

Company: ENCANA OIL & GAS (USA) INC.

Well: TWIN CREEK 12-6A1 (F12E)

Field: MAMM CREEK

County: GARFIELD State: COLORADO

CEMENT BOND LOG  
CBL- VDL  
GAMMA RAY - CCL

County: GARFIELD

Field: MAMM CREEK

Location: SHL: 2515' FNL & 1615' FWL

Well: TWIN CREEK 12-6A1

Company: ENCANA OIL & GAS (USA) INC.

| LOCATION  |  |
|---|--|
| SHL: 2515' FNL & 1615' FWL<br>BHL: 1610' FNL & 2025' FWL  | Elev.: K.B. 6166.80 ft<br>G.L. 6144.80 ft<br>D.F. 6165.80 ft |
| Permanent Datum: _____<br>Log Measured From: KELLY BUSHING<br>Drilling Measured From: KELLY BUSHING | Elev.: 6144.80 ft<br>22.00 ft above Perm. Datum              |
| API Serial No.<br>05-045-20394-0000   | Section 12<br>Township 7S<br>Range 92W                       |

|                               |             |                         |  |
|-------------------------------|-------------|-------------------------|--|
| Logging Date                  | 13-May-2012 |                         |  |
| Run Number                    | TWO         |                         |  |
| Depth Driller                 | 5670 ft     |                         |  |
| Schlumberger Depth            | 5602 ft     |                         |  |
| Bottom Log Interval           | 5596 ft     |                         |  |
| Top Log Interval              | 200 ft      |                         |  |
| Casing Fluid Type             | FRESH WATER |                         |  |
| Salinity                      |             |                         |  |
| Density                       | 8.4 lbm/gal |                         |  |
| Fluid Level                   | 22 ft       |                         |  |
| BIT/CASING/TUBING STRING      |             |                         |  |
| Bit Size                      | 6.125 in    |                         |  |
| From                          | 22 ft       |                         |  |
| To                            | 5670 ft     |                         |  |
| Casing/Tubing Size            | 4.500 in    |                         |  |
| Weight                        | 11.6 lbm/ft |                         |  |
| Grade                         | S80         |                         |  |
| From                          | 22 ft       |                         |  |
| To                            | 5649 ft     |                         |  |
| Maximum Recorded Temperatures | 159 degF    |                         |  |
| Logger On Bottom              | 13-May-2012 | Time 10:44              |  |
| Unit Number                   | 391         | Location GRAND JUNCTION |  |
| Recorded By                   | DAVID PATE  |                         |  |
| Witnessed By                  | UNATTENDED  |                         |  |

|                               |  |  |  |         |       |       |
|-------------------------------|--|--|--|---------|-------|-------|
| PVT DATA                      |  |  |  | Run 1   | Run 2 | Run 3 |
| Oil Density                   |  |  |  |         |       |       |
| Water Salinity                |  |  |  |         |       |       |
| Gas Gravity                   |  |  |  |         |       |       |
| Bo                            |  |  |  |         |       |       |
| Bw                            |  |  |  |         |       |       |
| 1/Bg                          |  |  |  |         |       |       |
| 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: 13-MAY-2012 11:33:26

|                        |
|------------------------|
| Depth System Equipment |
|------------------------|

| Depth Measuring Device    |             | Tension Device                |            | Logging Cable  |          |
|---------------------------|-------------|-------------------------------|------------|--|----------|
| Type:                     | IDW-B       | Type:                         | CMTD-C     | Type:  | 1-25ZT   |
| Serial Number:            | 5913        | Serial Number:                | 5032       | Serial Number:   | 391      |
| Calibration Date:         | 30-SEP-2011 | Calibration Date:             | 2-MAY-2012 | Length:  | 18400 FT |
| Calibrator Serial Number: | 33          | Calibrator Serial Number:     | 1159       | <hr/> Conveyance Method: Wireline<br>Rig Type: Rigless |          |
| Calibration Cable Type:   | 1-25ZT      | Number of Calibration Points: | 10         |  |          |
| Wheel Correction 1:       | -5          | Calibration RMS:              | 8          |  |          |
| Wheel Correction 2:       | -5          | Calibration Peak Error:       | 4          |  |          |

|                          |  |
|--------------------------|--|
| Depth Control Parameters |  |
|--------------------------|--|

|                           |                            |
|---------------------------|----------------------------|
| Log Sequence:             | Subsequent Log In the Well |
| Reference Log Name:       | CEMENT BOND LOG            |
| Reference Log Run Number: | TWO                        |
| Reference Log Date:       | 28-APR-2012                |

|                       |  |
|-----------------------|--|
| Depth Control Remarks |  |
|-----------------------|--|

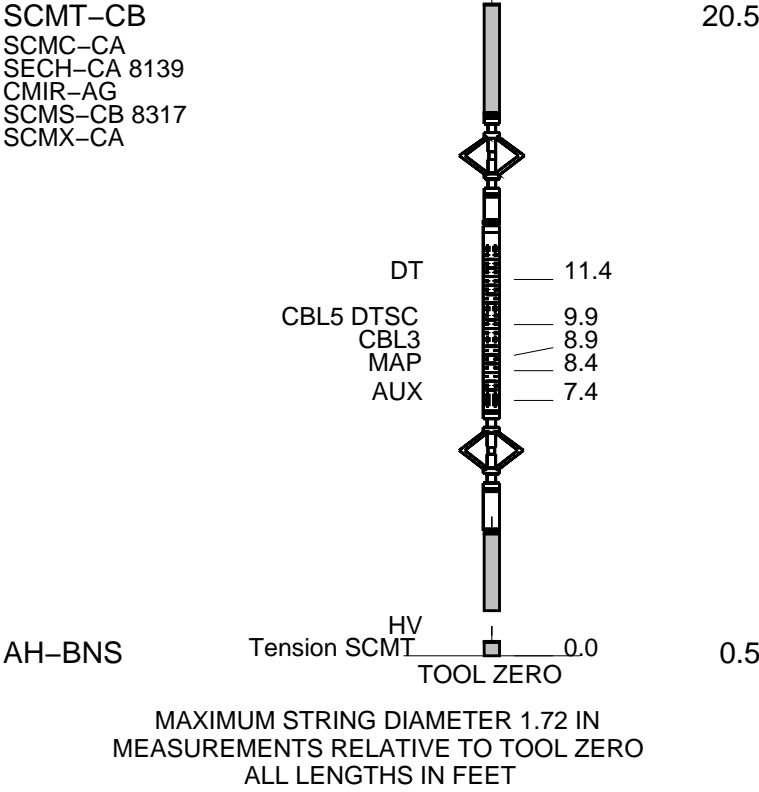
- |   |
|---|
| <ol style="list-style-type: none"><li>1. ALL SCHLUMBERGER DEPTH CONTROL POLICIES APPLIED</li><li>2. IDW USED AS PRIMARY DEPTH REFERENCE, Z-CHART USED AS SECONDARY.</li><li>3.</li><li>4.</li><li>5.</li><li>6.</li></ol> |
|---|

DISCLAIMER

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|  |                       |
|--|-----------------------|
| OTHER SERVICES1  | OTHER SERVICES2       |
| OS1: RST   | OS1:                  |
| OS2:   | OS2:                  |
| OS3:   | OS3:                  |
| OS4:   | OS4:                  |
| OS5:   | OS5:                  |
| REMARKS: RUN NUMBER 1  | REMARKS: RUN NUMBER 2 |
| THIS LOG CORRELATED TO CEMENT BOND LOG RAN ON 28-APR-2012 BY SCHLUMBERGER. |                       |
| TOOL RAN AS PER TOOL SKETCH.   |                       |
|  |                       |
| TD TAGGED AT: 5602FT   |                       |
| MAXIMUM RECORDED PRESSURE: 2318 PSIA                                       |                       |
| MAXIMUM RECORDED TEMPERATURE: 159 DEGF                                     |                       |
| SHORT JOINTS: 3630 FT & 4640 FT  |                       |





Schlumberger

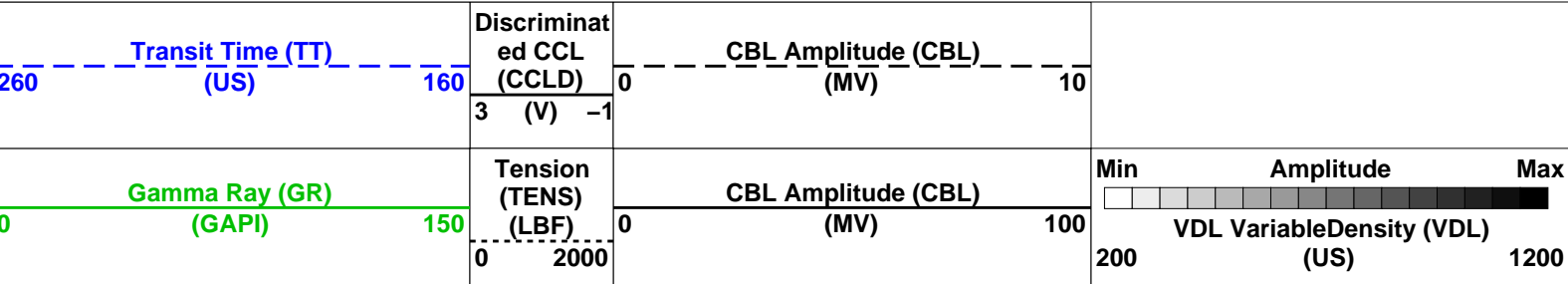
MAIN PASS 0 PSI

MAXIS Field Log

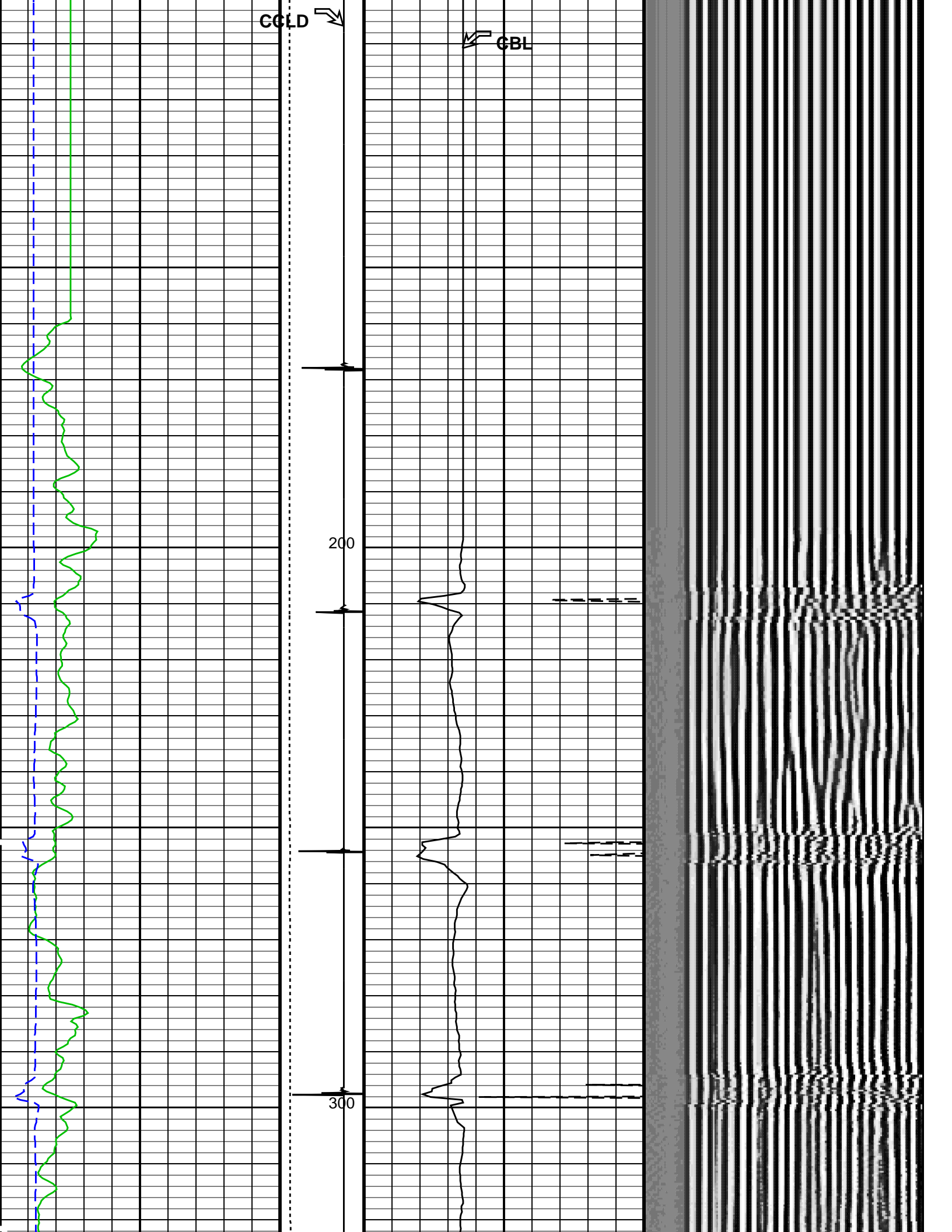
Company: ENCANA OIL & GAS (USA) INC. Well: TWIN CREEK 12-6A1 (F12E)

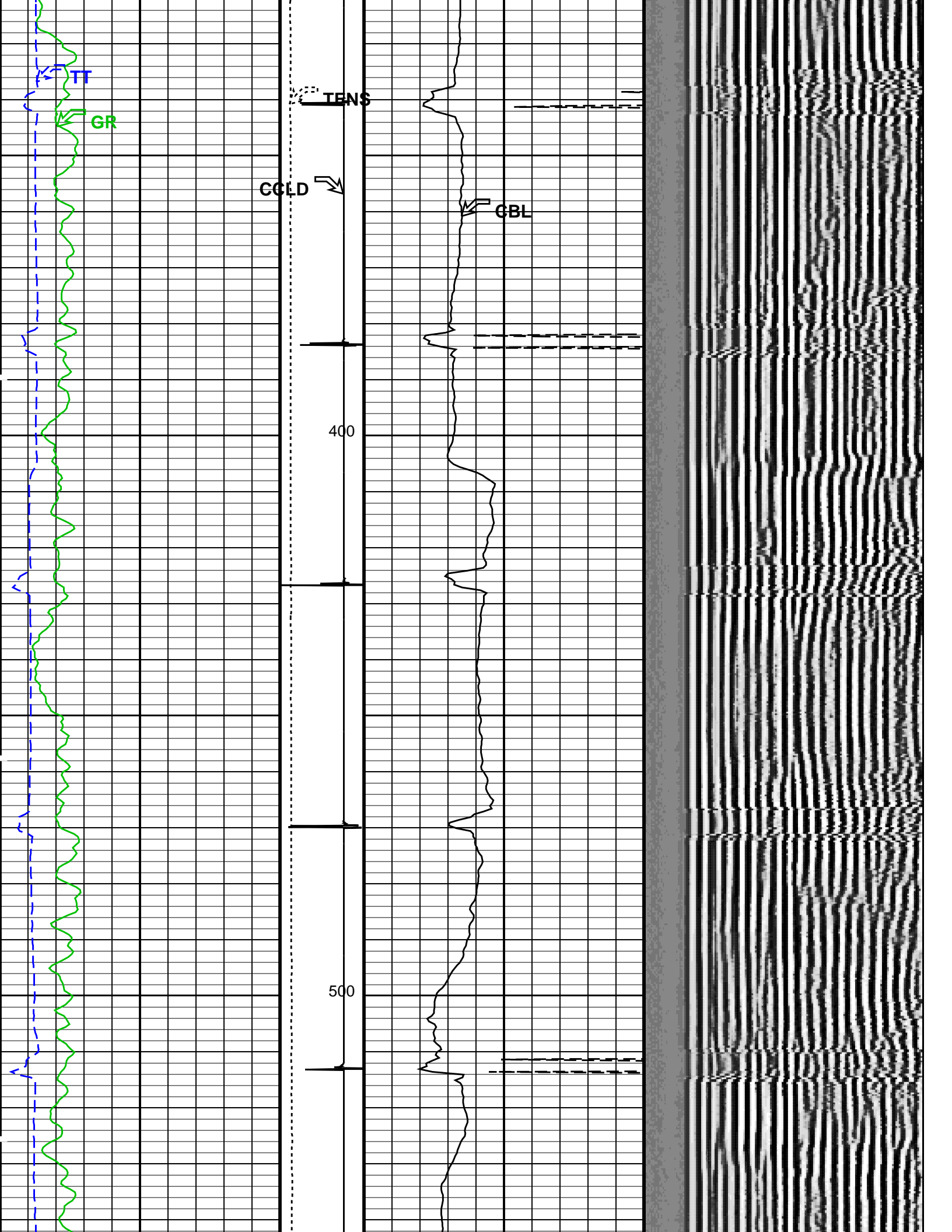
| Input DLIS Files            |                     |       |          |                   |           |          |
|-----------------------------|---------------------|-------|----------|-------------------|-----------|----------|
| DEFAULT                     | SCMT_RST_PSP_048PUP | FN:47 | PRODUCER | 13-May-2012 14:23 | 5612.0 FT | 101.5 FT |
| Output DLIS Files           |                     |       |          |                   |           |          |
| DEFAULT                     | SCMT_RST_PSP_064PUP | FN:63 | PRODUCER | 14-May-2012 19:39 | 5612.0 FT | 101.5 FT |
| OP System Version: 18C0-147 |                     |       |          |                   |           |          |
| SCMT-CB                     | HFE-4028-IFLEX      |       | RST-C    | 18C0-147          |           |          |
| PSPT-A                      | HFE-4028-IFLEX      |       |          |                   |           |          |

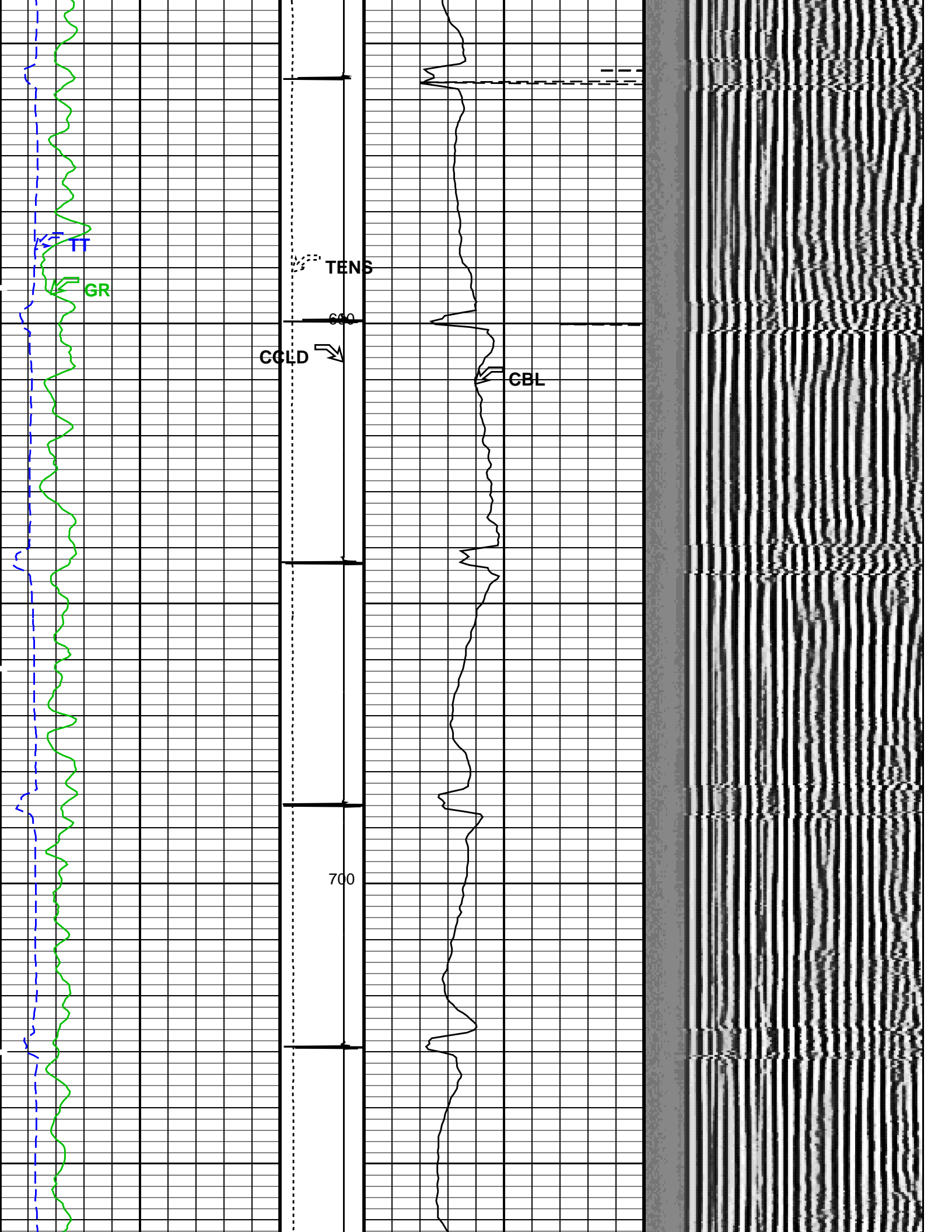
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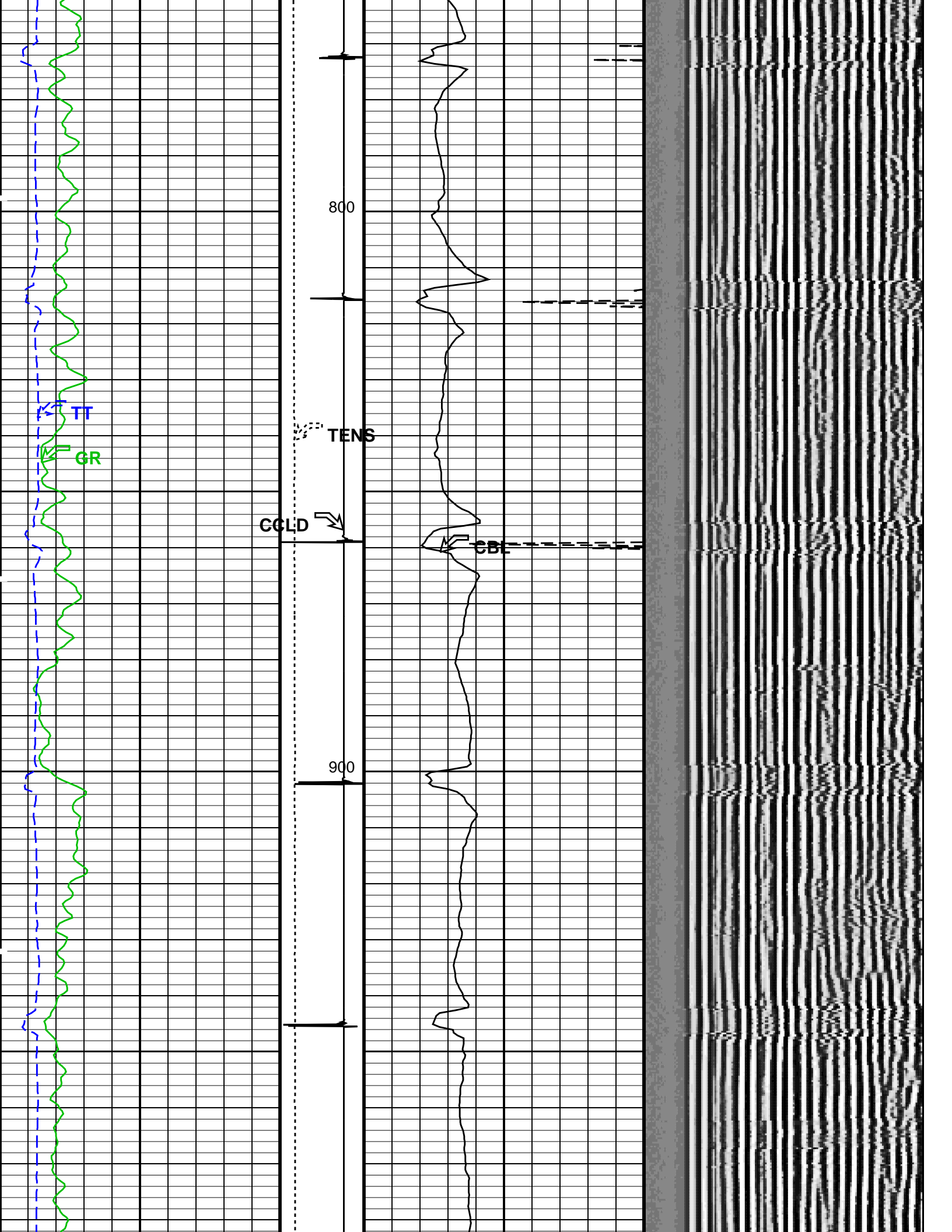


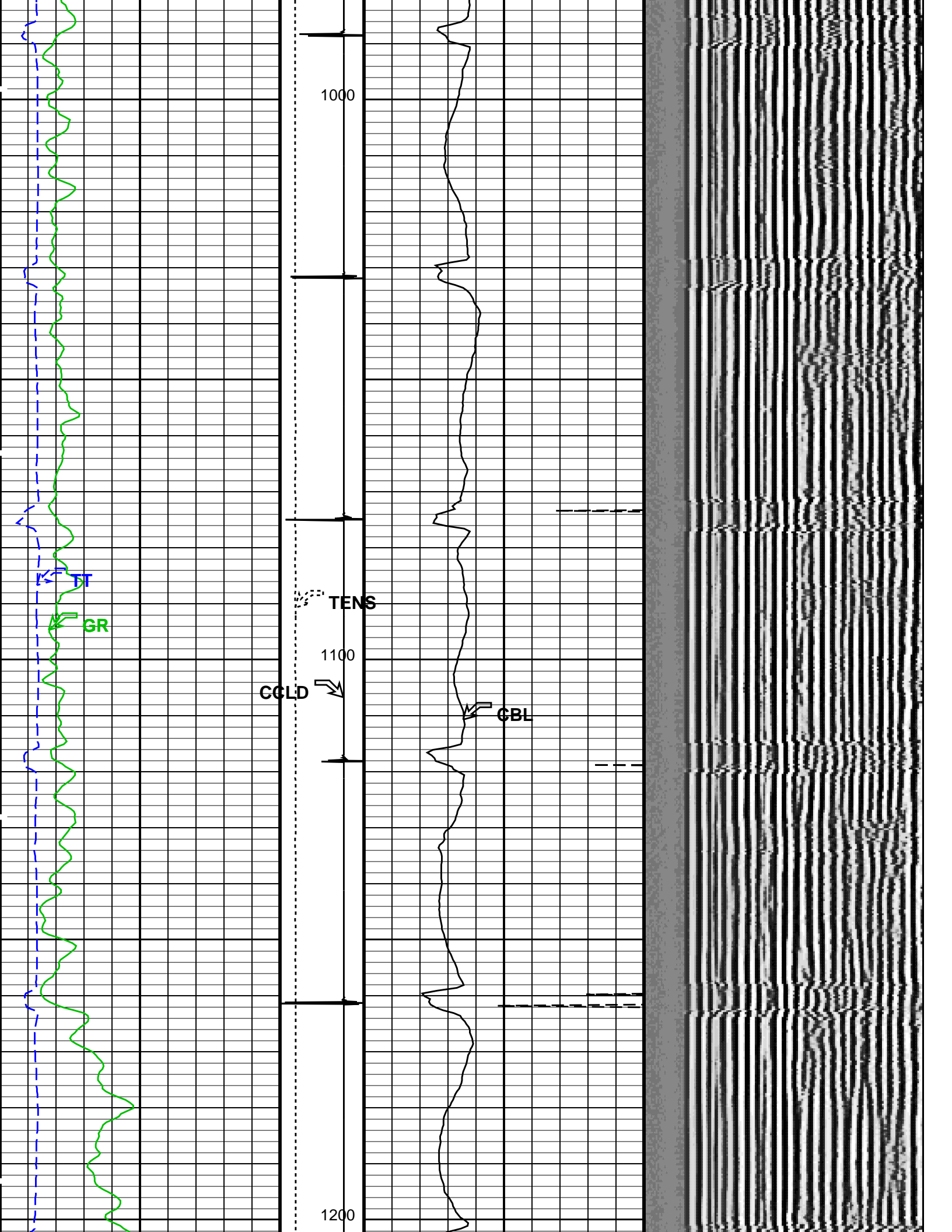




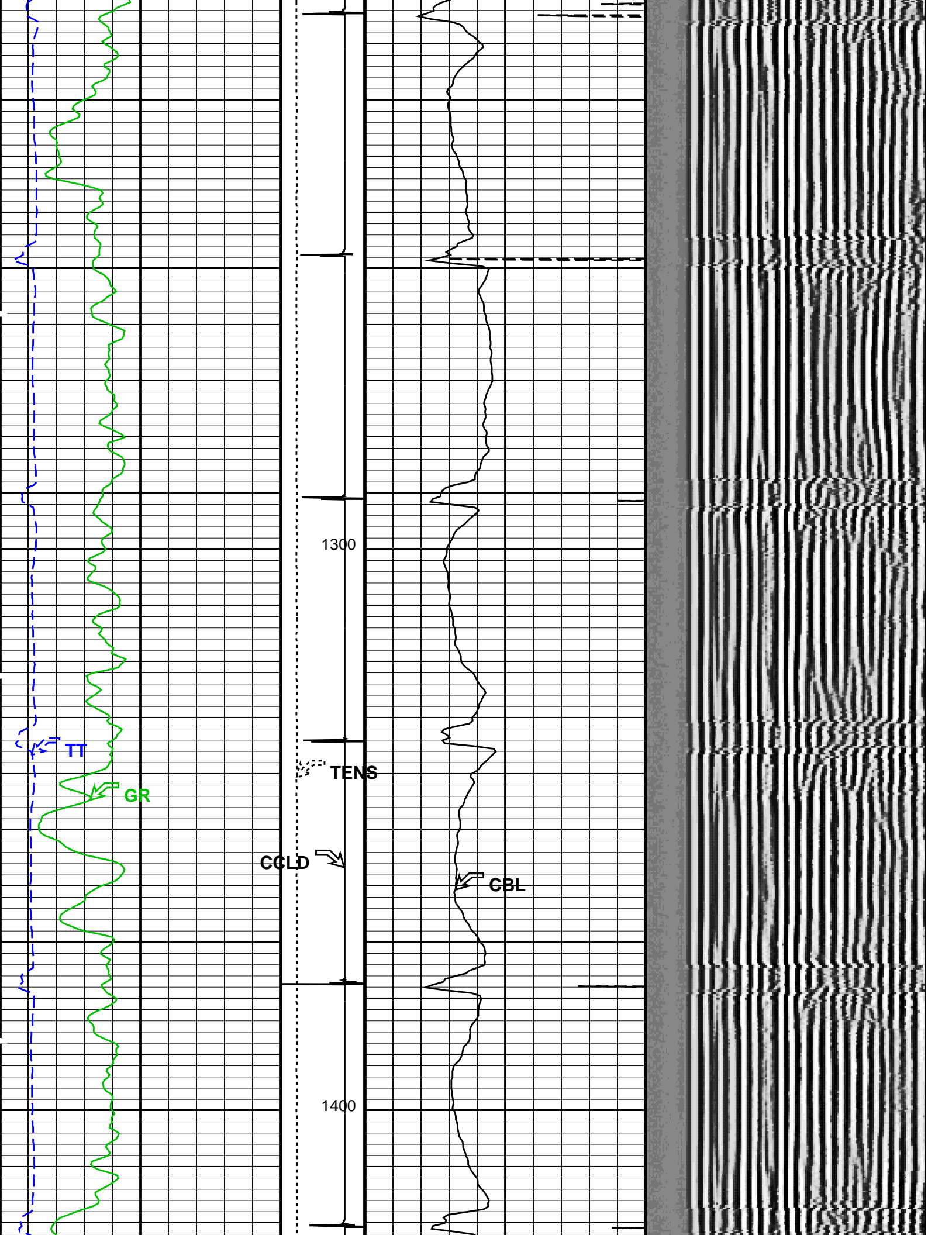


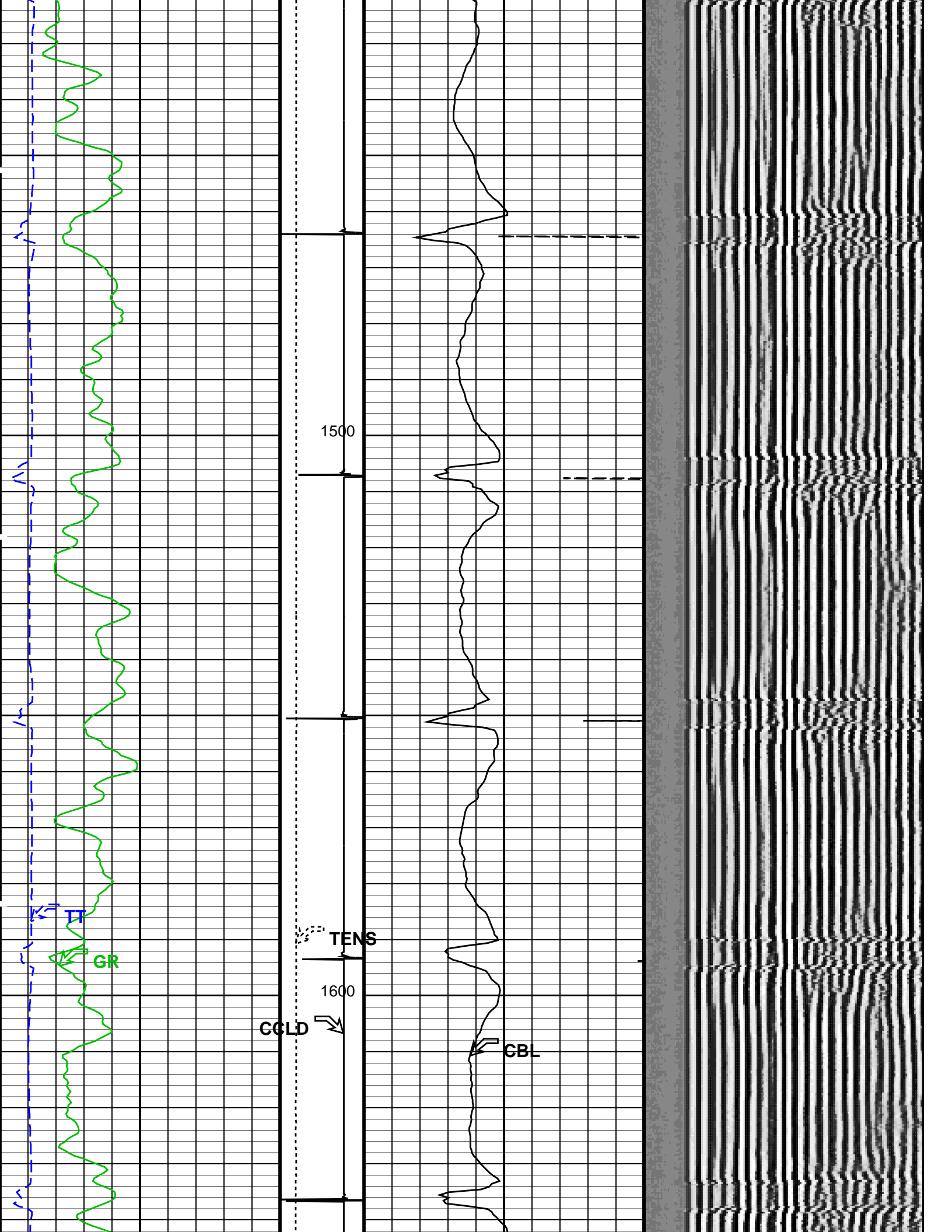


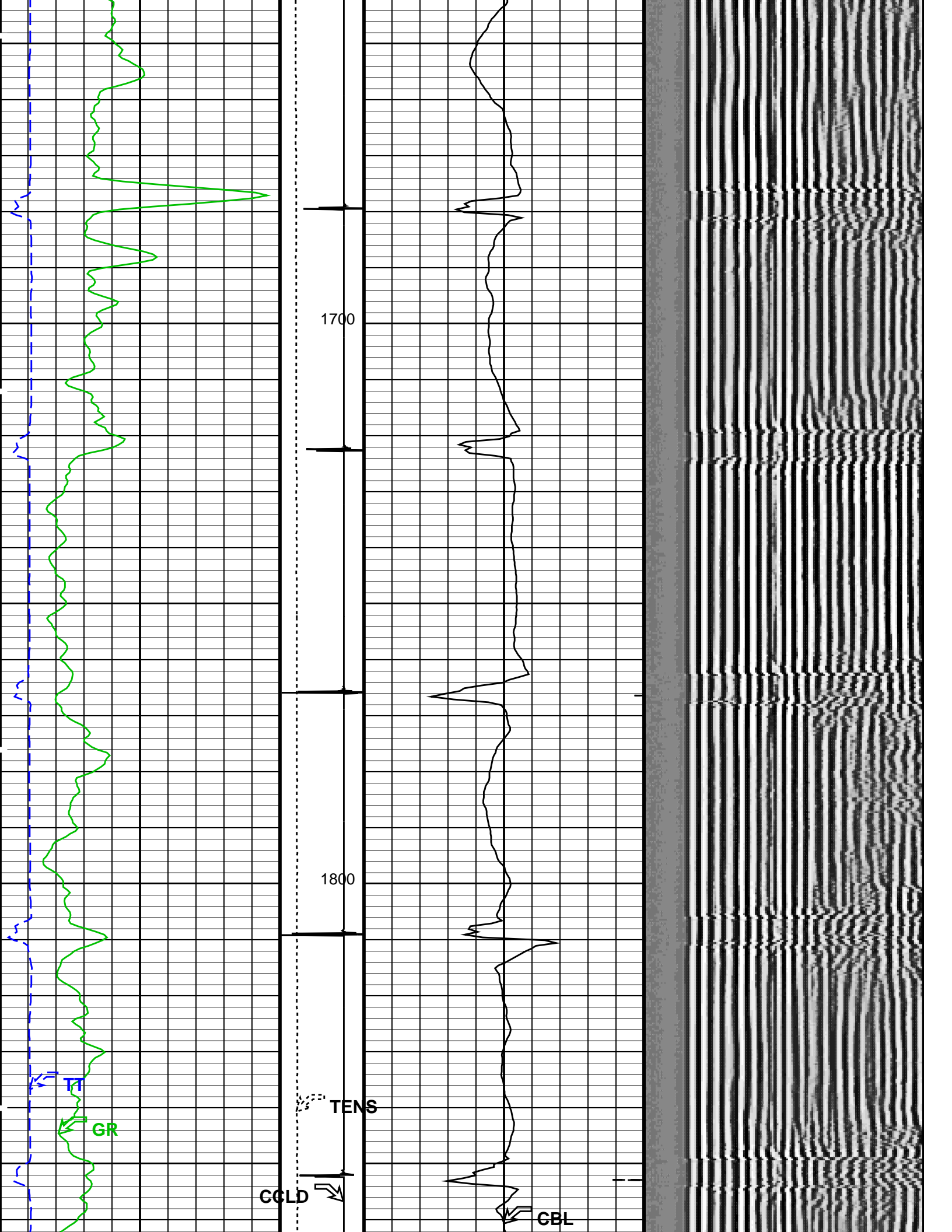




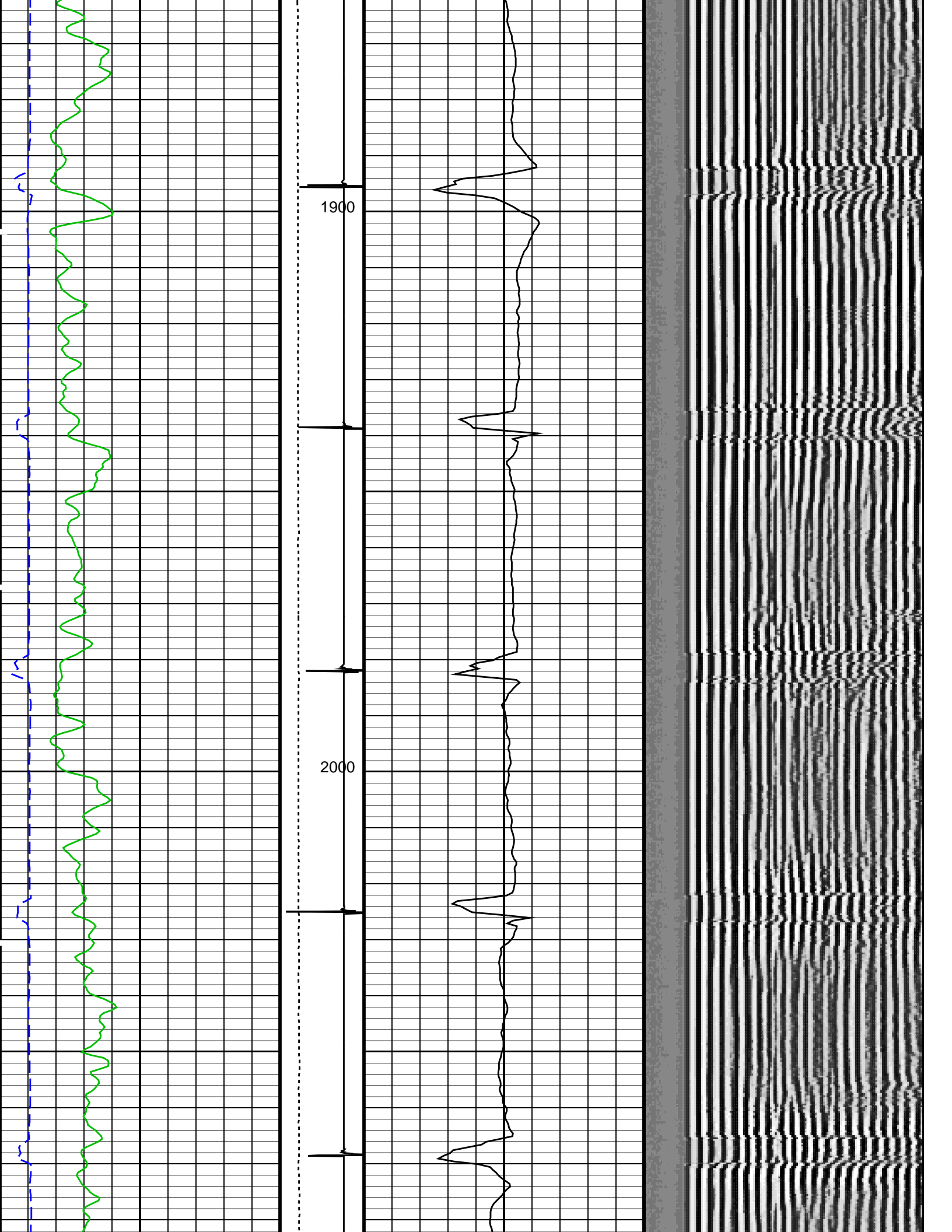


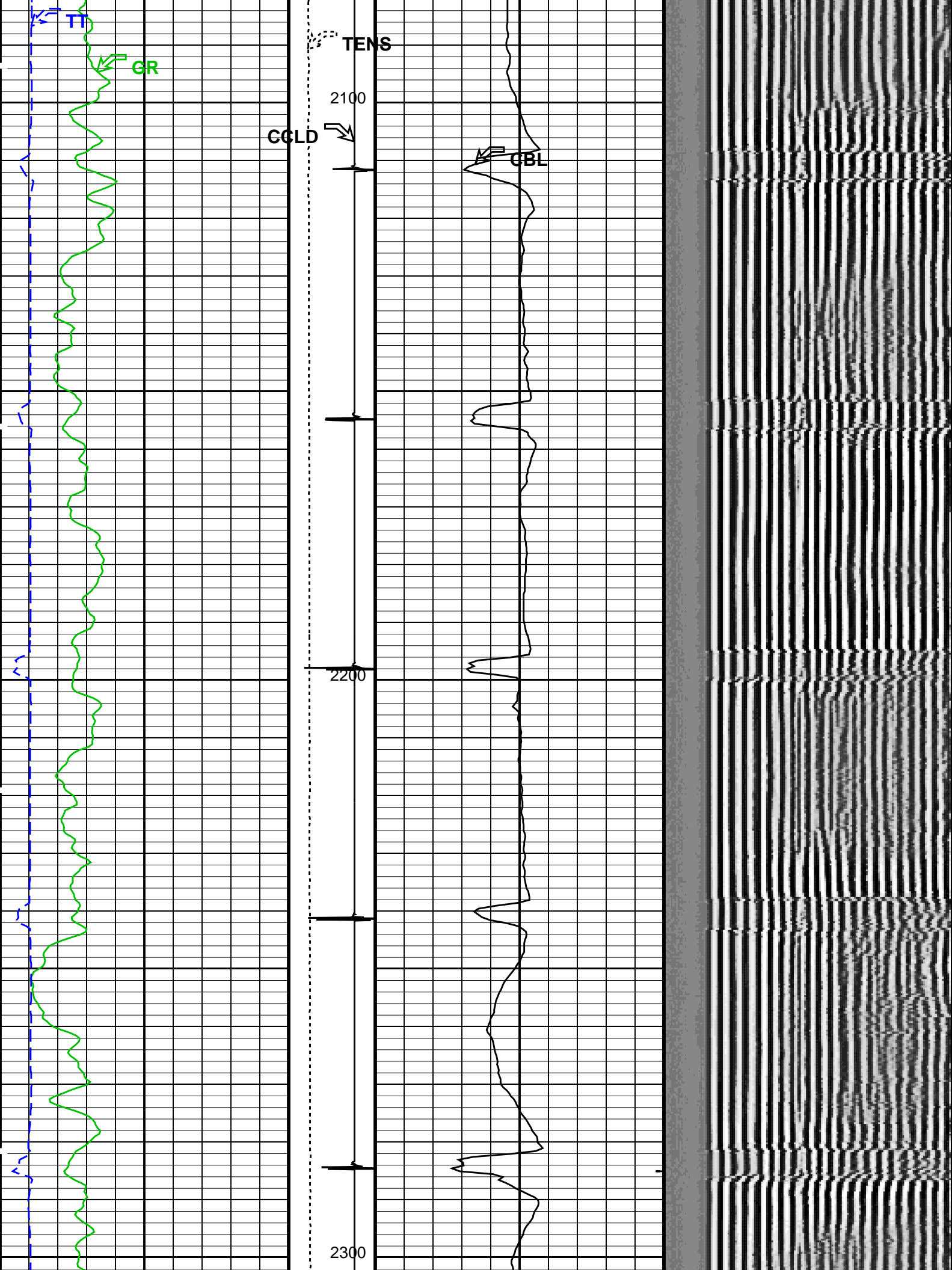


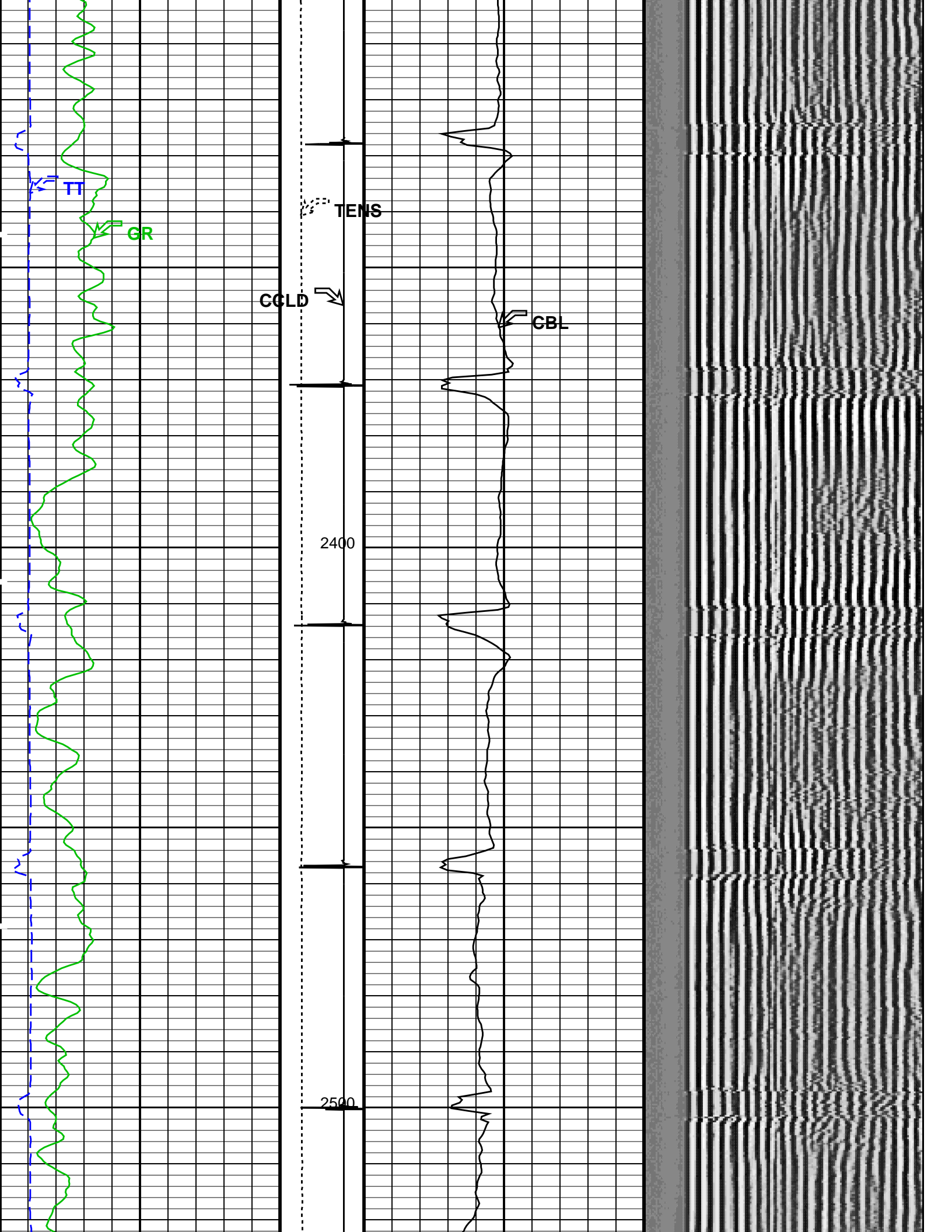


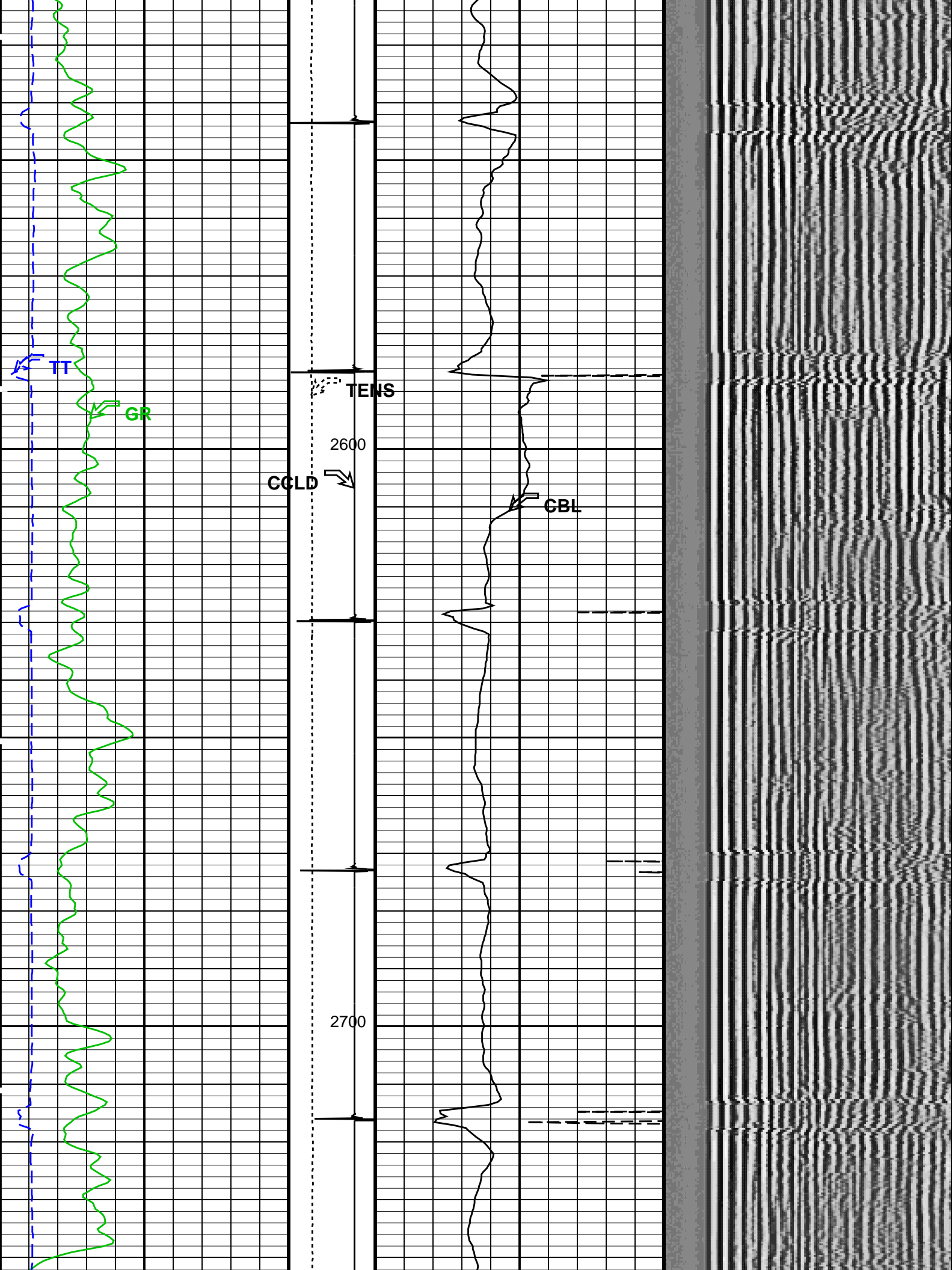




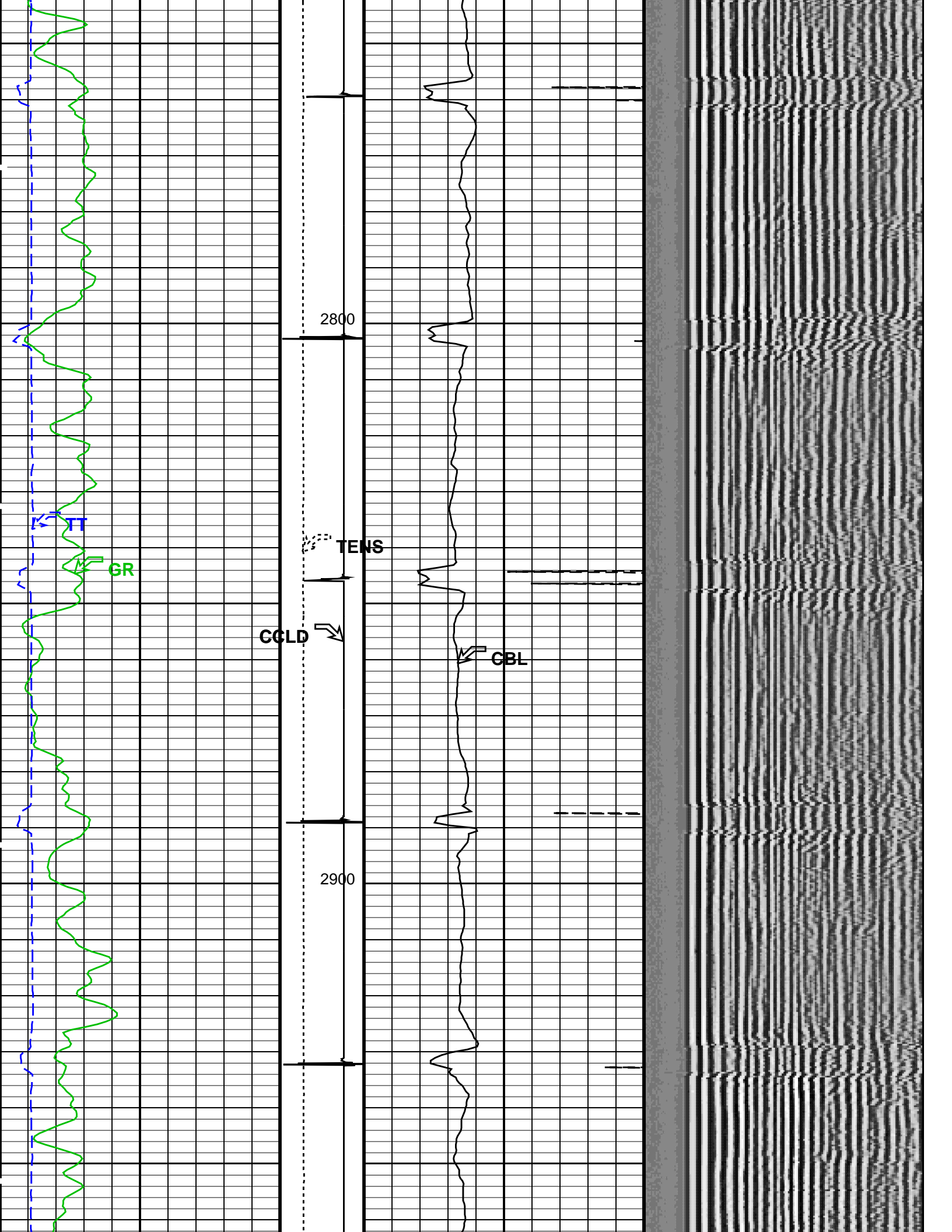


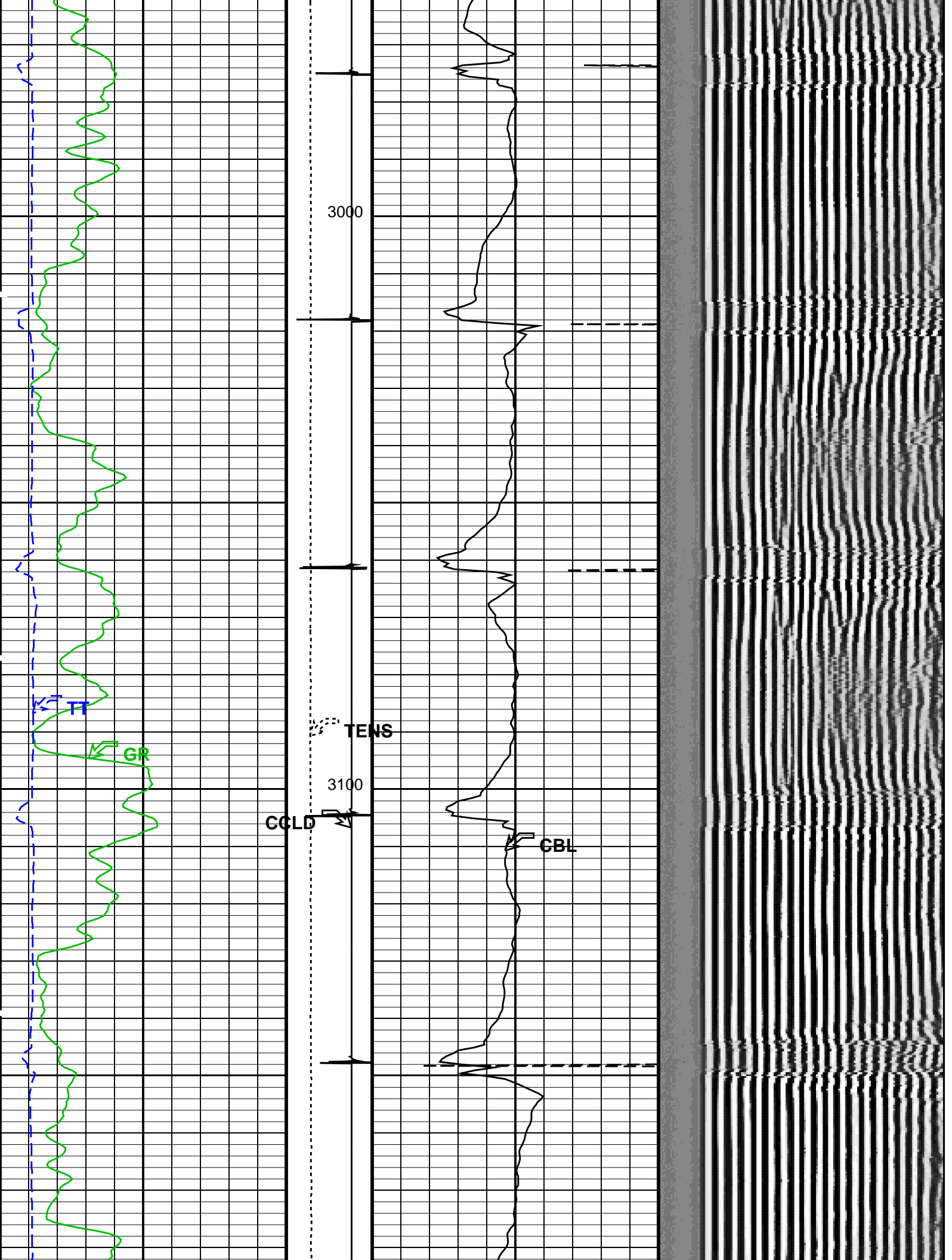


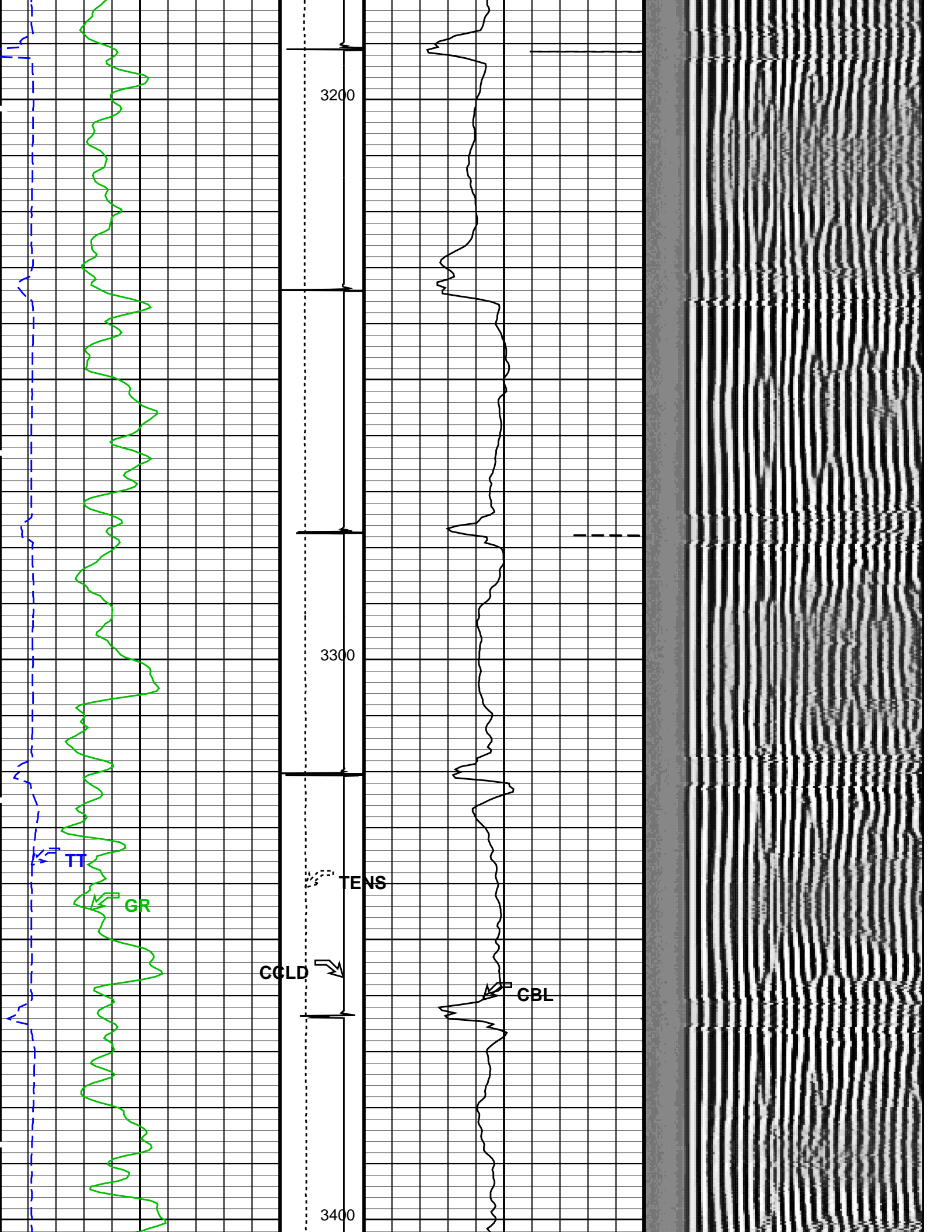


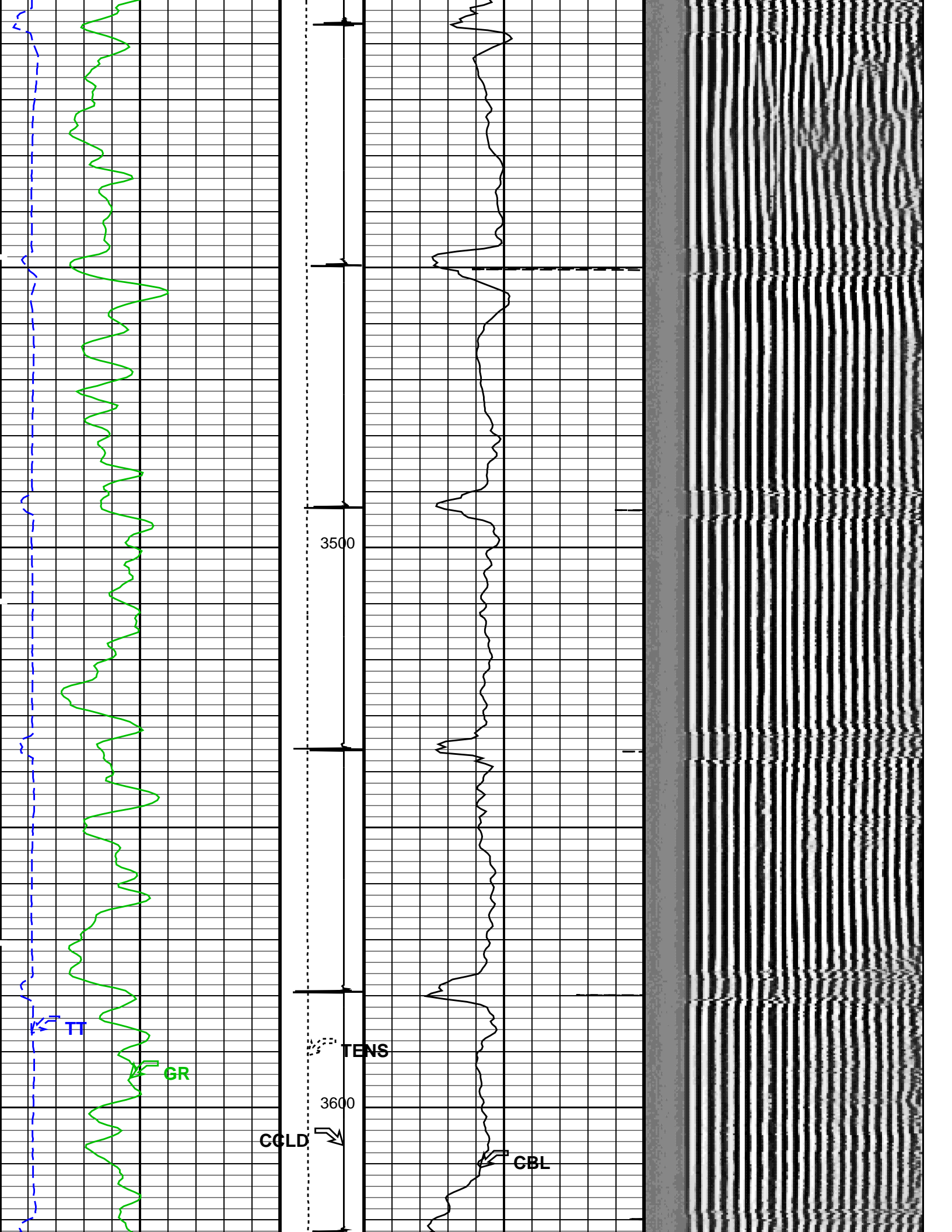




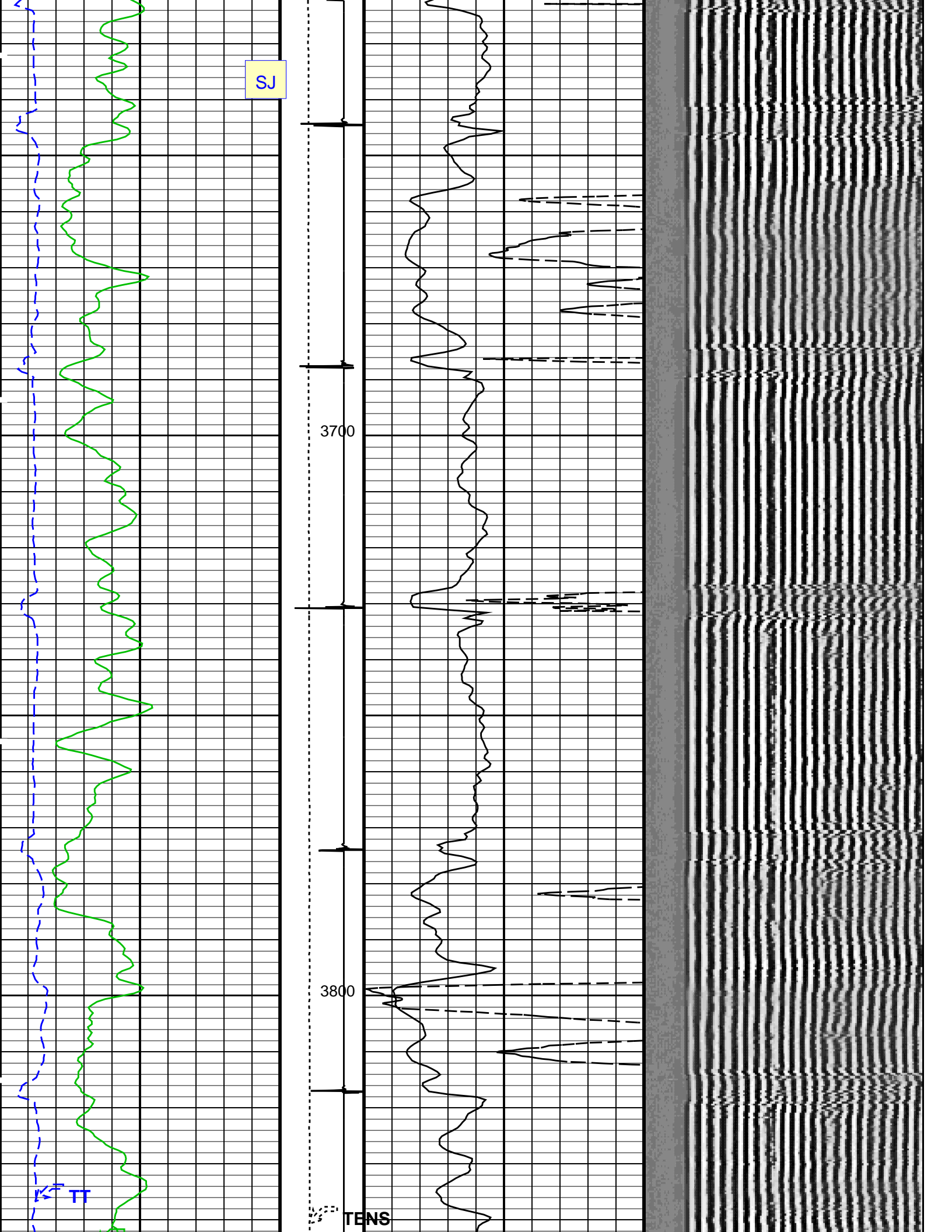


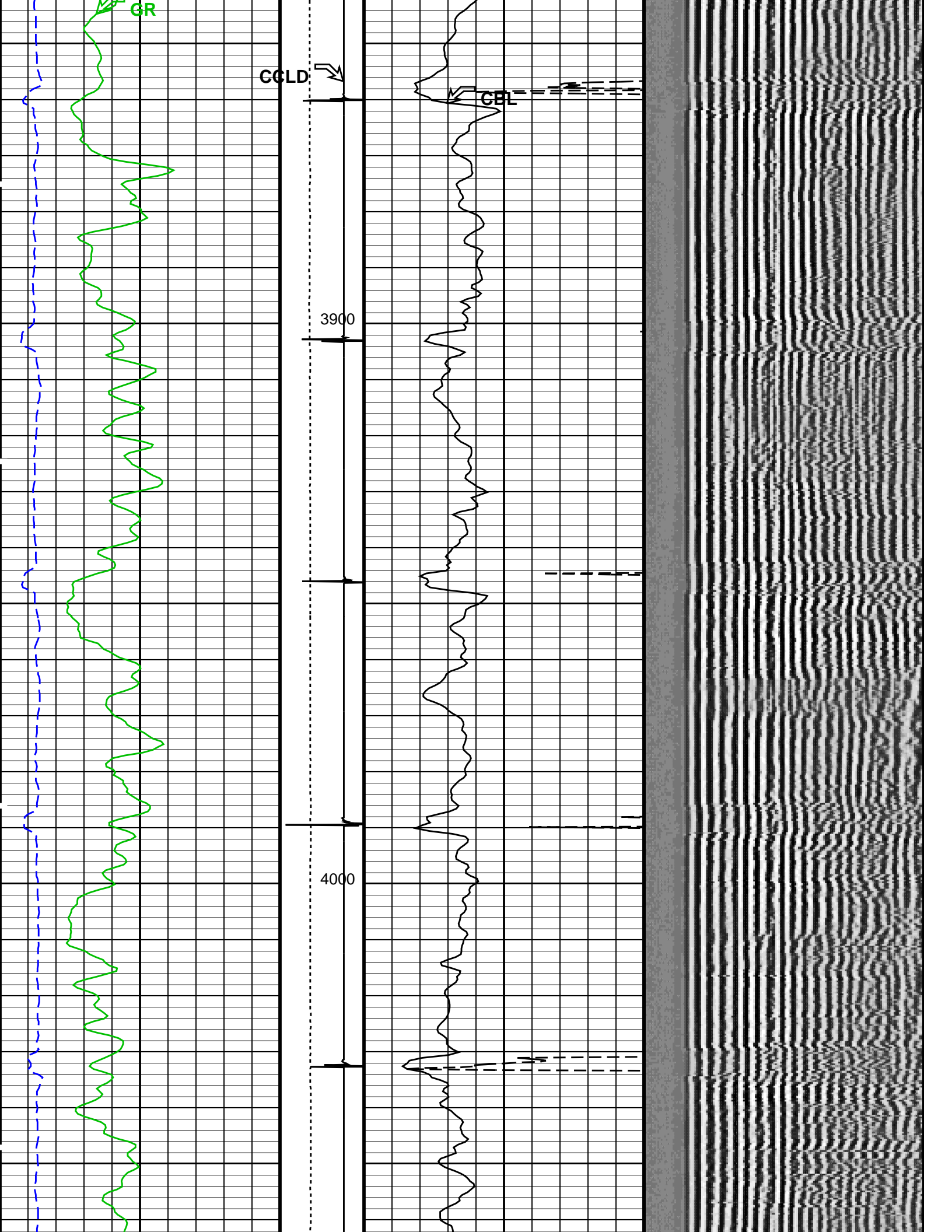


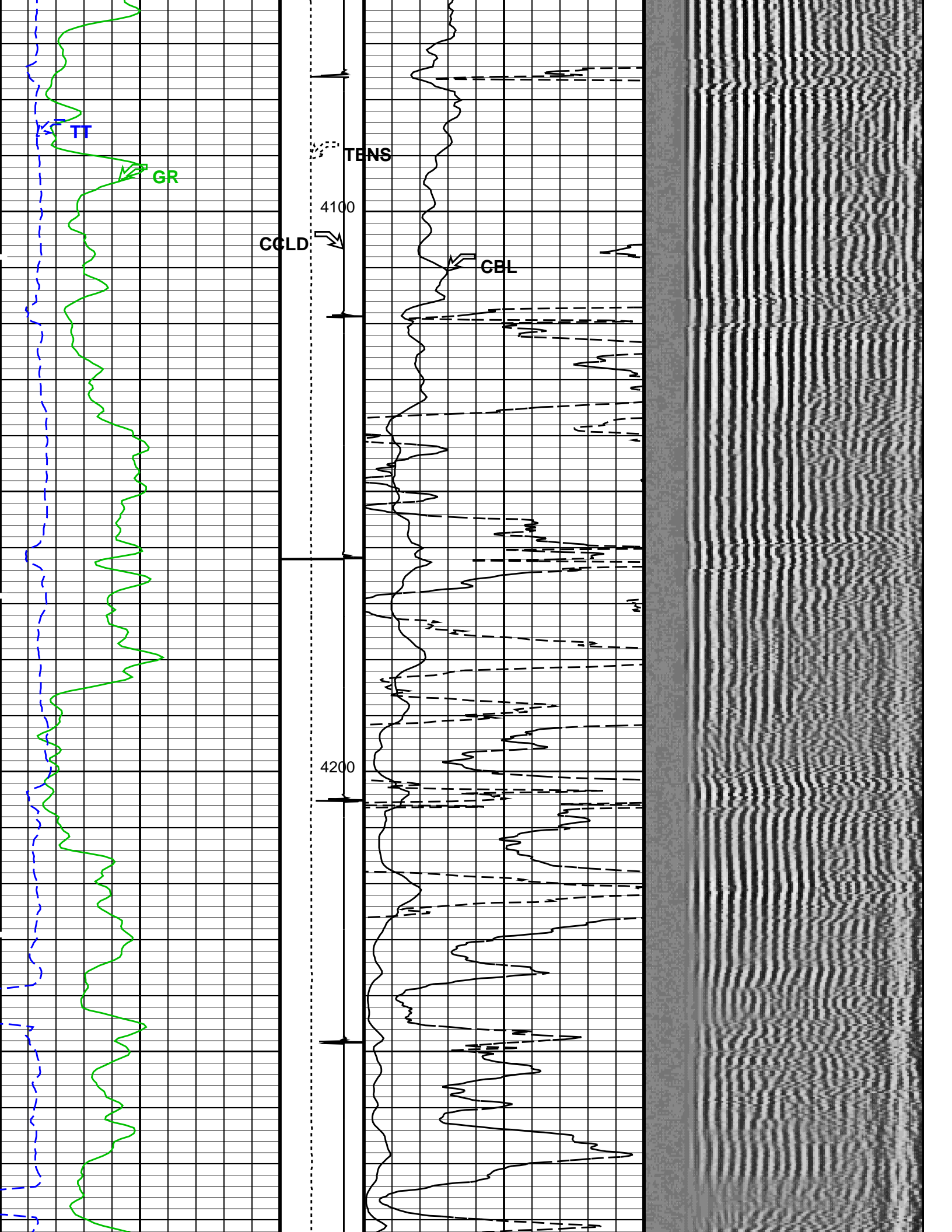


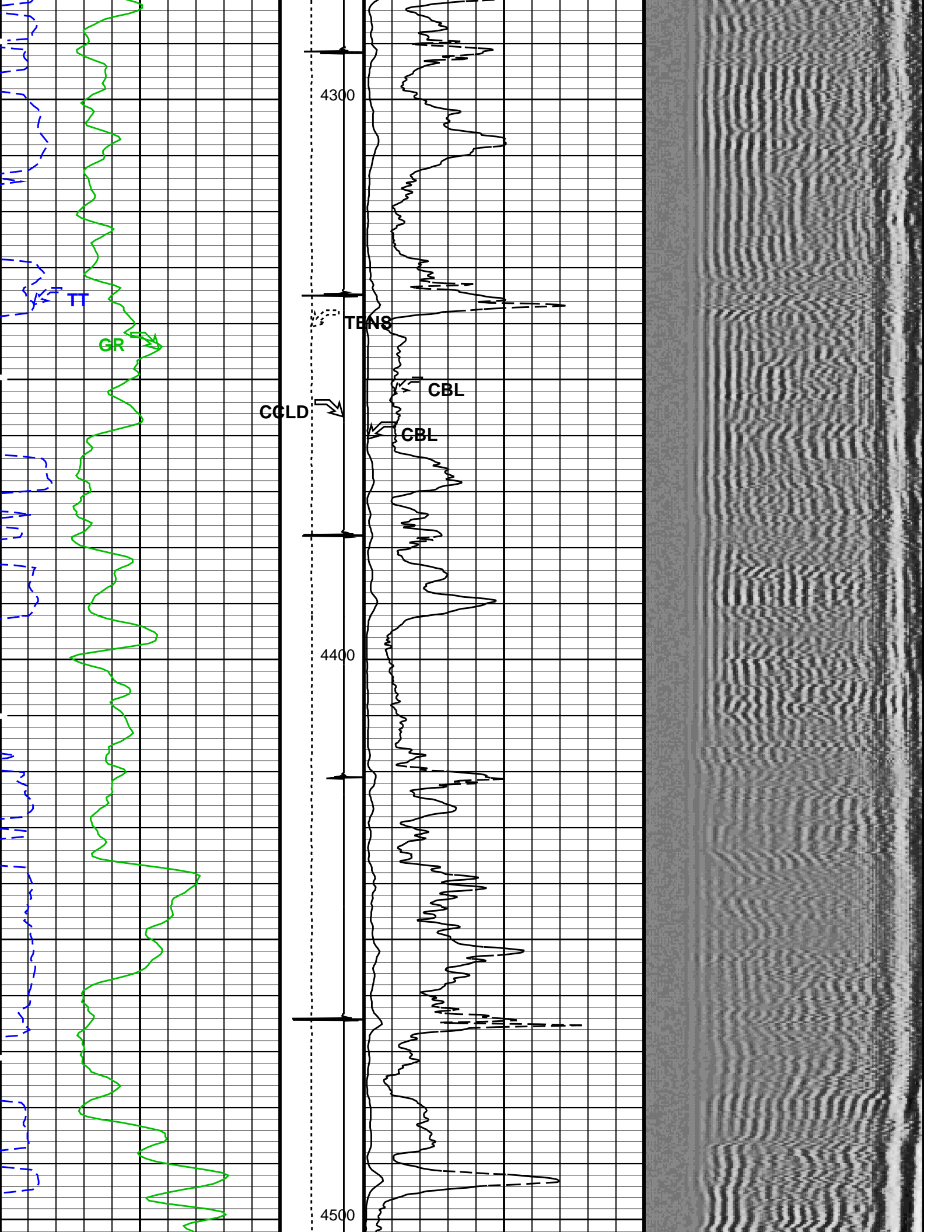




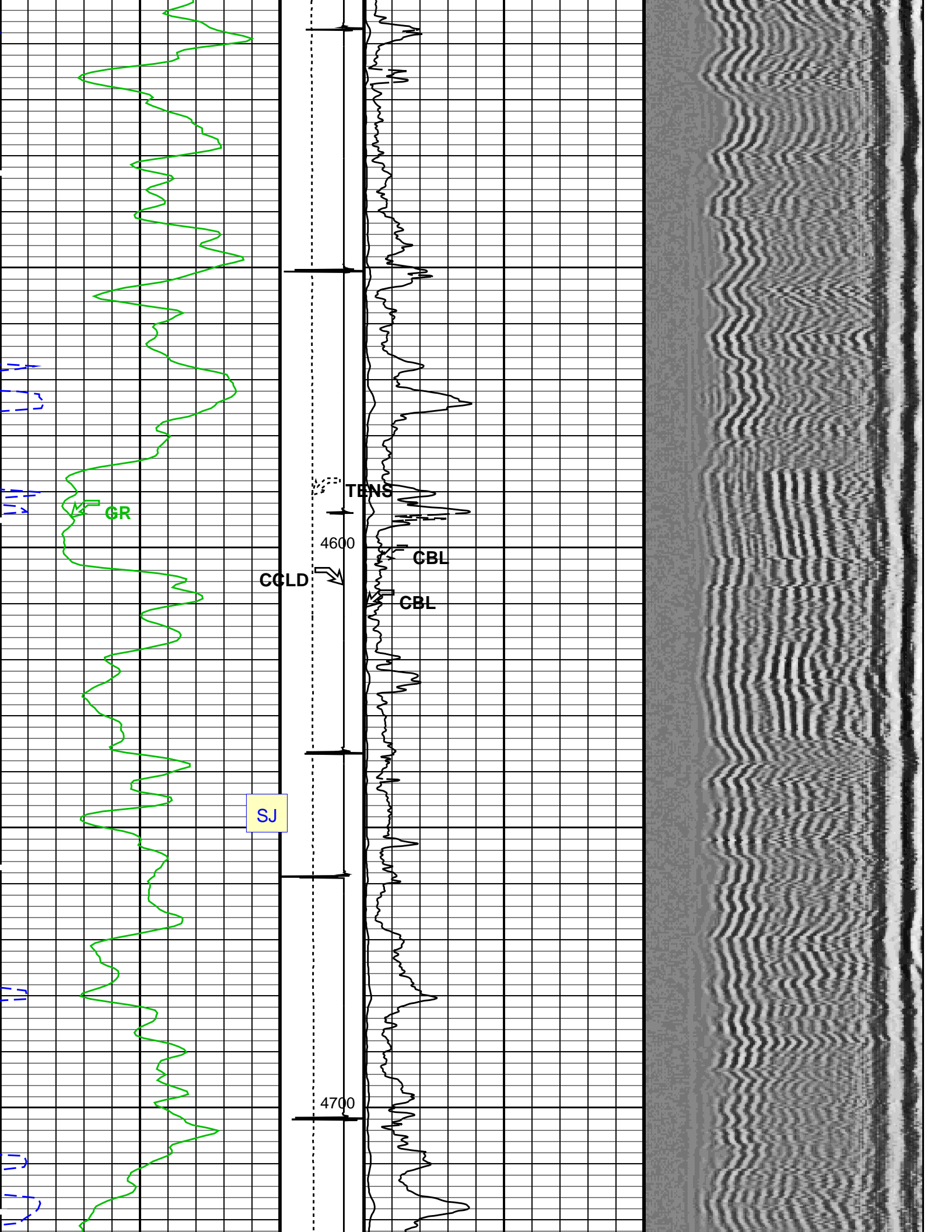


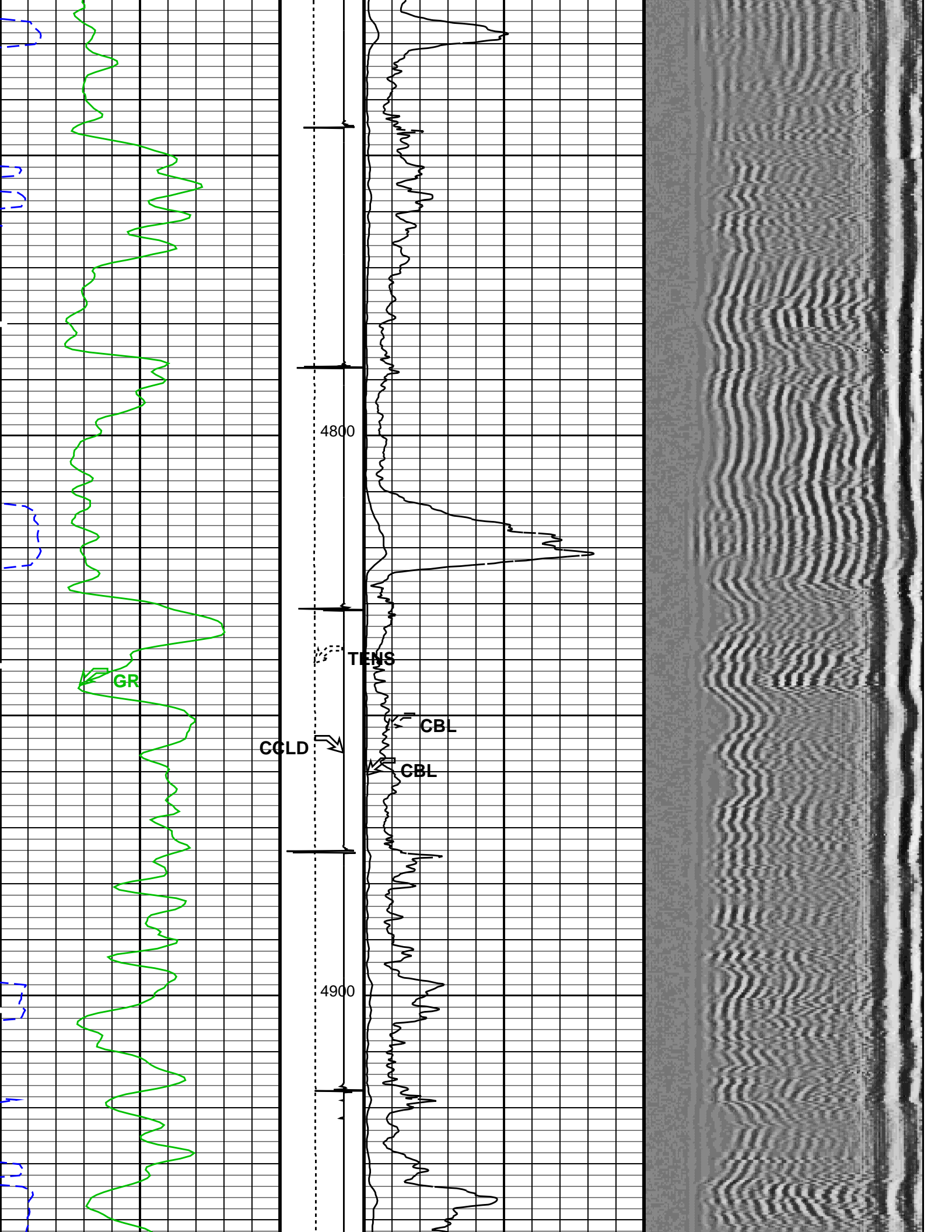


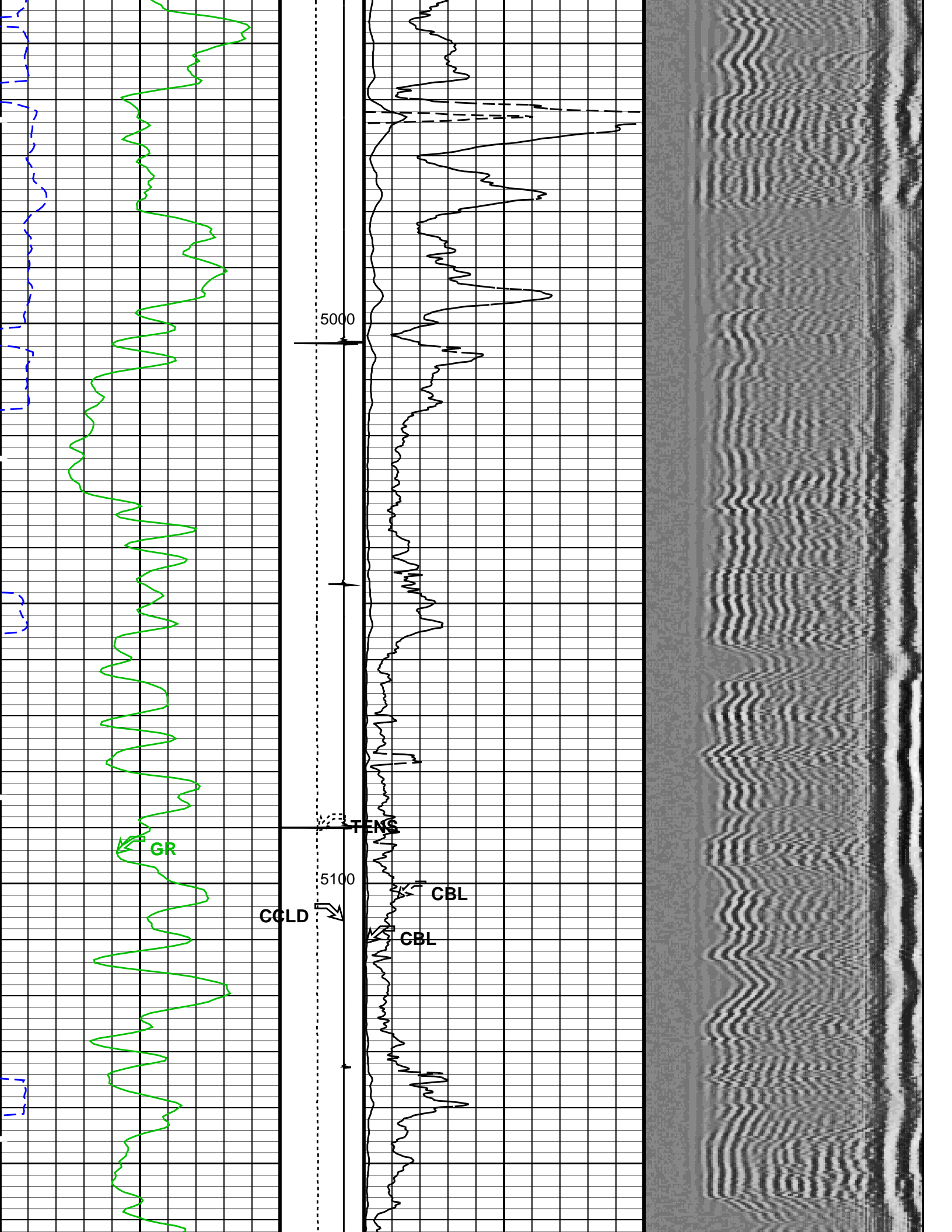


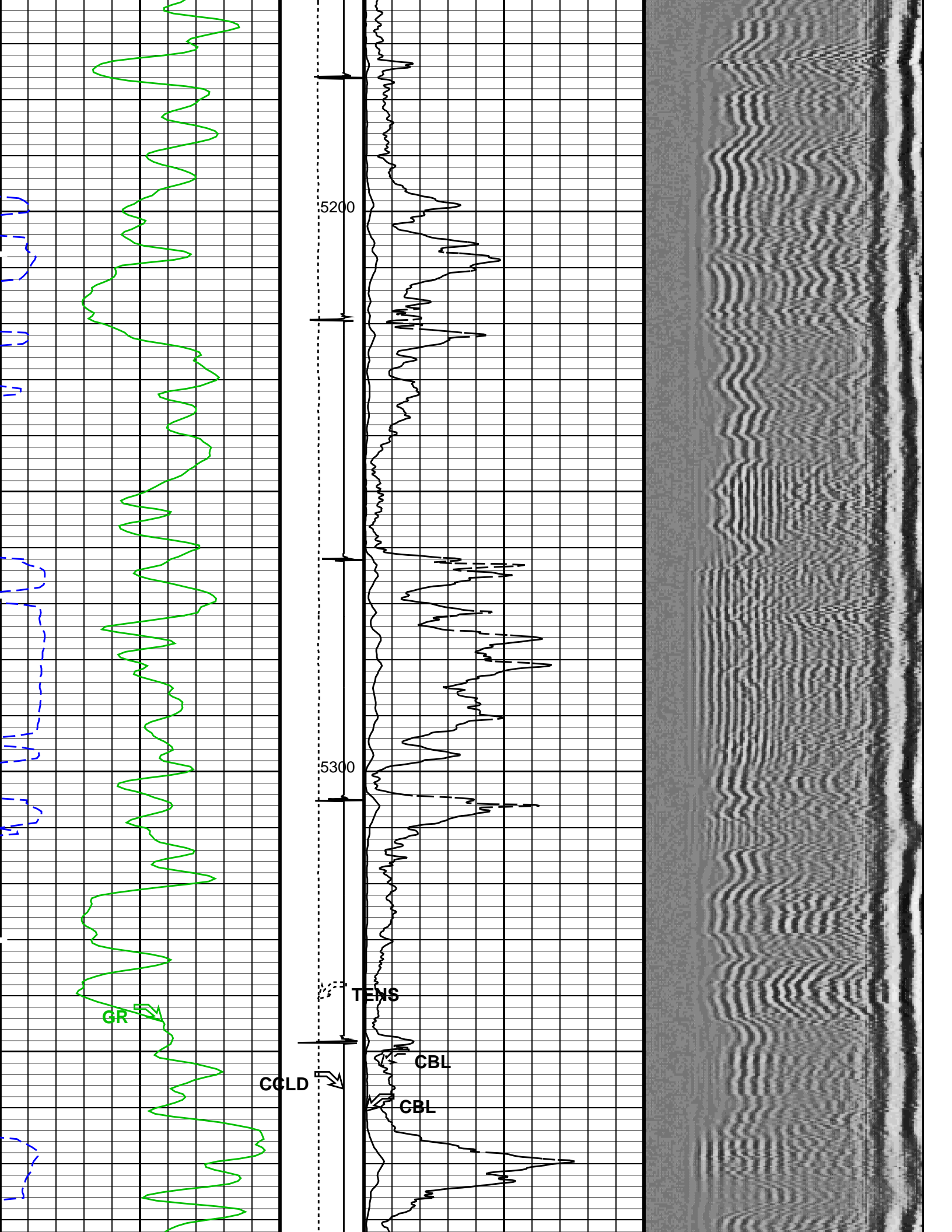




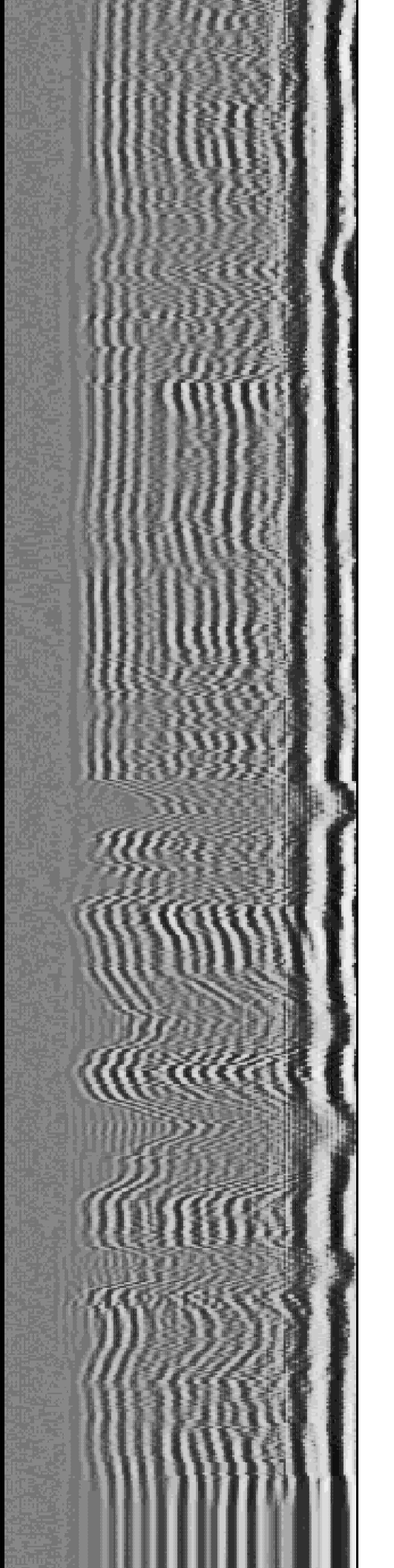
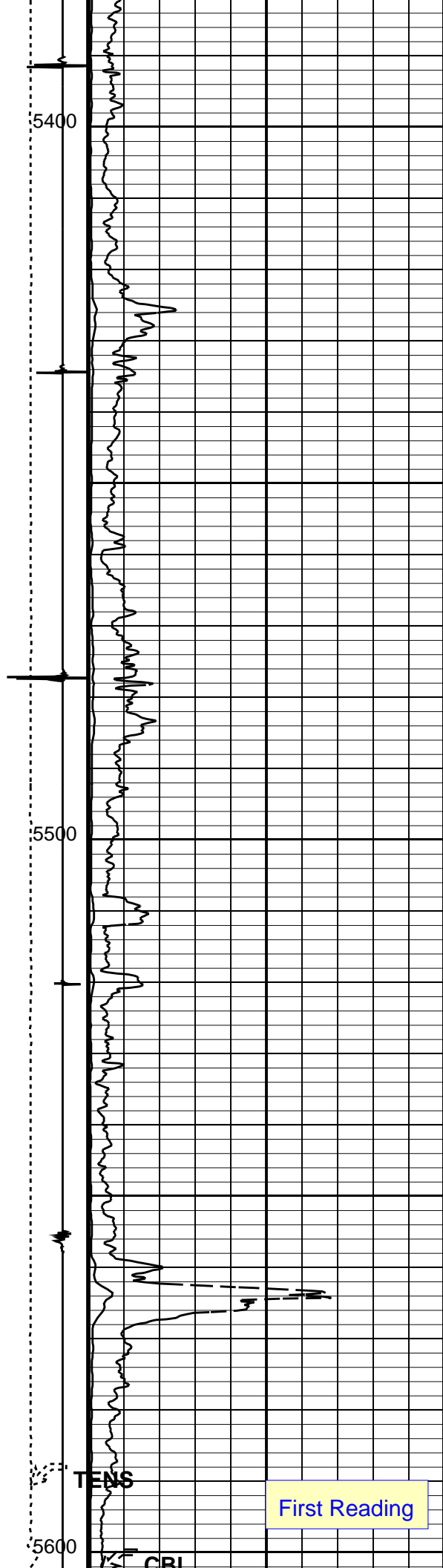
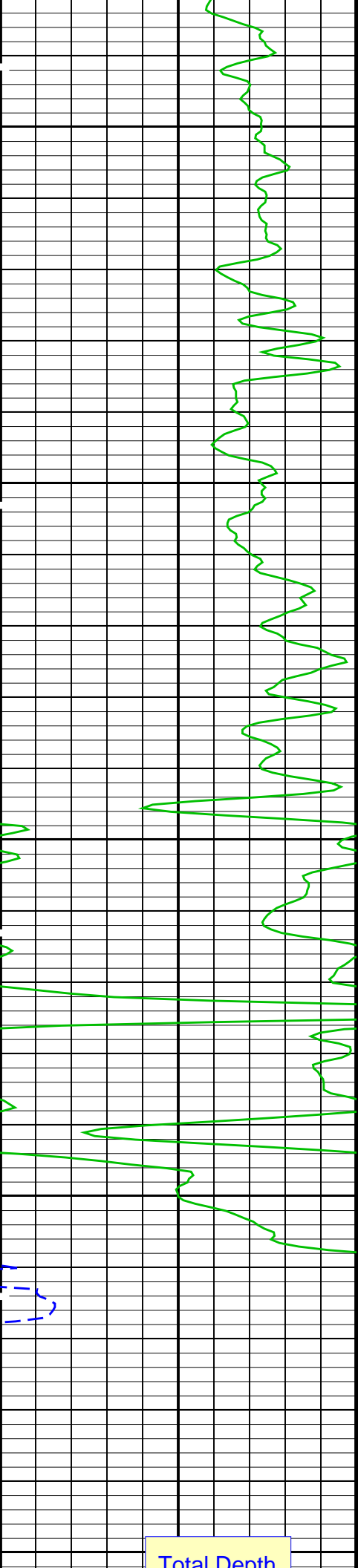












Total Depth

First Reading

TENS

CRI

|   |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
|   |  |  |  |  |  |  |  |
| <b>Gamma Ray (GR)</b><br>(GAPI)             |  | <b>Tension (TENS)</b><br>(LBF)         |  | <b>CBL Amplitude (CBL)</b><br>(MV)       |  | <b>Min</b> <b>Max</b><br><b>VDL Variable Density (VDL)</b><br>(US) |  |
| 0 150                                       |  | 0 2000                                 |  | 0 100                                    |  | 200 1200   |  |
| <b>Transit Time (TT)</b><br>(US)            |  | <b>Discriminated CCL (CCLD)</b><br>(V) |  | <b>CBL Amplitude (CBL)</b><br>(MV)       |  |  |  |
| 260 160                                     |  | 3 -1                                   |  | 0 10                                     |  |  |  |
| <b>PIP SUMMARY</b>                          |  |  |  |  |  |  |  |
| Time Mark Every 60 S                        |  |  |  |  |  |  |  |
| Format: CBL_VDL Vertical Scale: 5" per 100' |  |  |  | Graphics File Created: 14-May-2012 19:39 |  |  |  |

**OP System Version: 18C0-147**

|         |                |       |          |
|---------|----------------|-------|----------|
| SCMT-CB | HFE-4028-IFLEX | RST-C | 18C0-147 |
| PSPT-A  | HFE-4028-IFLEX |       |          |

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

|  |                     |                                    |                                  |
|--|---------------------|------------------------------------|----------------------------------|
| <b>Sonde Serial Number</b>                             | <b>SCMS-CB 8317</b> |                                    |                                  |
| <b>Current Casing Size</b>                             | <b>4.50000 IN</b>   |                                    |                                  |
| <b>Casing Weight</b>                                   | <b>11.6000 LB/F</b> |                                    |                                  |
| <b>Expected CBL Amplitude<br/>in Free Pipe Section</b> | <b>80 MV</b>        | <b>Minimum Sonic Amplitude</b>     | <b>0.579149 MV (100% Cement)</b> |
|  |                     |                                    | <b>1.55185 MV (80% Cement)</b>   |
|  |                     | <b>MAP Minimum Sonic Amplitude</b> | <b>4.32284 MV (100% Cement)</b>  |
|  |                     |                                    | <b>8.10244 MV (80% Cement)</b>   |

## Master Calibration (Normalization)

|                            |            |                              |     |
|----------------------------|------------|------------------------------|-----|
| Date of Master Calibration | 6-MAR-2012 |                              |     |
| CBL Correction Factor      | 0.0689824  | CBL Adjustment Factor (CBAF) | 1.0 |
| MAP 1 Correction Factor    | 0.107072   | MAP Adjustment Factor (MPAF) | 1.0 |
| MAP 2 Correction Factor    | 0.128400   |                              |     |
| MAP 3 Correction Factor    | 0.135634   |                              |     |
| MAP 4 Correction Factor    | 0.115019   |                              |     |
| MAP 5 Correction Factor    | 0.108562   |                              |     |
| MAP 6 Correction Factor    | 0.113017   |                              |     |
| MAP 7 Correction Factor    | 0.117769   |                              |     |
| MAP 8 Correction Factor    | 0.123422   |                              |     |

## 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                                       | 40       | US   |
| CBRA  | CBL LQC Reference Amplitude in Free Pipe             | 80       | MV   |
| CMCF  | CBL Cement Type Compensation Factor                  | 1        |      |
| CMTC  | 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                        | 0.924277 |      |

|                          |   |          |      |
|--------------------------|---|----------|------|
| 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                          | 8.40     | LB/G |
| DO                       | Depth Offset for Playback                       | 0.0      | FT   |
| DORL                     | Depth Offset for Repeat Analysis                | 0.0      | FT   |
| PP                       | Playback Processing                             | NORMAL   |      |
| TD                       | Total Depth                                     | 9216     | FT   |

Input DLIS Files

DEFAULT SCMT\_RST\_PSP\_048PUP FN:47 PRODUCER 13-May-2012 14:23 5612.0 FT 101.5 FT

Output DLIS Files

DEFAULT SCMT\_RST\_PSP\_064PUP FN:63 PRODUCER 14-May-2012 19:39



REPEAT PASS 0 PSI

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: TWIN CREEK 12-6A1 (F12E)

Input DLIS Files

DEFAULT SCMT\_RST\_PSP\_048PUP FN:47 PRODUCER 13-May-2012 14:23 5612.0 FT 101.5 FT  
DEFAULT SCMT\_RST\_PSP\_063PUP FN:62 PRODUCER 14-May-2012 19:38 5614.5 FT 5294.0 FT

Output DLIS Files

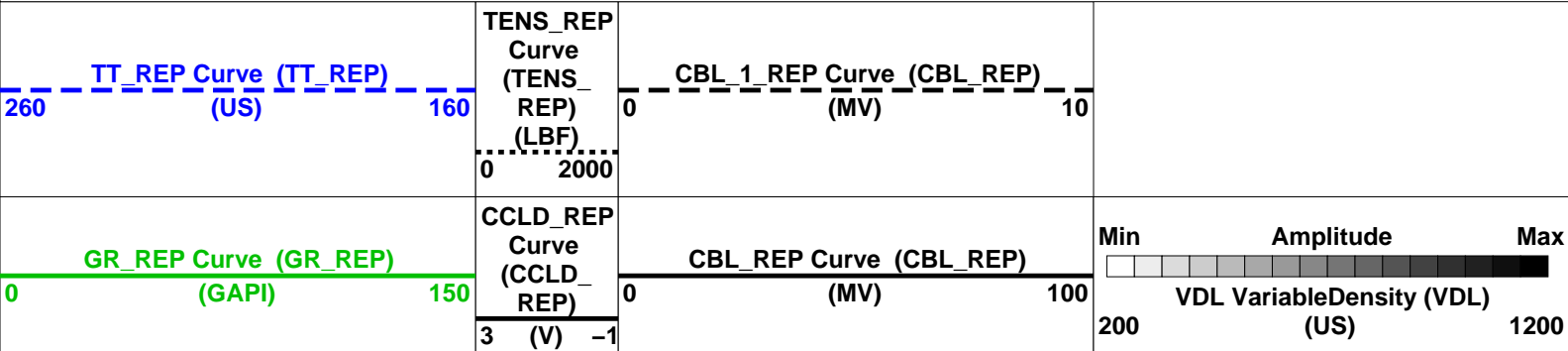
DEFAULT SCMT\_RST\_PSP\_064PUP FN:63 PRODUCER 14-May-2012 19:39

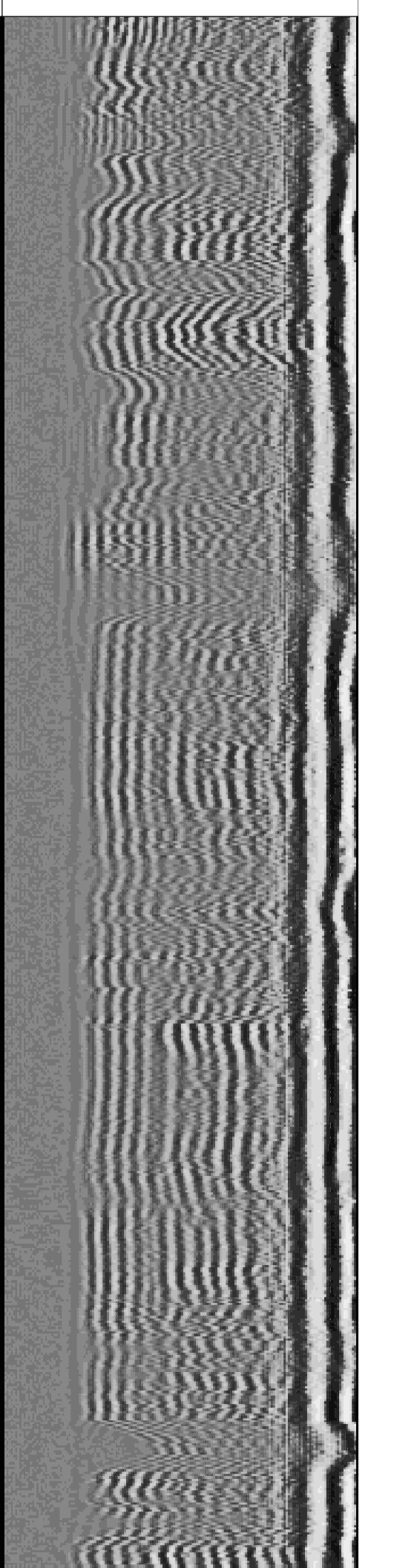
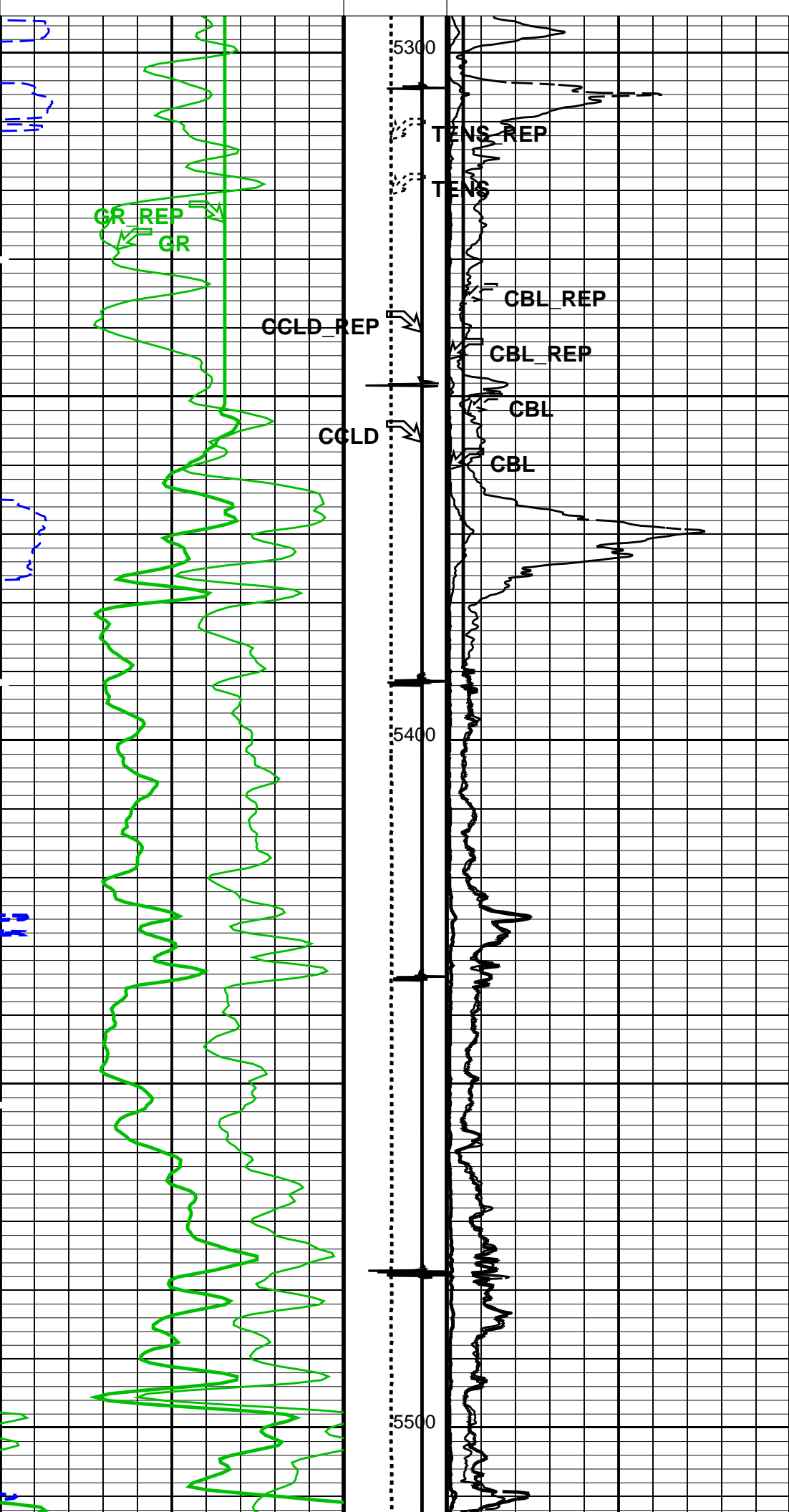
OP System Version: 18C0-147

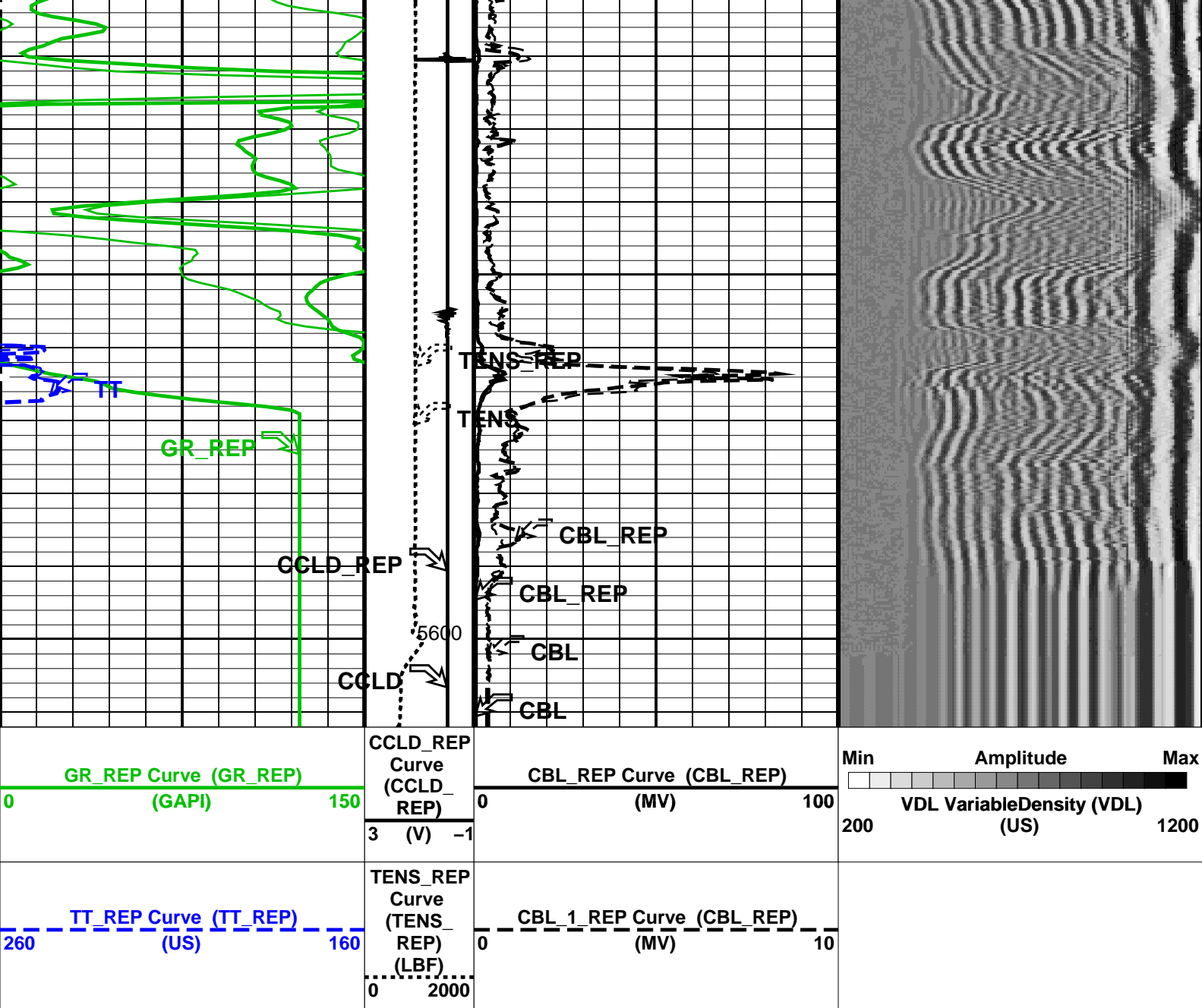
SCMT-CB HFE-4028-IFLEX RST-C 18C0-147  
PSPT-A HFE-4028-IFLEX

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: 14-May-2012 19:39

### OP System Version: 18C0-147

SCMT-CB HFE-4028-IFLEX RST-C 18C0-147  
PSPT-A HFE-4028-IFLEX

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

Sonde Serial Number SCMS-CB 8317

Current Casing Size 4.50000 IN

Casing Weight 11.6000 LB/F

Expected CBL Amplitude 80 MV

in Free Pipe Section

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   | 0.0689824 | CBL Adjustment Factor (CBAF) | 1.0 |
| MAP 1 Correction Factor | 0.107072  | MAP Adjustment Factor (MPAF) | 1.0 |
| MAP 2 Correction Factor | 0.128400  |                              |     |
| MAP 3 Correction Factor | 0.135634  |                              |     |
| MAP 4 Correction Factor | 0.115019  |                              |     |
| MAP 5 Correction Factor | 0.108562  |                              |     |
| MAP 6 Correction Factor | 0.113017  |                              |     |
| MAP 7 Correction Factor | 0.117769  |                              |     |
| MAP 8 Correction Factor | 0.123422  |                              |     |

## 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                                       | 40       | US   |
| CBRA  | CBL LQC Reference Amplitude in Free Pipe             | 80       | MV   |
| CMCF  | CBL Cement Type Compensation Factor                  | 1        |      |
| CMTC  | 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                        | 0.924277 |      |
| 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                               | 8.40     | LB/G |
| DO  | Depth Offset for Playback                            | 0.0      | FT   |
| DORL  | Depth Offset for Repeat Analysis                     | 0.0      | FT   |
| PP  | Playback Processing                                  | NORMAL   |      |
| TD  | Total Depth  | 9216     | FT   |

## Input DLIS Files

|         |                     |       |          |                   |           |           |
|---------|---------------------|-------|----------|-------------------|-----------|-----------|
| DEFAULT | SCMT_RST_PSP_048PUP | FN:47 | PRODUCER | 13-May-2012 14:23 | 5612.0 FT | 101.5 FT  |
| DEFAULT | SCMT_RST_PSP_063PUP | FN:62 | PRODUCER | 14-May-2012 19:38 | 5614.5 FT | 5294.0 FT |

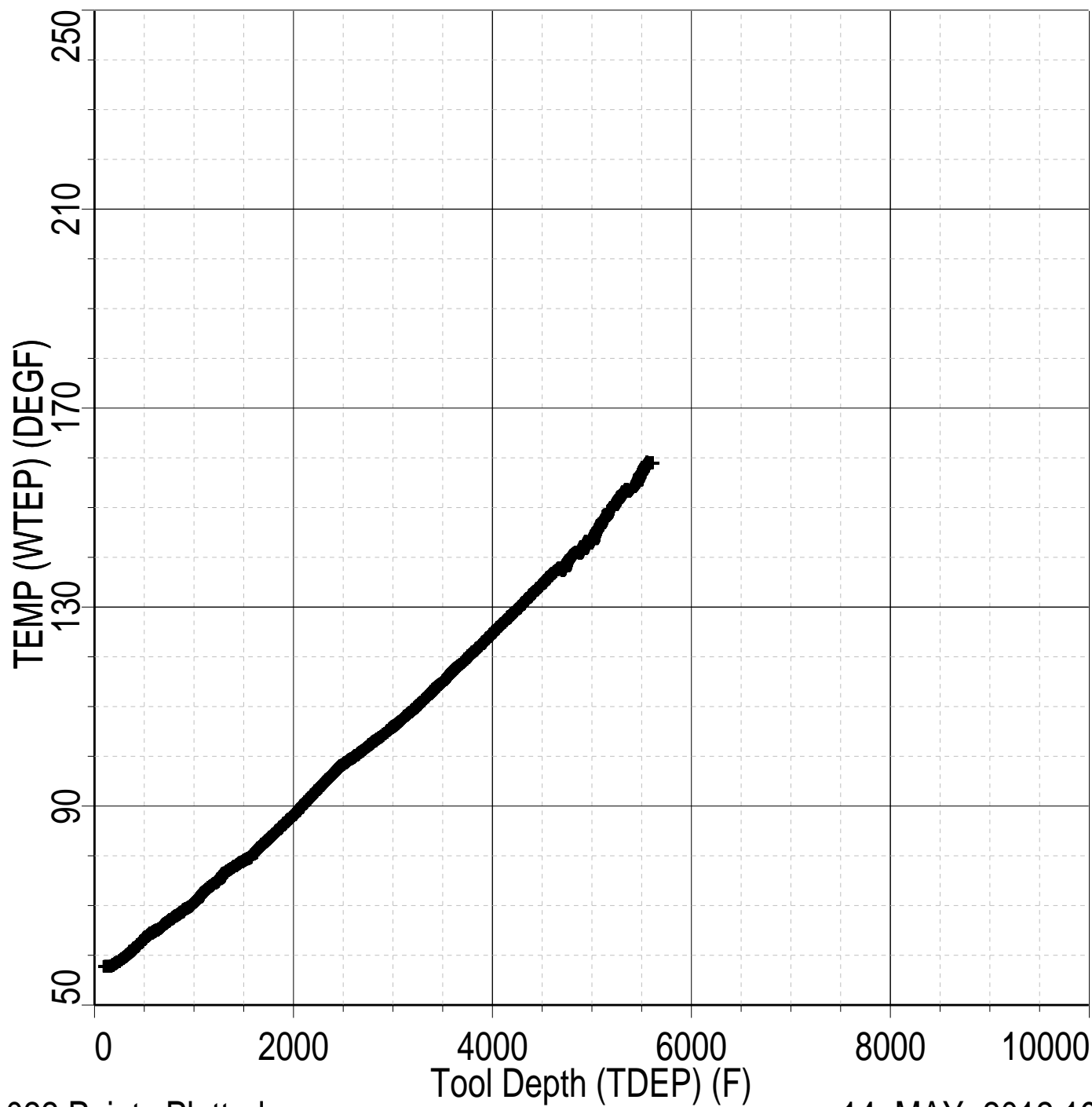
## Output DLIS Files

|         |                     |       |          |                   |  |  |
|---------|---------------------|-------|----------|-------------------|--|--|
| DEFAULT | SCMT_RST_PSP_064PUP | FN:63 | PRODUCER | 14-May-2012 19:39 |  |  |
|---------|---------------------|-------|----------|-------------------|--|--|

**Schlumberger**

**TEMPERATURE PLOT**

Index: 5612.0 – 101.5 FT



11022 Points Plotted

14-MAY-2012 19:43

**Schlumberger**

**COEFFICIENTS**

MAXIS Field Log

Client: ENCANA OIL & GAS (USA) INC.

Field: MAMM CREEK

Tool:

Sub Type:

PSP

PRMS

PBMS Digitalization Clock

Sonde Serial NB

Sensor Serial NB 3779

Calib Date ddmmyy 090107

Matrix Size 16

Coeff CRC D285

Clock Coeff

|         | Temp**0            | Temp**1            | Temp**2            |
|---------|--------------------|--------------------|--------------------|
| Temp**0 | -.210501098404E+03 | -.537713340627E+01 | -.752421519422E-01 |
|         | Temp**3            | Temp**4            | Temp**5            |
| Temp**0 | +.630273975887E-03 | +.266728381738E-05 | 0.0                |

PBMS Sapphire 10kPsi Gauge

Sonde Serial NB COEFFICIENTS FOR SAPPHIRE PBMS-A.3779 S/N:

Sensor Serial NB 3779

Calib Date ddmmyy 090107

Matrix Size 66

Coeff CRC 4C82

Pres Coeff

|       | Tt**0              | Tt**1              | Tt**2              |
|-------|--------------------|--------------------|--------------------|
| Tp**0 | -.611876617639E+04 | +.471061007964E+04 | -.216447354932E+04 |
| Tp**1 | +.371836126905E+04 | -.234756196935E+04 | +.129149325686E+04 |
| Tp**2 | +.193143980957E+02 | -.189348218853E+01 | -.341812471126E+01 |
| Tp**3 | -.568815065386E+01 | +.200079683569E+01 | 0.0                |
| Tp**4 | 0.0                | 0.0                | 0.0                |



|       |                    |                     |       |
|-------|--------------------|---------------------|-------|
| Tp**5 | 0.0                | 0.0                 | 0.0   |
|       | Tt**3              | Tt**4               | Tt**5 |
| Tp**0 | +380249508124E+03  | −.247683004908E+02  | 0.0   |
| Tp**1 | −.227135245080E+03 | +1.146352372057E+02 | 0.0   |
| Tp**2 | 0.0                | 0.0                 | 0.0   |
| Tp**3 | 0.0                | 0.0                 | 0.0   |
| Tp**4 | 0.0                | 0.0                 | 0.0   |
| Tp**5 | 0.0                | 0.0                 | 0.0   |

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PBMS Sapphire 10kPsi Gauge

Sonde Serial NB
Sensor Serial NB
Calib Date ddmmyy
Matrix Size
Coeff CRC

:
3779
090107
66
C39E

Temp Coeff

|       |                    |                    |                    |
|-------|--------------------|--------------------|--------------------|
|       | Tp**0              | Tp**1              | Tp**2              |
| Tt**0 | −.278275571347E+03 | +251216271916E+01  | −.820715649824E+00 |
| Tt**1 | +598349067015E+02  | −.107326373545E+01 | +652890183203E−01  |
| Tt**2 | +109160002120E+02  | +262812193556E+00  | −.450134240377E−02 |
| Tt**3 | −.673302171285E+00 | −.213772918779E−01 | 0.0                |
| Tt**4 | 0.0                | 0.0                | 0.0                |
| Tt**5 | 0.0                | 0.0                | 0.0                |
|       | Tp**3              | Tp**4              | Tp**5              |
| Tt**0 | +151507143209E+00  | −.592670012996E−02 | 0.0                |
| Tt**1 | +127486538512E−01  | −.437897076104E−02 | 0.0                |
| Tt**2 | 0.0                | 0.0                | 0.0                |
| Tt**3 | 0.0                | 0.0                | 0.0                |
| Tt**4 | 0.0                | 0.0                | 0.0                |
| Tt**5 | 0.0                | 0.0                | 0.0                |

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|           |                             |           |      |
|-----------|-----------------------------|-----------|------|
| Client:   | ENCANA OIL & GAS (USA) INC. | Tool:     | PSP  |
| Field:    | MAMM CREEK                  | Sub Type: | PBMS |
| Well:     | TWIN CREEK F12E PAD         | Sensor:   | GR   |
| Run date: | 13−May−2012                 |           |      |

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PBMS Gamma Ray

Sonde Serial NB

Sensor Serial NB

Calib Date ddmmyy

Matrix Size

Coeff CRC

RESISTORS FOR GR SENSOR N.34552,TOOL PBMS-AA3779. SENSOR S/N:

34552

030606

12

3AE5

GR HV Rt

|       | Rt**0              | Rt**1              |
|-------|--------------------|--------------------|
| Rt**0 | +.200000000000e+04 | +.214000000000e+04 |

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Client: ENCANA OIL & GAS (USA) INC.

Field: MAMM CREEK

Well: TWIN CREEK F12E PAD

Run date: 13-May-2012

Tool: PSP

Sub Type: PBMS

Sensor: WellTemp RTD

PBMS RTD Well Thermometer

Sonde Serial NB

Sensor Serial NB

Calib Date ddmmyy

Matrix Size

Coeff CRC

COEFFICIENTS FOR RTD THERMOMETER PBMS-A.3779 S/N:

3779

090107

16

3846

WTemp Coeff

|       | Tt**0              | Tt**1              | Tt**2              |
|-------|--------------------|--------------------|--------------------|
| Tt**0 | +.492135102627E+02 | -.278827553804E+03 | +.142867554561E+03 |
|       | Tt**3              | Tt**4              | Tt**5              |
| Tt**0 | -.233378392336E+02 | +.145553494493E+01 | 0.0                |

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Company: ENCANA OIL & GAS (USA) INC.



Well: TWIN CREEK 12-6A1 (F12E)

Field: MAMM CREEK

County: GARFIELD

State: COLORADO

CEMENT BOND LOG  
CBL- VDL  
GAMMA RAY - CCL