# CEMENT BOND LOG

| | |
|---|---|
| Company | Extraction Oil and Gas, Inc. |
| Well | 12W-20-12C |
| Field | Wattenberg |
| County | Adams |
| State | Colorado |

**Company** Extraction Oil and Gas, Inc.
**Well** 12W-20-12C
**Field** Wattenberg
**County** Adams **State** Colorado

API # : 05 001 10158
Location: NW/SW
2296 FSL
680 FWL

Other Services

SEC: 12 TWP: 1S RGE: 66W

Elevation
K.B. 5066
D.F. 5065
G.L. 5037

Permanent Datum: Ground Level Elevation: 5037
Log Measured From: Kelly Bushing , 29 ft. above Permanent Datum.
Drilling Measured From: Kelly Bushing

| | | | |
|---|---|---|---|
| Date | 09 January 2019 | | |
| Run Number | One | | |
| Plug Back T.D. Driller | ---- | | |
| Plug Back T.D. Logger | ---- | | |
| Bottom Logged Interval | 8370 | | |
| Top Log Interval | Surface | | |
| Type Fluid | Water | | |
| Density / Viscosity | ---- | | |
| Max. Recorded Temp. | 229 | | |
| Time Logger on Bottom | 11:00 | | |
| Equipment Number | GD114 | | |
| Location | Casper | | |
| Recorded By | GS Yarbro | | |
| Witnessed By | Parras | | |

| Casing Record | | | | Tubing Record | | | |
|---|---|---|---|---|---|---|---|
| Size | Weight | From | To | Size | Weight | From | To |
| 9 5/8 | 36 | 29 | ---- | | | | |
| 5 1/2 | 20 | 29 | ---- | | | | |
| | | | | | | | |
| | | | | | | | |

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Ticket # : RM0119PCBW125
Your Crew Today: Cheesman, Pena
Log Correlated to: Surface

| Cement Data | |
|---|---|
| Date Cemented | ---- |
| Primary / Squeeze | Primary |
| Type / Weight | ---- |
| Main Pass Press. | Zero |
| Repeat Pass Press. | Zero |

| Bond Index | |
|---|---|
| Index % | Est Top Depth |
| 20 % Bond | 1375 |
| 40 % Bond | 1645 |
| 60 % Bond | 3010 |
| 80 % Bond | 5030 |
| 100 % Bond | ---- |

**Comments**

**Estimated Top of Cement**
**(20% Bond Index) @ 1375**

Thank you for using Gyrodata

Eric Regnier: Rocky Mountain Wireline Manager EricR@Gyrodata.com

## Log Variables

Databased:\warrior\data\20190109_extraction_duck club 12w-20-12c_cbl\20190109_extraction_duc
Dataset field/well/run1/pass3/_vars_

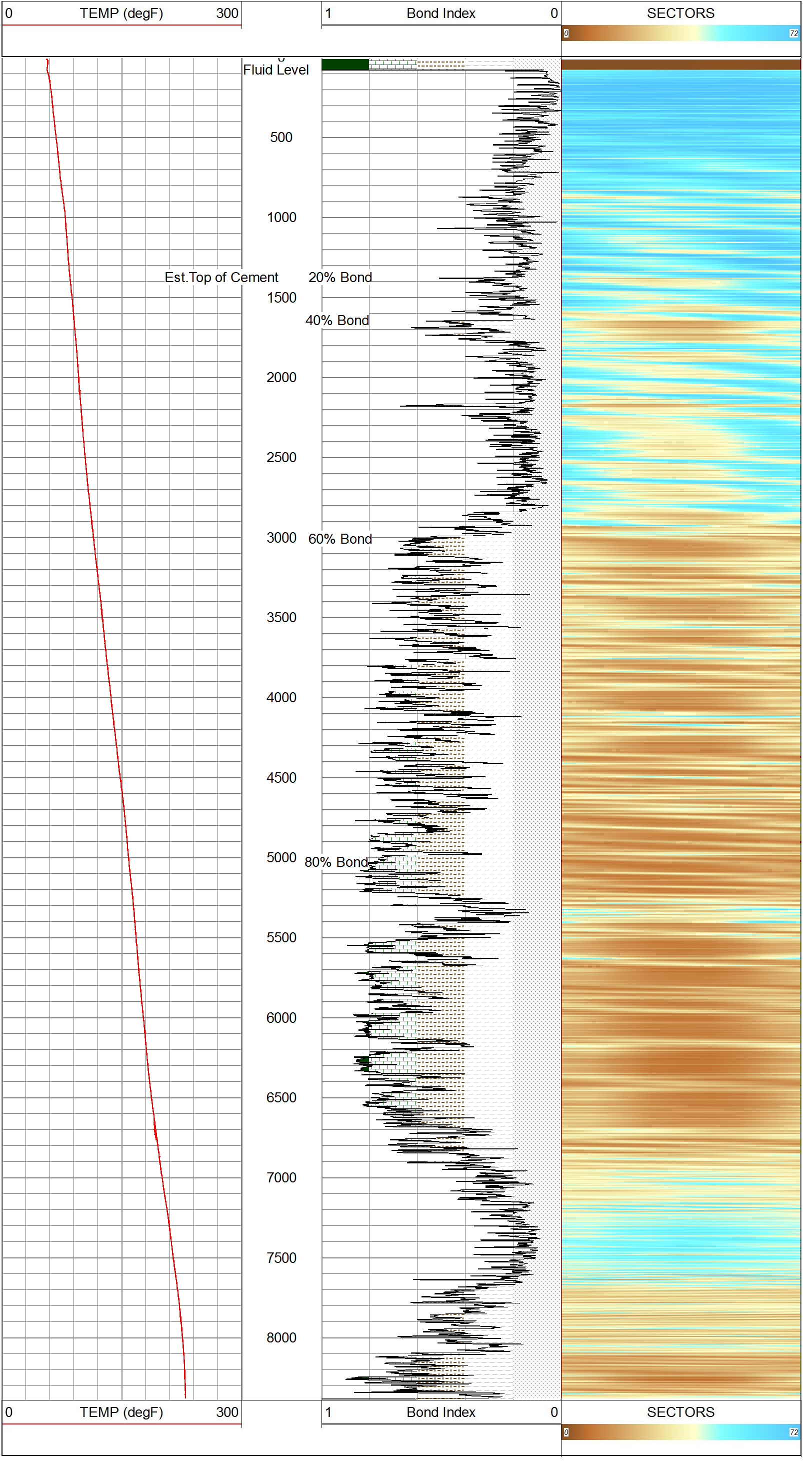
**Top - Bottom**

| BHTEMP_Src | BOREID<br>in | BOTTEMP<br>degF | CASEOD<br>in | CASETHCK<br>in | CASEWGHT<br>lb/ft | MAXAMPL<br>mV | MaxAPIID<br>in |
|---|---|---|---|---|---|---|---|
| TEMP | 8.5 | 100 | 5.5 | 0.361 | 20 | 71.9 | 4.923 |
| **MINAMPL<br>mV** | **MinAPIID<br>in** | **MINATTN<br>db/ft** | **PPT<br>usec** | **TDEPTH<br>ft** | | | |
| 2.1 | 4.751 | 0 | 239 | 0 | | | |

# BOND INDEX

**Calculated for 3000 PSI Compressive Strength Cement**

| | |
|---|---|
| Database File | 20190109_extraction_duck club 12w-20-12c_cbl\20190109_extraction_duck club 12w-20-12c_cbl.db |
| Dataset Pathname | ./././bndindx |
| Presentation Format | BNDIND~1 |
| Dataset Creation | Wed Jan 09 12:45:59 2019 |
| Charted by | Depth in Feet scaled 1:7500 |



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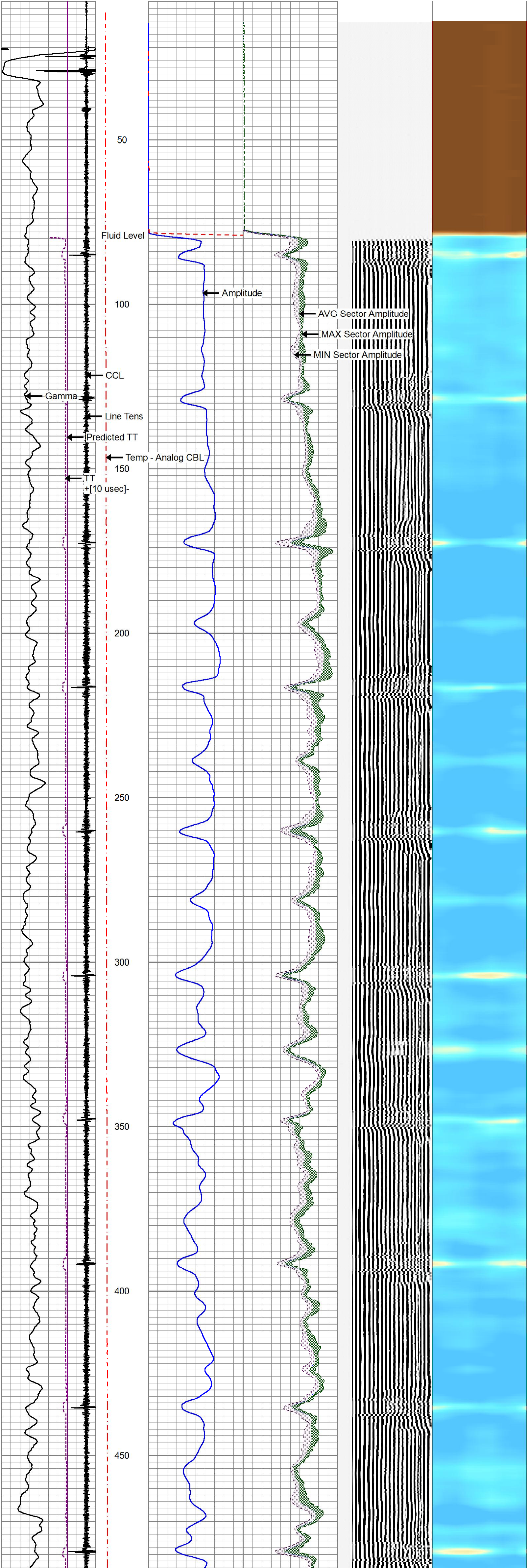
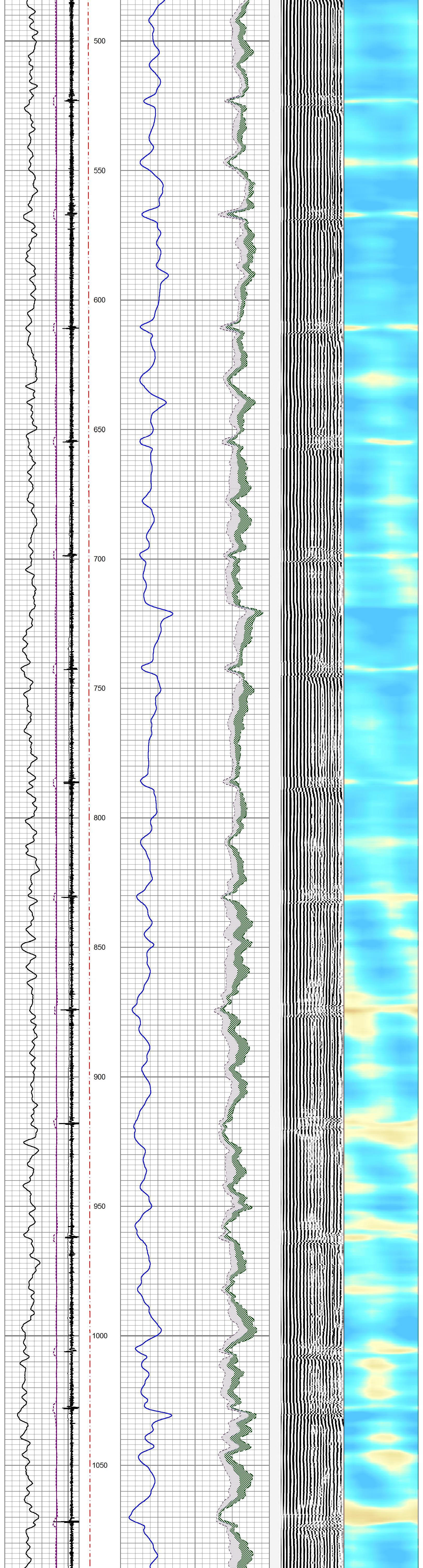
# MAIN PASS - Ran with 0 PSI

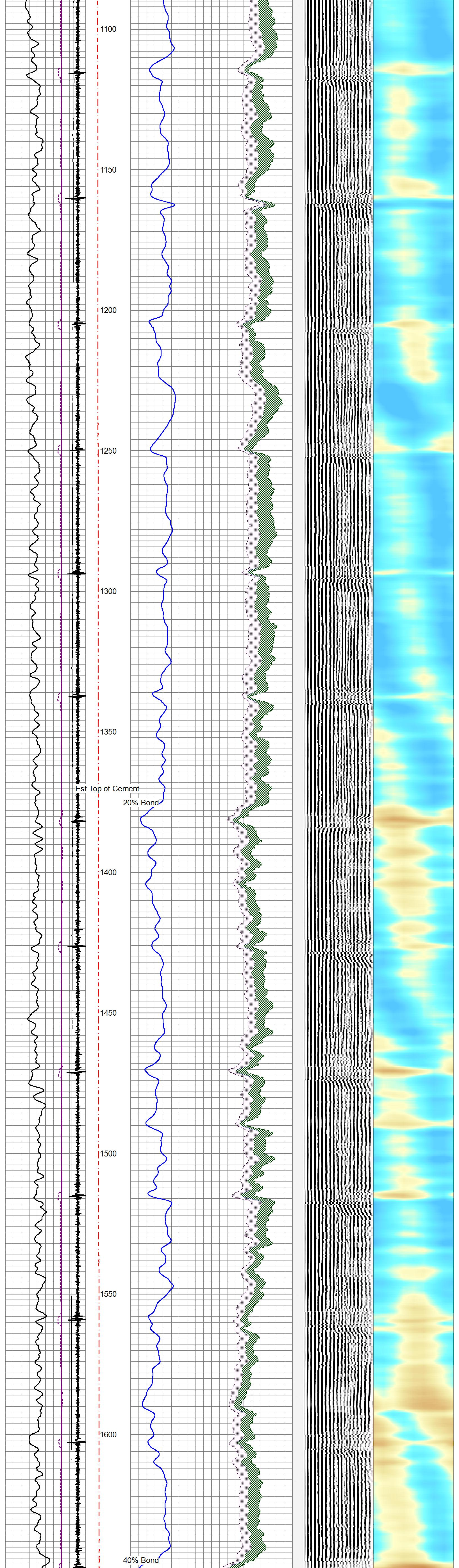
5 in / 100 ft

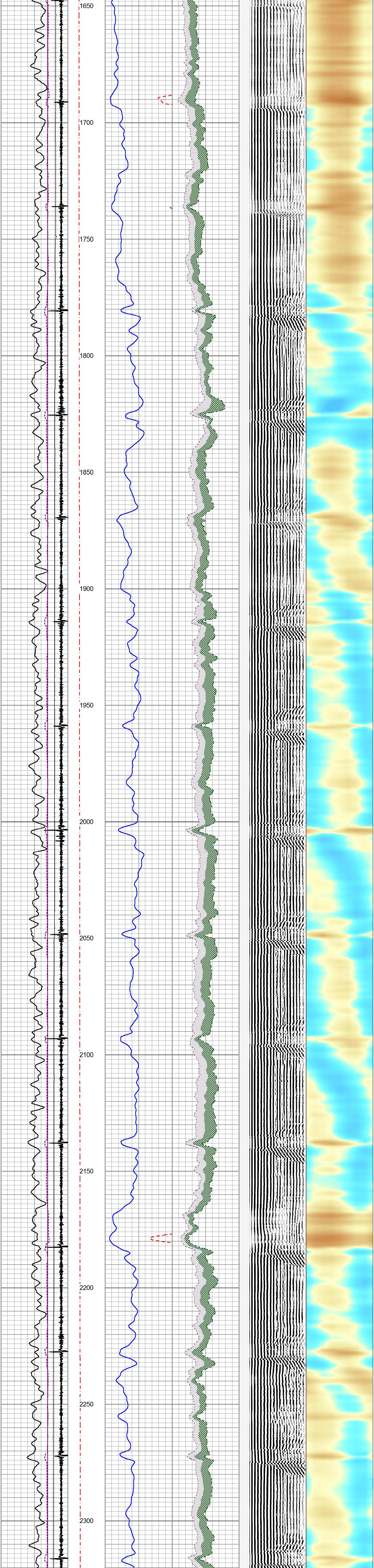
| | |
|---|---|
| Database File | 20190109_extraction_duck club 12w-20-12c_cbl\20190109_extraction_duck club 12w-20-12c_cbl.db |
| Dataset Pathname | pass3 |
| Presentation Format | rcbl_8s |
| Dataset Creation | Wed Jan 09 11:09:36 2019 |
| Charted by | Depth in Feet scaled 1:240 |

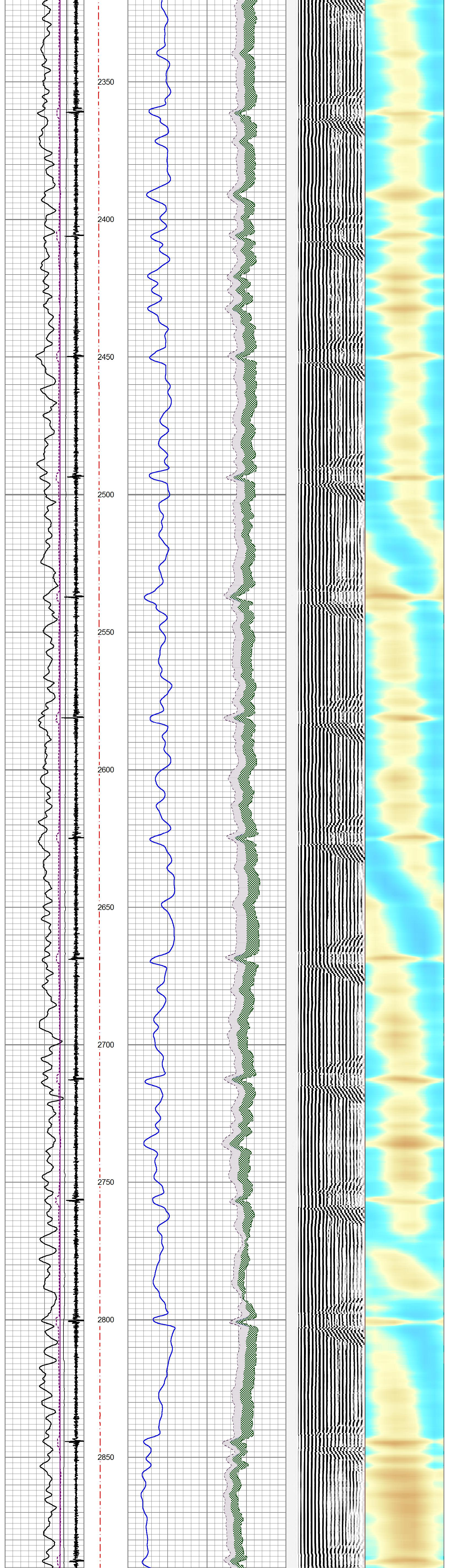
| CCL | np - Analog C | Amplitude (mV) | AVG Sector Amplitude | Acoustic Waveform | SECTORS |
|---|---|---|---|---|---|
| Gamma<br>0 (GAPI) 200 | (degF)<br>0 300 | 0 Amplitude (mV)100<br>Amplitude x10<br>0 (mV) 10 | 0 100 | 200 (usec) 1200 | 0 72 |
| 300(Line Tens (lb) 0 | | | MAX Sector Amplitude<br>0 100 | | |
| Predicted TT<br>TT<br>+[10 usec]- | | | MIN Sector Amplitude<br>0 100 | | |

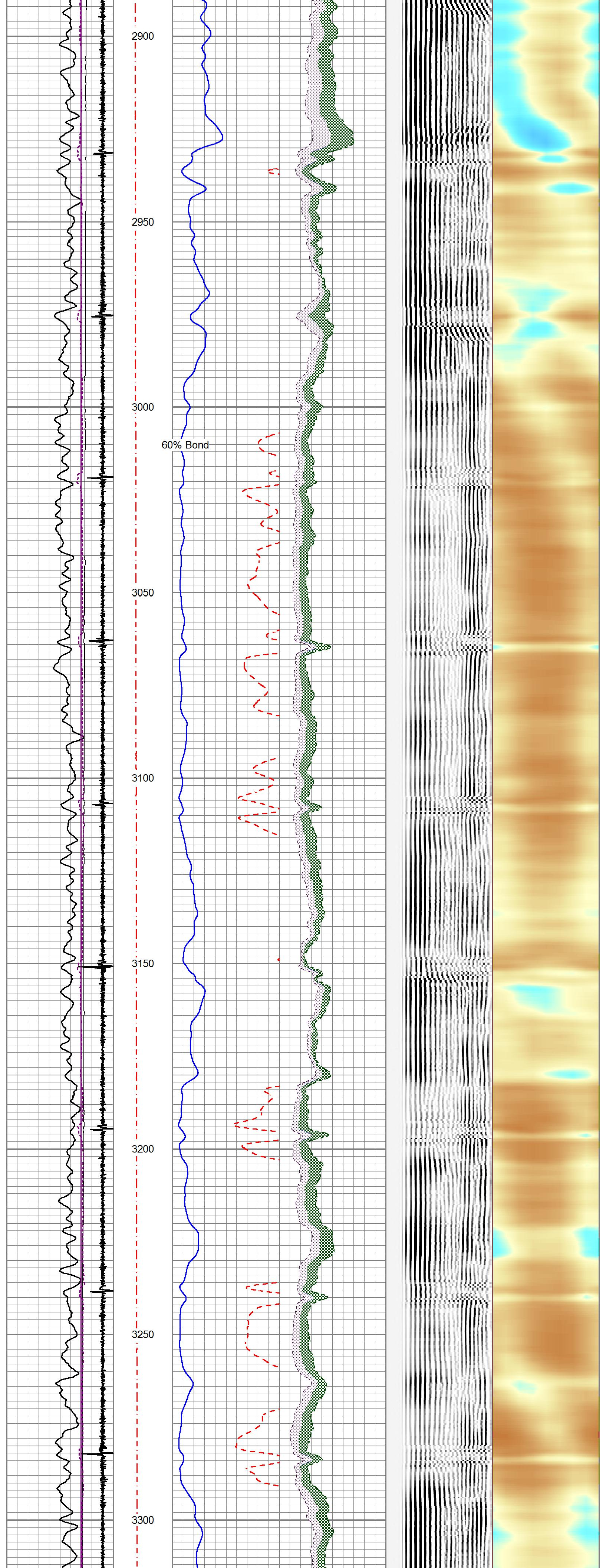


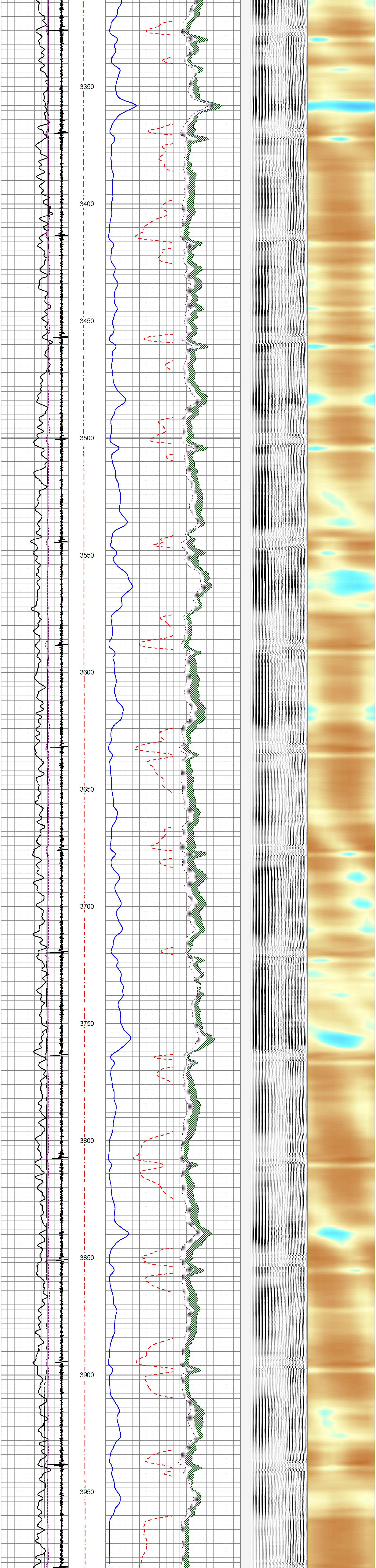


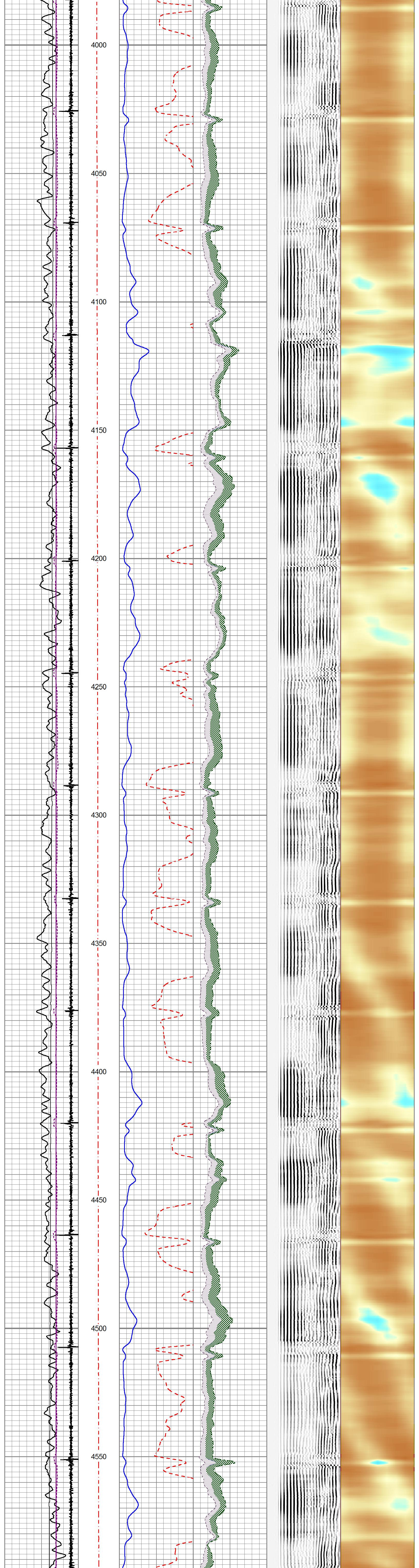


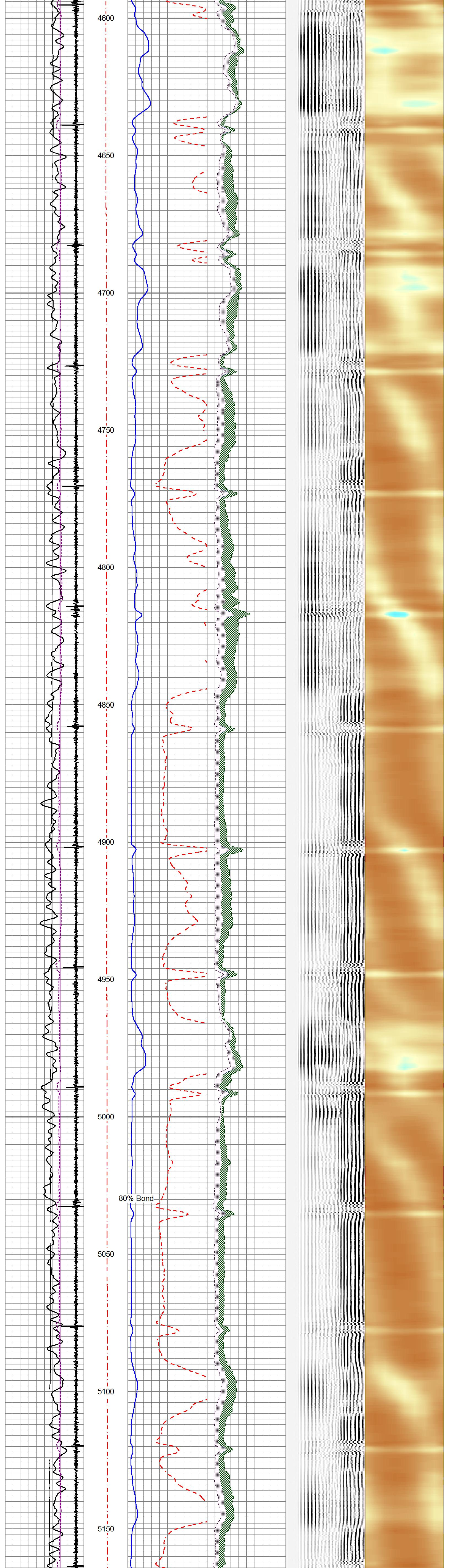


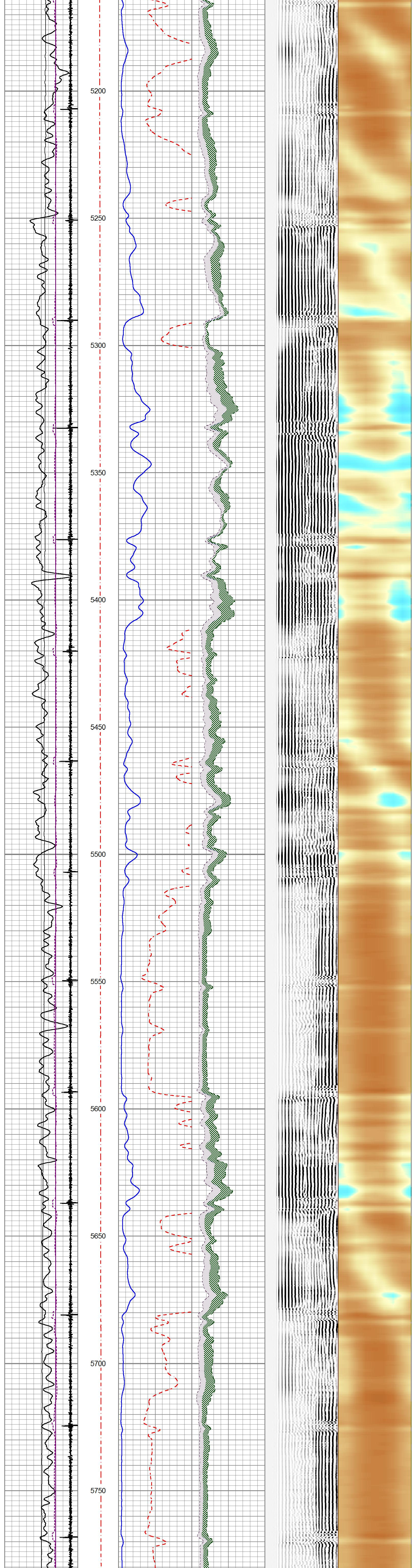


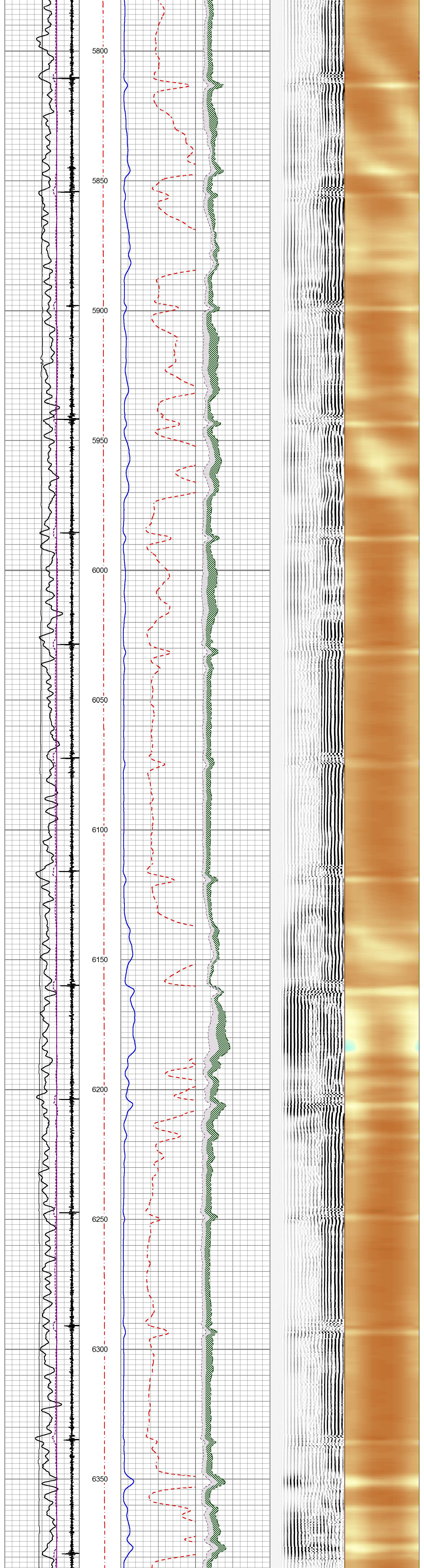


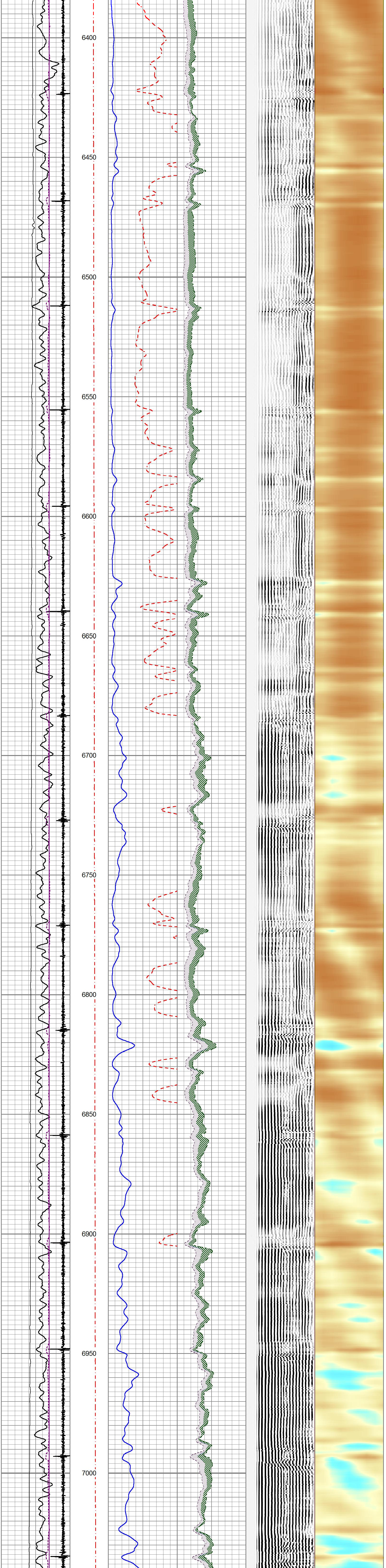

3350
3400
3450
3500
3550
3600
3650
3700
3750
3800
3850
3900
3950

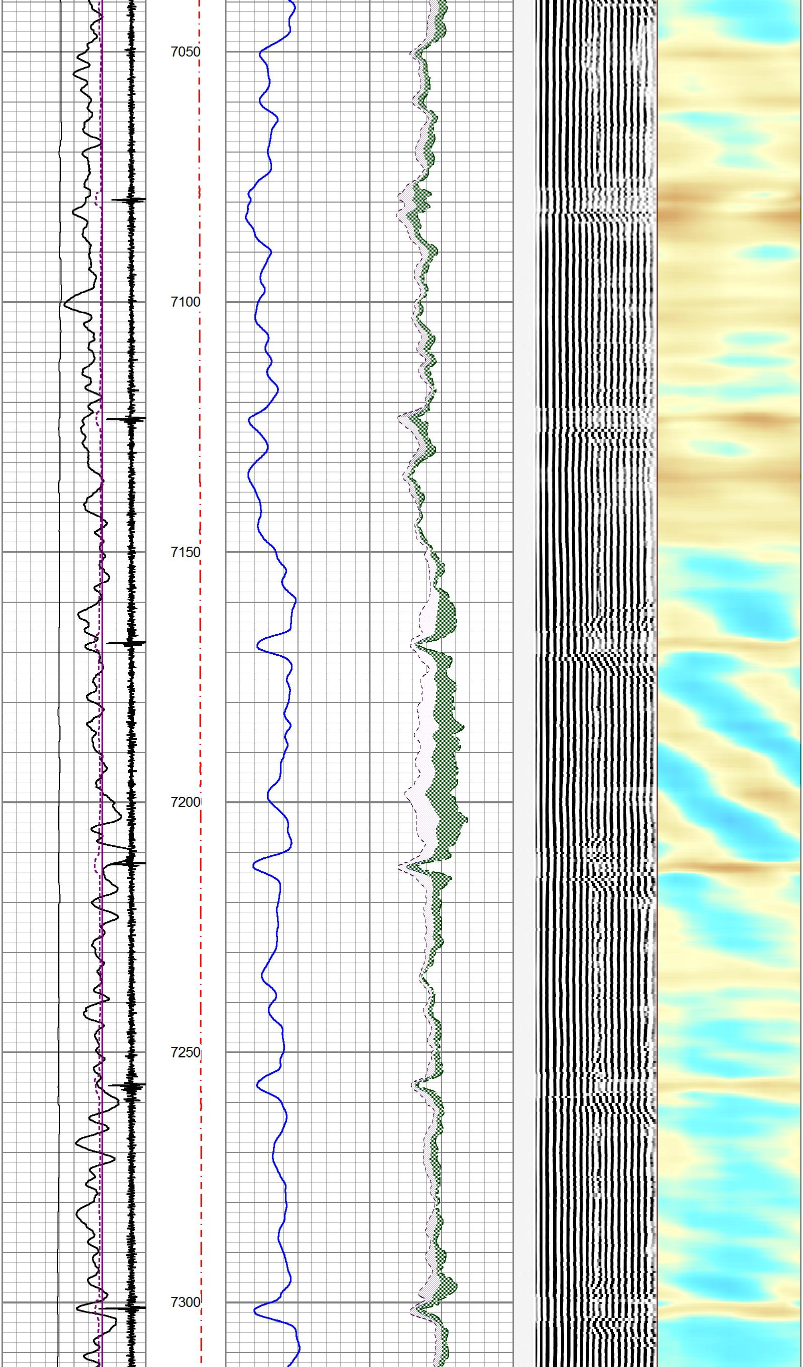

4000
4050
4100
4150
4200
4250
4300
4350
4400
4450
4500
4550

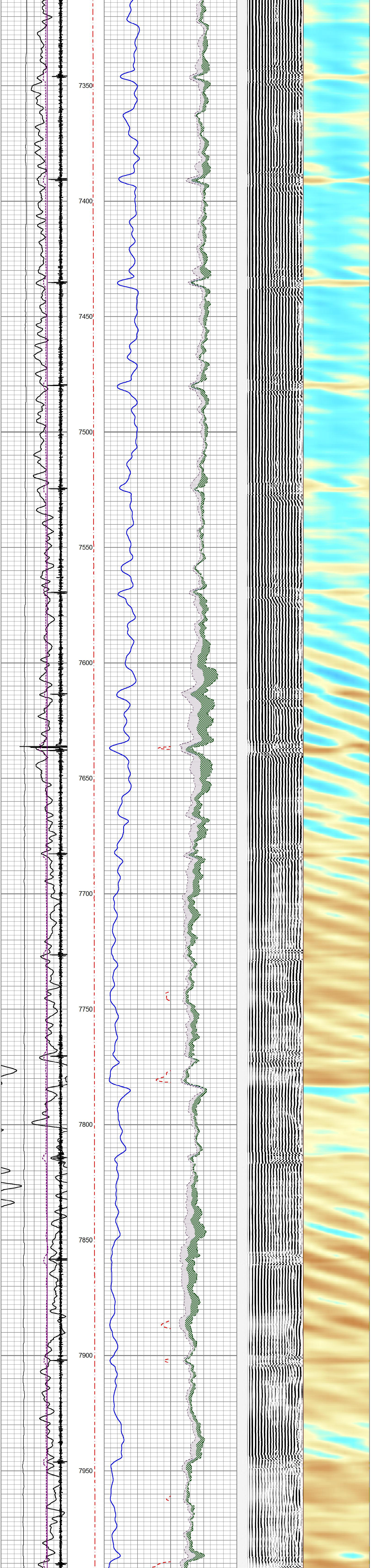

4600
4650
4700
4750
4800
4850
4900
4950
5000
5050
80% Bond
5100
5150

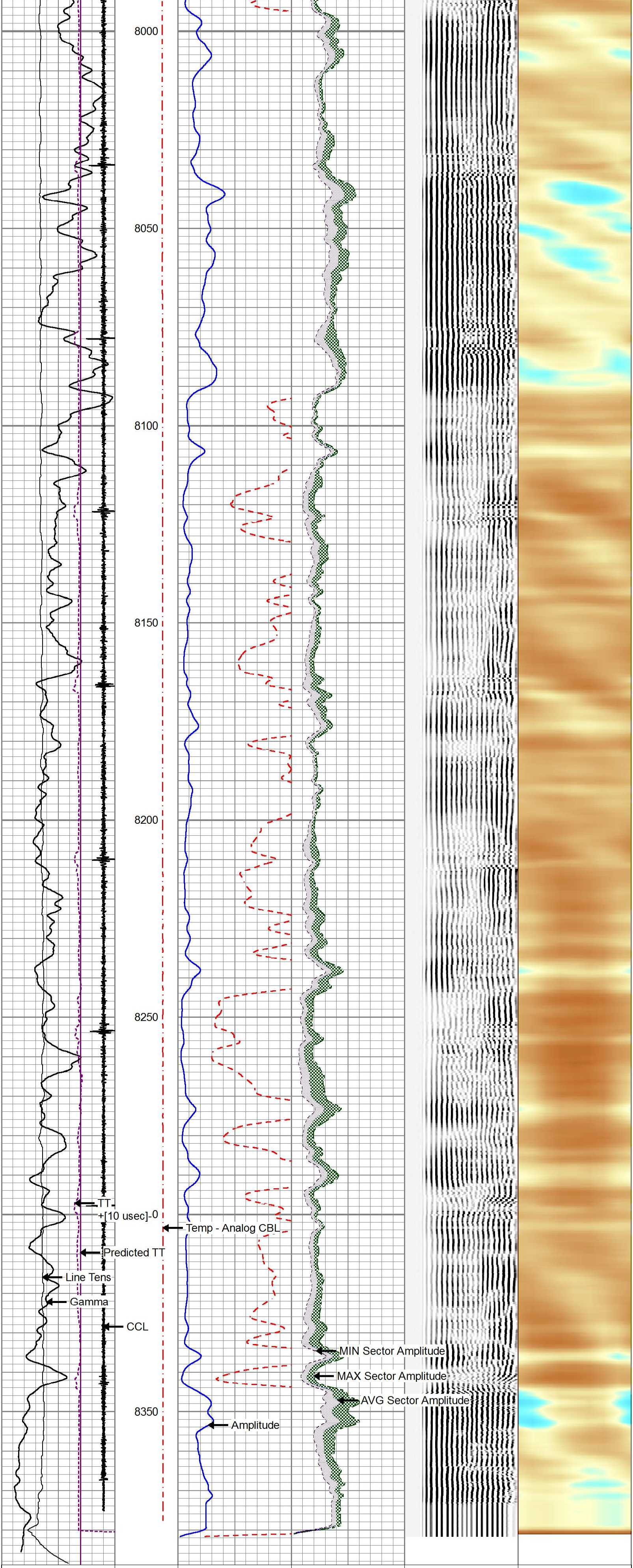

5200
5250
5300
5350
5400
5450
5500
5550
5600
5650
5700
5750


5800
5850
5900
5950
6000
6050
6100
6150
6200
6250
6300
6350


6400
6450
6500
6550
6600
6650
6700
6750
6800
6850
6900
6950
7000


7050
7100
7150
7200
7250
7300





| | | | | | |
|---|---|---|---|---|---|
| CCL | np - Analog C | 0 Amplitude (mV)100 | AVG Sector Amplitude | Acoustic Waveform | SECTORS |
| Gamma | (degF) | Amplitude x10 | 0 100 | 200 (usec) 1200 | 0 72 |
| 0 (GAPI) 200 | 0 300 | 0 (mV) 10 | MAX Sector Amplitude | | |
| 300(Line Tens (lb) 0 | | | 0 100 | | |
| Predicted TT | | | MIN Sector Amplitude | | |
| | | | 0 100 | | |
| TT<br>+[10 usec]- | | | | | |

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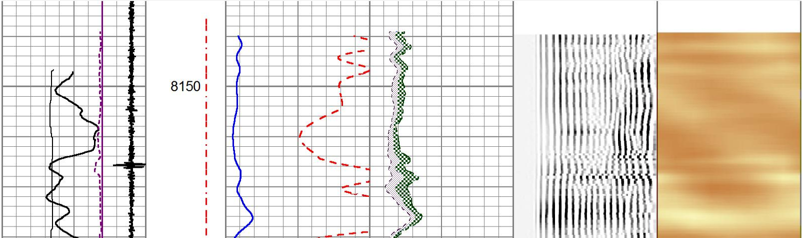
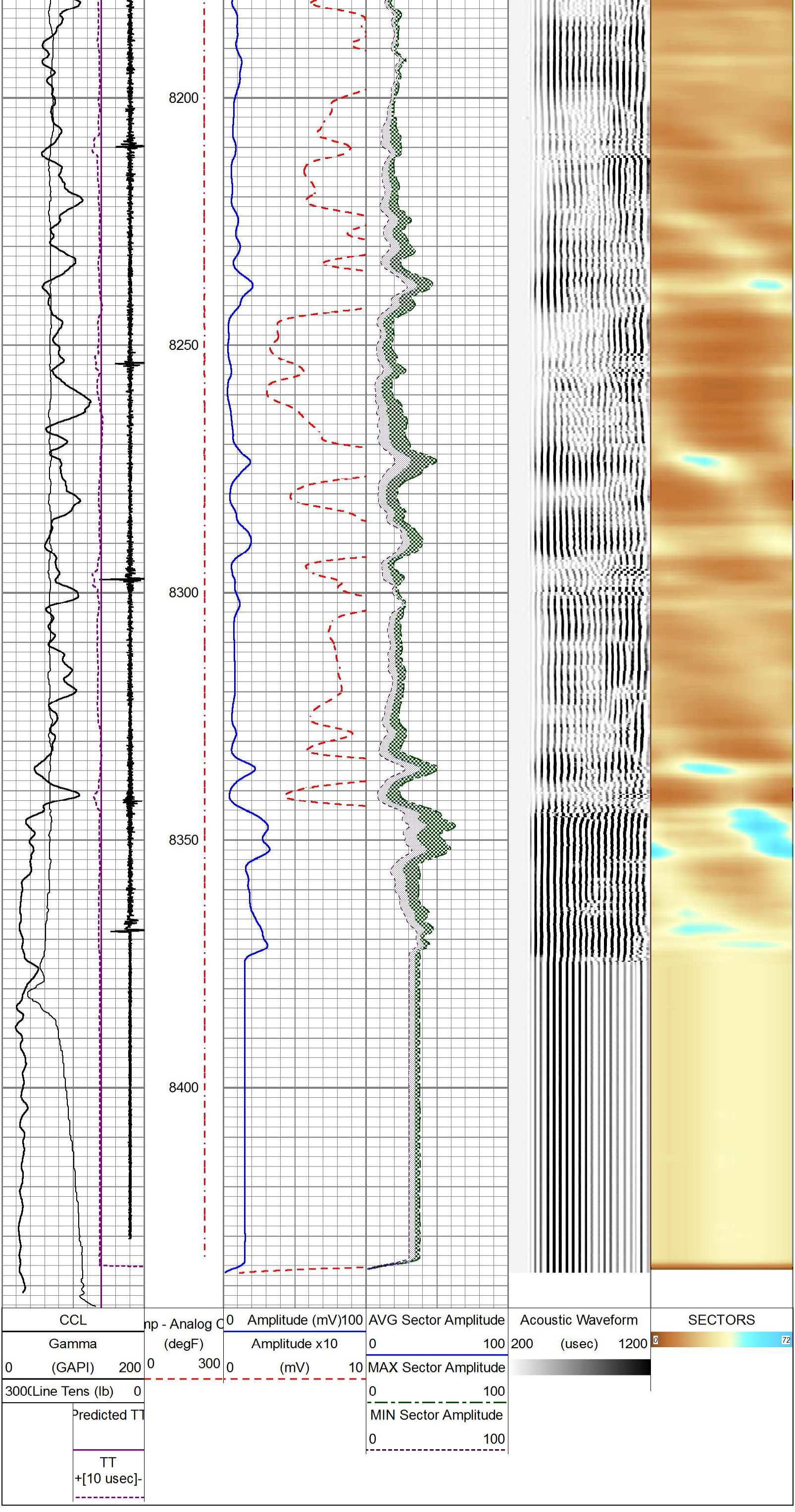
## REPEAT PASS - Ran with 0 PSI

5 in / 100 ft

| | |
|---|---|
| Database File | 20190109_extraction_duck club 12w-20-12c_cbl\20190109_extraction_duck club 12w-20-12c_cbl.db |
| Dataset Pathname | pass2 |
| Presentation Format | rcbl_8s |
| Dataset Creation | Wed Jan 09 11:03:40 2019 |
| Charted by | Depth in Feet scaled 1:240 |

| | | | | | |
|---|---|---|---|---|---|
| CCL | np - Analog C | 0 Amplitude (mV)100 | AVG Sector Amplitude | Acoustic Waveform | SECTORS |
| Gamma | (degF) | Amplitude x10 | 0 100 | 200 (usec) 1200 | 0 72 |
| 0 (GAPI) 200 | 0 300 | 0 (mV) 10 | MAX Sector Amplitude | | |
| 300(Line Tens (lb) 0 | | | 0 100 | | |
| Predicted TT | | | MIN Sector Amplitude | | |
| | | | 0 100 | | |
| TT<br>+[10 usec]- | | | | | |





## Calibration Report

| | |
|---|---|
| Database File | d:\warrior\data\20190109_extraction_duck club 12w-20-12c_cbl\20190109_extraction_duck club 12w-20-12c |
| Dataset Pathname | pass3 |
| Dataset Creation | Wed Jan 09 11:09:36 2019 |

### Gamma Ray Calibration Report

| | | |
|---|---|---|
| Serial Number: | ISHV2-02 | |
| Tool Model: | 2 3/4" TekCo | |
| Performed: | Wed Aug 22 11:07:35 2018 | |
| Calibrator Value: | 194.0 | GAPI |
| Background Reading: | 53.6 | cps |
| Calibrator Reading: | 293.4 | cps |
| Sensitivity: | 0.8092 | GAPI/cps |

### Segmented Cement Bond Log Calibration Report

| | | |
|---|---|---|
| Serial Number: | ISF06-04 | |
| Tool Model: | 2 3/4" RIB Analog | |
| Calibration Casing Diameter: | 5.500 | in |
| Calibration Depth: | 112.540 | ft |

Master Calibration, performed (Derived):

| | Raw (v) | | Calibrated (mv) | | Results | |
|---|---|---|---|---|---|---|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | 0.003 | 1.499 | 0.000 | 72.000 | 48.126 | -0.124 |
| CAL | -0.004 | 0.749 | | | | |
| 5' | 0.006 | 1.576 | 0.000 | 72.000 | 45.867 | -0.269 |
| SUM | | | | | | |
| S1 | 0.024 | 1.591 | 0.000 | 72.000 | 45.951 | -1.093 |
| S2 | 0.027 | 1.526 | 0.000 | 72.000 | 48.039 | -1.306 |
| S3 | 0.027 | 1.490 | 0.000 | 72.000 | 49.213 | -1.339 |
| S4 | 0.023 | 1.494 | 0.000 | 72.000 | 48.927 | -1.104 |
| S5 | 0.016 | 1.443 | 0.000 | 72.000 | 50.453 | -0.827 |
| S6 | 0.015 | 1.467 | 0.000 | 72.000 | 49.603 | -0.755 |
| S7 | 0.022 | 1.498 | 0.000 | 72.000 | 48.771 | -1.070 |
| S8 | 0.023 | 1.498 | 0.000 | 72.000 | 48.784 | -1.101 |

Internal Reference Calibration, performed (Not Performed):

| | Raw (v) | | Calibrated (v) | | Results | |
|---|---|---|---|---|---|---|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| CAL | 0.000 | 0.000 | -0.004 | 0.749 | 1.000 | 0.000 |

Air Zero Calibration, performed (Not Performed):

| | Raw (v) | Calibrated (v) | Results |
|---|---|---|---|
| | Zero | Zero | Offset |
| 3' | 0.000 | 0.000 | 0.000 |
| 5' | 0.000 | 0.000 | 0.000 |
| SUM | | | |
| S1 | 0.000 | 0.000 | 0.000 |
| S2 | 0.000 | 0.000 | 0.000 |
| S3 | 0.000 | 0.000 | 0.000 |
| S4 | 0.000 | 0.000 | 0.000 |
| S5 | 0.000 | 0.000 | 0.000 |
| S6 | 0.000 | 0.000 | 0.000 |
| S7 | 0.000 | 0.000 | 0.000 |
| S8 | 0.000 | 0.000 | 0.000 |

### Temperature Calibration Report

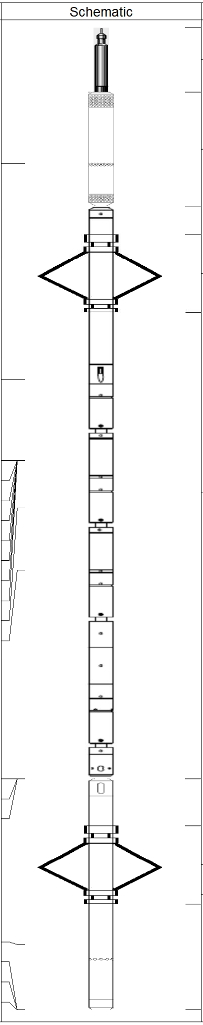
| | | |
|---|---|---|
| Serial Number: | ISF06-04 | |
| Tool Model: | 2 3/4" RIB Analog | |
| Performed: | Tue Jan 08 11:48:09 2019 | |

| | Reference | | Reading | |
|---|---|---|---|---|
| Low Reference: | 0.00 | degF | 0.00 | usec |
| High Reference: | 1.00 | degF | 1.00 | usec |

| | |
|---|---|
| Gain: | 0.33 |
| Offset: | 0.00 |
| Delta Spacing | 1 |

| Sensor | Offset (ft) |
|---|---|
| CCL | 13.50 |
| TEMP | 10.05 |
| WVFS8 | 8.76 |
| WVFS7 | 8.76 |
| WVFS6 | 8.76 |
| WVFS5 | 8.76 |
| WVFS4 | 8.76 |
| WVFS3 | 8.76 |
| WVFS2 | 8.76 |
| WVFS1 | 8.76 |
| WVF3FT | 8.01 |
| WVF5FT | 7.01 |
| WVFSYNC | 3.68 |
| WVFTEMP | 3.68 |
| WVFCAL | 3.68 |
| GR | 1.04 |
| LOCTIM | 0.00 |
| UTCTIM | 0.00 |
| PMON | 0.00 |

Schematic



| Description | Length (ft) | O.D. (in) | Weight (lb |
|---|---|---|---|
| CableHead-TitanConeType2 | 1.03 | 1.44 | 3.60 |
| CCL_Log-2 3/4" TekCo (IPSN7-03) | 1.83 | 2.75 | 33.00 |
| Antelope-Overbody | 1.25 | 2.75 | |
| RBTA-2 3/4" RIB Analog (ISF06-04) | 9.13 | 2.75 | 102.00 |
| Antelope-Overbody | 1.25 | 2.75 | |
| GR_Log-2 3/4" TekCo (ISHV2-02) | 3.68 | 2.75 | 47.00 |

| | |
|---|---|
| Dataset: | 20190109_extraction_duck club 12w-20-12c_cbl.db: field/well/run1/pass3 |
| Total length: | 15.67 ft |
| Total weight: | 185.60 lb |
| O.D.: | 2.75 in |

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| | |
|---|---|
| **Company** | Extraction Oil and Gas, Inc. |
| **Well** | 12W-20-12C |
| **Field** | Wattenberg |
| **County** | Adams |
| **State** | Colorado |
| **Country** | U.S.A. |