

Schlumberger

Company: ENCANA OIL & GAS (USA) INC.

Well: SG 8511E-22 (N22496)

Field: Story Gulch

County: Garfield

State: Colorado

SLIM CEMENT MAPPING TOOL  
CBL - VDL  
GAMMA RAY - CCL

County: Garfield  
Field: Story Gulch  
Location: SHL: 1202 FSL 1959 FWL  
Well: SG 8511E-22 (N22496)  
Company: ENCANA OIL & GAS (USA) INC

|                               |                 |                |      |  |  |  |  |
|-------------------------------|-----------------|----------------|------|--|--|--|--|
| Logging Date                  | 13-Jul-2012     |                |      |  |  |  |  |
| Run Number                    | 1               |                |      |  |  |  |  |
| Depth Driller                 | 1121.6 ft       |                |      |  |  |  |  |
| Schlumberger Depth            | 111.64 ft       |                |      |  |  |  |  |
| Bottom Log Interval           | 111.65 ft       |                |      |  |  |  |  |
| Top Log Interval              | 200 ft          |                |      |  |  |  |  |
| Casing Fluid Type             | FRESH WATER     |                |      |  |  |  |  |
| Salinity                      |                 |                |      |  |  |  |  |
| Density                       | 8.6 lbm/gal     |                |      |  |  |  |  |
| Fluid Level                   | 22 ft           |                |      |  |  |  |  |
| BIT/CASING/TUBING STRING      |                 |                |      |  |  |  |  |
| Bit Size                      | 8.750 in        |                |      |  |  |  |  |
| From                          | 0 ft            |                |      |  |  |  |  |
| To                            | 1121.6 ft       |                |      |  |  |  |  |
| Casing/Tubing Size            | 4.500 in        |                |      |  |  |  |  |
| Weight                        | 11.6 lbm/ft     |                |      |  |  |  |  |
| Grade                         | P-110           |                |      |  |  |  |  |
| From                          | 0 ft            |                |      |  |  |  |  |
| To                            | 111.96 ft       |                |      |  |  |  |  |
| Maximum Recorded Temperatures | 284 degF        |                |      |  |  |  |  |
| Logger On Bottom              | 13-Jul-2012     |                | 6:00 |  |  |  |  |
| Unit Number                   | 391             | Grand Junction |      |  |  |  |  |
| Recorded By                   | Kirstie Bunting |                |      |  |  |  |  |
| Witnessed By                  | SCOTT PITT      |                |      |  |  |  |  |

| PVT DATA                      |         |       |     |
|-------------------------------|---------|-------|-----|
| Oil Density                   | Run 1   | Run 2 | Run |
| Water Salinity                |         |       |     |
| Gas Gravity                   |         |       |     |
| Bo                            |         |       |     |
| Bw                            |         |       |     |
| 1/Bq                          |         |       |     |
| Bubble Point Pressure         |         |       |     |
| Bubble Point Temperature      |         |       |     |
| Solution GOR                  |         |       |     |
| Maximum Deviation             |         |       |     |
| CEMENTING DATA                |         |       |     |
| Primary/Squeeze               | Primary |       |     |
| Casing String No              |         |       |     |
| Lead Cement Type              |         |       |     |
| Volume                        |         |       |     |
| Density                       |         |       |     |
| Water Loss                    |         |       |     |
| Additives                     |         |       |     |
| Tail Cement Type              |         |       |     |
| Volume                        |         |       |     |
| Density                       |         |       |     |
| Water Loss                    |         |       |     |
| Additives                     |         |       |     |
| Expected Cement Top           |         |       |     |
| Logging Date                  |         |       |     |
| Run Number                    |         |       |     |
| Depth Driller                 |         |       |     |
| Schlumberger Depth            |         |       |     |
| Bottom Log Interval           |         |       |     |
| Top Log Interval              |         |       |     |
| Casing Fluid Type             |         |       |     |
| Salinity                      |         |       |     |
| Density                       |         |       |     |
| Fluid Level                   |         |       |     |
| BIT/CASING/TUBING STRING      |         |       |     |
| Bit Size                      |         |       |     |
| From                          |         |       |     |
| To                            |         |       |     |
| Casing/Tubing Size            |         |       |     |
| Weight                        |         |       |     |
| Grade                         |         |       |     |
| From                          |         |       |     |
| To                            |         |       |     |
| Maximum Recorded Temperatures |         |       |     |
| Logger On Bottom              |         |       |     |
| Unit Number                   |         |       |     |
| Recorded By                   |         |       |     |
| Witnessed By                  |         |       |     |

## DEPTH SUMMARY LISTING

Date Created: 10-JUL-2012 13:51:17

### Depth System Equipment

| Depth Measuring Device    |             | Tension Device                |             | Logging Cable                                 |          |
|---------------------------|-------------|-------------------------------|-------------|---|----------|
| Type:                     | IDW-B       | Type:                         | CM TD-B/A   | Type:   | 1-25ZT   |
| Serial Number:            | 5873        | Serial Number:                | 5006        | Serial Number:                                | 391      |
| Calibration Date:         | 20-DEC-2011 | Calibration Date:             | 21-JUN-2012 | Length:                                       | 24000 FT |
| Calibrator Serial Number: | 33          | Calibrator Serial Number:     | 174878      | Conveyance Method: Wireline<br>Rig Type: LAND |          |
| Calibration Cable Type:   | 1-25ZT      | Number of Calibration Points: | 10          |   |          |
| Wheel Correction 1 :      | -3          | Calibration RMS:              | 15          |   |          |
| Wheel Correction 2:       | -3          | Calibration Peak Error:       | 9           |   |          |

### Depth Control Parameters

Log Sequence: First Log In the Well

Rig Up Length At Surface: 200.00 FT

Rig Up Length At Bottom: 200.00 FT

Rig Up Length Correction: 0.00 FT

Stretch Correction: 0.00 FT

Tool Zero Check At Surface: 0.00 FT

### Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH PROCEDURES USED
2. PRIMARY DEPTH CONTROL: IDW
3. SECONDARY DEPTH CONTROL: DRUM COUNTER (SWPT)
- 4.
- 5.
- 6.

#### DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

#### OTHER SERVICES1

OS1: NONE

OS2:

OS3:

OS4:

OS5:

#### OTHER SERVICES2

OS1:

OS2:

OS3:

OS4:

OS5:

REMARKS: RUN NUMBER 1

FIRST RUN IN HOLE CORRELATED TO DOWN LOG

TOOL RAN AS PER TOOL SKETCH

ENTRANCE TIME: 05:00

TIME AT BOTTOM: 06:00

EXIT TIME: 08:45

TOTAL DEPTH = 11164 FT

REMARKS: RUN NUMBER 2

|   |  |
|---|--|
| ESTIMATED TOP OF CEMENT = 800 FT        |  |
| MAX RECORDED TEMPERATURE = 284 DEGF     |  |
| MAX RECORDED PRESSURE = 4695 PSIA       |  |
| STRETCH CORRECTION = 4 FT               |  |
| CBAF = .90                              |  |
| CYCLE SKIPPING DUE TO GOOD BOND         |  |
| EXPECTED CBL AMP IN FREE PIPE 80 MV     |  |
| MAIN LOG RAN WITH ZERO SURFACE PRESSURE |  |

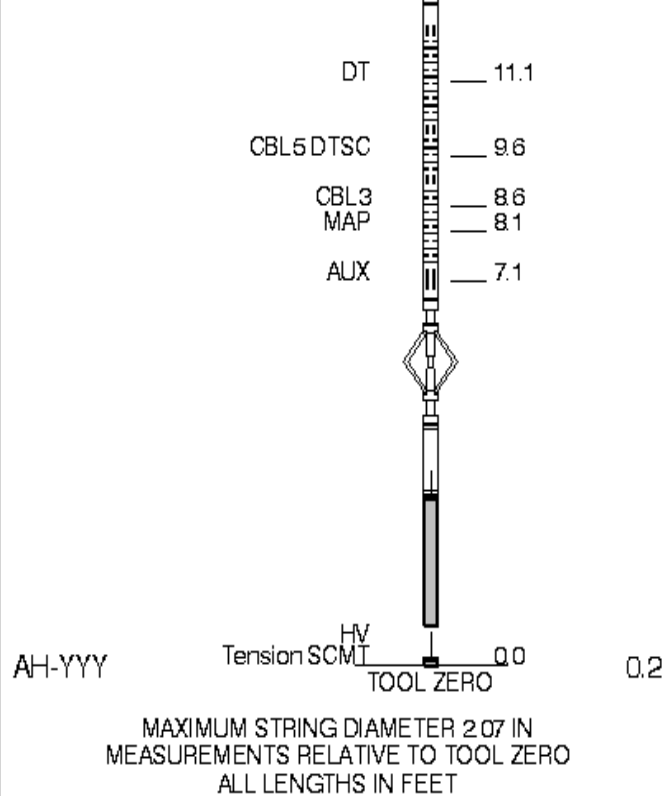
|                                      |  |
|--------------------------------------|--|
| THANK YOU FOR CHOOSING SCHLUMBERGER! |  |
|--------------------------------------|--|

| RUN 1            |            |      | RUN 2            |       |      |
|------------------|------------|------|------------------|-------|------|
| SERVICE ORDER #: | C8Q2-00021 |      | SERVICE ORDER #: |       |      |
| PROGRAM VERSION: | 19C0-187   |      | PROGRAM VERSION: |       |      |
| FLUID LEVEL:     | 22 ft      |      | FLUID LEVEL:     |       |      |
| LOGGED INTERVAL  | START      | STOP | LOGGED INTERVAL  | START | STOP |
|                  |            |      |                  |       |      |
|                  |            |      |                  |       |      |
|                  |            |      |                  |       |      |
|                  |            |      |                  |       |      |
|                  |            |      |                  |       |      |

| EQUIPMENT DESCRIPTION |  |  |       |  |  |
|-----------------------|--|--|-------|--|--|
| RUN 1                 |  |  | RUN 2 |  |  |

| SURFACE EQUIPMENT   |  |
|---------------------|--|
| WITM-A<br>PSC_16MHZ |  |

| DOWNHOLE EQUIPMENT   |  |
|--|--|
| <div> <div> <div>MH-22</div> <div>MH-22</div> <div>33.2</div> </div> <div> <div>AH-38</div> <div>Detail MT</div> <div>TelStatus</div> <div>CTEM</div> <div>31.6</div> <div>31.3</div> </div> <div> <div>HBMS-B</div> <div>PSC-A</div> <div>HUDH-A</div> <div>HSTC-A</div> <div>HBMC-A</div> <div>GR</div> <div>CCL</div> <div>HBMC</div> <div>HTPS-A 2884</div> <div>HCQG E_Mano</div> <div>RTD_Thermometer</div> <div>GR</div> <div>26.4</div> <div>CCL</div> <div>24.0</div> <div>HSTC Aux.</div> <div>HBMC Aux.</div> <div>22.5</div> <div>CQG Manom</div> <div>Well_Temp</div> <div>21.1</div> <div>SCMT-CB</div> <div>SCMC-CA 8172</div> <div>SECH-CA</div> <div>CMIR-AG</div> <div>SCMS-CB 8179</div> <div>SCMX-CA</div> <div>20.2</div> </div> </div> |  |



# MAIN PASS CBL VDL

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SG 8511 E-22 (N22496)

## Input DLIS Files

|         |                  |        |          |                   |            |          |
|---------|------------------|--------|----------|-------------------|------------|----------|
| DEFAULT | SCMT_HBMS_140LUP | FN:129 | PRODUCER | 13-Jul-2012 05:55 | 11170.0 FT | 116.5 FT |
|---------|------------------|--------|----------|-------------------|------------|----------|

## Output DLIS Files

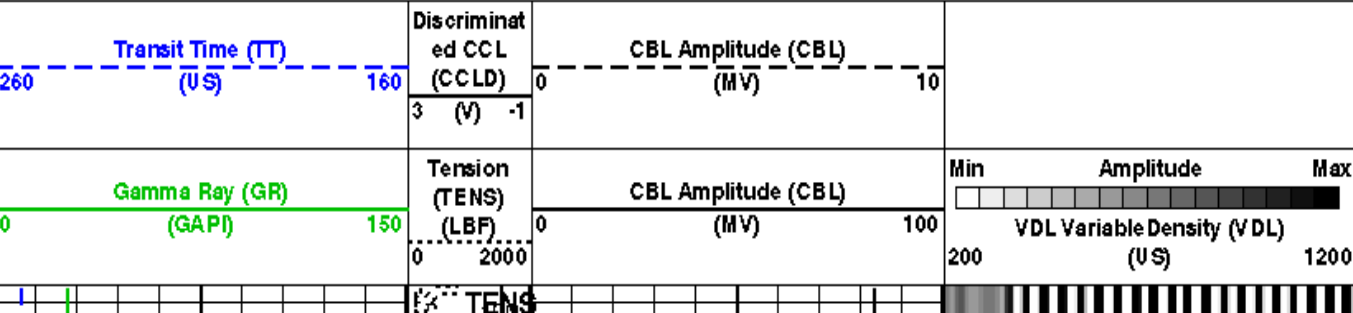
|         |                  |        |          |                   |            |         |
|---------|------------------|--------|----------|-------------------|------------|---------|
| DEFAULT | SCMT_HBMS_143PUP | FN:132 | PRODUCER | 13-Jul-2012 08:53 | 11174.0 FT | 96.0 FT |
|---------|------------------|--------|----------|-------------------|------------|---------|

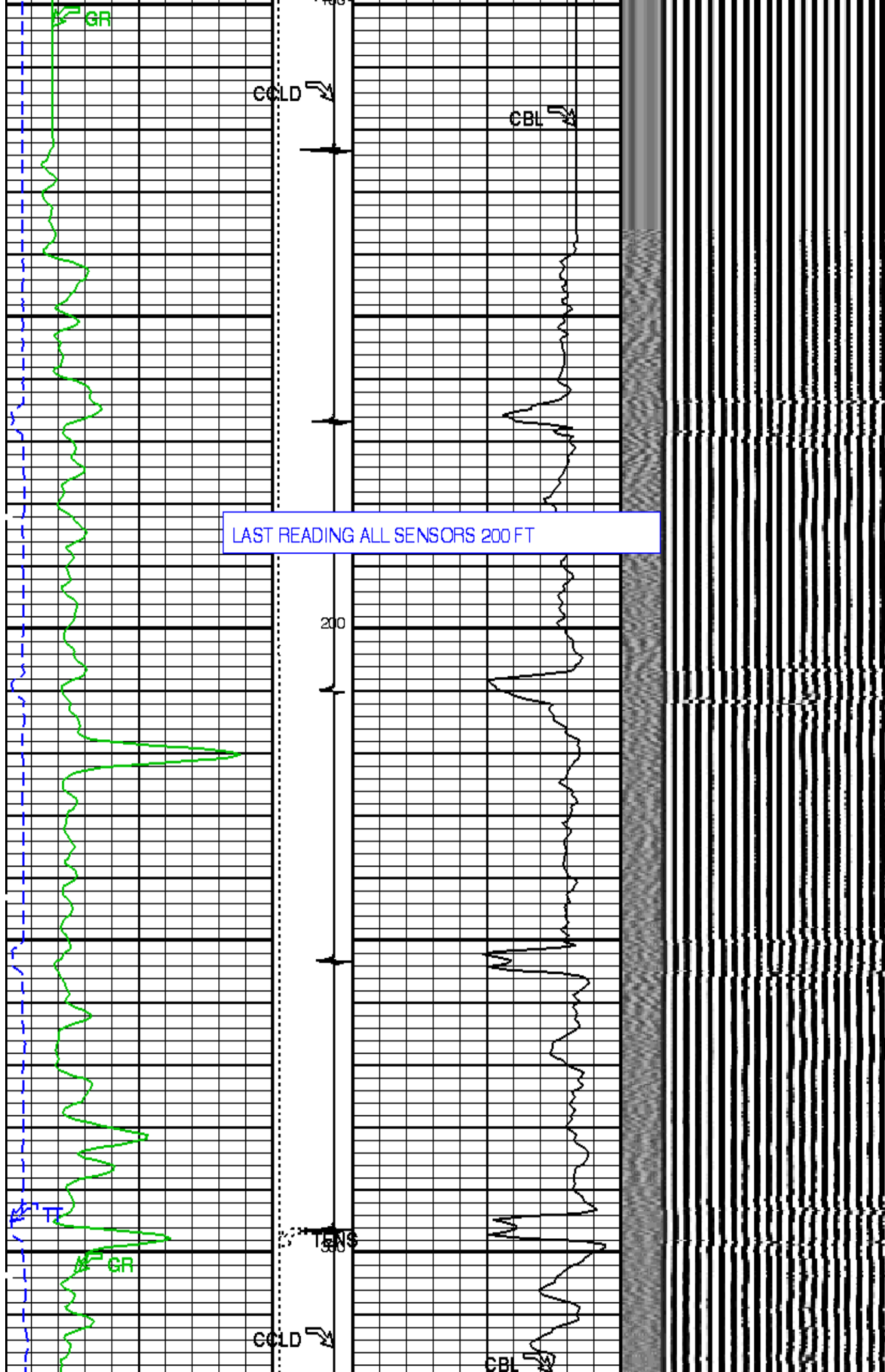
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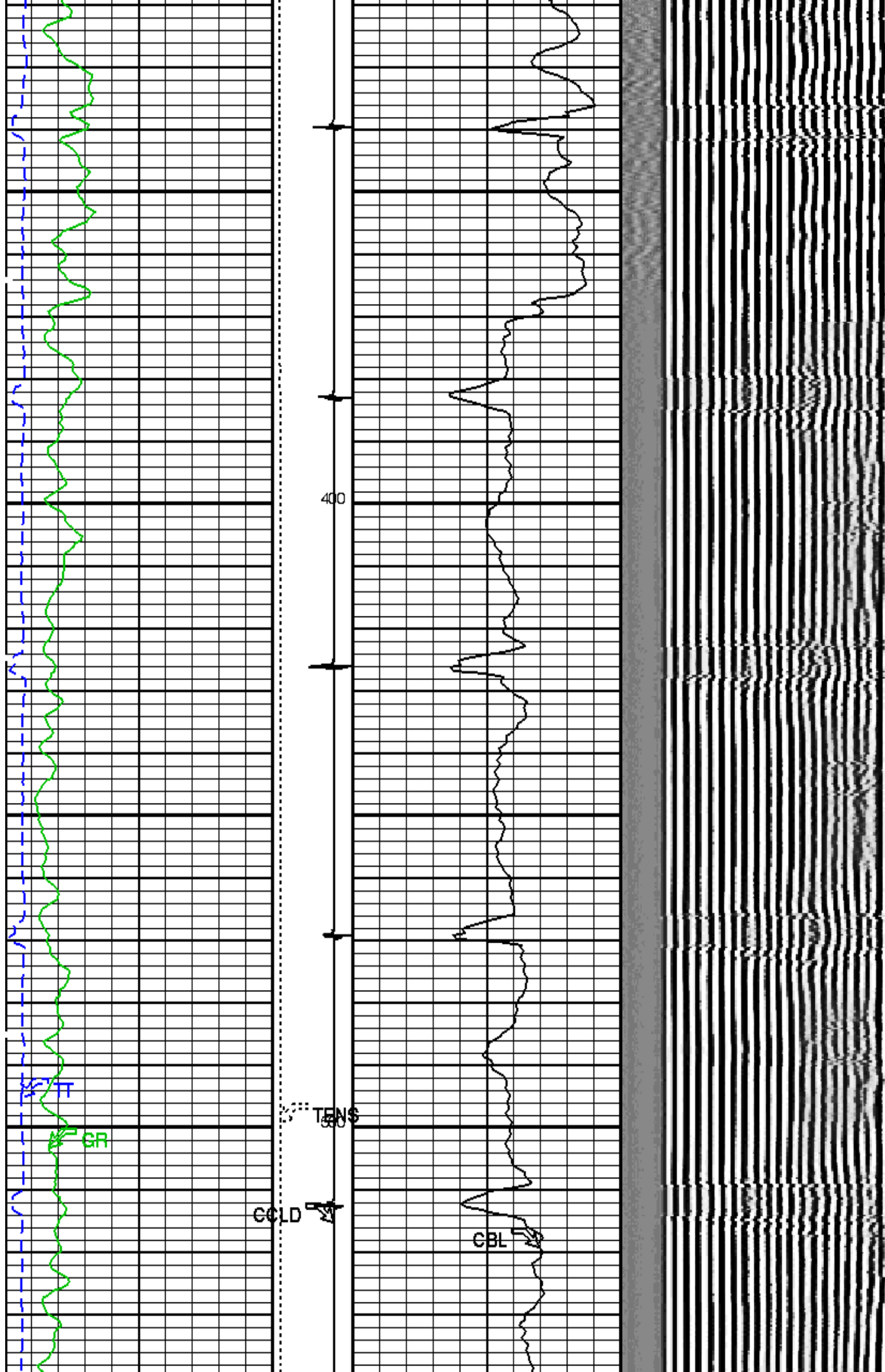
|         |                        |        |          |
|---------|------------------------|--------|----------|
| SCMT-CB | SRPC-5095-H2-2011-OP19 | HBMS-B | 19C0-187 |
|---------|------------------------|--------|----------|

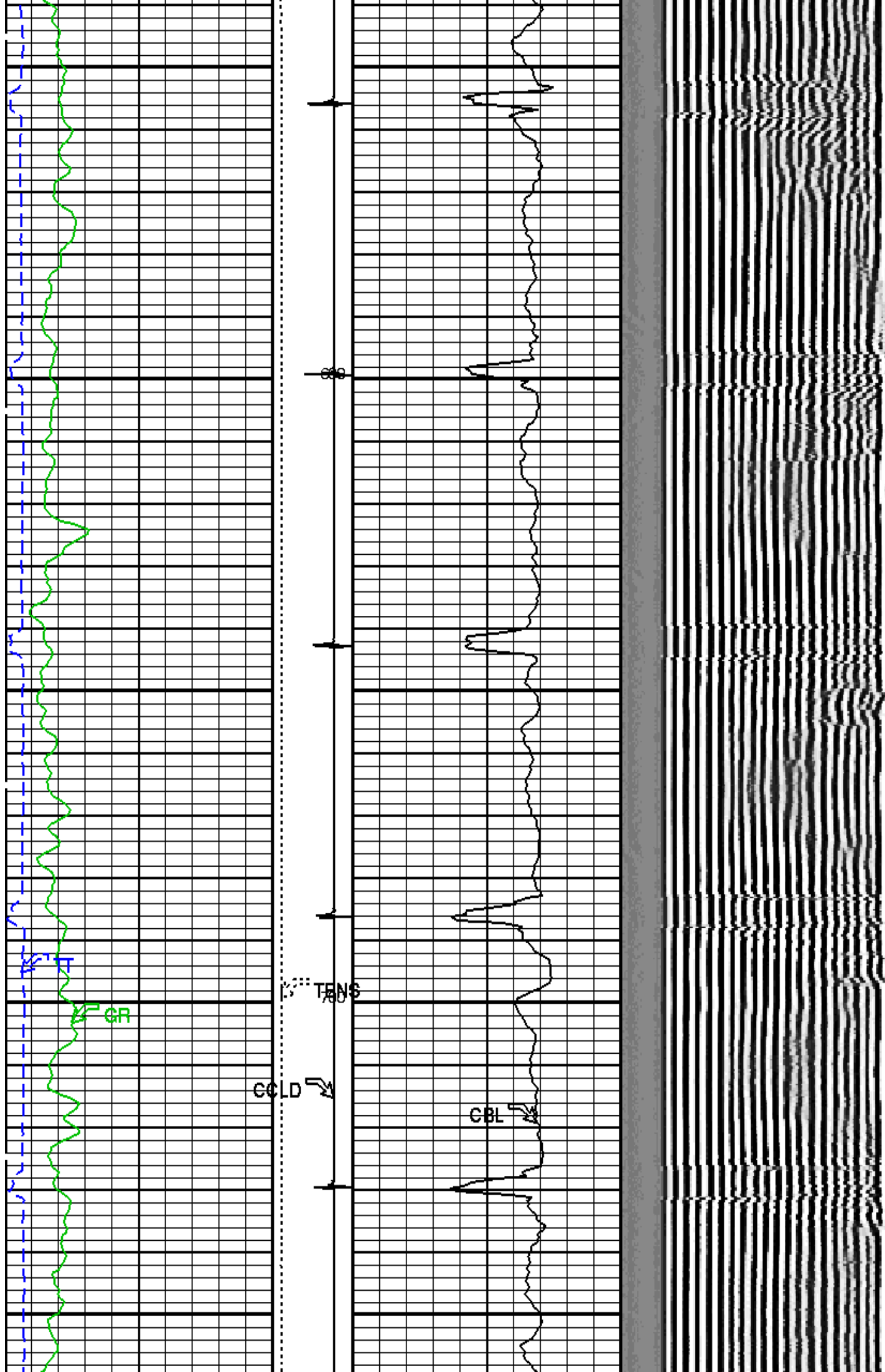
## PIP SUMMARY

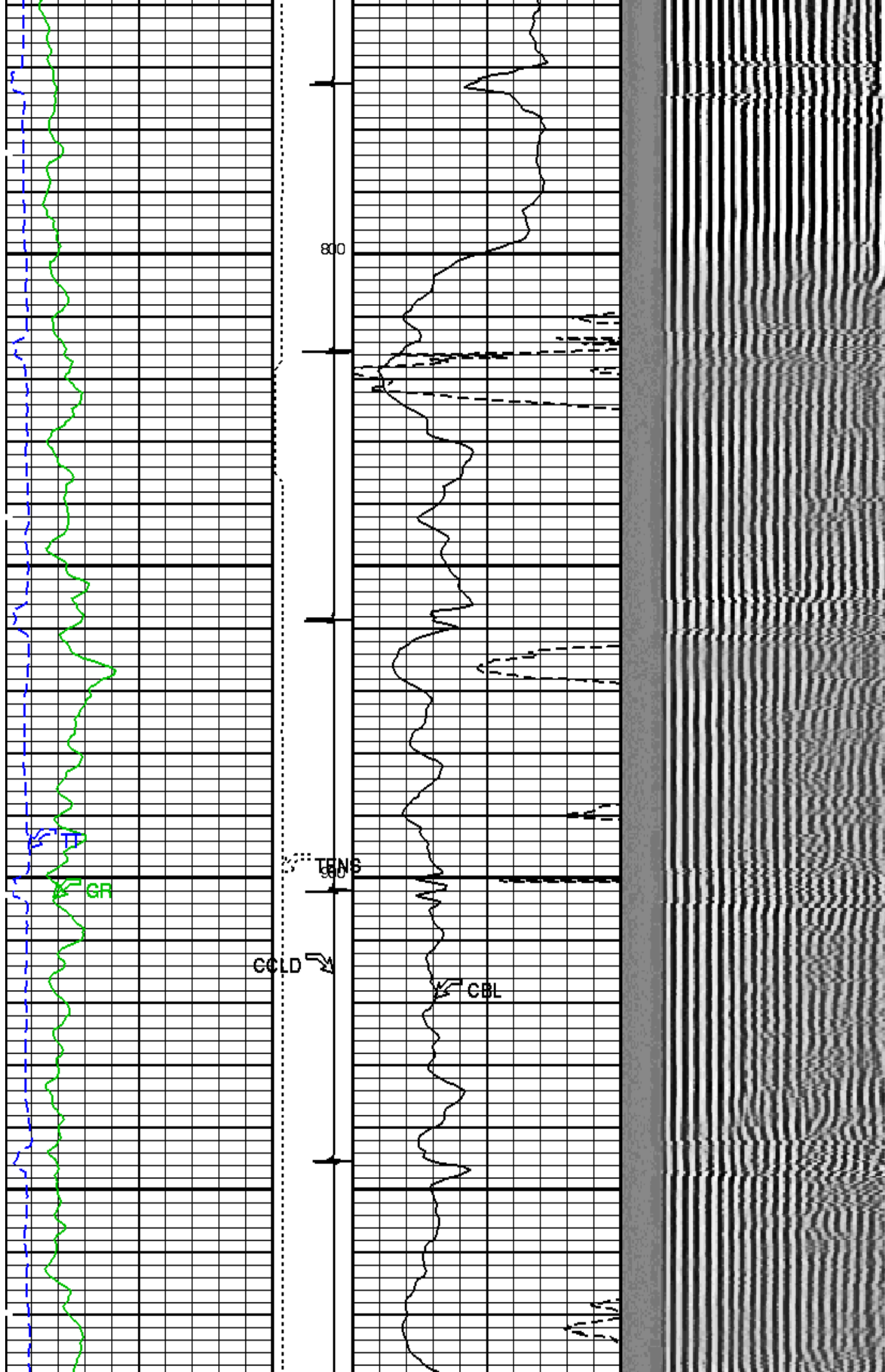
Time Mark Every 60 S

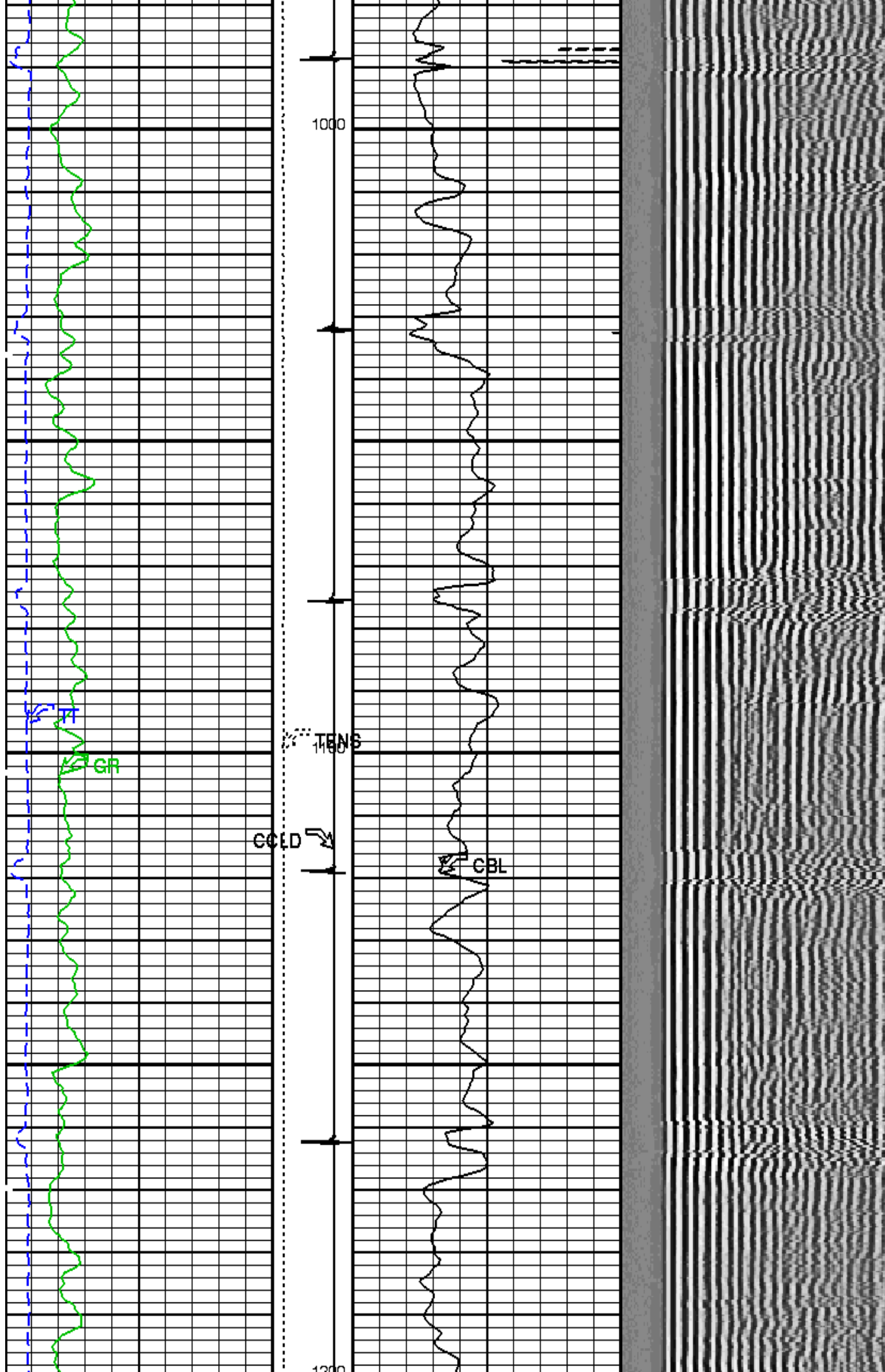


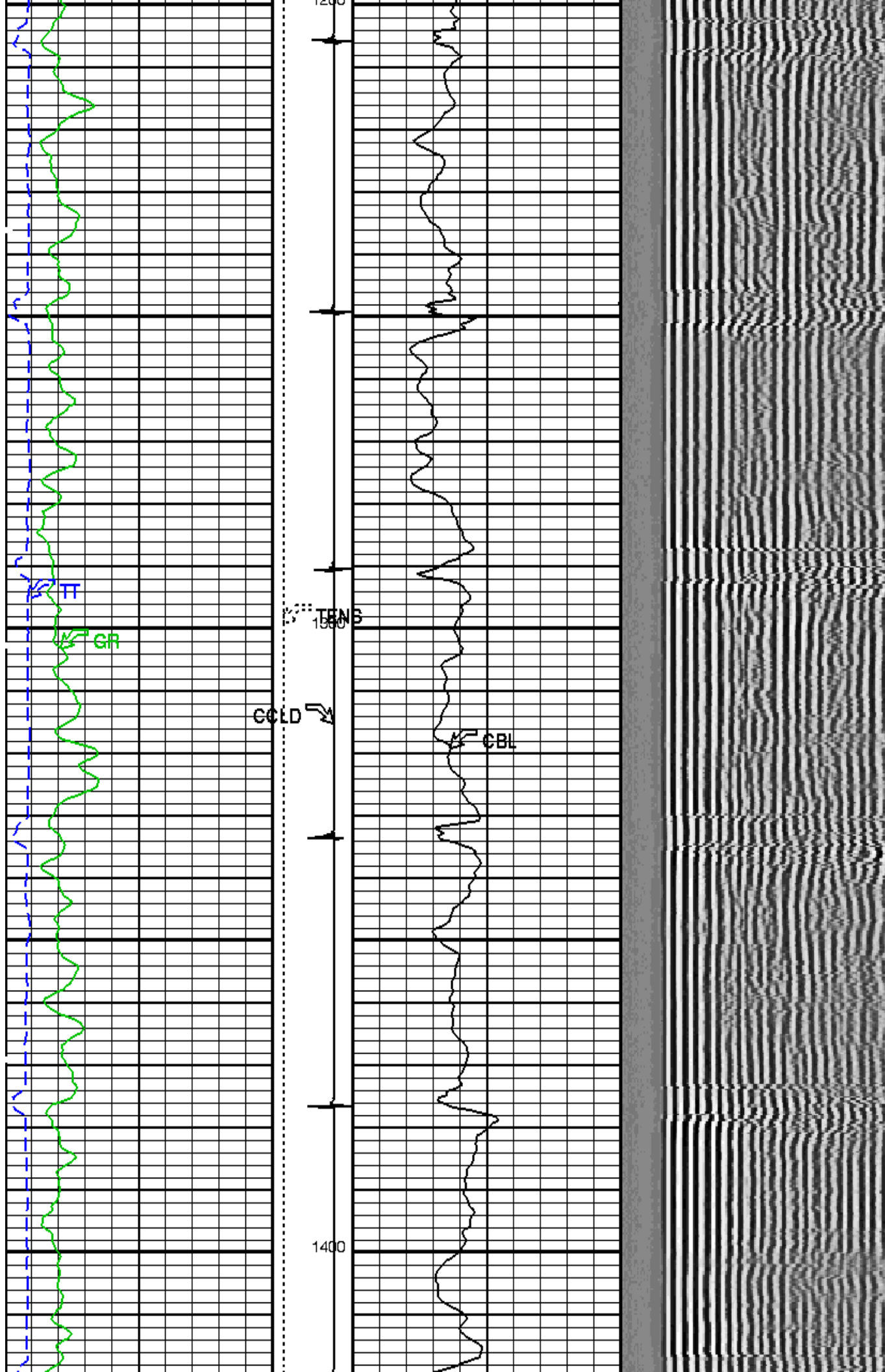


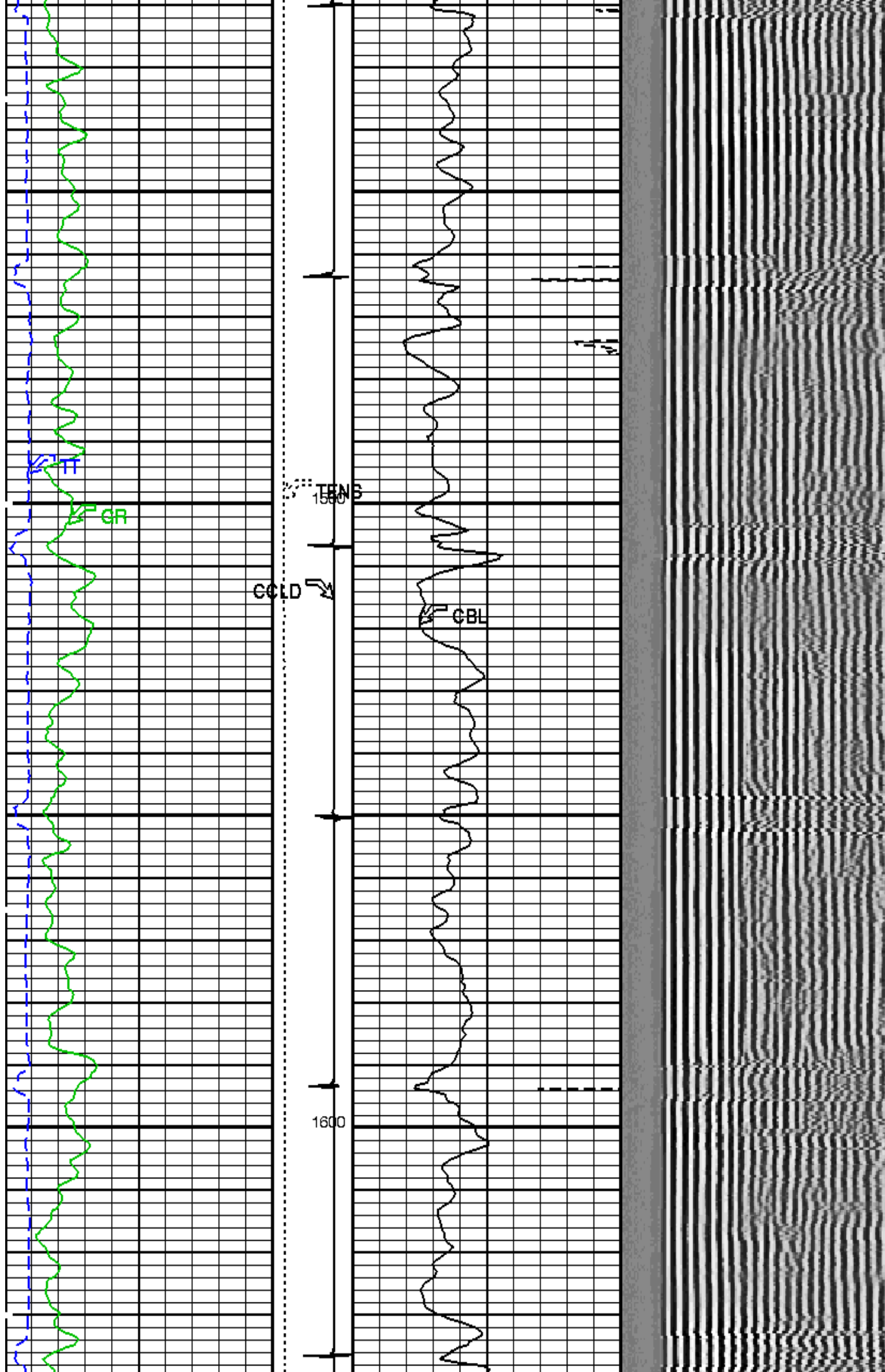


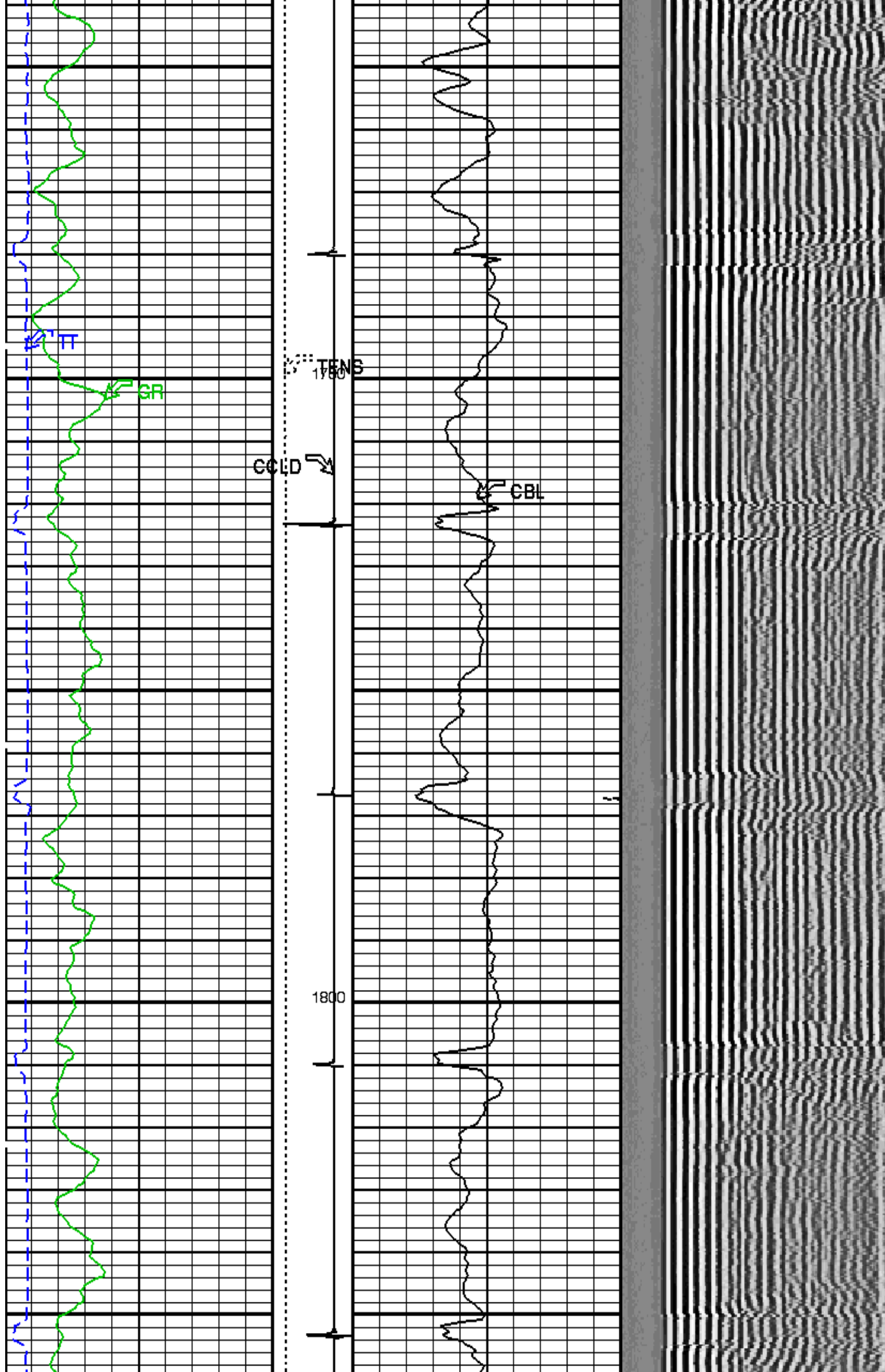


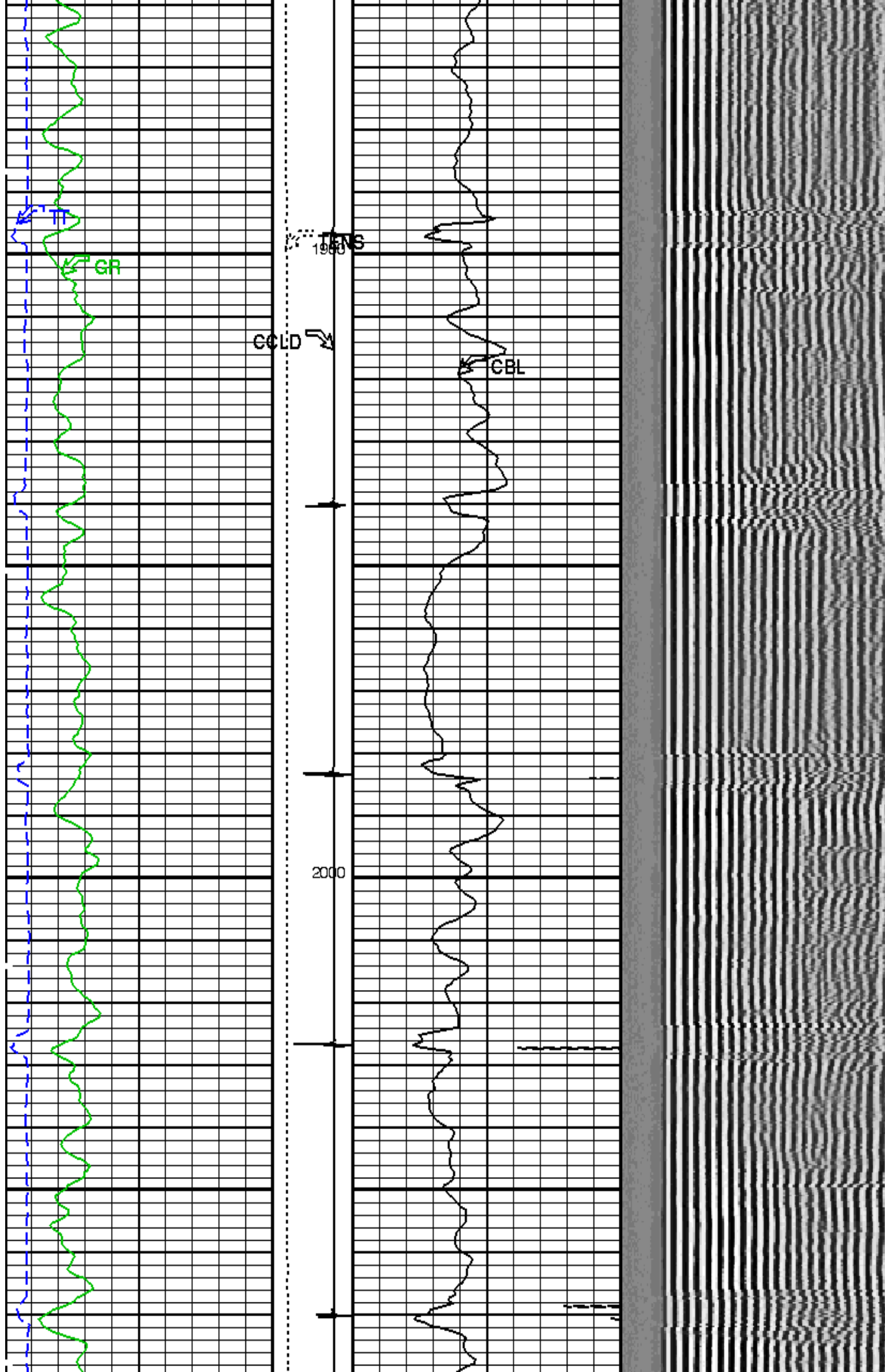


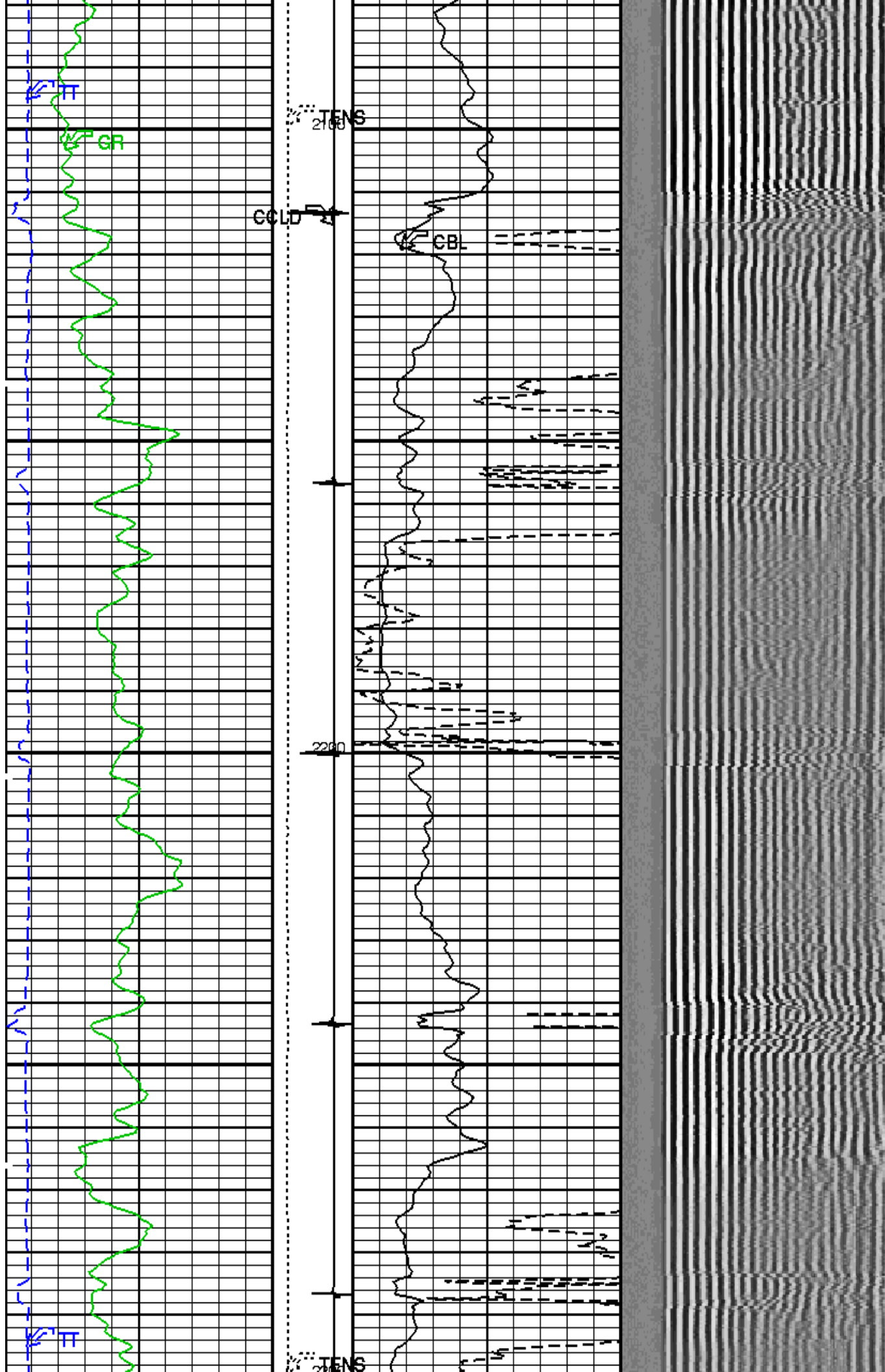


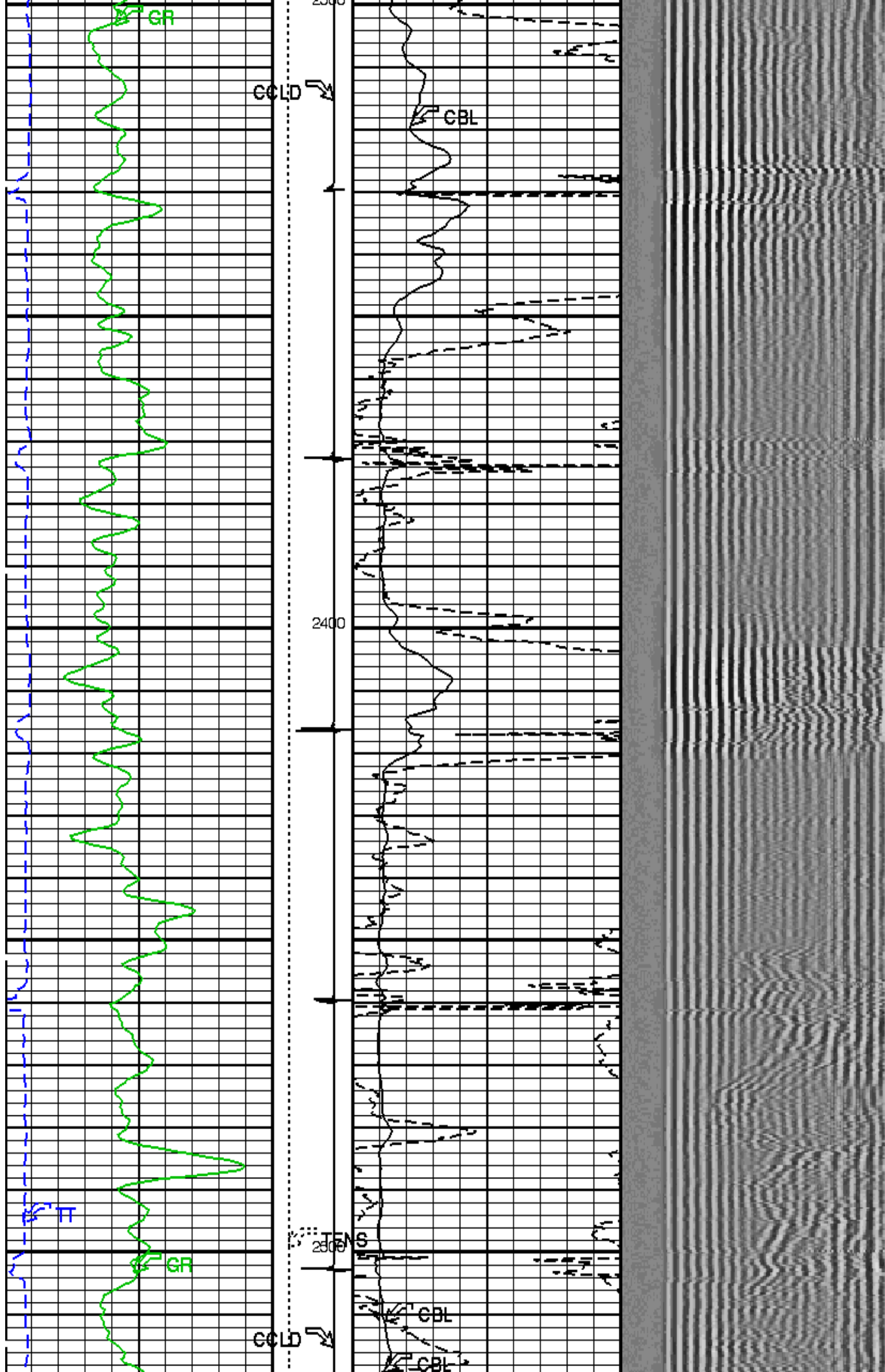


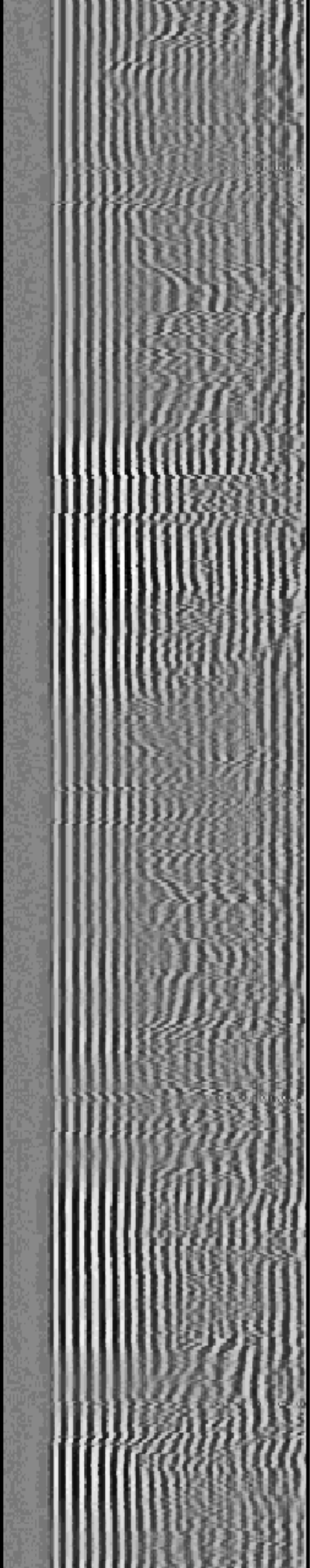
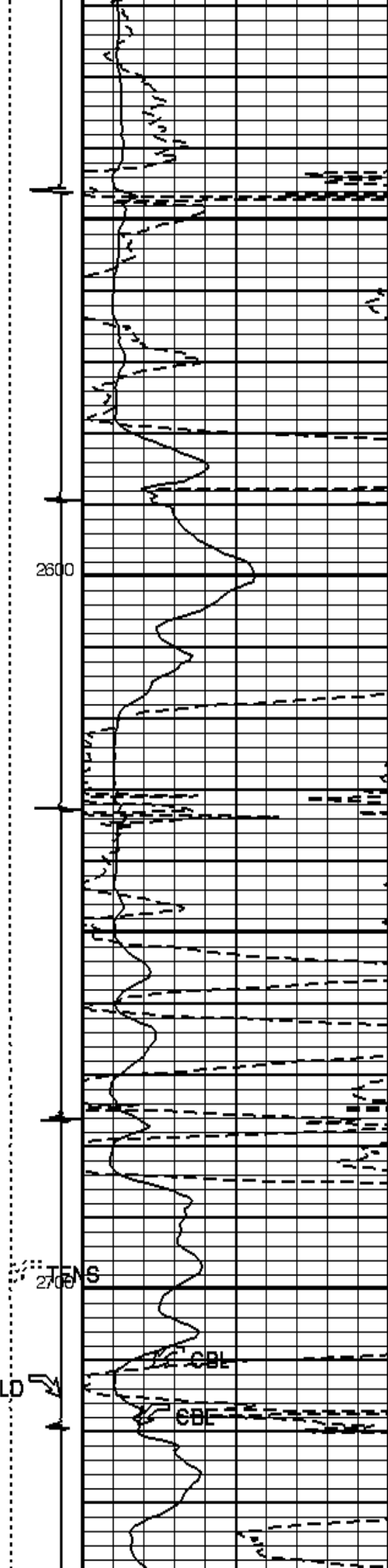
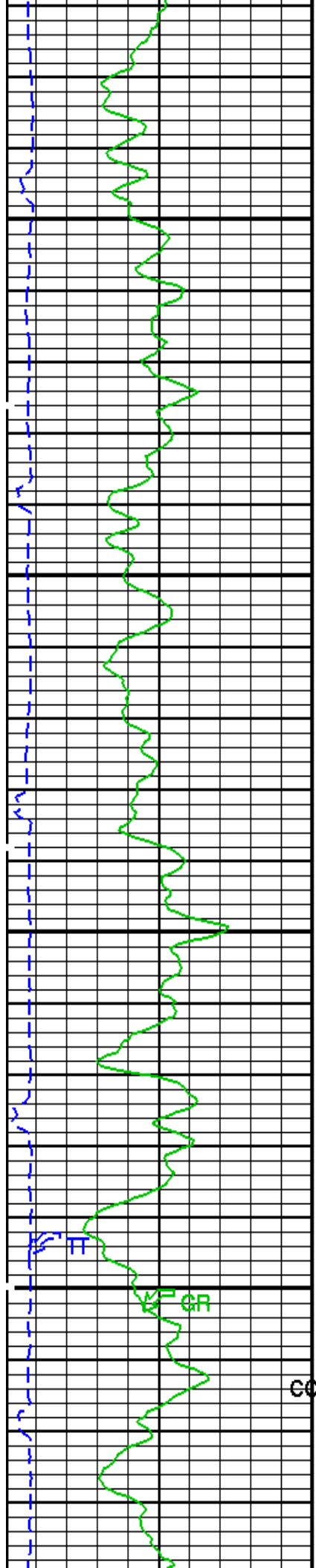


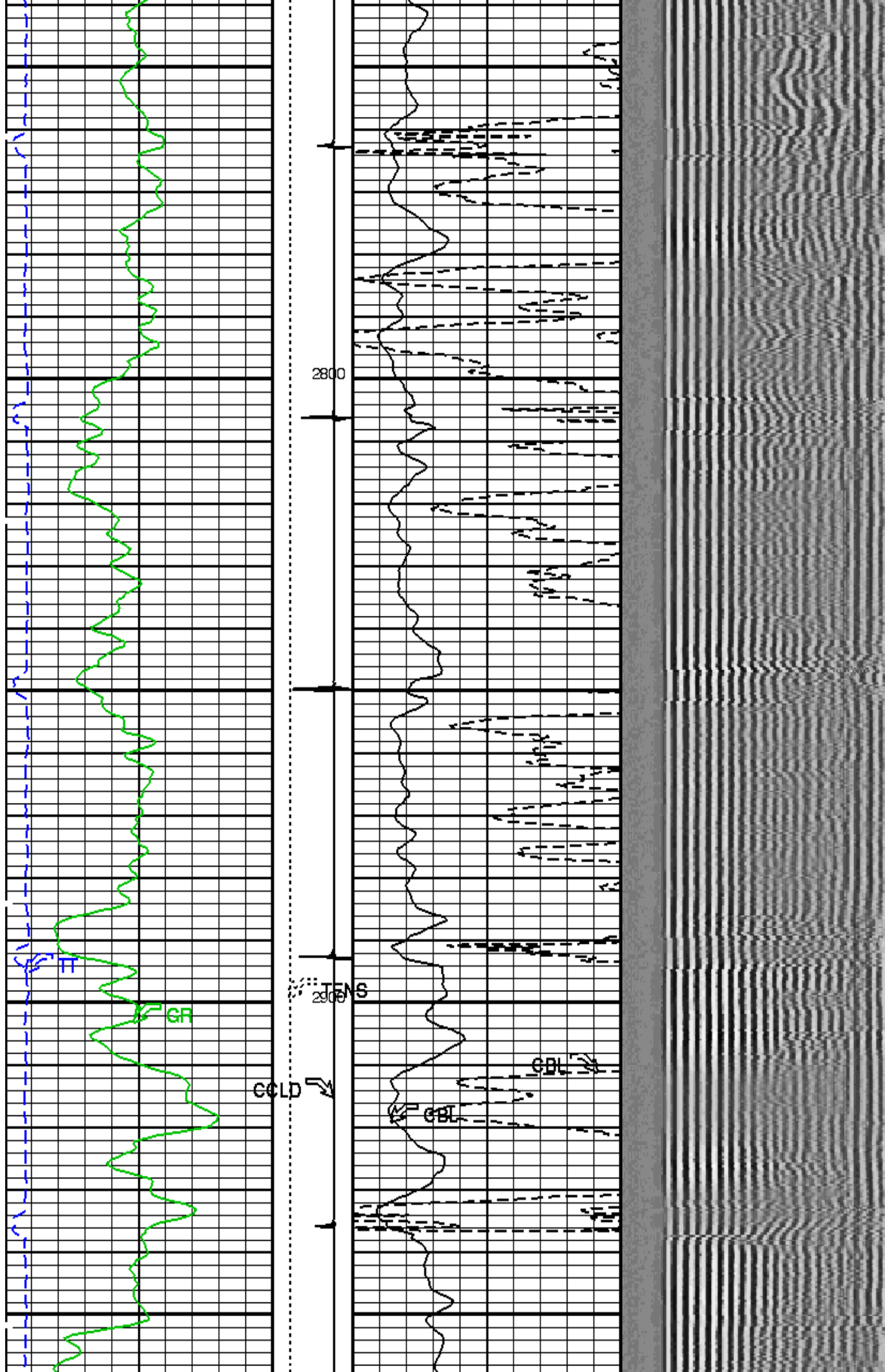


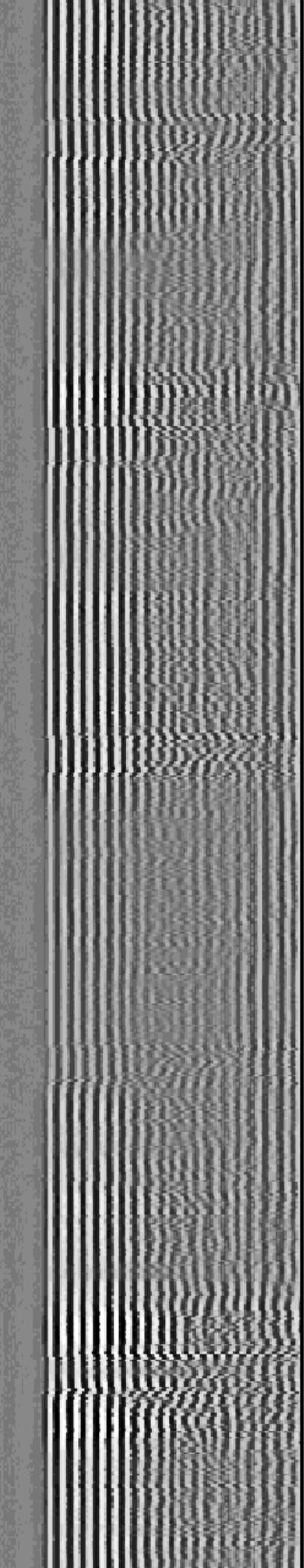
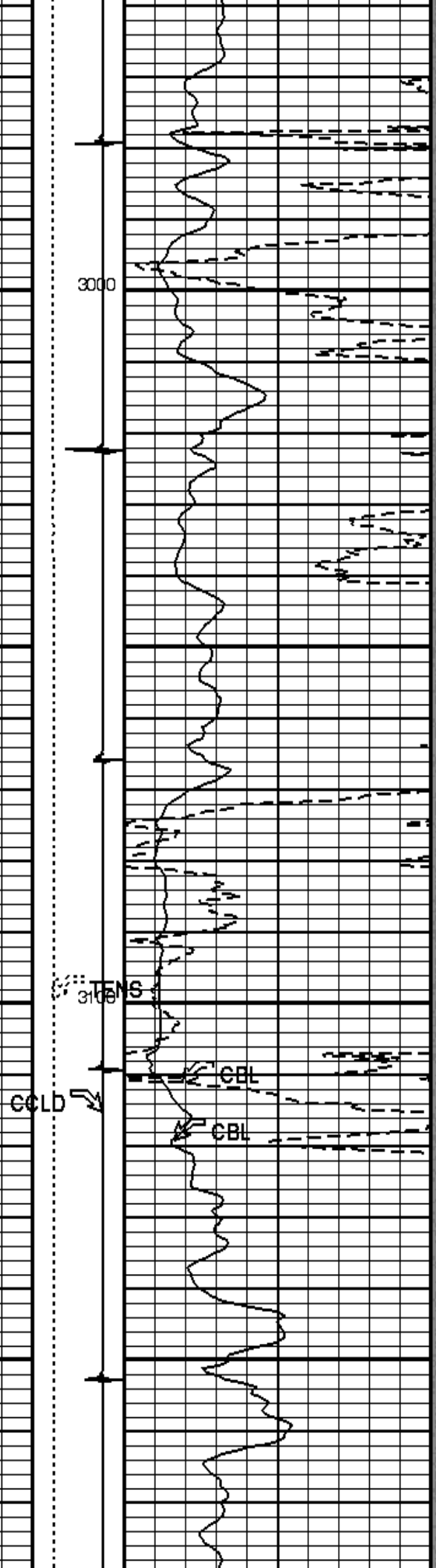
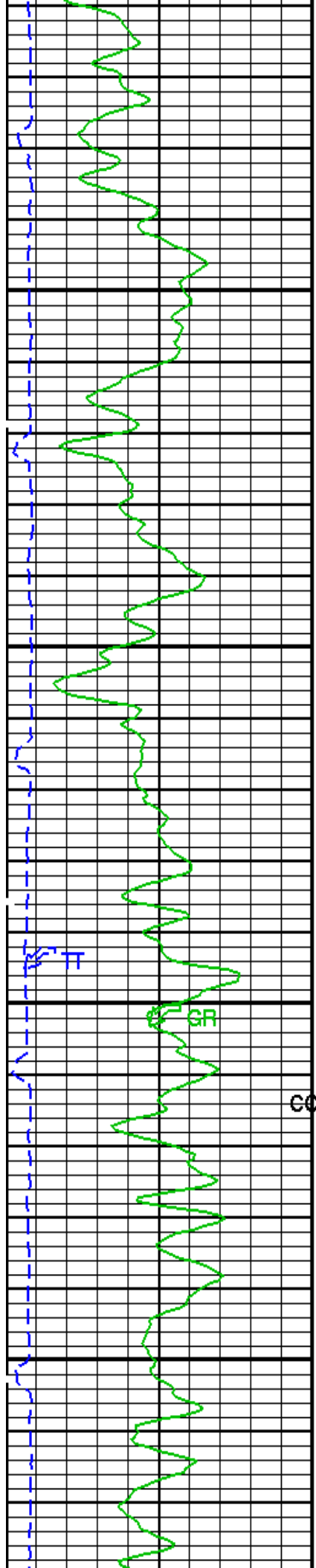


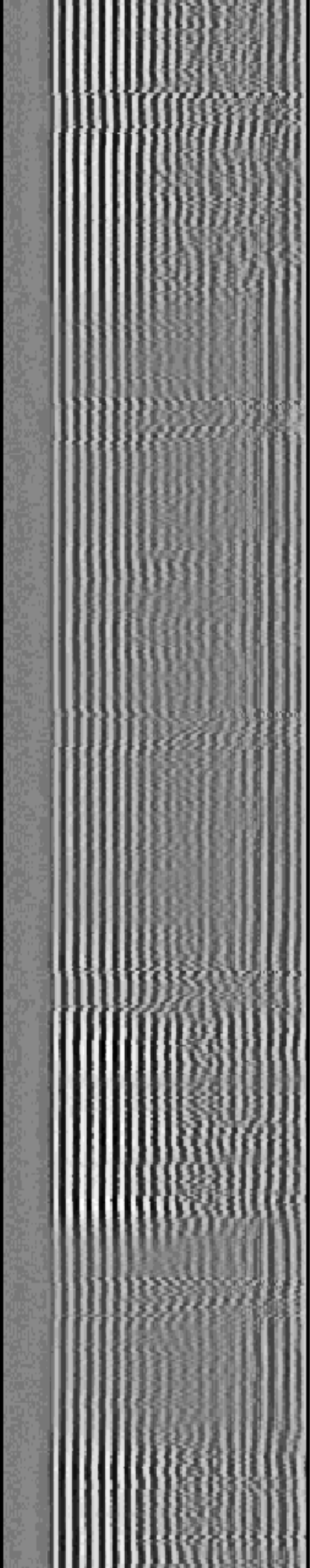
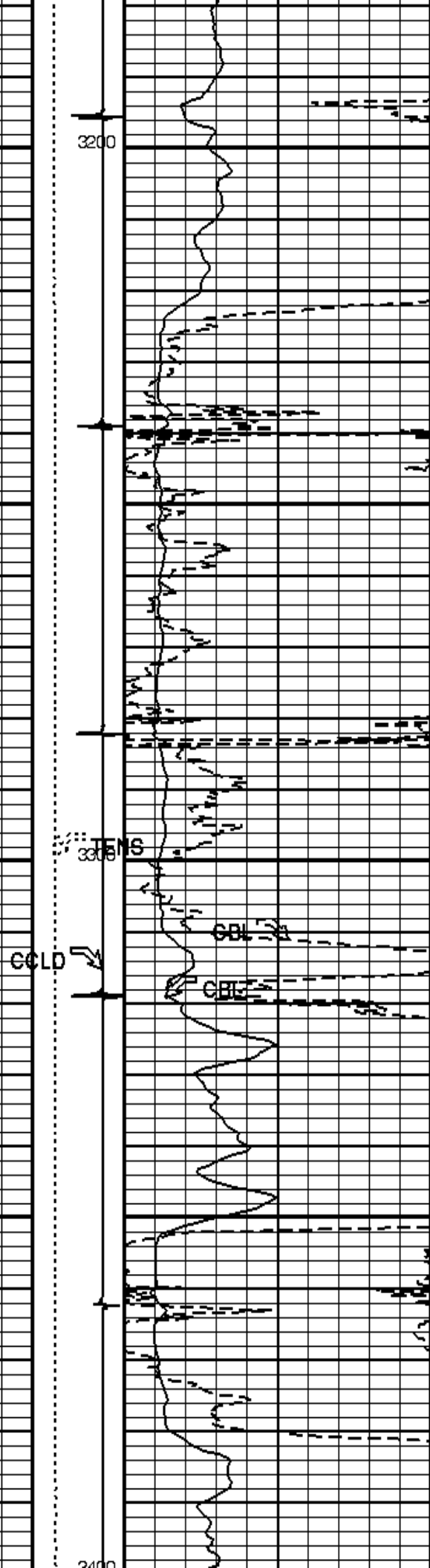
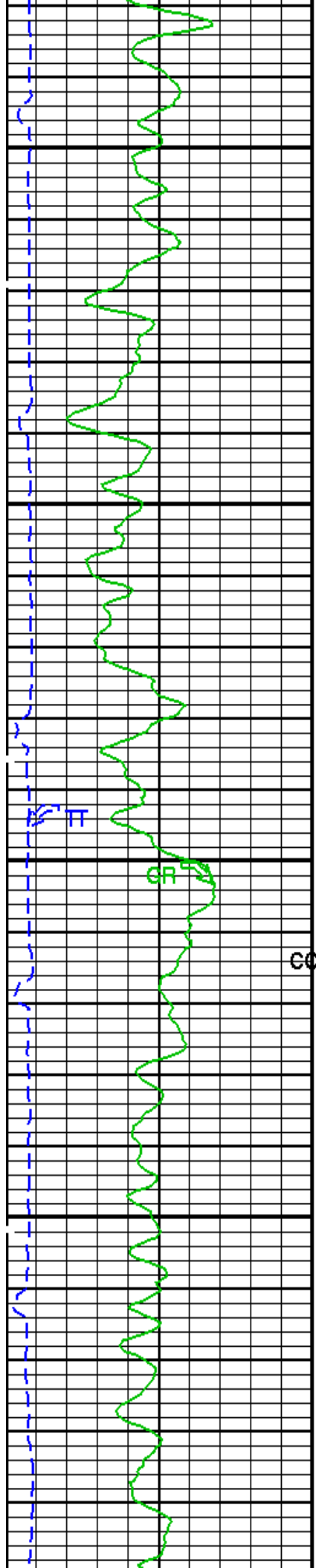


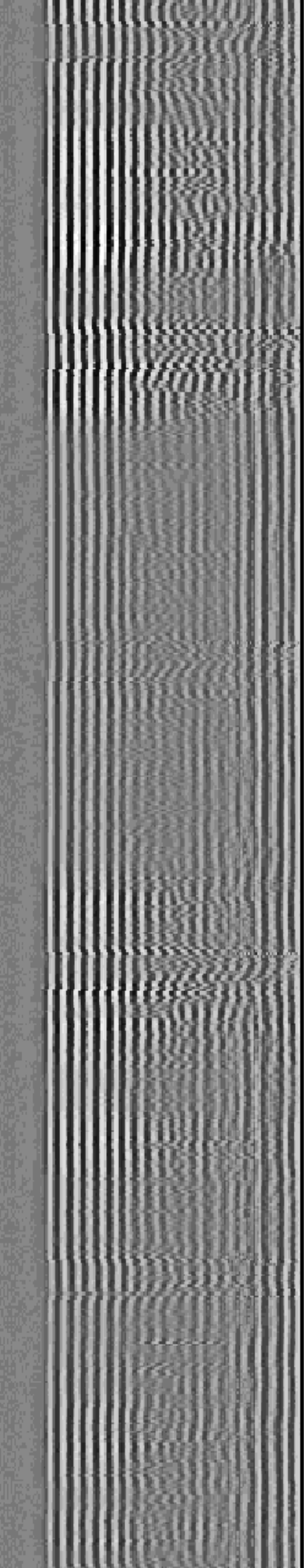
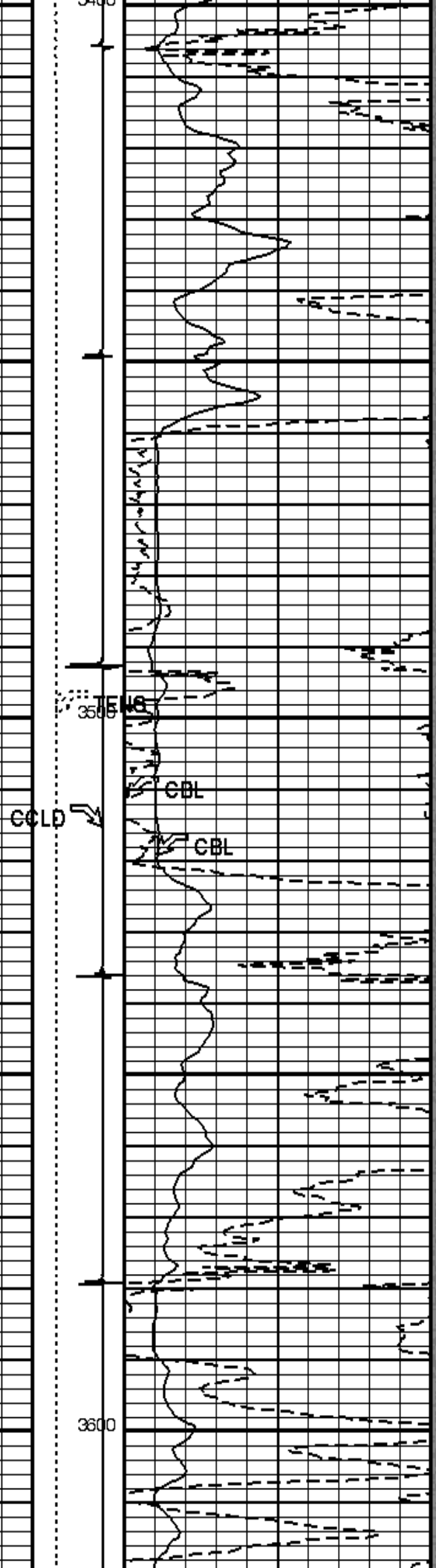
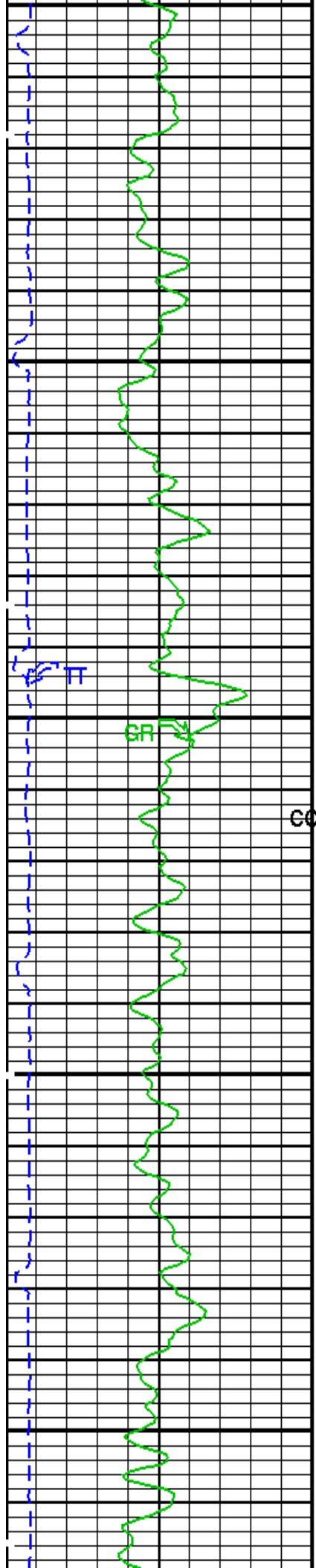


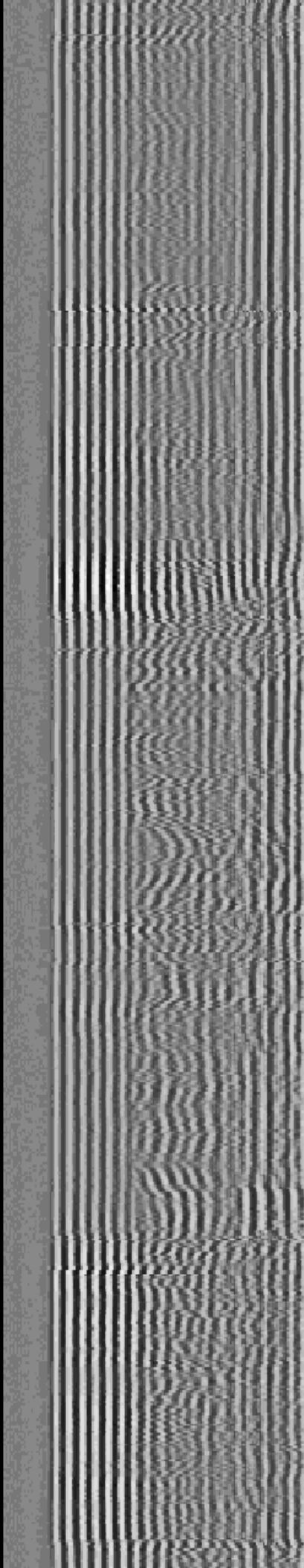
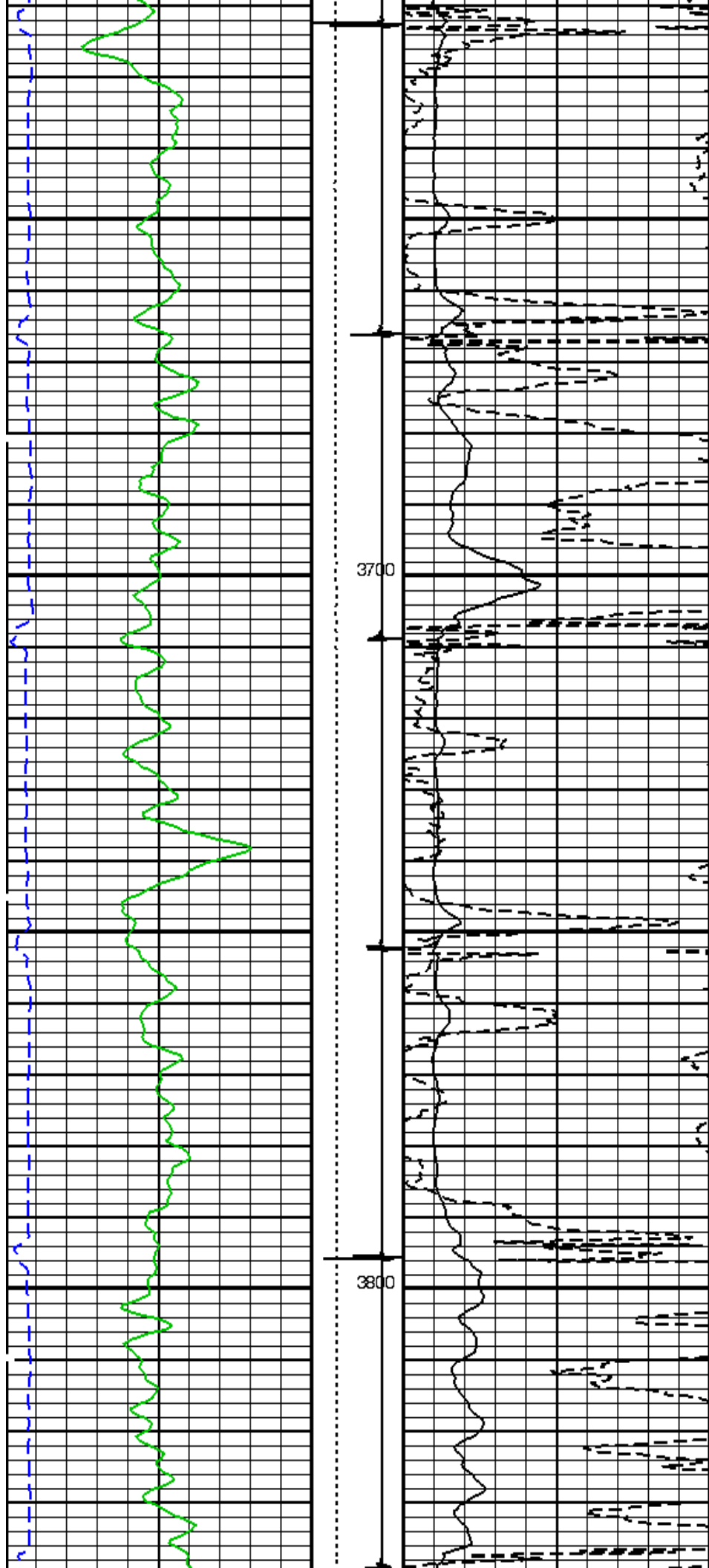


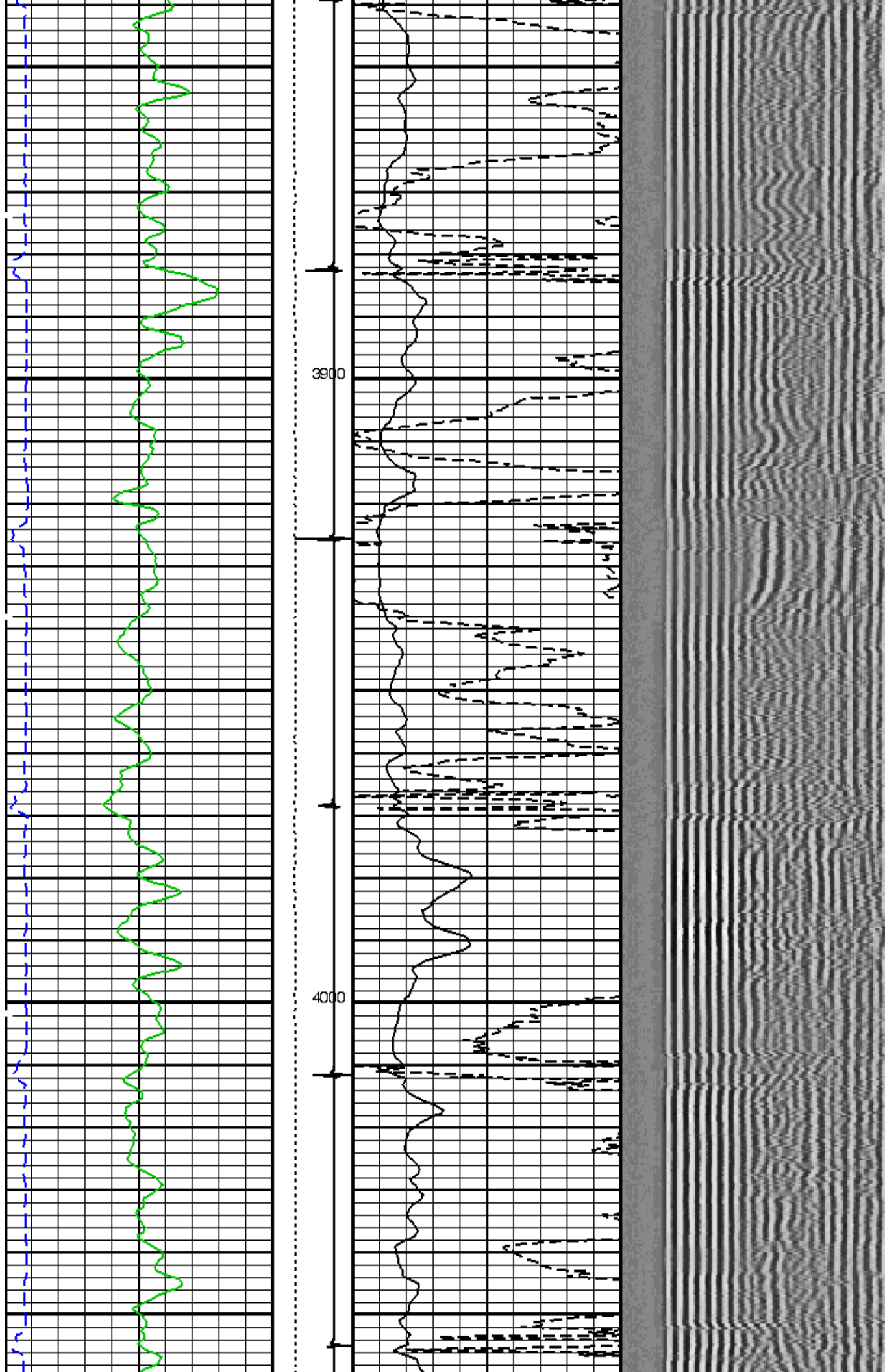


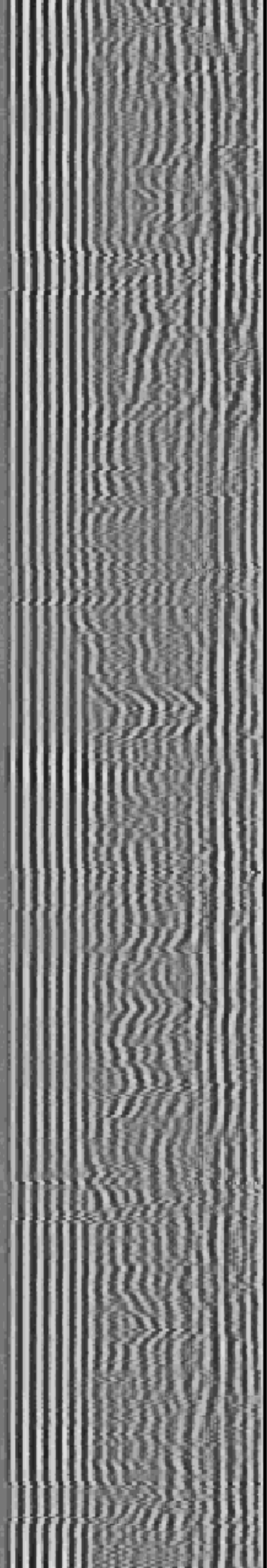
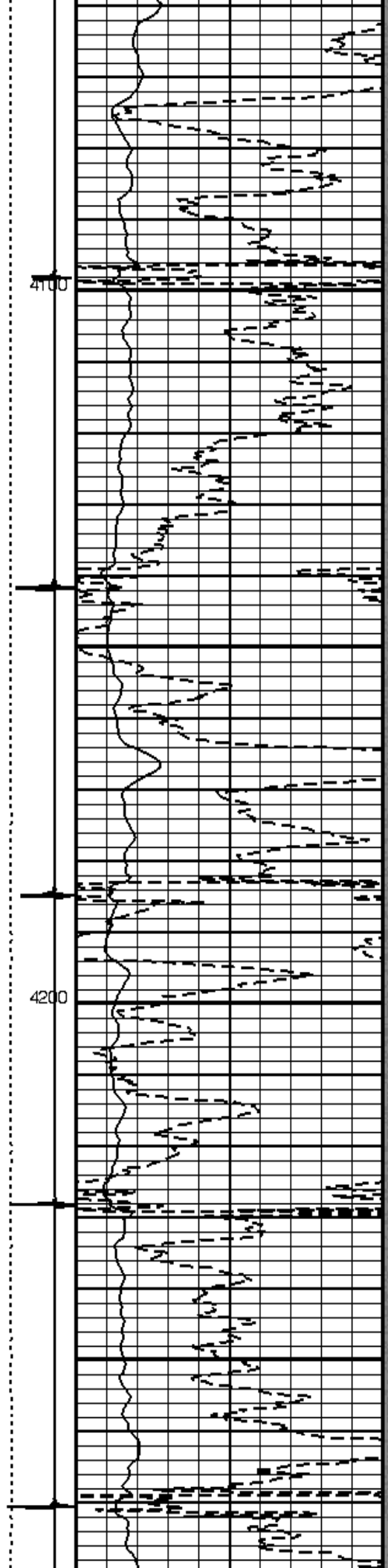
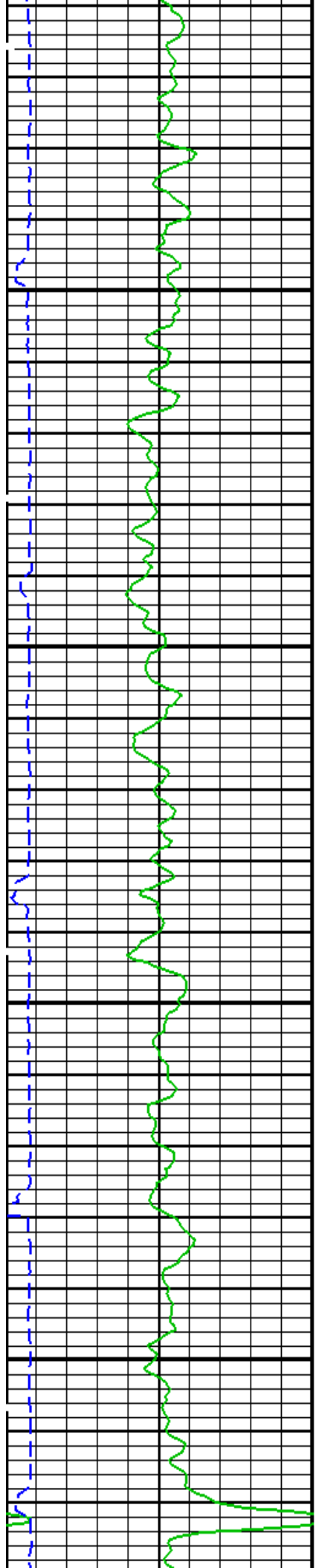


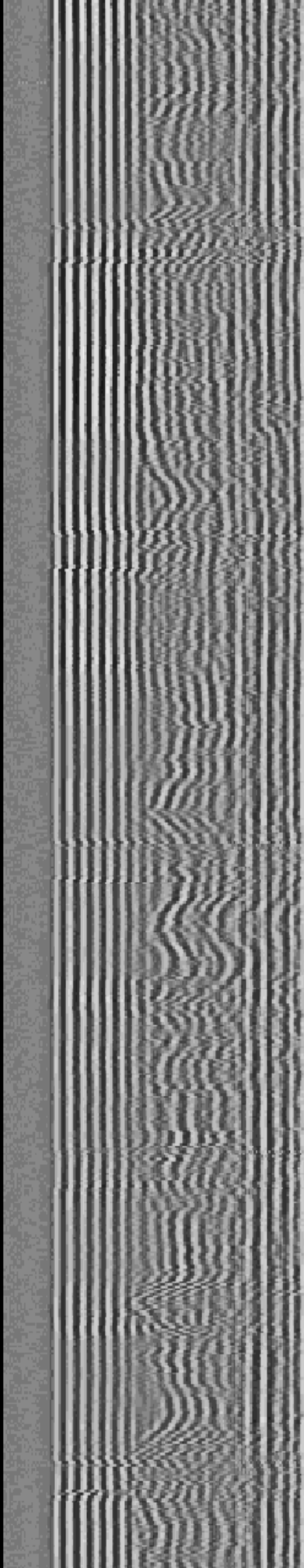
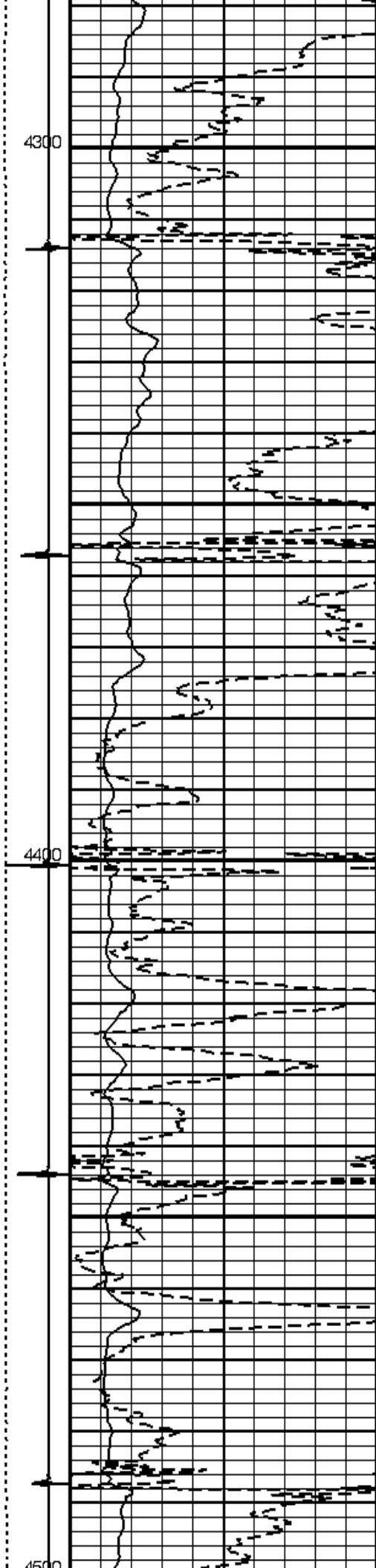
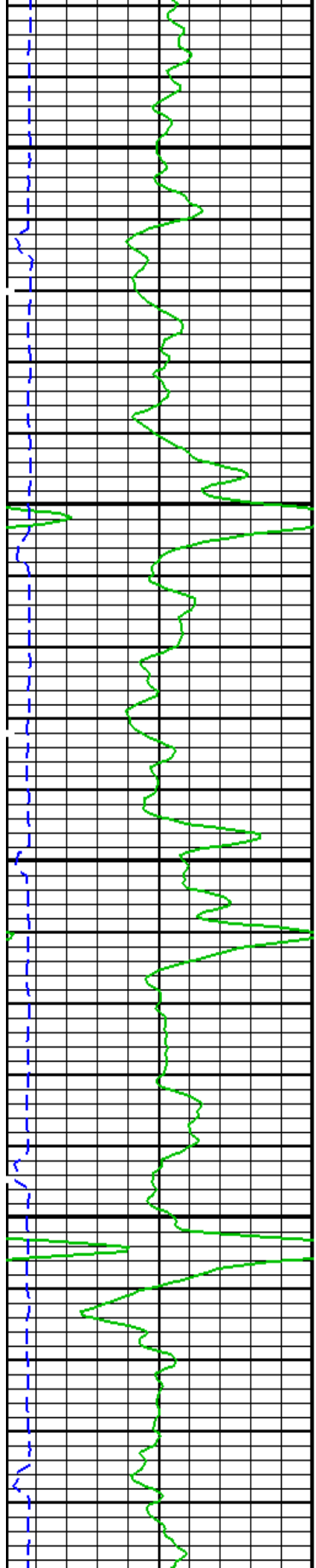


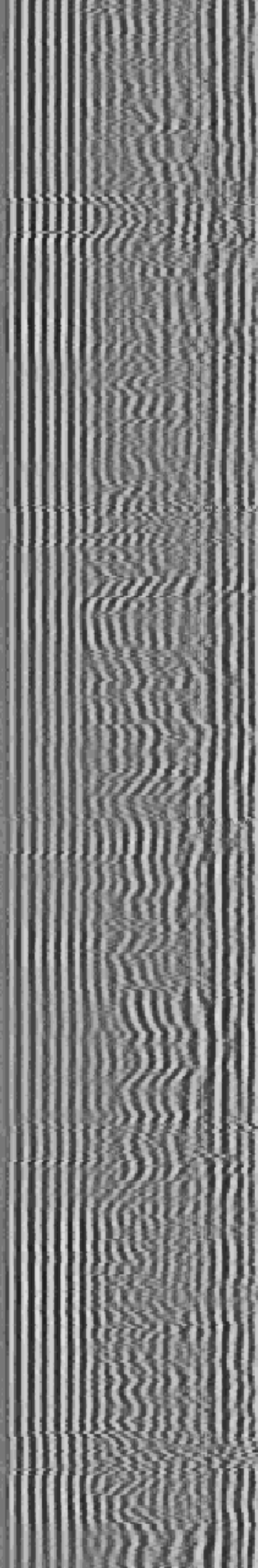
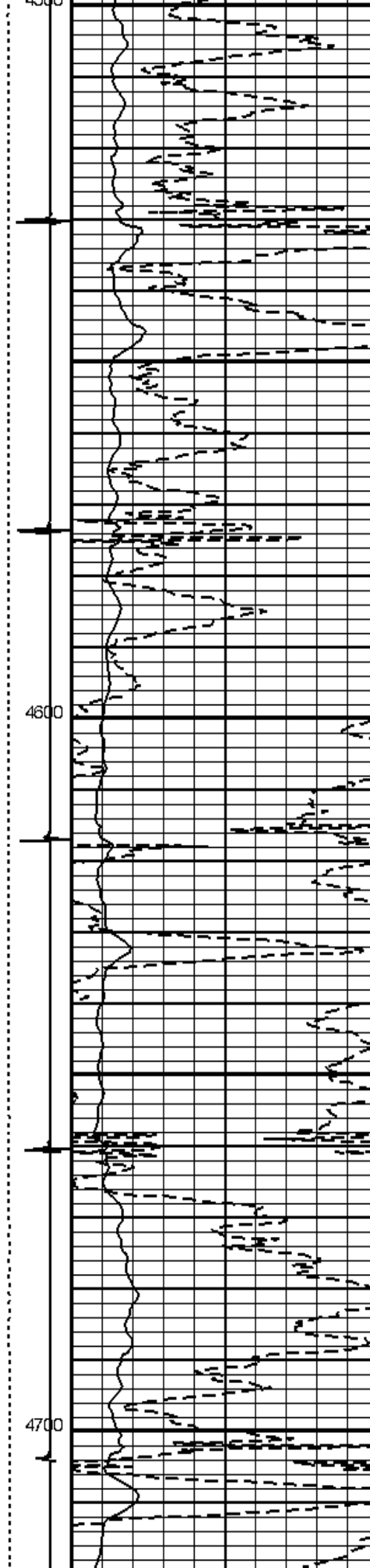
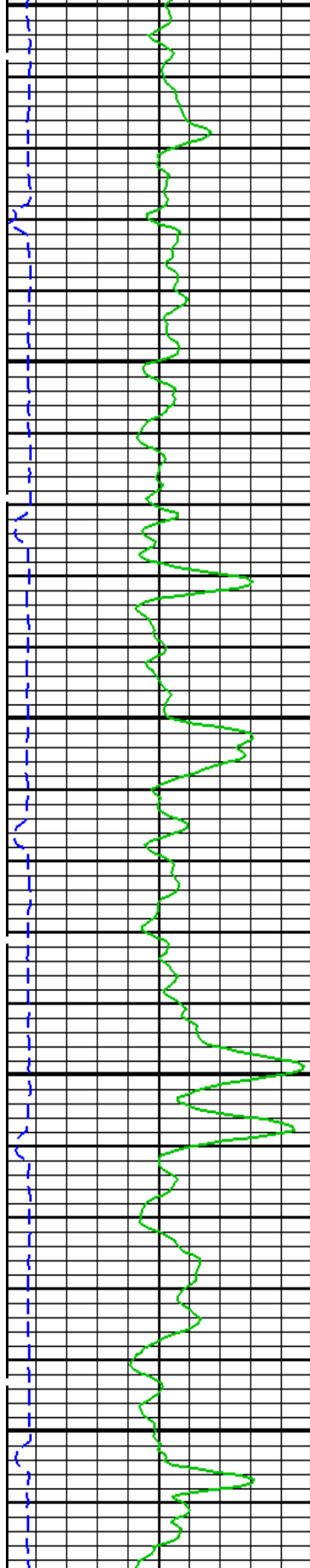


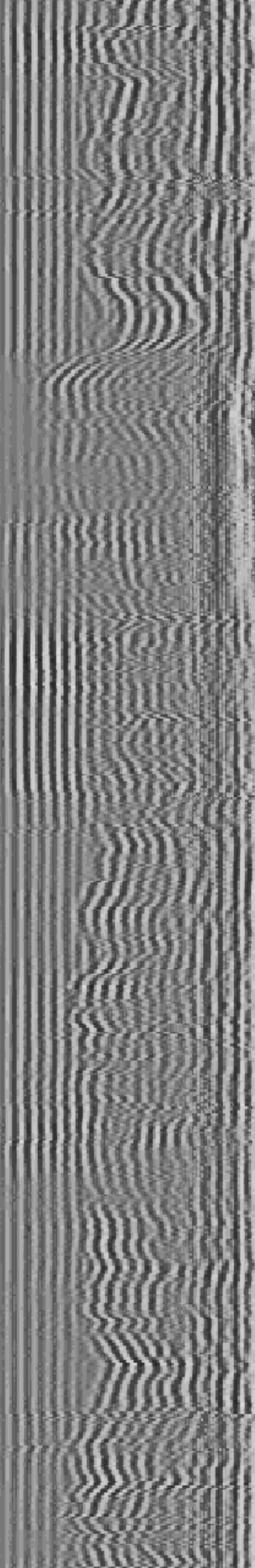
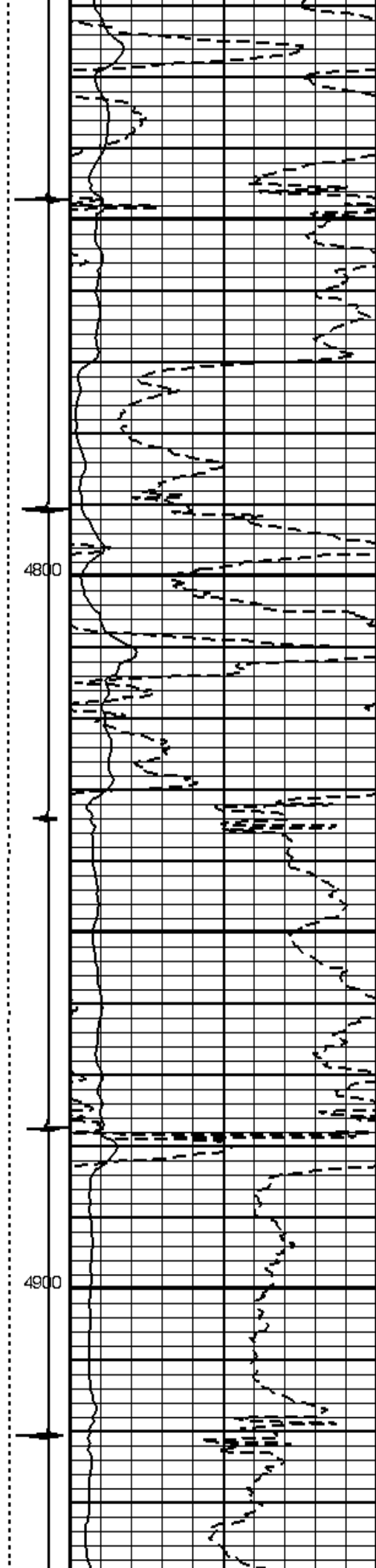
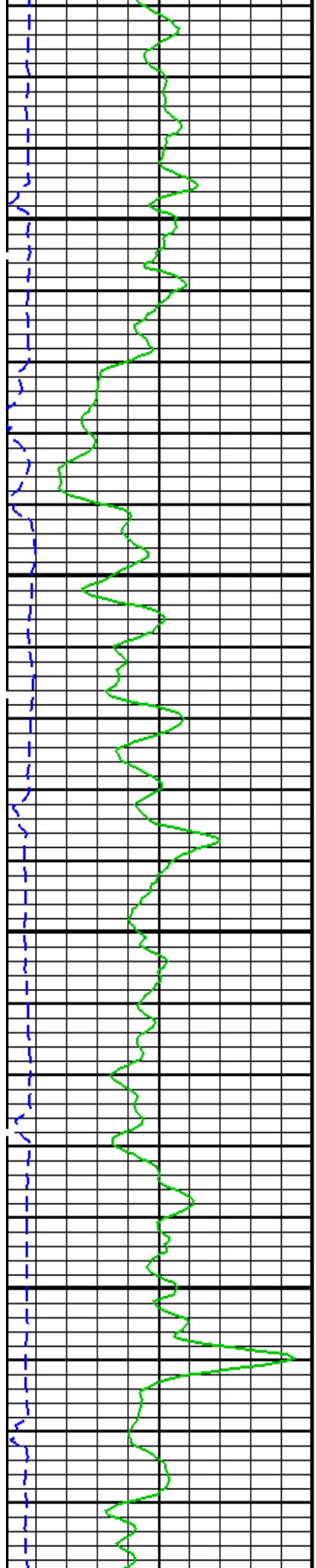


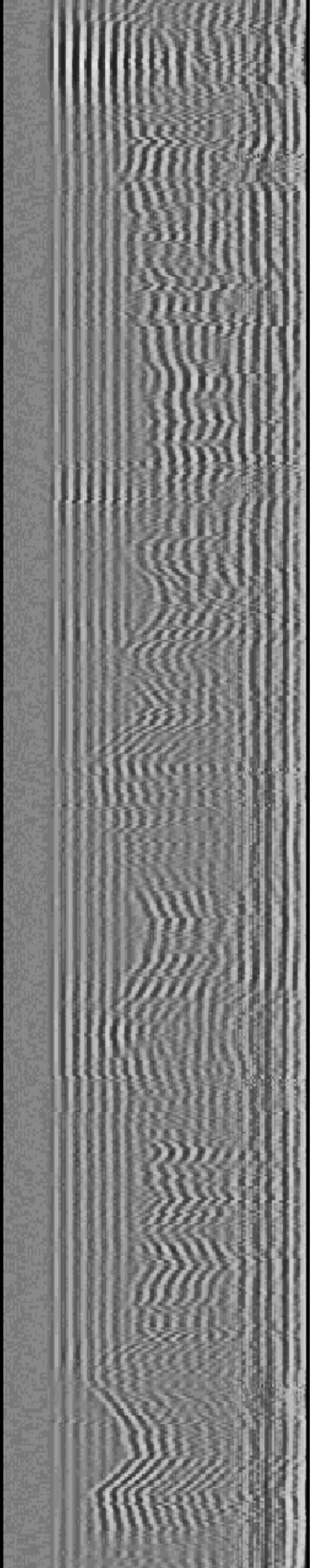
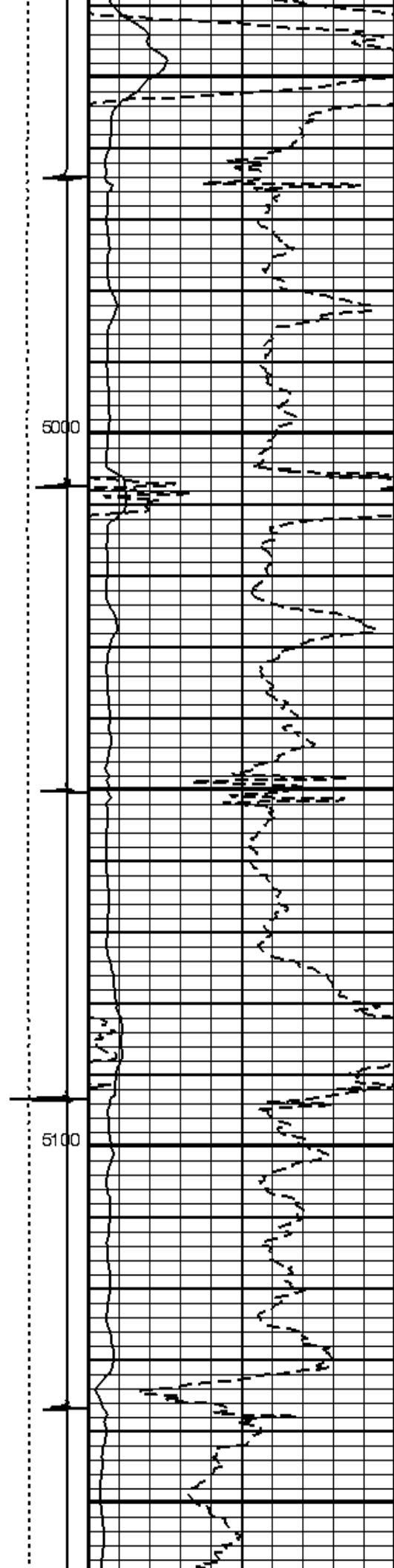
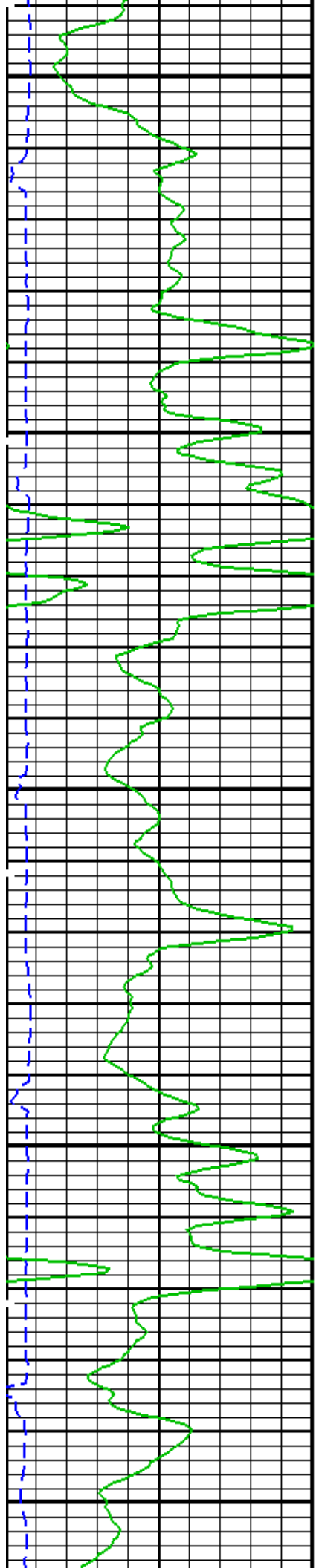


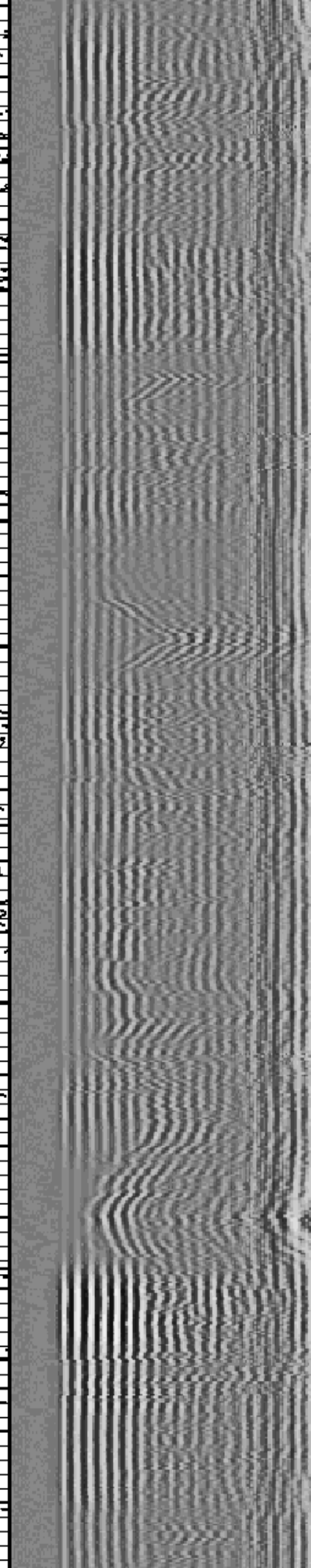
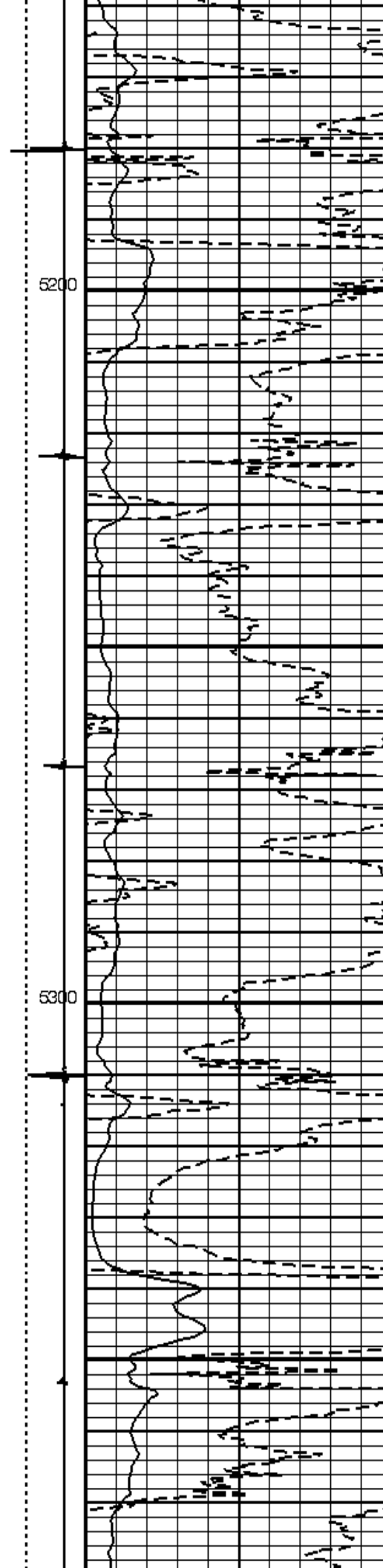
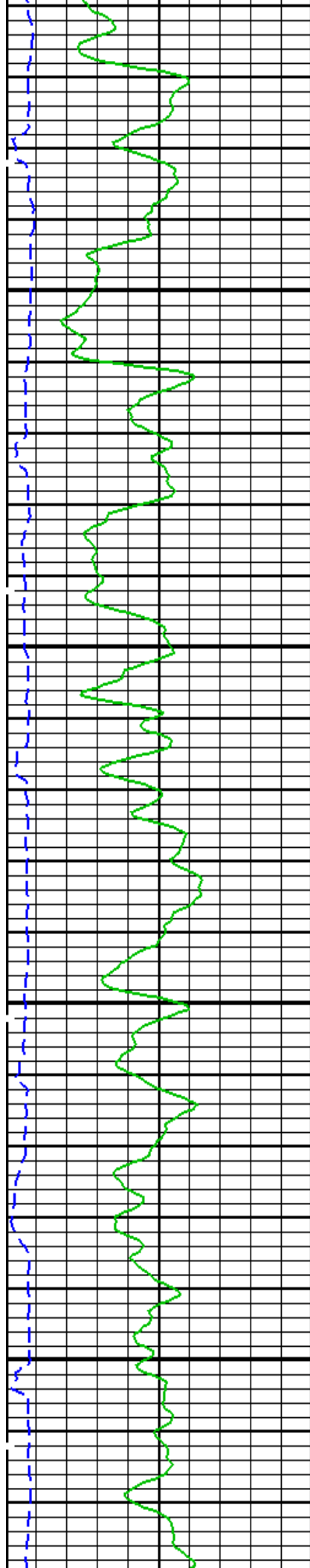


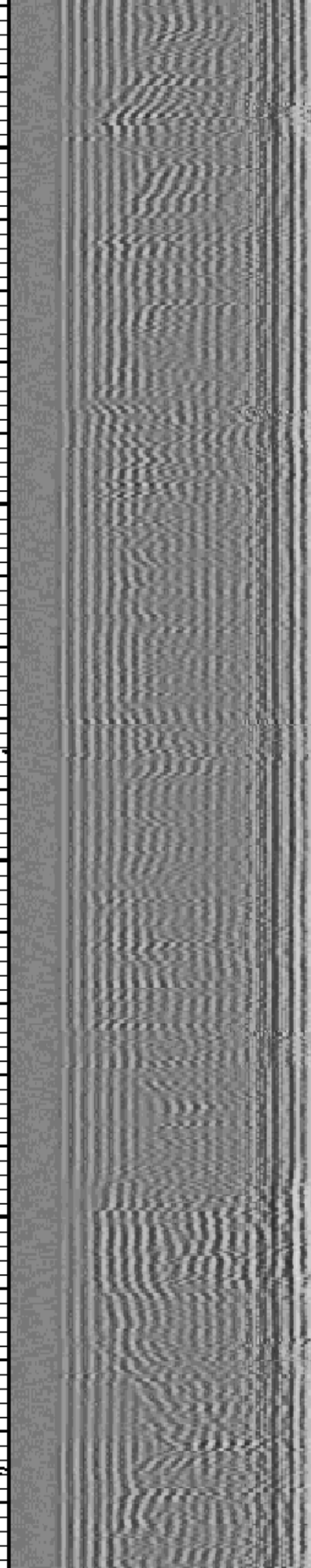
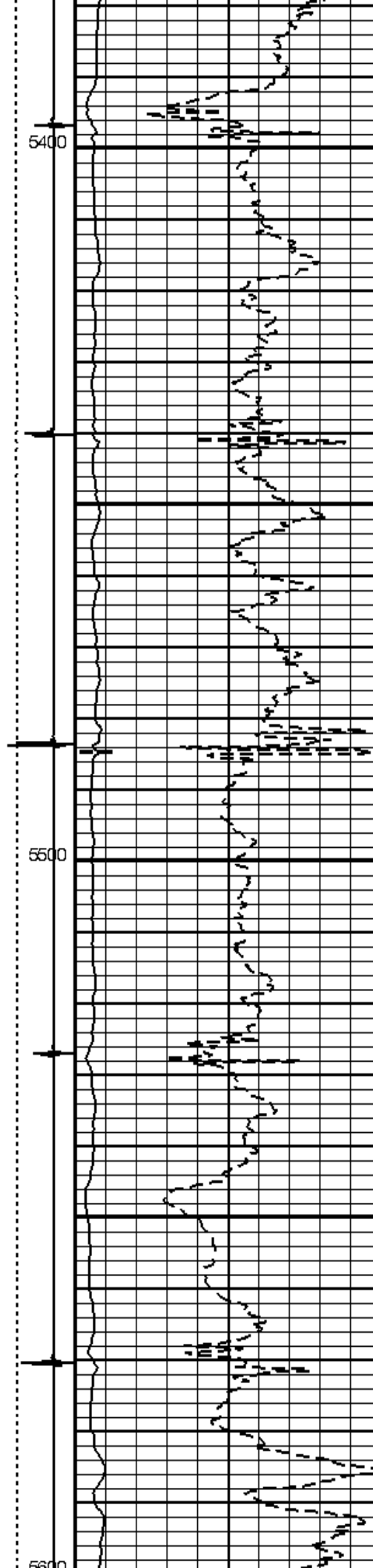
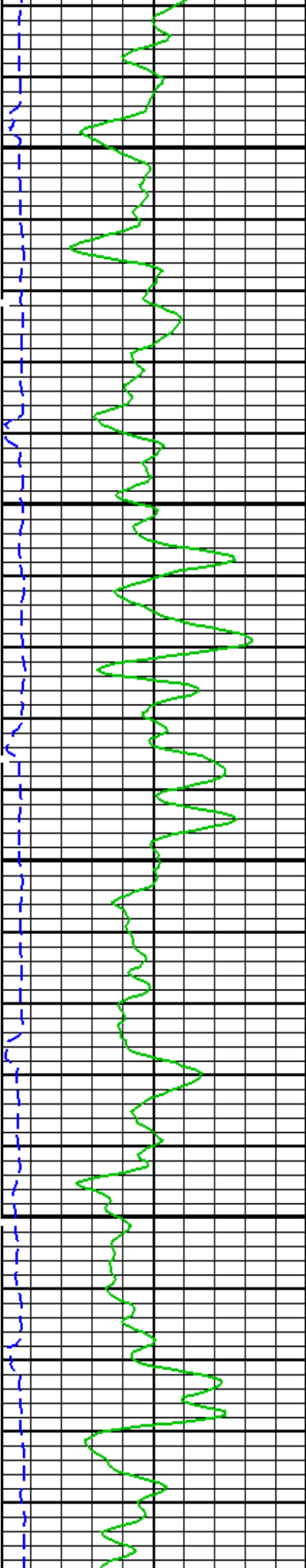


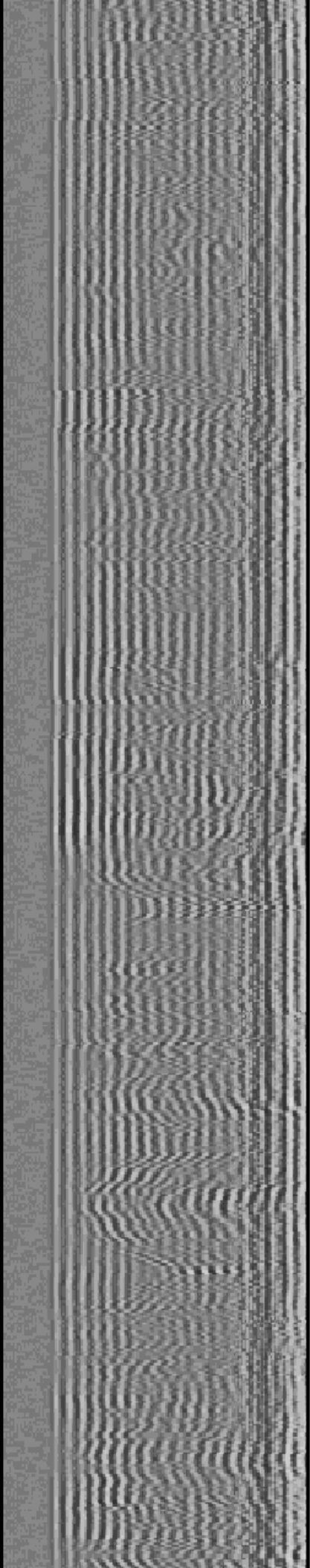
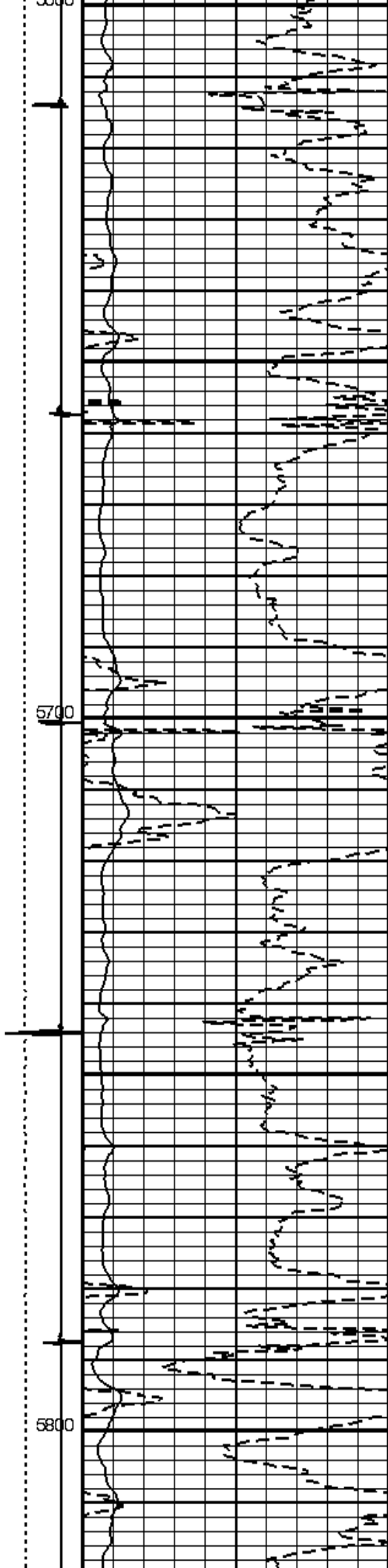
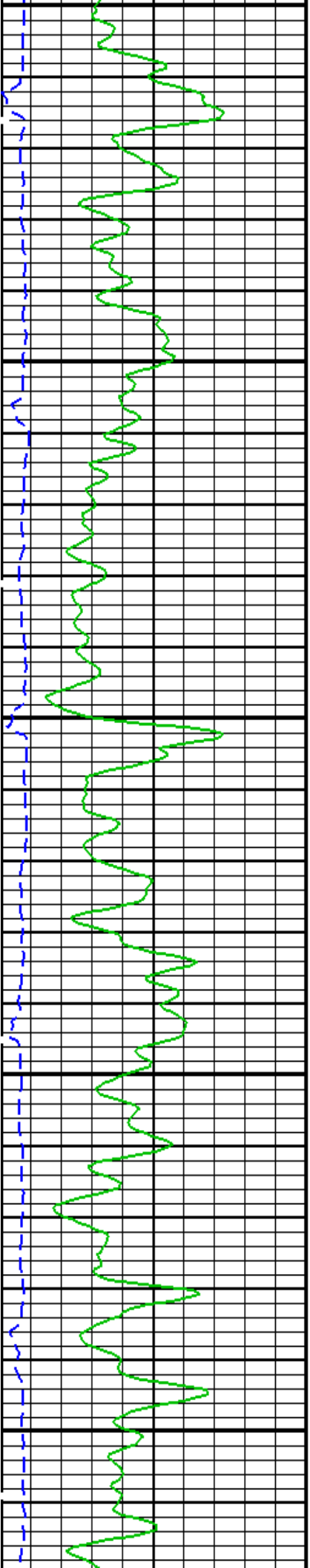


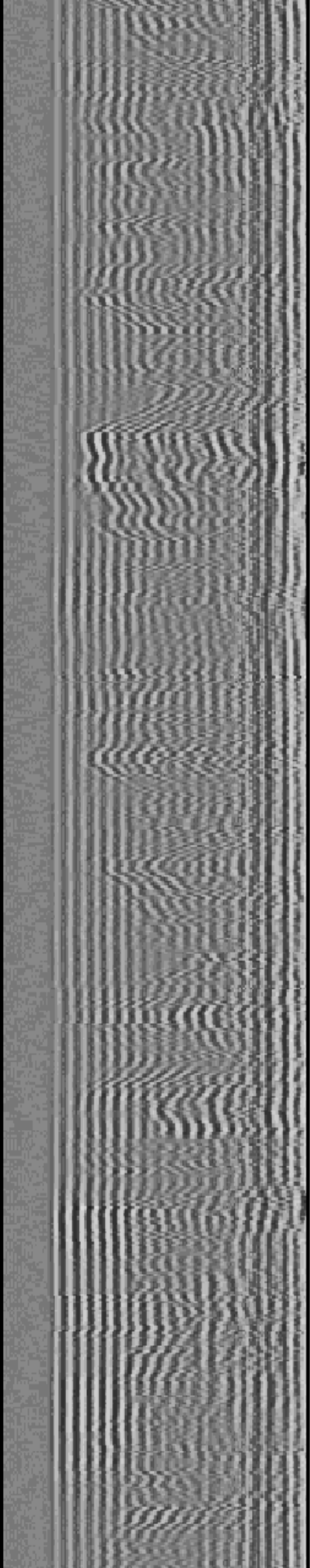
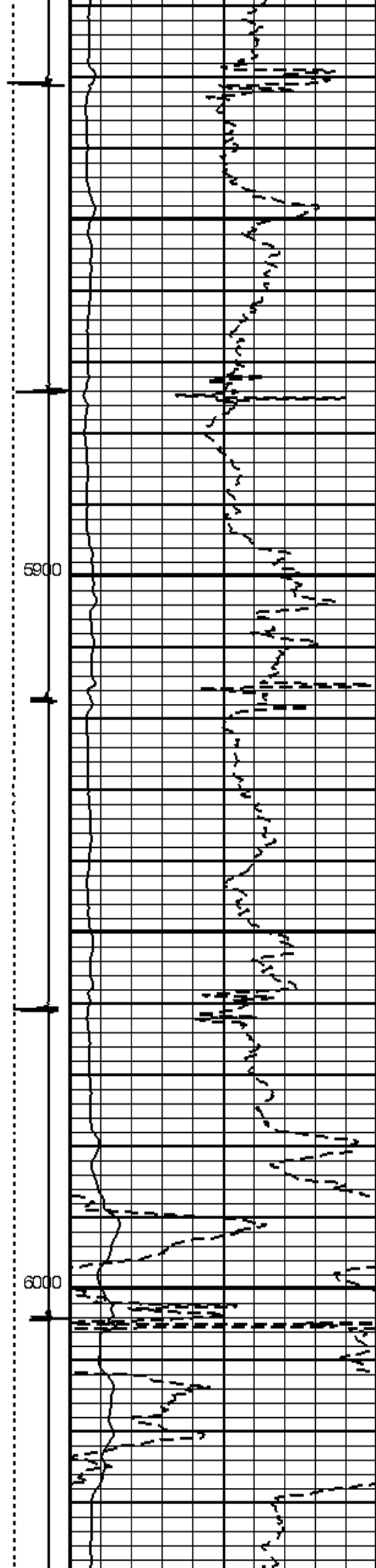
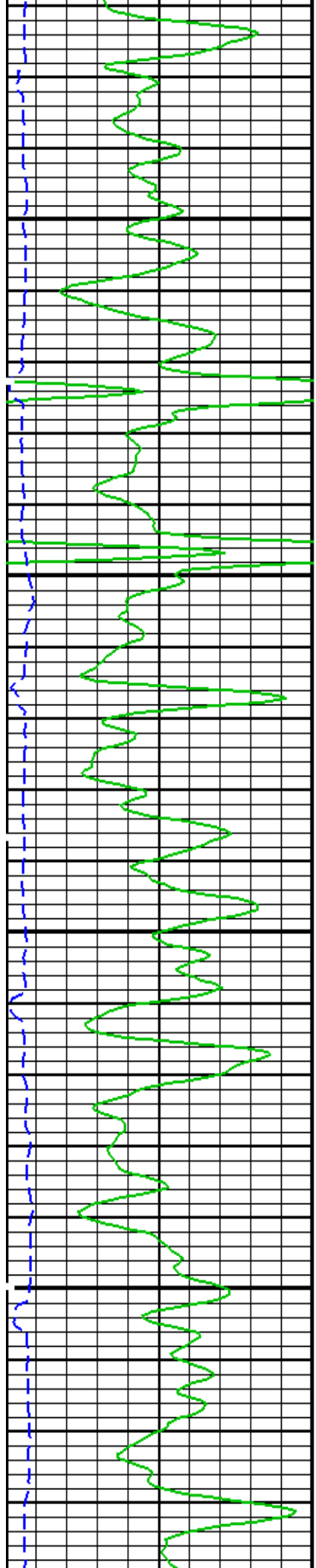


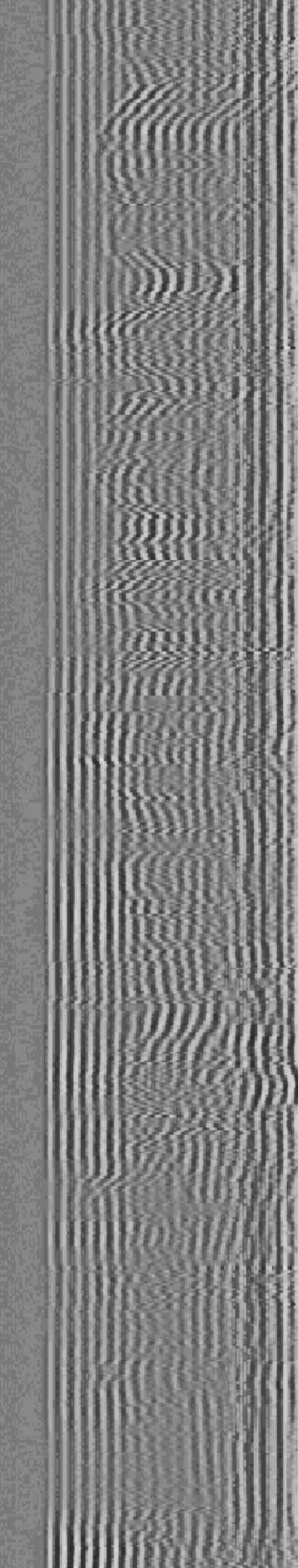
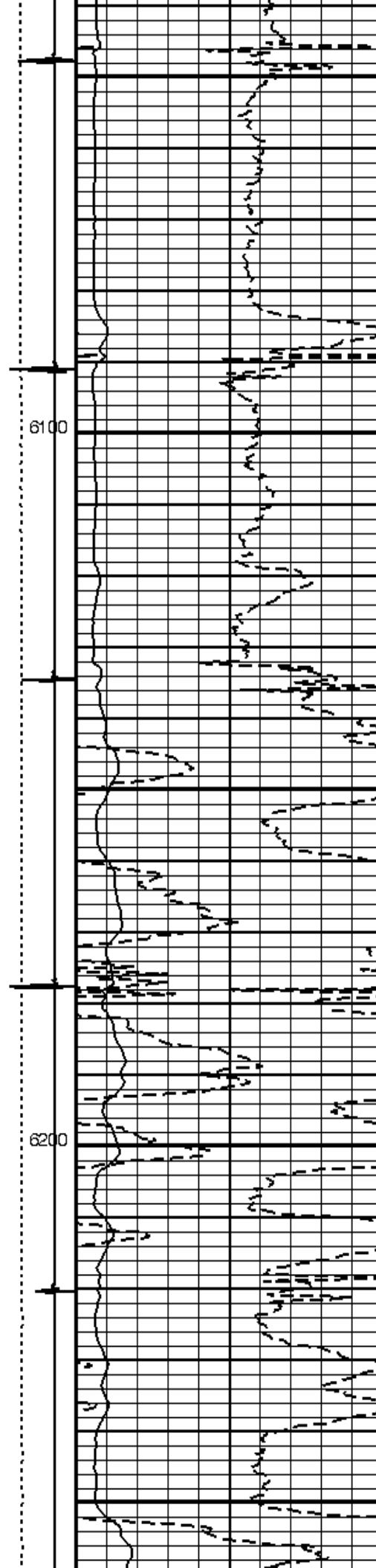
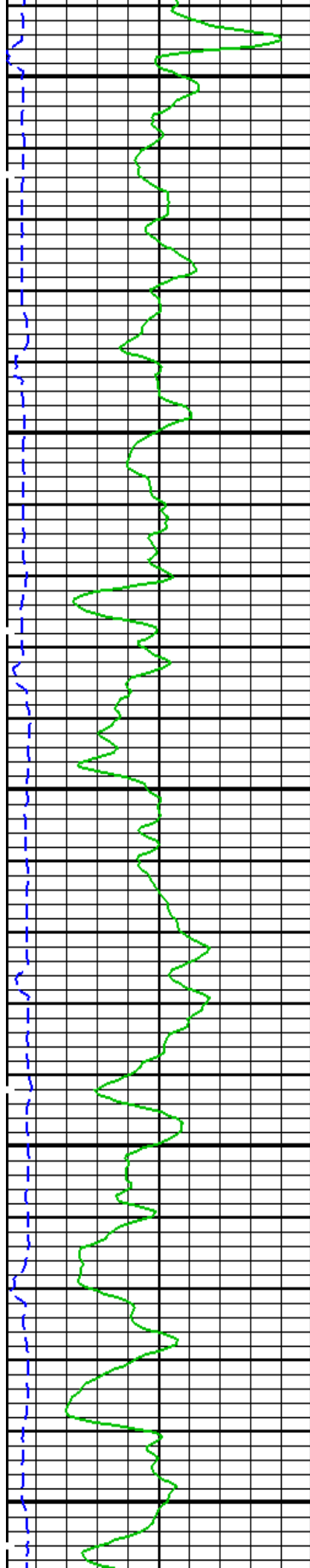


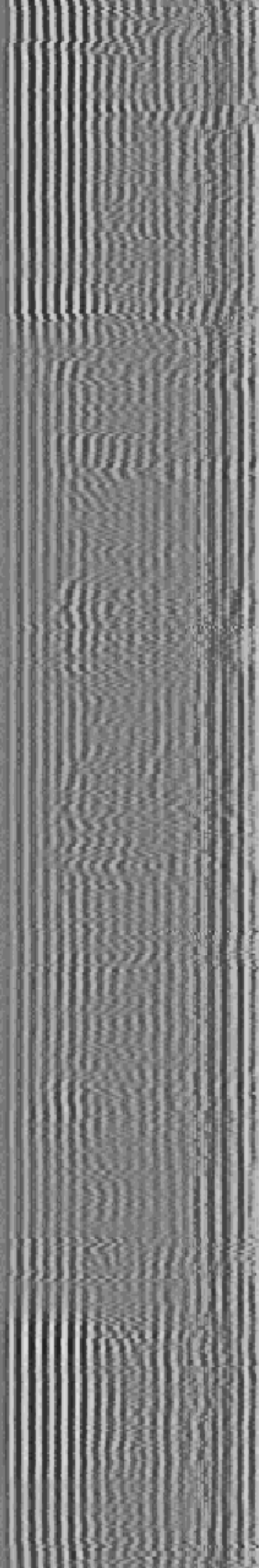
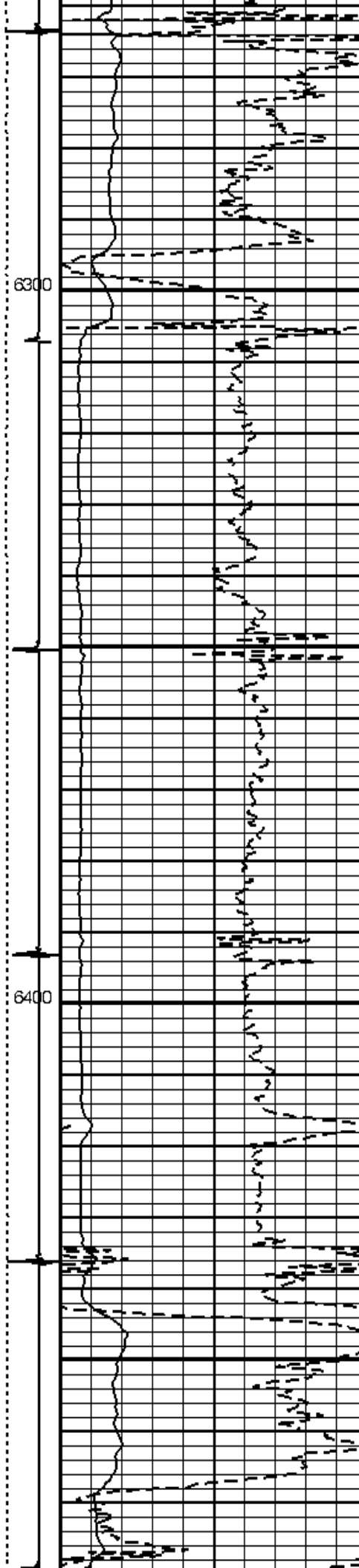
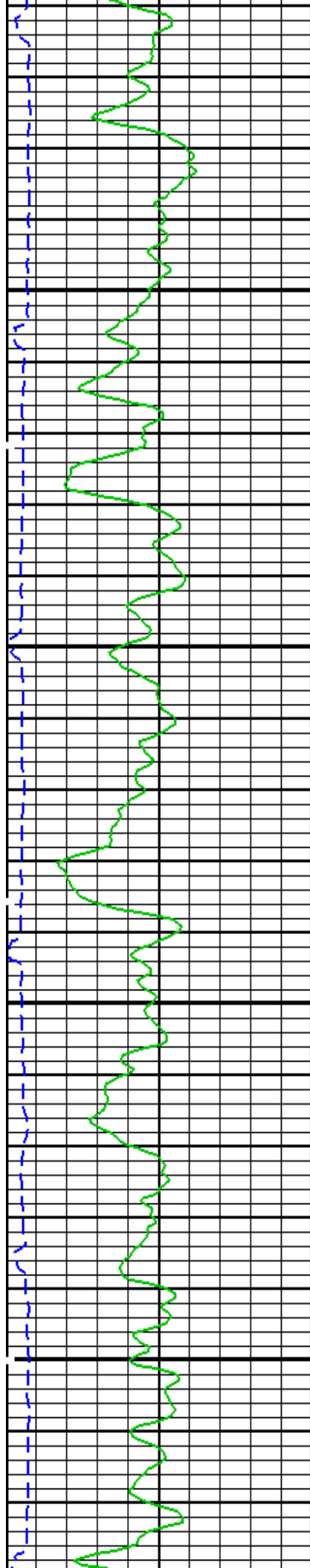


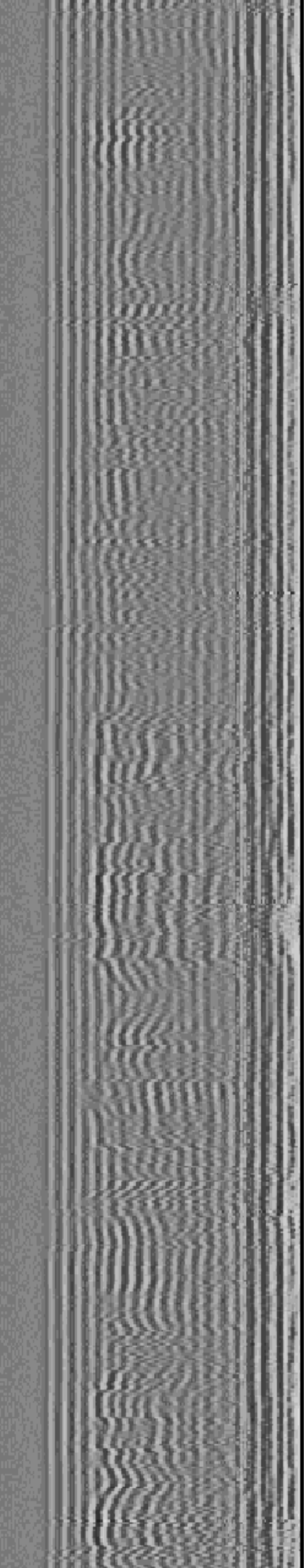
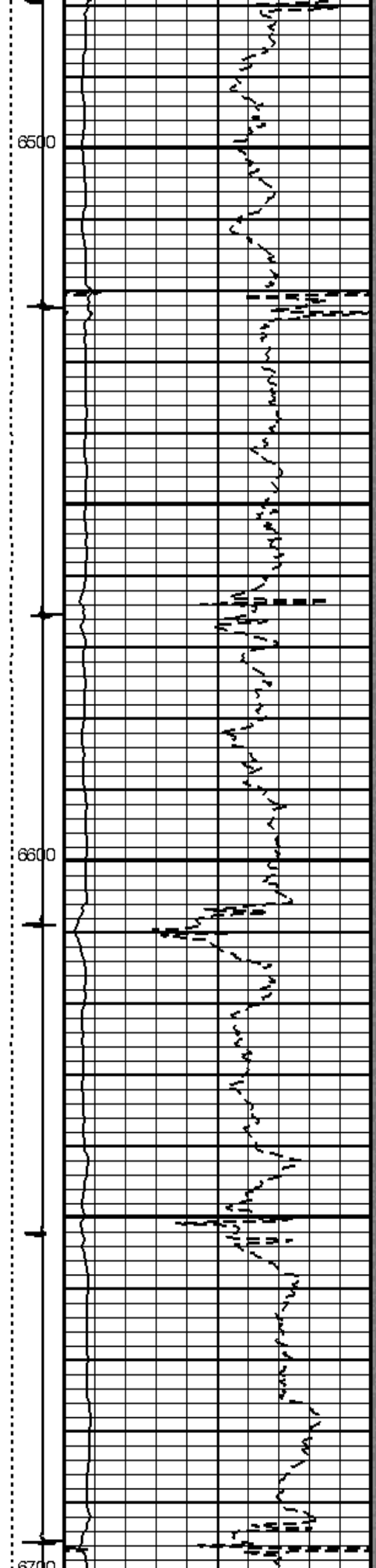
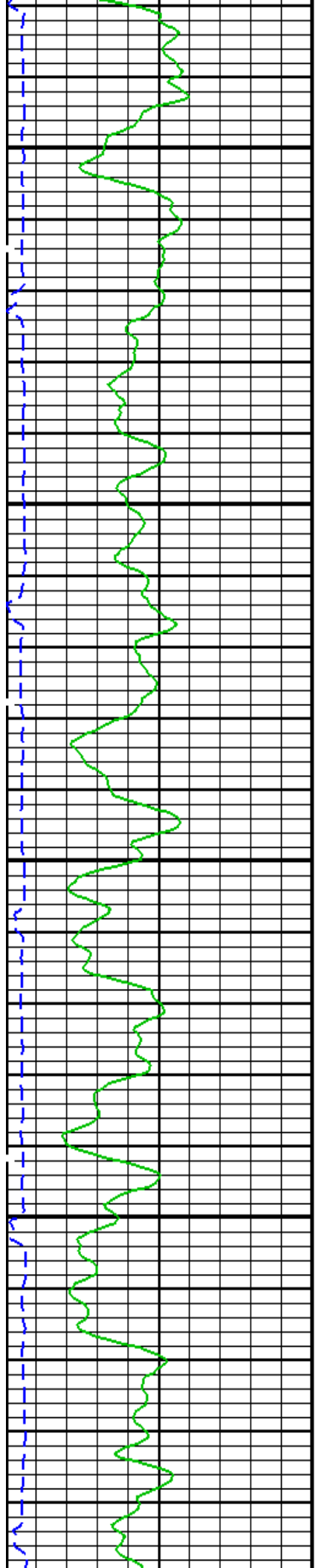








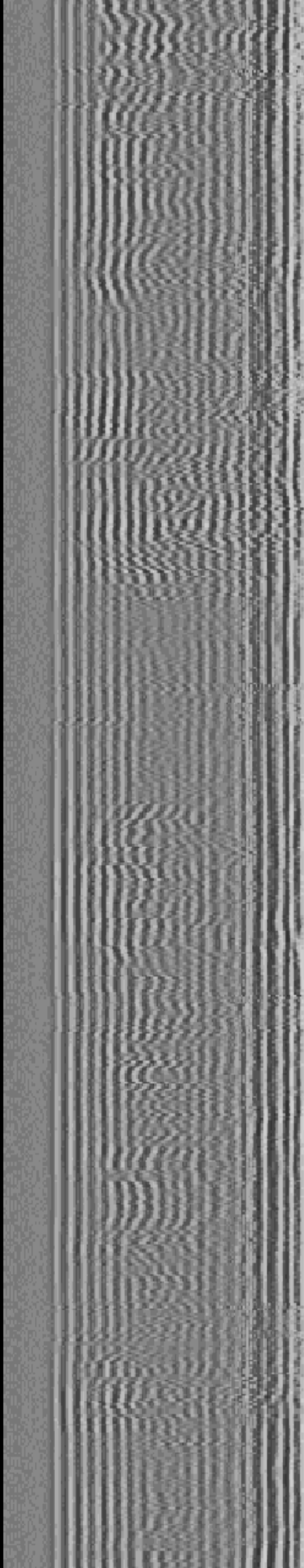
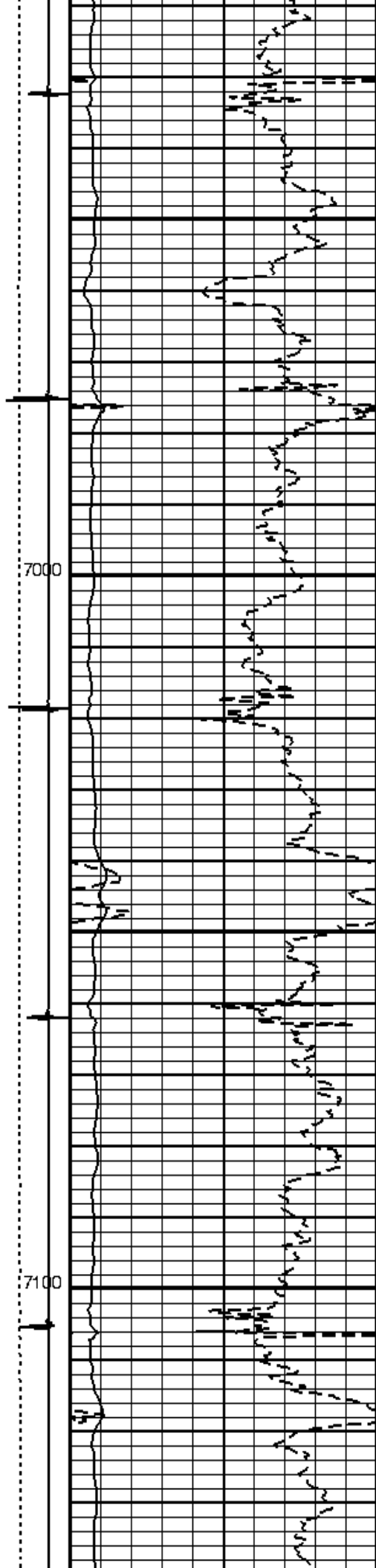
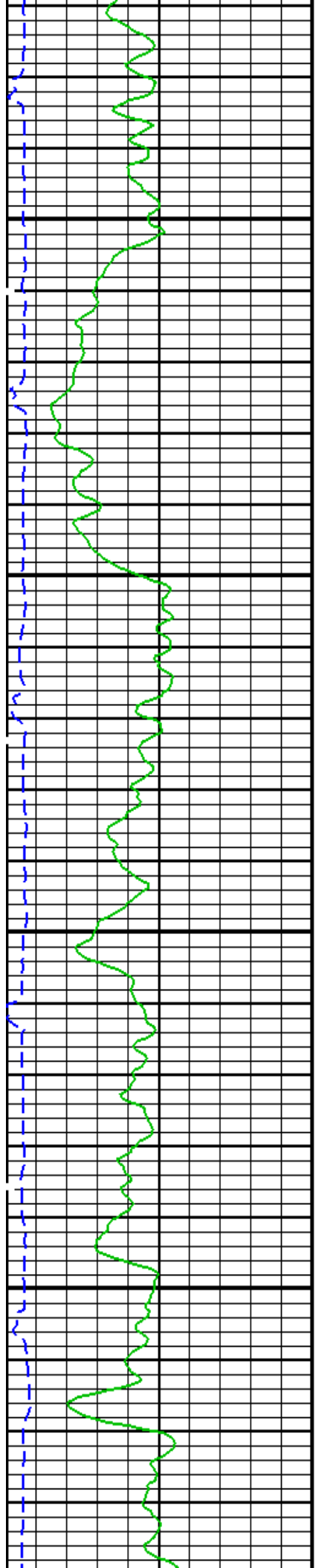


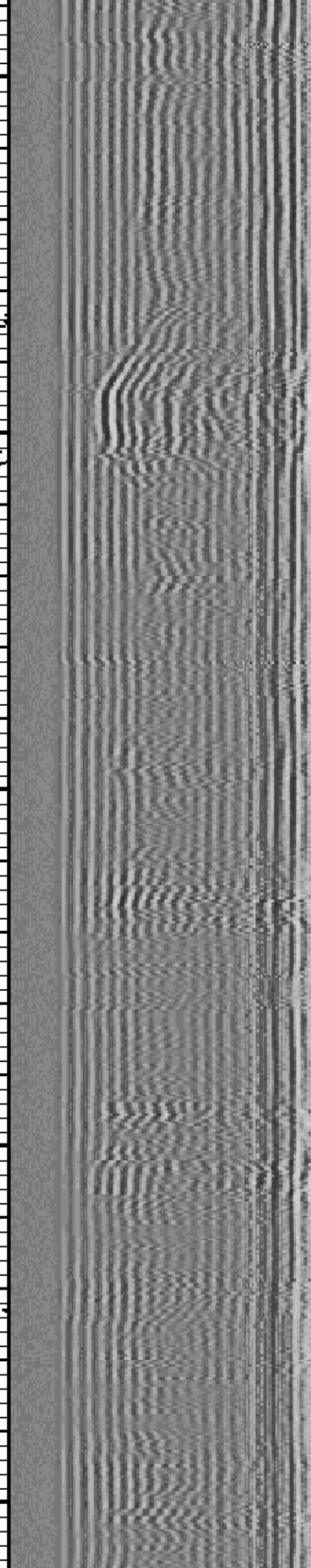
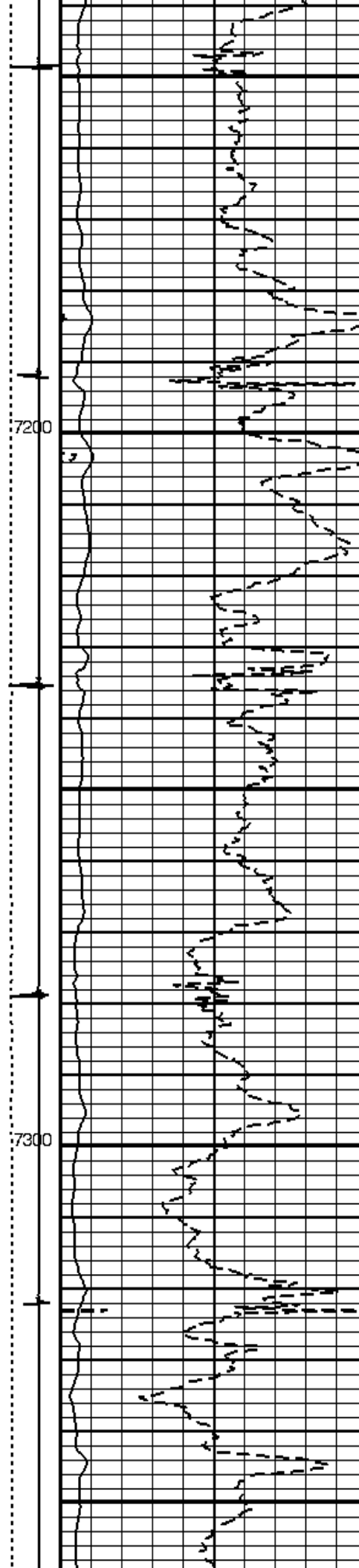
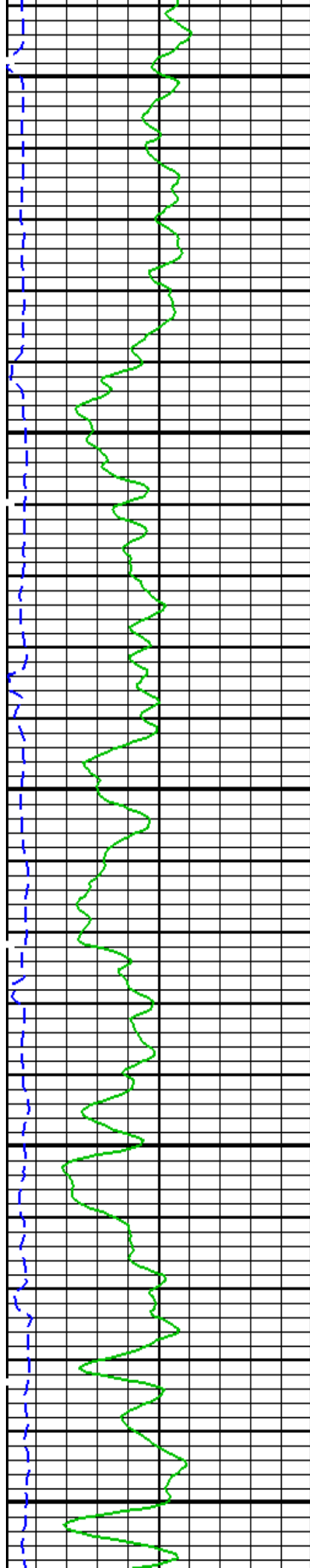


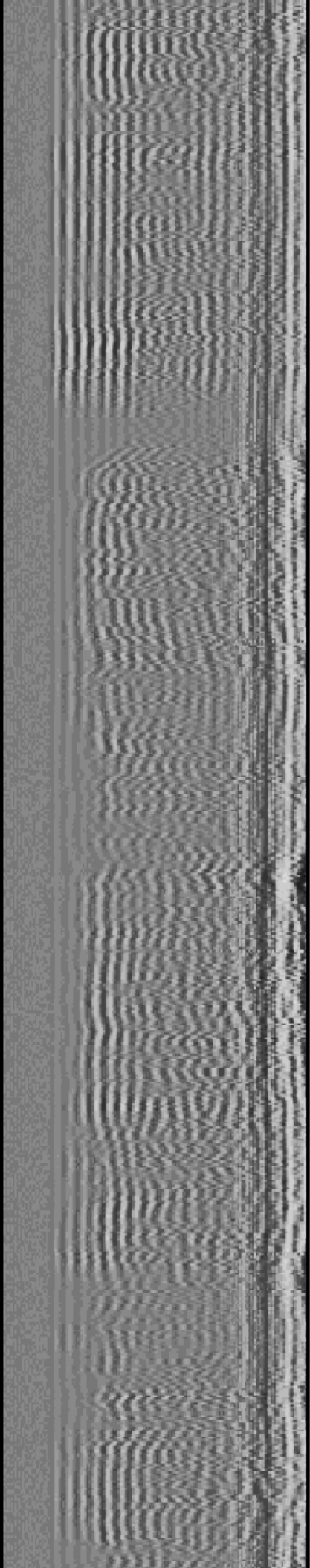
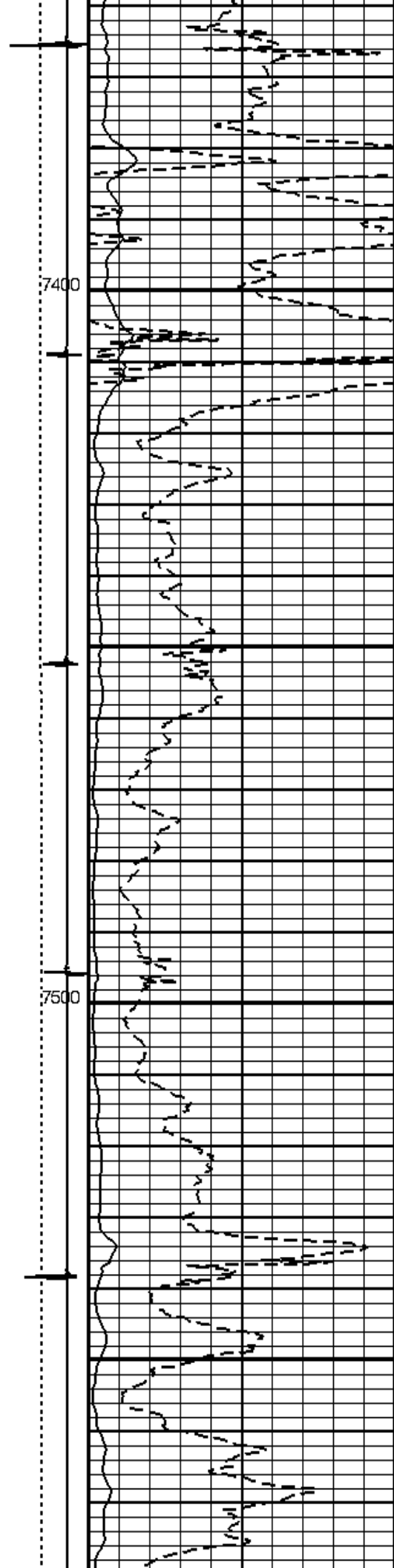
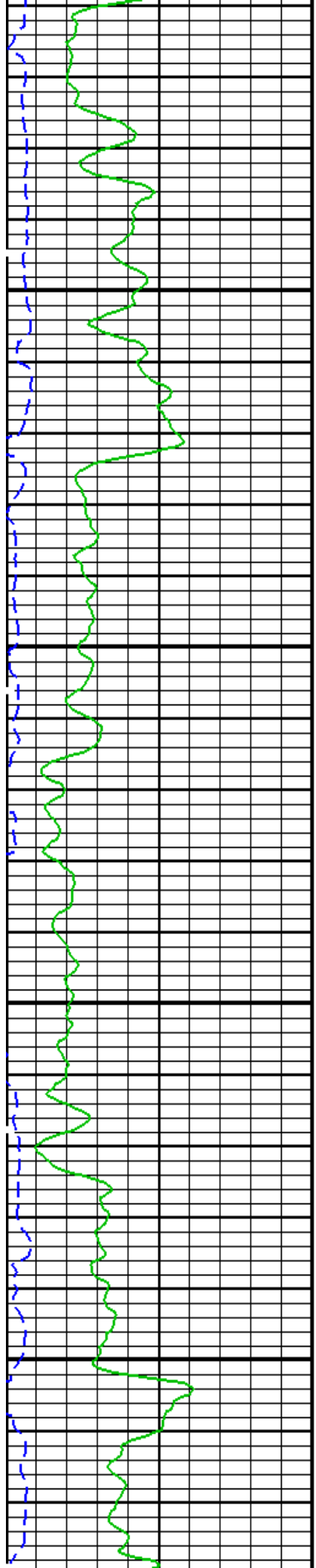
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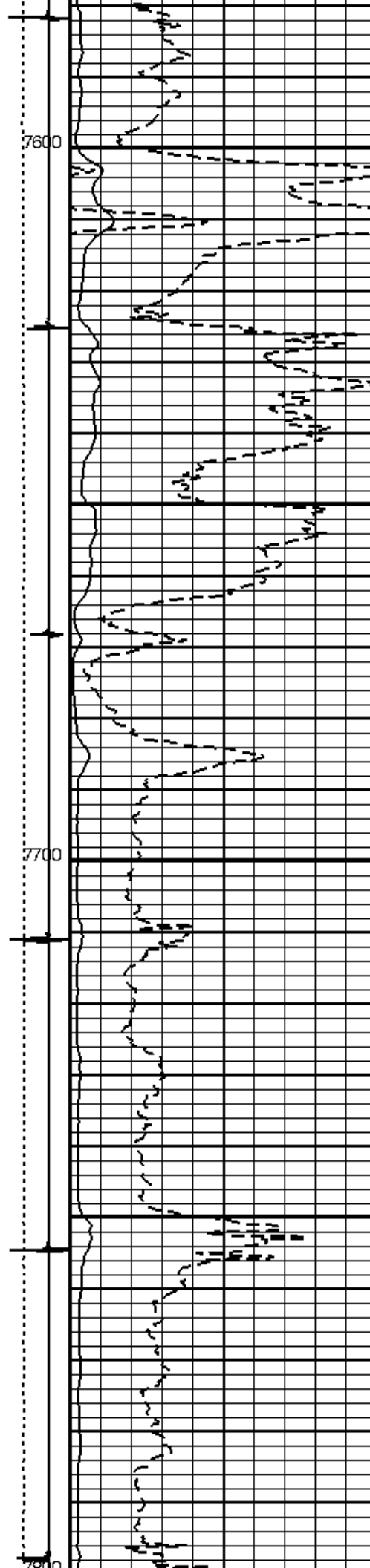
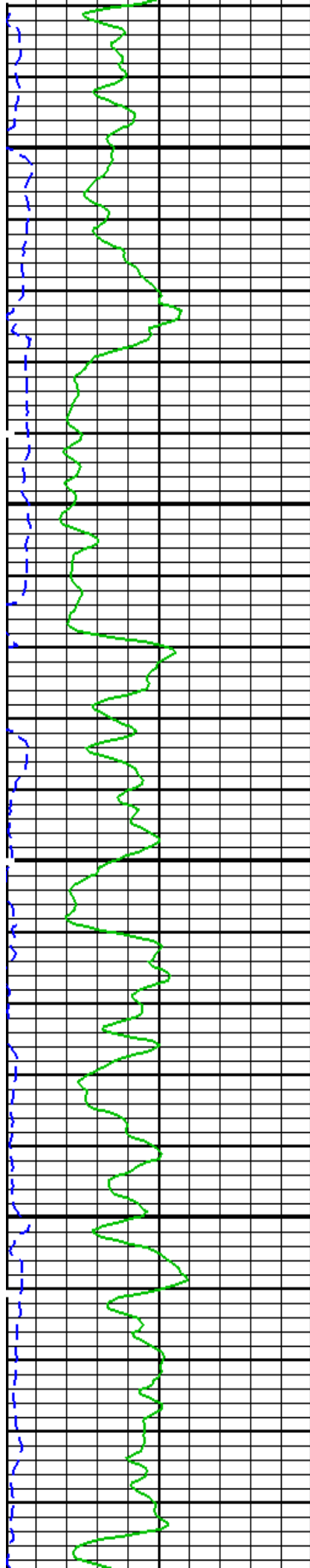
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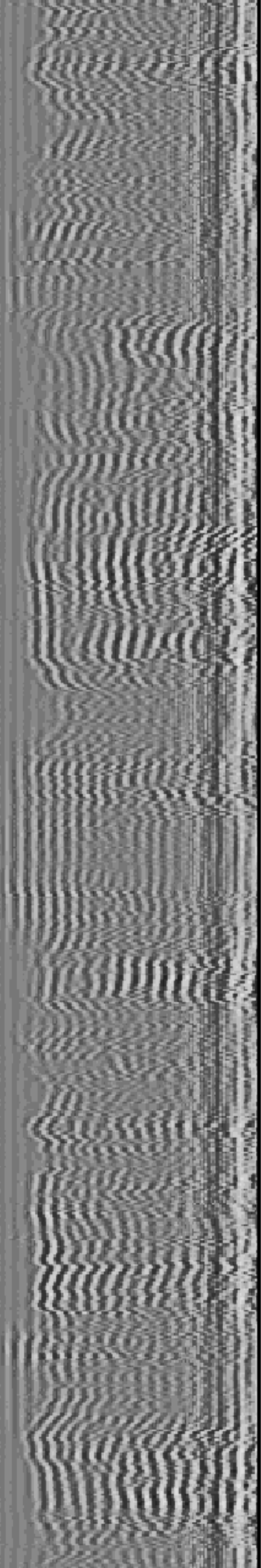
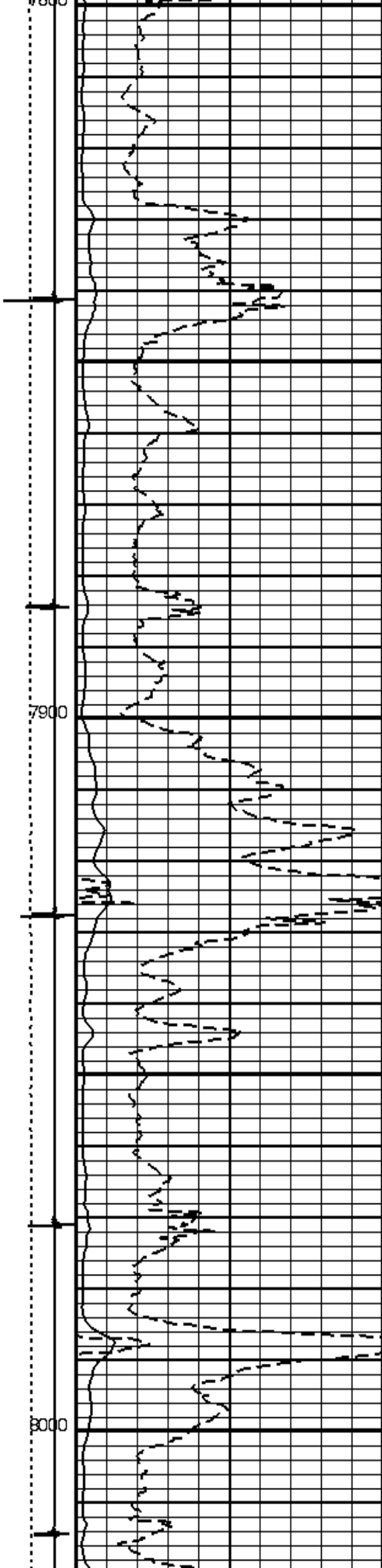
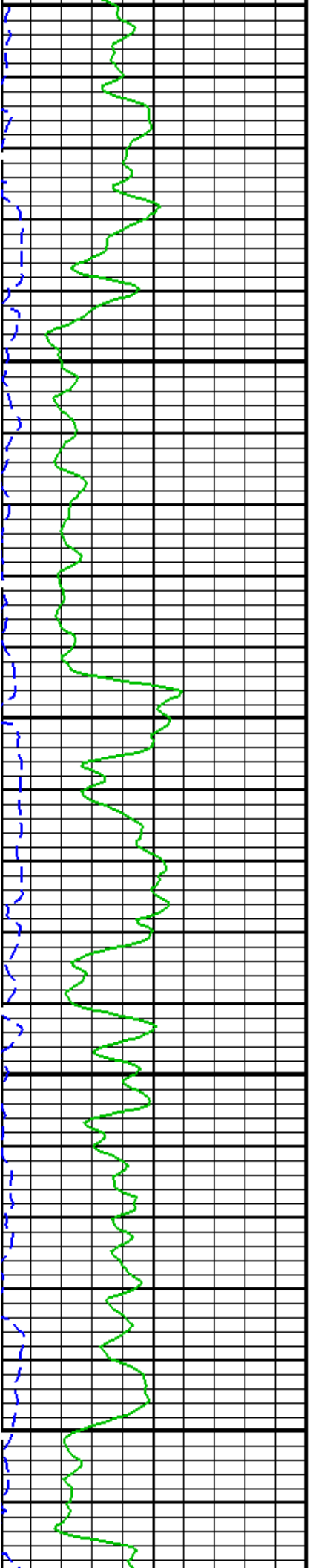
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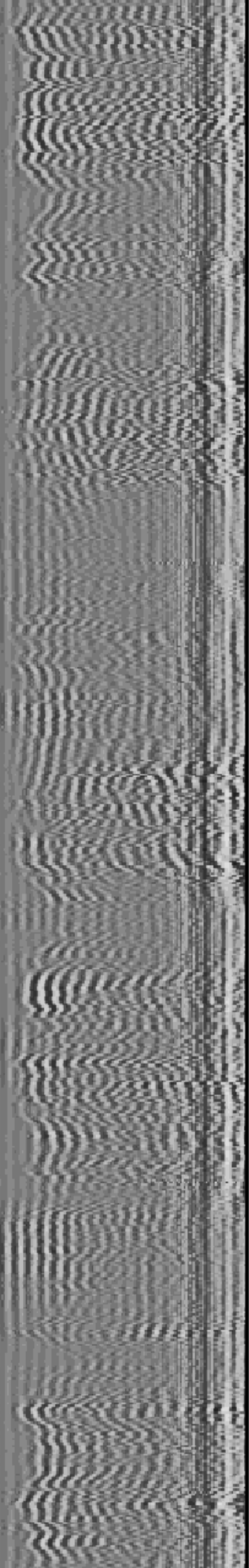
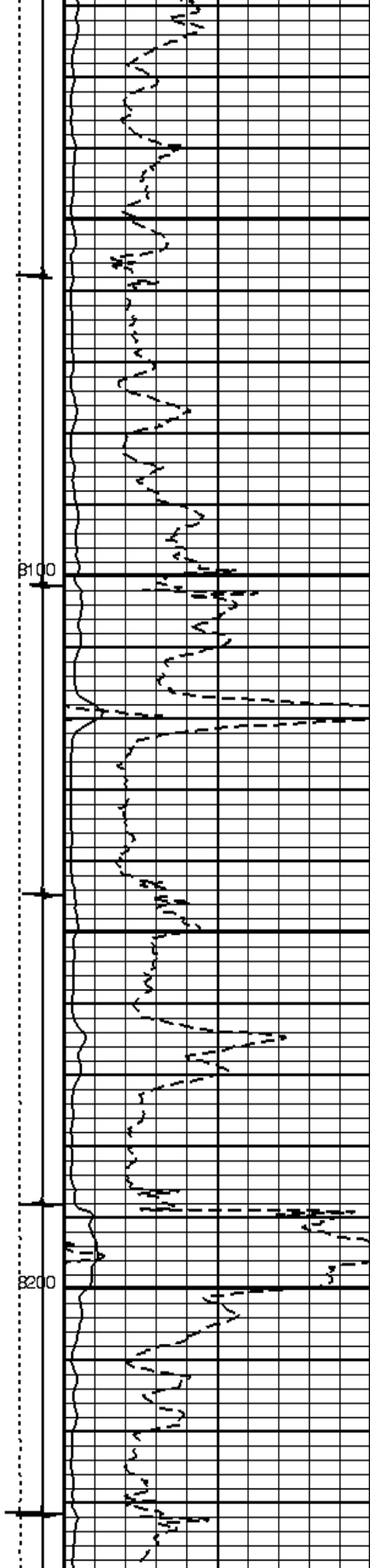
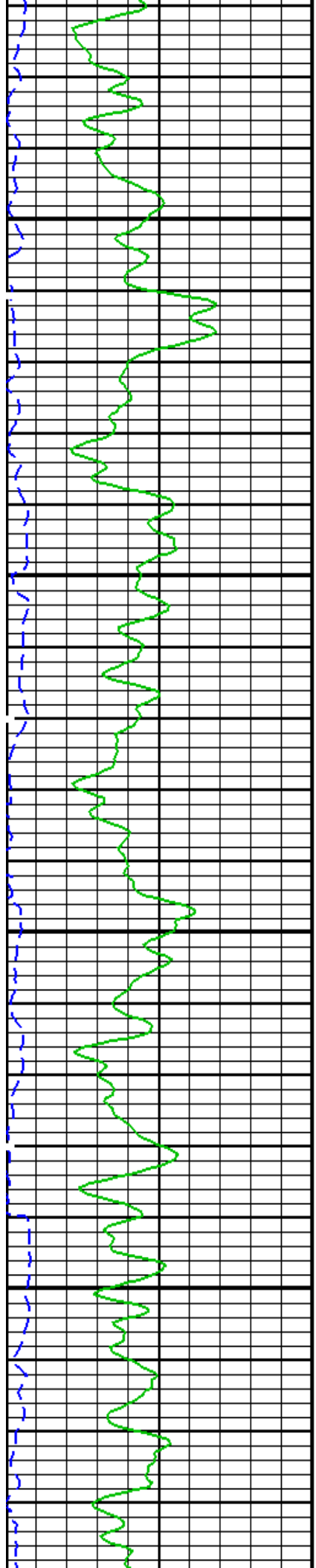


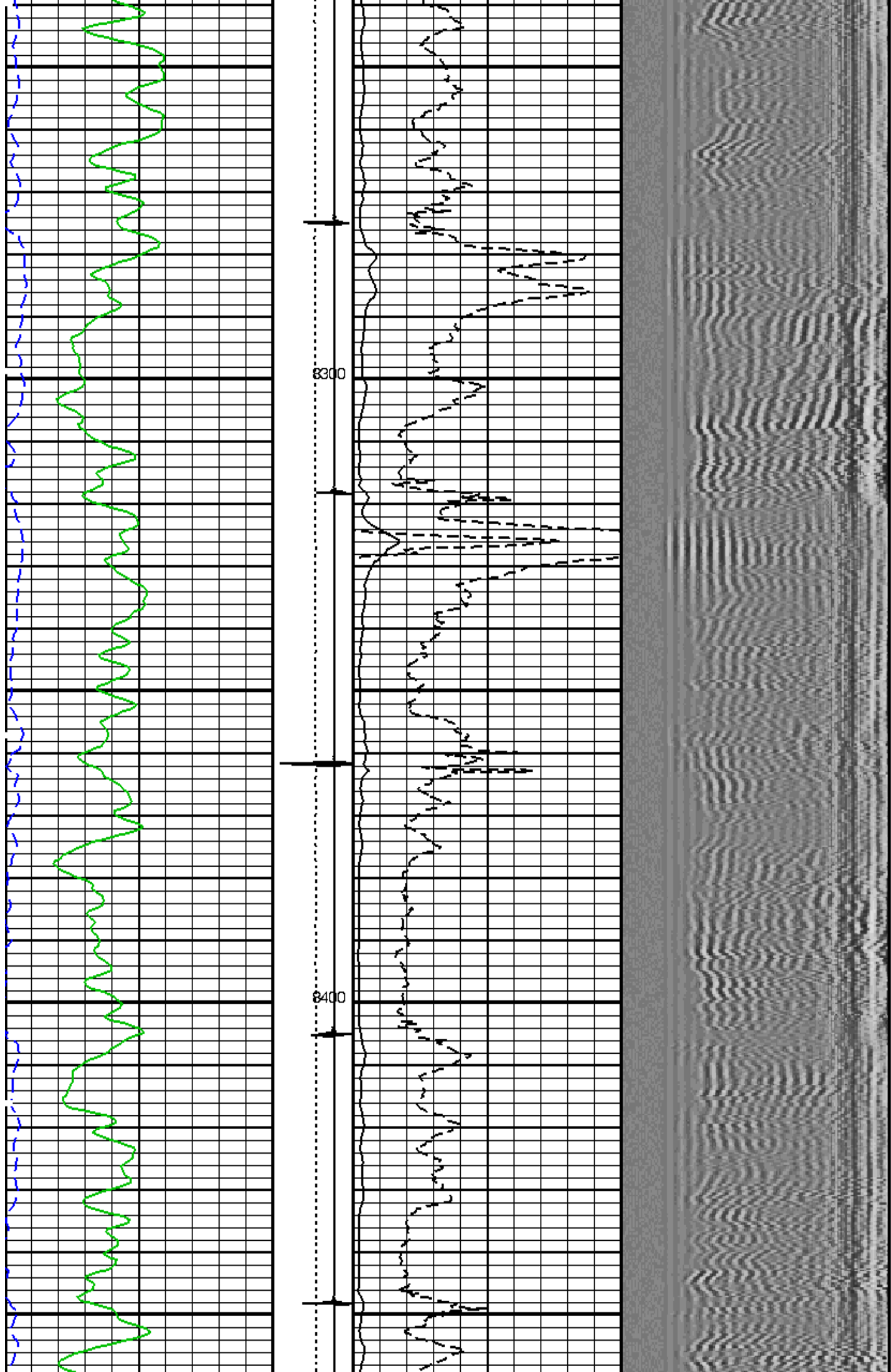


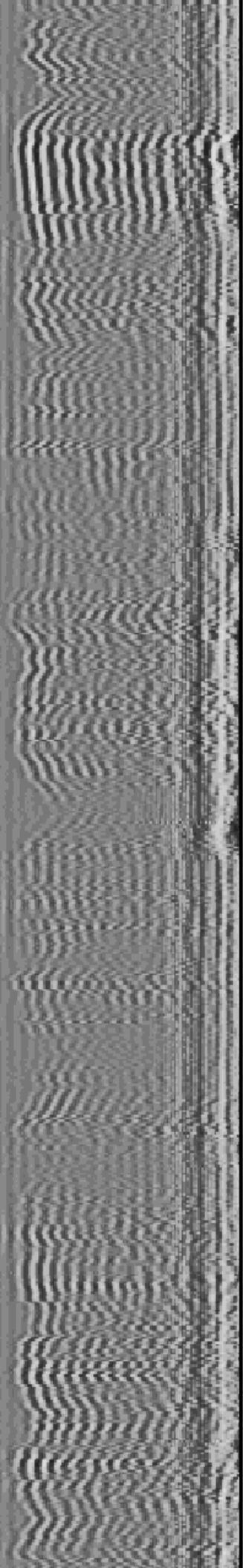
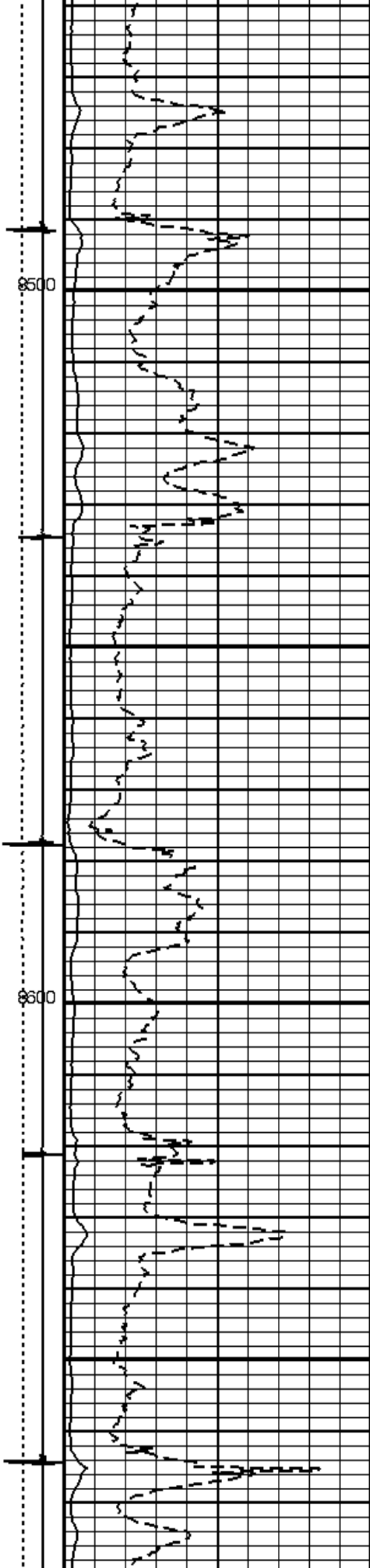
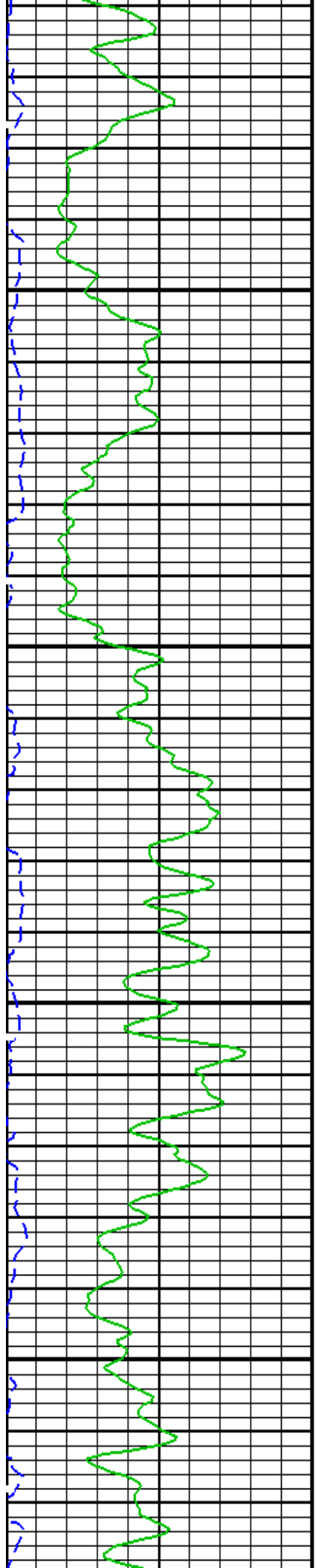


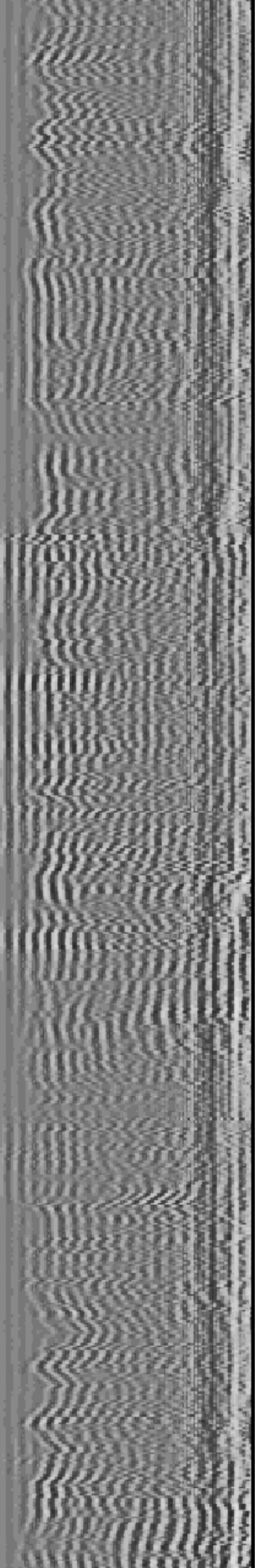
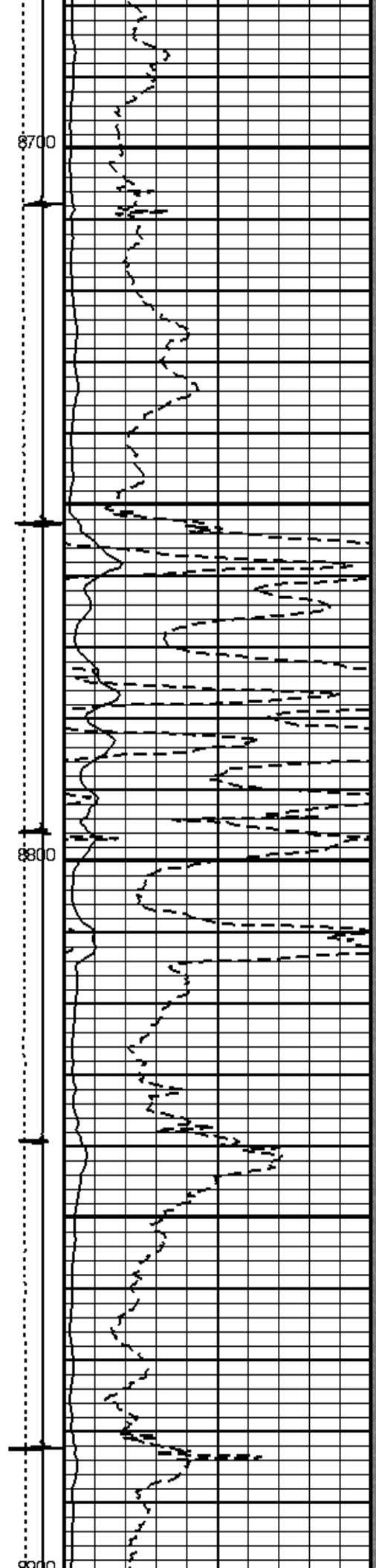
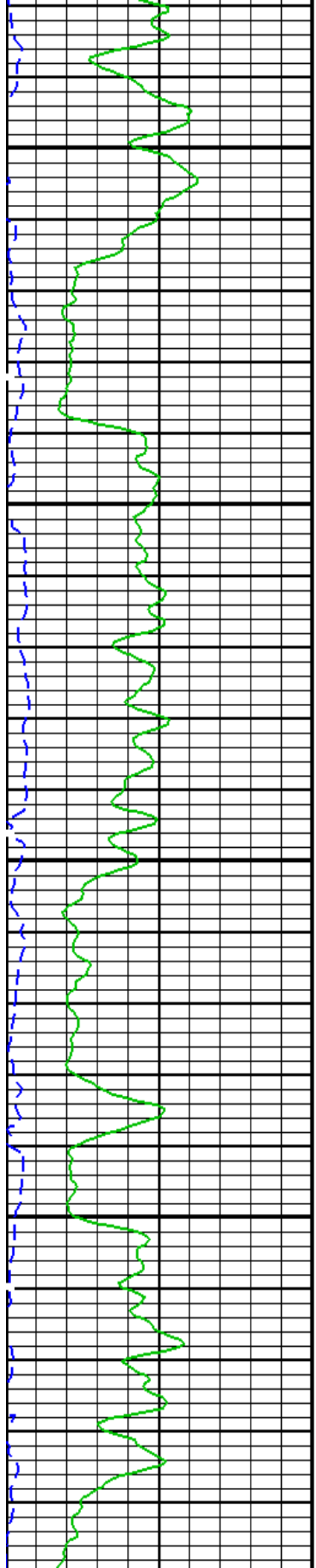


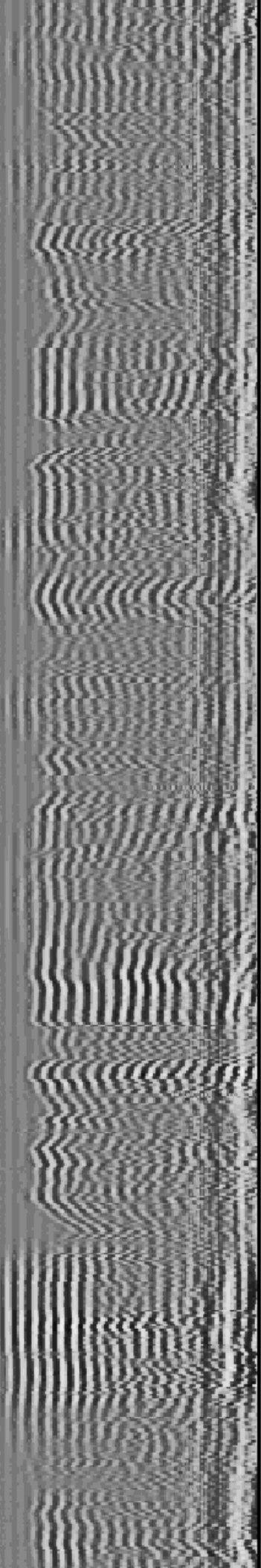
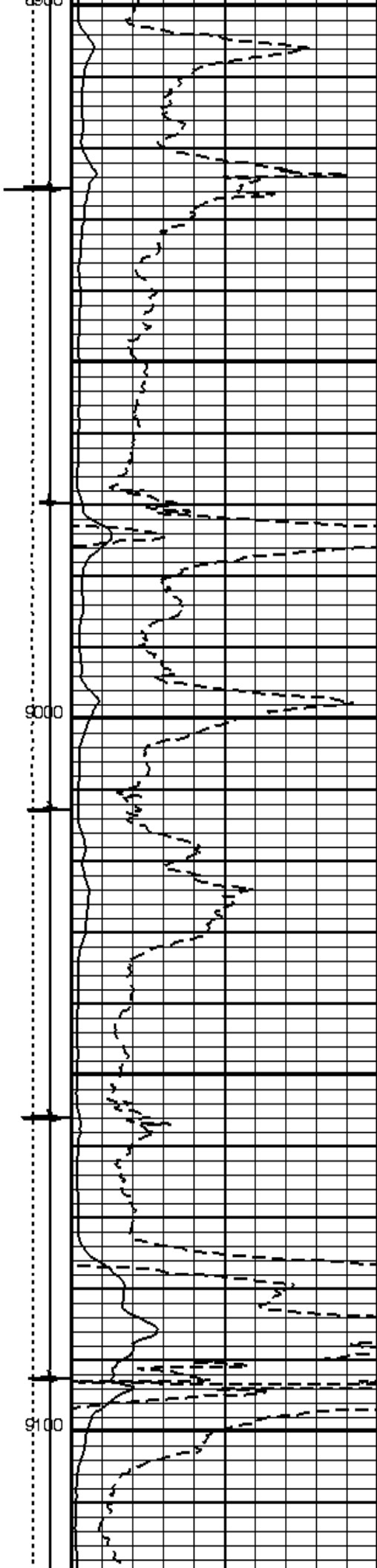
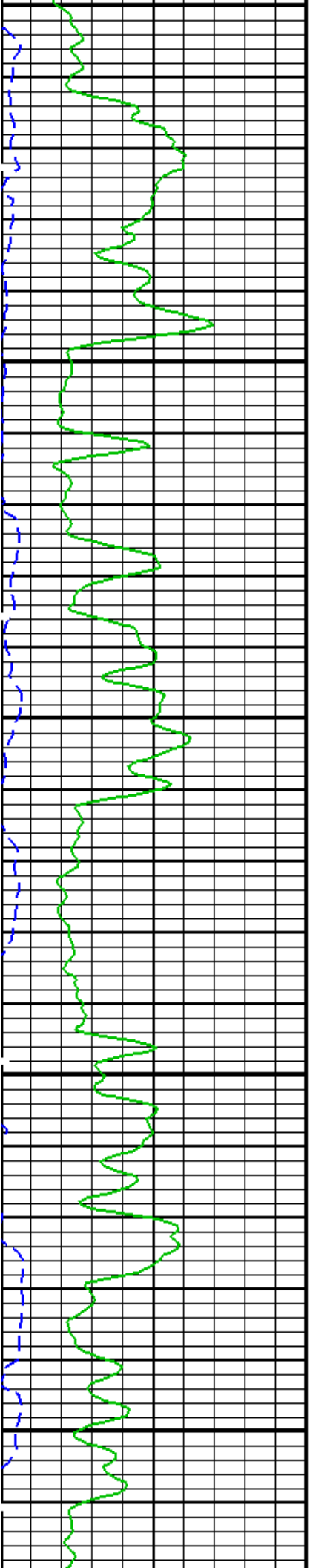


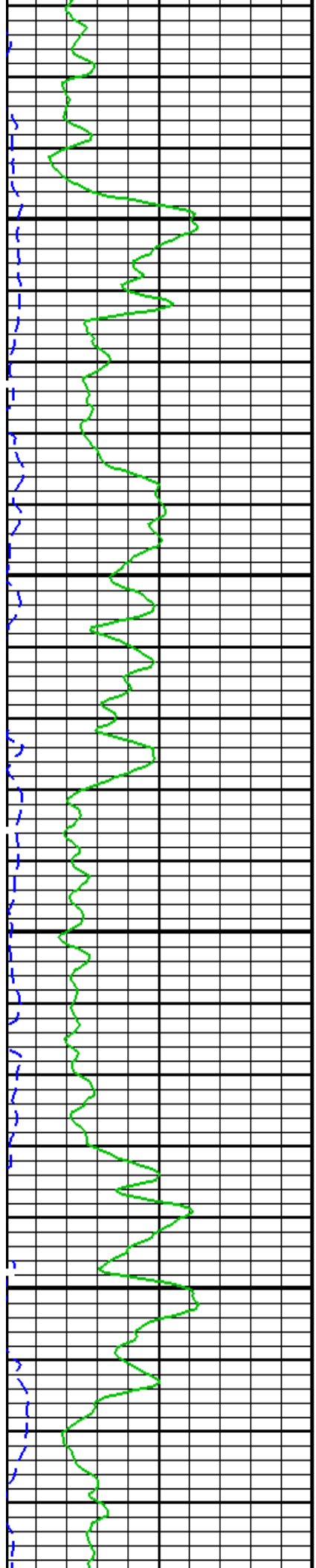
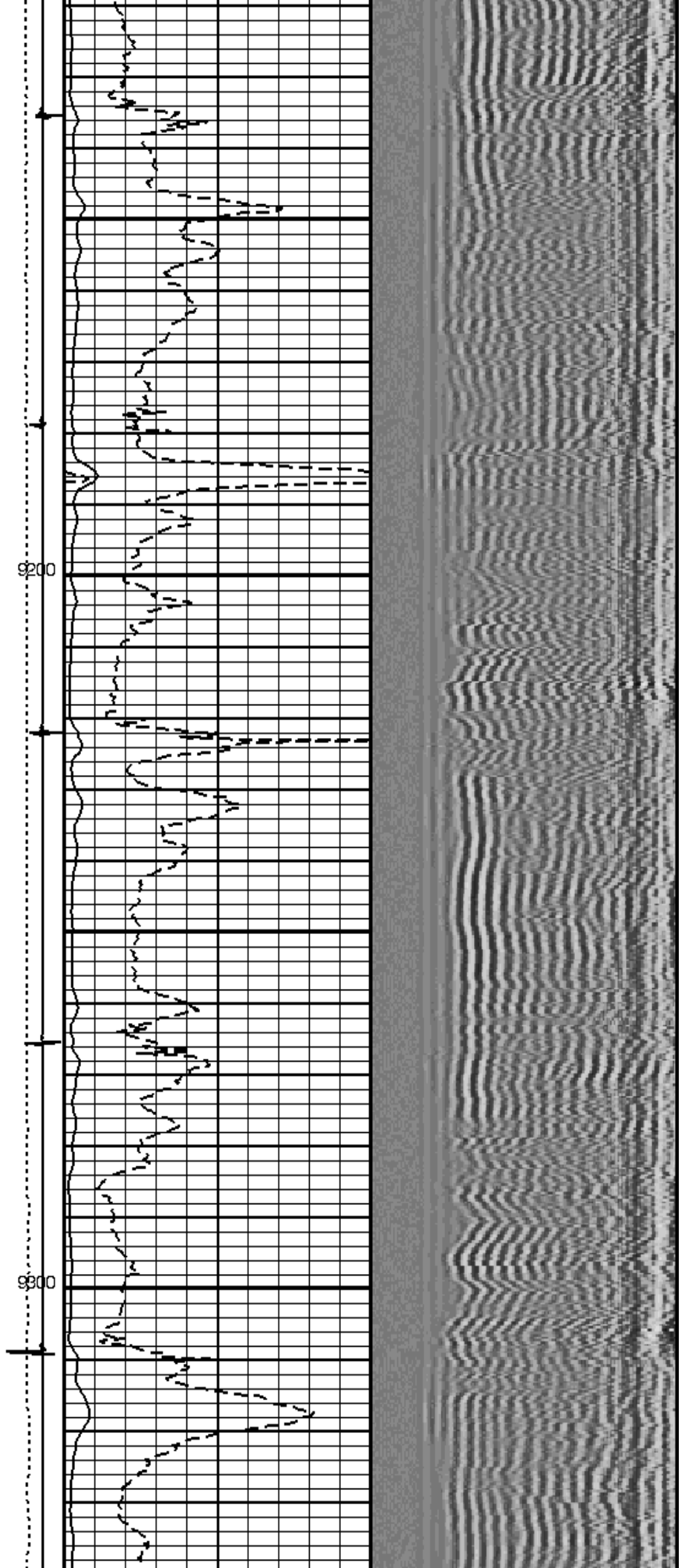


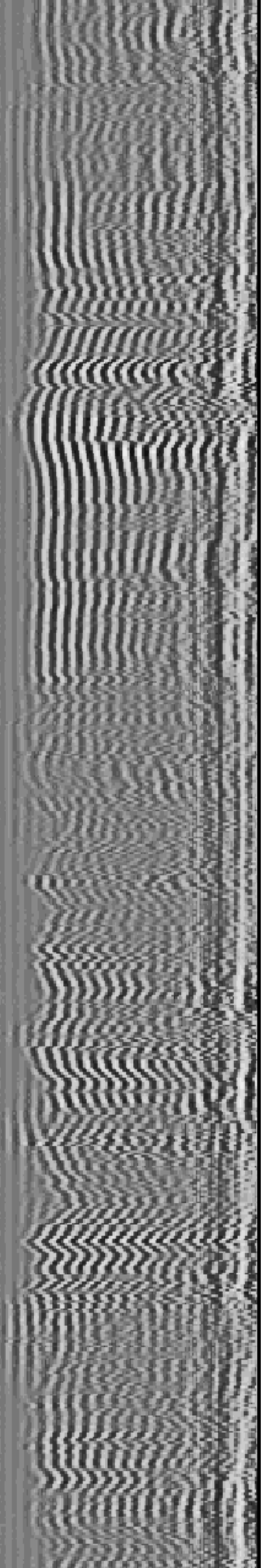
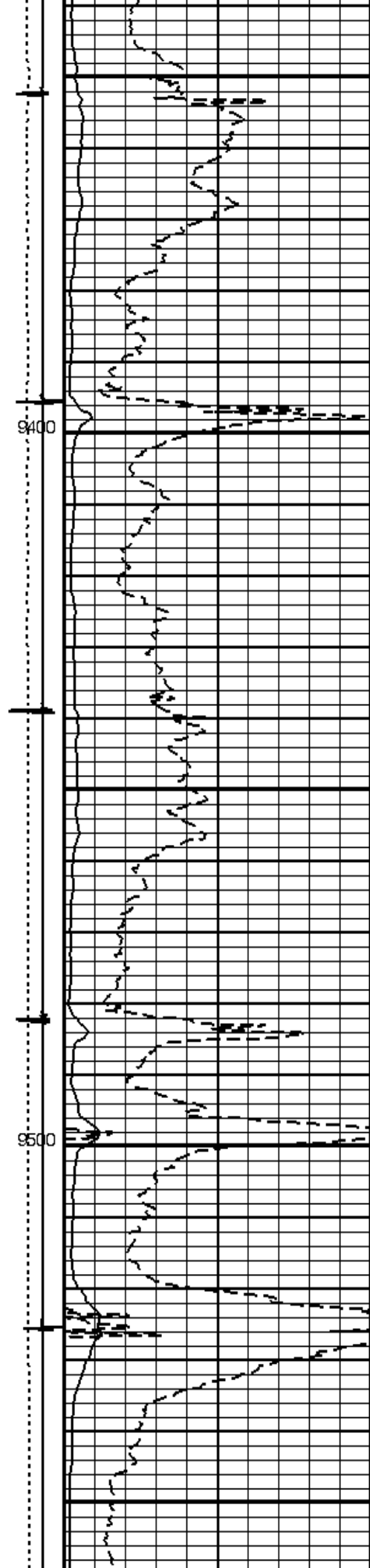
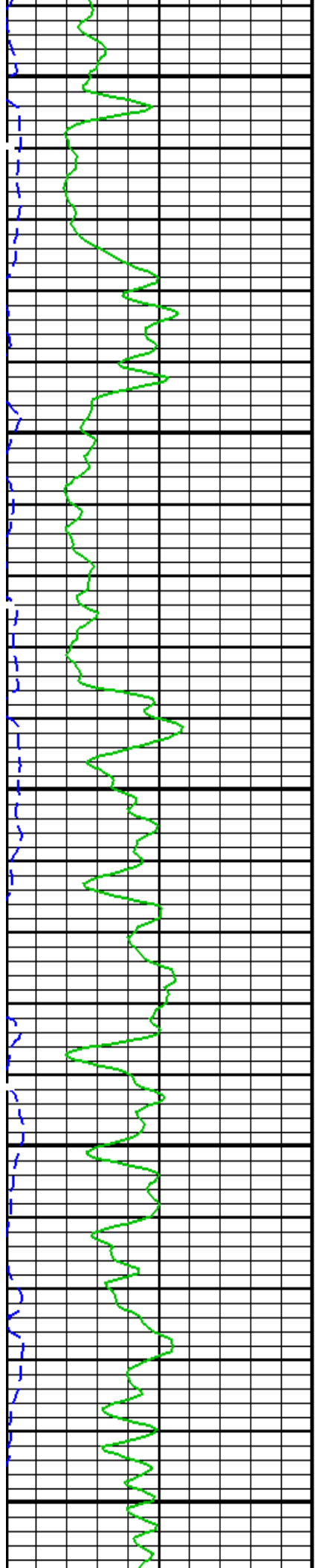


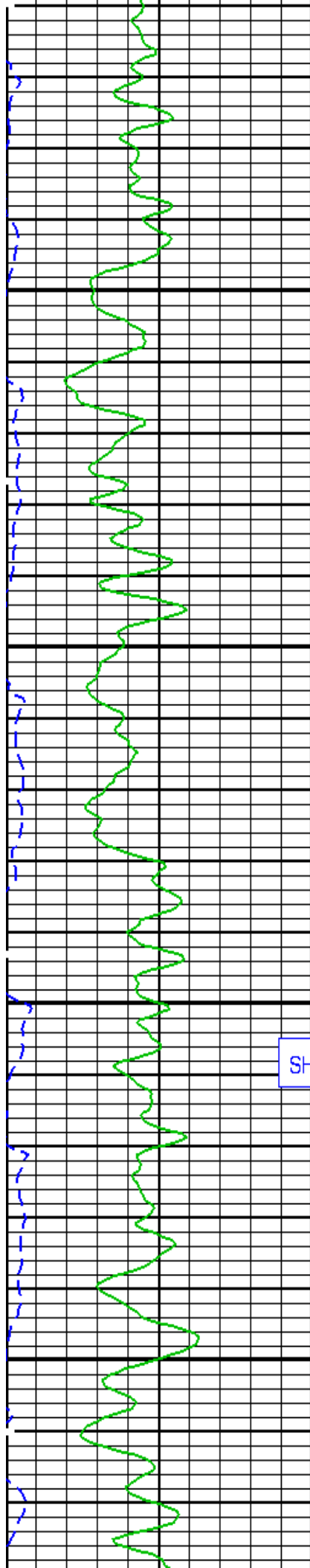




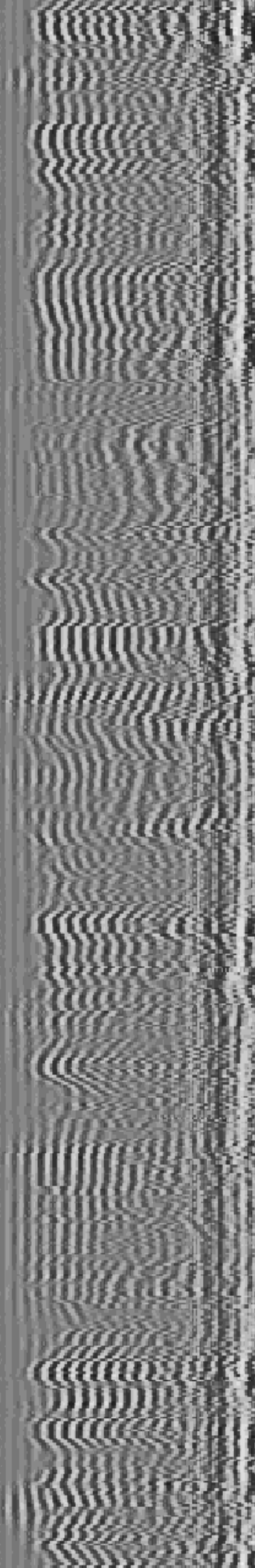
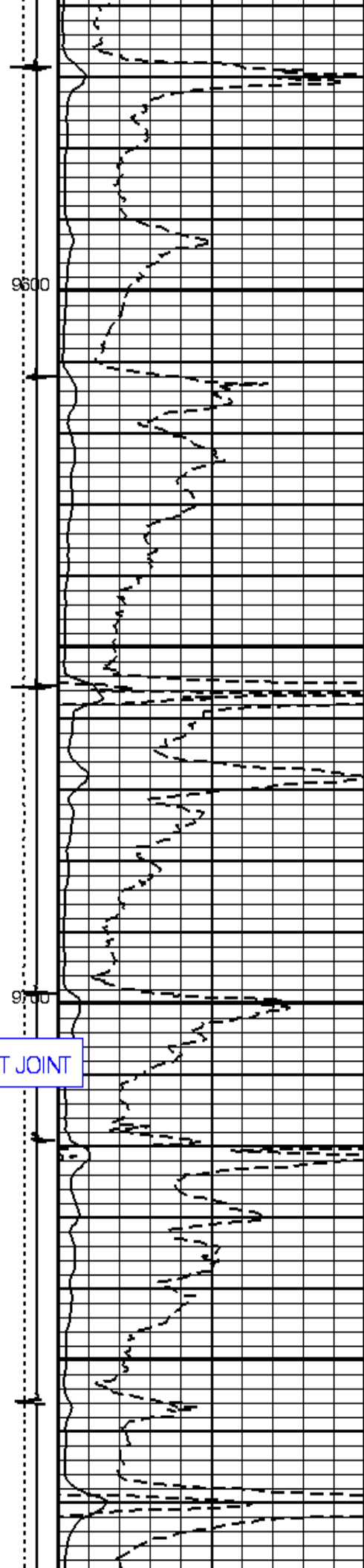


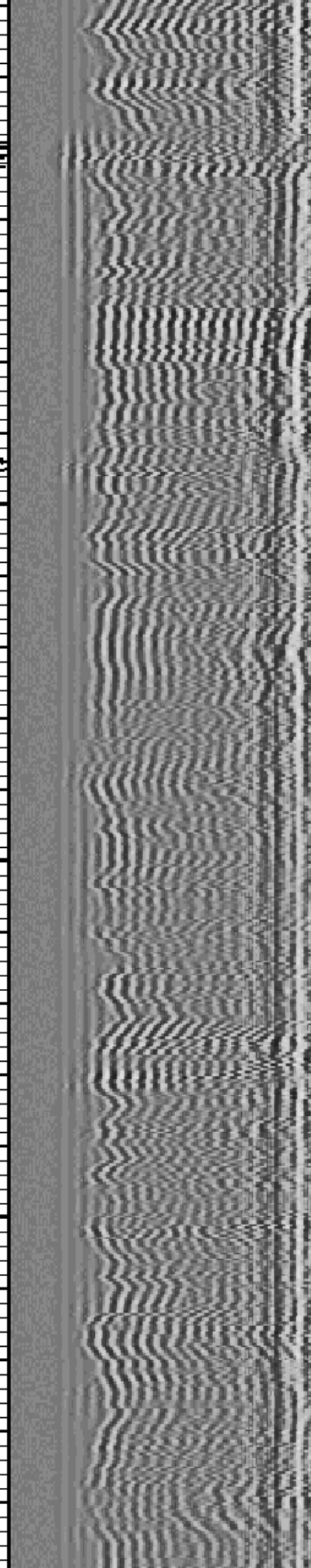
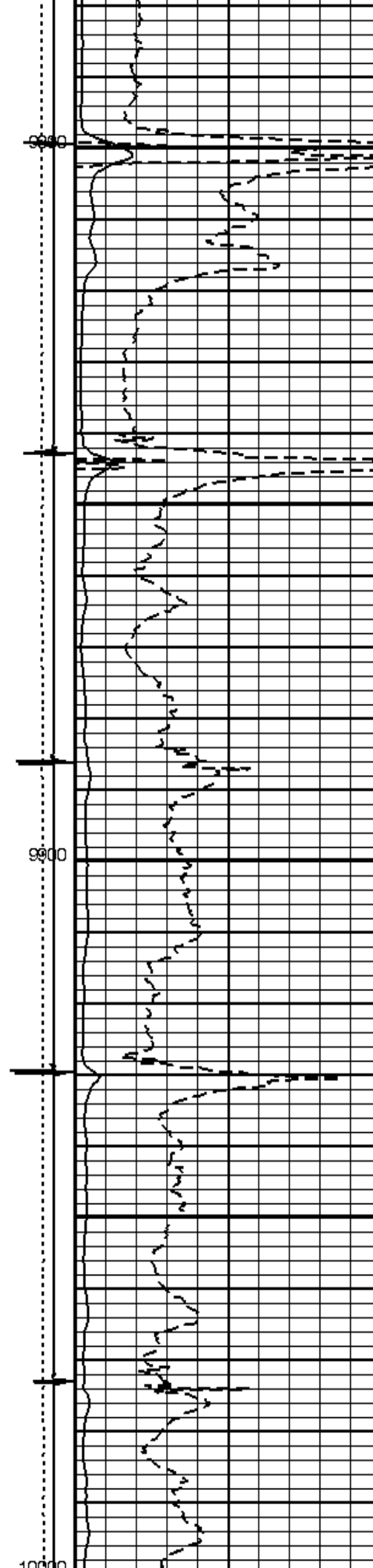
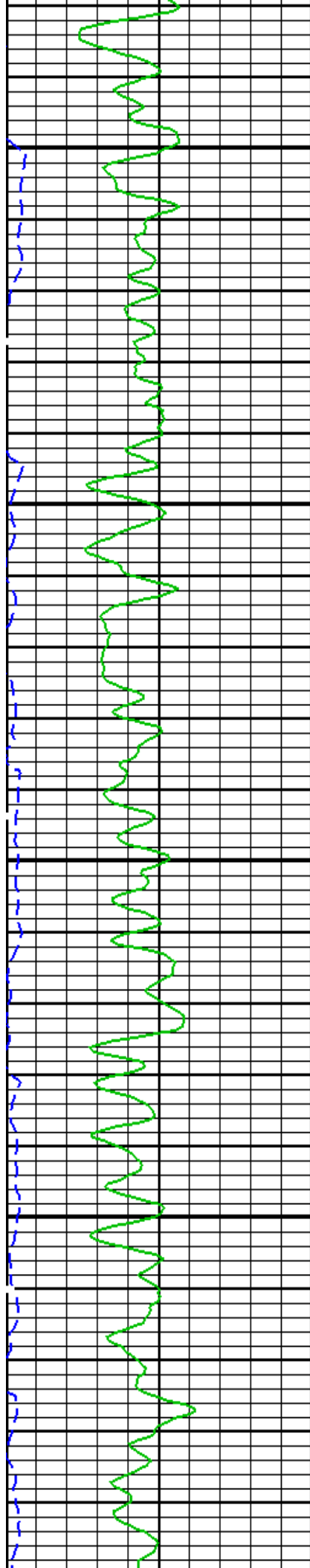


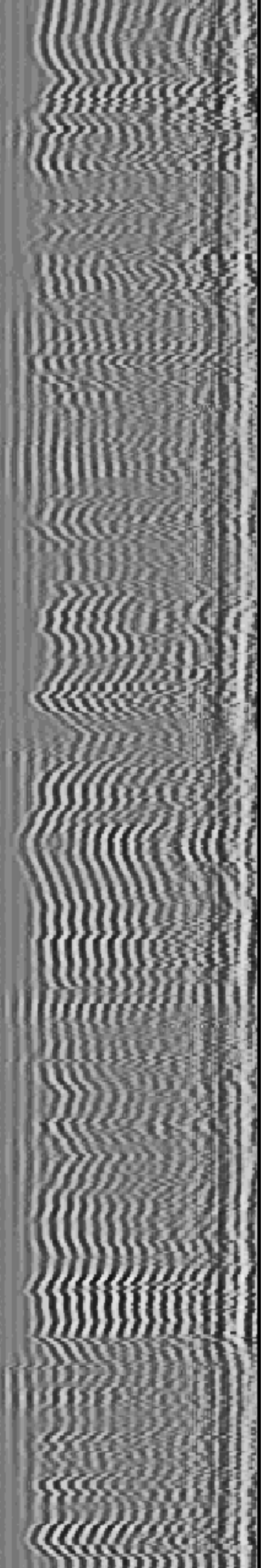
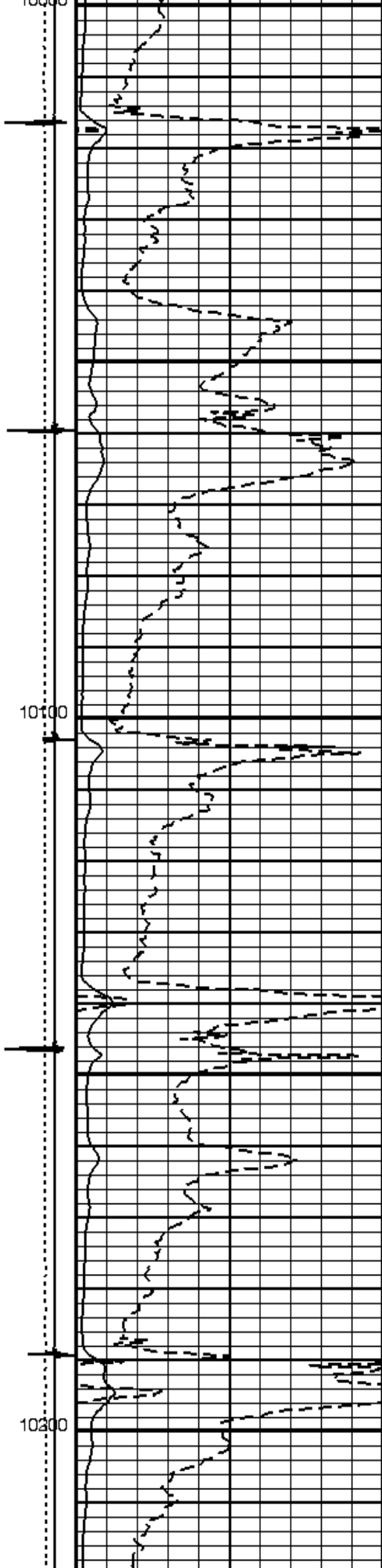
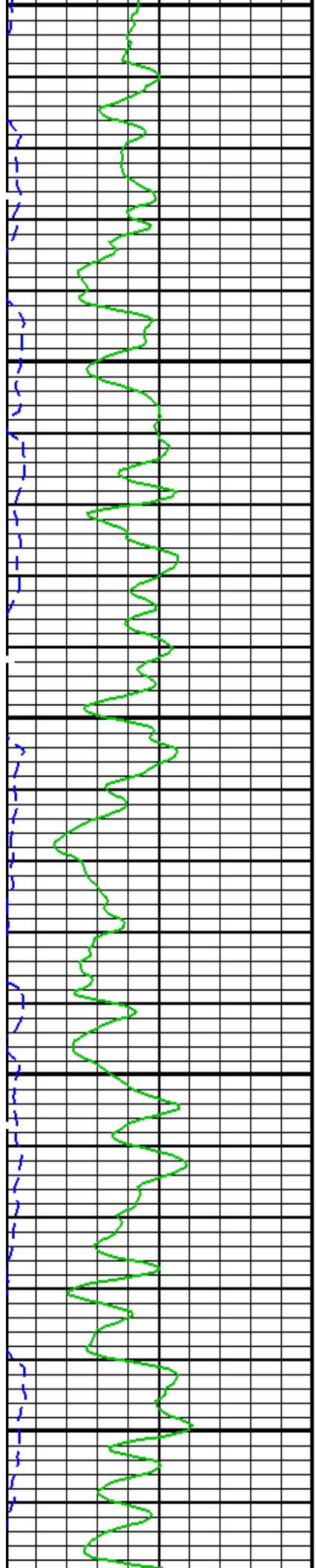


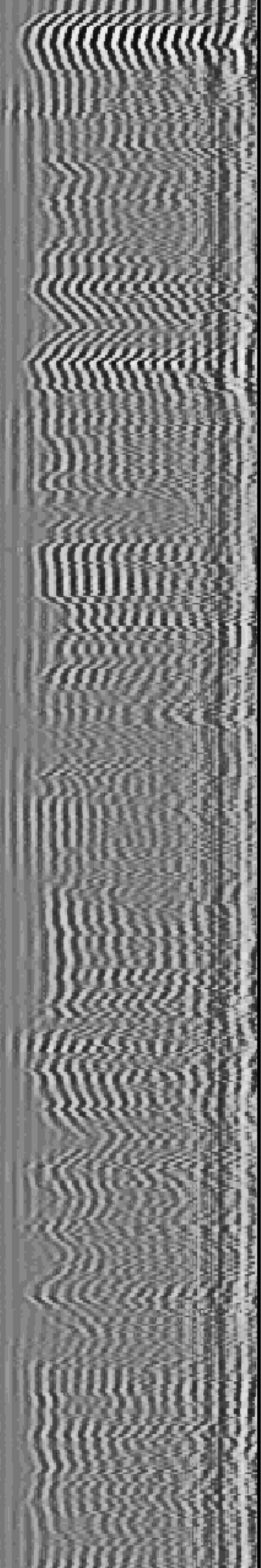
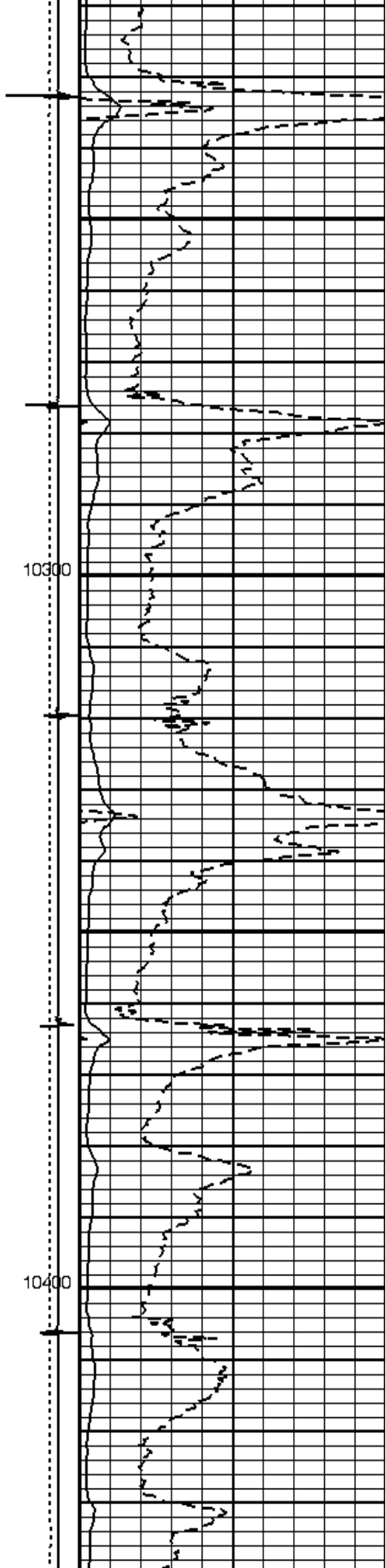
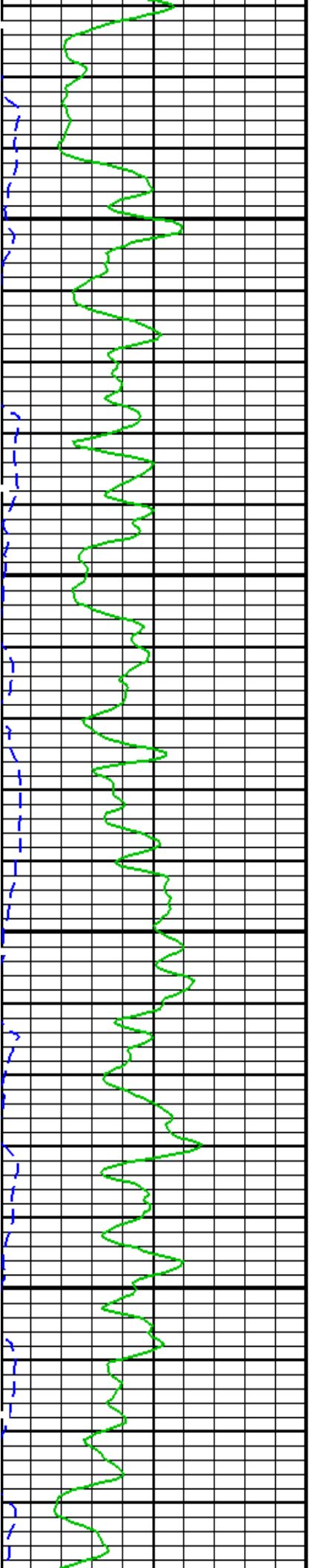


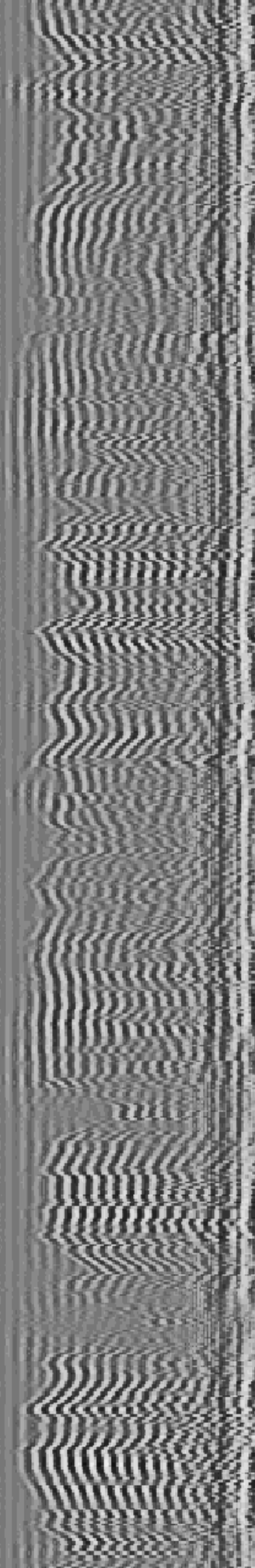
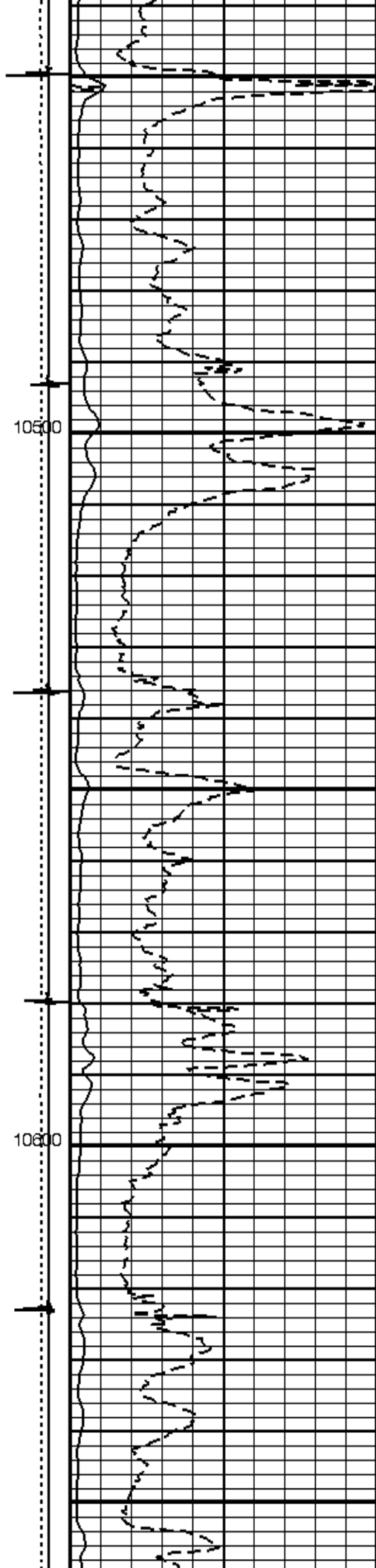
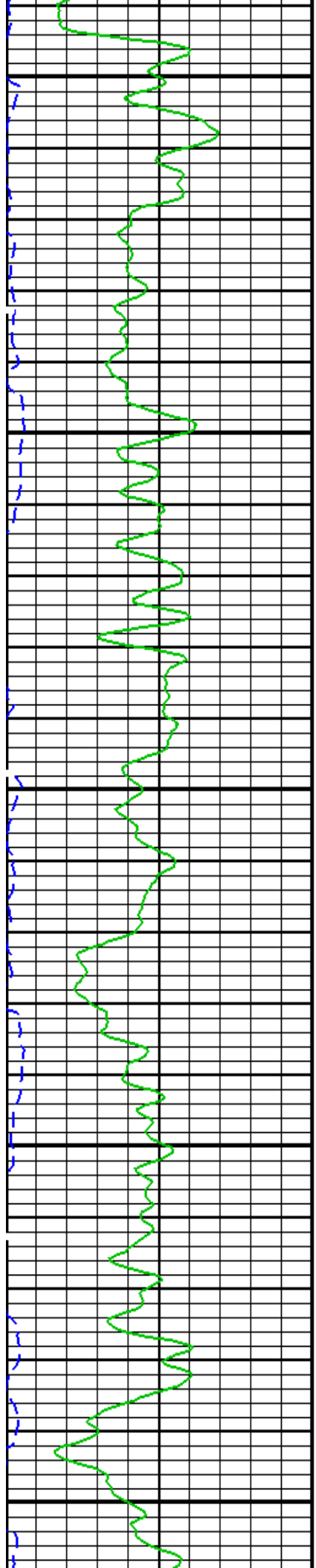
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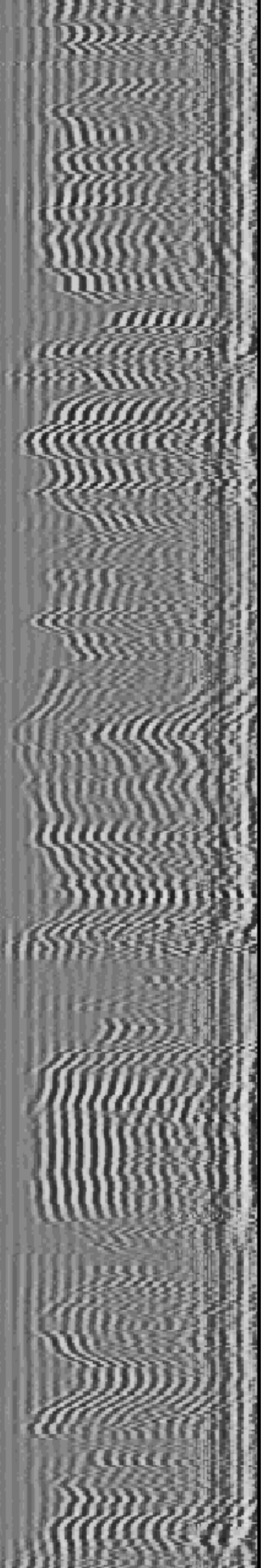
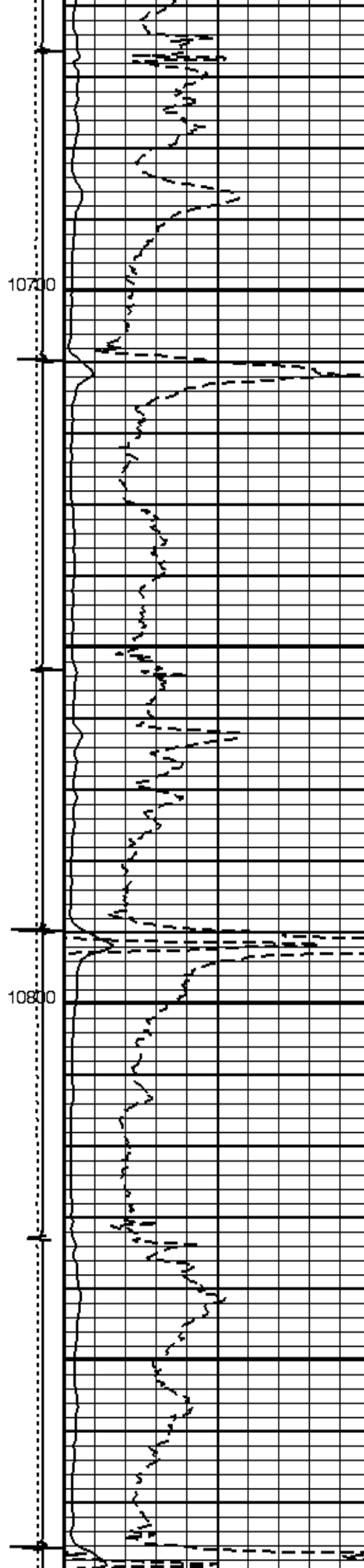
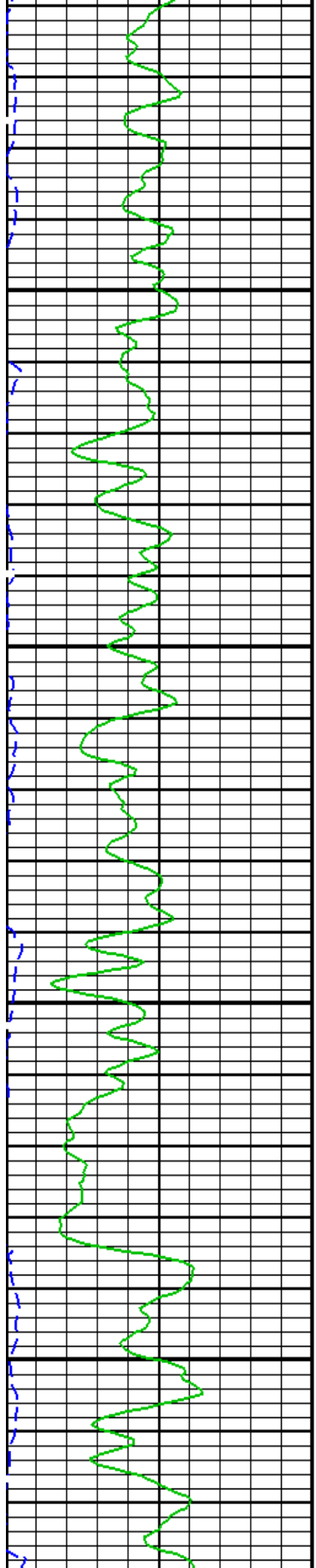


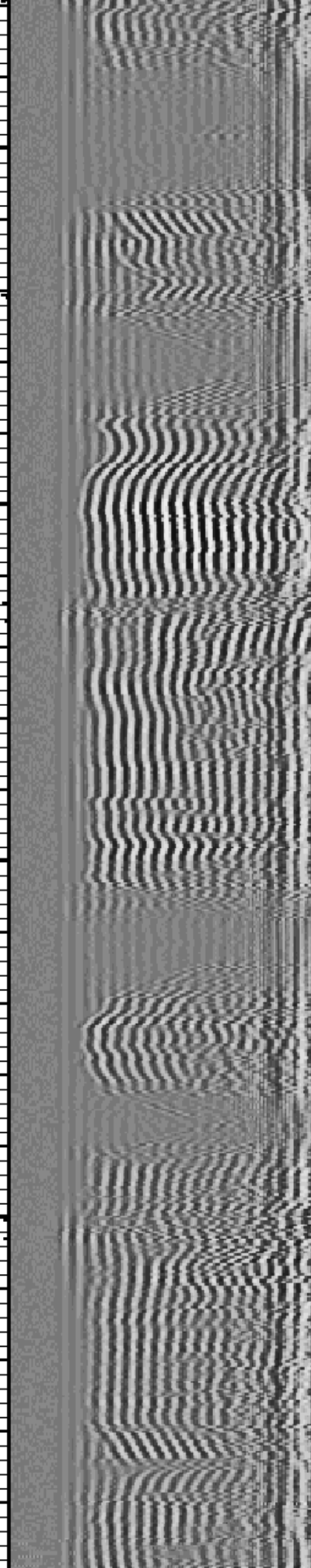
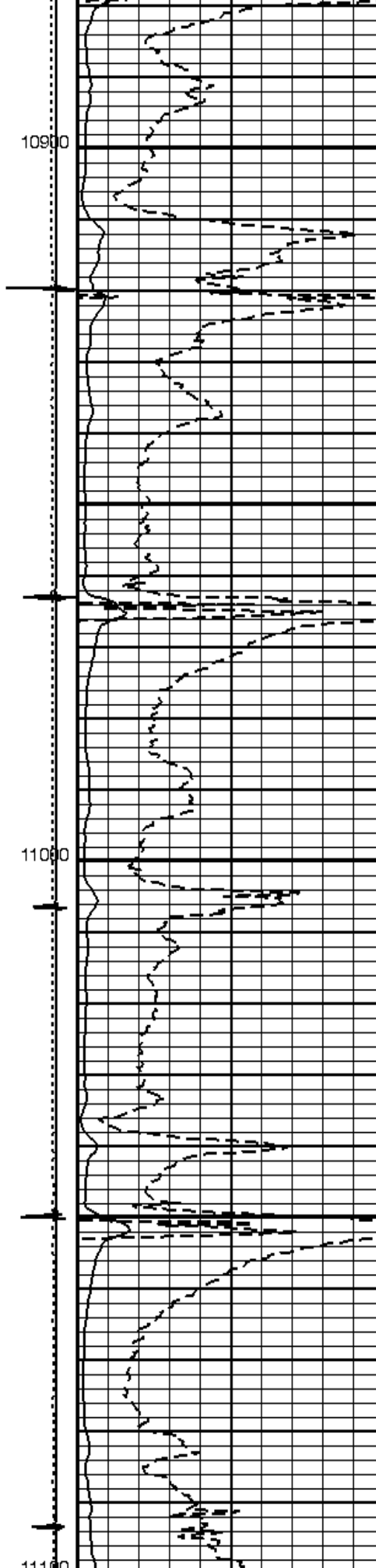
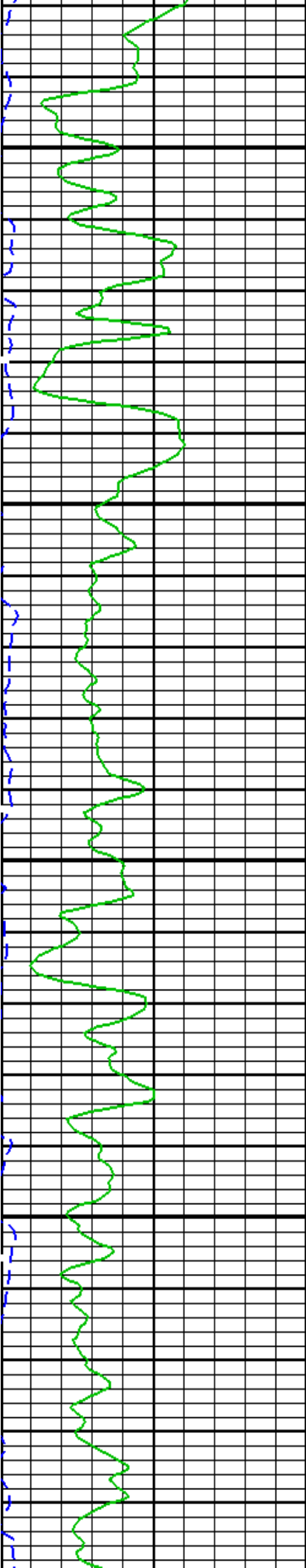


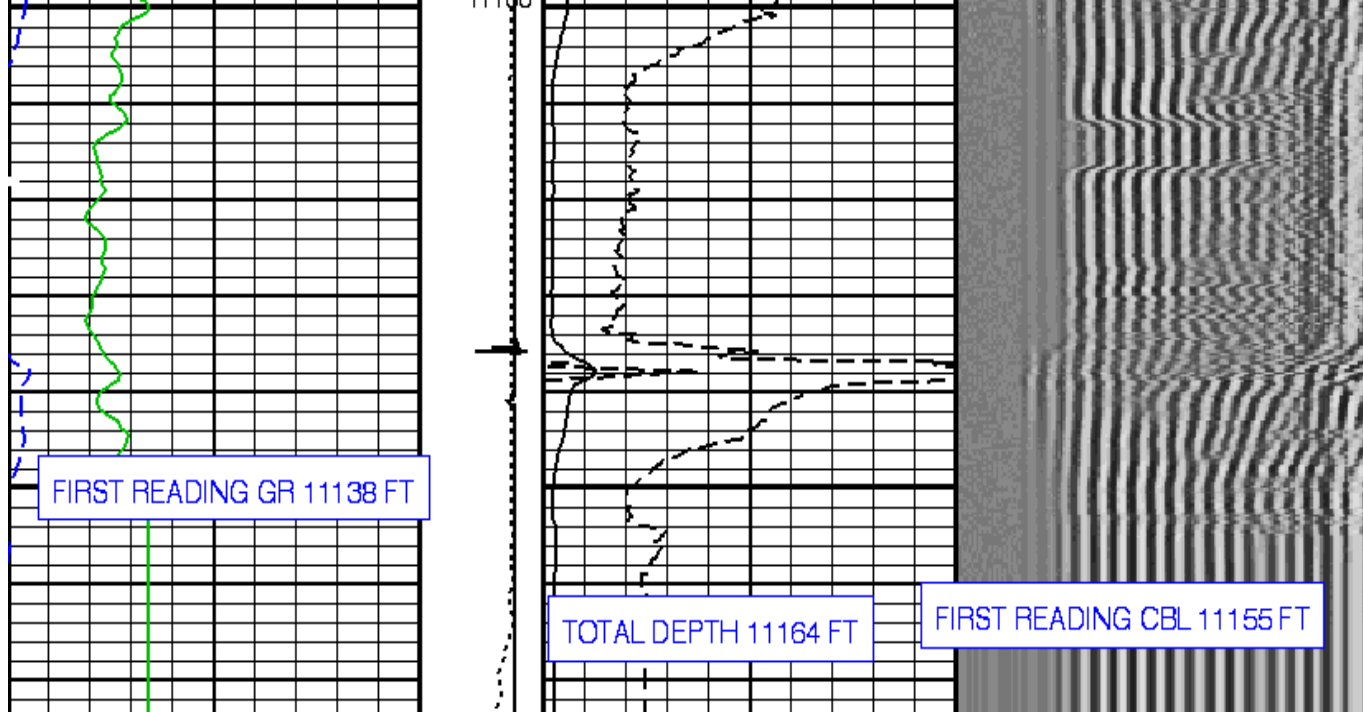












|                           |  |                             |   |
|---------------------------|--|-----------------------------|---|
| Gamma Ray (GR)<br>(GAPI)  | Tension<br>(TENS)<br>(LBF)             | CBL Amplitude (CBL)<br>(MV) | Min<br>Amplitude<br>Max<br>VDL Variable Density (VDL)<br>(US) |
| 0 150                     | 0 2000                                 | 0 100                       | 200 1200  |
| Transit Time (TT)<br>(US) | Discriminat<br>ed CCL<br>(CCLD)<br>(V) | CBL Amplitude (CBL)<br>(MV) |   |
| 260 160                   | 3 -1                                   | 0 10                        |   |

#### PIP SUMMARY

Time Mark Every 60 S

Format: CBL\_VDL Vertical Scale: 5" per 100'

Graphics File Created: 13-Jul-2012 08:53

### OP System Version: 19C0-187

SCMT-CB SRPC-5095-H2-2011-OP19 HBMS-B 19C0-187

#### <<< SCMT Cement Evaluation Information Summary >>>

|  |              |                             |  |
|--|--------------|-----------------------------|--|
| Sonde Serial Number                            | SCMS-CB 8179 |                             |  |
| Current Casing Size                            | 4.50000 IN   |                             |  |
| Casing Weight                                  | 11.6000 LB/F |                             |  |
| Expected CBL Amplitude<br>in Free Pipe Section | 80 MV        | Minimum Sonic Amplitude     | 0.579149 MV (100% Cement)<br>1.55185 MV (80% Cement) |
|  |              | MAP Minimum Sonic Amplitude | 4.32284 MV (100% Cement)<br>8.10244 MV (80% Cement)  |

| Master Calibration (Normalization) |            | Before Calibration (Adjustment) |          |
|------------------------------------|------------|---------------------------------|----------|
| Date of Master Calibration         | 6-MAR-2012 |                                 |          |
| CBL Correction Factor              | 0.0704263  | CBL Adjustment Factor (CBAF)    | 0.900000 |
| MAP 1 Correction Factor            | 0.0993191  | MAP Adjustment Factor (MPAF)    | 1.0      |
| MAP 2 Correction Factor            | 0.0941329  |                                 |          |
| MAP 3 Correction Factor            | 0.101552   |                                 |          |
| MAP 4 Correction Factor            | 0.114415   |                                 |          |
| MAP 5 Correction Factor            | 0.127992   |                                 |          |
| MAP 6 Correction Factor            | 0.121190   |                                 |          |
| MAP 7 Correction Factor            | 0.112867   |                                 |          |
| MAP 8 Correction Factor            | 0.102913   |                                 |          |

## Parameters

| DLIS Name                                     | Description  | Value     |      |
|---|--|-----------|------|
| SCMT-CB: Slim Cement Mapping Tool, 1-11/16 OD |  |           |      |
| BILI  | Bond Index Level for Zone Isolation                  | 0.8       |      |
| CB3D  | SCMT CBL 3 ft Peak Detection Mode                    | PEAK      |      |
| CB3G  | SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate | 224.559   | US   |
| CB3T  | SCMT CBL 3 ft Fixed Threshold Level                  | 20        | MV   |
| CB5D  | SCMT CBL 5 ft Peak Detection Mode                    | PEAK      |      |
| CB5G  | SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate | 338.559   | US   |
| CB5T  | SCMT CBL 5 ft Fixed Threshold Level                  | 20        | MV   |
| CBLG  | CBL Gate Width                                       | 45        | US   |
| CBRA  | CBL LQC Reference Amplitude in Free Pipe             | 80        | MV   |
| CMCF  | CBL Cement Type Compensation Factor                  | 1         |      |
| CMT   | SCMT Slow Channel Multiplexer Mode                   | SCAN      |      |
| CMTM  | SCMT Operating Mode                                  | LOG       |      |
| CSCS  | SCMT Slow Channel Index                              | VCC       |      |
| CTHI  | Casing Thickness                                     | 0.255617  | IN   |
| DTF   | Delta-T Fluid  | 189       | US/F |
| FATT  | Acoustic Attenuation due to Fluid                    | 0         | DB/F |
| FCF   | CBL Fluid Compensation Factor                        | 0.902782  |      |
| GOBO  | Good Bond  | 1.55185   | MV   |
| MAPD  | SCMT MAP Peak Detection Mode                         | PEAK      |      |
| MAPG  | SCMT MAP Peak Detection T0_Delay and Noise Gate      | 167.559   | US   |
| MAPT  | SCMT MAP Fixed Threshold Level                       | 30        | MV   |
| MATT  | Maximum Attenuation                                  | 16.5449   | DB/F |
| MCCF  | MAP Cement Type Compensation Factor                  | 1         |      |
| MCI   | Minimum Cemented Interval for Isolation              | 1.25      | FT   |
| MMSA  | MAP Minimum Sonic Amplitude                          | 4.32284   | MV   |
| MSA   | Minimum Sonic Amplitude                              | 0.579149  | MV   |
| PEDE  | Peak Detection On/Off Switch in Playback             | OFF       |      |
| VDLG  | VDL Manual Gain                                      | 5         |      |
| ZCMT  | Acoustic Impedance of Cement                         | 6.8       | MRAY |
| System and Miscellaneous                      |  |           |      |
| CSIZ  | Current Casing Size                                  | 4.500     | IN   |
| CWEI  | Casing Weight  | 11.60     | LB/F |
| DFD   | Drilling Fluid Density                               | 8.60      | LB/G |
| DO  | Depth Offset for Playback                            | 4.0       | FT   |
| DORL  | Depth Offset for Repeat Analysis                     | 0.0       | FT   |
| PP  | Playback Processing                                  | RECOMPUTE |      |
| TD  | Total Depth  | 11164     | FT   |

### Input DLIS Files

|         |                  |        |          |                   |            |          |
|---------|------------------|--------|----------|-------------------|------------|----------|
| DEFAULT | SCMT_HBMS_140LUP | FN:129 | PRODUCER | 13-Jul-2012 05:55 | 11170.0 FT | 116.5 FT |
|---------|------------------|--------|----------|-------------------|------------|----------|

### Output DLIS Files

|         |                  |        |          |                   |  |
|---------|------------------|--------|----------|-------------------|--|
| DEFAULT | SCMT_HBMS_143PUP | FN:132 | PRODUCER | 13-Jul-2012 08:53 |  |
|---------|------------------|--------|----------|-------------------|--|



## REPEAT ANALYSIS CBL VDL

MAXIS Field Log

Company: ENCAN OIL & GAS (USA) INC.

Well: SG 8511 E-22 (N22496)

### Input DLIS Files

|         |                  |        |          |                   |           |           |
|---------|------------------|--------|----------|-------------------|-----------|-----------|
| DEFAULT | SCMT_HBMS_138LUP | FN:127 | PRODUCER | 13-Jul-2012 05:27 | 6905.0 FT | 6502.0 FT |
|---------|------------------|--------|----------|-------------------|-----------|-----------|

### Output DLIS Files

|         |                  |        |          |                   |  |
|---------|------------------|--------|----------|-------------------|--|
| DEFAULT | SCMT_HBMS_143PUP | FN:132 | PRODUCER | 13-Jul-2012 08:53 |  |
|---------|------------------|--------|----------|-------------------|--|

SCMT-CB

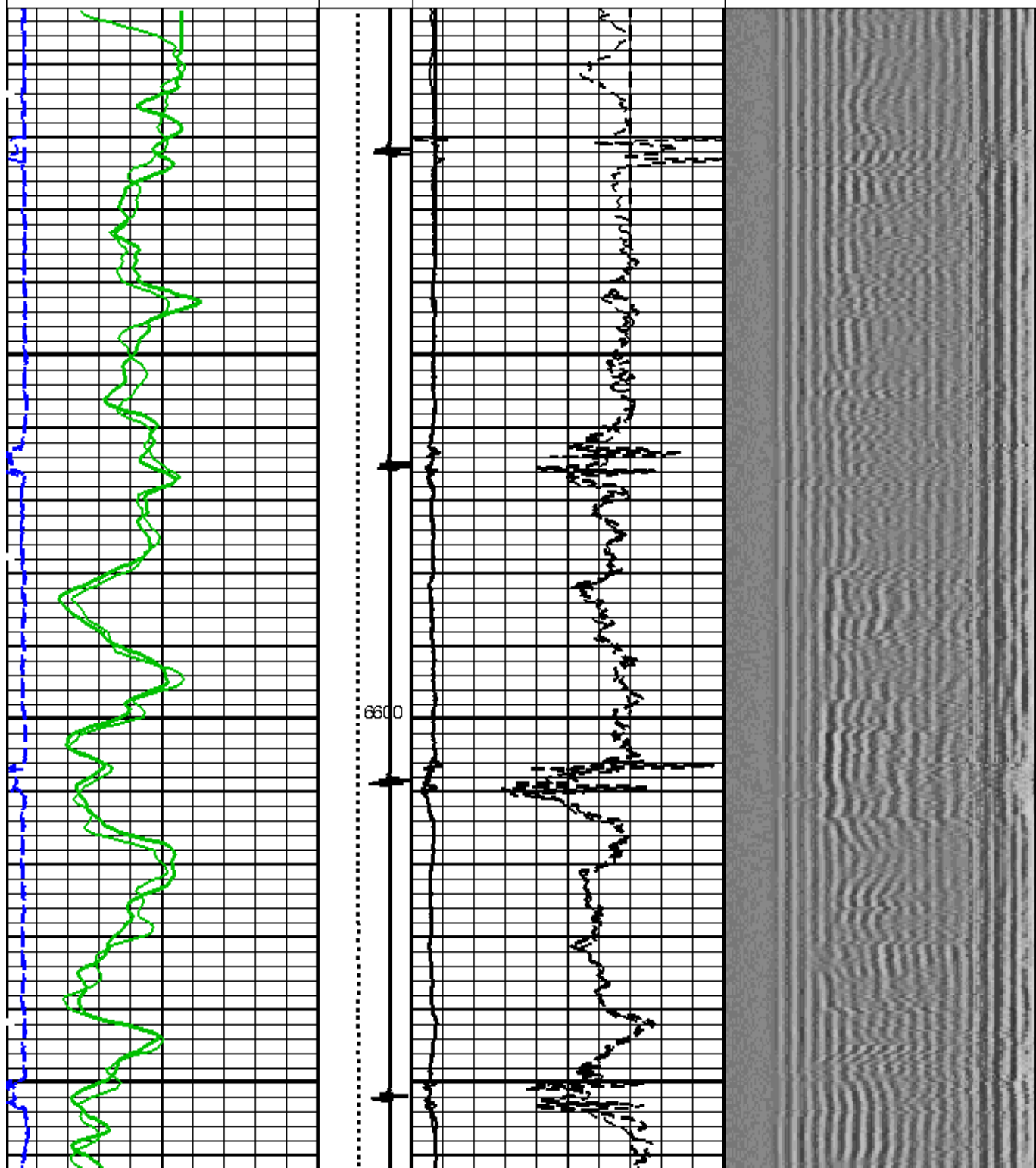
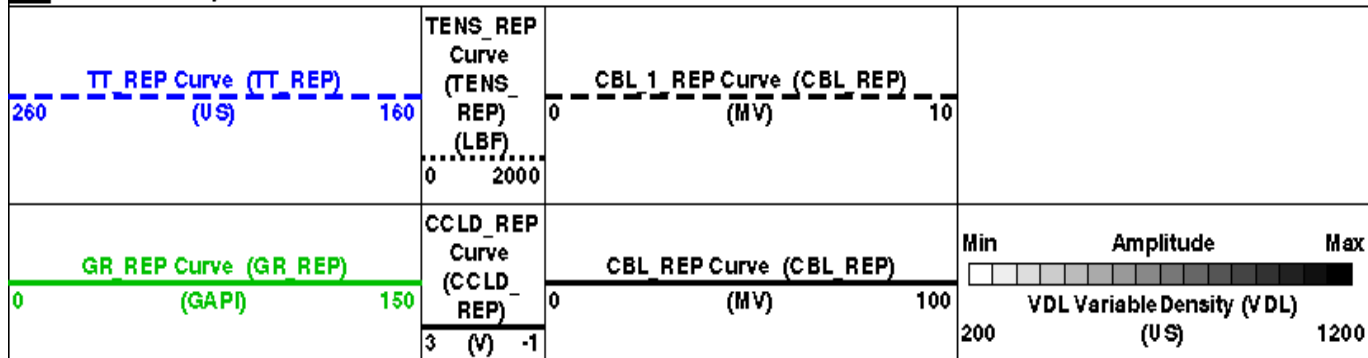
SRPC-5095-H2-2011-OP19

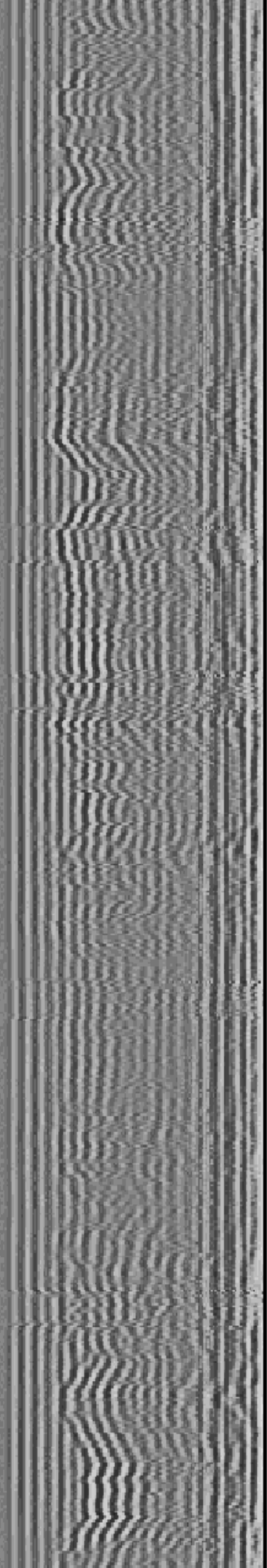
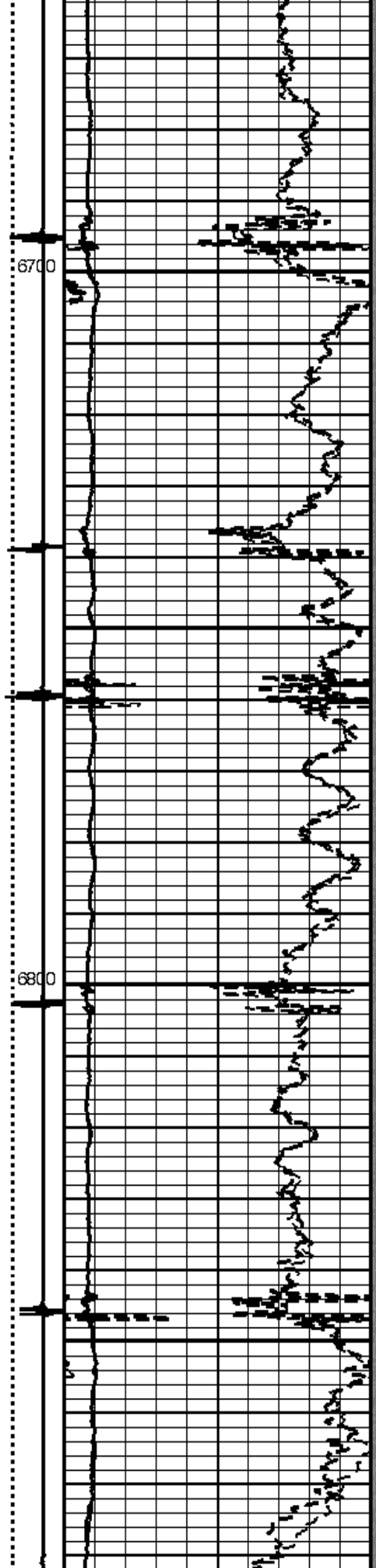
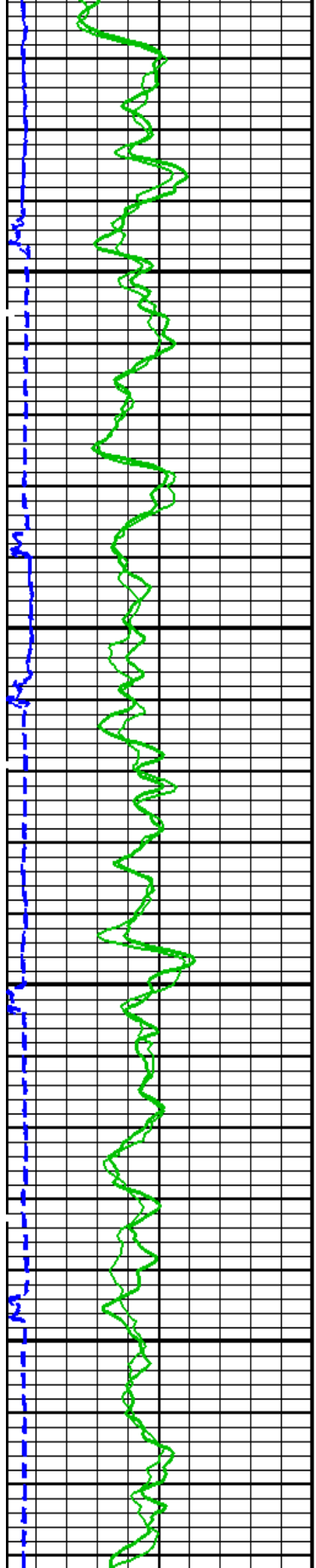
HBMG-B

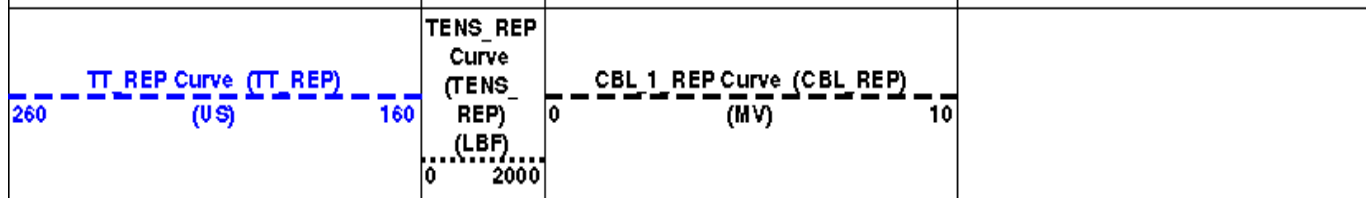
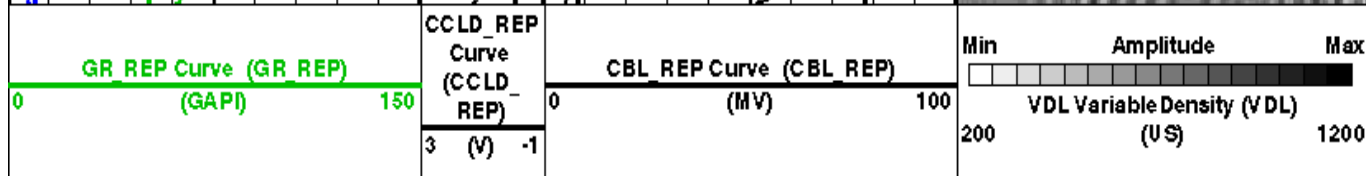
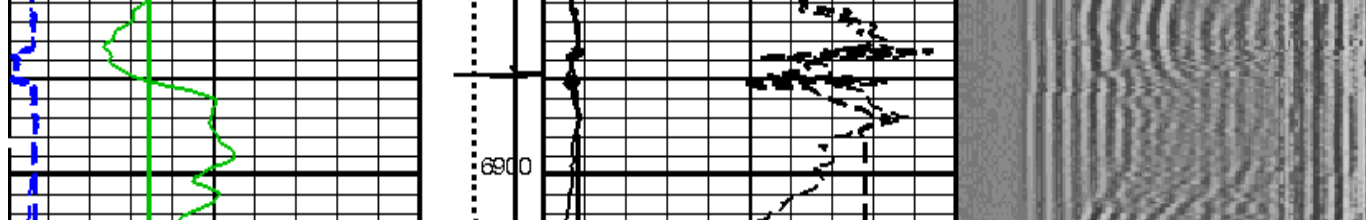
19C0-187

PIP SUMMARY

Time Mark Every 60 S







#### PIP SUMMARY

Time Mark Every 60 S

Format: CBL\_VDL\_REP Vertical Scale: 5" per 100'

Graphics File Created: 13-Jul-2012 08:53

### OP System Version: 19C0-187

SCMT-CB SRPC-5095-H2-2011-OP19 HBMS-B 19C0-187

#### <<< SCMT Cement Evaluation Information Summary >>>

|   |                                 |                              |                           |
|---|---------------------------------|------------------------------|---------------------------|
| Sonde Serial Number                         | SCMS-CB 8179                    |                              |                           |
| Current Casing Size                         | 4.50000 IN                      |                              |                           |
| Casing Weight                               | 11.6000 LB/F                    |                              |                           |
| Expected CBL Amplitude in Free Pipe Section | 80 MV                           | Minimum Sonic Amplitude      | 0.579149 MV (100% Cement) |
|   |                                 |                              | 1.55185 MV (80% Cement)   |
|   |                                 | MAP Minimum Sonic Amplitude  | 4.32284 MV (100% Cement)  |
|   |                                 |                              | 8.10244 MV (80% Cement)   |
| Master Calibration (Normalization)          | Before Calibration (Adjustment) |                              |                           |
| Date of Master Calibration                  | 6-MAR-2012                      |                              |                           |
| CBL Correction Factor                       | 0.0704263                       | CBL Adjustment Factor (CBAF) | 0.900000                  |
| MAP 1 Correction Factor                     | 0.0993191                       | MAP Adjustment Factor (MPAF) | 1.0                       |
| MAP 2 Correction Factor                     | 0.0941329                       |                              |                           |
| MAP 3 Correction Factor                     | 0.101552                        |                              |                           |
| MAP 4 Correction Factor                     | 0.114415                        |                              |                           |
| MAP 5 Correction Factor                     | 0.127992                        |                              |                           |
| MAP 6 Correction Factor                     | 0.121190                        |                              |                           |
| MAP 7 Correction Factor                     | 0.112867                        |                              |                           |
| MAP 8 Correction Factor                     | 0.102913                        |                              |                           |

### Parameters

| DLIS Name                                     | Description  | Value   |    |
|---|--|---------|----|
| SCMT-CB: Slim Cement Mapping Tool, 1-11/16 OD |  |         |    |
| BILI  | Bond Index Level for Zone Isolation                  | 0.8     |    |
| CB3D  | SCMT CBL 3 ft Peak Detection Mode                    | PEAK    |    |
| CB3G  | SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate | 224.559 | US |
| CB3T  | SCMT CBL 3 ft Fixed Threshold Level                  | 20      | MV |
| CB5D  | SCMT CBL 5 ft Peak Detection Mode                    | PEAK    |    |
| CB5G  | SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate | 338.559 | US |
| CB5T  | SCMT CBL 5 ft Fixed Threshold Level                  | 20      | MV |
| CBLG  | CBL Gate Width                                       | 45      | US |
| CBRA  | CBL LQC Reference Amplitude in Free Pipe             | 80      | MV |

|                          |   |           |      |
|--------------------------|---|-----------|------|
| CMCF                     | CBL Cement Type Compensation Factor             | 1         | SCAN |
| CMTC                     | SCMT Slow Channel Multiplexer Mode              | LOG       |      |
| CMTM                     | SCMT Operating Mode                             | VCC       |      |
| CSCS                     | SCMT Slow Channel Index                         | 0.255617  | IN   |
| CTHI                     | Casing Thickness                                | 189       | US/F |
| DTF                      | Delta-T Fluid                                   | 0         | DB/F |
| FATT                     | Acoustic Attenuation due to Fluid               | 0.902782  |      |
| FCF                      | CBL Fluid Compensation Factor                   | 1.55185   | MV   |
| GOBO                     | Good Bond                                       | PEAK      |      |
| MAPD                     | SCMT MAP Peak Detection Mode                    | 167.559   | US   |
| MAPG                     | SCMT MAP Peak Detection T0 Delay and Noise Gate | 30        | MV   |
| MAPT                     | SCMT MAP Fixed Threshold Level                  | 16.5449   | DB/F |
| MATT                     | Maximum Attenuation                             | 1         |      |
| MCCF                     | MAP Cement Type Compensation Factor             | 1.25      | FT   |
| MCI                      | Minimum Cemented Interval for Isolation         | 4.32284   | MV   |
| MMSA                     | MAP Minimum Sonic Amplitude                     | 0.579149  | MV   |
| MSA                      | Minimum Sonic Amplitude                         | OFF       |      |
| PEDE                     | Peak Detection On/Off Switch in Playback        | 5         |      |
| VDLG                     | VDL Manual Gain                                 | 6.8       | MRAY |
| ZCMT                     | Acoustic Impedance of Cement                    |           |      |
| System and Miscellaneous |   |           |      |
| CSZ                      | Current Casing Size                             | 4.500     | IN   |
| CWEI                     | Casing Weight                                   | 11.60     | LB/F |
| DFD                      | Drilling Fluid Density                          | 8.60      | LB/G |
| DO                       | Depth Offset for Playback                       | 4.0       | FT   |
| DORL                     | Depth Offset for Repeat Analysis                | 0.0       | FT   |
| PP                       | Playback Processing                             | RECOMPUTE |      |
| TD                       | Total Depth                                     | 11164     | FT   |

### Input DLIS Files

DEFAULT SCMT\_HBMS\_138LUP FN:127 PRODUCER 13-Jul-2012 05:27 6905.0 FT 6502.0 FT

### Output DLIS Files

DEFAULT SCMT\_HBMS\_143PUP FN:132 PRODUCER 13-Jul-2012 08:53

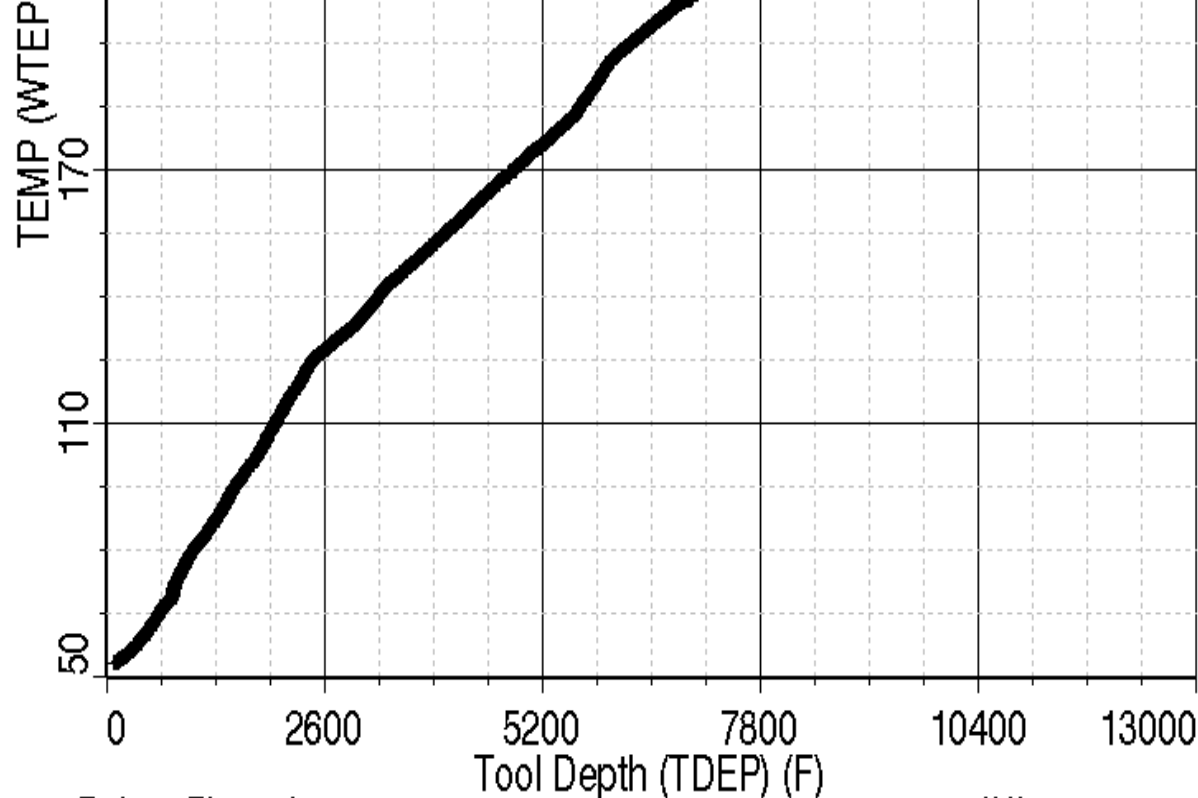
**Schlumberger**

## TEMPERATURE PLOT

MAXIS Field Log

Index: 11174.0 - 96.0 FT





22157 Points Plotted

13-JUL-2012 9:00

**Schlumberger**

**PBMS COEFFICIENTS**

MAXIS Field Log

Client: ENCANA OIL & GAS (USA) INC.

Field: Story Gulch

Well: SG 8514B-22 (N22496)

Run date: 12-Jul-2012

Tool: PSP

Sub Type: PBMS

Sensor: GR

PBMS Gamma Ray

Sonde Serial NB

Sensor Serial NB

Calib Date ddmmyy

Matrix Size

Coeff CRC

RESISTORS FOR GR SENSOR N.34384, TOOL HBMS-BA2880. SENSOR S/N:

34384

160206

12

D8B5

GR HV Rt

Rt\*\*0

Rt\*\*1

Rt\*\*0

+ .200000000000e+04

+ .173000000000e+04

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Client: ENCANA OIL & GAS (USA) INC.  
Field: Story Gulch  
Well: SG 8514B-22 (N22496)  
Run date: 12-Jul-2012

Tool: PSP  
Sub Type: PBMS  
Sensor: WellTemp RTD

---

**PBMS RTD Well Thermometer**

Sonde Serial NB                      COEFFICIENTS FOR RTD THERMOMETER PBMS-B.2880 S/N:  
Sensor Serial NB                      2880  
Calib Date ddmmyy                    260408  
Matrix Size                            16  
Coeff CRC                              A3AF

**WTemp Coeff**

|           | $T^{**0}$            | $T^{**1}$            | $T^{**2}$            |
|-----------|----------------------|----------------------|----------------------|
| $T^{**0}$ | $-.104337336008E+04$ | $+.798824971753E+03$ | $-.251944021281E+03$ |
|           | $T^{**3}$            | $T^{**4}$            | $T^{**5}$            |
| $T^{**0}$ | $+.406192777109E+02$ | $-.240958437264E+01$ | 0.0                  |

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Client: ENCANA OIL & GAS (USA) INC.  
Field: Story Gulch  
Well: SG 8514B-22 (N22496)  
Run date: 12-Jul-2012

Tool: PSP  
Sub Type: PBMS  
Sensor: CQG

---

**PBMS Quartz Gauge type F**

Sonde Serial NB                      COEFFICIENTS FOR CQG PBMS-B.2880 S/N:  
Sensor Serial NB                      2880  
Calib Date ddmmyy                    260408

Calib Date ddmmyy 260408  
 Matrix Size 66  
 Coeff CRC 66B8

Pres Coeff

|       | Fb**0              | Fb**1              | Fb**2              |
|-------|--------------------|--------------------|--------------------|
| Fc**0 | +.694668499013E+04 | +.138137467574E-01 | -.206148488488E-06 |
| Fc**1 | -.104285125976E+01 | -.125721589078E-04 | -.971577899959E-10 |
| Fc**2 | +.101045175546E-05 | +.480801816357E-10 | +.889110474366E-15 |
| Fc**3 | +.127326781620E-11 | +.130693902354E-15 | 0.0                |
| Fc**4 | 0.0                | 0.0                | 0.0                |
| Fc**5 | 0.0                | 0.0                | 0.0                |

|       | Fb**3              | Fb**4              | Fb**5              |
|-------|--------------------|--------------------|--------------------|
| Fc**0 | -.802395356069E-10 | -.148392899370E-14 | -.162952476494E-19 |
| Fc**1 | +.114970383999E-15 | +.186330526680E-19 | 0.0                |
| Fc**2 | 0.0                | 0.0                | 0.0                |
| Fc**3 | 0.0                | 0.0                | 0.0                |
| Fc**4 | 0.0                | 0.0                | 0.0                |
| Fc**5 | 0.0                | 0.0                | 0.0                |

PBMS Quartz Gauge type F

Sonde Serial NB :  
 Sensor Serial NB 2880  
 Calib Date ddmmyy 260408  
 Matrix Size 66  
 Coeff CRC 3690

Temp Coeff

|       | Fc**0              | Fc**1              | Fc**2              |
|-------|--------------------|--------------------|--------------------|
| Fb**0 | +.114978632240E+03 | -.318843725686E-03 | +.651766172344E-08 |
| Fb**1 | -.590205352250E-02 | +.168686572404E-07 | +.162345150354E-12 |
| Fb**2 | -.362996279263E-07 | +.407654559315E-12 | +.452411391342E-17 |
| Fb**3 | -.276281361281E-12 | +.871817059405E-17 | 0.0                |
| Fb**4 | 0.0                | 0.0                | 0.0                |
| Fb**5 | 0.0                | 0.0                | 0.0                |

|       | Fc**3              | Fc**4              | Fc**5              |
|-------|--------------------|--------------------|--------------------|
| Fb**0 | +.199118144093E-13 | -.260997933236E-18 | +.618908211390E-21 |
| Fb**1 | +.250084591851E-17 | +.455070709200E-21 | 0.0                |
| Fb**2 | 0.0                | 0.0                | 0.0                |
| Fb**3 | 0.0                | 0.0                | 0.0                |
| Fb**4 | 0.0                | 0.0                | 0.0                |

|       |     |     |     |
|-------|-----|-----|-----|
| Fb**4 | 0.0 | 0.0 | 0.0 |
| Fb**5 | 0.0 | 0.0 | 0.0 |

PBMS Quartz Gauge type F

Sonde Serial NB :  
 Sensor Serial NB 2880  
 Calib Date ddmmyy 260408  
 Matrix Size 16  
 Coeff CRC 71B5

Clock Freq Coeff

|              | (Fb'-Fc')**0       | (Fb'-Fc')**1       | (Fb'-Fc')**2       |
|--------------|--------------------|--------------------|--------------------|
| (Fb'-Fc')**0 | +.310736316923E+05 | +.273670214709E-02 | +.731815197856E-06 |
|              | (Fb'-Fc')**3       | (Fb'-Fc')**4       | (Fb'-Fc')**5       |
| (Fb'-Fc')**0 | -.654219198492E-10 | -.150585137208E-15 | -.117697151708E-19 |

PBMS Quartz Gauge type F

Sonde Serial NB :  
 Sensor Serial NB 2880  
 Calib Date ddmmyy 260408  
 Matrix Size 16  
 Coeff CRC ECB5

Clock Temp Coeff

|              | (Fb'-Fc')**0       | (Fb'-Fc')**1       | (Fb'-Fc')**2       |
|--------------|--------------------|--------------------|--------------------|
| (Fb'-Fc')**0 | +.116053417872E+03 | -.554118045908E-02 | -.348241454518E-07 |
|              | (Fb'-Fc')**3       | (Fb'-Fc')**4       | (Fb'-Fc')**5       |
| (Fb'-Fc')**0 | +.207992675474E-12 | -.353168788938E-17 | -.345142848607E-21 |










**Schlumberger**

**MASTER CALIBRATION**

MAXIS Field Log

| Measurement  | Nominal | Master | Before | After | Change | Limit | Units |
|--|---------|--------|--------|-------|--------|-------|-------|
| Slim Cement Mapping Tool, 1-11/16 OD Master Calibration - SCMT CBL and MAP Amplitude Normalization in SFT-155/-255 |         |        |        |       |        |       |       |
| Master: 6-Mar-2012 15:06   |         |        |        |       |        |       |       |
| MAP 1 Amplitude Plus   | 1075    | 1208   | -      | -     | -      | -     | MV    |
| MAP 2 Amplitude Plus   | 1075    | 1275   | -      | -     | -      | -     | MV    |
| MAP 3 Amplitude Plus   | 1075    | 1182   | -      | -     | -      | -     | MV    |
| MAP 4 Amplitude Plus   | 1075    | 1049   | -      | -     | -      | -     | MV    |
| MAP 5 Amplitude Plus   | 1075    | 937.6  | -      | -     | -      | -     | MV    |
| MAP 6 Amplitude Plus   | 1075    | 990.2  | -      | -     | -      | -     | MV    |
| MAP 7 Amplitude Plus   | 1075    | 1063   | -      | -     | -      | -     | MV    |
| MAP 8 Amplitude Plus   | 1075    | 1166   | -      | -     | -      | -     | MV    |
| CBL Amplitude Plus   | 1350    | 1363   | -      | -     | -      | -     | MV    |

| Slim Cement Mapping Tool, 1-11/16 OD / Equipment Identification |           |      |  |
|---|-----------|------|--|
| Primary Equipment:  |           |      |  |
| Slim Cement Mapping Xmitter Electronics                         | SCMX - CA |      |  |
| Slim Cement Mapping Sonde                                       | SCMS - CB | 8179 |  |
| Slim Cement Mapping Cartridge                                   | SCMC - CA | 8172 |  |
| Auxiliary Equipment:  |           |      |  |
| Slim Electronics Cartridge Housing                              | SECH - CA |      |  |

| Slim Cement Mapping Tool, 1-11/16 OD Master Calibration  |   |           |           |           |   |           |       |
|--|---|-----------|-----------|-----------|---|-----------|-------|
| SCMT CBL and MAP Amplitude Normalization in SFT-155/-255 |   |           |           |           |   |           |       |
| Phase  | MAP 1 Amplitude Plus MV   |           | Value     | Phase     | MAP 2 Amplitude Plus MV   |           | Value |
| Master   |    |           | 1208      | Master    |    |           | 1275  |
|  | 500.0   | 1075      | 1650      | 500.0     | 1075  | 1650      |       |
|  | (Minimum)   | (Nominal) | (Maximum) | (Minimum) | (Nominal)   | (Maximum) |       |
| Phase  | MAP 3 Amplitude Plus MV   |           | Value     | Phase     | MAP 4 Amplitude Plus MV   |           | Value |
| Master   |  |           | 1182      | Master    |  |           | 1049  |
|  | 500.0   | 1075      | 1650      | 500.0     | 1075  | 1650      |       |
|  | (Minimum)   | (Nominal) | (Maximum) | (Minimum) | (Nominal)   | (Maximum) |       |
| Phase  | MAP 5 Amplitude Plus MV   |           | Value     | Phase     | MAP 6 Amplitude Plus MV   |           | Value |
| Master   |  |           | 937.6     | Master    |  |           | 990.2 |
|  | 500.0   | 1075      | 1650      | 500.0     | 1075  | 1650      |       |
|  | (Minimum)   | (Nominal) | (Maximum) | (Minimum) | (Nominal)   | (Maximum) |       |
| Phase  | MAP 7 Amplitude Plus MV   |           | Value     | Phase     | MAP 8 Amplitude Plus MV   |           | Value |
| Master   |  |           | 1063      | Master    |  |           | 1166  |
|  | 500.0   | 1075      | 1650      | 500.0     | 1075  | 1650      |       |
|  | (Minimum)   | (Nominal) | (Maximum) | (Minimum) | (Nominal)   | (Maximum) |       |
| Phase  | CBL Amplitude Plus MV   |           | Value     |           |   |           |       |
| Master   |  |           | 1363      |           |   |           |       |
|  | 1000  | 1350      | 1700      |           |   |           |       |
|  | (Minimum)   | (Nominal) | (Maximum) |           |   |           |       |
| Master: 6-Mar-2012 15:06                                 |   |           |           |           |   |           |       |

Company: **ENCANA OIL & GAS (USA) INC.**

**Schlumberger**

Well: **SG 8511E-22 (N22496)**

Field: **Story Gulch**

County: **Garfield**

State: **Colorado**

SLIM CEMENT MAPPING TOOL

CBL - VDL

GAMMA RAY - CCL