

# HALLIBURTON

## BOREHOLE COMPENSATED SONIC ARRAY LOG

|                 |                                       |
|-----------------|---------------------------------------|
| COMPANY         | OXY USA INC.                          |
| WELL            | ELLIOTT C-1B                          |
| FIELD           | LEMON VICK PREEDY                     |
| COUNTY          | HASKELL                               |
| STATE           | KANSAS                                |
| COMPANY         | OXY USA INC.                          |
| WELL            | ELLIOTT C-1B                          |
| FIELD           | LEMON VICK PREEDY                     |
| COUNTY          | HASKELL                               |
| STATE           | KANSAS                                |
| API No.         | 15081220030000                        |
| Location        | (SHL) 1981' FSL & 669' FEL            |
| Other Services: | DSN / SDL<br>MICROLOG<br>BSAT<br>ACRT |
| Sect.           | 28                                    |
| Twp.            | 29S                                   |
| Rge.            | 33W                                   |
| Elev.           | 2946.0 ft                             |
| Elev. D.F.      | 2960.0 ft                             |
| Elev. G.L.      | 2946.0 ft                             |

|                        |           |                           |
|------------------------|-----------|---------------------------|
| Permanent Datum        | GL        | Elev. 2946.0 ft           |
| Log measured from      | KB        | 14.0 ft above perm. Datum |
| Drilling measured from | KB        | G.L. 2946.0 ft            |
| Date                   | 20-Jan-13 |                           |
| Run No.                | ONE       |                           |

|                          |                           |
|--------------------------|---------------------------|
| Depth - Driller          | 5817.00 ft                |
| Depth - Logger           | 5816.0 ft                 |
| Bottom - Logged Interval | 5789                      |
| Top - Logged Interval    | 1824                      |
| Casing - Driller         | 8.625 in @ 1827.0 ft      |
| Casing - Logger          | 1824.0 ft                 |
| Bit Size                 | 7.875 in @                |
| Type Fluid in Hole       | WATER BASED MUD           |
| Density                  | 9.1 ppg 56.00 sqft        |
| PH                       | 11.10 pH 8.4 cp/m         |
| Source of Sample         | MUDPIT                    |
| Rm @ Meas. Temperature   | 1.300 ohmm @ 70.00 degF @ |
| Rmf @ Meas. Temperature  | 1.110 ohmm @ 70.00 degF @ |
| Rmc @ Meas. Temperature  | 1.500 ohmm @ 70.00 degF @ |
| Source Rmf               | MEASURED MEASURED         |
| Rm @ BHT                 | 0.64 ohmm @ 149.0 degF @  |
| Time Since Circulation   | 18.5 hr                   |
| Time on Bottom           | 20-Jan-13 09:56           |
| Max. Rec. Temperature    | 149.0 degF @ 5816.0 ft @  |
| Equipment Location       | 10782954 LIBERAL          |
| Recorded By              | S. INGERSOLL              |
| Witnessed By             | CAL WYLLIE                |
|                          | AUSTIN GARNIER            |

Fold here

Service Ticket No.: 90014112      API Serial No.: 15081220030000      PGM Version: WL INSITE R3.6.0 (Build 3)

| CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE |            |   |  | RESISTIVITY SCALE CHANGES  |                 |               |                 |       |
|---|------------|---|--|----------------------------|-----------------|---------------|-----------------|-------|
| Date                                    | Sample No. |   |  | Type Log                   | Depth           | Scale Up Hole | Scale Down Hole |       |
| Type Fluid in Hole                      |            |   |  |                            |                 |               |                 |       |
| Density                                 | Viscosity  |   |  |                            |                 |               |                 |       |
| Ph                                      | Fluid Loss |   |  |                            |                 |               |                 |       |
| Source of Sample                        |            |   |  | RESISTIVITY EQUIPMENT DATA |                 |               |                 |       |
| Rm @ Meas. Temp                         | @          | @ |  | Run No.                    | Tool Type & No. | Pad Type      | Tool Pos.       | Other |
| Rmf @ Meas. Temp.                       | @          | @ |  | ONE                        | ACRT            | N/A           | CENT.           |       |
| Rmc @ Meas. Temp.                       | @          | @ |  |                            | 10929775        |               |                 |       |
| Source Rmf                              | Rmc        |   |  |                            |                 |               |                 |       |
| Rm @ BHT                                | @          | @ |  |                            |                 |               |                 |       |
| Rmf @ BHT                               | @          | @ |  |                            |                 |               |                 |       |
| Rmc @ BHT                               | @          | @ |  |                            |                 |               |                 |       |

| EQUIPMENT DATA     |          |              |          |             |          |             |          |
|--------------------|----------|--------------|----------|-------------|----------|-------------|----------|
| GAMMA              |          | ACOUSTIC     |          | DENSITY     |          | NEUTRON     |          |
| Run No.            | ONE      | Run No.      | ONE      | Run No.     | ONE      | Run No.     | ONE      |
| Serial No.         | 10748374 | Serial No.   | 10747684 | Serial No.  | 10673803 | Serial No.  | 10735145 |
| Model No.          | GTET     | Model No.    | BSAT     | Model No.   | SDLT     | Model No.   | DSNT     |
| Diameter           | 3.625"   | No. of Cent. | 2        | Diameter    | 5.3"     | Diameter    | 3.625"   |
| Detector Model No. | GTET     | Spacing      | .5'      | Log Type    | GAM-GAM  | Log Type    | NEU-NEU  |
| Type               | SCINT    |              |          | Source Type | CS-137   | Source Type | AM-241BE |
| Length             | 8"       | LSA [Y/N]    |          | Serial No.  | 5073GW   | Serial No.  | DSN-4369 |
| Distance to Source | N/A      | FWDA [Y/N ]  |          | Strength    | 1.5 CI   | Strength    | 15 CI    |

LOGGING DATA

GENERAL      GAMMA      ACOUSTIC      DENSITY      NEUTRON

| Run No. | GENERAL |      | Speed<br>ft/min | GAMMA |     | ACOUSTIC |     | Matrix     | DENSITY |     | NEUTRON    |    | Matrix |      |
|---------|---------|------|-----------------|-------|-----|----------|-----|------------|---------|-----|------------|----|--------|------|
|         | Depth   |      |                 | L     | R   | L        | R   |            | Scale   |     | L          | R  |        |      |
|         | From    | To   |                 |       |     |          |     |            | L       | R   |            |    |        |      |
| ONE     | 5816    | 1824 | REC             | 0     | 150 | 30       | -10 | 47.6 us/ft | 30      | -10 | 2.71 gm/cc | 30 | -10    | LIME |

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

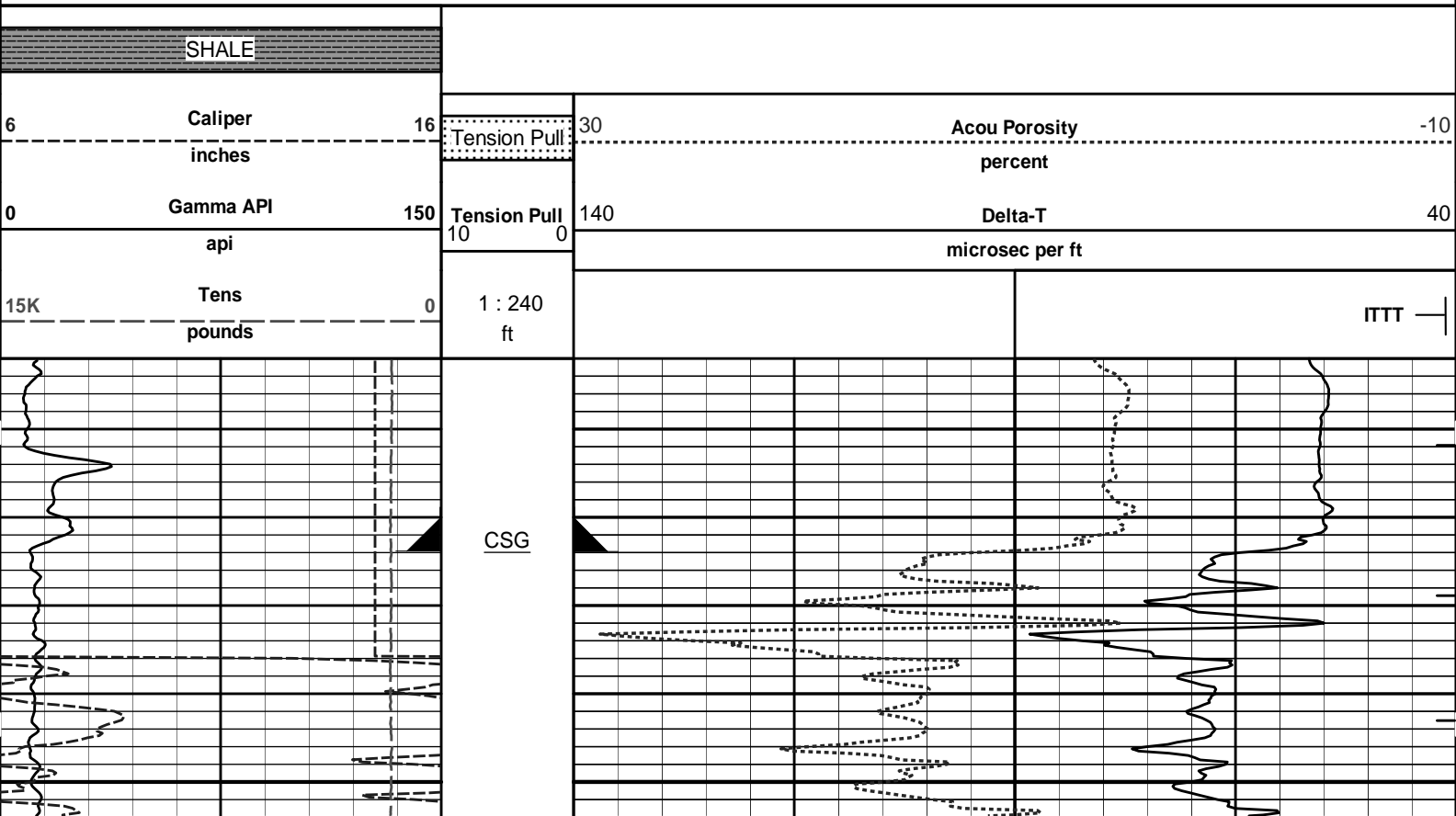
Remarks: ANNULAR HOLE VOLUME CALCULATED 5.5 INCH CASING.  
 BOTTOM 150' OF SP DOES NOT REPEAT DUE TO FLUID MOVEMENT.  
 CHLORIDES REPORTED AT 500 mg/L.

HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

HALLIBURTON

**HALLIBURTON** Plot Time: 20-Jan-13 14:04:58  
 Plot Range: 1802 ft to 5822 ft  
 Data: ELLIOTT\_C-1B\Well Based\ELLIOTT\_C-1B\_MAIN\_PASS\  
 Plot File: \BSAT\BSAT\_5\_MAIN\_LIB

## 5 INCH MAIN LOG

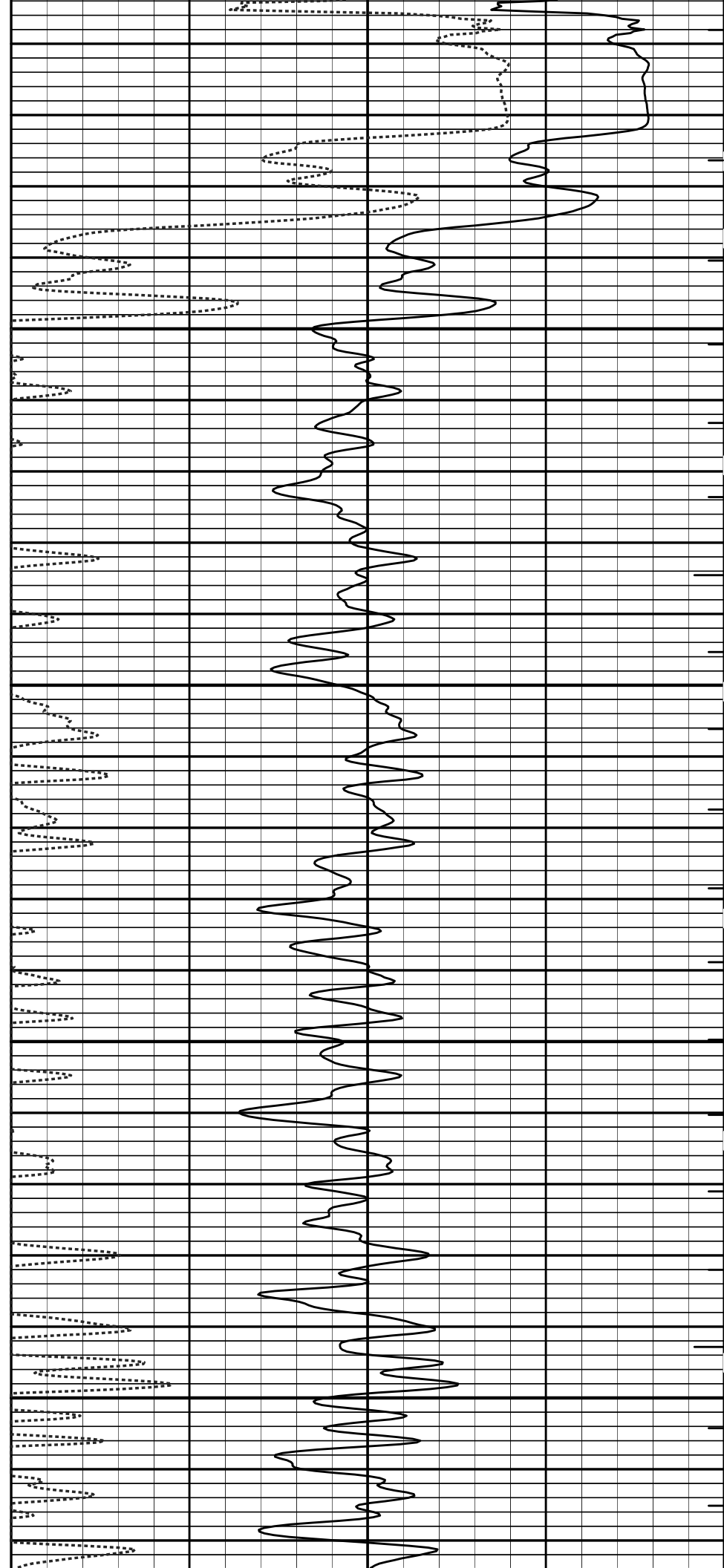


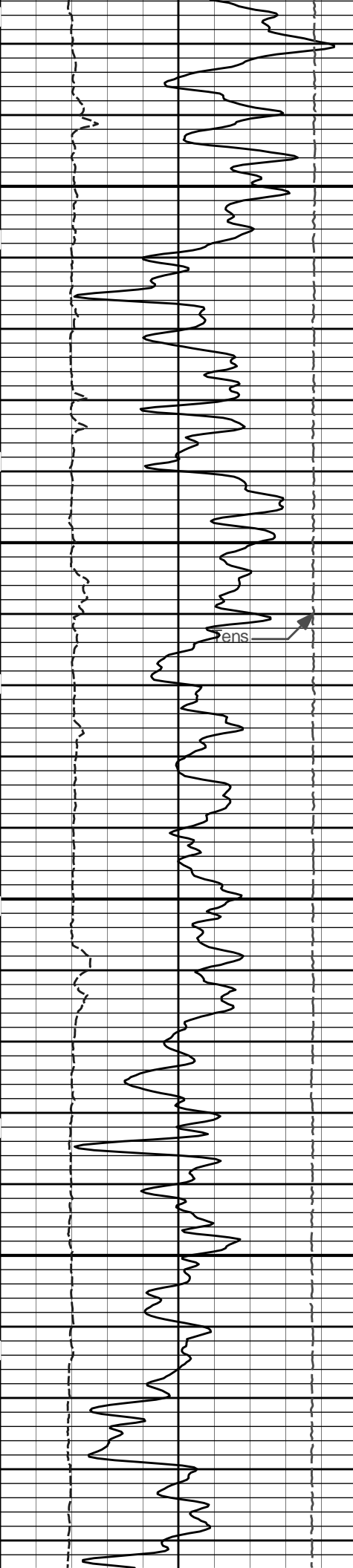


1900

2000

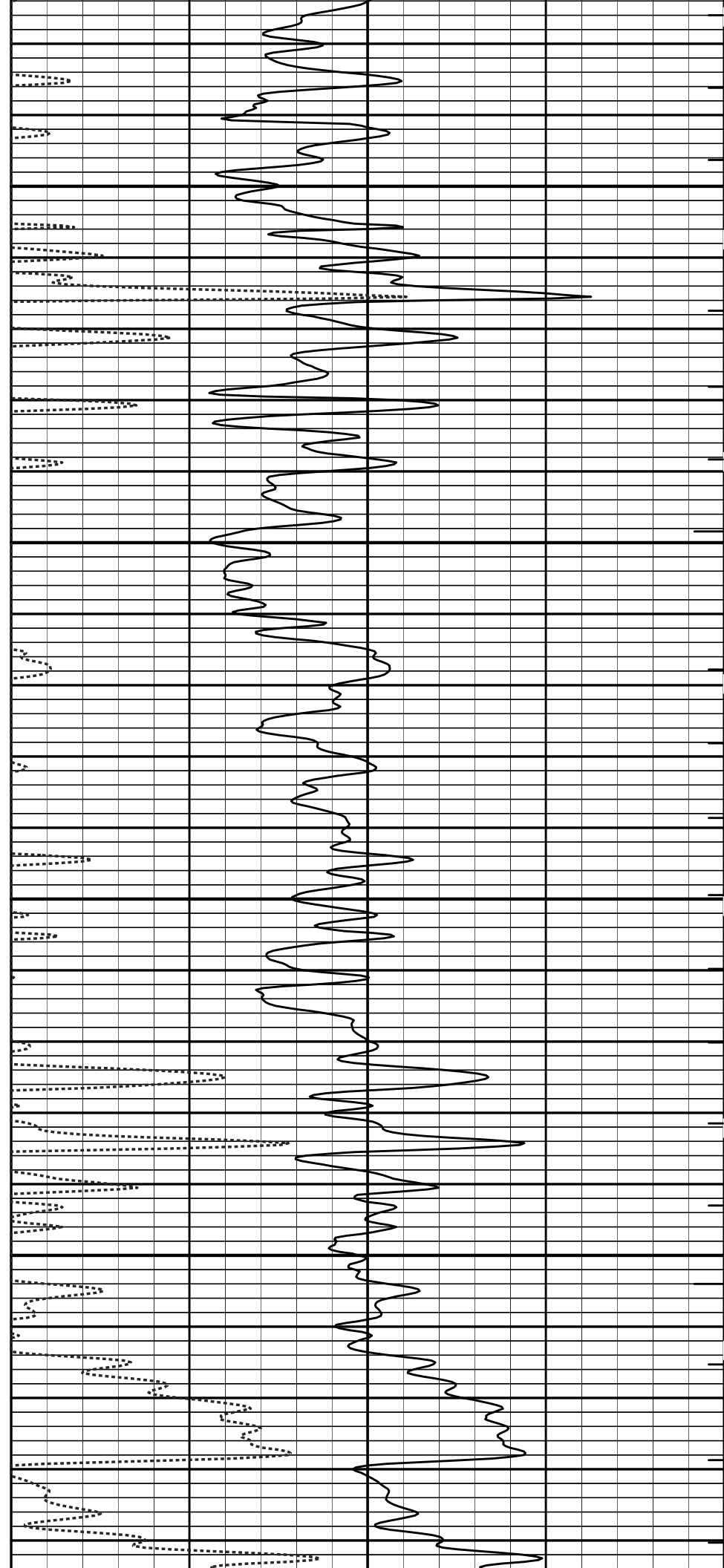
Tens

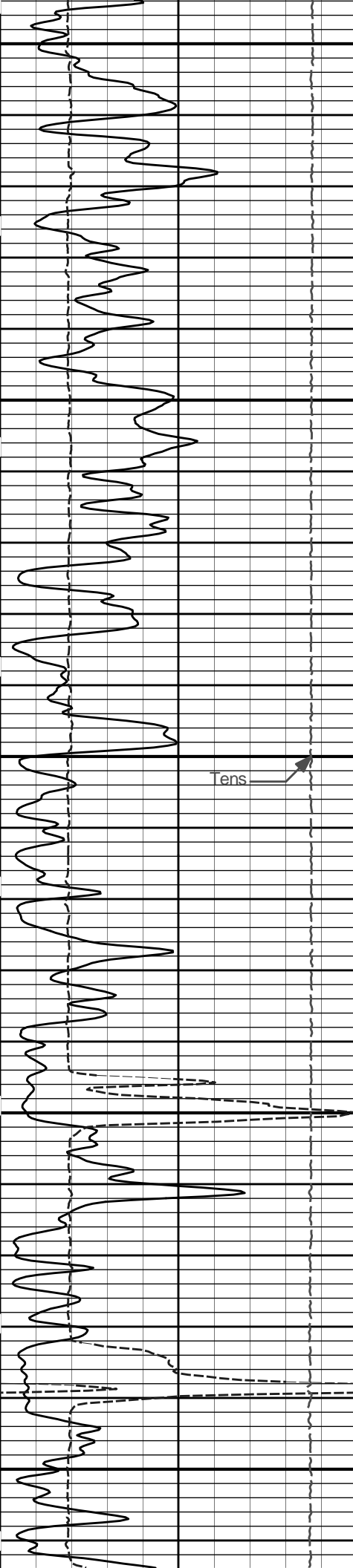




2100

2200

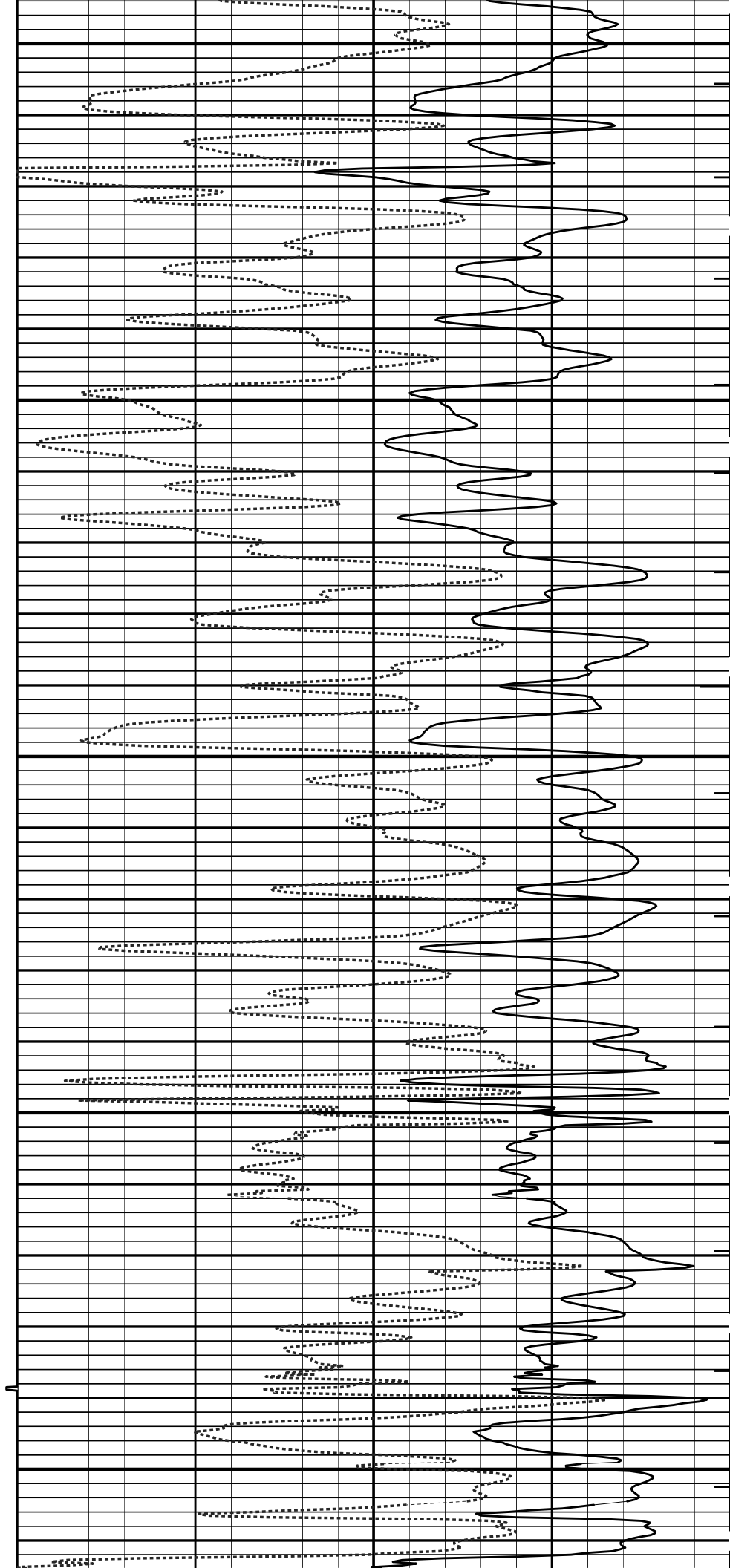


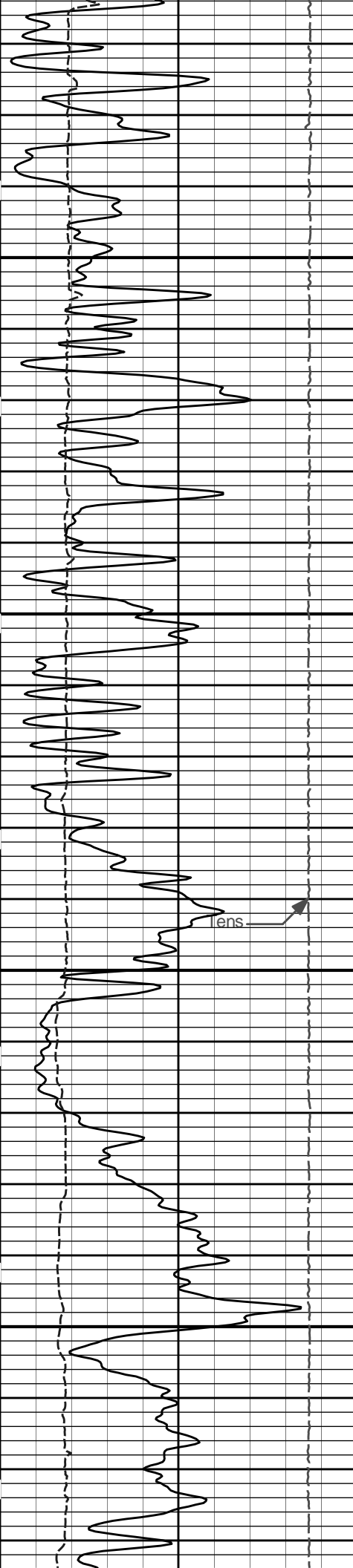


2300

2400

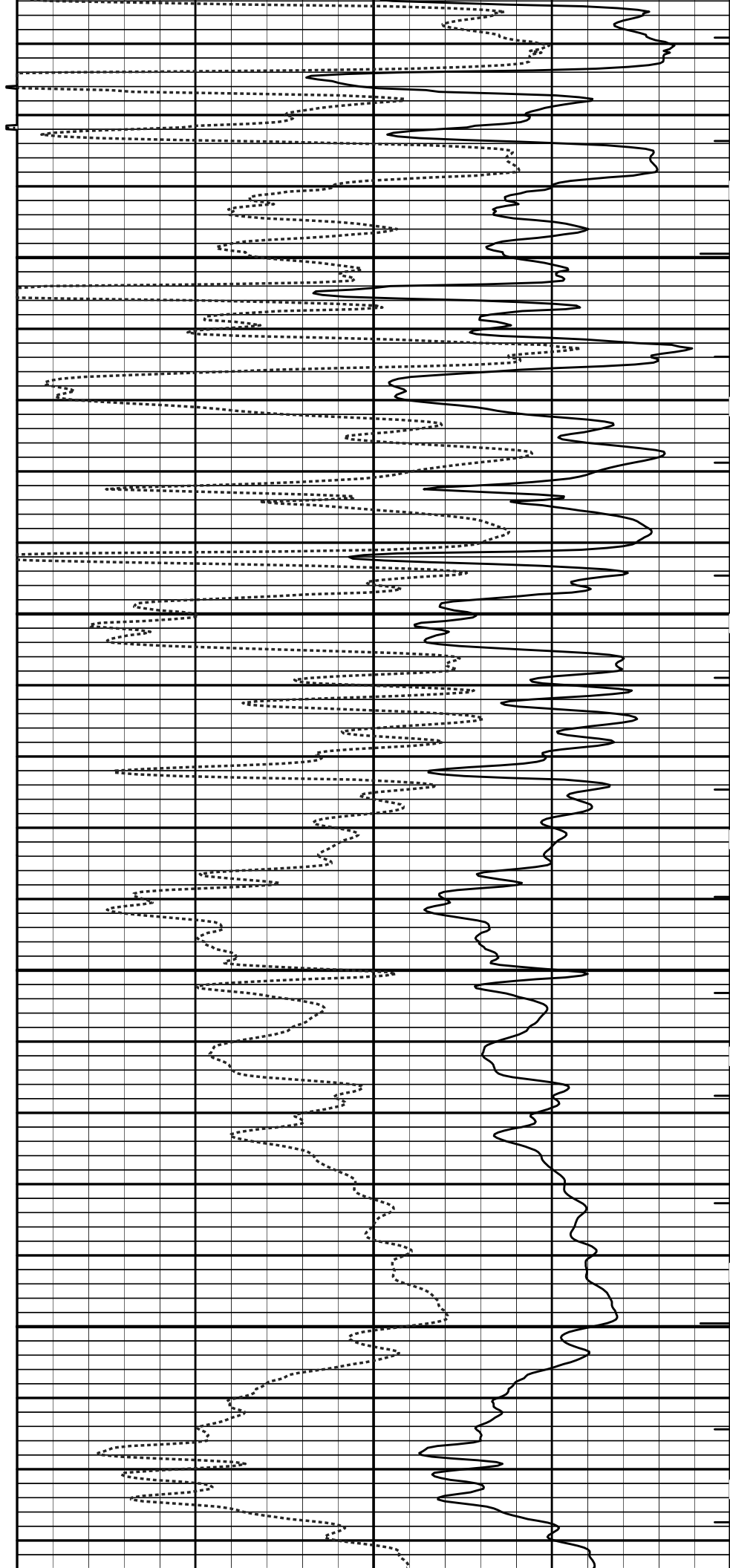
2500

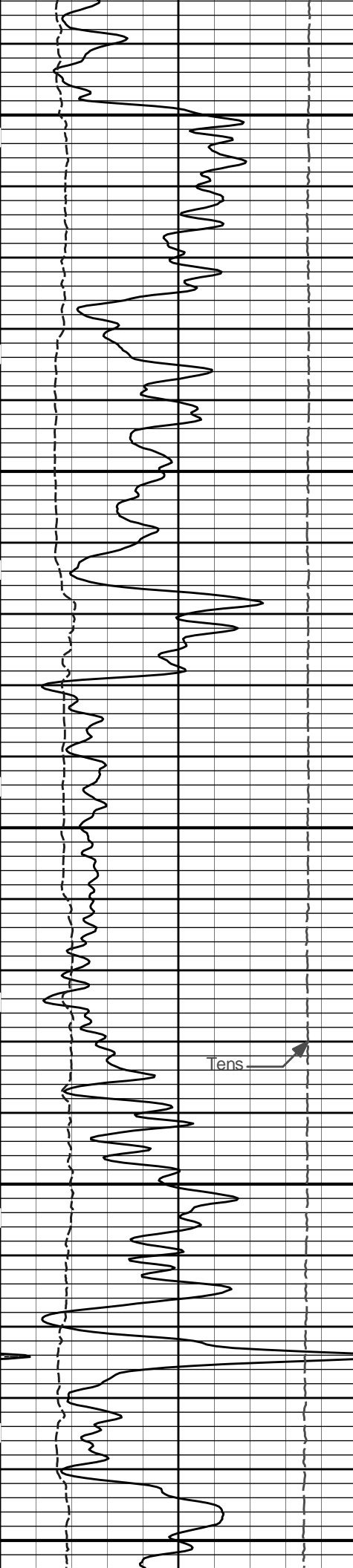




2600

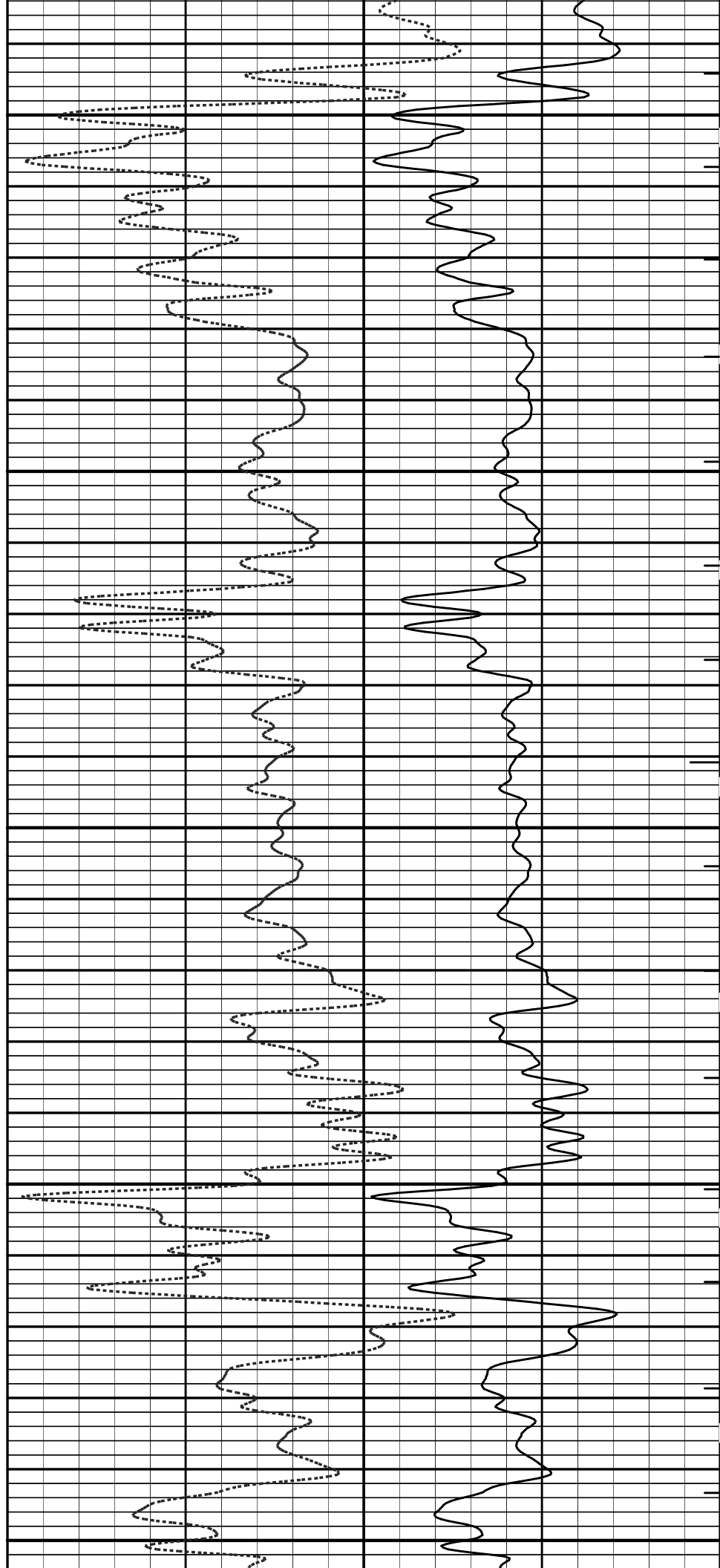
2700

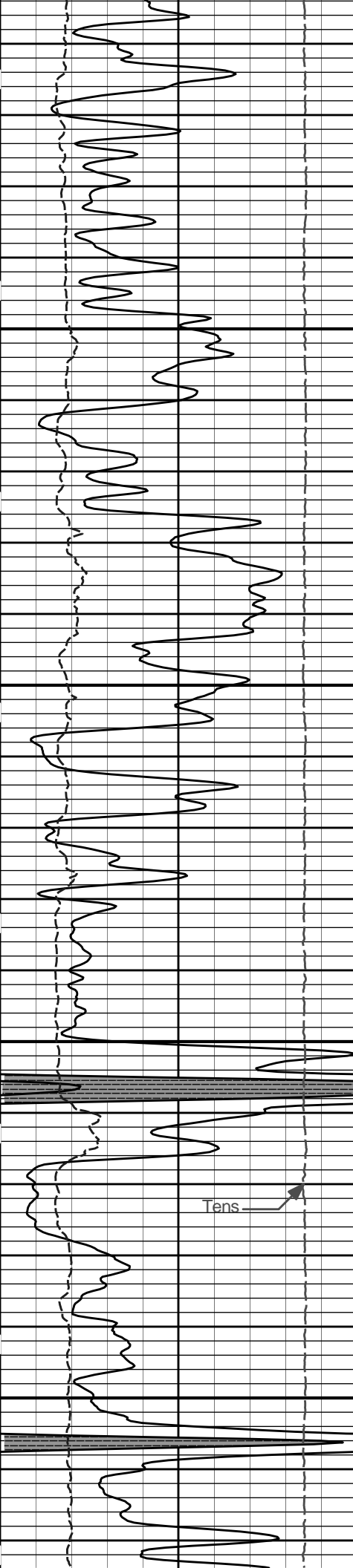




2800

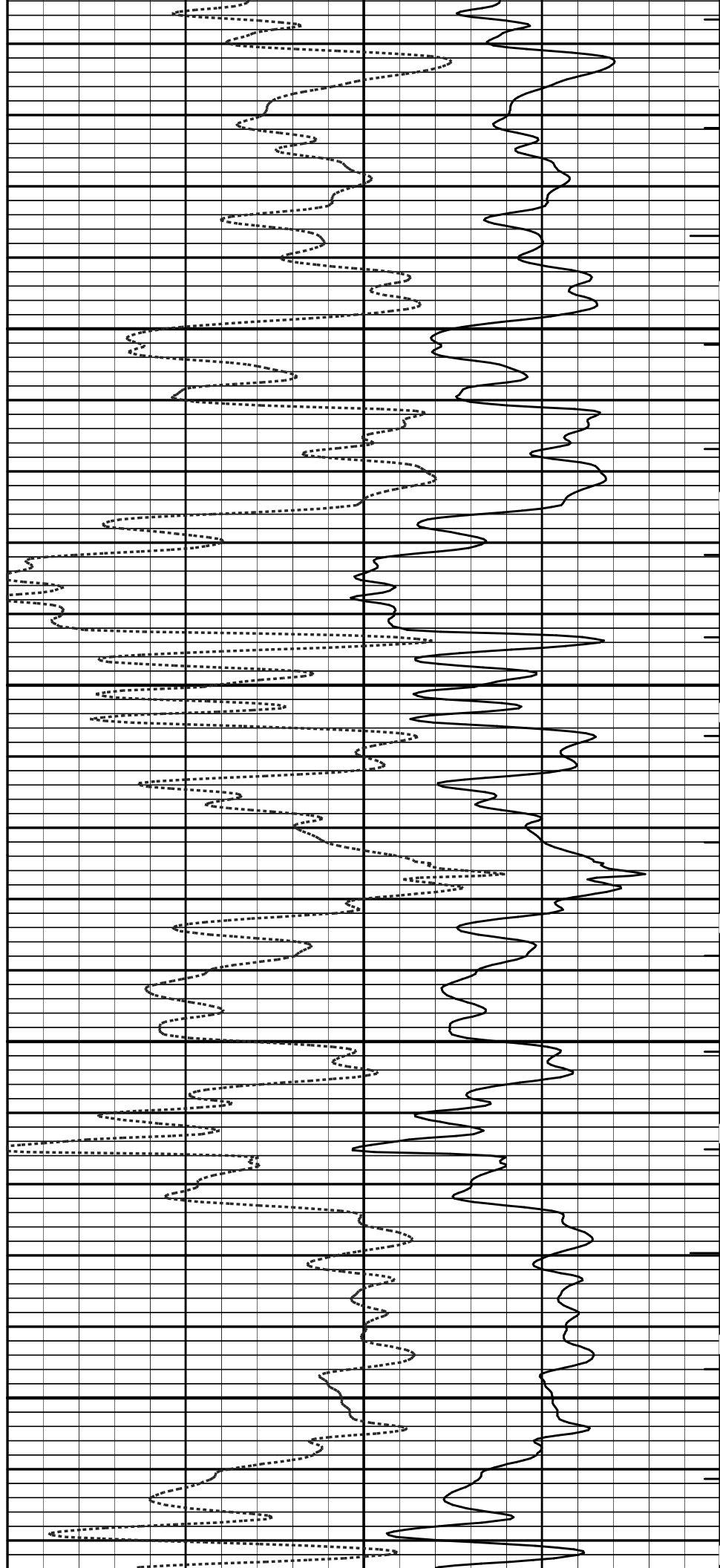
2900



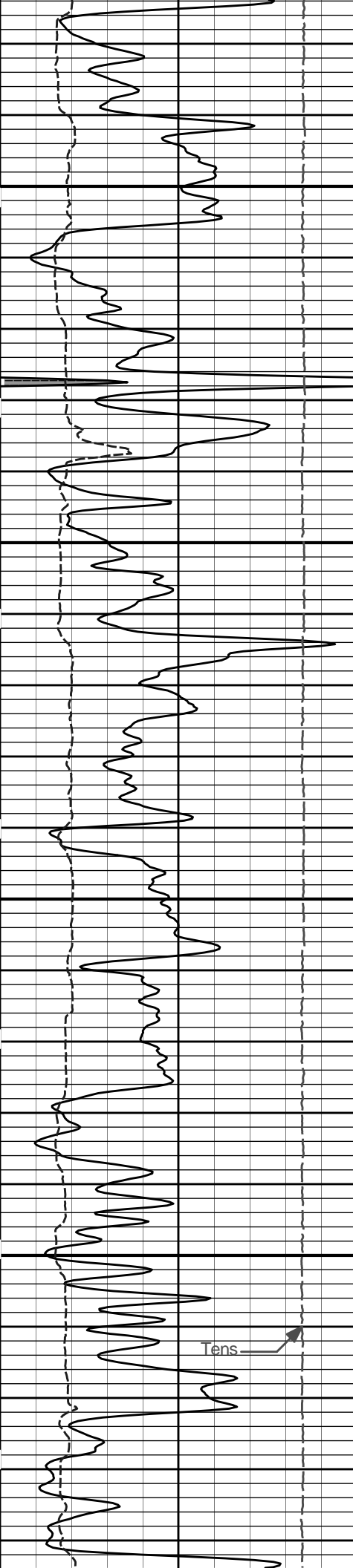


3000

3100

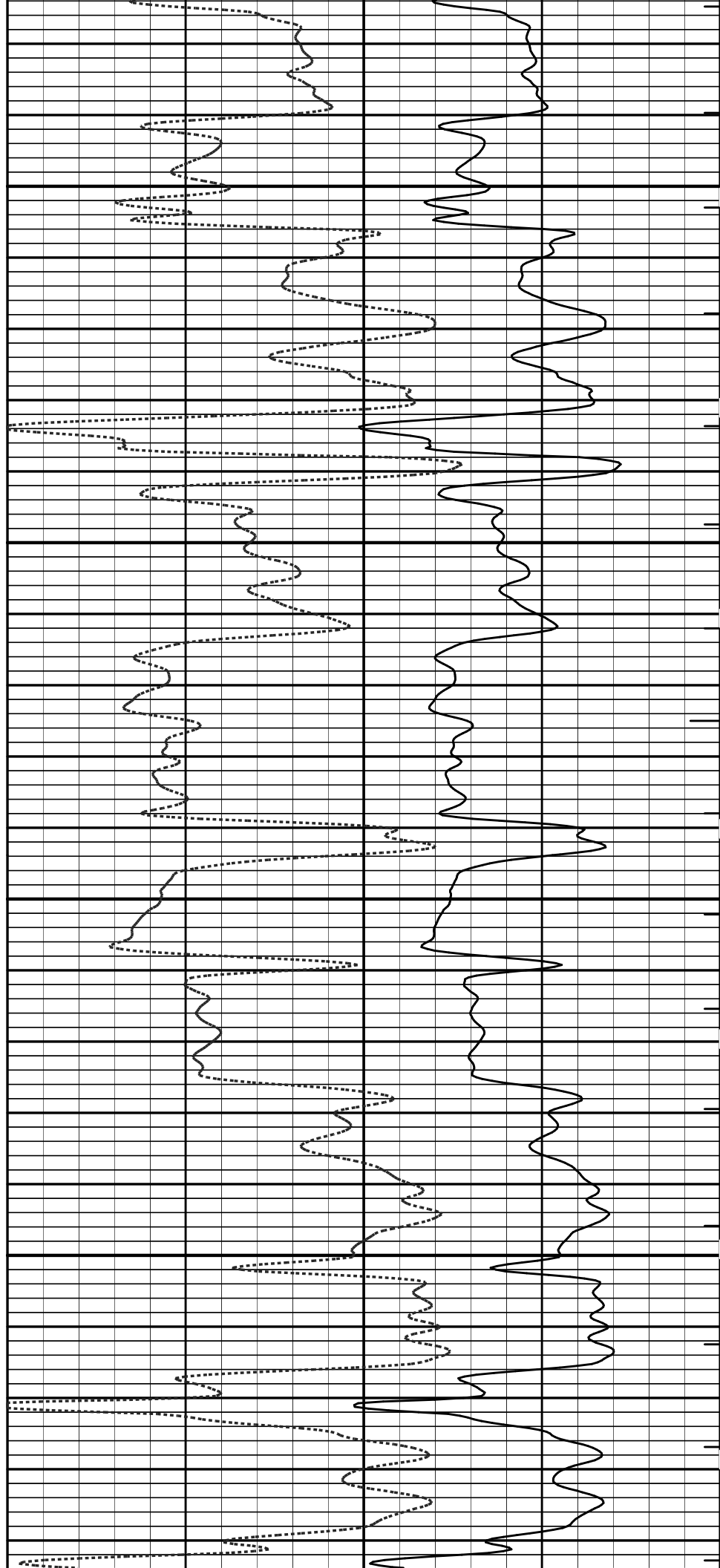


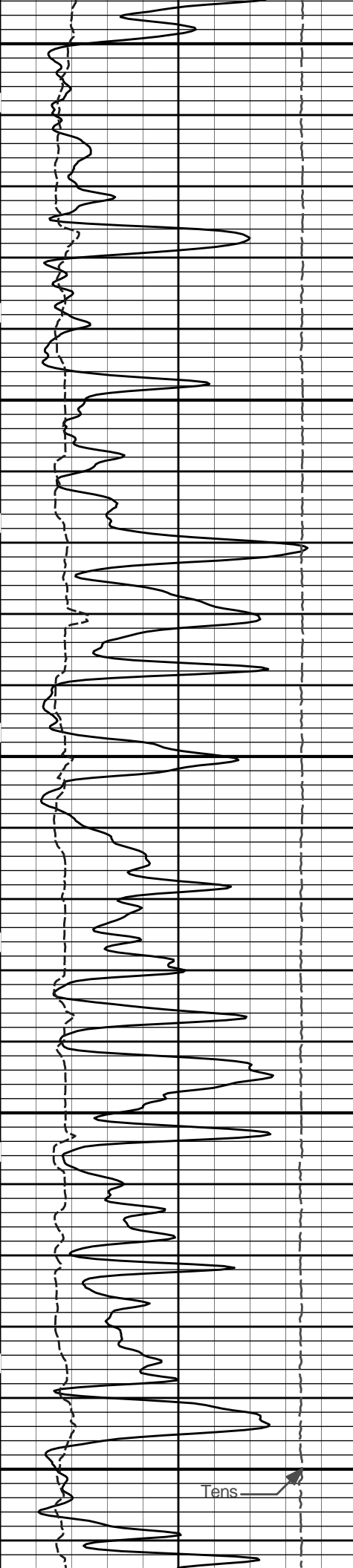




3200

3300

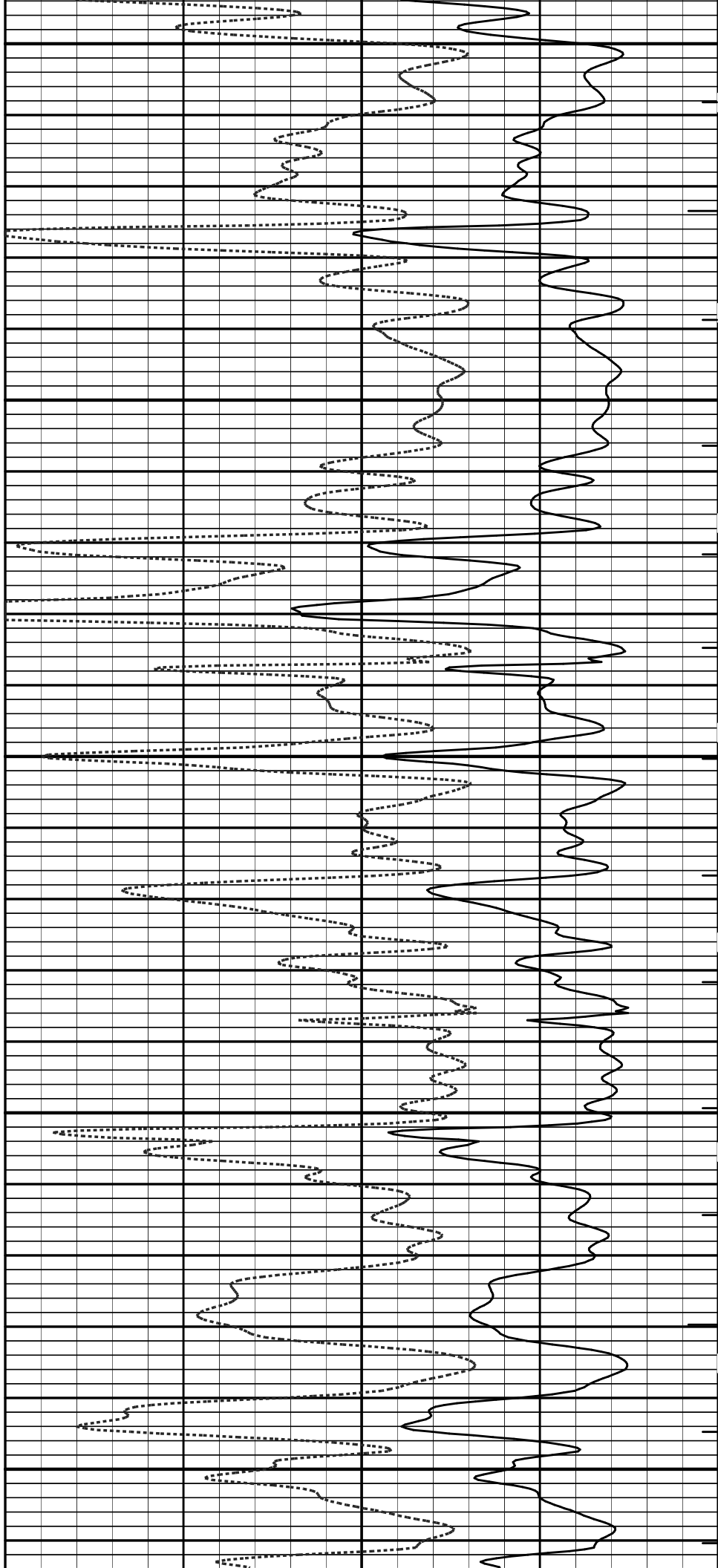


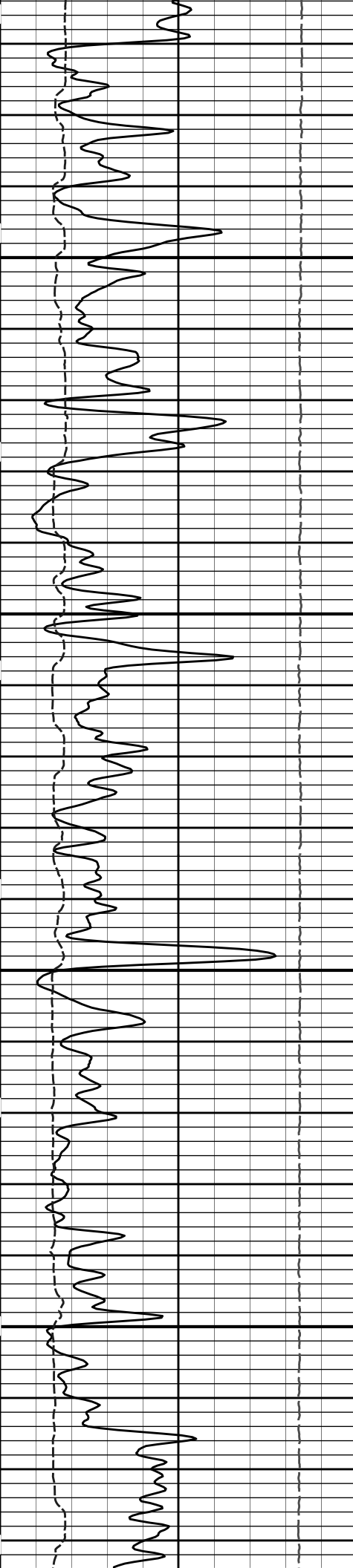


3400

3500

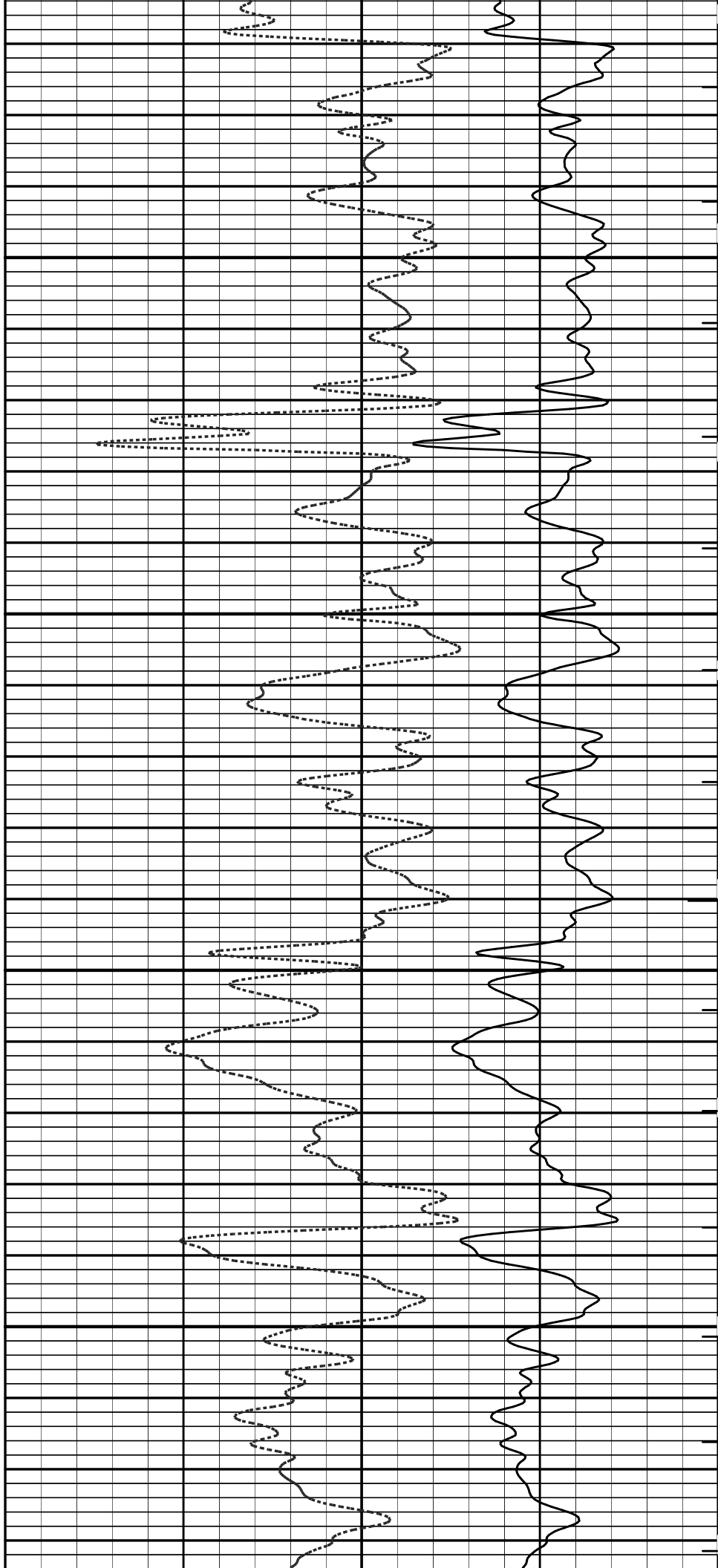
3600

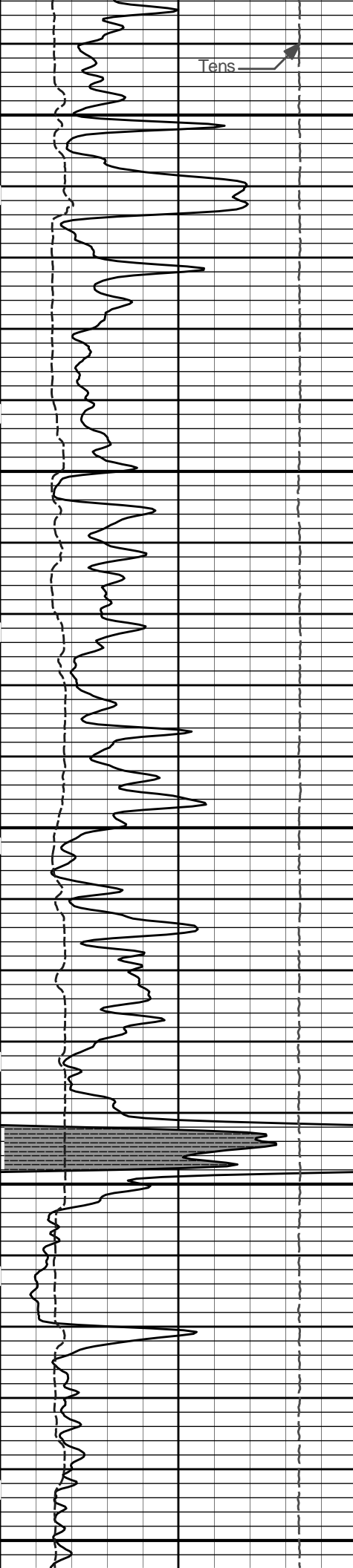




3700

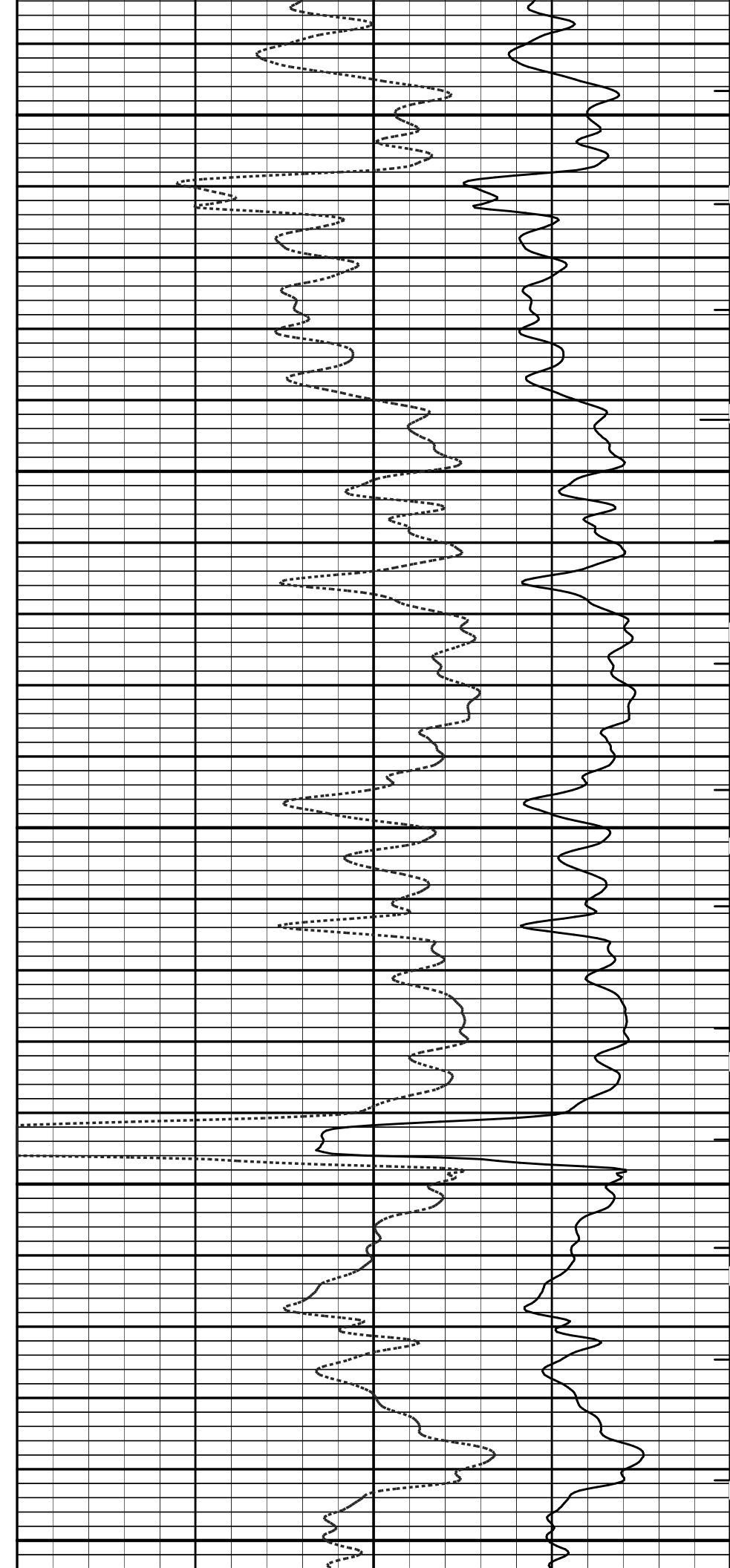
3800

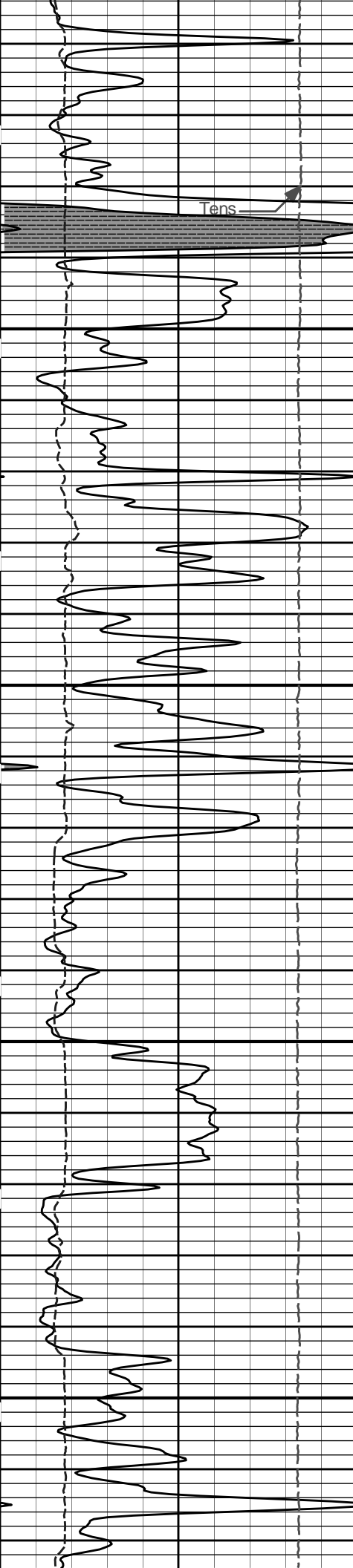




3900

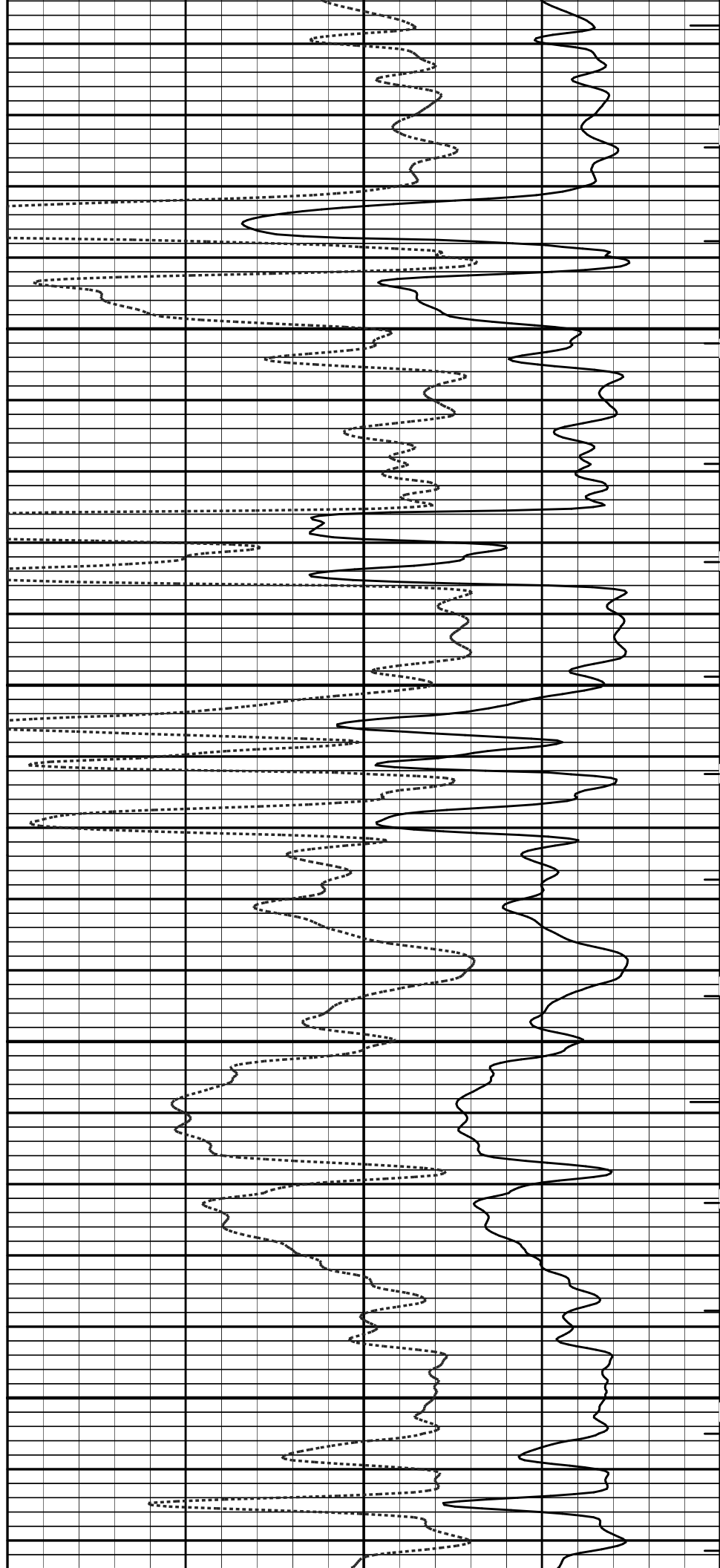
4000

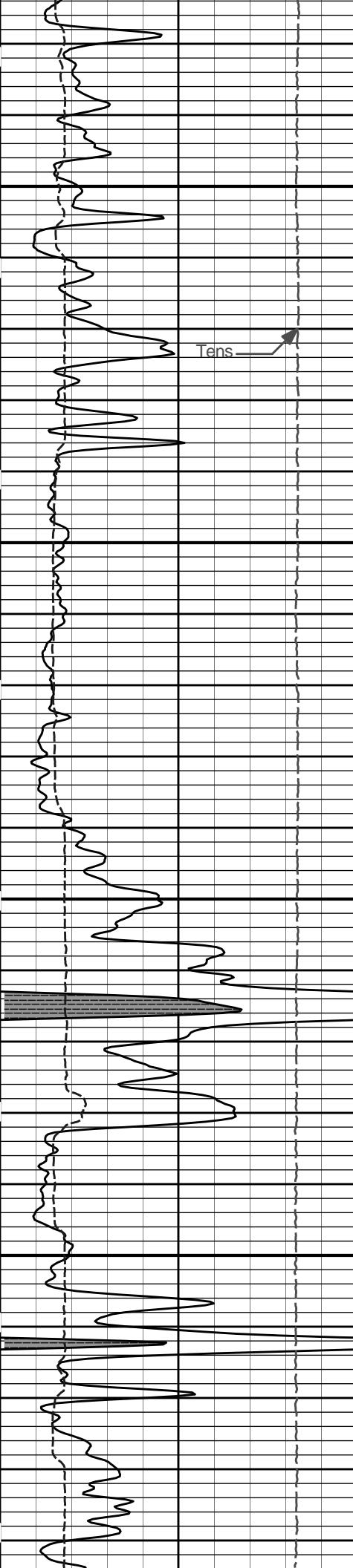




4100

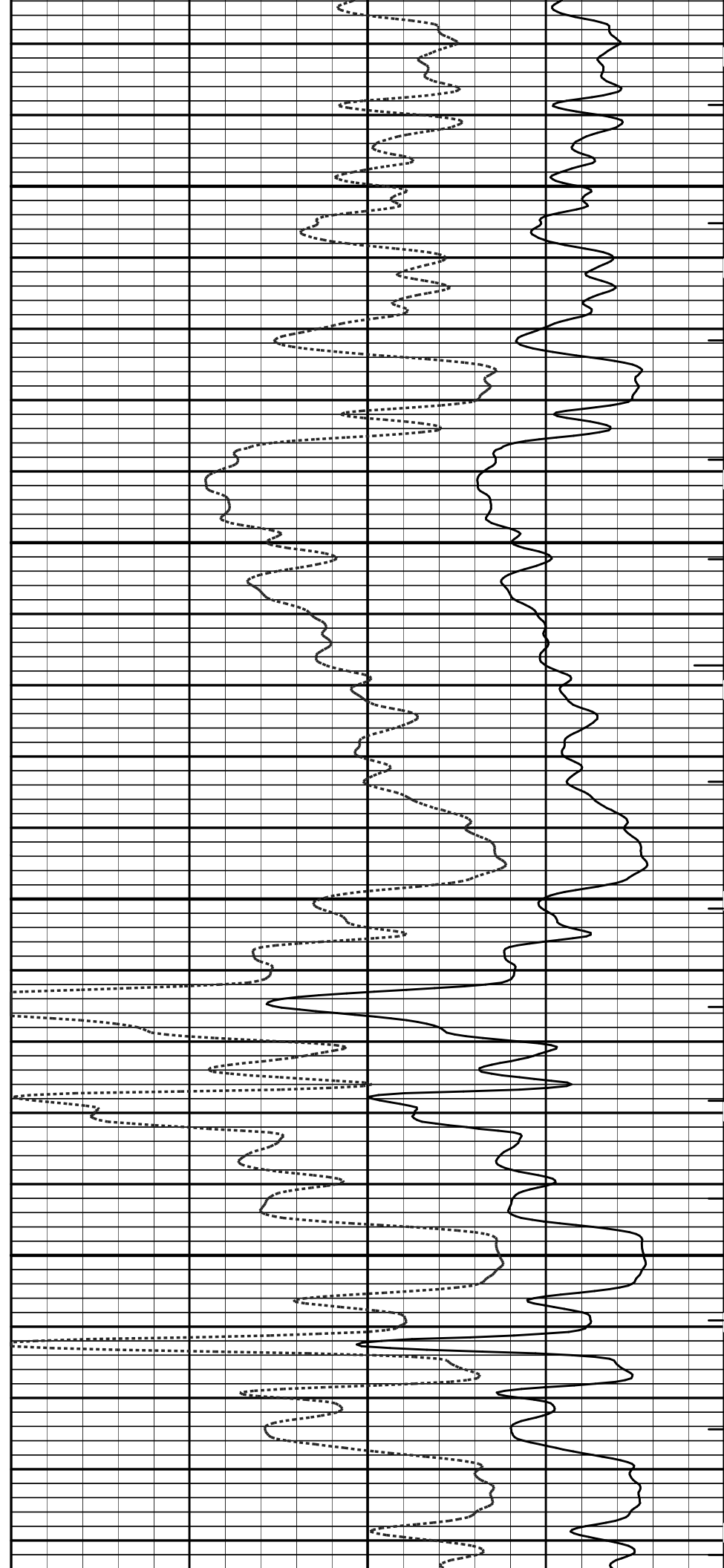
4200

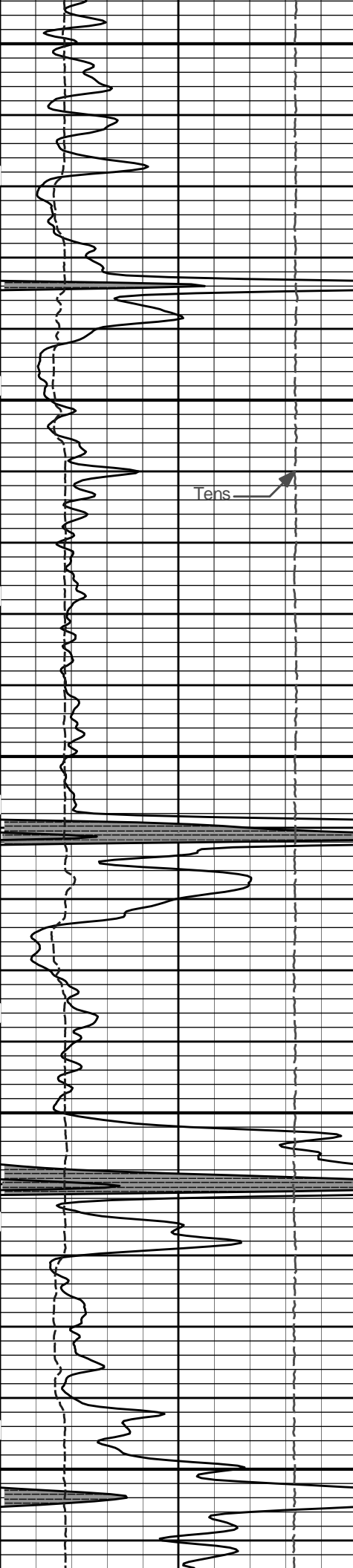




4300

4400

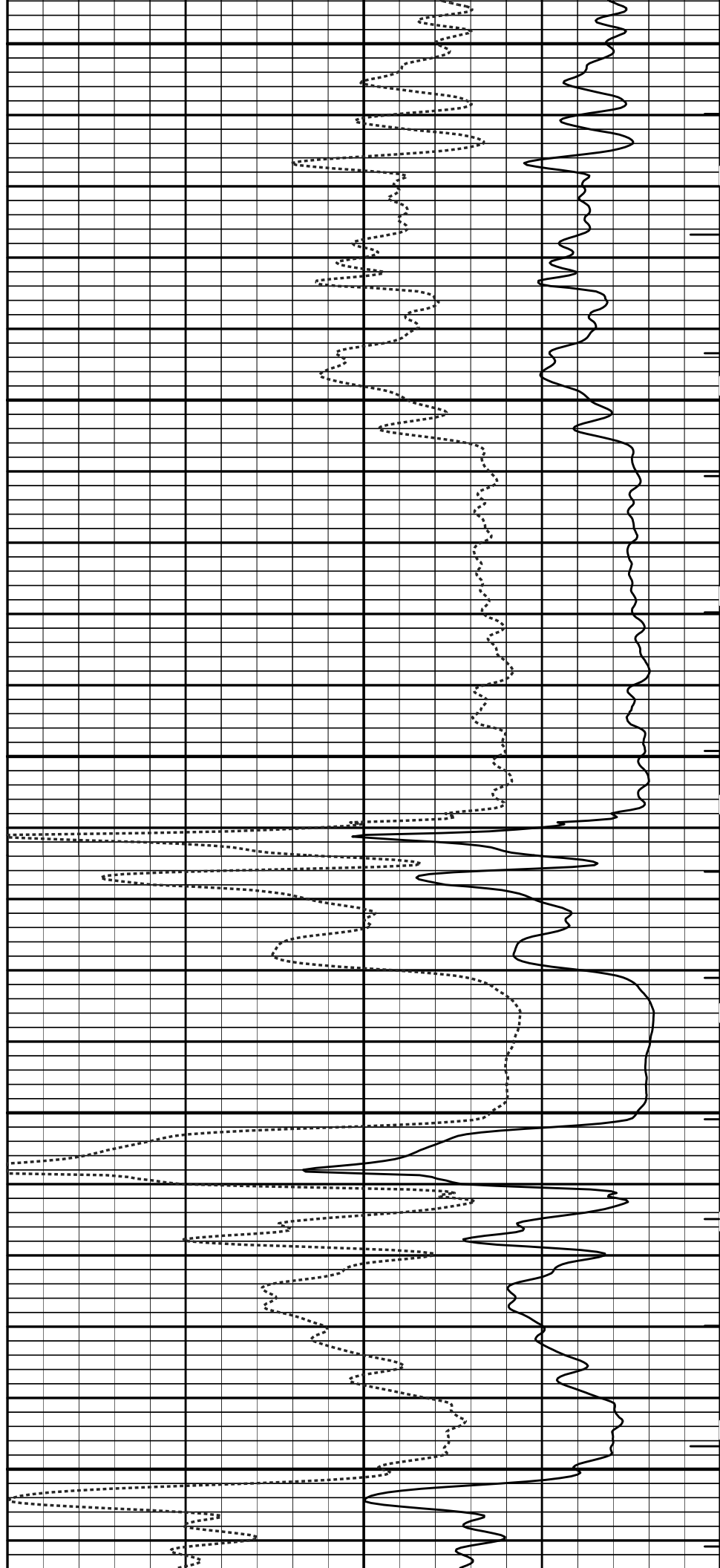


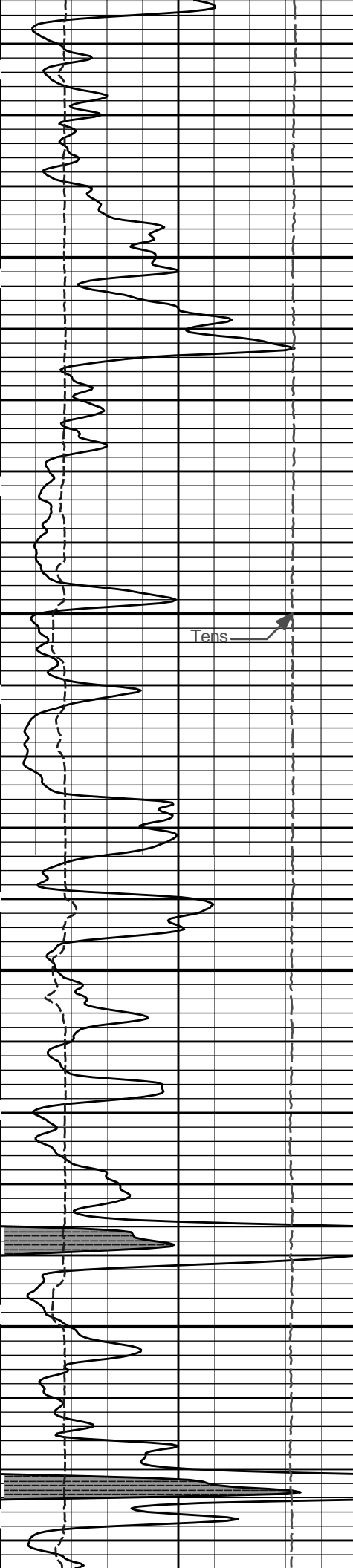


4500

4600

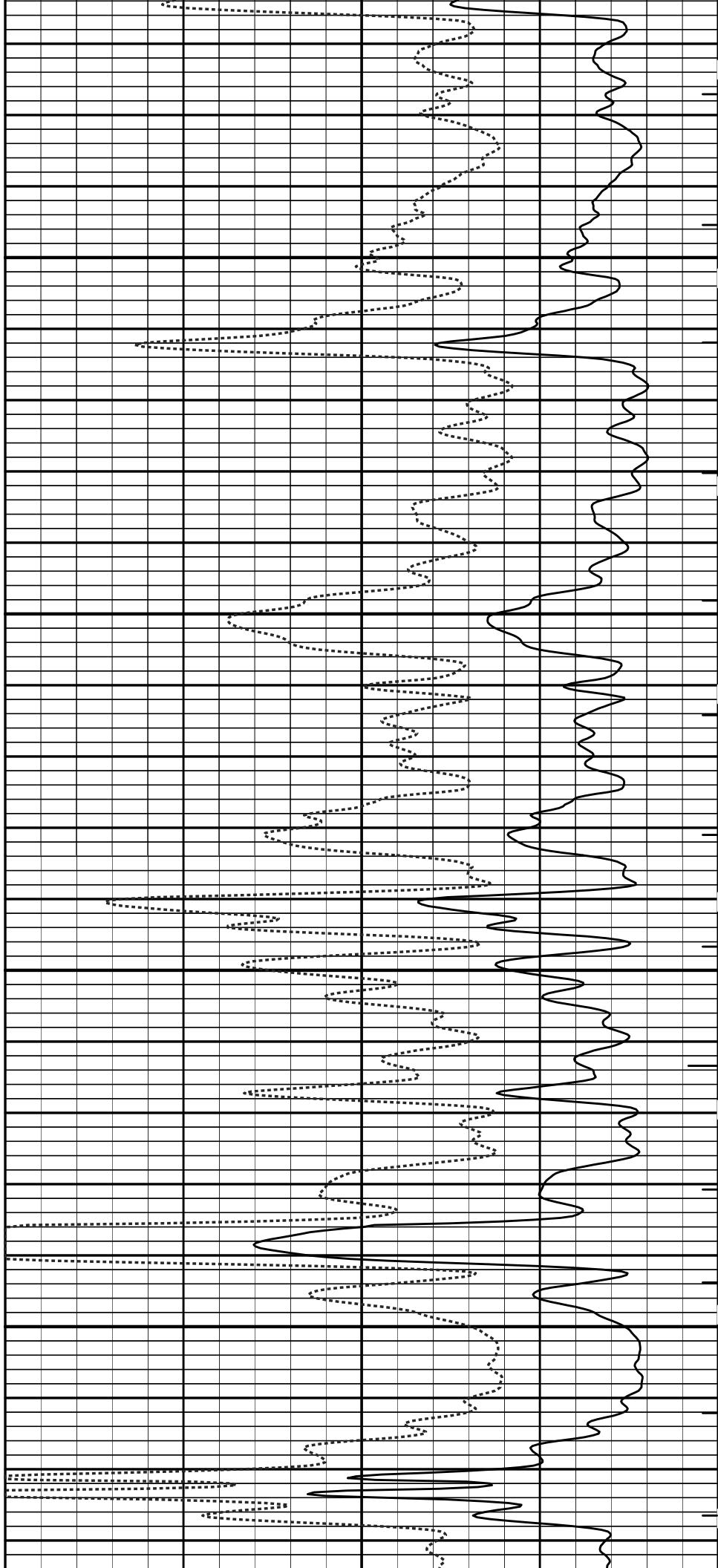
4700





4800

4900

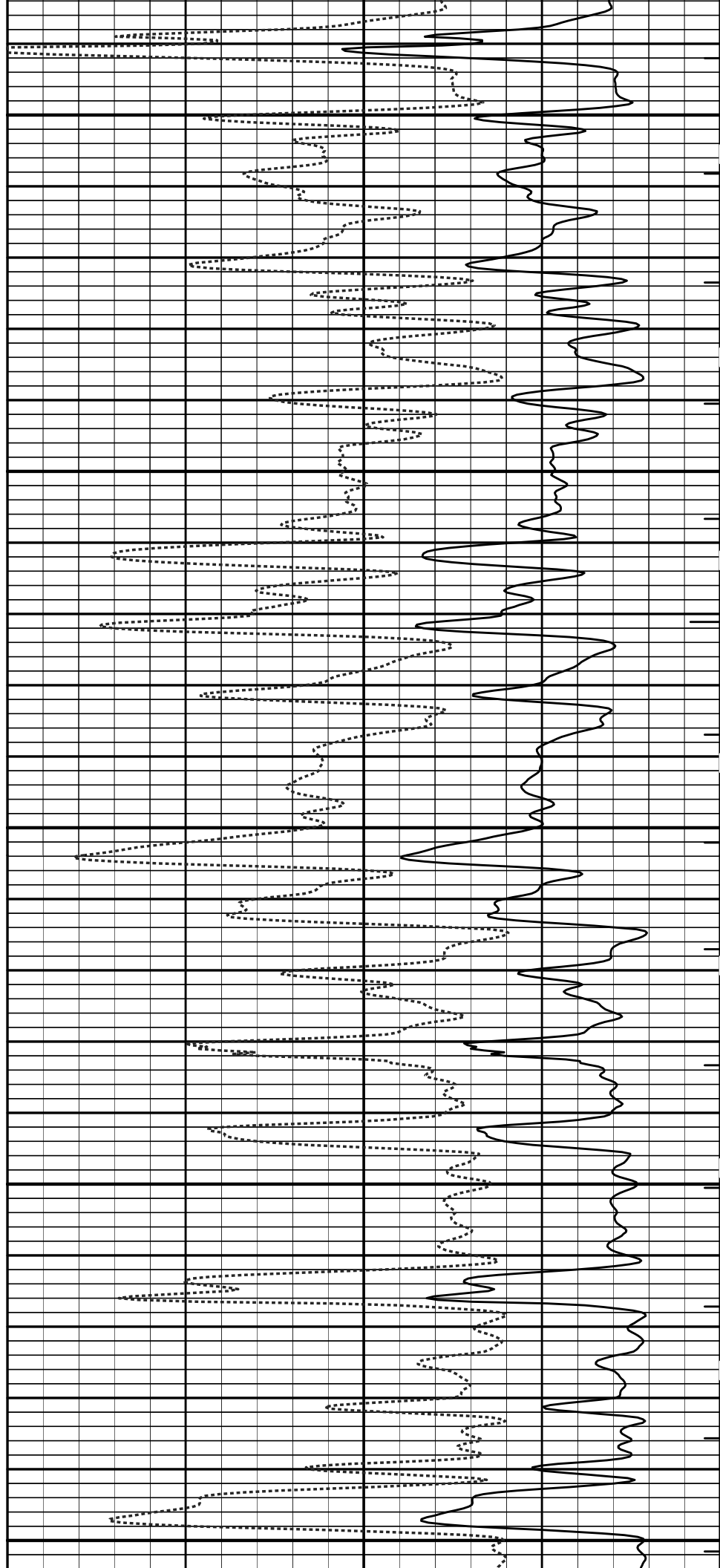


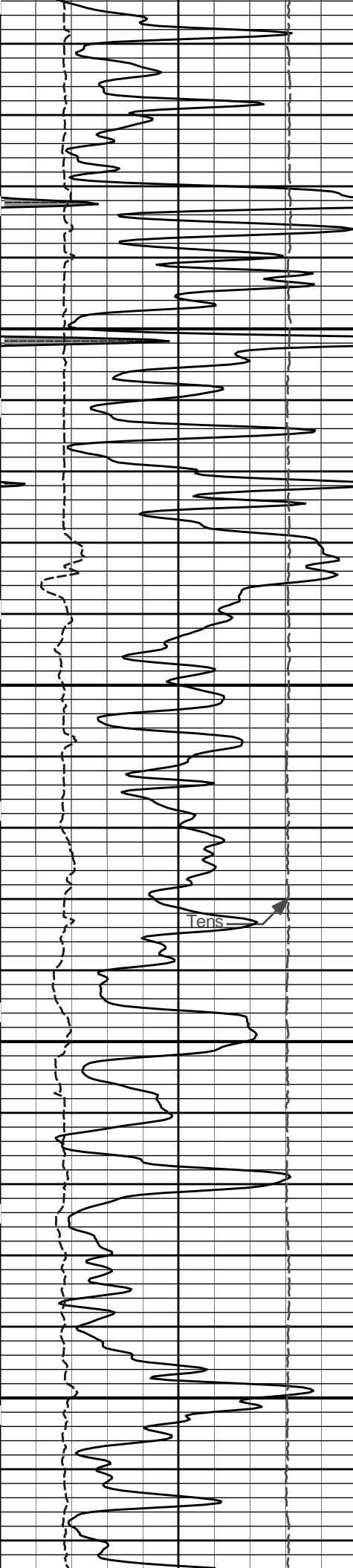




5000

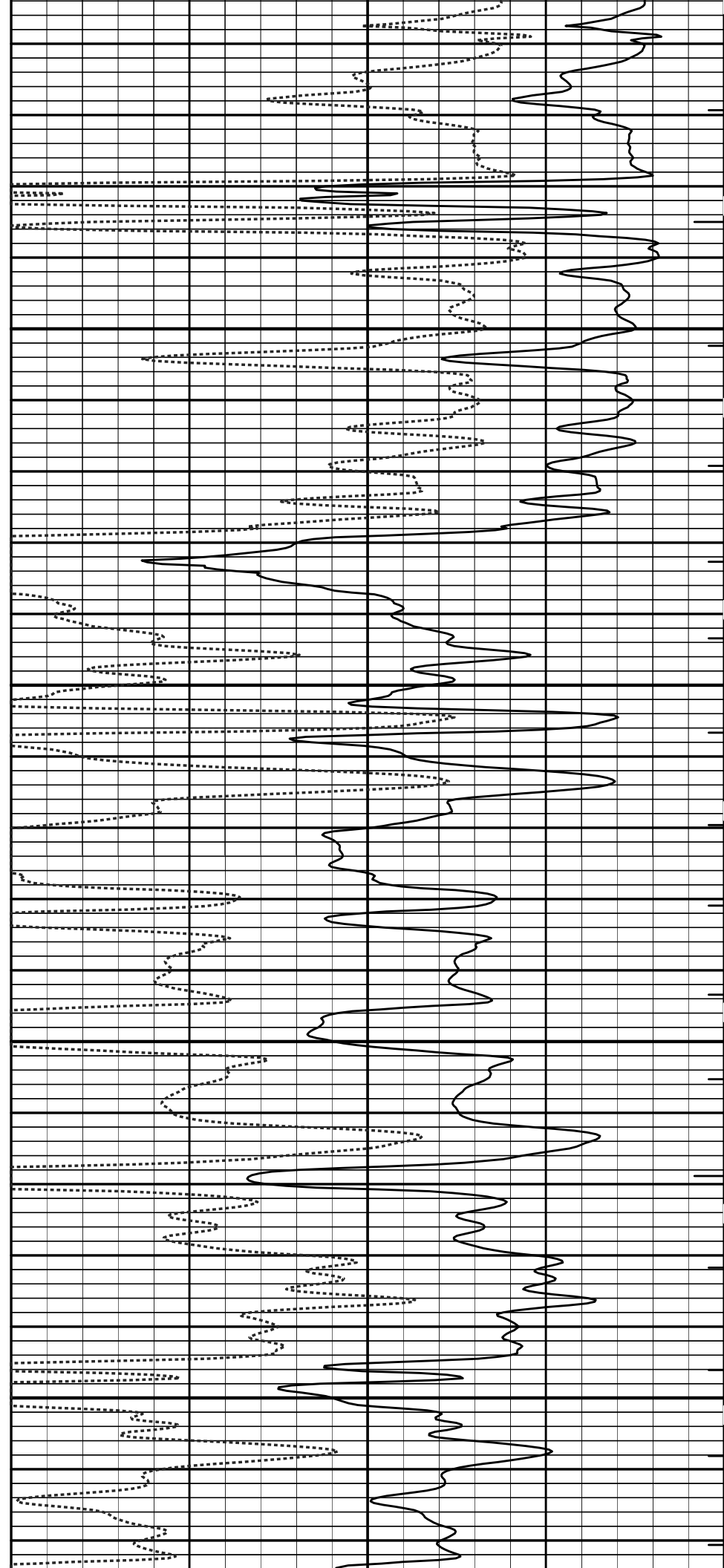
5100

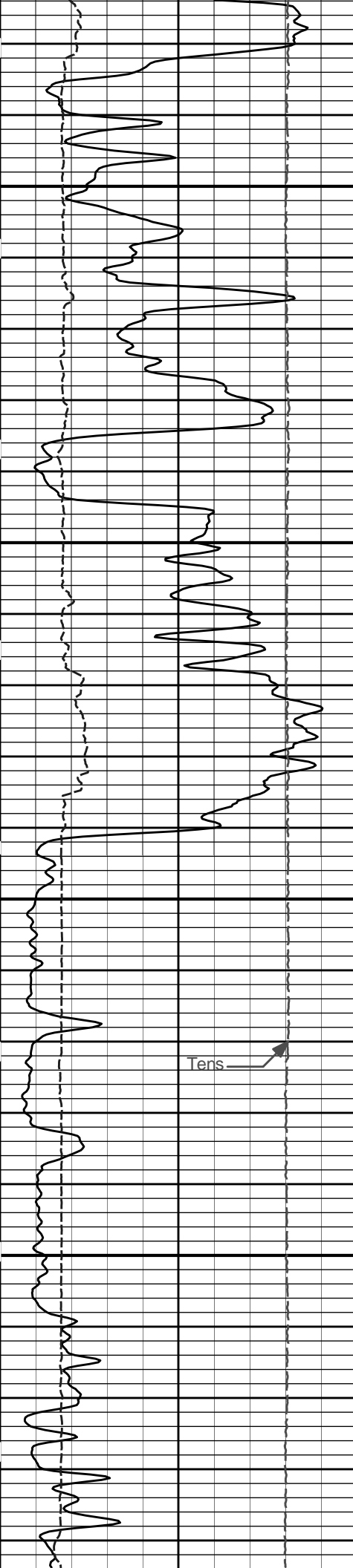




5200

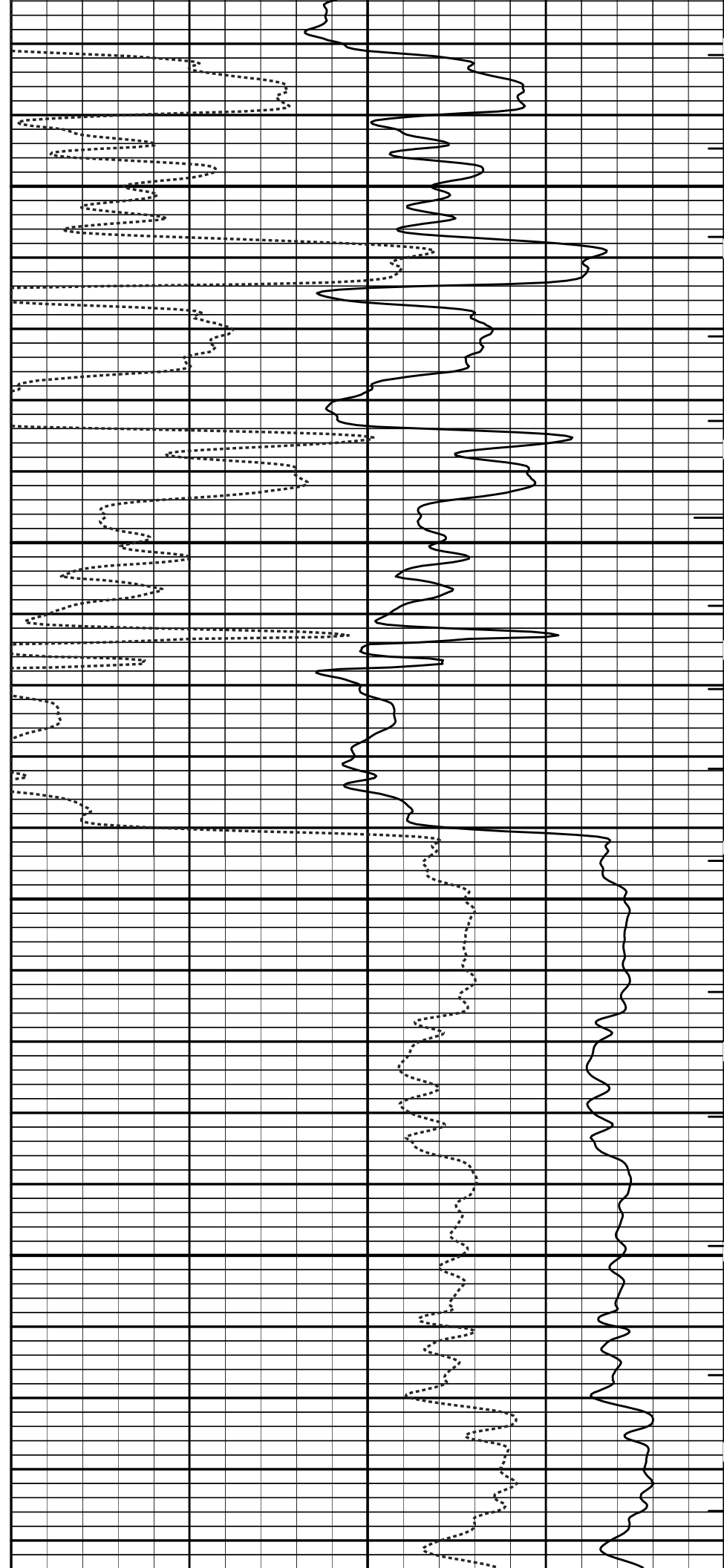
5300

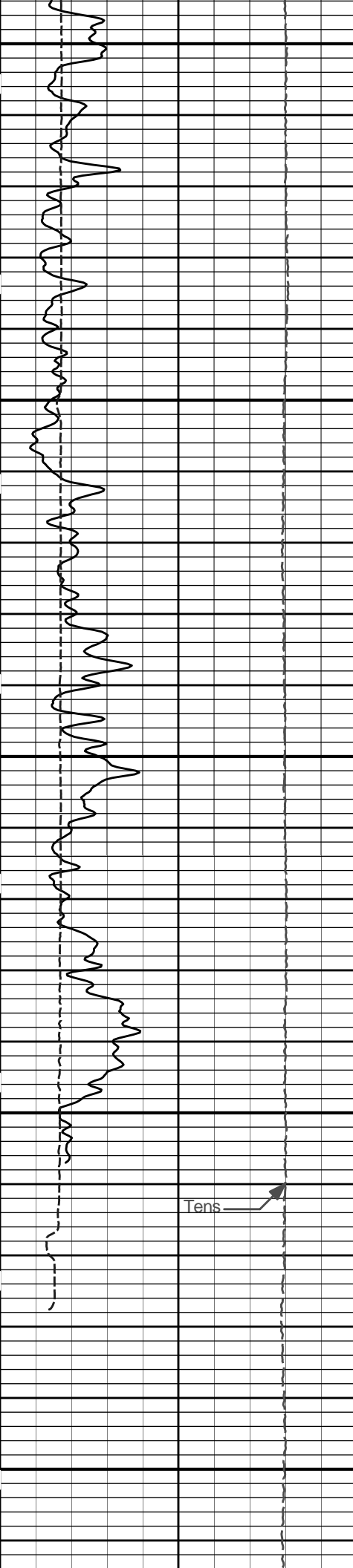




5400

5500



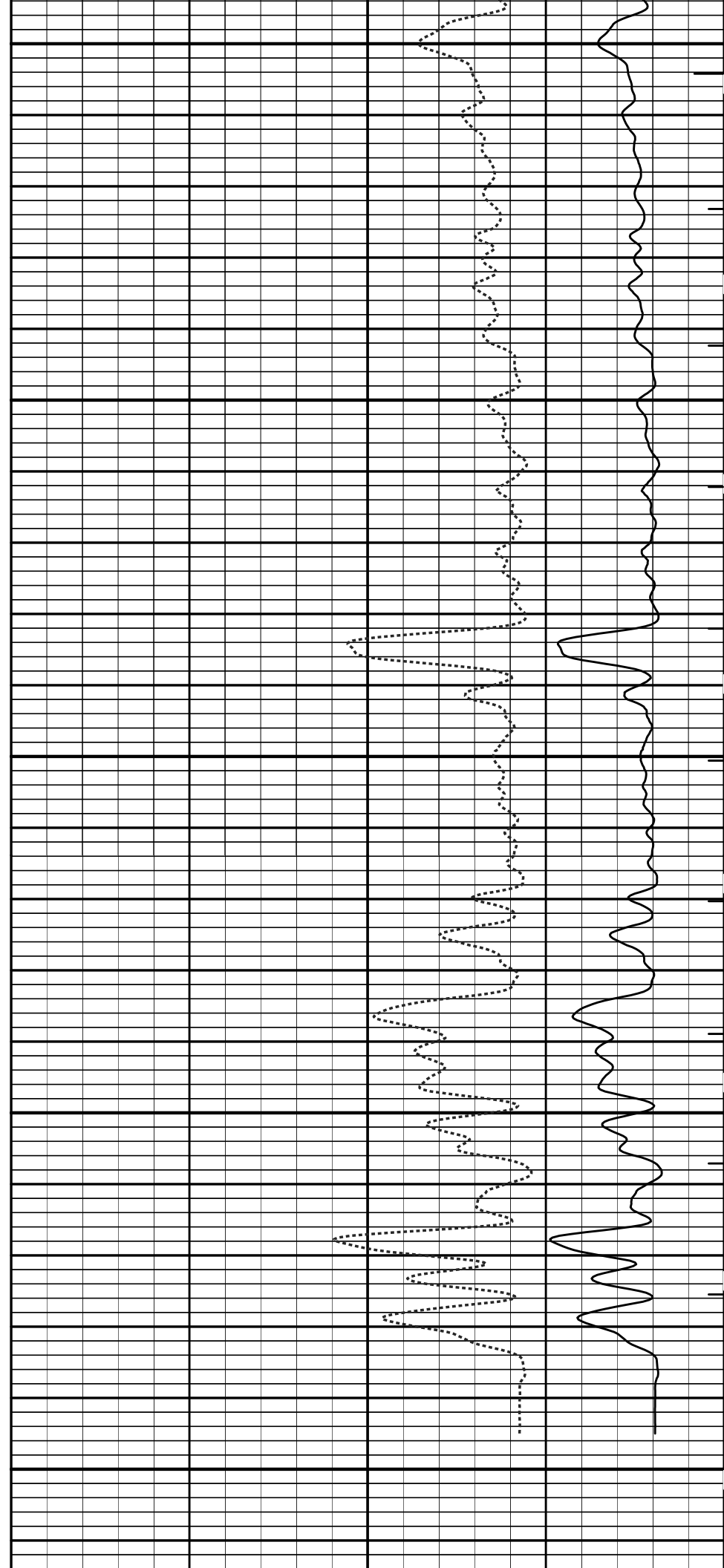


5600

5700

5800

Tens.



ID

|       |           |     |
|-------|-----------|-----|
| 15K   | Tens      | 0   |
|       | pounds    |     |
| 0     | Gamma API | 150 |
|       | api       |     |
| 6     | Caliper   | 16  |
|       | inches    |     |
| SHALE |           |     |

|              |     |
|--------------|-----|
| 1 : 240      |     |
| ft           |     |
| Tension Pull | 140 |
| 10 0         |     |
| Tension Pull | 30  |
|              |     |

|                 |     |
|-----------------|-----|
| ITTT            |     |
| Delta-T         | 40  |
| microsec per ft |     |
| Acou Porosity   | -10 |
| percent         |     |

**HALLIBURTON**

Plot Time: 20-Jan-13 14:05:32  
 Plot Range: 1802 ft to 5822 ft  
 Data: ELLIOTT\_C-1B\Well Based\ELLIOTT\_C-1B\_MAIN\_PASS\  
 Plot File: \BSAT\BSAT\_5\_MAIN\_LIB

# 5 INCH MAIN LOG

**HALLIBURTON**

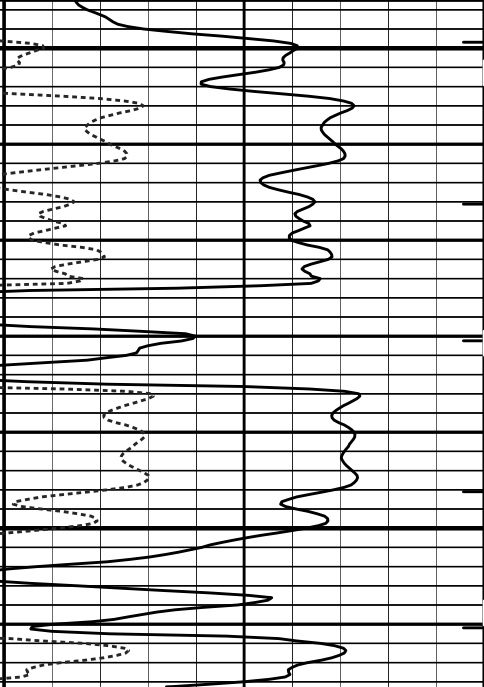
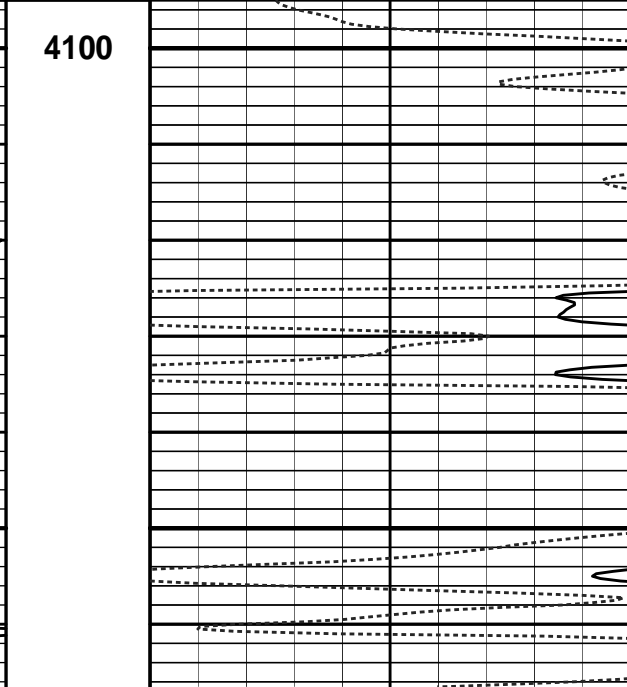
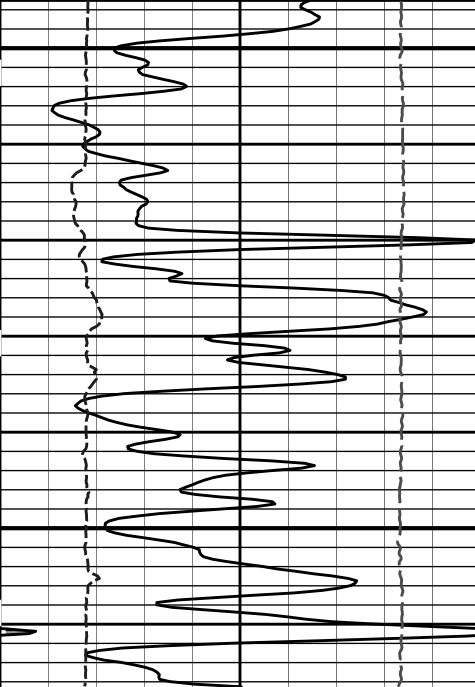
Plot Time: 20-Jan-13 14:05:33  
 Plot Range: 4095 ft to 5817.92 ft  
 Data: ELLIOTT\_C-1B\Well Based\ELLIOTT\_C-1B\_REPEAT\  
 Plot File: \BSAT\BSAT\_5\_REP\_LIB

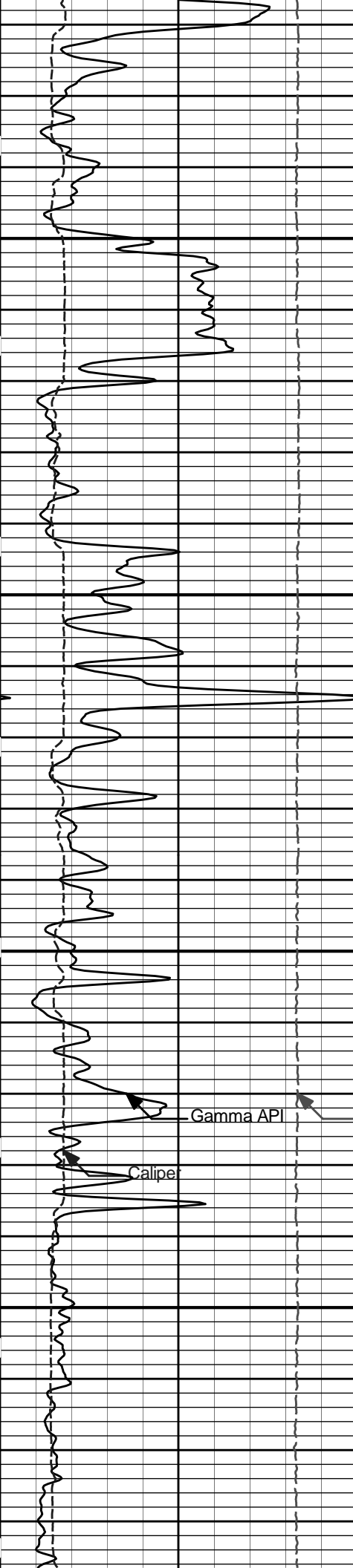
# REPEAT SECTION

|       |           |     |
|-------|-----------|-----|
| SHALE |           |     |
| 6     | Caliper   | 16  |
|       | inches    |     |
| 0     | Gamma API | 150 |
|       | api       |     |
| 15K   | Tension   | 0   |
|       | pounds    |     |

|         |  |
|---------|--|
| 1 : 240 |  |
| ft      |  |
|         |  |
|         |  |

|                 |     |
|-----------------|-----|
| ITTT            |     |
| Acou Porosity   | -10 |
| percent         |     |
| Delta-T         | 40  |
| microsec per ft |     |





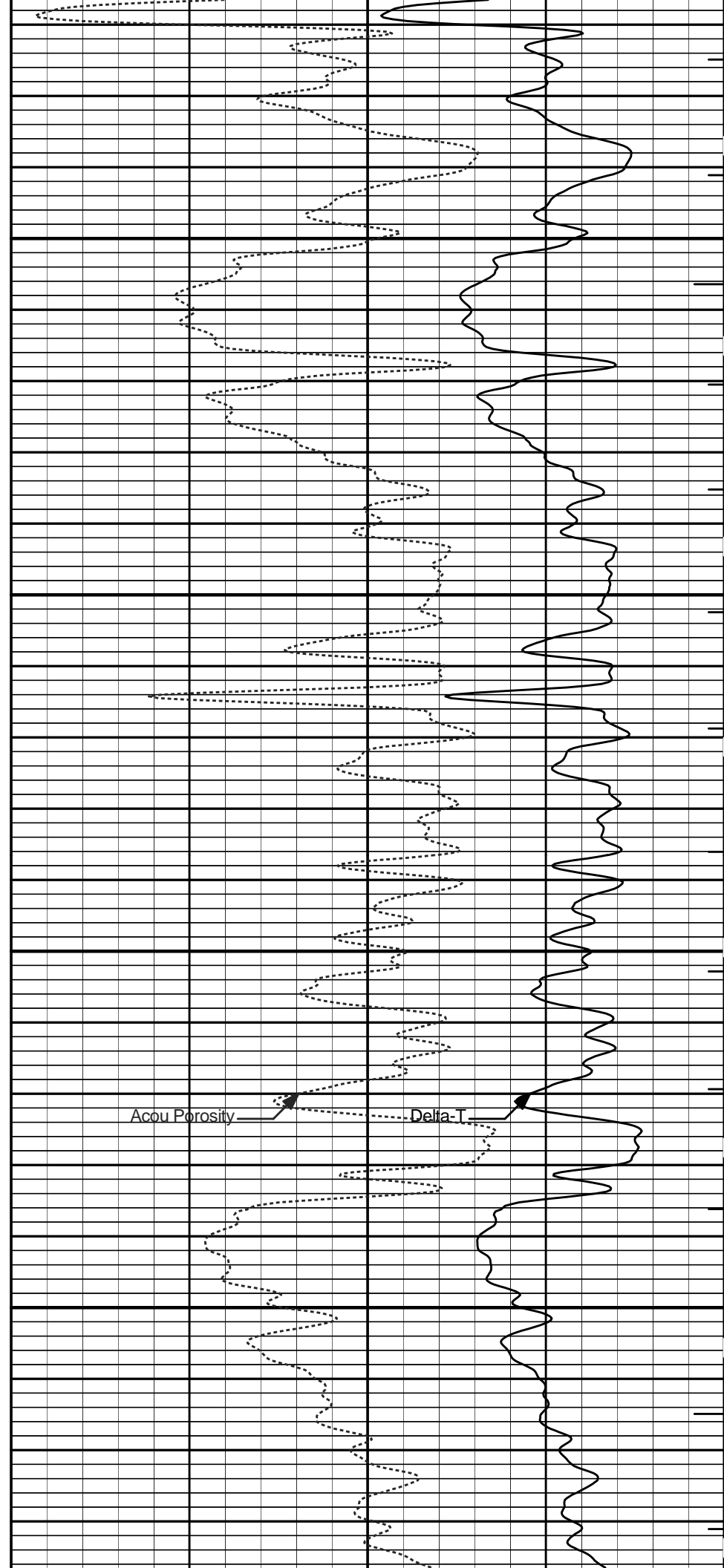
4200

4300

Gamma API

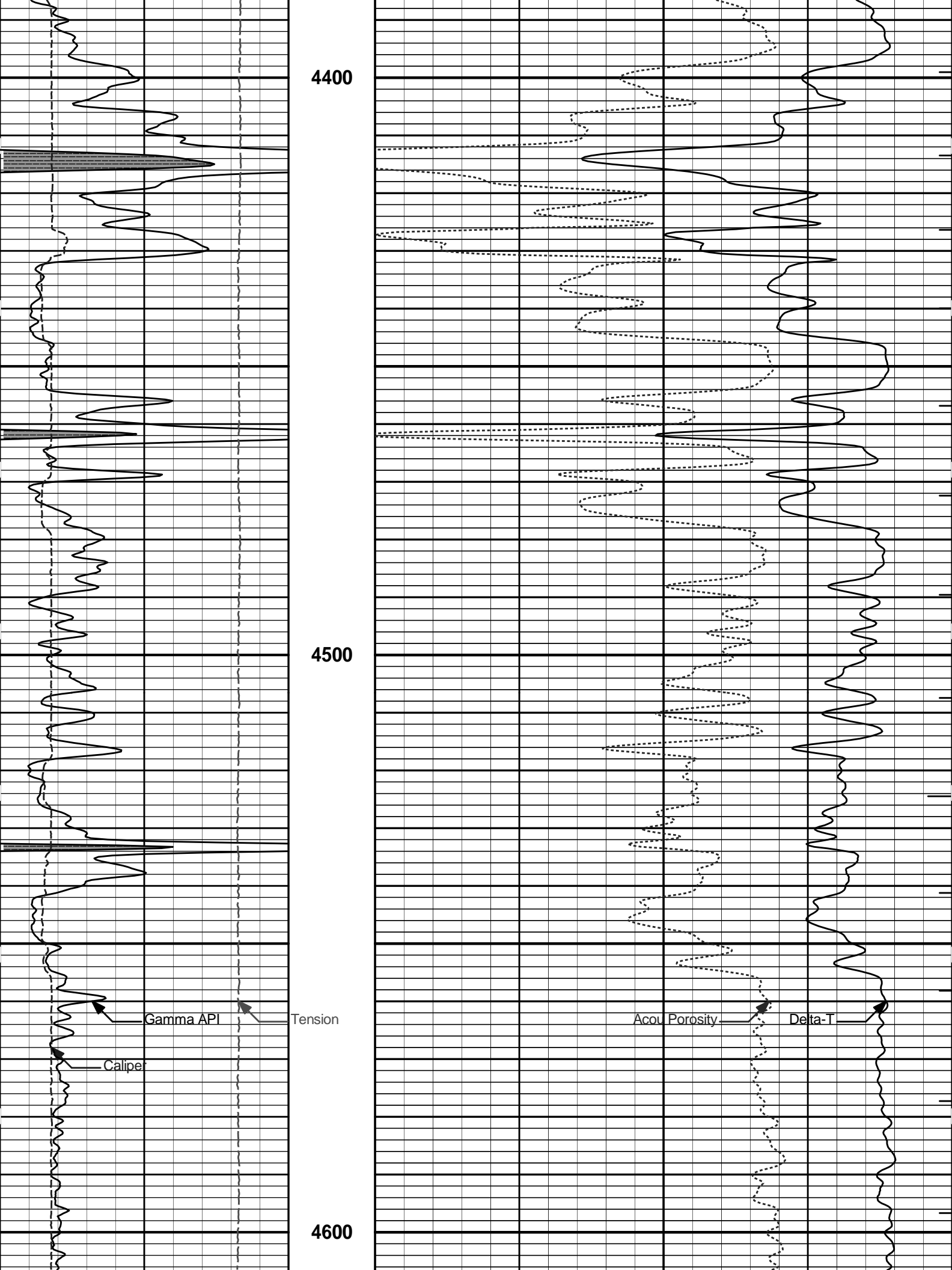
Caliper

Tension



Acou Porosity

Delta-T



4400

4500

4600

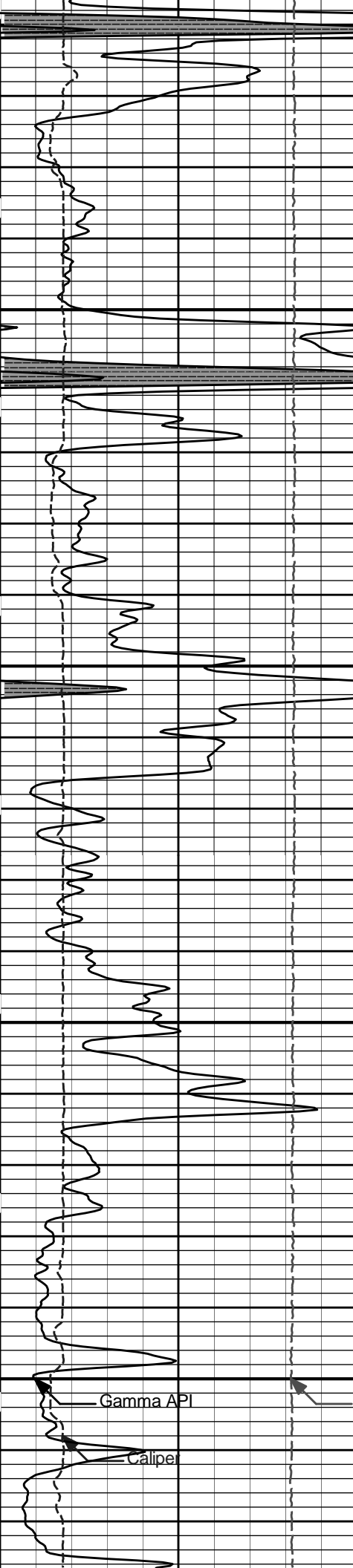
Gamma API

Caliper

Tension

Acou. Porosity

Delta-T



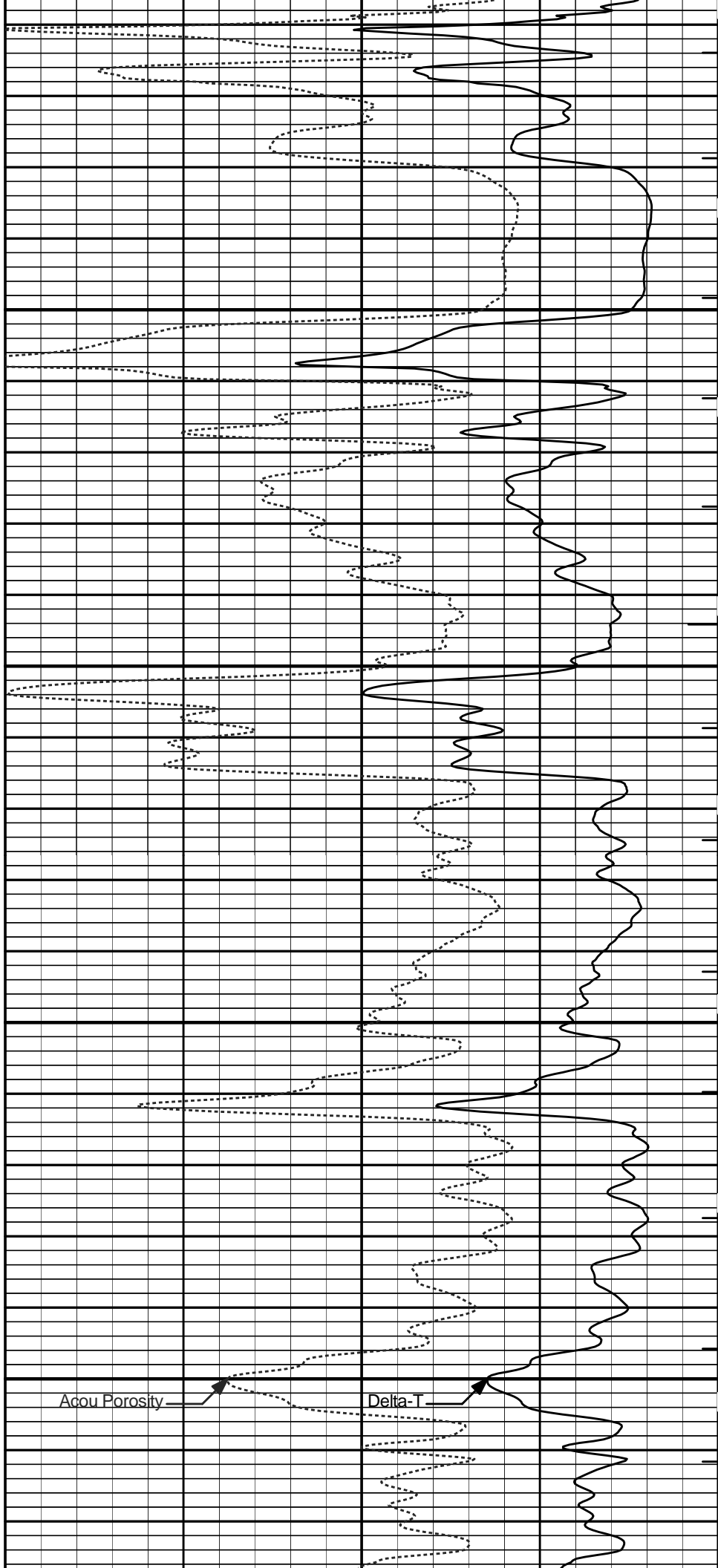
4700

4800

Gamma API

Caliper

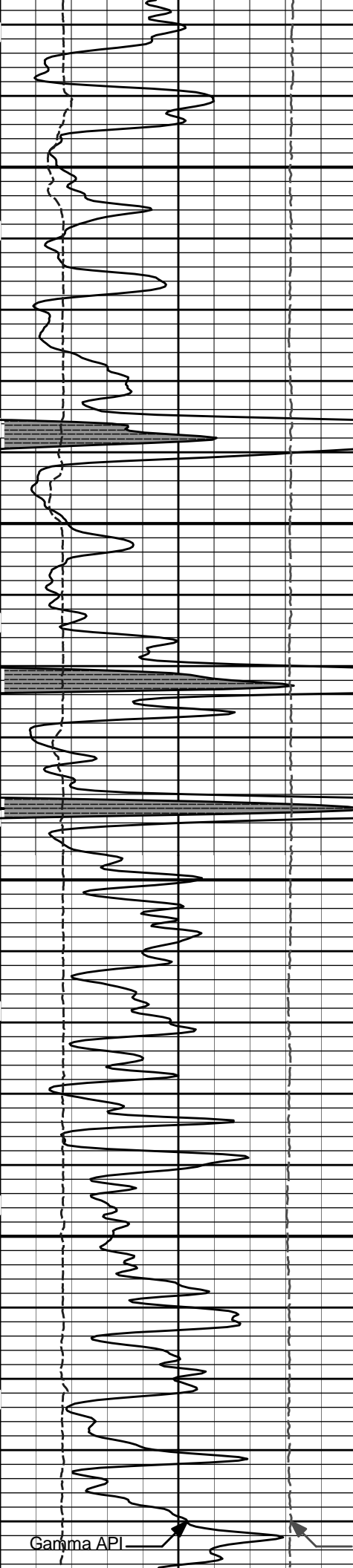
Tension



Acou Porosity

Delta-T

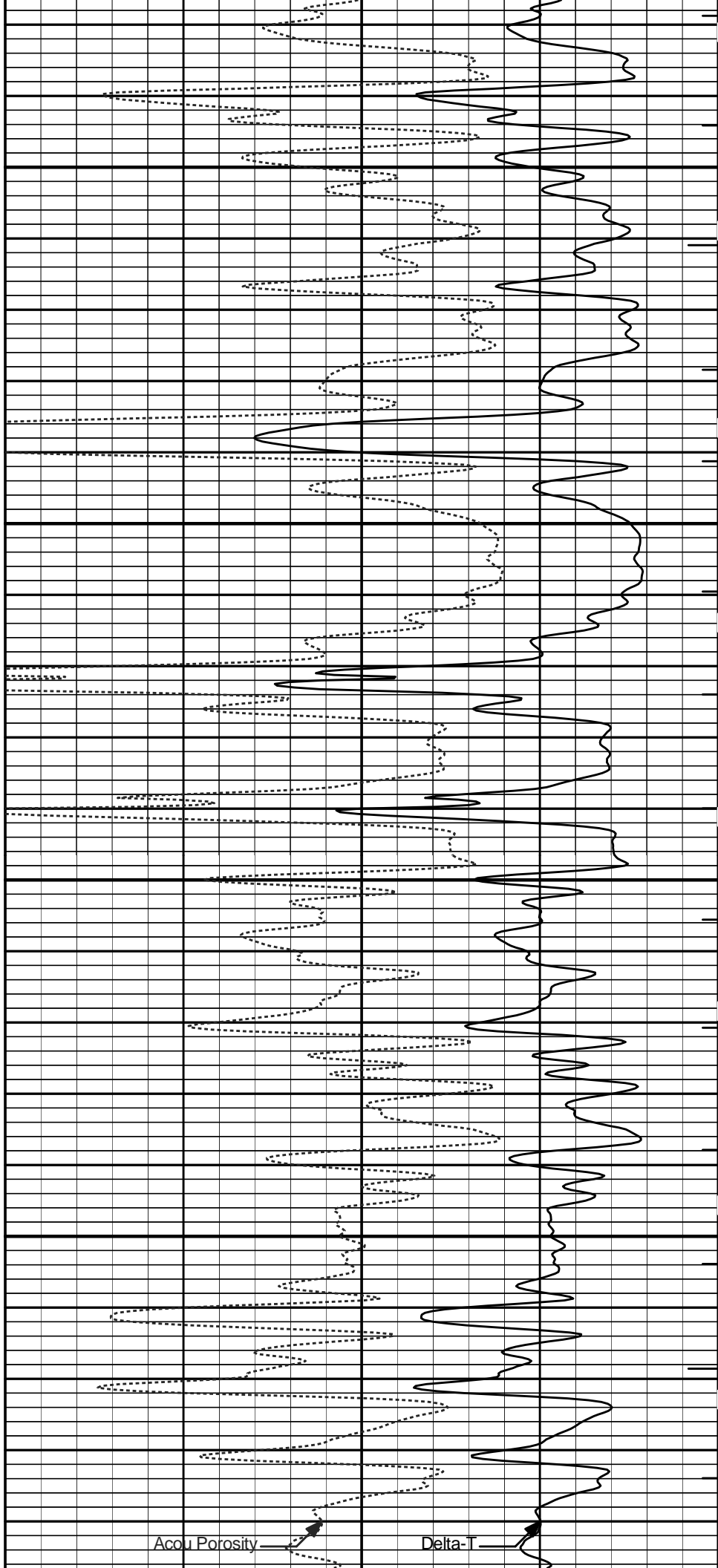




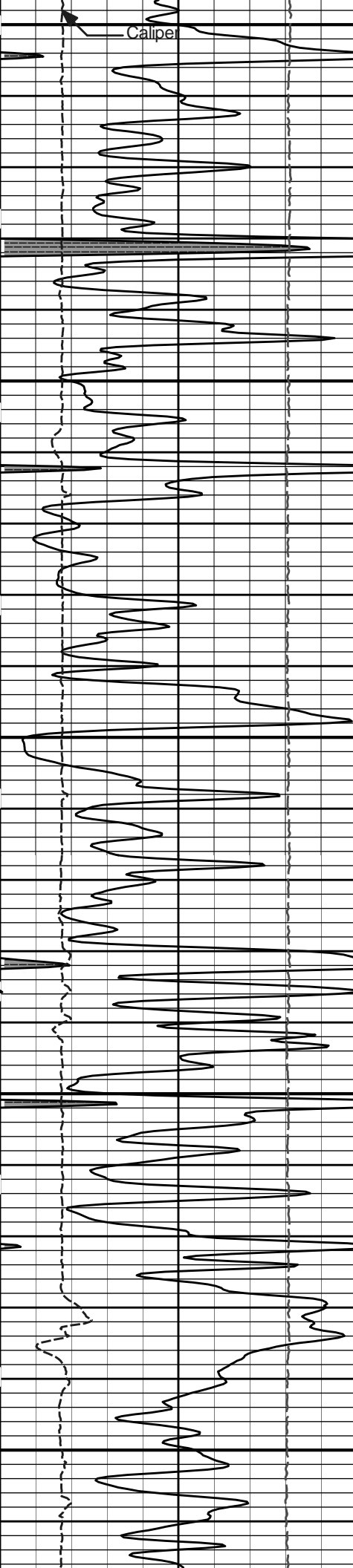
4900

5000

Gamma API Tension



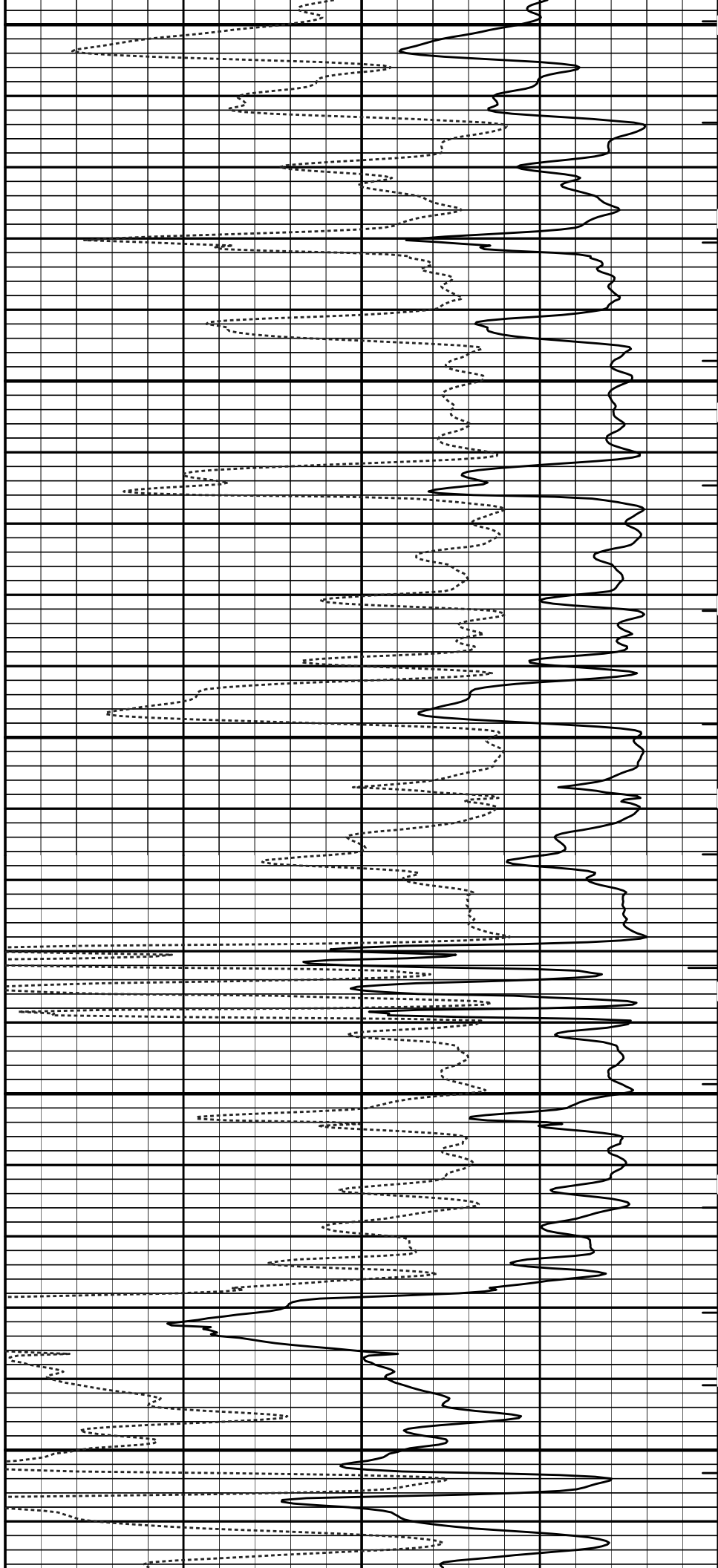
Acou Porosity Delta-T

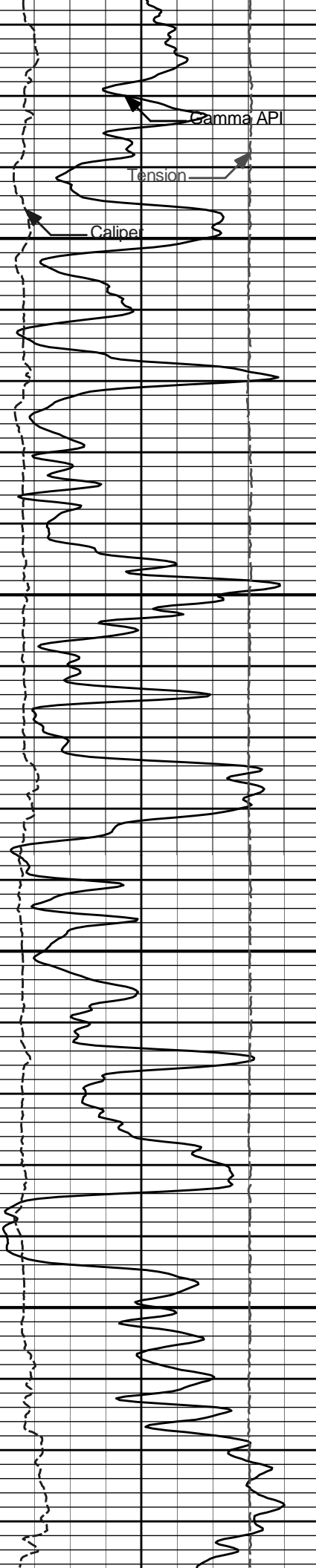


Caliper

5100

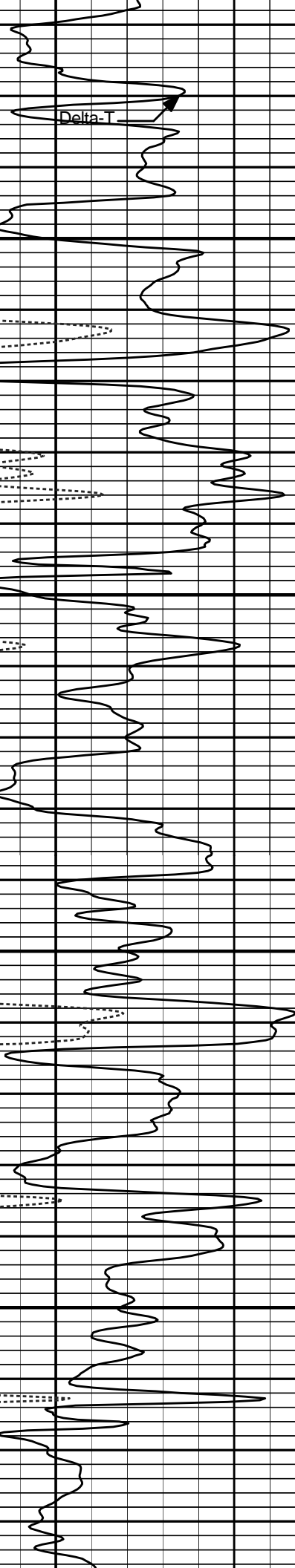
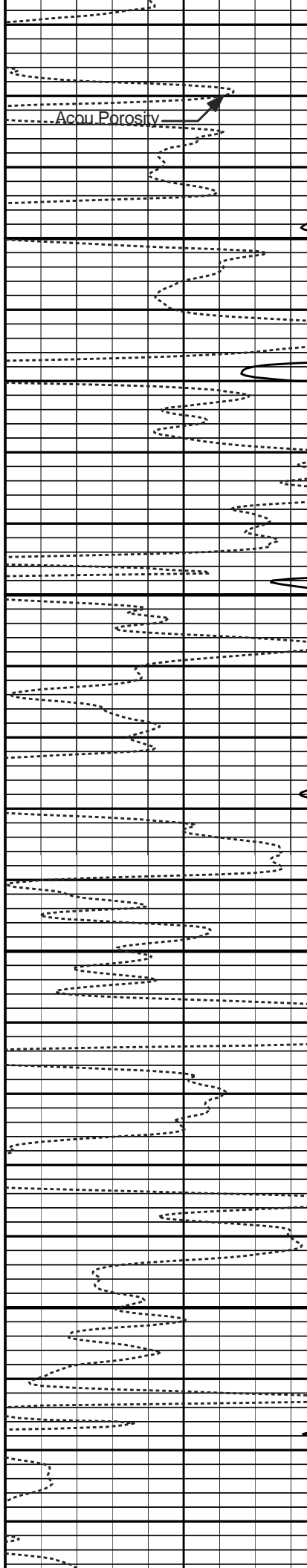
5200





5300

5400



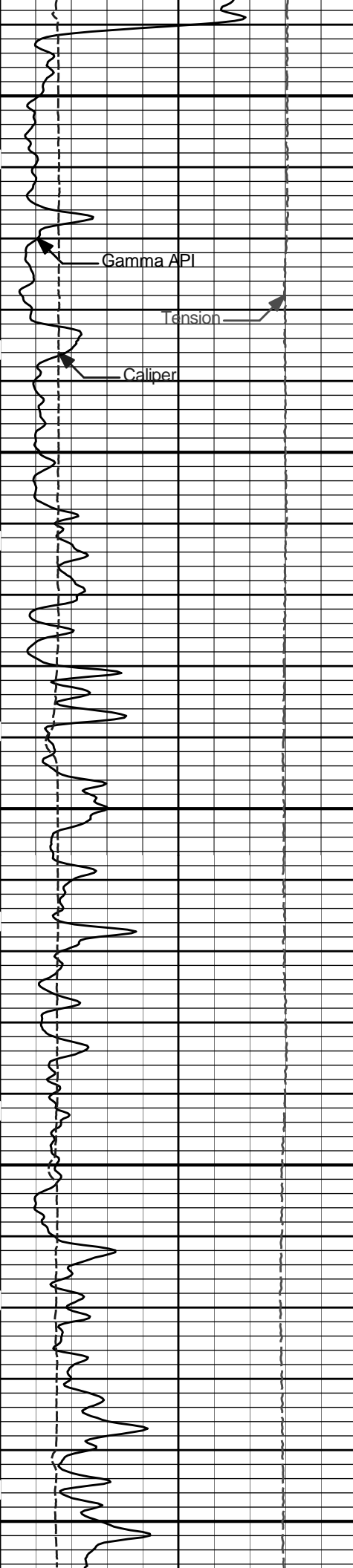
Gamma API

Tension

Caliper

Acou Porosity

Delta-T



5500

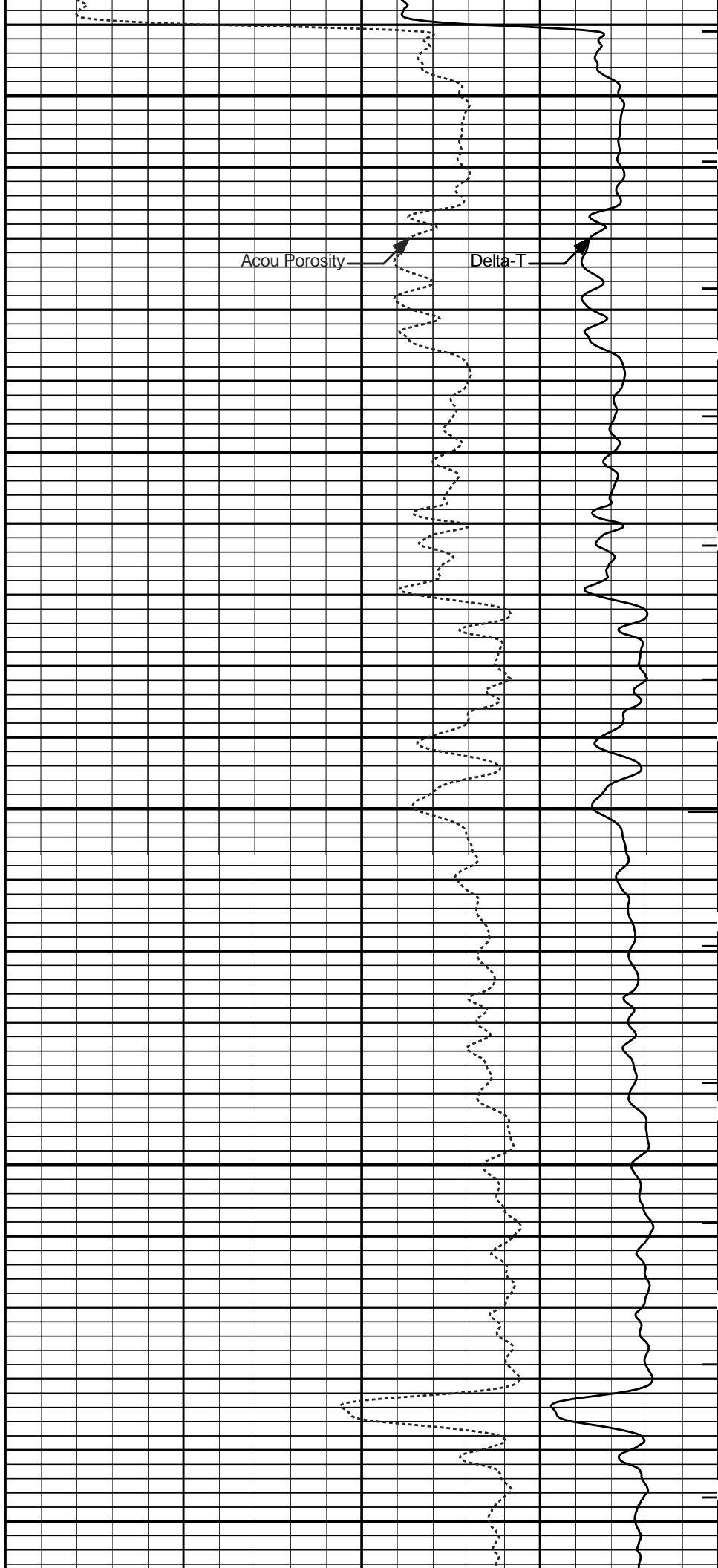
Gamma API

Tension

Caliper

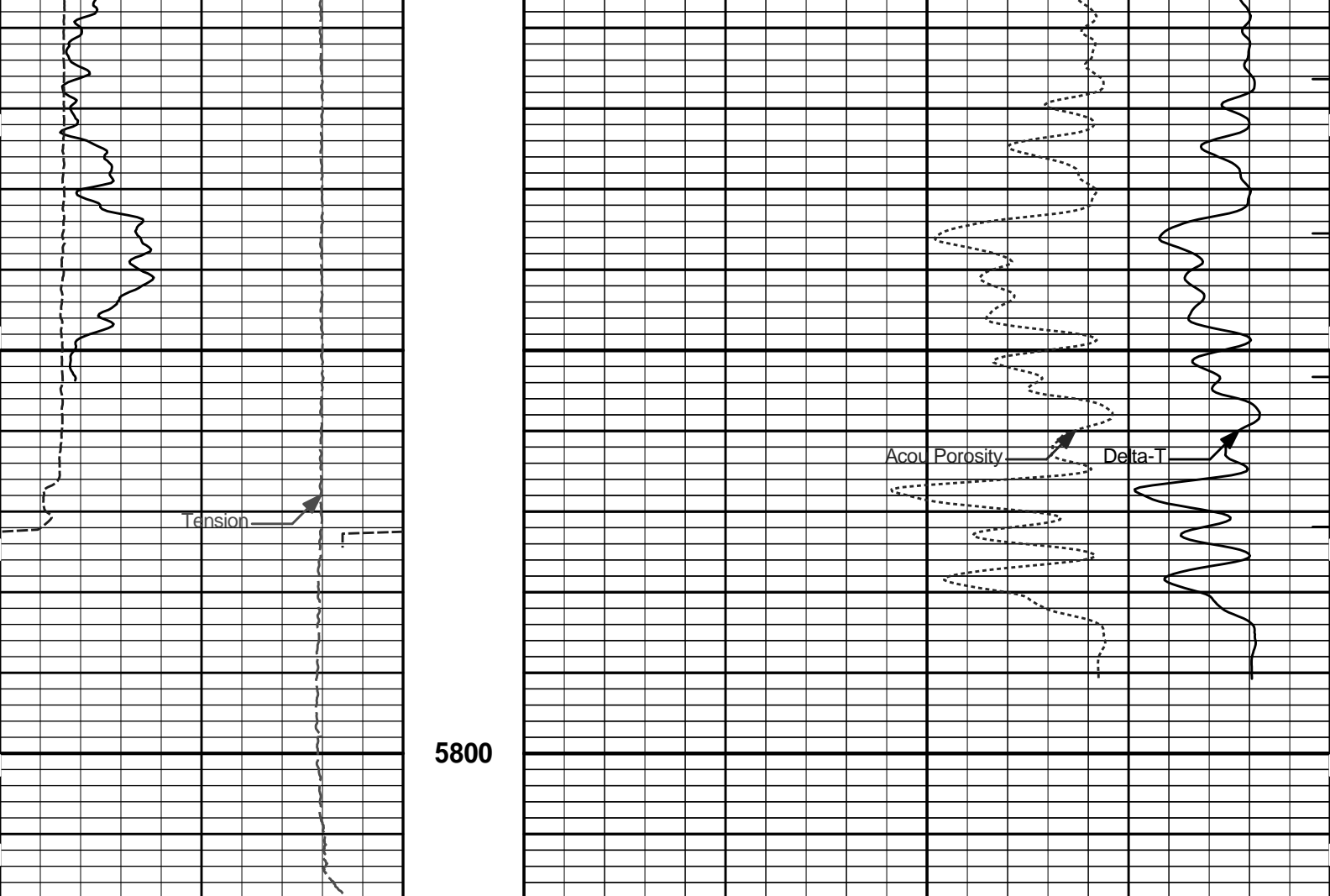
5600

5700



Acou Porosity

Delta-T



|       |           |     |               |     |                 |     |
|-------|-----------|-----|---------------|-----|-----------------|-----|
| 15K   | Tension   | 0   | 1 : 240<br>ft |     | ITTT            |     |
|       | pounds    |     |               |     |                 |     |
| 0     | Gamma API | 150 |               | 140 | Delta-T         | 40  |
|       | api       |     |               |     | microsec per ft |     |
| 6     | Caliper   | 16  |               | 30  | Acou Porosity   | -10 |
|       | inches    |     |               |     | percent         |     |
| SHALE |           |     |               |     |                 |     |

**HALLIBURTON**

Plot Time: 20-Jan-13 14:05:48  
 Plot Range: 4095 ft to 5817.92 ft  
 Data: ELLIOTT\_C-1B\Well Based\ELLIOTT\_C-1B\_REPEAT\  
 Plot File: \BSAT\BSAT\_5\_REP\_LIB

## REPEAT SECTION

**HALLIBURTON**

### TOOL STRING DIAGRAM REPORT

| Description             | Overbody Description | O.D.       | Diagram | Sensors @ Delays       | Length  | Accumulated Length |
|-------------------------|----------------------|------------|---------|------------------------|---------|--------------------|
| CH_HOS-954<br>37.50 lbs |                      | Ø 2.750 in |         | Temperature @ 75.79 ft | 3.03 ft | 76.82 ft           |

SP Sub-TRK954  
60.00 lbs

Ø 3.625 in →

← SP @ 72.01 ft

3.74 ft

73.79 ft

GTET-10748374  
165.00 lbs

Ø 3.625 in →

8.52 ft

70.05 ft

DSNT-10735145  
174.00 lbs

DSN Decentralizer-  
10735145  
6.60 lbs

Ø 5.000 in\* →

Ø 3.625 in →

9.69 ft

61.53 ft

← DSN Far @ 54.59 ft

← DSN Near @ 53.84 ft

51.84 ft

SDLT-10673803  
360.00 lbs

SDLT Pad-10673790  
65.00 lbs  
Microlog Pad-10673803  
8.00 lbs

Ø 4.500 in →

Ø 4.750 in\* →

Ø 4.750 in\* →

10.81 ft

Microlog @ 44.03 ft

← SDL Caliper @ 43.84 ft

← SDL @ 43.83 ft

41.03 ft

Flex Joint-  
10989947  
140.00 lbs

Ø 3.625 in →

5.67 ft

35.36 ft

Centralizer 25-001  
8.00 lbs

Ø 4.000 in\* →

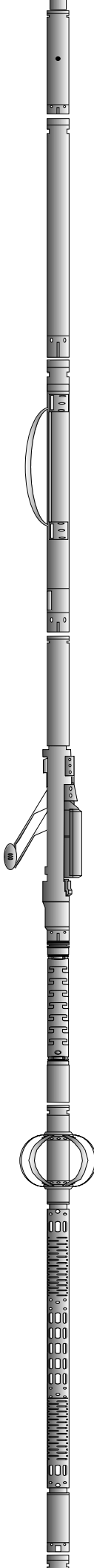
BSAT-10747684  
300.00 lbs

Ø 3.625 in →

15.77 ft

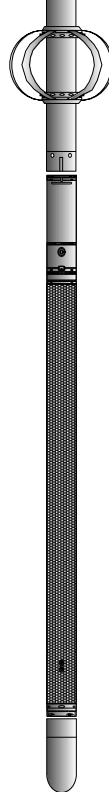
← Sonic Receivers @ 26.84 ft

19.58 ft



ACRt Instrument- Centralizer 25-002  
 I776 8.00 lbs  
 50.00 lbs

Ø 4.000 in\*  
 Ø 3.625 in



ACRt Sonde-10929775  
 200.00 lbs

Ø 3.625 in

← Mud Resistivity @ 13.19 ft

← ACRt @ 9.21 ft

Bull Nose-001  
 5.00 lbs

Ø 2.750 in

5.03 ft

14.55 ft

14.22 ft

0.33 ft

0.33 ft

0.00 ft

| Mnemonic | Tool Name   | Serial Number | Weight (lbs) | Length (ft) | Accumulated Length (ft) | Max.Log. Speed (fpm) |
|----------|---|---------------|--------------|-------------|-------------------------|----------------------|
| CH_HOS   | Hostile Cable Head with Load Cell                     | 954           | 37.50        | 3.03        | 73.79                   | 300.00               |
| SP       | SP Sub  | TRK954        | 60.00        | 3.74        | 70.05                   | 300.00               |
| GTET     | Gamma Telemetry Tool                                  | 10748374      | 165.00       | 8.52        | 61.53                   | 60.00                |
| DSNT     | Dual Spaced Neutron                                   | 10735145      | 174.00       | 9.69        | 51.84                   | 60.00                |
| DCNT     | DSN Decentralizer                                     | 10735145      | 6.60         | 5.13        | * 55.17                 | 300.00               |
| SDLT     | Spectral Density Tool                                 | 10673803      | 360.00       | 10.81       | 41.03                   | 60.00                |
| MICP     | Microlog Pad  | 10673803      | 8.00         | 1.00        | * 43.53                 | 60.00                |
| SDLP     | Density Insite Pad                                    | 10673790      | 65.00        | 2.55        | * 43.24                 | 60.00                |
| FLEX     | Flex Joint  | 10989947      | 140.00       | 5.67        | 35.36                   | 300.00               |
| BSAT     | Borehole Sonic Array Tool                             | 10747684      | 300.00       | 15.77       | 19.58                   | 60.00                |
| OBCEN    | Centralizer - 25 in. Overbody                         | 001           | 8.00         | 2.08        | * 32.34                 | 300.00               |
| ACRt     | Array Compensated True Resistivity Instrument Section | I776          | 50.00        | 5.03        | 14.55                   | 300.00               |
| OBCEN    | Centralizer - 25 in. Overbody                         | 002           | 8.00         | 2.08        | * 16.27                 | 300.00               |
| ACRt     | Array Compensated True Resistivity Sonde Section      | 10929775      | 200.00       | 14.22       | 0.33                    | 300.00               |
| BLNS     | Bull Nose   | 001           | 5.00         | 0.33        | 0.00                    | 300.00               |

**Total** **1,587.10** **76.82**

\* Not included in Total Length and Length Accumulation.

Data: ELLIOTT\_C-1B\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\006 20-Jan-13 09:56 Up @5820.0f

Date: 20-Jan-13 12:04:25

**HALLIBURTON**

**PARAMETERS REPORT**

| Depth ((ft)) | Tool Name | Mnemonic | Description   | Value   | Units |
|--------------|-----------|----------|---|---------|-------|
| TOP          |           |          |   |         |       |
|              | SHARED    | BS       | Bit Size  | 7.875   | in    |
|              | SHARED    | UBS      | Use Bit Size instead of Caliper for all applications. | No      |       |
|              | SHARED    | MDBS     | Mud Base  | Water   |       |
|              | SHARED    | MDWT     | Borehole Fluid Weight                                 | 9.100   | ppg   |
|              | SHARED    | WAGT     | Weighting Agent                                       | Natural |       |
|              | SHARED    | BSAL     | Borehole salinity                                     | 0.00    | ppm   |

|                 |      |  |             |      |
|-----------------|------|--|-------------|------|
| SHARED          | FSAL | Formation Salinity NaCl                      | 0.00        | ppm  |
| SHARED          | KPCT | Percent K in Mud by Weight?                  | 0.00        | %    |
| SHARED          | RMUD | Mud Resistivity                              | 2.000       | ohmm |
| SHARED          | TRM  | Temperature of Mud                           | 75.0        | degF |
| SHARED          | CSD  | Logging Interval is Cased?                   | No          |      |
| SHARED          | ICOD | AHV Casing OD                                | 5.500       | in   |
| SHARED          | ST   | Surface Temperature                          | 75.0        | degF |
| SHARED          | TD   | Total Well Depth                             | 5817.00     | ft   |
| SHARED          | BHT  | Bottom Hole Temperature                      | 130.0       | degF |
| SHARED          | SVTM | Navigation and Survey Master Tool            | NONE        |      |
| SHARED          | AZTM | High Res Z Accelerometer Master Tool         | GTET        |      |
| SHARED          | TEMM | Temperature Master Tool                      | NONE        |      |
| SHARED          | BHSM | Borehole Size Master Tool                    | NONE        |      |
| Rwa / CrossPlot | XPOK | Process Crossplot?                           | Yes         |      |
| Rwa / CrossPlot | FCHO | Select Source of F                           | Automatic   |      |
| Rwa / CrossPlot | AFAC | Archie A factor                              | 0.6200      |      |
| Rwa / CrossPlot | MFAC | Archie M factor                              | 2.1500      |      |
| Rwa / CrossPlot | RMFR | Rmf Reference                                | 0.10        | ohmm |
| Rwa / CrossPlot | TMFR | Rmf Ref Temp                                 | 75.00       | degF |
| Rwa / CrossPlot | RWA  | Resistivity of Formation Water               | 0.05        | ohmm |
| Rwa / CrossPlot | ADP  | Use Air Porosity to calculate CrossplotPhi   | No          |      |
| GTET            | GROK | Process Gamma Ray?                           | Yes         |      |
| GTET            | GRSO | Gamma Tool Standoff                          | 0.000       | in   |
| GTET            | GEOK | Process Gamma Ray EVR?                       | No          |      |
| GTET            | TPOS | Tool Position for Gamma Ray Tools.           | Eccentered  |      |
| DSNT            | DNOK | Process DSN?                                 | Yes         |      |
| DSNT            | DEOK | Process DSN EVR?                             | No          |      |
| DSNT            | NLIT | Neutron Lithology                            | Limestone   |      |
| DSNT            | DNSO | DSN Standoff - 0.25 in (6.35 mm) Recommended | 0.250       | in   |
| DSNT            | DNTP | Temperature Correction Type                  | None        |      |
| DSNT            | DPRS | DSN Pressure Correction Type                 | None        |      |
| DSNT            | SHCO | View More Correction Options                 | No          |      |
| DSNT            | UTVD | Use TVD for Gradient Corrections?            | No          |      |
| DSNT            | LHWT | Logging Horizontal Water Tank?               | No          |      |
| SDLT            | CLOK | Process Caliper Outputs?                     | Yes         |      |
| SDLT Pad        | DNOK | Process Density?                             | Yes         |      |
| SDLT Pad        | DNOK | Process Density EVR?                         | No          |      |
| SDLT Pad        | CB   | Logging Calibration Blocks?                  | No          |      |
| SDLT Pad        | SPVT | SDLT Pad Temperature Valid?                  | Yes         |      |
| SDLT Pad        | DTWN | Disable temperature warning                  | No          |      |
| SDLT Pad        | DMA  | Formation Density Matrix                     | 2.710       | g/cc |
| SDLT Pad        | DFL  | Formation Density Fluid                      | 1.000       | g/cc |
| Microlog Pad    | MLOK | Process MicroLog Outputs?                    | Yes         |      |
| BSAT            | MBOK | Compute BCAS Results?                        | Yes         |      |
| BSAT            | FLLO | Frequency Filter Low Pass Value?             | 5000        | Hz   |
| BSAT            | FLHI | Frequency Filter High Pass Value?            | 27000       | Hz   |
| BSAT            | DTFL | Delta -T Fluid                               | 189.00      | uspf |
| BSAT            | DTMT | Delta -T Matrix Type                         | User define |      |
| BSAT            | DTMA | Delta -T Matrix                              | 47.60       | uspf |
| BSAT            | DTSH | Delta -T Shale                               | 100.00      | uspf |
| BSAT            | SPEQ | Acoustic Porosity Equation                   | Wylie       |      |
| ACRt Sonde      | RTOK | Process ACRt?                                | Yes         |      |



|            |      |                               |                 |      |
|------------|------|-------------------------------|-----------------|------|
| ACRt Sonde | MNSO | Minimum Tool Standoff         | 1.50            | in   |
| ACRt Sonde | TCS1 | Temperature Correction Source | FP Lwr & FP Upr |      |
| ACRt Sonde | TPOS | Tool Position                 | Free Hanging    |      |
| ACRt Sonde | RMOP | Rmud Source                   | Mud Cell        |      |
| ACRt Sonde | RMIN | Minimum Resistivity for MAP   | 0.20            | ohmm |
| ACRt Sonde | RMIN | Maximum Resistivity for MAP   | 200.00          | ohmm |
| ACRt Sonde | THQY | Threshold Quality             | 0.50            |      |
| ACRt Sonde | MRFX | Fixed mud resistivity         | 2000            | ohmm |

BOTTOM

Data: ELLIOTT\_C-1B\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\006 20-Jan-13 09:56 Up @5820.0f

Date: 20-Jan-13 12:05:40

# HALLIBURTON

## CALIBRATION REPORT

### NATURAL GAMMA RAY TOOL SHOP CALIBRATION

**Tool Name:** GTET - 10748374      **Reference Calibration Date:** 19-Dec-12 08:49:49  
**Engineer:** T. HYDE      **Calibration Date:** 17-Jan-13 13:03:23  
**Software Version:** WL INSITE R3.6.0 (Build 3)      **Calibration Version:** 1

Calibrator Source S/N: TB-185  
 Calibrator API Reference:228.00 api  
 Equivalent Calibrator API Reference:232.0 api

| Measurement             | Measured | Calibrated | Units |
|-------------------------|----------|------------|-------|
| Background              | 47.0     | 47.4       | api   |
| Background + Calibrator | 277.4    | 279.4      | api   |
| Calibrator              | 230.4    | 232.0      | api   |

### NATURAL GAMMA RAY TOOL FIELD CALIBRATION

**Tool Name:** GTET - 10748374      **Reference Calibration Date:** 17-Jan-13 13:03:23  
**Engineer:** S. INGERSOLL      **Calibration Date:** 20-Jan-13 06:30:11  
**Software Version:** WL INSITE R3.6.0 (Build 3)      **Calibration Version:** 1

Calibrator Source S/N: TB-185  
 Calibrator API Reference:228.00 api  
 Equivalent Calibrator API Reference:232.0 api

| Field Verification      | Shop  | Field | Units |
|-------------------------|-------|-------|-------|
| Background              | 47.4  | 29.1  | api   |
| Background + Calibrator | 279.4 | 264.1 | api   |
| Calibrator              | 232.0 | 235.0 | api   |

| Shop  | Field | Difference | Tolerance |
|-------|-------|------------|-----------|
| 232.0 | 235.0 | -3.0       | +/- 9.00  |

### CALIBRATION SUMMARY

| Sensor               | Shop  | Field | Post  | Difference | Tolerance | Units |
|----------------------|-------|-------|-------|------------|-----------|-------|
| <b>GTET-10748374</b> |       |       |       |            |           |       |
| Gamma Ray Calibrator | 232.0 | 235.0 | ----- | -3.0       | +/- 9.00  | api   |

Data: ELLIOTT\_C-1B\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\006 20-Jan-13 09:56 Up @5820.0f

Date: 20-Jan-13 12:10:35

# HALLIBURTON

# INPUTS, DELAYS AND FILTERS TABLE

| Mnemonic           | Input Description                                       | Delay (ft) | Filter Type | Filter Length (ft) |
|--------------------|---|------------|-------------|--------------------|
| <b>Depth Panel</b> |   |            |             |                    |
| TENS               | Tension   | 0.00       | NO          |                    |
| <b>CH_HOS</b>      |   |            |             |                    |
| DHTN               | Downhole Tension  | 0.00       | BLK         | 0.000              |
| <b>SP Sub</b>      |   |            |             |                    |
| PLTC               | Plot Control Mask                                       | 72.01      | NO          |                    |
| SP                 | Spontaneous Potential                                   | 72.01      | BLK         | 1.250              |
| SPR                | Raw Spontaneous Potential                               | 72.01      | NO          |                    |
| SPO                | Spontaneous Potential Offset                            | 72.01      | NO          |                    |
| <b>GTET</b>        |   |            |             |                    |
| TPUL               | Tension Pull  | 63.99      | NO          |                    |
| GR                 | Natural Gamma Ray API                                   | 63.99      | TRI         | 1.750              |
| GRU                | Unfiltered Natural Gamma Ray API                        | 63.99      | NO          |                    |
| EGR                | Natural Gamma Ray API with Enhanced Vertical Resolution | 63.99      | W           | 1.416 , 0.750      |
| ACCZ               | Accelerometer Z   | 0.00       | BLK         | 0.083              |
| DEVI               | Inclination   | 0.00       | NO          |                    |
| <b>DSNT</b>        |   |            |             |                    |
| TPUL               | Tension Pull  | 53.74      | NO          |                    |
| RNDS               | Near Detector Telemetry Counts                          | 53.84      | BLK         | 1.417              |
| RFDS               | Far Detector Telemetry Counts                           | 54.59      | TRI         | 0.583              |
| DNTT               | DSN Tool Temperature                                    | 53.84      | NO          |                    |
| DSNS               | DSN Tool Status   | 53.74      | NO          |                    |
| ERNR               | Near Detector Telemetry Counts EVR                      | 53.84      | BLK         | 0.000              |
| ERFD               | Far Detector Telemetry Counts EVR                       | 54.59      | BLK         | 0.000              |
| ENTM               | DSN Tool Temperature EVR                                | 53.84      | NO          |                    |
| <b>SDLT</b>        |   |            |             |                    |
| TPUL               | Tension Pull  | 43.84      | NO          |                    |
| PCAL               | Pad Caliper   | 43.84      | TRI         | 0.250              |
| ACAL               | Arm Caliper   | 43.84      | TRI         | 0.250              |
| <b>BSAT</b>        |   |            |             |                    |
| TPUL               | Tension Pull  | 26.84      | NO          |                    |
| STAT               | Status  | 26.84      | NO          |                    |
| DLYT               | Delay Time  | 26.84      | NO          |                    |
| SI                 | Sample Interval   | 26.84      | NO          |                    |
| TXRX               | Raw Telemetry 10 Receivers                              | 26.84      | NO          |                    |
| FRMC               | Tool Frame Count  | 26.84      | NO          |                    |
| GMOD               | Gain processing mode                                    | 19.58      | NO          |                    |
| <b>ACRt Sonde</b>  |   |            |             |                    |
| TPUL               | Tension Pull  | 2.73       | NO          |                    |
| F1R1               | ACRT 12KHz - 80in R value                               | 8.98       | BLK         | 0.000              |
| F1X1               | ACRT 12KHz - 80in X value                               | 8.98       | BLK         | 0.000              |
| F1R2               | ACRT 12KHz - 50in R value                               | 6.48       | BLK         | 0.000              |
| F1X2               | ACRT 12KHz - 50in X value                               | 6.48       | BLK         | 0.000              |
| F1R3               | ACRT 12KHz - 29in R value                               | 4.98       | BLK         | 0.000              |
| F1X3               | ACRT 12KHz - 29in X value                               | 4.98       | BLK         | 0.000              |

|                 |   |       |     |       |
|-----------------|---|-------|-----|-------|
| F1R4            | ACRT 12KHz - 17in R value                     | 3.98  | BLK | 0.000 |
| F1X4            | ACRT 12KHz - 17in X value                     | 3.98  | BLK | 0.000 |
| F1R5            | ACRT 12KHz - 10in R value                     | 3.48  | BLK | 0.000 |
| F1X5            | ACRT 12KHz - 10in X value                     | 3.48  | BLK | 0.000 |
| F1R6            | ACRT 12KHz - 6in R value                      | 3.23  | BLK | 0.000 |
| F1X6            | ACRT 12KHz - 6in X value                      | 3.23  | BLK | 0.000 |
| F2R1            | ACRT 36KHz - 80in R value                     | 8.98  | BLK | 0.000 |
| F2X1            | ACRT 36KHz - 80in X value                     | 8.98  | BLK | 0.000 |
| F2R2            | ACRT 36KHz - 50in R value                     | 6.48  | BLK | 0.000 |
| F2X2            | ACRT 36KHz - 50in X value                     | 6.48  | BLK | 0.000 |
| F2R3            | ACRT 36KHz - 29in R value                     | 4.98  | BLK | 0.000 |
| F2X3            | ACRT 36KHz - 29in X value                     | 4.98  | BLK | 0.000 |
| F2R4            | ACRT 36KHz - 17in R value                     | 3.98  | BLK | 0.000 |
| F2X4            | ACRT 36KHz - 17in X value                     | 3.98  | BLK | 0.000 |
| F2R5            | ACRT 36KHz - 10in R value                     | 3.48  | BLK | 0.000 |
| F2X5            | ACRT 36KHz - 10in X value                     | 3.48  | BLK | 0.000 |
| F2R6            | ACRT 36KHz - 6in R value                      | 3.23  | BLK | 0.000 |
| F2X6            | ACRT 36KHz - 6in X value                      | 3.23  | BLK | 0.000 |
| F3R1            | ACRT 72KHz - 80in R value                     | 8.98  | BLK | 0.000 |
| F3X1            | ACRT 72KHz - 80in X value                     | 8.98  | BLK | 0.000 |
| F3R2            | ACRT 72KHz - 50in R value                     | 6.48  | BLK | 0.000 |
| F3X2            | ACRT 72KHz - 50in X value                     | 6.48  | BLK | 0.000 |
| F3R3            | ACRT 72KHz - 29in R value                     | 4.98  | BLK | 0.000 |
| F3X3            | ACRT 72KHz - 29in X value                     | 4.98  | BLK | 0.000 |
| F3R4            | ACRT 72KHz - 17in R value                     | 3.98  | BLK | 0.000 |
| F3X4            | ACRT 72KHz - 17in X value                     | 3.98  | BLK | 0.000 |
| F3R5            | ACRT 72KHz - 10in R value                     | 3.48  | BLK | 0.000 |
| F3X5            | ACRT 72KHz - 10in X value                     | 3.48  | BLK | 0.000 |
| F3R6            | ACRT 72KHz - 6in R value                      | 3.23  | BLK | 0.000 |
| F3X6            | ACRT 72KHz - 6in X value                      | 3.23  | BLK | 0.000 |
| RMUD            | Mud Resistivity                               | 12.52 | BLK | 0.000 |
| F1RT            | Transmitter Reference 12 KHz Real Signal      | 2.73  | BLK | 0.000 |
| F1XT            | Transmitter Reference 12 KHz Imaginary Signal | 2.73  | BLK | 0.000 |
| F2RT            | Transmitter Reference 36 KHz Real Signal      | 2.73  | BLK | 0.000 |
| F2XT            | Transmitter Reference 36 KHz Imaginary Signal | 2.73  | BLK | 0.000 |
| F3RT            | Transmitter Reference 72 KHz Real Signal      | 2.73  | BLK | 0.000 |
| F3XT            | Transmitter Reference 72 KHz Imaginary Signal | 2.73  | BLK | 0.000 |
| TFPU            | Upper Feedpipe Temperature Calculated         | 2.73  | BLK | 0.000 |
| TFPL            | Lower Feedpipe Temperature Calculated         | 2.73  | BLK | 0.000 |
| ITMP            | Instrument Temperature                        | 2.73  | BLK | 0.000 |
| TCVA            | Temperature Correction Values Loop Off        | 2.73  | NO  |       |
| TIDV            | Instrument Temperature Derivative             | 2.73  | NO  |       |
| TUDV            | Upper Temperature Derivative                  | 2.73  | NO  |       |
| TLDV            | Lower Temperature Derivative                  | 2.73  | NO  |       |
| TRBD            | Receiver Board Temperature                    | 2.73  | NO  |       |
| <b>SDLT Pad</b> |   |       |     |       |
| TPUL            | Tension Pull                                  | 43.83 | NO  |       |
| NAB             | Near Above                                    | 43.66 | BLK | 0.920 |
| NHI             | Near Cesium High                              | 43.66 | BLK | 0.920 |
| NLO             | Near Cesium Low                               | 43.66 | BLK | 0.920 |
| NVA             | Near Valley                                   | 43.66 | BLK | 0.920 |
| NBA             | Near Barite                                   | 43.66 | BLK | 0.920 |
| NDE             | Near Density                                  | 43.66 | BLK | 0.920 |
| NPK             | Near Peak                                     | 43.66 | BLK | 0.920 |
| NLI             | Near Lithology                                | 43.66 | BLK | 0.920 |

|      |                            |       |     |       |
|------|----------------------------|-------|-----|-------|
| NBAU | Near Barite Unfiltered     | 43.66 | BLK | 0.250 |
| NLIU | Near Lithology Unfiltered  | 43.66 | BLK | 0.250 |
| FAB  | Far Above                  | 44.01 | BLK | 0.250 |
| FHI  | Far Cesium High            | 44.01 | BLK | 0.250 |
| FLO  | Far Cesium Low             | 44.01 | BLK | 0.250 |
| FVA  | Far Valley                 | 44.01 | BLK | 0.250 |
| FBA  | Far Barite                 | 44.01 | BLK | 0.250 |
| FDE  | Far Density                | 44.01 | BLK | 0.250 |
| FPK  | Far Peak                   | 44.01 | BLK | 0.250 |
| FLI  | Far Lithology              | 44.01 | BLK | 0.250 |
| PTMP | Pad Temperature            | 43.84 | BLK | 0.920 |
| NHV  | Near Detector High Voltage | 43.24 | NO  |       |
| FHV  | Far Detector High Voltage  | 43.24 | NO  |       |
| ITMP | Instrument Temperature     | 43.24 | NO  |       |
| DDHV | Detector High Voltage      | 43.24 | NO  |       |

**Microlog Pad**

|      |                  |       |     |       |
|------|------------------|-------|-----|-------|
| TPUL | Tension Pull     | 44.03 | NO  |       |
| MINV | Microlog Lateral | 44.03 | BLK | 0.750 |
| MNOR | Microlog Normal  | 44.03 | BLK | 0.750 |

Data: ELLIOTT\_C-1B\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\006 20-Jan-13 09:56 Up @5820.0f

Date: 20-Jan-13 12:06:16

|                    |                          |   |               |
|--------------------|--------------------------|---|---------------|
| COMPANY            | <b>OXY USA INC.</b>      |   |               |
| WELL               | <b>ELLIOTT C-1B</b>      |   |               |
| FIELD              | <b>LEMON VICK PREEDY</b> |   |               |
| COUNTY             | <b>HASKELL</b>           | STATE   | <b>KANSAS</b> |
| <b>HALLIBURTON</b> |                          | <b>BOREHOLE COMPENSATED<br/>SONIC ARRAY<br/>LOG</b> |               |