Schlumberger

Company: **ENCANA OIL & GAS (USA) INC.**

Well: **SG 8506E−34 (E34) 496**
Field: **STORY GULCH**
County: **GARFIELD** State: **COLORADO**

ISOLATION SCANNER
CEMENT EVALUATION
GAMMA RAY, CCL

County: GARFIELD
Field: STORY GULCH
Location: SHL: SWNW 2237' FNL & 1000'
Well: SG 8506E−34 (E34) 496
Company: ENCANA OIL & GAS (USA) INC.

LOCATION

SHL: SWNW 2237' FNL & 1000' FWL
BHL: SENE 2434'FNL & 1337' FEL

Elev.: K.B. 8353.50 ft
G.L. 8323.50 ft
D.F. 8352.50 ft

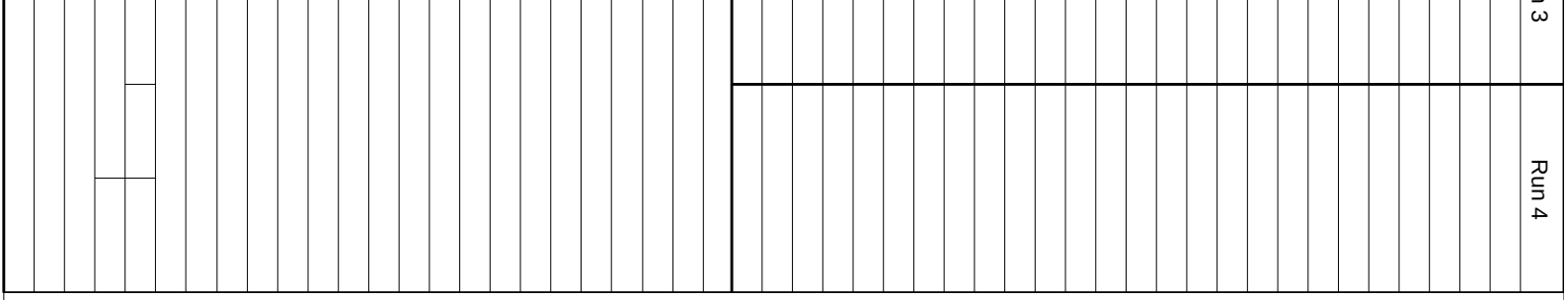
Permanent Datum: GROUND LEVEL Elev.: 8323.50 ft
Log Measured From: KELLY BUSHING 30.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05045219260000	34	4S	96W

Logging Date		10−Oct−2013						
Run Number		1						
Depth Driller		3000 ft						
Schlumberger Depth		2920 ft						
Bottom Log Interval		2920 ft						
Top Log Interval		30 ft						
Casing Fluid Type		WATER						
Salinity								
Density		8.6 lbm/gal						
Fluid Level		0 ft						
BIT/CASING/TUBING STRING								
Bit Size		14.750 in						
From		0 ft						
To		3000 ft						
Casing/Tubing Size		9.625 in						
Weight		36 lbm/ft						
Grade		J55						
From		0 ft						
To		2981 ft						
Maximum Recorded Temperatures		150 degF						
Logger On Bottom	Time	10−Oct−2013	15:00					
Unit Number	Location	2271	VERNAL					
Recorded By		CURTIS SCHAAF						
Witnessed By		TULLY GALLAGHER						

		Run 1	Run 2	Run
PVT DATA	Oil Density			
	Water Salinity			
	Gas Gravity			
	Bo			
	Bw			
	1/Bg			
	Bubble Point Pressure			
	Bubble Point Temperature			
Solution GOR				
Maximum Deviation		2.9 deg		
CEMENTING DATA				
Primary/Squeeze		Primary		
Casing String No				
Lead Cement Type		LITEFILL		
Volume		946 ft3		
Density		10 lbm/gal		
Water Loss				
Additives				
Tail Cement Type		CLASS G		
Volume		251 ft3		
Density		12.5 lbm/gal		
Water Loss				
Additives				
Expected Cement Top		30 ft		

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: 10−OCT−2013 13:12:48

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−JA	Type:	CMTD−B/A	Type:	7−46A−XS
Serial Number:	6911	Serial Number:	2952	Serial Number:	711172
Calibration Date:	05−09−2013	Calibration Date:	04−OCT−201	Length:	19600 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100518		
Calibration Cable Type:	7−46A−XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−6	Calibration RMS:	17	Rig Type:	LAND
Wheel Correction 2:	−6	Calibration Peak Error:	30		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	170.50 FT
Rig Up Length At Bottom:	170.40 FT
Rig Up Length Correction:	0.10 FT
Stretch Correction:	0.00 FT
Tool Zero Check At Surface:	0.10 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH PROCEDURES FOLLOWED
2. IDW USED AS PRIMARY DEPTH MEASUREMENT DEVICE
3. Z−CHART USED AS SECONDARY DEPTH REFERENCE
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1:	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
TOOLS RUN AS PER TOOL SKETCH	
TOOLS CENTRALIZED VIA TWO (2) KNUCKLES AND THREE (3) IN−LINE CENTALIZER	
FLOAT COLLAR SET AT 2936 FT	
NO PRESSURE APPLIED TO LOG, WELL FILLED WITH WATER	
LEAD CEMENT: 10 PPG LITEFILL	

TAIL CEMENT: 12.5 PPG

RUN 1		RUN 2	
SERVICE ORDER #:	CL4I−00028	SERVICE ORDER #:	
PROGRAM VERSION:	19C1−222	PROGRAM VERSION:	
FLUID LEVEL:	0 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

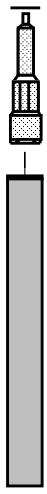
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT 34.0
LEH−QT 2608

MDSB_EDTC
Mud Tempe — 31.0

EDTC−B 31.0
EDTH−B 8054
EDTC−B 8054
EDTG−A/B

CTEM — 27.5

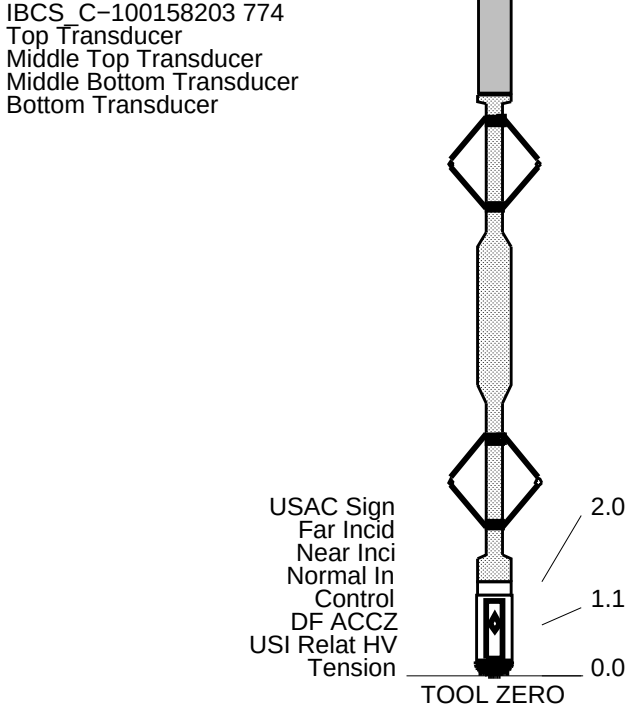
Gamma Ray — 25.7
EFTB DIAG
TelStatus
EDTCB Ele — 24.5

AH−107 24.5
AH−107 3837

AH−INLINE 22.5
AH−INLINE 5898

AH−107 18.7
AH−107 3918

USIT−E 16.7
ECH−MFA 1903
USAC−A 928
USIS−A 1832
USSC−B 972



MAXIMUM STRING DIAMETER 6.66 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS
5 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. **Well: SG 8506E−34 (E34) 496**

Input DLIS Files

DEFAULT	**USI_005LUP**	**FN:4**	**PRODUCER**	**10−Oct−2013 14:58**	**2856.5 FT**	**35.5 FT**

Output DLIS Files

DEFAULT	**USI_010PUP**	**FN:9**	**PRODUCER**	**10−Oct−2013 16:35**	**2856.5 FT**	**35.5 FT**

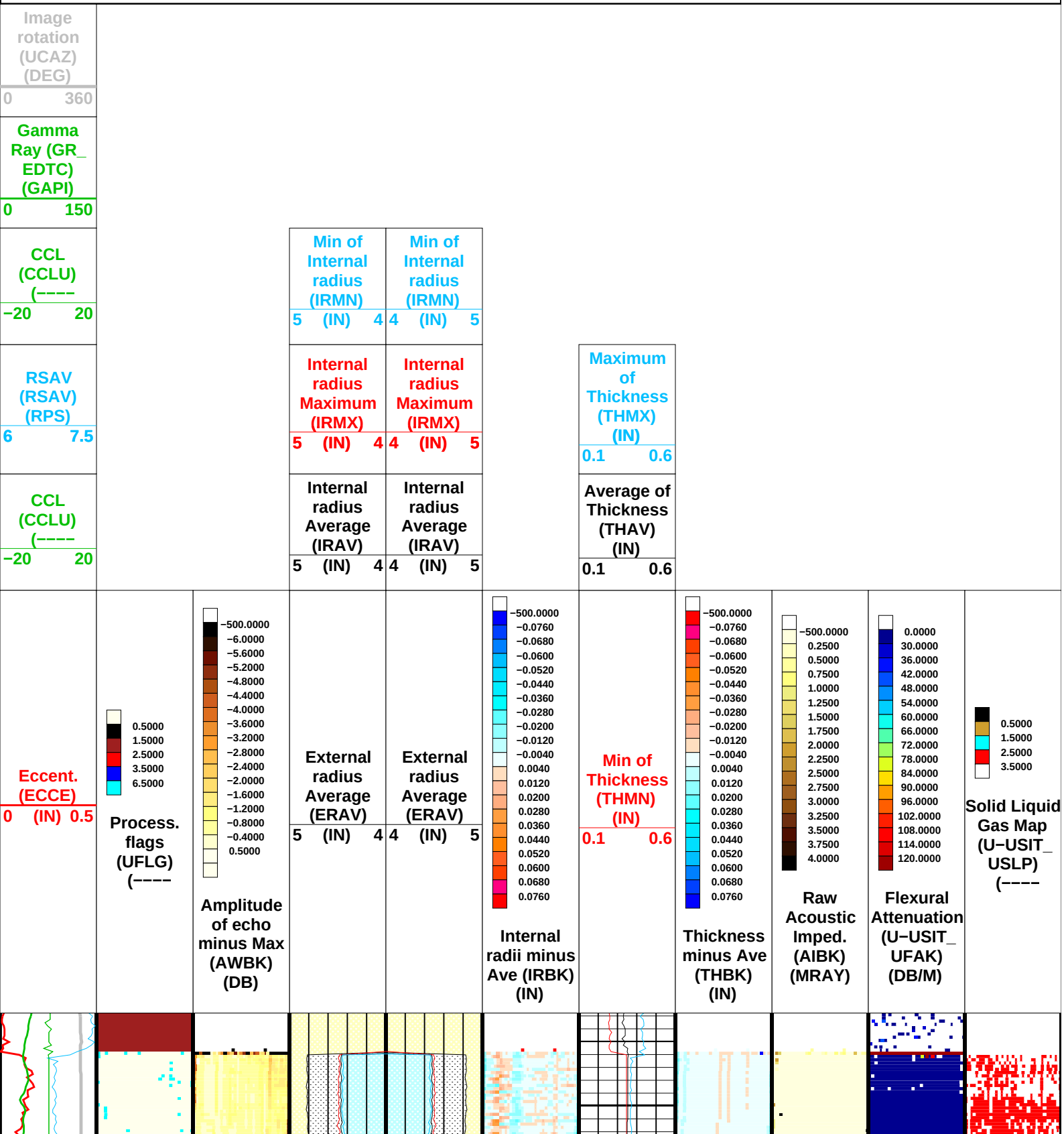
OP System Version: 19C1−222

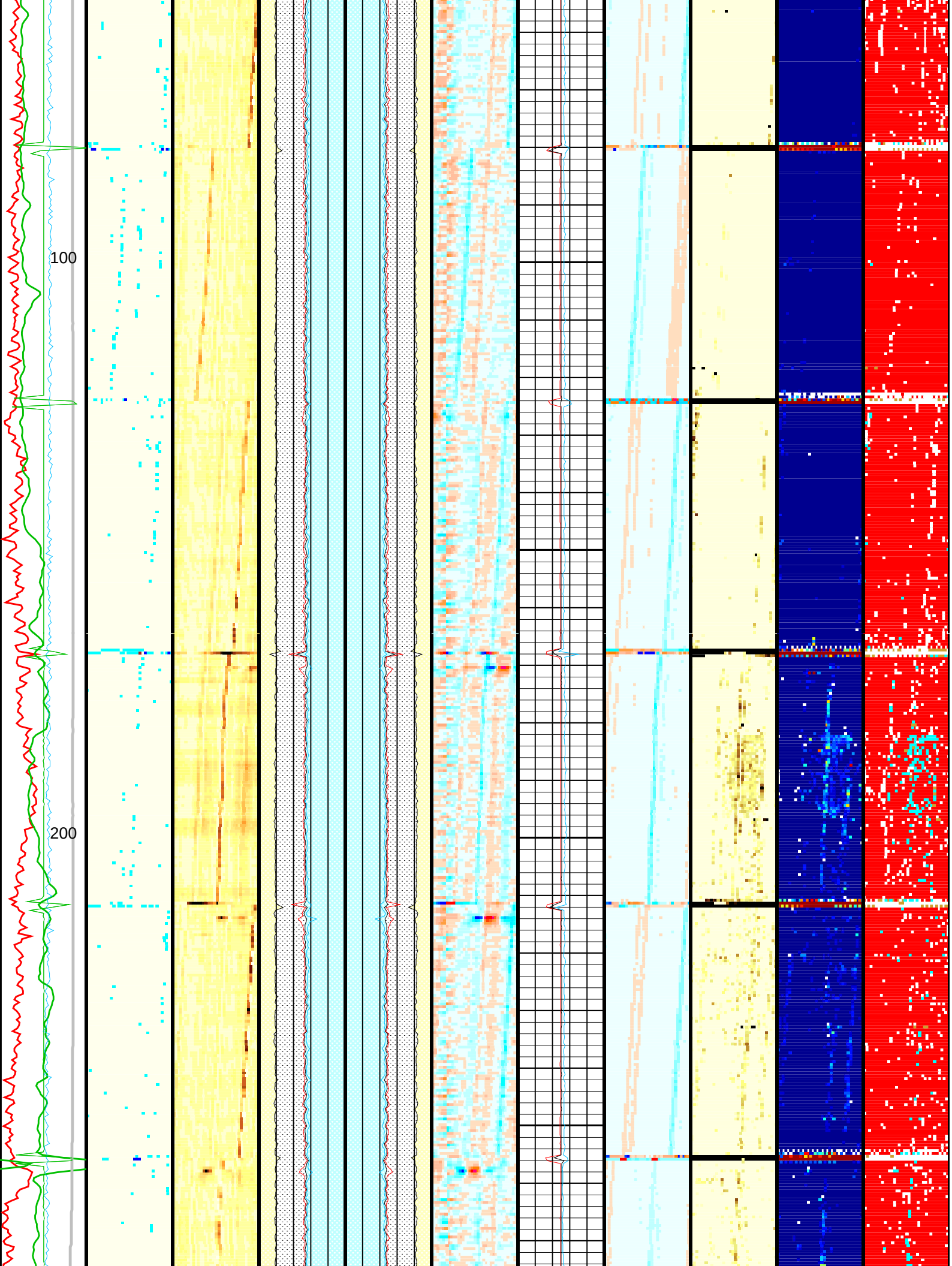
USIT−E	**19C1−222**	**EDTC−B**	**19C1−222**

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	**203.00**	**1.70**
2493.00	**205.00**	**1.65**

2100.00	206.00	1.63
1793.00	208.00	1.60
1486.00	210.00	1.55
1178.00	211.00	1.50
915.00	213.00	1.50
607.00	214.00	1.45
300.00	215.00	1.45

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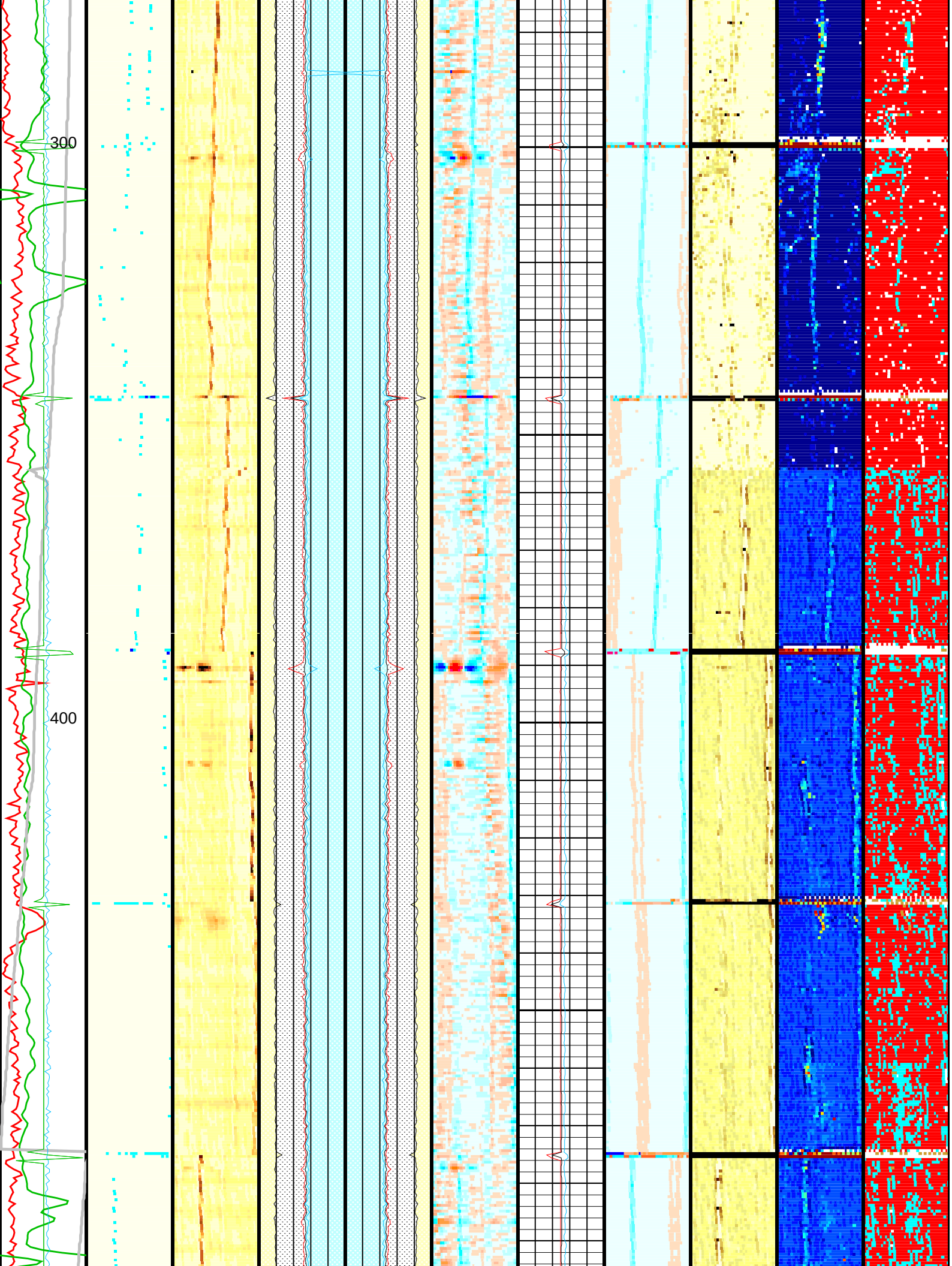
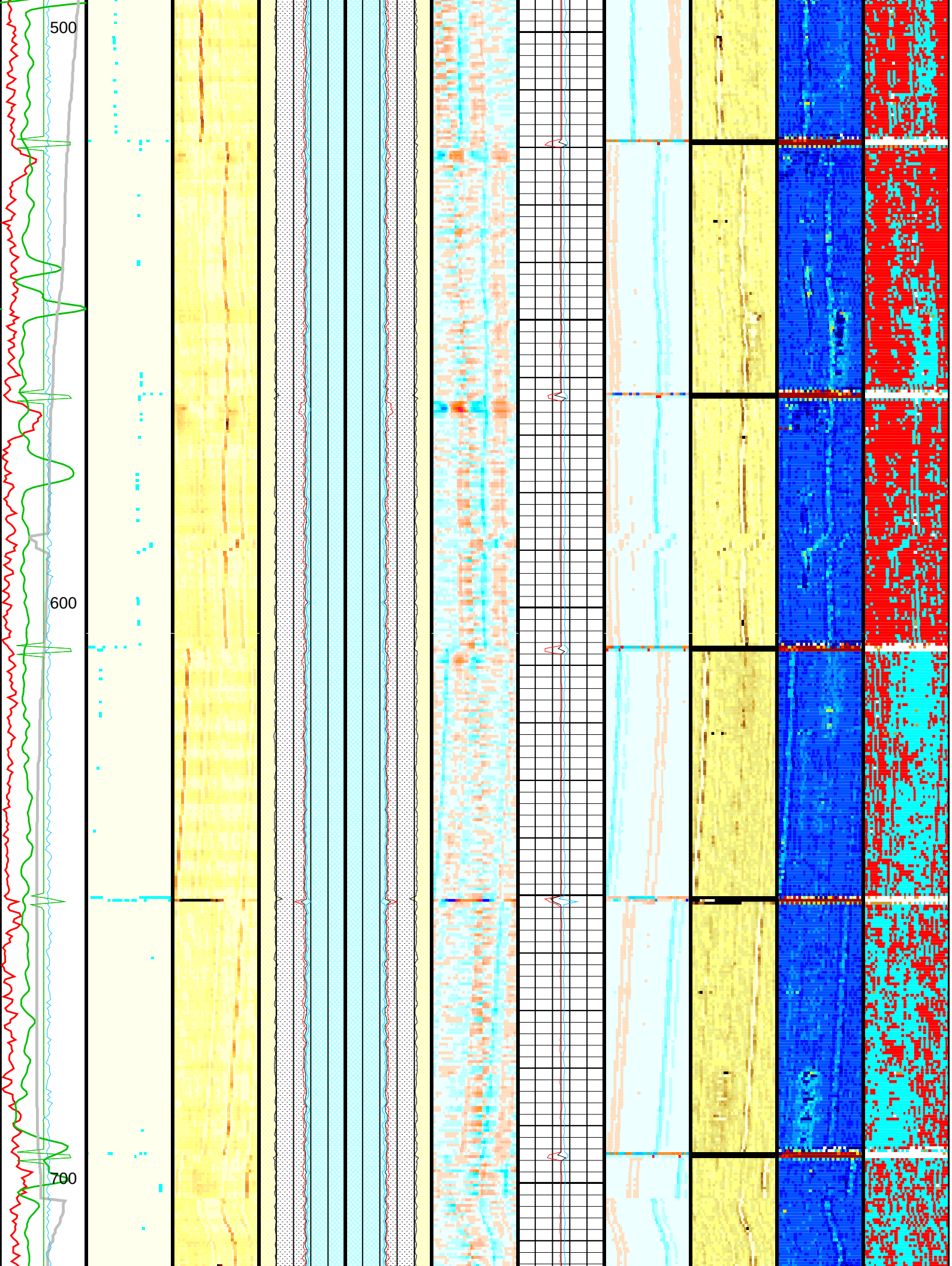
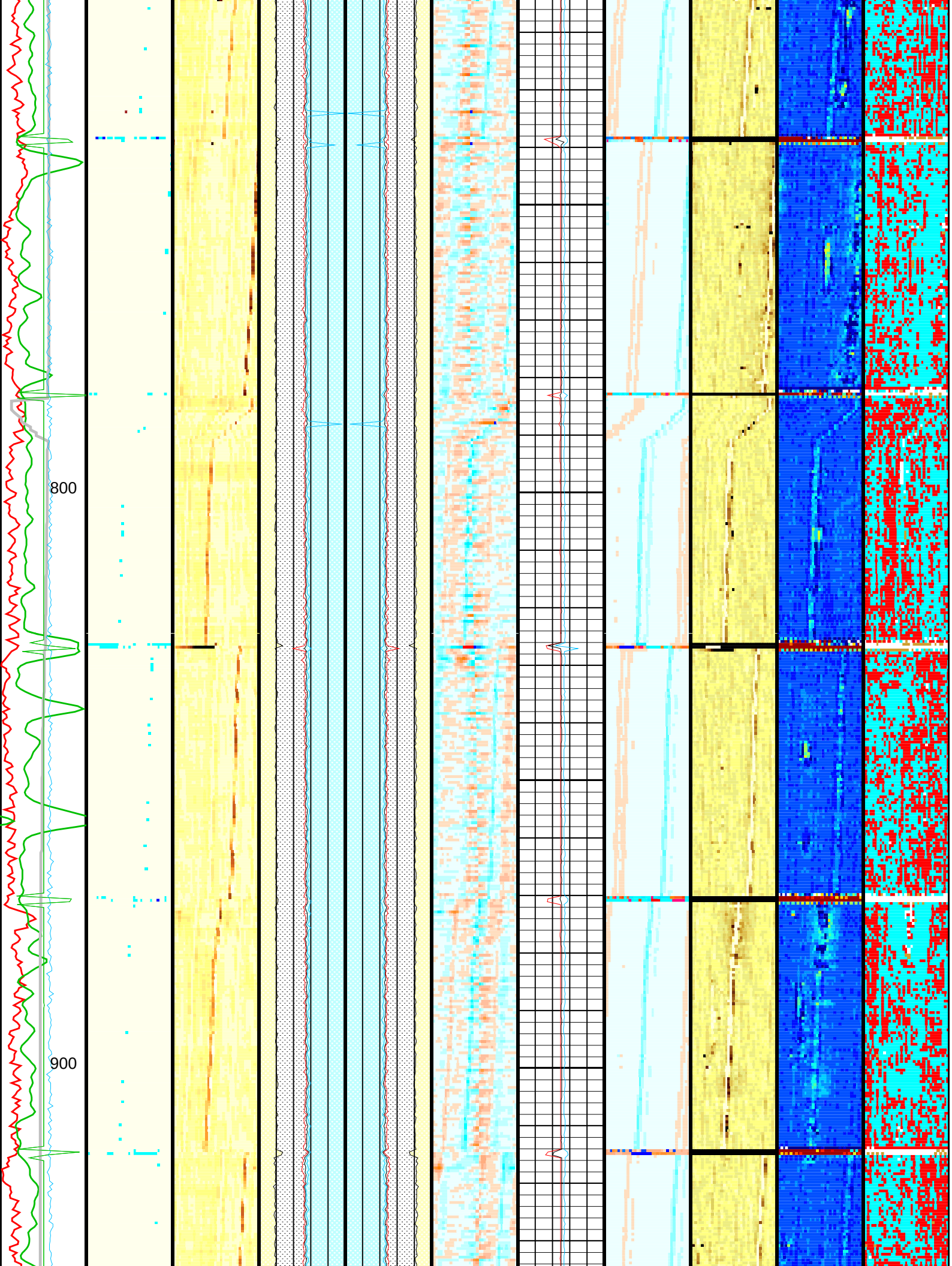

300
400


500
600
700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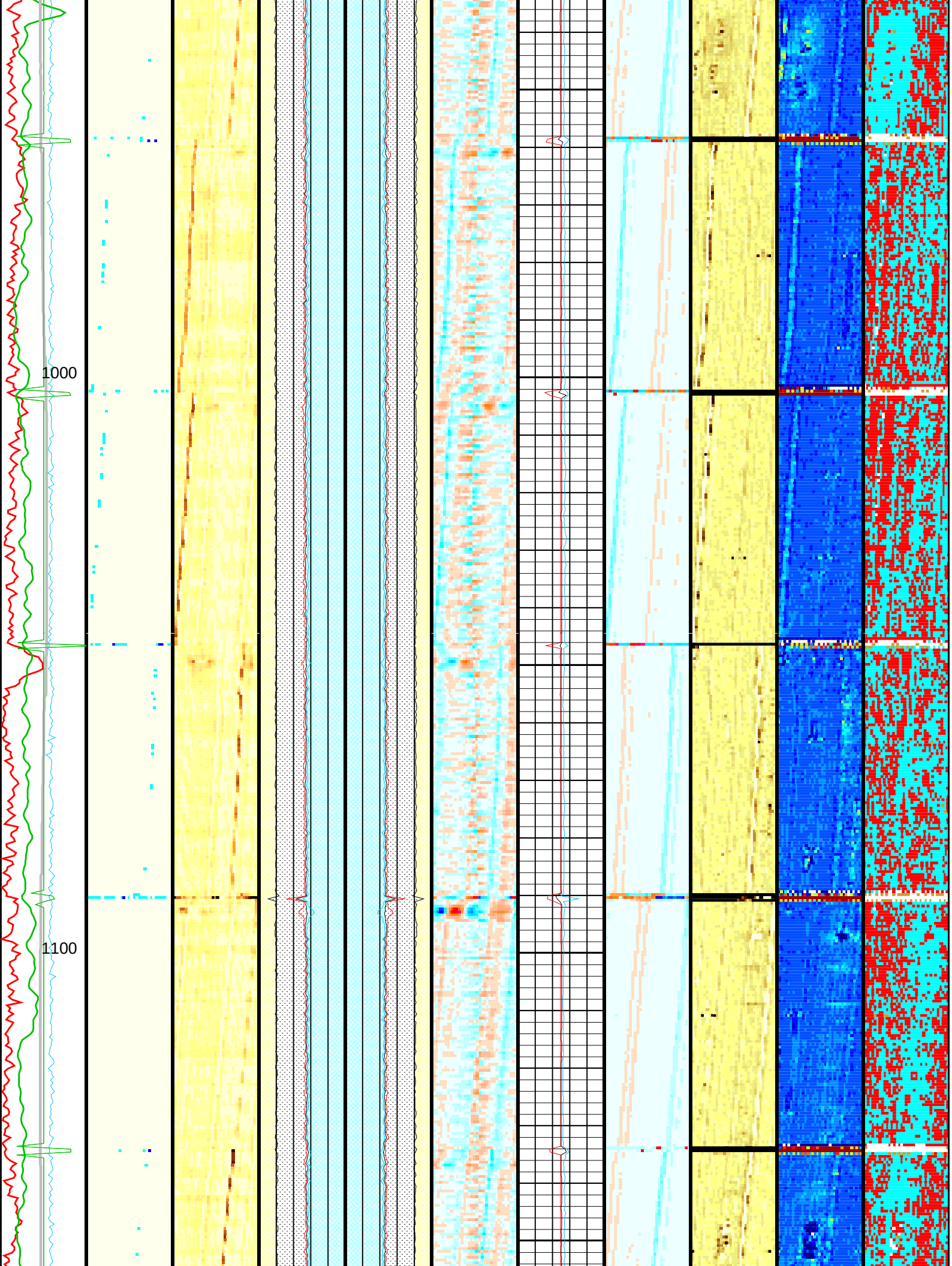
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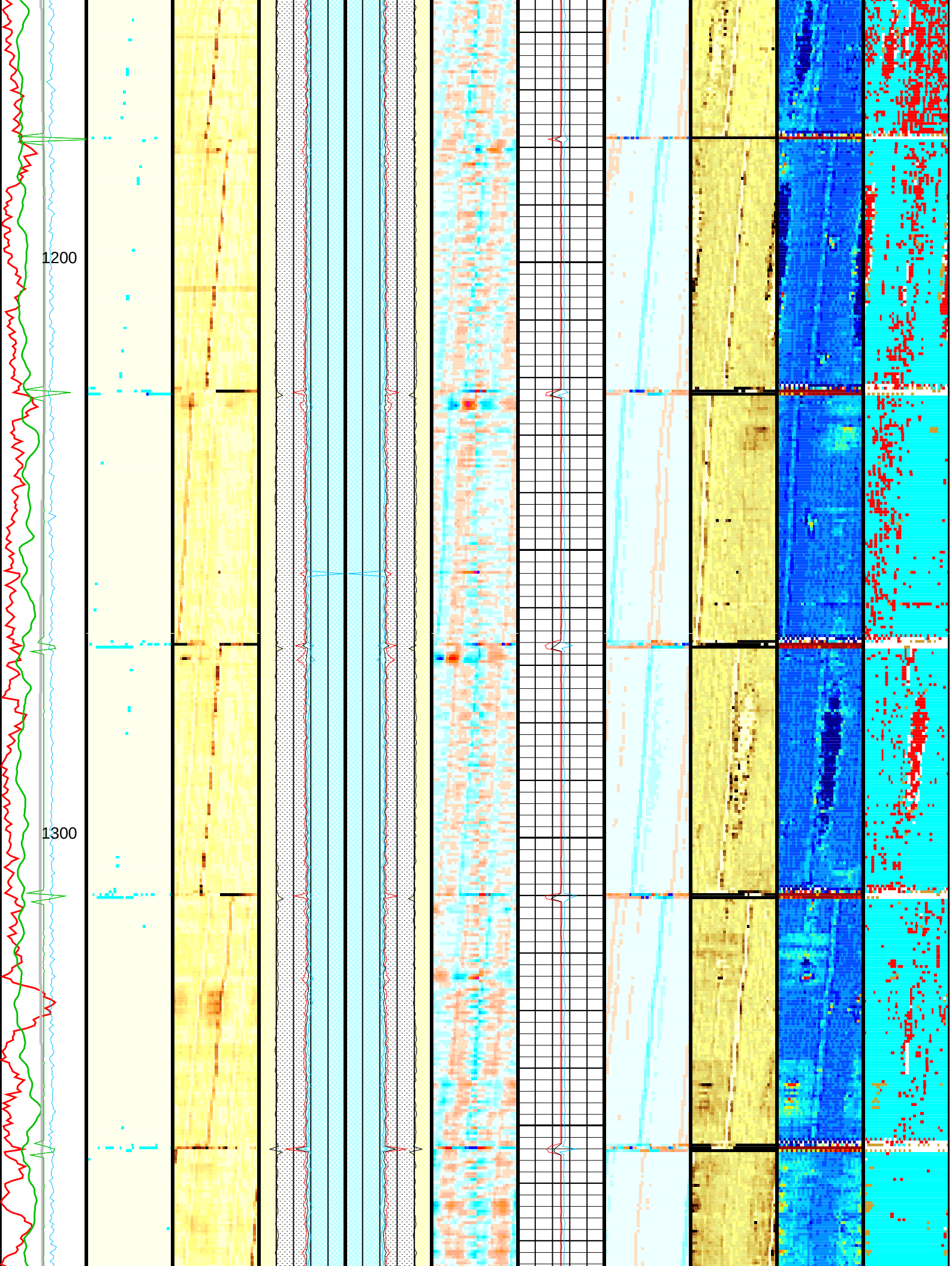
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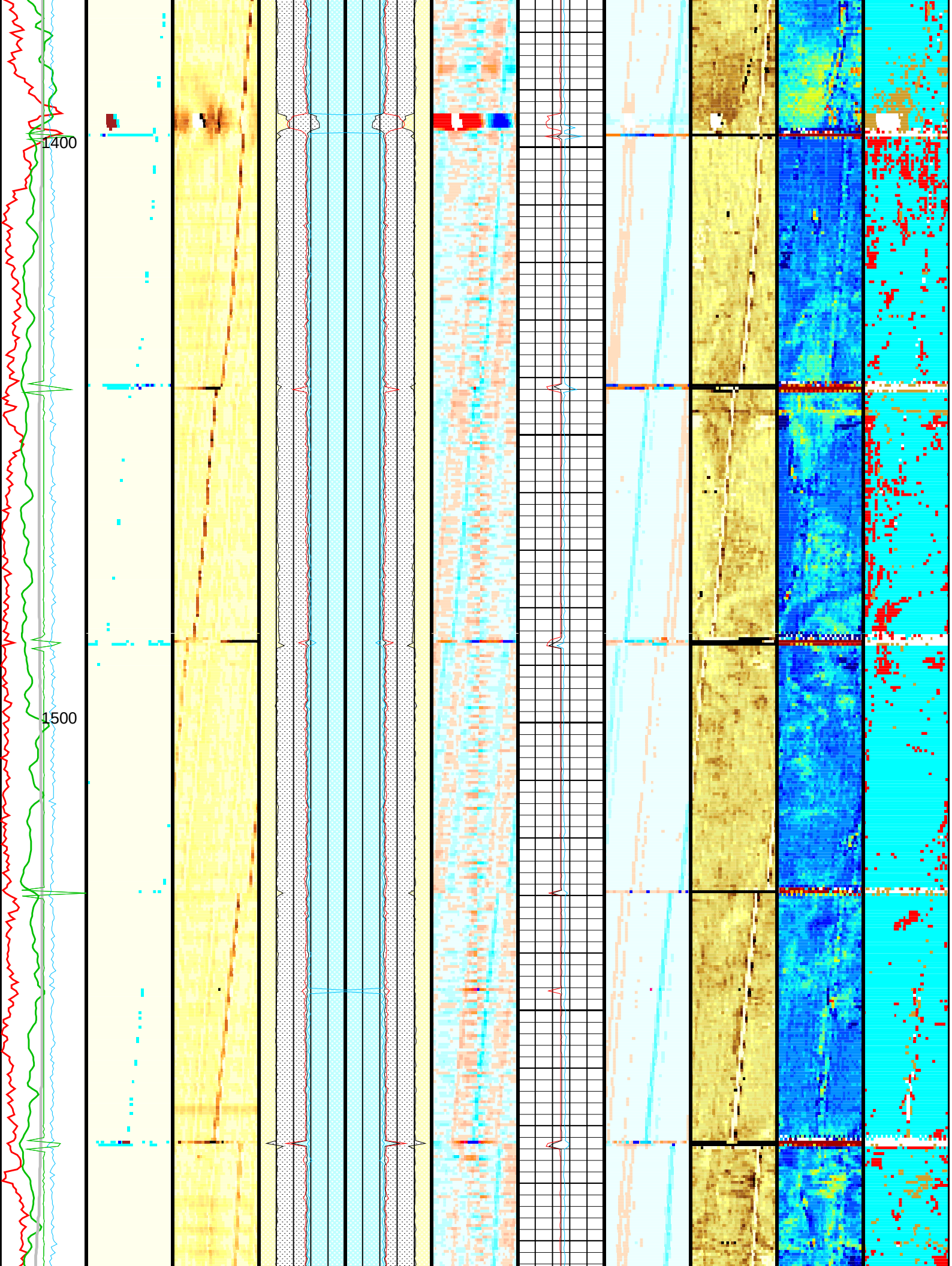
1300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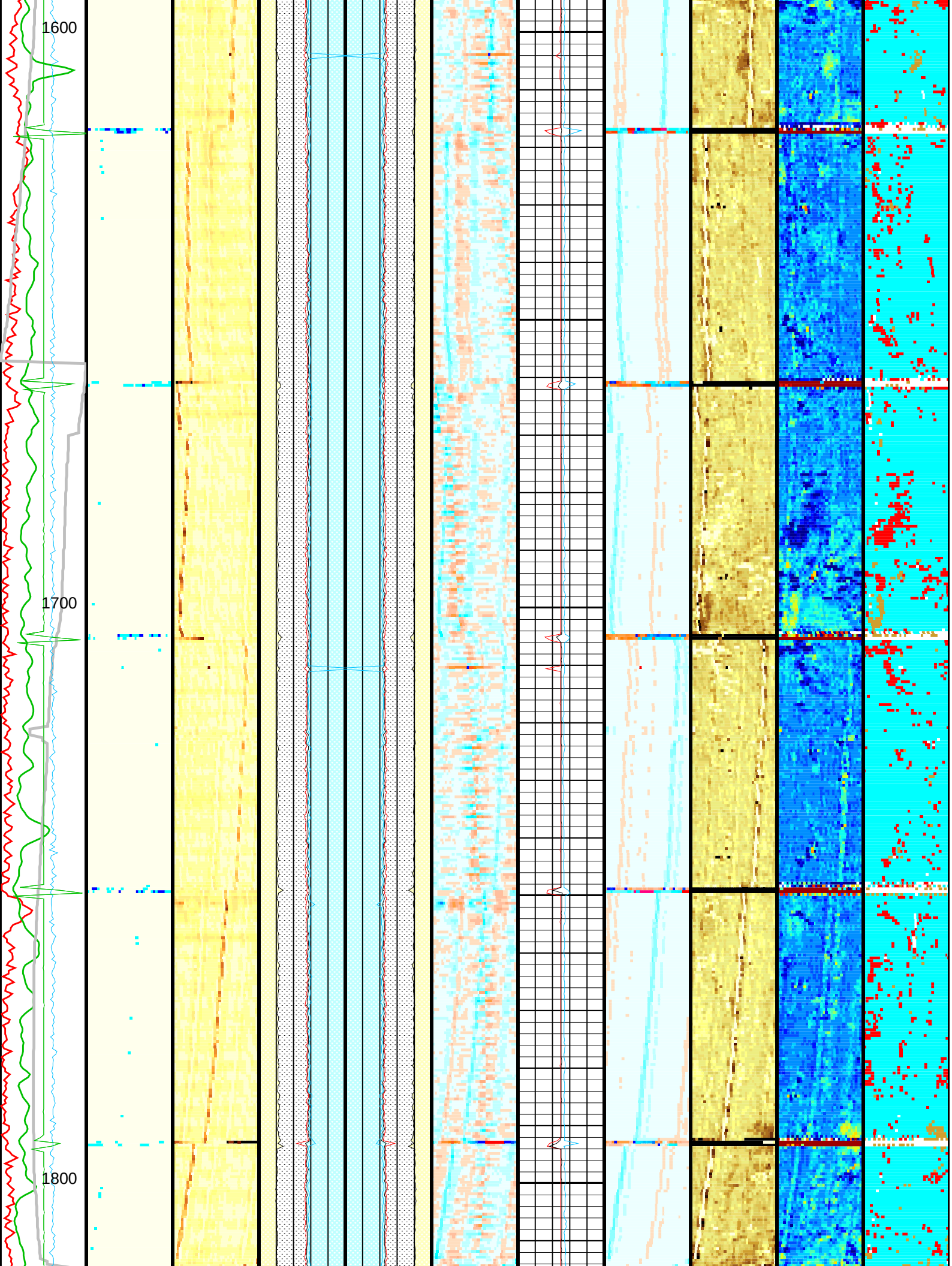
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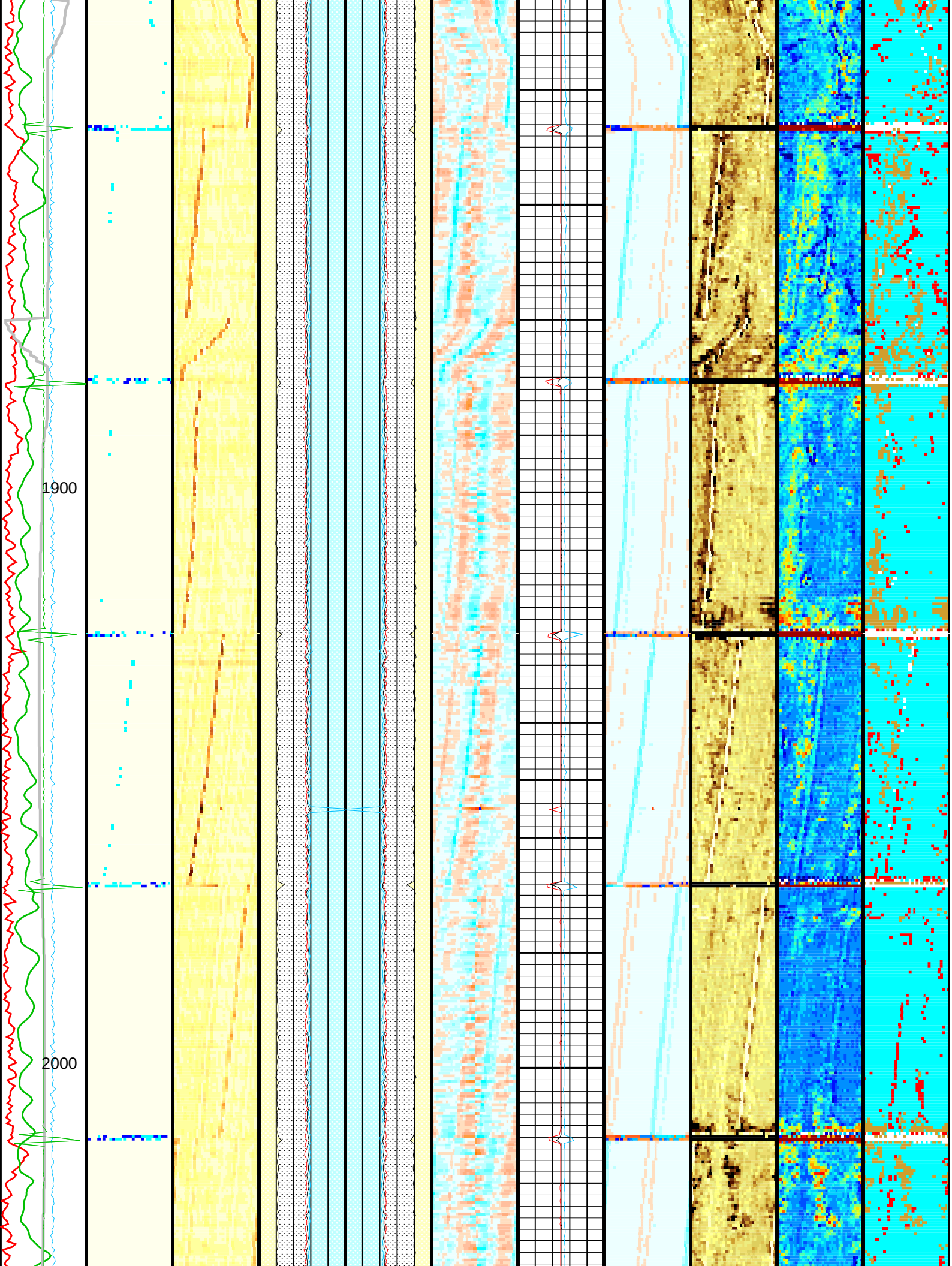
1700
1800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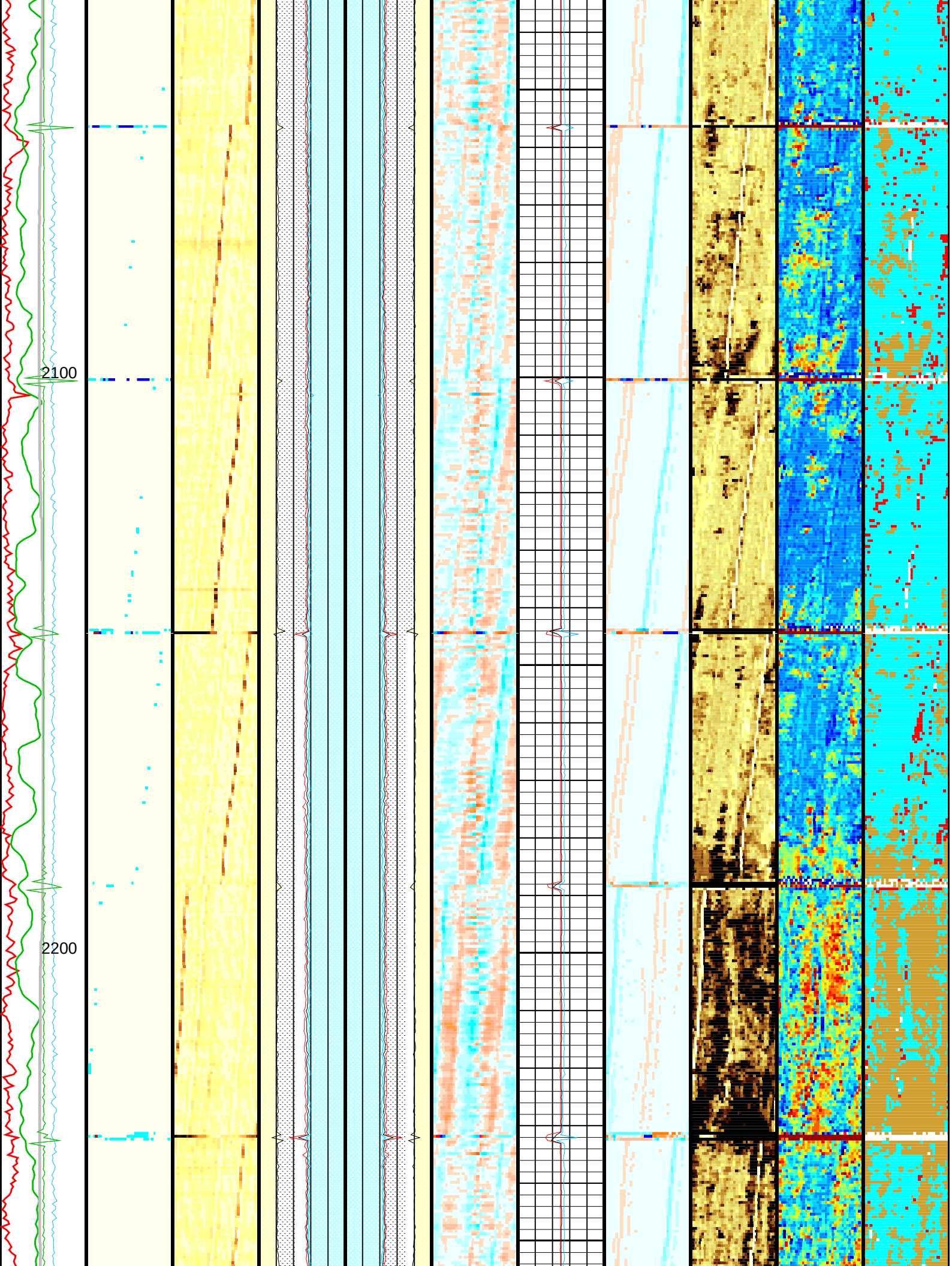
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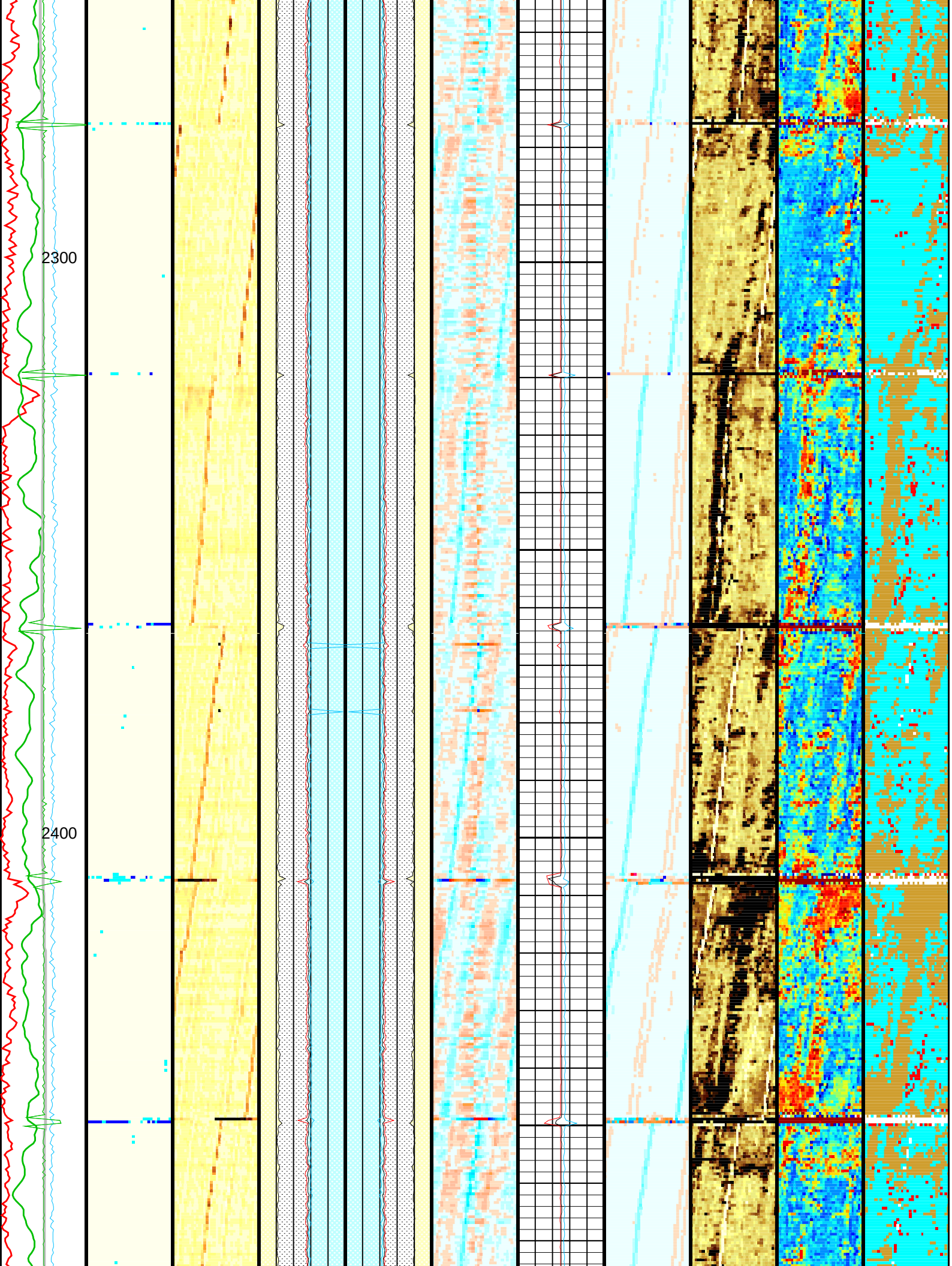
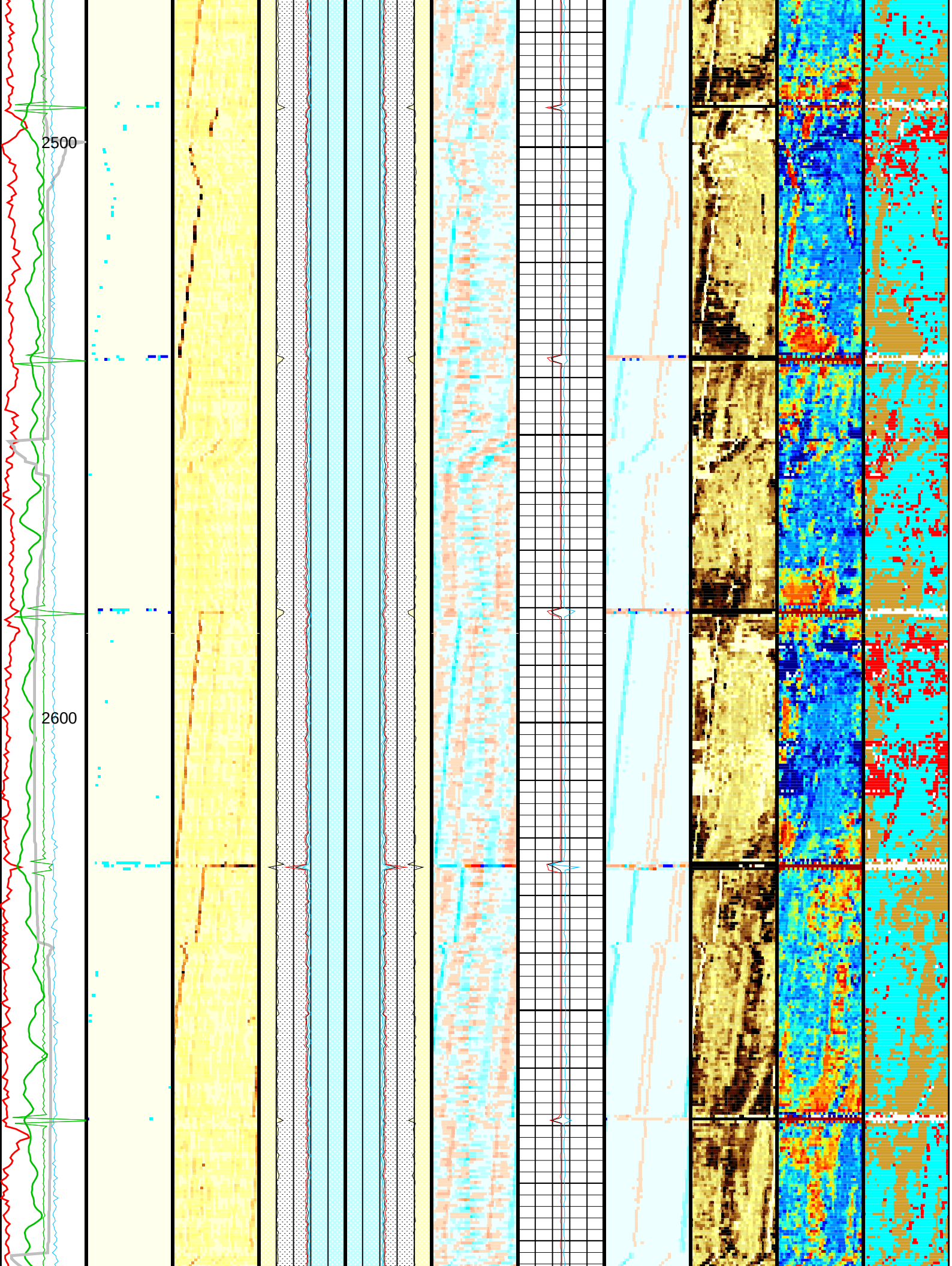
2200


2300
2400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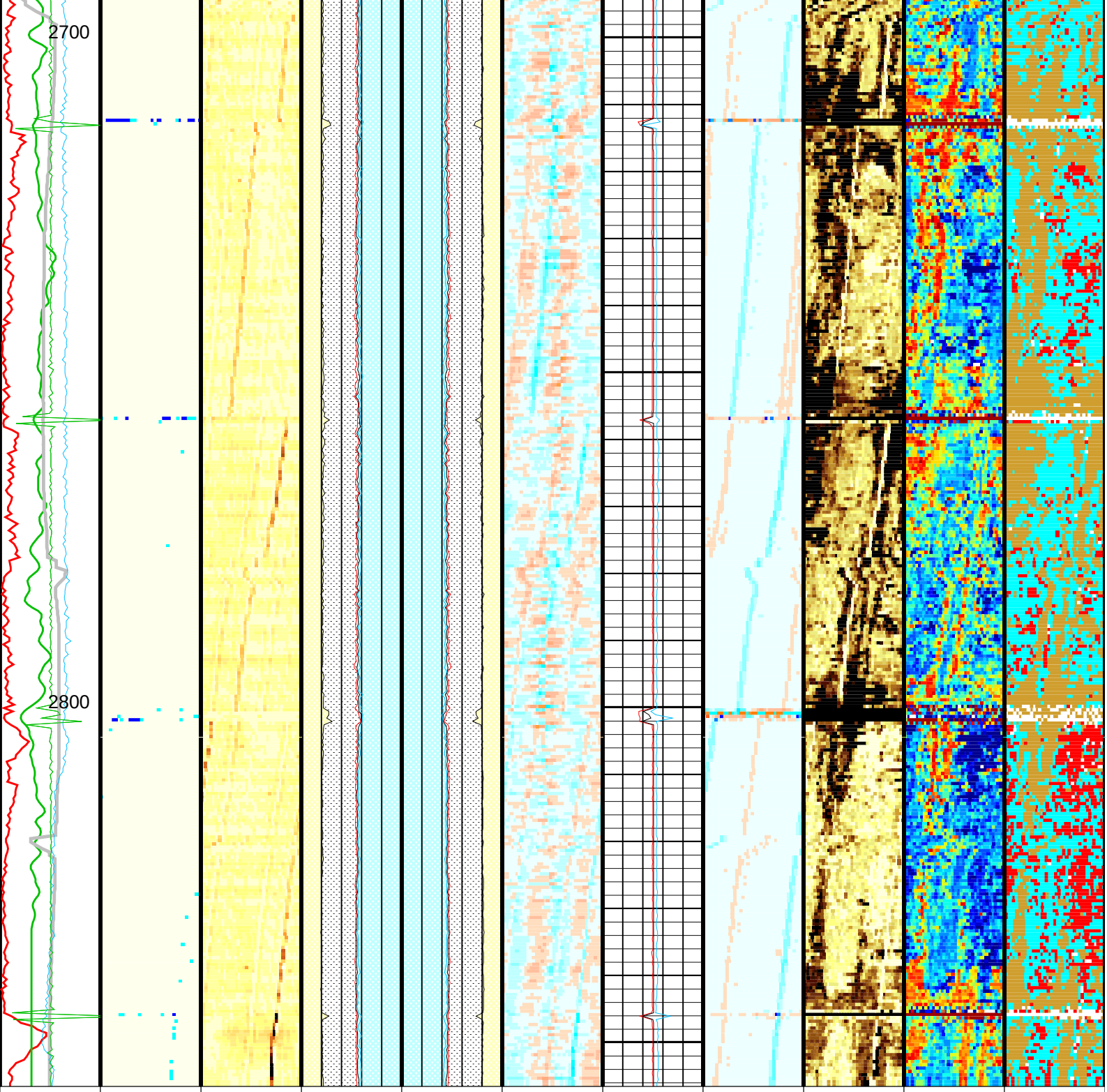
2600



Eccent. (ECCE)
0 (IN) 0.5

0.5000
1.5000
2.5000
3.5000
6.5000

Process. flags (UFLG) (----

−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

Amplitude of echo minus Max (AWBK)

External radius Average (ERAV)
5 (IN) 4

External radius Average (ERAV)
4 (IN) 5

−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

Internal radii minus

Min of Thickness (THMN) (IN)
0.1 0.6

−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

Thickness minus Ave

−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)

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)

0.5000
1.5000
2.5000
3.5000

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

(AWBK) (DB)		Ave (IRBK) (IN)		(THBK) (IN)	(MRAY)	(DB/M)	

CCL (CCLU) (-----	Internal radius Average (IRAV)	Internal radius Average (IRAV)	Average of Thickness (THAV) (IN)
-20 20	5 (IN) 4	4 (IN) 5	0.1 0.6
RSAV (RSAV) (RPS)	Internal radius Maximum (IRMX)	Internal radius Maximum (IRMX)	Maximum of Thickness (THMX) (IN)
6 7.5	5 (IN) 4	4 (IN) 5	0.1 0.6
CCL (CCLU) (-----	Min of Internal radius (IRMN)	Min of Internal radius (IRMN)	
-20 20	5 (IN) 4	4 (IN) 5	
Gamma Ray (GR_ EDTC) (GAPI)			
0 150			
Image rotation (UCAZ) (DEG)			
0 360			

Format: USI_IBC_SLG_Composite **Vertical Scale: 5" per 100'** **Graphics File Created: 10-Oct-2013 16:35**

OP System Version: 19C1-222

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

All USI Images are outside views

Center of image corresponds to bottom of casing

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	9.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	8.921	IN
DFVL	Default Fluid Velocity	201	US/F
DOT	Diameter of Transducer Sensor	4.874	IN
EMXV	EMEX Voltage	70	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	RB	
MW	Mud Weight	8.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.37795	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	0.352	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	−42	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_C	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_9_58_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.1081	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.65	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
System and Miscellaneous			
BS	Bit Size	14.750	IN
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

Output DLIS Files

DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35		

Schlumberger

MAIN PASS
2 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. **Well: SG 8506E−34 (E34) 496**

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

Output DLIS Files

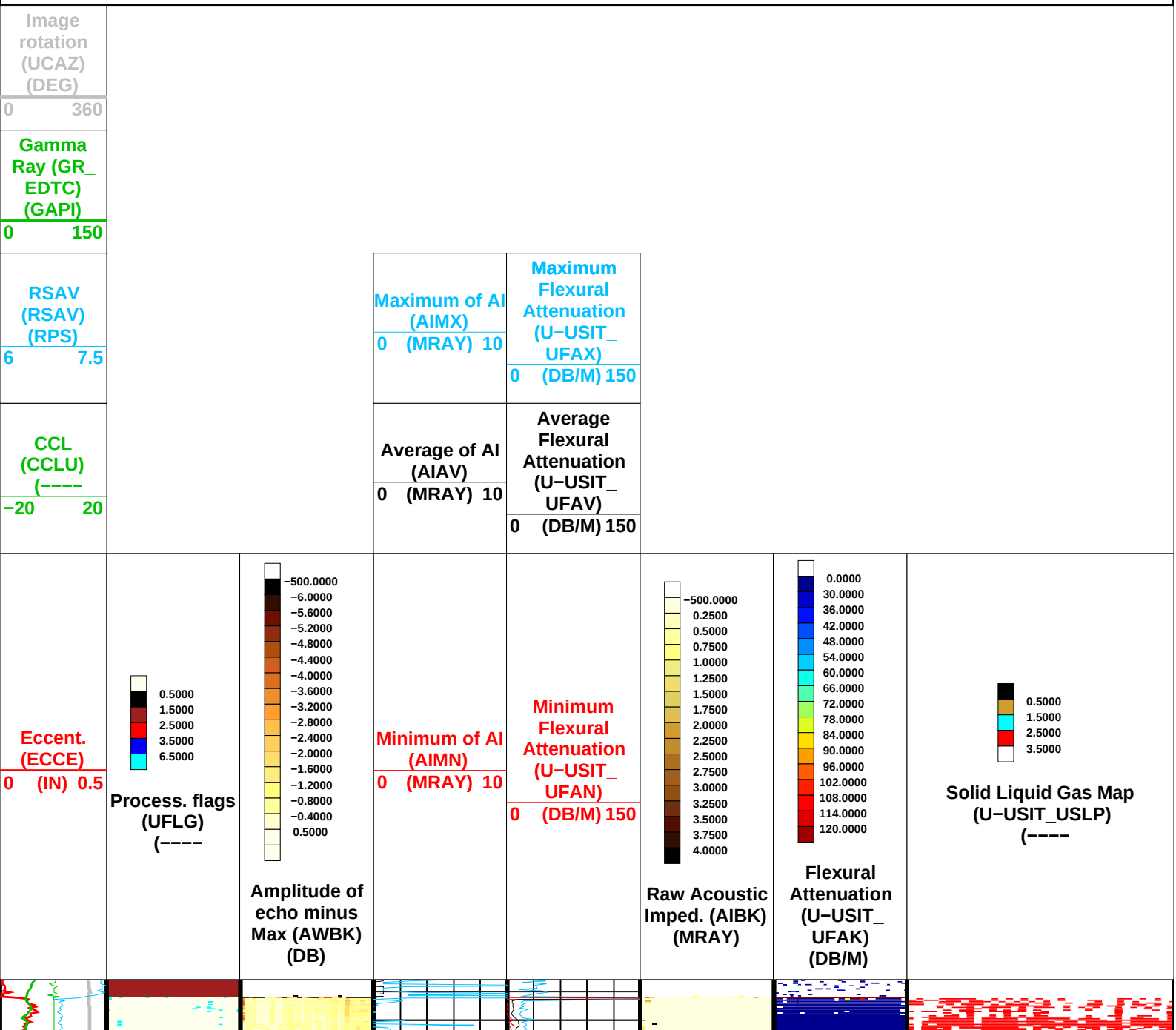
DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35	2856.5 FT	35.5 FT

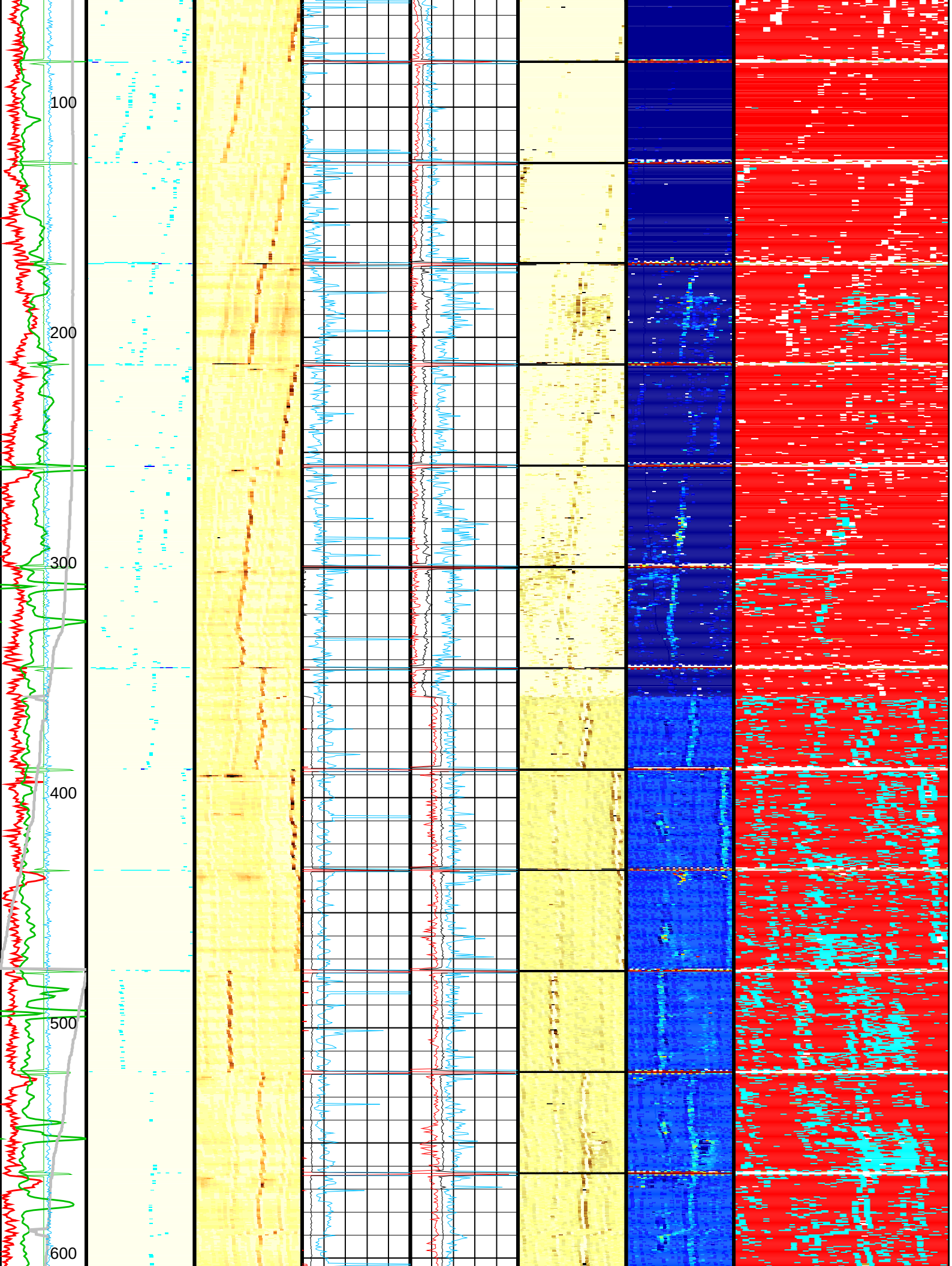
OP System Version: 19C1−222

USIT−E	19C1−222	EDTC−B	19C1−222

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	203.00	1.70
2493.00	205.00	1.65
2100.00	206.00	1.63
1793.00	208.00	1.60
1486.00	210.00	1.55
1178.00	211.00	1.50
915.00	213.00	1.50
607.00	214.00	1.45
300.00	215.00	1.45

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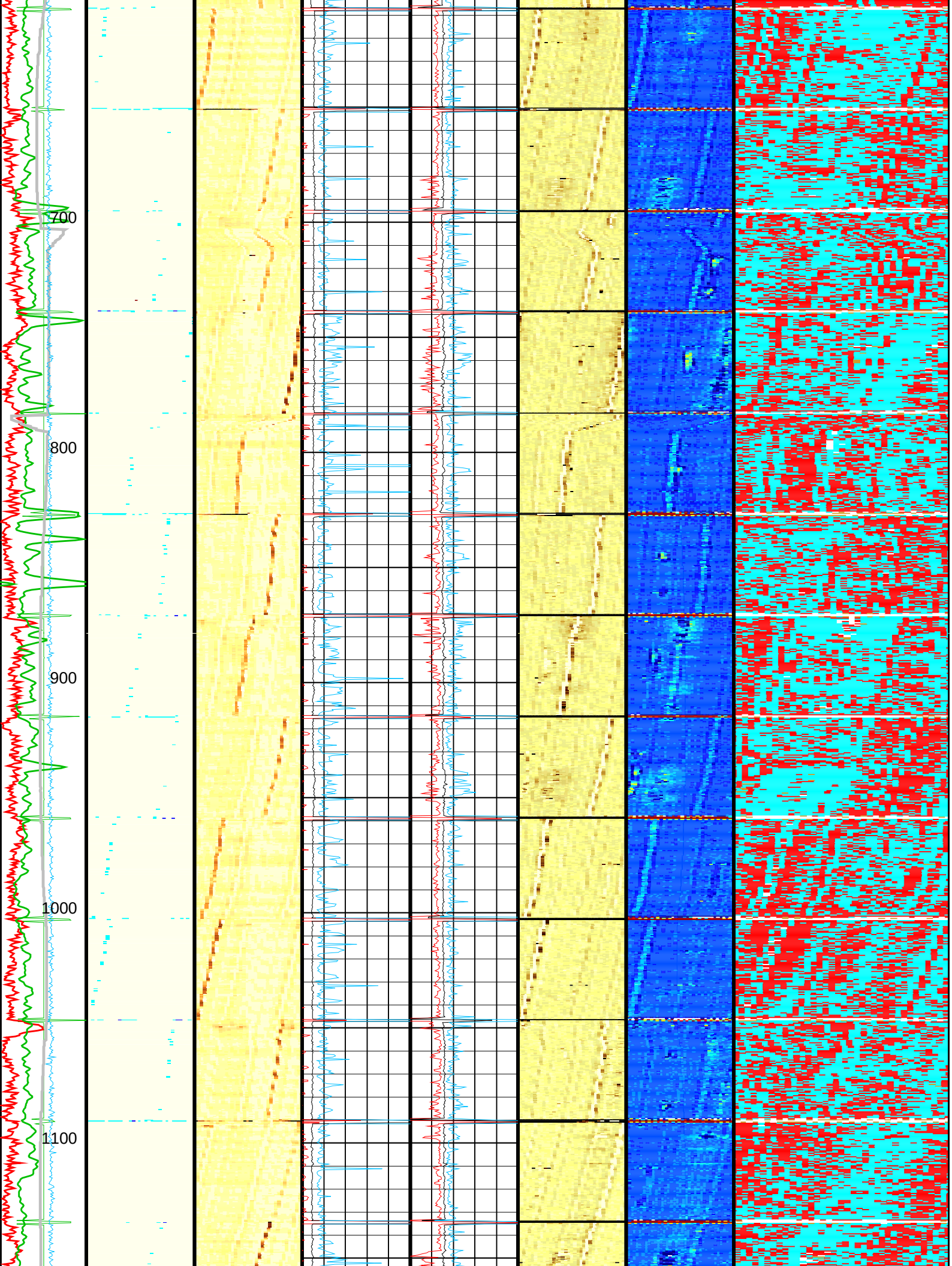
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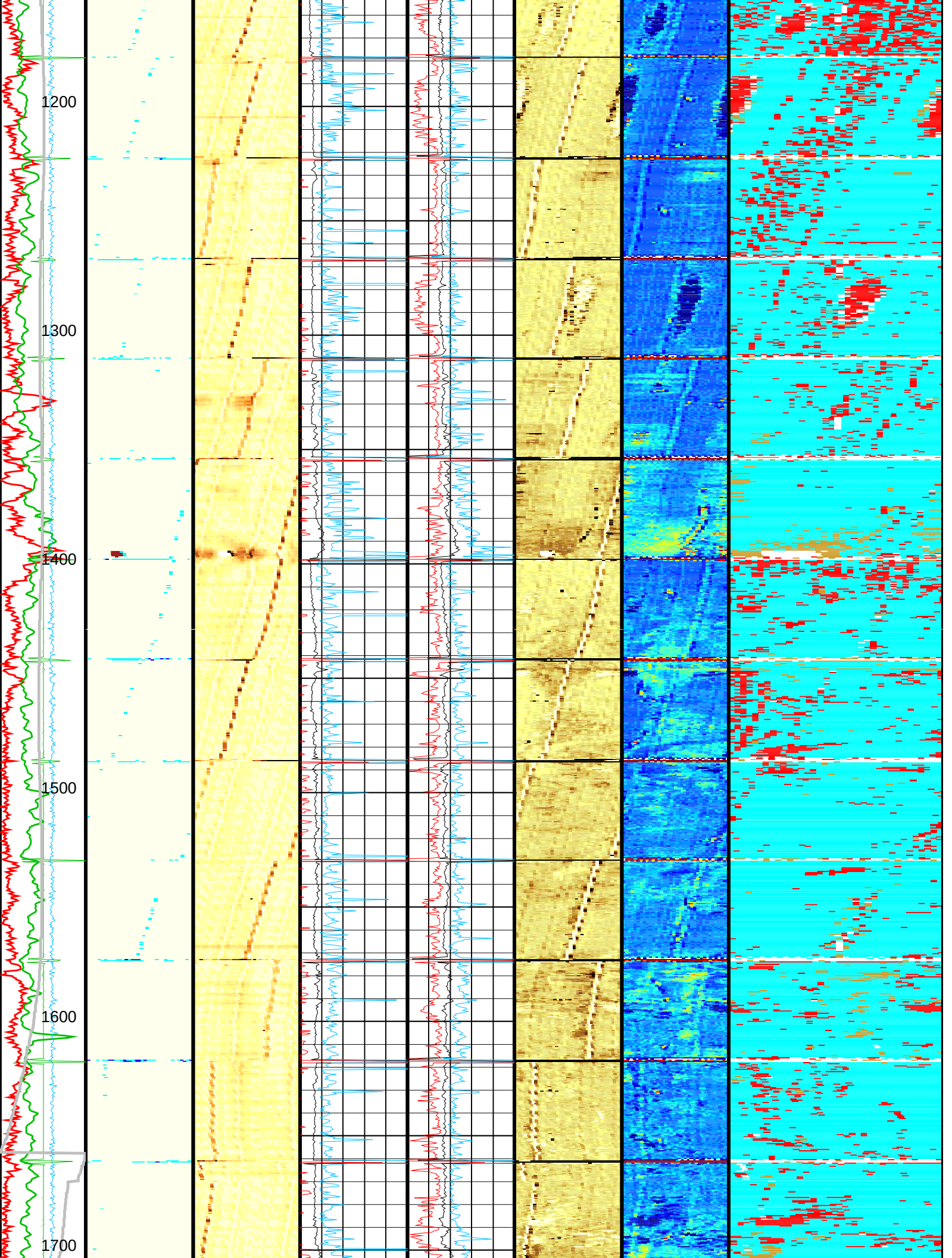
800
900
1000
1100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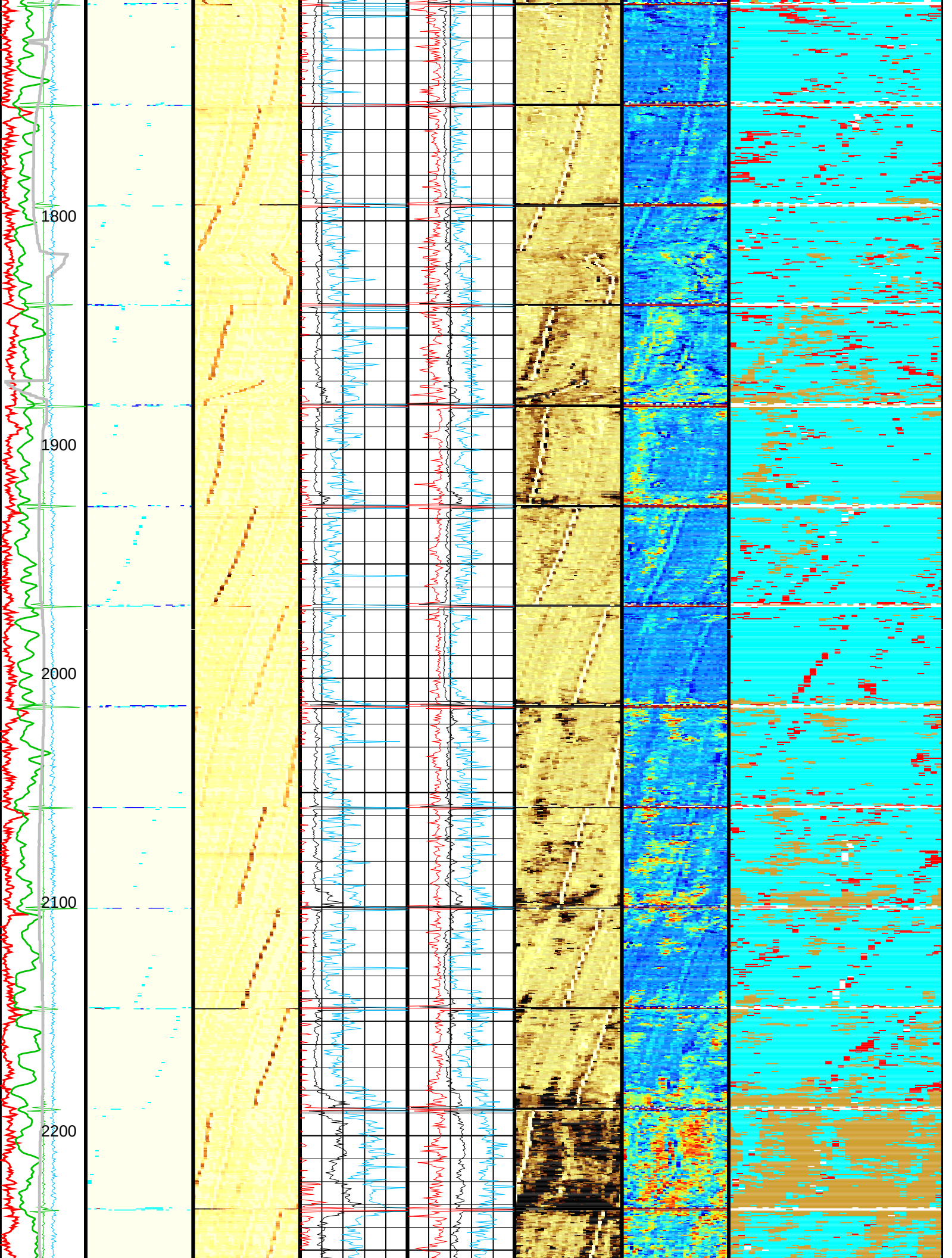
1300
1400
1500
1600
1700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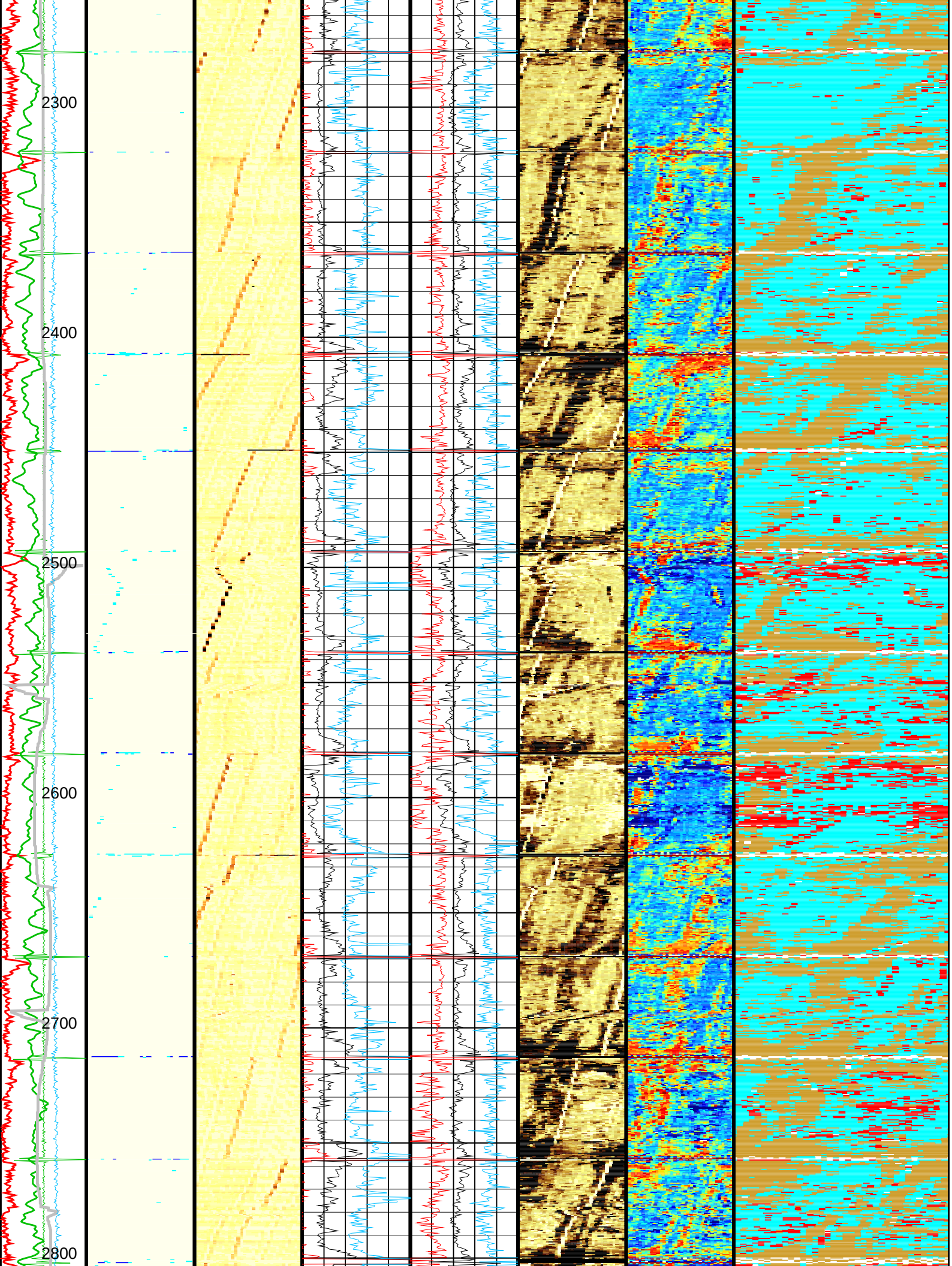
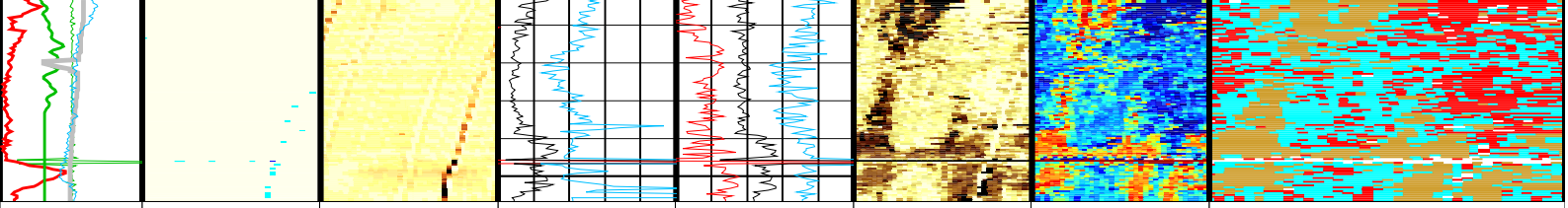
1900
2000
2100
2200


2300
2400
2500
2600
2700
2800



Eccent. (ECCE) 0 (IN) 0.5	Process. flags (UFLG) (---- 0.5000 1.5000 2.5000 3.5000 6.5000	Amplitude of echo minus Max (AWBK) (DB) −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	Minimum of AI (AIMN) 0 (MRAY) 10	Minimum Flexural Attenuation (U−USIT_ UFAN) 0 (DB/M) 150	Raw Acoustic Imped. (AIBK) (MRAY) −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	Flexural Attenuation (U−USIT_ UFAK) (DB/M) 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	Solid Liquid Gas Map (U−USIT_USLP) (---- 0.5000 1.5000 2.5000 3.5000
CCL (CCLU) (---- −20 20			Average of AI (AIAV) 0 (MRAY) 10	Average Flexural Attenuation (U−USIT_ UFAV) 0 (DB/M) 150			
RSAV (RSAV) (RPS) 6 7.5			Maximum of AI (AIMX) 0 (MRAY) 10	Maximum Flexural Attenuation (U−USIT_ UFAX) 0 (DB/M) 150			
Gamma Ray (GR_ EDTC) (GAPI) 0 150							
Image rotation (UCAZ) (DEG) 0 360							

Format: USI_IBC_SLG **Vertical Scale: 2" per 100'** **Graphics File Created: 10−Oct−2013 16:35**

OP System Version: 19C1−222

USIT−E	**19C1−222**	**EDTC−B**	**19C1−222**

All USI Images are outside views

Center of image corresponds to bottom of casing

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

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	9.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	8.921	IN
DFVL	Default Fluid Velocity	201	US/F
DOT	Diameter of Transducer Sensor	4.874	IN
EMXV	EMEX Voltage	70	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	RB	
MW	Mud Weight	8.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.37795	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	0.352	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	−42	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_C	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_9_58_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.1081	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.65	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
	System and Miscellaneous		
BS	Bit Size	14.750	IN
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

Output DLIS Files

DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35

Schlumberger

MAIN PASS
2 INCH

Company: ENCANA OIL & GAS (USA) INC. Well: SG 8506E−34 (E34) 496

Input DLIS Files

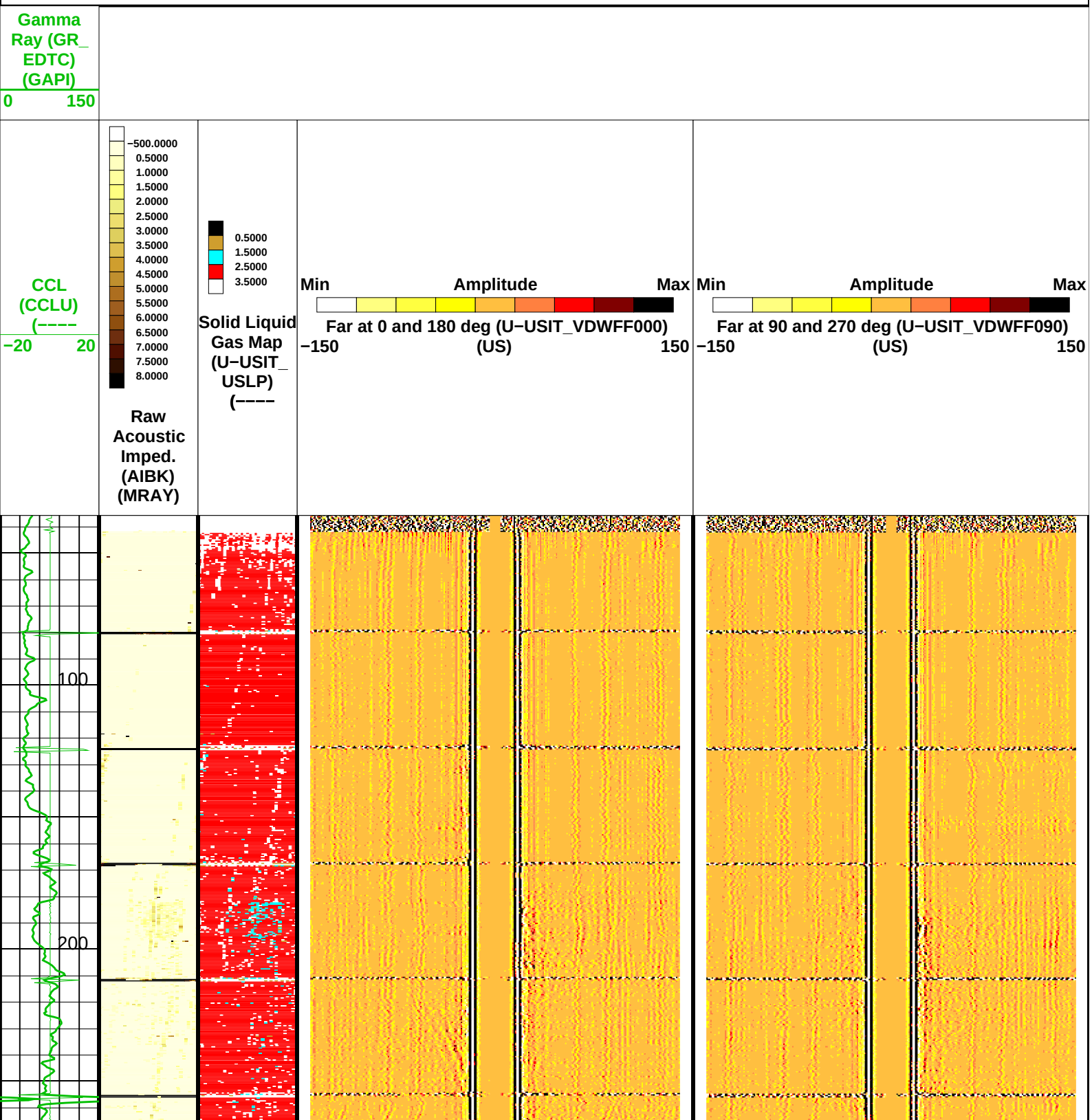
DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

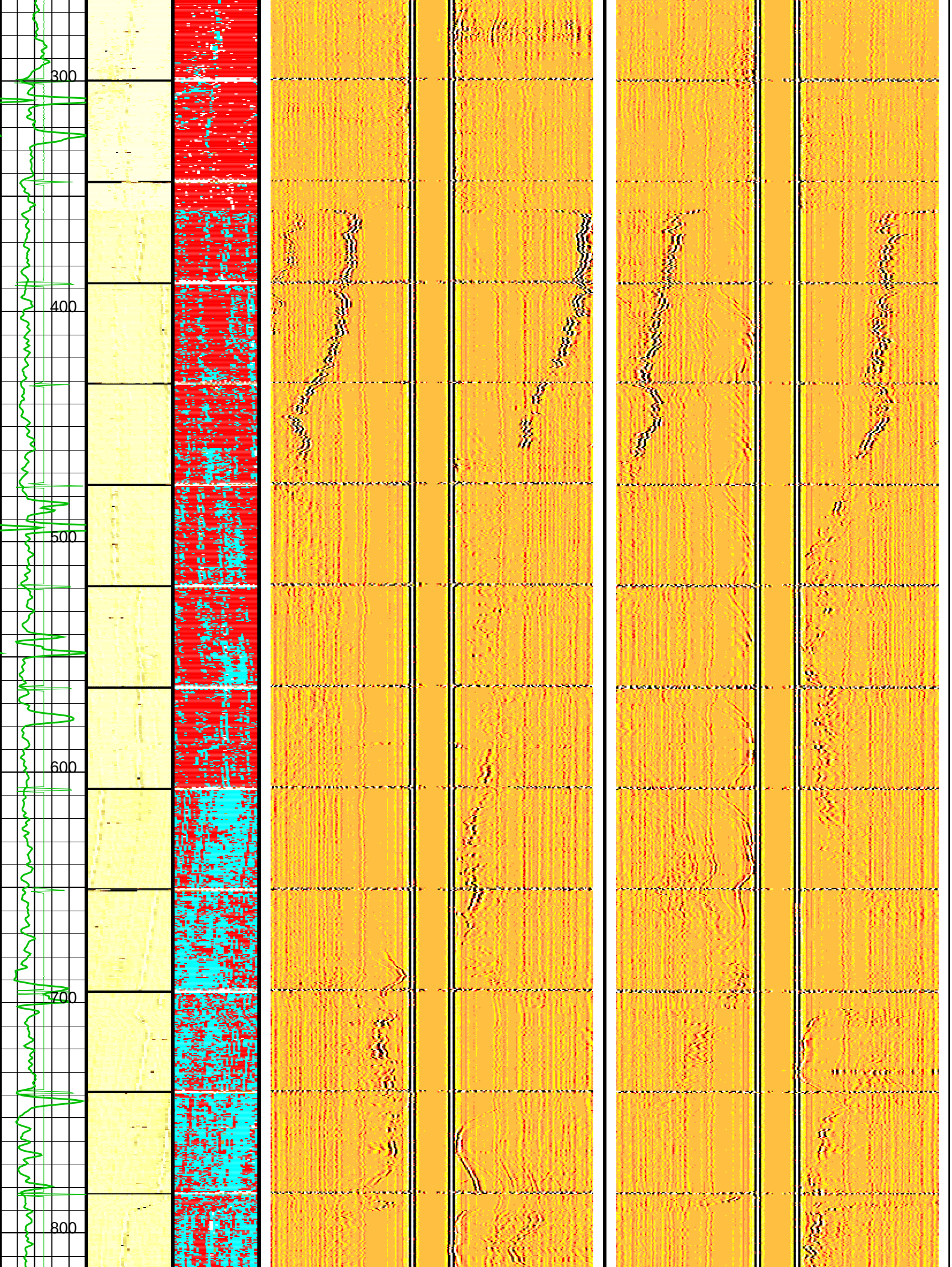
Output DLIS Files

DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35	2856.5 FT	35.5 FT

OP System Version: 19C1−222

USIT−E	19C1−222	EDTC−B	19C1−222

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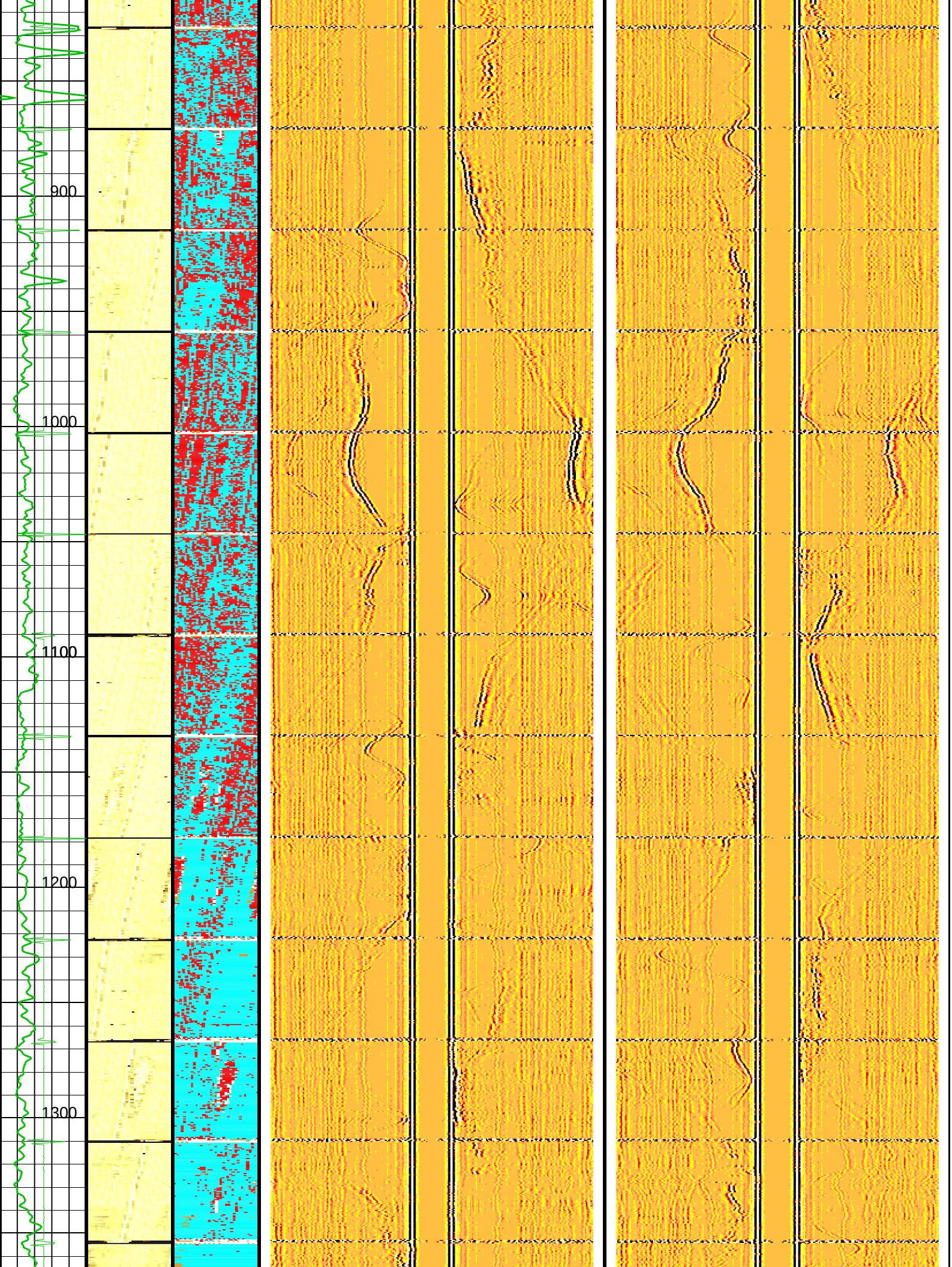
400
500
600
700
800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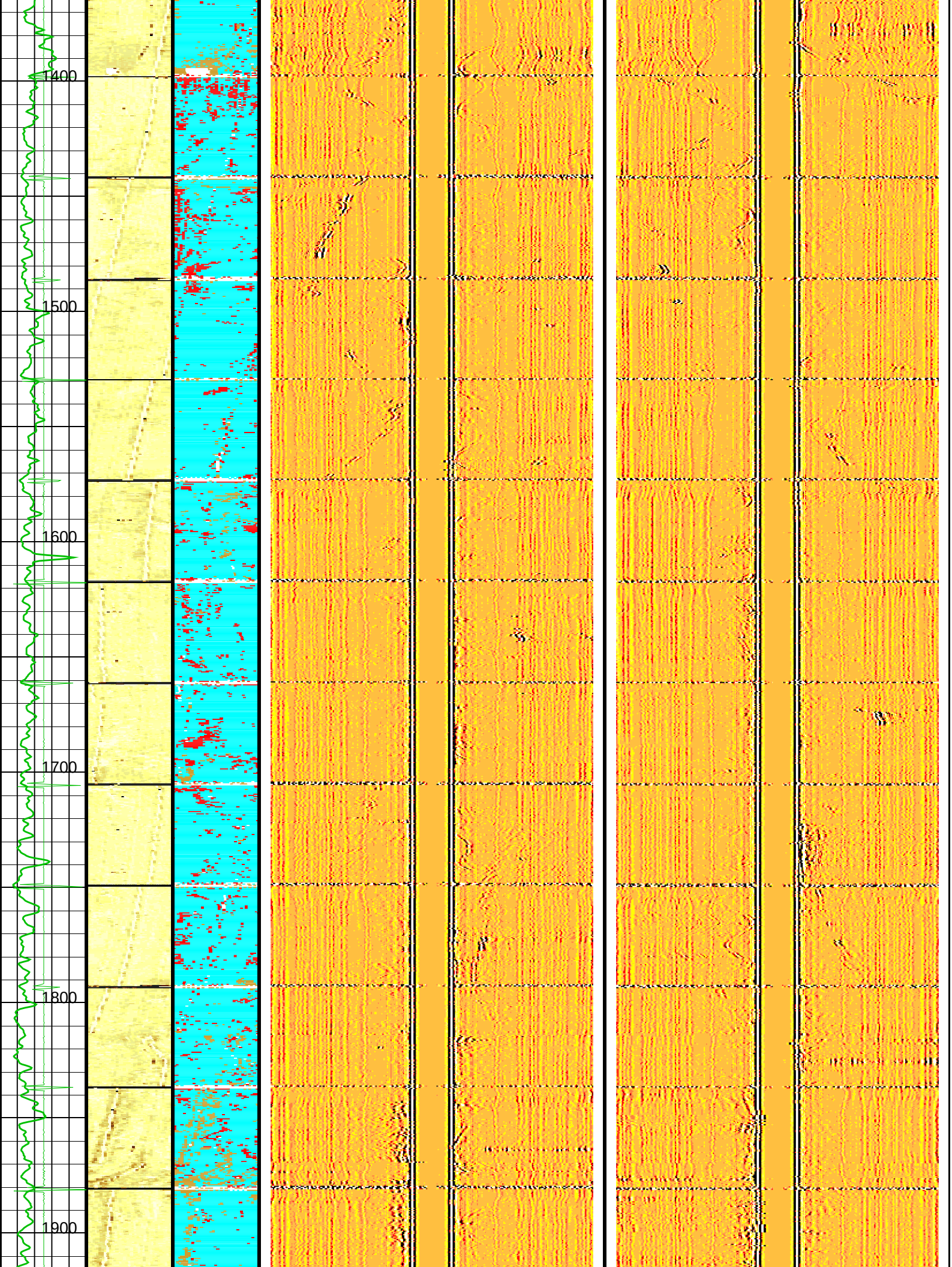
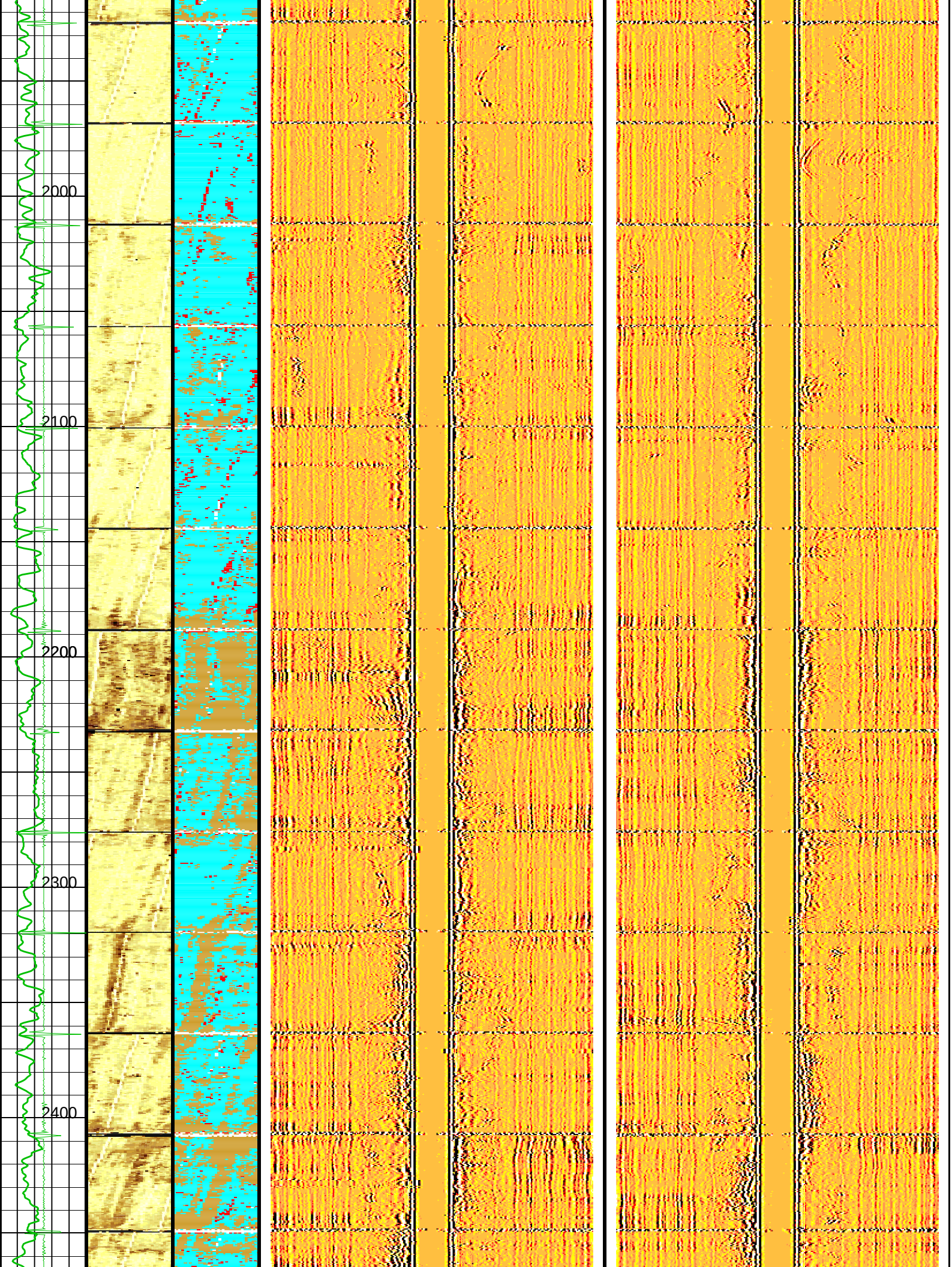
1000
1100
1200
1300


1400
1500
1600
1700
1800
1900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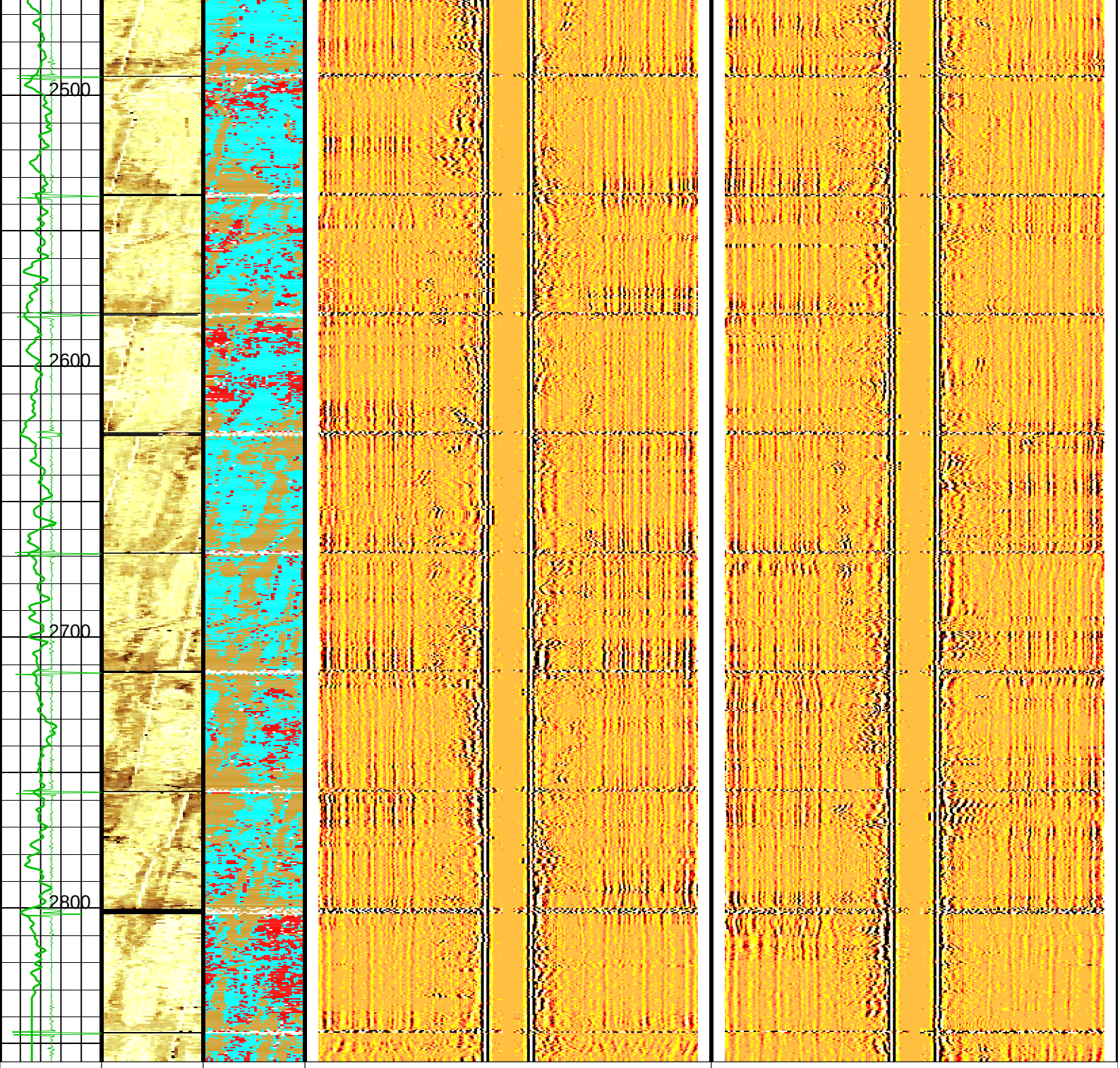
2100
2200
2300
2400



CCL (CCLU) (----
−20 20

−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Raw Acoustic Imped. (AIBK) (MRAY)

0.5000
1.5000
2.5000
3.5000

Solid Liquid Gas Map (U−USIT_USLP) (----

Min Amplitude Max

Far at 0 and 180 deg (U−USIT_VDWFF000)
−150 (US) 150

Min Amplitude Max

Far at 90 and 270 deg (U−USIT_VDWFF090)
−150 (US) 150

Gamma

Ray (GR_EDTC) (GAPI)	
0	150

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	9.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	8.921	IN
DFVL	Default Fluid Velocity	201	US/F
DOT	Diameter of Transducer Sensor	4.874	IN
EMXV	EMEX Voltage	70	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	RB	
MW	Mud Weight	8.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.37795	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	0.352	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	−42	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_C	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_9_58_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.1081	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.65	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
	System and Miscellaneous		
BS	Bit Size	14.750	IN
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: USI_IBC_VDL_WIDE **Vertical Scale: 2" per 100'** **Graphics File Created: 10−Oct−2013 16:35**

OP System Version: 19C1−222

USIT−E	19C1−222	EDTC−B	19C1−222

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

Output DLIS Files

DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35

Schlumberger

MAIN PASS
0.1 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. **Well: SG 8506E−34 (E34) 496**

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 14:58	2856.5 FT	35.5 FT

Output DLIS Files

DEFAULT	USI_010PUP	FN:9	PRODUCER	10−Oct−2013 16:35	2856.5 FT	35.5 FT

OP System Version: 19C1−222

USIT−E	19C1−222	EDTC−B	19C1−222

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	203.00	1.70
2493.00	205.00	1.65
2100.00	206.00	1.63
1793.00	208.00	1.60
1486.00	210.00	1.55
1178.00	211.00	1.50
915.00	213.00	1.50
607.00	214.00	1.45
300.00	215.00	1.45

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
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)
−7.5 7.5

Maximum Acoustic Impedance #4 (MAX_AI4) (MRAY)
−7.5 7.5

Maximum Acoustic Impedance #6 (MAX_AI6) (MRAY)
−7.5 7.5

Maximum Acoustic Impedance #8 (MAX_AI8) (MRAY)
−7.5 7.5

Maximum Acoustic Impedance #1 (MAX_AI1) (MRAY)
0 15

Maximum Acoustic Impedance #3 (MAX_AI3) (MRAY)
0 15

Maximum Acoustic Impedance #5 (MAX_AI5) (MRAY)
0 15

Maximum Acoustic Impedance #7 (MAX_AI7) (MRAY)
0 15

Minimum Acoustic Impedance #9 (MIN_AI9) (MRAY)
0 15

Maximum of AI (AIMX) (MRAY)
0 7.5

Maximum Flexural Attenuation (U−USIT_UFAX) (DB/M)
0 150

Gamma Ray (GR_EDTC) (GAPI)
0 150

Average Acoustic Impedance #2 (AV_AI2) (MRAY)
−7.5 7.5

Average Acoustic Impedance #4 (AV_AI4) (MRAY)
−7.5 7.5

Average Acoustic Impedance #6 (AV_AI6) (MRAY)
−7.5 7.5

Average Acoustic Impedance #8 (AV_AI8) (MRAY)
−7.5 7.5

Maximum Acoustic Impedance #9 (MAX_AI9) (MRAY)
0 15

Minimum of AI (AIMN) (MRAY)
0 7.5

Average Flexural Attenuation (U−USIT_UFAV) (DB/M)
0 150

Eccent. (ECCE)
0 (IN) 0.5

Average Acoustic Impedance #1 (AV_AI1) (MRAY)
0 15

Average Acoustic Impedance #3 (AV_AI3) (MRAY)
0 15

Average Acoustic Impedance #5 (AV_AI5) (MRAY)
0 15

Average Acoustic Impedance #7 (AV_AI7) (MRAY)
0 15

Average Acoustic Impedance #9 (AV_AI9) (MRAY)
0 15

Average of AI (AIAV) (MRAY)
0 7.5

Minimum Flexural Attenuation (U−USIT_UFAN) (DB/M)
0 150

−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

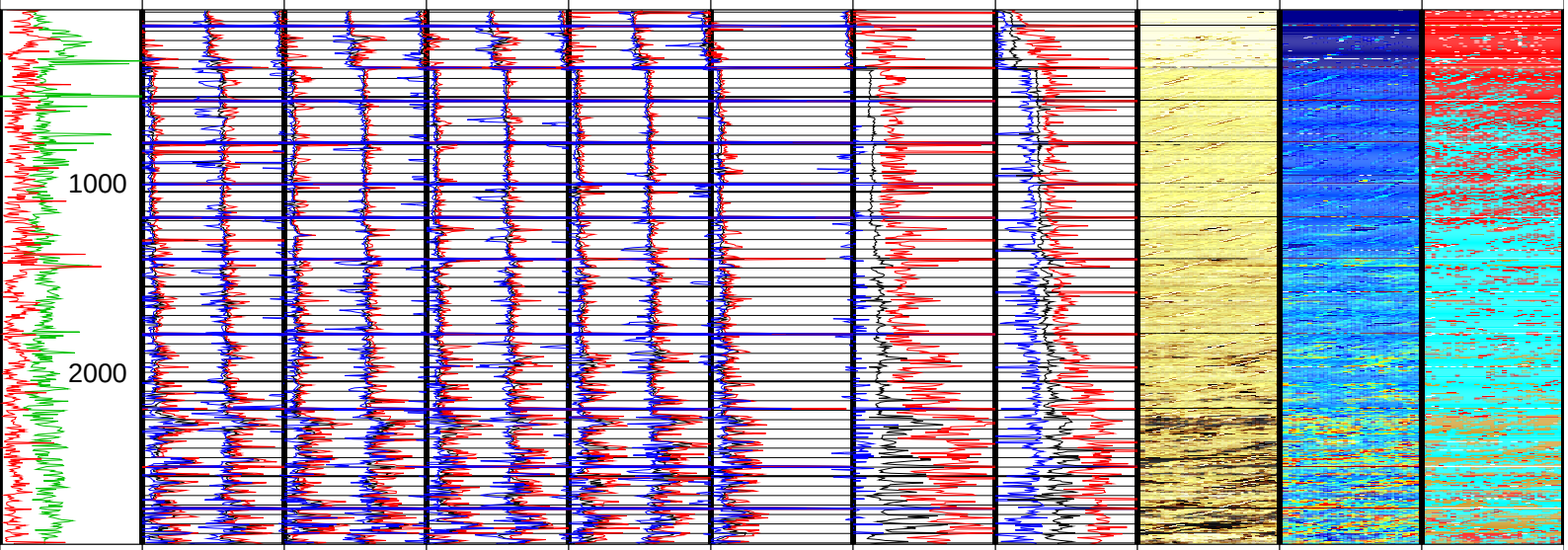
Flexural Attenuation (U−USIT_UFAK) (DB/M)

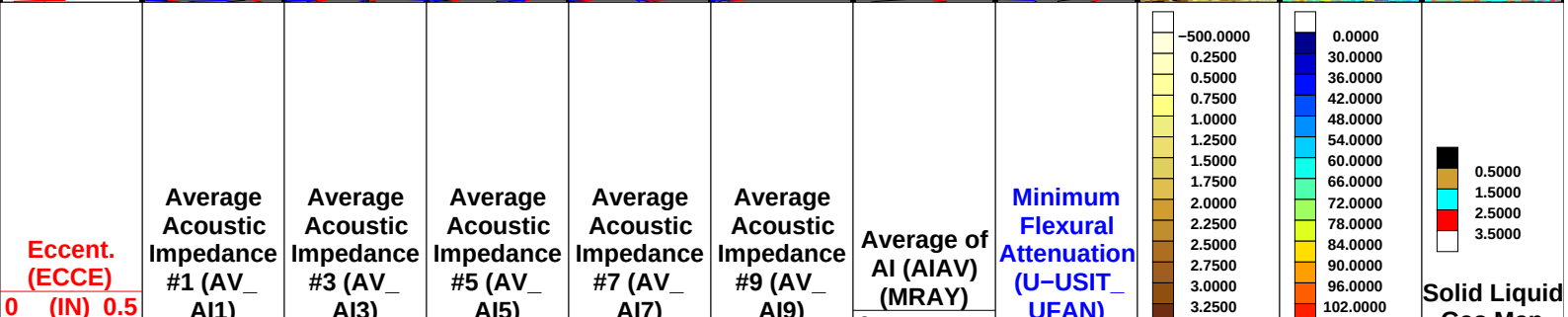
0.5000
1.5000
2.5000
3.5000

Solid Liquid Gas Map (U−USIT_USLP) (−−−−

1000

2000





Eccent. (ECCE)
0 (IN) 0.5

Average Acoustic Impedance #1 (AV_AI1) (MRAY)
0 15

Average Acoustic Impedance #3 (AV_AI3) (MRAY)
0 15

Average Acoustic Impedance #5 (AV_AI5) (MRAY)
0 15

Average Acoustic Impedance #7 (AV_AI7) (MRAY)
0 15

Average Acoustic Impedance #9 (AV_AI9) (MRAY)
0 15

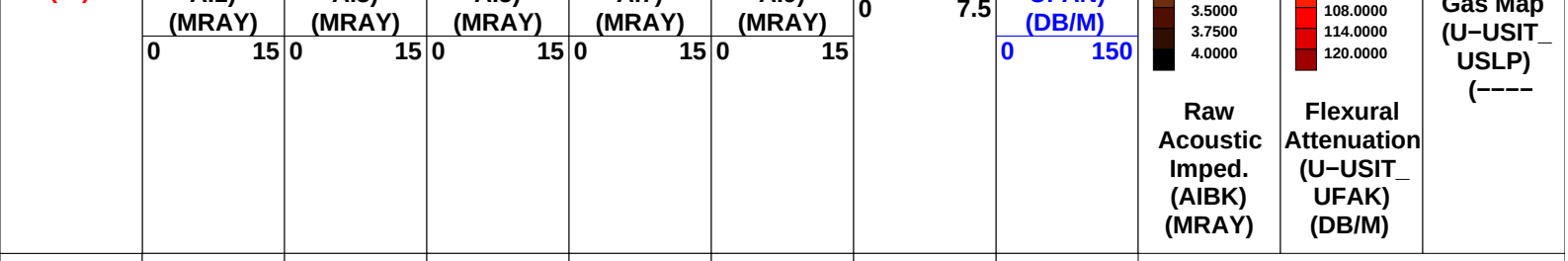
Average of AI (AIAV) (MRAY)
0 7.5

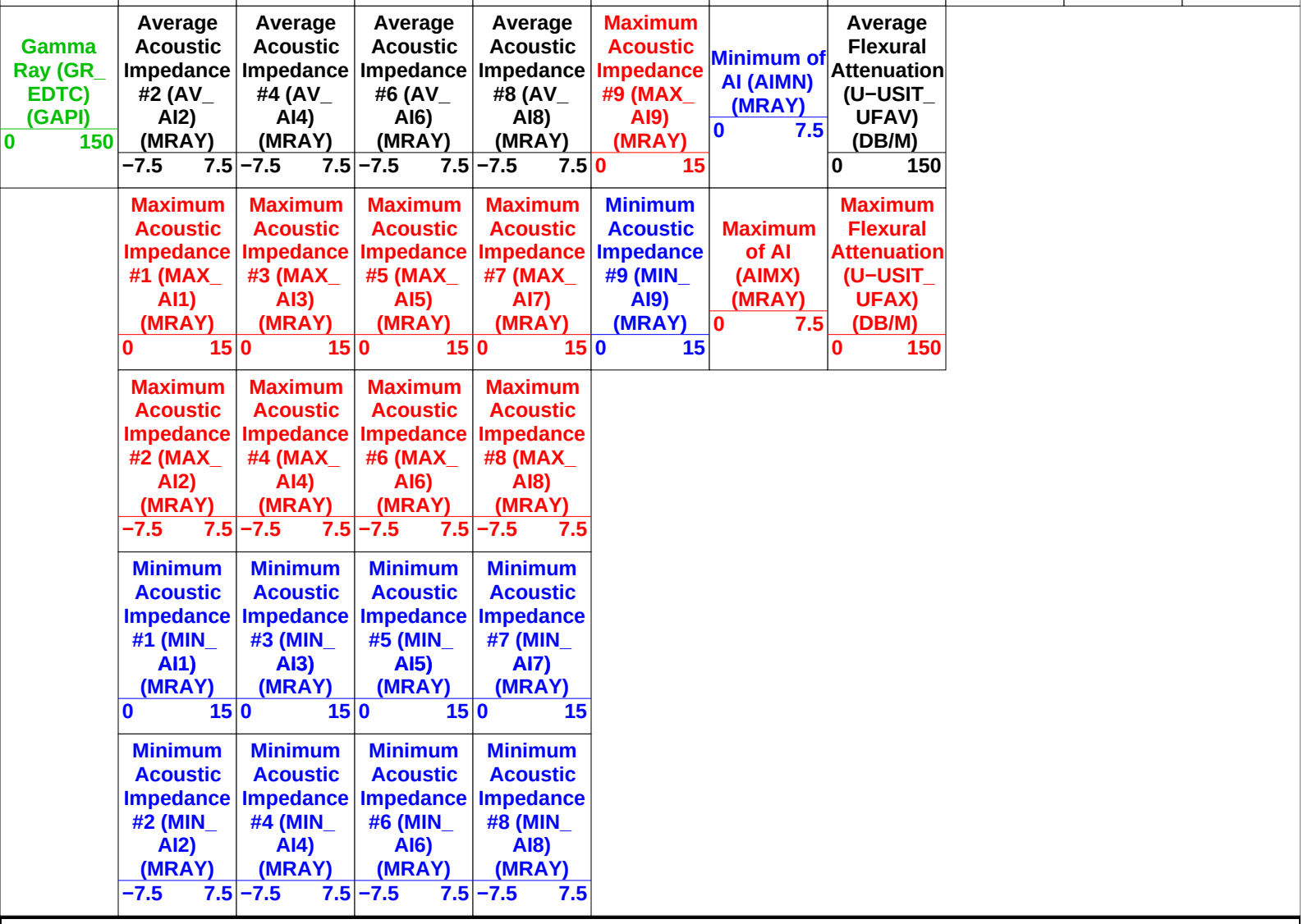
Minimum Flexural Attenuation (U−USIT_UFAN) (DB/M)
0 150

−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

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

0.5000
1.5000
2.5000
3.5000





Format: M_Goodwin_Compressed **Vertical Scale: 0.1" per 100'** **Graphics File Created: 10−Oct−2013 16:35**

OP System Version: 19C1−222

USIT−E	**19C1−222**	**EDTC−B**	**19C1−222**

All USI Images are outside views

Center of image corresponds to bottom of casing

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_005LUP**	**FN:4**	**PRODUCER**	**10−Oct−2013 14:58**	**2856.5 FT**	**35.5 FT**

Output DLIS Files

Schlumberger

FLUID PROPERTIES

MAXIS Field Log

IBC Inv. Fluid Z QC (−−−−

Index: 2856.5 − 35.5 FT

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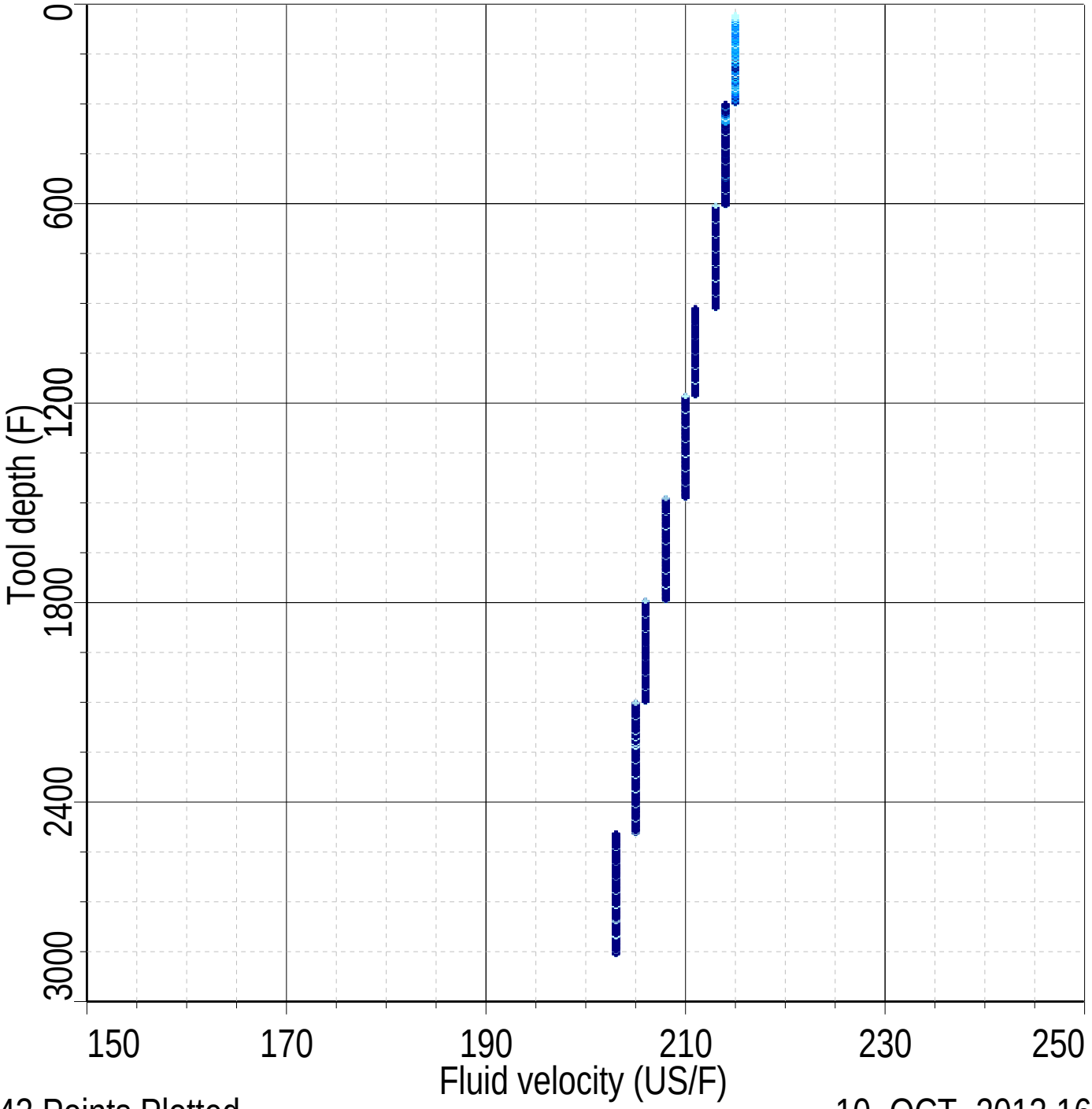


5643 Points Plotted

10−OCT−2013 16:37

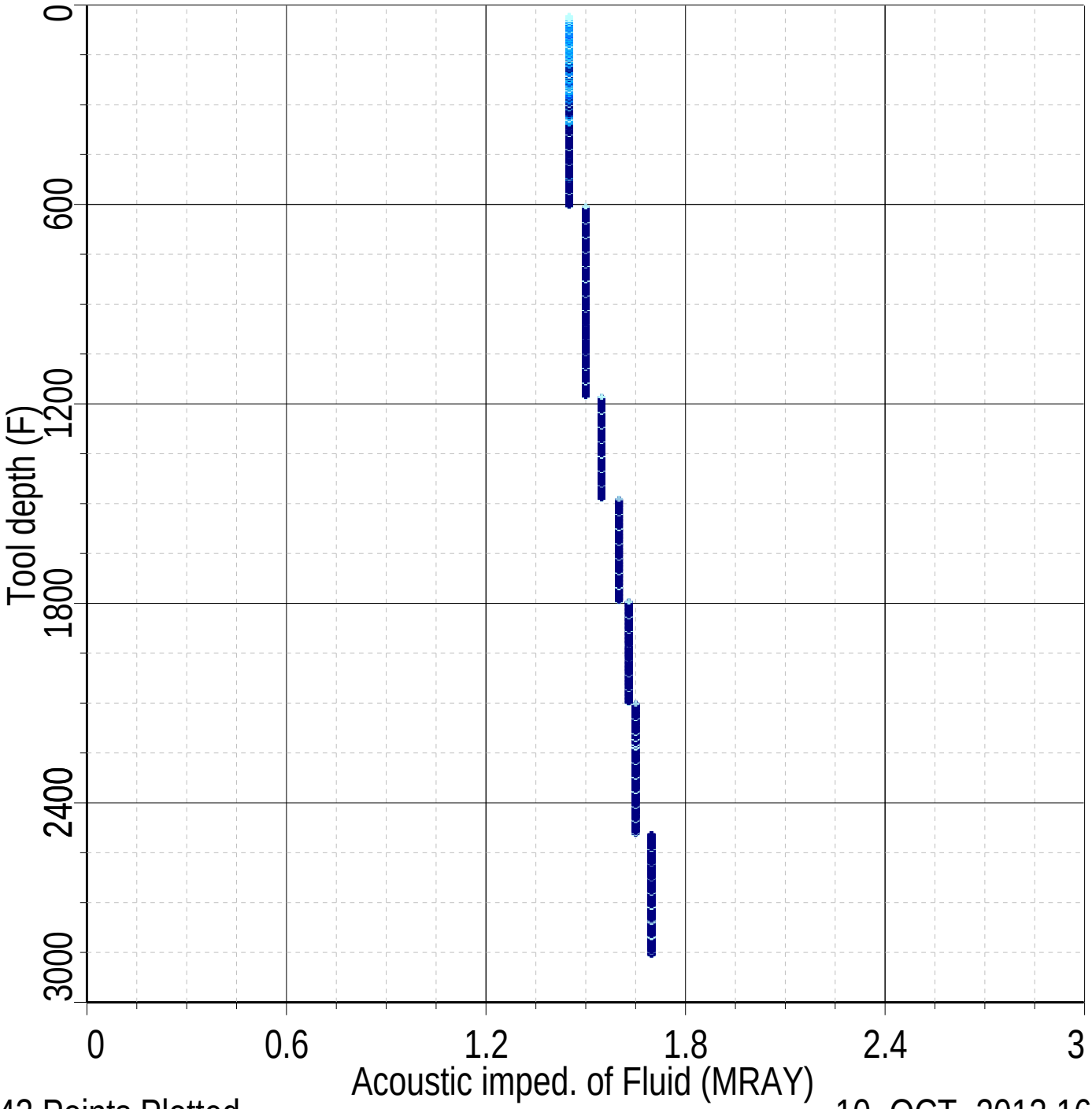
IBC Inv. Fluid Z QC (−−−−

0. 0.5

Index: 2856.5 - 35.5 FT

0.

0.5



5643 Points Plotted

10-OCT-2013 16:37

Company: **ENCANA OIL & GAS (USA) INC.**

Schlumberger

Well: **SG 8506E-34 (E34) 496**
Field: **STORY GULCH**
County: **GARFIELD**
State: **COLORADO**

ISOLATION SCANNER
CEMENT EVALUATION
GAMMA RAY, CCL