



**Radial Cement Bond
Variable Density Log
W/Gamma Ray/CCL/Temp**

Company Antero Resources
Well Penn Unit 1H
Field Rabbit Ears
County Tyler
State West Virginia

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Field Rabbit Ears
County Tyler
State West Virginia

Location: API #: 47-095-02614

Other Services

Permanent Datum SEC N/A TWP N/A RGE N/A
Log Measured From Ground Level Kelly Bushing (30')
Drilling Measured From Elevation Kelly Bushing

Elevation

K.B.
D.F.
G.L.

Date 22-Feb-2020

| | | | | | |
|------------------------|----------------|---------------|---------|------------|--------|
| Run Number | One | | | | |
| Depth Driller | 15,152 ft. | | | | |
| Depth Logger | 6,984 ft. | | | | |
| Bottom Logged Interval | 6,984 ft. | | | | |
| Top Log Interval | Surface | | | | |
| Open Hole Size | N/A | | | | |
| Type Fluid | Water | | | | |
| Density / Viscosity | N/A | | | | |
| Max. Recorded Temp. | 148 Deg. F. | | | | |
| Estimated Cement Top | 6,310 ft. | | | | |
| Time Well Ready | 07:00 | | | | |
| Time Logger on Bottom | 15:00 | | | | |
| Equipment Number | 132 | | | | |
| Location | Marietta, Ohio | | | | |
| Recorded By | Tom Weese | | | | |
| Witnessed By | James Carter | | | | |
| Borehole Record | | Tubing Record | | | |
| Run Number | Bit | From | To | Size | Weight |
| | | | | | From |
| | | | | | To |
| Casing Record | | Size | Wgt/Ft | Top | Bottom |
| Surface String | 13 3/8 in. | 54.5 lbs. | Surface | 403 ft. | |
| Prod. String | 9 5/8 in. | 36 lbs. | Surface | 2,655 ft. | |
| Production String | 5 1/2 in. | 20 lbs. | Surface | 15,152 ft. | |
| Liner | | | | | |

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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.

Comments

Primary Log on Well

Marker Joint @ 5,591 to 5,601 ft. Wireline Depth
No Correction to Pipe Tally - Per OSR

Main Pass 1,500 PSI
Repeat Pass 0 PSI

Thank You For Choosing Nine Energy Service Wireline. Marietta, Ohio

RECEIVED
Office of Oil and Gas

OCT 28 2020

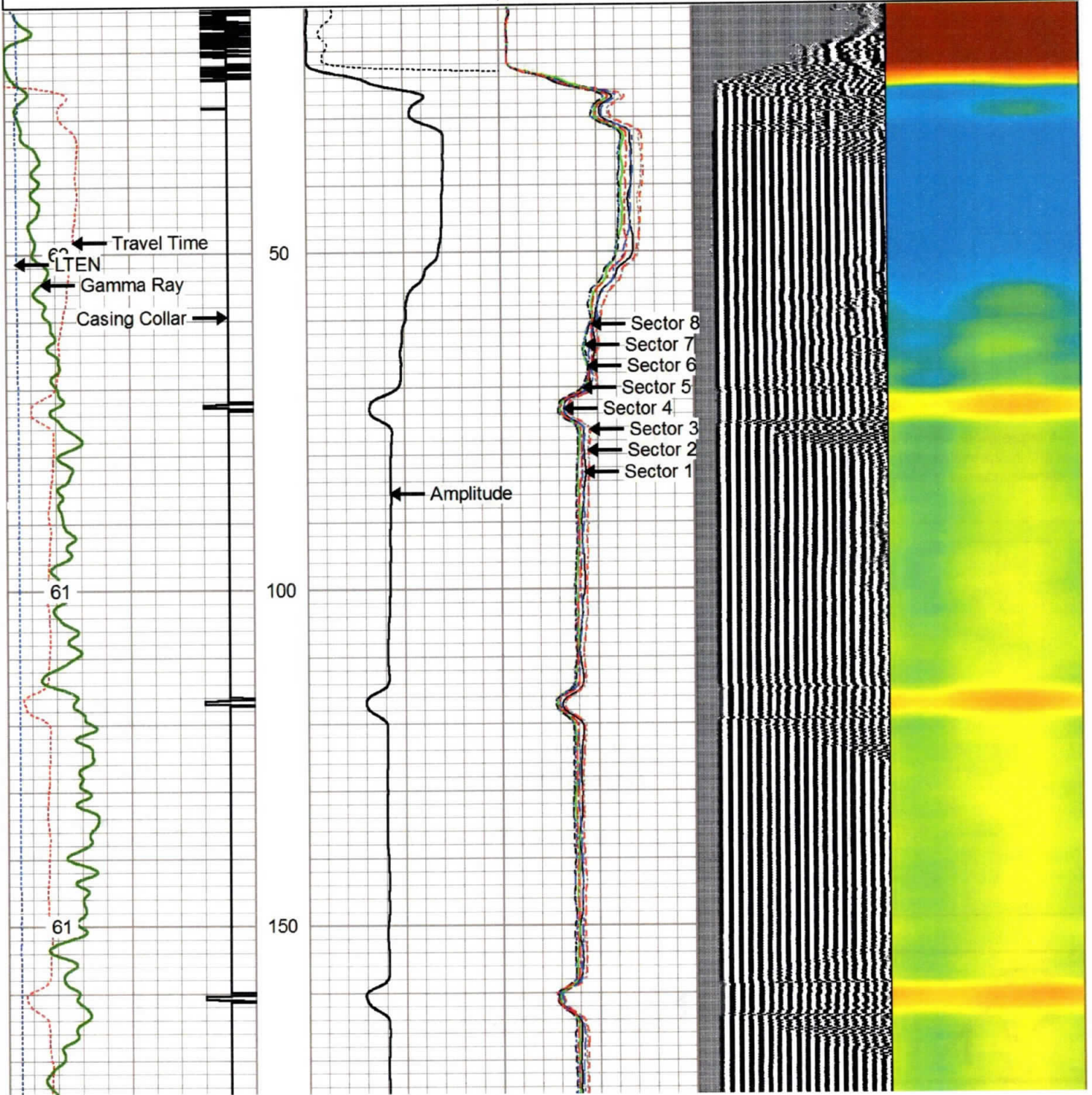
WV Department of
Environmental Protection

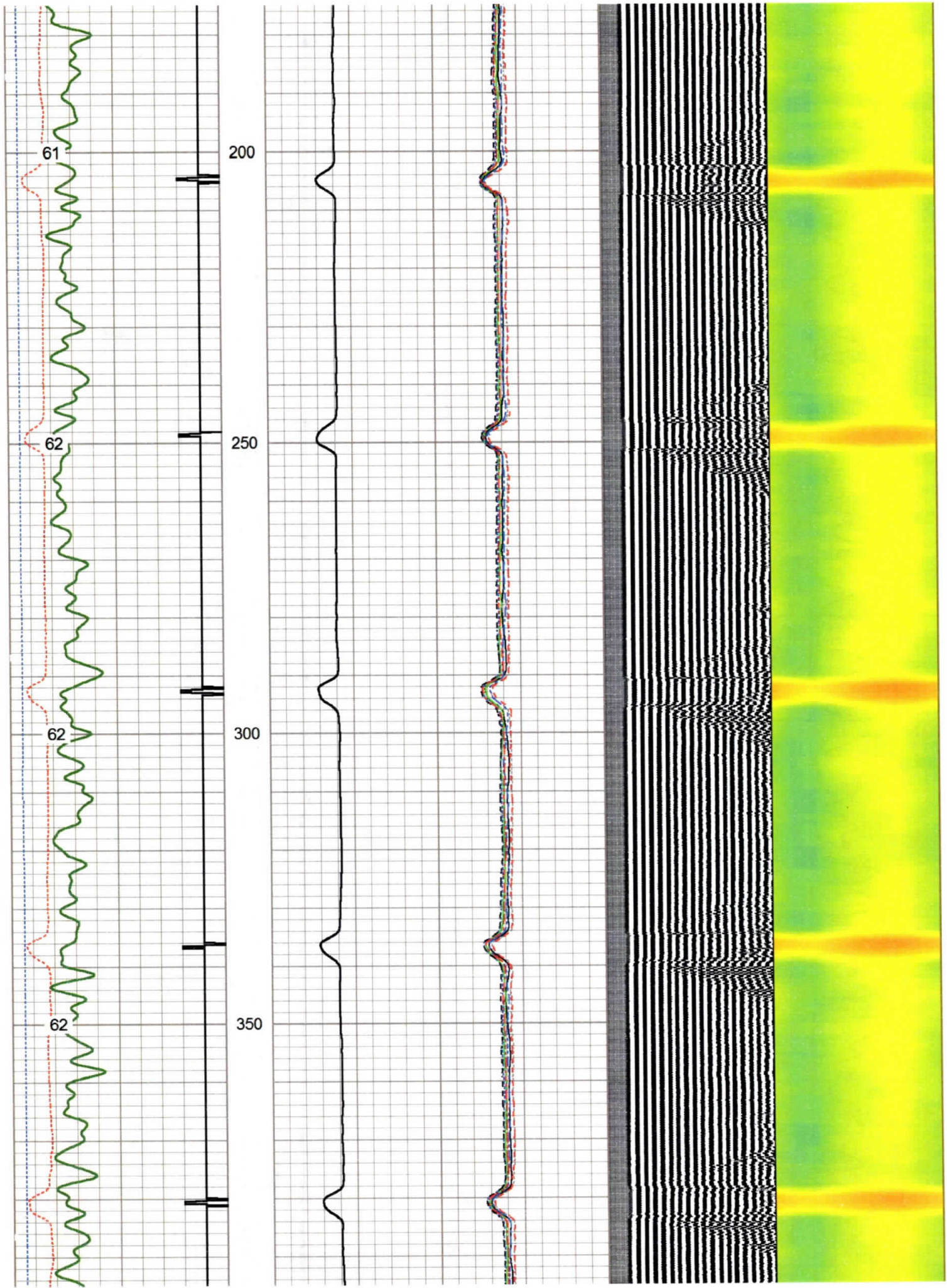


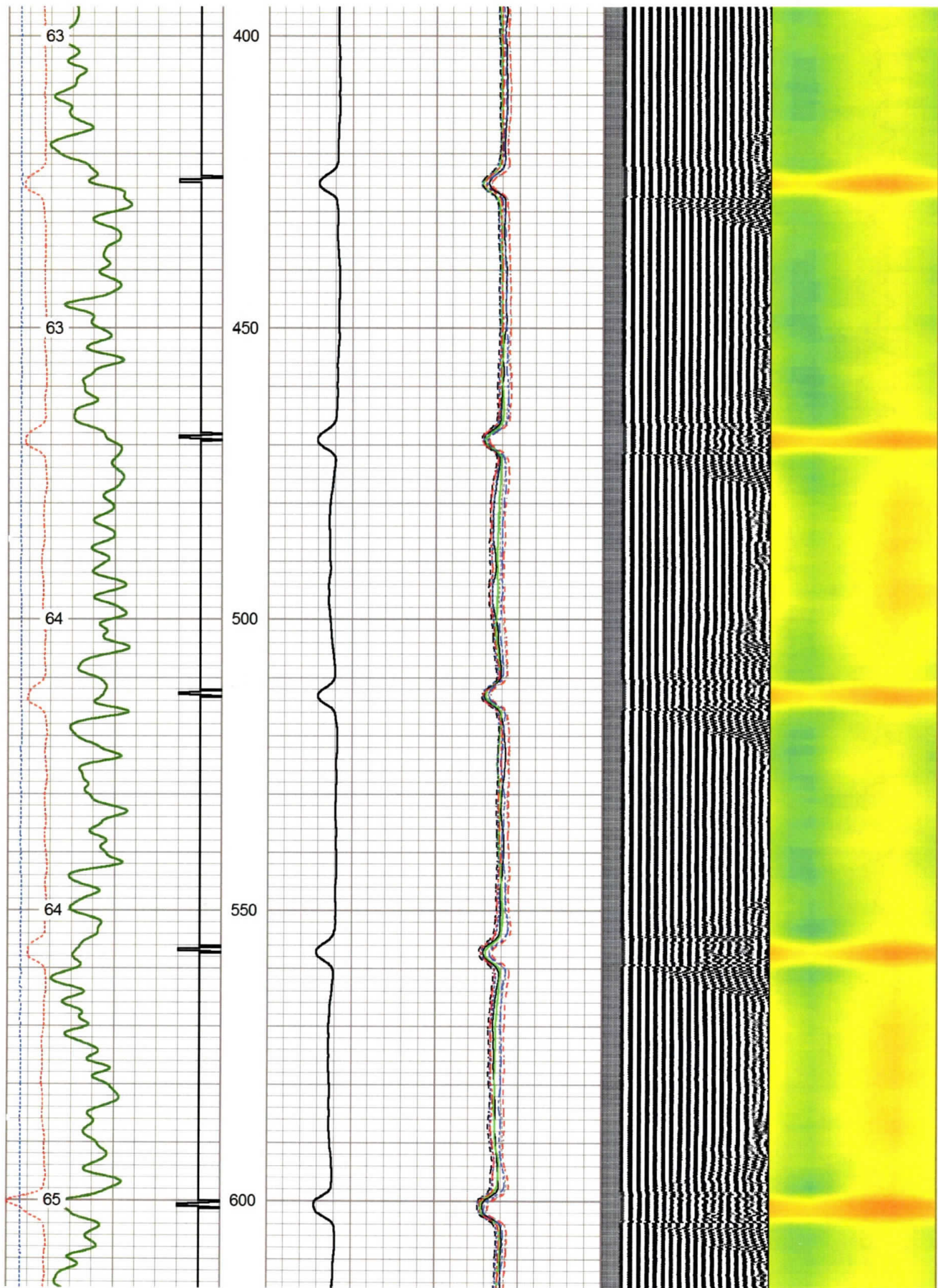
Main Pass 1,500 PSI

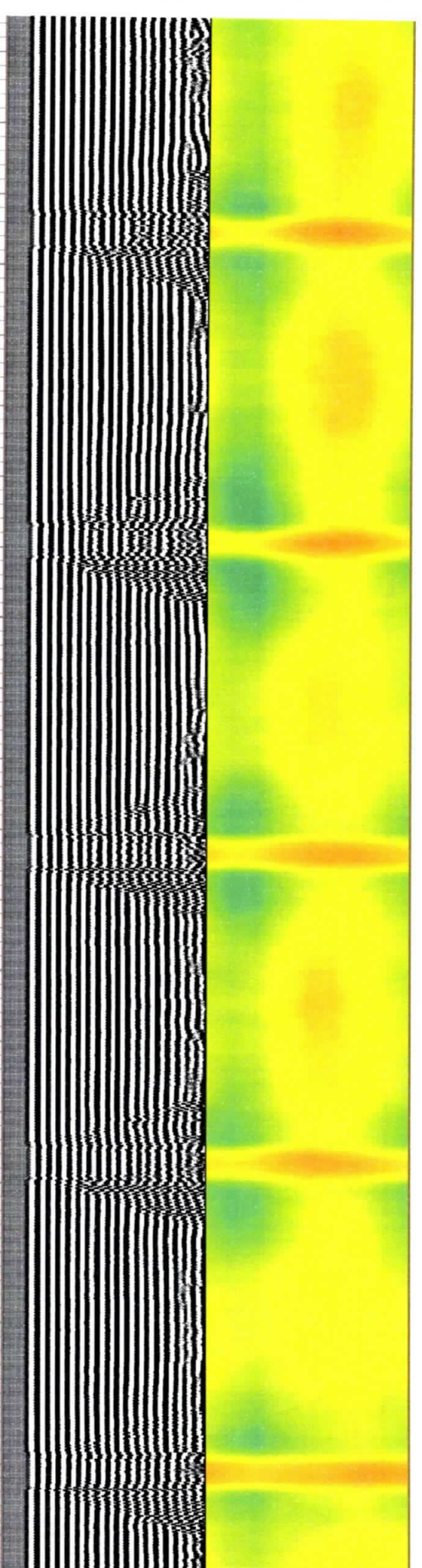
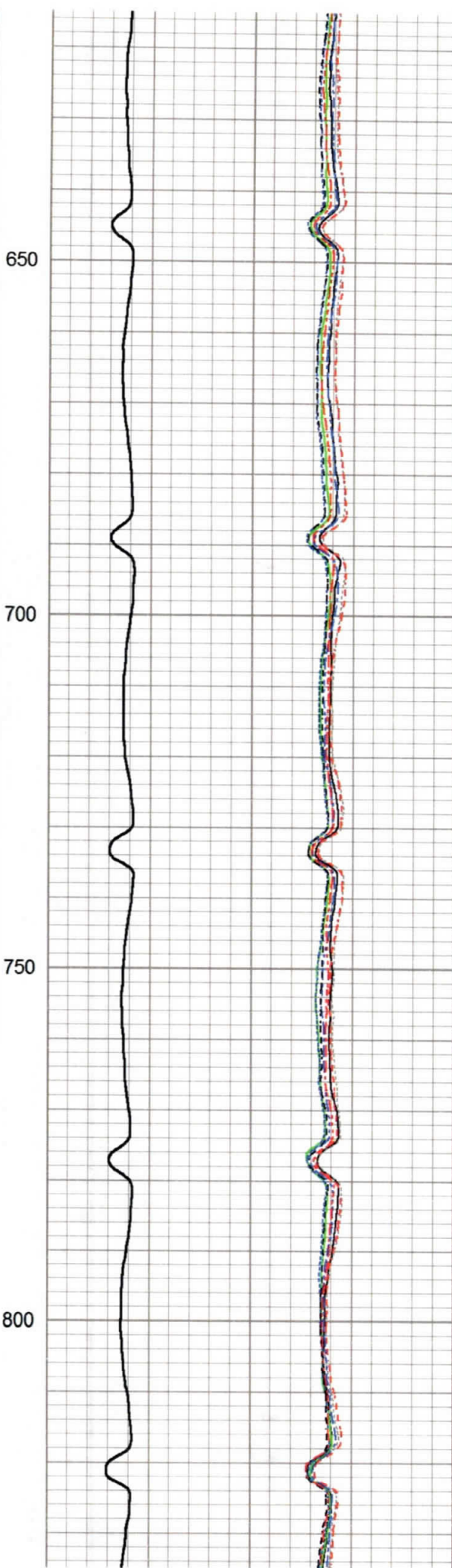
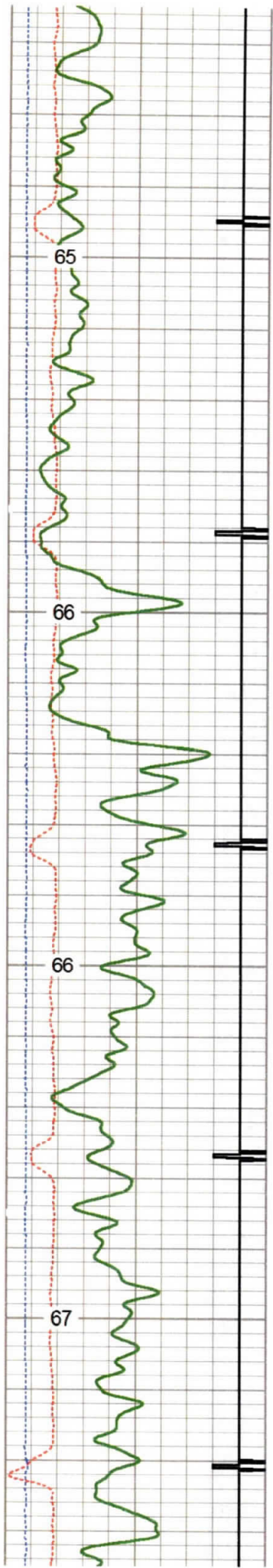
Database File antero_penn_1h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Penn_1H/RCBL_1/pass4
 Presentation Format scbl03
 Dataset Creation Sat Feb 22 14:45:41 2020
 Charted by Depth in Feet scaled 1:240

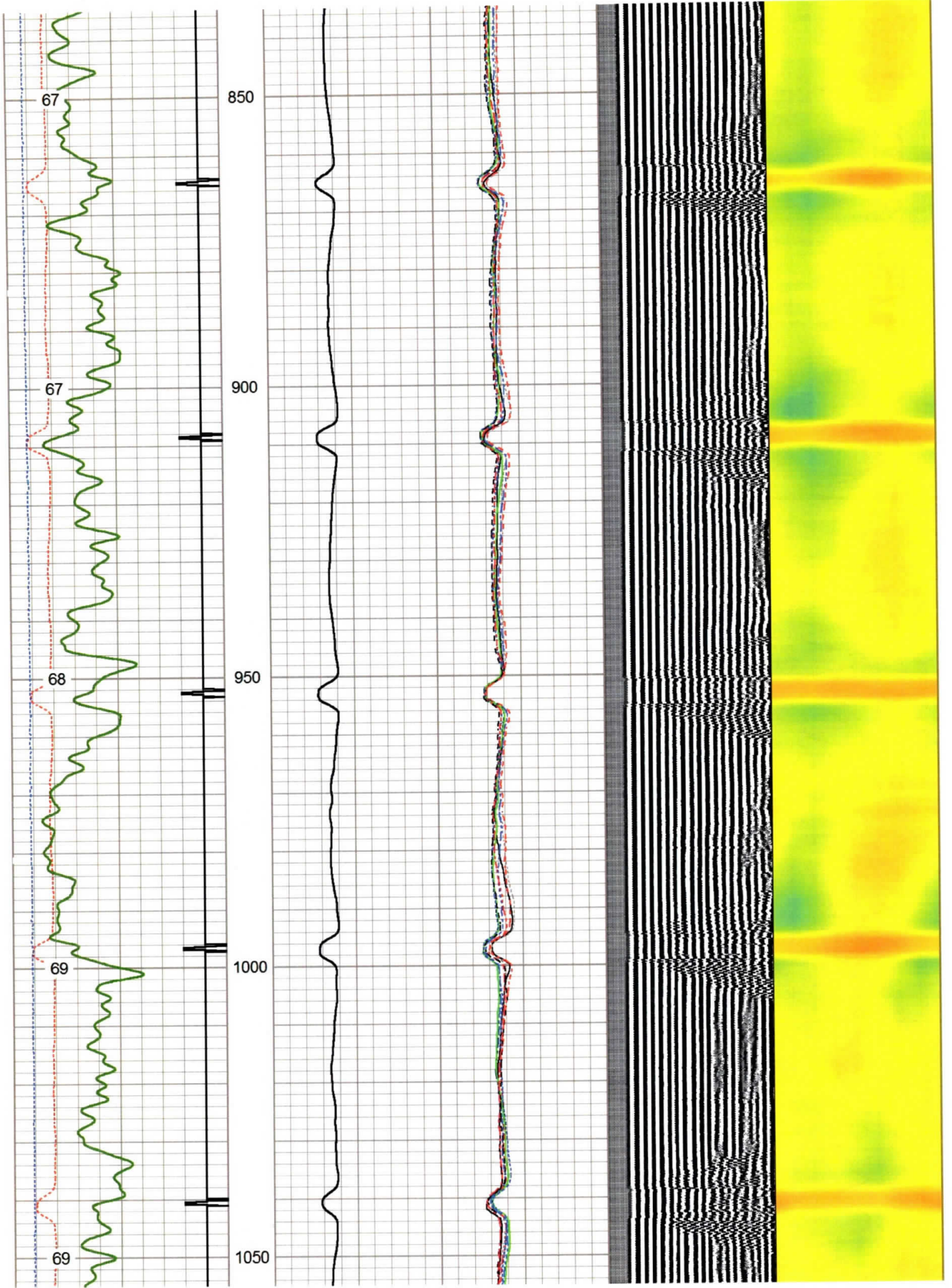
| | | | | | | | | | | | | |
|---------------|--------------------|------|---------------------|----------------|-----|----|----------|-----|------------------|--------|------------|---|
| 260 | Travel Time (usec) | 200 | 0 | Amplitude (mV) | 100 | -5 | Sector 1 | 150 | Variable Density | 1 | Cement Map | 8 |
| Casing Collar | | | Amplified Amplitude | | -5 | -5 | Sector 2 | 150 | 200 | (usec) | 1200 | |
| 0 | Gamma Ray (GAPI) | 150 | 0 | (mV) | 10 | -5 | Sector 3 | 150 | | | | |
| 0 | LTEN (lb) | 2500 | | | | -5 | Sector 4 | 150 | | | | |
| Temp (degF) | | | | | | -5 | Sector 5 | 150 | | | | |
| | | | | | | -5 | Sector 6 | 150 | | | | |
| | | | | | | -5 | Sector 7 | 150 | | | | |
| | | | | | | -5 | Sector 8 | 150 | | | | |

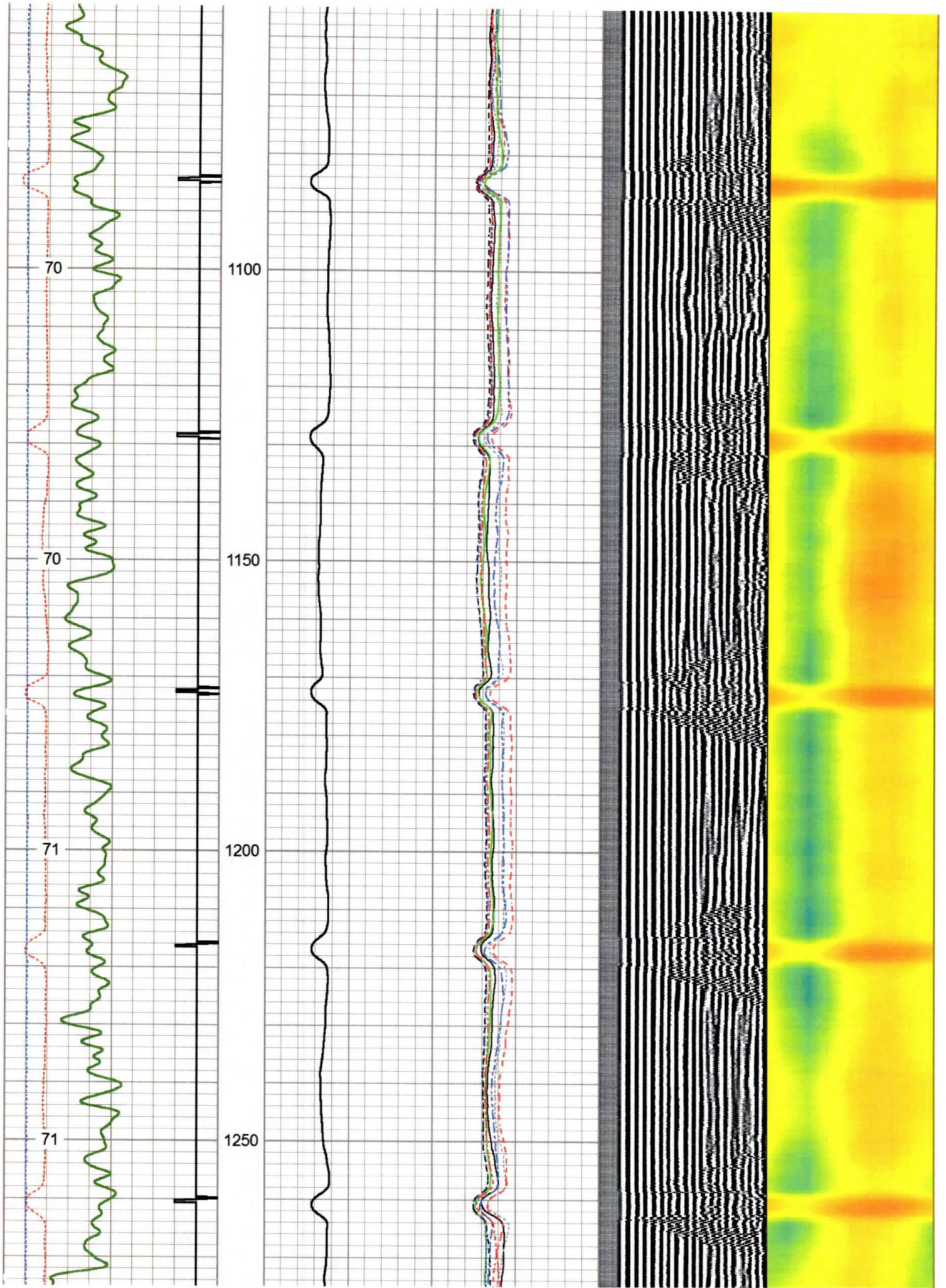


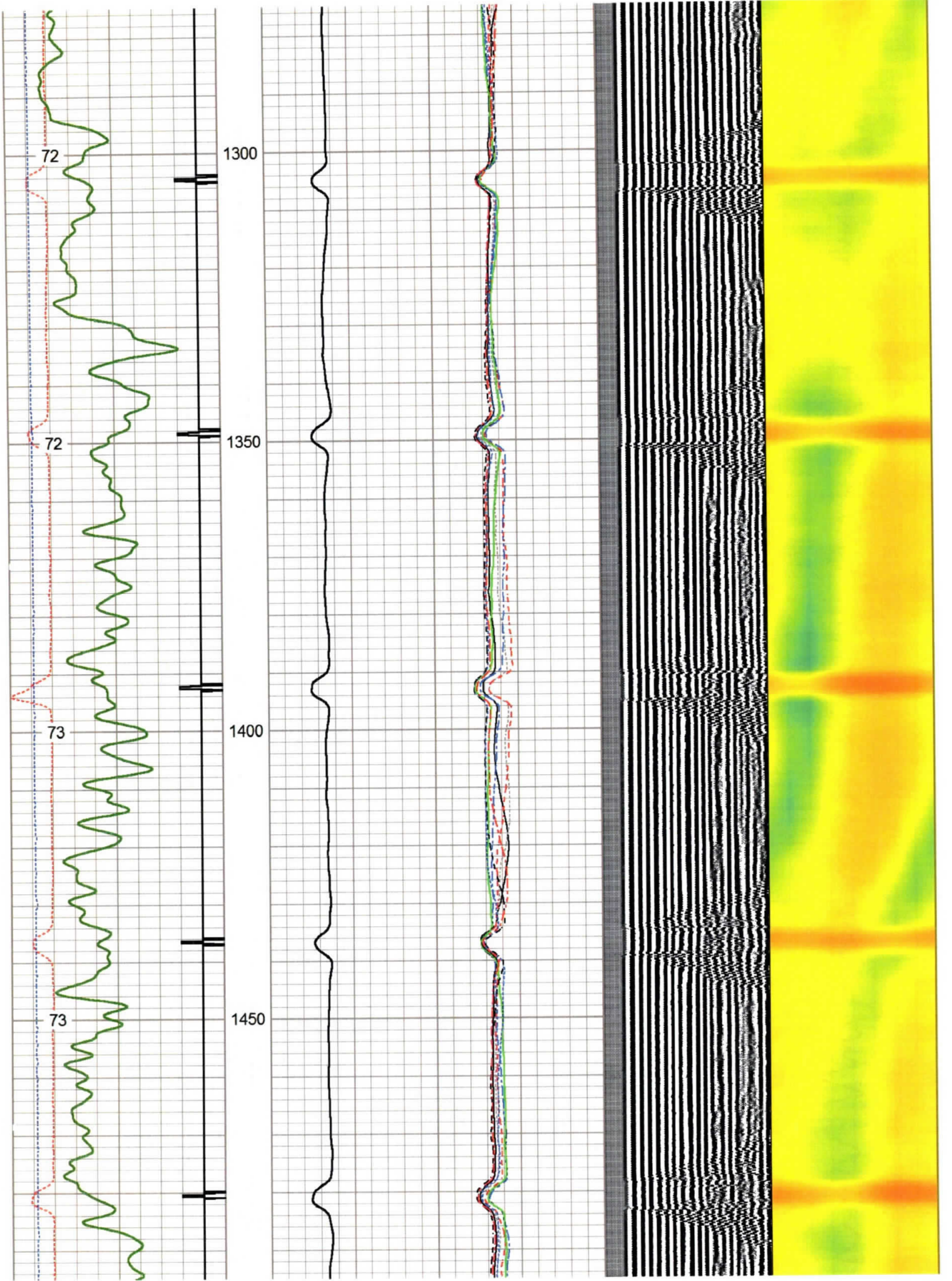


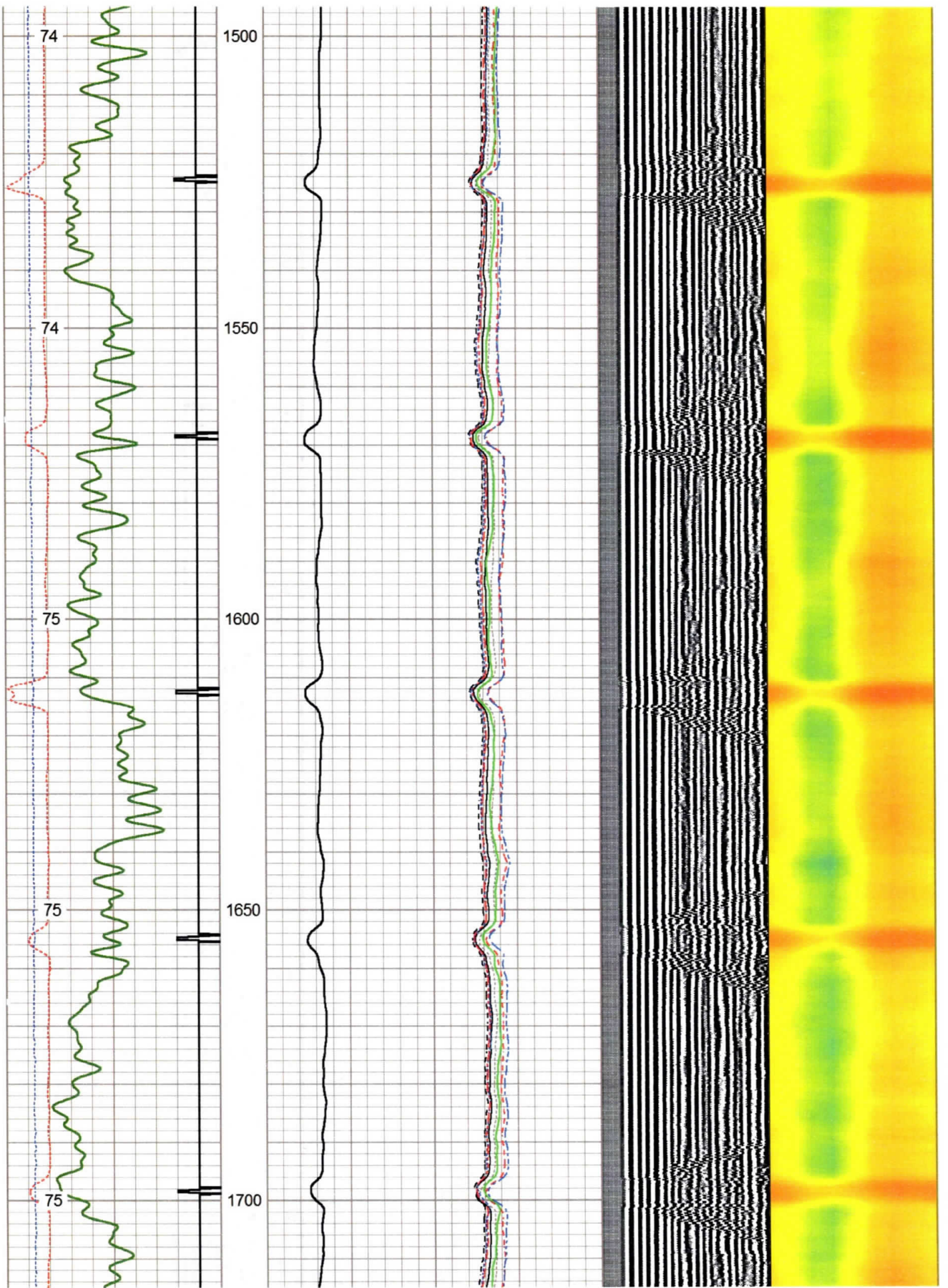


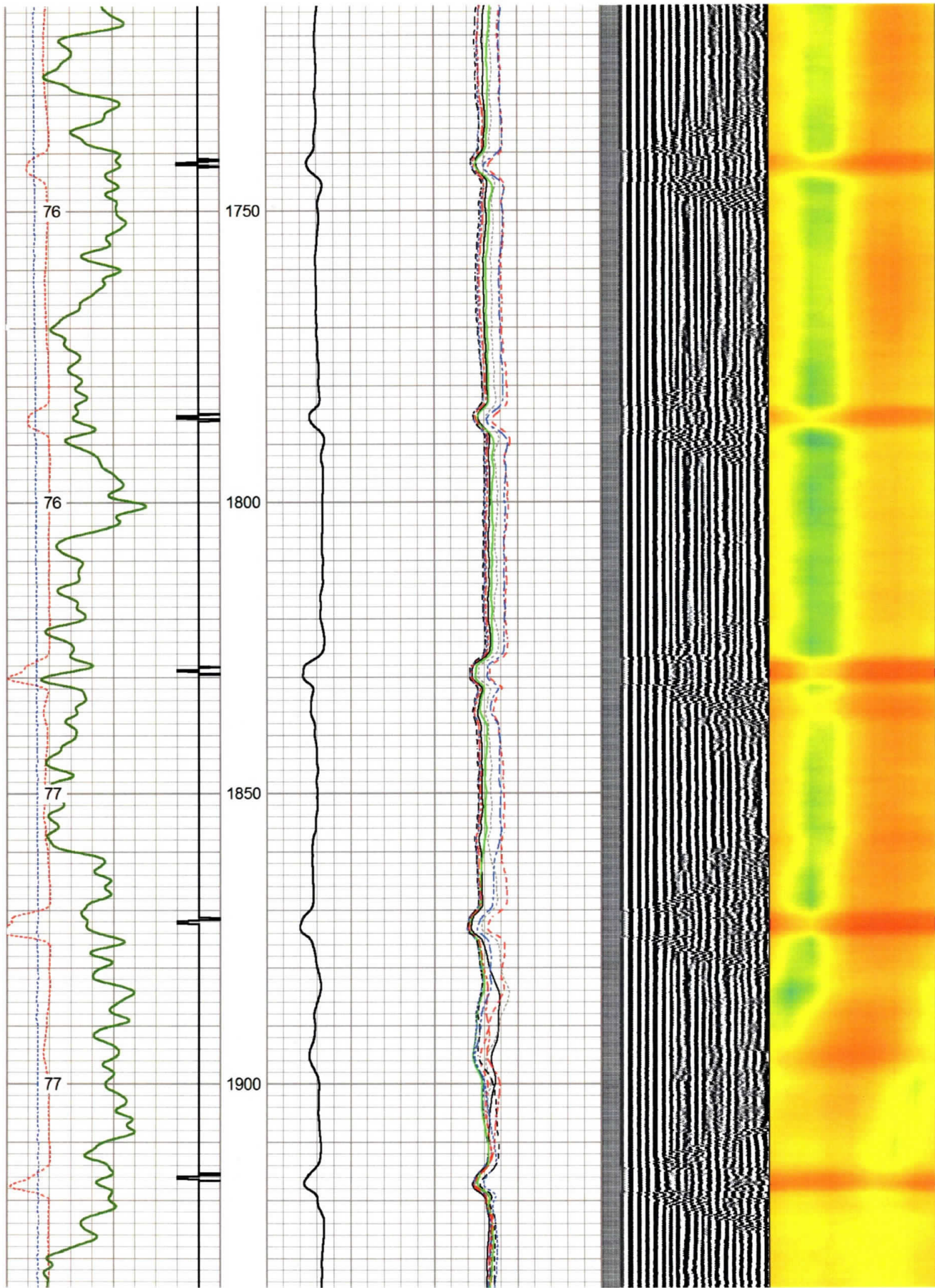


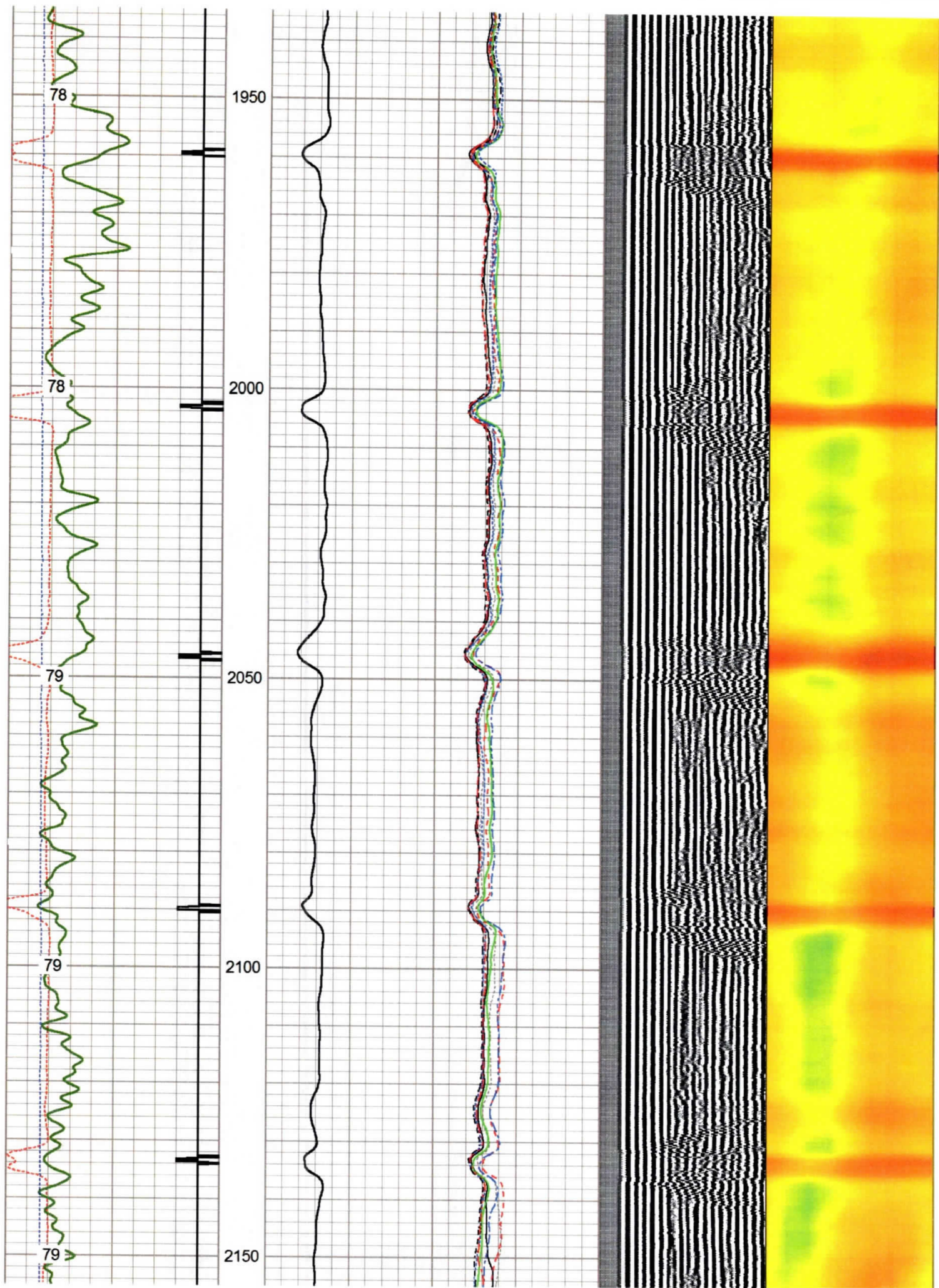


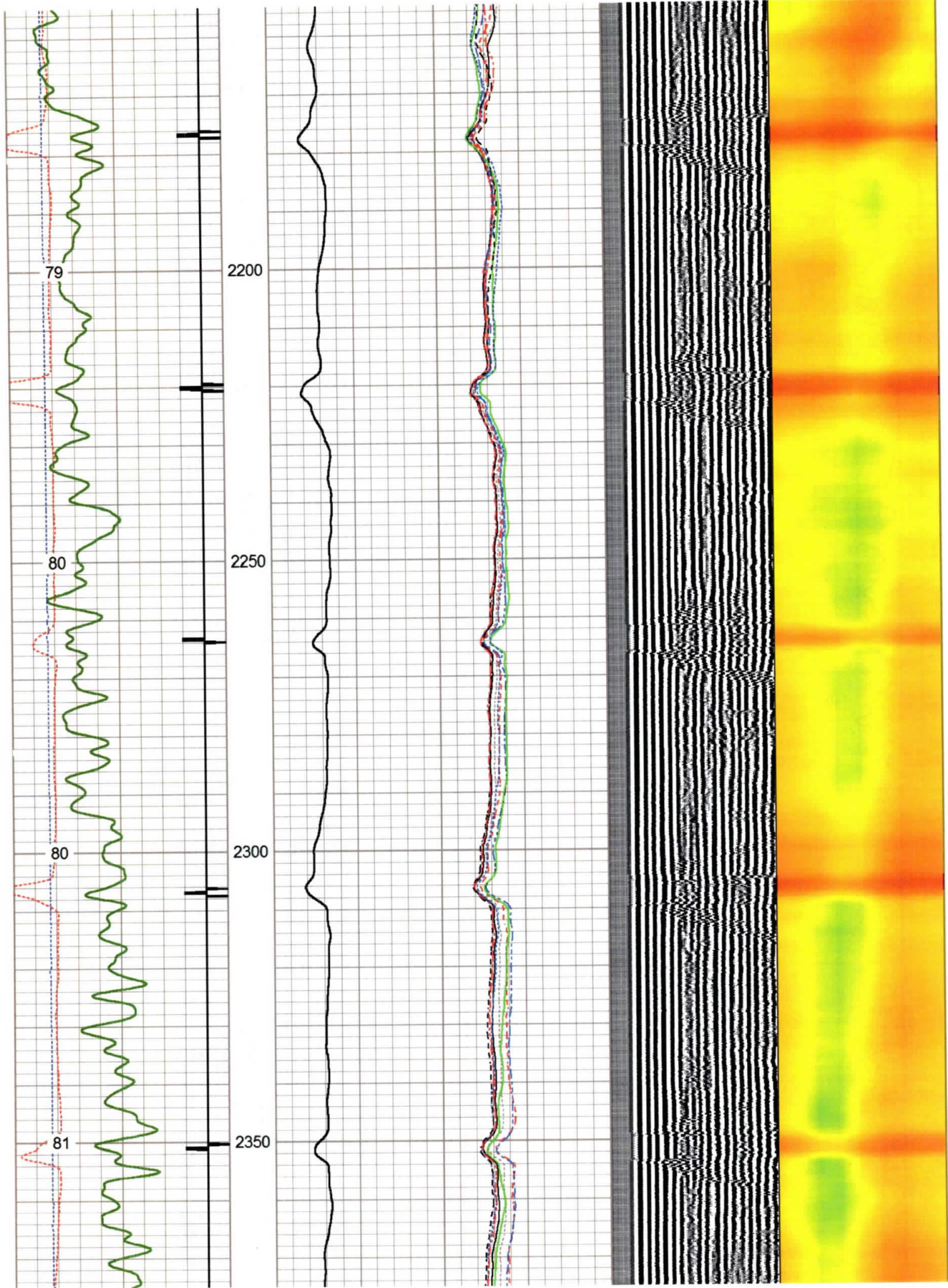


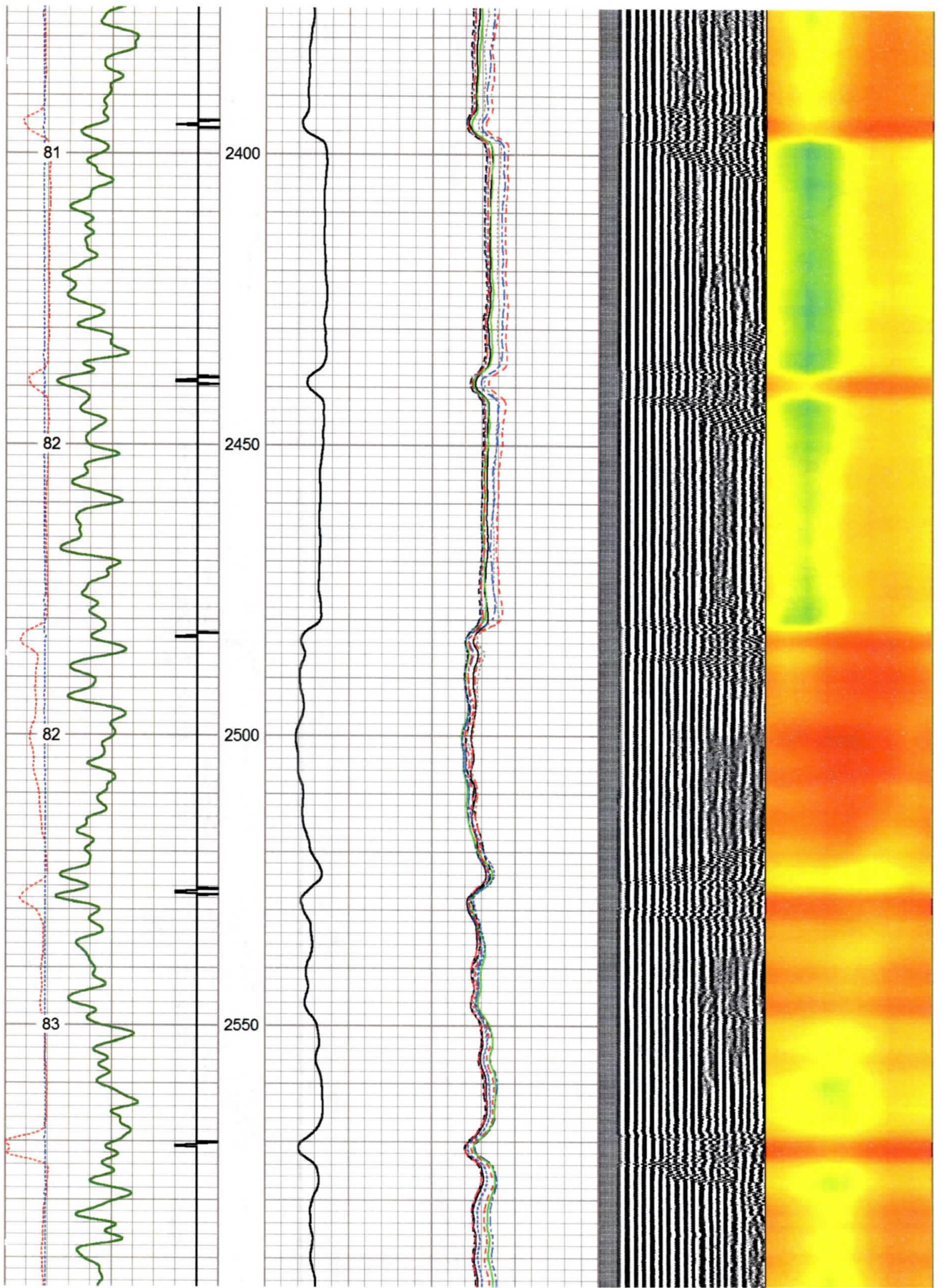


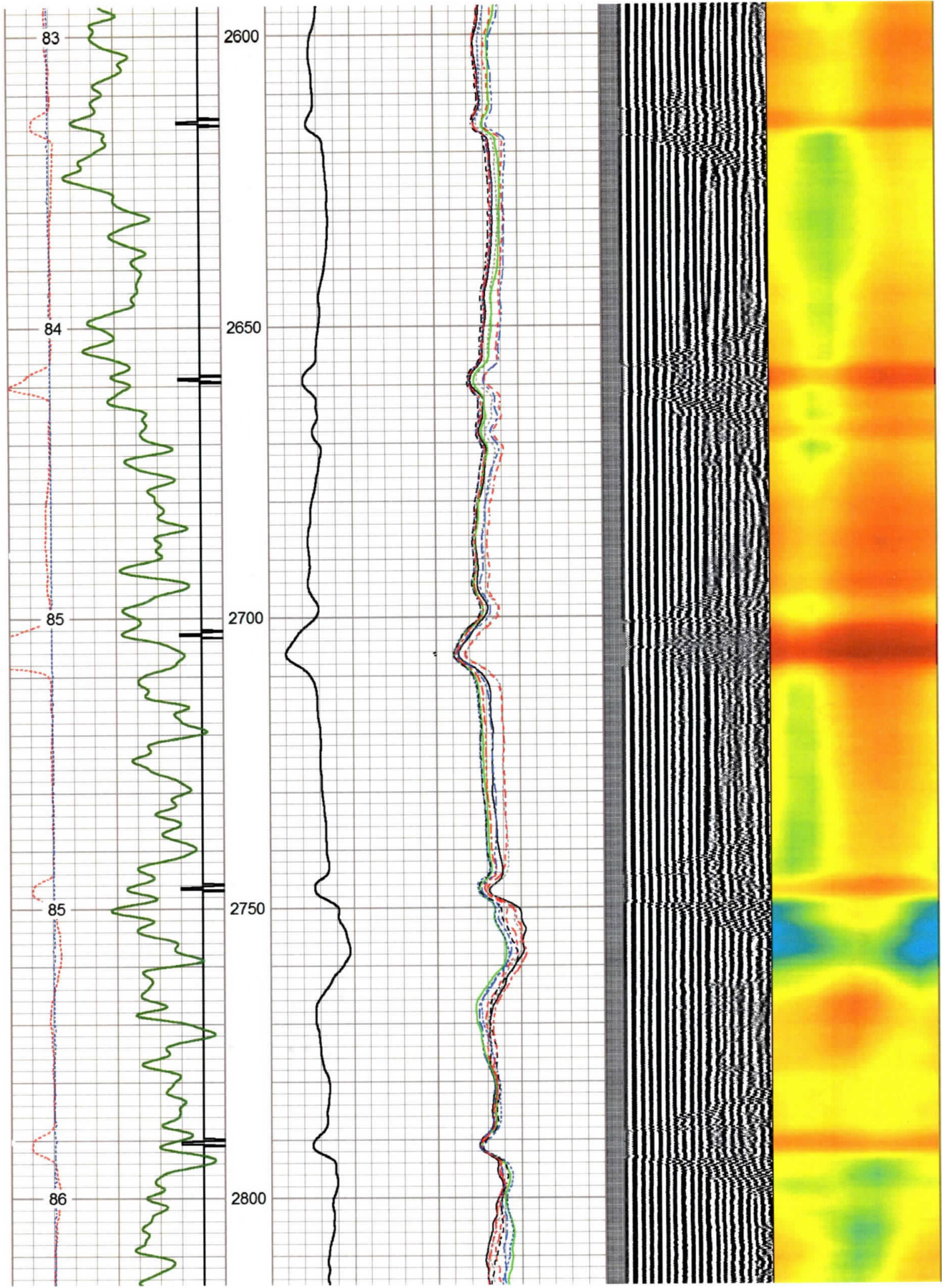


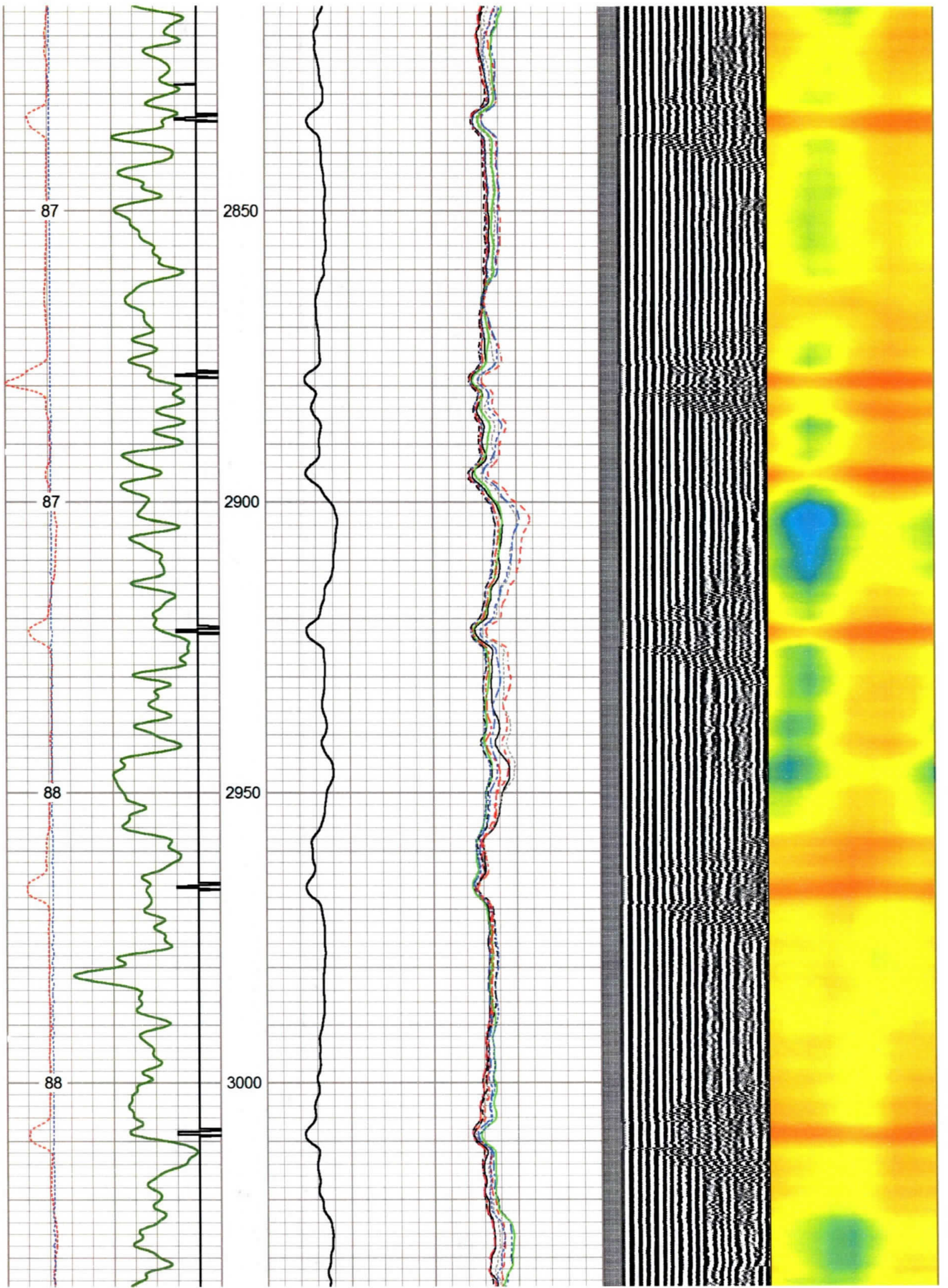


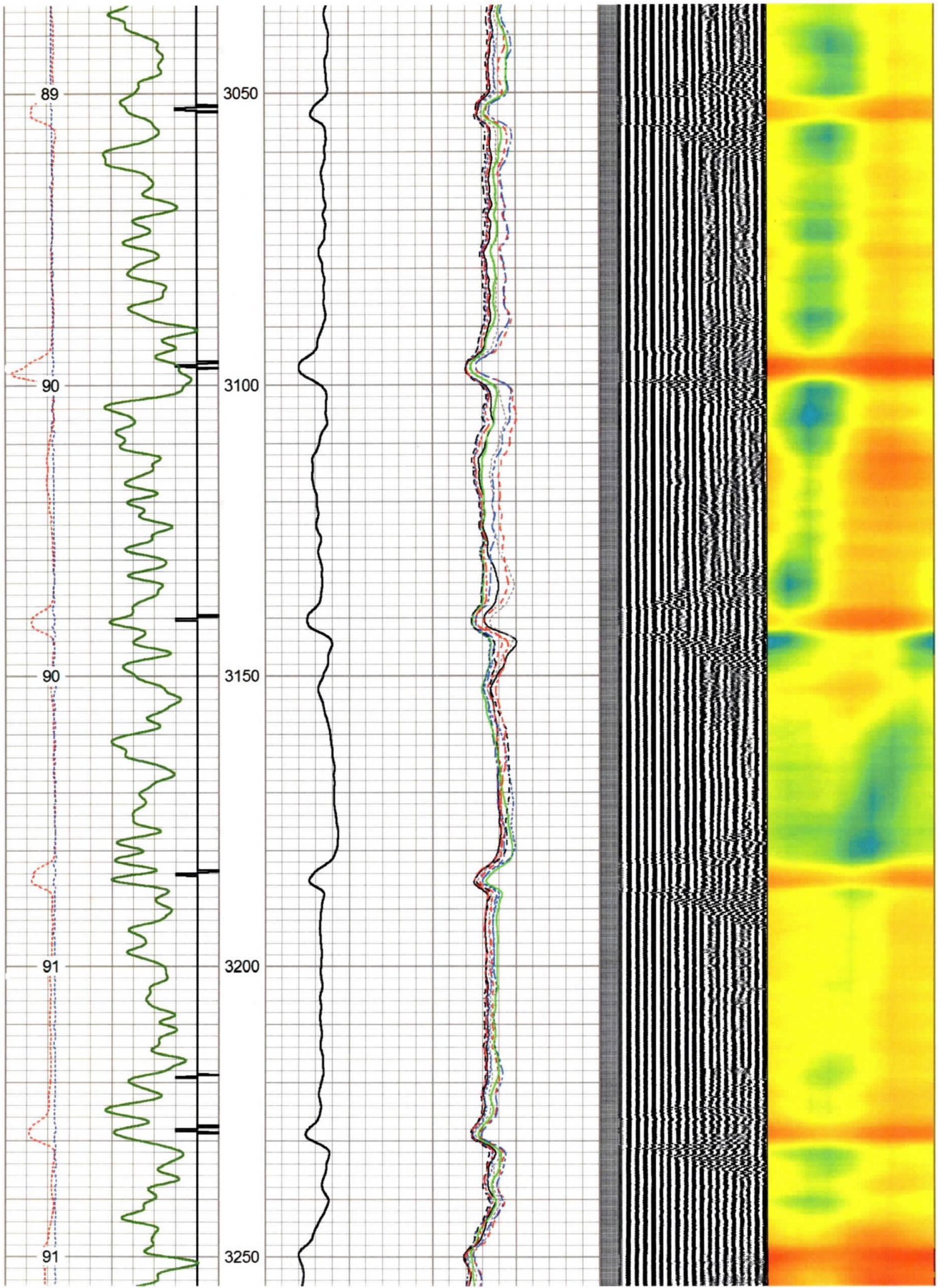


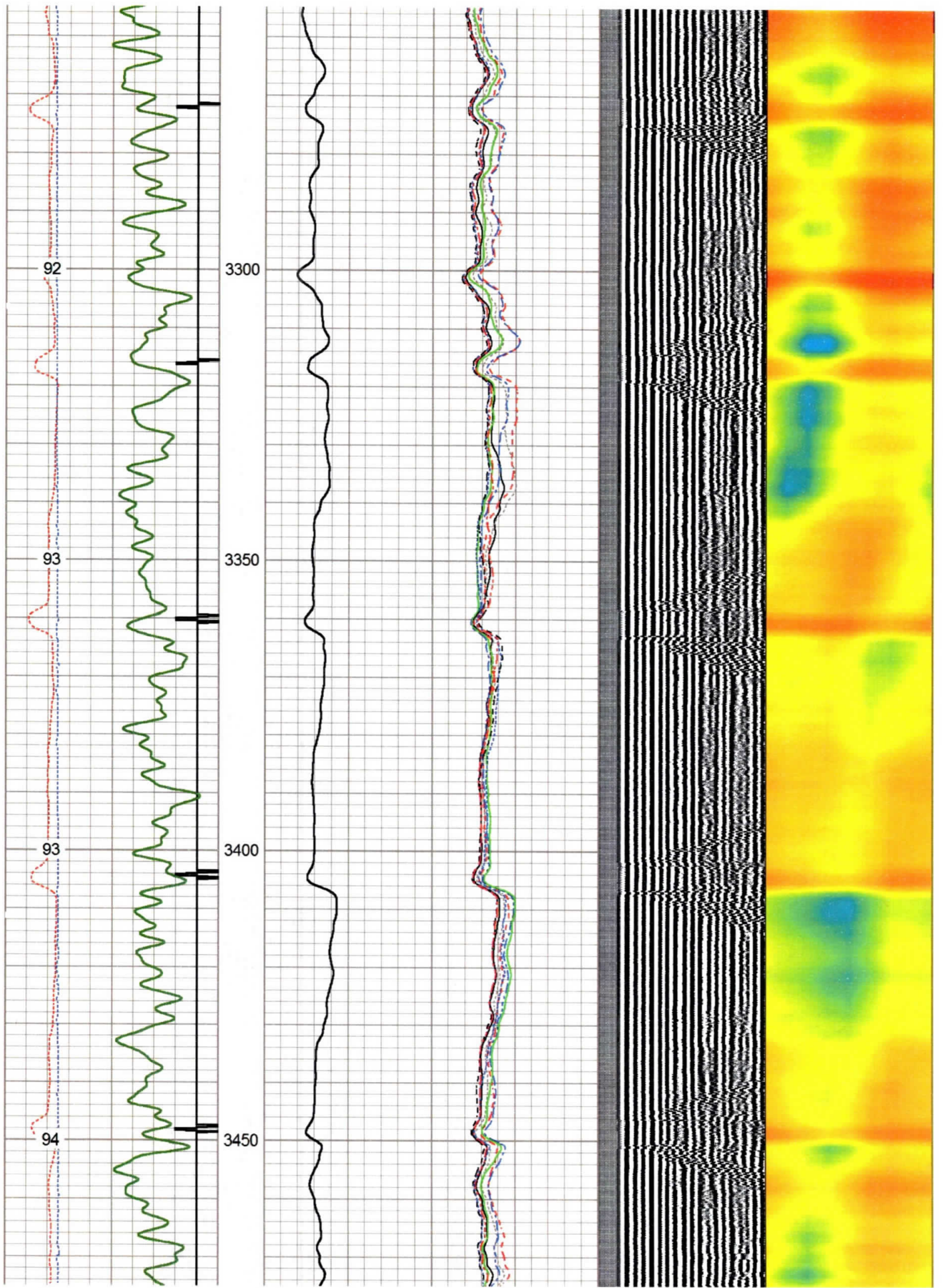


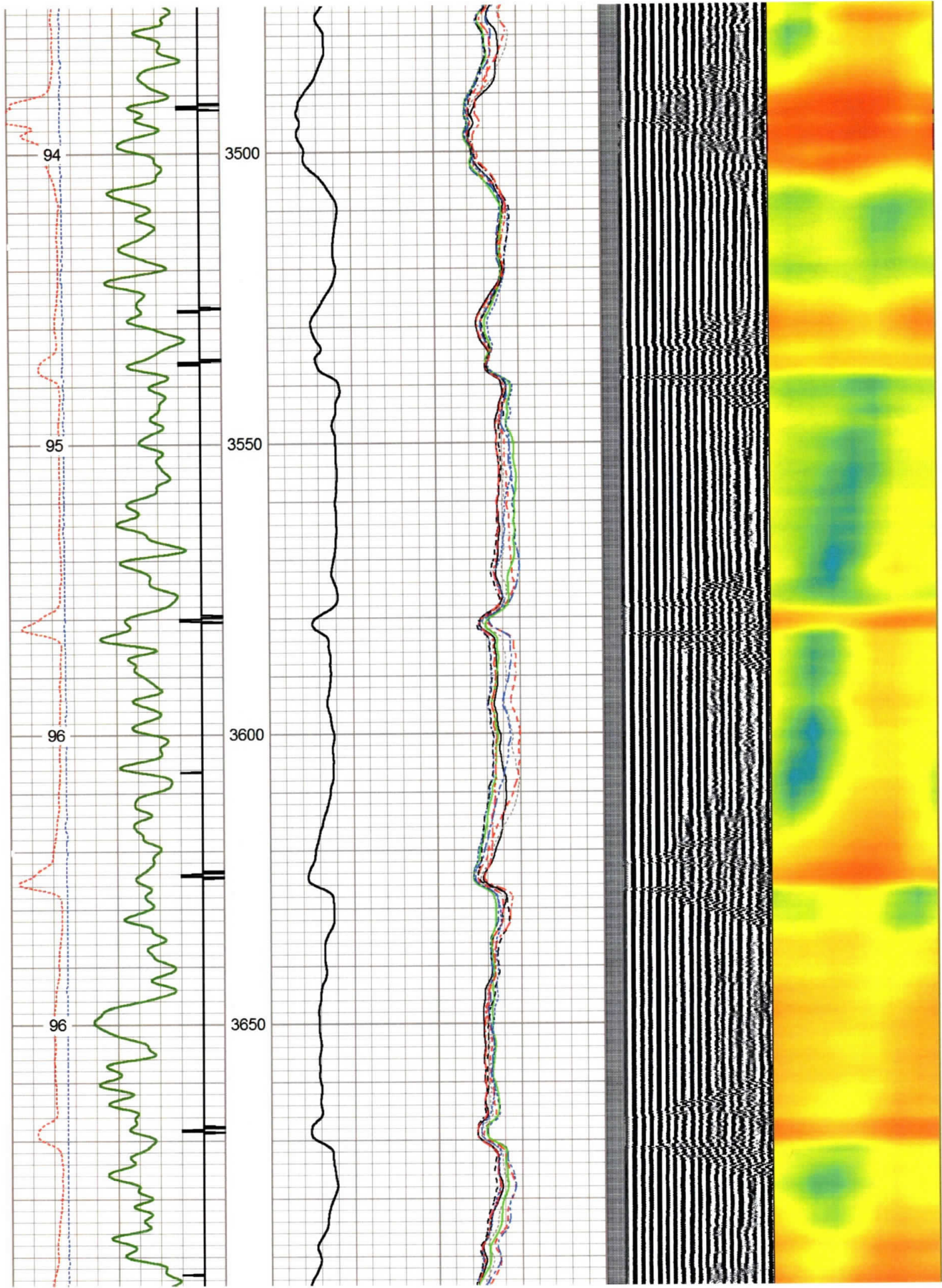


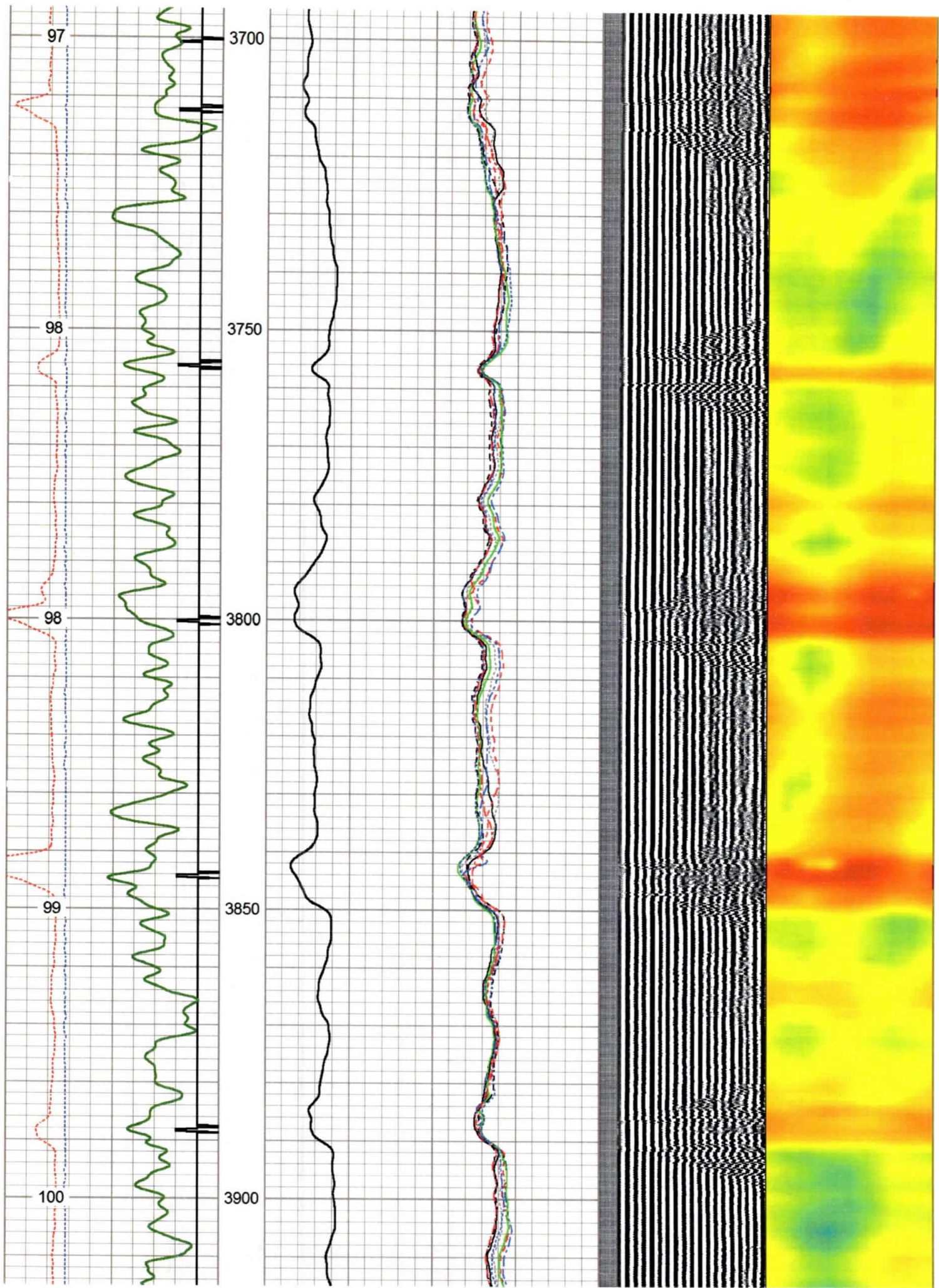


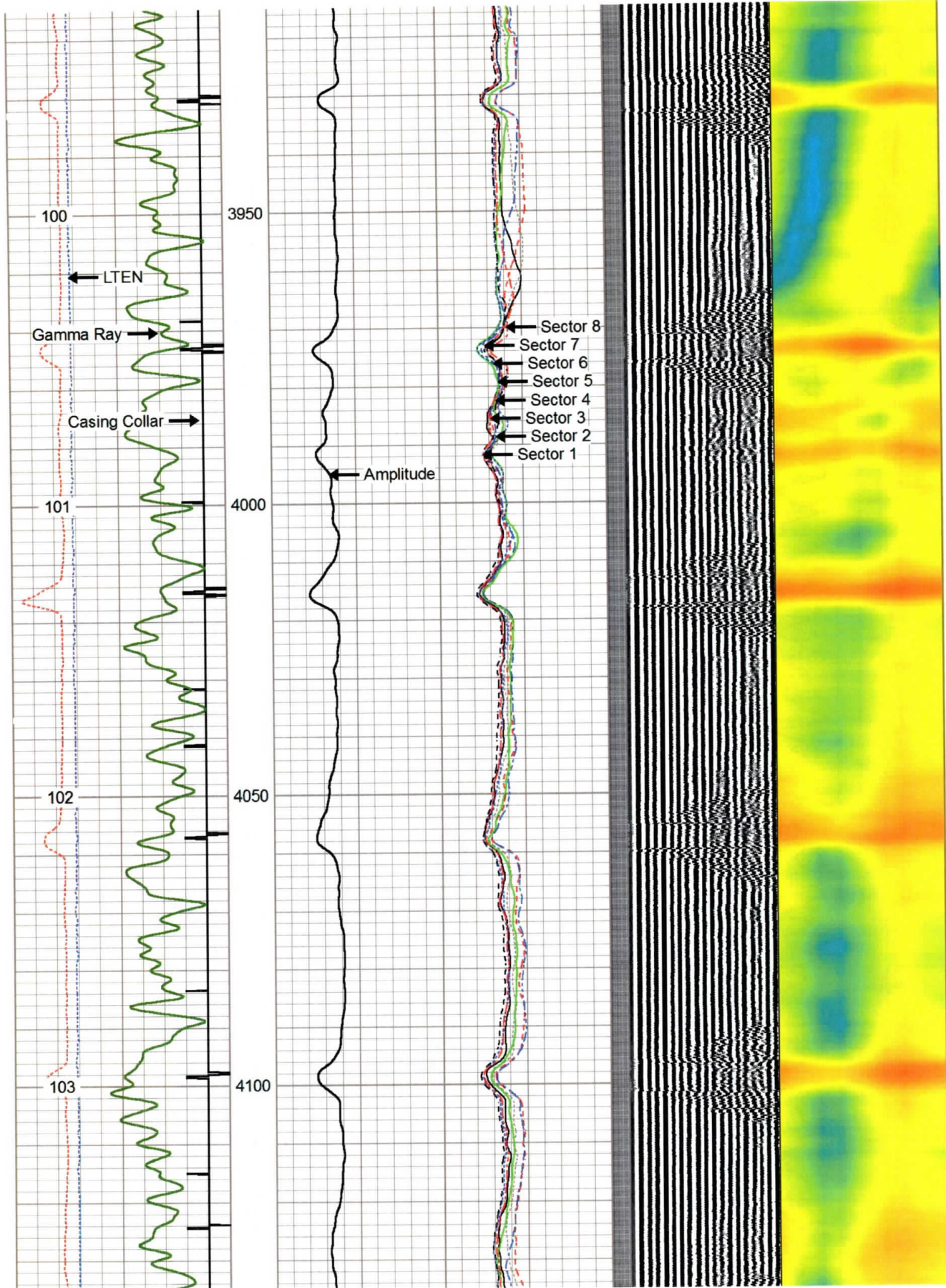


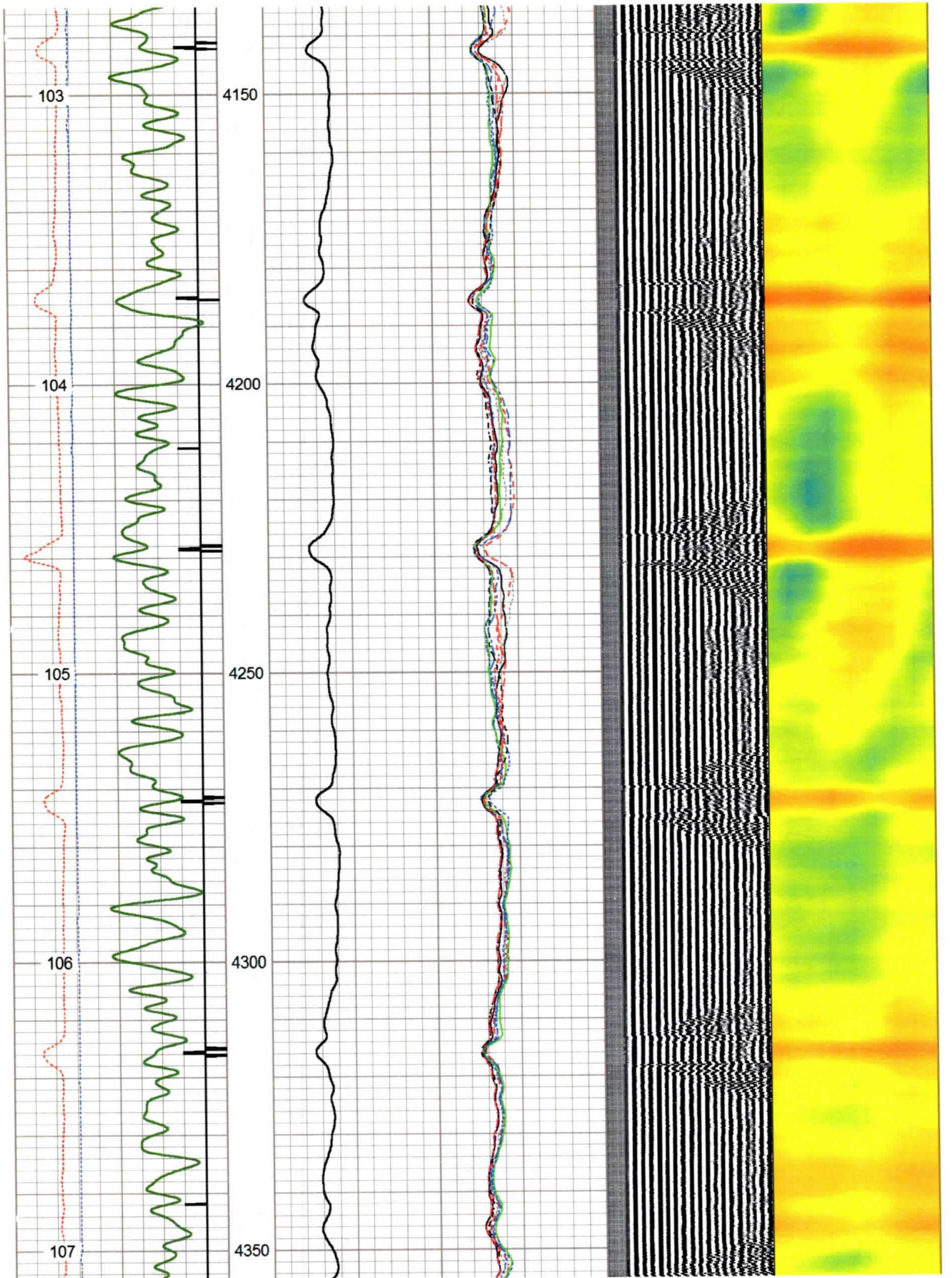


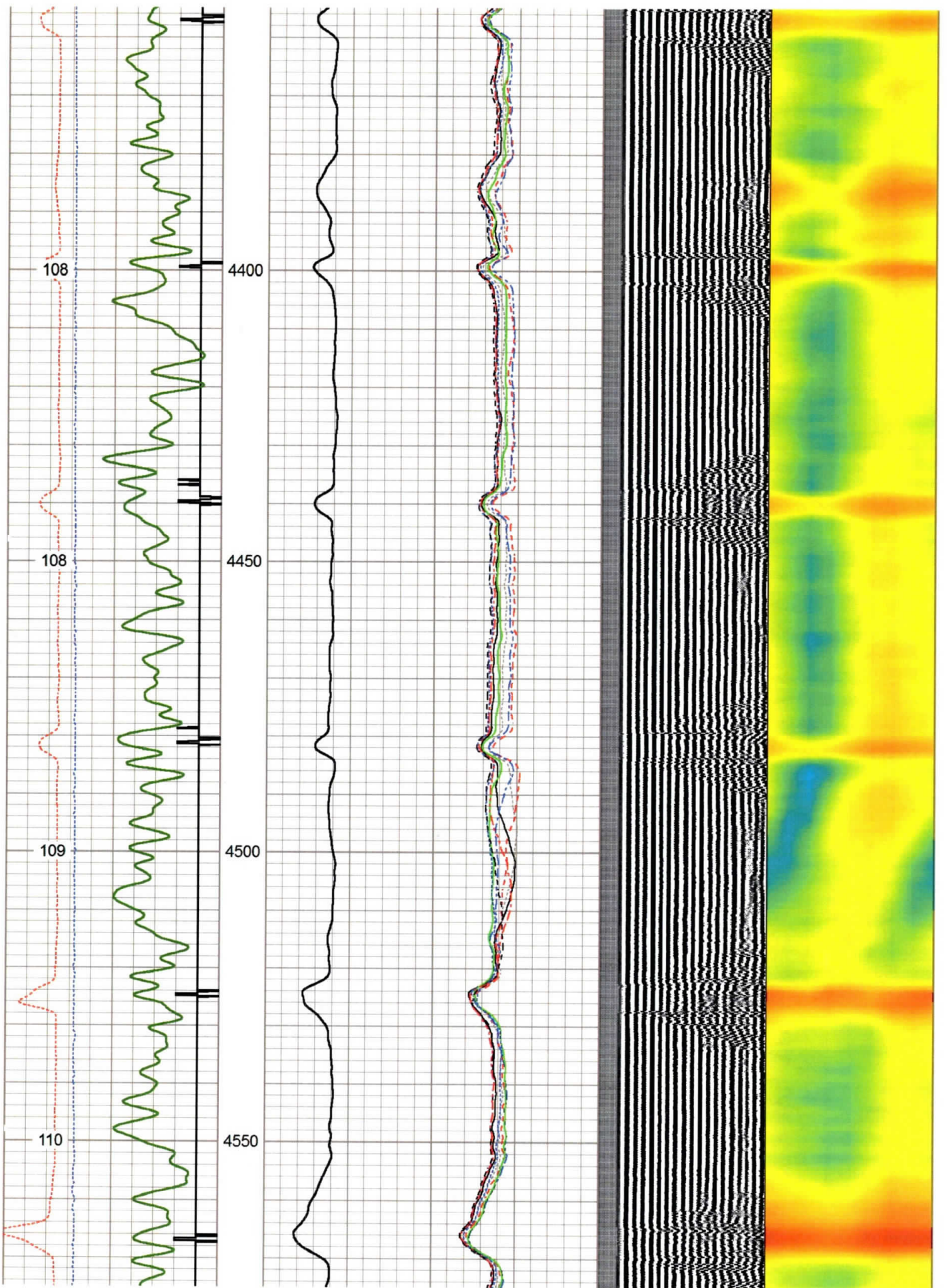


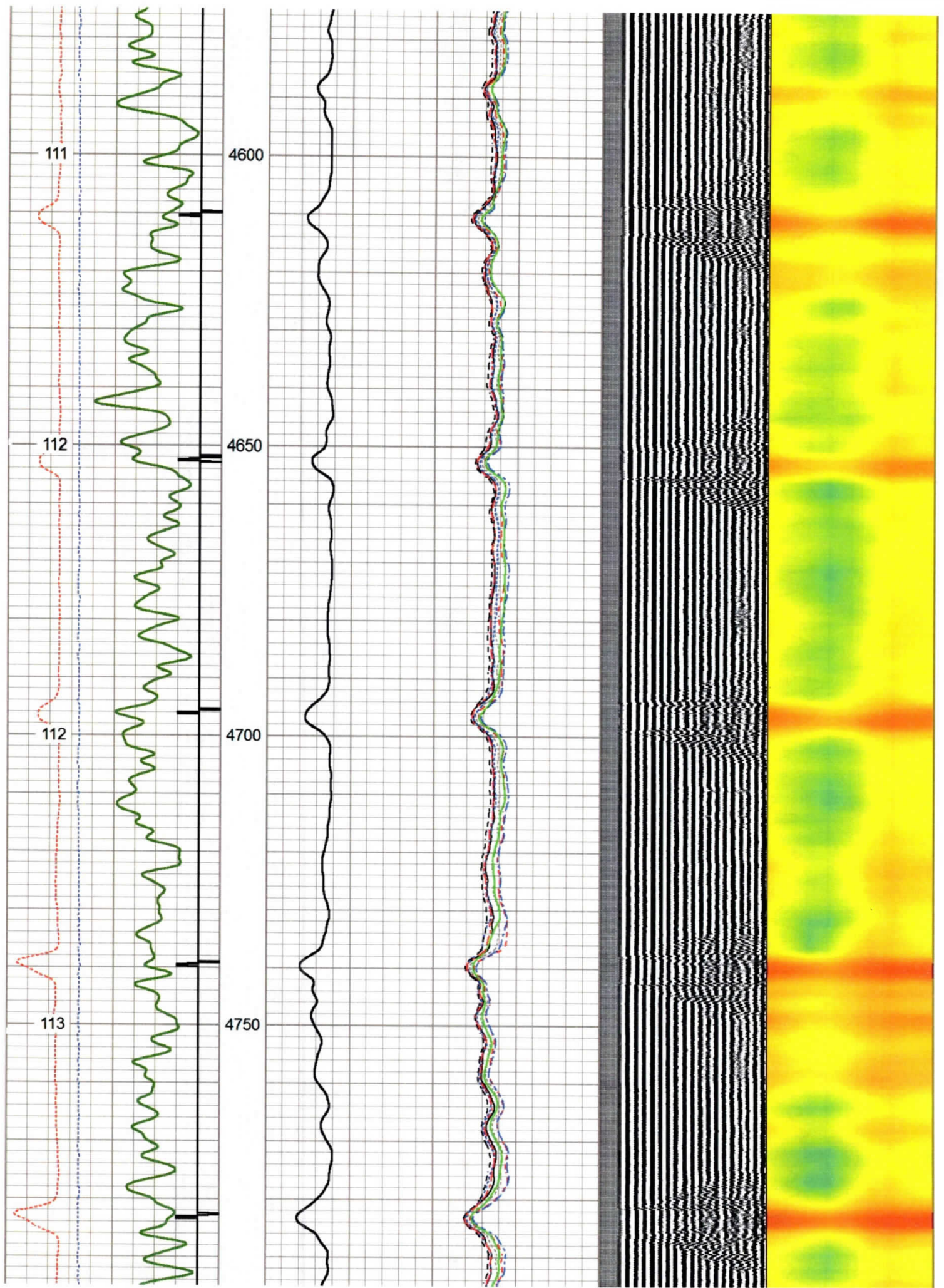


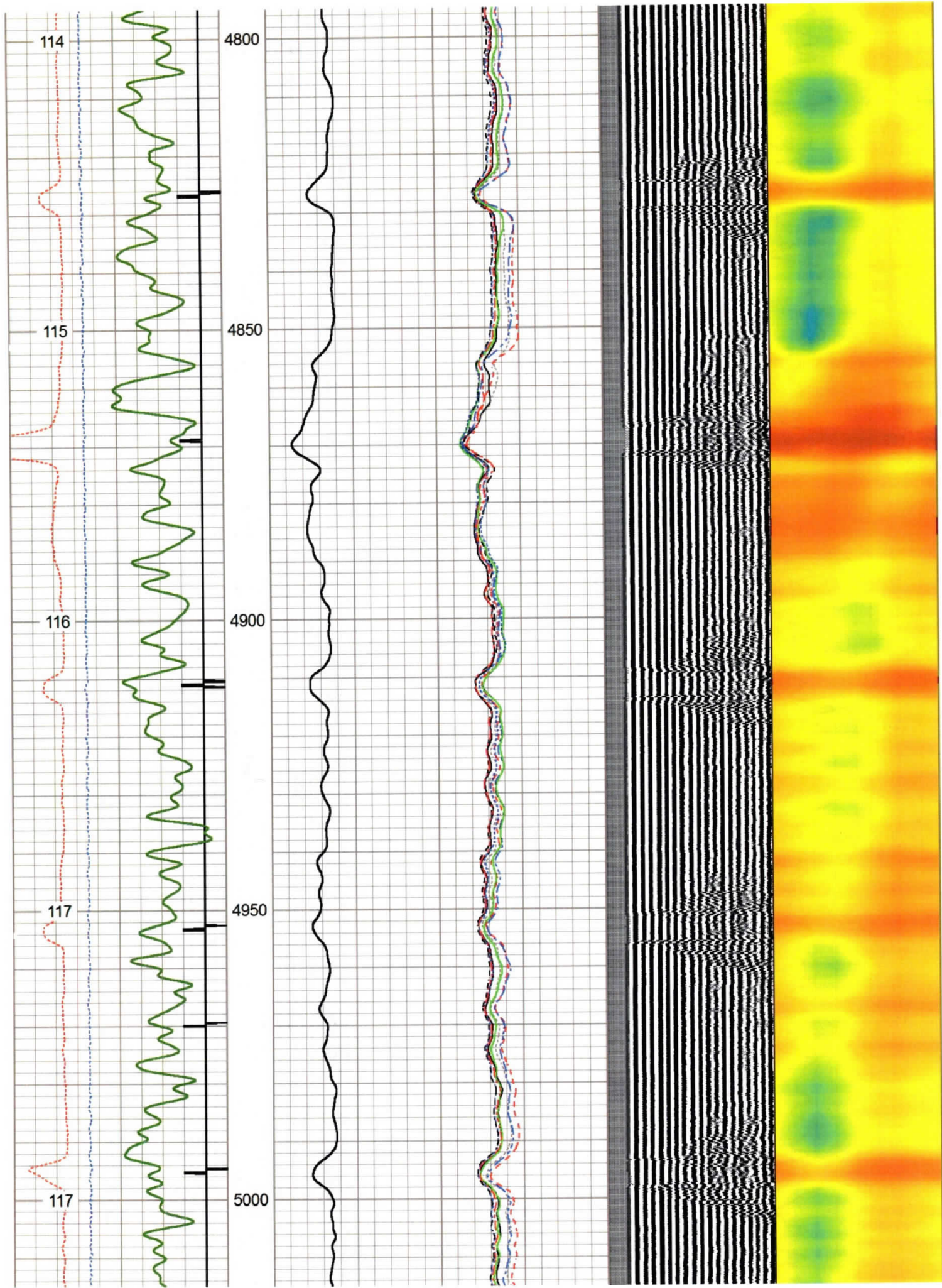


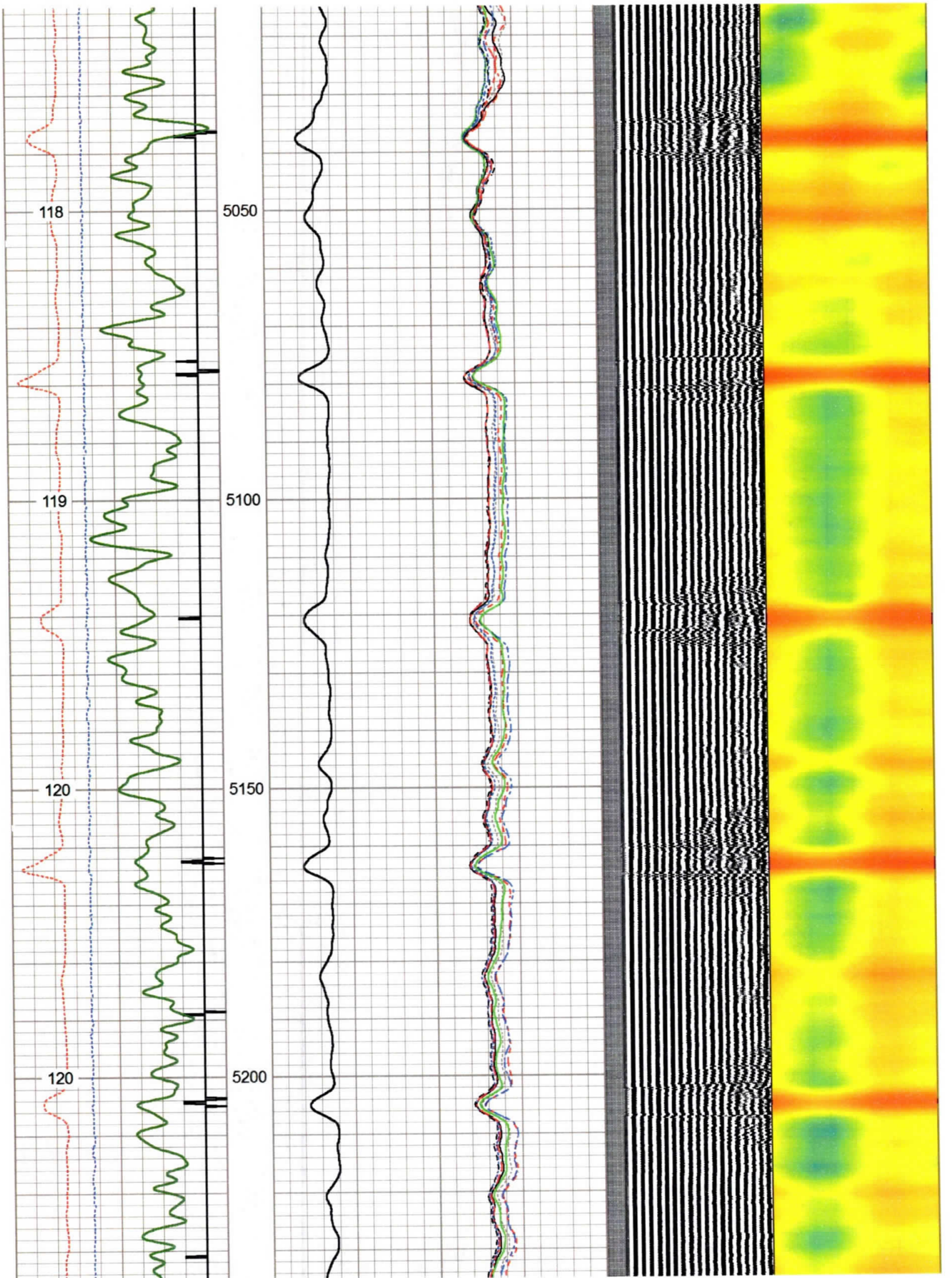


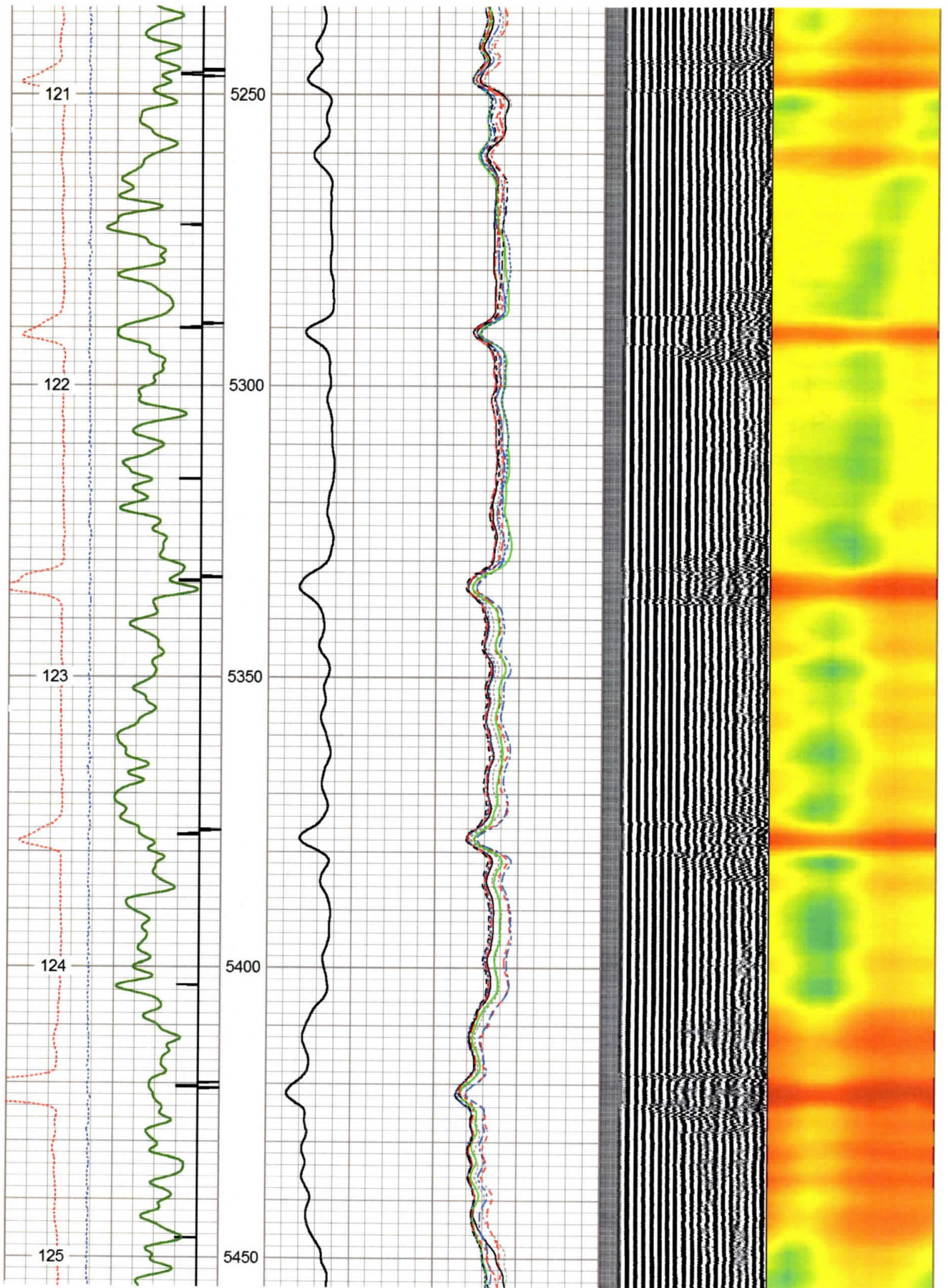


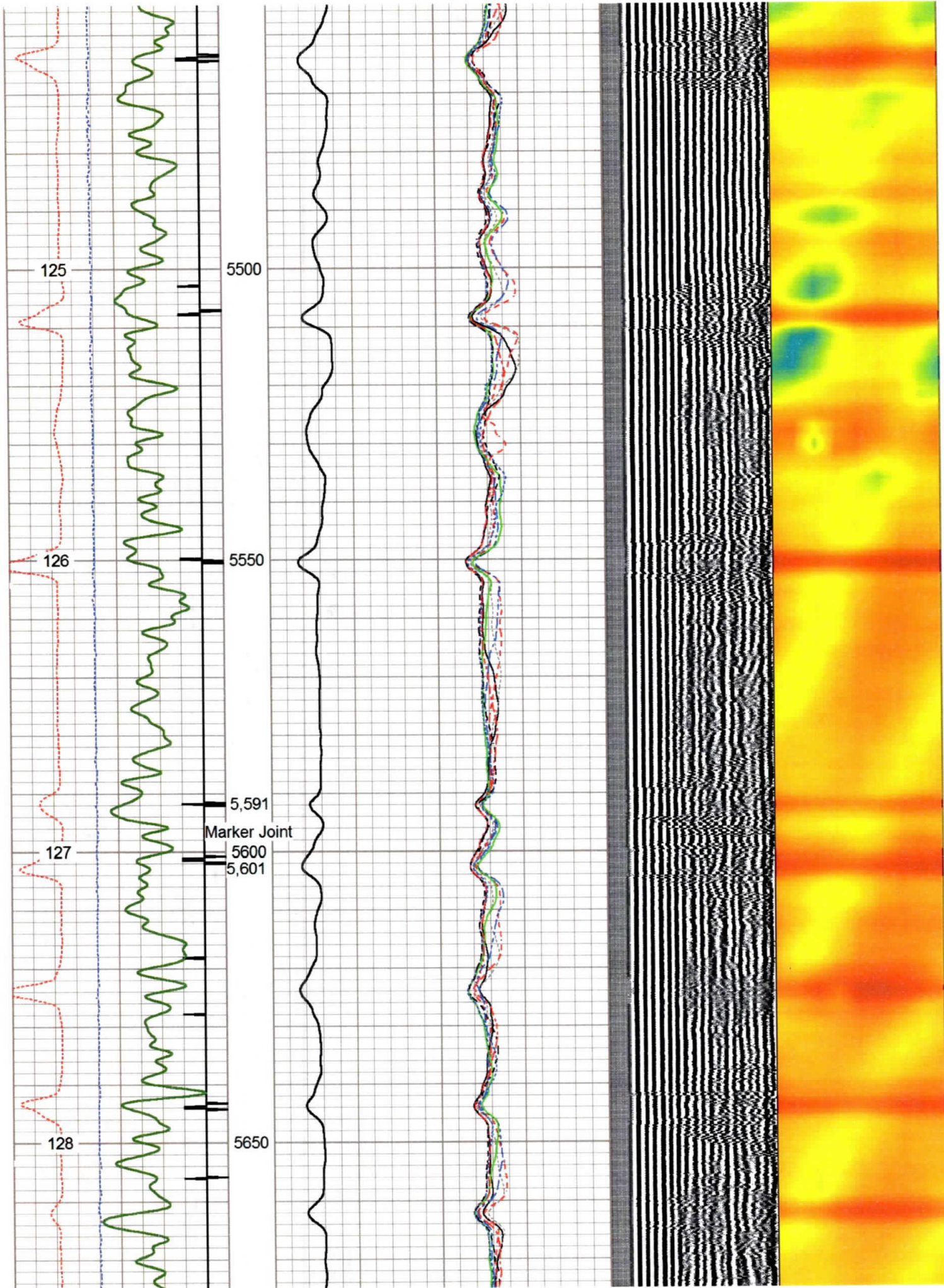


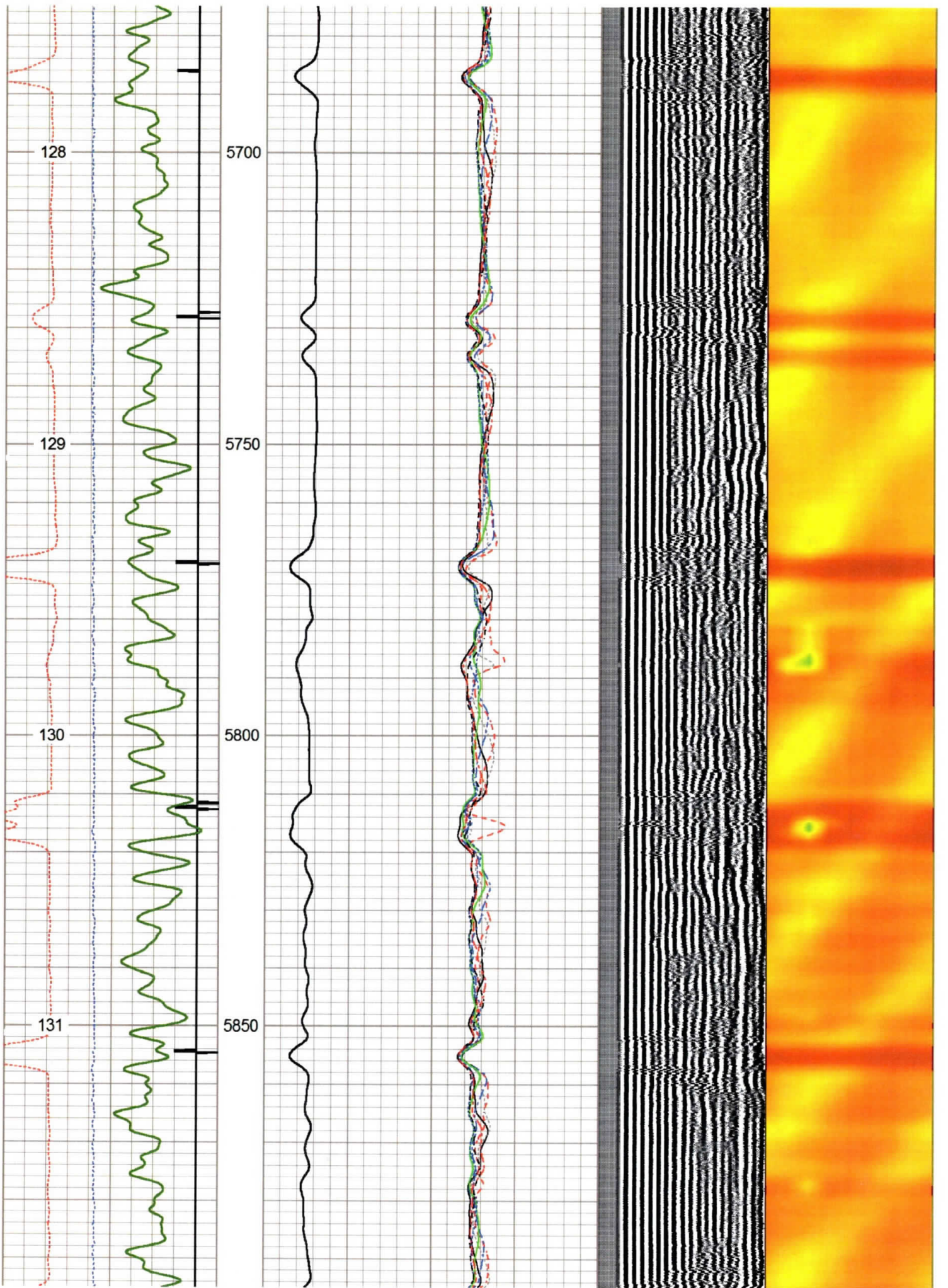


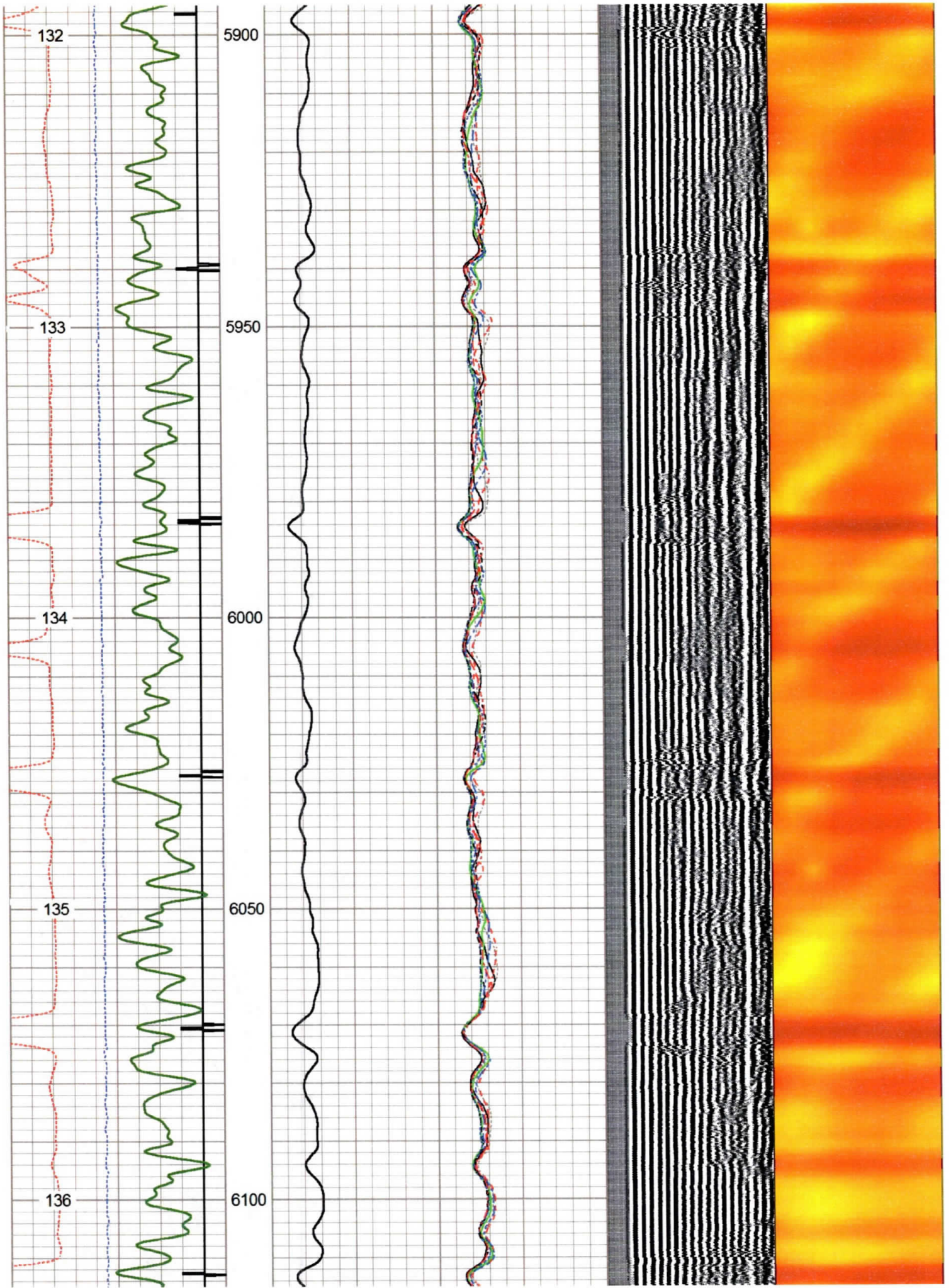


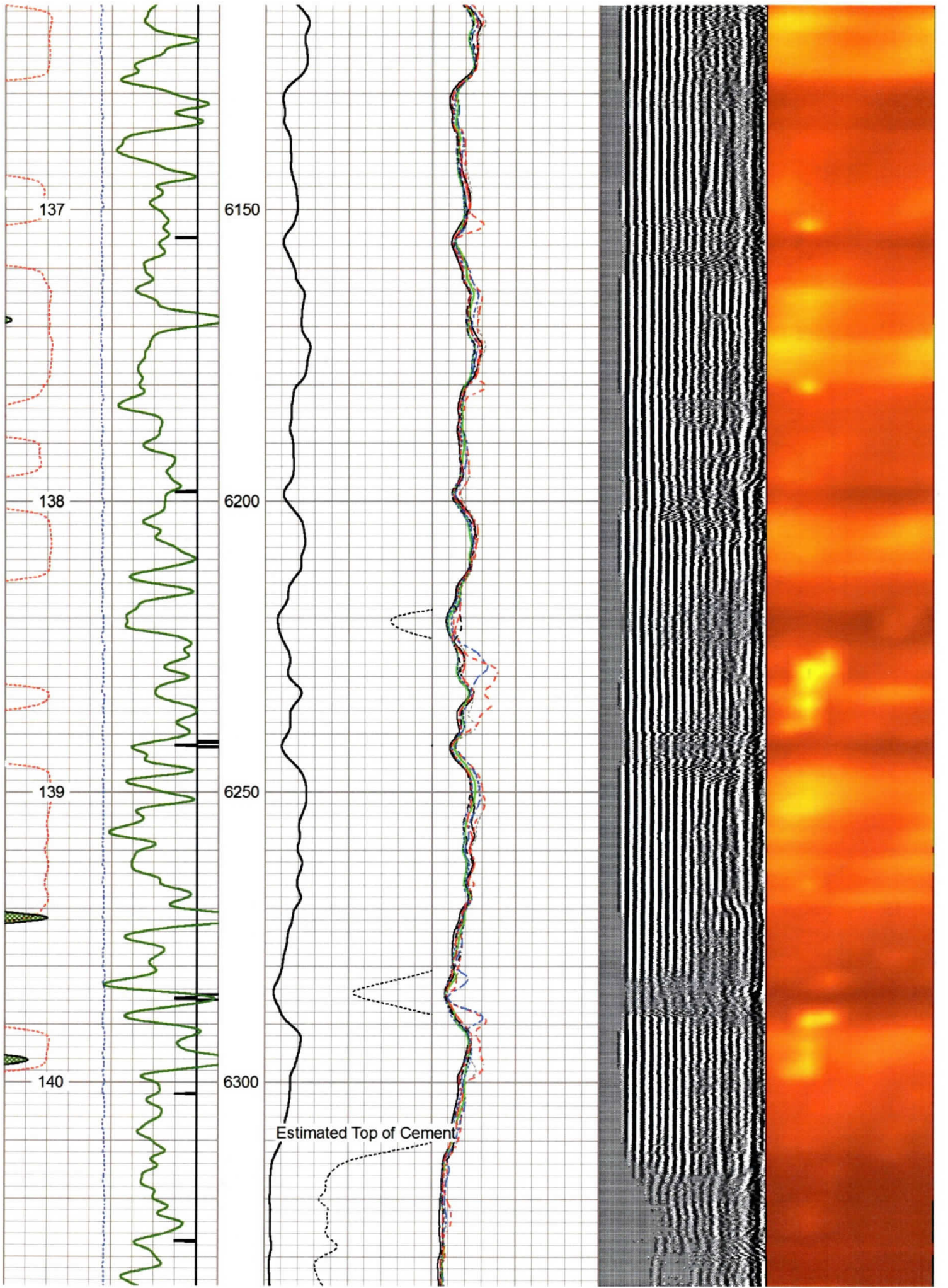


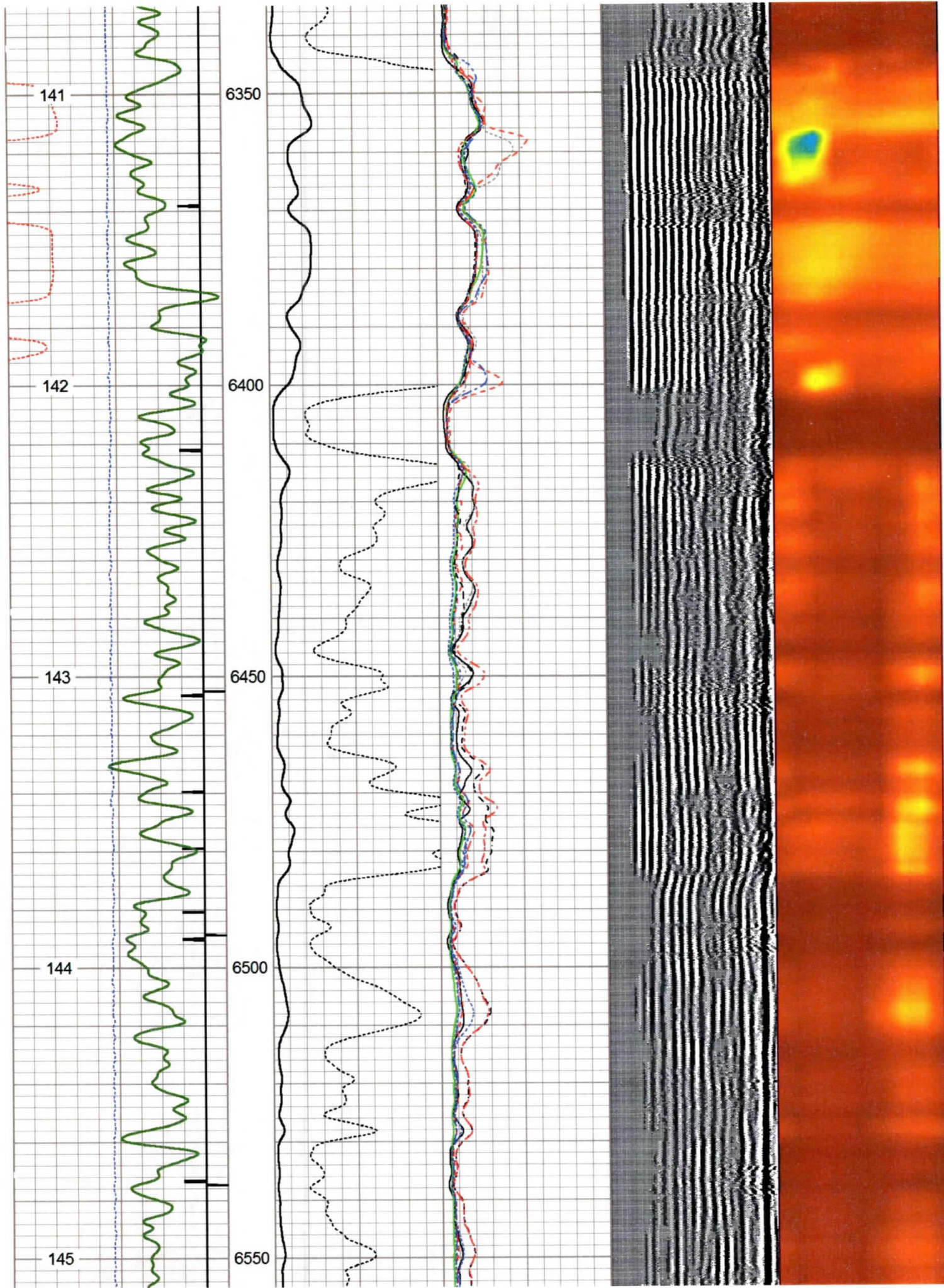


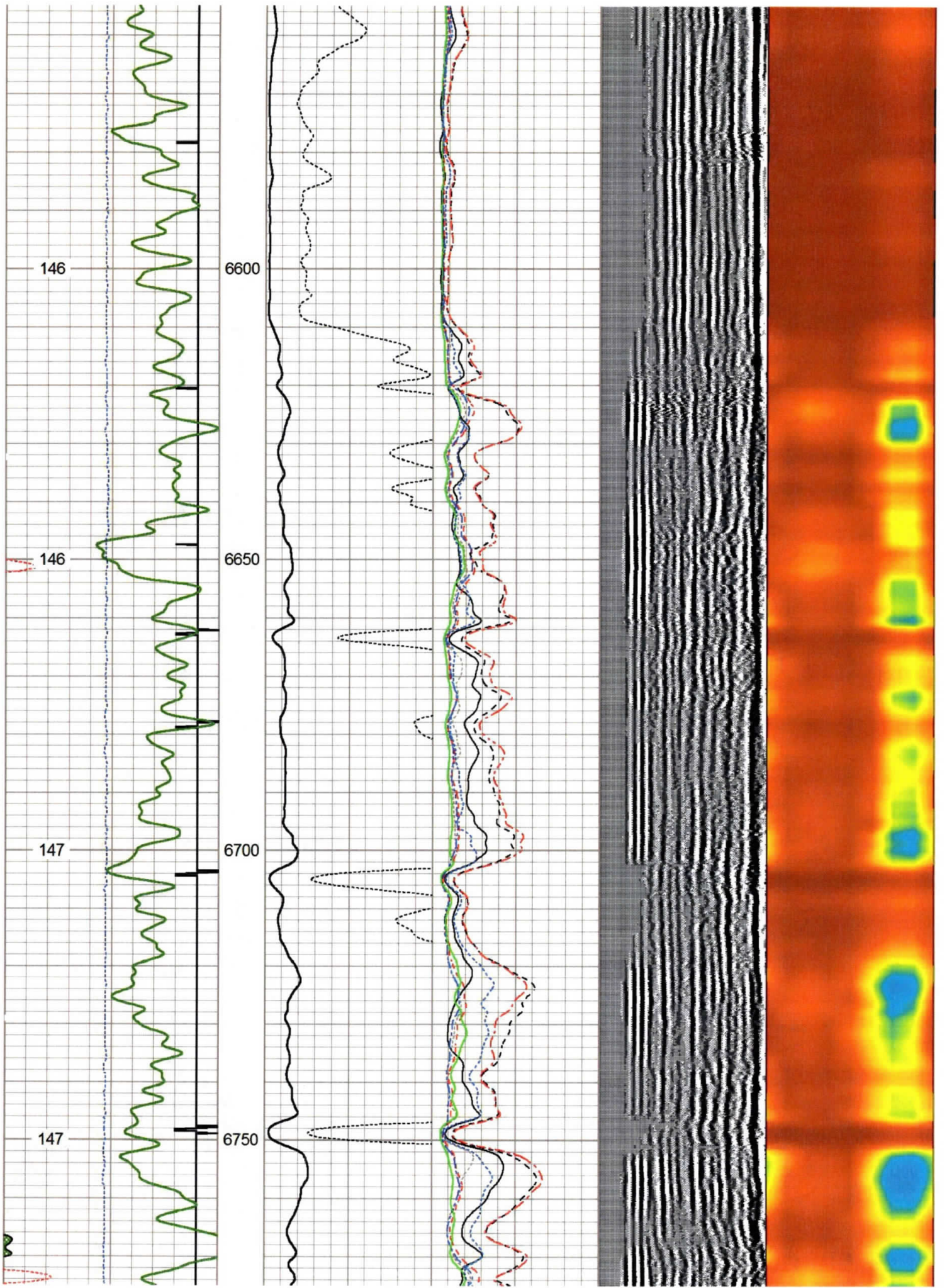


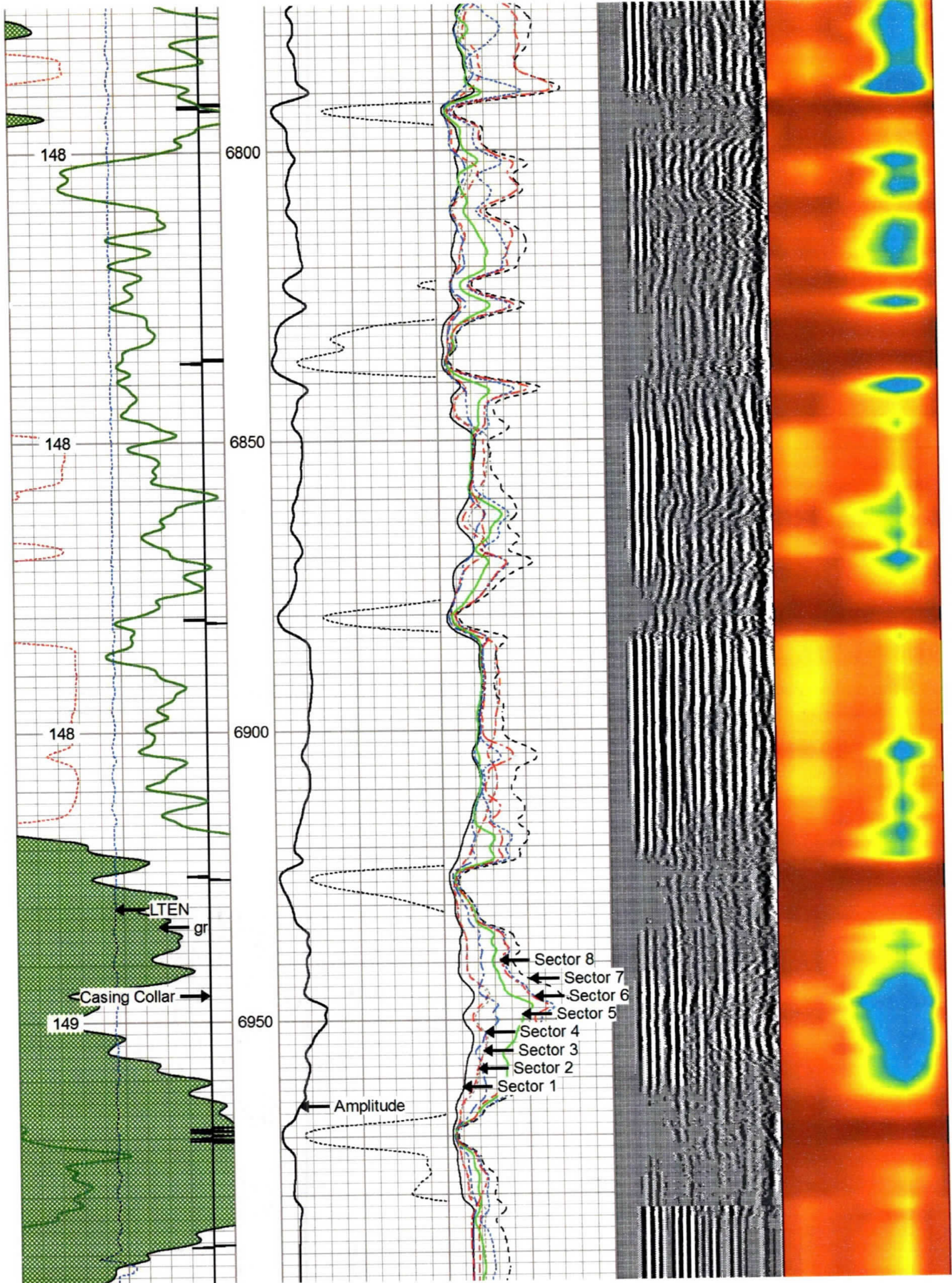


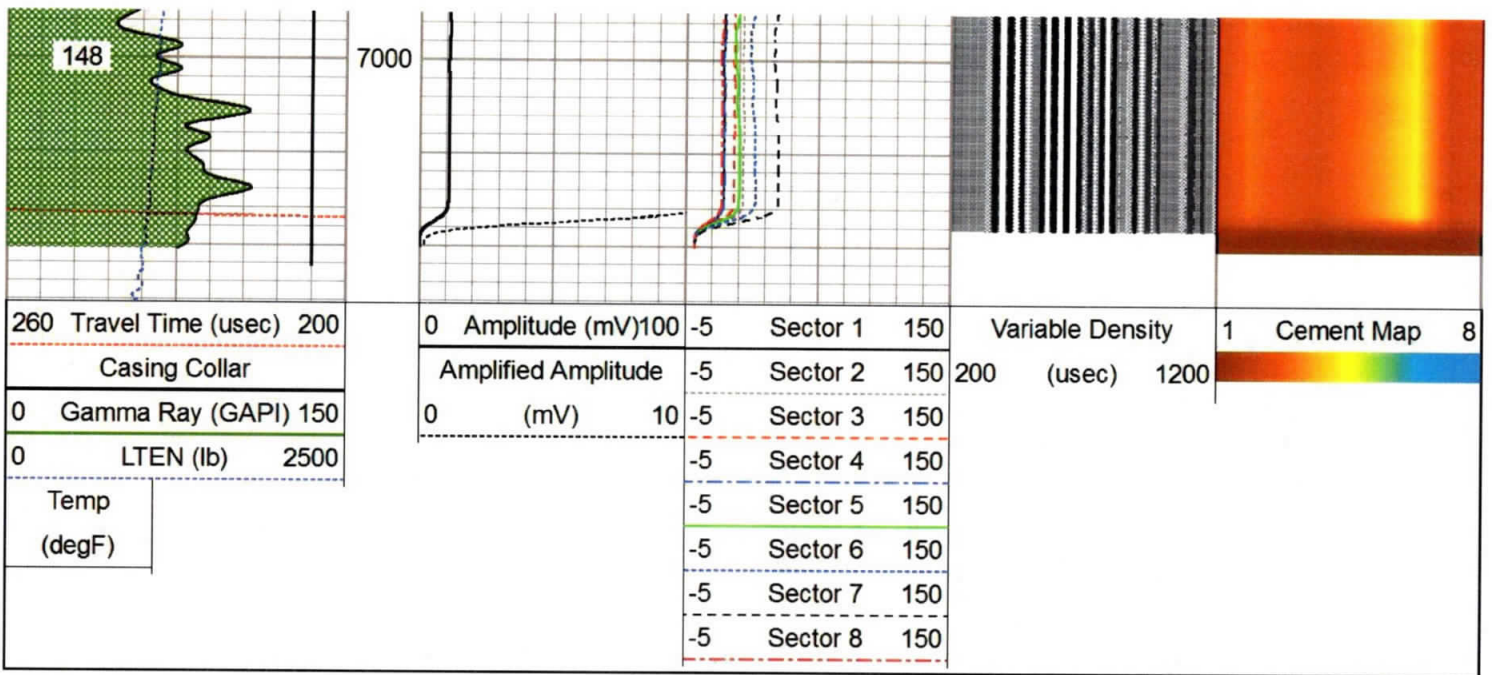






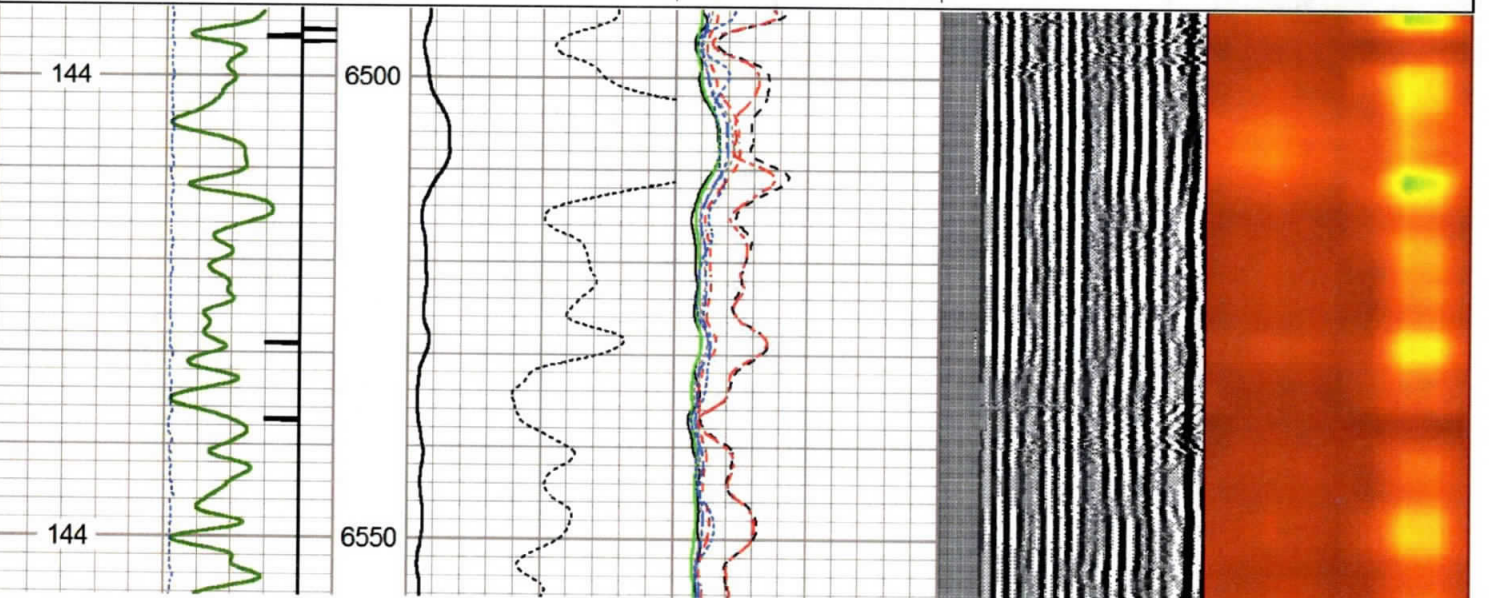
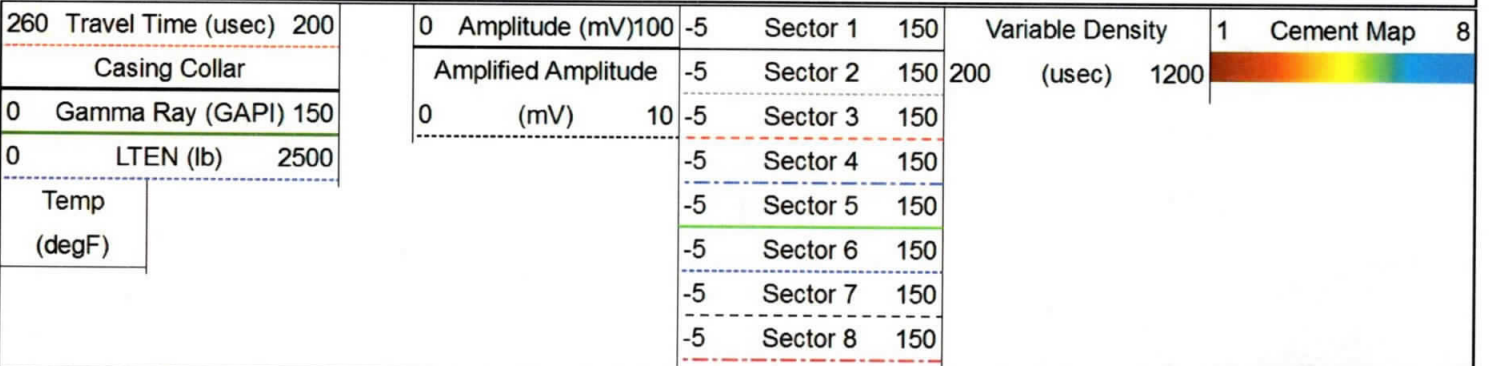


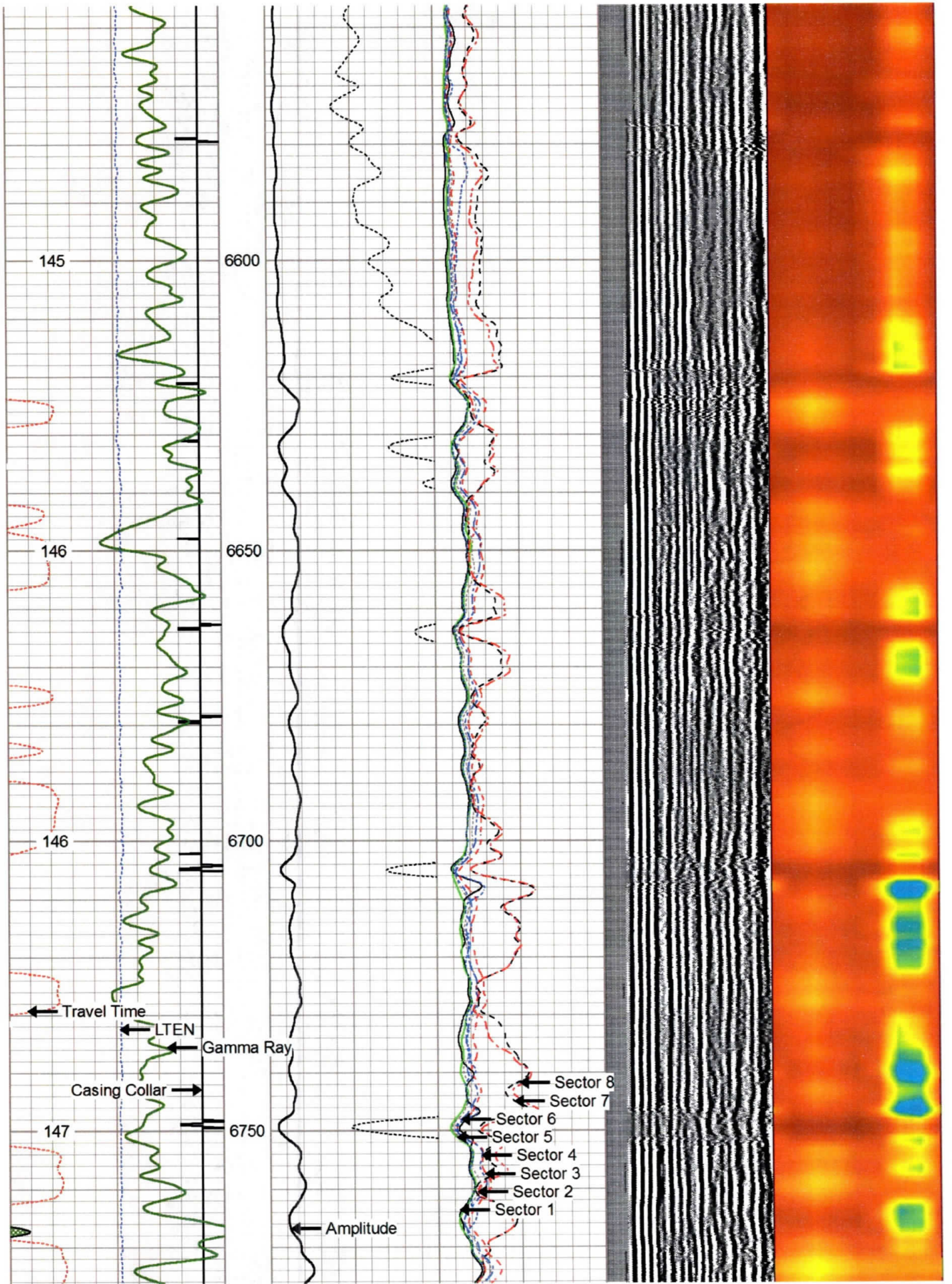


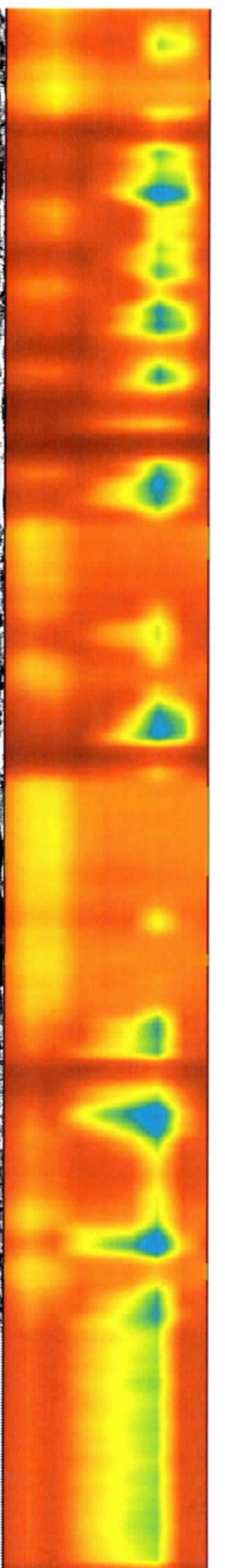
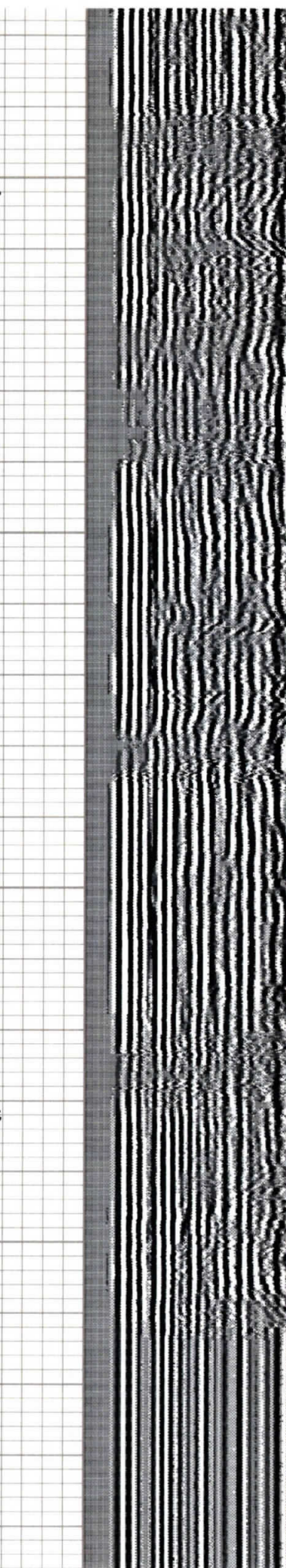
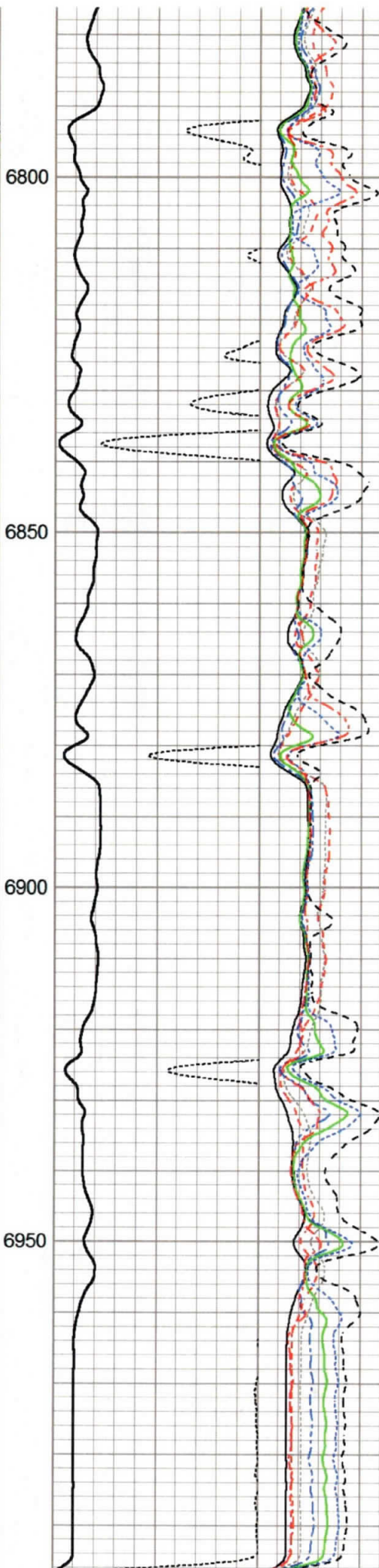
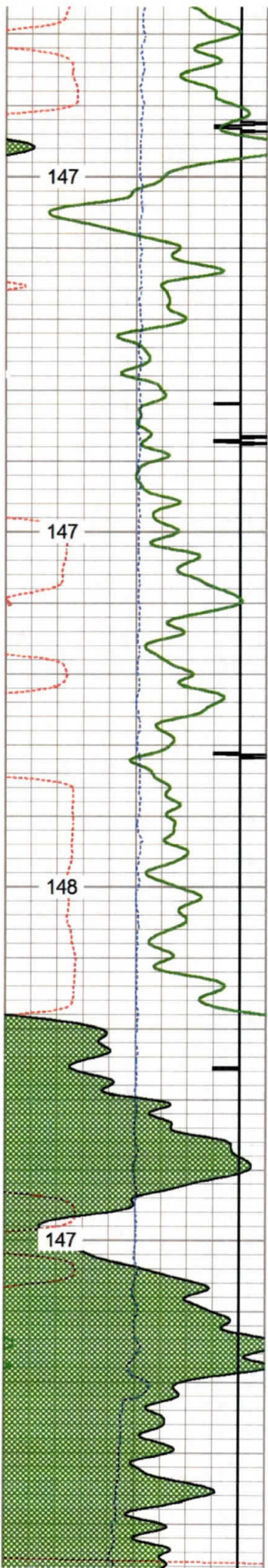


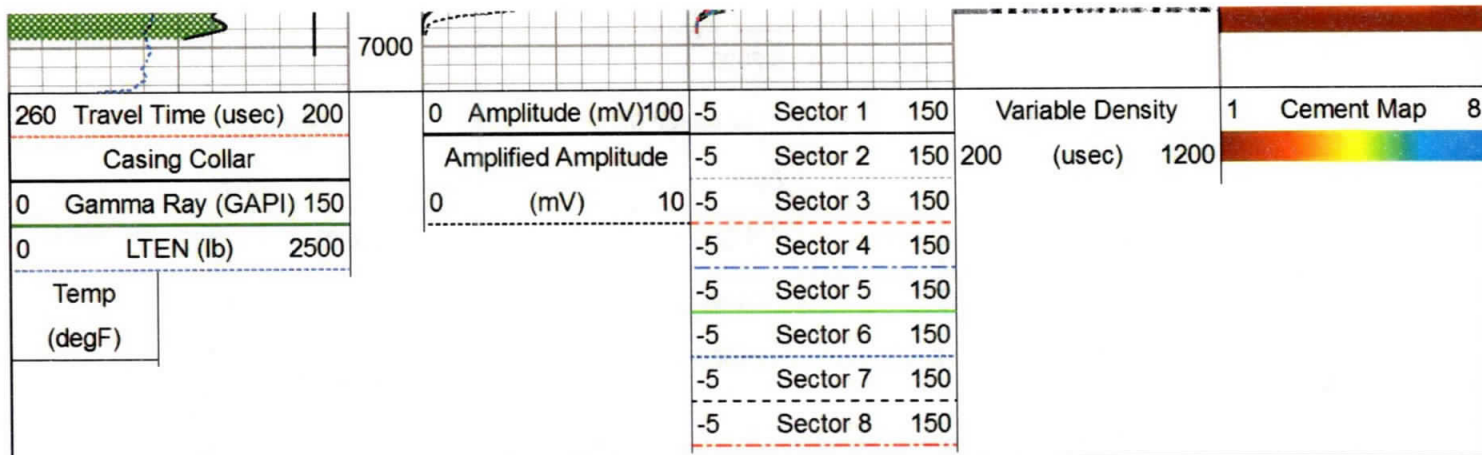

Repeat Pass 0 PSI

Database File antero_penn_1h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Penn_1H/RCBL_1/pass2
 Presentation Format scbl03
 Dataset Creation Sat Feb 22 14:37:19 2020
 Charted by Depth in Feet scaled 1:240









Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero_penn_1h_rcbl_nineenergy_22_feb_202.db
 Dataset Rabbit_Ears/Penn_1H/RCBL_1/pass4/_vars_

Top - Bottom

| | | | | | | | |
|------------|--------|---------|---------|----------|----------|---------|---------|
| BHTEMP_Src | BOREID | BOTTEMP | CASEOD | CASETHCK | CASEWGHT | MAXAMPL | MINAMPL |
| TEMP | in | degF | in | in | lb/ft | mV | mV |
| | 7.875 | 148 | 5.5 | 0.361 | 20 | 72 | 1 |
| MINATTN | PERFS | PPT | SRFTEMP | TDEPTH | | | |
| db/ft | | usec | degF | ft | | | |
| 0.8 | No | 0 | 0 | 0 | | | |

Variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_penn_1h_rcbl_nineenergy_22_feb_202.db
 Dataset Pathname Rabbit_Ears/Penn_1H/RCBL_1/pass4
 Dataset Creation Sat Feb 22 14:45:41 2020

Gamma Ray Calibration Report

Serial Number: FW1211-86
 Tool Model: Probe
 Performed: Mon Feb 03 15:18:32 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.8000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1312-32
 Tool Model: Probe275T

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 38.475 ft

Master Calibration, performed Sat Feb 22 10:04:56 2020:


| | Raw (v) | | Calibrated (mv) | | Results | |
|-----|---------|-------|-----------------|--------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | 0.012 | 0.993 | 1.000 | 71.921 | 52.282 | 0.133 |
| CAL | 1.015 | 1.021 | | | | |
| 5' | 0.015 | 1.077 | 0.020 | 71.921 | 67.681 | -0.975 |
| SUM | | | | | | |
| S1 | 0.009 | 0.993 | 1.000 | 72.000 | 72.207 | 0.333 |
| S2 | 0.020 | 0.975 | 1.000 | 72.000 | 74.336 | -0.454 |
| S3 | 0.012 | 0.933 | 1.000 | 72.000 | 77.034 | 0.105 |
| S4 | 0.015 | 0.975 | 1.000 | 72.000 | 73.983 | -0.127 |
| S5 | 0.015 | 1.016 | 1.000 | 72.000 | 70.907 | -0.051 |
| S6 | 0.012 | 1.017 | 1.000 | 72.000 | 70.669 | 0.120 |
| S7 | 0.012 | 1.012 | 1.000 | 72.000 | 70.973 | 0.165 |
| S8 | 0.012 | 0.991 | 1.000 | 72.000 | 72.503 | 0.130 |

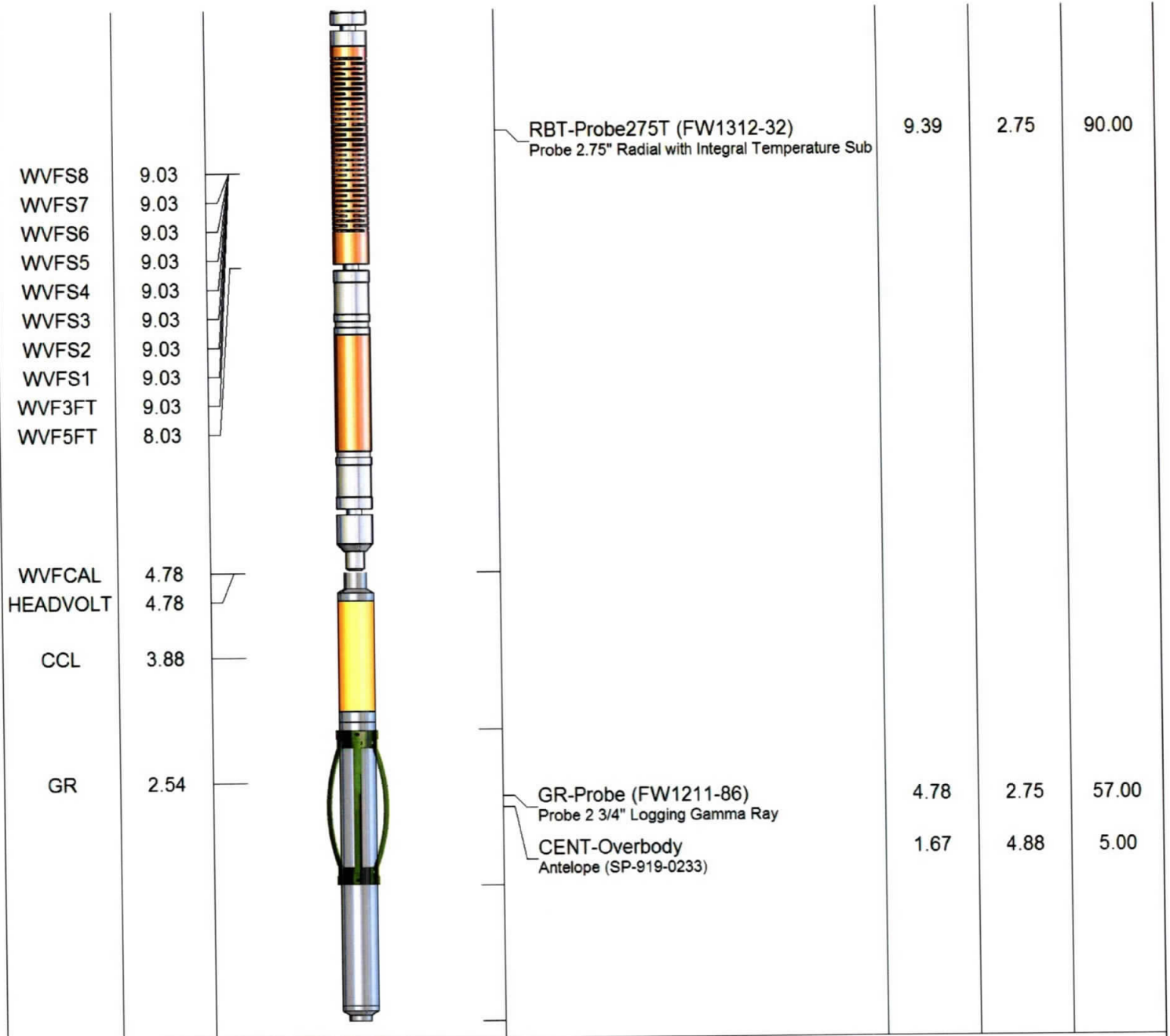
Internal Reference Calibration, performed (Not Performed):

| | Raw (v) | | Calibrated (v) | | Results | |
|-----|---------|-------|----------------|-------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| CAL | 0.000 | 0.000 | 1.015 | 1.021 | 1.000 | 0.000 |

Air Zero Calibration, performed Sat Feb 22 07:01:26 2020:

| | 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 | |

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|----------|-------------|---|---|-------------|-----------|-------------|
| HeadVolt | 14.11 |  | CHD-Titan Titan 1 7/16" GO Cablehead | 1.00 | 1.44 | 5.00 |
| Temp | 11.27 | | CENT-Overbody Antelope (SP-919-0233) | 1.67 | 4.88 | 5.00 |



Dataset: antero_penn_1h_rcbl_nineenergy_22_feb_202.db: Rabbit_Ears/Penn_1H/RCBL_1/pass4
 Total length: 15.17 ft
 Total weight: 162.00 lb
 O.D.: 4.88 in



Nine

Company Antero Resources
 Well Penn Unit 1H
 Field Rabbit Ears
 County Tyler
 State West Virginia