

Schlumberger

Company: Noble Energy Inc

Well: Wells Ranch AA35-68-1AHNA

Field: Wattenberg

County: Weld

State: Colorado

Ultrasonic Imaging Tool
Cement Evaluation

County: Weld

Field: Wattenberg

Location: Sec. 36, T6N, R63W

Well: Wells Ranch AA35-68-1AHNA

Company: Noble Energy Inc

LOCATION

Sec. 36, T6N, R63W

SHL: NW/4NW 680 FNL X 164 FWL

Lat/Long: 40.44828000/-104.39409000

Elev.: K.B. 4838.00 ft

G.L. 4808.00 ft

D.F. 4837.00 ft

Permanent Datum: _____

Ground Level _____

Elev.: 4808.00 ft

Log Measured From: _____

Kelly Bushing _____

30.00 ft above Perm. Datum

Drilling Measured From: _____

Kelly Bushing _____

API Serial No.

05-123-38664-000C

Section 36

Township 6N

Range 63W

Logging Date 27-Mar-2014			
Run Number	1		
Depth Driller	11169 ft		
Schlumberger Depth	9541 ft		
Bottom Log Interval	9541 ft		
Top Log Interval	0 ft		
Casing Fluid Type	Brine		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	0 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.750 in		
From	635 ft		
To	6931 ft		
Casing/Tubing Size	7.000 in		
Weight	26 lbm/ft		
Grade	P-110		
From	635 ft		
To	6931 ft		
Maximum Recorded Temperatures			
Logger On Bottom	27-Mar-2014	Time	10:20
Unit Number	3030	Location	Casper, WY
Recorded By	Allison Johnston		
Witnessed By	Kelli Hale		

PVT DATA		Run 1	Run 2	Run 3
Oil Density				
Water Salinity				
Gas Gravity				
Bo				
Bw				
1/Bg				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation				
CEMENTING DATA				
Primary/Squeeze		Primary		
Casing String No				
Lead Cement Type				
Volume				
Density				
Water Loss				
Additives				
Tail Cement Type				
Volume				
Density				
Water Loss				
Additives				
Expected Cement Top				
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Fluid Type				
Salinity				
Density				
Fluid Level				
BIT/CASING/TUBING STRING				
Bit Size				
From				
To				
Casing/Tubing Size				
Weight				
Grade				
From				
To				
Maximum Recorded Temperatures				
Logger On Bottom		Time		
Unit Number	Location			
Recorded By				
Witnessed By				

DEPTH SUMMARY LISTING

Date Created: 27-MAR-2014 11:52:34

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-39P-LXS
Serial Number:	6404	Serial Number:	2858	Serial Number:	
Calibration Date:	30-Oct-2013	Calibration Date:	27-Feb-2014	Length:	18240 FT
Calibrator Serial Number:	6404	Calibrator Serial Number:	44135	Conveyance Method:	Wireline
Calibration Cable Type:	7-39P-LXS	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-4	Calibration RMS:	13		
Wheel Correction 2:	-4	Calibration Peak Error:	24		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	3.00 FT
Tool Zero Check At Surface:	

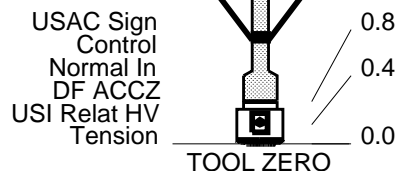
Depth Control Remarks

1. All Schlumberger depth procedures followed.
2. IDW used as primary depth control, z-chart used as secondary depth control.
- 3.
- 4.
- 5.
- 6.

DISCLAIMER

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OTHER SERVICES1	OTHER SERVICES2
OS1:	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
1) Toolstring run as per tool sketch.	
2) Logging Objective: cement evaluation	
3) Well cemented by Haliburton on 10-Mar-2014.	
4) Well cemented with 13.8 ppg Expandacem tail and 12.5 ppg Varicem lead.	



MAXIMUM STRING DIAMETER 7.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

USIT Composite 3000 Psi

MAXIS Field Log

Company: Noble Energy Inc

Well: Wells Ranch AA35-68-1AHNA

Input DLIS Files

DEFAULT	USI_012LUP	FN:11	PRODUCER	27-Mar-2014 09:52	6541.5 FT	100.2 FT
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Output DLIS Files

DEFAULT	USI_020PUP	FN:19	PRODUCER	27-Mar-2014 12:13	6544.5 FT	103.5 FT
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OP System Version: 19C1-222

USIT-E	19C1-222	EDTC-B	19C1-222
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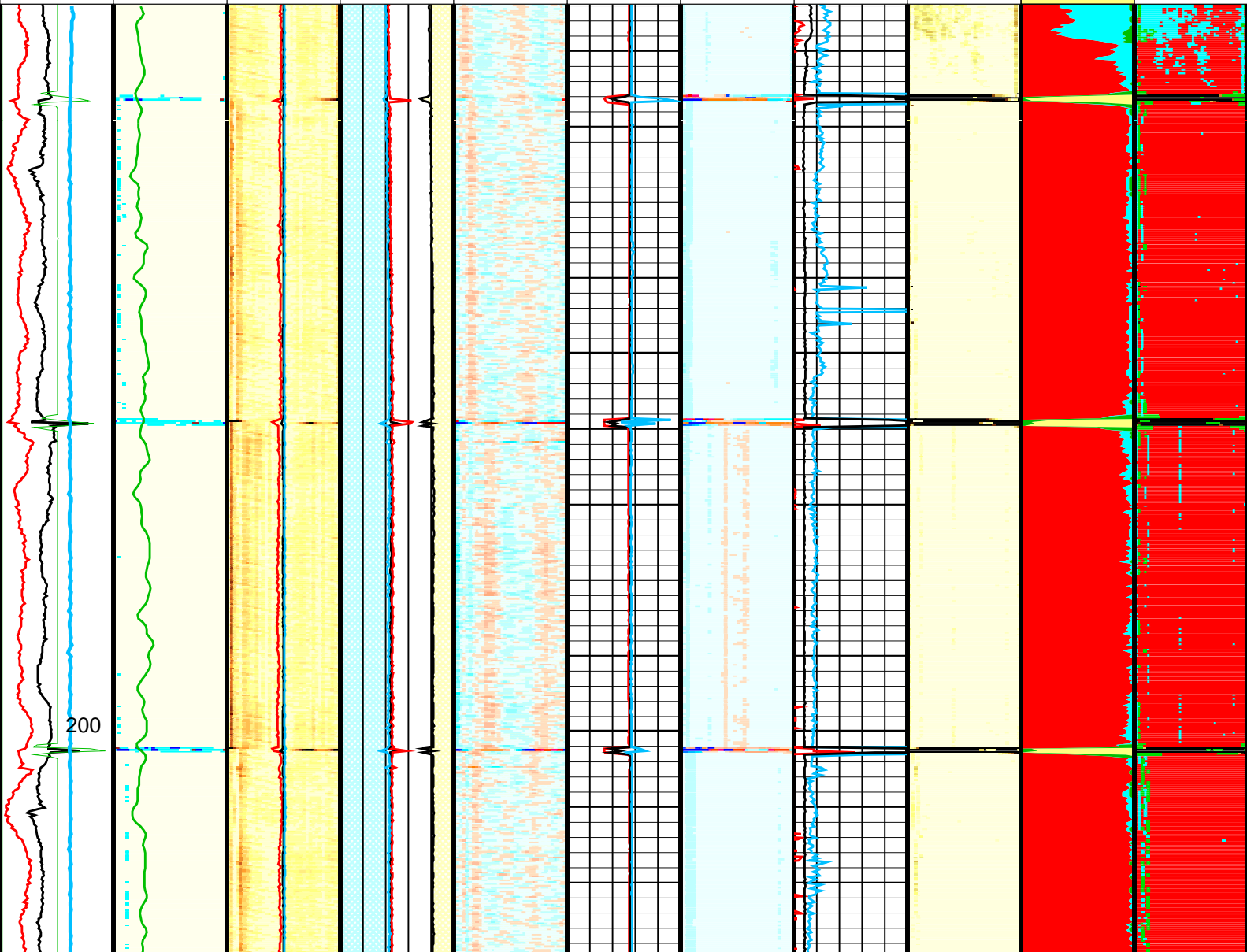
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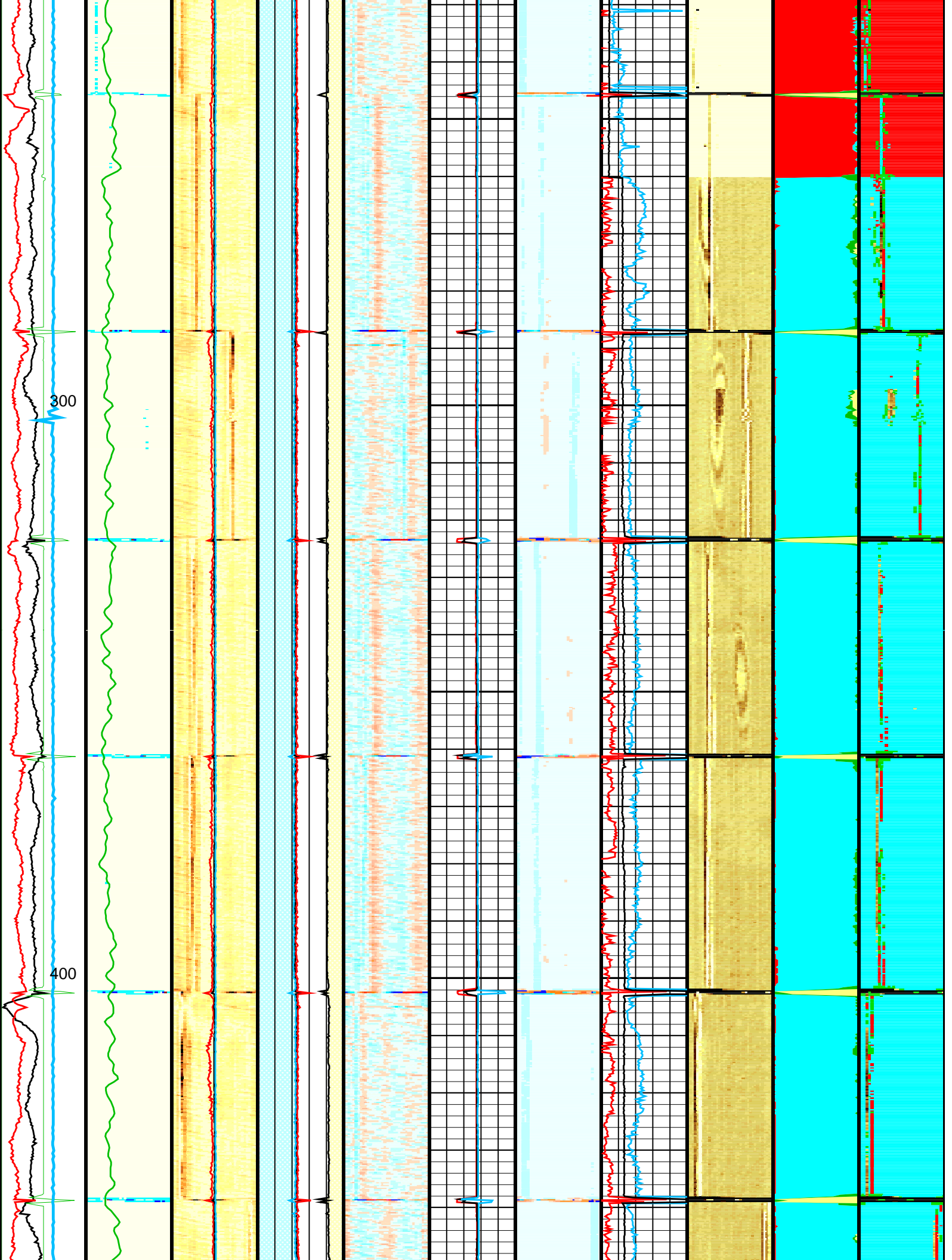
DLIS Name	New Value	Previous Value	Depth & Time
DFVL	186 US/F	197 US/F	6544.5 12:13:10
	187 US/F	186 US/F	5900.0 12:13:33
	187 US/F	187 US/F	5200.0 12:14:12
	189 US/F	187 US/F	4050.0 12:15:17
	191 US/F	189 US/F	2900.0 12:16:21
	192 US/F	191 US/F	2300.0 12:16:55
	193 US/F	192 US/F	1900.0 12:17:18
	193 US/F	193 US/F	1750.0 12:17:26
	195 US/F	193 US/F	1600.0 12:17:34
	195 US/F	195 US/F	1300.0 12:17:51

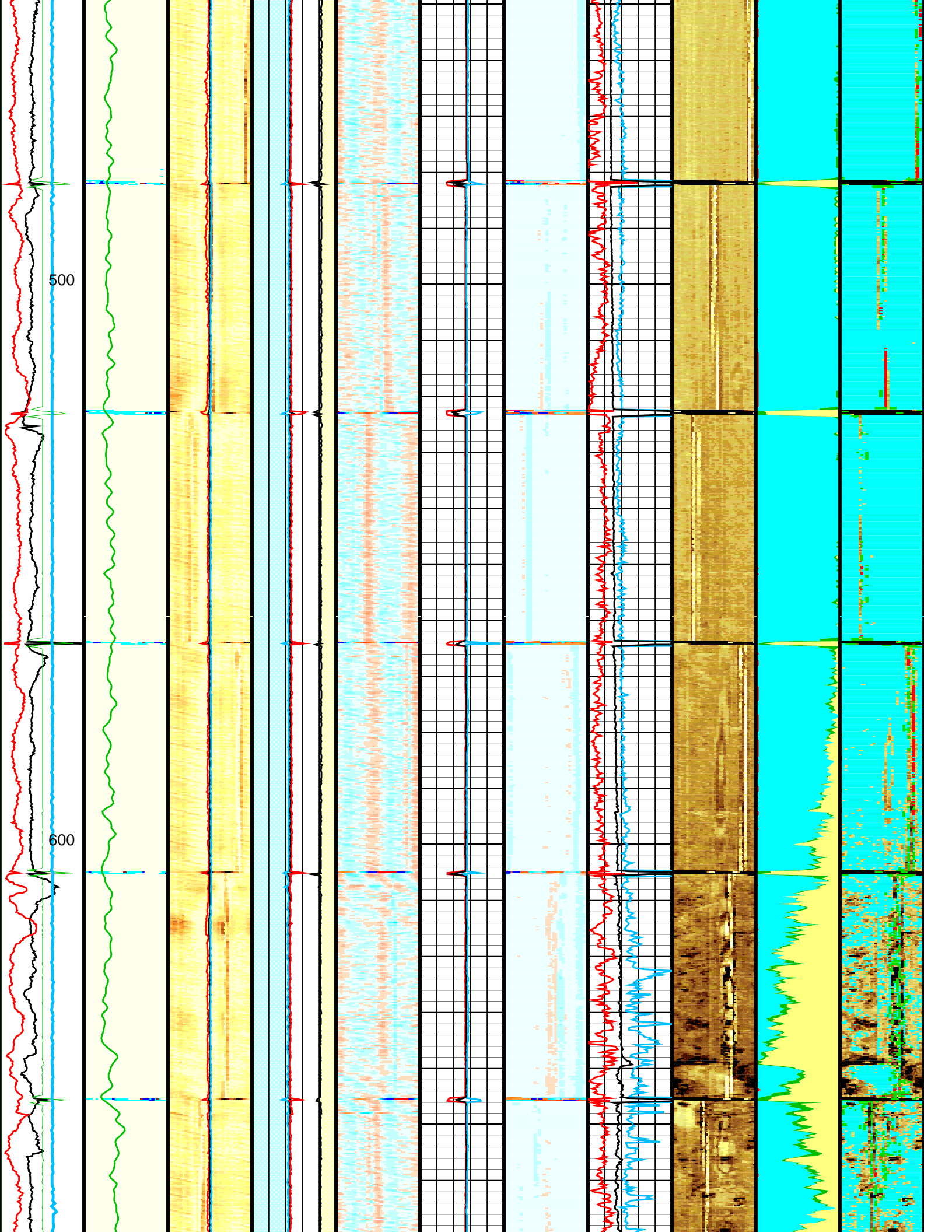
Image rotation (UCAZ) (DEG)	0360						
Azimuth of eccent. (AZEC) (DEG)	0360						
Tool/Tot. Drag From D4T to STIA							
Cable Drag From D4T to STIT							
Stuck Stretch (STIT)	0(F)50						
Cable Speed (CS) (F/HR)	02000						
Rev. speed (RSAV) (RPS)	-8-6		<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div>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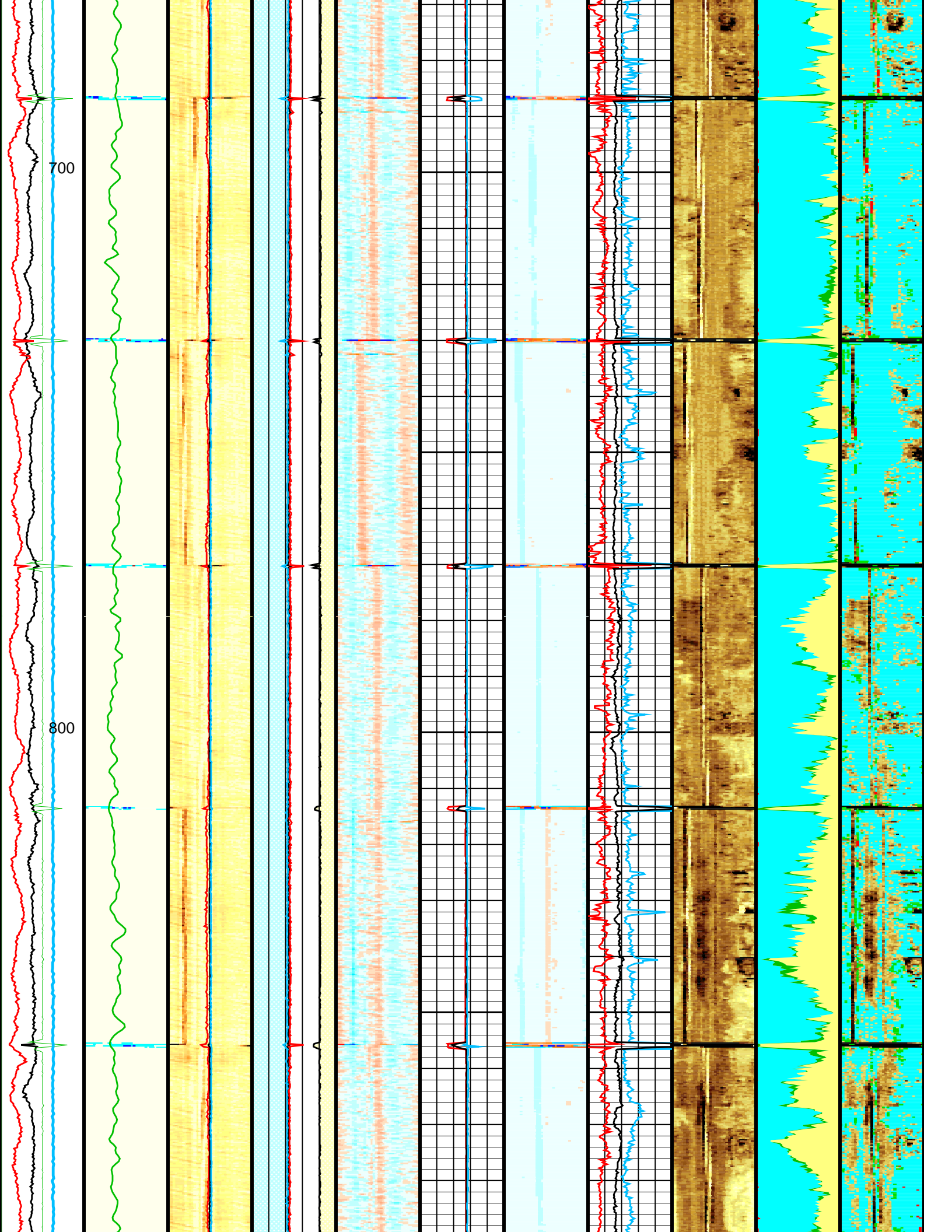
Rev. speed (RSAV)	Process. flags (UFLG) (----	Average of Amplitude (AWAV)	Internal radius Average (IRAV) (IN)	Average of Thickness (THAV) (IN)	Maximum of AI (AIMX) (MRAY)	Gas or Dry MicroA
6 (RPS) 8		0 (DB) 75	2.7 3.7	0.1 0.6	-1 9	

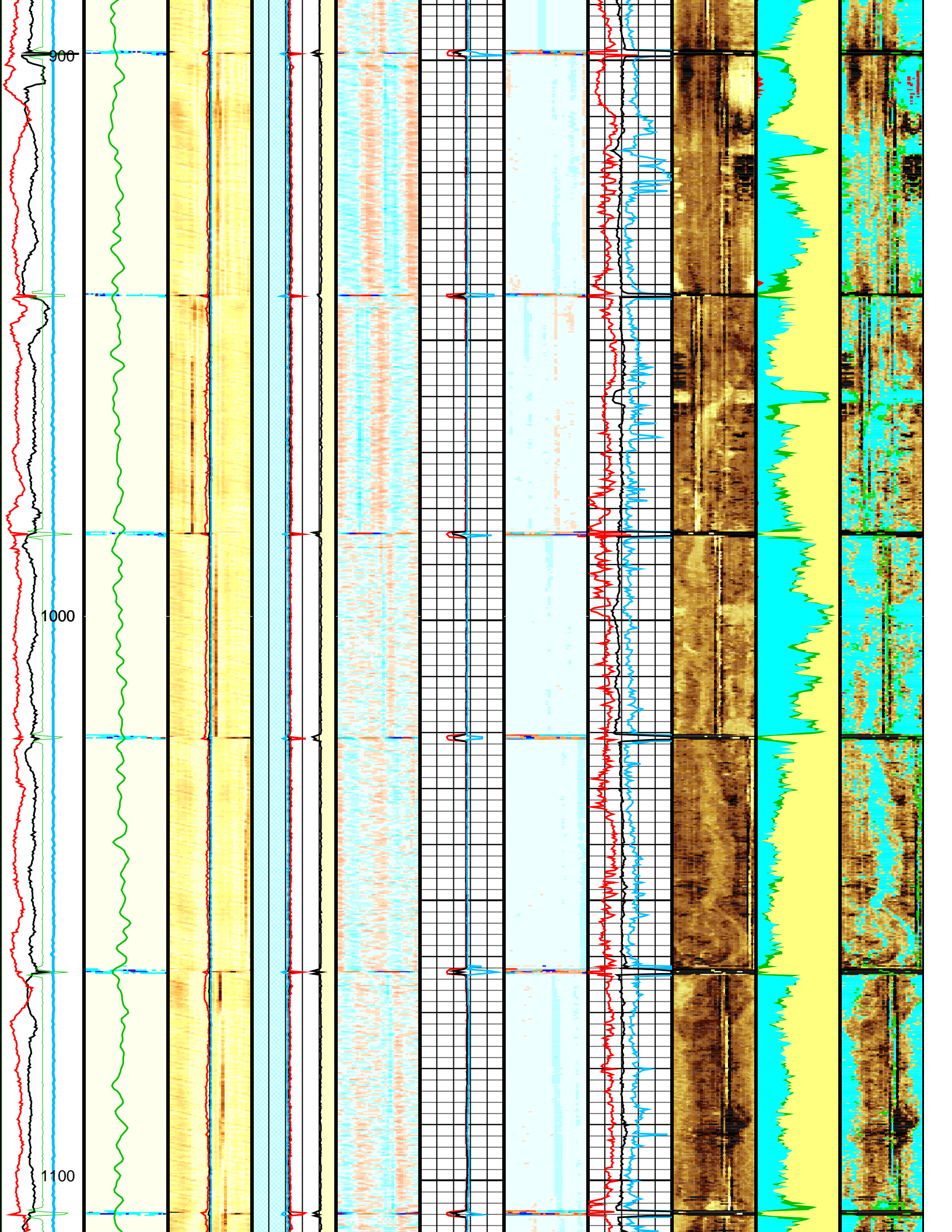
Eccent. (ECCE) 0 (IN) 0.5	Gamma Ray (GR_ EDTC) (GAPI) 0 150	Min. of Amplitude (AWMN) (DB) 75	External radius Average (ERAV) (IN) 2.7 3.7	Min of Thickness (THMN) (IN) 0.1 0.6	Minimum of AI (AIMN) (MRAY) -1 9	Bonded	Cement Map with Impedance Classificati on (AI_ MICRO_ DEBONDIN G_IMAGE) (MRAY)
			Internal radii minus Ave (IRBK) (IN)	Thickness minus Ave (THBK) (IN)	Raw Acoustic Imped. (AIBK) (MRAY)		

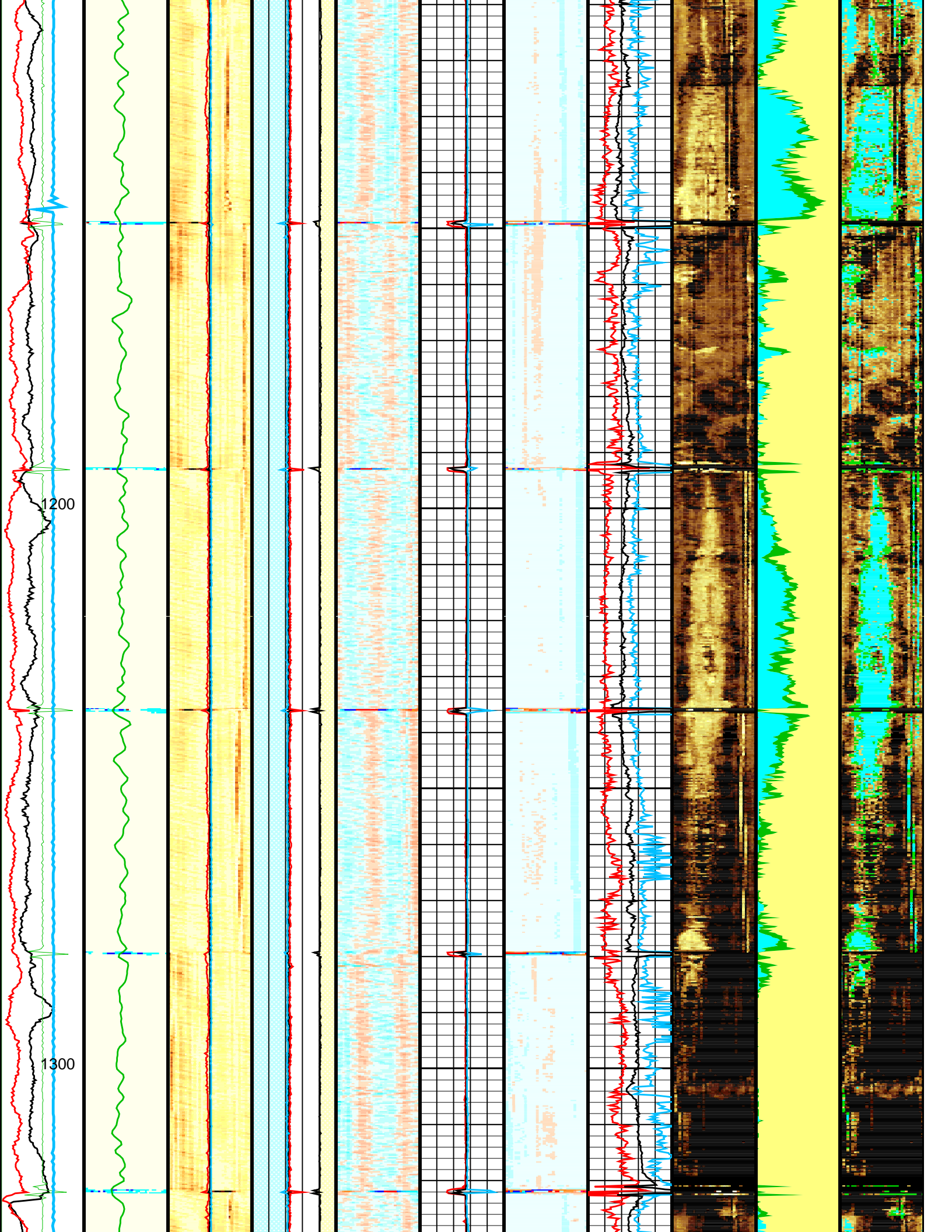


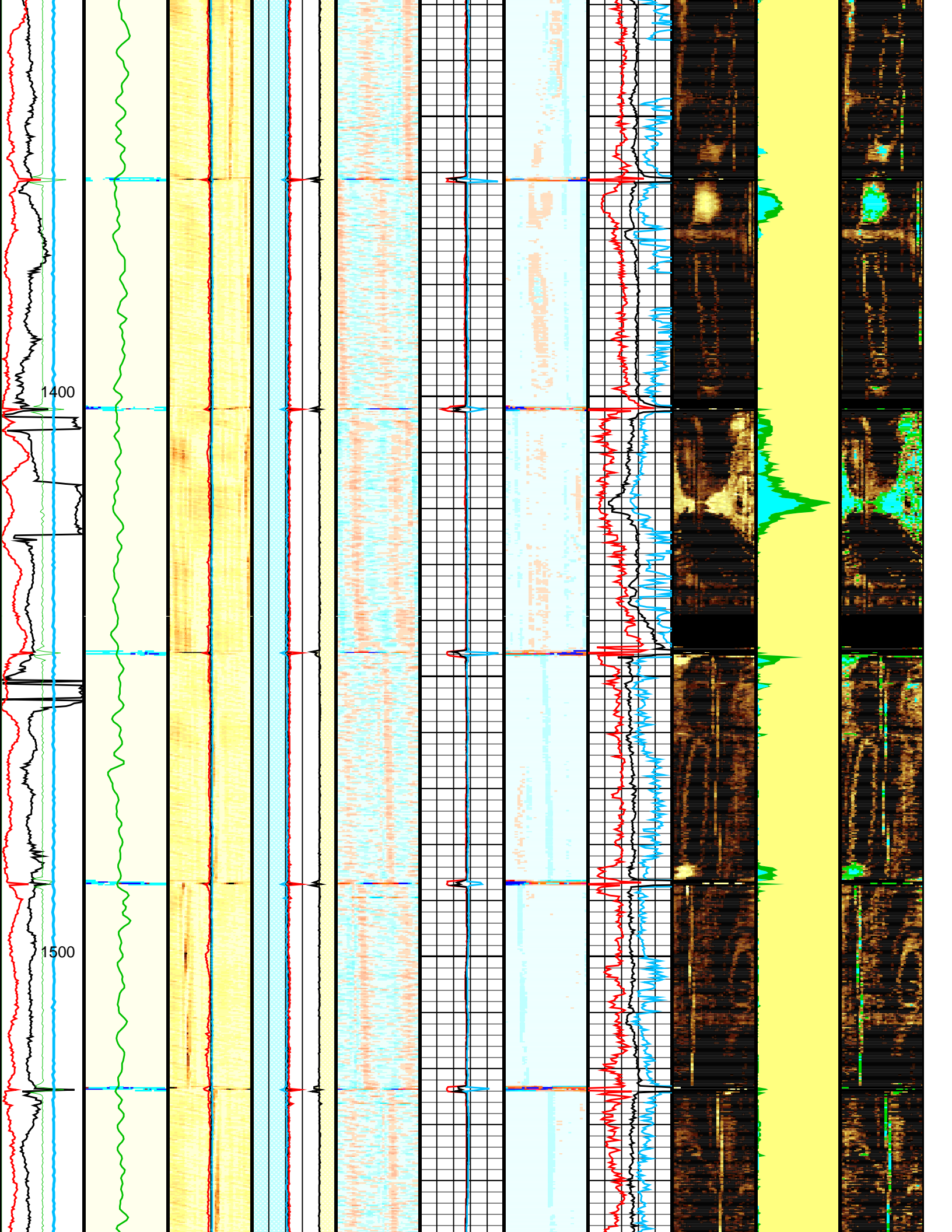


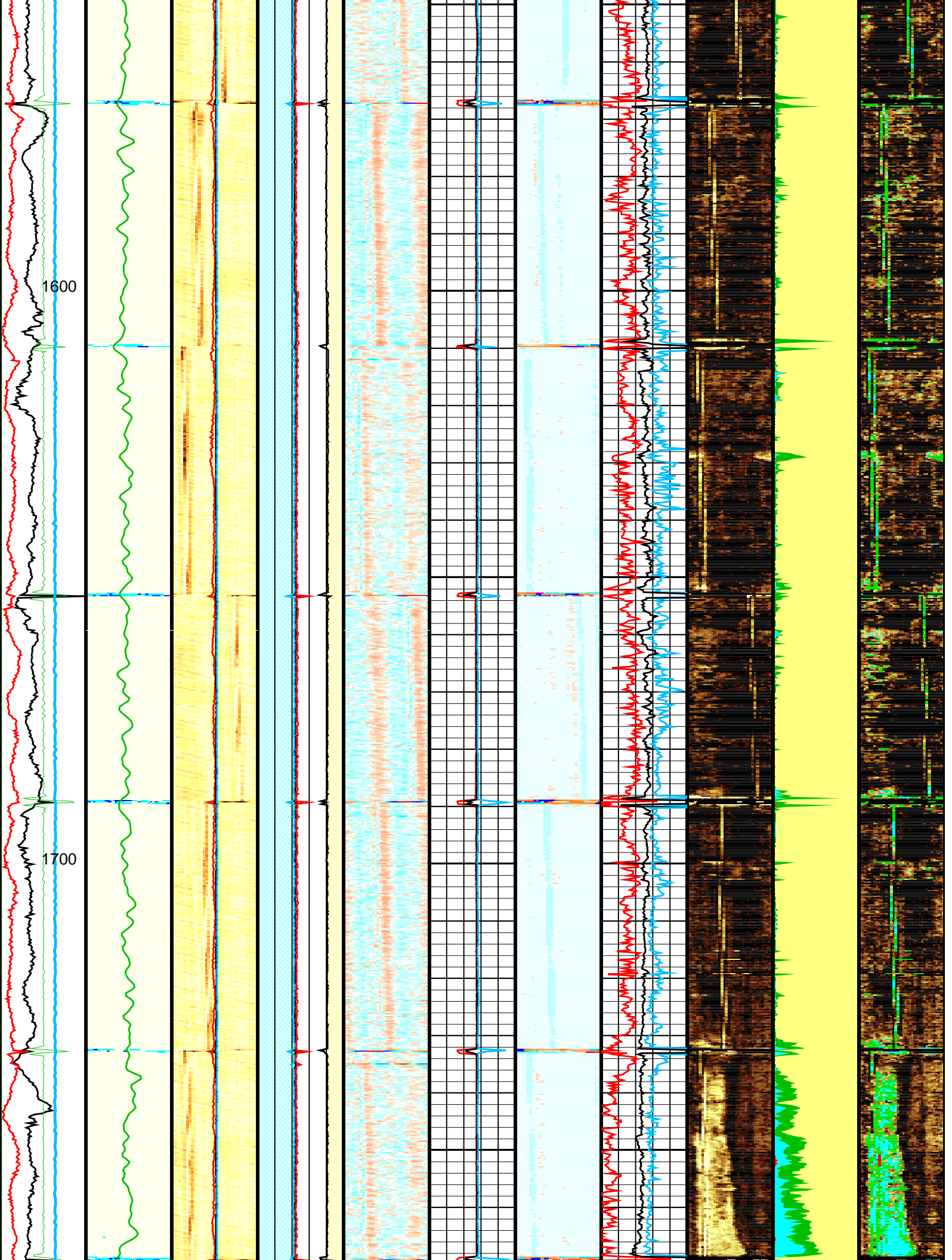


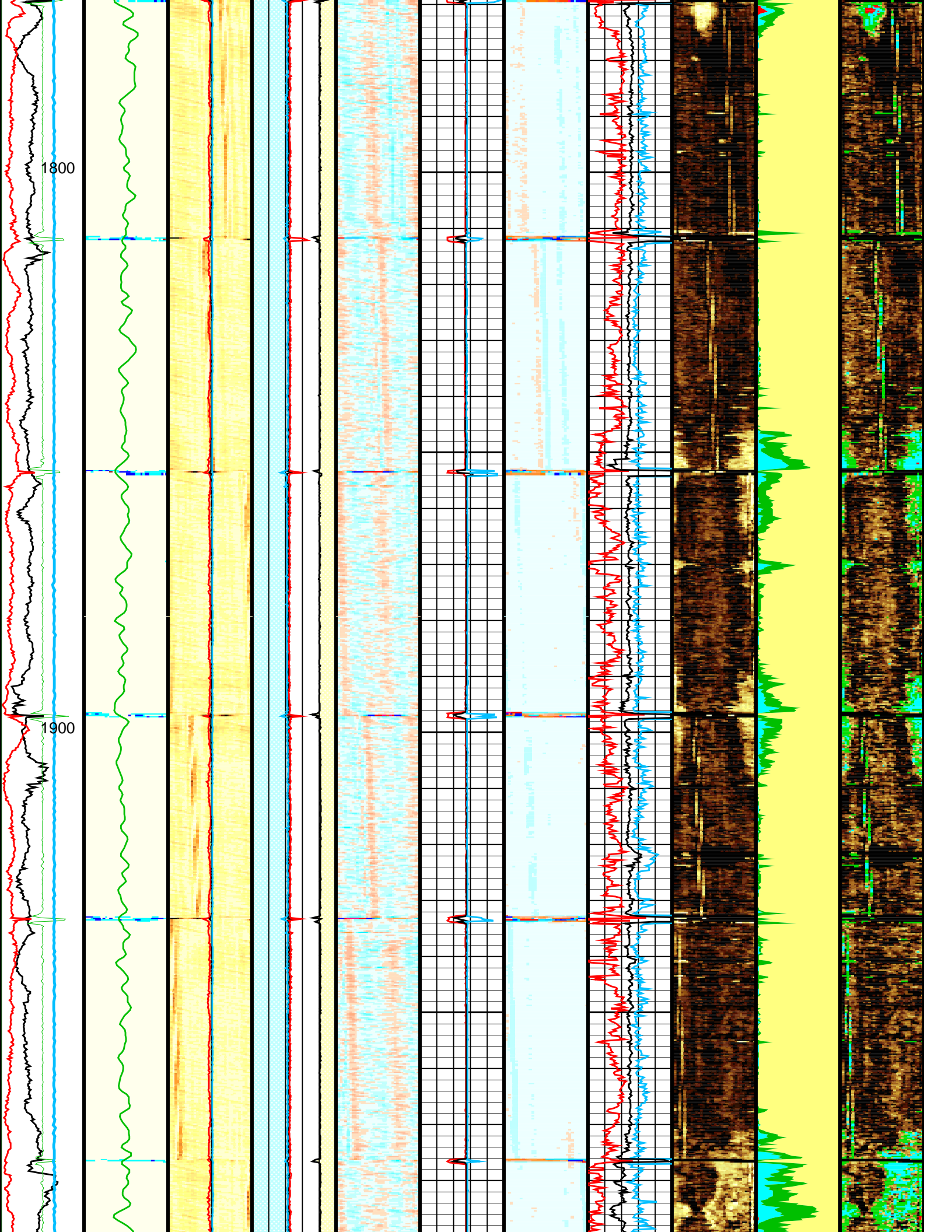


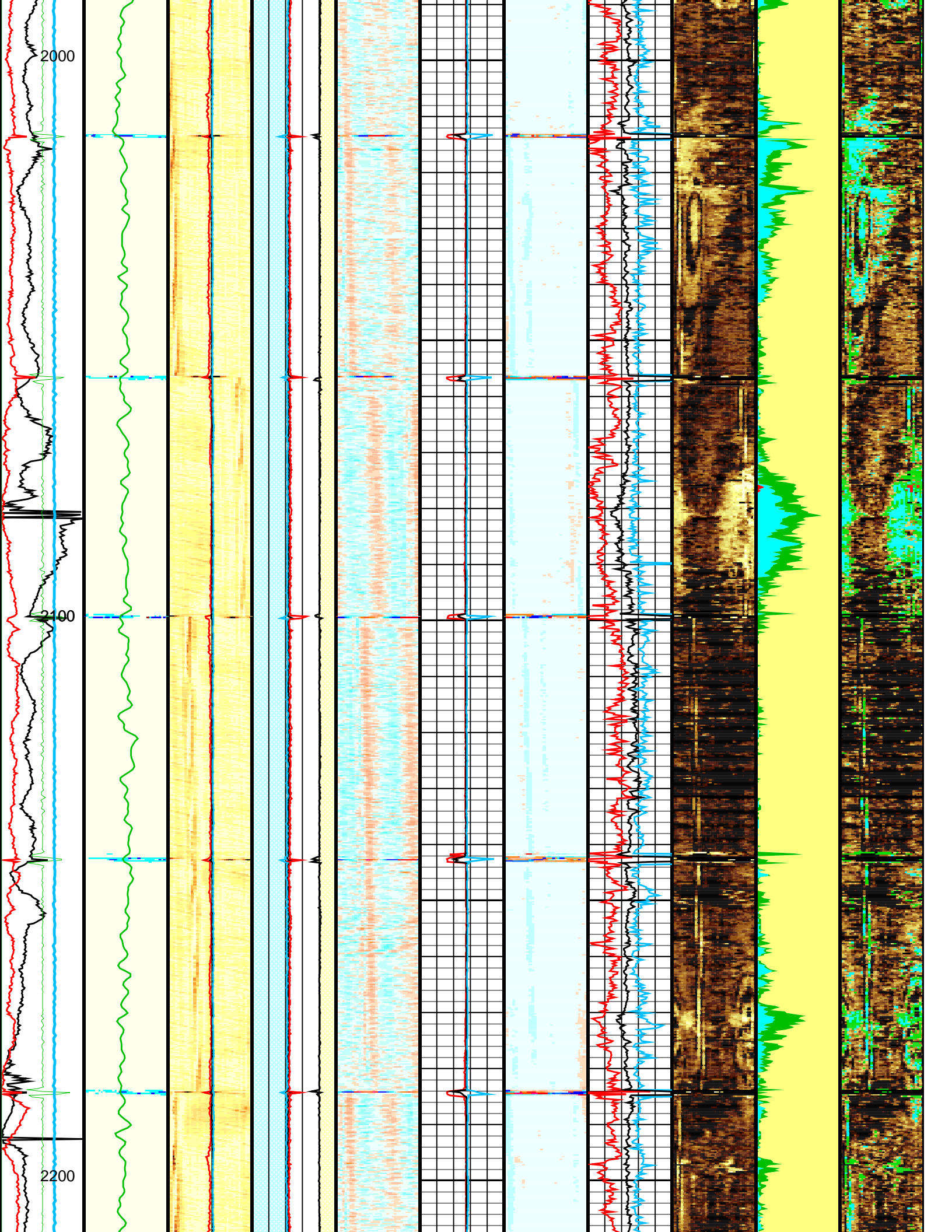


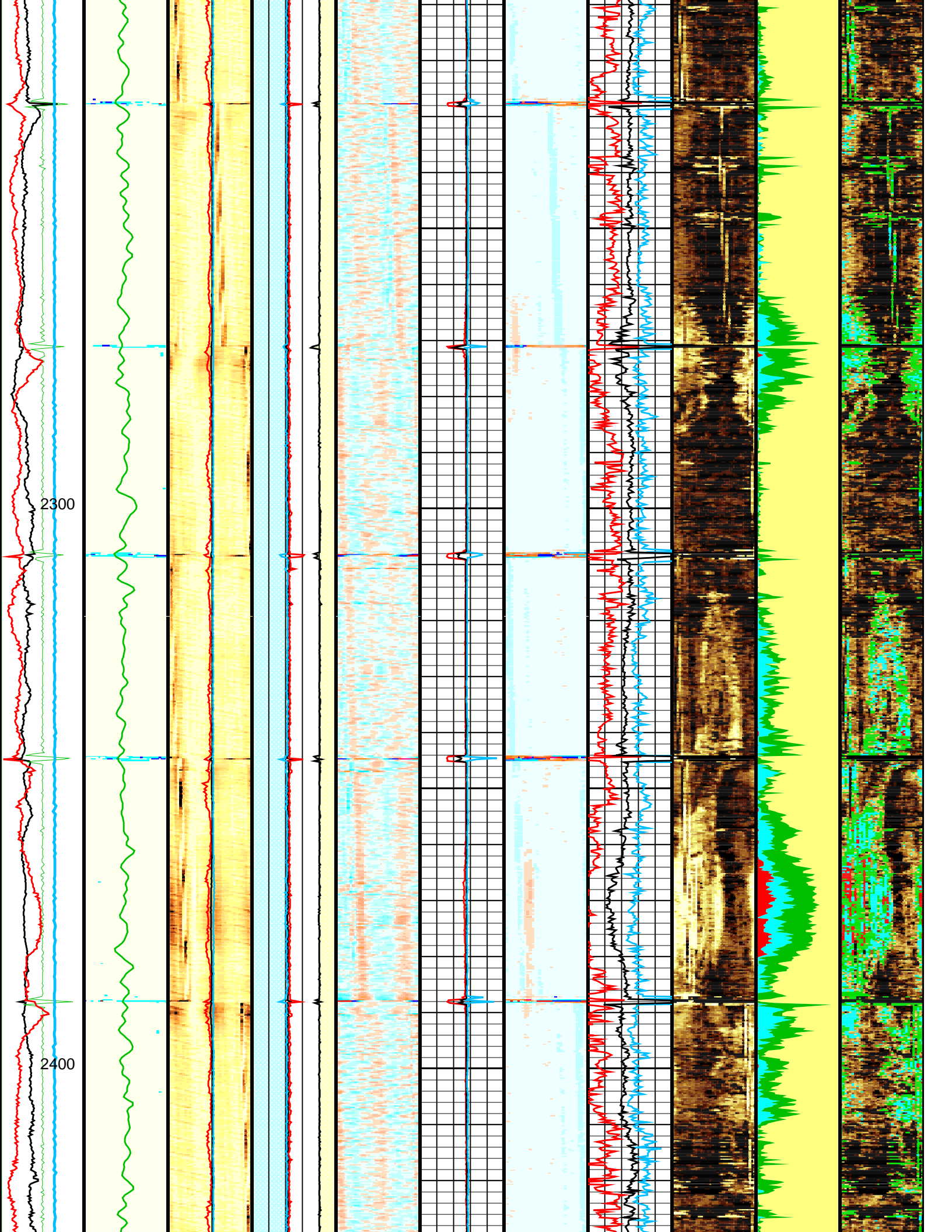


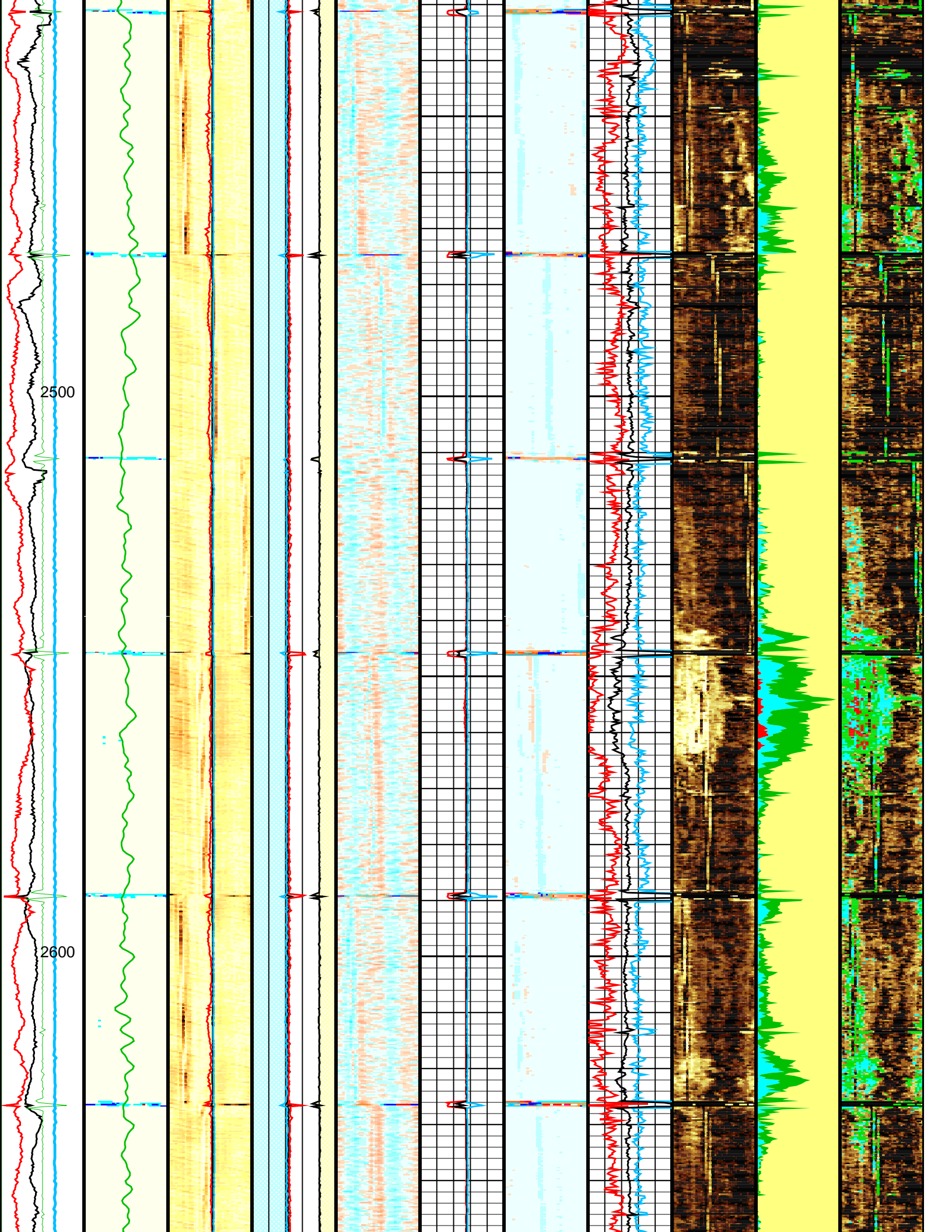


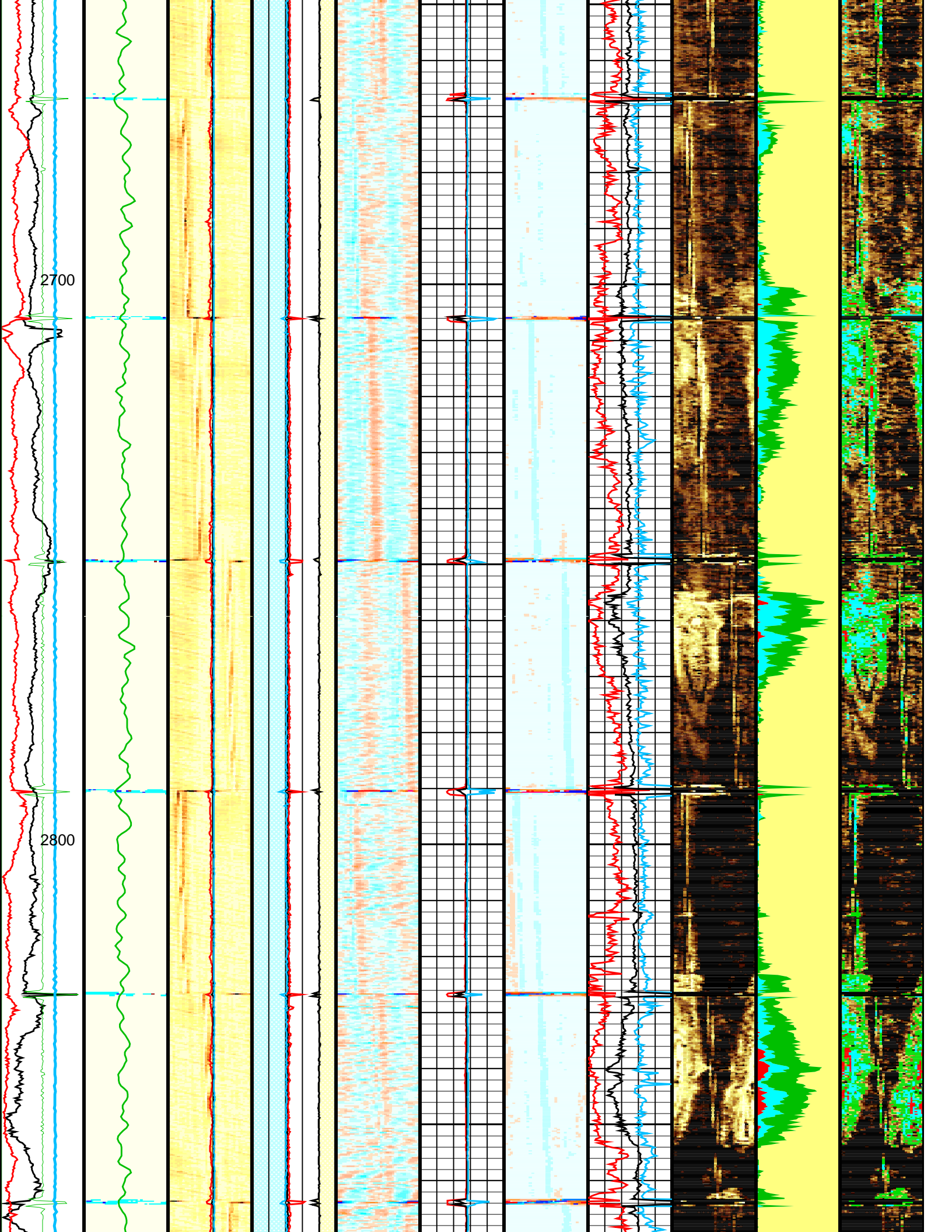


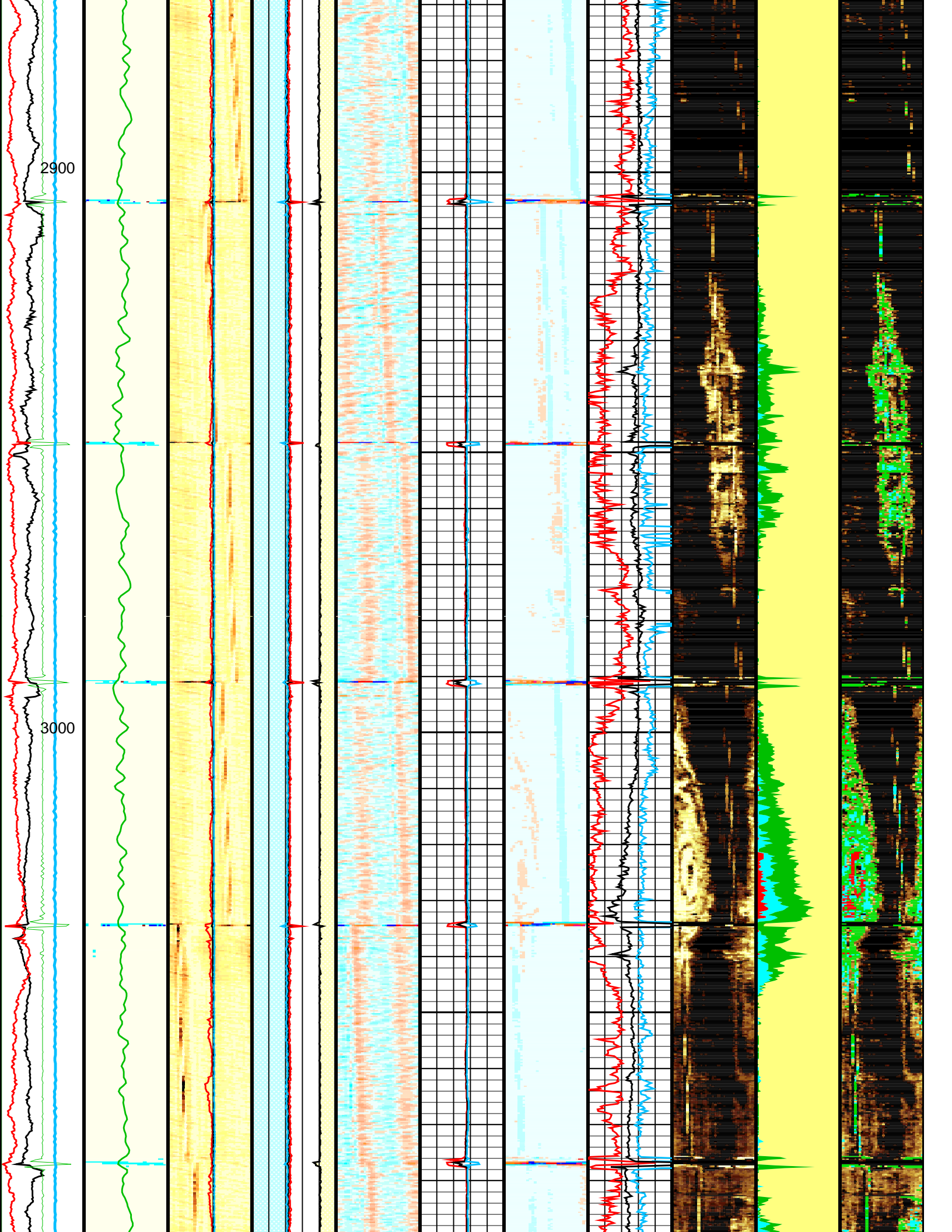


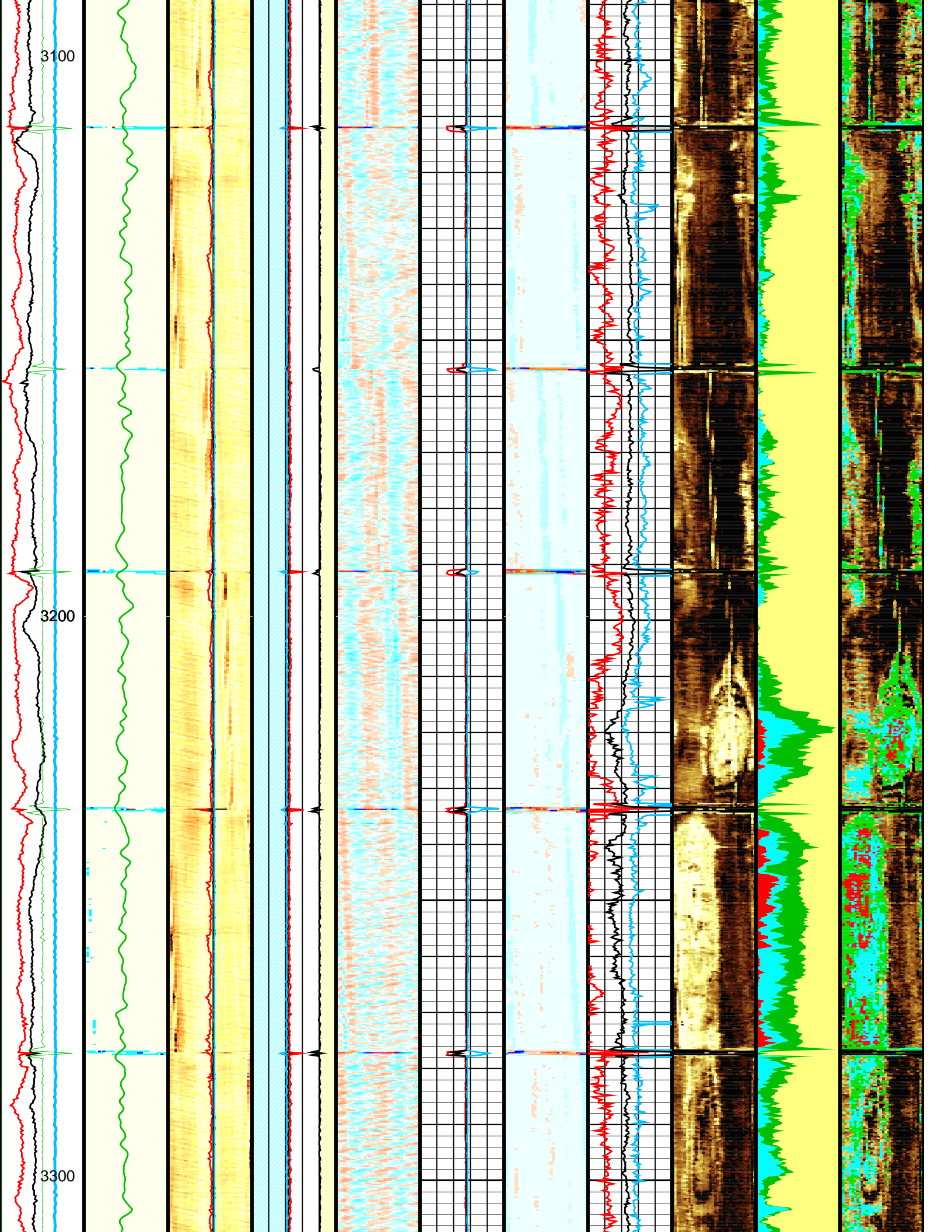


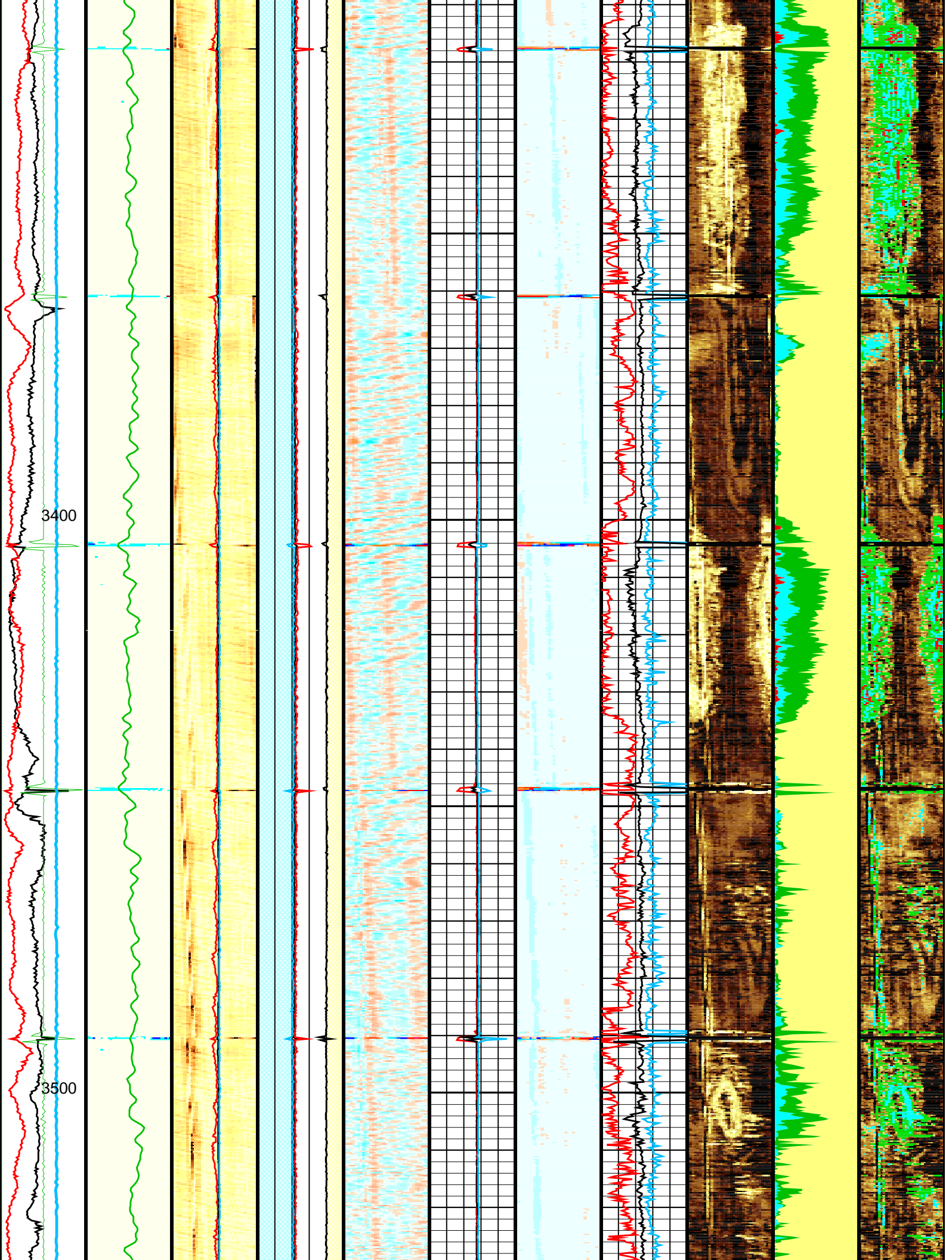


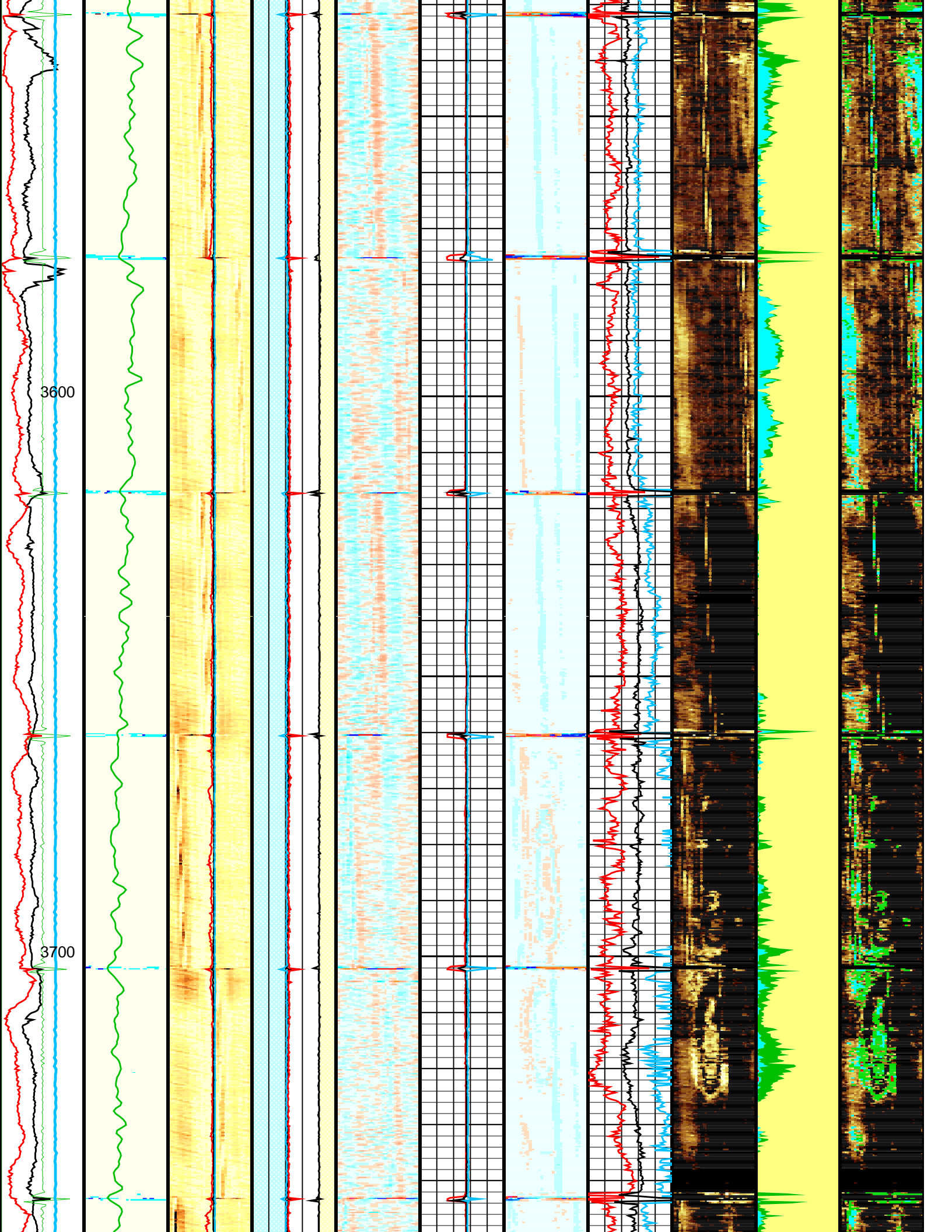


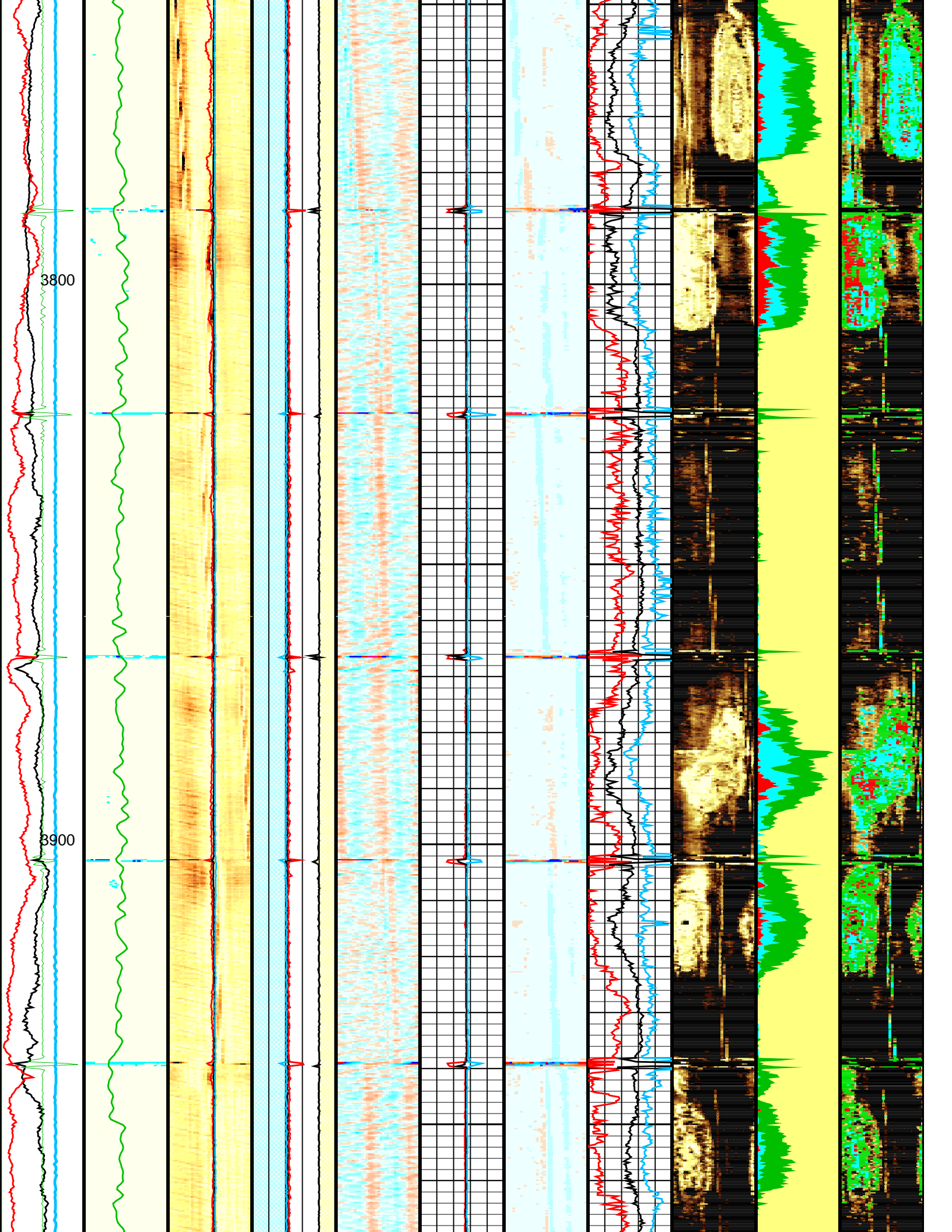


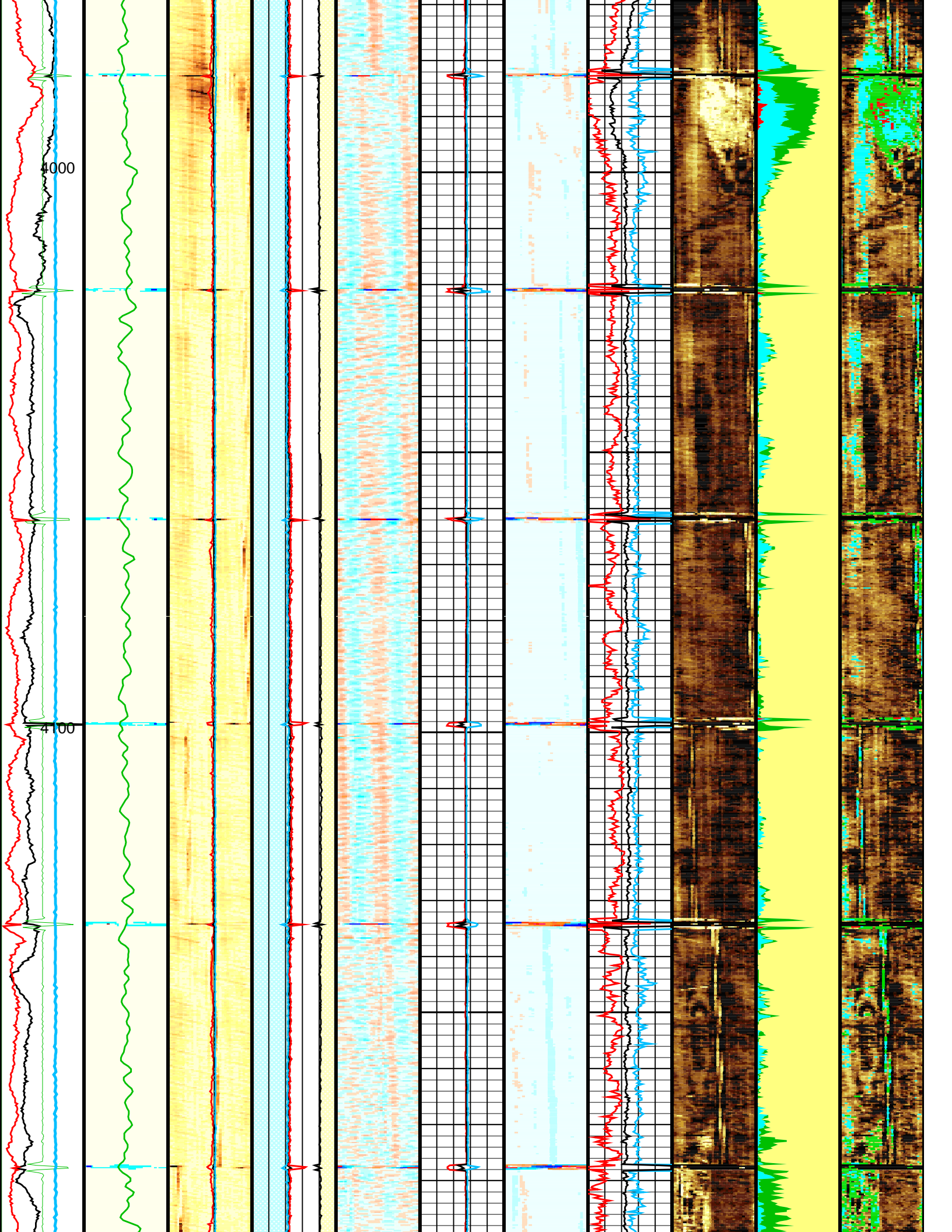


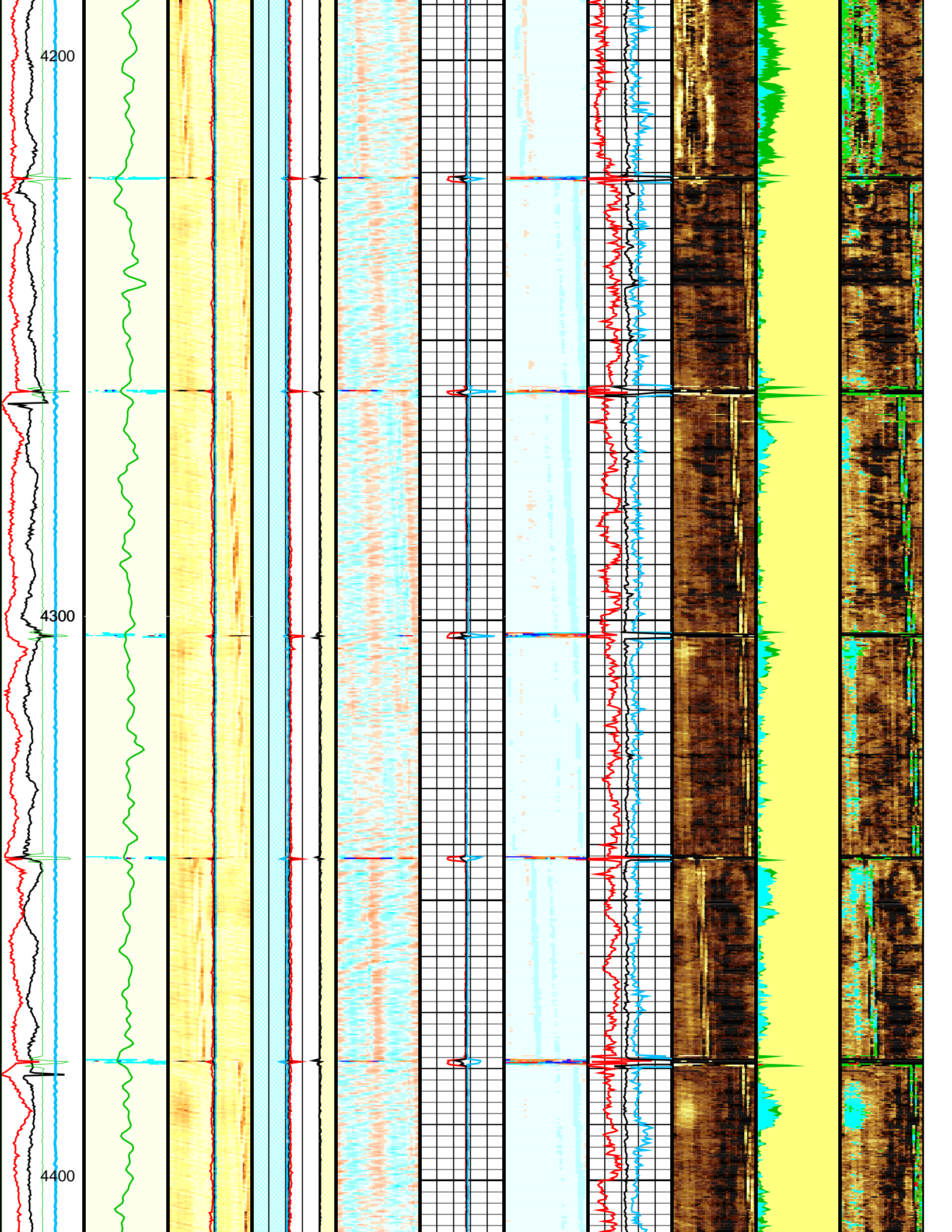


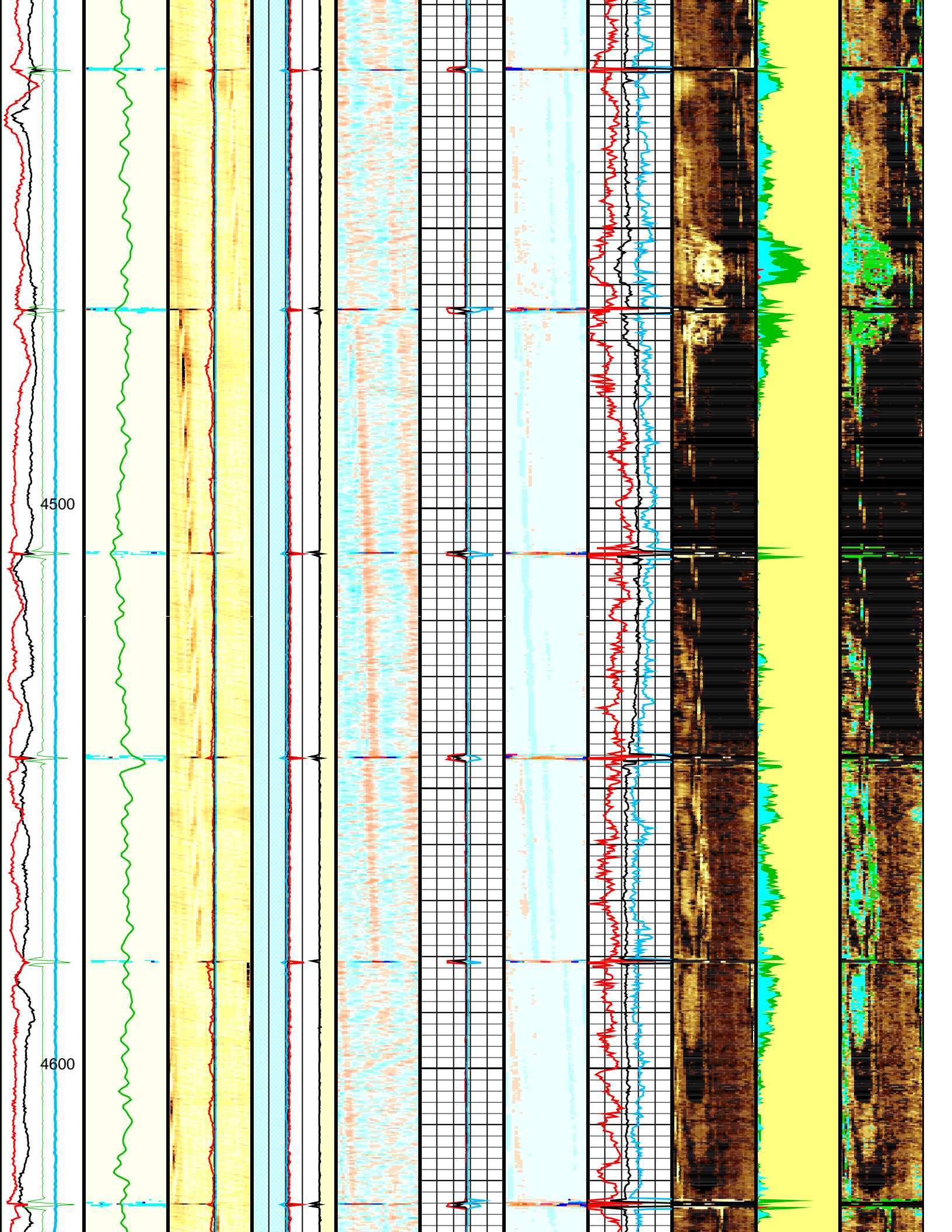


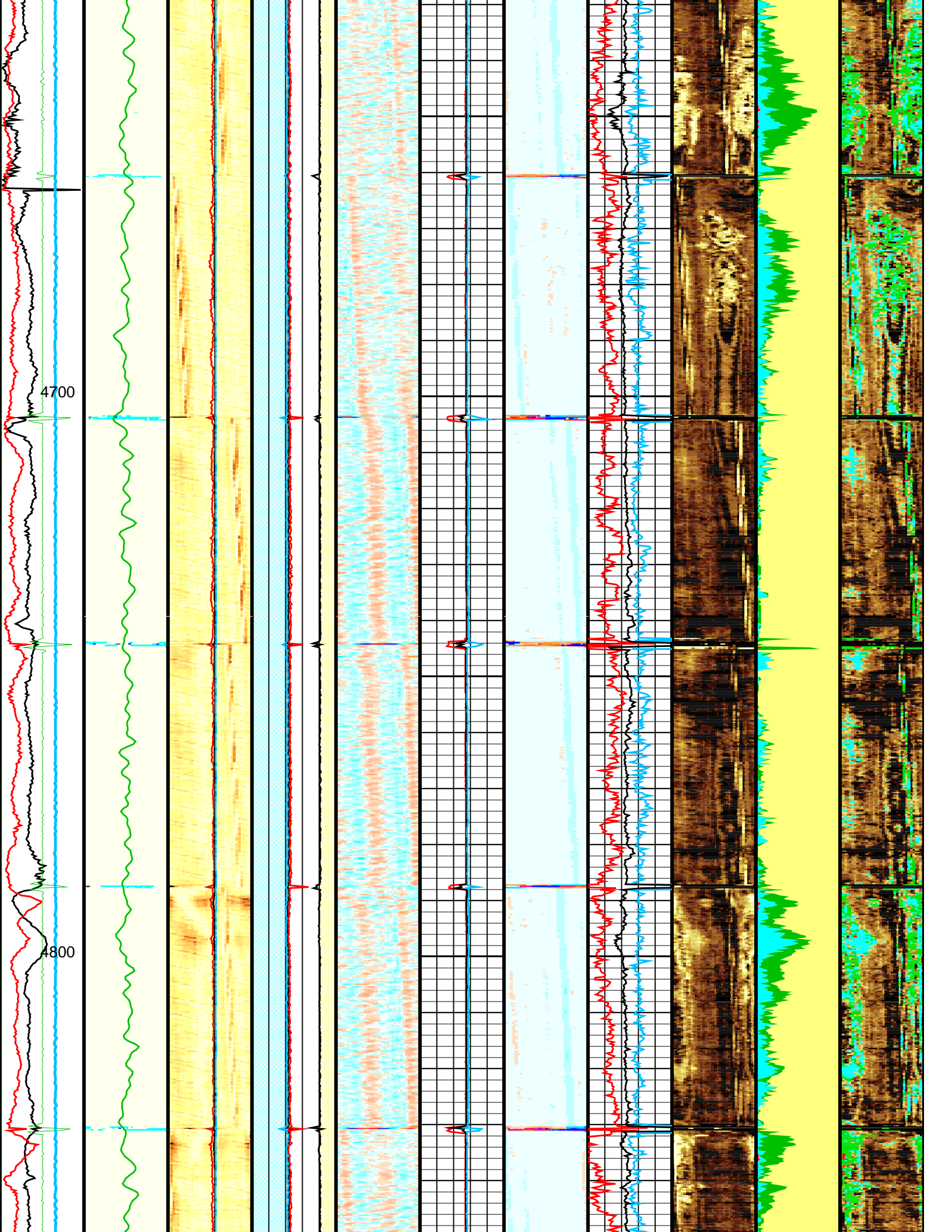


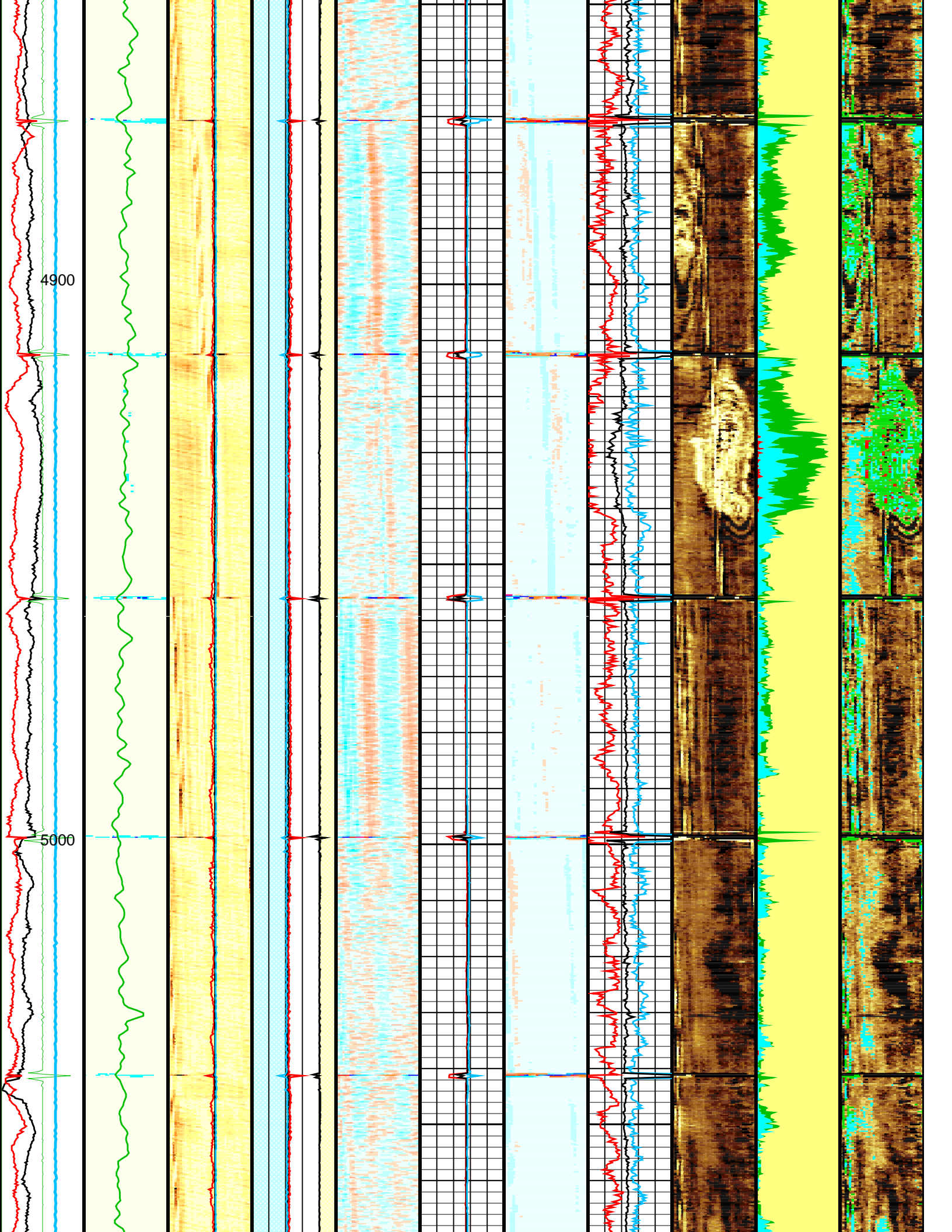


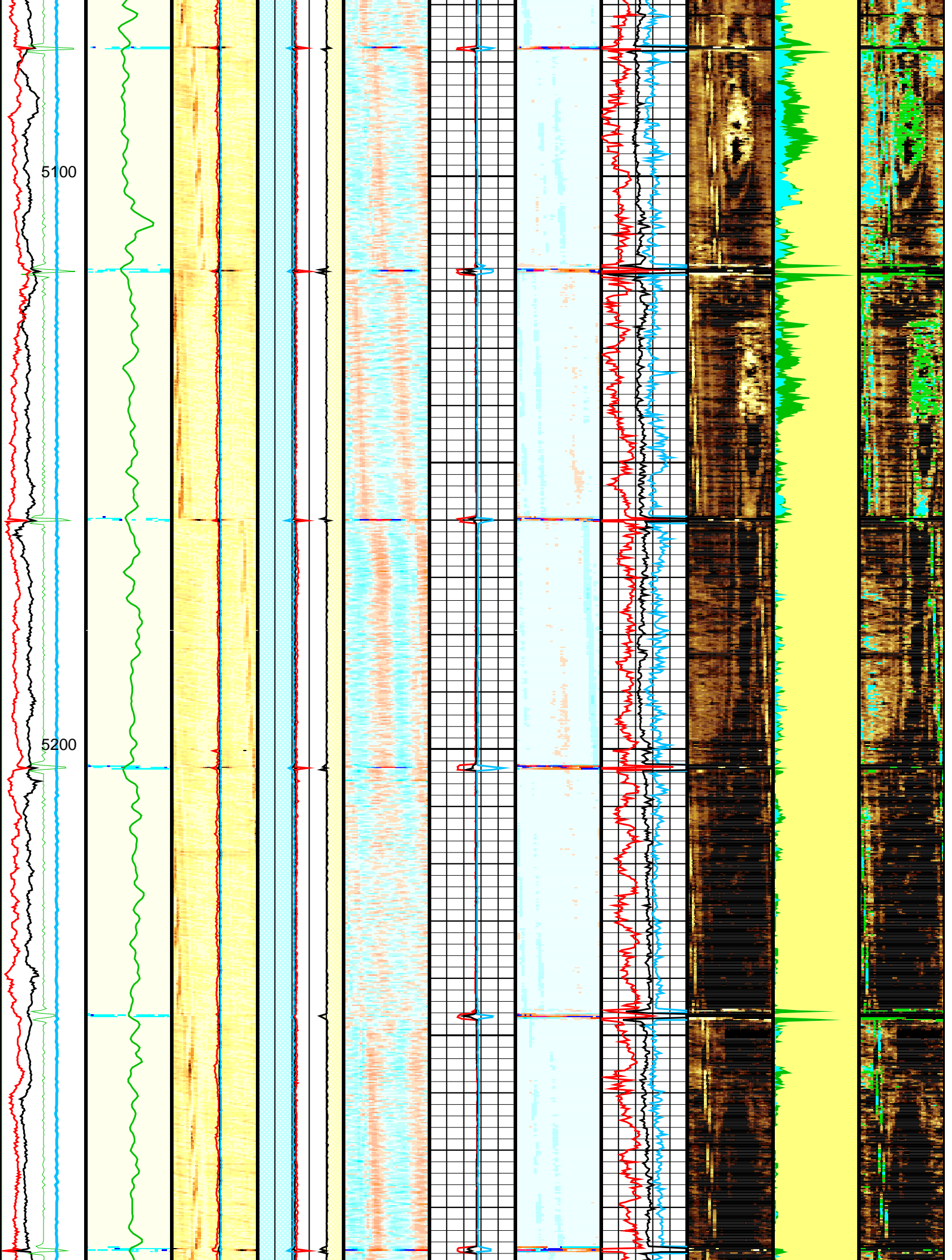


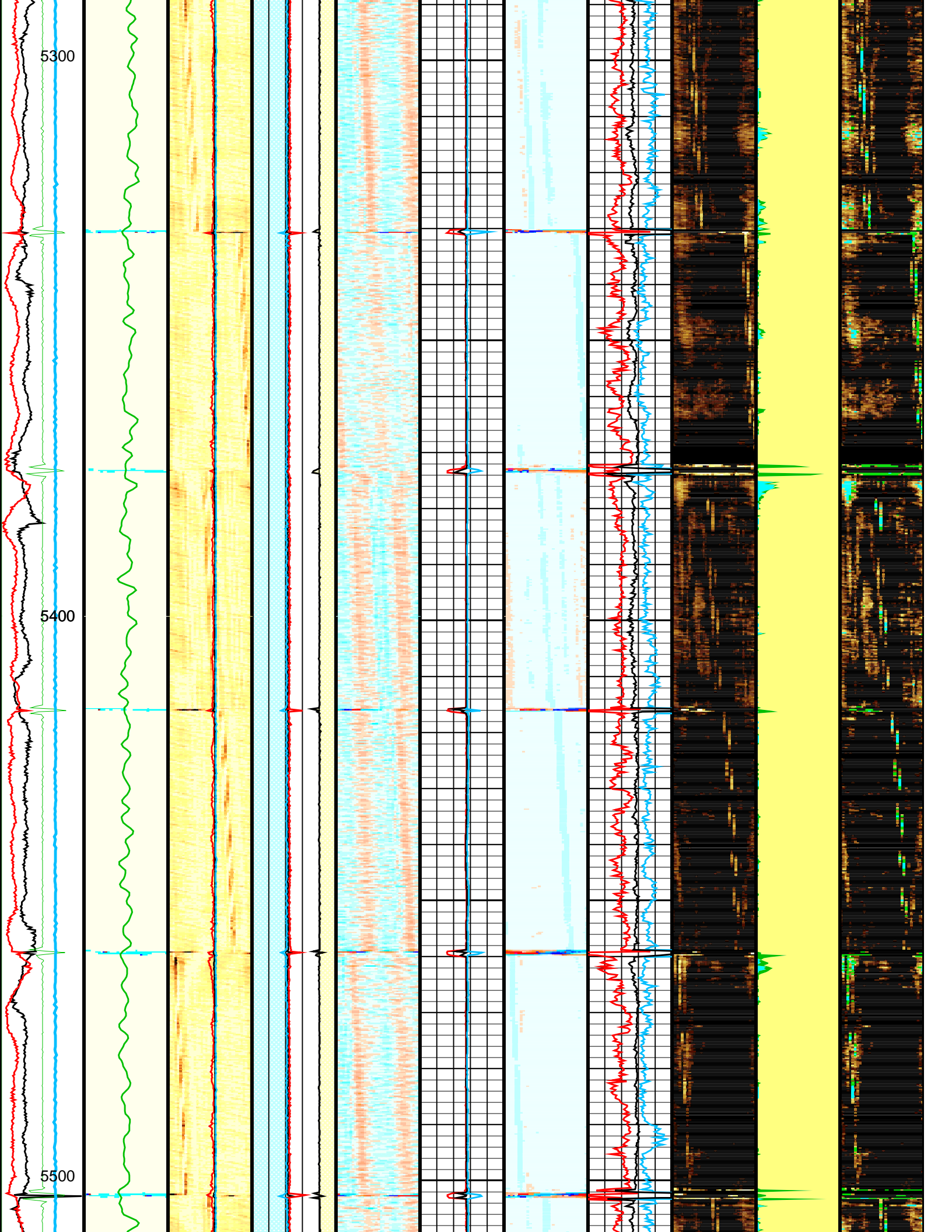


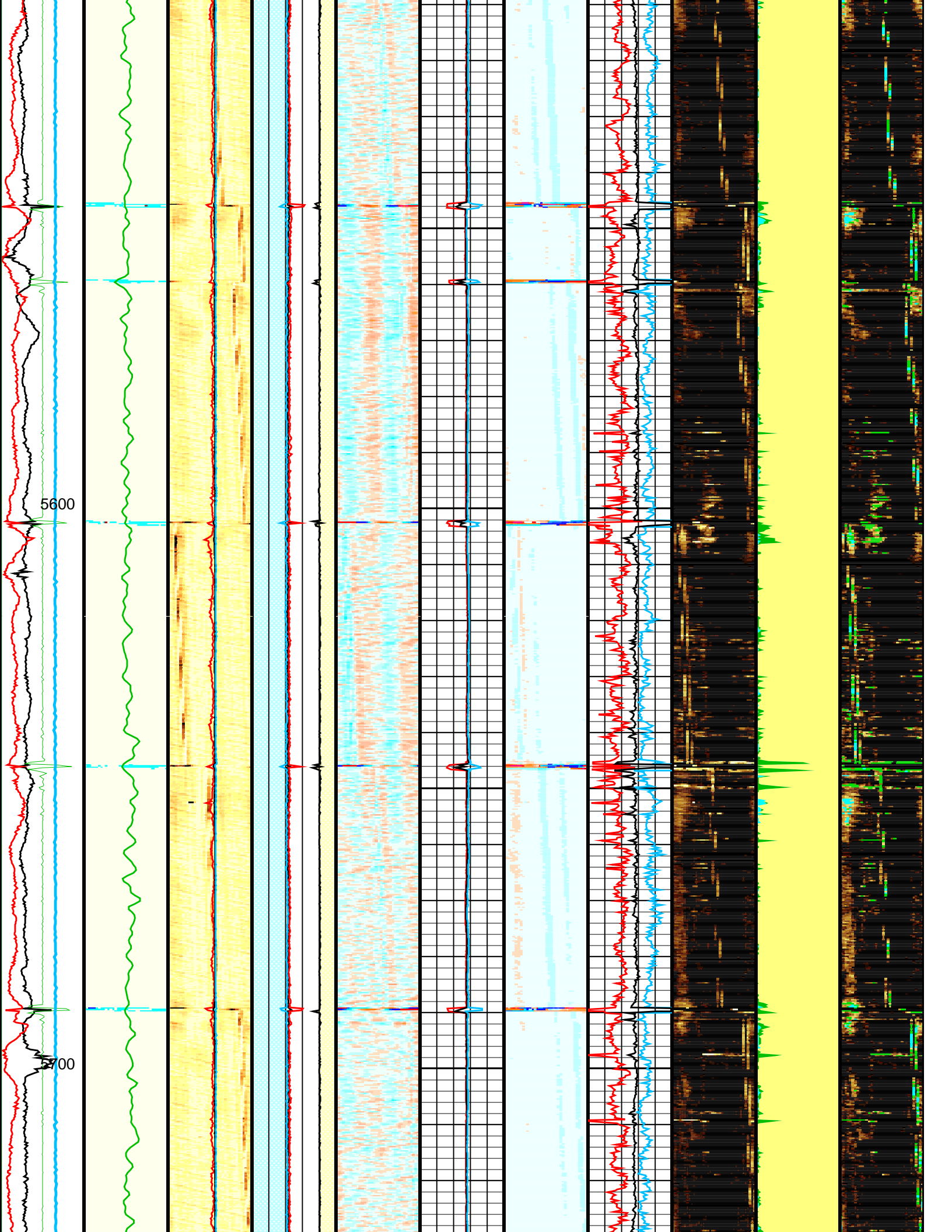


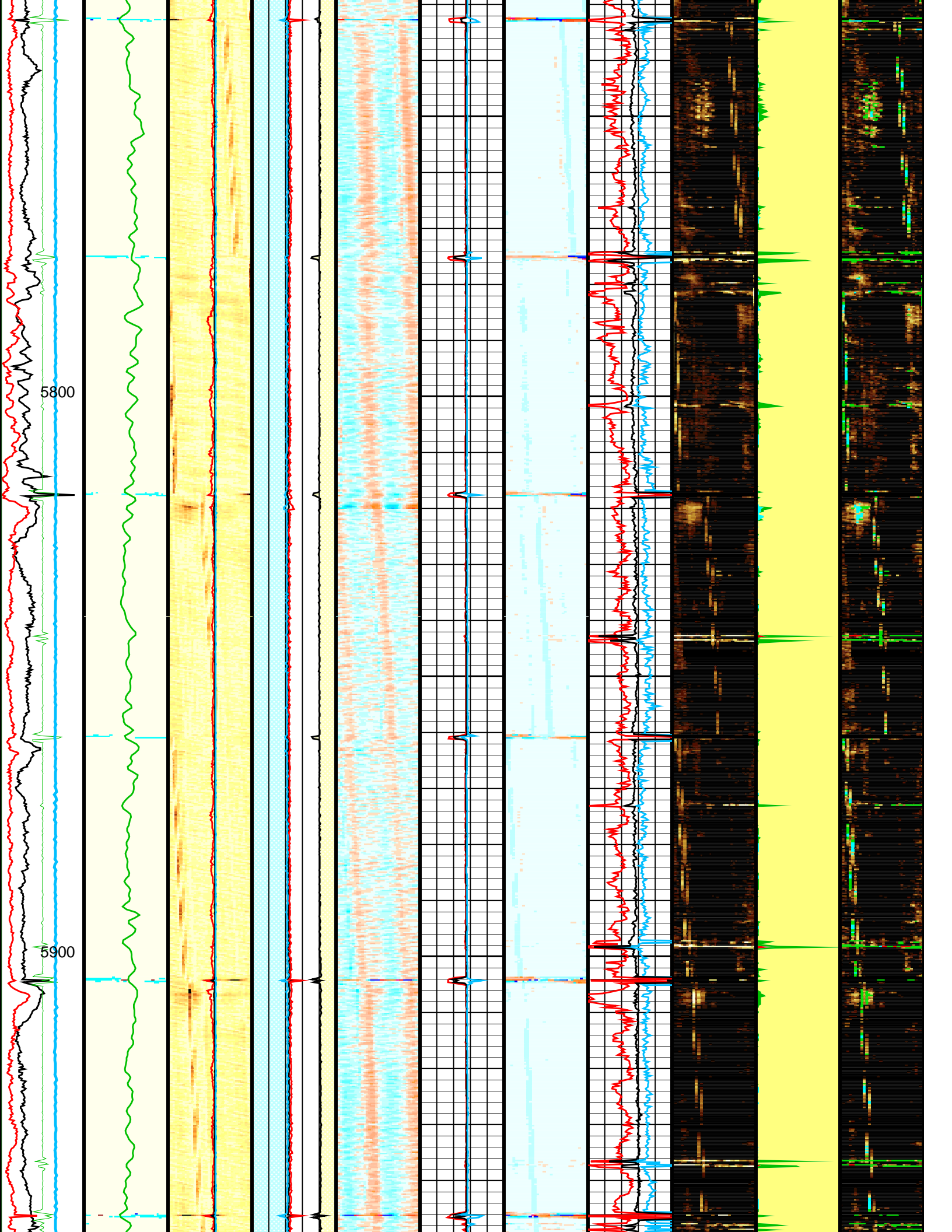


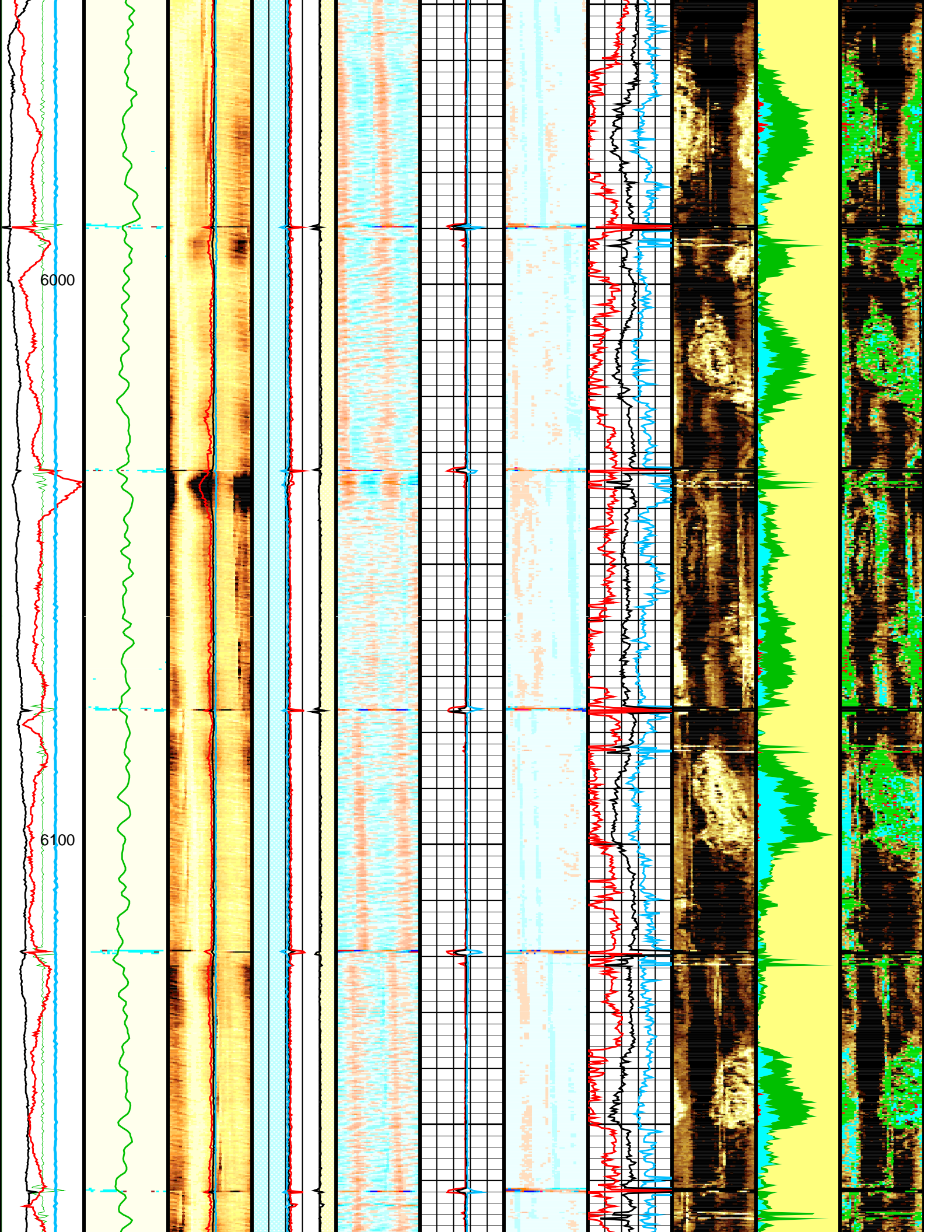


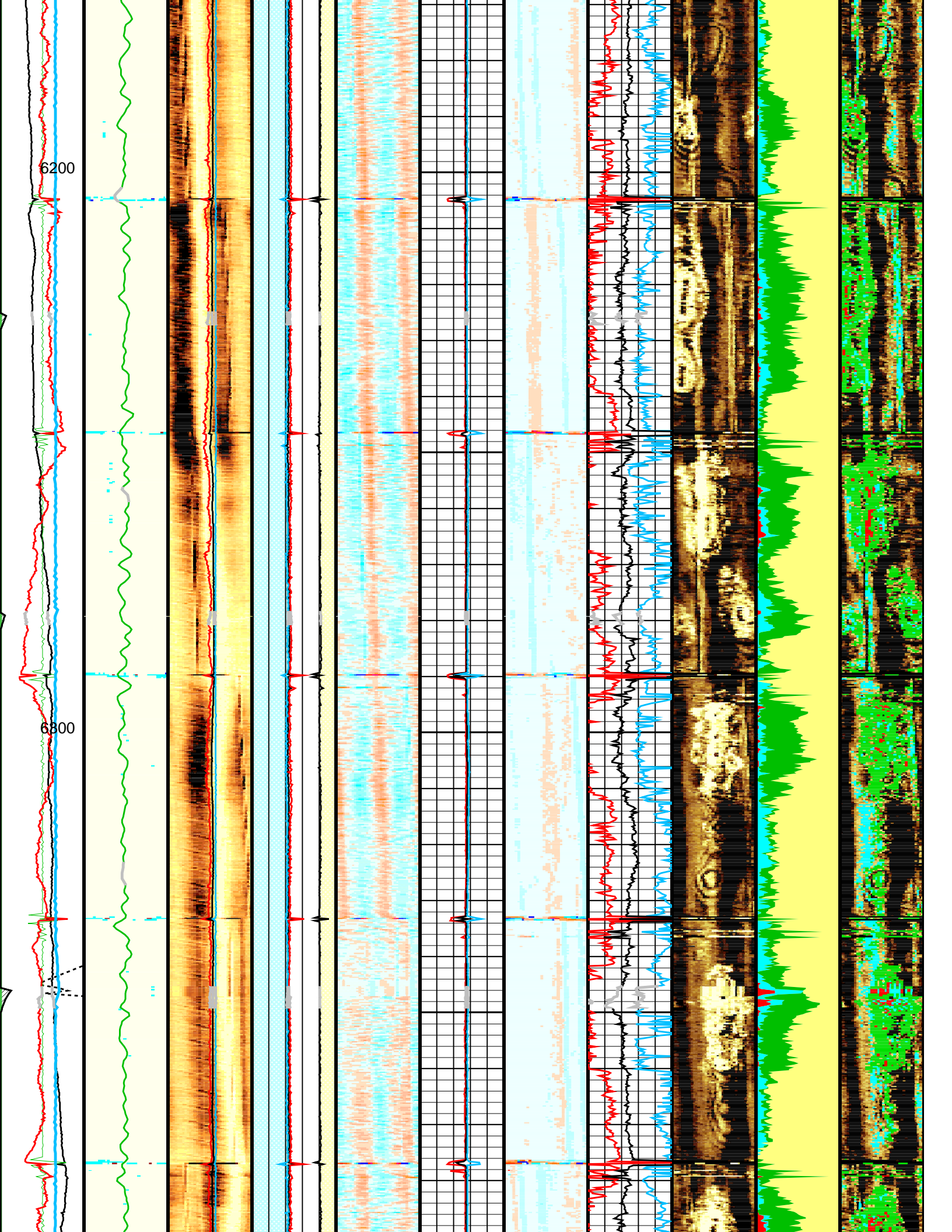


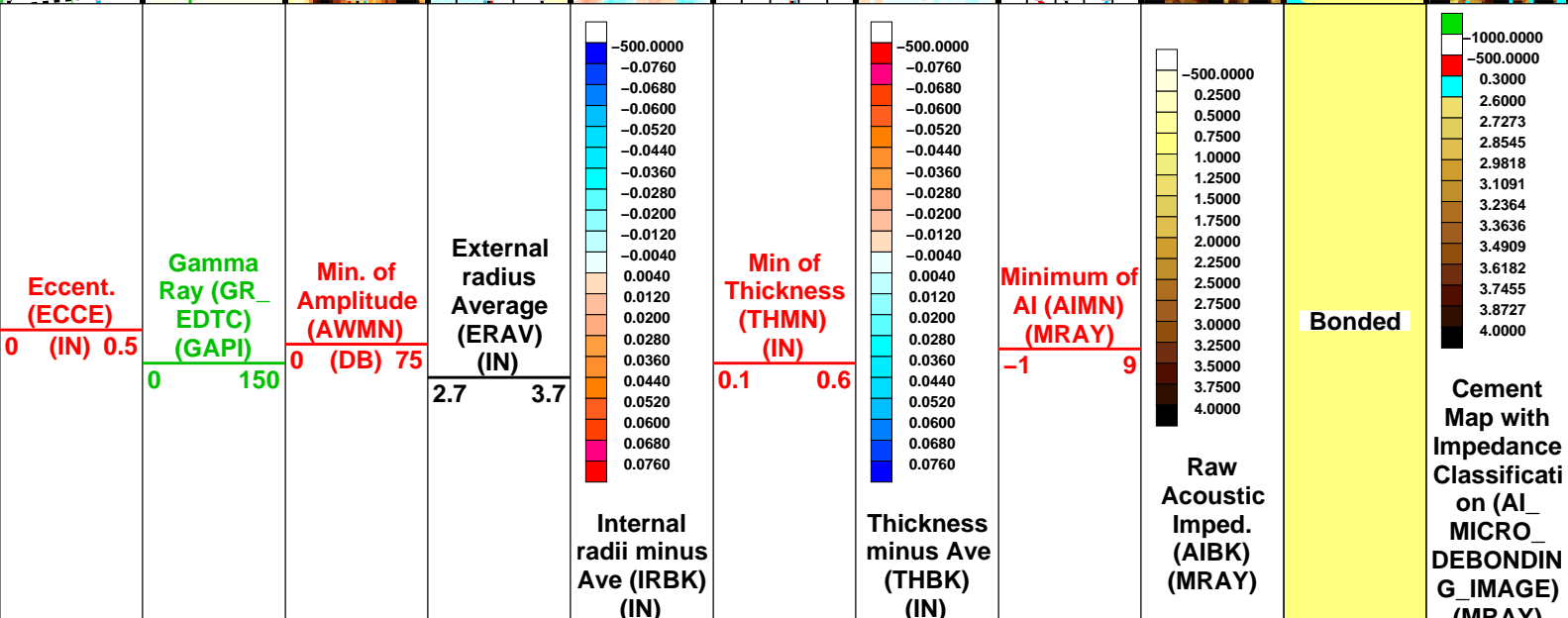
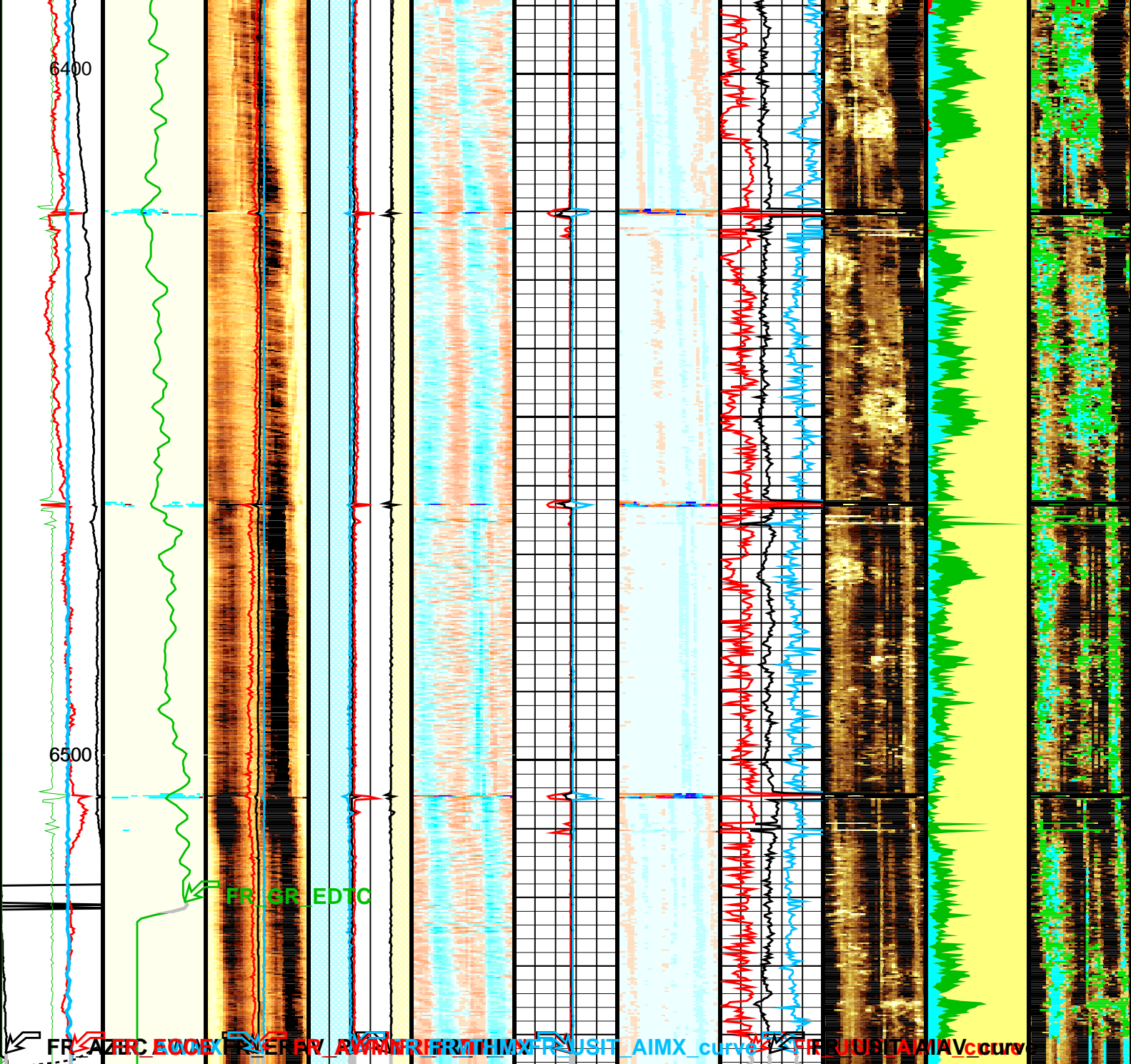


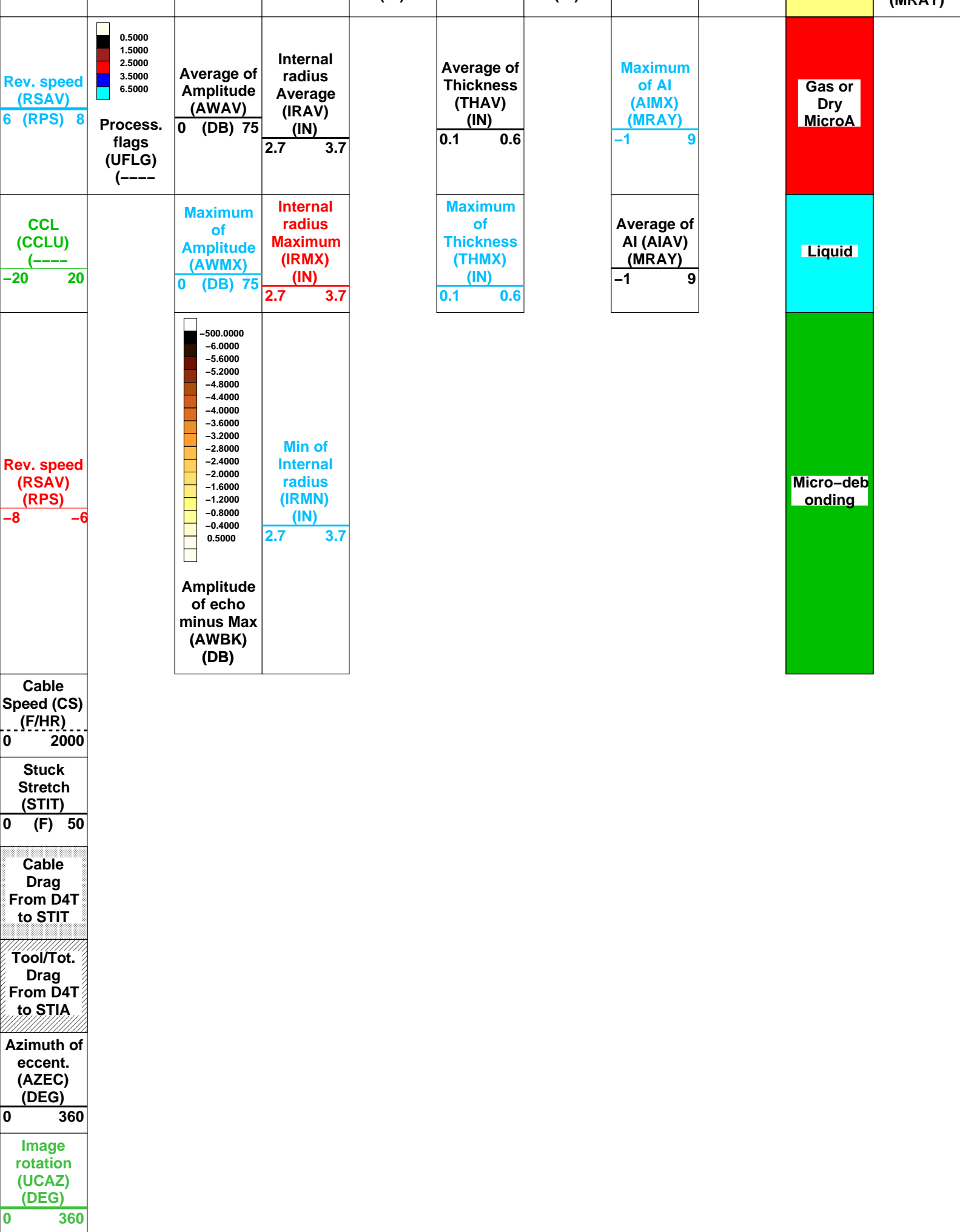












USIT-E	19C1-222	EDTC-B	19C1-222
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All USI Images are outside views

COMPUTATION FLAGS LABELLING

(0 – 1.5)	UFLG 1	UTIM error
(1.5 – 2.5)	UFLG 2	Pulse origin not detected
(2.5 – 3.5)	UFLG 3	WINLEN error
<hr/>		
(3.5 – 6.5)	UFLG 4 UFLG 5 UFLG 6	CASING THICKNESS error
<hr/>		
(6.5 – 10)	UFLG 7 UFLG 8 UFLG 9	LOOP PROCESSING error

USI : LOW Frequency Compression Mode Used For Logging.


Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value	
USIT-E: Ultrasonic Imaging – E			
AGMN	Minimum Gain of Cartridge	–4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	197	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	82	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
SDNV	Number of Vertical Samples used for Micro–debonding Computation	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro–debonding	0.5	
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro–debonding	0.3	
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	–2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_3IN_60U_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	–1	MRAY
ZMUD	Acoustic Impedance of Mud	1.7	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth – Driller	11169.00	FT

IDL	Total Depth - Logger	-50000.00	FT
CWEI	System and Miscellaneous		
DO	Casing Weight	26.00	LB/F
PP	Depth Offset for Playback	3.0	FT
	Playback Processing	RECOMPUTE	

Input DLIS Files						
DEFAULT	USI_012LUP	FN:11	PRODUCER	27-Mar-2014 09:52	6541.5 FT	100.2 FT
Output DLIS Files						
DEFAULT	USI_020PUP	FN:19	PRODUCER	27-Mar-2014 12:13		



USIT Composite

0 Psi

MAXIS Field Log

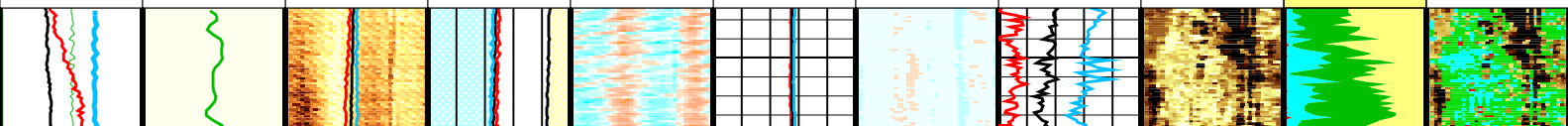
Company: Noble Energy Inc	Well: Wells Ranch AA35-68-1AHNA
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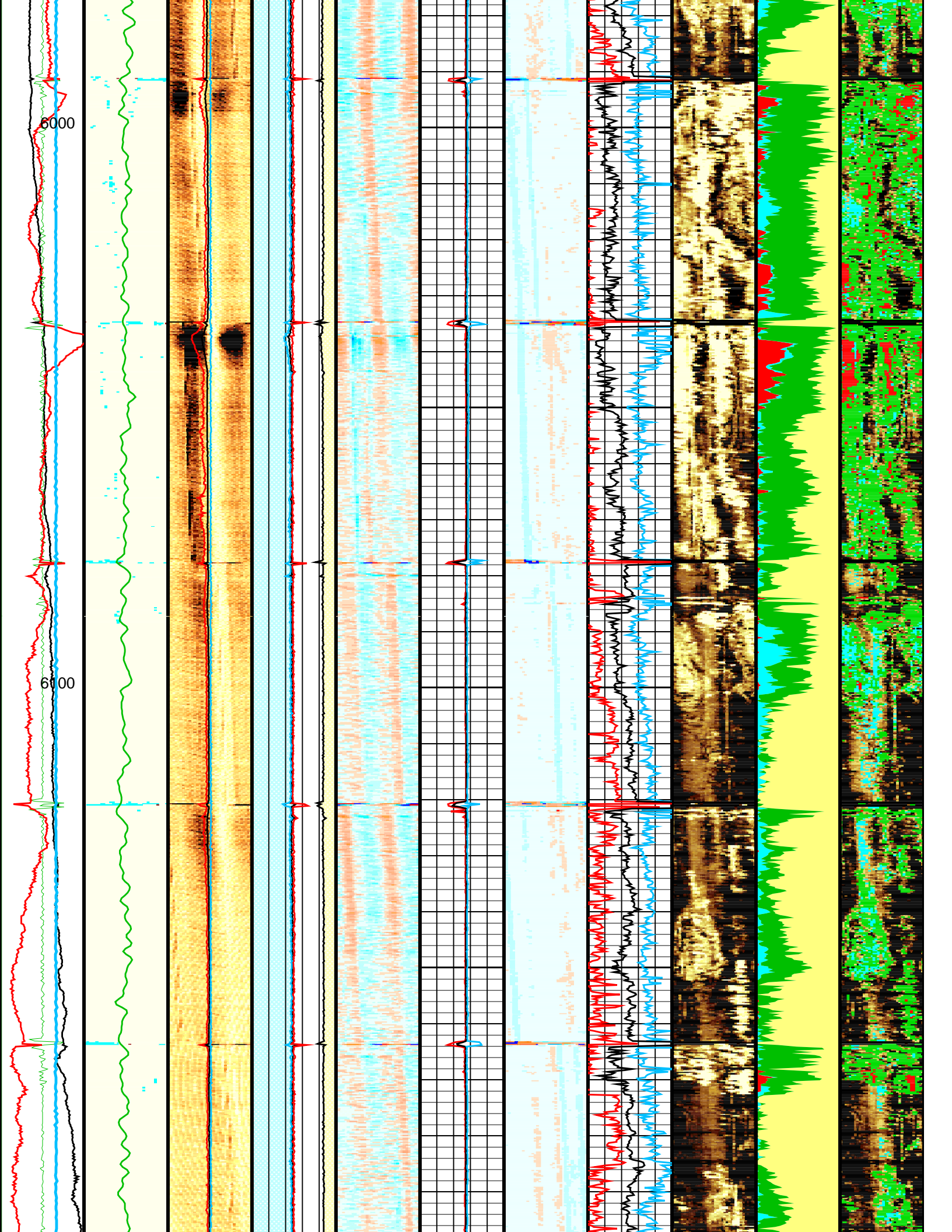
Input DLIS Files						
DEFAULT	USI_010LUP	FN:9	PRODUCER	27-Mar-2014 09:22	6541.0 FT	5961.7 FT
Output DLIS Files						
DEFAULT	USI_021PUP	FN:20	PRODUCER	27-Mar-2014 12:19		

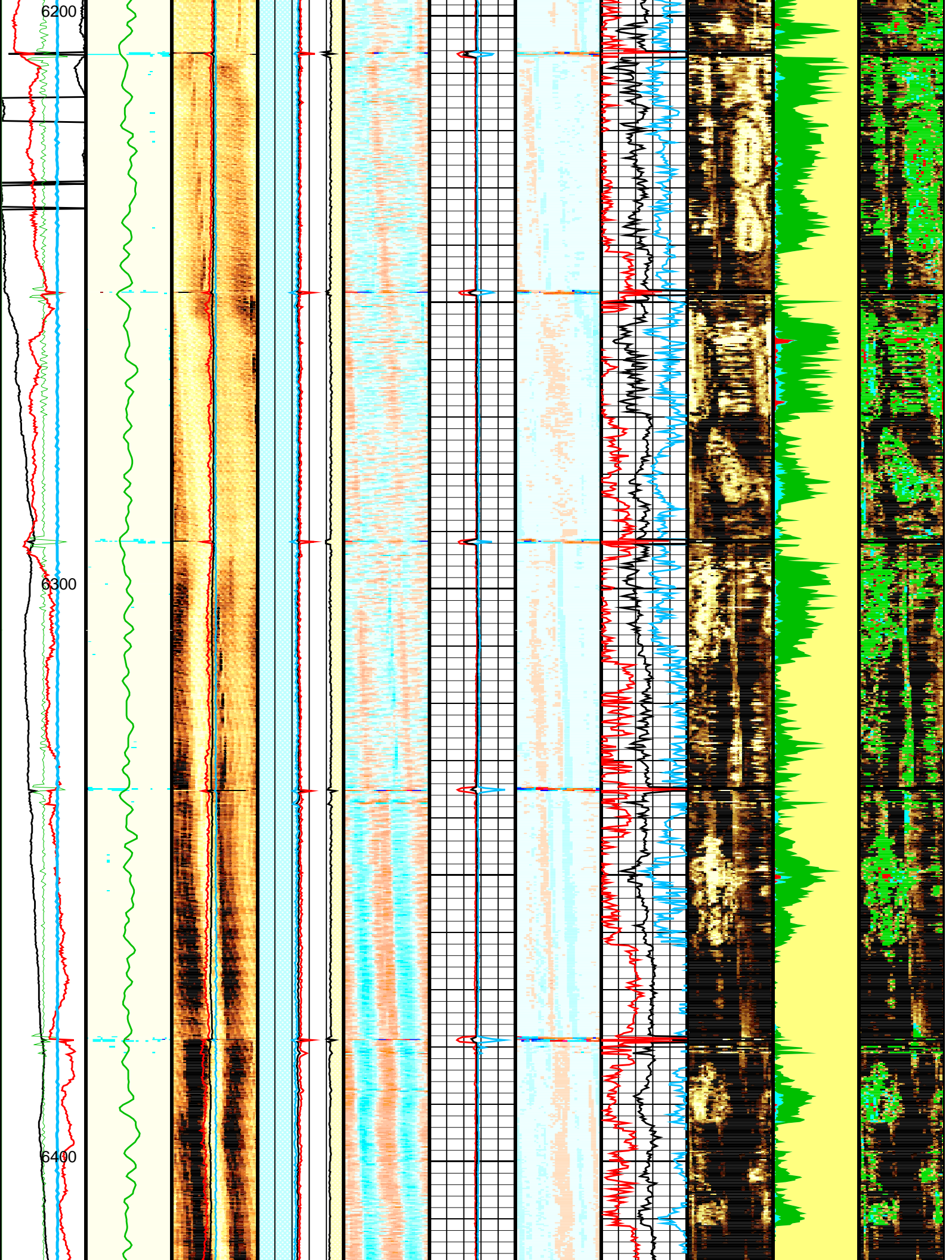
OP System Version: 19C1-222						
USIT-E	19C1-222		EDTC-B		19C1-222	

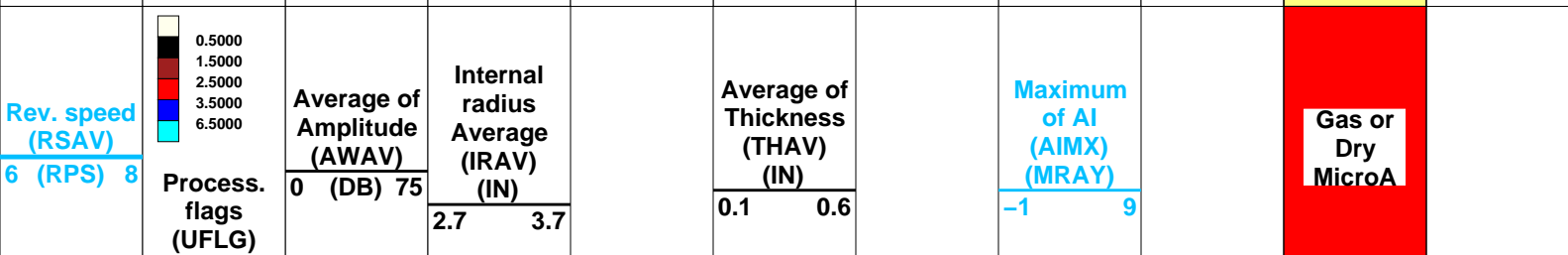
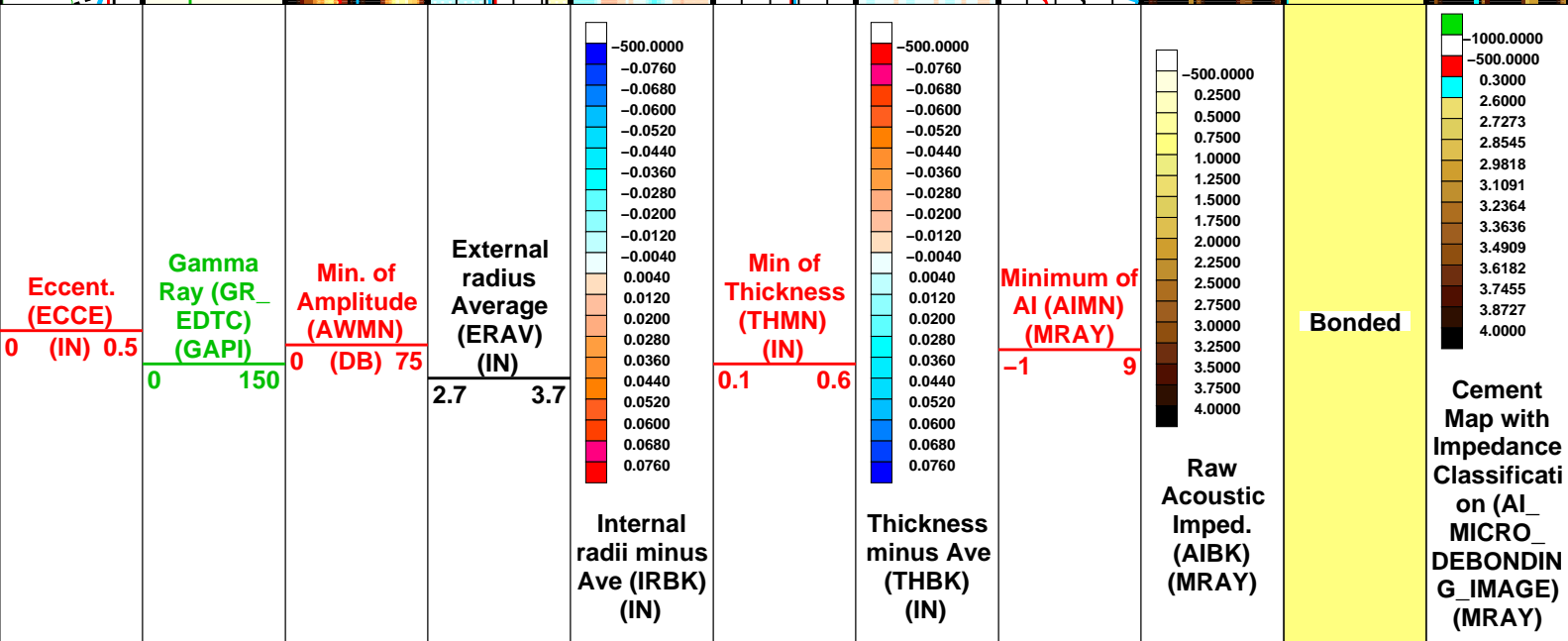
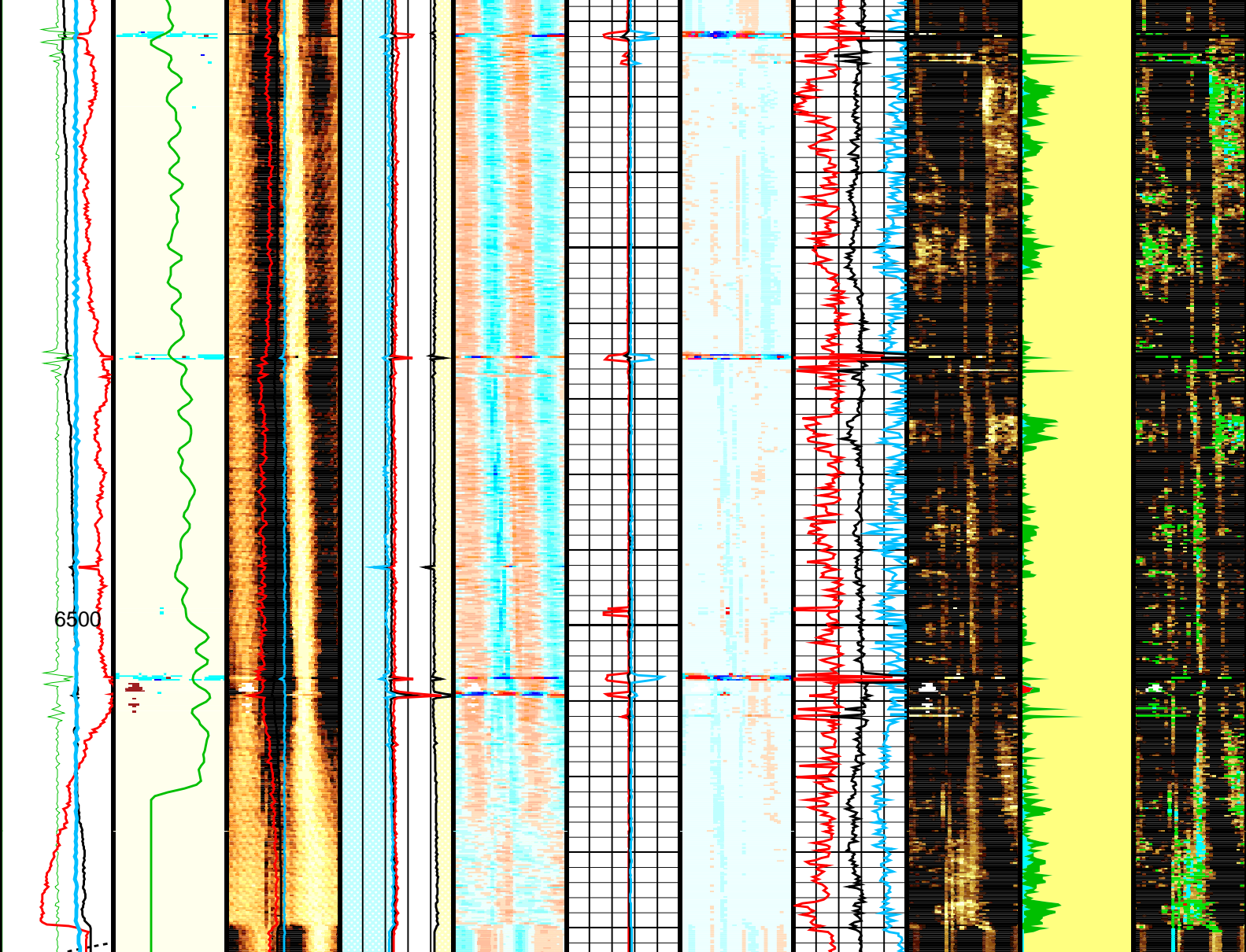
Changed Parameter Summary						
DLIS Name	New Value		Previous Value		Depth & Time	
DFVL	186	US/F	199	US/F	6543.5	12:19:53
ZMUD	1.77	MRAY	1.71	MRAY	6543.5	12:19:53

Image rotation (UCAZ) (DEG)	0	360
Azimuth of eccent. (AZEC) (DEG)	0	360
Tool/Tot. Drag From D4T to STIA		
Cable Drag From D4T to STIT		
Stuck		









Format: USI_Composite		Vertical Scale: 5" per 100'		Graphics File Created: 27-Mar-2014 12:19	
OP System Version: 19C1-222					
USIT-E	19C1-222	EDTC-B	19C1-222		

All USI Images are outside views

COMPUTATION FLAGS LABELLING

(0 – 1.5)	UFLG 1	UTIM error
(1.5 – 2.5)	UFLG 2	Pulse origin not detected
(2.5 – 3.5)	UFLG 3	WINLEN error
<hr/>		
(3.5 – 6.5)	UFLG 4 UFLG 5 UFLG 6	CASING THICKNESS error
<hr/>		
(6.5 – 10)	UFLG 7 UFLG 8 UFLG 9	LOOP PROCESSING error

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value	
USIT-E: Ultrasonic Imaging – E			
AGMN	Minimum Gain of Cartridge	–4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	199	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	82	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
SDNV	Number of Vertical Samples used for Micro-debonding Computation	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	0.5	
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	0.3	
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	–2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_3IN_60U_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	–1	MRAY
ZMUD	Acoustic Impedance of Mud	1.71	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth – Driller	11169.00	FT
TDL	Total Depth – Logger	–50000.00	FT
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	2.5	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT USI_010LUP FN:9 PRODUCER 27–Mar–2014 09:22 6541.0 FT 5961.7 FT

Output DLIS Files

DEFAULT USI_021PUP FN:20 PRODUCER 27-Mar-2014 12:19



USIT Composite
Station Log

MAXIS Field Log

Company: Noble Energy Inc Well: Wells Ranch AA35-68-1AHNA

Input DLIS Files

DEFAULT USI_011LUP FN:10 PRODUCER 27-Mar-2014 09:36 9898.5 FT 8682.0 FT

Output DLIS Files

DEFAULT USI_022PUP FN:21 PRODUCER 27-Mar-2014 12:20 9901.0 FT 8684.5 FT

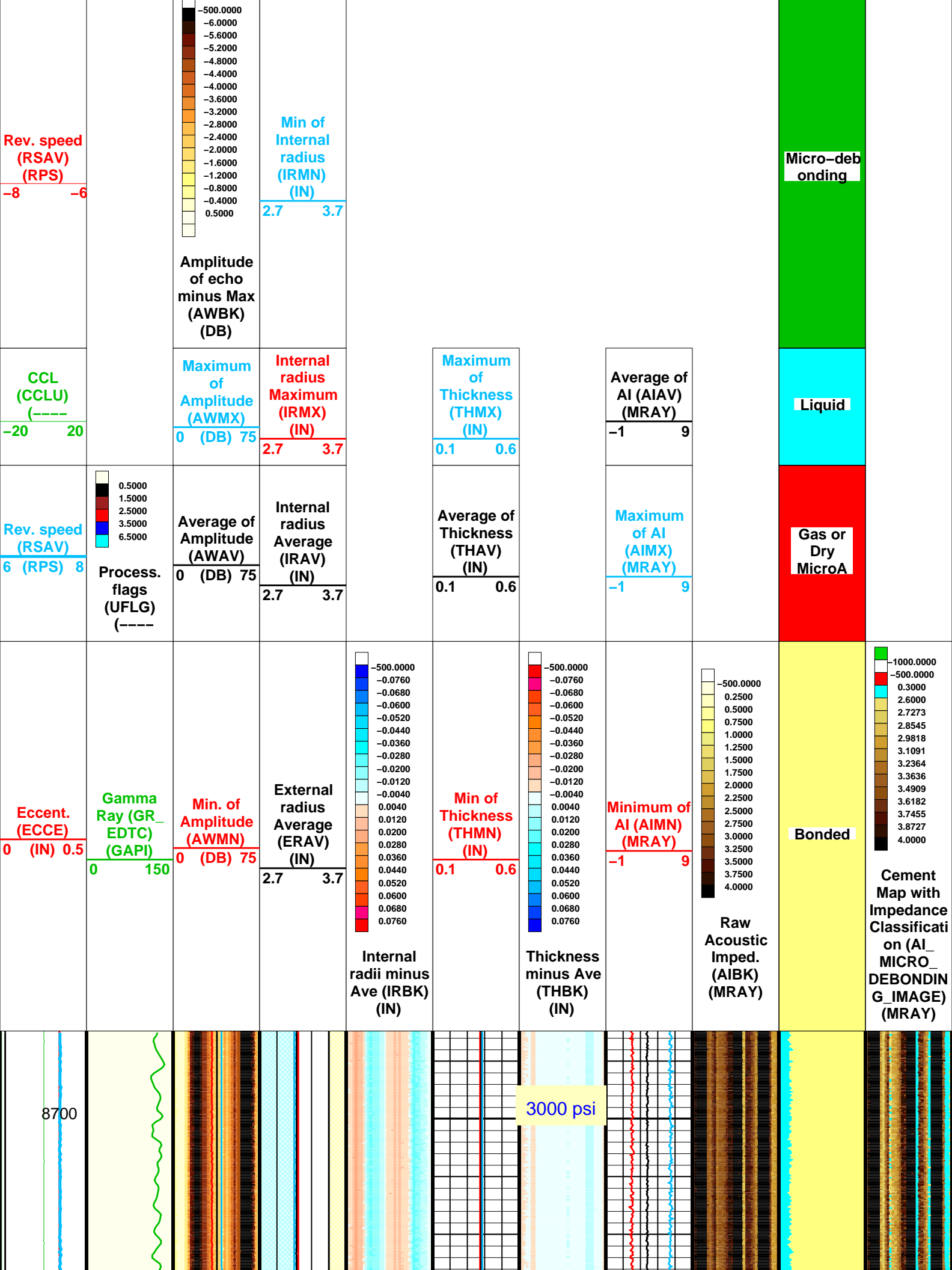
OP System Version: 19C1-222

USIT-E 19C1-222 EDTC-B 19C1-222

Changed Parameter Summary

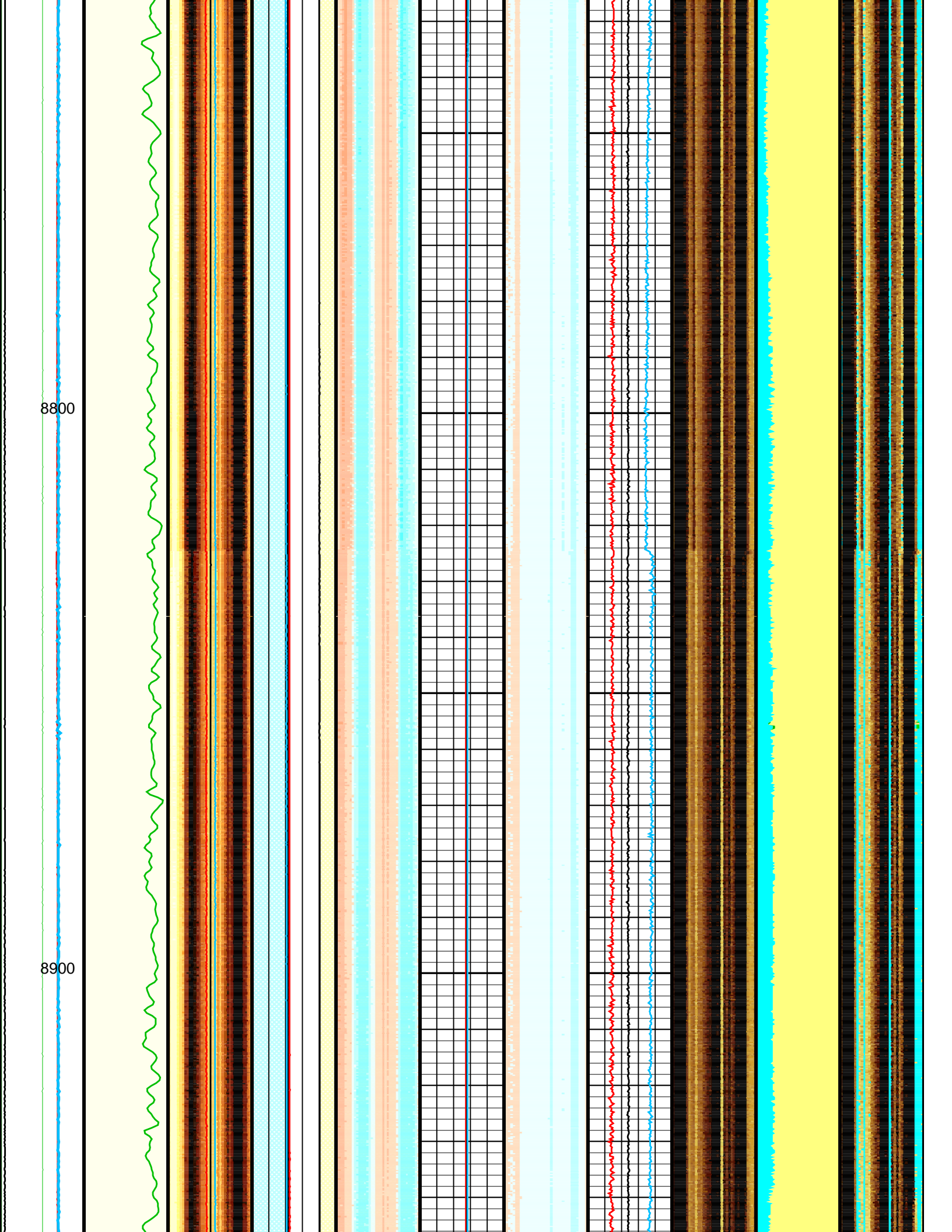
DLIS Name	New Value	Previous Value	Depth & Time
DFVL	186 US/F	186 US/F	9901.0 12:21:04
ZMUD	1.77 MRAY	1.77 MRAY	9901.0 12:21:04

Image rotation (UCAZ) (DEG)	
0 360	
Azimuth of eccent. (AZEC) (DEG)	
0 360	
Tool/Tot. Drag From D4T to STIA	
Cable Drag From D4T to STIT	
Stuck Stretch (STIT)	
0 (F) 50	
Cable Speed (CS) (F/HR)	
0 2000	



8800

8900



9000

9100

2500 psi

9200

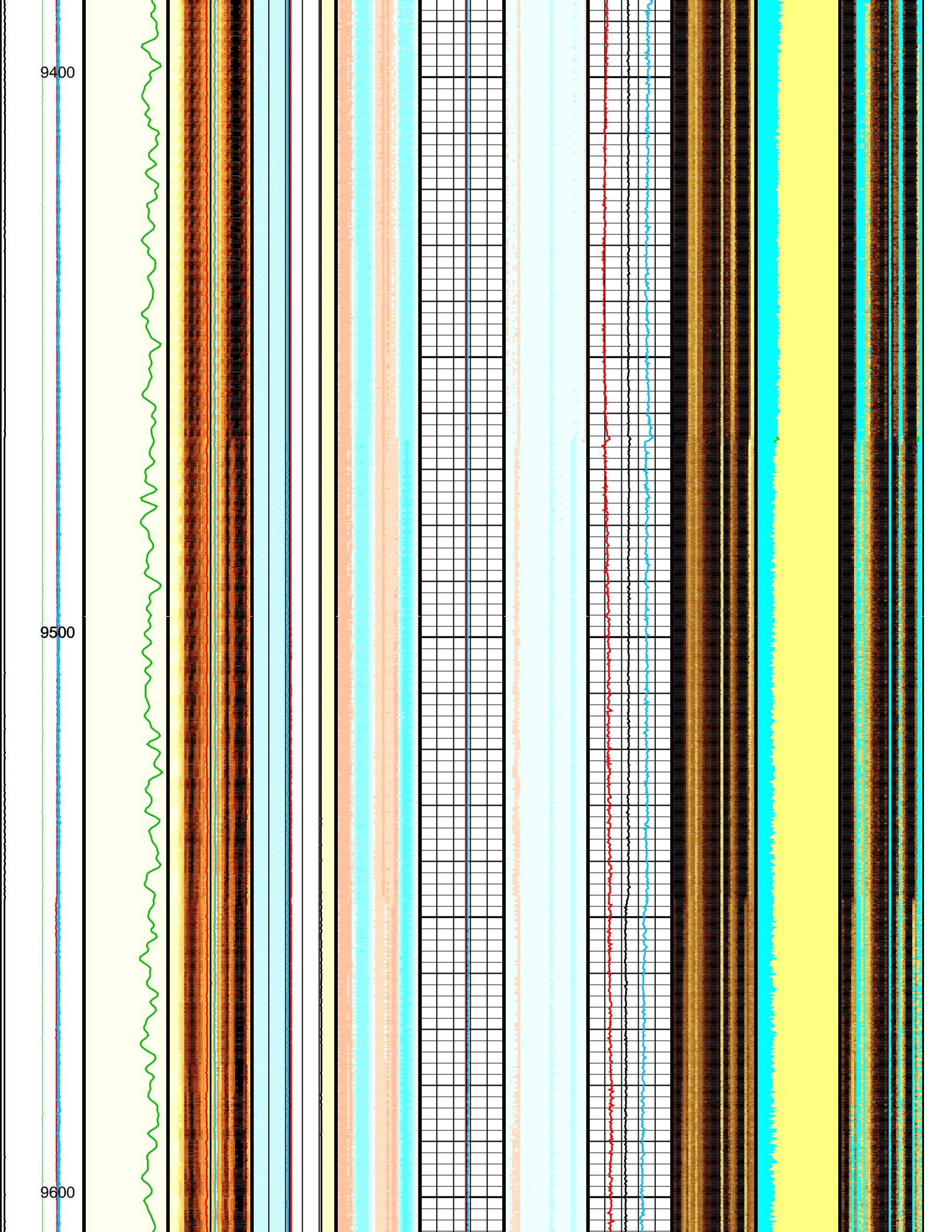
9300

2000 psi

9400

9500

9600

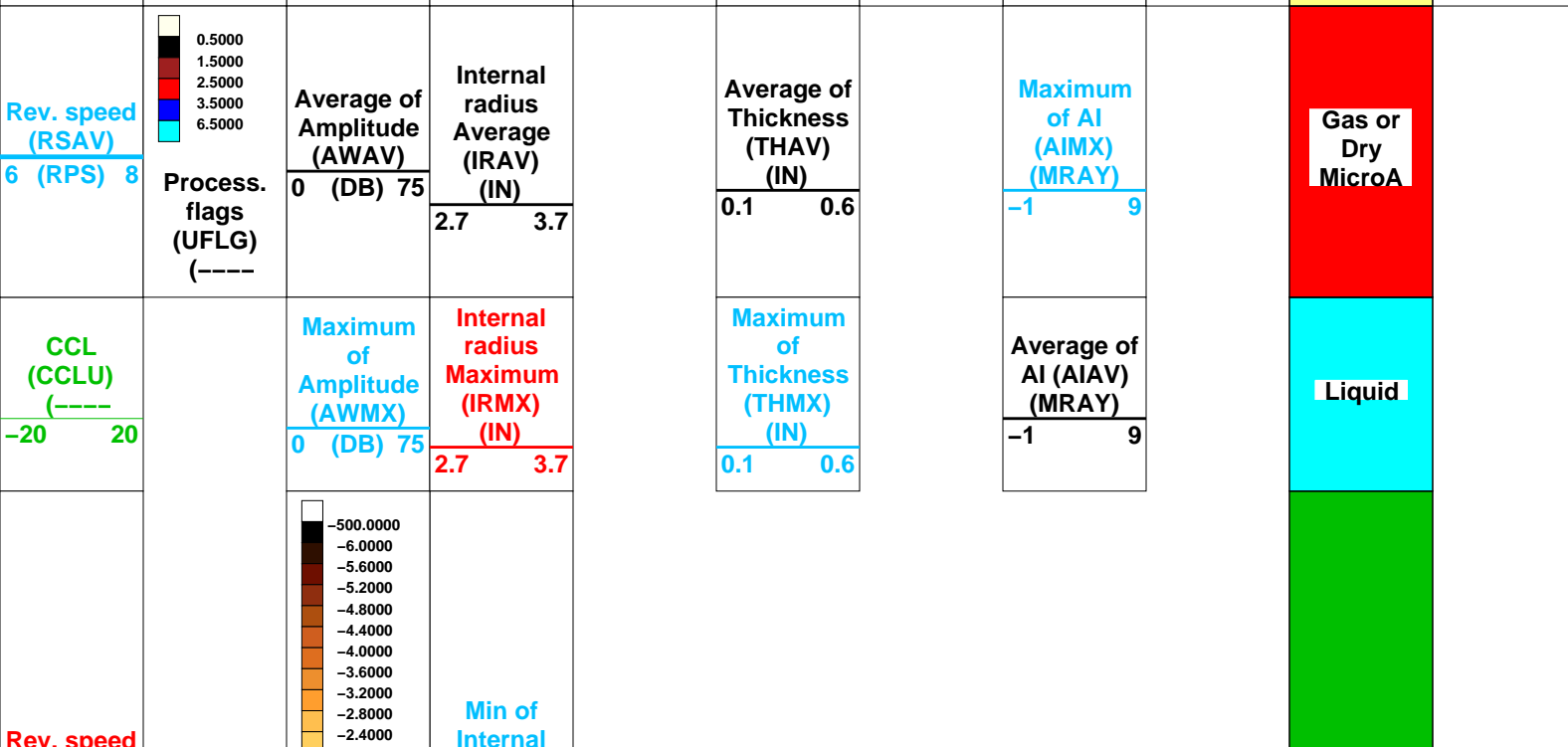
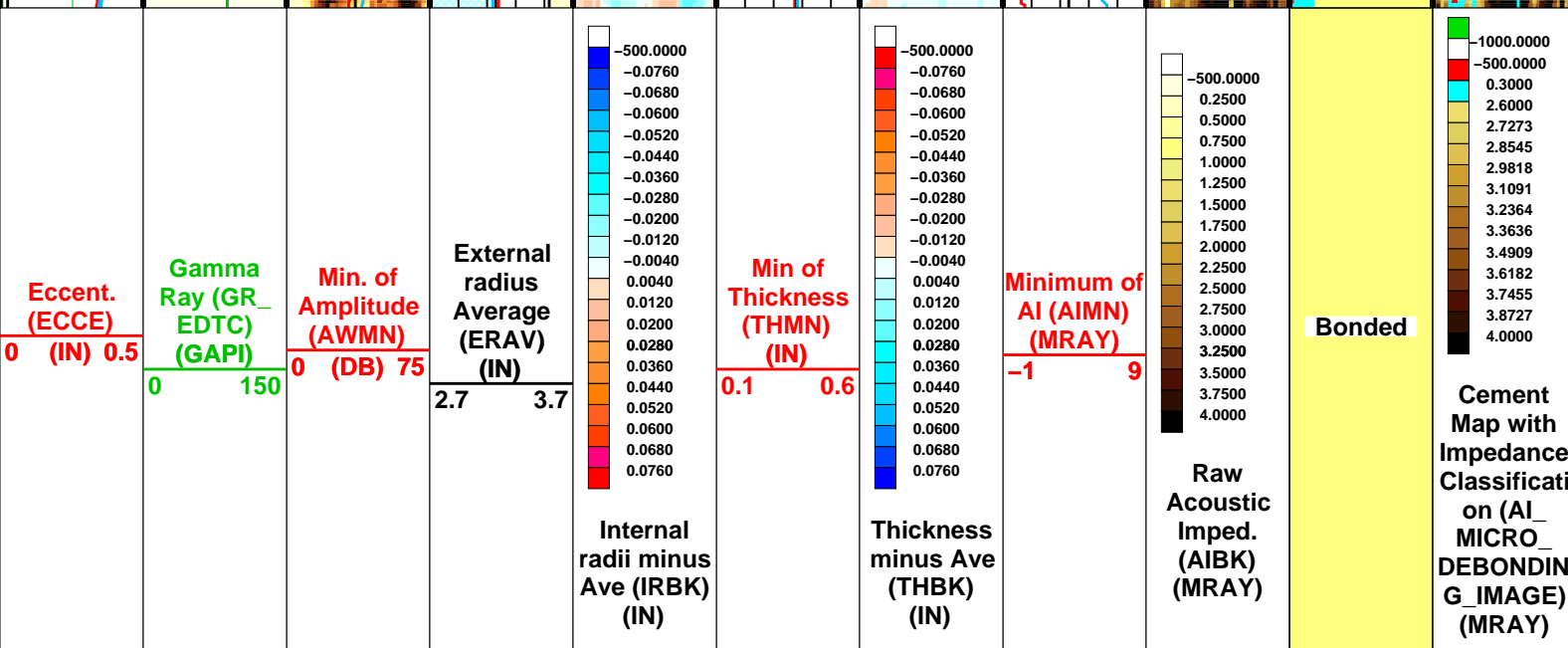


9700

9800

1500 psi

500 psi



-8	-6
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Image rotation (UCAZ) (DEG)
0
360

COMPUTATION FLAGS LABELLING			
(0 – 1.5)	UFLG 1		UTIM error
(1.5 – 2.5)	UFLG 2		Pulse origin not detected
(2.5 – 3.5)	UFLG 3		WINLEN error
<hr/>			
(3.5 – 6.5)	UFLG 4	UFLG 5 UFLG 6	CASING THICKNESS error
<hr/>			
(6.5 – 10)	UFLG 7	UFLG 8 UFLG 9	LOOP PROCESSING error

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value
USIT-E: Ultrasonic Imaging – E		
AGMN	Minimum Gain of Cartridge	–4 DB
AGMX	Maximum Gain of Cartridge	20 DB
BERJ	Bad Echo Rejection	ON
CDIA	Casing Outer Diameter	7 IN
CSDE	Casing Density	486.94 LBCF
CSID	Casing Inner Diameter	6.276 IN
DFVL	Default Fluid Velocity	186 US/F
DOT	Diameter of Transducer Sensor	2.874 IN
EMXV	EMEX Voltage	82 V
FDII	FPM Data Interpolation Interval	0 FT
IMAR	Image Rotation	OFF
MW	Mud Weight	8.4 LB/G
RCD	Reference Calibrator Outer Diameter	7 IN
RCSO	Reference Calibrator Standoff	1.1811 IN
RCTH	Reference Calibrator Thickness	0.2952 IN
SDNV	Number of Vertical Samples used for Micro-debonding Computation	5
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	0.5
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	0.3
TCUB	T^3 Processing Level	Vax_Loop
THDH	Maximum Search Thickness (percentage of nominal)	130
THDL	Minimum Search Thickness (percentage of nominal)	70
THDP	Thickness Detection Policy	Fundamental
THNO	Nominal Thickness of Casing	0.362 IN
UMAO	USIT Measurement Angular Offset	18 DEG
USTO	Ultrasonic Time Offset	–2 US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch
UWKM	Ultrasonic Working Mode	10DEG_3IN_60U_LF
VCAS	Ultrasonic Transversal Velocity in Casing	51.4 US/F
WLEN	T^3 Processing Length	21.7078 US
ZCAS	Acoustic Impedance of Casing	46.25 MRAY
ZINI	Initial Estimate of Cement Impedance	–1 MRAY
ZMUD	Acoustic Impedance of Mud	1.77 MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6 MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3 MRAY
STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI
STKT	STI Stuck Threshold	2.5 FT
TDD	Total Depth – Driller	11169.00 FT
TDL	Total Depth – Logger	–50000.00 FT
System and Miscellaneous		
CWEI	Casing Weight	26.00 LB/F
DO	Depth Offset for Playback	2.5 FT
PP	Playback Processing	RECOMPUTE

Input DLIS Files

DEFAULT	USI_011LUP	FN:10	PRODUCER	27–Mar–2014 09:36	9898.5 FT	8682.0 FT
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Output DLIS Files

DEFAULT	USI_022PUP	FN:21	PRODUCER	27–Mar–2014 12:20
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Schlumberger

Compressed Goodwin
0.1" = 100'

Input DLIS Files

DEFAULT

USI_012LUP

FN:11

PRODUCER

27-Mar-2014 09:52

6541.5 FT

100.2 FT

Output DLIS Files

DEFAULT

USI_020PUP

FN:19

PRODUCER

27-Mar-2014 12:13

6544.5 FT

103.5 FT

OP System Version: 19C1-222

USIT-E

19C1-222

EDTC-B

19C1-222

	<div>Minimum Acoustic Impedance #2 (MIN_ AI2) (MRAY)</div> <div>-7.57.5</div>	<div>Minimum Acoustic Impedance #4 (MIN_ AI4) (MRAY)</div> <div>-7.57.5</div>	<div>Minimum Acoustic Impedance #6 (MIN_ AI6) (MRAY)</div> <div>-7.57.5</div>	<div>Minimum Acoustic Impedance #8 (MIN_ AI8) (MRAY)</div> <div>-7.57.5</div>						
	<div>Minimum Acoustic Impedance #1 (MIN_ AI1) (MRAY)</div> <div>015</div>	<div>Minimum Acoustic Impedance #3 (MIN_ AI3) (MRAY)</div> <div>015</div>	<div>Minimum Acoustic Impedance #5 (MIN_ AI5) (MRAY)</div> <div>015</div>	<div>Minimum Acoustic Impedance #7 (MIN_ AI7) (MRAY)</div> <div>015</div>						
	<div>Maximum Acoustic Impedance #2 (MAX_ AI2) (MRAY)</div> <div>-7.57.5</div>	<div>Maximum Acoustic Impedance #4 (MAX_ AI4) (MRAY)</div> <div>-7.57.5</div>	<div>Maximum Acoustic Impedance #6 (MAX_ AI6) (MRAY)</div> <div>-7.57.5</div>	<div>Maximum Acoustic Impedance #8 (MAX_ AI8) (MRAY)</div> <div>-7.57.5</div>						Area
	<div>Maximum Acoustic Impedance #1 (MAX_ AI1) (MRAY)</div> <div>015</div>	<div>Maximum Acoustic Impedance #3 (MAX_ AI3) (MRAY)</div> <div>015</div>	<div>Maximum Acoustic Impedance #5 (MAX_ AI5) (MRAY)</div> <div>015</div>	<div>Maximum Acoustic Impedance #7 (MAX_ AI7) (MRAY)</div> <div>015</div>	<div>Minimum Acoustic Impedance #9 (MIN_ AI9) (MRAY)</div> <div>015</div>	<div>Maximum of AI (AIMX) (MRAY)</div> <div>07.5</div>				Liquid
	<div>Average Acoustic Impedance #2 (AV_ AI2) (MRAY)</div> <div>-7.57.5</div>	<div>Average Acoustic Impedance #4 (AV_ AI4) (MRAY)</div> <div>-7.57.5</div>	<div>Average Acoustic Impedance #6 (AV_ AI6) (MRAY)</div> <div>-7.57.5</div>	<div>Average Acoustic Impedance #8 (AV_ AI8) (MRAY)</div> <div>-7.57.5</div>	<div>Maximum Acoustic Impedance #9 (MAX_ AI9) (MRAY)</div> <div>015</div>	<div>Minimum of AI (AIMN) (MRAY)</div> <div>07.5</div>				Gas
<div>Eccent. (ECCE) 0 (IN) 0.5</div>	<div>Average Acoustic Impedance #1 (AV_ AI1) (MRAY)</div> <div>015</div>	<div>Average Acoustic Impedance #3 (AV_ AI3) (MRAY)</div> <div>015</div>	<div>Average Acoustic Impedance #5 (AV_ AI5) (MRAY)</div> <div>015</div>	<div>Average Acoustic Impedance #7 (AV_ AI7) (MRAY)</div> <div>015</div>	<div>Average Acoustic Impedance #9 (AV_ AI9) (MRAY)</div> <div>015</div>	<div>Average of AI (AIAV) (MRAY)</div> <div>07.5</div>	<div><div></div><div>-500.0000</div><div>0.2500</div><div>0.5000</div><div>0.7500</div><div>1.0000</div><div>1.2500</div><div>1.5000</div><div>1.7500</div><div>2.0000</div><div>2.2500</div><div>2.5000</div><div>2.7500</div><div>3.0000</div><div>3.2500</div><div>3.5000</div><div>3.7500</div><div>4.0000</div></div> <div>Raw Acoustic Impedance</div>	<div><div></div><div>-1000.0000</div><div>-500.0000</div><div>0.3000</div><div>2.6000</div><div>2.7273</div><div>2.8545</div><div>2.9818</div><div>3.1091</div><div>3.2364</div><div>3.3636</div><div>3.4909</div><div>3.6182</div><div>3.7455</div><div>3.8727</div><div>4.0000</div></div> <div>Cement Map with Impedance Classification on (AI_</div>	<div>Gamma Ray (GR_ EDTC) (GAPI)</div> <div>0150</div>	<div>Bonded (100 -0)</div>

#2 (AV_ AI2) (MRAY)	#4 (AV_ AI4) (MRAY)	#6 (AV_ AI6) (MRAY)	#8 (AV_ AI8) (MRAY)	#9 (MAX_ AI9) (MRAY)	(MRAY)
-7.5 7.5	-7.5 7.5	-7.5 7.5	-7.5 7.5	0 15	0 7.5
Maximum Acoustic Impedance #1 (MAX_ AI1) (MRAY)	Maximum Acoustic Impedance #3 (MAX_ AI3) (MRAY)	Maximum Acoustic Impedance #5 (MAX_ AI5) (MRAY)	Maximum Acoustic Impedance #7 (MAX_ AI7) (MRAY)	Minimum Acoustic Impedance #9 (MIN_ AI9) (MRAY)	Maximum of AI (AIMX) (MRAY)
0 15	0 15	0 15	0 15	0 15	0 7.5
Maximum Acoustic Impedance #2 (MAX_ AI2) (MRAY)	Maximum Acoustic Impedance #4 (MAX_ AI4) (MRAY)	Maximum Acoustic Impedance #6 (MAX_ AI6) (MRAY)	Maximum Acoustic Impedance #8 (MAX_ AI8) (MRAY)		
-7.5 7.5	-7.5 7.5	-7.5 7.5	-7.5 7.5		
Minimum Acoustic Impedance #1 (MIN_ AI1) (MRAY)	Minimum Acoustic Impedance #3 (MIN_ AI3) (MRAY)	Minimum Acoustic Impedance #5 (MIN_ AI5) (MRAY)	Minimum Acoustic Impedance #7 (MIN_ AI7) (MRAY)		
0 15	0 15	0 15	0 15		
Minimum Acoustic Impedance #2 (MIN_ AI2) (MRAY)	Minimum Acoustic Impedance #4 (MIN_ AI4) (MRAY)	Minimum Acoustic Impedance #6 (MIN_ AI6) (MRAY)	Minimum Acoustic Impedance #8 (MIN_ AI8) (MRAY)		
-7.5 7.5	-7.5 7.5	-7.5 7.5	-7.5 7.5		

Gas

Liquid

Area

Format: USIT only Goodwin Compressed Vertical Scale: 0.1" per 100' Graphics File Created: 27-Mar-2014 12:13

OP System Version: 19C1-222

USIT-E 19C1-222 EDTC-B 19C1-222

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Input DLIS Files

DEFAULT USI_012LUP FN:11 PRODUCER 27-Mar-2014 09:52 6541.5 FT 100.2 FT

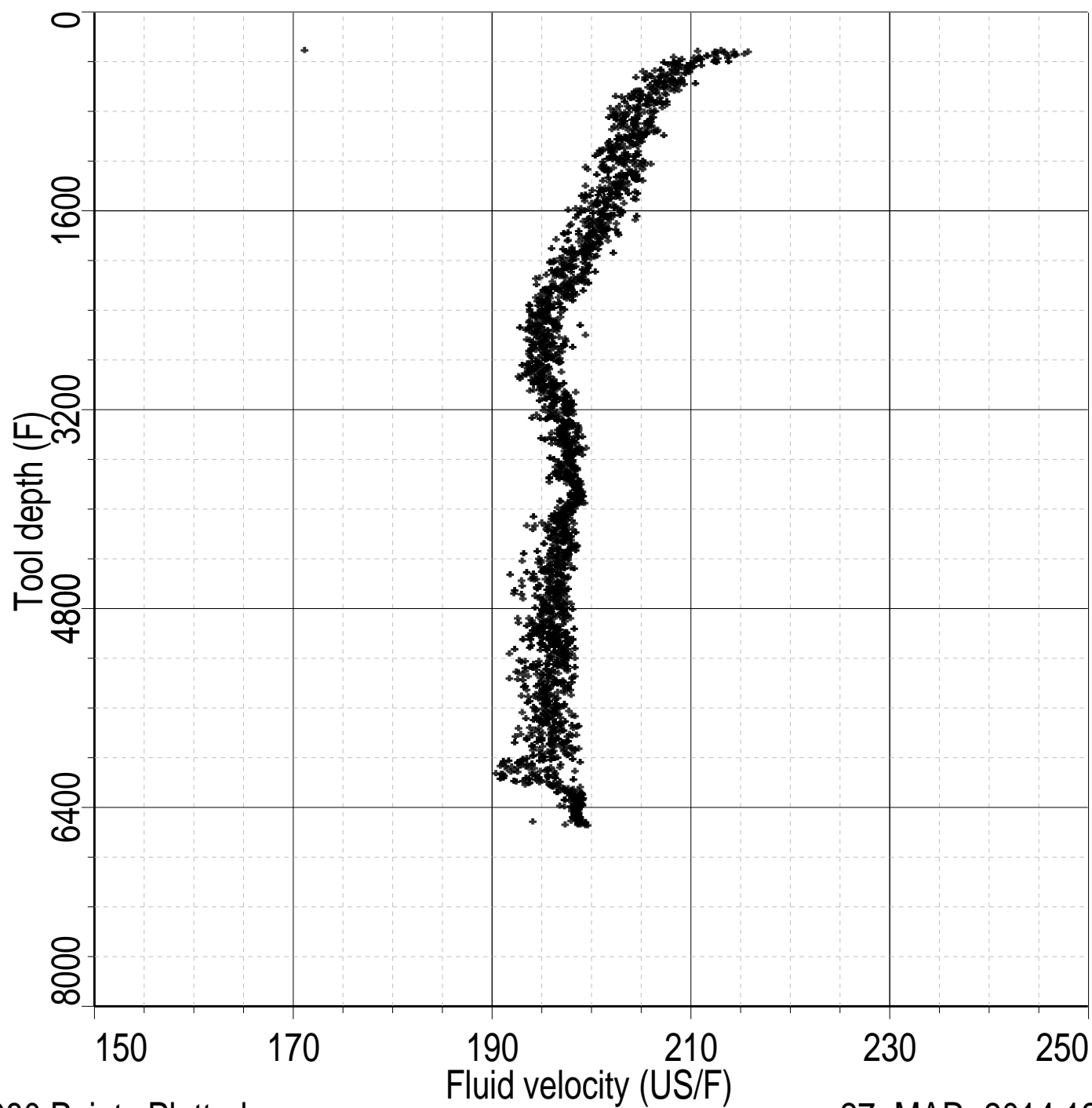
Output DLIS Files

DEFAULT USI_020PUP FN:19 PRODUCER 27-Mar-2014 12:13

Schlumberger

Fluid Properties

Index: 6544.0 – 178.0 FT



2080 Points Plotted

27-MAR-2014 12:34

Index: 6544.0 – 178.0 FT

