

# CIRCUMFERENTIAL ACOUSTIC SCANNING TOOL

## CASING INSPECTION

<<< Fold Here >>>	
<p>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.</p>	<p>Comments</p> <p>GR-CBL-CAST RAN IN COMBINATION</p> <p>LOGS CORRELATED TO J-W CBL DATED 12/09/2010</p> <p>TOOLS RAN IN 5.5" 15.5 LB CASING</p> <p>CAST CONFIG: 3 5/8" HEAD, BLACK 450KHz TRANSDUCER, CIM, 72 SHOTS, 12 SPF</p> <p>***THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES***</p>

Service Ticket No.	903829094	API No.	05075071820000	PGM Ver	WARRIOR 8.0
The Well Name, Location, Borehole Description, and / or Cementing Data Furnished by Client					
EQUIPMENT DATA					
GAMMA		CBL		CAST	
Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	12105786	Serial No.	12091451	Serial No.	12158270
Model No.	TTTCU-002	Model No.	CBL-M	Model No.	CAST-M
Diameter	1.69"	Diameter	2.75"	Diameter	3.125"
LOGGING DATA					
General Data					
Pass	Depths		Well Head	Speed	Logging Run Comments
No	From	To	Pressure	Ft/Min	



ONE	5100'	SURFACE	0	15			
	GAMMA		THICKNESS		AMP		
Pass	Scale		Scale		Scale		Scale
No.	L	R	L	R	L	R	L L
ONE	0	150	0.225	0.325	0	100	
DIRECTIONAL INFORMATION							
Maximum Deviation			deg. @		KOP		

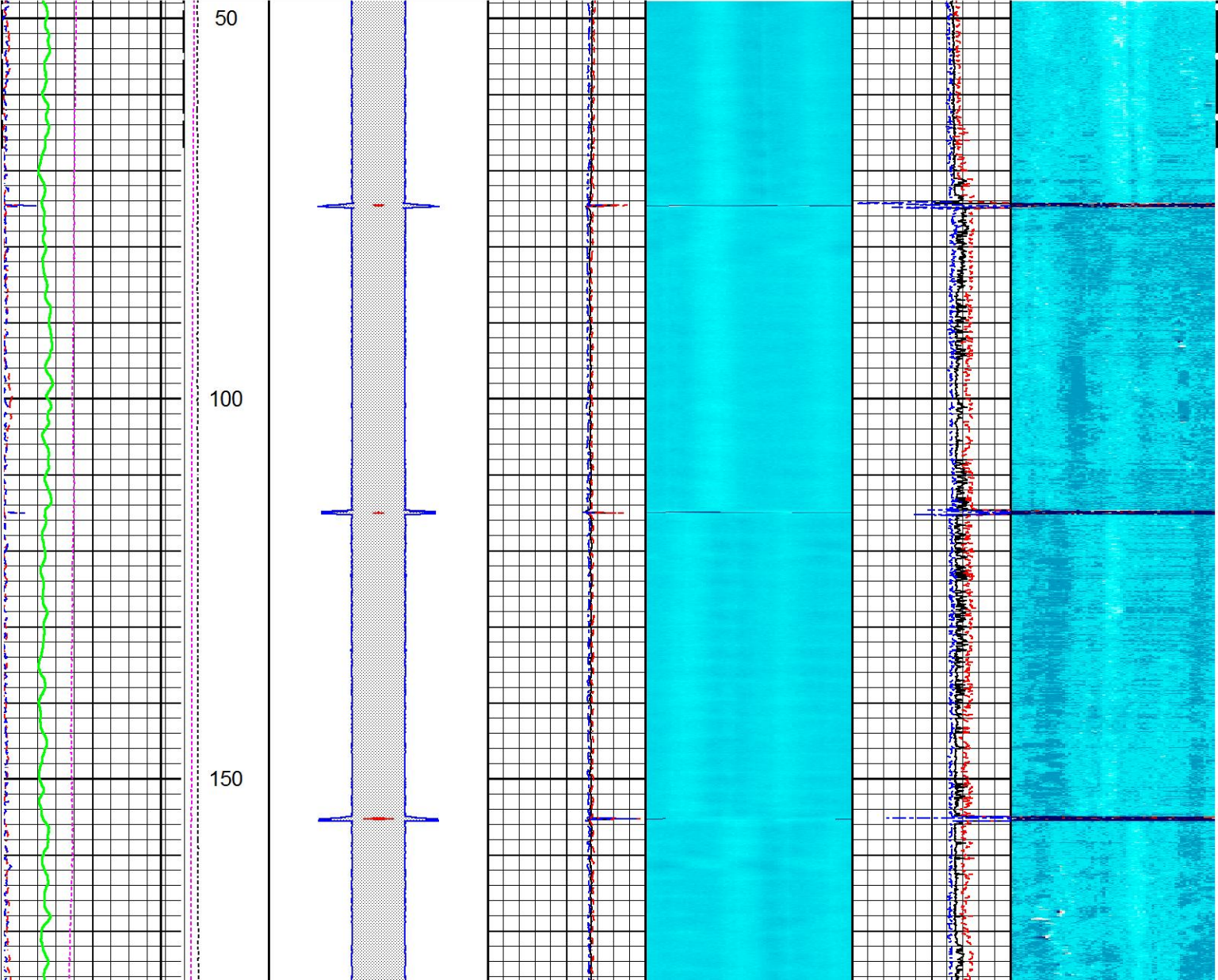
MAIN PASS

HALLIBURTON

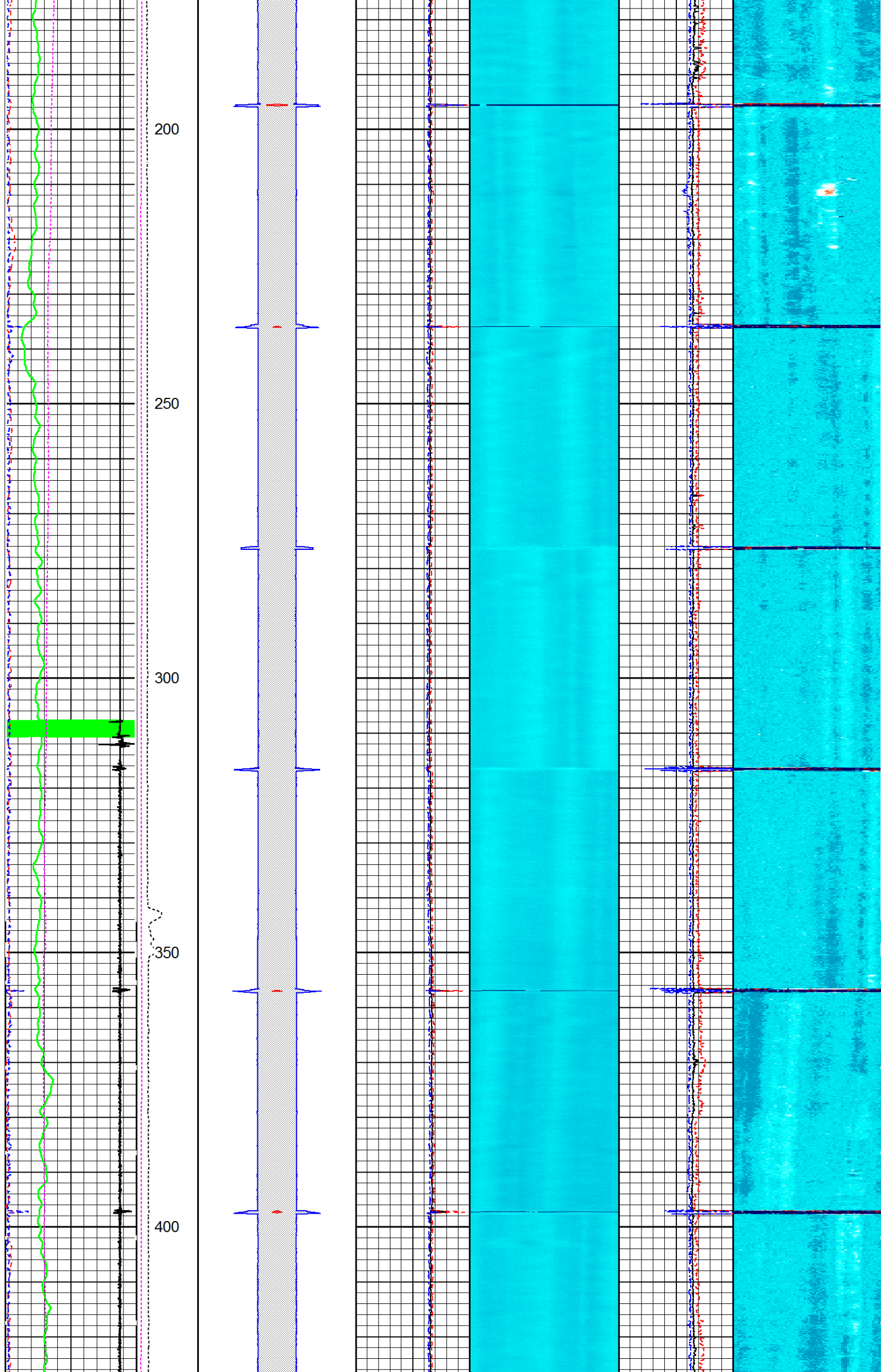
5" = 100'

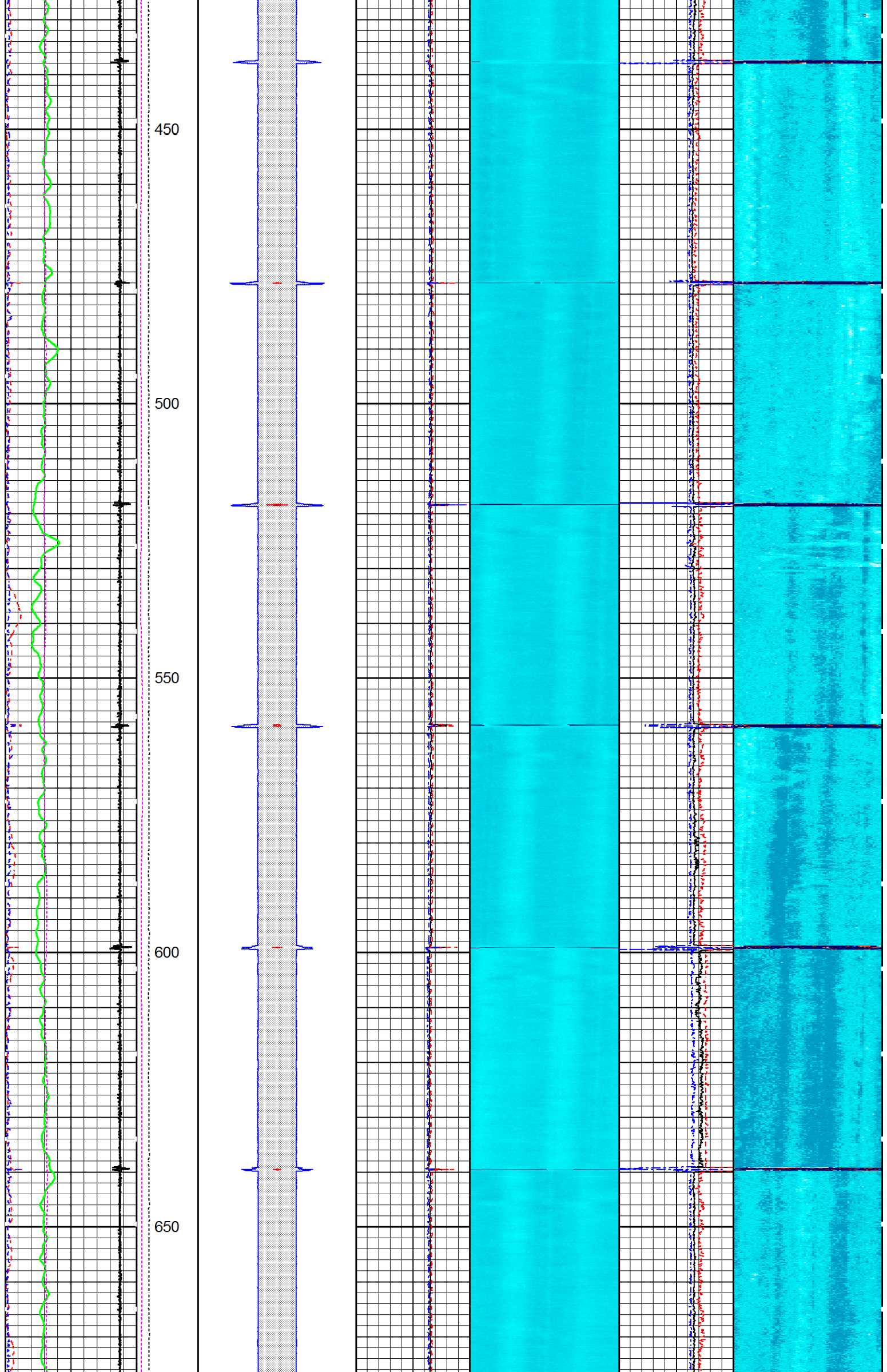
Database File	ecgs_gillham_6.db
Dataset Pathname	MAIN_CAST
Presentation Format	1_EXTR~3
Dataset Creation	Wed Feb 08 11:56:45 2017
Charted by	Depth in Feet scaled 1:240

0 GR (GAPI)150	LTEN	CID	CID	IR_AVG	0 IR 360	THK_AV	0 THICKNESS 360
0 ECC (in) 1		(in)	(in)	2.2 (in) 2.7	2.2 2.7	0.2 (in) 0.3	0.2 0.3
0 OVAL (in) 0.2	0 (2500	7.1 5.1 5.1 7.1		IR_MAX		THK_MAX	
CCL	RB	COD	COD	2.2 (in) 2.7		0.2 (in) 0.3	
-1 DEV (deg) 9	(deg)	(in)	(in)	IR_MIN		THK_MIN	
	-1 359	7.1 5.1 5.1 7.1		2.2 (in) 2.7		0.2 (in) 0.3	

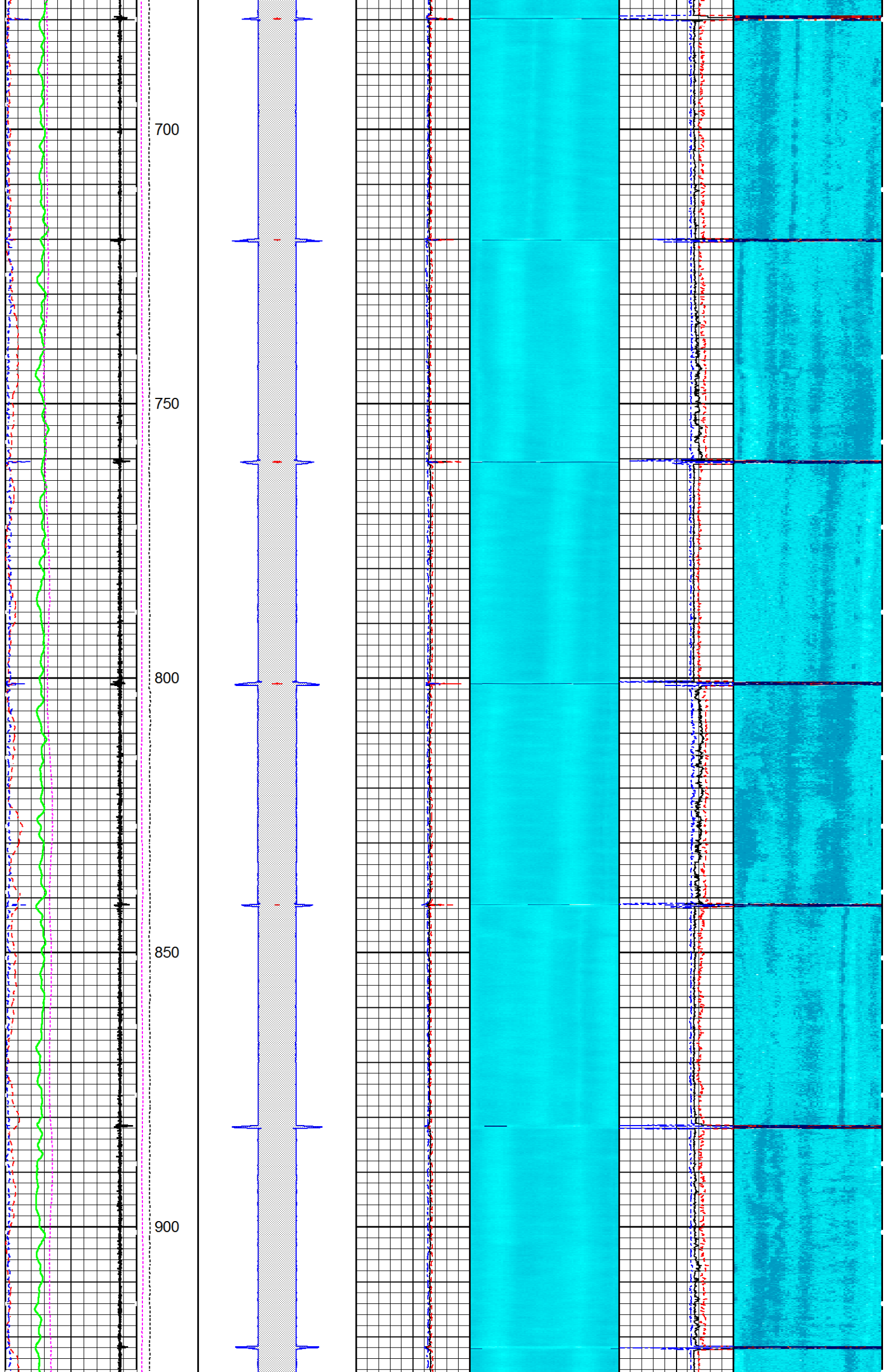


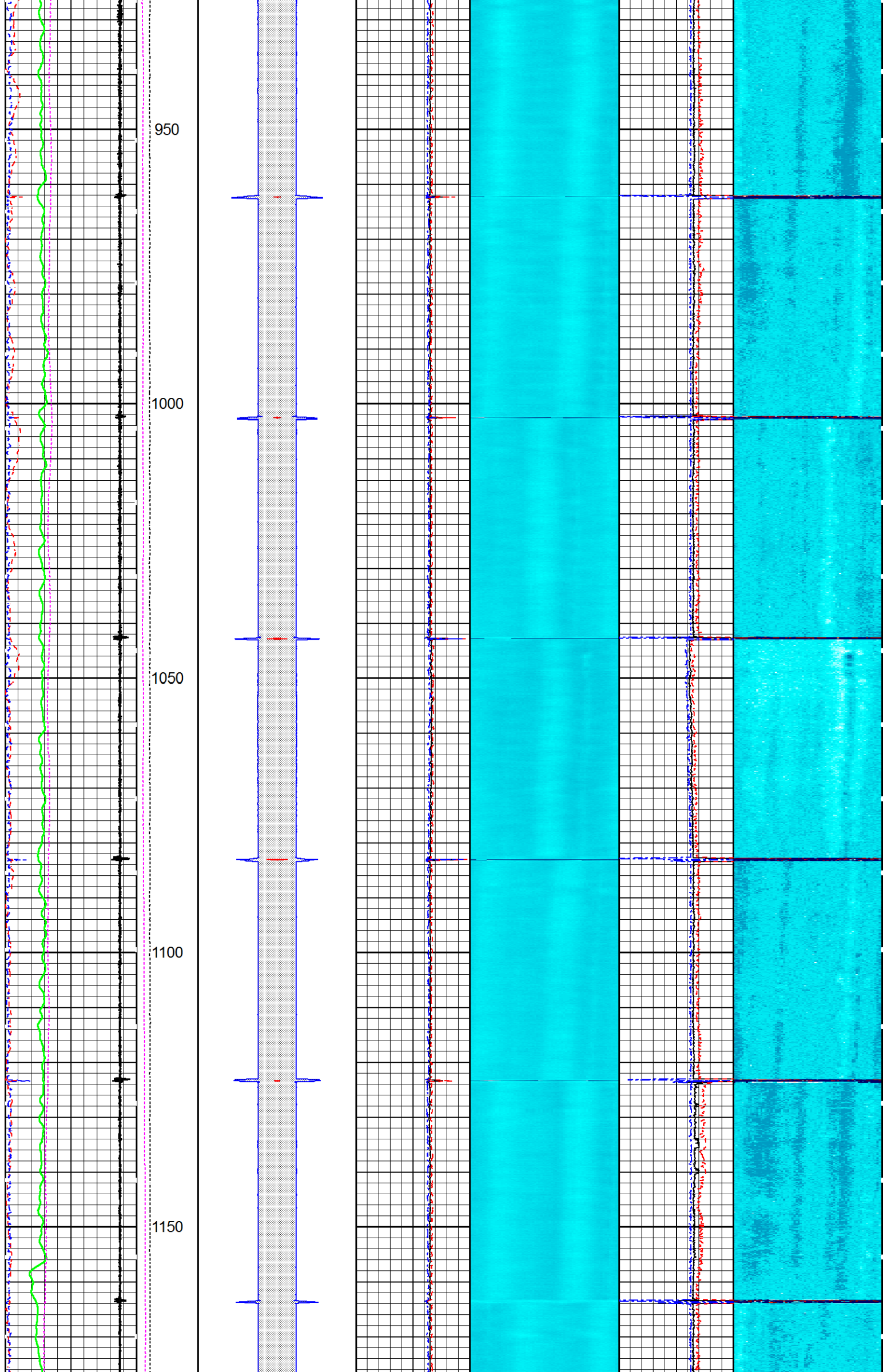




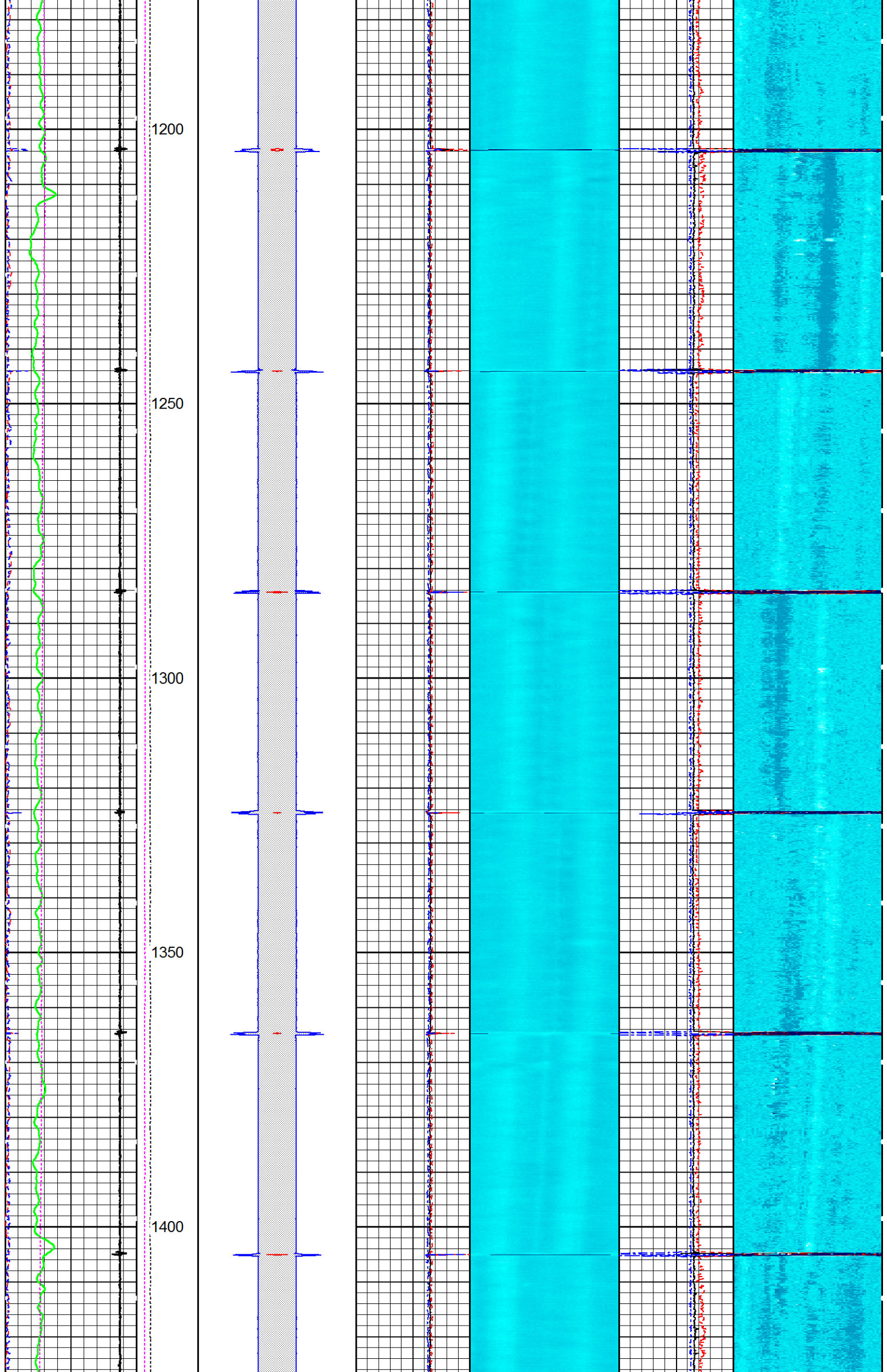


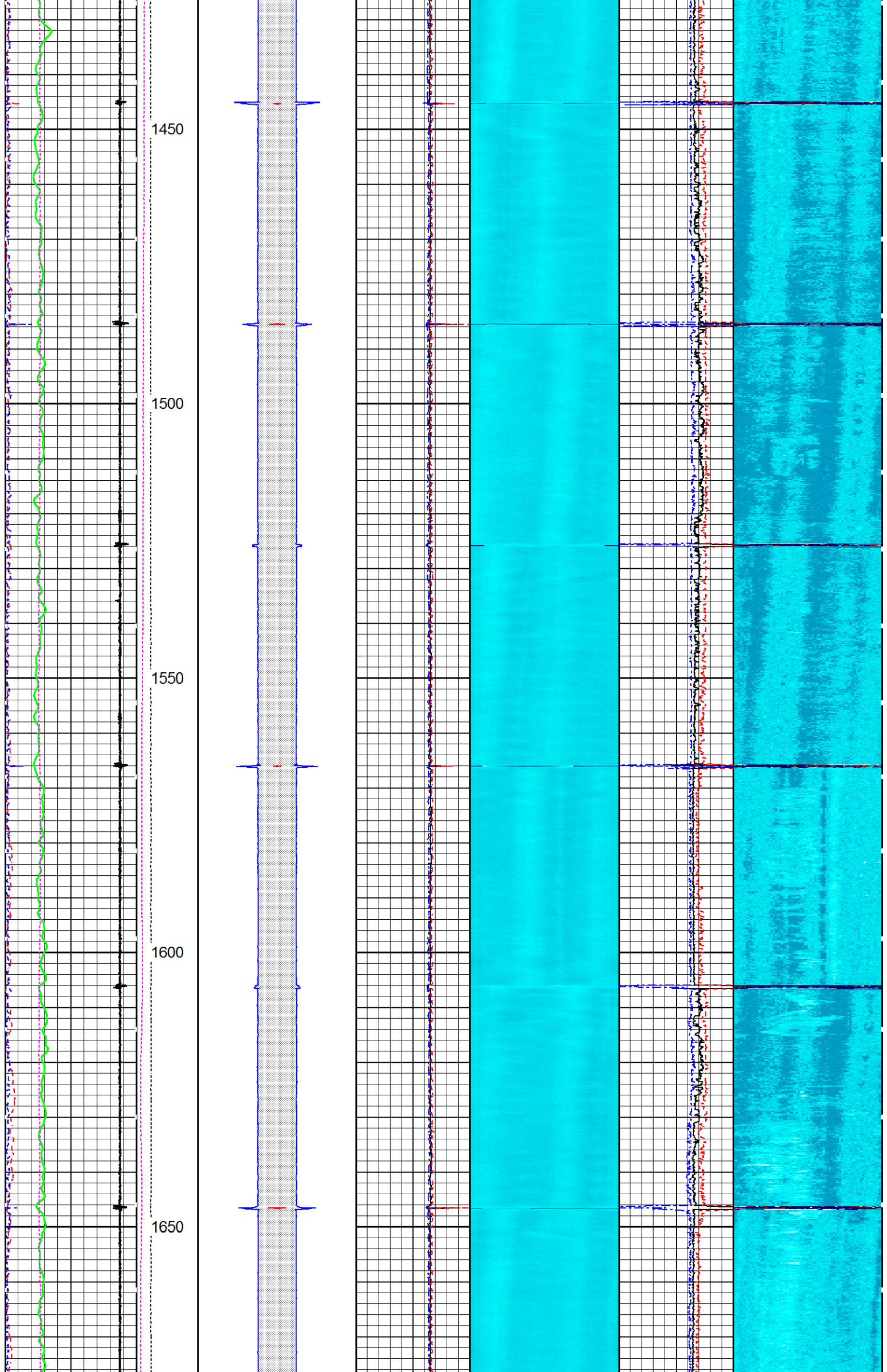




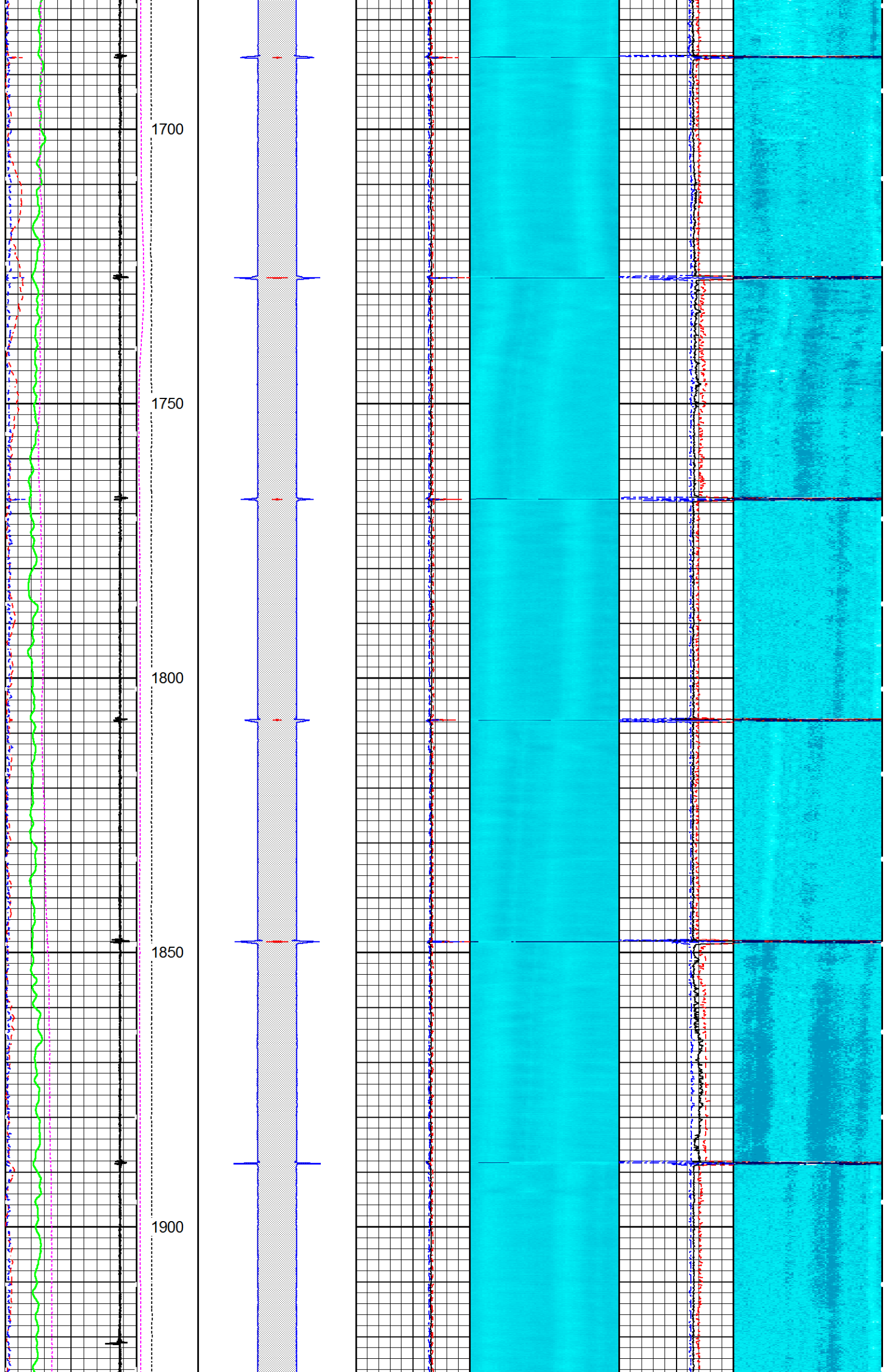


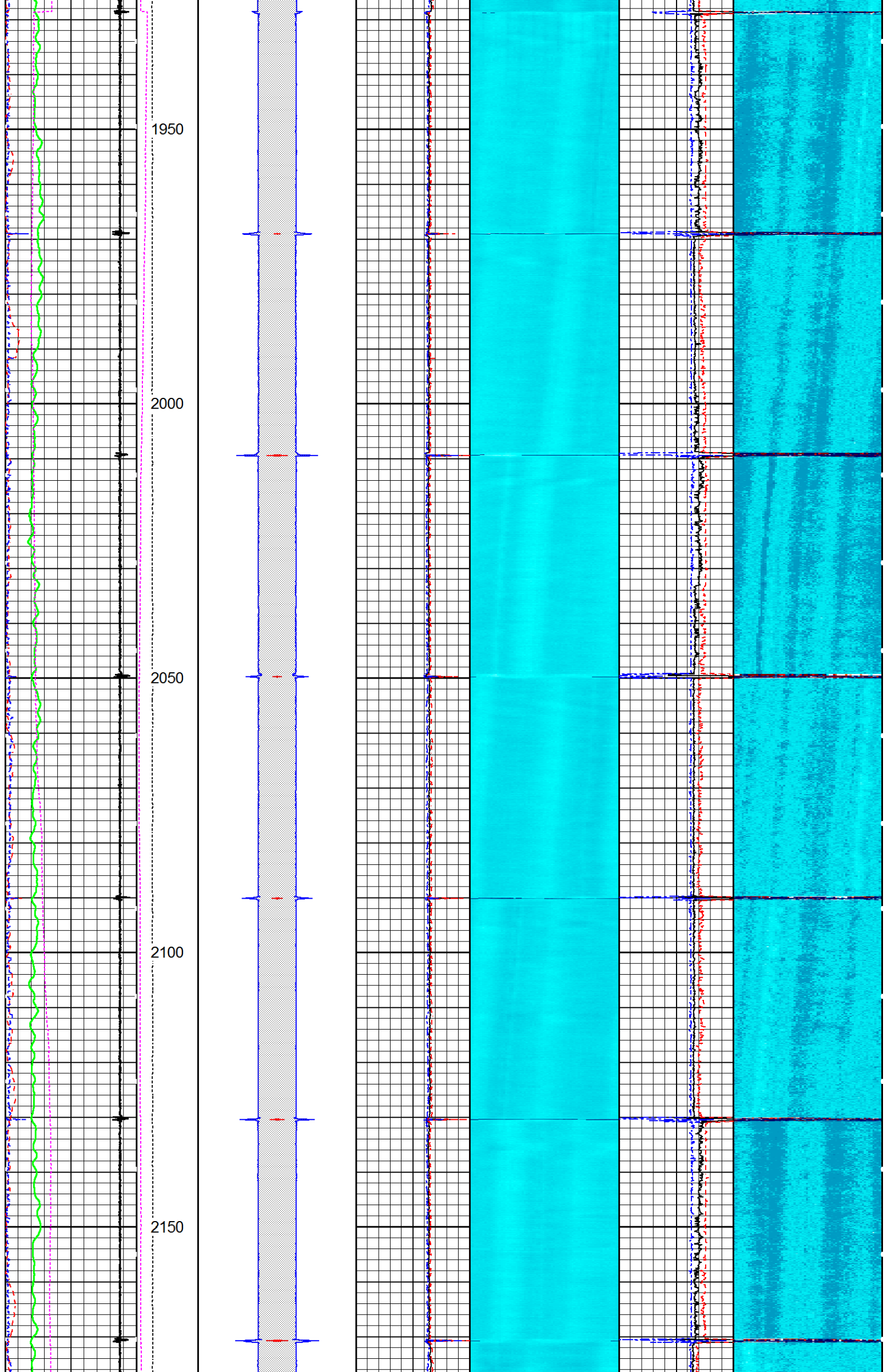




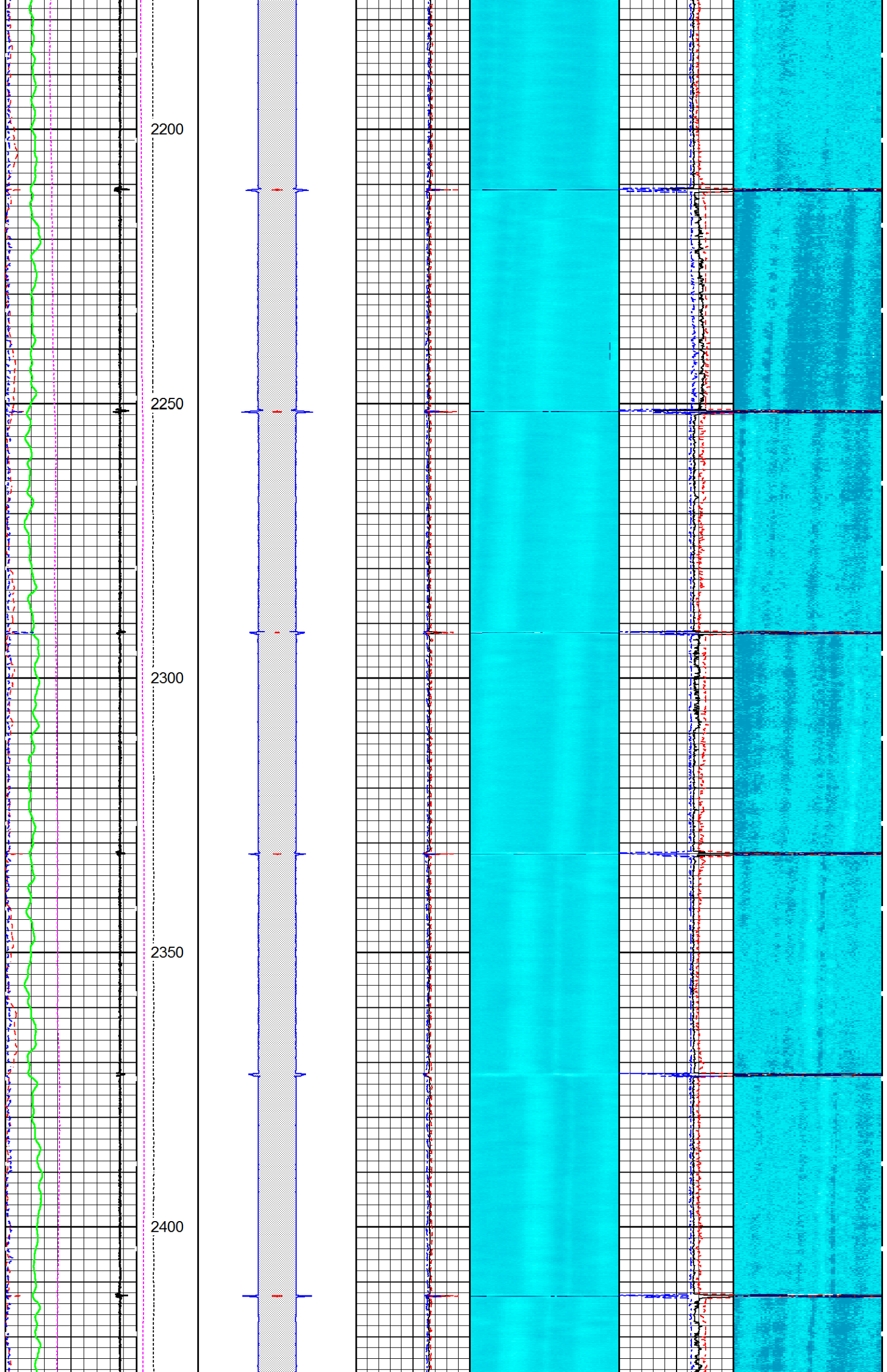


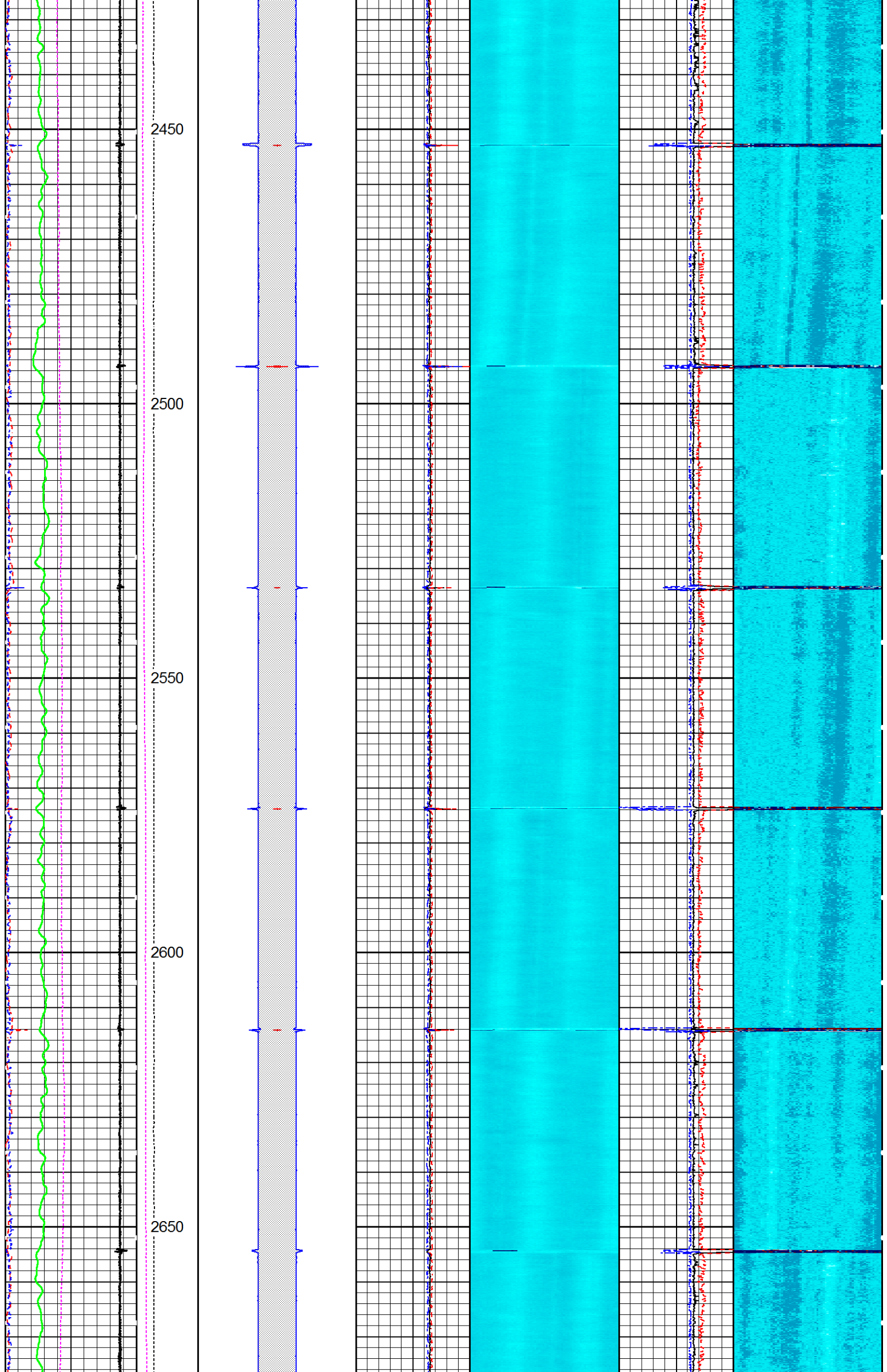




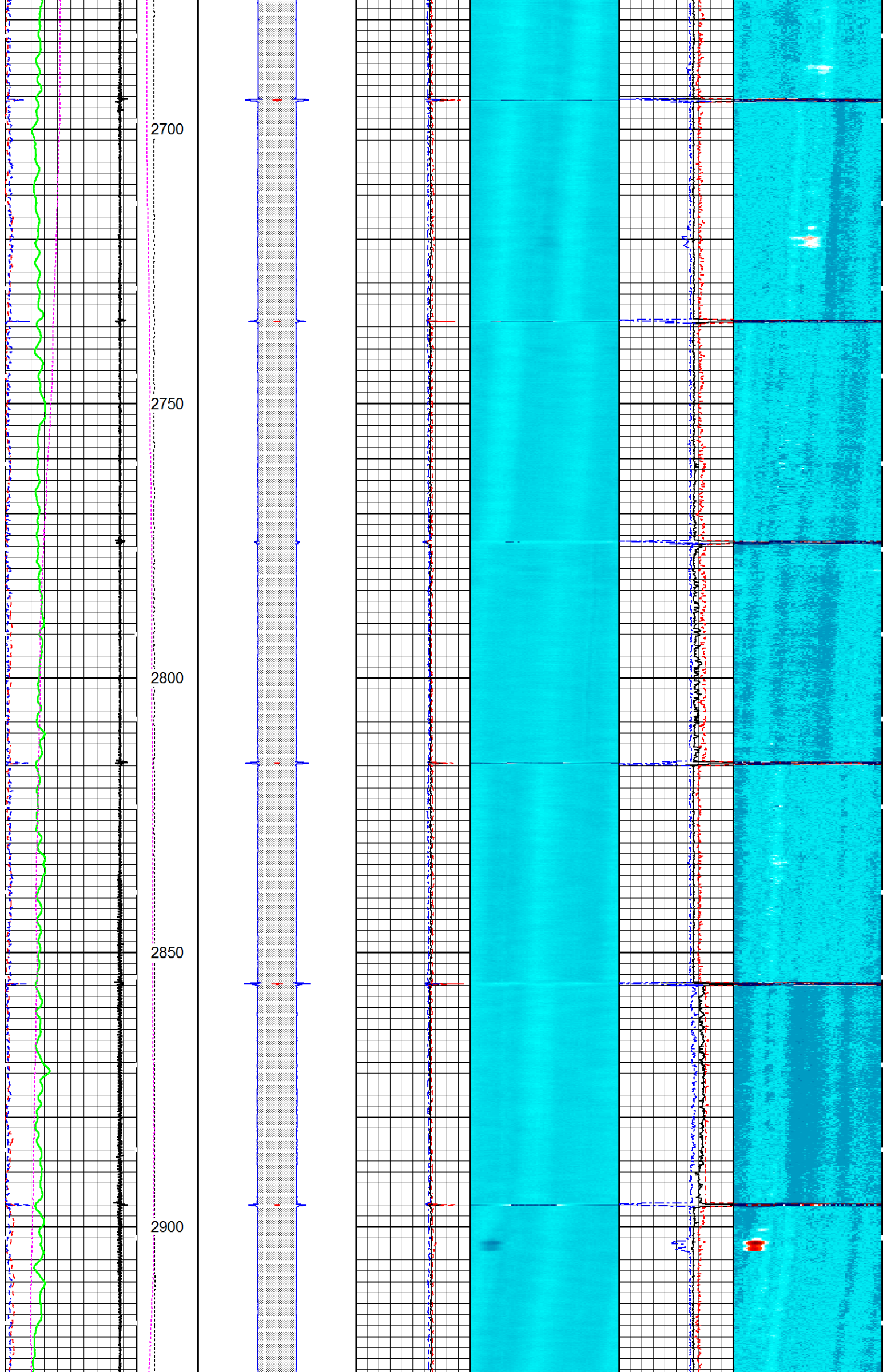


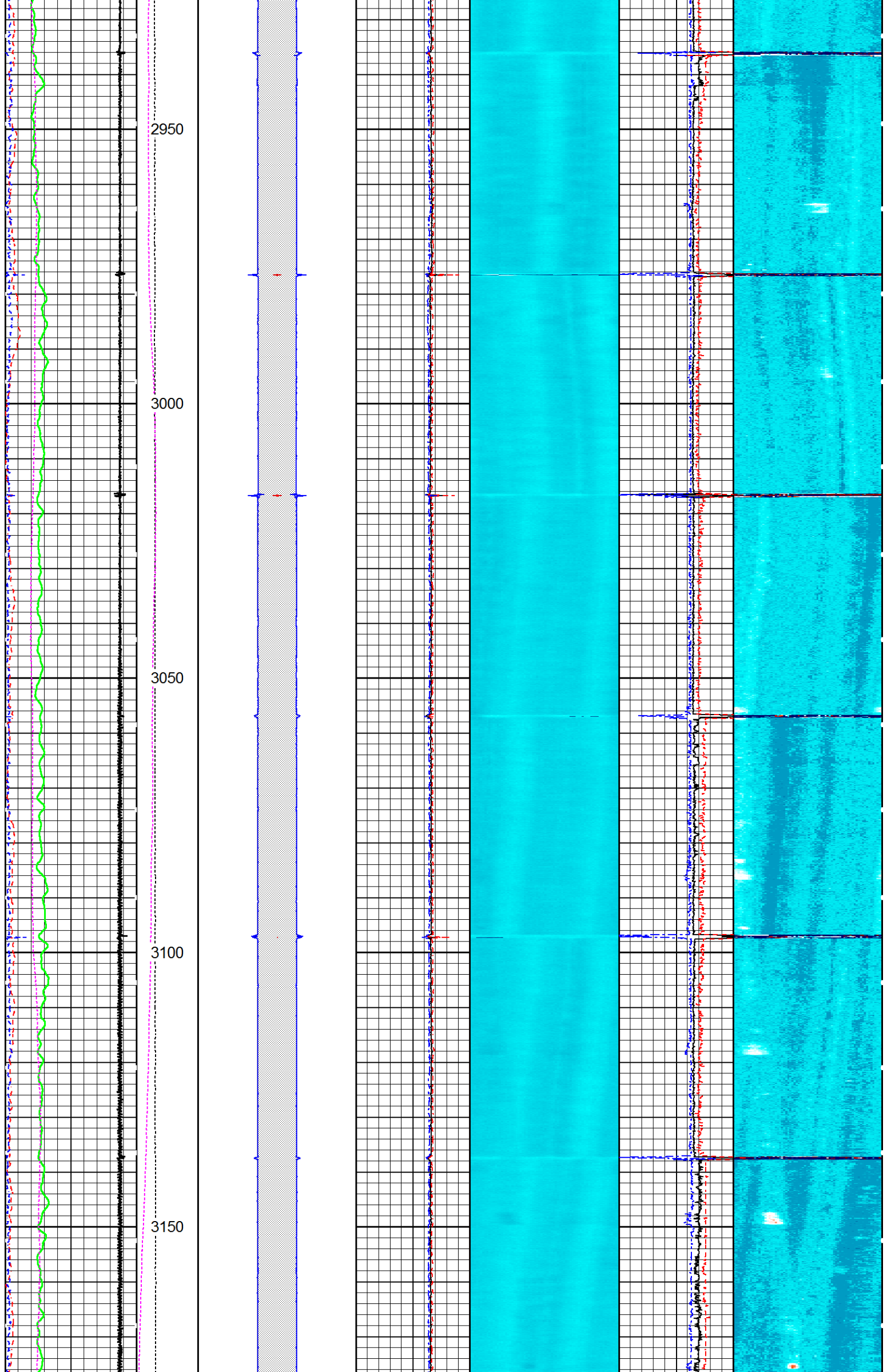




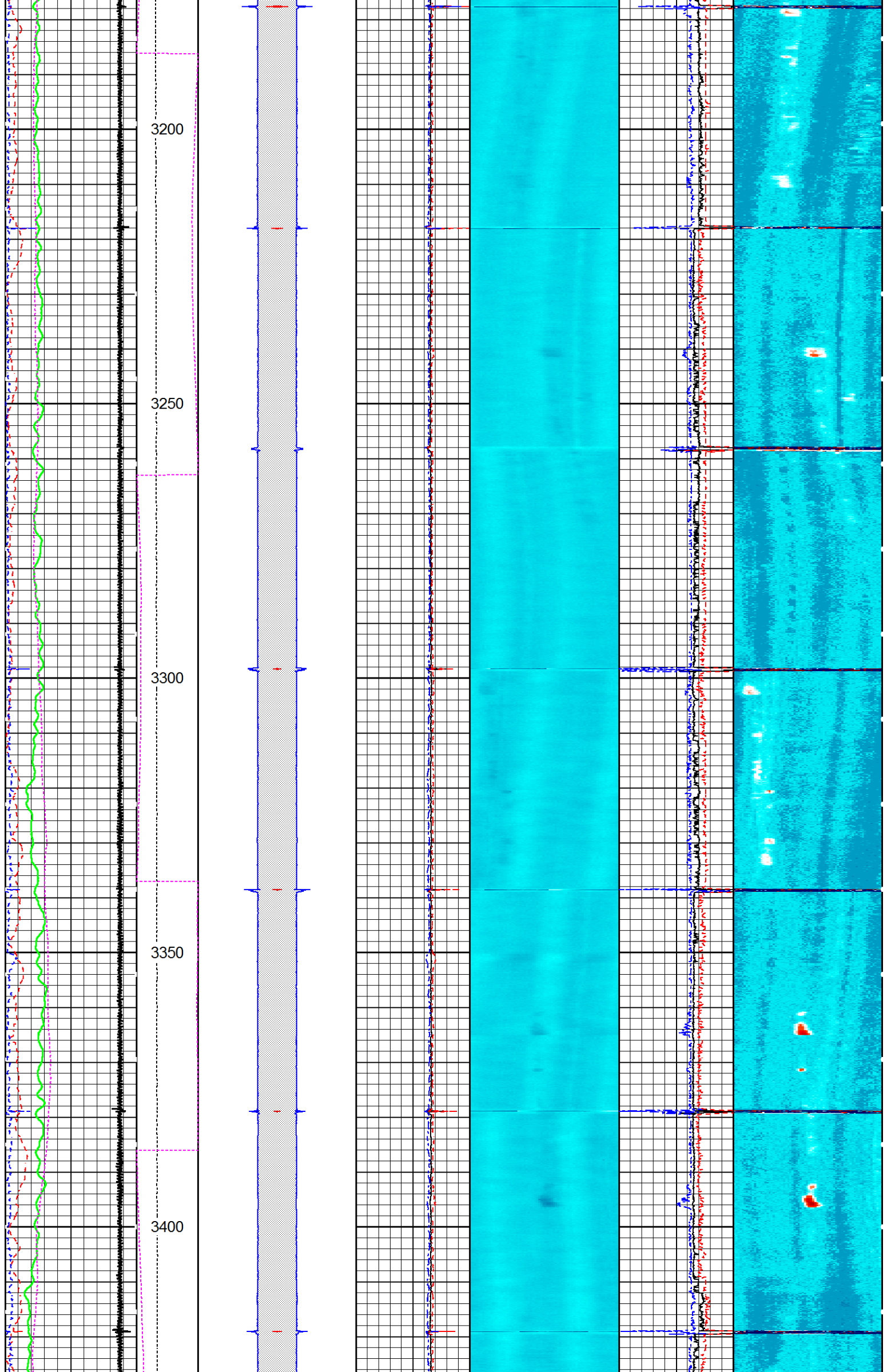


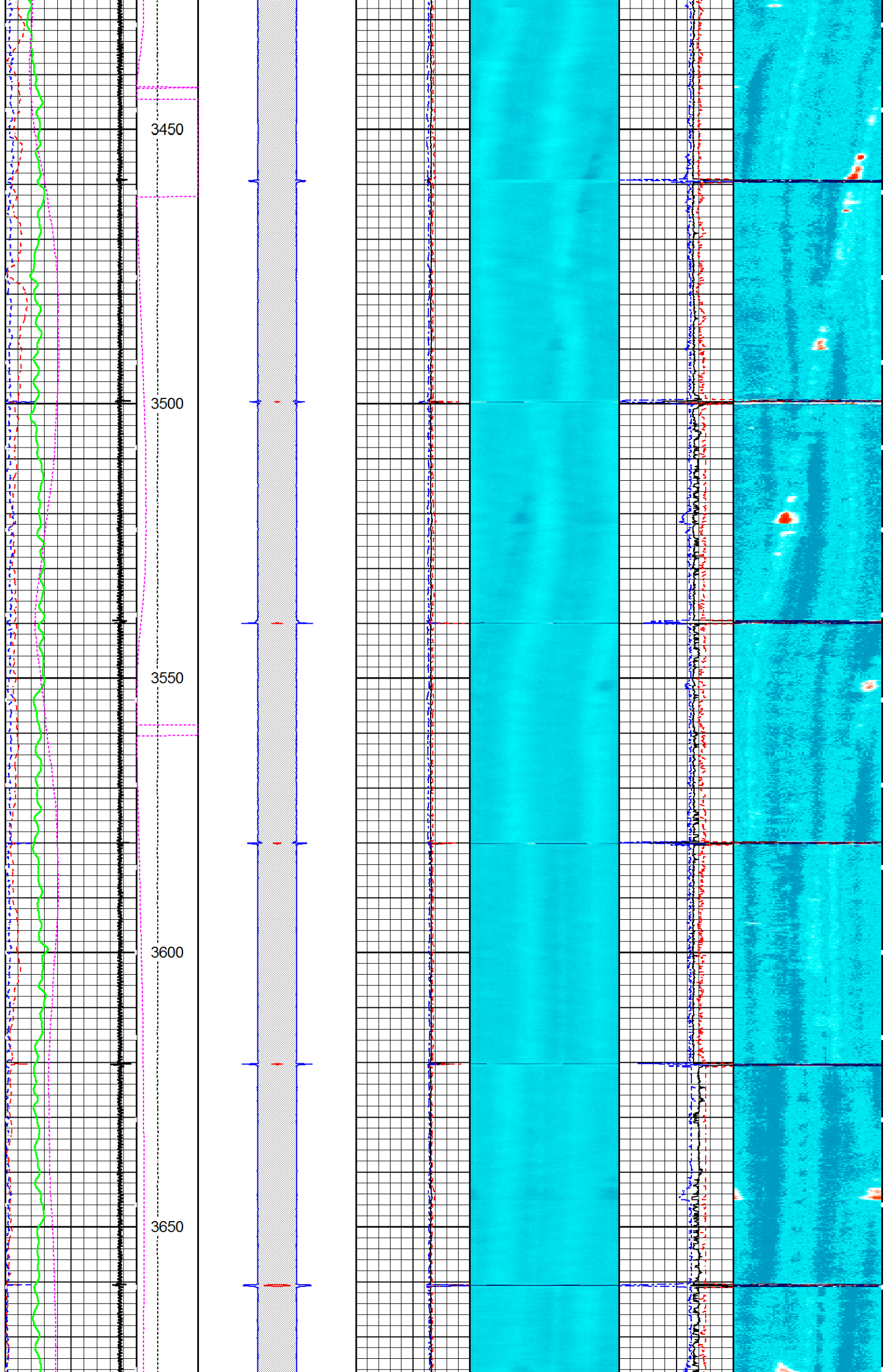




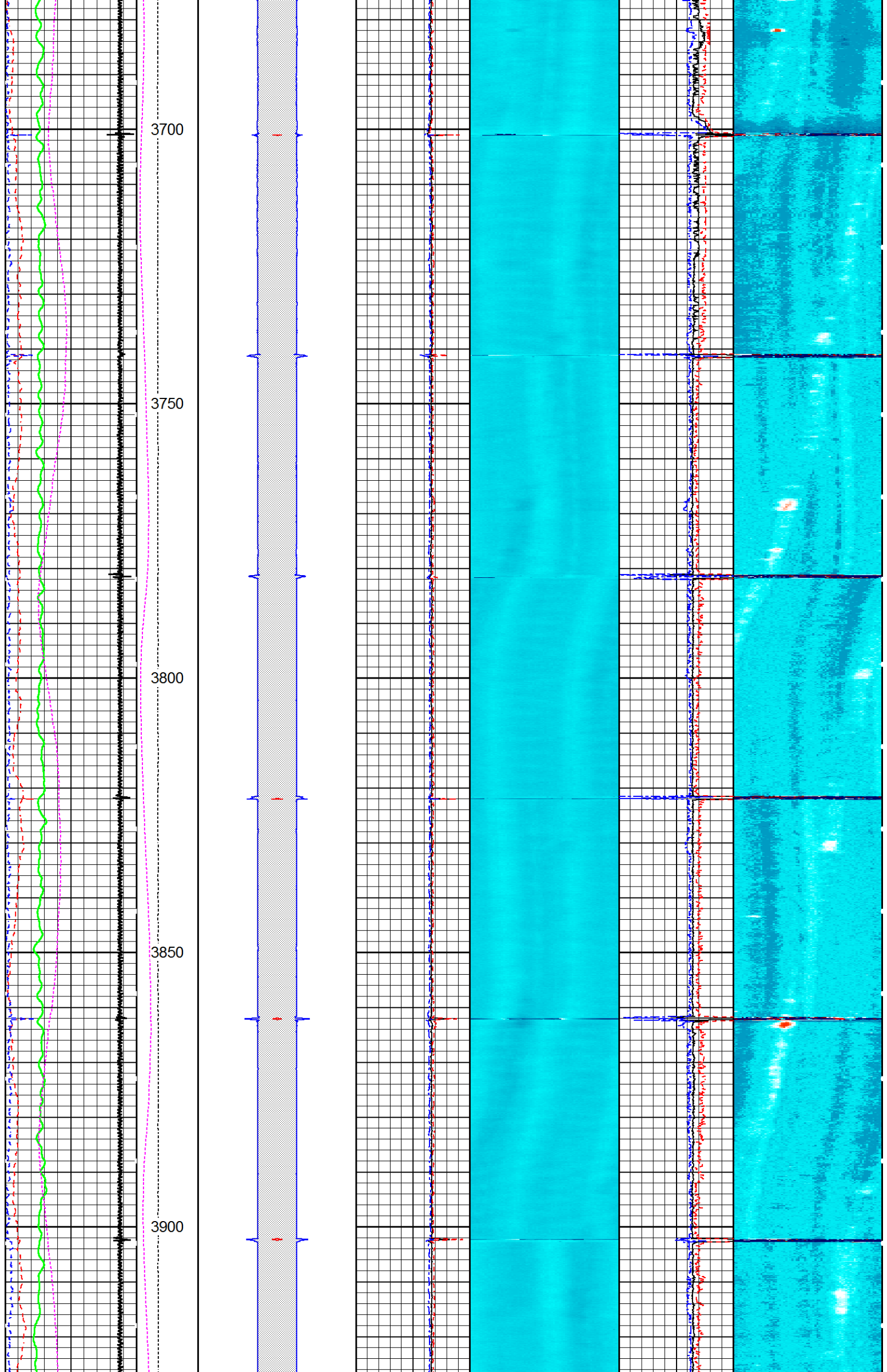


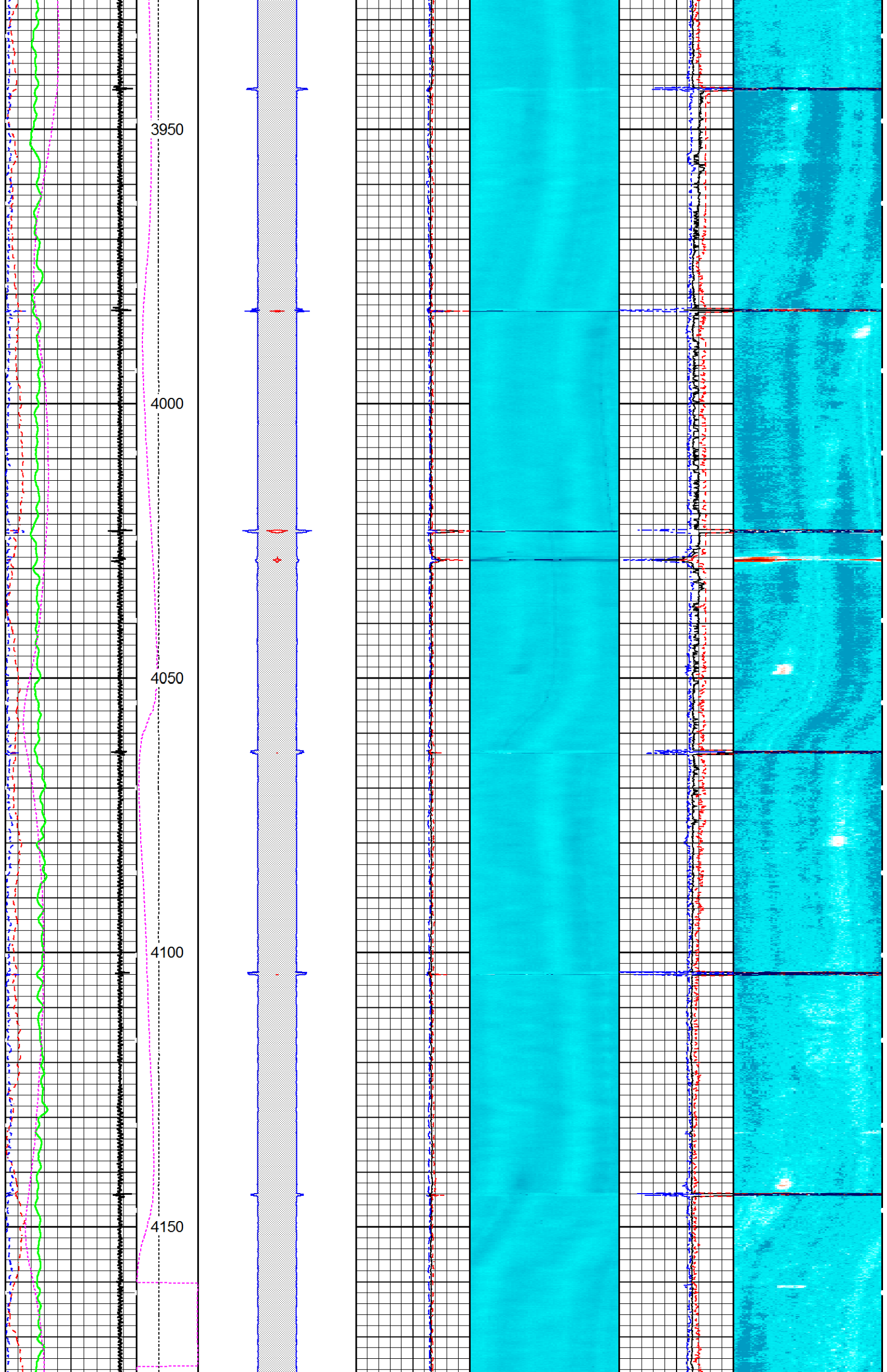




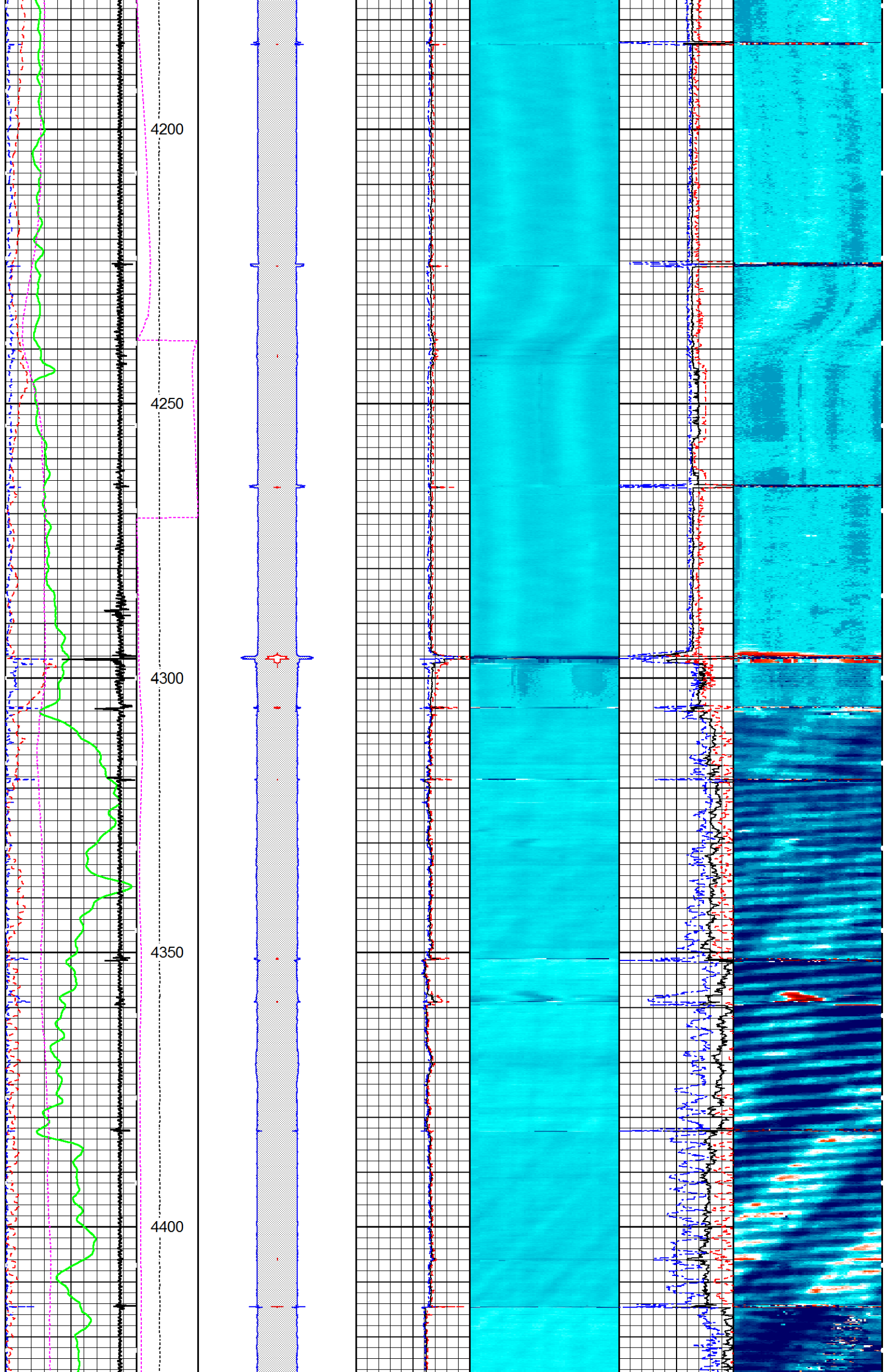


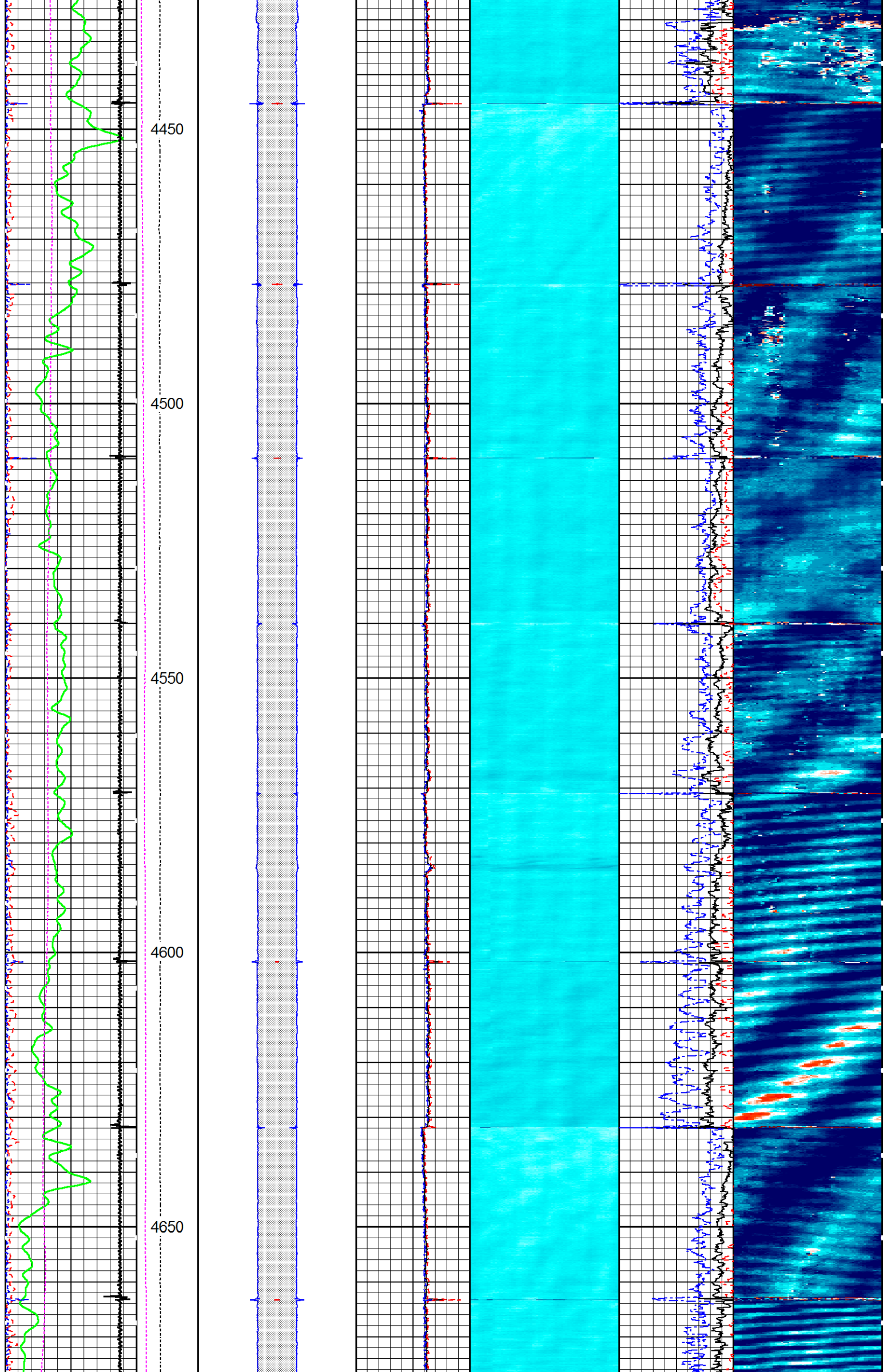




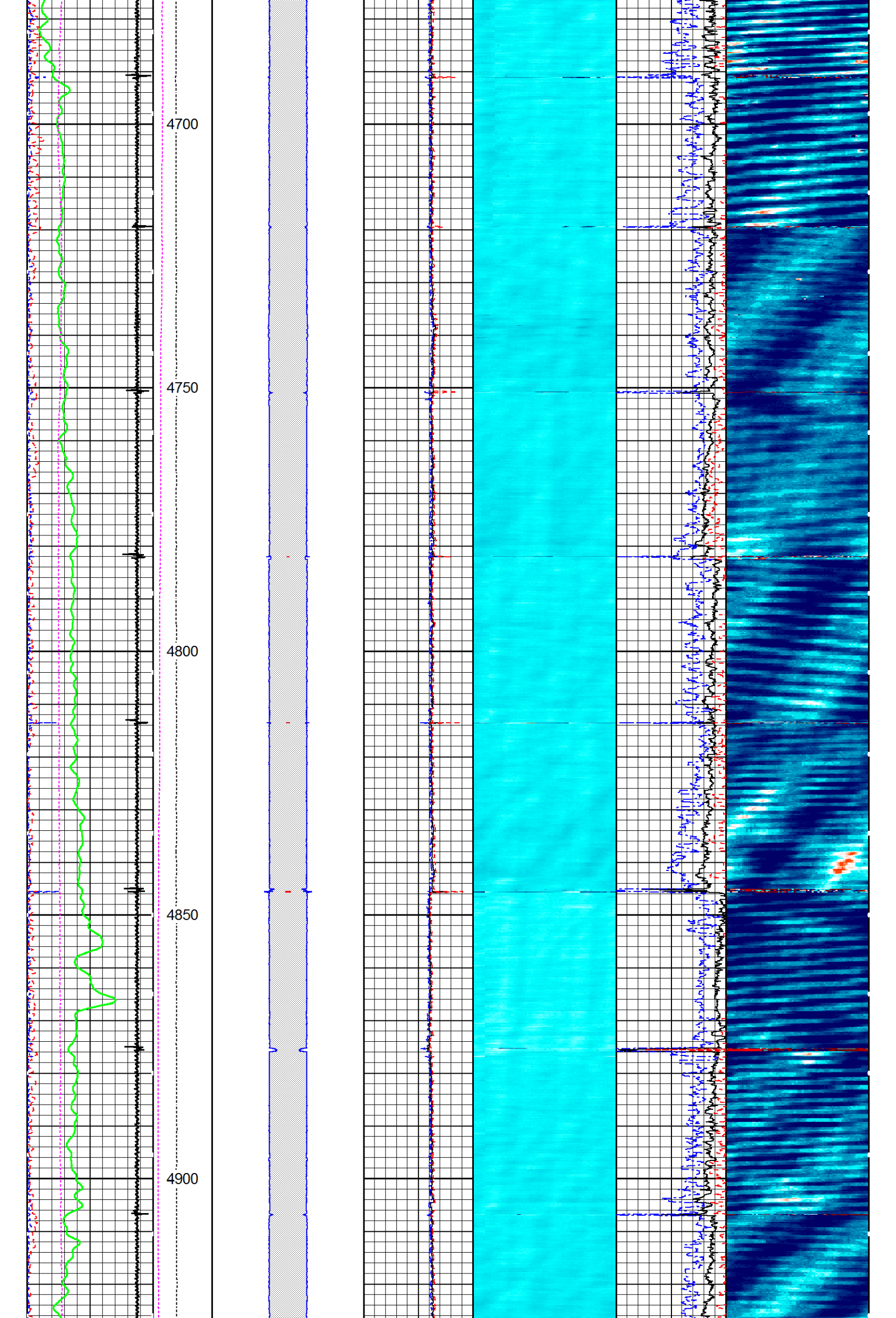




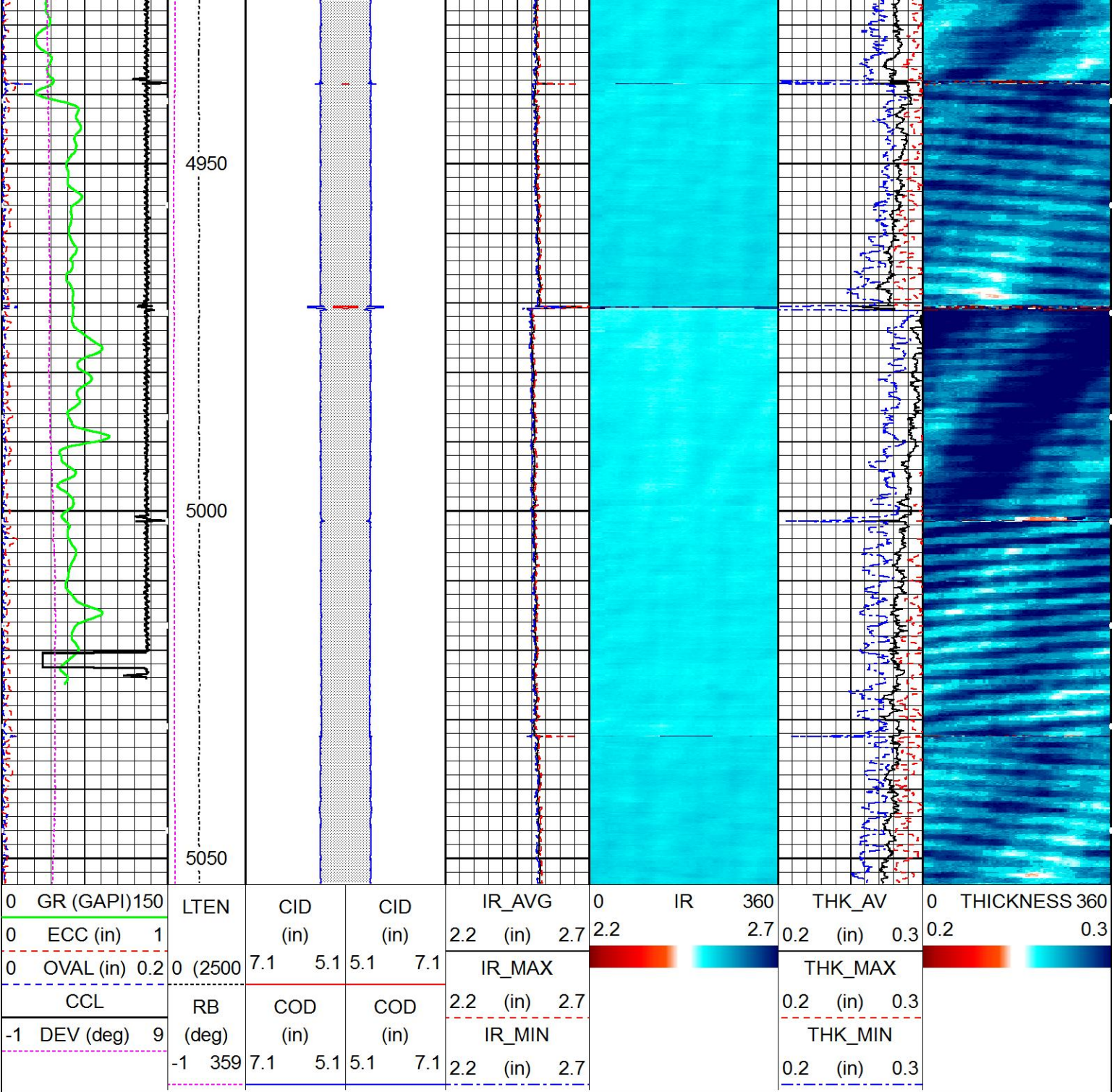












MAIN PASS

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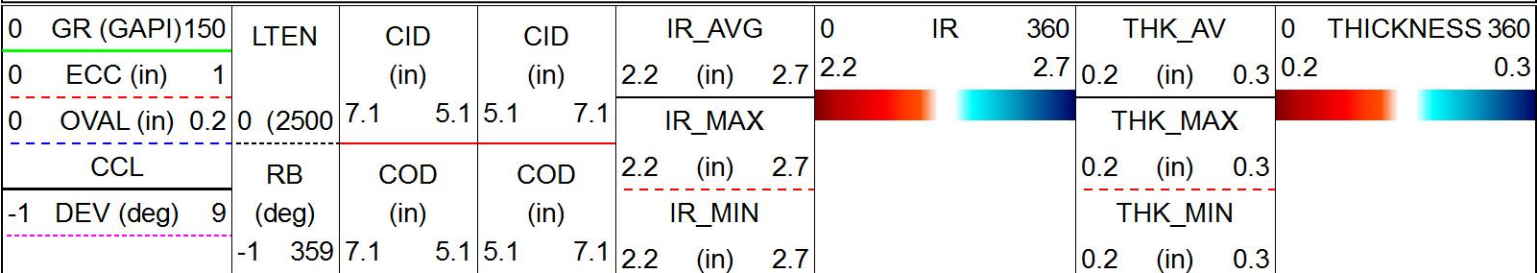
5" = 100'

REPEAT PASS

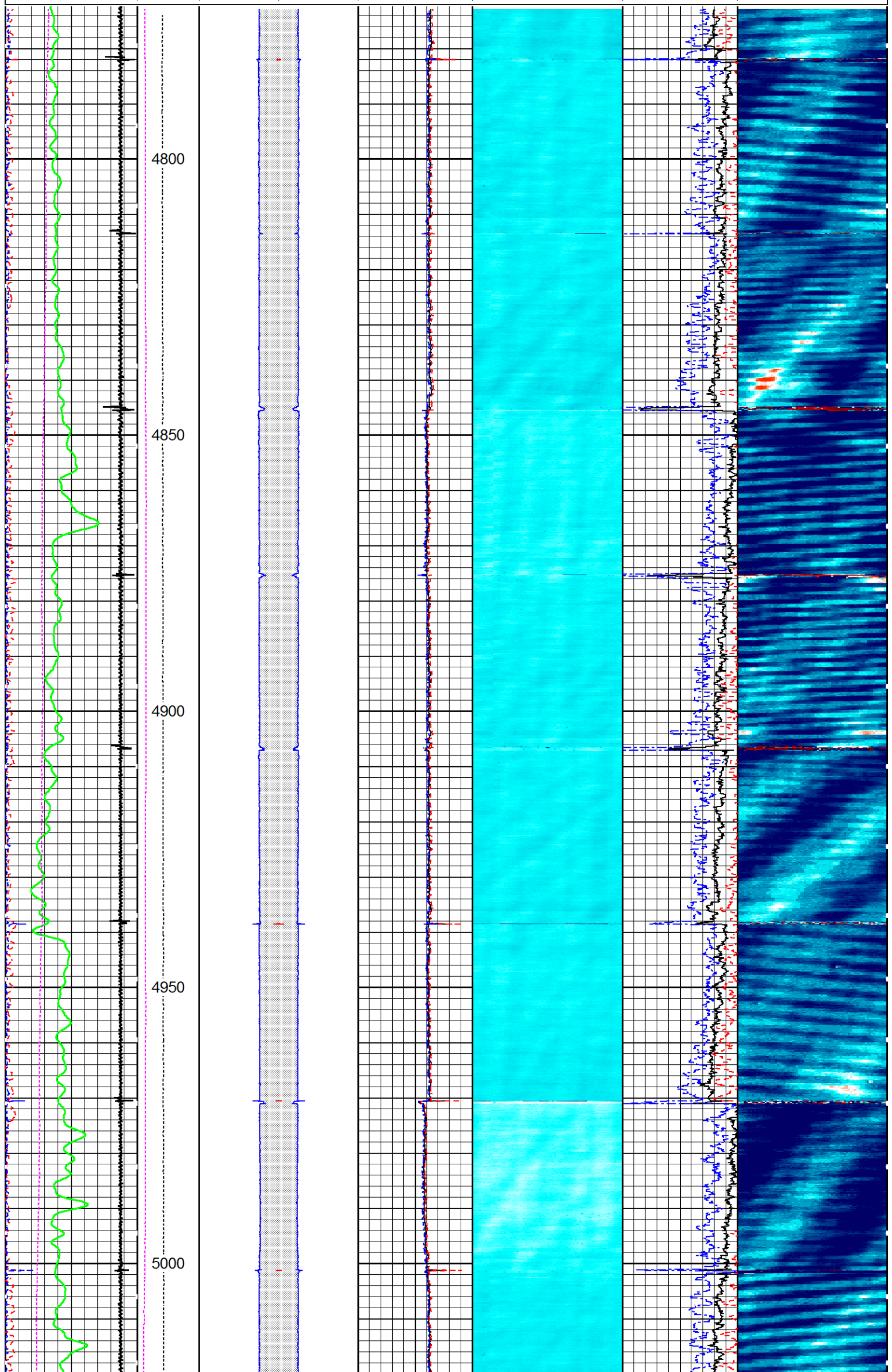
HALLIBURTON

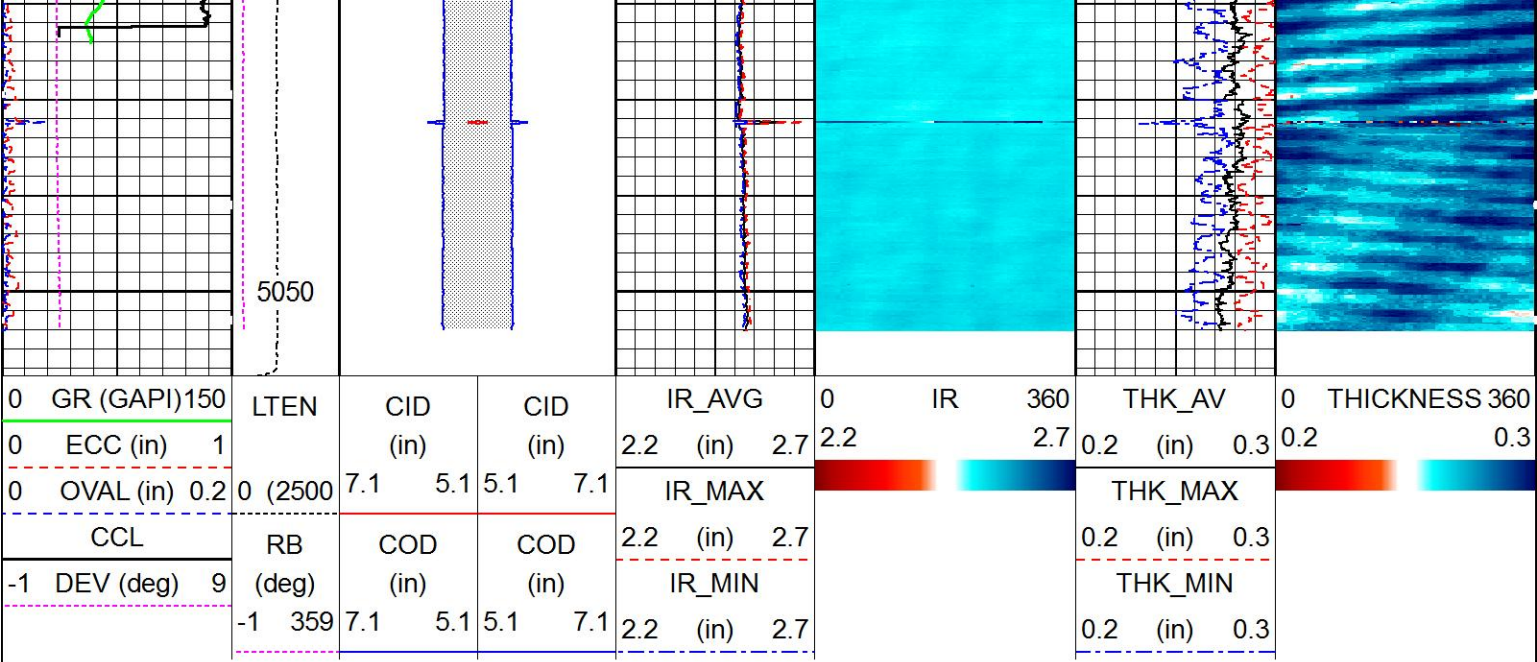
5" = 100'

Database File	ecgs_gillham_6.db
Dataset Pathname	RPT
Presentation Format	1_EXTR~3
Dataset Creation	Tue Feb 07 16:24:04 2017
Charted by	Depth in Feet scaled 1:240









## Log Variables

Database C:\ProgramData\Warrior\Data\ecgs\_gillham\_6.db  
Dataset field/well/run1/MAIN/\_vars\_

### Top - Bottom

BHTEMP_Src	BITSIZE in	BOTTEMP degF	CASEOD in	CASETHCK in	CASEWGHT lb/ft	MSGGN	MudWgt lb/gal
TEMP	7.875	180	5.5	0.275	15.5	1	8.5
PERFS	SRFTEMP degF	TDEPTH ft	USERFTT usec/ft	ZREF MRayl			
0	40	5100	0	1.7			

### Calibration Report

Database File ecgs\_gillham\_6.db  
Dataset Pathname RPT  
Dataset Creation Tue Feb 07 16:24:04 2017

### Circumferential Acoustic Scanning Tool Shop Calibration Report

Serial-Model: 12158270-3 5/8 EXT SCAN  
Calibration Performed: Mon Feb 06 17:50:26 2017

### Mudcell Transducer

### Main Transducer

	Measured	Expected	Measured	Expected	Units
W/O Calibrator	47.80	44.00	N/A	N/A	usec
W Calibrator	39.62	35.00	54.80	50.00	usec
Calibrated Offsets					
Name	Value	Units			
TCAL	4.8000	usec			
MCAL	6.8881	usec			


### XY Accelerometers Calibration Report

Performed: Mon Apr 14 09:51:09 2014  
Low Read. High Read. Low Ref. High Ref.

X Accelerometer 1.006 0.008 g 1.000 1.000 g



Y Accelerometer	-1.004	0.980	gee	-1.000	1.000	gee
Cement Bond Log Shop Calibration Report						
Serial-Model:			12091451-A			
Calibration Performed:			Thu Dec 01 13:19:47 2016			
Free Pipe Calibration						
TT	Measured	Units				
Amplitude	244.6	usec				
Log Base Line	552.0	mV				
	5.9	mV				
Calibration References and Gain						
Name	Value	Units				
Pipe O.D.	4.500	in				
Pipe Weight	11.6	lb/ft				
Pipe Ref. Amp.	81.2	mV				
Amp. Gain	0.149					
Gamma Ray Calibration Report						
Type / Serial:			002 / 12105786			
SHOP CALIBRATION		Mon Feb 06 14:47:35 2017				
	Counts/Sec.	Gain	Offset	Jig	Units	
Background	43.5				cps	
Calibrator	203.8				cps	
		0.9981			GAPI/cps	
PRIMARY VERIFICATION						
Background	42.6				cps	
Calibrator	206.2				cps	
Difference				163.6	GAPI	
BEFORE SURVEY VERIFICATION						
Background	0.0				cps	
Calibrator	0.0				cps	
Difference				0.0	GAPI	
AFTER SURVEY VERIFICATION						
Background	0.0				cps	
Calibrator	0.0				cps	
Difference				0.0	GAPI	

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
CCL	35.10		STNDCH-1_11_16_CH 1.6875 IN CABLE HEAD	1.50	1.44	1.00
GR	32.84		TTTCU-002 (12105786) Through Tubing Telemetry Cartridge - Ultrawire	7.65	1.69	100.00

			XHU-003 (000001) Crossover Halliburton 1553 to Ultrawire	1.58	1.69	7.00
			CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
Temp	23.12					
TT3FT	20.87		HCBLM-A (12091451) Halliburton HCBLM Tool	9.38	2.75	116.00
AMP3FT	20.87					
WVF5FT	19.91					
WVF3FT	16.39		CENT-CASTM-CENT CAST M INLINE CENTRALIZER	2.16	3.13	25.00
			HAL-CAST-M-ELECT-CAST-M-Elect (11527.572) CAST M ELECTRONIC	2.75		30.00
AccY2	0.00					
AccX2	0.00					
AccY1	0.00					
AccX1	0.00		HAL-CAST-M-3 5/8 EXT SCAN (121582706.65) 3 5/8 EXT SCAN CASTM	3.13		276.00
SCAN	0.00					
LOCTIM	0.00					
UTCTIM	0.00					
LLMTEN	0.00					
<div>Dataset: ecgs_gillham_6.db: field/well/run1/MAIN</div> <div>Total length: 38.67 ft</div> <div>Total weight: 580.00 lb</div> <div>O.D.: 3.13 in</div>						

Company	EAST CHEYENNE GAS STORAGE LLC				
Well	GILLHAM 6				
Field	PEETZ WEST				
County	LOGAN	State	CO		
HALLIBURTON	CIRCUMFERENTIAL ACOUSTIC SCANNING TOOL CASING INSPECTION				