

Company: Kerr McGee Oil &amp; Gas Onshore LP

Well: Butterball 16C-10HZ

Field: Wattenberg

County: Weld State: Colorado

## Ultrasonic Imager

## Cement Evaluation

## Gamma Ray - CCL Log

County: Weld  
Field: Wattenberg  
Location: NWNE Sec. 10 T2 R67W  
Well: Butterball 16C-10HZ  
Company: Kerr McGee Oil & Gas Onshore LP

Location:		NWNE Sec. 10 T2 R67W	Elev.:	K.B.	4938.00 ft
		SHL: 657' FNL & 1489' FEL			
		Lat/Long: 40.158063/-104.872460			
Permanent Datum:		<u>Ground Level</u>	Elev.:	<u>4922.00 f</u>	
Log Measured From:		<u>Kelly Bushing</u>	16.00 ft	above Perm.Datum	
Drilling Measured From:		Kelly Bushing			
API Serial No.	Section:	Township:	Range:		
05-123-40989	10	2N	67W		

Logging Date 06-May-2015

Run Number ONE

Depth Driller 13193.00 ft

Schlumberger Depth 7910.00 ft

Bottom Log Interval 7910.00 ft

Top Log Interval 20.00 ft

Casing Fluid Type Water

Salinity

Density 10 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 7.88 in

From 1149.00 ft

To 7910.00 ft

Casing/Tubing Size 5.5 in

Weight 17 lbm/ft

Grade N/A

From 0.00 ft

To 13193.00 ft

Max Recorded Temperatures 220.93 degF

Logger on Bottom 07-May-2015 08:15:00

Unit Number 3022 Location: Fort Morgan, CO

Recorded By Evan Meadows / Peter Brookens

Witnessed By Van Franke

## Disclaimer

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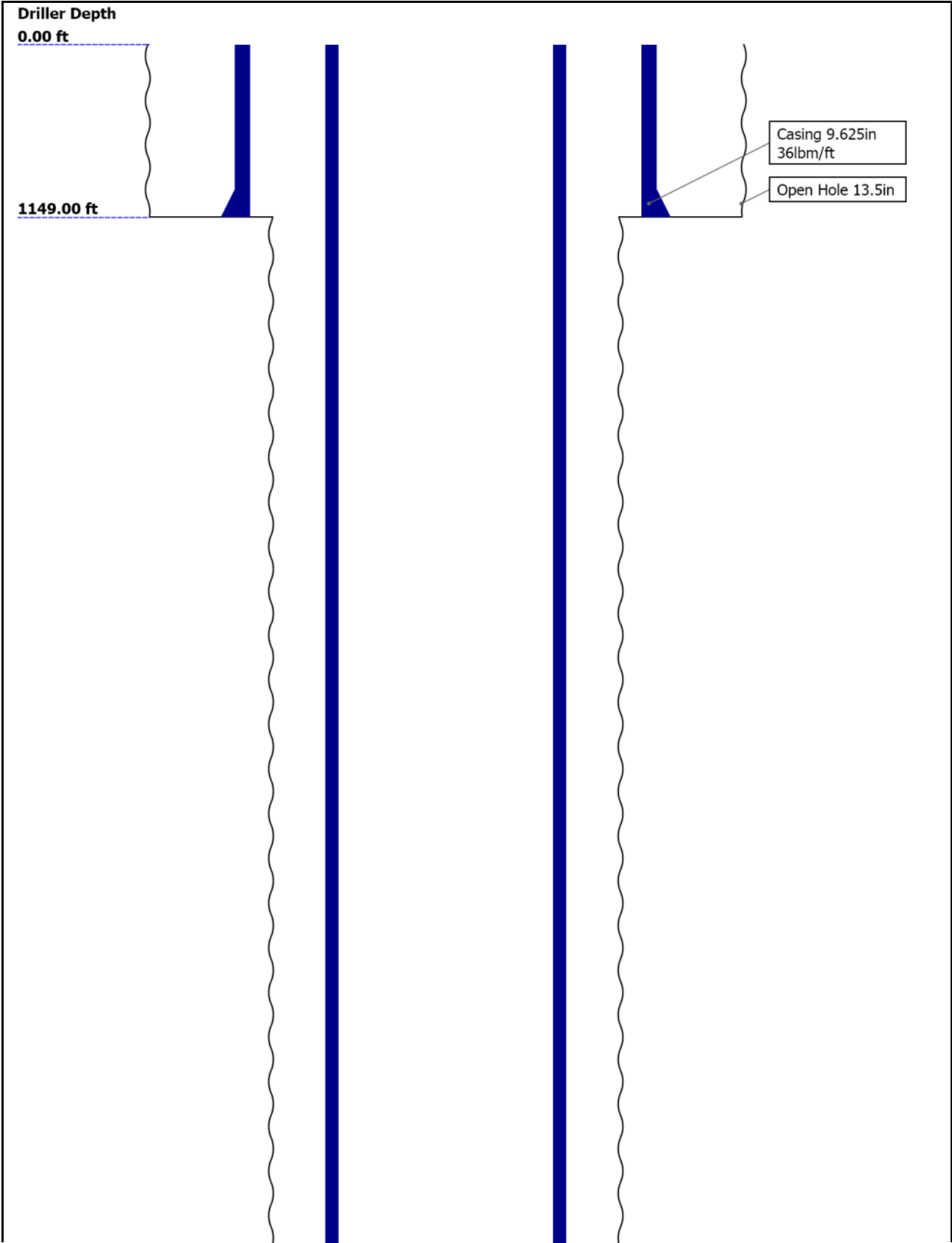
## Contents

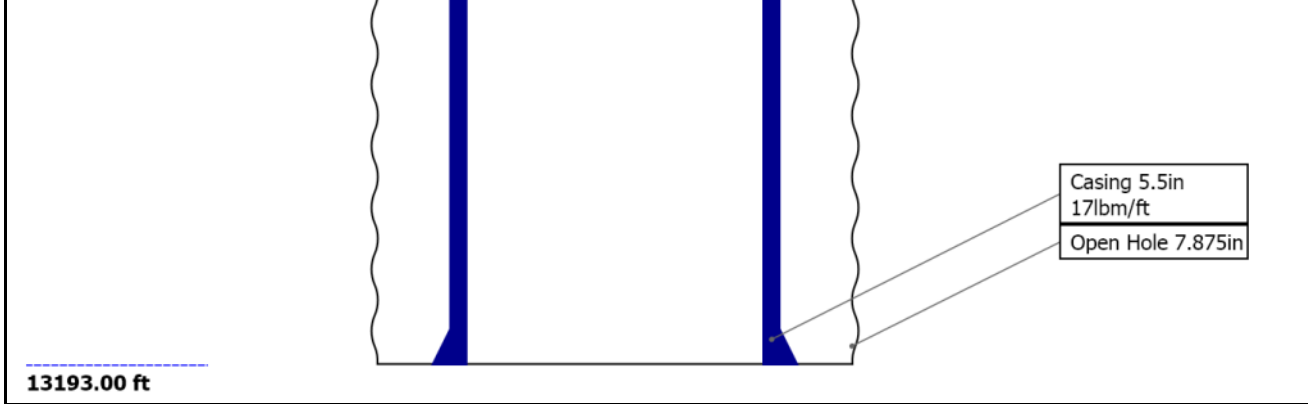
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Well Sketch





## Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	13.5	7.875				
Top Driller ( ft )	0	1149				
Top Logger ( ft )	0	1149				
Bottom Driller ( ft )	1149	13193				
Bottom Logger ( ft )	1149	7910				
Casing						
Size ( in )	9.625	5.5				
Weight ( lbm/ft )	36	17				
Inner Diameter ( in )	8.921	4.892				
Grade	N/A	N/A				
Top Driller ( ft )	0	0				
Top Logger ( ft )	0	0				
Bottom Driller ( ft )	1149	13193				
Bottom Logger ( ft )	1149	13193				

## Operational Run Summary

Parameter ( unit )	ONE					
Date Log Started	06-May-2015					
Time Log Started	15:06:14					
Date Log Finished	07-May-2015					
Time Log Finished	09:50:17					
Top Log Interval ( ft )	20.00					
Bottom Log Interval ( ft )	7910.00					
Total Depth ( ft )						
Max Hole Deviation ( deg )	0.00					
Azimuth of Max Deviation ( deg )	0.00					
Bit Size ( in )	7.875					
Logging Unit Number	3022					
Logging Unit Location	Fort Morgan, CO					
Recorded By	Evan Meadows / Peter Brookens					

Witnessed By	Van Franke					
Service Order Number	D62I-00028					

## Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks
<b>Equip name</b>	<b>Length</b>	<b>MP name</b>	<b>Offset</b>	This is the first run in hole.
LEH-QT LEH-QT	28.97			Toolstring run as per toolsketch (w/ 2 centralizers, 2 knuckles).
				Log objective: Cement evaluation
<b>EDTC-B:8</b> <b>629</b>	<b>26.06</b>			0 PSI Main and Repeat passes performed. 2500 PSI Main added following 0 PSI Main.
EDTH-B:86 52				11.2 PPG Mudpush Express OBM, 12.0 PPG conventional lead cement, and 13.5 PPG conventional tail cement.
EDTG-A:7 7792		CTEM ACCZ HV	22.56 0.00 0.00	Bottom log interval at 7840' due to loss of tension in deviation.
EDTC-B:86 29		Gamma Ray TelStatu s	20.69 19.56	Well bleeds off pressure while pressuring up. Only able to pressure up to 2500 PSI.
<b>AH-184[ 2]:2829</b>	<b>19.56</b>			10 PPG DFD used based on Zebra values most closely matching fluid slowness.
<b>AH-184[ 1]</b>	<b>17.56</b>		757	TD not tagged. Tension lost due to deviation at 7910'.
<b>USIT-E:99 2</b>	<b>15.56</b>			Crew: Ludgate, Strand, Brookens, Meadows.
ECH-MFA: 1964				
USAC-A:9 92				
USIS-A:99 9				
USSC-B:17 94				
USRS-A USI-SENS OR:1389				
		USI Sen sor TOOL_ZERO Head Fe nsion	0.37	
<p>Lengths are in ft</p> <p>Maximum Outer Diameter = 3.625 in</p> <p>Line: Sensor Location, Value: Gating Offset</p> <p>All measurements are relative to TOOL_ZERO</p>				

## Depth Summary

		ONE		
<b>Depth Measuring Device</b>				
Type	IDW-JA			
Serial Number	7234			
Calibration Date	13-Feb-2015			
Calibrator Serial Number	16			
Calibration Cable Type	7-39 PLXS			
Wheel Correction 1	-4			
Wheel Correction 2	-2			

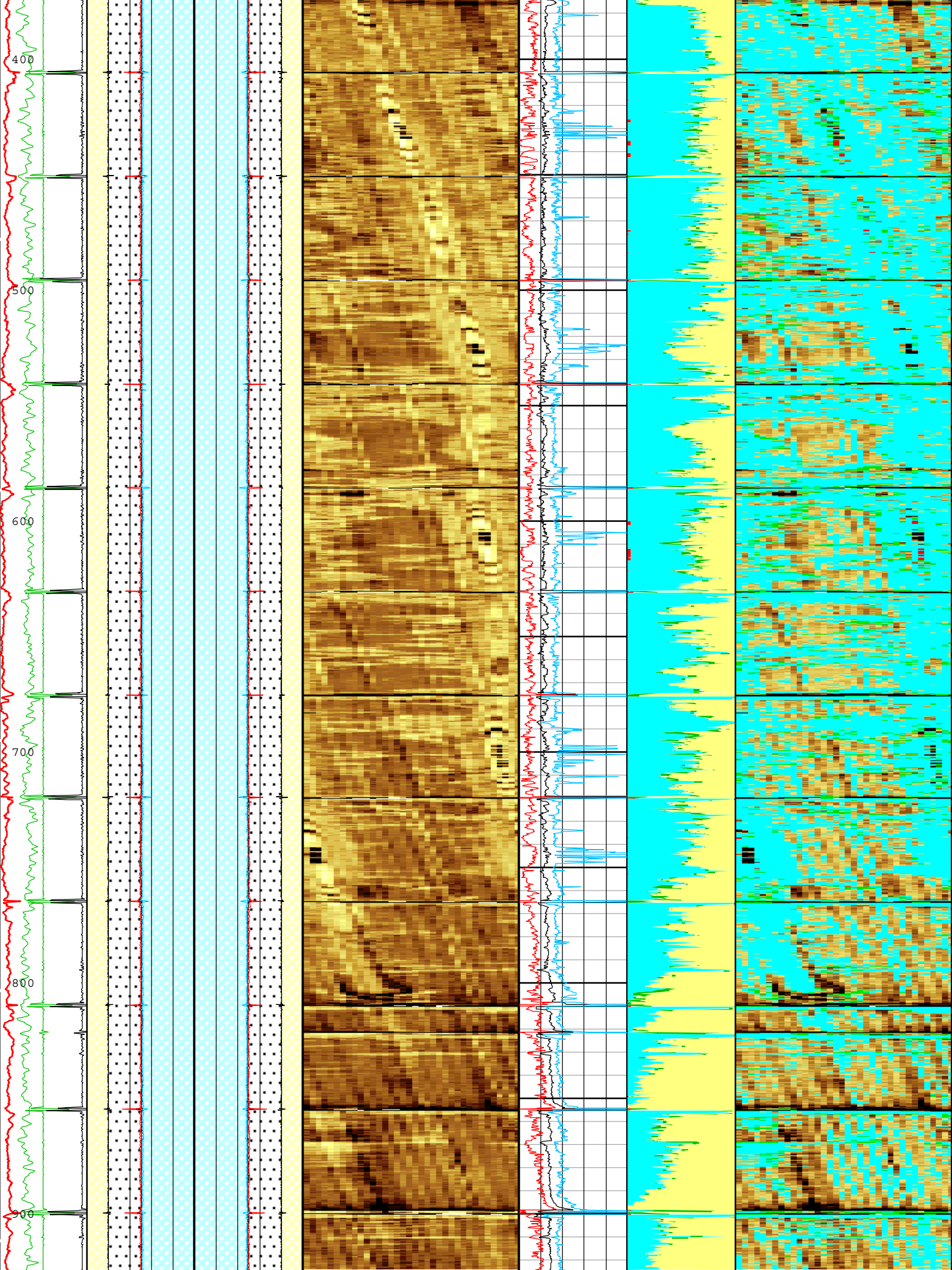
## Tension Device

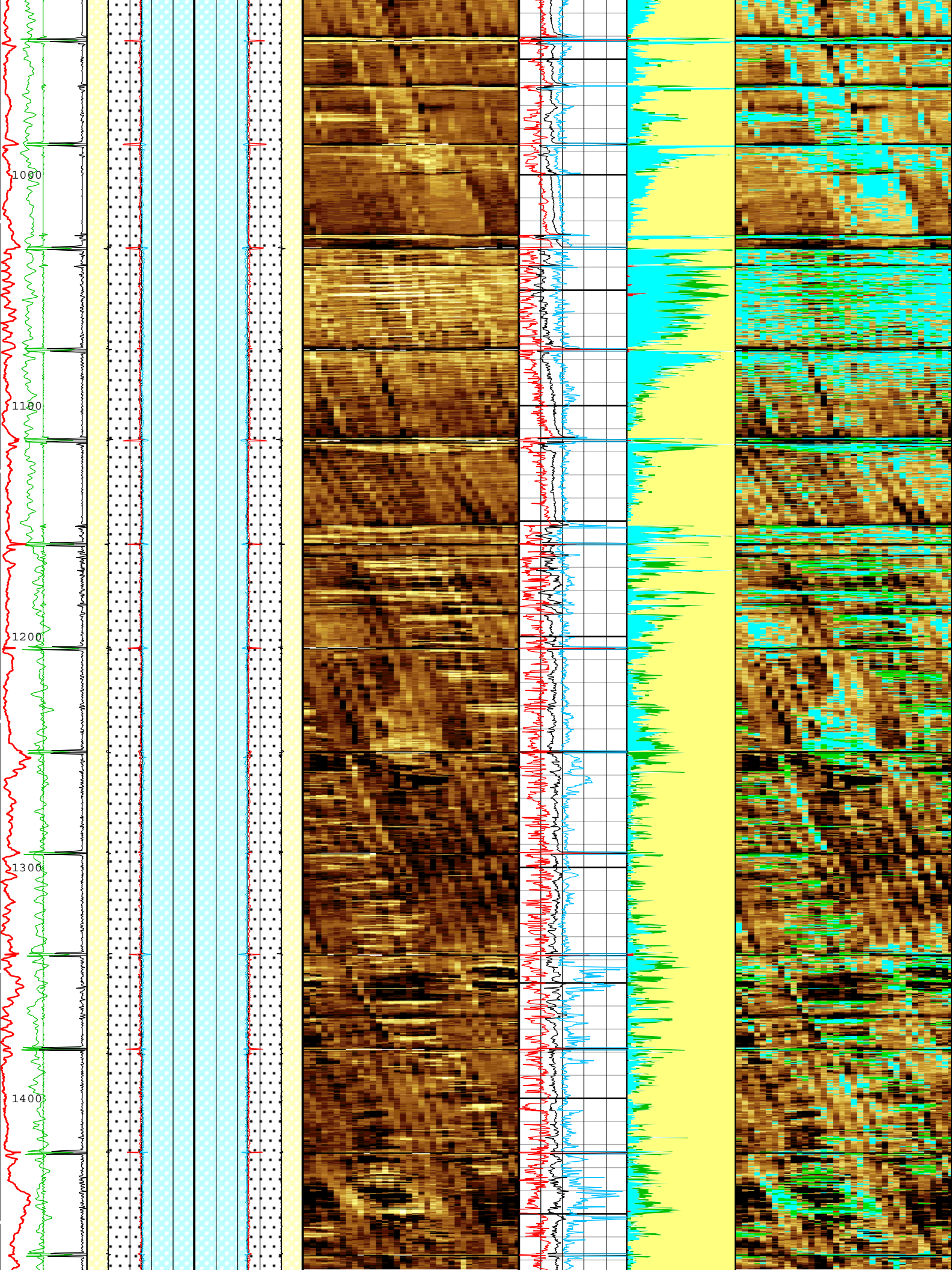
Type	CMTD-B/A		
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Serial Number	1109		
Calibration Date	23-Apr-2015		
Calibrator Serial Number	78135A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	6		
Calibration Peak Error	11		
Logging Cable			
Type	7-39P-LXS		
Serial Number	U711136		
Length	17200.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane		
ONE:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES WERE FOLLOWED DURING LOGGING. IDW USED AS PRIMARY DEPTH CONTROL MEASURE. Z CHART USED AS SECONDARY DEPTH CONROL MEASURE.	
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			
Stretch Correction	8.60 ft		
Tool Zero Check At Surface			
Import (2) of USI Cement			
USIT - Fluid Properties Measurement			
Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Main[9]:Up	7925.38	11.64
Fluid Velocity = "Automatic". CFVL equals DFSL channel			
Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)
Mud Impedance = "FreePipe Norm." Free Pipe normalization zone is : 8.92m(29.26ft) to 11.27m(36.96ft) MUD_N_FRP = 0.97 DFD = 1.20g/cm3(10.00lbm/gal) CZMD median computed in free pipe normalization interval = 1.71 MRayl			
Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
ONE			
USI Cement - Main Pass - 2500 PSI			
Log	Company:Kerr McGee Oil & Gas Onshore LP		Well:Butterball 16C-10HZ ONE: Main[9]:Up:S014
Description: USI Cement    Format: USI Cement    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:03			
TIME_1900 - Time Marked every 60.00 (s)			
Casing Collar Locator Ultrasonic (CCLU) USIT-E			
-20 in 20			
Gamma Ray (ECGR_EDT C) EDTC-B			
0 gAPI 150			
Stuck Tool Indicator	External Radii	External Radii	

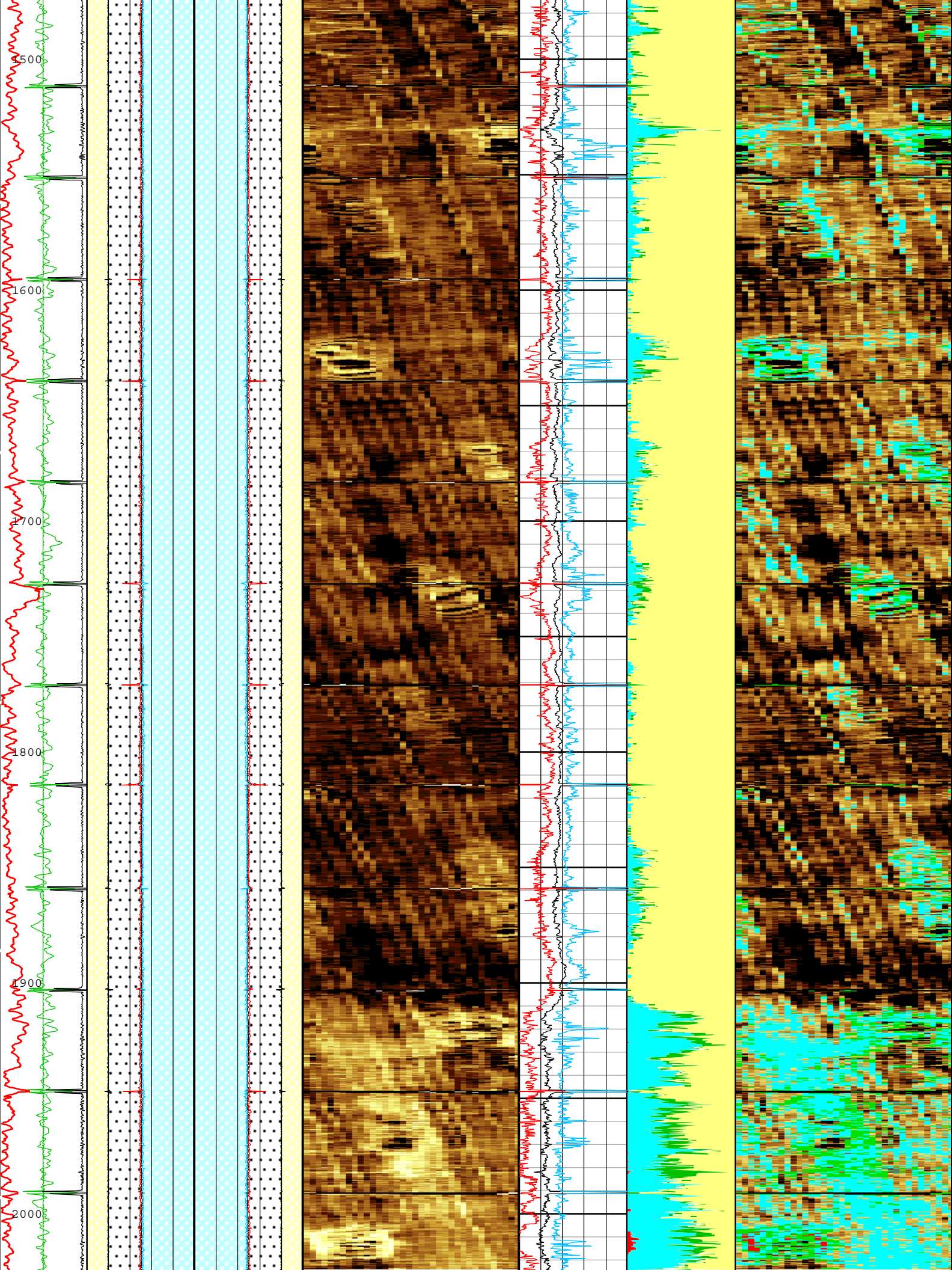
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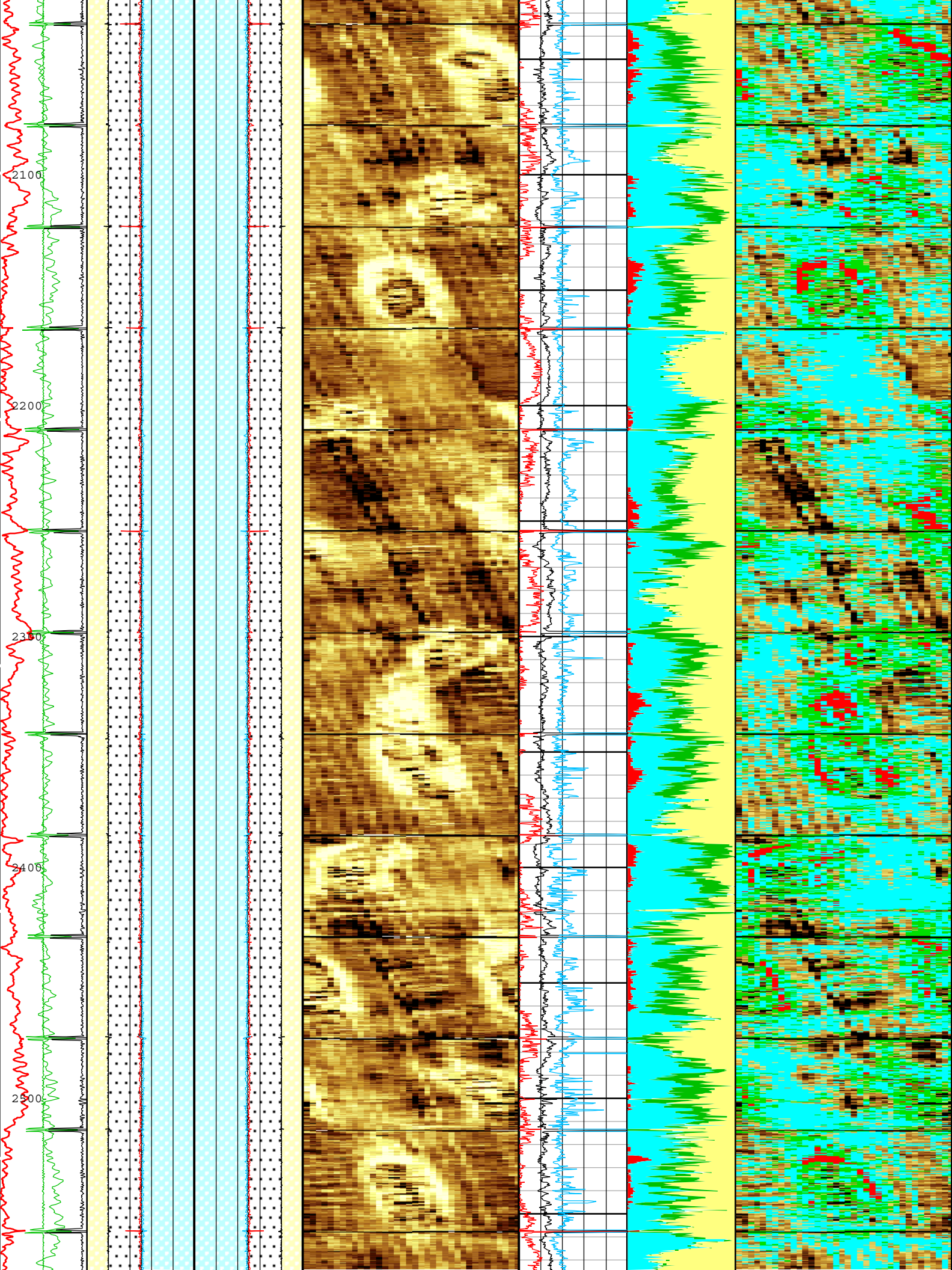




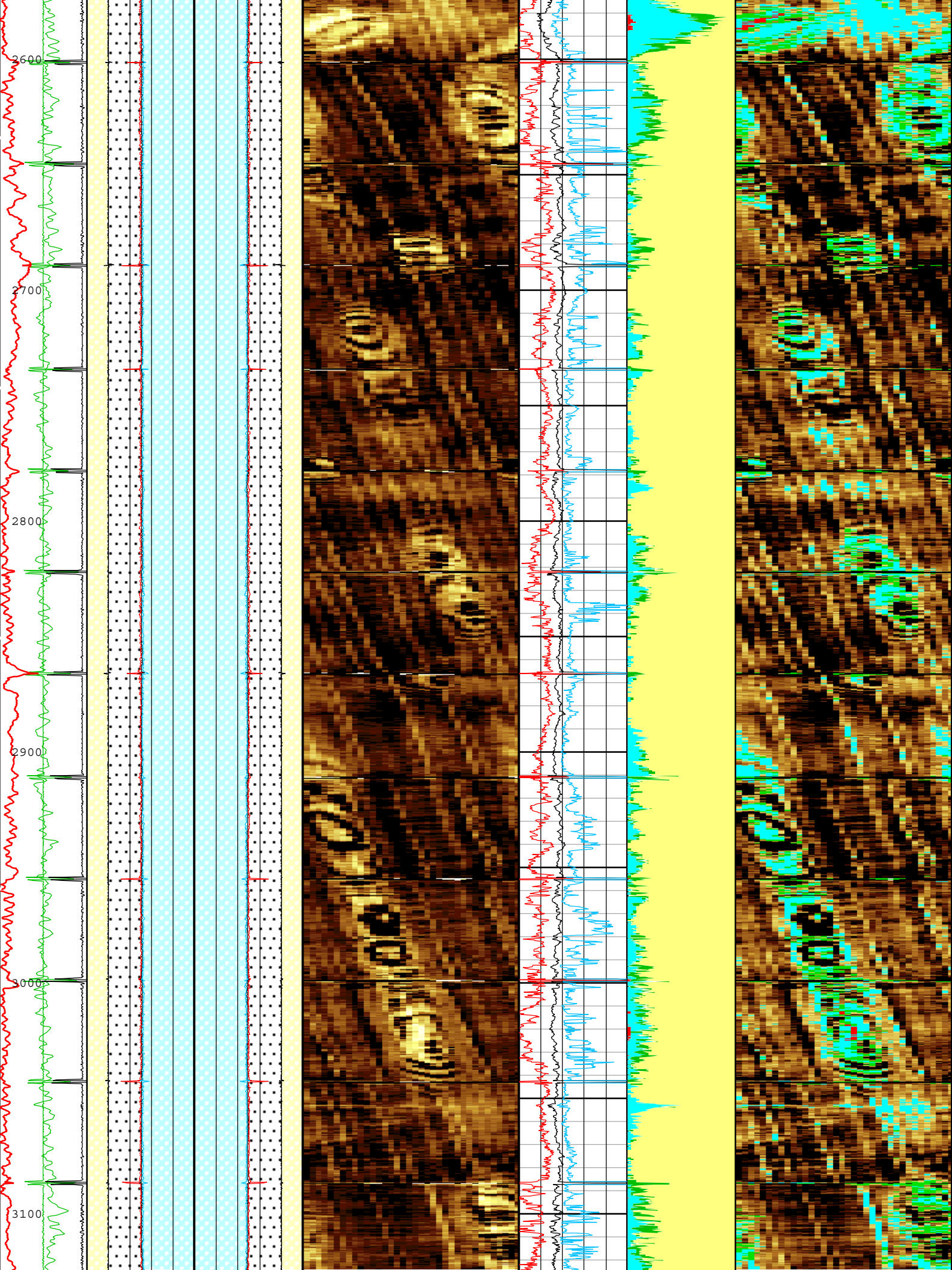


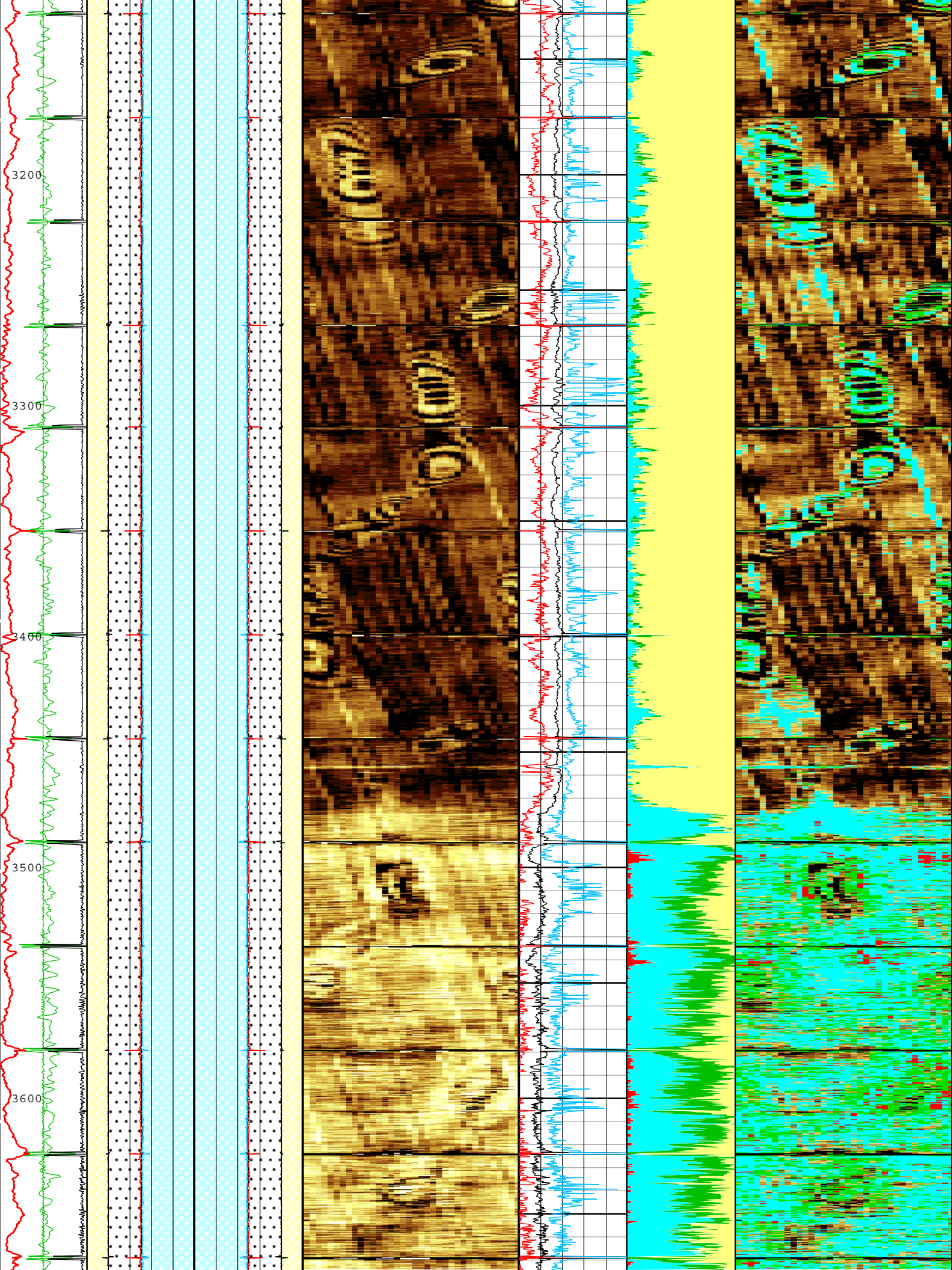




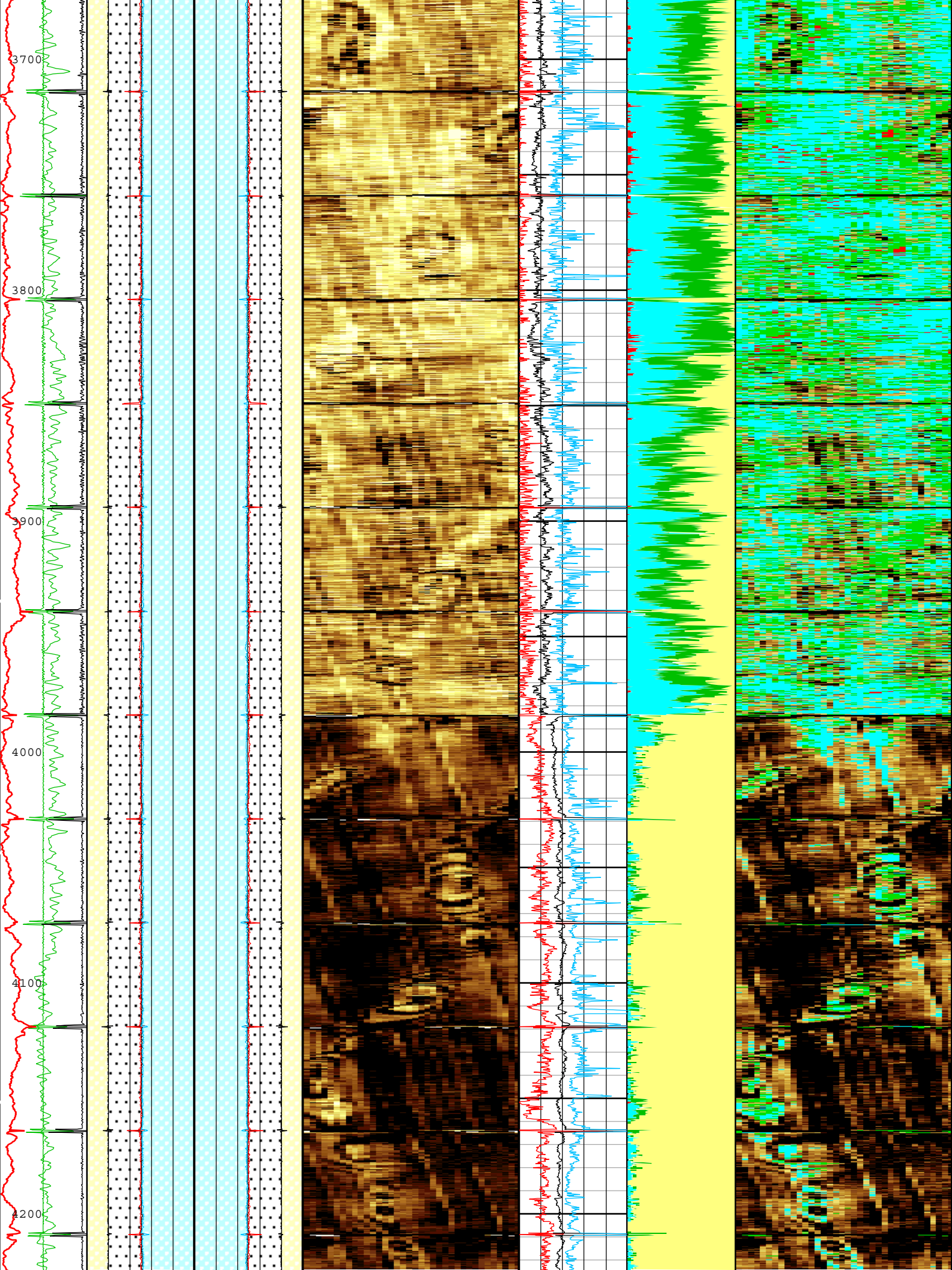




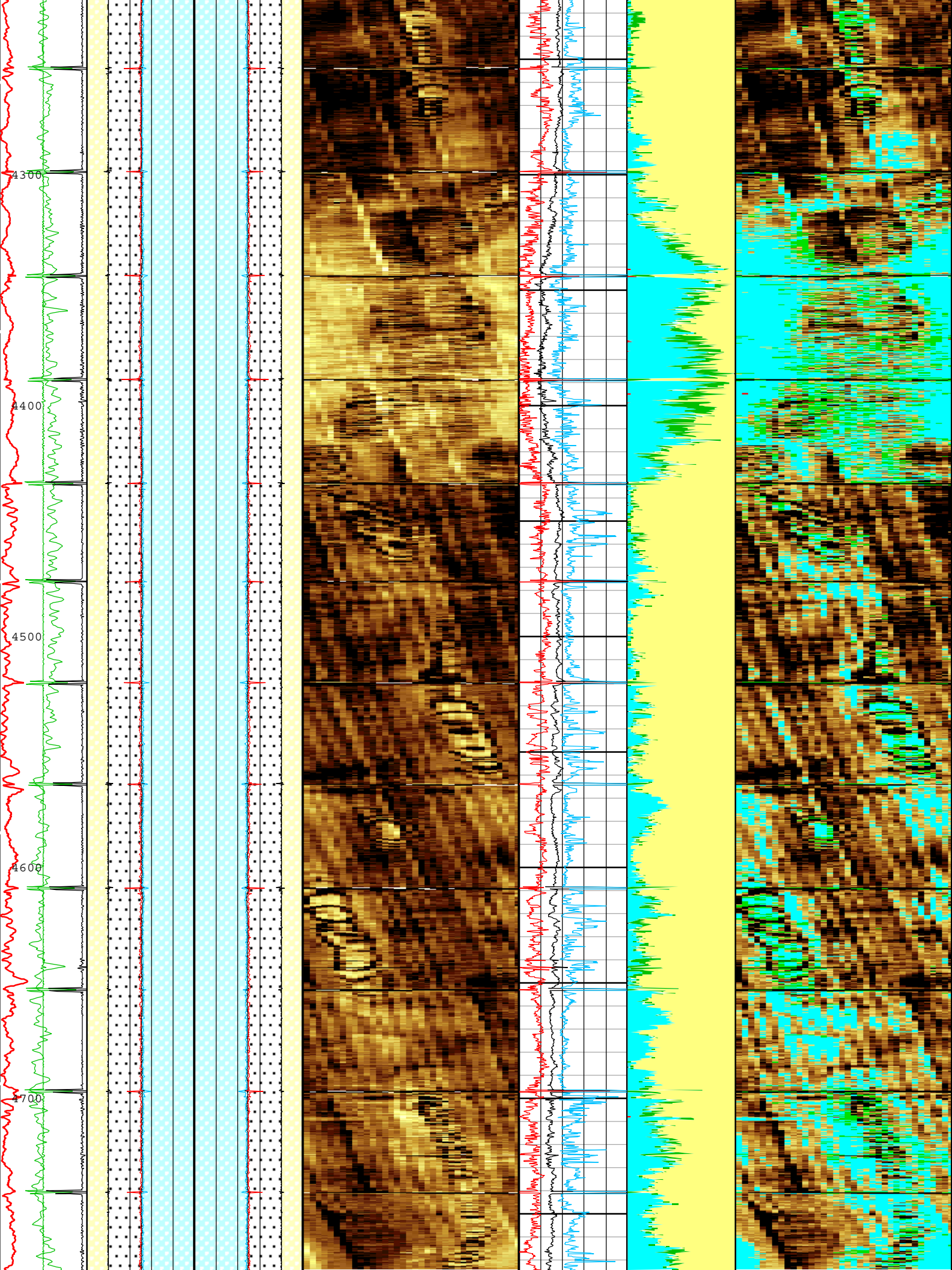


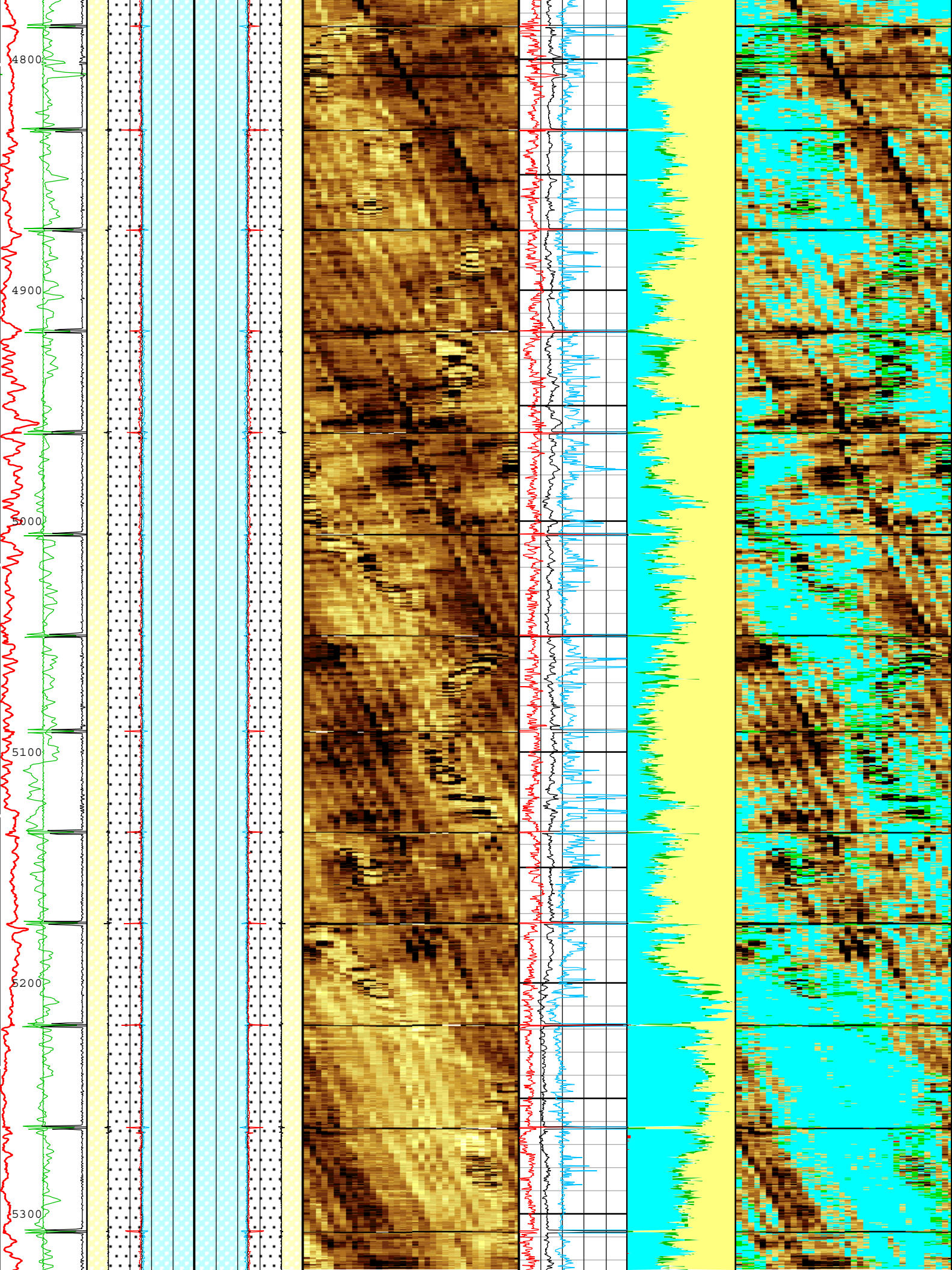




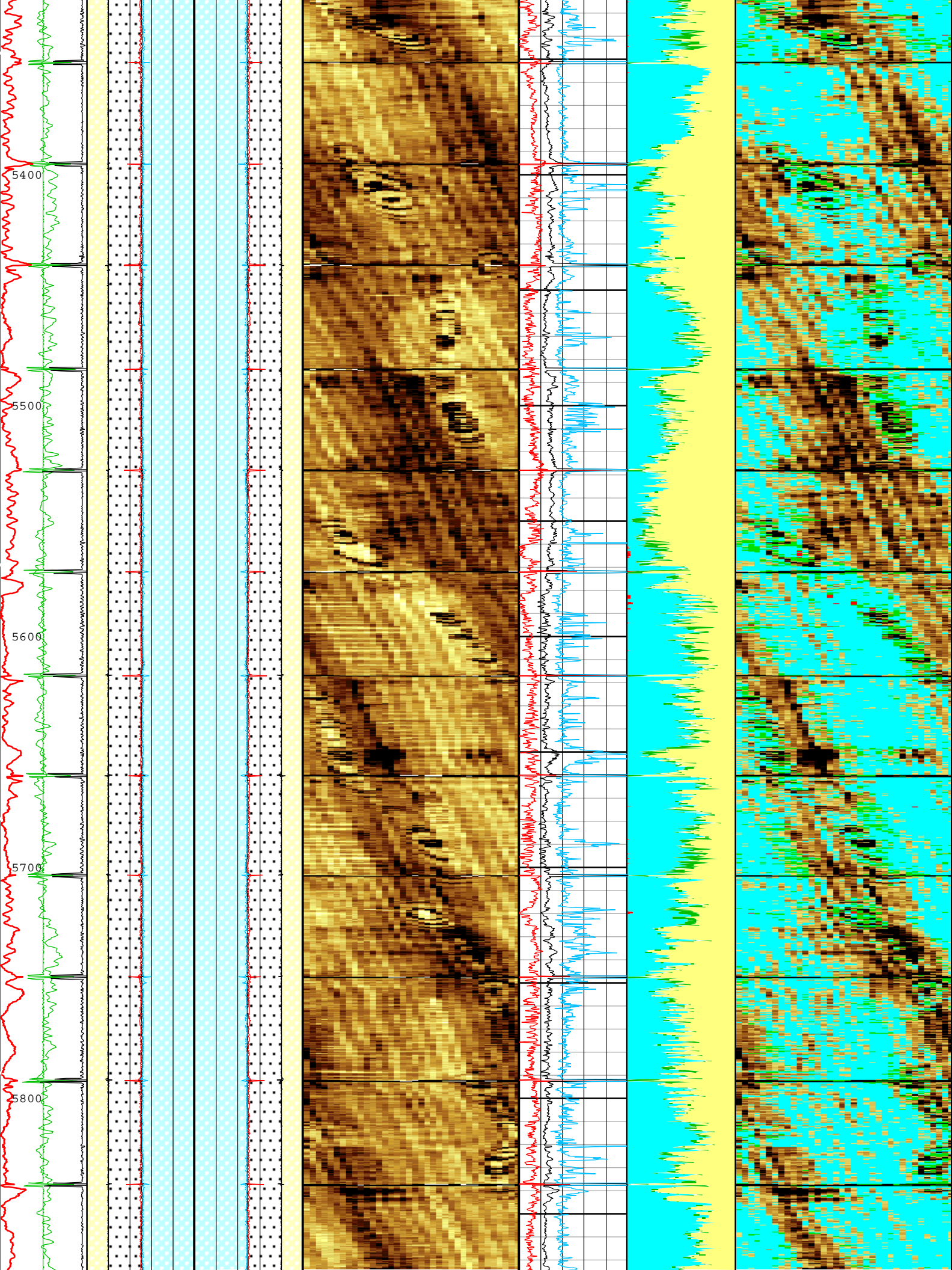


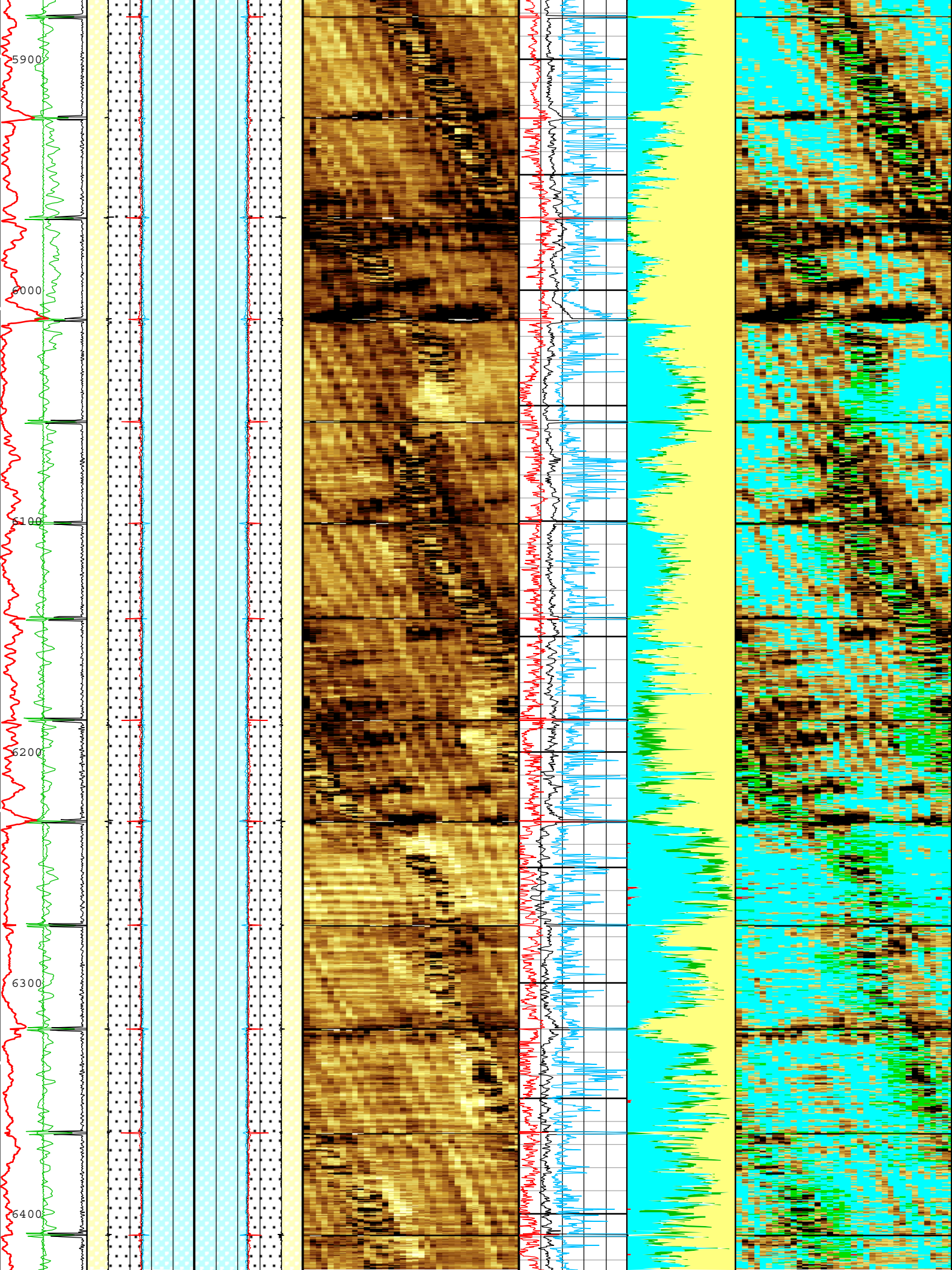




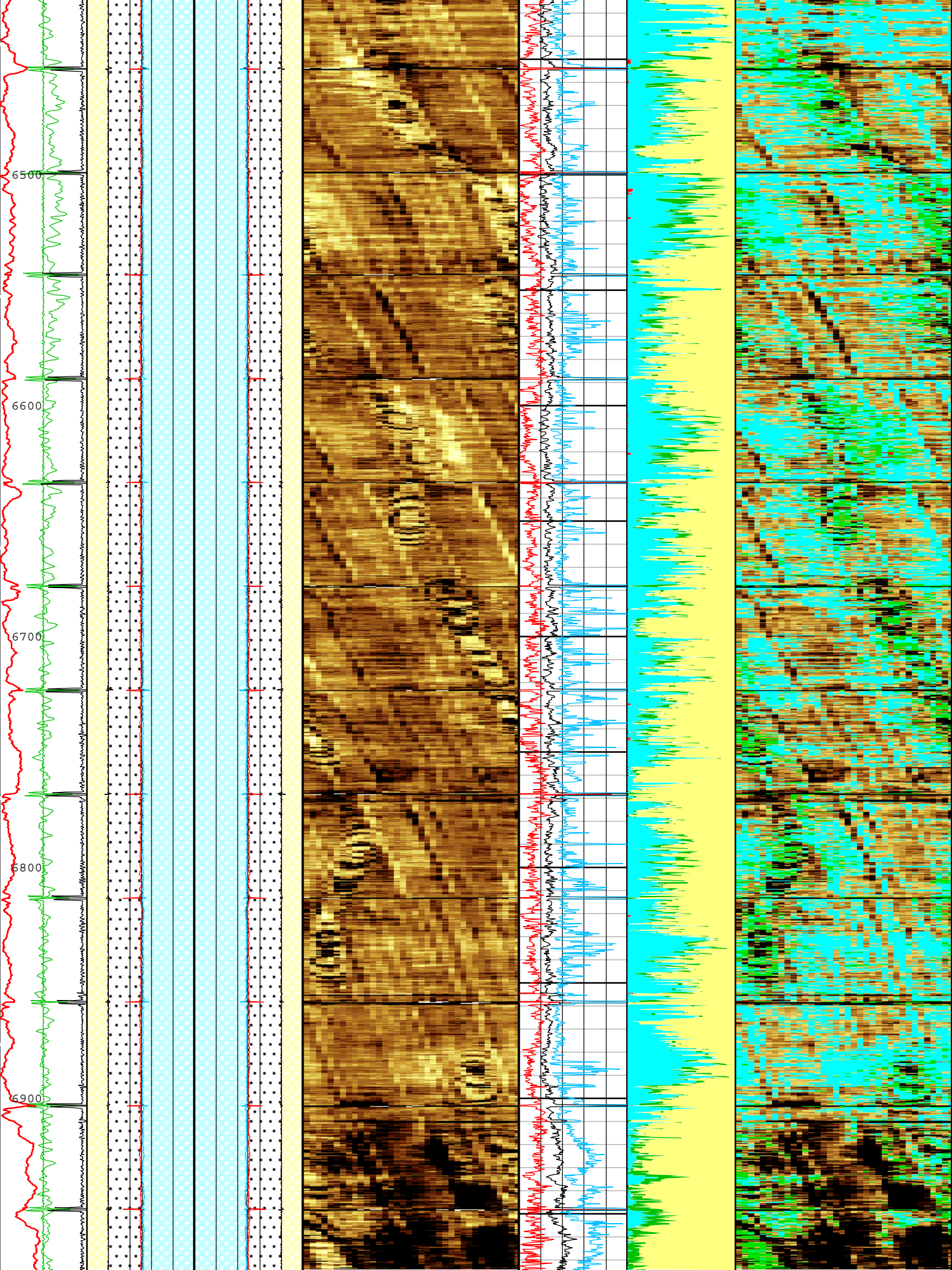




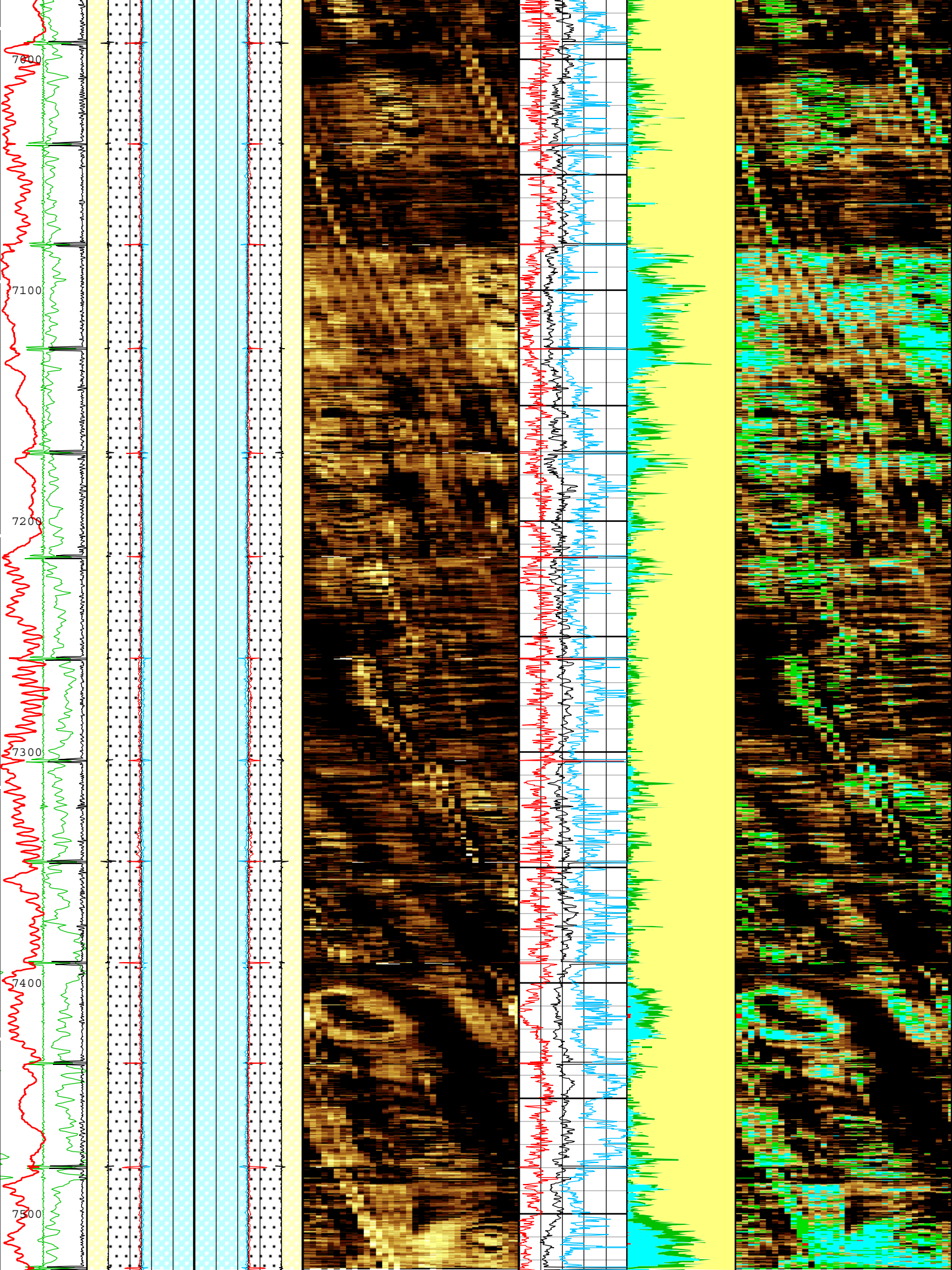


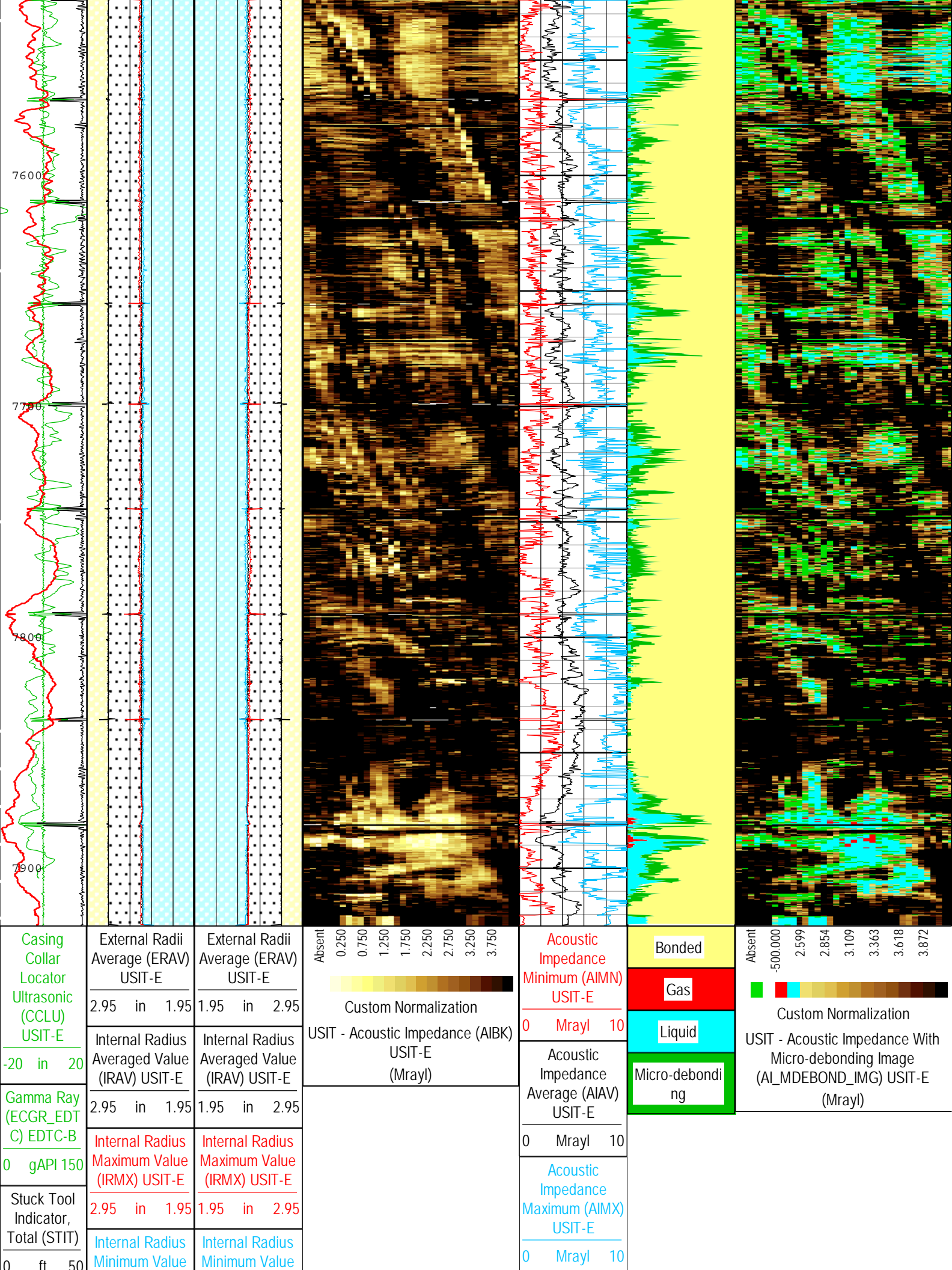












Casing Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 20

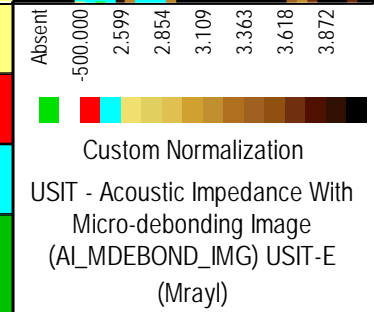
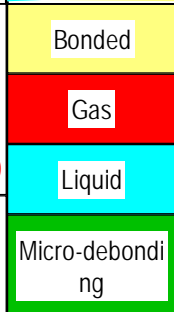
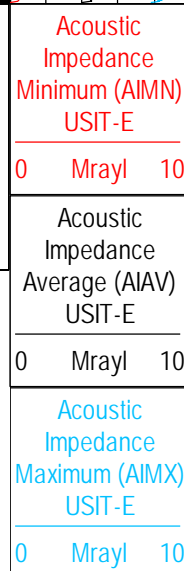
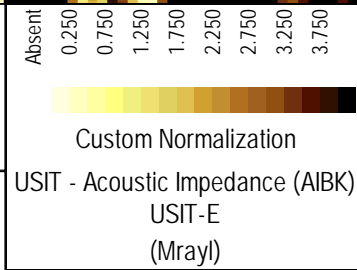
Gamma Ray (ECGR\_EDT C) EDTC-B

0 gAPI 150

Stuck Tool Indicator, Total (STIT)

0 ft 50

External Radii Average (ERAV) USIT-E	2.95 in 1.95	External Radii Average (ERAV) USIT-E	1.95 in 2.95
Internal Radius Averaged Value (IRAV) USIT-E	2.95 in 1.95	Internal Radius Averaged Value (IRAV) USIT-E	1.95 in 2.95
Internal Radius Maximum Value (IRMX) USIT-E	2.95 in 1.95	Internal Radius Maximum Value (IRMX) USIT-E	1.95 in 2.95
Internal Radius Minimum Value USIT-E	2.95 in 1.95	Internal Radius Minimum Value USIT-E	1.95 in 2.95



	(IRMN) USIT-E	(IRMN) USIT-E
CableDrag	2.95 in 1.95	1.95 in 2.95
Amplitude of Eccentering (ECCE) USIT-E		
0 in 0.5		
Casing Collar Locator Ultrasonic (CCLU) USIT-E		
-19 in 1		

TIME\_1900 - Time Marked every 60.00 (s)

Description: USI Cement    Format: USI Cement    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:03

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AFVU	Automatic Fluid Velocity Update	USIT-E	On	
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	13193	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMENT)	Cement Type	USIT-E	Light Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.304	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	11	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_BINPROC	ICE Bin Processing Depth Interval	USIT-E	0	ft
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	18.79	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	0.97	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RAPID_OPTION	Rapid Access Computation Option	USIT-E	Off	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in

SDNV	Number of Vertical Samples used for Micro-debonding Computation	USIT-E	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	USIT-E	0.5	Mrayl
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	USIT-E	0.3	Mrayl
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	Depth Zoned	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters				
Parameter	Value	Start ( ft )	Stop ( ft )	
BS	13.5	0	1149	
BS	7.875	1149	7910	
ZMUD	1.69	0	210	
ZMUD	1.7	210	250	
ZMUD	1.71	250	450	
ZMUD	1.72	450	620	
ZMUD	1.73	620	775	
ZMUD	1.74	775	840	
ZMUD	1.75	840	1024	
ZMUD	1.76	1024	1280	
ZMUD	1.77	1280	1580	
ZMUD	1.78	1580	1850	
ZMUD	1.79	1850	2220	
ZMUD	1.8	2220	2580	
ZMUD	1.81	2580	3110	
ZMUD	1.82	3110	3650	
ZMUD	1.83	3650	4150	
ZMUD	1.84	4150	7925	
All depth are actual.				

Tool Control Parameters

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB

AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	6750	ft/h
MOTOR_PROTECT	Motor Protection	USIT-E	On	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7600	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	73.83	us

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
EMXV	70	07-May-2015 08:17:59	07-May-2015 08:22:14	7925.38	7917.85
EMXV	75	07-May-2015 08:22:14	07-May-2015 08:22:32	7917.85	7913.02
EMXV	80	07-May-2015 08:22:32	07-May-2015 08:32:18	7913.02	7281.34
EMXV	76	07-May-2015 08:32:18	07-May-2015 08:34:39	7281.34	7024.42
EMXV	70	07-May-2015 08:34:39	07-May-2015 08:38:08	7024.42	6645.47
EMXV	67	07-May-2015 08:38:08	07-May-2015 08:47:08	6645.47	5663.69
EMXV	63	07-May-2015 08:47:08	07-May-2015 08:52:45	5663.69	5045.24
EMXV	60	07-May-2015 08:52:45	07-May-2015 09:23:44	5045.24	1698.34
EMXV	65	07-May-2015 09:23:44	07-May-2015 09:23:57	1698.34	1674.14
EMXV	70	07-May-2015 09:23:57	07-May-2015 09:41:30	1674.14	11.64
WINB	33.83	07-May-2015 08:17:59	07-May-2015 08:27:45	7925.38	7777.37
WINB	31.8	07-May-2015 08:27:45	07-May-2015 09:41:30	7777.37	11.64

All depth are at tool zero.	
Import (3) of USI Goodwin	
ONE	
USI Goodwin Compressed - Main Pass - 2500 PSI	

Log	<div> <div>Company:Kerr McGee Oil &amp; Gas Onshore LP</div> <div>Well:Butterball 16C-10HZ</div> <div>ONE: MainI9I:Up:S014</div> </div>				
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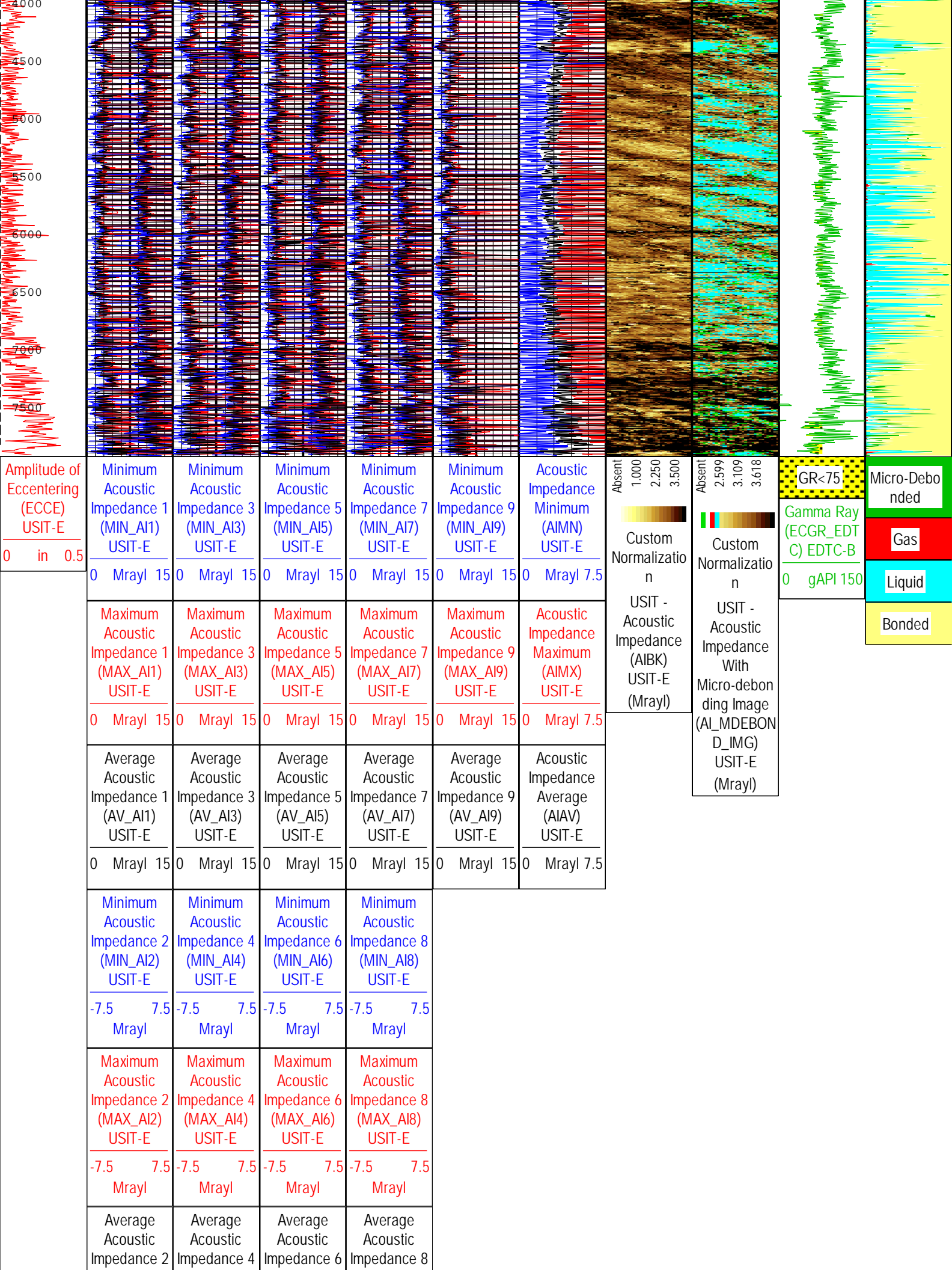
Description: USI Goodwin    Format: USI Goodwin    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:15

TIME\_1900 - Time Marked every 60.00 (s)

	Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E
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(AV_AI2) USIT-E	(AV_AI4) USIT-E	(AV_AI6) USIT-E	(AV_AI8) USIT-E
-7.5      7.5	-7.5      7.5	-7.5      7.5	-7.5      7.5
Mrayl	Mrayl	Mrayl	Mrayl

TIME\_1900 - Time Marked every 60.00 (s)

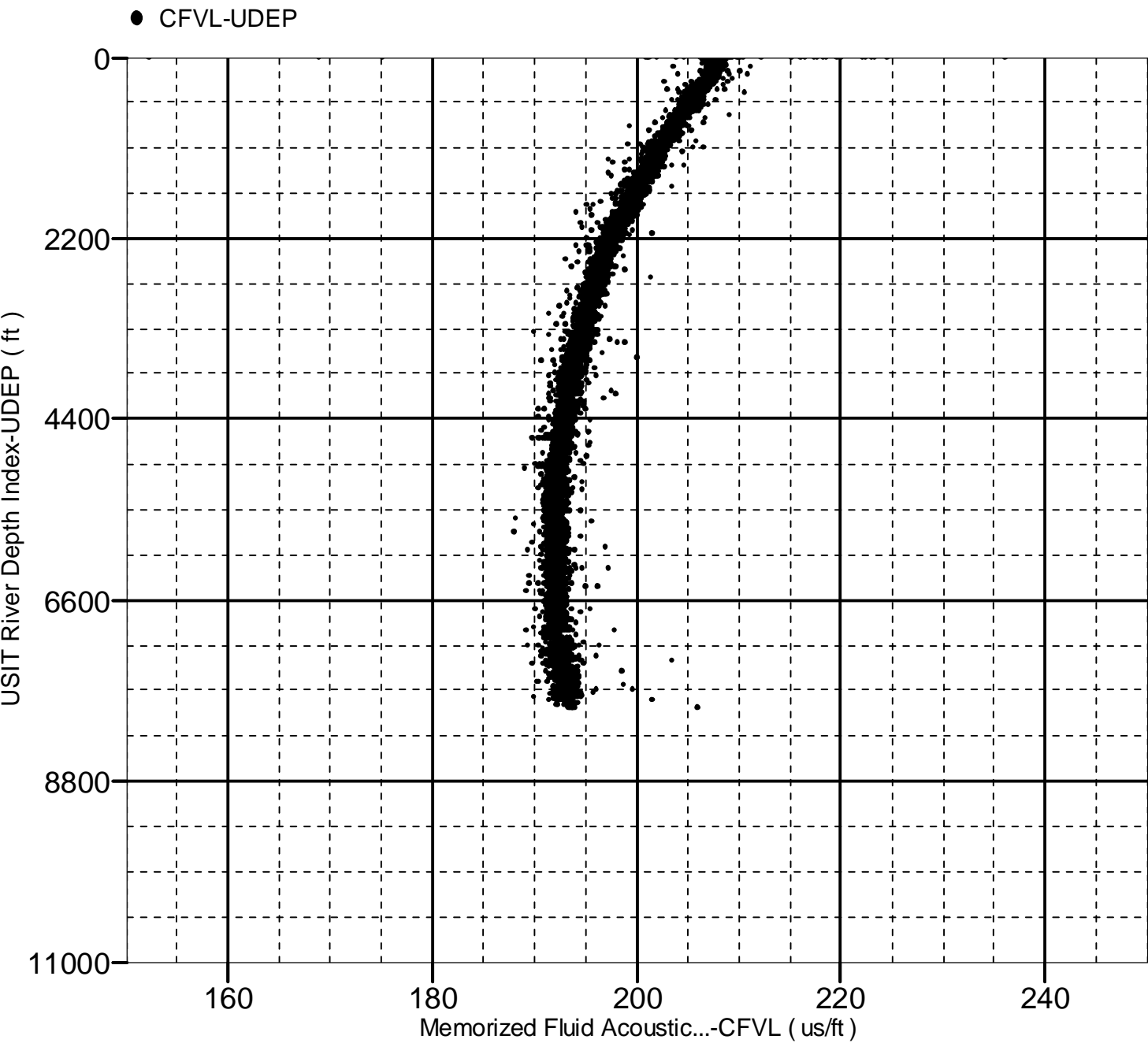
Description: USI Goodwin    Format: USI Goodwin    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:15

XYZ	Company:Kerr McGee Oil & Gas Onshore LP Well:Butterball 16C-10HZ ONE: Main[9]:Up:S014
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# Fluid Acoustic Slowness vs Depth

## 2D Cross Plot

Index Range: From 7925.00 to 11.50 ft



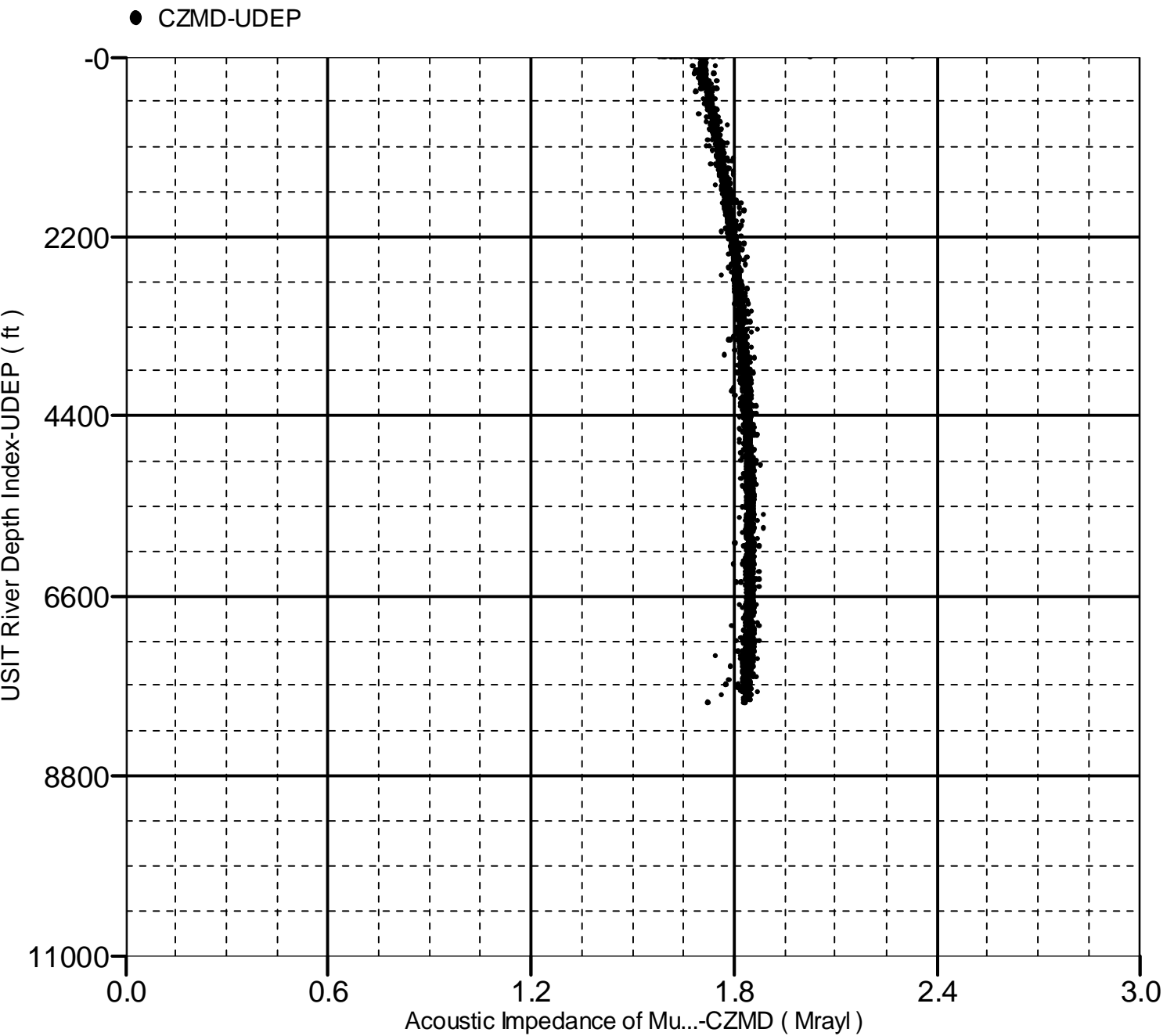
XYZ	Company:Kerr McGee Oil & Gas Onshore LP Well:Butterball 16C-10HZ ONE: Main[9]:Up:S014
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# Acoustic Impedance of Mud vs Depth

Acoustic Impedance of Well vs Depth

2D Cross Plot

Index Range: From 7925.00 to 11.50 ft



Import (2) of USI Cement

ONE

USI Cement

Log

Company:Kerr McGee Oil & Gas Onshore LP

Well:Butterball 16C-10HZ

ONE: Log[2]:Up:S014

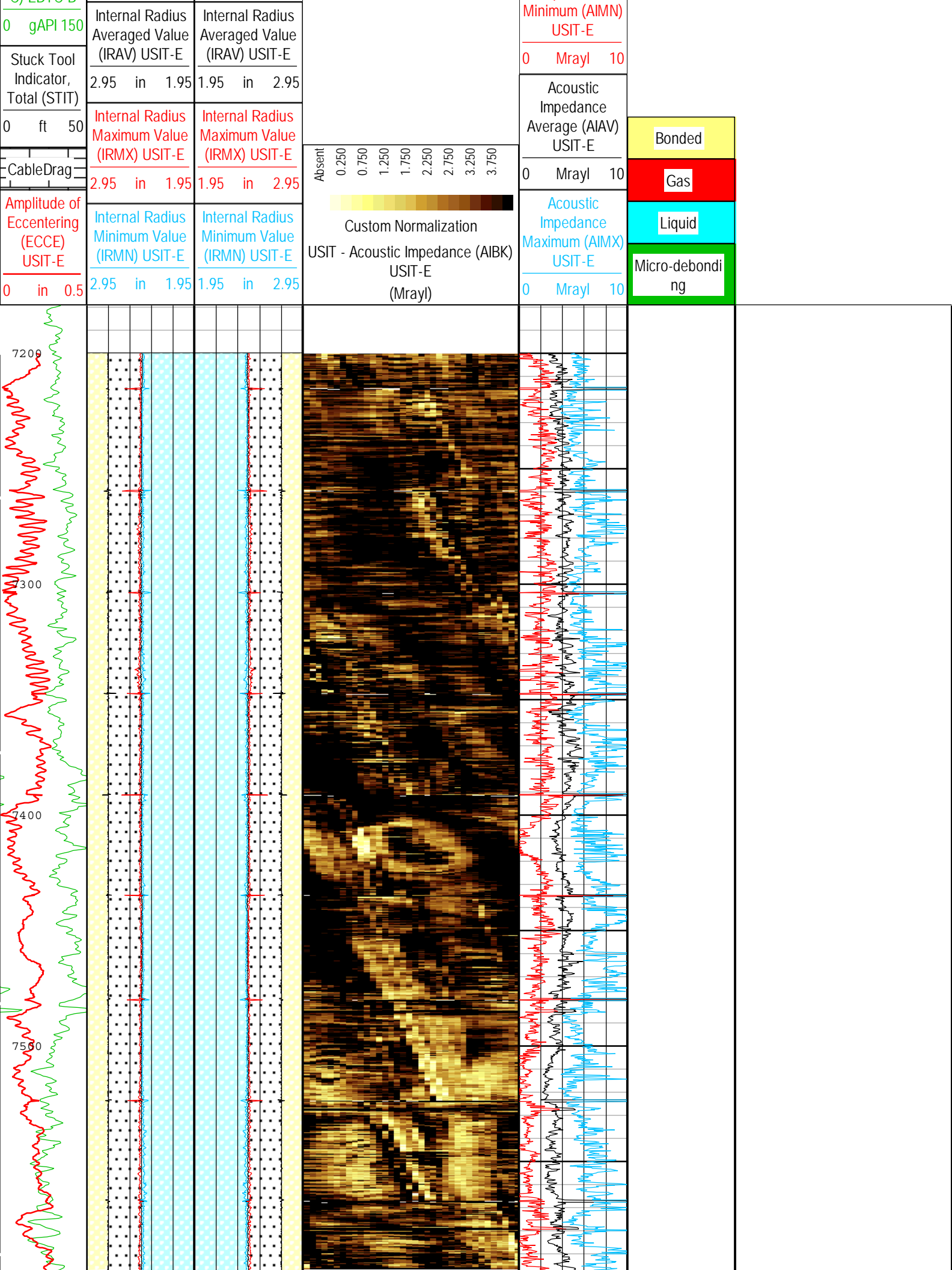
Description: USI Cement    Format: USI Cement    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:20

TIME\_1900 - Time Marked every 60.00 (s)

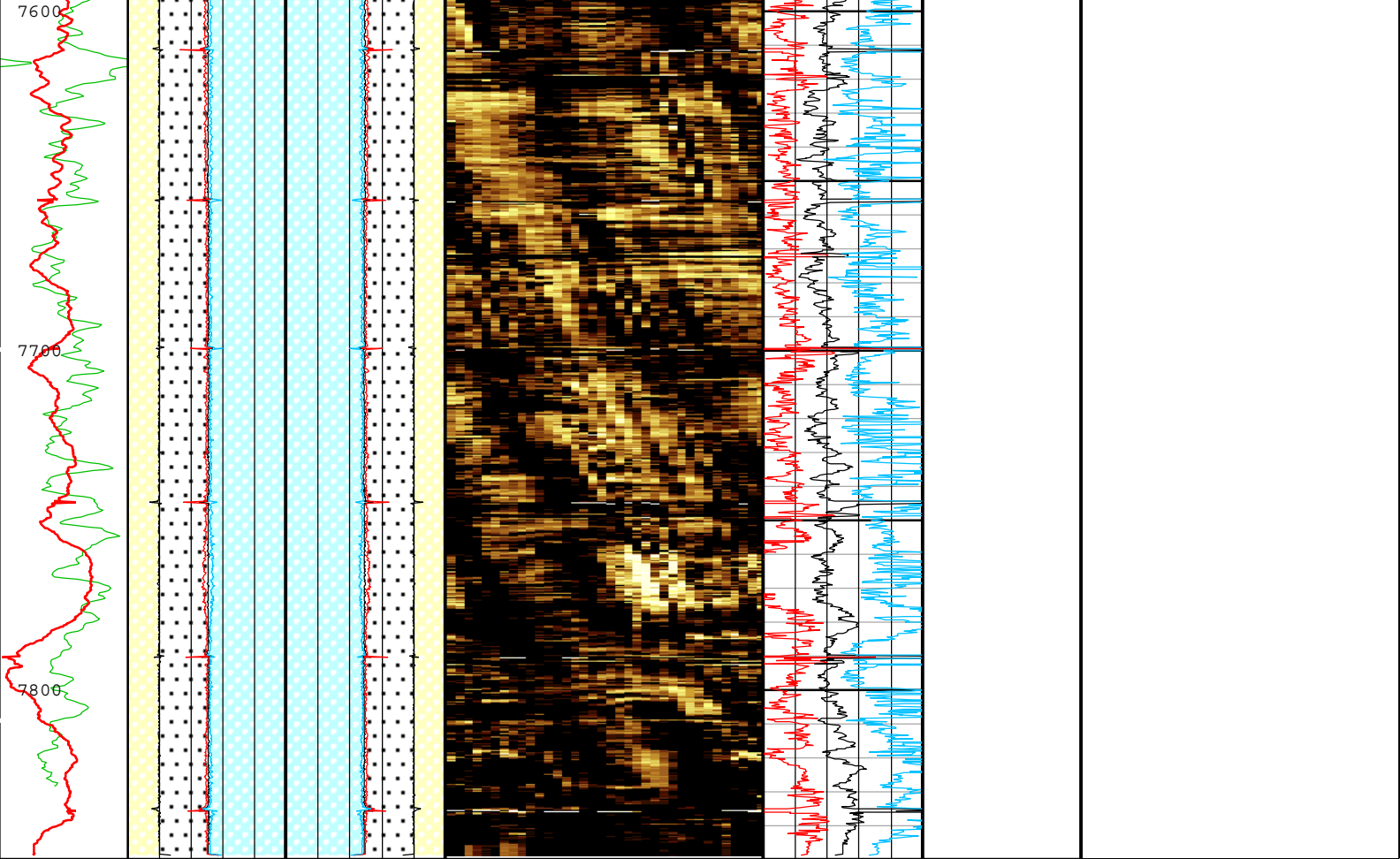
	External Radii Average (ERAV) USIT-E			External Radii Average (ERAV) USIT-E		
	2.95	in	1.95	1.95	in	2.95
Gamma Ray (ECGR_EDT C) EDTC-B						

Acoustic  
Impedance









Gamma Ray (ECGR_EDT C) EDTC-B	External Radii Average (ERAV) USIT-E	External Radii Average (ERAV) USIT-E	Absent 0.250 0.750 1.250 1.750 2.250 2.750 3.250 3.750  Custom Normalization  USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	Acoustic Impedance Minimum (AIMN) USIT-E	Bonded
0 gAPI 150	2.95 in 1.95	1.95 in 2.95		0 Mrayl 10	Gas
Stuck Tool Indicator, Total (STIT)	Internal Radius Averaged Value (IRAV) USIT-E	Internal Radius Averaged Value (IRAV) USIT-E		Acoustic Impedance Average (AIAV) USIT-E	Liquid
0 ft 50	2.95 in 1.95	1.95 in 2.95		0 Mrayl 10	Micro-debonding
CableDrag	Internal Radius Maximum Value (IRMX) USIT-E	Internal Radius Maximum Value (IRMX) USIT-E		Acoustic Impedance Maximum (AIMX) USIT-E	
Amplitude of Eccentering (ECCE) USIT-E	2.95 in 1.95	1.95 in 2.95		0 Mrayl 10	
0 in 0.5	Internal Radius Minimum Value (IRMN) USIT-E	Internal Radius Minimum Value (IRMN) USIT-E			
	2.95 in 1.95	1.95 in 2.95			

TIME\_1900 - Time Marked every 60.00 (s)

Description: USI Cement    Format: USI Cement    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 09-May-2015 13:32:20

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AFVU	Automatic Fluid Velocity Update	USIT-E	On	
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WI SESSION	7.875	in

	Bit Size	WLSESSION	7.875	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	13193	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMENT)	Cement Type	USIT-E	Light Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.304	in
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	11	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_BINPROC	ICE Bin Processing Depth Interval	USIT-E	0	ft
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	18.79	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	0.97	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RAPID_OPTION	Rapid Access Computation Option	USIT-E	Off	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	FreePipe Norm.	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.84	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB

AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	50	V
HRES	Horizontal Resolution	USIT-E	10 deg	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	6750	ft/h
MOTOR_PROTECT	Motor Protection	USIT-E	On	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	8000	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	33.83	us
WINE	Window End Time	USIT-E	73.83	us



Company:	Kerr McGee Oil & Gas Onshore LP	Schlumberger
Well:	Butterball 16C-10HZ	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Ultrasonic Imager		
Cement Evaluation		
Gamma Ray - CCL Log		