



**Weatherford**

**CML MESSENGER SHUTTLE  
ARRAY INDUCTION  
ELECTRIC LOG**

|                               |                      |               |   |
|-------------------------------|----------------------|---------------|---|
| COMPANY                       | SANDRIDGE ENERGY     |               |   |
| WELL                          | JEFFERSON 3306 1-27H |               |   |
| FIELD                         | STOHRVILLE           |               |   |
| PROVINCE/COUNTY               | HARPER               |               |   |
| COUNTRY/STATE                 | USA \ KANSAS         |               |   |
| LOCATION                      | SW SW SE SE          |               |   |
| PERMIT NUMBER                 | 200' FSL & 1245' FEL |               |   |
| SEC 27                        | TWP 33S              | RGE 6W        | Other Services  |
| Latitude                      | 37.1278595378        |               | MPD/MDN   |
| Longitude                     | 97.9099537438        |               |   |
| API Number                    | 15-077-21938         |               |   |
| Permanent Datum GL, Elevation | 1288 feet            |               |   |
| Log Measured From             | KB                   |               |   |
| Drilling Measured From        | KB @ 22' AGL         |               |   |
| Date                          | 07-JUL-2013          |               | Elevations:<br>KB 1310.00<br>DF 1310.00<br>GL 1288.00 |
| Run Number                    | ONE                  |               |   |
| Service Order                 | 3540178              |               |   |
| Depth Driller                 | 8865.00              | feet          |   |
| Depth Logger                  | 8865.00              | feet          |   |
| First Reading                 | 8830.00              | feet          |   |
| Last Reading                  | 5090.00              | feet          |   |
| Casing Driller                | 5152.00              | feet          |   |
| Casing Logger                 | 5152.00              | feet          |   |
| Bit Size                      | 6.125                | inches        |   |
| Hole Fluid Type               | WATER                |               |   |
| Density / Viscosity           | 9.00 lb/USg          | 40.00 CP      |   |
| PH / Fluid Loss               | 9.00                 | 6.00 ml/30Min |   |
| Sample Source                 | FLOWLINE             |               |   |
| Rm @ Measured Temp            | 1.60 @ 99.0          | ohm-m         |   |
| Rmf @ Measured Temp           | 1.28 @ 99.0          | ohm-m         |   |
| Rmc @ Measured Temp           | 1.92 @ 99.0          | ohm-m         |   |
| Source Rmf / Rmc              | CALC                 | CALC          |   |
| Rm @ BHT                      | 1.15 @140.0          | ohm-m         |   |
| Time Since Circulation        | 18 HOURS             |               |   |
| Max Recorded Temp             | 140.00               | deg F         |   |
| Equipment / Base              | 18108                | OKC           |   |
| Recorded By                   | GUTHMUELLER          |               |   |
| Witnessed By                  | J LYNCH              |               |   |
| AFEE#                         | DC12981              |               |   |
|                               |                      | TALCORN       |   |

**BOREHOLE RECORD**

Last Edited: 08-JUL-2013 09:21

| Bit Size<br>inches | Depth From<br>feet | Depth To<br>feet |
|--------------------|--------------------|------------------|
| 12.250             | 0.00               | 681.00           |
| 8.750              | 681.00             | 5177.00          |
| 6.125              | 5177.00            | 8865.00          |

**CASING RECORD**

| Type  | Size<br>inches | Depth From<br>feet | Shoe Depth<br>feet | Weight<br>pounds/ft |
|-------|----------------|--------------------|--------------------|---------------------|
| SURF  | 9.625          | 0.00               | 681.00             | 36.00               |
| INTER | 7.000          | 0.00               | 5152.00            | 26.00               |

**REMARKS**

LOGGED WITH WLS\_13.06.9804 SOFTWARE

LOGGED USING MESSENGER METHOD OF DEPLOYMENT AND MEMORY LOGGING SYSTEM

LOGGED WITH ADVANTAGE DEPTH SYSTEM\_CORRECTED BACK TO PIPE STRAP

LOGGING STRING: SRT-079,MBS-131, MTI-076,MGS-135,MCL-069,SKJ-455,SHA-185,MISD-603,MDN-422,MPD-472,MISD-733,SHA-594,SKJ-472,MISE-575,MFE-396,MISE-564,MAI-389

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

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

DRILL PIPE DEPTH DURING DEPLOYMENT - 8750  
 LOGGING TOOL DEPTH AFTER DEPLOYMENT - 8835

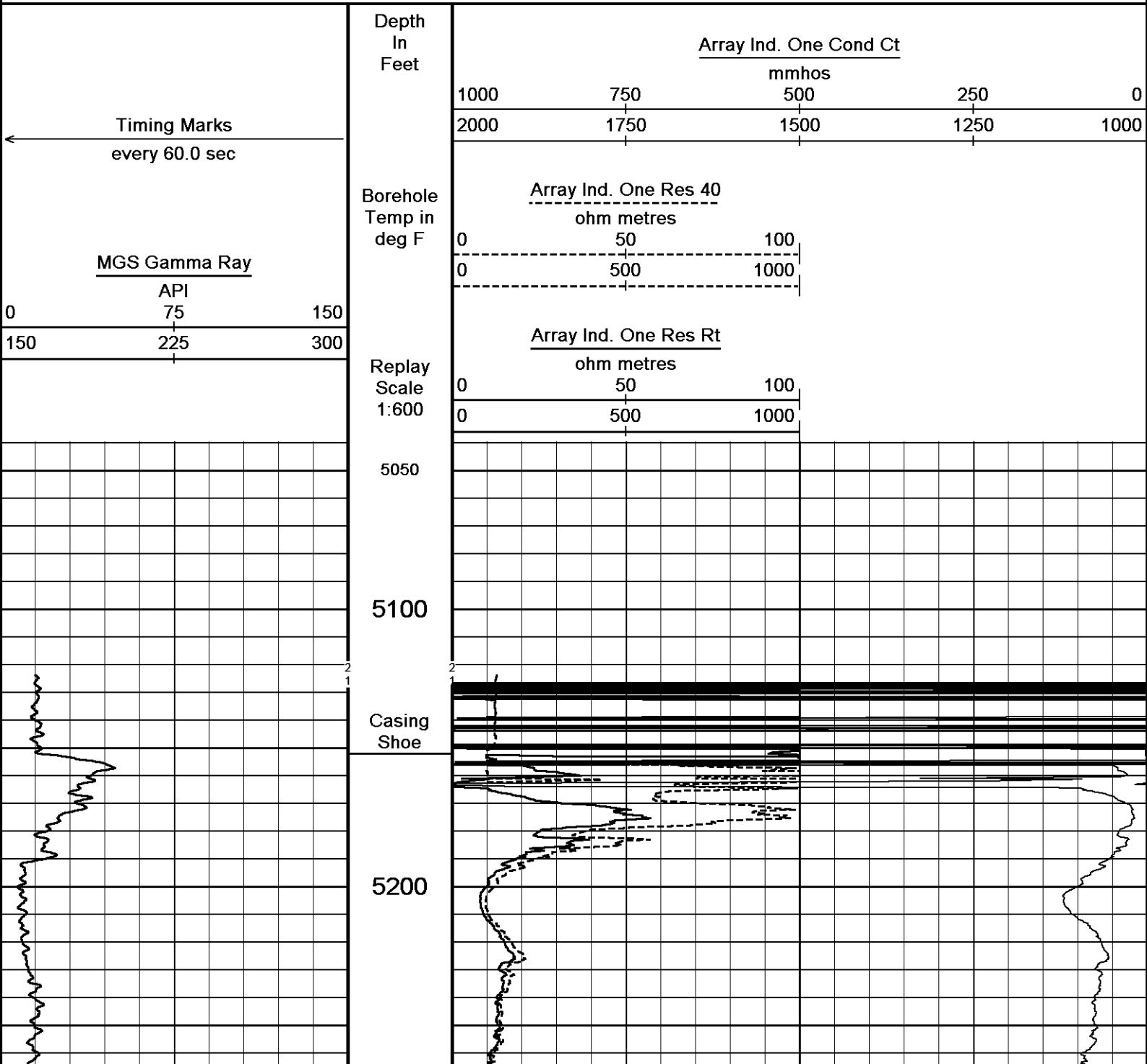
SERVICE ORDER # 3540178  
 RIG: UNIT 9

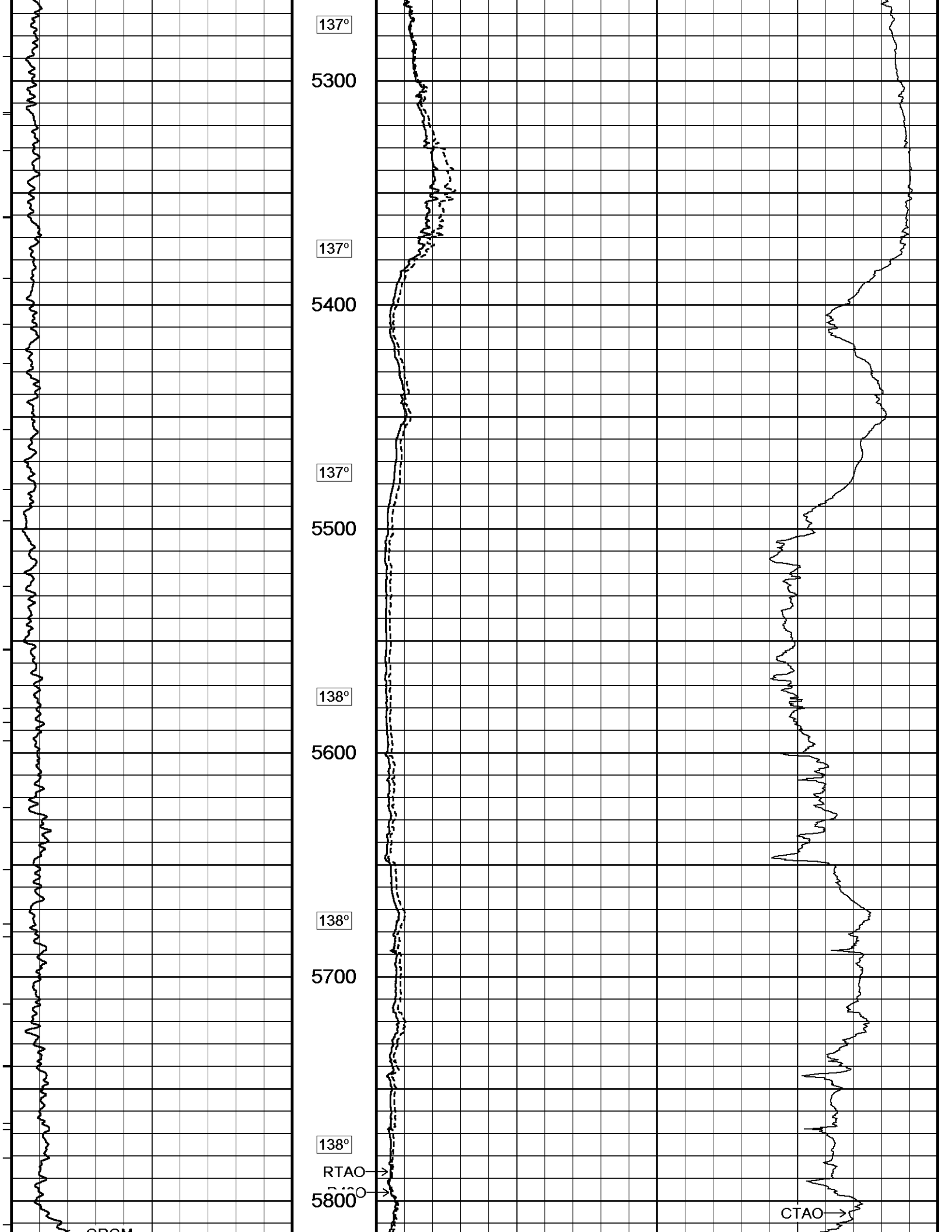
OPERATORS: BURGER; WORLEY

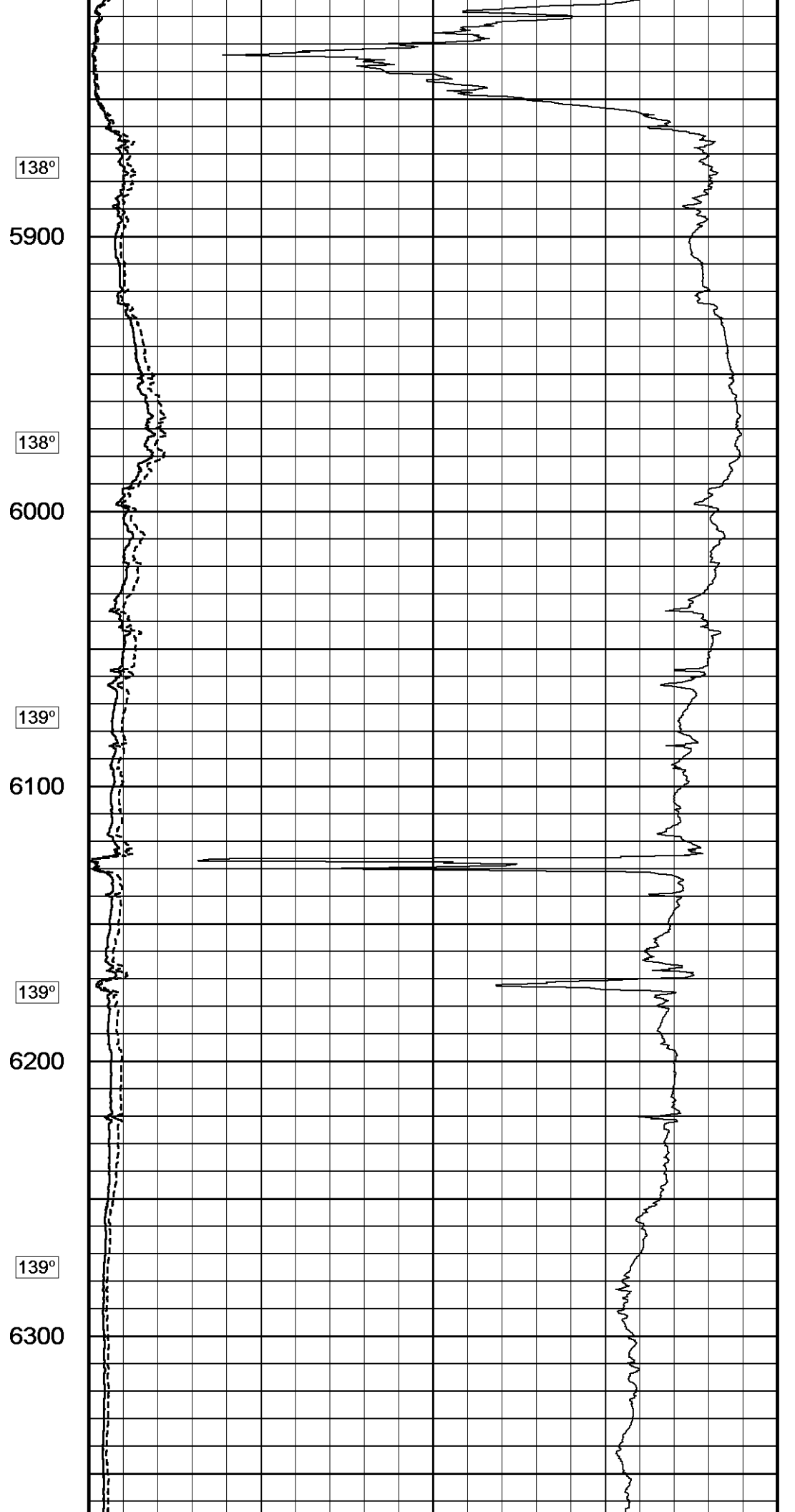
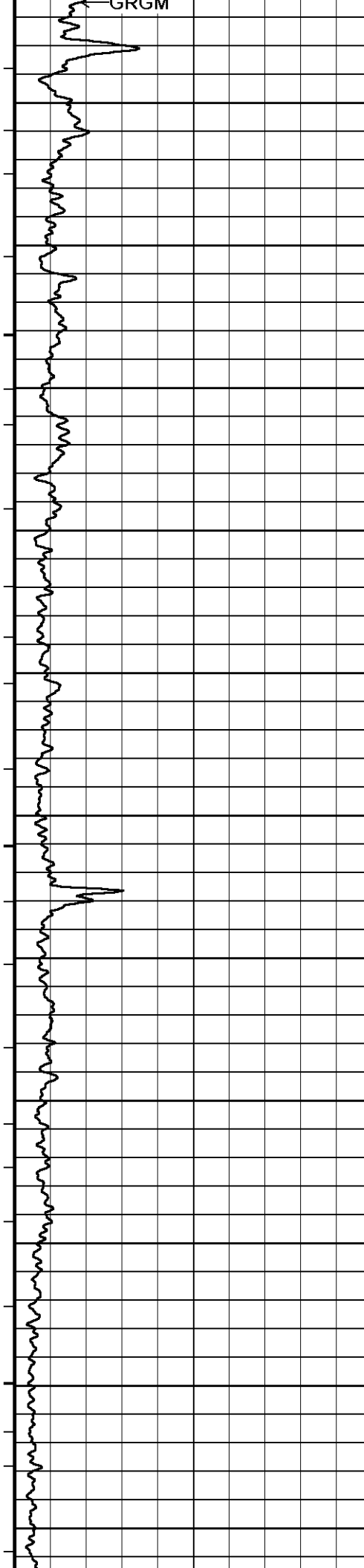
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

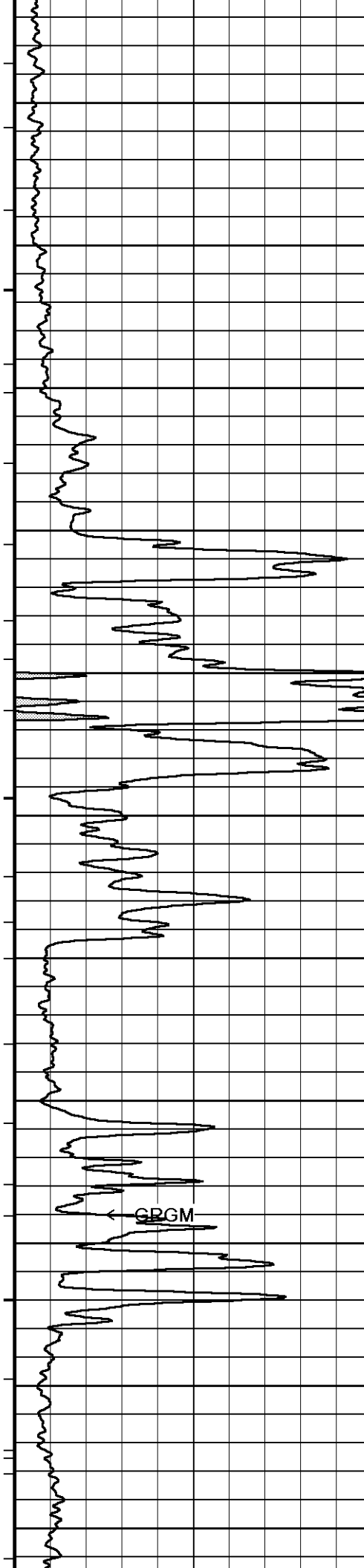
**2 INCH MAIN LOG**

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 08-JUL-2013 09:21  
 Filename: C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta Recorded on 08-JUL-2013 07:59  
 System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

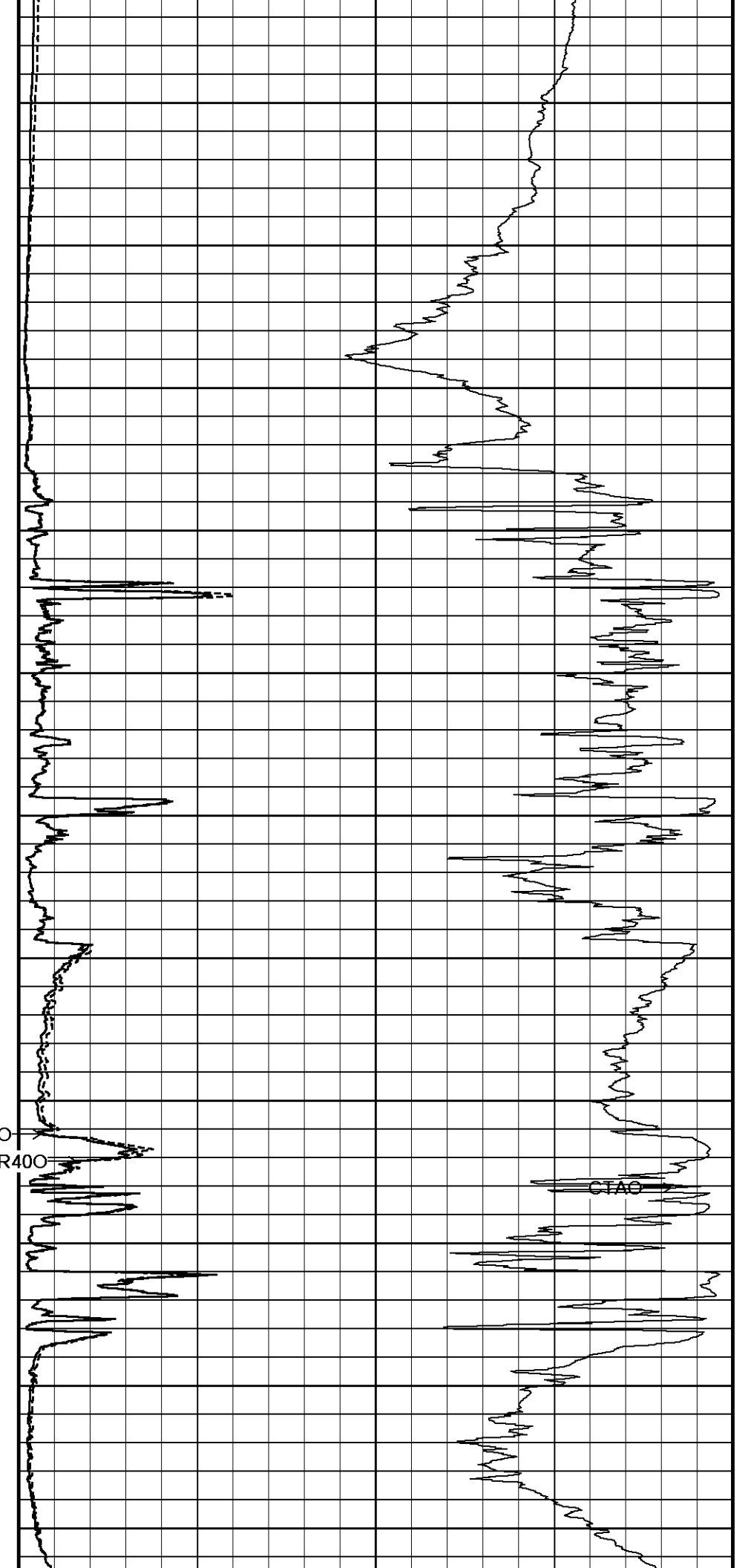


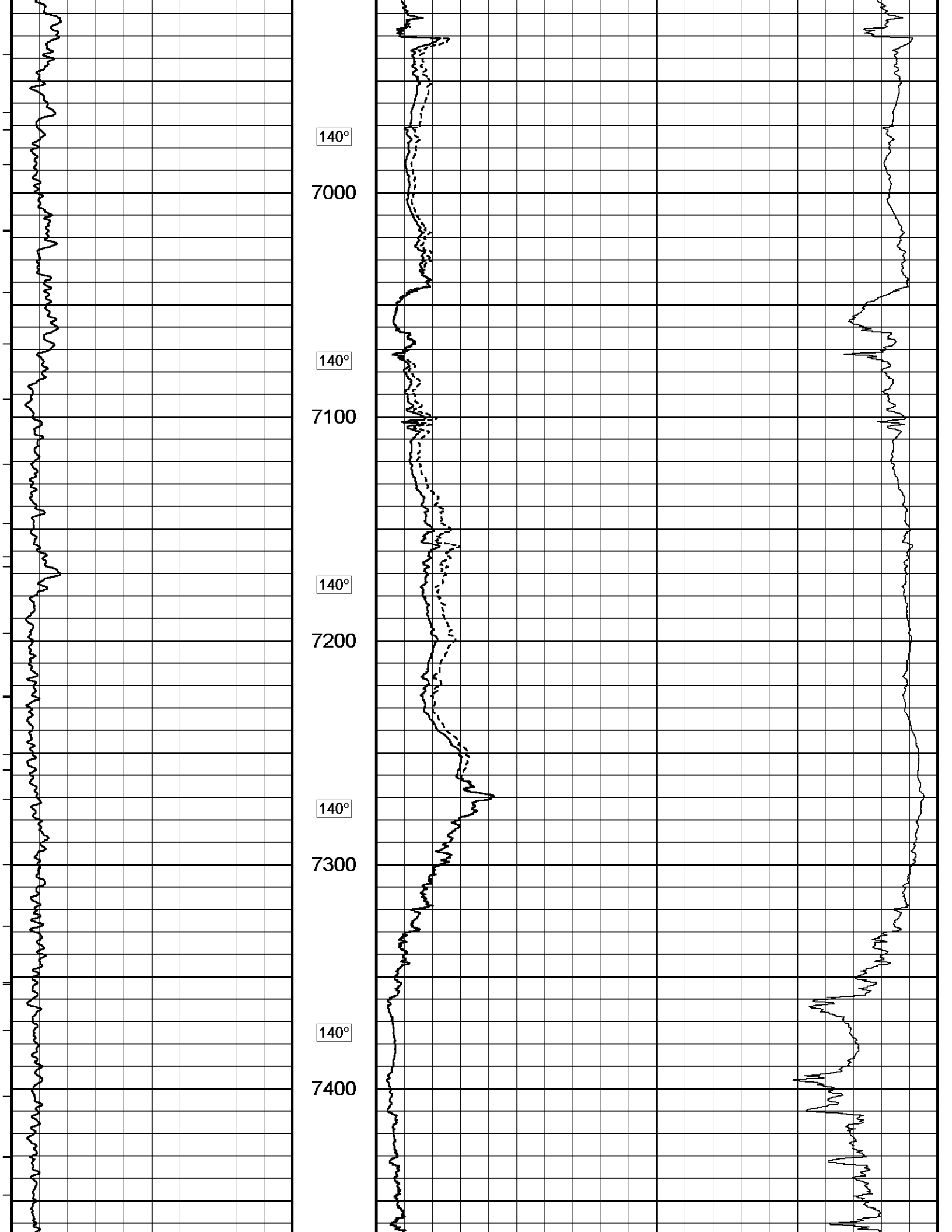


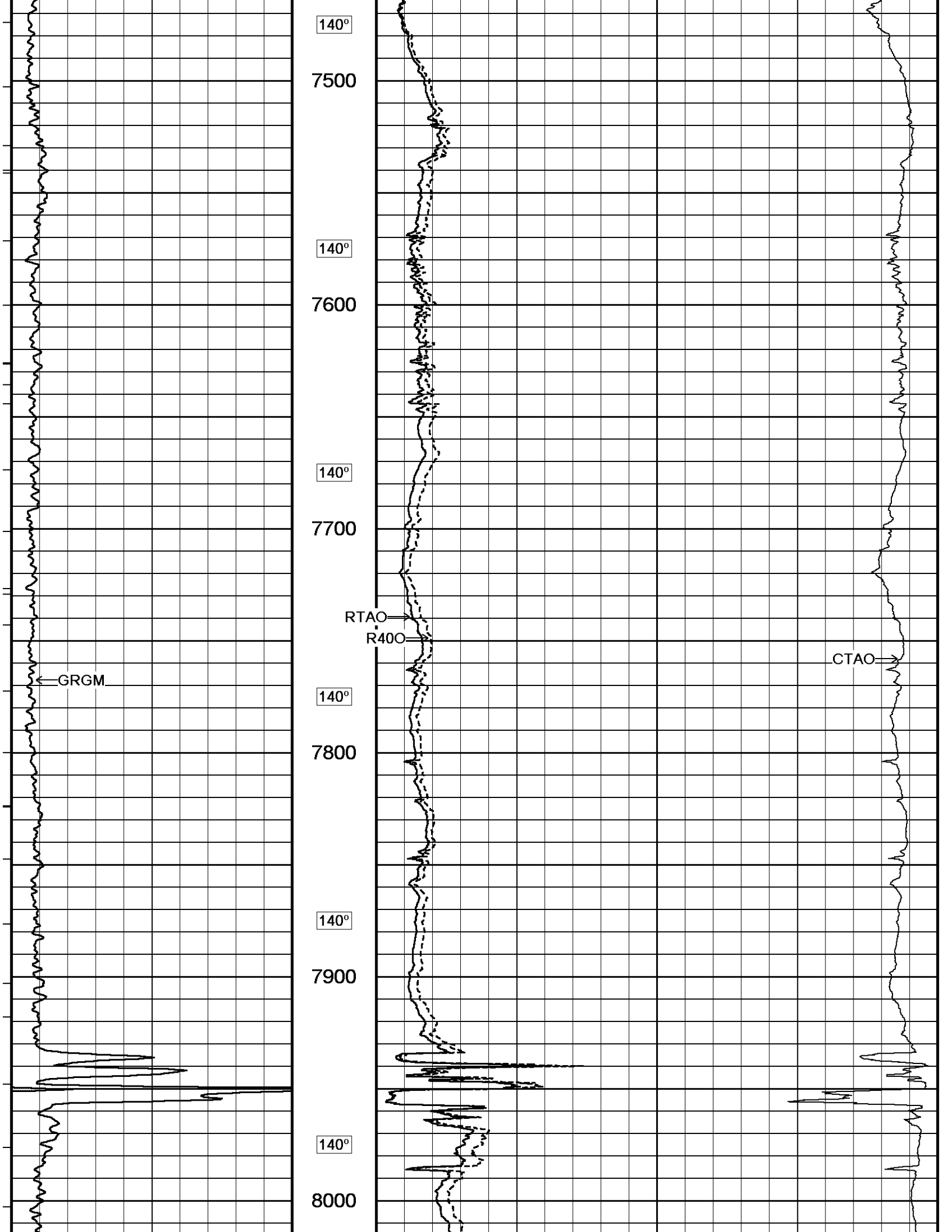


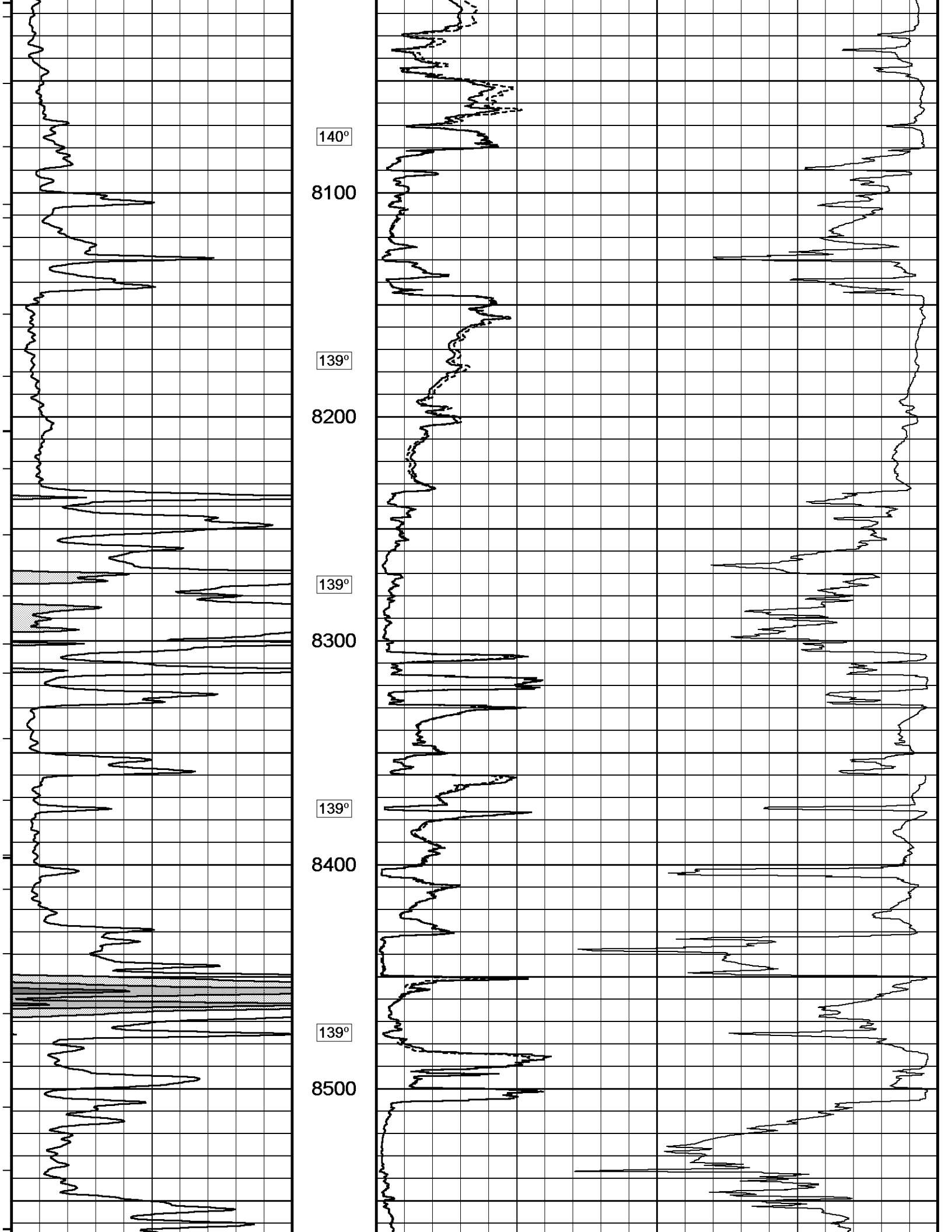


140°  
6400  
140°  
6500  
140°  
6600  
140°  
6700  
RTAO  
140° R400  
6800  
140°  
6900

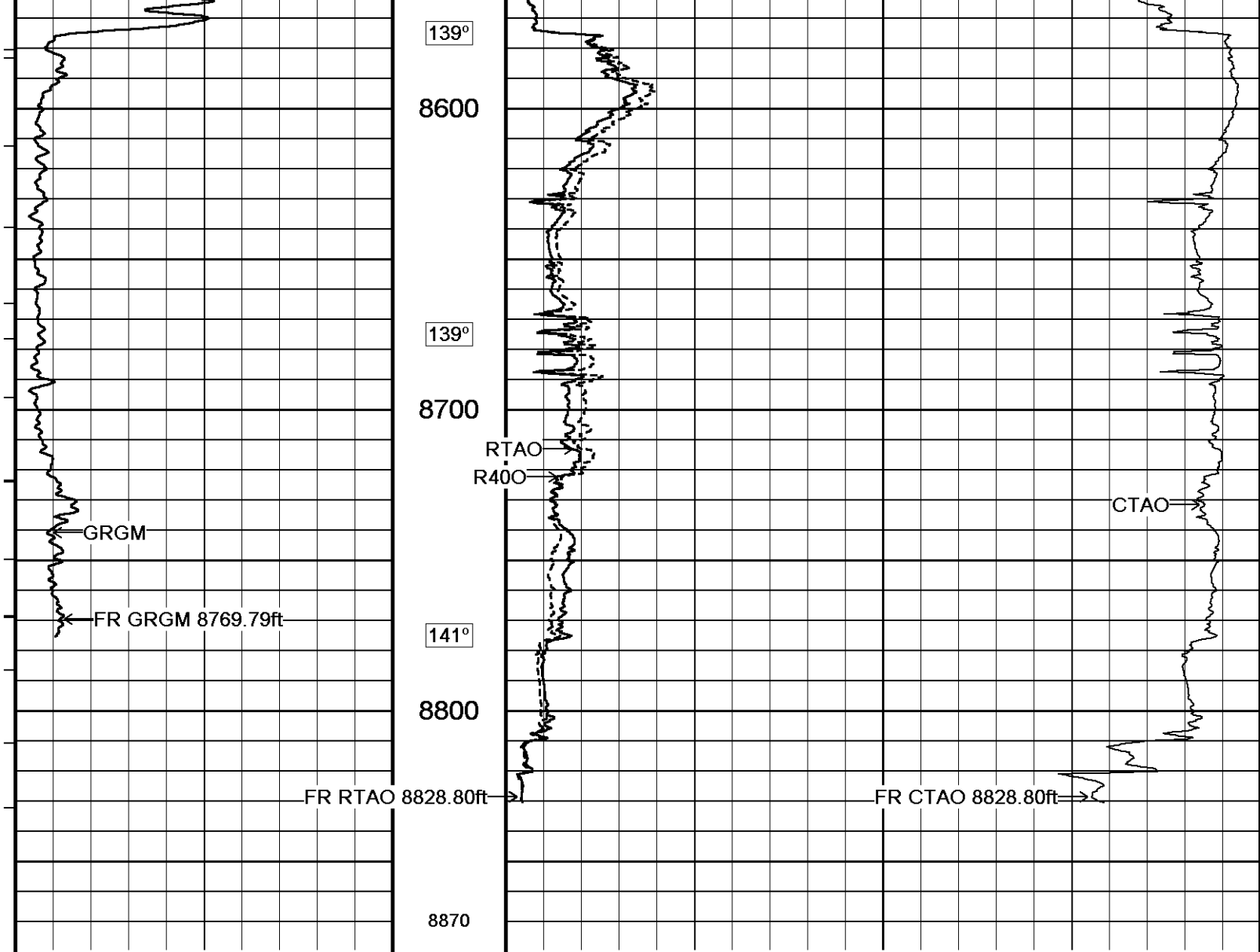












|                                |                                     |      |      |      |      |
|--------------------------------|-------------------------------------|------|------|------|------|
| Timing Marks<br>every 60.0 sec | Array Ind. One Cond Ct              |      |      |      |      |
|                                | 1000                                | 750  | 500  | 250  | 0    |
| MGS Gamma Ray<br>API           | Array Ind. One Res 40<br>ohm metres |      |      |      |      |
|                                | 2000                                | 1750 | 1500 | 1250 | 1000 |
| 0 75 150<br>150 225 300        | Array Ind. One Res Rt<br>ohm metres |      |      |      |      |
|                                | 0                                   | 50   | 100  |      |      |
| Replay Scale<br>1:600          | Array Ind. One Res Rt<br>ohm metres |      |      |      |      |
|                                | 0                                   | 50   | 100  |      |      |
|                                | 0                                   | 500  | 1000 |      |      |

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Filename: C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta  
 System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

Plotted on 08-JUL-2013 09:21  
 Recorded on 08-JUL-2013 07:59

2 INCH MAIN LOG

5 INCH MAIN LOG

Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 08-JUL-2013 09:21

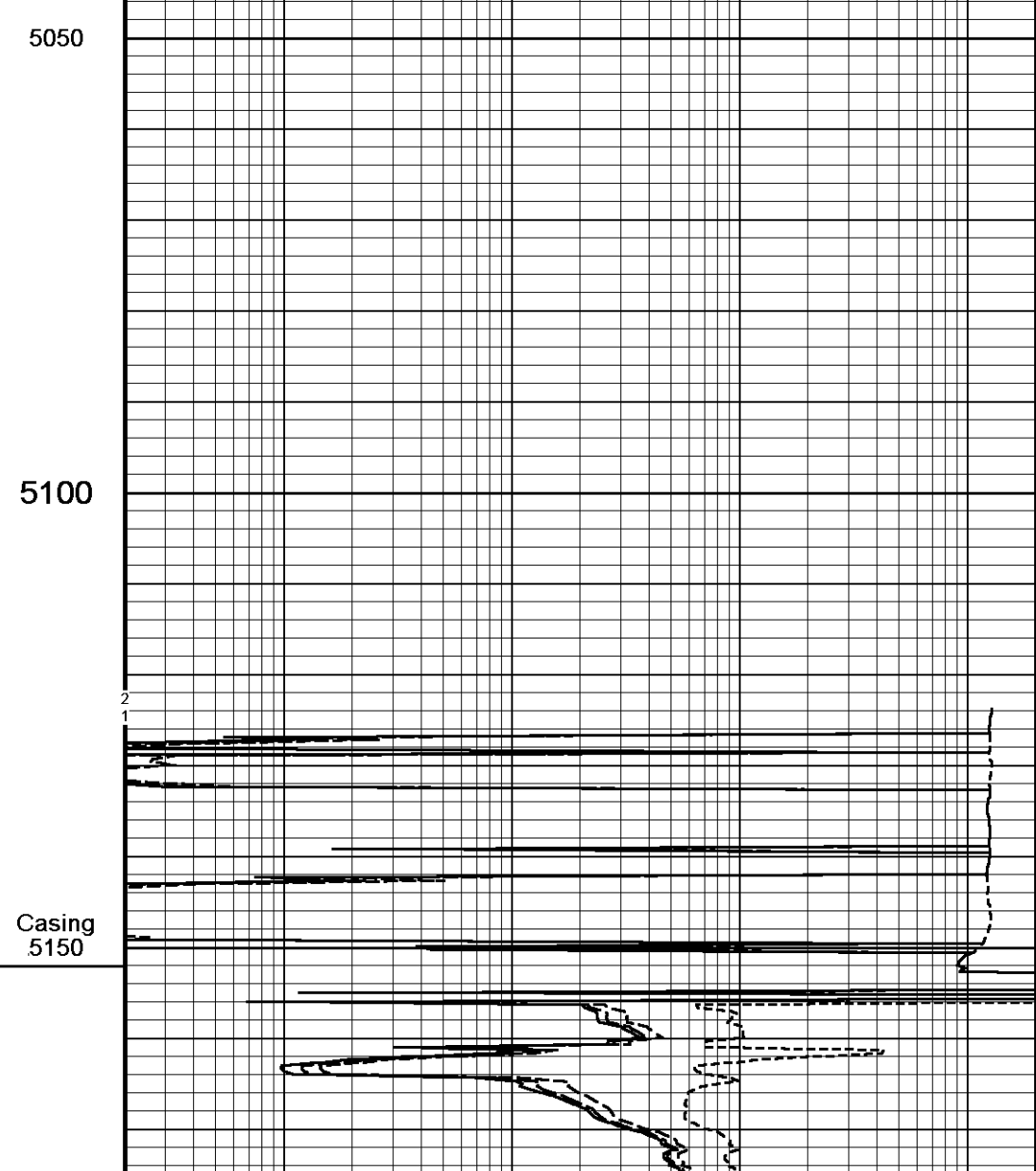
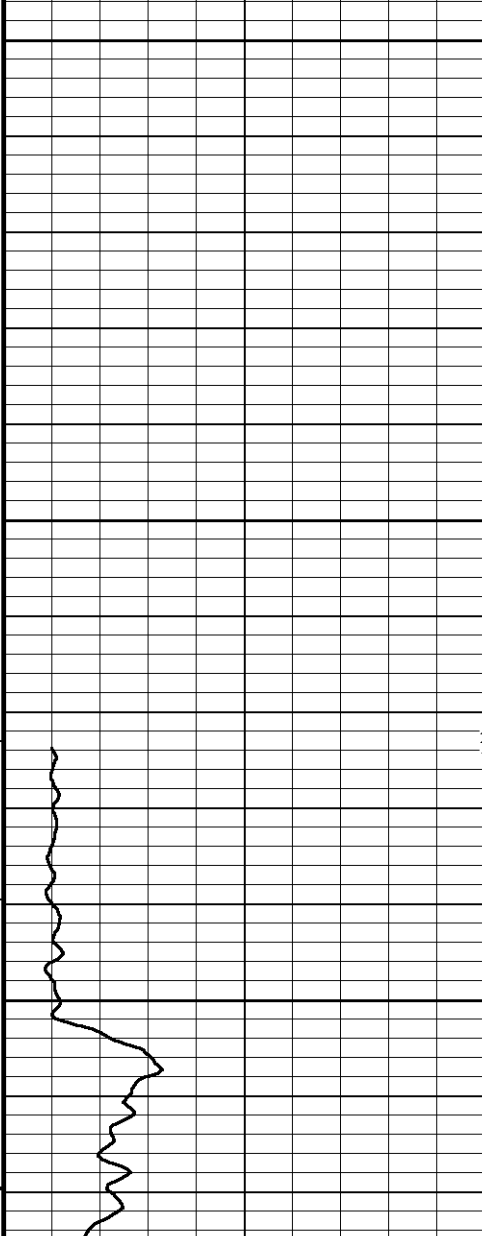
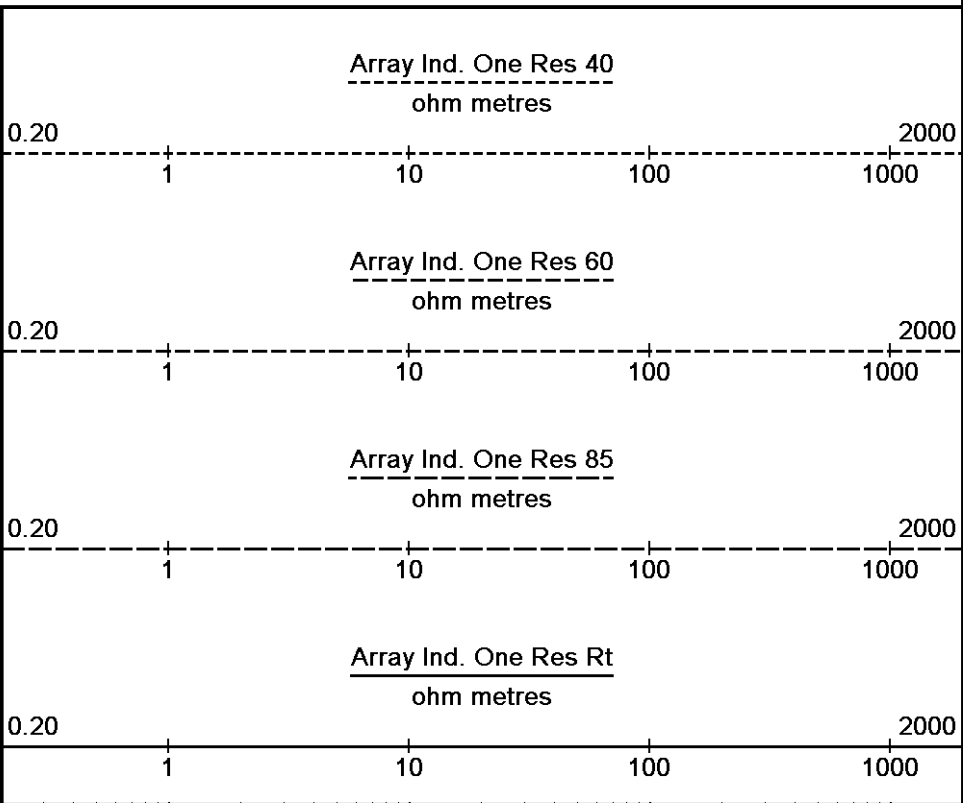
← Timing Marks every 60.0 sec

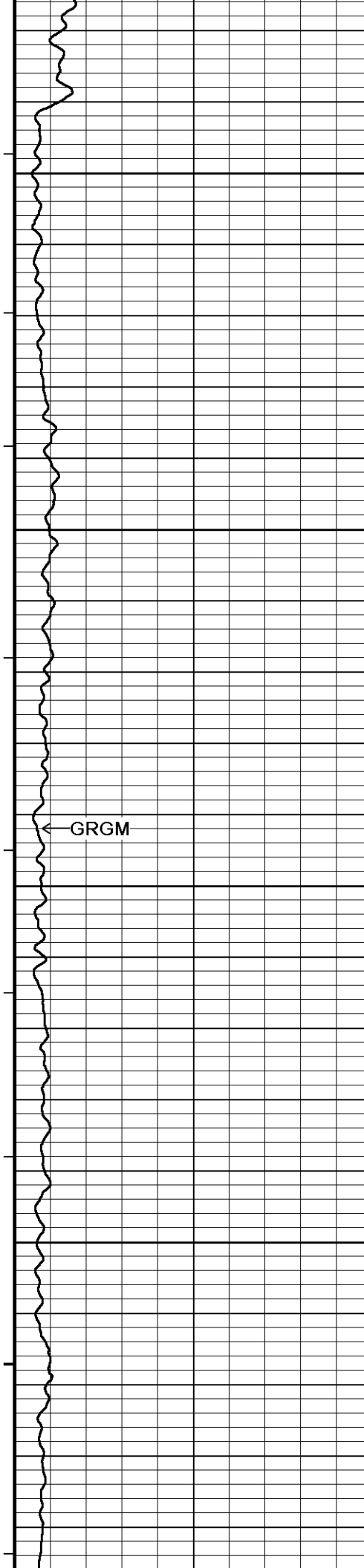
MGS Gamma Ray  
API  
0 75 150  
150 225 300

Depth In Feet

Borehole Temp in deg F

Replay Scale 1:240





5200

137°

5250

137°

5300

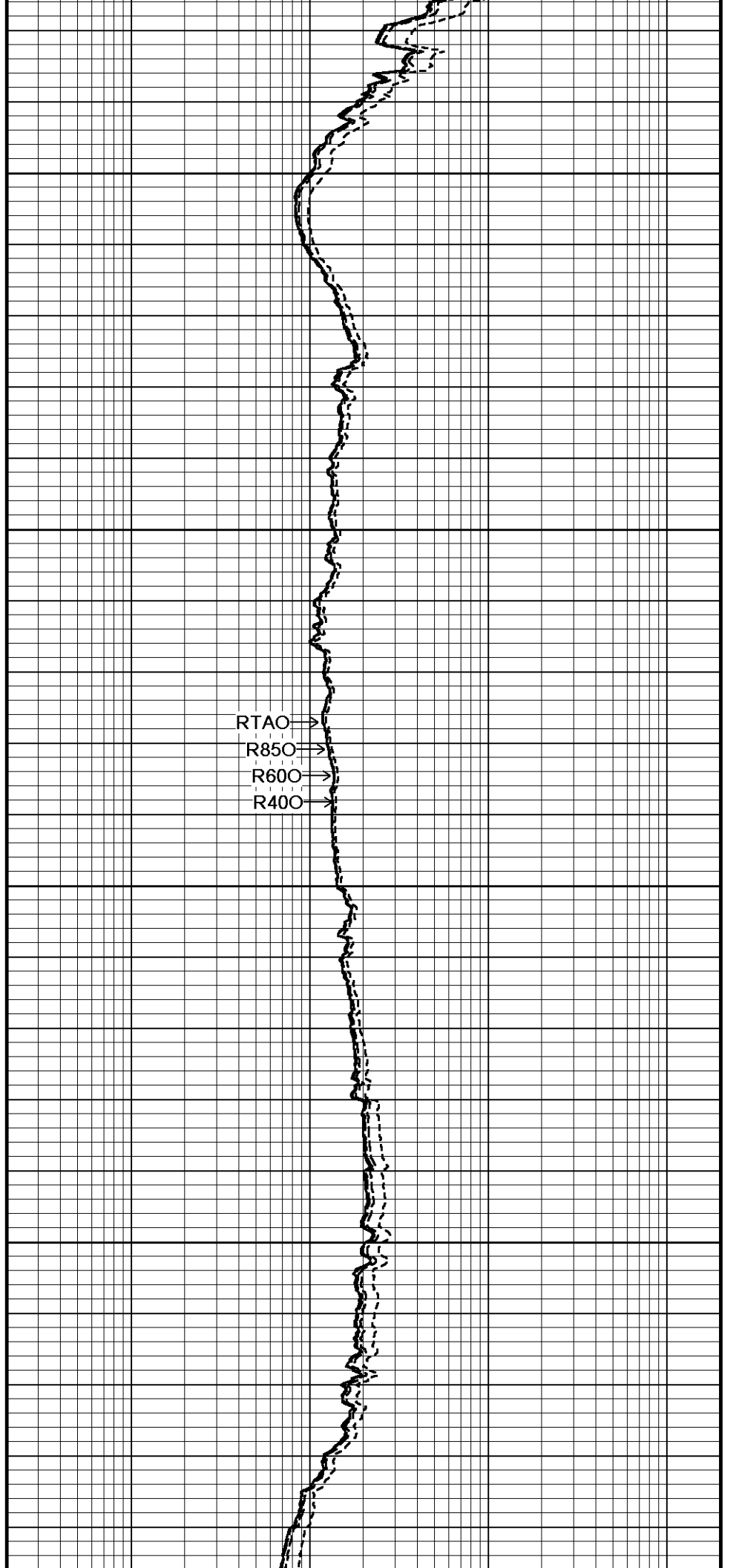
137°

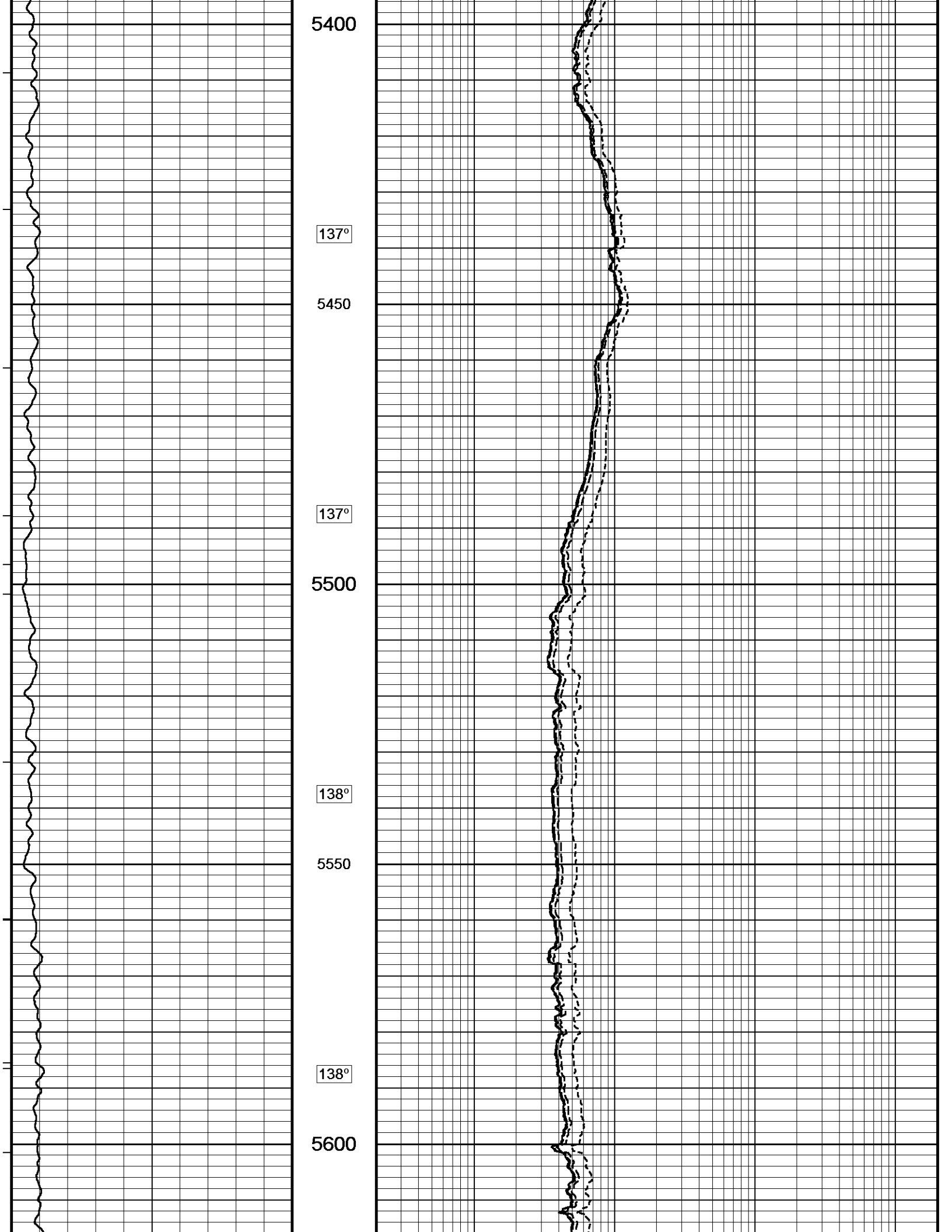
5350

137°

← GRGM

RTAO →  
R850 →  
R600 →  
R400 →





5400

137°

5450

137°

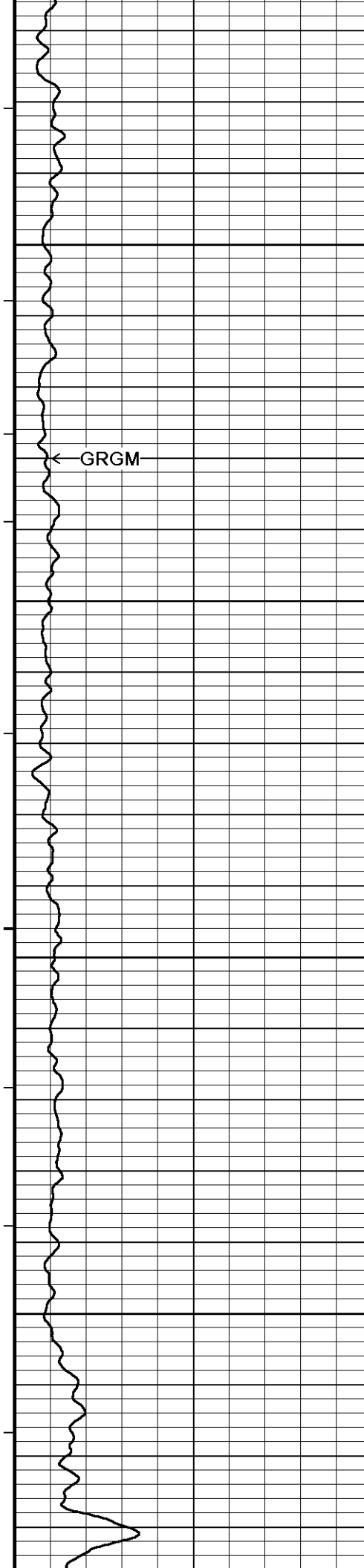
5500

138°

5550

138°

5600



138°

5650

138°

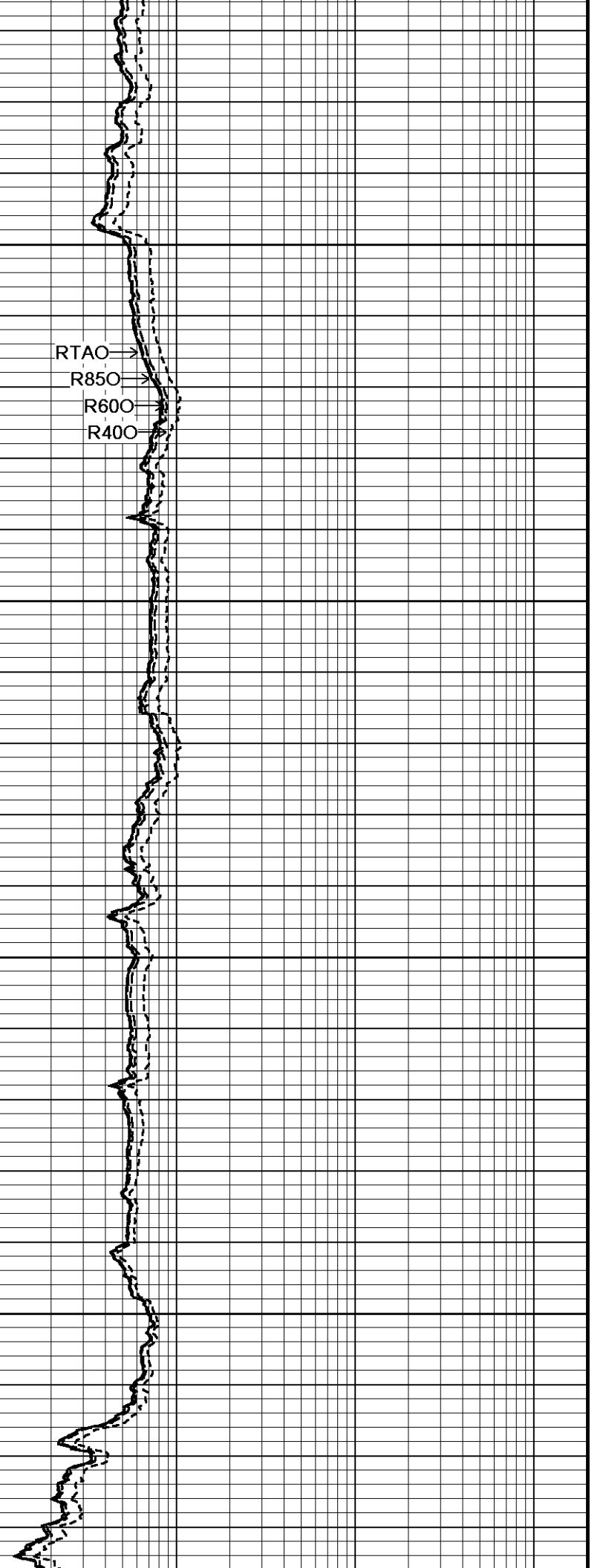
5700

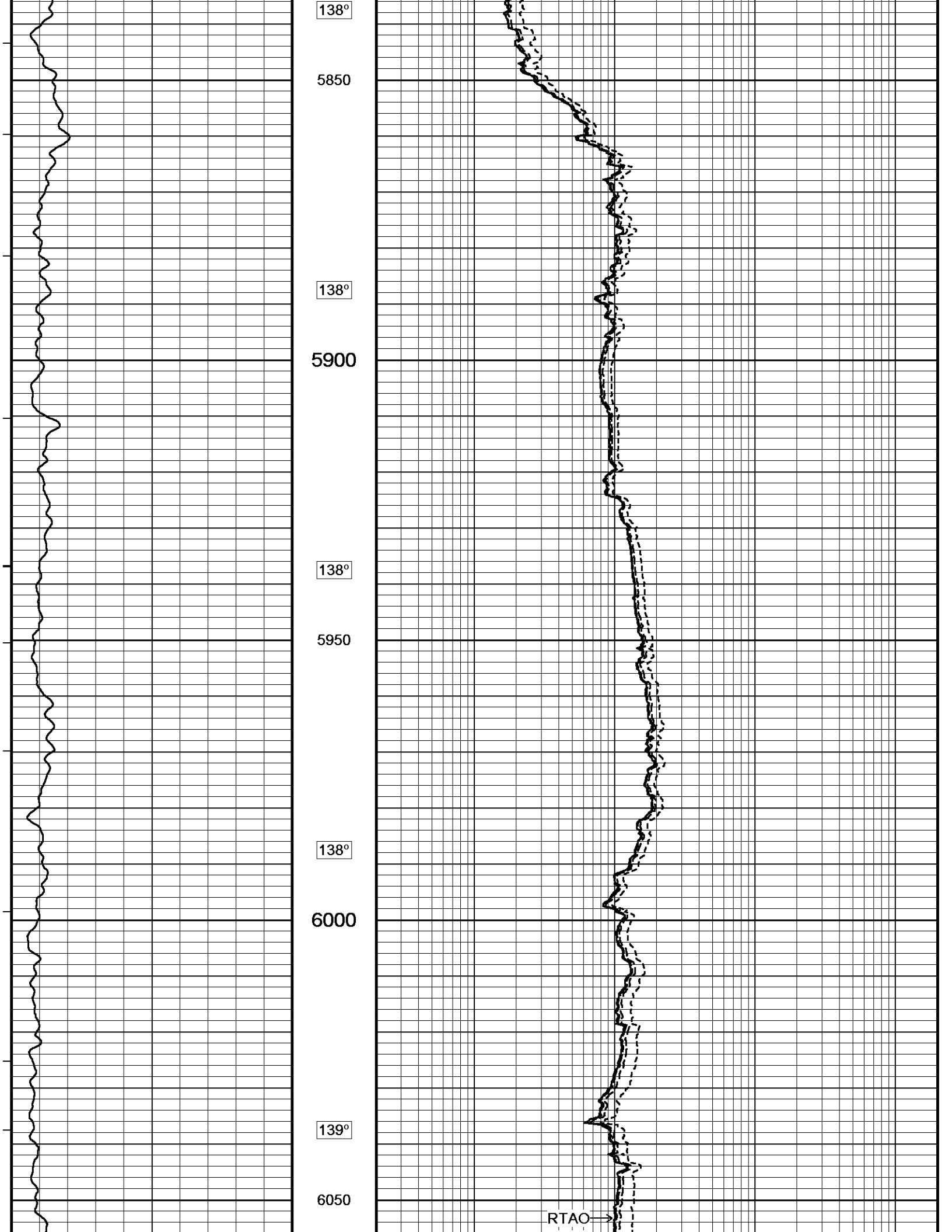
138°

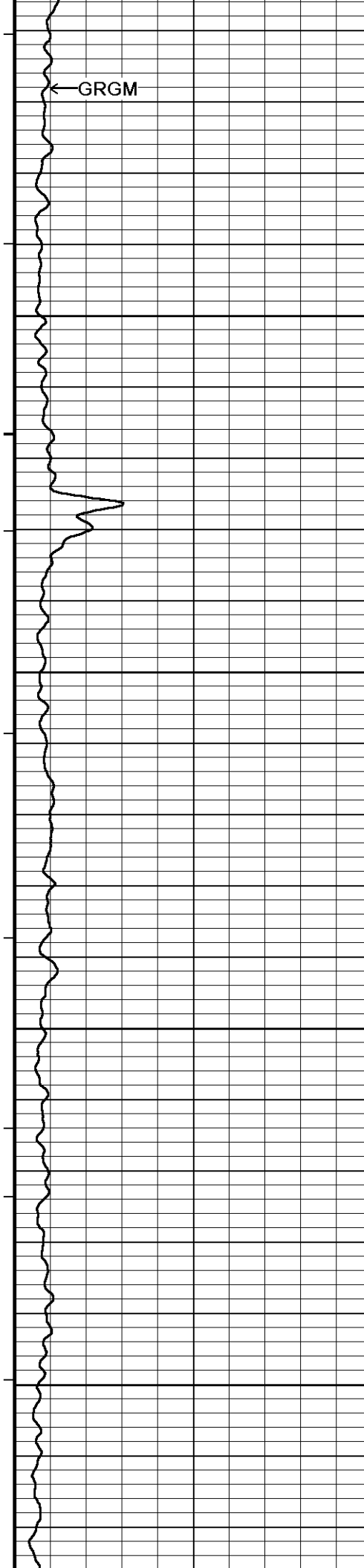
5750

138°

5800







139°

6100

139°

6150

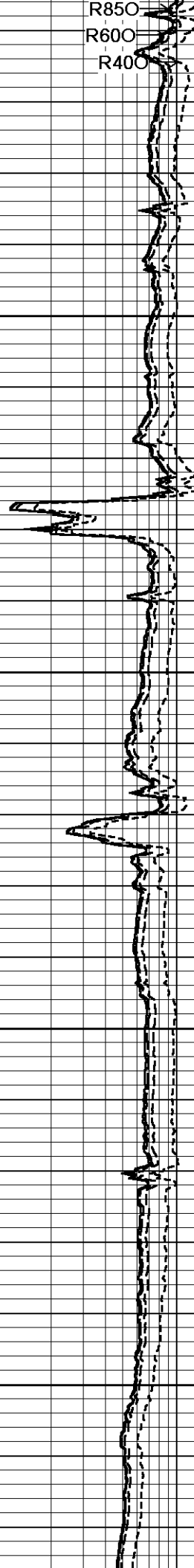
139°

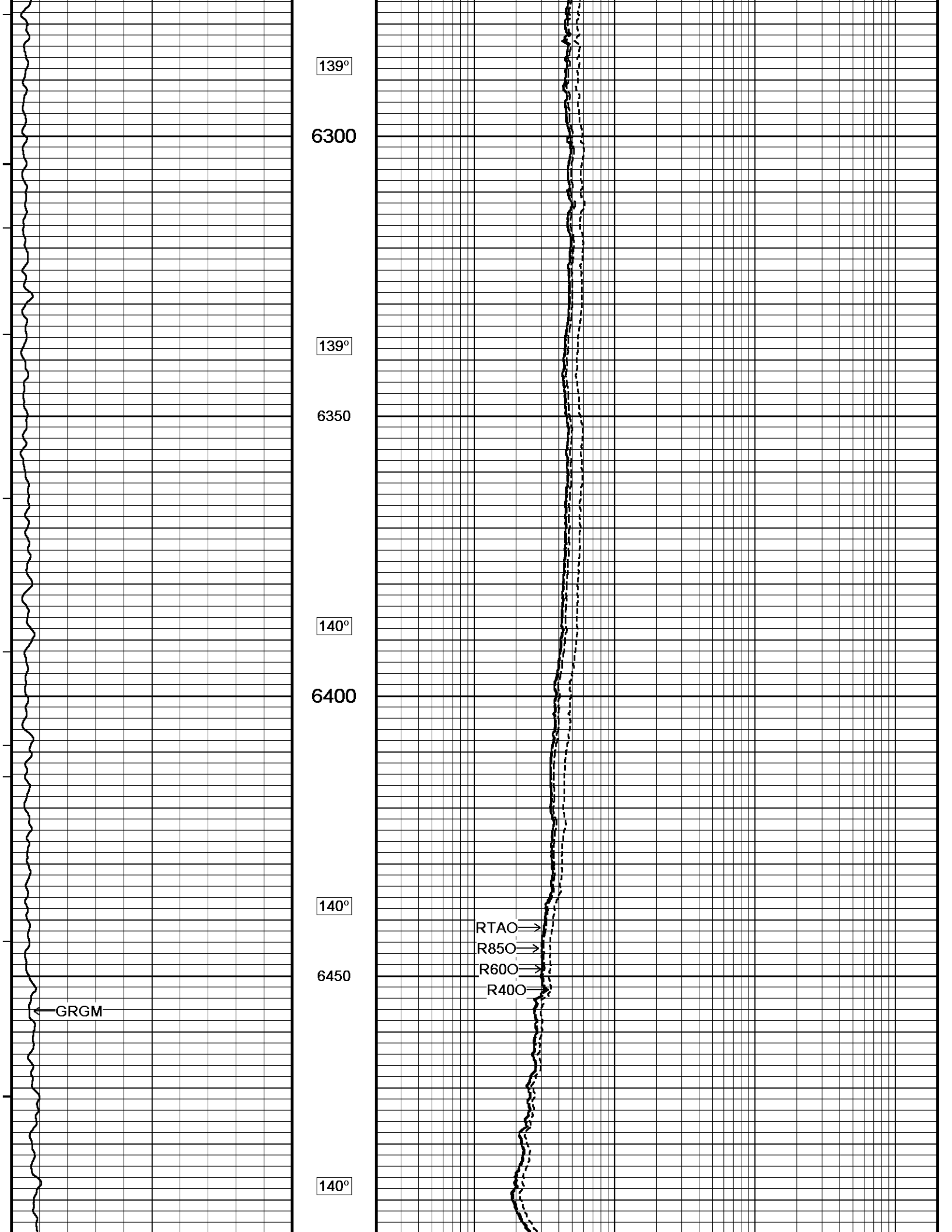
6200

139°

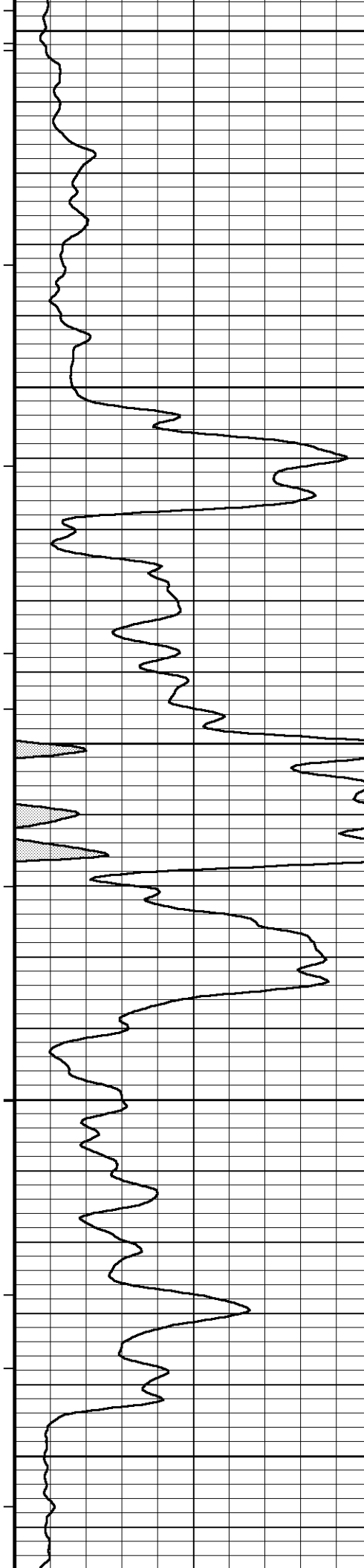
6250

R850  
R600  
R400









6500

140°

6550

140°

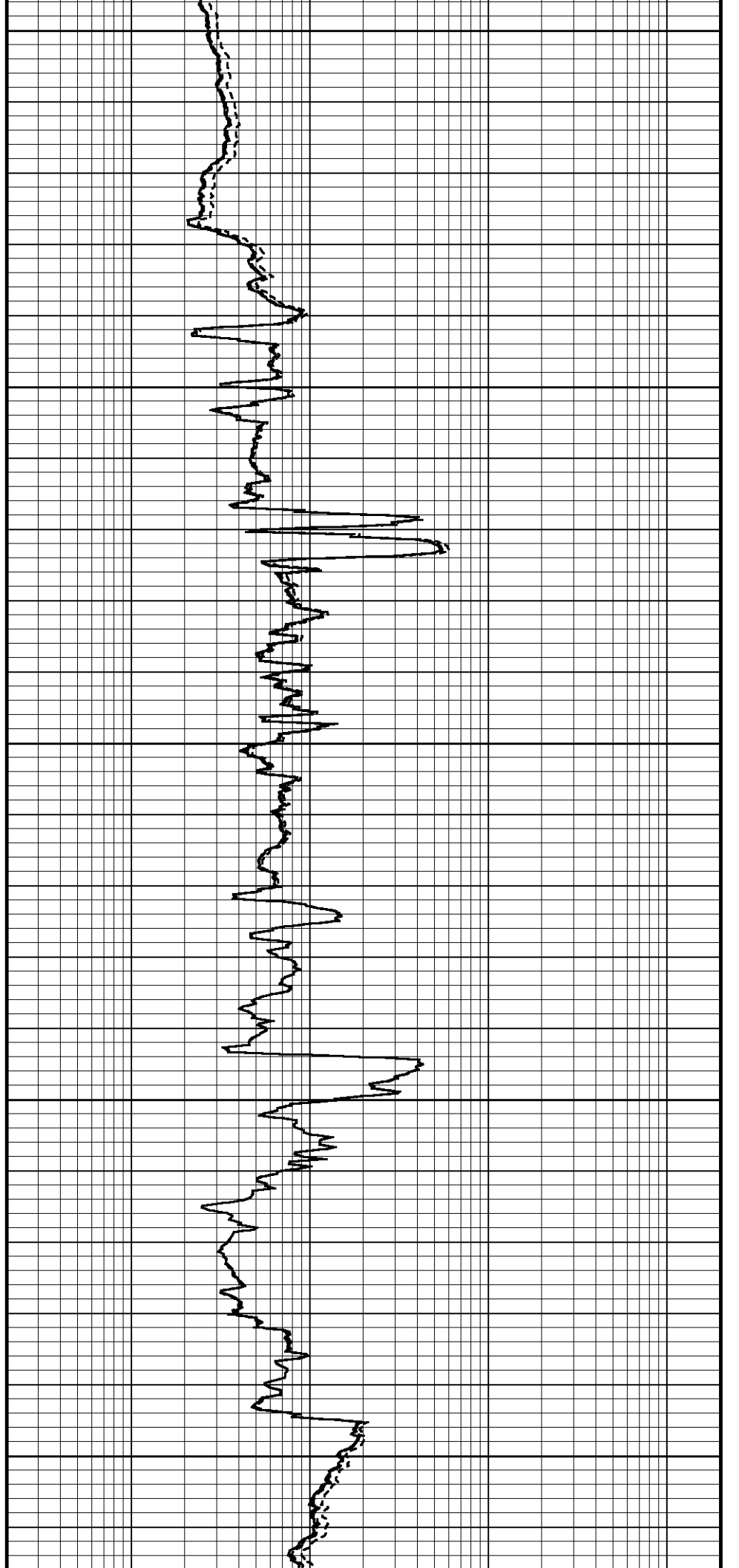
6600

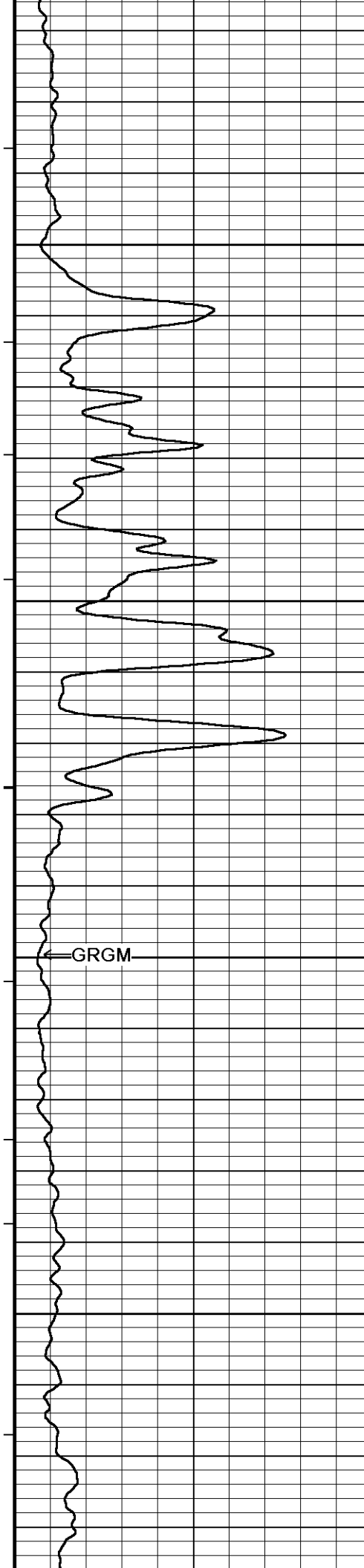
140°

6650

140°

6700





140°

6750

140°

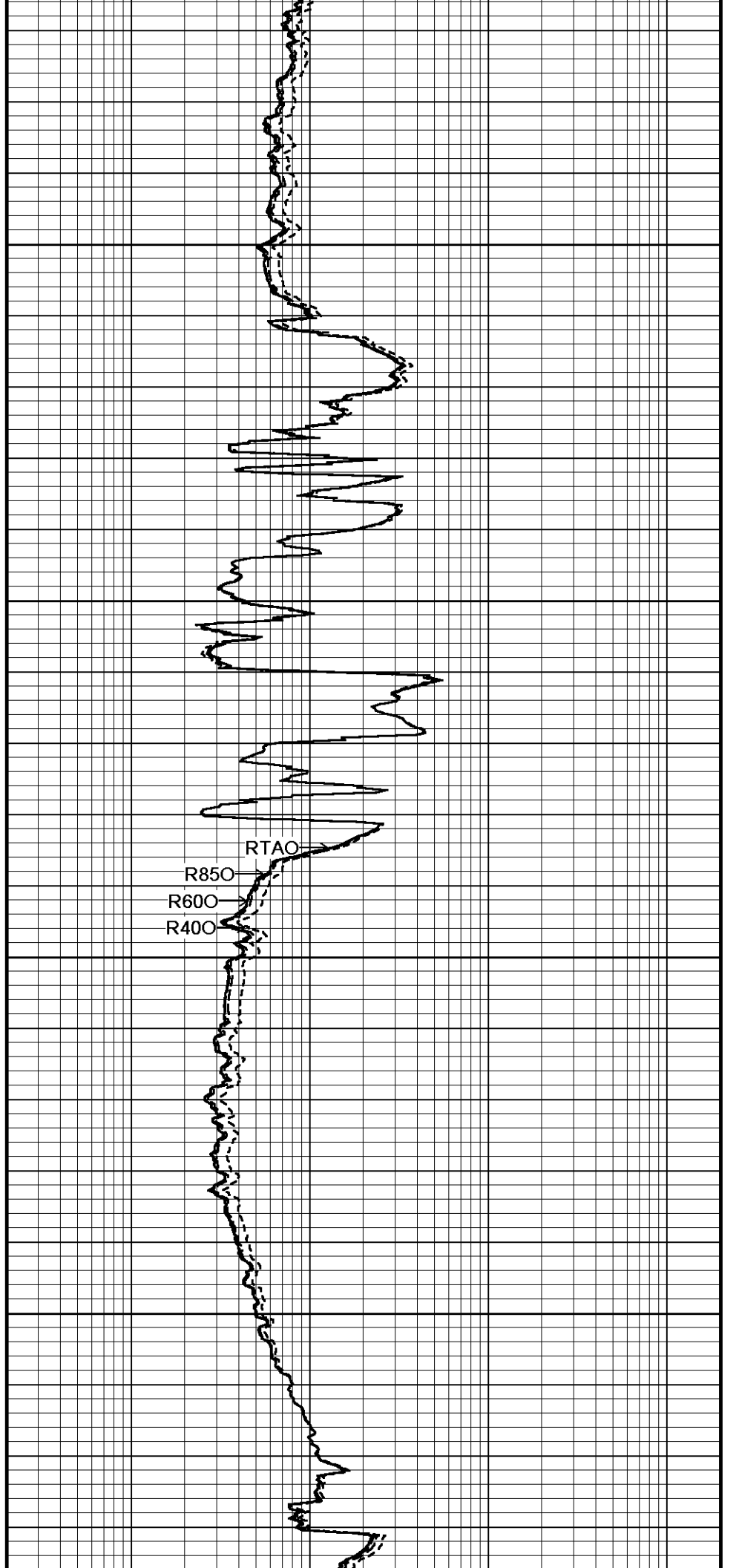
6800

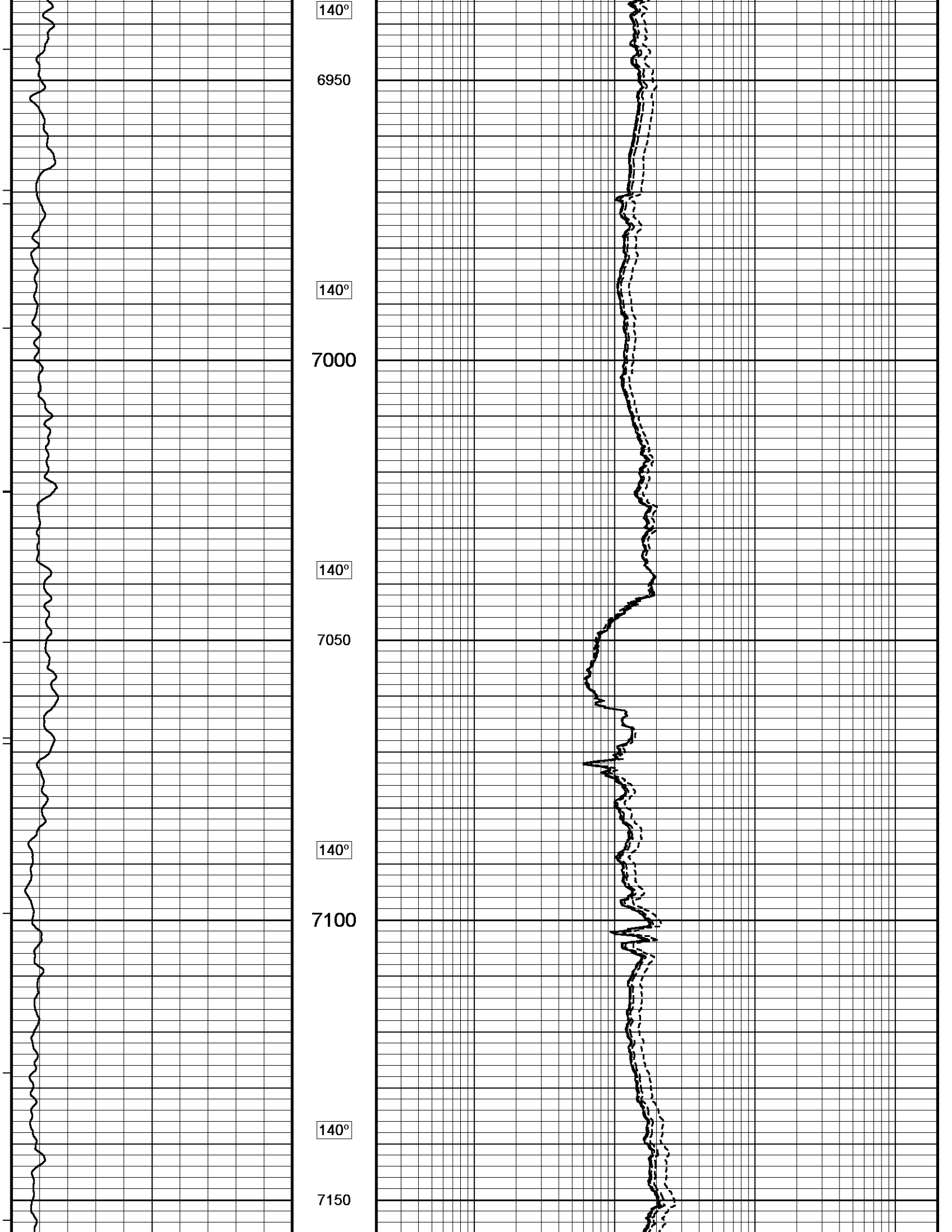
140°

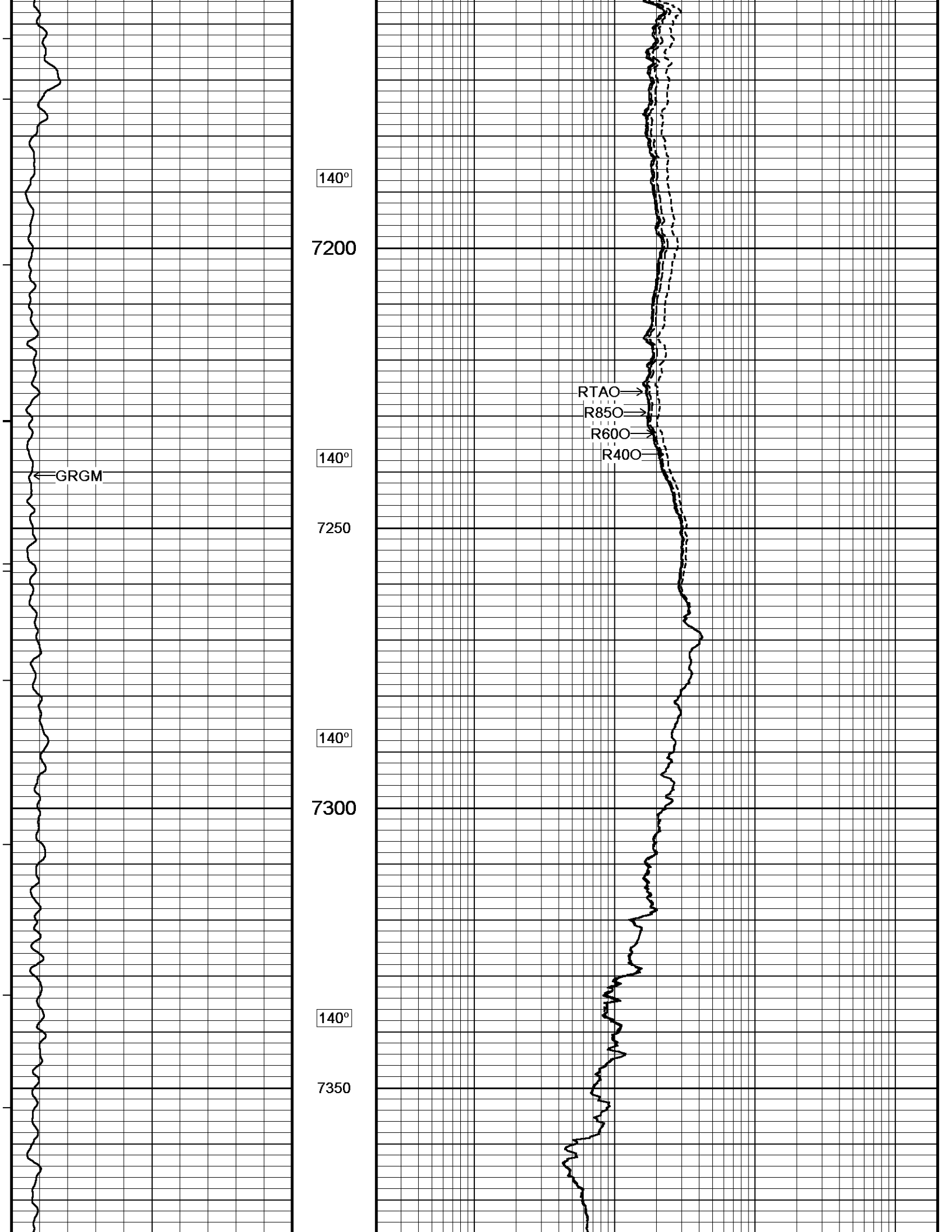
6850

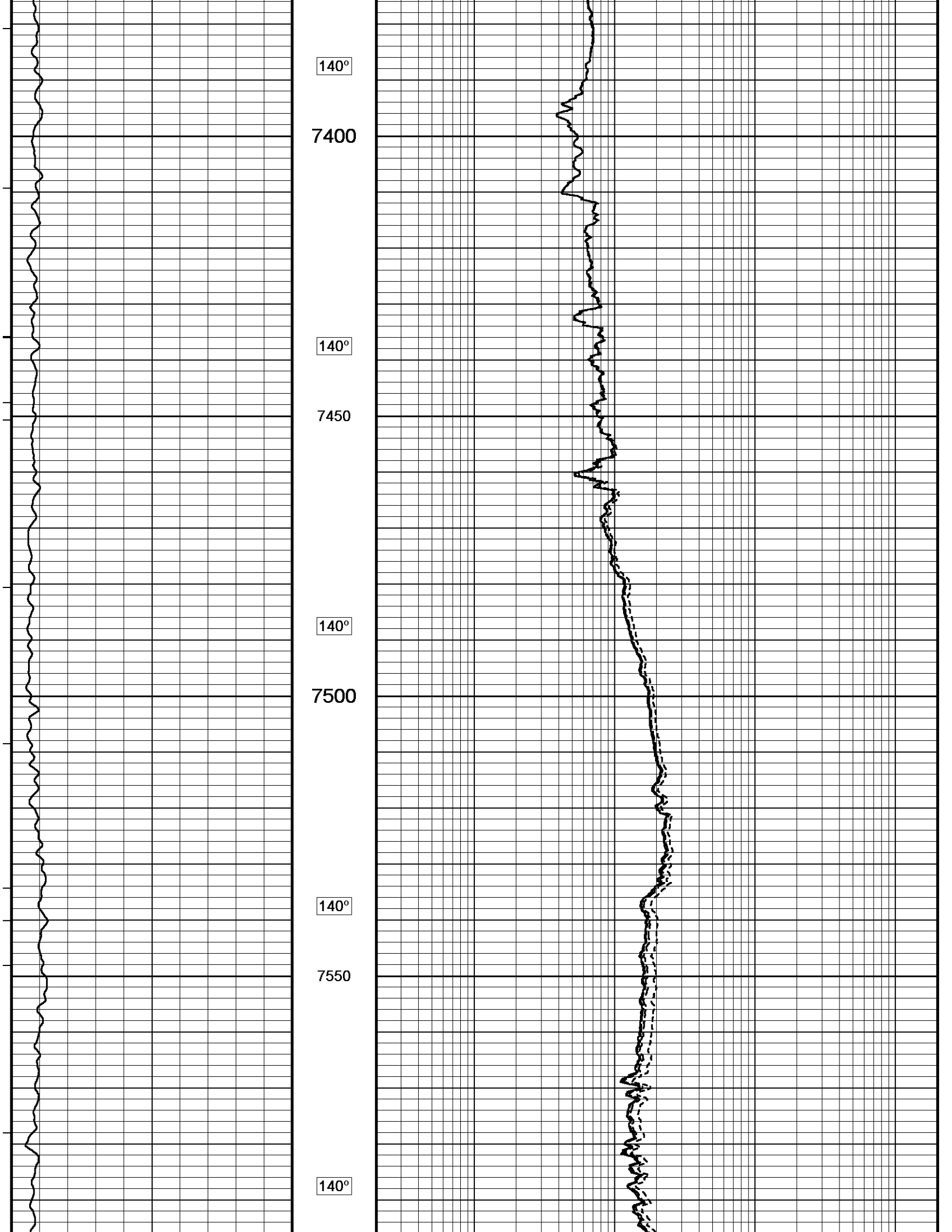
140°

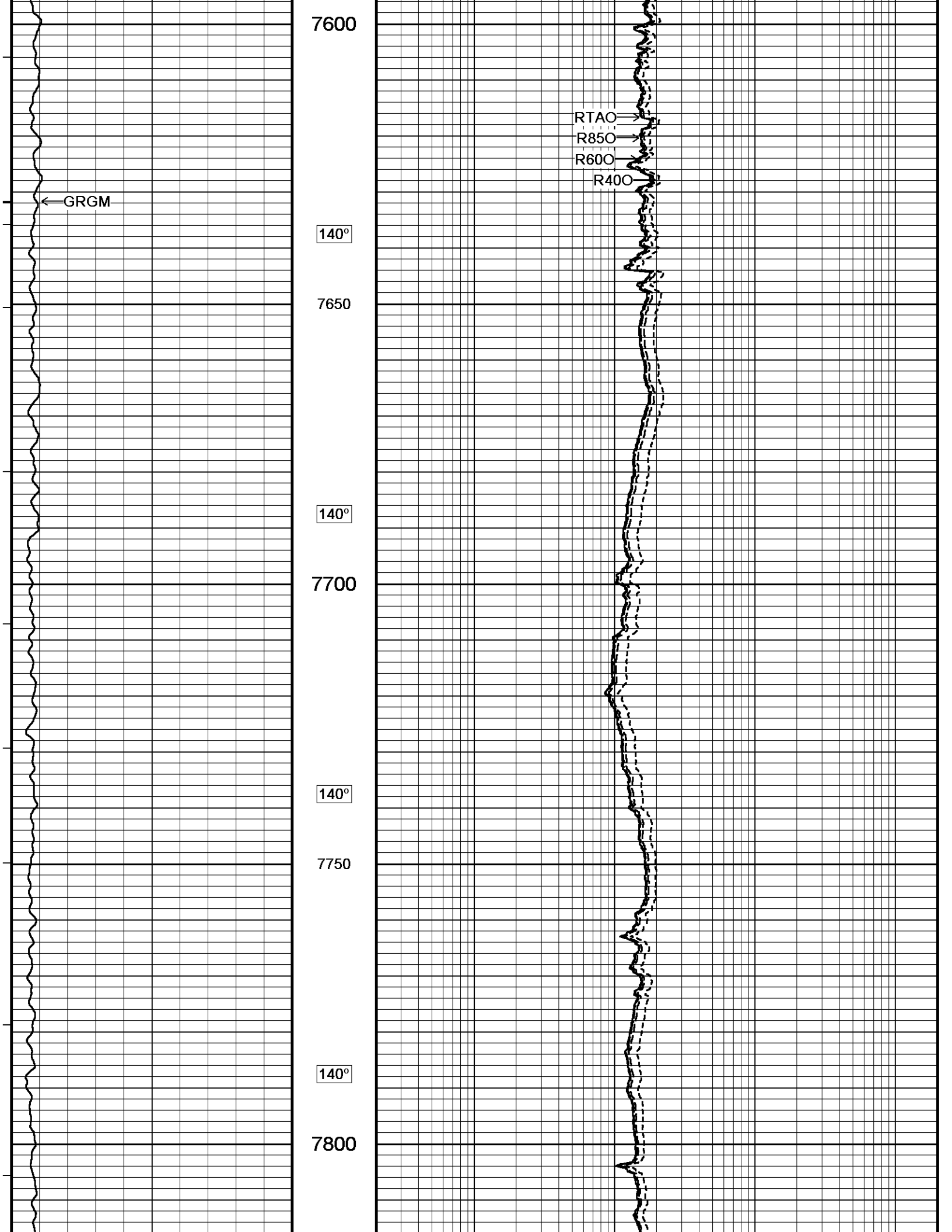
6900











7600

← GRGM

140°

7650

RTAO →  
R85O →  
R60O →  
R40O →

140°

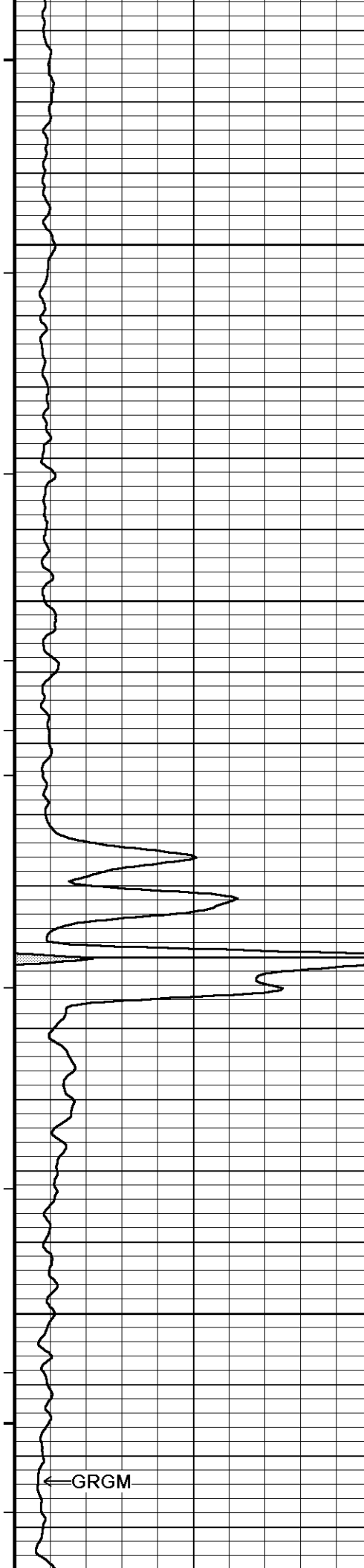
7700

140°

7750

140°

7800



140°

7850

140°

7900

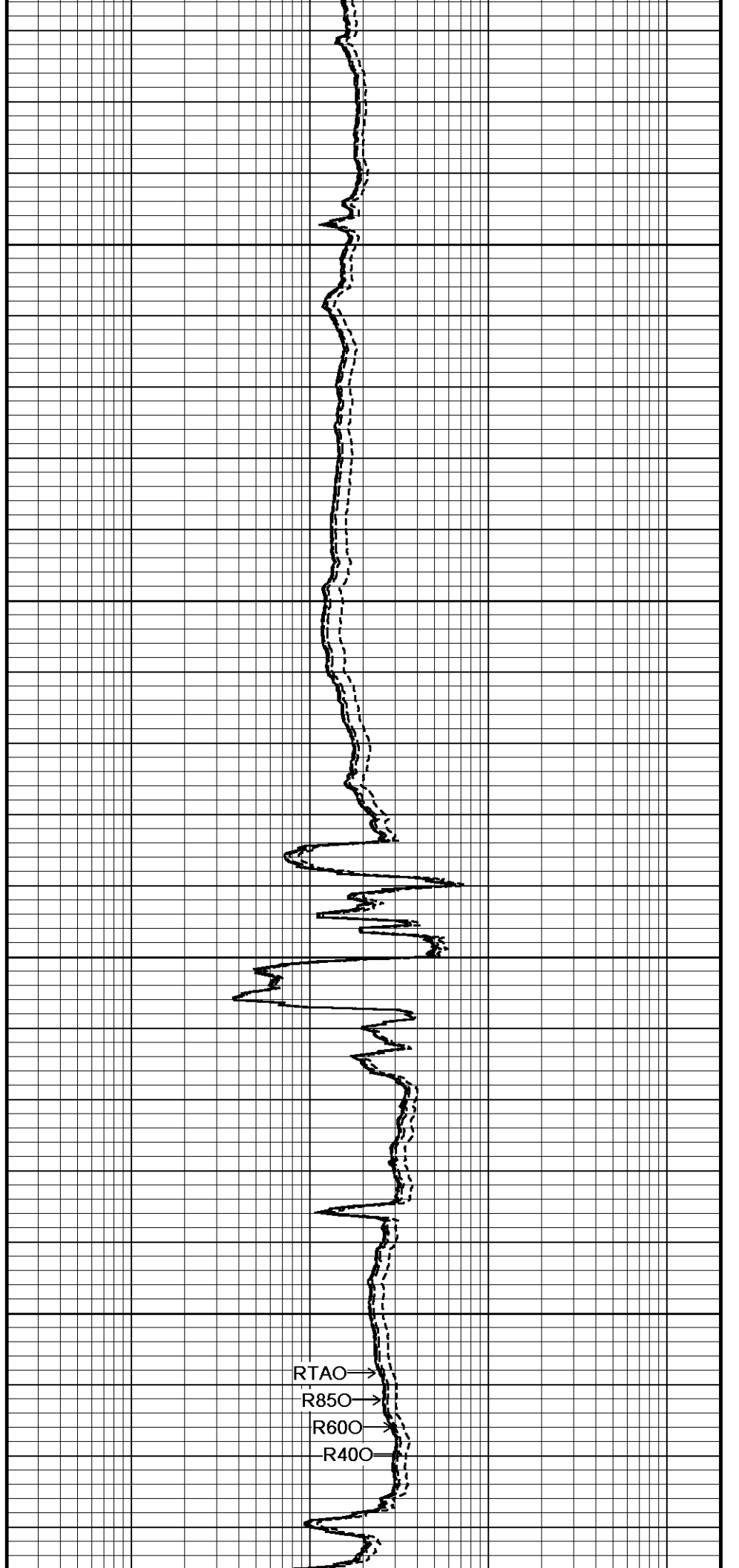
140°

7950

140°

8000

← GRGM

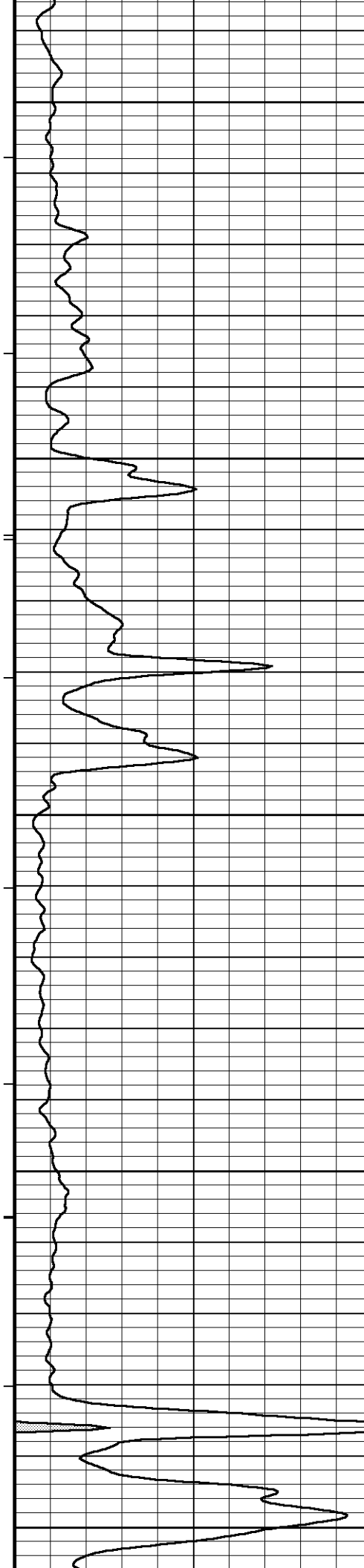


RTAO →

R850 →

R600 →

R400 →



140°

8050

140°

8100

140°

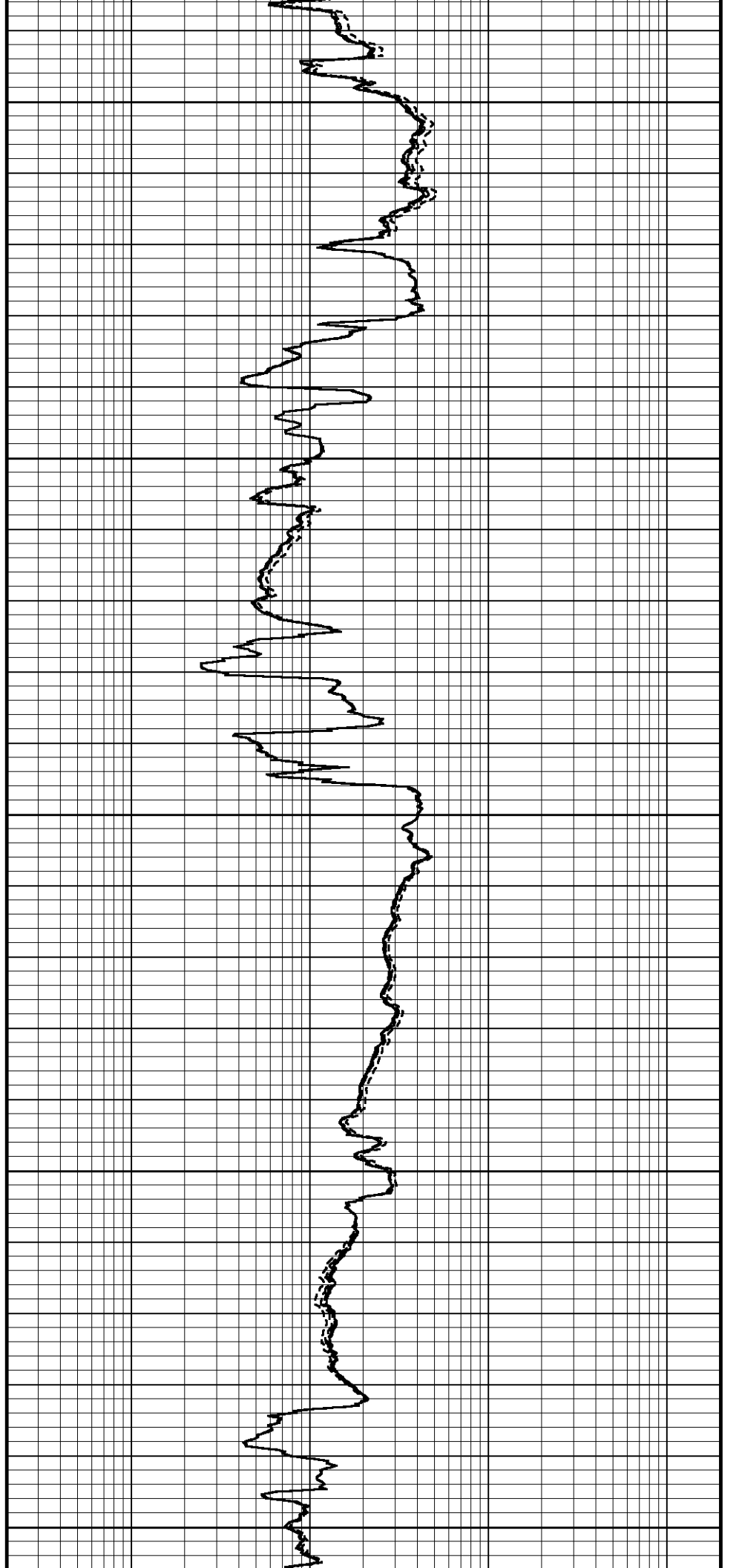
8150

139°

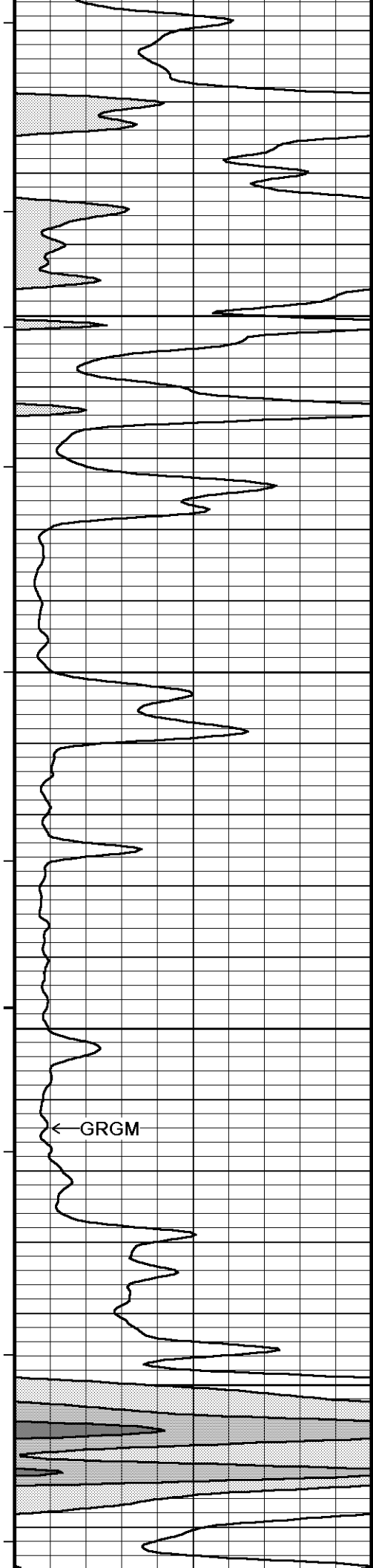
8200

139°

8250







139°

8300

139°

8350

139°

8400

139°

8450

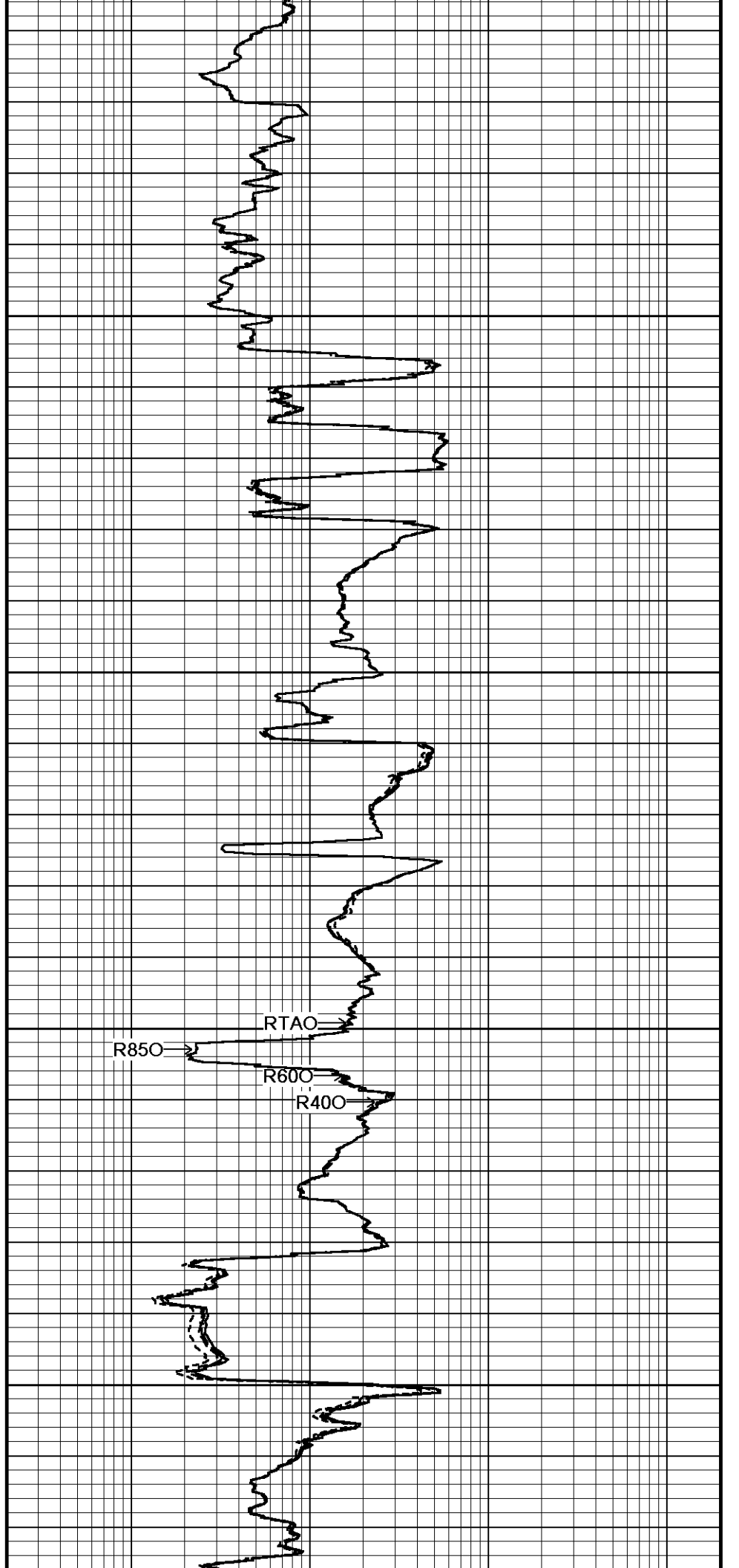
← GRGM

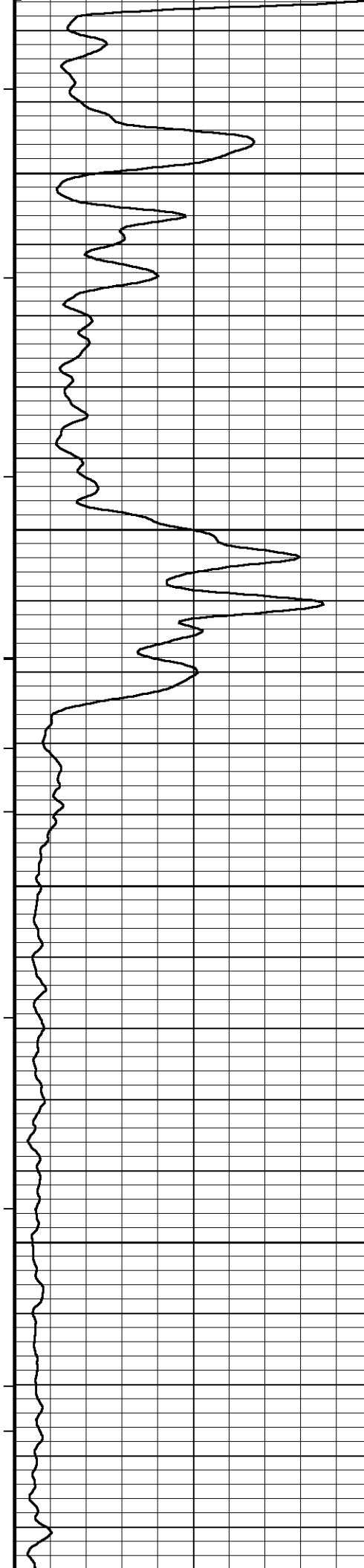
R850 →

RTAO →

R600 →

R400 →





139°

8500

139°

8550

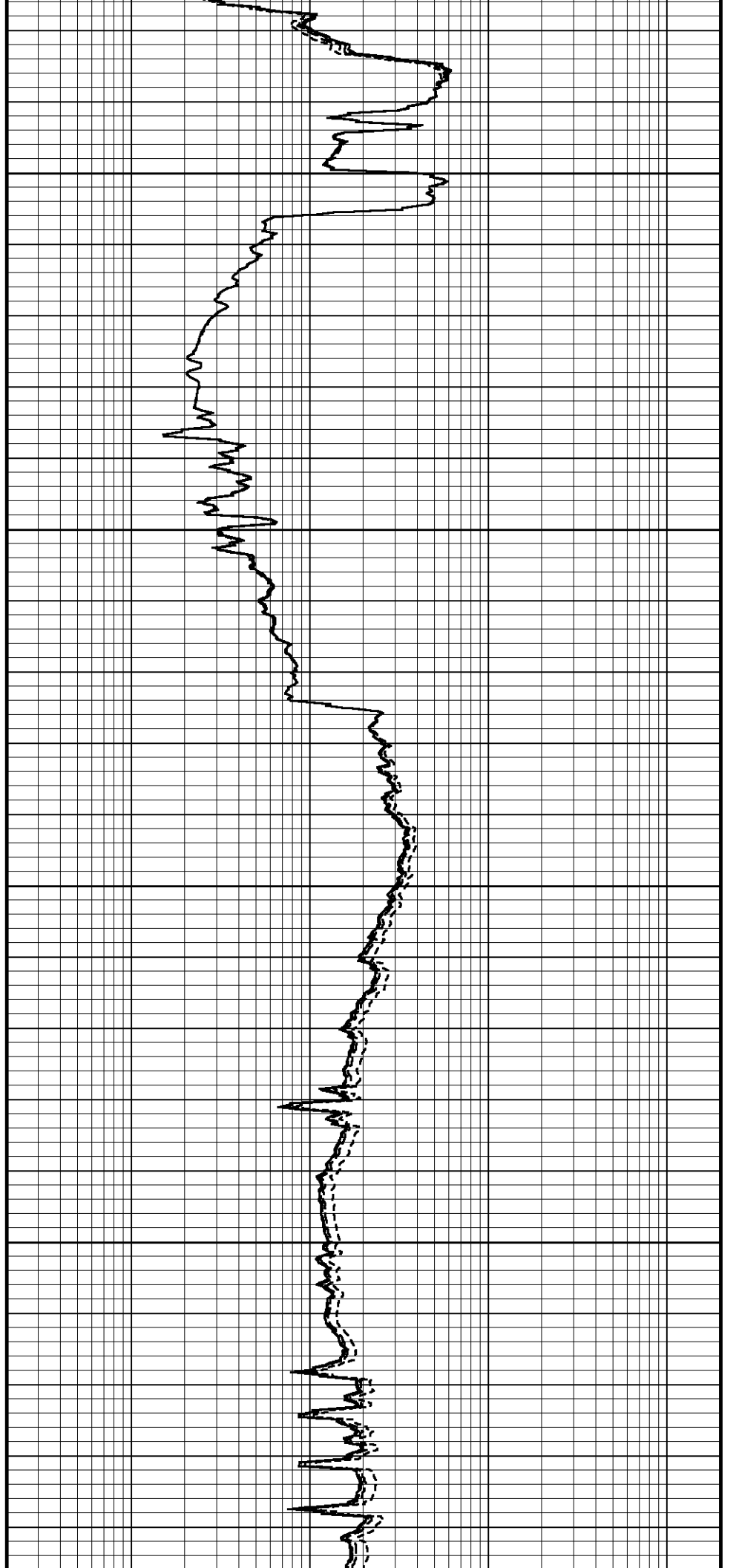
139°

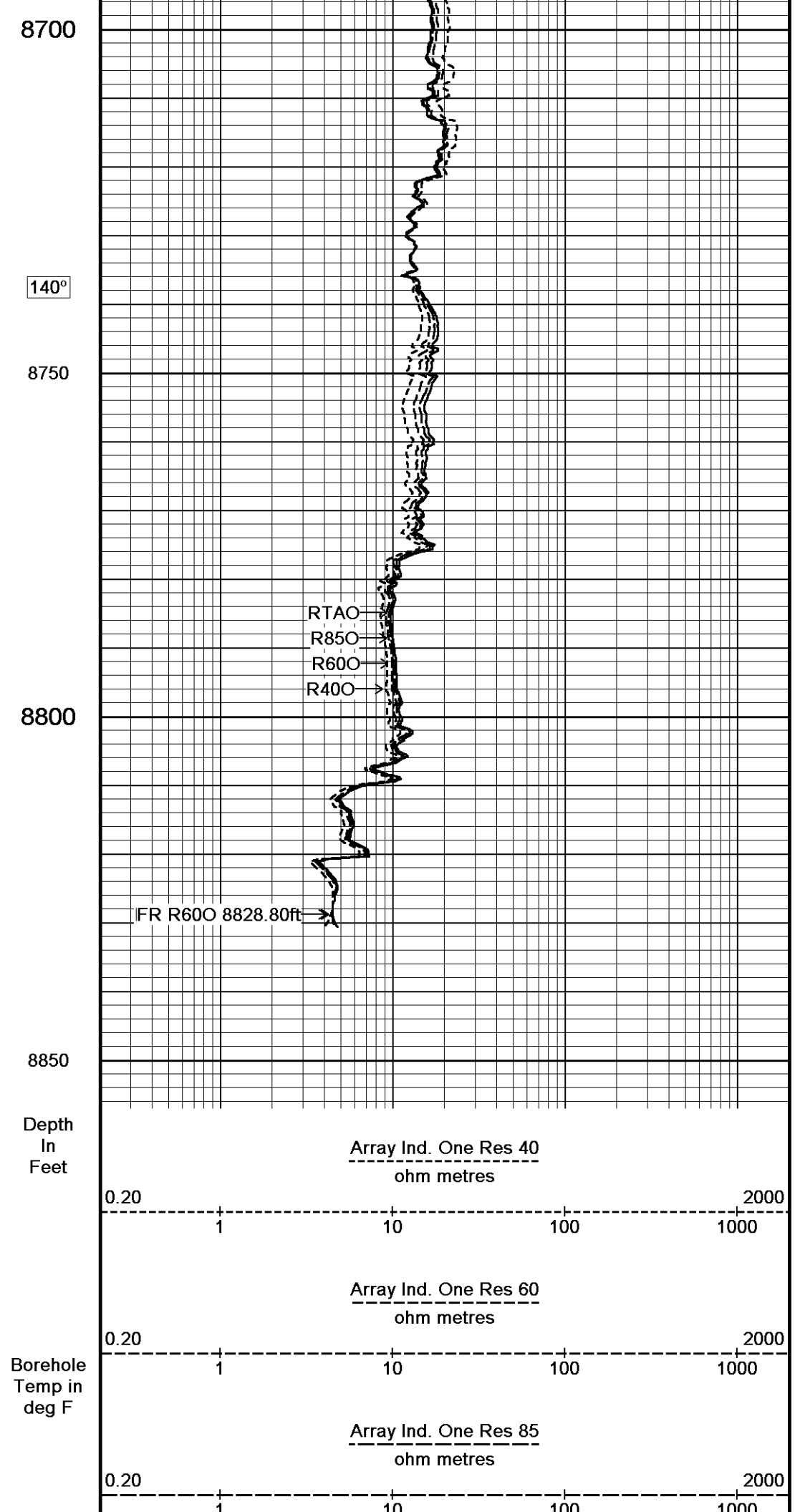
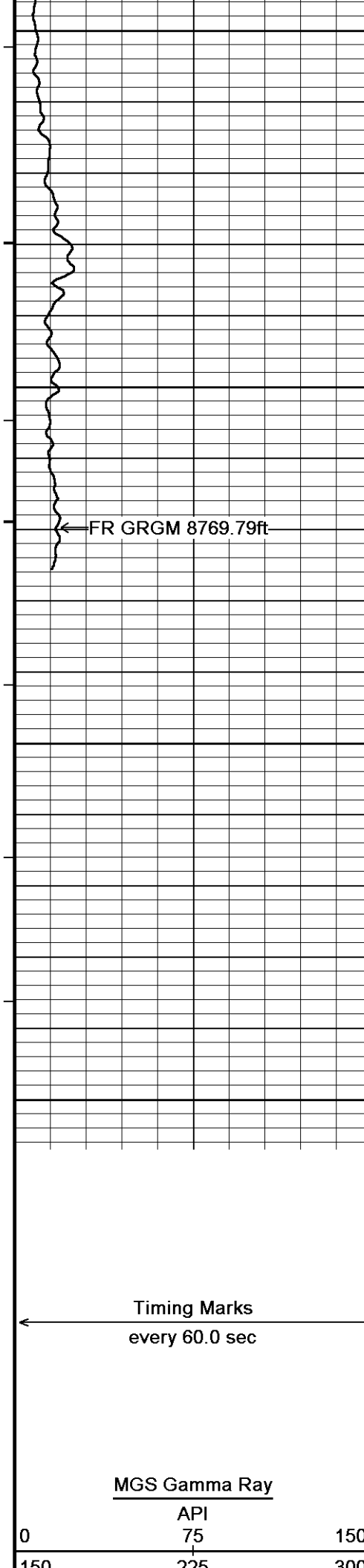
8600

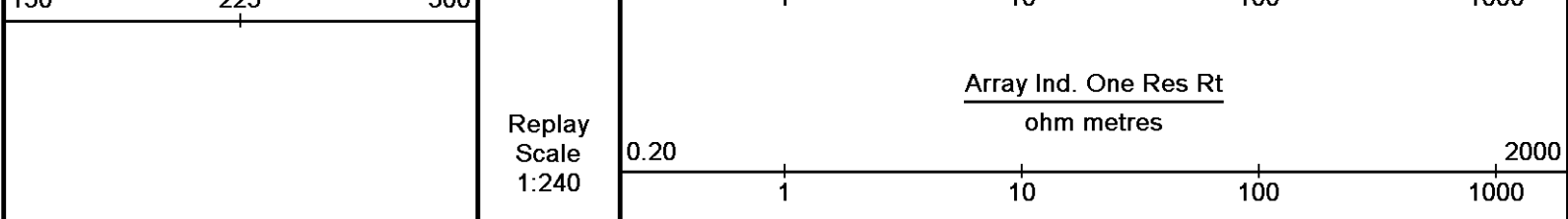
139°

8650

139°







Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 08-JUL-2013 09:21  
 Filename: C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta  
 Recorded on 08-JUL-2013 07:59  
 System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

**5 INCH MAIN LOG**

**BEFORE SURVEY CALIBRATION**  
 C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta

**General Constants All 000** Last Edited on 08-JUL-2013,08:12

**General Parameters**

|                             |          |            |
|-----------------------------|----------|------------|
| Mud Resistivity             | 1.600    | ohm-metres |
| Mud Resistivity Temperature | 99.000   | 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          | 9.625           | 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                  |  |
| SW/APOR Tool Source | 0.000                  |  |

**Down-hole Tension Calibration SMS 0** Field Calibration on 06-MAY-2013,07:48

| Reading No | Measured | Calibrated (lbs) |
|------------|----------|------------------|
| 1          | 12115.60 | 0.00             |
| 2          | 13815.60 | 500.00           |

**Strain Gauge Constants MMS-E.B 165** Last Edited on 02-JUL-2013,21:35

Atmospheric Pressure 14.70 psi

Serial Number 262778

Calibration Date 28-Dec-2010

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           | -0.111 | -0.111 | -0.108 | -0.107 | -0.109    | -0.109 | -0.117 | -0.117 |
| 3000.0        | 5.068  | 5.069  | 5.072  | 5.072  | 5.070     | 5.071  | 5.061  | 5.063  |
| 6000.0        | 10.256 | 10.260 | 10.261 | 10.264 | 10.260    | 10.263 | 10.250 | 10.254 |
| 9000.0        | 15.454 | 15.459 | 15.460 | 15.464 | 15.459    | 15.463 | 15.449 | 15.455 |
| 12000.0       | 20.663 | 20.666 | 20.669 | 20.672 | 20.669    | 20.673 | 20.661 | 20.665 |
| 15000.0       | 25.884 |        | 25.891 |        | 25.893    |        | 25.885 |        |

**High Resolution Temperature Calibration MGS-C.J 135** Field Calibration on 07-JUL-2013,11:24

|       | 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 07-JUL-2013,11:24

## SP Calibration MGS-C.J 135

Field Calibration on 07-JUL-2013,11:24

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

## Gamma Calibration MGS-C.J 135

Field Calibration on 07-JUL-2013 11:29

|                    | Measured | Calibrated (API) |
|--------------------|----------|------------------|
| Background         | 41       | 28               |
| Calibrator (Gross) | 1321     | 885              |
| Calibrator (Net)   | 1280     | 857              |

## Gamma Constants MGS-C.J 135

Last Edited on 07-JUL-2013,18:21

|                               |                 |       |
|-------------------------------|-----------------|-------|
| Gamma Calibrator Number       | GRCG073         |       |
| 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            | %     |

## Neutron Calibration MDN-B.J 422

Base Calibration on 24-JUN-2013 09:10

Field Check on 07-JUL-2013 11:34

|                          | Measured |     | Calibrated (cps) |      |
|--------------------------|----------|-----|------------------|------|
|                          | Near     | Far | Near             | Far  |
| Base Calibration         | 3092     | 95  | 3714             | 110  |
| Ratio                    | 32.513   |     | 33.764           |      |
| Field Calibrator at Base |          |     | Calibrated (cps) |      |
| Ratio                    |          |     | 2272             | 3403 |
| Field Check              |          |     | Calibrated (cps) |      |
| Ratio                    |          |     | 2331             | 3424 |
|                          |          |     | 0.680            |      |

## Neutron Constants MDN-B.J 422

Last Edited on 07-JUL-2013,18:20

|                                 |                 |           |
|---------------------------------|-----------------|-----------|
| Neutron Source Id               | HN553           |           |
| Neutron Jig Number              | N639            |           |
| Epithermal Neutron              | No              |           |
| Caliper Source for Processing   | Density Caliper |           |
| Stand-off                       | 0.00            | inches    |
| Mud Density                     | 1.08            | gm/cc     |
| Limestone Sigma                 | 7.10            | cu        |
| Sandstone Sigma                 | 4.26            | cu        |
| Dolomite Sigma                  | 4.70            | cu        |
| Formation Pressure Source       | None            |           |
| Formation Pressure              | N/A             | kpsi      |
| Temperature Source              | Constant Value  |           |
| Temperature                     | 68.00           | 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-C.A 396

Base Calibration on 24-JUN-2013 12:12

Field Check on 07-JUL-2013 11:15

|             | Measured | Calibrated (ohm-m) |
|-------------|----------|--------------------|
| Reference 1 | 0.0      | 0.0                |
| Reference 2 | 963.4    | 126.8              |
| Base Check  |          | 281.2              |
| Field Check |          | 281.2              |

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

## Induction Calibration MAI-B.J 389

Base Calibration on 02-AUG-2010,08:19  
Field Check on 07-JUL-2013 11:14

## Base Calibration

## Test Loop Calibration

| Channel | Measured |       | Calibrated (mmho/m) |       |
|---------|----------|-------|---------------------|-------|
|         | Low      | High  | Low                 | High  |
| 1       | 16.7     | 465.5 | 9.3                 | 966.2 |
| 2       | 6.4      | 384.0 | 7.6                 | 821.4 |
| 3       | 3.1      | 258.9 | 5.2                 | 566.0 |
| 4       | 1.8      | 133.7 | 2.6                 | 279.2 |

Array Temperature 25.6 Deg F

| Channel | Base Check (mmho/m) |      | Field Check (mmho/m) |        |
|---------|---------------------|------|----------------------|--------|
|         | Low                 | High | Low                  | High   |
| 1       |                     |      | 14.4                 | 3893.4 |
| 2       |                     |      | 29.1                 | 3504.5 |
| 3       |                     |      | 29.0                 | 3045.8 |
| 4       |                     |      | 19.4                 | 2060.8 |
| Deep    |                     |      | 18.9                 | 2010.9 |
| Medium  |                     |      | 41.8                 | 3999.0 |
| Shallow |                     |      | 41.7                 | 5145.6 |

Array Temperature 88.8 Deg F

## Induction Constants MAI-B.J 389

Last Edited on 08-JUL-2013,08:12

|                                   |                          |            |
|-----------------------------------|--------------------------|------------|
| Induction Model                   | RtAP-WBM                 |            |
| Caliper for Borehole Corr.        | Density Caliper          |            |
| Hole Size for Borehole Correction | N/A                      | inches     |
| Tool Centred                      | No                       |            |
| Stand-off Type                    | Fins                     |            |
| Stand-off                         | 0.50                     | inches     |
| Number of Fins on Stand-off       | 6.0000                   |            |
| Stand-off Fin Angle               | 60.00                    | degrees    |
| Stand-off Fin Width               | 0.5000                   | inches     |
| Borehole Corr. Rm Source          | Temperature Corr         |            |
| Temp. for Rm Corr.                | MGS External Temperature |            |
| Squasher Start                    | 0.0020                   | mhos/metre |
| Squasher Offset                   | N/A                      | mhos/metre |

## Borehole Normalisation

|      |        |      |        |
|------|--------|------|--------|
| DRM1 | 0.0000 | DRC1 | 0.0000 |
| DRM2 | 0.0000 | DRC2 | 0.0000 |
| MRM1 | 0.0000 | MRC1 | 0.0000 |
| MRM2 | 0.0000 | MRC2 | 0.0000 |
| SRM1 | 0.0000 | SRC1 | 0.0000 |
| SRM2 | 0.0000 | SRC2 | 0.0000 |

## Calibration Site Corrections

|           |      |             |
|-----------|------|-------------|
| Channel 1 | 0.00 | mmhos/metre |
| Channel 2 | 0.00 | mmhos/metre |
| Channel 3 | 0.00 | mmhos/metre |
| Channel 4 | 0.00 | mmhos/metre |

## Apparent Porosity and Water Saturation Constants

|                                      |        |         |
|--------------------------------------|--------|---------|
| Archie Constant (A)                  | 1.00   |         |
| Cementation Exponent (M)             | 2.00   |         |
| Saturation Exponent (N)              | 2.00   |         |
| Saturation of Water for Apor         | 100.00 | percent |
| Resistivity of Water for Apor and Sw | 0.05   | ohm-m   |
| Resistivity of Mud Filtrate for Sw   | 0.00   | ohm-m   |
| Source for Rt                        | 0.00   |         |

Source for Rxo 0.00

High Resolution Temperature Calibration MAI-B.J 389

Field Calibration on 02-JUL-2013,21:04

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

High Resolution Temperature Constants MAI-B.J 389

Last Edited on 02-JUL-2013,21:04

Pre-filter Length 11

Caliper Calibration MPD-D.A 472

Base Calibration on 02-JUL-2013 21:22

Field Calibration on 07-JUL-2013 11:19

| Base Calibration |          |                      |
|------------------|----------|----------------------|
| Reading No       | Measured | Calibrator Size (in) |
| 1                | 17696    | 4.00                 |
| 2                | 26105    | 5.97                 |
| 3                | 34452    | 7.96                 |
| 4                | 42555    | 9.86                 |
| 5                | 51802    | 11.88                |
| 6                | N/A      | N/A                  |

| Field Calibration |                       |                     |
|-------------------|-----------------------|---------------------|
|                   | Measured Caliper (in) | Actual Caliper (in) |
|                   | 5.95                  | 5.97                |

Photo Density Calibration MPD-D.A 472

Base Calibration on 24-JUN-2013 10:54

Field Check on 07-JUL-2013 11:24

| Density Calibration |          |       |                  |       |
|---------------------|----------|-------|------------------|-------|
| Base Calibration    |          |       |                  |       |
|                     | Measured |       | Calibrated (sdu) |       |
|                     | Near     | Far   | Near             | Far   |
| Reference 1         | 60620    | 31102 | 59494            | 30754 |
| Reference 2         | 25855    | 2890  | 26398            | 2598  |

Field Check at Base 1184.5 1459.9

Field Check 1189.2 1452.5

| PE Calibration   |       |             |       |                  |
|------------------|-------|-------------|-------|------------------|
| Base Calibration |       |             |       |                  |
|                  | WS    | Measured WH | Ratio | Calibrated Ratio |
| Background       | 233   | 1056        |       |                  |
| Reference 1      | 27171 | 60412       | 0.454 | 0.367            |
| Reference 2      | 8129  | 25709       | 0.320 | 0.270            |

Field Check at Base 232.8 1056.2

Field Check 231.6 1061.1

Density Constants MPD-D.A 472

Last Edited on 08-JUL-2013,08:12

|                               |                 |
|-------------------------------|-----------------|
| Density Source Id             | P74840B         |
| Nylon Calibrator Number       | DNCE766         |
| Aluminium Calibrator Number   | DHCG856         |
| Density Shoe Profile          | 4 inch          |
| Caliper Source for Processing | Density Caliper |
| PE Correction to Density      | Not Applied     |
| Mud Density                   | 1.08 gm/cc      |
| Mud Density Z/A Multiplier    | 1.11            |
| Mud Filtrate Density          | 1.00 gm/cc      |
| Dry Hole Mud Filtrate Density | 1.00 gm/cc      |
| DNCT                          | 0.00 gm/cc      |
| CRCT                          | 0.00 gm/cc      |
| Density Z/A Correction        | Hybrid          |
| Matrix Density (gm/cc)        | Depth (ft)      |
| 2.71                          |                 |
| 0.00                          | 0.00            |

0.00  
0.00  
0.00  
0.00  
0.00  
0.00  
0.00

0.00  
0.00  
0.00  
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0.00  
0.00

### DOWNHOLE EQUIPMENT

C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta

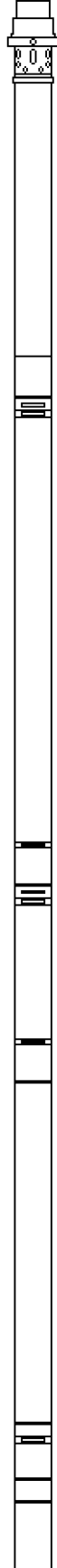
Shuttle Running Tool 3.5"  
SRT-A.A 79 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-F.A 200v Compact Battery Sub  
MBS-F.A 131 LG: 10.61 ft WT: 70.5 lb OD: 2.24 in

Compact Memory Sub E.B  
MMS-E.B 165 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.  
MTI-B.A 76 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma  
MGS-C.J 135 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in



61.76 ft GRGM - MGS Gamma Ray



Compact Collar Locator  
MCL-B.J 69 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

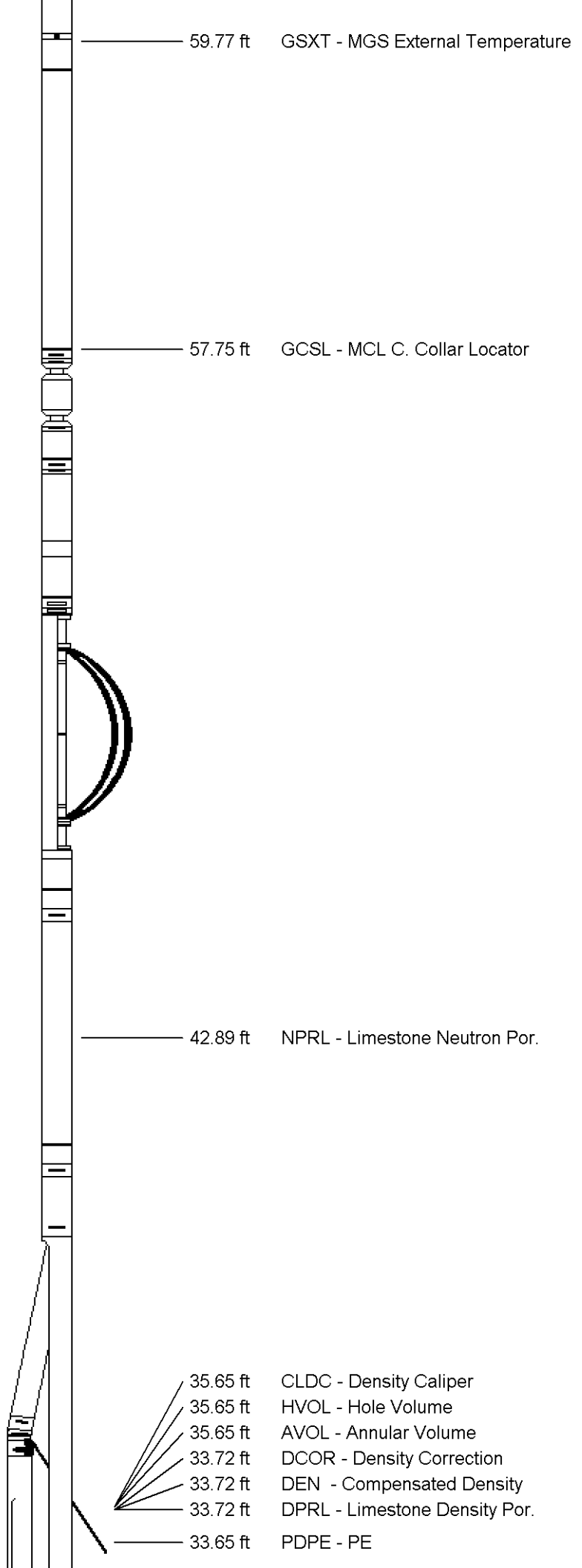
SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 455 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-H Compact Swivel Head Adaptor  
SHA-H 185 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub  
MIS-D.B 603 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron  
MDN-B.J 422 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-D.A 472 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in



59.77 ft GSXT - MGS External Temperature

57.75 ft GCSL - MCL C. Collar Locator

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-D.B Compact Inline Bowspring sub  
MIS-D.B 733 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.B Compact Swivel Head Adaptor  
SHA-J.B 594 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

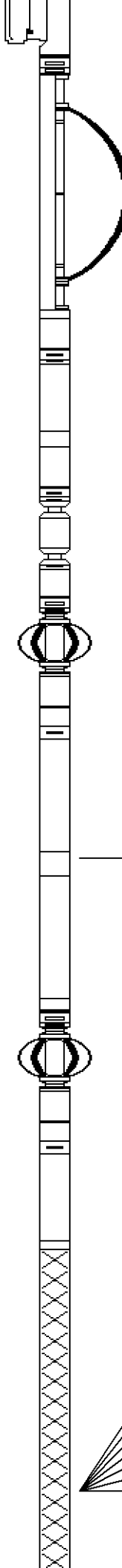
SKJ-E.B Compact Knuckle Joint  
SKJ-E.B 472 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub  
MIS-E.B 575 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric  
MFE-C.A 396 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

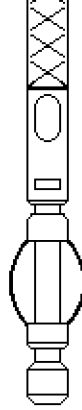
MIS-E.B Compact Inline Standoff sub  
MIS-E.B 564 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction  
MAI-B.J 389 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in



16.05 ft FEFE - Shallow FE

- 3.34 ft CTAO - Array Ind. One Cond Ct
- 3.34 ft R200 - Array Ind. One Res 20
- 3.34 ft R300 - Array Ind. One Res 30
- 3.34 ft R400 - Array Ind. One Res 40
- 3.34 ft R600 - Array Ind. One Res 60
- 3.34 ft R850 - Array Ind. One Res 85
- 3.34 ft RTAO - Array Ind. One Res Rt



Tool Zero

(1.84ft from bottom)

Total Length: 88.36 ft Weight: 637.1 lb

All measurements relative to tool zero.

**COMPANY** SANDRIDGE ENERGY  
**WELL** JEFFERSON 3306 1-27H  
**FIELD** STOHRVILLE  
**PROVINCE/COUNTY** HARPER  
**COUNTRY/STATE** USA \ KANSAS

|                         |         |      |               |         |      |
|-------------------------|---------|------|---------------|---------|------|
| Elevation Kelly Bushing | 1310.00 | feet | First Reading | 8830.00 | feet |
| Elevation Drill Floor   | 1310.00 | feet | Depth Driller | 8865.00 | feet |
| Elevation Ground Level  | 1288.00 | feet | Depth Logger  | 8865.00 | feet |

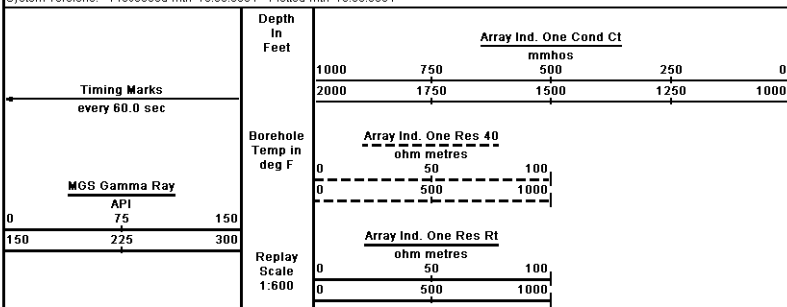


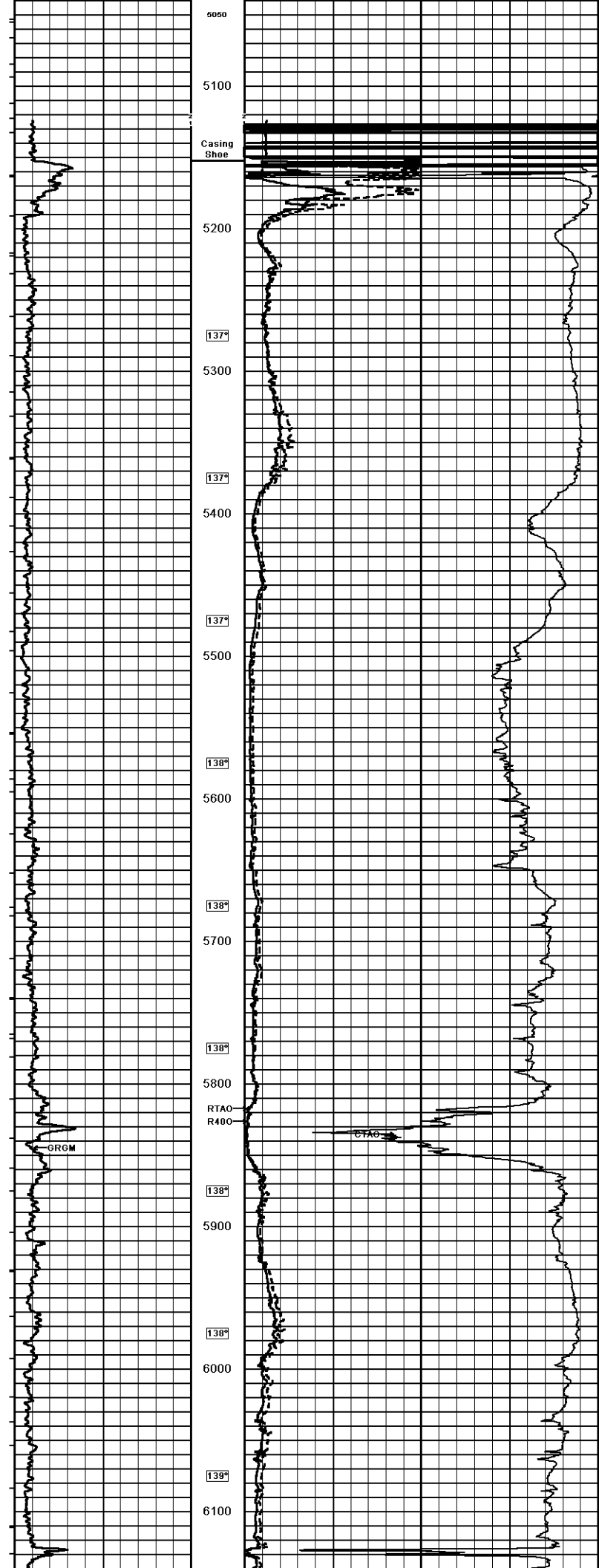
**Weatherford**<sup>®</sup>

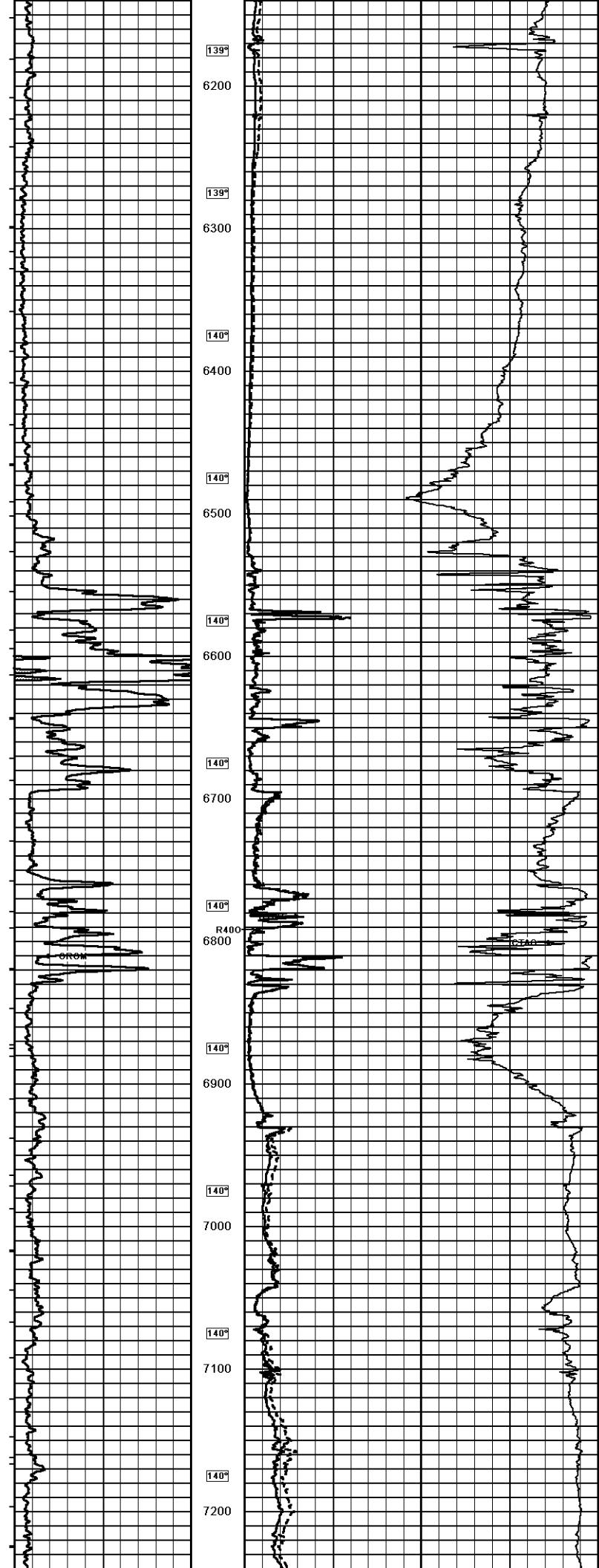
**CML MESSENGER SHUTTLE  
 ARRAY INDUCTION  
 ELECTRIC LOG**

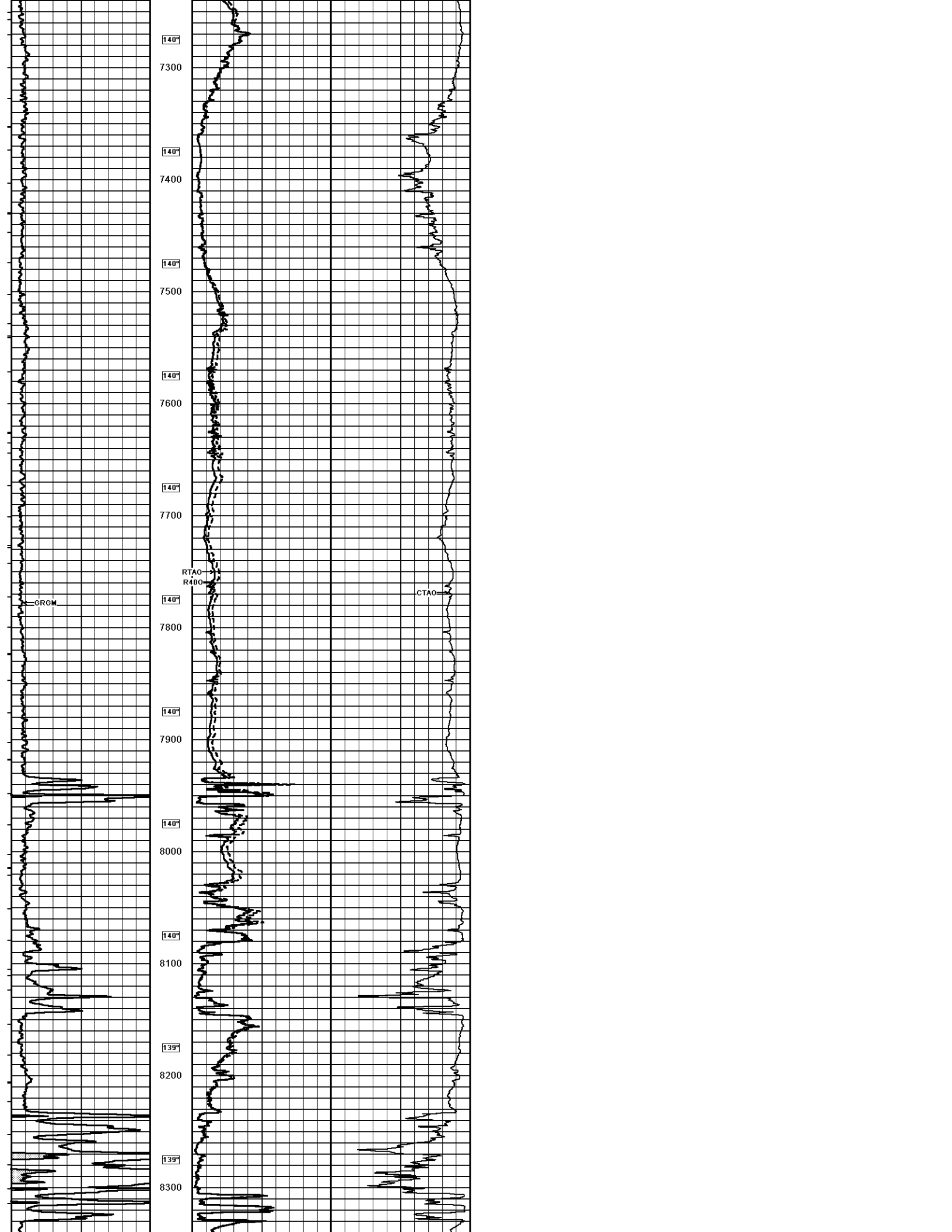
|  |                   |   |                      |
|--|-------------------|---|----------------------|
| <b>Weatherford</b>   |                   | <b>CML MESSENGER SHUTTLE<br/>ARRAY INDUCTION<br/>ELECTRIC LOG</b> |                      |
| COMPANY SANDRIDGE ENERGY<br>WELL JEFFERSON 3306 1-27H<br>FIELD STOHRVILLE<br>PROVINCE/COUNTY HARPER<br>COUNTRY/STATE USA \ KANSAS<br>LOCATION SW SW SE SE<br>PERMIT NUMBER 200 FSL & 1245' FEL<br>Sec. 27 Twp. 33S Rge. 9W (Other Services)<br>Latitude 37.120555379<br>Longitude 97.969557439<br>SRNumber 154071-21839<br>Permanent Datum Q.L. Elevation 1288 feet<br>Log Measured From KB<br>Drilling Measured From KB @ 22' AGL<br>Date 07-JUL-2013 |                   |   |                      |
| Run Number   | ONE               | Flowline  |                      |
| Service Order  | 3540178           | Depth Driller   | 8865.00 feet         |
| Depth Driller  | 8865.00 feet      | Depth Logger  | 8830.00 feet         |
| First Reading  | 8830.00 feet      | Last Reading  | 5090.00 feet         |
| Case Reading   | 5192.00 feet      | Casing Driller  | 5192.00 feet         |
| Casing Logger  | 6.125 inches      | Flow Fluid Type   | WATER                |
| Flow Fluid Type  | WATER             | Density/Viscosity   | 9.00 lb/USg 40.00 cP |
| PH / Fluid Loss  | 9.00              | Sample Source   | FLOWLINE             |
| Sample Source  | FLOWLINE          | Rm @ Measured Temp  | 1.60 @ 99.0 ohm-m    |
| Rm @ Measured Temp   | 1.29 @ 99.0 ohm-m | Rm @ Measured Temp  | 1.92 @ 99.0 ohm-m    |
| Rm @ Measured Temp   | 1.92 @ 99.0 ohm-m | Source Rm / Rmc   | CALC                 |
| Source Rm / Rmc  | CALC              | Rm @ BHT  | 1.15 @ 40.0 ohm-m    |
| Rm @ BHT   | 1.15 @ 40.0 ohm-m | Time Since Circulation  | 18 HOURS             |
| Time Since Circulation   | 18 HOURS          | Max Recorded Temp   | 140.00 deg F         |
| Max Recorded Temp  | 140.00 deg F      | Equipment Base  | 18188 OIC            |
| Equipment Base   | 18188 OIC         | Recorded By   | GOTHMUELLER          |
| Recorded By  | GOTHMUELLER       | Witnessed By  | JLIMONCH             |
| Witnessed By   | JLIMONCH          | Tool Zero   | 1310.00 feet         |
| Tool Zero  | 1310.00 feet      | Ground Level  | 1288.00 feet         |
| Ground Level   | 1288.00 feet      | PT#   | 0012881              |

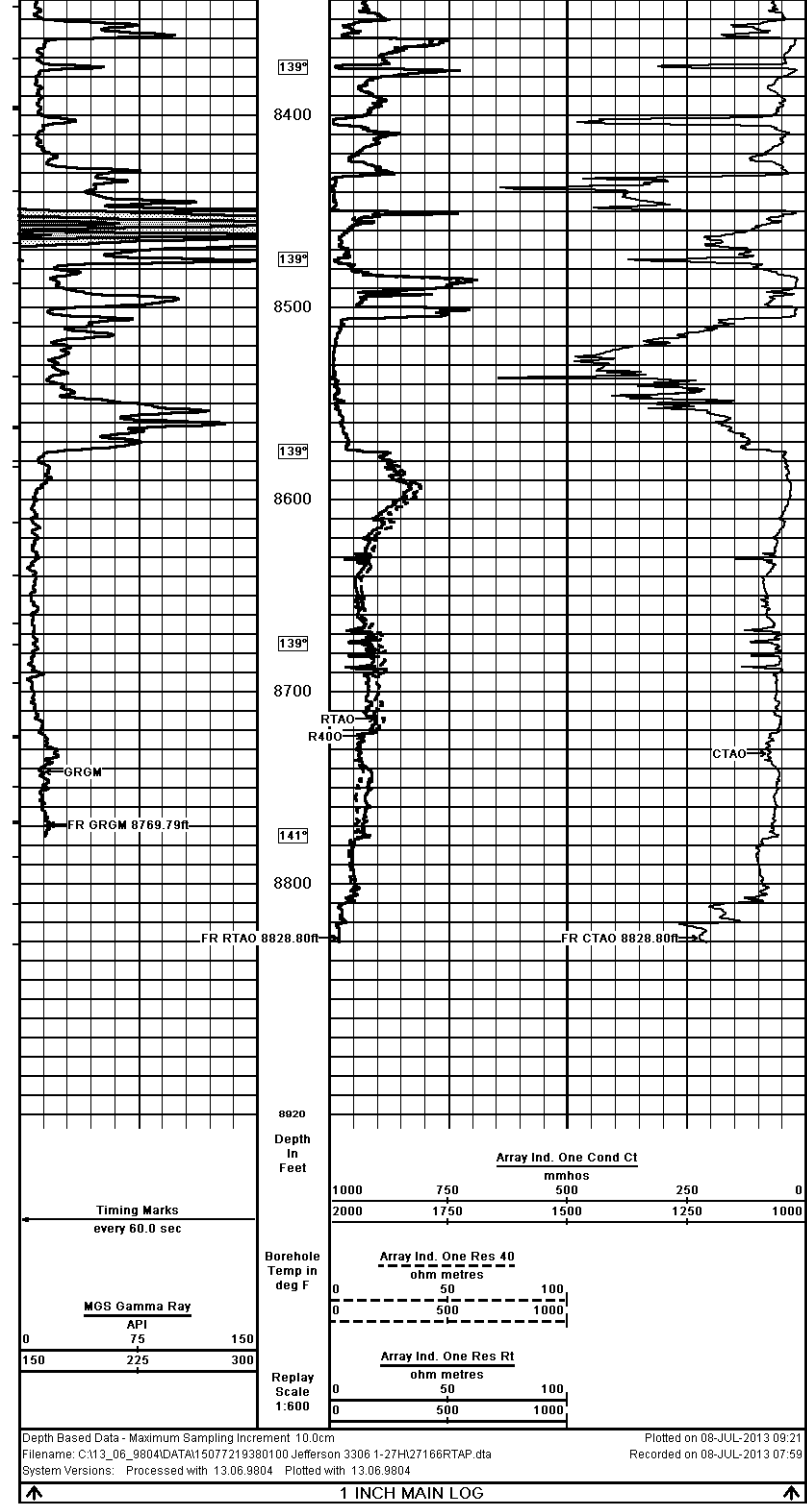
**1 INCH MAIN LOG**  
 Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 08-JUL-2013 09:21  
 Filename: C:\1\_3\_06\_9804\DATA\15077219380100\Jefferson 3306 1-27H\27166RTAP.dta  
 Recorded on 08-JUL-2013 07:59  
 System Versions: Processed with 13.06.9804 Plotted with 13.06.9804












Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 08-JUL-2013 09:21  
 Filename: C:\13\_06\_9804\DATA\15077219380100 Jefferson 3306 1-27H\27166RTAP.dta  
 Recorded on 08-JUL-2013 07:59  
 System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

↑ 1 INCH MAIN LOG ↑

|  |                      |      |               |         |      |
|--|----------------------|------|---------------|---------|------|
| COMPANY  | SANDRIDGE ENERGY     |      |               |         |      |
| WELL   | JEFFERSON 3306 1-27H |      |               |         |      |
| FIELD  | STOHRVILLE           |      |               |         |      |
| PROVINCE/COUNTY  | HARPER               |      |               |         |      |
| COUNTRY/STATE  | USA \ KANSAS         |      |               |         |      |
| Elevation Kelly Bushing  | 1310.00              | feet | First Reading | 8830.00 | feet |
| Elevation Drill Floor  | 1310.00              | feet | Depth Driller | 8865.00 | feet |
| Elevation Ground Level   | 1288.00              | feet | Depth Logger  | 8865.00 | feet |
|  <b>CML MESSENGER SHUTTLE</b><br><b>ARRAY INDUCTION</b><br><b>ELECTRIC LOG</b> |                      |      |               |         |      |