



PIONEER

Pioneer Energy Services

RADIAL BOND LOG WITH GAMMA RAY

Company **KERR-MCGEE OIL & GAS ONSHORE**
Well **LUDWIG 2-5 2**
Field **WATTENBERG**
County **WELD** State **CO**

Comp. **KERR-MCGEE OIL & GAS ONSHORE**
Well **LUDWIG 2-5 2**
Field **WATTENBERG**
Co. **WELD**
State **CO**

Location: API #: 0512314595
SHL: 1000' FNL 1000' FWL
NVNW
SEC 5 TWP 3N RGE 65W
Permanent Datum GL Elevation 4933'
Log Measured From GL Above Perm. Datum
Drilling Measured From KB
Other Services
NONE
Elevation
K.B. 4944'
D.F. 4943'
G.L. 4933'

Date of Service 28 DEC 2016

Run Number 1

Depth Driller or PBTD 7937'

Depth Logger 7720'

Bottom Log Interval 7720'

Top Log Interval SURFACE

Open Hole Size 7 7/8"

Type Fluid WBM

Fluid Level SURFACE

Fluid Density N/A

Max. Recorded Temperature 245 F

Max. Wellhead Pressure 0 PSI

Wellhead Connection N/A

Estimated Cement Top SEE LOG

Unit Number P-01

Wireline Size 9/32"

Location FT. MORGAN, CO

Recorded By S. STUMP

Witnessed By B. SMITH

Size

Wt/Ft

Top

Bottom

4.5"

11.6#

SURFACE

7937'

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.
0 PSI ON WELL WHILE LOGGING

S.O. # 2-260270

WELL LOGGED FROM 7720' TO 0'

THANK YOU FOR USING PIONEER ENERGY SERVICES!

Your Pioneer Energy Services Crew

Engineer: S. STUMP
Operator: Z. MCVAY
Operator: K. HARRYMAN
Operator:

Tool Data - Services

SCBL
GR/CCL

Serial Number

141168
070238

Top - -10.00 ft

BHTEMP_Src TEMP	BOREID in 0	BOTTEMP degF 0	CASEOD in 0	CASETHCK in 0	CASEWGHT lb/ft 0	MAXAMPL mV 0
MINAMPL mV 0	MINATTN db/ft 0	PERFS 0	PPT usec 0	SRFTEMP degF 0	TDEPTH ft 0	

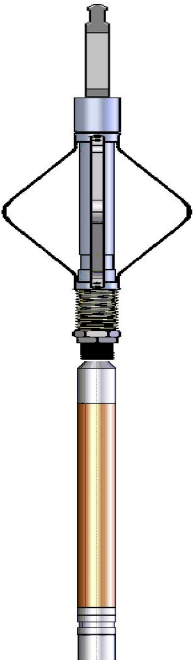
-10.00 ft - 3368.00 ft

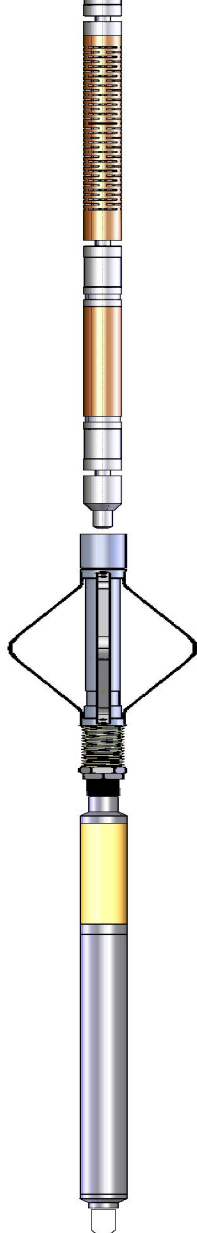
BHTEMP_Src TEMP	BOREID in 7.875	BOTTEMP degF 204	CASEOD in 4.5	CASEWGHT lb/ft 11.6	MINAMPL mV 1.5	MINATTN db/ft 0.08
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3368.00 ft - 7730.00 ft

7730.00 ft - Bottom

BHTEMP_Src TEMP	BOREID in 0	BOTTEMP degF 0	CASEOD in 0	CASEWGHT lb/ft 0	MINAMPL mV 0	MINATTN db/ft 0
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Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TEMP	14.17		Cable Head-Titan 143 1 7/16" Titan Cable Head	1.03	1.43	2.00
			Centralizer-275 Probe 2 3/4" Probe Adjustable Spring Centralizer	2.88	2.75	15.00

WVFS8	11.94		SCBL-275 Probe w Temp New Mod (14119.17) Probe Radii Bond Tool with Temperature			
WVFS7	11.94					
WVFS6	11.94					
WVFS5	11.94					
WVFS4	11.94					
WVFS3	11.94					
WVFS2	11.94					
WVFS1	11.94					
WVFCAL	11.94					
WVFS3FT	11.94					
WVFS5FT	10.94					
			Centralizer-275 Probe 2 3/4" Probe Adjustable Spring Centralizer	2.88	2.75	15.00
CCL	3.91					
			GR_CCL-275 Probe GR-CCL (070238) Probe 2 3/4" Gamma Ray / CCL Analog - Neg Pulse	4.54	2.75	60.00
GR	1.17					
			Bullnose-Titan GO Pin Pressure Cap	0.27	1.38	1.00
<div>Dataset: 2-260270.db: field/well/run1/MAIN</div> <div>Total length: 20.76 ft</div> <div>Total weight: 188.00 lb</div> <div>O.D.: 2.75 in</div>						



FREE PIPE PASS

0 PSI ON WELL WHILE LOGGING

Database File	2-260270.db
Dataset Pathname	FREE PIPE
Presentation Format	pinr_scbl
Dataset Creation	Wed Dec 28 14:40:27 2016
Charted by	Depth in Feet scaled 1:240

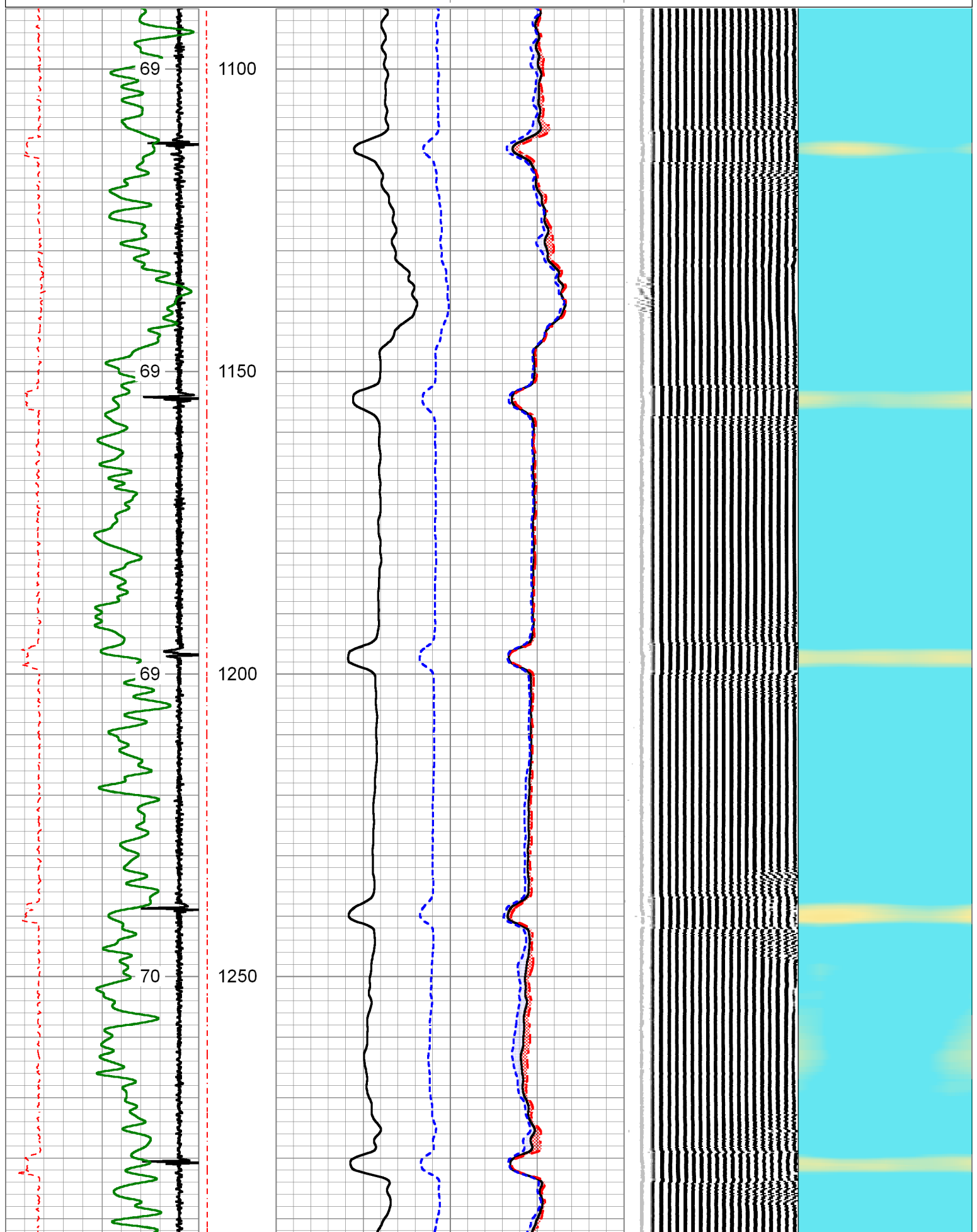
3' Travel Time	Line Tension	3' Amplitude (mV)	Sector Amplitude Average	200	VDL	1200	1	Sector Map	8
260 (usec)	0 (3000)	0 100	0 150				10		60
-9 Collar Locator	1	3' Amplified Amplitude X 5	Sector Amplitude Maximum						
Gamma Ray		0 (mV) 20							
0 (GAPI) 150		1 Bond Index 0 0							

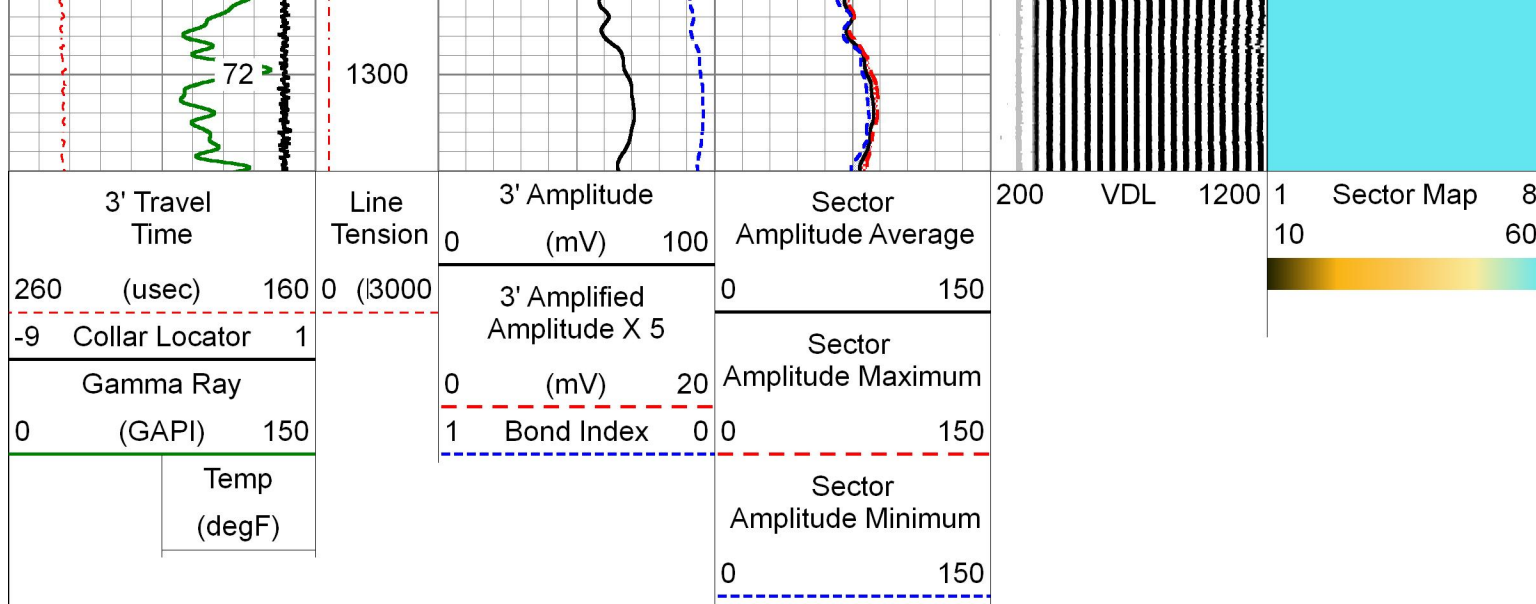
Temp
(degF)


Sector
Amplitude Minimum

0

150





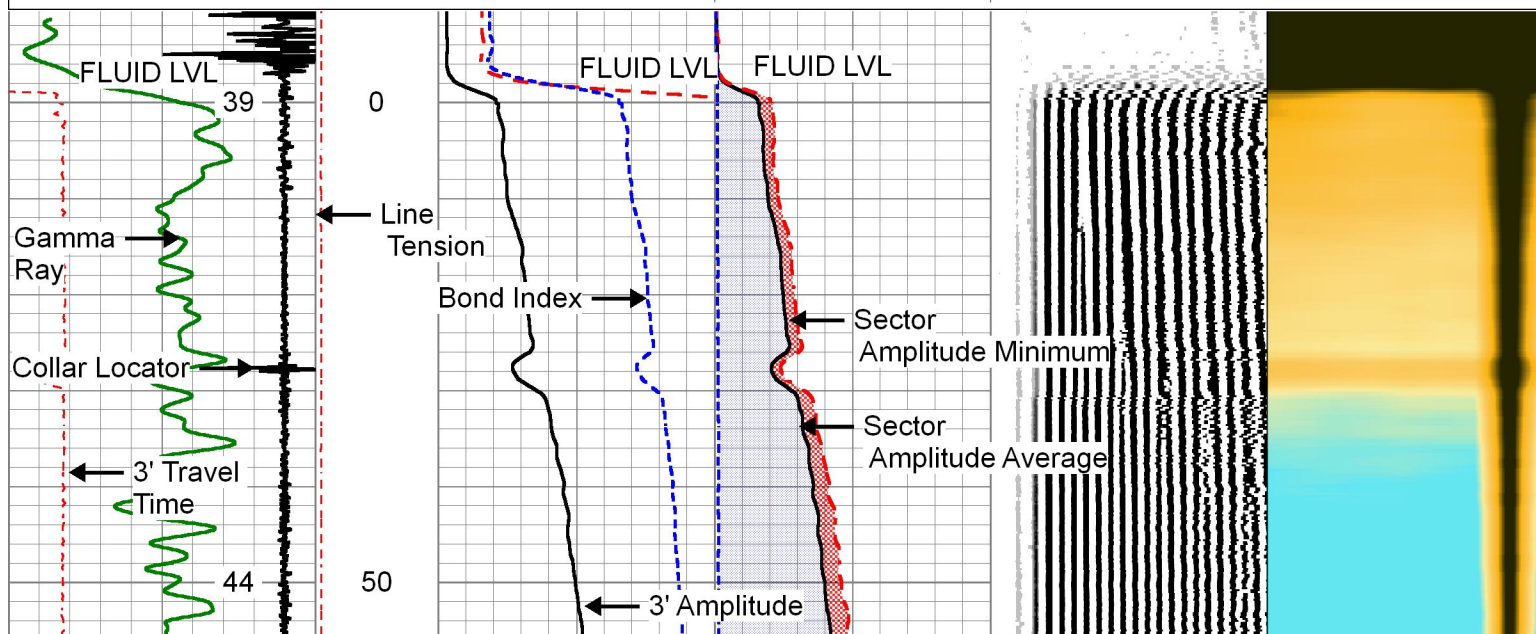
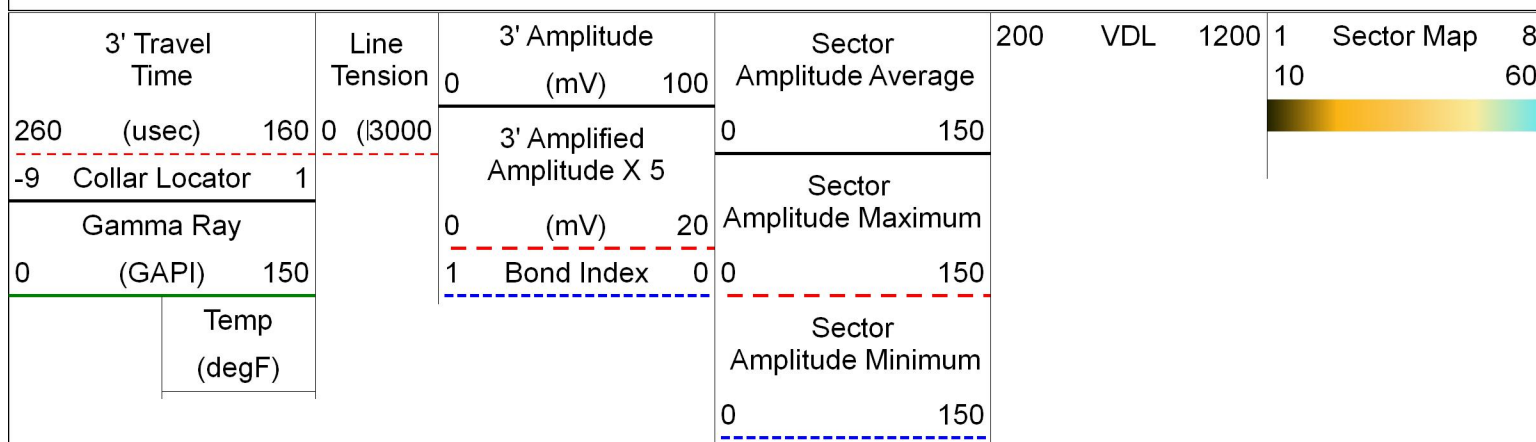


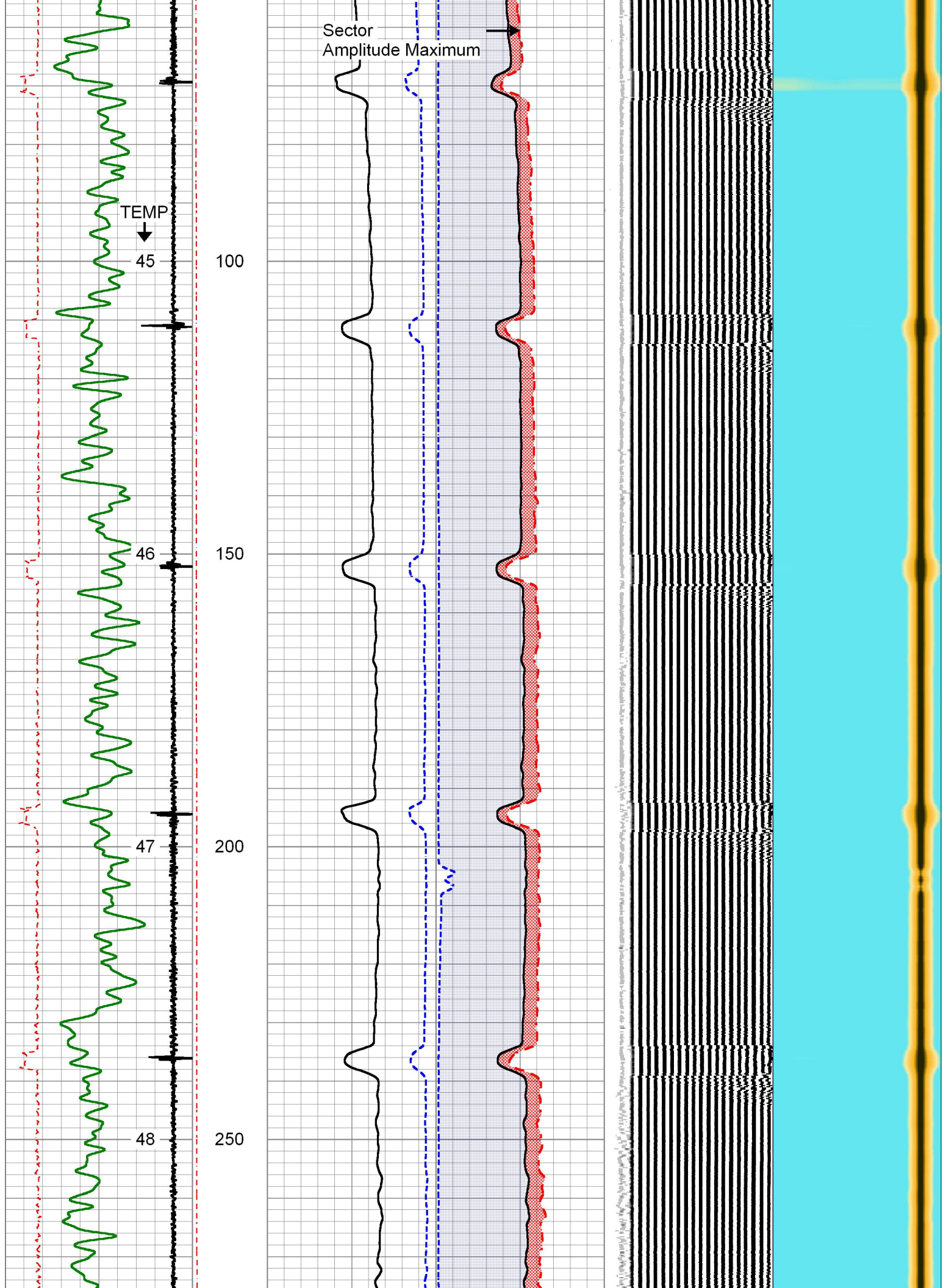
PIONEER
Pioneer Energy Services

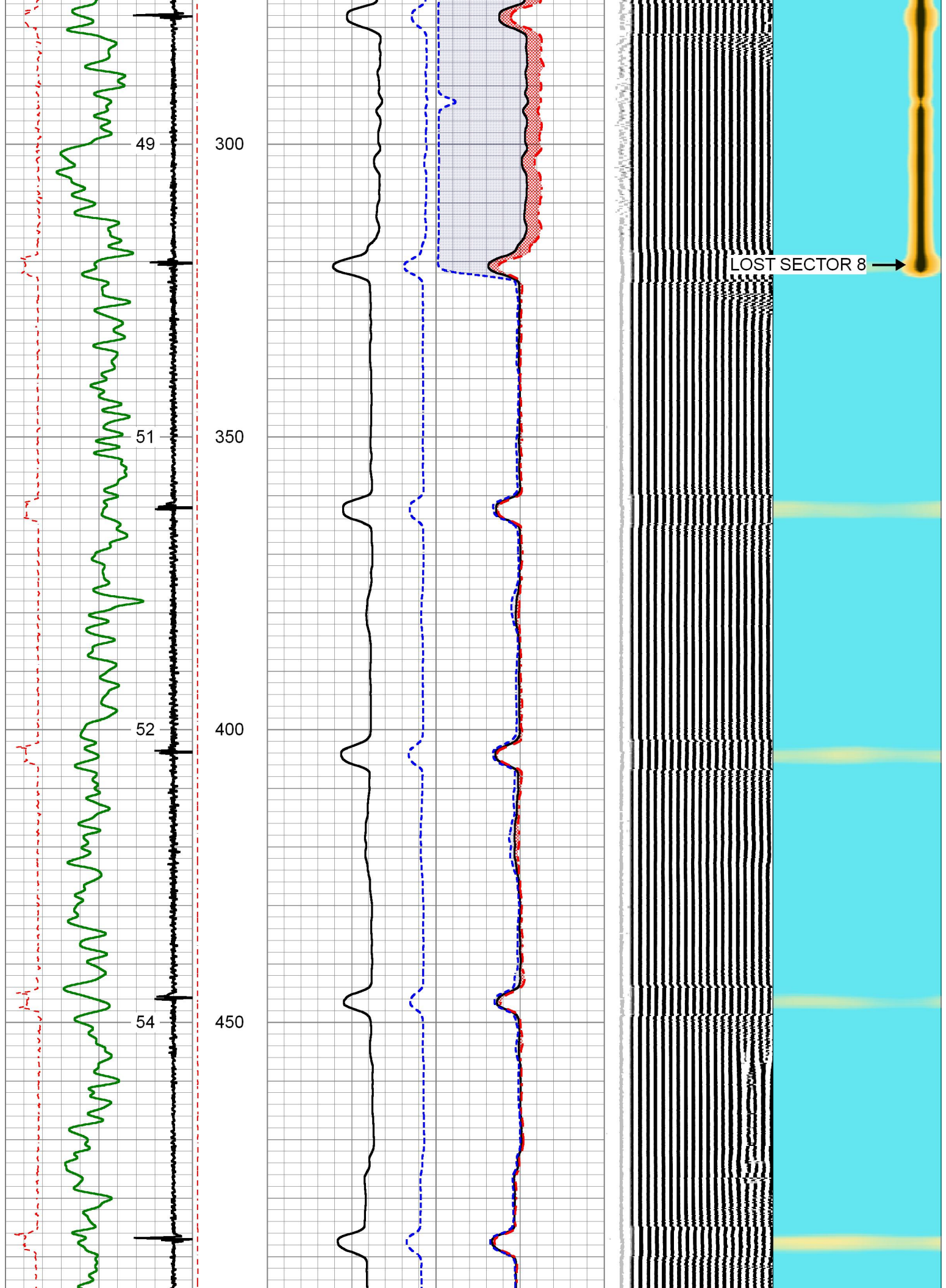
MAIN PASS

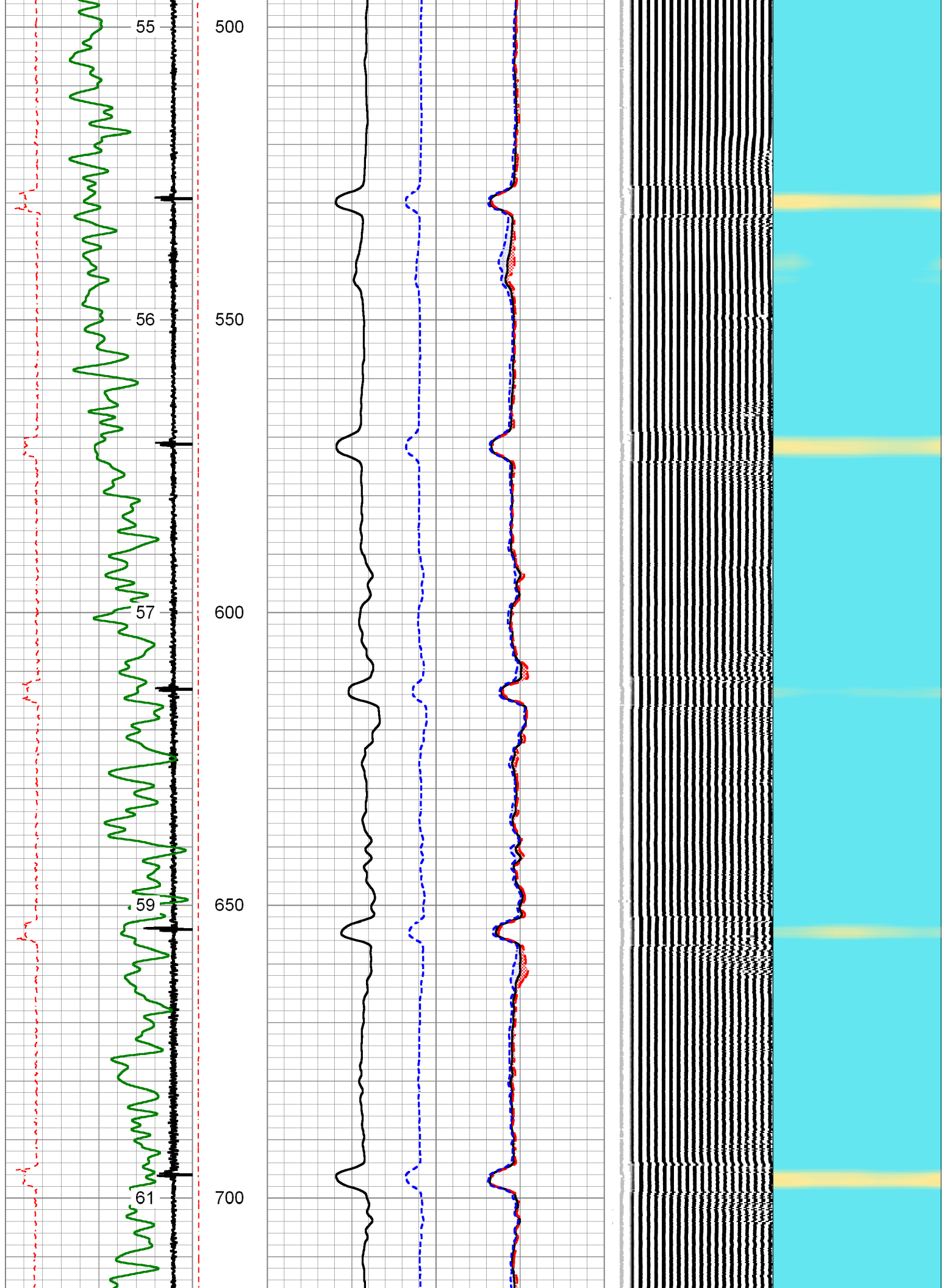
0 PSI ON WELL WHILE LOGGING

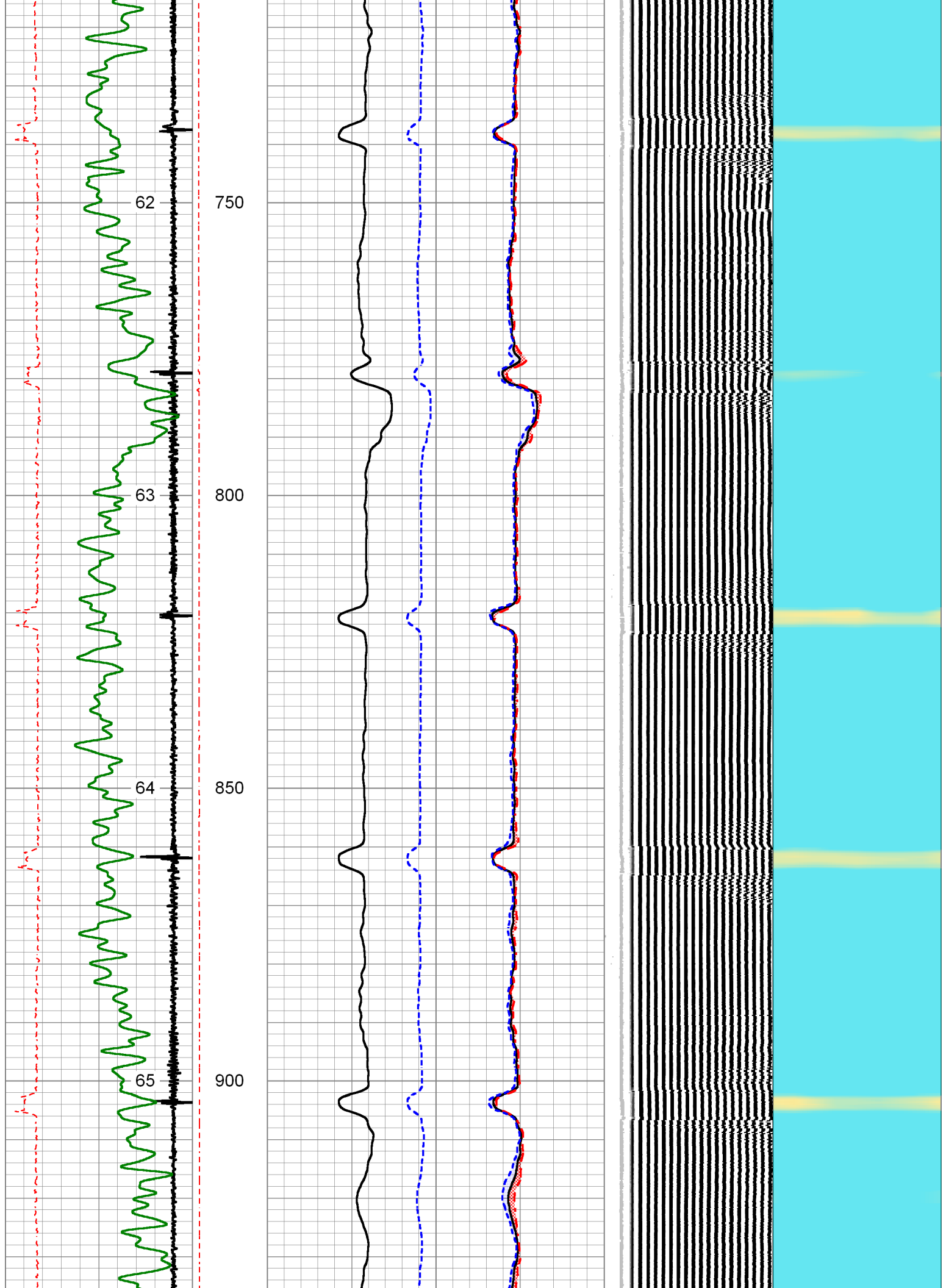
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 Dataset Pathname MAIN
 Presentation Format pinr_scbl
 Dataset Creation Wed Dec 28 14:35:03 2016
 Charted by Depth in Feet scaled 1:240

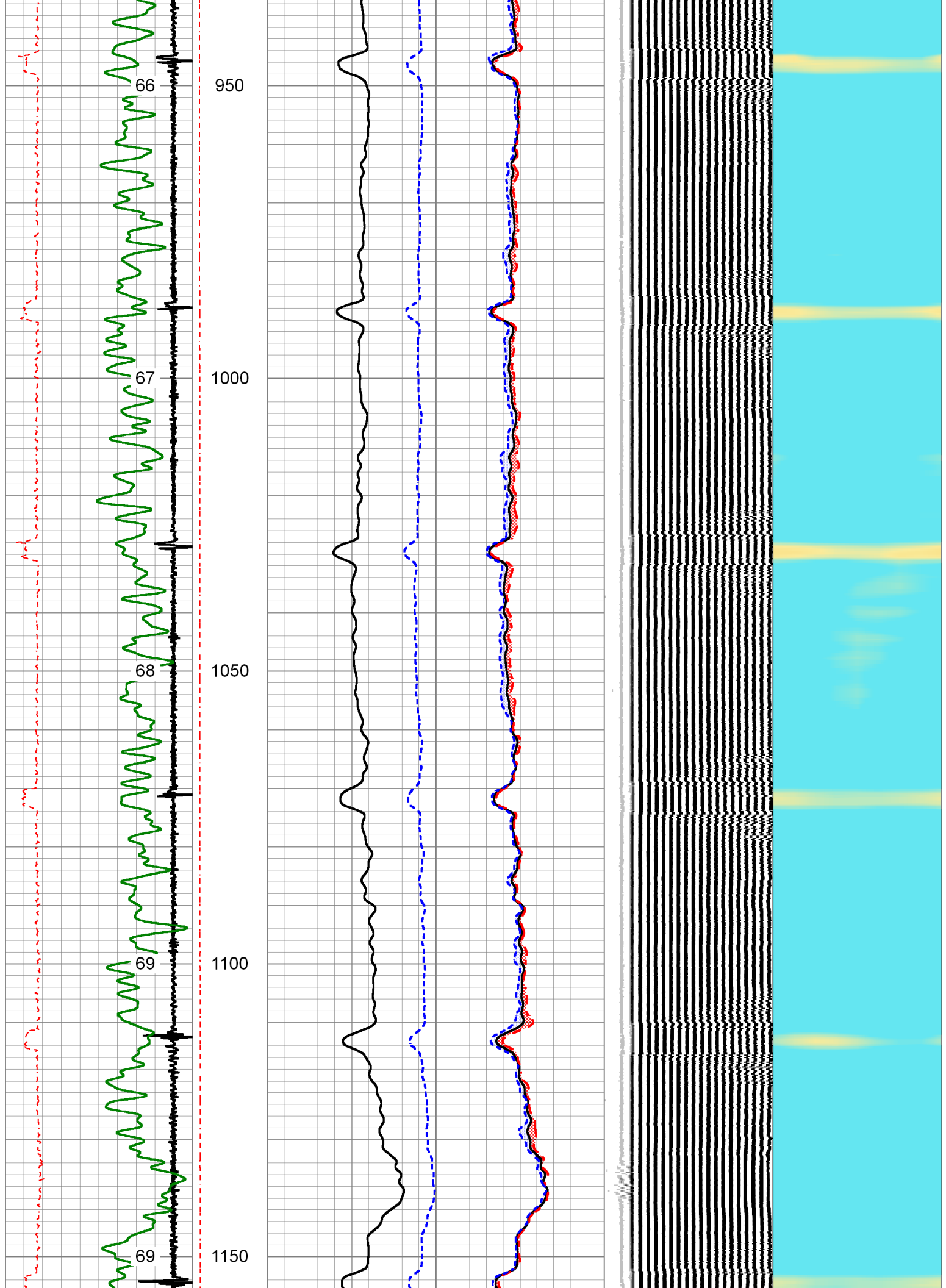


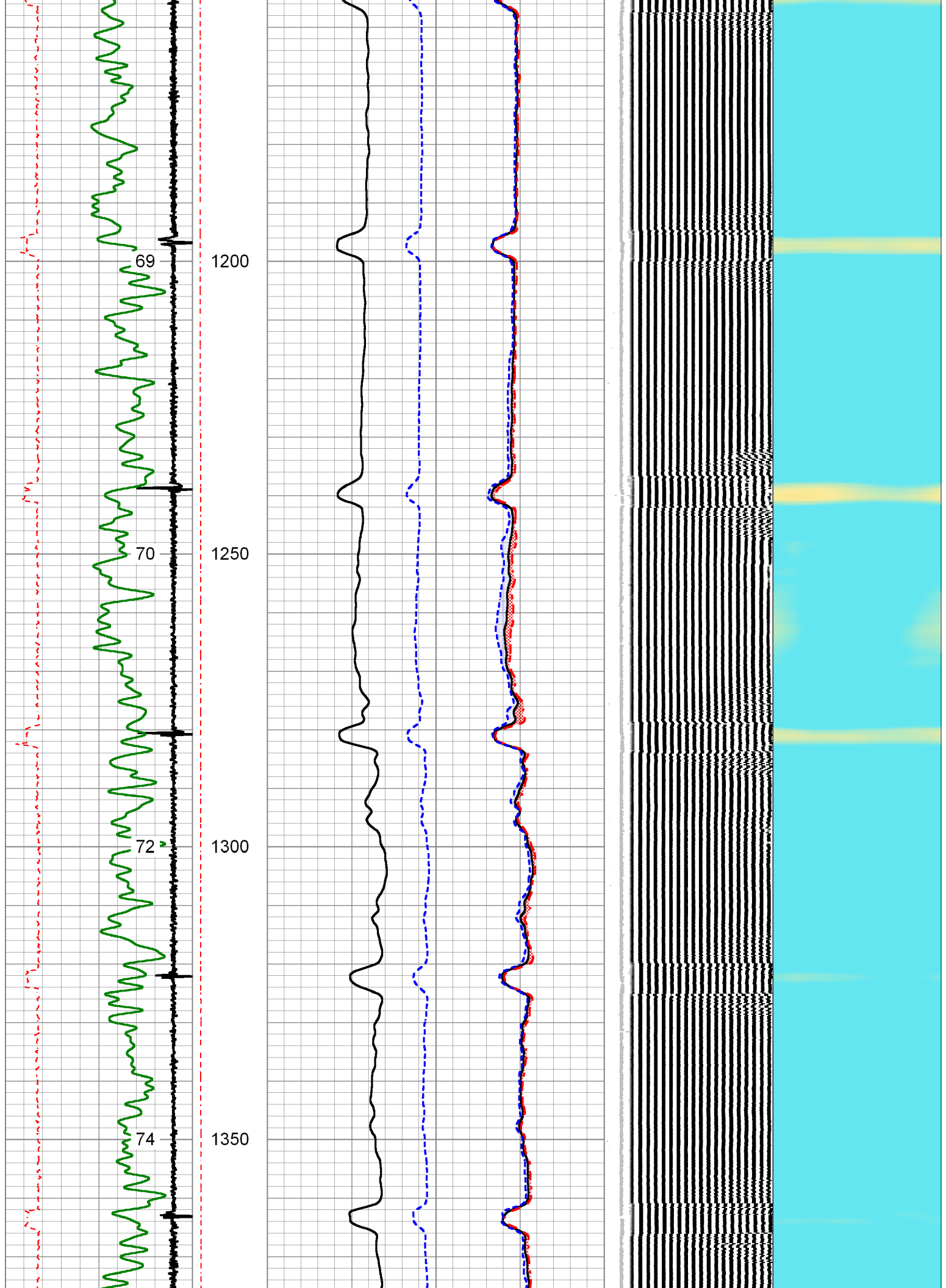


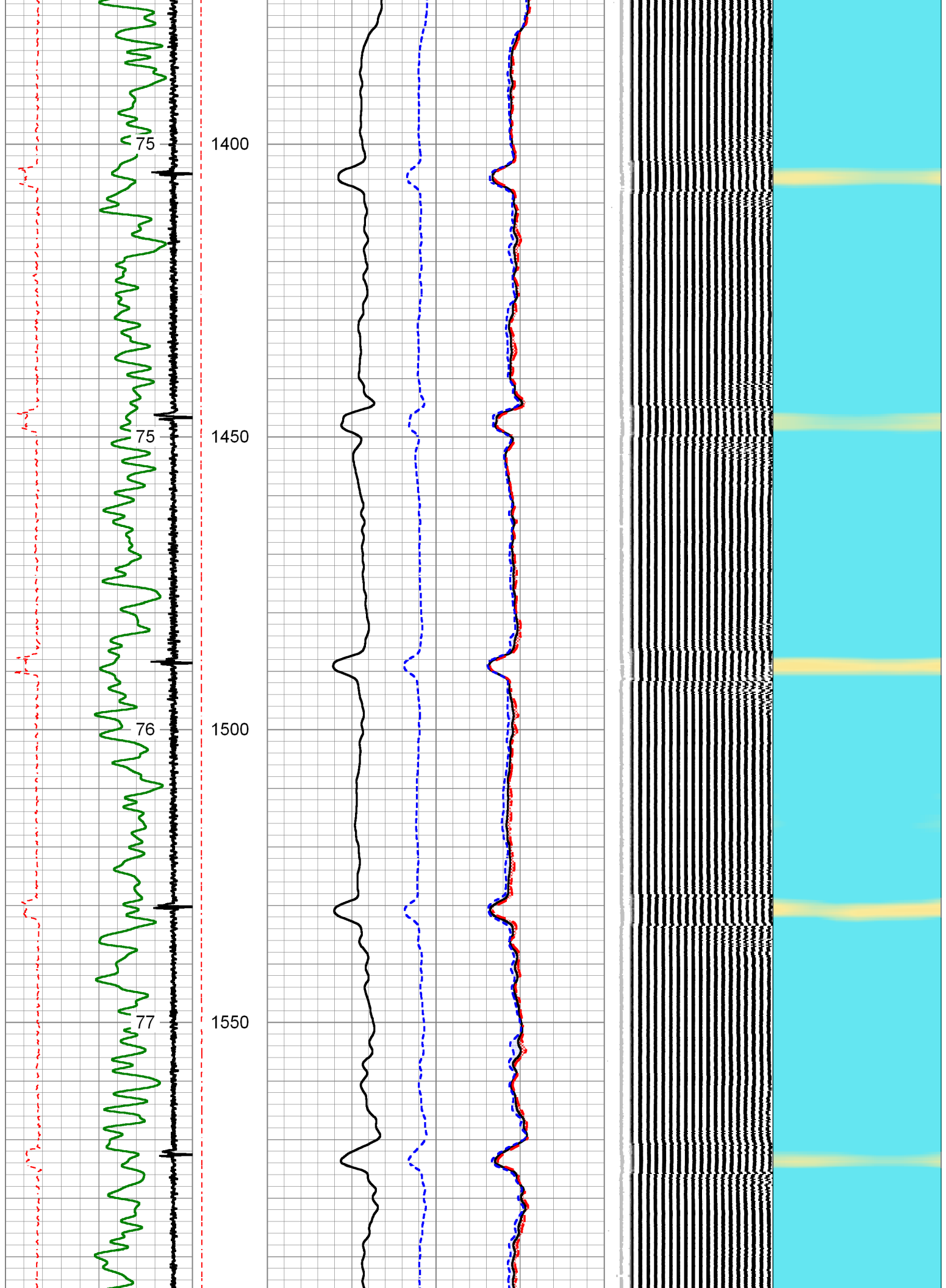


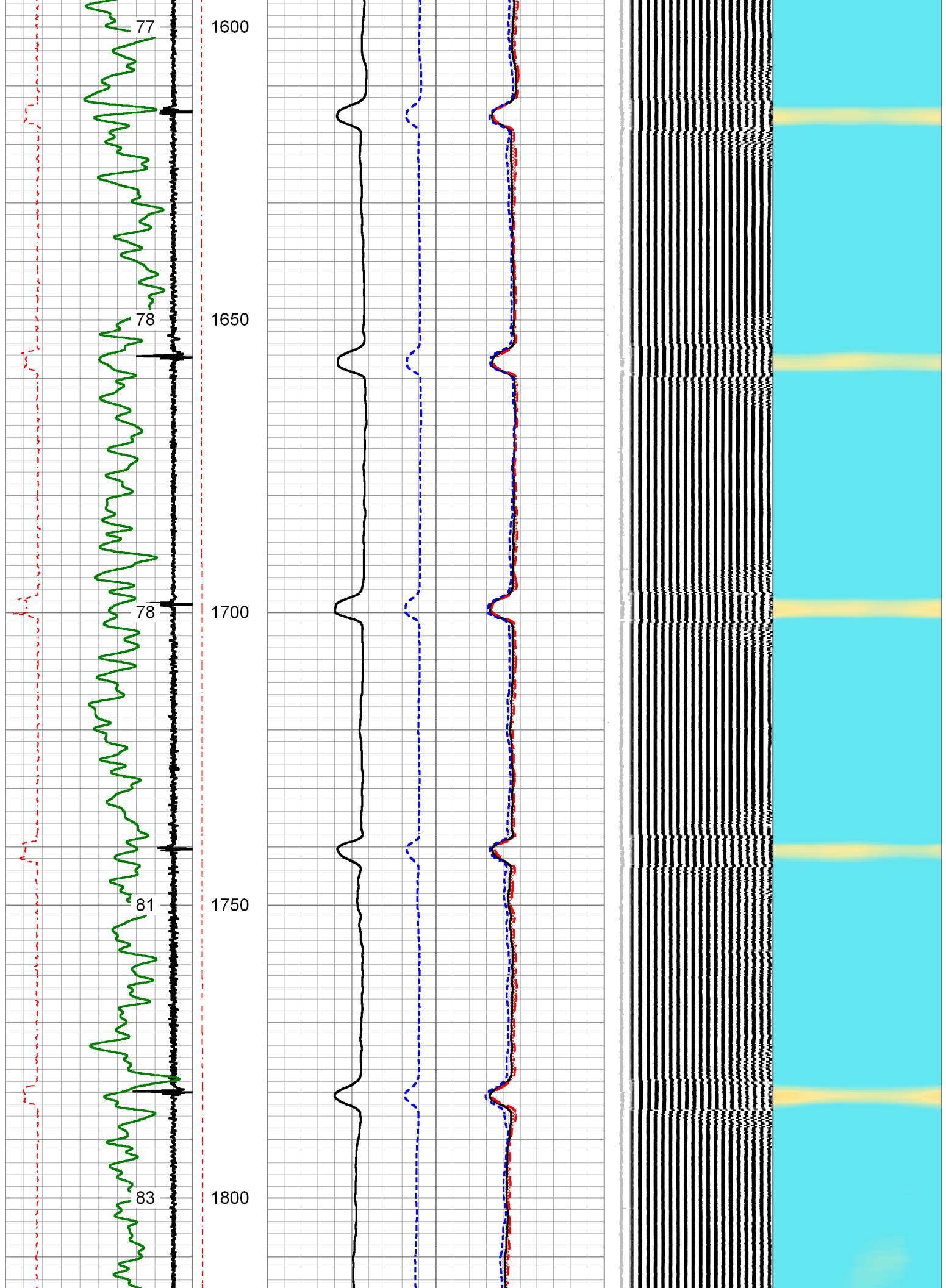


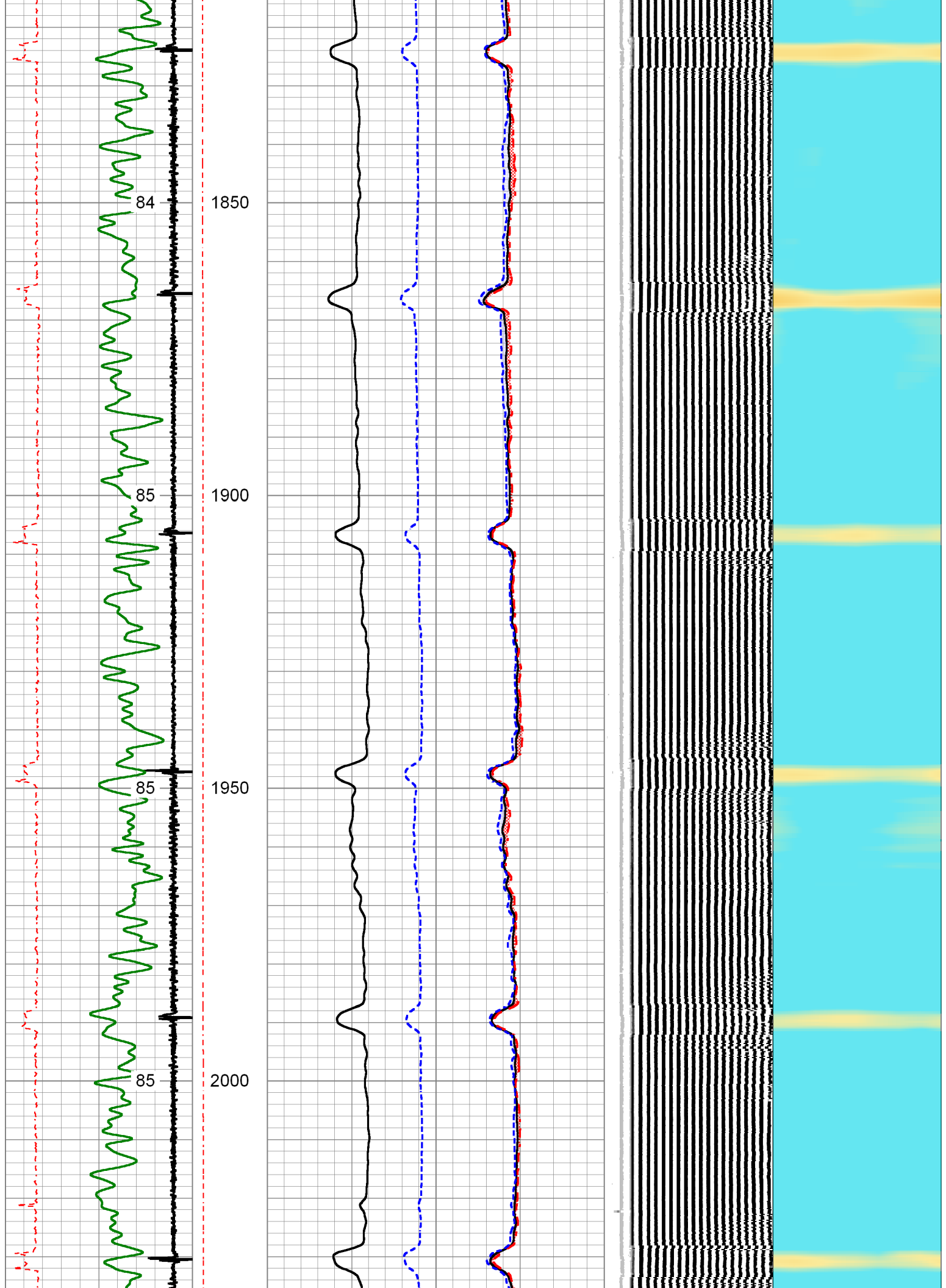


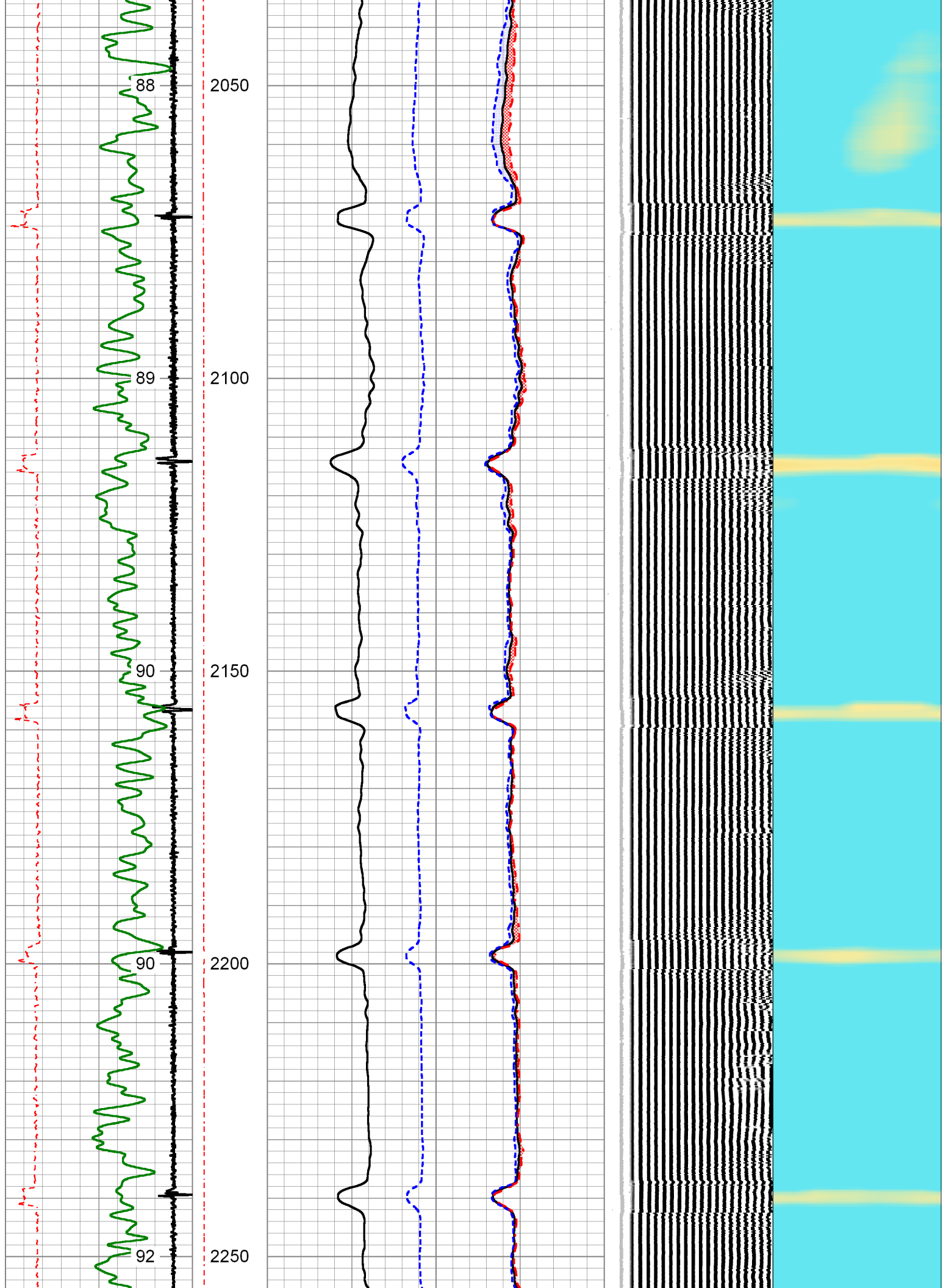


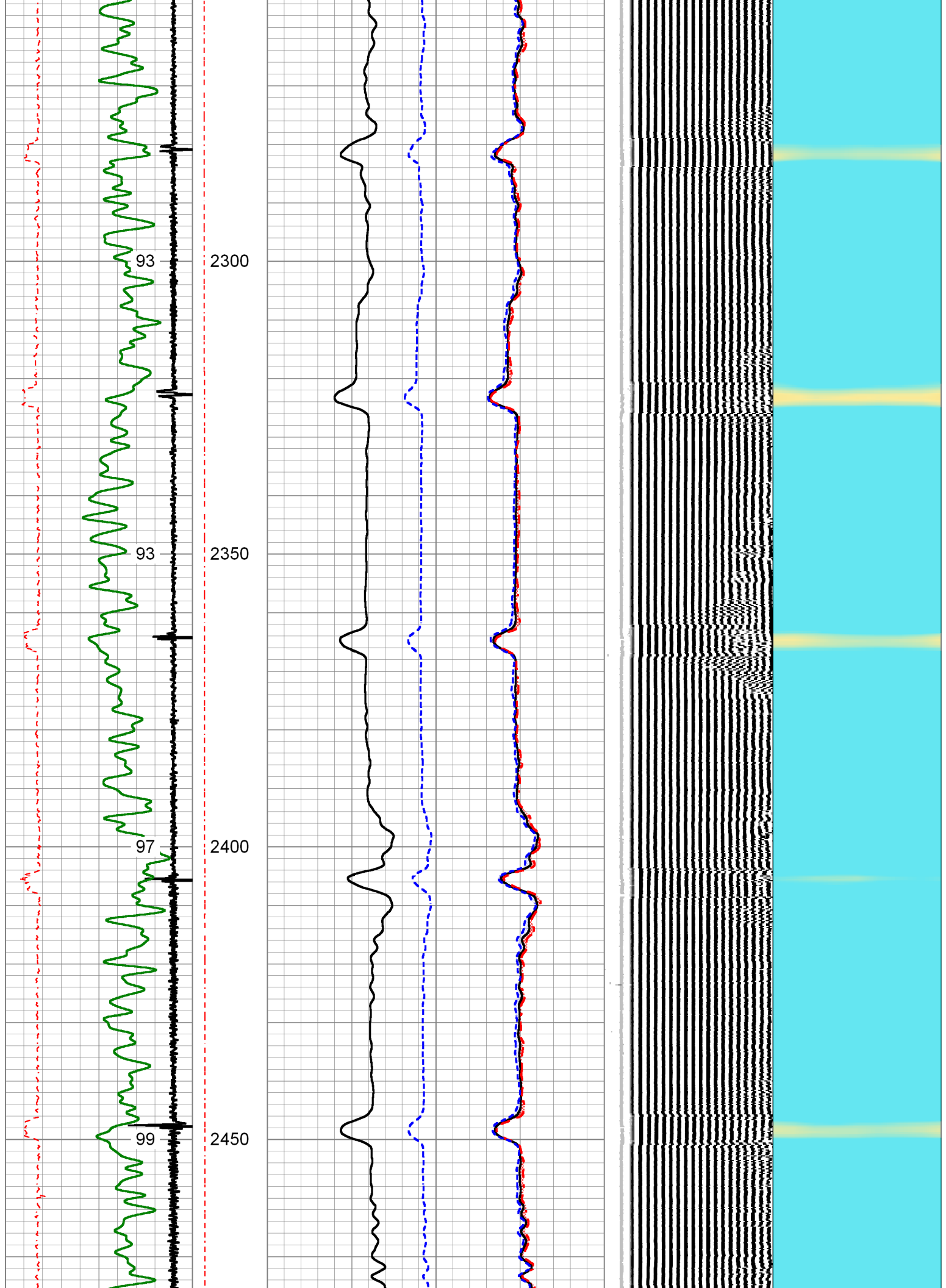


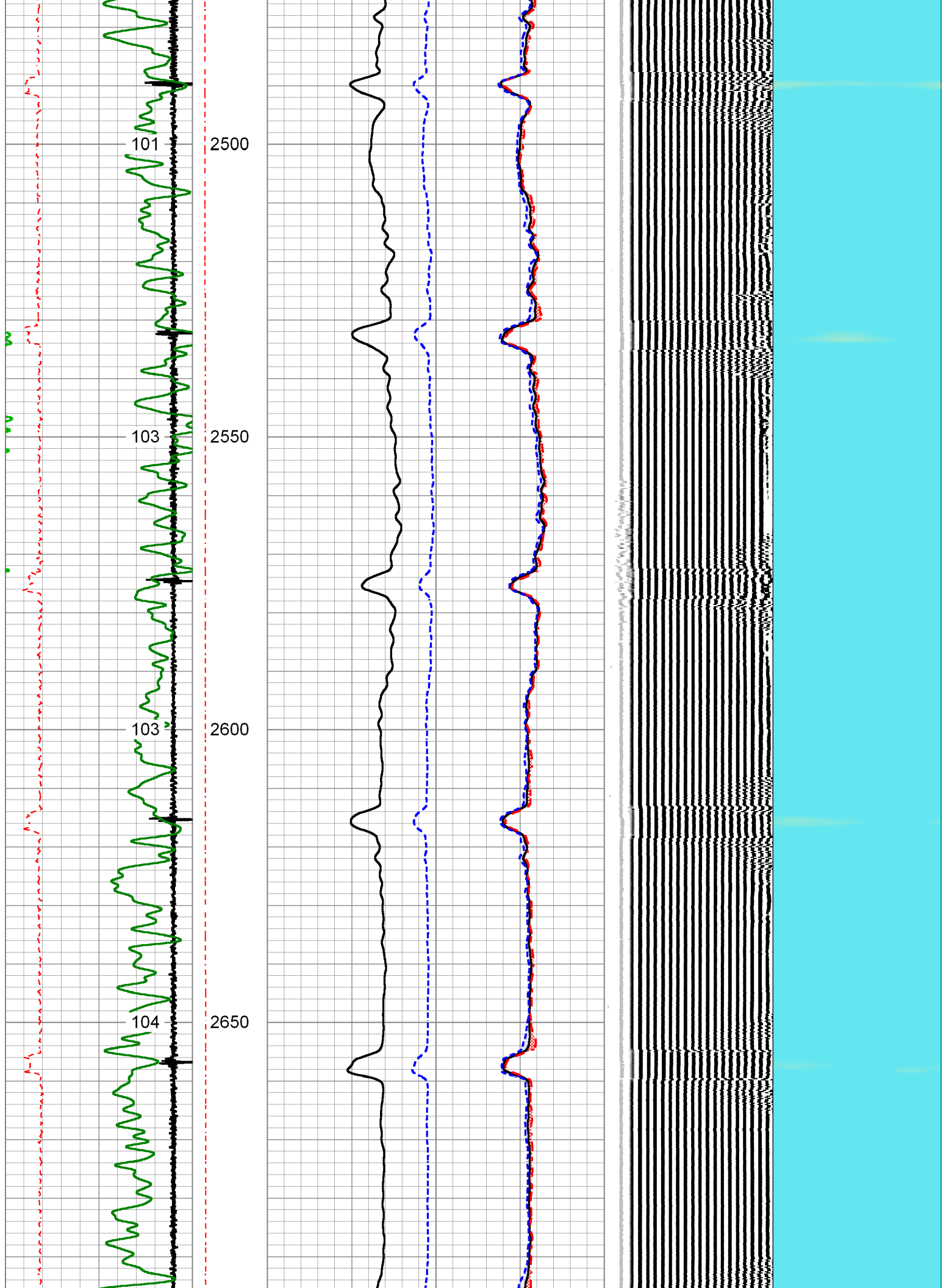


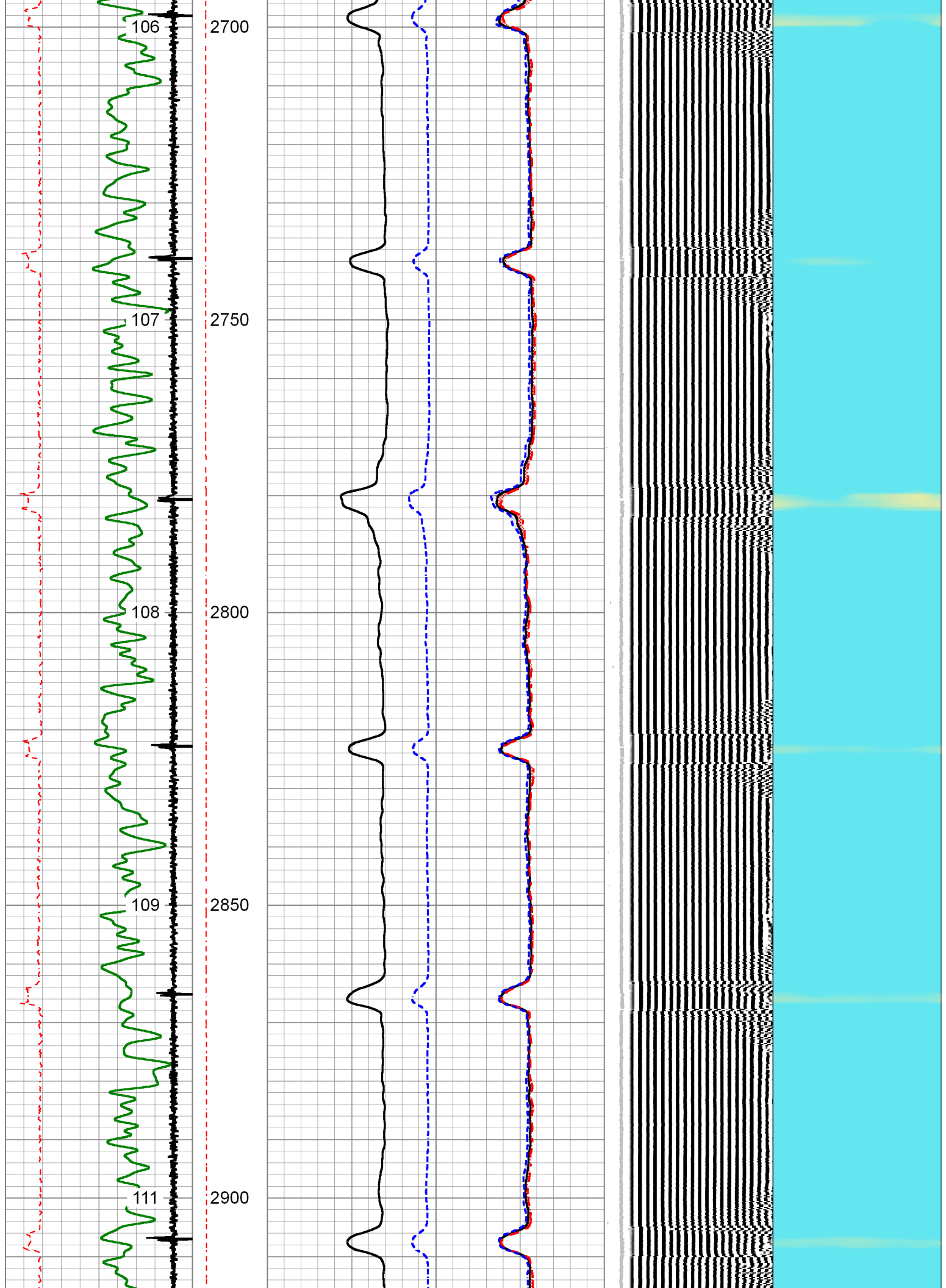


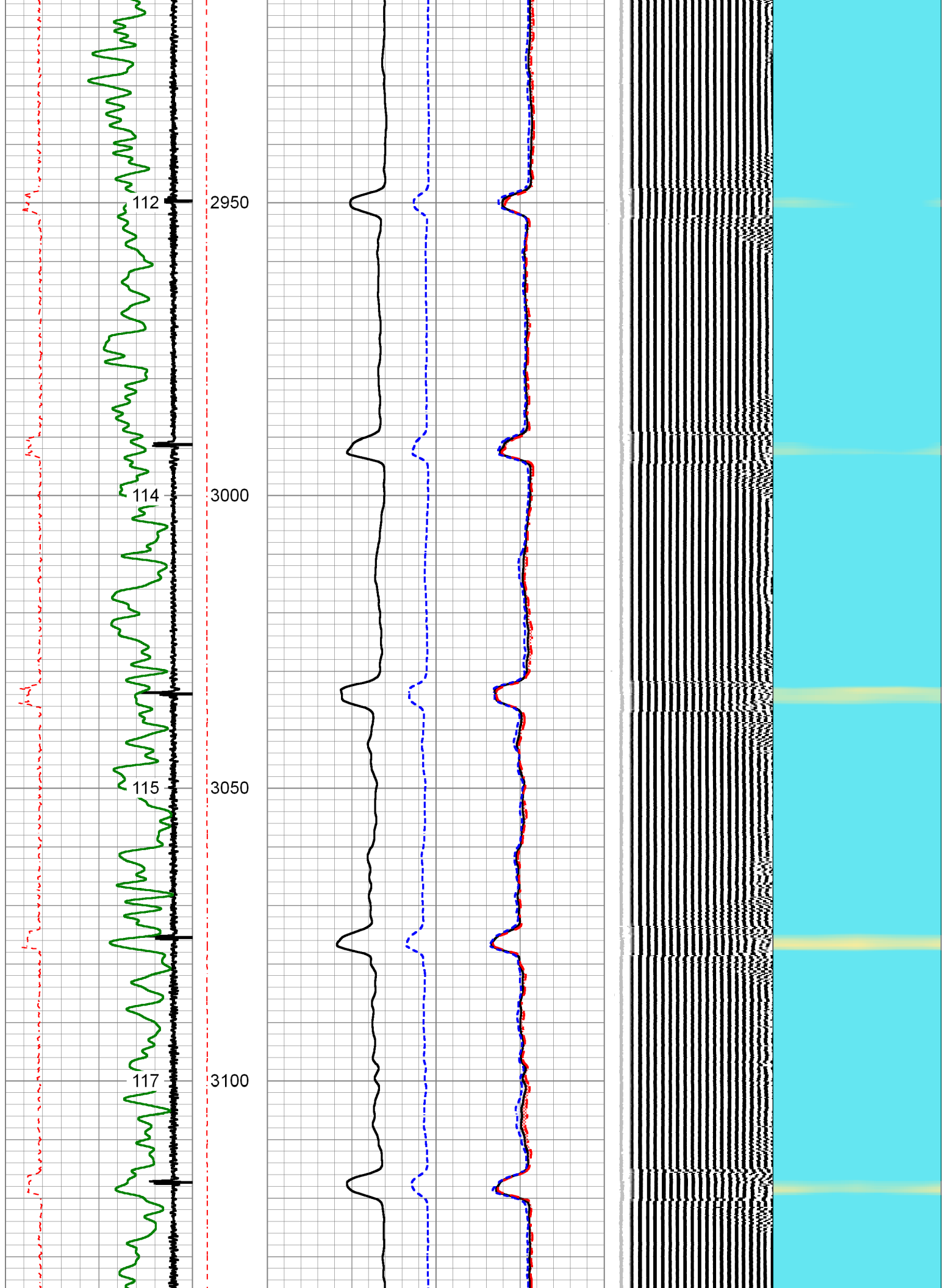


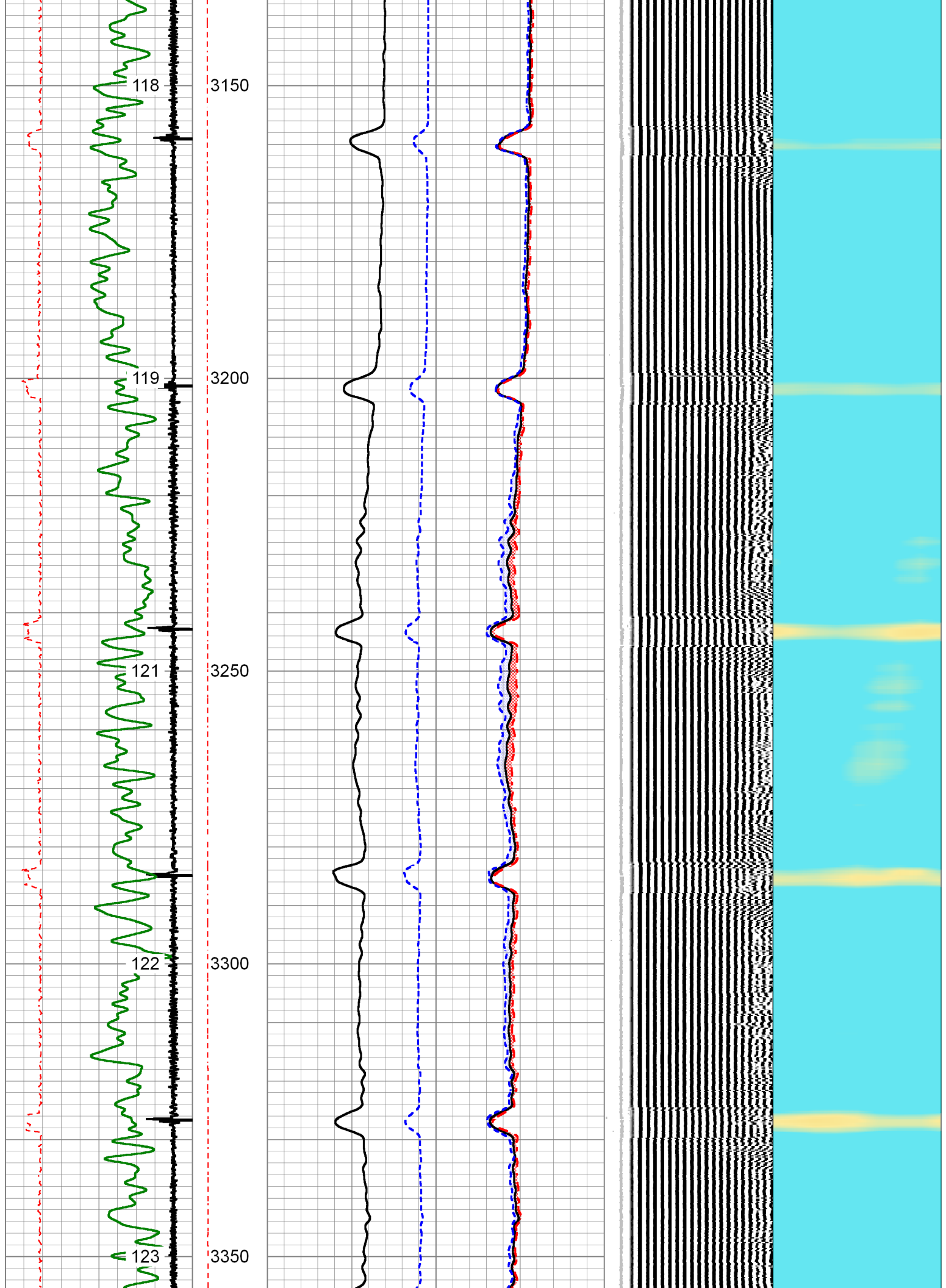


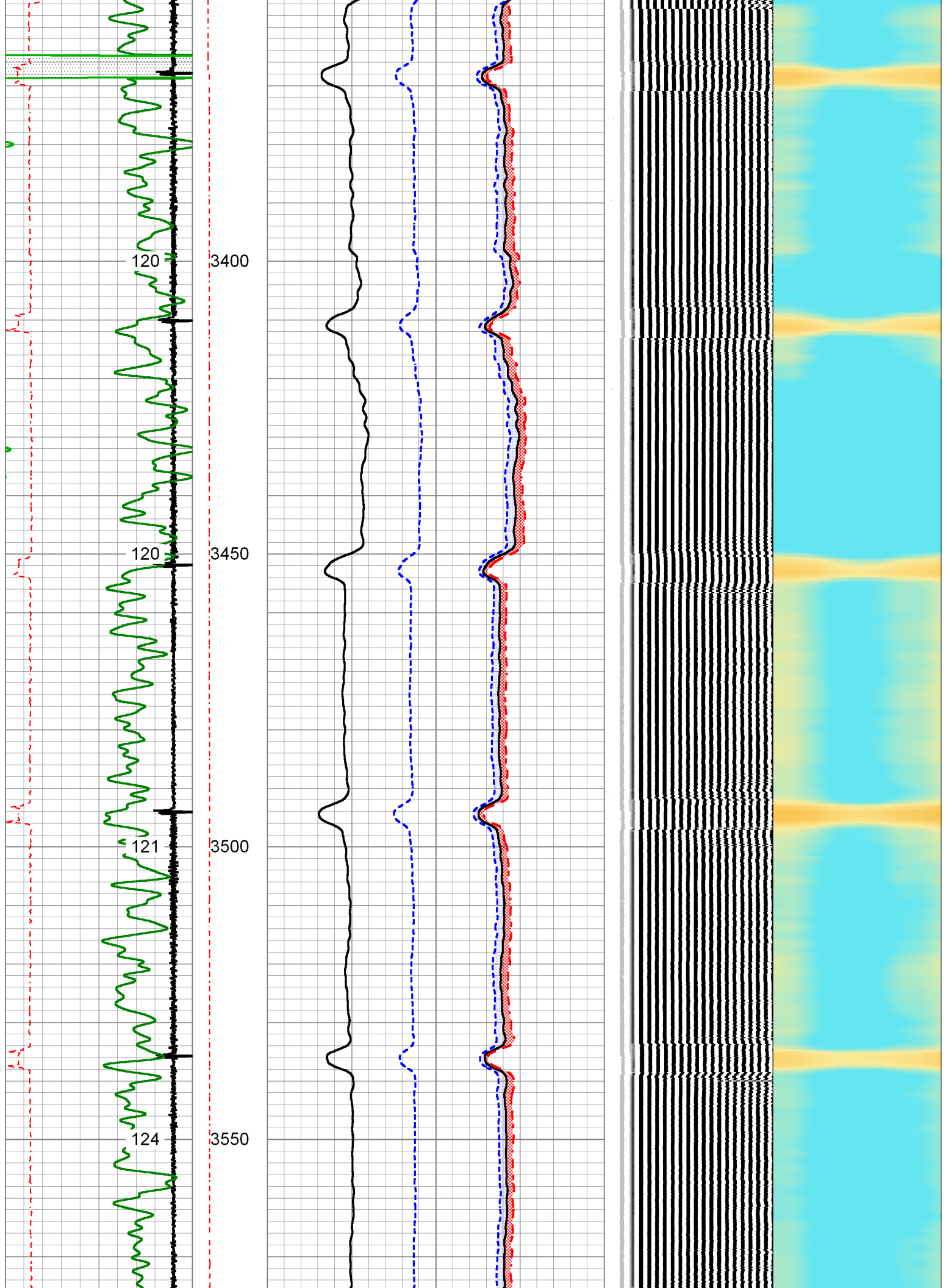


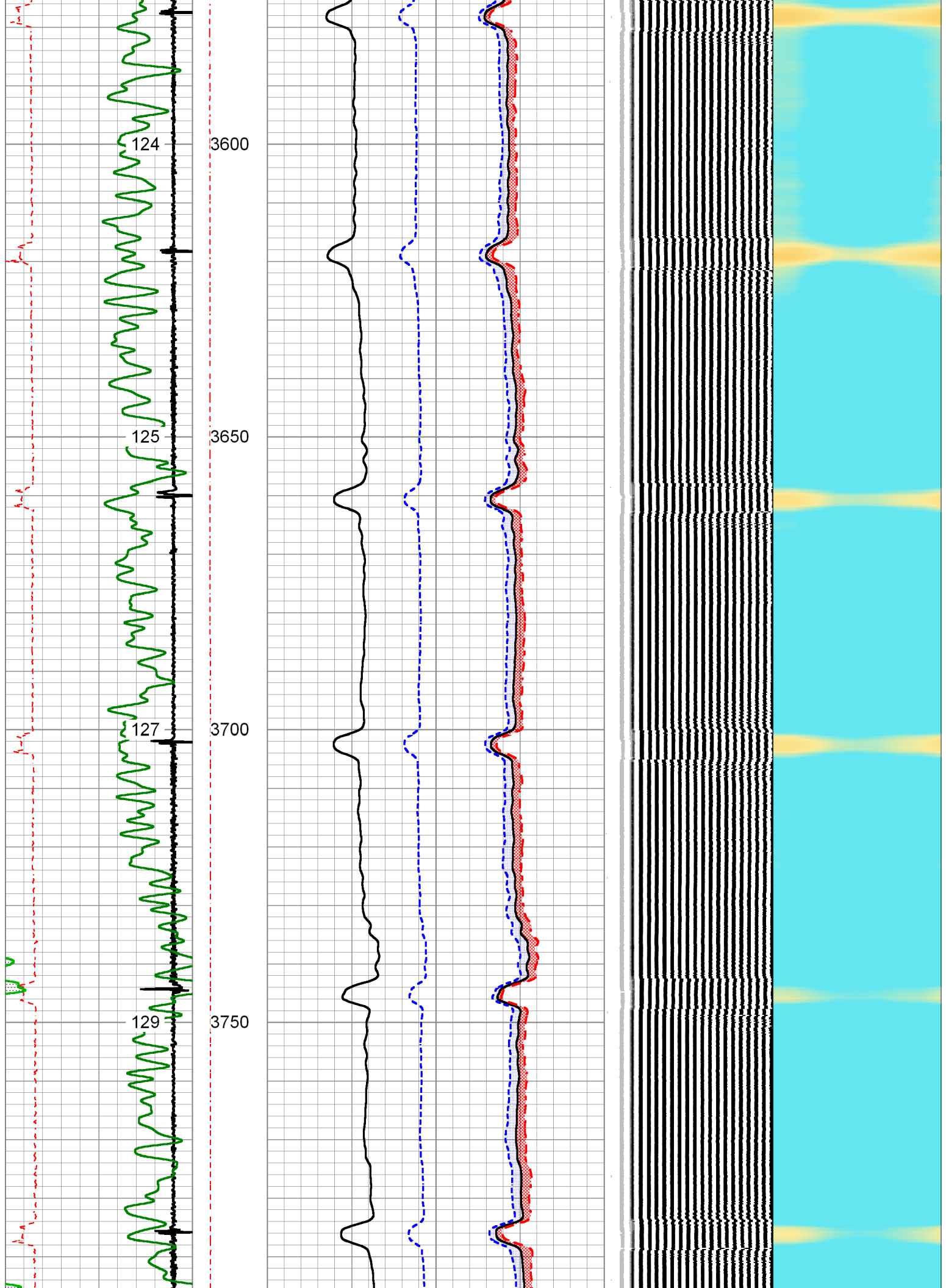


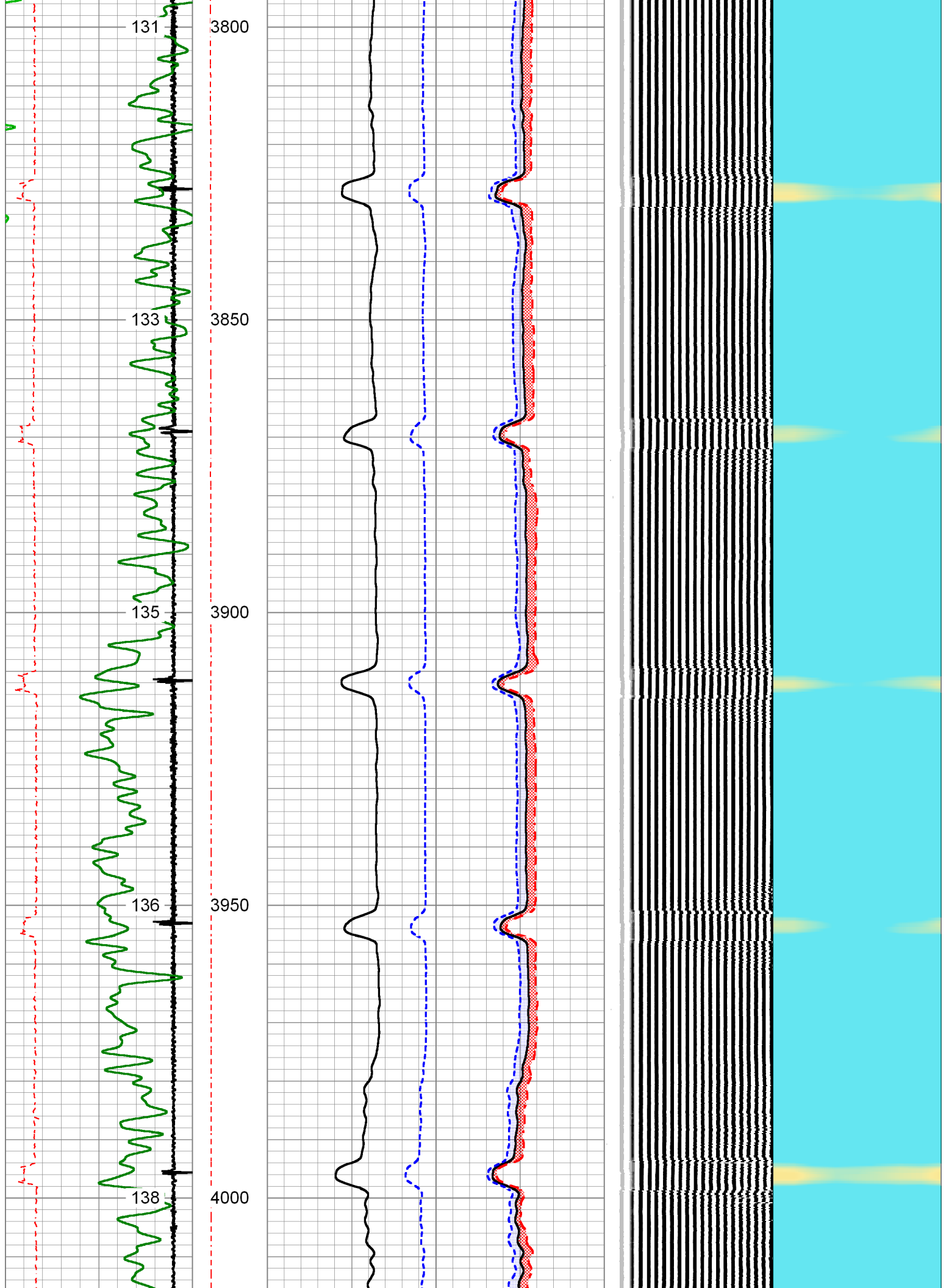


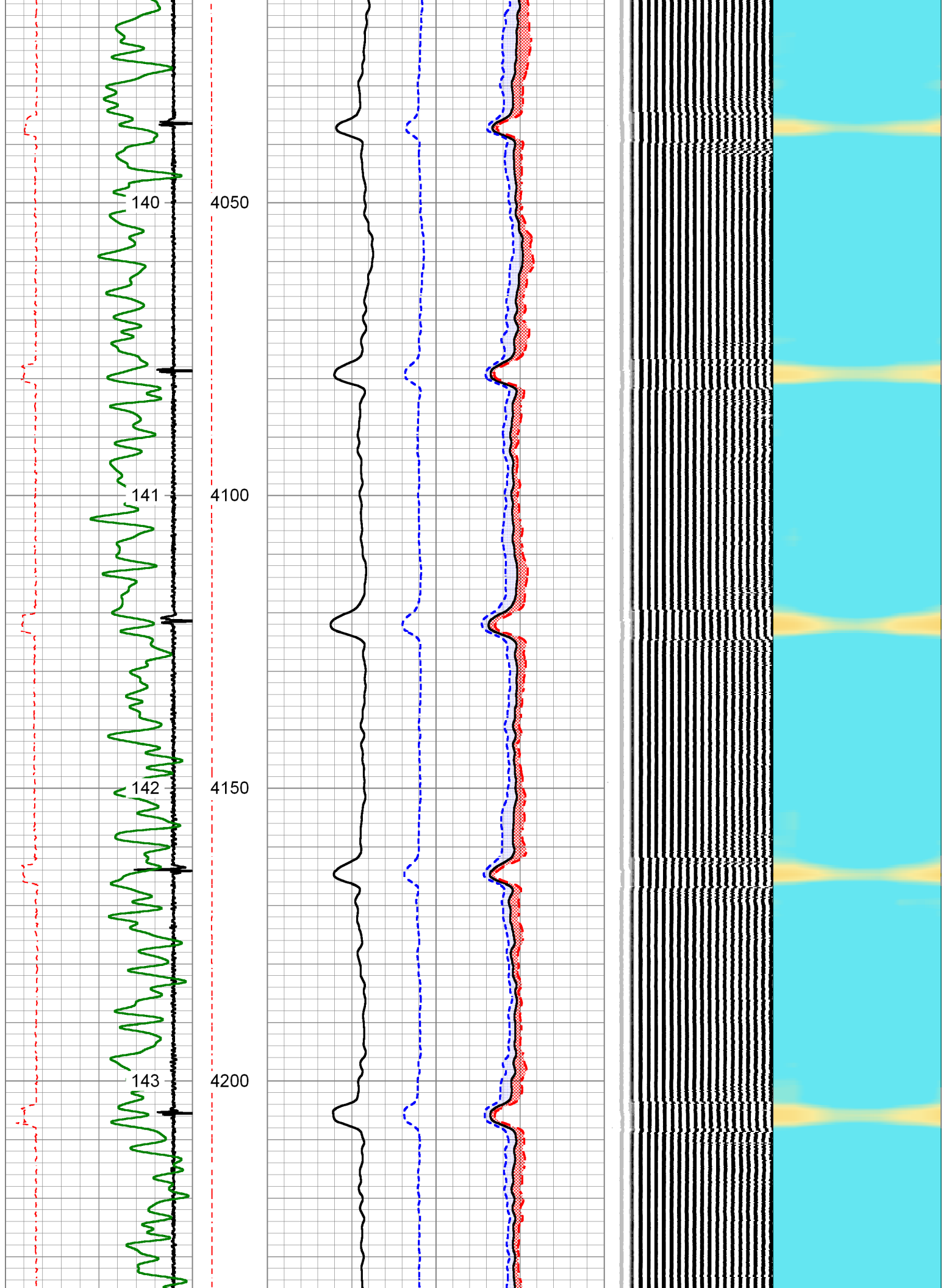


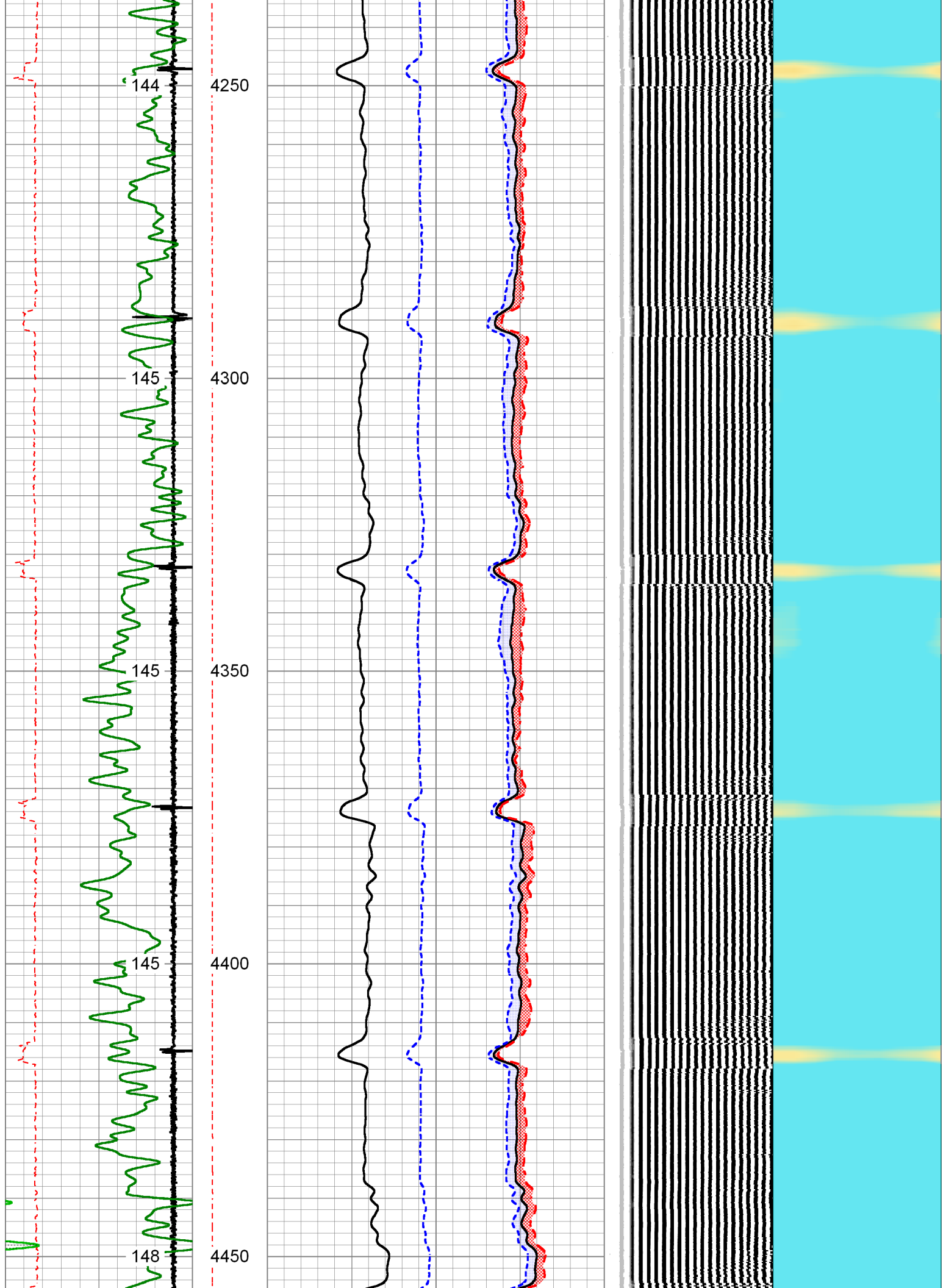


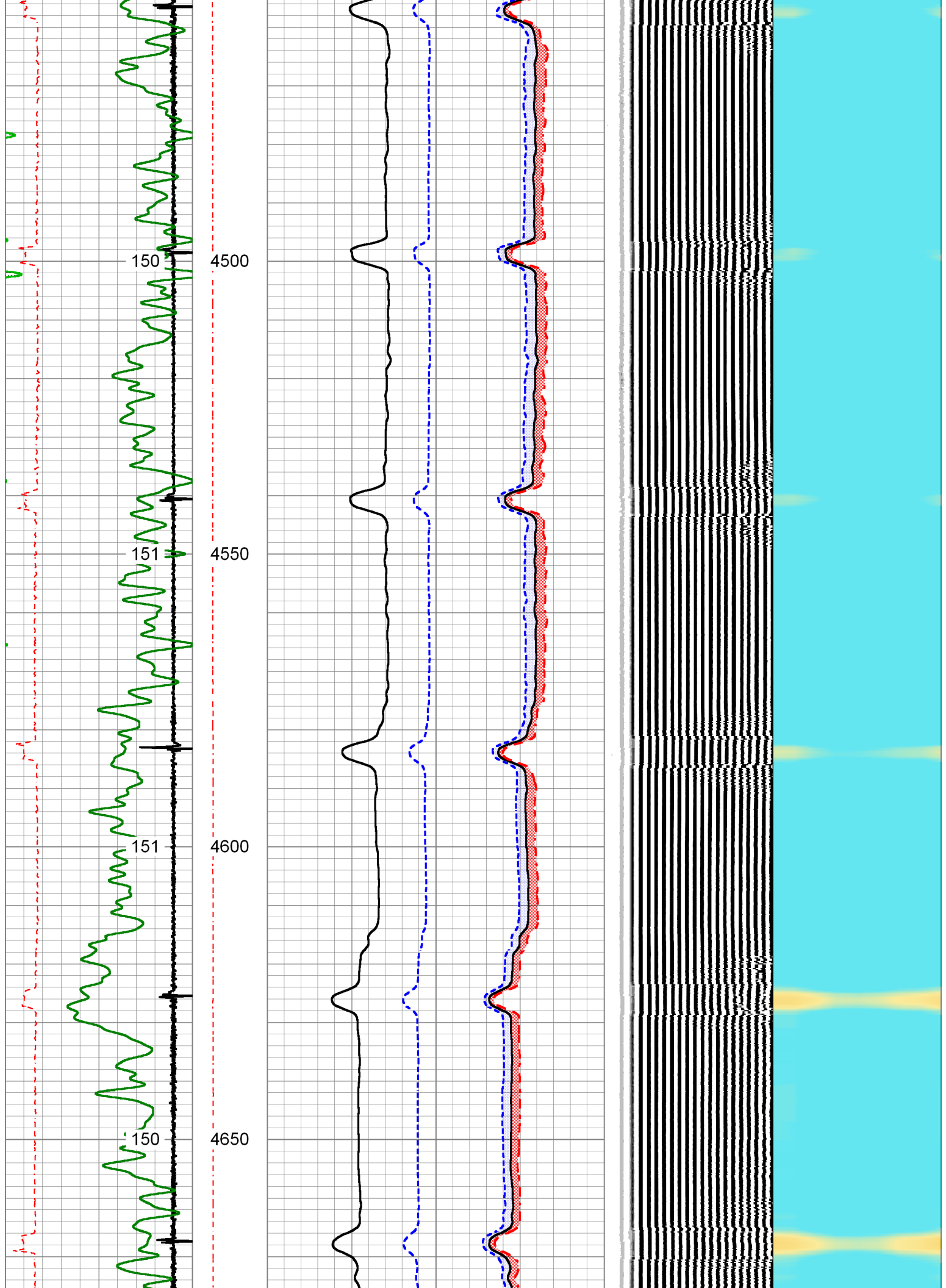


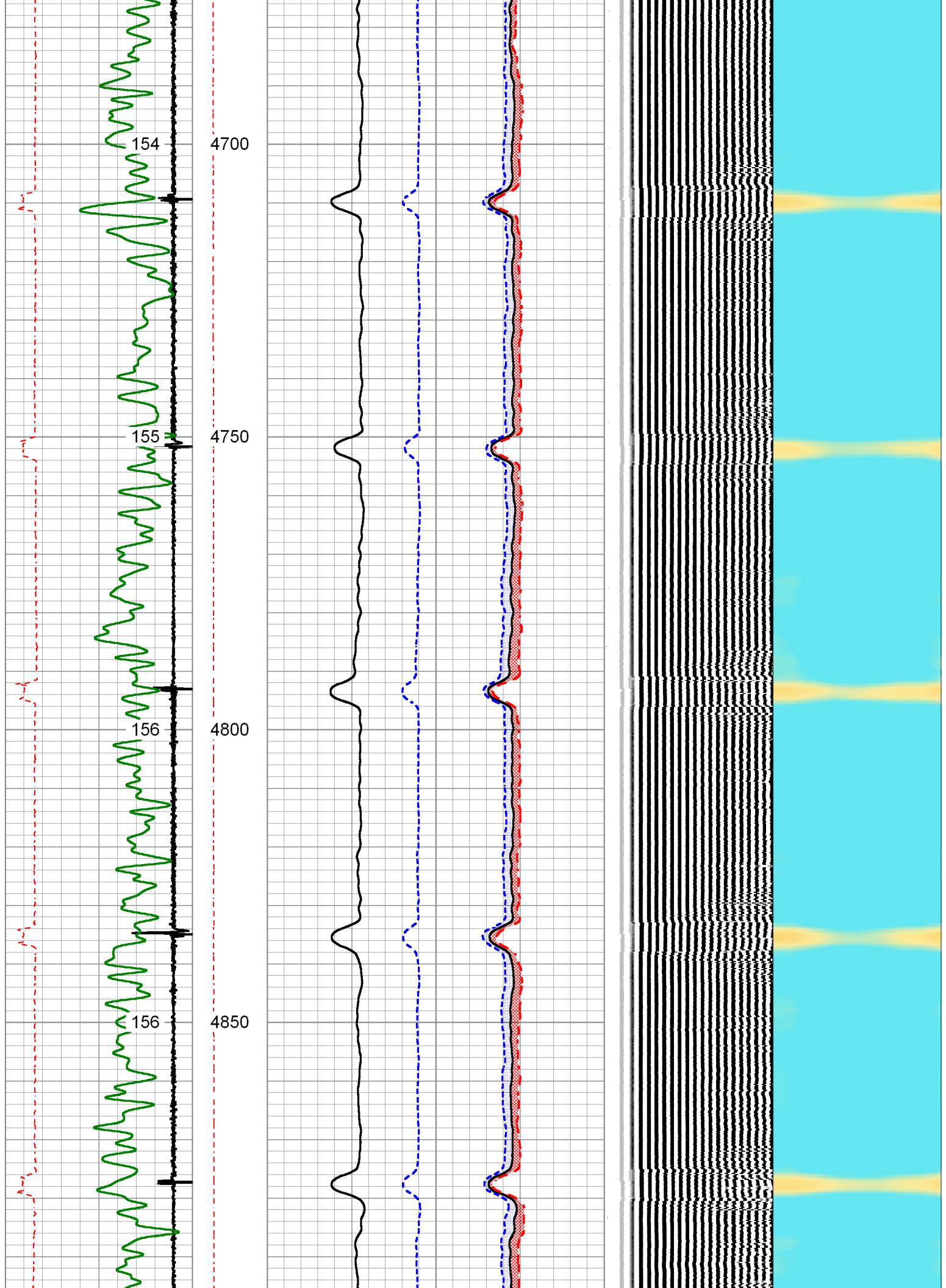


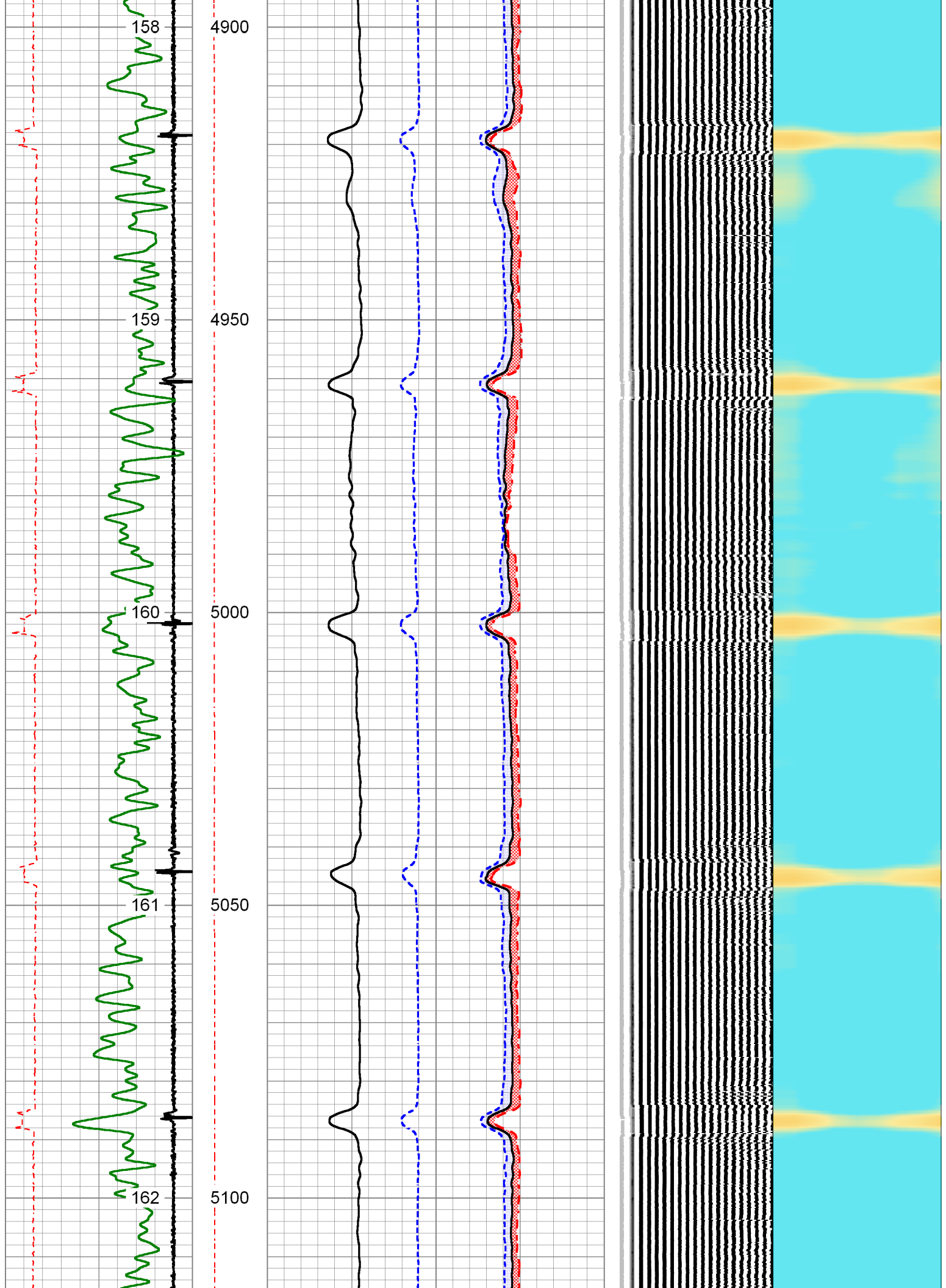


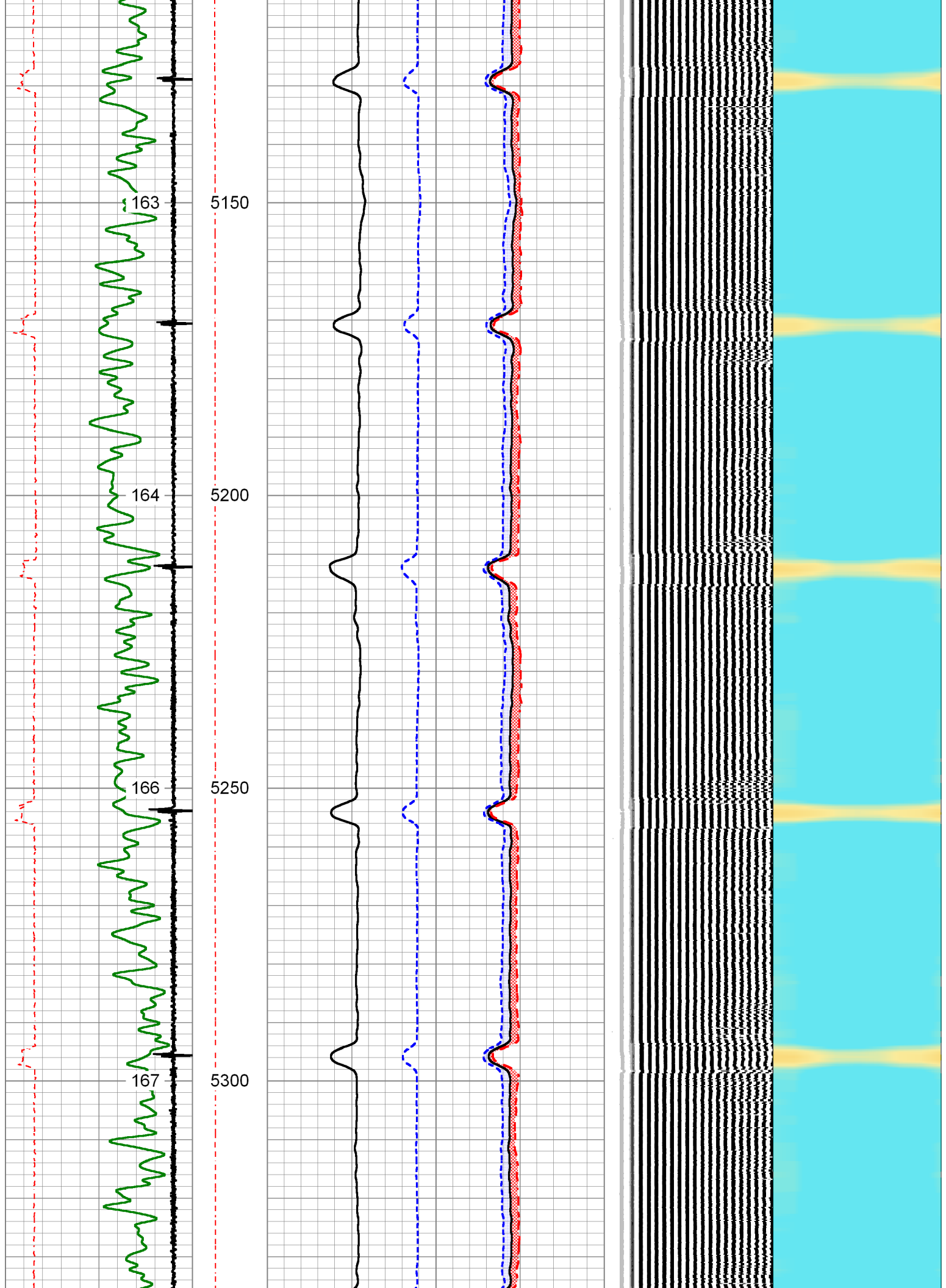


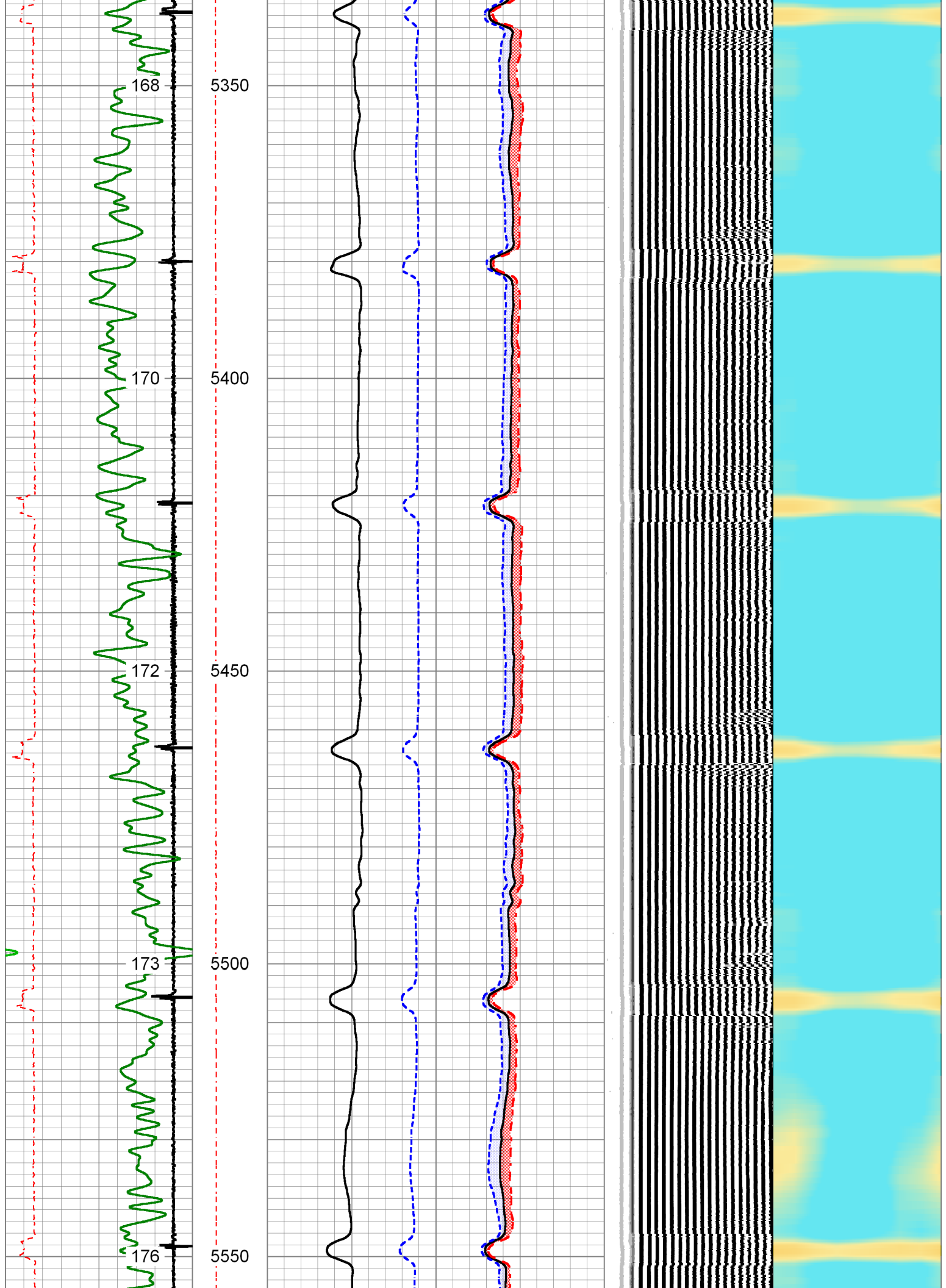


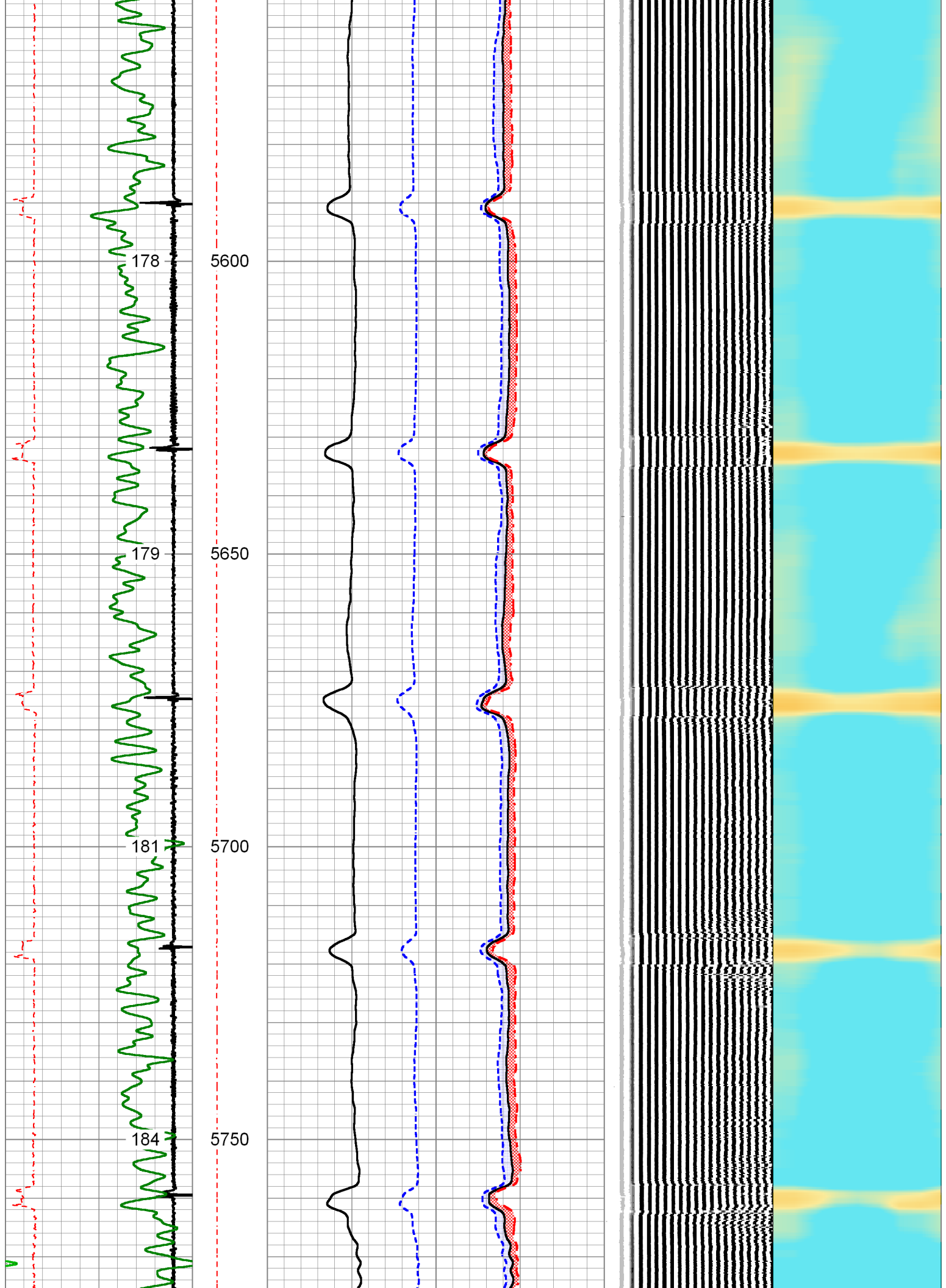


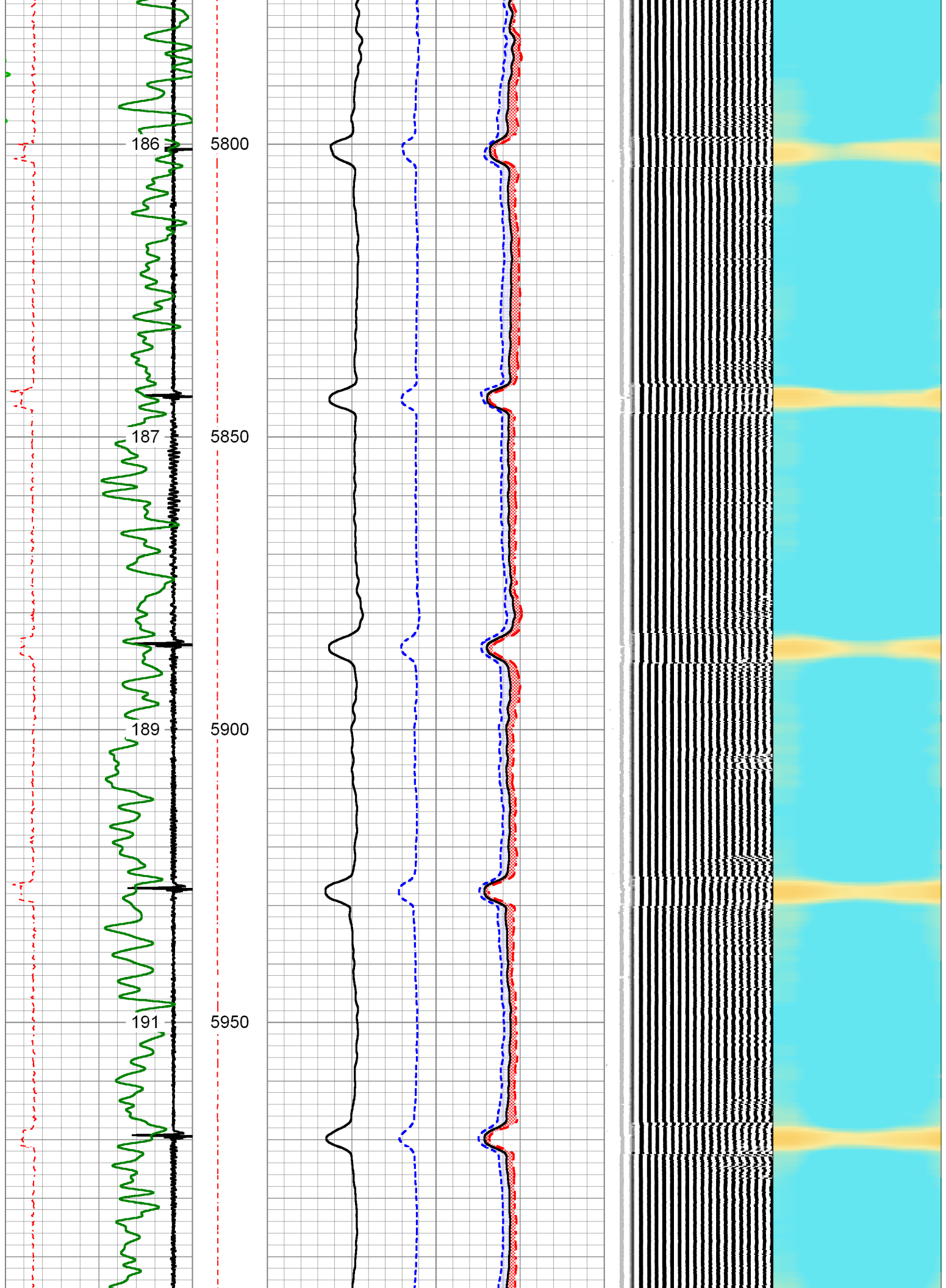


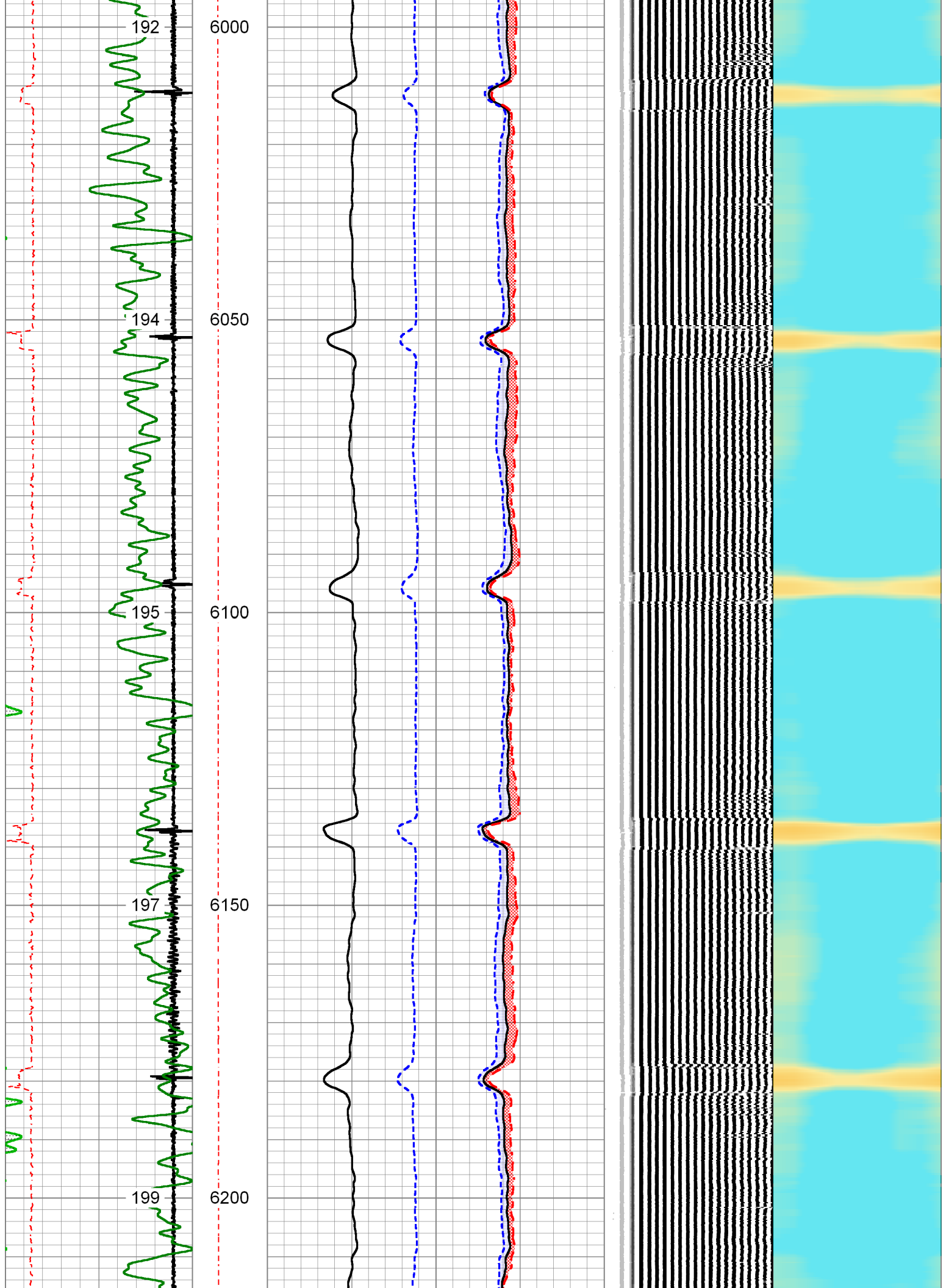


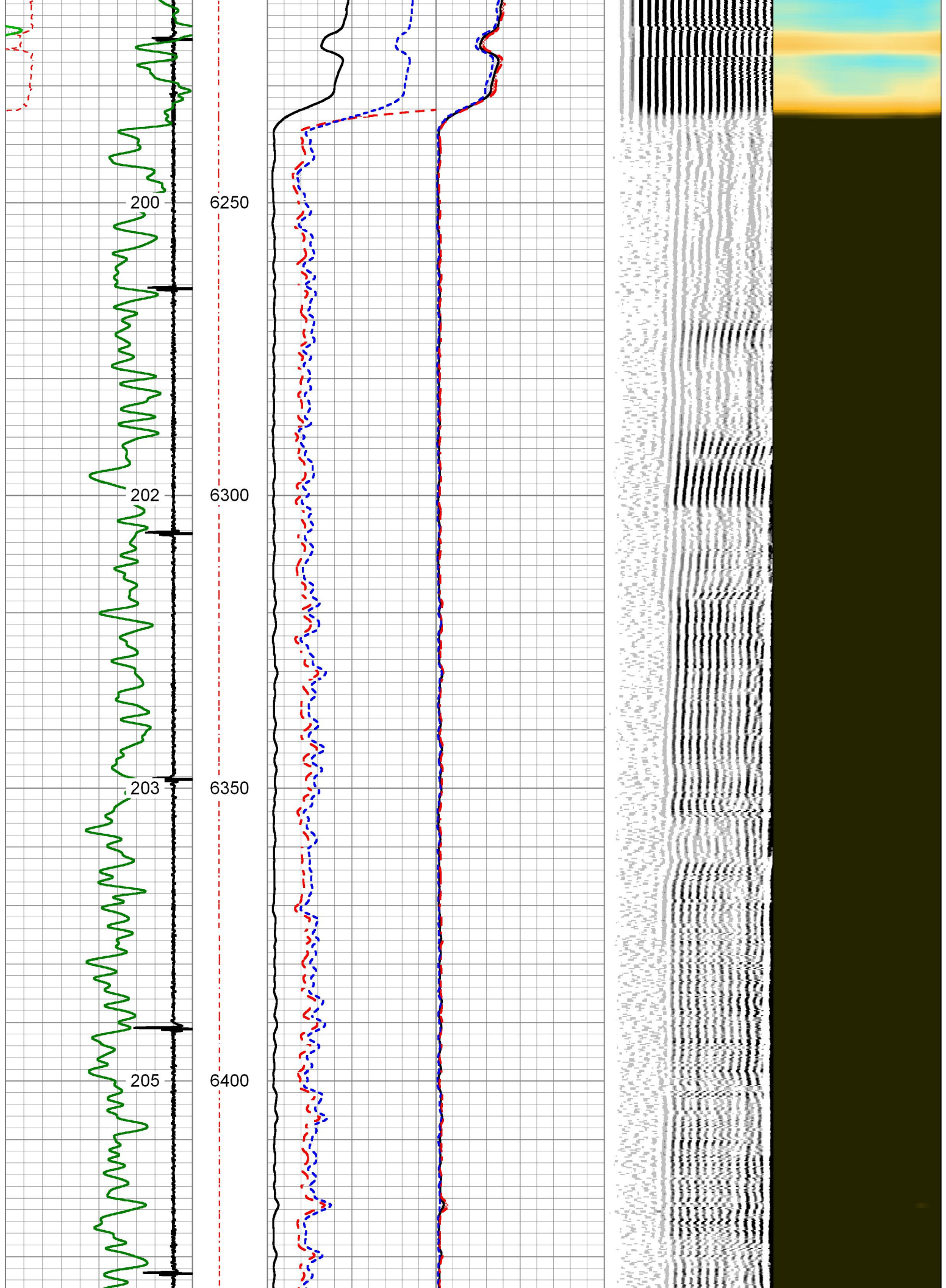


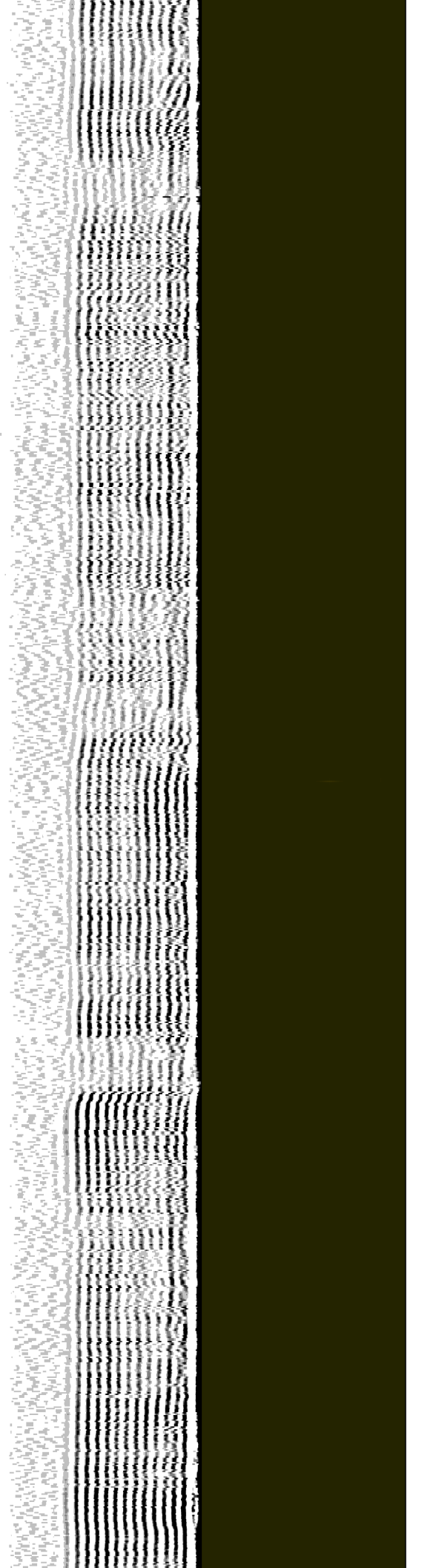
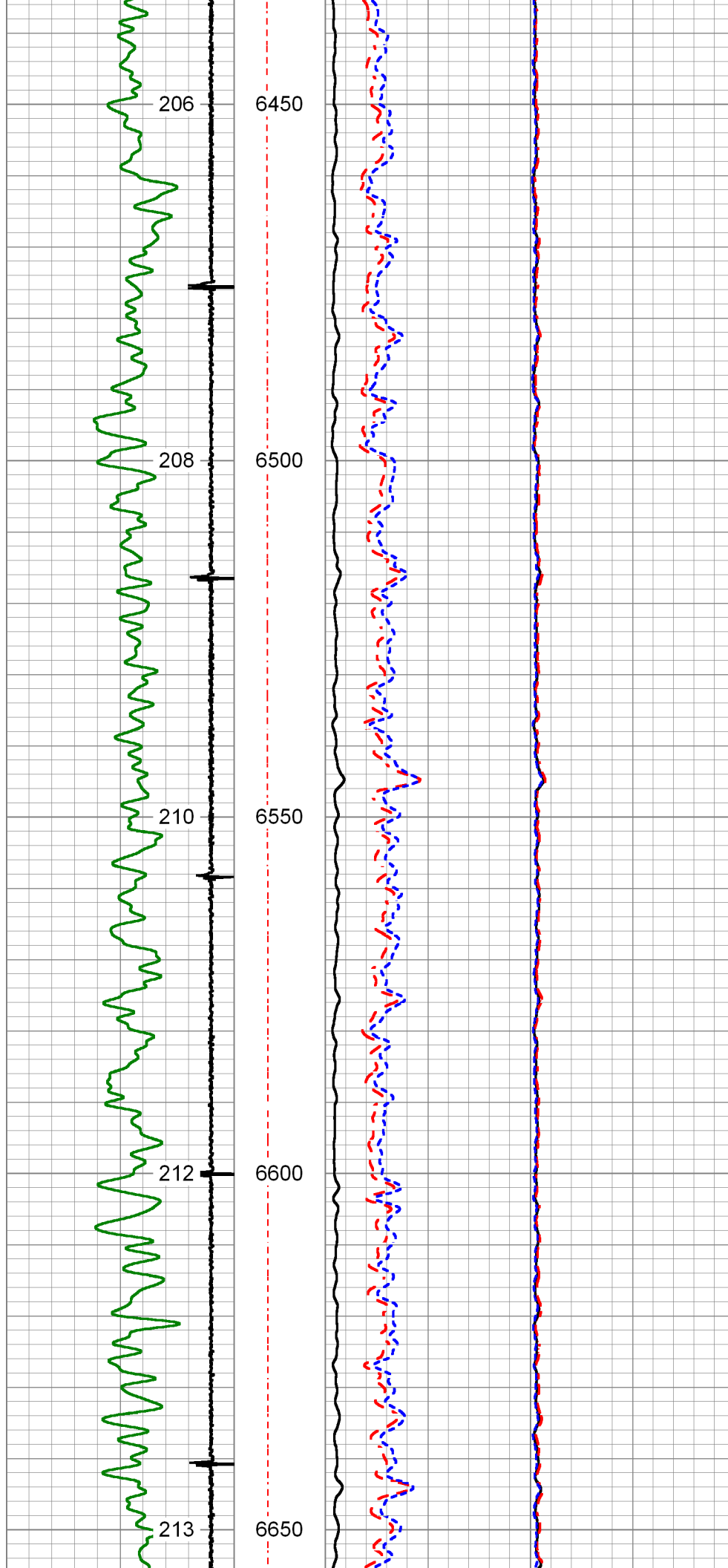


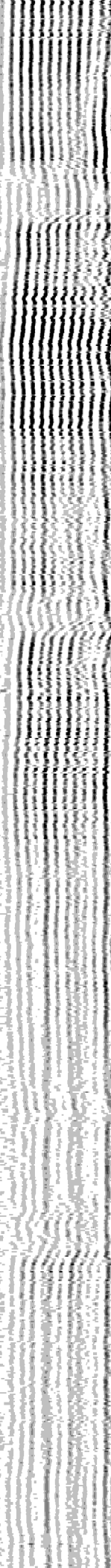
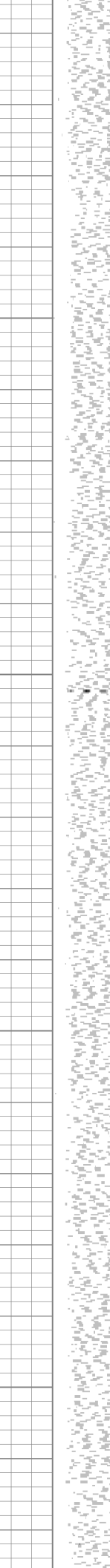
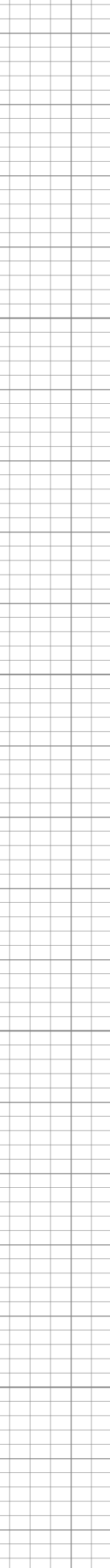
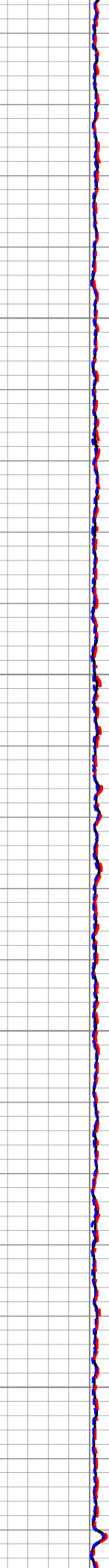
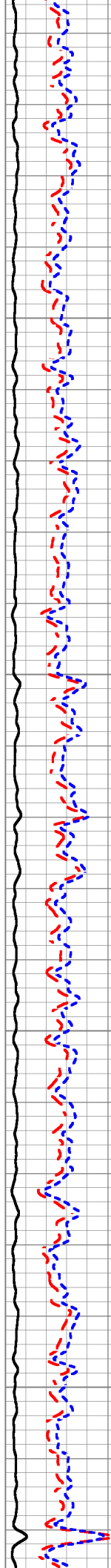
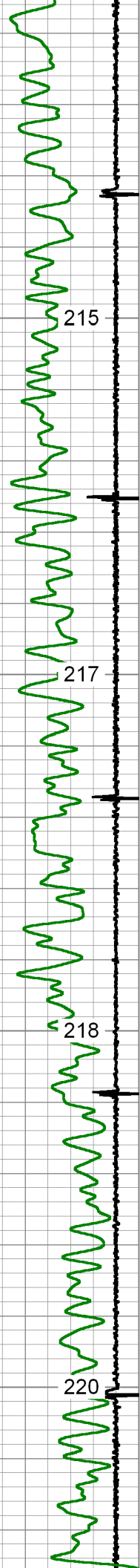


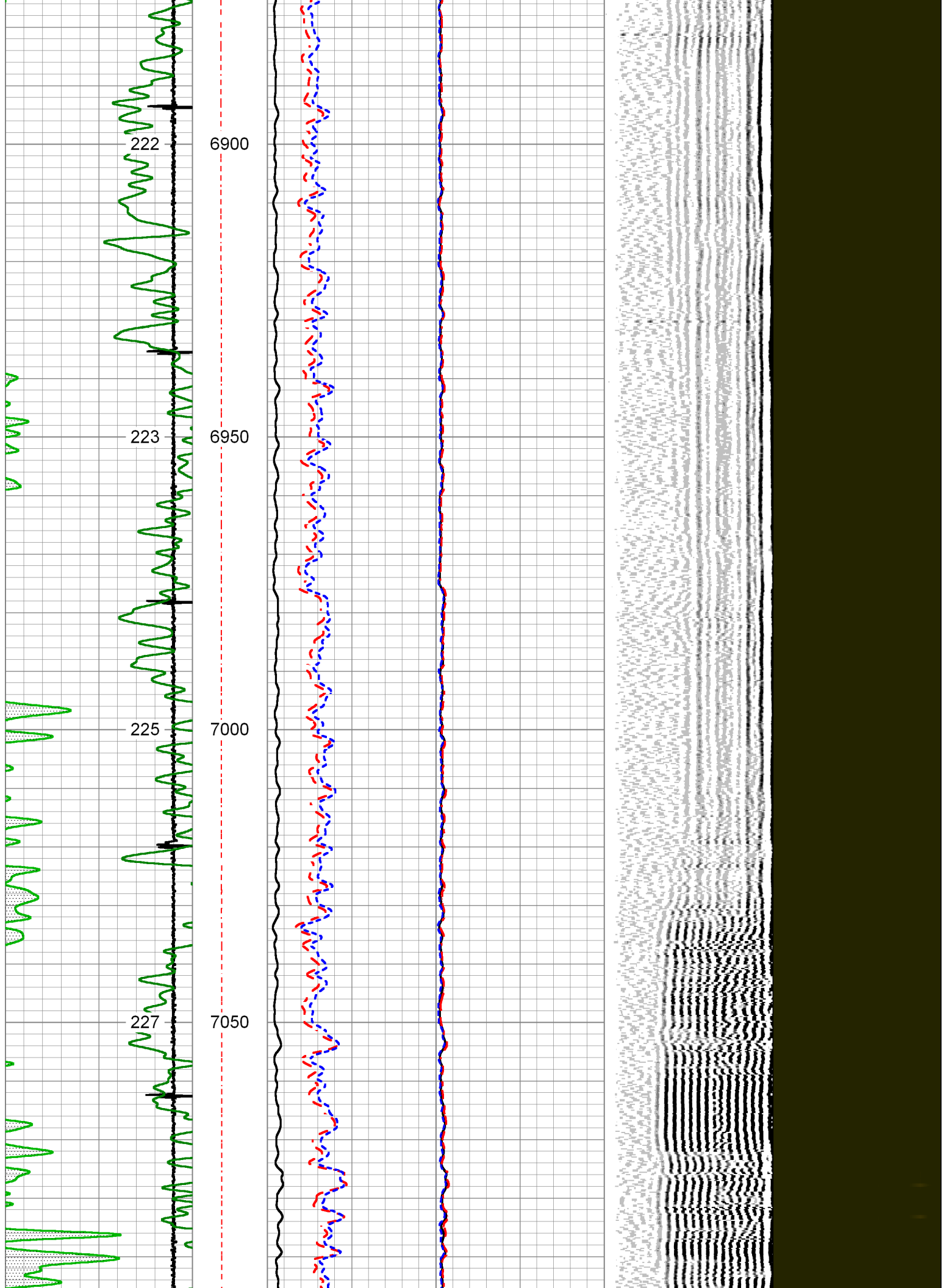


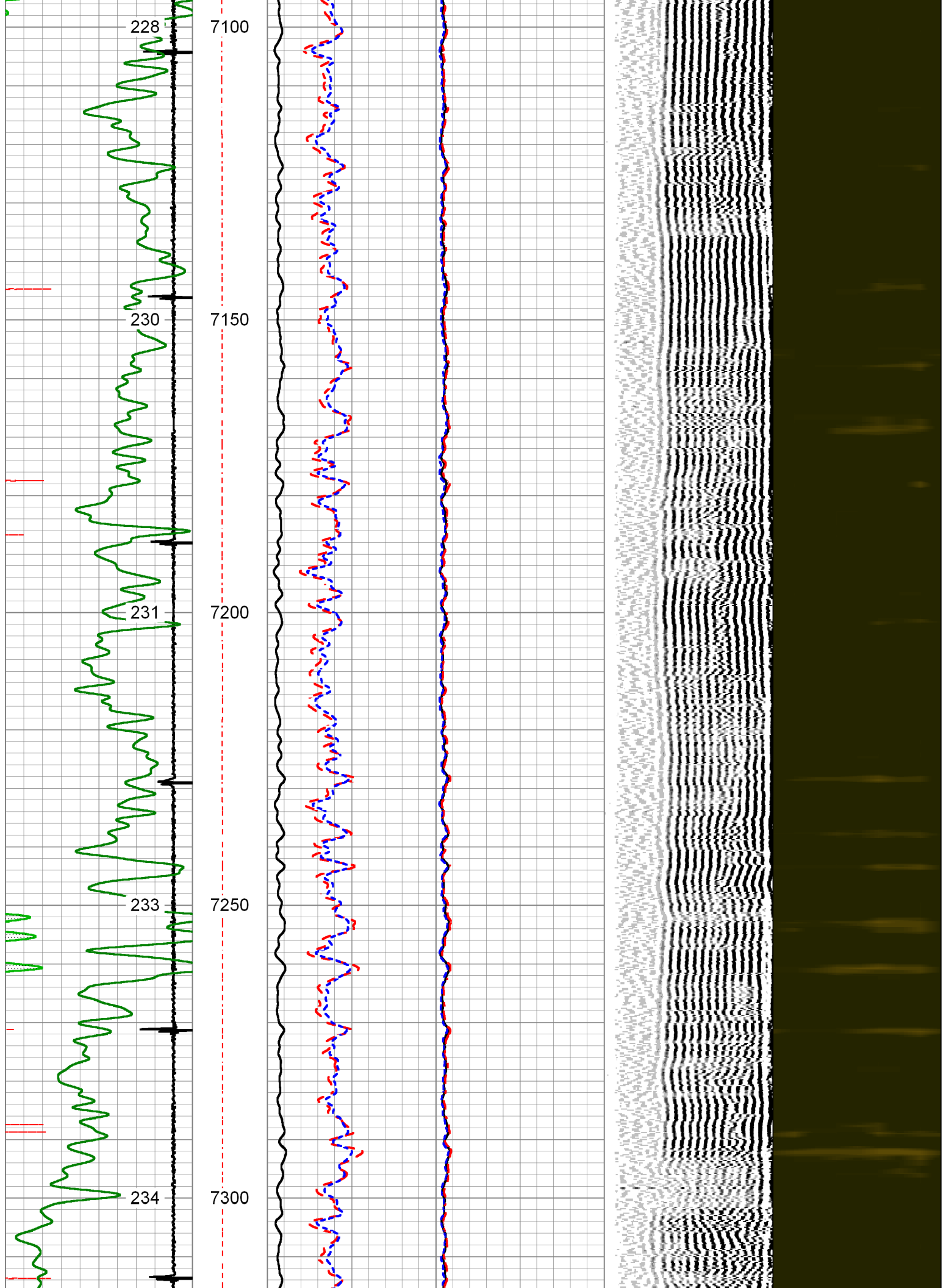


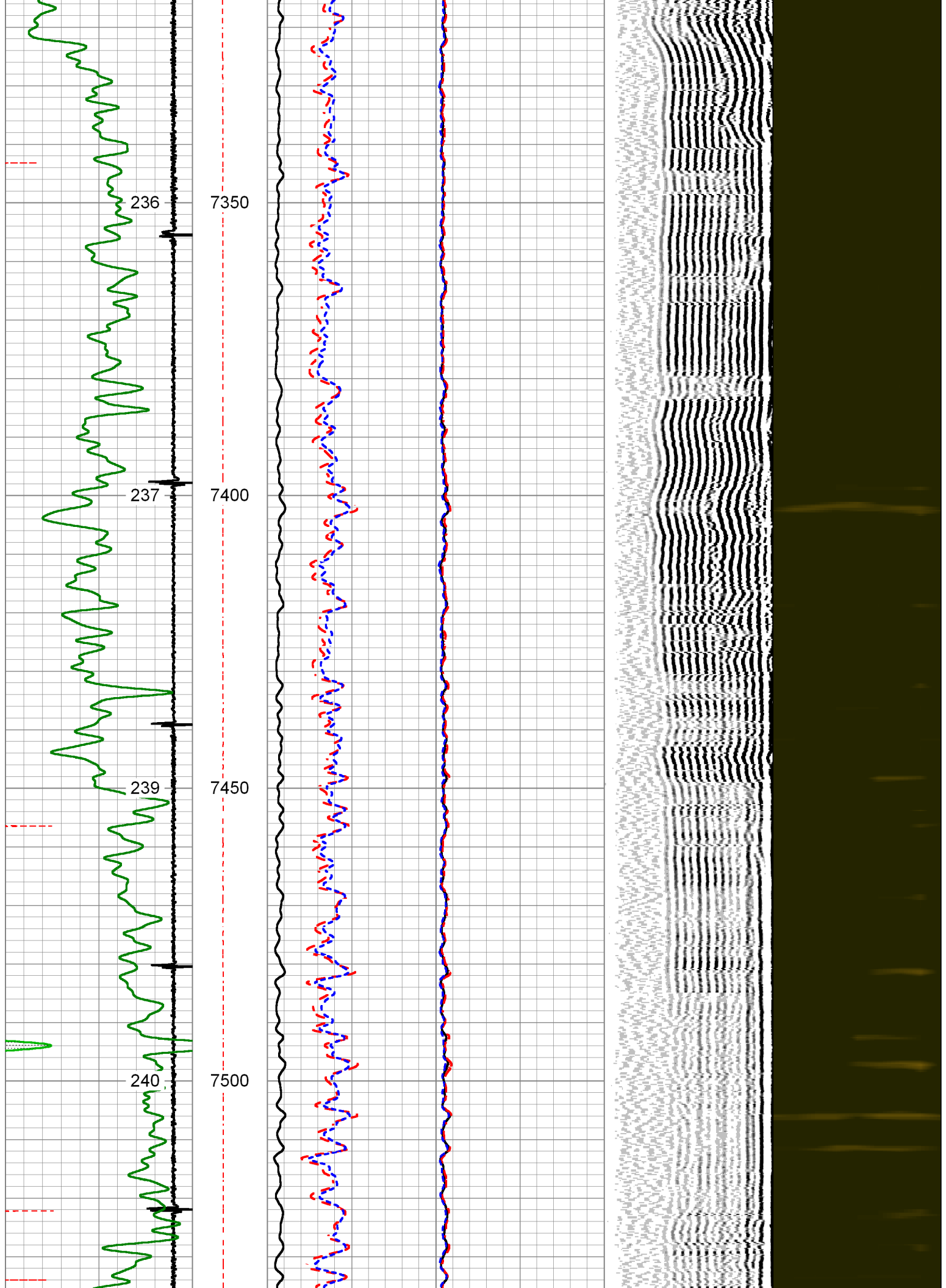


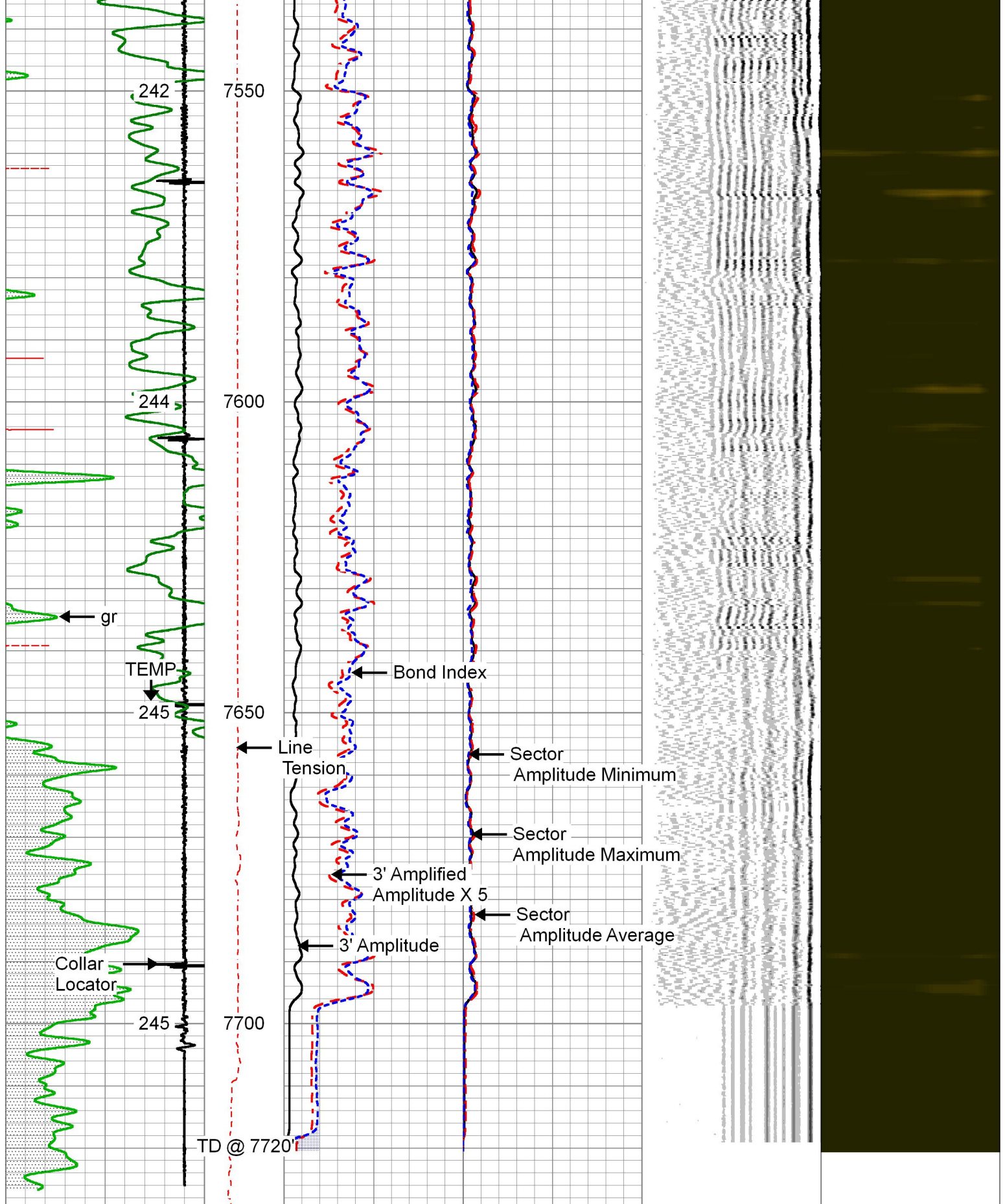













3' Travel Time	Line Tension	3' Amplitude (mV)	Sector Amplitude Average	200	VDL	1200	1	Sector Map	8
260 (usec)	0 (3000)	100	0	150			10		60
-9 Collar Locator		3' Amplified Amplitude X 5 (mV)	Sector Amplitude Maximum						
Gamma Ray		0 20							

0	(GAPI)	150	1	Bond Index	0	0	150
	Temp (degF)					Sector Amplitude Minimum	
						0	150

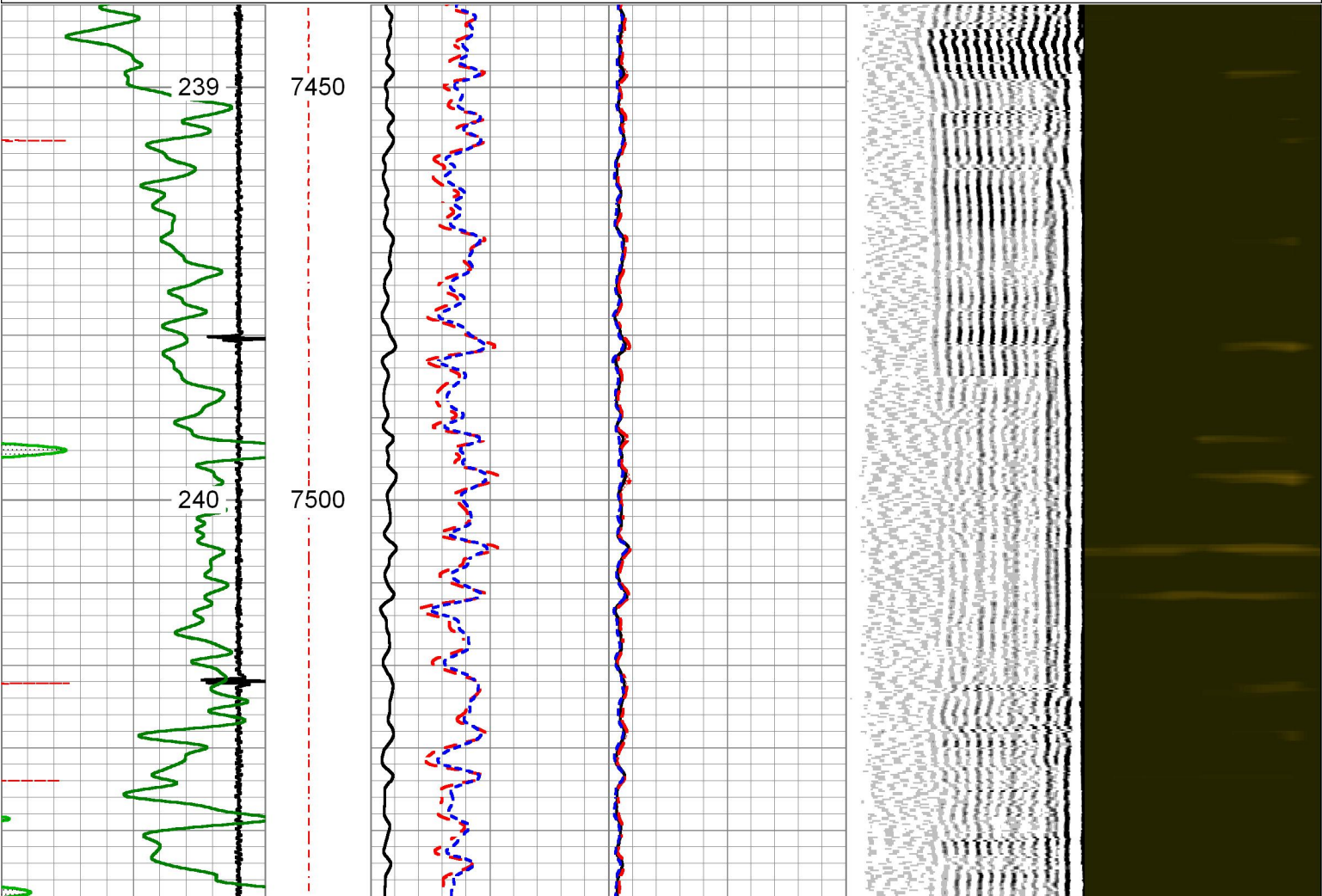


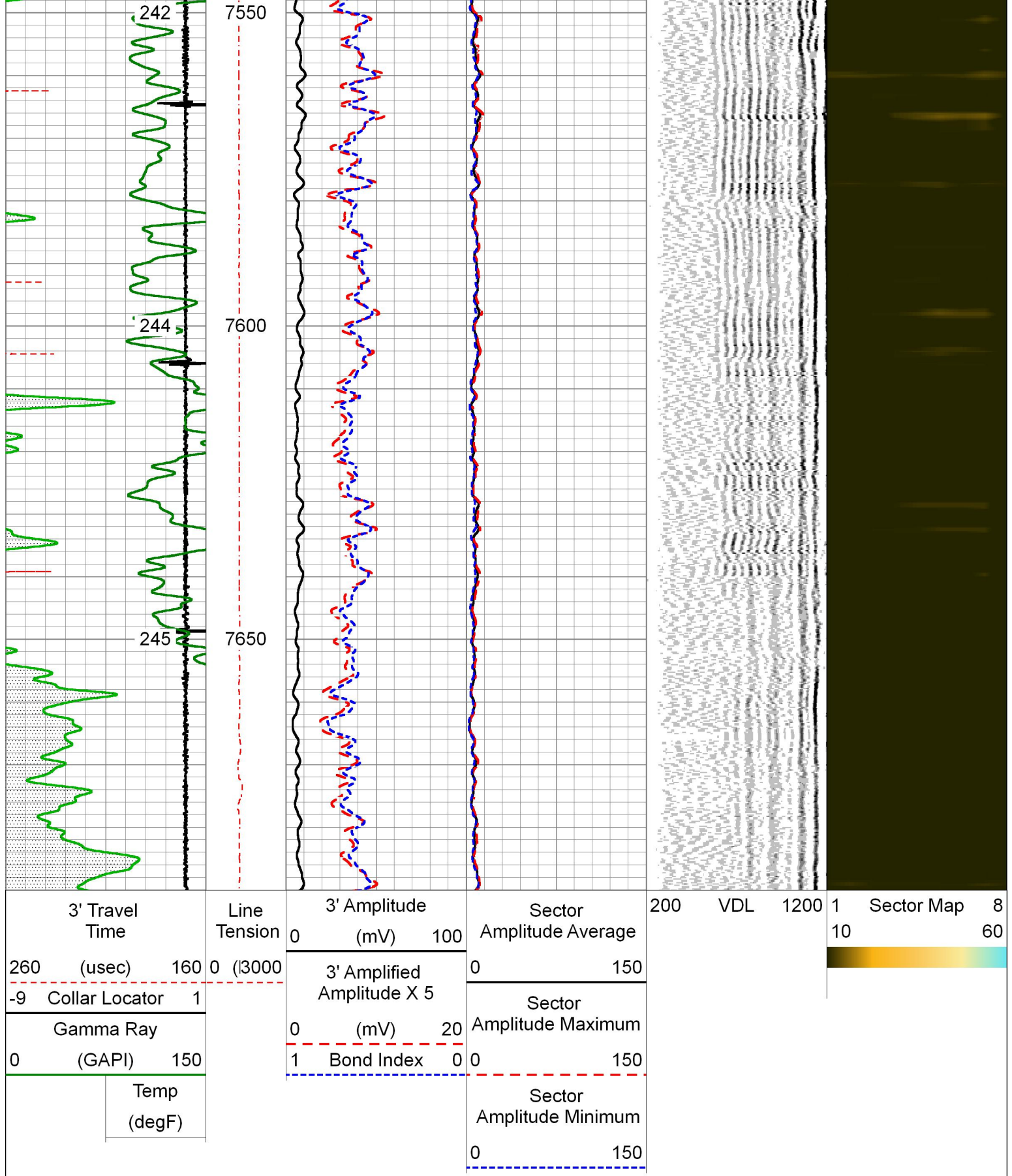
REPEAT SECTION

0 PSI ON WELL WHILE LOGGING

Database File	2-260270.db
Dataset Pathname	REPEAT
Presentation Format	pinr_scbl
Dataset Creation	Wed Dec 28 14:31:52 2016
Charted by	Depth in Feet scaled 1:240

3' Travel Time	Line Tension	3' Amplitude (mV)	Sector Amplitude Average	200	VDL	1200	1	Sector Map	8
260 (usec)	0 (3000)	0 100	0 150				10		60
-9 Collar Locator 1		3' Amplified Amplitude X 5							
Gamma Ray		0 (mV) 20	Sector Amplitude Maximum						
0 (GAPI) 150		1 Bond Index 0	0 150						
Temp (degF)			Sector Amplitude Minimum						
			0 150						





Calibration Report

Database File 2-260270.db
Dataset Pathname MAIN
Dataset Creation Wed Dec 28 14:35:03 2016

Gamma Ray Calibration Report

Serial Number: 070238

Serial Number: 070238
Tool Model: 275 Probe GR-CCL
Performed: Mon Dec 19 09:12:42 2016

Calibrator Value: 320.0 GAPI
Background Reading: 0.3 cps
Calibrator Reading: 1.5 cps
Sensitivity: 0.8500 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: 141168
Tool Model: 275 Probe w Temp New Mod

Calibration Casing Diameter: 4.500 in
Calibration Depth: -1139.595 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	1.423	1.400	81.196	56.089	1.400
CAL	1.511	1.510				
5'	0.000	1.337	1.400	81.196	59.674	1.400
SUM						
S1	0.000	1.518	0.000	100.000	65.897	-0.000
S2	0.000	1.585	0.000	100.000	63.077	-0.000
S3	0.000	1.563	0.000	100.000	63.991	-0.000
S4	0.000	1.497	0.000	100.000	66.793	-0.000
S5	0.000	1.443	0.000	100.000	69.305	-0.000
S6	0.000	1.376	0.000	100.000	72.677	-0.000
S7	0.000	1.371	0.000	100.000	72.964	-0.000
S8	0.000	1.439	0.000	100.000	69.485	-0.000

Temperature Calibration Report

Serial Number: 141168
Tool Model: 275 Probe w Temp New Mod
Performed: Wed Dec 14 06:15:46 2016

	Reference		Reading	
Low Reference:	0.00	degF	0.00	degF
High Reference:	1.00	degF	1.00	degF

Gain: 0.78
Offset: 8.00
Delta Spacing: 1



Company: KERR-MCGEE OIL & GAS ONSHORE
Well: LUDWIG 2-5 2
Field: WATTENBERG
County: WELD
State: CO
Country: USA