Appendix E

HTH-1RC Data

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Table E−1. HTH-1RC_Chronology

Date	Time	Depth (ft bgs)	Activity
05/26/09	15:45 − 21:00	NA	DH rig (LK17) arrives on site, rig is inspected, tire replaced, and rig was moved to HTH-1 pad.
05/26/09	23:30	NA	Fishing tool was run 180 ft down HTH-1 and the bladder pump was retrieved.
05/27/09	01:00	NA	Rig is moved off HTH-1 and goes to UC-1-P-1S
06/04/09	21:40	NA	Crane set up at HTH-1 to begin running in BQ tremie pipe.
06/05/09	03:10	NA	Finish tripping in BQ tremie pipe to 2,700 ft.
06/05/09	06:55	NA	Finish tripping in shallow piezometer string to a depth of 1,038.6 ft.
06/05/09	09:20	NA	Finish tripping in deep piezometer string to a depth of 1,958.6 ft.
06/05/09	21:00	NA	Finish tripping in 4-inch well casing and landed well at a depth of 2,678.24 ft.
06/06/09	07:30	NA	Completed placing 1/8 to 1/4 inch gravel to depth of 2,310 ft.
06/06/09	14:00	NA	Completed placing No. 6 sand to a depth of 2,290 ft, 3/8 inch bentonite chips to a depth of 2,280 ft, and cement between well and deep piezometer at a depth of 1,980 ft.
06/06/09	18:00	NA	Completed placing gravel, sand, and bentonite for deep piezometer.
06/07/09	04:00	NA	Completed placing cement between deep and shallow piezometers to a depth of 1,080 ft.
06/07/09	08:00	NA	Completed placing gravel, sand, and bentonite for shallow piezometer.
06/07/09	15:40	NA	Completed placing cement from shallow piezometer to surface.
06/07/09	21:20	NA	Trip BQ rod in to 1,200 ft depth and start air lift development.
06/08/09	04:40	NA	End air lift development.
06/08/09	10:20	NA	BQ rods tripped out.
06/08/09	12:20	NA	Completed tripping in 1.25 inch PVC water access tubing to depth of 800 ft.

Table E−2. CNTA HTH-1RC Well Construction Materials

Construction	Material	Type	Interval (ft)	Stemming Material	Volume (ft^3)	Interval (ft)
Upper Piezometer Casing	1.25-in. CS Flush Joint Tubing	Blank	+0.8 – 978.6	Cement Seal	370.0	0.0 – 907.0
				3/8-in. Bentonite Chips	5.3	907.0 – 920.0
		Screen w/end cap	978.6 – 1,038.6	No. 6 Sand Pack	10.2	920.0 – 945.0
				1/8–1/4-in. Gravel Pack	55.1	945.0 – 1,080.0
Bottom Seal	NA			Cement Seal	312.2	1,080.0 – 1,845.0
Lower Piezometer Casing	1.25-in. CS Flush Joint Tubing	Blank	+ 0.8 – 1,898.6	3/8-in. Bentonite Chips	4.1	1,845.0 – 1,855.0
				No. 6 Sand Pack	6.1	1,855.0 – 1,870.0
		Screen w/end cap	1,898.6 – 1,958.6	1/8–1/4-in. Gravel Pack	45.0	1,870.0 – 1,980.0
Bottom Seal	NA			Cement Seal	125.4	1,980.0 – 2,280.0
Monitor Well Casing	4.0-in. CS Casing	Blank	+1.0 – 2,357.75	3/8-in. Bentonite Chips	4.2	2,280.0 – 2,290.0
		Screen	2,357.75 – 2,658.05	No. 6 Sand Pack	8.4	2,290.0 – 2,310.0
		Blank w/end cap	2,658.05 – 2,678.24	1/8–1/4-in. Gravel Pack	221.55	2,310.0 – 2,812.0
Submersible pump	Bladder Pump	Pump depth	700	NA		
		Drop tube intake	2,600.0	NA		
Pump Riser Tubing	0.375-in. Tubing	Blank	+1.0 – 700.0	NA		
Pump Air Supply Tube	0.25-in. Tubing	Blank	+1.0 – 700.0	NA		
Water Access Tubing	1.25-in. Flush Joint Schedule 80 PVC	Blank	+1.2 – 760.0	NA		
		Screen w/end cap	760.0 – 800.0	NA		

CS = Carbon steel
ft = Feet
ft^3 = Cubic feet
in. = Inch
NA = Not applicable
PVC = Polyvinyl chloride

Table E−3. HTH-1RC Tritium Results

Sample Identification	Date	Time	Depth (ft)	MDA (dpm)	Tritium (pCi/L)	MDC (pCi/L)
Well Development - Air						
HTH-1 Well Dev.	06/07/09	2140	WD	36.73	-1981	3309
HTH-1 Well Dev.	06/07/09	2230	WD	37.39	-360	3369
HTH-1 Well Dev.	06/07/09	2350	WD	35.26	-3333	3177
HTH-1 Well Dev.	06/08/09	0020	WD	34.86	-1621	3140
HTH-1 Well Dev.	06/08/09	0120	WD	37.17	-360	3349
HTH-1 Well Dev.	06/08/09	0220	WD	36.93	-720	3327
HTH-1 Well Dev.	06/08/09	0320	WD	36.93	-720	3327
HTH-1 Well Dev.	06/08/09	0420	WD	3.97	-1351	357

ft = Feet
dpm = Disintegrations per minute
MDA = Minimum detectable activity
pCi/L = Picocuries per liter
MDC = Minimum detectable concentration
WD = Well development

Table E−4. HTH-1RC Water Quality Parameter Results

Date	Time	Depth (ft)	pH (SU)	Temperature (°C)	Conductivity (µS/cm)	Br^- (mg/L)	Turbidity (NTU)
Well Development - Pump							
06/07/09	2120	WD	9.84	27.11	635	1.5	881
06/07/09	2220	WD	8.59	29.73	508	6.6	>1000
06/07/09	2320	WD	8.58	29.65	537	3.4	523
06/08/09	0020	WD	8.45	28.85	531	3.7	108
06/08/09	0120	WD	8.61	29.4	536	3.2	80.8
06/08/09	0220	WD	8.63	28.66	536	2.8	59.5
06/08/09	0320	WD	8.63	28.96	536	2.5	56.3
06/08/09	0420	WD	8.65	28.8	535	2.1	50.5

Br– = Bromide
°C = Degrees Celsius
ft = Feet
mg/L = Milligrams per liter
NTU = Nephelometric turbidity unit
SU = Standard unit
WD = Well development
µS/cm = Microsiemens per centimeter

Schlumberger – Summary of Results

It is our goal in this review to present a general overview of the condition of the cement and casing at CNTA, HTH-1. All interpretations or opinions, as presented in this review, will be covered under Schlumberger's current Terms and Agreement Clause, which stipulates "Schlumberger will not be held responsible for any actions, real or inferred because of this review."

The two sonic tools used in the logging operations—the SSLT for the cement bond to formation, and the USIT for casing corrosion and cement mapping—require fluid in the well bore to transfer the signals from the tools to the casing and back. Because of these operating parameters, the SSLT-CBL-VDL readings are only valid below the fluid level at 535 feet. Furthermore, the USIT will require a higher hydrostatic pressure on the spinning transducer, to prevent cavitations in the fluid column, so it is only valid below 629 feet.

- Column 1 presents the Depth reading, Casing Collar (CCL-U), and the tool centralization curve (ECCE). All are within operation parameters and won't be addressed again in this review.
- Columns 2 and 3 each present components of the USIT casing corrosion profile. Minimum/maximum radii are displayed for the casing ID and OD. This presentation is also interpreted for the casing rugosity, changes in casing weights, and different casing conditions, such as expansion, ovality, or damage. Perforations may also be visible if they aren't filled with concretions or salts.
- Column 4 displays the raw acoustic impedance and is interpreted for cement to casing bond, with the darker colors indicating better cement bond to the casing. Perforations may also be visible as a small circular dot that is usually darker than the surrounding coloring.
- Column 5 has the SSLT amplitude curves for cement to casing bond; one is scaled at 100mv, the other at 20mv. These are measurable values, with a maximum value of 52mv for free pipe. The presentation will also shade the curves when the average cement bond to casing is above 75%. The Gamma Ray curve is also presented here and is used for correlation and identification of formation characteristics.
- Column 6 and 7 are for presenting the USIT cement map and will be interpreted for cement to casing micro-debonding or micro-annulus. Cement channeling will also be identifiable here, and other cement conditions may be inferred by the presence of fluid or gas (air) in the cement presentation.
- Column 8 is the SSL-T cement to formation bond presentation and may also be interpreted as an average value for cement to casing bond. Micro-annulus and channeling are inferred in the presentation but difficult to quantify without the USIT map.

The excess amount of casing distortion present leads one to believe there may still be extreme forces at work against the cement and casing. These forces could be released if the casing is deepened or milled for a side-track completion.

- **538' –629'; USIT invalid** / CBL-VDL indicates fluid-filled micro-annulus between the cement and casing, amplitude shading intermittent, below 75% bonded, with cement to formation bonding.

- **629’- 700’: USIT valid / Casing in gauge**, gas- and fluid-filled micro-annulus between the cement and casing, amplitude shading intermittent, below 75% bonded, with cement to formation bonding.
- **700’-800’; Casing distorted**, micro-debonded, amplitude shading above 75% bonded, good cement to formation bonding.
- **800’-850’; Casing distorted**, fluid-filled micro-annulus present, amplitude shading intermittent, above 75% bonded, with cement to formation bonding.
- **850’-947’; Casing in gauge**, gas- and fluid-filled micro-annulus present, amplitude shading above 75% bonded, with cement to formation bonding.
- **947’-1150’; Casing distorted**, micro-debonded present, amplitude shading intermittent, above 75% bonded, with cement to formation bonding.
- **1150’-1208’; Casing in gauge**, gas- and fluid-filled micro-annulus present, amplitude shading intermittent below 75% bonded, with cement to formation patchy.
- **1208’-1308’; Casing in gauge**, micro-debonded, amplitude shading present above 75% bonded, with cement to formation bonding.
- 1**308’-1400’; Casing in gauge**, gas- and fluid-filled micro-annulus present, amplitude shading intermittent below 75% bonded, with cement to formation bond patchy.
- **1400’-1500’; Casing weight change**, micro-debonded, amplitude shading present above 75% bonded, with cement to formation bonding.
- **1500’-1660’; Casing in gauge**, fluid-filled channel or cracked cement, amplitude shading intermittent below 75% bonded, with cement to formation bonding.
- **1660’-1718’; Casing distorted**, fluid-filled channel or cracked cement, amplitude shading present above 75% bonded, with cement to formation bonding.
- **1718’-1850’; Casing in gauge**, fluid-filled channel or cracked cement, amplitude shading present above 75% bonded, with cement to formation bonding.
- **1850’-1976’; Casing distorted**, micro-debonded, amplitude shading present above 75% bonded, with cement to formation bonding.
- **1976’-2200’; Casing in gauge**, fluid-filled channel or cracked cement, amplitude shading present above 75% bonded, with cement to formation bonding.
- **2200’-2300’; Casing distorted**, micro-debonded or cracked cement, amplitude shading present above 75% bonded, with cement to formation bonding.
- **2300’-2400’; Casing in gauge**, micro-debonded, amplitude shading present above 75% bonded, with cement to formation bonding.
- **2400’-2460’; Casing distorted**, fluid-filled channel in or cracked cement, amplitude shading present above 75% bonded, with cement to formation bonding.
- **2460’-2480’; Casing in gauge**, micro-debonded, amplitude shading present above 75% bonded, with cement to formation bonding.
- **2480’-2640’; Casing in gauge**, gas- and fluid-filled micro-annulus between the cement and casing, amplitude shading intermittent, below 75% bonded, with cement to formation bonding.

- **2640’-2710’; Casing distorted**, gas- and fluid-filled micro-annulus present, amplitude shading intermittent below 75% bonded, no measurable cement to formation bond.
- **2710’-2810’; Casing in gauge**, gas- and fluid-filled micro-annulus between the cement and casing, amplitude shading intermittent, below 75% bonded, no measurable cement to formation bond.

Schlumberger

Company: **S.M Stoller Corporation**

Well: **HTH 1**
Field: **CNTA**
County: **Nye** State: **Nevada**

USIT SONIC IMAGER
USIT CORROSION LOG
USIT CEMENT LOG

County: Nye
Field: CNTA
Location: Central Nevada Test Area :
Well: HTH 1
Company: S.M Stoller Corporation

LOCATION

Central Nevada Test Area :
NYe County, NV

Elev.: K.B.
G.L. 6010.8 ft
D.F.

Permanent Datum: GROUND LEVEL Elev.: 6010.8 ft
Log Measured From: GROUND LEVEL 0.0 ft above Perm. Datum
Drilling Measured From: GROUND LEVEL

API Serial No.	Section	Township	Range

Logging Date	16-Oct-2008	
Run Number	1	
Depth Driller	3704 ft	
Schlumberger Depth	2818 ft	
Bottom Log Interval	2818 ft	
Top Log Interval	535 ft	
Casing Fluid Type	WATER	
Salinity		
Density	8.3 lbm/gal	
Fluid Level	535 ft	
BIT/CASING/TUBING STRING		
Bit Size	12.250 in	
From	0 ft	
To	2818 ft	
Casing/Tubing Size	9.625 in	
Weight	36 lbm/ft	
Grade	J-55	
From	0 ft	
To	2818 ft	
Maximum Recorded Temperatures		
Logger On Bottom / Time	16-Oct-2008	
Unit Number / Location	323 BAKERSFIELD	
Recorded By	S. JABER	
Witnessed By	CRAIG GOODKNIGHT	

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
	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

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: SSLT	OS1:
OS2: CBL-VDL	OS2:
OS3: GAMMA RAY	OS3:
OS4: CCL	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
No correlation log available, zeroed at ground level.	
Bit size: 12.25: from Surf. - TD	
Casing size: 9.625 #36: from surf. to TD	
USIT invalid above 629ft. the hydrostatic pressure is below	
coupling pressure need for transducer.	
Fluid level @535 ft.	
CBL-VDL invalid above fluid level.	

RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:		15C0-309	PROGRAM VERSION:		
FLUID LEVEL:		535 ft	FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

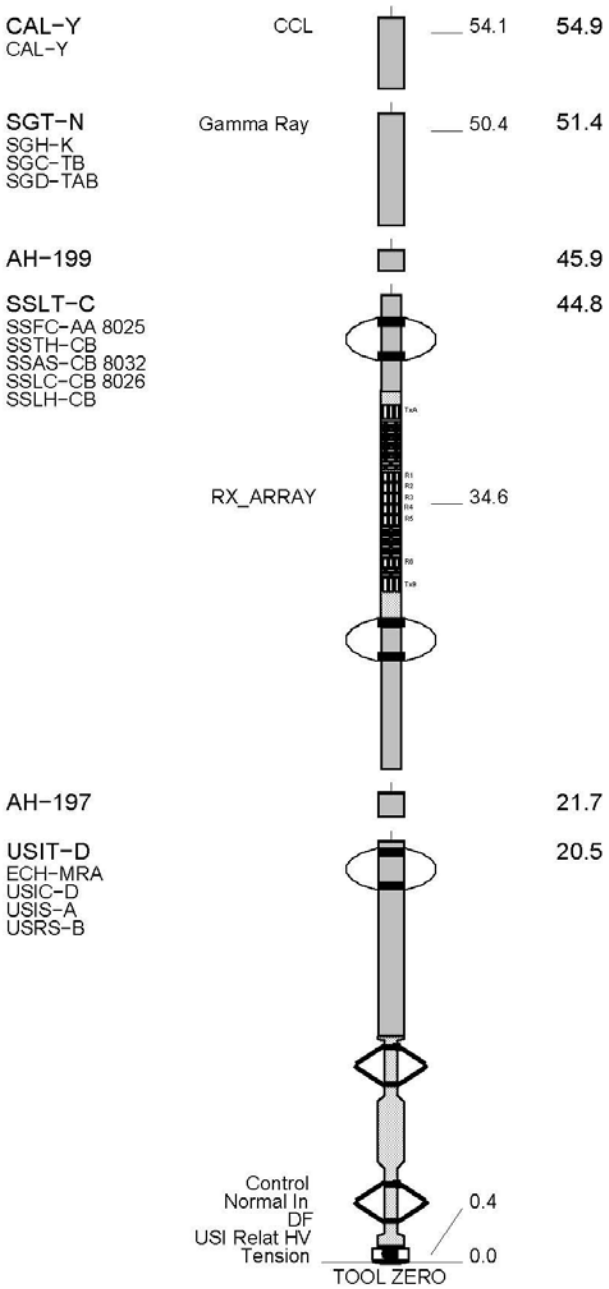
EQUIPMENT DESCRIPTION

RUN 1	RUN 2

SURFACE EQUIPMENT

GSR-U/Y
WITM (DTS)-A

DOWNHOLE EQUIPMENT



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

Schlumberger

USIT−CEMENT BOND LOG
CBL−VDL−GR−CCL LOG

MAXIS Field Log

Company: S.M Stoller Corporation **Well: HTH 1**

Input DLIS Files

02−Nov−2008 13:52

Output DLIS Files

DEFAULT	USI_SONIC_043PUP	FN:42	PRODUCER	02−Nov−2008 15:04	2811.0 FT	430.5 FT

OP System Version: 15C0−309

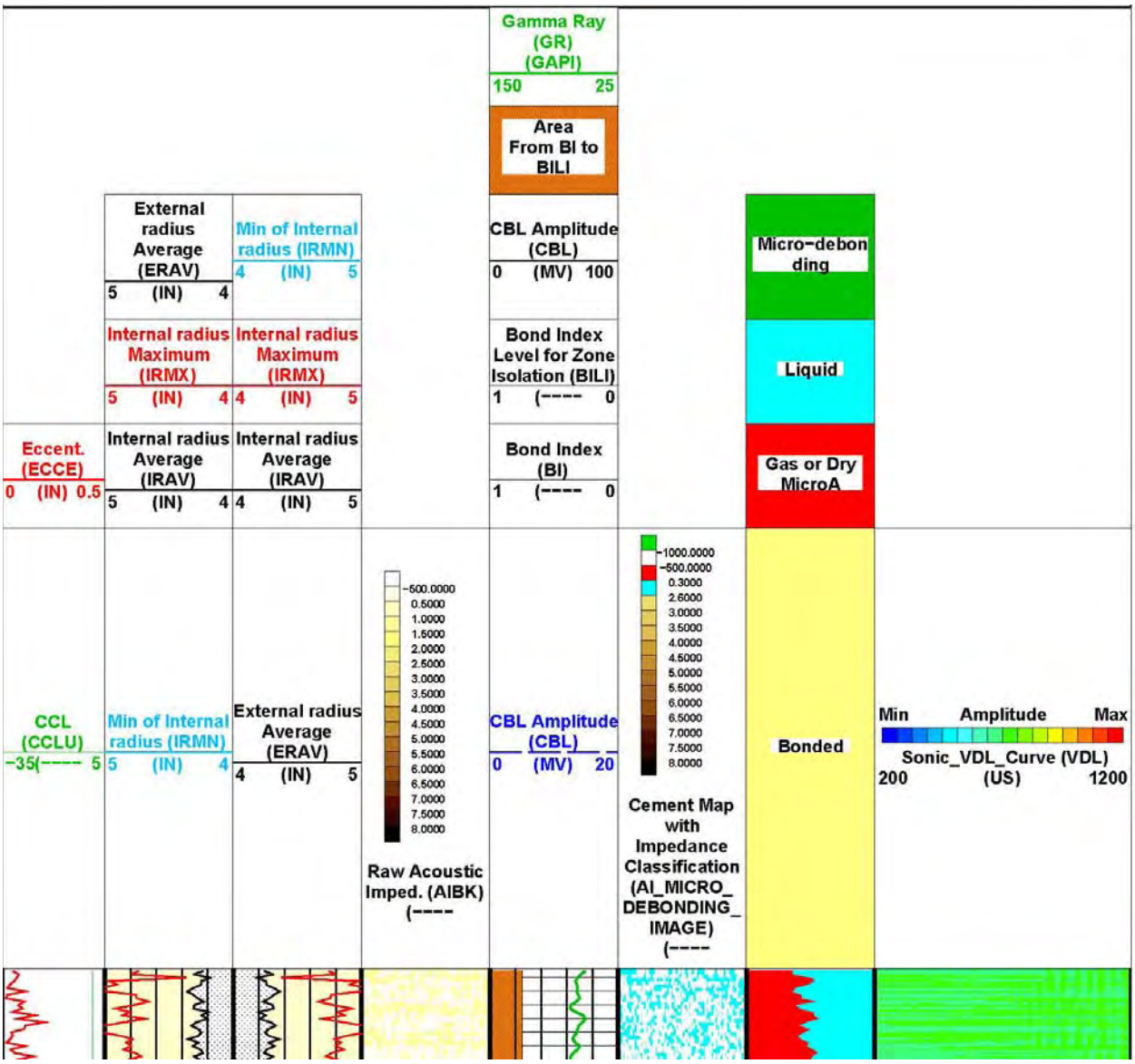
MCM

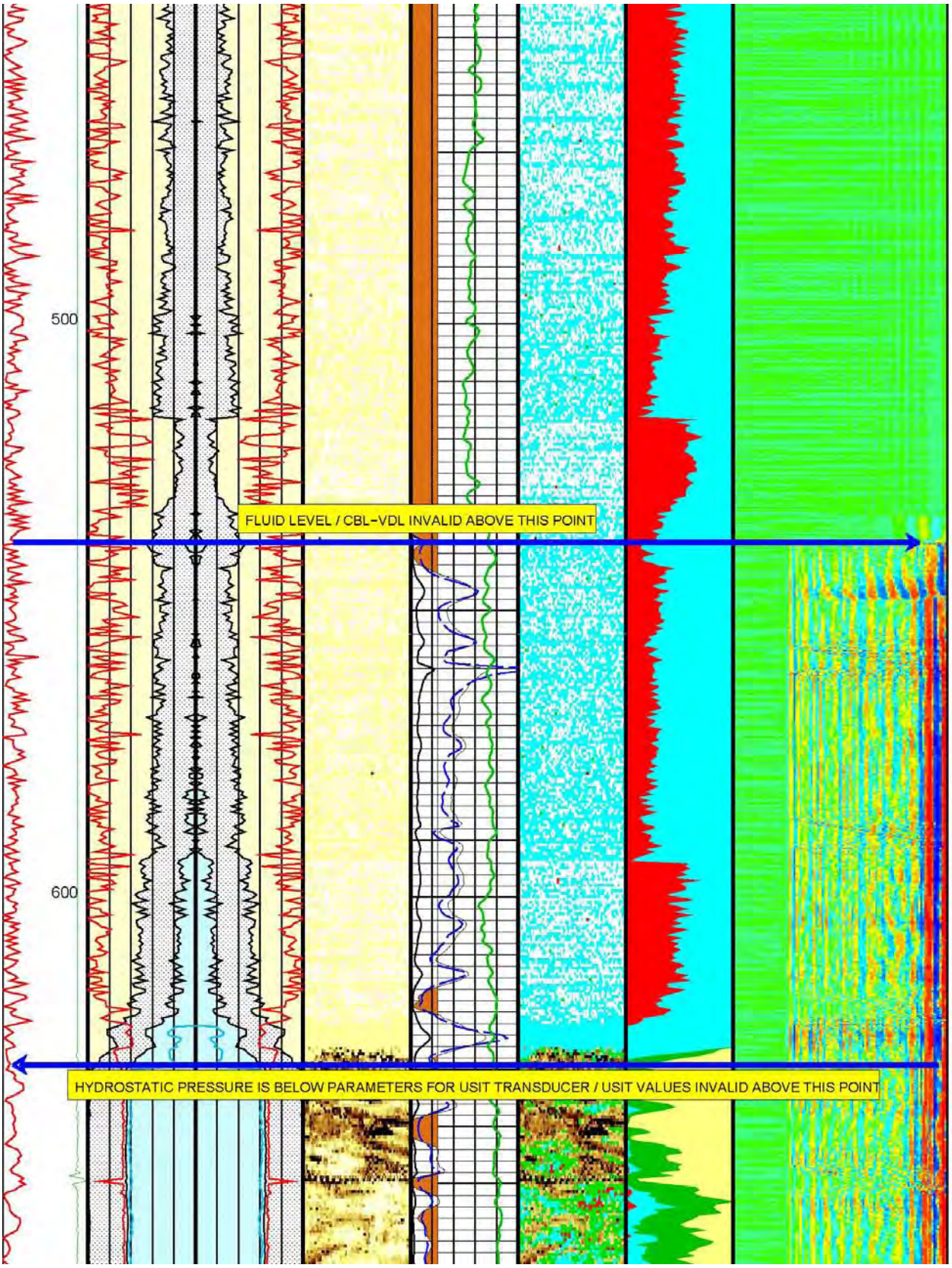
USIT−D	15C0−309	SSLT−C	15C0−309
SGT−N	15C0−309	CAL−Y	15C0−309
DTC−H	15C0−309		

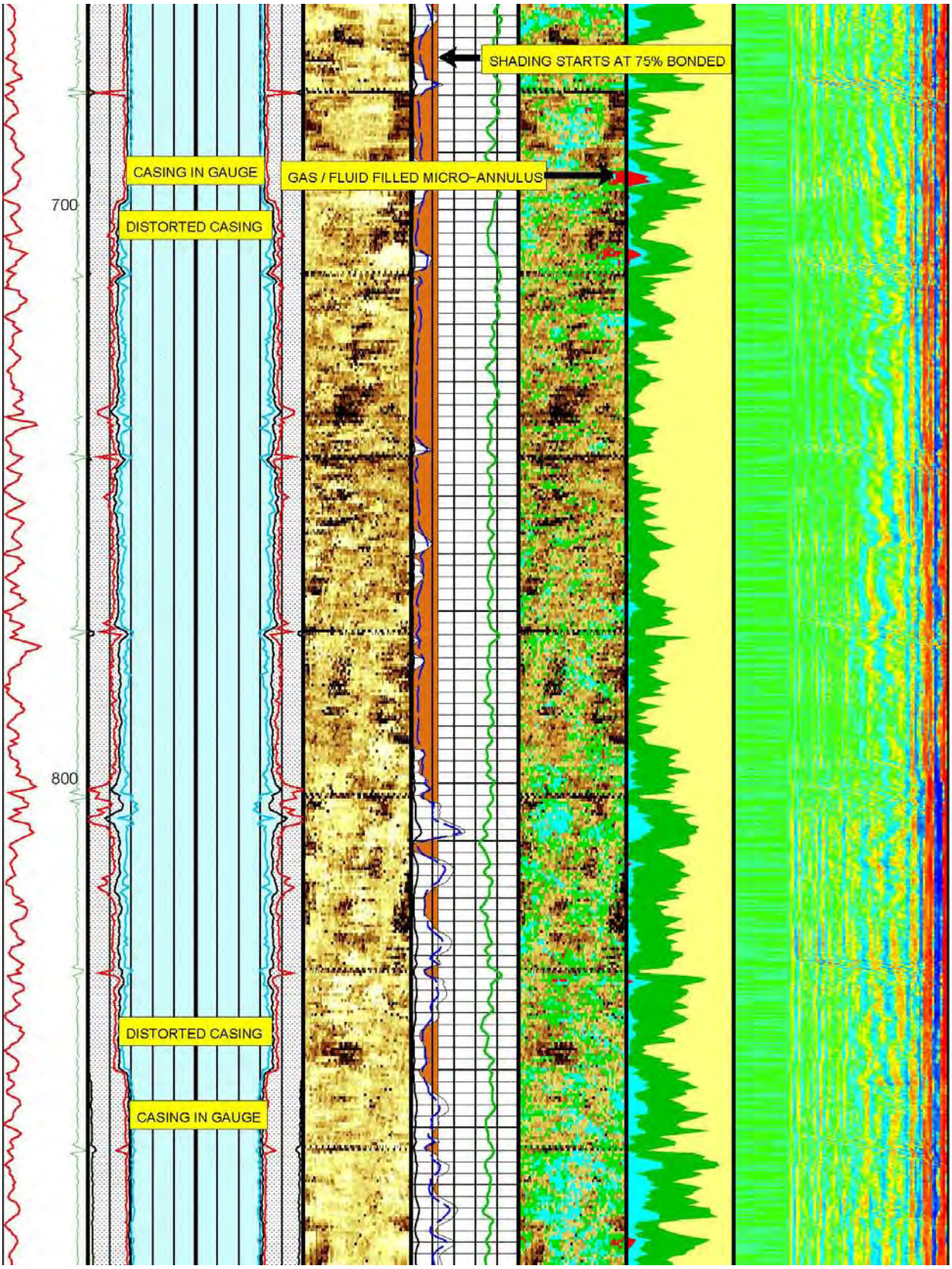
Zoning of Mud Parameters

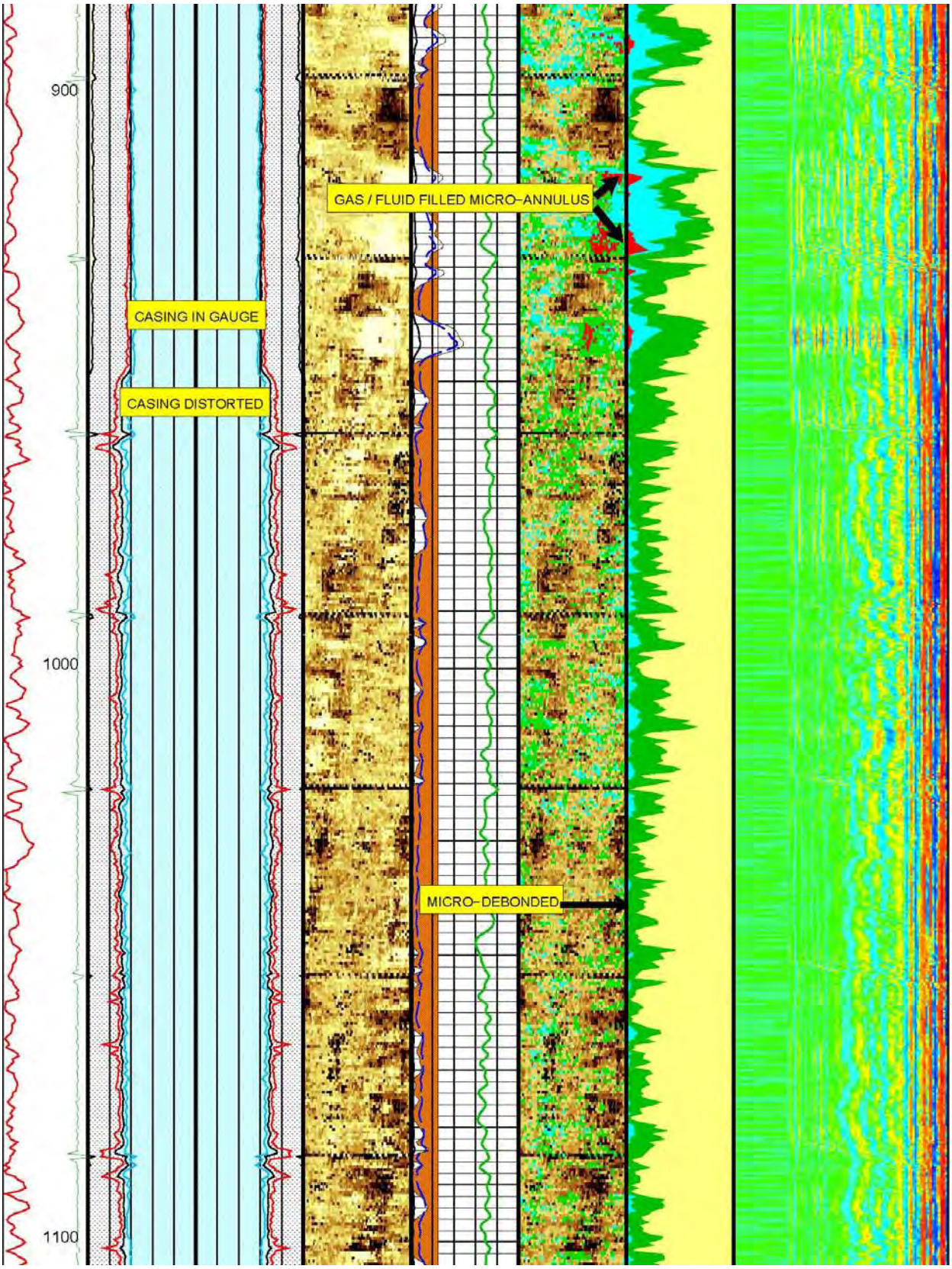
Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
2500.00	194.00	1.43
500.00	194.00	1.43

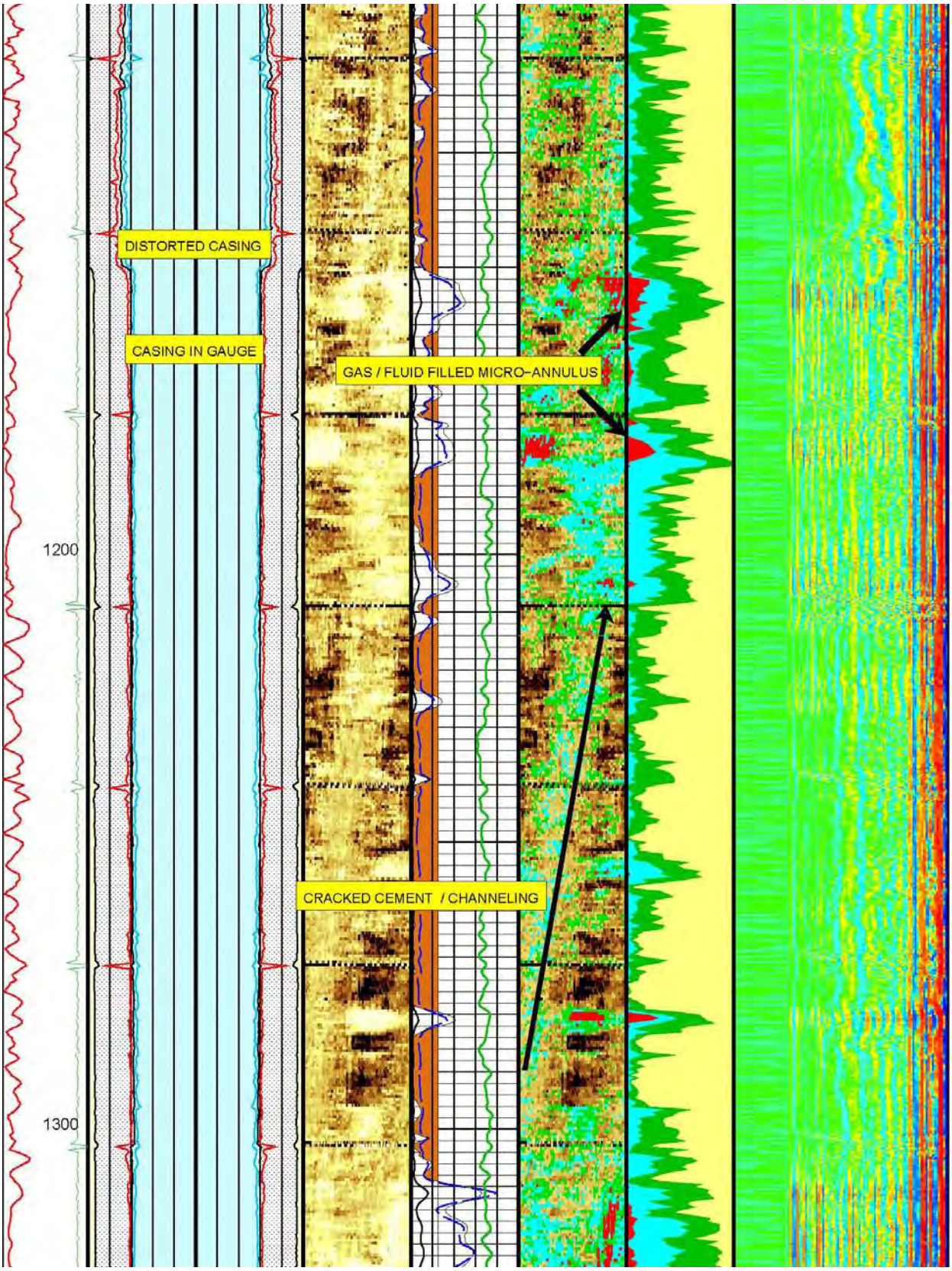
Presentation 1

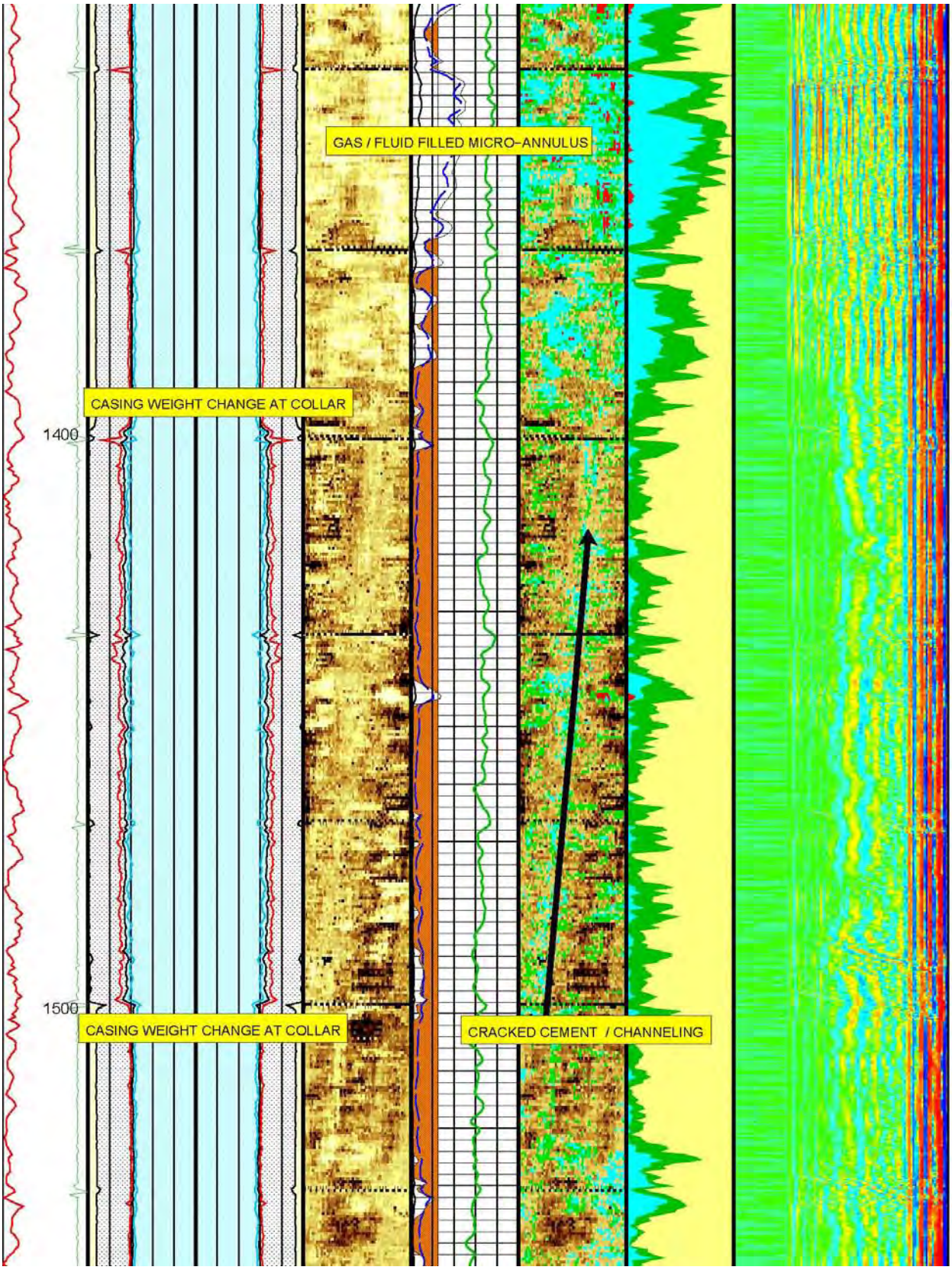


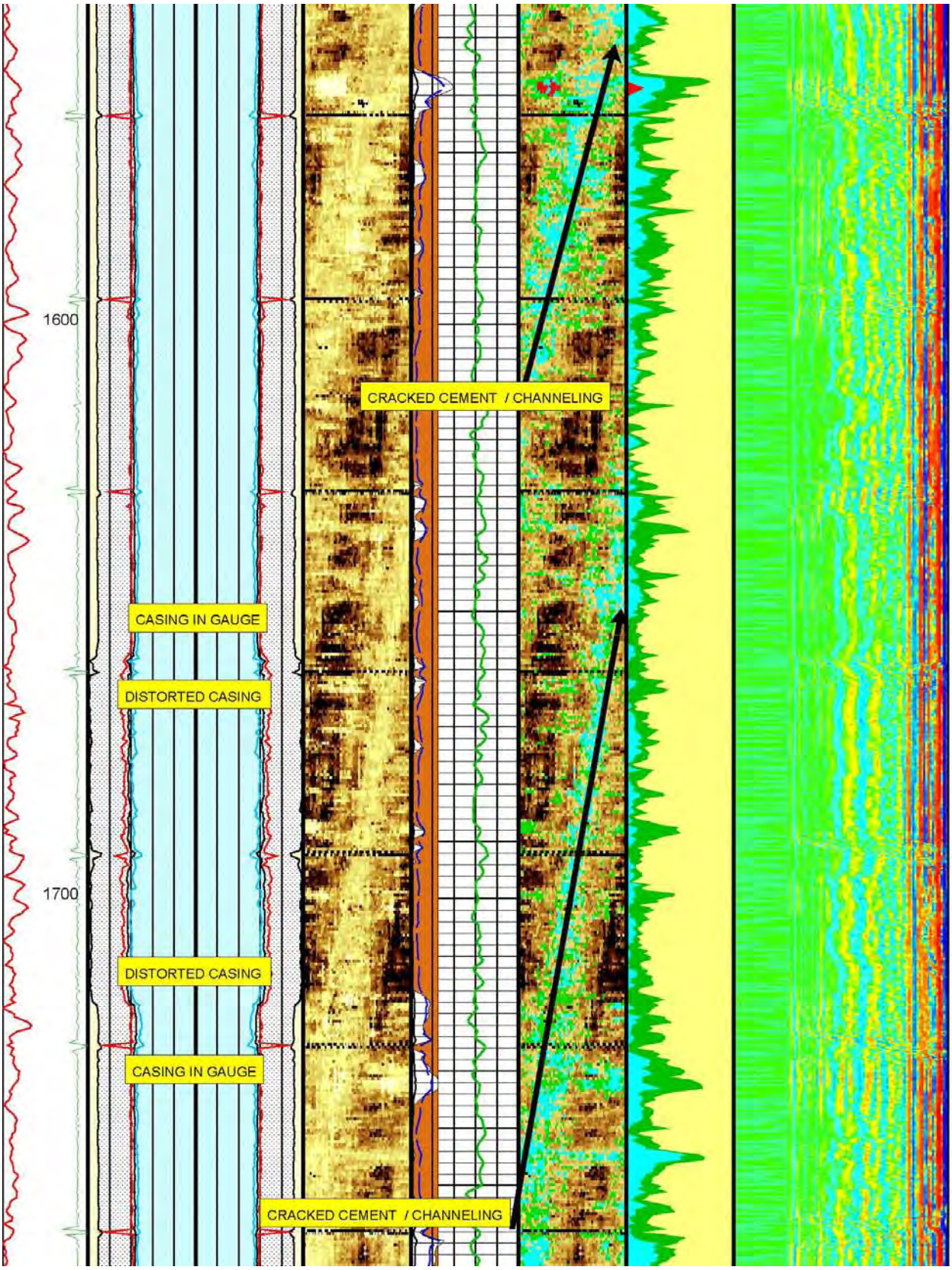

500
600
FLUID LEVEL / CBL-VDL INVALID ABOVE THIS POINT
HYDROSTATIC PRESSURE IS BELOW PARAMETERS FOR USIT TRANSDUCER / USIT VALUES INVALID ABOVE THIS POINT

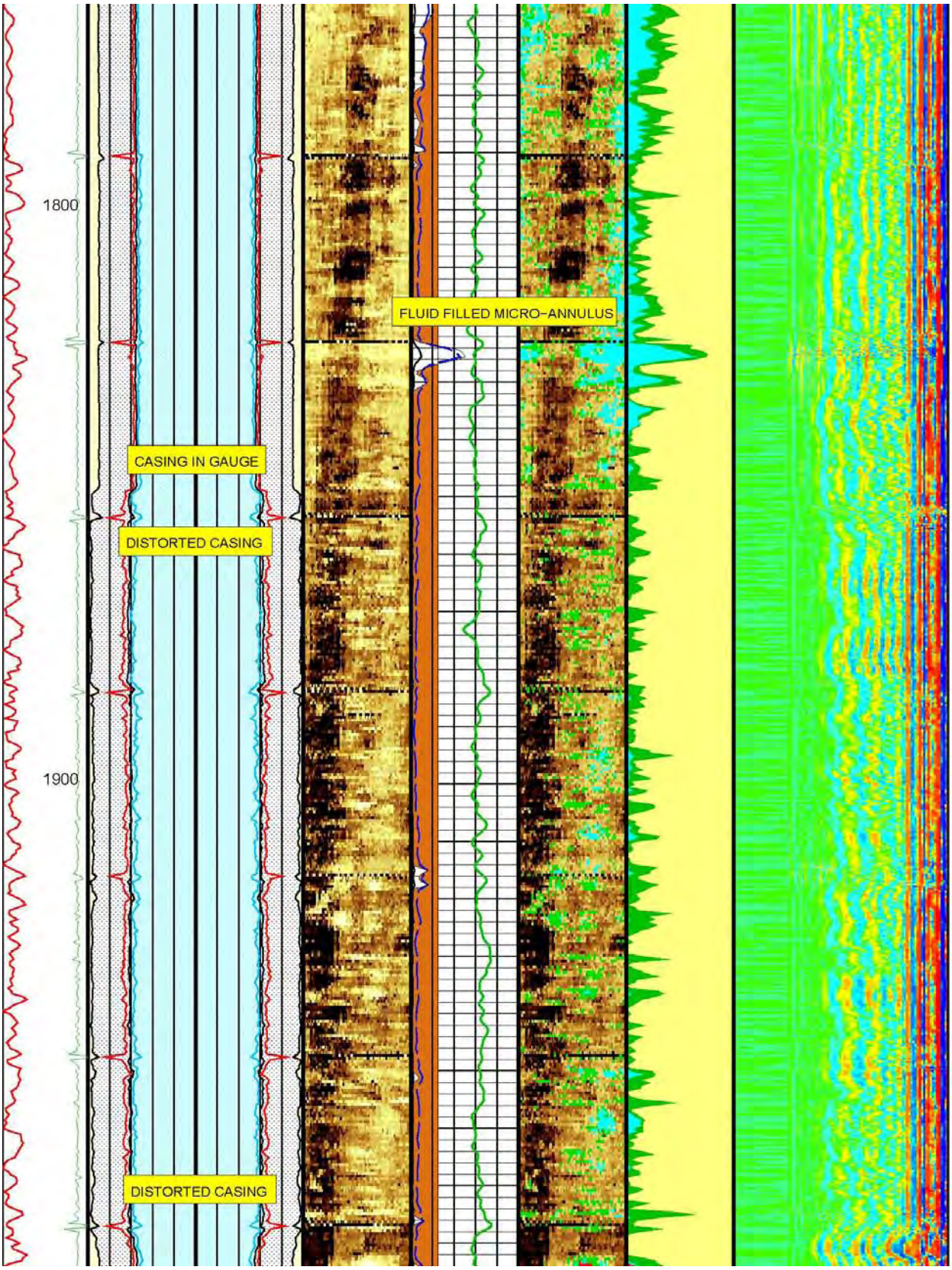

SHADING STARTS AT 75% BONDED
CASING IN GAUGE
GAS / FLUID FILLED MICRO-ANNULUS
700
DISTORTED CASING
800
DISTORTED CASING
CASING IN GAUGE

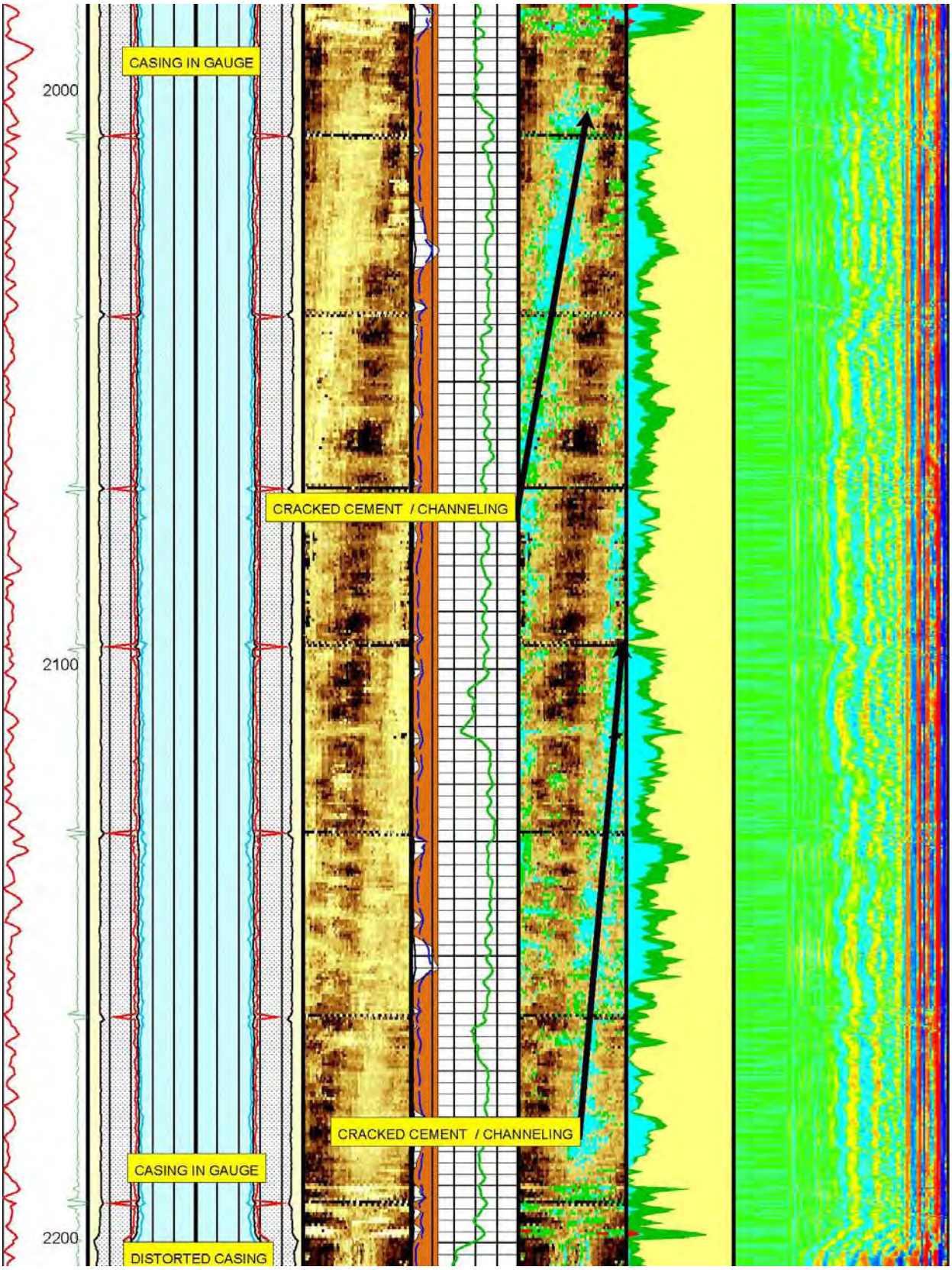

900
1000
1100
GAS / FLUID FILLED MICRO-ANNULUS
CASING IN GAUGE
CASING DISTORTED
MICRO-DEBONDED

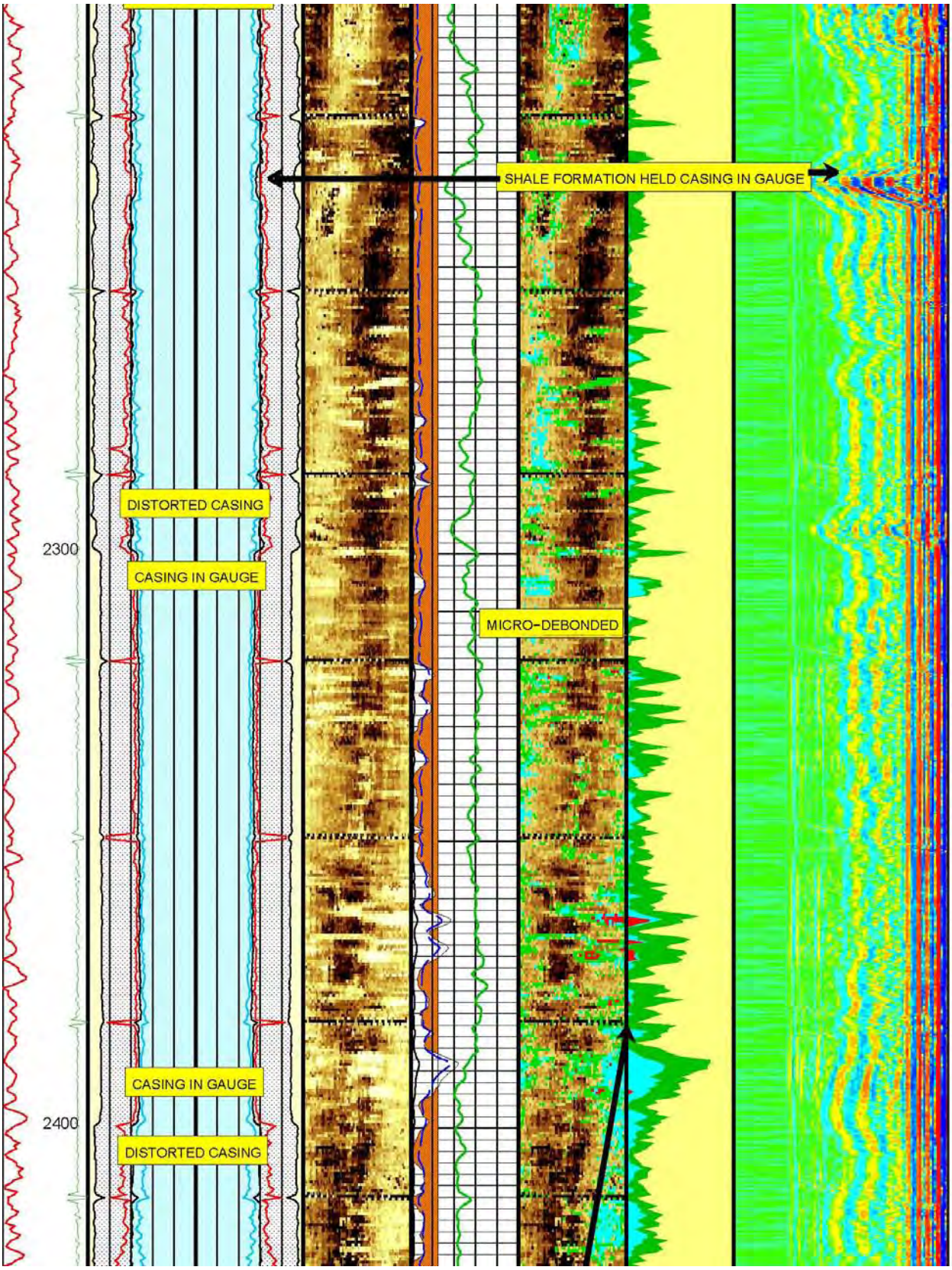

DISTORTED CASING
CASING IN GAUGE
GAS / FLUID FILLED MICRO–ANNULUS
1200
CRACKED CEMENT / CHANNELING
1300

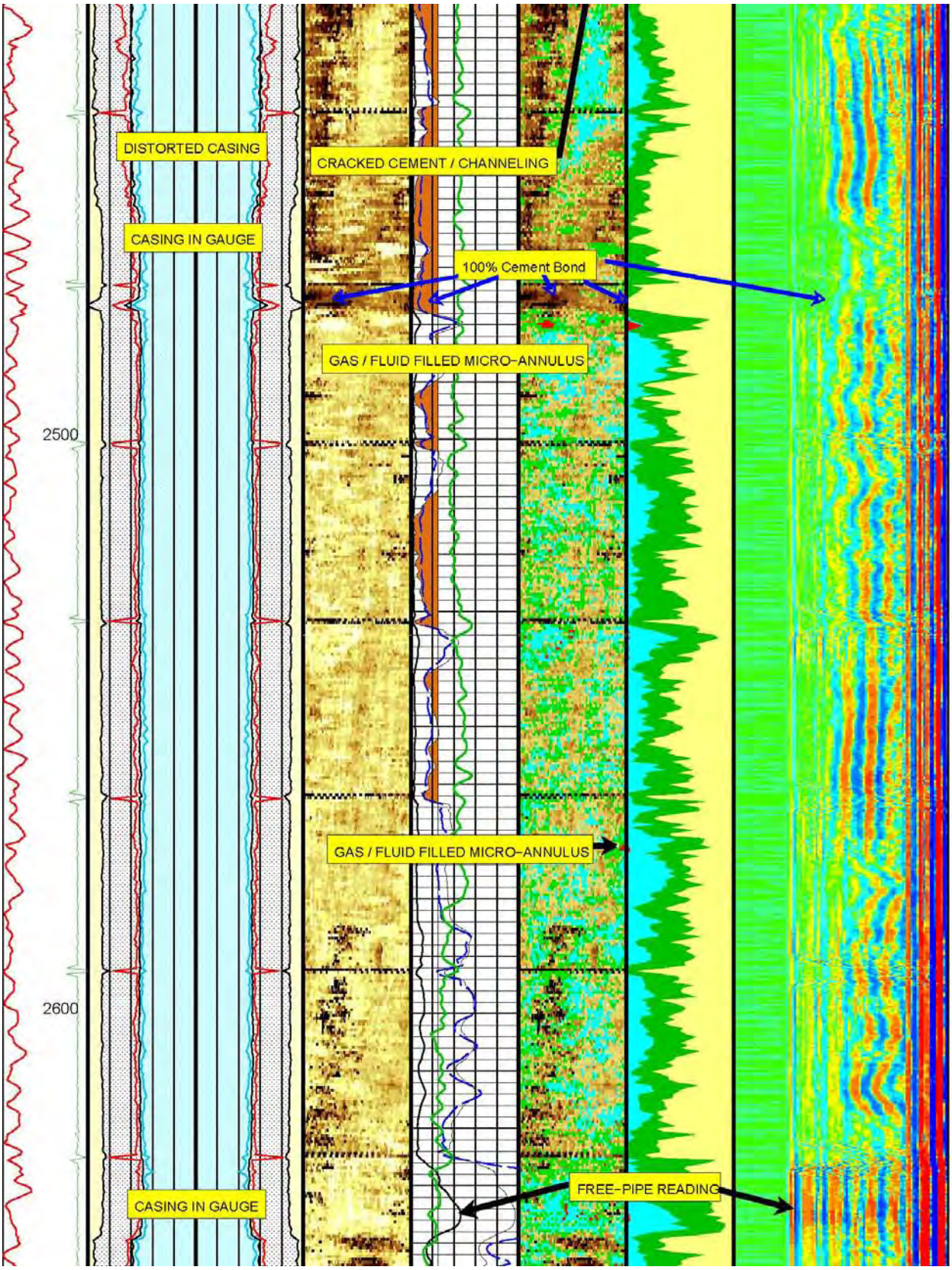

GAS / FLUID FILLED MICRO–ANNULUS
CASING WEIGHT CHANGE AT COLLAR
1400
1500
CASING WEIGHT CHANGE AT COLLAR
CRACKED CEMENT / CHANNELING

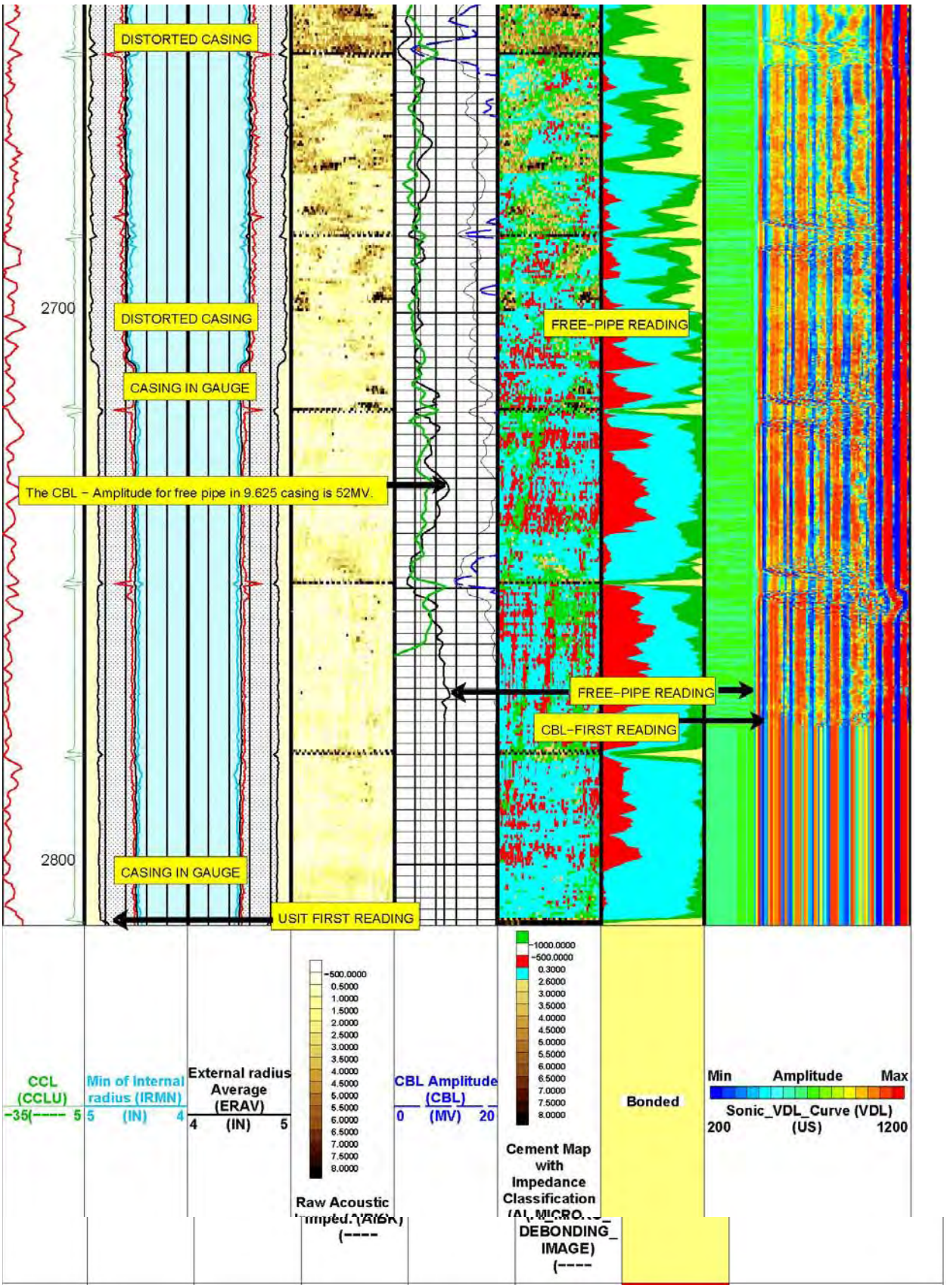

1600
1700
CRACKED CEMENT / CHANNELING
CASING IN GAUGE
DISTORTED CASING
DISTORTED CASING
CASING IN GAUGE
CRACKED CEMENT / CHANNELING

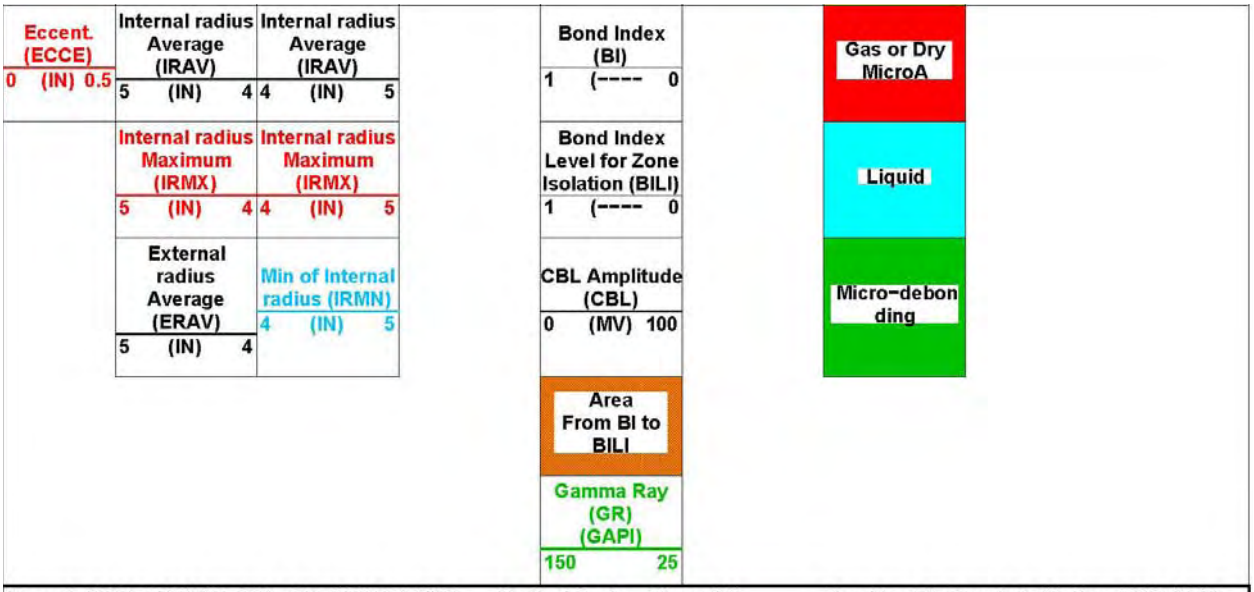

1800
1900
FLUID FILLED MICRO-ANNULUS
CASING IN GAUGE
DISTORTED CASING
DISTORTED CASING


CASING IN GAUGE
2000
CRACKED CEMENT / CHANNELING
2100
CRACKED CEMENT / CHANNELING
CASING IN GAUGE
2200
DISTORTED CASING


SHALE FORMATION HELD CASING IN GAUGE
DISTORTED CASING
2300
CASING IN GAUGE
MICRO-DEBONDED
CASING IN GAUGE
2400
DISTORTED CASING


DISTORTED CASING
CRACKED CEMENT / CHANNELING
CASING IN GAUGE
100% Cement Bond
GAS / FLUID FILLED MICRO-ANNULUS
2500
GAS / FLUID FILLED MICRO-ANNULUS
2600
FREE-PIPE READING
CASING IN GAUGE


DISTORTED CASING
2700
DISTORTED CASING
CASING IN GAUGE
The CBL – Amplitude for free pipe in 9.625 casing is 52MV.
FREE-PIPE READING
FREE-PIPE READING
CBL-FIRST READING
2800
CASING IN GAUGE
USIT FIRST READING
CCL (CCLU)
-35(----- 5
Min of internal radius (IRMN)
5 (IN) 4
External radius Average (ERAV)
4 (IN) 5
Raw Acoustic
CBL Amplitude (CBL)
0 (MV) 20
Cement Map with Impedance Classification
DEBONDING_ IMAGE)
Bonded
Min Amplitude Max
Sonic_VDL_Curve (VDL)
200 (US) 1200



Format: USIT-CEMENT-CBL-GR_9.625 CASING Vertical Scale: 5" per 100 Graphics File Created: 02-Nov-2008 15:04

OP System Version: 15C0-309

MCM

USIT-D	15C0-309	SSLT-C	15C0-309
SGT-N	15C0-309	CAL-Y	15C0-309
DTC-H	15C0-309		

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−D: Ultrasonic Imaging − D			
AGMN	Minimum Gain of Cartridge	−4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	9.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	8.921	IN
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	20	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
SDNV	Number of Vertical Samples used for Micro−debonding Computation	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro−debonding	0.5	
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro−debonding	0.3	
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.352	IN
UMAO	USIT Measurement Angular Offset	−10	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.1081	US
ZCAS	Acoustic Impedance of Casing	46.25	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.48	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
SSLT−C: SlimAccess Sonic Logging Tool			
BILI	Bond Index Level for Zone Isolation	0.75	
CBAF	CBL Adjustment Factor	0.9	
CBLG	CBL Gate Width	50	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	52	MV
CMCF	CBL Cement Type Compensation Factor	0.43206	
CTHI	Casing Thickness	0.363554	IN
DETE	Detection Peak	E1	
DFAD_INTERVAL_MODE	Detection Interval Mode for first arrival	FIXED	
DTF	Delta−T Fluid	189	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	1	
GOBO	Good Bond	5	MV
MAHTR	Manual High Threshold Refernce	40	
MATT	Maximum Attenuation	9.02354	DB/F
MNHTR	Minimum High Threshold Reference	30	
MODE	Sonic Firing Mode	CBL	
MSA	Minimum Sonic Amplitude	1.57543	MV
NMSG	Near Minimum Sliding Gate	265	US
NUMP	Number of Detection Passes	2	
SGAD	Sliding Gate Allow/Disallow	OFF	
SGDT	Sliding Gate Delta−T	57	US/F
SLEV	Signal Level for Threshold Control	5000	
VDLG	VDL Manual Gain	5	
VDM	VDL Display Mode	R5	
ZCMT	Acoustic Impedance of Cement	4.75	MRAY
System and Miscellaneous			
CWEI	Casing Weight	36.00	LB/F
DFD	Drilling Fluid Density	8.30	LB/G
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Schlumberger

USIT–CORROSION LOG WITH CEMENT IMPEDANCE

MAXIS Field Log

Company: S.M Stoller Corporation **Well: HTH 1**

Input DLIS Files

DEFAULT	USI_SONIC_043PUP	FN:42	PRODUCER	02–Nov–2008 15:04	2811.0 FT	430.5 FT

Output DLIS Files

DEFAULT	USI_SONIC_046PUP	FN:45	PRODUCER	02–Nov–2008 19:10	2811.0 FT	630.5 FT

OP System Version: 15C0–309

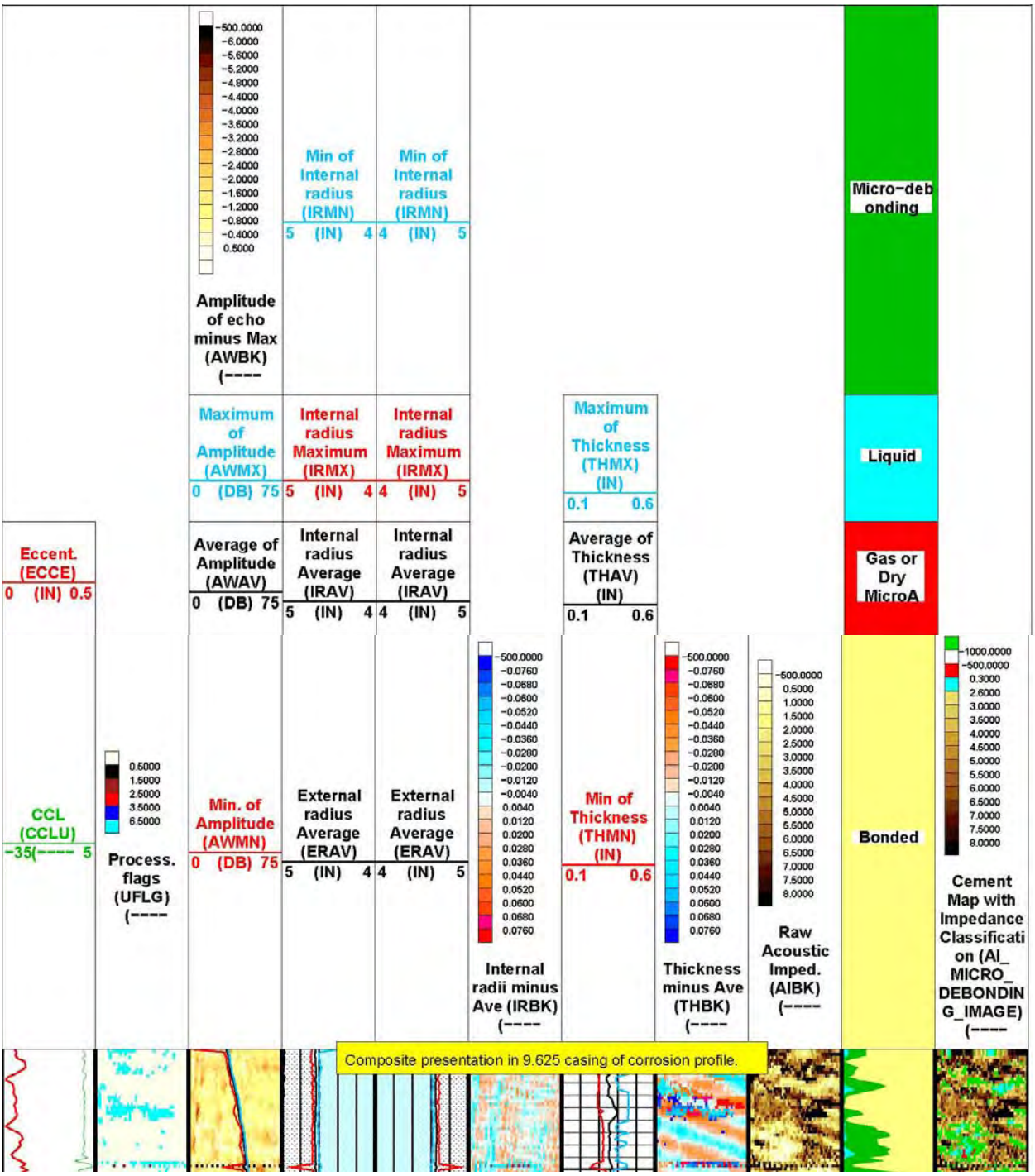
MCM

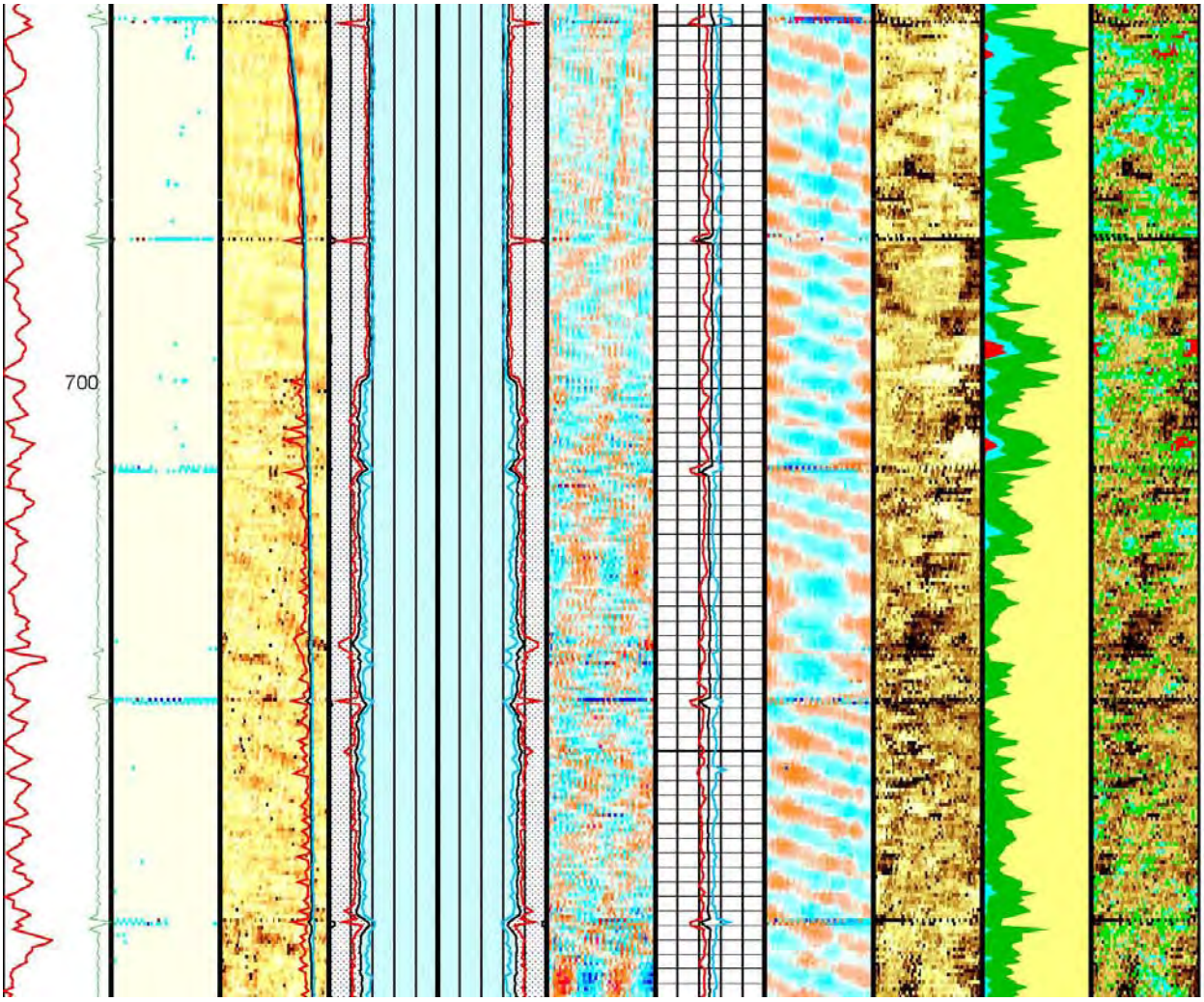
USIT–D	15C0–309	SSLT–C	15C0–309
SGT–N	15C0–309	CAL–Y	15C0–309
DTC–H	15C0–309		

Zoning of Mud Parameters

Depth	Fluid Velocity (DFVL)	Acoustic Impedance (ZMUD)
2500.00	194.00	1.43
2000.00	194.00	1.43
1500.00	194.00	1.43
1000.00	194.00	1.43
500.00	194.00	1.43

Presentation 2

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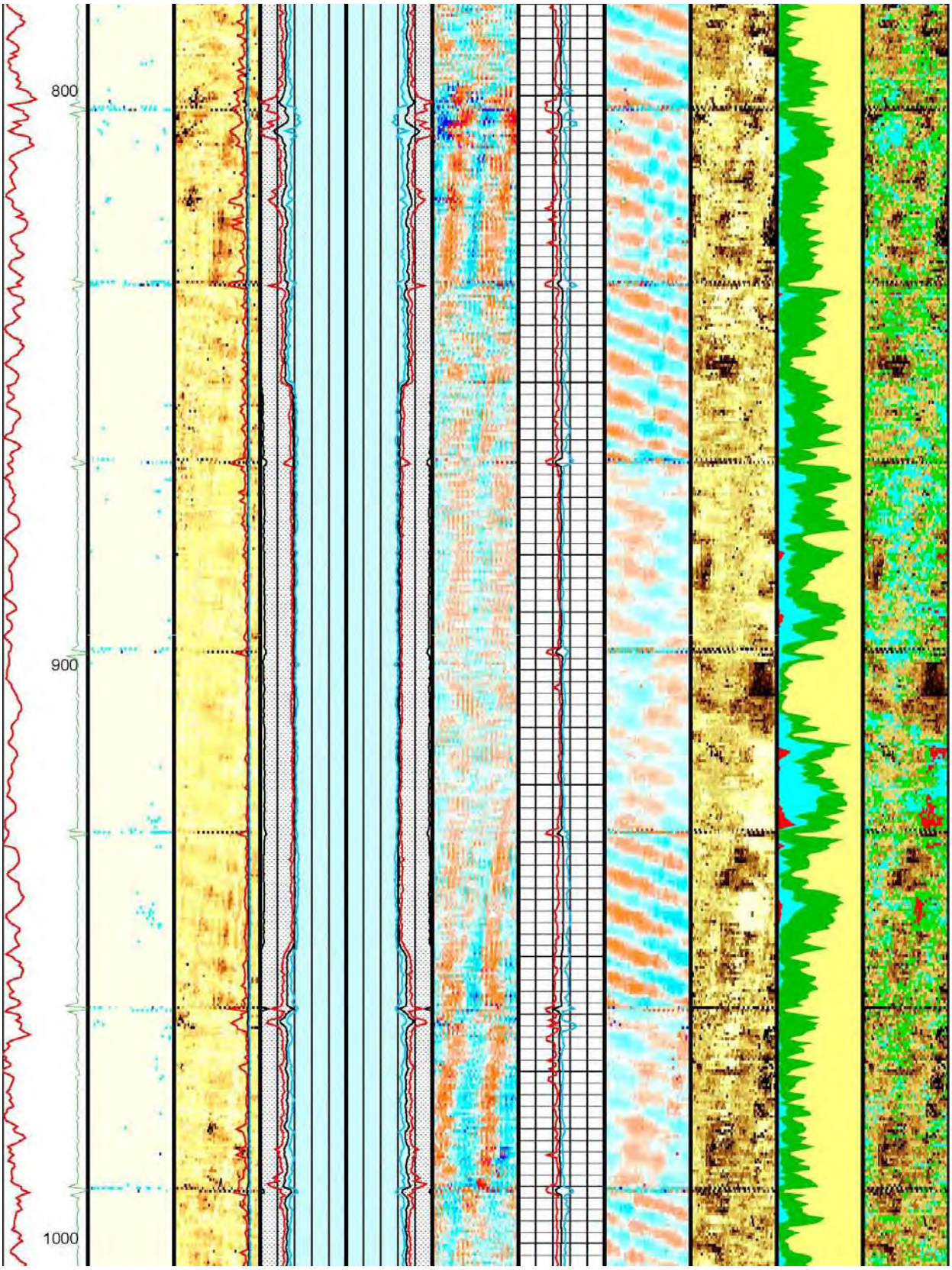
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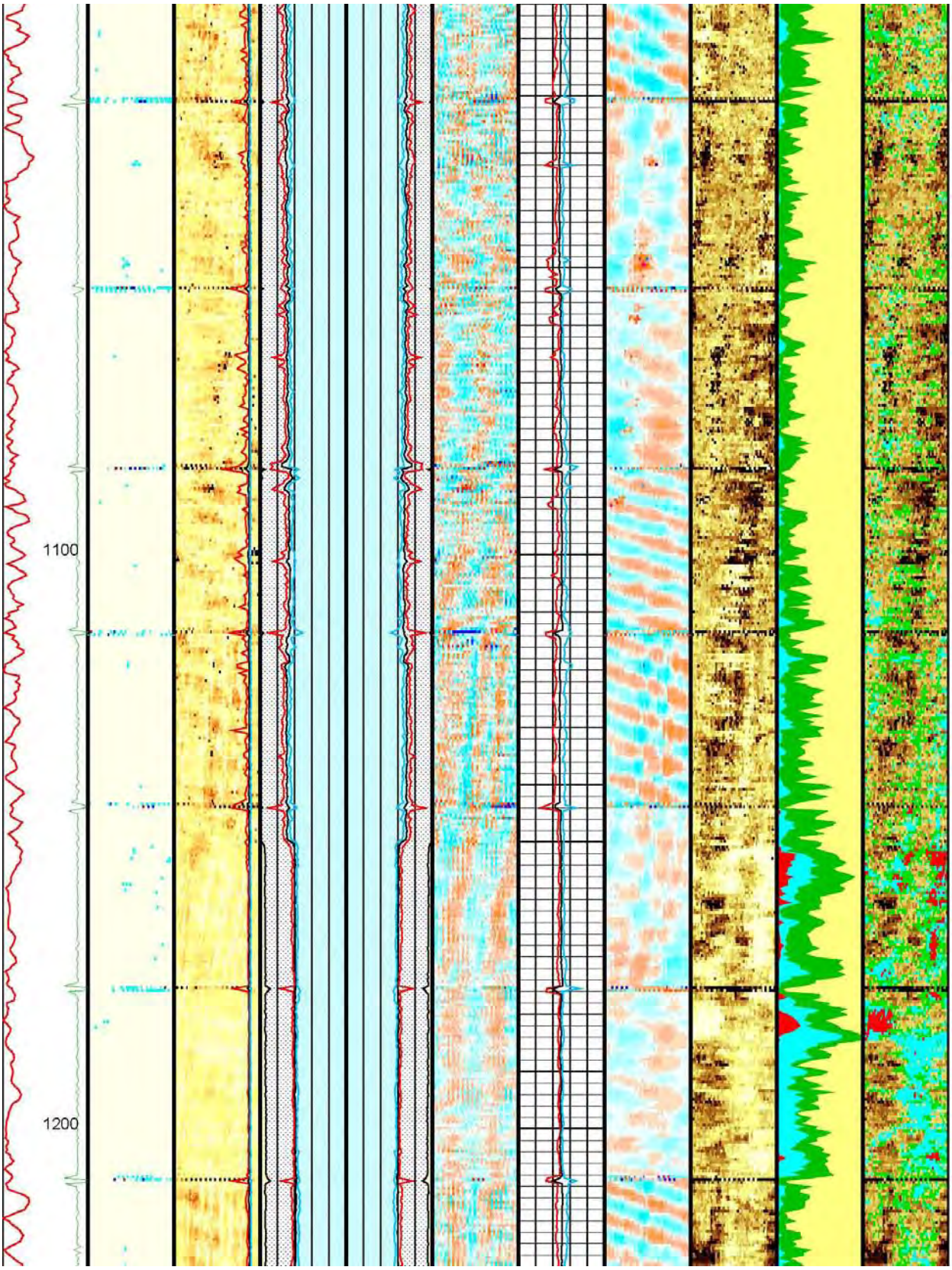
900
1000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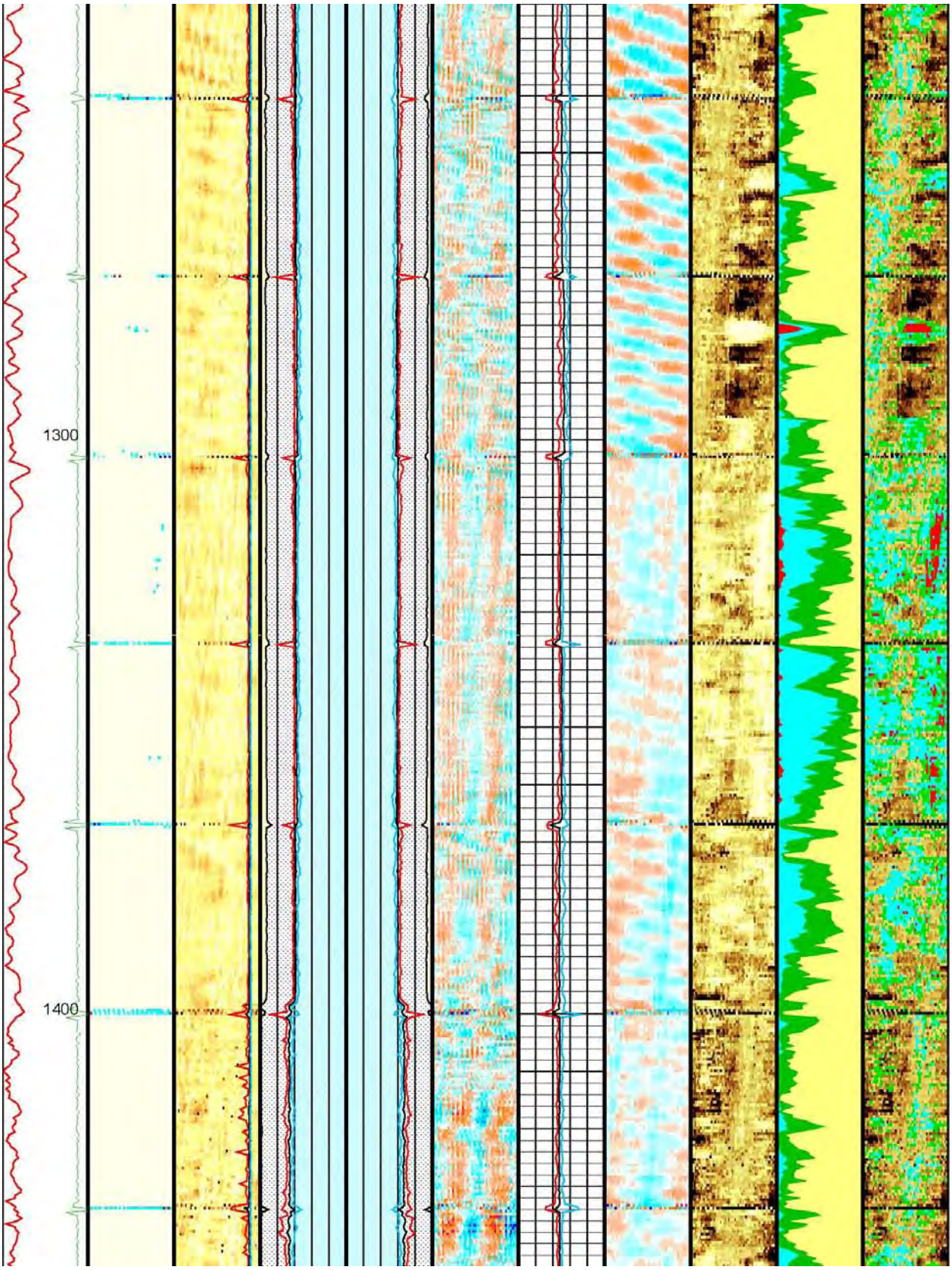
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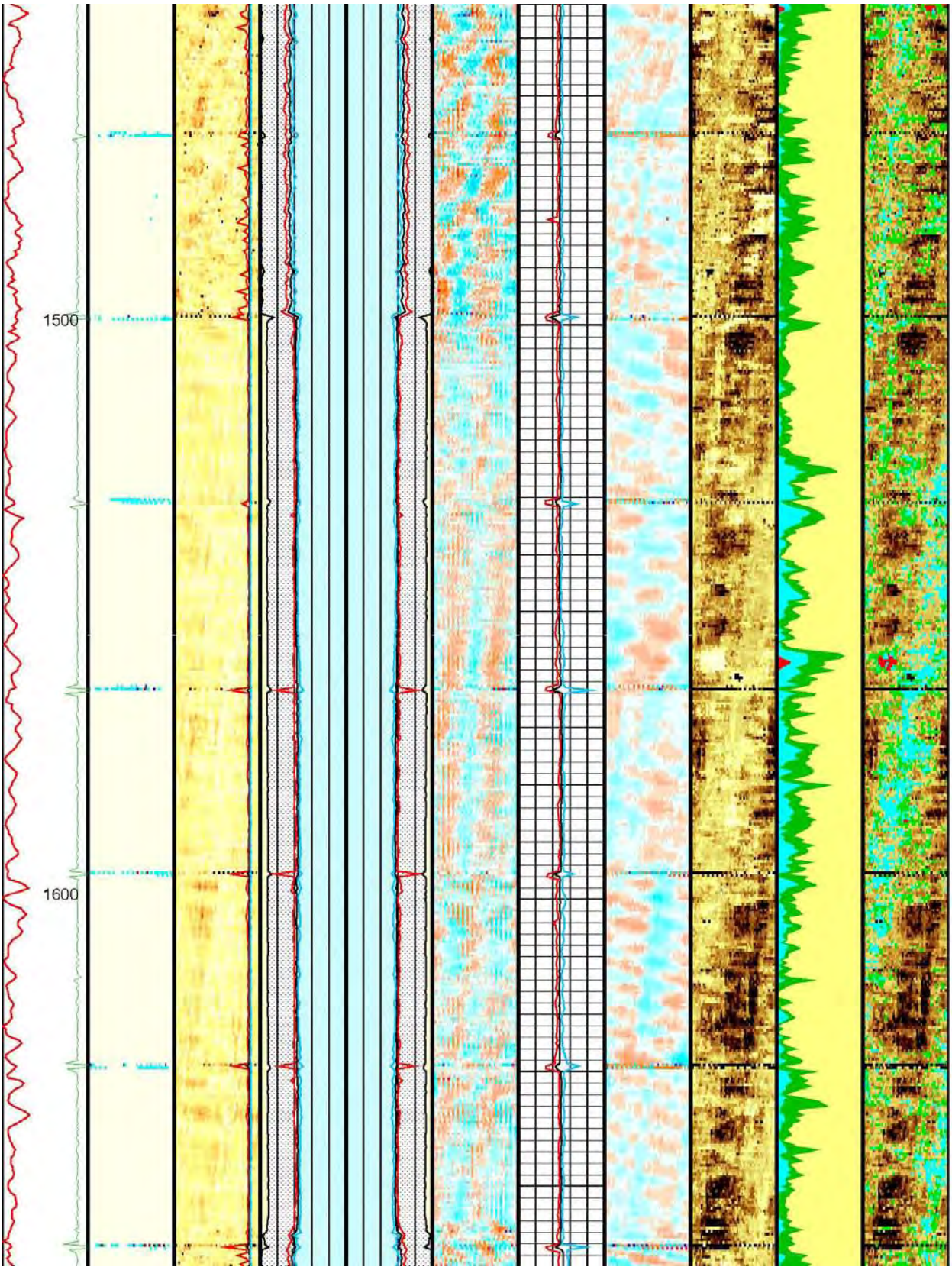
1400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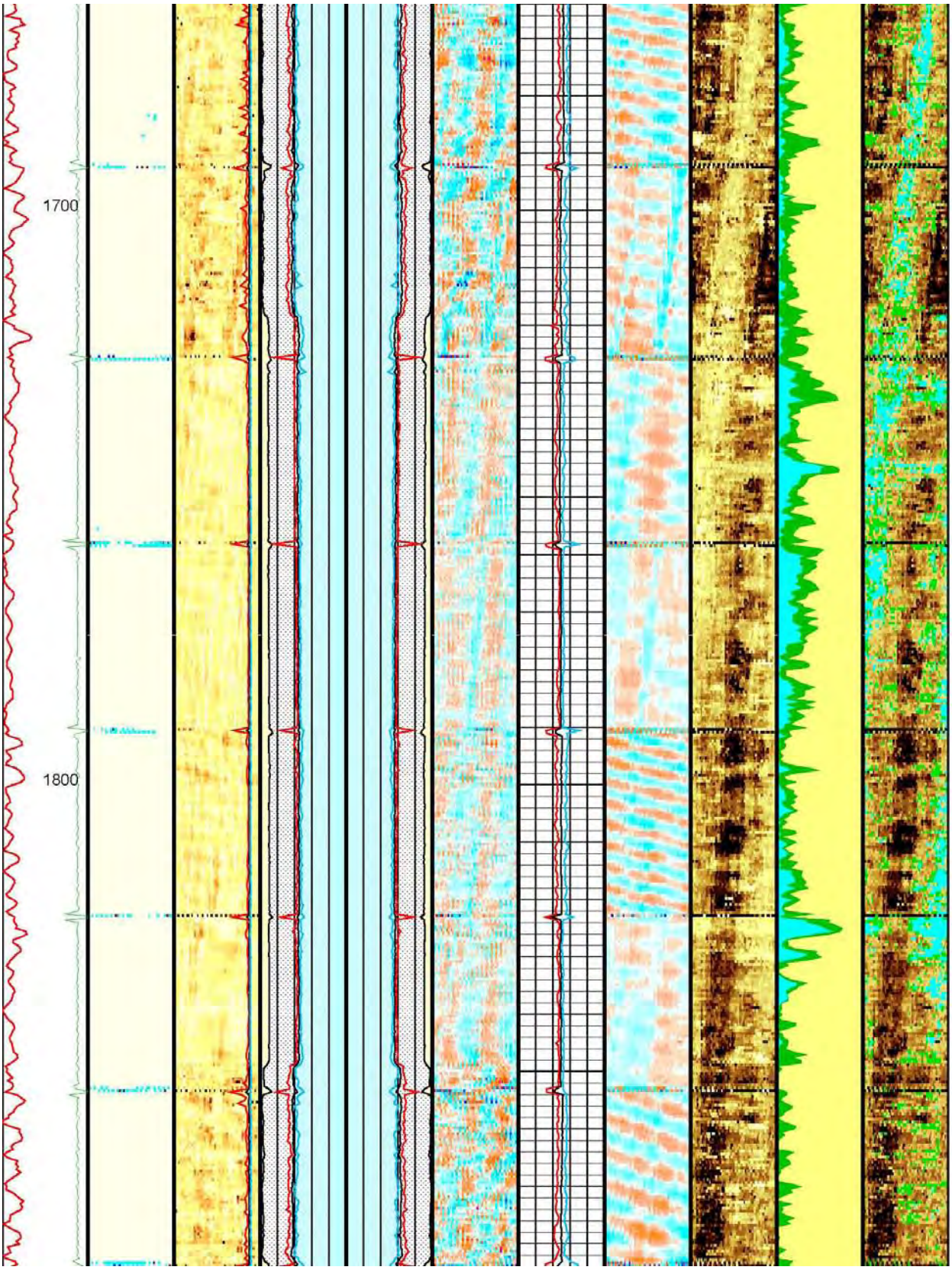
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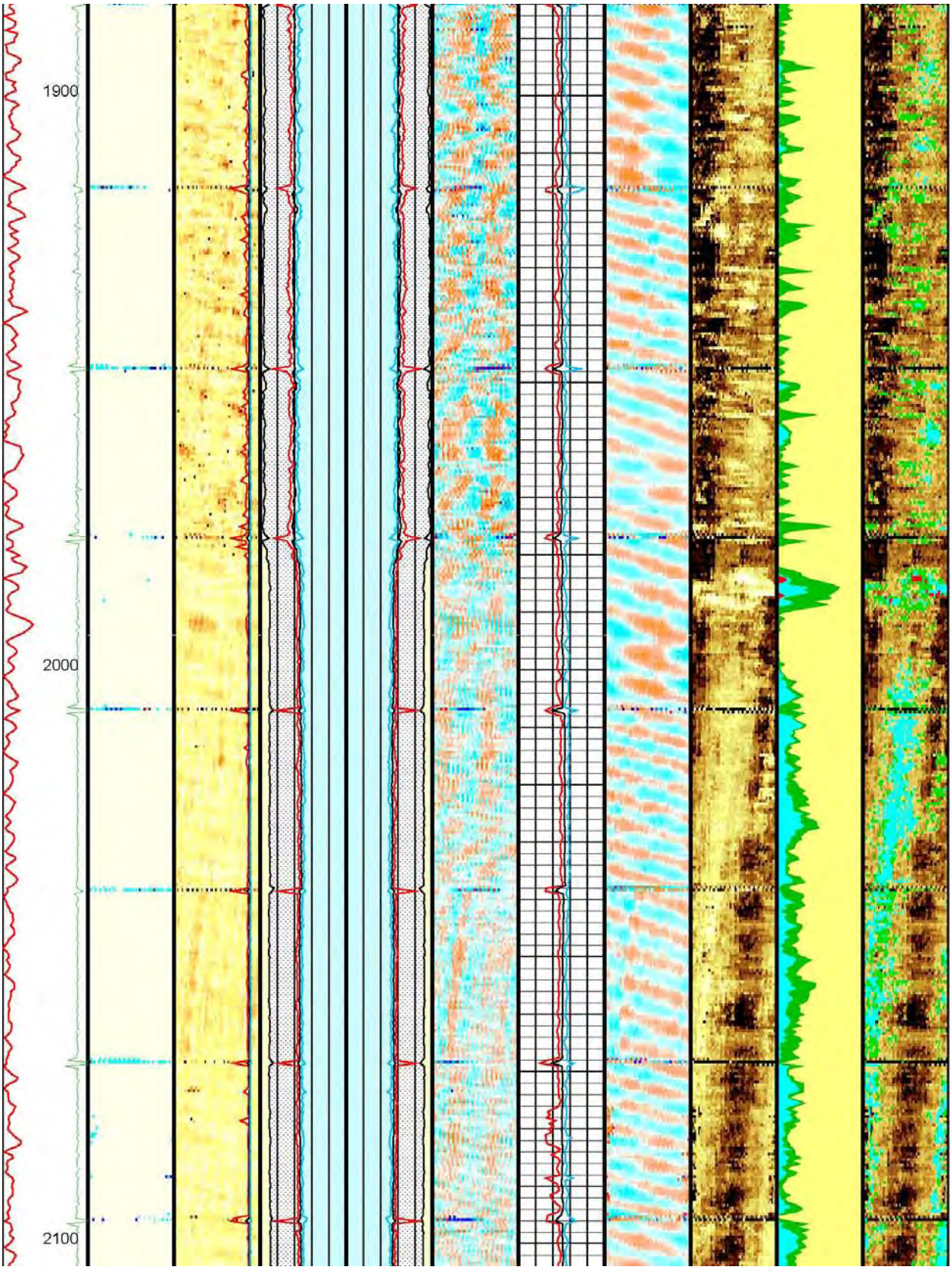
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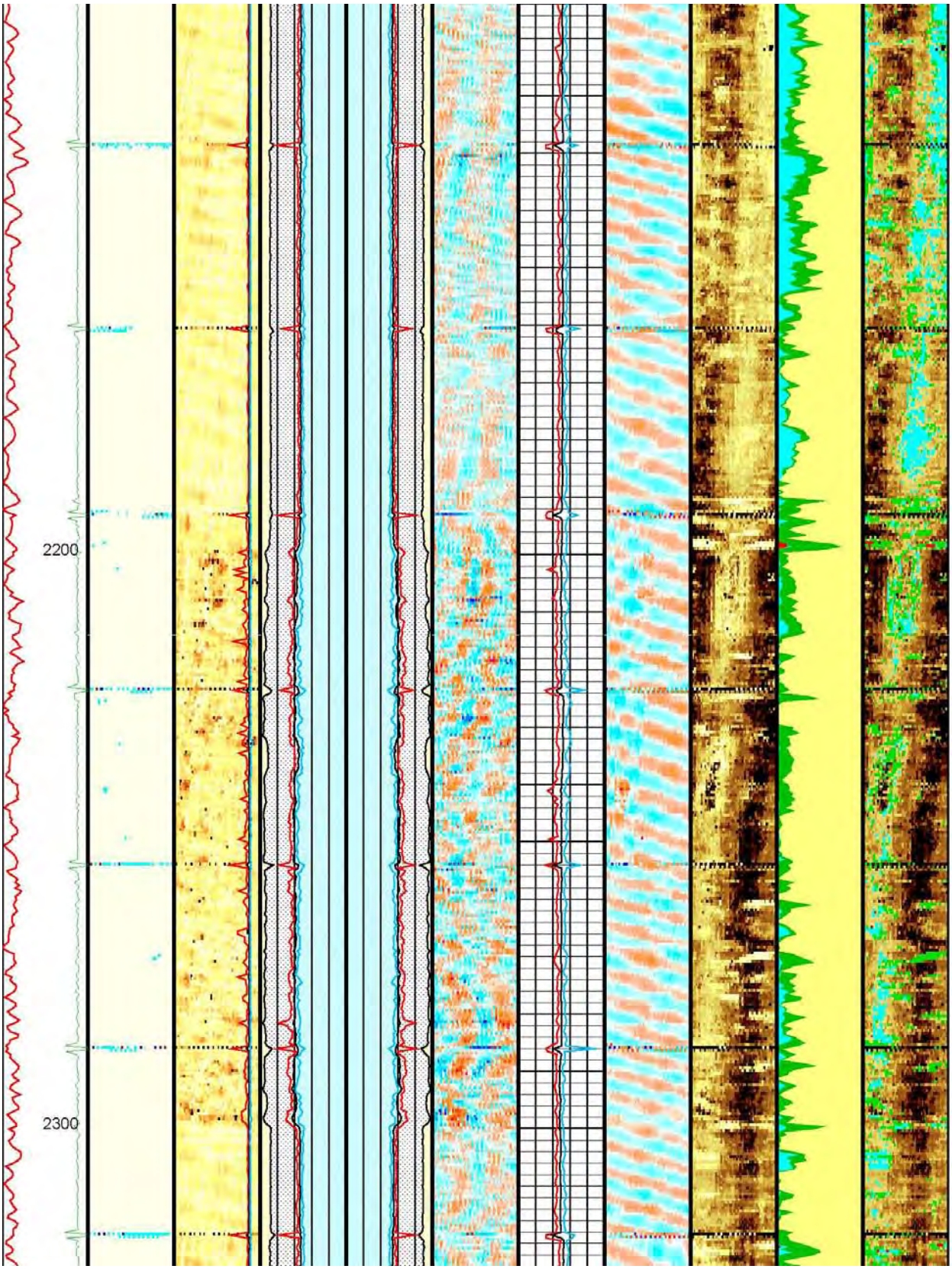
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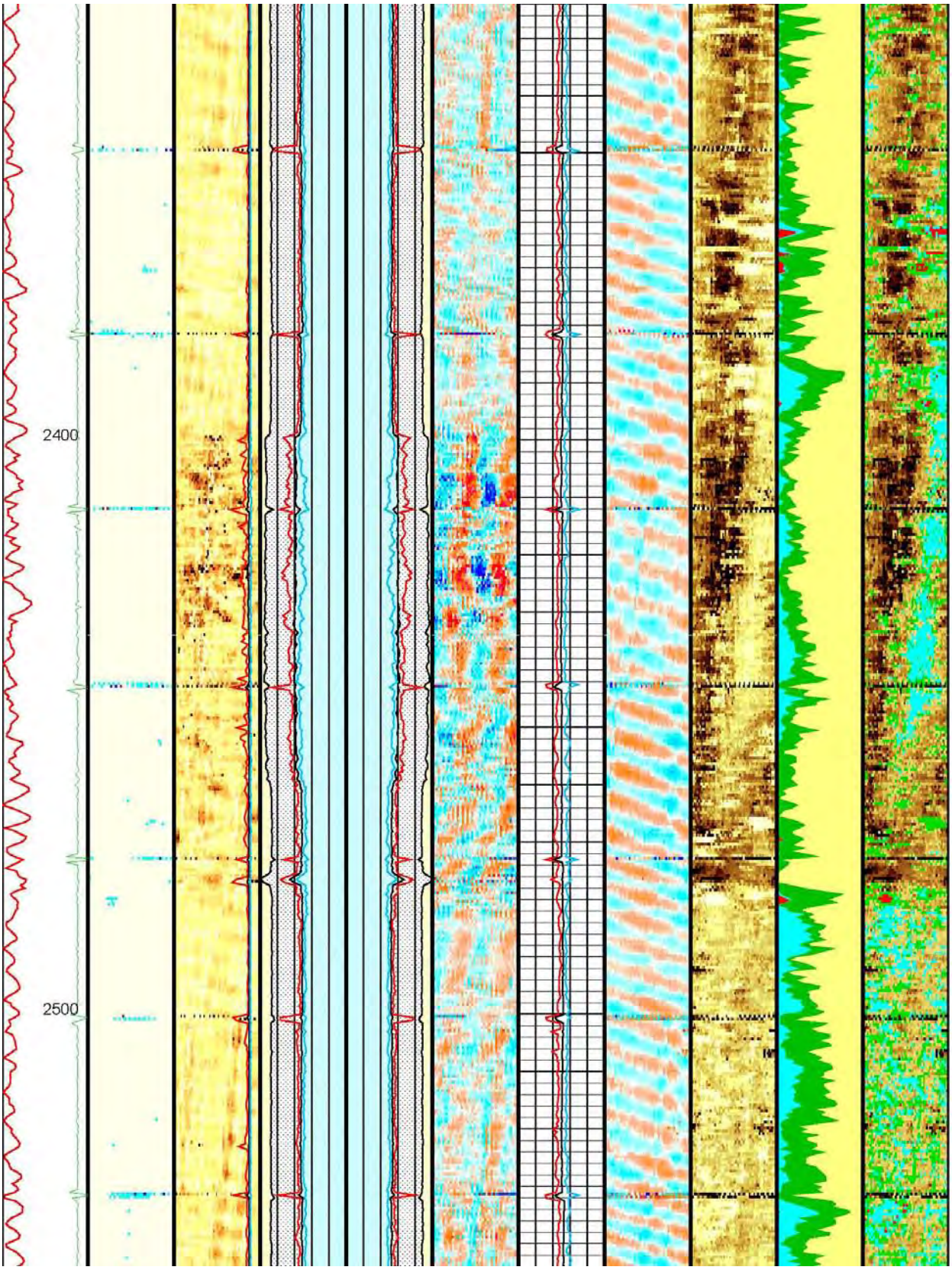
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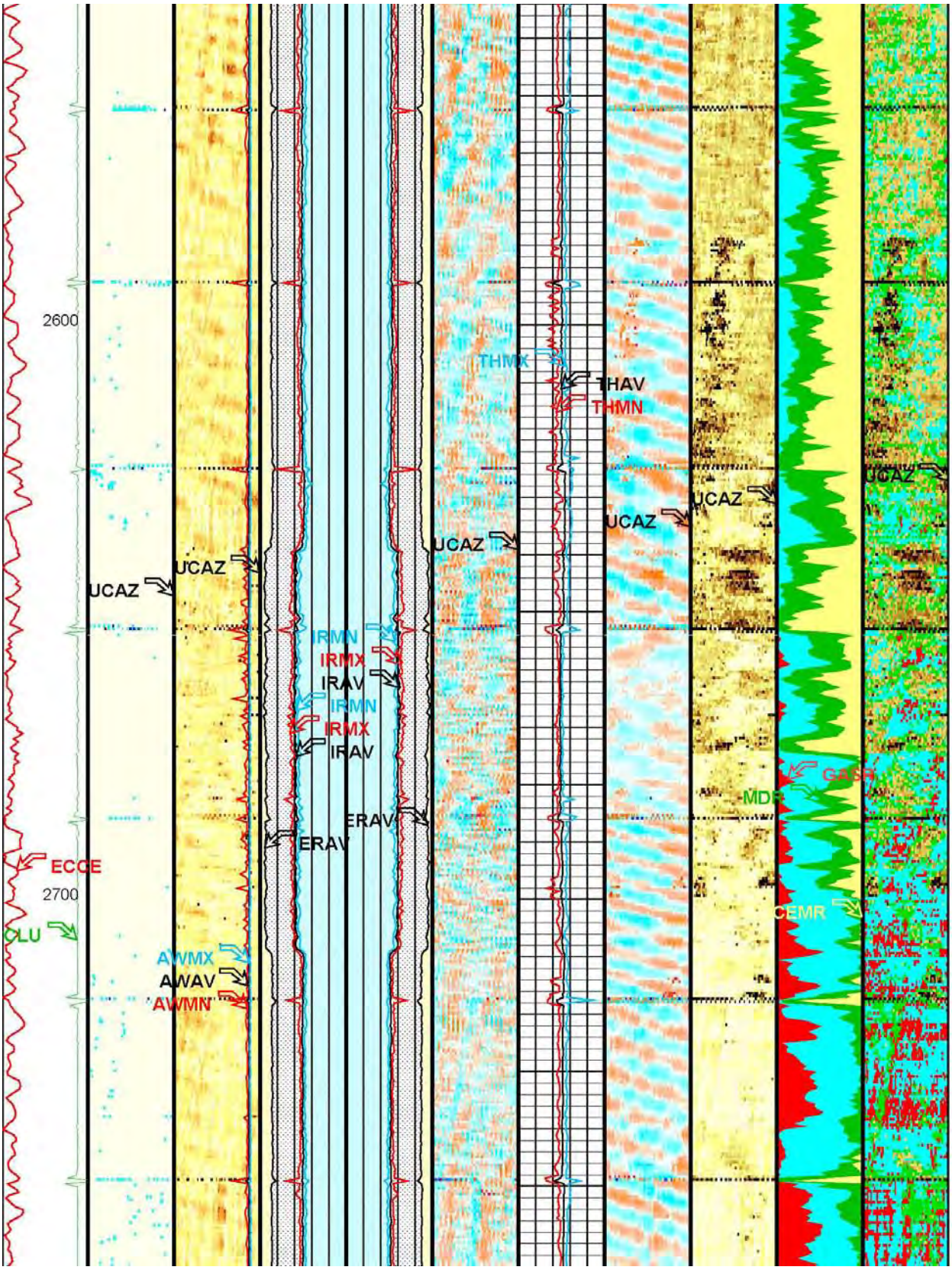
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2700
THMX
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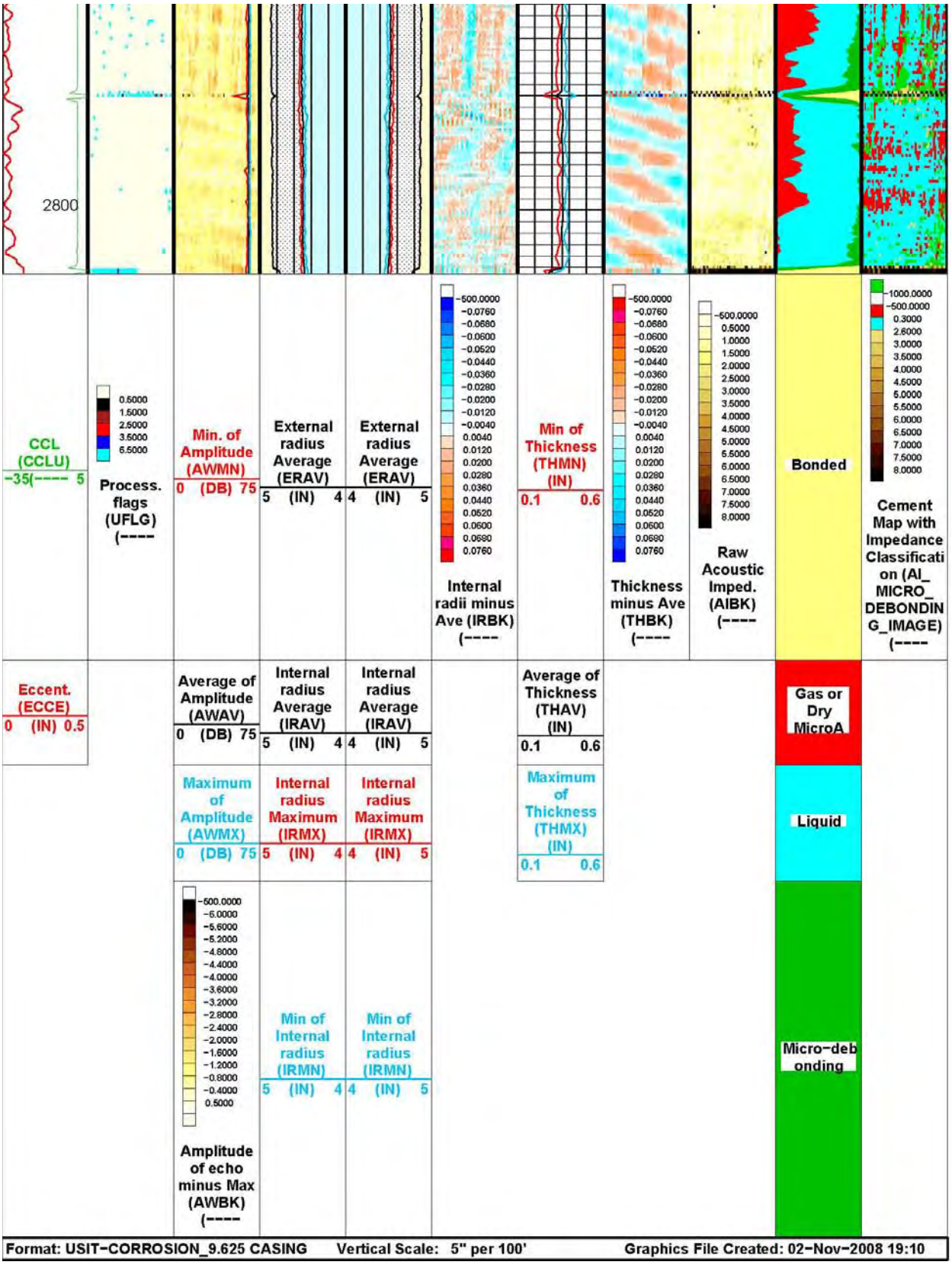
AWMN
GASH
MDR
CEMR


2800
CCL (CCLU)
-35(---- 5
Process. flags (UFLG) (----
Min. of Amplitude (AWMN)
0 (DB) 75
External radius Average (ERAV)
5 (IN) 4
External radius Average (ERAV)
4 (IN) 5
Internal radii minus Ave (IRBK) (----
Min of Thickness (THMN) (IN)
0.1 0.6
Thickness minus Ave (THBK) (----
Raw Acoustic Imped. (AIBK) (----
Bonded
Cement Map with Impedance Classification (AI_MICRO_DEBONDING_IMAGE) (----
Eccent. (ECCE)
0 (IN) 0.5
Average of Amplitude (AWAV)
0 (DB) 75
Internal radius Average (IRAV)
5 (IN) 4
Internal radius Average (IRAV)
4 (IN) 5
Average of Thickness (THAV) (IN)
0.1 0.6
Gas or Dry MicroA
Maximum of Amplitude (AWMX)
0 (DB) 75
Internal radius Maximum (IRMX)
5 (IN) 4
Internal radius Maximum (IRMX)
4 (IN) 5
Maximum of Thickness (THMX) (IN)
0.1 0.6
Liquid
Min of Internal radius (IRMN)
5 (IN) 4
Min of Internal radius (IRMN)
4 (IN) 5
Amplitude of echo minus Max (AWBK) (----
Micro-debonding
Format: USIT-CORROSION_9.625 CASING
Vertical Scale: 5" per 100'
Graphics File Created: 02-Nov-2008 19:10

OP System Version: 15C0−309

MCM

USIT−D	15C0−309	SSLT−C	15C0−309
SGT−N	15C0−309	CAL−Y	15C0−309
DTC−H	15C0−309		

All USI Images are outside views

COMPUTATION FLAGS LABELLING

(0 − 1.5)	UFLG 1	UTIM error
(1.5 − 2.5)	UFLG 2	Pulse origin not detected
(2.5 − 3.5)	UFLG 3	WINLEN error
(3.5 − 6.5)	UFLG 4 UFLG 5 UFLG 6	CASING THICKNESS error
(6.5 − 10)	UFLG 7 UFLG 8 UFLG 9	LOOP PROCESSING error

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−D: Ultrasonic Imaging − D			
AGMN	Minimum Gain of Cartridge	−4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	9.625	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	8.921	IN
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	20	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
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UWKM	Ultrasonic Working Mode	5DEG_6IN_LF	
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ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.48	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
System and Miscellaneous			
CWEI	Casing Weight	36.00	LB/F
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	