



Induction Array Log

Company Reeder Operating, LLC
Well Robert D. Gray 1-20H
Field N/A
County Comanche
State KS

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Well Robert D. Gray 1-20H
Field N/A
County Comanche
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| | | | | | | | |
|------------------------------|--------------|------------------------|---------------------|-----------|--------------------------|----------------|----------------------------------|
| Date | 11/14/2011 | Location: | 150' FSL & 225' FWL | API #: | 15-033-21603-01-00 | Other Services | GRT, MEL MAS, LDT CNL, IAT |
| Run Number | ONE | Permanent Datum | GL | Elevation | 2018 | ft. | K.B. 2035 |
| Depth Driller | 5735 | Log Measured From | KB | | 17 ft. above perm. datum | ft. | D.F. 2035 |
| Depth Logger | 5398 | Drilling Measured From | KB | | | ft. | G.L. 2018 |
| Bottom Logged Interval | 5389 | | | | | | |
| Top Log Interval | 796 | | | | | | |
| Casing Driller | 9.625 @ 8'10 | | | | | | |
| Casing Logger | 796 | | | | | | |
| Bit Size | 8.75 | | | | | | |
| Type Fluid in Hole | WBM | | | | | | |
| Density / Viscosity | 9.1 / 68 | | | | | | |
| pH / Fluid Loss | 10.6 / 4.7 | | | | | | |
| Source of Sample | FLOWLINE | | | | | | |
| Rm @ Meas. Temp | .7 @ 89 | | | | | | |
| Rmt @ Meas. Temp | .52 @ 89 | | | | | | |
| Rmc @ Meas. Temp | 1.0 @ 89 | | | | | | |
| Source of Rmf / Rmc | MEASURED | | | | | | |
| Rm @ BHT | .52 @ 121 | | | | | | |
| Time Circulation Stopped | 0600 | | | | | | |
| Time Logger on Bottom | 1115 | | | | | | |
| Maximum Recorded Temperature | 121 | | | | | | |
| Equipment Number | 11008 | | | | | | |
| Location | OKC | | | | | | |
| Recorded By | W. MILLER | | | | | | C. HUMPHREYS |
| Witnessed By | K. BLALOCK | | | | | | G. WENTE |

<<< Fold Here >>>

Equipment and Log Data

| | | | | | | | | | |
|--------------|------------|----------------|---------|----------------|-----------|--------------|-----------|------------|-----------|
| Date: | 11/14/2011 | Service Order: | 10225 | | | | | | |
| Gamma | | Density | | Neutron | | Sonic | | IAT | |
| Run No. | ONE | Run No. | ONE | Run No. | ONE | Run No. | ONE | Run No. | ONE |
| Serial No. | 10047 | Serial No. | 10112 | Serial No. | 10071 | Serial No. | 10037LS | Serial No. | 10107 |
| O.D. | 3.375 in. | Source No. | 50129B | Source No. | 66005B | Centralizers | TWO | Standoffs | 2 @ 1.5 |
| | | O.D. | 4.5 in. | O.D. | 3.375 in. | O.D. | 3.375 in. | O.D. | 3.875 in. |

Logging Pass Data

| General | | | Gamma | | Density | | | Neutron | | | Sonic | | | IAT | |
|---------|--------|------|--------|-------|---------|-------|--------|---------|-------|--------|--------|-------|--------|--------|-------|
| | | | Scales | | Scales | | | Scales | | | Scales | | | Scales | |
| Run | Depths | | Left | Right | Left | Right | Matrix | Left | Right | Matrix | Left | Right | Matrix | Left | Right |
| ONE | 5398 | 796 | 0 | 150 | | | | | | | 30% | -10% | 47.6 | 0.2 | 2000 |
| TWO | 5412 | 4300 | 0 | 150 | 30% | -10% | 2.71 | 30% | -10% | LIME | | | | | |

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 interpretation, and we shall not, except in the case of gross or willful 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 set out in our current Price Schedule.

Comments

PASS ONE: GRT, MAS, IAT
 PASS TWO: GRT, MEL, CNL, LDT
 THIS IS THE FIRST RUN IN THE WELL.
 CNL DECENTRALIZED WITH BOWSPRING
 CHLORIDES REPORTED AT 9500 MG/L

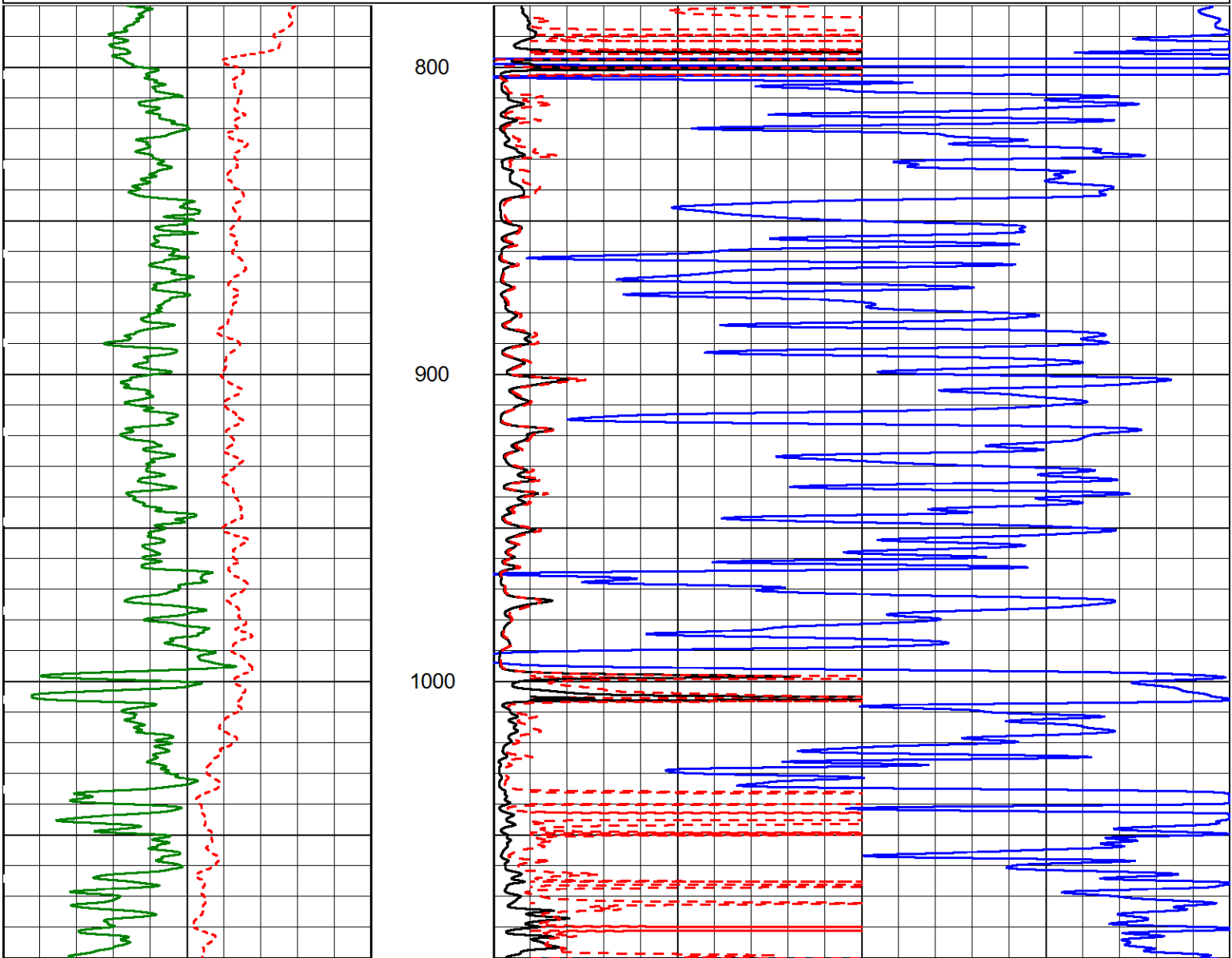
NO LCM REPORTED.
KOP AT 4923
WELL DEVIATED 90.45° AT TD

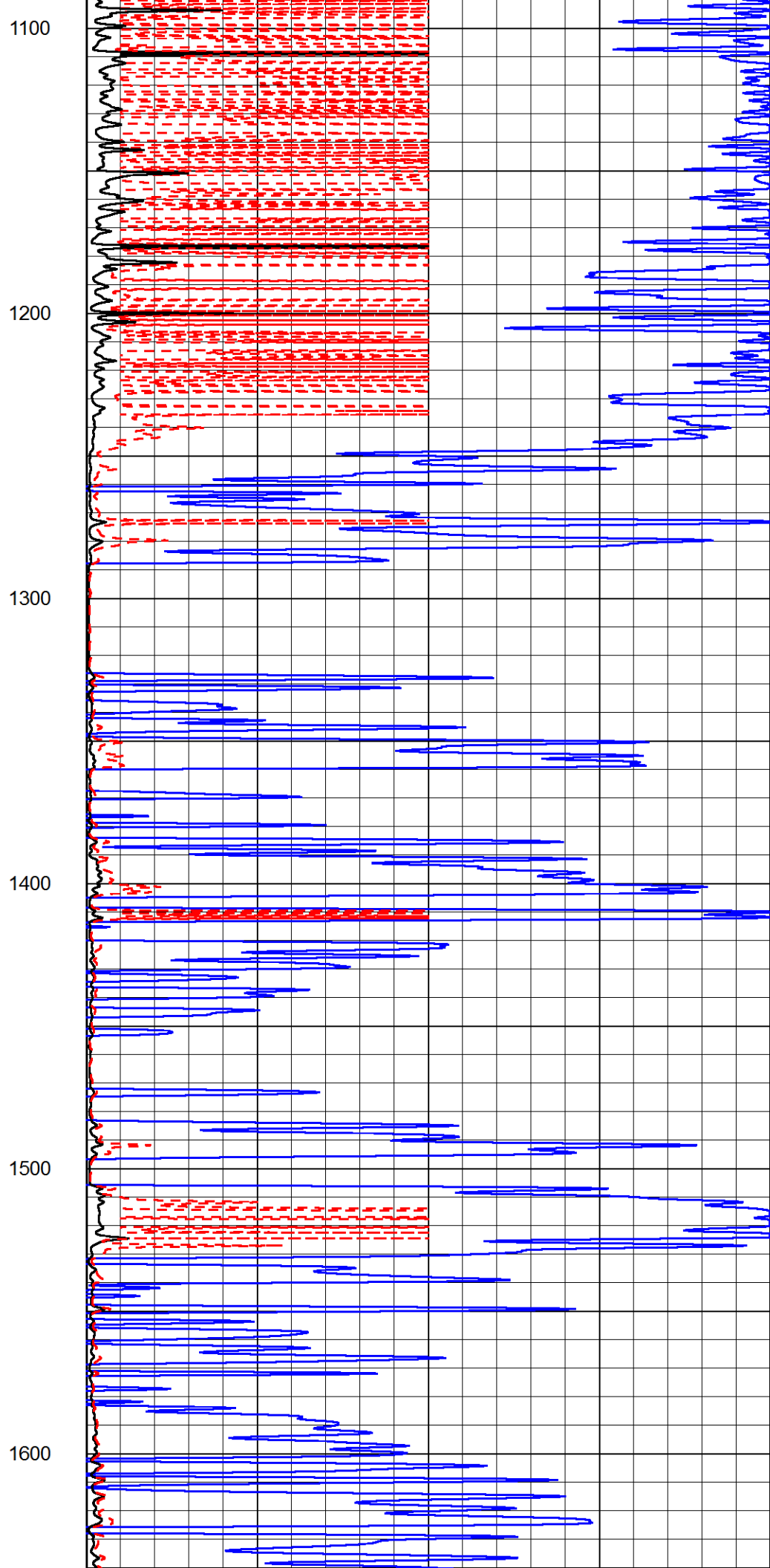
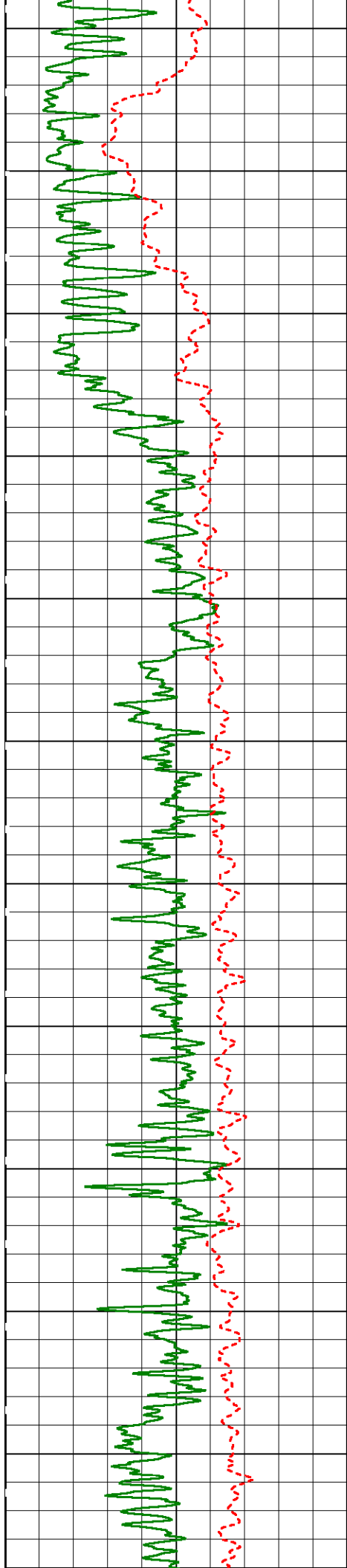
YOUR CREW TODAY: K. PATTON, D. GOSEY
THANK YOU FOR CHOOSING ALLIED WIRELINE. OKLAHOMA CITY, OK. (405) 445-7135.

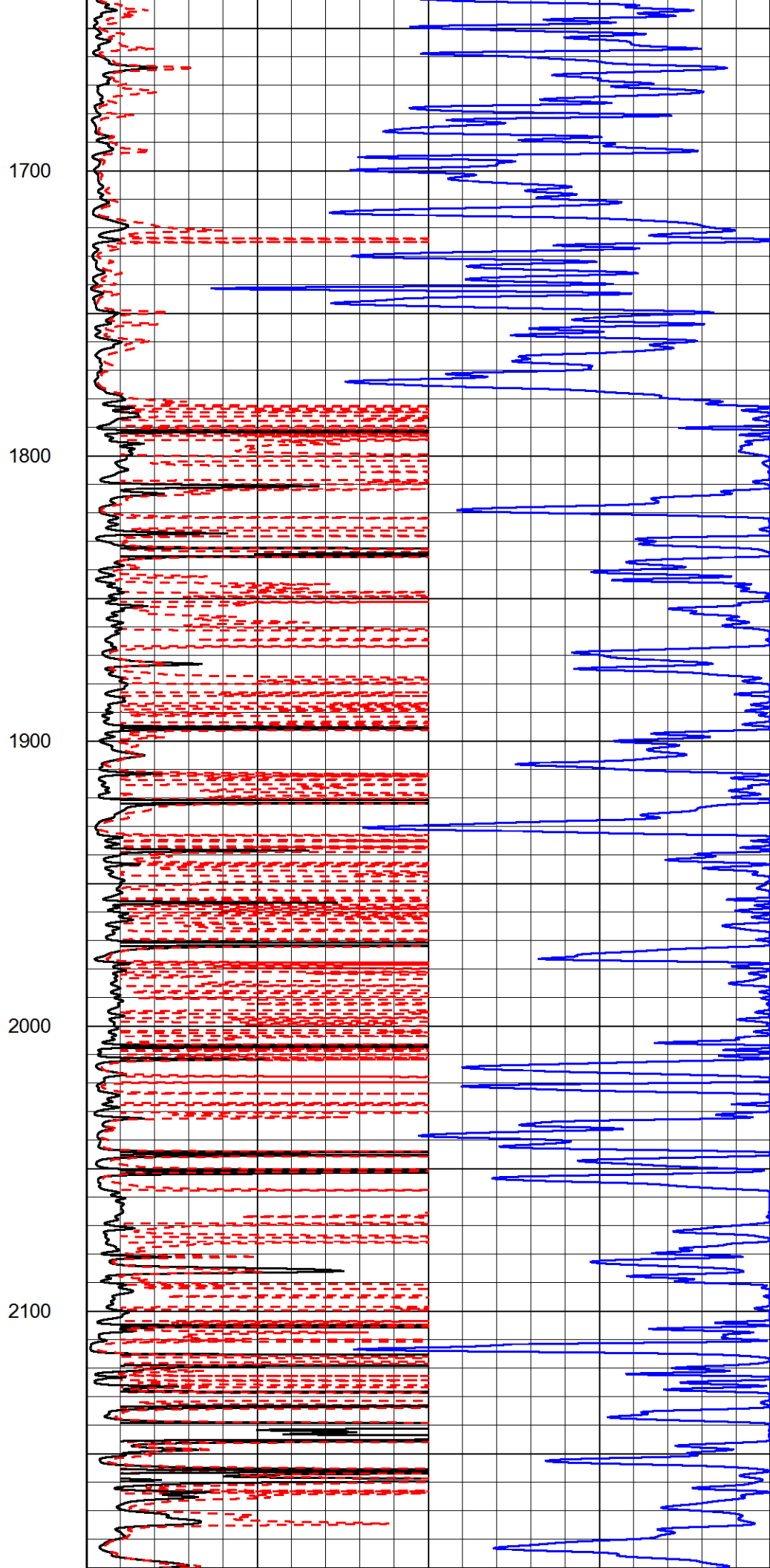
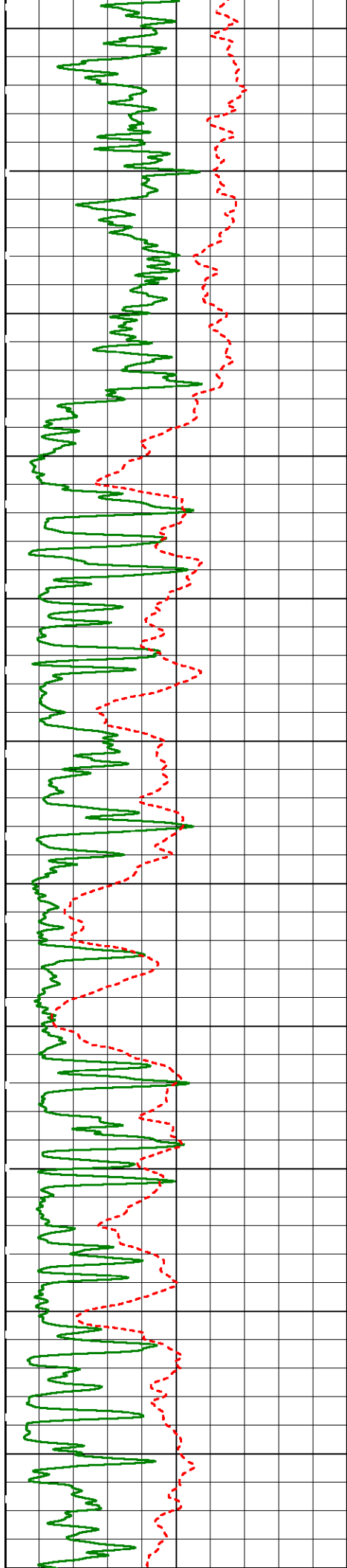
| | |
|--|--------------------|
|  | <h1>Main Pass</h1> |
|--|--------------------|

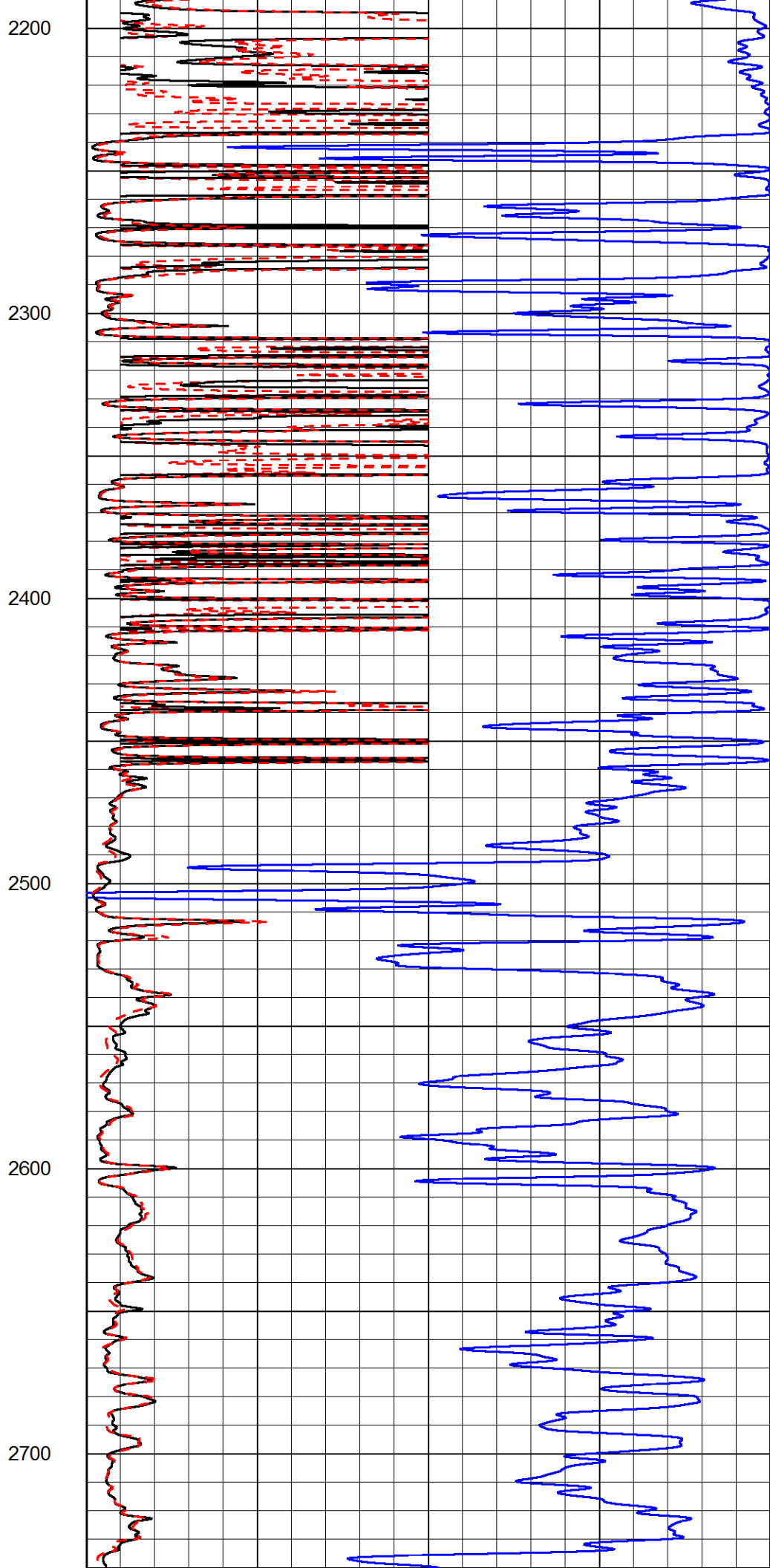
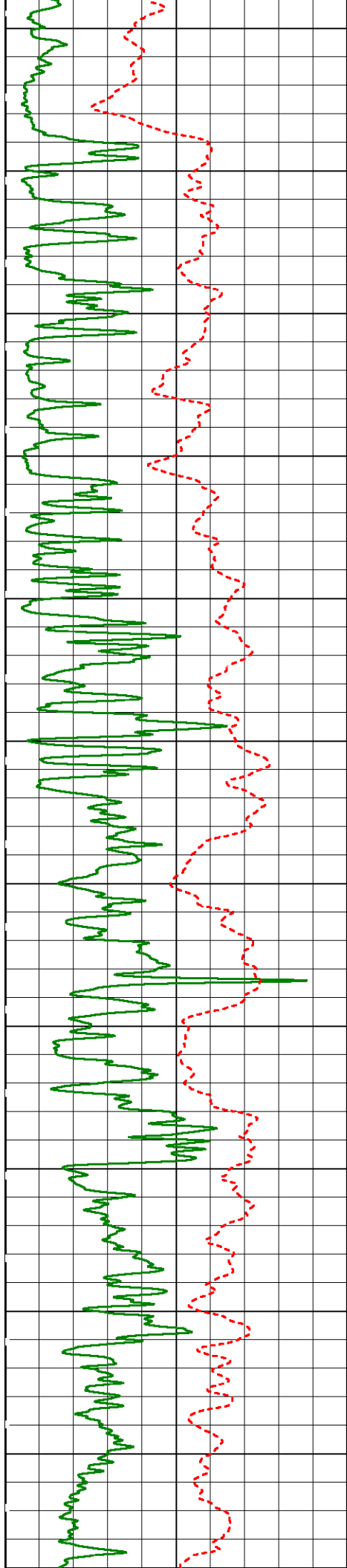
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Charted by: Depth in Feet scaled 1:600

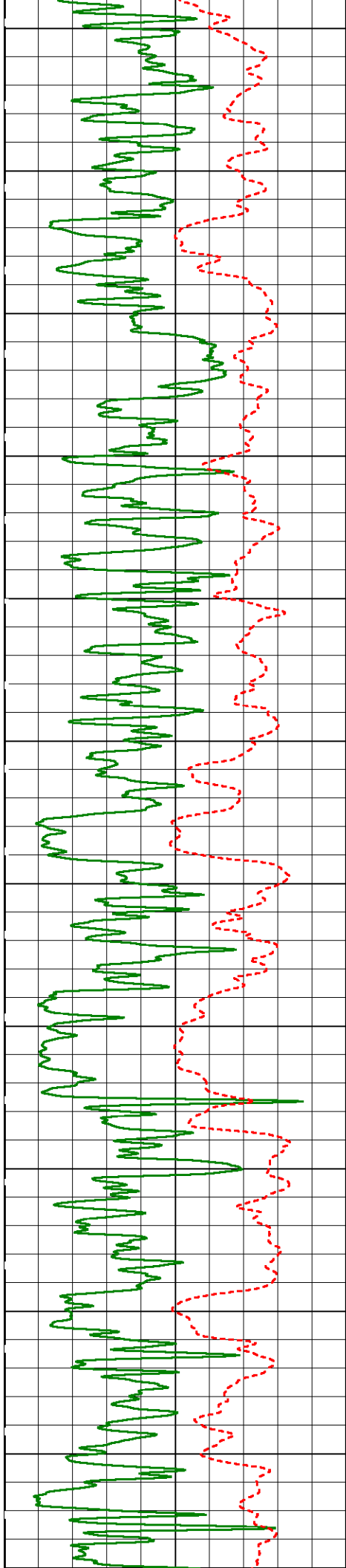
| | | | | | |
|-------------|------------------|-----|------|--------------------------------|---|
| 0 | Gamma Ray (GAPI) | 150 | 1000 | 90" Conductivity (mmho/m) | 0 |
| SP [-20mV+] | | | 0 | Shallow Resistivity (Ohm-m) 50 | |
| | | | 0 | Deep Resistivity (Ohm-m) 50 | |











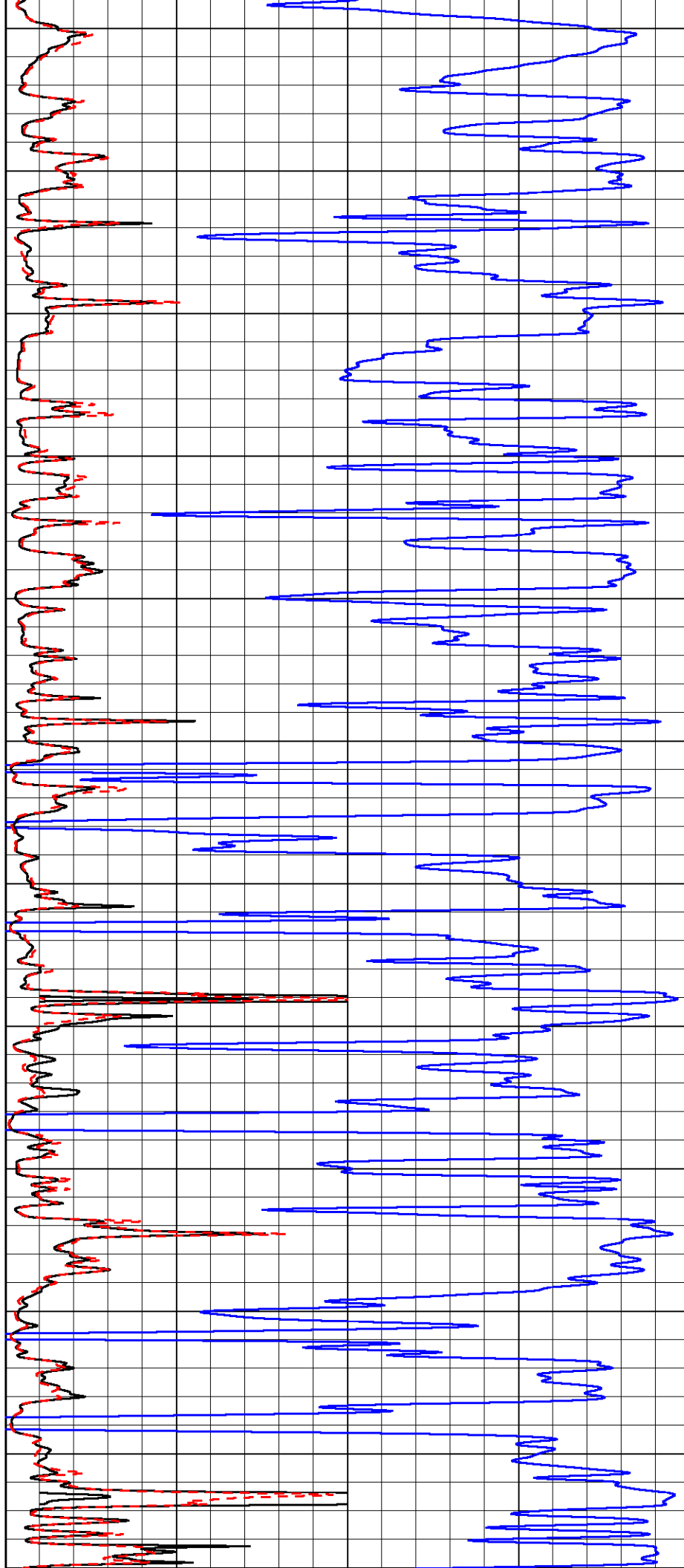
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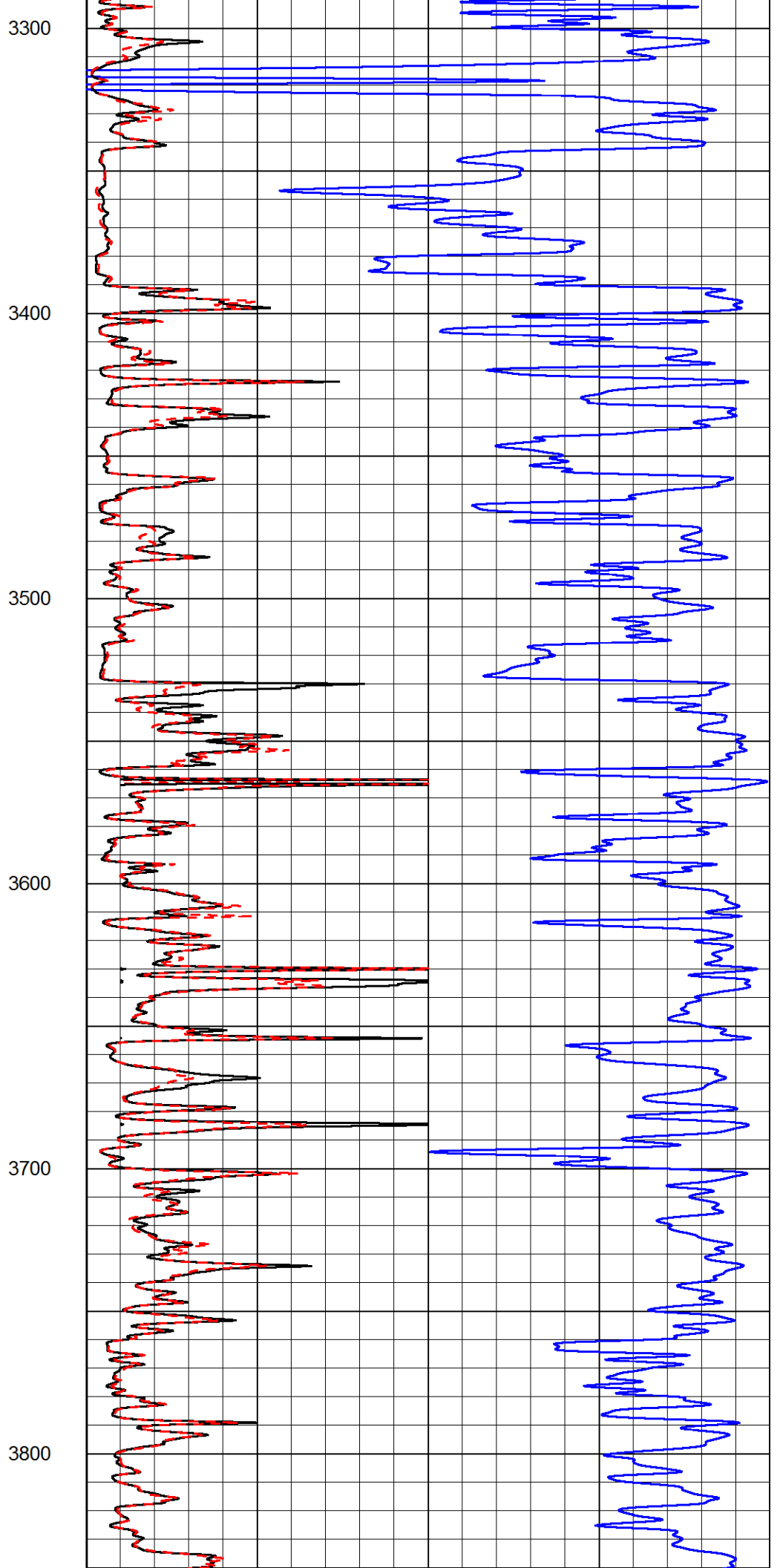
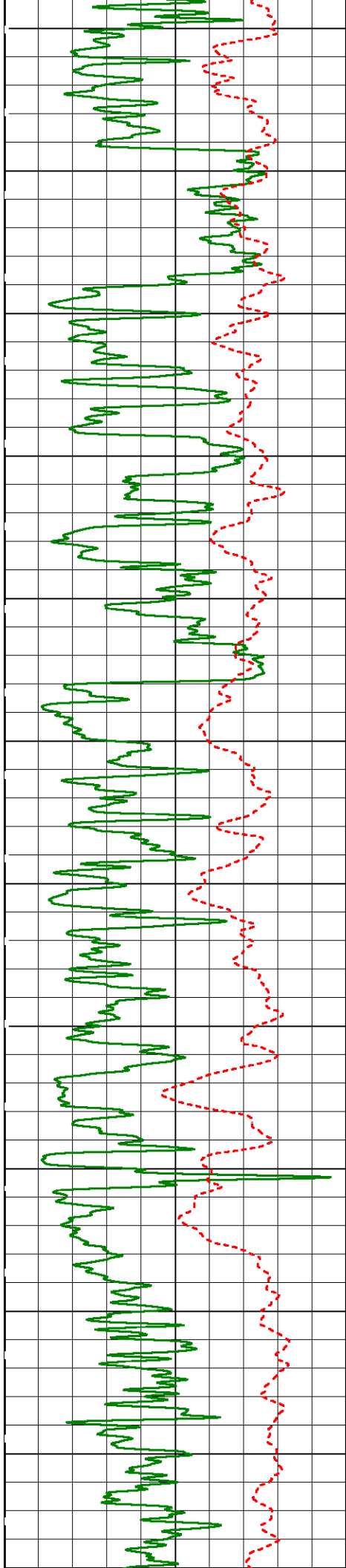
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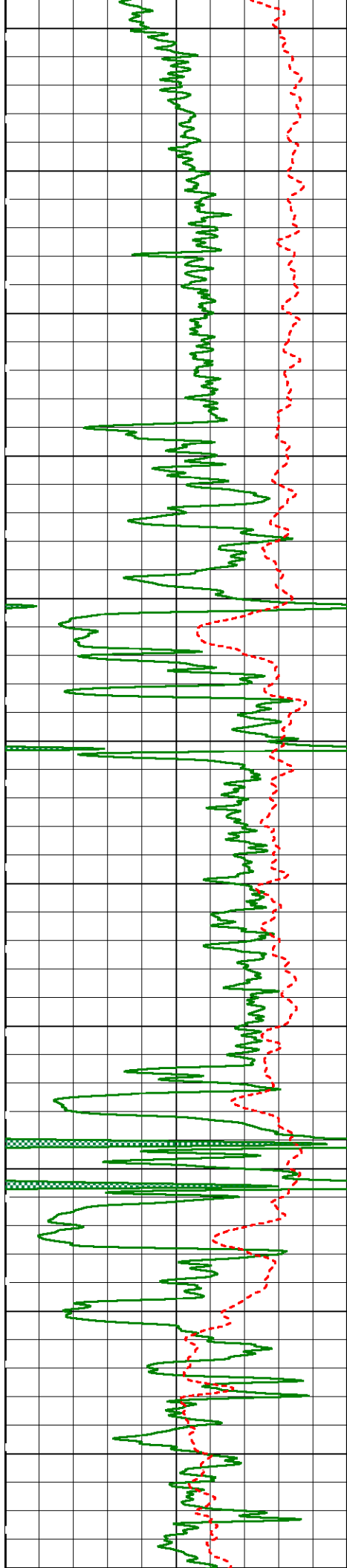
3000

3100

3200







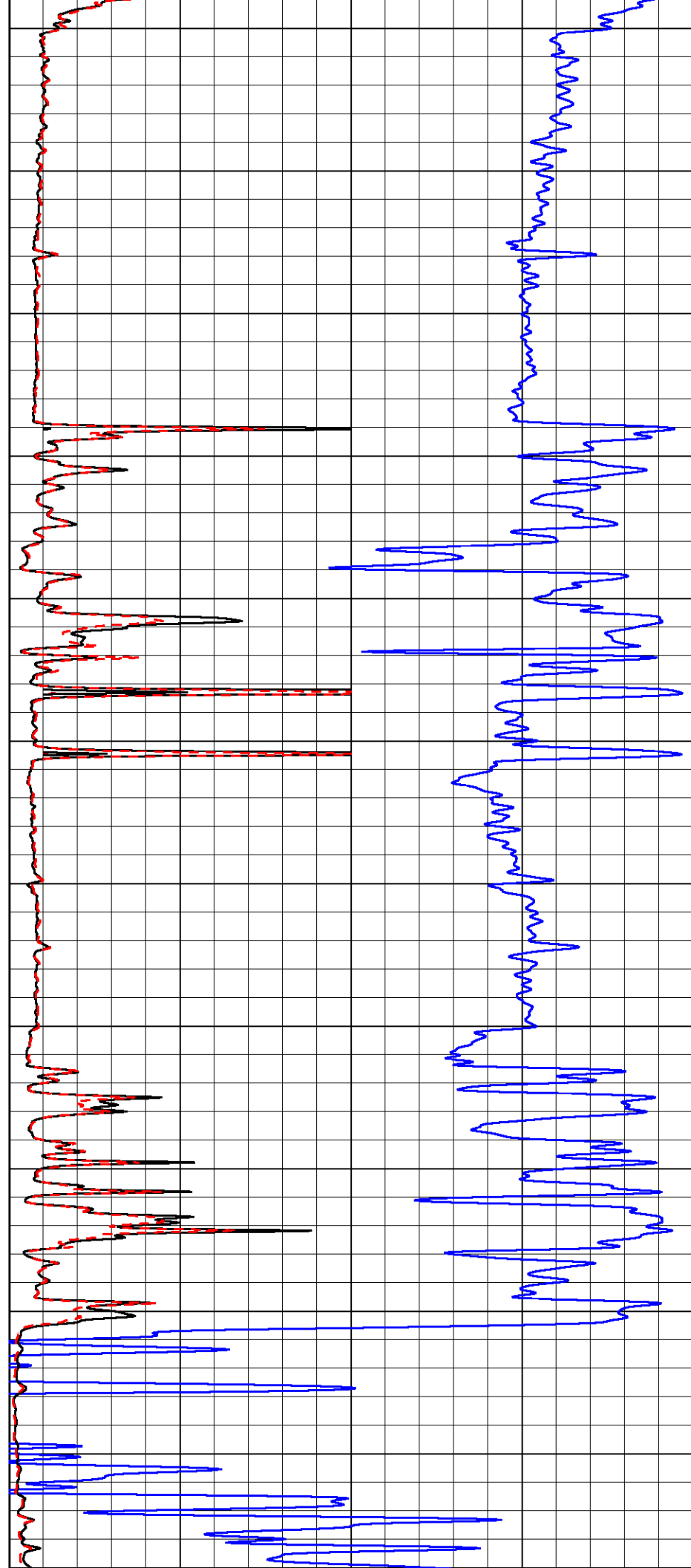
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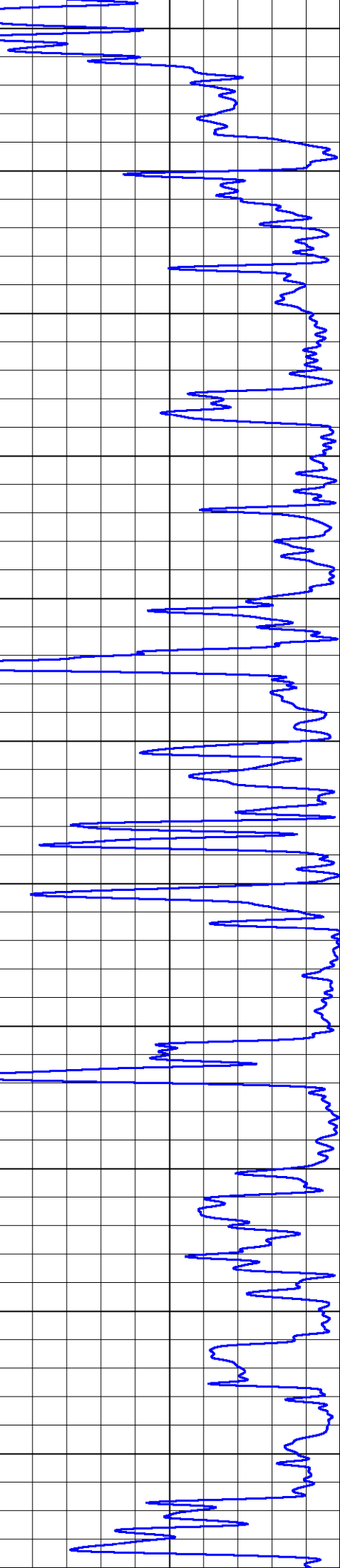
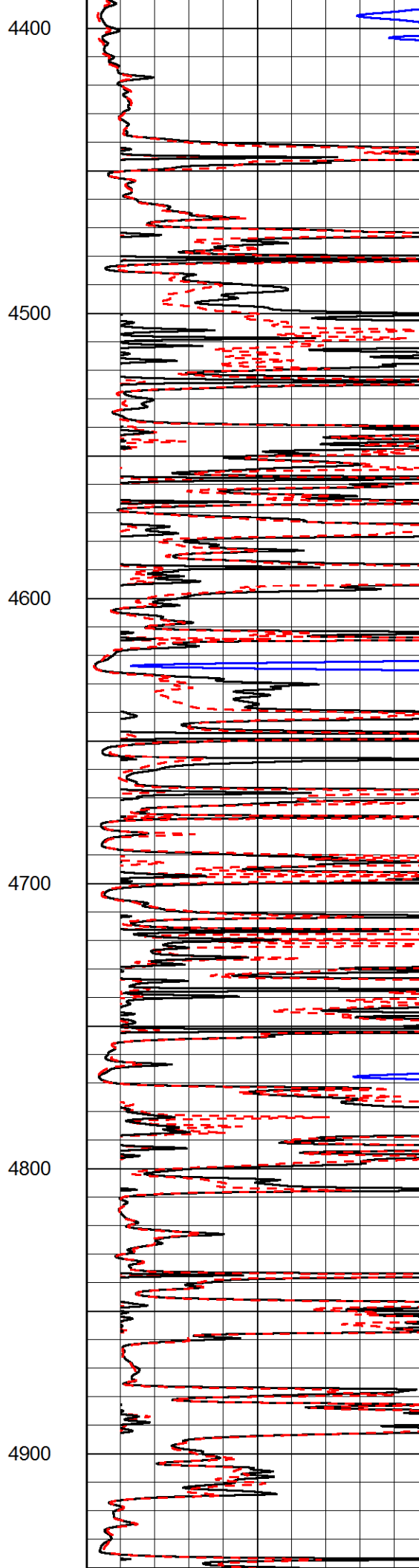
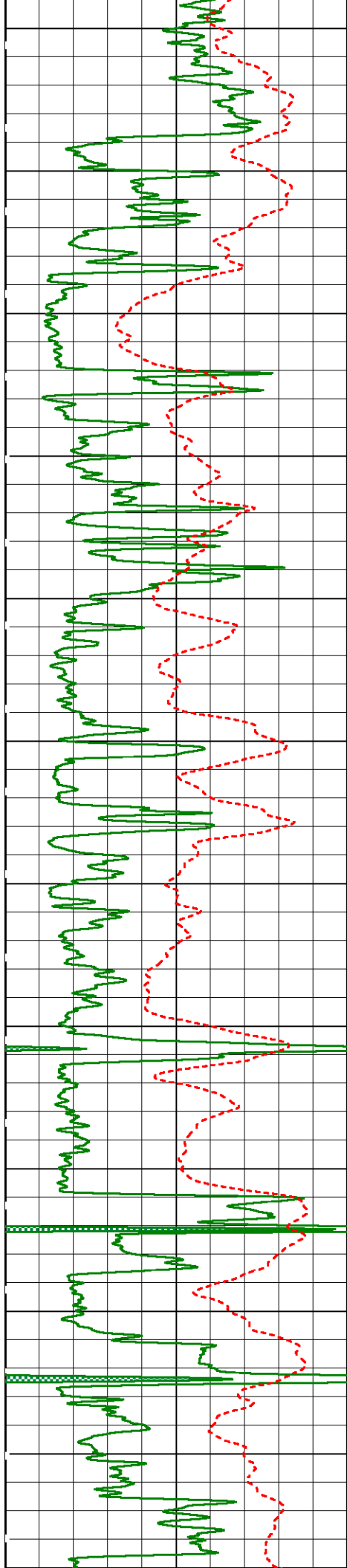
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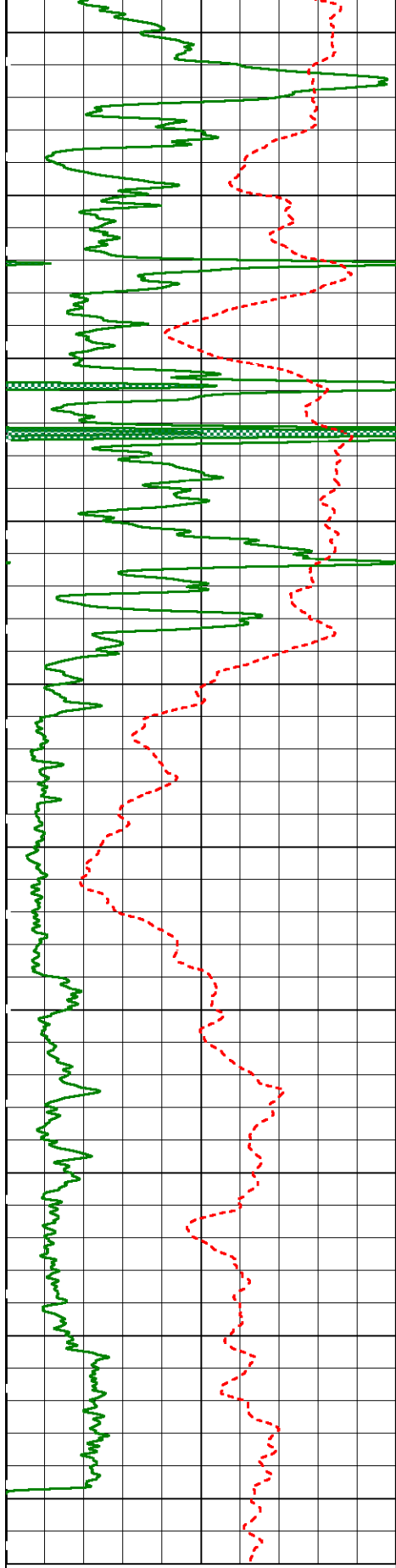
4100

4200

4300







5000

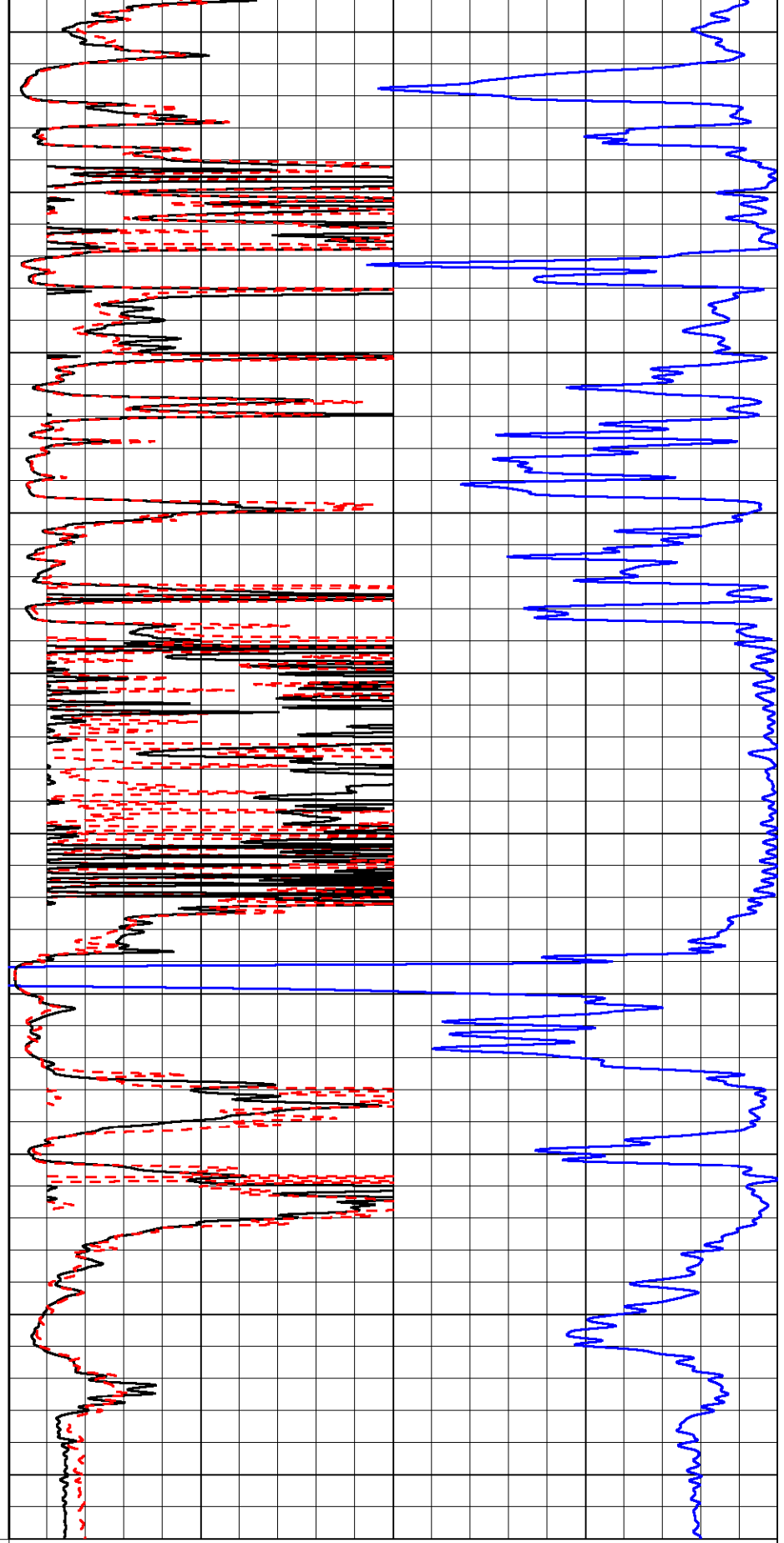
5100

5200

5300

5400

0 Gamma Ray (GAPI) 150
 SP [-20mV+]



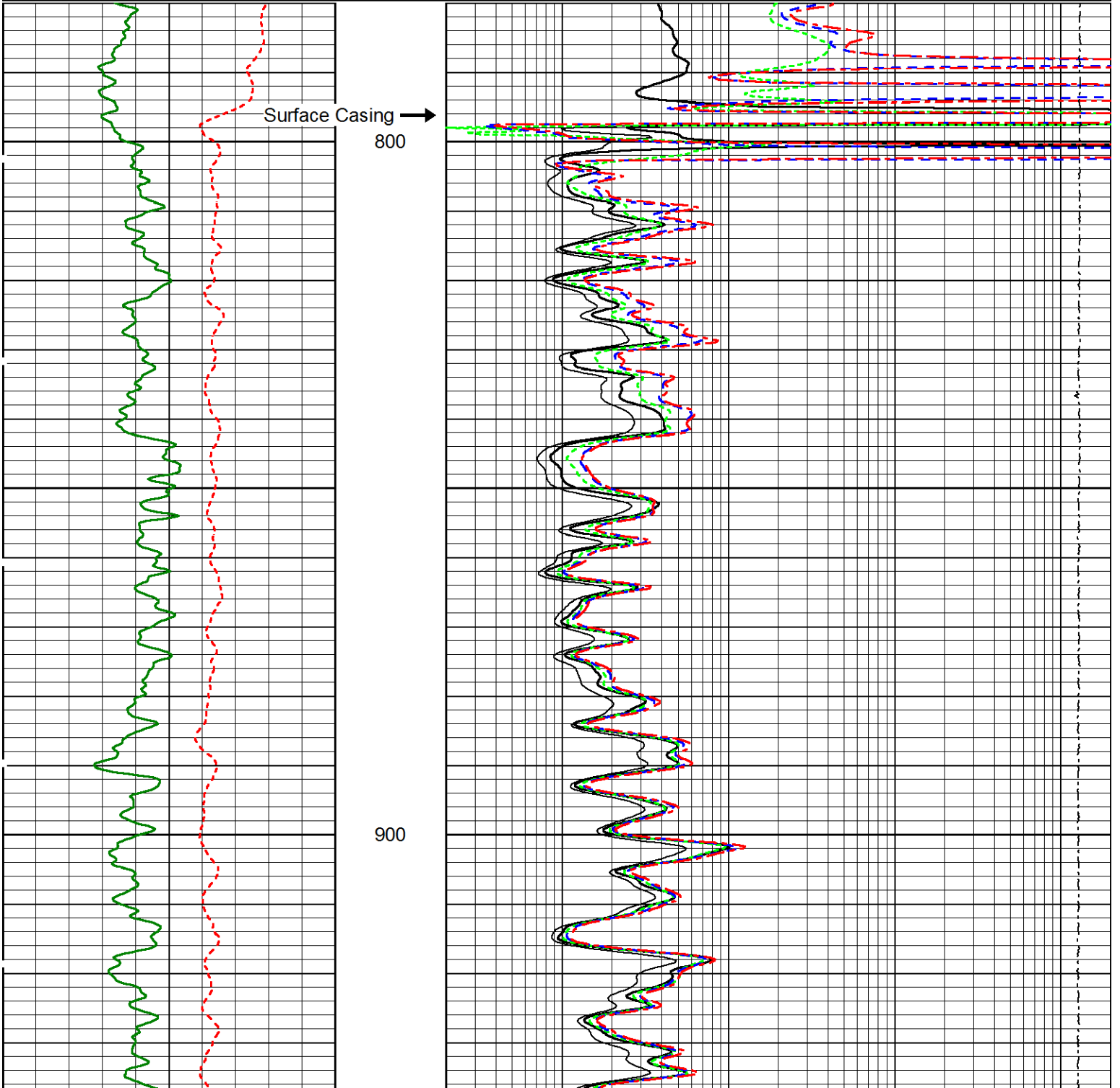
1000 90" Conductivity (mmho/m) 0
 0 Shallow Resistivity (Ohm-m) 50
 0 Deep Resistivity (Ohm-m) 50

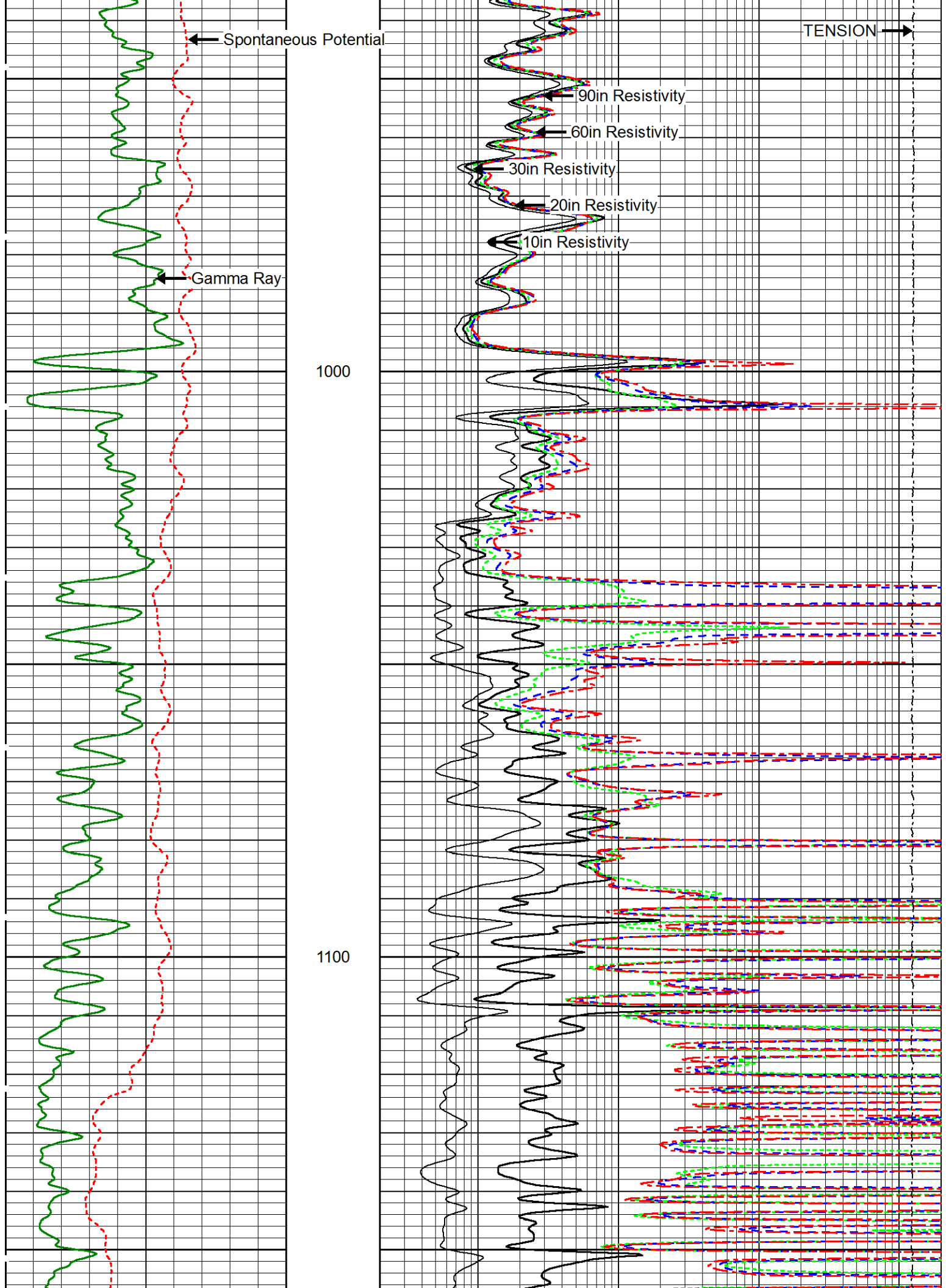
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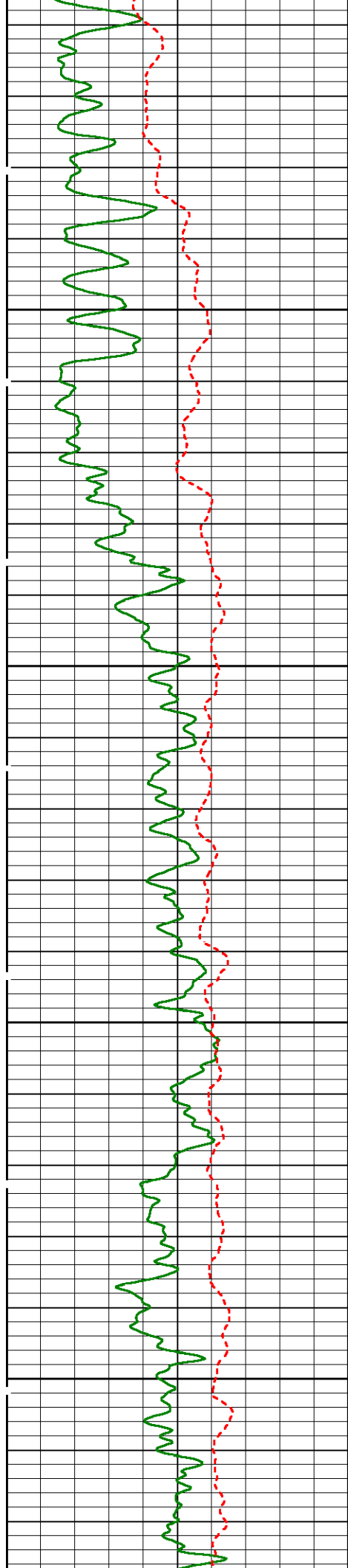
0 Gamma Ray (GAPI) 150
 SP [-20mV+]

0.2 10in Resistivity (Ohm-m) 2000
 0.2 20in Resistivity (Ohm-m) 2000
 0.2 30in Resistivity (Ohm-m) 2000
 0.2 60in Resistivity (Ohm-m) 2000
 0.2 90in Resistivity (Ohm-m) 2000

10000 TENSION (lb) 0

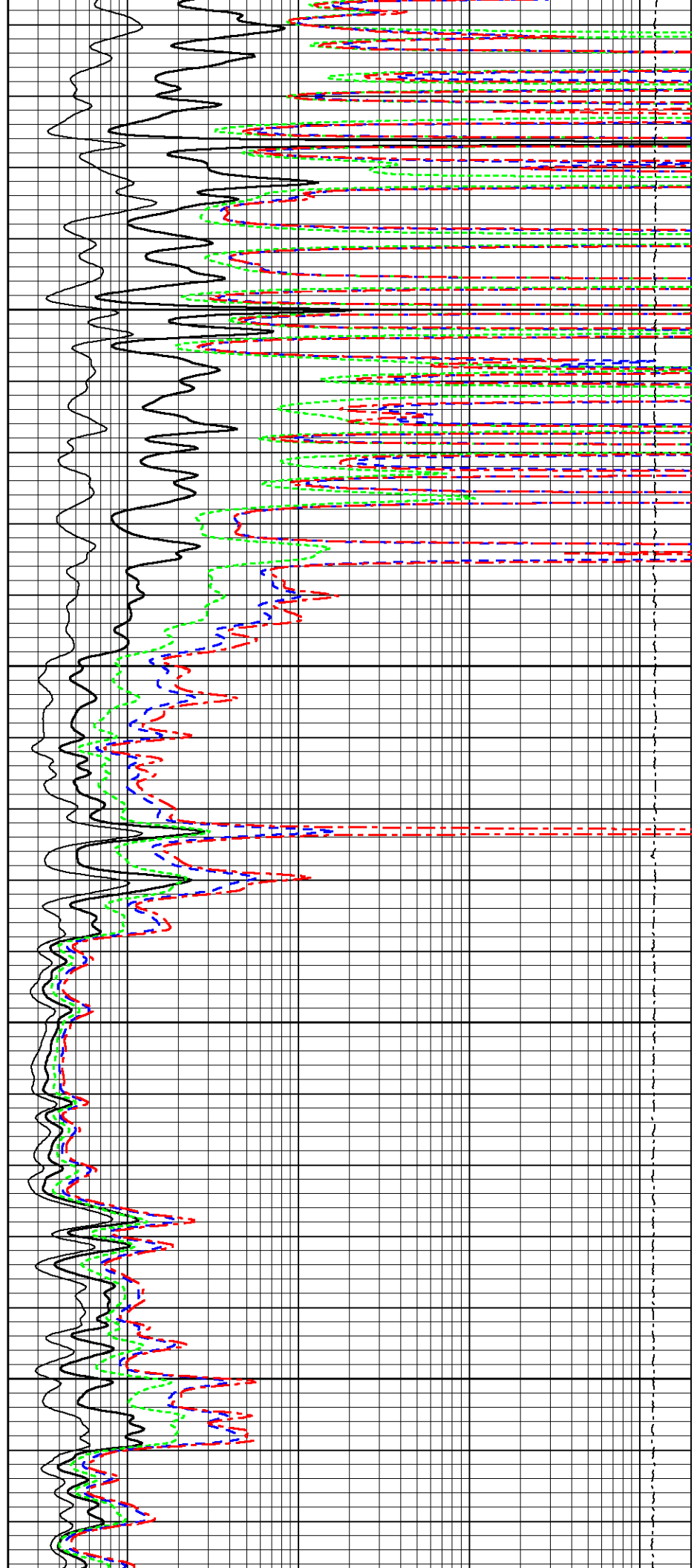


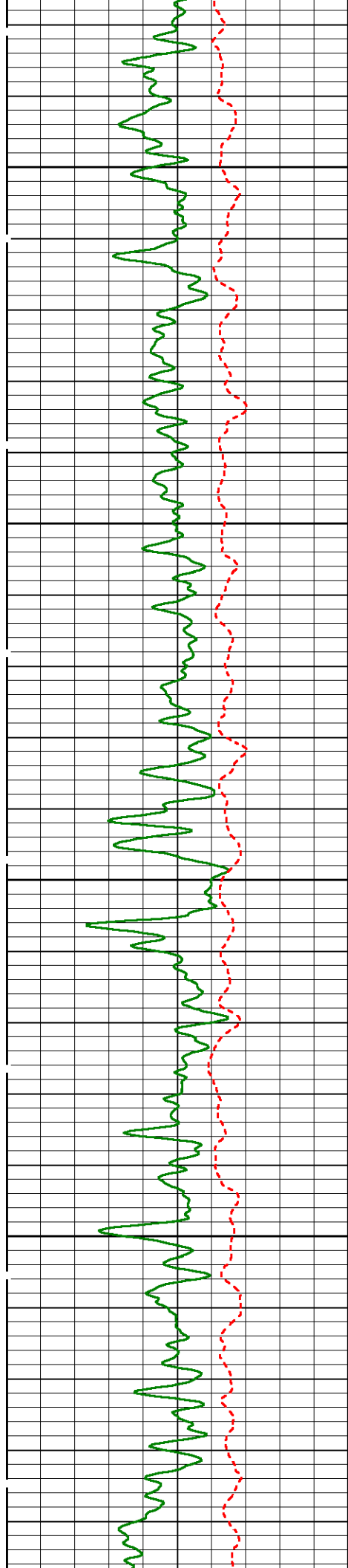




1200

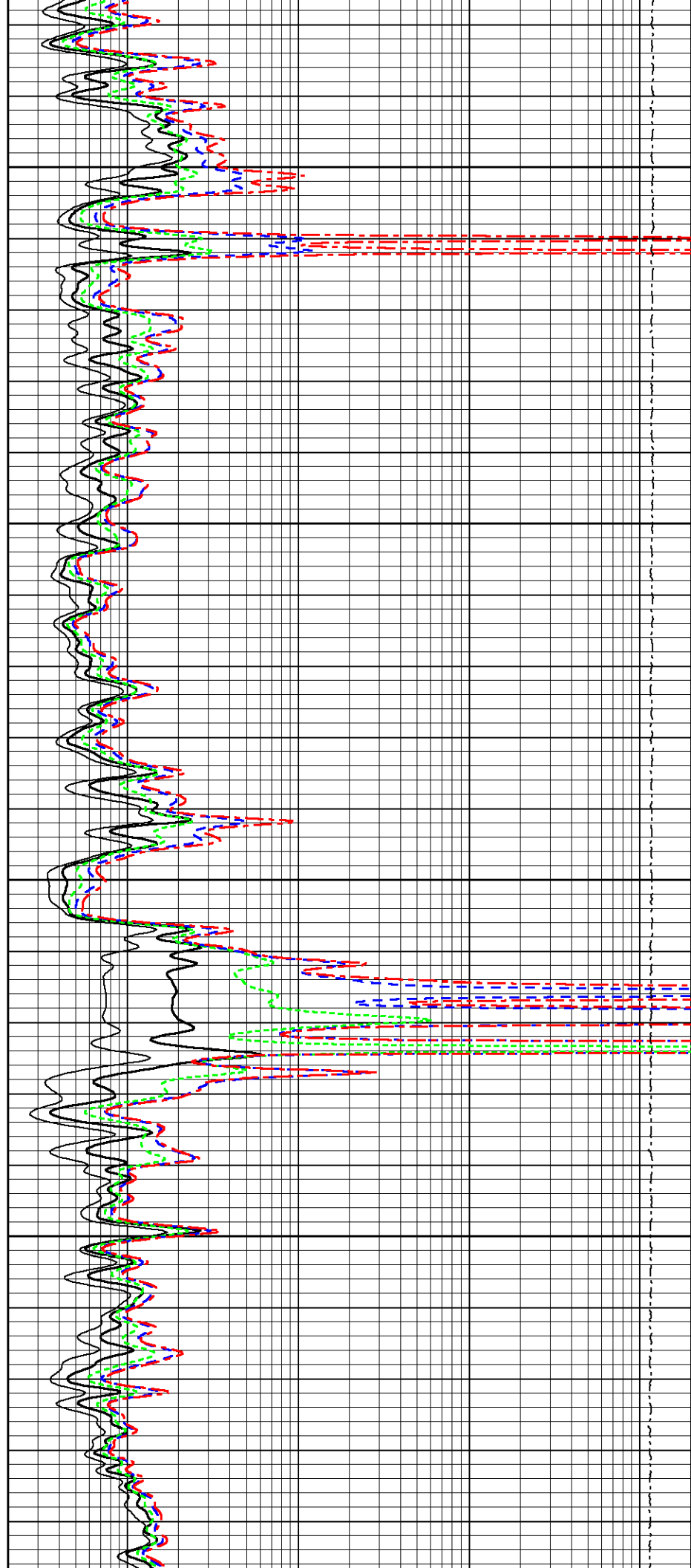
1300





1400

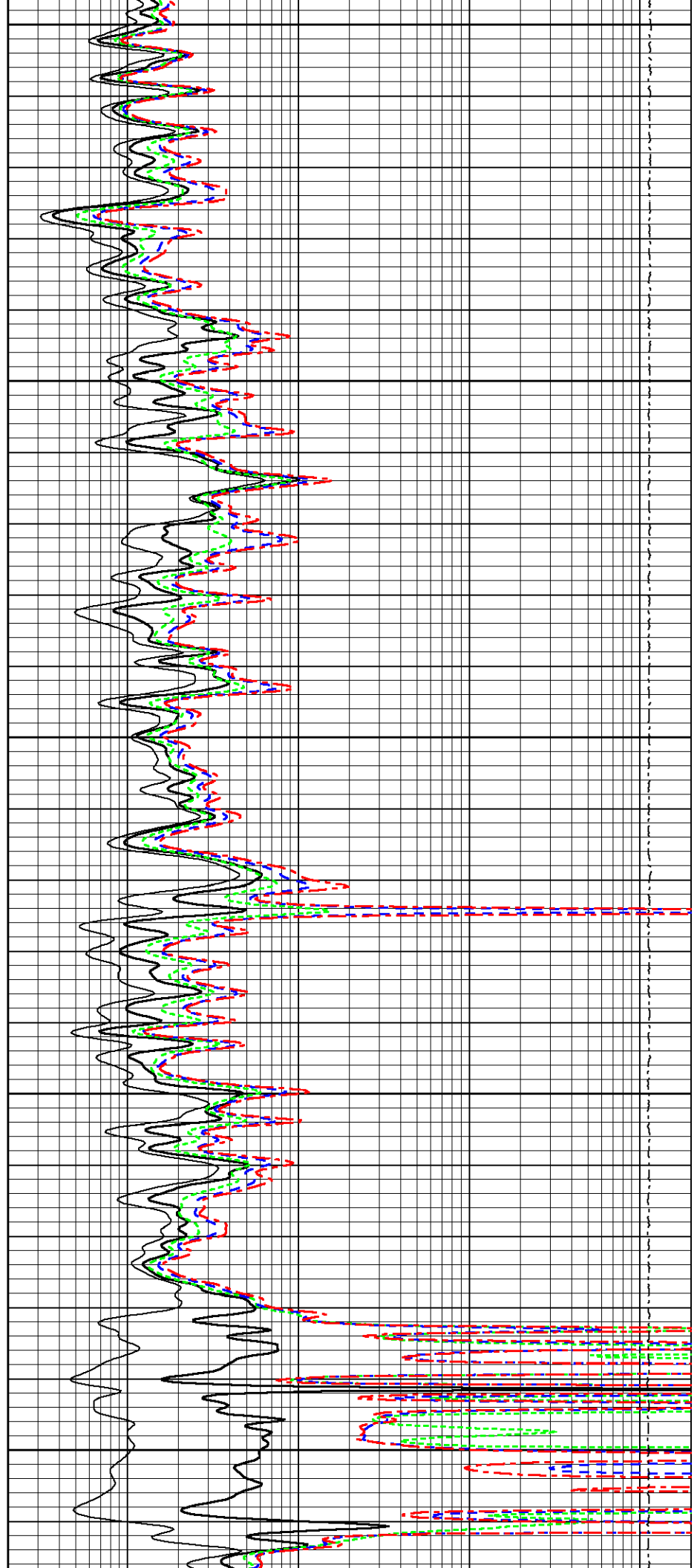
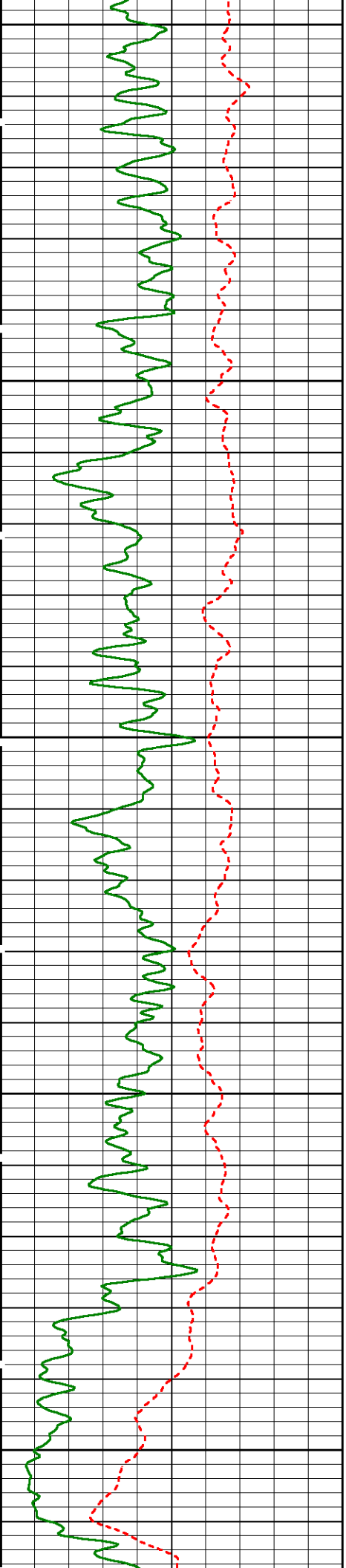
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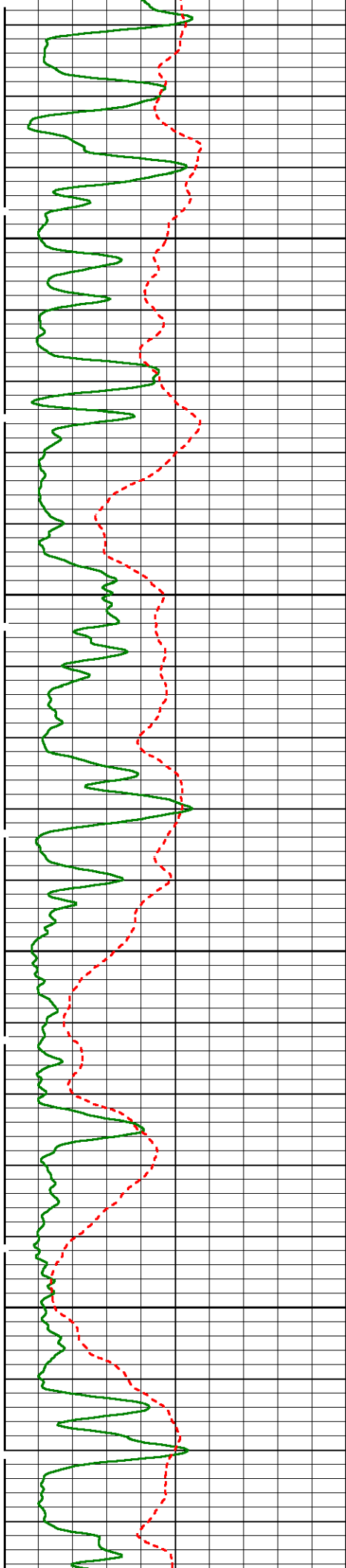


1600

1700

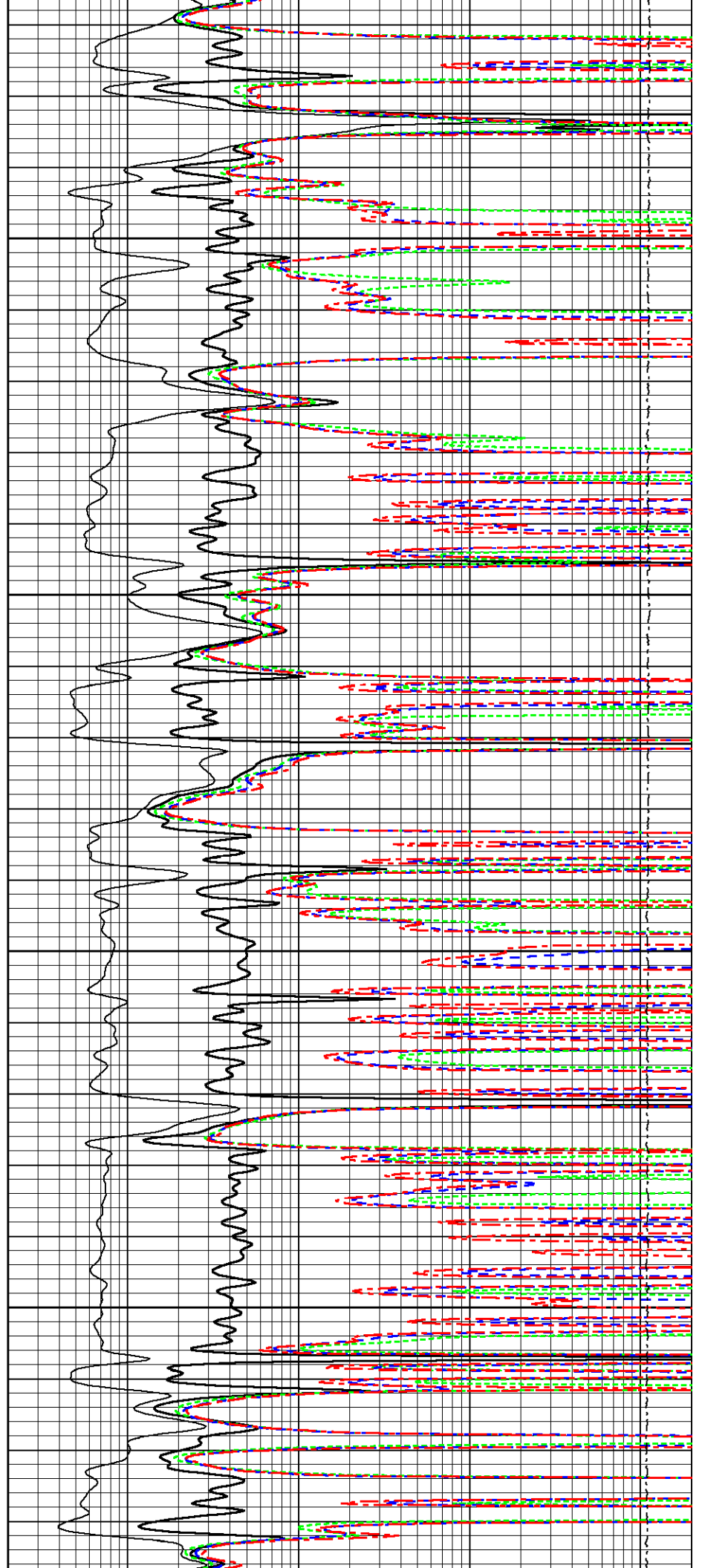
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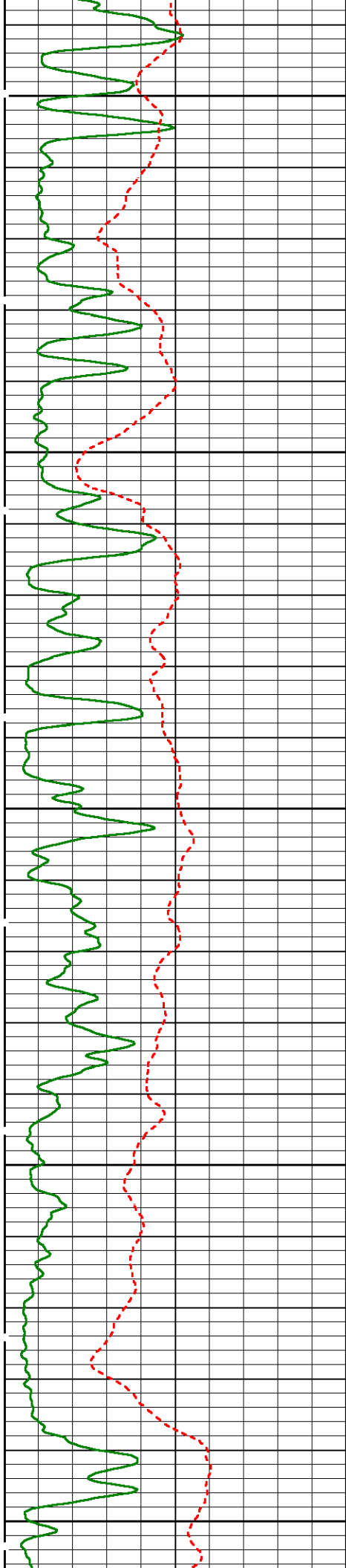




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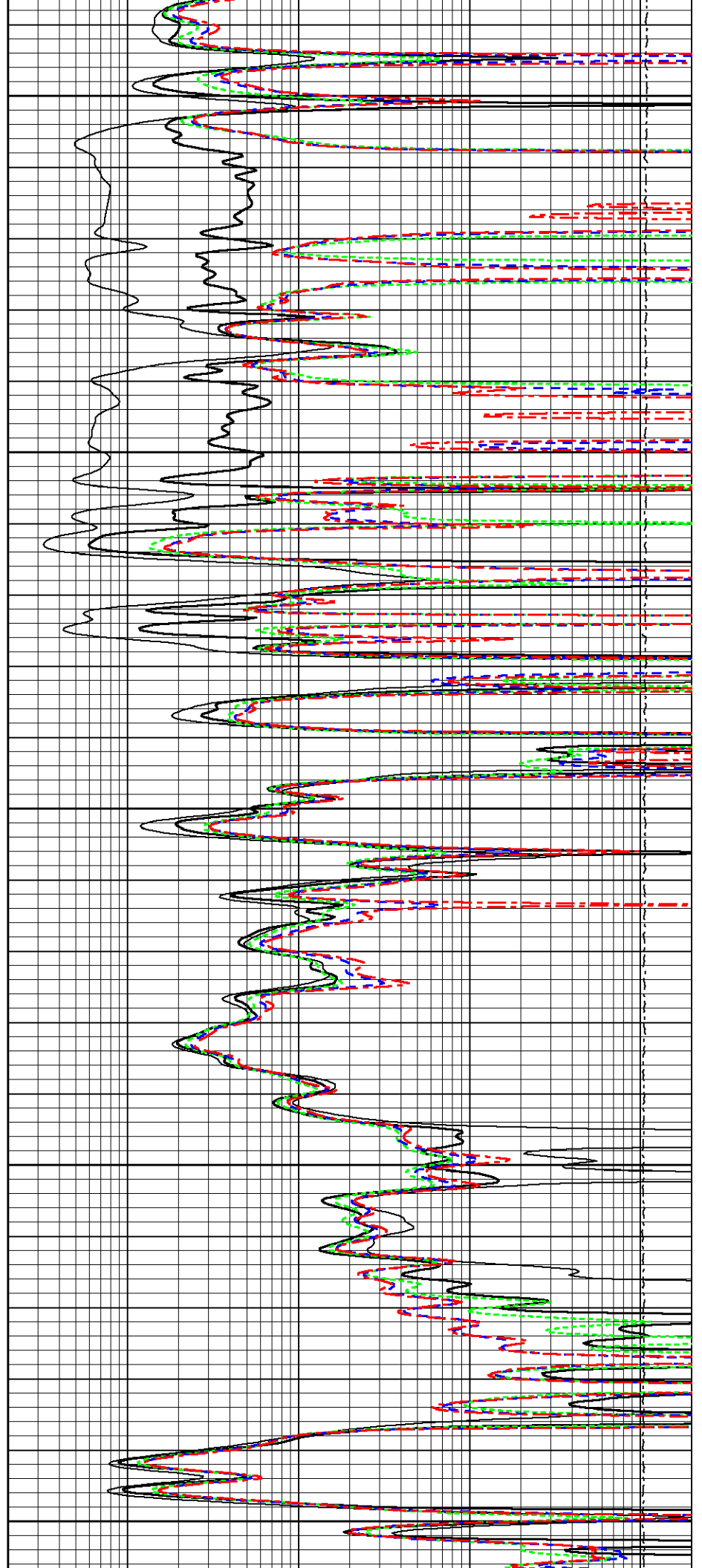
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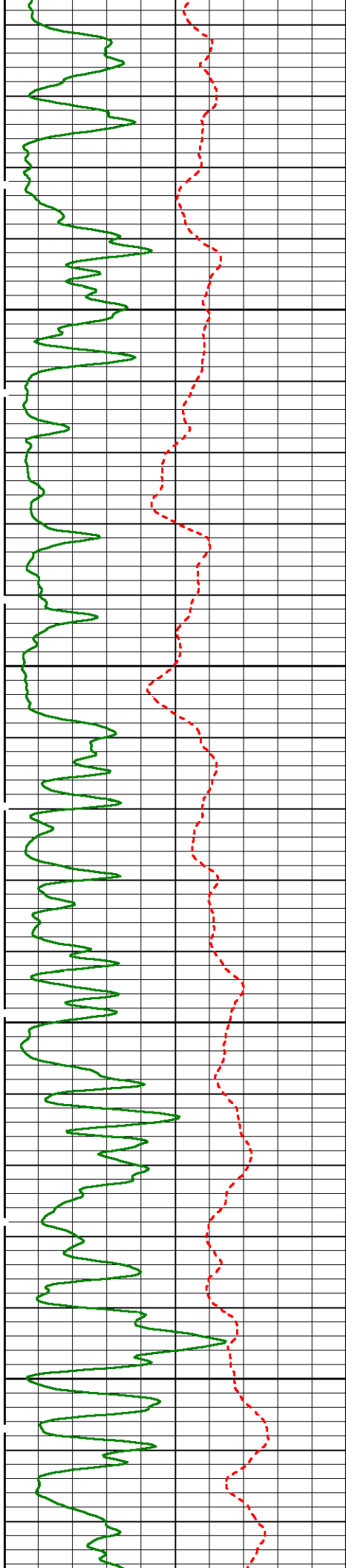




2100

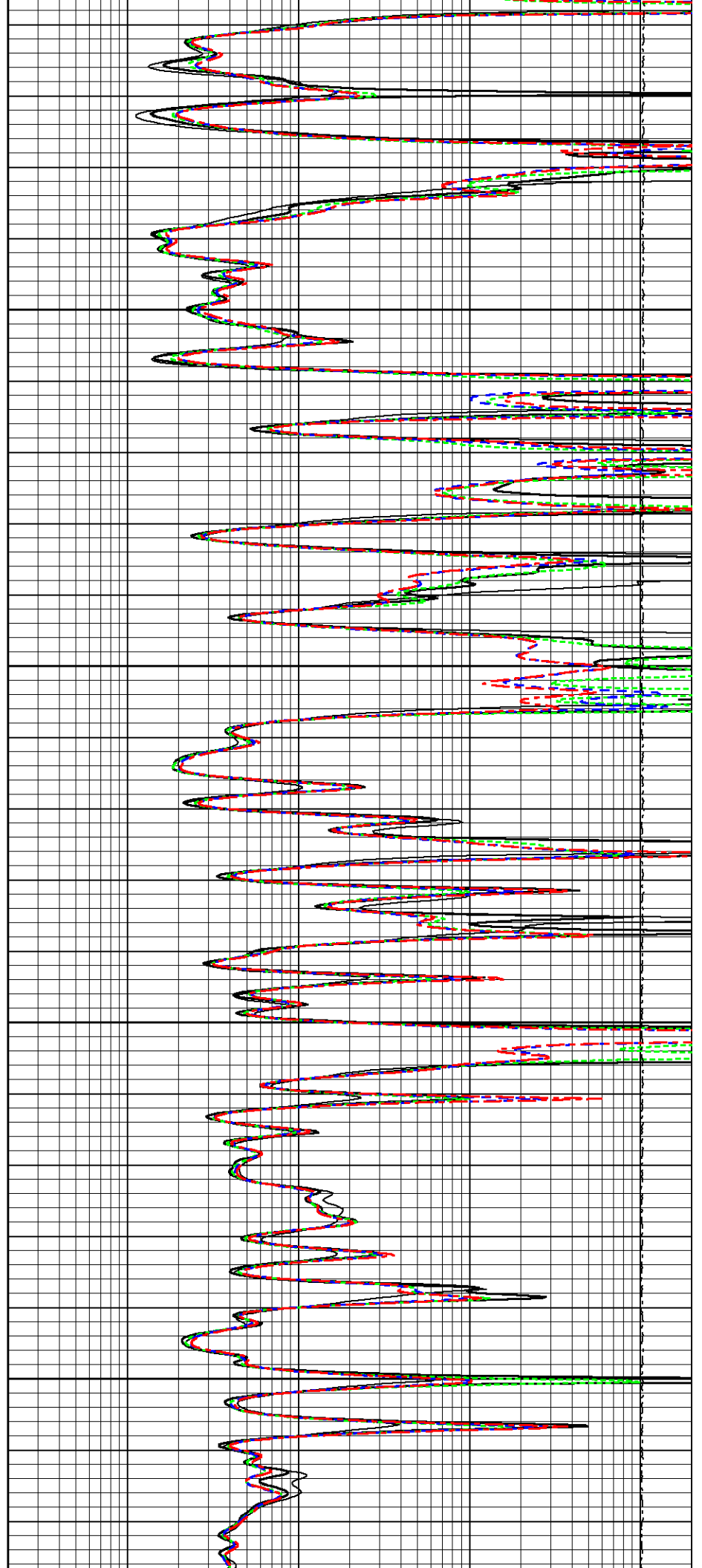
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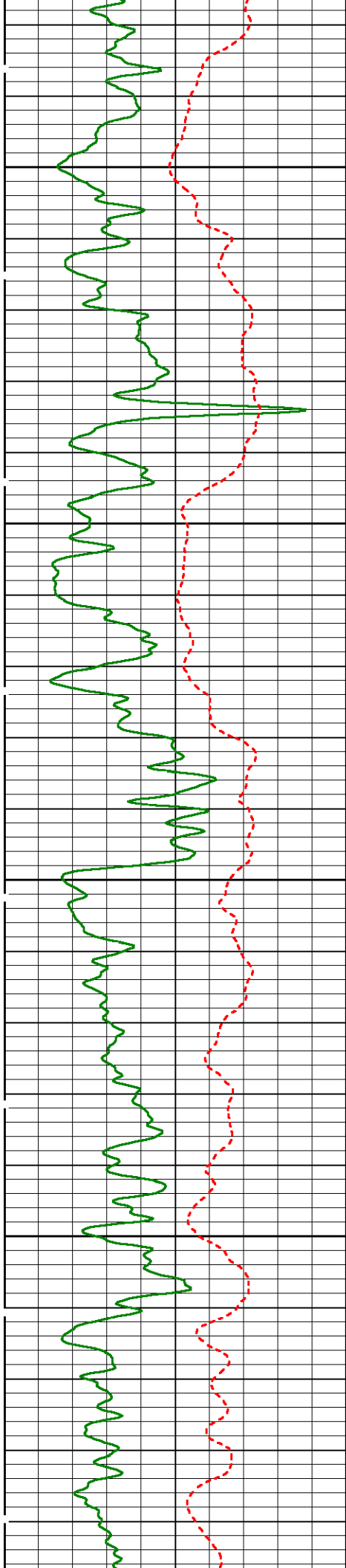




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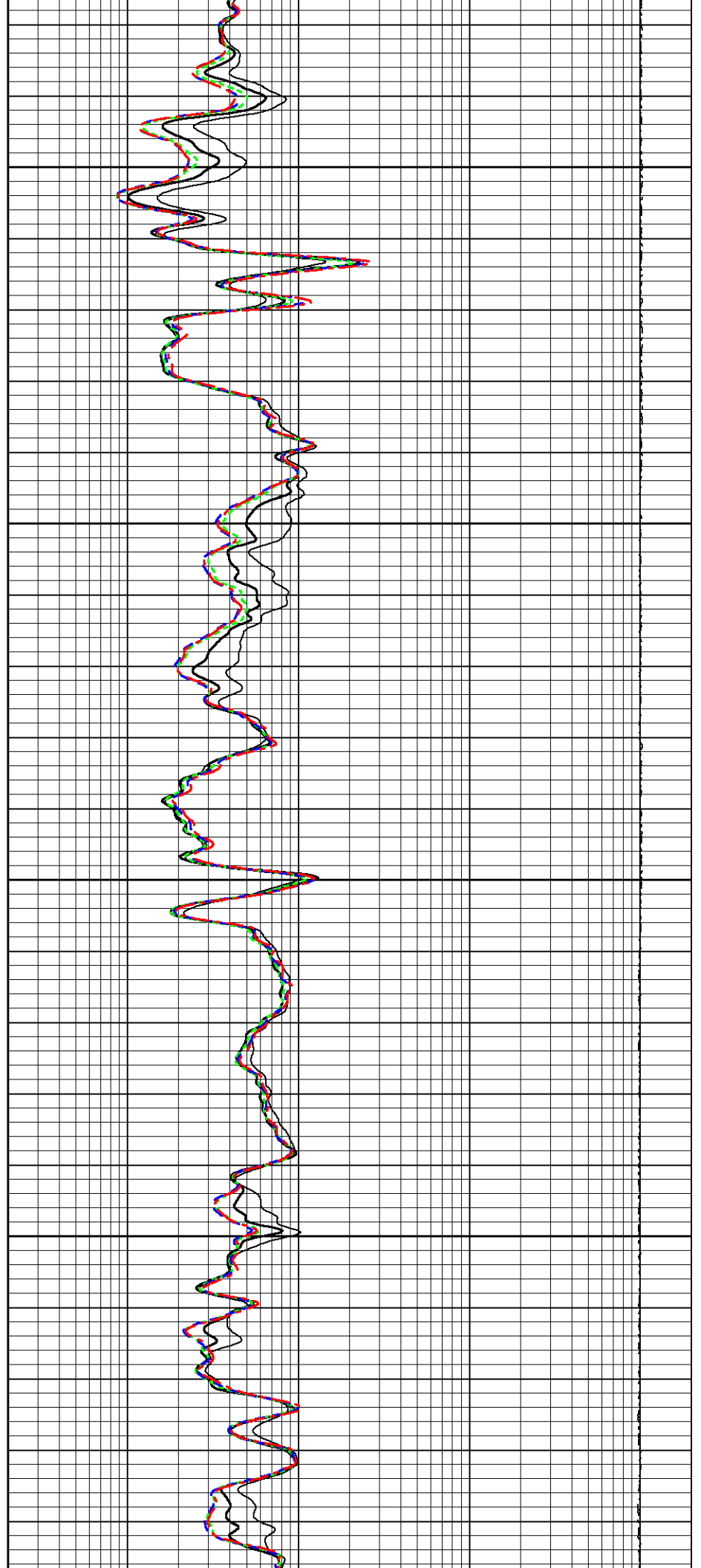
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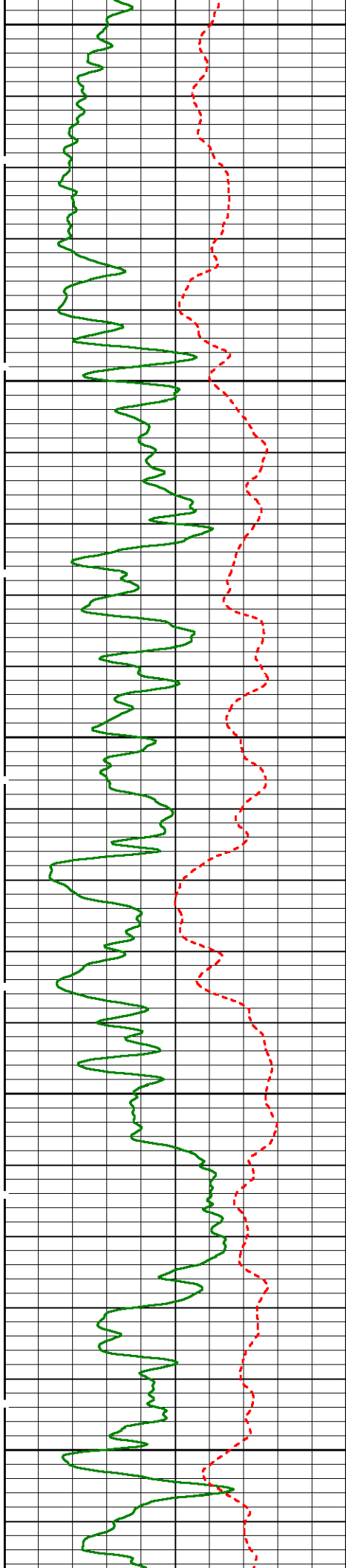




2500

2600

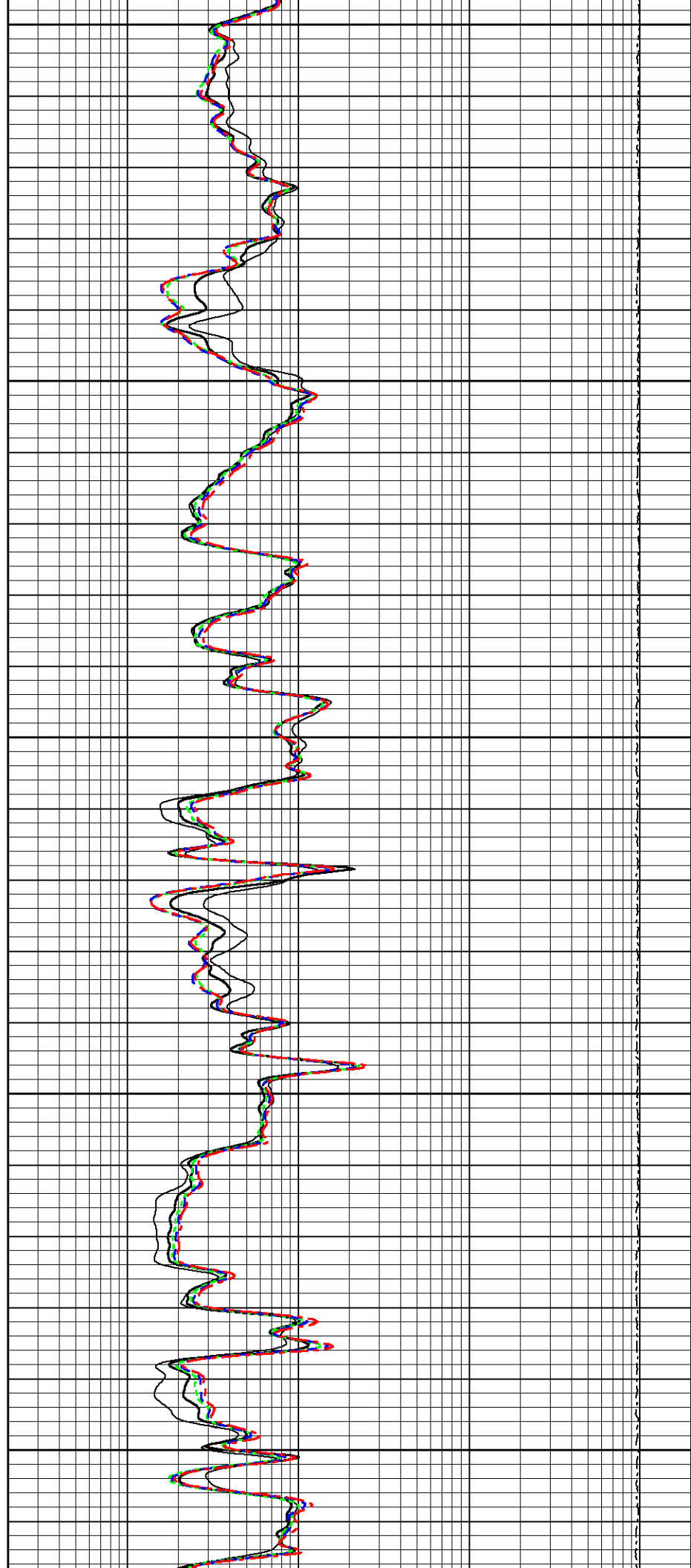


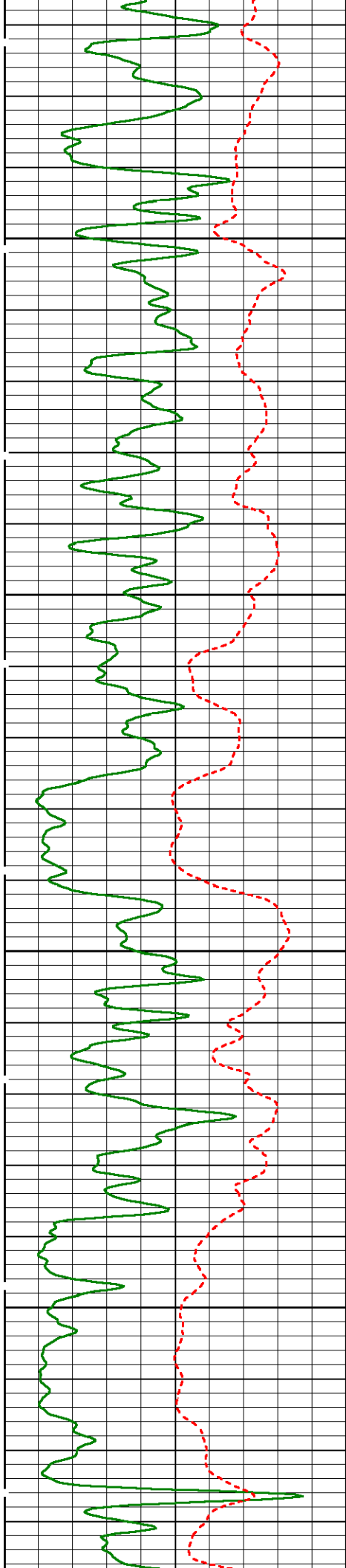


2700

2800

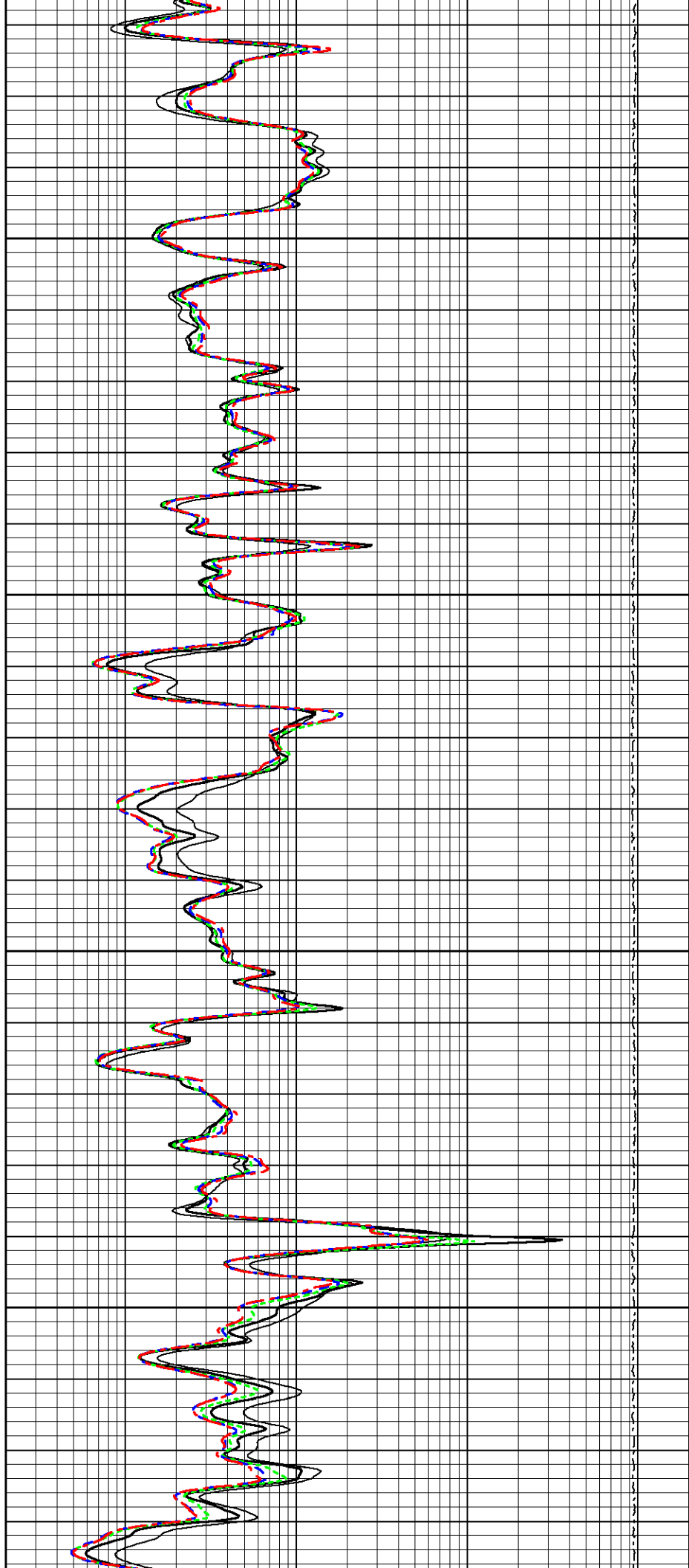
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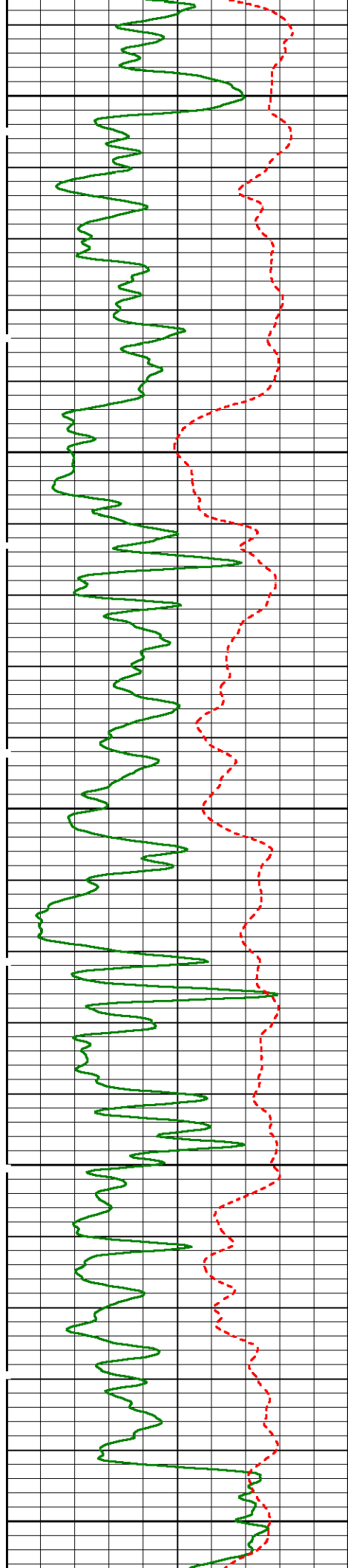




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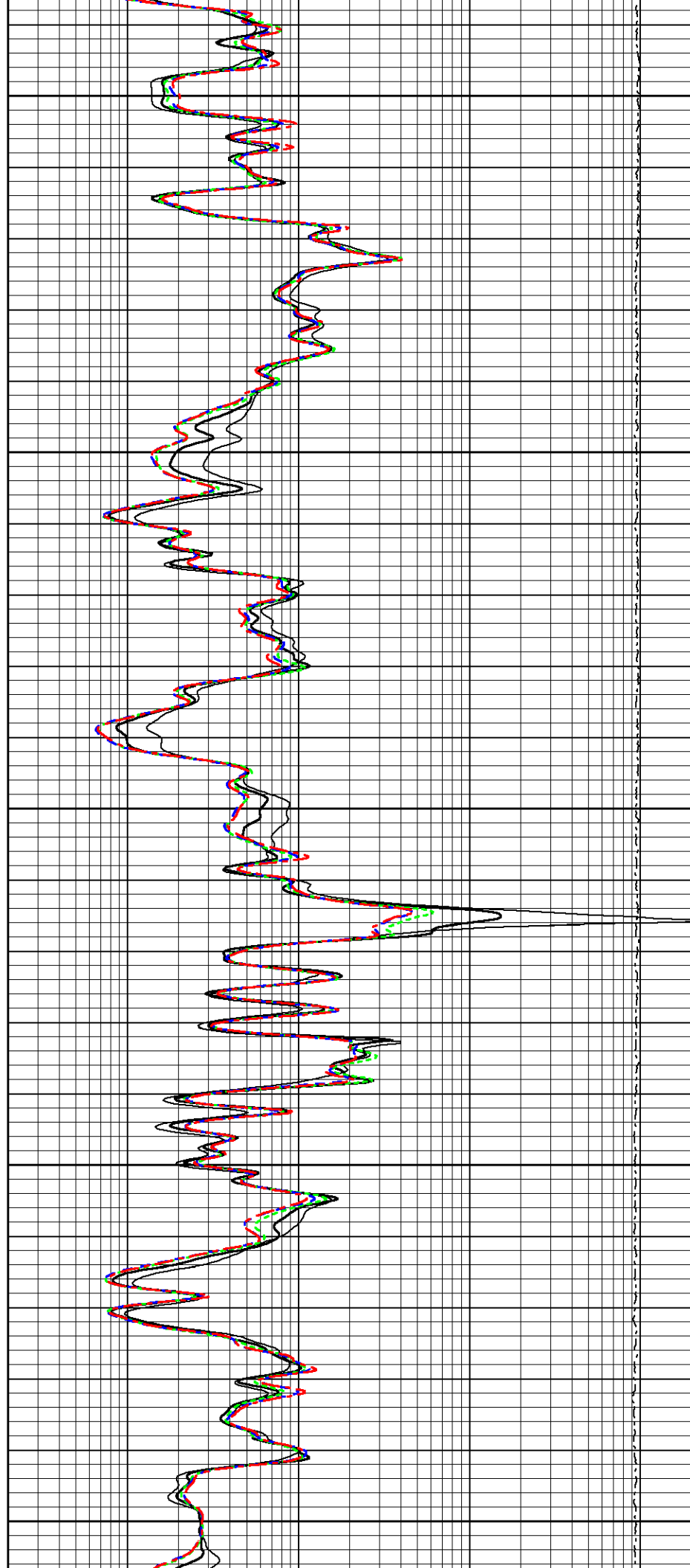
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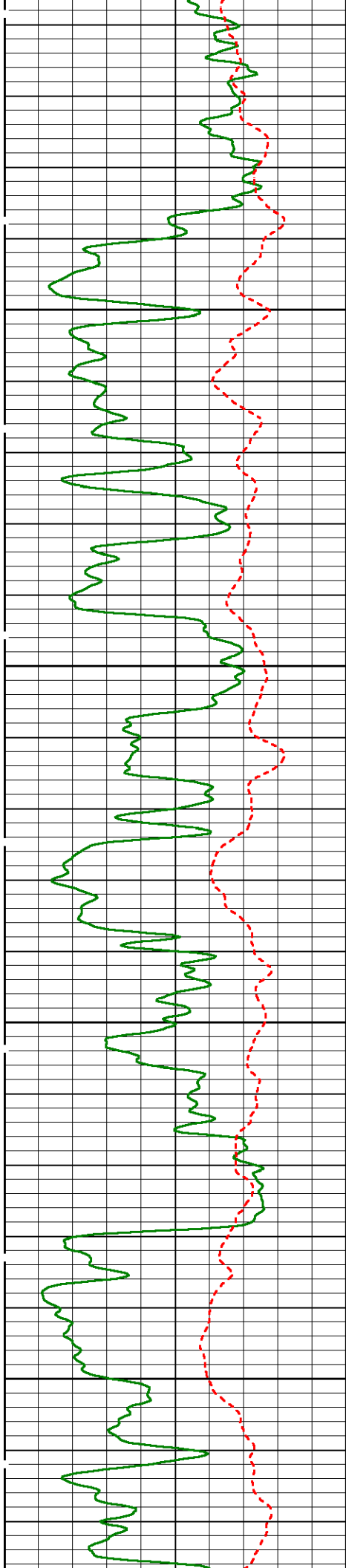




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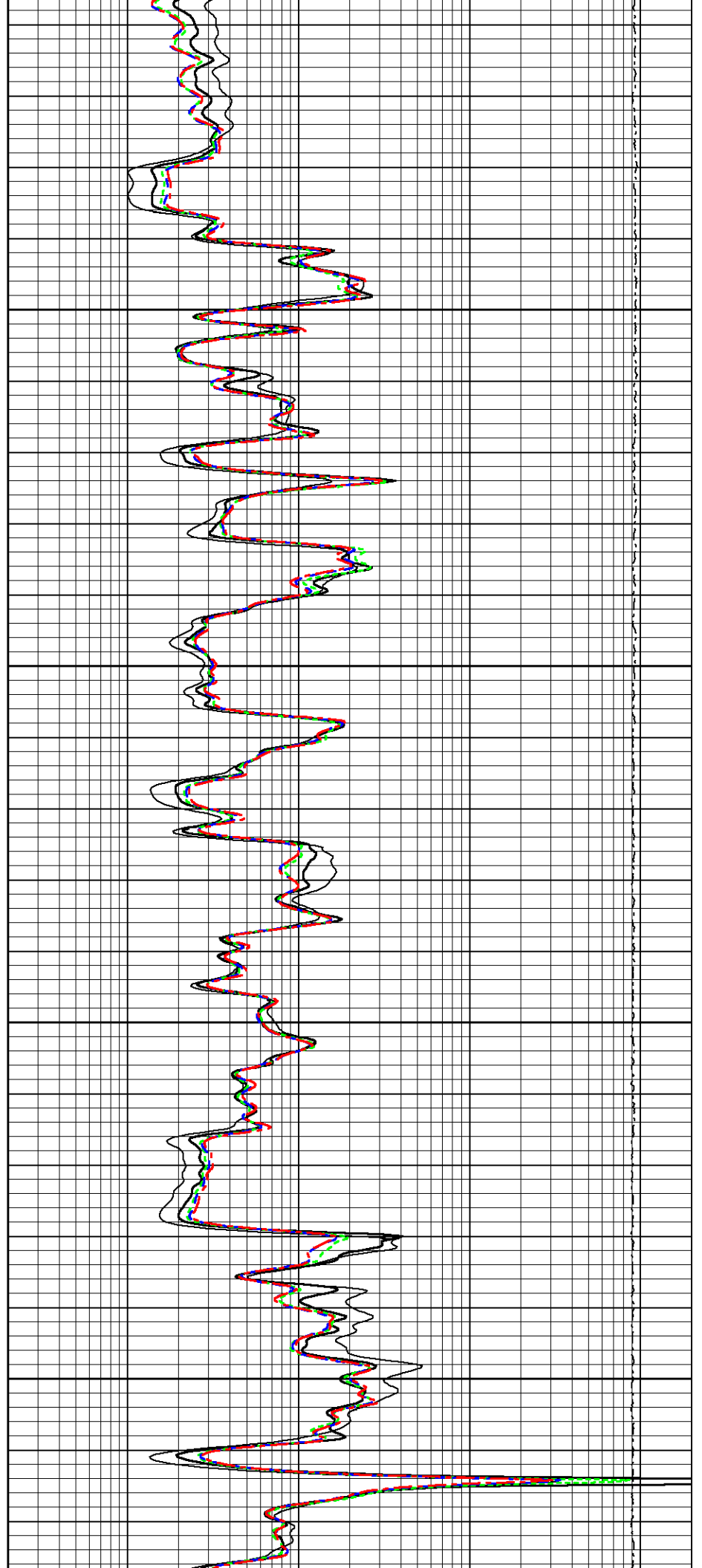
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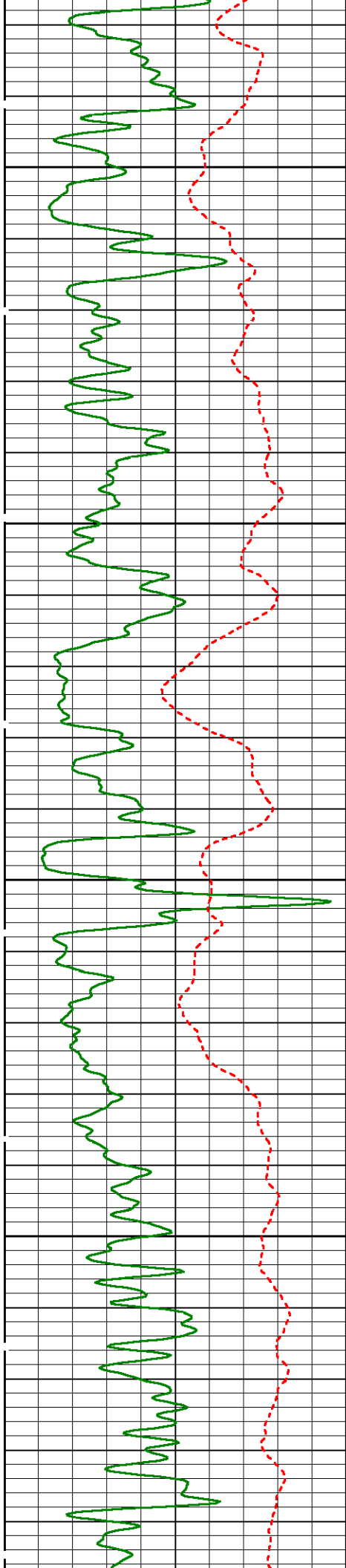




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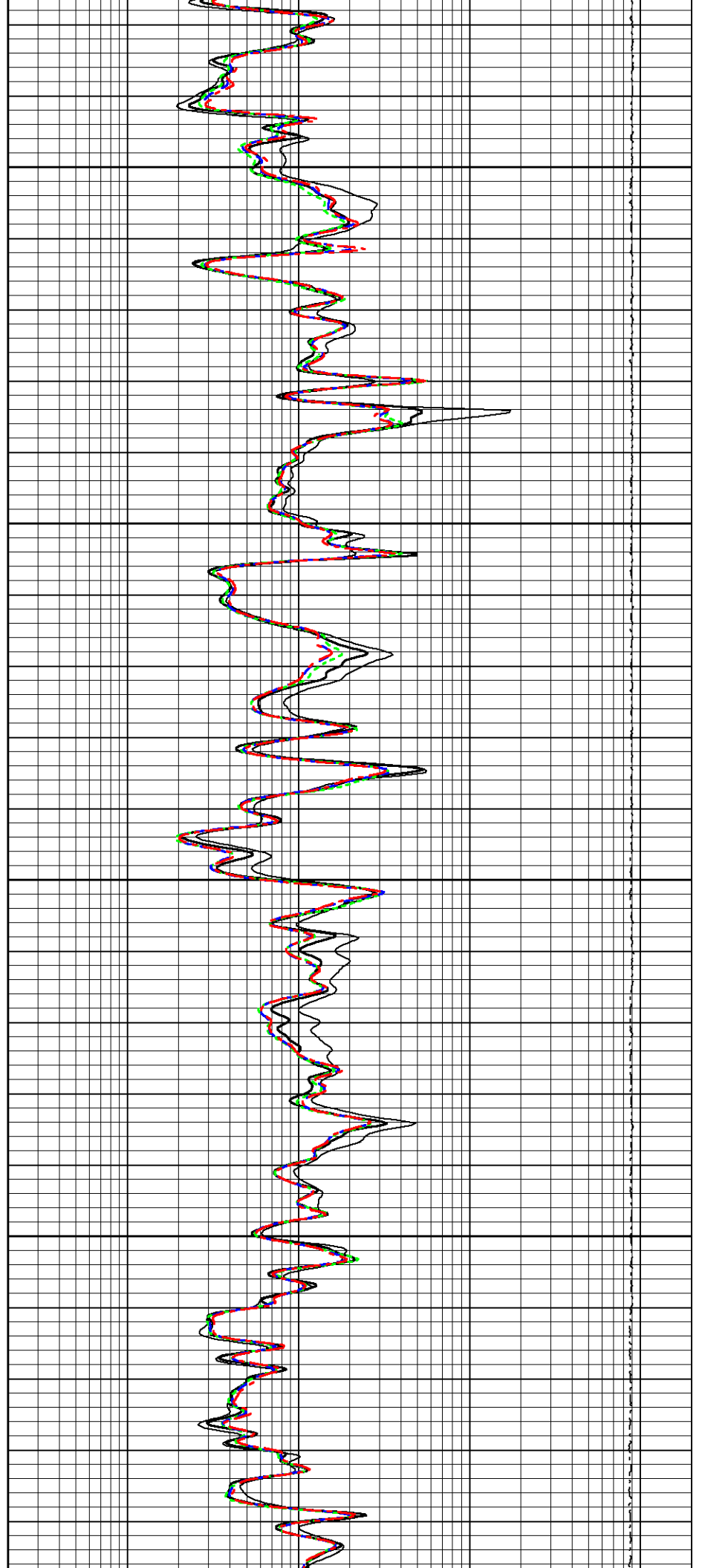
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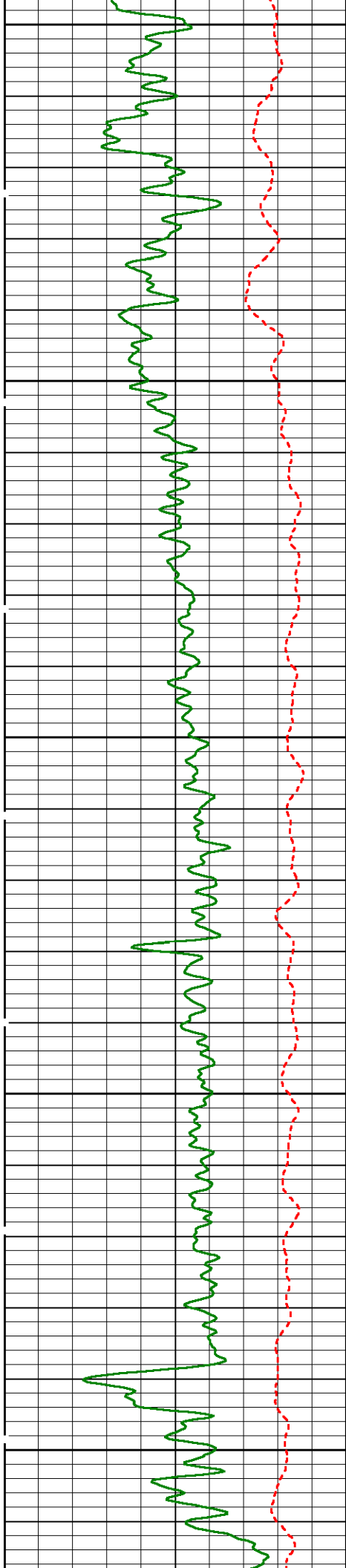




3600

3700

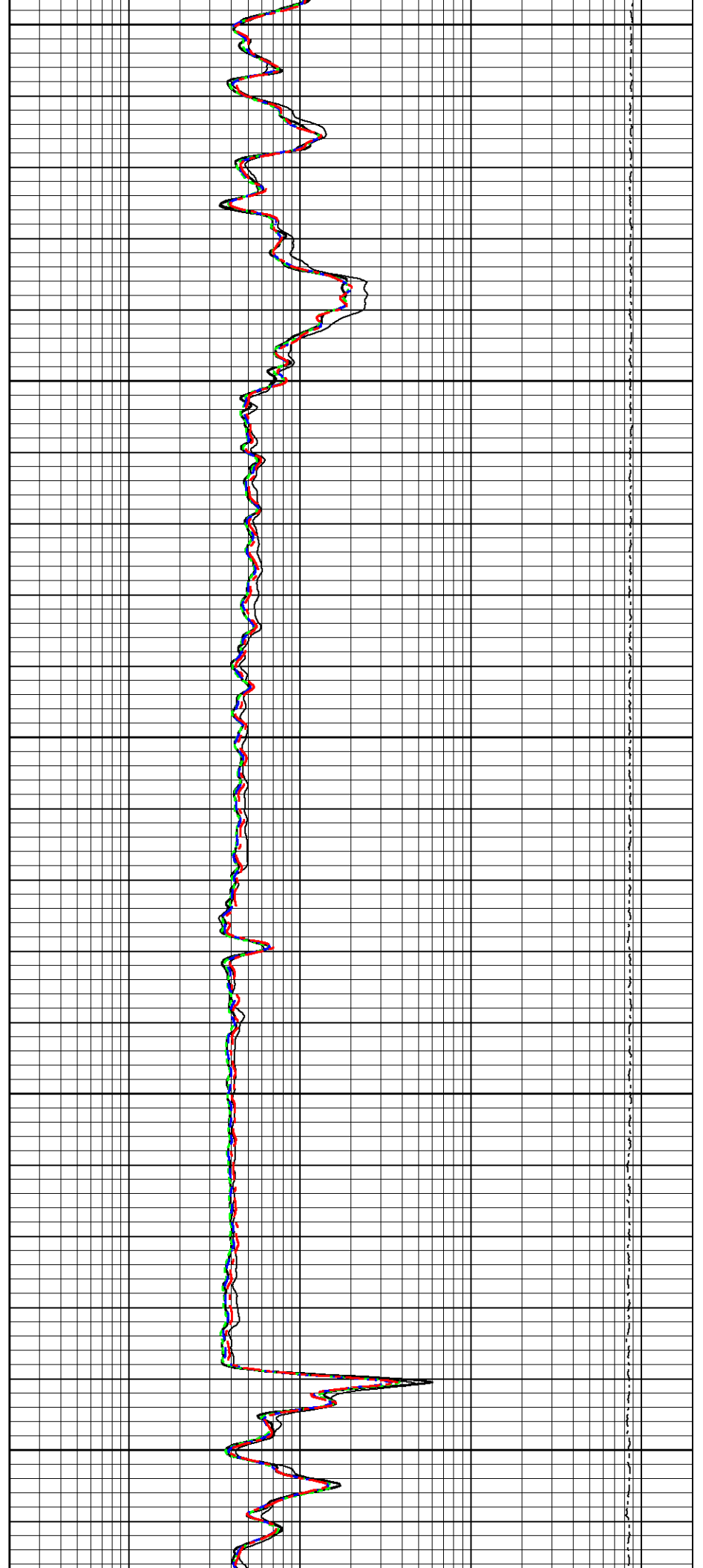


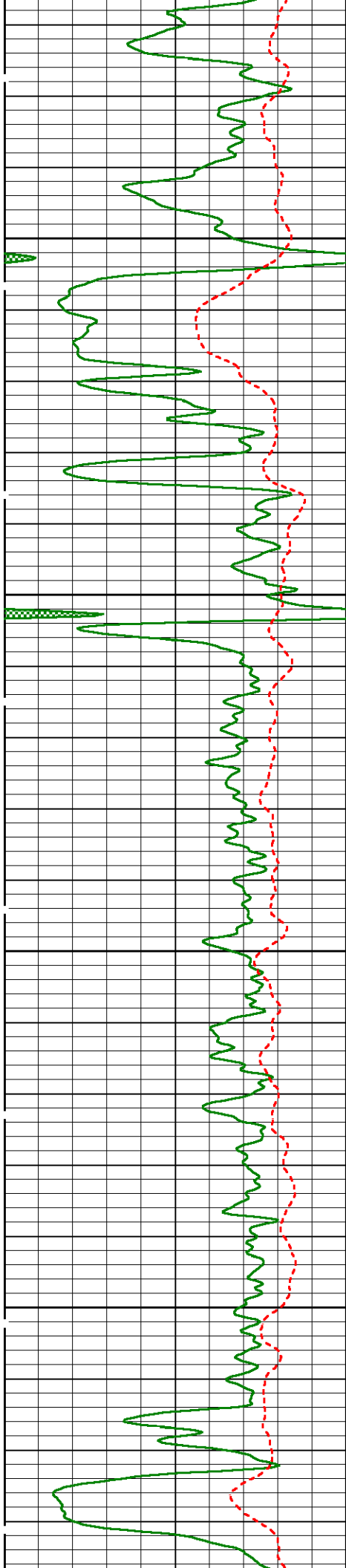


3800

3900

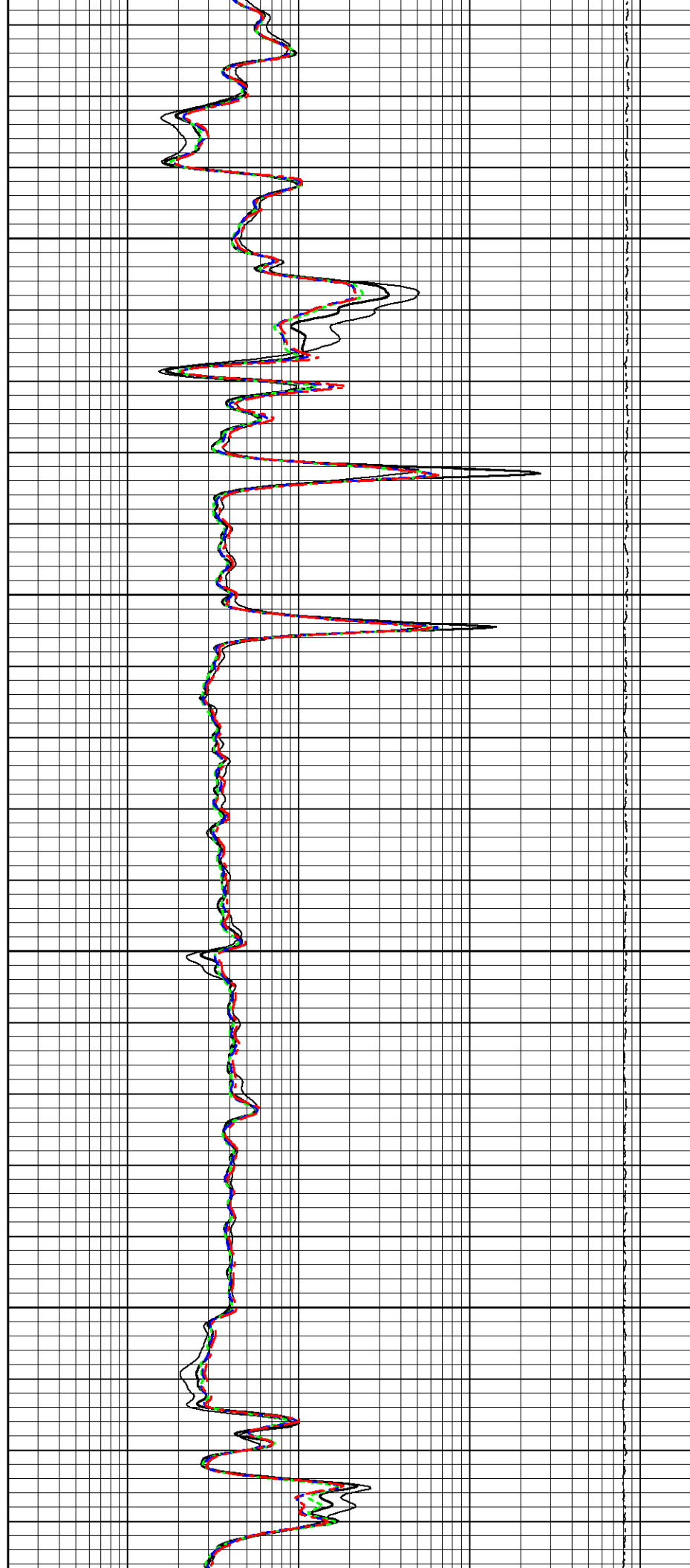
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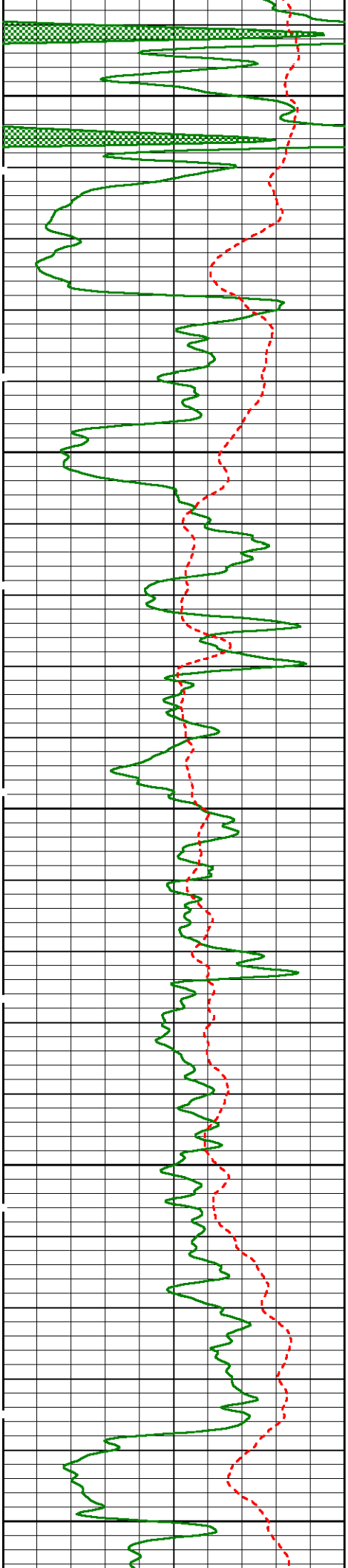




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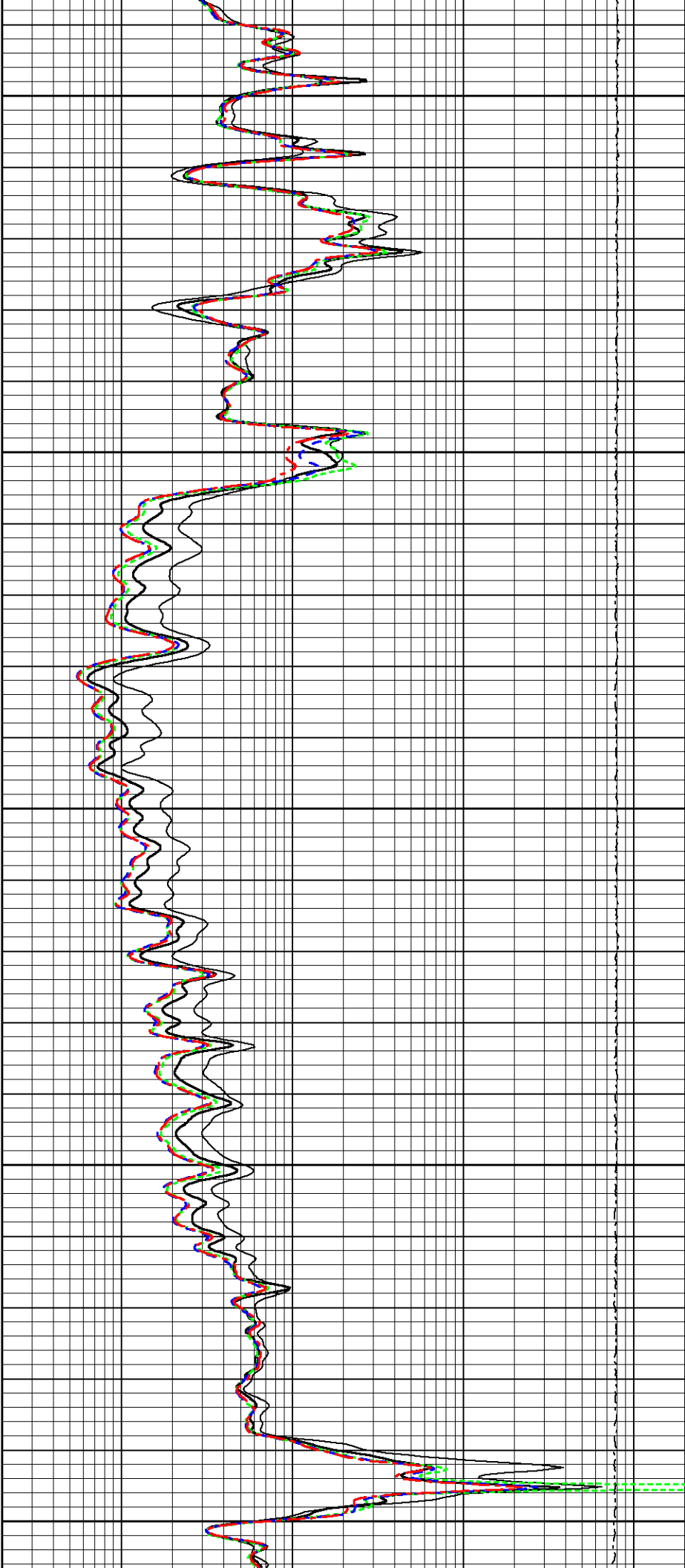
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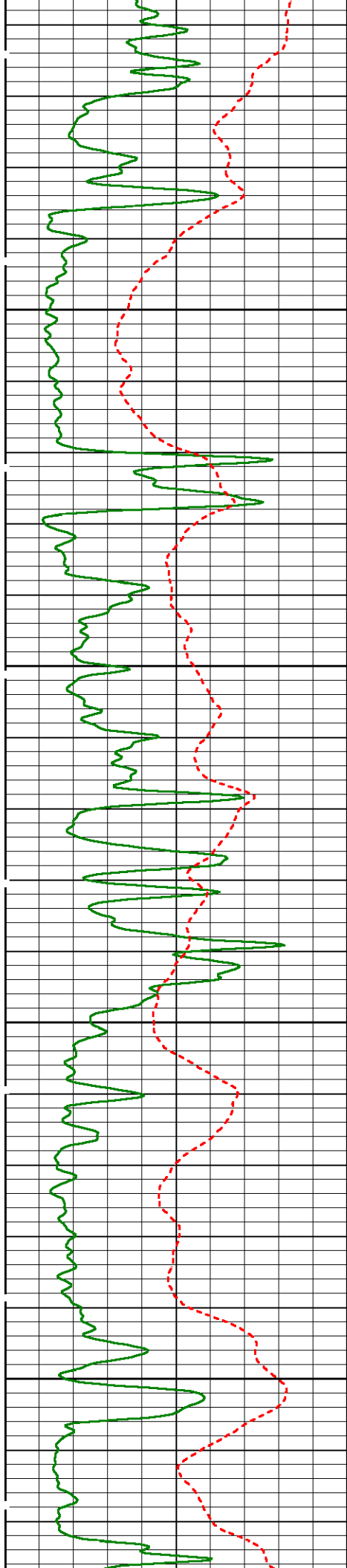




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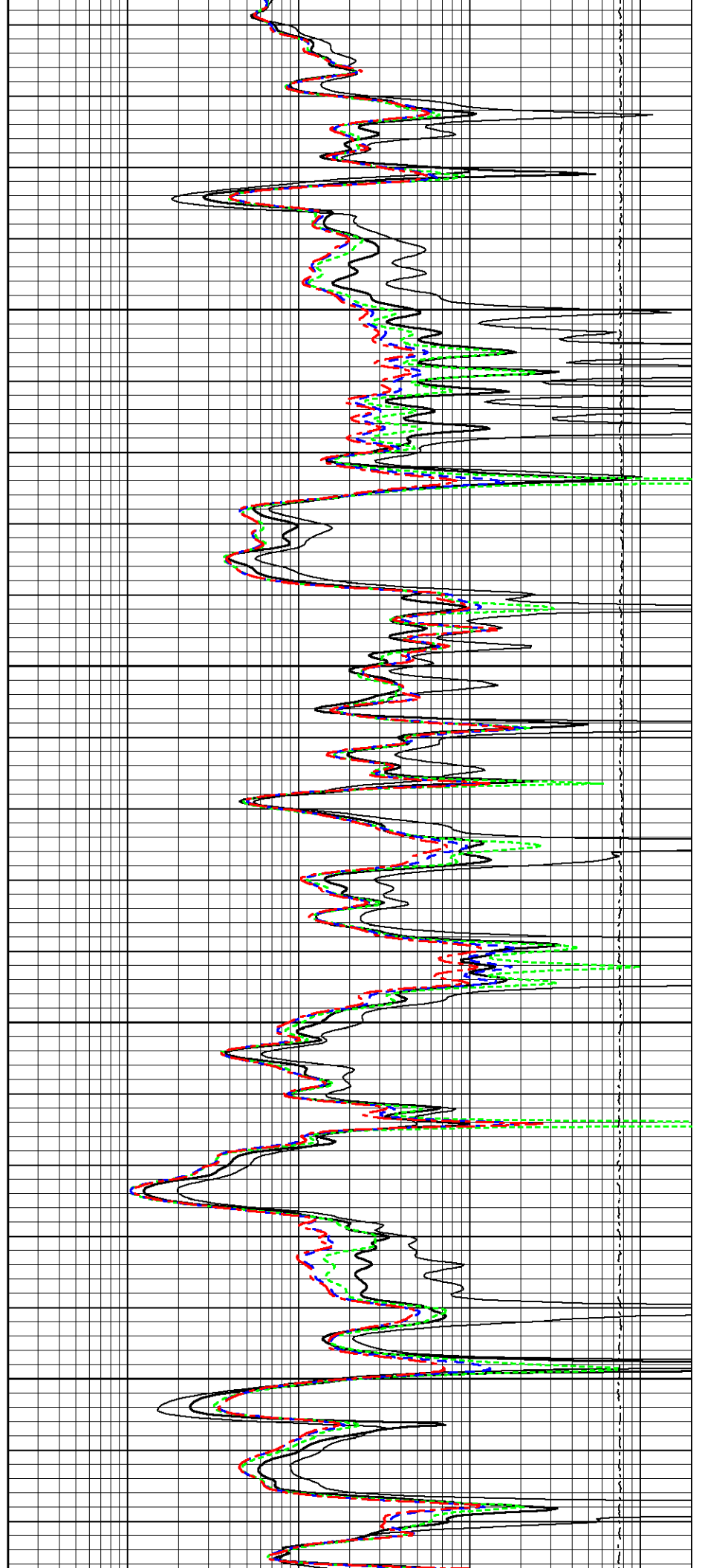
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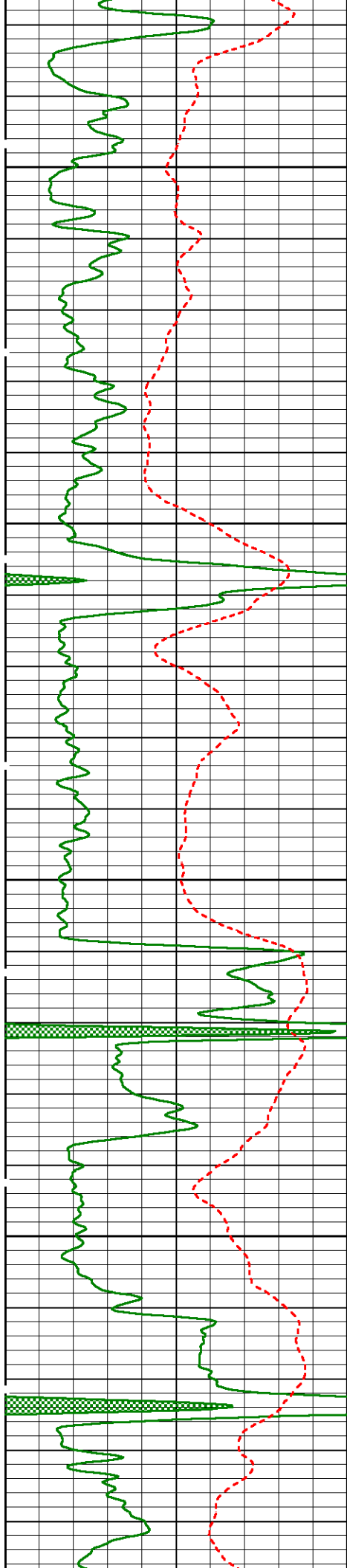




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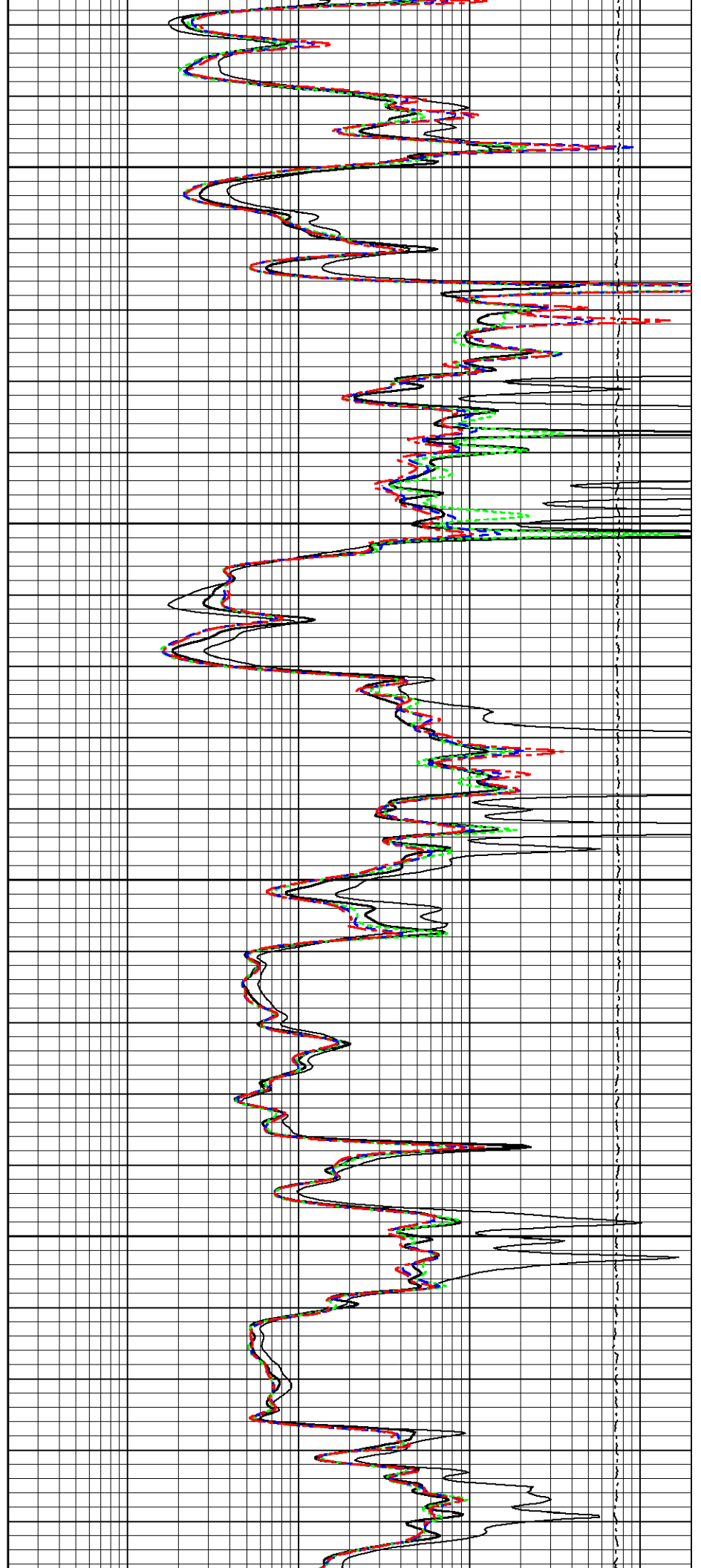
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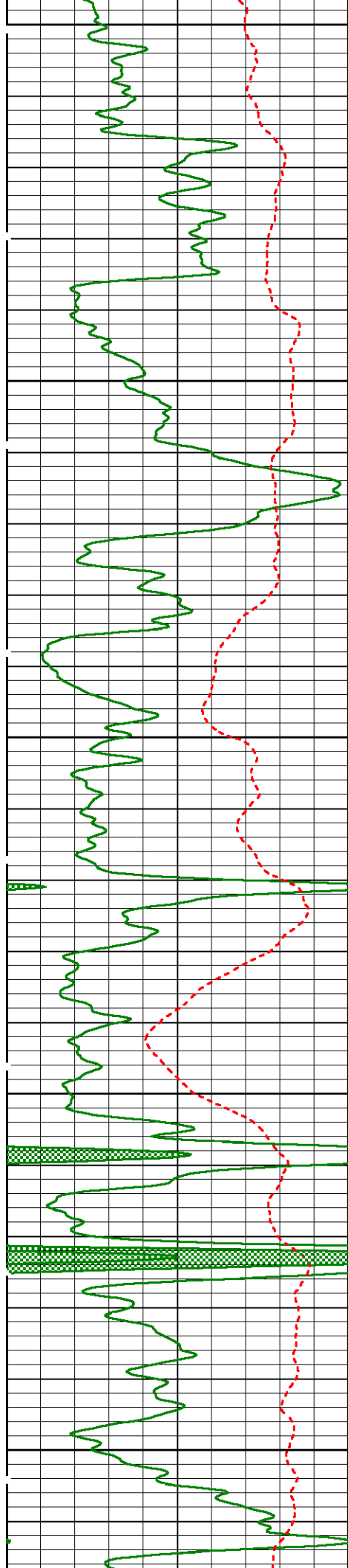




4700

4800

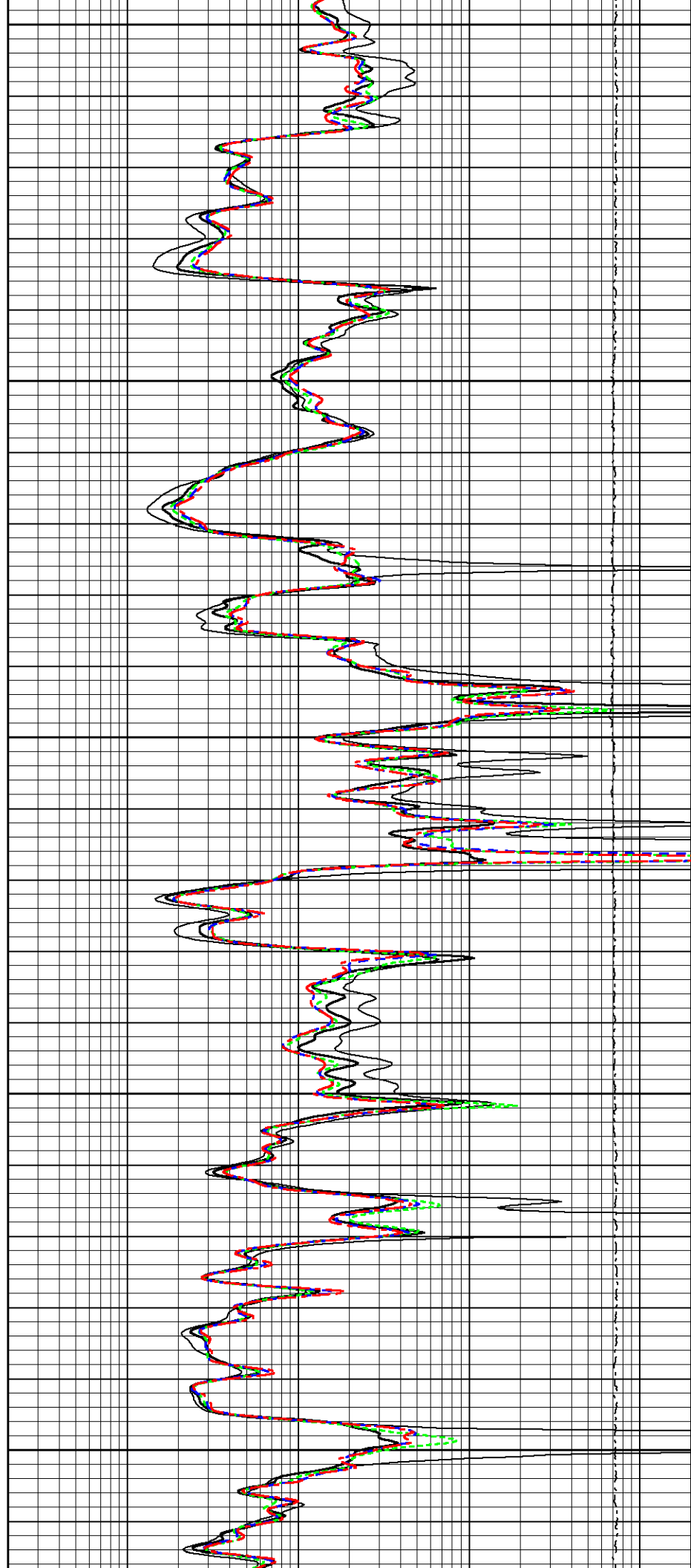


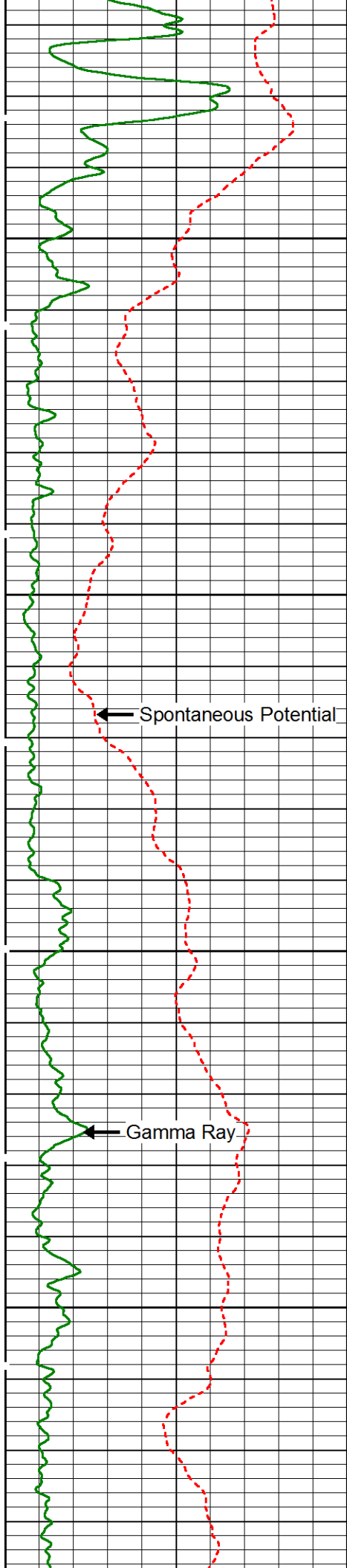


4900

5000

5100



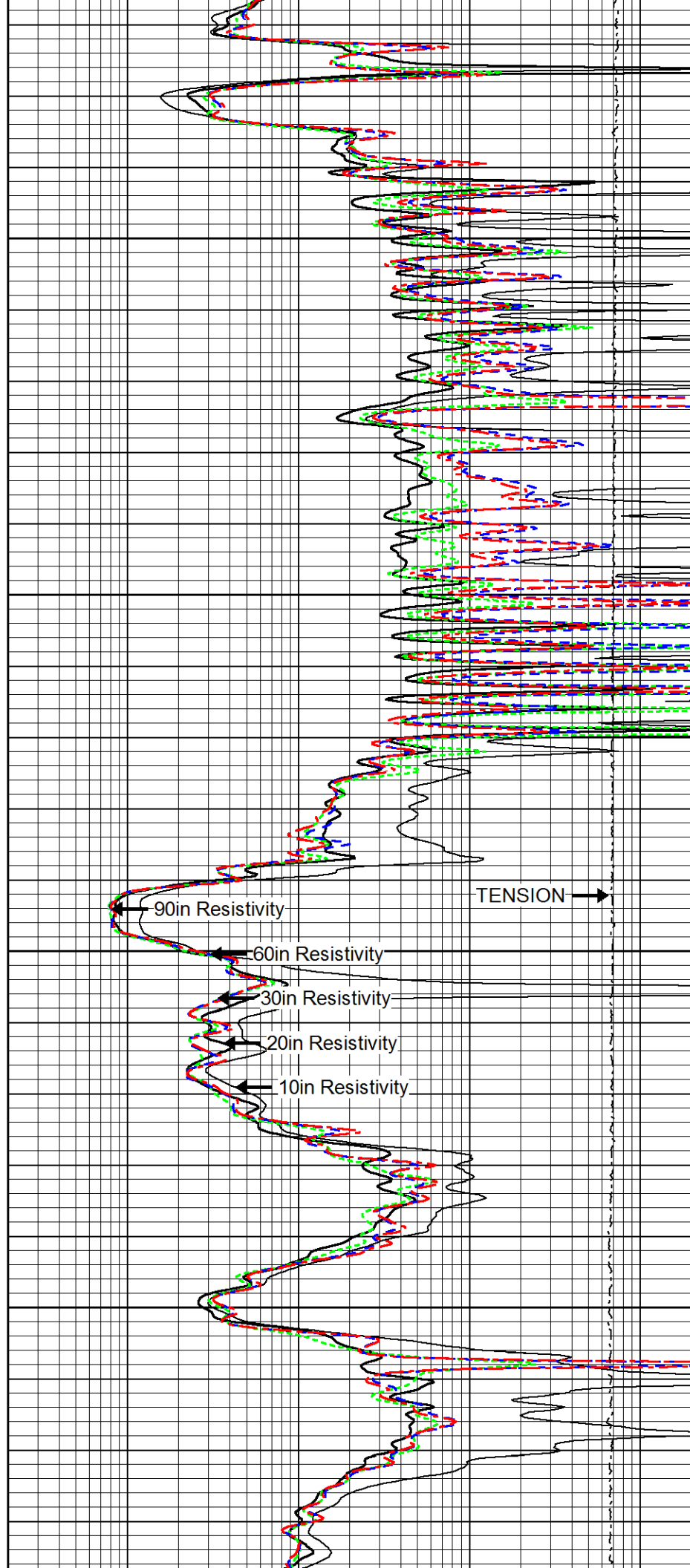


5200

← Spontaneous Potential

← Gamma Ray

5300



TENSION →

← 90in Resistivity

← 60in Resistivity

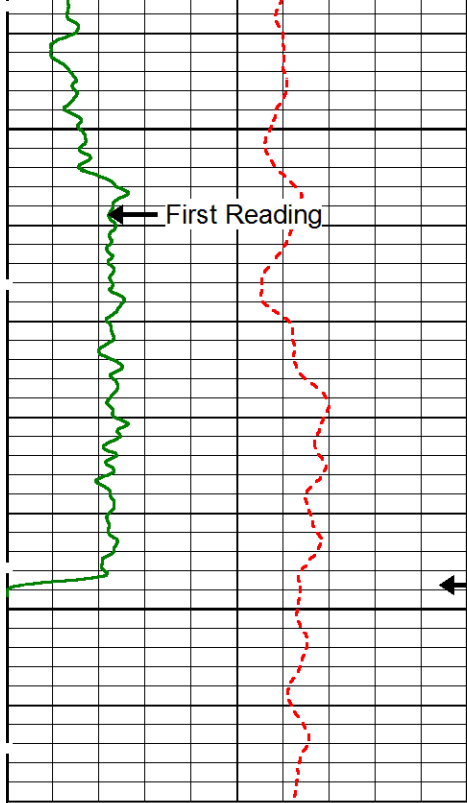
← 30in Resistivity

← 20in Resistivity

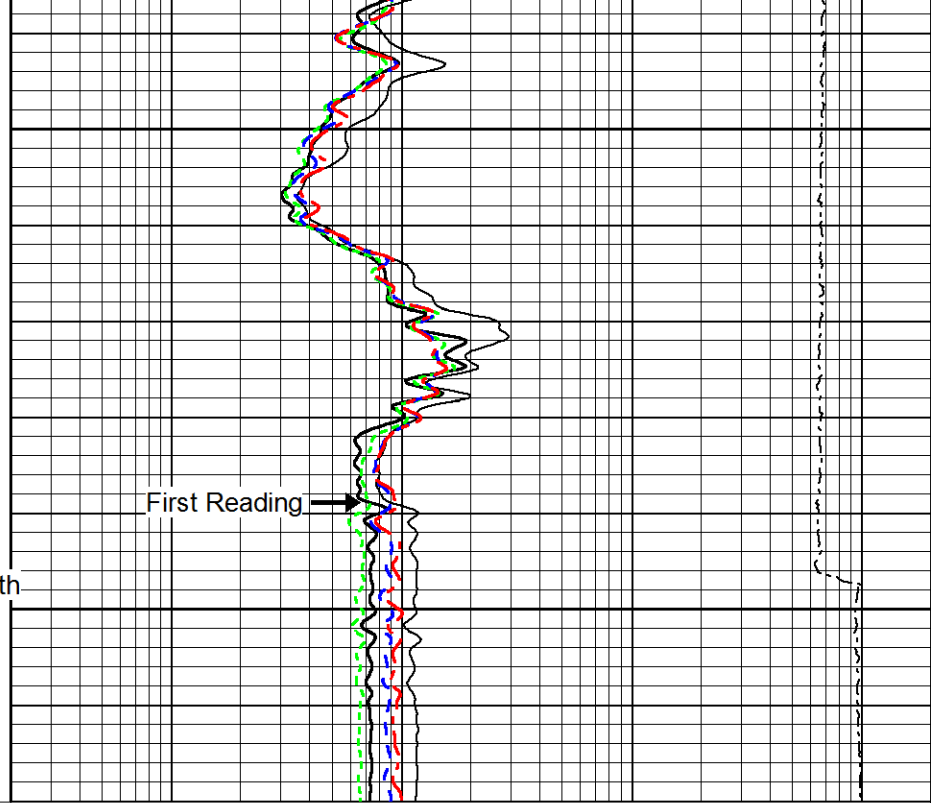
← 10in Resistivity

5200

5300



| | | |
|---|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| | SP [-20mV+] | |



| | | |
|-----|--------------------------|------|
| 0.2 | 10in Resistivity (Ohm-m) | 2000 |
| 0.2 | 20in Resistivity (Ohm-m) | 2000 |
| 0.2 | 30in Resistivity (Ohm-m) | 2000 |
| 0.2 | 60in Resistivity (Ohm-m) | 2000 |
| 0.2 | 90in Resistivity (Ohm-m) | 2000 |
| | 10000 TENSION (lb) | 0 |

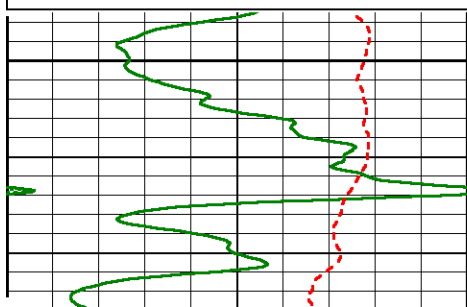


Repeat Pass

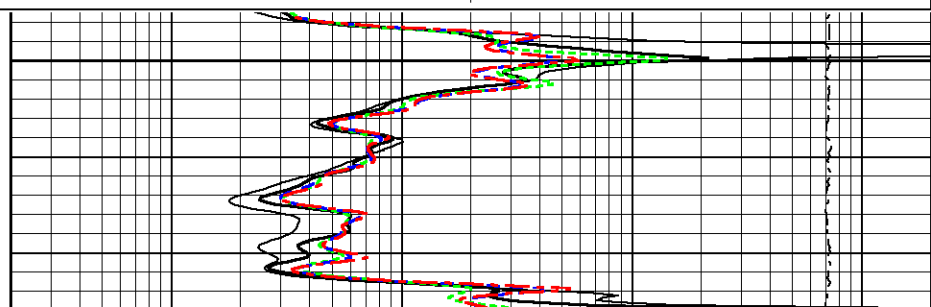
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 Charted by: Depth in Feet scaled 1:240

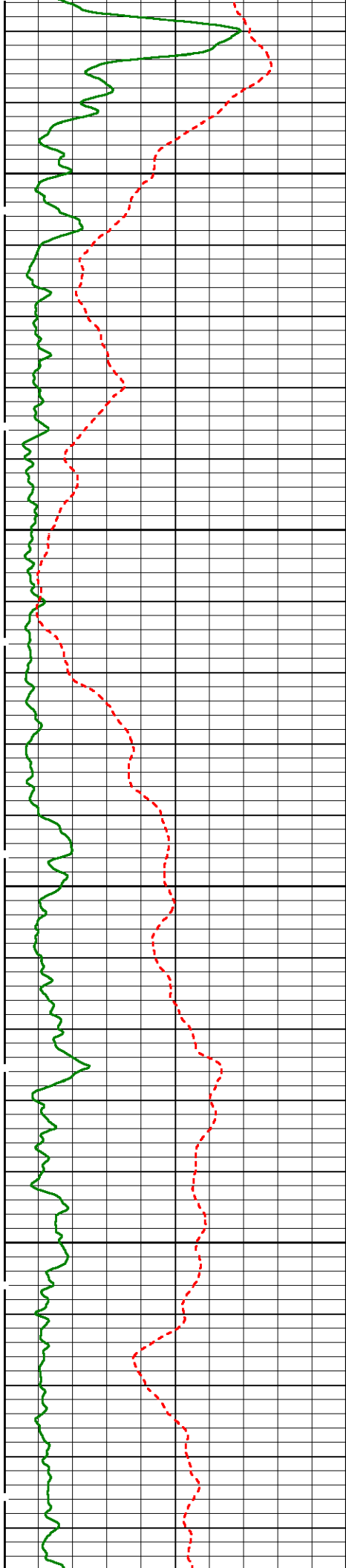
| | | |
|---|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| | SP [-20mV+] | |

| | | |
|-----|--------------------------|------|
| 0.2 | 10in Resistivity (Ohm-m) | 2000 |
| 0.2 | 20in Resistivity (Ohm-m) | 2000 |
| 0.2 | 30in Resistivity (Ohm-m) | 2000 |
| 0.2 | 60in Resistivity (Ohm-m) | 2000 |
| 0.2 | 90in Resistivity (Ohm-m) | 2000 |
| | 10000 TENSION (lb) | 0 |



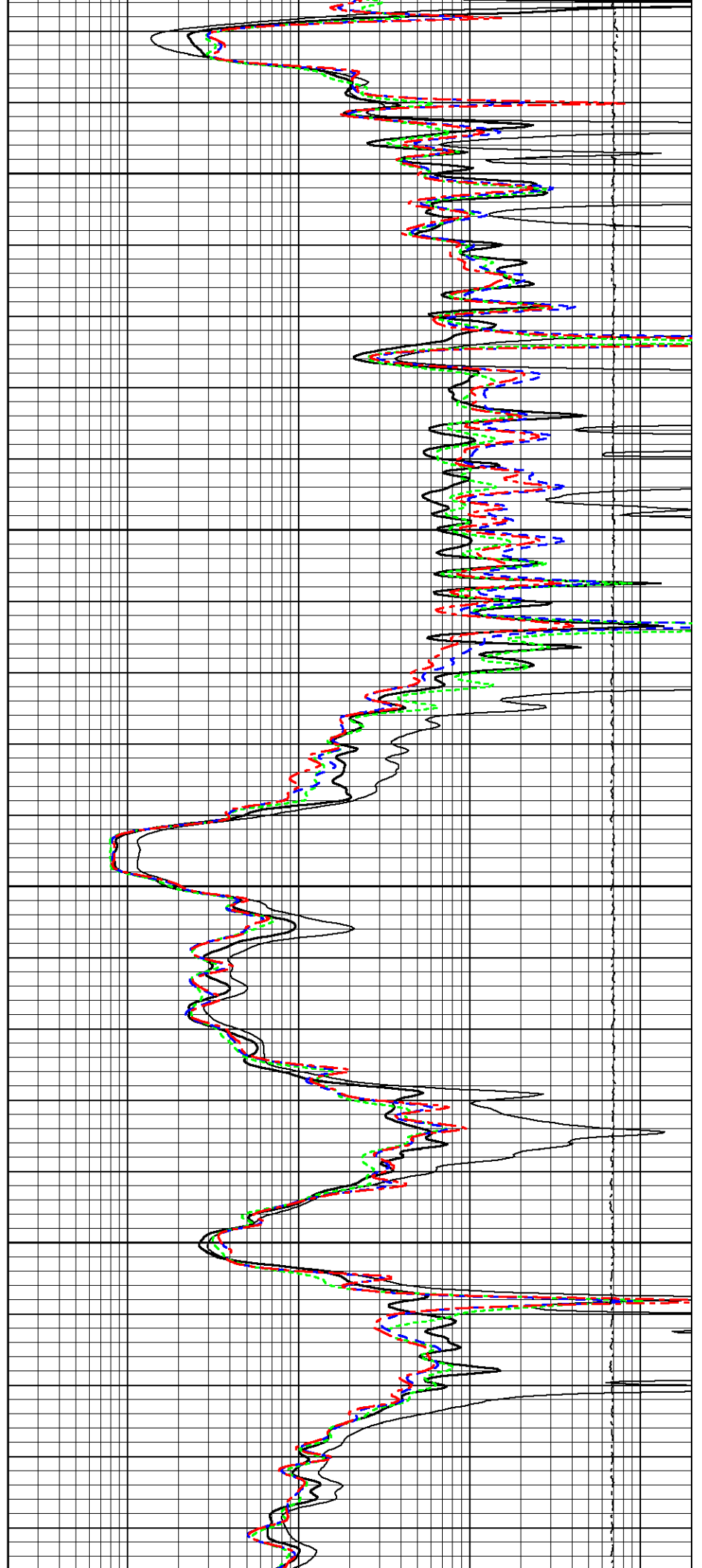
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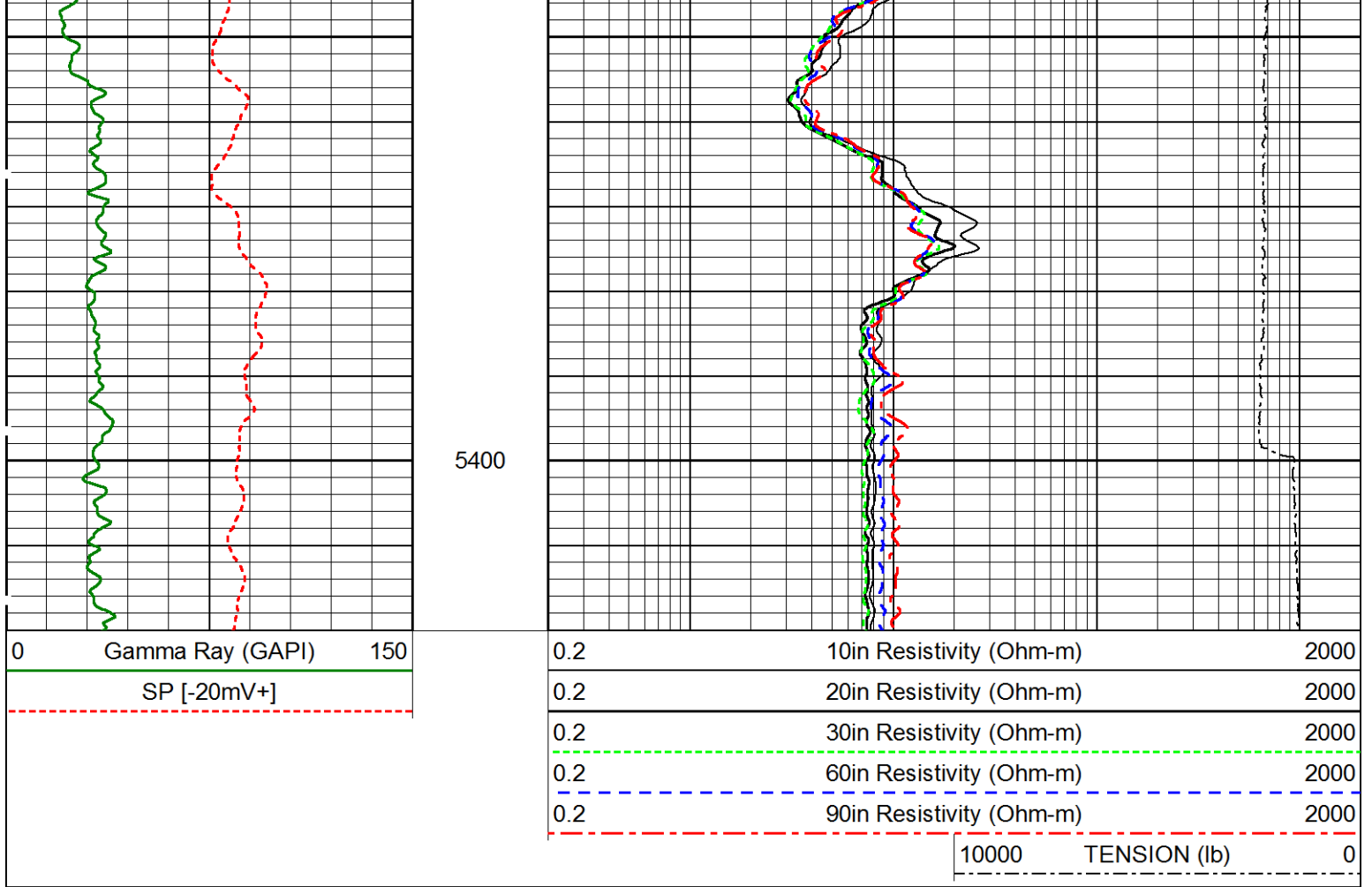




5200

5300





Calibration Report

Database File: reeder5689.db
 Dataset Pathname: iatwcali
 Dataset Creation: Tue Nov 15 11:07:19 2011 by Calc Sondex V7.03

Induction Array Tool Calibration Report

Serial Number: B10107
 Tool Model: 002

Master Calibration Performed: Thu May 06 11:29:47 2010
 Temperature: 67.6 degF

Sonde Error:

| Array | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|-----------|-------|------|-------|-------|------|------|-----|--------|
| Real | 203.4 | -9.7 | -39.8 | -14.2 | -1.5 | 1.8 | 4.4 | mmho/m |
| Imaginary | 203.6 | 89.7 | -2.8 | 20.7 | 8.6 | 18.5 | 5.5 | mmho/m |

Loop Gain:

| Array | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|------------------|-------|-------|--------|--------|--------|-------|-------|--------|
| Loop (real) | 537.7 | 678.5 | 1295.3 | 1394.1 | 1144.8 | 712.8 | 404.8 | mmho/m |
| Loop (imaginary) | 73.3 | 92.5 | 389.8 | 419.5 | 344.5 | 214.5 | 121.8 | mmho/m |
| Real | 764.0 | 722.2 | 1258.1 | 1375.0 | 1163.7 | 738.9 | 422.1 | mmho/m |
| Imaginary | 278.6 | 188.8 | 386.4 | 437.3 | 356.8 | 240.7 | 130.0 | mmho/m |
| Gain (real) | 0.959 | 0.927 | 0.998 | 1.004 | 0.982 | 0.967 | 0.969 | |
| Gain (imaginary) | 0.977 | 0.934 | 1.002 | 1.007 | 0.989 | 0.965 | 0.978 | |

Before Survey Verification Performed: Mon Nov 14 11:16:36 2011
 Sonde 1 Temperature: 69.5 degF
 Sonde 2 Temperature: 73.2 degF
 Array 1 Temperature: 82.9 degF

| Array | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------|------|------|-----|-----|-----|-----|-----|
| TxIR | -0.0 | -0.0 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |

| | | | | | | | |
|---------------|-------|-------|-------|-------|-------|-------|-------|
| TxIX | -0.0 | -0.0 | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 |
| Tx Magnitude | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Gain | 103.5 | 122.5 | 111.4 | 117.5 | 118.5 | 131.5 | 148.5 |
| RxCR | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 |
| RxCX | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 |
| RxC Magnitude | 0.5 | 1.1 | 0.7 | 0.9 | 0.9 | 1.5 | 2.8 |

Tool Module Parameters

Software Version: 1.8.7.0
 Borehole Size Source: BOREID
 Mud Resistivity Source: Hilchie
 Mud Resistivity At Surface: 0.7000Ohm-m
 Mud Resistivity Surface Temperature: 89.0000degF
 Borehole Corrections: Automatic
 Minimum Standoff: 1.4in

MAS CBL Calibration Report

Serial Number: C10037LS
 Tool Model: 001LS
 Performed: Sun Jun 13 14:33:21 1993

Depth: 0 ft
 Casing Diameter: 0 in

| | | | |
|-------------------------|------------|------------|----|
| | 3' Spacing | 5' Spacing | |
| Signal Zero: | 0 | 0 | mV |
| Calibrated Amplitude: | 1 | 1 | mV |
| Reading at Signal Zero: | 0 | 0 | V |
| Reading in Free Pipe: | 1 | 1 | V |
| Gain: | 1 | 1 | |
| Offset: | 0 | 0 | |

Gamma Ray Calibration Report

Serial Number: C10047
 Tool Model: 001

Performed: Sun Nov 13 14:26:12 2011

Calibrator Value: 147.0 GAPI

Background Reading: 71.3 cps
 Calibrator Reading: 522.8 cps

Sensitivity: 0.3255 GAPI/cps




Log Variables

Database: C:\Warrior\Data\reeder5689.db
 Dataset: field/well/run1/iatwcali

Top - Bottom

| | | | | | | | |
|-------------------------|------------------------|-------------------------|--------------|-------------------|---------------------|--------------------------|-----------------------|
| BOREID in 8.75 | BOTTEMP degF 121 | TDEPTH ft 5735 | PERFS 0 | CASEOD in 7 | SPSHIFT mV 10 | MATRXDEN g/cc 2.71 | FLUIDDEN g/cc 1 |
| MudWgt lb/gal 9.1 | AIR_HOLE? No | CASEWGHT lb/ft 26 | CASED? No | DE-CENT No | SO in 0.25 | SRFTEMP degF 68 | DEVI ° 0 |
| MUDSALIN | FRMSALIN | SVMATRIX | SVFLUID | COMPACT | MINATTN | MINAMPL | MAXAMPL |

| | | | | | | | |
|------|------|---------|---------|---|-------|----|----|
| kppm | kppm | usec/ft | usec/ft | | db/ft | mV | mV |
| 0 | 0 | 47.6 | 189 | 1 | 0.8 | 1 | 0 |

| Sensor | Offset (ft) | Schematic | Description | Len (ft) | OD (in) | Wt (lb) |
|---------|-------------|---|--|----------|---------|---------|
| GR | 38.90 |  | CHD-001 (000004) Cable Head | 2.19 | 3.38 | 35.00 |
| | | | XTU-008 (C10087) Crossover Ultrawire Toolbus to Ultralink | 2.08 | 3.38 | 47.00 |
| | | | GRT-001 (C10047) Gamma Ray Tool | 3.22 | 3.38 | 69.00 |
| WVFATR8 | 26.79 |  | MAS-001LS (C10037LS) Multi Array Sonic Tool (LS) | 19.82 | 3.38 | 340.00 |
| WVFATR7 | 26.54 | | | | | |
| WVFATR6 | 26.29 | | | | | |
| WVFATR5 | 26.04 | | | | | |
| WVFATR4 | 25.79 | | | | | |
| WVFATR3 | 25.54 | | | | | |
| WVFATR2 | 25.29 | | | | | |
| WVFATR1 | 25.04 | | | | | |
| WVF5FT | 24.54 | | | | | |
| WVF3FT | 23.54 | | | | | |
| IAT | 8.44 |  | KJT-001 (000002) Knuckle Joint | 2.86 | 3.38 | 72.00 |
| | | | IAT-002 (B10107) Induction Array Tool | 13.22 | 3.88 | 196.00 |

SP

0.42



BN-SOFF (000001)
Bottom Nose Standoff

0.38

6.88

6.00

Dataset: reeder5689.db: field/well/run1/iatwcali
Total Length: 43.77 ft
Total Weight: 765.00 lb
O.D.: 6.88 in



Main Pass

Database File: reeder5689.db
Dataset Pathname: iatwcali
Presentation Format: acond2
Dataset Creation: Tue Nov 15 11:07:19 2011 by Calc Sondex V7.03
Charted by: Depth in Feet scaled 1:1200

| | | | | |
|---------------------|-----|--------------------------------|---------------------------|---|
| Gamma Ray (GAPI) | 150 | 1000 | 90" Conductivity (mmho/m) | 0 |
| SP [-20mV+] | | Shallow Resistivity (Ohm-m) | 50 | |
| | | Deep Resistivity (Ohm-m) | 50 | |

