Schlumberger

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

Well: **SG 8508F−33 (E34) 496**
Field: **STORY GULCH**
County: **GARFIELD** State: **COLORADO**

ISOLATION SCANNER
CEMENT EVALUATION
GAMMA RAY, CCL

County: GARFIELD
Field: STORY GULCH
Location: SHL: SWNW 2236' FNL & 992' F
Well: SG 8508F−33 (E34) 496
Company: ENCANA OIL & GAS (USA) INC.

LOCATION

SHL: SWNW 2236' FNL & 992' FWL
BHL: SENE 2529'FNL & 1302' FEL

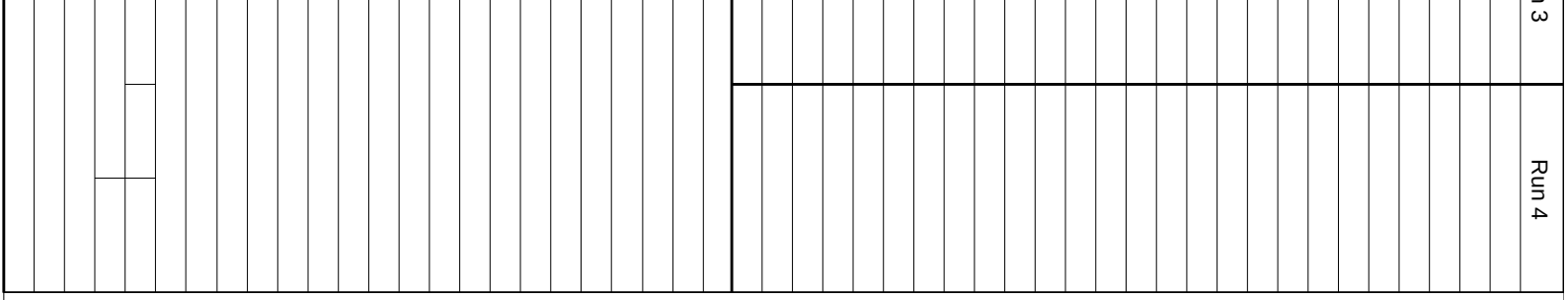
Elev.: K.B. 8353.50 ft
G.L. 8323.50 ft
D.F. 8352.50 ft

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
05045219000000	34	4S	96W

		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	19.9 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			
	Volume	251 ft3		
	Density	12.5 lbm/gal		
	Water Loss			
	Additives			
	Expected Cement Top	30 ft		

Logging Date		10−Oct−2013					Logging Date			
Run Number		1					Run Number			
Depth Driller		3000 ft					Depth Driller			
Schlumberger Depth		2850 ft					Schlumberger Depth			
Bottom Log Interval		2850 ft					Bottom Log Interval			
Top Log Interval		30 ft					Top Log Interval			
Casing Fluid Type		WATER					Casing Fluid Type			
Salinity							Salinity			
Density		8.6 lbm/gal					Density			
Fluid Level		0 ft					Fluid Level			
BIT/CASING/TUBING STRING							BIT/CASING/TUBING STRING			
Bit Size		14.750 in					Bit Size			
From		0 ft					From			
To		3000 ft					To			
Casing/Tubing Size		9.625 in					Casing/Tubing Size			
Weight		36 lbm/ft					Weight			
Grade		J55					Grade			
From		0 ft					From			
To		2981 ft					To			
Maximum Recorded Temperatures		150 degF					Maximum Recorded Temperatures			
Logger On Bottom	Time	10−Oct−2013	12:45				Logger On Bottom	Time		
Unit Number	Location	2271	VERNAL				Unit Number	Location		
Recorded By		CURTIS SCHAAF					Recorded By			
Witnessed By		TULLY GALLAGHER					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−00027	SERVICE ORDER #:	
PROGRAM VERSION:	19C1−222	PROGRAM VERSION:	
FLUID LEVEL:	0 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

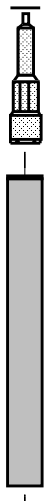
EQUIPMENT DESCRIPTION

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

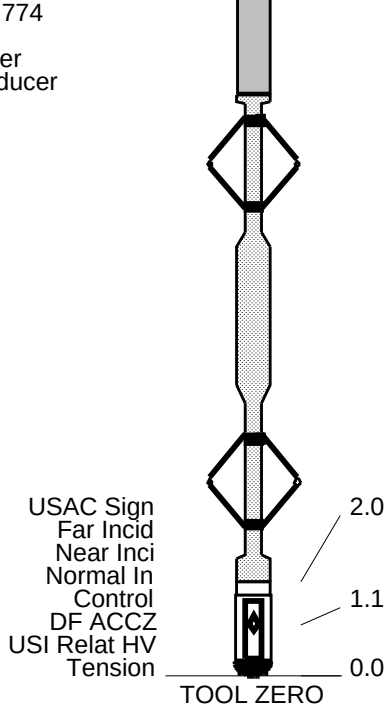
Gamma Ray — 25.7
EFTB DIAG
TelStatus
EDTCB Ele — 24.5

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 8508F−33 (E34) 496**

Input DLIS Files

DEFAULT	**USI_005LUP**	**FN:4**	**PRODUCER**	**10−Oct−2013 12:40**	**2848.5 FT**	**39.0 FT**

Output DLIS Files

DEFAULT	**USI_012PUP**	**FN:11**	**PRODUCER**	**10−Oct−2013 14:16**	**2848.5 FT**	**39.0 FT**

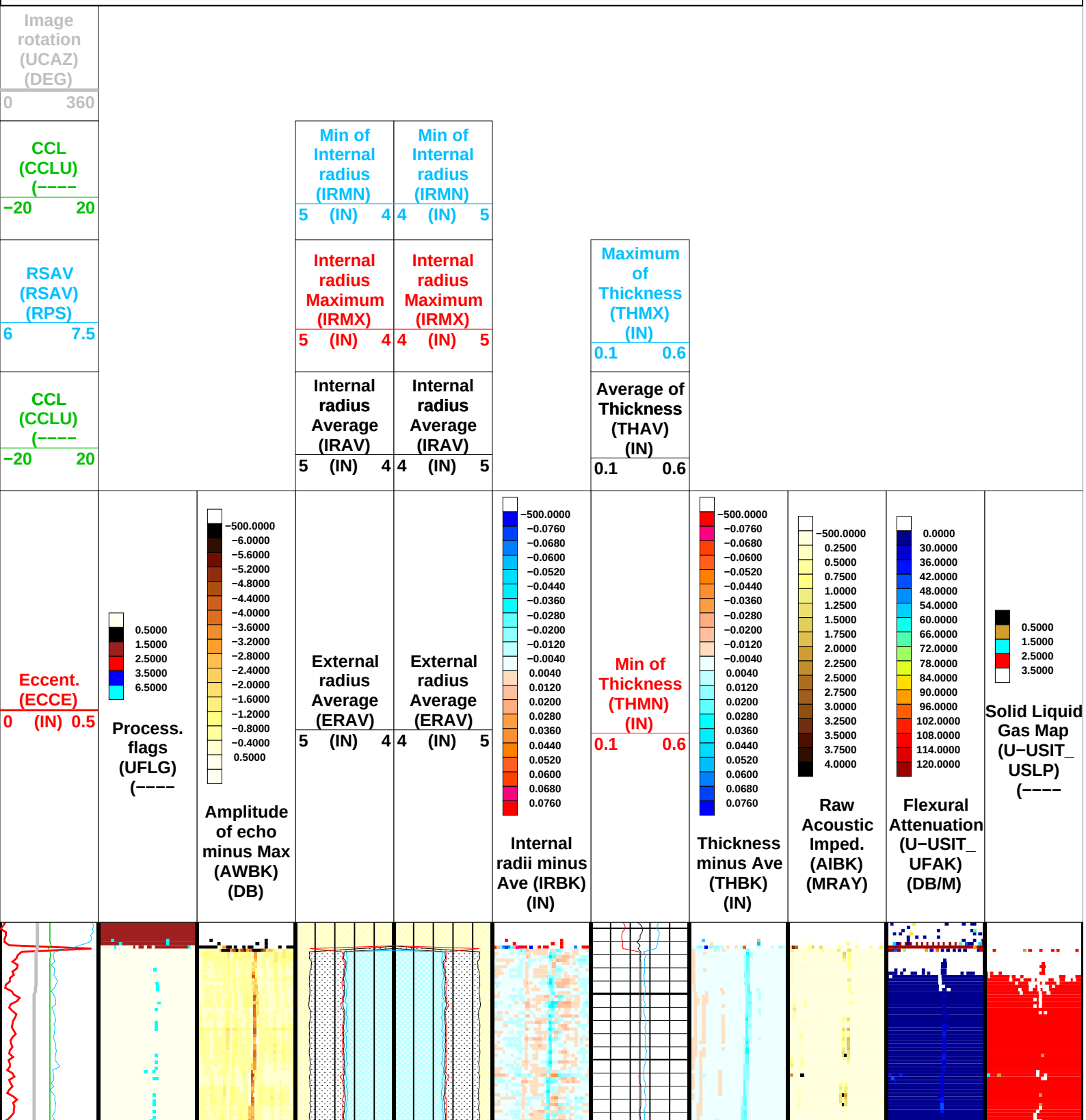
OP System Version: 19C1−222

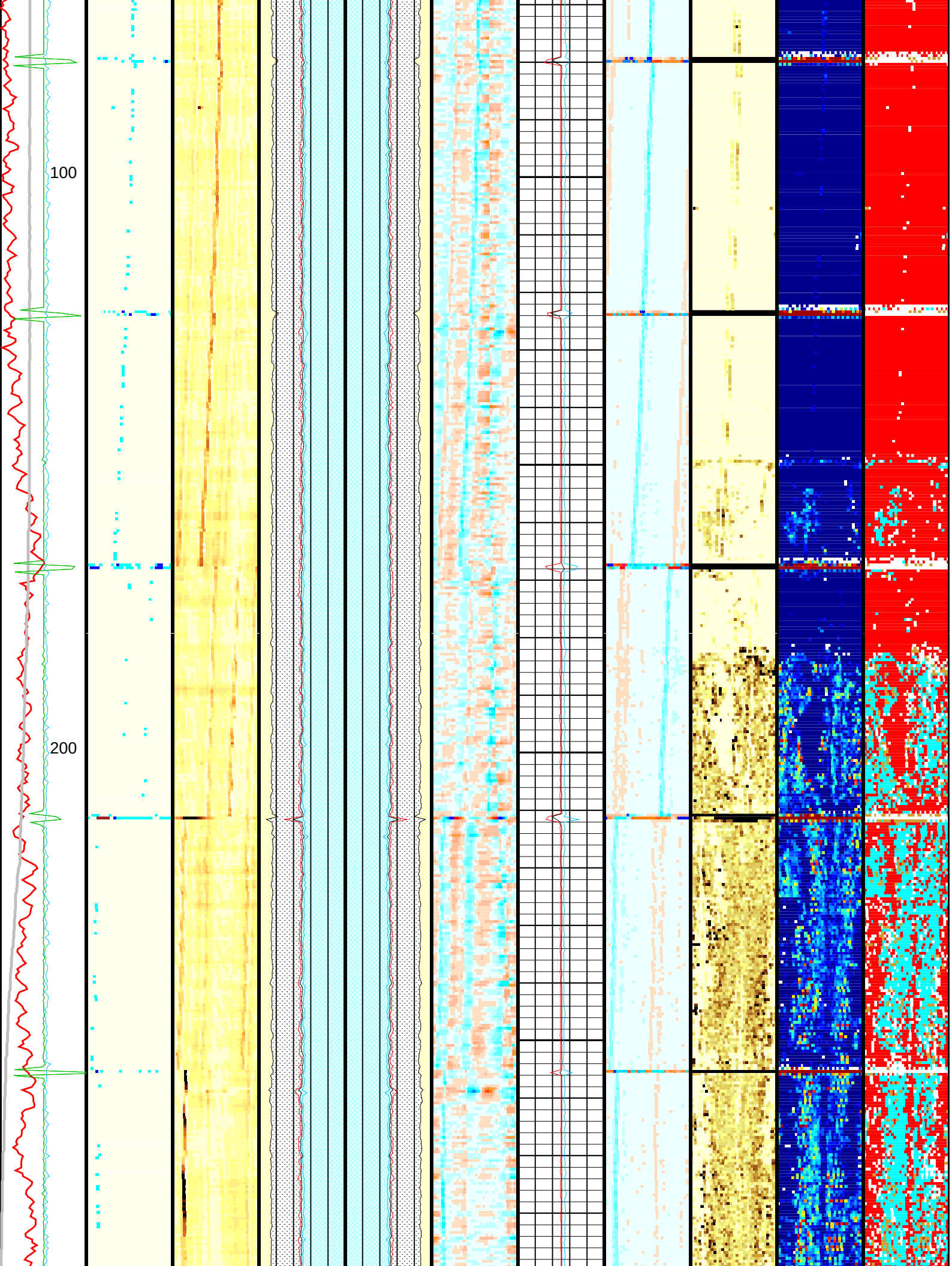
USIT−E	**19C1−222**	**EDTC−B**	**19C1−222**

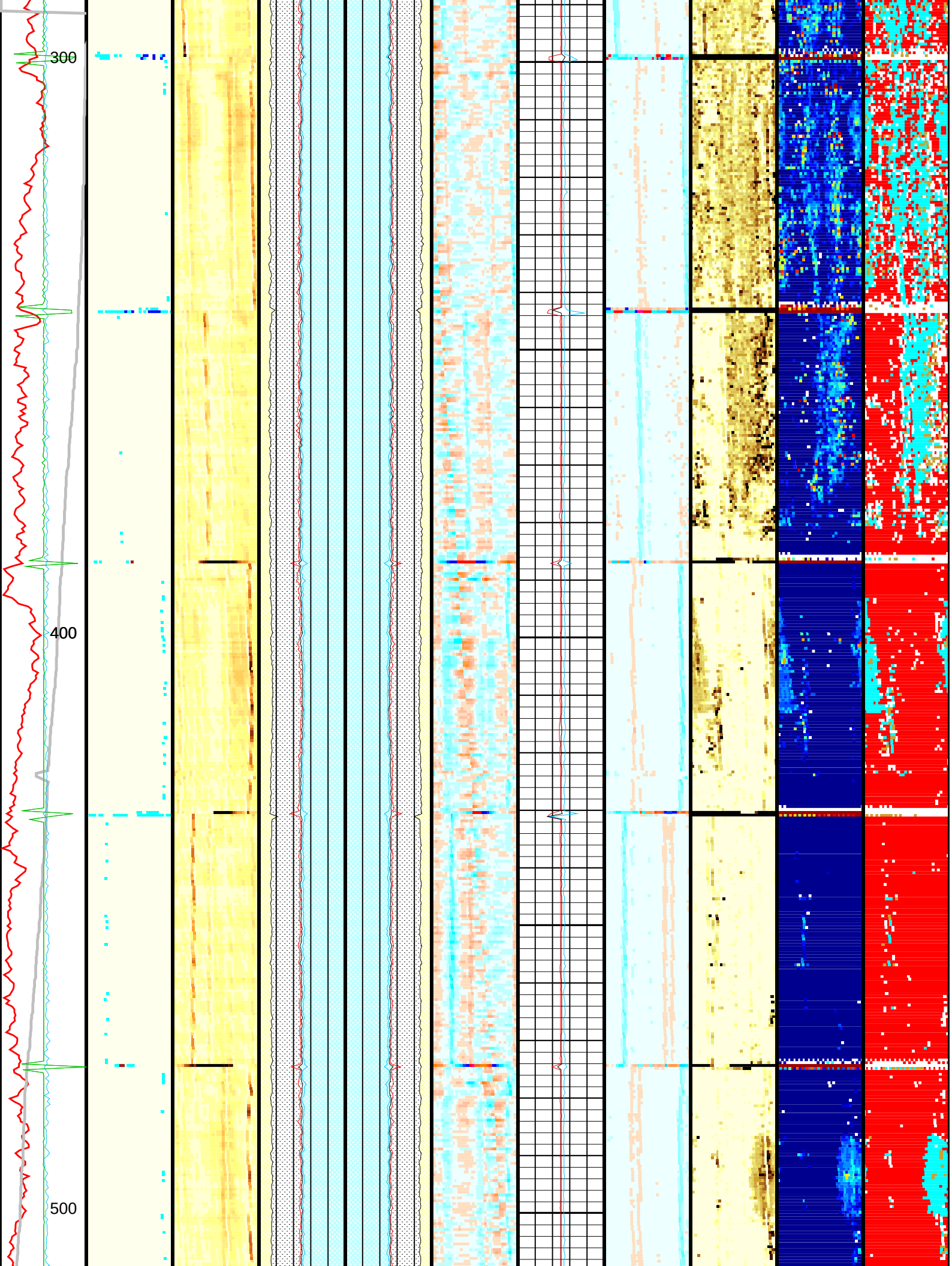
Zoning of Mud Parameters

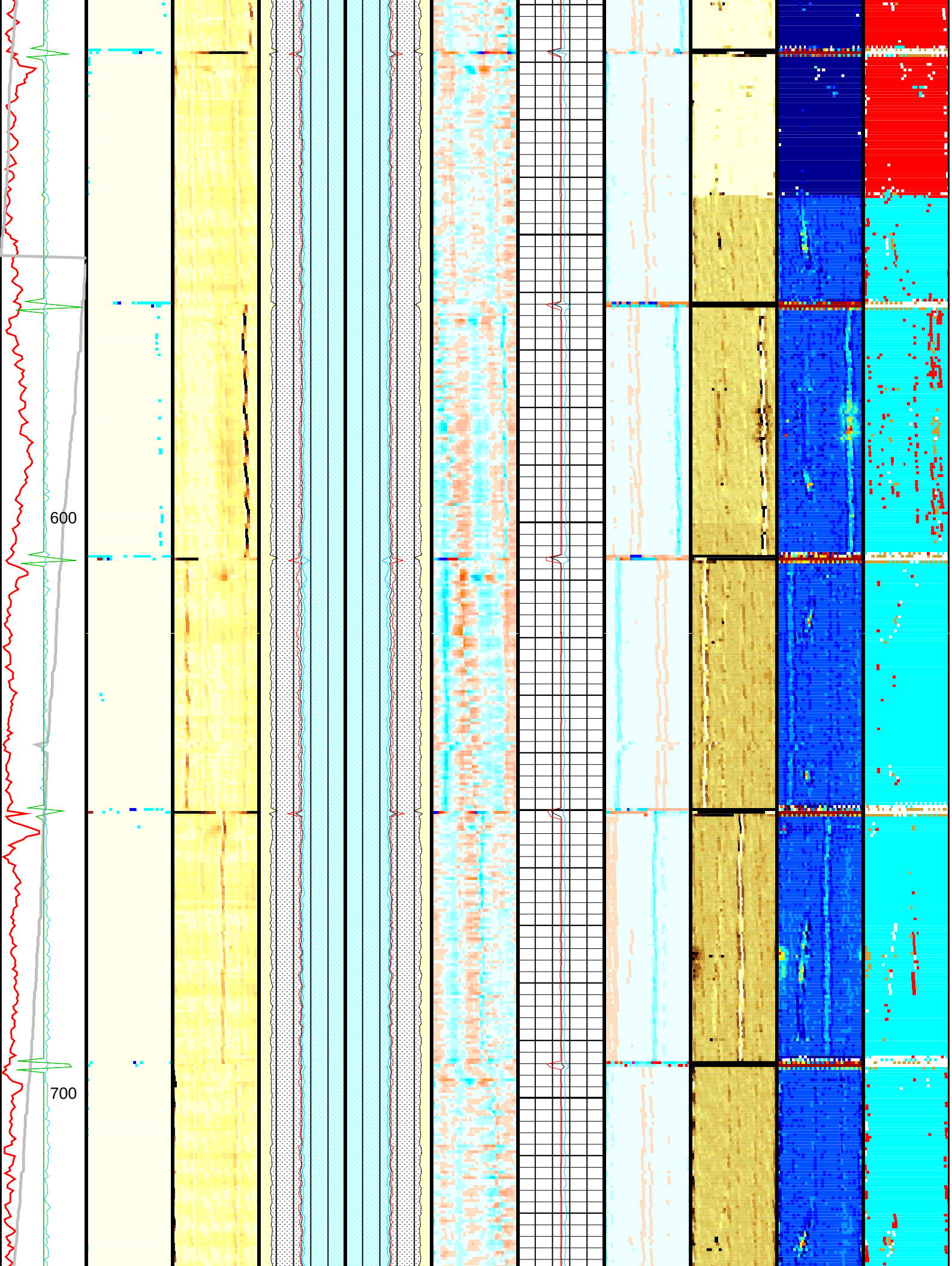
Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	**202.00**	**1.75**
2800.00	**203.00**	**1.75**

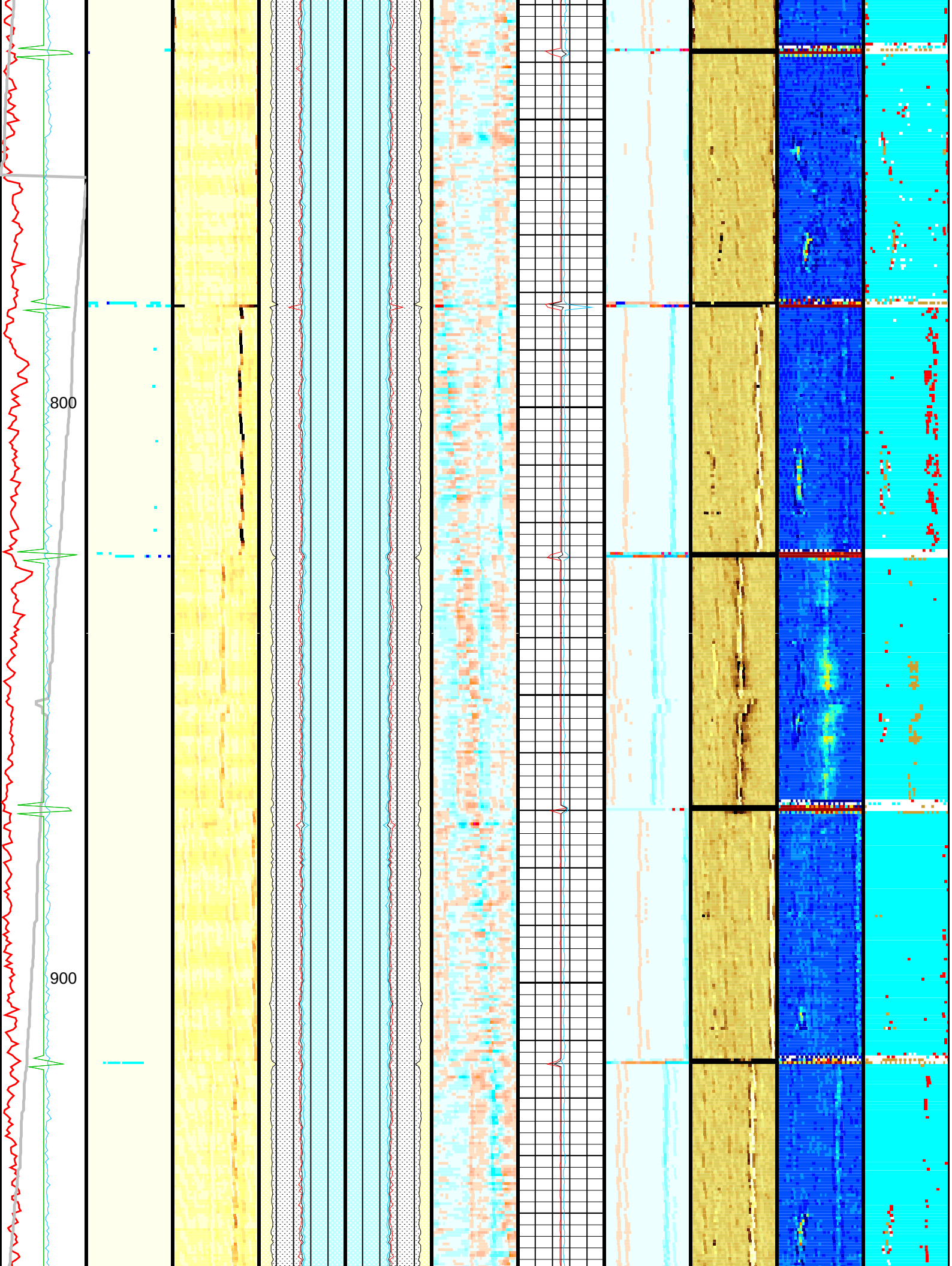
2500.00	204.00	1.75
2200.00	205.00	1.70
1800.00	206.00	1.70
1500.00	207.00	1.65
1200.00	208.00	1.60
900.00	209.00	1.60
600.00	210.00	1.55
300.00	211.00	1.50




100
200


300
400
500


600
700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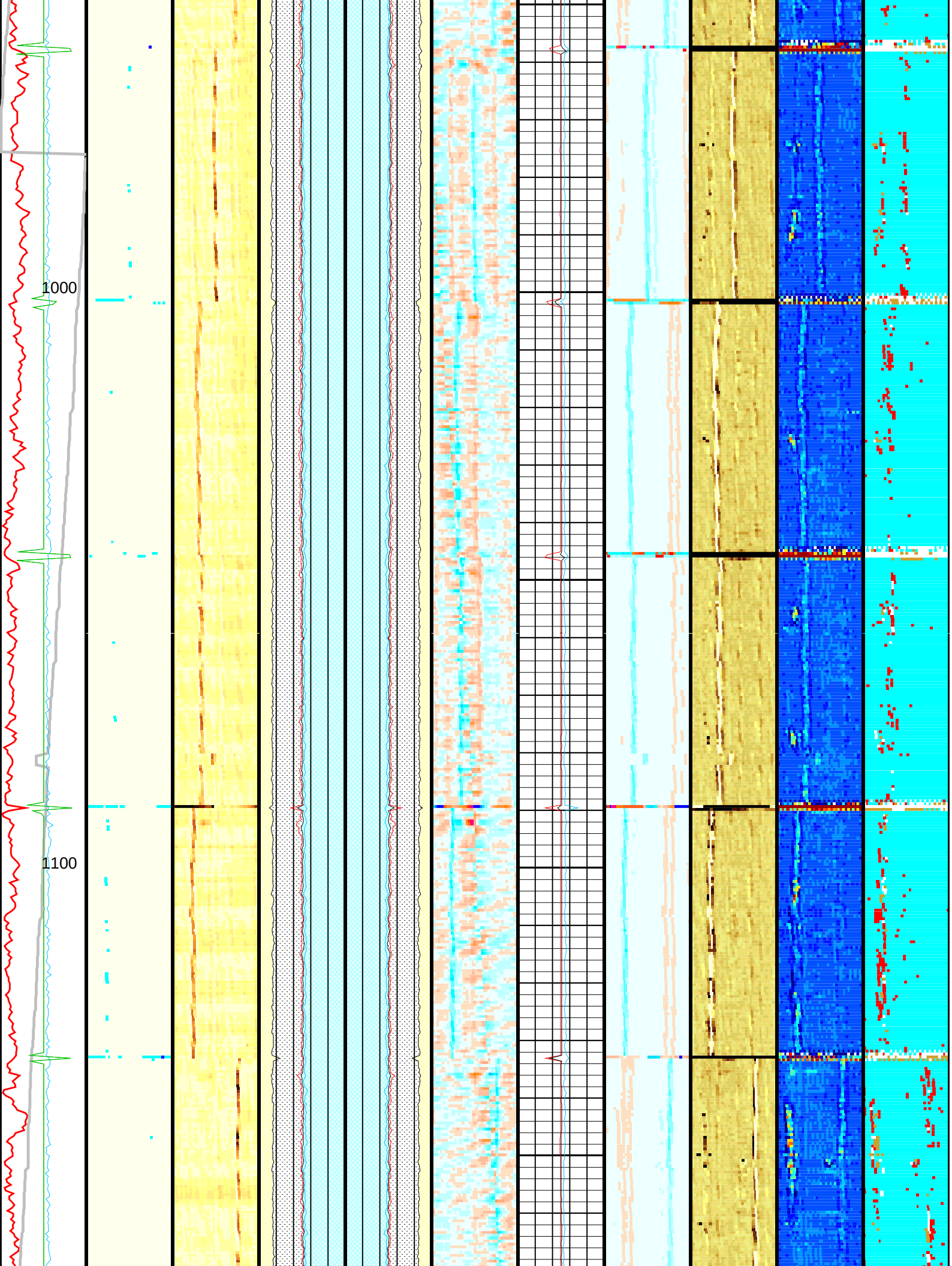
900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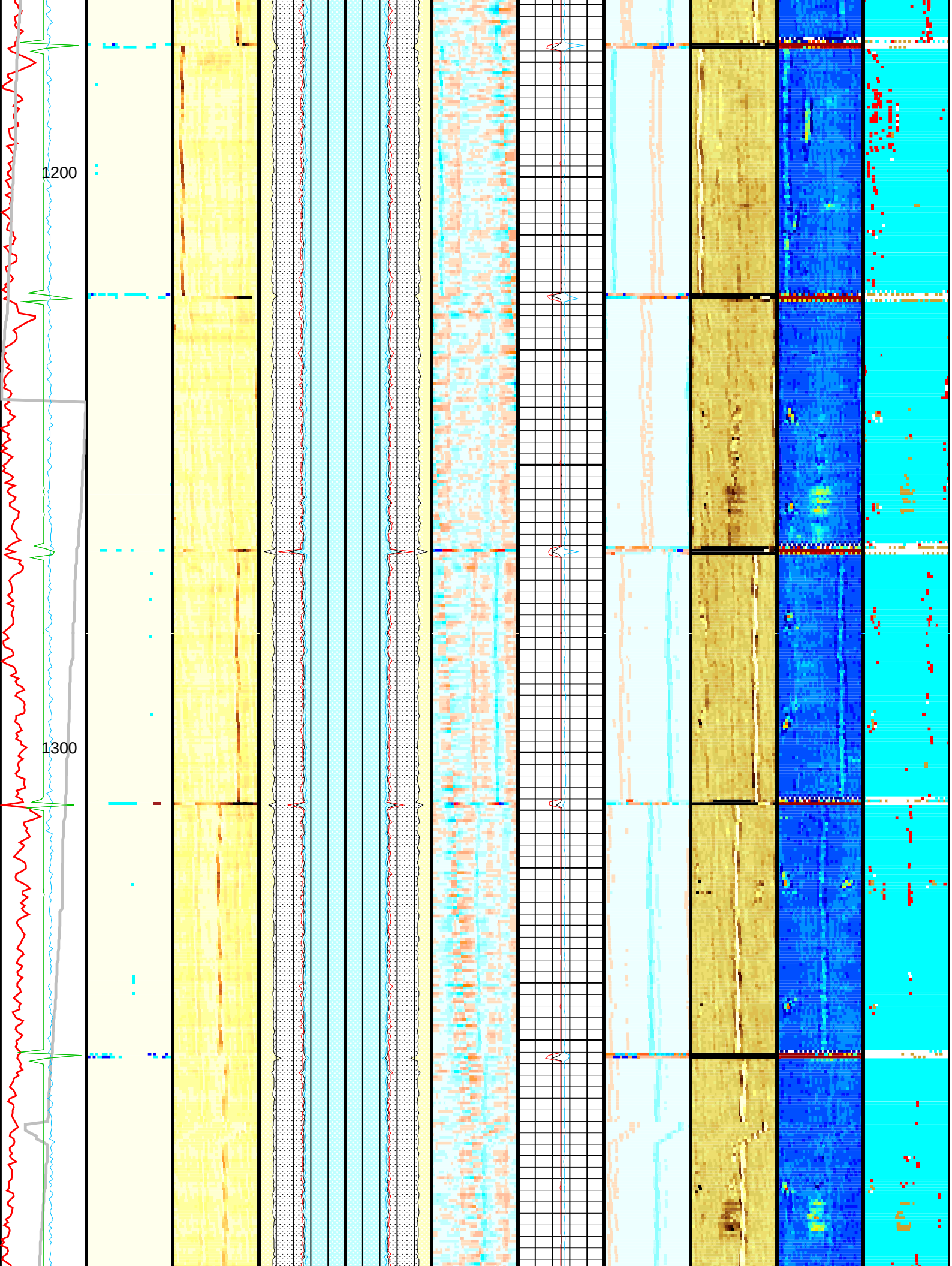
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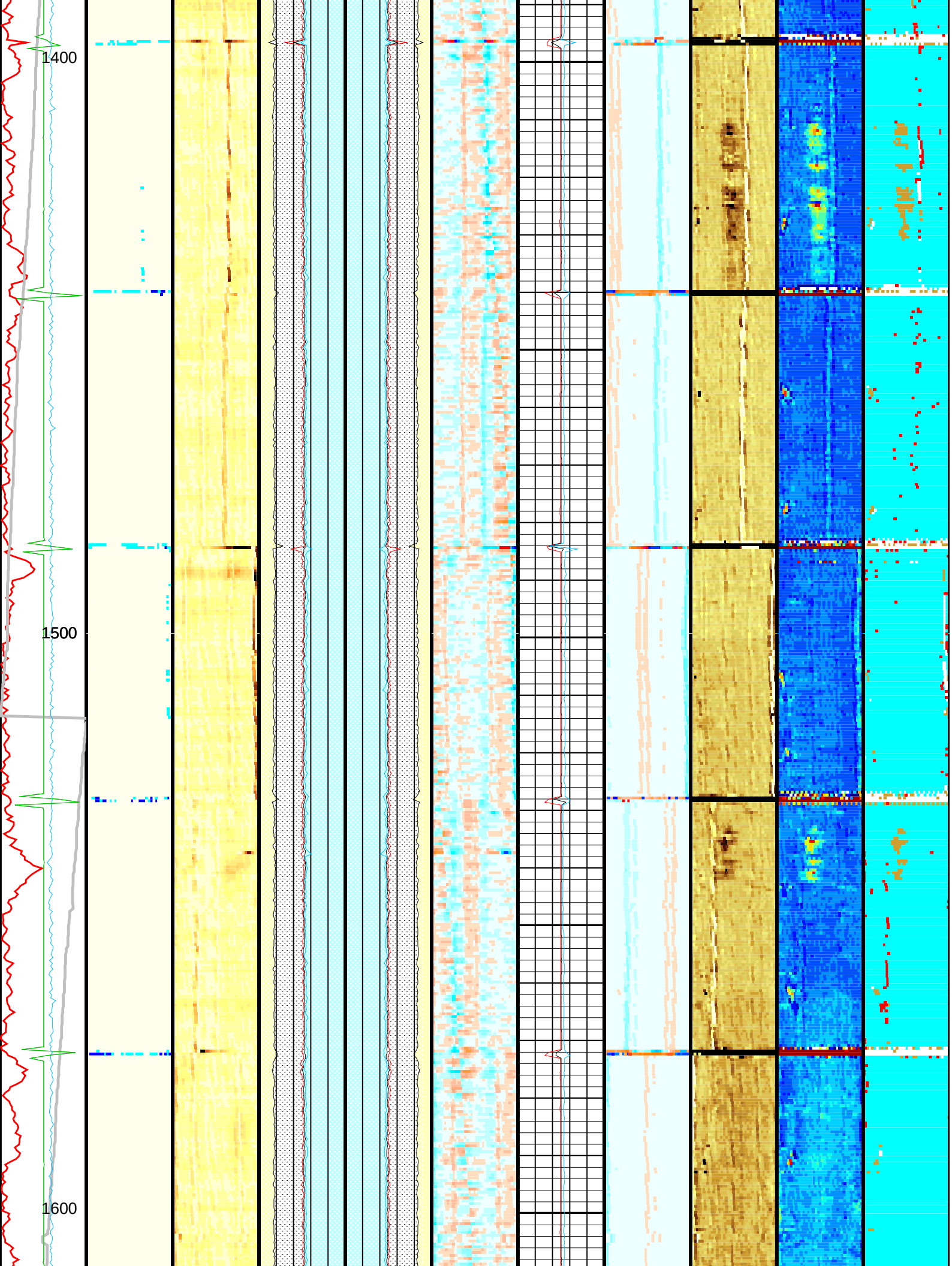
1300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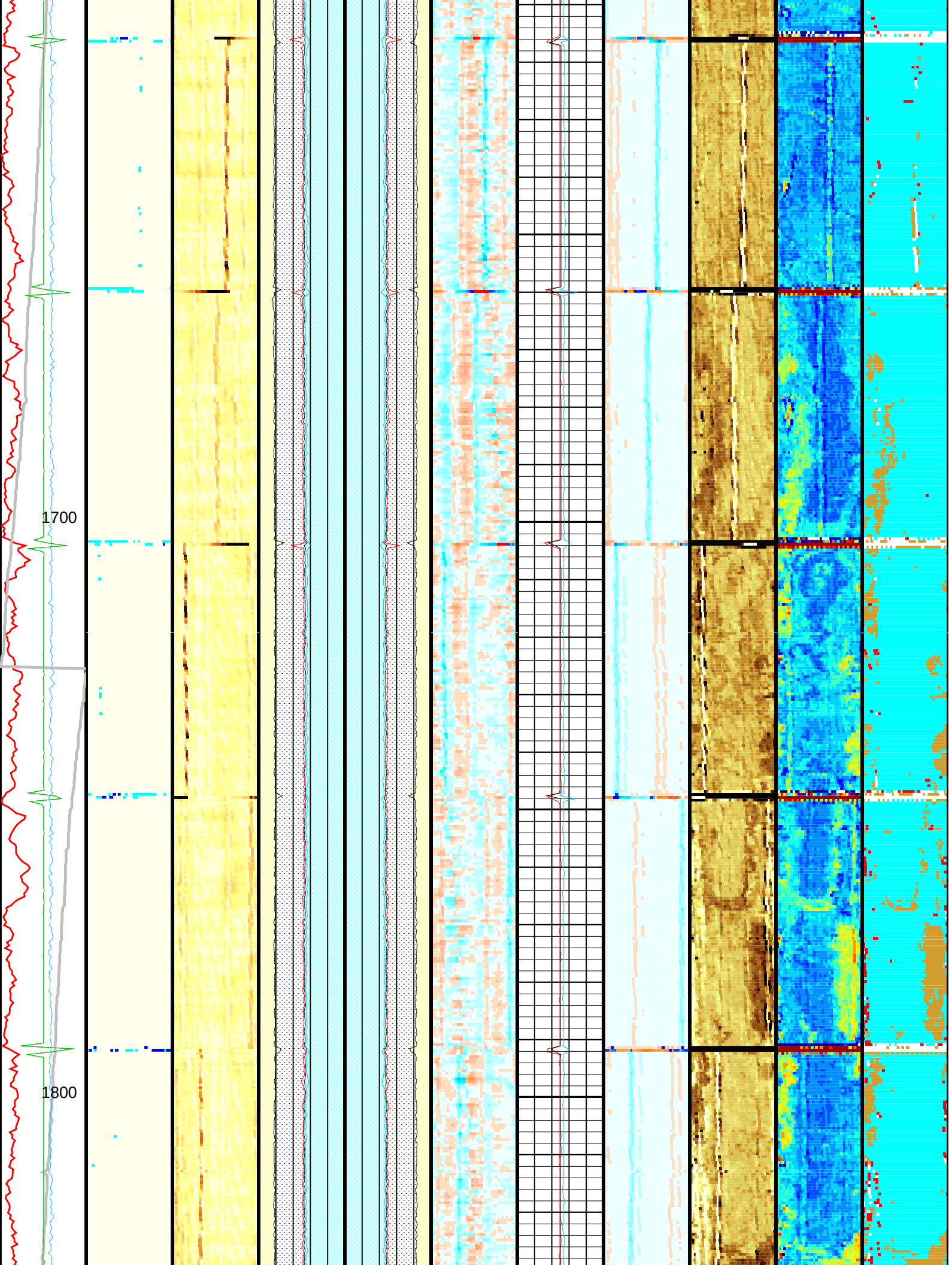
1500
1600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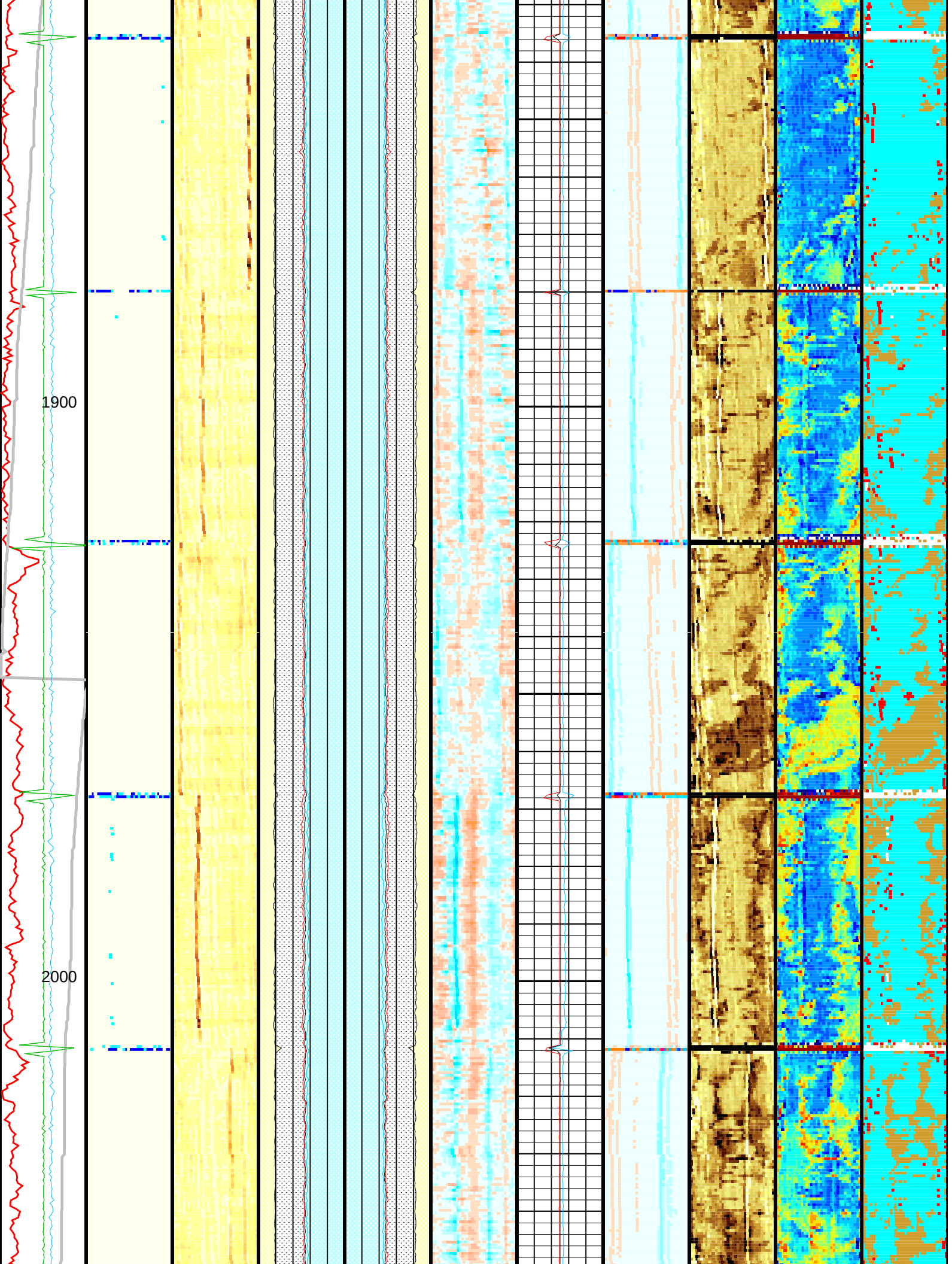
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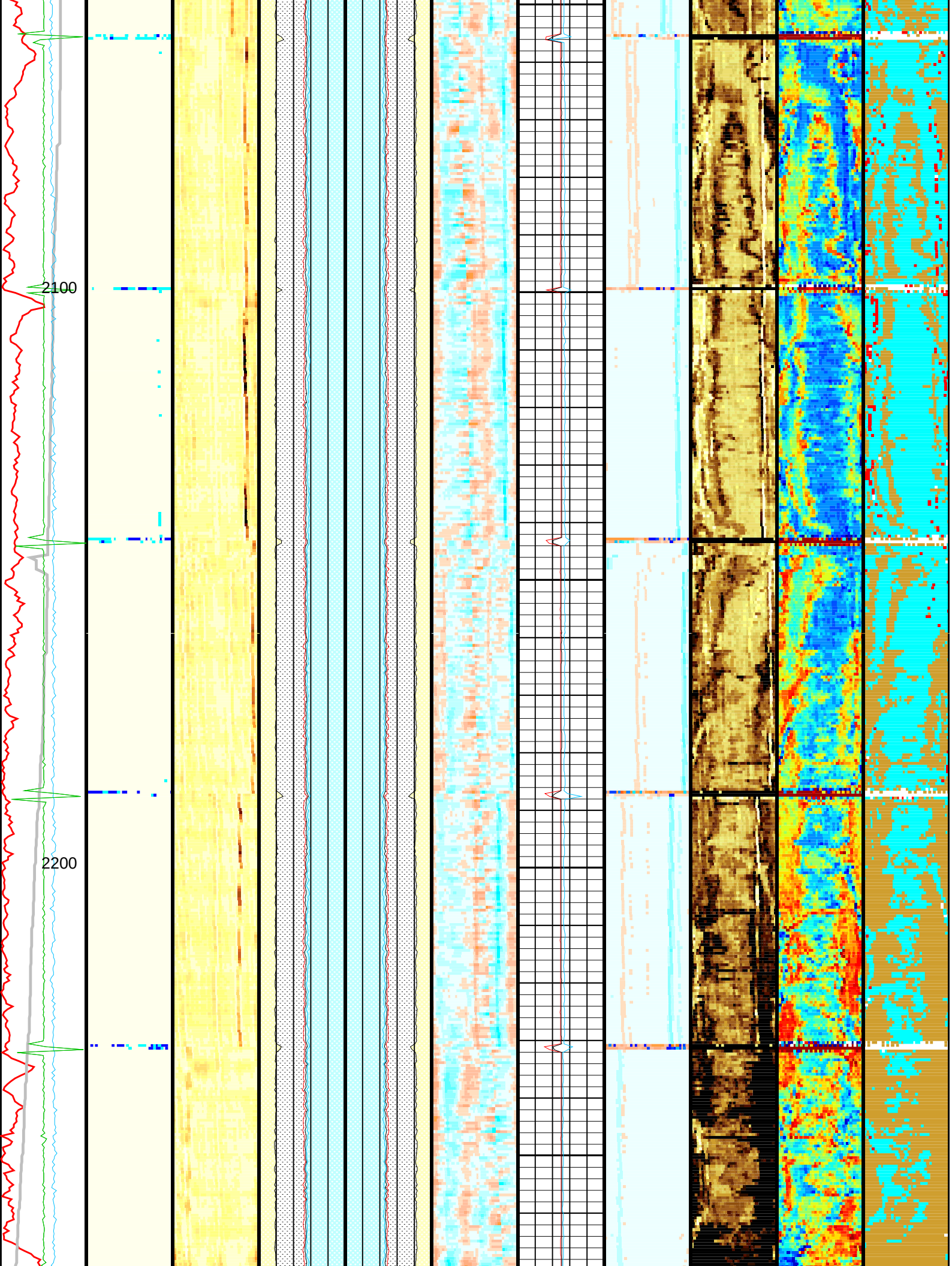
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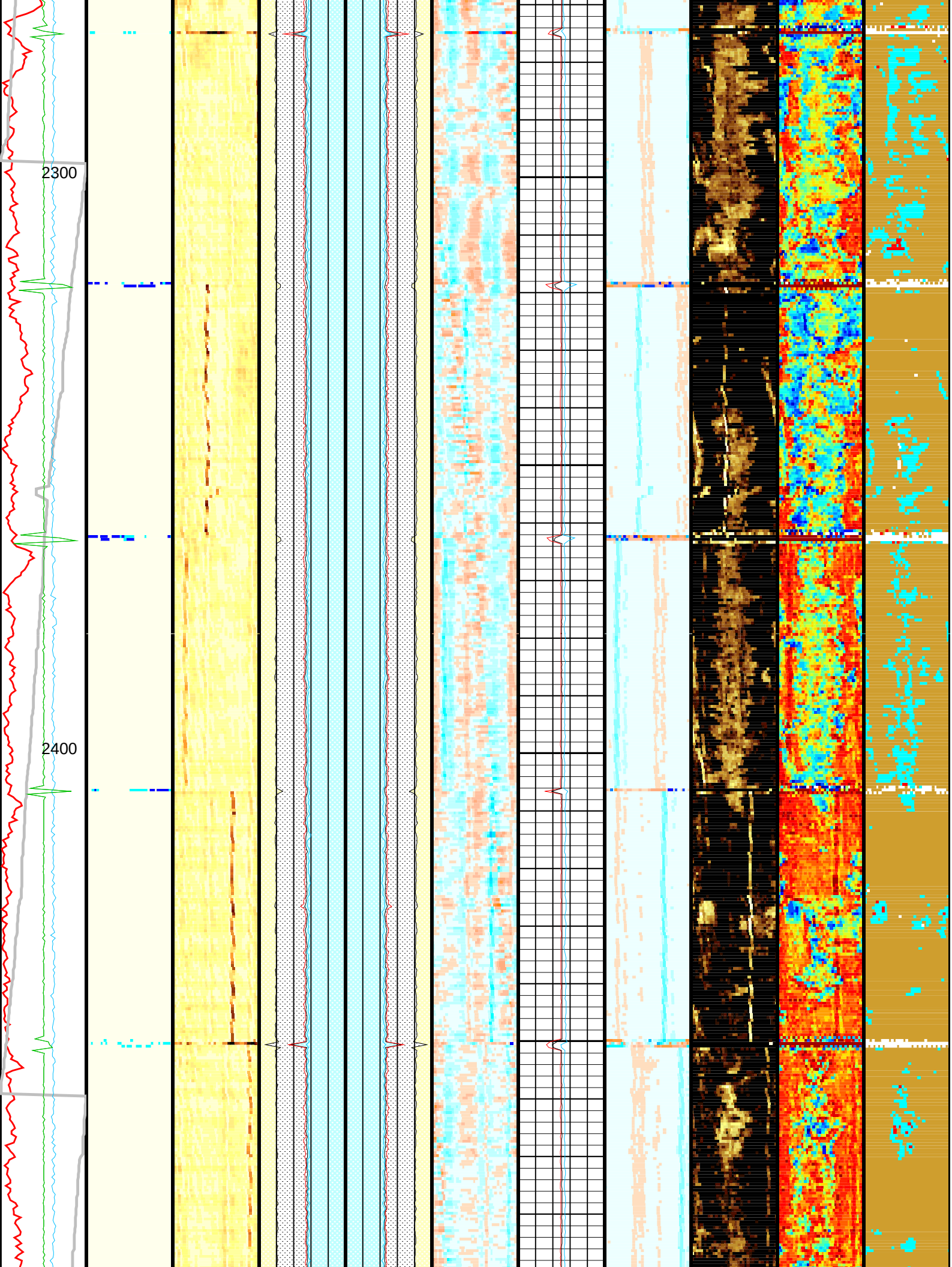
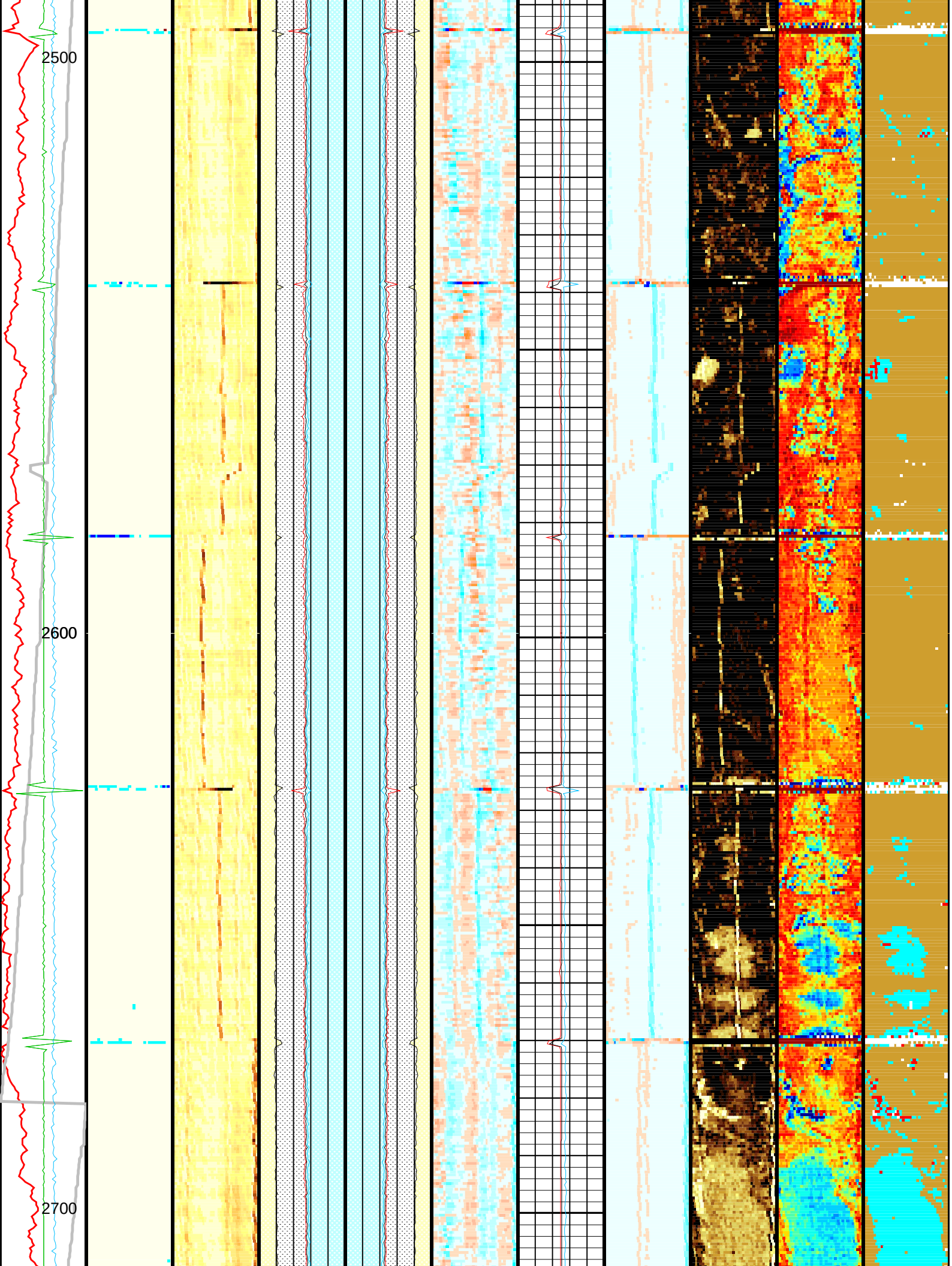
2200


2300
2400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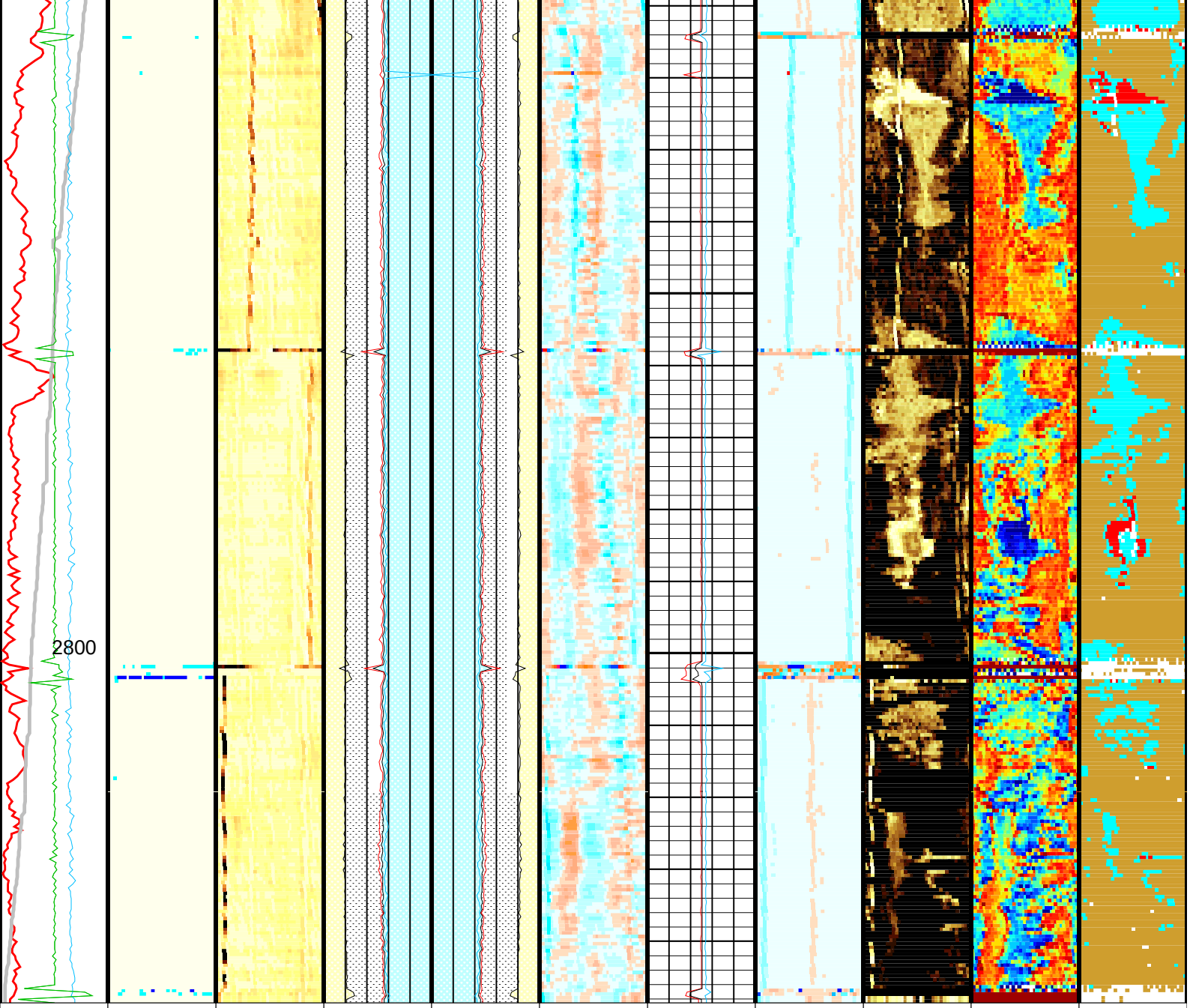
2600
2700



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) (DB)

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 Ave (IRBK) (IN)

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 (THBK) (IN)

−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)

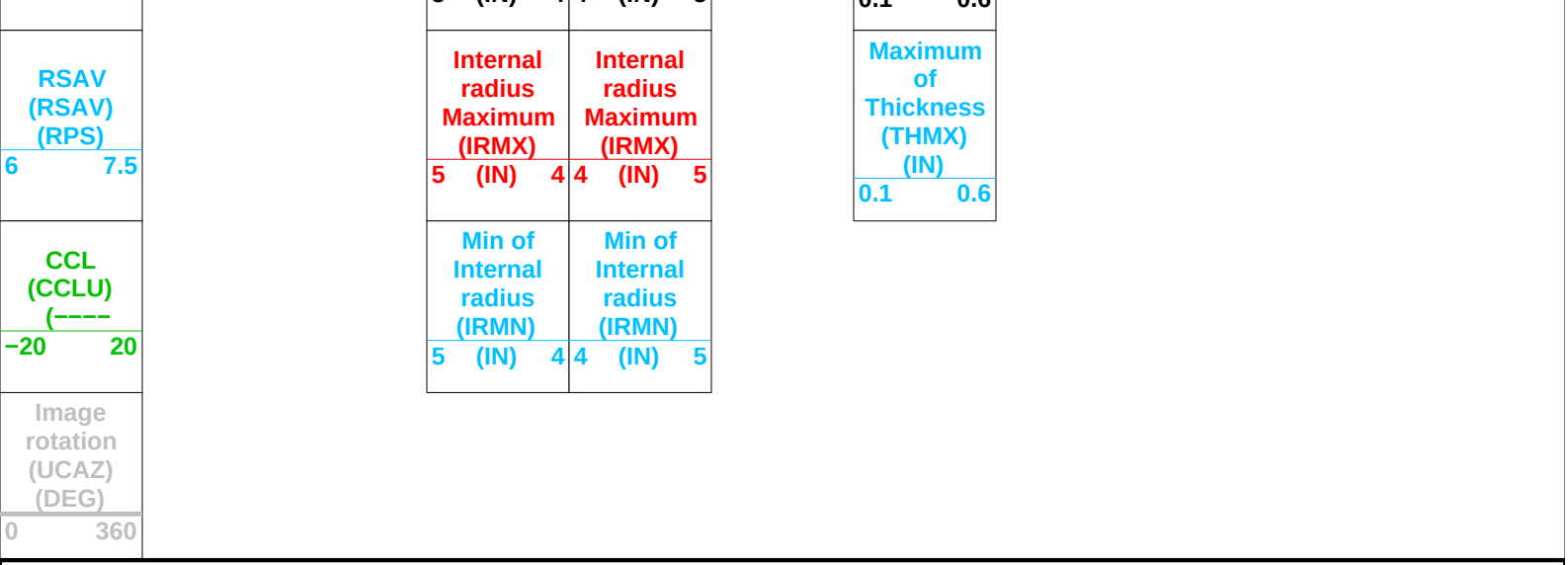
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_USLP) (----

CCL (CCLU) (----
−20 20

Internal radius Average (IRAV)
5 (IN) 4

Internal radius Average (IRAV)
4 (IN) 5

Average of Thickness (THAV) (IN)
0.1 0.6



Format: USI_IBC_SLG_Composite Vertical Scale: 5" per 100' Graphics File Created: 10-Oct-2013 14:16

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	60	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	1.7	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 12:40	2848.5 FT	39.0 FT

Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10-Oct-2013 14:16		

Schlumberger

MAIN PASS
2 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SG 8508F-33 (E34) 496

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10-Oct-2013 12:40	2848.5 FT	39.0 FT

Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10-Oct-2013 14:16	2848.5 FT	39.0 FT

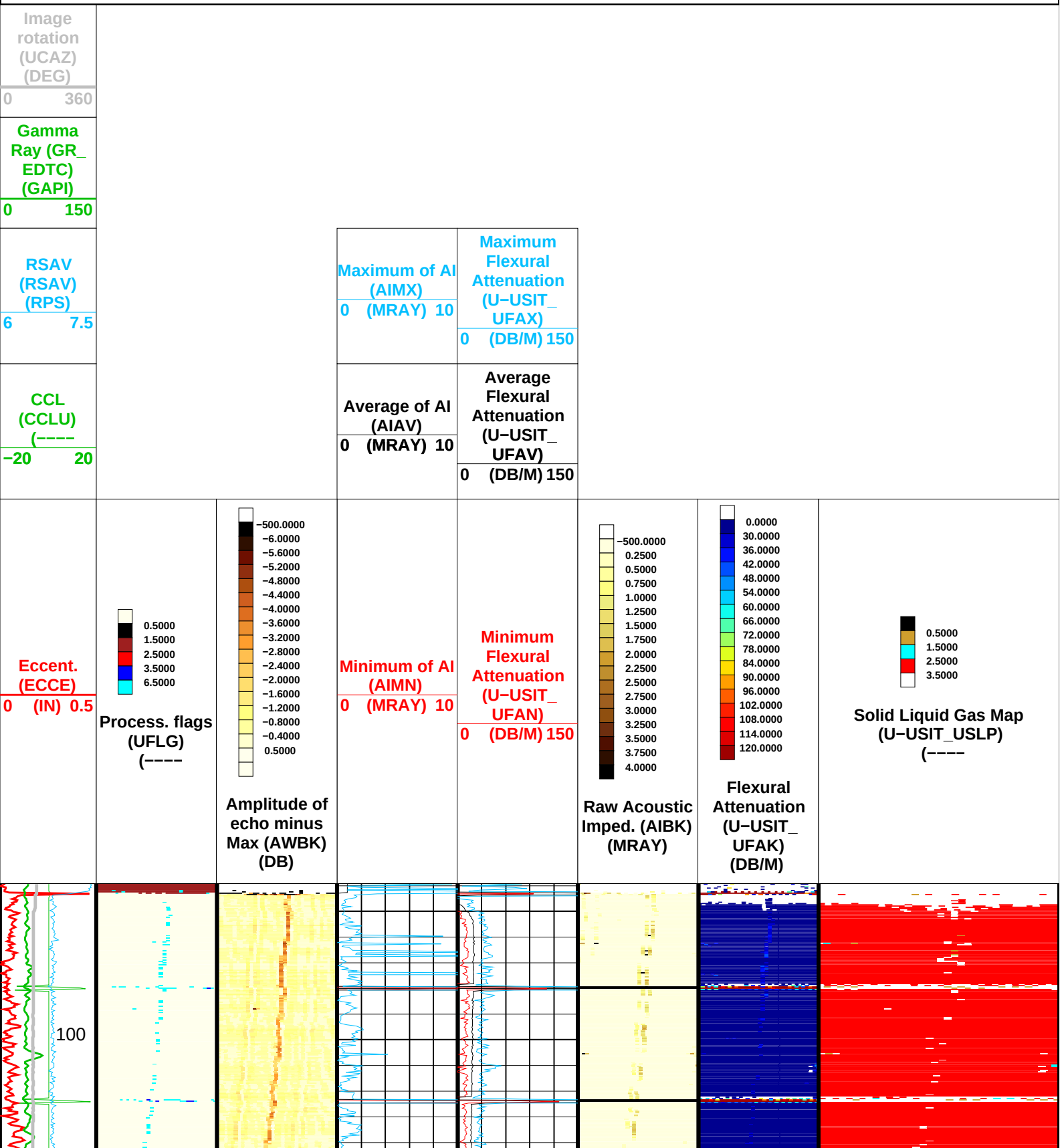
OP System Version: 19C1-222

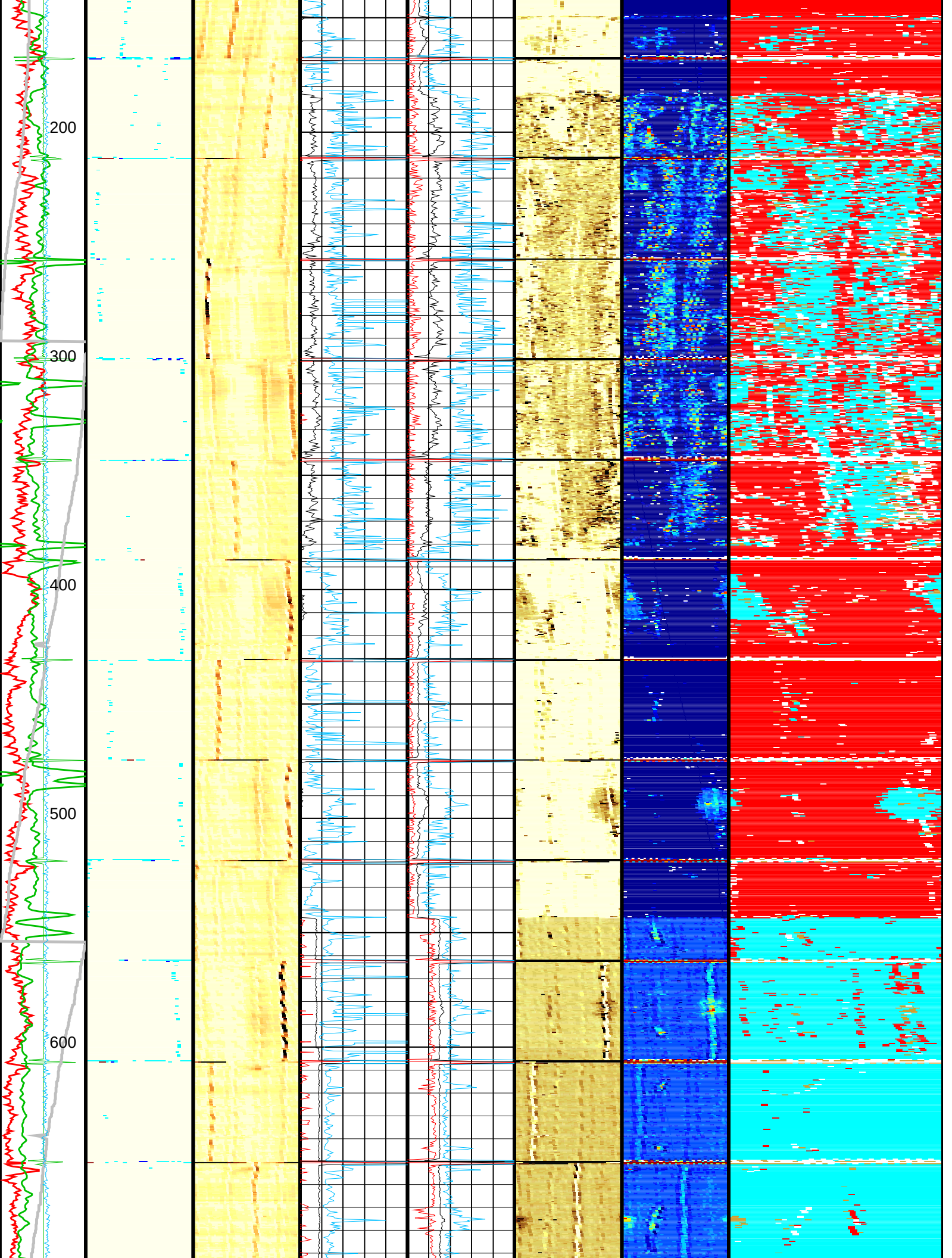
USIT-E	19C1-222	EDTC-B	19C1-222

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	202.00	1.75
2800.00	203.00	1.75
2500.00	204.00	1.75

2200.00	205.00	1.70
1800.00	206.00	1.70
1500.00	207.00	1.65
1200.00	208.00	1.60
900.00	209.00	1.60
600.00	210.00	1.55
300.00	211.00	1.50

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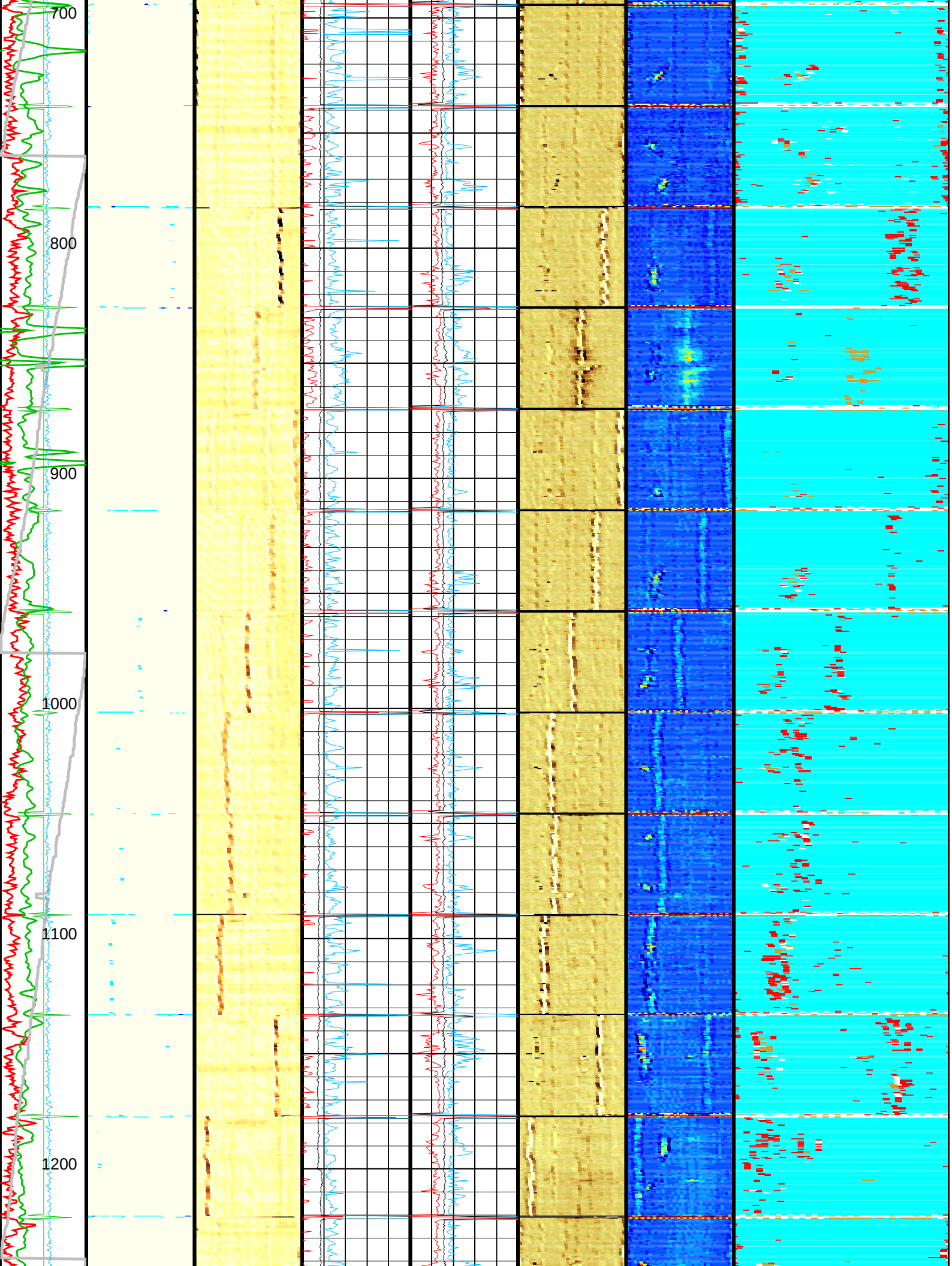
300
400
500
600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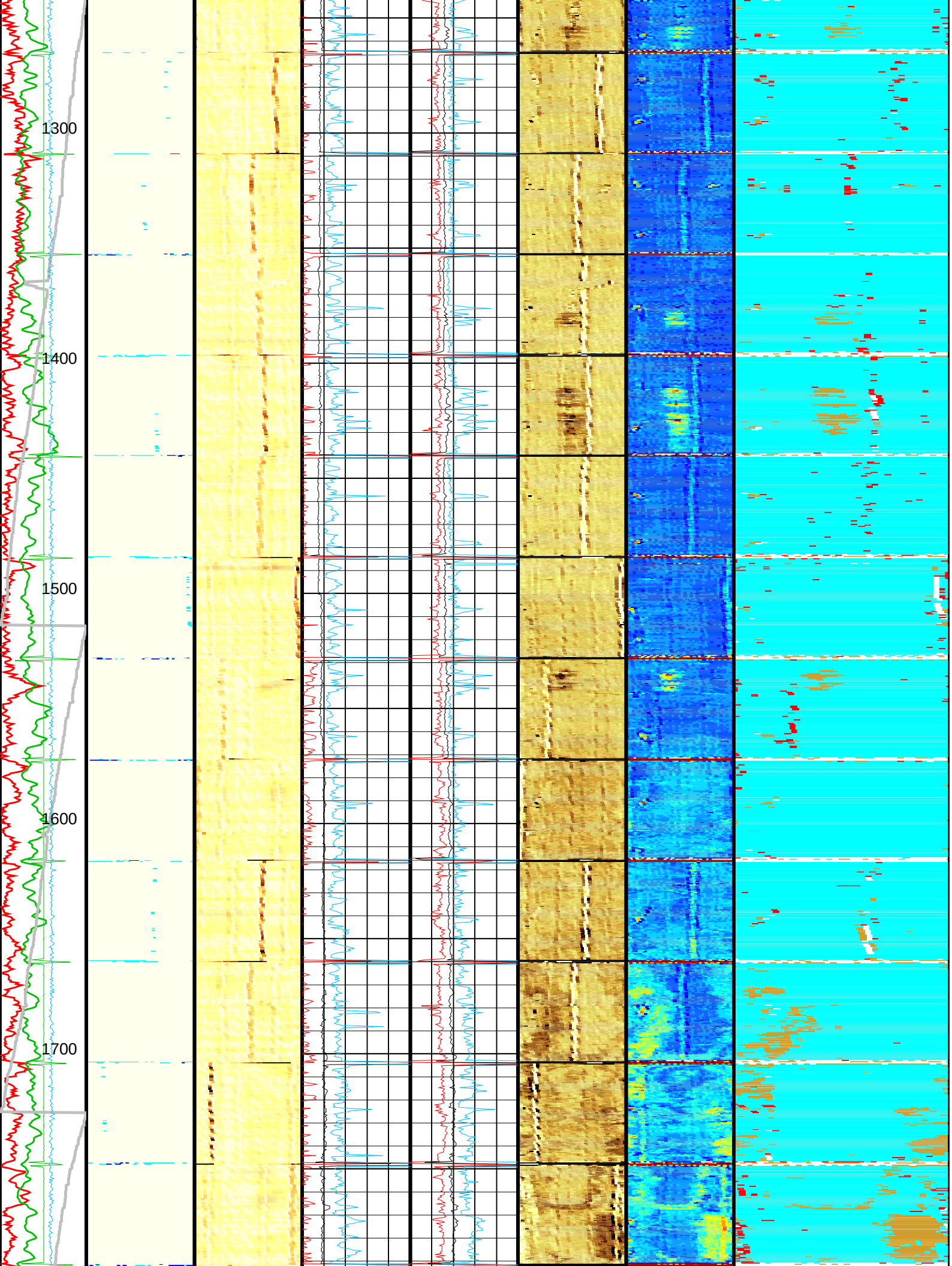
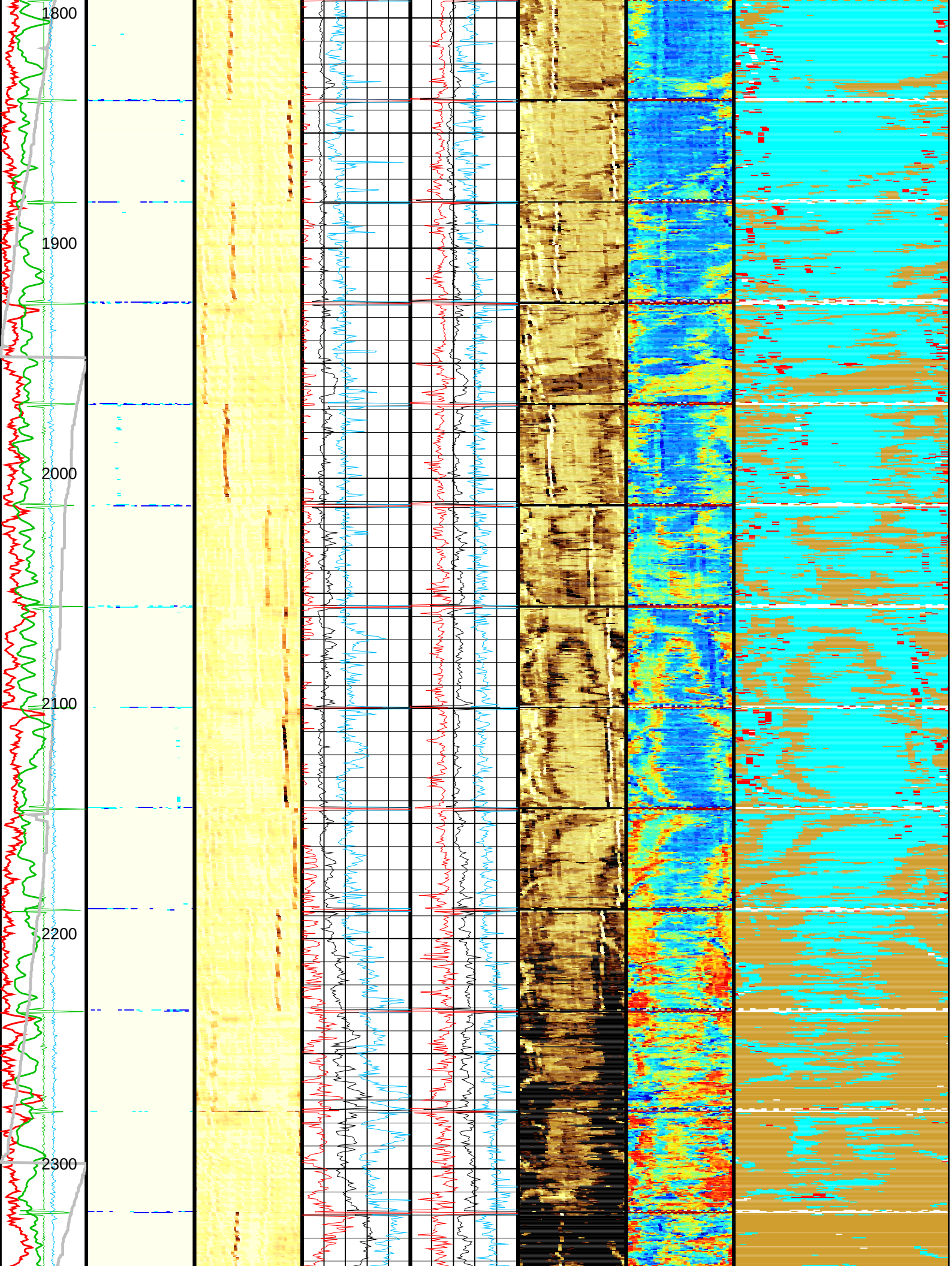
1000
1100
1200


1300
1400
1500
1600
1700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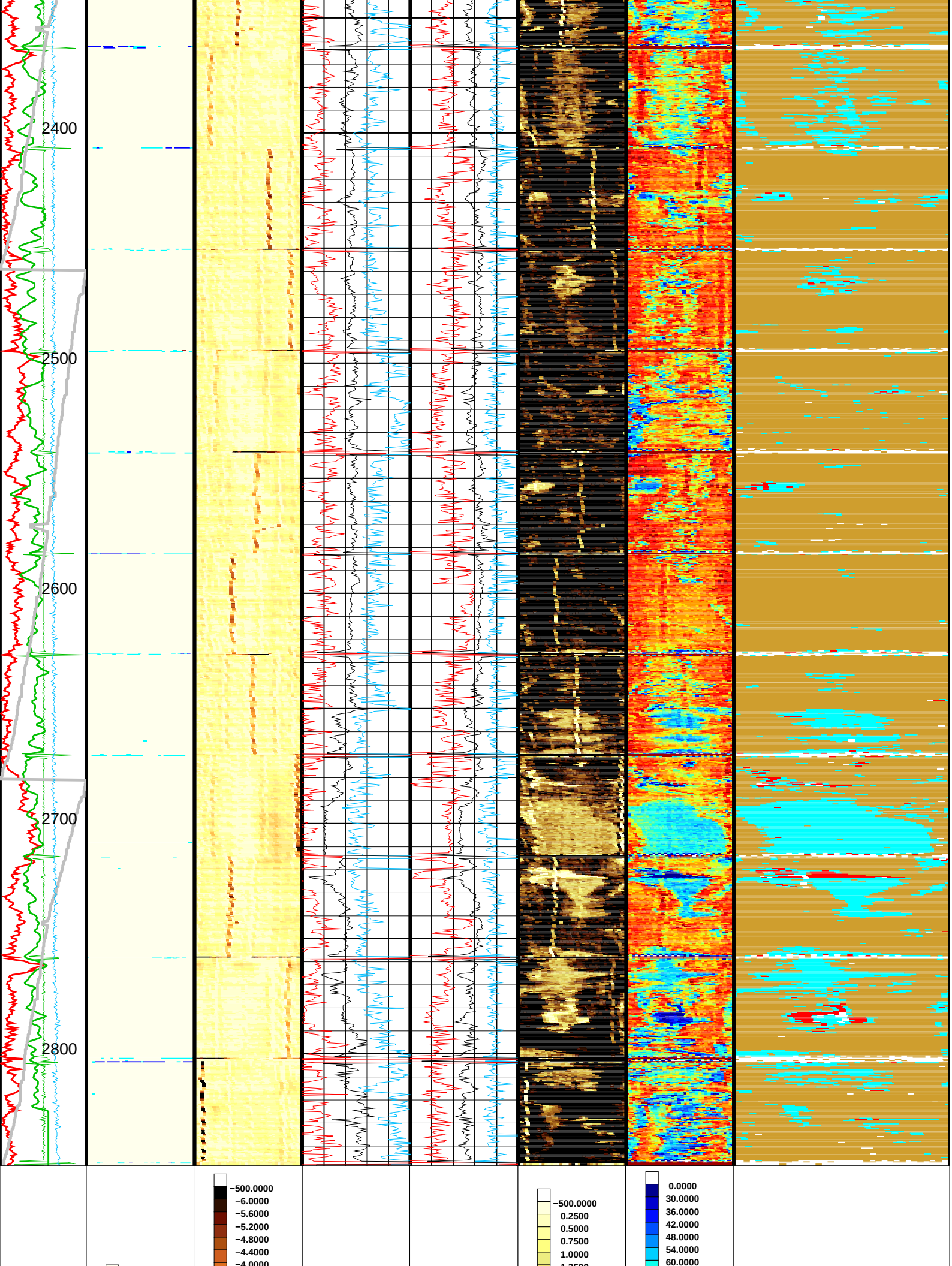
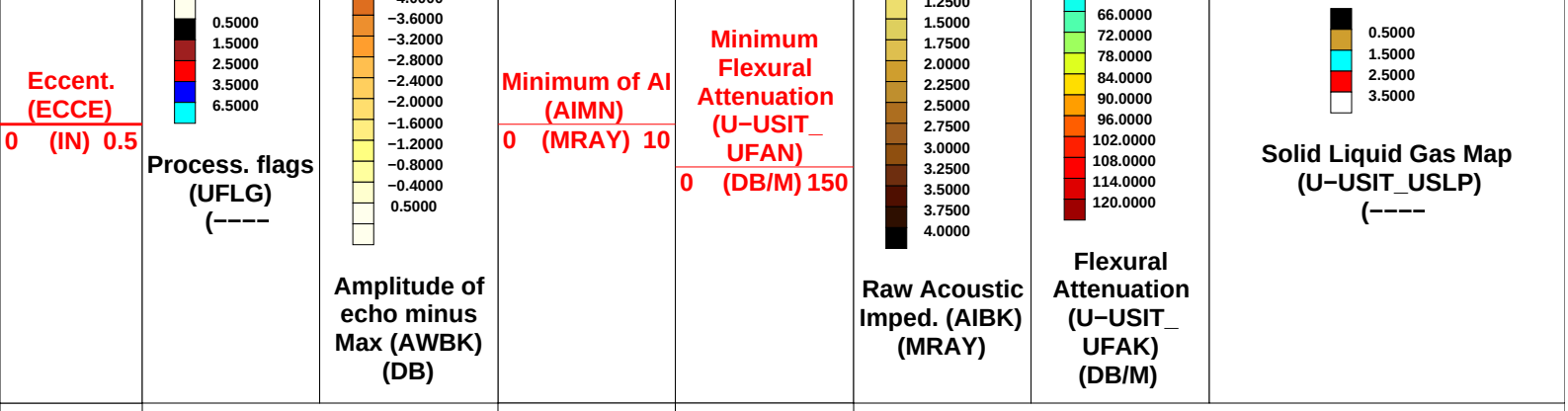
1900
2000
2100
2200
2300


2400
2500
2600
2700
2800
−500.0000
−6.0000
−5.6000
−5.2000
−4.8000
−4.4000
−500.0000
0.2500
0.5000
0.7500
1.0000
0.0000
30.0000
36.0000
42.0000
48.0000
54.0000
60.0000



Format: USI_IBC_SLG **Vertical Scale: 2" per 100'** **Graphics File Created: 10−Oct−2013 14:16**

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	60	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	1.7	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 12:40	2848.5 FT	39.0 FT

Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10−Oct−2013 14:16		

Schlumberger

MAIN PASS
2 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SG 8508F−33 (E34) 496

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 12:40	2848.5 FT	39.0 FT

Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10−Oct−2013 14:16	2848.5 FT	39.0 FT

QP System Version: 19C1−232

OP System Version: 19C1-222

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

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)

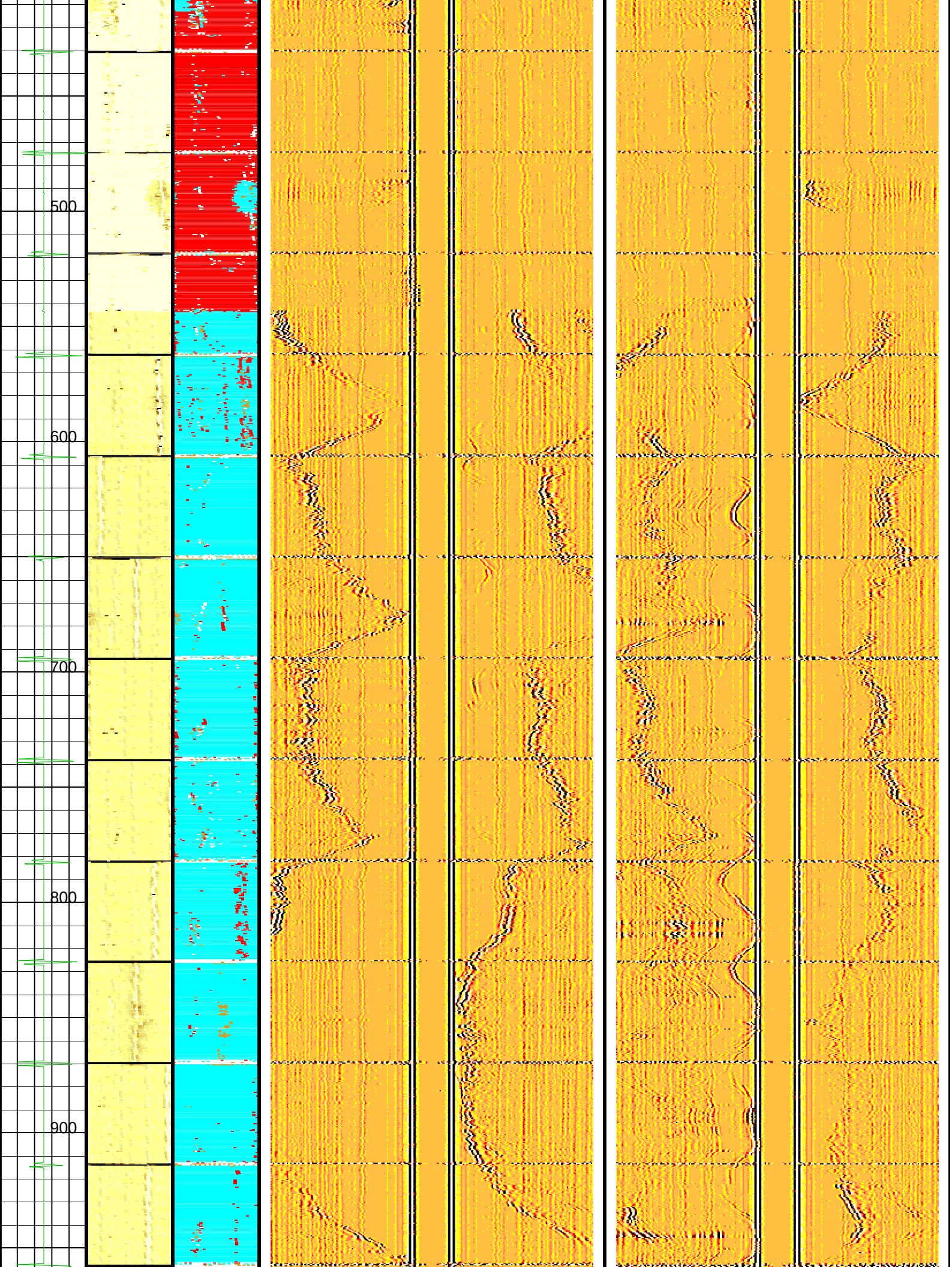
0.5000
1.5000
2.5000
3.5000

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

100
200
300
400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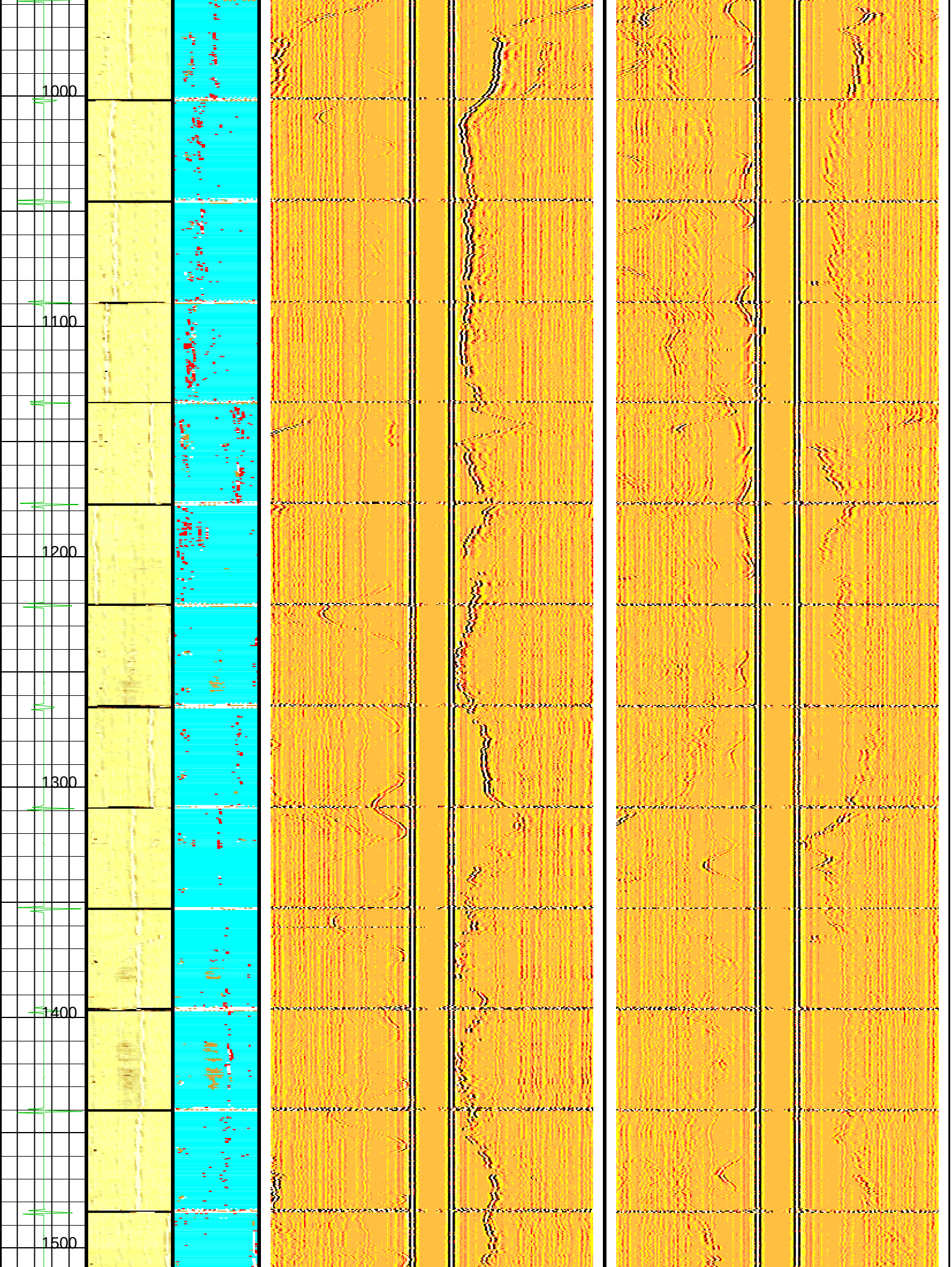
600
700
800
900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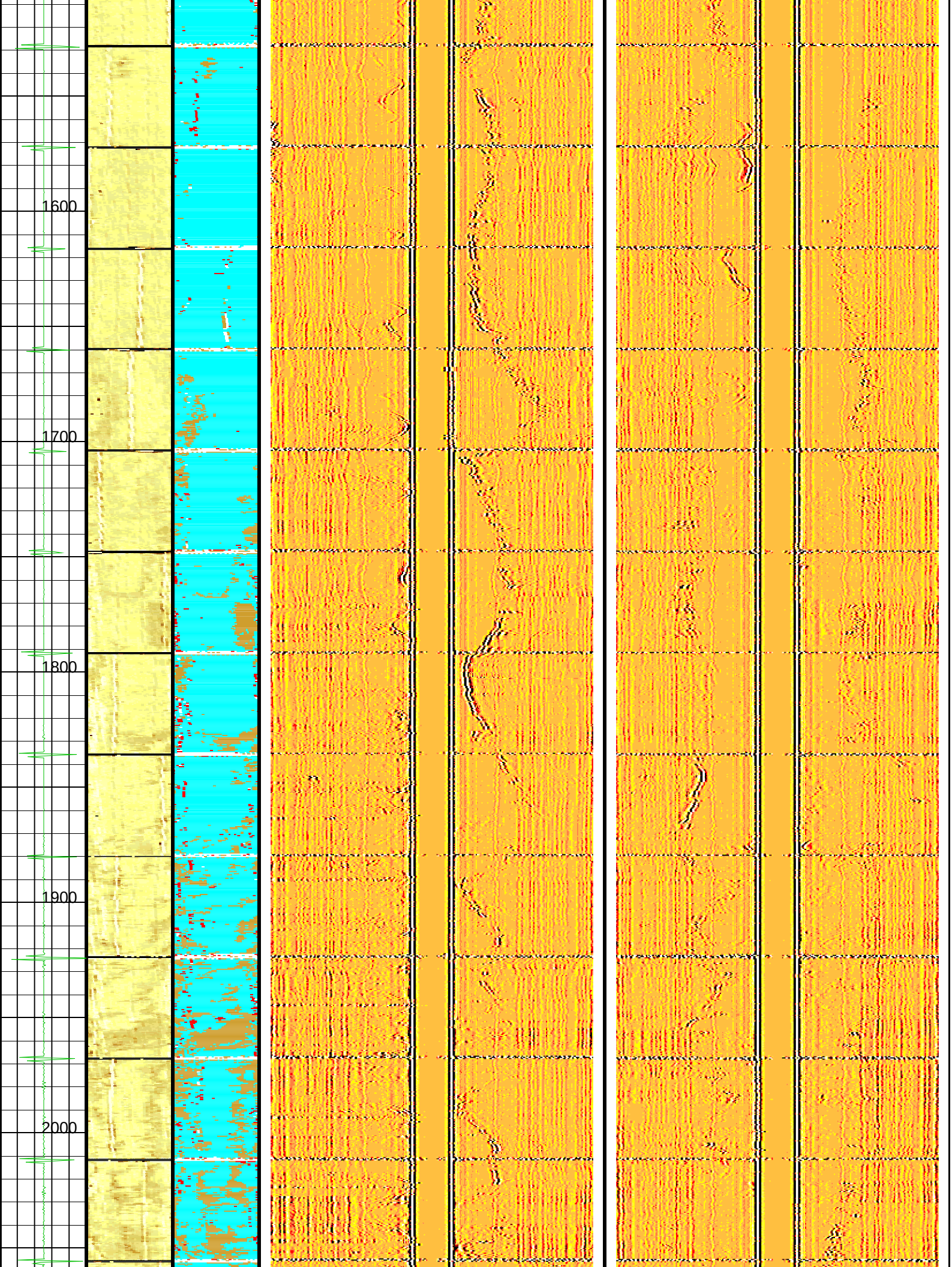
1100
1200
1300
1400
1500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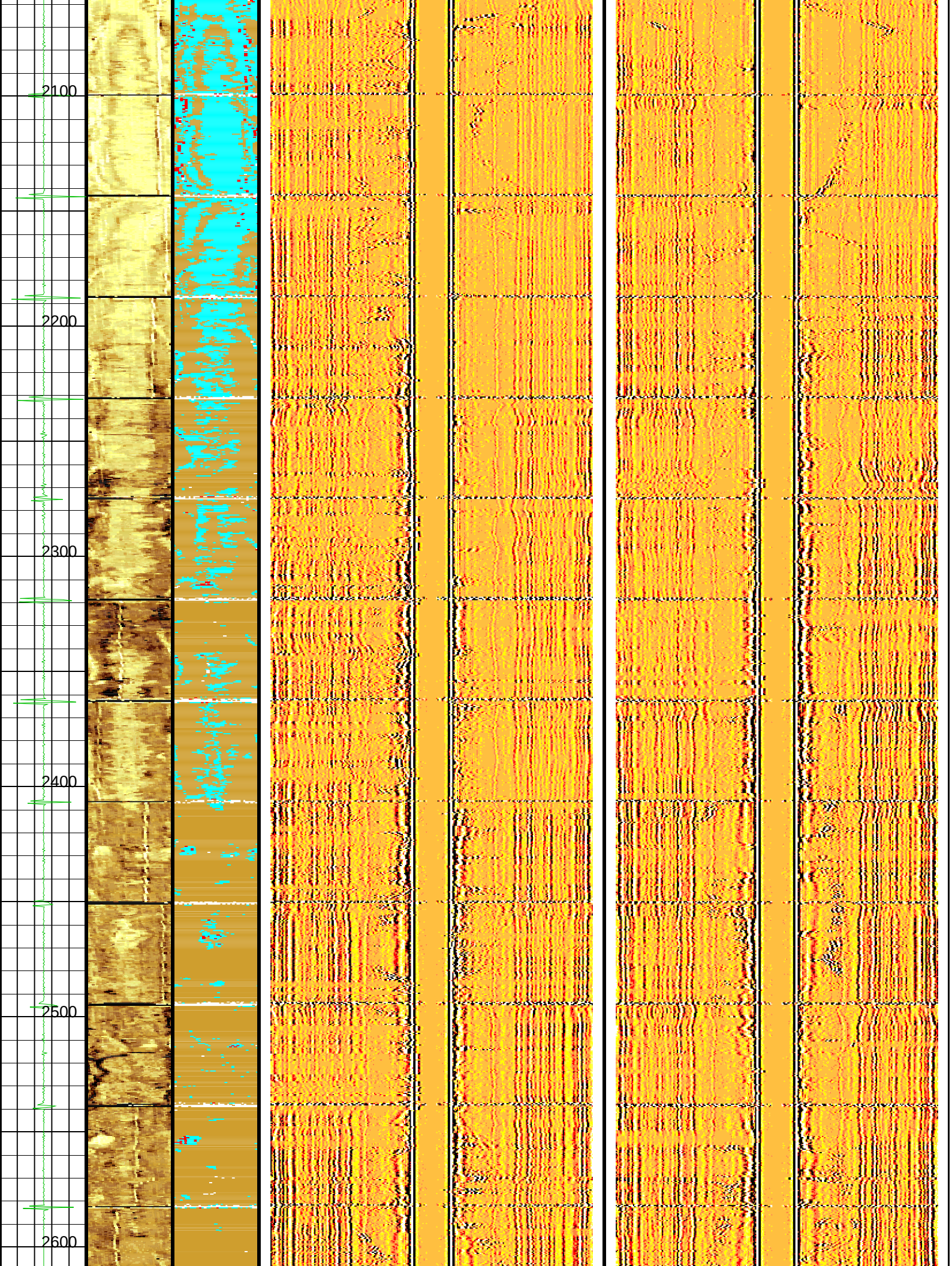
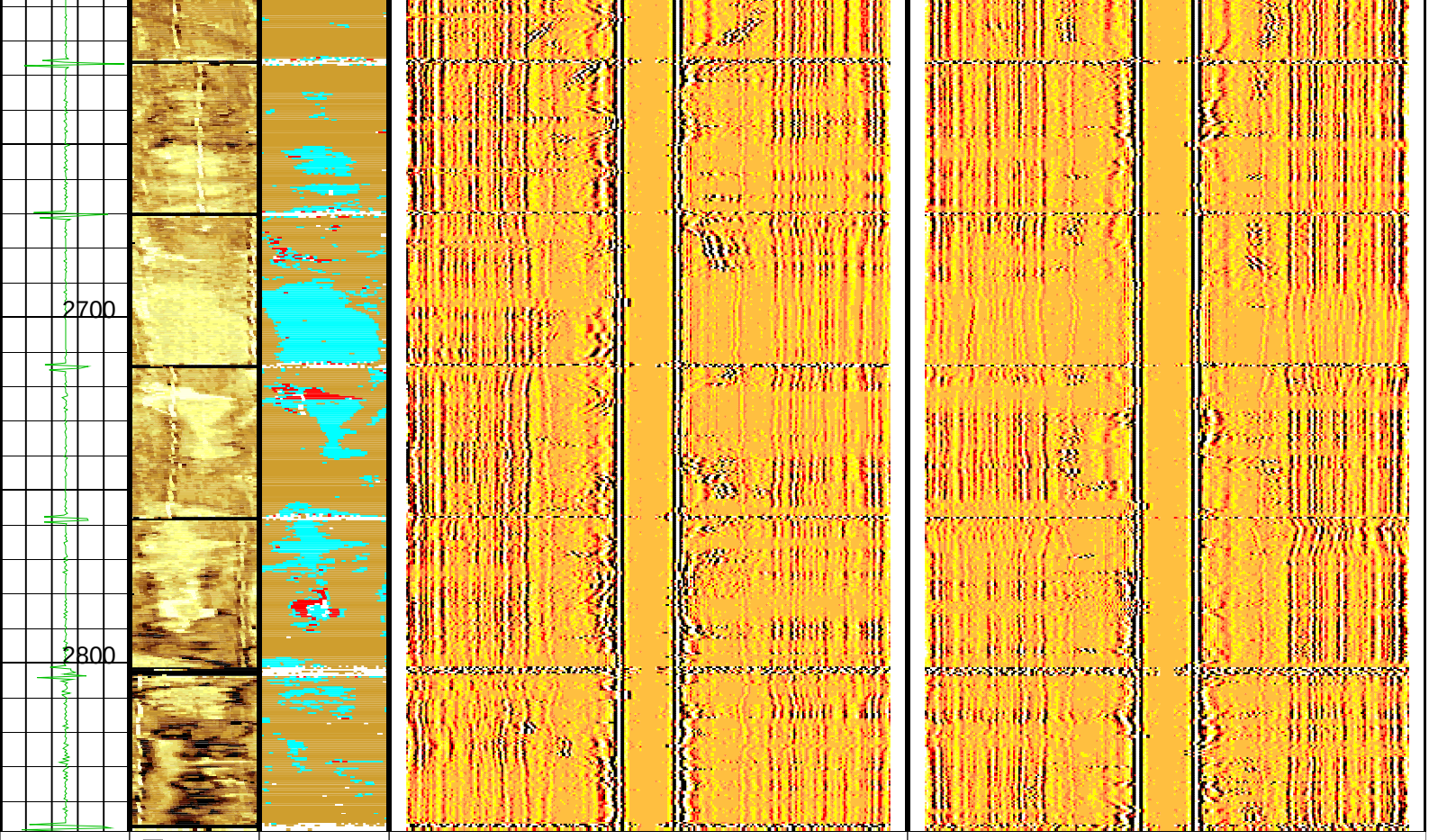
1700
1800
1900
2000


2100
2200
2300
2400
2500
2600



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

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	60	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	1.7	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 14:16

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 12:40	2848.5 FT	39.0 FT

Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10−Oct−2013 14:16		

Schlumberger

MAIN PASS
0.1 INCH

MAXIS Field Log

Company: ENCANA OIL & GAS (USA) INC. Well: SG 8508F−33 (E34) 496

Input DLIS Files

DEFAULT	USI_005LUP	FN:4	PRODUCER	10−Oct−2013 12:40	2848.5 FT	39.0 FT

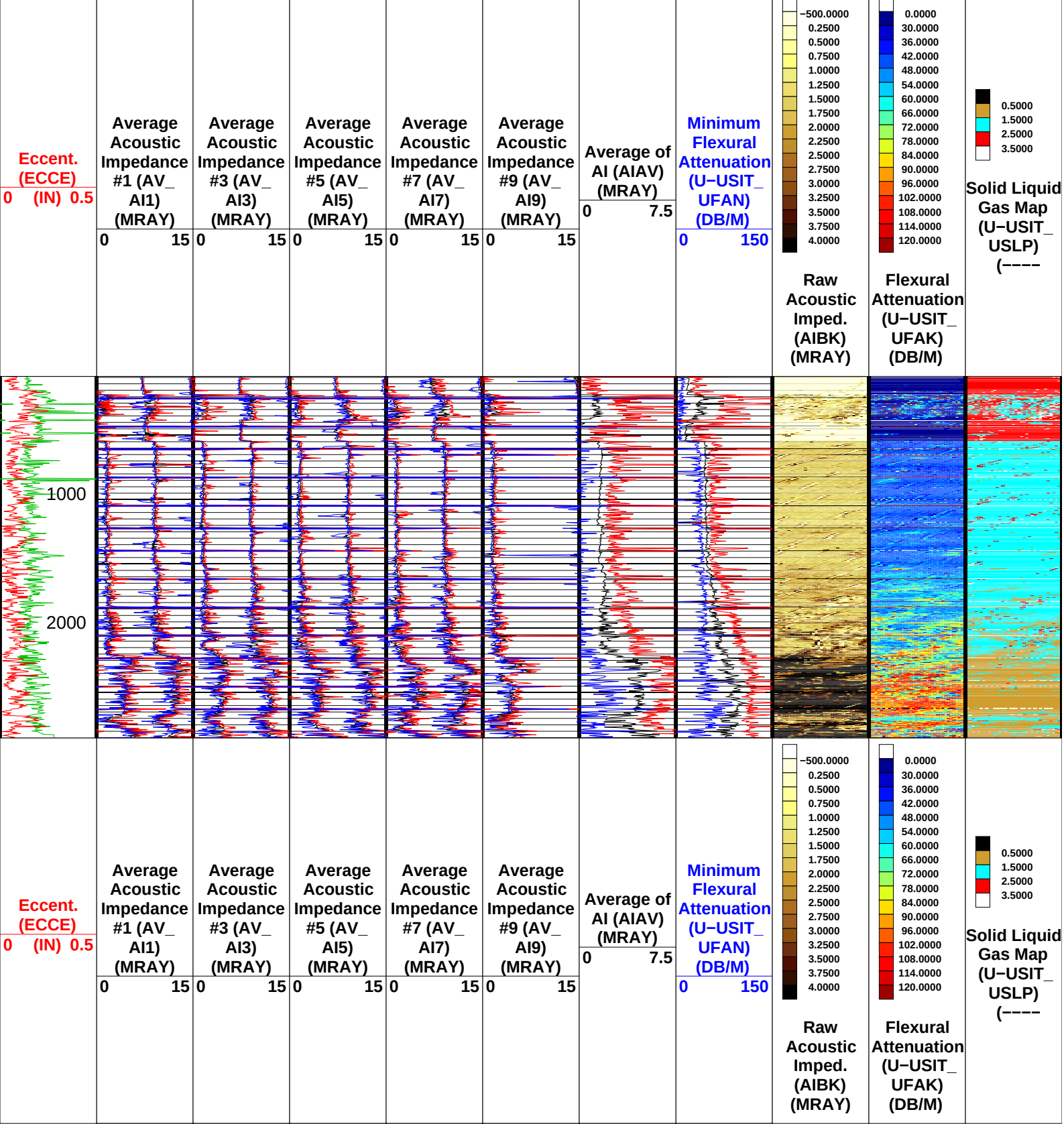
Output DLIS Files

DEFAULT	USI_012PUP	FN:11	PRODUCER	10−Oct−2013 14:16	2848.5 FT	39.0 FT

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
3000.00	202.00	1.75
2800.00	203.00	1.75
2500.00	204.00	1.75
2200.00	205.00	1.70
1800.00	206.00	1.70
1500.00	207.00	1.65
1200.00	208.00	1.60
900.00	209.00	1.60
600.00	210.00	1.55
300.00	211.00	1.50

	Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY) −7.5 7.5				
	Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY) 0 15	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY) 0 15	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY) 0 15	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY) 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) (−−−−

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

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

Maximum Acoustic Impedance #2 (MAX_AI2) (MRAY)	Maximum Acoustic Impedance #4 (MAX_AI4) (MRAY)	Maximum Acoustic Impedance #6 (MAX_AI6) (MRAY)	Maximum Acoustic Impedance #8 (MAX_AI8) (MRAY)
−7.5 7.5	−7.5 7.5	−7.5 7.5	−7.5 7.5
Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY)	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY)	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY)	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY)
0 15	0 15	0 15	0 15
Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY)	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY)	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY)	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY)
−7.5 7.5	−7.5 7.5	−7.5 7.5	−7.5 7.5

Format: M_Goodwin_Compressed **Vertical Scale: 0.1" per 100'** **Graphics File Created: 10−Oct−2013 14:16**

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 12:40**	**2848.5 FT**	**39.0 FT**

Output DLIS Files

DEFAULT	**USI_012PUP**	**FN:11**	**PRODUCER**	**10−Oct−2013 14:16**

Schlumberger

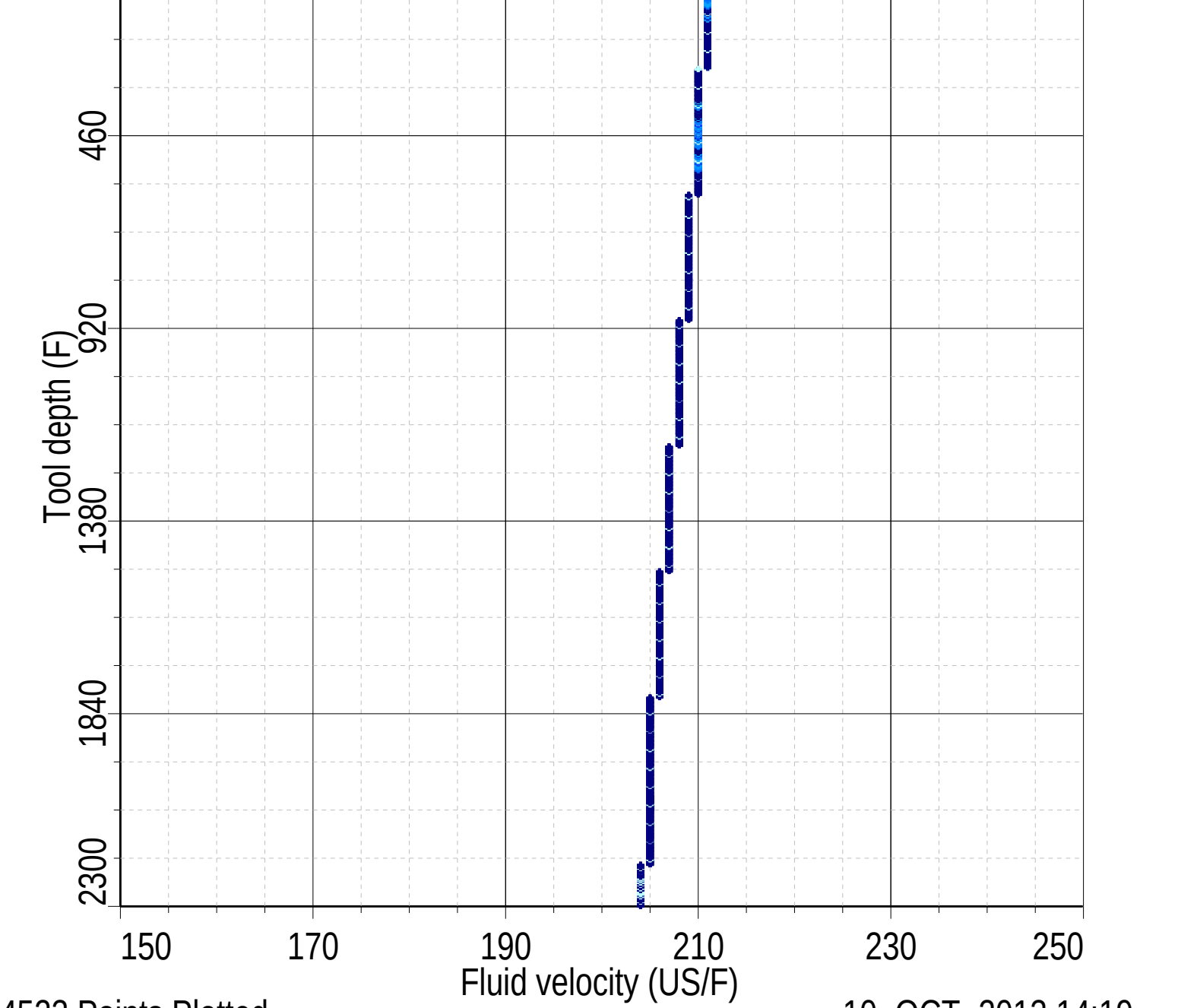
FLUID PROPERTIES

MAXIS Field Log

IBC Inv. Fluid Z QC (−−−−

Index: 2848.5 − 39.0 FT

0. 0.5



4523 Points Plotted

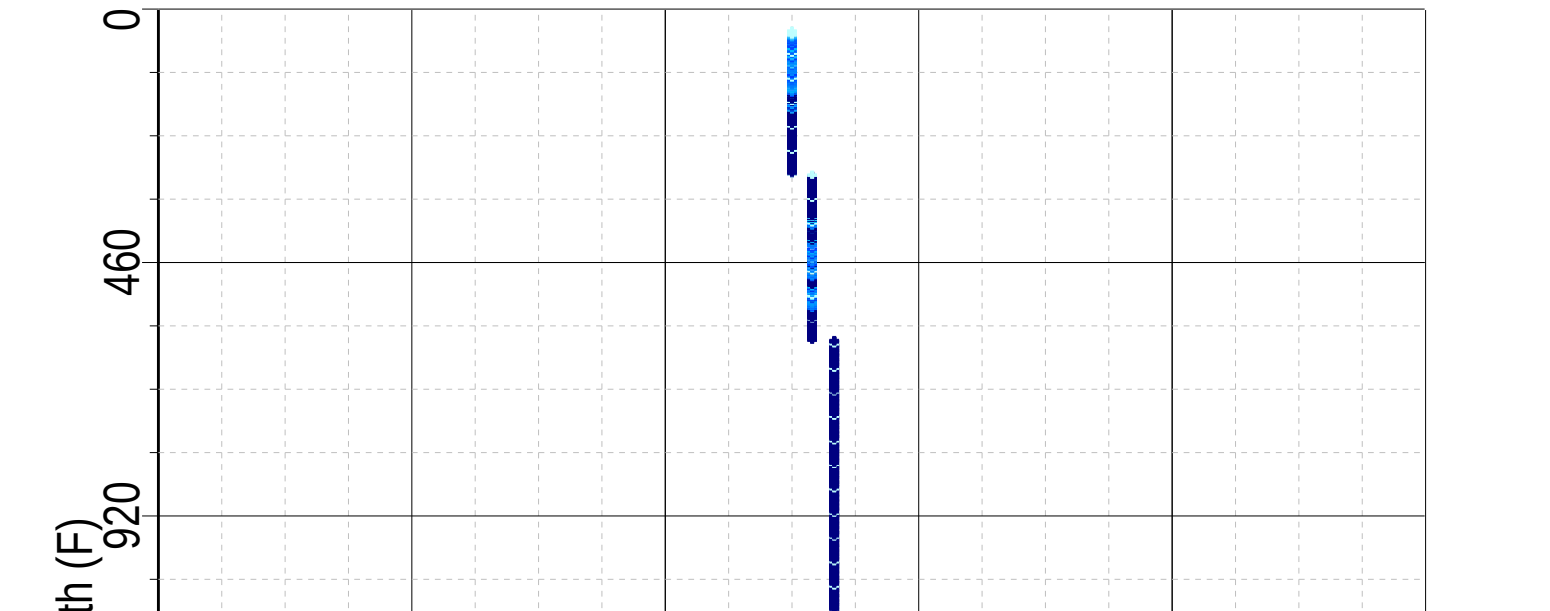
10−OCT−2013 14:19

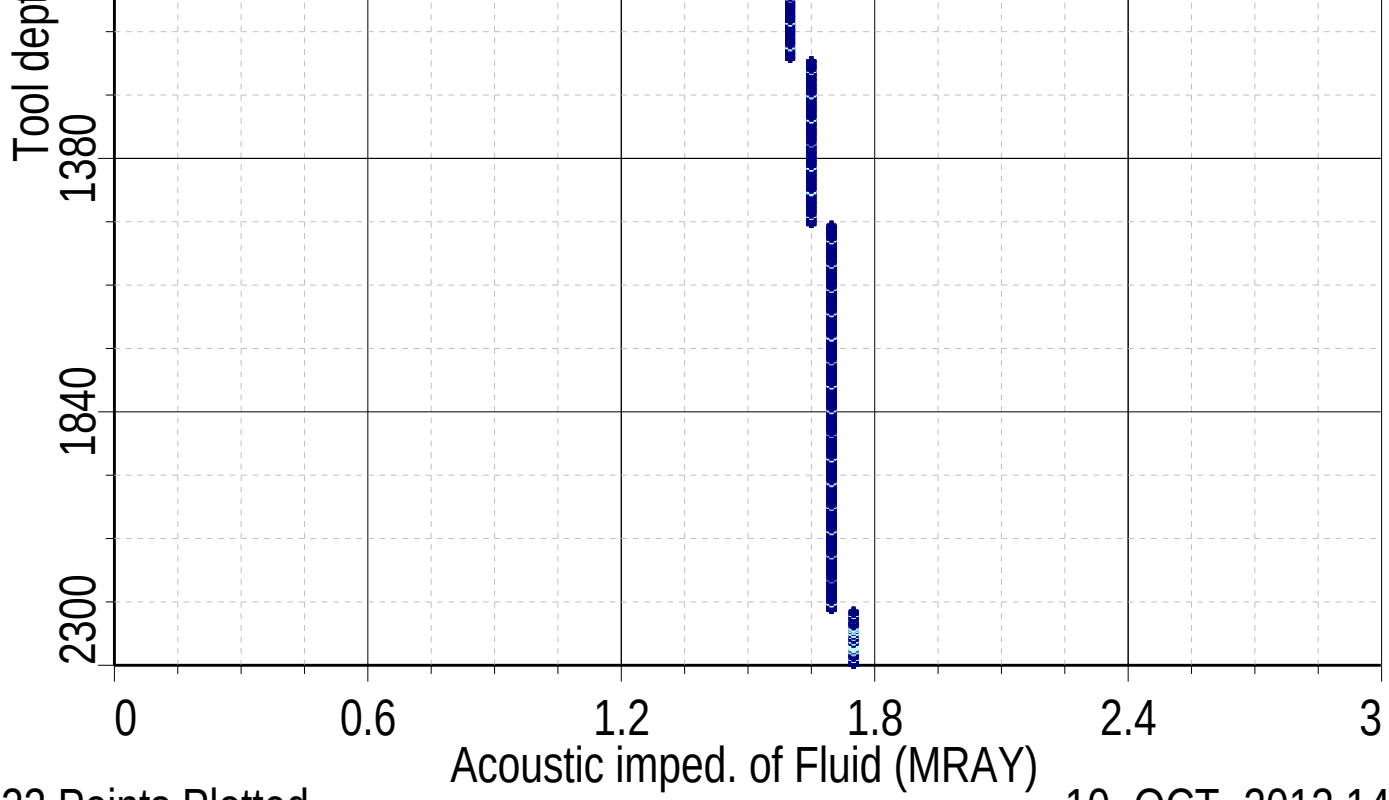
IBC Inv. Fluid Z QC (−−−−

Index: 2848.5 − 39.0 FT

0.

0.5





4523 Points Plotted

10−OCT−2013 14:19

Company:	**ENCANA OIL & GAS (USA) INC.**
Well:	**SG 8508F−33 (E34) 496**
Field:	**STORY GULCH**
County:	**GARFIELD**
State:	**COLORADO**

Schlumberger

ISOLATION SCANNER
CEMENT EVALUATION
GAMMA RAY, CCL