**gyrodata**

# CEMENT BOND LOG

Company EXTRACTION OIL & GAS
Well WAAG NORTH #1
Field WATTENBERG
County WELD State CO

| | | | |
|---|---|---|---|
| Company | EXTRACTION OIL & GAS | | |
| Well | WAAG NORTH #1 | | |
| Field | WATTENBERG | | |
| County | WELD | State | CO |
| API No.: 05-123-40342 | Serv#: 1010 | Other Services | |
| Location: 14' FNL & 1766' FWL<br>LAT. 40.568040<br>LONG.:-104.709500 | | TEMPERATURE<br>CCL | |
| Sec: 19 | Twp:7N | Rge: 65W | |
| Permanent Datum | GROUND LEVEL | Elevation 4902' | Elevation |
| Log Measured From | KB , 17 Ft. above perm. datum | | K.B. 4919' |
| Drilling Measured From | KB | | D.F. 4918'<br>G.L. 4902' |

| | | | |
|---|---|---|---|
| Date @ Time Logged | 10-JAN-15 @2330 HRS. | Type Fluid in Hole | FRESH WATER |
| Run No. | ONE | Density of Fluid | 8.4LB/GL |
| Depth - Driller | 12,230' | Fluid Level | SURFACE |
| Depth - Logger | 7751' | Cement Top Est. Logged | 870' |
| Bottom - Logged Interval | 7739' | Equipment / Location | GD-114 / CASPER |
| Top - Log Interval | SURFACE | Recorded by | M. FENN |
| Max. Recorded Temp. | 211°F | Witnessed by | B. PATCH |

| CEMENTING DATA | Surface String | Protection String | Production String | Liner |
|---|---|---|---|---|
| Date / Time Cemented | | | | |
| Primary / Squeeze | | | | |
| Expected Compressive Strength | psi@ hrs | psi@ hrs | psi@ hrs | psi@ hrs |
| Cement Volume | / | / | / | / |
| Cement Type / Weight | / | / | / | / |
| Formulation | | | | |
| Mud Type / Mud Wgt. | / | / | / | / |

| Borehole Record | | | Casing & Tubing Record | | | |
|---|---|---|---|---|---|---|
| Run Number | Bit | From | To | Size | Weight | From | To |
| | | | | 9 5/8" | 36# | SURFACE | 894' |
| | | | | 7" | 26# | SURFACE | 7869' |
| | | | | 4 1/2" | 13.5# | 7500' | 12225' |

<<< Fold Here >>>

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

## Comments

**Cement Bond Log was the initial log ran on the well dated 1/10/15**
**Cement top was estimated at 870'**
**Max temp on bottom was 211°F**
**KOP @ 6900'**
**Wireline Depth was to max fall per company man request.**
**Gamma Survey to surface per procedure.**

**Your crew today was J.Adams,S. Dovala**

**Thank you for using Gyrodata Logging Services, Casper, WY**

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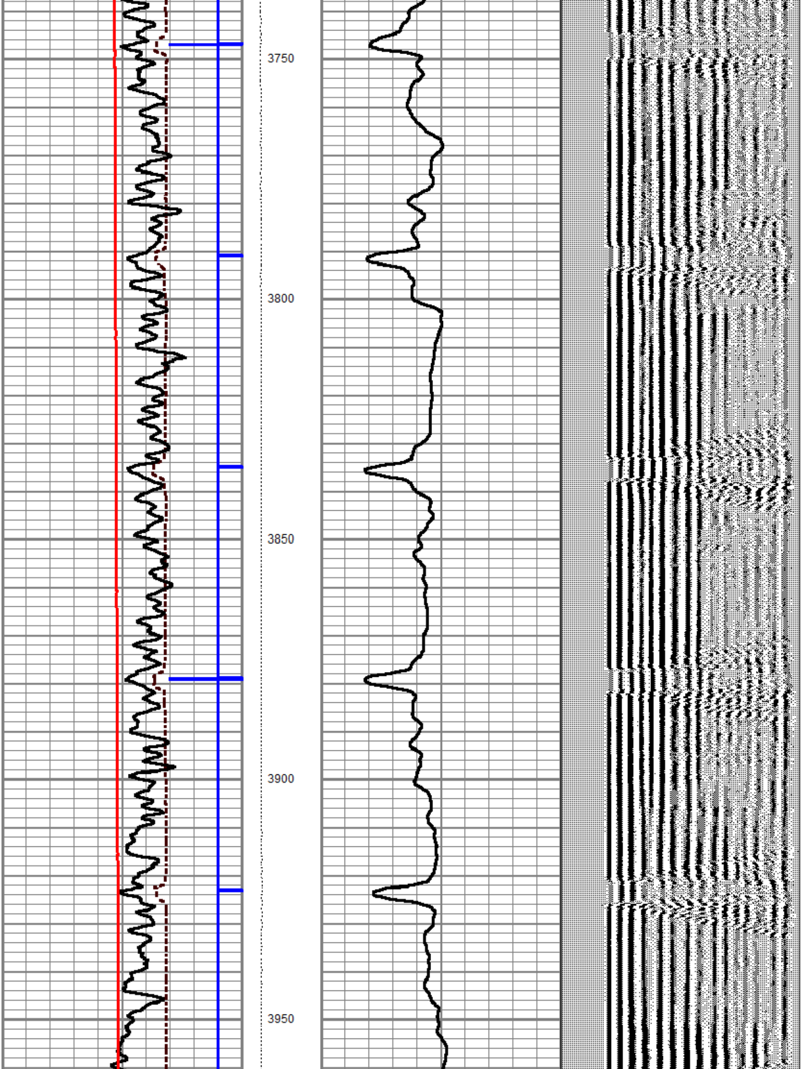
# CEMENT BOND LOG PRESENTATION

## MAIN LOG SECTION/ 0 PSI

5"=100'

| | |
|---|---|
| Database File | 2015_extraction_waag_north_1.db |
| Dataset Pathname | pass3.1 |
| Presentation Format | cbl_drs |
| Dataset Creation | Sun Jan 11 03:33:36 2015 |
| Charted by | Depth in Feet scaled 1:240 |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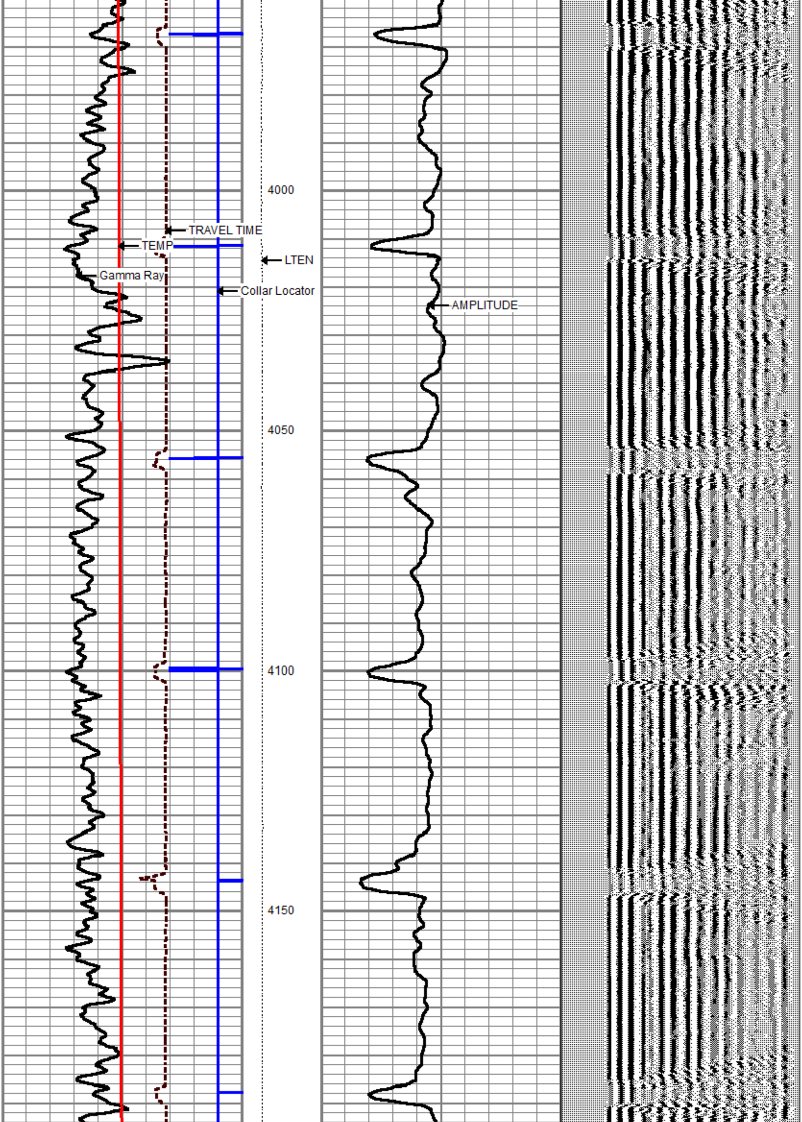
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TEMP
LTEN
Gamma Ray
Collar Locator
AMPLITUDE
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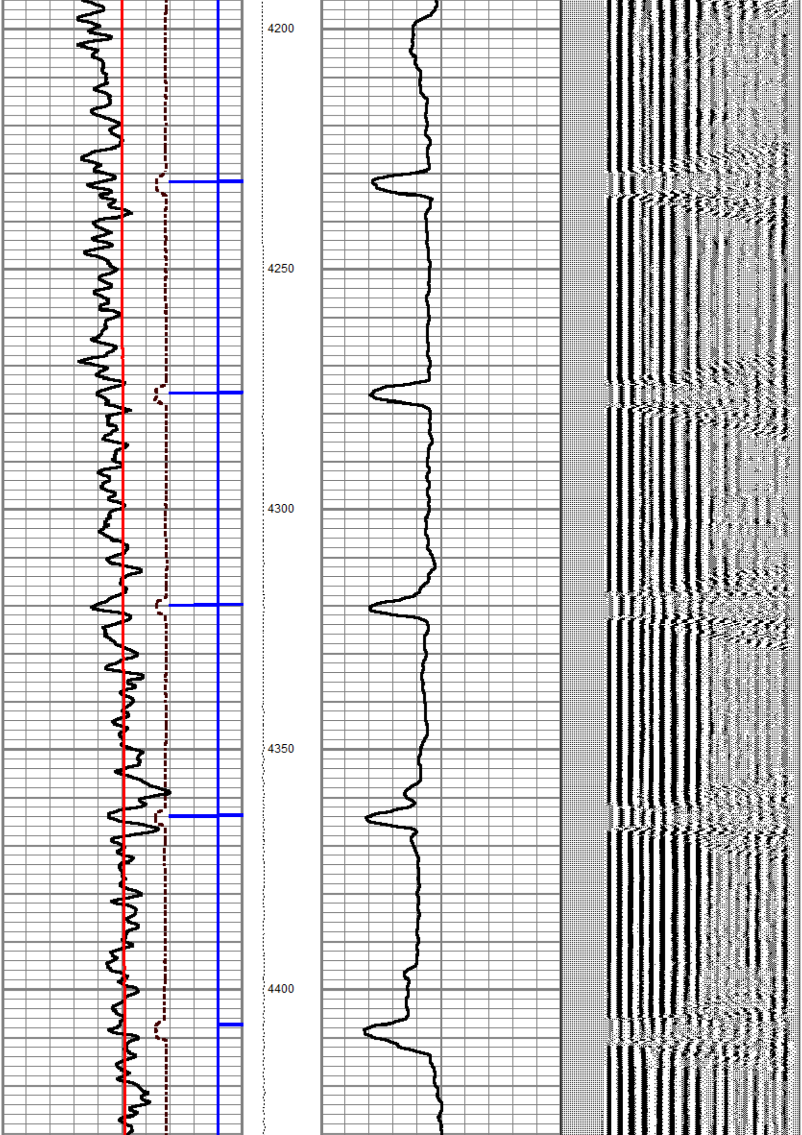
4100
4150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4250
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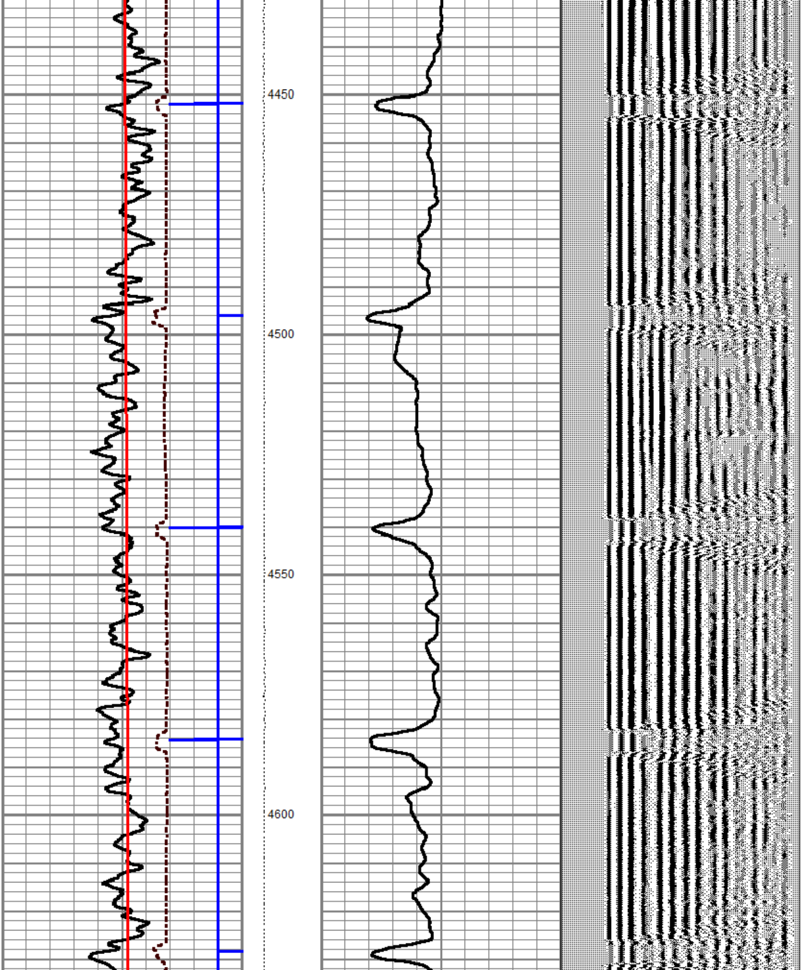
4350
4400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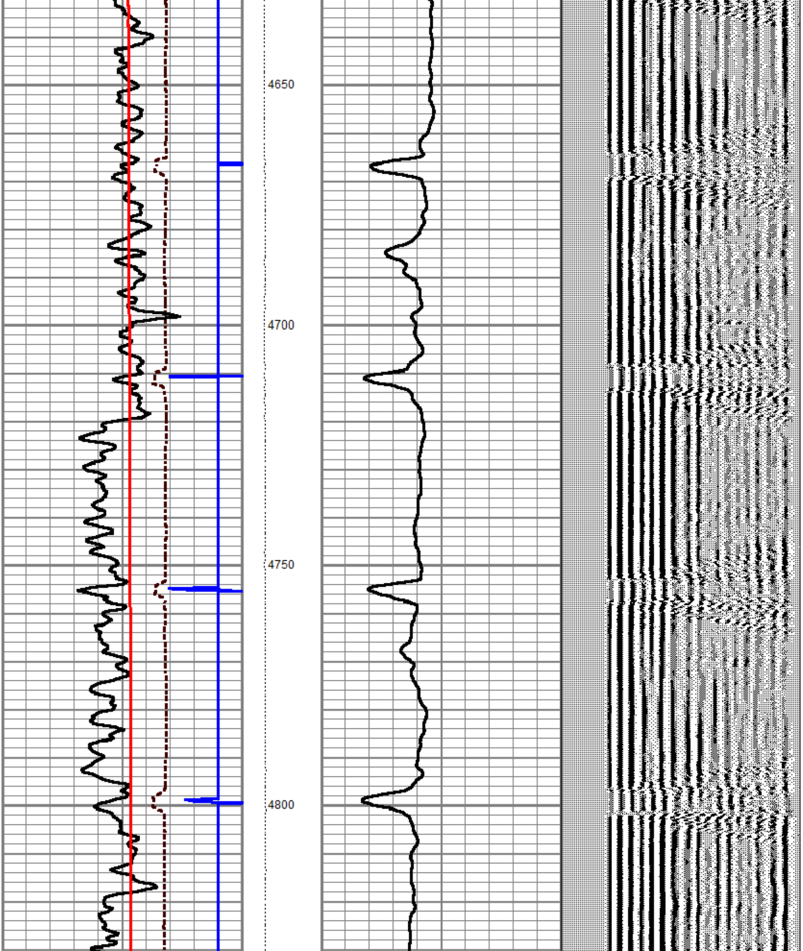
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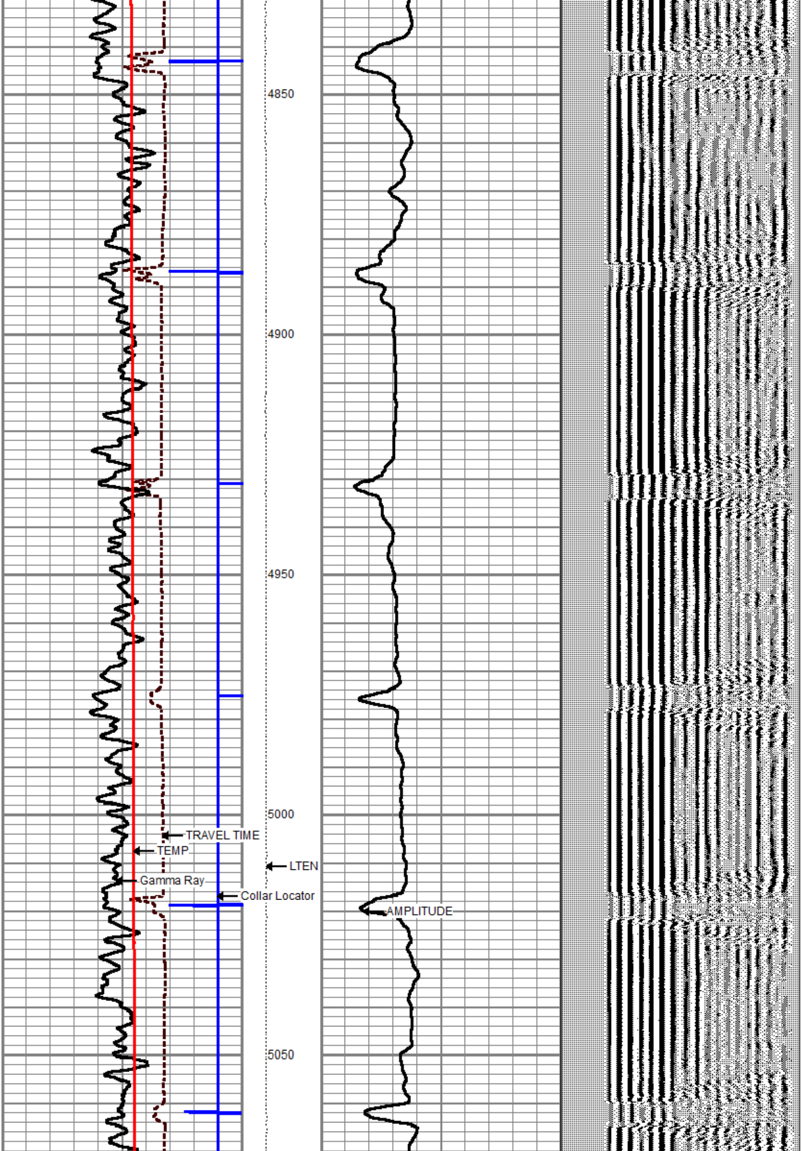
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4950
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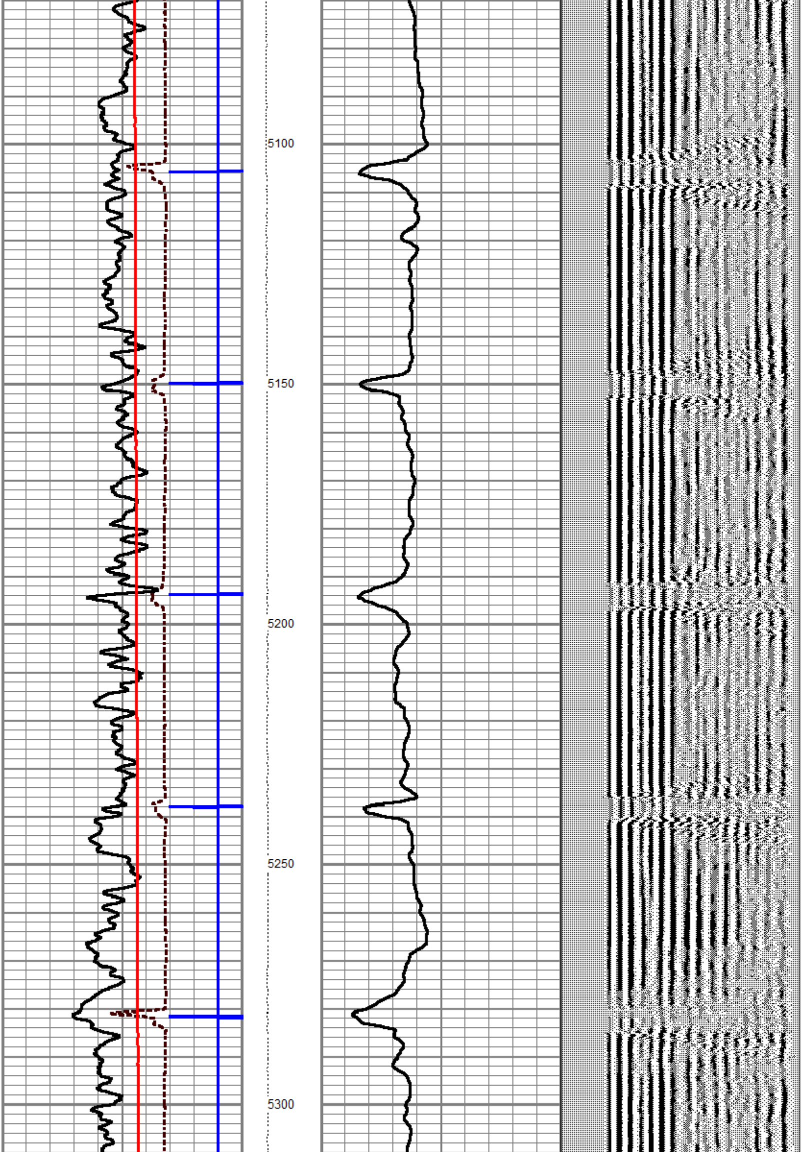
TEMP
LTEN
Gamma Ray
Collar Locator
AMPLITUDE
5050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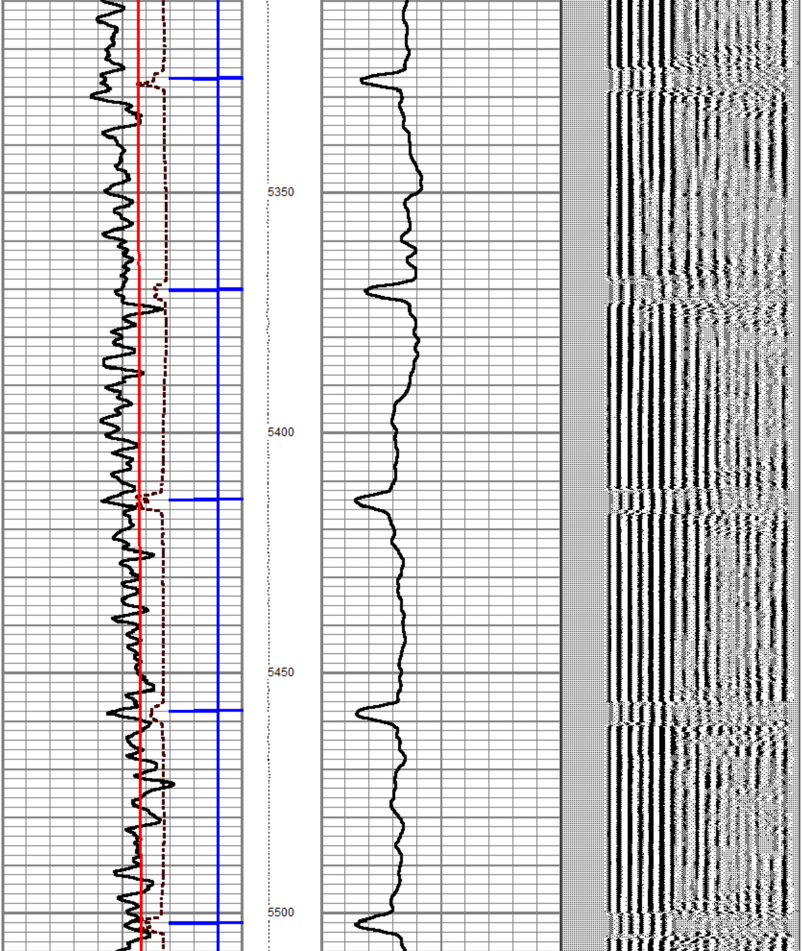
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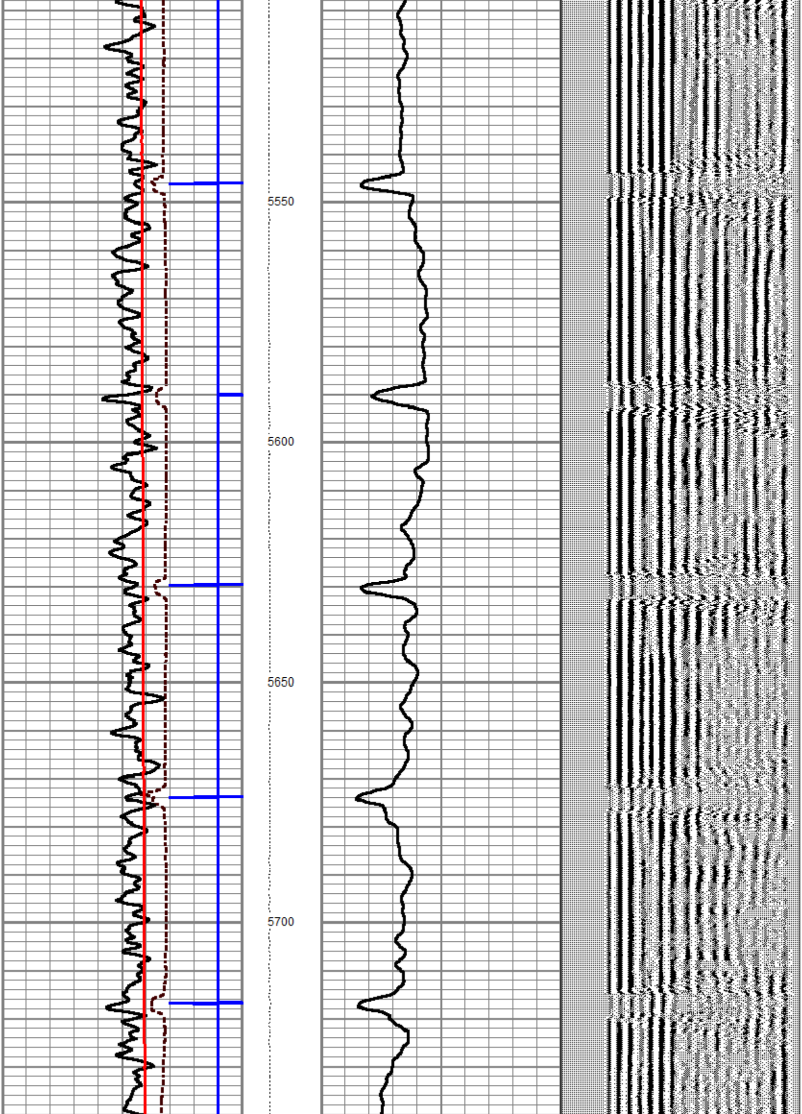
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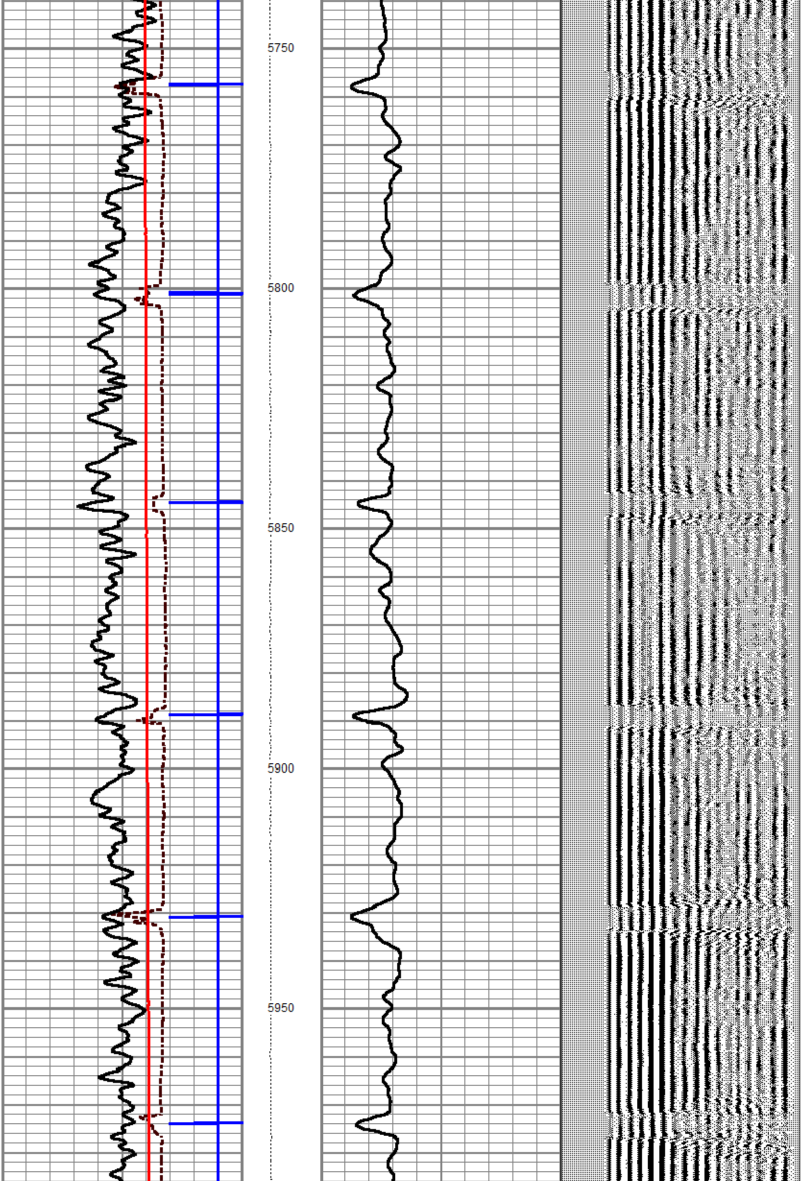
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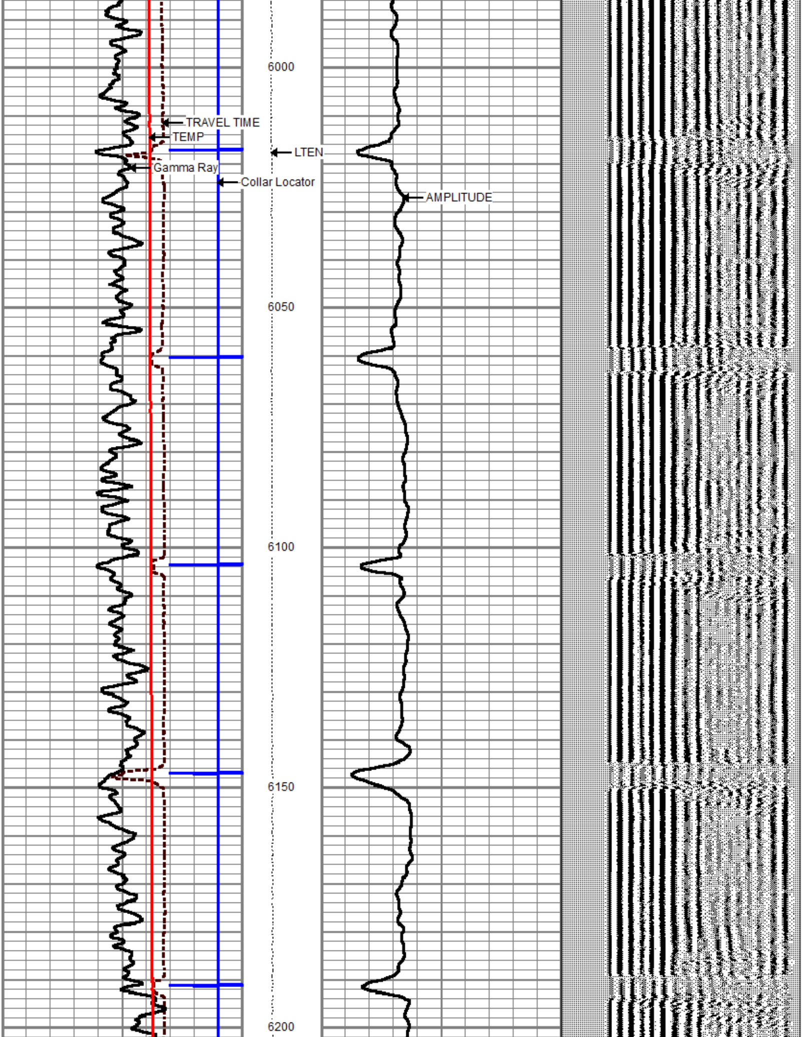
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TEMP
LTEN
Gamma Ray
Collar Locator
AMPLITUDE
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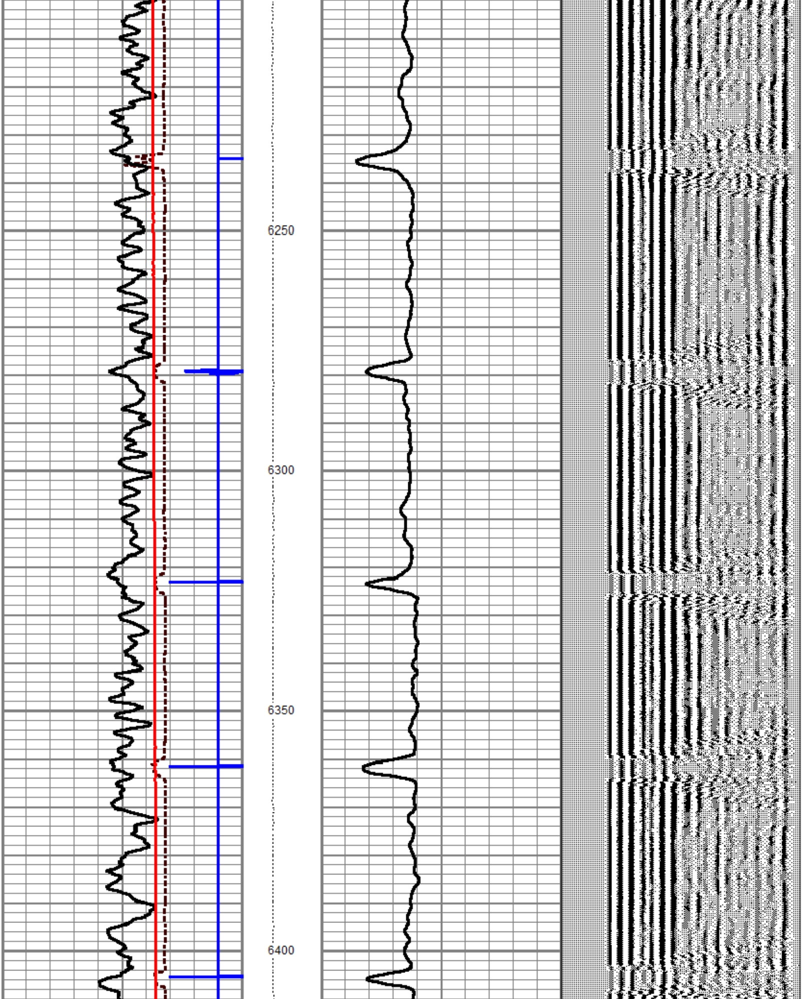
6150
6200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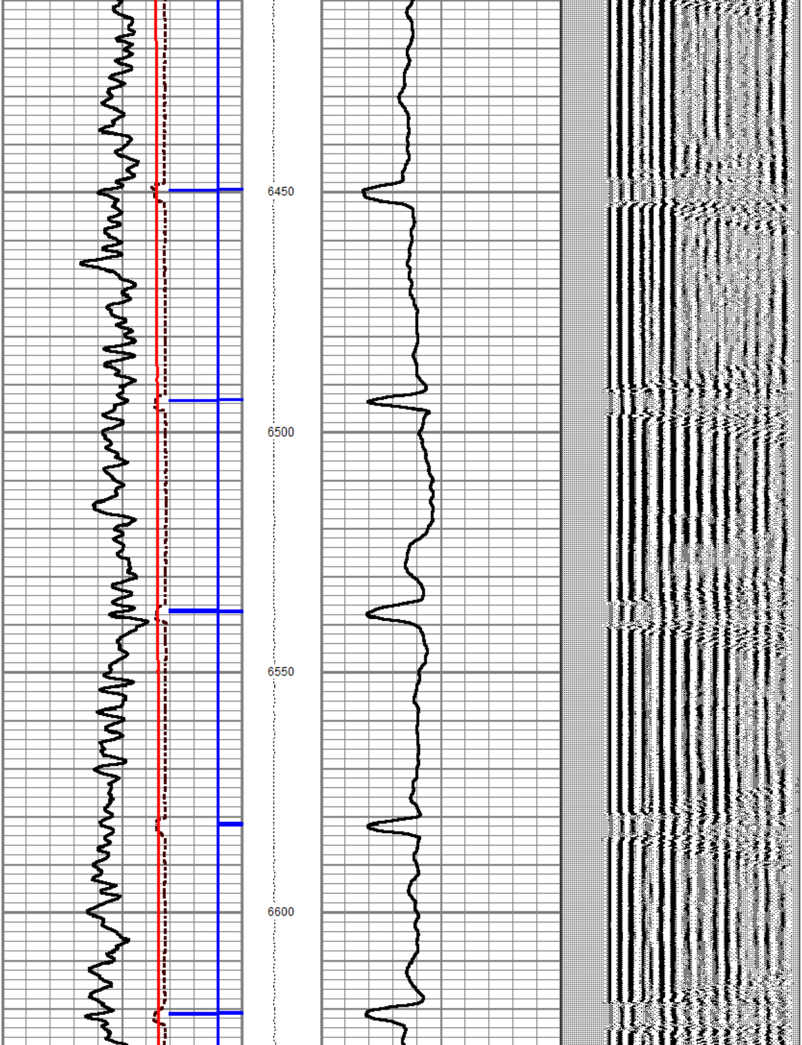
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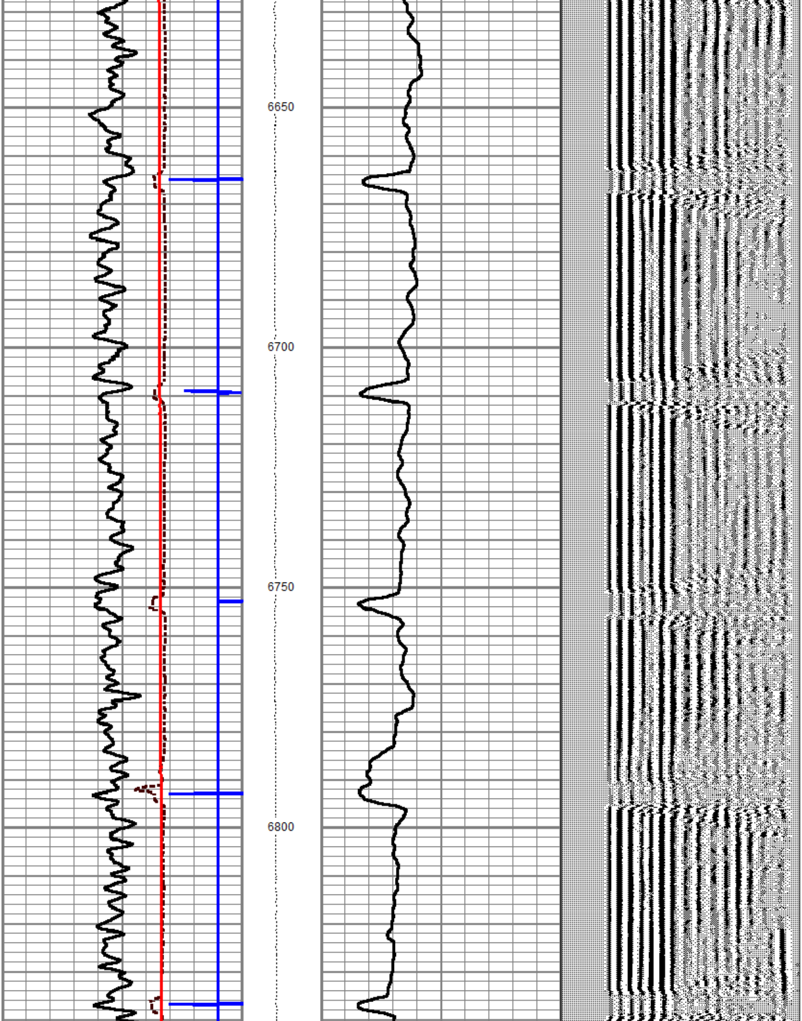
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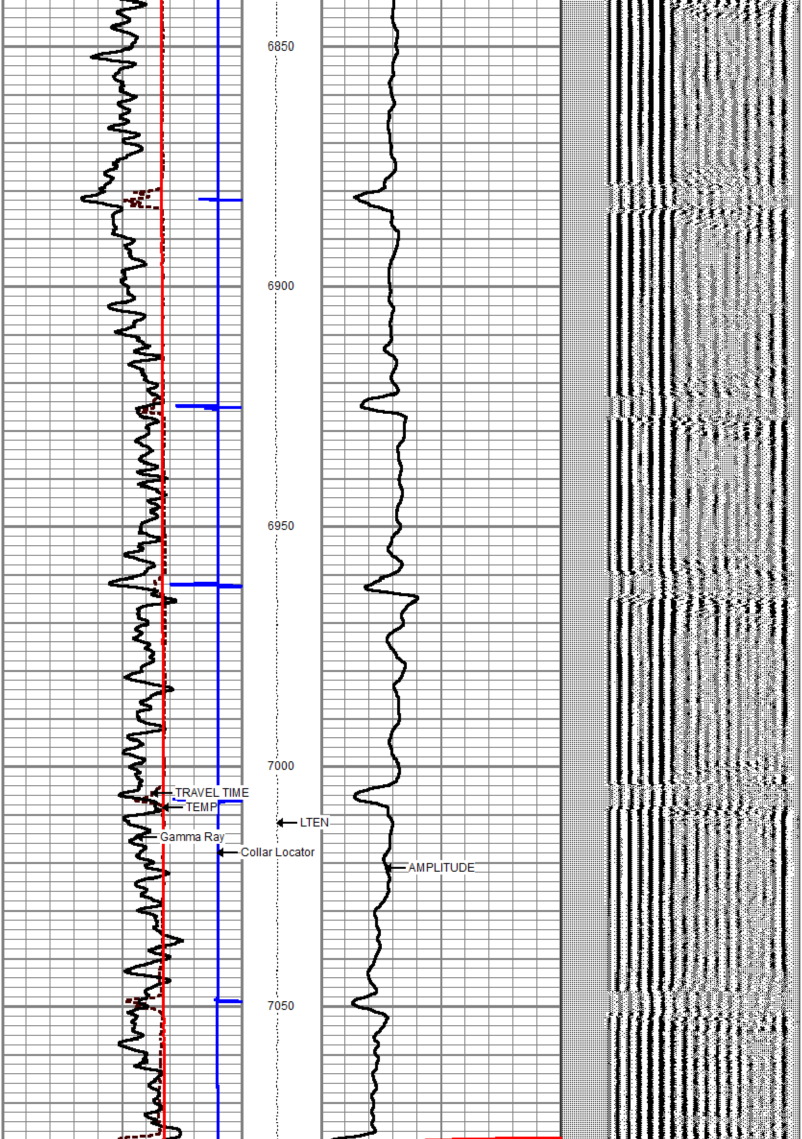
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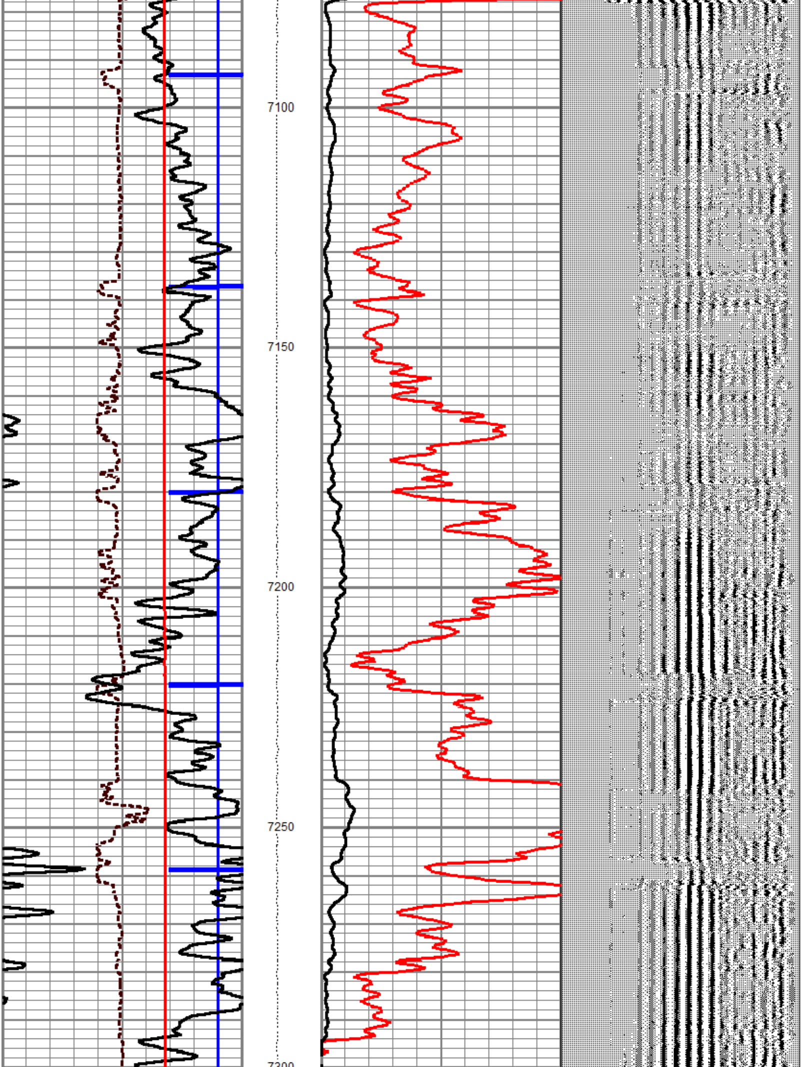
7000
TRAVEL TIME
TEMP
LTEN
Gamma Ray
Collar Locator
AMPLITUDE
7050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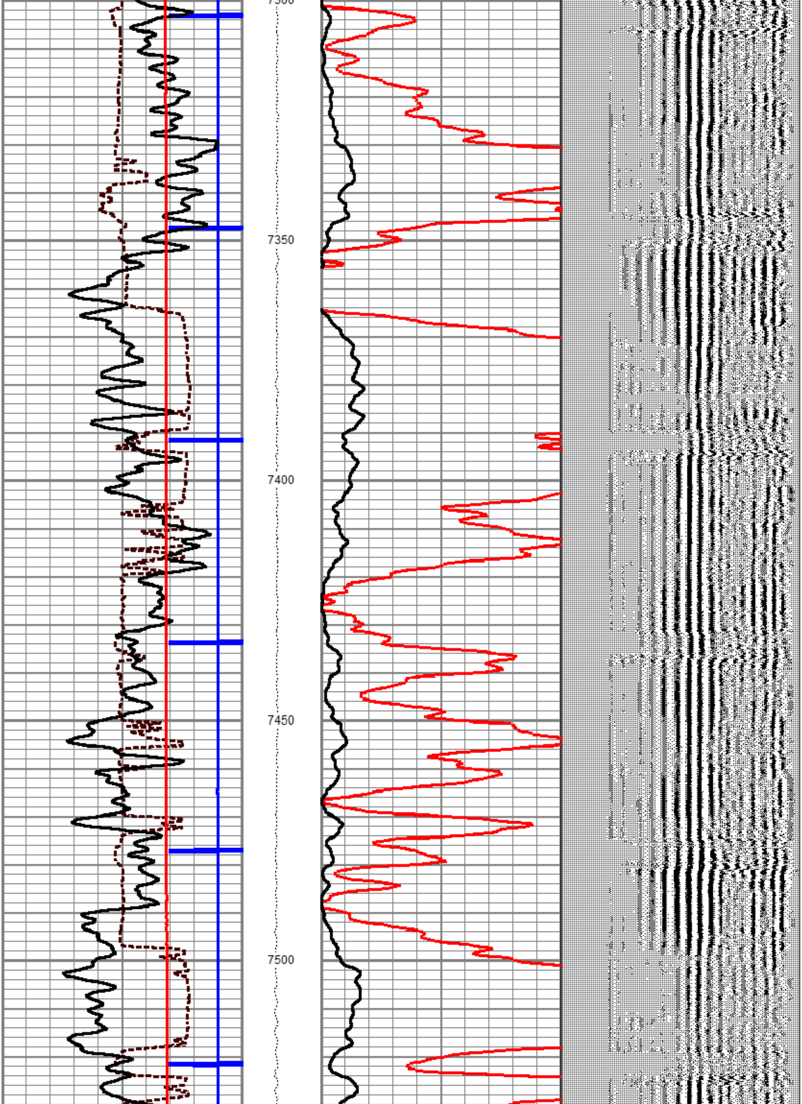
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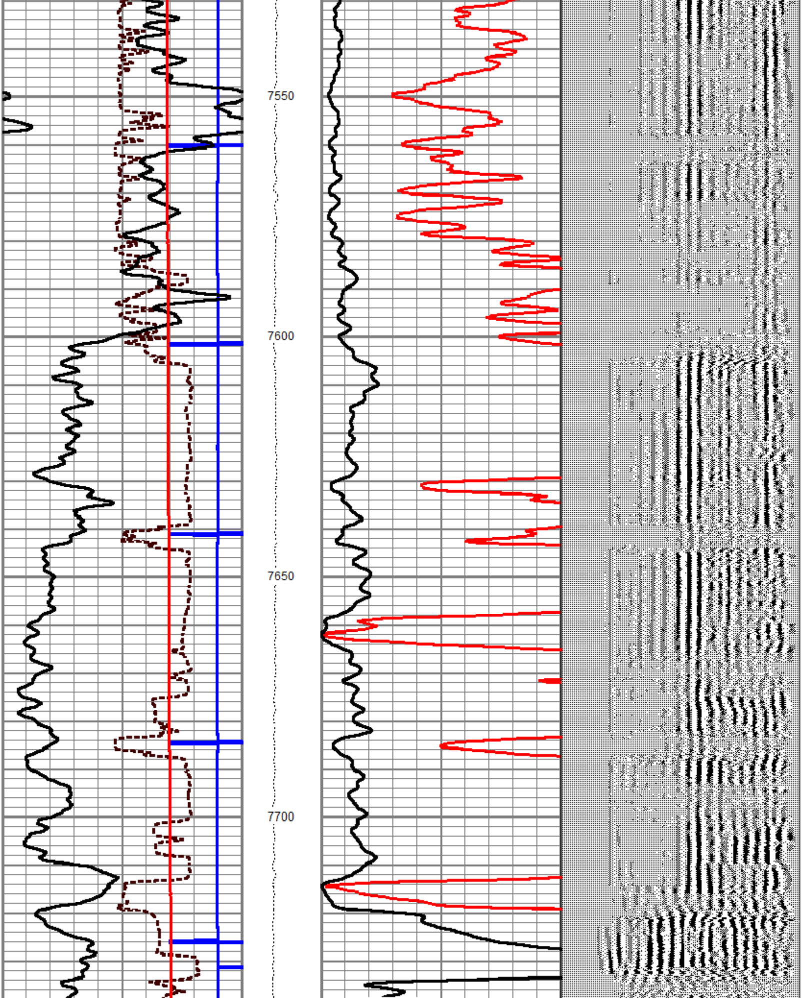
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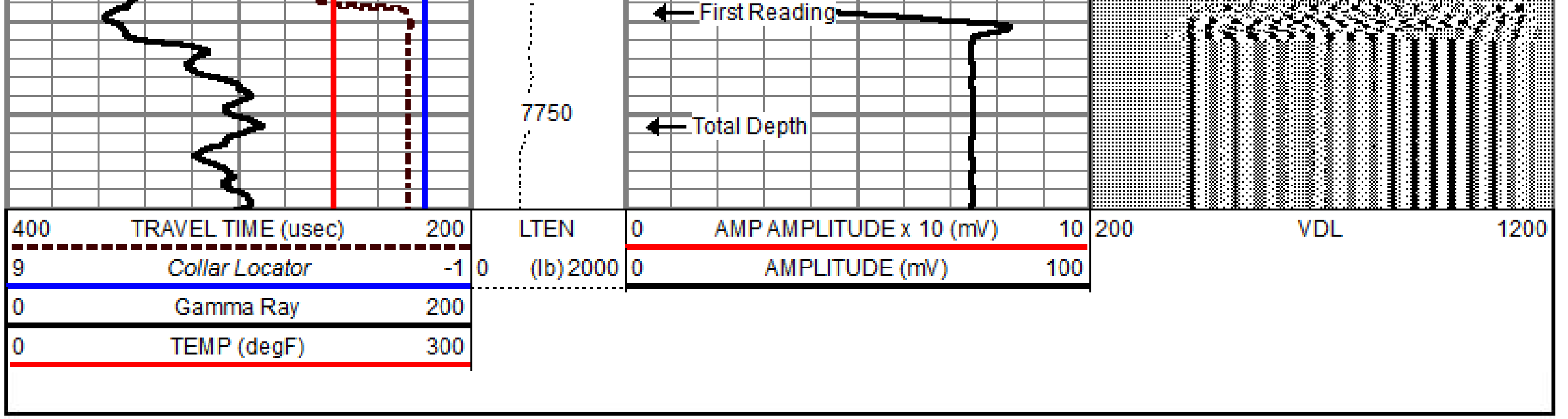

400 TRAVEL TIME (usec) 200
9 Collar Locator -1
0 Gamma Ray 200
0 TEMP (degF) 300
LTEN
0 (lb) 2000
0 AMP AMPLITUDE x 10 (mV) 10
0 AMPLITUDE (mV) 100
200 VDL 1200

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## CEMENT BOND LOG PRESENTATION

MAIN LOG SECTION/ 0 PSI
5"=100'

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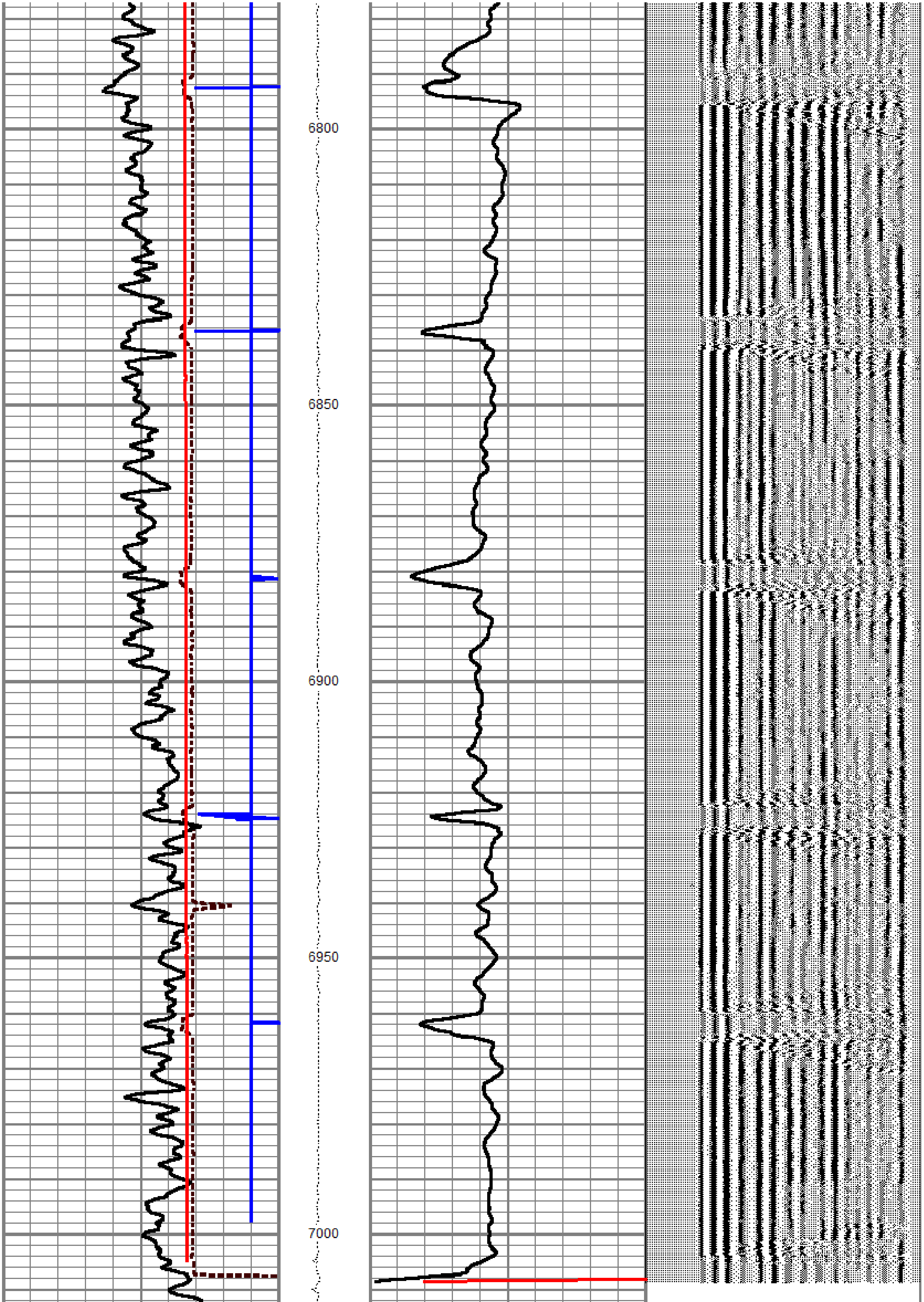
## CEMENT BOND LOG PRESENTATION

REPEAT LOG SECTION / 0 PSI
5"=100'

| | |
|---|---|
| Database File | 2015_extraction_waag_north_1.db |
| Dataset Pathname | pass1 |
| Presentation Format | cbl_drs |
| Dataset Creation | Sun Jan 11 01:08:50 2015 |
| Charted by | Depth in Feet scaled 1:240 |

400 TRAVEL TIME (usec) 200
9 Collar Locator -1
0 Gamma Ray 200
0 TEMP (degF) 300
LTEN
0 (lb) 2000
0 AMP AMPLITUDE x 10 (mV) 10
0 AMPLITUDE (mV) 100
200 VDL 1200



400 TRAVEL TIME (usec) 200
9 Collar Locator -1
0 Gamma Ray 200
0 TEMP (degF) 300
LTEN
0 (lb) 2000
0 AMP AMPLITUDE x 10 (mV) 10
0 AMPLITUDE (mV) 100
200 VDL 1200

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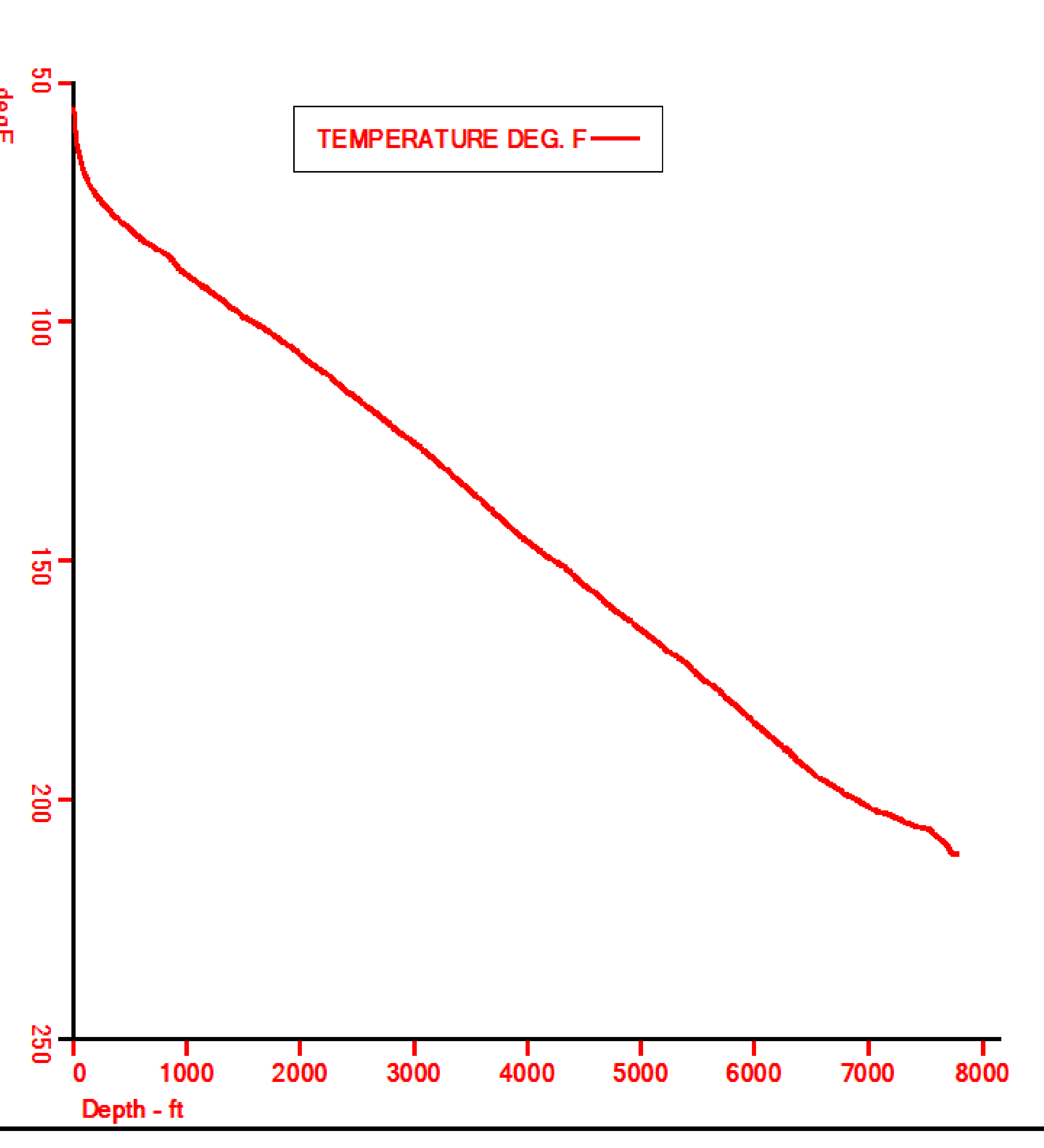
## CEMENT BOND LOG PRESENTATION

REPEAT LOG SECTION / 0 PSI
5"=100'



## Log Variables

Database C:\ProgramData\Warrior\Data\2015_extraction_waag_north_1.db
Dataset field/well/run1/pass3.1

Top - Bottom

| BHTEMP_Src | PPT usec | CASEWGHT lb/ft | MAXAMPL mV | MINAMPL mV | MINATTN db/ft | SRFTEMP degF | CASEOD in | PERFS | TDEPTH ft |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 26 | 62 | 1.7 | 0.8 | 30 | 7 | 0 | 7869 |

| BOTTEMP degF | BOREID in |
|---|---|
| 250 | 8.75 |

### Calibration Report

| | |
|---|---|
| Database File | 2015_extraction_waag_north_1.db |
| Dataset Pathname | pass3.1 |
| Dataset Creation | Sun Jan 11 03:33:36 2015 |

#### Gamma Ray Calibration Report

| | | |
|---|---|---|
| Serial Number: | 234GR-IPCD9-02 | |
| Tool Model: | GR-Tek-Co | |
| Performed: | Tue Feb 25 16:32:03 2014 | |
| Calibrator Value: | 120.0 | |
| Background Reading: | 100.8 | cps |
| Calibrator Reading: | 244.7 | cps |
| Sensitivity: | 0.8337 | /cps |

#### Segmented Cement Bond Log Calibration Report

| | | |
|---|---|---|
| Serial Number: | ISF06-04-10-10-2014 | |
| Tool Model: | 275 H/T RIB with I/E Temp | |
| Calibration Casing Diameter: | 7.000 | in |
| Calibration Depth: | 401.425 | ft |

Master Calibration, performed Sun Jan 11 02:33:30 2015:

| | Raw (v) | | Calibrated (mv) | | Results | |
|---|---|---|---|---|---|---|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | -0.026 | 0.321 | 0.000 | 62.165 | 179.468 | 4.596 |
| CAL | 0.000 | 0.243 | | | | |
| 5' | 0.091 | 0.465 | 0.000 | 62.165 | 166.421 | -15.150 |
| SUM | | | | | | |
| S1 | 0.209 | 0.187 | 0.000 | 100.000 | -4439.964 | 930.011 |
| S2 | 0.199 | 0.245 | 0.000 | 100.000 | 2159.810 | -430.160 |
| S3 | 0.195 | 0.319 | 0.000 | 100.000 | 808.568 | -158.003 |
| S4 | 0.182 | 0.396 | 0.000 | 100.000 | 466.008 | -84.756 |
| S5 | 0.191 | 0.364 | 0.000 | 100.000 | 578.708 | -110.411 |
| S6 | 0.217 | 0.299 | 0.000 | 100.000 | 1220.249 | -264.748 |
| S7 | 0.226 | 0.212 | 0.000 | 100.000 | -7166.801 | 1617.712 |
| S8 | 0.233 | 0.177 | 0.000 | 100.000 | -1800.652 | 419.352 |

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

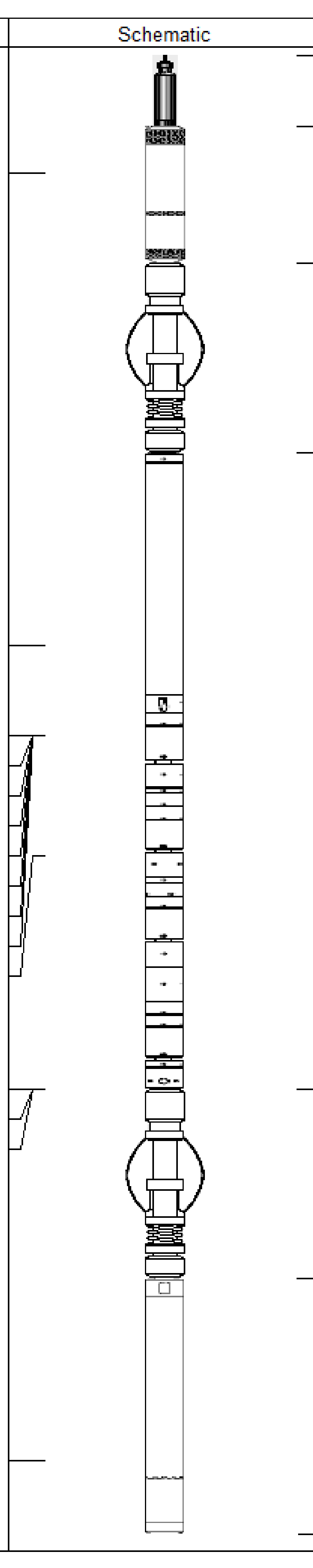
| | Raw (v) | | Calibrated (v) | | Results | |
|---|---|---|---|---|---|---|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| CAL | 0.000 | 0.000 | 0.000 | 0.243 | 1.000 | 0.000 |

Air Zero Calibration, performed Wed Dec 31 17:00:00 1969:

| | 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: | ISF06-04-10-10-2014 | | | |
| Tool Model: | 275 H/T RIB with I/E Temp | | | |
| Performed: | Mon Jan 05 14:44:41 2015 | | | |
| | 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) | Description | Length (ft) | O.D. (in) | Weight (lb) |
|---|---|---|---|---|---|
| | | TitanConeType2<br>Cable Head 1 7/16 Cone Type II | 1.03 | 1.44 | 3.60 |
| CCL | 19.56 | CCL-275tekco (234CCL-IS2T1-08)<br>2 3/4" 450 Deg. "F" TekCo CCL Earth Mag | 1.96 | 2.75 | 20.00 |
| | | 2.75<br>2 3/4" Tekco Adjustable Centralizer | 2.73 | 2.75 | 25.00 |
| TEMP | 12.77 | | | | |
| WVFS8 | 11.48 | | | | |
| WVFS7 | 11.48 | 275 H/T RIB with I/E Temp (ISF06-04-10-10-20 9.13<br>Tekco 2.75" 450 Deg. F RIB with I/E Temp | 9.13 | 2.75 | 102.00 |
| WVFS6 | 11.48 | | | | |
| WVFS5 | 11.48 | | | | |
| WVFS4 | 11.48 | | | | |
| WVFS3 | 11.48 | | | | |
| WVFS2 | 11.48 | | | | |
| WVFS1 | 11.48 | | | | |
| WVF5FT | 9.73 | | | | |
| WVFSYNC | 6.40 | | | | |
| WVFTEMP | 6.40 | | | | |
| WVFCAL | 6.40 | | | | |
| | | 2.75<br>2 3/4" Tekco Adjustable Centralizer | 2.73 | 2.75 | 25.00 |
| | | GR-GR-Tek-Co (234GR-IPCD9-02)<br>Tekco 2 3/4" 400 Deg. F Logging Gamma Ray | 3.67 | 2.75 | 40.00 |
| GR | 1.04 | | | | |

| | |
|---|---|
| Dataset: | 2015_extraction_waag_north_1.db: field/well/run1/pass3.1 |
| Total length: | 21.25 ft |
| Total weight: | 215.60 lb |
| O.D.: | 2.75 in |

**gyrodata**

| | |
|---|---|
| Company | EXTRACTION OIL & GAS |
| Well | WAAG NORTH #1 |
| Field | WATTENBERG |
| County | WELD |
| State | CO |
| Country | USA |