

Schlumberger

Company: Kerr–McGee Oil & Gas Onshore LP

Well: Crowder 15N–18HZ

Field: Wattenberg

County: Weld State: Colorado

USIT
Cement Evaluation

County: Weld

Field: Wattenberg

Location: Sec. 18, T2N, R65W

Well: Crowder 15N–18HZ

Company: Kerr–McGee Oil & Gas Onshore

LOCATION

Sec. 18, T2N, R65W

SHL: 253' FNL X 1168' FEL NENE

Elev.: K.B. 4983.00 ft
G.L. 4958.00 ft
D.F. 4982.00 ft

Permanent Datum: _____

Ground Level _____

Elev.: 4983.00 ft _____

Log Measured From: _____

Ground Level _____

0.00 ft above Perm. Datum

Drilling Measured From: _____

Kelly Bushing _____

API Serial No.

05–123–36721–0000

Section 18

Township 2N

Range 65W

PVT DATA			
Oil Density	Run 1	Run 2	Run 3
Water Salinity			
Gas Gravity			
Bo			
Bw			
1/Bg			
Bubble Point Pressure			
Bubble Point Temperature			
Solution GOR			
Maximum Deviation	90 deg		
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	23–May–2013			
Run Number	1			
Depth Driller	11538 ft			
Schlumberger Depth	6650 ft			
Bottom Log Interval	6650 ft			
Top Log Interval	0 ft			
Casing Fluid Type	Fresh Water			
Salinity				
Density	8.9 lbm/gal			
Fluid Level	0 ft			
BIT/CASING/TUBING STRING				
Bit Size	8.750 in			
From				
To				
Casing/Tubing Size	7.000 in			
Weight	26 lbm/ft			
Grade	P-110 LTC & DQX			
From				
To				
Maximum Recorded Temperatures	200 degF			
Logger On Bottom	23–May–2013		10:00	
Unit Number	Location	2223	Ft. Morgan, CO	
Recorded By	Tim Hoffman			
Witnessed By	Darin Kirkpatrick			

DEPTH SUMMARY LISTING

Date Created: 23-MAY-2013 7:38:53

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW-B	Type:	CMTD-B/A	Type:	7-46A-XS
Serial Number:	1918	Serial Number:	1274	Serial Number:	
Calibration Date:	22-Apr-2013	Calibration Date:	30-Apr-2013	Length:	24000 FT
Calibrator Serial Number:		Calibrator Serial Number:	78135	Conveyance Method:	Wireline
Calibration Cable Type:	7-46A-XS	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	-9	Calibration RMS:	36		
Wheel Correction 2:	-8	Calibration Peak Error:	77		

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:	


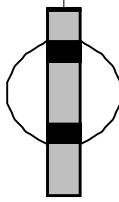


Depth Control Remarks

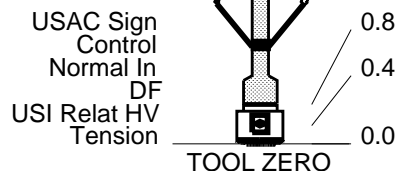
1. All Schlumberger depth policies followed.
2. IDW used as primary depth reference.
3. Z-Chart used as secondary.
- 4.
- 5.
- 6.

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	OTHER SERVICES2
OS1:	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
This is the first run in hole	
Logs zeroed at ground level	
Toolstring run as per tool sketch	
Top of liner at 6672', will log down to 6650'	
Cement: 14.4 bpg to 6150'	

12.5 ppg to 2860'					
12.7 ppg to 16'					
Repeat pass done under zero pressure					
Main pass logged with 2000 psi					
Rig: Crane					
Crew: Tyler Riter, Josh Strand					
RUN 1			RUN 2		
SERVICE ORDER #:		CCN1-00007	SERVICE ORDER #:		
PROGRAM VERSION:		19C2-270	PROGRAM VERSION:		
FLUID LEVEL:		0 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP
EQUIPMENT DESCRIPTION					
RUN 1			RUN 2		
SURFACE EQUIPMENT					
GSR-U/Y 599 WITM (DTS)-A					
DOWNHOLE EQUIPMENT					
LEH-QT LEH-QT		32.8			
DTC-H ECH-KC 9984 DTCH0-A DTCH1-A	CTEM	28.9			
	TelStatus ToolStatu	26.8			
SGT-N SGH-K 3039 SGC-TB 10249 SGD-TAB	Gamma Ray	25.9			
AH-CEN AH-CEN		21.3			
AH-107 AH-107 757		17.5			
USIT-E ECH-MFA 1964 USAC-A 992 USIS-A 2797		15.5			



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

Company: Kerr-McGee Oil & Gas Onshore LP

Well: Crowder 15N-18HZ

Input DLIS Files

DEFAULT	USI_011LUP	FN:10	PRODUCER	23-May-2013 09:50	6644.5 FT	-13.7 FT
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Output DLIS Files

DEFAULT	USI_019PUP	FN:17	PRODUCER	23-May-2013 11:08	6644.5 FT	-13.5 FT
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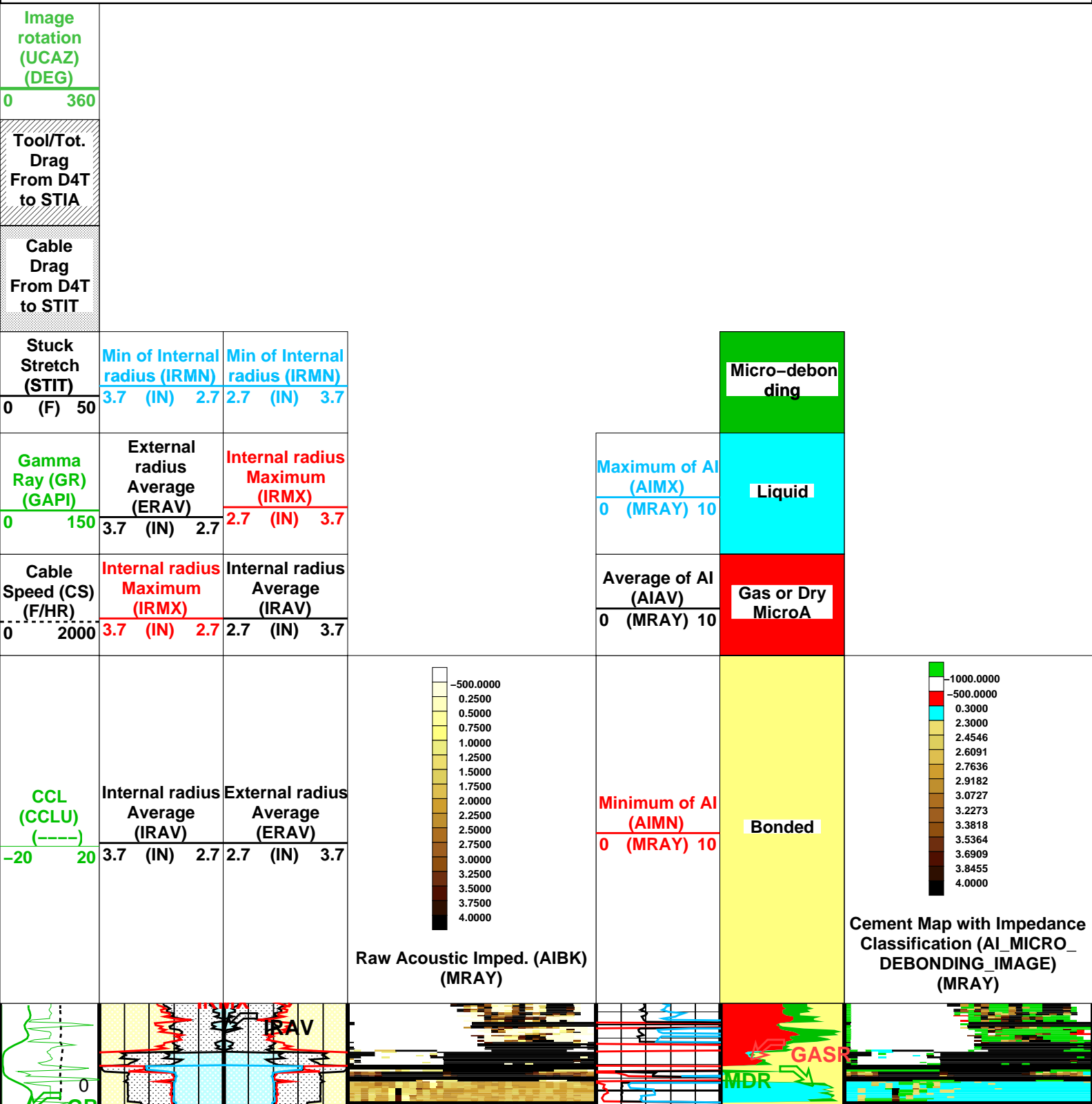
OP System Version: 19C2-270

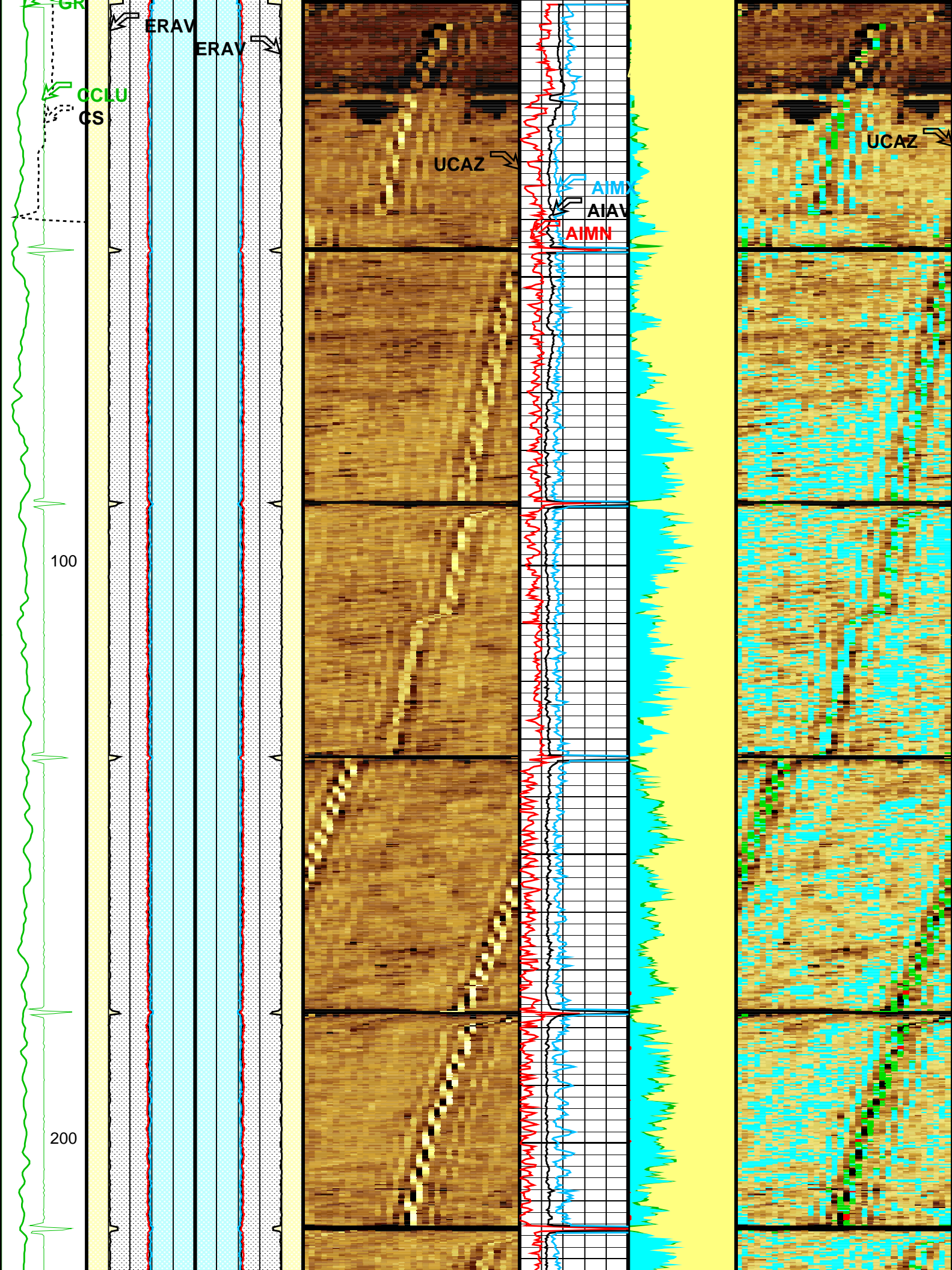
USIT-E	19C2-270	SGT-N	19C2-270
DTC-H	19C2-270		

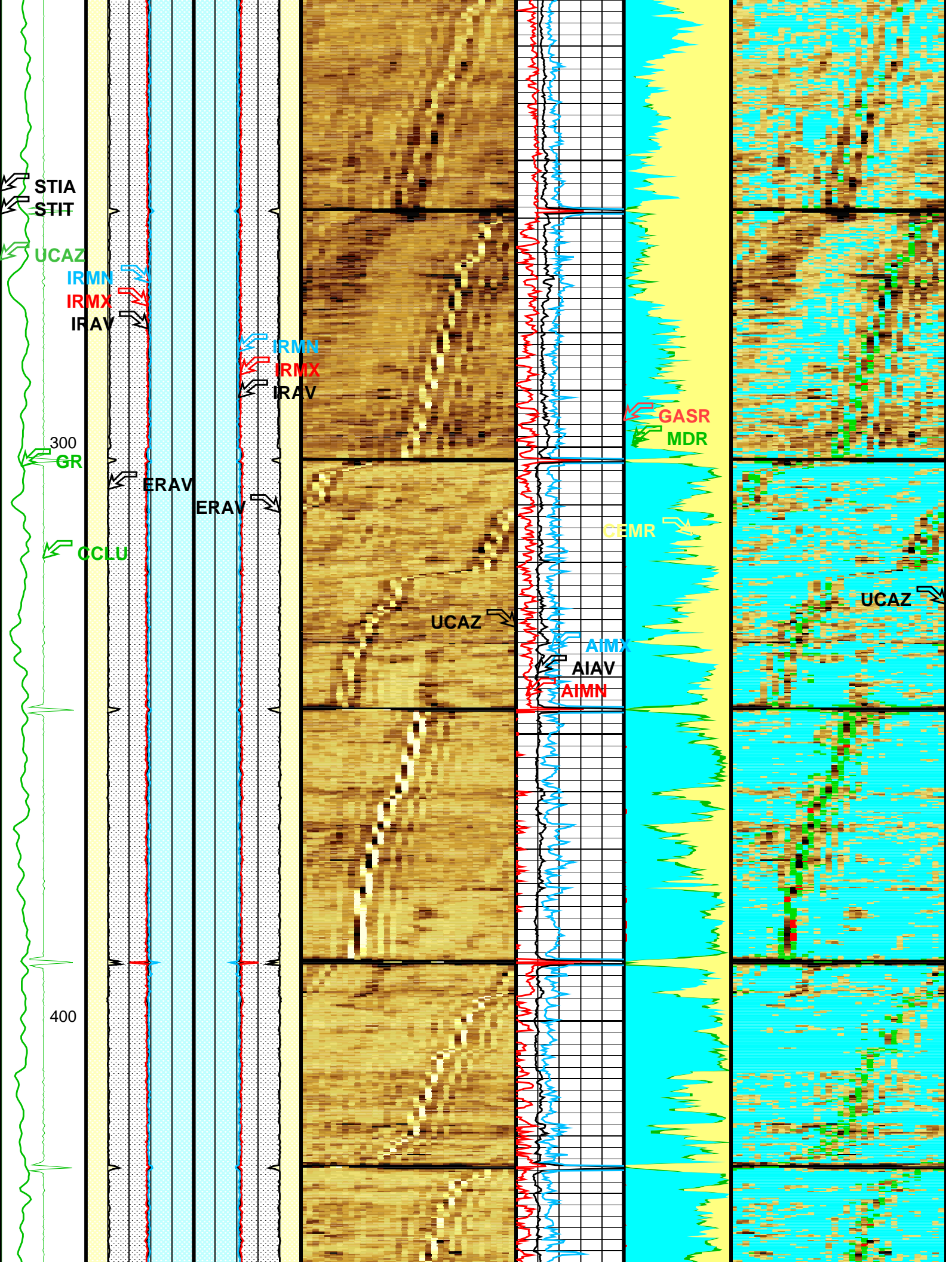
Zoning of Mud Parameters

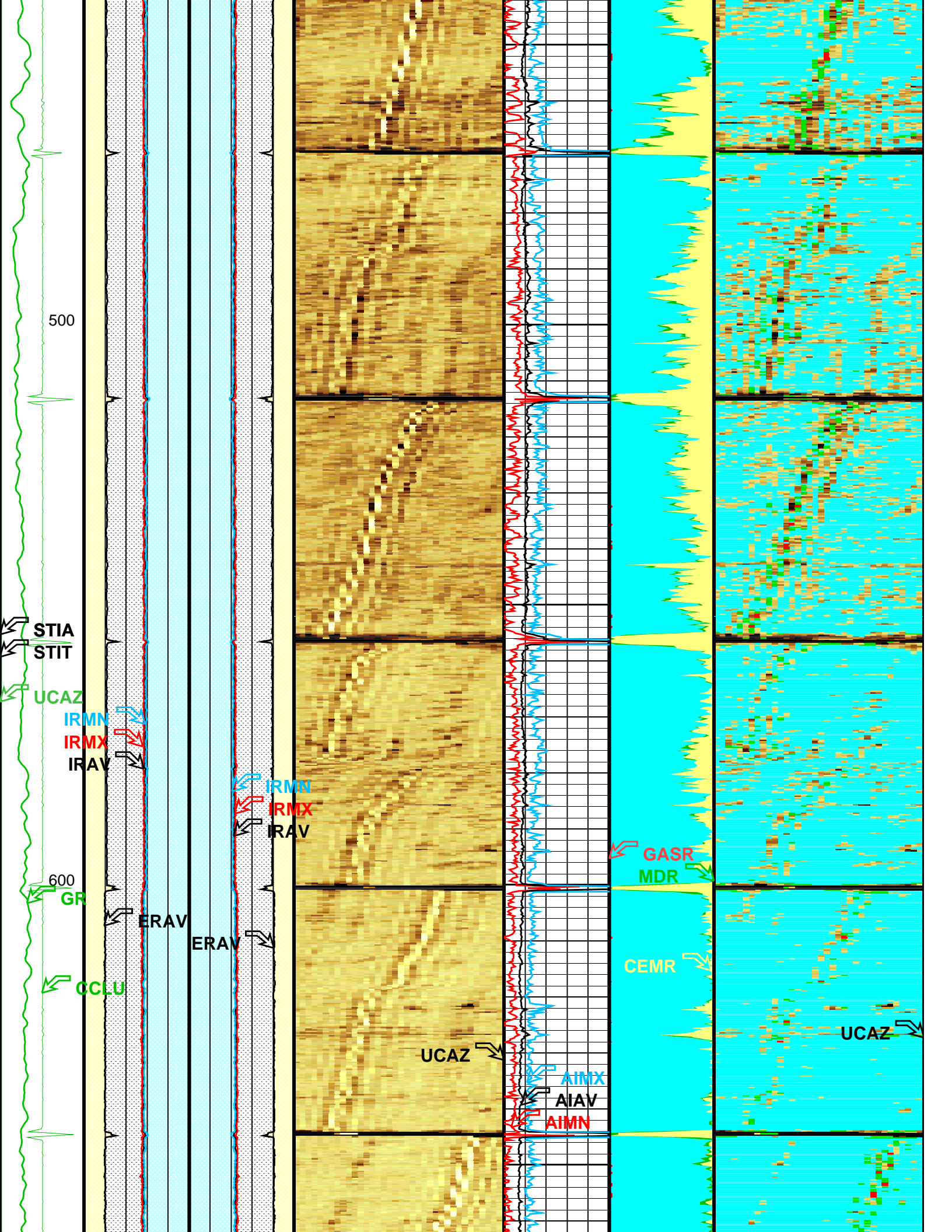
Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
6600.00	189.41	1.79
6000.00	189.14	1.79
5400.00	188.49	1.80
4800.00	189.28	1.81
4200.00	190.90	1.85
3600.00	188.31	1.81
3300.00	186.11	1.84
3000.00	185.62	1.87

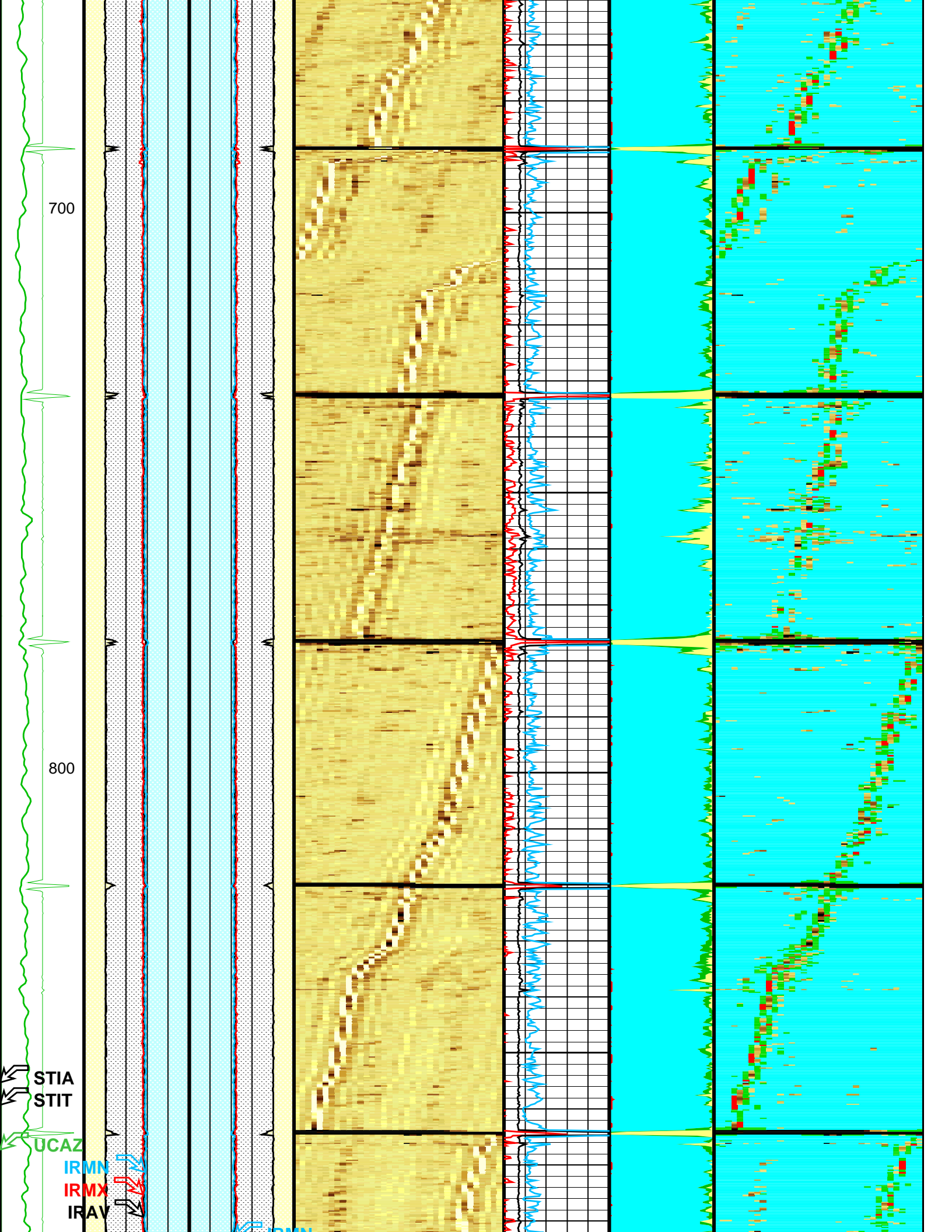
2700.00	188.65	1.89
2400.00	191.22	1.89
2100.00	192.23	1.88
1800.00	191.76	1.86
1500.00	193.65	1.94
1200.00	194.94	1.94
900.00	195.95	1.92
600.00	197.98	1.95
300.00	200.23	2.05

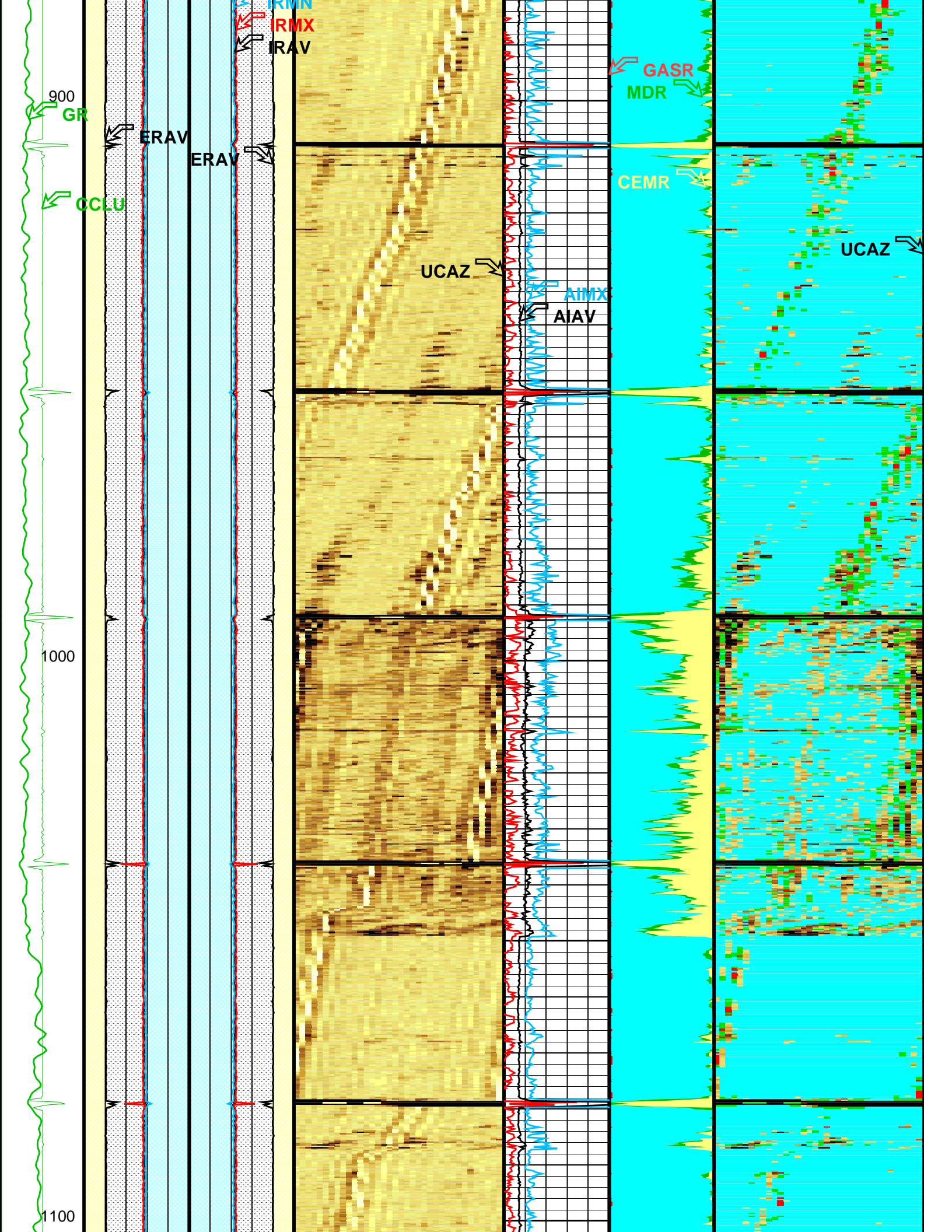


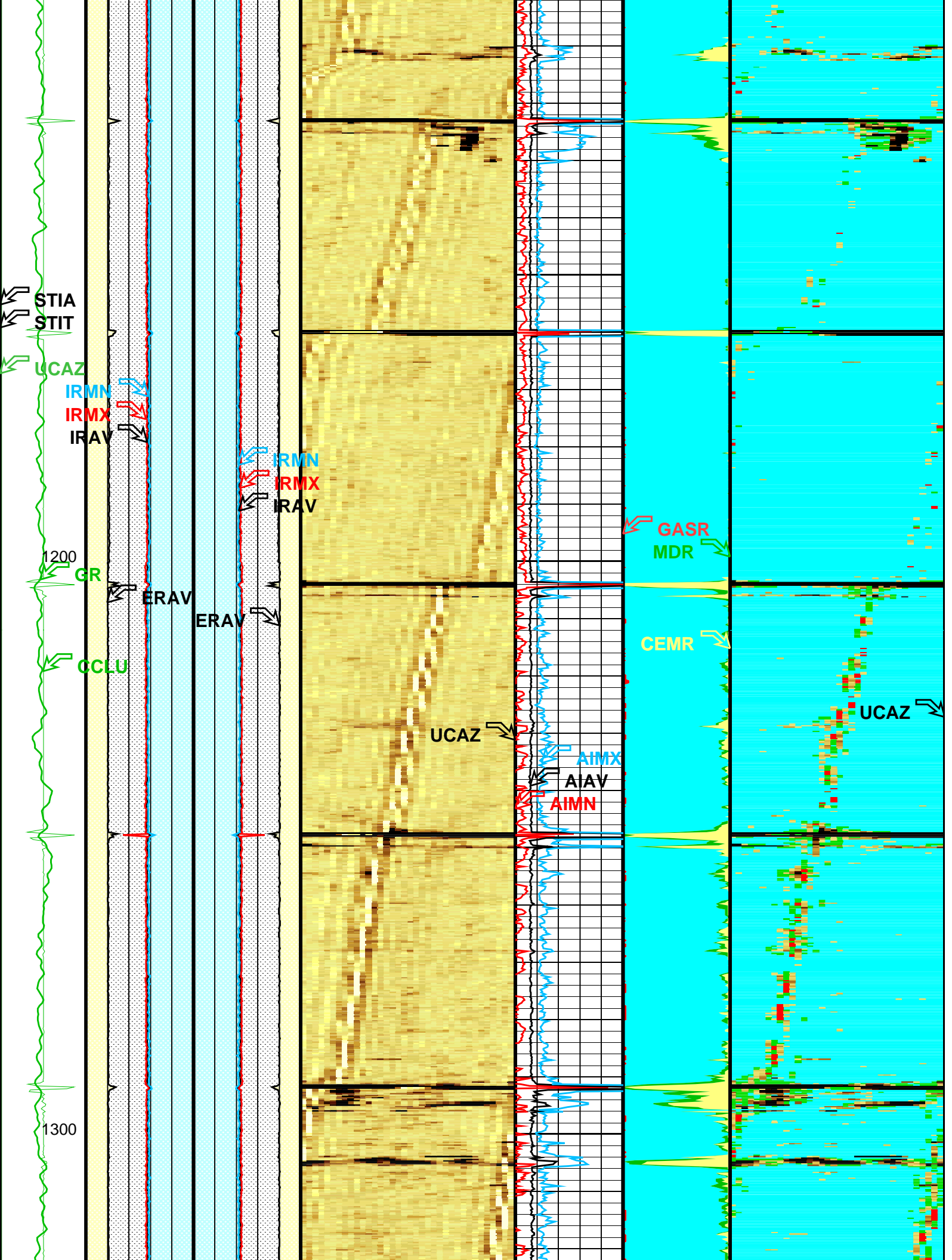


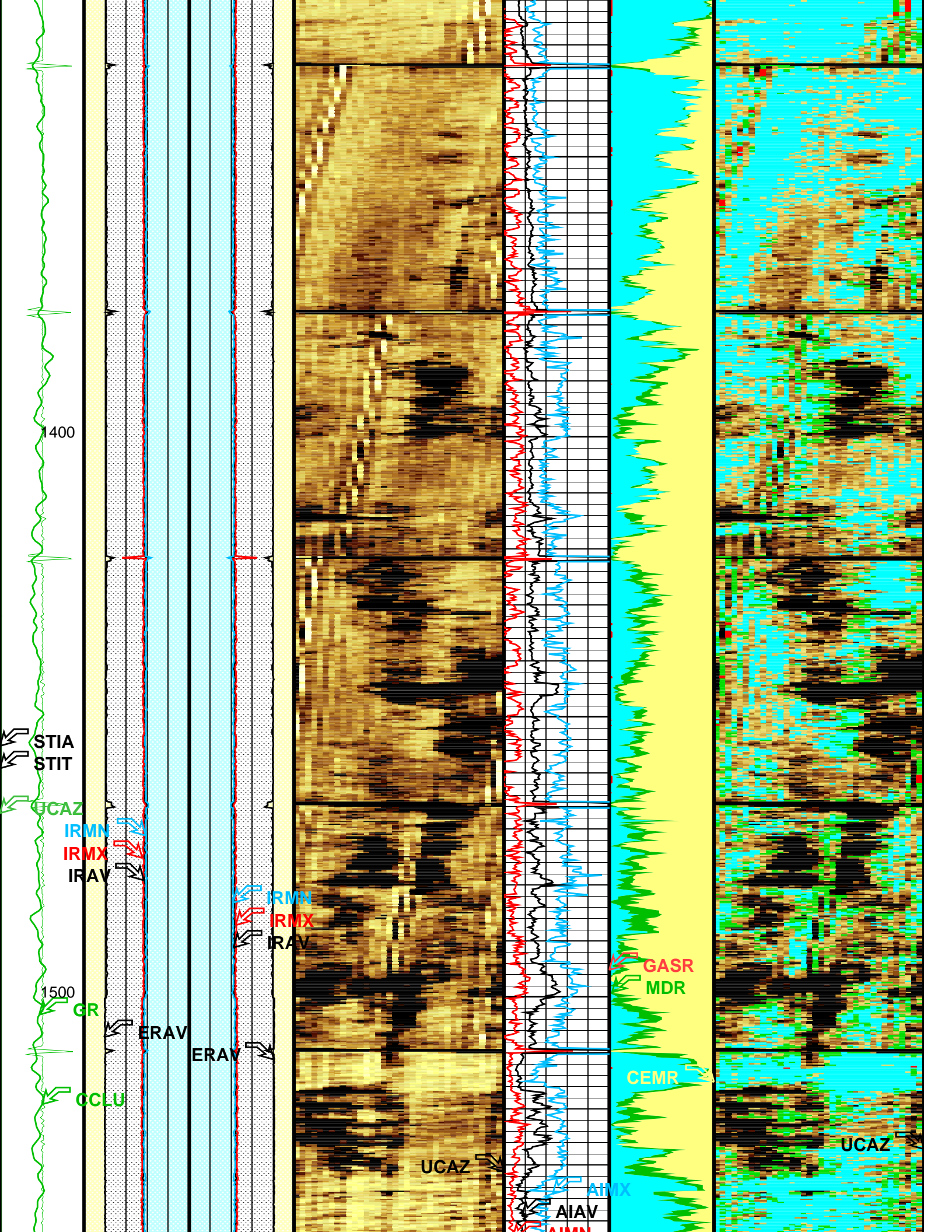


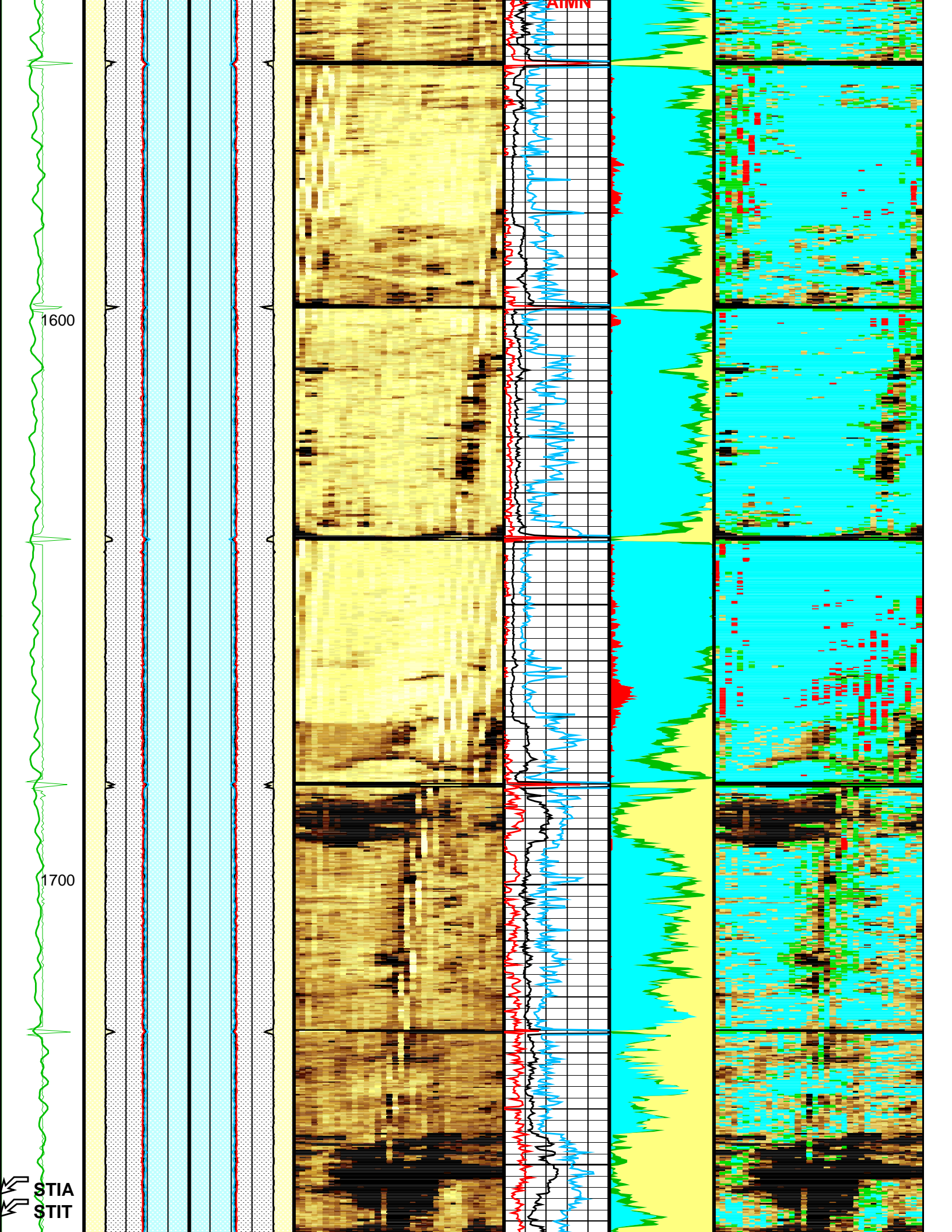


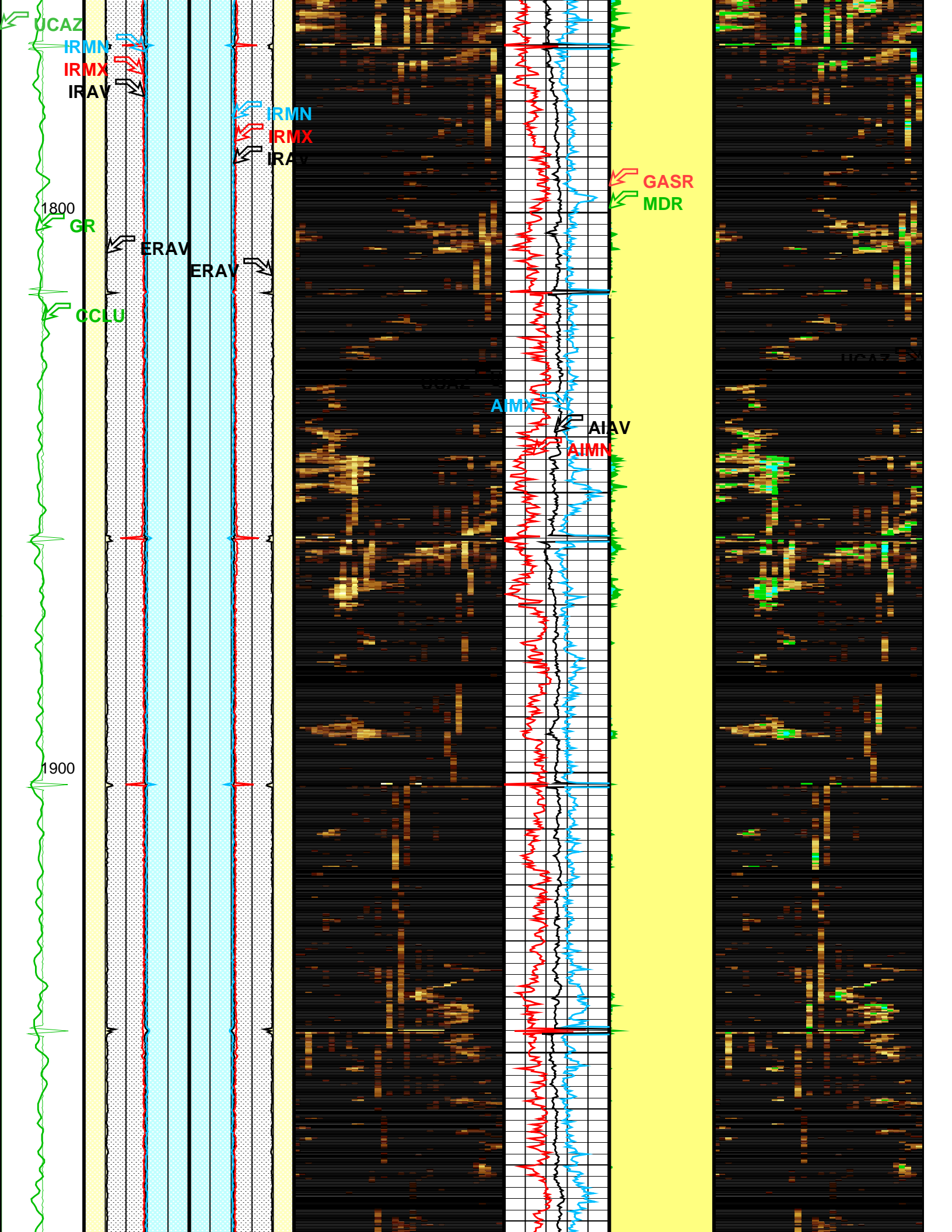


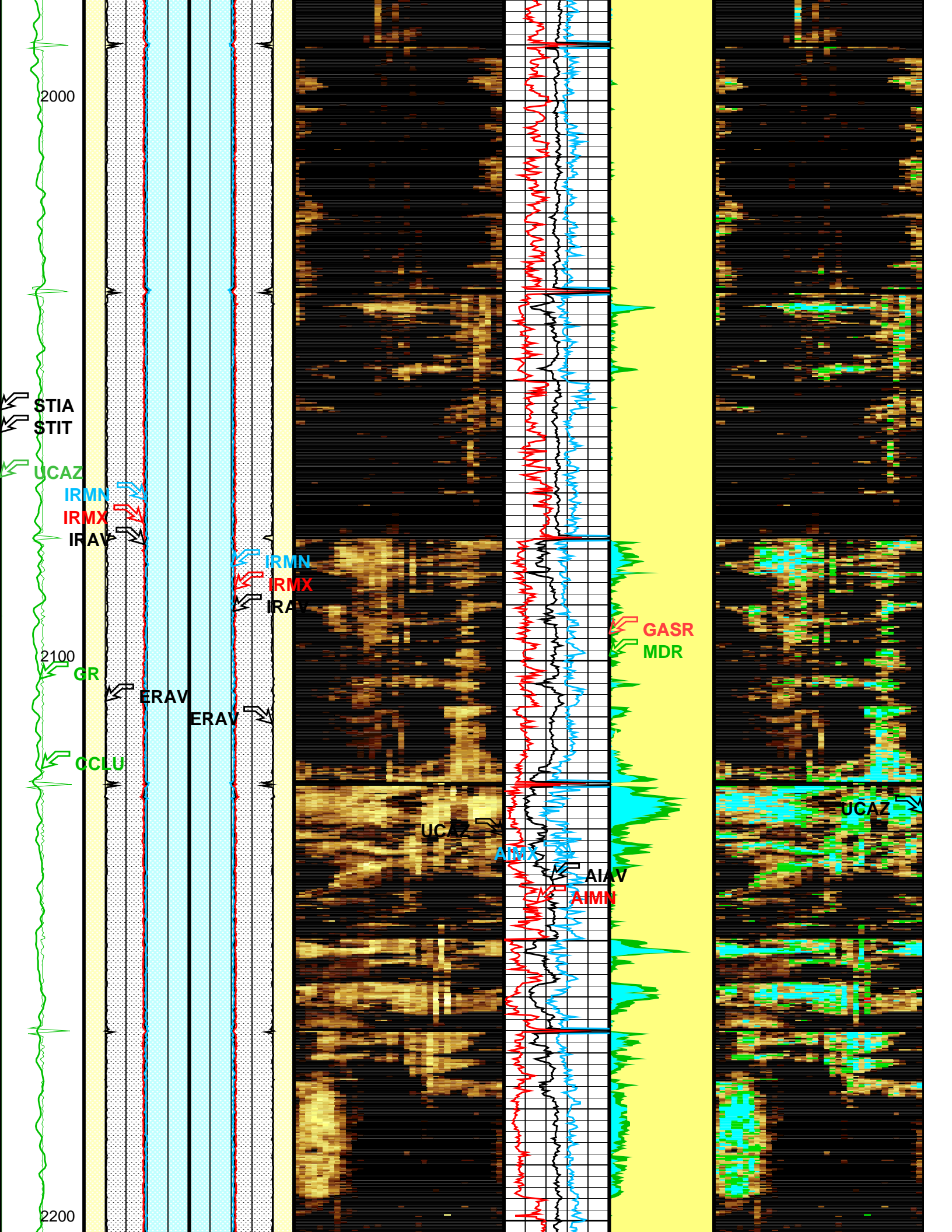


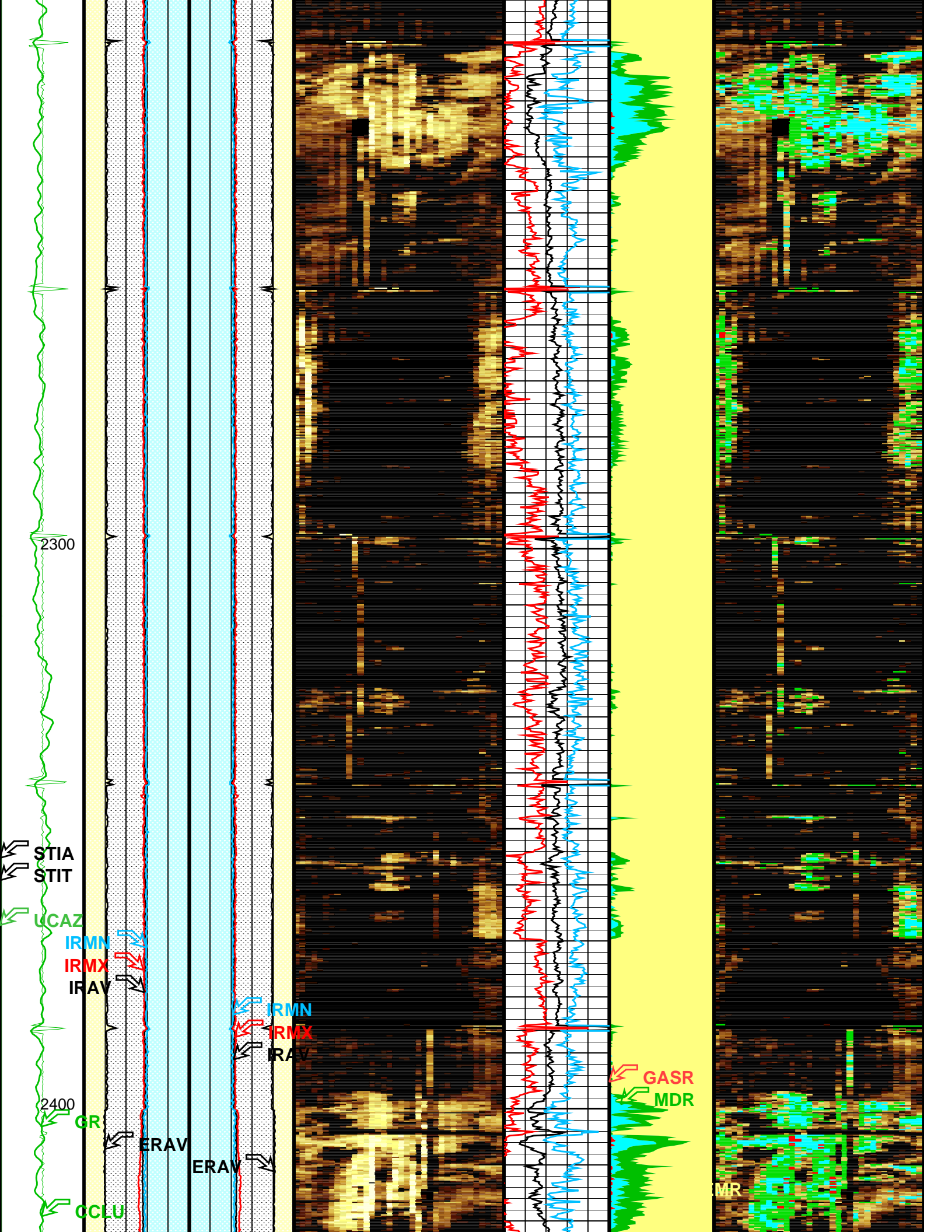


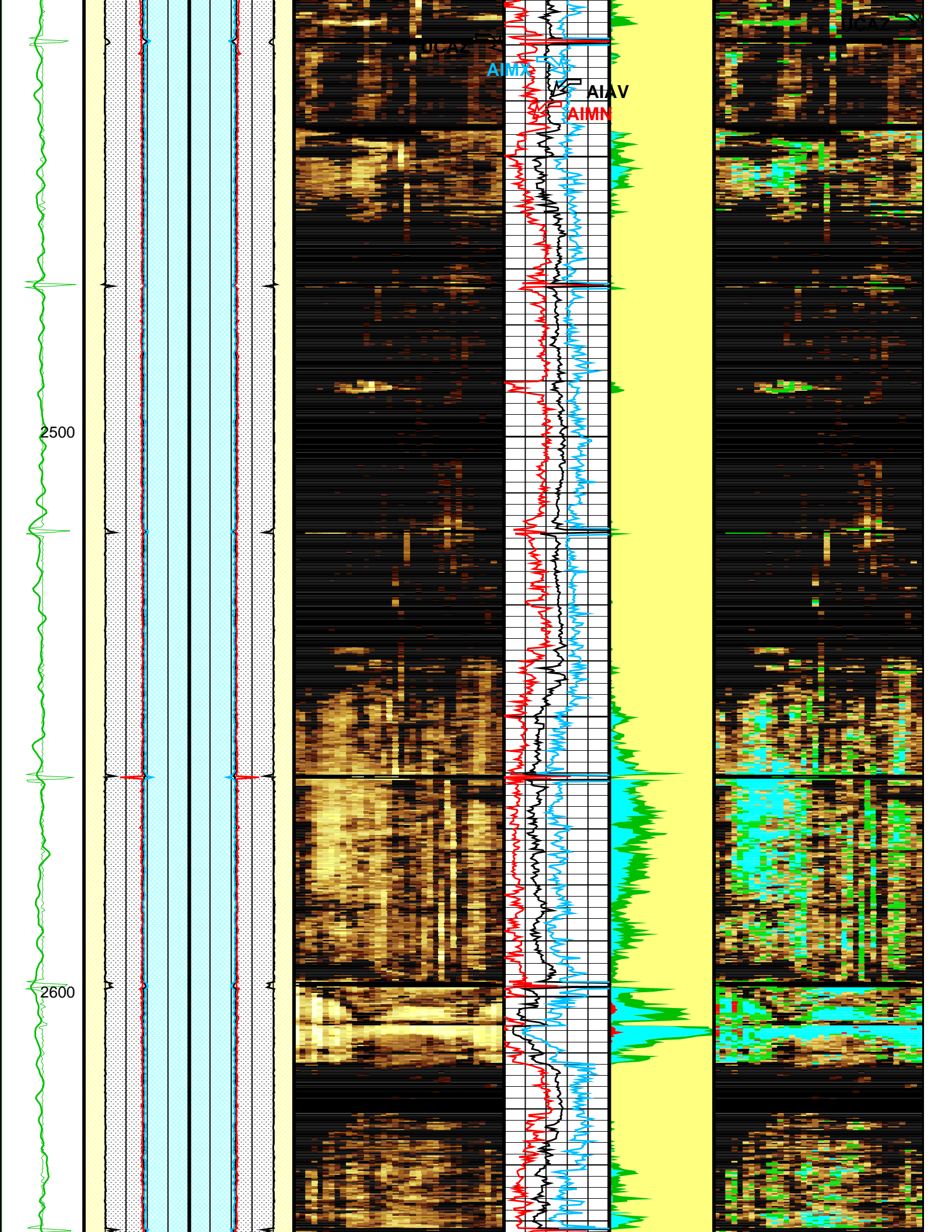


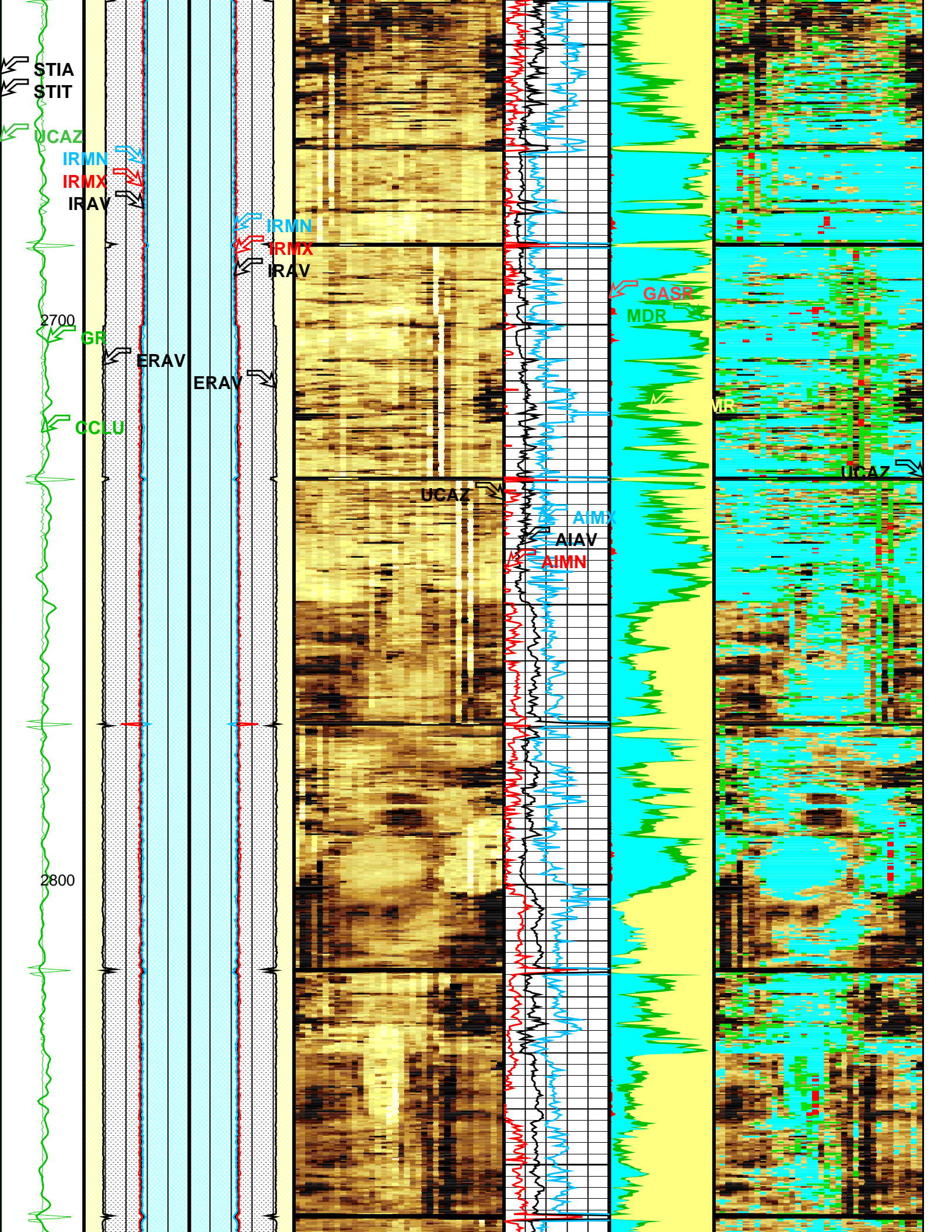


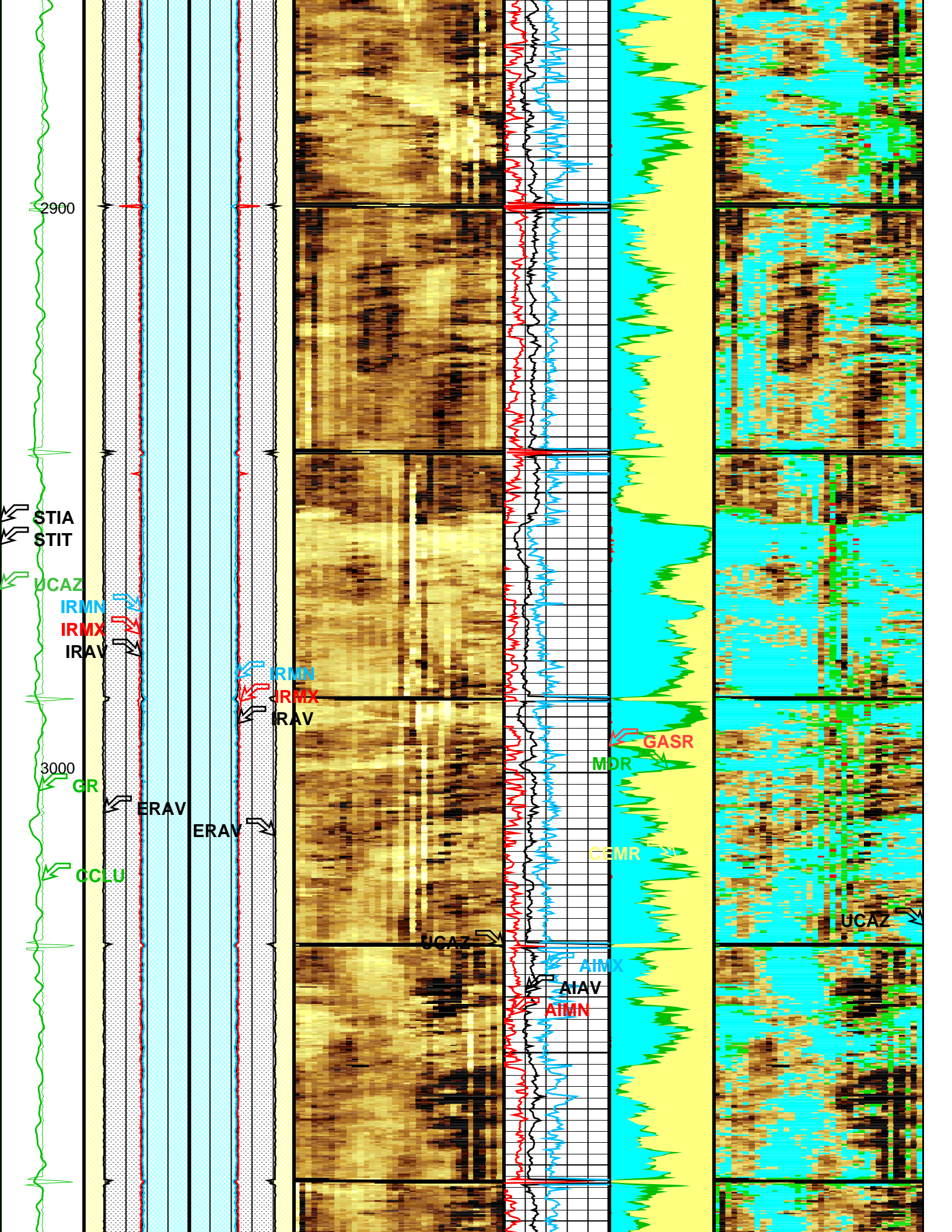


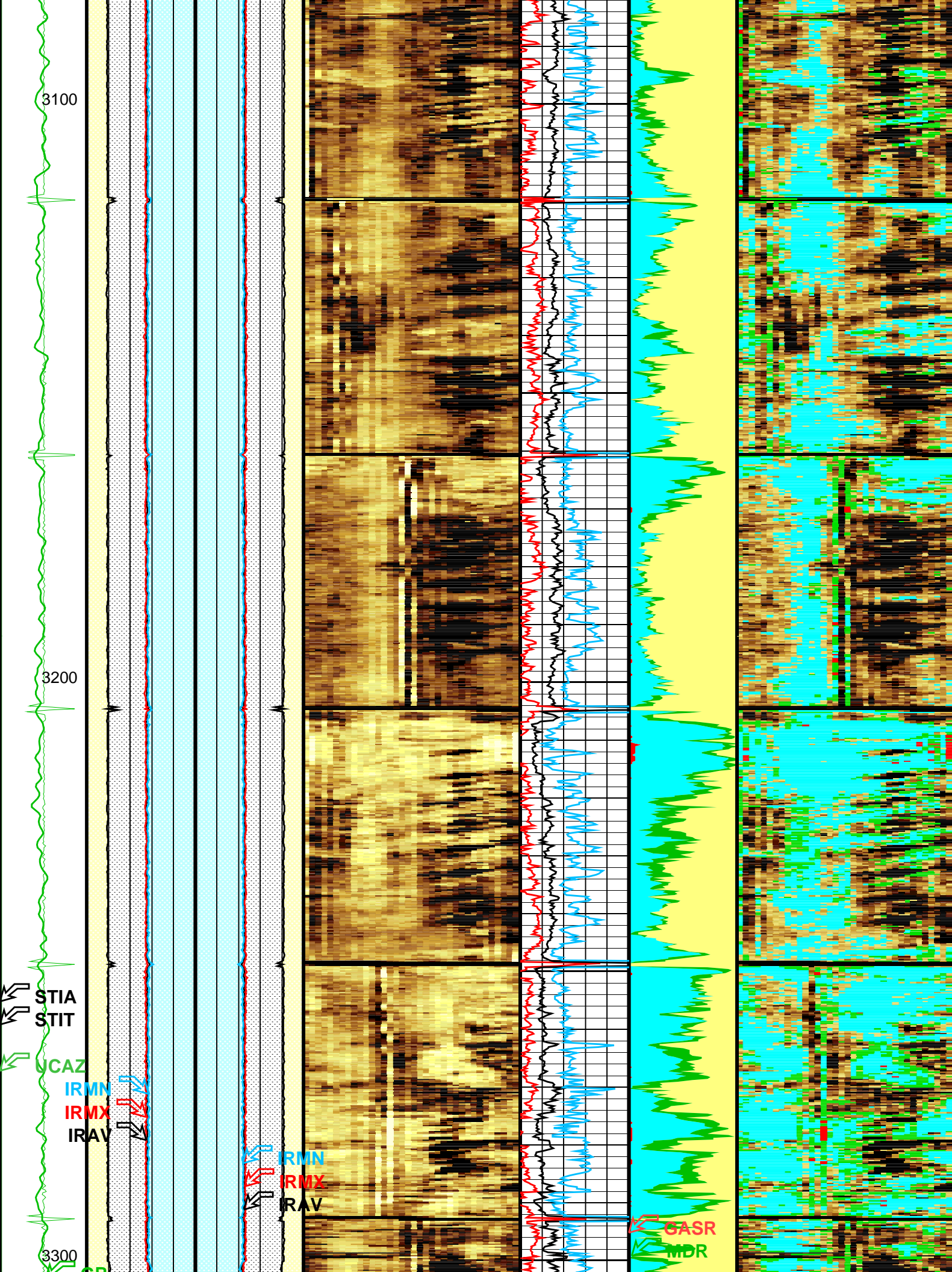


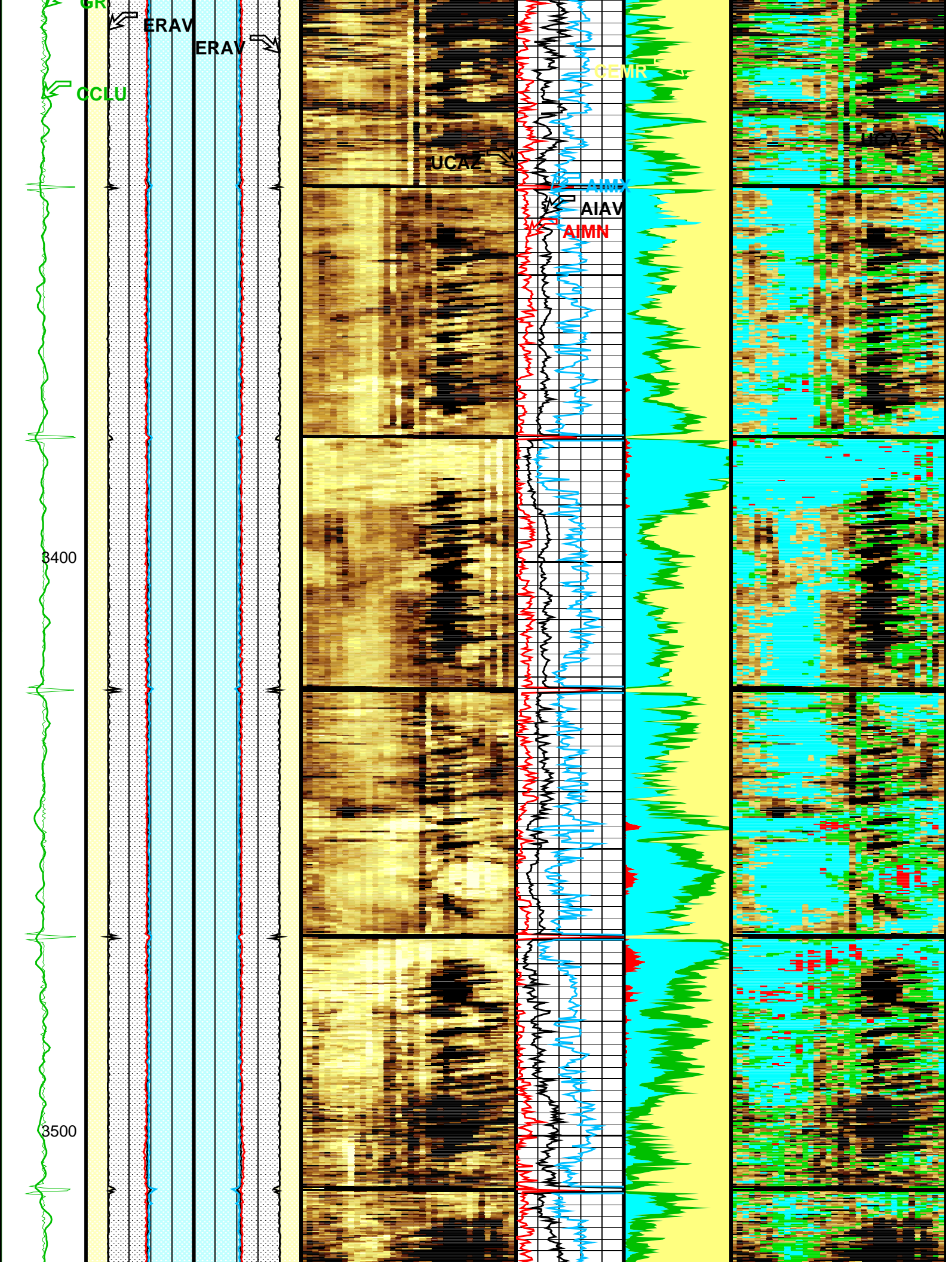


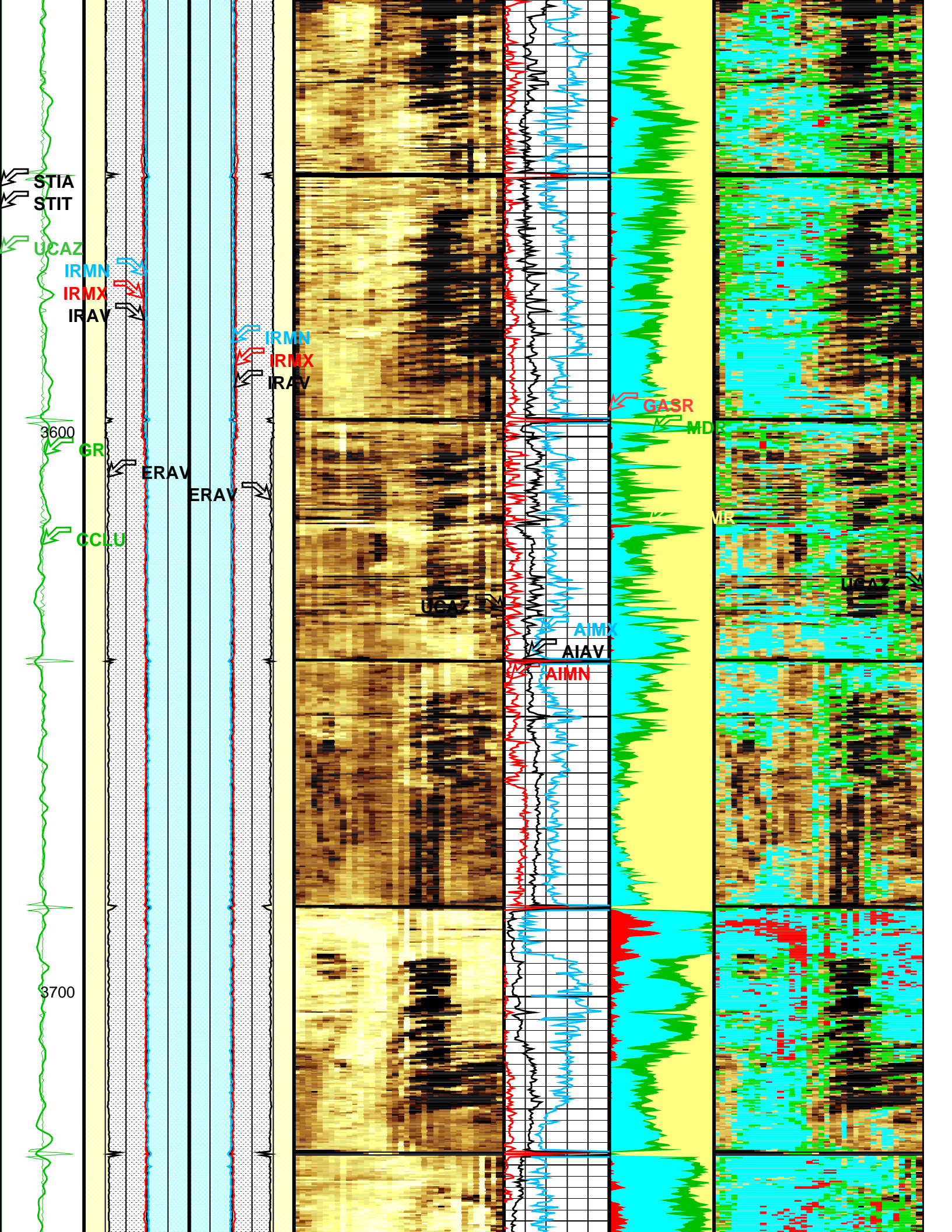


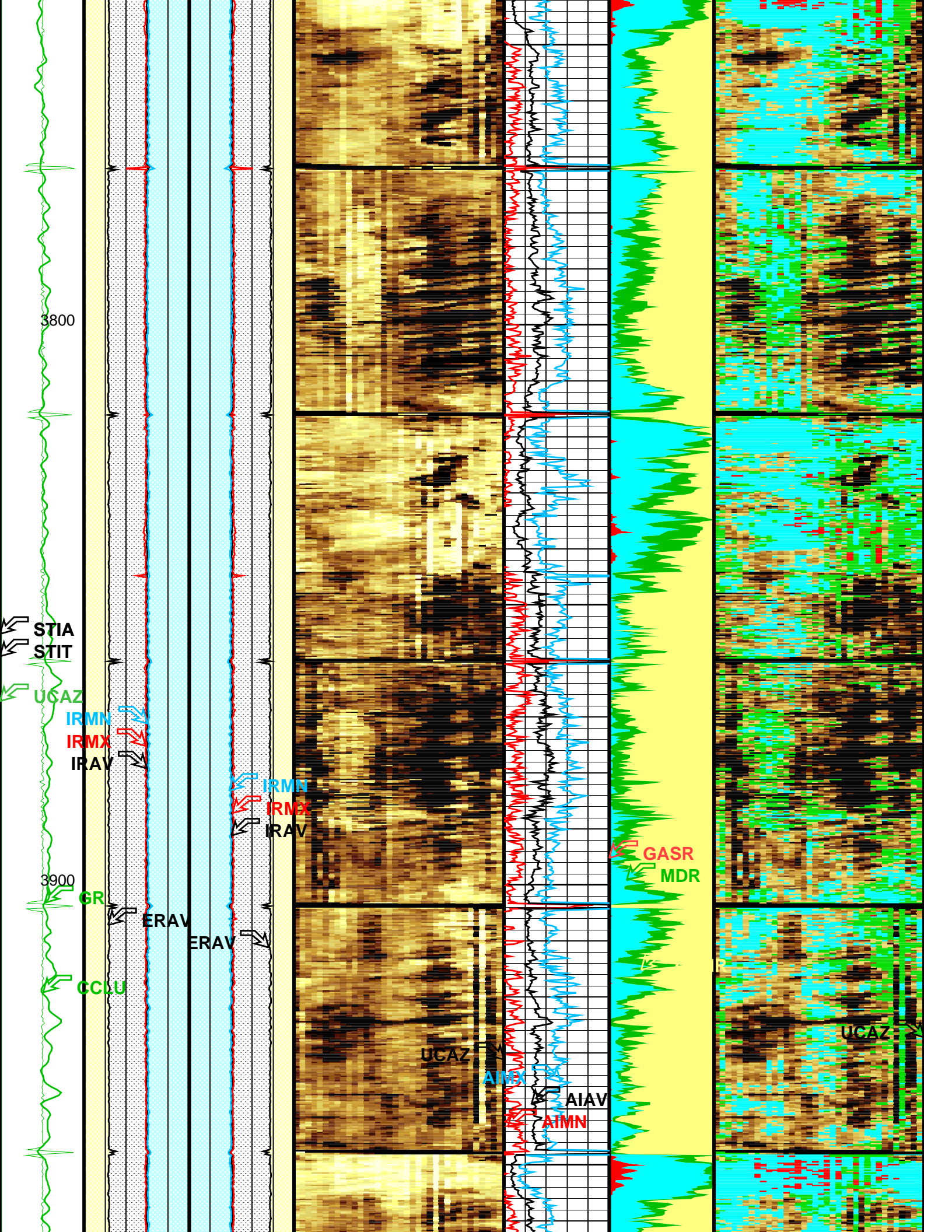


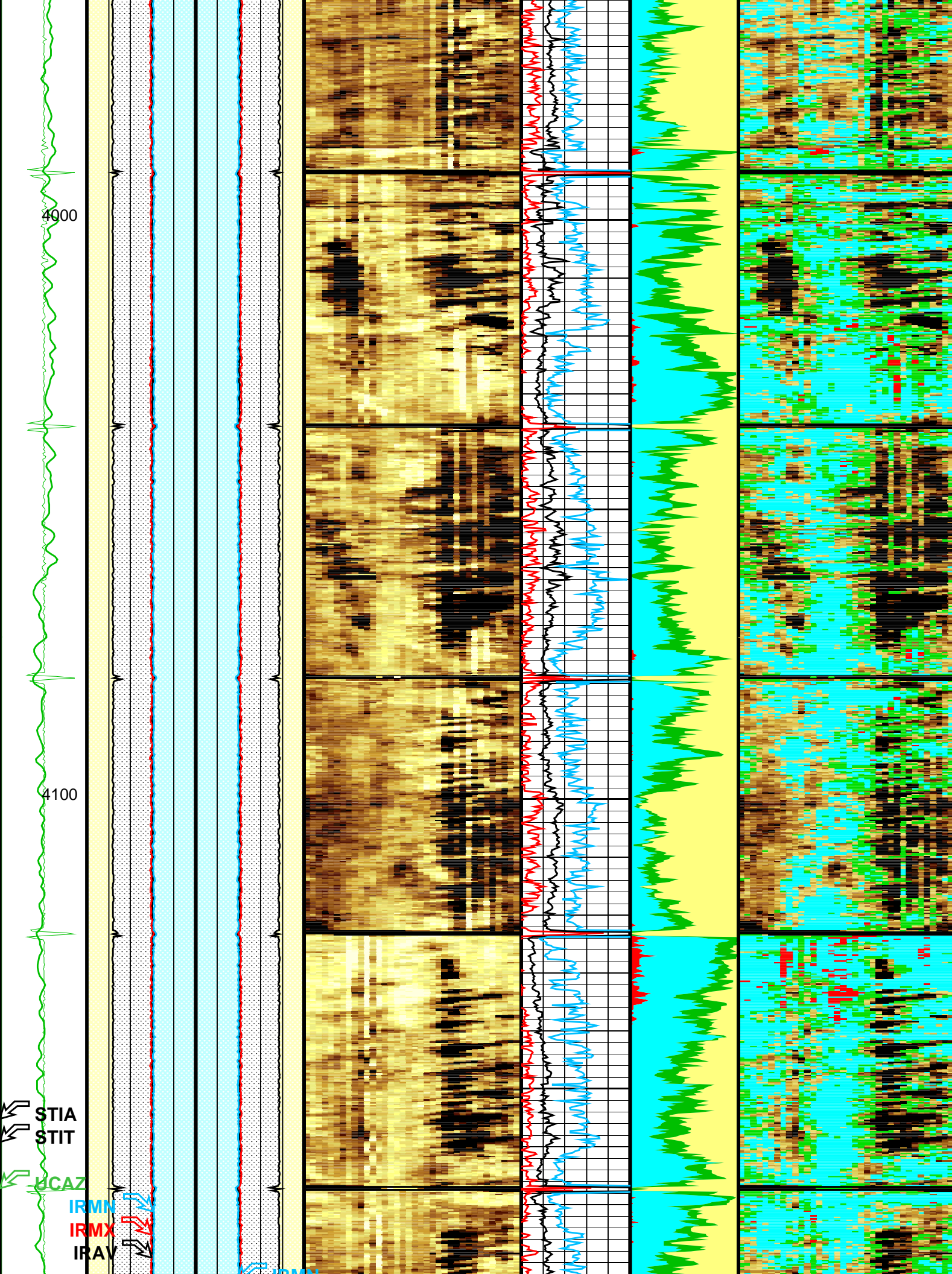


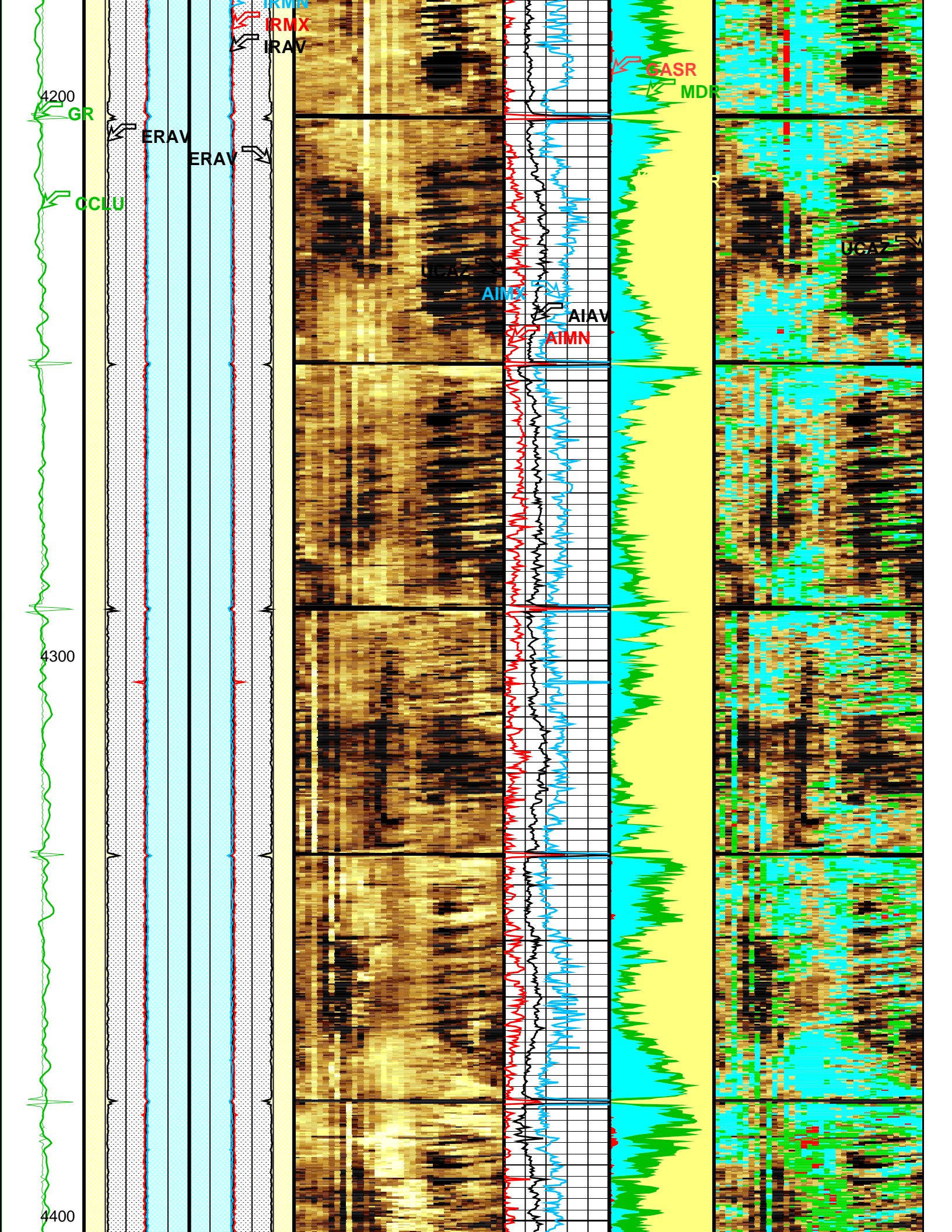


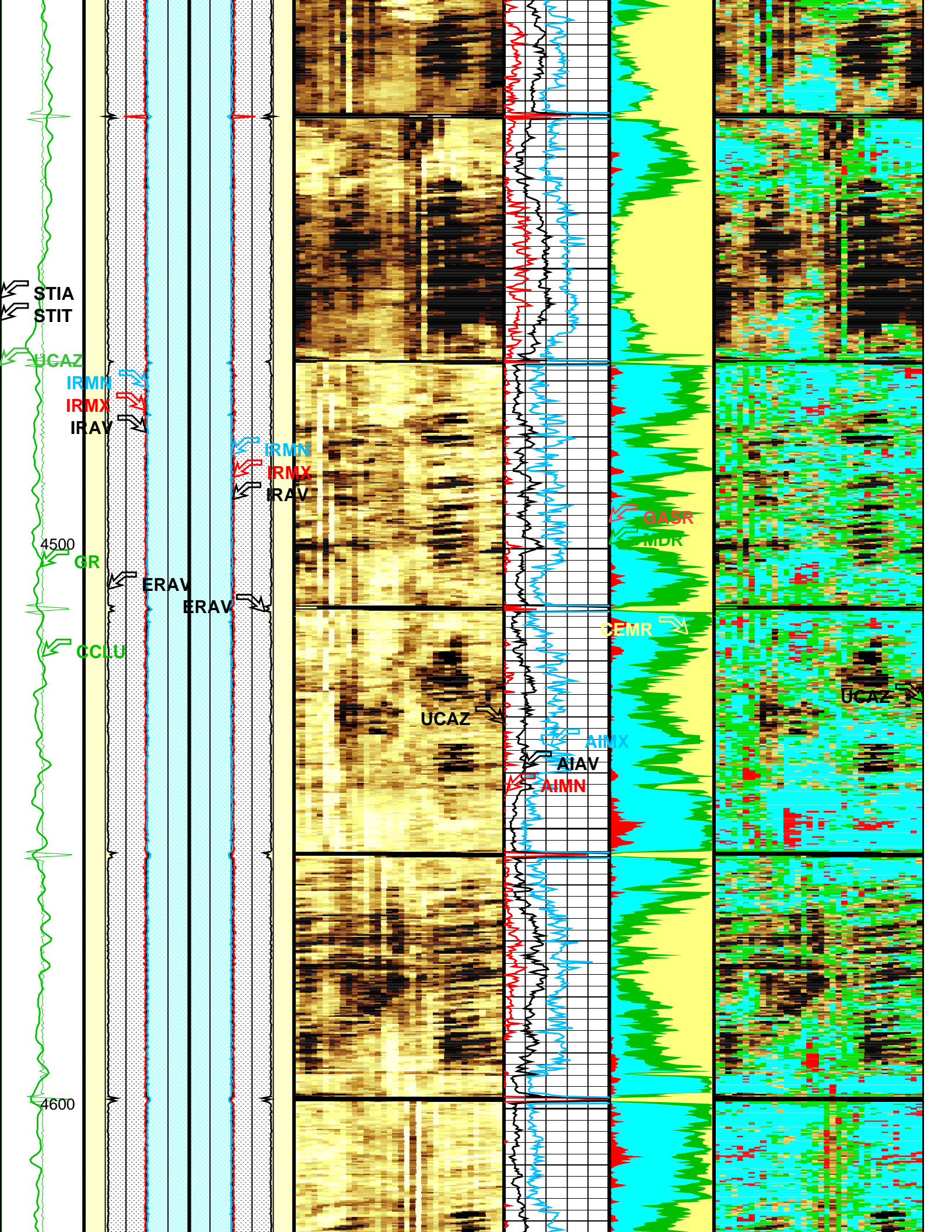


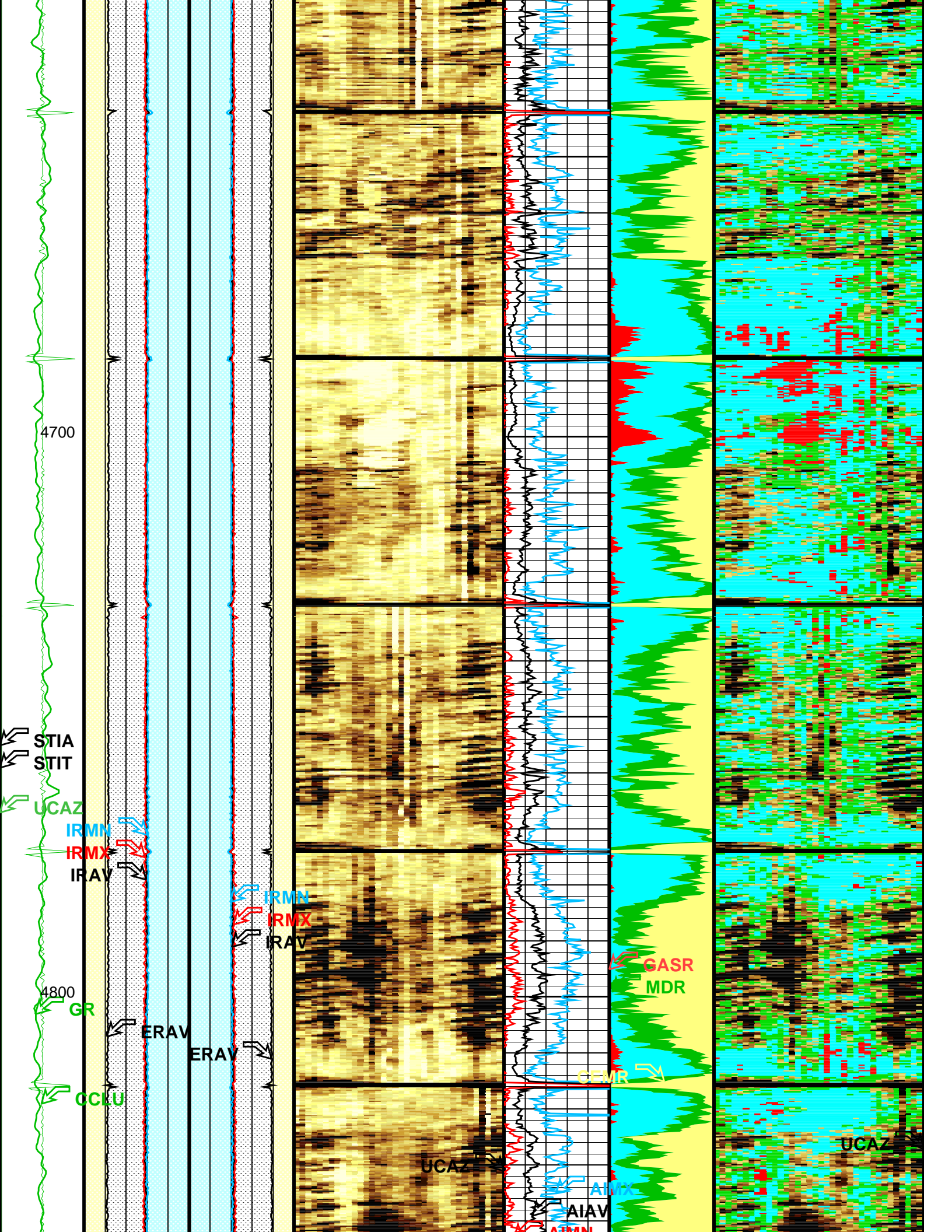


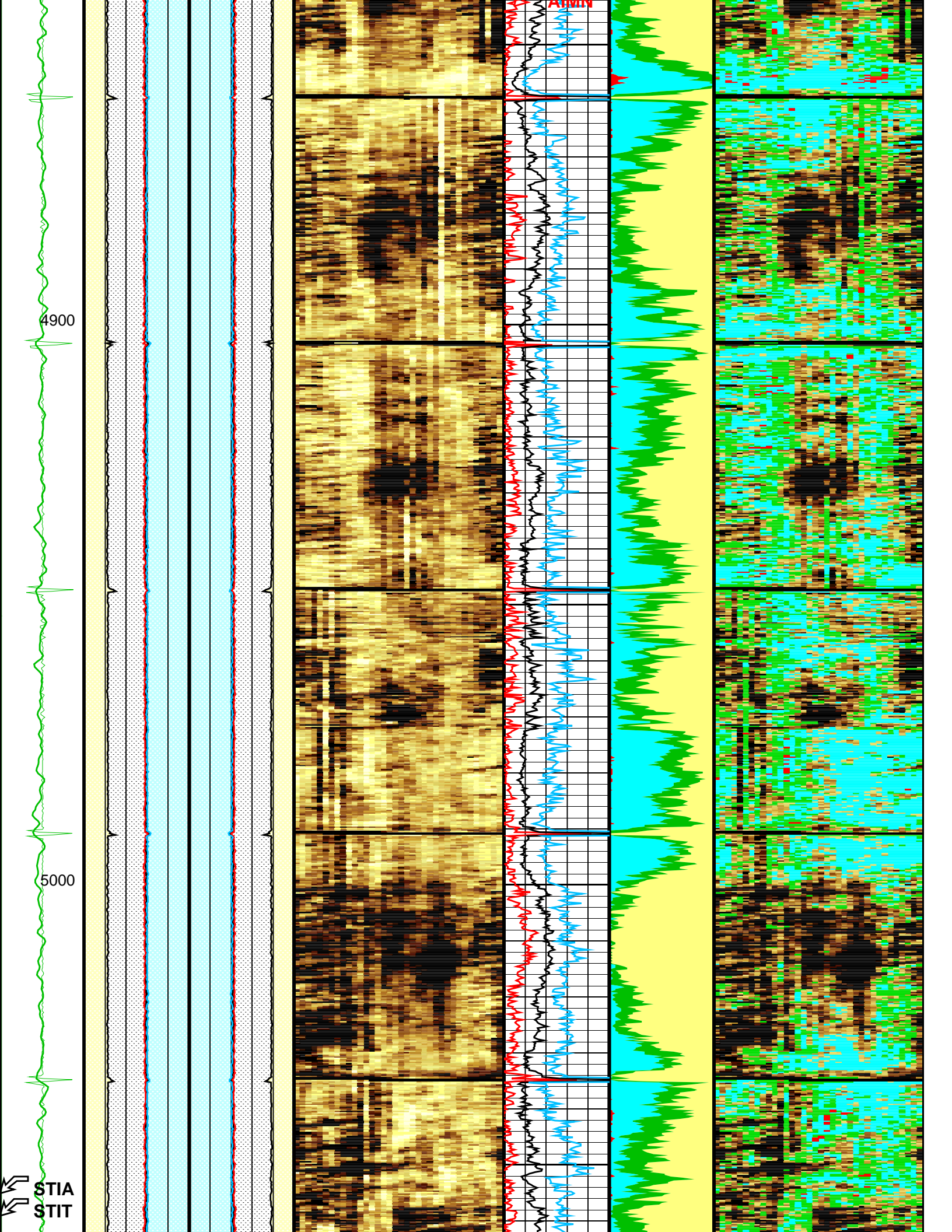


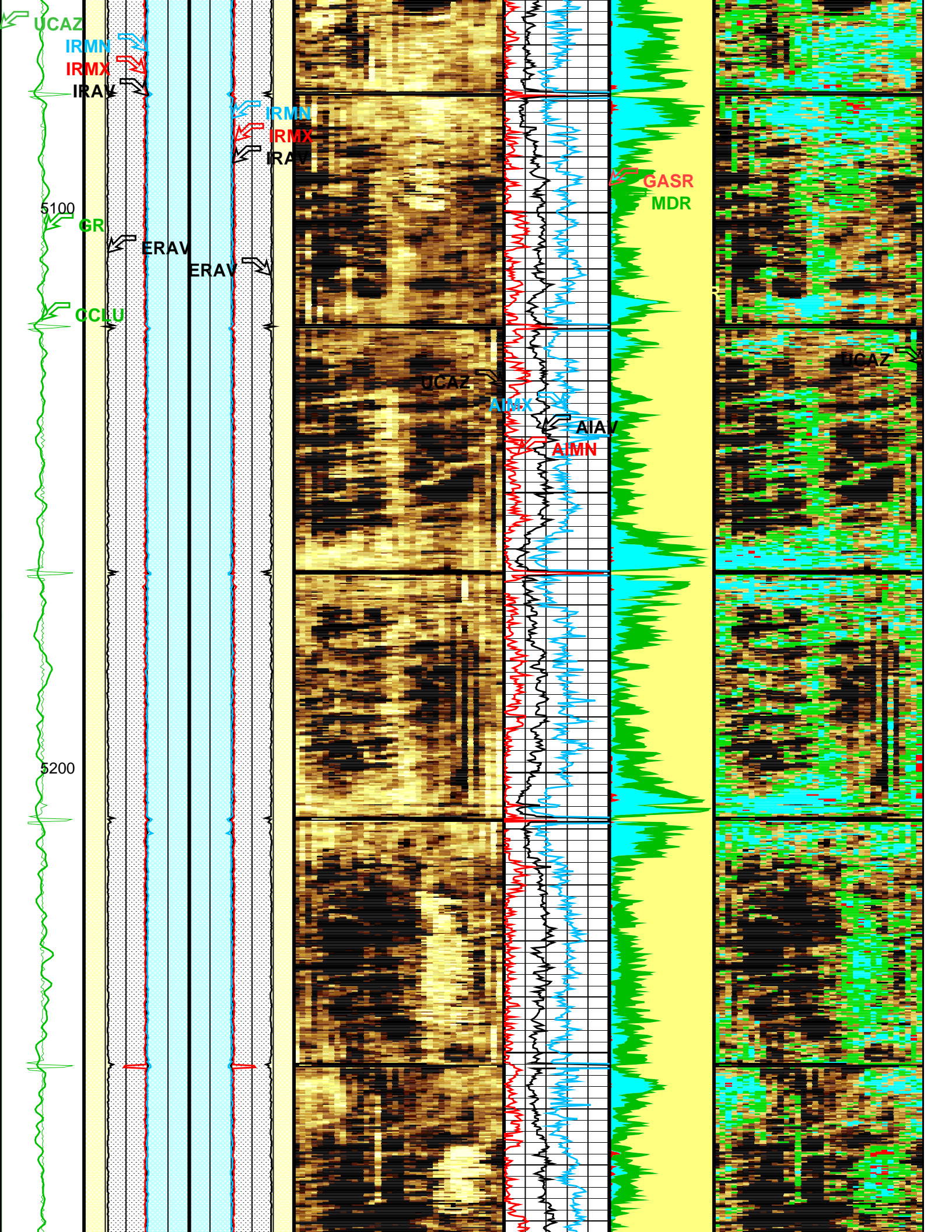


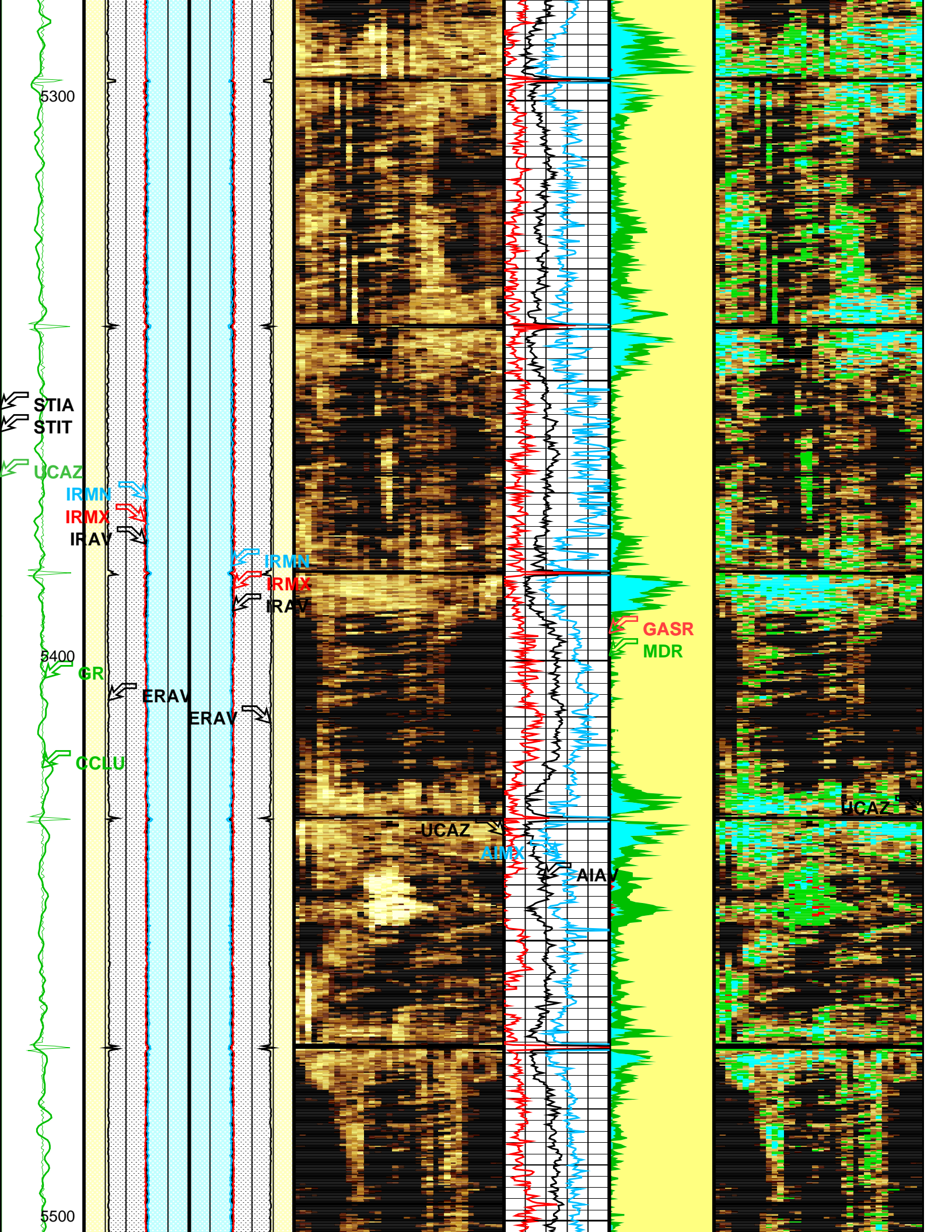


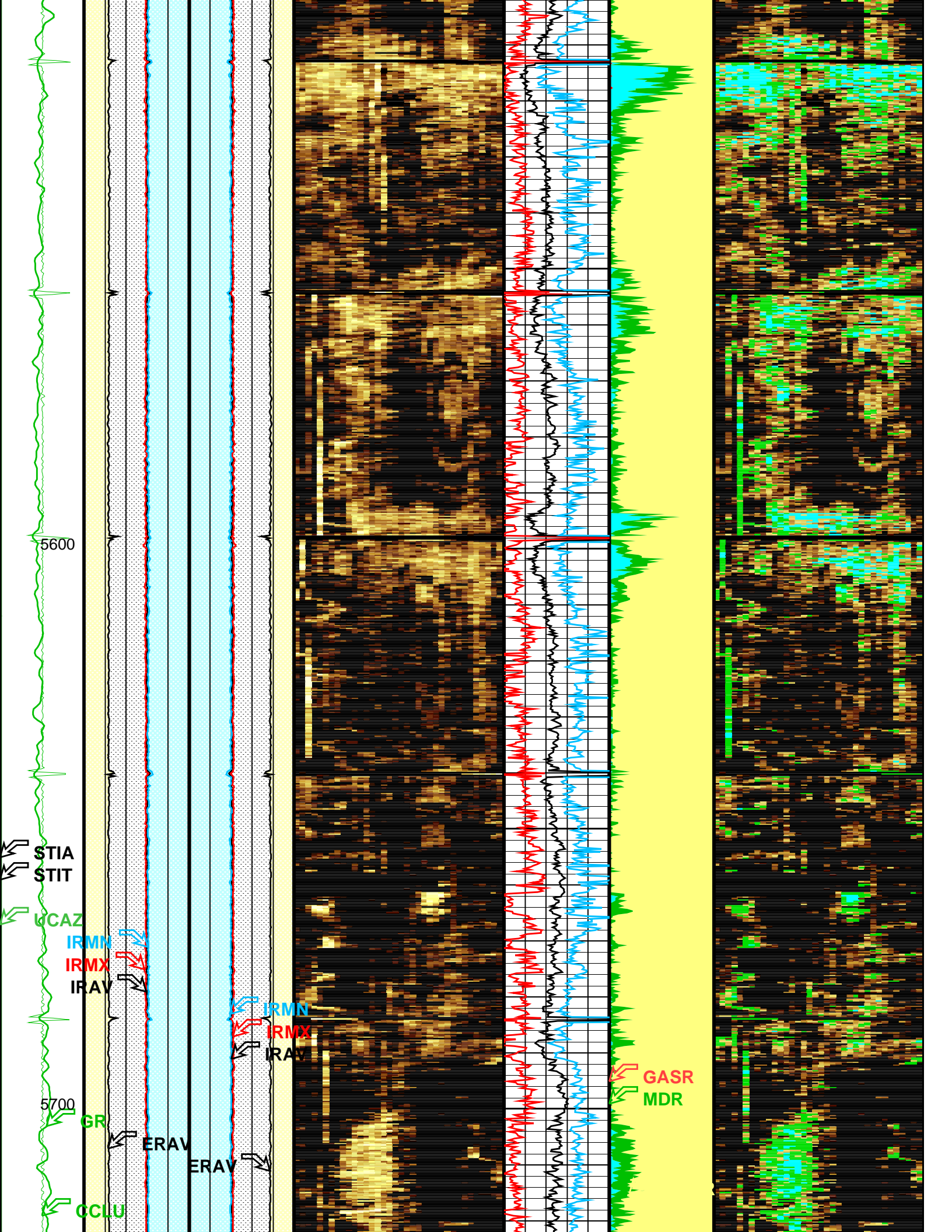


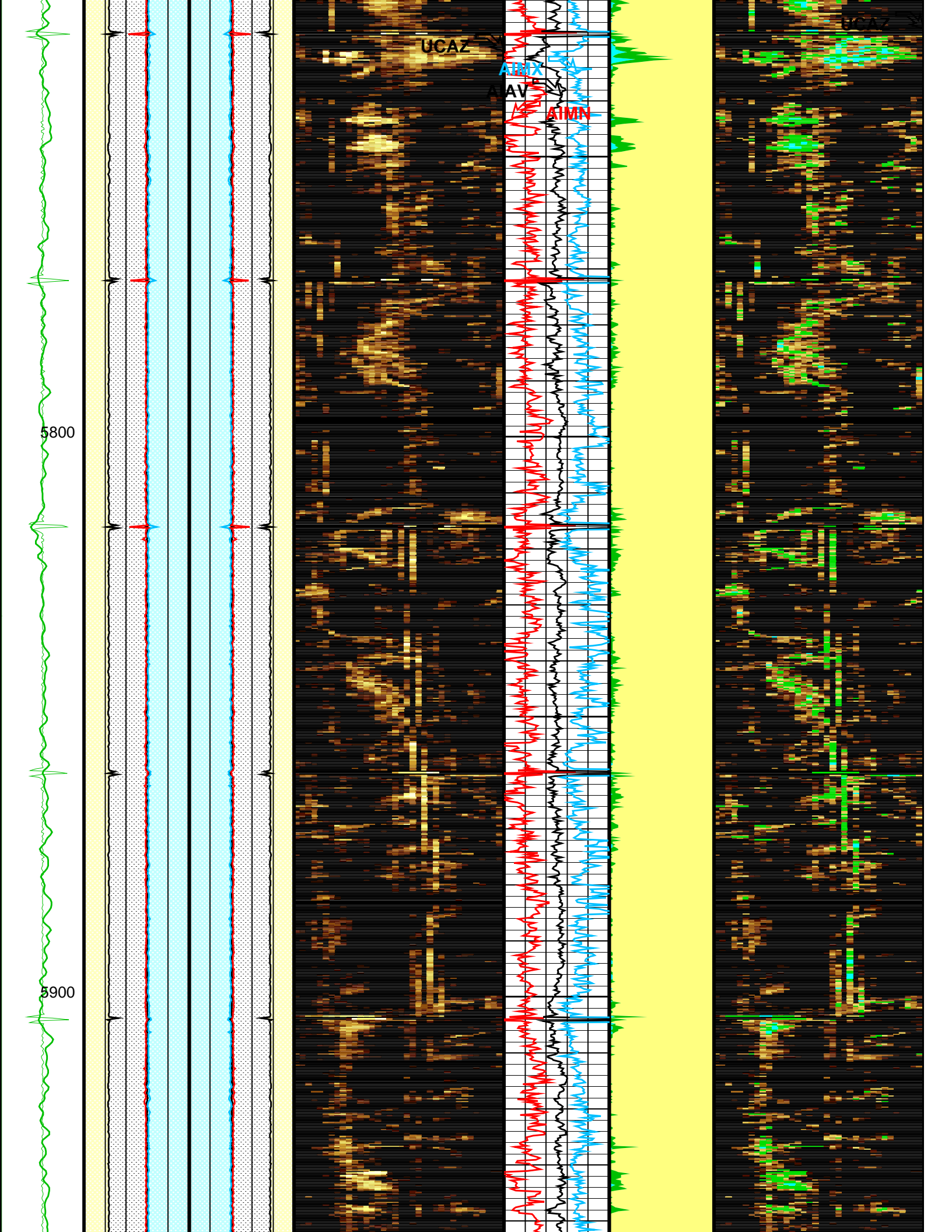


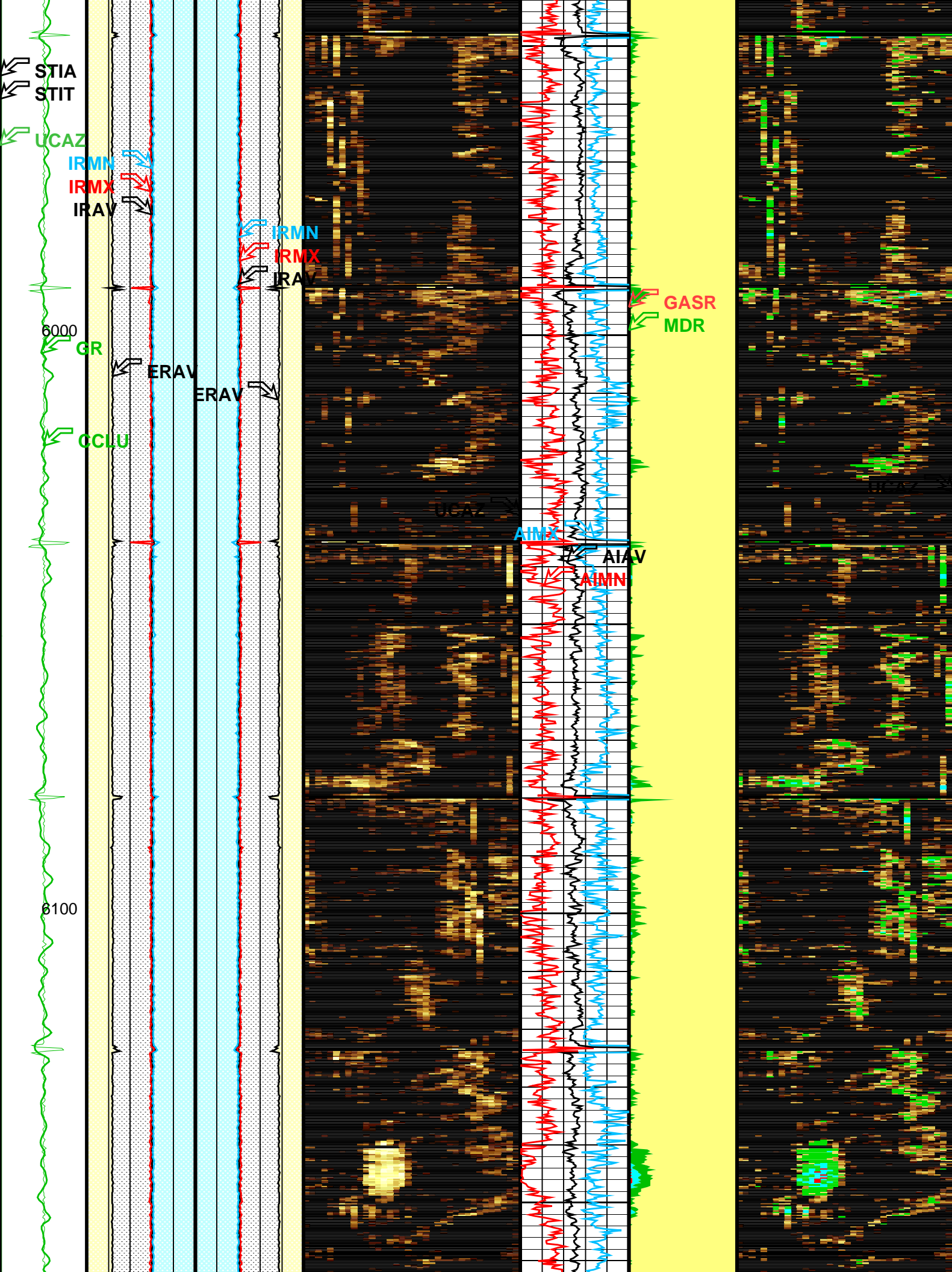


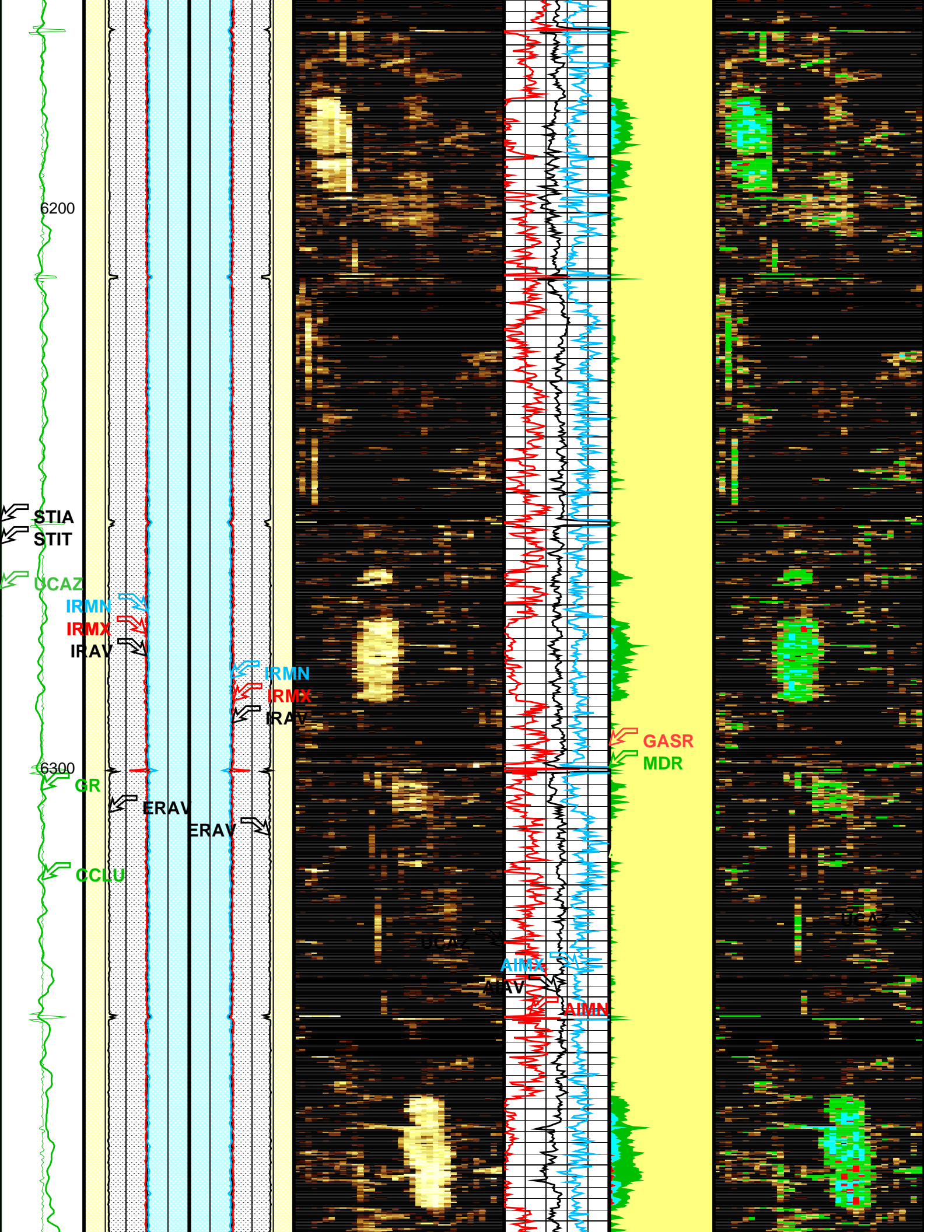


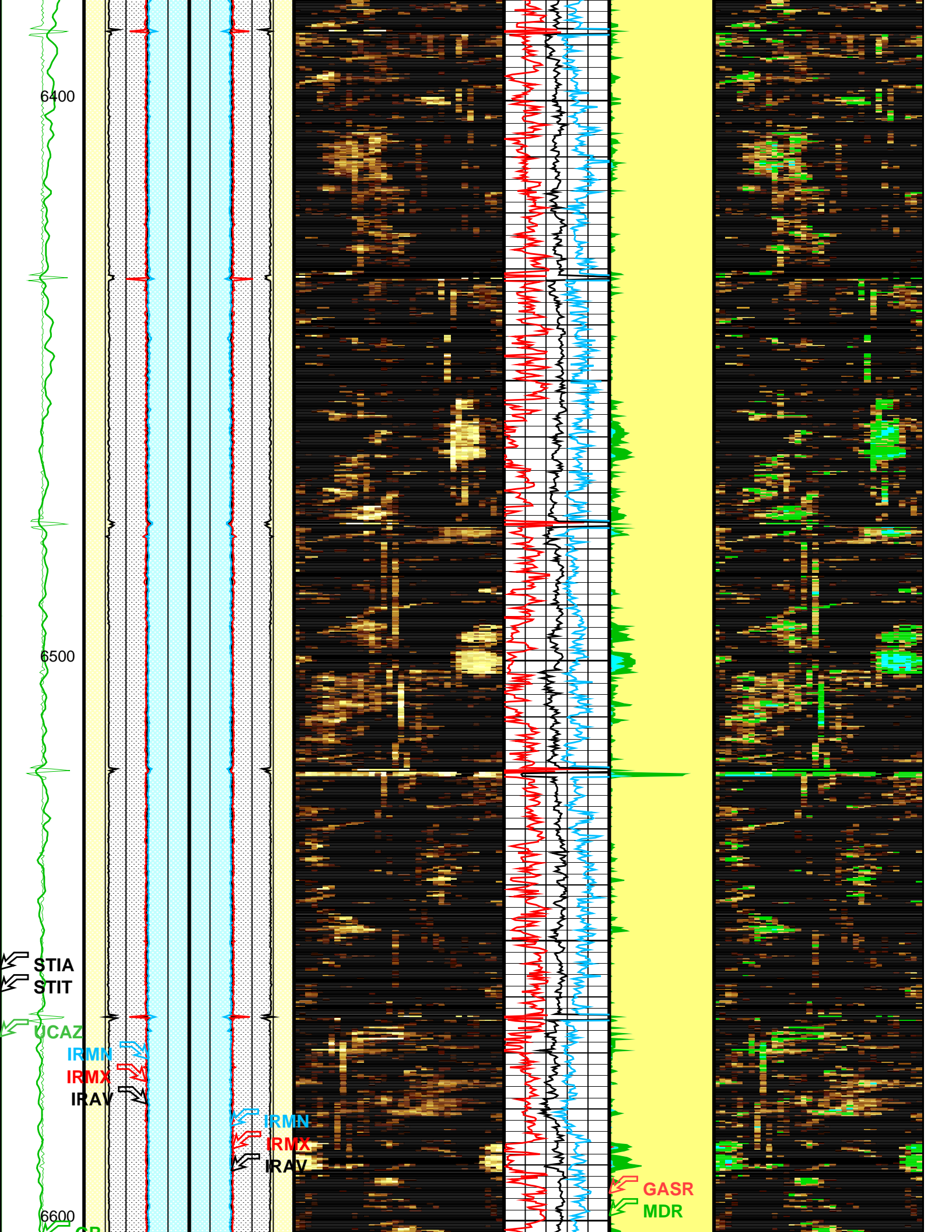


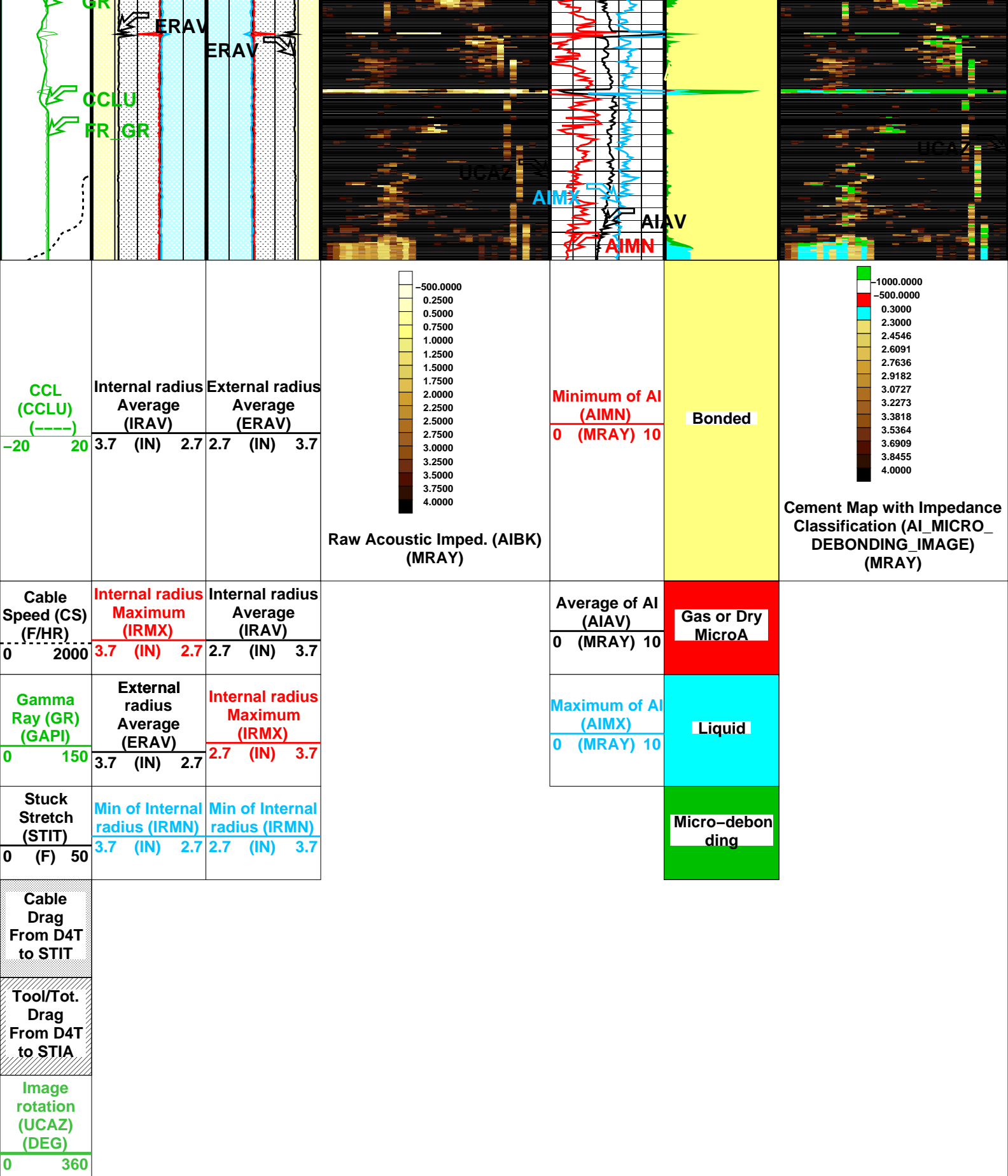












USI : LOW Frequency Compression Mode Used For Logging.

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	189	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	40	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.9	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	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	–1	MRAY
ZMUD	Acoustic Impedance of Mud	1.65	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.3	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	2.5	FT
TDD	Total Depth – Driller	11538.00	FT
TDL	Total Depth – Logger	6650.00	FT
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	USI_011LUP	FN:10	PRODUCER	23-May-2013 09:50	6644.5 FT	-13.7 FT
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Output DLIS Files

DEFAULT	USI_019PUP	FN:17	PRODUCER	23-May-2013 11:08
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Input DLIS Files

DEFAULT	USI_011LUP	FN:10	PRODUCER	23-May-2013 09:50	6644.5 FT	-13.7 FT
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Output DLIS Files

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OP System Version: 19C2-270

USIT-E
DTC-H

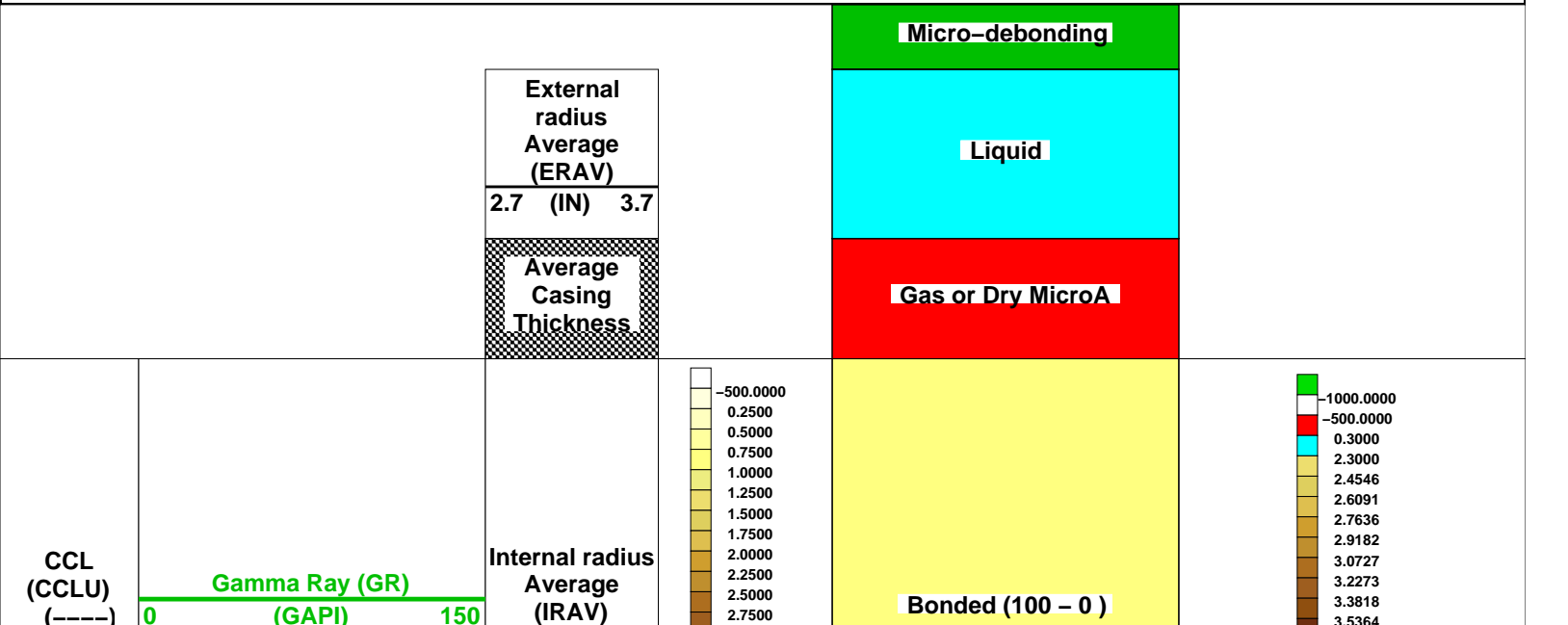
19C2-270
19C2-270

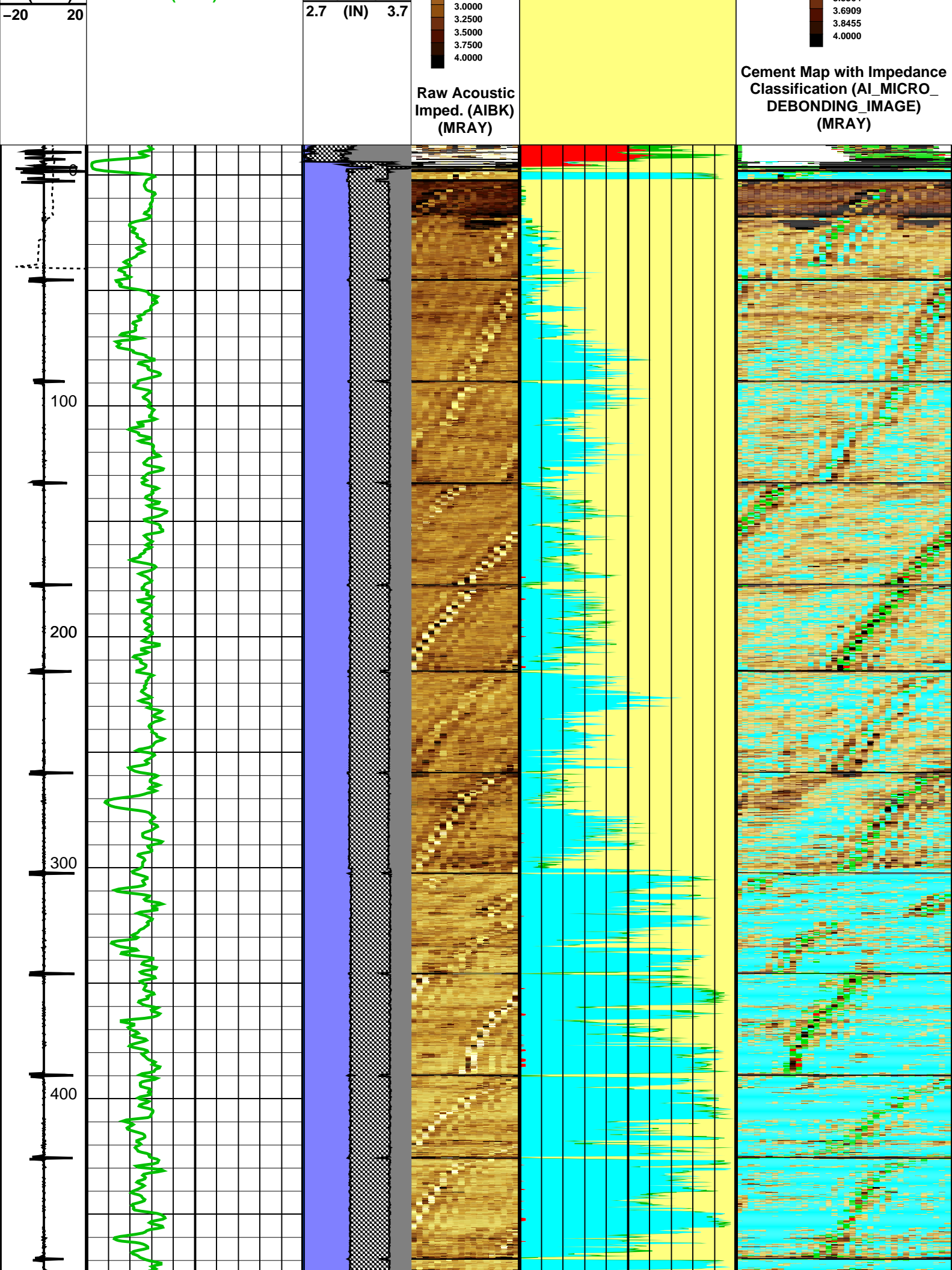
SGT-N

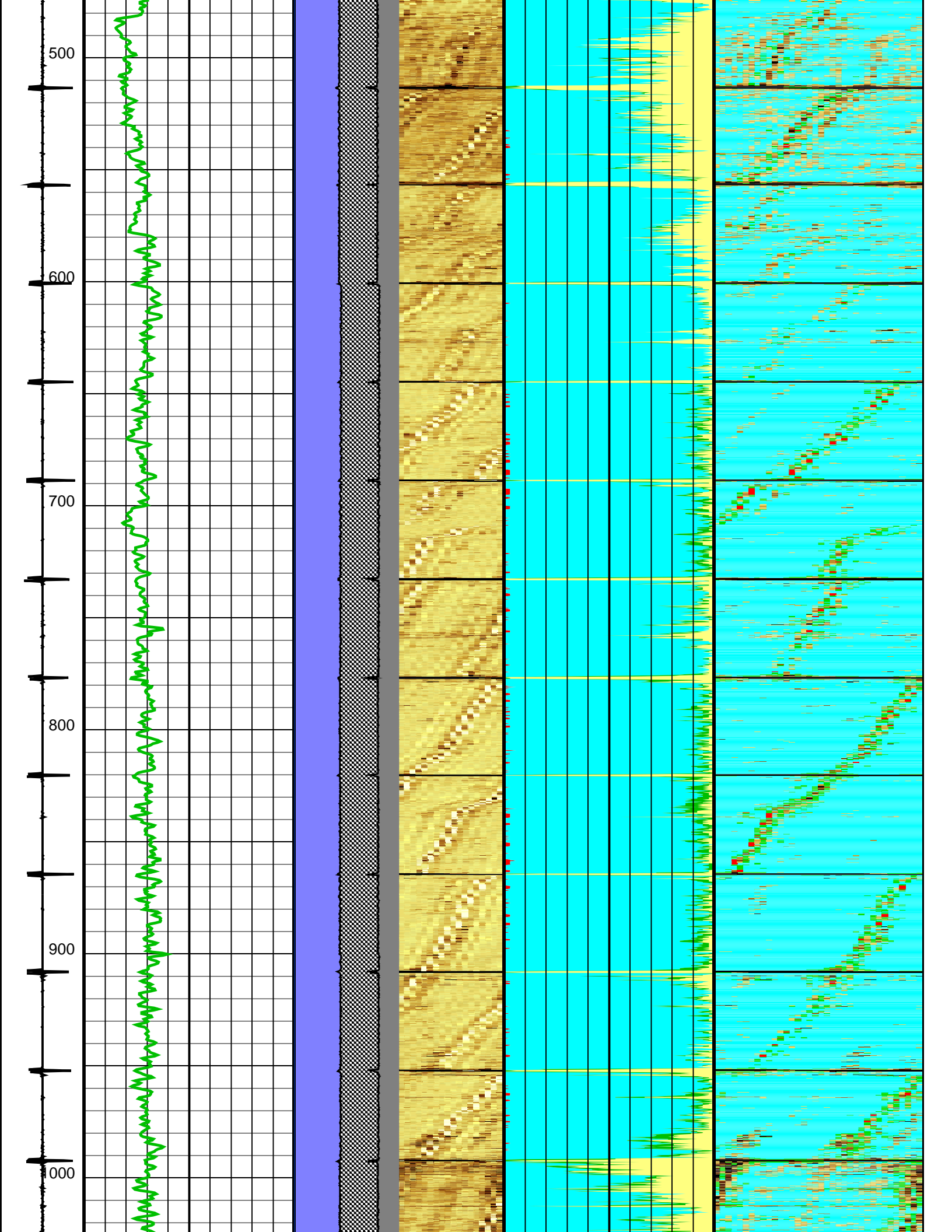
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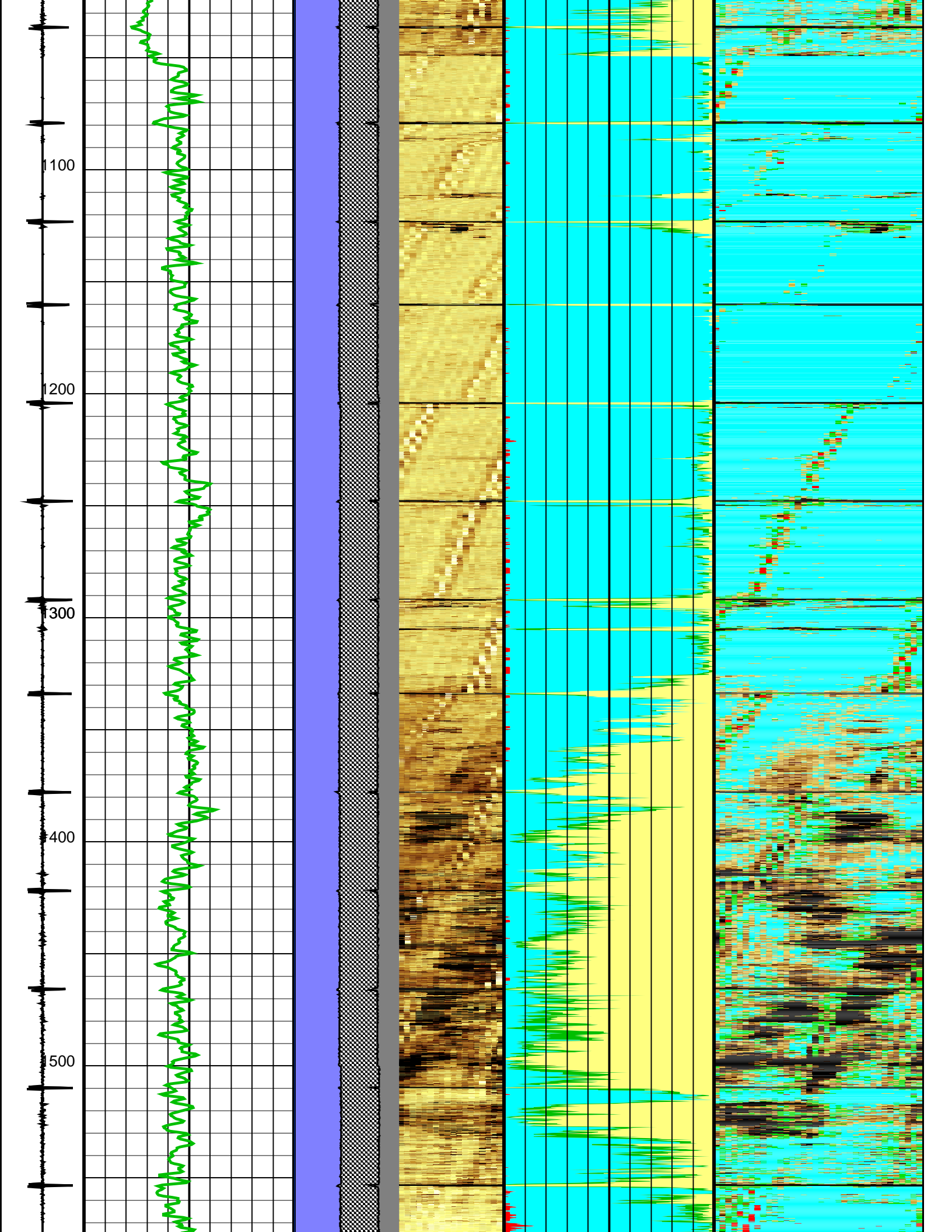
Zoning of Mud Parameters

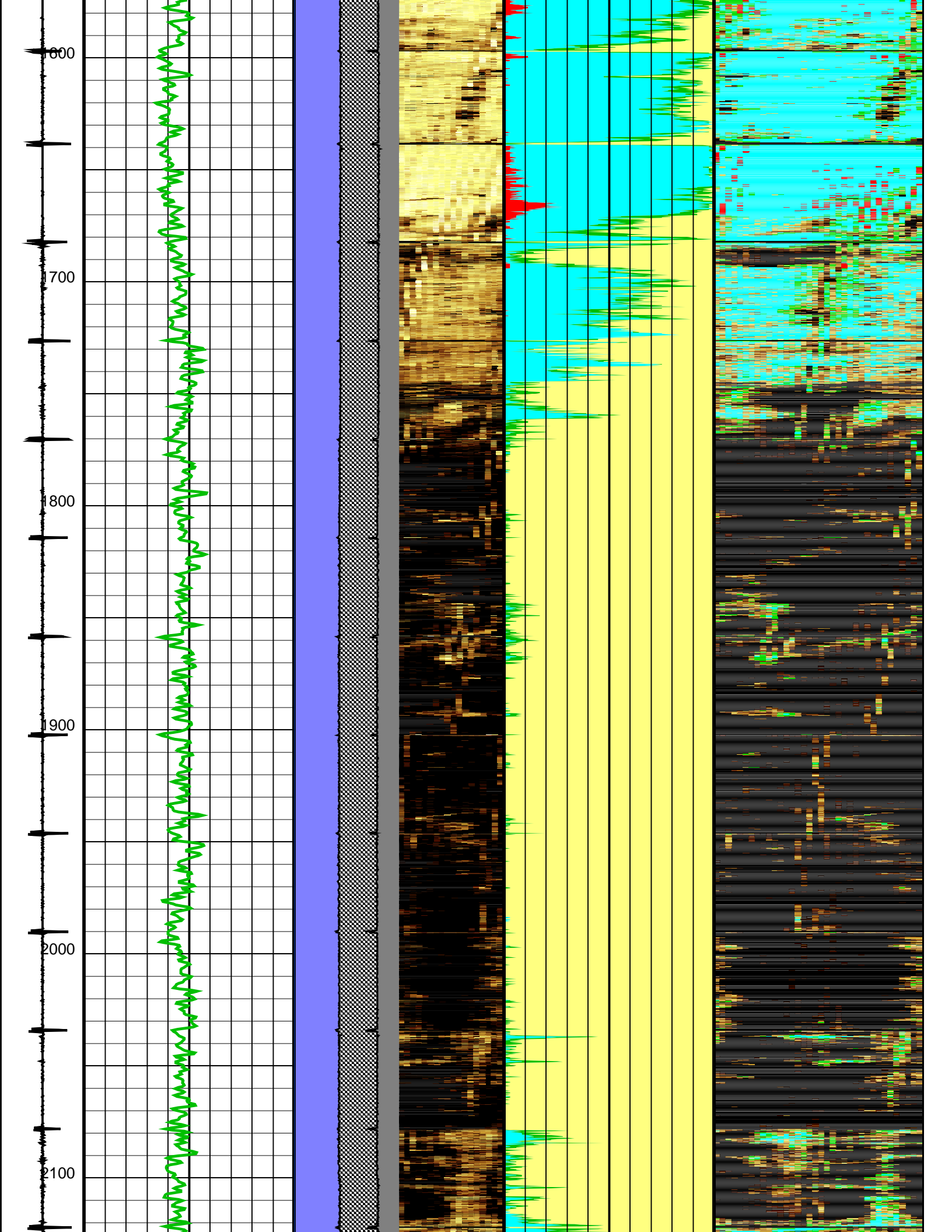
Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
6600.00	189.41	1.79
6000.00	189.14	1.79
5400.00	188.49	1.80
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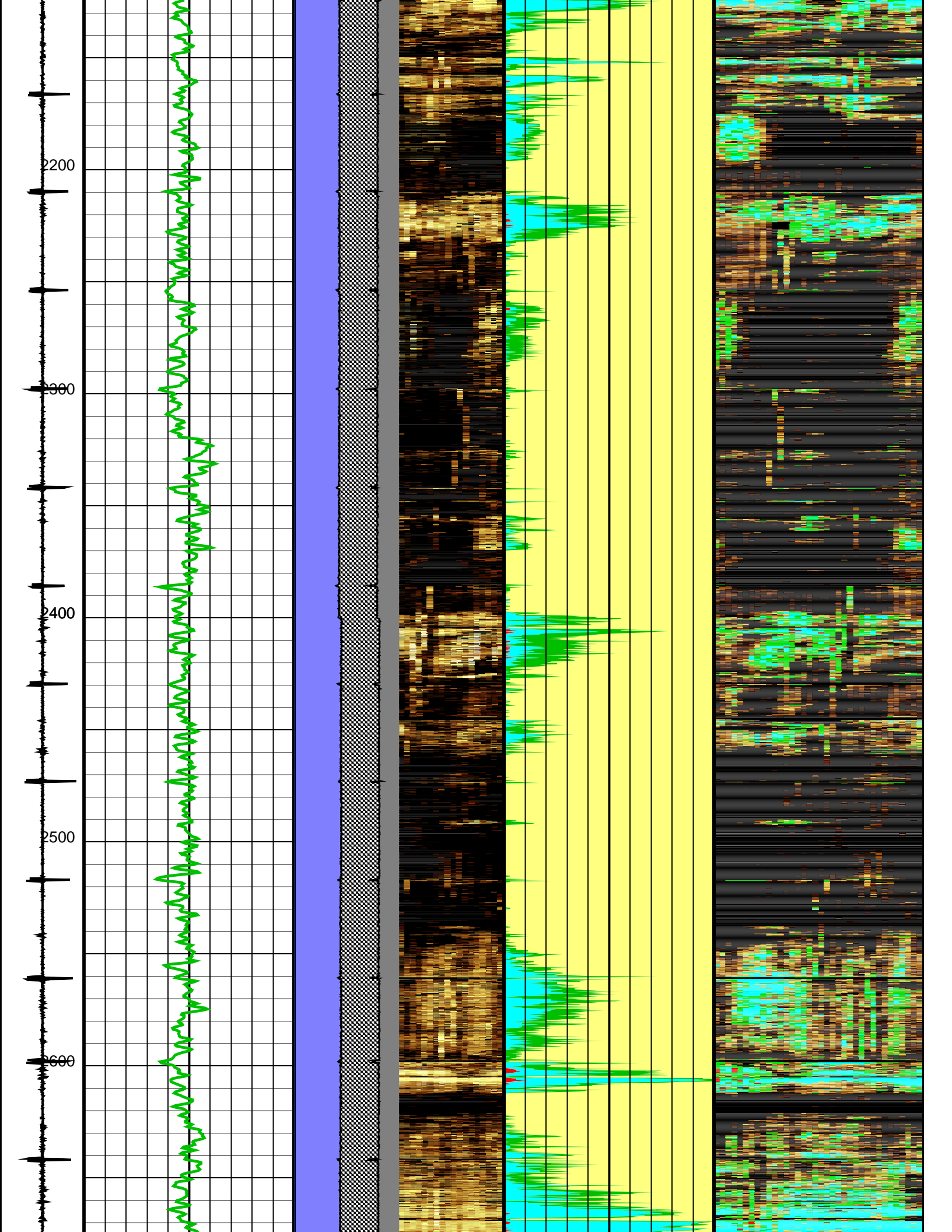


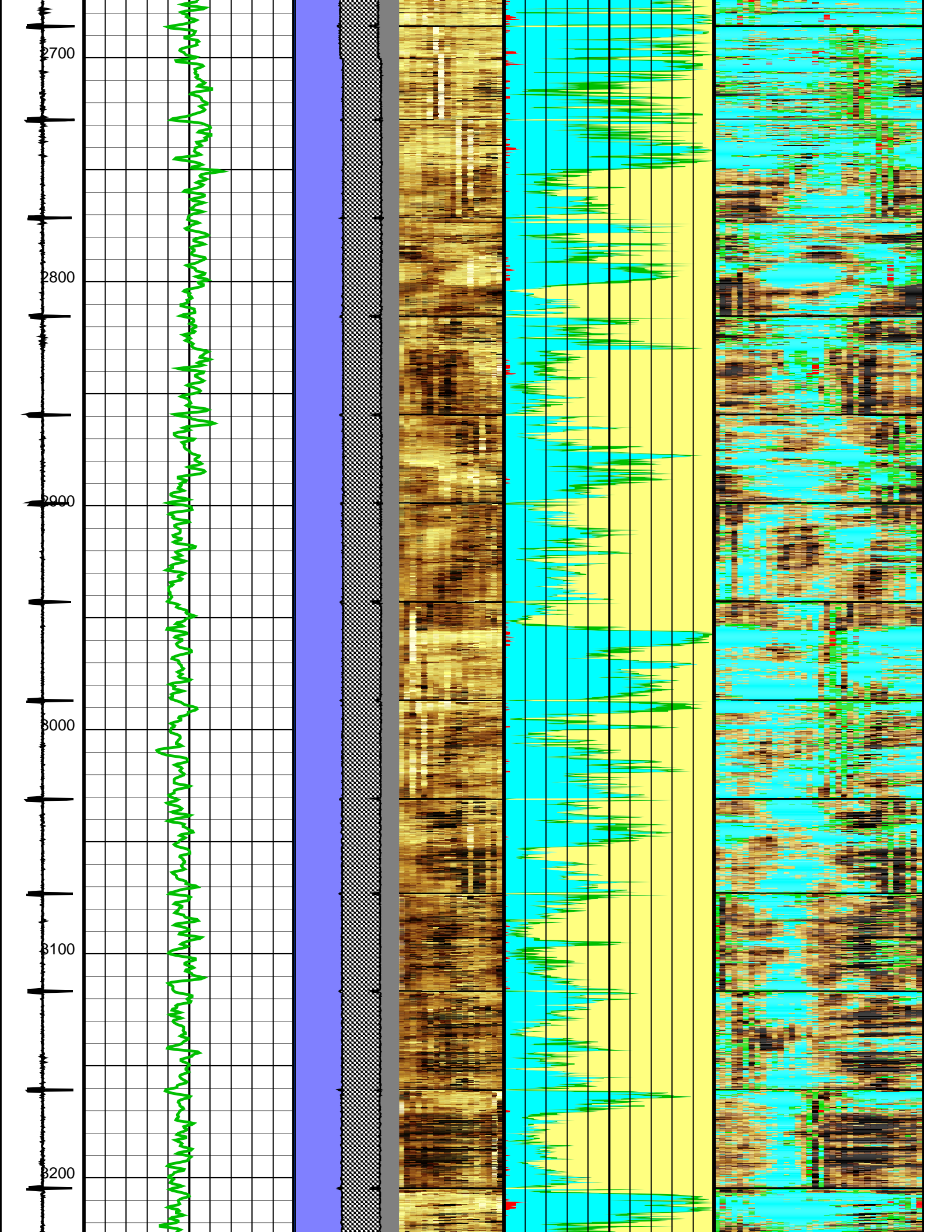


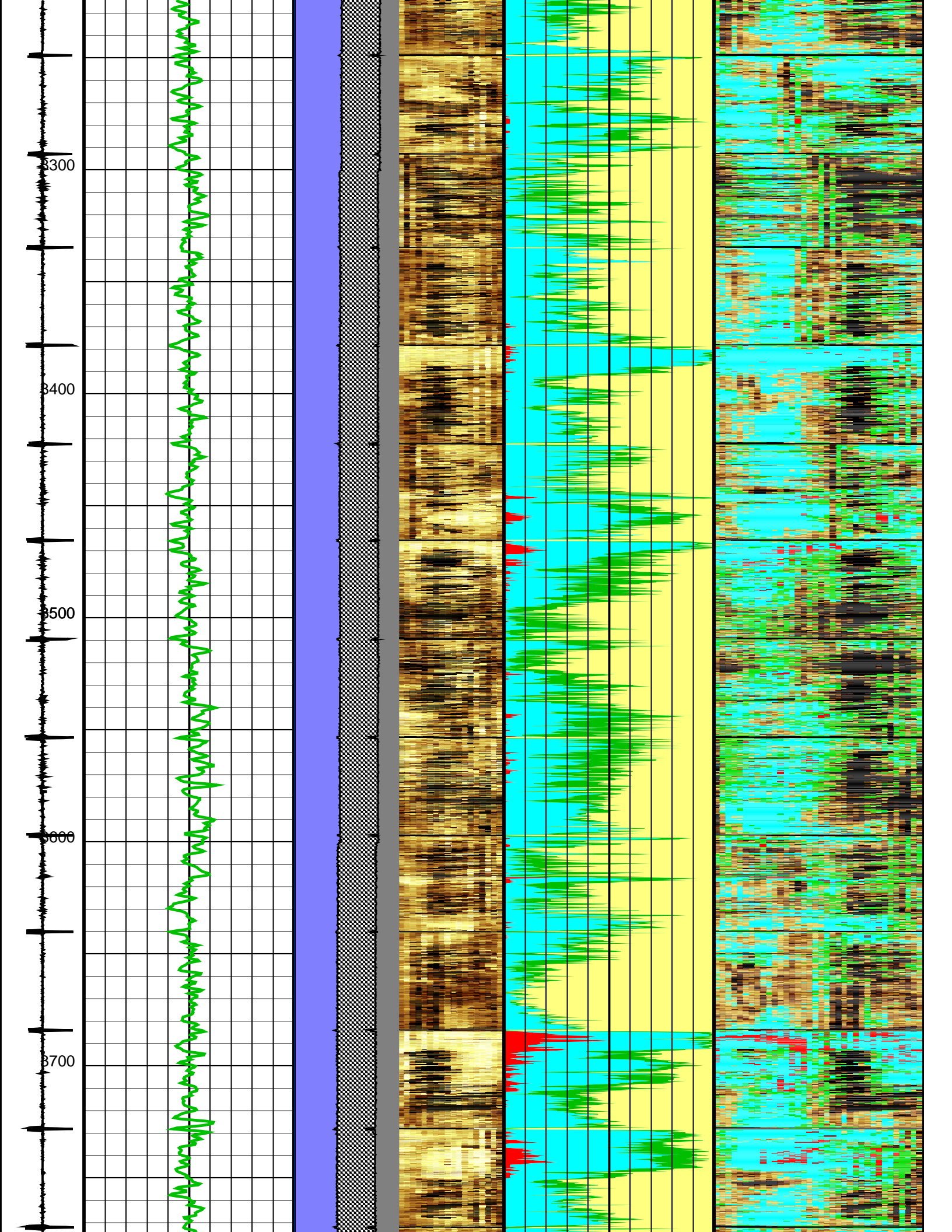


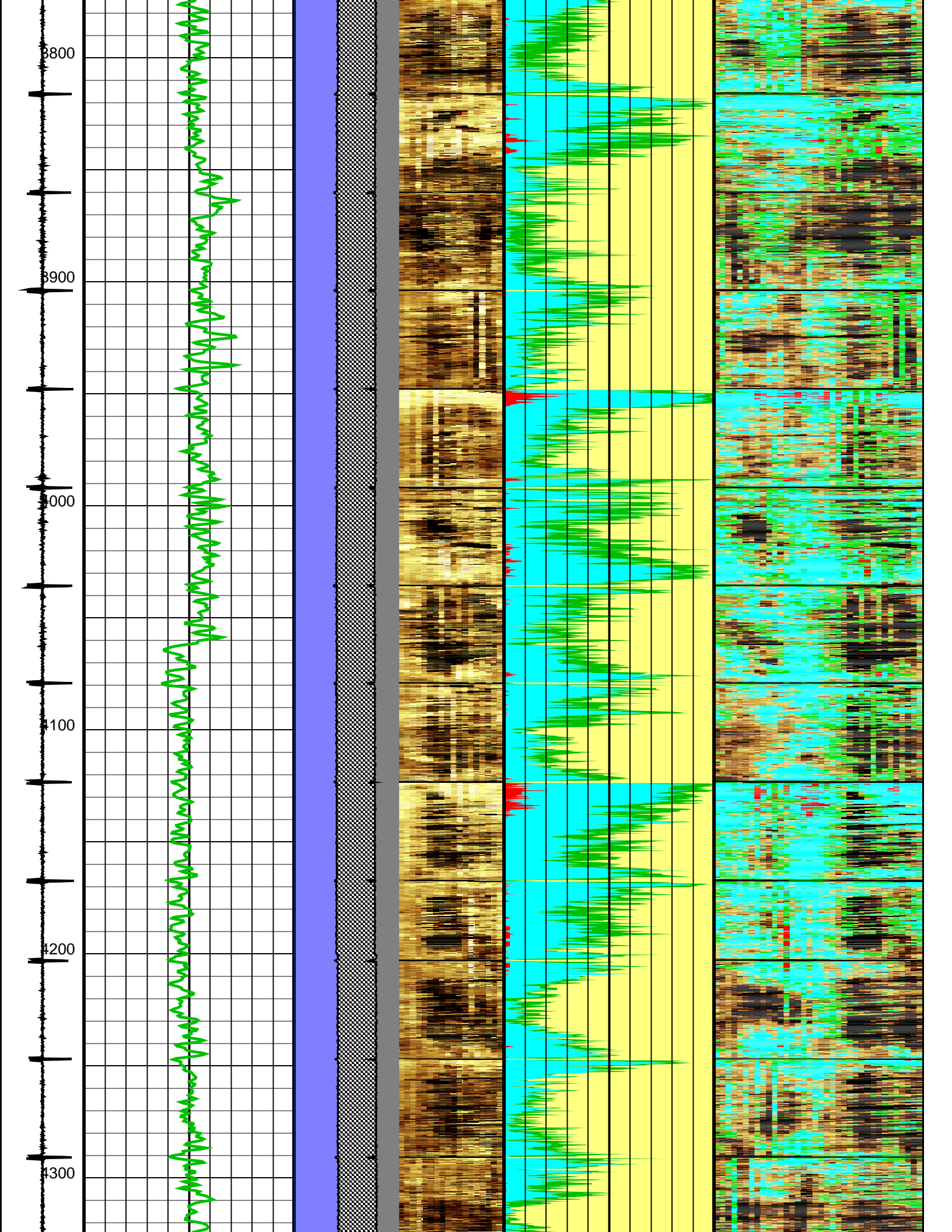


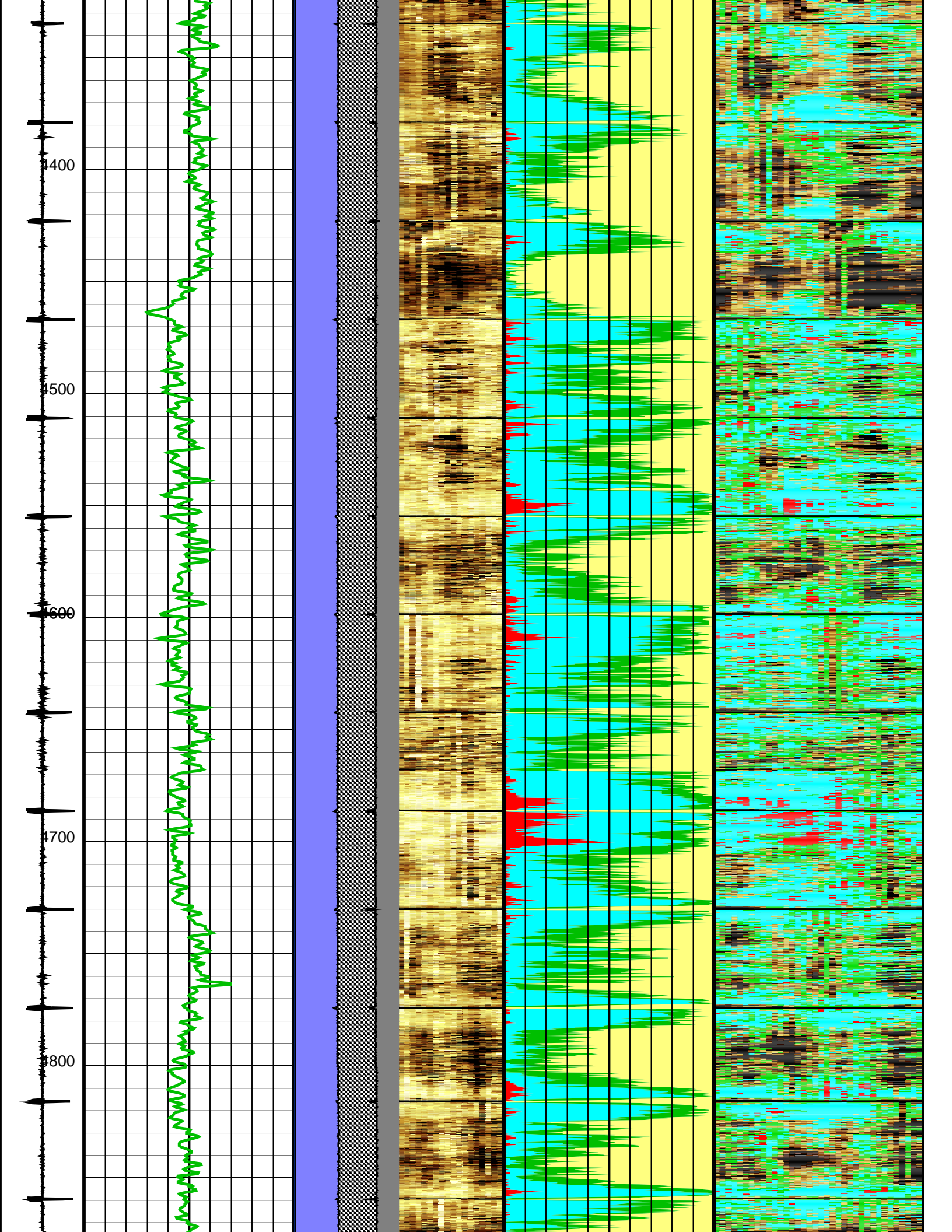


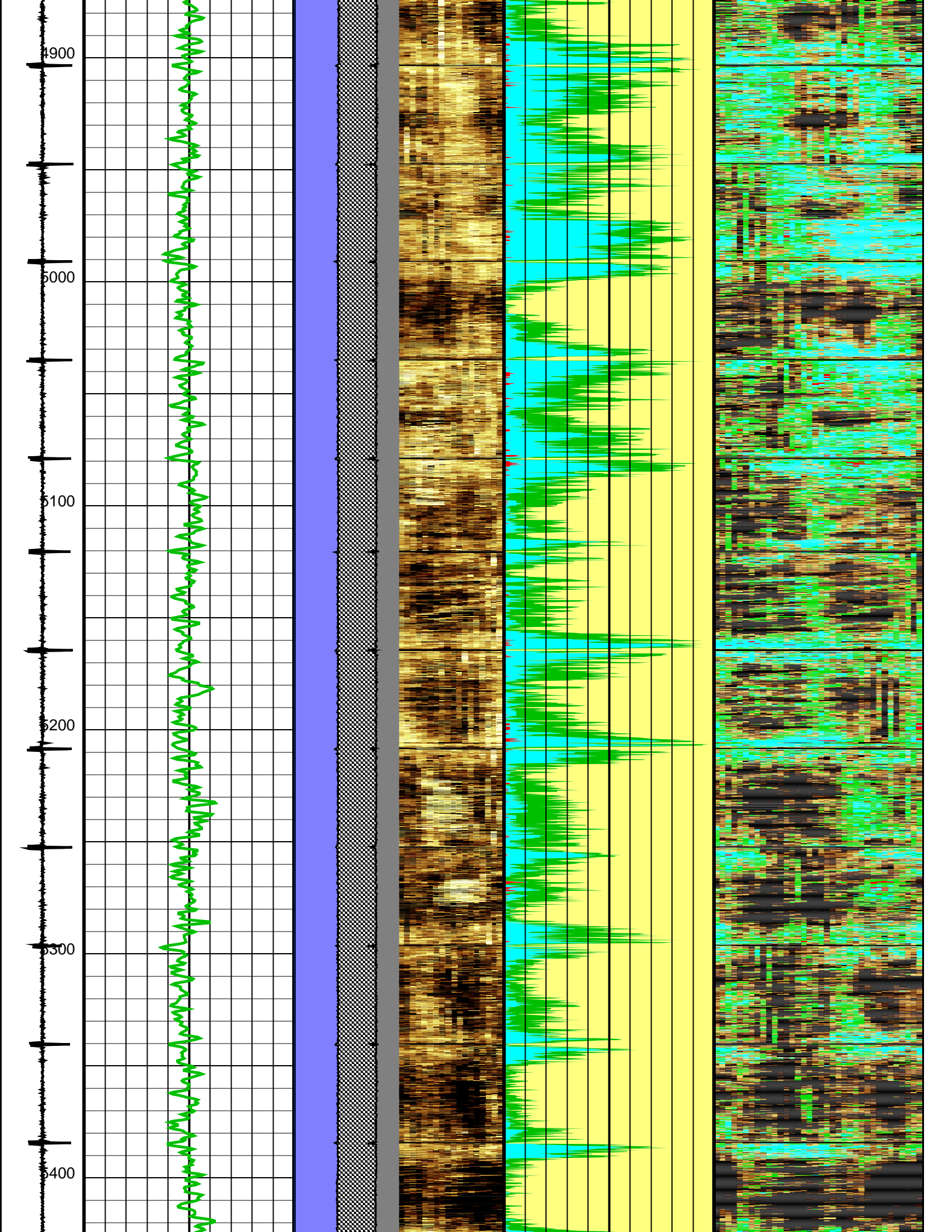


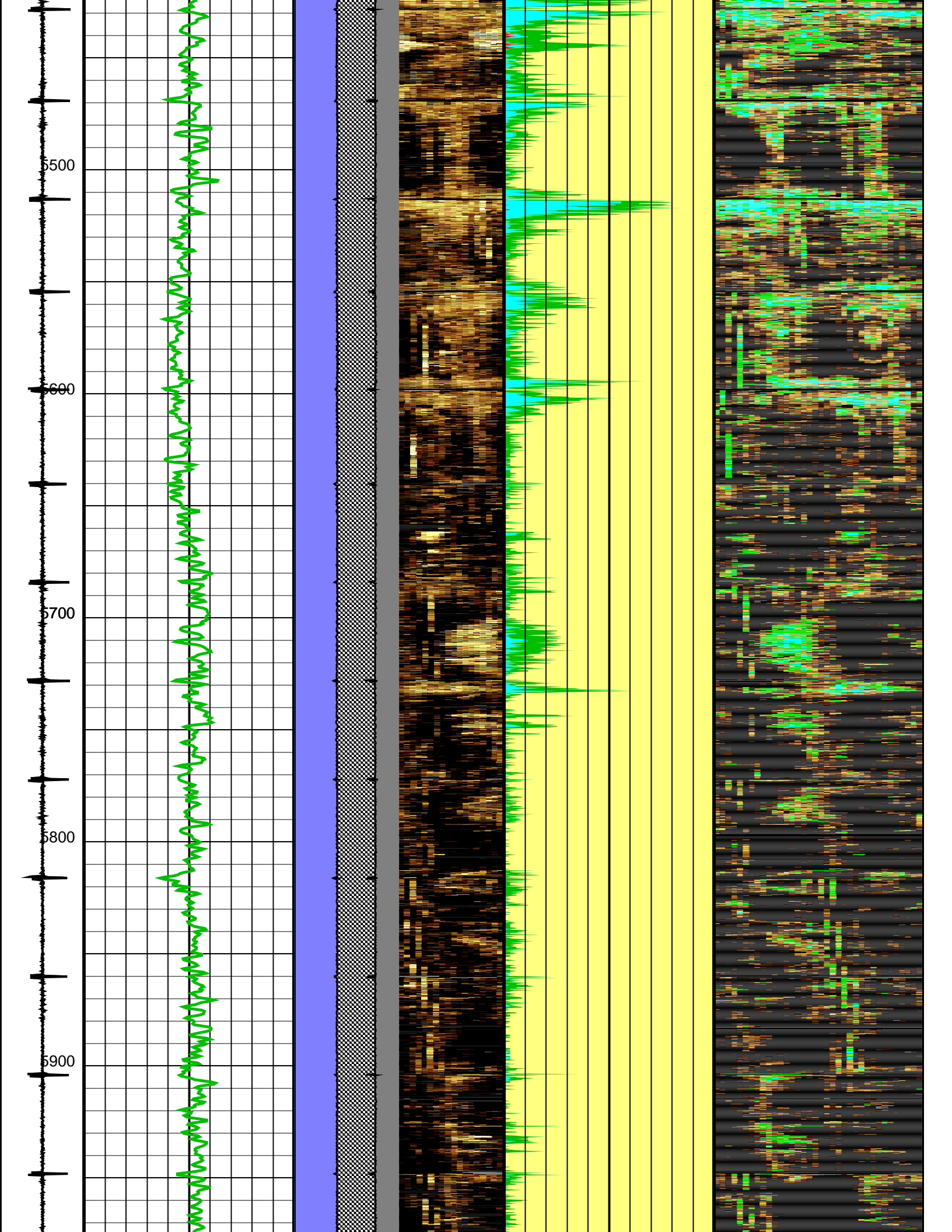


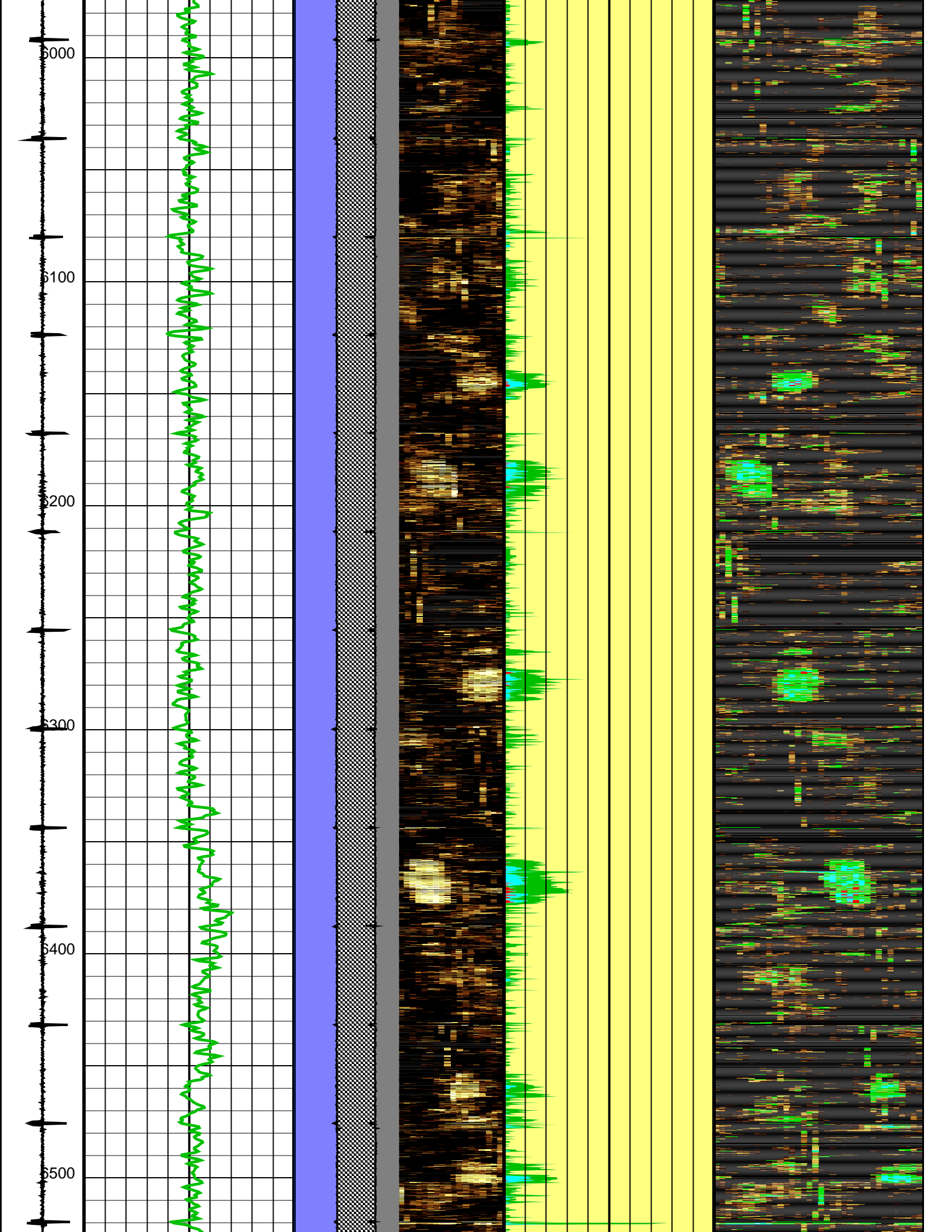


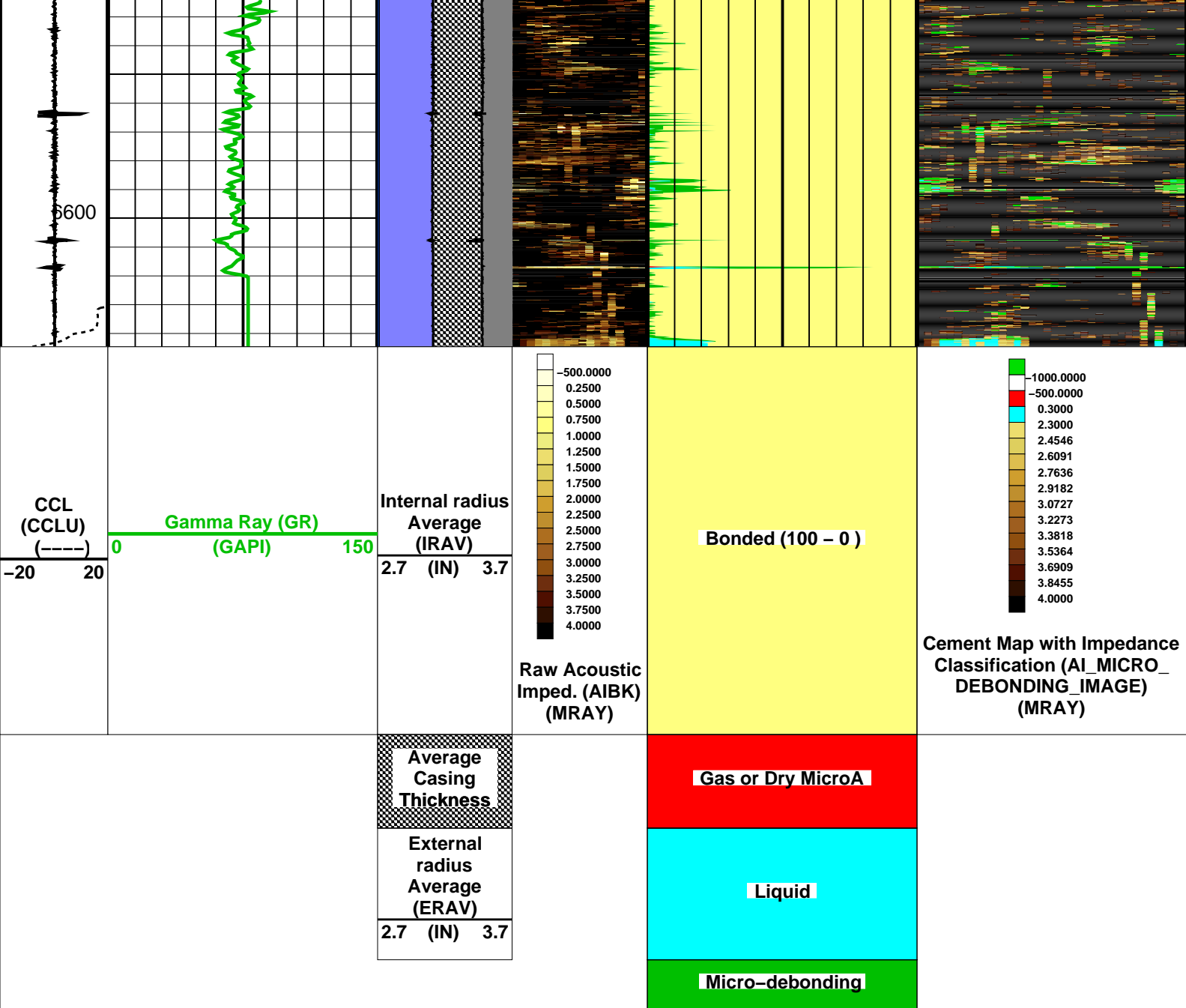












Format: USIT ND State 2 inch Vertical Scale: 2" per 100' Graphics File Created: 23-May-2013 11:08

OP System Version: 19C2-270

USIT-E 19C2-270 SGT-N 19C2-270
DTC-H 19C2-270

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
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USIT-E: Ultrasonic Imaging - E		
AGMN	Minimum Gain of Cartridge	-4 DB
AGMY	Maximum Gain of Cartridge	20 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	189	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	40	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.9	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	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	-1	MRAY
ZMUD	Acoustic Impedance of Mud	1.65	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.3	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
System and Miscellaneous			
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT USI_011LUP FN:10 PRODUCER 23-May-2013 09:50 6644.5 FT -13.7 FT

Output DLIS Files

DEFAULT USI_019PUP FN:17 PRODUCER 23-May-2013 11:08

Company: Kerr-McGee Oil & Gas Onshore LP Well: Crowder 15N-18HZ

Input DLIS Files

DEFAULT USI_011LUP FN:10 PRODUCER 23-May-2013 09:50 6644.5 FT -13.7 FT

Output DLIS Files

DEFAULT USI_019PUP FN:17 PRODUCER 23-May-2013 11:08 6644.5 FT -13.5 FT

OP System Version: 19C2-270

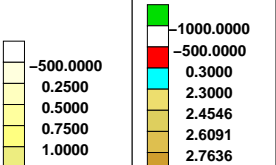
USIT-E 19C2-270 SGT-N 19C2-270
DTC-H 19C2-270

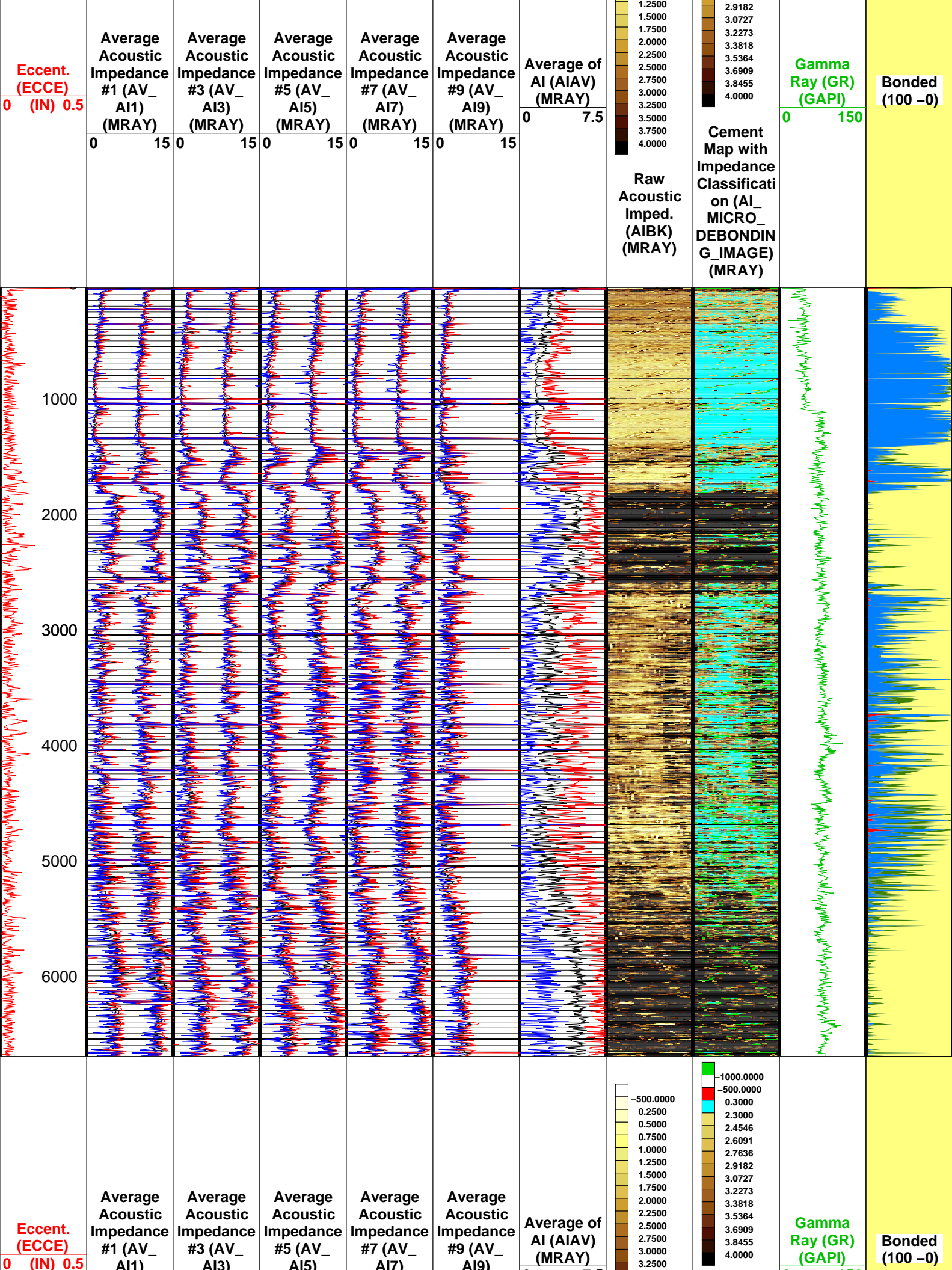
Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
6600.00	189.41	1.79
6000.00	189.14	1.79
5400.00	188.49	1.80

4800.00	189.28	1.81
4200.00	190.90	1.85
3600.00	188.31	1.81
3300.00	186.11	1.84
3000.00	185.62	1.87
2700.00	188.65	1.89
2400.00	191.22	1.89
2100.00	192.23	1.88
1800.00	191.76	1.86
1500.00	193.65	1.94
1200.00	194.94	1.94
900.00	195.95	1.92
600.00	197.98	1.95
300.00	200.23	2.05

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)		
-7.57.5	-7.57.5	-7.57.5	-7.57.5		
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)		
015	015	015	015		
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)		
-7.57.5	-7.57.5	-7.57.5	-7.57.5		
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)
015	015	015	015	015	07.5
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)
-7.57.5	-7.57.5	-7.57.5	-7.57.5	015	07.5





	(MRAY)	(MRAY)	(MRAY)	(MRAY)	(MRAY)	0	7.5	<div><div></div><div>3.5000 3.7500 4.0000</div></div>	Cement Map with Impedance Classificati on (AI_ MICRO_ DEBONDIN G_IMAGE) (MRAY)	0	150	
	0 15	0 15	0 15	0 15	0 15			Raw Acoustic Imped. (AIBK) (MRAY)				
	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)						Gas
	-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)						Liquid
	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)								Area
	-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								

Format: USIT only Goodwin Compressed			Vertical Scale: 0.1" per 100'			Graphics File Created: 23-May-2013 11:08		
OP System Version: 19C2-270								
USIT-E	19C2-270			SGT-N		19C2-270		
DTC-H	19C2-270							
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_011LUP			FN:10	PRODUCER	23-May-2013 09:50	6644.5 FT	-13.7 FT

Output DLIS Files					
DEFAULT	USI_019PUP	FN:17	PRODUCER	23-May-2013 11:08	

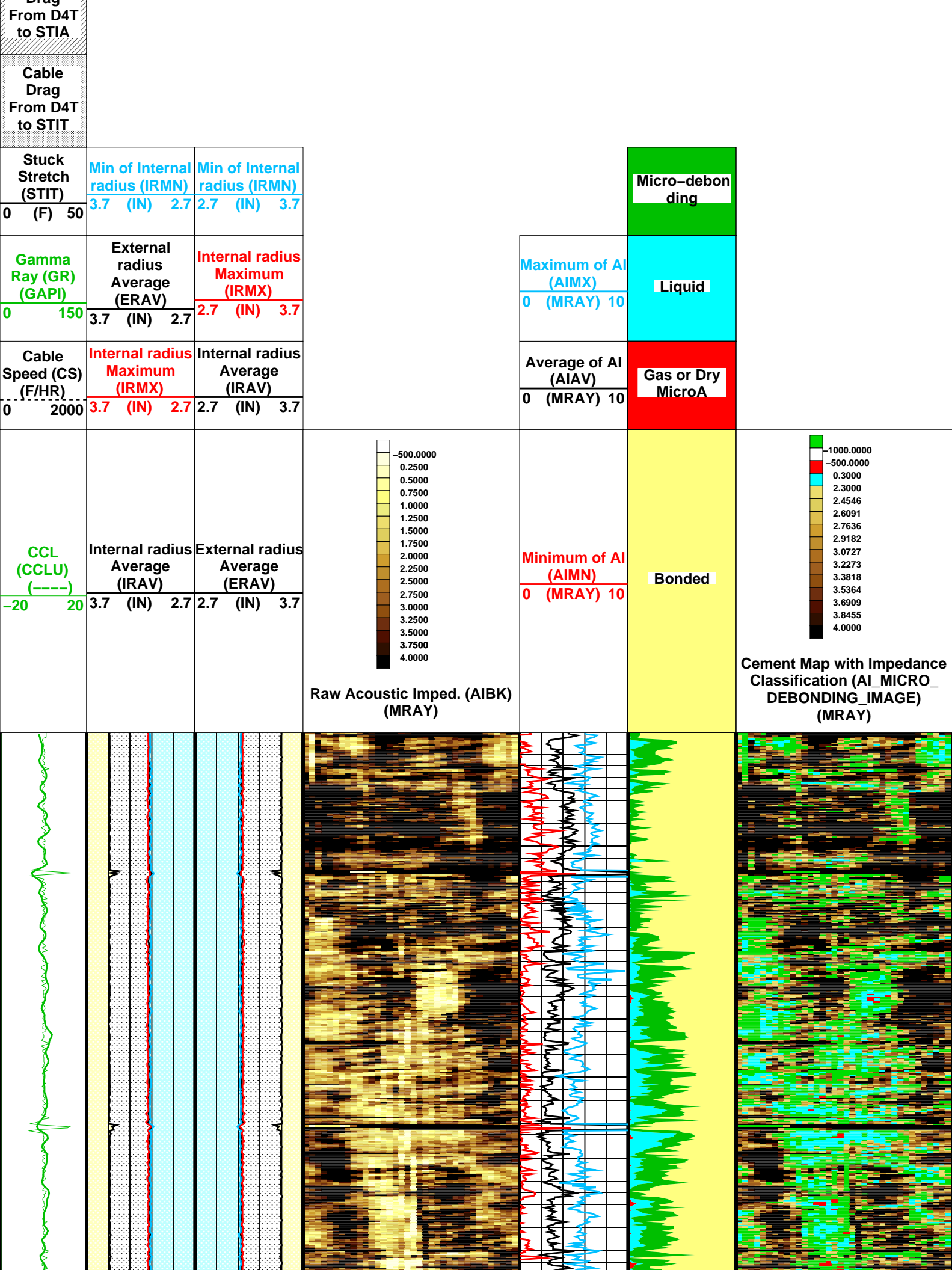
Company: Kerr-McGee Oil & Gas Onshore LP			Well: Crowder 15N-18HZ		
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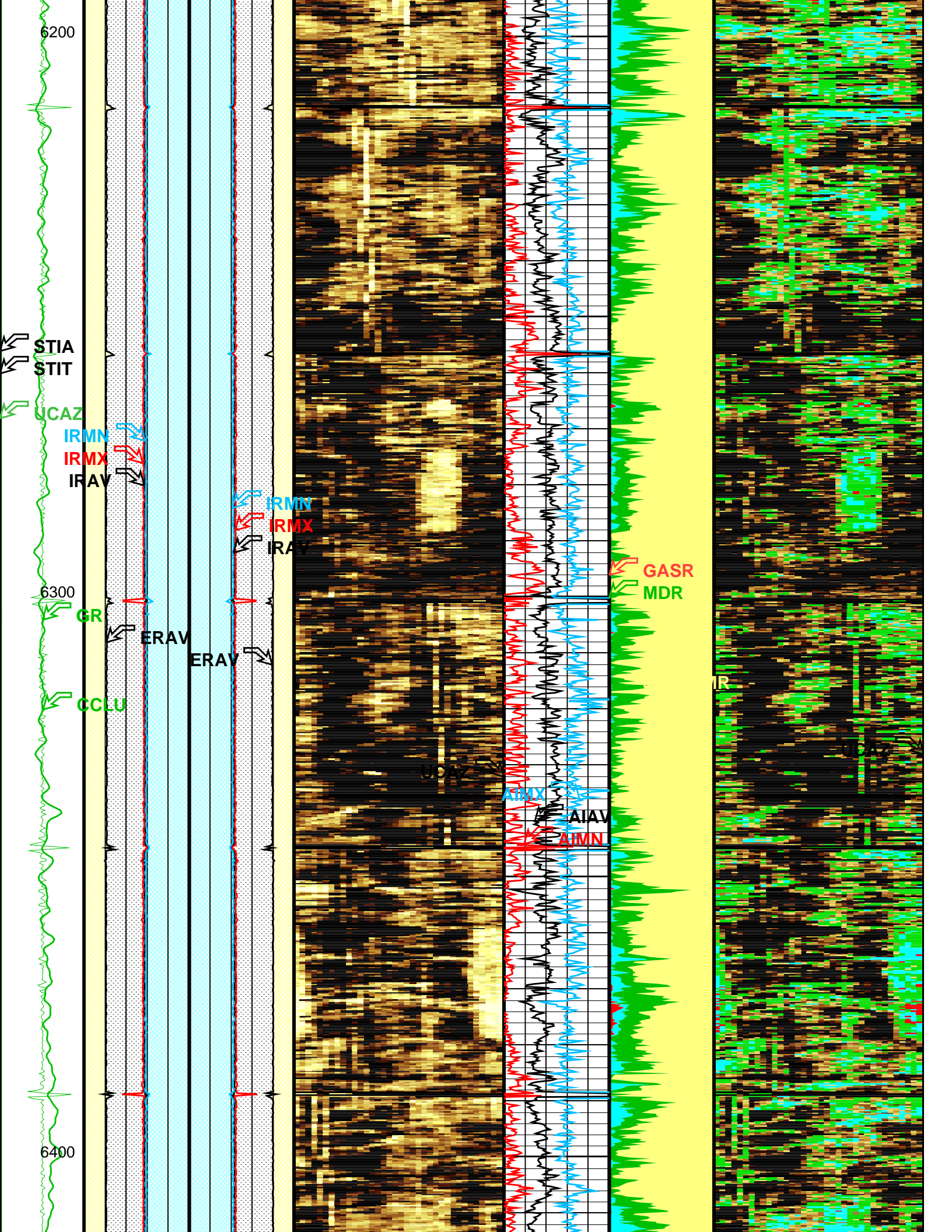
Input DLIS Files					
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Output DLIS Files					
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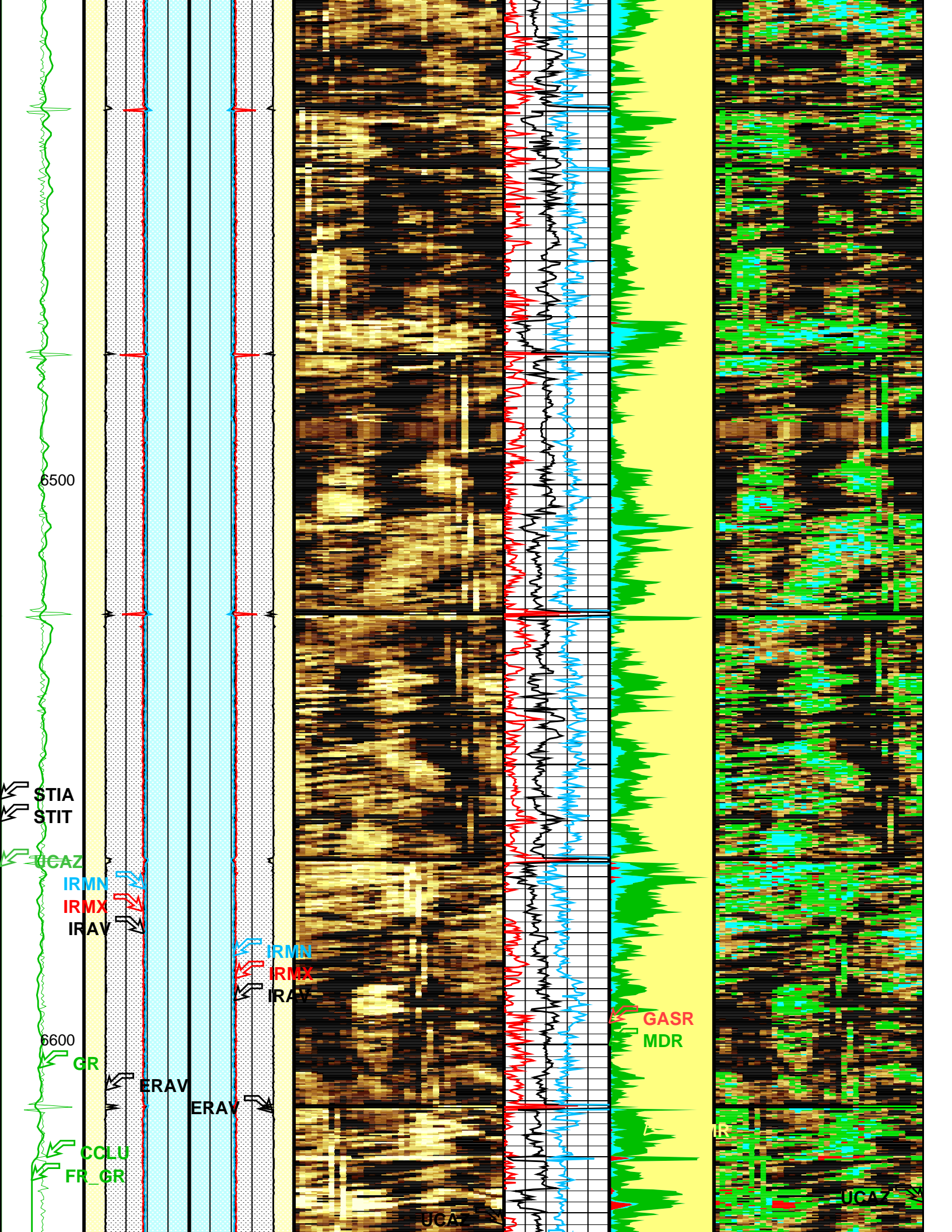
OP System Version: 19C2-270			
USIT-E	19C2-270	SGT-N	19C2-270
DTC-H	19C2-270		

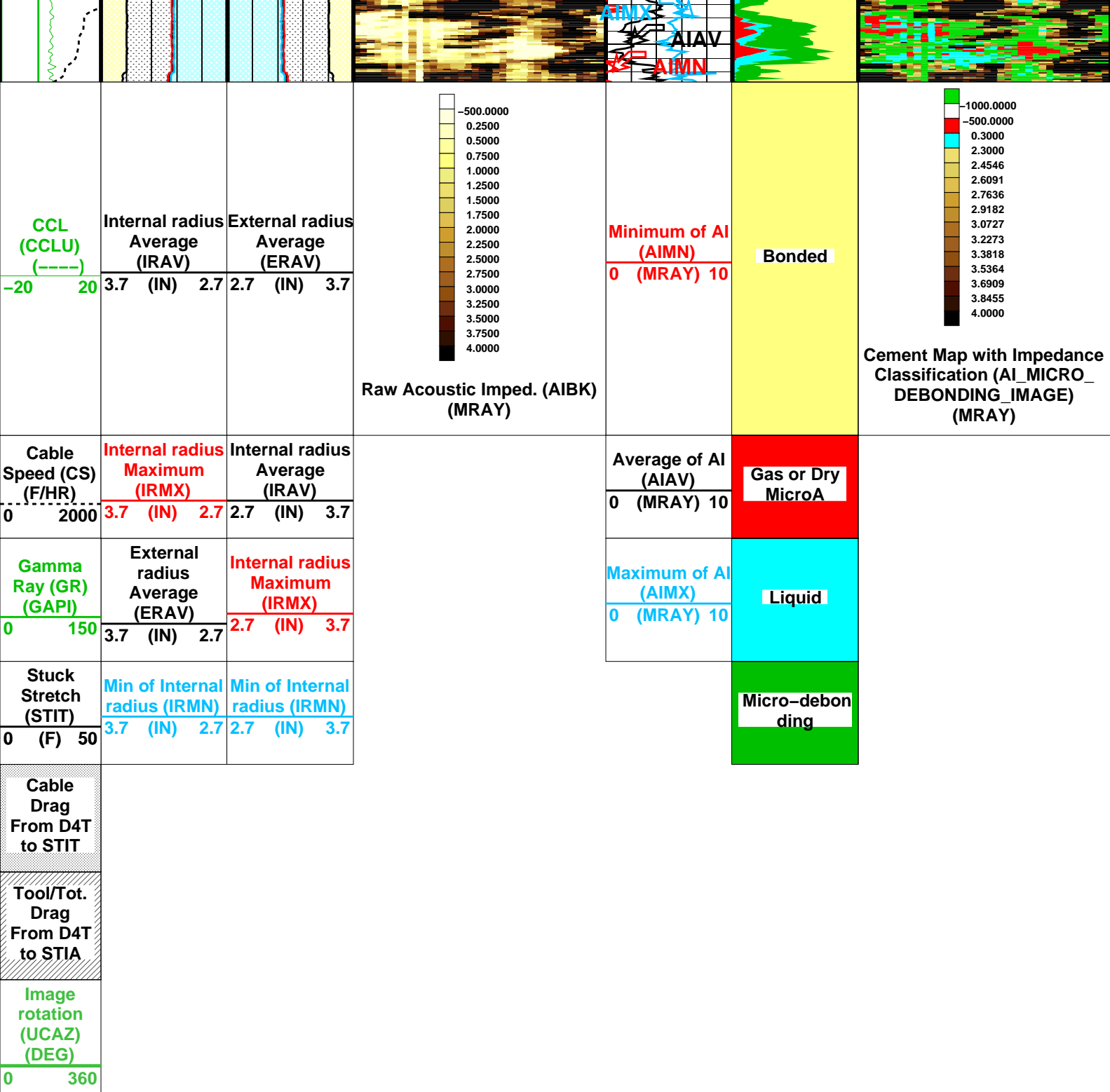
Zoning of Mud Parameters		
Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
6600.00	189.41	1.79
6000.00	189.14	1.79
5400.00	188.49	1.80
4800.00	189.28	1.52
4200.00	190.90	1.56
3600.00	188.31	1.52
3300.00	186.11	1.55
3000.00	185.62	1.57
2700.00	188.65	1.59
2400.00	191.22	1.59
2100.00	192.23	1.58
1800.00	191.76	1.57
1500.00	193.65	1.64
1200.00	194.94	1.64
900.00	195.95	1.62
600.00	197.98	1.65
300.00	200.23	1.76

Image rotation (UCAZ) (DEG)	0360
Tool/Tot. Drag	









Format: USIT CEMENT 5 inch Vertical Scale: 5" per 100' Graphics File Created: 23-May-2013 11:15

OP System Version: 19C2-270

USIT-E	19C2-270	SGT-N	19C2-270
DTC-H	19C2-270		

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-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	189 US/F
DOT	Diameter of Transducer Sensor	2.874 IN
EMXV	EMEX Voltage	40 V
FDII	FPM Data Interpolation Interval	0 FT
IMAR	Image Rotation	OFF
MW	Mud Weight	8.9 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	46.2537 MRAY
ZINI	Initial Estimate of Cement Impedance	–1 MRAY
ZMUD	Acoustic Impedance of Mud	1.65 MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.3 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	2.5 FT
TDD	Total Depth – Driller	11538.00 FT
TDL	Total Depth – Logger	6650.00 FT
System and Miscellaneous		
CWEI	Casing Weight	26.00 LB/F
DO	Depth Offset for Playback	0.0 FT
PP	Playback Processing	RECOMPUTE

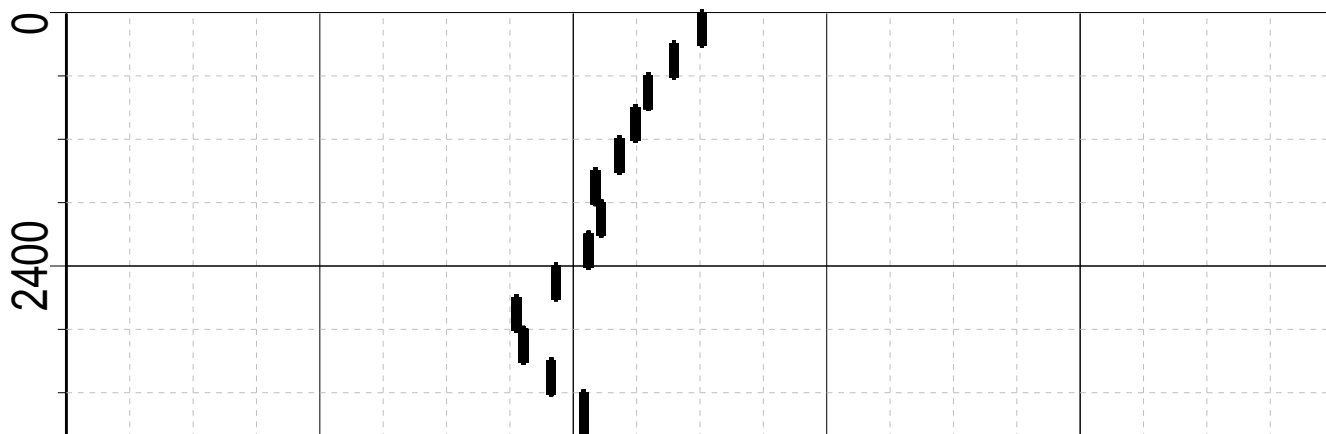
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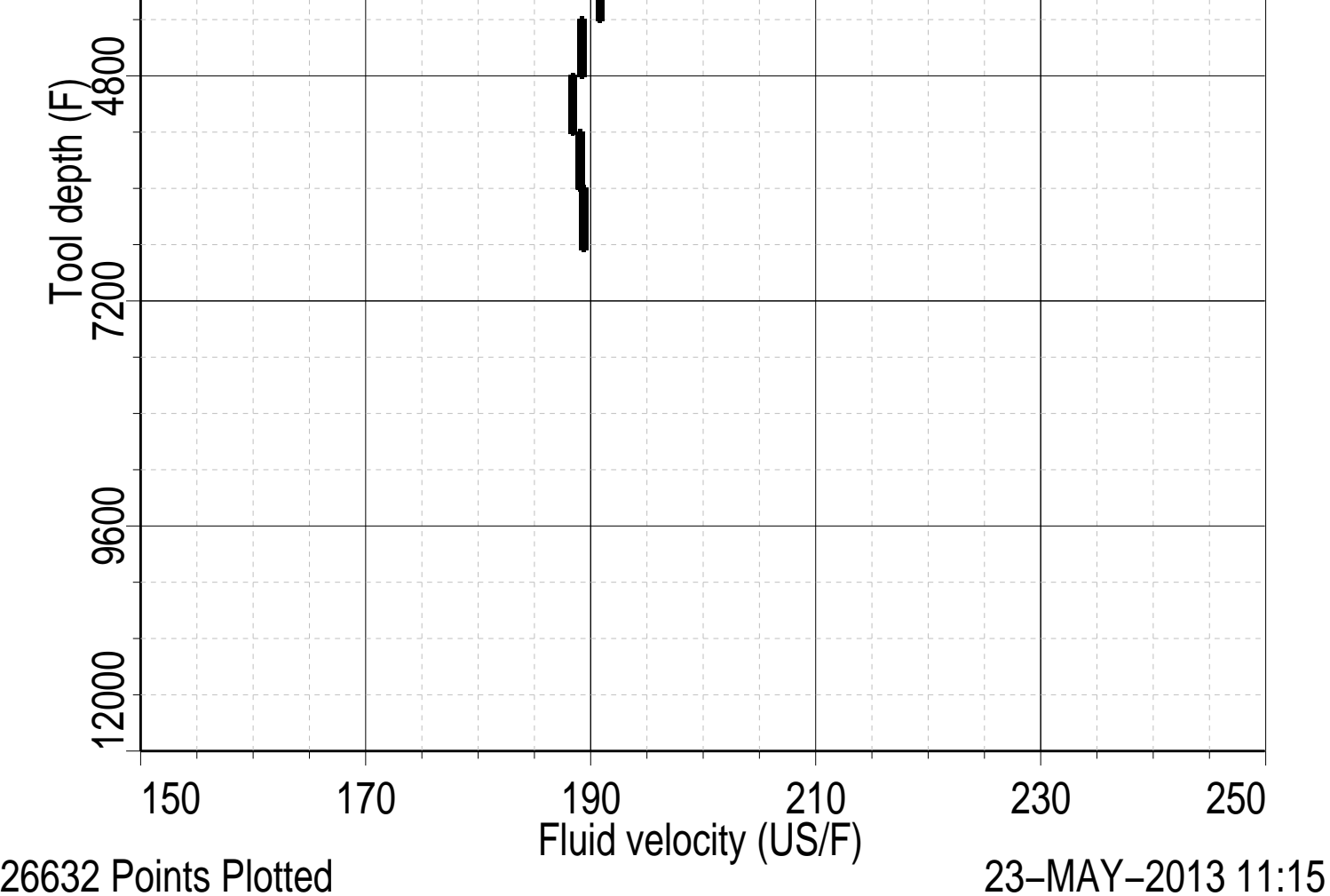
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Output DLIS Files

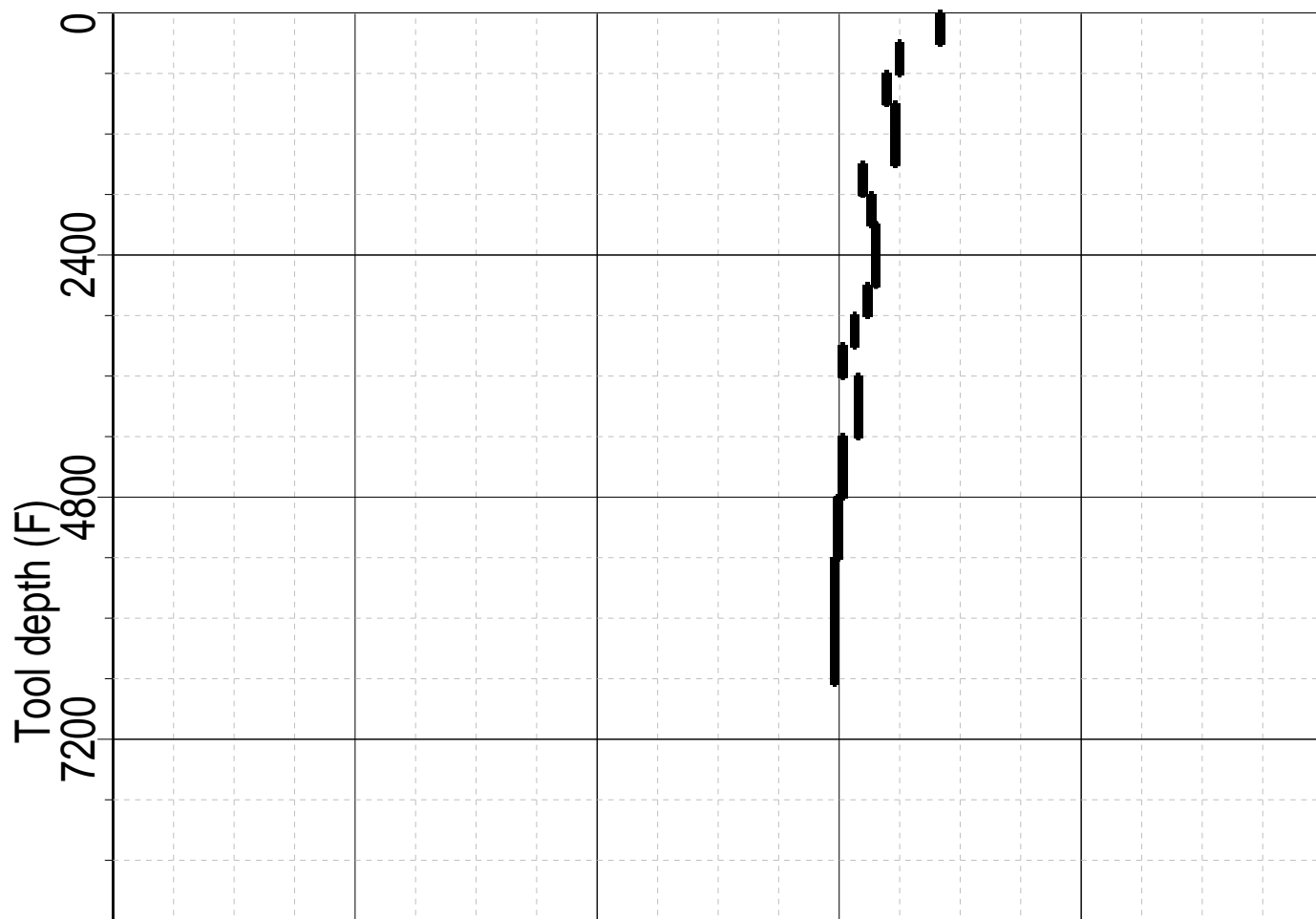
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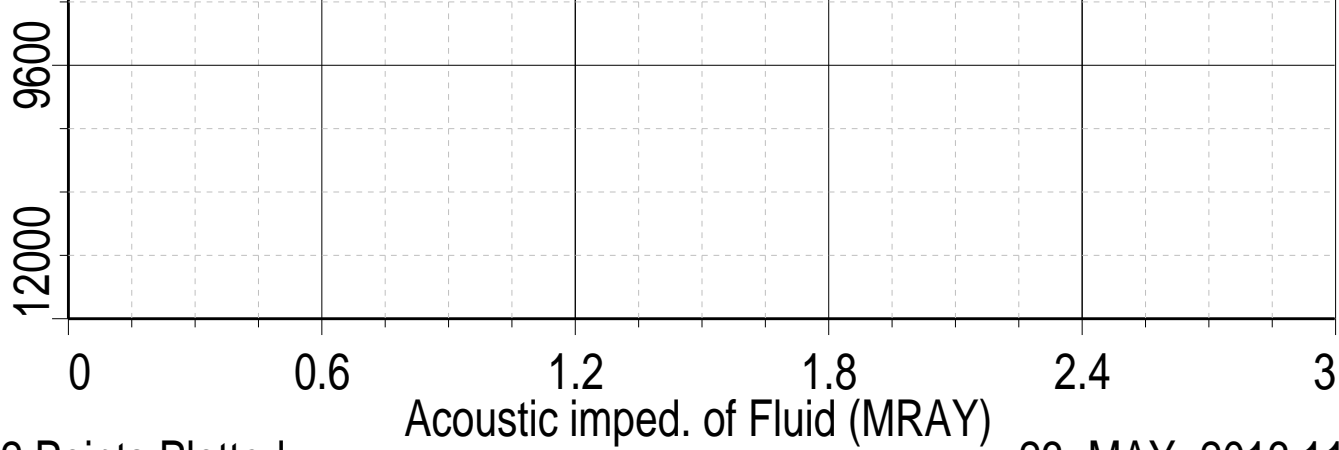
Index: 6644.5 – –13.2 FT





Index: 6644.5 – -13.2 FT





26632 Points Plotted

23-MAY-2013 11:15

Company: **Kerr-McGee Oil & Gas Onshore LP**

Schlumberger

Well: **Crowder 15N-18HZ**

Field: **Wattenberg**

County: **Weld**

State: **Colorado**

USIT

Cement Evaluation