Schlumberger

Company: Southern California Gas Company

Well: Porter 68B

Field: Aliso Canyon

County: Los Angeles State: California

Cement Bond Log

Variable Density Log

Gamma Ray - CCL

County: Los Angeles
Field: Aliso Canyon
Location:
Well: Porter 68B
Company: Southern California Gas Company

Location:

Elev.: K.B. 2100.50 ft
G.L. 2077.00 ft
D.F.

Permanent Datum:	Ground Level	Elev.:	2077.00 f
Log Measured From:	Kelly Bushing	23.50 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section:	Township:	Range:
04-037-24136-00	28	3N	16W

Logging Date		13-Apr-2016			
Run Number		One			
Depth Driller		6600.00 ft			
Schlumberger Depth		6600.00 ft			
Bottom Log Interval		6600.00 ft			
Top Log Interval		34.00 ft			
Casing Fluid Type		Polymer			
Salinity					
Density		9.5 lbm/gal			
Fluid Level		8.00 ft			
BIT/CASING/TUBING STRING					
Bit Size		12.25 in			
From		799.00 ft			
To		6800.00 ft			
Casing/Tubing Size		9.625 in			
Weight		47 lbm/ft			
Grade		N80			
From		0.00 ft			
To		6800.00 ft			
Max Recorded Temperatures					
Logger on Bottom	Time	13-Apr-2016	09:13:00		
Unit Number	Location:	3189	Ventura		
Recorded By		I. Kartawidjaja			
Witnessed By		Mr. Tom McMahon			

Disclaimer

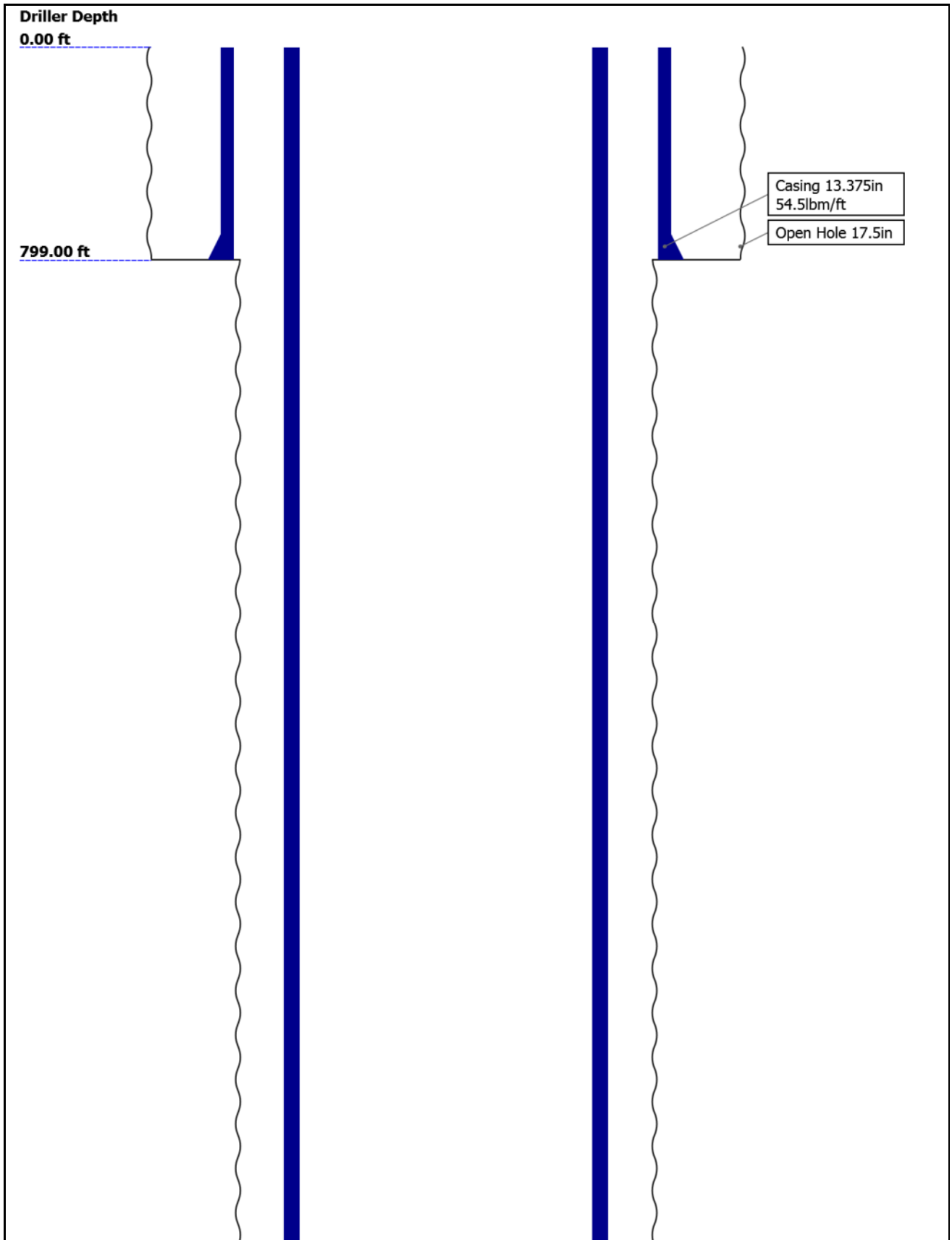
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE 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.

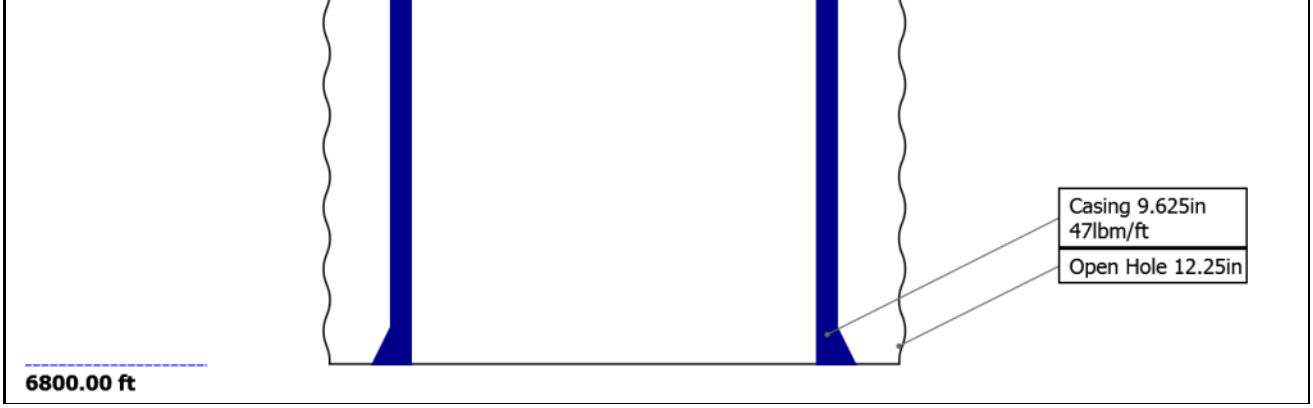
Contents

1. Header
2. Disclaimer
3. Contents
4. Well Sketch
5. Borehole Size/Casing/Tubing Record
6. Remarks and Equipment Summary
7. Job Event Summary
8. Composite 1 Main Pass 5 in = 100 ft
   - 8.1 Integration Summary
   - 8.2 Software Version
   - 8.3 Composite Summary
   - 8.4 Log (Sonic CBL with VDL)
   - 8.5 Parameter Listing
9. One Repeat Pass 5 in = 100 ft
   - 9.1 Integration Summary
   - 9.2 Composite Summary
   - 9.3 Log (Sonic CBL with VDL)

10. USI Fluid Properties Measurement
11. Composite 1 Main Pass 5 in = 100 ft
11.1 Integration Summary
11.2 Composite Summary
11.3 Log (LBV1_USI-VDL (DSLT) Cement 9.625inch)
12. Tail

Well Sketch





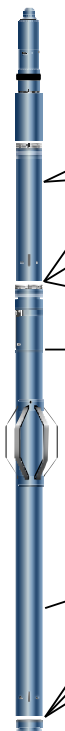
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	17.5	12.25				
Top Driller (ft)	0	799				
Top Logger (ft)	0	799				
Bottom Driller (ft)	799	6800				
Bottom Logger (ft)	799	6800				
Casing						
Size (in)	13.375	9.625				
Weight (lbm/ft)	54.5	47				
Inner Diameter (in)	12.615	8.681				
Grade	K55	N80				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	799	6800				
Bottom Logger (ft)	799	6800				

Remarks and Equipment Summary

One: Toolstring

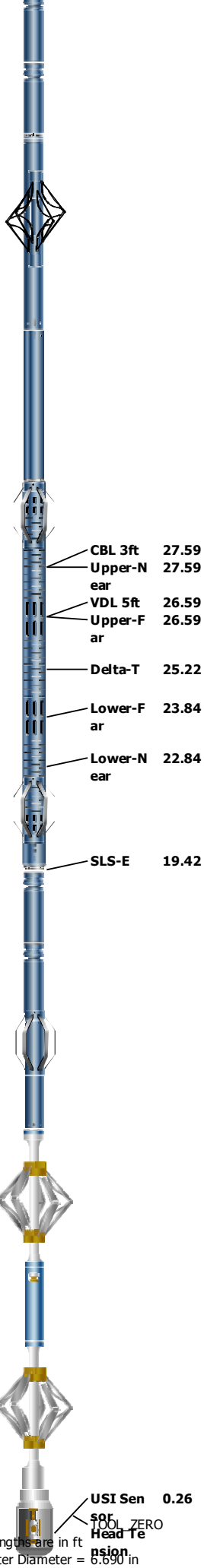
Equip name	Length
LEH-QT:2867	59.39
LEH-QT:2867	
DTC-H	56.47
ECH-KC	
DTC-H	
HGNS-H:3923	53.47
HGNH:4819	
NPV-N	
NSR-F:5002	
HACCZ-H:3923	
HMCA-H	
HGNS-H:3923	
AH-184[	44.06



MP name	Offset
Red	
CTEM	55.57
HV	0.00
TelStatus	53.47
ToolStatus	53.47
Temperature	53.44
GR	52.73
CNL Porosity	46.4
HMCA	44.06
HGNS	44.06
Accelerometer	0.00

One: Remarks

Depth correlated to Halliburton Compensated Density/Dual Spaced Neutron log dated 06-11-93, from 6100 to 6500 ft
Logging objectives: Cement and corrosion evaluation
USIT logged in 10 deg/1.5 inch, logging speed 2800-3000 fph, Repeated hi-res in 10 deg/0.6 inch, speed 1000 fph
Bridge plug set at 6626 ft. Top of sand tagged at 6602 ft, logged from 6600ft to 350 ft under 0 psi surface pressure.
Logged from 350 to 50 ft with 200 psi surface pressure to maintain pressure on USI transducer and CBL tool
Did separate pass from 50 ft to Ground level with 200 psi
Cemented in 1993: 248bbl Class G foamed to 10.8ppg with N2, 164bbl Class G with 0.1% Hr7 and 1.0% Halad 322



AH-184[4] 44.06

AH-184[3]:2985 42.06

DSLT-H:8236 40.06
ECH-KH:8678
DSLC-H:8236
SLS-E:1206

AH-184[2]:2882 19.42

AH-184[1]:6735 17.42

USIT-E:1764 15.42
ECH-MFA:1764
USAC-A:1764
USIS-A:2720
USSC-B
USRS-C:840
USI-SENSOR:3349

Lengths are in ft
Maximum Outer Diameter = 6.690 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Job Event Summary

Event	Time	Duration	Interval	Remark
Run 1				**Apr-13-2016 06:42**
Log[3]:Down	Apr-13-2016 08:06	01:43:14	690.88 - 6602.52 ft	FPM
Log[4]:Up	Apr-13-2016 08:50	00:05:35	6597.99 - 6377.94 ft	Repeat Pass @ TD 0 psi
Log[5]:Up	Apr-13-2016 08:57	00:11:50	6551.94 - 6345.78 ft	Very Hi-Res Repeat 0 psi
Log[6]:Up	Apr-13-2016 09:13	02:12:28	6602.18 - 169.85 ft	Main Pass 0 psi
Log[8]:Up	Apr-13-2016 12:08	00:11:12	5125.54 - 4924.57 ft	Very Hi-Res Repeat 0 psi
Log[9]:Up	Apr-13-2016 12:23	00:08:29	4560.8 - 4404.45 ft	Very Hi-Res Repeat 0 psi
Log[10]:Up	Apr-13-2016 12:34	00:04:09	4022.58 - 3945.29 ft	Very Hi-Res Repeat 0 psi
Log[11]:Up	Apr-13-2016 12:42	00:06:30	3512.54 - 3392.23 ft	Very Hi-Res Repeat 0 psi
Log[12]:Up	Apr-13-2016 12:49	00:04:54	3303.88 - 3214.24 ft	Very Hi-Res Repeat 0 psi
Log[13]:Up	Apr-13-2016 13:03	00:04:57	1834.03 - 1740.99 ft	Very Hi-Res Repeat 0 psi
Log[14]:Up	Apr-13-2016 13:11	00:02:37	1450.2 - 1402.08 ft	Very Hi-Res Repeat 0 psi
Log[15]:Up	Apr-13-2016 13:16	00:08:53	1185.92 - 1019.52 ft	Very Hi-Res Repeat 0 psi
Log[16]:Up	Apr-13-2016 13:27	00:14:53	900.36 - 627.76 ft	Very Hi-Res Repeat 0 psi
Log[17]:Up	Apr-13-2016 13:43	00:08:22	595.74 - 211.4 ft	Main Pass #2 0 psi
Log[19]:Up	Apr-13-2016 14:07	00:08:39	407.06 - 56.7 ft	Main Pass #3 200 psi
Run 2				**Apr-13-2016 14:49**
Log[2]:Up	Apr-13-2016 15:01	00:07:19	243.78 - 12.1 ft	Surface Pass 200 psi
Log[3]:Up	Apr-13-2016 15:09	00:02:36	46.54 - 13.87 ft	Surface Pass Very-Hi Res 200 psi

Composite 1

Main Pass 5 in = 100 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Computation	Description	Version
CEVAL	Sonic Cement Evaluation Computation Ensemble provides common Parameters and Channels	6.1.58882.3100

SoftwareVersion_Tool	SoftwareVersion_Run Version	SoftwareVersion_Build Version
WAFE-SEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-FEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-TMDI	Synergy SV451EC version 46.19	Synergy SV451EC version 46.19

Tool Elements	Description	Software Version	Firmware Version
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	4.0
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	6.1.58882.3100	2.0

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	169.85 ft	6602.18 ft	13-Apr-2016 9:13:00 AM	13-Apr-2016 11:25:29 AM	ON	1.00 ft	Yes
One	Log[17]:Up	Up	211.40 ft	595.74 ft	13-Apr-2016 1:43:04 PM	13-Apr-2016 1:51:26 PM	ON	5.99 ft	Yes
One	Log[19]:Up	Up	56.70 ft	407.06 ft	13-Apr-2016 2:07:43 PM	13-Apr-2016 2:16:22 PM	ON	6.67 ft	Yes

All depths are referenced to toolstring zero

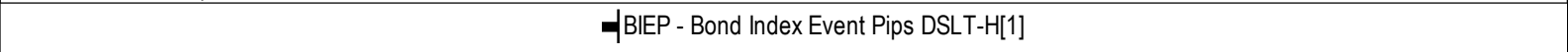
Log

Company:Southern California Gas Company Well:Porter 68B

Composite 1:S002

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 13-Apr-2016 17:22:03



TIME_1900 - Time Marked every 60.00 (s)

GoodBond From CBL to GOBO

CBL Amplitude (CBL) DSLT-H[1]

0 mV 20

Transit Time for CBL (TT) DSLT-H[1]

480 us 280

Gamma Ray (GR)

0 gAPI 150

Instance - 1 (6" HGNS[1] RT) (ECGR)

Cable Tension (TENS)

10000 0

lbf

CBL Amplitude (CBL) DSLT-H[1]

0 mV 100

Good Bond (GOBO)

0 mV 10

Min Amplitude Max

Variable Density Log - DSLT DSLT-H[1]

200 us 1200

10

20

30

40

50

60

70

80

90

100

110

120

130

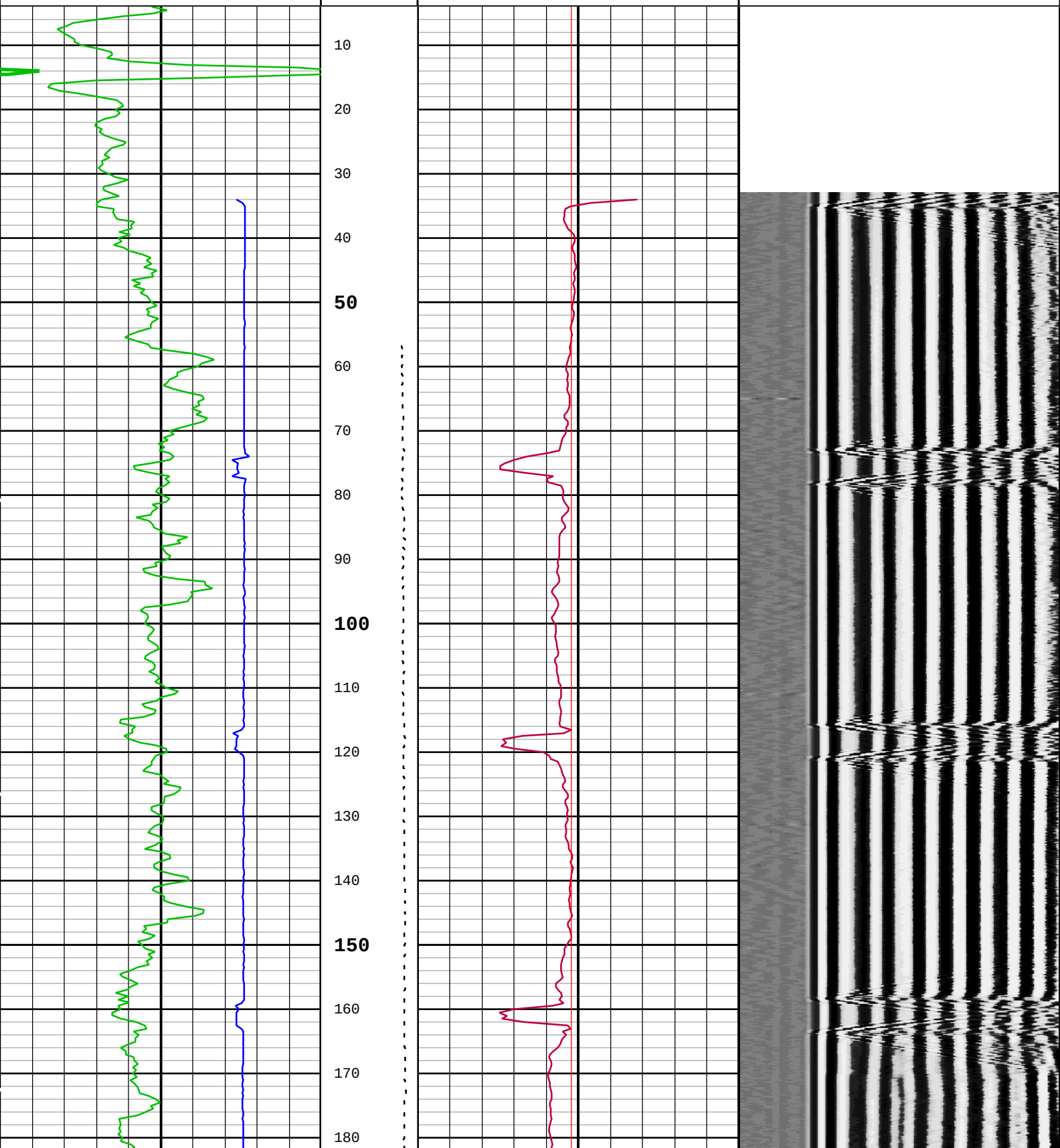
140

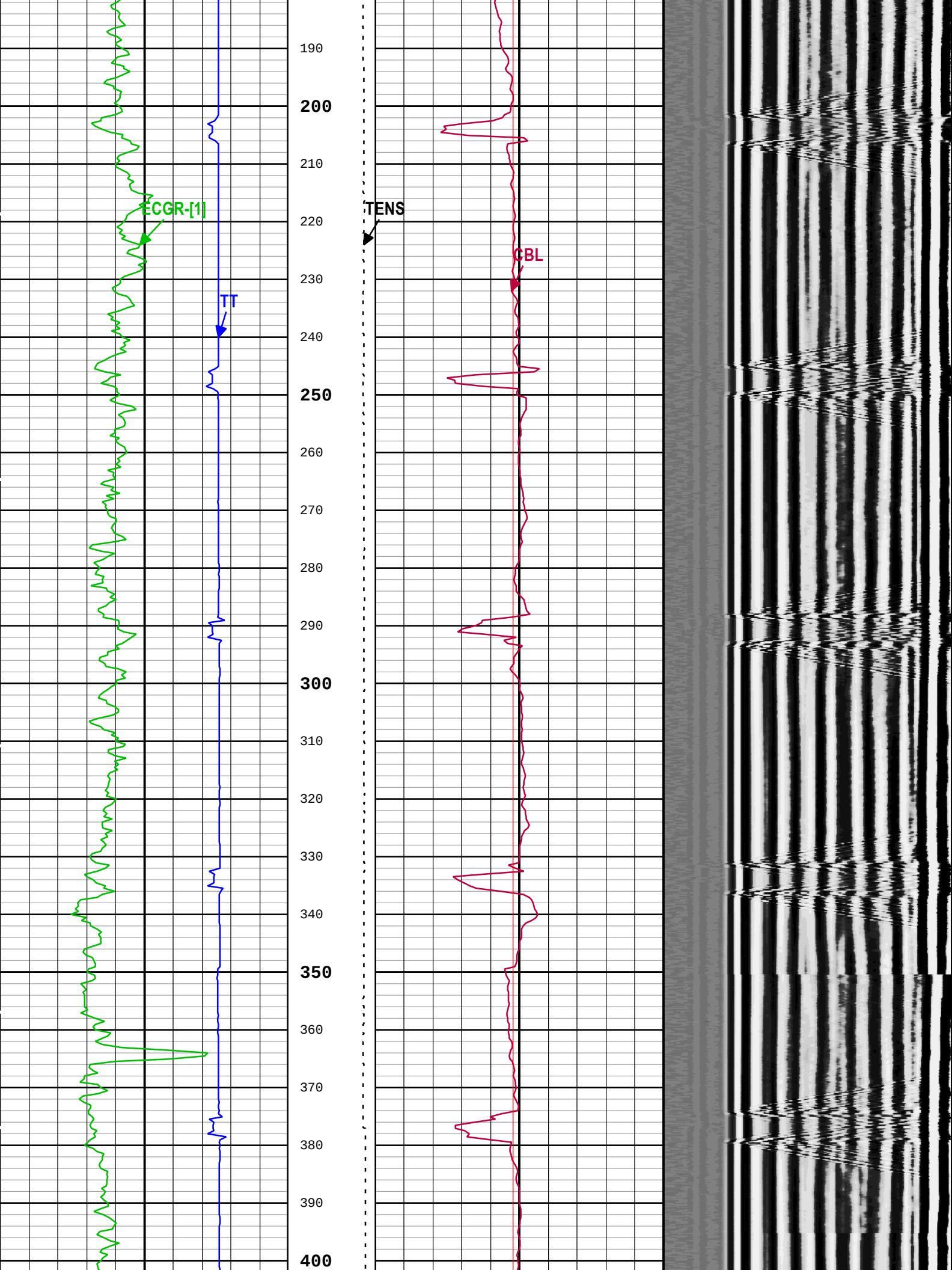
150

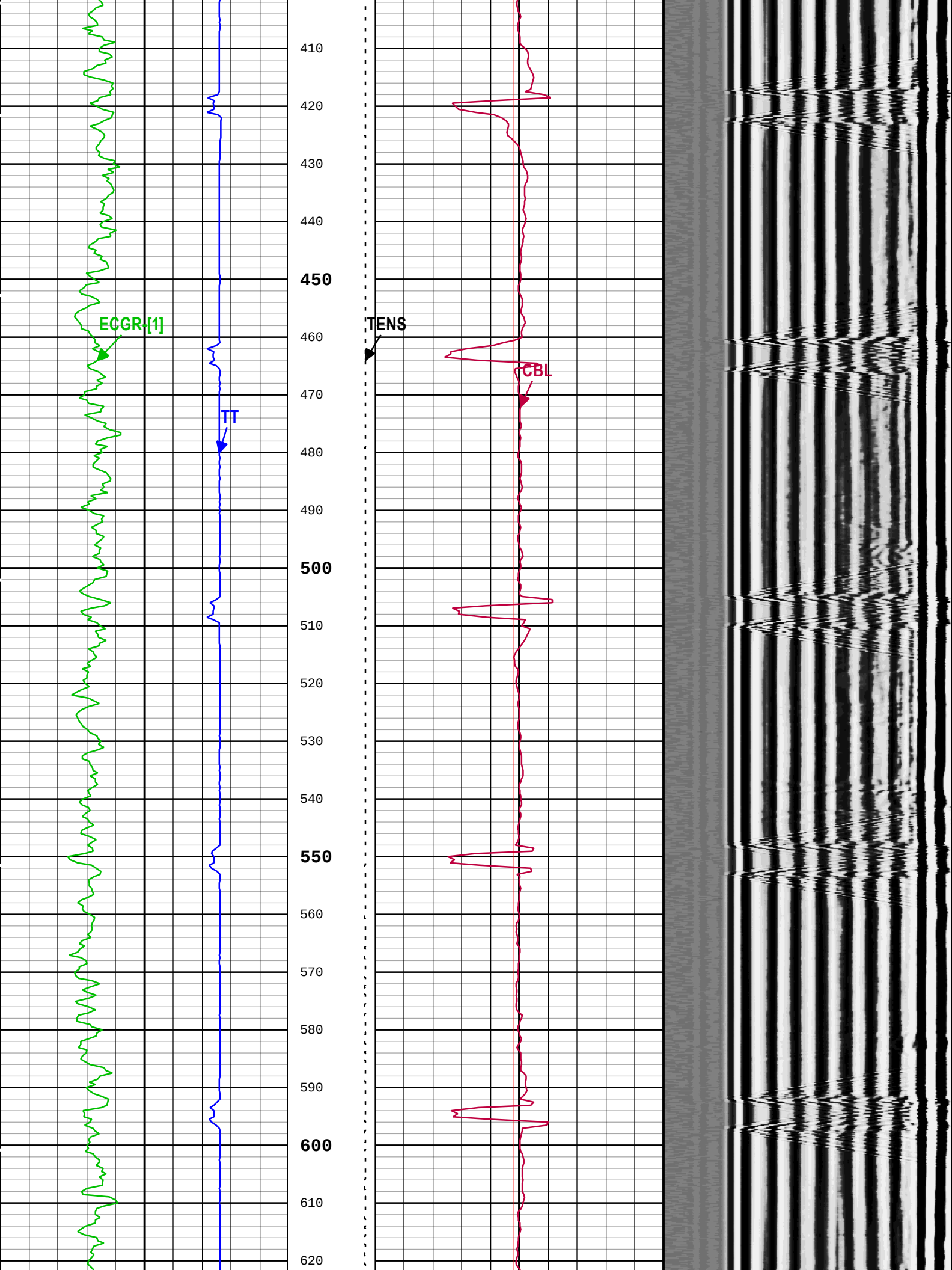
160

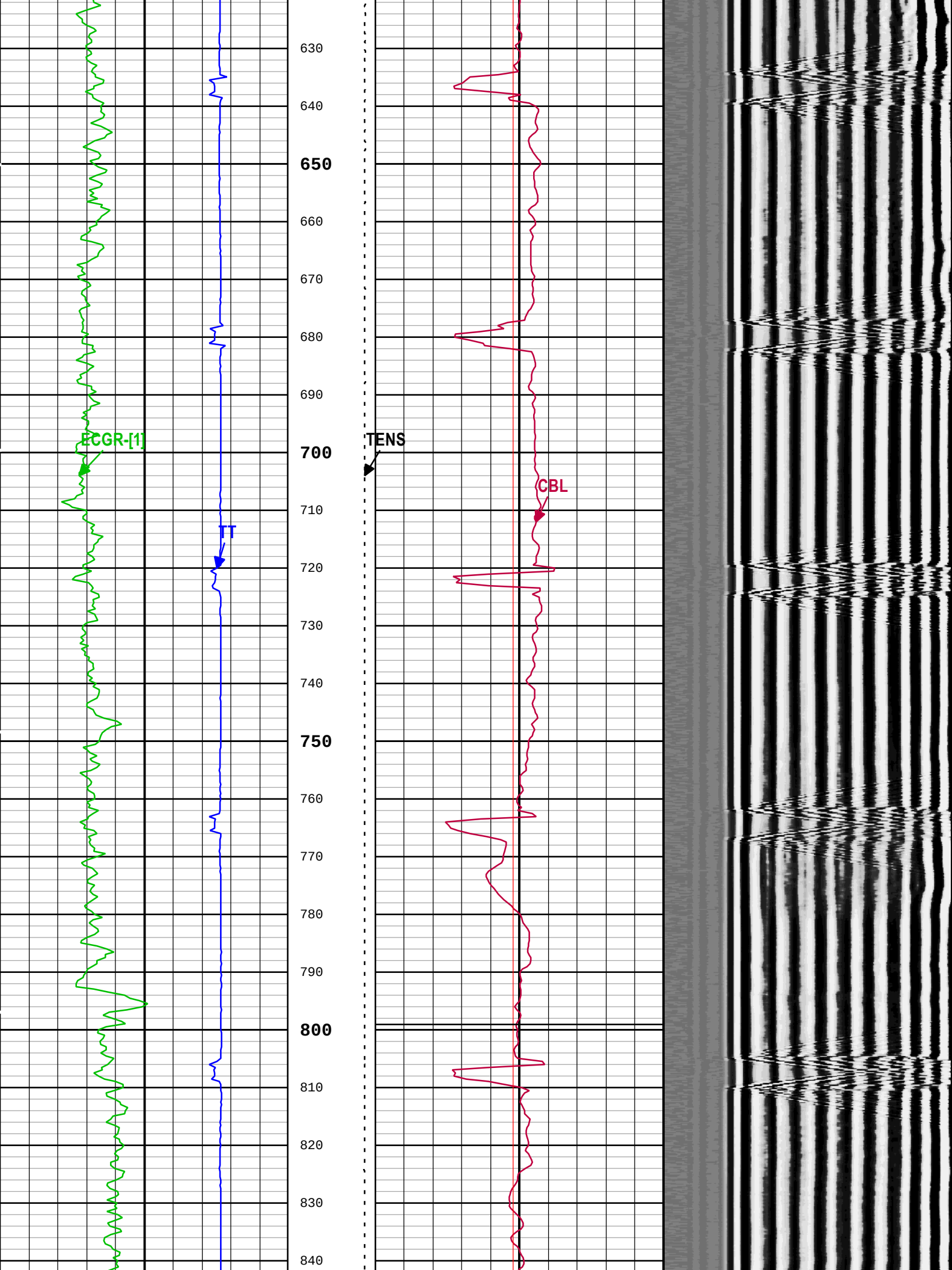
170

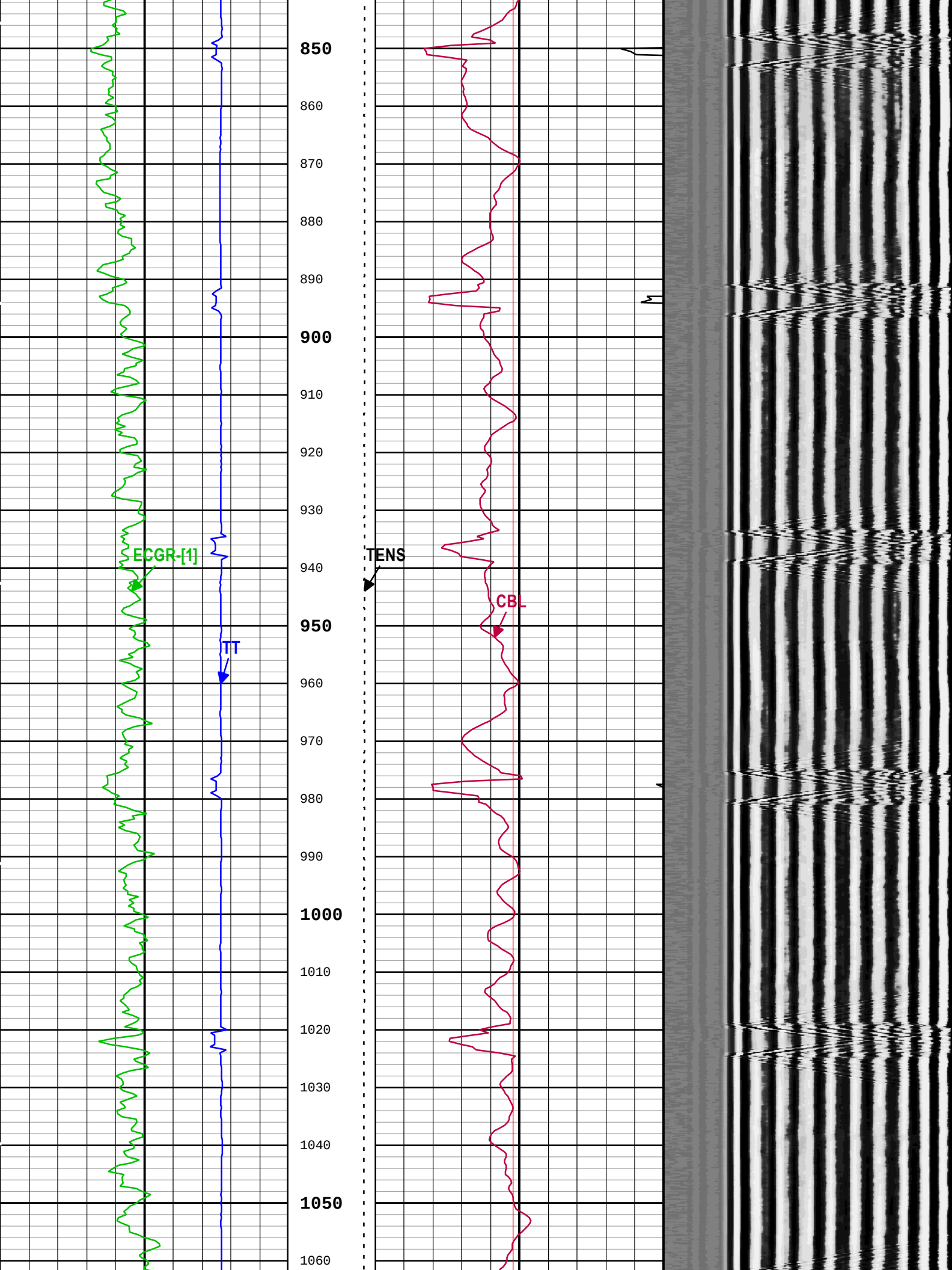
180

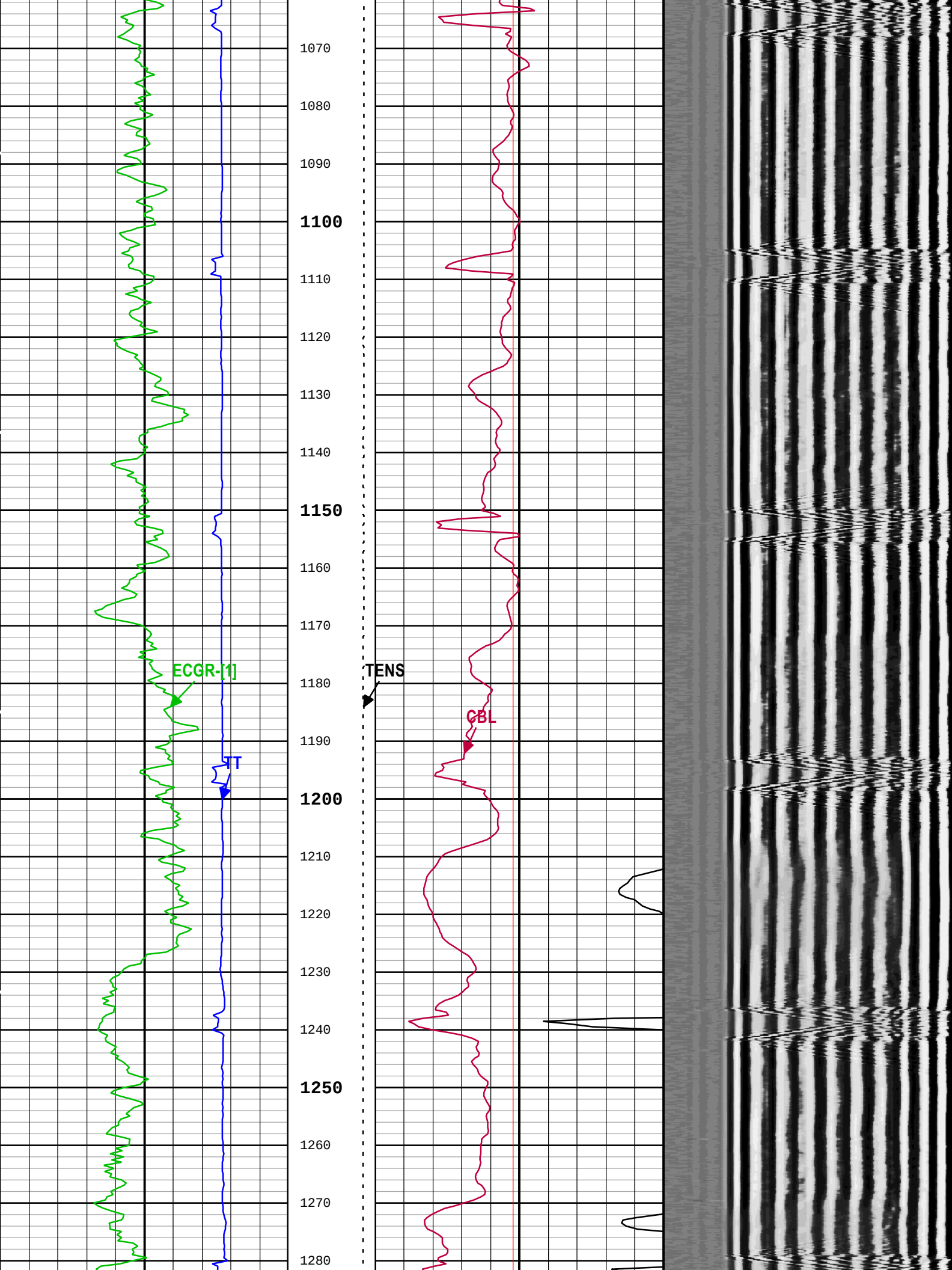


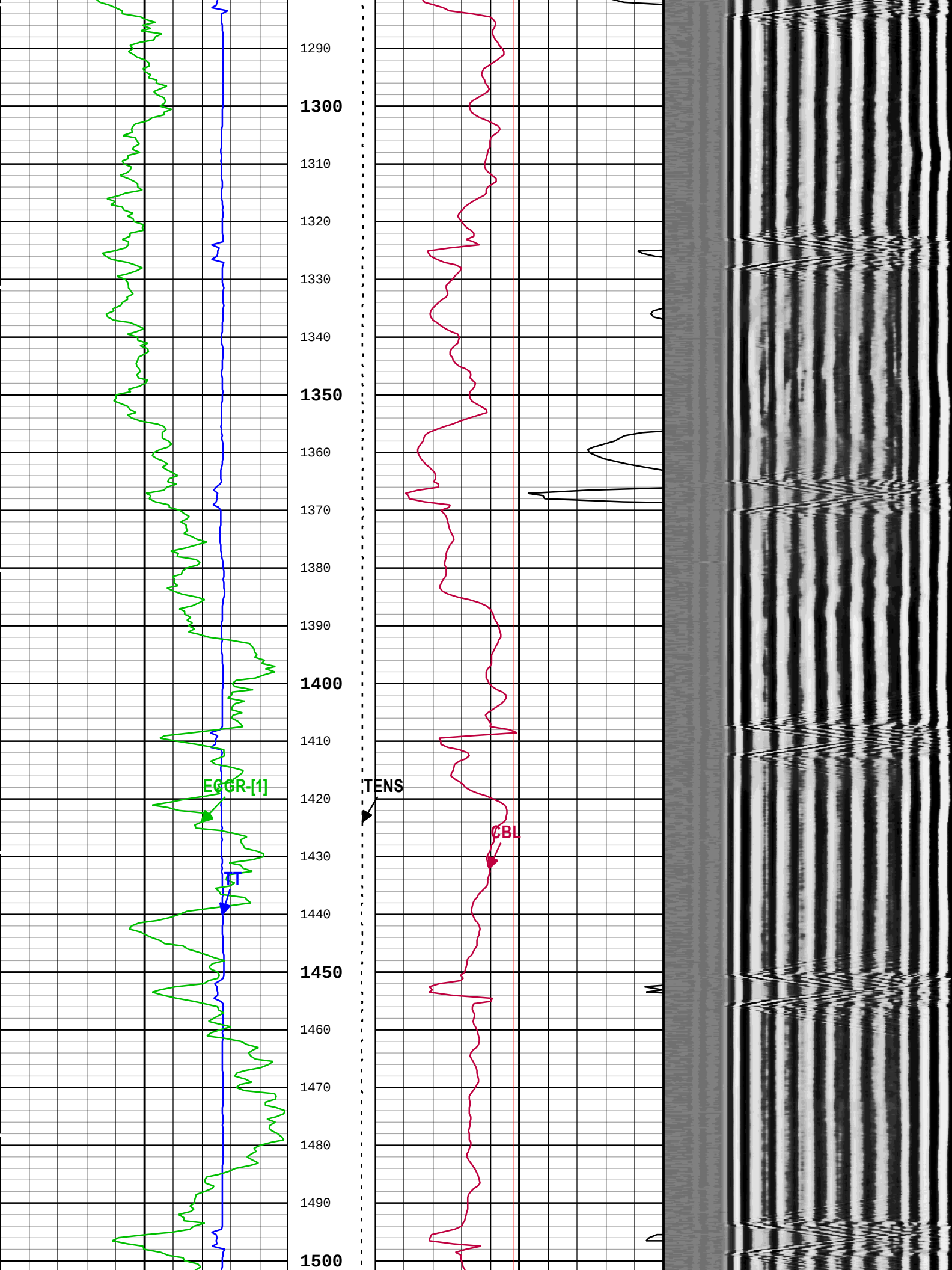

ECGR-[1]
TT
TENS
CBL
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400

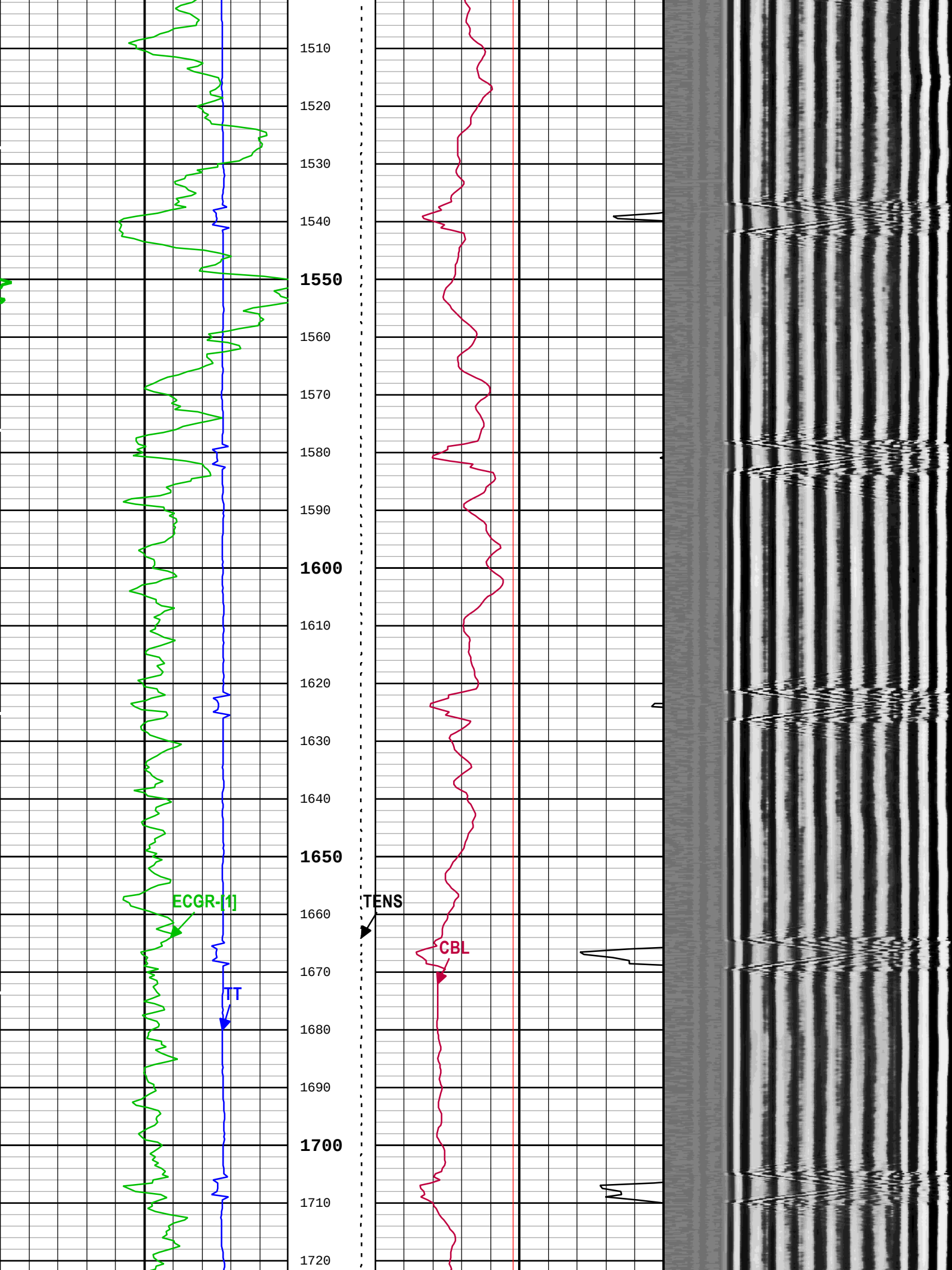

410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600
610
620
ECGR [1]
TT
TENS
CBL

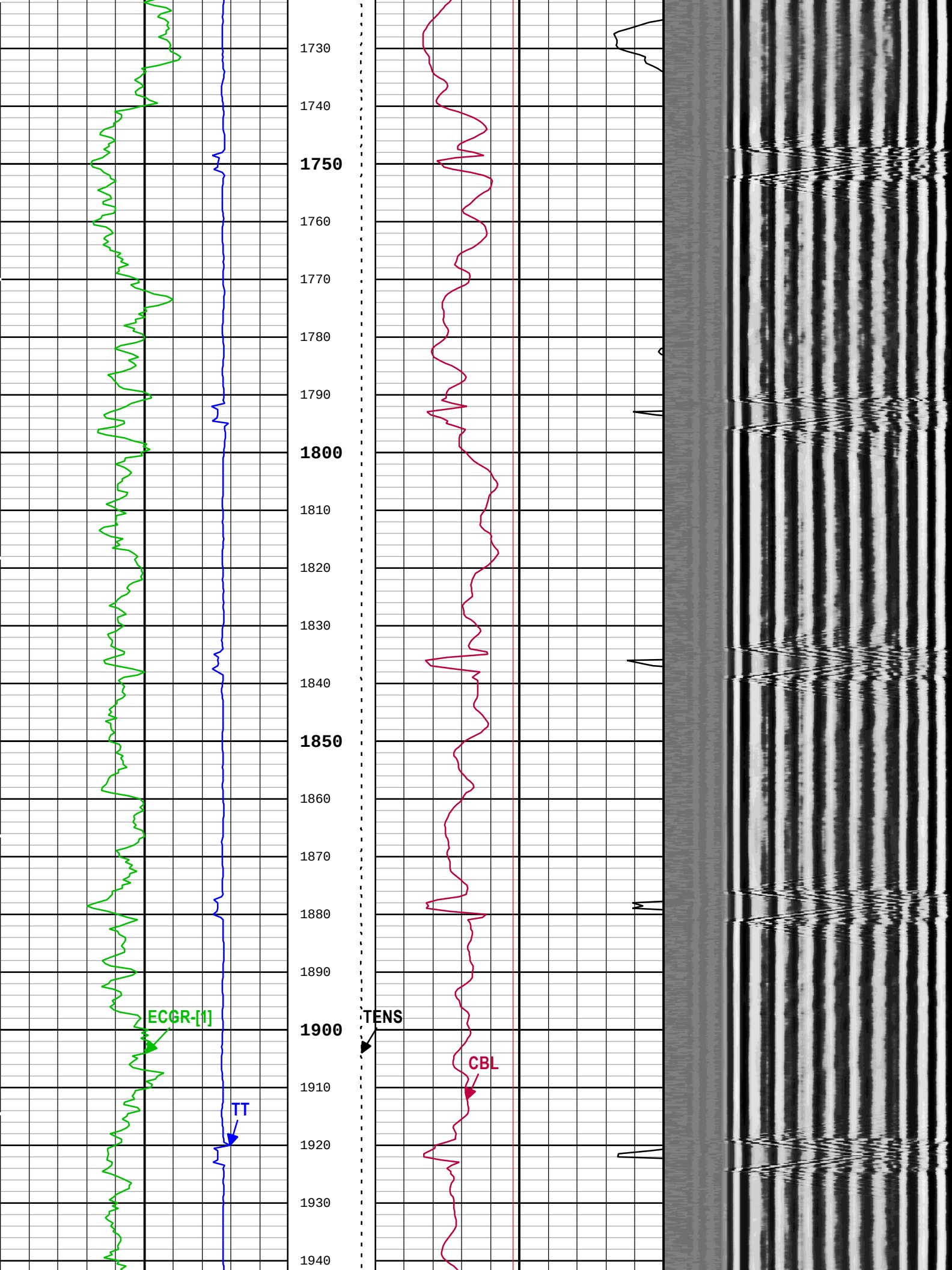

630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780
790
800
810
820
830
840
ECGR-[1]
TT
TENS
CBL

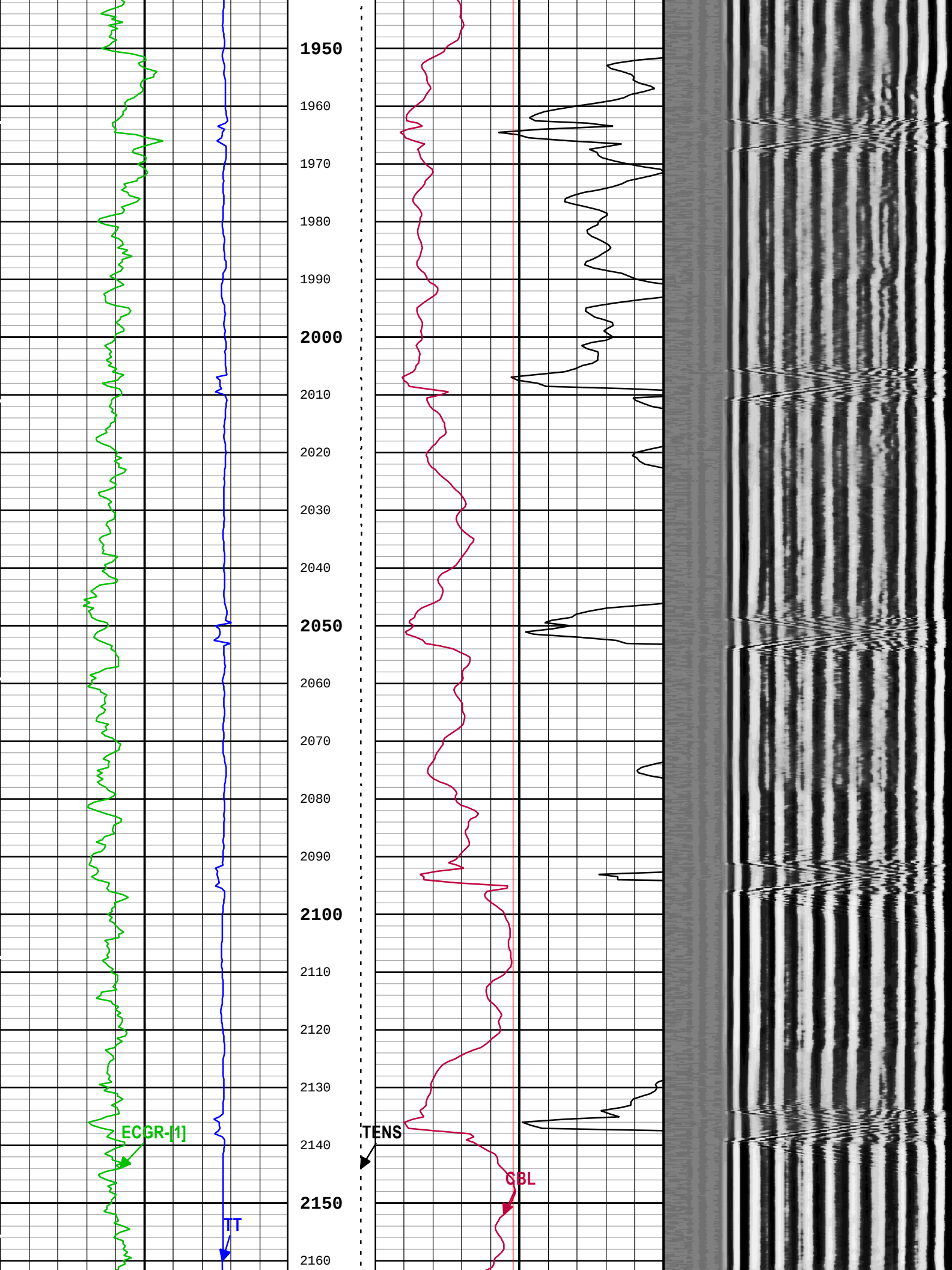

850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020
1030
1040
1050
1060
ECGR-[1]
TT
TENS
CBL

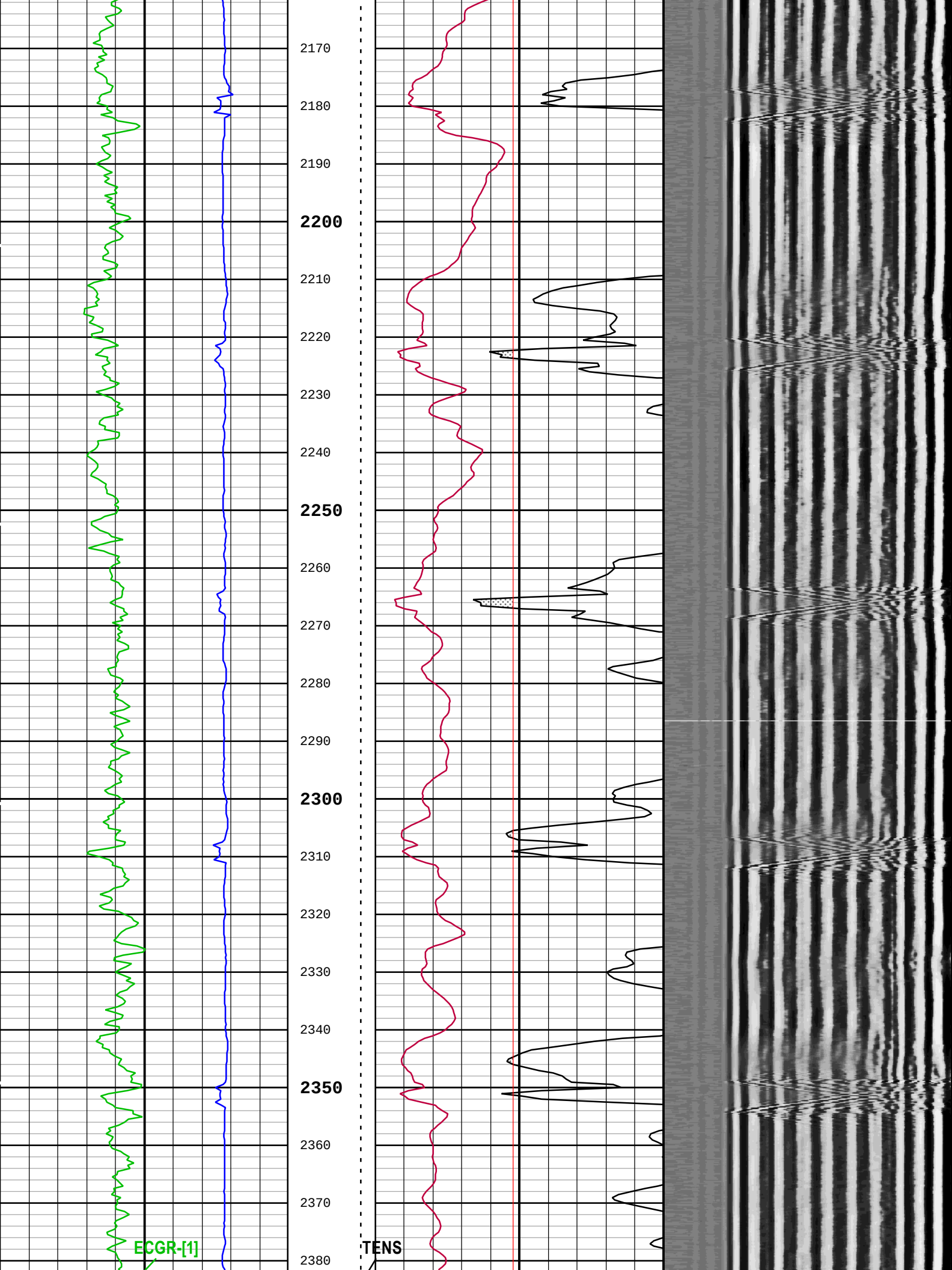

1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
ECGR-[1]
TT
TENS
CBL

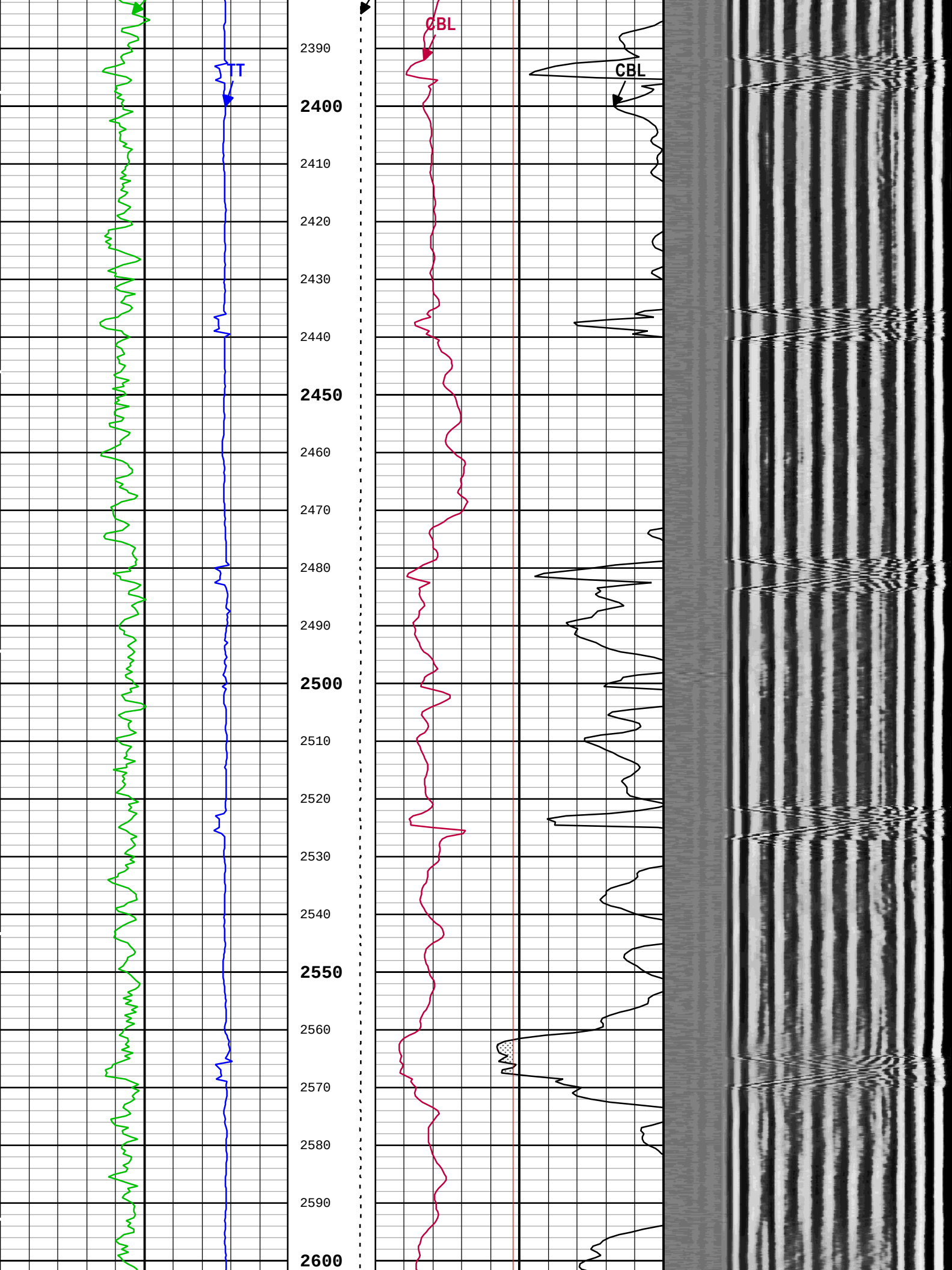

1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
EGGR-[1]
TT
TENS
CBL

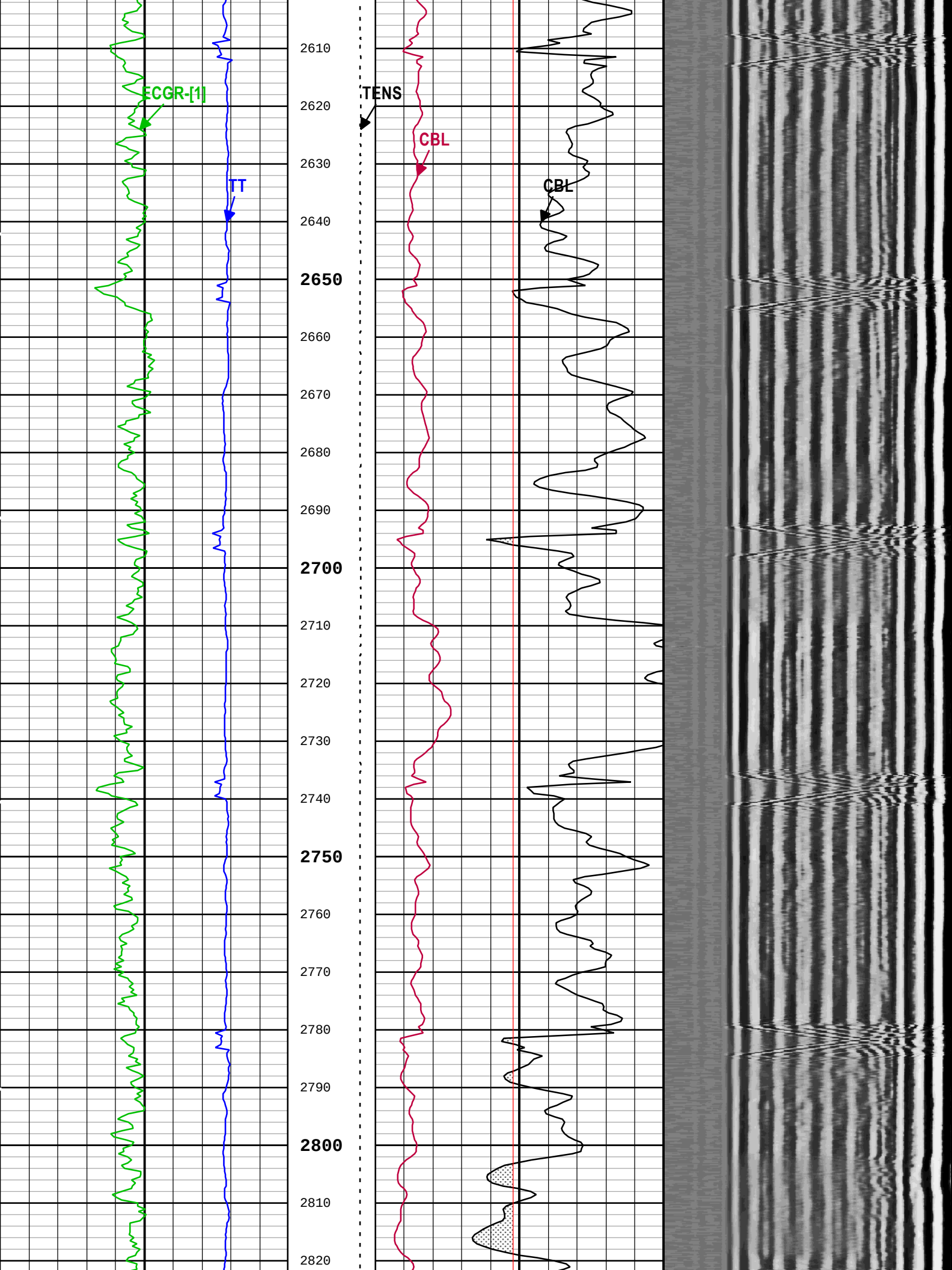

1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
ECGR-[1]
TT
TENS
CBL

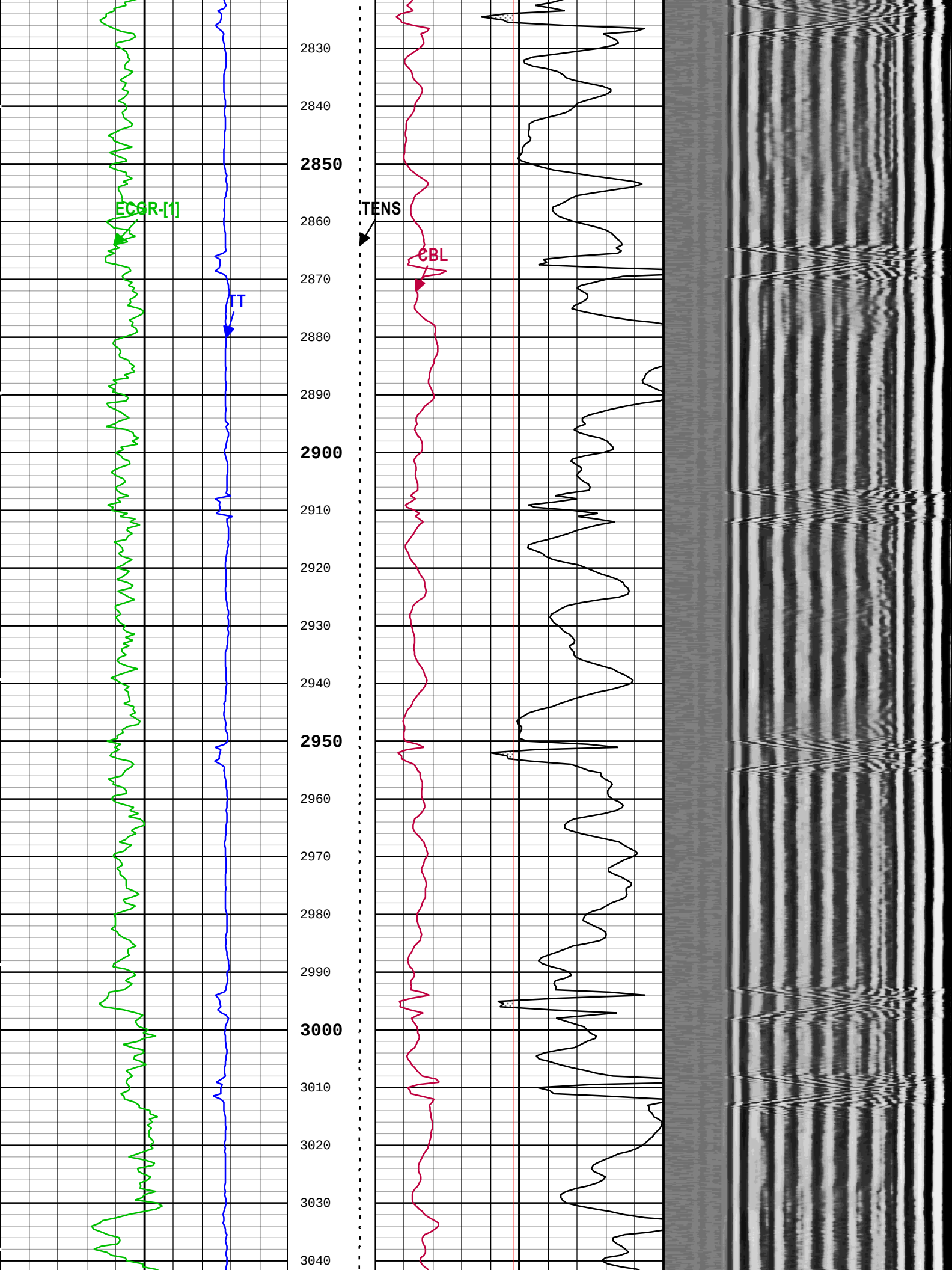

1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
ECGR-[1]
TT
TENS
CBL

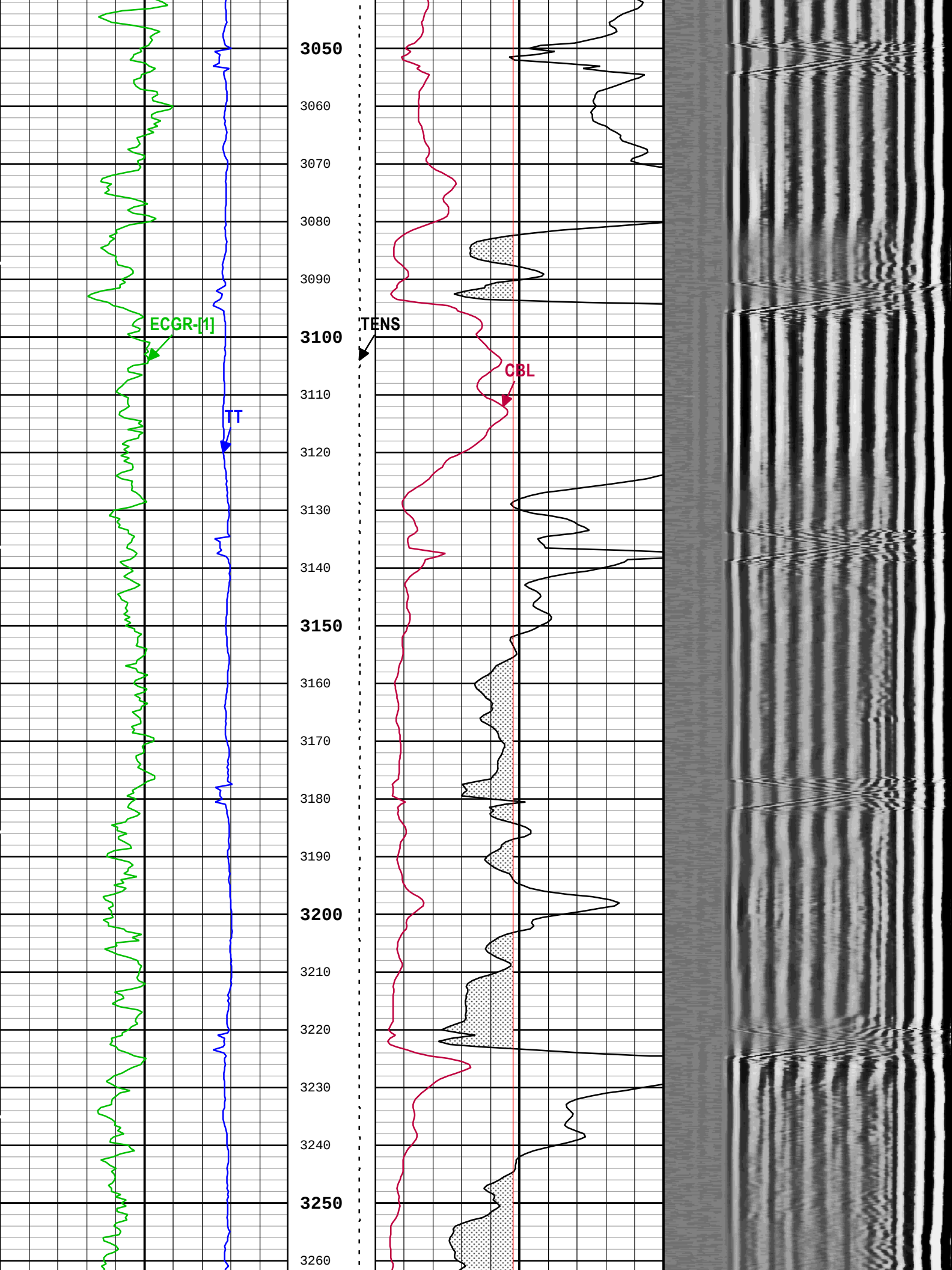

1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
ECGR-[1]
TT
TENS
CBL

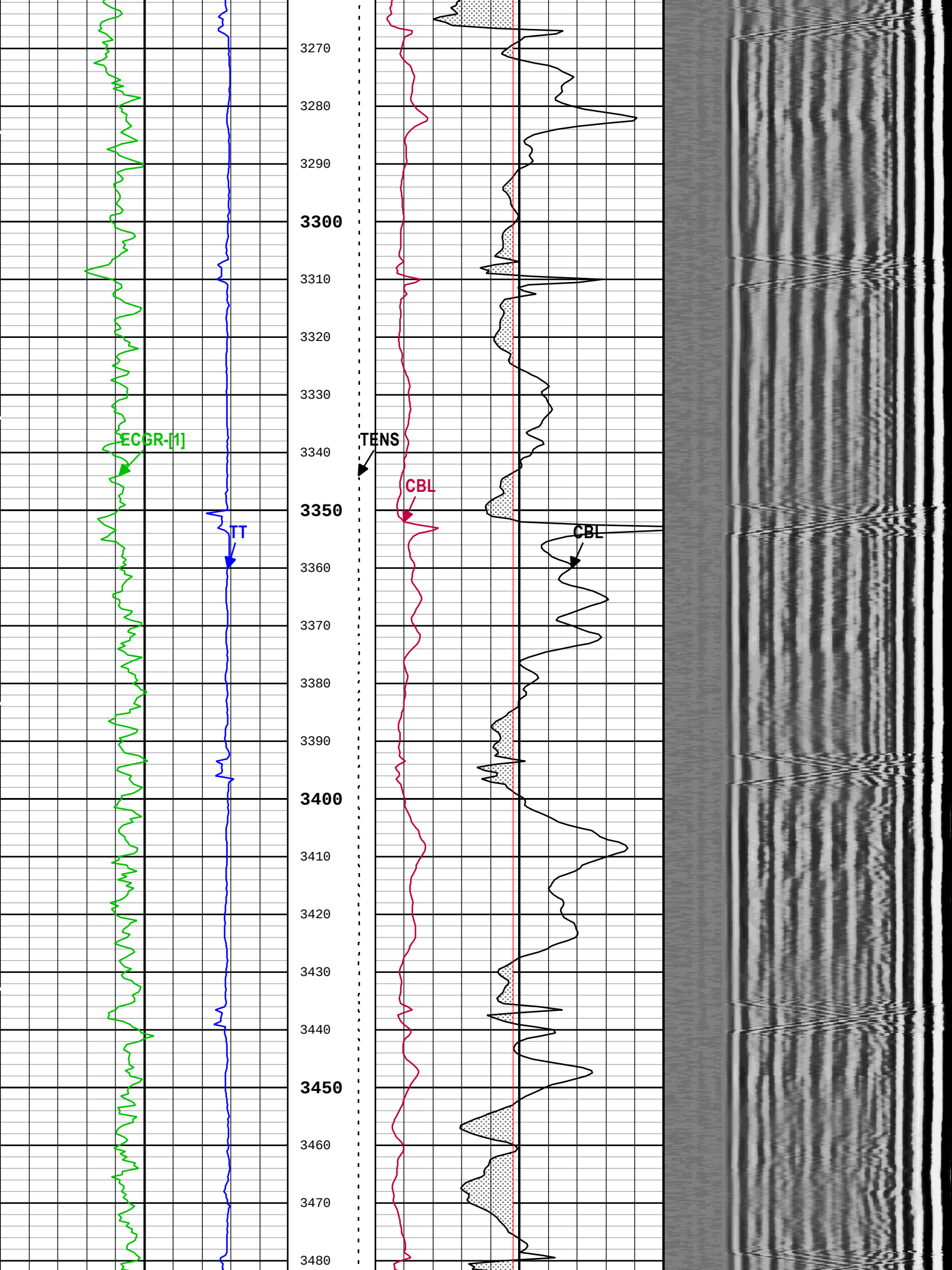

2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
ECGR-[1]
TENS

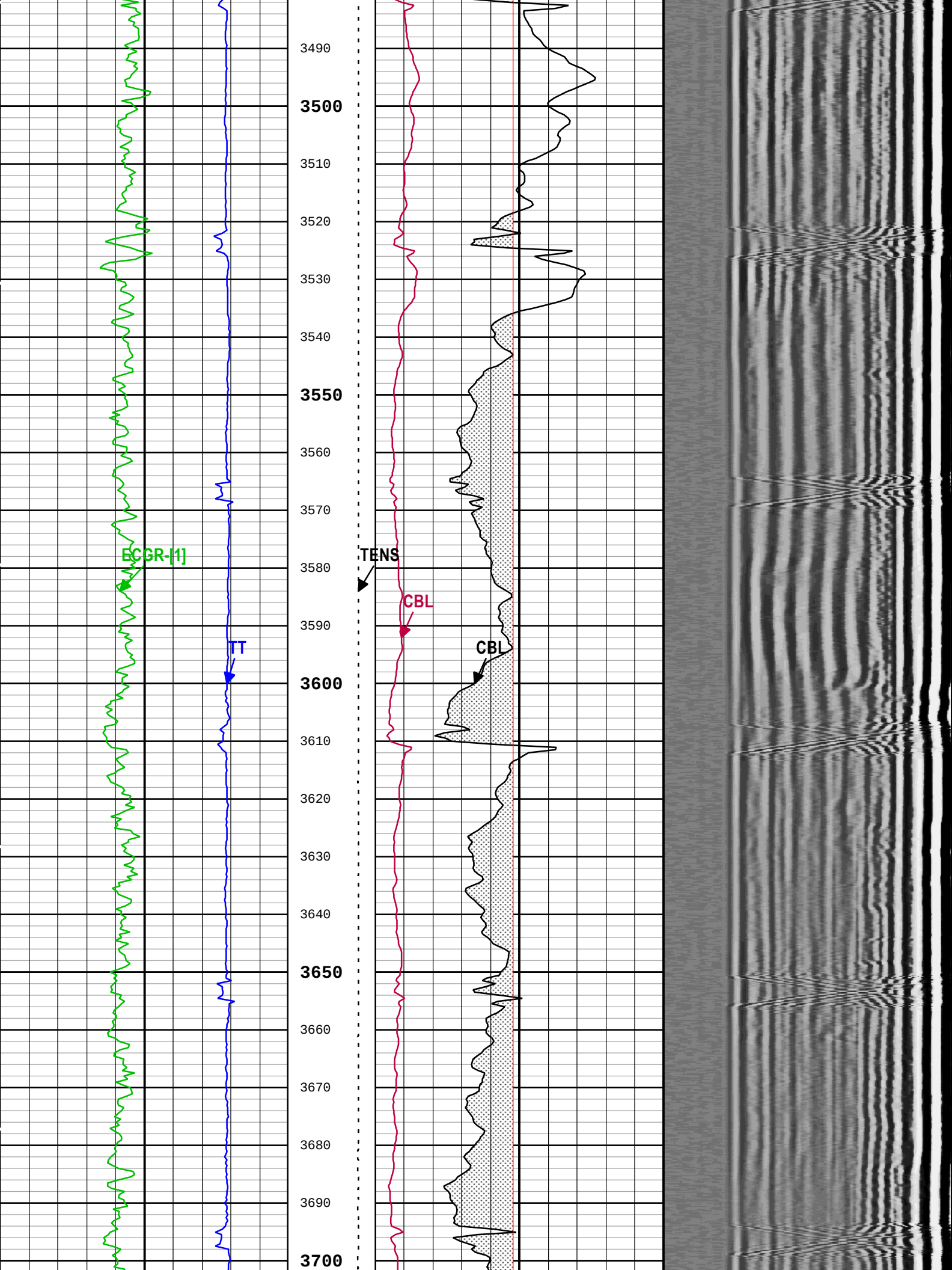

TT
CBL
CBL
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600

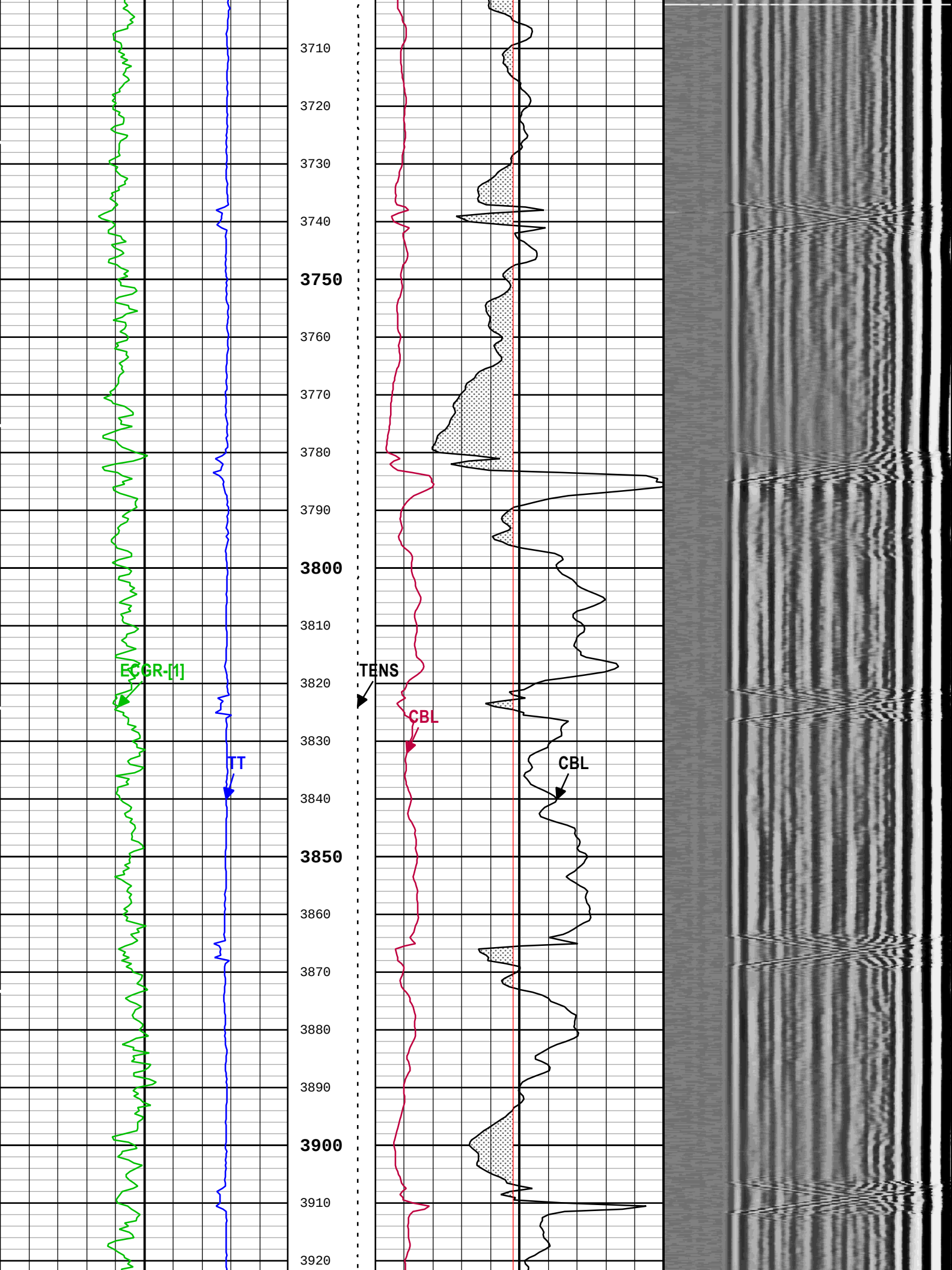

ECGR-[1]
TT
TENS
CBL
CBL
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820

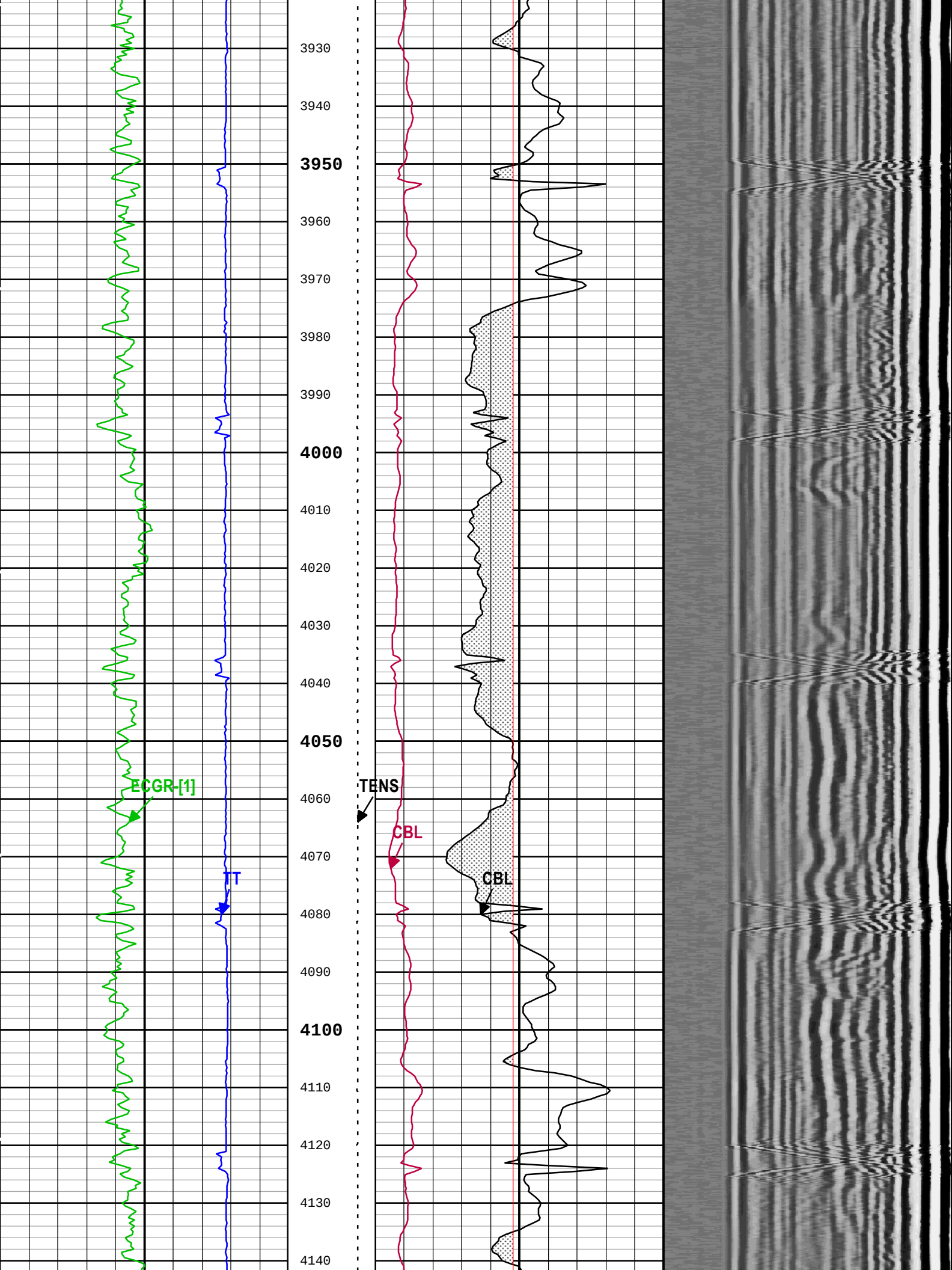

ECGR-[1]
TT
TENS
CBL
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040

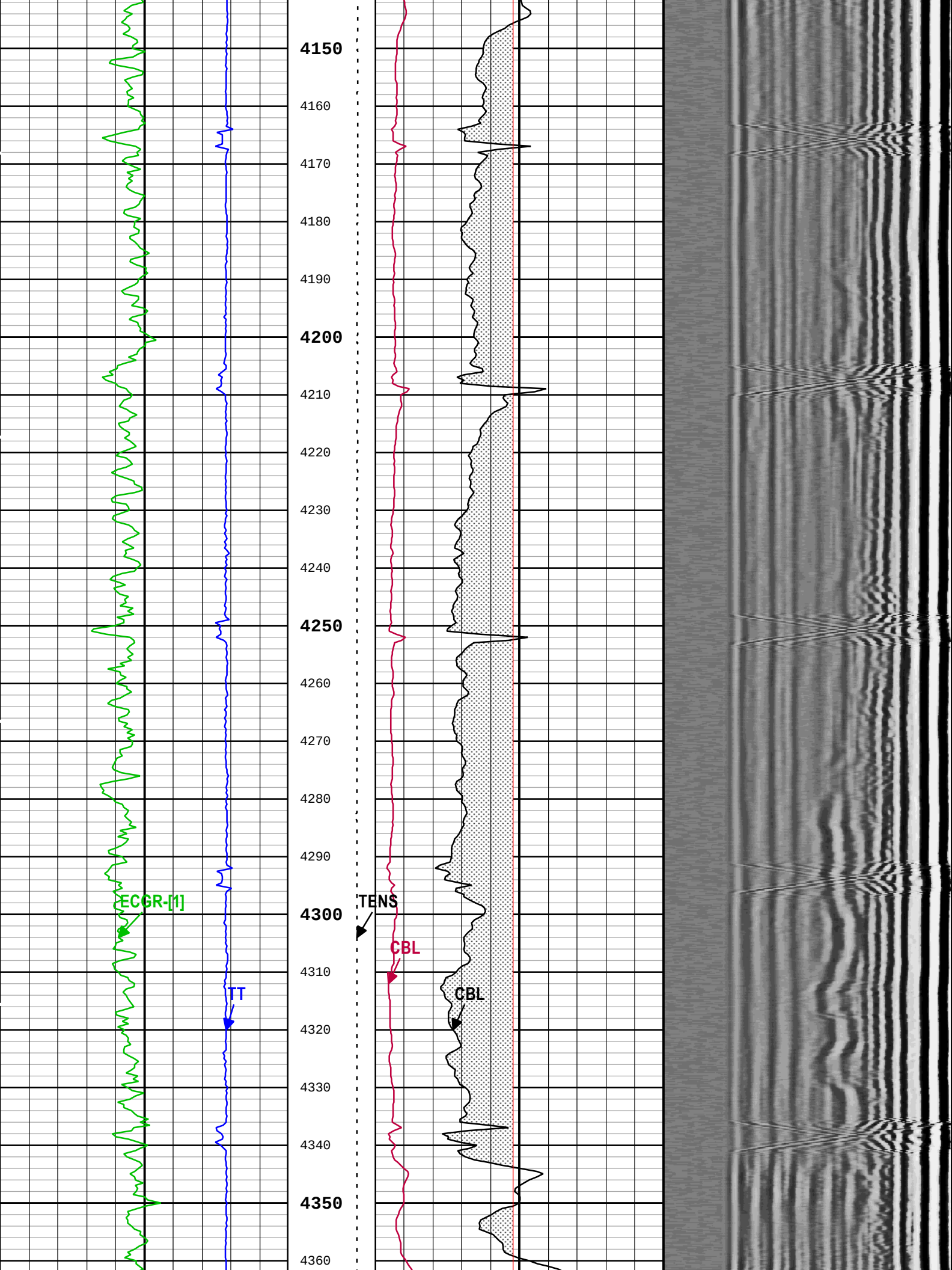

ECGR-[1]
TT
TENS
CBL
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260

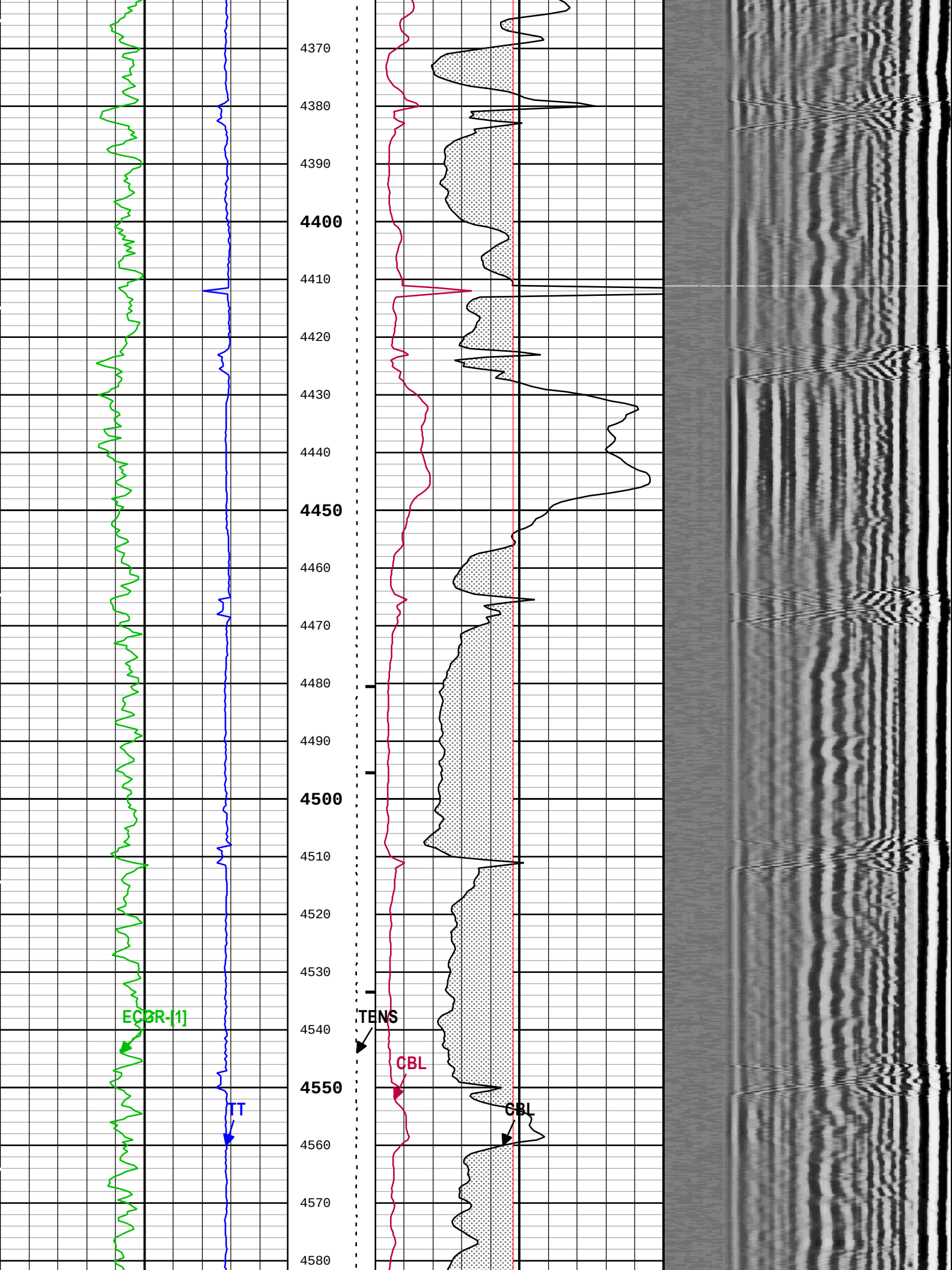

3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
ECGR-[1]
TT
TENS
CBL
CBL

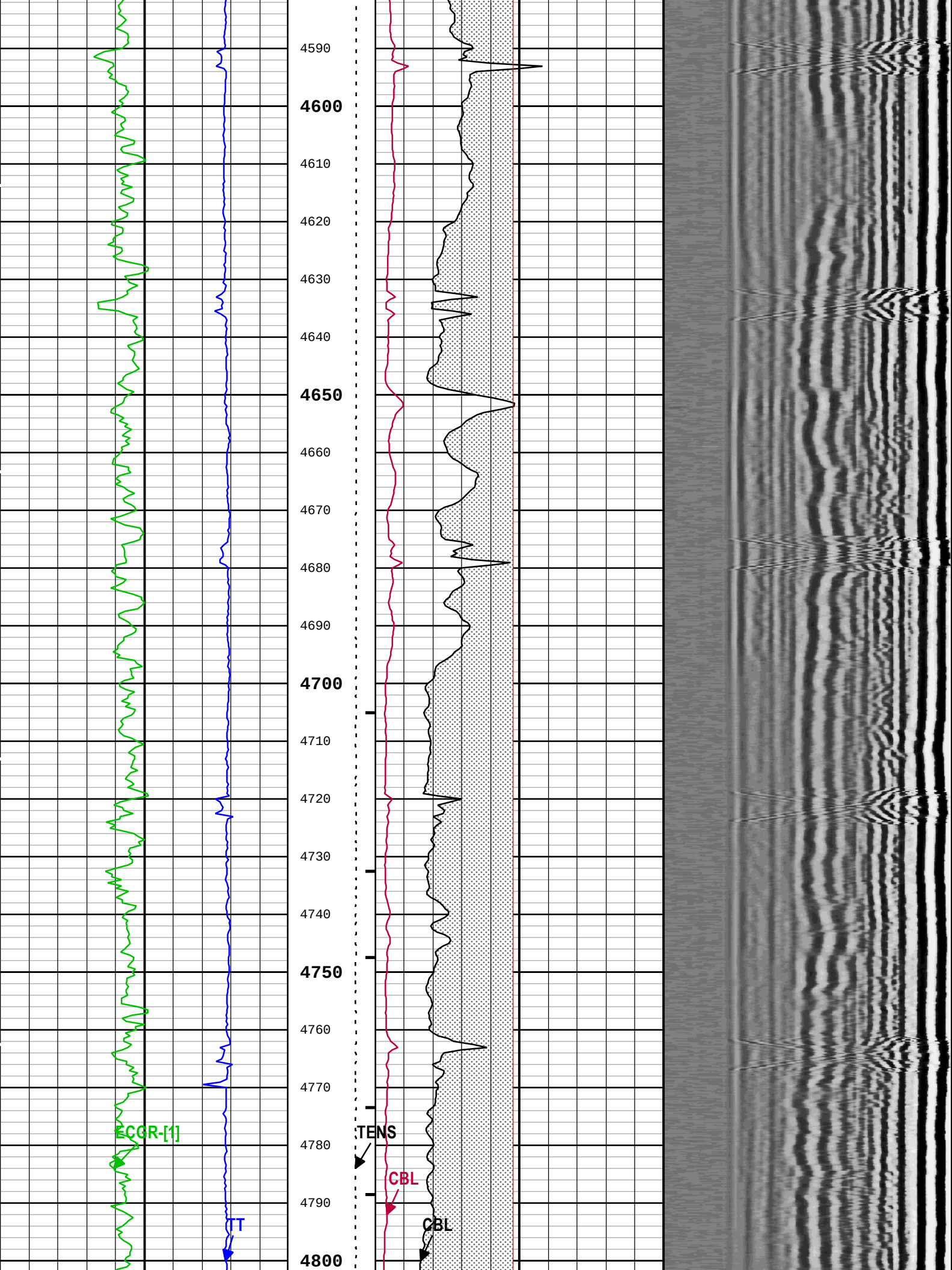

3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
ECGR-[1]
TT
TENS
CBL
CBL

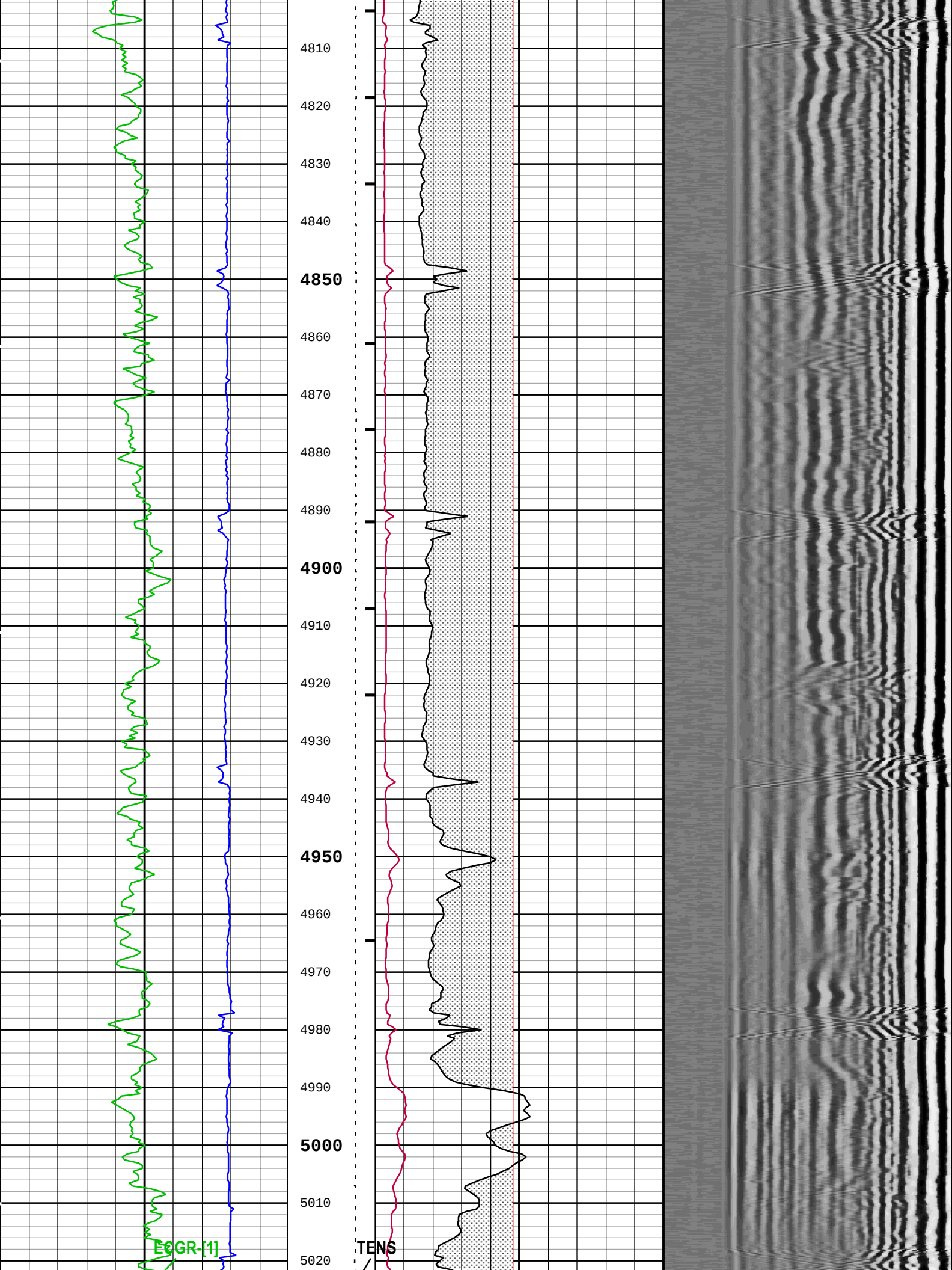

3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
ECGR-[1]
TT
TENS
CBL
CBL

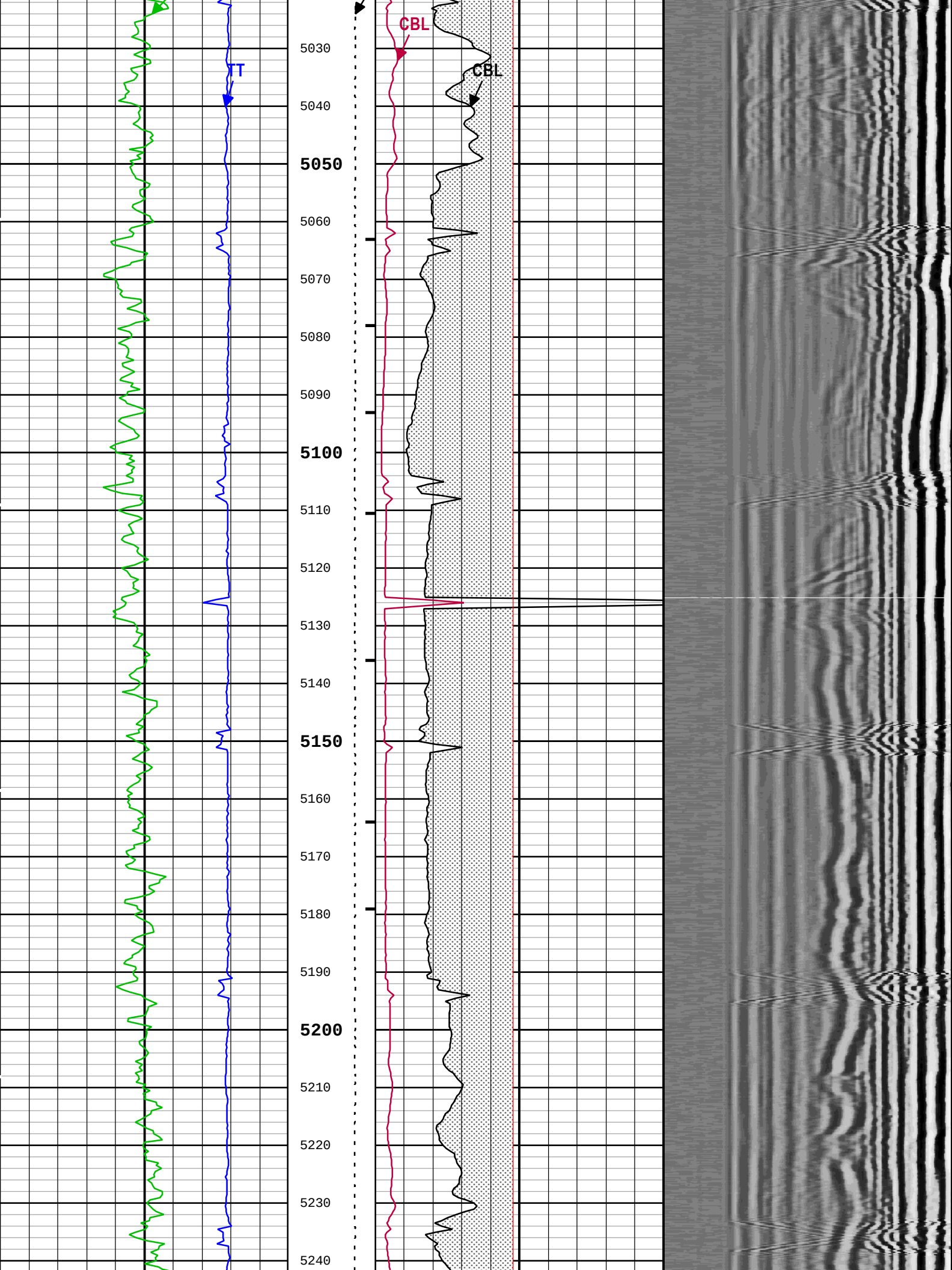

3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
ECGR-[1]
TT
TENS
CBL
CBL

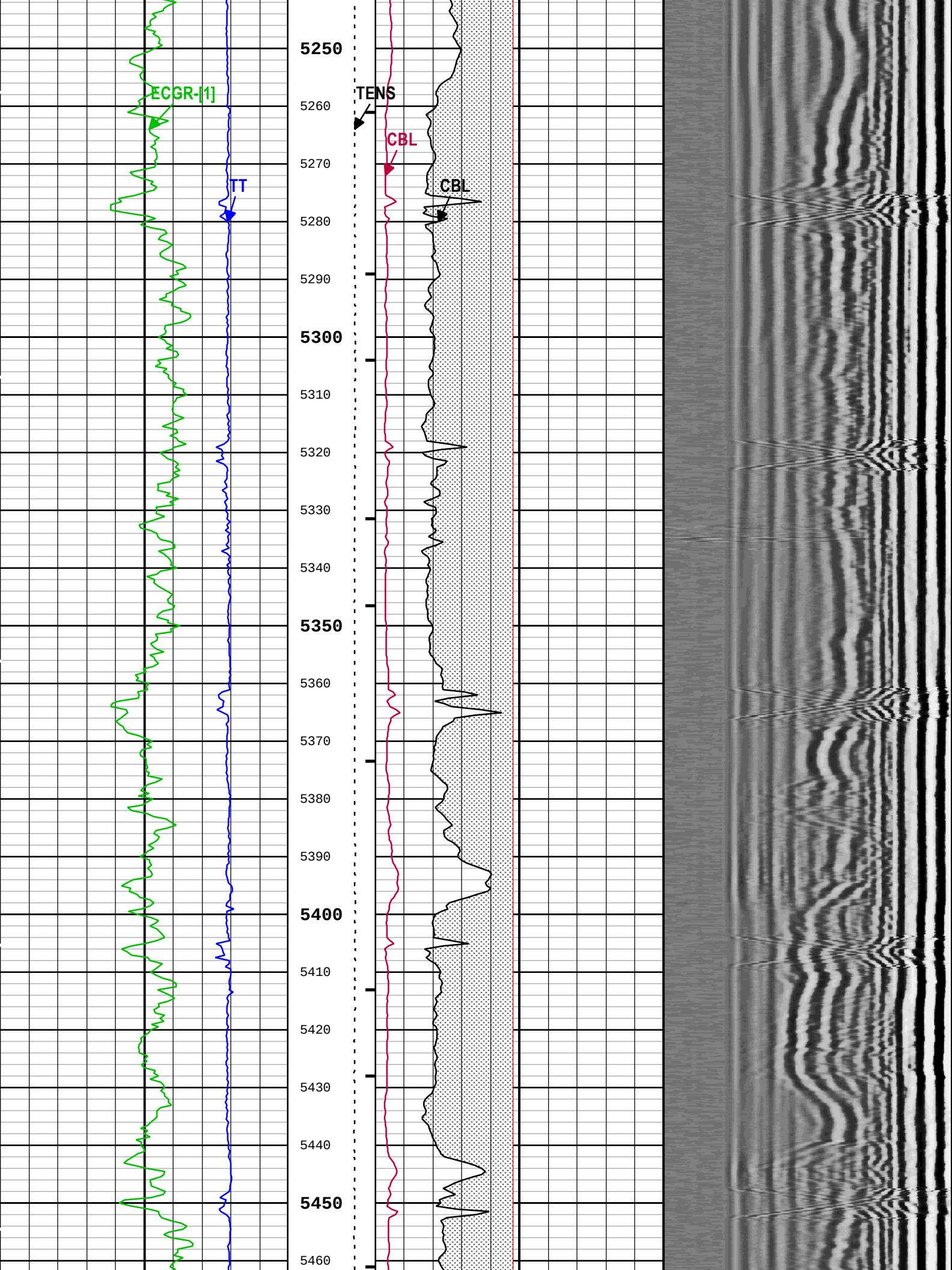

4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
4340
4350
4360
ECGR-[1]
TT
TENS
CBL
CBL

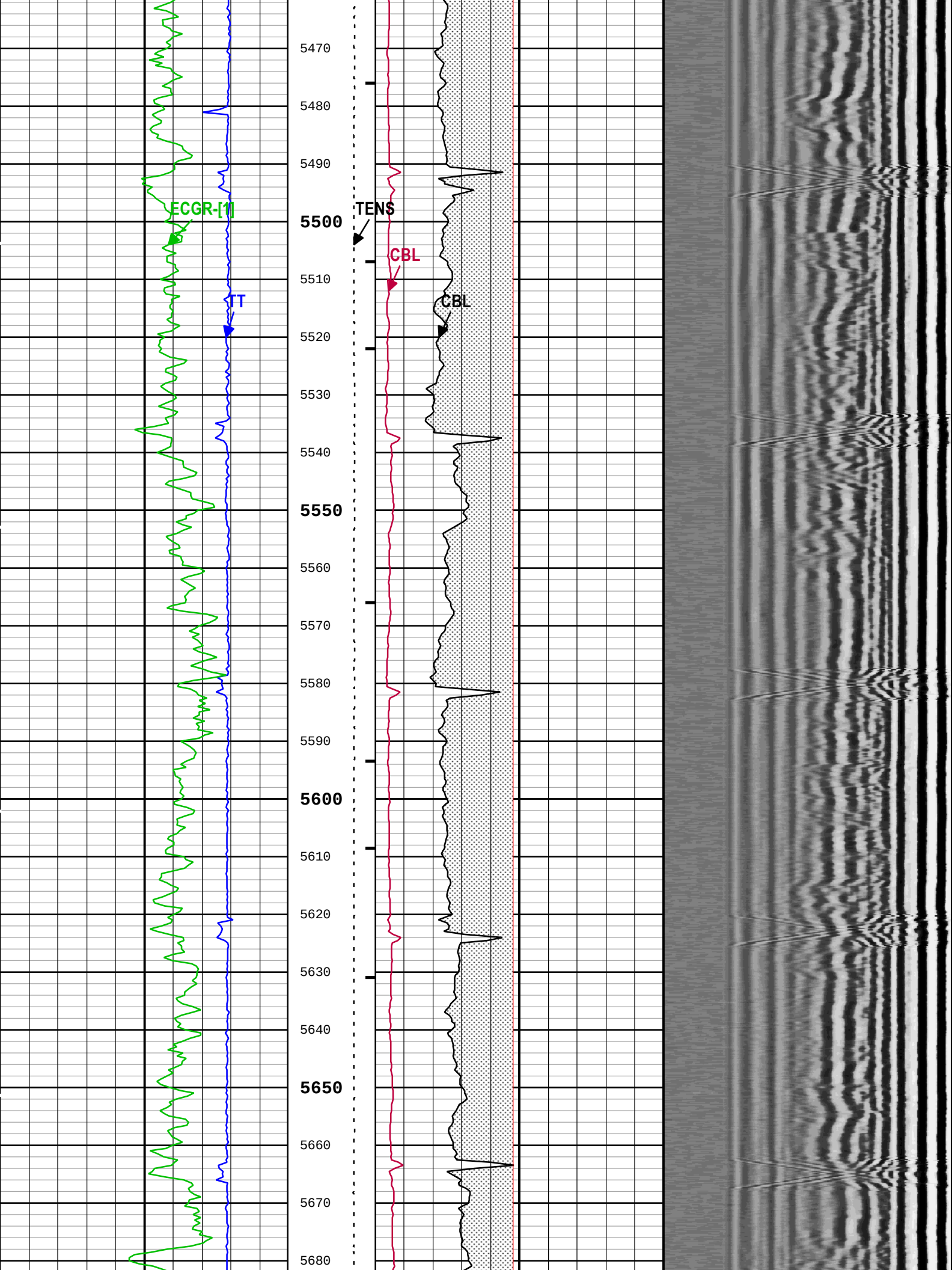

4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
ECGR-[1]
TT
TENS
CBL
CBL

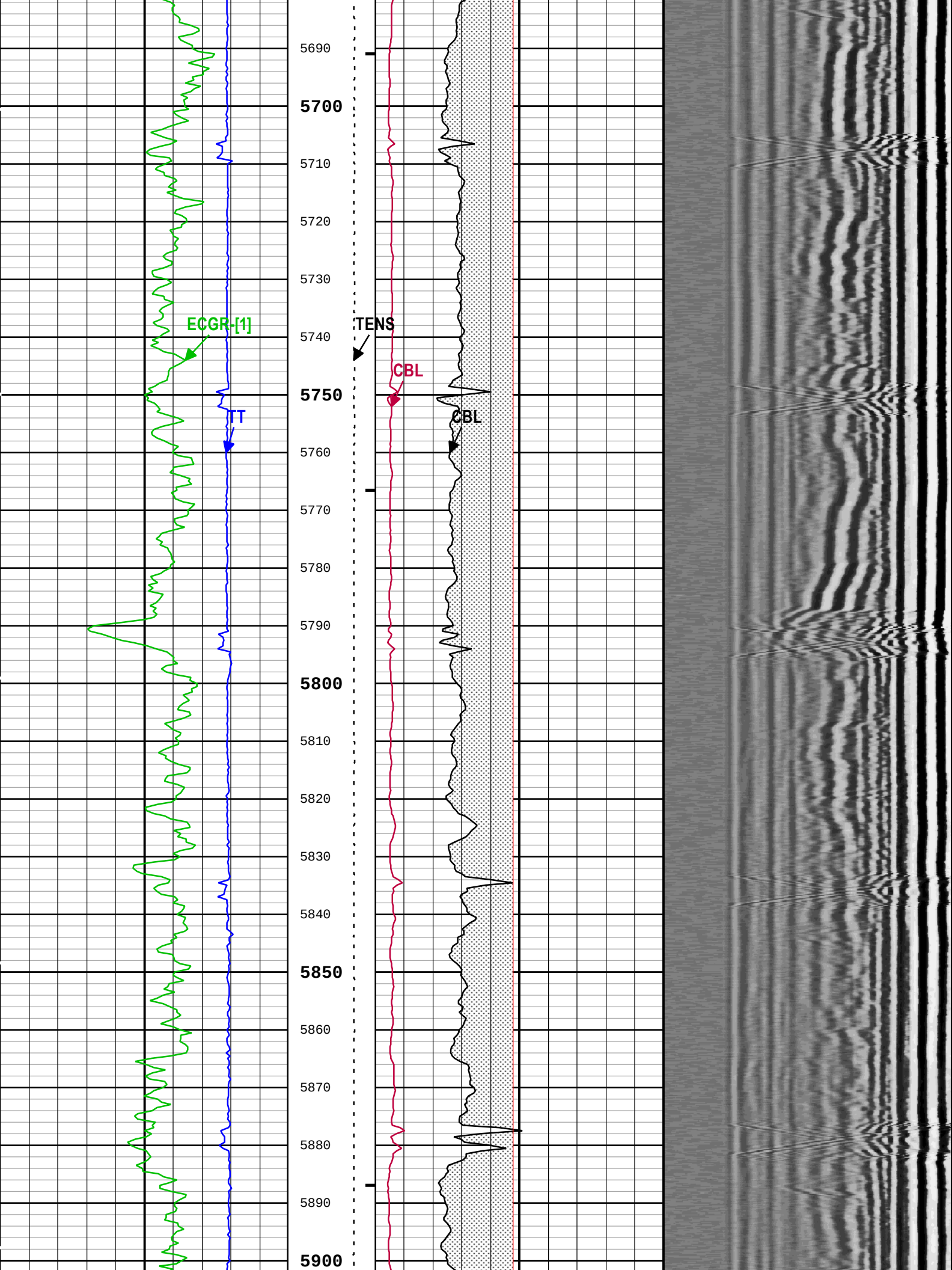

4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
4780
4790
4800
ECGR-[1]
TT
TENS
CBL
CBL

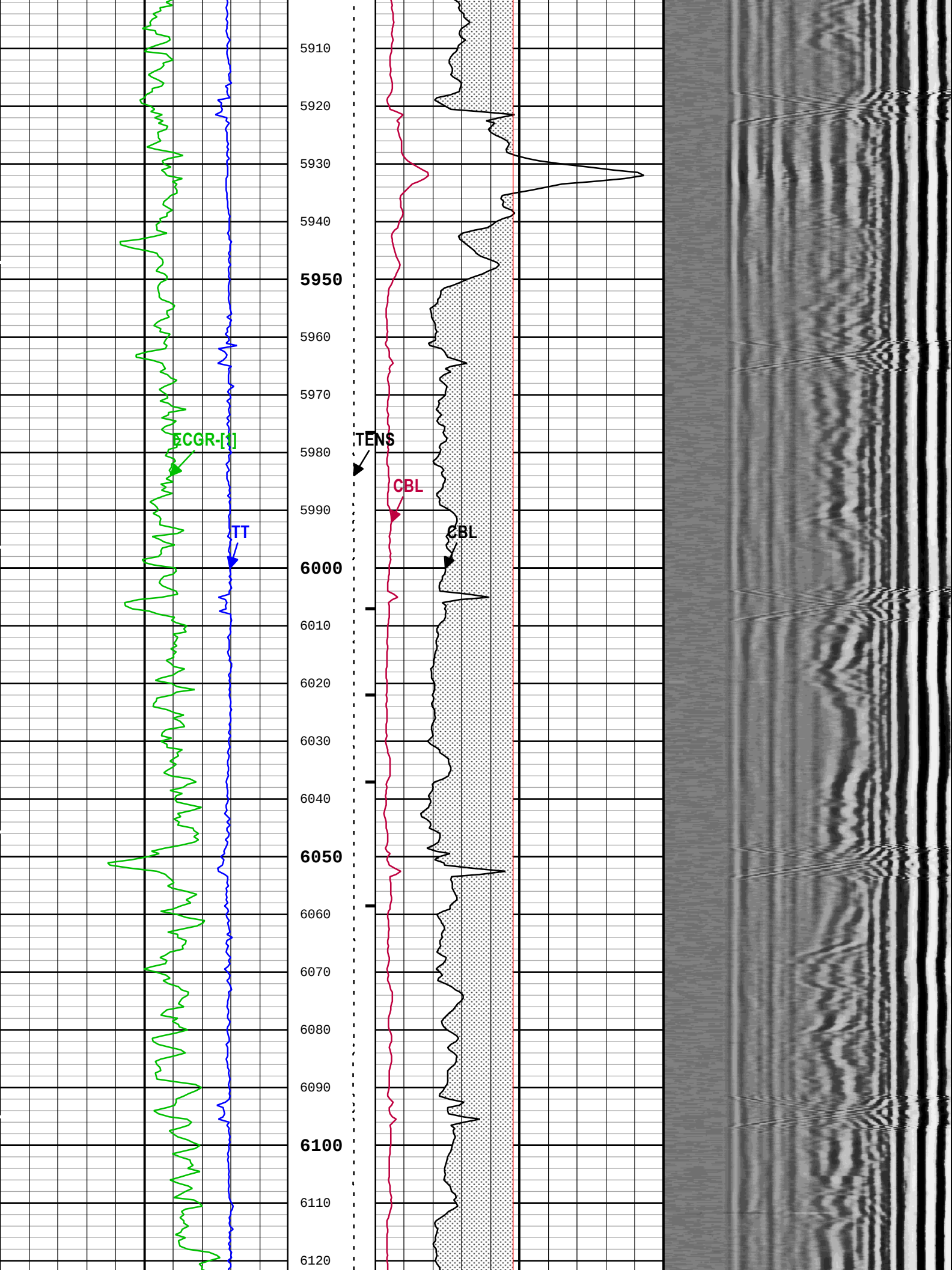

4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
5010
5020
ECGR-[1]
TENS

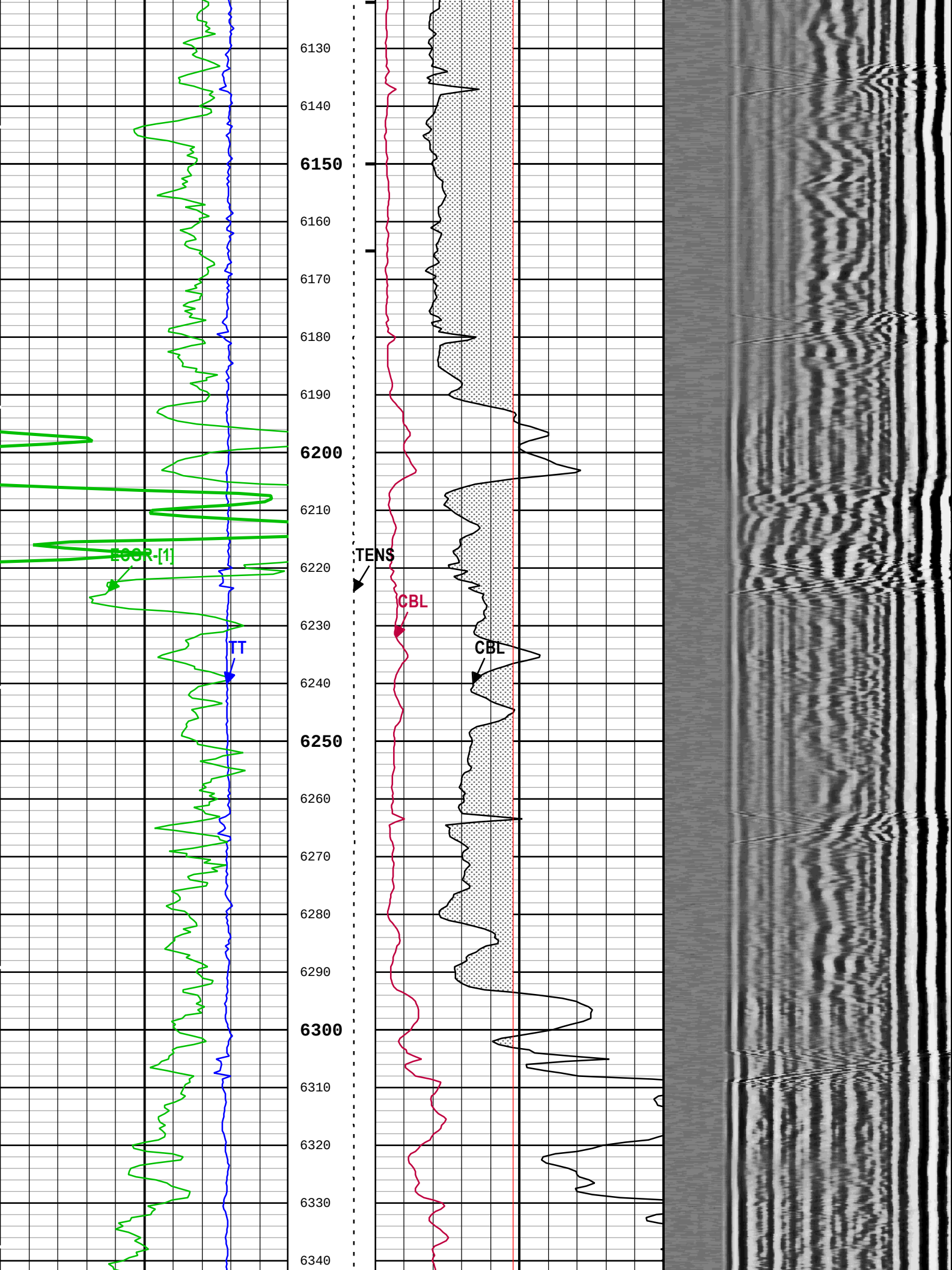

TT
CBL
CBL
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
5240

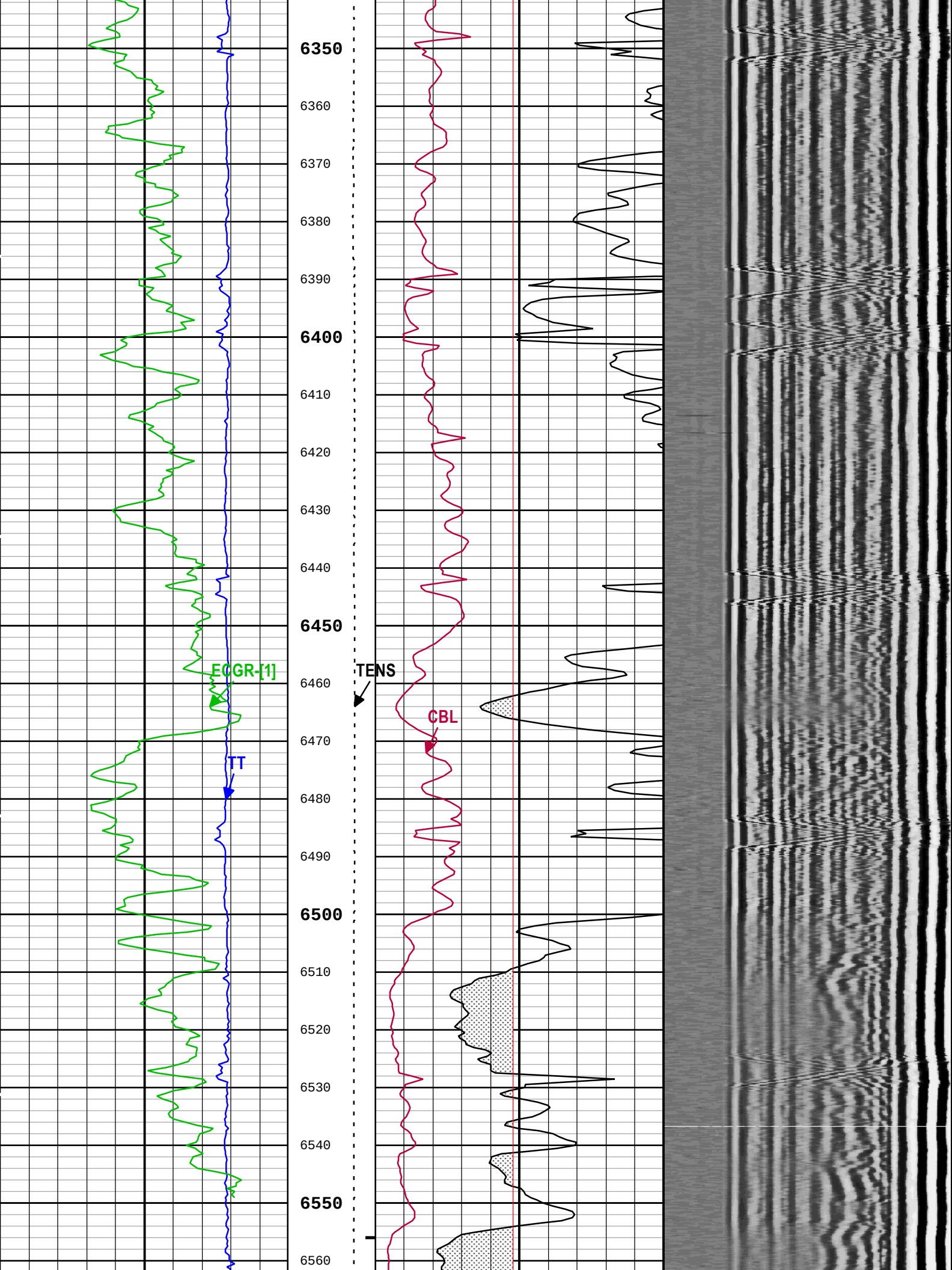

ECGR-[1]
TT
TENS
CBL
CBL
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460

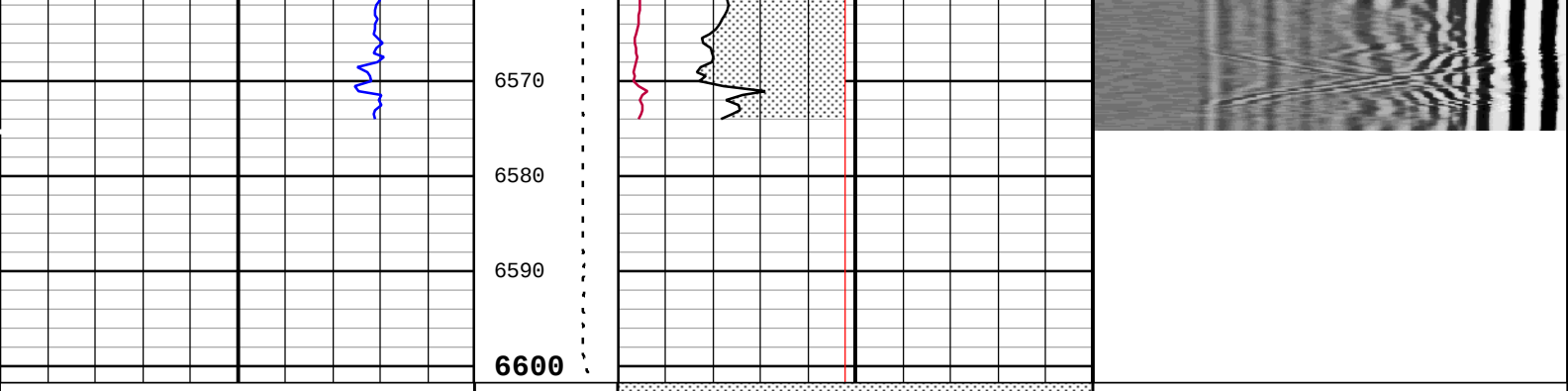

ECGR-[1]
TT
TENS
CBL
CBL
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680


ECGR-[1]
TT
TENS
CBL
CBL
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900


5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
ECGR-[1]
TT
TENS
CBL
CBL


6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
ECGR-[1]
TT
TENS
CBL
CBL


6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
ECGR-[1]
TT
TENS
CBL



Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 13-Apr-2016 17:22:03

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLT-H	140	us
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	6800	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	52	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMCF	CBL Cement Type Compensation Factor	DSLT-H	1	
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
FCF	CBL Fluid Compensation Factor	DSLT-H	0.84	
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	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	4.78	mV
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	9.3	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.63	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	2.63	mV

NMSG	Near Minimum Sliding Gate	DSLT-H	310	us
NMXG	Near Maximum Sliding Gate	DSLT-H	940	us
NUMP	Number of Detection Passes	DSLT-H	2	
RCTH	Reference Calibrator Thickness	USIT-E	0.295	in
SFAF	Sonic Formation Attenuation Factor	DSLT-H	3.25	dB/ft
SGAD	Sliding Gate Status	DSLT-H	Off	
SGCL	Sliding Gate Closing Delta-T	DSLT-H	130	us/ft
SGCW	Sliding Gate Closing Width	DSLT-H	25	us
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	110	us
SLEV	Signal Level for AGC	DSLT-H	5000	mV
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	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	Time Zoned	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.5	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
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	Theoretical	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	5	
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZCMT	Acoustic Impedance of Cement	DSLT-H	6.8	Mrayl
ZCMT_NEAT	Acoustic Impedance of Cement in Neat Cement	DSLT-H	6.8	Mrayl

OneDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	4	799
BS	12.25	799	6601.75
MCI	21.68	4	799
MCI	14.81	799	6601.75

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
DDEL	Digitizing Delay	DSLT-H	0	us
MODE	DSLT Acquisition Mode	DSLT-H	CBLB	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
DWCO	Digitizer Word Count	DSLT-H	250	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3375	ft/h
SDTH	Switch Down Threshold	DSLT-H	20000	
SGAI	Selectable Acquisition Gain	DSLT-H	x1	

SUTH	Switch Up Threshold	DSLT-H	1000	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6600	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

One

Repeat Pass 5 in = 100 ft

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	6377.94 ft	6597.99 ft	13-Apr-2016 8:50:44 AM	13-Apr-2016 8:56:19 AM	ON	2.60 ft	Yes

All depths are referenced to toolstring zero

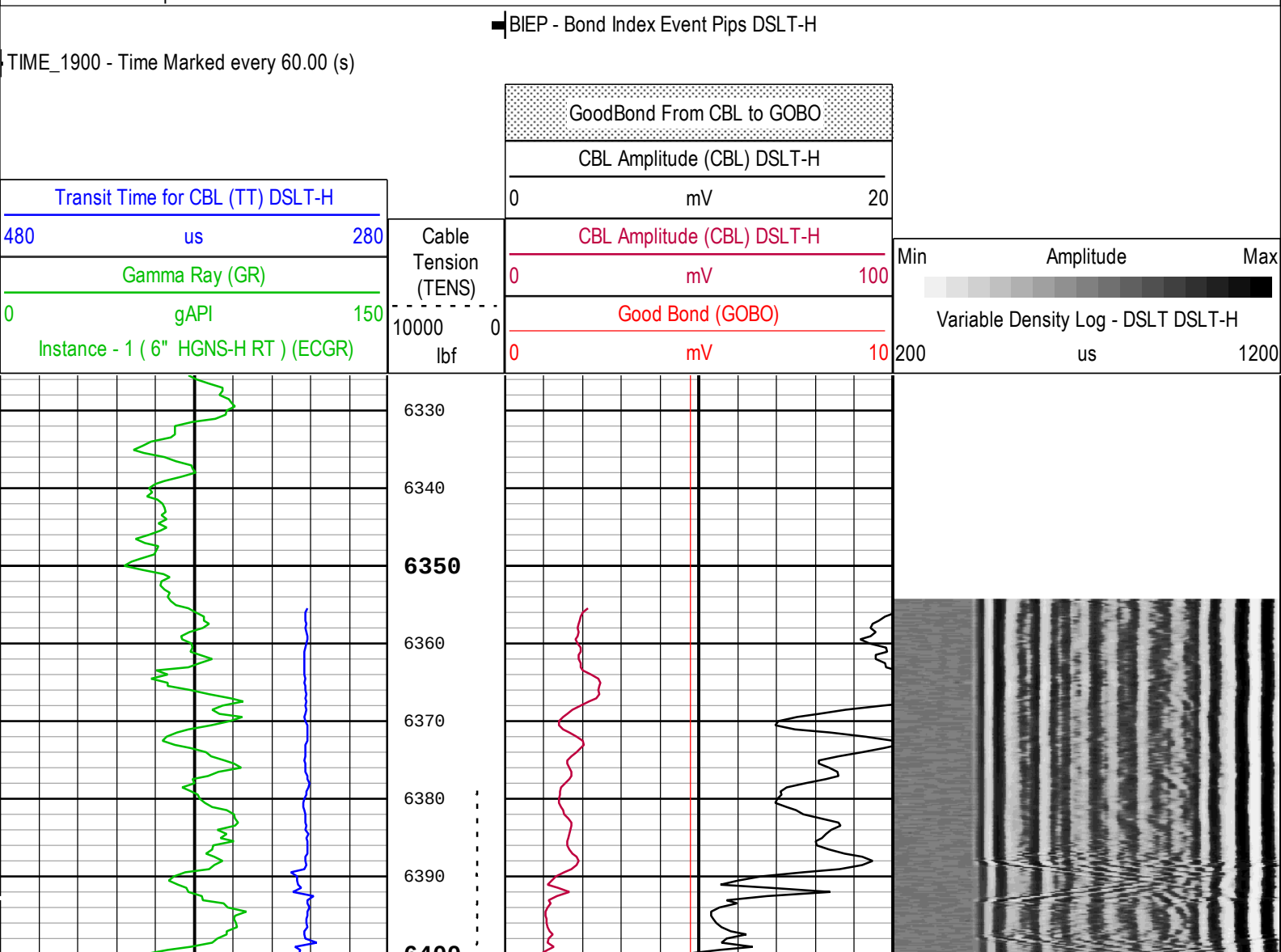
Log

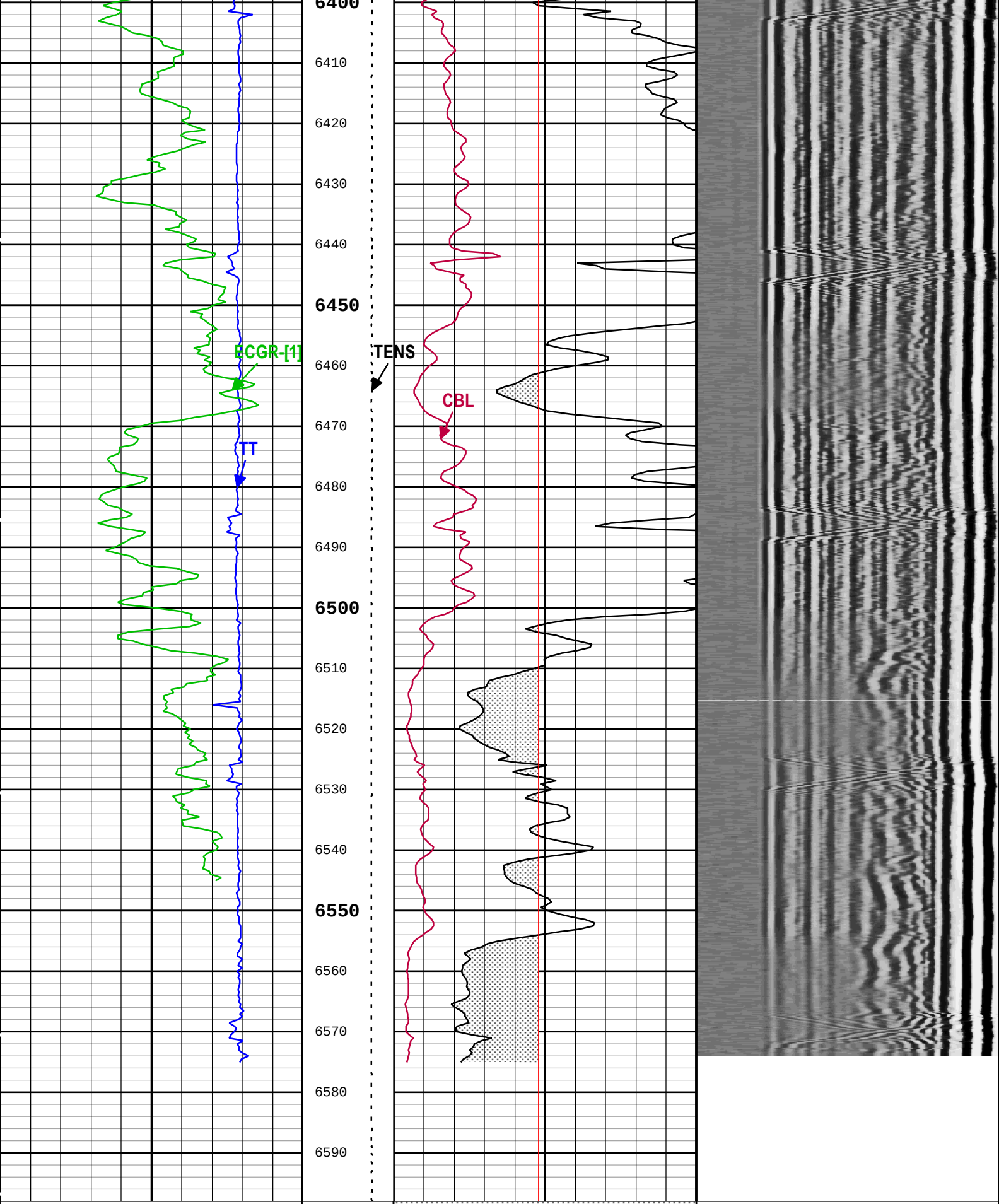
Company:Southern California Gas Company Well:Porter 68B

One: Log[4]:Up:S002

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 13-Apr-2016 17:22:09





Transit Time for CBL (TT) DSLT-H
480 us 280

Gamma Ray (GR)
0 gAPI 150

Cable Tension (TENS)
10000 0
lbf

GoodBond From CBL to GOBO

CBL Amplitude (CBL) DSLT-H
0 mV 20

CBL Amplitude (CBL) DSLT-H

Min Amplitude Max

Variable Density Log - DSLT DSLT-H
200 us 1200

Instance - 1 (6 HGNS-H RT) (ECGR)

0 mV 100

Good Bond (GOBO)

0 mV 10

TIME_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips DSLT-H

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 13-Apr-2016 17:22:09

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[6]:Up	6602.18	169.85

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)

Mud Impedance = "Theoretical".
CZMD uses theoretical results.
MUD_N_THE=1.00
DFD=1.14g/cm3(9.50lbm/gal)

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)

Composite 1

Main Pass 5 in = 100 ft

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	169.85 ft	6602.18 ft	13-Apr-2016 9:13:00 AM	13-Apr-2016 11:25:29 AM	ON	1.00 ft	Yes
One	Log[17]:Up	Up	211.40 ft	595.74 ft	13-Apr-2016 1:43:04 PM	13-Apr-2016 1:51:26 PM	ON	5.99 ft	Yes
One	Log[19]:Up	Up	56.70 ft	407.06 ft	13-Apr-2016 2:07:43 PM	13-Apr-2016 2:16:22 PM	ON	6.67 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 68B
Composite 1:S002

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 13-Apr-2016 17:22:17

TIME_1900 - Time Marked every 60.00 (s)

ERAV_IRAV

ERAV_RHF1

IRAV_LHF1

IRAV_ERAV

LHF1_ERAV

RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]

5 in 4

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]

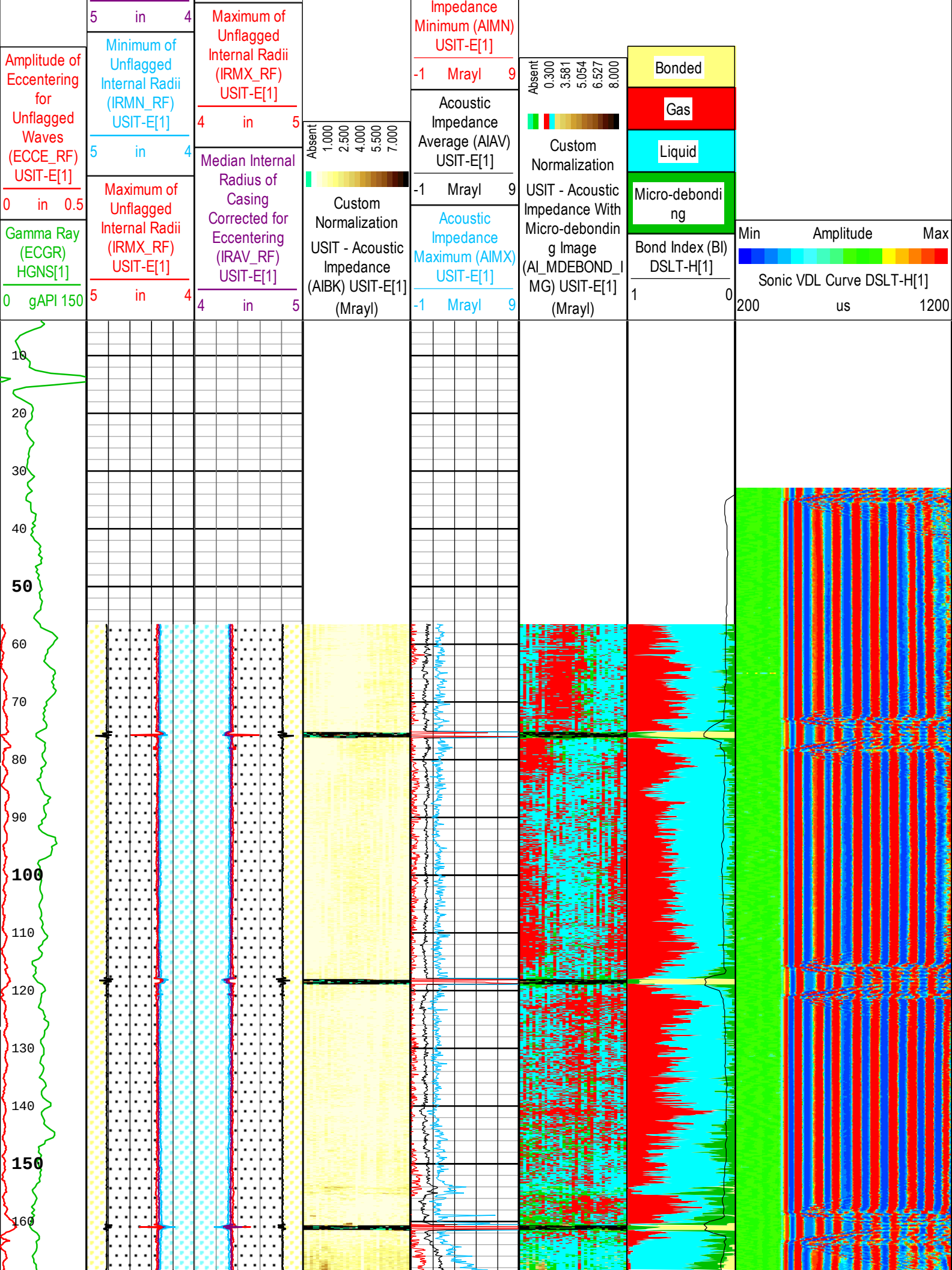
4 in 5

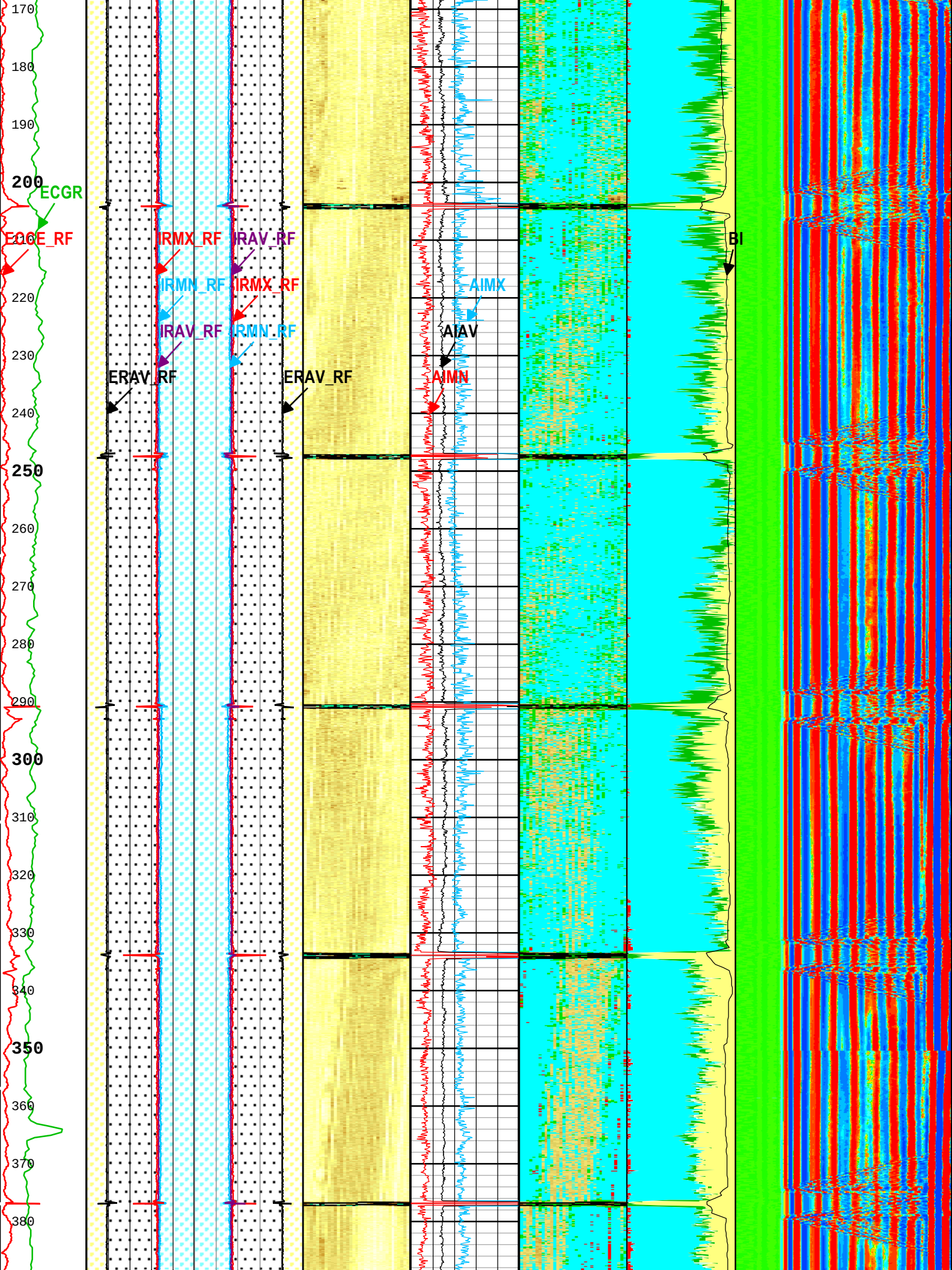
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]

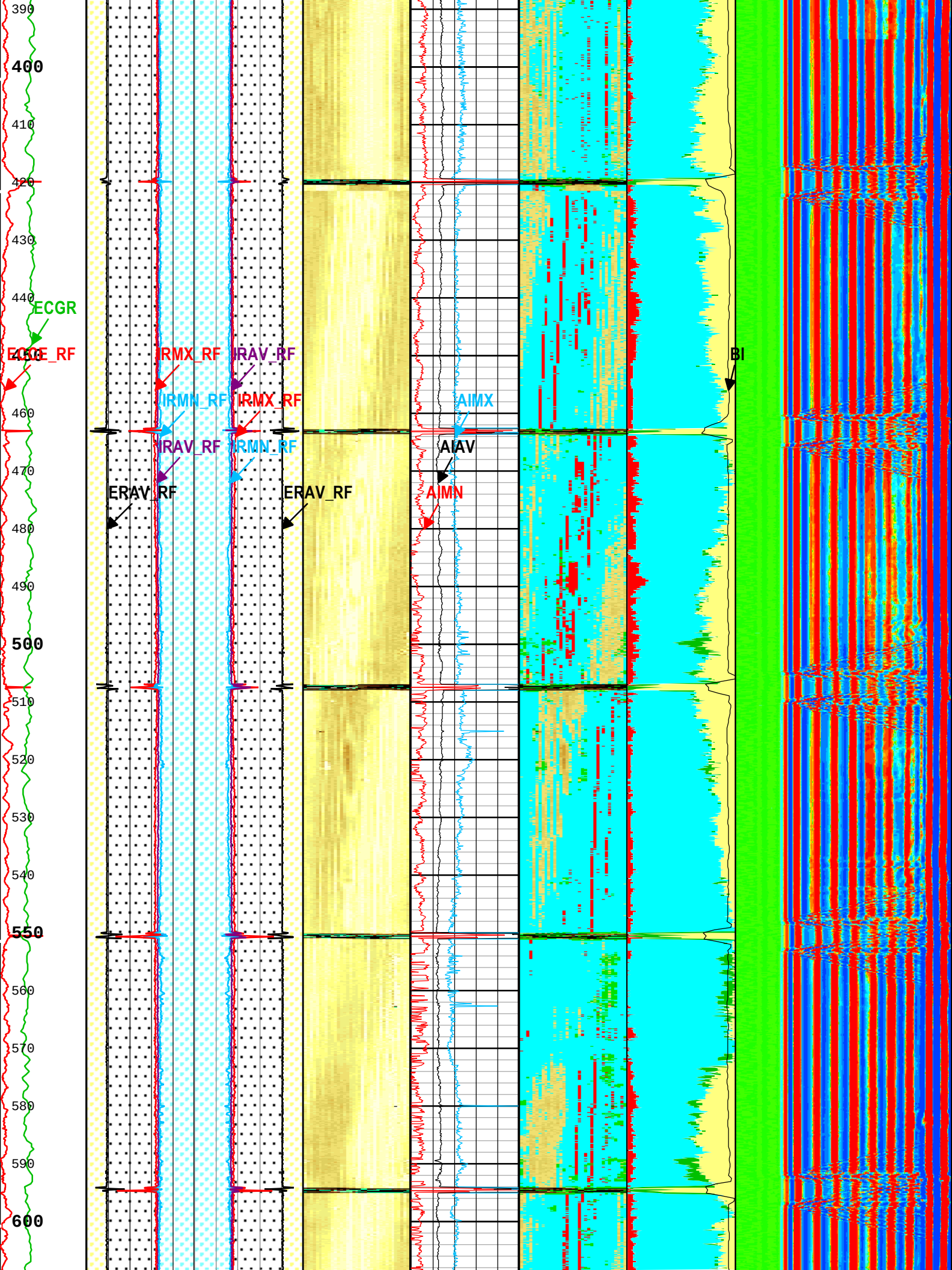
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]

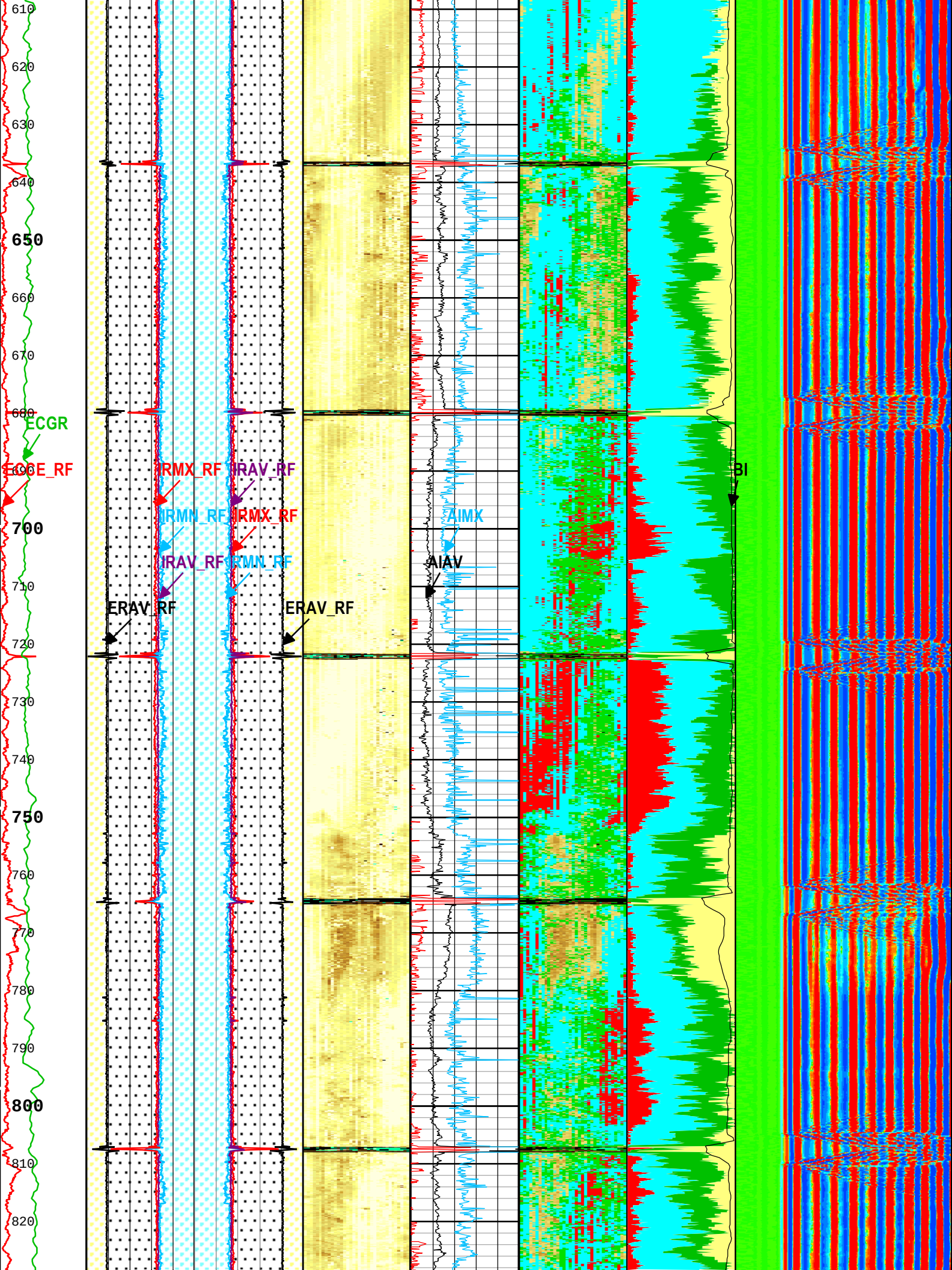
4 in 5

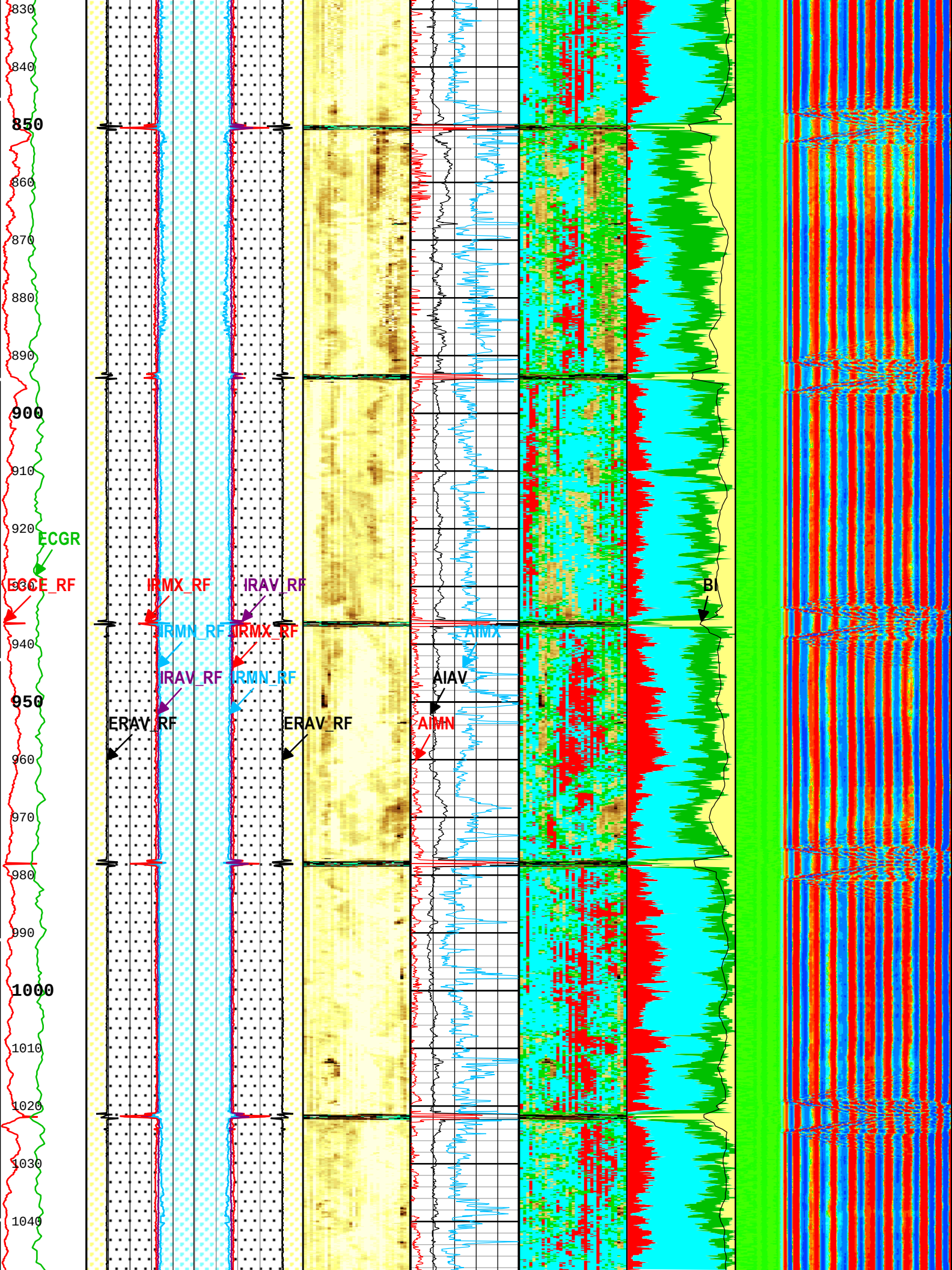
Acoustic

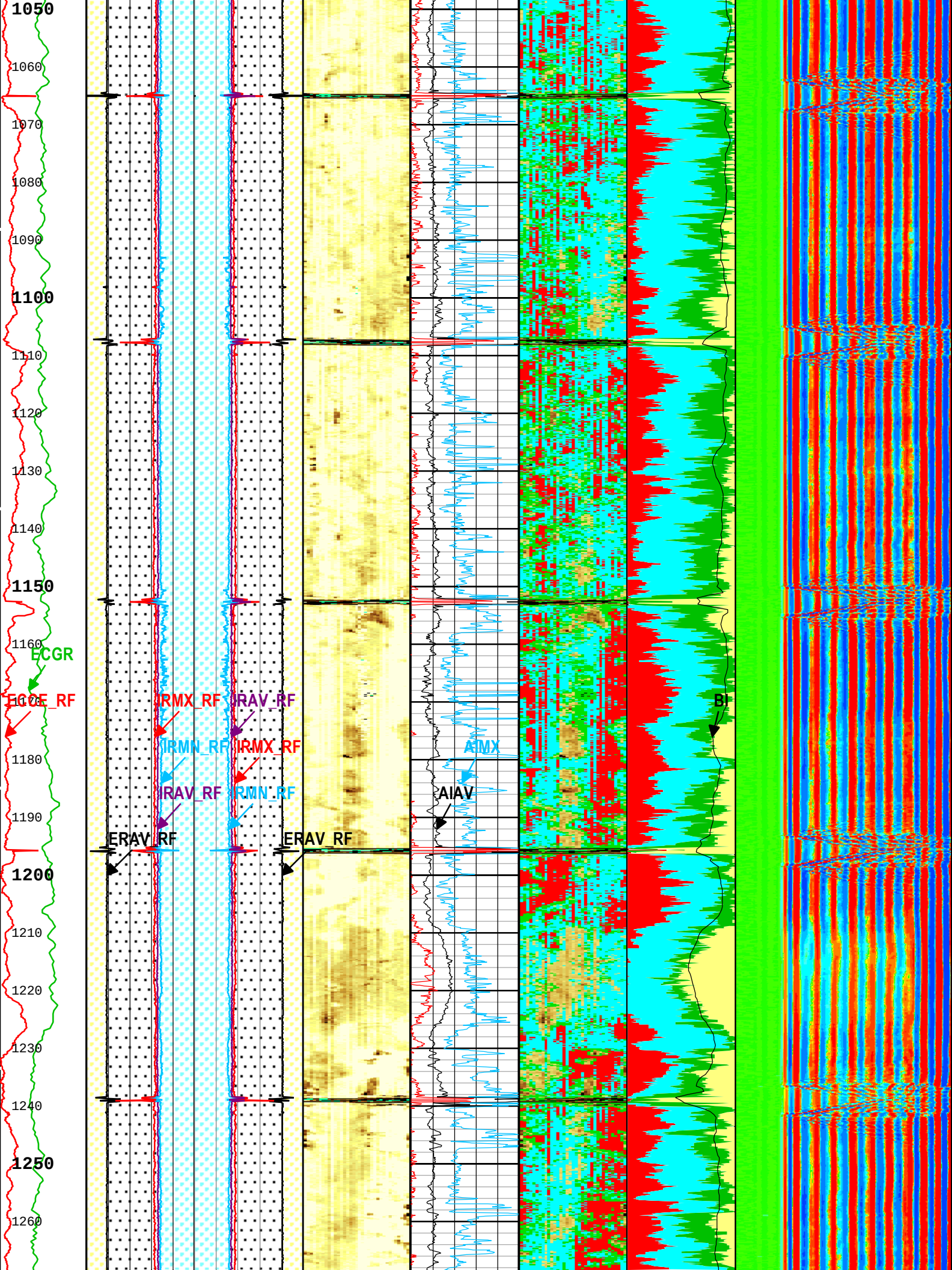

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Gamma Ray (ECGR) HGNS[1]
0 gAPI 150
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4 in 5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4 in 5
Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H[1]
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H[1]
200 us 1200
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160

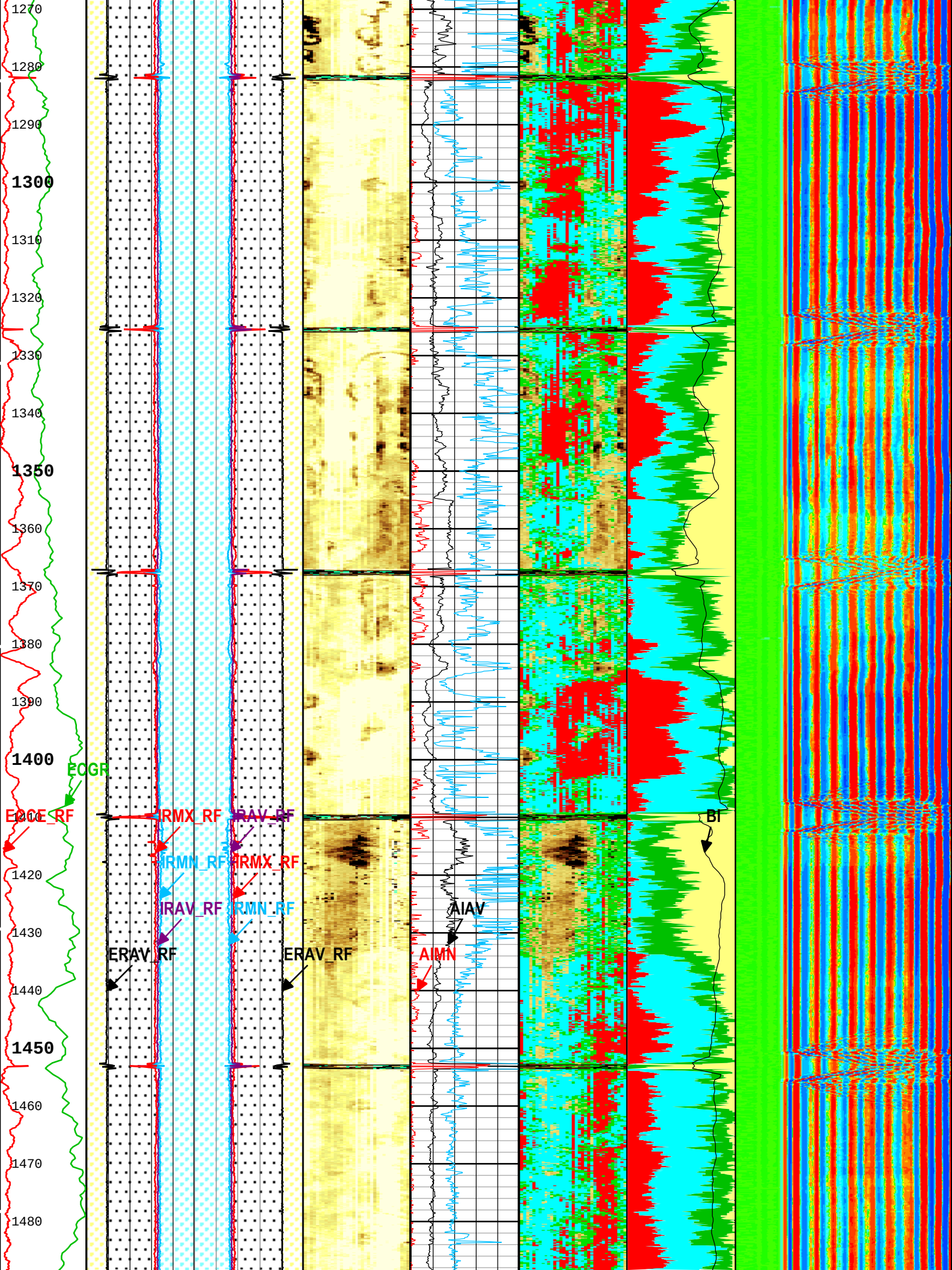

ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

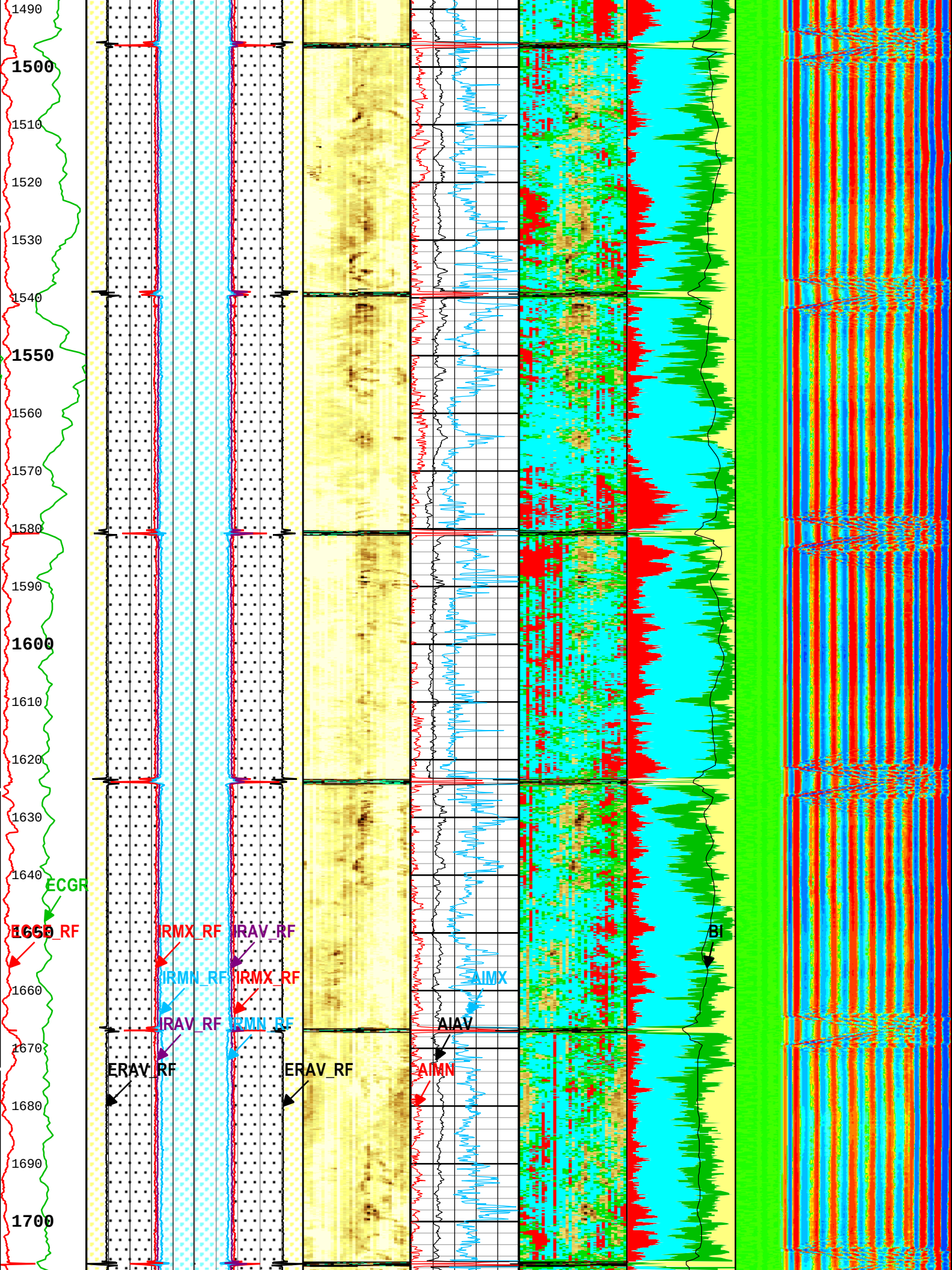

390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IIRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

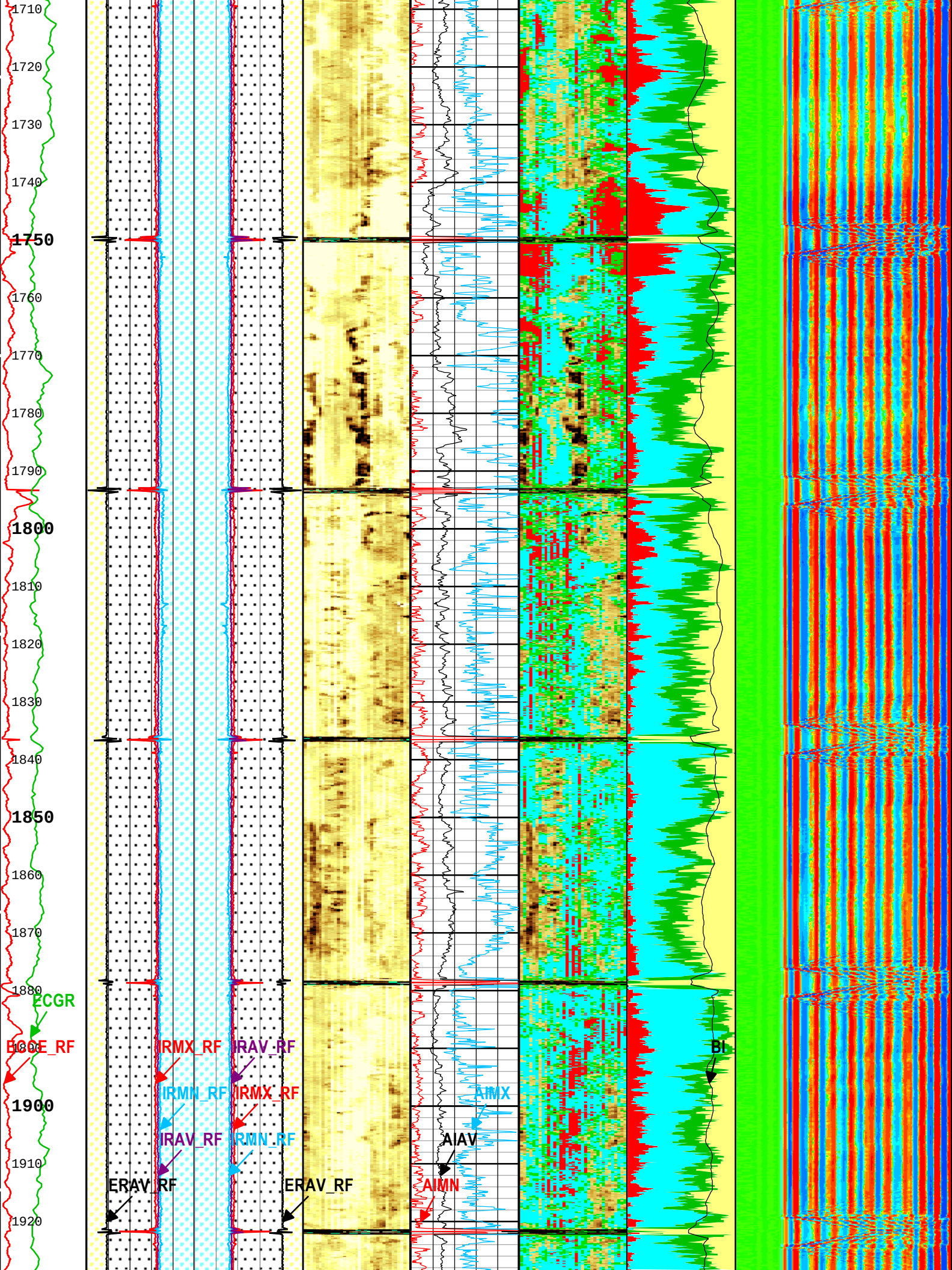

610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780
790
800
810
820
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
BI

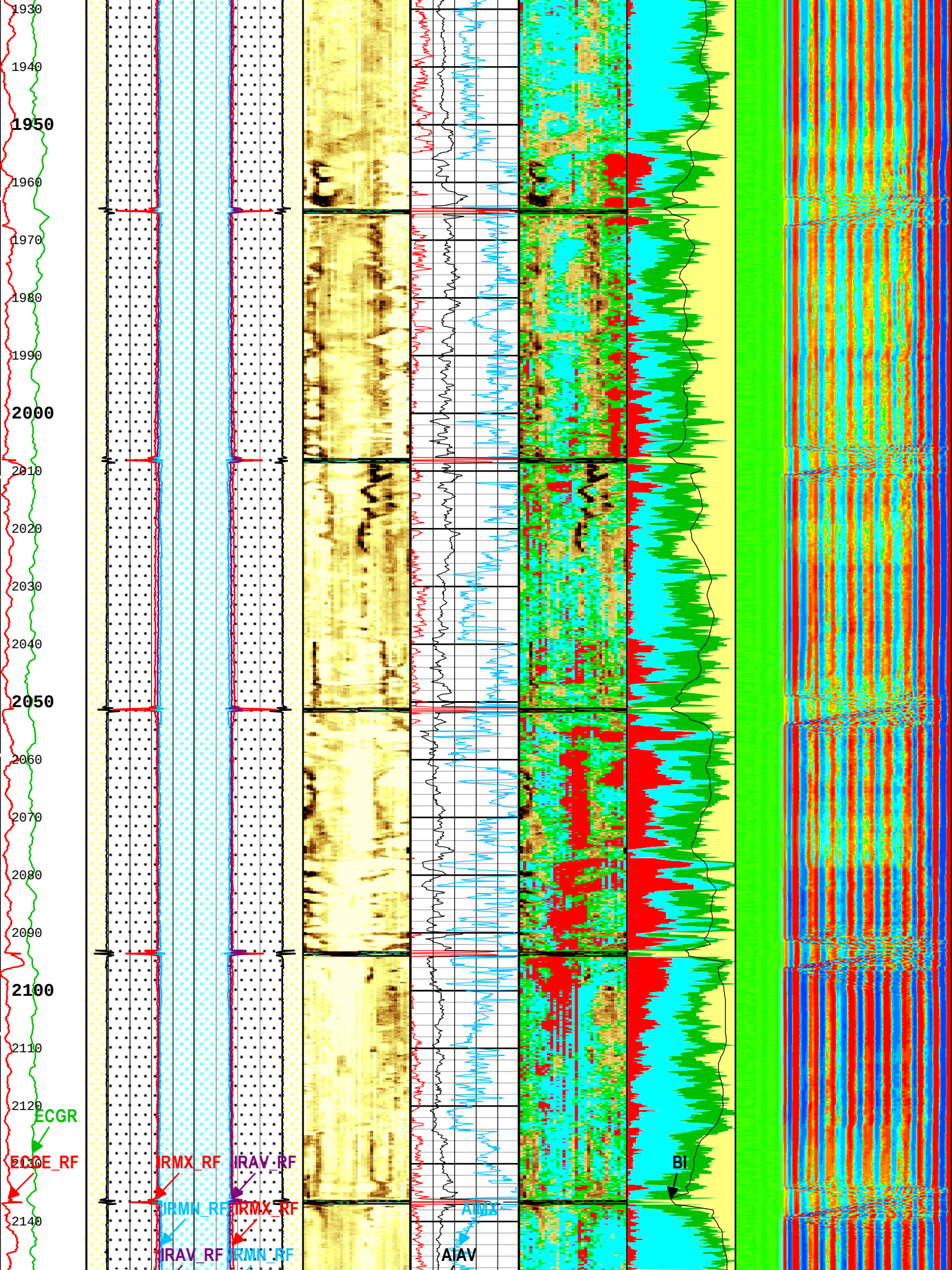

830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020
1030
1040
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

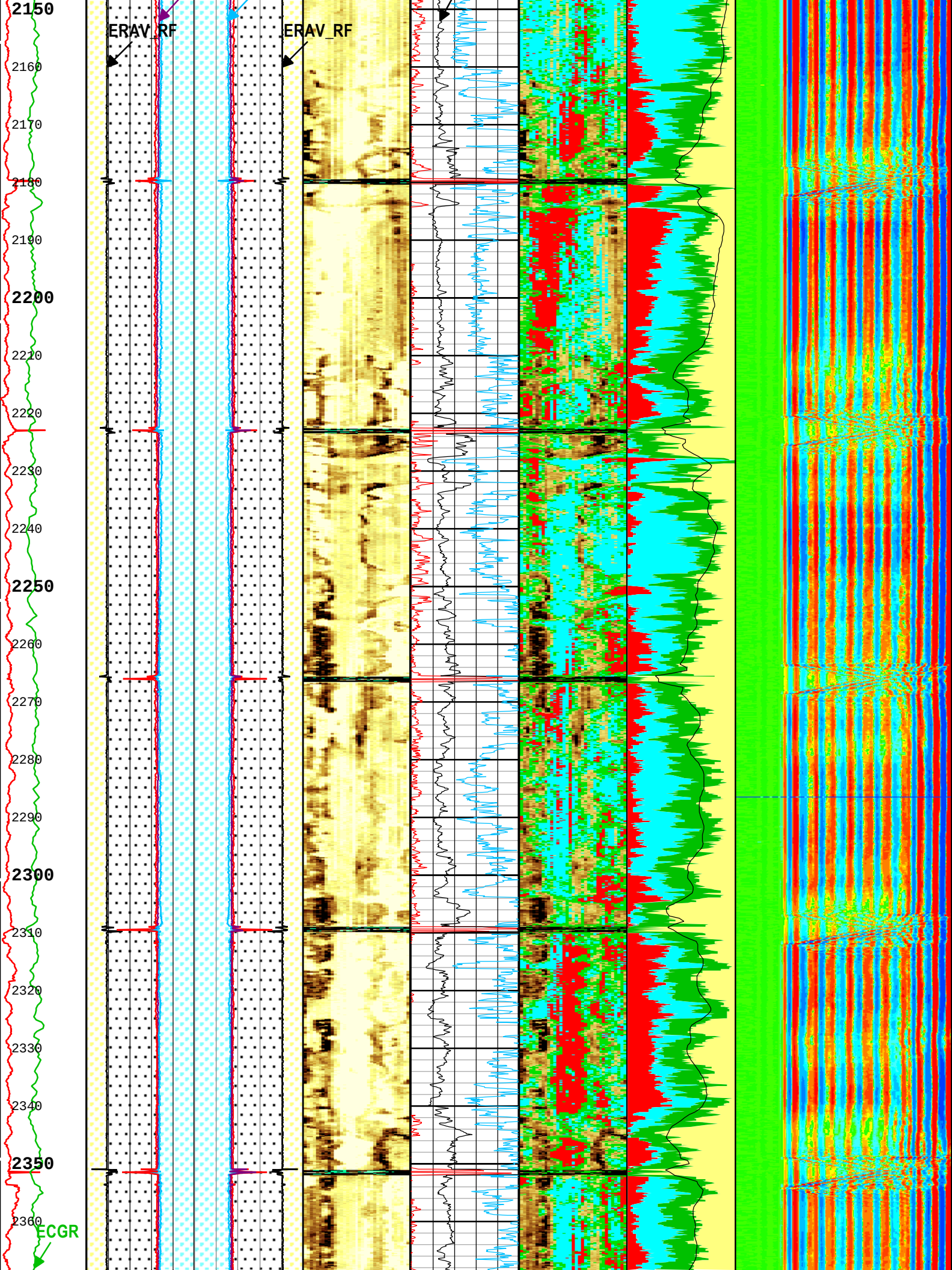

1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
ECGR
ECQE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
BI

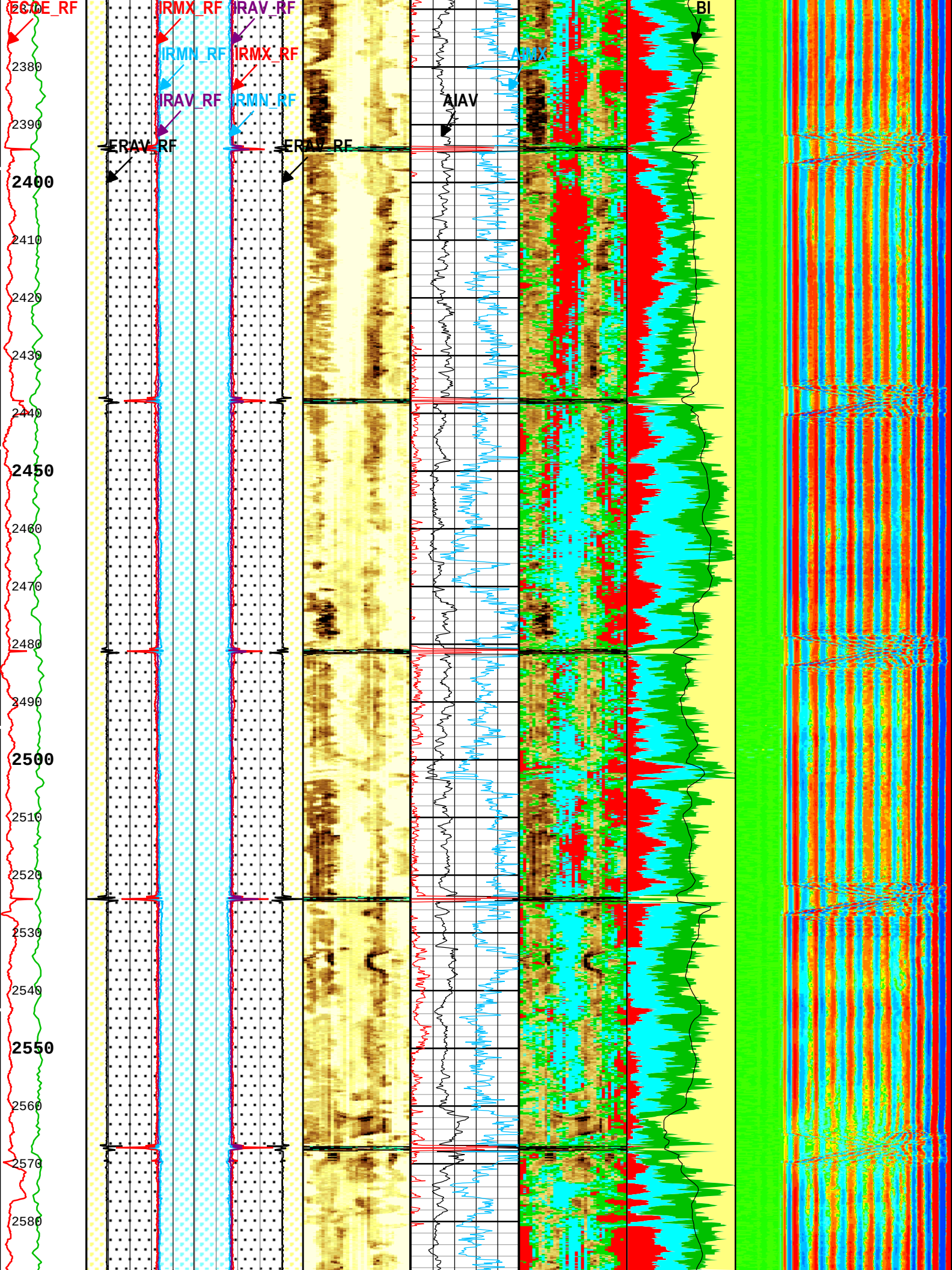

1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI

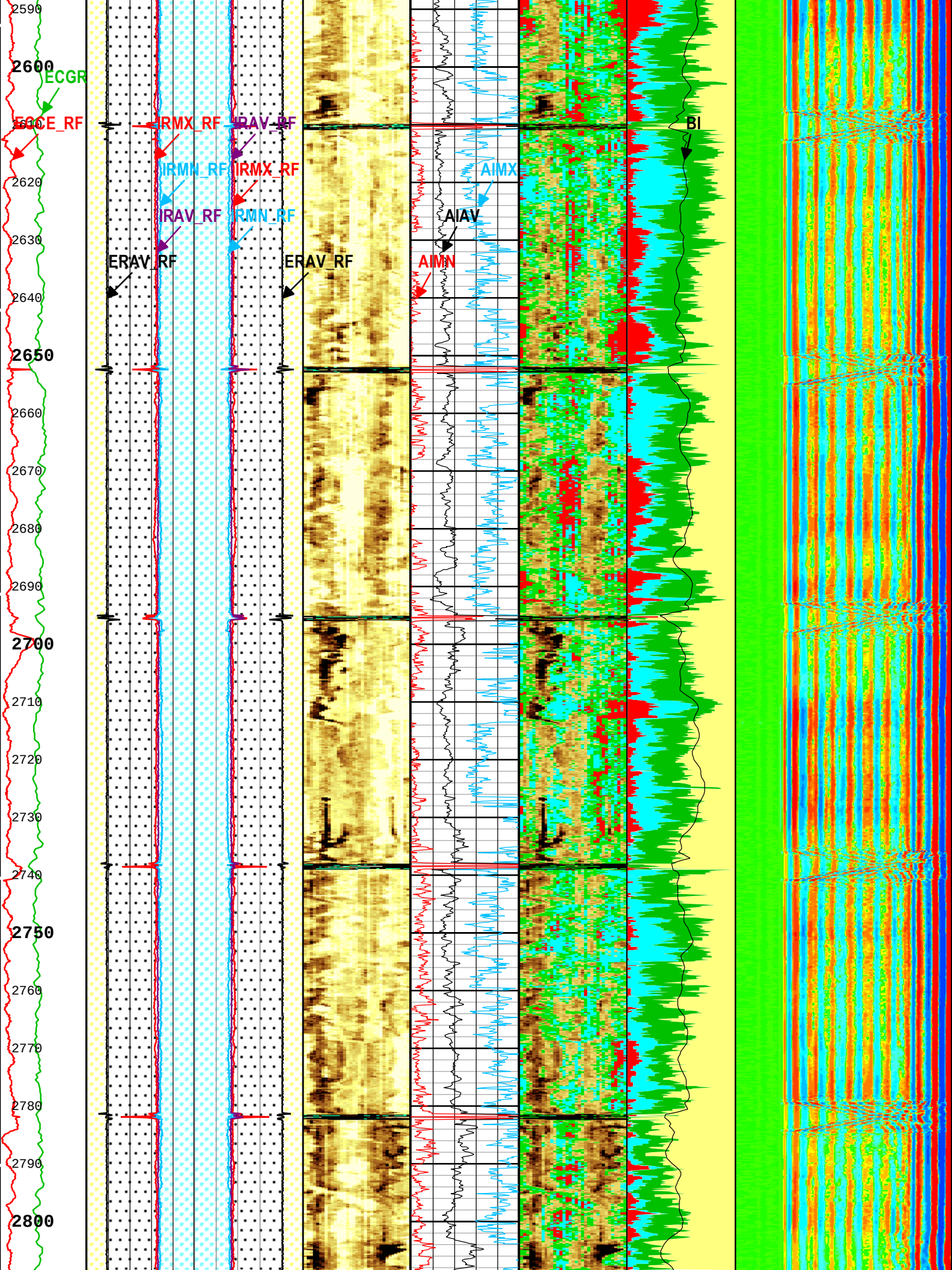

1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
ECGR
ERMX_RF
ERAV_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

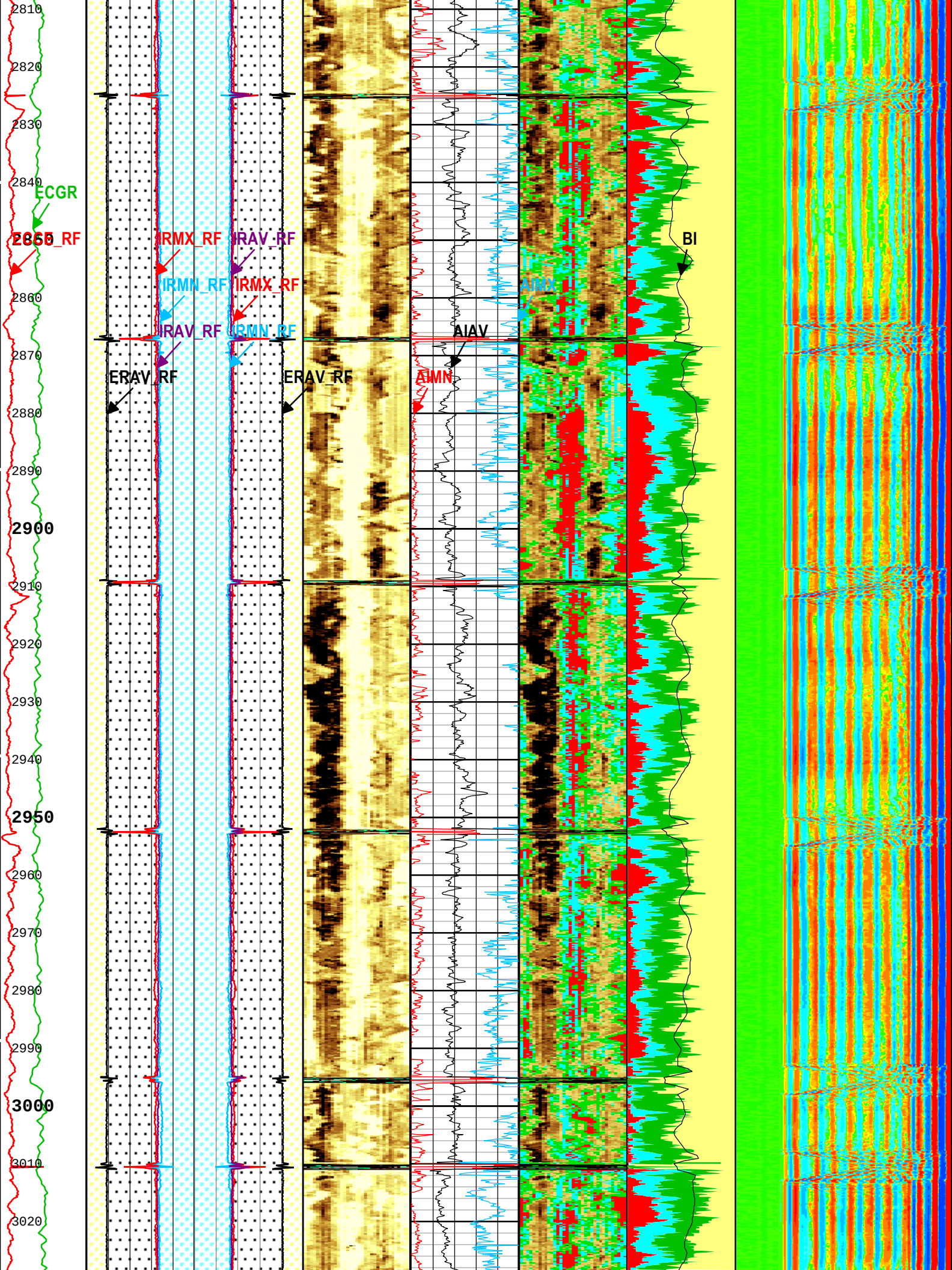

1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1900
1910
1920
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

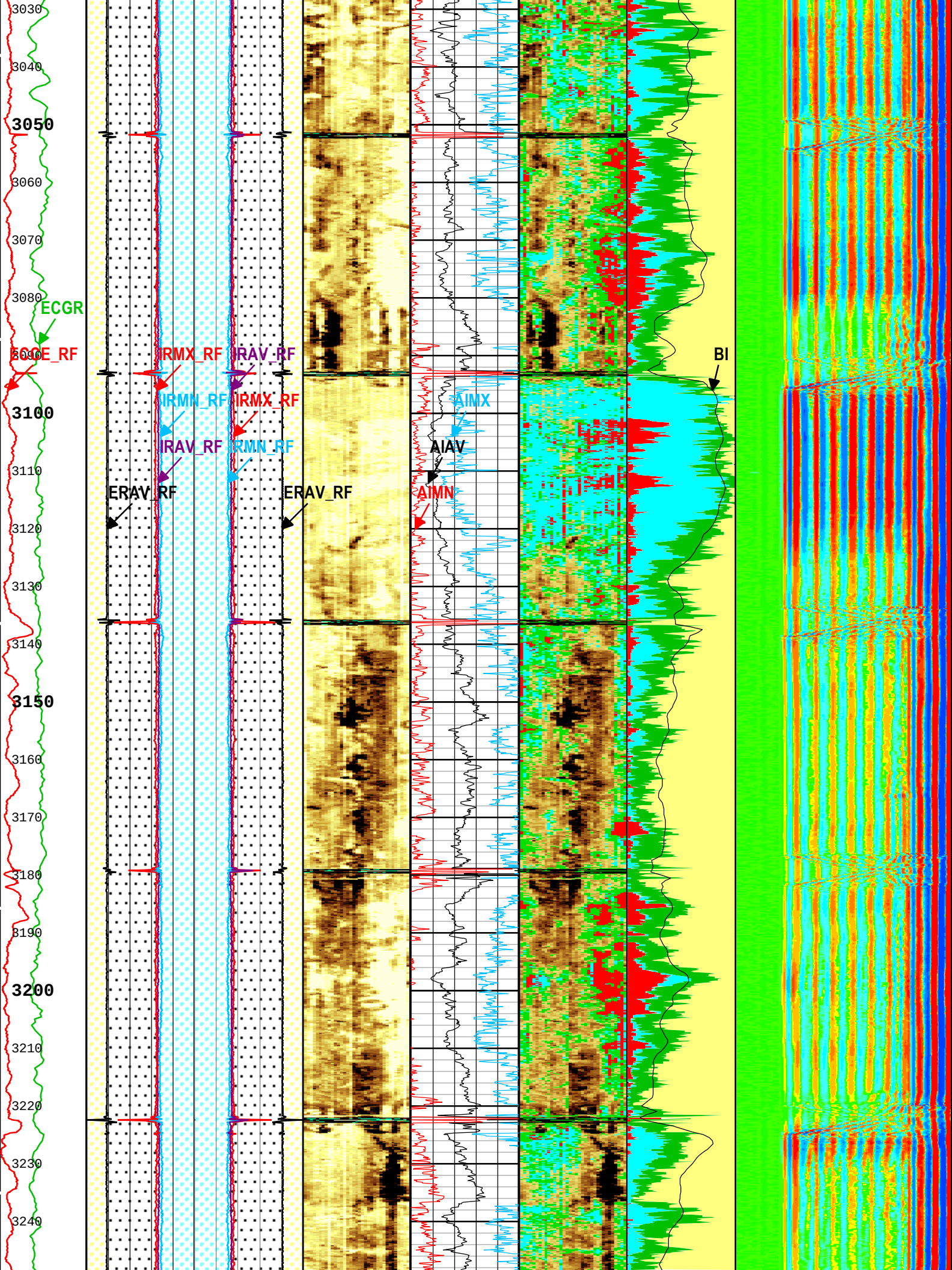

1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
ECGR
ECOE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
AIMX
AIAV
BI

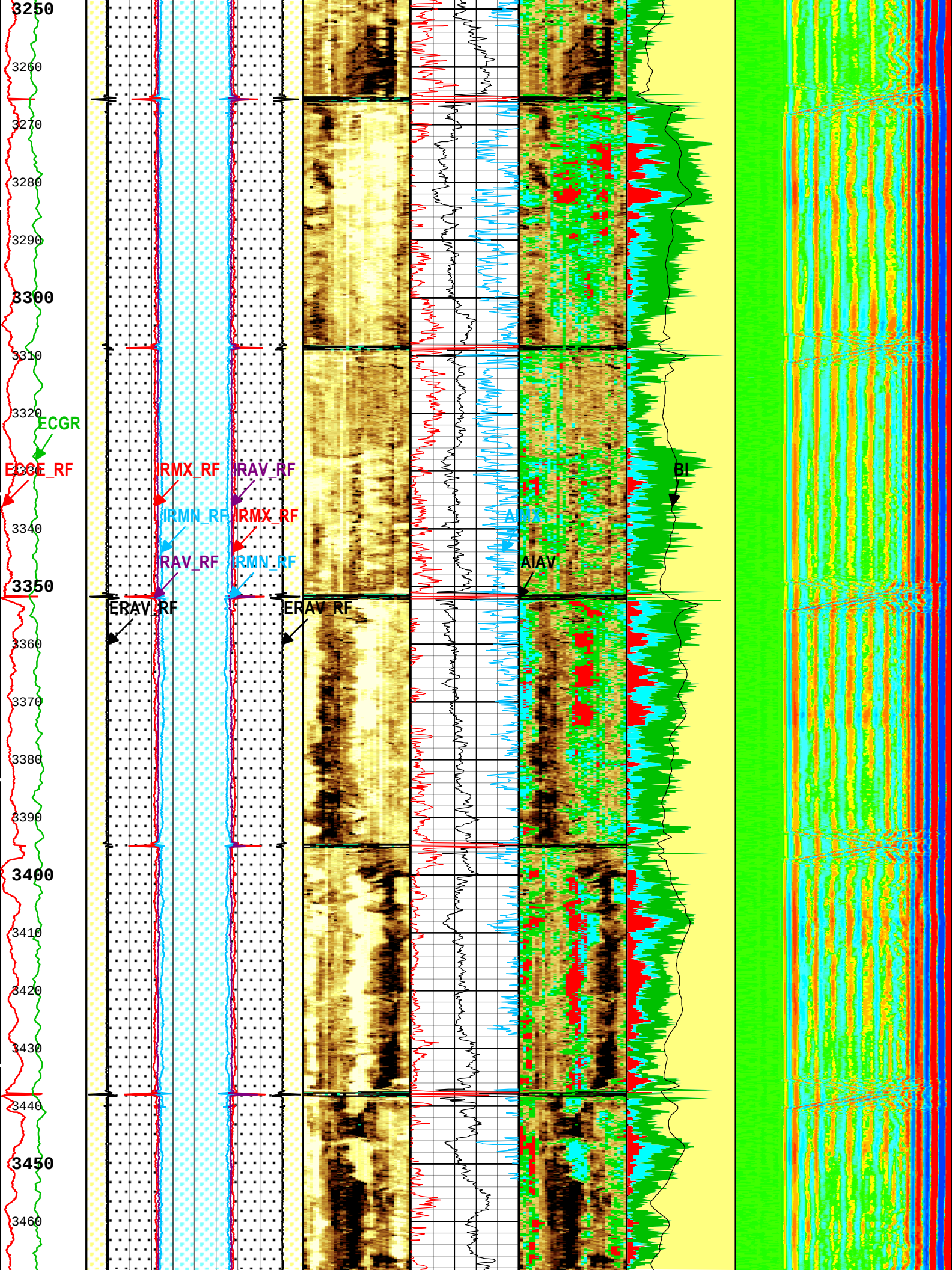

ERAV_RF
ERAV_RF
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
ECGR

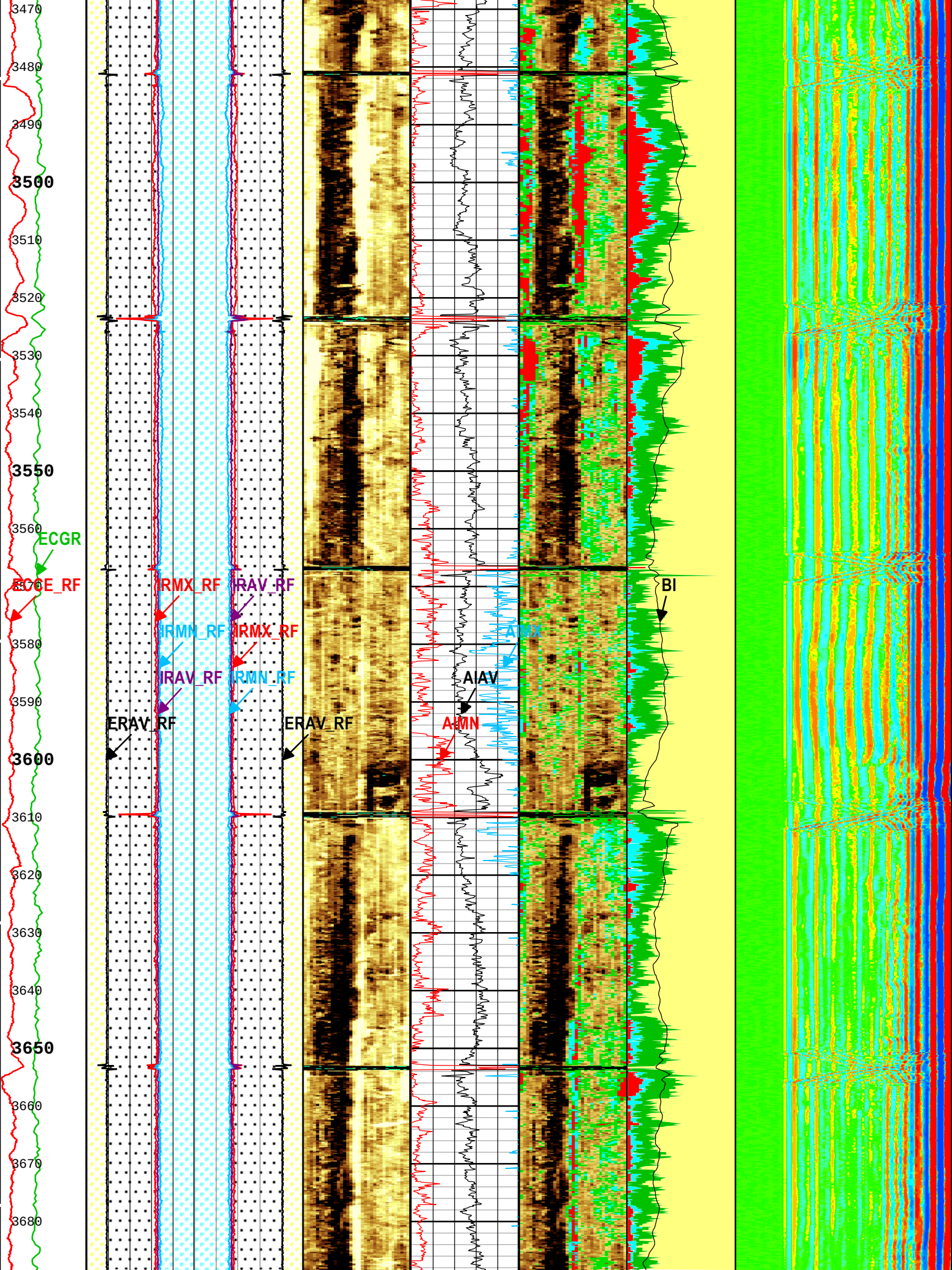

IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
BI
AIMX
AIAV
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580

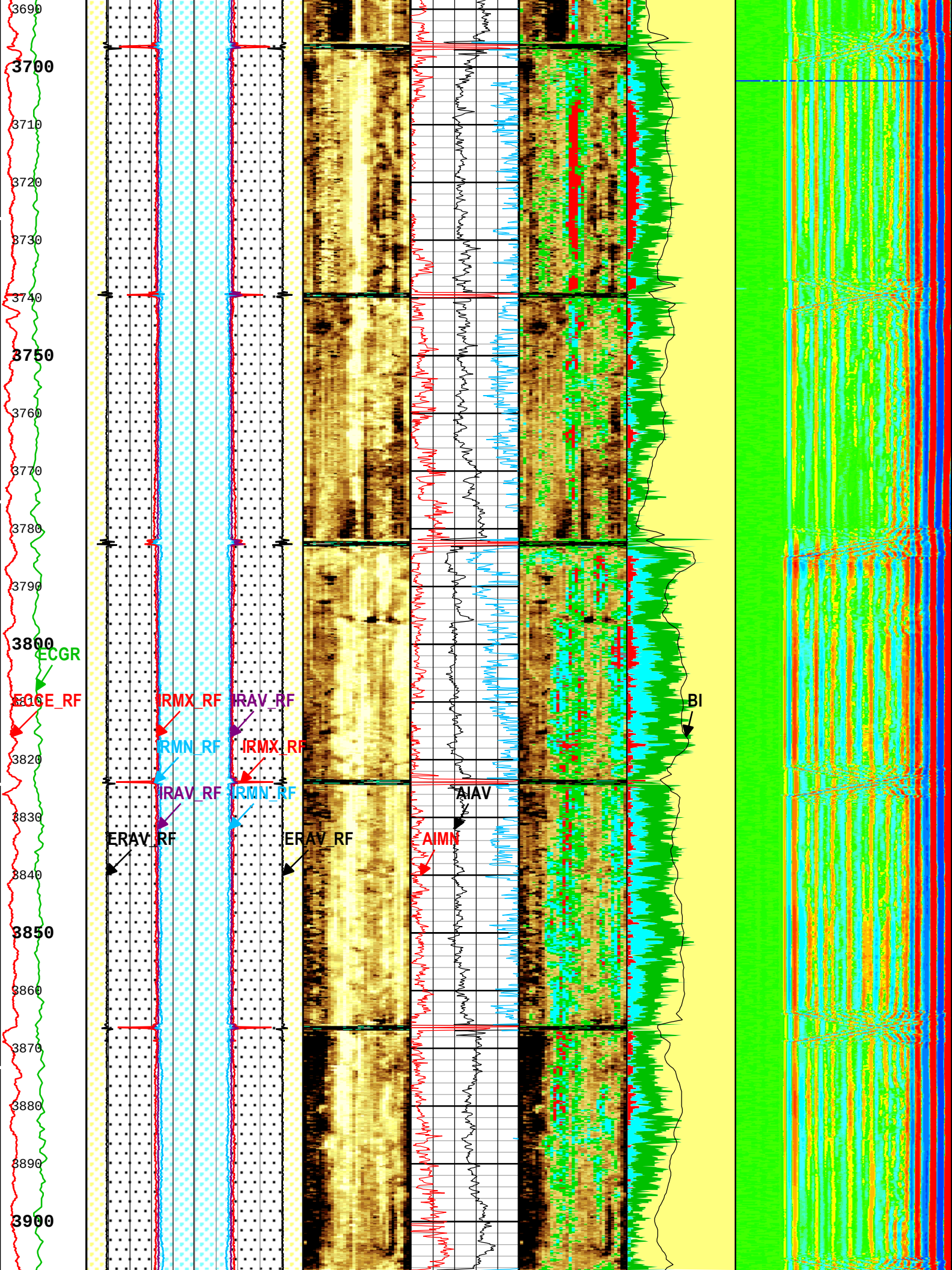

2590
2600
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
BI
2620
IRMN_RF
IRMX_RF
AIMX
AIAV
2630
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMN
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800

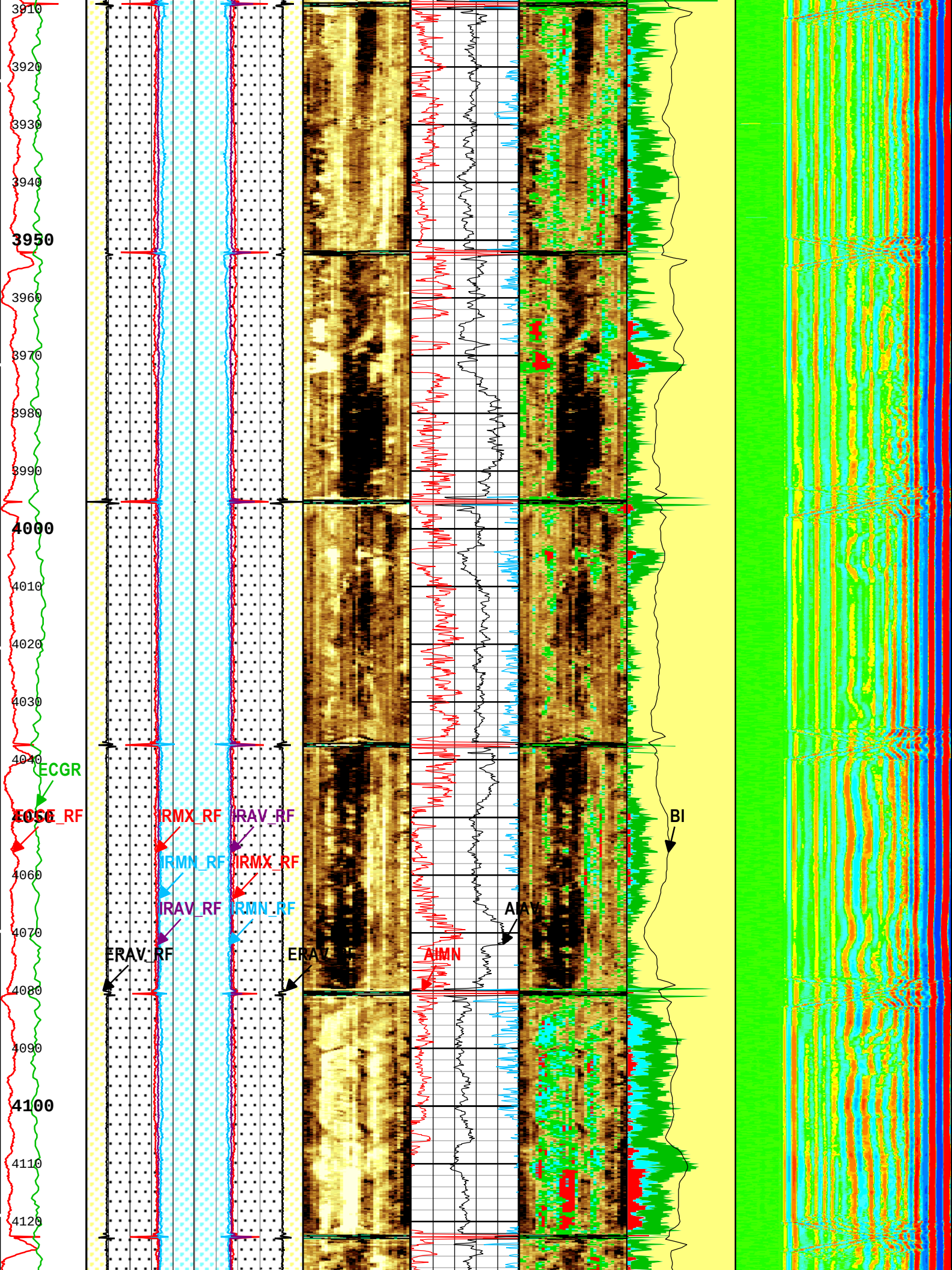

ECGR
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020

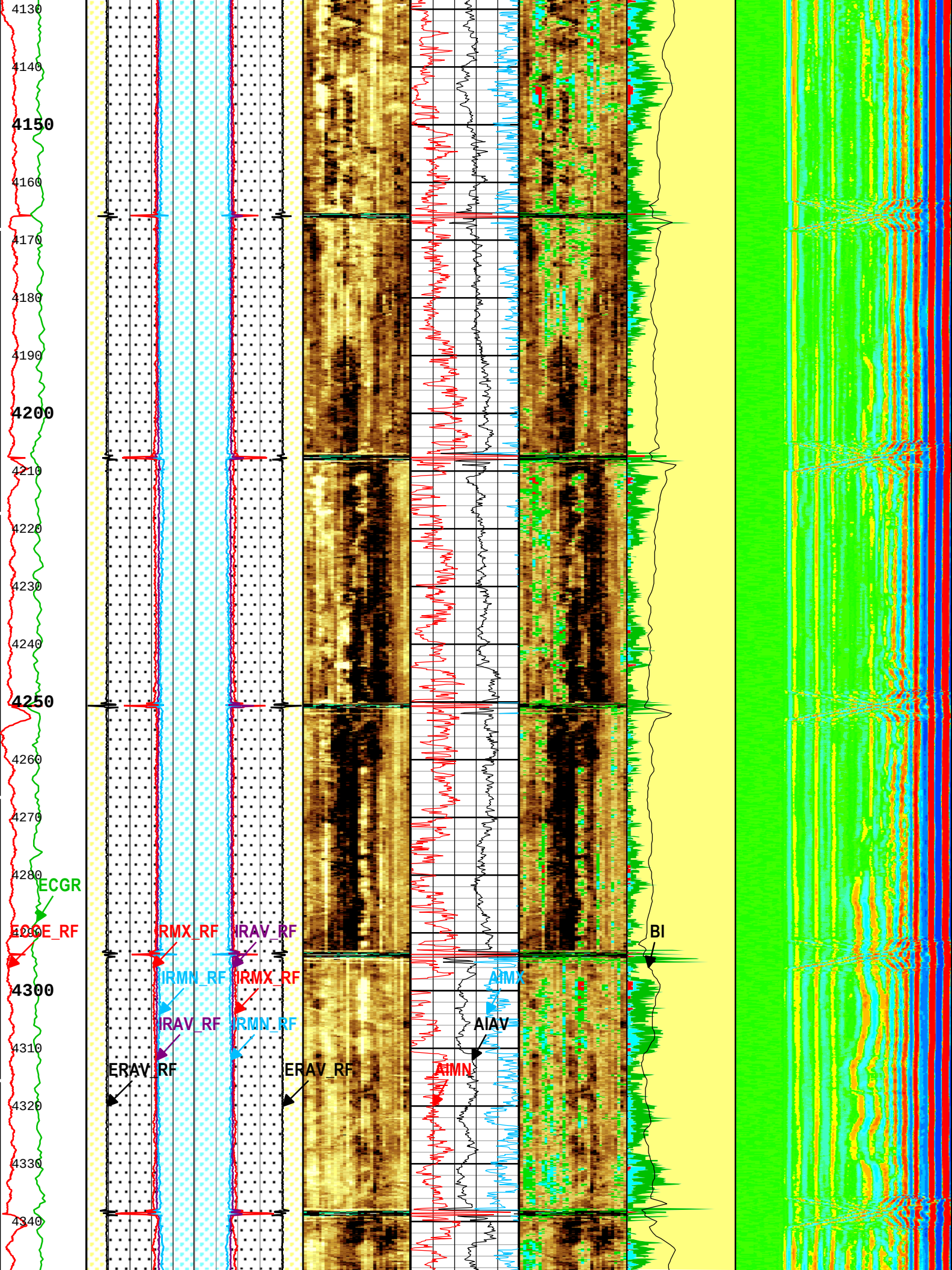

3030
3040
3050
3060
3070
3080
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240

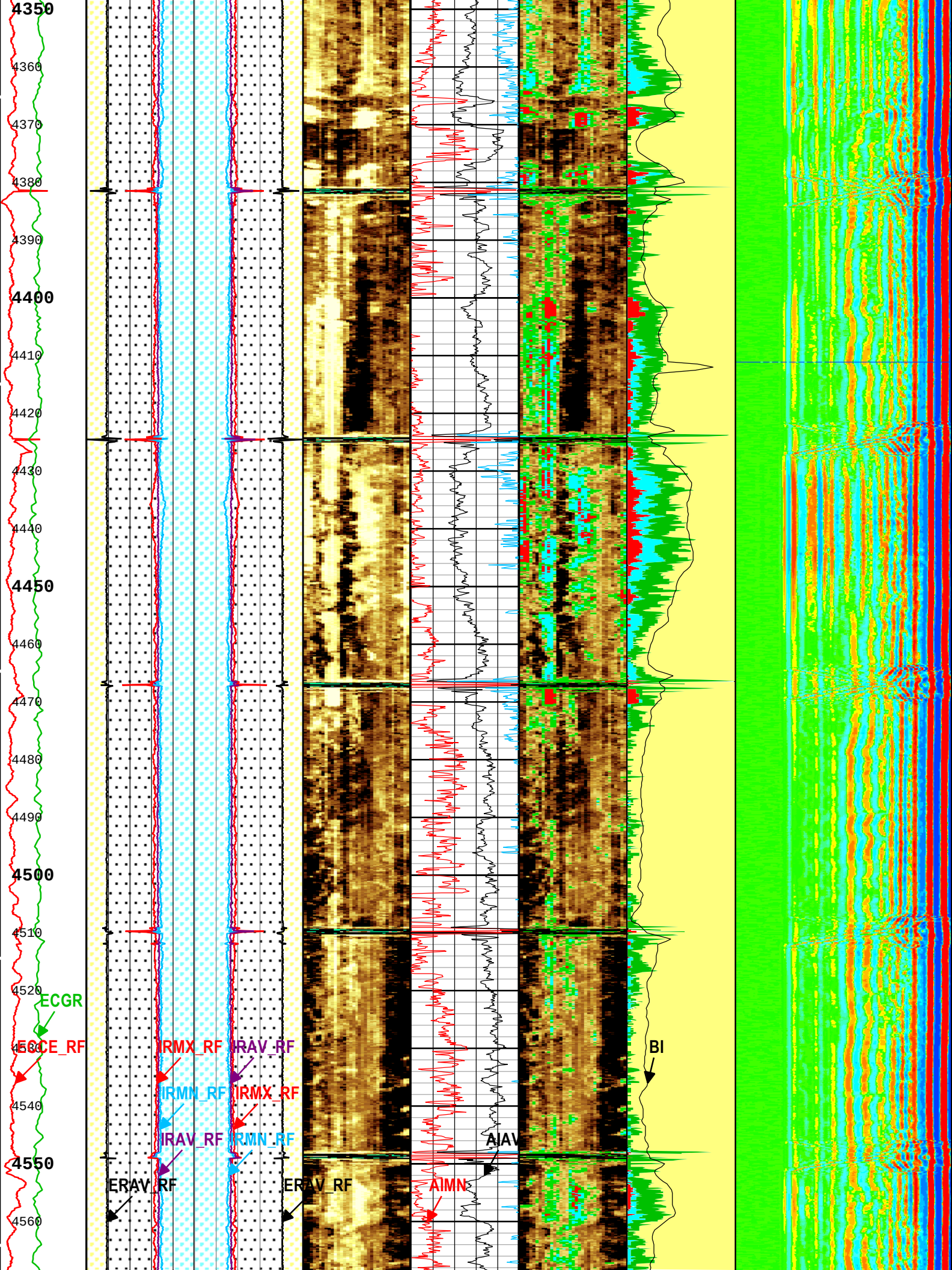

3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
ECGR
ECGE_RF
RMX_RF
RAV_RF
IRMN_RF
IRMX_RF
RAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
BI

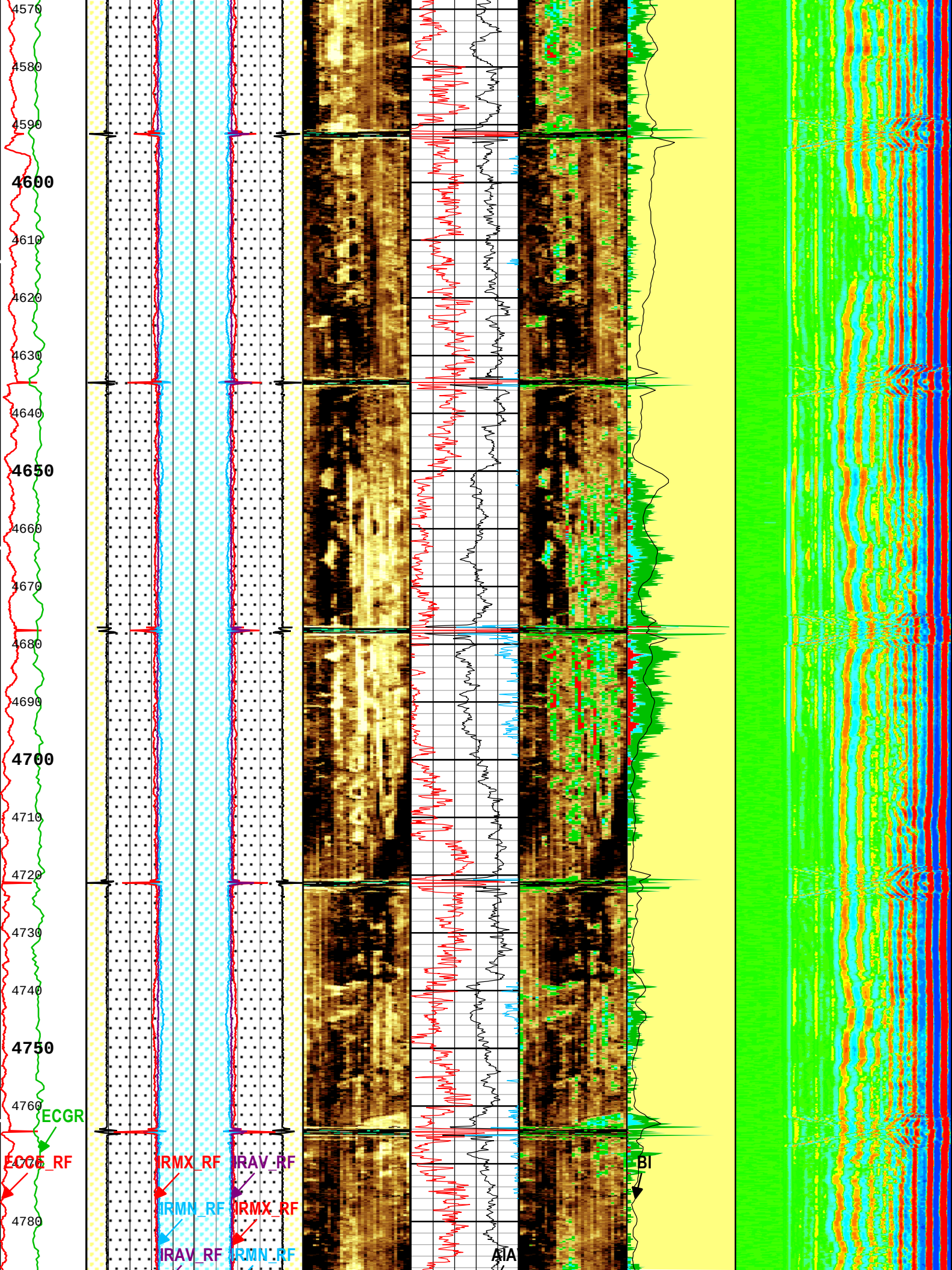

3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
BI
AIMX
AIAV
AIMN

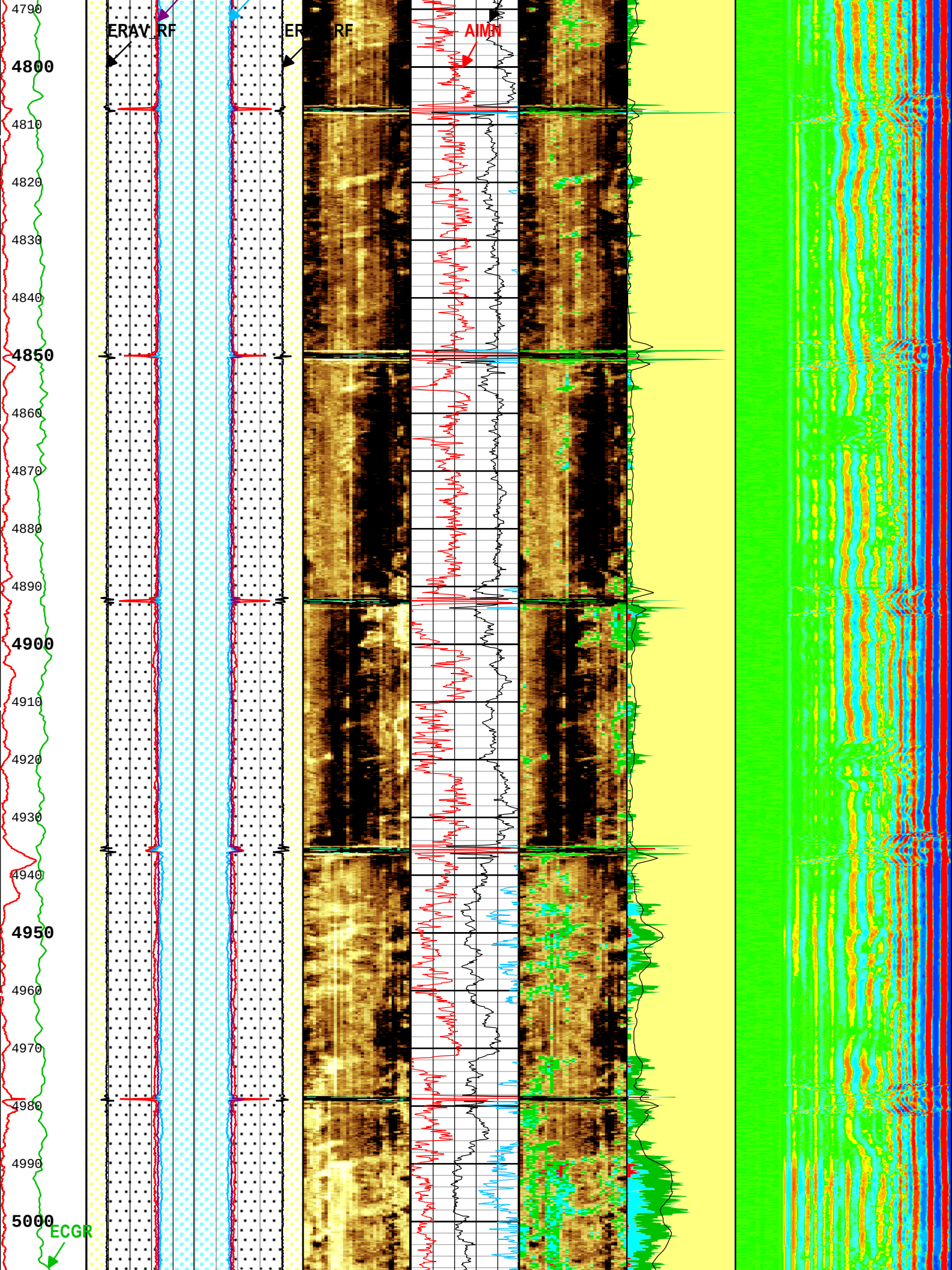

3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
3900
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI

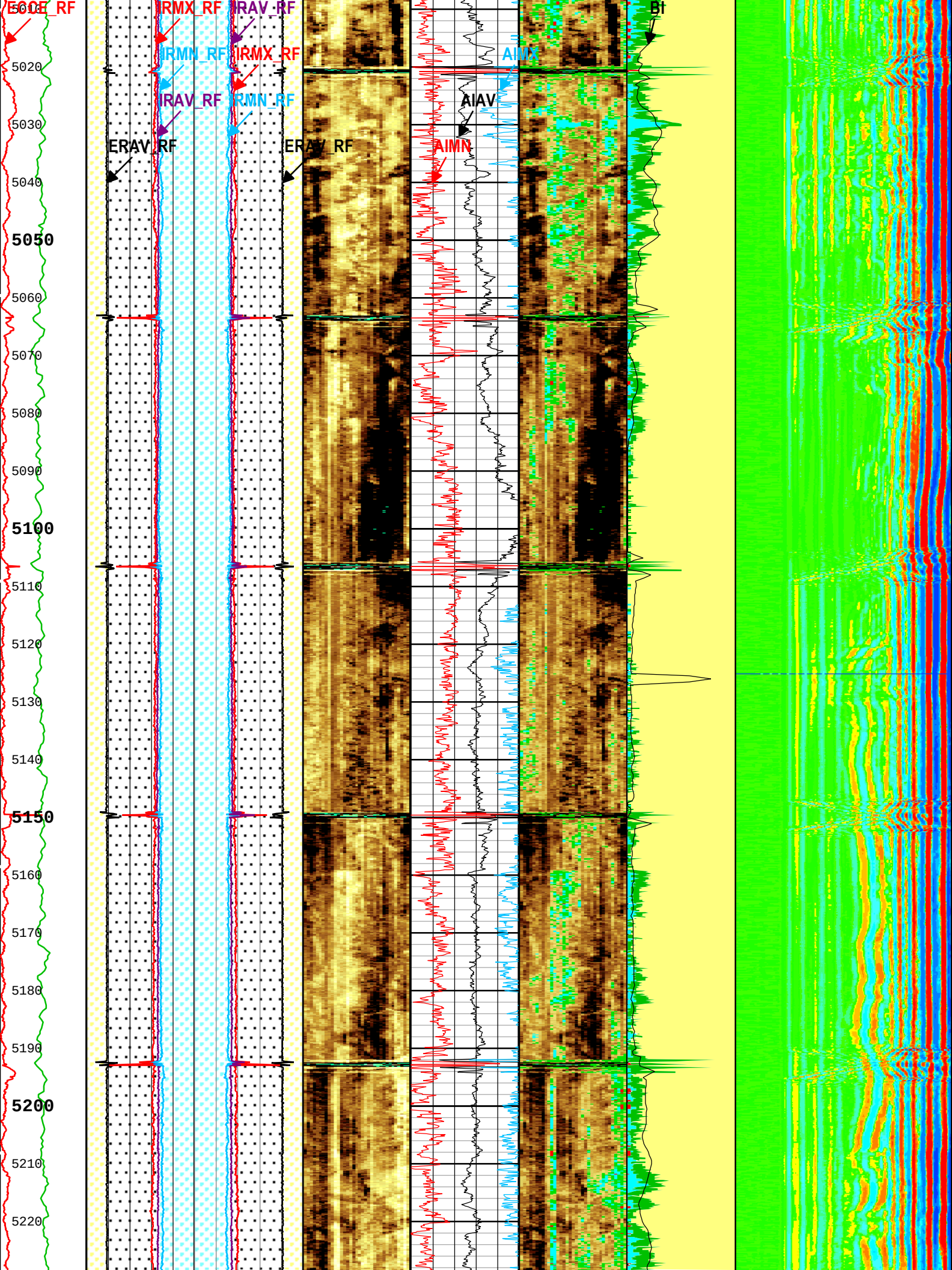

3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
ECGR
ERMX_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMN
AIAV
BI

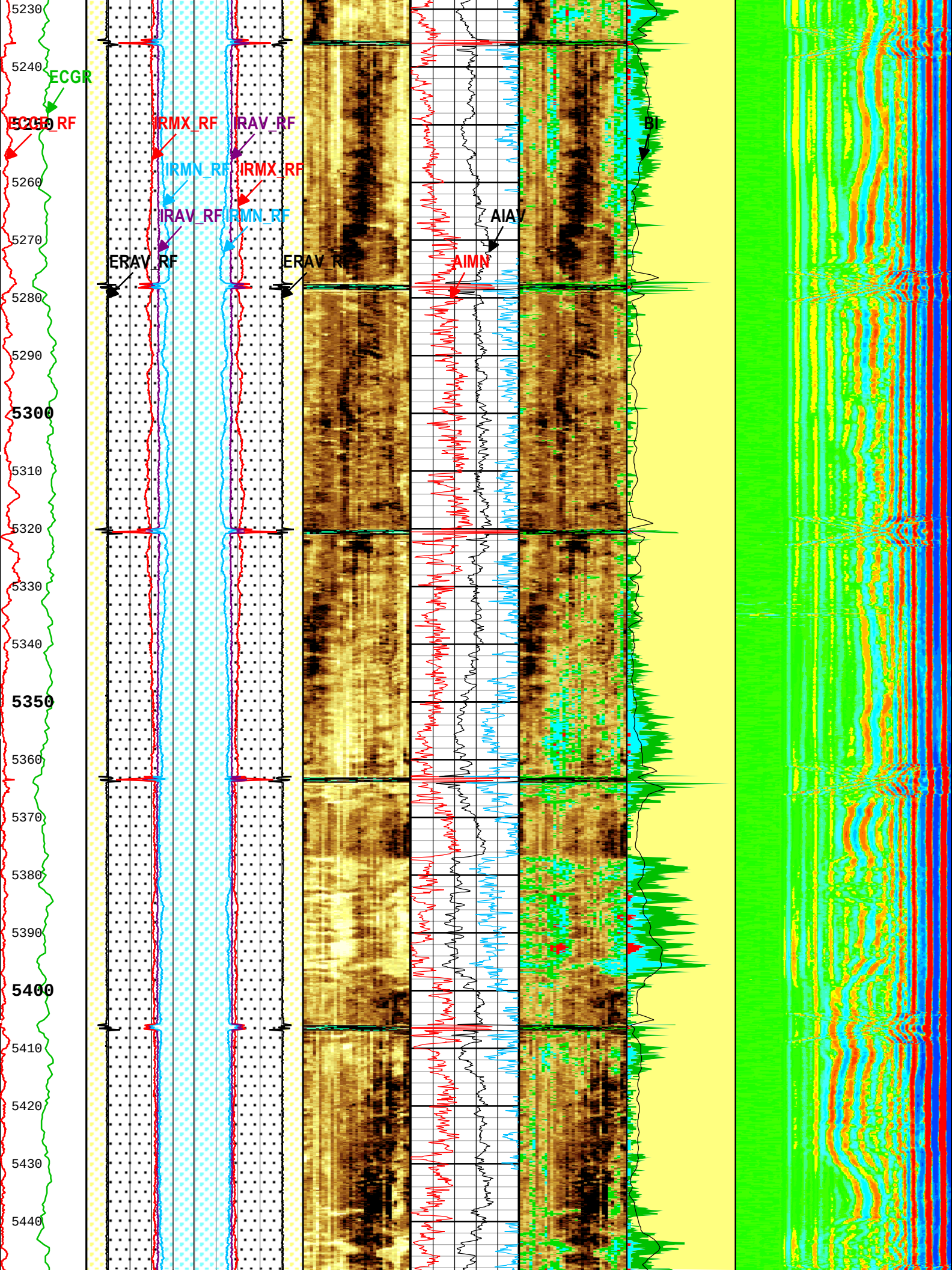

4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
4340
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI

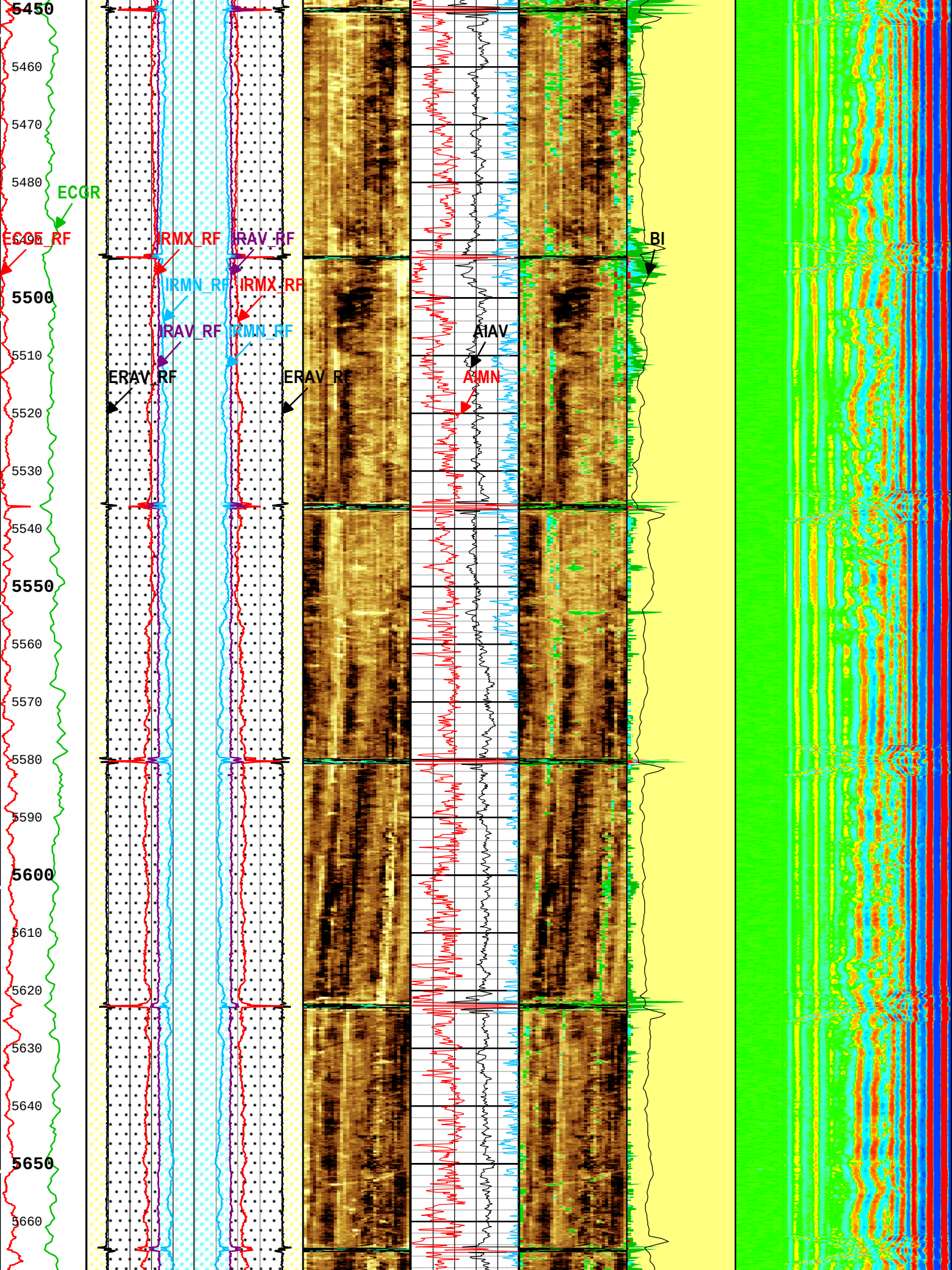

4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI

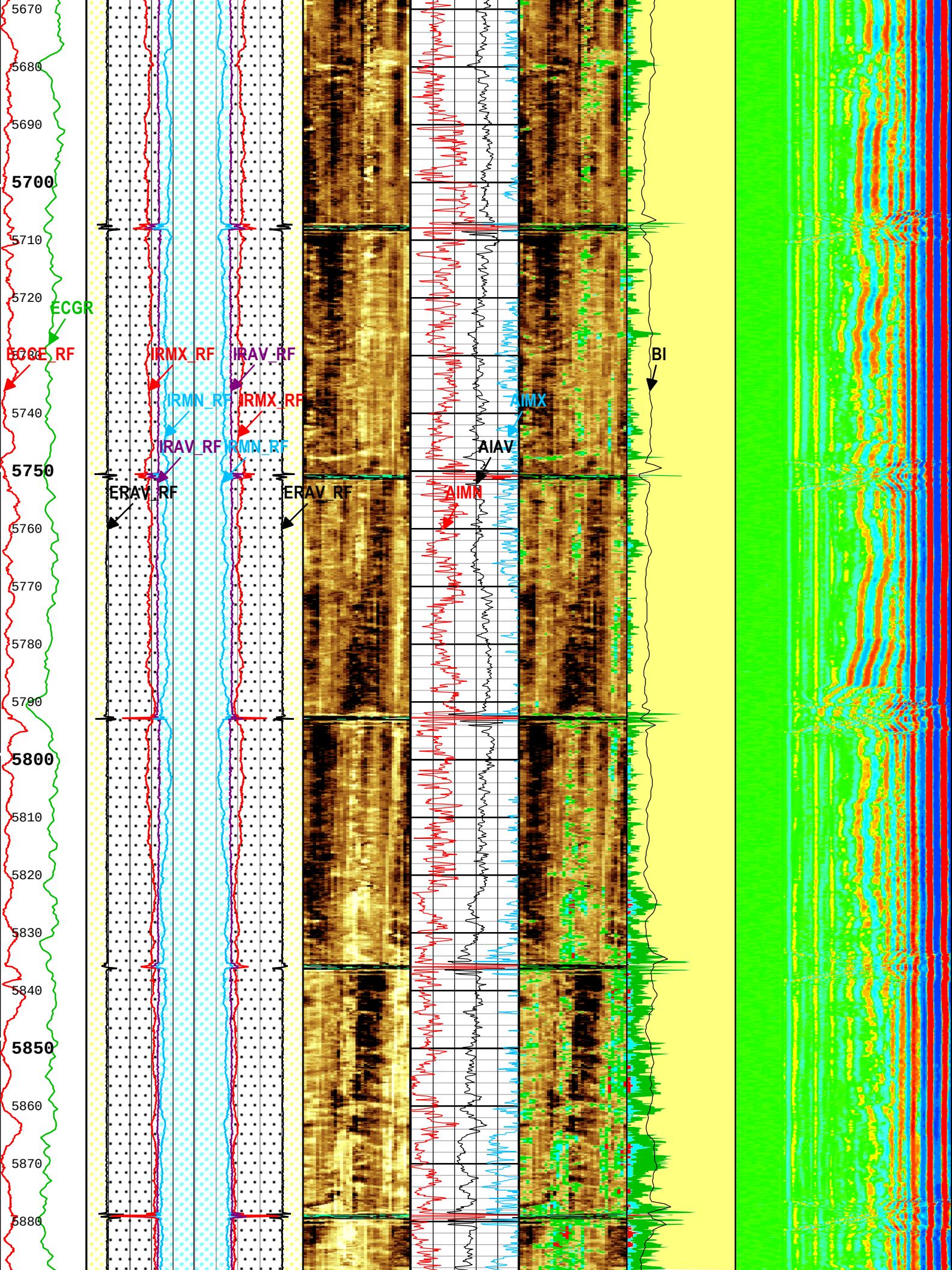

4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
4780
ECGR
ECCG_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
BI
ATA

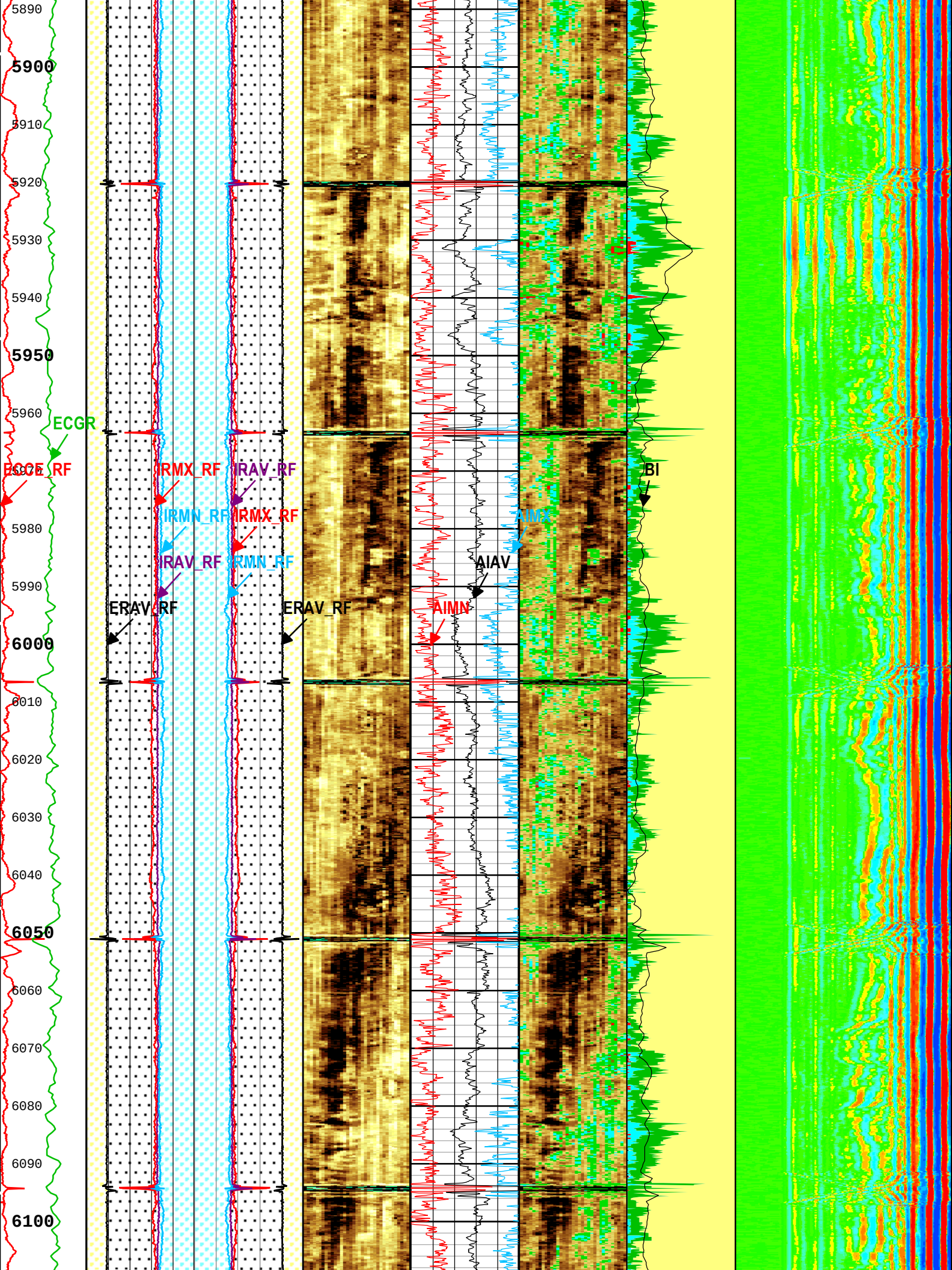

4790
ERAV_RF
ER RF
AIMN
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
ECGR

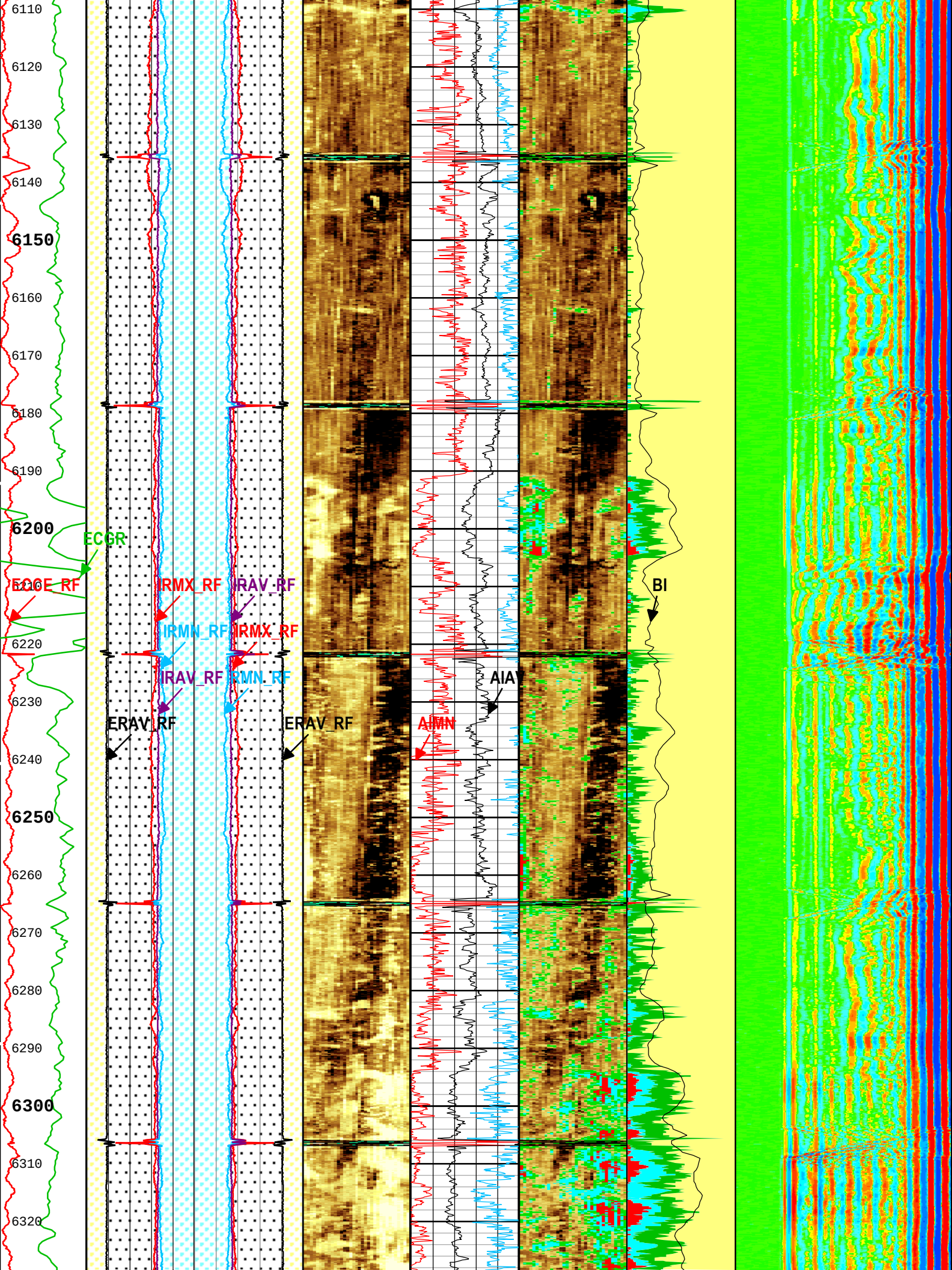

ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
Bi
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220

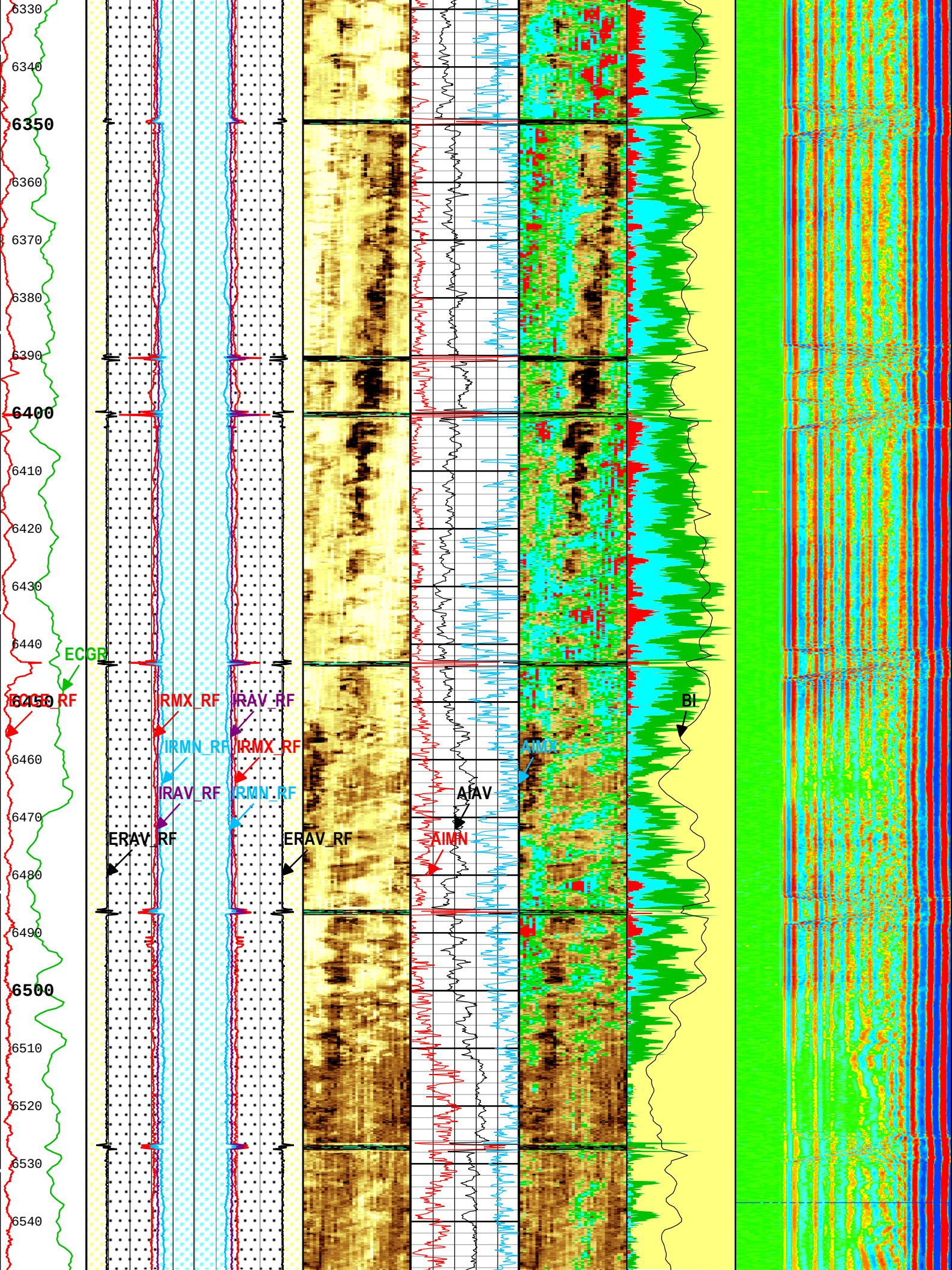

ECGR
ECAL_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440

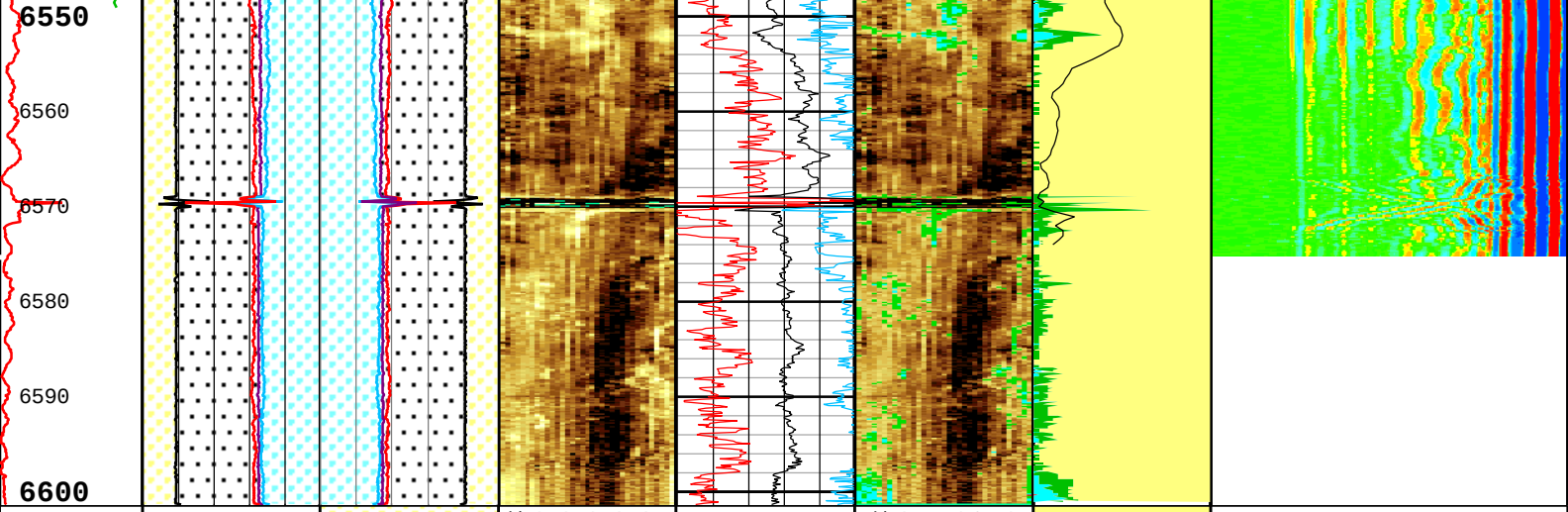

5450
5460
5470
5480
ECGR
ECOE_RF
IRMX_RF
IRAV_RF
5500
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
5510
ERAV_RF
ERAV_RF
AIAV
AIMN
BI
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660


5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI


5890
5900
5910
5920
5930
5940
5950
5960
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
AIMX
AIAV
AIMN
BI
ERAV_RF
ERAV_RF
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100


6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
ECGR
ECGE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIAV
AIMN
BI


6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
ECGR
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI



Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Gamma Ray (ECGR) HGNS[1]
0 gAPI 150

ERAV_IRAV | ERAV_RHF1
IRAV_LHF1 | IRAV_ERAV
LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
5 in 4

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4 in 5

Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)

Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9

Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)

Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H[1]
1 0

Min Amplitude Max
Sonic VDL Curve DSLT-H[1]
200 us 1200

TIME_1900 - Time Marked every 60.00 (s)

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 13-Apr-2016 17:22:17

Company:	Southern California Gas Company
Well:	Porter 68B
Field:	Aliso Canyon
County:	Los Angeles
State:	California

Schlumberger

Cement Bond Log
Variable Density Log
Gamma Ray - CCL