

Schlumberger

Company: Encana Oil & Gas Inc

Well: Flanigan 2A-6H

Field: Wattenberg

County: Weld

State: Colorado

County: Weld

Field: Wattenberg

Location: Lat/Long : 40.08674 / -104.59946

Well: Flanigan 2A-6H

Company: Encana Oil & Gas Inc

Isolation Scanner
Cement Evaluation

LOCATION			
Lat/Long : 40.08674 / -104.59946	Elev.: K.B.	4949.00 ft	
SHL : 266'FNL X 900' FWL NWNE	G.L.	4936.00 ft	
	D.F.	4949.00 ft	
Permanent Datum:	Ground Level	Elev.: 4936.00 ft	
Log Measured From:	Kelly Bushing	13.00 ft above Perm. Datum	
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section	Township	Range
05-123-35694-00	6	1N	64W

Logging Date 23-Jul-2012

Run Number One

Depth Driller 11345 ft

Schlumberger Depth 11345 ft

Bottom Log Interval 7200 ft

Top Log Interval 150 ft

Casing Fluid Type Water Based Mud

Salinity

Density 9.95 lbm/gal

Fluid Level

BIT/CASING/TUBING STRING

Bit Size 8.750 in

From

To

Casing/Tubing Size 7.000 in

Weight 26 lbm/ft

Grade

From

To

Maximum Recorded Temperatures

Logger On Bottom 23-Jul-2012 11:45

Unit Number 3022 Fort Morgan

Recorded By Arvin Shi

Witnessed By Mr Dennis

Run 1

Run 2

Run

Oil Density

Water Salinity

Gas Gravity

Bo

Bw

1/Bg

Bubble Point Pressure

Bubble Point Temperature

Solution GOR

Maximum Deviation

CEMENTING DATA

Primary/Squeeze

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 23-Jul-2012 11:45

Unit Number 3022 Fort Morgan

Recorded By Arvin Shi

Witnessed By Mr Dennis

DEPTH SUMMARY LISTING

Date Created: 23-JUL-2012 15:12:05

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-39P LXS
Serial Number:	6405	Serial Number:	1109	Serial Number:	
Calibration Date:	6-Jun-2012	Calibration Date:	17-Jul-2012	Length:	16700 FT
Calibrator Serial Number:		Calibrator Serial Number:	100513	Conveyance Method:	Wireline
Calibration Cable Type:	7-39P LXS	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-5	Calibration RMS:	11		
Wheel Correction 2:	-7	Calibration Peak Error:	7		

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:	
Tool Zero Check At Surface:	


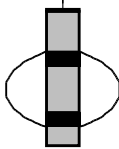




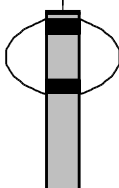
Depth Control Remarks

1. All Schlumberger depth policy applied
2. IDW used as primary depth measurements and Z-Chart as secondary depth measurements
- 3.
- 4.
- 5.
- 6.

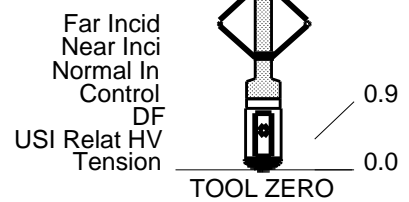
DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES1 OS1: None OS2: OS3: OS4: OS5:	OTHER SERVICES2 OS1: OS2: OS3: OS4: OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
1.This is first run in well	
2. Toolstring run as per tool sketch. Two gemcos and three inline centralizers used to centralize tool	
3. Two knuckles used to allow tool to flex	
4. Logging Objectives : Cement Evaluation	

Logging Objectives Cement Evaluation					
5. Pressure pass not done due to openhole beneath intermediate casing					
6. Repeat pass was done at 3750–3200 ft with 10 Deg 1.5 in Resolution					
7. Fluid level is detected at					
Cement : Tuned light 10# cement from 354' to 4108'					
Varicem 12# cement from 4108' to 6417'					
Varicem 13# cement from 6417' to 7417'					
Your Crew : Jay Musgrave & Jacob Jump					
RUN 1			RUN 2		
SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL:			SERVICE ORDER #: PROGRAM VERSION: FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
SURFACE EQUIPMENT					
GSR–U/Y WITM (DTS)–A					
DOWNHOLE EQUIPMENT					
LEH–QT LEH–QT		44.4			
AH–CEN AH–CEN		41.5			
CAL–Y CAL–Y 669	CCL 	36.9 37.7			
DTC–H ECH–KC 10316 DTCH0–A 9236 DTCH1–A	CTEM TelStatus ToolStatu 	33.3 31.2 34.2			
SGT–N SGH–K 3039 SGC–TB 10249 SGD–TAB	Gamma Ray 	30.3 31.2			
AH–107 AH–107		25.7			
USIT–D ECH–MRA 4949 USIC–D 947 AH–107 USIS–A 791 USSC–B IBCS_B–100158202 826 Top Transducer		23.7			

Top Transducer
Middle Top Transducer
Middle Bottom Transducer
Bottom Transducer



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



5" SLG Composite

MAXIS Field Log

Company: Encana Oil & Gas Inc Well: Flanigan 2A-6H

Input DLIS Files

DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
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Output DLIS Files

DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25	7110.5 FT	147.5 FT
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OP System Version: 19C0-187

USIT-D	SRPC-5095-H2-2011-OP19	SGT-N	19C0-187
DTC-H	19C0-187	CAL-Y	19C0-187

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

Rev. speed
(RSAV)
(RPS)
-8 -6

CCL
(CCLU)
(----)
-20 20

Rev. speed
(RSAV)
6 (RPS) 8

Eccent.
(ECCE)
0 (IN) 0.5

Process.
flags
(UFLG)
(----)

<div><div></div><div>-500.0000</div><div>-6.0000</div><div>-5.6000</div><div>-5.2000</div><div>-4.8000</div><div>-4.4000</div><div>-4.0000</div><div>-3.6000</div><div>-3.2000</div><div>-2.8000</div><div>-2.4000</div><div>-2.0000</div><div>-1.6000</div><div>-1.2000</div><div>-0.8000</div><div>-0.4000</div><div>0.5000</div></div>	<div>Min of Internal radius (IRMN) (IN)</div> <div>3.7 2.7</div>	<div>Min of Internal radius (IRMN) (IN)</div> <div>2.7 3.7</div>
Amplitude of echo minus Max (AWBK) (DB)		
<div>Maximum of Amplitude (AWMX) 0 (DB) 75</div>	<div>Internal radius Maximum (IRMX) (IN)</div> <div>3.7 2.7</div>	<div>Internal radius Maximum (IRMX) (IN)</div> <div>2.7 3.7</div>
<div>Average of Amplitude (AWAV) 0 (DB) 75</div>	<div>Internal radius Average (IRAV) (IN)</div> <div>3.7 2.7</div>	<div>Internal radius Average (IRAV) (IN)</div> <div>2.7 3.7</div>

Internal
radii minus

<div>Maximum of Thickness (THMX) (IN)</div> <div>0.1 0.6</div>
<div>Average of Thickness (THAV) (IN)</div> <div>0.1 0.6</div>

Min of
Thickness
(THMN)
(IN)
0.1 0.6

Thickness
minus Ave

Raw
Acoustic
Imped.
(AIRK)

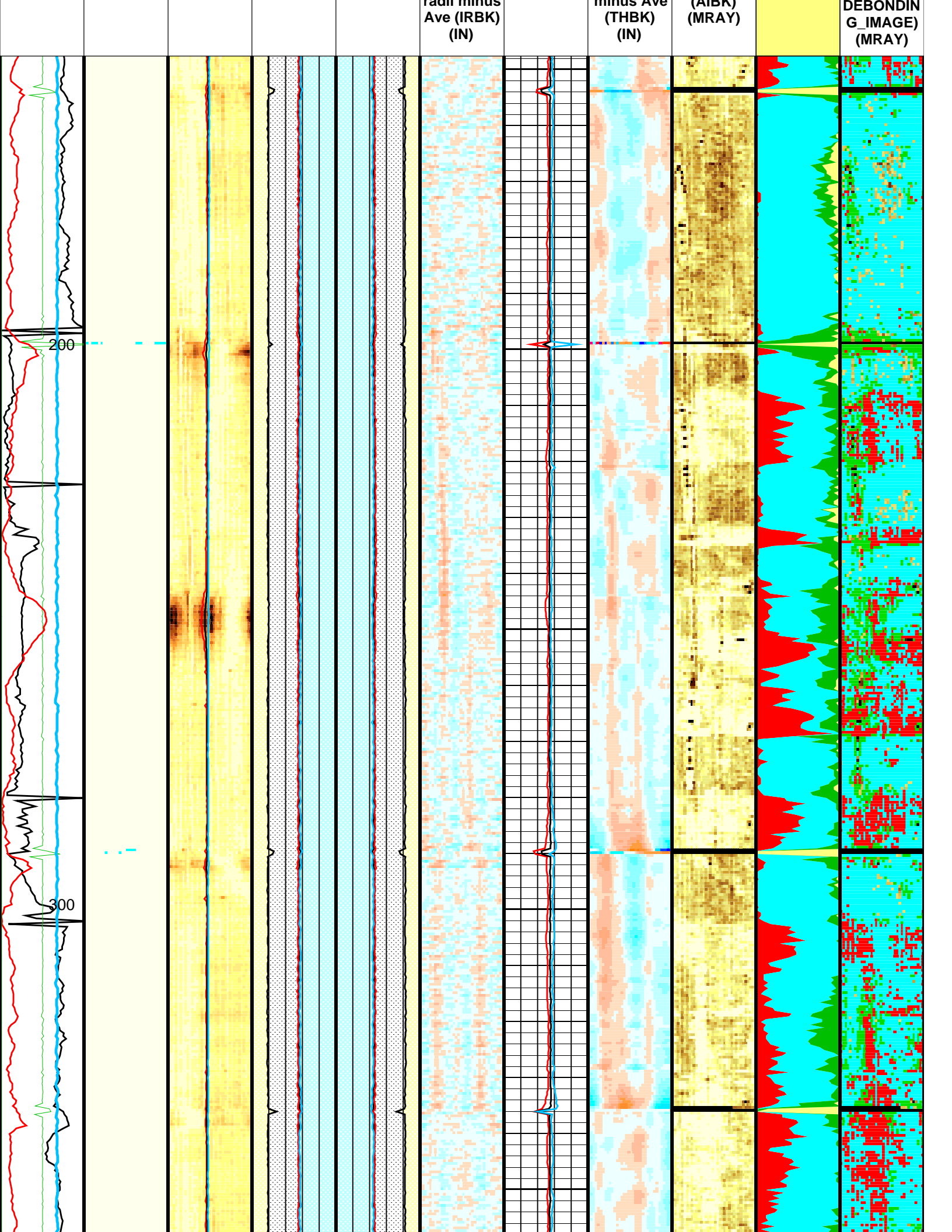
Micro-deb
onding

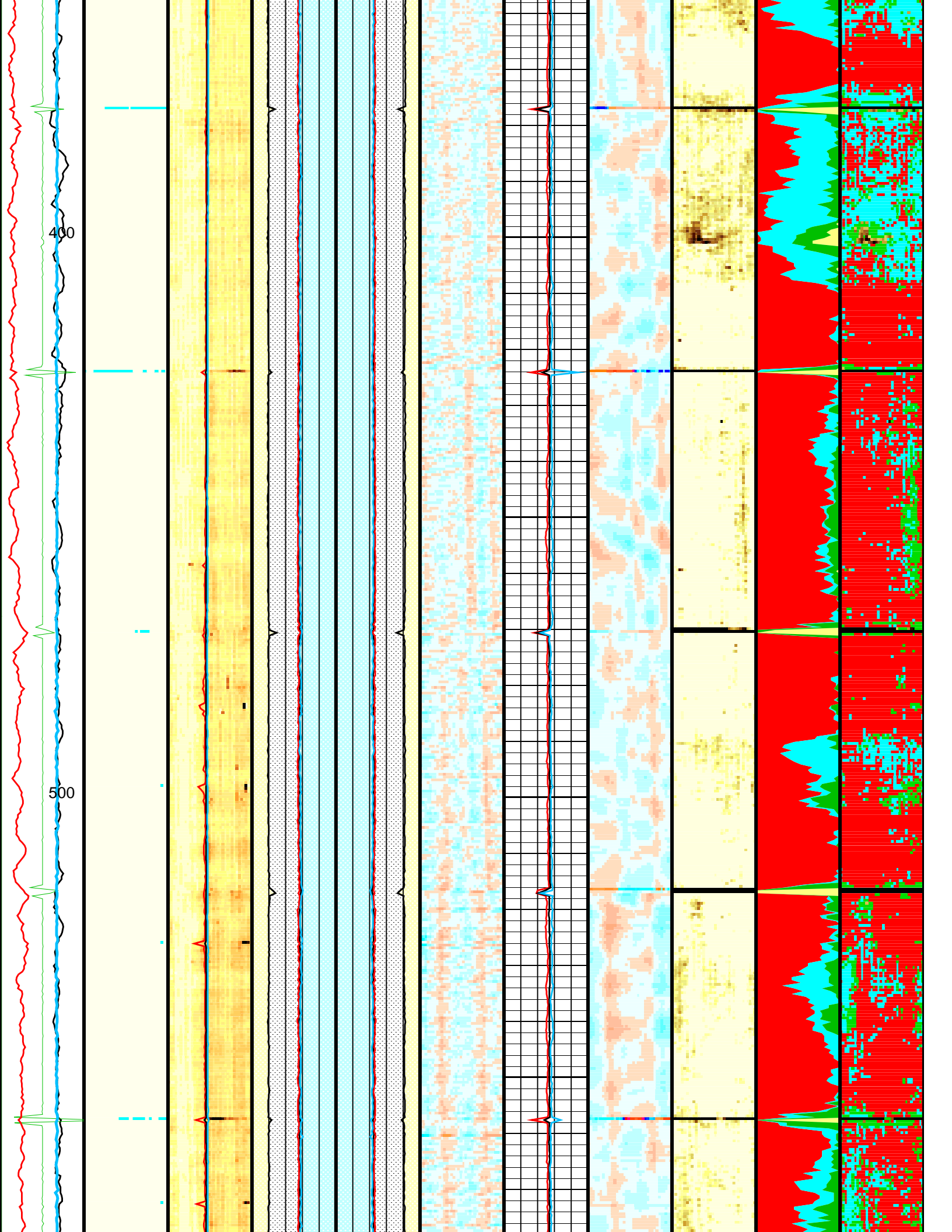
Liquid

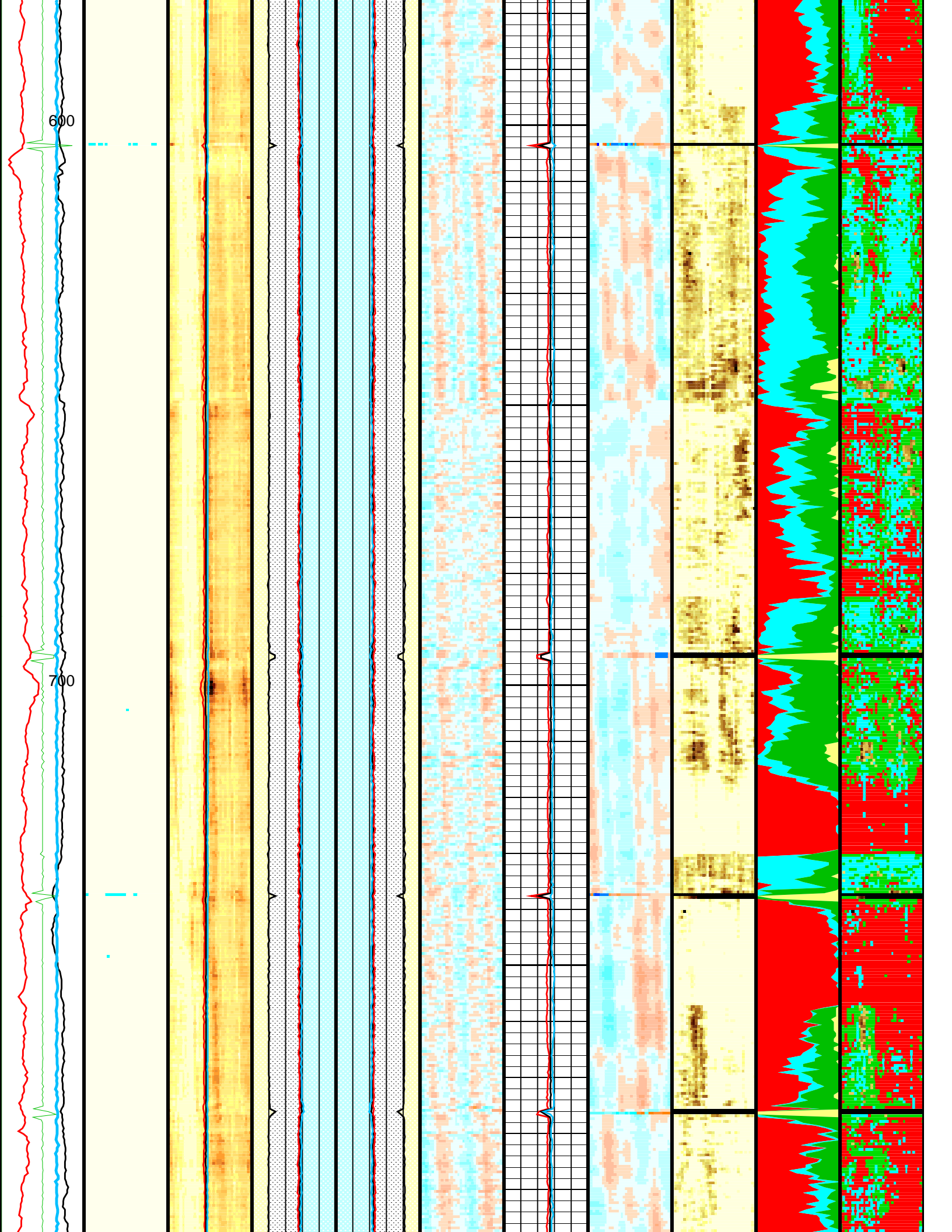
Gas or
Dry
MicroA

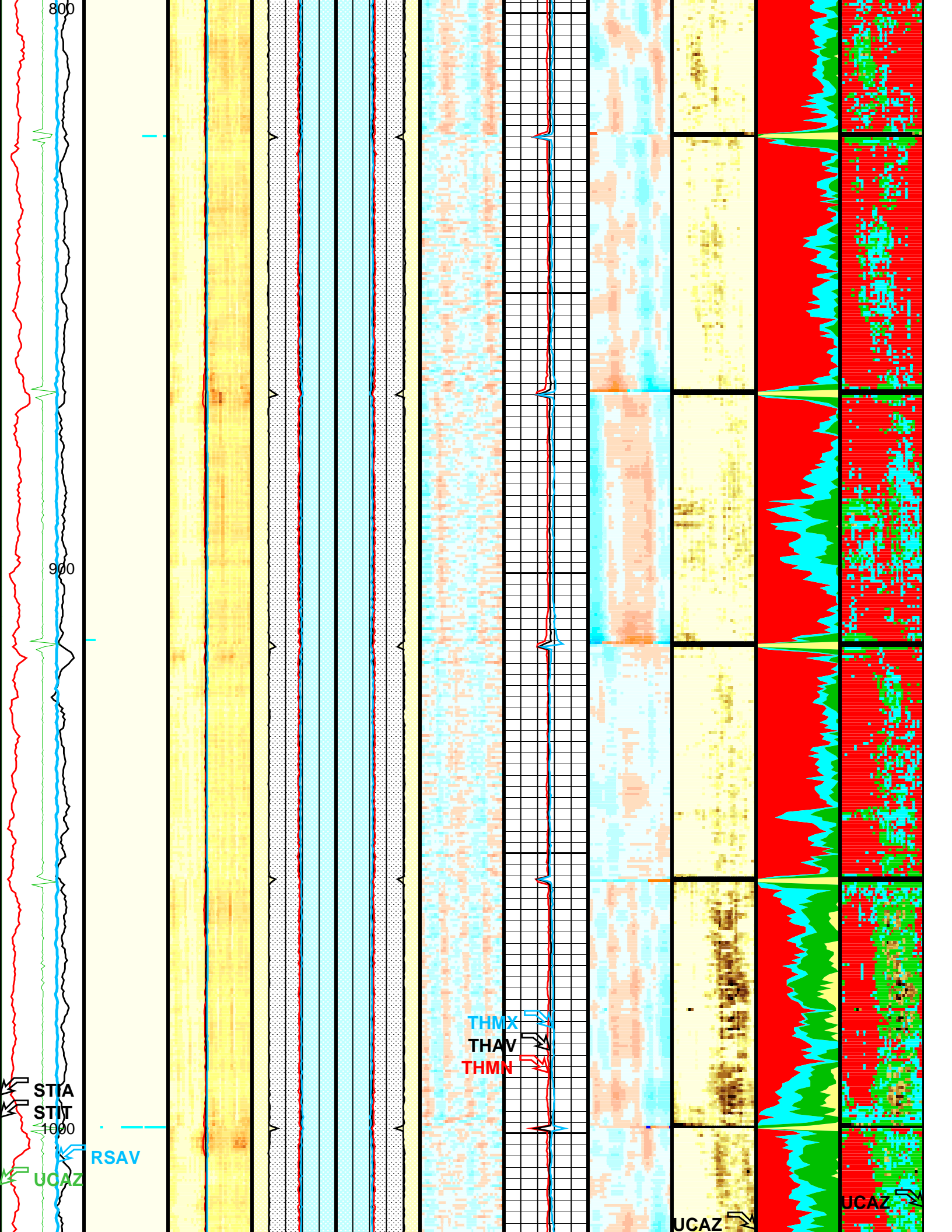
Bonded

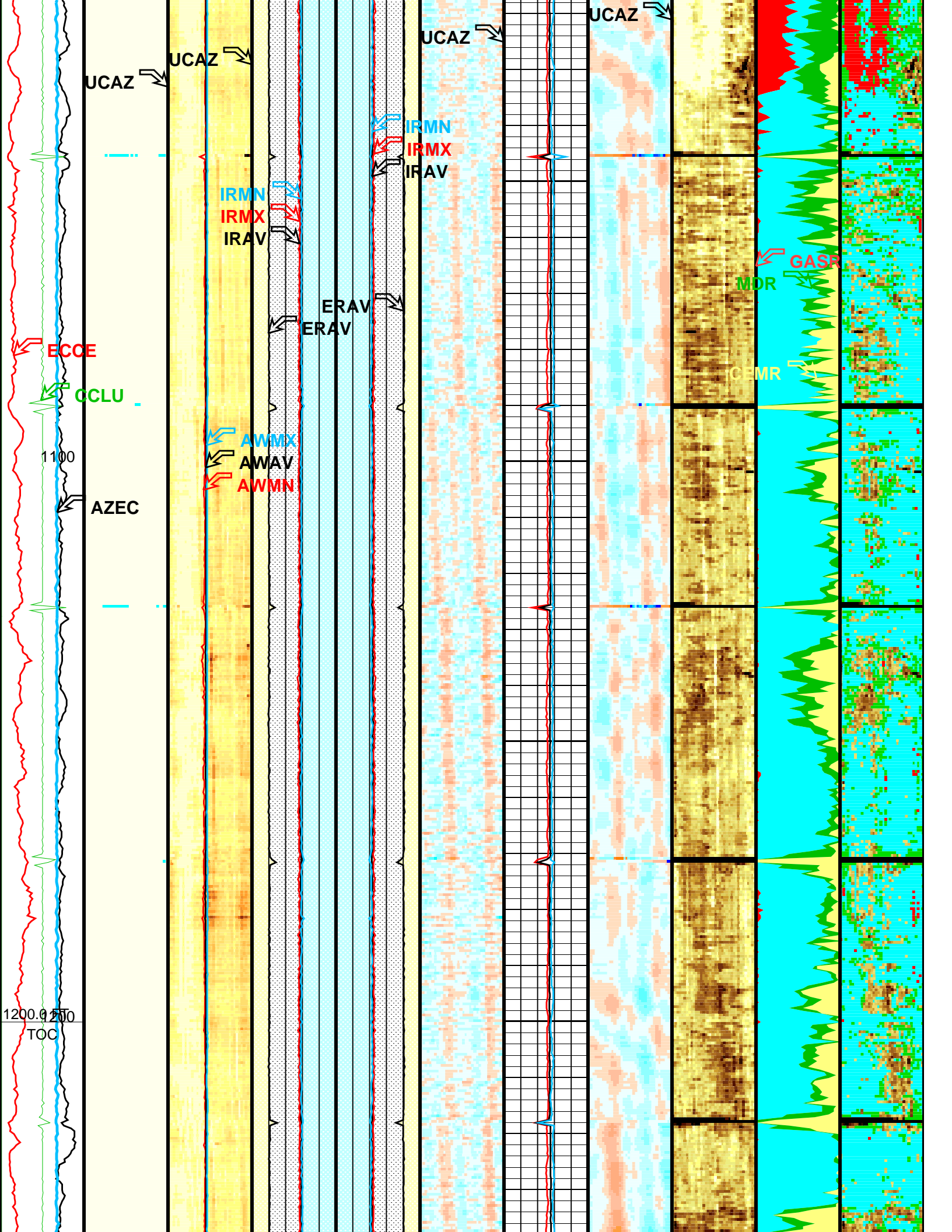
Cement
Map with
Impedance
Classificati
on (AI_
MICRO_

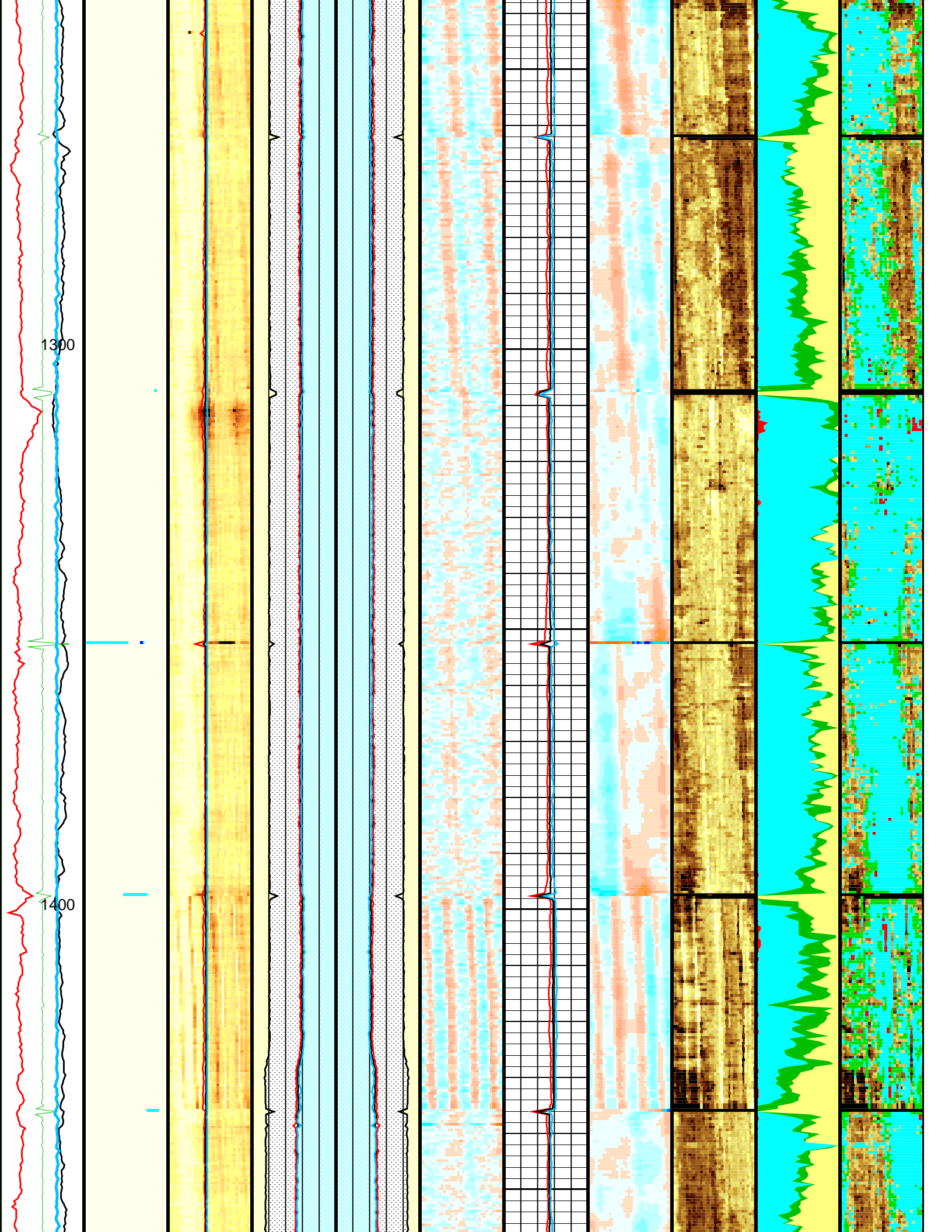


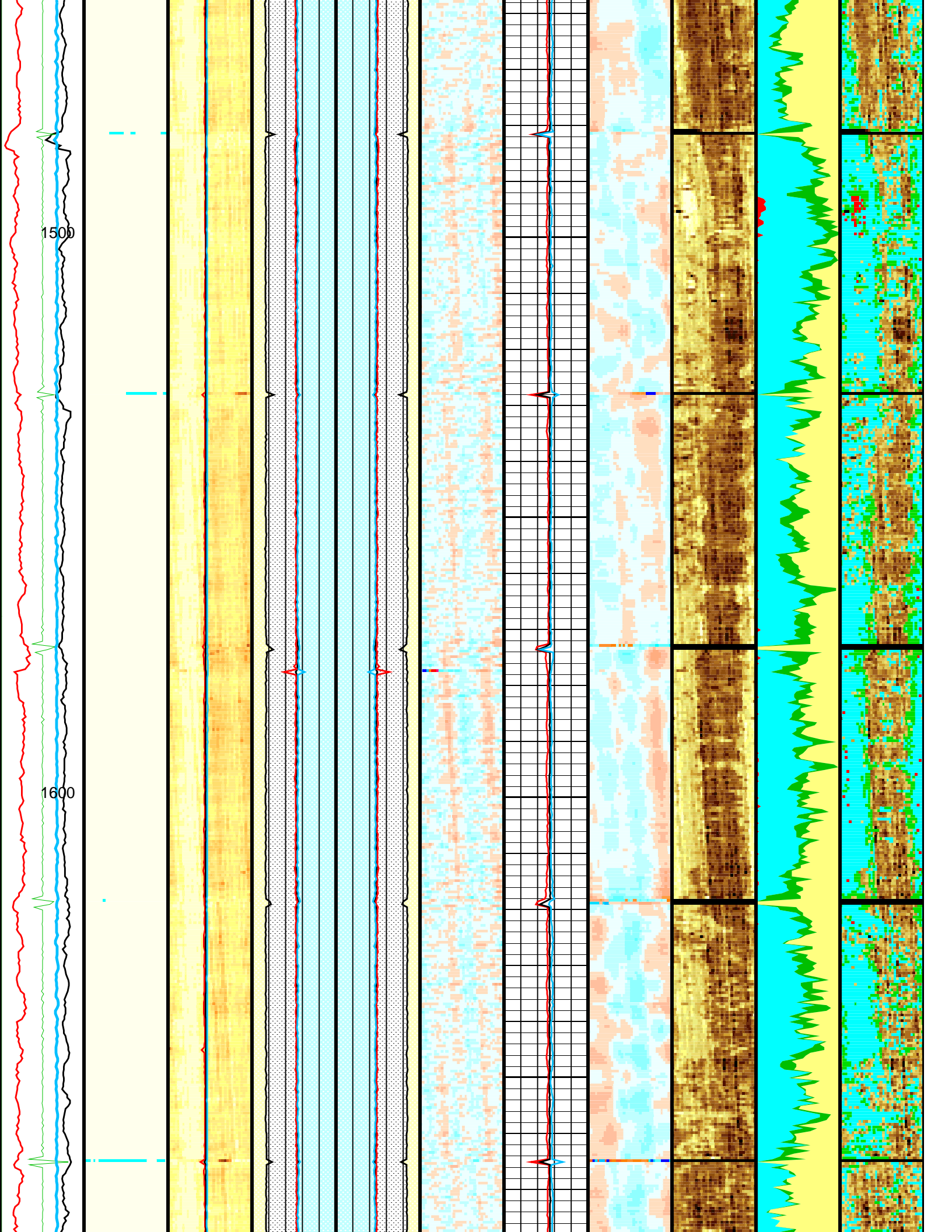


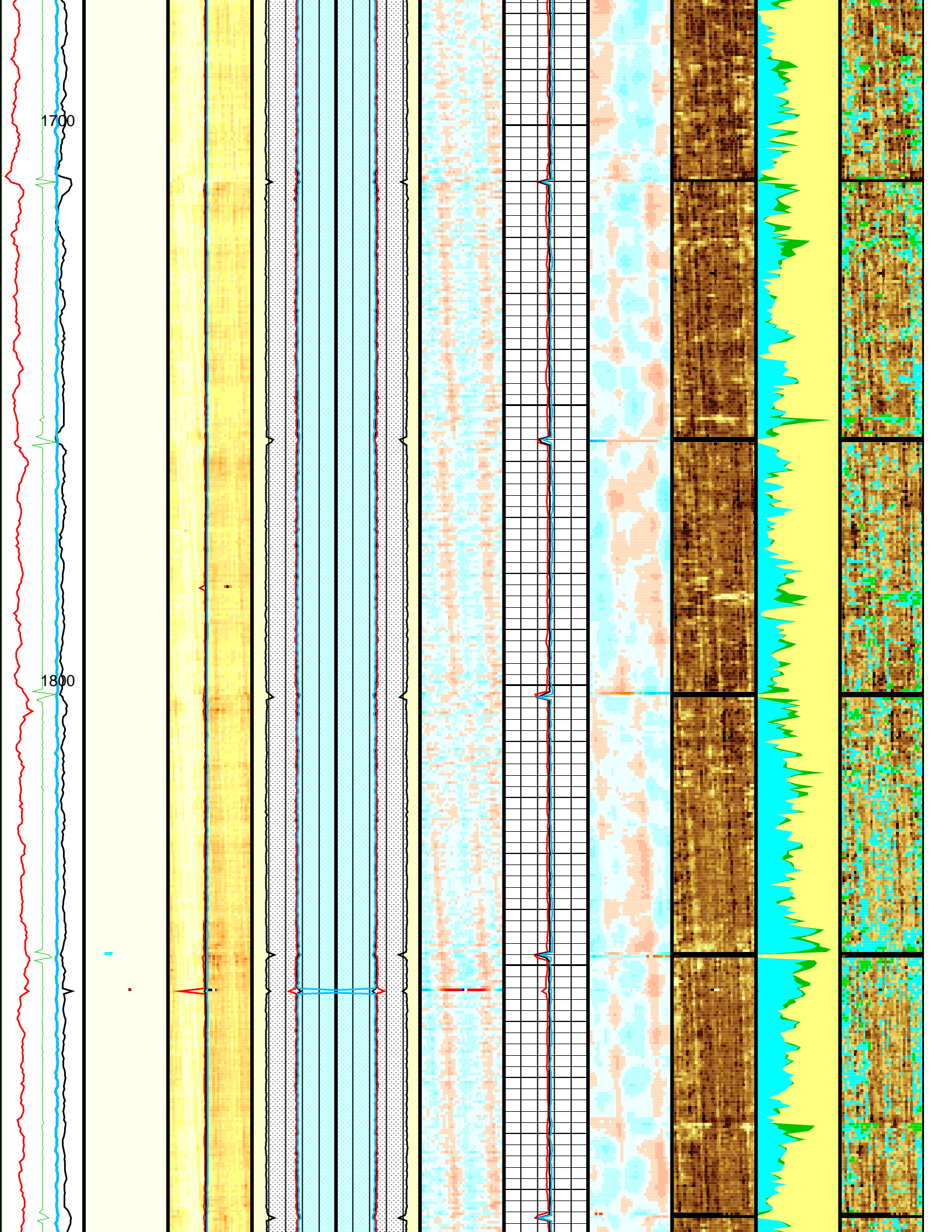


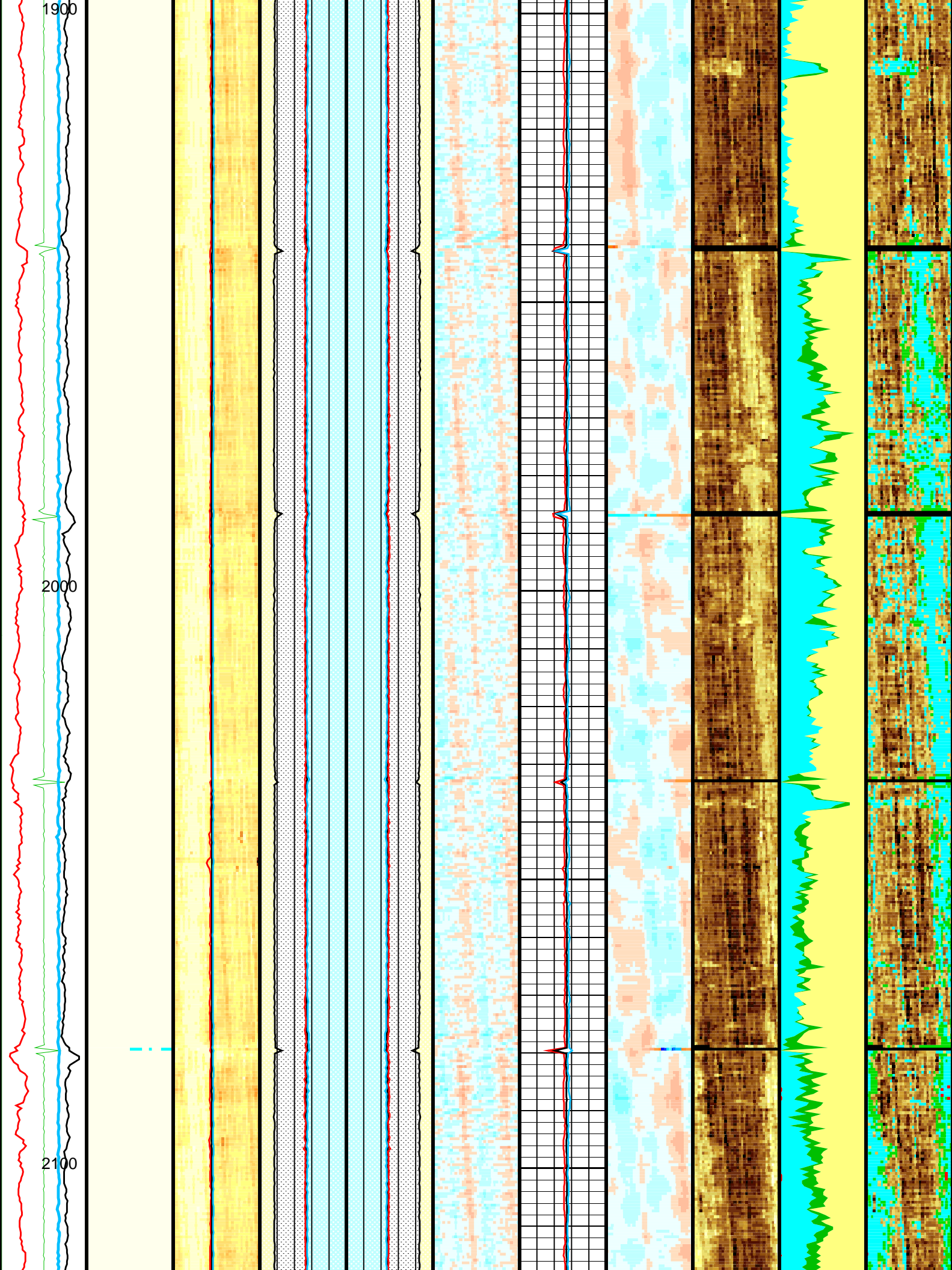


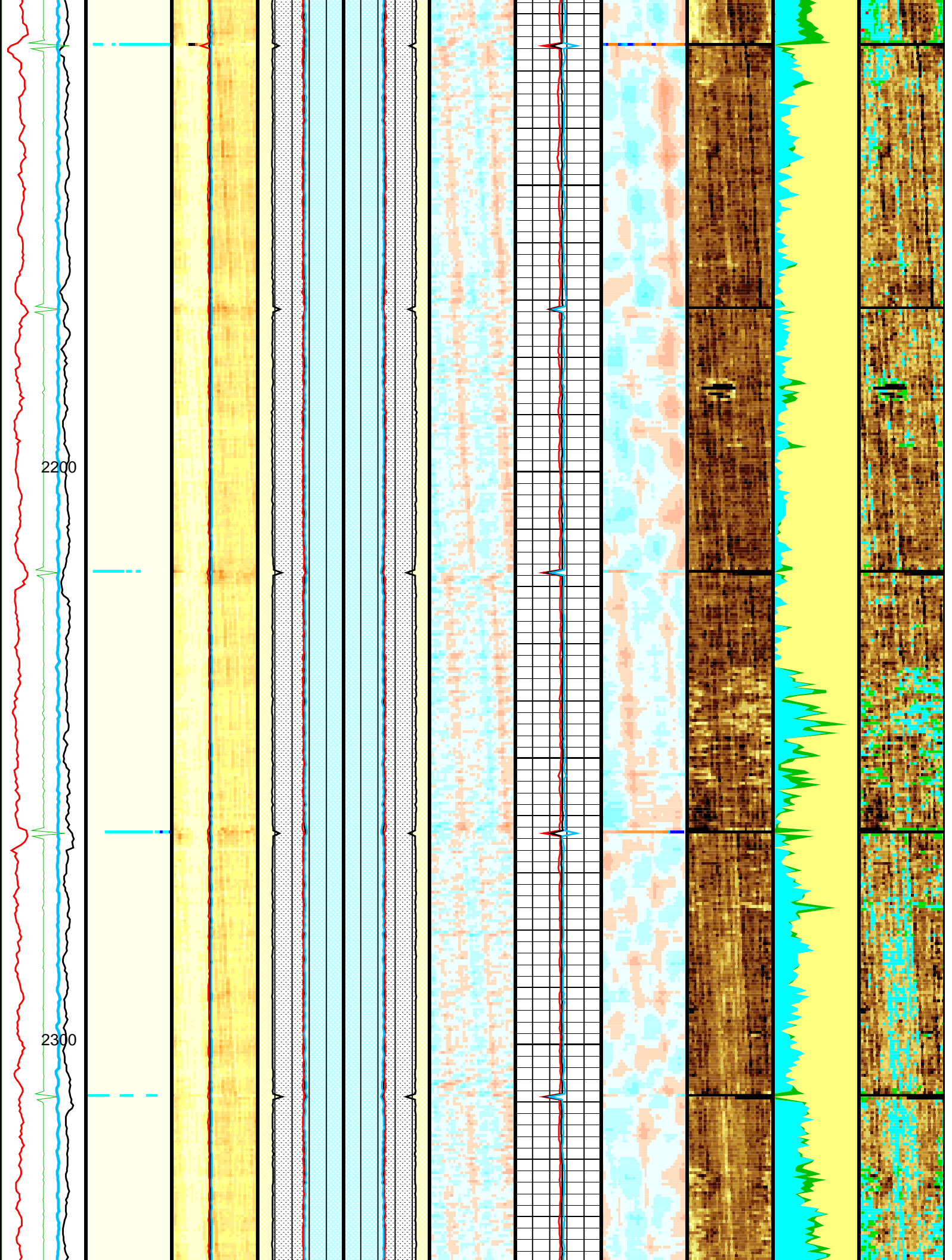


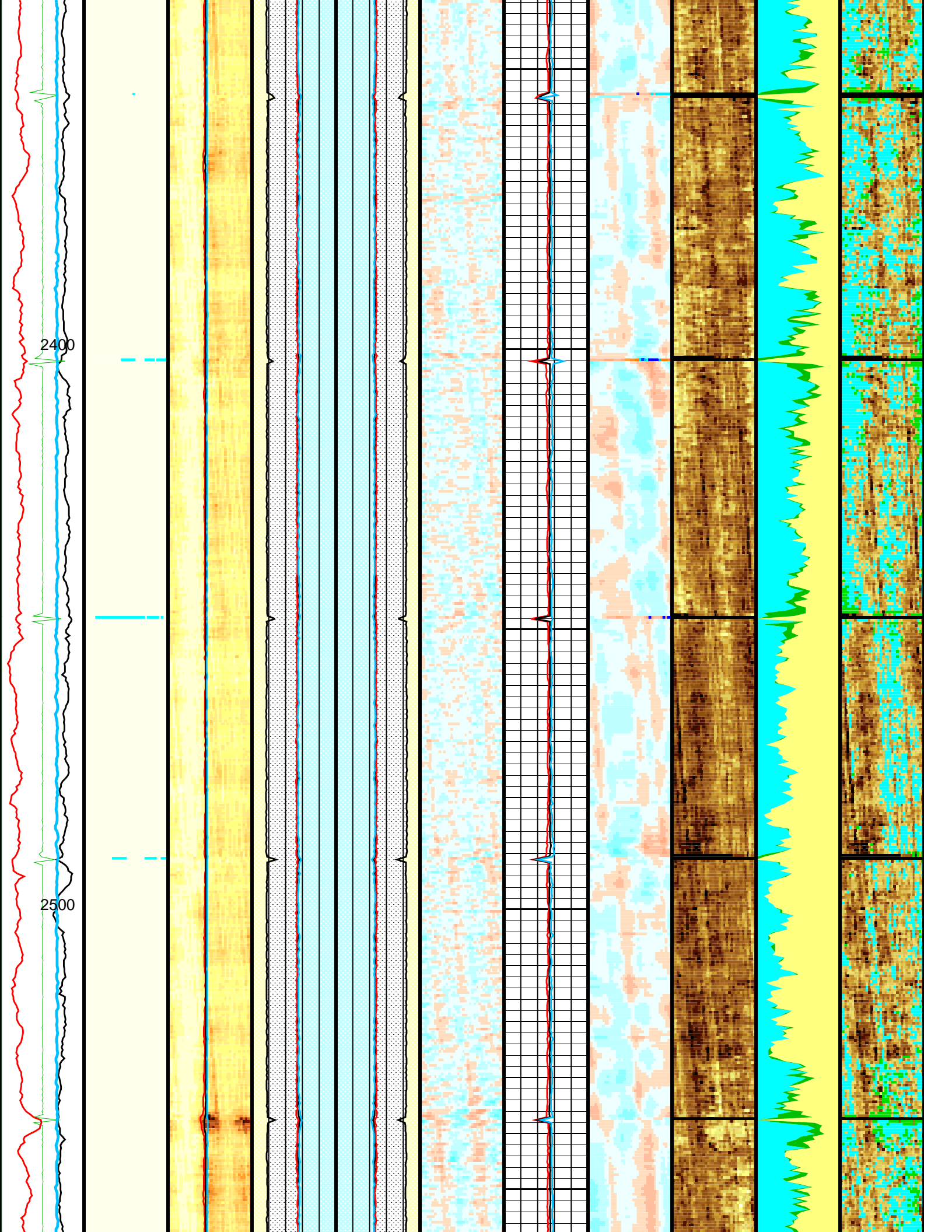


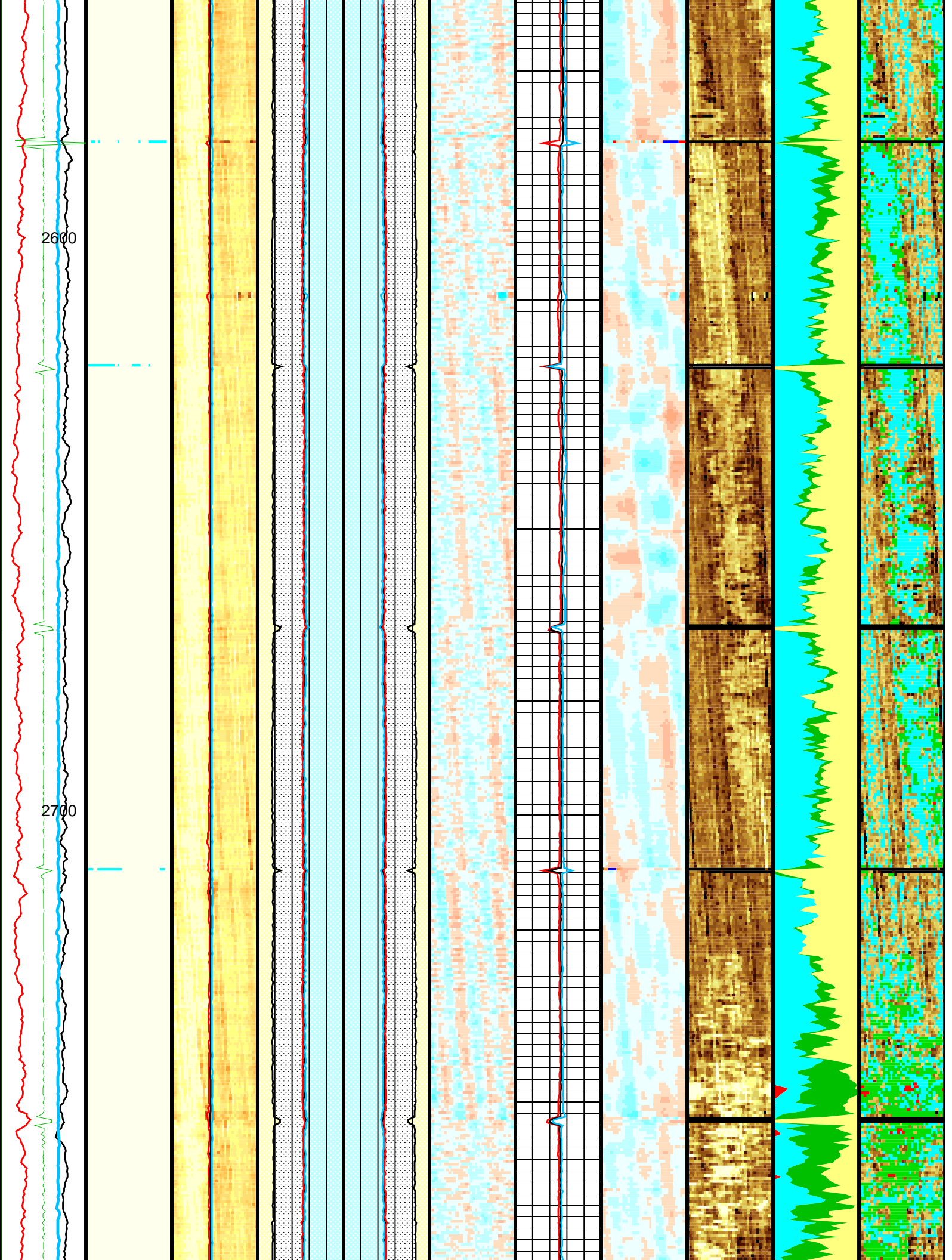


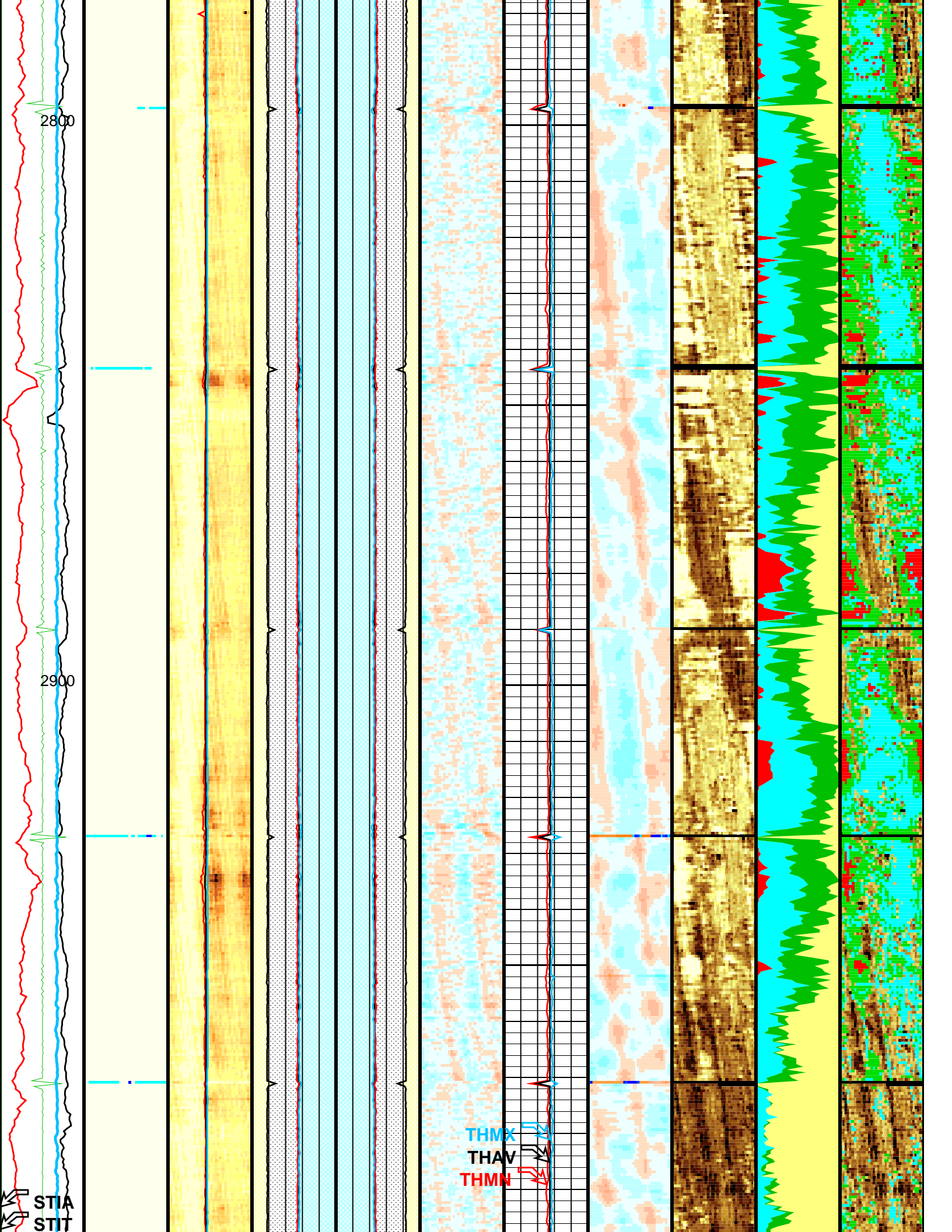


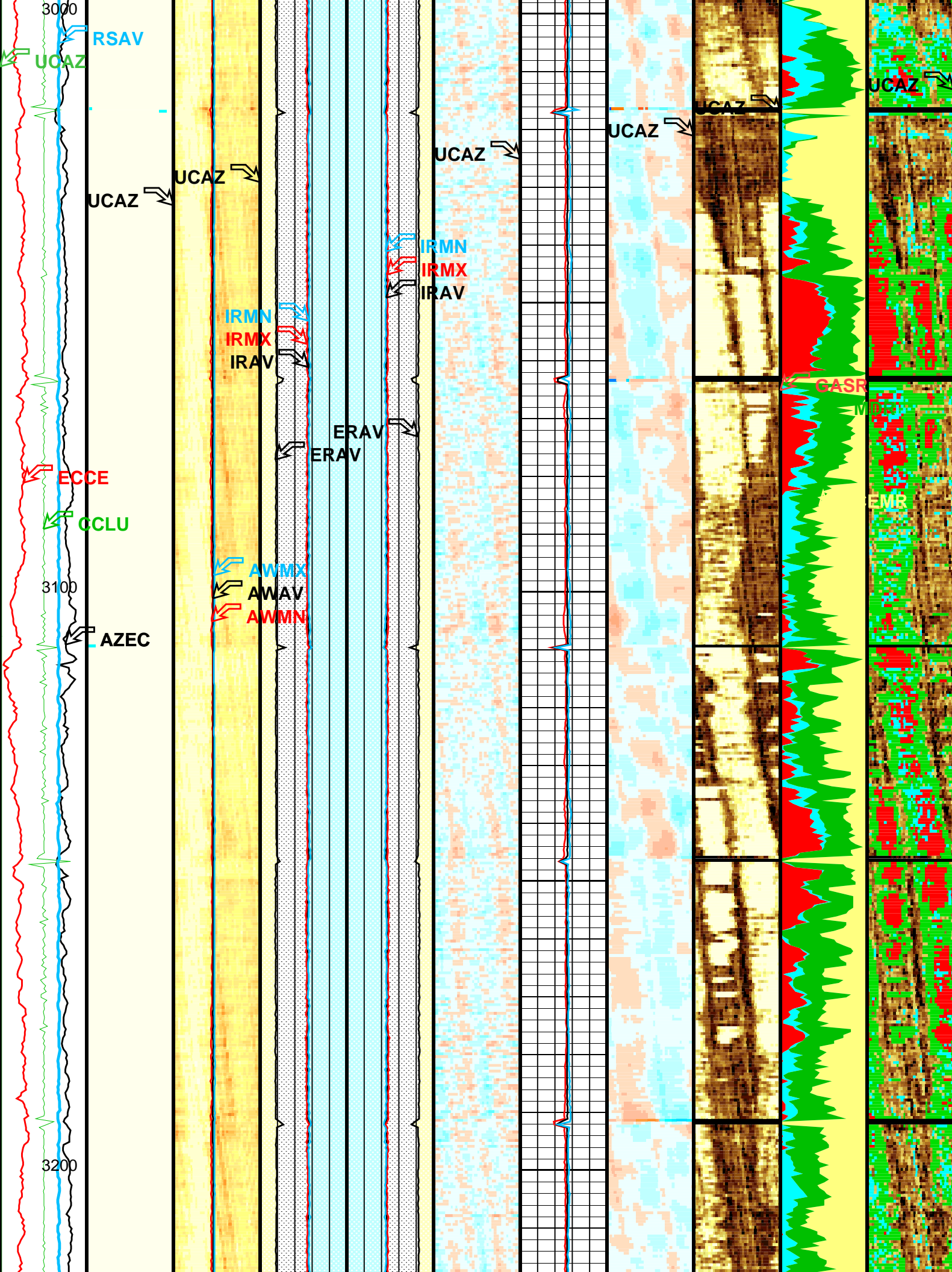


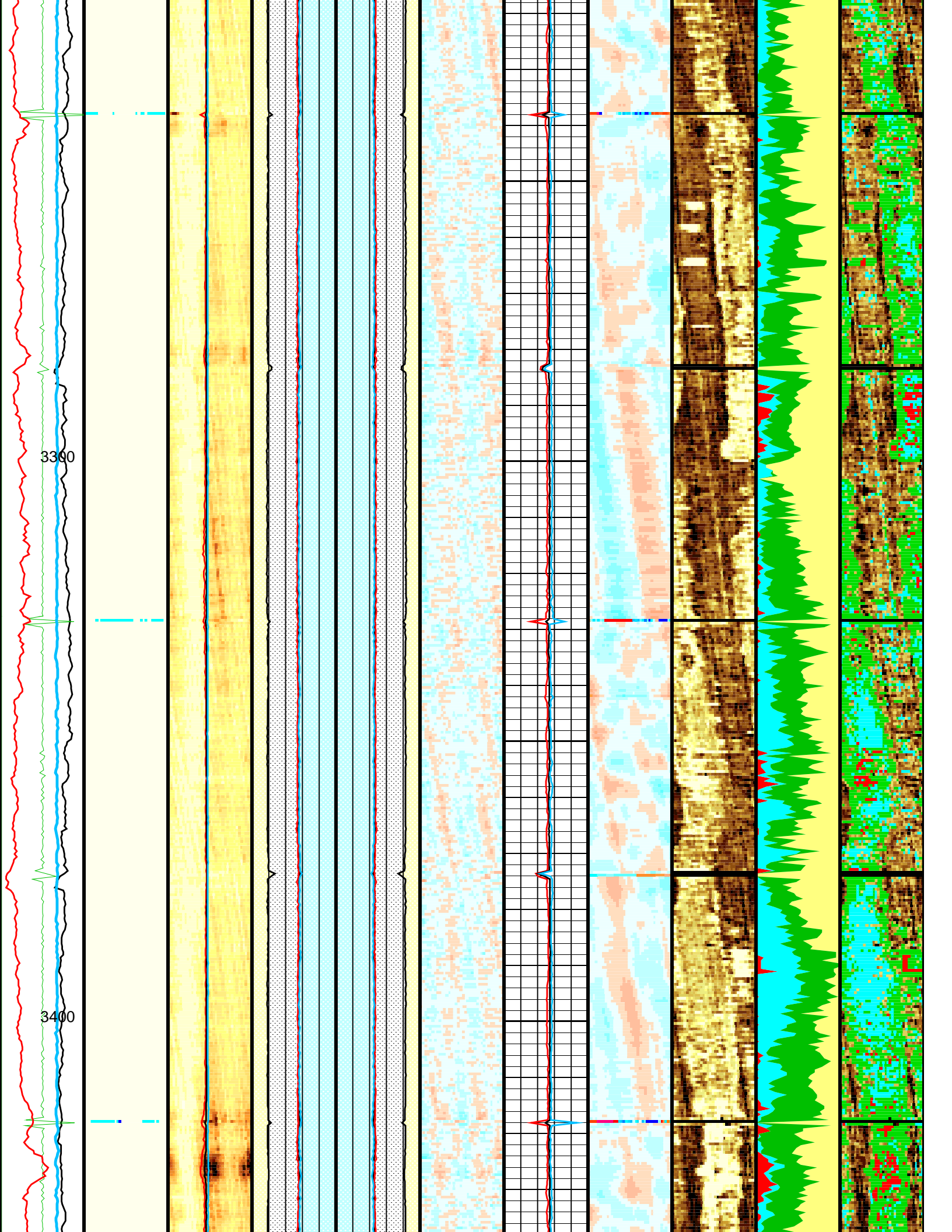


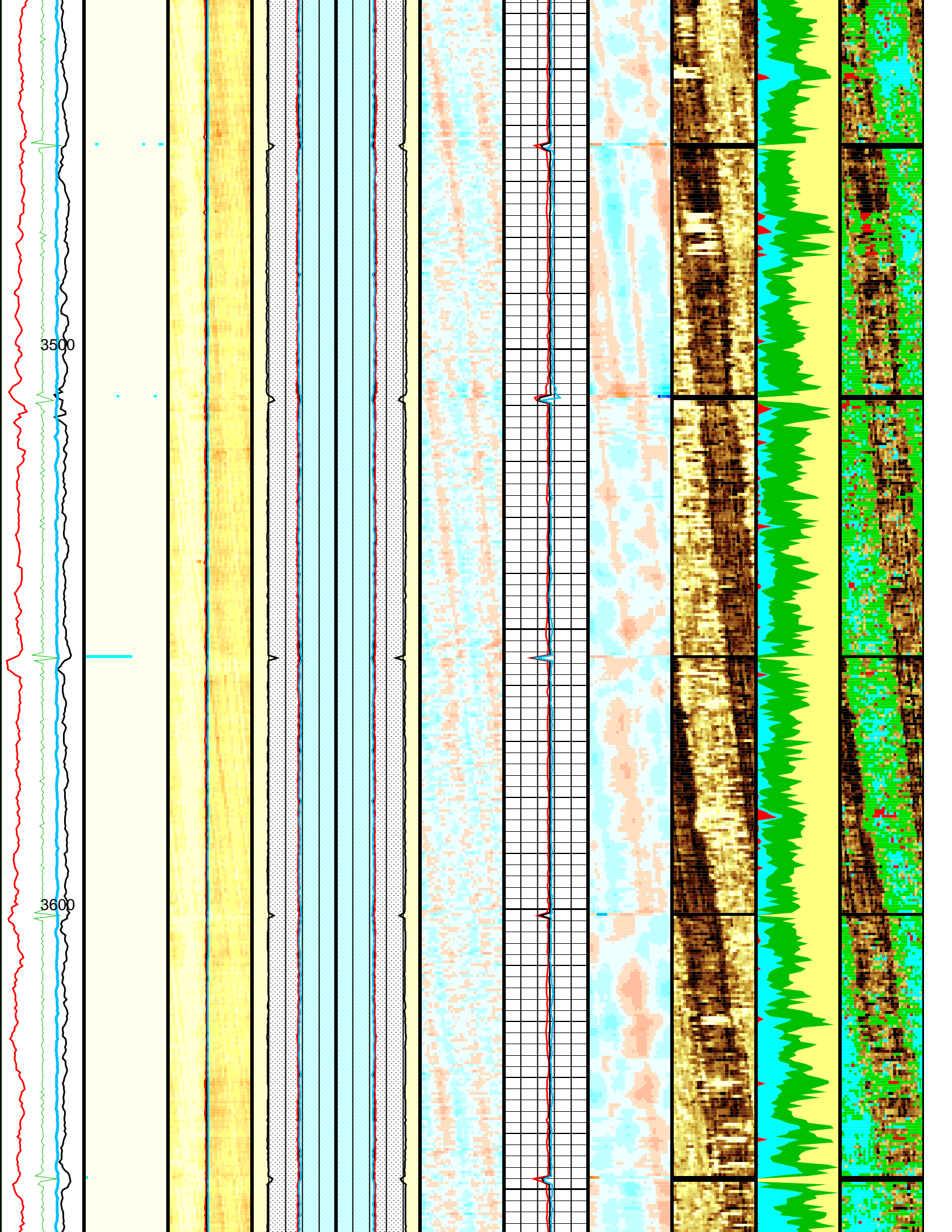


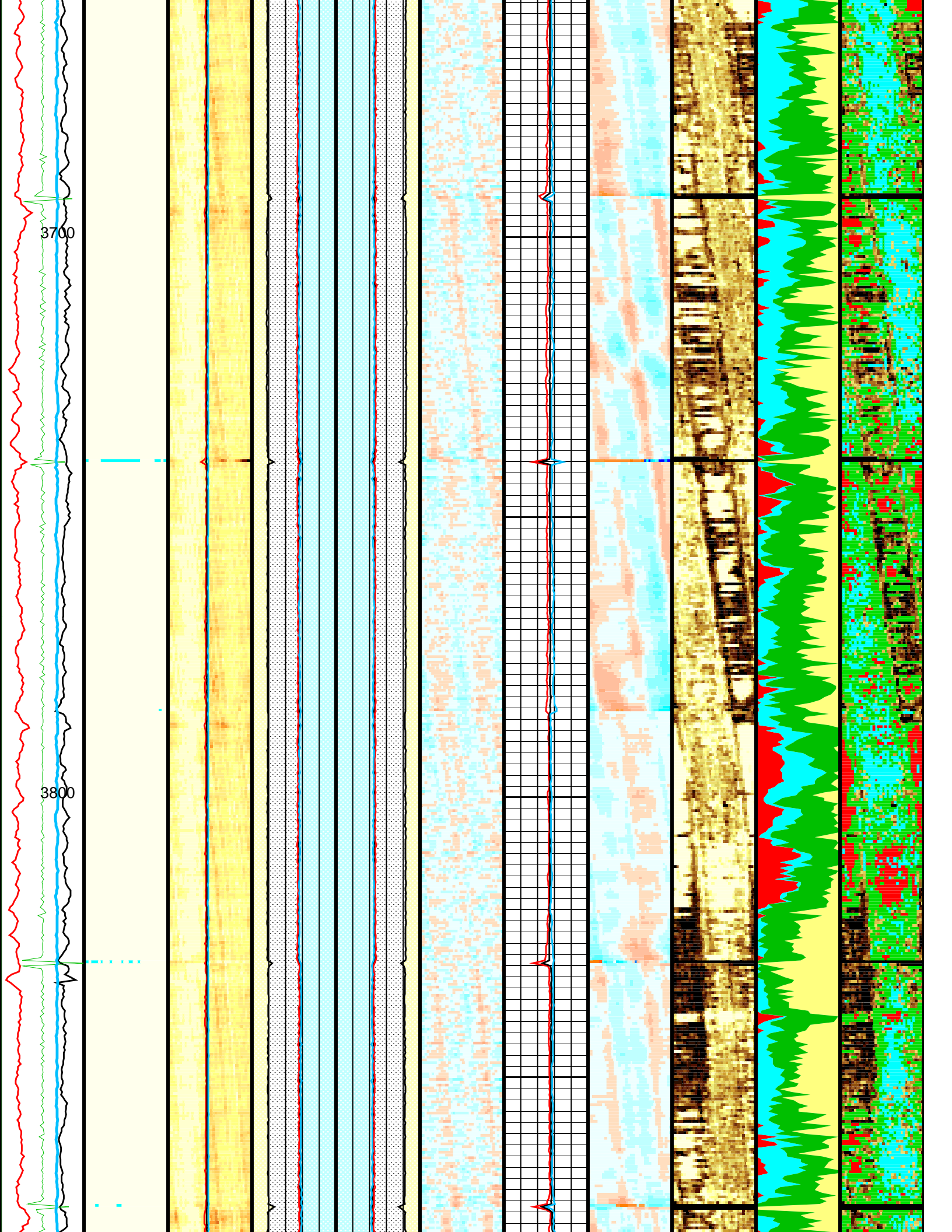


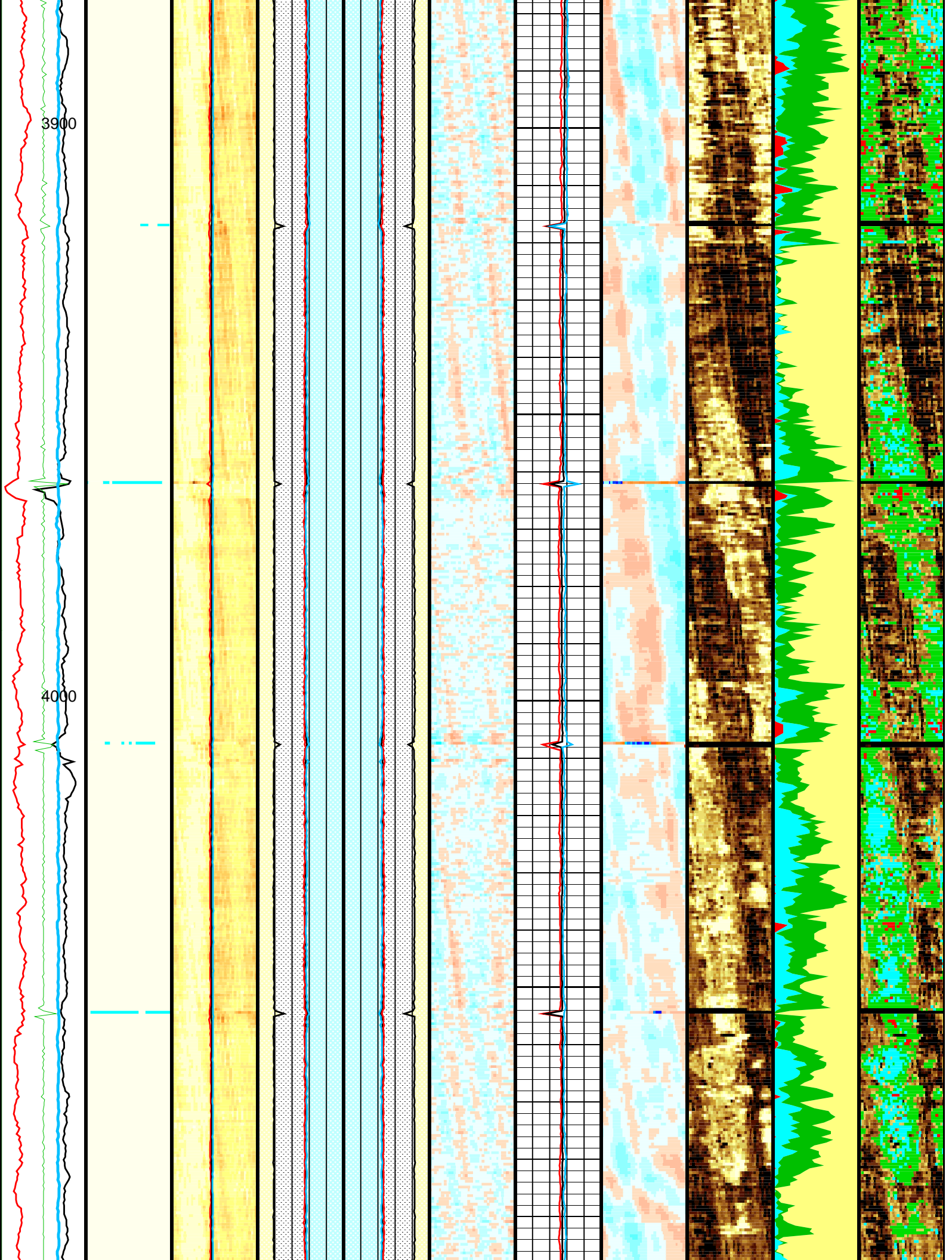


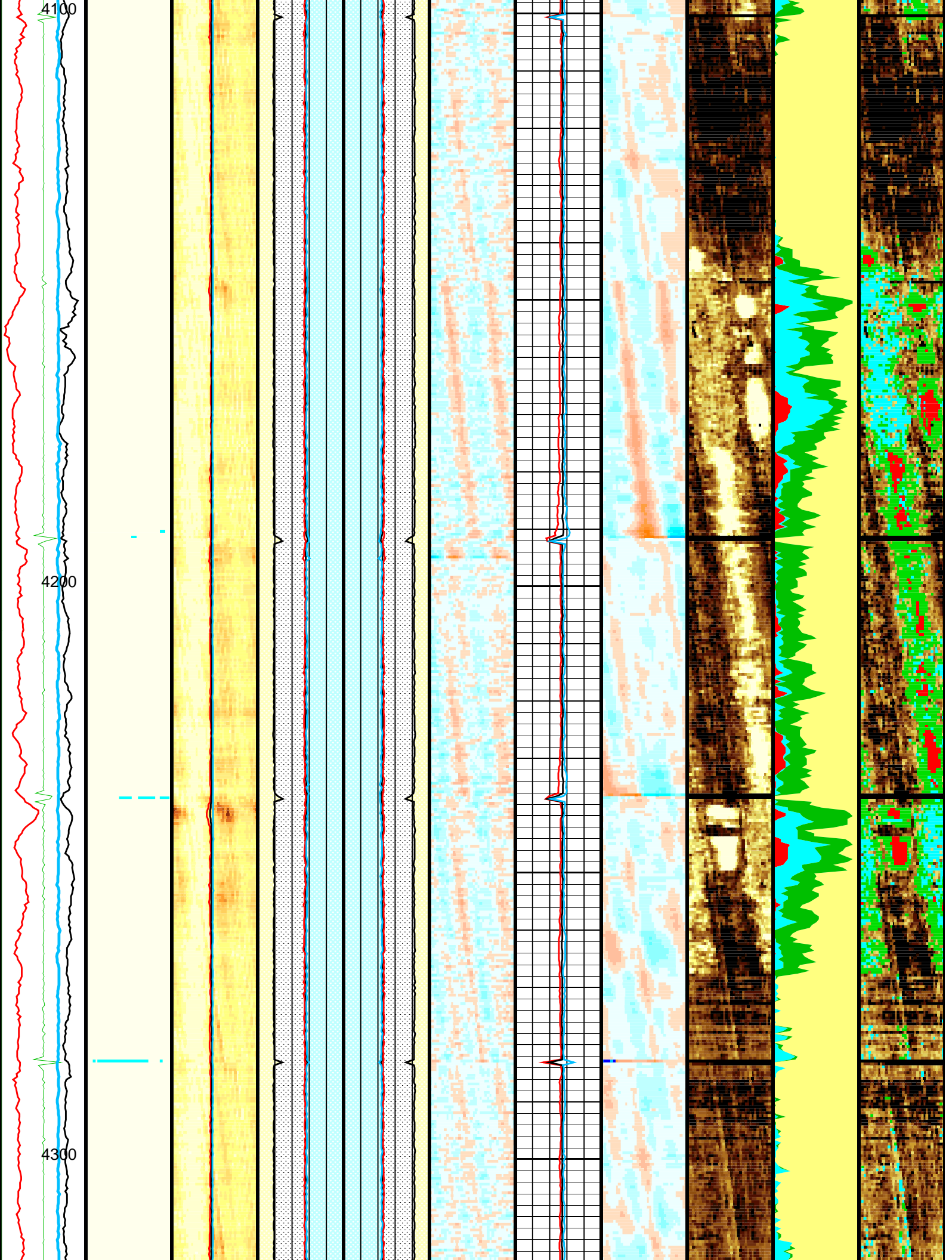


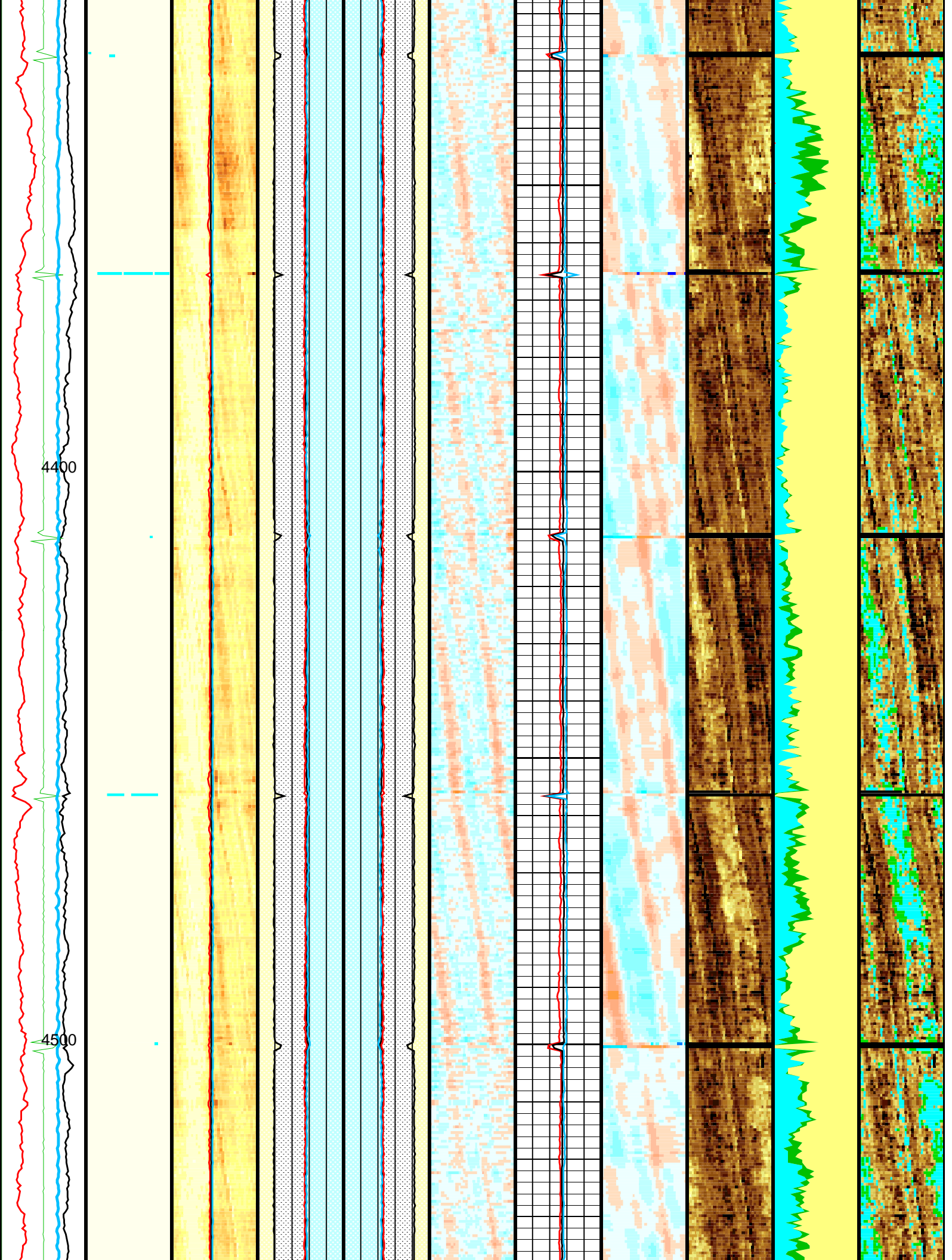


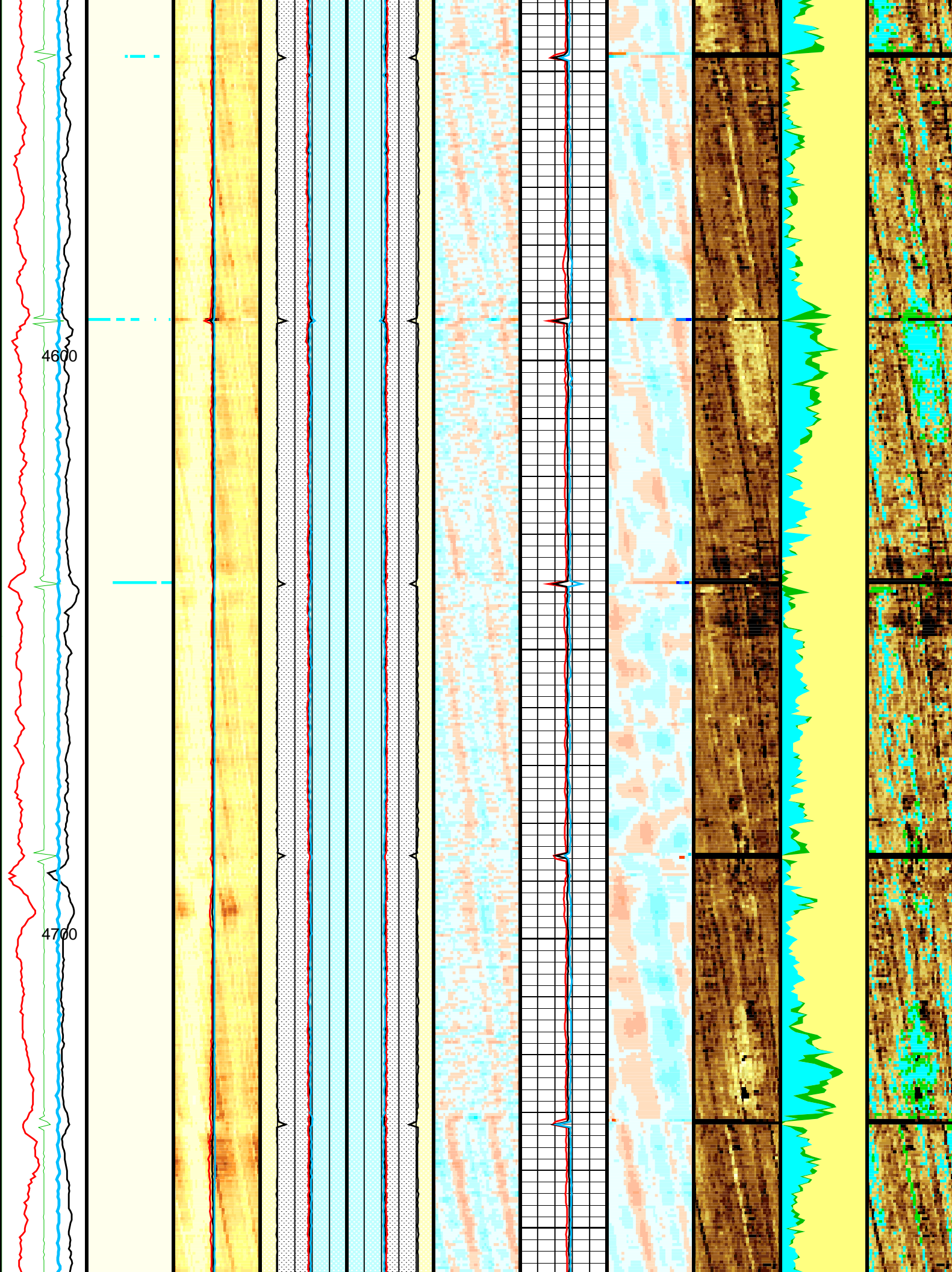


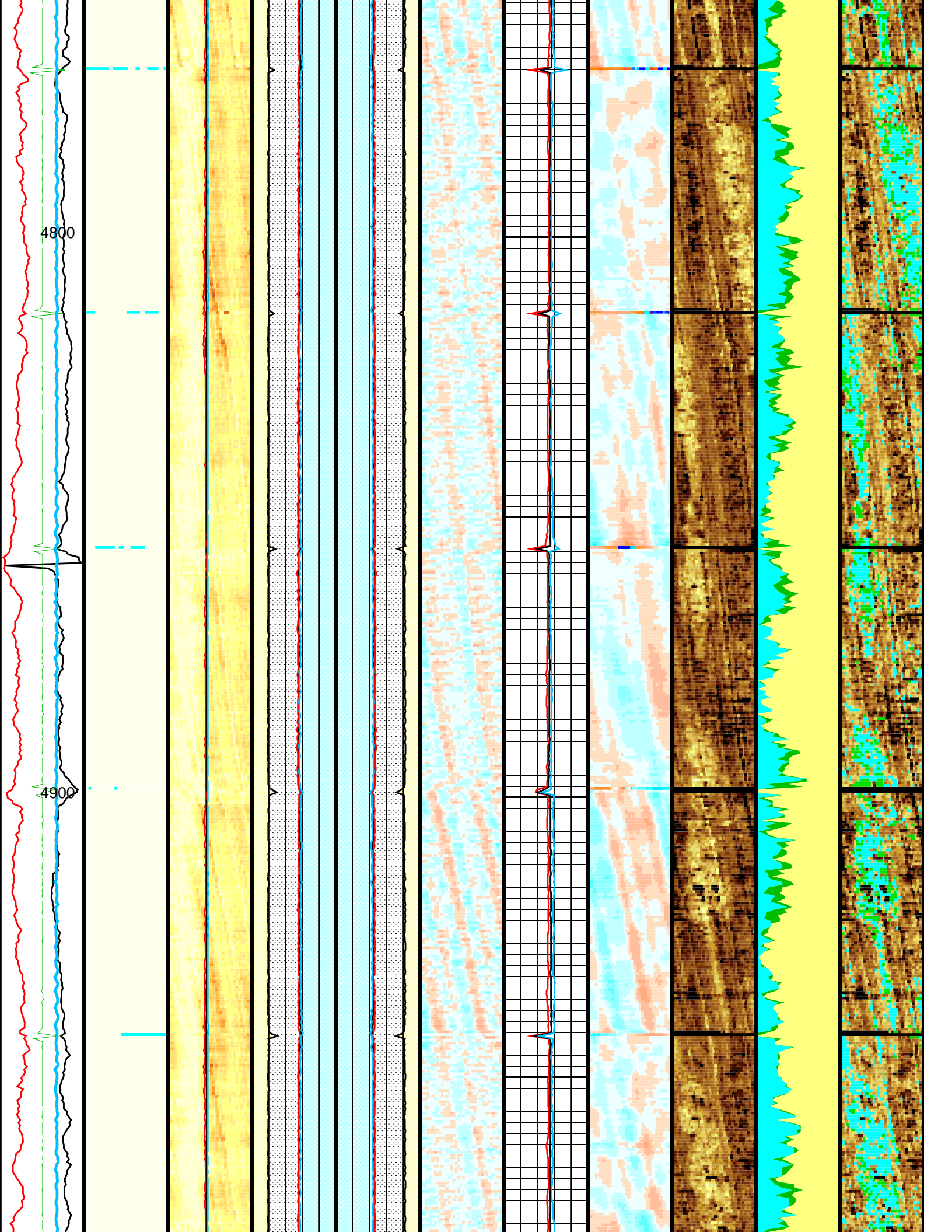


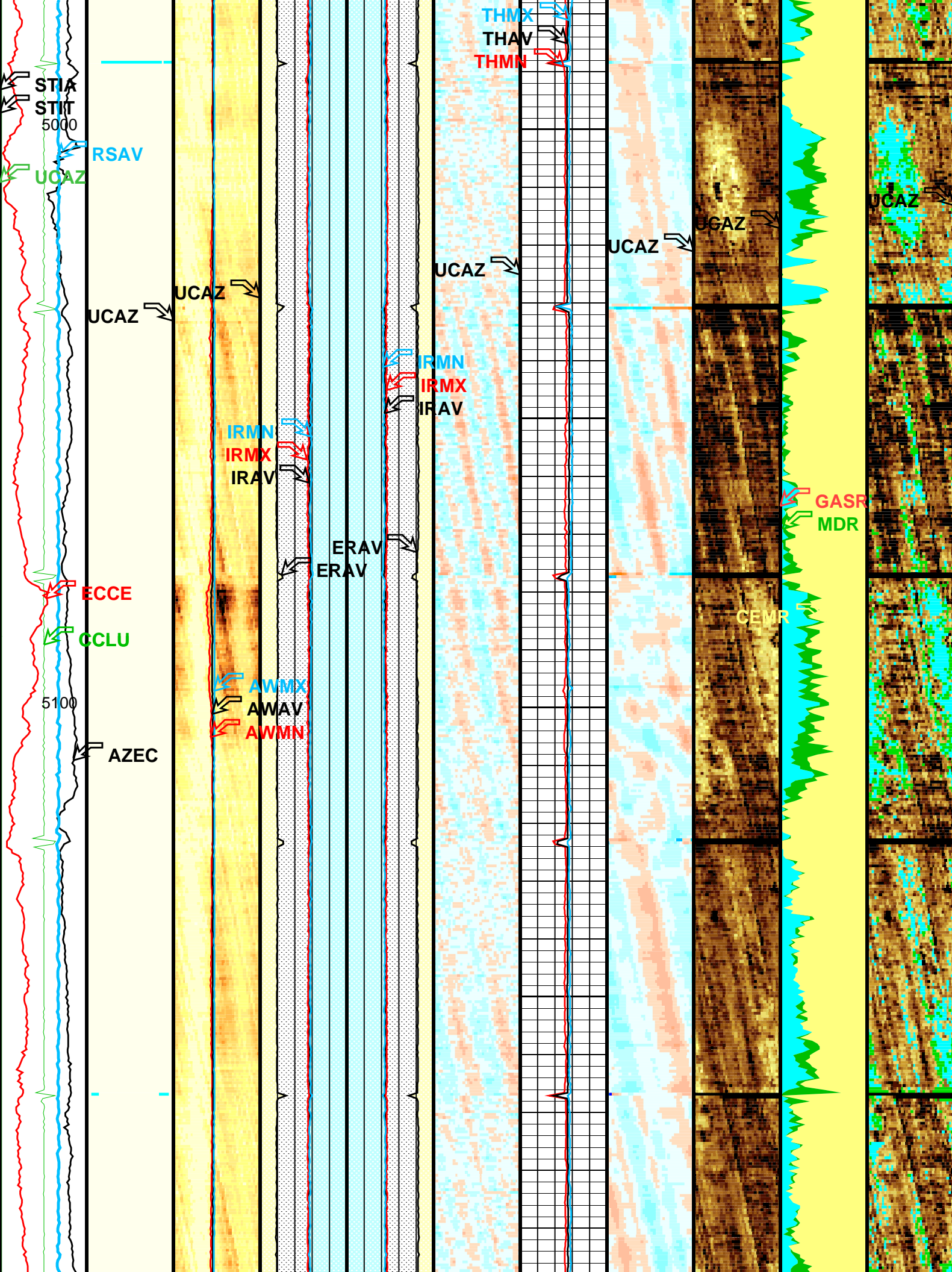


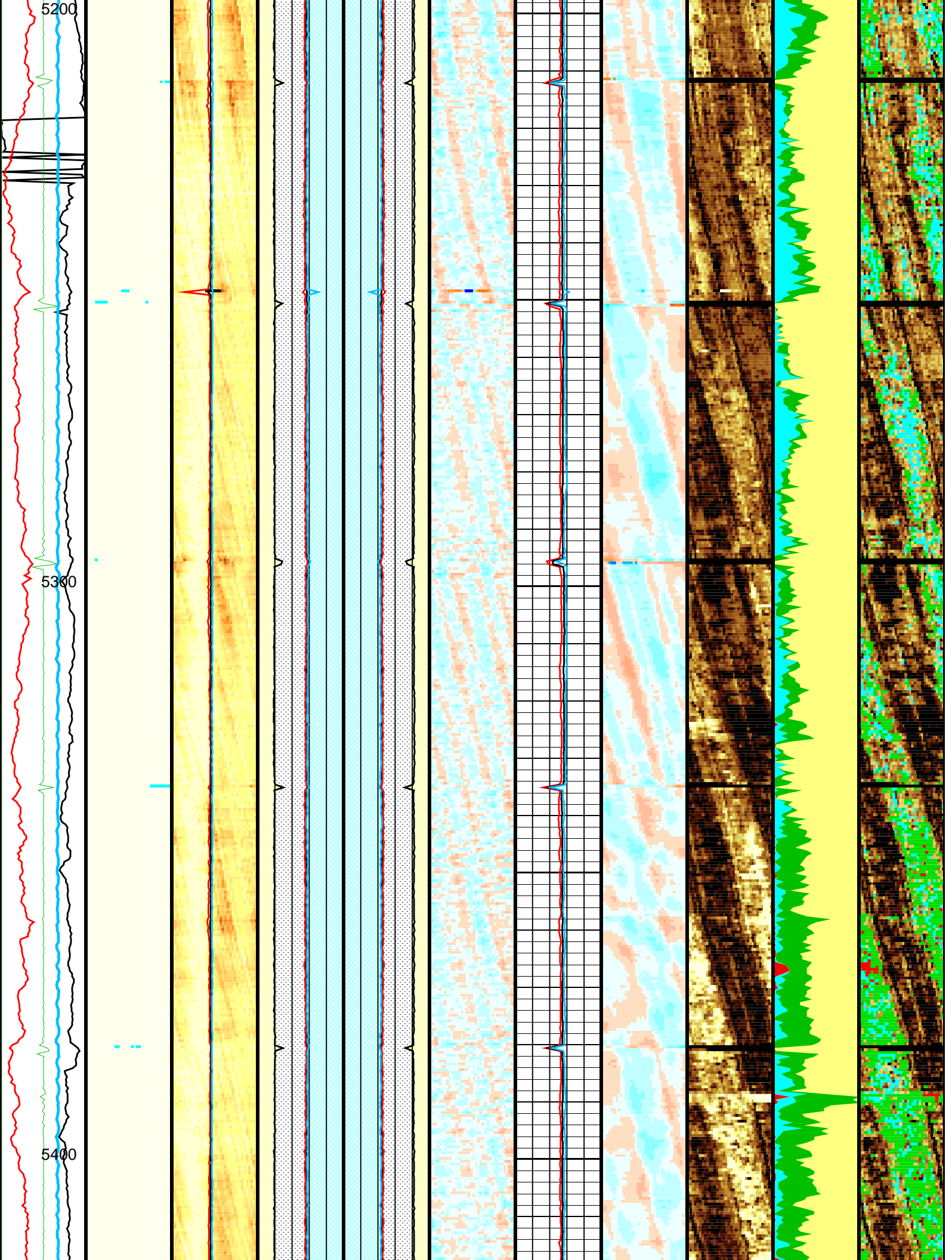


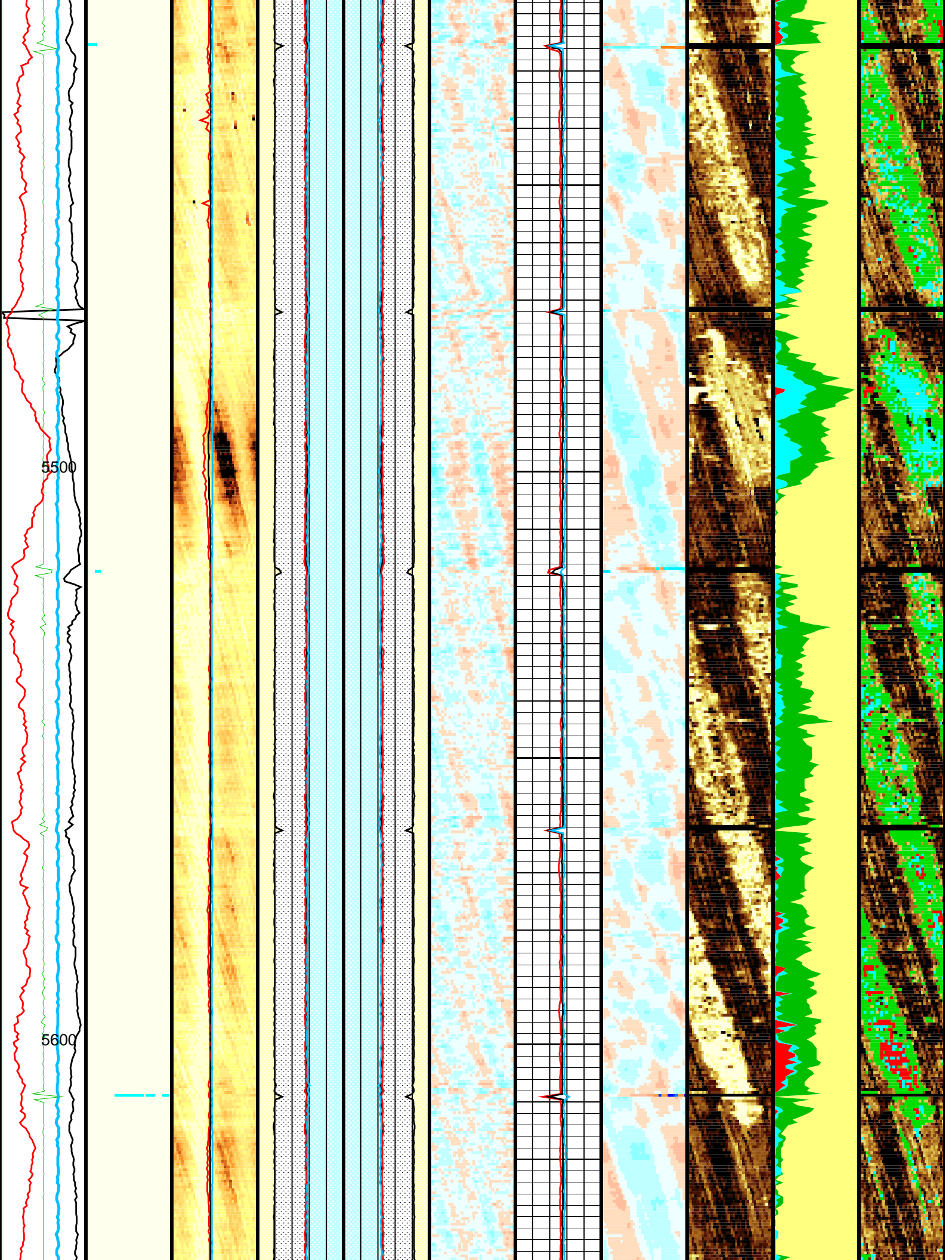


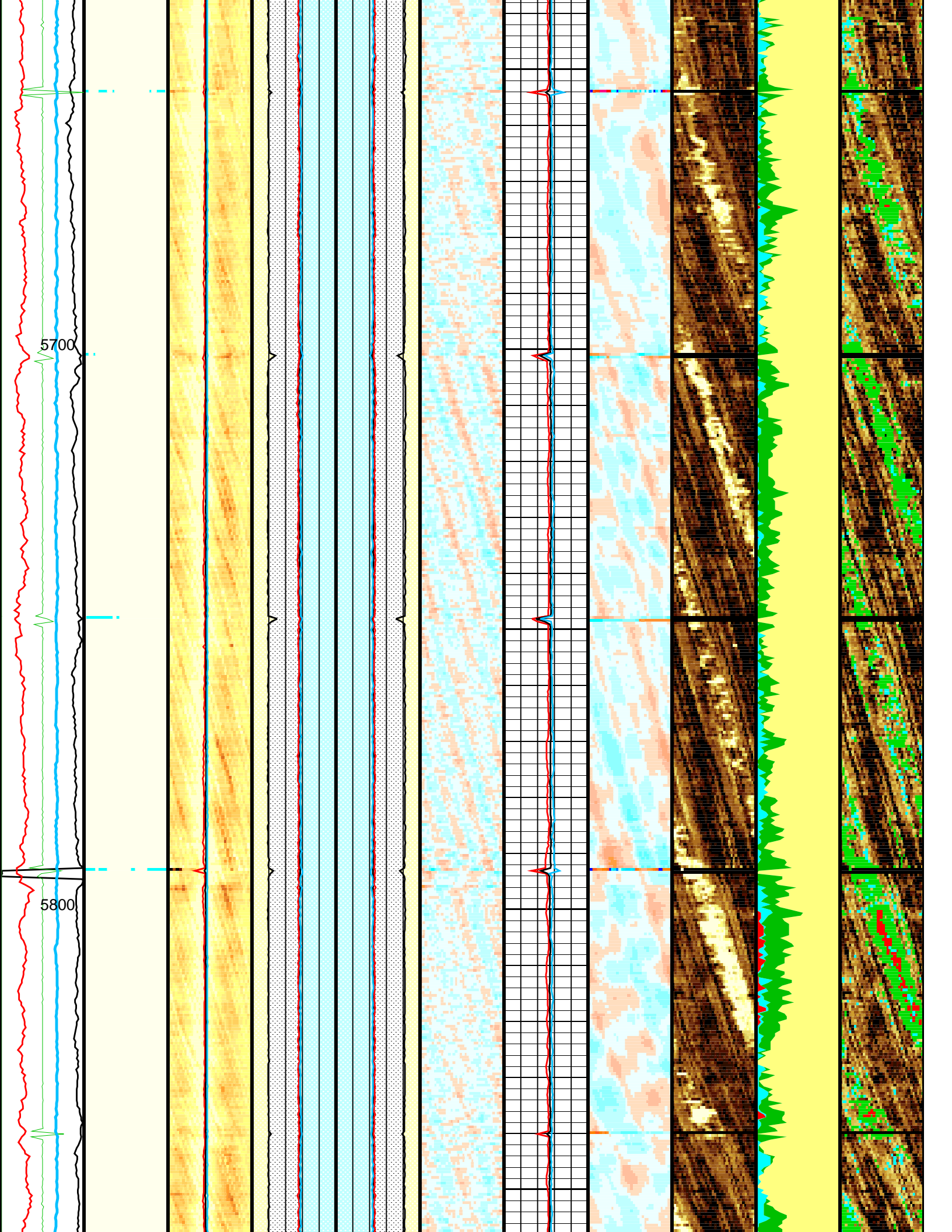


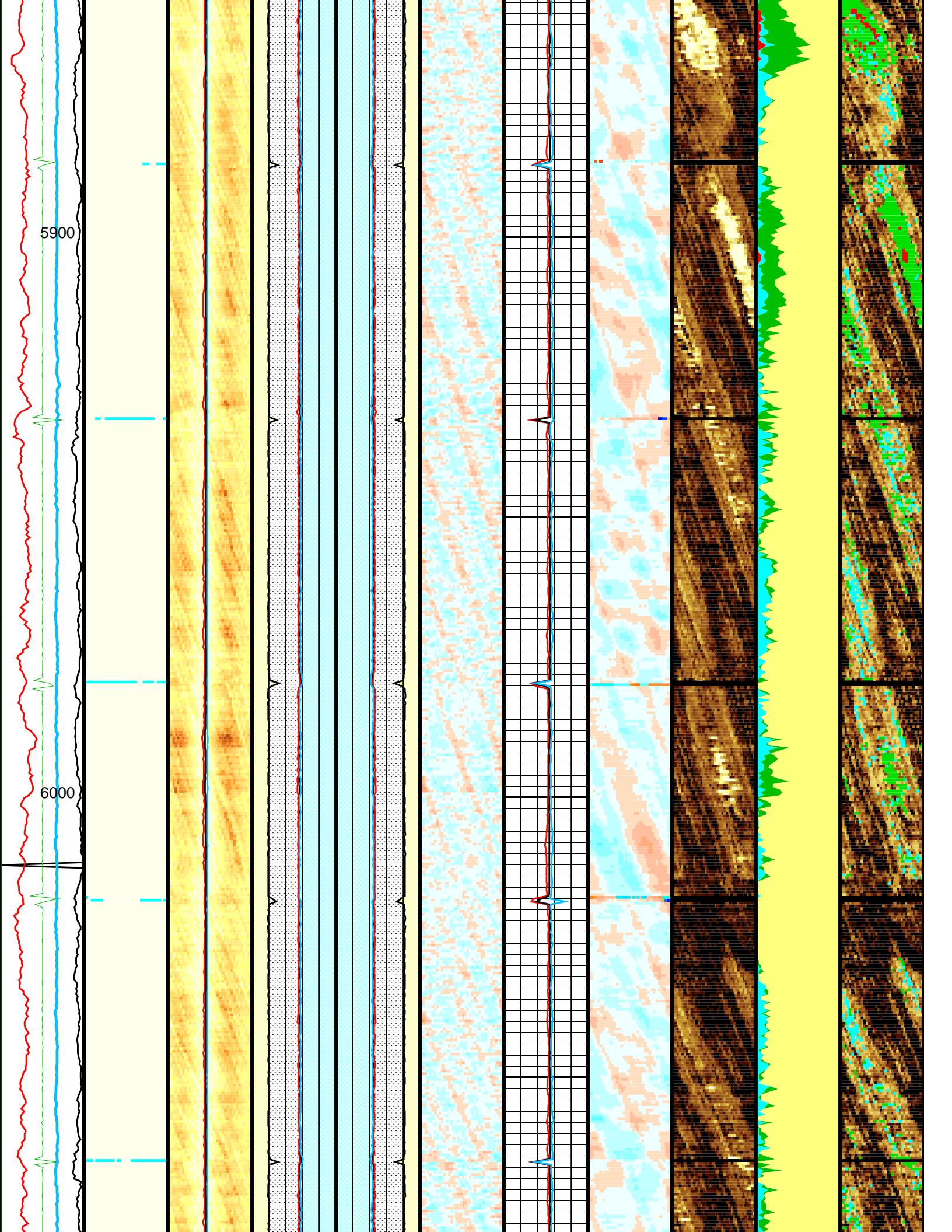


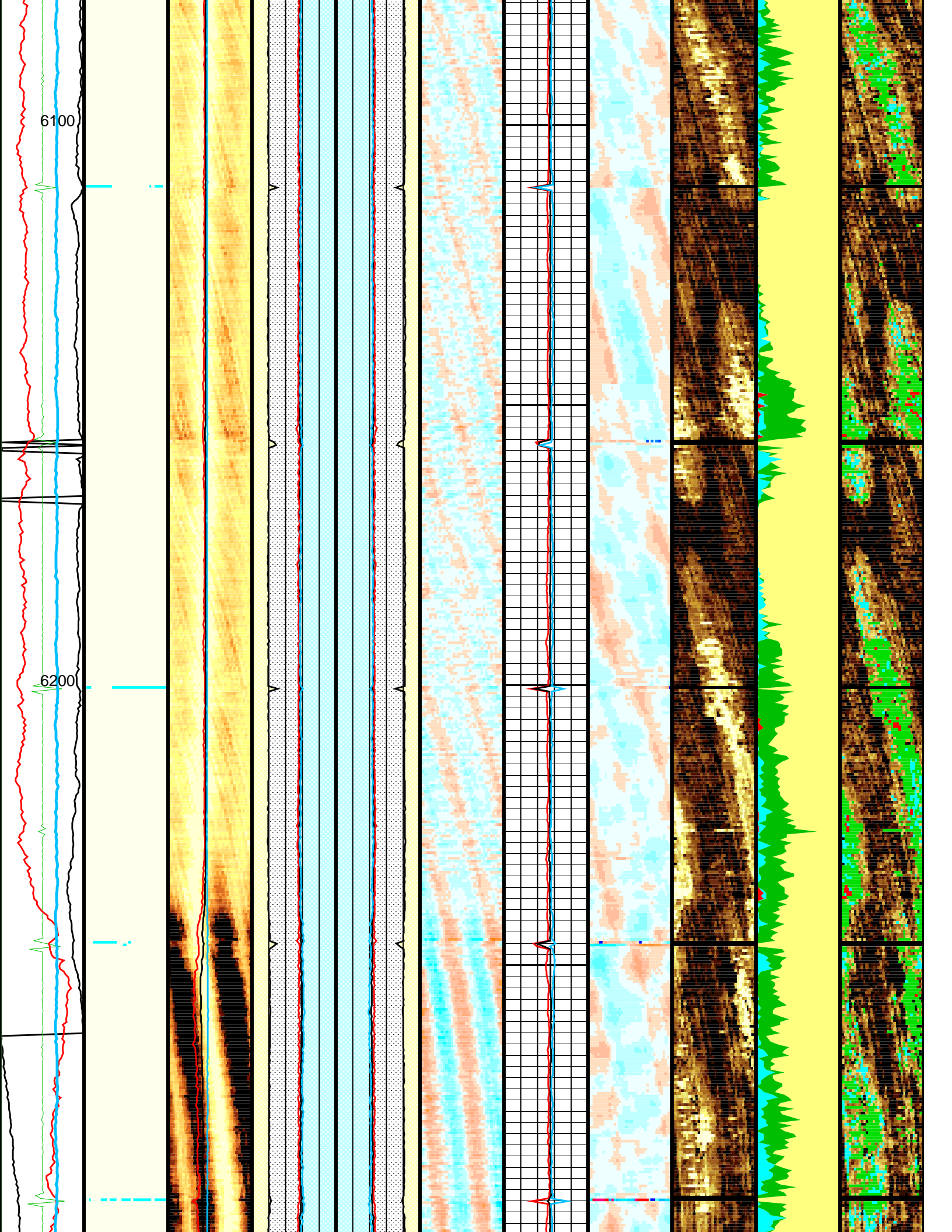


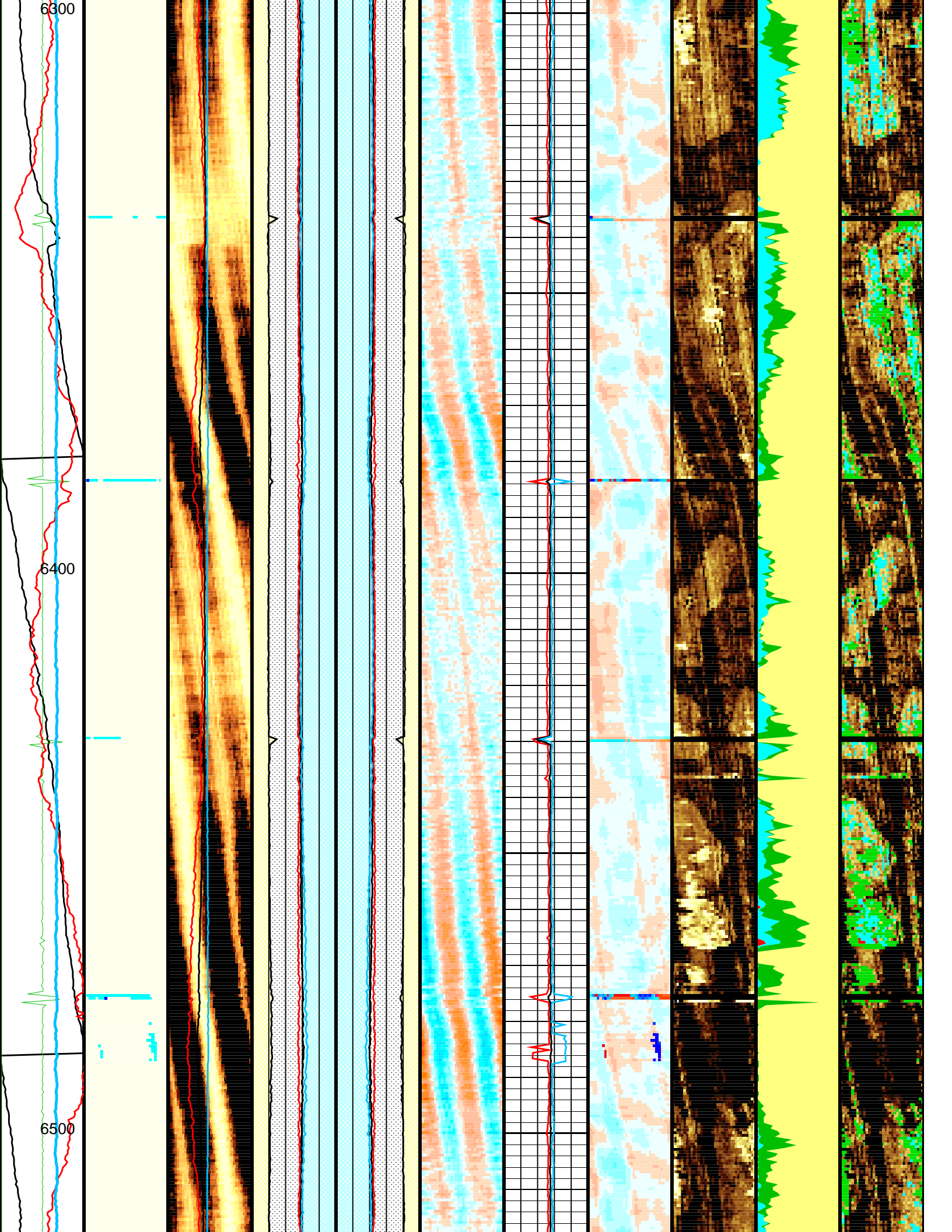


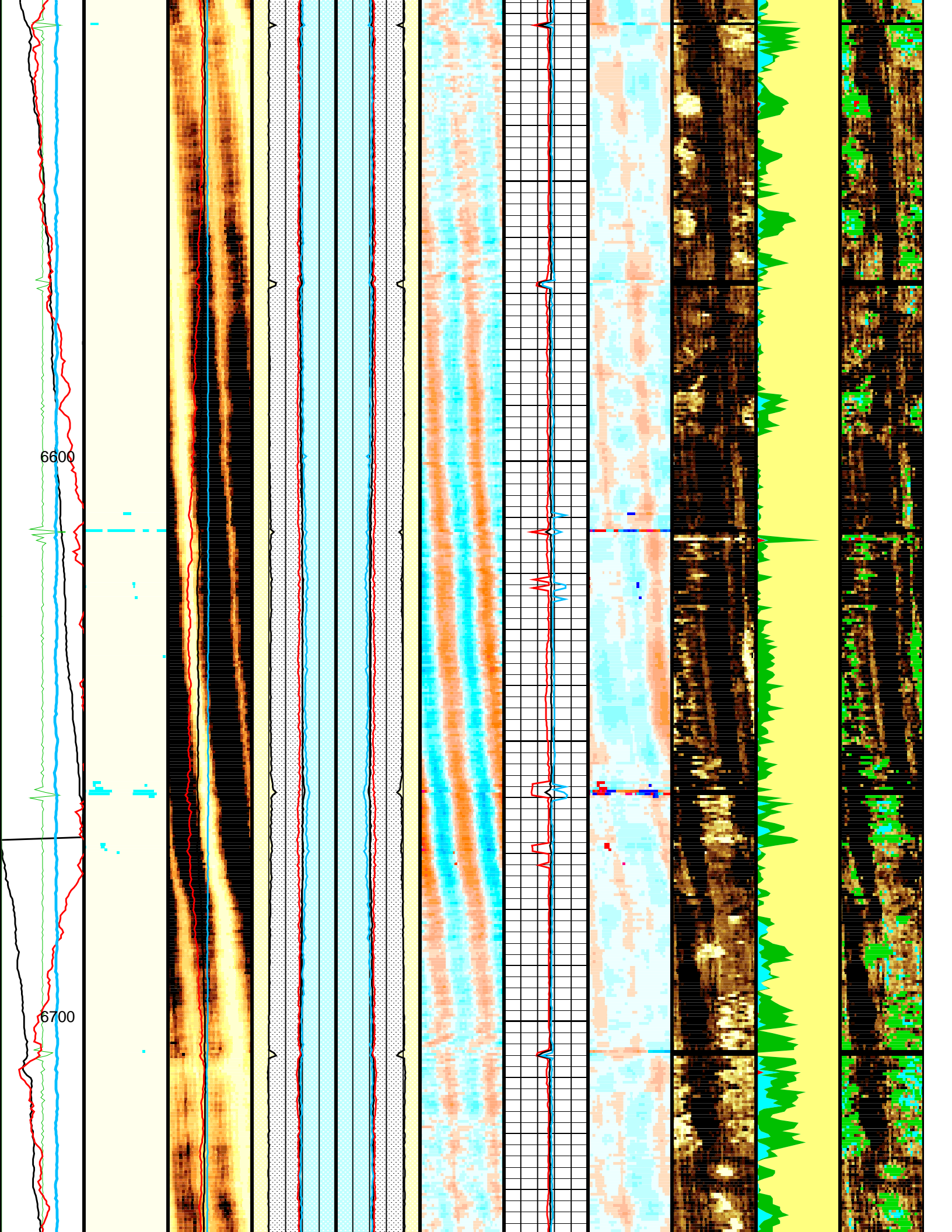


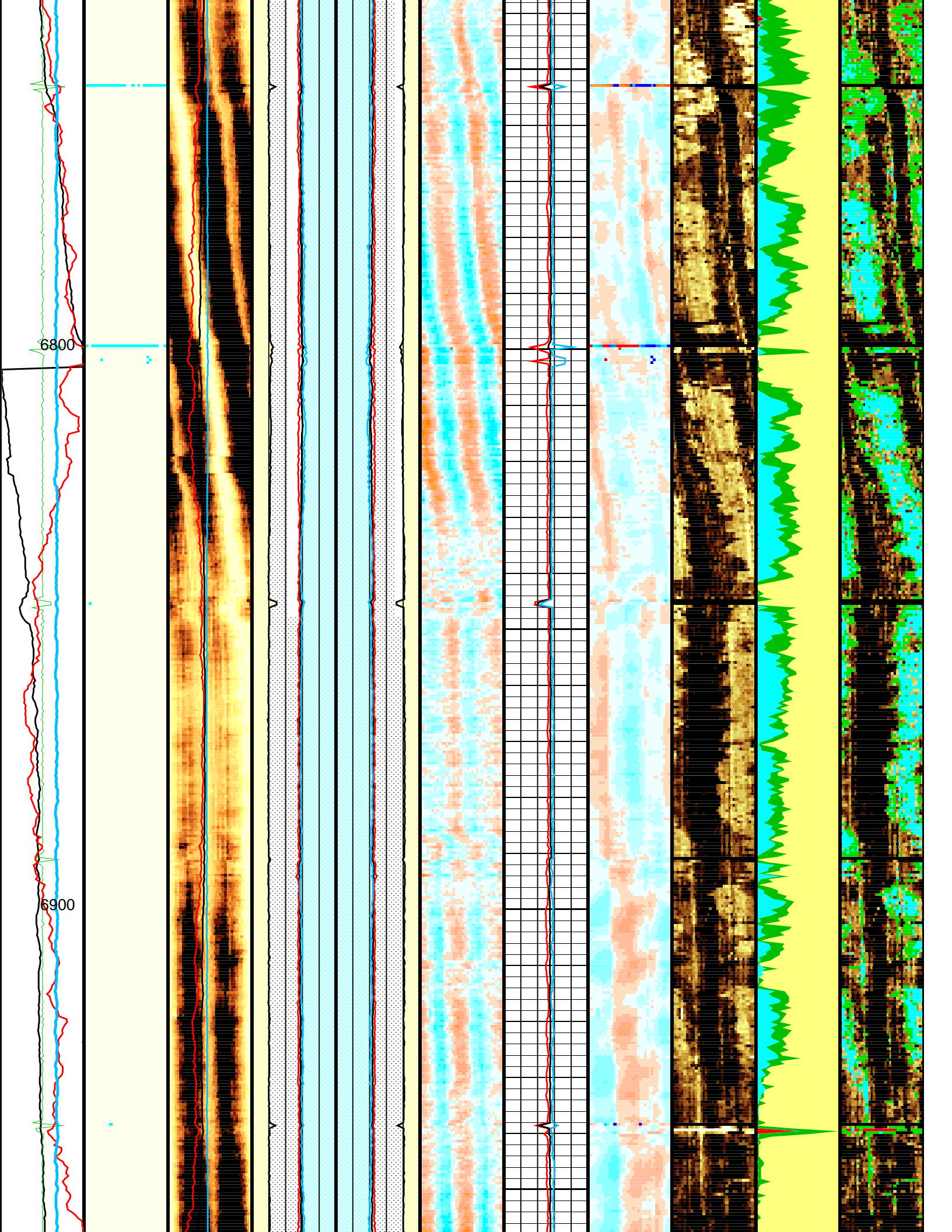


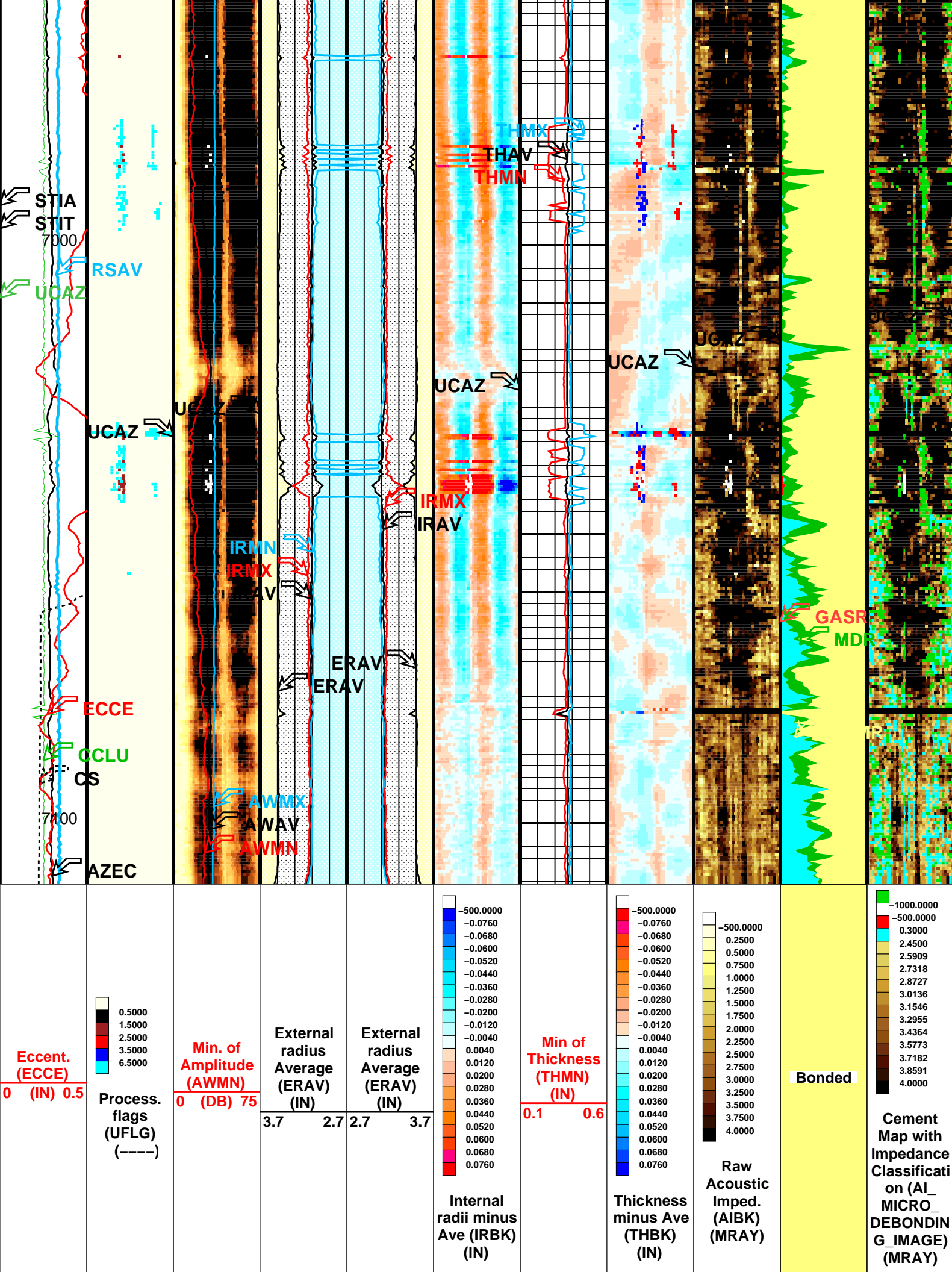












All USI Images are outside views

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-D: Ultrasonic Imaging – D			
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	20	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.95	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	–10	DEG
USTO	Ultrasonic Time Offset	–2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_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	1.95	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	TDL	
STKT	STI Stuck Threshold	5	FT
TDD	Total Depth – Driller	11345.00	FT
TDL	Total Depth – Logger	11345.00	FT
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	2.0	FT

PP	Playback Processing				NORMAL	
Input DLIS Files						
DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
Output DLIS Files						
DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25		

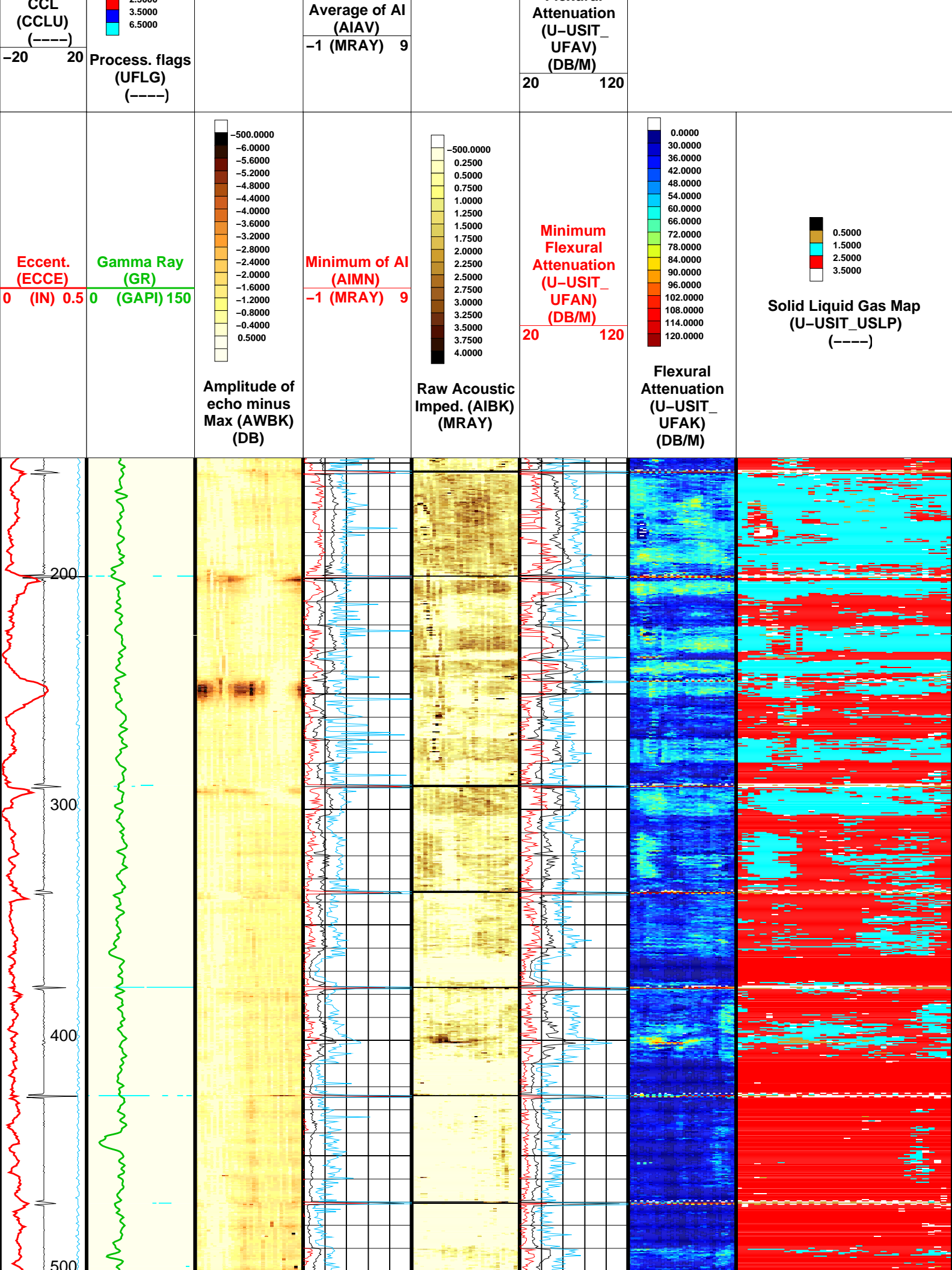


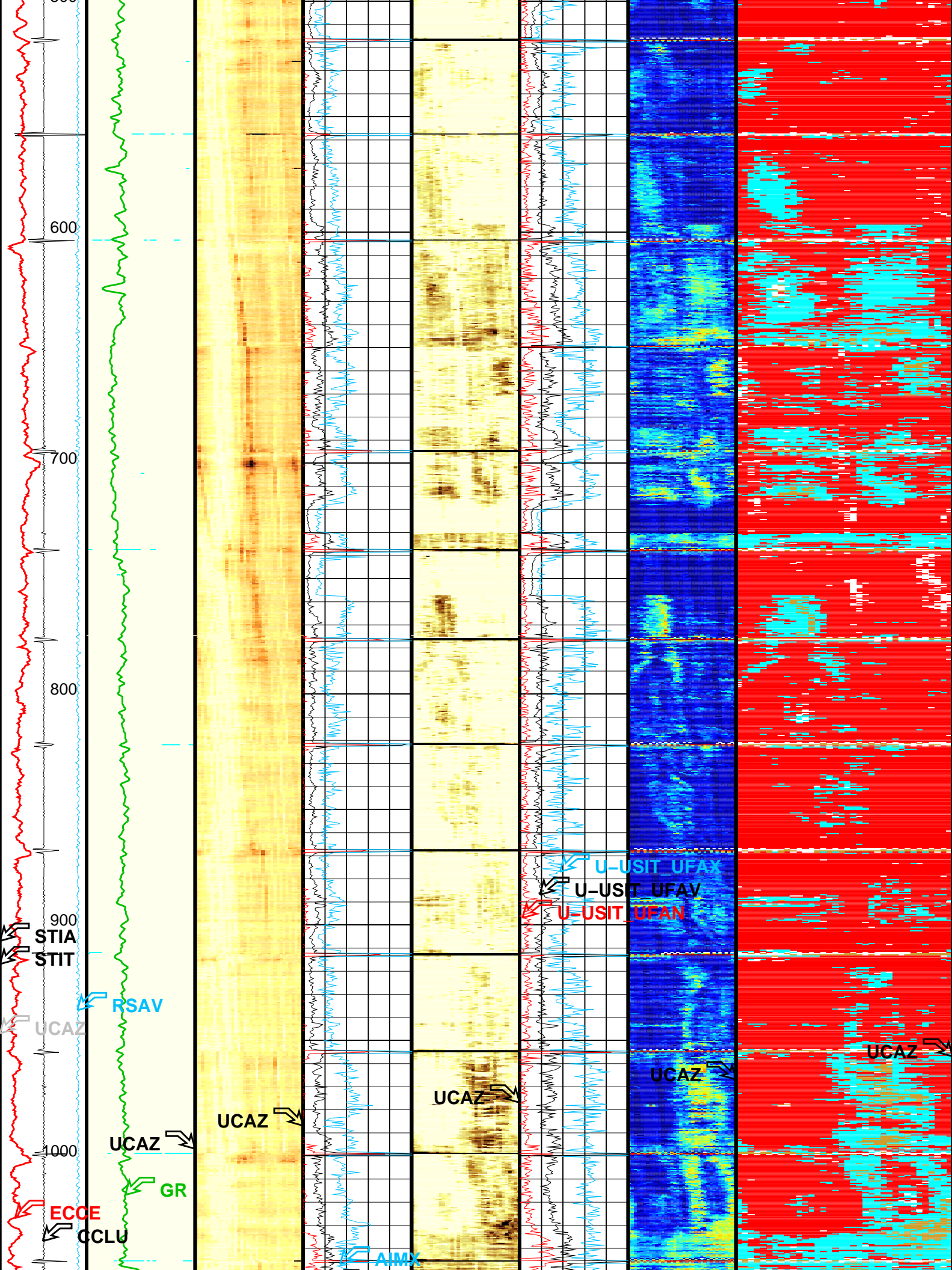
2" SLG

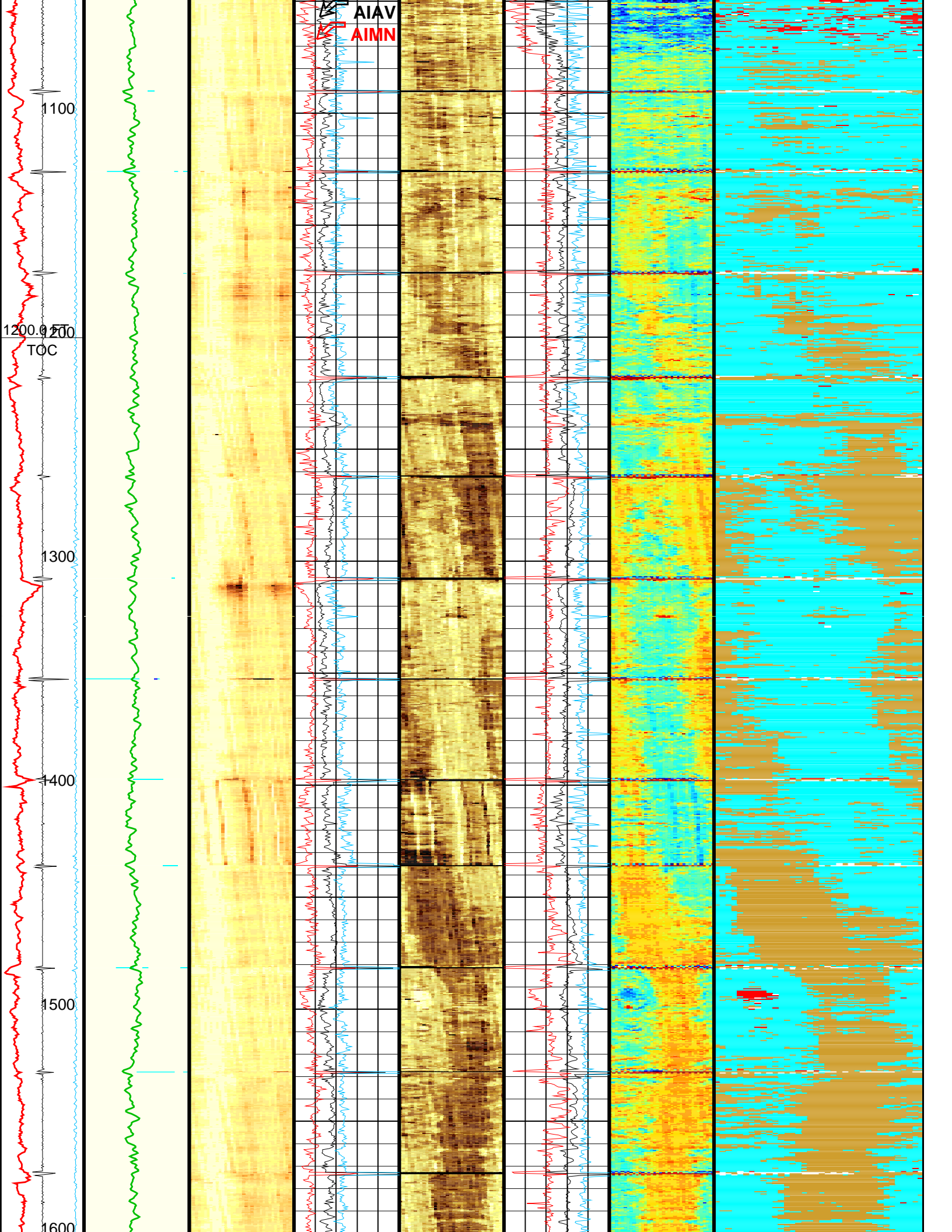
MAXIS Field Log

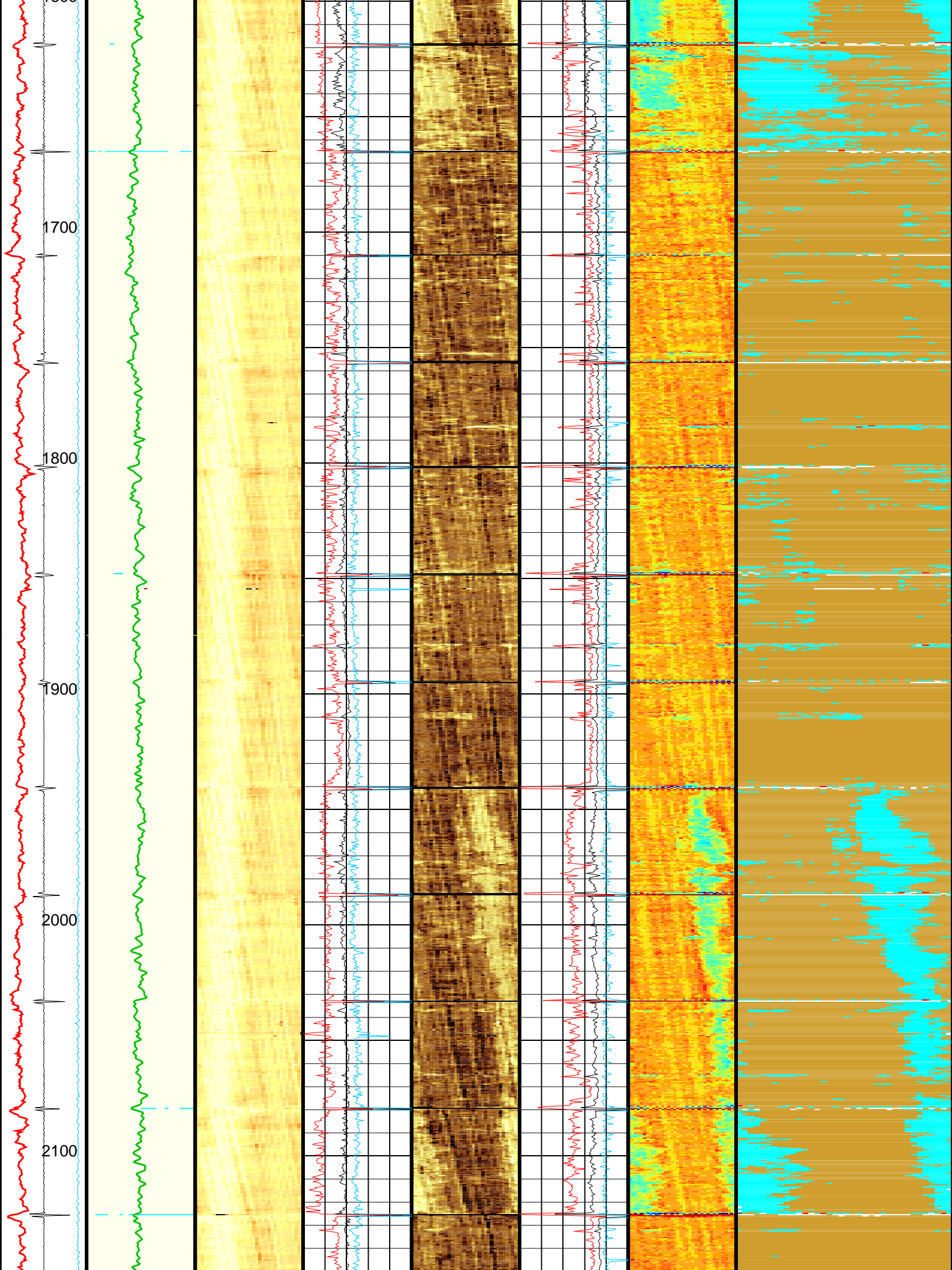
Company: Encana Oil & Gas Inc				Well: Flanigan 2A-6H		
Input DLIS Files						
DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
Output DLIS Files						
DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25	7110.5 FT	147.5 FT
OP System Version: 19C0-187						
USIT-D	SRPC-5095-H2-2011-OP19		SGT-N	19C0-187		
DTC-H	19C0-187		CAL-Y	19C0-187		

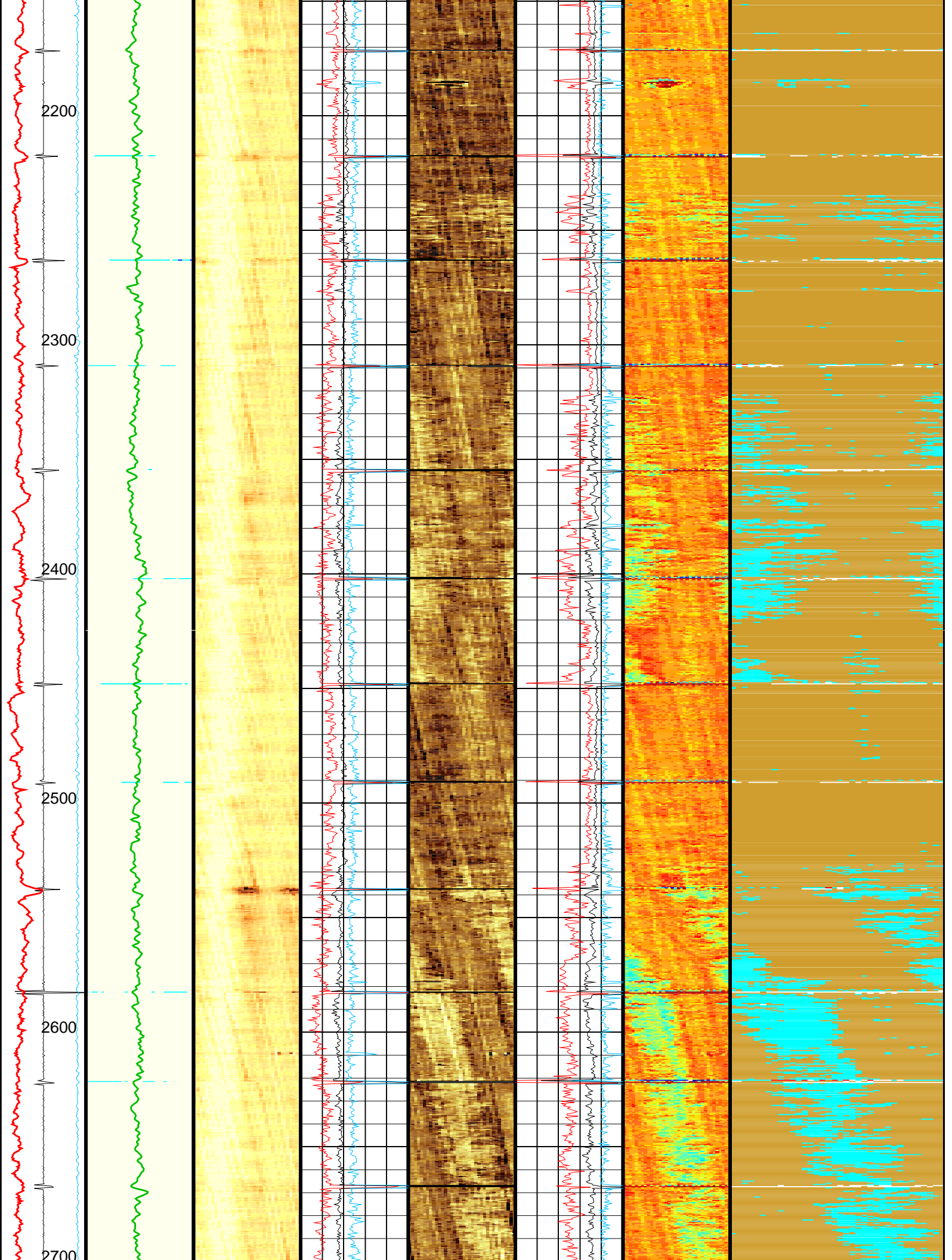
Image rotation (UCAZ) (DEG)					
0 360					
Tool/Tot. Drag From D4T to STIA					
Cable Drag From D4T to STIT					
Stuck Stretch (STIT)					
0 (F) 50					
RSAV (RSBV) (RPS)	Maximum of AI (AIMX)		Maximum Flexural Attenuation (U-USIT_UFAX) (DB/M)		
6 7.5	-1 (MRAY) 9		20 120		
			Average Flexural		

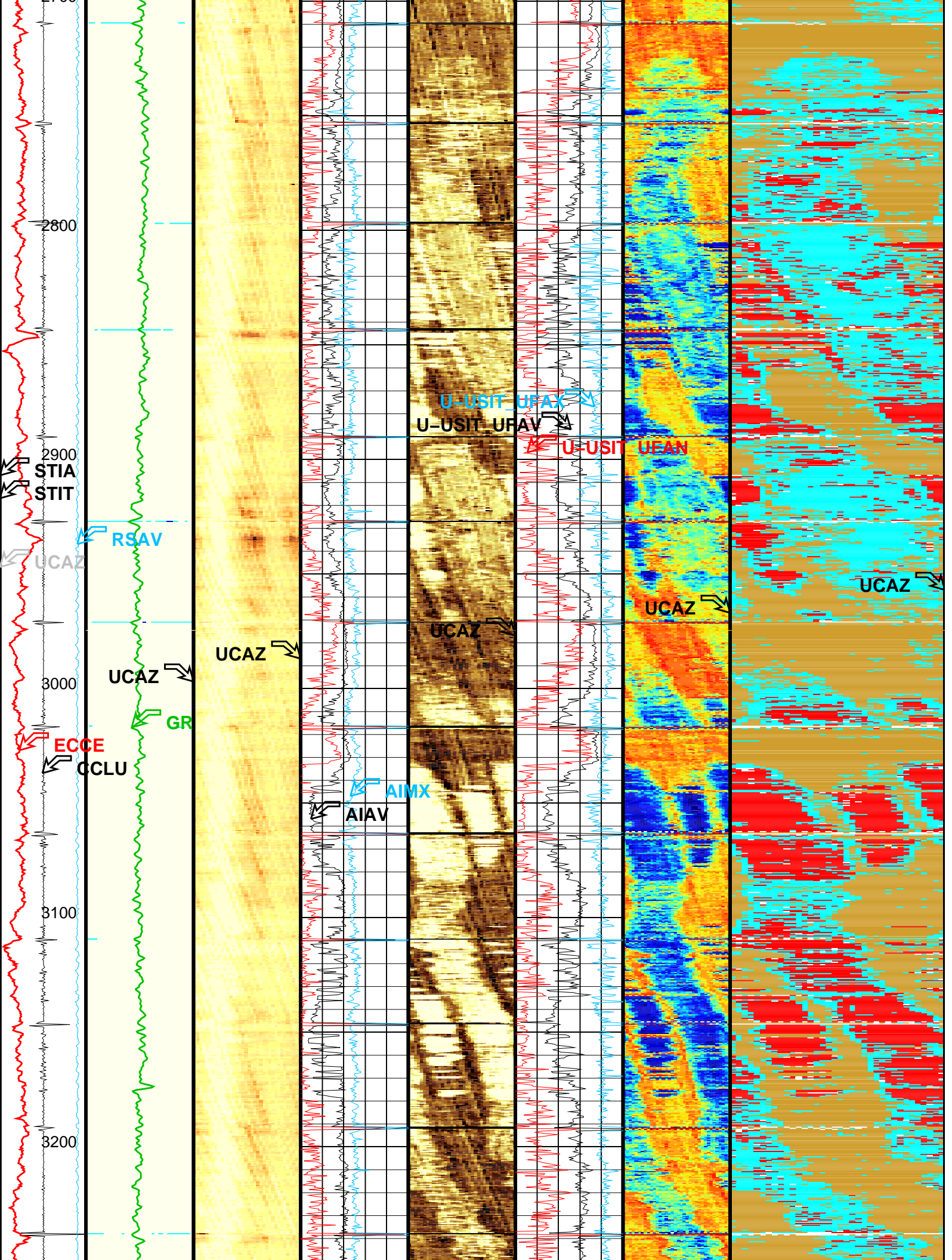


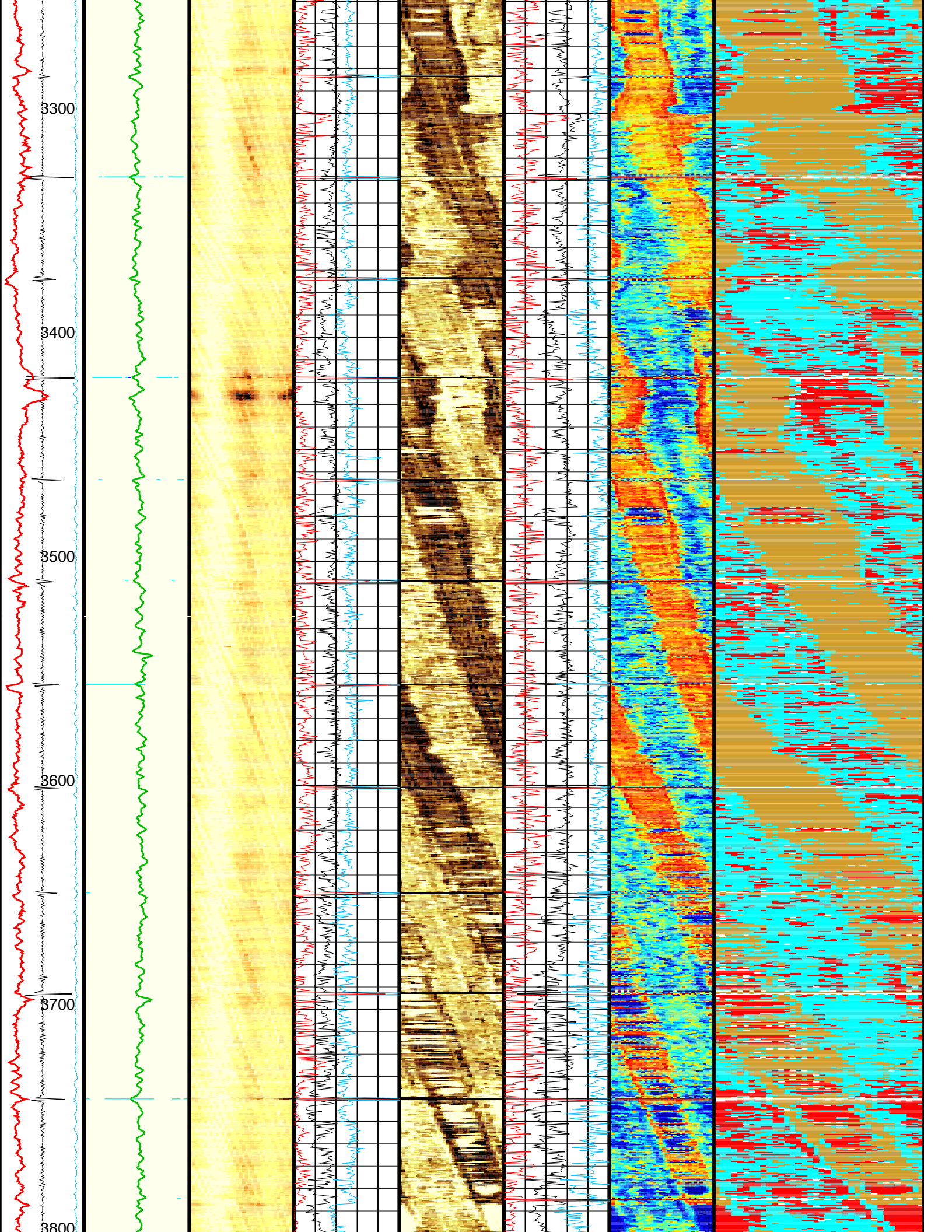


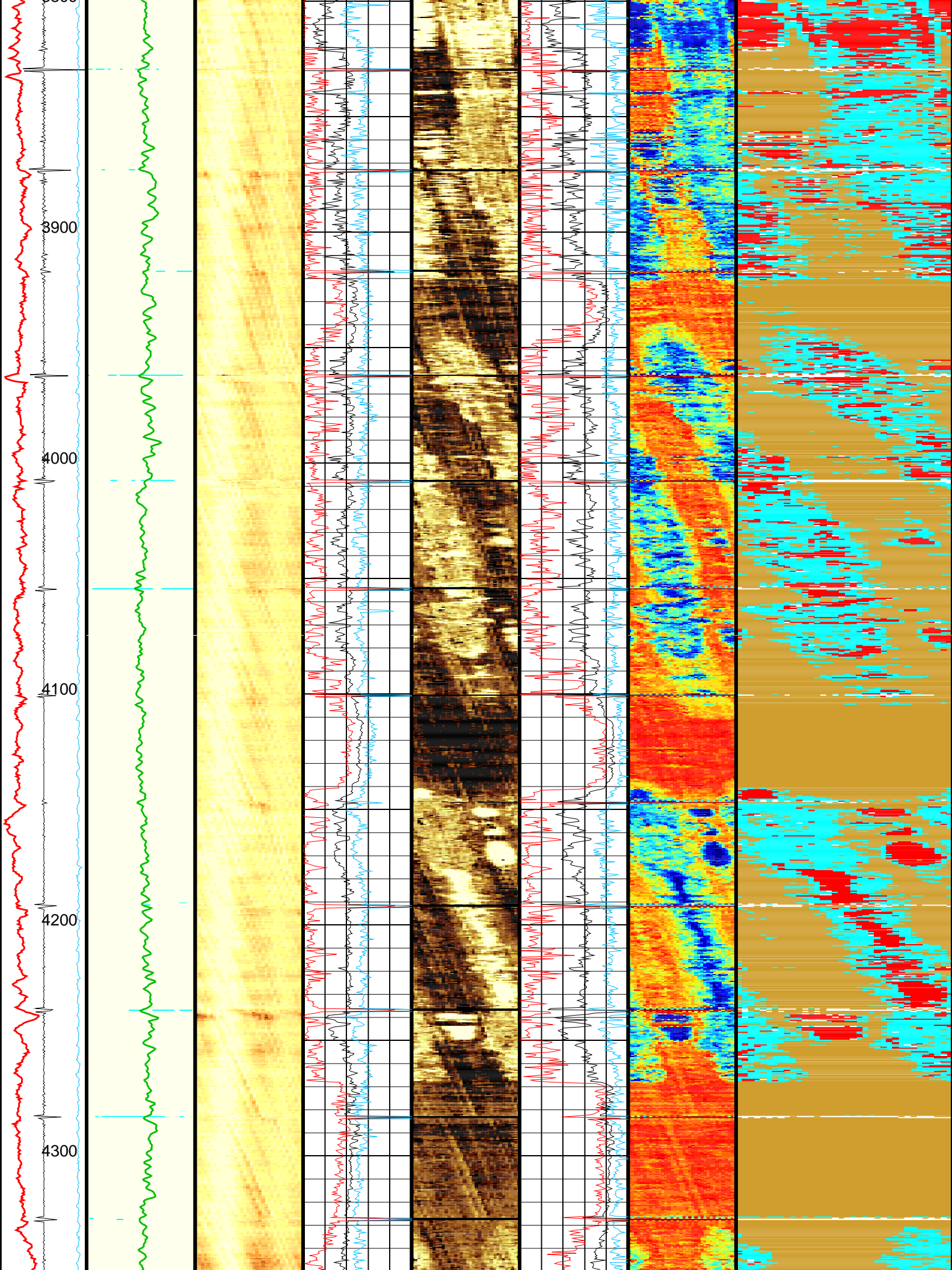


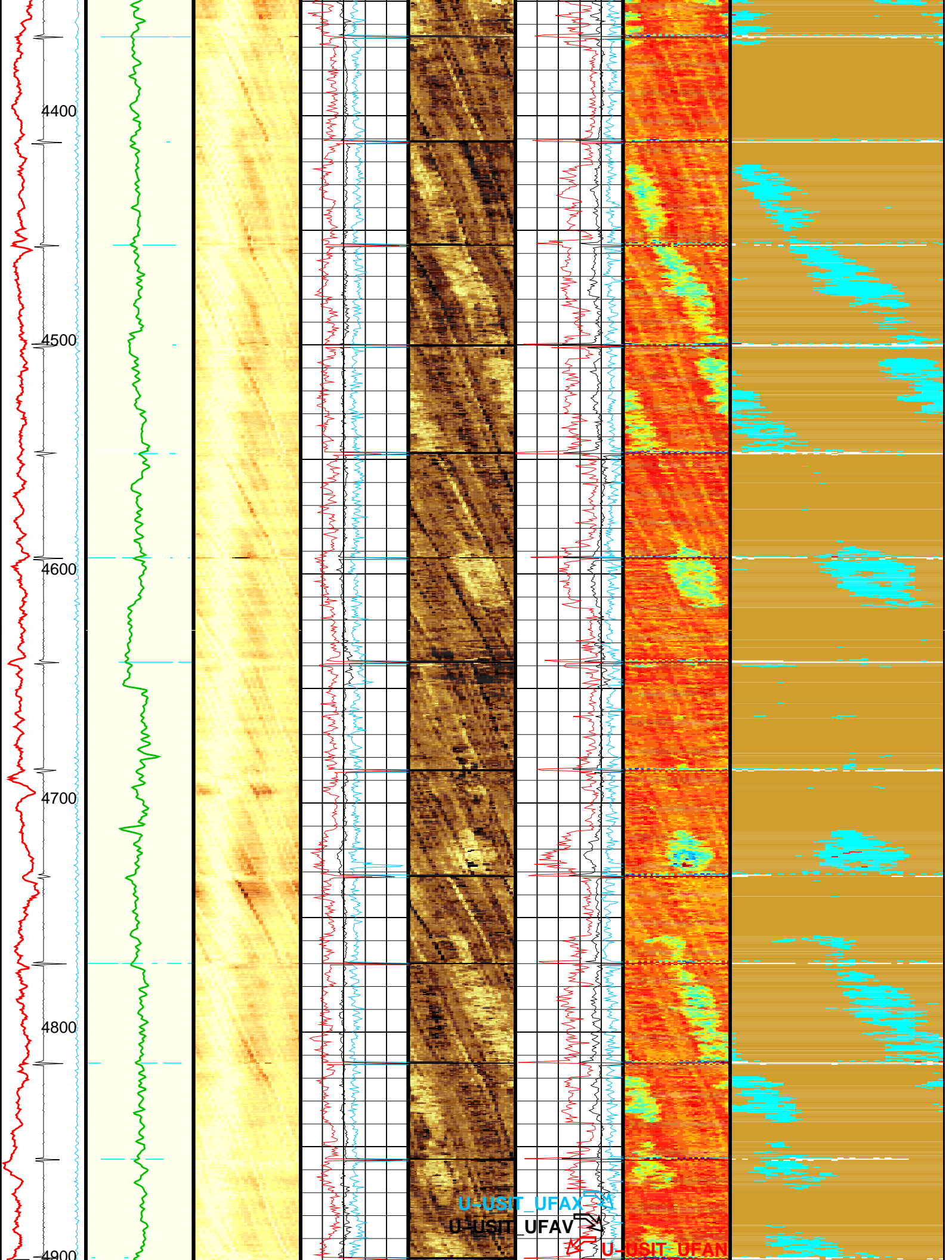


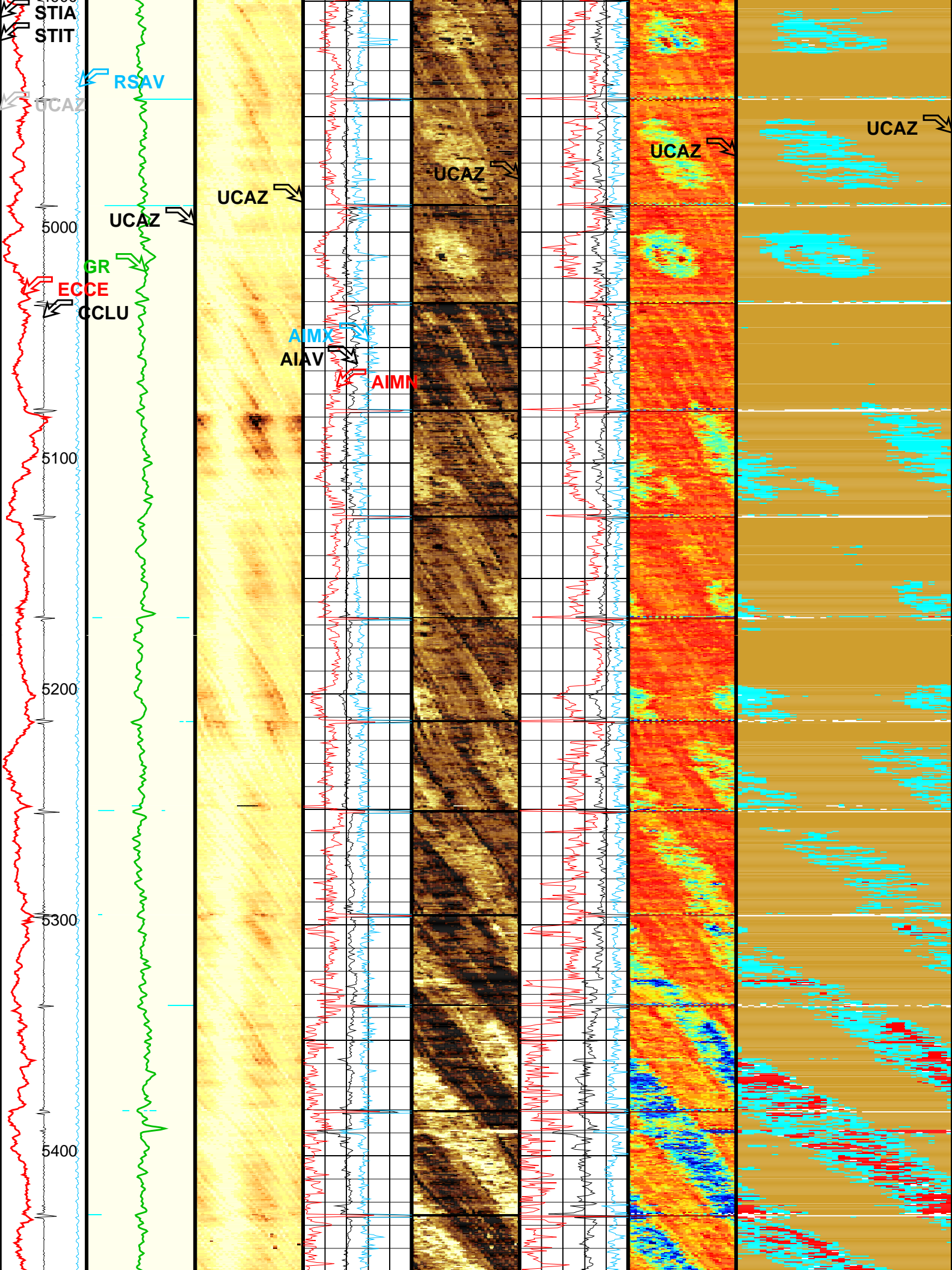


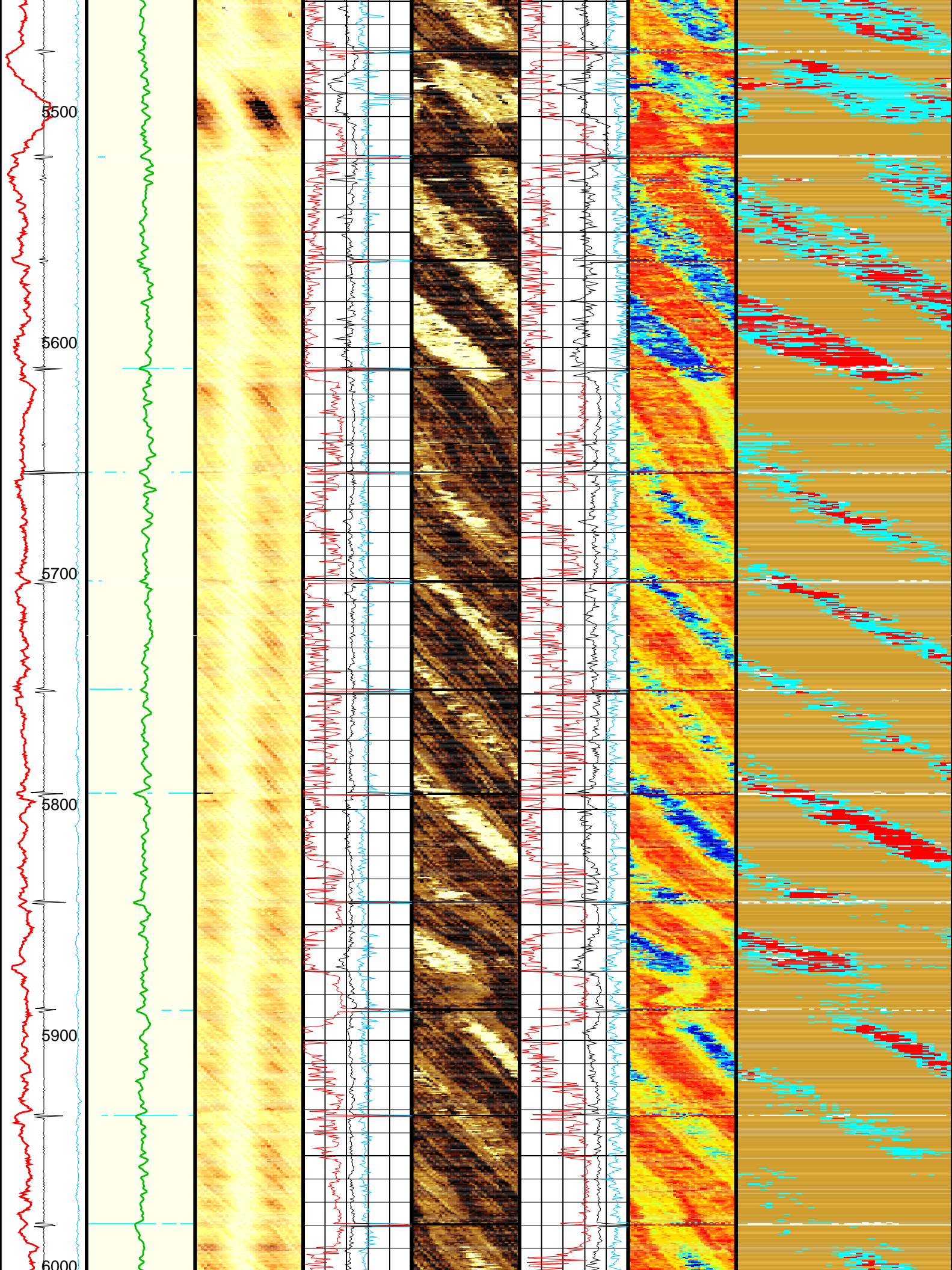


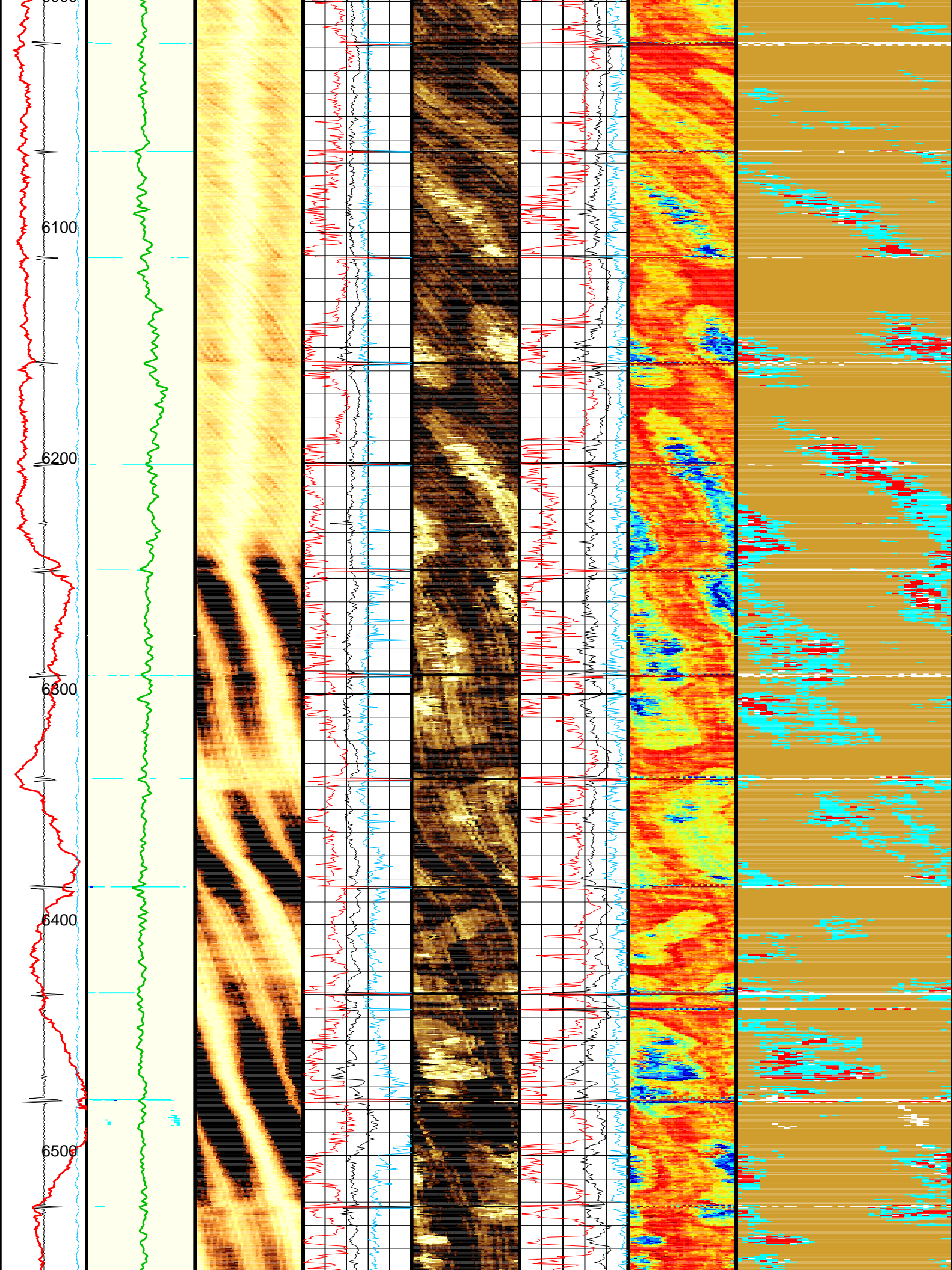


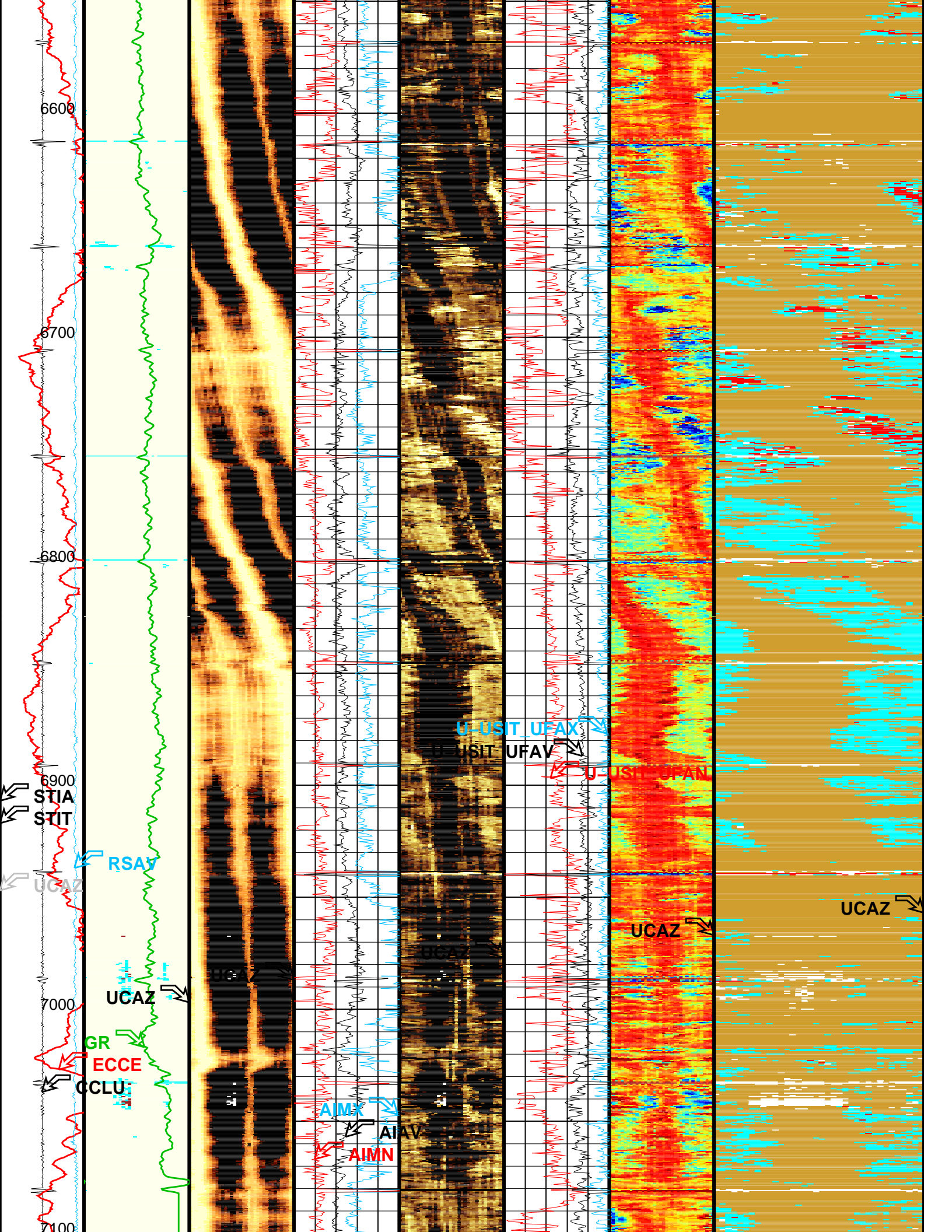


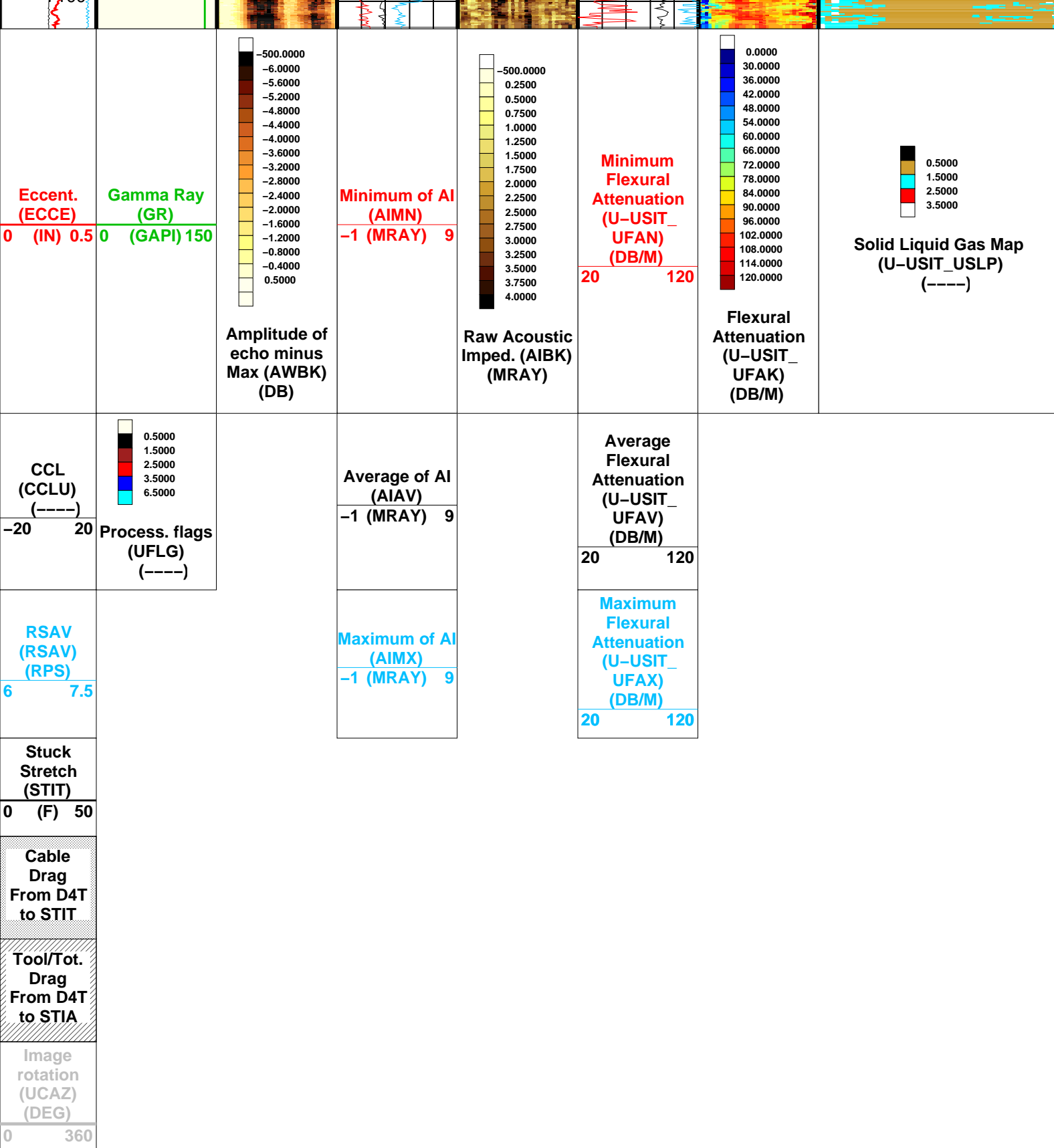












Format: 2 inch IBC SLG Vertical Scale: 2" per 100' Graphics File Created: 23-Jul-2012 15:26

OP System Version: 19C0-187

USIT-D	SRPC-5095-H2-2011-OP19	SGT-N	19C0-187
DTC-H	19C0-187	CAL-Y	19C0-187

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.

Parameters

DLIS Name	Description	Value
USIT-D: Ultrasonic Imaging - D		
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	20 V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD
IMAR	Image Rotation	OFF
MW	Mud Weight	9.95 LB/G
RCOD	Reference Calibrator Outer Diameter	7 IN
RCSO	Reference Calibrator Standoff	1.1811 IN
RCTH	Reference Calibrator Thickness	0.2952 IN
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
U-USIT_CENT	USIT Cement Type	LIGHT
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	0 MRAY
U-USIT_IISR	USIT IBC Inverted Fluid Slowness Resolution	1.0 US_P_FT
U-USIT_IIZR	USIT IBC Inverted ZMUD Resolution	0.050_MRAY
U-USIT_OCDI	USIT Outer Casing Diameter	0 IN
U-USIT_OCSH	USIT Outer Casing Shoe	0 FT
U-USIT_OCWE	USIT Outer Casing Weight	0 LB/F
U-USIT_TIEB	IBC Third Interface Echo Bin Processing	YES
U-USIT_TIEC	IBC Third Interface Echo Cleaning	NONE
U-USIT_TIEM	IBC Third Interface Echo Multi Tracking	NO
U-USIT_TIEP	IBC Third Interface Echo Policy	BFEP
U-USIT_TIER	IBC Third Interface Echo Receivers	BOTH
U-USIT_U3WE	Third Interface Echo Window End	110 US
U-USIT_UBTP	USIT Bottom Transducer Position	UNKNOWN
U-USIT_UFAO	USIT Flexural Attenuation Offset	2 DB/M
U-USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap
U-USIT_UIST	Ultrasonic IBC Sonde Type	Sub_ibcs_B
U-USIT_UTAN	USIT Transducer Angles	33_DEG
UMAO	USIT Measurement Angular Offset	-10 DEG
USTO	Ultrasonic Time Offset	-2 US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_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	1.95 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	TDL
STKT	STI Stuck Threshold	5 FT
TDD	Total Depth - Driller	11345.00 FT
TDL	Total Depth - Logger	11345.00 FT
System and Miscellaneous		
BS	Bit Size	8.750 IN
CWEI	Casing Weight	26.00 LB/F
DO	Depth Offset for Playback	2.0 FT
PP	Playback Processing	NORMAL

Input DLIS Files

DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
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Output DLIS Files

DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25
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Company: Encana Oil & Gas Inc

Well: Flanigan 2A-6H

Input DLIS Files

DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
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Output DLIS Files

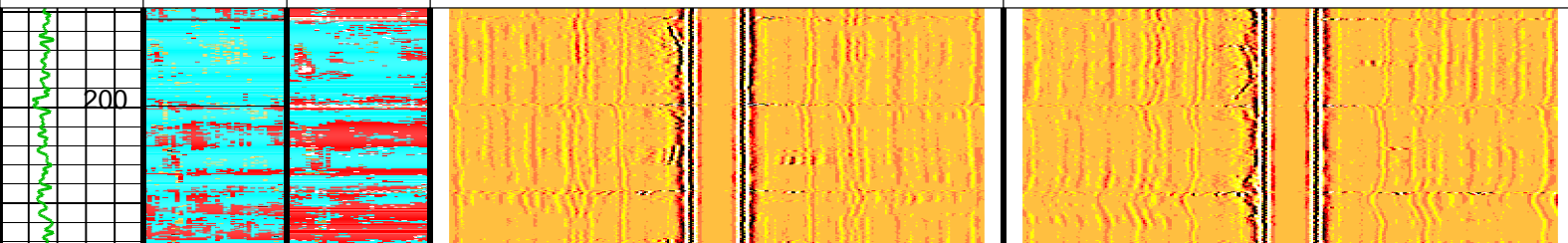
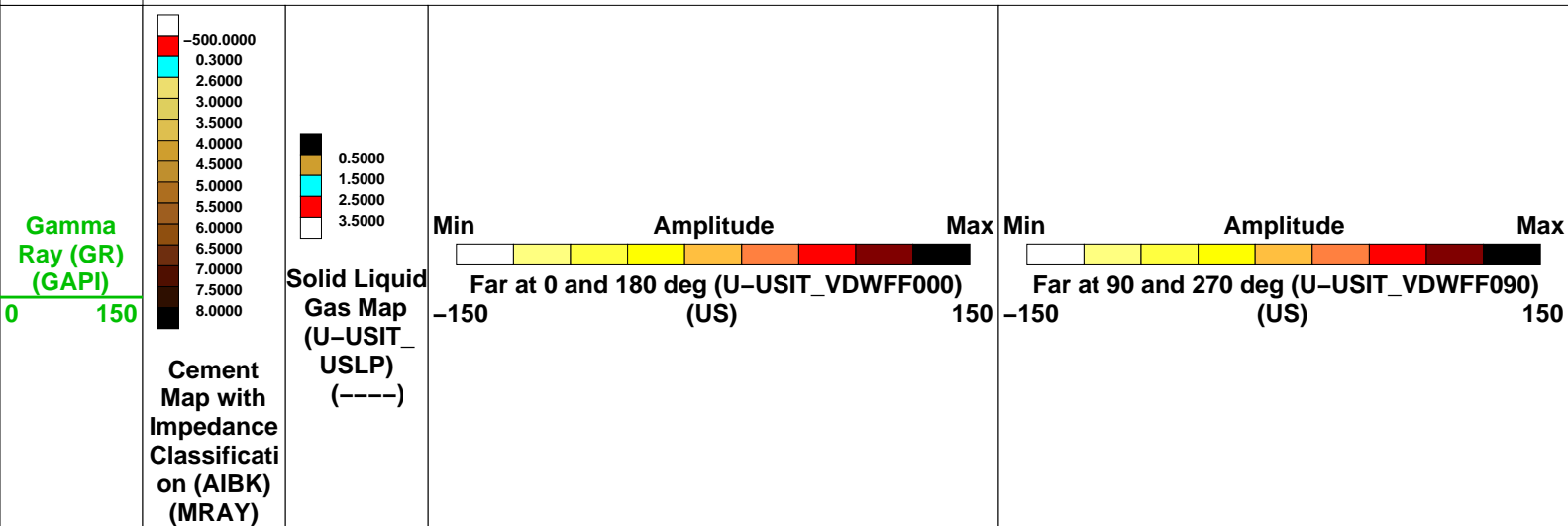
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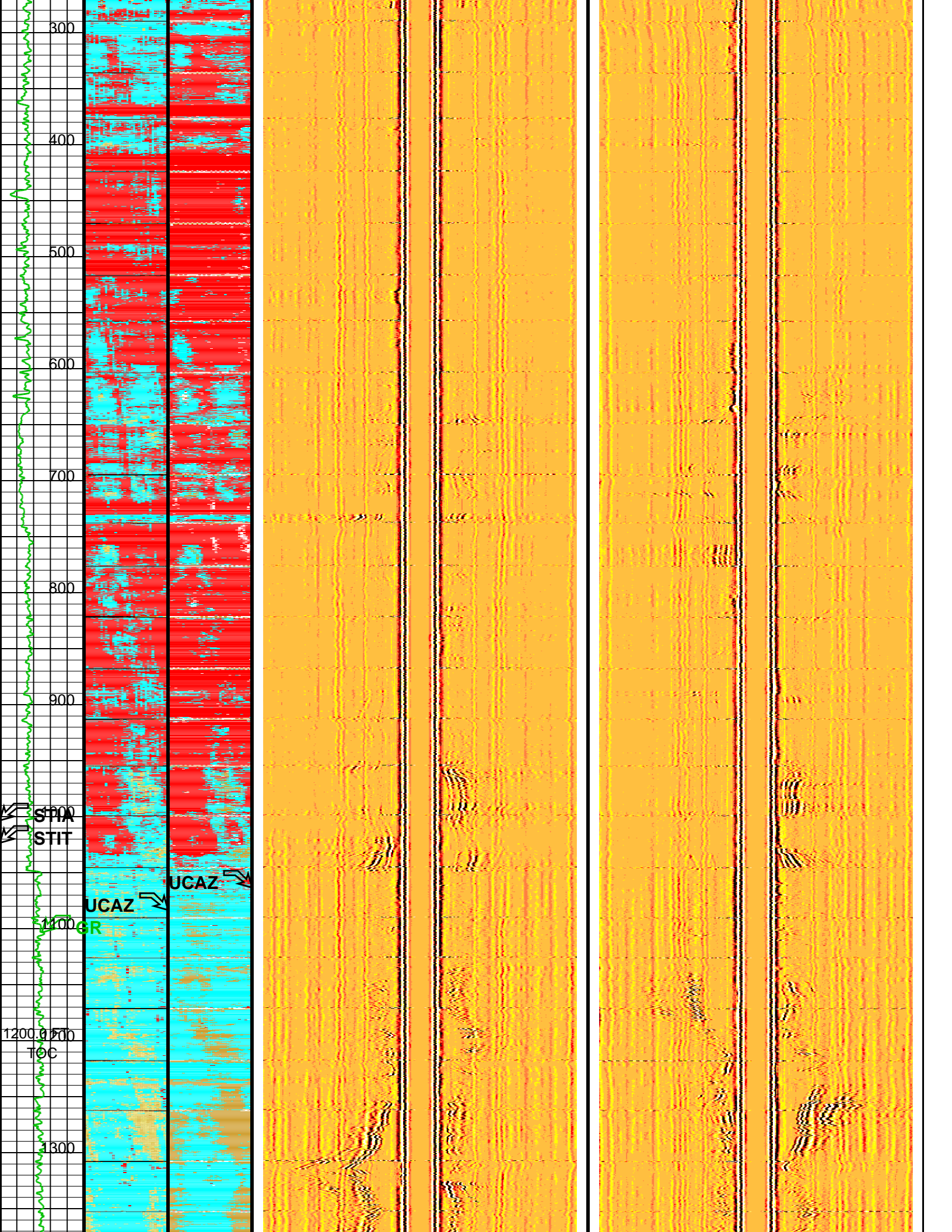
OP System Version: 19C0-187

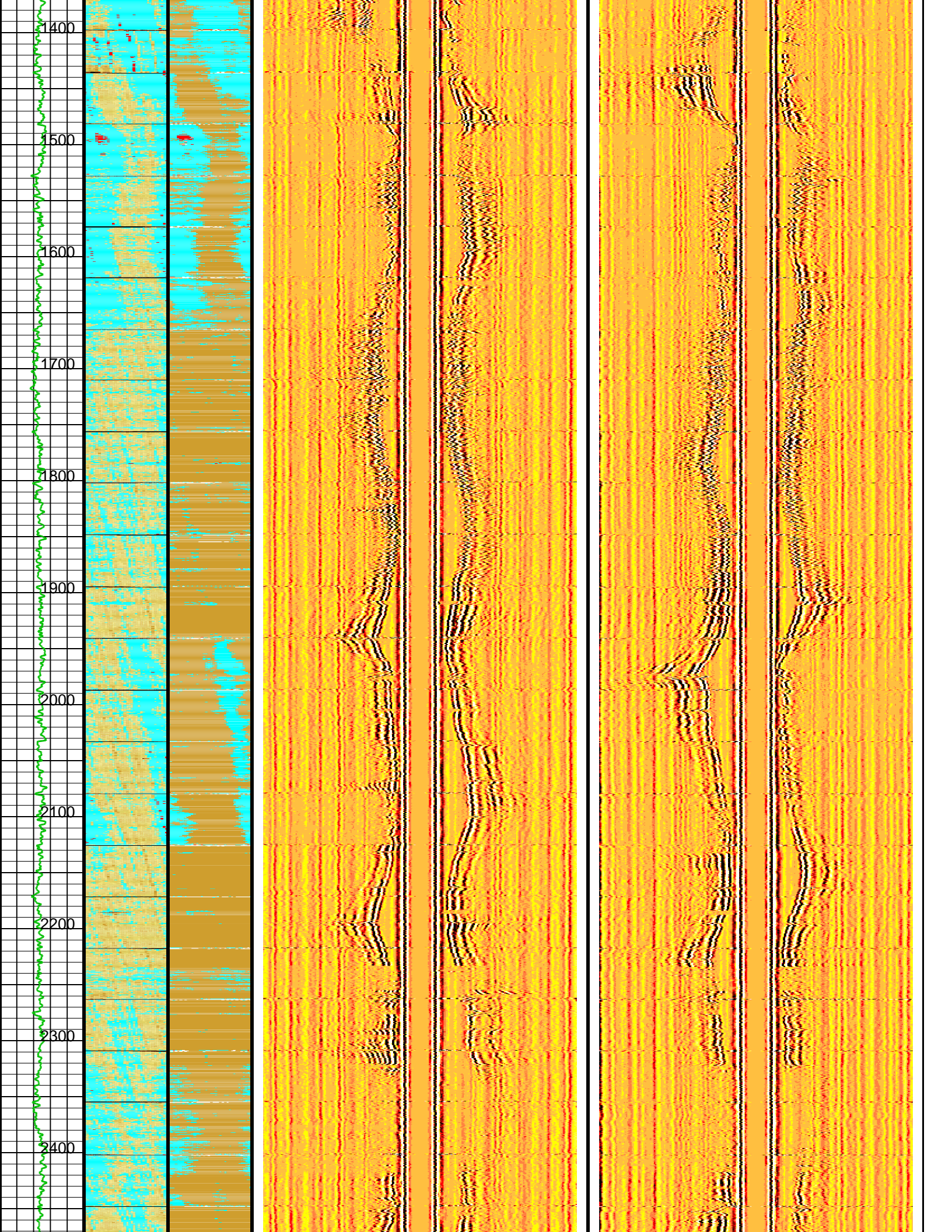
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DTC-H	19C0-187	CAL-Y	19C0-187

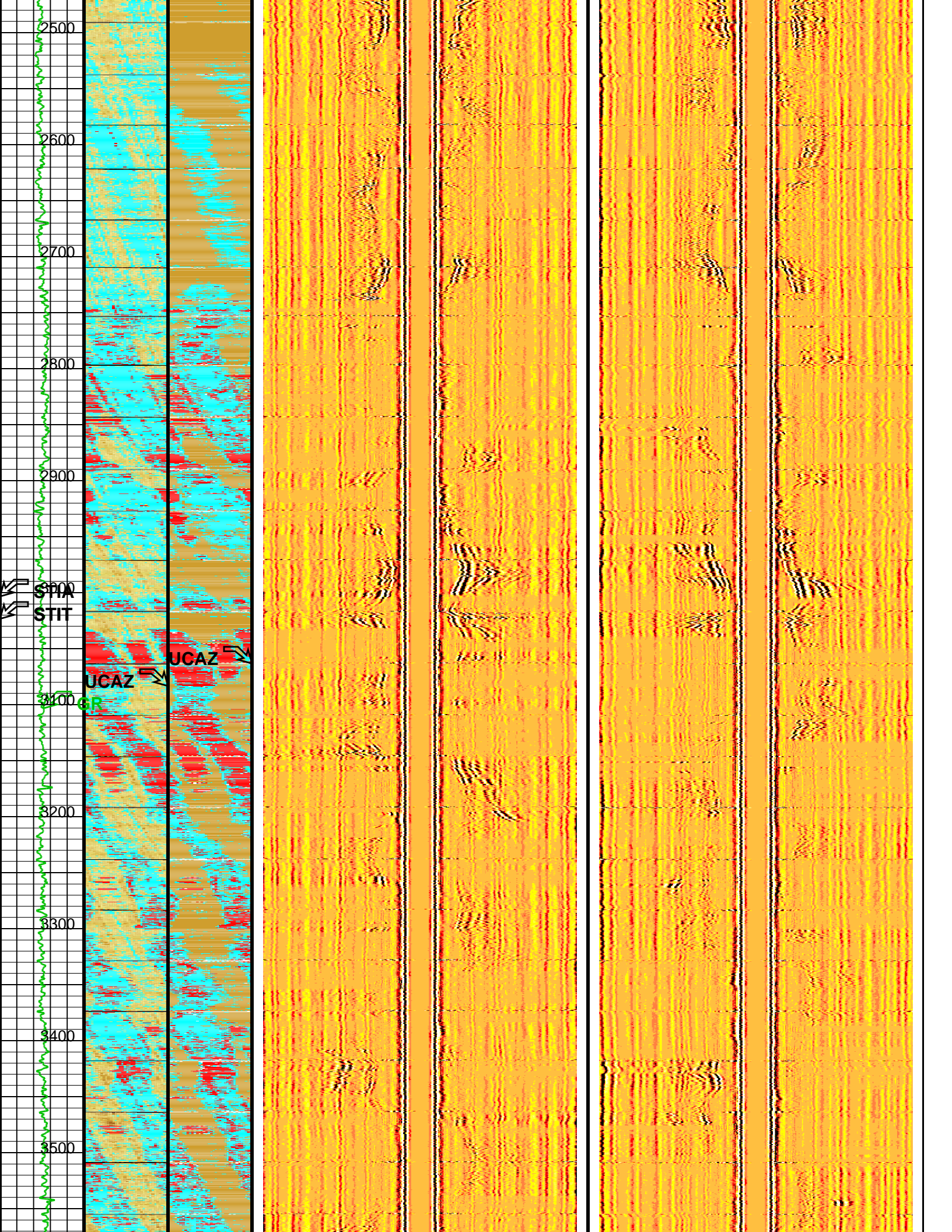
Tool/Tot.
Drag
From D4T
to STIACable
Drag
From D4T
to STITStuck
Stretch
(STIT)

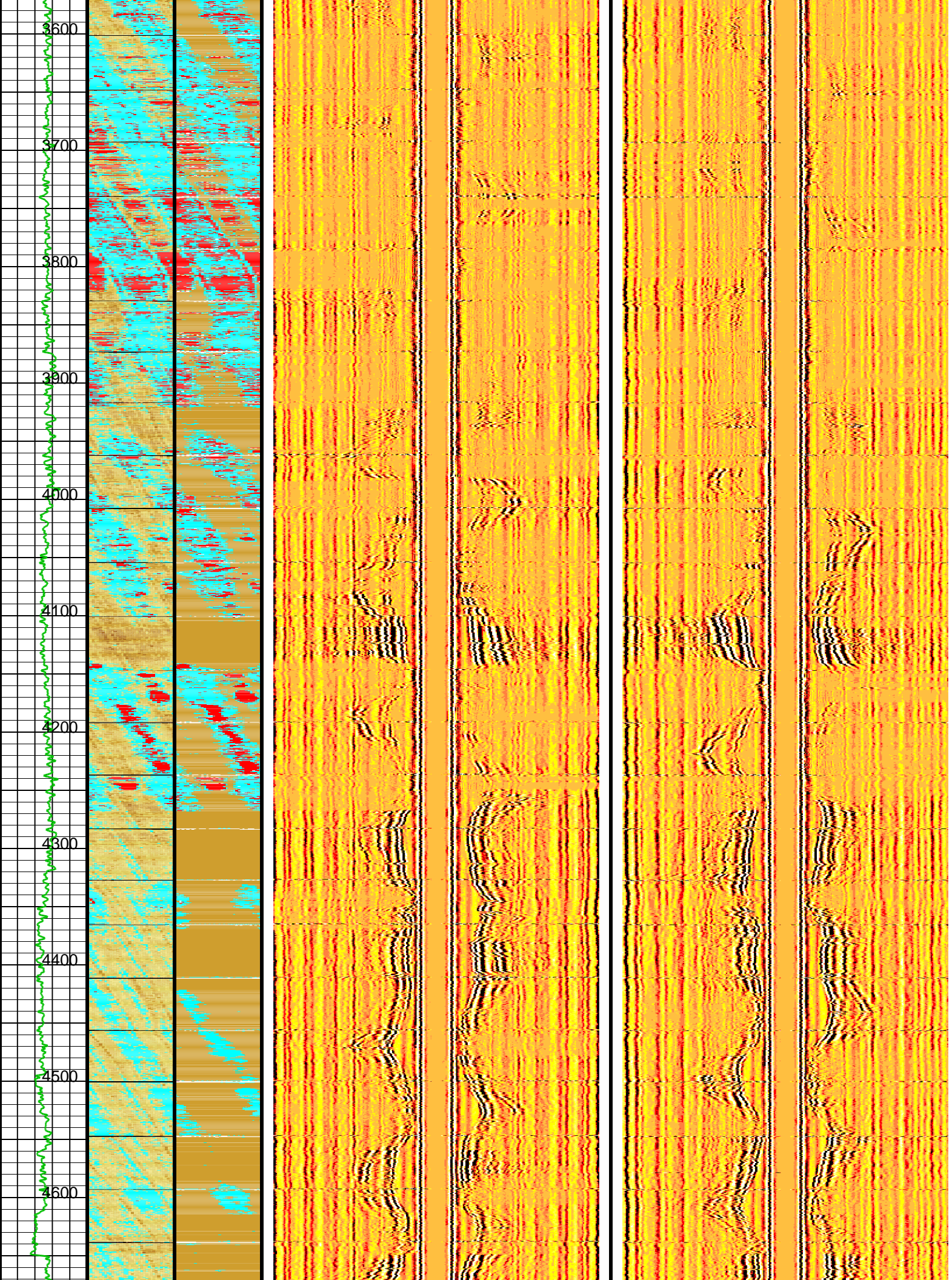
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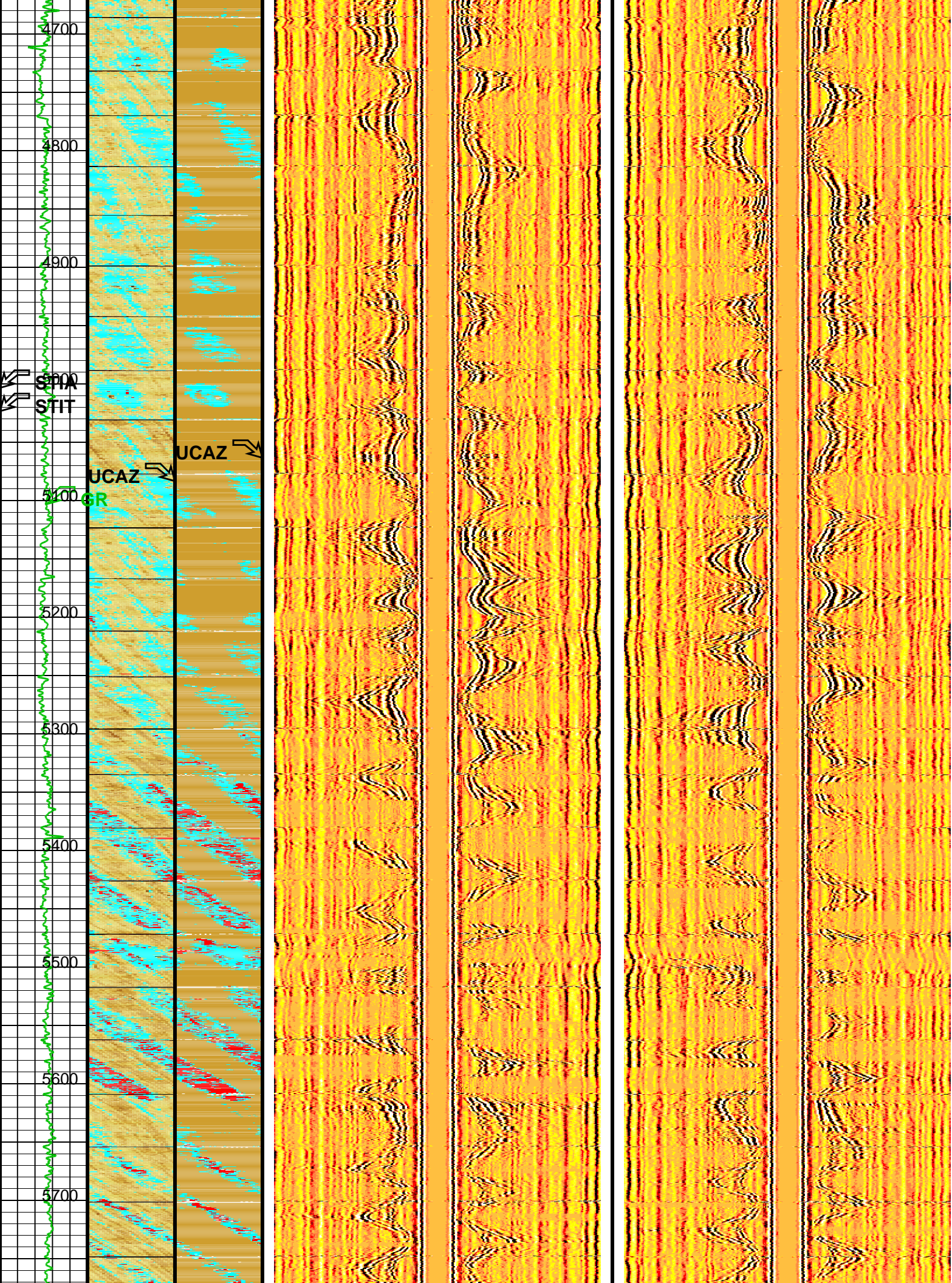


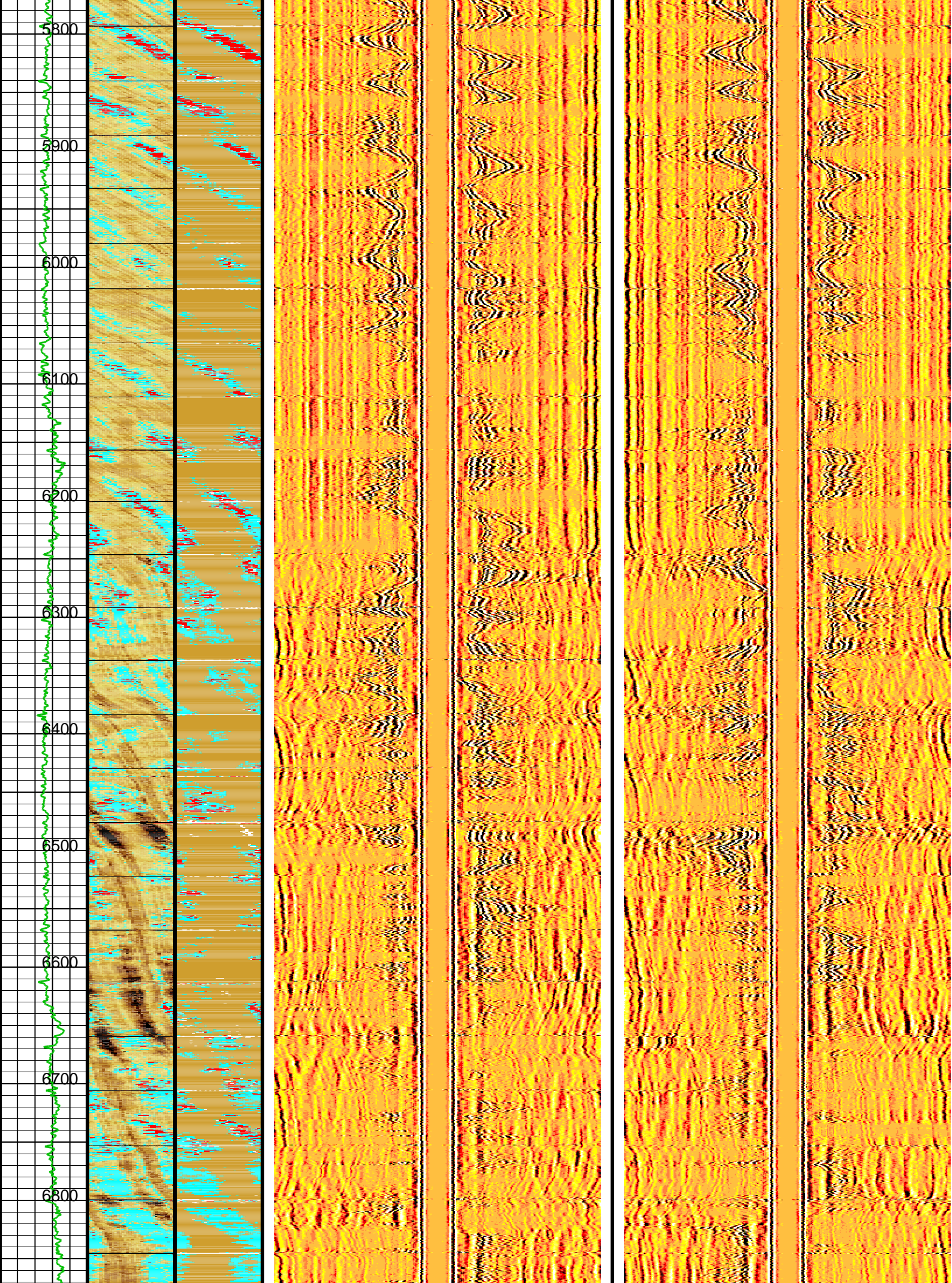


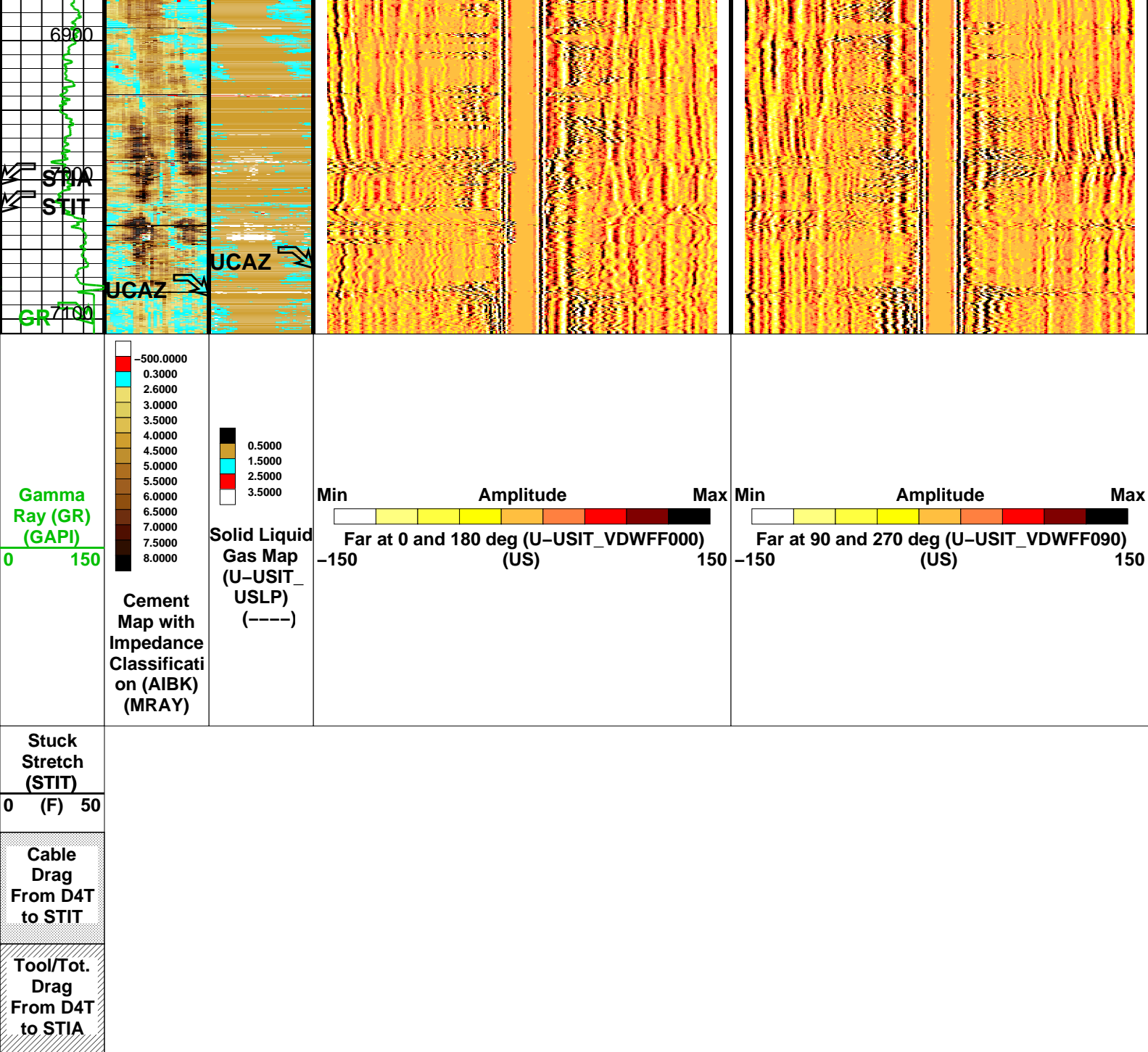












Parameters

DLIS Name	Description	Value	
USIT-D: Ultrasonic Imaging – D			
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	20	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.95	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
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

THRO	Nominal Thickness of Casing	0.302	IN
U-USIT_CEMT	USIT Cement Type	LIGHT	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	0	MRAY
U-USIT_IISR	USIT IBC Inverted Fluid Slowness Resolution	1.0_US_P_FT	
U-USIT_IIZR	USIT IBC Inverted ZMUD Resolution	0.050_MRAY	
U-USIT_OCDI	USIT Outer Casing Diameter	0	IN
U-USIT_OCSH	USIT Outer Casing Shoe	0	FT
U-USIT_OCWE	USIT Outer Casing Weight	0	LB/F
U-USIT_TIEB	IBC Third Interface Echo Bin Processing	YES	
U-USIT_TIEC	IBC Third Interface Echo Cleaning	NONE	
U-USIT_TIEM	IBC Third Interface Echo Multi Tracking	NO	
U-USIT_TIEP	IBC Third Interface Echo Policy	BFEP	
U-USIT_TIER	IBC Third Interface Echo Receivers	BOTH	
U-USIT_U3WE	Third Interface Echo Window End	110	US
U-USIT_UBTP	USIT Bottom Transducer Position	UNKNOWN	
U-USIT_UFAO	USIT Flexural Attenuation Offset	2	DB/M
U-USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U-USIT_UIST	Ultrasonic IBC Sonde Type	Sub_ibcs_B	
U-USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	-10	DEG
USTO	Ultrasonic Time Offset	-2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_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	1.95	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	TDL	
STKT	STI Stuck Threshold	5	FT
TDD	Total Depth - Driller	11345.00	FT
TDL	Total Depth - Logger	11345.00	FT
System and Miscellaneous			
BS	Bit Size	8.750	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	2.0	FT
PP	Playback Processing	NORMAL	

Format: 1 inch IBC VDL WIDE Vertical Scale: 1" per 100' Graphics File Created: 23-Jul-2012 15:26

OP System Version: 19C0-187

USIT-D	SRPC-5095-H2-2011-OP19	SGT-N	19C0-187
DTC-H	19C0-187	CAL-Y	19C0-187

Input DLIS Files

DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
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Output DLIS Files

DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25
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Company: Encana Oil & Gas Inc Well: Flanigan 2A-6H

Input DLIS Files

DEFAULT	USI_008LUP	FN:7	PRODUCER	23-Jul-2012 11:28	7108.5 FT	145.5 FT
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Output DLIS Files

DEFAULT	USI_013PUP	FN:12	PRODUCER	23-Jul-2012 15:25	7110.5 FT	147.5 FT
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OP System Version: 19C0-187

USIT-D	SRPC-5095-H2-2011-OP19	SGT-N	19C0-187
DTC-H	19C0-187	CAL-Y	19C0-187

Minimum Acoustic Impedance #2 (MIN_	Minimum Acoustic Impedance #4 (MIN_	Minimum Acoustic Impedance #6 (MIN_	Minimum Acoustic Impedance #8 (MIN_
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	AI2) (MRAY)		AI4) (MRAY)		AI6) (MRAY)		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						
	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						
	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)		Maximum Flexural Attenuation (U-USIT_ UFAX) (DB/M)	
	0	15	0	15	0	15	0	15	0	15	0	7.5	40	140
Gamma Ray (GR) (GAPI)	Average Acoustic Impedance #2 (AV_ AI2) (MRAY)		Average Acoustic Impedance #4 (AV_ AI4) (MRAY)		Average Acoustic Impedance #6 (AV_ AI6) (MRAY)		Average Acoustic Impedance #8 (AV_ AI8) (MRAY)		Maximum Acoustic Impedance #9 (MAX_ AI9) (MRAY)		Minimum of AI (AIMN) (MRAY)		Average Flexural Attenuation (U-USIT_ UFAV) (DB/M)	
0	-7.5	7.5	-7.5	7.5	-7.5	7.5	-7.5	7.5	0	15	0	7.5	40	140
Eccent. (ECCE)	Average Acoustic Impedance #1 (AV_ AI1) (MRAY)		Average Acoustic Impedance #3 (AV_ AI3) (MRAY)		Average Acoustic Impedance #5 (AV_ AI5) (MRAY)		Average Acoustic Impedance #7 (AV_ AI7) (MRAY)		Average Acoustic Impedance #9 (AV_ AI9) (MRAY)		Average of AI (AIAV) (MRAY)		Minimum Flexural Attenuation (U-USIT_ UFAN) (DB/M)	
0 (IN) 0.5	0	15	0	15	0	15	0	15	0	15	0	7.5	40	140

-500.0000

0.2500

0.5000

0.7500

1.0000

1.2500

1.5000

1.7500

2.0000

2.2500

2.5000

2.7500

3.0000

3.2500

3.5000

3.7500

4.0000

Raw
Acoustic
Imped.
(AIBK)
(MRAY)

0.0000

30.0000

36.0000

42.0000

48.0000

54.0000

60.0000

66.0000

72.0000

78.0000

84.0000

90.0000

96.0000

102.0000

108.0000

114.0000

120.0000

Flexural
Attenuation
(U-USIT_
UFAK)
(DB/M)

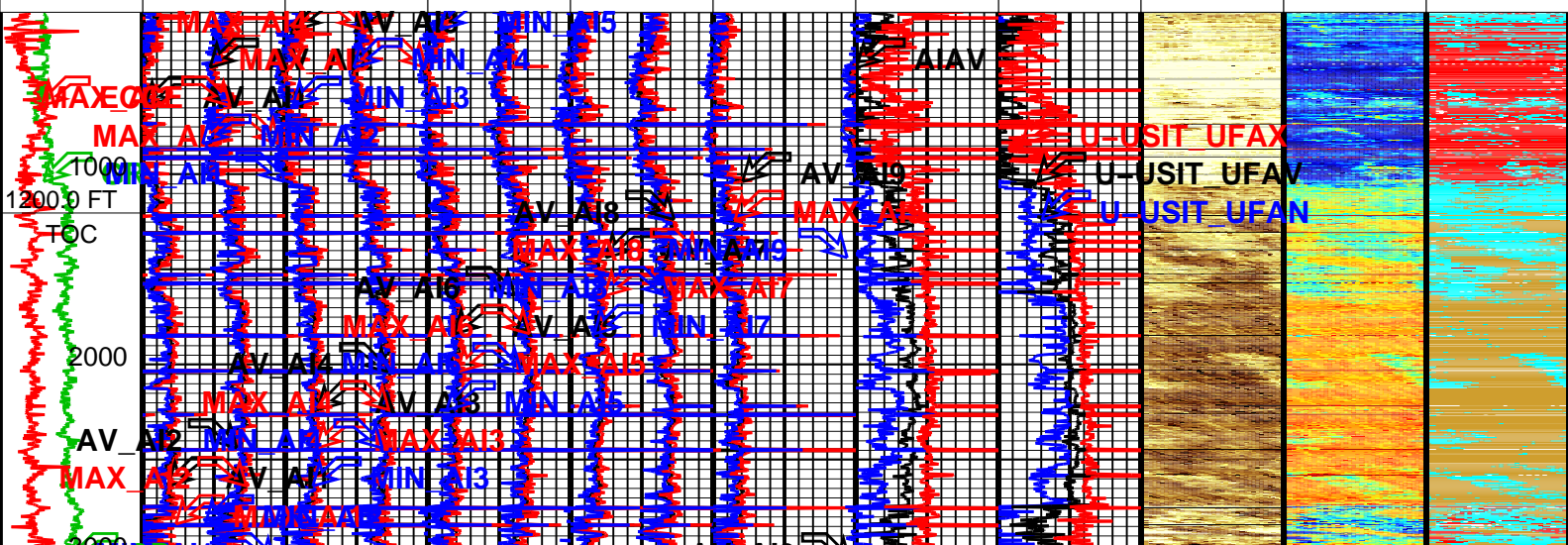
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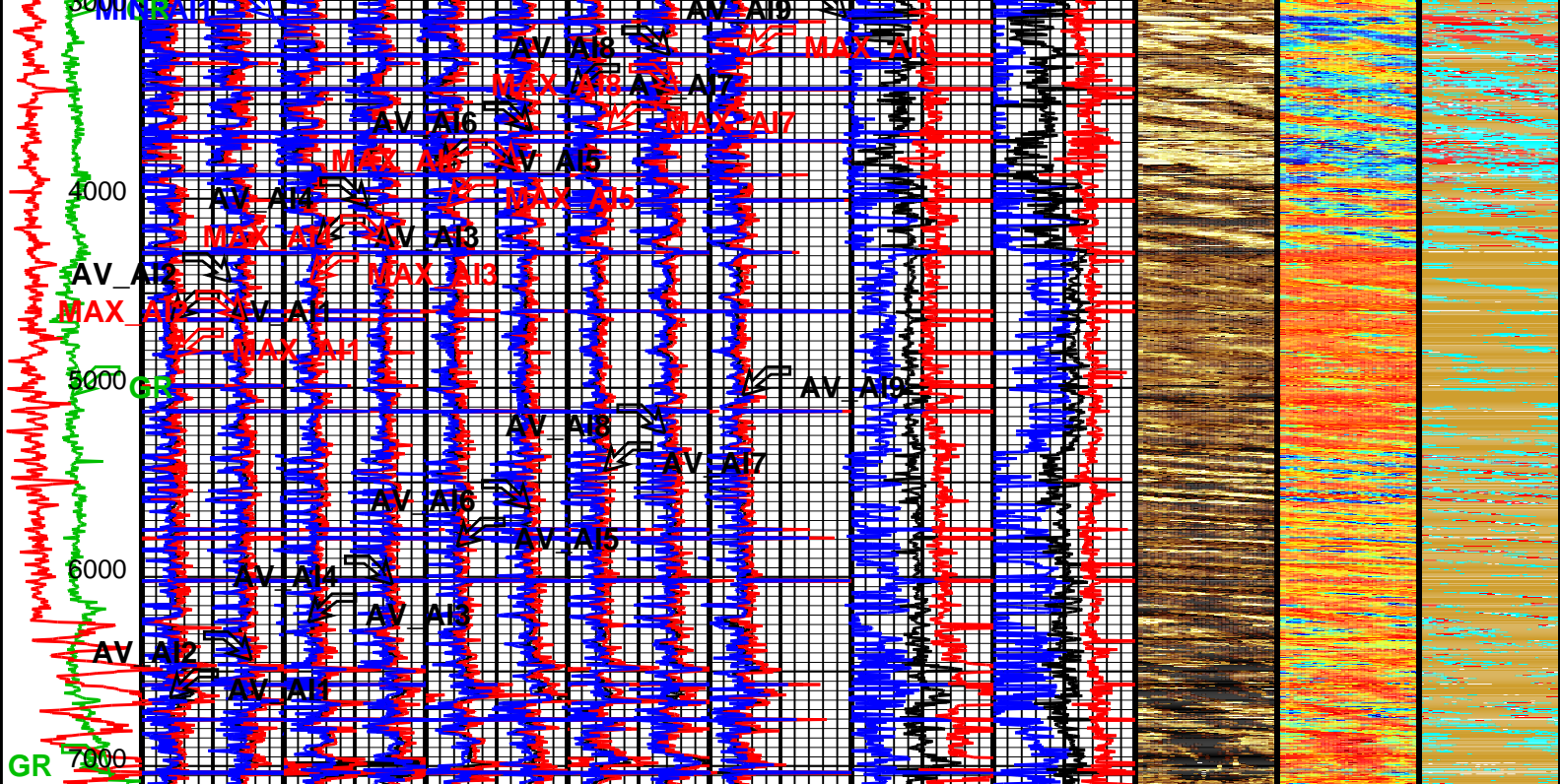
1.5000

2.5000

3.5000

Solid Liquid
Gas Map
(U-USIT_
USLP)
(----





<div>Eccent. (ECCE)</div> <div>0 (IN) 0.5</div>	Average Acoustic Impedance #1 (AV_ AI1) (MRAY)	Average Acoustic Impedance #3 (AV_ AI3) (MRAY)	Average Acoustic Impedance #5 (AV_ AI5) (MRAY)	Average Acoustic Impedance #7 (AV_ AI7) (MRAY)	Average Acoustic Impedance #9 (AV_ AI9) (MRAY)	Average of AI (AIAV) (MRAY)	Minimum Flexural Attenuation (U-USIT_ UFAN) (DB/M)	<div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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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Impedance #1 (MIN_ AI1) (MRAY)	Impedance #3 (MIN_ AI3) (MRAY)	Impedance #5 (MIN_ AI5) (MRAY)	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

Format: IBC Goodwin Compressed

Vertical Scale: 0.1" per 100'

Graphics File Created: 23-Jul-2012 15:26

OP System Version: 19C0-187

USIT-D

SRPC-5095-H2-2011-OP19

SGT-N

19C0-187

DTC-H

19C0-187

CAL-Y

19C0-187

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_008LUP

FN:7

PRODUCER

23-Jul-2012 11:28

7108.5 FT

145.5 FT

Output DLIS Files

DEFAULT

USI_013PUP

FN:12

PRODUCER

23-Jul-2012 15:25

Schlumberger

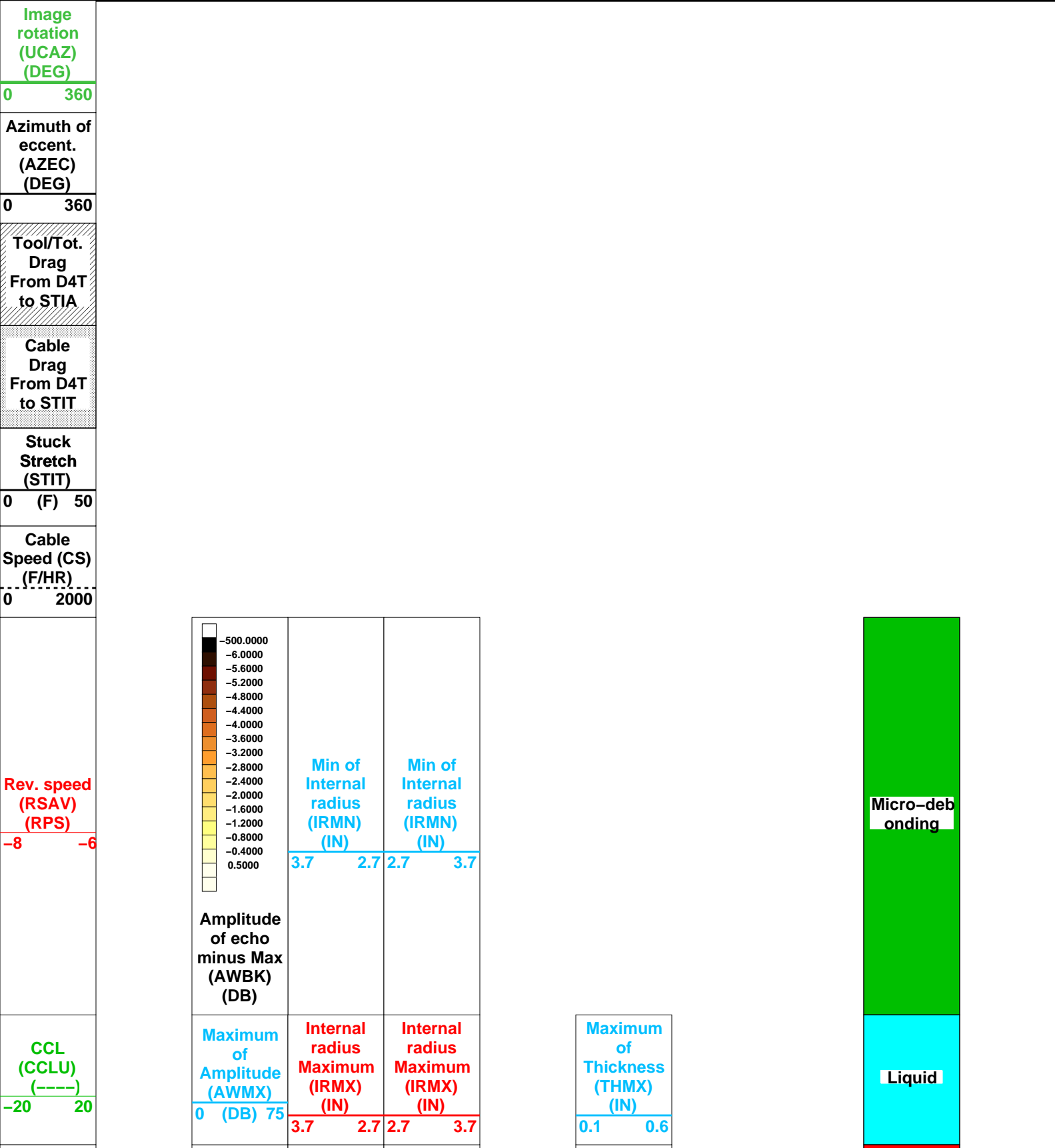
0.1" IBC Compressed Goodwin

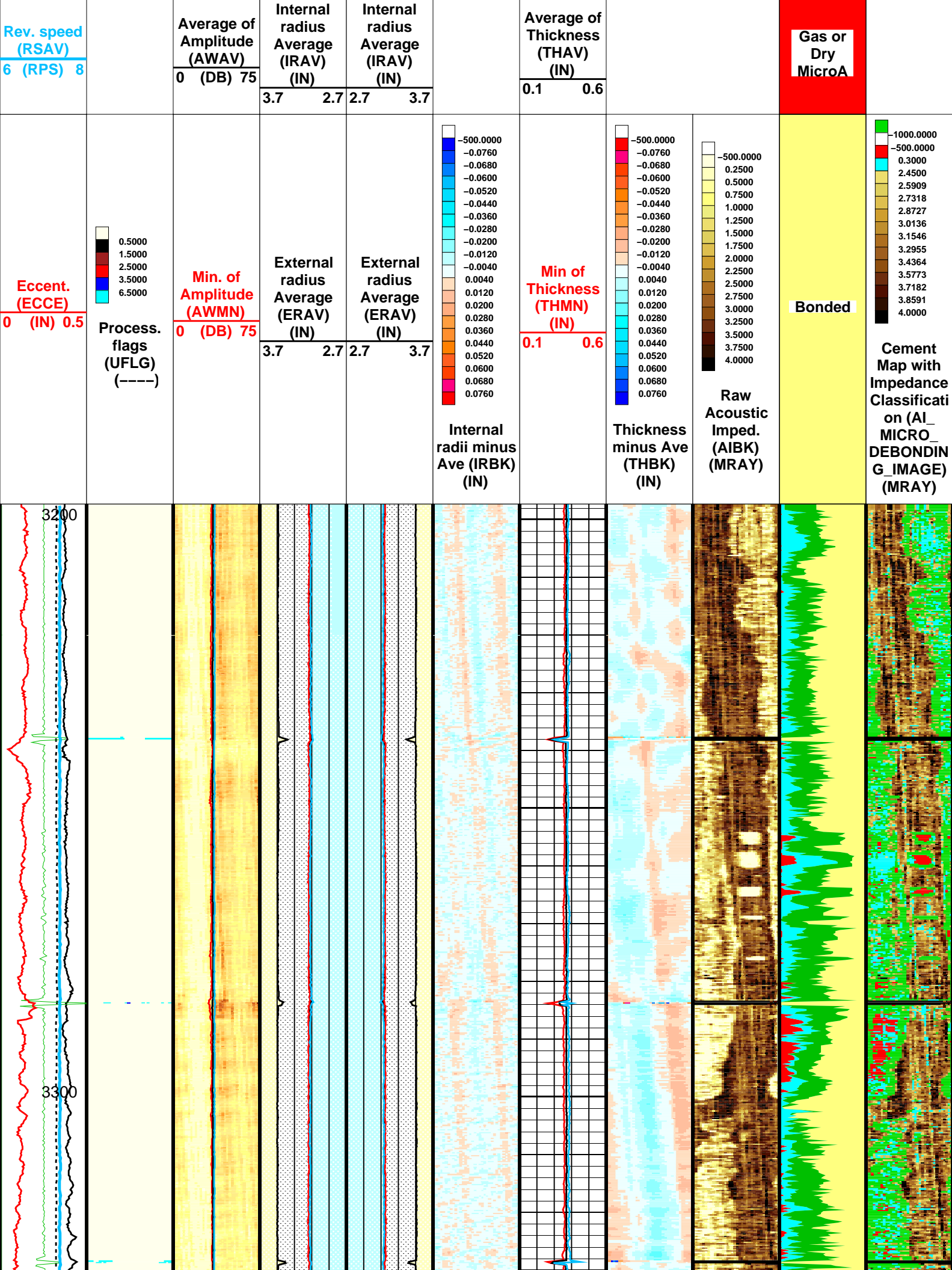
MAXIS Field Log

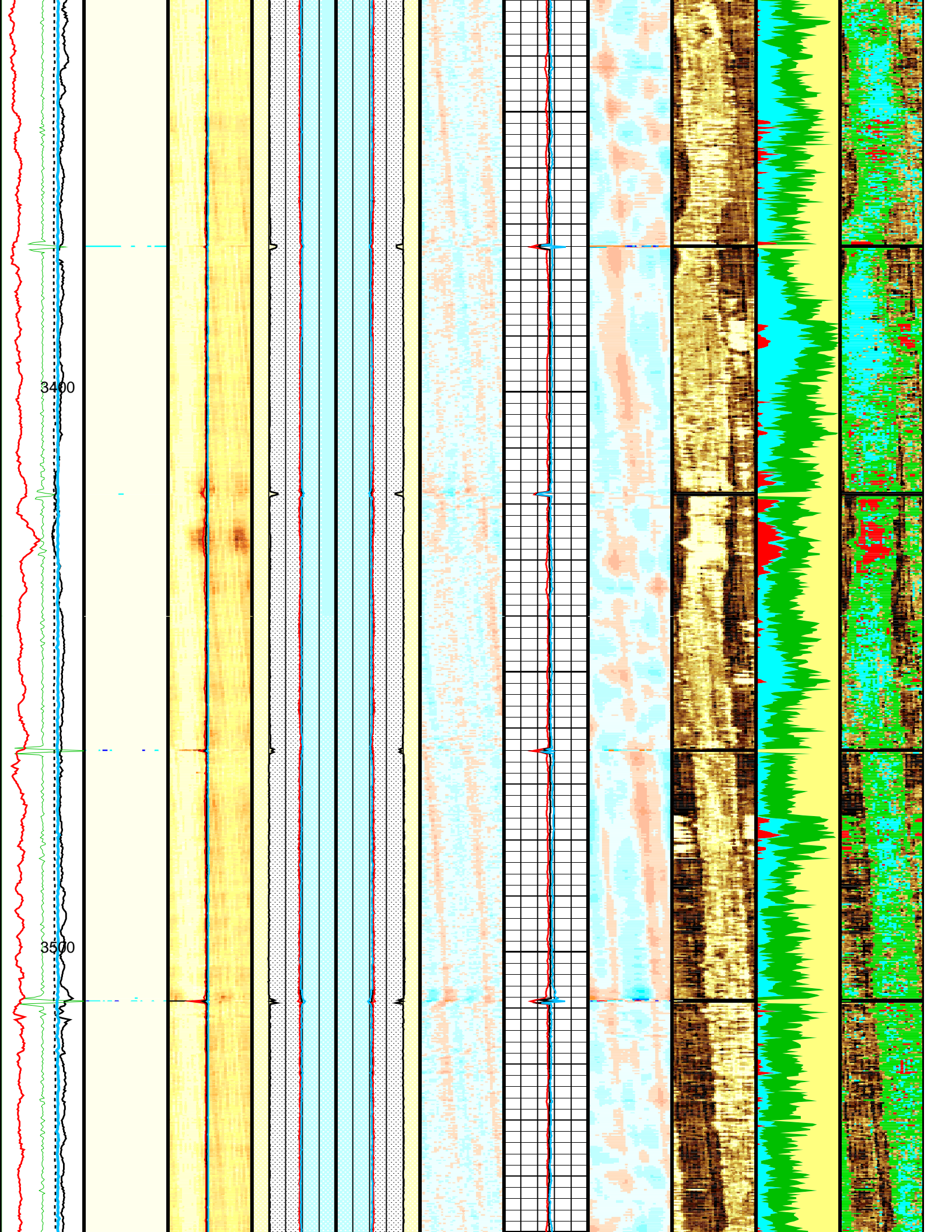
Schlumberger

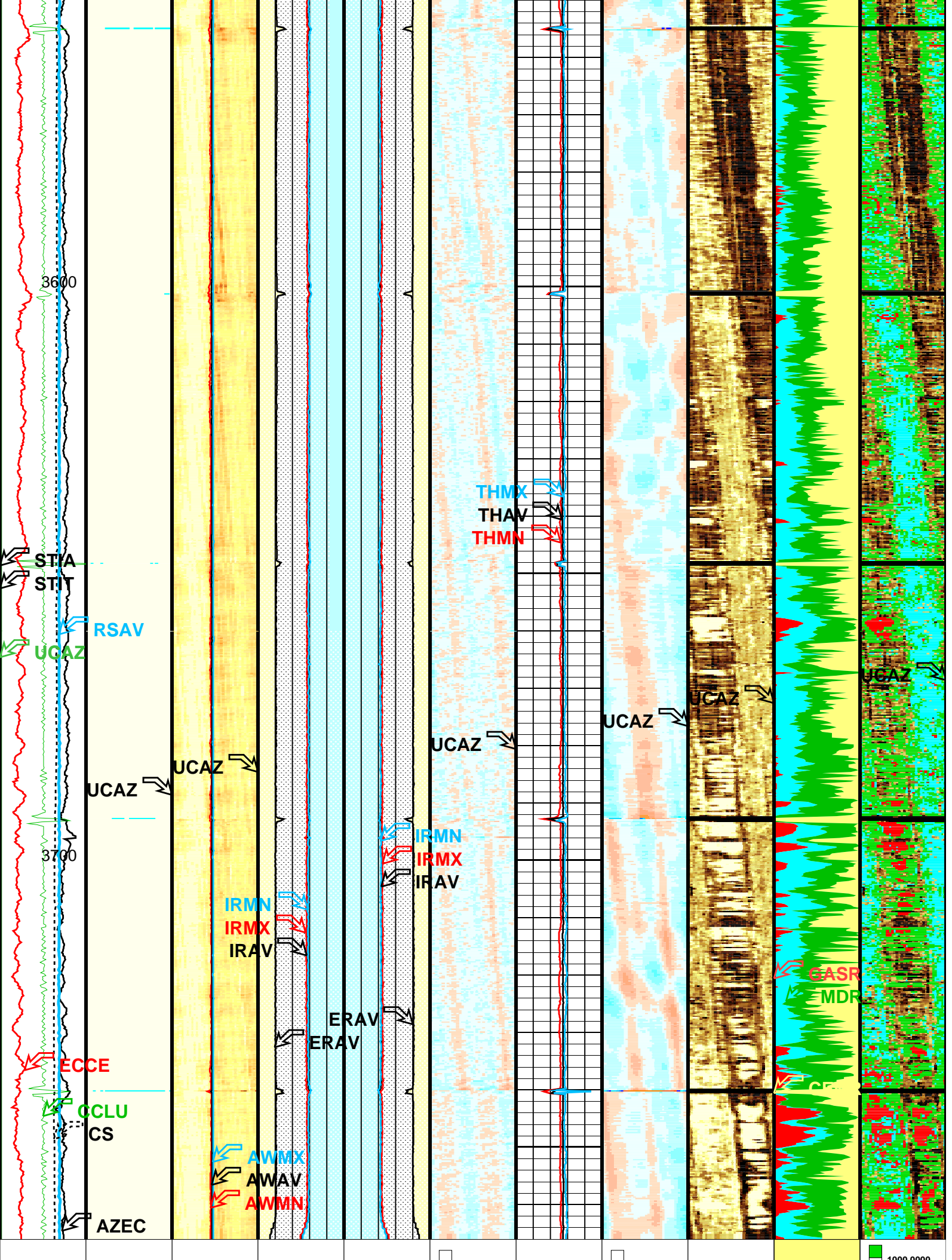
Repeat pass

MAXIS Field Log









<div><div>Eccent. (ECCE)</div><div>0 (IN) 0.5</div></div> <div><div>Process. flags (UFLG) (-----)</div><div><div>0.5000 1.5000 2.5000 3.5000 6.5000</div></div></div>	<div><div>Min. of Amplitude (AWMN)</div><div>0 (DB) 75</div></div> <div><div>External radius Average (ERAV) (IN)</div><div>3.7 2.7</div></div> <div><div>External radius Average (ERAV) (IN)</div><div>2.7 3.7</div></div>	<div><div>Internal radii minus Ave (IRBK) (IN)</div><div><div>-500.0000 -0.0760 -0.0680 -0.0600 -0.0520 -0.0440 -0.0360 -0.0280 -0.0200 -0.0120 -0.0040 0.0040 0.0120 0.0200 0.0280 0.0360 0.0440 0.0520 0.0600 0.0680 0.0760</div></div></div>	<div><div>Min of Thickness (THMN) (IN)</div><div>0.1 0.6</div></div> <div><div>Thickness minus Ave (THBK) (IN)</div><div><div>-500.0000 -0.0760 -0.0680 -0.0600 -0.0520 -0.0440 -0.0360 -0.0280 -0.0200 -0.0120 -0.0040 0.0040 0.0120 0.0200 0.0280 0.0360 0.0440 0.0520 0.0600 0.0680 0.0760</div></div></div>	<div><div>Raw Acoustic Imped. (AIBK) (MRAY)</div><div><div>-500.0000 -0.2500 0.2500 0.5000 0.7500 1.0000 1.2500 1.5000 1.7500 2.0000 2.2500 2.5000 2.7500 3.0000 3.2500 3.5000 3.7500 4.0000</div></div></div>	<div><div>Bonded</div></div>	<div><div>Cement Map with Impedance Classificati on (AI_ MICRO_ DEBONDIN G_IMAGE) (MRAY)</div><div><div>-500.0000 0.3000 2.4500 2.5909 2.7318 2.8727 3.0136 3.1546 3.2955 3.4364 3.5773 3.7182 3.8591 4.0000</div></div></div>
<div><div>Rev. speed (RSAV)</div><div>6 (RPS) 8</div></div>	<div><div>Average of Amplitude (AWAV)</div><div>0 (DB) 75</div></div> <div><div>Internal radius Average (IRAV) (IN)</div><div>3.7 2.7</div></div> <div><div>Internal radius Average (IRAV) (IN)</div><div>2.7 3.7</div></div>	<div><div>Average of Thickness (THAV) (IN)</div><div>0.1 0.6</div></div>	<div><div>Gas or Dry MicroA</div></div>			
<div><div>CCL (CCLU) (-----)</div><div>-20 20</div></div>	<div><div>Maximum of Amplitude (AWMX)</div><div>0 (DB) 75</div></div> <div><div>Internal radius Maximum (IRMX) (IN)</div><div>3.7 2.7</div></div> <div><div>Internal radius Maximum (IRMX) (IN)</div><div>2.7 3.7</div></div>	<div><div>Maximum of Thickness (THMX) (IN)</div><div>0.1 0.6</div></div>	<div><div>Liquid</div></div>			
<div><div>Rev. speed (RSAV) (RPS)</div><div>-8 -6</div></div>	<div><div><div><div>-500.0000 -6.0000 -5.6000 -5.2000 -4.8000 -4.4000 -4.0000 -3.6000 -3.2000 -2.8000 -2.4000 -2.0000 -1.6000 -1.2000 -0.8000 -0.4000 0.5000</div></div></div><div><div>Amplitude of echo minus Max (AWBK) (DB)</div></div></div> <div><div>Min of Internal radius (IRMN) (IN)</div><div>3.7 2.7</div></div> <div><div>Min of Internal radius (IRMN) (IN)</div><div>2.7 3.7</div></div>		<div><div>Micro-deb onding</div></div>			
<div><div>Cable Speed (CS) (F/HR)</div><div>0 2000</div></div>						
<div><div>Stuck Stretch (STIT)</div><div>0 (F) 50</div></div>						
<div><div>Cable Drag From D4T to STIT</div></div>						
<div><div>Tool/Tot. Drag</div></div>						

From D4T to STIA
Azimuth of eccent. (AZEC) (DEG)
0 360
Image rotation (UCAZ) (DEG)
0 360

Format: USI_Composite

Vertical Scale: 5" per 100'

Graphics File Created: 23-Jul-2012 15:39

OP System Version: 19C0-187

USIT-D

SRPC-5095-H2-2011-OP19

SGT-N

19C0-187

DTC-H

19C0-187

CAL-Y

19C0-187

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

(3.5 – 6.5)

UFLG 4 UFLG 5 UFLG 6

CASING THICKNESS error

(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-D: Ultrasonic Imaging – D			
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	20	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.95	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	
SDTVR	Acoustic Impedance STD Vertical Threshold for Micro-debonding	0.3	

TCUB	Acoustic Impedance of Casing	0.3	
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	-10	DEG
USTO	Ultrasonic Time Offset	-2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_3IN_136UNF_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	1.95	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	TDL	
STKT	STI Stuck Threshold	5	FT
TDD	Total Depth - Driller	11345.00	FT
TDL	Total Depth - Logger	11345.00	FT
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	9.0	FT
PP	Playback Processing	NORMAL	

Input DLIS Files

DEFAULT	USI_010LUP	FN:9	PRODUCER	23-Jul-2012 14:53	3757.0 FT	3188.0 FT
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Output DLIS Files

DEFAULT	USI_016PUP	FN:15	PRODUCER	23-Jul-2012 15:38
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Schlumberger

Mud Properties

MAXIS Field Log

Index: 7110.5 – 147.5 FT

IBC Inv. Fluid Z QC (----)

0.  0.5

