Schlumberger

Company: **Noble Energy Inc**

Well: **Vigilant State AC16−07**
Field: **Wattenberg**
County: **Weld** State: **Colorado**

County: Weld
Field: Wattenberg
Location: SW NE Sec. 16, T7N, R63W
Well: Vigilant State AC16−07
Company: Noble Energy Inc

Isolation Scanner
Cement Evaluation

LOCATION

SW NE Sec. 16, T7N, R63W	Elev.:	K.B.	4865.00 ft
SHL: 1980' FNL x 1980' FEL		G.L.	4850.00 ft
Lat/Long: 40.576000/−104.439020		D.F.	4864.00 ft

Permanent Datum:	Ground Level	Elev.:	4850.00 ft
Log Measured From:	Kelly Bushing	15.00 ft	above Perm. Datum
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section	Township	Range
05−123−37248−0000	16	7N	63W

Logging Date		17−Jul−2013	
Run Number		1	
Depth Driller		8881 ft	
Schlumberger Depth		8860 ft	
Bottom Log Interval		8860 ft	
Top Log Interval		300 ft	
Casing Fluid Type		Fresh Water	
Salinity			
Density		8.4 lbm/gal	
Fluid Level		0 ft	
BIT/CASING/TUBING STRING			
Bit Size		8.750 in	
From		0 ft	
To		8881 ft	
Casing/Tubing Size		7.000 in	
Weight		26 lbm/ft	
Grade		L−80	
From		0 ft	
To		8881 ft	
Maximum Recorded Temperatures			
Logger On Bottom	Time	17−Jul−2013	13:00
Unit Number	Location	2135	Ft. Morgan, CO
Recorded By		Keri Loring	
Witnessed By		Omar Fabela	

		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			
	CEMENTING DATA			
	Primary/Squeeze	Primary		
	Casing String No			
	Lead Cement Type			
	Volume			
	Density			
	Water Loss			
	Additives			
	Tail Cement Type			
	Volume			
	Density			
	Water Loss			
	Additives			
	Expected Cement Top			
	Logging Date			
	Run Number			
	Depth Driller			
	Schlumberger Depth			
	Bottom Log Interval			
	Top Log Interval			
	Casing Fluid Type			
	Salinity			
	Density			
	Fluid Level			
	BIT/CASING/TUBING STRING			
	Bit Size			
	From			
	To			
	Casing/Tubing Size			
	Weight			
	Grade			
	From			
	To			
	Maximum Recorded Temperatures			
	Logger On Bottom	Time		
	Unit Number	Location		
	Recorded By			
	Witnessed By			

Run 3

Run 4

DEPTH SUMMARY LISTING

Date Created: 18−JUL−2013 18:44:44

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46P XS
Serial Number:	5852	Serial Number:	1919	Serial Number:	711057
Calibration Date:	12−Jul−2013	Calibration Date:	19−Jun−2013	Length:	17100 FT
Calibrator Serial Number:		Calibrator Serial Number:	78135		
Calibration Cable Type:	7−46P XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−4	Calibration RMS:	16	Rig Type:	LAND
Wheel Correction 2:	−3	Calibration Peak Error:	26		

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:	2.00 FT
Tool Zero Check At Surface:	

Depth Control Remarks

1. All Schlumberger depth control procedures followed.
2. IDW used as primary depth device.
3. Z−chart used as secondary depth device.
4. Log not correlated to open hole logs
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
Well cemented on 15−July−2013 by Halliburton.	
Well pressured to 3000 psi for main pass; no pressure for repeat pass at TD.	
Repeats preformed at 2150−2200 ft, 3750−3800 ft, 4400−4460 ft, 7700−7750 ft, and 7900−7930 ft; all with 3000 psi.	
DV tool at 7299 feet.	

13.8 lb Expandacem cement, 10 lb Clean Spacer III, and 9.5 lb WBM displacement in first stage.

10 lb Tuned Light B1 cement, 13 lb Varicem B1 cement, 15.8 lb HalCem G Cement, and 10 lb Clean Spacer III in second stage.

Top of fluid at 300 feet.

Omar Fabela checked back side of 7" casing and did not note any anomalies.

Thank you for choosing Schlumberger Wireline.

Schlumberger Crew: J. Strand, I. Derry

RUN 1			RUN 2		
SERVICE ORDER #:		BX19−00084	SERVICE ORDER #:		
PROGRAM VERSION:		19C0−187	PROGRAM VERSION:		
FLUID LEVEL:		0 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

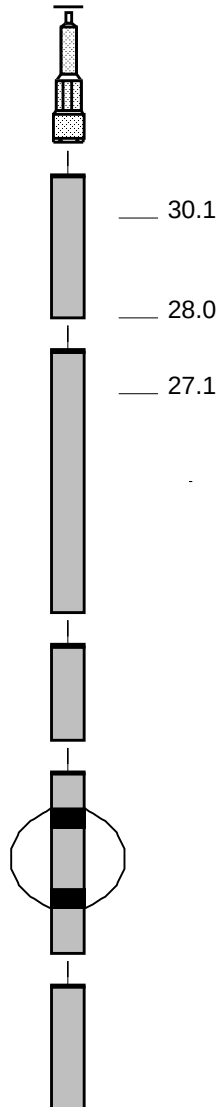
EQUIPMENT DESCRIPTION

RUN 1 | RUN 2

SURFACE EQUIPMENT

GSR−U/Y
WITM (DTS)−A

DOWNHOLE EQUIPMENT



LEH−QT 33.9
LEH−QT

DTC−H 31.0
ECH−KC 9562
DTCH0−A
DTCH1−A

CTEM 30.1

TelStatus
ToolStatu 28.0

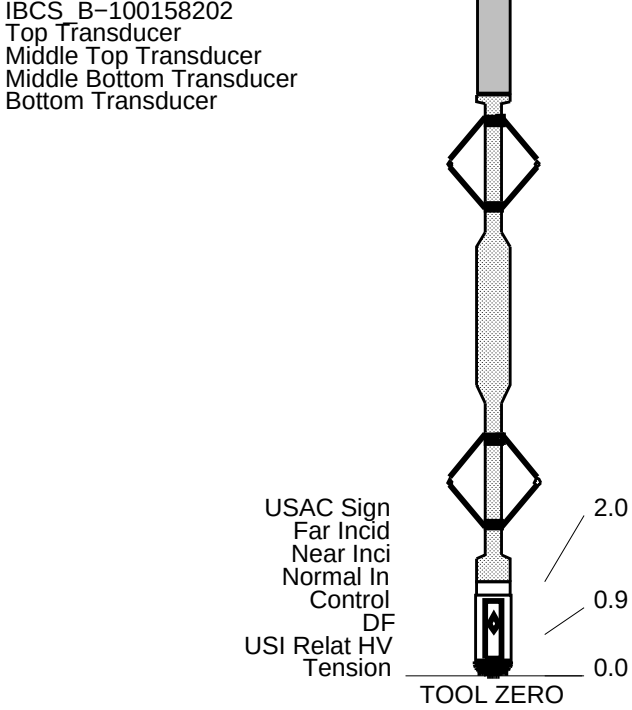
SGT−N 28.0
SGH−K 3039
SGC−TB 6249
SGD−TAB 21700

Gamma Ray 27.1

AH−107 22.5
AH−107 757

AH−CEN 20.5
AH−CEN

USIT−E 16.7
ECH−MFA 1964
USAC−A 992
USIS−A 2797
USSC−B



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

Schlumberger

Composite Main Log
5" = 100’

MAXIS Field Log

Company: Noble Energy Inc **Well: Vigilant State AC16−07**

Input DLIS Files

DEFAULT	**Splice_USI_027CUP**	**FN:1**	**PRODUCER**	**18−Jul−2013 17:52**	**8851.0 FT**	**131.2 FT**

Output DLIS Files

DEFAULT	**USI_045PUP**	**FN:38**	**PRODUCER**	**18−Jul−2013 21:08**	**8852.0 FT**	**133.0 FT**

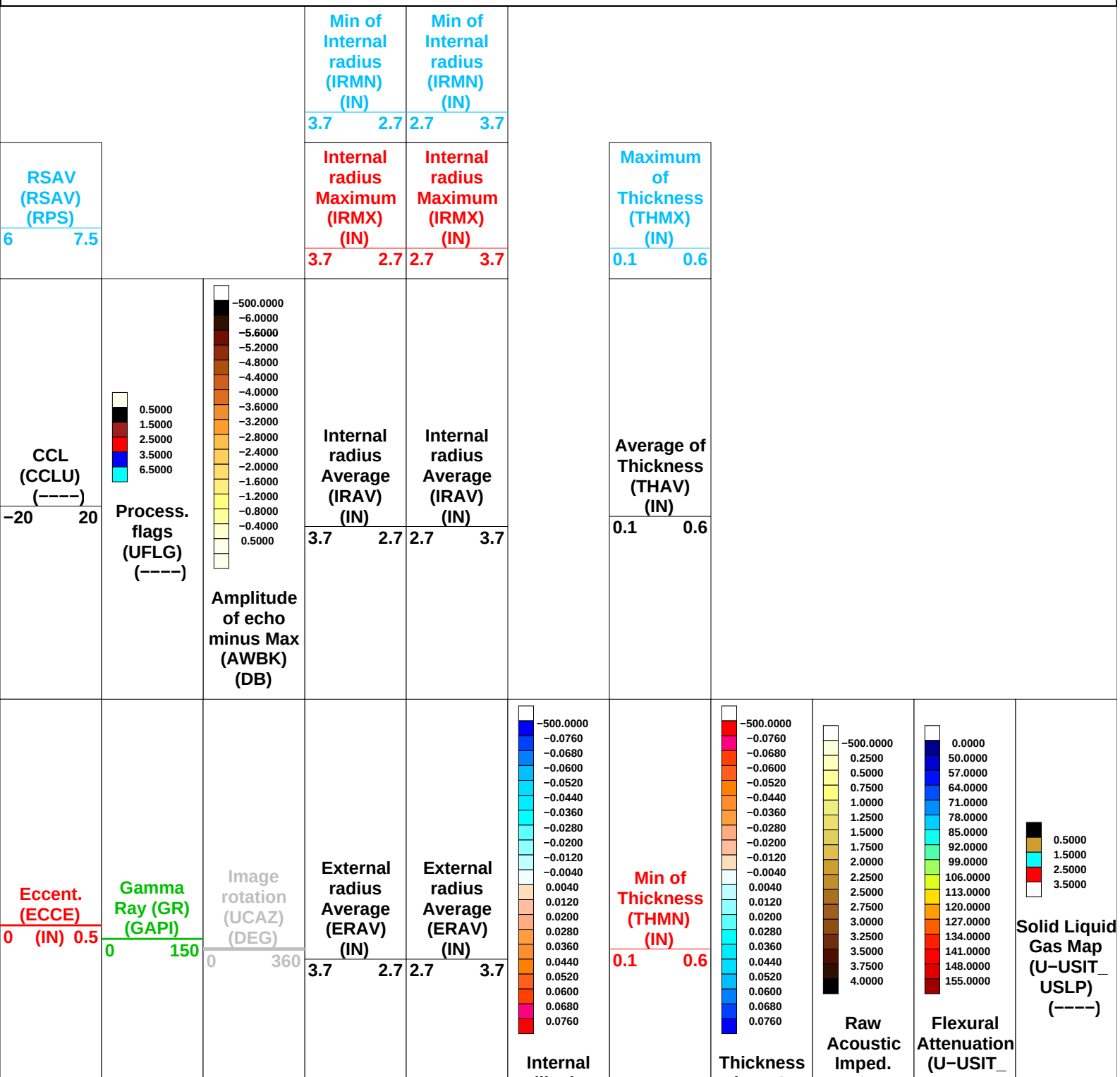
OP System Version: 19C0−187

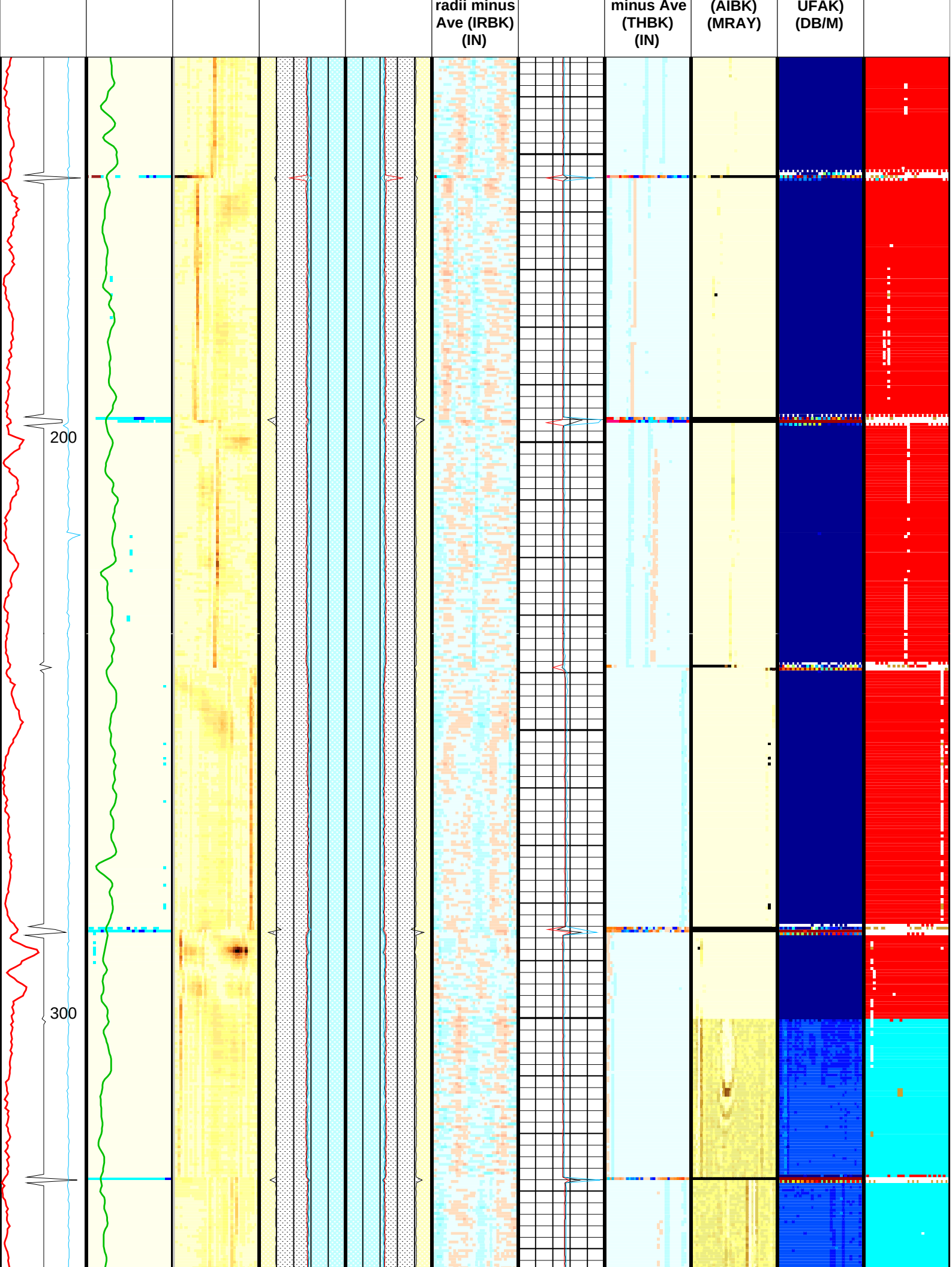
USIT−E	**19C0−187**	**SGT−N**	**19C0−187**
DTC−H	**19C0−187**		

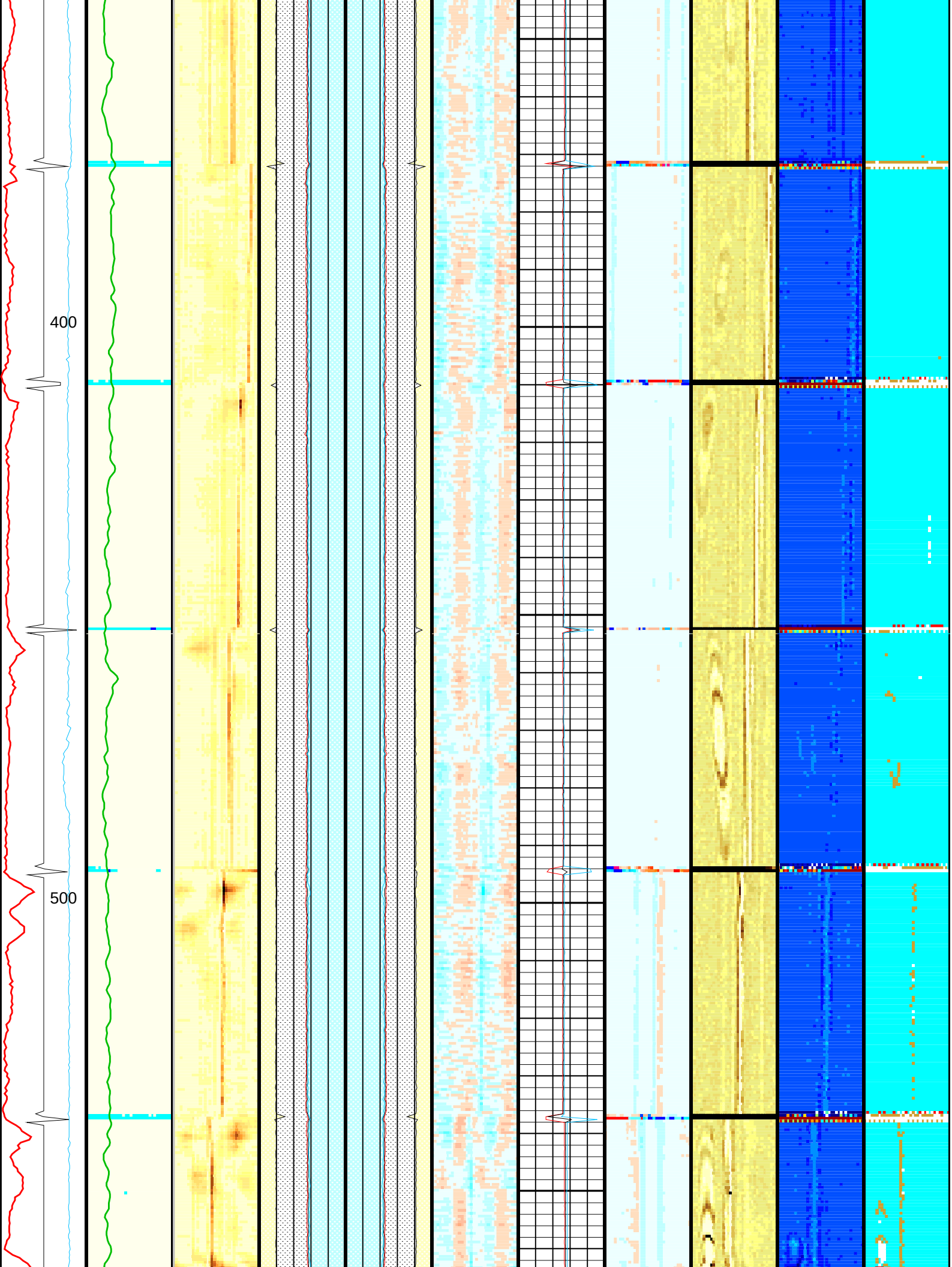
Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	**202.00**	**1.75**
7789.00	**200.00**	**1.75**

7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72




radii minus
Ave (IRBK)
(IN)
minus Ave
(THBK)
(IN)
(AIBK)
(MRAY)
UFAK)
(DB/M)
200
300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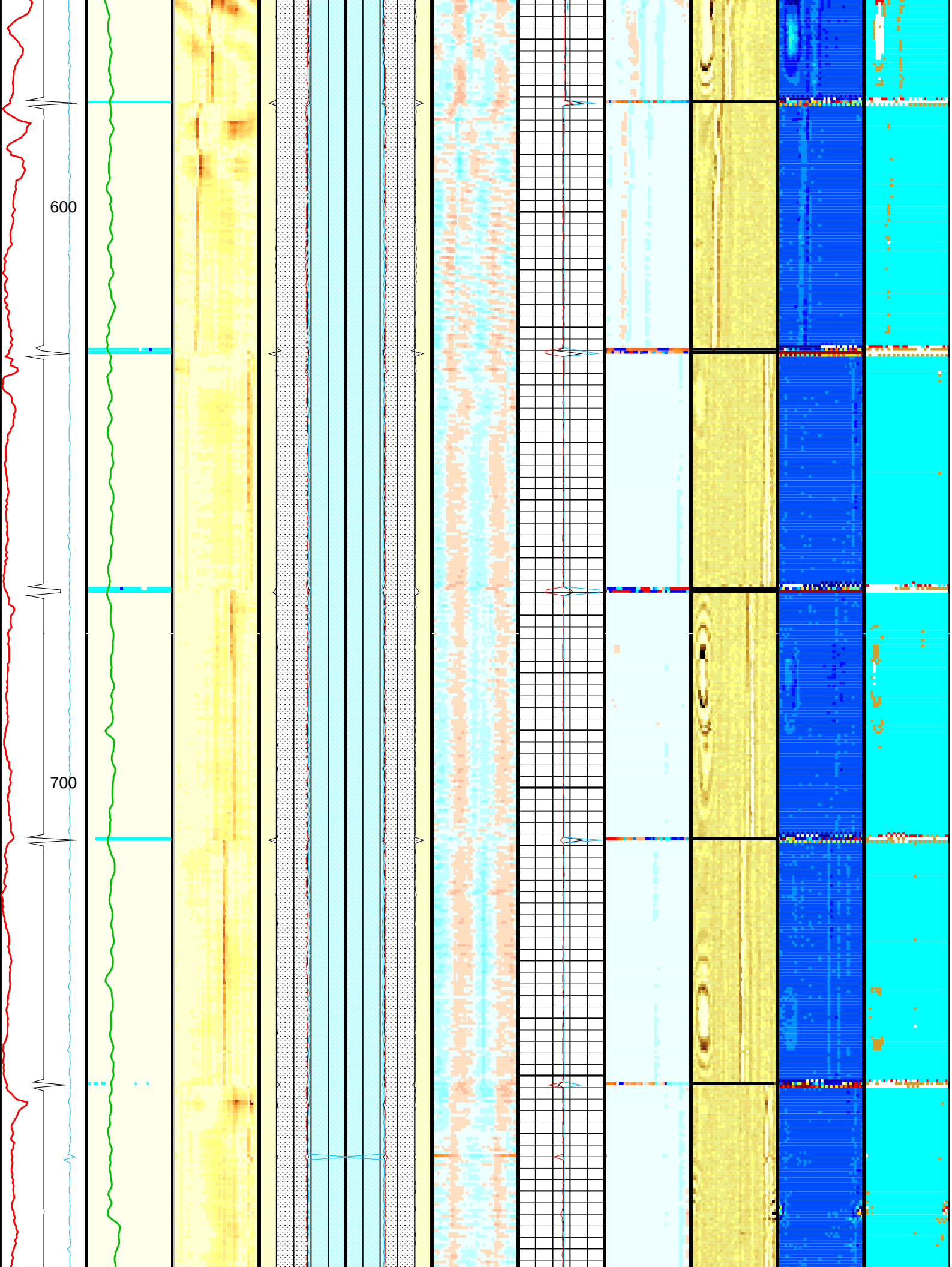
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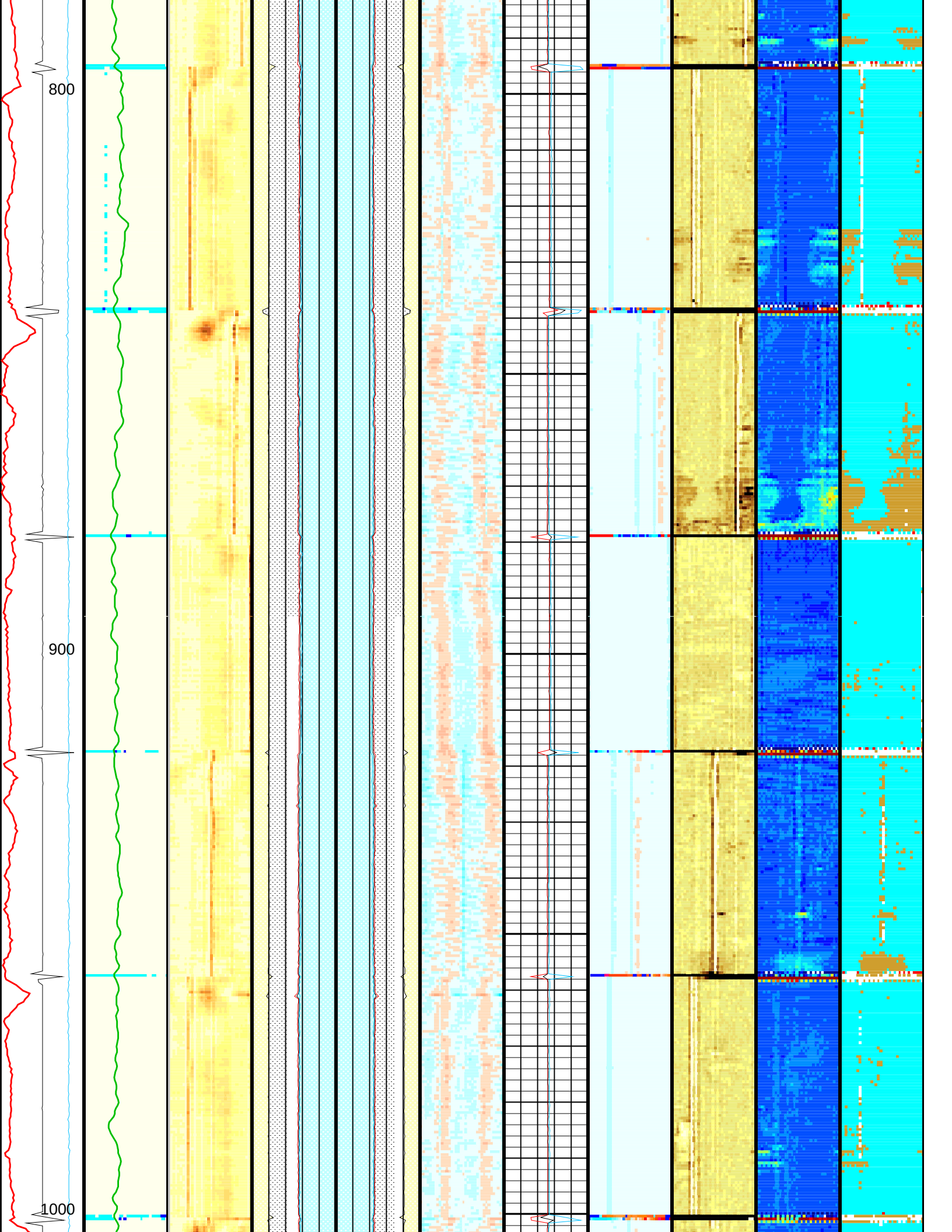
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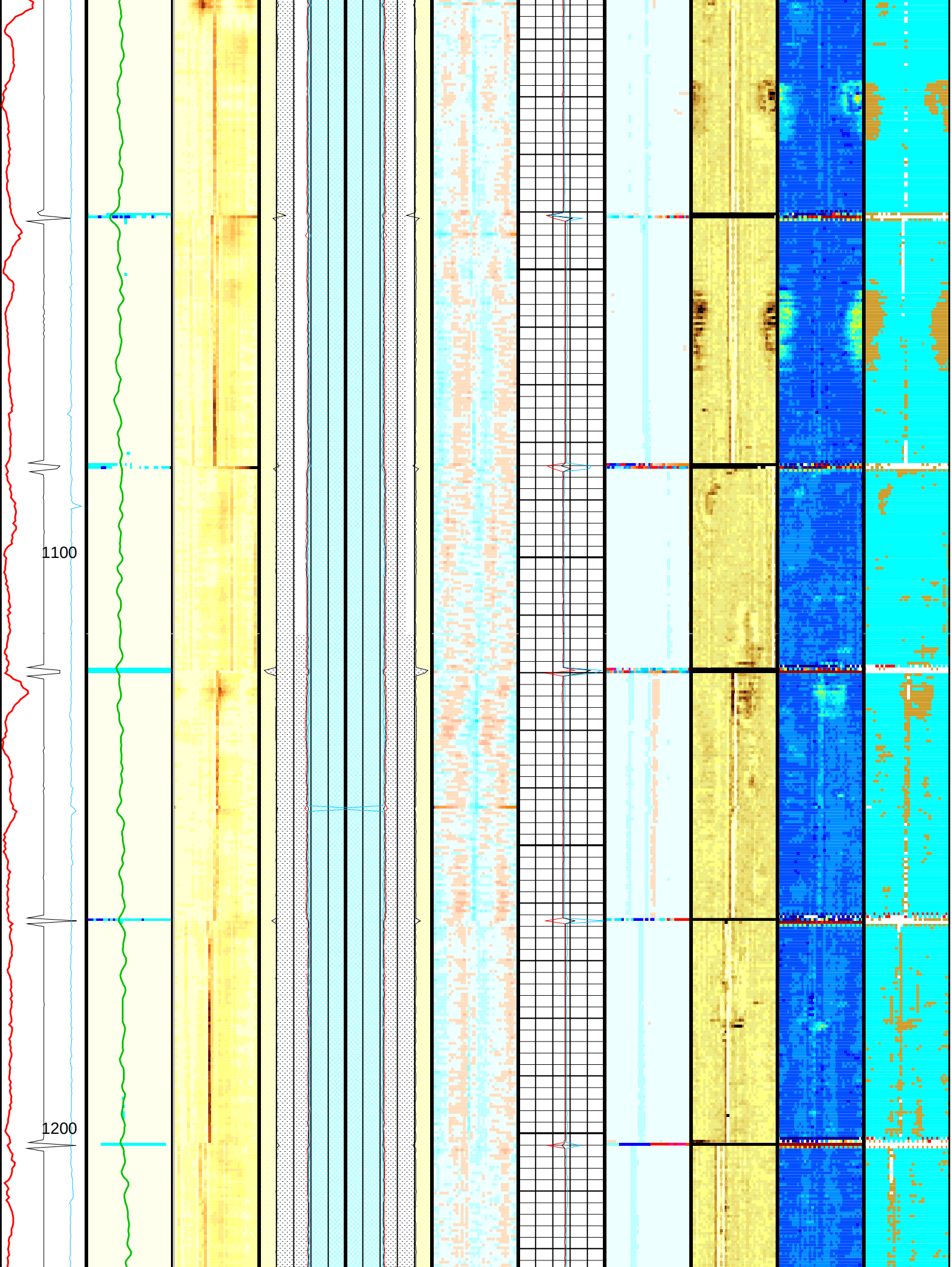
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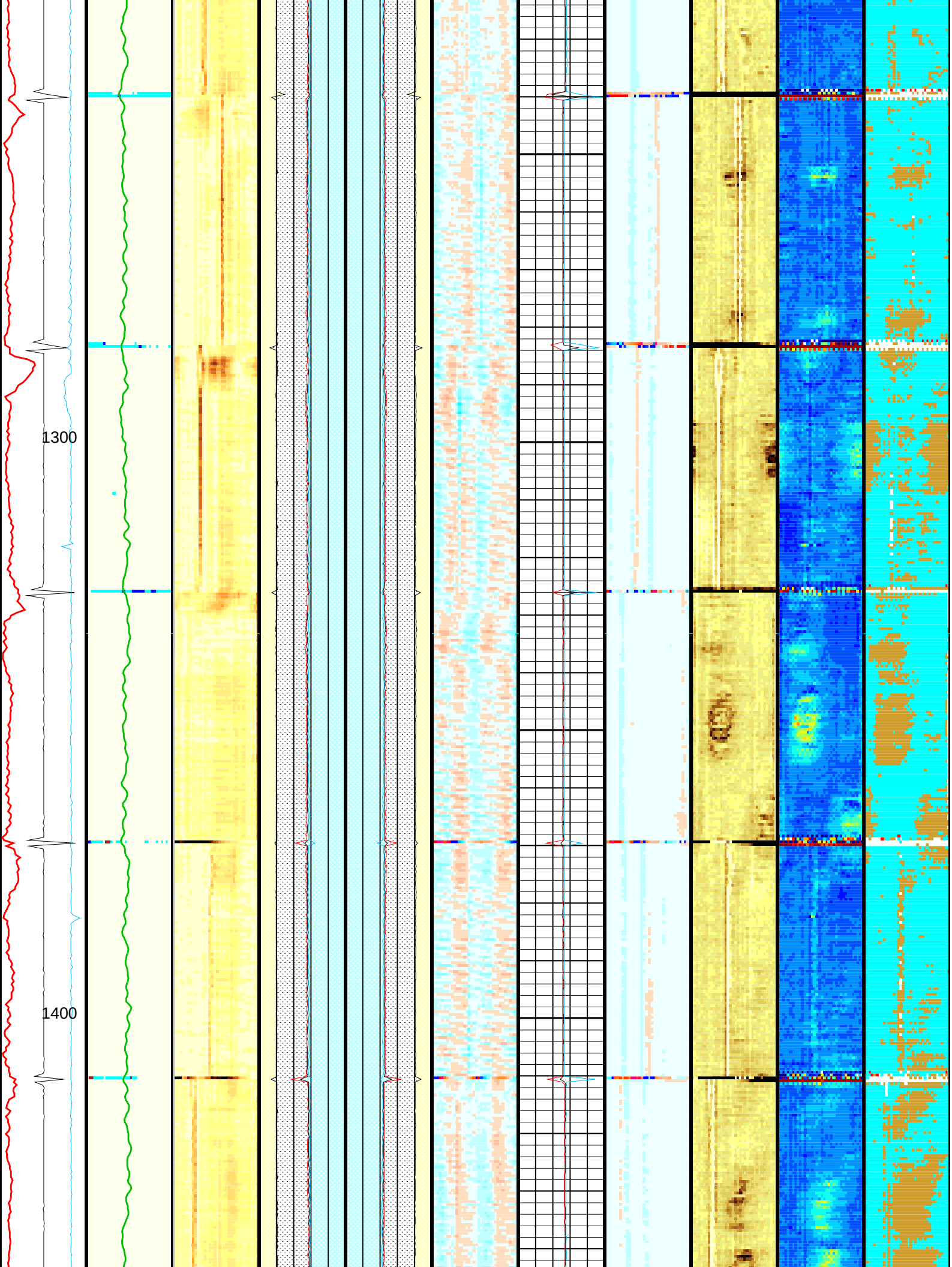
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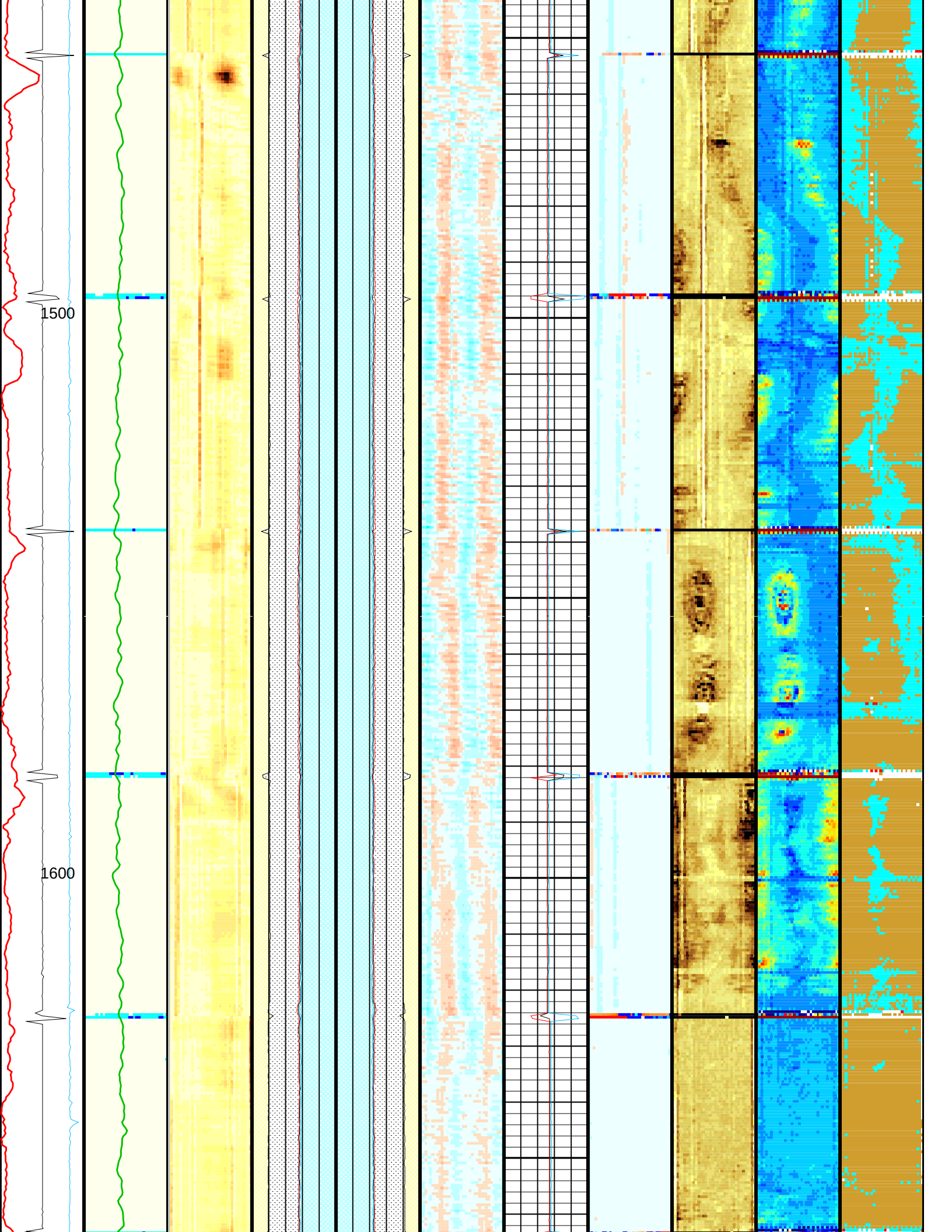
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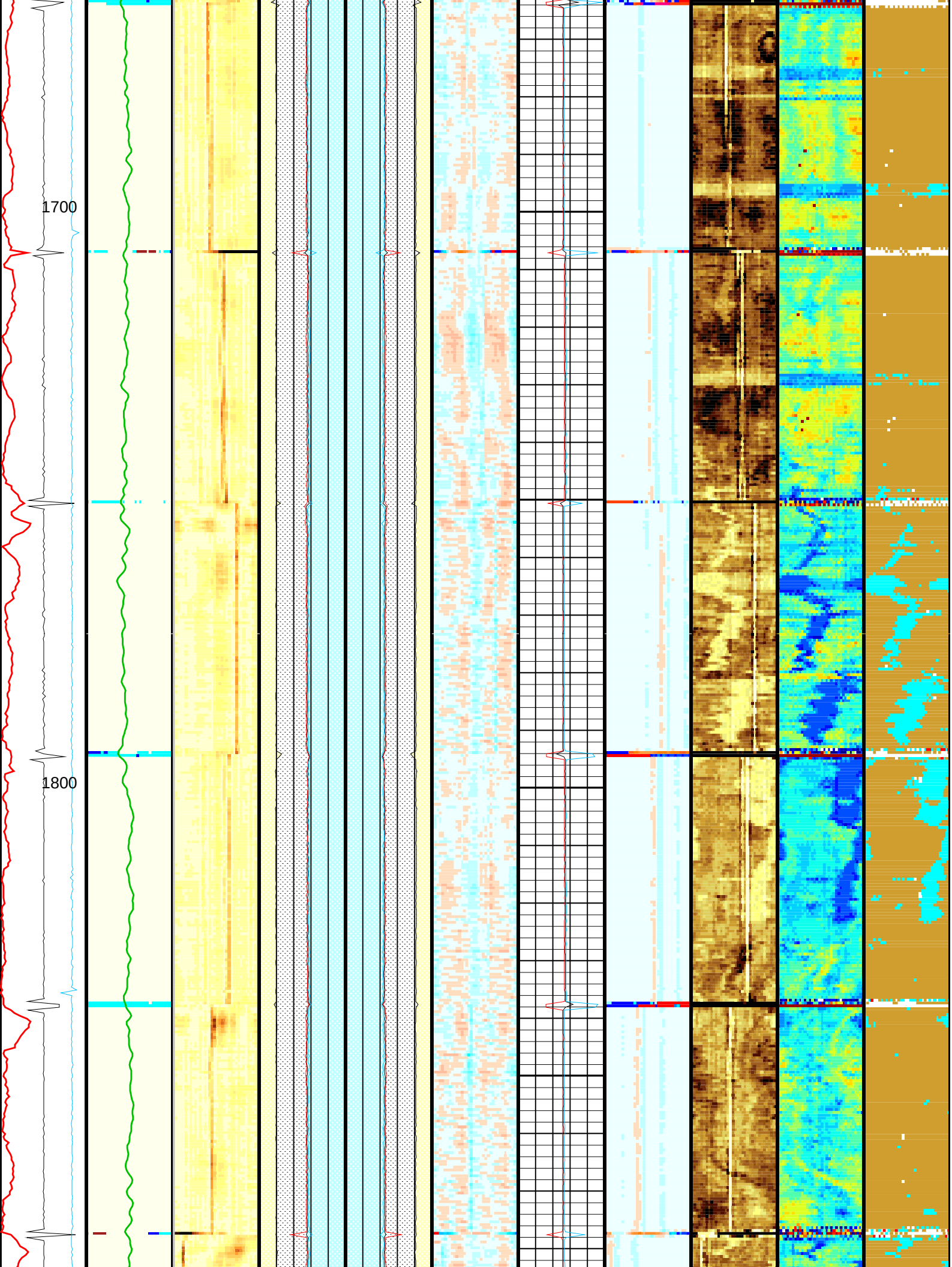
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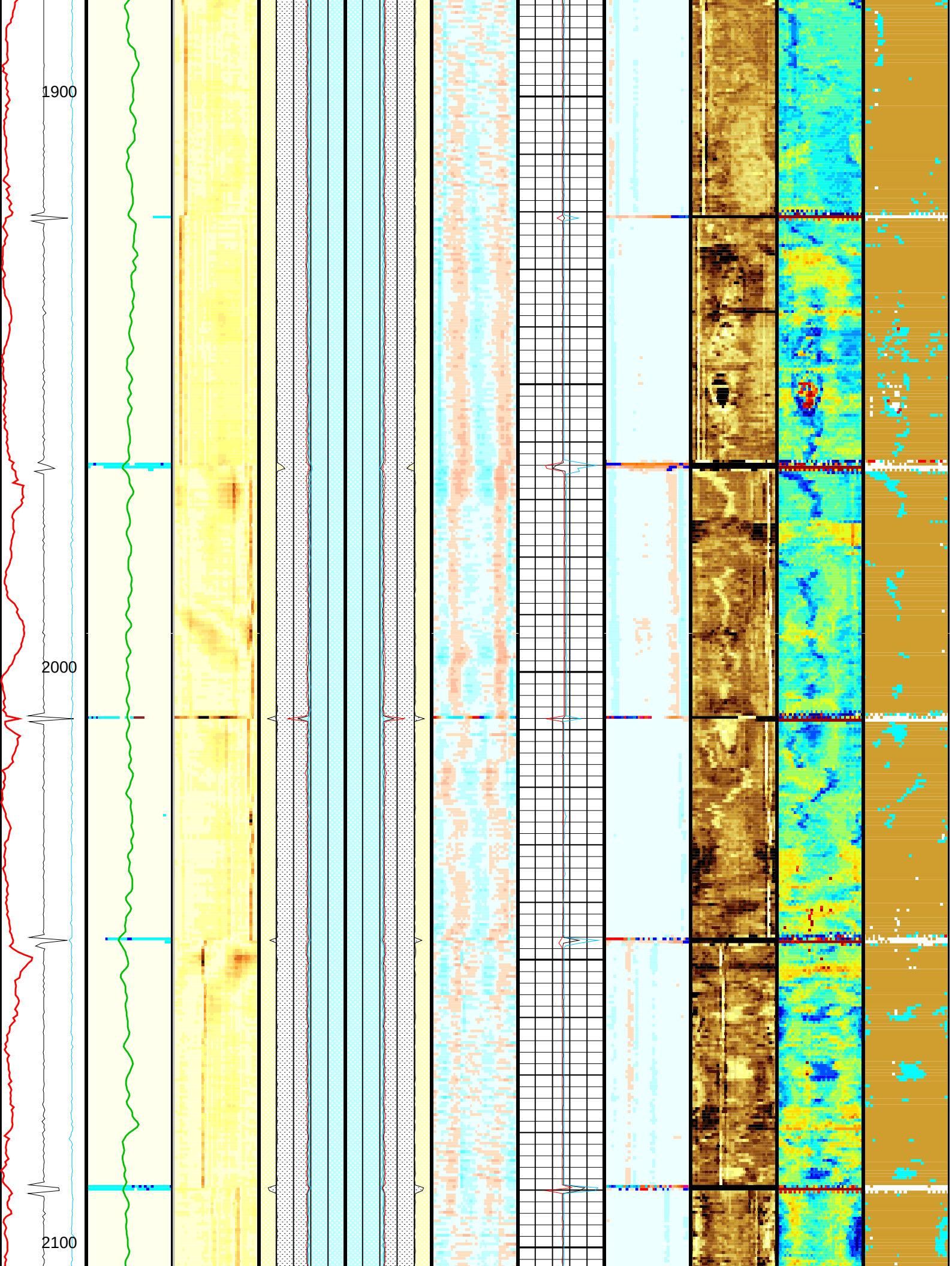
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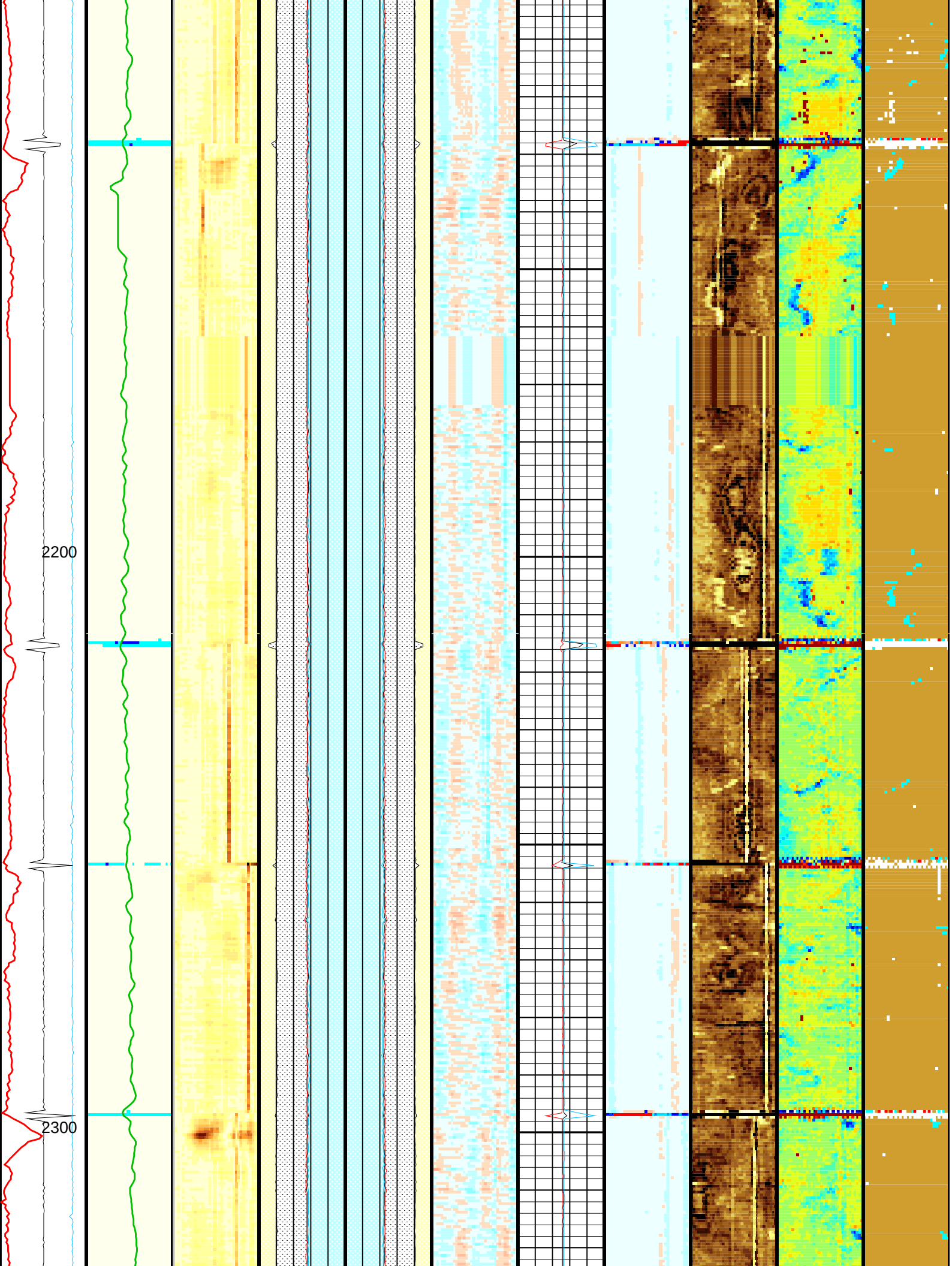
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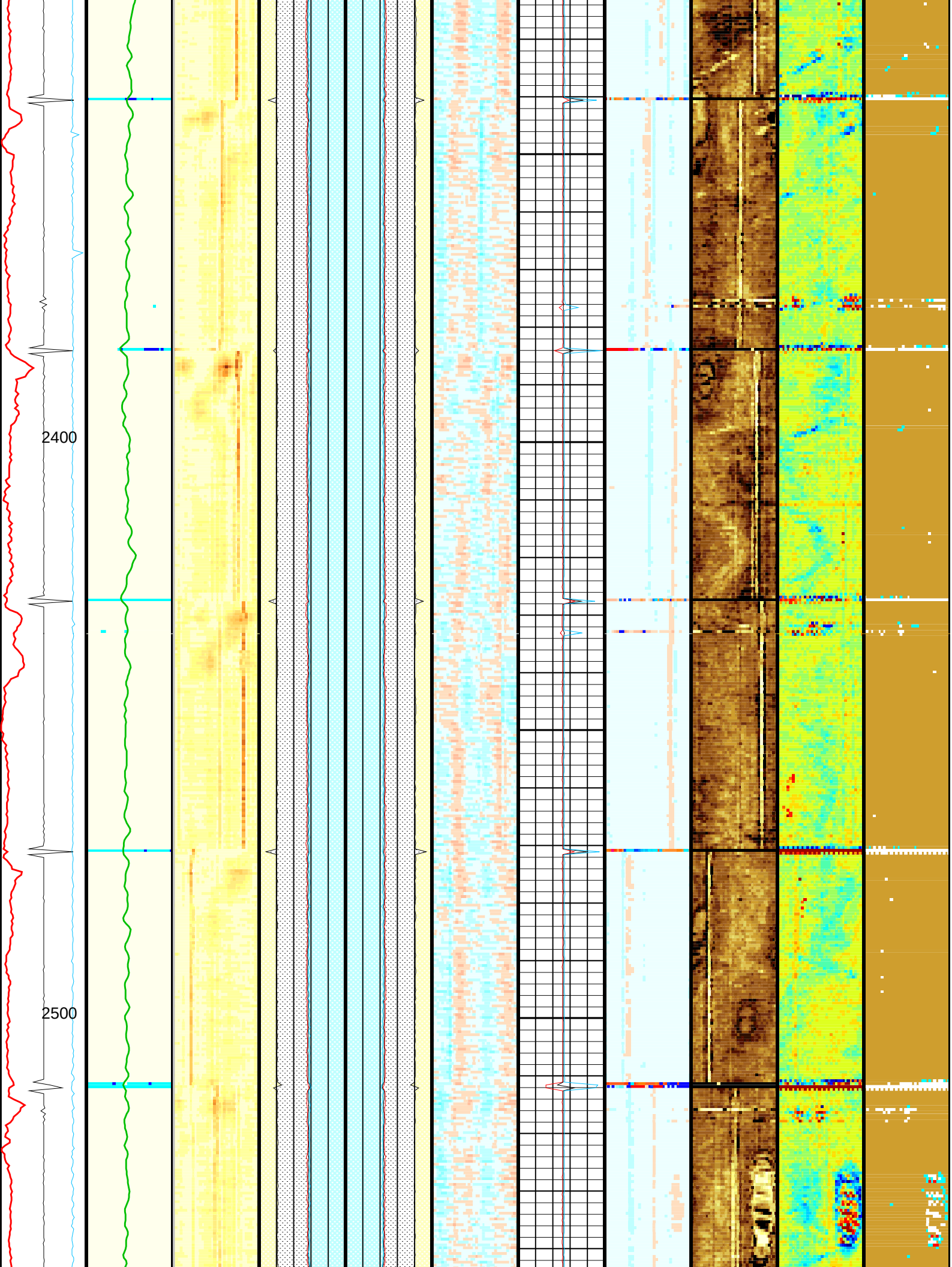
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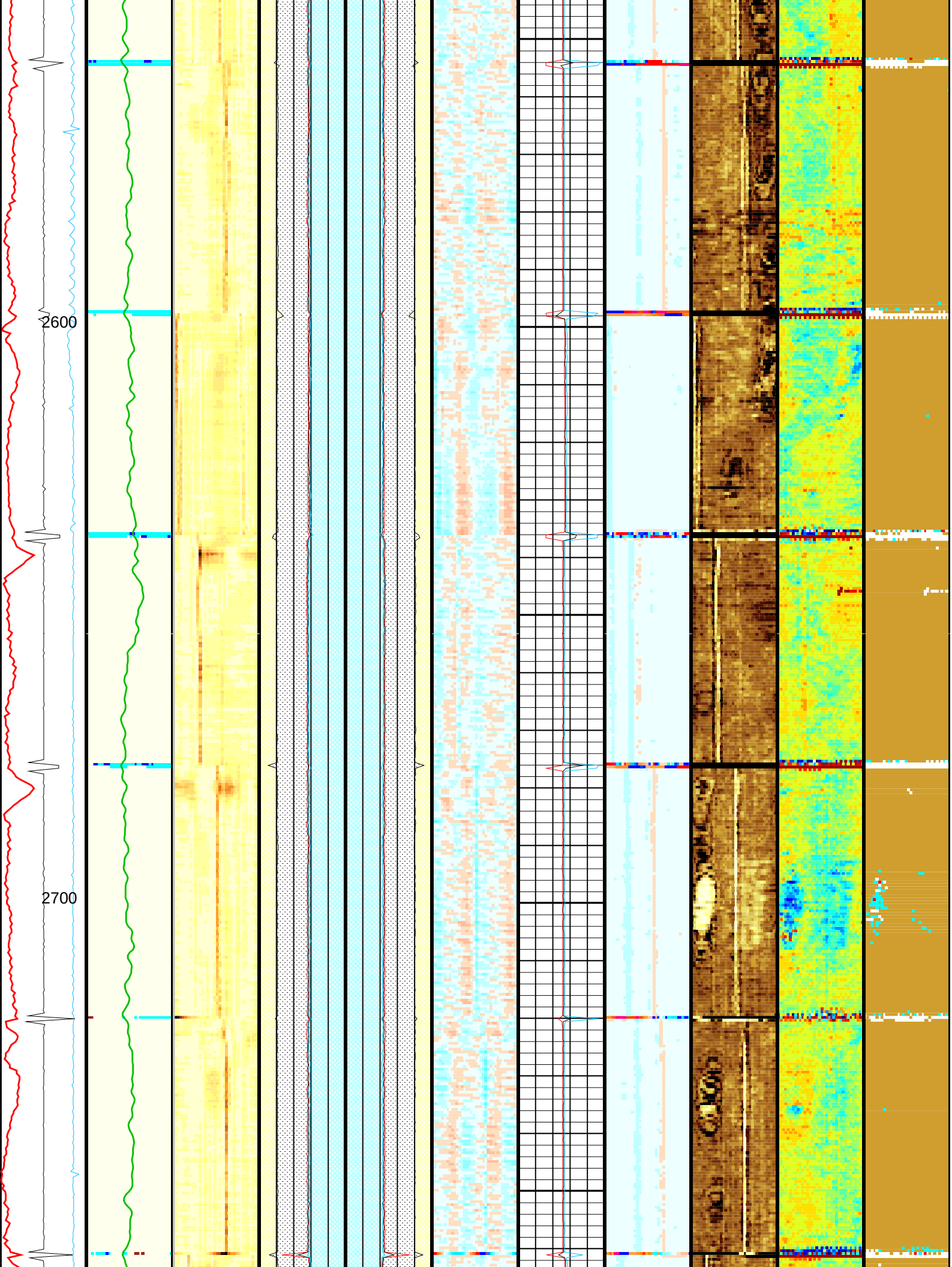
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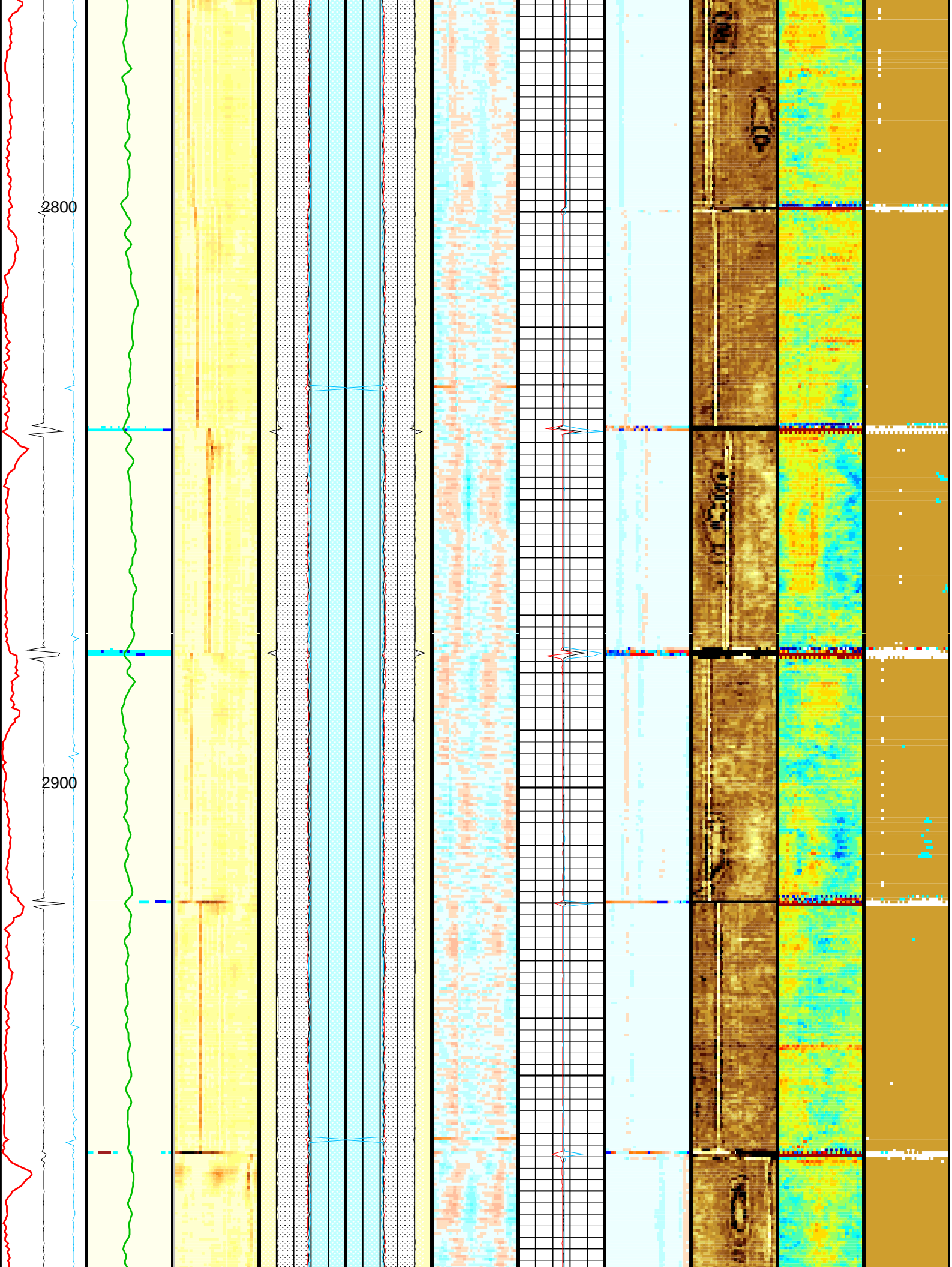
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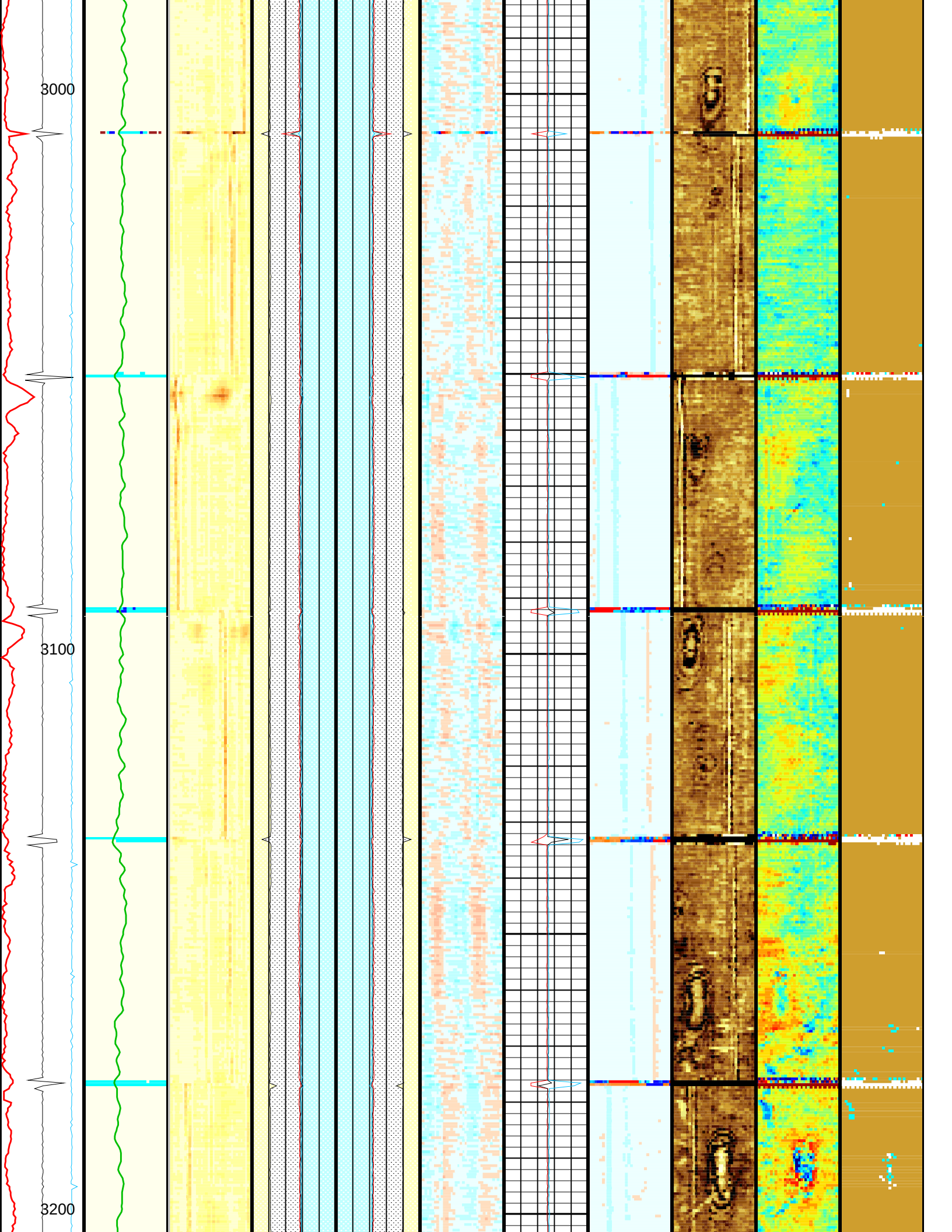
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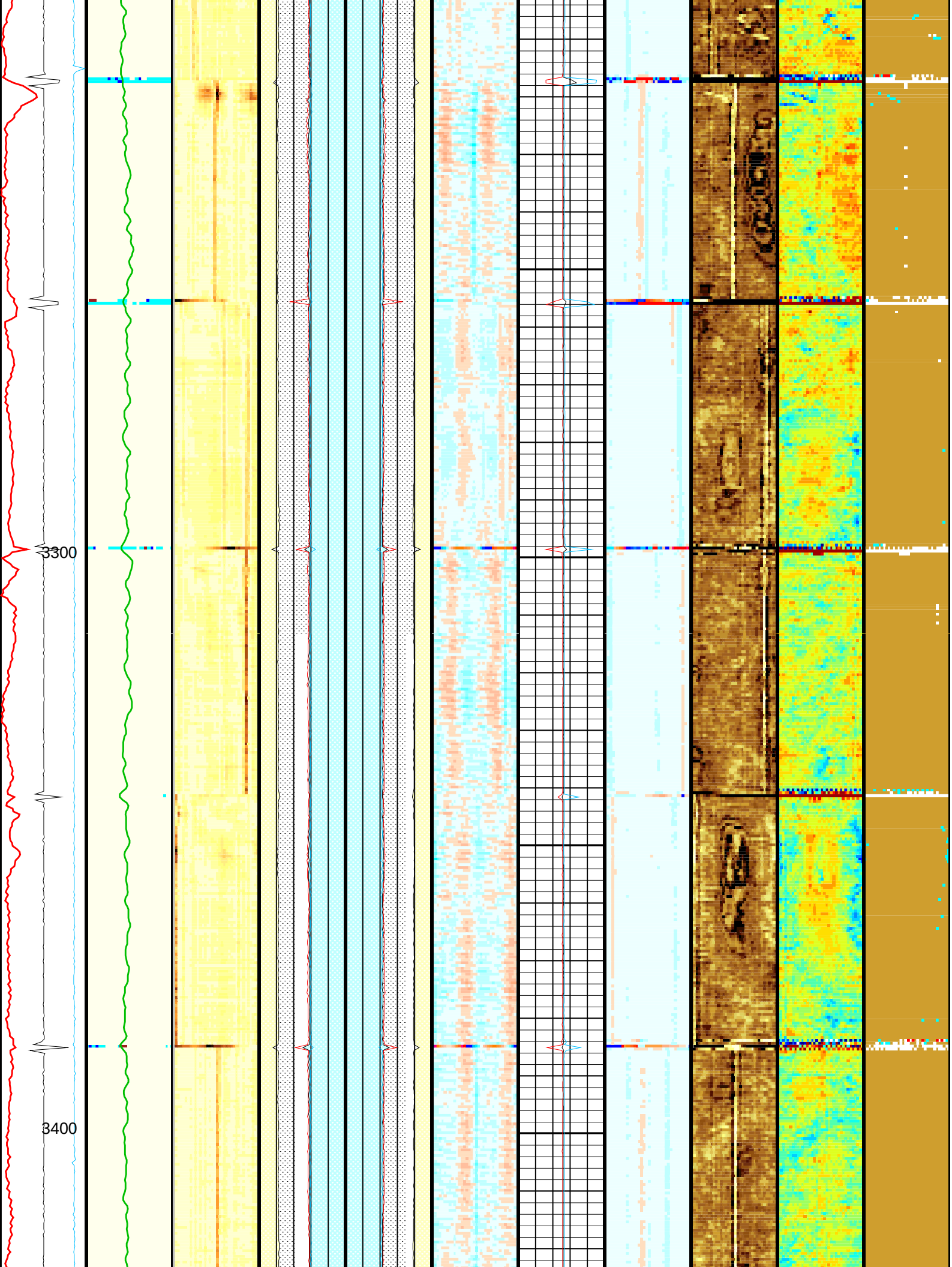
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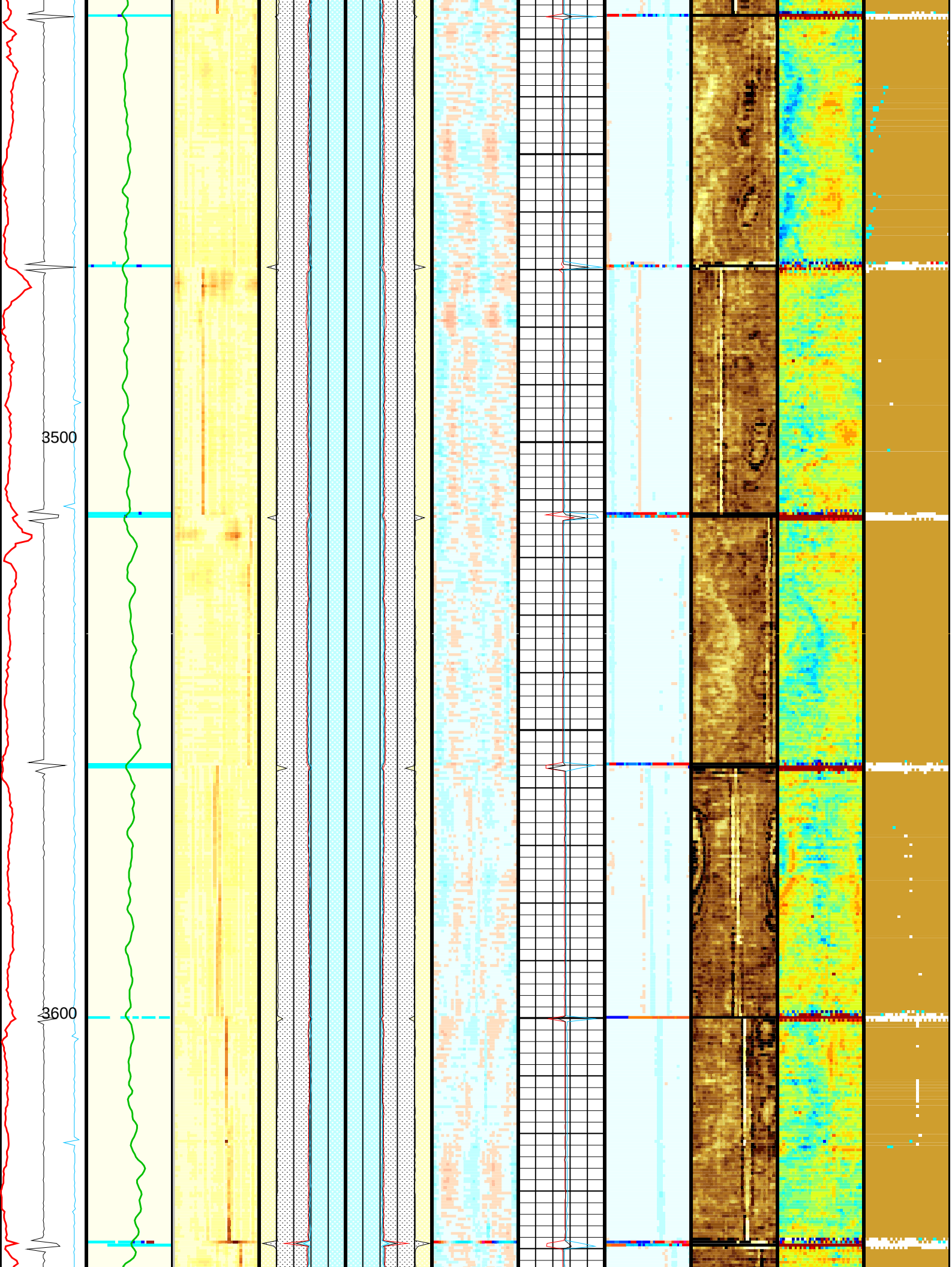
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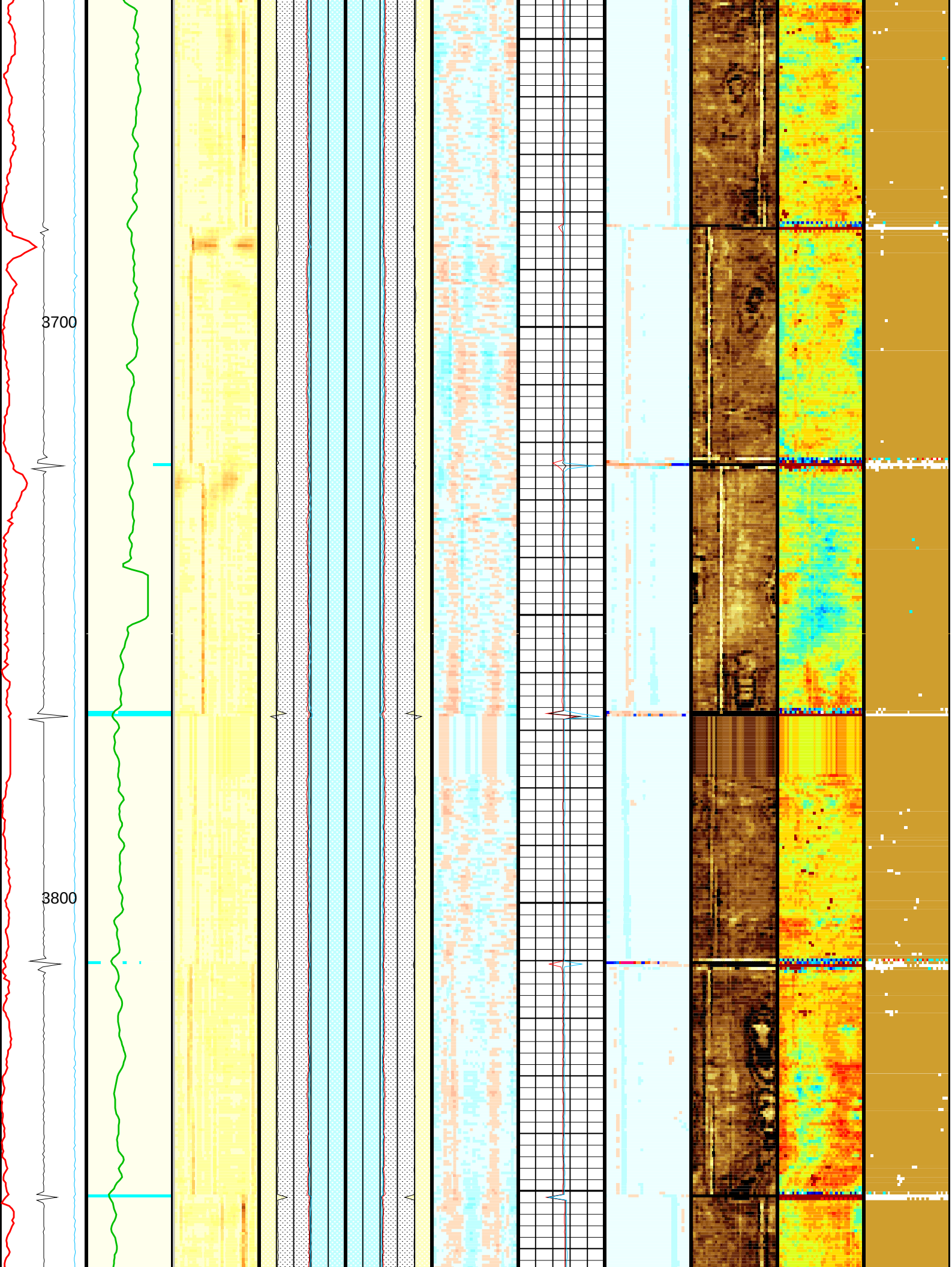
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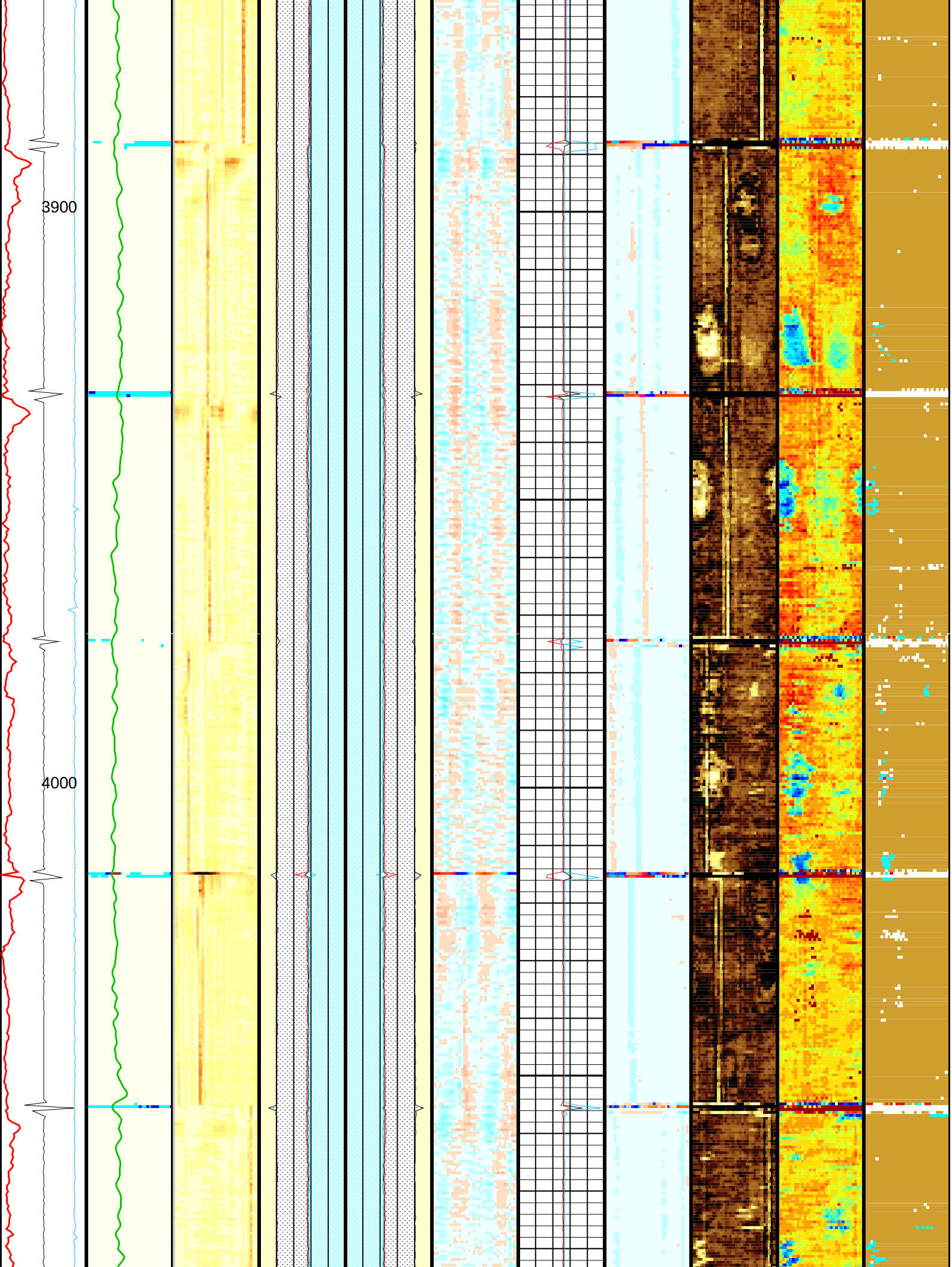
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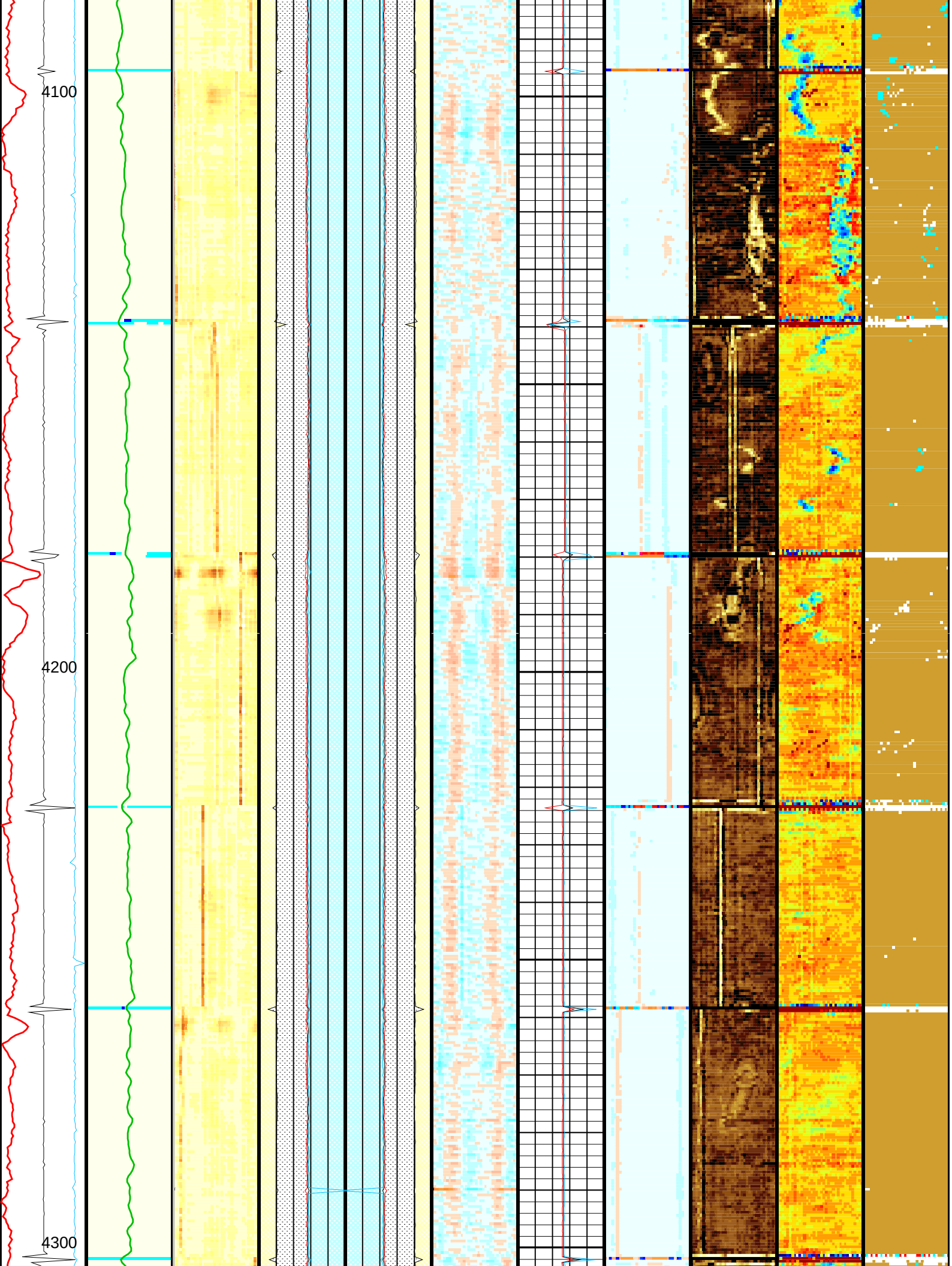
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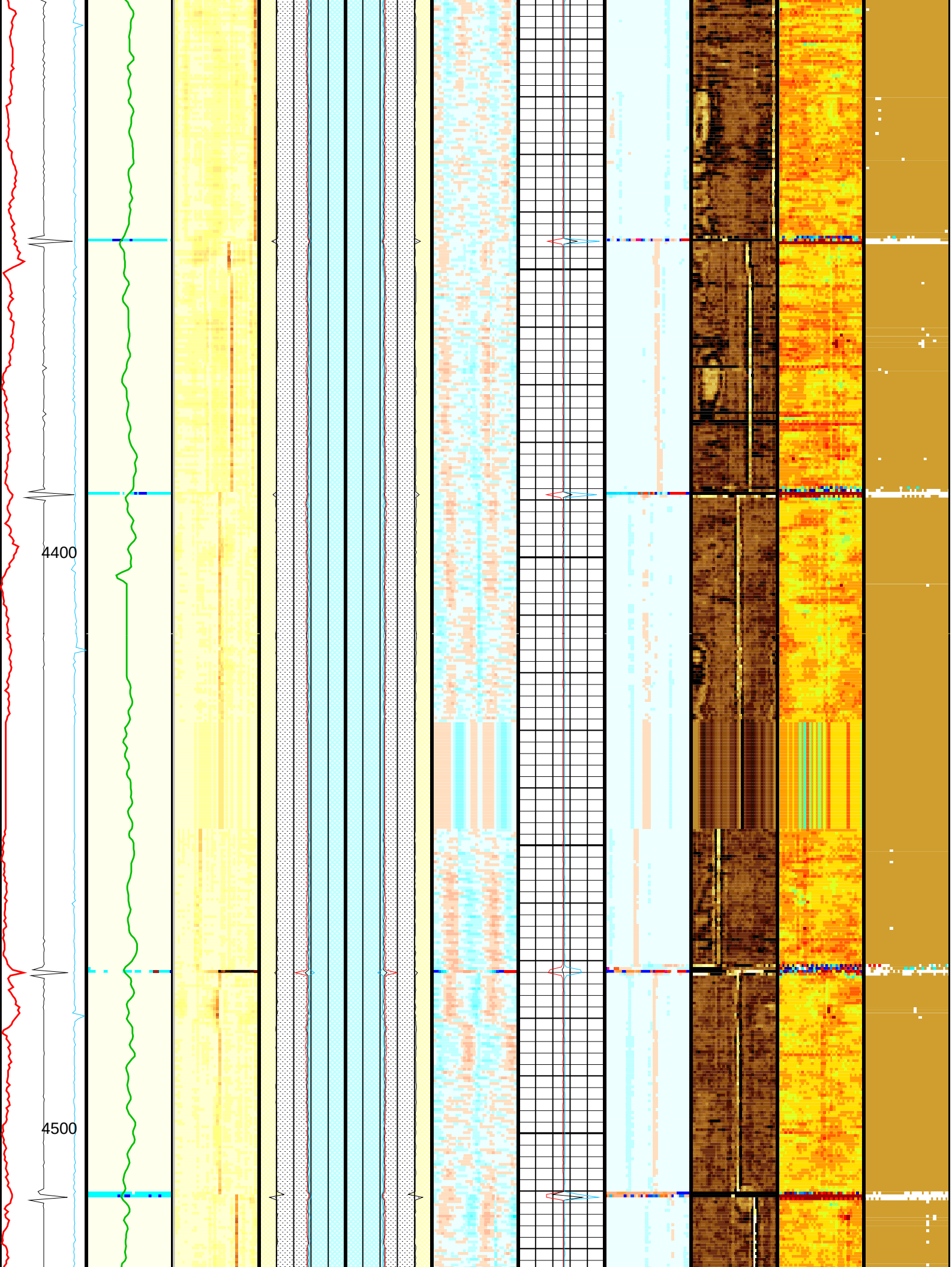
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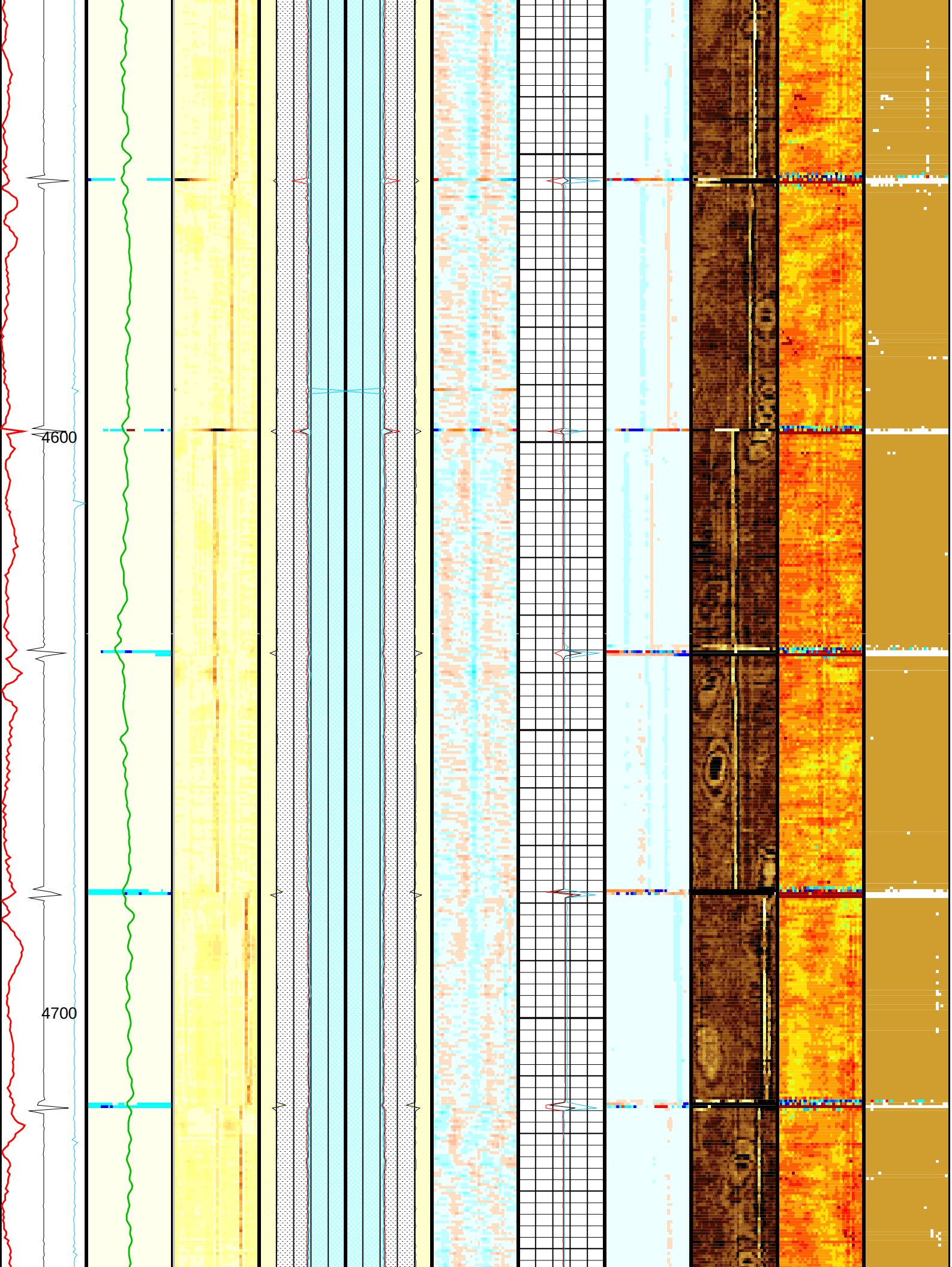
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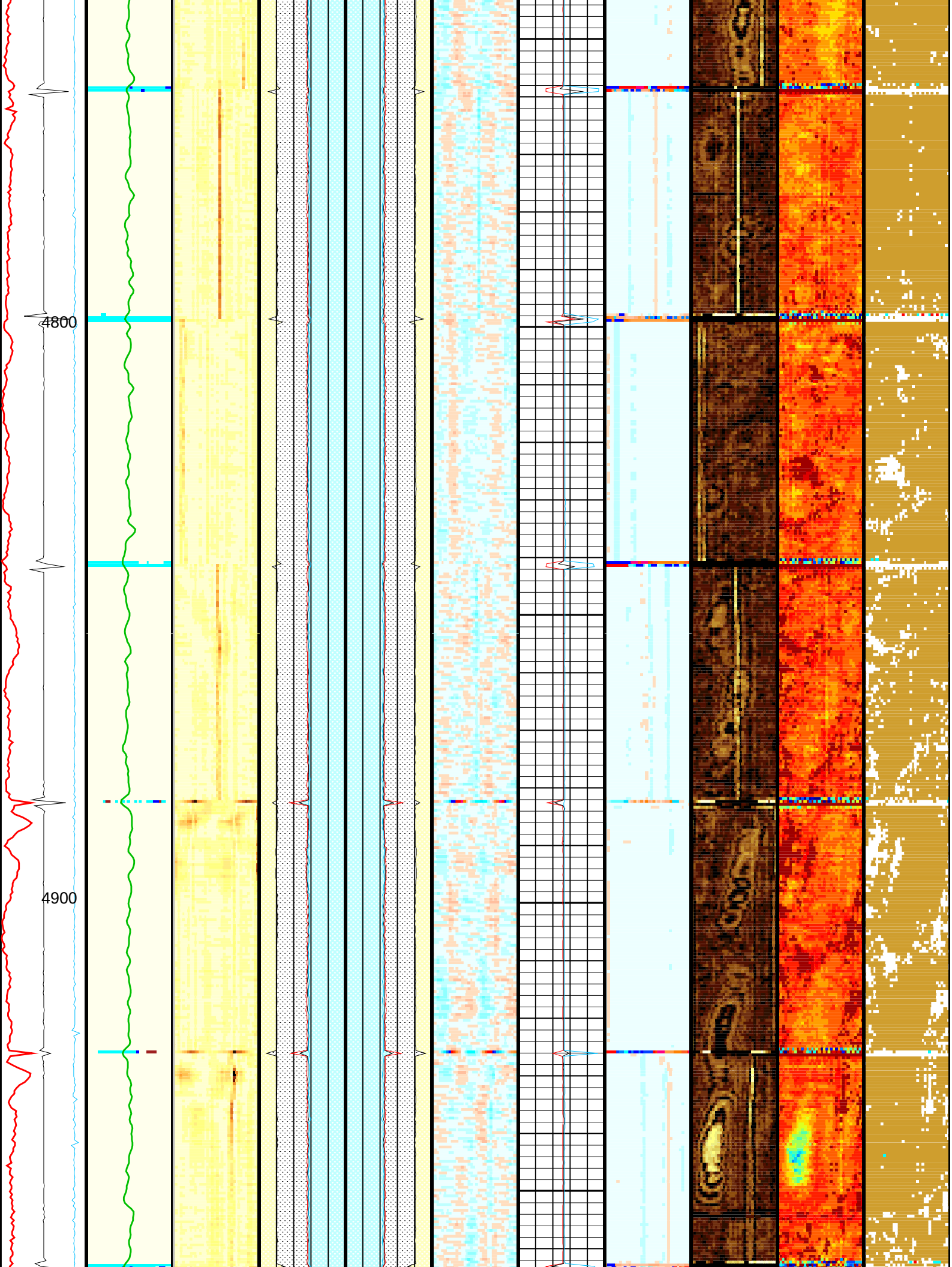
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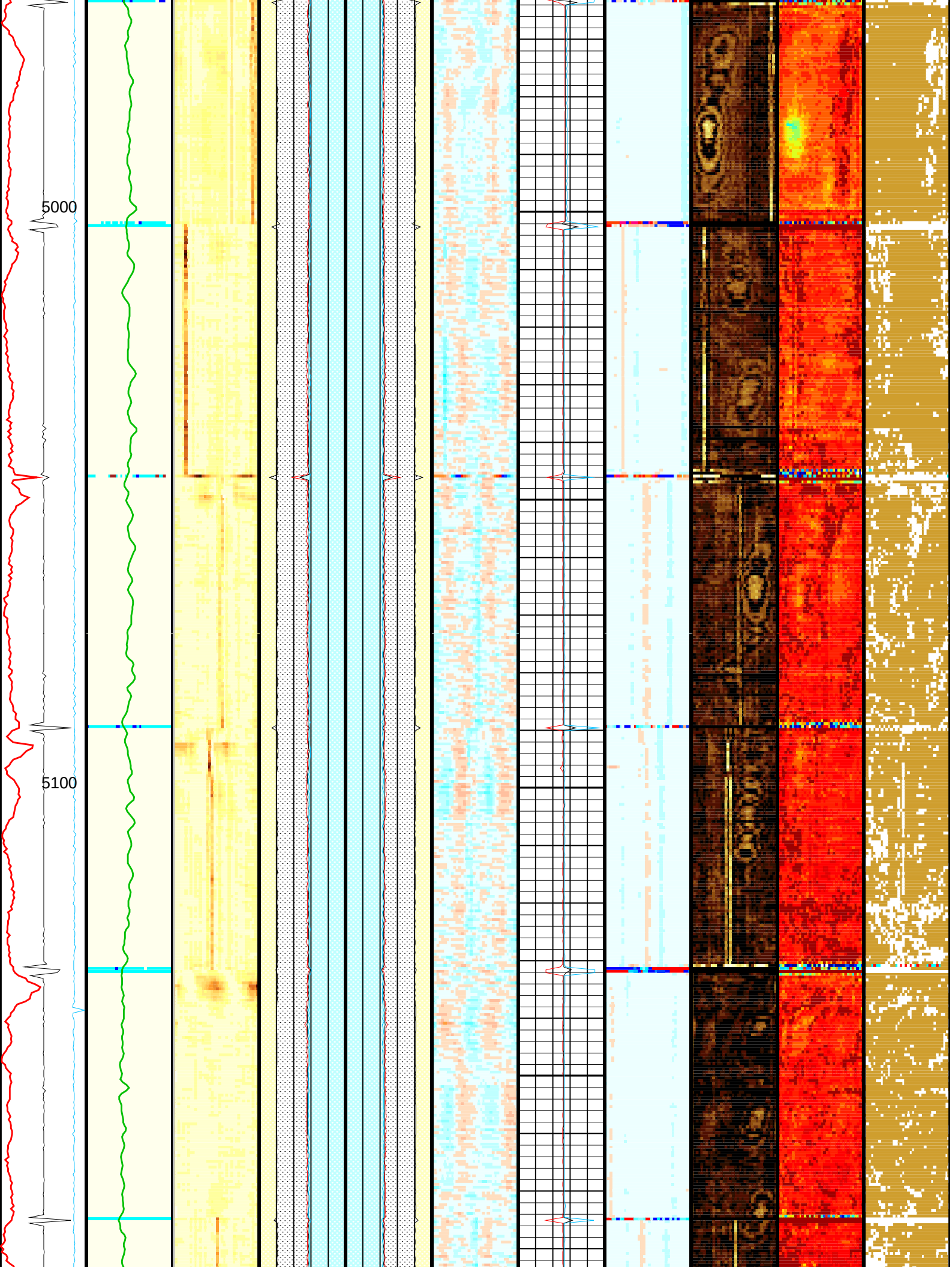
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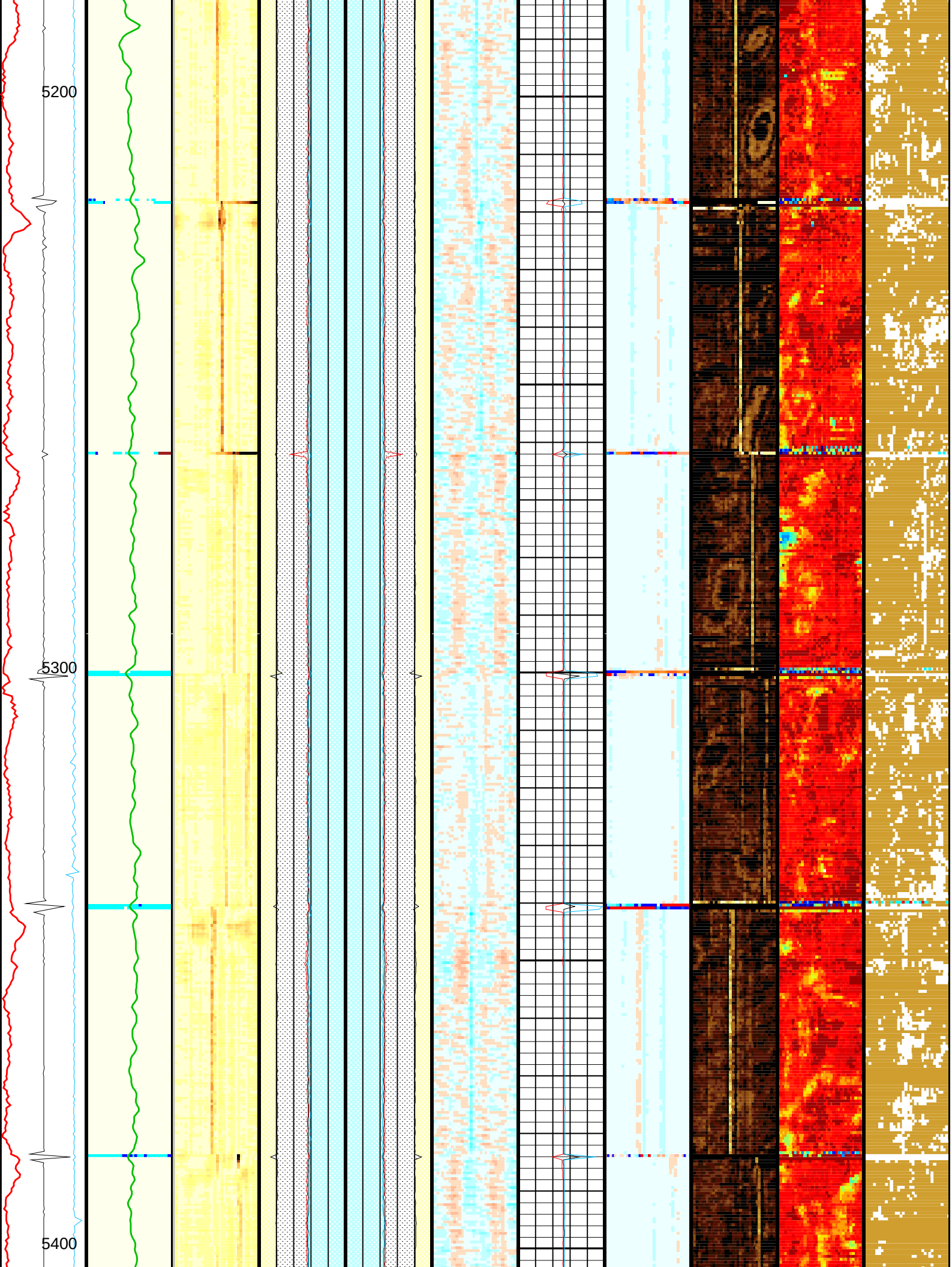
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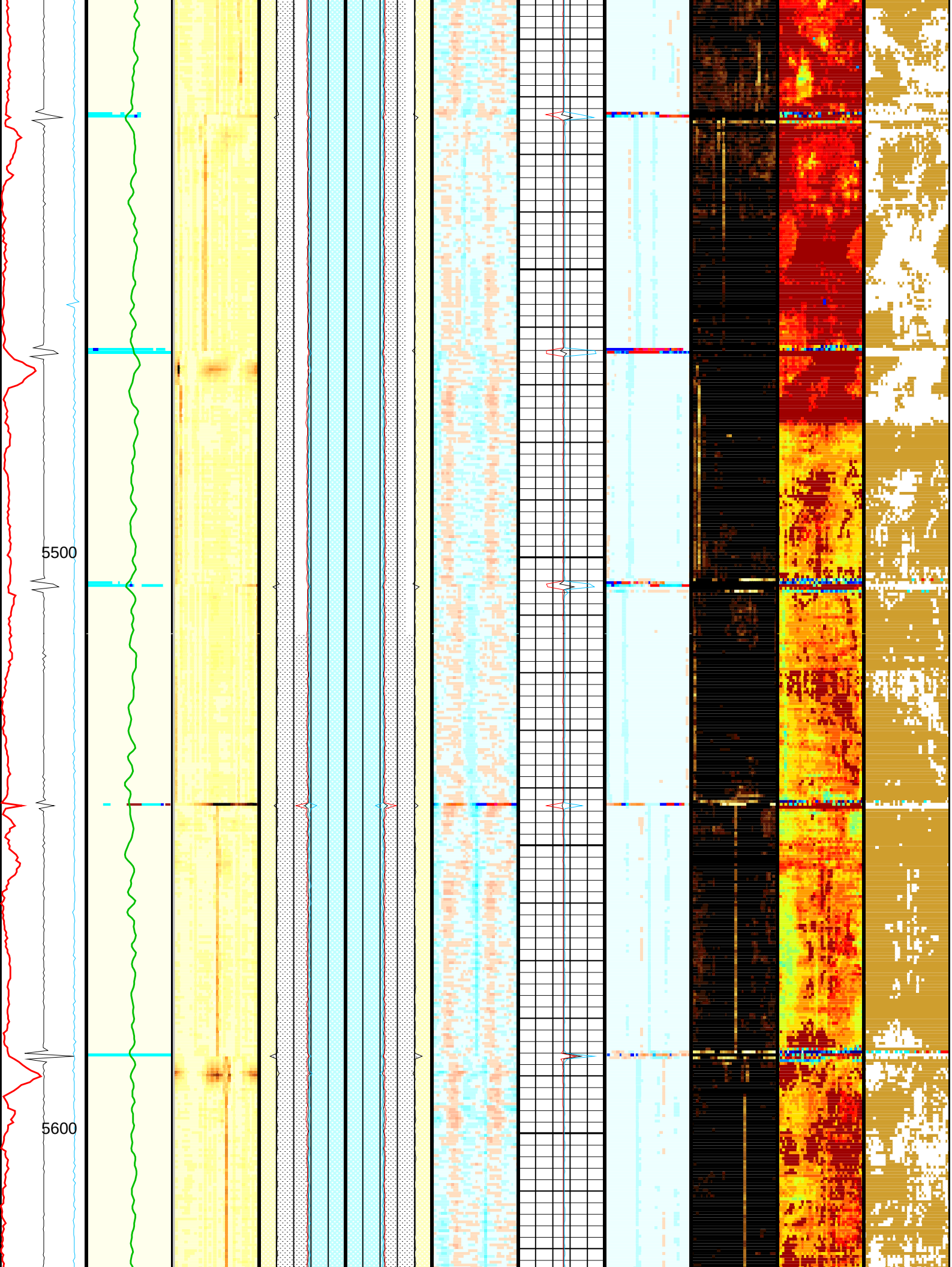
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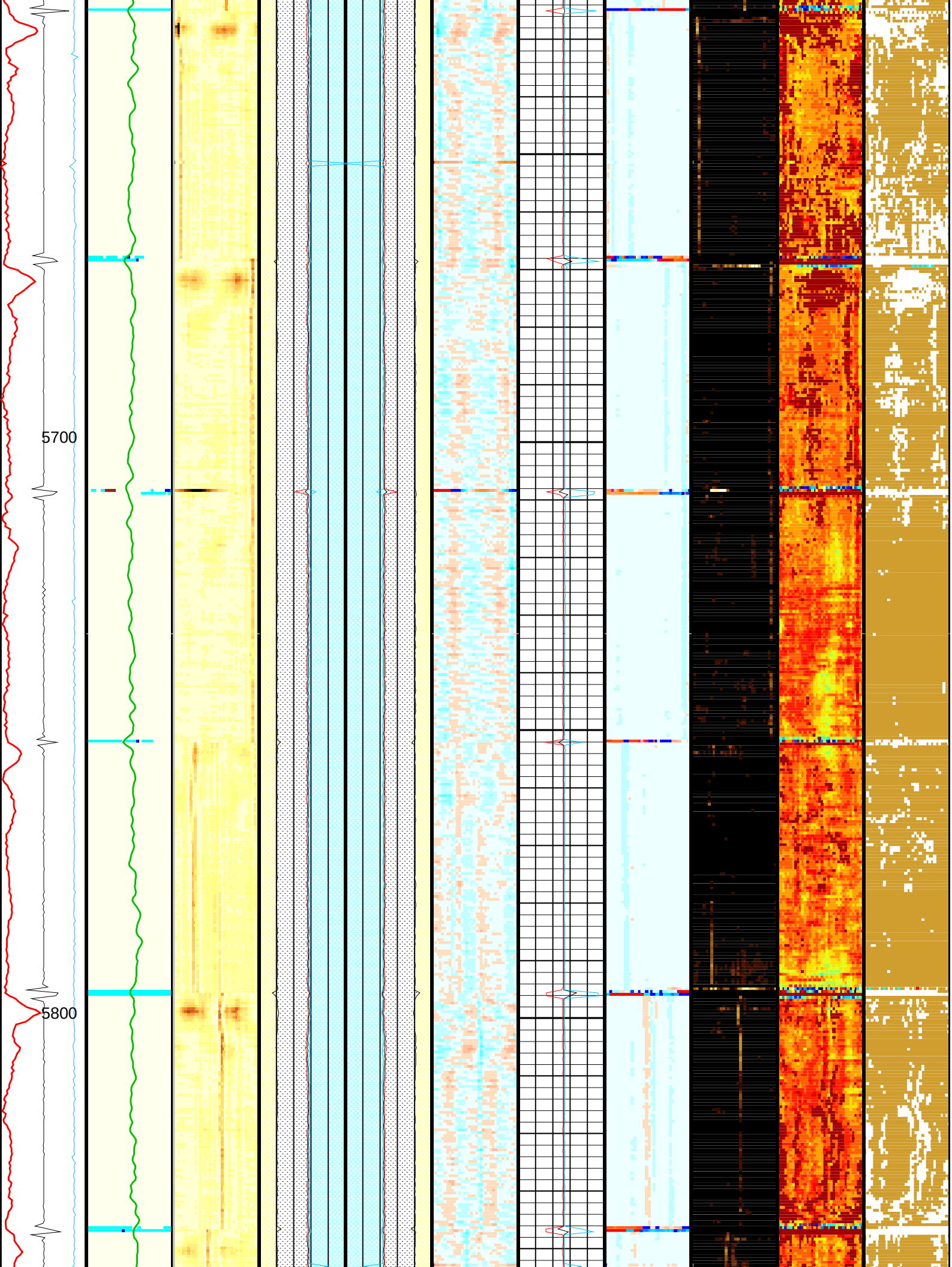
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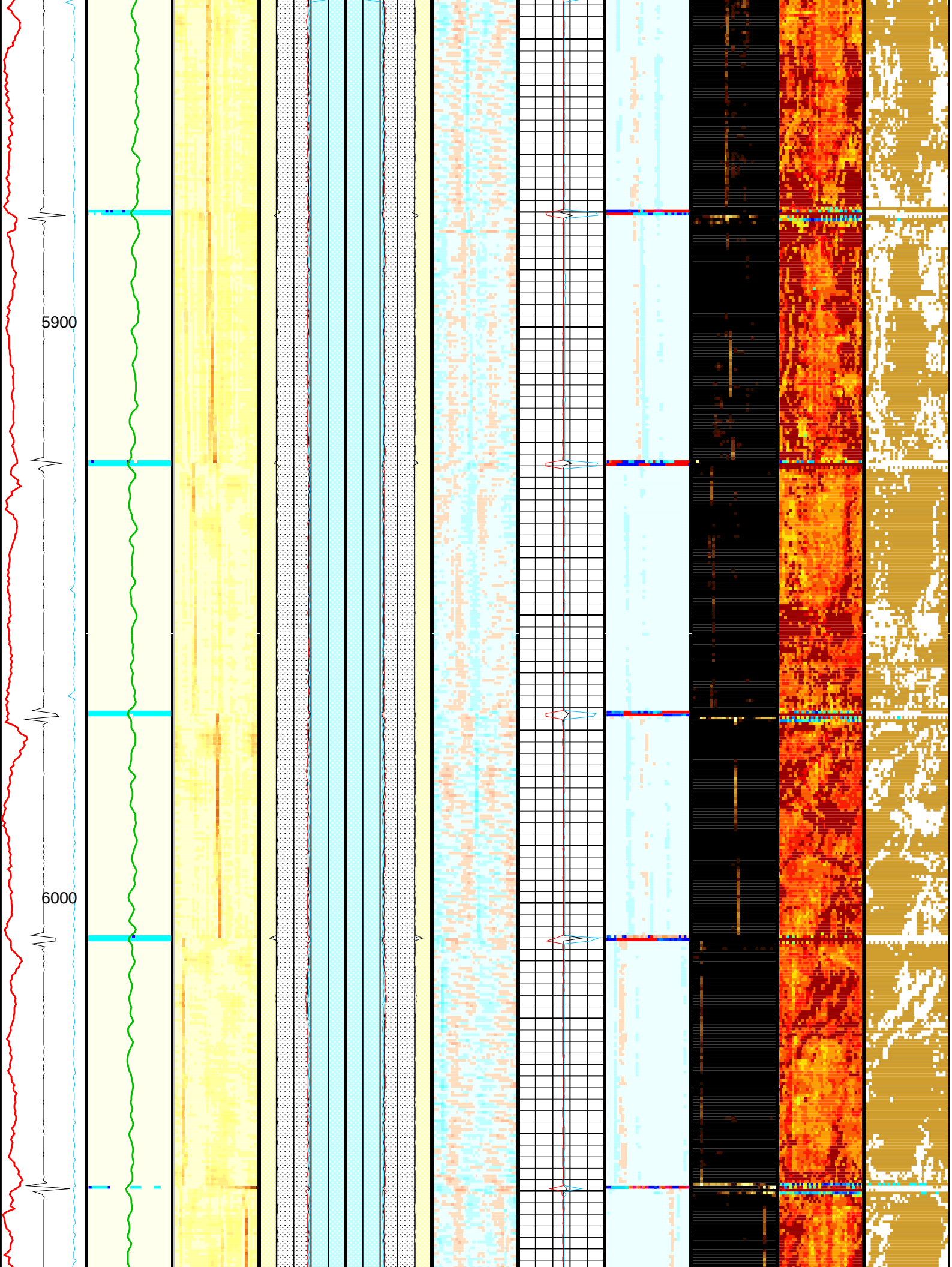
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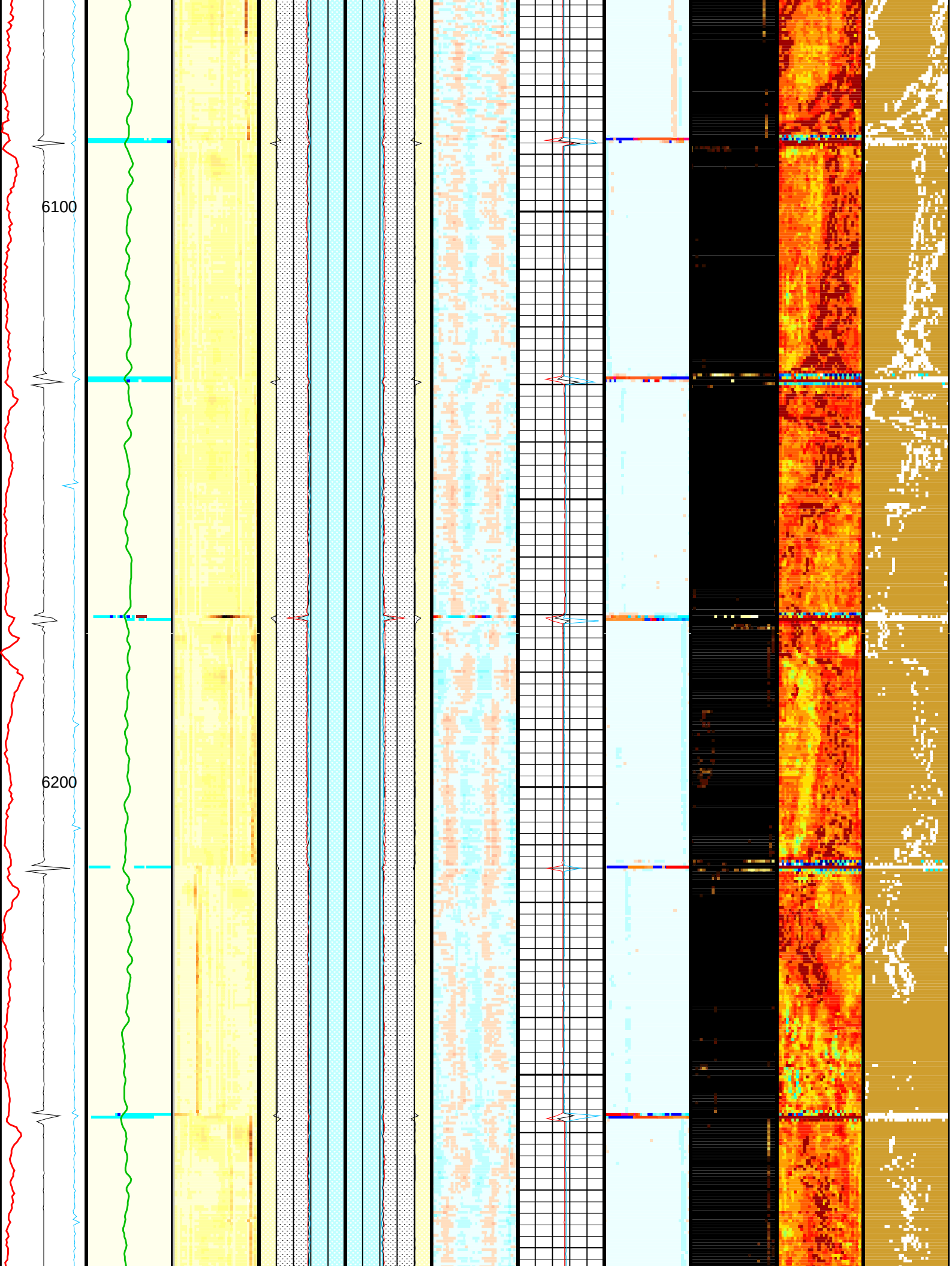
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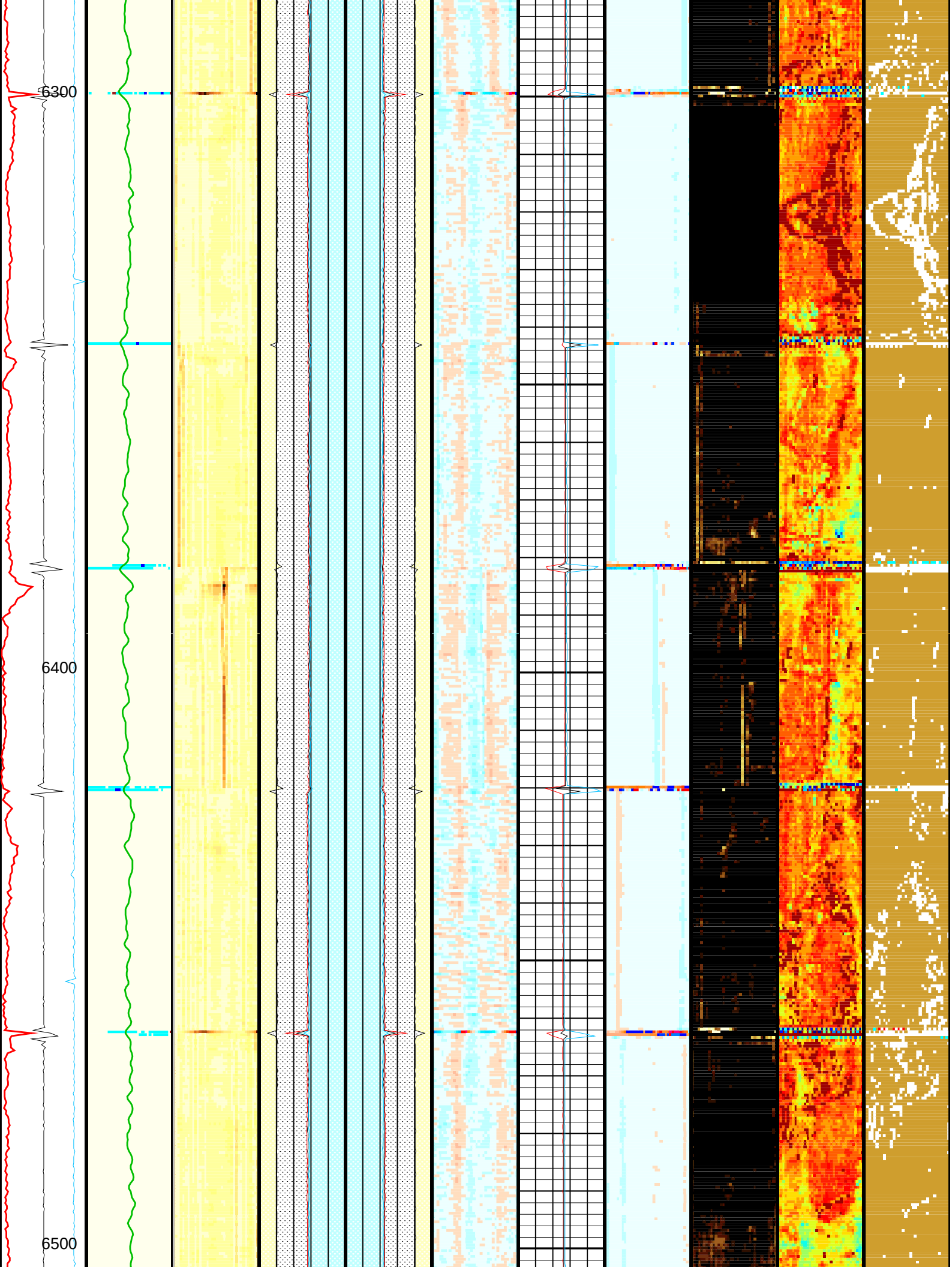
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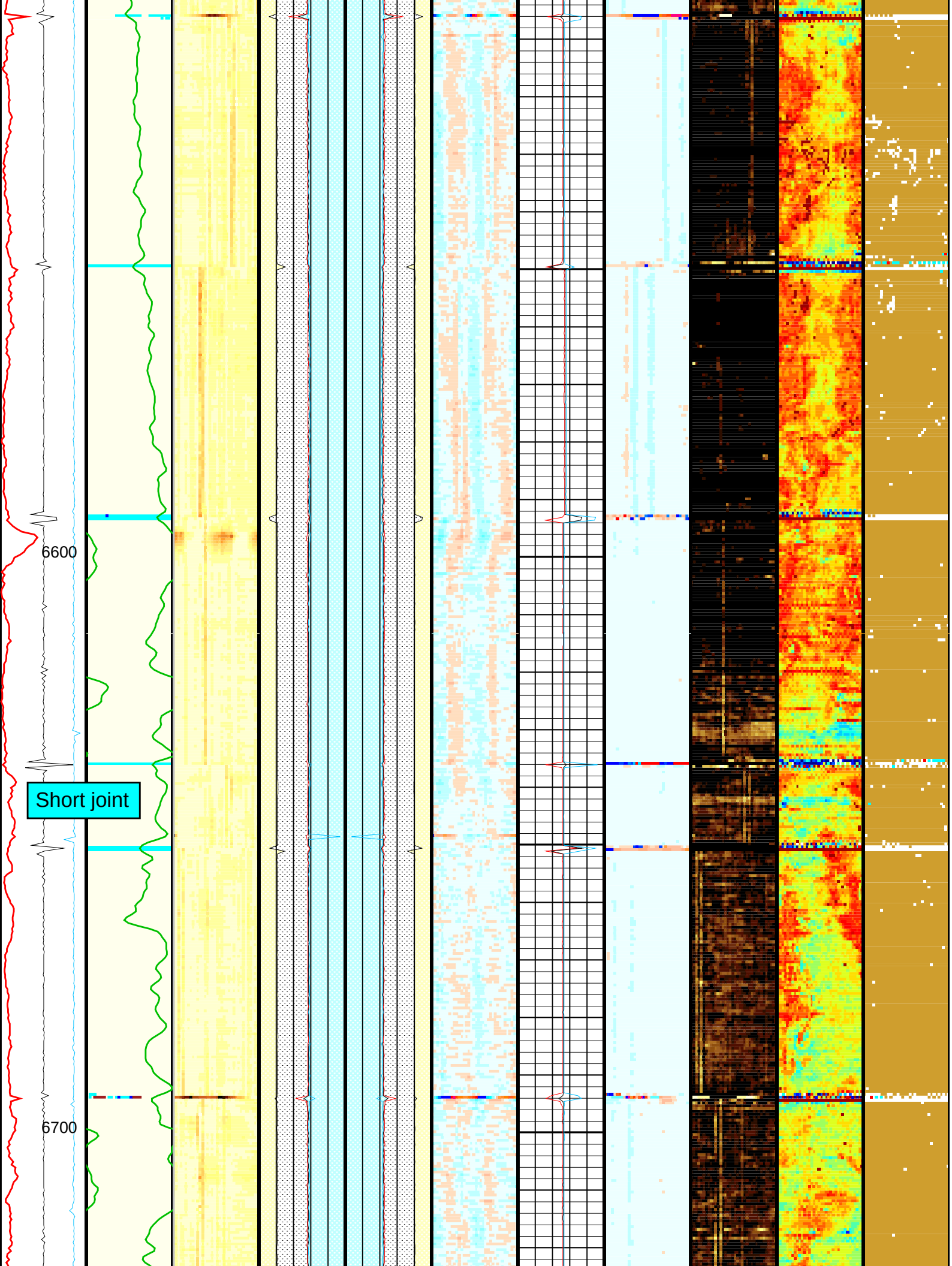
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Short joint
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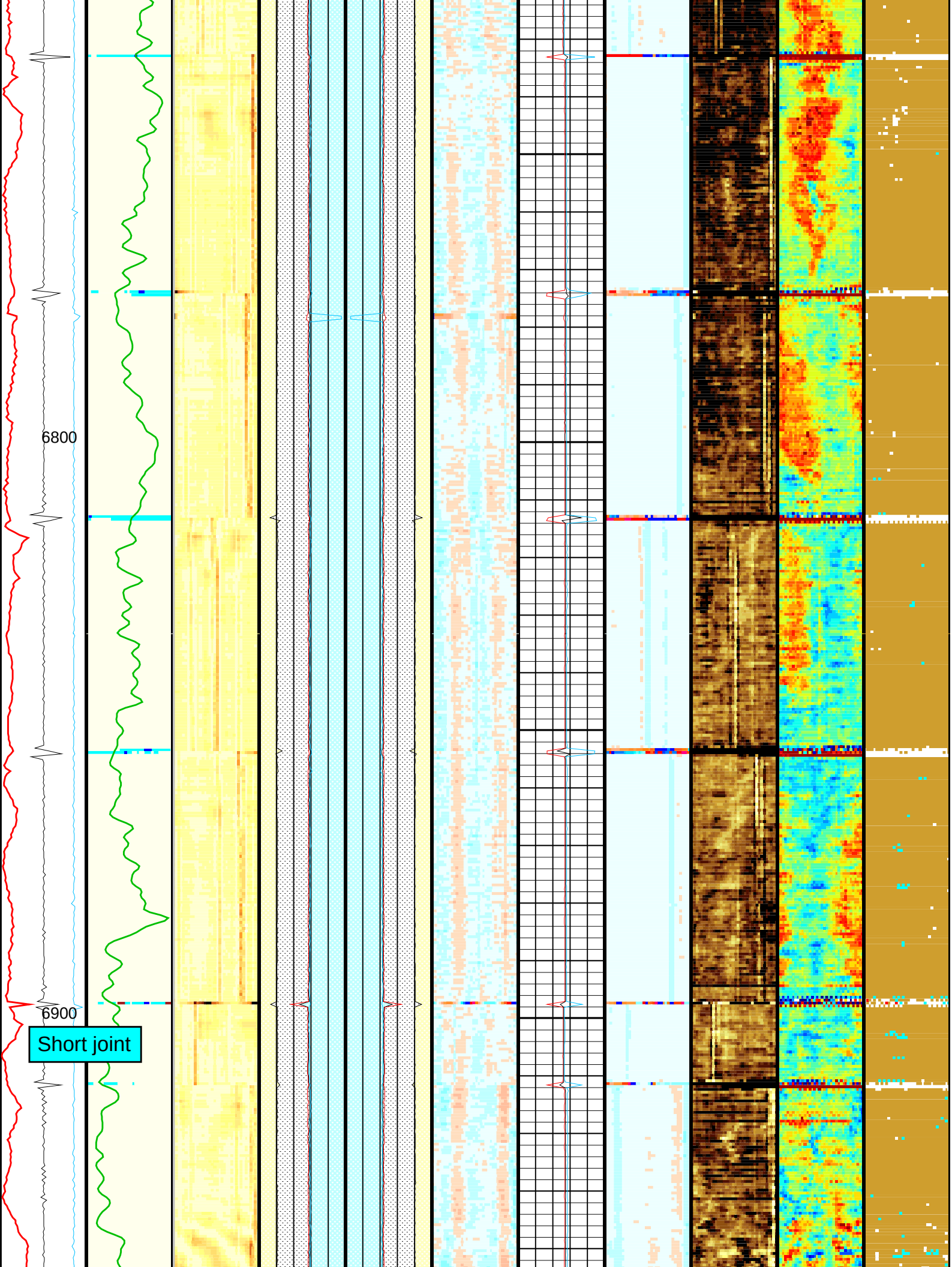
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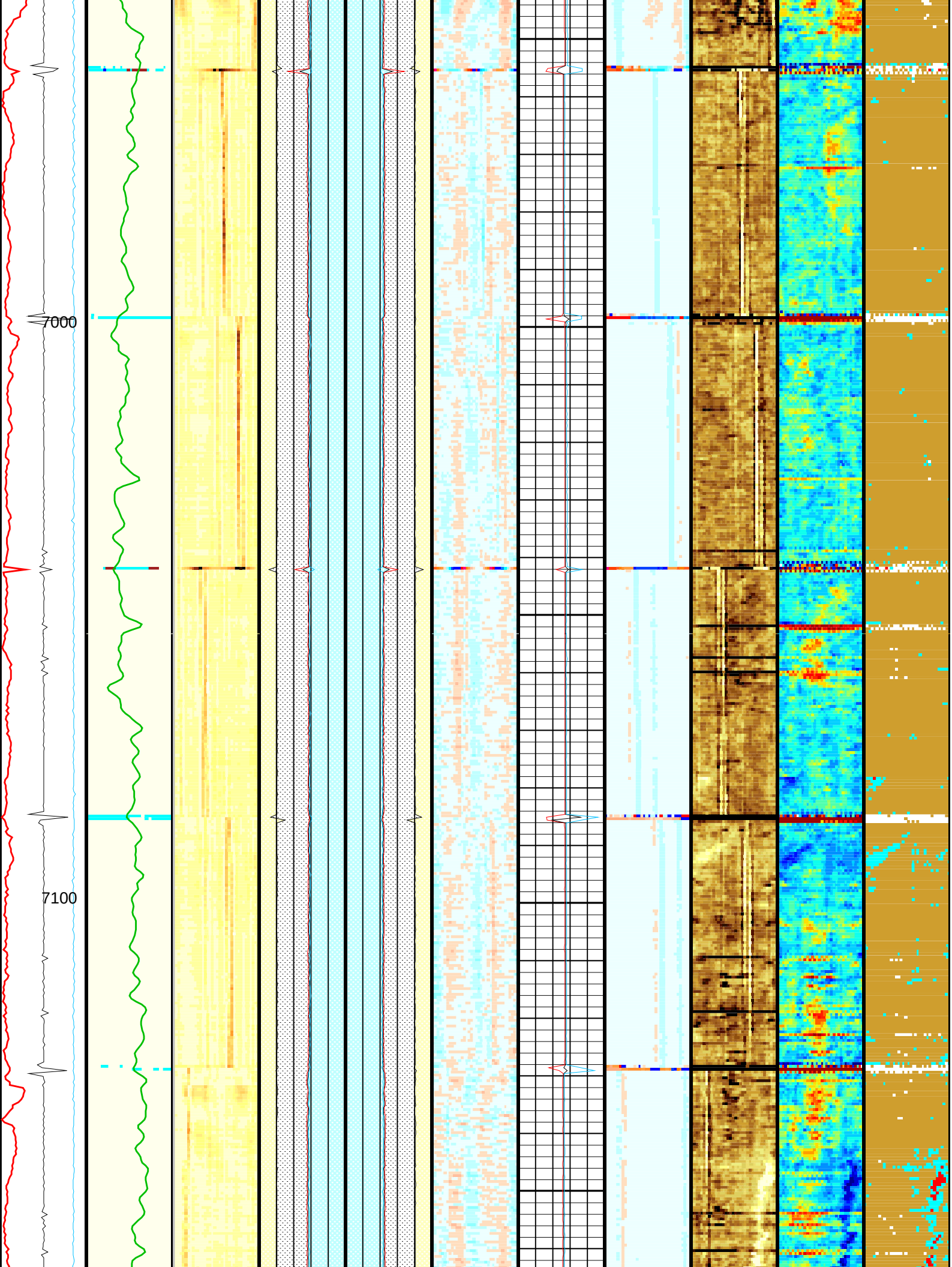
Short joint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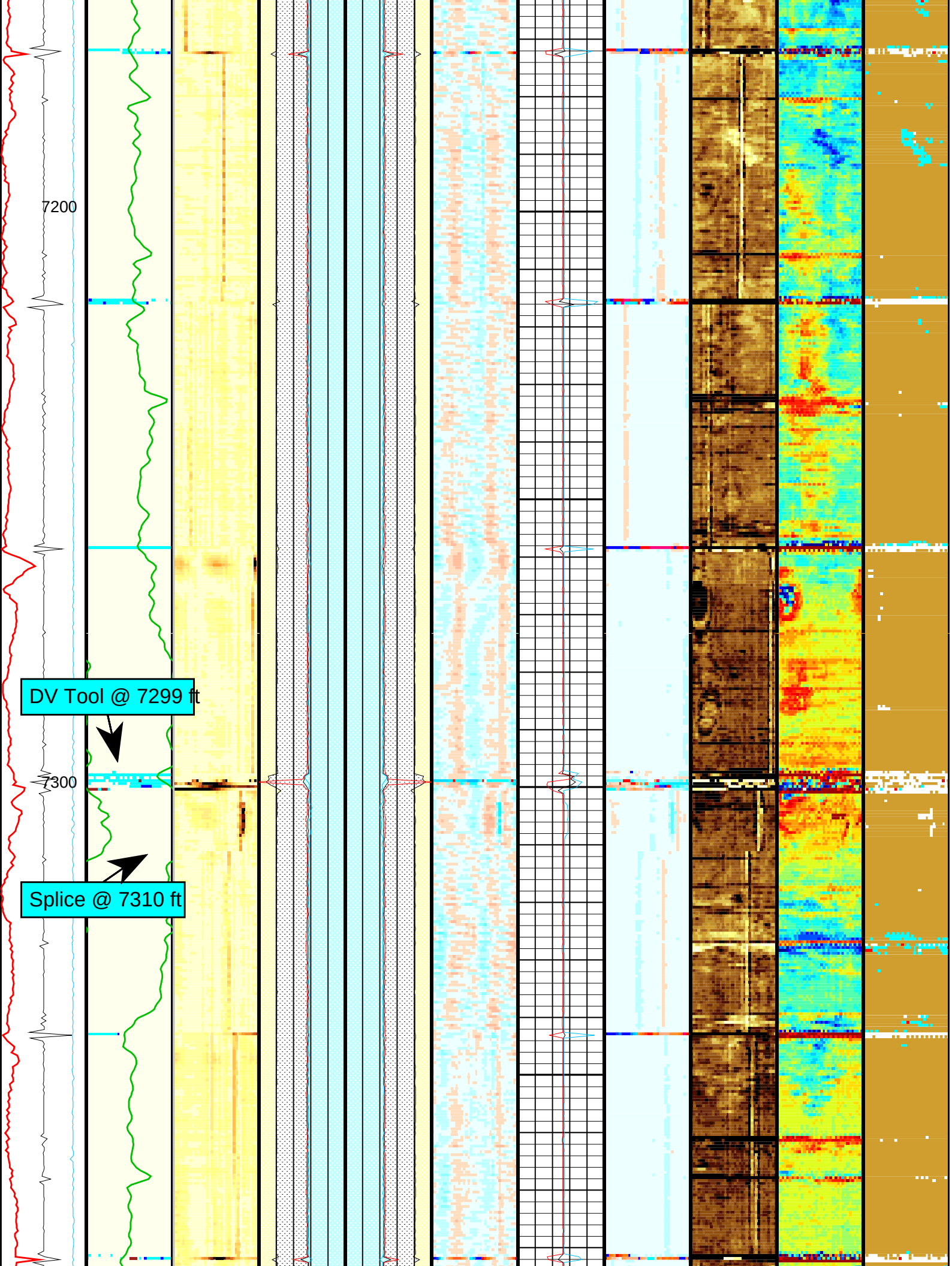
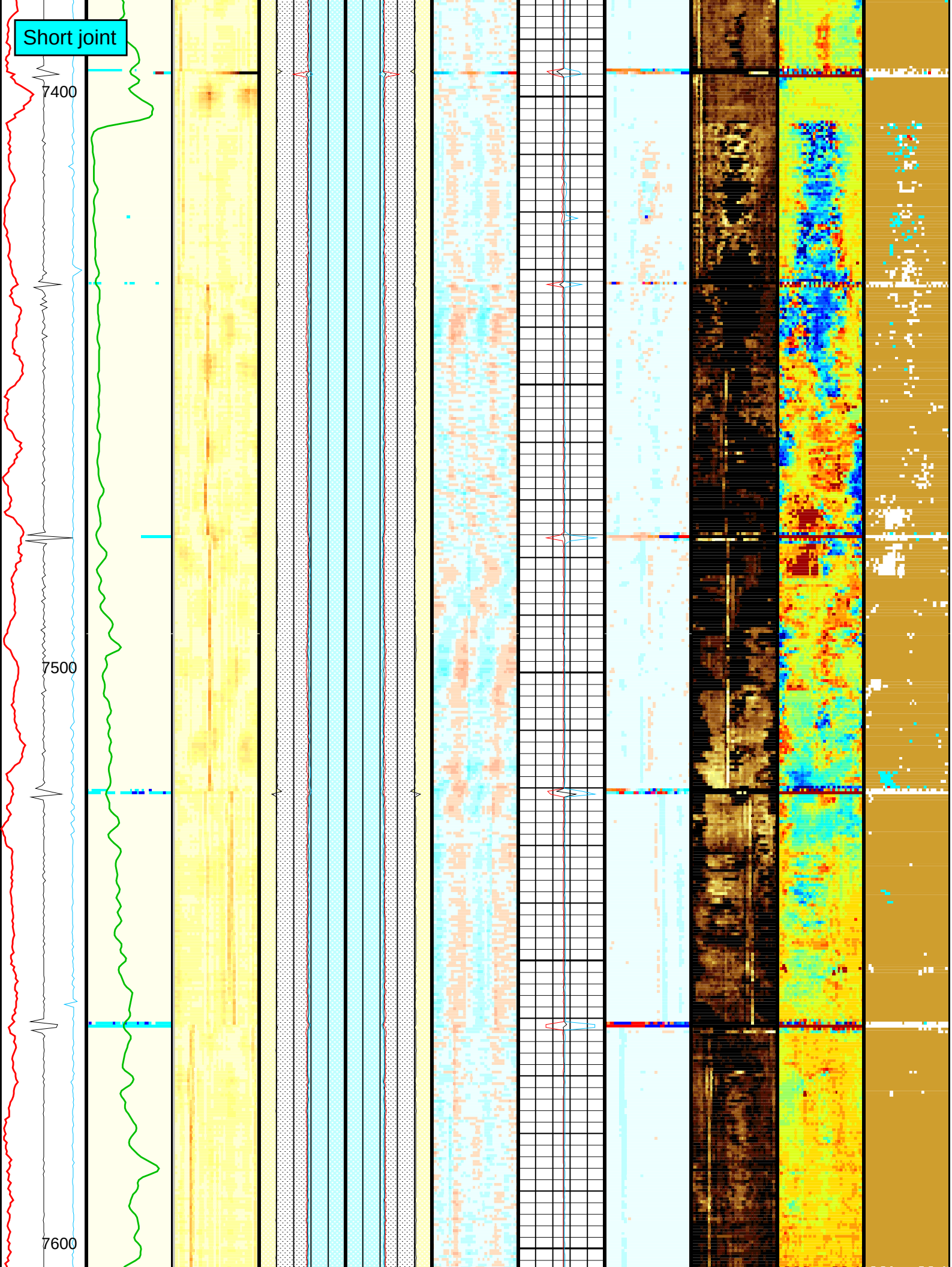

7200
7300
DV Tool @ 7299 ft
Splice @ 7310 ft


Short joint
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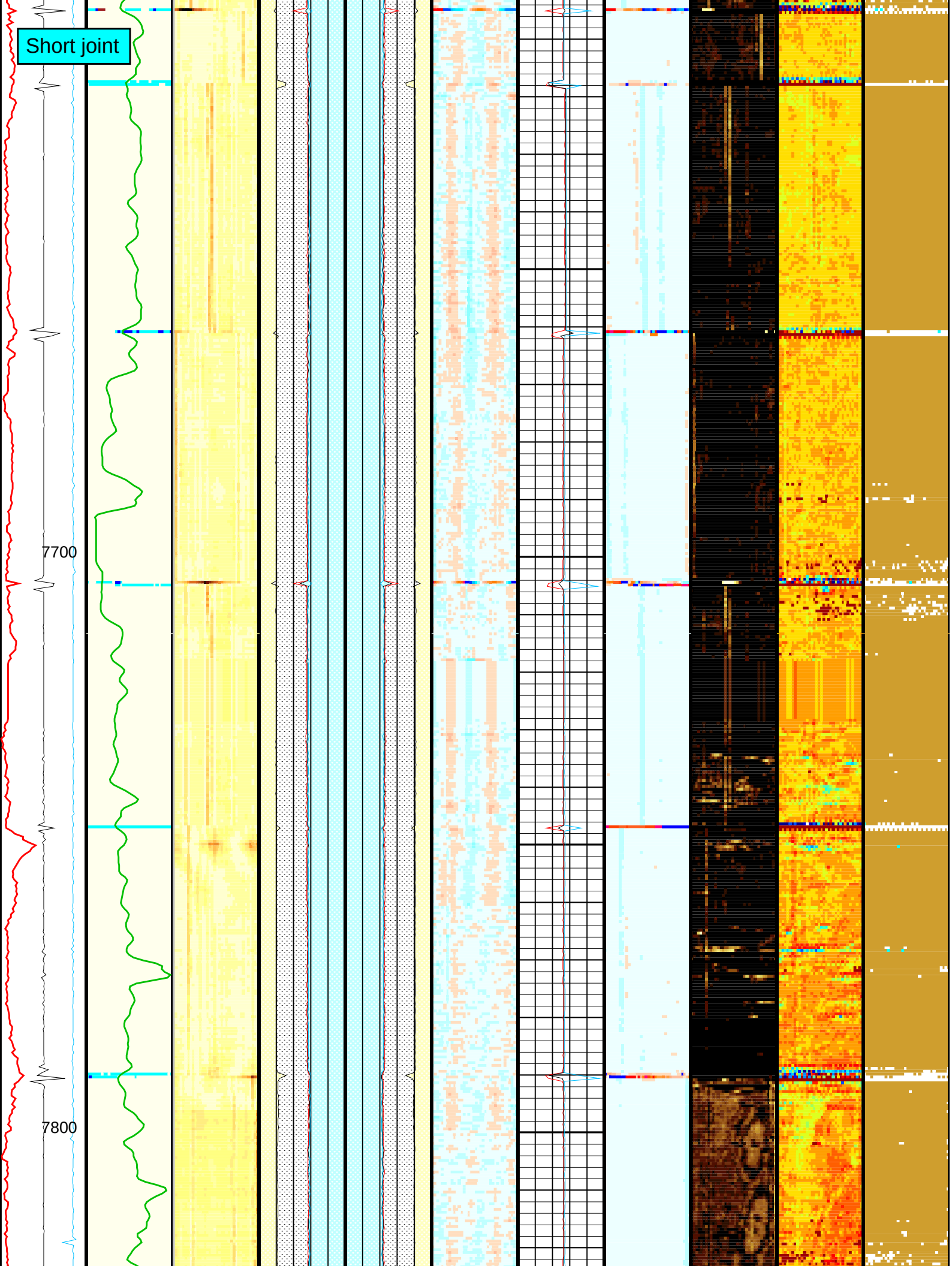
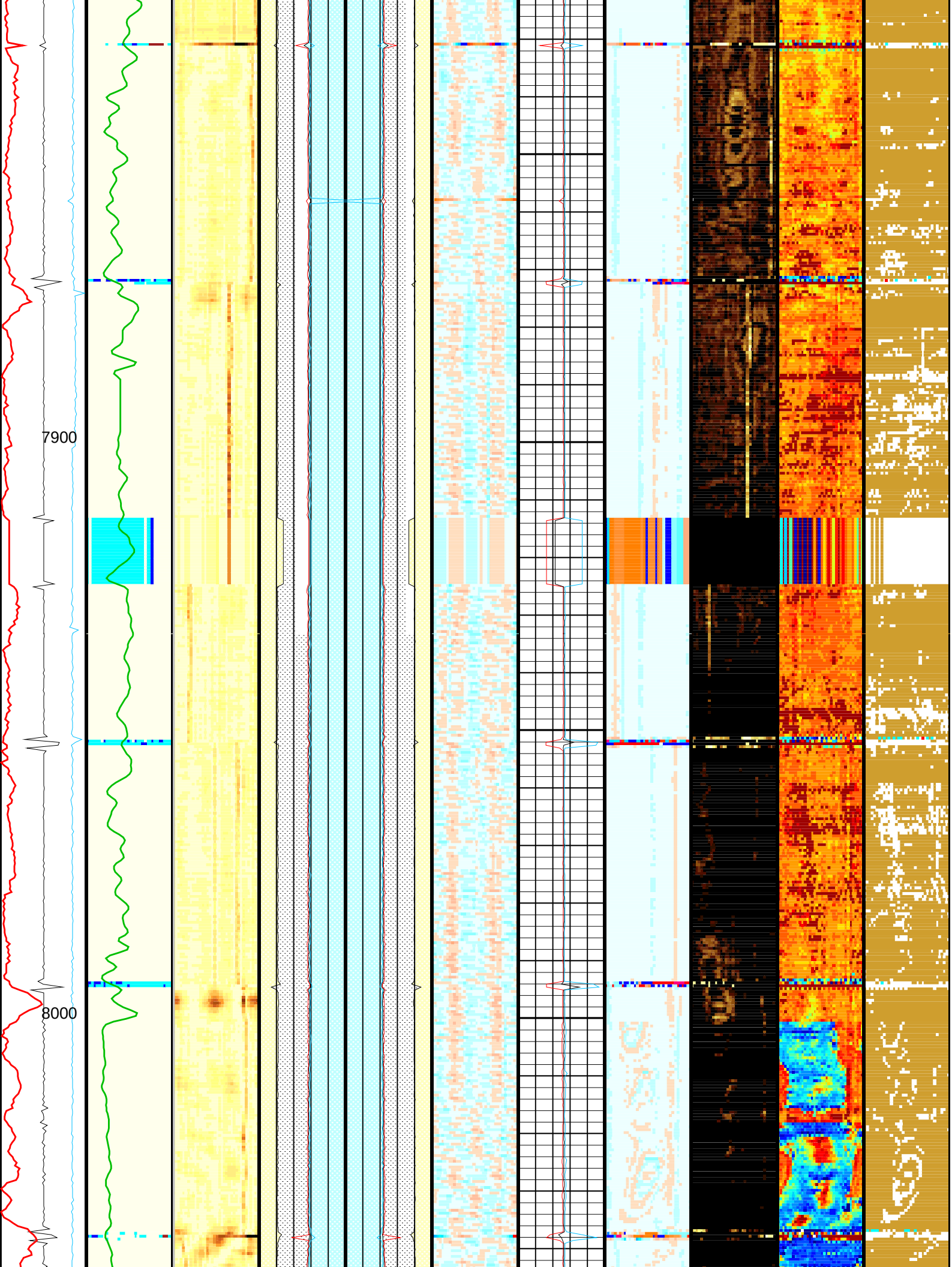
7500
7600


Short joint
7700
7800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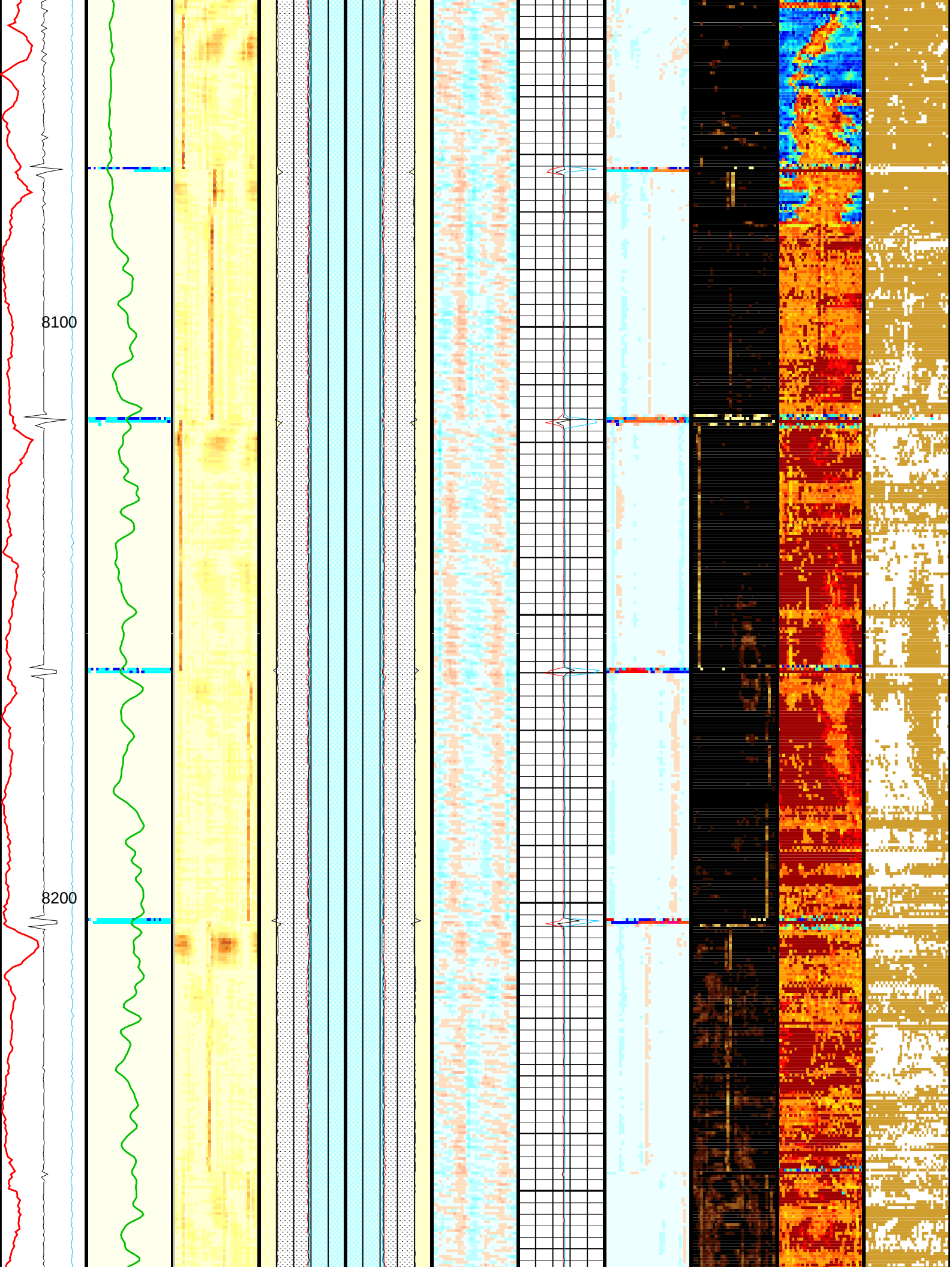
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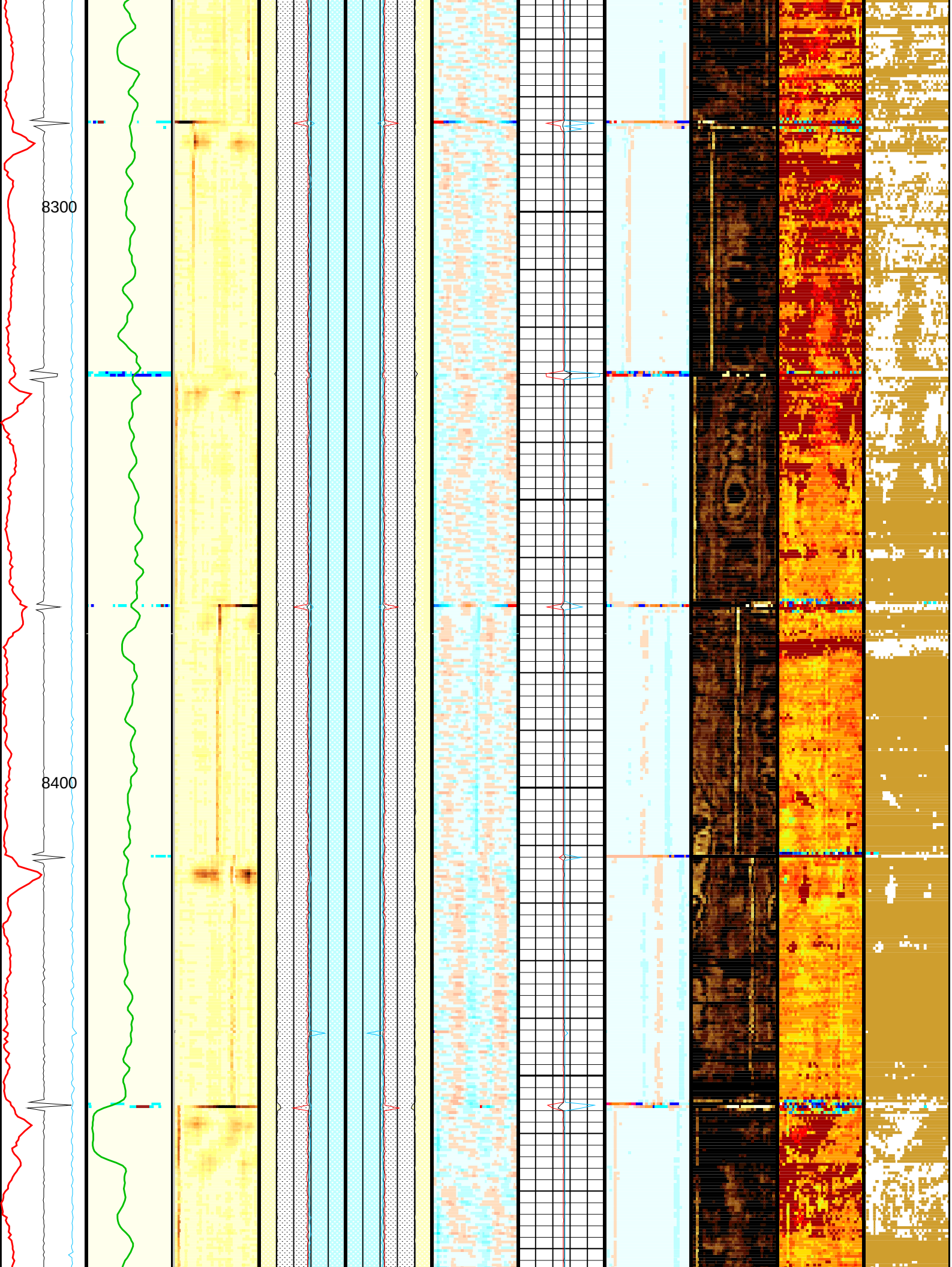
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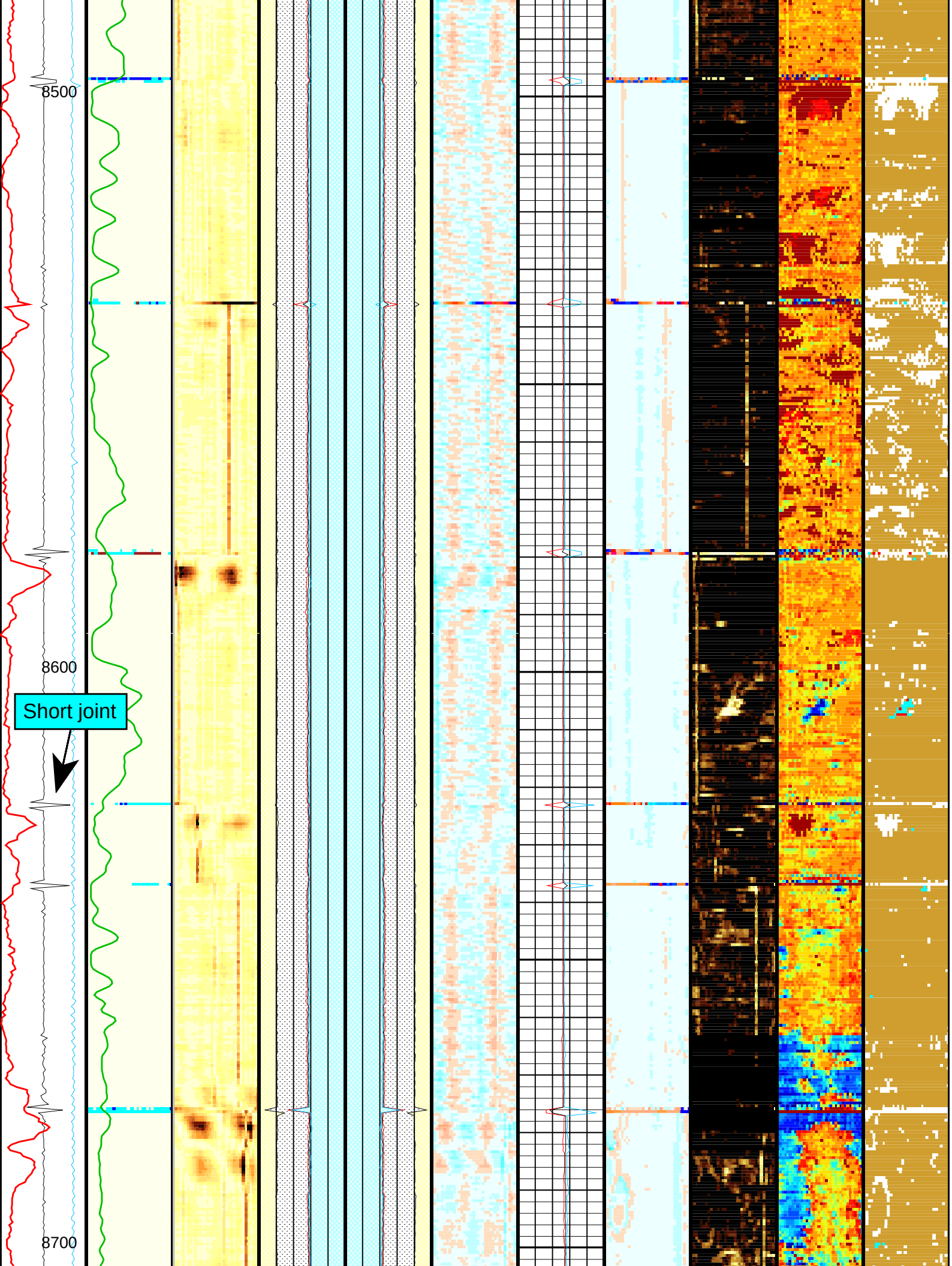
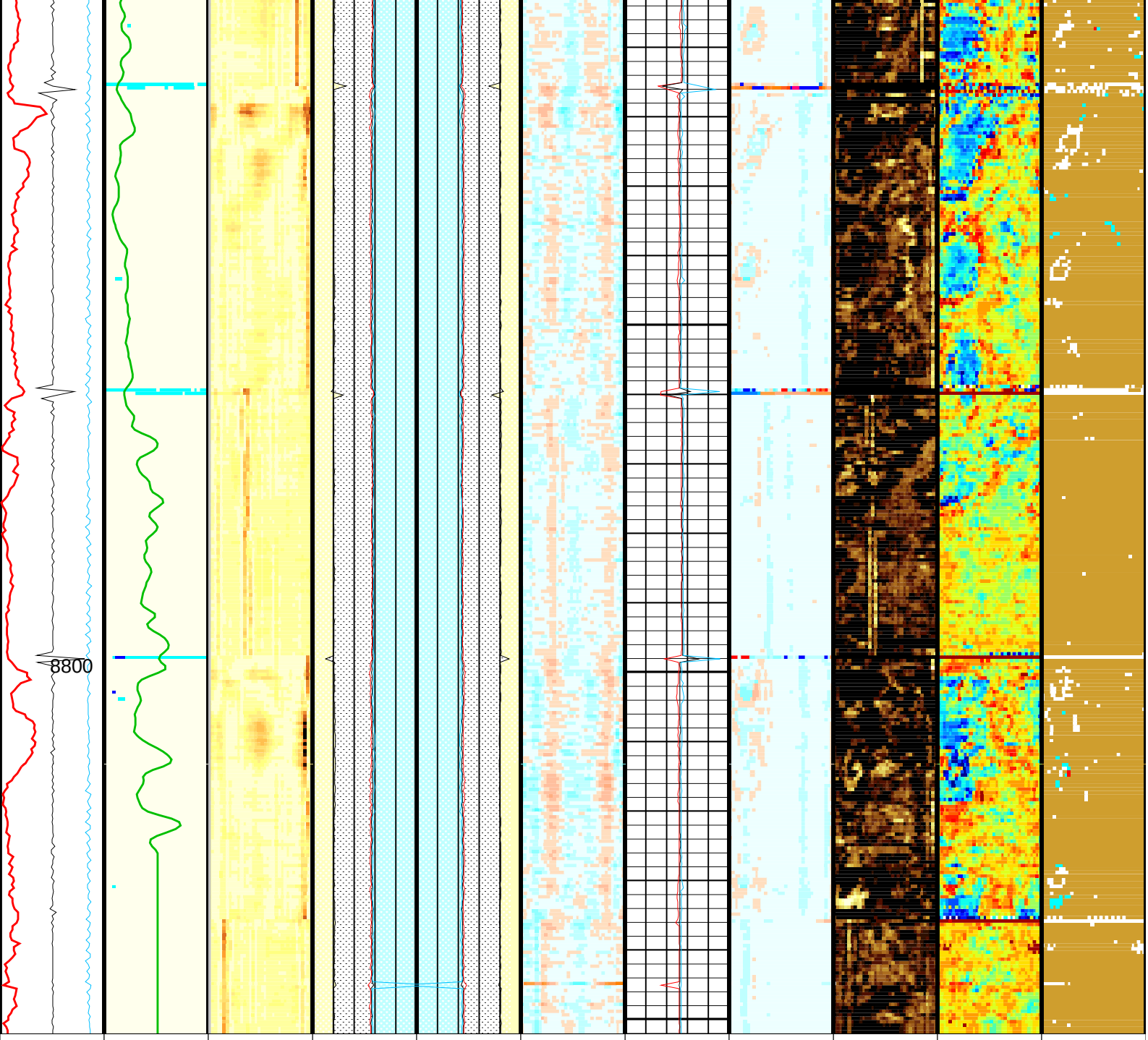

8500
8600
Short joint
8700



Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
−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

Min of Thickness (THMN) (IN)
0.1 0.6

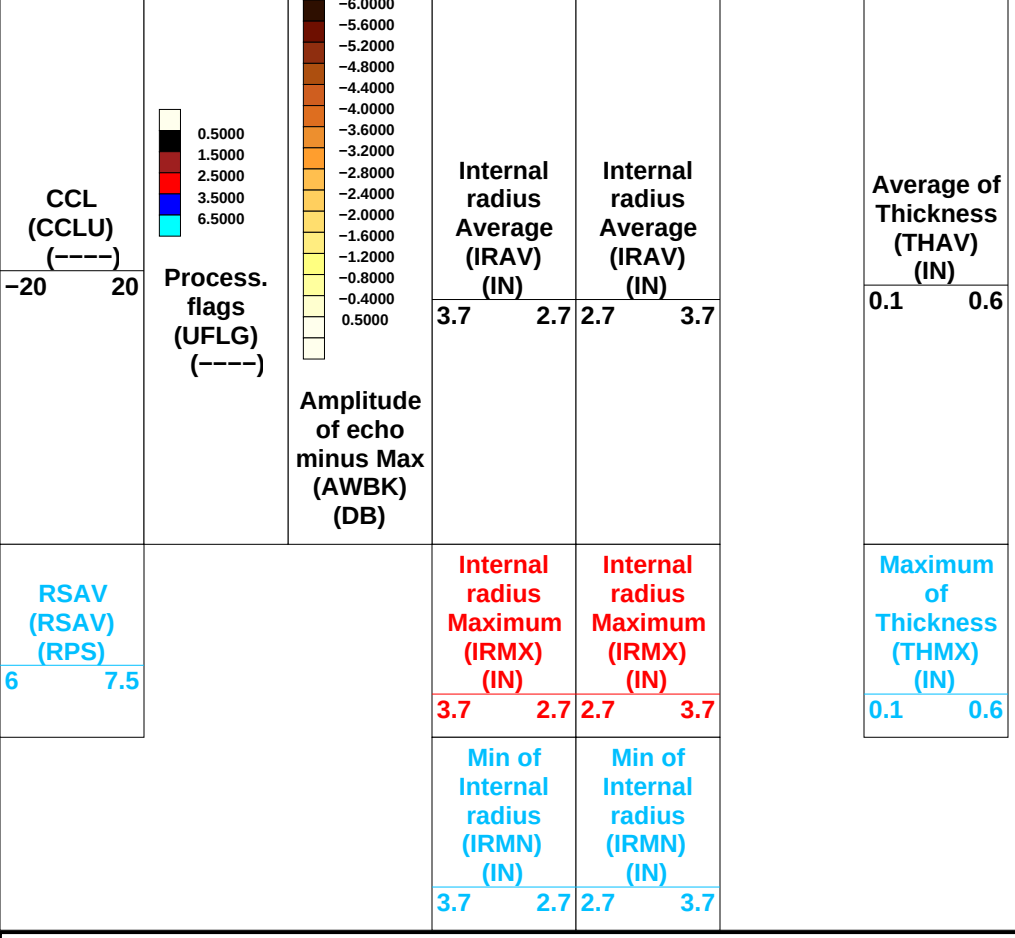
Thickness minus Ave (THBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

Solid Liquid Gas Map (U−USIT_ USLP) (−−−−)
0.5000
1.5000
2.5000
3.5000

−500.0000



Format: 5 inch IBC CEMENT COMPOSITE **Vertical Scale: 5" per 100'** **Graphics File Created: 18−Jul−2013 21:08**

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
	USIT−E: Ultrasonic Imaging − E		
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G

OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	

RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	Splice_USI_027CUP	FN:1	PRODUCER	18−Jul−2013 17:52	8851.0 FT	131.2 FT

Output DLIS Files

DEFAULT	USI_045PUP	FN:38	PRODUCER	18−Jul−2013 21:08

Schlumberger

Solid−Liquid−Gas Log
2" = 100’

MAXIS Field Log

Company: Noble Energy Inc **Well: Vigilant State AC16−07**

Input DLIS Files

DEFAULT	Splice_USI_027CUP	FN:1	PRODUCER	18−Jul−2013 17:52	8851.0 FT	131.2 FT

Output DLIS Files

DEFAULT	USI_045PUP	FN:38	PRODUCER	18−Jul−2013 21:08	8852.0 FT	133.0 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72

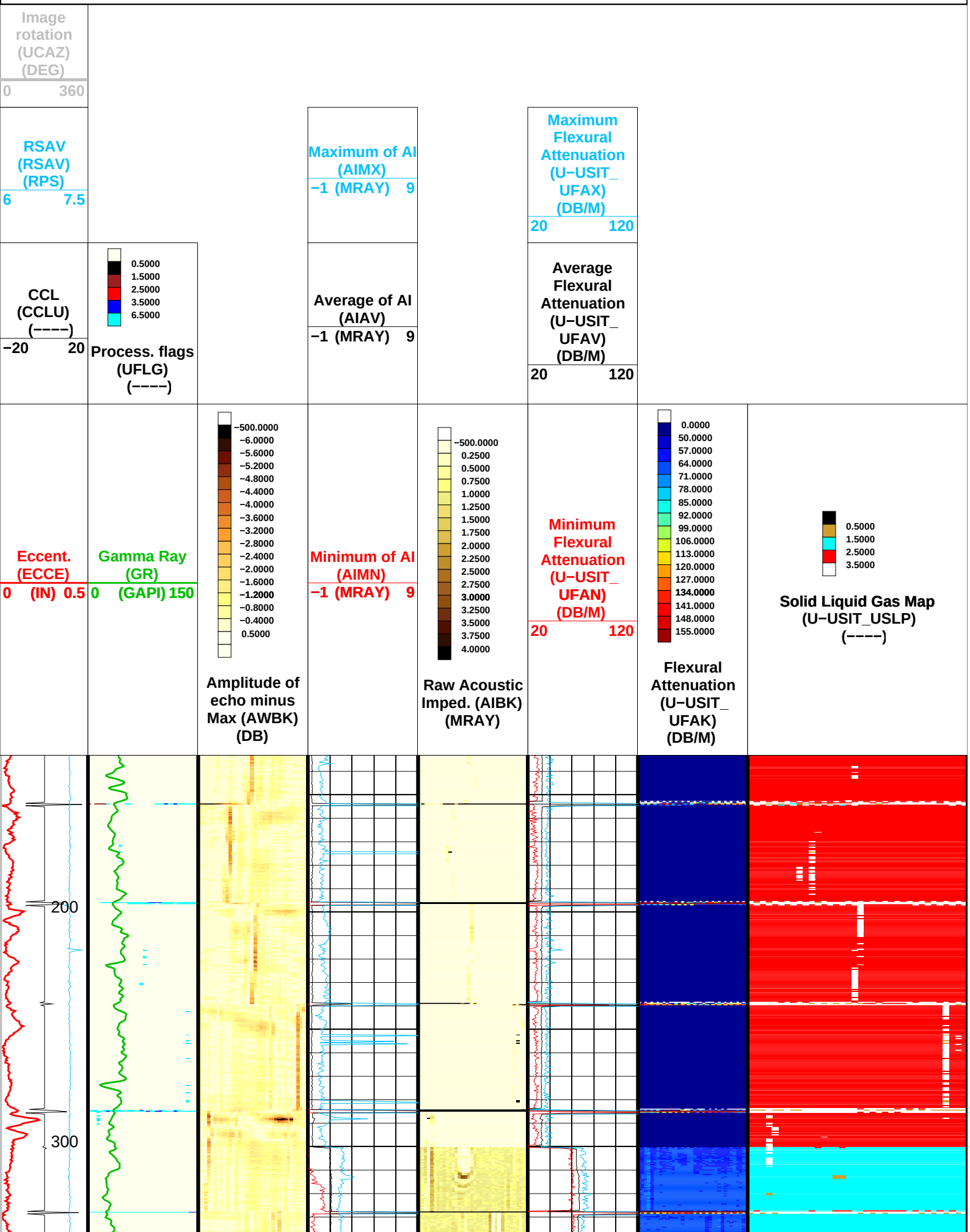
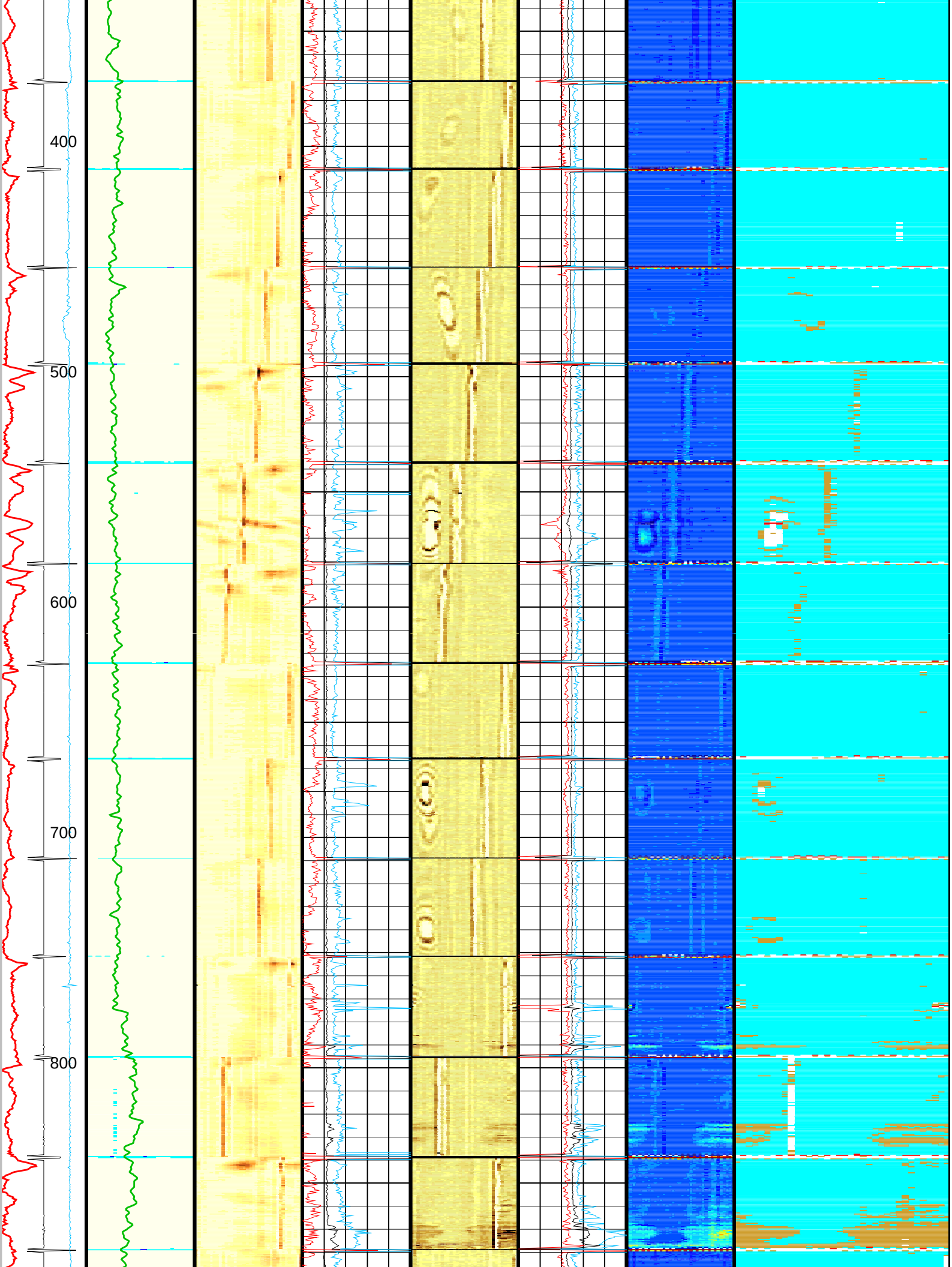


Image rotation (UCAZ) (DEG)
0 360
RSAV (RSAV) (RPS)
6 7.5
CCL (CCLU) (----)
−20 20
0.5000
1.5000
2.5000
3.5000
6.5000
Process. flags (UFLG) (----)
Maximum of AI (AIMX)
−1 (MRAY) 9
Average of AI (AIAV)
−1 (MRAY) 9
Maximum Flexural Attenuation (U−USIT_ UFAX) (DB/M)
20 120
Average Flexural Attenuation (U−USIT_ UFAV) (DB/M)
20 120
Eccent. (ECCE)
0 (IN) 0.5
Gamma Ray (GR)
0 (GAPI) 150
−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)
Minimum of AI (AIMN)
−1 (MRAY) 9
−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)
Minimum Flexural Attenuation (U−USIT_ UFAN) (DB/M)
20 120
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_USLP) (----)
200
300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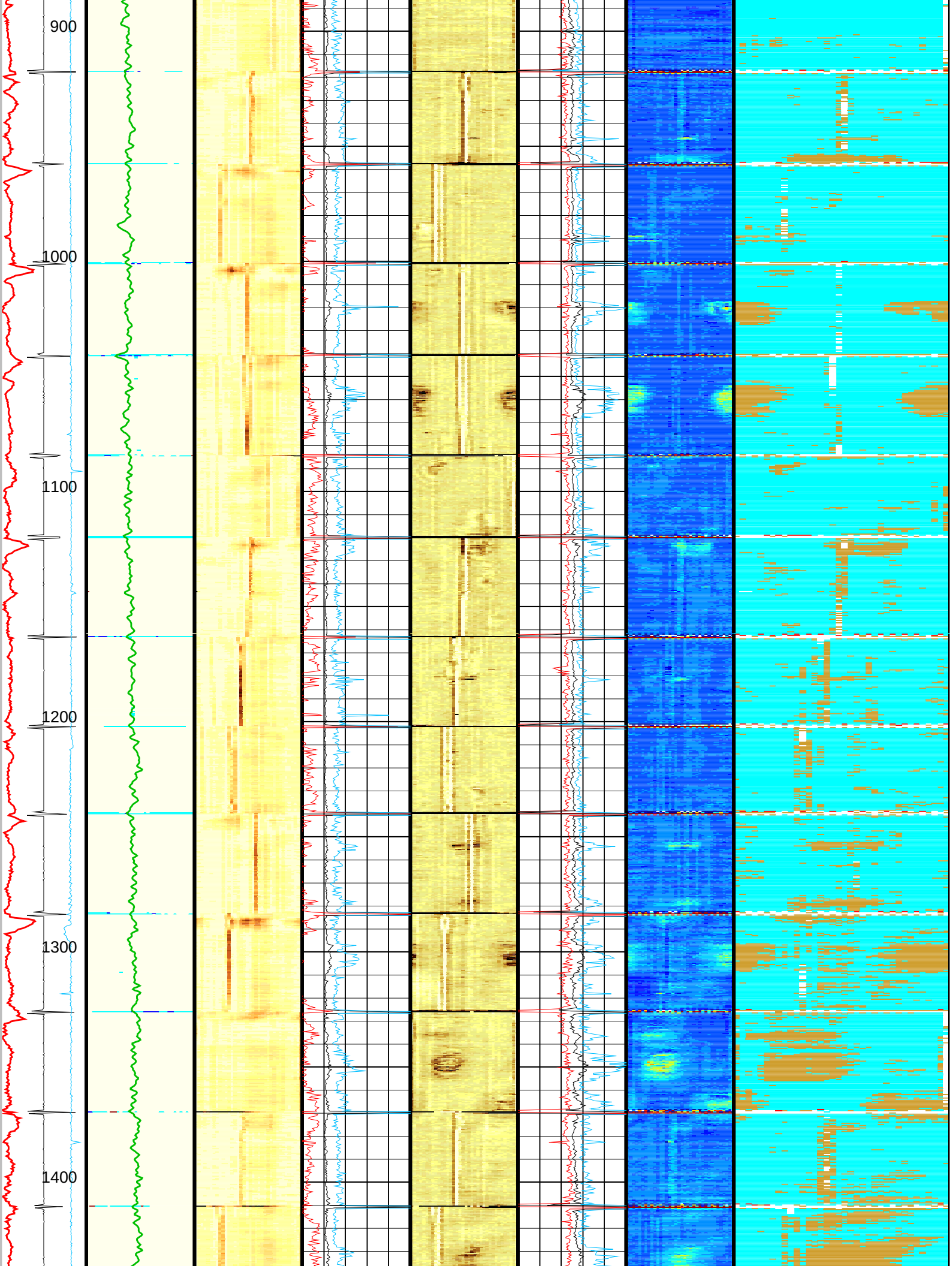
500
600
700
800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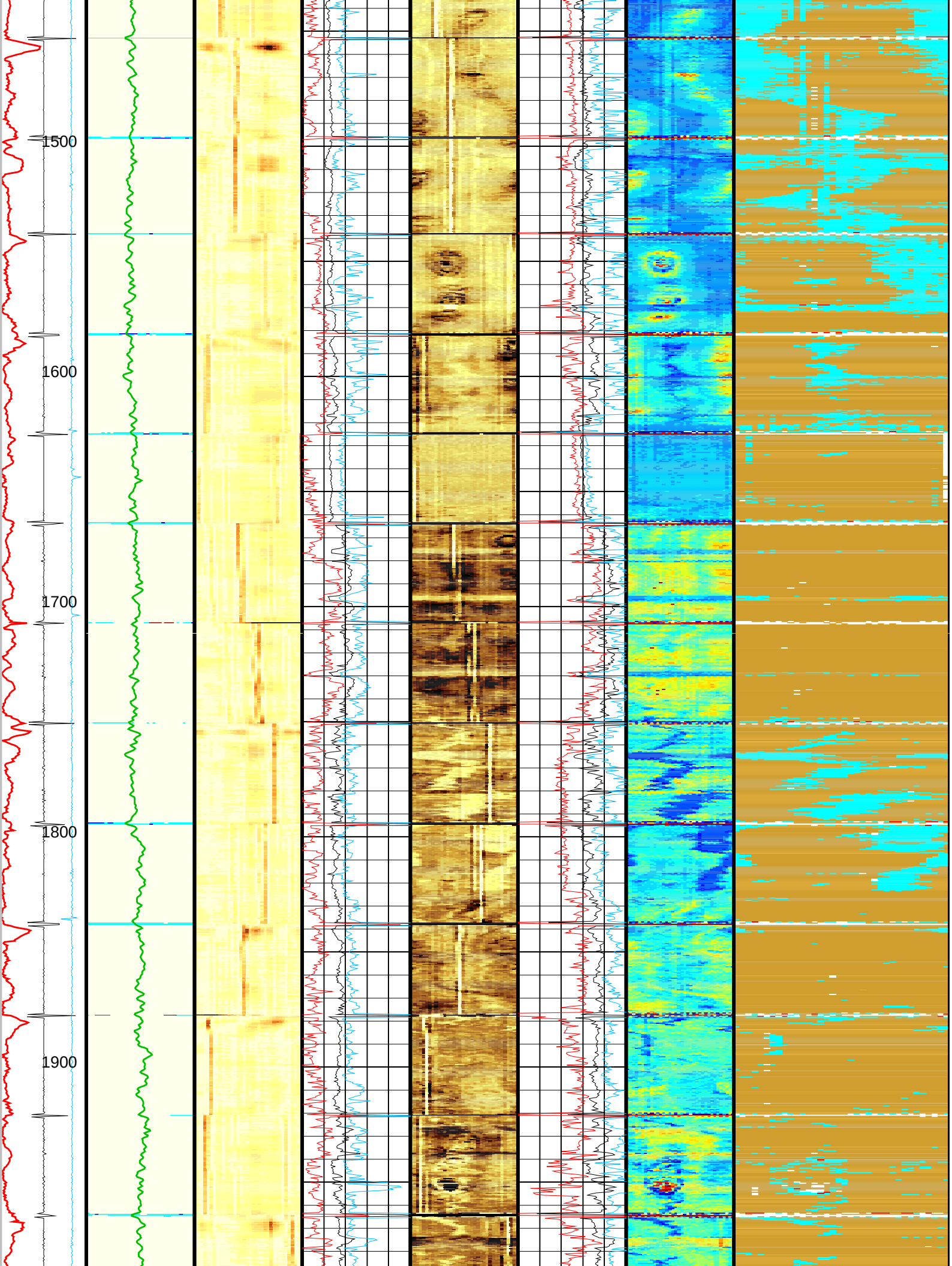
1000
1100
1200
1300
1400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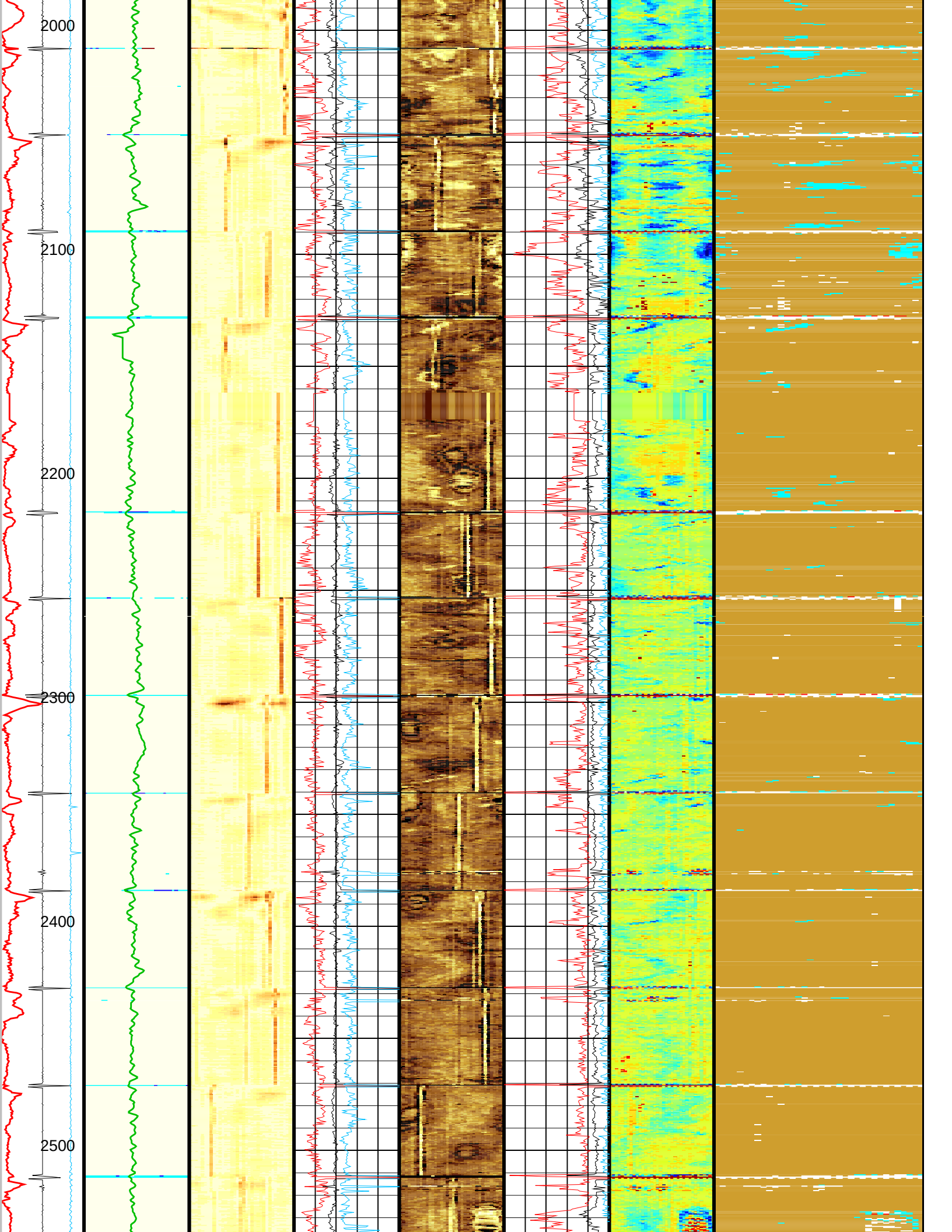
1600
1700
1800
1900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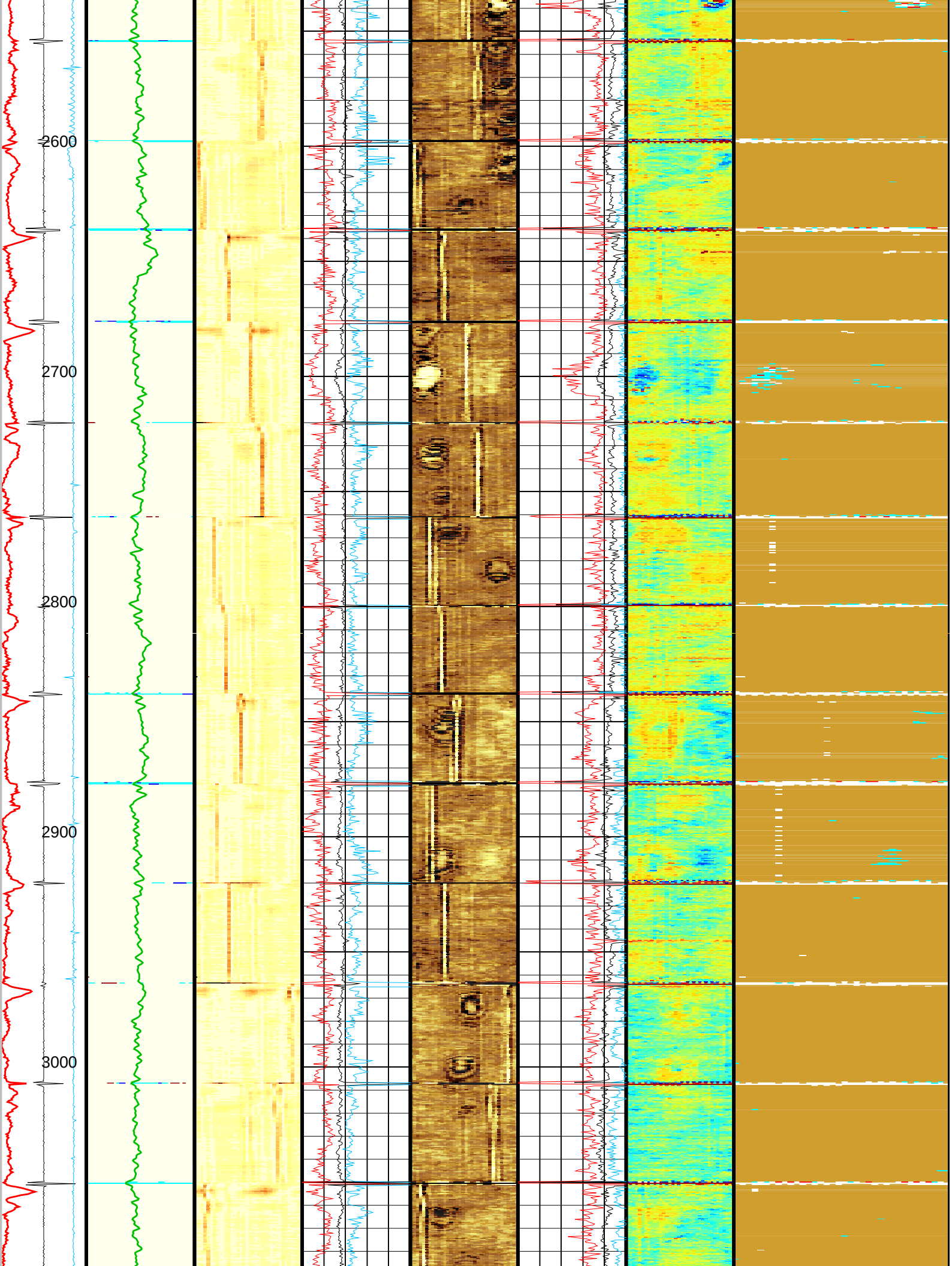
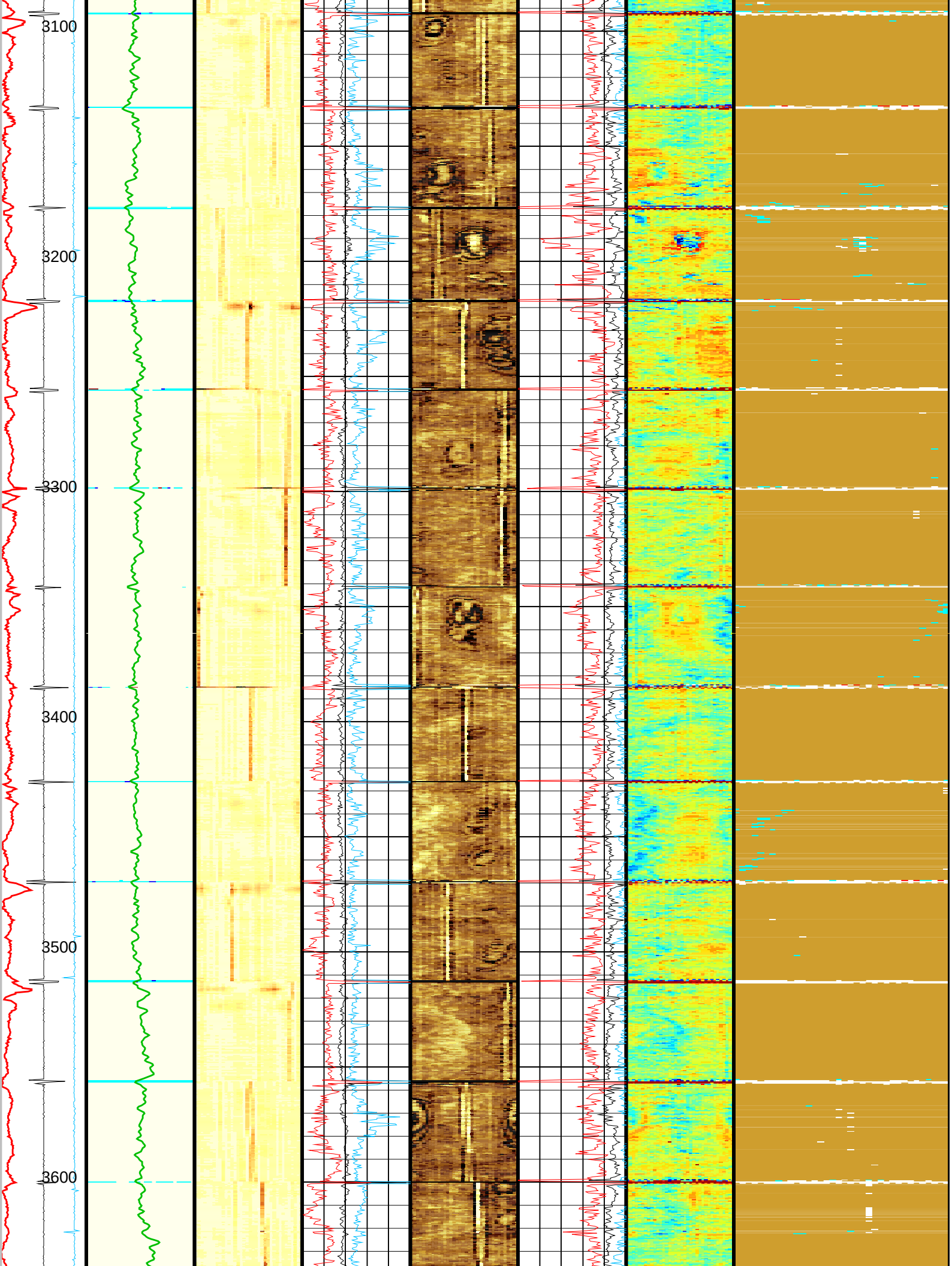
2100
2200
2300
2400
2500


2600
2700
2800
2900
3000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3400
3500
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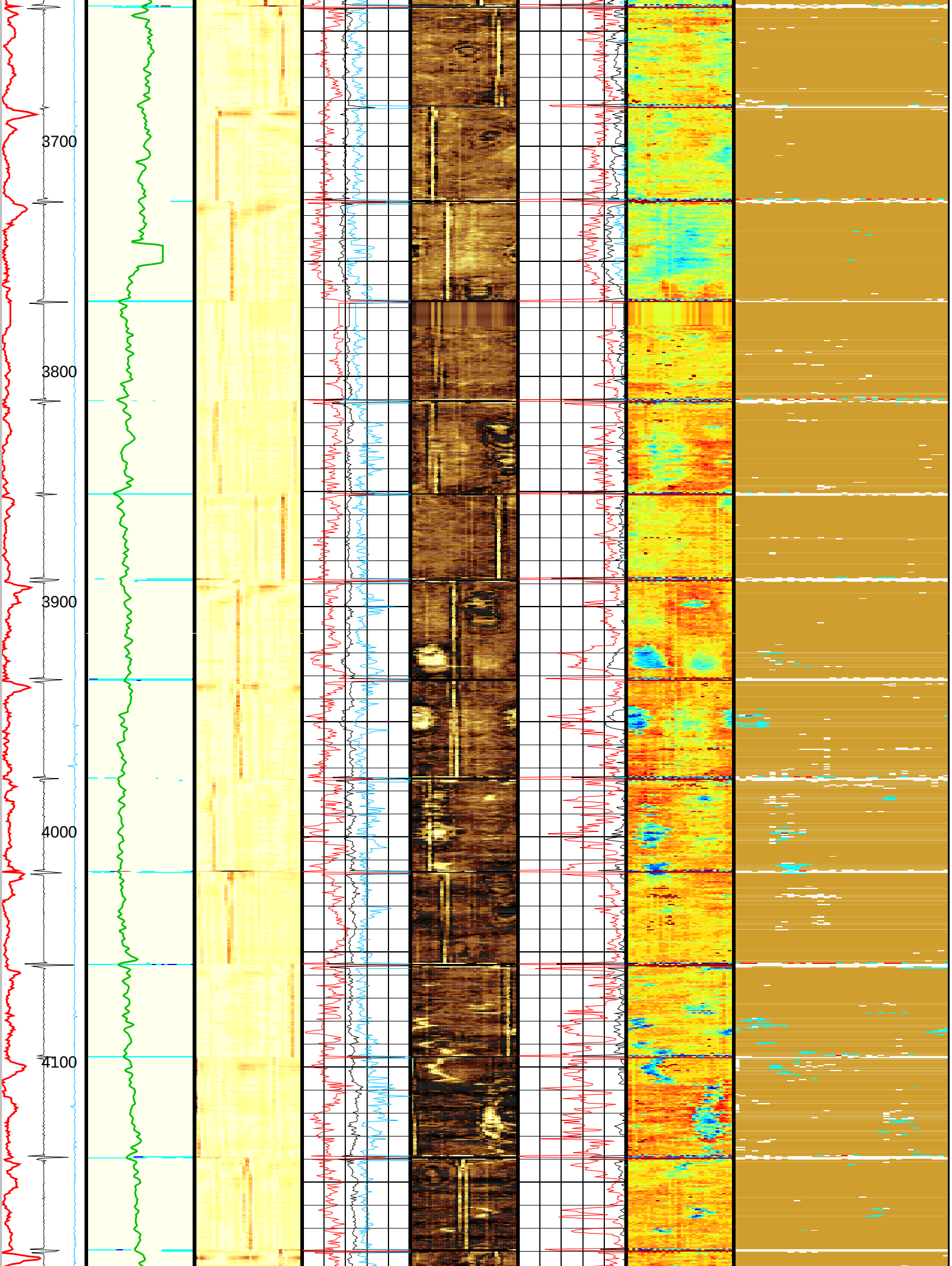
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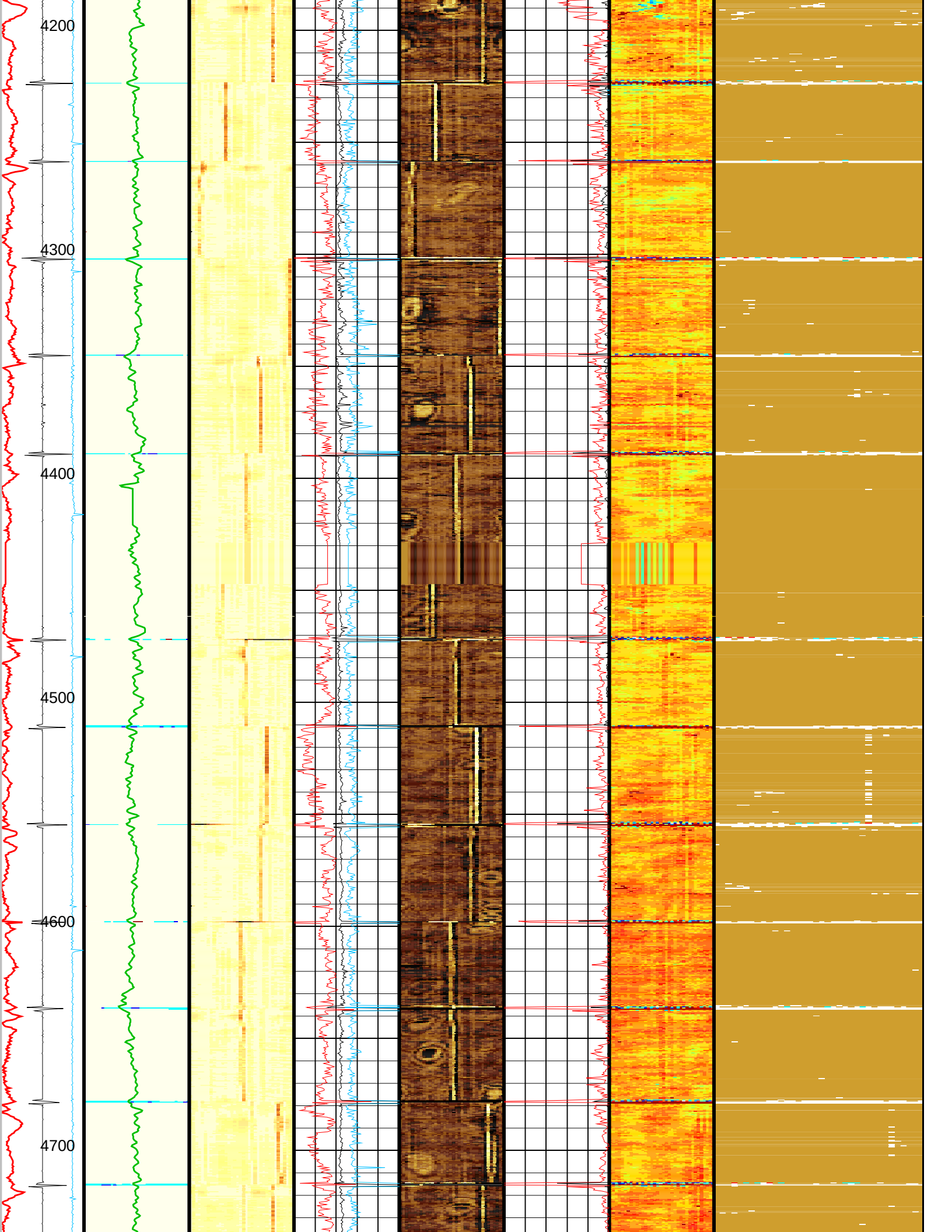
3800
3900
4000
4100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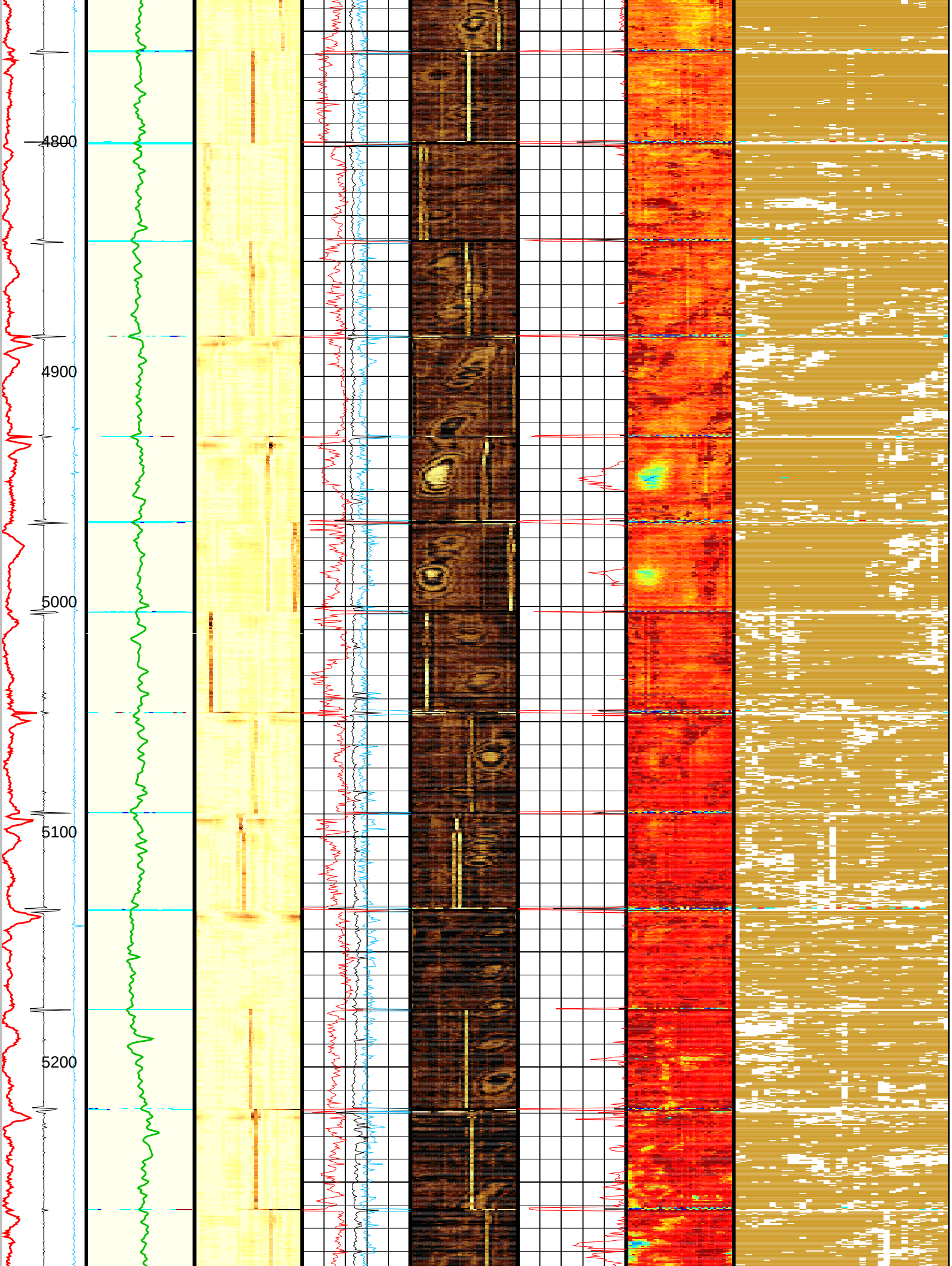
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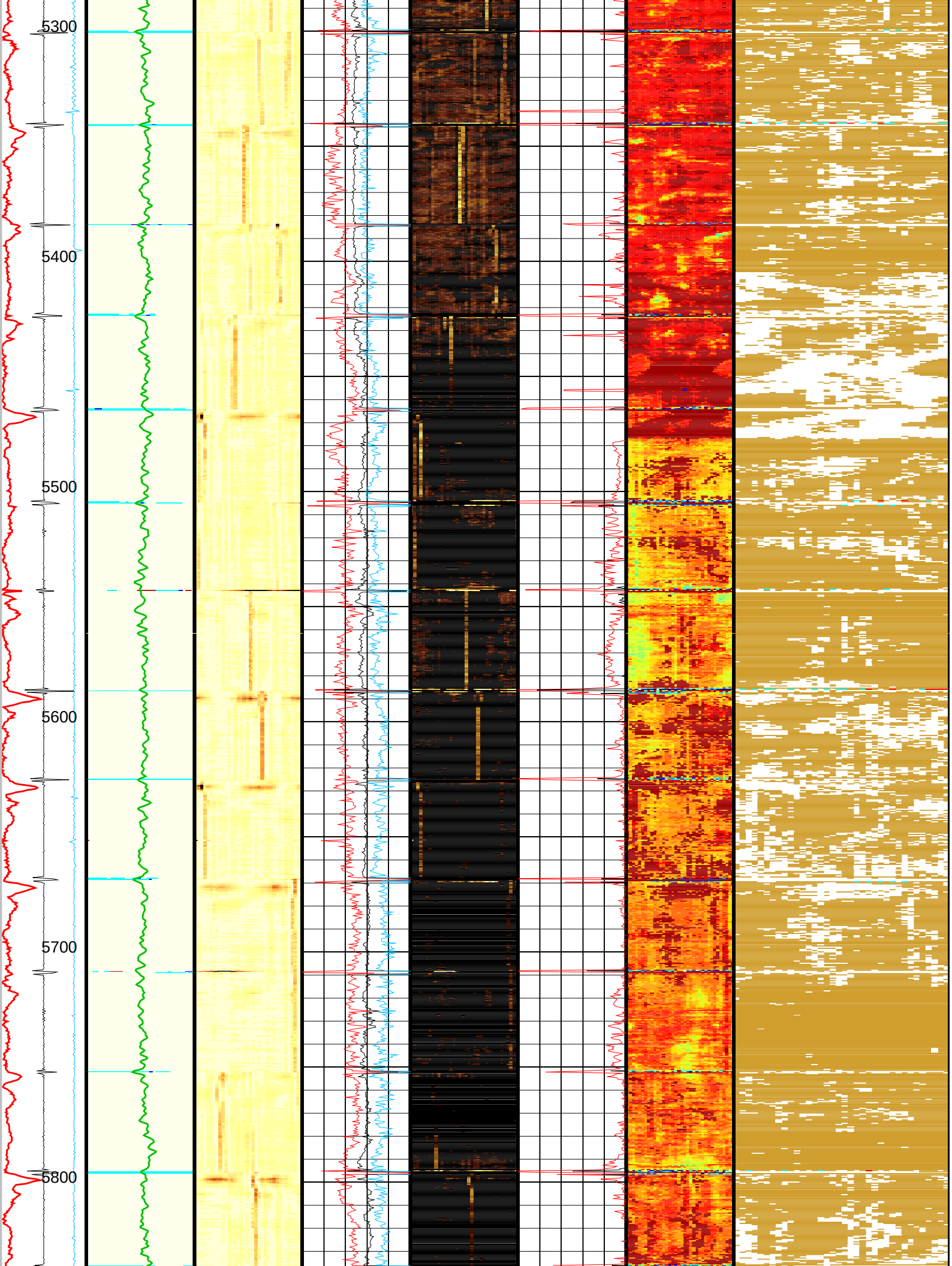
5200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5700
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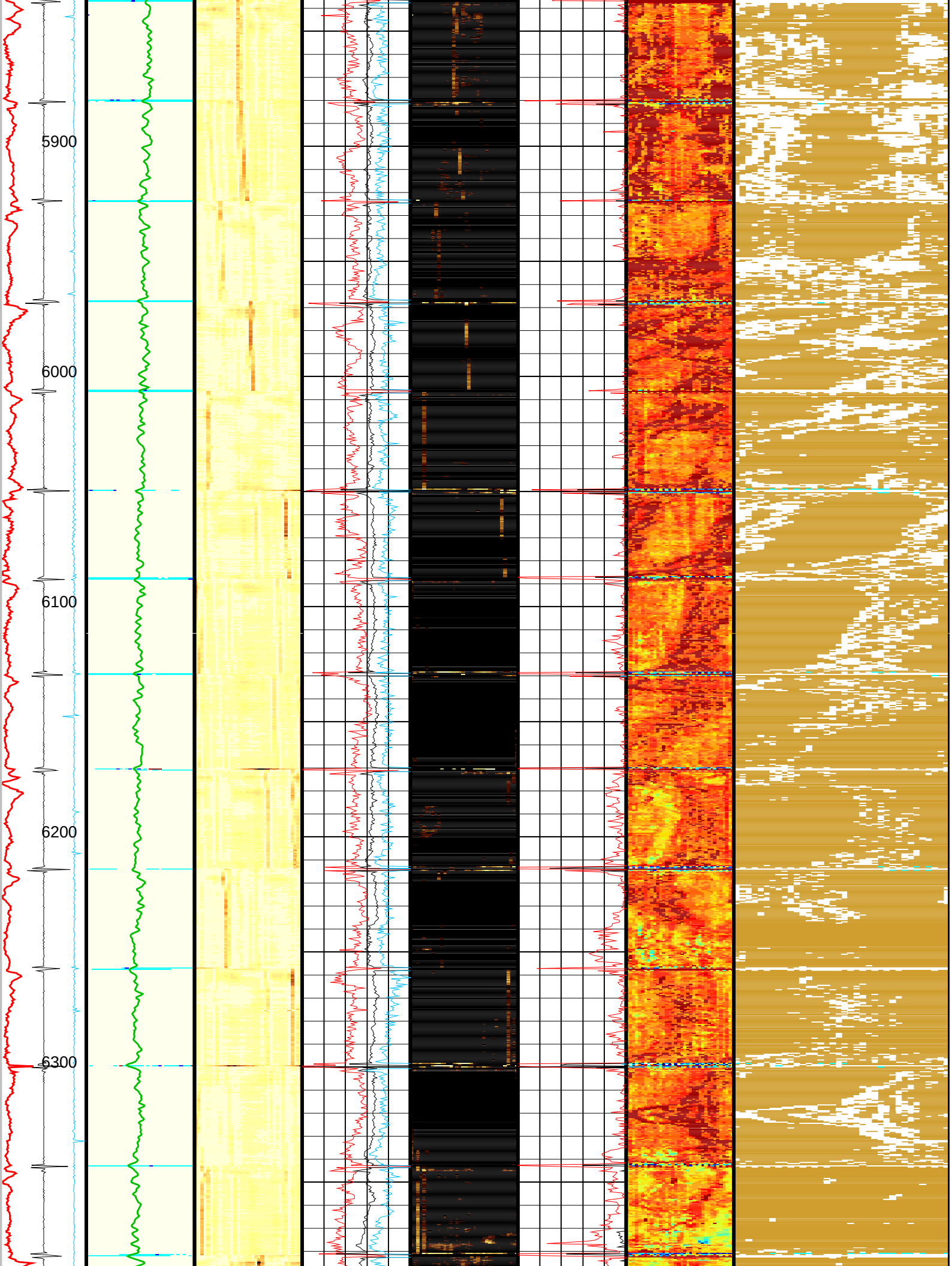
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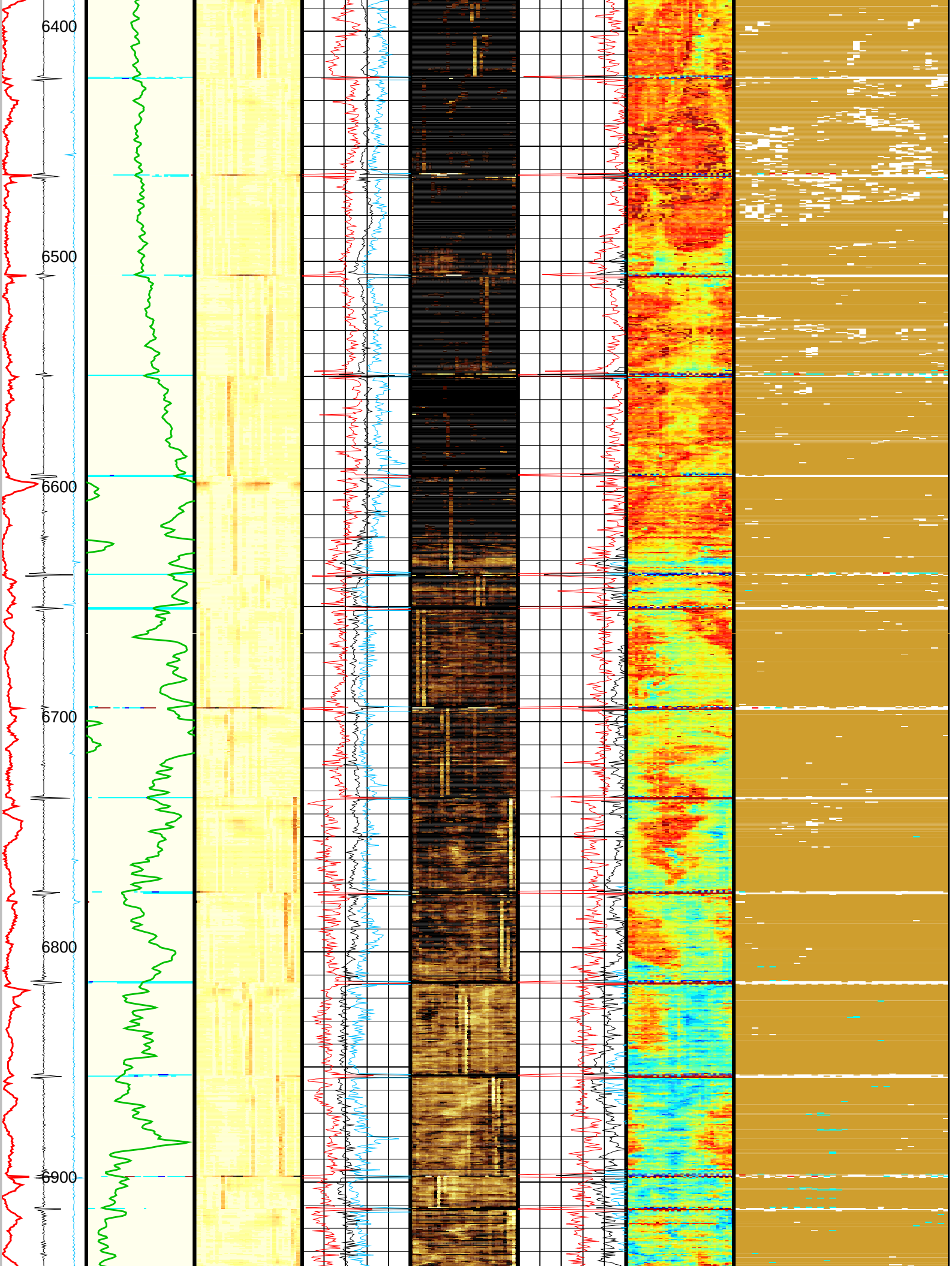
6100
6200
6300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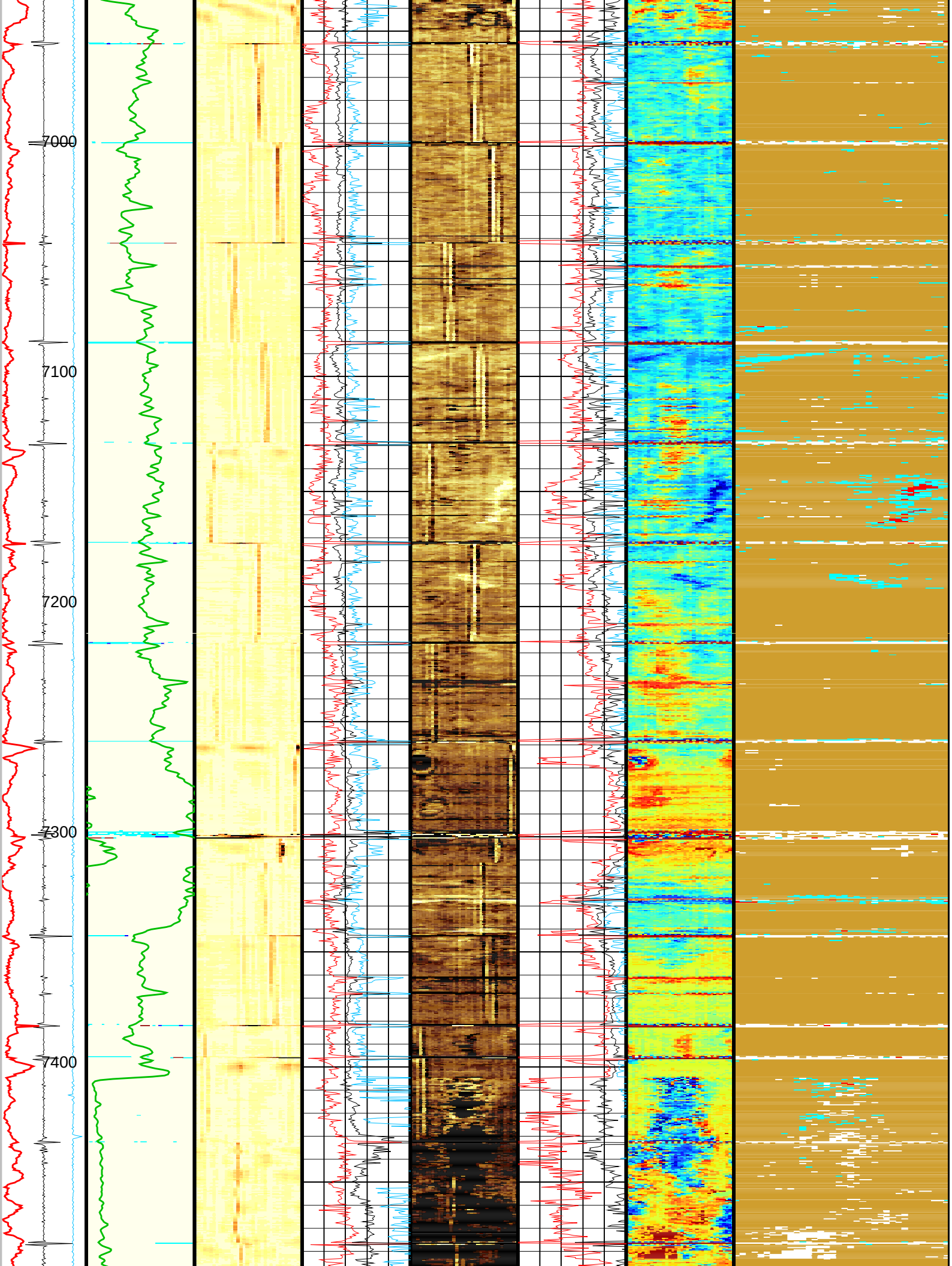
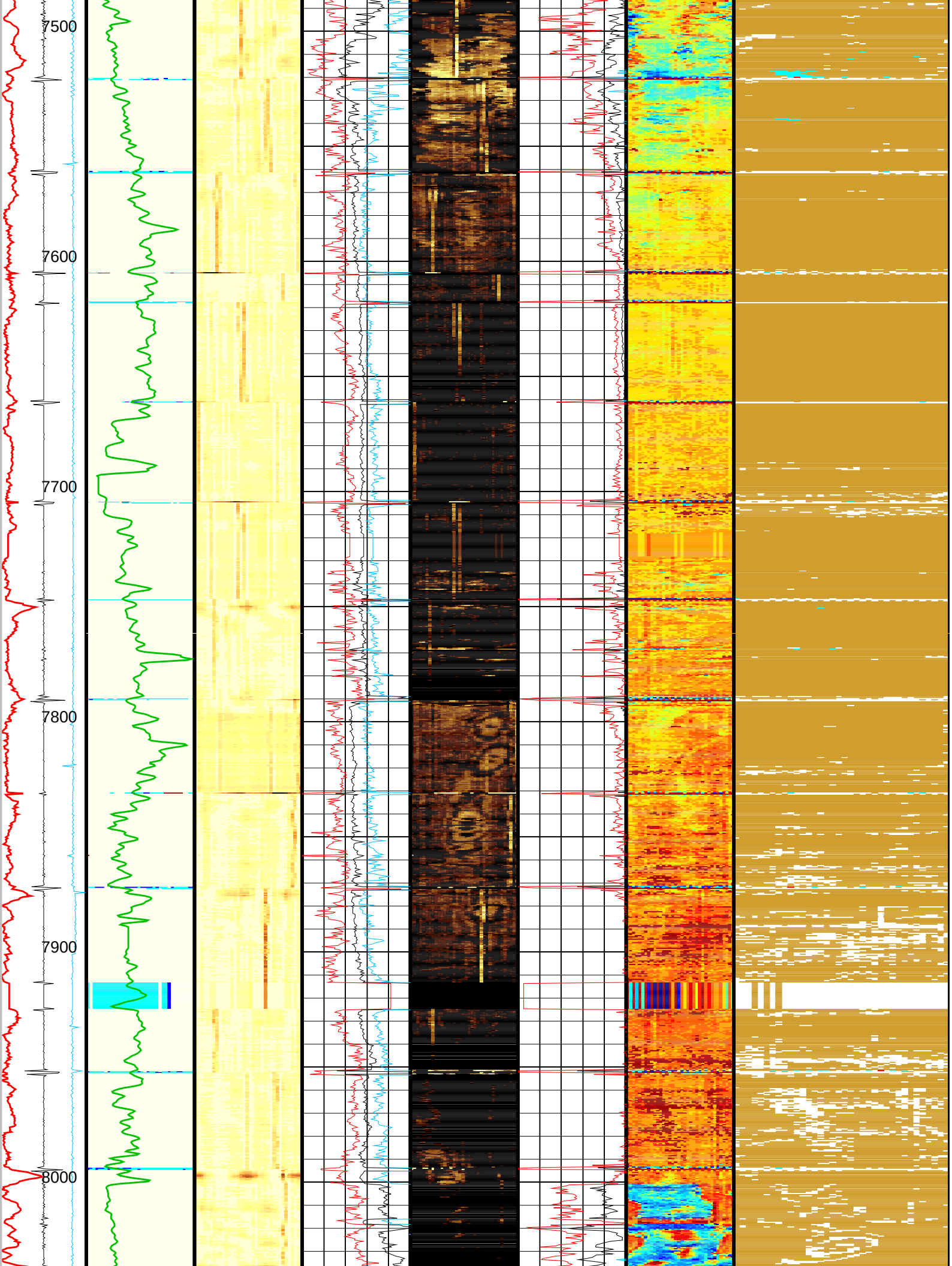
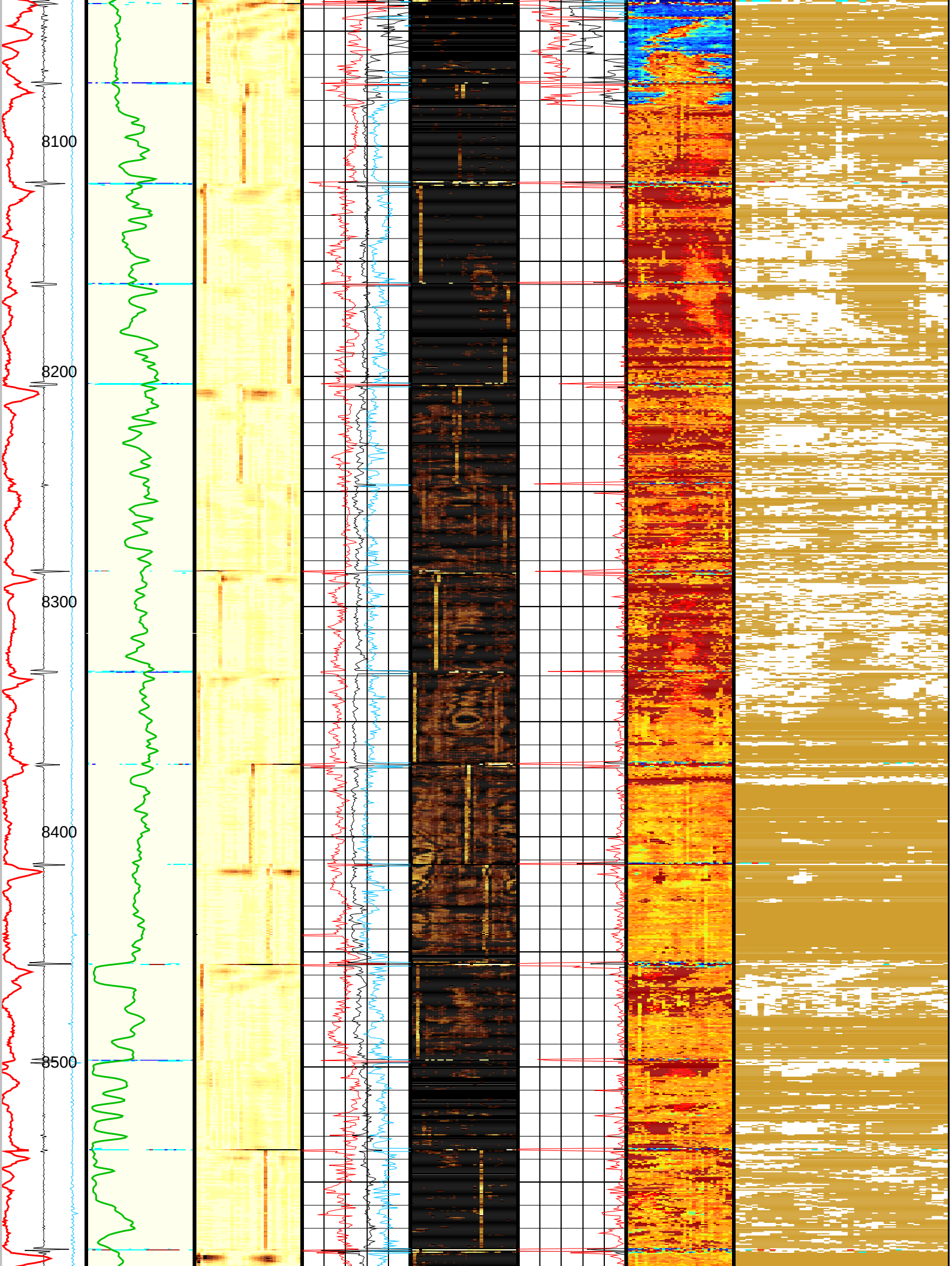
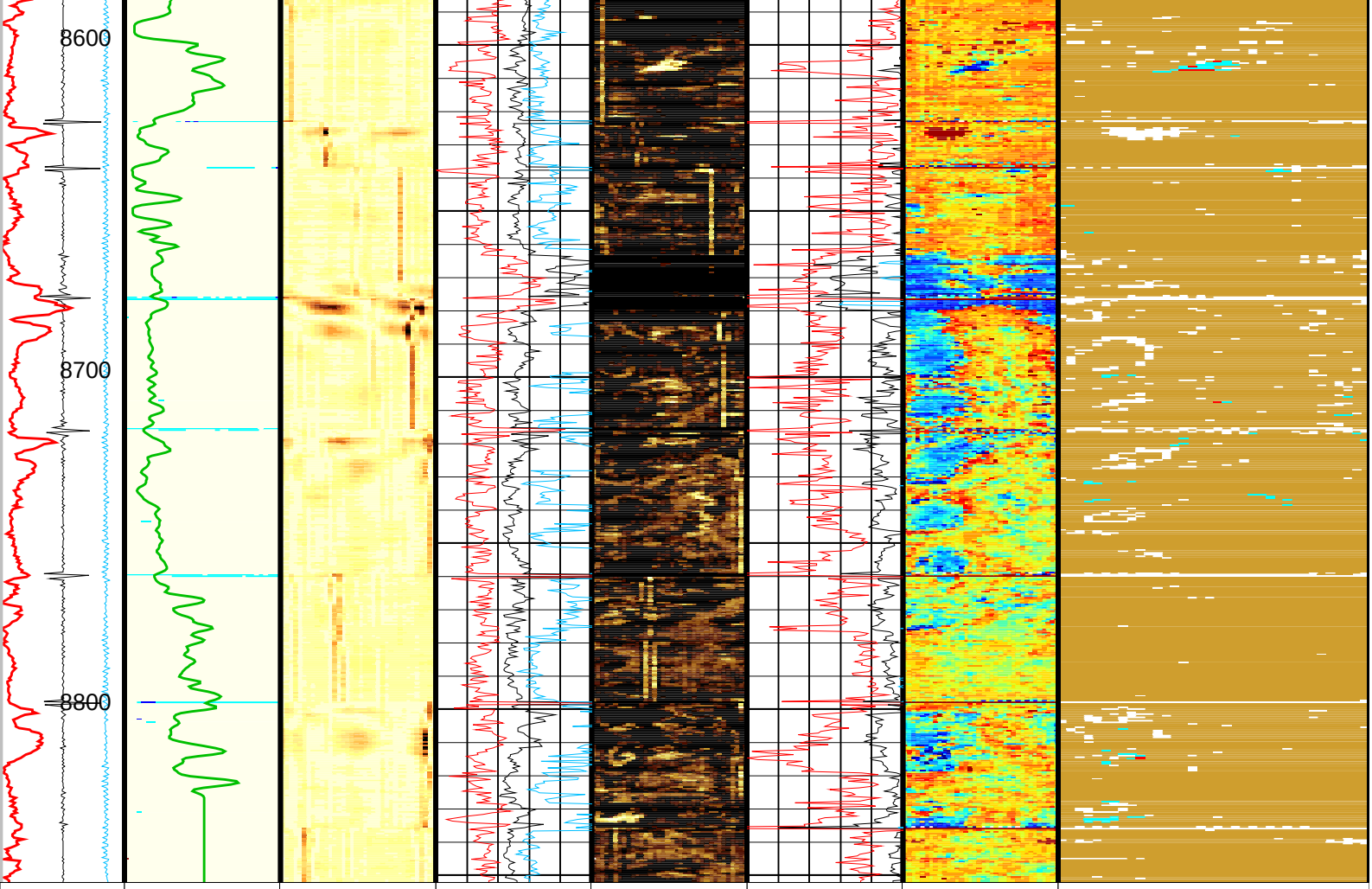
6800
6900


7000
7100
7200
7300
7400


7500
7600
7700
7800
7900
8000


8100
8200
8300
8400
8500



Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR)
0 (GAPI) 150

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)
−1 (MRAY) 9

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

Minimum Flexural Attenuation (U−USIT_ UFAN) (DB/M)
20 120

Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

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

CCL (CCLU) (−−−−)
−20 20

Process. flags (UFLG) (−−−−)
0.5000
1.5000
2.5000
3.5000
6.5000

Average of AI (AIAV)
−1 (MRAY) 9

Average Flexural Attenuation (U−USIT_ UFAV) (DB/M)
20 120

RSAV (RSAV) (RPS)
6 7.5

Maximum of AI (AIMX)
−1 (MRAY) 9

Maximum Flexural Attenuation (U−USIT_ UFAX) (DB/M)
20 120

Image

rotation (UCAZ) (DEG)
0 360

Format: 2 inch IBC SLG Vertical Scale: 2" per 100' Graphics File Created: 18−Jul−2013 21:08

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT−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	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
U−USIT_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	−1	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	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	8.750	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	1.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	Splice_USI_027CUP	FN:1	PRODUCER	18−Jul−2013 17:52	8851.0 FT	131.2 FT

Output DLIS Files

DEFAULT	USI_045PUP	FN:38	PRODUCER	18−Jul−2013 21:08

Schlumberger

Compressed Goodwin
0.1" = 100'

MAXIS Field Log

Company: Noble Energy Inc **Well: Vigilant State AC16−07**

Input DLIS Files

DEFAULT	Splice_USI_027CUP	FN:1	PRODUCER	18−Jul−2013 17:52	8851.0 FT	131.2 FT

Output DLIS Files

DEFAULT	USI_045PUP	FN:38	PRODUCER	18−Jul−2013 21:08	8852.0 FT	133.0 FT

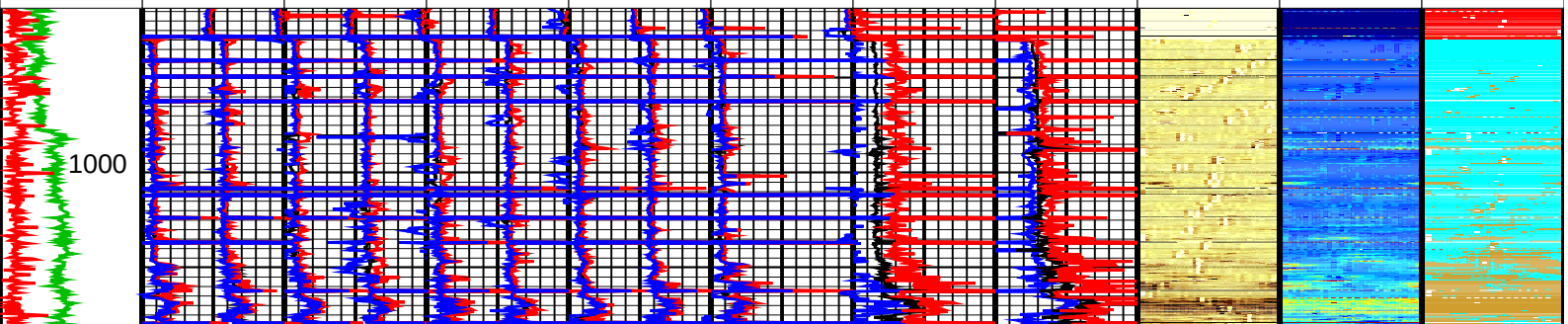
OP System Version: 19C0−187

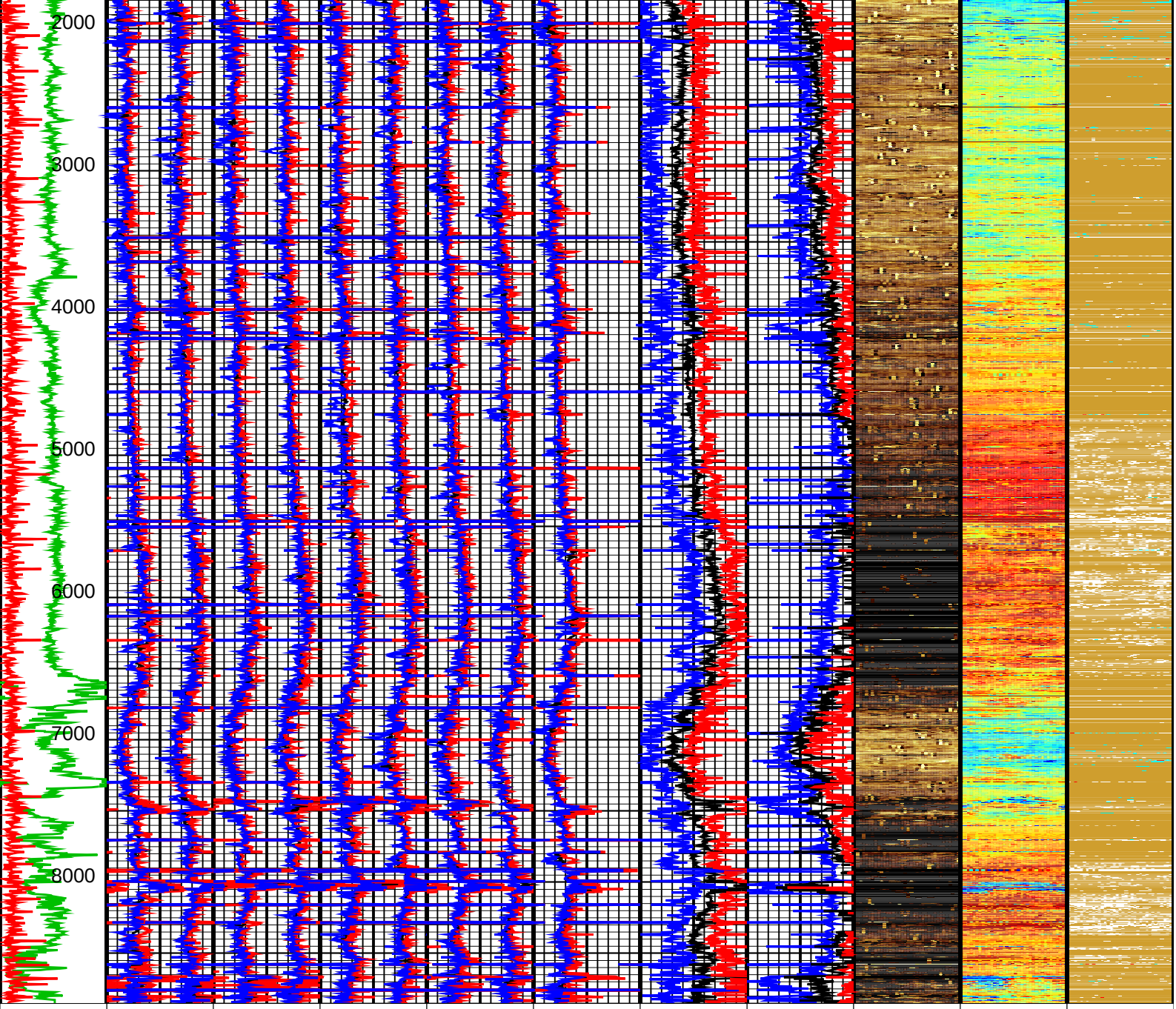
USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72

	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) 40 140			
Gamma Ray (GR) (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) 40 140			
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) 40 140	−500.0000 0.2500 0.5000 0.7500 1.0000 1.2500 1.5000 1.7500 2.0000 2.2500 2.5000 2.7500 3.0000 3.2500 3.5000 3.7500 4.0000 Raw Acoustic Imped. (AIBK) (MRAY)	0.0000 50.0000 57.0000 64.0000 71.0000 78.0000 85.0000 92.0000 99.0000 106.0000 113.0000 120.0000 127.0000 134.0000 141.0000 148.0000 155.0000 Flexural Attenuation (U−USIT_UFAK) (DB/M)	0.5000 1.5000 2.5000 3.5000 Solid Liquid Gas Map (U−USIT_USLP) (−−−−)





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) 40 140	−500.0000, 0.2500, 0.5000, 0.7500, 1.0000, 1.2500, 1.5000, 1.7500, 2.0000, 2.2500, 2.5000, 2.7500, 3.0000, 3.2500, 3.5000, 3.7500, 4.0000 Raw Acoustic Imped. (AIBK) (MRAY)	0.0000, 50.0000, 57.0000, 64.0000, 71.0000, 78.0000, 85.0000, 92.0000, 99.0000, 106.0000, 113.0000, 120.0000, 127.0000, 134.0000, 141.0000, 148.0000, 155.0000 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) (GAPI) 0 150	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) 0 7.5	Average Flexural Attenuation (U−USIT_UFAV) (DB/M)			

−7.5 7.5	−7.5 7.5	−7.5 7.5	−7.5 7.5	0 15		40 140	
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) 40 140	
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				
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				
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				

Format: IBC Goodwin Compressed Vertical Scale: 0.1" per 100' Graphics File Created: 18−Jul−2013 21:08

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Input DLIS Files

DEFAULT	Splice_USI_027CUP	FN:1	PRODUCER	18−Jul−2013 17:52	8851.0 FT	131.2 FT

Output DLIS Files

DEFAULT	USI_045PUP	FN:38	PRODUCER	18−Jul−2013 21:08

Schlumberger

Repeat Pass 2150−2200 Ft
5" = 100'

Company: Noble Energy Inc | Well: Vigilant State AC16−07

Input DLIS Files

DEFAULT	USI_024LUP	FN:23	PRODUCER	17−Jul−2013 15:15	2213.0 FT	2148.5 FT

Output DLIS Files

DEFAULT	USI_044PUP	FN:37	PRODUCER	18−Jul−2013 21:07	2214.0 FT	2149.5 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72

Tool/Tot. Drag From D4T to STIA

Cable Drag From D4T to STIT

Stuck Stretch (STIT)

0 (F) 50

Min of Internal radius (IRMN) (IN)

3.7 2.7

Min of Internal radius (IRMN) (IN)

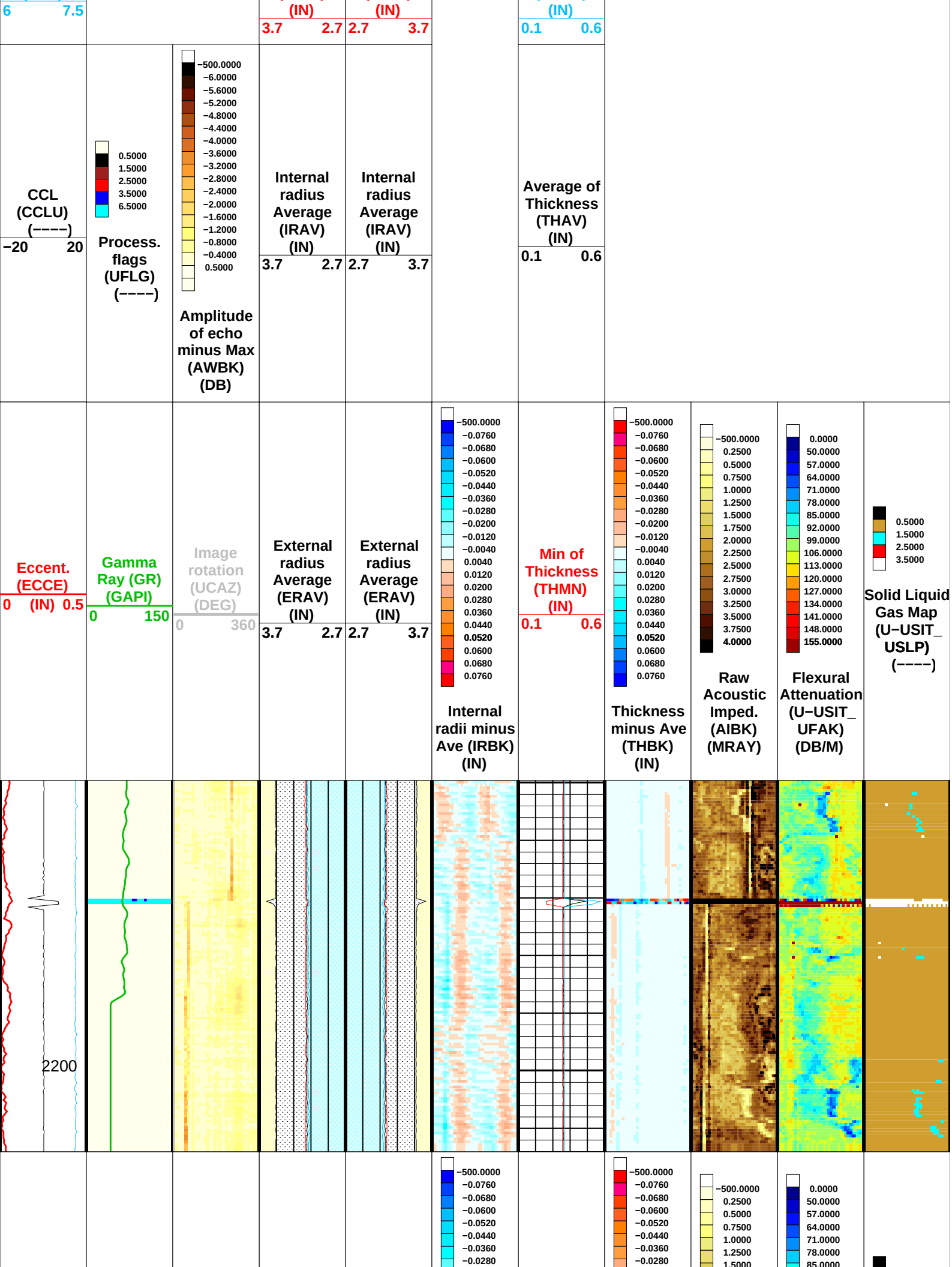
2.7 3.7

RSAV (RSAV) (RPS)

Internal radius Maximum (IRMX)

Internal radius Maximum (IRMX)

Maximum of Thickness (THMX)


6 7.5
(IN)
3.7 2.7
(IN)
2.7 3.7
(IN)
0.1 0.6
CCL (CCLU) (----)
−20 20
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)
Internal radius Average (IRAV) (IN)
3.7 2.7
Internal radius Average (IRAV) (IN)
2.7 3.7
Average of Thickness (THAV) (IN)
0.1 0.6
Eccent. (ECCE)
0 (IN) 0.5
Gamma Ray (GR) (GAPI)
0 150
Image rotation (UCAZ) (DEG)
0 360
External radius Average (ERAV) (IN)
3.7 2.7
External radius Average (ERAV) (IN)
2.7 3.7
−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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_ USLP) (----)
2200

Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

−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

−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)

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)

92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

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

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)

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

RSAV (RSAV) (RPS)
6 7.5

Internal radius Maximum (IRMX) (IN)
3.7 2.7

Internal radius Maximum (IRMX) (IN)
2.7 3.7

Maximum of Thickness (THMX) (IN)
0.1 0.6

Stuck Stretch (STIT)
0 (F) 50

Min of Internal radius (IRMN) (IN)
3.7 2.7

Min of Internal radius (IRMN) (IN)
2.7 3.7

Cable Drag From D4T to STIT

Tool/Tot. Drag From D4T to STIA

Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18−Jul−2013 21:07

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT−E: Ultrasonic Imaging − E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY

ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_024LUP	FN:23	PRODUCER	17−Jul−2013 15:15	2213.0 FT	2148.5 FT

Output DLIS Files

DEFAULT	USI_044PUP	FN:37	PRODUCER	18−Jul−2013 21:07

Schlumberger

Repeat Pass 3750−3800 Ft
5" = 100’

MAXIS Field Log

Company: Noble Energy Inc | Well: Vigilant State AC16−07

Input DLIS Files

DEFAULT	USI_023LUP	FN:22	PRODUCER	17−Jul−2013 15:15	3810.5 FT	3749.5 FT

Output DLIS Files

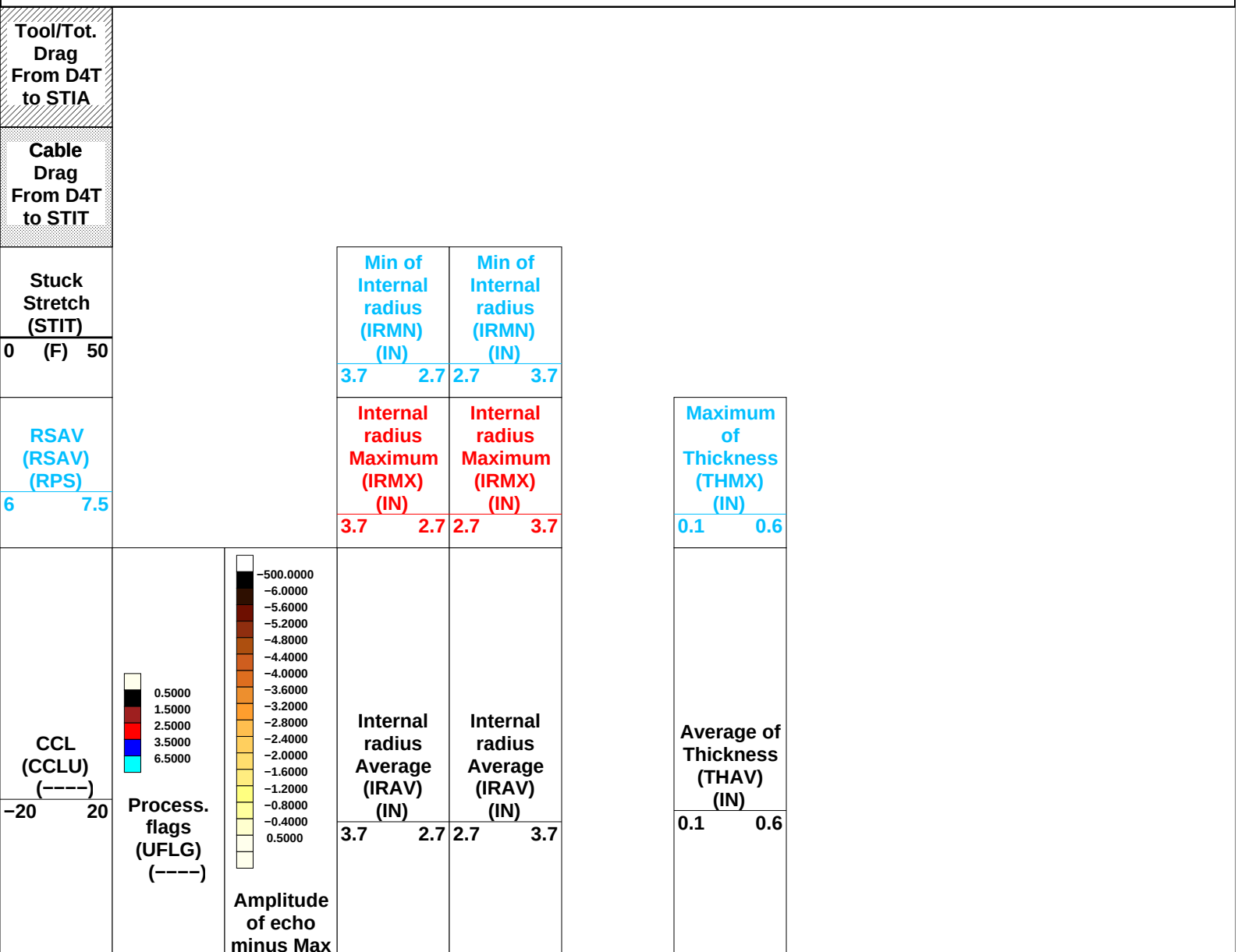
DEFAULT	USI_043PUP	FN:36	PRODUCER	18−Jul−2013 21:06	3811.5 FT	3750.5 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72



(AWBK)
(DB)

Eccent. (ECCE) 0 (IN) 0.5

Gamma Ray (GR) (GAPI) 0 150

Image rotation (UCAZ) (DEG) 0 360

External radius Average (ERAV) (IN) 3.7 2.7

External radius Average (ERAV) (IN) 2.7 3.7

−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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

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

0.5000
1.5000
2.5000
3.5000

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

3800

Eccent. (ECCE) 0 (IN) 0.5

Gamma Ray (GR) (GAPI) 0 150

Image rotation (UCAZ) (DEG) 0 360

External radius Average (ERAV) (IN) 3.7 2.7

External radius Average (ERAV) (IN) 2.7 3.7

−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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

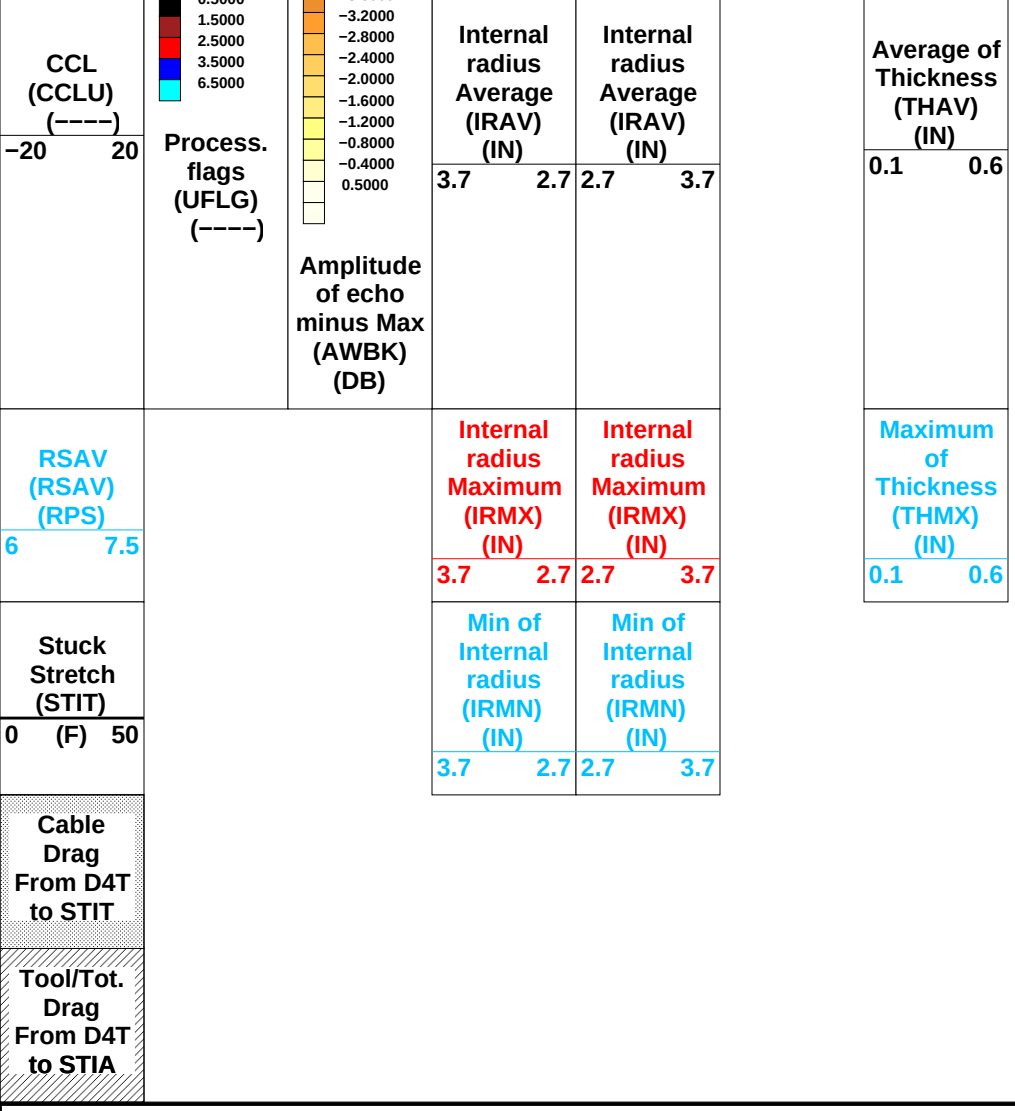
Flexural Attenuation (U−USIT_ UFAK) (DB/M)

0.5000
1.5000
2.5000
3.5000

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

0.5000
1.5000
2.5000
3.5000

−500.0000
−6.0000
−5.6000
−5.2000
−4.8000
−4.4000
−4.0000
−3.6000



Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18-Jul-2013 21:06

OP System Version: 19C0-187

USIT-E	19C0-187	SGT-N	19C0-187
DTC-H	19C0-187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT-E: Ultrasonic Imaging - E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	-0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI

DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN

CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_023LUP	FN:22	PRODUCER	17−Jul−2013 15:15	3810.5 FT	3749.5 FT

Output DLIS Files

DEFAULT	USI_043PUP	FN:36	PRODUCER	18−Jul−2013 21:06

Schlumberger

Repeat Pass 4400−4460 Ft
5" = 100’

MAXIS Field Log

Company: Noble Energy Inc

Well: Vigilant State AC16−07

Input DLIS Files

DEFAULT	USI_022LUP	FN:21	PRODUCER	17−Jul−2013 15:15	4461.0 FT	4397.5 FT

Output DLIS Files

DEFAULT	USI_042PUP	FN:35	PRODUCER	18−Jul−2013 21:05	4462.0 FT	4398.5 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72

956.00 208.00 1.72

Tool/Tot. Drag From D4T to STIA

Cable Drag From D4T to STIT

Stuck Stretch (STIT)
0 (F) 50

Min of Internal radius (IRMN) (IN)
3.7 2.7

Min of Internal radius (IRMN) (IN)
2.7 3.7

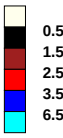
RSAV (RSAV) (RPS)
6 7.5

Internal radius Maximum (IRMX) (IN)
3.7 2.7

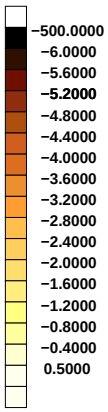
Internal radius Maximum (IRMX) (IN)
2.7 3.7

Maximum of Thickness (THMX) (IN)
0.1 0.6

CCL (CCLU) (----)
−20 20



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



Amplitude of echo minus Max (AWBK) (DB)

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

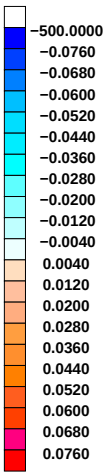
Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

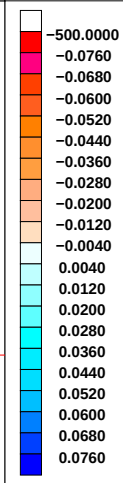
External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

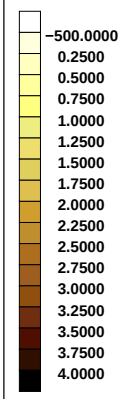


Internal radii minus

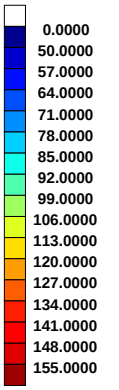
Min of Thickness (THMN) (IN)
0.1 0.6



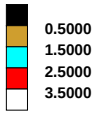
Thickness minus Ave



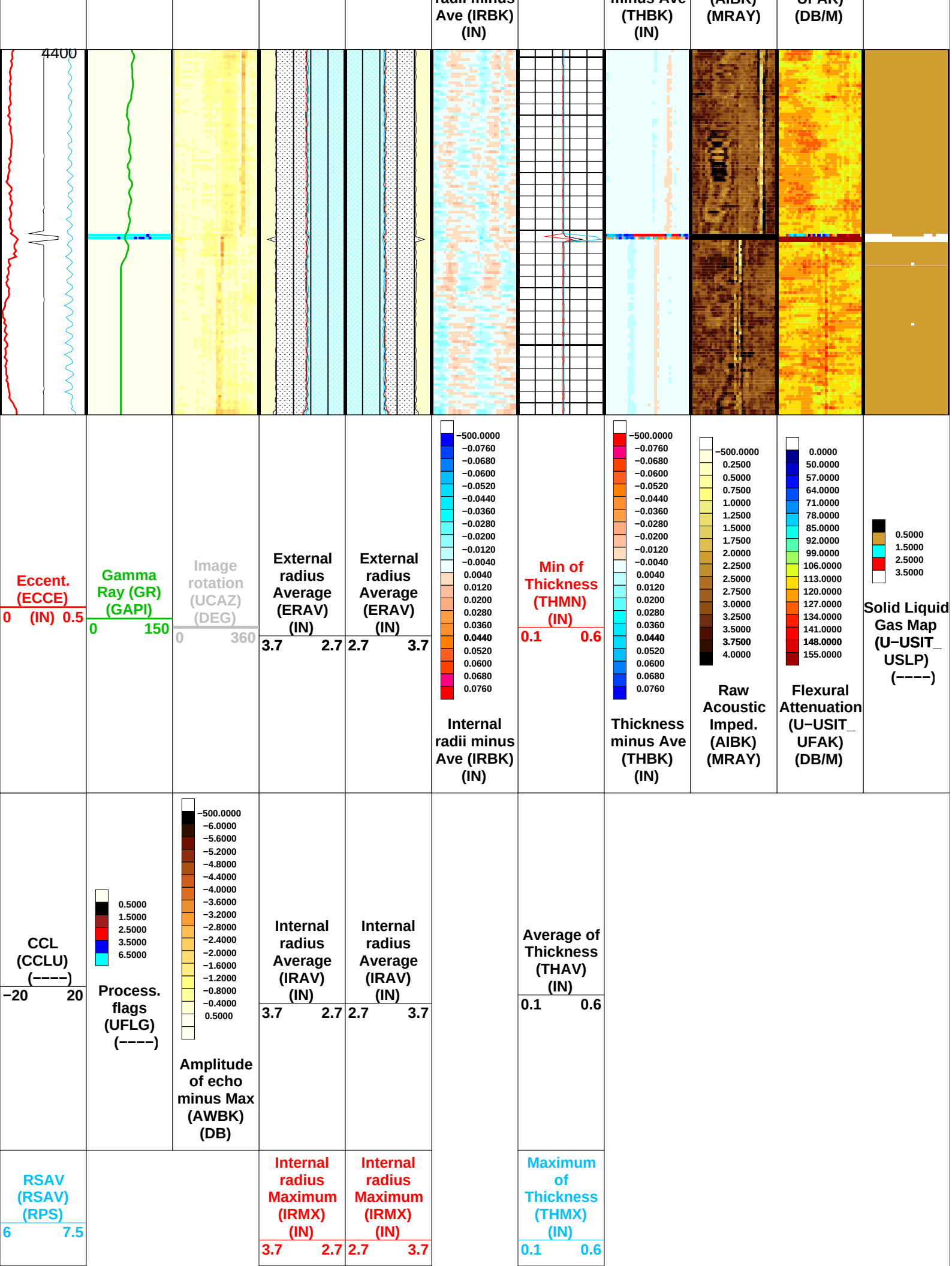
Raw Acoustic Imped. (AIBK)



Flexural Attenuation (U−USIT_ UFAK)



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


4400
Eccent. (ECCE)
0 (IN) 0.5
Gamma Ray (GR) (GAPI)
0 150
Image rotation (UCAZ) (DEG)
0 360
External radius Average (ERAV) (IN)
3.7 2.7
External radius Average (ERAV) (IN)
2.7 3.7
−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
Thickness minus Ave (THBK) (IN)
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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_ USLP) (−−−−)
CCL (CCLU) (−−−−)
−20 20
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)
Internal radius Average (IRAV) (IN)
3.7 2.7
Internal radius Average (IRAV) (IN)
2.7 3.7
Average of Thickness (THAV) (IN)
0.1 0.6
RSAV (RSAV) (RPS)
6 7.5
Internal radius Maximum (IRMX) (IN)
3.7 2.7
Internal radius Maximum (IRMX) (IN)
2.7 3.7
Maximum of Thickness (THMX) (IN)
0.1 0.6

Stuck Stretch (STIT)
0 (F) 50

Cable Drag From D4T to STIT

Tool/Tot. Drag From D4T to STIA

Min of Internal radius (IRMN) (IN)		Min of Internal radius (IRMN) (IN)	
3.7	2.7	2.7	3.7

Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18−Jul−2013 21:05

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT−E: Ultrasonic Imaging − E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_022LUP	FN:21	PRODUCER	17−Jul−2013 15:15	4461.0 FT	4397.5 FT

Output DLIS Files

DEFAULT	USI_042PUP	FN:35	PRODUCER	18−Jul−2013 21:05

Schlumberger

Repeat Pass 7700−7750 Ft
5" = 100’

MAXIS Field Log

Company: Noble Energy Inc **Well: Vigilant State AC16−07**

Input DLIS Files

DEFAULT	USI_020LUP	FN:19	PRODUCER	17−Jul−2013 15:14	7761.0 FT	7691.6 FT

Output DLIS Files

DEFAULT	USI_041PUP	FN:34	PRODUCER	18−Jul−2013 21:04	7762.0 FT	7693.0 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72

Tool/Tot. Drag From D4T to STIA

Cable Drag From D4T to STIT

Min of | Min of

Stuck Stretch (STIT)
0 (F) 50

Min of Internal radius (IRMN) (IN)
3.7 2.7

Min of Internal radius (IRMN) (IN)
2.7 3.7

RSAV (RSAV) (RPS)
6 7.5

Internal radius Maximum (IRMX) (IN)
3.7 2.7

Internal radius Maximum (IRMX) (IN)
2.7 3.7

Maximum of Thickness (THMX) (IN)
0.1 0.6

CCL (CCLU) (----)
−20 20

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

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
−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

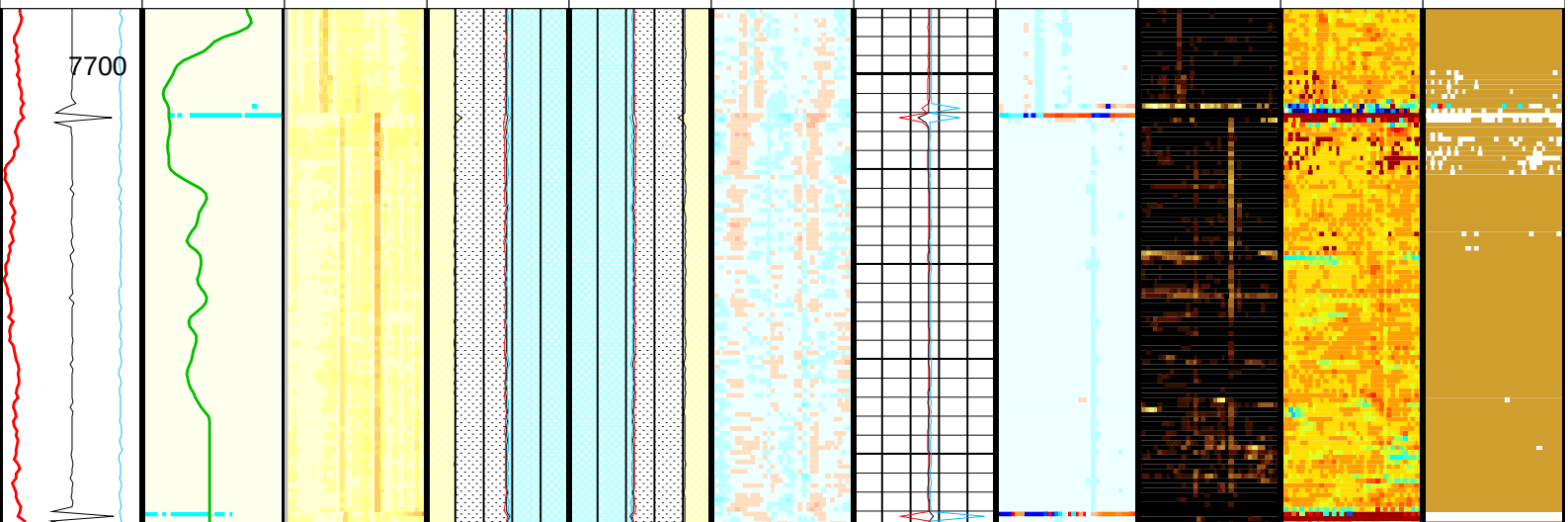
Min of Thickness (THMN) (IN)
0.1 0.6

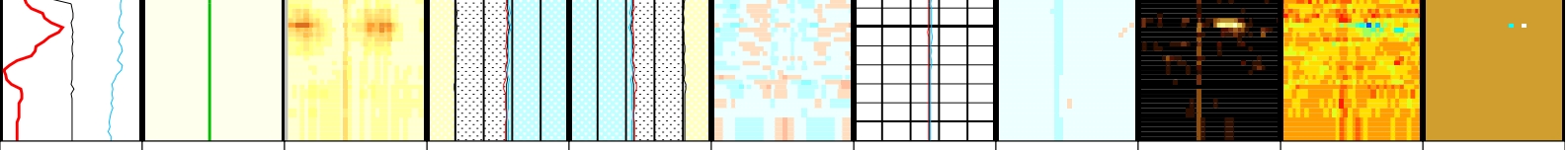
Thickness minus Ave (THBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

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

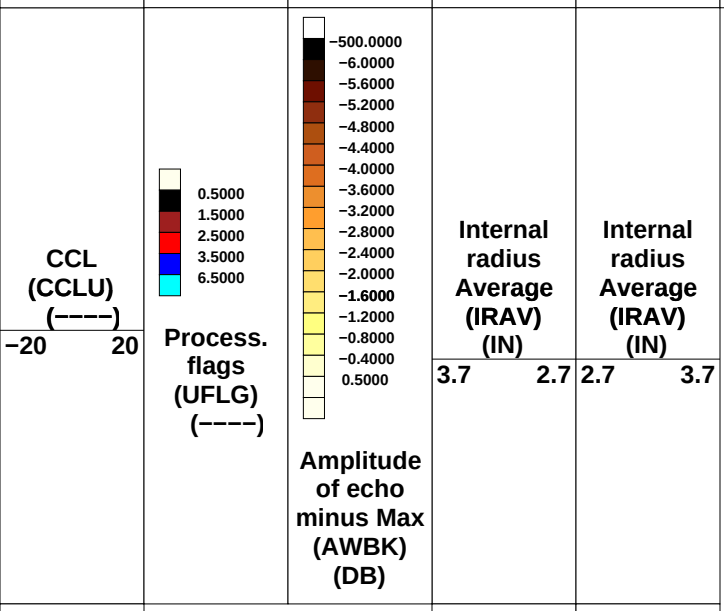
Flexural Attenuation (U−USIT_UFAK) (DB/M)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

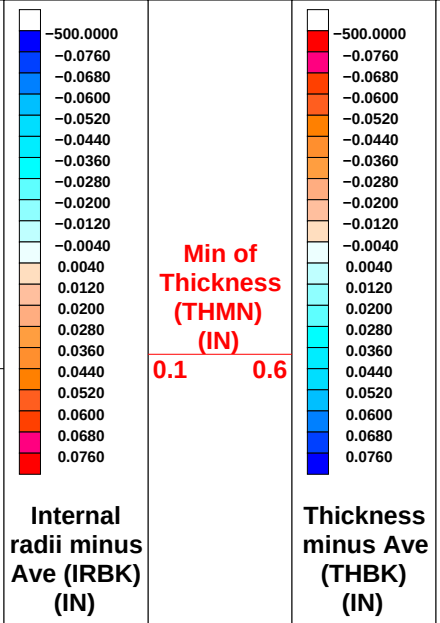
Solid Liquid Gas Map (U−USIT_USLP) (----)
0.5000
1.5000
2.5000
3.5000

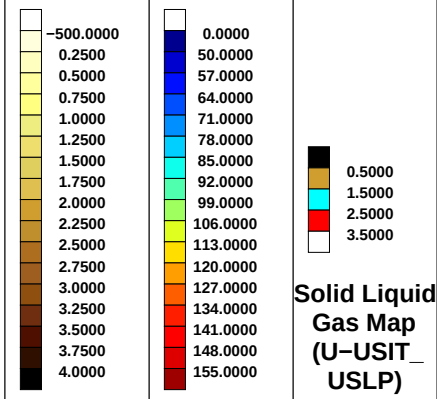




Eccent. (ECCE) 0 (IN) 0.5	Gamma Ray (GR) (GAPI) 0 150	Image rotation (UCAZ) (DEG) 0 360	External radius Average (ERAV) (IN) 3.7 2.7	External radius Average (ERAV) (IN) 2.7 3.7	Internal radii minus Ave (IRBK) (IN)	Min of Thickness (THMN) (IN) 0.1 0.6	Thickness minus Ave (THBK) (IN)	Raw Acoustic Imped. (AIBK) (MRAY)	Flexural Attenuation (U−USIT_ UFAK) (DB/M)	Solid Liquid Gas Map (U−USIT_ USLP) (−−−−)
CCL (CCLU) (−−−−) −20 20	Process. flags (UFLG) (−−−−)	Amplitude of echo minus Max (AWBK) (DB)	Internal radius Average (IRAV) (IN) 3.7 2.7	Internal radius Average (IRAV) (IN) 2.7 3.7		Average of Thickness (THAV) (IN) 0.1 0.6				
RSAV (RSAV) (RPS) 6 7.5			Internal radius Maximum (IRMX) (IN) 3.7 2.7	Internal radius Maximum (IRMX) (IN) 2.7 3.7		Maximum of Thickness (THMX) (IN) 0.1 0.6				
Stuck Stretch (STIT) 0 (F) 50			Min of Internal radius (IRMN) (IN) 3.7 2.7	Min of Internal radius (IRMN) (IN) 2.7 3.7						
Cable Drag From D4T to STIT										
Tool/Tot. Drag From D4T to STIA										







Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18−Jul−2013 21:05

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT−E: Ultrasonic Imaging − E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UPTP	USIT Radial Transducer Position	UNKNOWN	

U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_020LUP	FN:19	PRODUCER	17−Jul−2013 15:14	7761.0 FT	7691.6 FT

Output DLIS Files

DEFAULT	USI_041PUP	FN:34	PRODUCER	18−Jul−2013 21:04

Schlumberger

Repeat Pass 7900−7930 Ft
5" = 100’

MAXIS Field Log

Company: Noble Energy Inc | Well: Vigilant State AC16−07

Input DLIS Files

DEFAULT	USI_019LUP	FN:18	PRODUCER	17−Jul−2013 15:14	7929.0 FT	7869.0 FT

Output DLIS Files

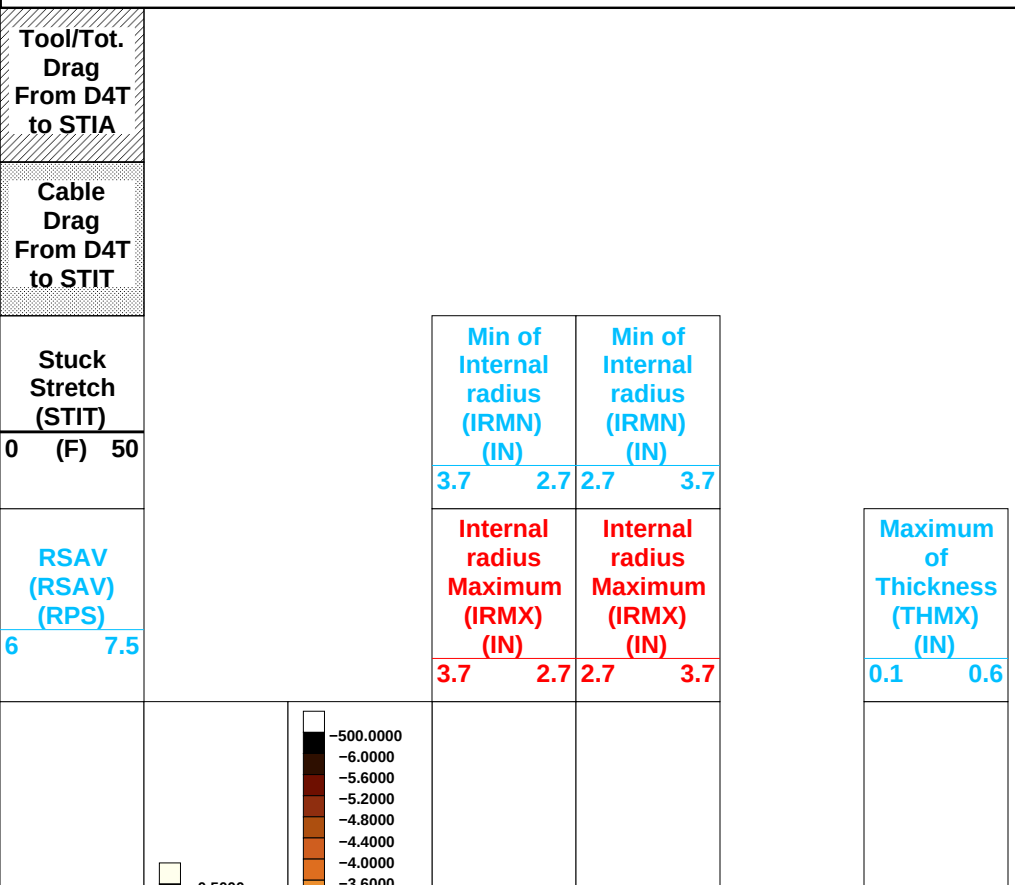
DEFAULT	USI_040PUP	FN:33	PRODUCER	18−Jul−2013 21:03	7930.0 FT	7870.0 FT

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75
7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72



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

Process. flags (UFLG) (----)
0.5000
1.5000
2.5000
3.5000
6.5000

Amplitude of echo minus Max (AWBK) (DB)
-3.2000
-2.8000
-2.4000
-2.0000
-1.6000
-1.2000
-0.8000
-0.4000
0.5000

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
-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

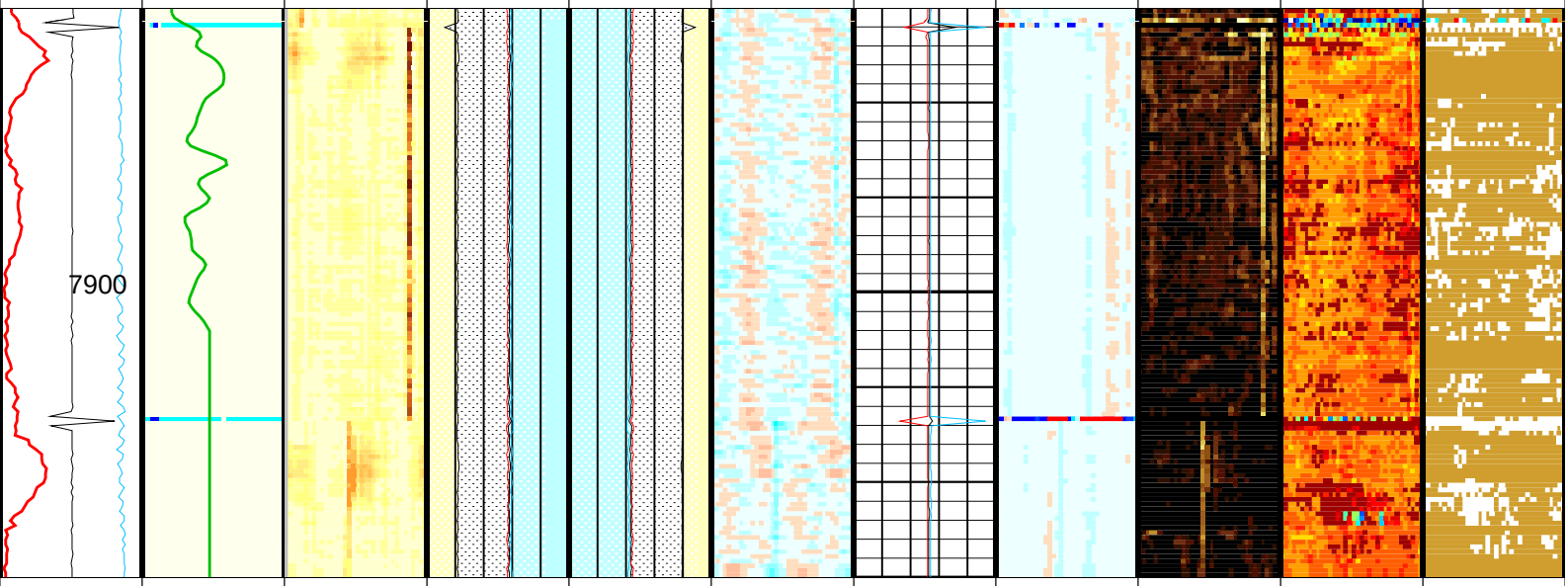
Min of Thickness (THMN) (IN)
0.1 0.6

Thickness minus Ave (THBK) (IN)
-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

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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

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



Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

-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

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

-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

0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

0.5000
1.5000
2.5000
3.5000

Raw Acoustic

					Internal radii minus Ave (IRBK) (IN)		Thickness minus Ave (THBK) (IN)	Acoustic Imped. (AIBK) (MRAY)	Attenuation (U−USIT_ UFAK) (DB/M)	
CCL (CCLU) (−−−−) −20 20	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)	Internal radius Average (IRAV) (IN) 3.7 2.7	Internal radius Average (IRAV) (IN) 2.7 3.7		Average of Thickness (THAV) (IN) 0.1 0.6				
RSAV (RSAV) (RPS) 6 7.5			Internal radius Maximum (IRMX) (IN) 3.7 2.7	Internal radius Maximum (IRMX) (IN) 2.7 3.7		Maximum of Thickness (THMX) (IN) 0.1 0.6				
Stuck Stretch (STIT) 0 (F) 50			Min of Internal radius (IRMN) (IN) 3.7 2.7	Min of Internal radius (IRMN) (IN) 2.7 3.7						
Cable Drag From D4T to STIT										
Tool/Tot. Drag From D4T to STIA										

Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18−Jul−2013 21:03

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value

USIT−E: Ultrasonic Imaging − E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_019LUP	FN:18	PRODUCER	17−Jul−2013 15:14	7929.0 FT	7869.0 FT

Output DLIS Files

DEFAULT	USI_040PUP	FN:33	PRODUCER	18−Jul−2013 21:03

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No Pressure Repeat
5" = 100'

MAXIS Field Log

Company: Noble Energy Inc — Well: Vigilant State AC16−07

Input DLIS Files

DEFAULT	USI_010LUP	FN:9	PRODUCER	17−Jul−2013 15:14	8844.5 FT	8563.5 FT

Output DLIS Files

DEFAULT	USI_039PUP	FN:32	PRODUCER	18−Jul−2013 21:00

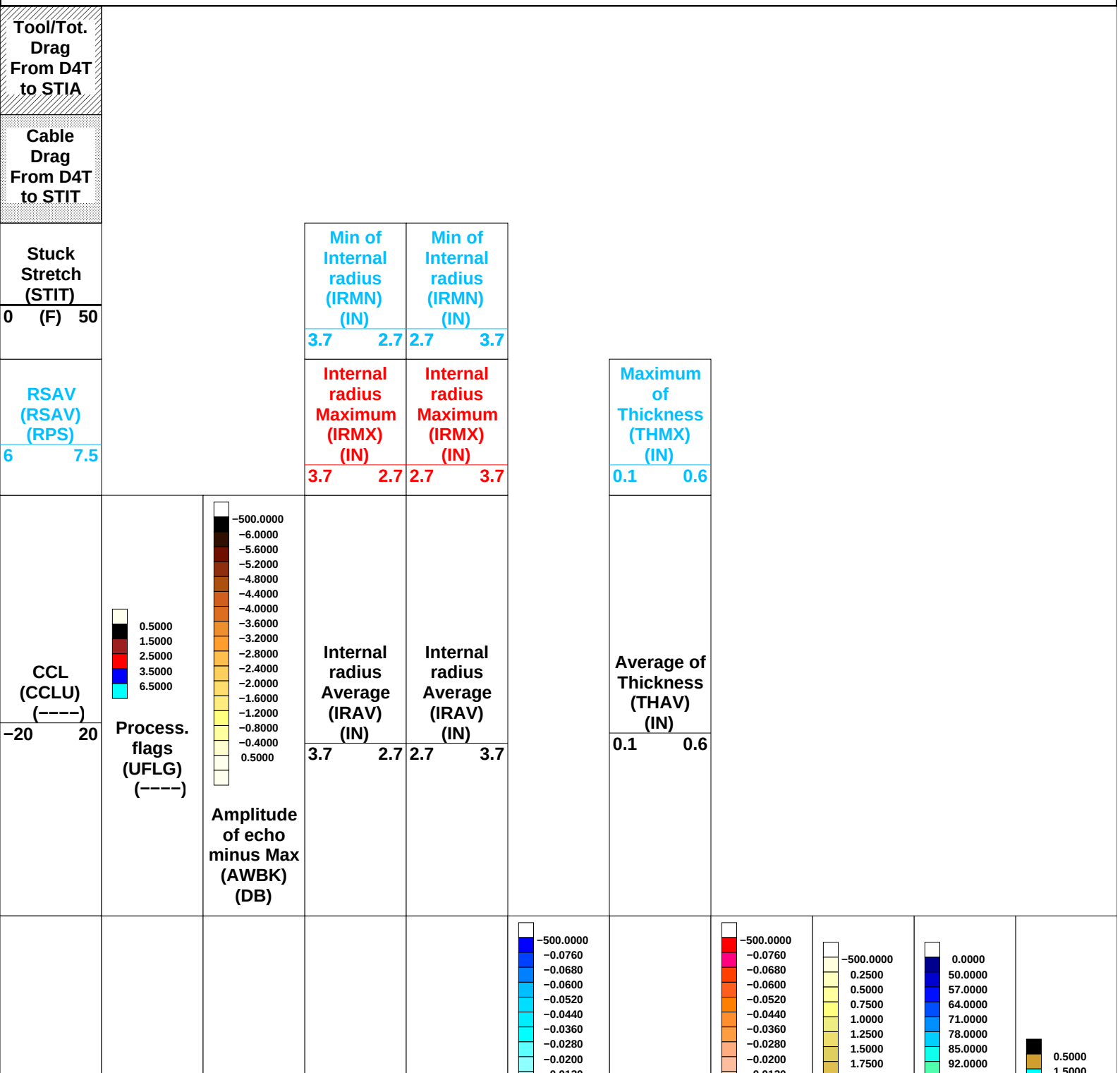
OP System Version: 19C0−187

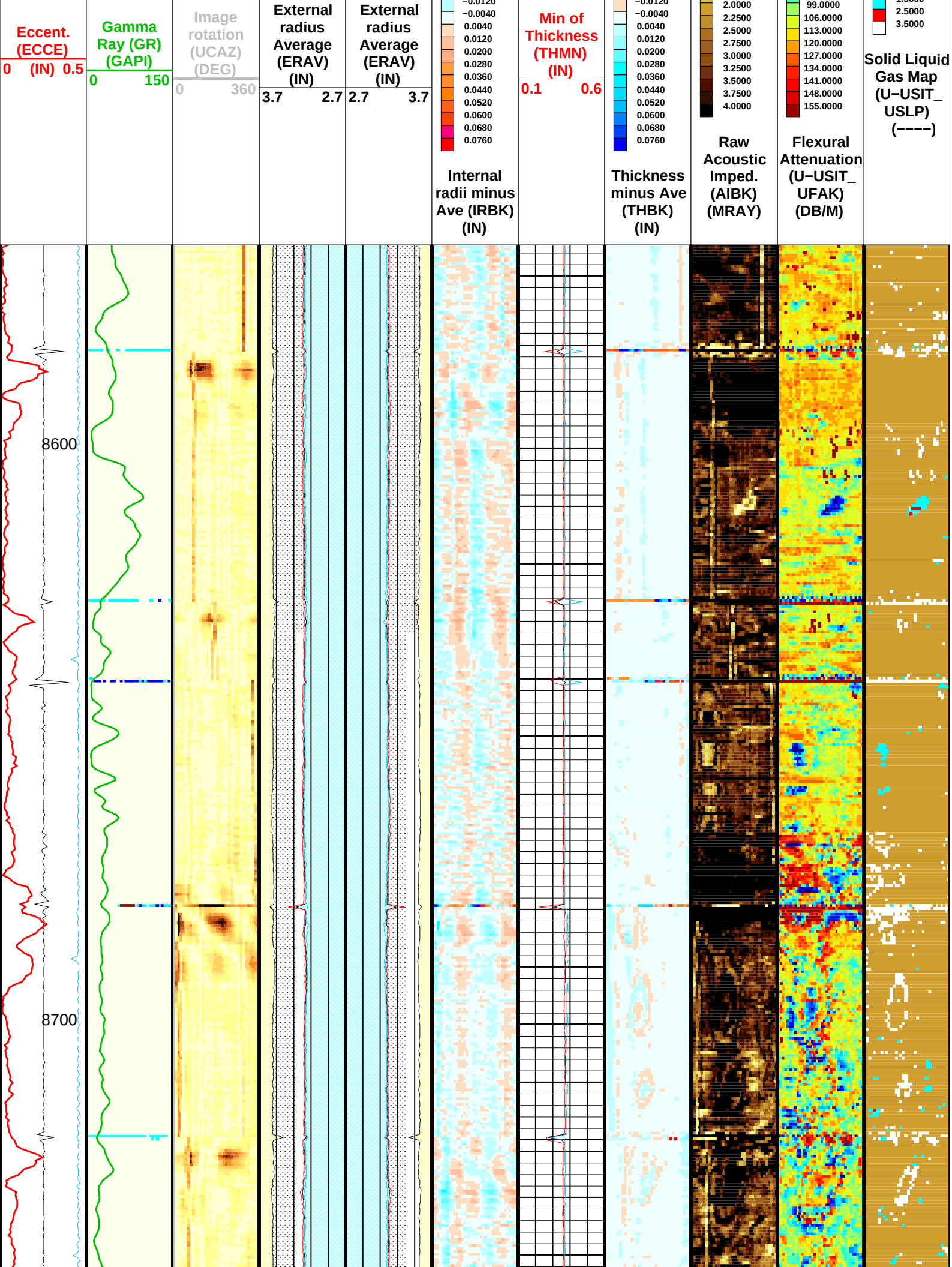
USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

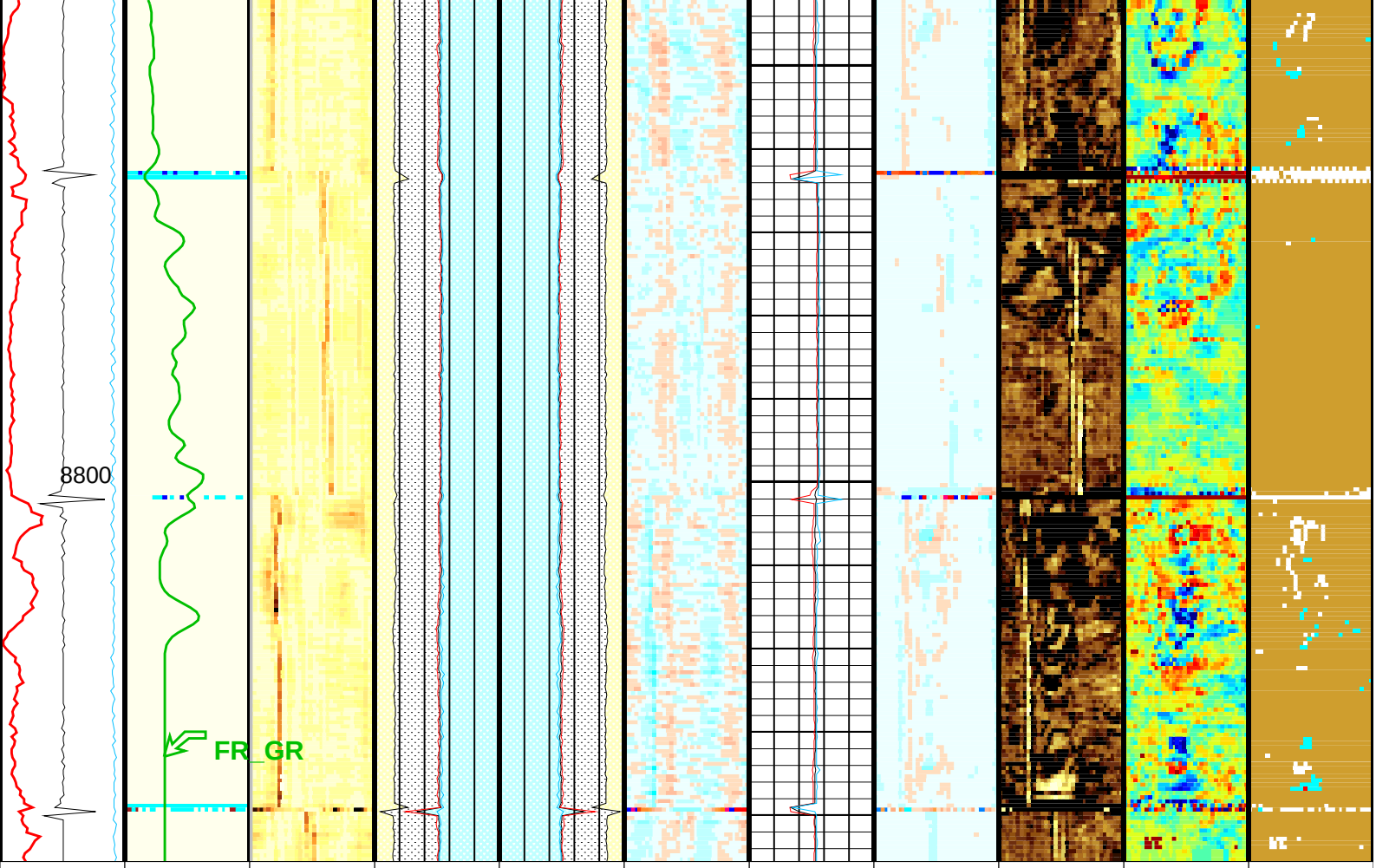
Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
9000.00	202.00	1.75

7789.00	200.00	1.75
4090.00	201.00	1.75
3930.00	202.00	1.75
3470.00	204.00	1.74
2252.00	205.00	1.73
1622.00	207.00	1.72
956.00	208.00	1.72




Eccent. (ECCE)
0 (IN) 0.5
Gamma Ray (GR) (GAPI)
0 150
Image rotation (UCAZ) (DEG)
0 360
External radius Average (ERAV) (IN)
3.7 2.7
External radius Average (ERAV) (IN)
2.7 3.7
−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
Thickness minus Ave (THBK) (IN)
2.0000
2.2500
2.5000
2.7500
3.0000
3.2500
3.5000
3.7500
4.0000
Raw Acoustic Imped. (AIBK) (MRAY)
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
Flexural Attenuation (U−USIT_ UFAK) (DB/M)
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_ USLP) (−−−−)
8600
8700



Eccent. (ECCE)
0 (IN) 0.5

Gamma Ray (GR) (GAPI)
0 150

Image rotation (UCAZ) (DEG)
0 360

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
−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

Min of Thickness (THMN) (IN)
0.1 0.6

Thickness minus Ave (THBK) (IN)
−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

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
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

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

CCL (CCLU) (−−−−)
−20 20

Process. flags (UFLG) (−−−−)
0.5000
1.5000
2.5000
3.5000
6.5000

Amplitude of echo
−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

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

		minus Max (AWBK) (DB)			
RSAV (RSAV) (RPS) 6 7.5			Internal radius Maximum (IRMX) (IN) 3.7 2.7	Internal radius Maximum (IRMX) (IN) 2.7 3.7	Maximum of Thickness (THMX) (IN) 0.1 0.6
Stuck Stretch (STIT) 0 (F) 50			Min of Internal radius (IRMN) (IN) 3.7 2.7	Min of Internal radius (IRMN) (IN) 2.7 3.7	
Cable Drag From D4T to STIT					
Tool/Tot. Drag From D4T to STIA					

Format: 5 inch IBC CEMENT COMPOSITE Vertical Scale: 5" per 100' Graphics File Created: 18−Jul−2013 21:00

OP System Version: 19C0−187

USIT−E	19C0−187	SGT−N	19C0−187
DTC−H	19C0−187		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

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

Parameters

DLIS Name	Description	Value	
USIT−E: Ultrasonic Imaging − E			
	Corrosion range maximum	0.076	IN
	T^3 Processing Length for FPM	26.648	US
	Corrosion range minimum	−0.076	IN
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
CDUN	Curves Unit Declared in Presentation Manager	IN	
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
CYST	Casing Yield Strength	0	PSI
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	50	V
FDII	FPM Data Interpolation Interval	0	FT
FSOD	Fluid Slowness Fits Casing Outer Diameter	0_OFF	
IMAR	Image Rotation	OFF	
MW	Mud Weight	8.4	LB/G
OPLEV	USIT Remove Flagged Data Level	level2	
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	

SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro−debonding	0.5	
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro−debonding	0.3	
SUBT	Ultrasonic Subassembly Type	Sub_7_inch_S	
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
TMUC	Type of Mud	BRINE	
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_RFWB	USIT Remove Flagged Data Window Begin	0	US
U−USIT_RFWE	USIT Remove Flagged Data Window End	511	US
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_UDFC	USIT Deflector for Casing	NONE	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−1	DB/M
U−USIT_UFGA	Far Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UFGI	Far Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_UHCI	USIT IBC Hydraulic Communication Interval	06FT_02M	
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UNGA	Near Receiver Maximum Gain of Cartridge	48	DB
U−USIT_UNGI	Near Receiver Minimum Gain of Cartridge	−12	DB
U−USIT_URTP	USIT Radial Transducer Position	UNKNOWN	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	18	DEG
UPAT	Emission Pattern	Pattern_375K	
USIT_USAC_TASK_ALLOW	USIT USAC Allow Task after Power Up	YES	
USIT_USAC_TASK_TIMEOUT	USIT USAC Task Timeout (in seconds) FOR TEST REPORT	600	
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	10DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.5	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SGT−N: Scintillation Gamma Ray Tool − N			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	195	DEGF
DPPM	Density Porosity Processing Mode	STAN	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
SHT	Surface Hole Temperature	68	DEGF
SOGR	SGT Standoff Distance	0	IN
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	8881.00	FT
TDL	Total Depth − Logger	8860.00	FT
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	7.000	IN
CWEI	Casing Weight	26.00	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	1.0	FT
FLEV	Fluid Level	0.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	−50000	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Input DLIS Files

DEFAULT	USI_010LUP	FN:9	PRODUCER	17−Jul−2013 15:14	8844.5 FT	8563.5 FT

Output DLIS Files

DEFAULT	USI_039PUP	FN:32	PRODUCER	18−Jul−2013 21:00

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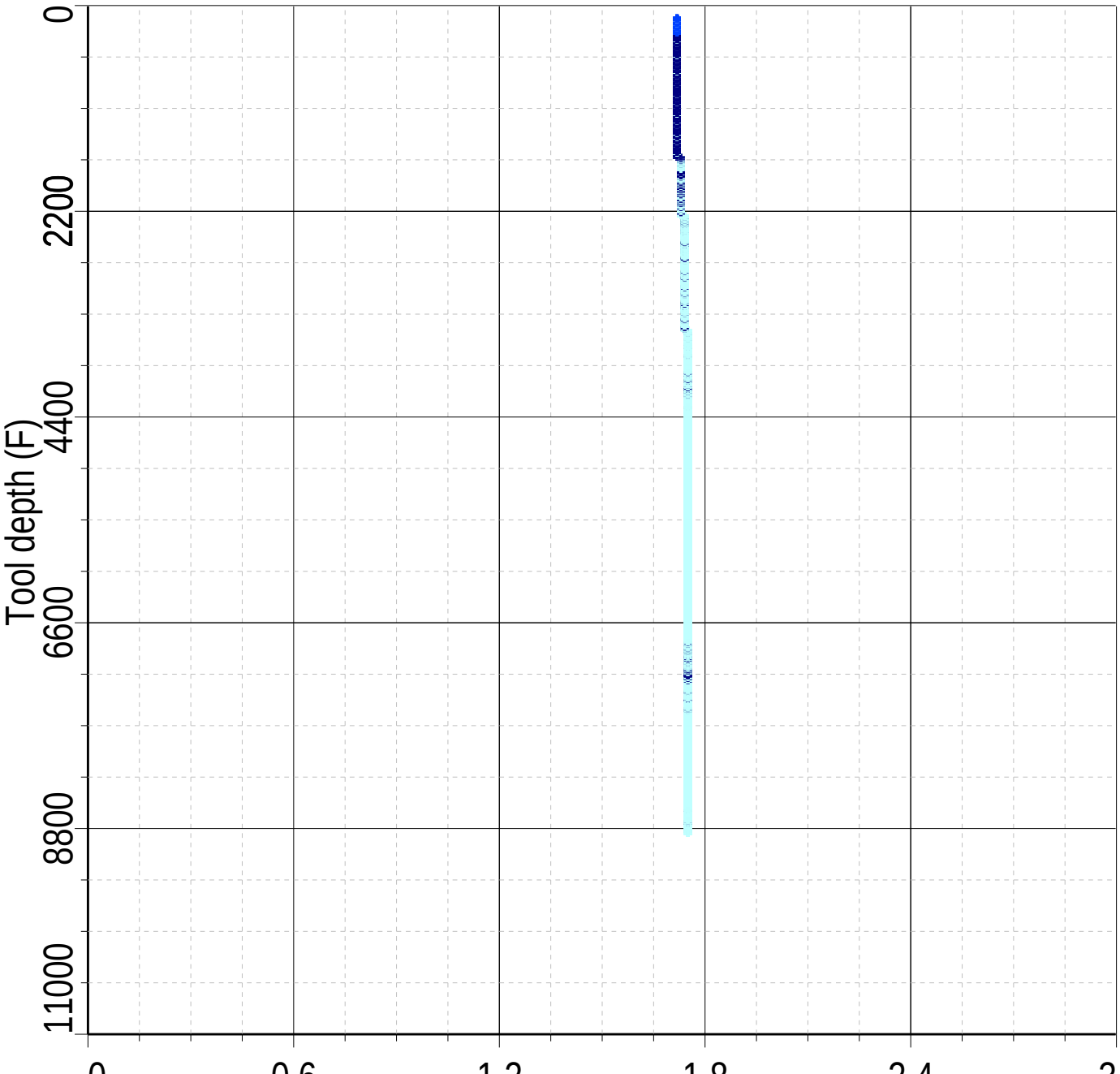
Fluid Properties

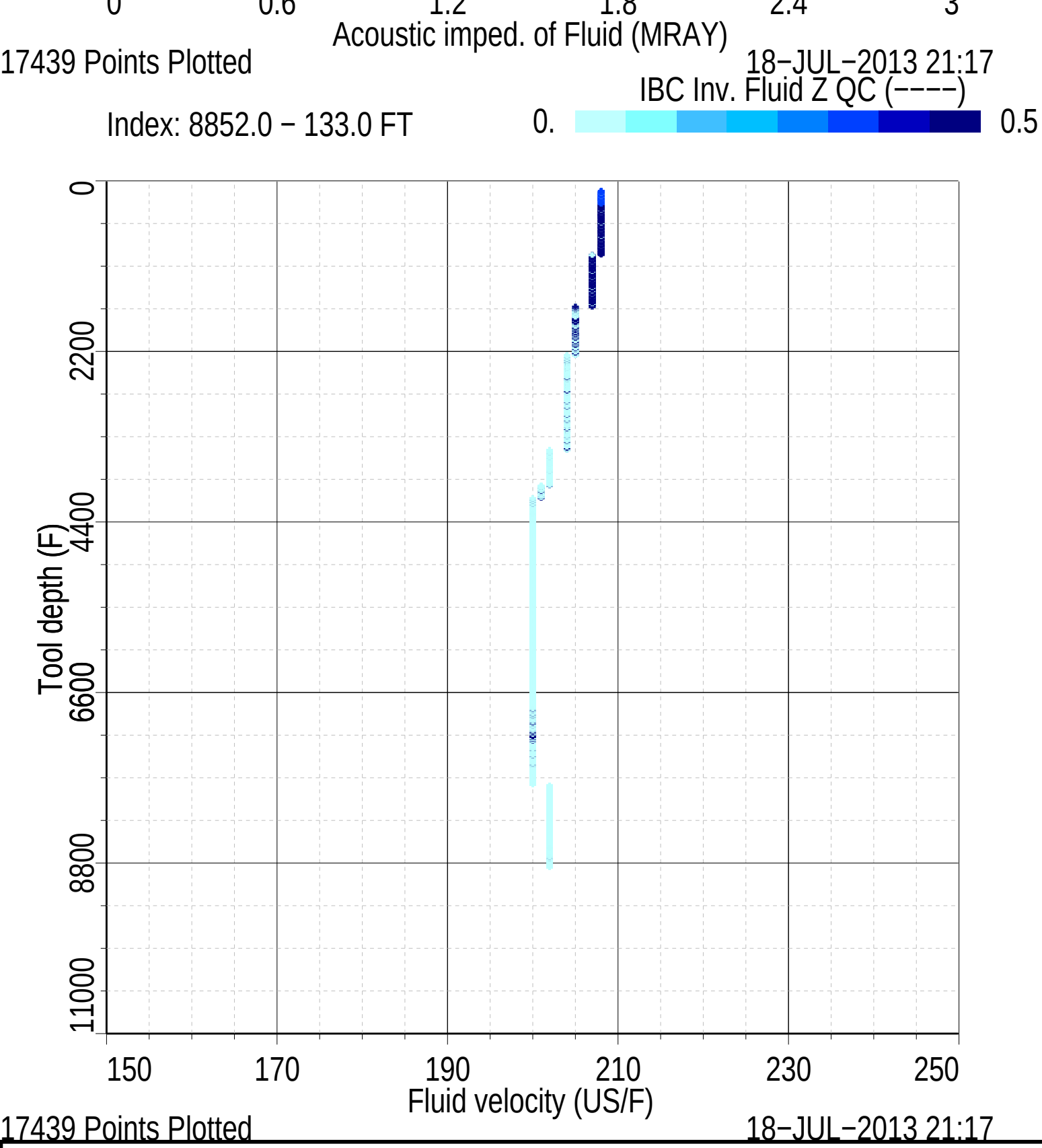
MAXIS Field Log

Index: 8852.0 − 133.0 FT

IBC Inv. Fluid Z QC (−−−−)

0. 0.5





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Calibrations

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Ultrasonic Imaging − E Wellsite Calibration − IBC CSL: Far versus Near Gain Offset							
Before: Calibration not done							
Near Waveform for azimuth 001	0	N/A	0	N/A	N/A	N/A	DB/M
Scintillation Gamma Ray Tool − N Wellsite Calibration − Detector Calibration							
Before: 16−Jul−2013 20:52							
Gamma Ray (Jig − Bkg)	158.0	N/A	158.0	N/A	N/A	14.37	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Ultrasonic Imaging − E / Equipment Identification

Primary Equipment:		
IBC 7 Inch Sub	IBCS − 100	
Ultrasonic Transducer	Bott −	
Ultrasonic Transducer	Midd −	
Ultrasonic Transducer	Midd −	
Ultrasonic Transducer	Top −	
USIT sonde	USIS − A	2797
USIT Sonde Cartridge For 4 Transducers	USSC − B	
USAC Acquisition Cartridge DTS/FTB	USAC − A	992
Auxiliary Equipment:		
USAC Housing/cartridge	ECH − MFA	1964

Ultrasonic Imaging − E Wellsite Calibration

IBC CSL: Far versus Near Gain Offset

Phase	Near Waveform for azimuth 001 DB/M	Value
Before		0

−200.0 (Minimum) 0 (Nominal) 200.0 (Maximum)

Before: Calibration not done

Scintillation Gamma Ray Tool − N / Equipment Identification

Primary Equipment:		
Scintillation Gamma Cartridge	SGC − TB	6249
Scintillation Gamma Detector	SGD − TAB	21700
Auxiliary Equipment:		
Scintillation Gamma Housing	SGH − K	3039
Gamma Source Radioactive	GSR − U/Y	

Scintillation Gamma Ray Tool − N Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		69.96	Before		158.0	Before		165.0
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	143.7 (Minimum)	158.0 (Nominal)	172.4 (Maximum)	150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: 16−Jul−2013 20:52

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC−H Auxiliary Cartridge	DTCH − A	
DTC−H Telemetry Cartridge	DTCH − A	
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH − KC	9562

Company:	**Noble Energy Inc**
Well:	**Vigilant State AC16−07**
Field:	**Wattenberg**
County:	**Weld**
State:	**Colorado**

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Isolation Scanner
Cement Evaluation