

HALLIBURTON

CIRCUMFERENTIAL  
ACOUSTIC  
SCANNING TOOL  
CIM MODE

Company	EAST CHEYENNE GAS		
Well	SCHWAKE 1 WP-M008		
Field	WEST PEETZ PROSPECT		
County	LOGAN	State	CO
Company EAST CHEYENNE GAS STORAGE LLC			
Well SCHWAKE 1 WP-M008			
Field WEST PEETZ PROSPECT			
County LOGAN State CO			
API No.:	05-075-087990000	Serv #:	90394701
Location: SURFACE HOLE LOCATION: 671' FSL & 667' FEL		Other Services	
Sec: 31 Twp: 12N Rge: 52W		CAST TEMP CBL	
Permanent Datum	G.L.	Elevation	4540'
Log Measured From	K.B. , 16 Ft. above perm. datum		
Drilling Measured From	K.B.		

Date @ Time Logged	03-APRIL-2017	Type Fluid in Hole	FRESH WATER
Run No.	ONE	Density of Fluid	8.5 PPG
Depth - Driller	6334 FT	Fluid Level	SURFACE
Depth - Logger	5125 FT	Cement Top Est. Logged	SURFACE
Bottom - Logged Interval	5120 FT	Equipment / Location	11808537 / RS
Top - Log Interval	SURFACE	Recorded by	PEDRO GONZALEZ B.
Max. Recorded Temp.	193° F	Witnessed by	G. OHLMAN
CEMENTING DATA			
	Surface String	Protection String	Liner
Date / Time Cemented			
Primary / Squeeze			
Expected Compressive Strength	psi@ hrs	psi@ hrs	psi@ hrs
Cement Volume			
Cement Type / Weight Formulation	/	/	/
Mud Type / Mud Wgt.	/	/	/
Borehole Record			
Run Number	Bit	From	To
			Size
			Weight
			From
			To

<<< Fold Here >>>

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.

Comments

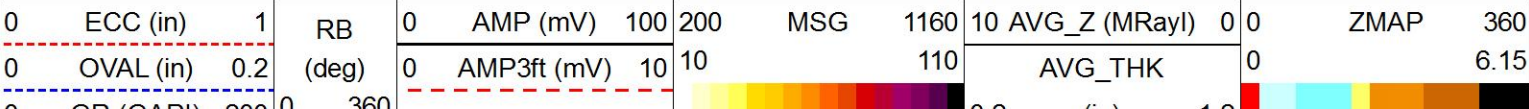
HES CIRCUMFERENTIAL ACOUSTIC SCANNING LOG CORRELATED BY JW CEMENT BOND LOG DATED JUNE-29-2010  
LOG INTERVAL PER CUSTOMER REQUEST  
CAST CONFIG: 3 5/8" HEAD, BLACK 450KHz TRANSDUCER, CIM, 72 SHOTS, 12 SPF TOOLS RAN IN 5.5" 15.5 LB CASING  
  
\*\*\*THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES\*\*\*

MAIN PASS

HALLIBURTON

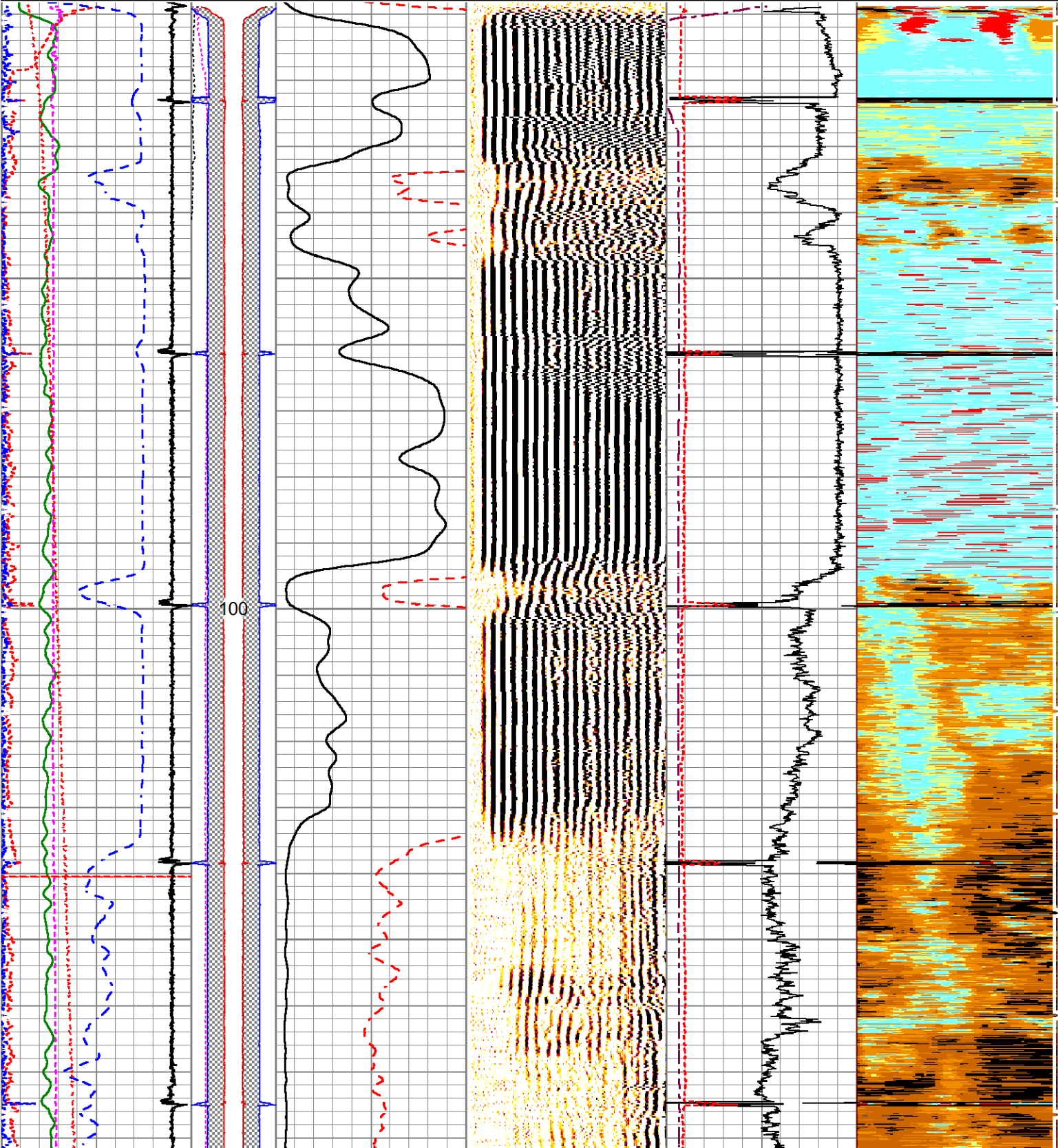
5"=100'

Database File schwake1-cast.db  
Dataset Pathname schwake1/run1/MAIN  
Presentation Format 1COMBO~1  
Dataset Creation Mon Apr 03 17:55:16 2017  
Charted by Depth in Feet scaled 1:240

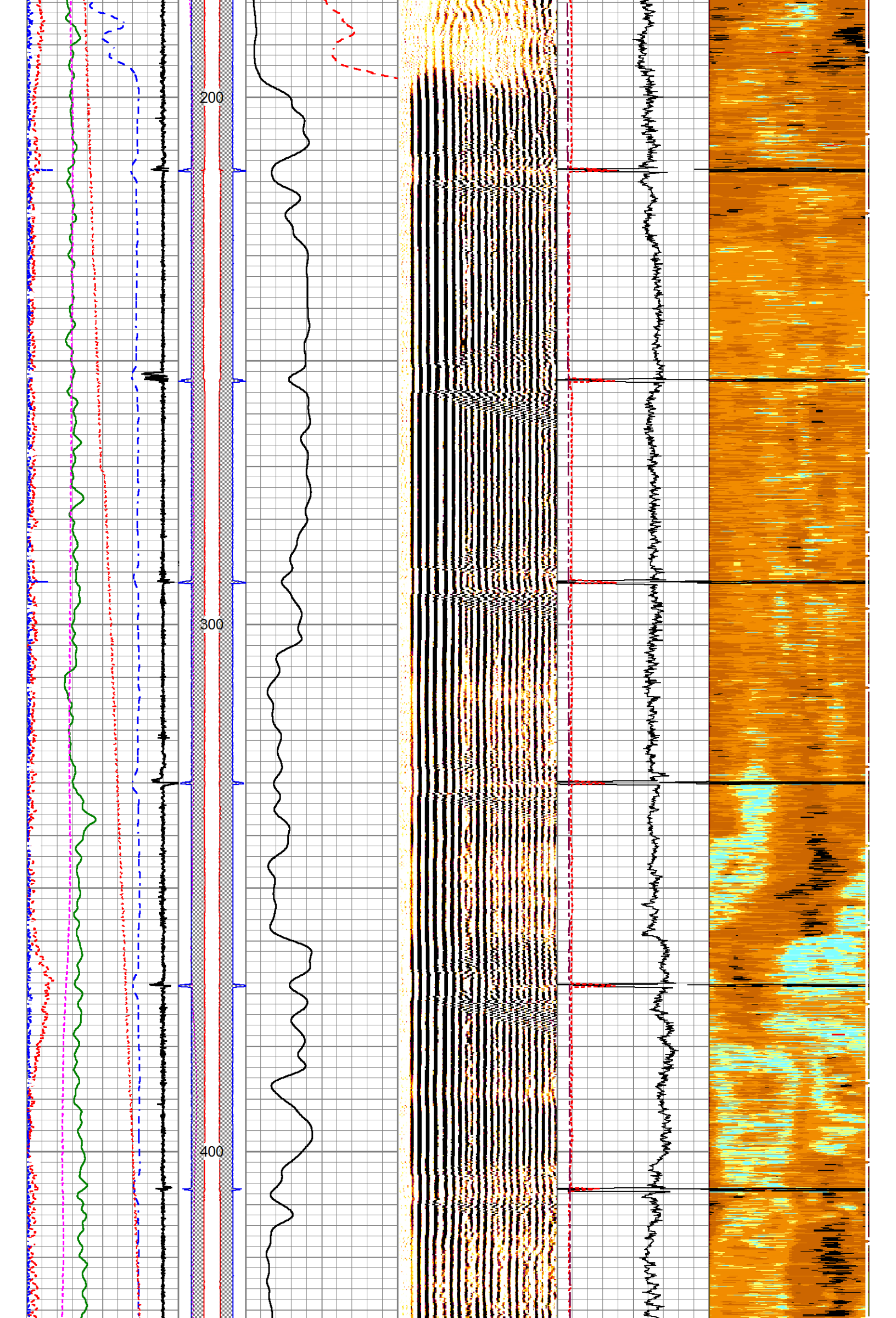


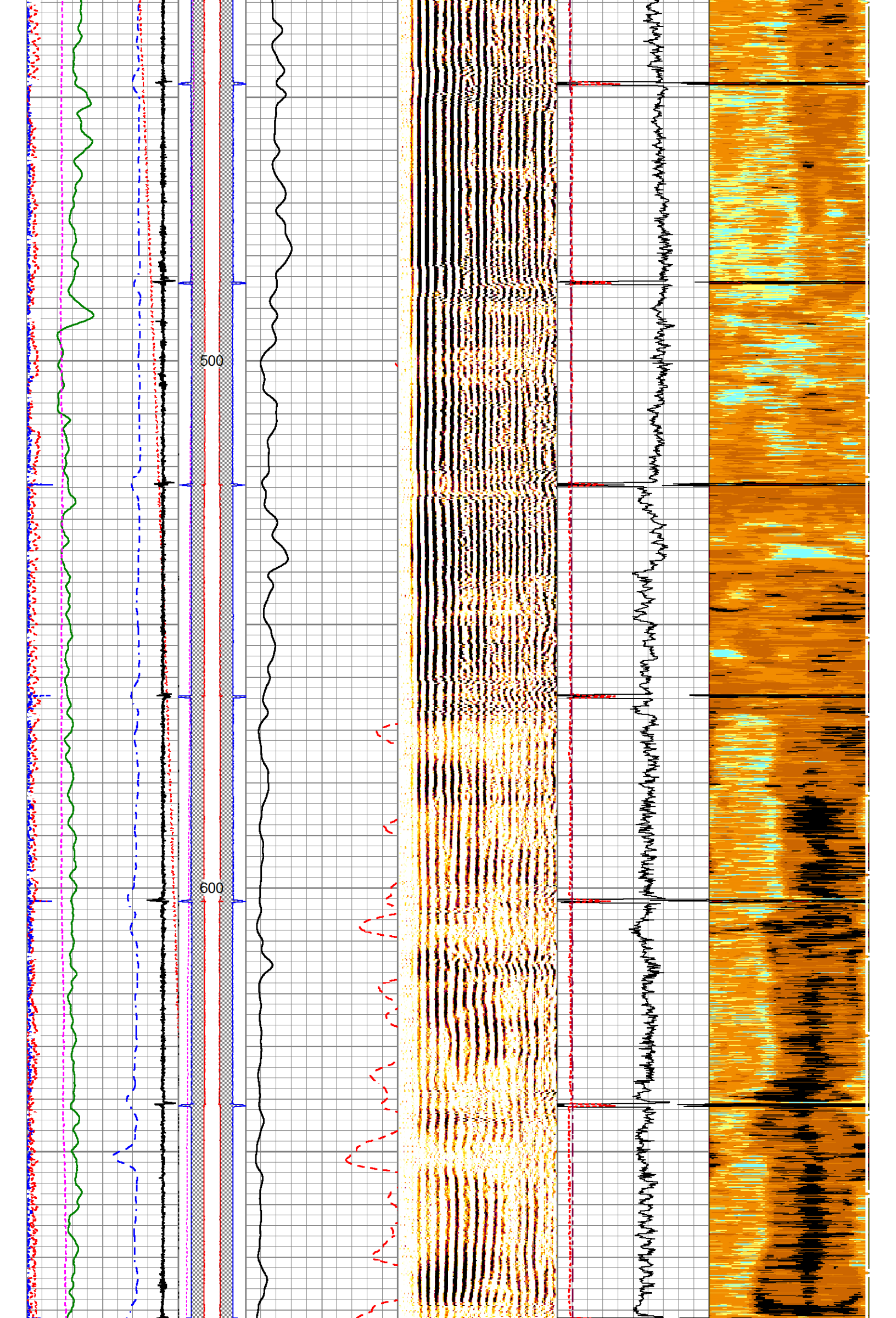
0	GR (GAPI)	200	0	500
-1	DEV (deg)	9	LTEN	
	CBL_TT		(lb)	
353	(usec)	233	500	2500
85	TEMP (degF)	105	COD	
-450	CCL	50	(in)	
			6.1	3.1
			COD	
			(in)	
			3.1	6.1
			CID	
			(in)	
			6.1	3.1
			CID	
			(in)	
			3.1	6.1

0.2	(in)	1.2
220	FTT (usec/ft)	120

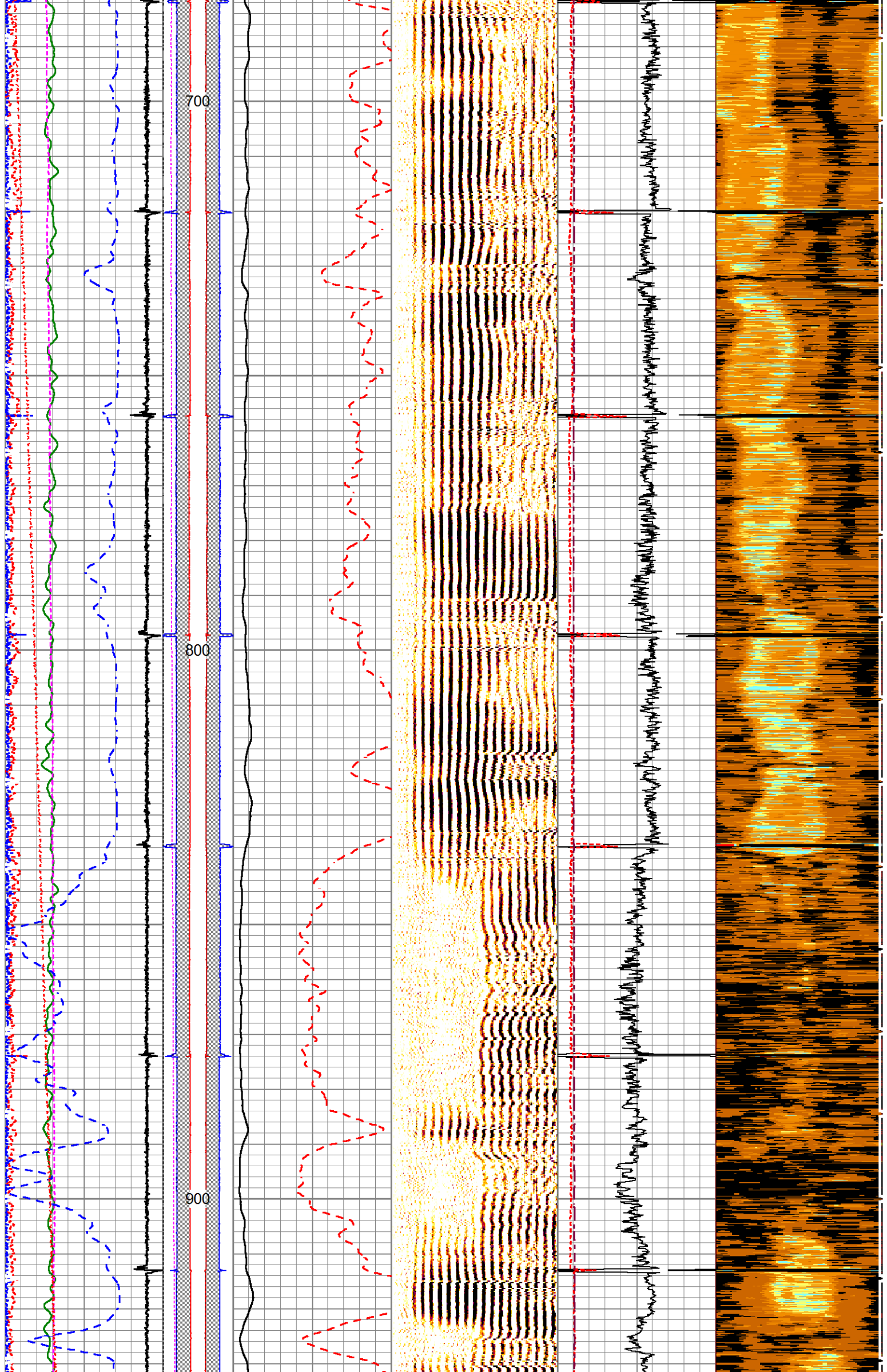


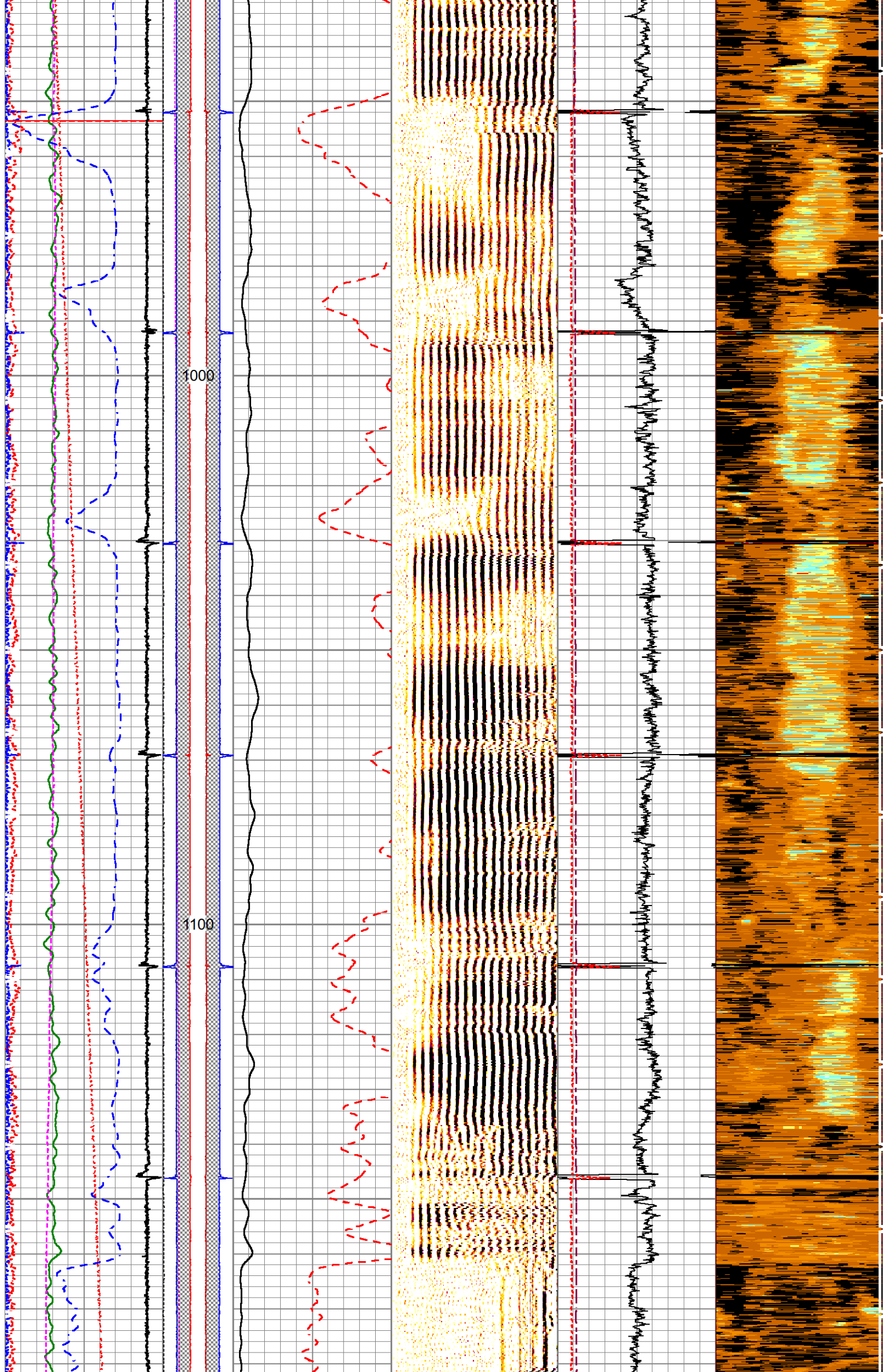




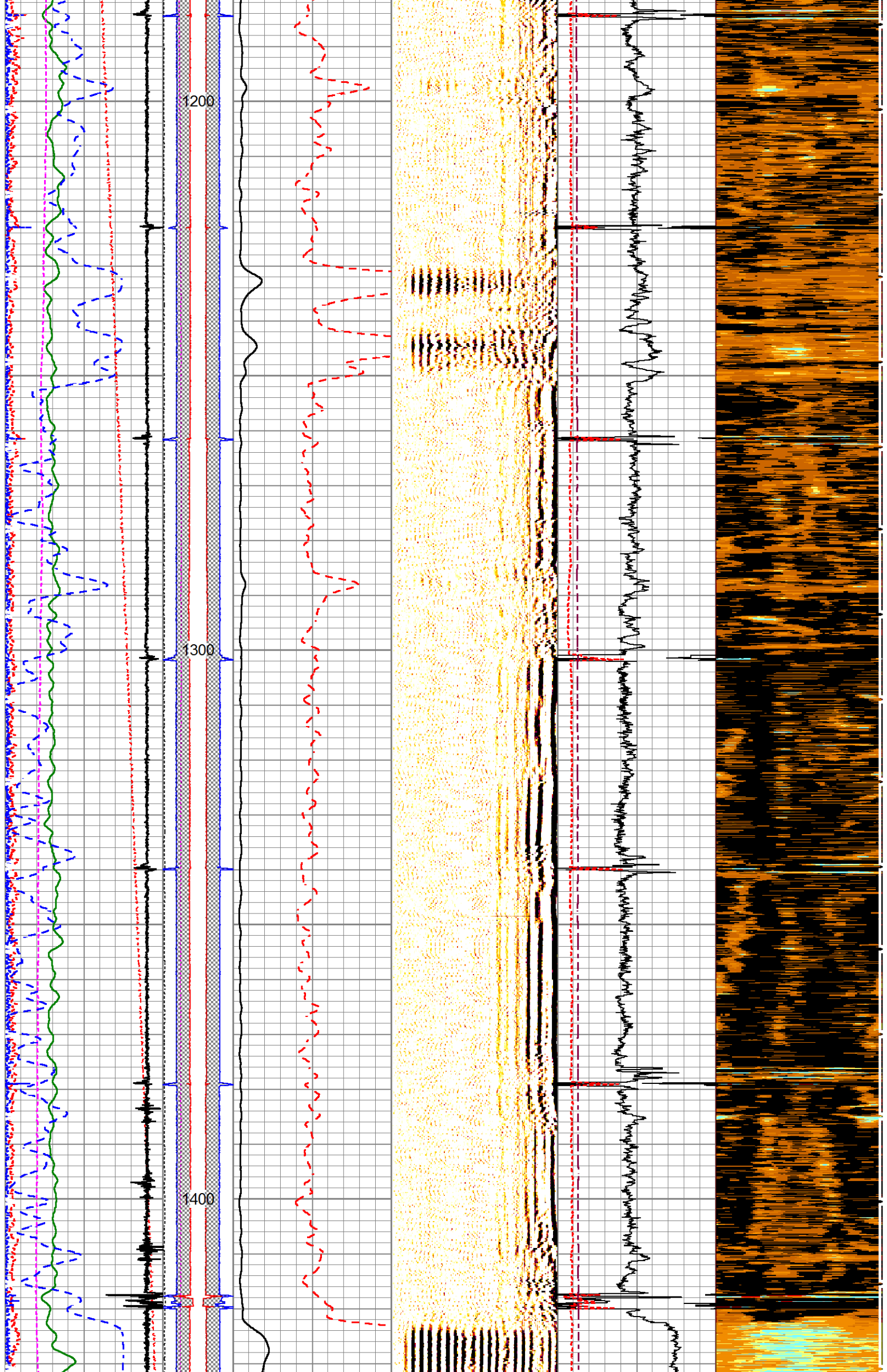


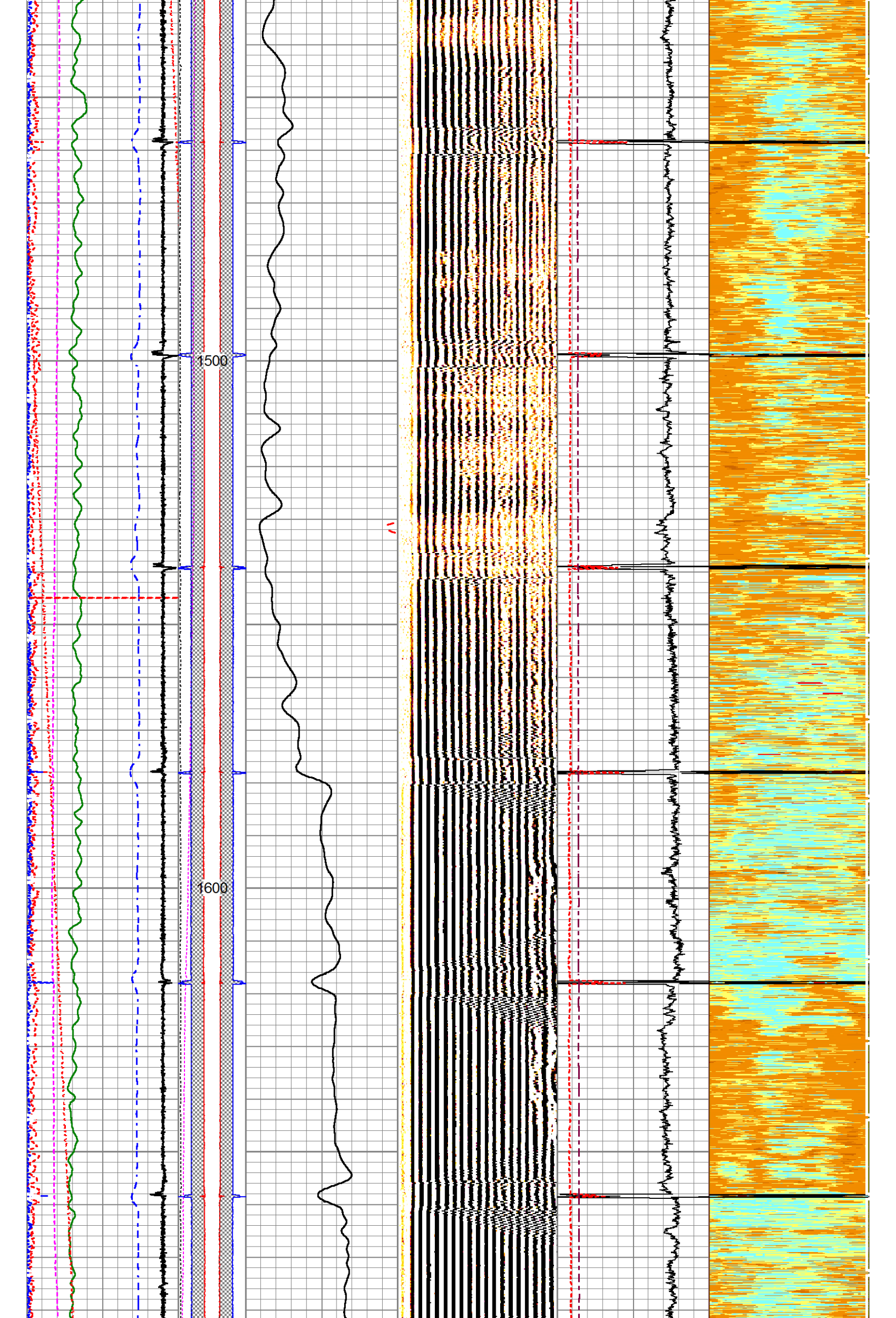




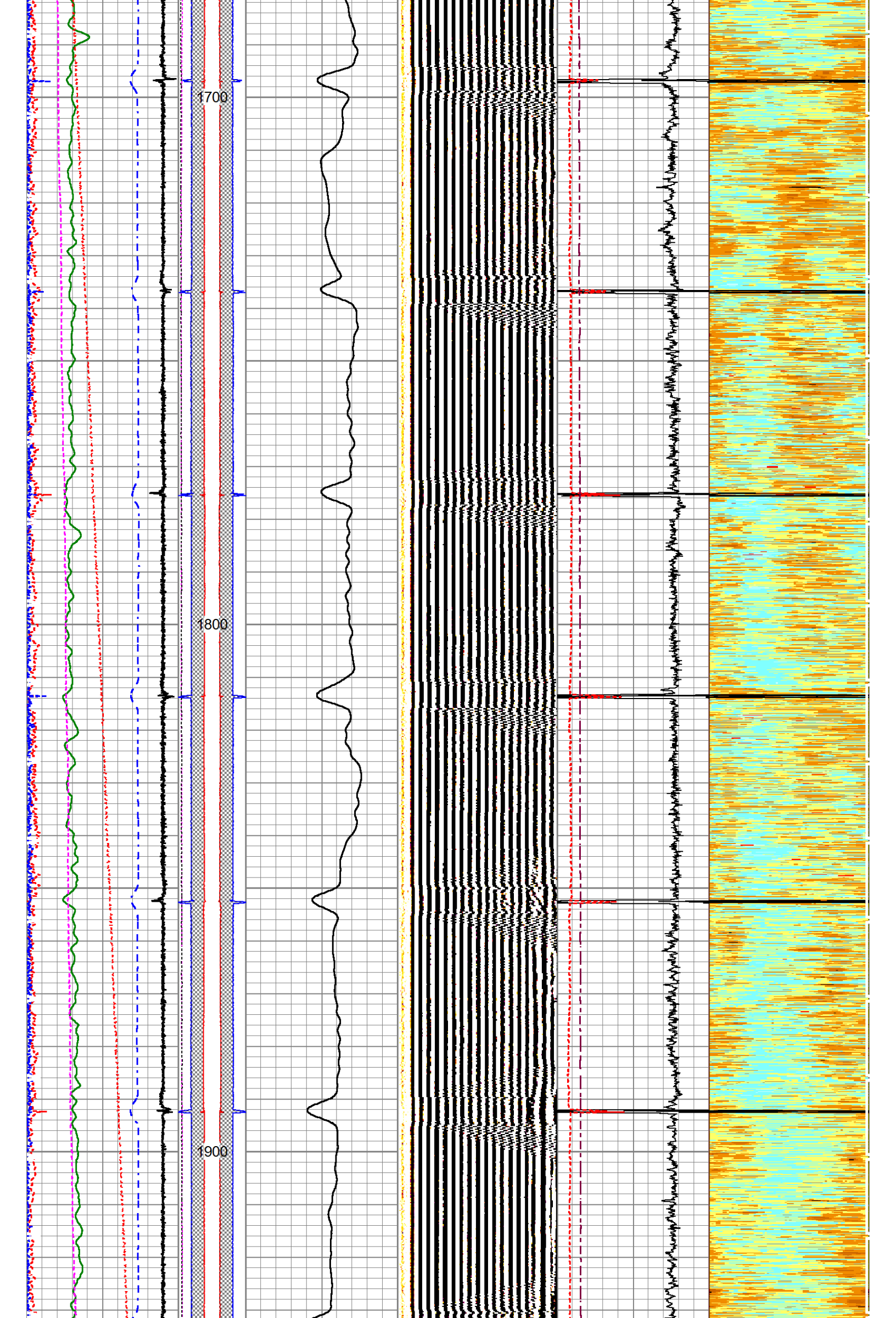


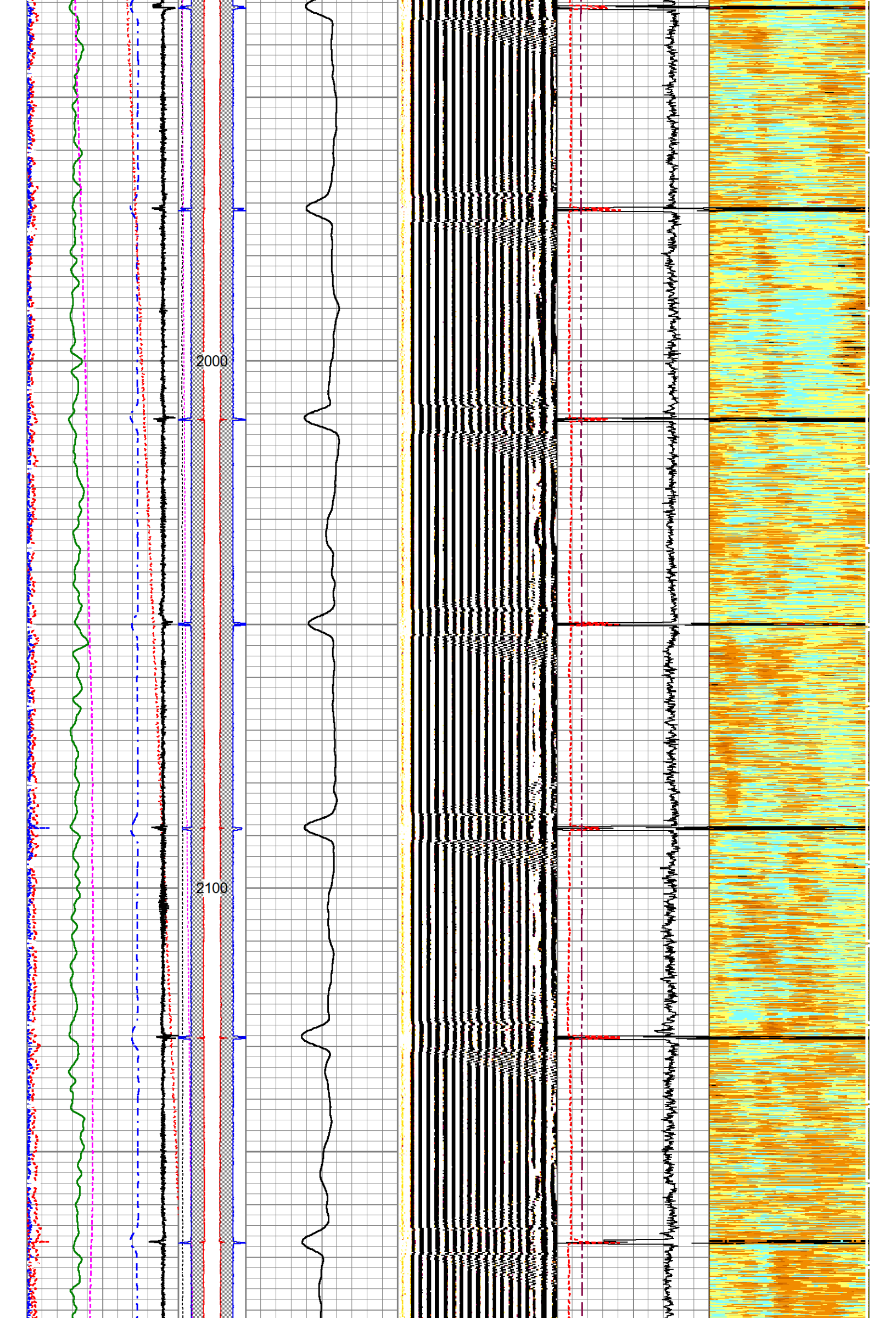




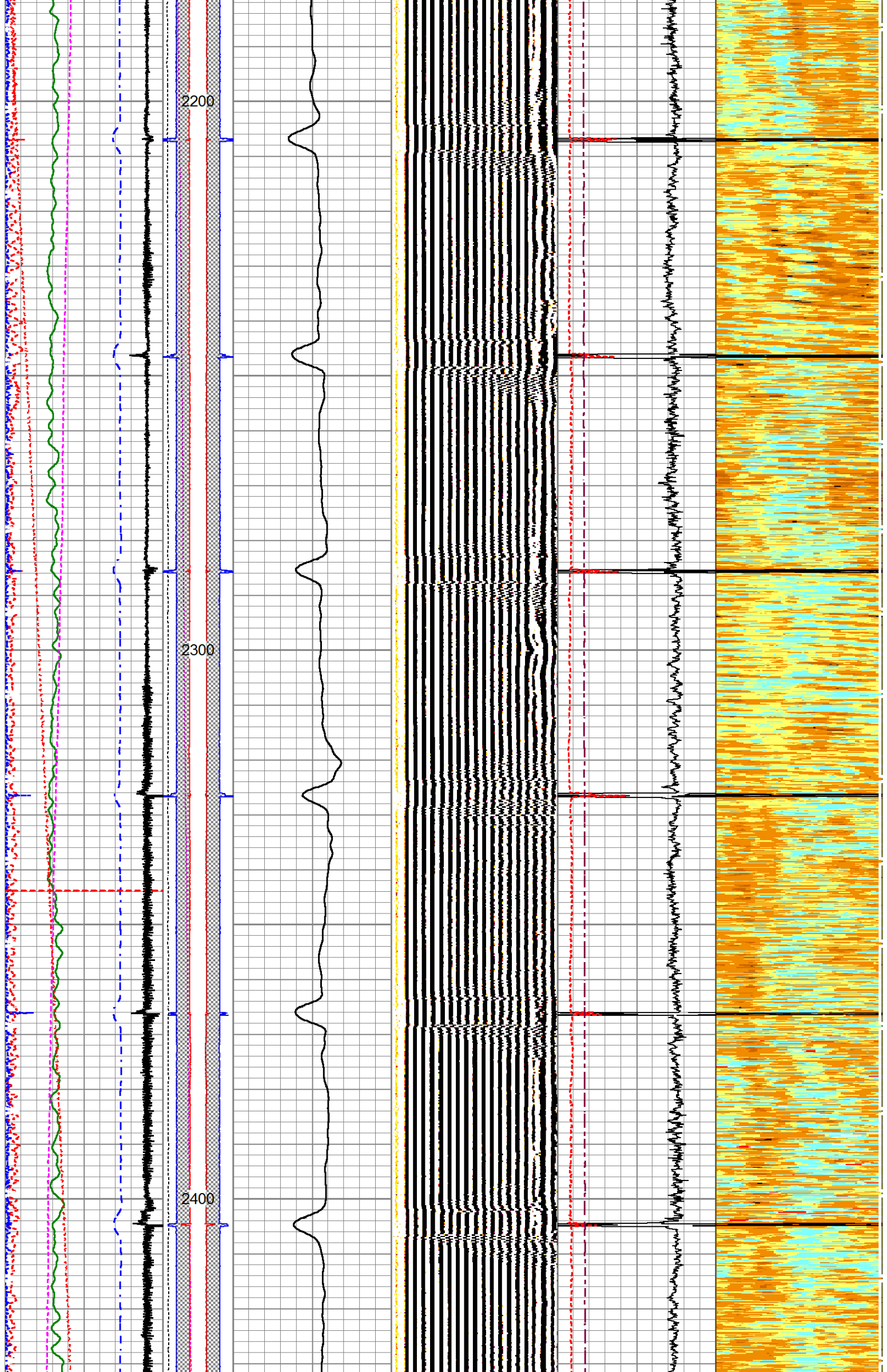


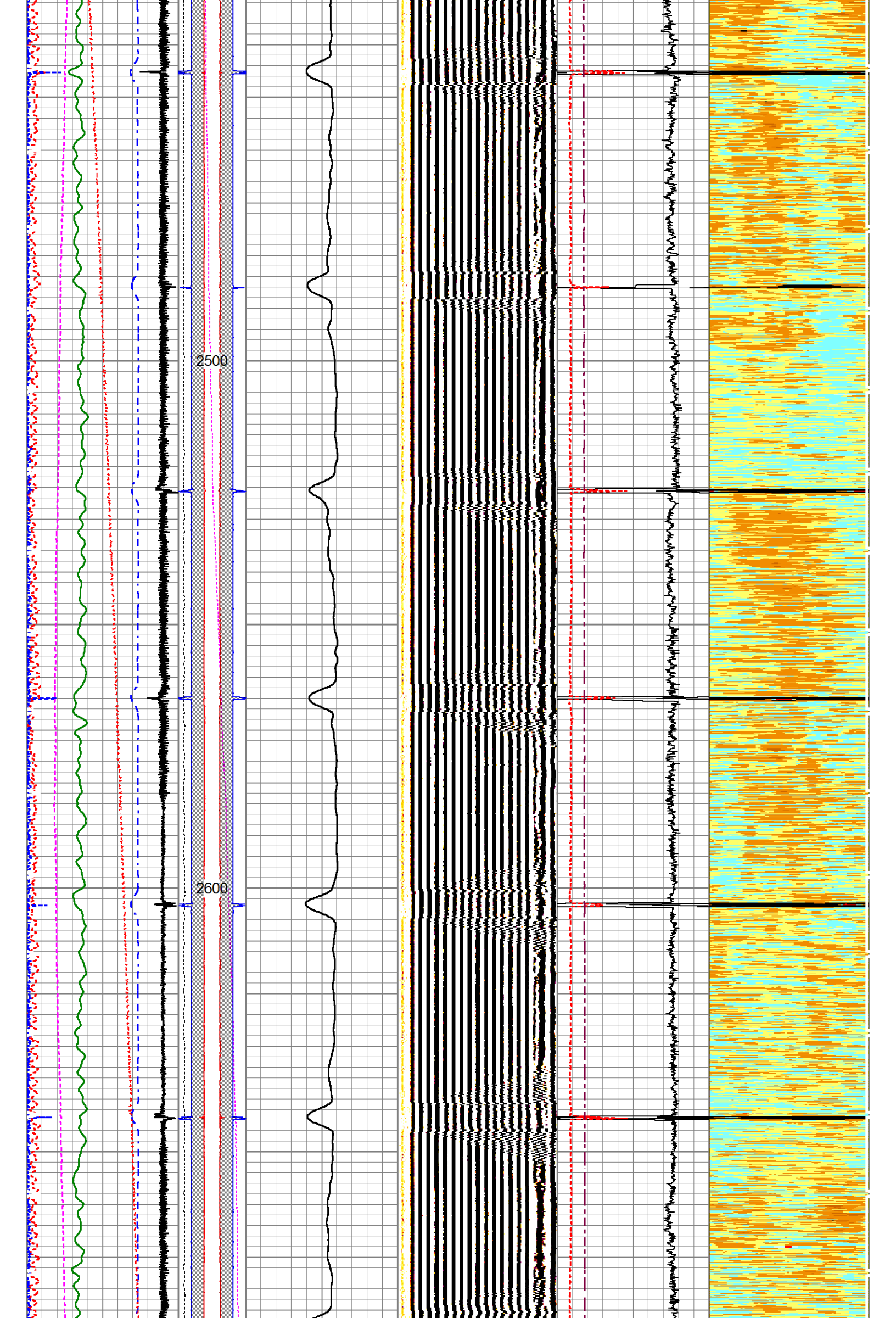




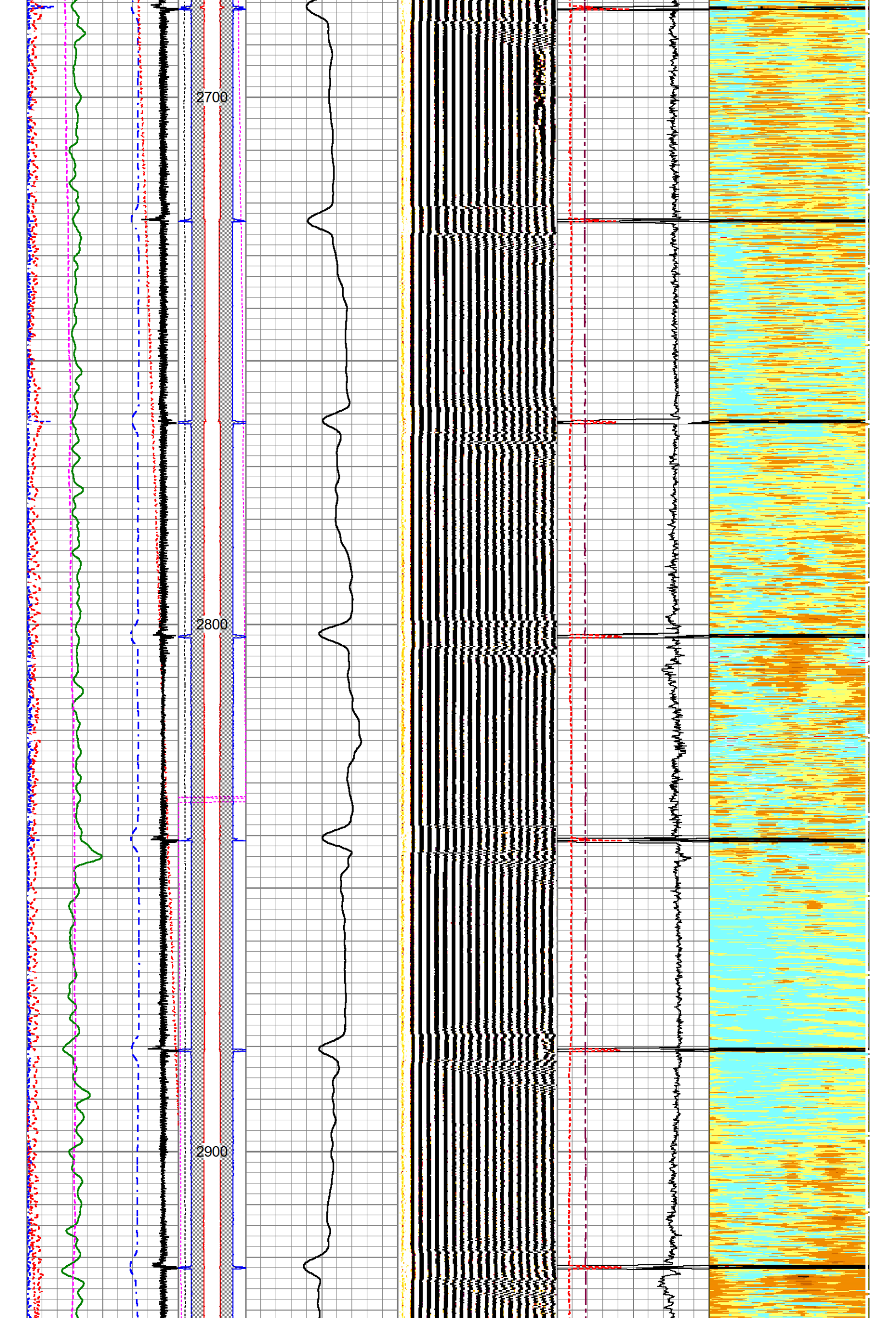


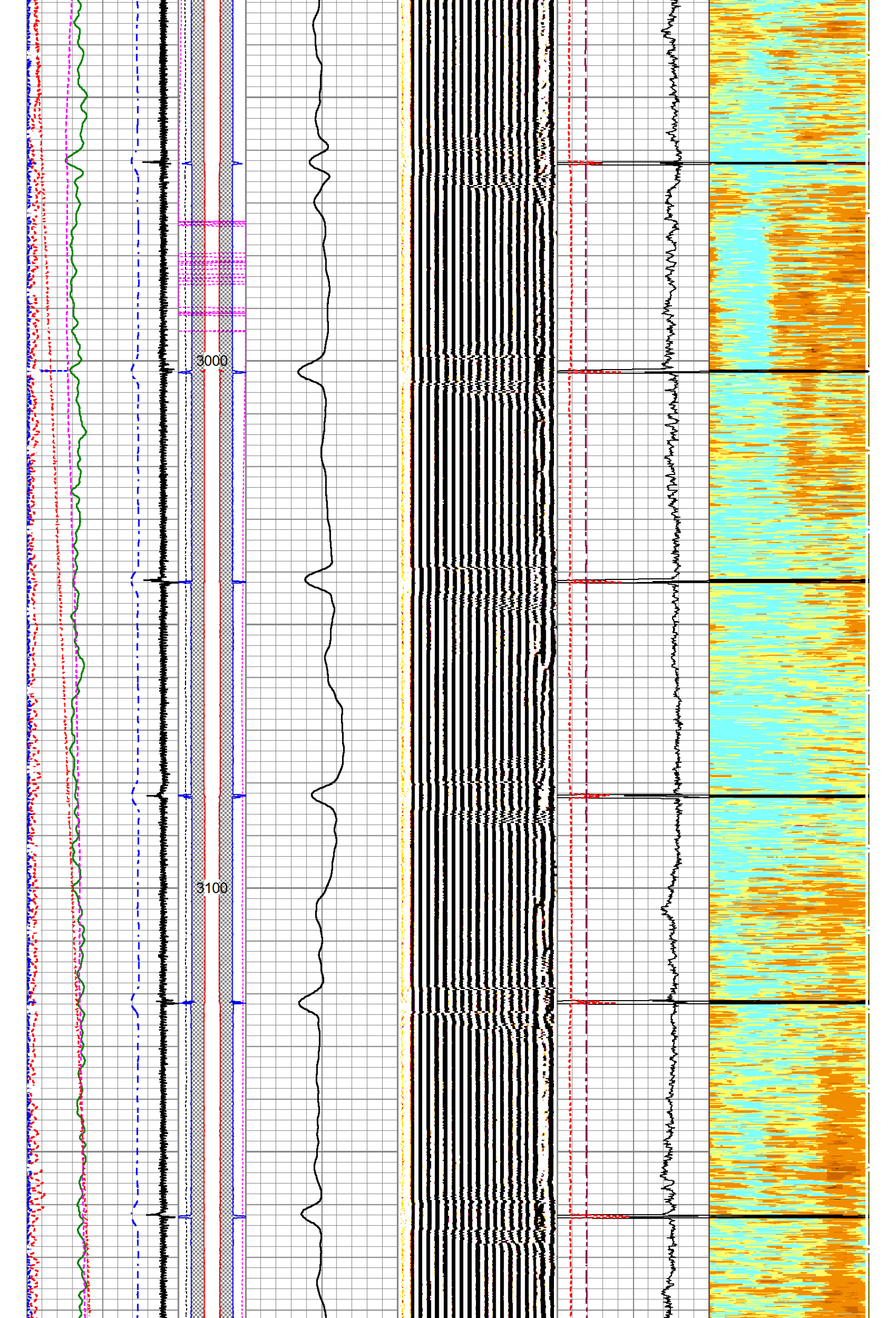




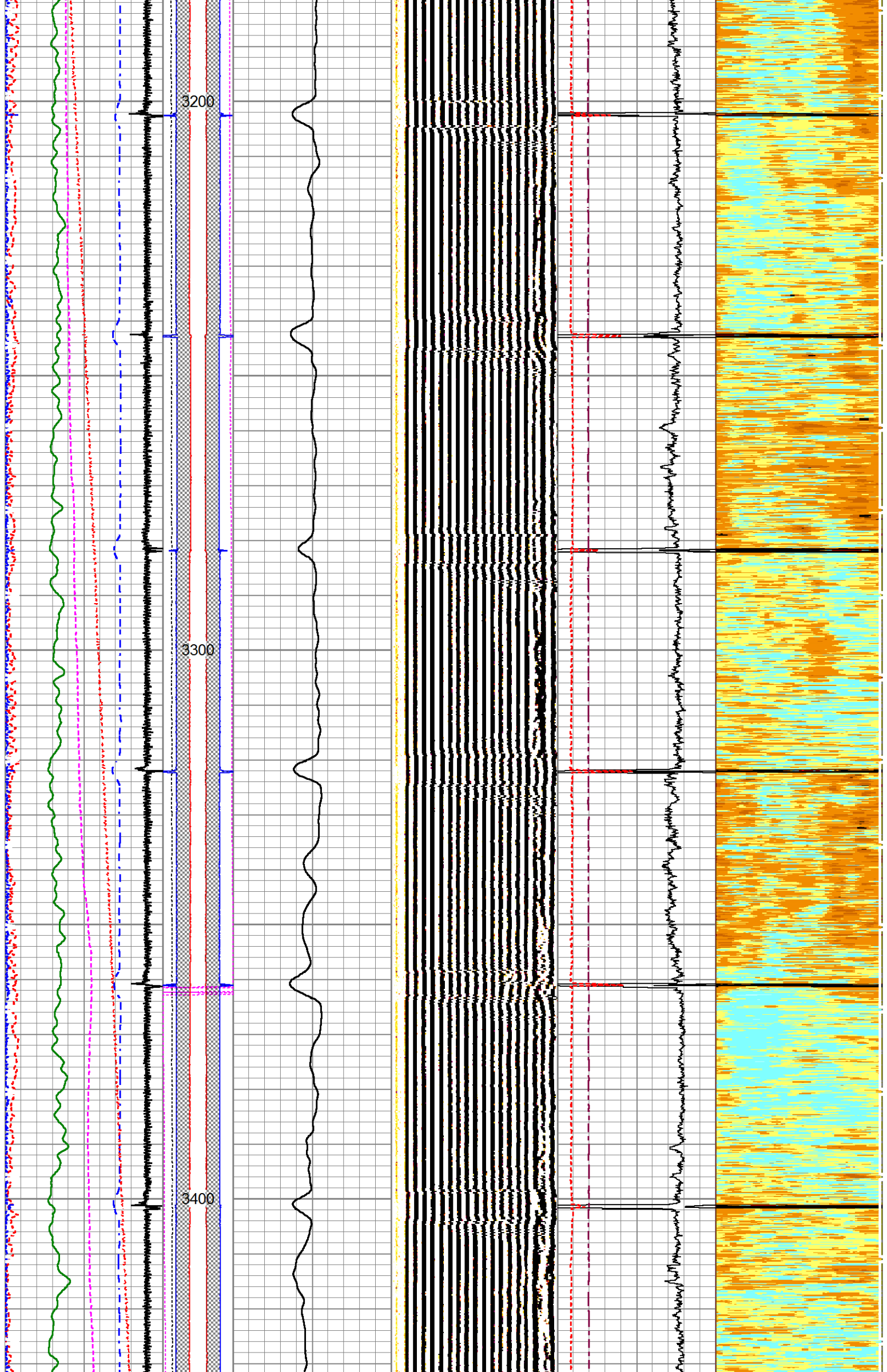


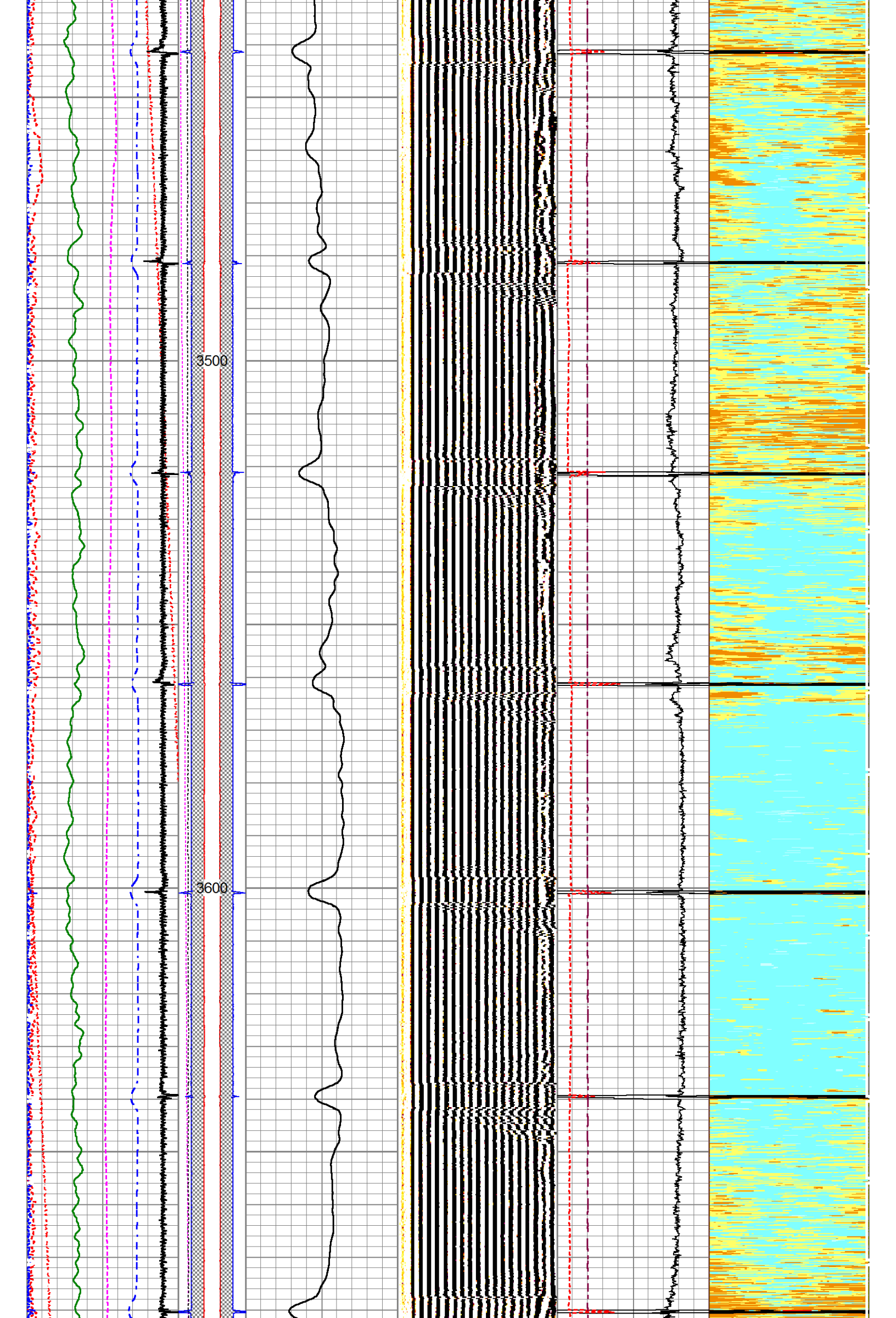




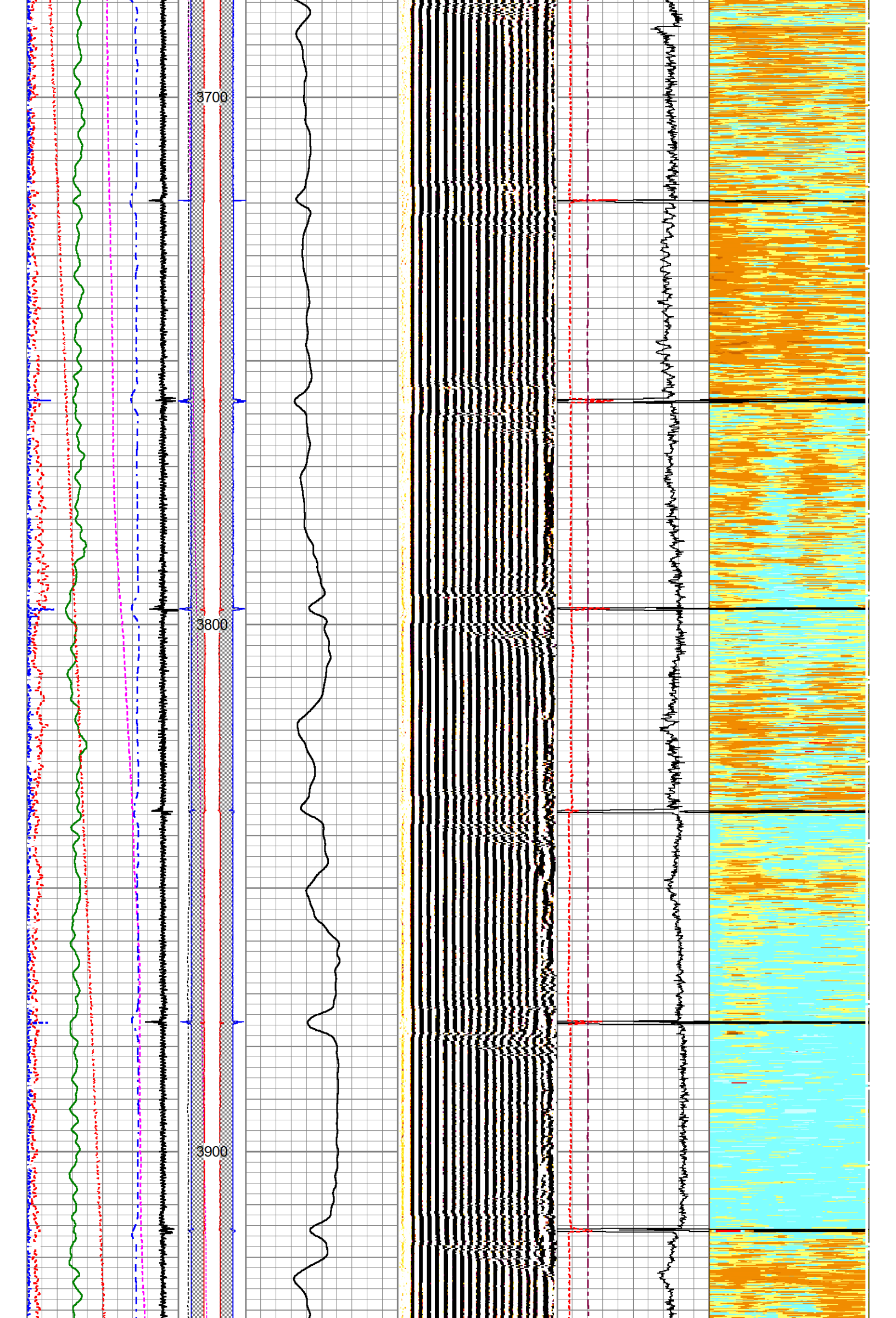


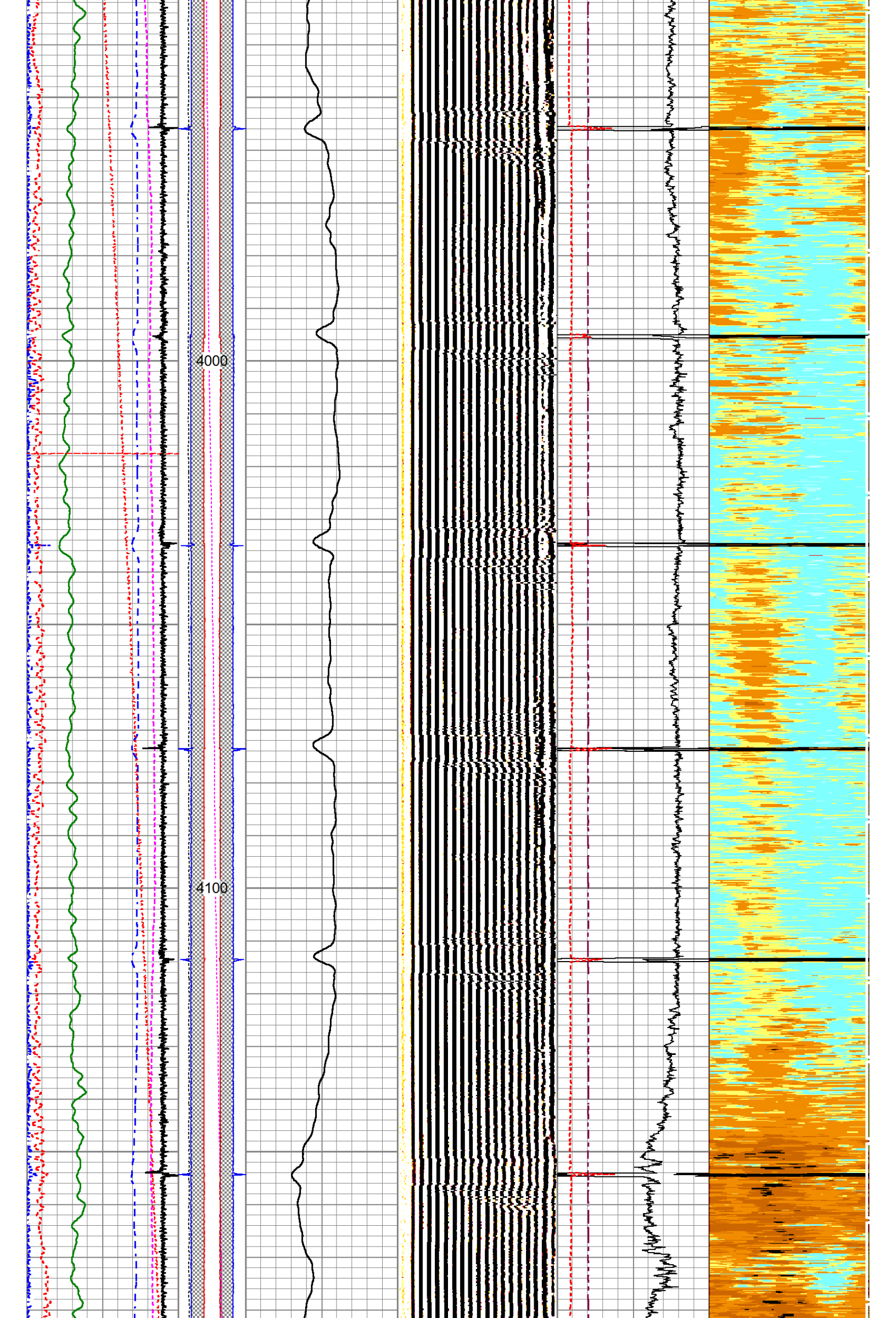




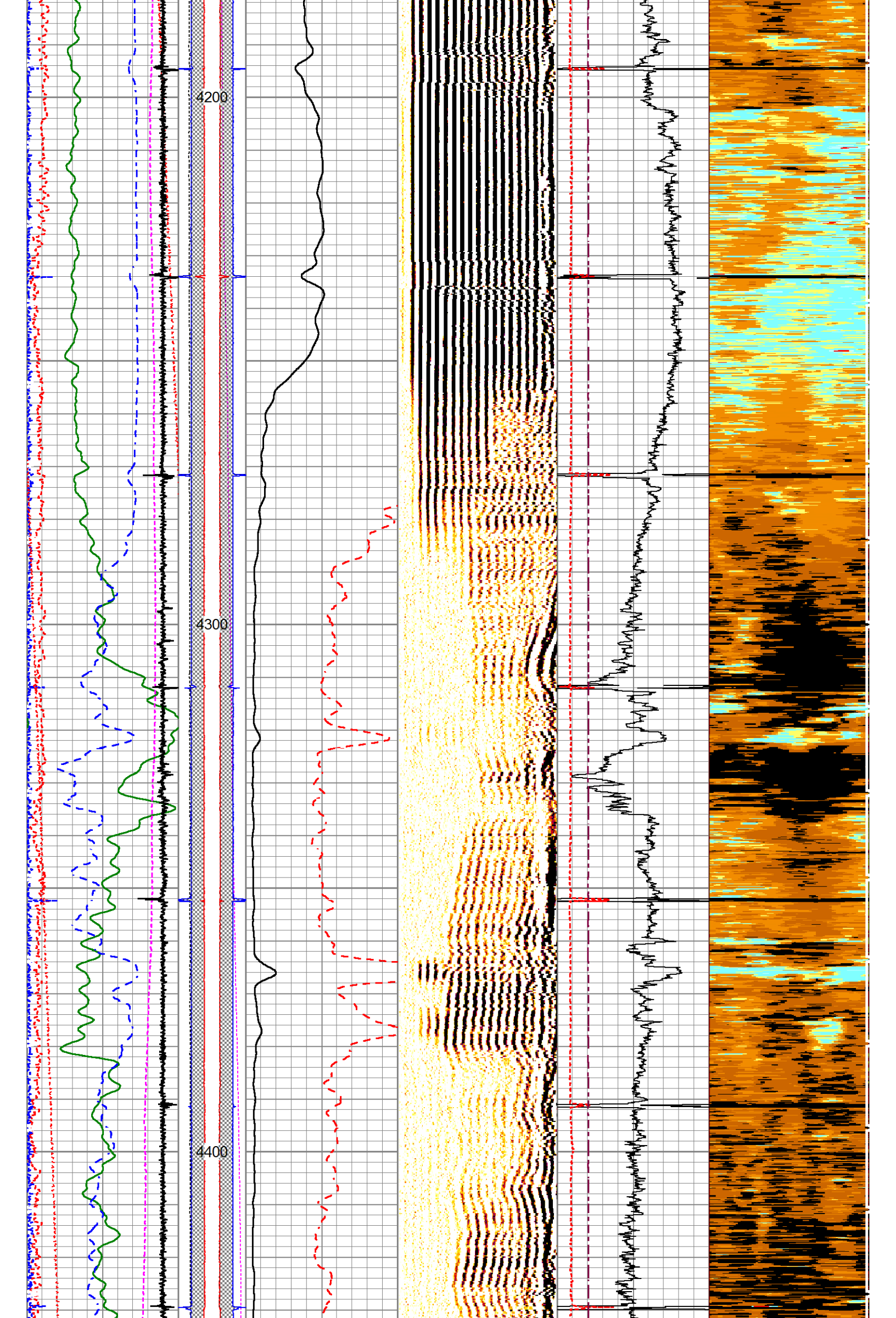


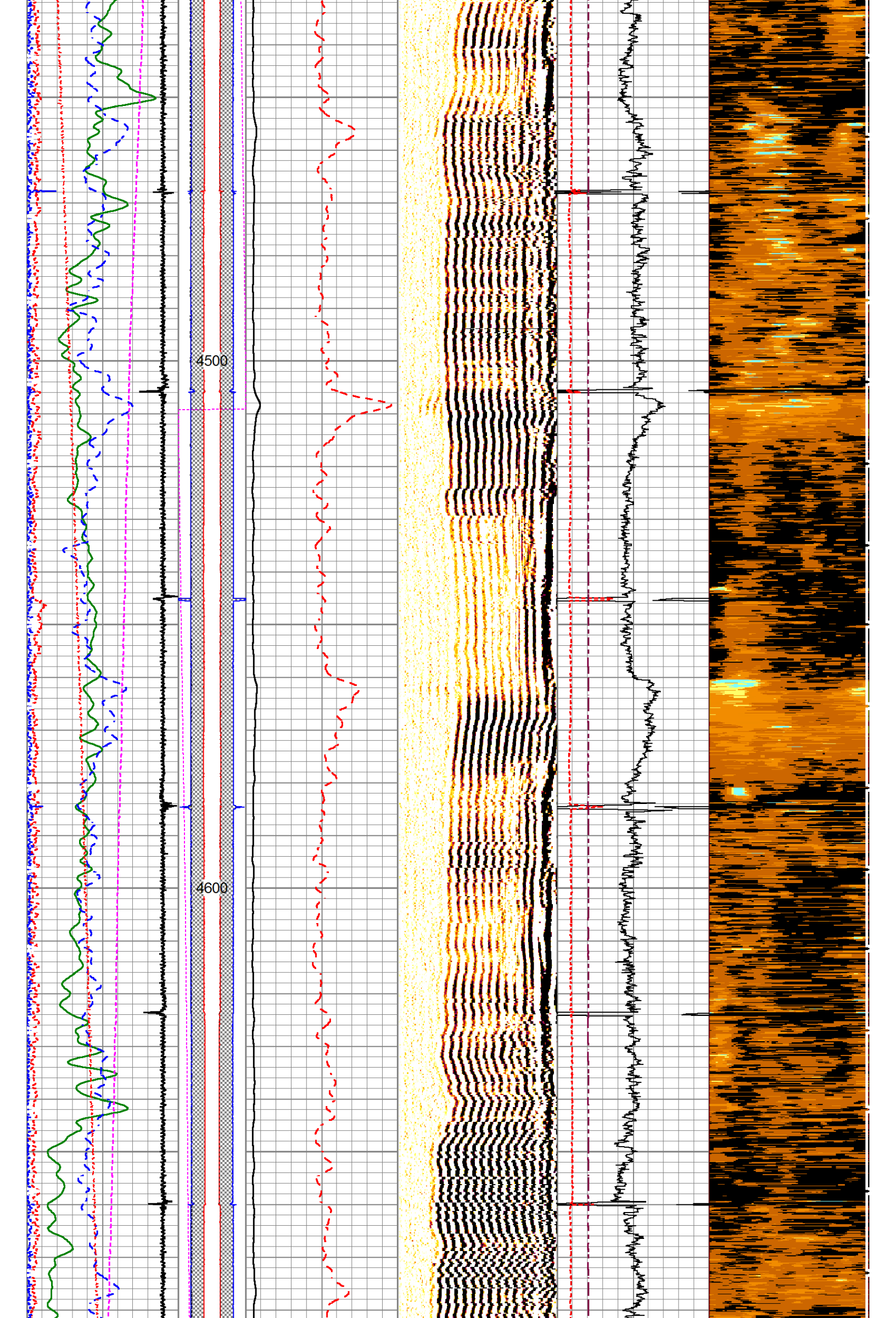




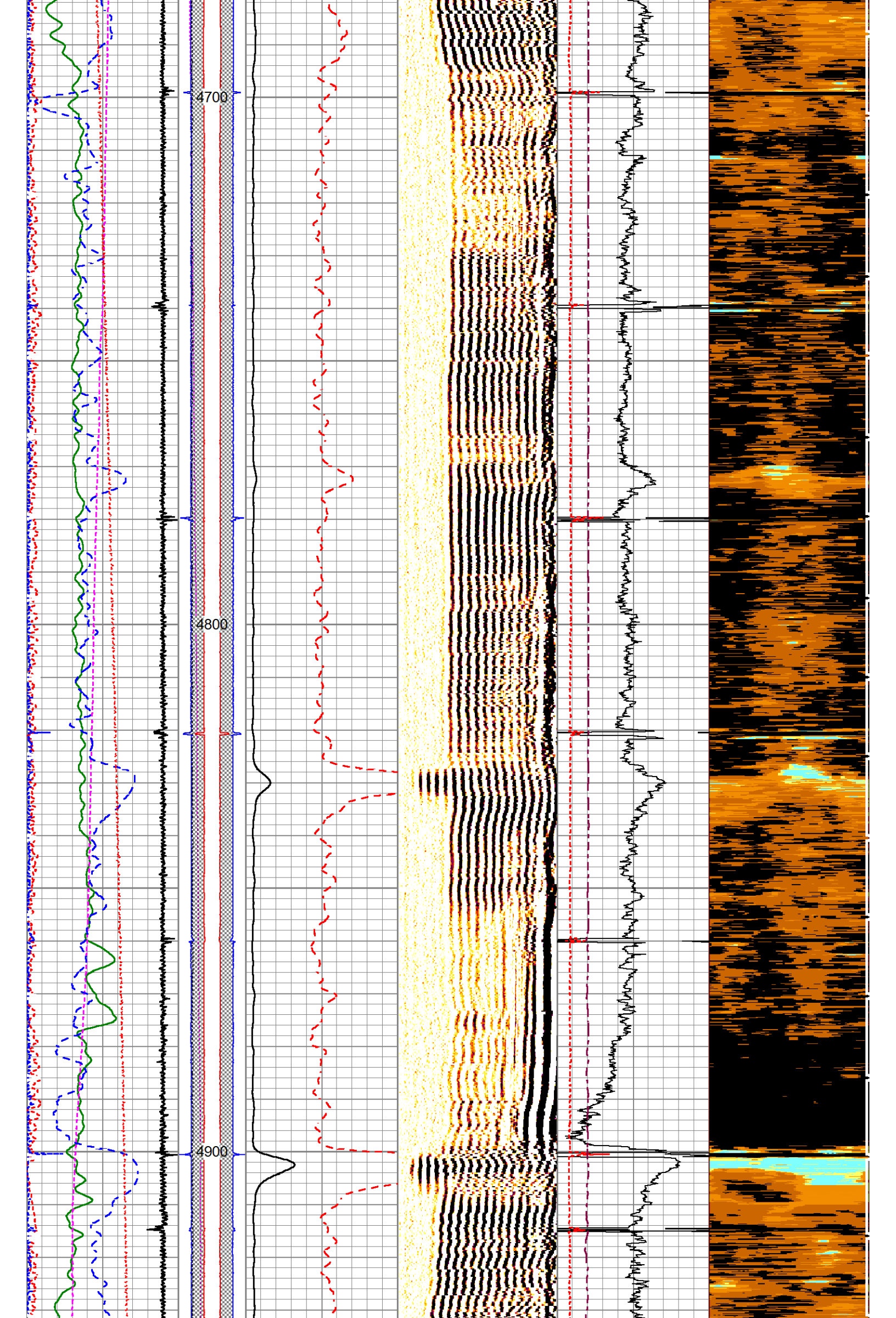


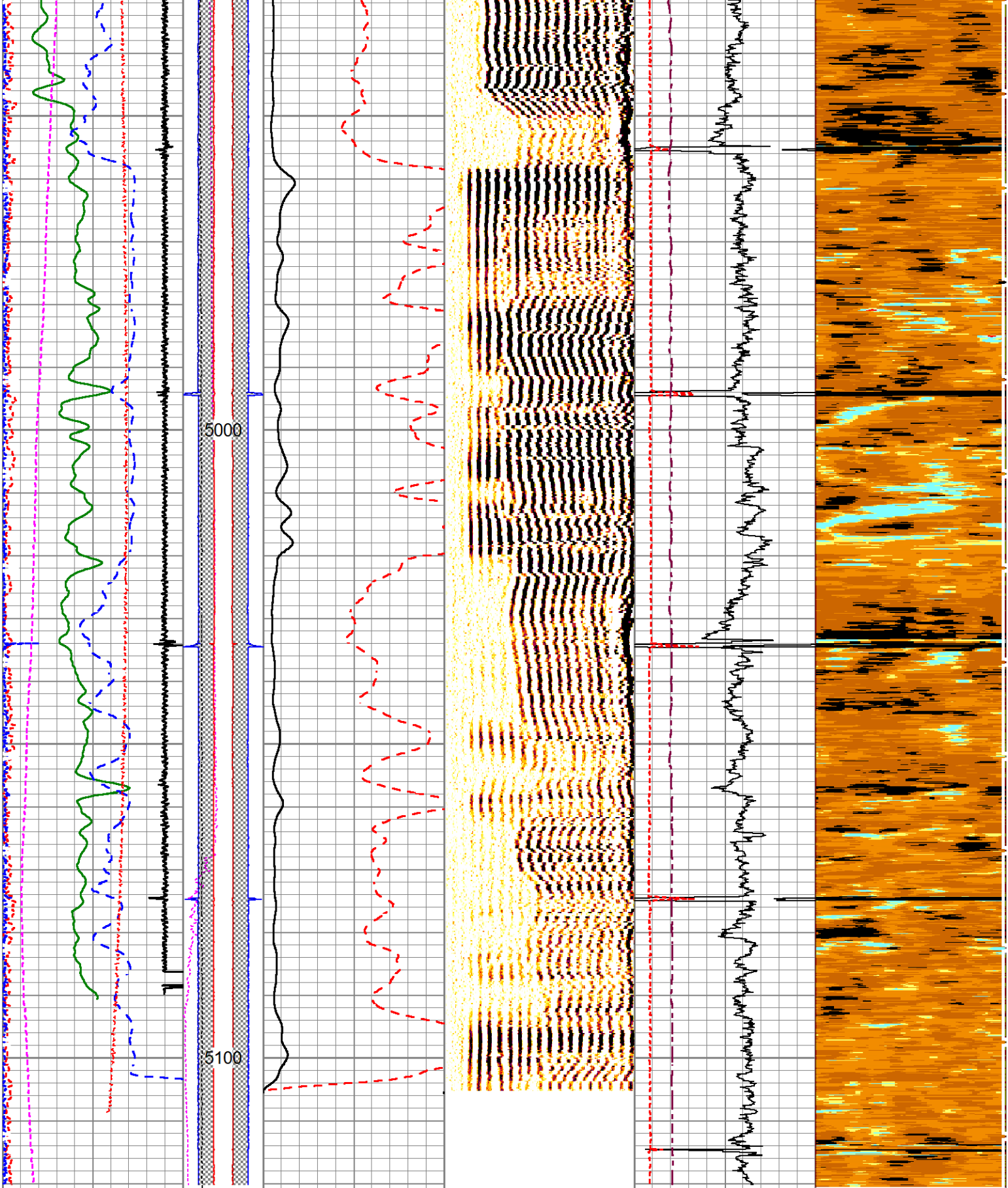






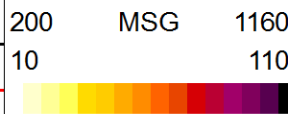






0	ECC (in)	1	RB	0	AMP (mV)	100
0	OVAL (in)	0.2	(deg)	0	AMP3ft (mV)	10
0	GR (GAPI)	200	0	360		
-1	DEV (deg)	9	LTEN			
	CBL_TT		(lb)			
353	(usec)	233	500	2500		
85	TEMP (degF)	105	COD			
-450	CCL	50	(in)			
			6.1	3.1		
			COD			
			(in)			
			3.1	6.1		

0	AMP (mV)	100
0	AMP3ft (mV)	10



10	AVG_Z (MRayl)	0
	AVG_THK	
0.2	(in)	1.2
220	FTT (usec/ft)	120

0	ZMAP	360
0		6.15



	CID (in)	
6.1	3.1	
	CID (in)	
3.1	6.1	

HALLIBURTON

MAIN PASS

5"=100'

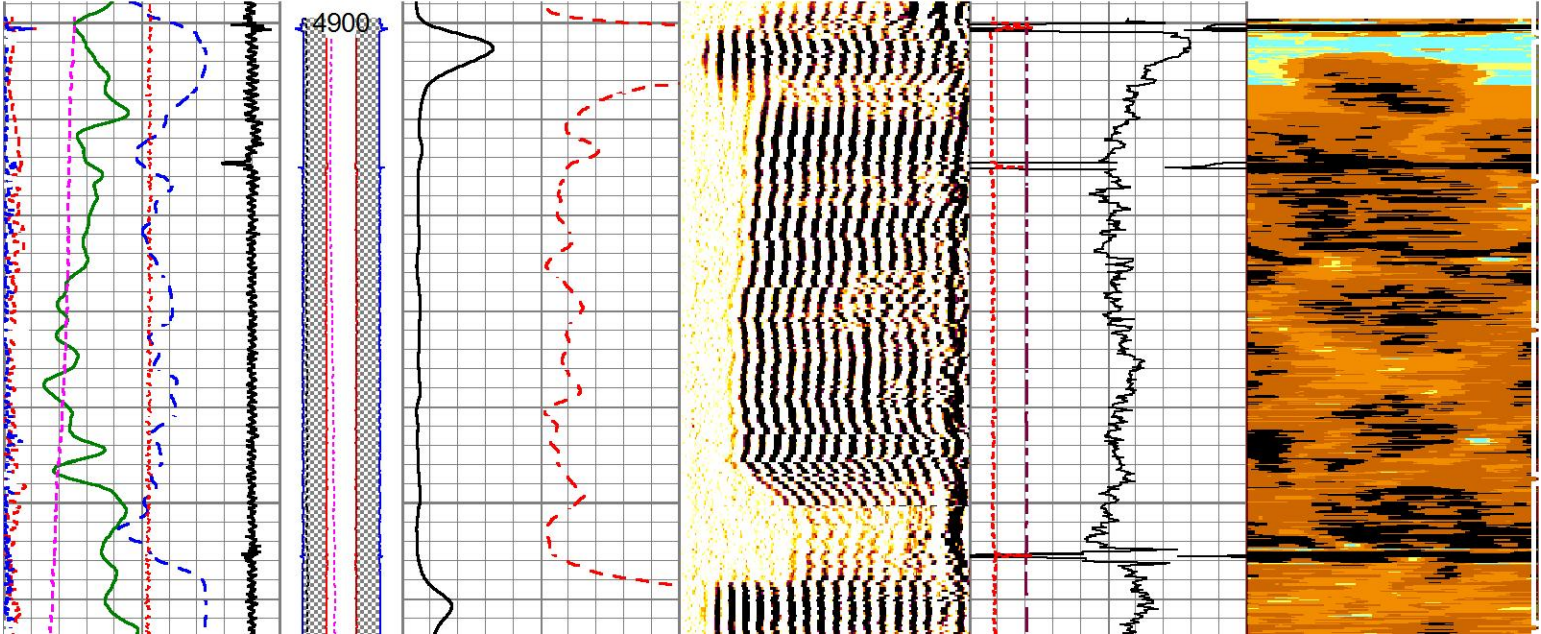
HALLIBURTON

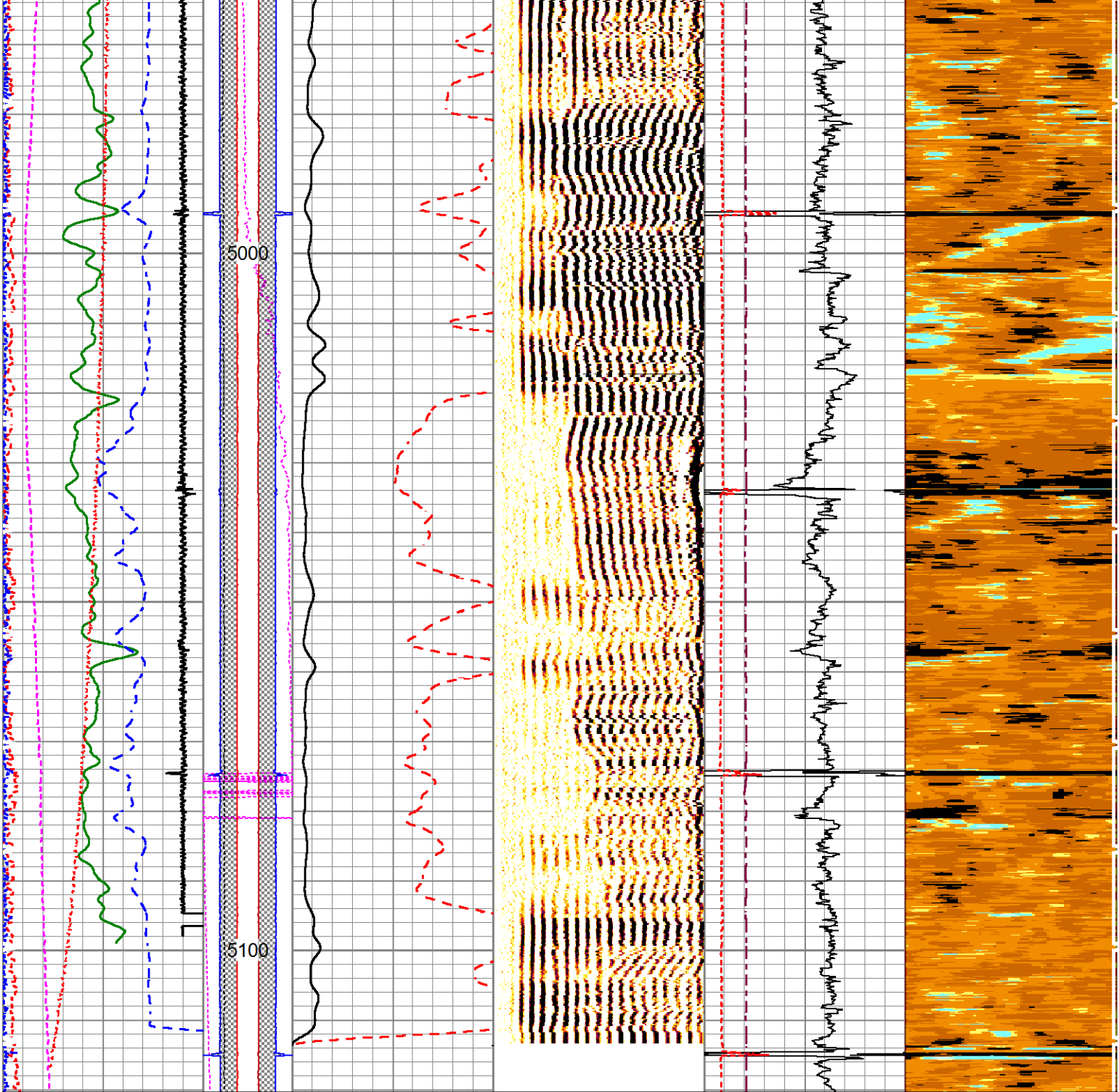
REPEAT PASS

5"=100'

Database File        schwake1-cast.db  
Dataset Pathname    schwake1/run1/REPEAT1  
Presentation Format   1COMBO~1  
Dataset Creation     Mon Apr 03 17:35:49 2017  
Charted by           Depth in Feet scaled 1:240

0	ECC (in)	1	RB	0	AMP (mV)	100	200	MSG	1160	10	AVG_Z (MRayl)	0	0	ZMAP	360
0	OVAL (in)	0.2	(deg)	0	AMP3ft (mV)	10	10		110		AVG_THK	0			6.15
0	GR (GAPI)	200	0	360							(in)	0.2	1.2		
-1	DEV (deg)	9	LTEN								220	FTT (usec/ft)	120		
	CBL_TT		(lb)												
353	(usec)	233	500	2500											
85	TEMP (degF)	105	COD												
-450	CCL	50	(in)												
			6.1	3.1											
			COD												
			(in)												
			3.1	6.1											
			CID												
			(in)												
			6.1	3.1											
			CID												
			(in)												
			3.1	6.1											





0	ECC (in)	1	RB	0	AMP (mV)	100	200	MSG	1160	10	AVG_Z (MRayl)	0	0	ZMAP	360
0	OVAL (in)	0.2	(deg)	0	AMP3ft (mV)	10	10		110		AVG_THK		0		6.15
0	GR (GAPI)	200	0	360							(in)	0.2	1.2		
-1	DEV (deg)	9	LTEN								220	FTT (usec/ft)	120		
	CBL_TT		(lb)												
353	(usec)	233	500	2500											
85	TEMP (degF)	105	COD												
-450	CCL	50	(in)												
			6.1	3.1											
			COD												
			(in)												
			3.1	6.1											
			CID												
			(in)												
			6.1	3.1											
			CID												
			(in)												
			3.1	6.1											

REPEAT PASS

Calibration Report	
Database File	schwake1-cast.db
Dataset Pathname	schwake1/run1/MAIN
Dataset Creation	Mon Apr 03 17:55:16 2017

Circumferential Acoustic Scanning Tool Downhole Calibration Report	
Serial-Model:	11922569-3 5/8 EXT SCAN
Calibration Performed:	Mon Apr 03 17:03:59 2017

Averaged Results

Name	Value	Units
TT-Main	46.3	usec
Amp-Main	62.2	
Frq-Main	299.9	khz
TT-Mud	46.8	usec
Amp-Mud	51.4	
TT-LWw1	46.3	usec
TT-LWw2	89.0	usec
Amp-LWw1	63.6	
Amp-LWw2	28.0	
Frq-LWw	366.7	khz
TT-MWw1	46.8	usec
TT-MWw2	89.6	usec
Amp-MWw1	51.6	
Amp-MWw2	18.4	
Frq-MWw	277.9	khz

Calibrated Offsets

Name	Value
TCAL	3.7
MCAL	3.9

XY Accelerometers Calibration Report						
Performed:	(Not Performed)					
	Low Read.	High Read.		Low Ref.	High Ref.	
X Accelerometer	0.000	1.000	gee	0.000	1.000	gee
Y Accelerometer	0.000	1.000	gee	0.000	1.000	gee

Cement Bond Log Shop Calibration Report	
Serial-Model:	12091454-A
Calibration Performed:	Mon Apr 03 17:09:16 2017

Free Pipe Calibration		
TT	Measured	Units
Amplitude	263.7	usec
Log Base Line	611.1	mV
	4.5	mV
Calibration References and Gain		
Name	Value	Units
Pipe O.D.	5.500	in
Pipe Weight	15.5	lb/ft
Pipe Ref. Amp.	71.9	mV



Amp. Gain

0.119

Gamma Ray Calibration Report

Type / Serial: 002 / 11224502

SHOP CALIBRATION

Mon Feb 27 11:33:38 2017

Background	Counts/Sec.	Gain	Offset	Jig	Units
Calibrator	29.0				cps
	296.5				cps
		1.3758			GAPI/cps

PRIMARY VERIFICATION

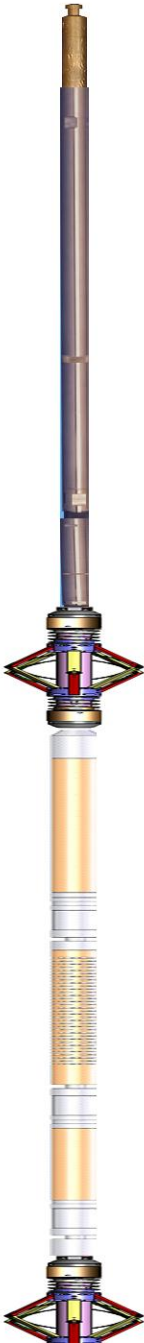
Background	39.1				cps
Calibrator	412.9				cps
Difference				373.7	GAPI


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)
			STNDCH-1_11_16_CH 1.6875 IN CABLE HEAD	1.50	1.44	1.00
CCL	35.10					
GR	32.84		TTTCU-002 (11224502) Through Tubing Telemetry Cartridge - Ultrawire	7.65	1.69	37.00
			XHU-003 (12461939) 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 (12091454) 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

				CAST M INLINE CENTRALIZER		
				HAL-CAST-M-ELECT-CAST-M-Elect (12037.574) CAST M ELECTRONIC	2.75	30.00
AccY2	0.00			HAL-CAST-M-3 5/8 EXT SCAN (119225696.65) 3 5/8 EXT SCAN CASTM	3.13	276.00
AccX2	0.00					
AccY1	0.00					
AccX1	0.00					
SCAN	0.00					
LOCTIM	0.00					
UTCTIM	0.00					
LLMTEN	0.00					
Dataset: schwake1-cast.db: field/schwake1/run1/MAIN						
Total length: 38.67 ft						
Total weight: 517.00 lb						
O.D.: 3.13 in						

Company	EAST CHEYENNE GAS STORAGE LLC				
Well	SCHWAKE 1 WP-M008				
Field	WEST PEETZ PROSPECT				
County	LOGAN	State	CO		
HALLIBURTON	CIRCUMFERENTIAL ACOUSTIC SCANNING TOOL				