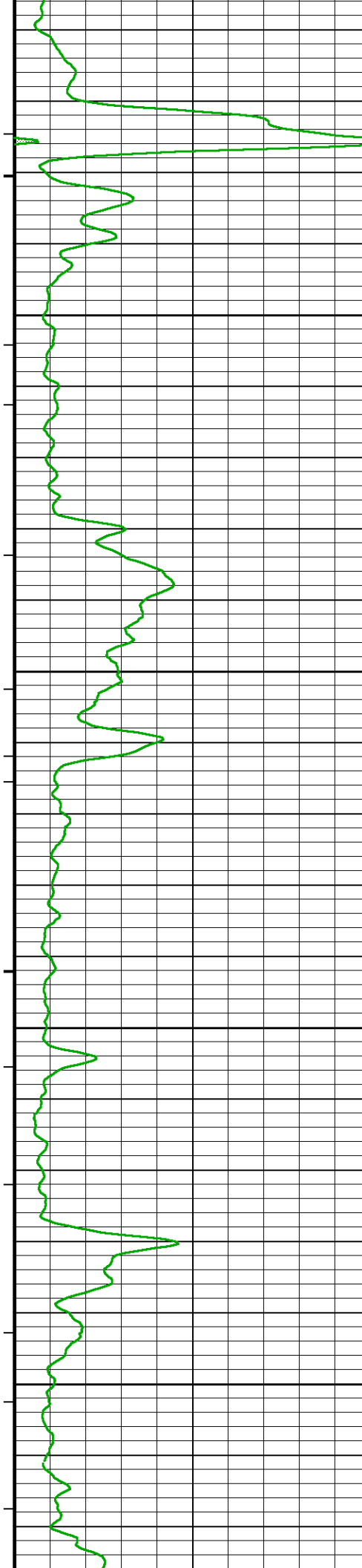
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135°

5350







136°

5400

136°

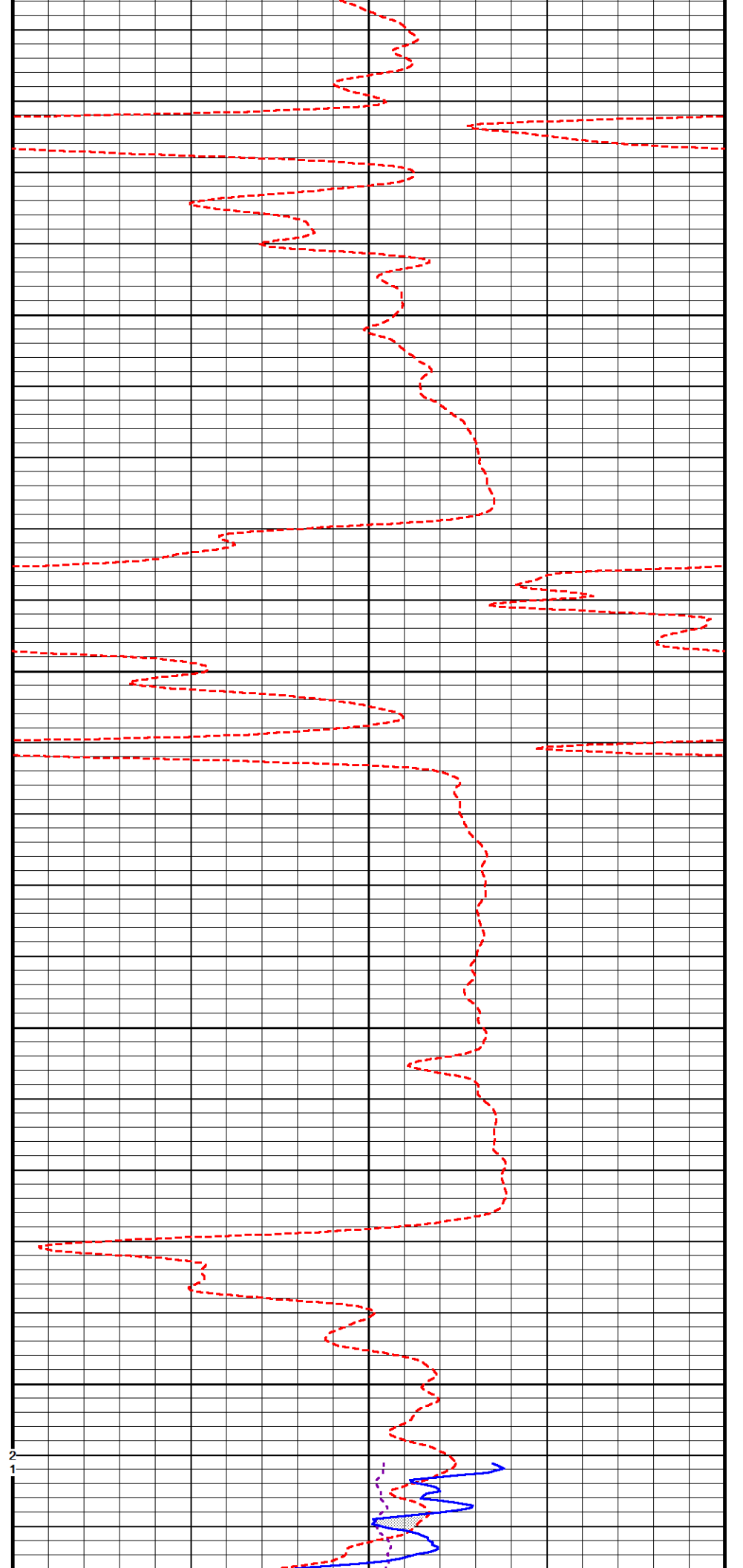
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136°

5500

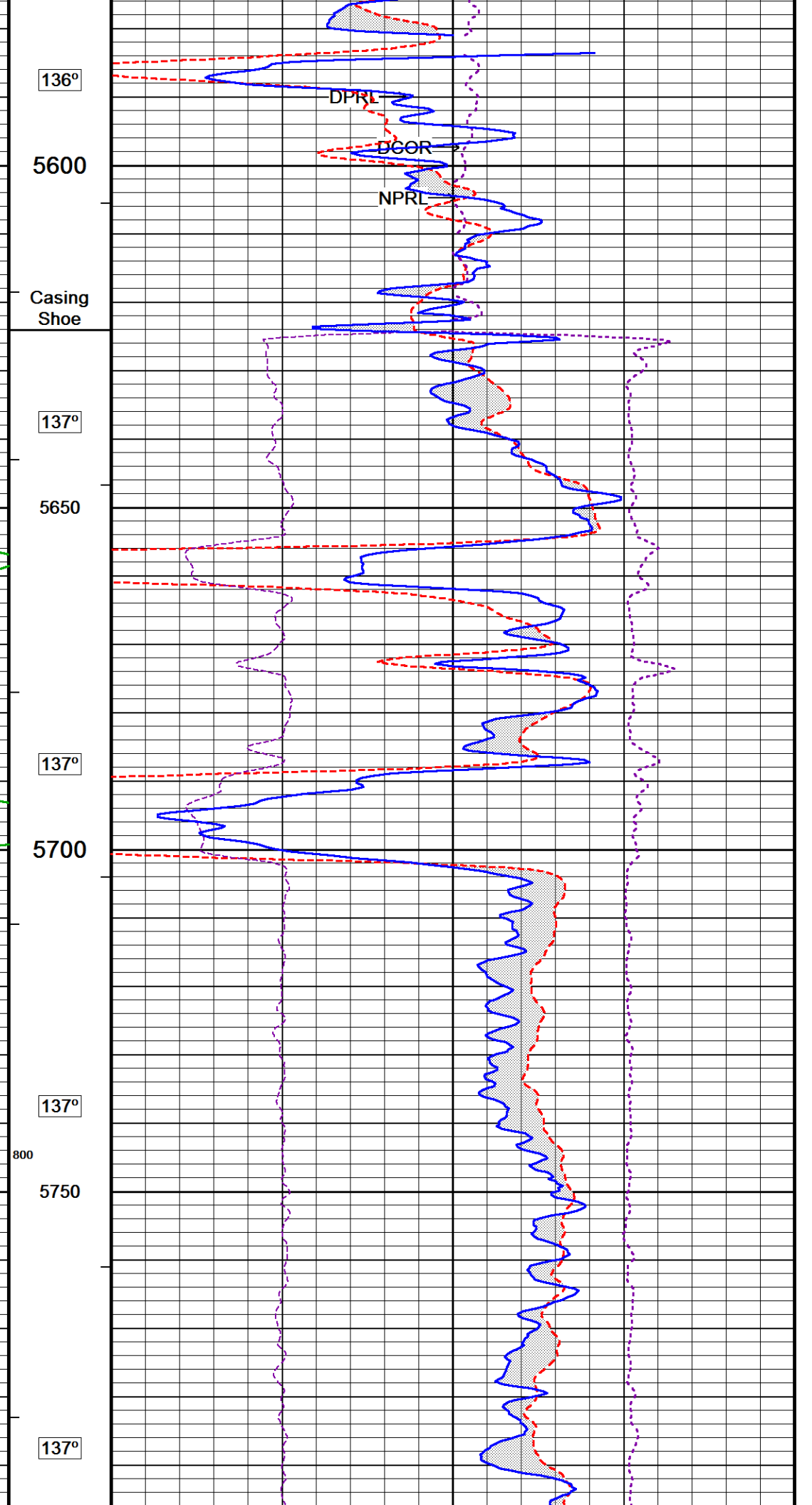
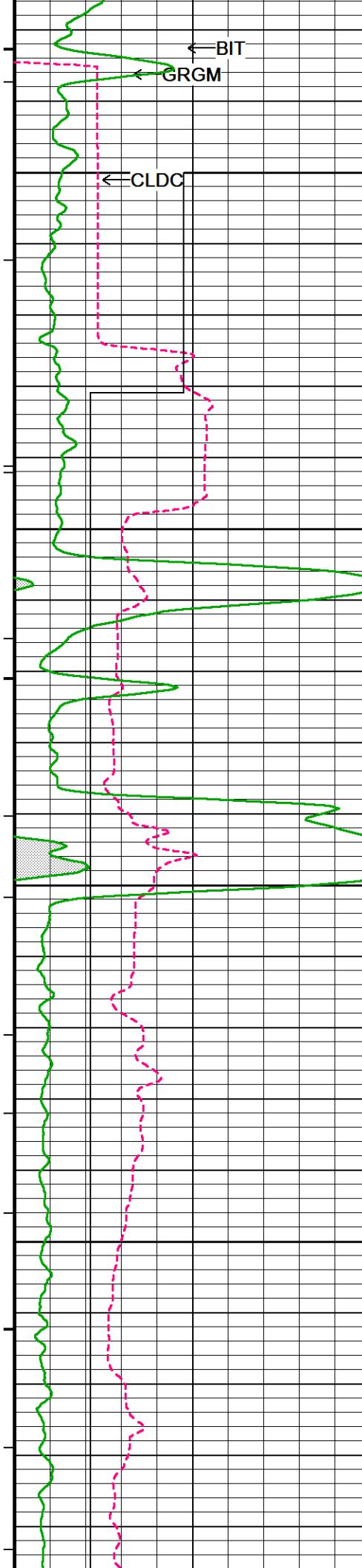
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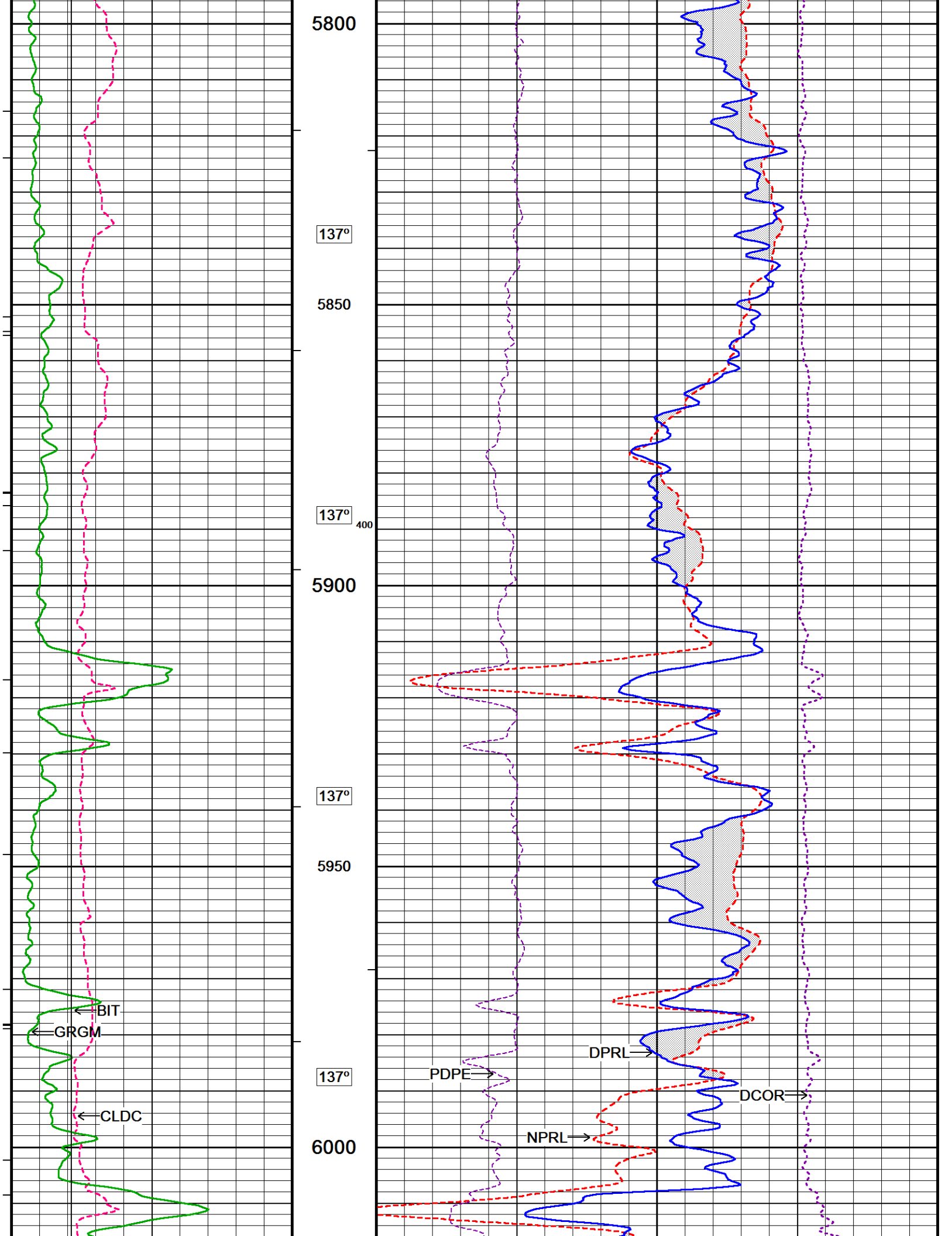
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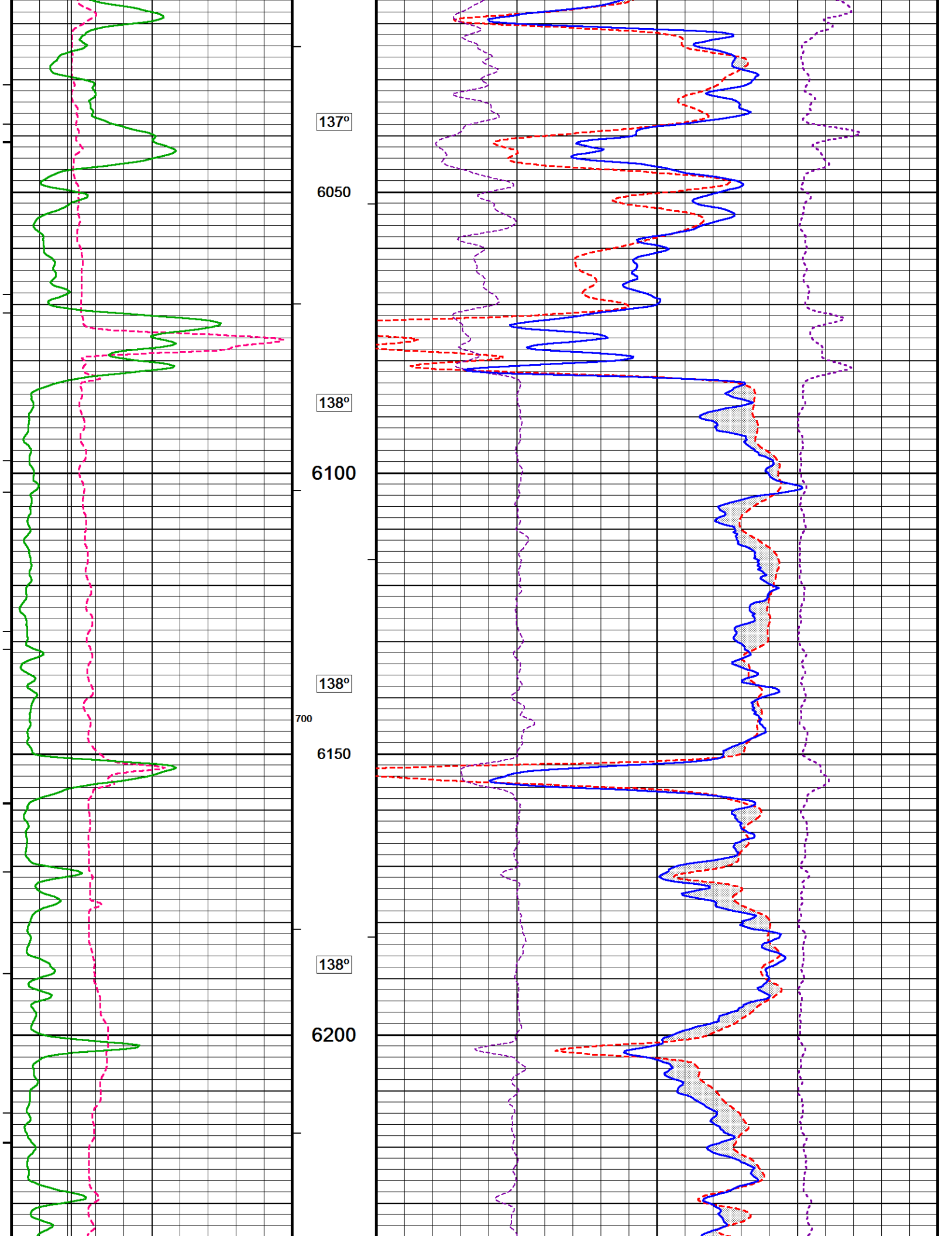


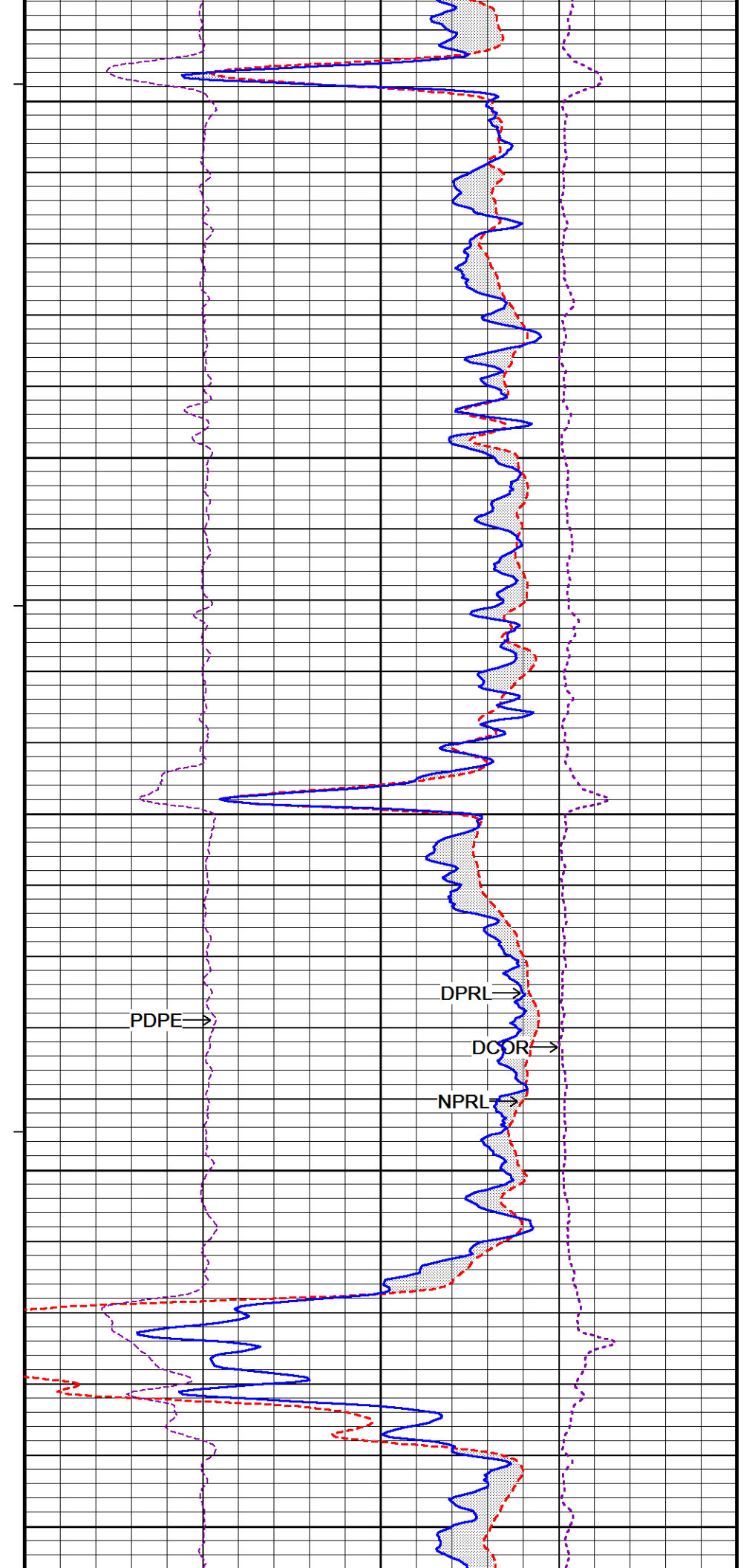
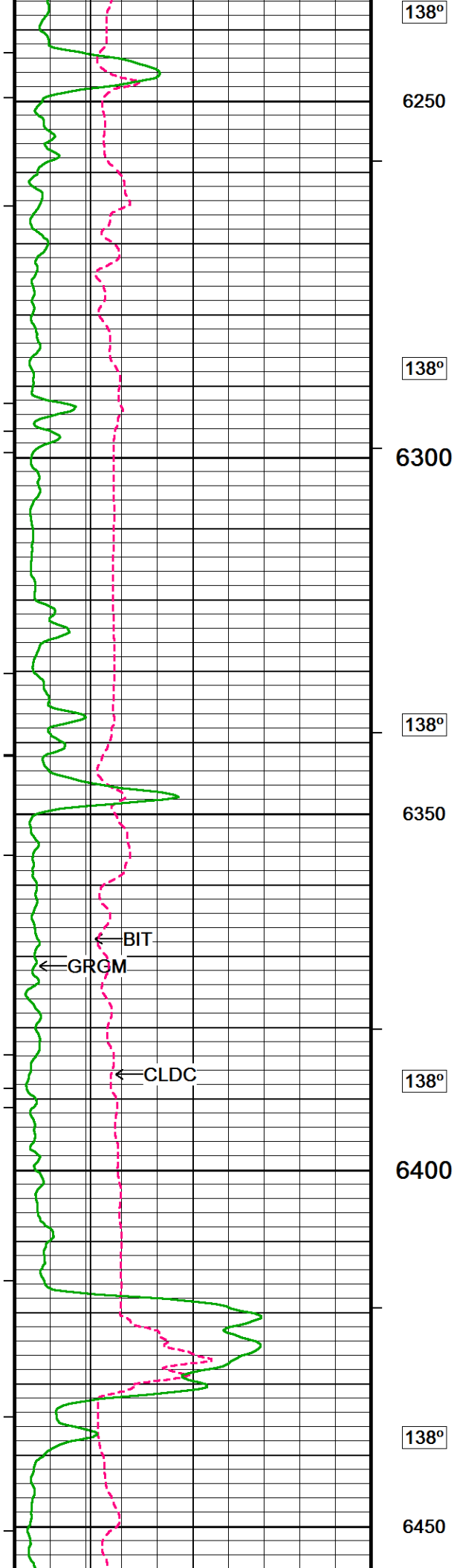
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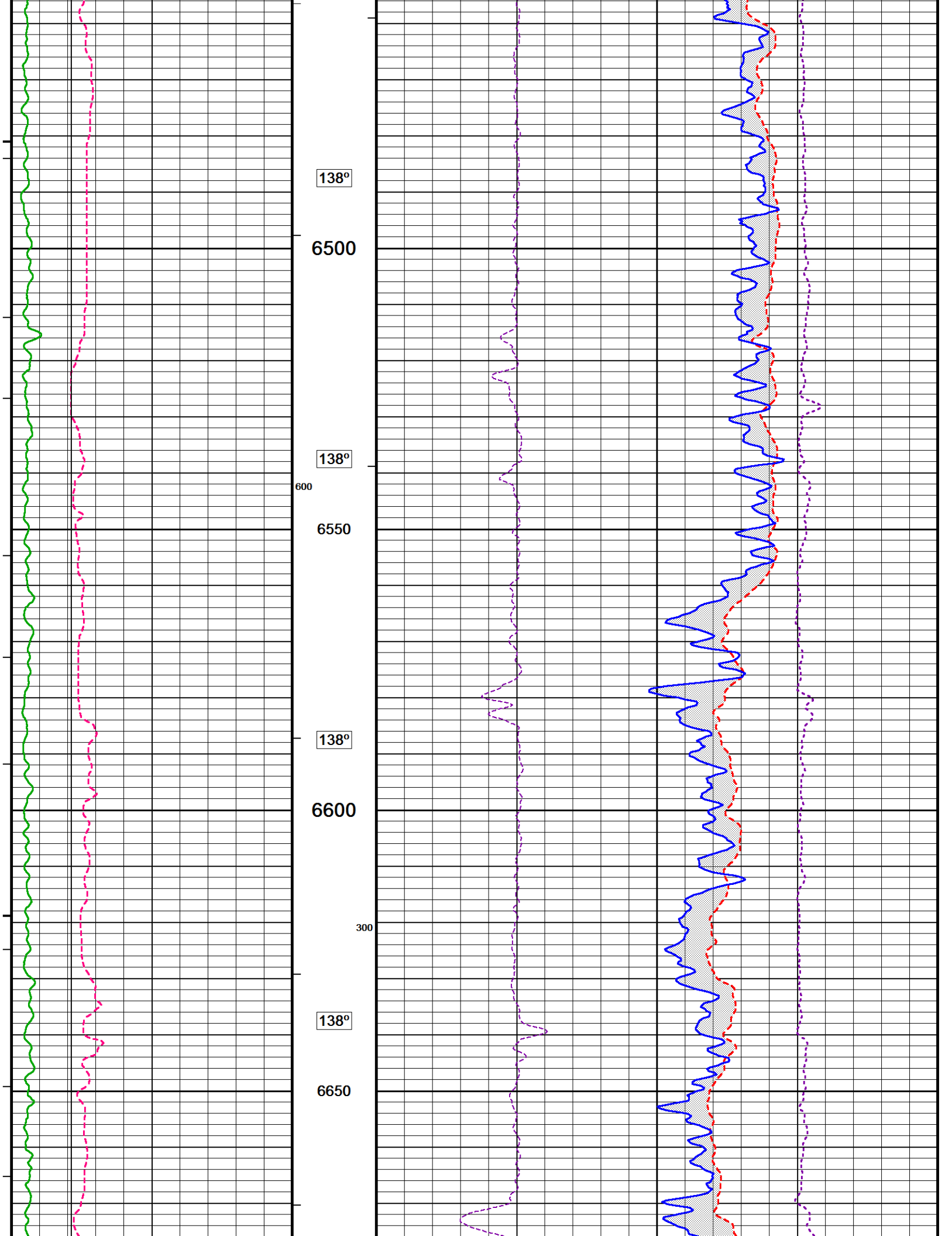
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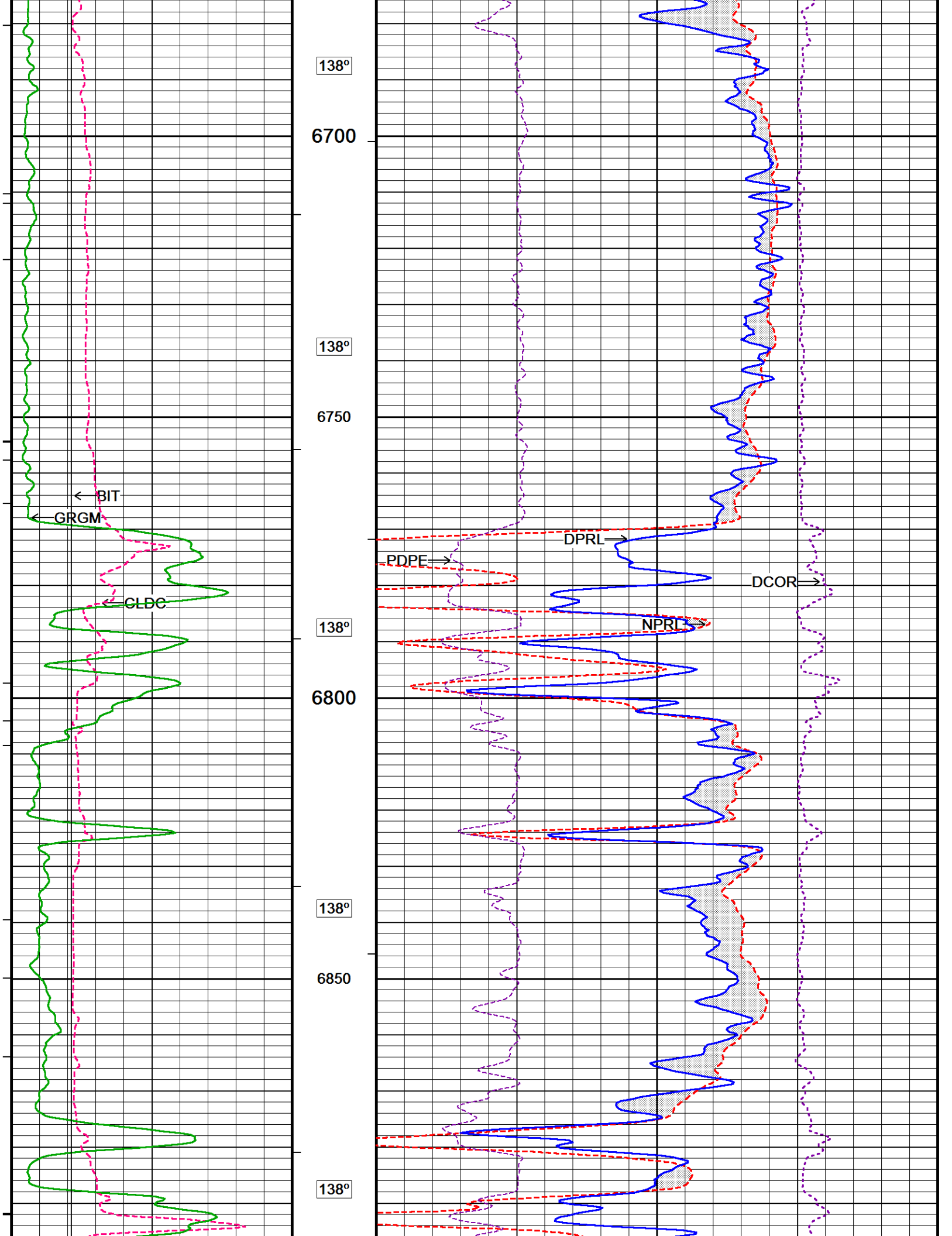




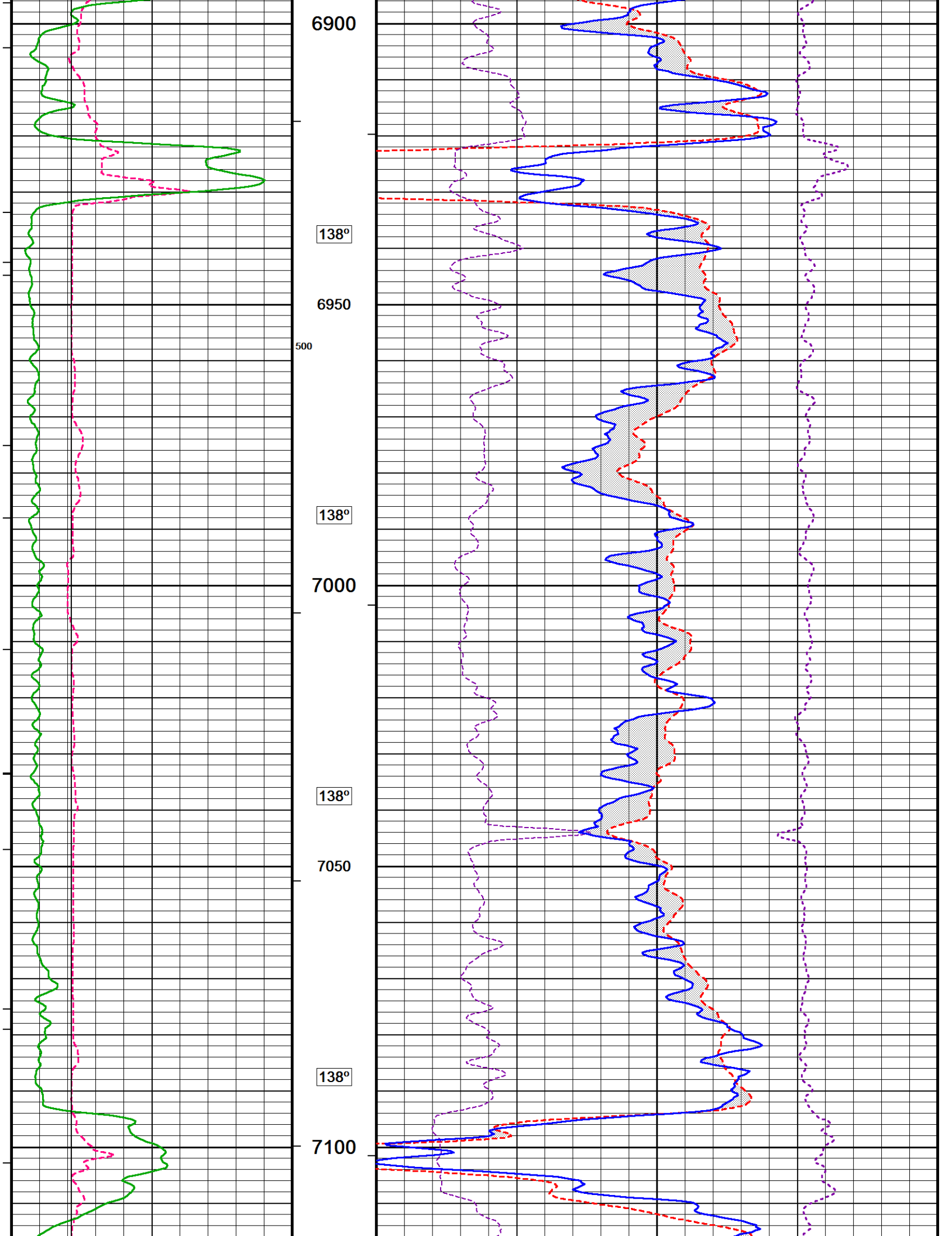


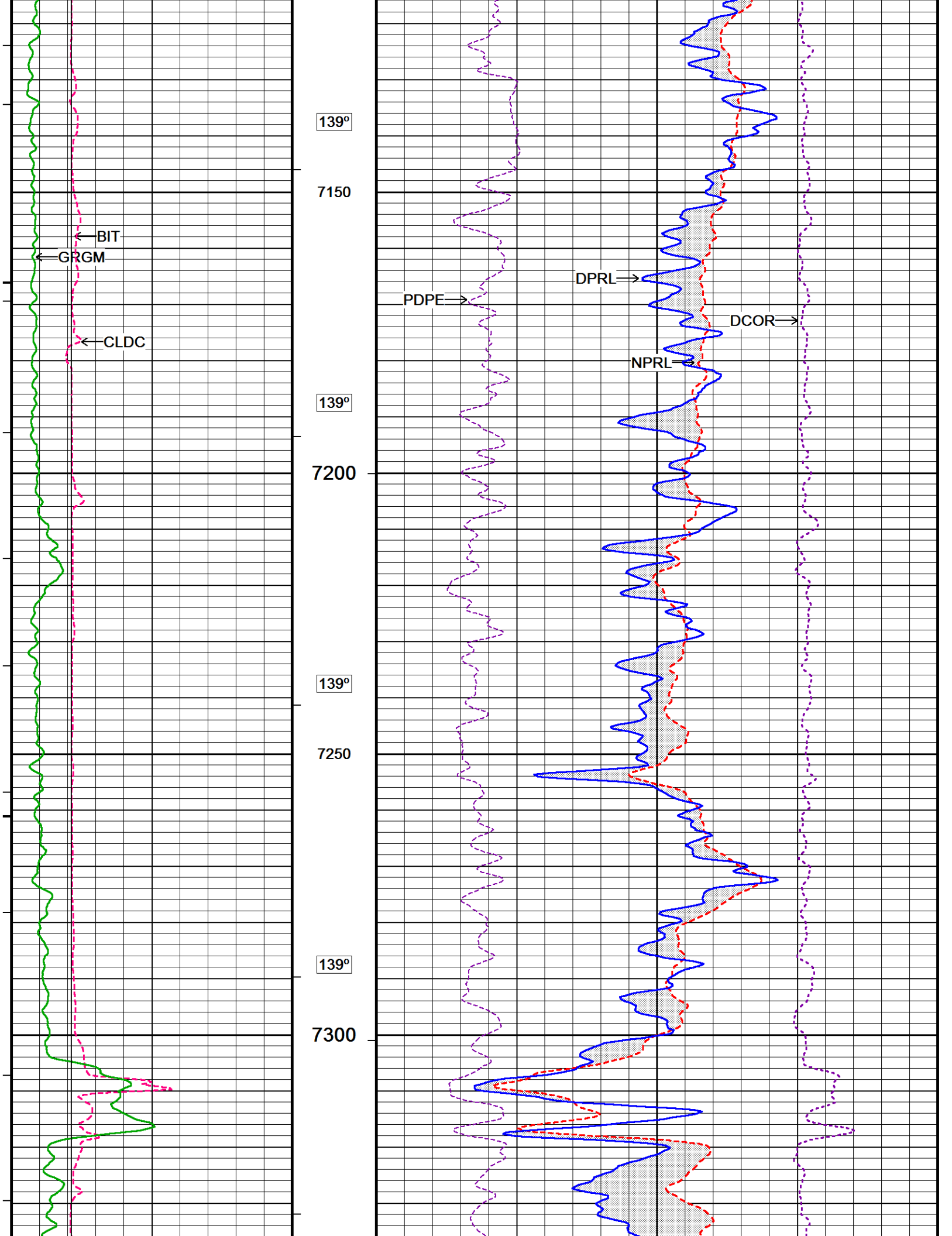


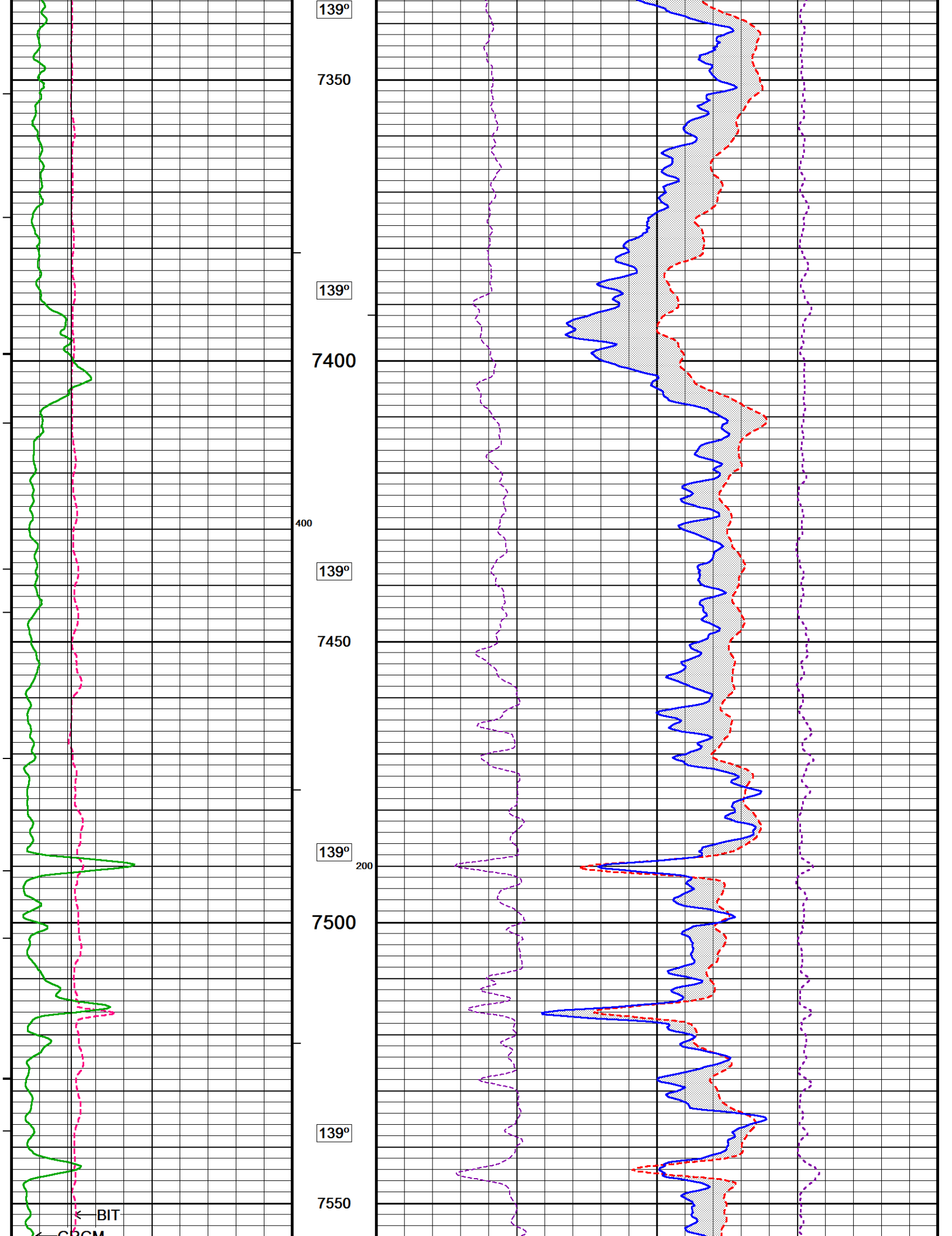


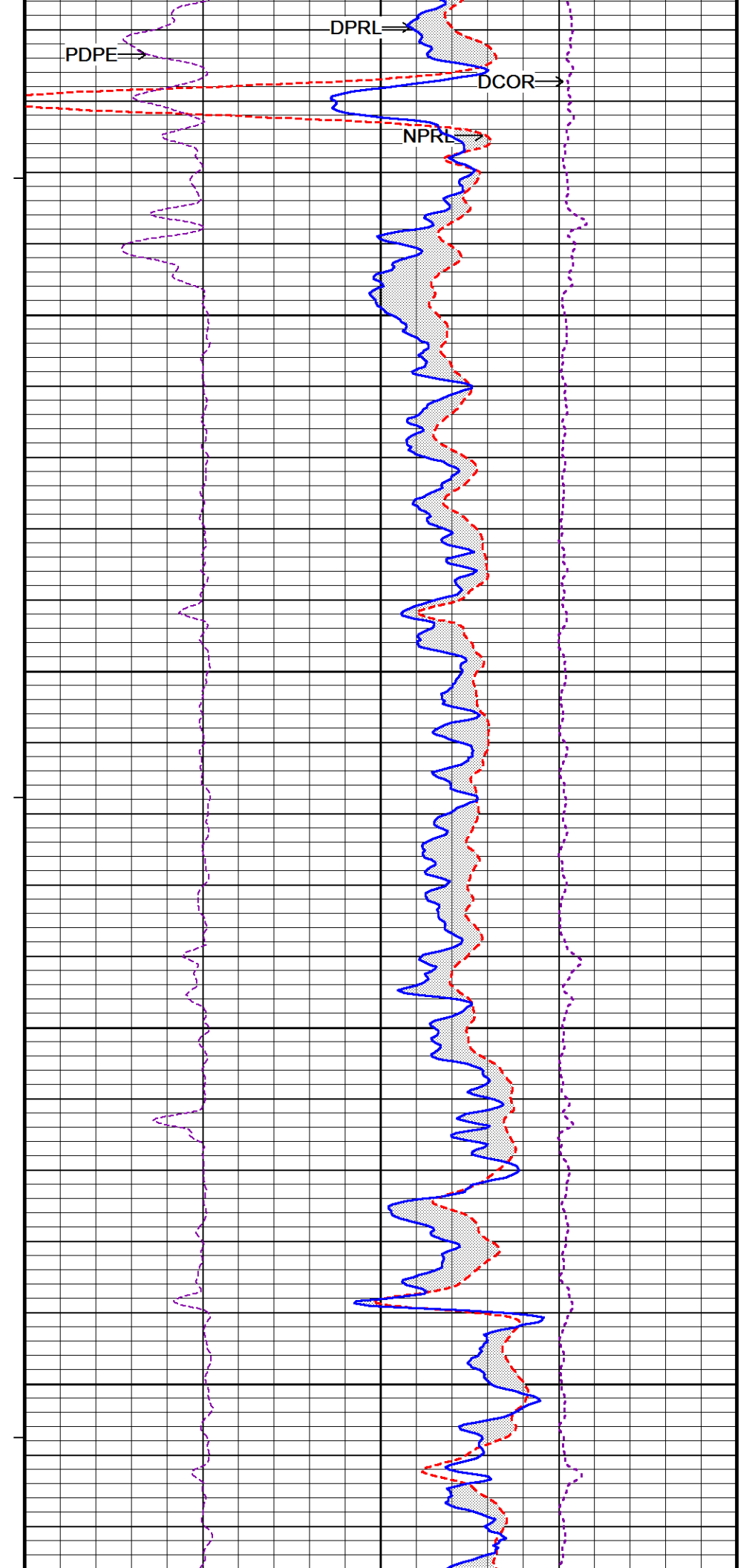
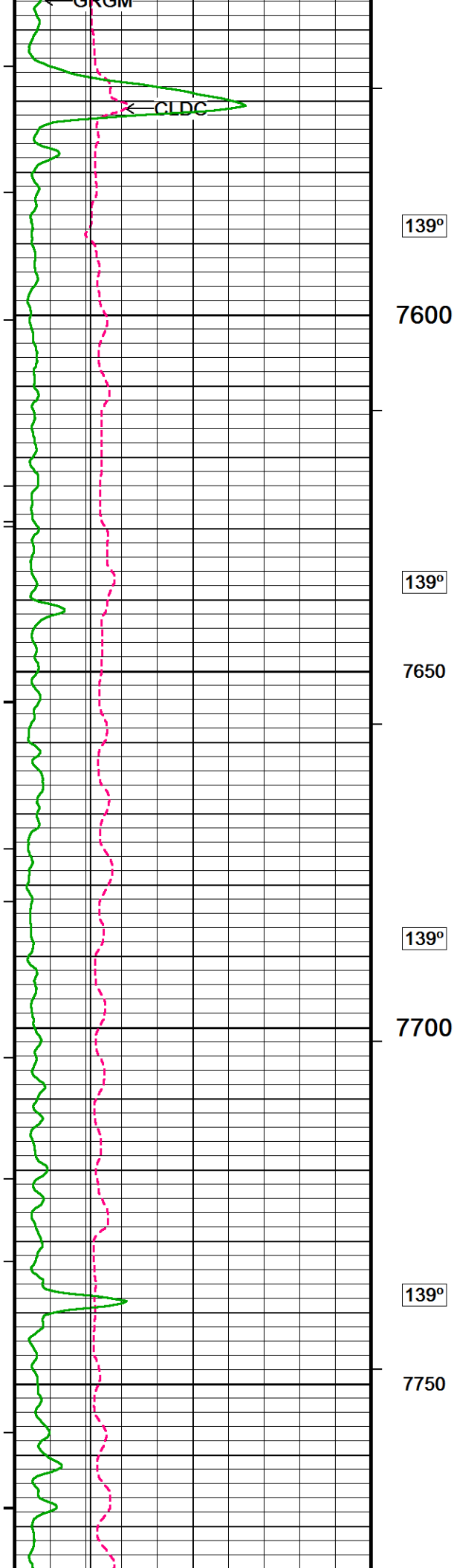


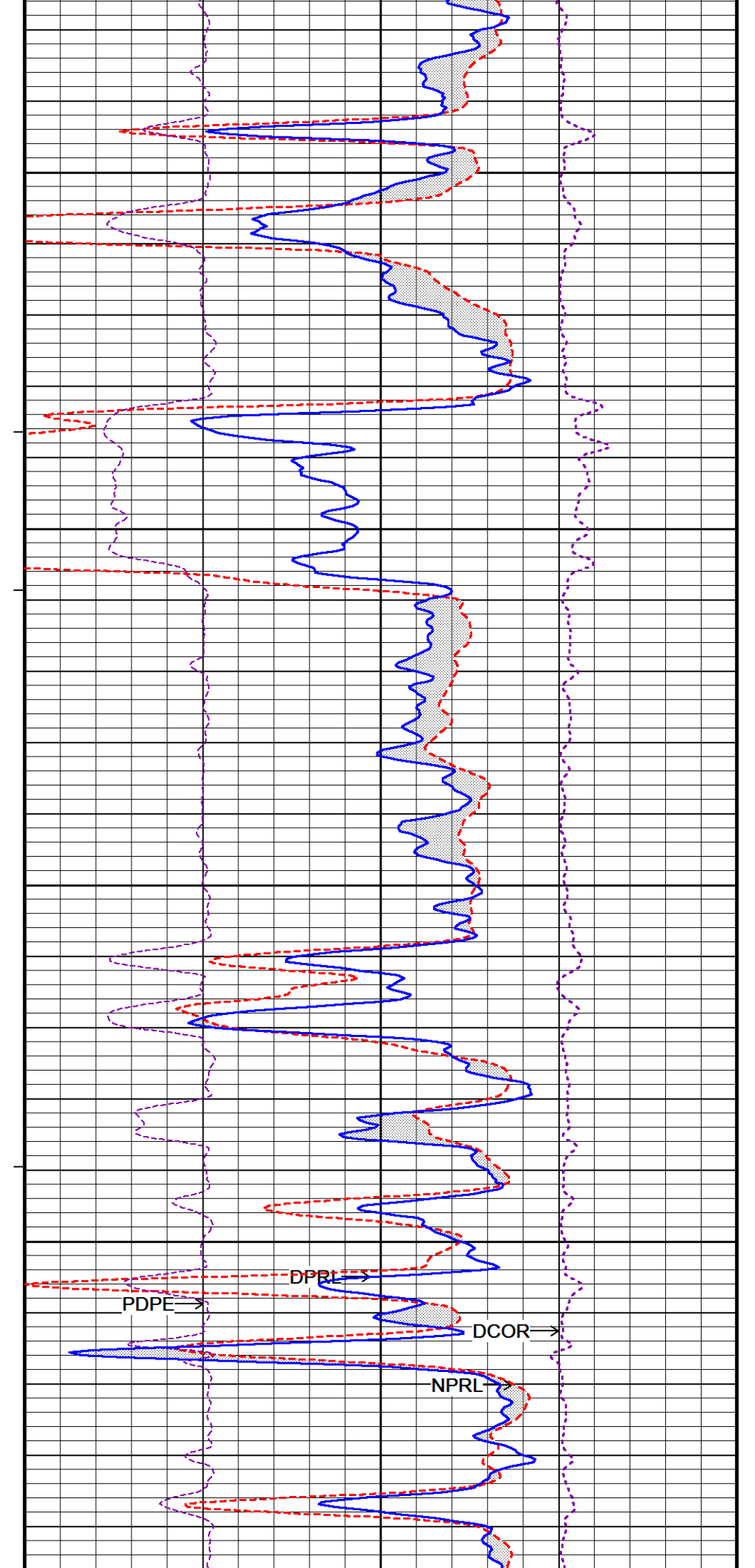
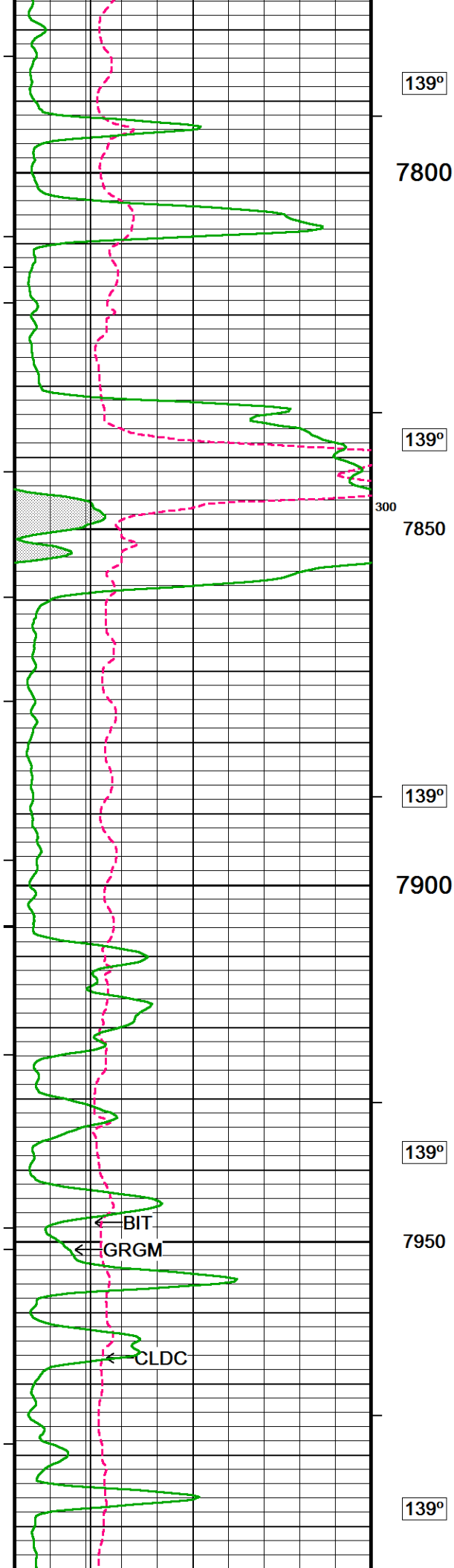


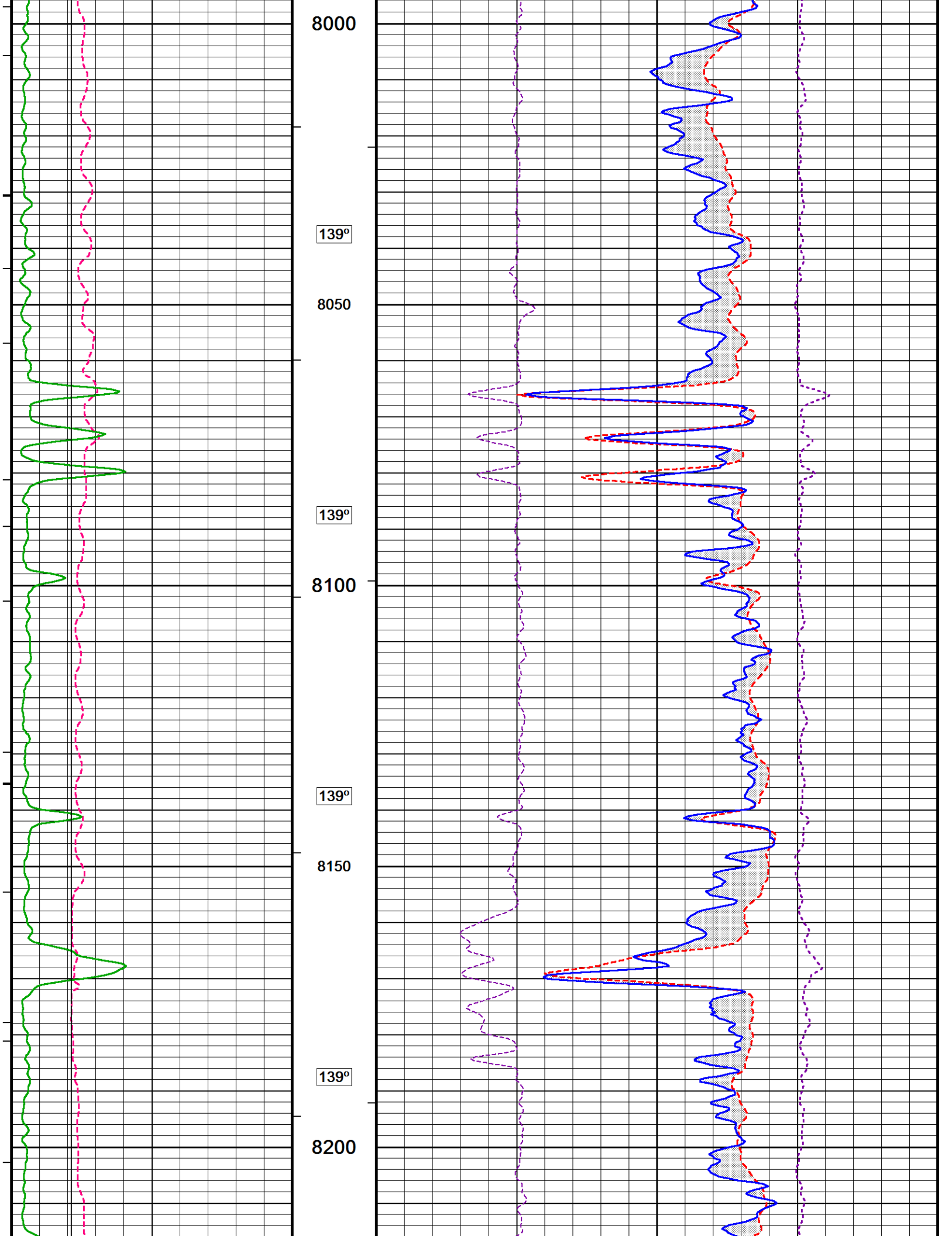


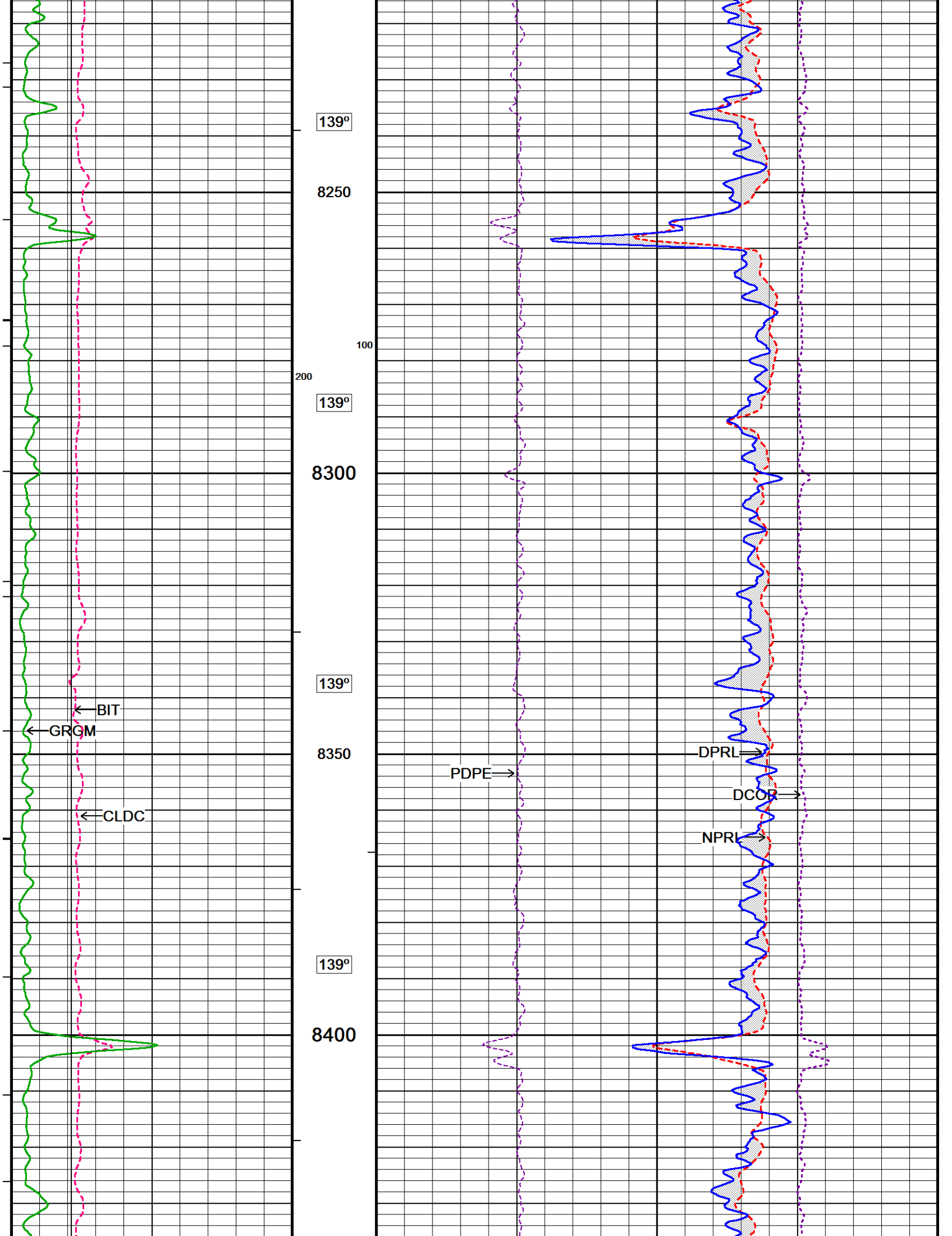




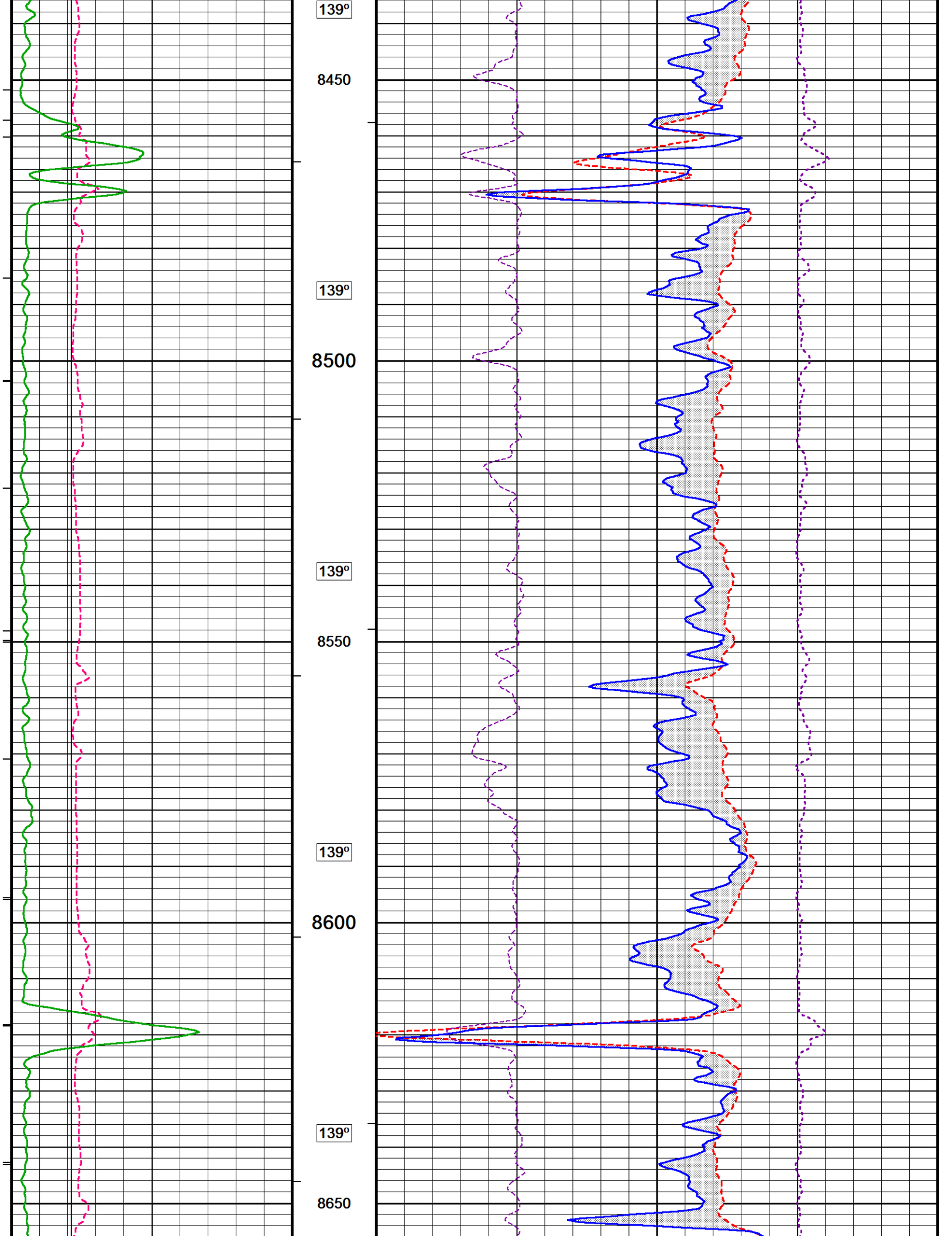


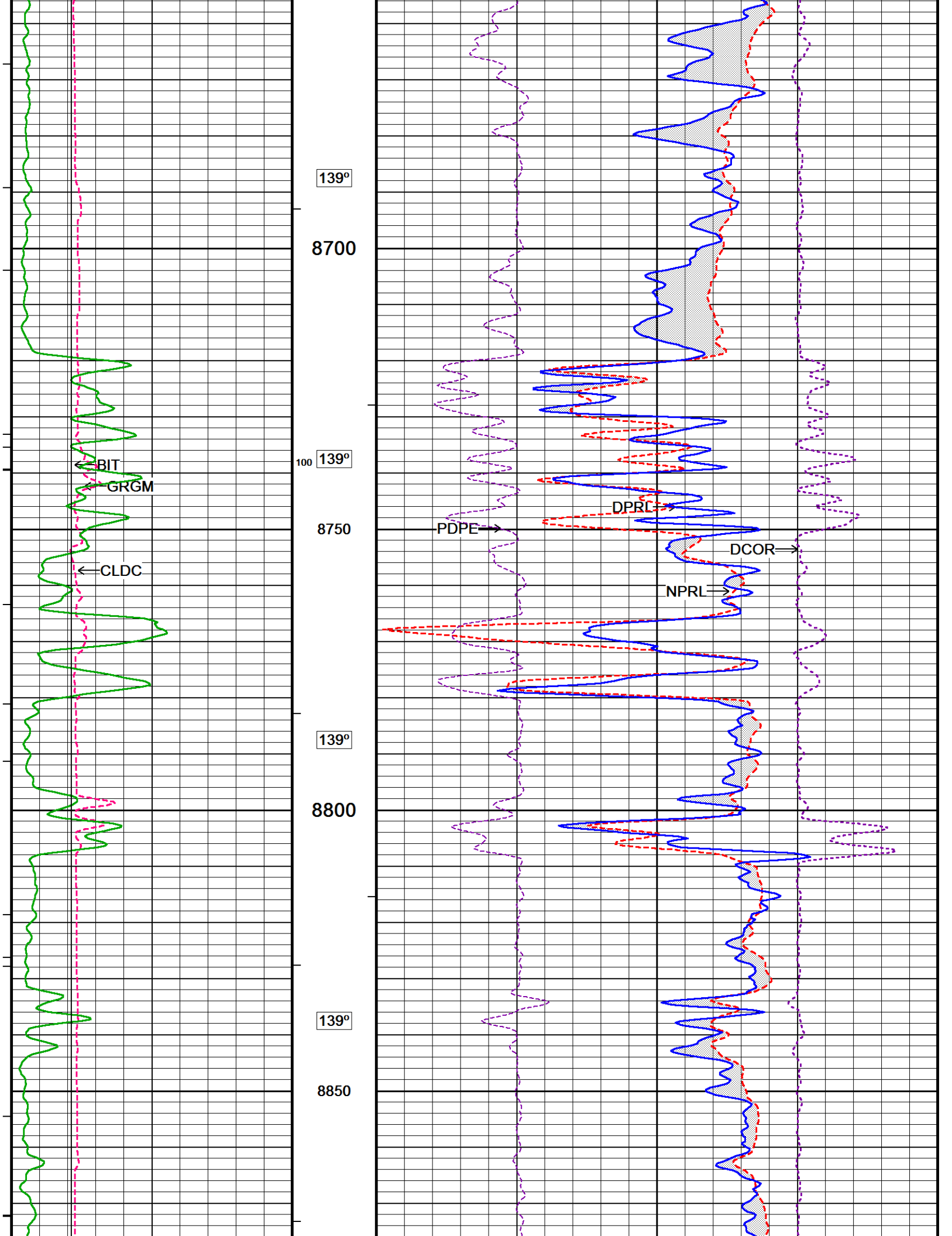


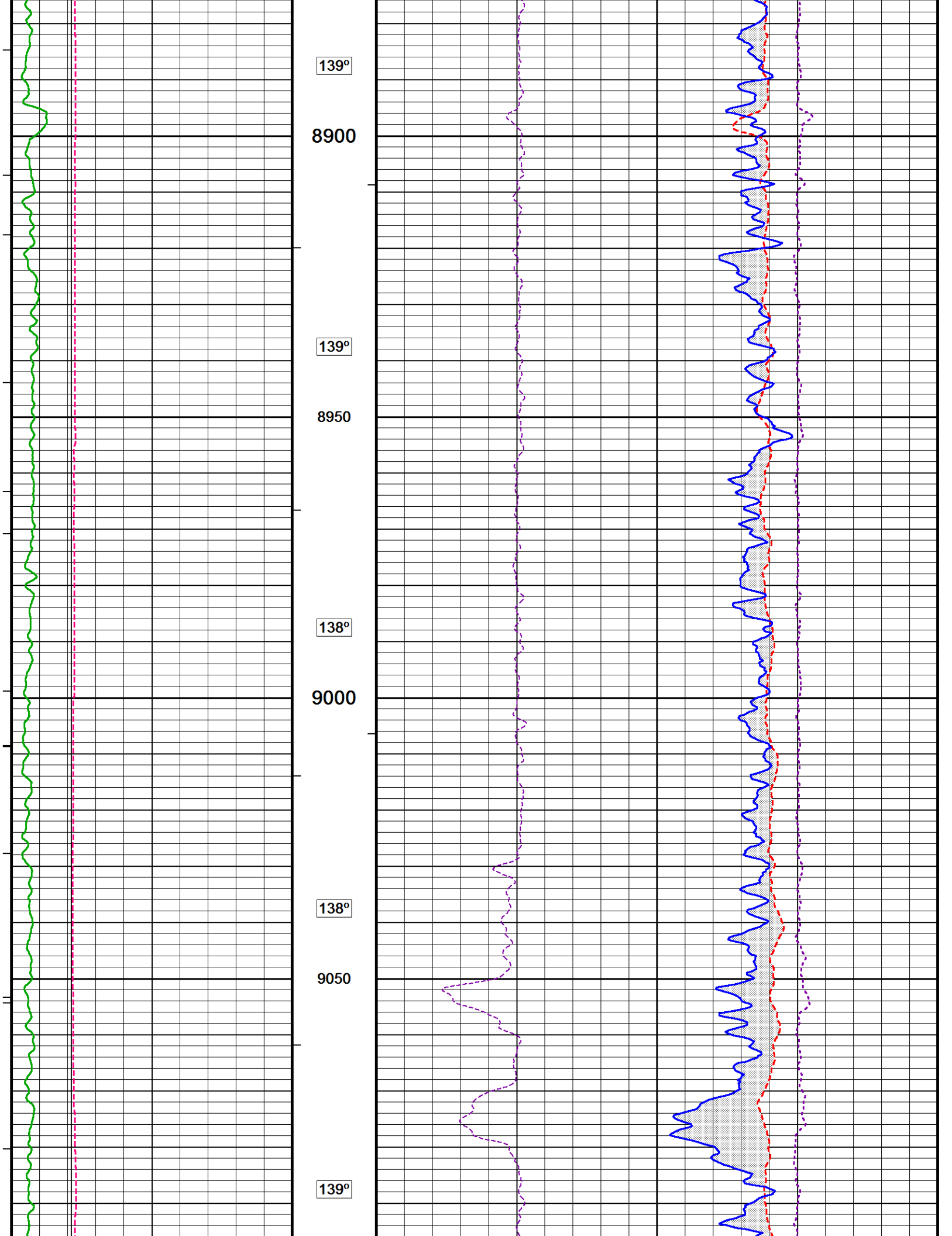


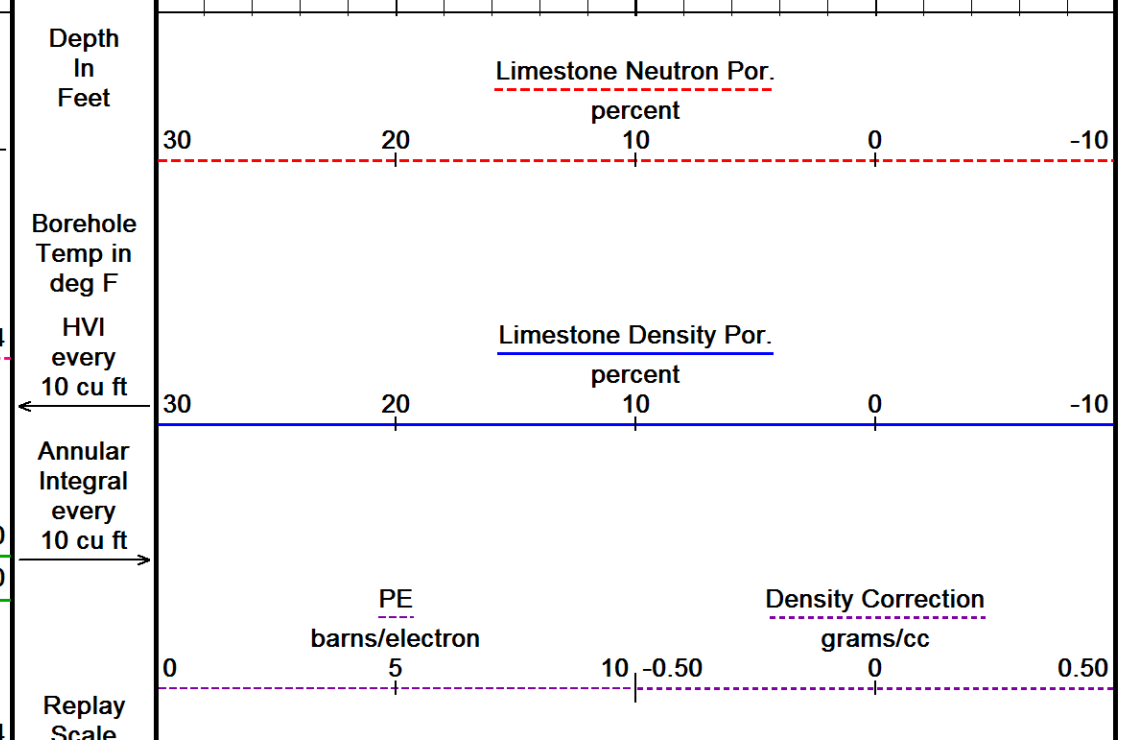
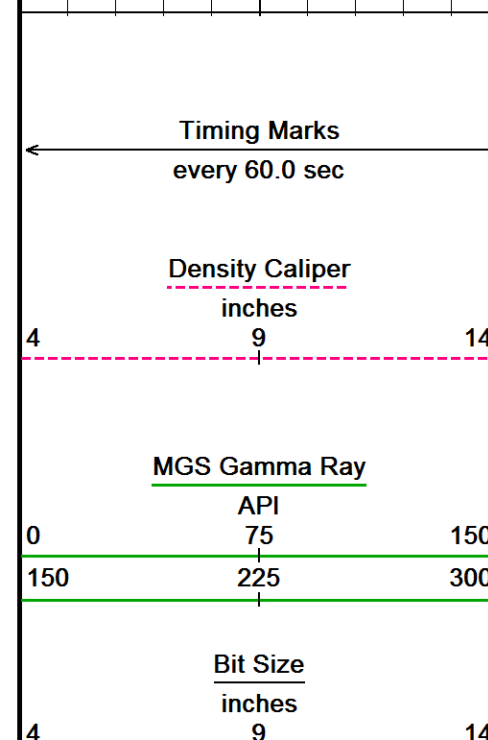
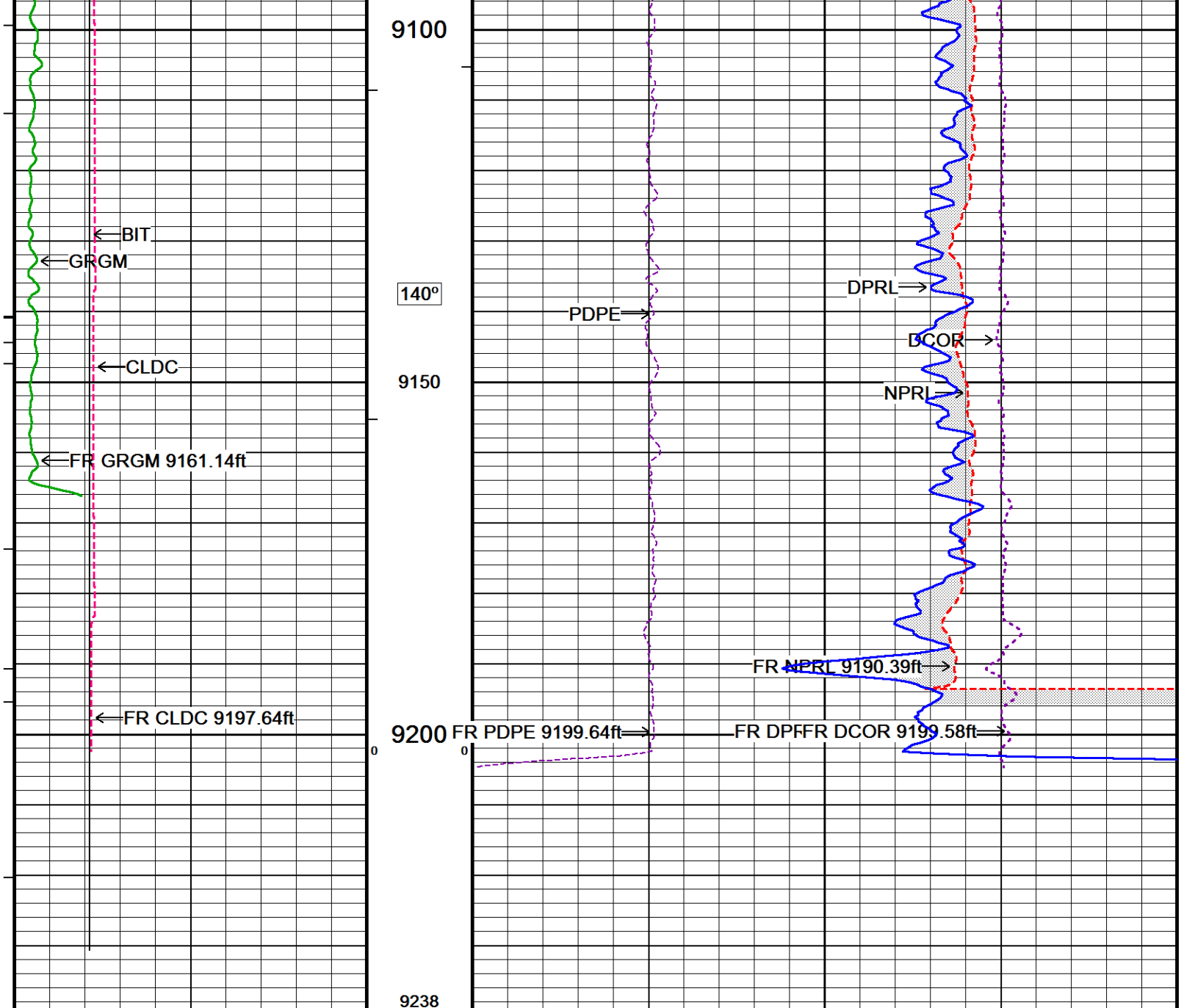












Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 31-DEC-2014 12:03

Filename: D:\14\_03\_4558\_WLS\DATA\15077220890100\_Frey 3508 1-8H\88208rtap.dta

Recorded on 15-OCT-2014 01:45

System Versions: Logged with 14.03.4558 Processed with 14.03.4558 Plotted with 14.05.5335



### 5 INCH MAIN LOG



### 5 INCH BULK DENSITY



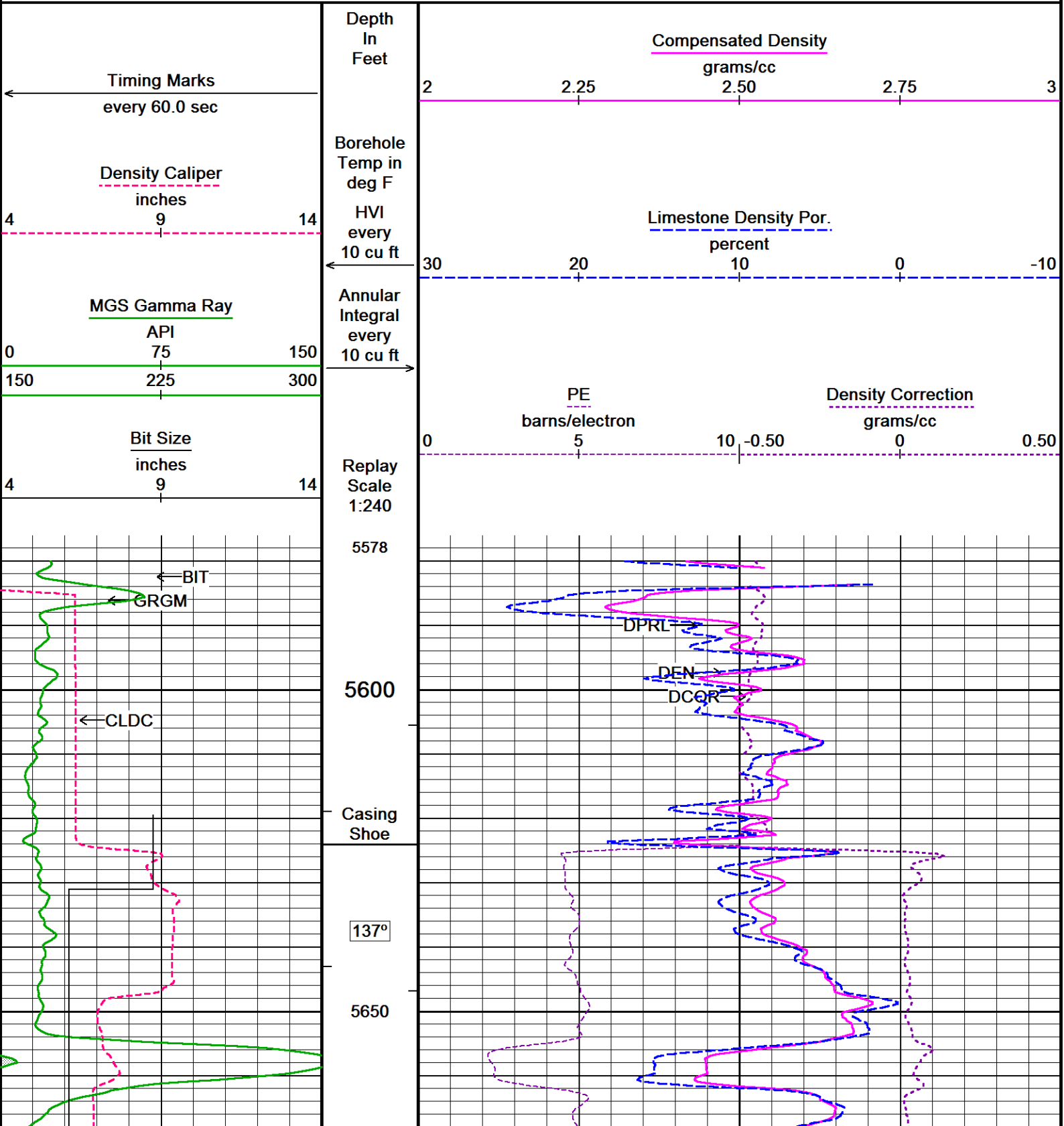
Depth Based Data - Maximum Sampling Increment 10.0cm

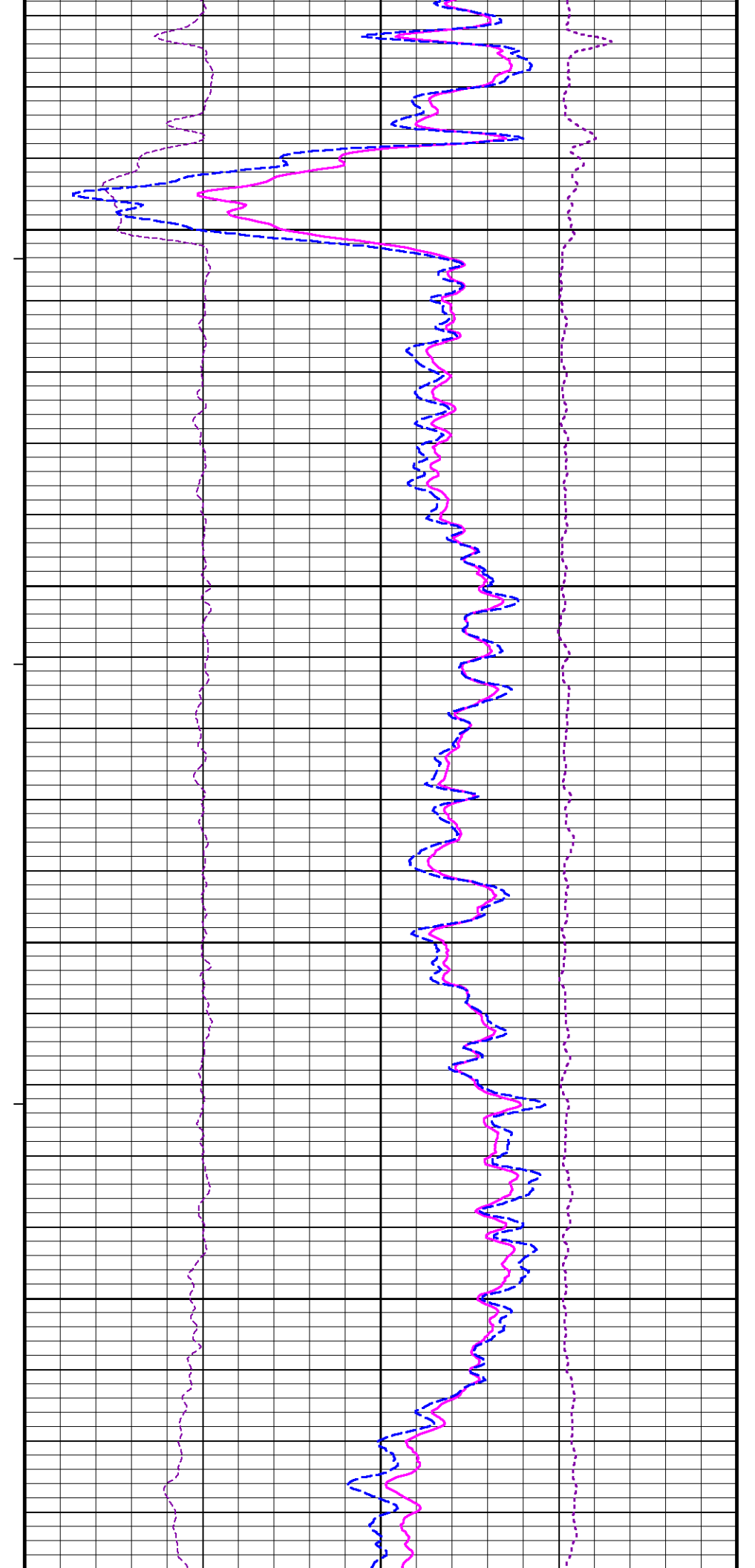
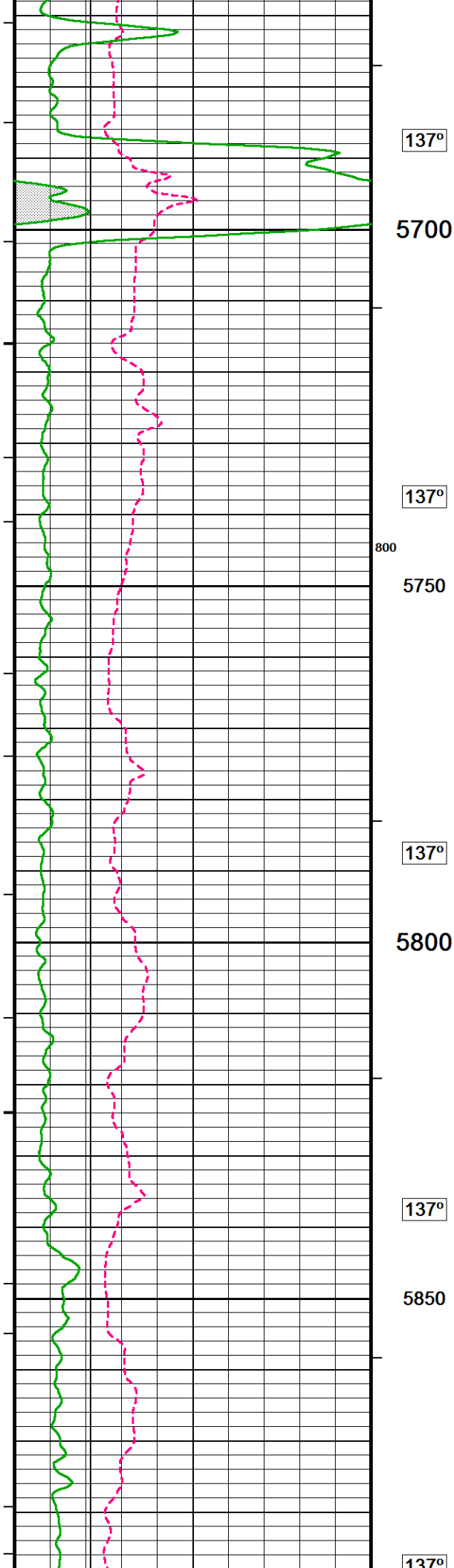
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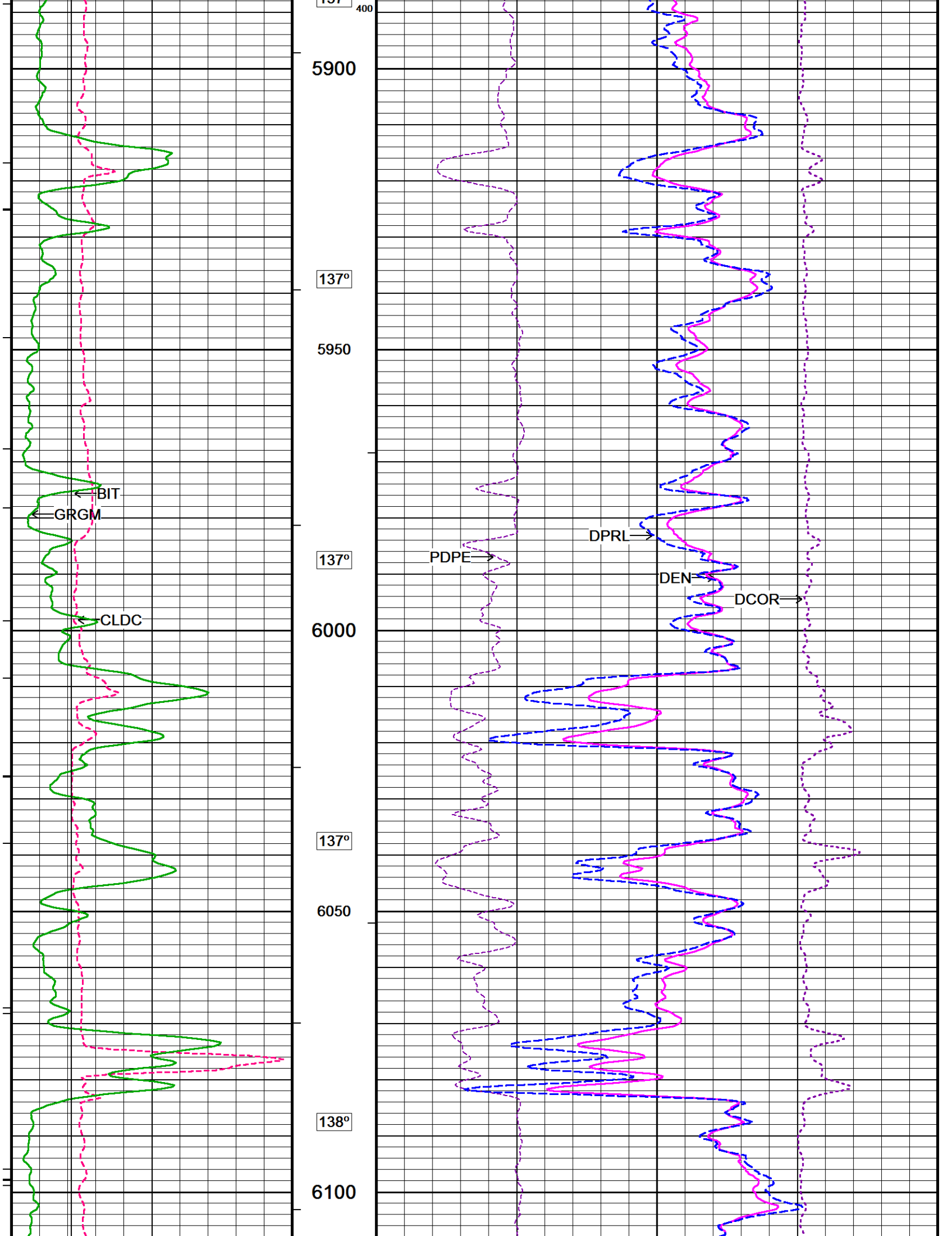
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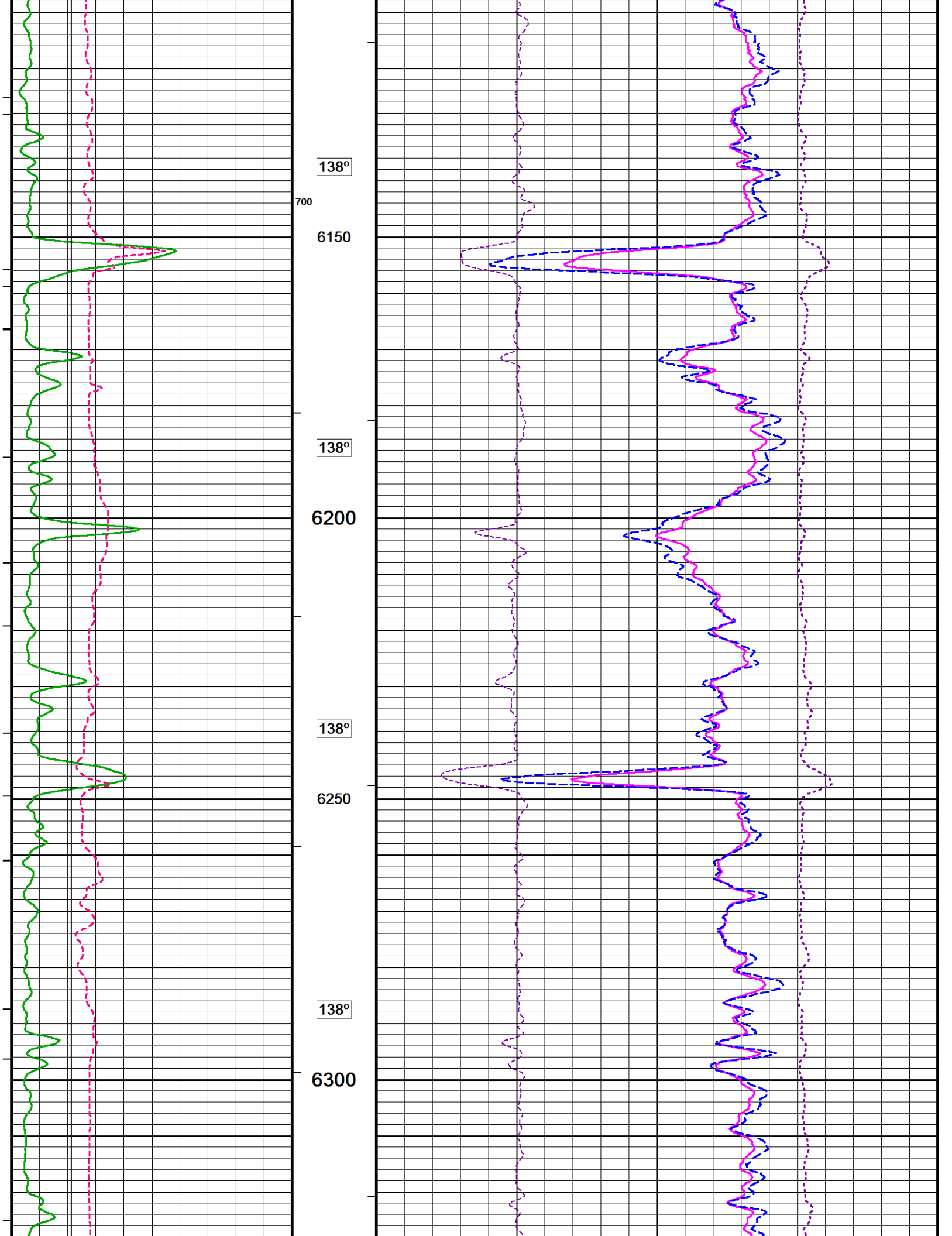
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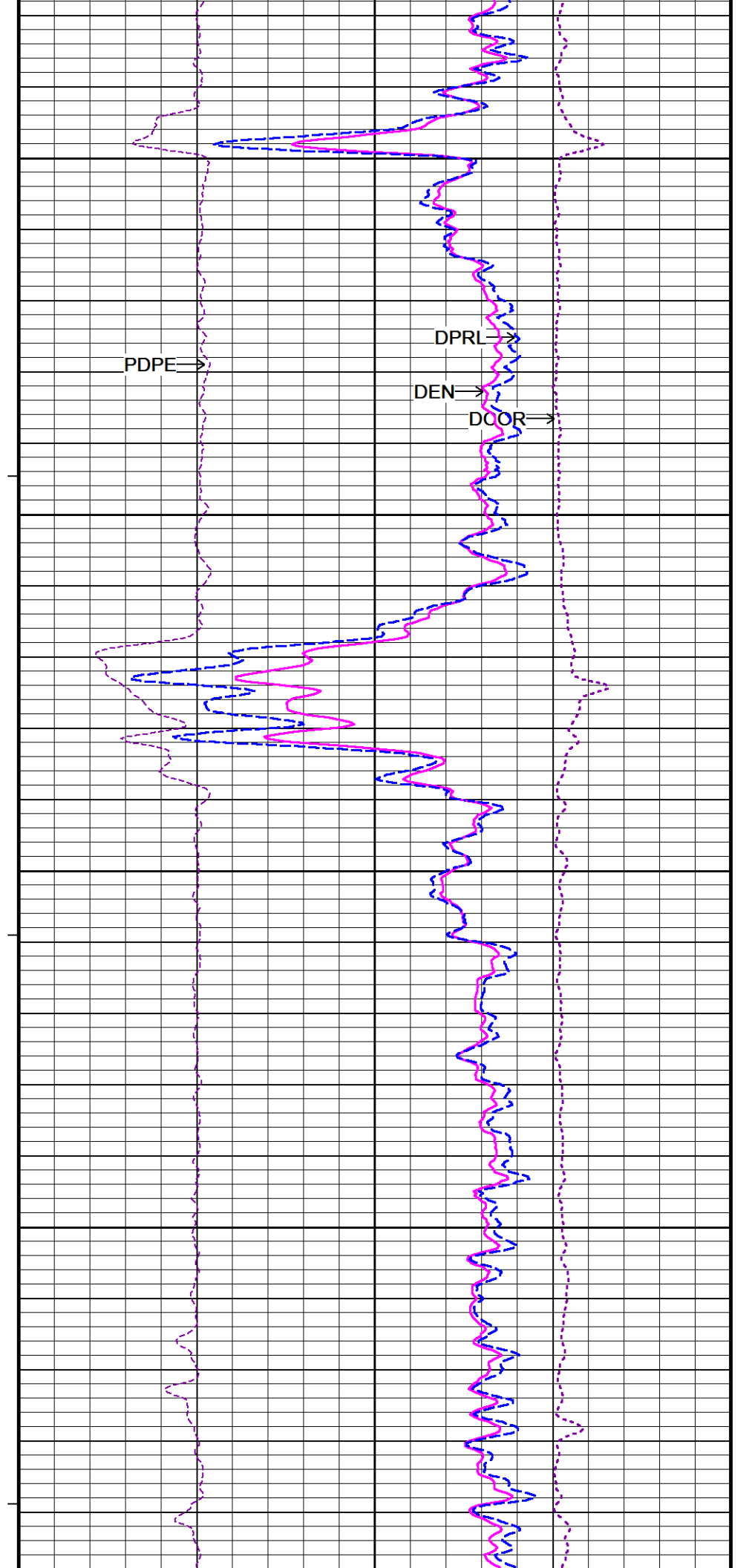
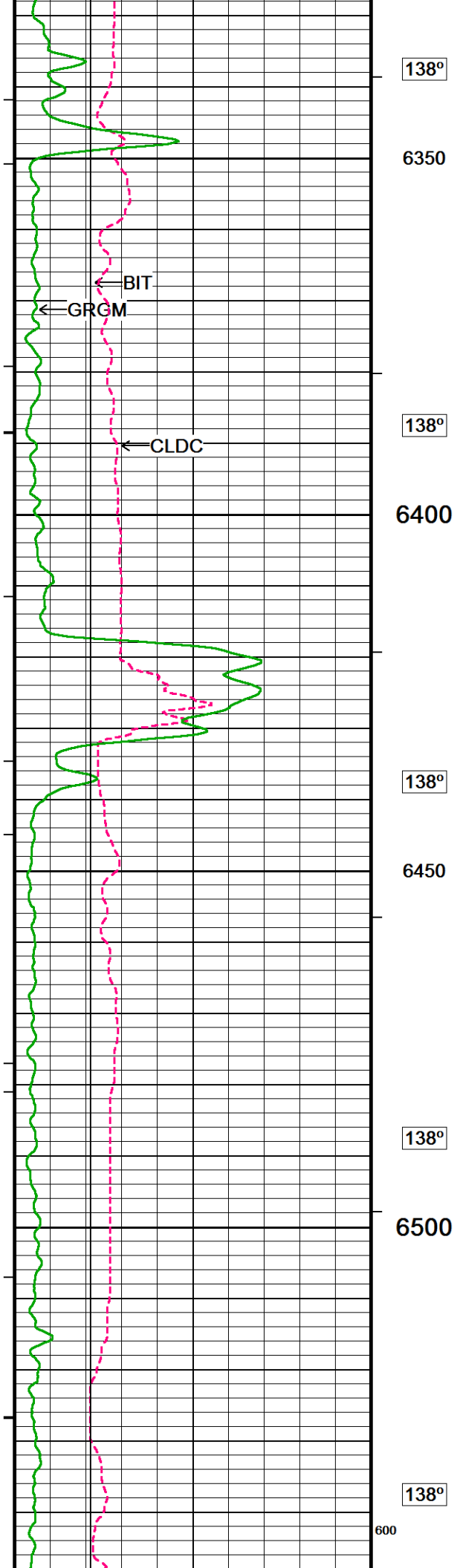


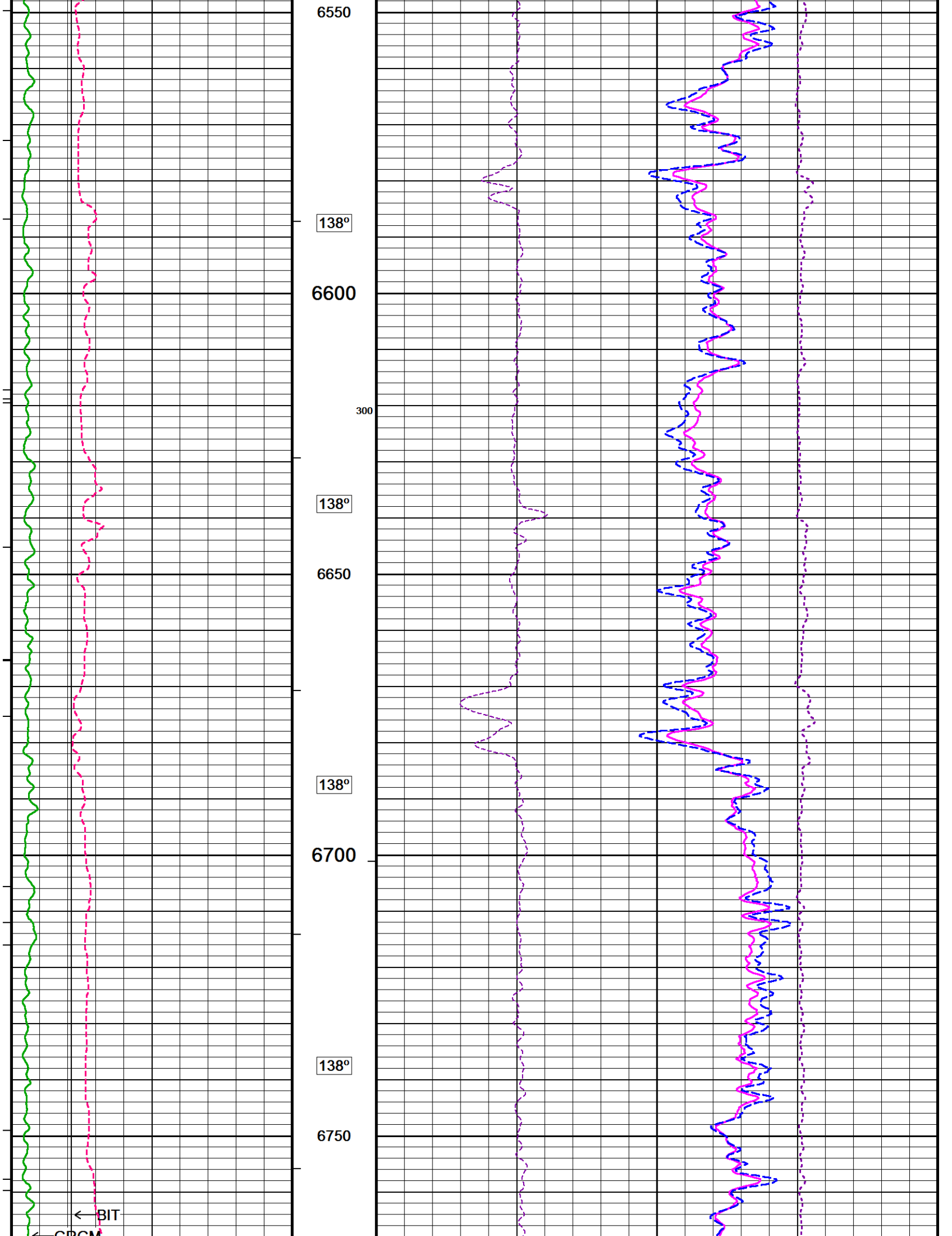


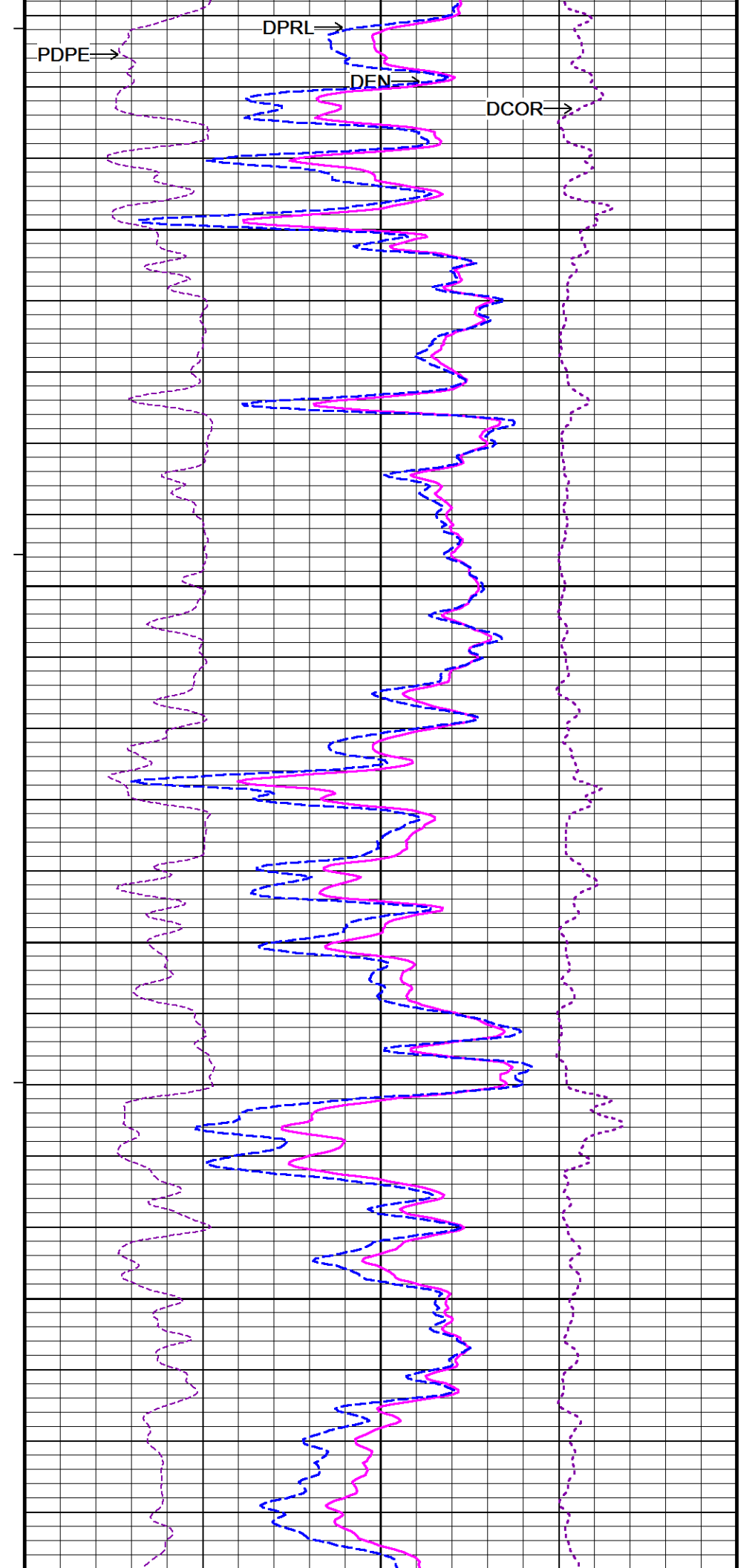
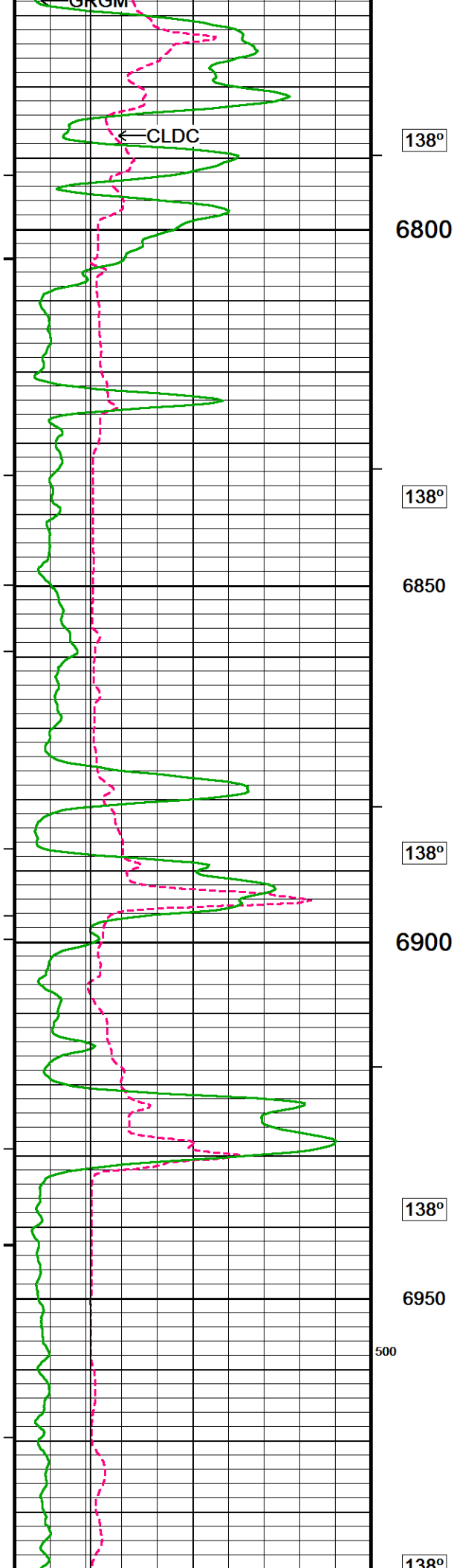


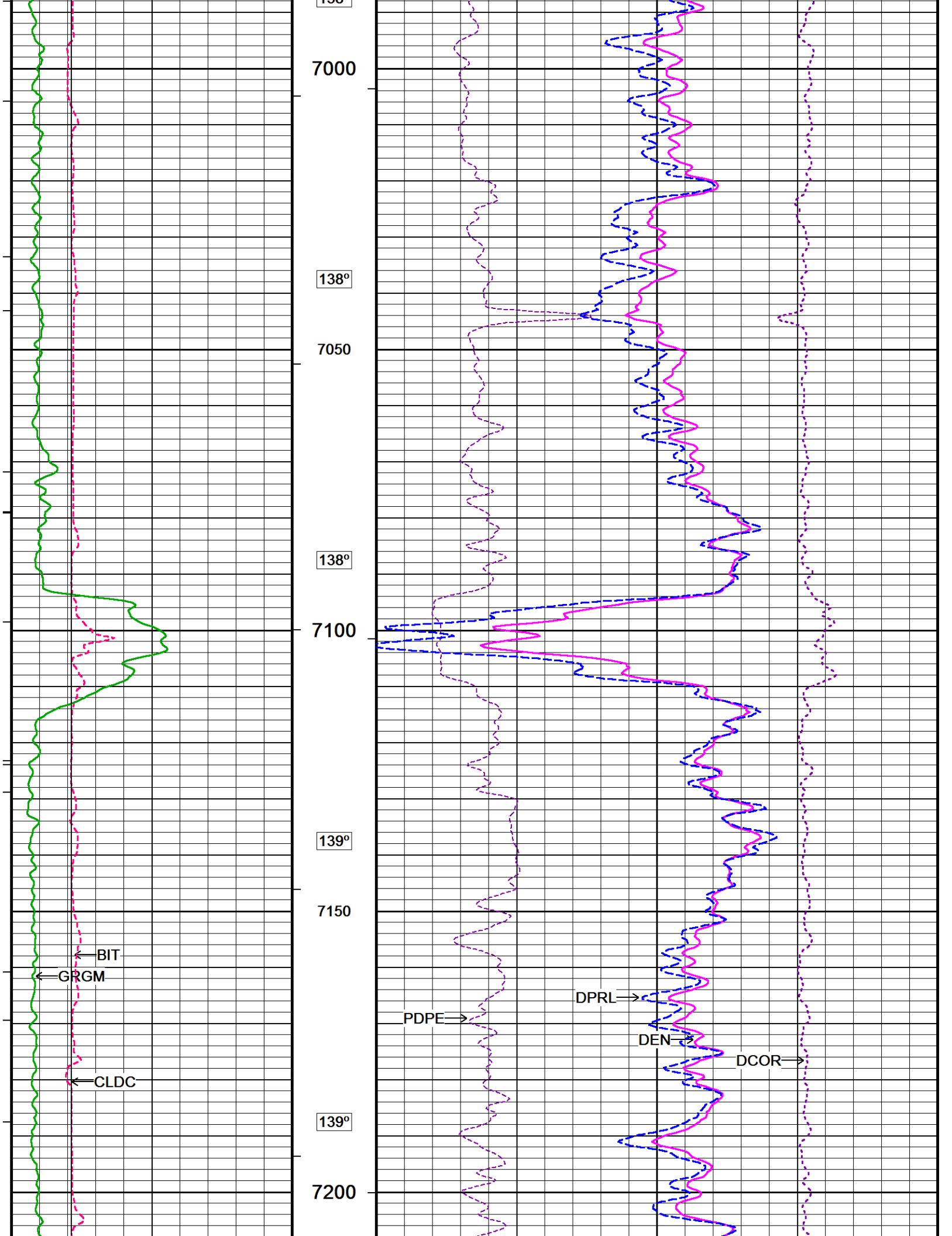


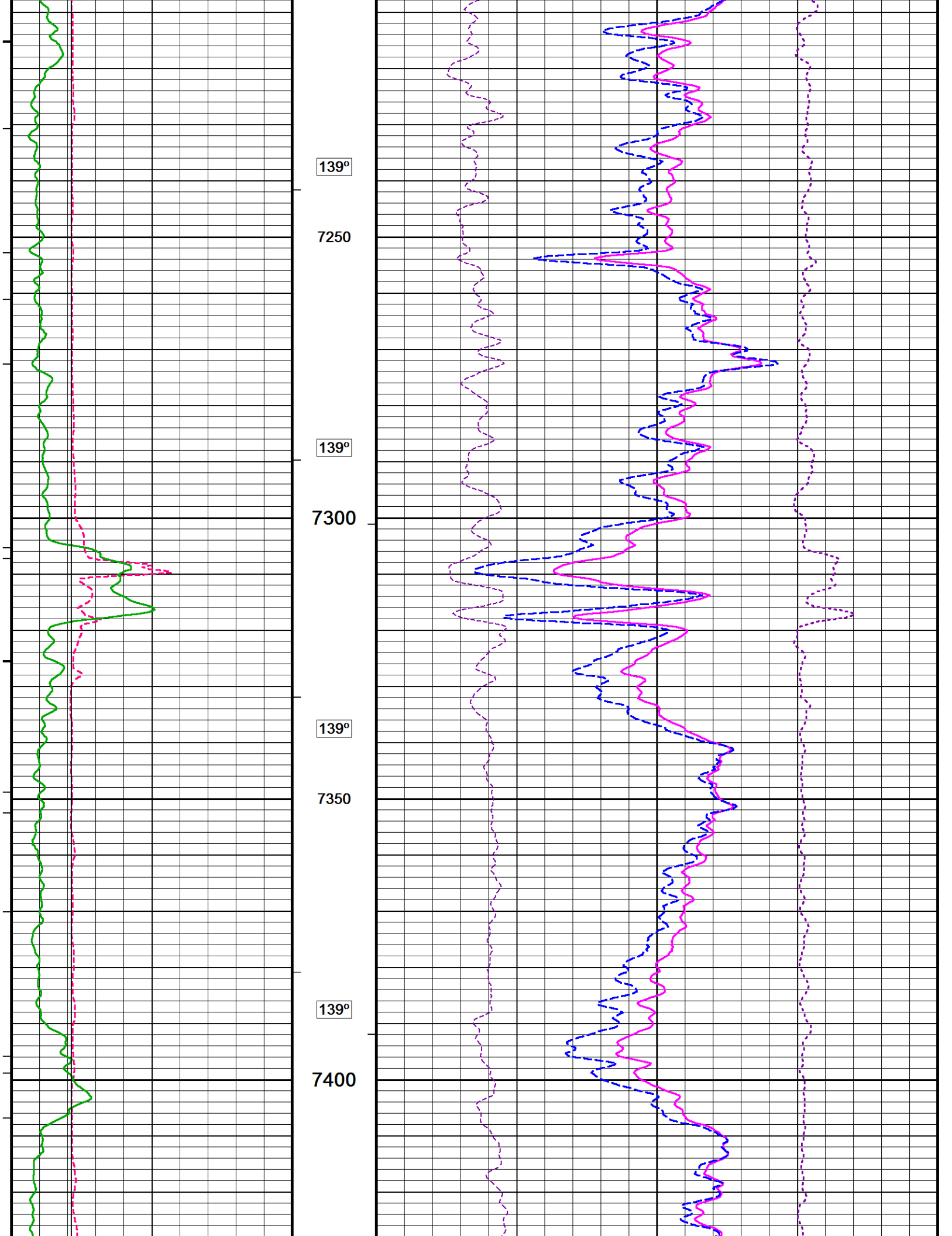


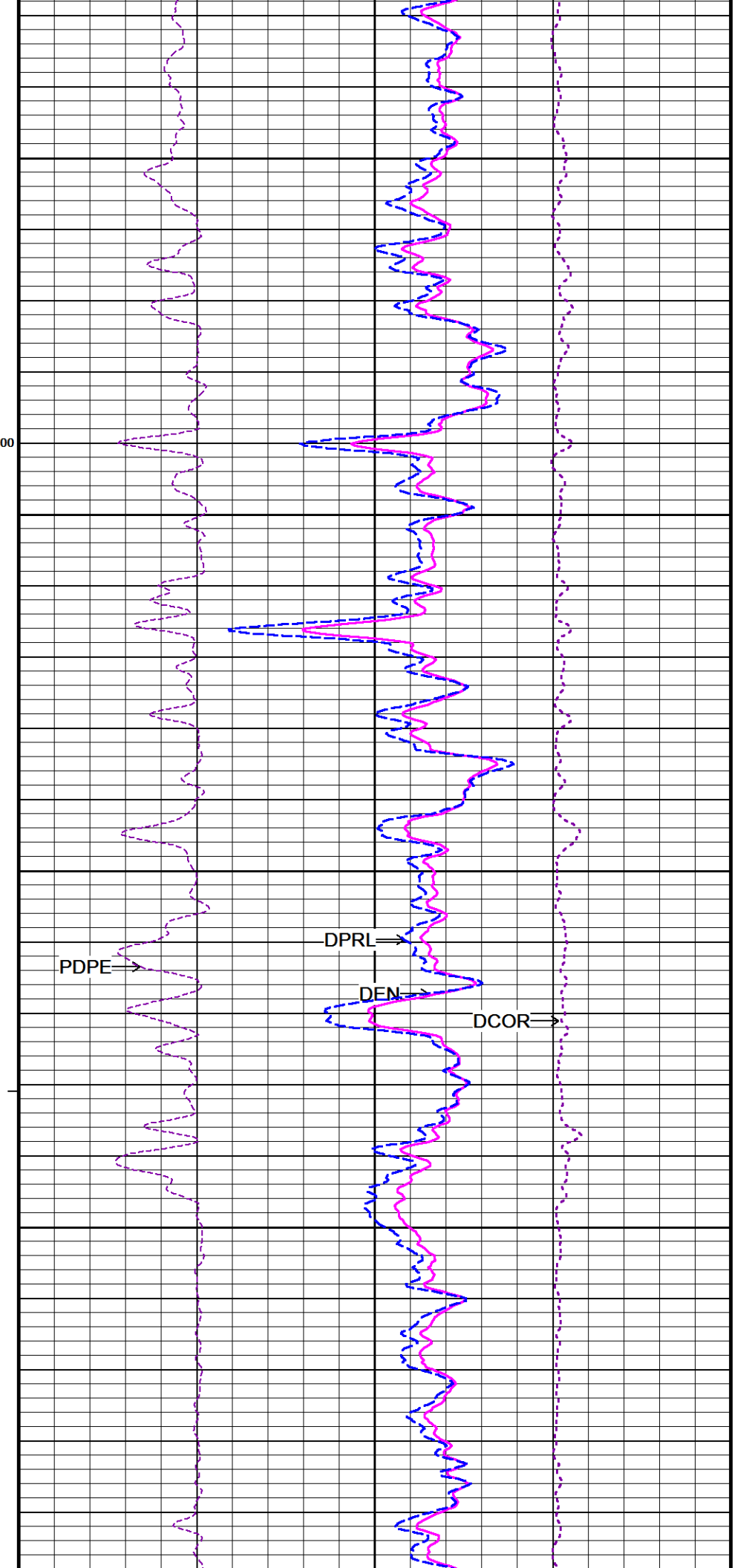
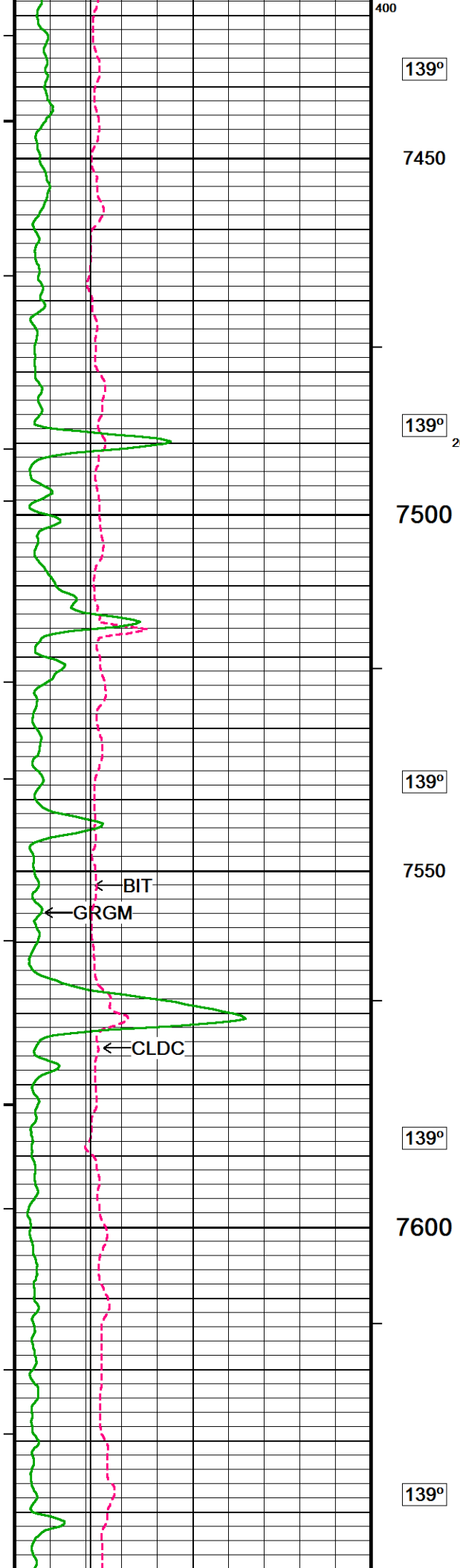


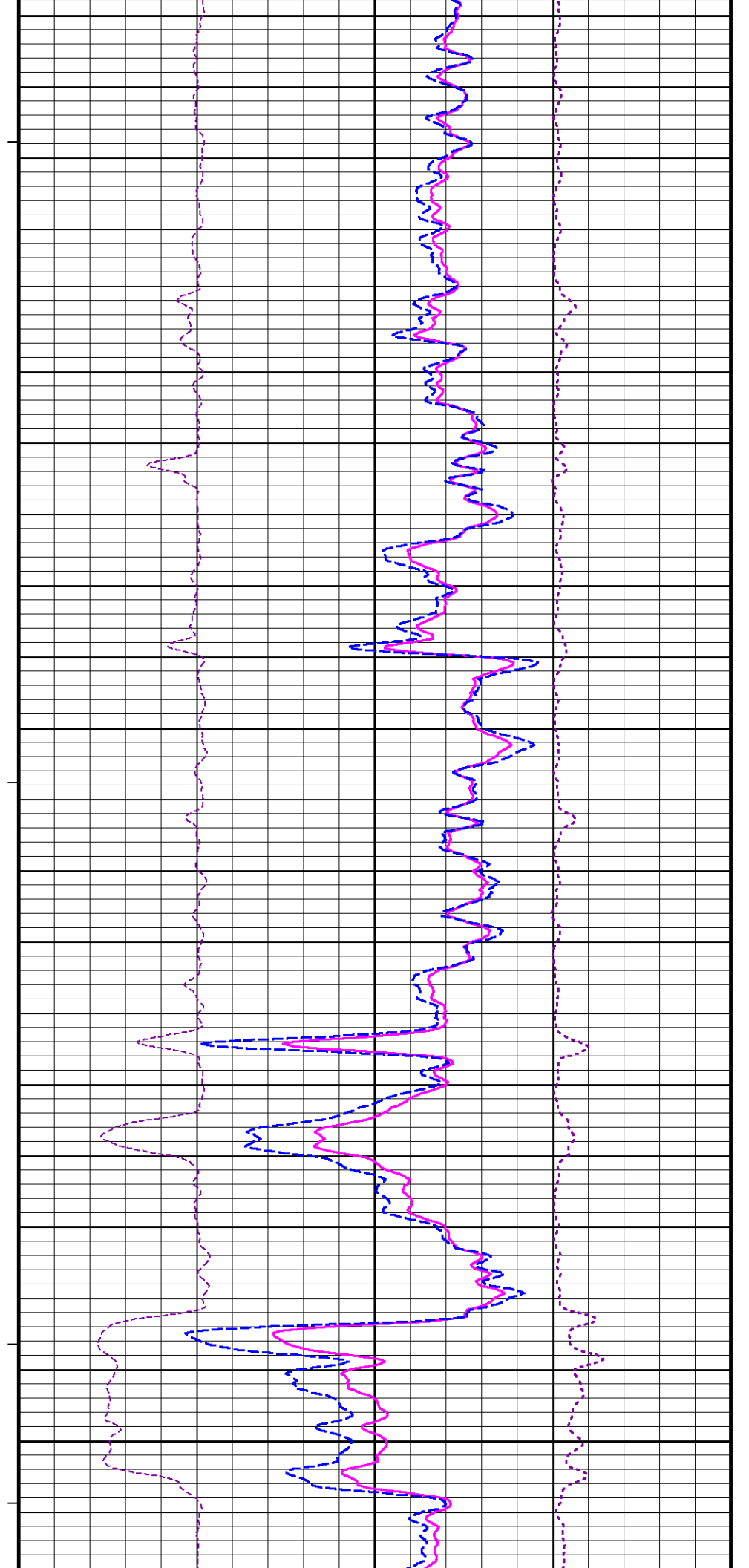
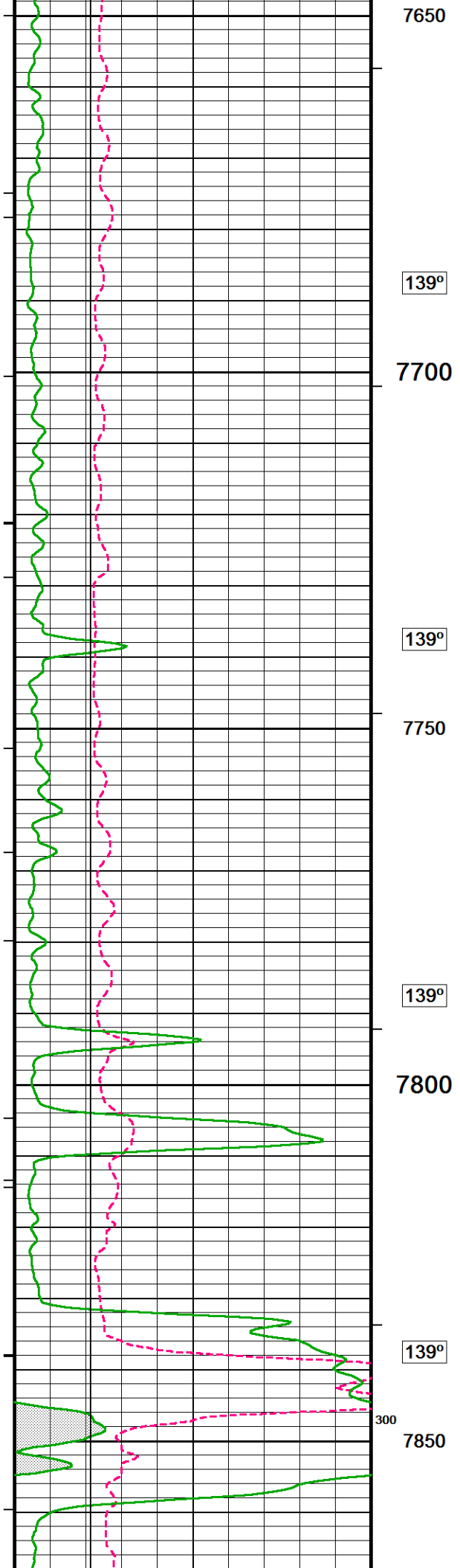




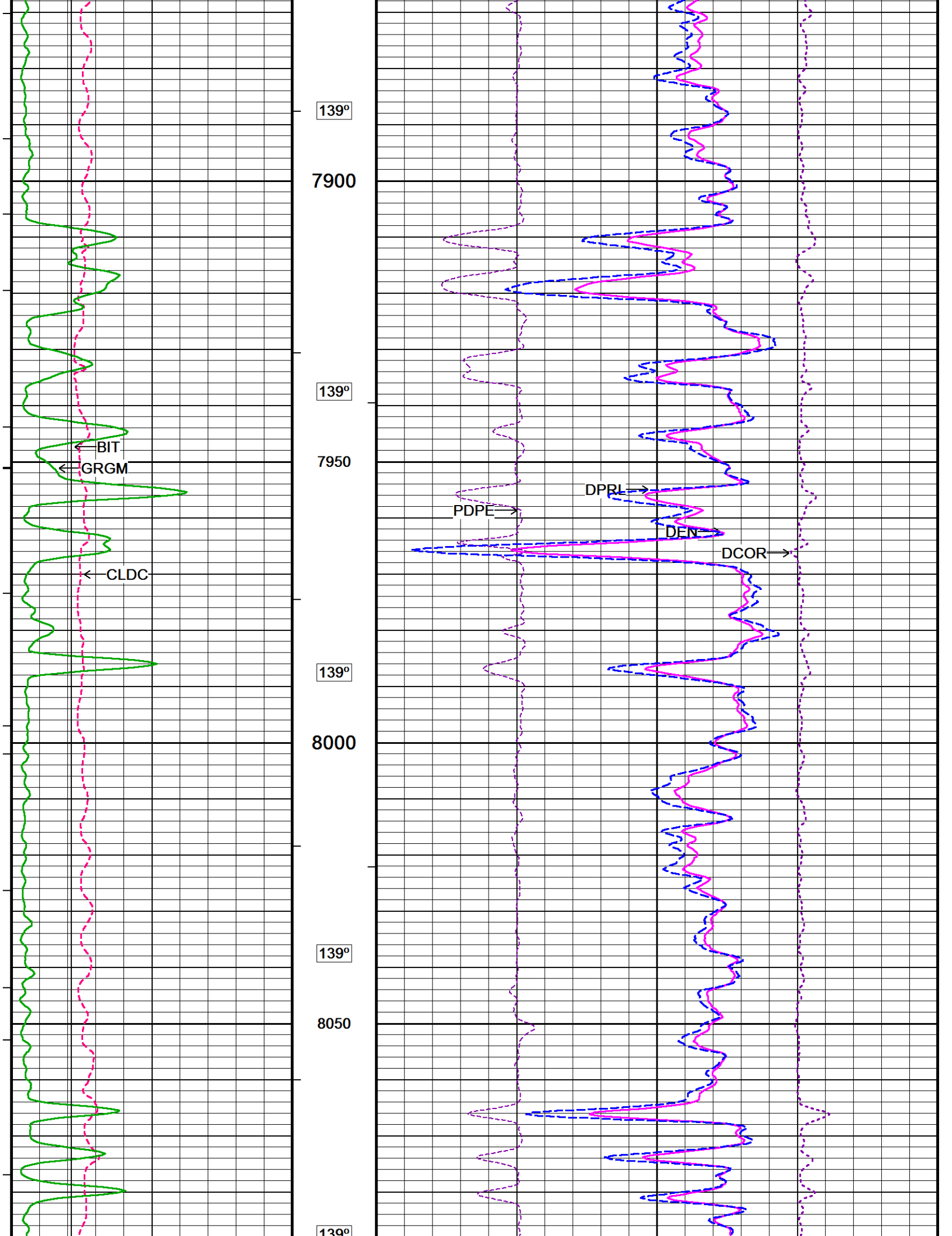


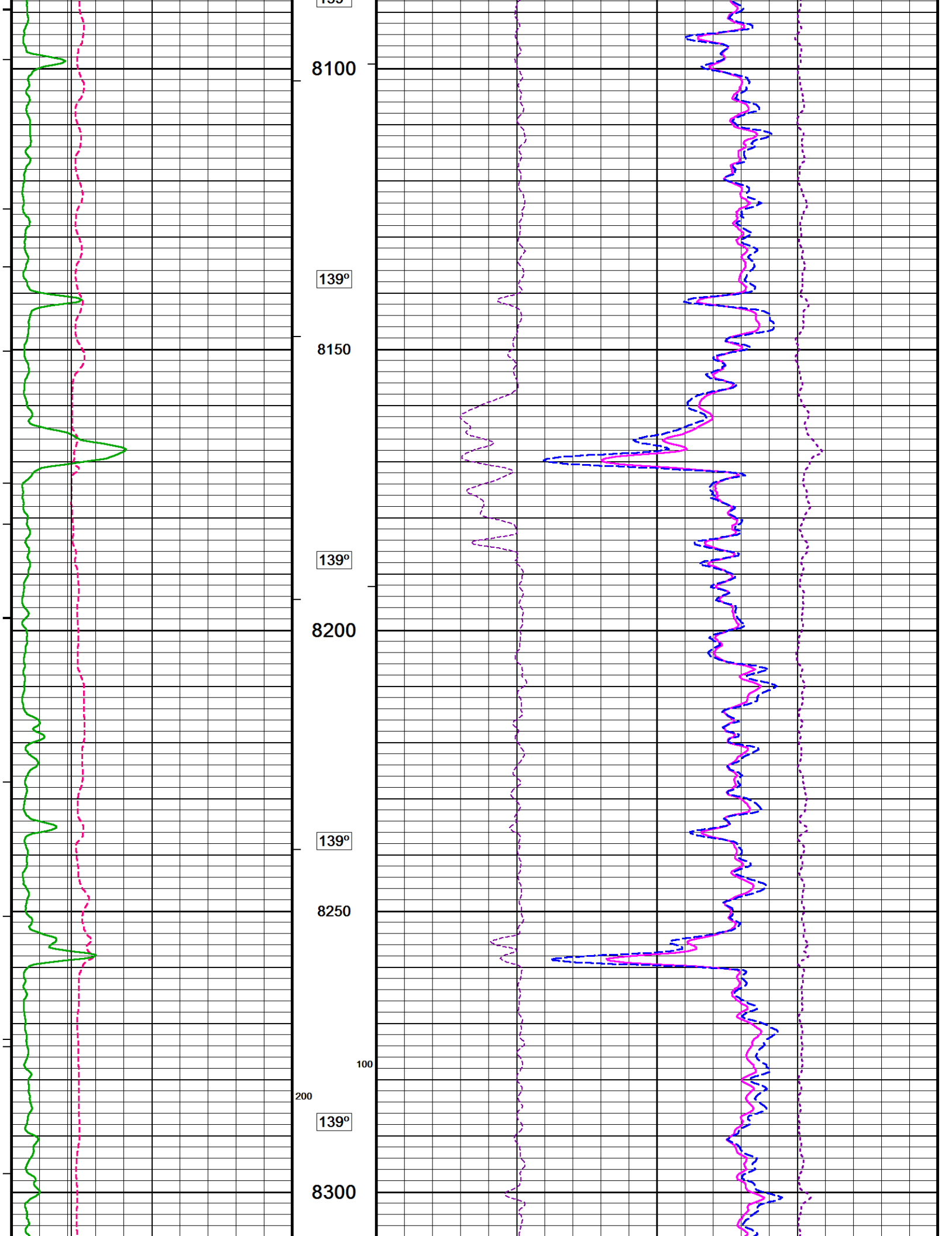


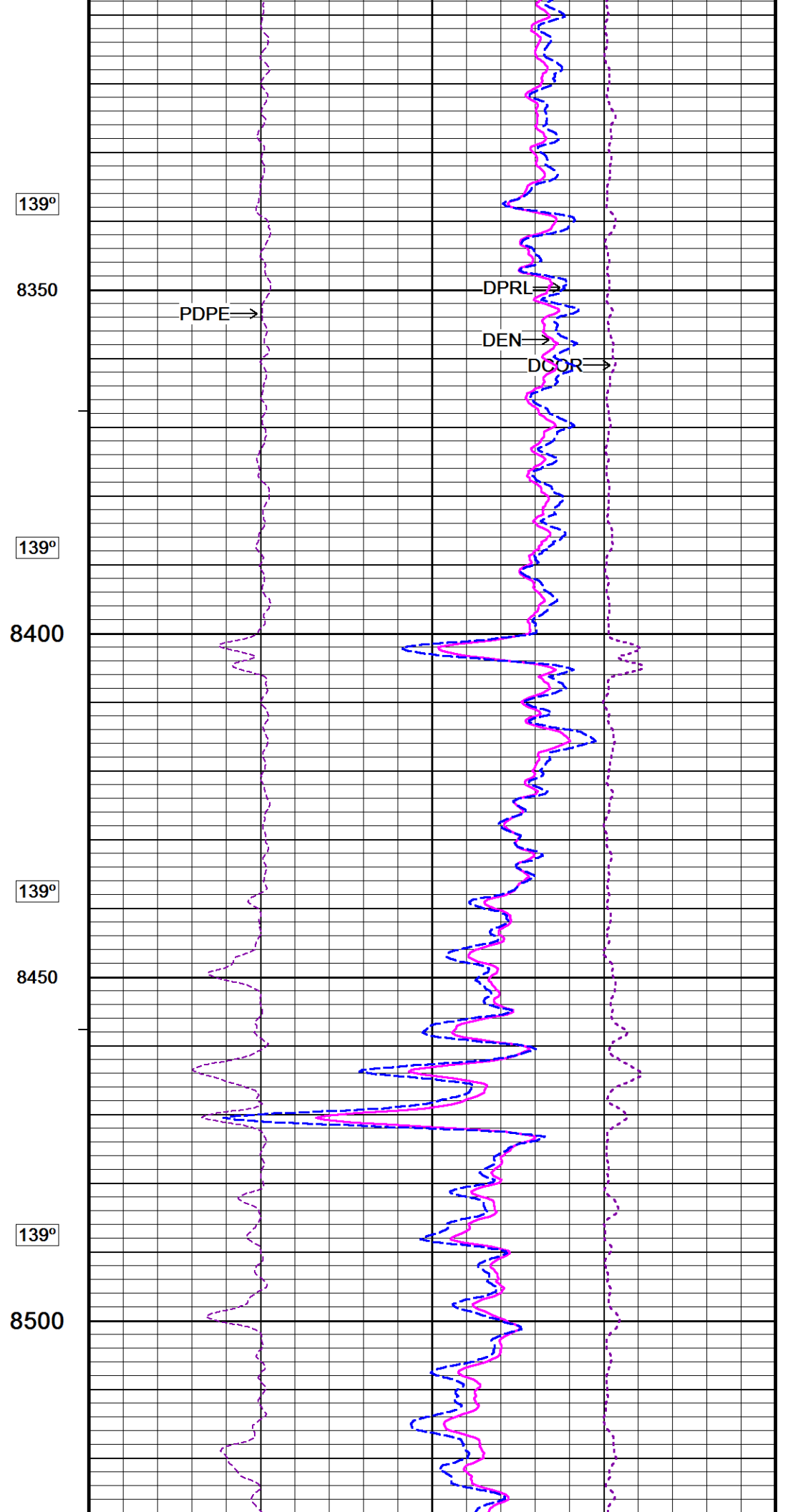
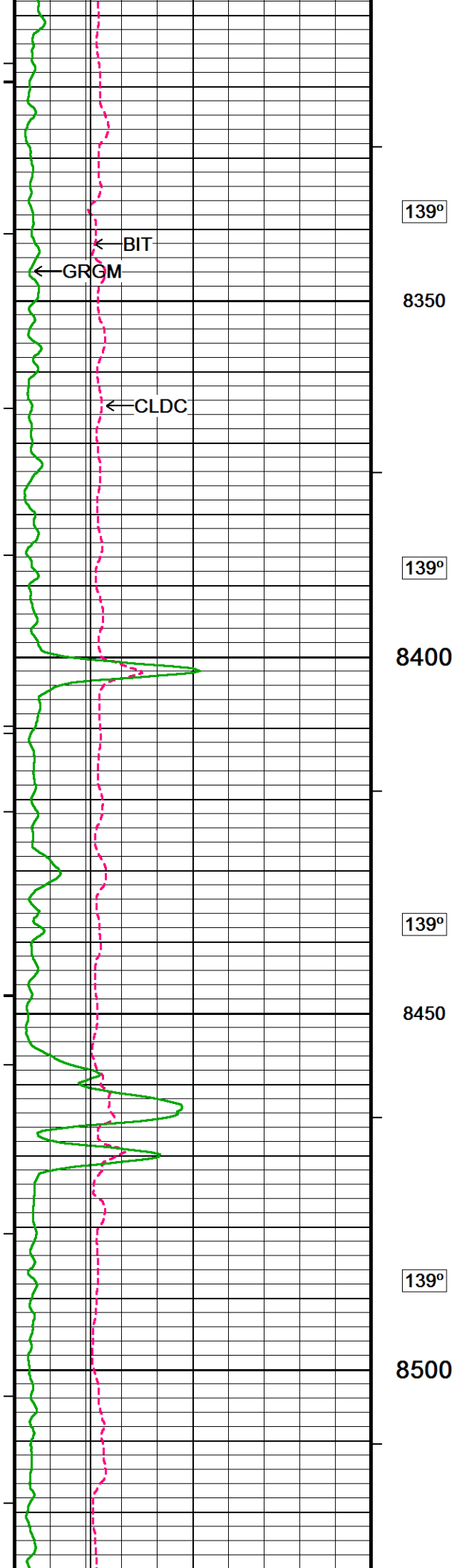


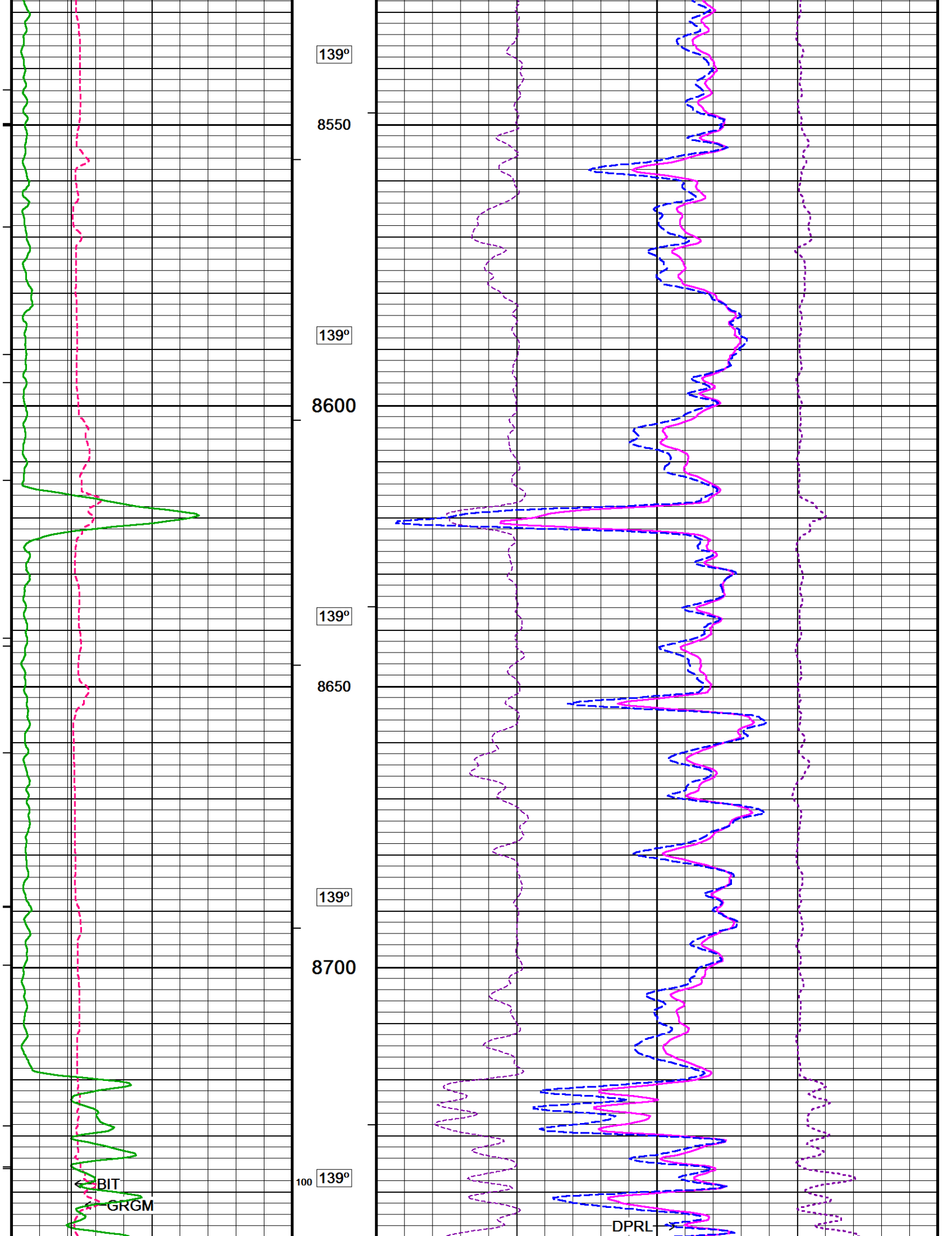


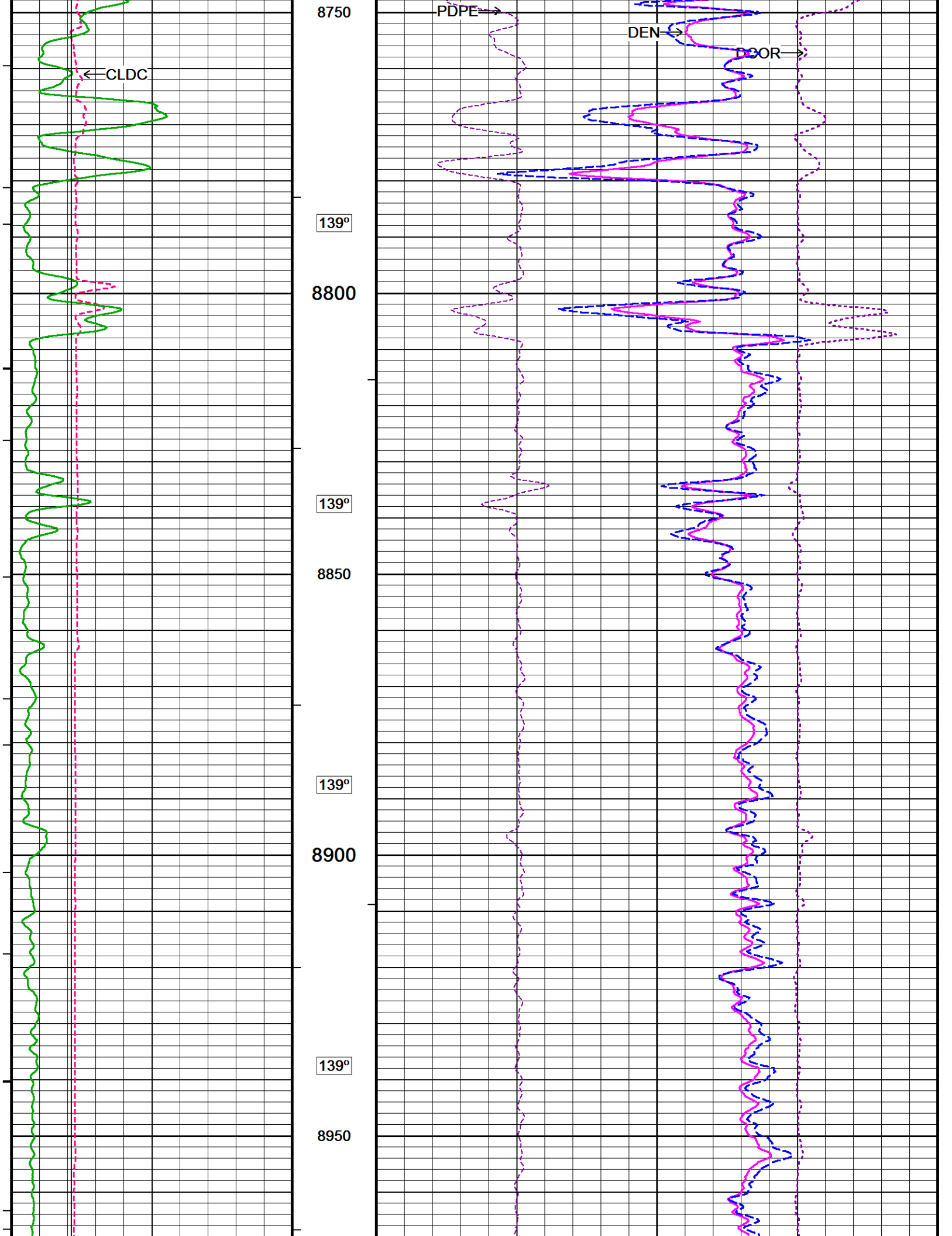


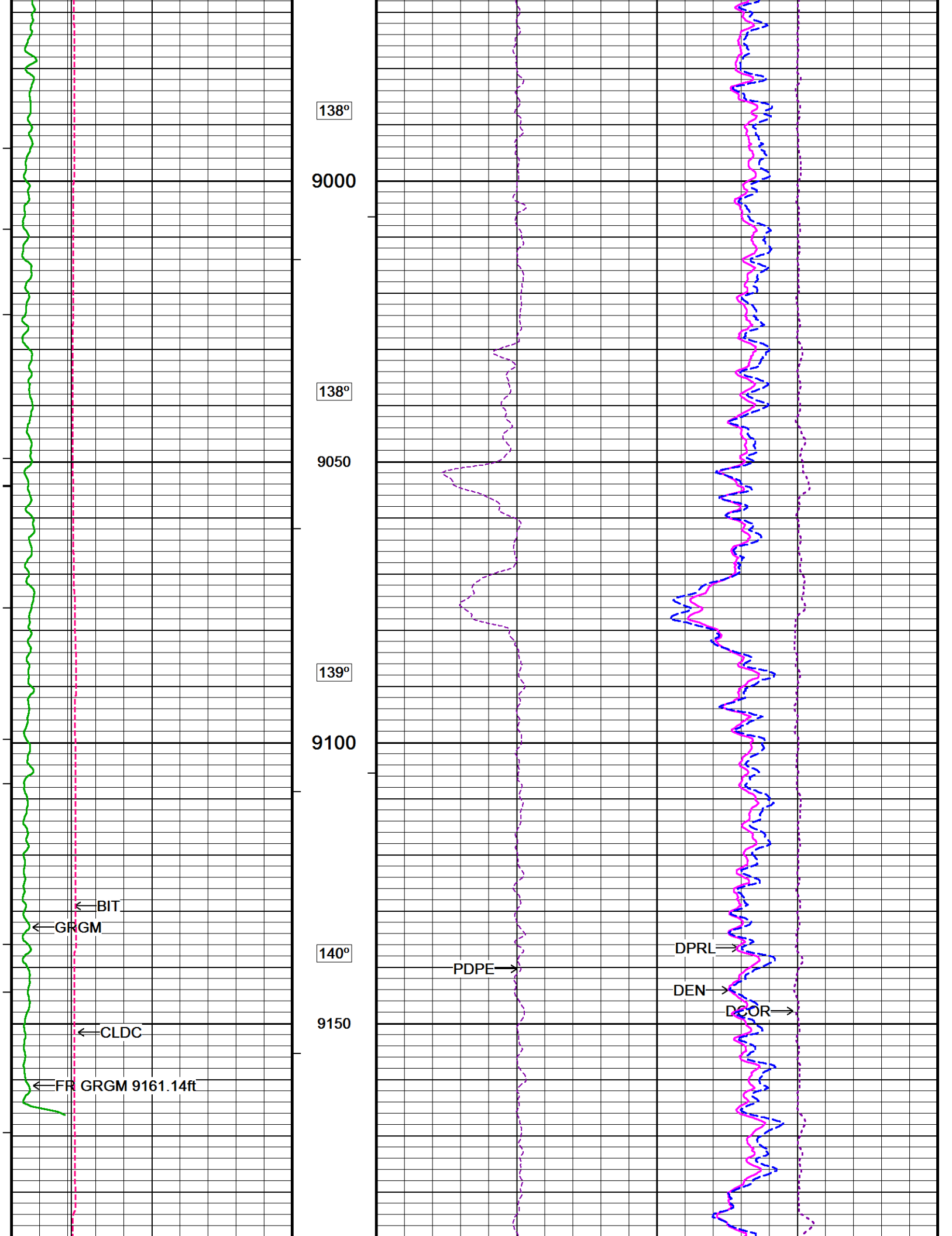


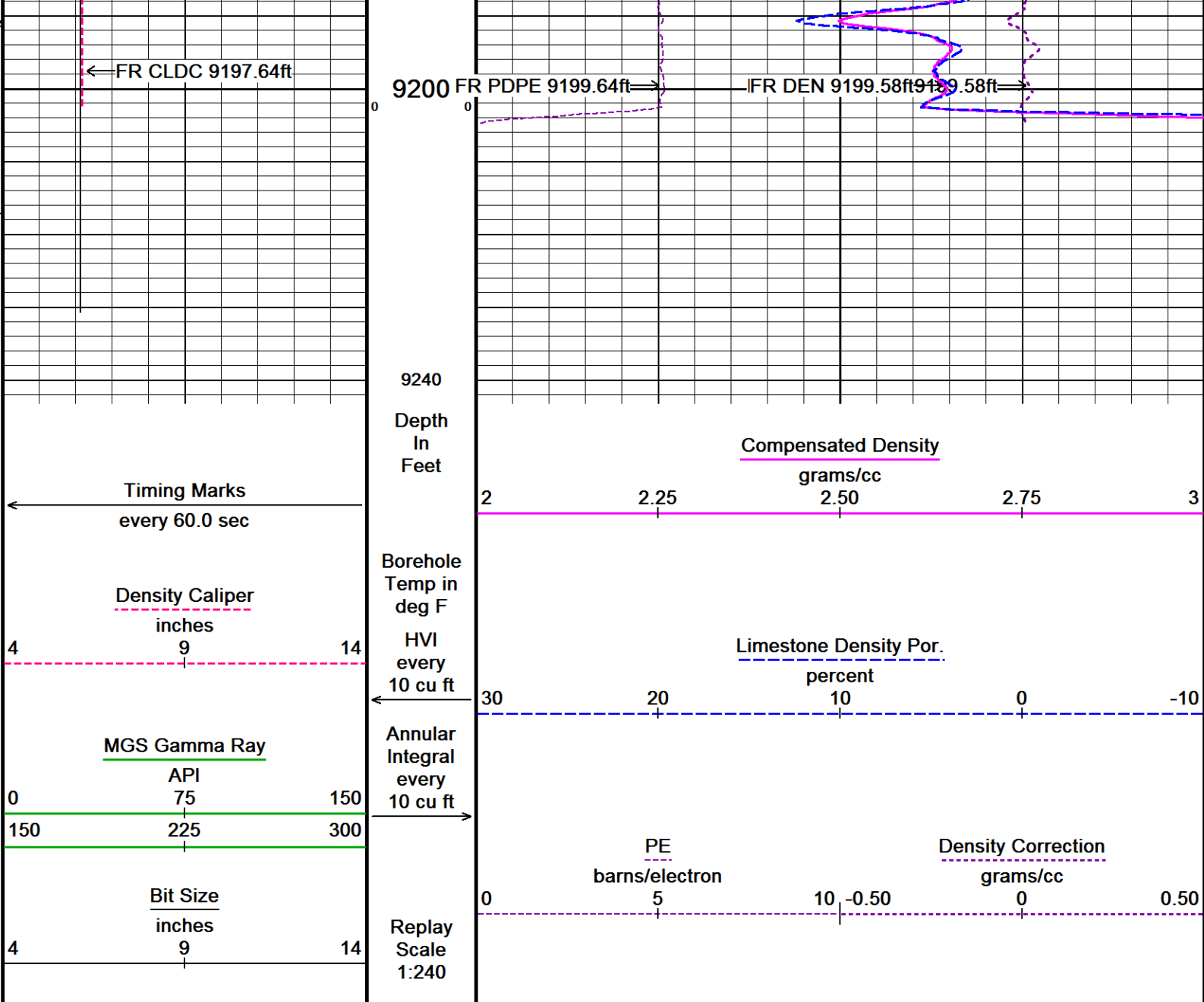












Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 31-DEC-2014 12:03  
 Filename: D:\14\_03\_4558\_WLS\DATA\15077220890100\_Frey 3508 1-8H\88208rtap.dta  
 Recorded on 15-OCT-2014 01:45  
 System Versions: Logged with 14.03.4558 Processed with 14.03.4558 Plotted with 14.05.5335

↑ 5 INCH BULK DENSITY ↑

**BEFORE SURVEY CALIBRATION**  
 D:\14\_03\_4558\_WLS\DATA\15077220890100\_Frey 3508 1-8H\88208rtap.dta

|  |                 |                                  |
|--|-----------------|----------------------------------|
| General Constants All 000                                      |                 | Last Edited on 15-OCT-2014,03:01 |
| <b>General Parameters</b>                                      |                 |                                  |
| Mud Resistivity  | 2.500           | ohm-metres                       |
| Mud Resistivity Temperature                                    | 91.000          | degrees F                        |
| Water Level  | 0.000           | feet                             |
| Borehole Fluid Processing                                      | Wet Hole        |                                  |
| <b>Hole/Annular Volume and Differential Caliper Parameters</b> |                 |                                  |
| 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 |                                  |
| <b>Rwa Parameters</b>  |                 |                                  |

|                     |                       |
|---------------------|-----------------------|
| Porosity used       | Base Density Porosity |
| Resistivity used    | Array Ind. One Res Rt |
| RWA Constant A      | 0.610                 |
| RWA Constant M      | 2.150                 |
| SW/APOR Tool Source | 0.000                 |

Strain Gauge Constants SER-B.A 220

Last Edited on

|                                      |              |       |       |       |           |       |       |       |
|--------------------------------------|--------------|-------|-------|-------|-----------|-------|-------|-------|
| 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 |
| 2000.0                               | 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 |
| 6000.0                               | 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 |
| 10000.0                              | 0.000        | 0.000 | 0.000 | 0.000 | 0.000     | 0.000 | 0.000 | 0.000 |

Strain Gauge Constants MMS-E.B 166

Last Edited on

|                                      |              |       |       |       |           |       |       |       |
|--------------------------------------|--------------|-------|-------|-------|-----------|-------|-------|-------|
| 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 |
| 2000.0                               | 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 |
| 6000.0                               | 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 |
| 10000.0                              | 0.000        | 0.000 | 0.000 | 0.000 | 0.000     | 0.000 | 0.000 | 0.000 |

High Resolution Temperature Calibration MGS-C.J 135

Field Calibration on 08-OCT-2014,11:27

|       |          |                   |
|-------|----------|-------------------|
|       | Measured | Calibrated(Deg F) |
| Lower | 0.00     | 0.00              |
| Upper | 0.00     | 0.00              |

High Resolution Temperature Constants MGS-C.J 135

Last Edited on 08-OCT-2014,11:27

Pre-filter Length 11

SP Calibration MGS-C.J 135

Field Calibration on 08-OCT-2014,11:27

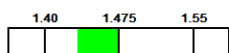
|             |          |                 |
|-------------|----------|-----------------|
|             | Measured | Calibrated (mV) |
| Reference 1 | 100.0    | 100.0           |
| Reference 2 | -100.0   | -100.0          |

Gamma Calibration MGS-C.J 135

Field Calibration on 13-OCT-2014 04:49

|                    |          |                  |
|--------------------|----------|------------------|
|                    | Measured | Calibrated (API) |
| Background         | 45       | 32               |
| Calibrator (Gross) | 1273     | 889              |
| Calibrator (Net)   | 1228     | 857              |

Gamma Calibration Tolerances MGS-C.J 135

Ratio 1.433  Counts/API

Gamma Constants MGS-C.J 135

Last Edited on 14-OCT-2014,09:00

|                                 |         |
|---------------------------------|---------|
| Gamma Calibrator Number         | GRCG073 |
| GRC-M Calibrator Jig in Use?    | NO      |
| Inactive Background Jig in Use? | NO      |



|                               |                 |       |
|-------------------------------|-----------------|-------|
| Mud Density                   | 1.08            | gm/cc |
| Caliper Source for Processing | Density Caliper |       |
| Tool Position                 | Eccentred       |       |
| Concentration of KCl          |                 | kppm  |
| K Mud Type                    | Chloride        |       |
| K Mud Concentration           | 0.00            | %     |

FE Calibration MFE-C.A 396

Base Calibration on 28-AUG-2014 11:47  
Field Check on 13-OCT-2014 04:37

|                  |          |                    |  |
|------------------|----------|--------------------|--|
| Base Calibration |          |                    |  |
|                  | Measured | Calibrated (ohm-m) |  |
| Reference 1      | 0.0      | 0.0                |  |
| Reference 2      | 962.5    | 126.8              |  |
| Base Check       |          | 281.5              |  |
| Field Check      |          | 281.6              |  |

FE Calibration Tolerances MFE-C.A 396

|             |       |  |       |
|-------------|-------|--|-------|
| Reference 2 | 962.5 |  | ohm   |
| Base Check  | 281.5 |  | ohm-m |
| Field Check | 281.6 |  | ohm-m |

FE Constants MFE-C.A 396

Last Edited on 13-OCT-2014,04:35

|                                  |                          |        |
|----------------------------------|--------------------------|--------|
| 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 |

Neutron Calibration MDN-C.A 480

Base Calibration on 29-SEP-2014 11:14  
Field Check on 13-OCT-2014 04:56

|                          |          |                  |                  |      |
|--------------------------|----------|------------------|------------------|------|
| Base Calibration         |          |                  |                  |      |
|                          | Measured | Calibrated (cps) |                  |      |
|                          | Near     | Far              | Near             | Far  |
|                          | 2972     | 91               | 3714             | 110  |
| Ratio                    | 32.690   |                  | 33.764           |      |
| Field Calibrator at Base |          |                  | Calibrated (cps) |      |
|                          |          |                  | 2423             | 3556 |
| Ratio                    |          |                  | 0.681            |      |
| Field Check              |          |                  | Calibrated (cps) |      |
|                          |          |                  | 2392             | 3504 |
| Ratio                    |          |                  | 0.683            |      |

Neutron Calibration Tolerances MDN-C.A 480

|              |        |  |     |             |    |  |     |
|--------------|--------|--|-----|-------------|----|--|-----|
| Near Reading | 2972   |  | cps | Far Reading | 91 |  | cps |
| Ratio        | 32.690 |  |     |             |    |  |     |
| Base Check   | 0.681  |  |     |             |    |  |     |
| Field Check  | 0.683  |  |     |             |    |  |     |

Neutron Constants MDN-C.A 480

Last Edited on 14-OCT-2014,09:00

|                               |                 |        |
|-------------------------------|-----------------|--------|
| Neutron Source Id             | HN553           |        |
| Neutron Jig Number            | N639            |        |
| Air Hole Processing           | Legacy          |        |
| 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       | Constant Value |           |
| Formation Pressure              | 0.00           | kpsi      |
| Temperature Source              | Constant Value |           |
| Temperature                     | 68.00          | 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    |           |

Induction Calibration MAI-C.A 502

Base Calibration on 23-APR-2013,17:49  
Field Check on 13-OCT-2014 04:26

Base Calibration

| Test Loop Calibration |      | Measured |     | Calibrated (mmho/m) |  |
|-----------------------|------|----------|-----|---------------------|--|
| Channel               | Low  | High     | Low | High                |  |
| 1                     | 16.7 | 457.8    | 9.3 | 966.2               |  |
| 2                     | 6.5  | 374.2    | 7.6 | 821.4               |  |
| 3                     | 3.6  | 252.2    | 5.2 | 566.0               |  |
| 4                     | 1.1  | 130.0    | 2.6 | 279.2               |  |
| Array Temperature     |      | 74.1     |     | Deg F               |  |

Test Loop Calibration Verified

| Channel           | Base Check (mmho/m) |      | Field Check (mmho/m) |        |       |
|-------------------|---------------------|------|----------------------|--------|-------|
|                   | Low                 | High | Low                  | High   |       |
| 1                 |                     |      | -4.9                 | 2111.8 |       |
| 2                 |                     |      | 12.9                 | 1926.8 |       |
| 3                 |                     |      | 14.0                 | 1678.4 |       |
| 4                 |                     |      | 11.7                 | 1131.8 |       |
| Deep              |                     |      | 10.0                 | 1103.1 |       |
| Medium            |                     |      | 20.4                 | 2213.5 |       |
| Shallow           |                     |      | 16.9                 | 2833.9 |       |
| Array Temperature |                     |      |                      | 64.3   | Deg F |

Induction Calibration Tolerances MAI-C.A 502

|                    |      |  |        |                     |       |  |        |
|--------------------|------|--|--------|---------------------|-------|--|--------|
| Low Conductivity 1 | 16.7 |  | mmho/m | High Conductivity 1 | 457.8 |  | mmho/m |
| Low Conductivity 2 | 6.5  |  | mmho/m | High Conductivity 2 | 374.2 |  | mmho/m |
| Low Conductivity 3 | 3.6  |  | mmho/m | High Conductivity 3 | 252.2 |  | mmho/m |
| Low Conductivity 4 | 1.1  |  | mmho/m | High Conductivity 4 | 130.0 |  | mmho/m |
| Background Vx 1    | 0.0  |  | mmho/m | Phase Check Loop 1  | 0.0   |  | %      |
| Background Vx 2    | 0.0  |  | mmho/m | Phase Check Loop 2  | 0.0   |  | %      |
| Background Vx 3    | 0.0  |  | mmho/m | Phase Check Loop 3  | 0.0   |  | %      |
| Background Vx 4    | 0.0  |  | mmho/m | Phase Check Loop 4  | 0.0   |  | %      |

Induction Constants MAI-C.A 502

Last Edited on 15-OCT-2014,03:01

|                                   |                          |            |
|-----------------------------------|--------------------------|------------|
| 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               | 0.7500                   | 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-C.A 502

Field Calibration on 09-JUL-2014,14:11

|       | Measured | Calibrated(Deg F) |
|-------|----------|-------------------|
| Lower | 50.00    | 50.00             |
| Upper | 100.00   | 212.00            |

High Resolution Temperature Constants MAI-C.A 502

Last Edited on 09-JUL-2014,14:09

Pre-filter Length 11

Caliper Calibration MPD-D.A 472

Base Calibration on 26-SEP-2014 10:16  
Field Calibration on 13-OCT-2014 04:30

| Base Calibration |          |                      |
|------------------|----------|----------------------|
| Reading No       | Measured | Calibrator Size (in) |
| 1                | 16803    | 4.00                 |
| 2                | 25313    | 5.97                 |
| 3                | 33731    | 7.96                 |
| 4                | 41972    | 9.86                 |
| 5                | 51107    | 11.88                |
| 6                | N/A      | N/A                  |

| Field Calibration |                       |                     |
|-------------------|-----------------------|---------------------|
|                   | Measured Caliper (in) | Actual Caliper (in) |
|                   | 5.94                  | 5.97                |

Caliper Calibration Tolerances MPD-D.A 472

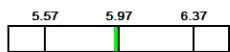
Long Arm Field Cal. 5.94  in

Photo Density Calibration MPD-D.A 472

Base Calibration on 26-SEP-2014 11:08  
Field Check on 13-OCT-2014 04:34

| Density Calibration |          |       |                  |       |
|---------------------|----------|-------|------------------|-------|
| Base Calibration    | Measured |       | Calibrated (sdu) |       |
|                     | Near     | Far   | Near             | Far   |
| Background          | 1281     | 1462  |                  |       |
| Reference 1         | 57608    | 27585 | 59494            | 30754 |
| Reference 2         | 24698    | 2738  | 26390            | 2598  |

| Field Check at Base |          |            |
|---------------------|----------|------------|
|                     | Measured | Calibrated |
|                     | 1280.7   | 1462.4     |

| Field Check |          |            |
|-------------|----------|------------|
|             | Measured | Calibrated |
|             | 1274.3   | 1461.5     |

PE Calibration

| Base Calibration |       |       |       |                  |
|------------------|-------|-------|-------|------------------|
|                  | WS    | WH    | Ratio | Calibrated Ratio |
| Background       | 247   | 1144  |       |                  |
| Reference 1      | 25852 | 57395 | 0.455 | 0.367            |
| Reference 2      | 7749  | 24550 | 0.320 | 0.270            |



MBS-F.A 200v Compact Battery Sub  
MBS-F.A 115 LG: 10.22 ft WT: 81.6 lb OD: 2.240 in

Compact Memory Sub E.B  
MMS-E.B 166 LG: 5.20 ft WT: 37.5 lb OD: 2.240 in

Compact Tool Isolator sub.  
MTI-C.A 150 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma  
MGS-C.J 135 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator  
MCL-B.J 60 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in



63.89 ft GRGM - MGS Gamma Ray

61.91 ft GSXT - MGS External Temperature

59.89 ft GCSL - MCL C. Collar Locator

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 789 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Focussed Electric  
MFE-C.A 396 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

53.15 ft FEFE - Shallow FE

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 564 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 728 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

SHA-J.B Compact Swivel Head Adaptor  
SHA-J.B 594 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub  
MIS-D.B 816 LG: 5.70 ft WT: 33.1 lb OD: 2.244 in

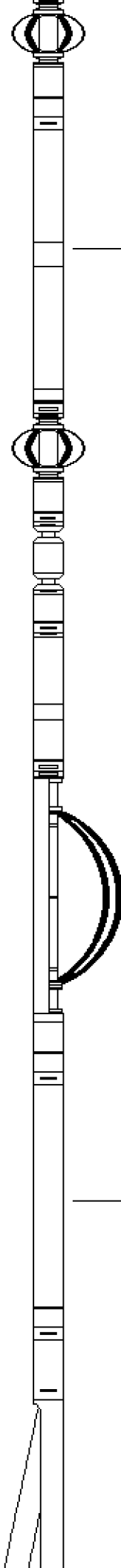
Compact Neutron  
MDN-C.A 480 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

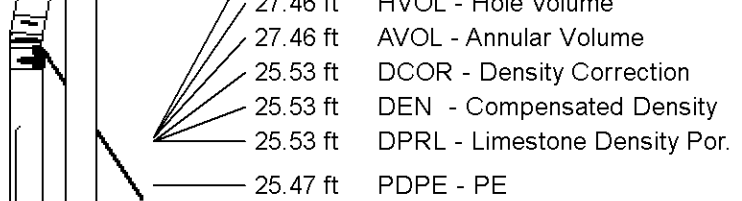
34.70 ft NPRL - Limestone Neutron Por.

Compact Density/Caliper  
MPD-D.A 472 LG: 9.59 ft WT: 90.4 lb OD: 2.244 in

27.46 ft CLDC - Density Caliper

27.46 ft UVOL - Hole Volume





MIS-D.B Compact Inline Bowspring sub  
 MIS-D.B 817 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SHA-J.A Compact Swivel Head Adaptor  
 SHA-J.A 438 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint  
 SKJ-E.B 455 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub  
 MIS-E.B 579 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction  
 MAI-C.A 502 LG: 12.52 ft WT: 48.5 lb OD: 2.240 in



Tool Zero (1.84ft from bottom)





Total Length: 98.91 ft Weight: 754.0 lb

All measurements relative to tool zero.

|                 |  |
|-----------------|--|
| COMPANY         | SANDRIDGE EXPLORATION & PRODUCTION LLC |
| WELL            | FREY 3508 1-8H                         |
| FIELD           | BOUSE                                  |
| PROVINCE/COUNTY | HARPER                                 |
| COUNTRY/STATE   | USA / KANSAS                           |

|                         |         |      |               |         |      |
|-------------------------|---------|------|---------------|---------|------|
| Elevation Kelly Bushing | 1252.00 | feet | First Reading | 9200.00 | feet |
| Elevation Drill Floor   | 1252.00 | feet | Depth Driller | 9315.00 | feet |
| Elevation Ground Level  | 1237.00 | feet | Depth Logger  | 9225.00 | feet |



**Weatherford**<sup>®</sup>

CML IMPULSE SHUTTLE  
 COMPACT PHOTO DENSITY  
 COMPENSATED NEUTRON LOG