Schlumberger

Company: Caerus Operating LLC

Well: NPR 23B-10 596

Field: NPR

County: Garfield State: Colorado

County: Garfield
Field: NPR
Location: K10-596
Well: NPR 23B-10 596
Company: Caerus Operating LLC

Cement Bond Log

RST Sigma Log

Gamma Ray - Collar Locator

Location:				
K10-596		Elev.:	K.B.	6733.00 ft
			G.L.	6709.00 ft
			D.F.	6733.00 ft
Permanent Datum:	Ground Level	Elev.:	6709.00 f	
Log Measured From:	Kelly Bushing	24.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

API Serial No.	Section:	Township:	Range:
05045237750000	10	5S	96W

Logging Date		15-Sep-2018	
Run Number		One	
Depth Driller		9905.00 ft	
Schlumberger Depth		9861.00 ft	
Bottom Log Interval		9861.00 ft	
Top Log Interval		2900.00 ft	
Casing Fluid Type		2% KCL Water	
Salinity			
Density		10 lbm/gal	
Fluid Level		8.00 ft	
BIT/CASING/TUBING STRING			
Bit Size		8.75 in	
From		3000.00 ft	
To		9861.00 ft	
Casing/Tubing Size		4.5 in	
Weight		11.6 lbm/ft	
Grade		P110	
From		0.00 ft	
To		9861.00 ft	
Max Recorded Temperatures		277 degF	
Logger on Bottom	Time	15-Sep-2018 07:00:00	
Unit Number	Location:	3108 Evanston, WY	
Recorded By		Richard Woods	
Witnessed By		Trent Ray	

Disclaimer

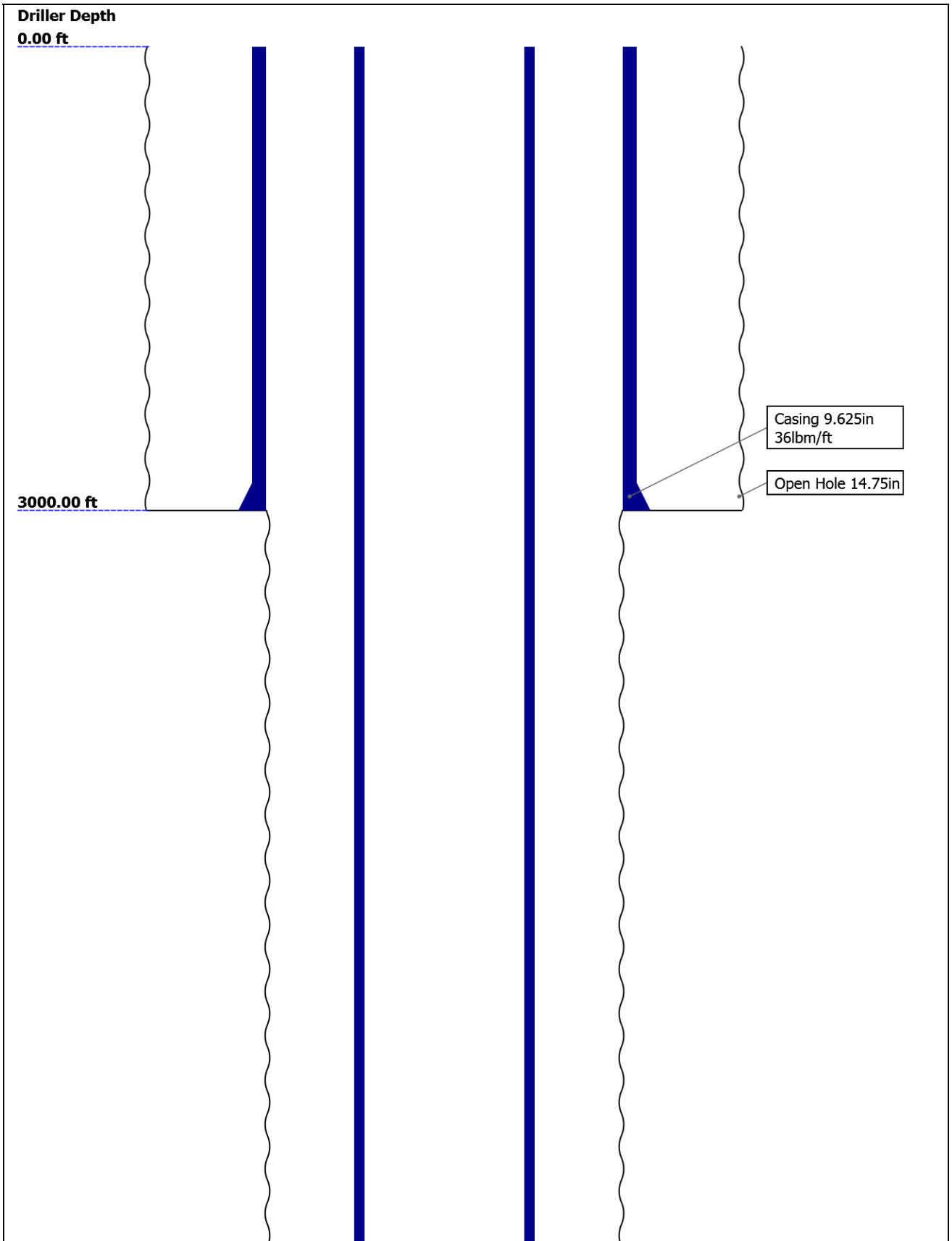
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA;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

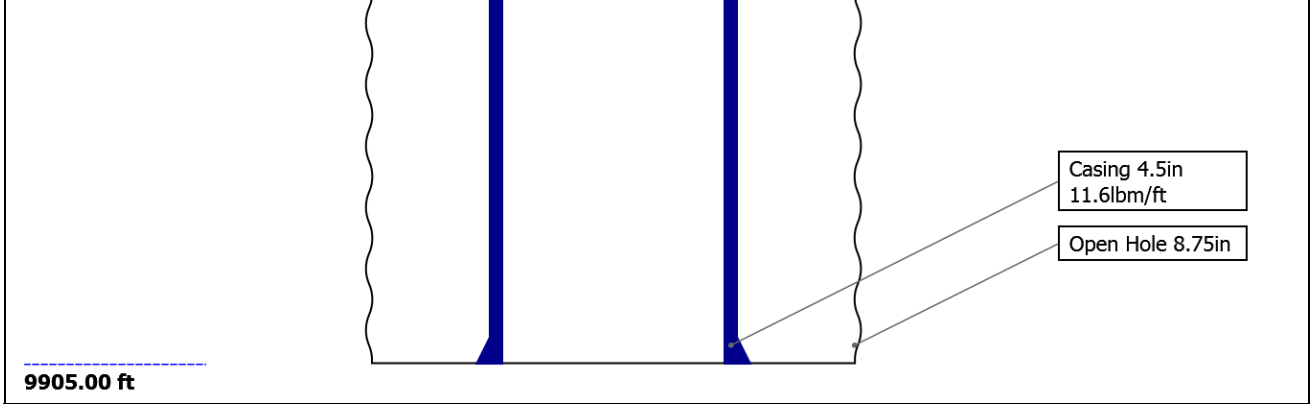
Contents

1. Header
2. Disclaimer
3. Contents
4. Well Sketch
5. Borehole Size/Casing/Tubing Record
6. Remarks and Equipment Summary
7. Depth Summary
8. One Main Pass
   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
   9.1 Integration Summary
   9.2 Software Version
   9.3 Composite Summary
   10.5 Parameter Listing
10. One Repeat Pass
   11.1 Integration Summary
   11.2 Software Version
   11.3 Composite Summary
   11.4 Log (RST SIGMA Answer)
   11.5 Parameter Listing
12. Tail

9.4 Log (Sonic CBL with VDL)
9.5 Parameter Listing
10. One Main Pass
10.1 Integration Summary
10.2 Software Version
10.3 Composite Summary
10.4 Log (RST SIGMA Answer)

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	14.75	8.75				
Top Driller (ft)	0	3000				
Top Logger (ft)	0	3000				
Bottom Driller (ft)	3000	9905				
Bottom Logger (ft)	3000	9861				
Casing						
Size (in)	9.625	4.5				
Weight (lbm/ft)	36	11.6				
Inner Diameter (in)	8.921	4				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	3000	9905				
Bottom Logger (ft)	3000	9861				

Remarks and Equipment Summary

One: Toolstring

Equip name	Length	MP name	Offset
PEH-E	**61.66**		
AH-38	**59.98**		
PSTP-B:2826	**59.7**		
PSC-A		**GR**	**55.99**
PSTC-A		**PSTC**	**55.7**
PBMS-B:2826		**PSTC Tool String Bottom**	**0.00**
		Temperature	**52.94**
		CQG Pressure	**52.6**
		CCL	**52.18**
		PBMS	**51.43**
RST-C:578	**51.43**		
RSCH-A:437			
RSC-E:551			
RSS-A:488			
MNTR-F:1352 -51352			
RSXH-A			
RSX-E:578			
		RSC-E	**45.07**

One: Remarks

Toolstring run as per toolsketch

RST Mode: Sigma

Matrix: Sandstone

Max Recorded Temp:

SLB Depth:

Thank you for choosing Schlumberger!!

Far 42.31
Near 41.81
RSX-E 28.41
744
PPAT-A:744 28.41
SCMT-HC:8225 26.49
UDFH-RMC:8020
SCMC-HC:8225
SCME-K
SCMS-CA:8225
UDFH-RMT:8024
SCMX-HC:8039
DT 14.03
CBL5 12.53
DTSC 12.53
CBL3 11.53
MAP 11.03
AUX 10.03
SCMT 5.71

Lengths are in ft
Maximum Outer Diameter = 2.065 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

	One		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	5979		
Calibration Date	10-JUN-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	1-25ZA-XXS		
Wheel Correction 1	-3		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number	5036		
Calibration Date	10-Sep-2018		
Calibrator Serial Number	112544A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	21		
Calibration Peak Error	10		
Logging Cable			
Type	1-25ZA		
Serial Number	112140		
Length	16800.00 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 policies followed.
Rig Up Length At Surface		IDW used as primary depth control
Rig Up Length At Bottom		Z-Chart used as secondary depth control
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

One

Main Pass

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100
Application Patch	Wireline_Hotfix-Mandatory-2018SP1_8.1.102865

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include

									Parallel Data
One	Log[3]:Up	Up	67.72 ft	9872.95 ft	15-Sep-2018 6:20:28 AM	15-Sep-2018 10:59:55 AM	ON	7.11 ft	No

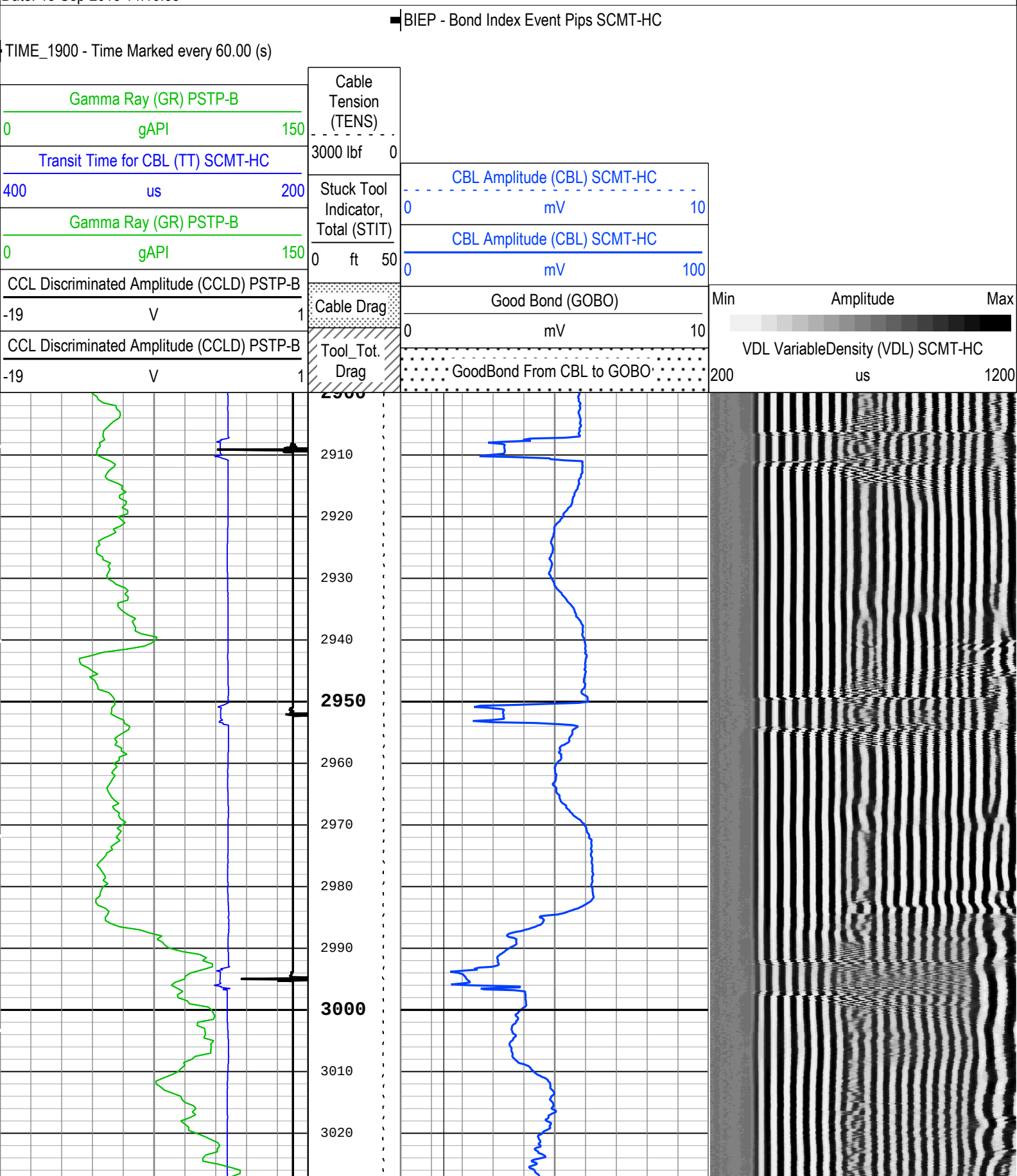
All depths are referenced to toolstring zero

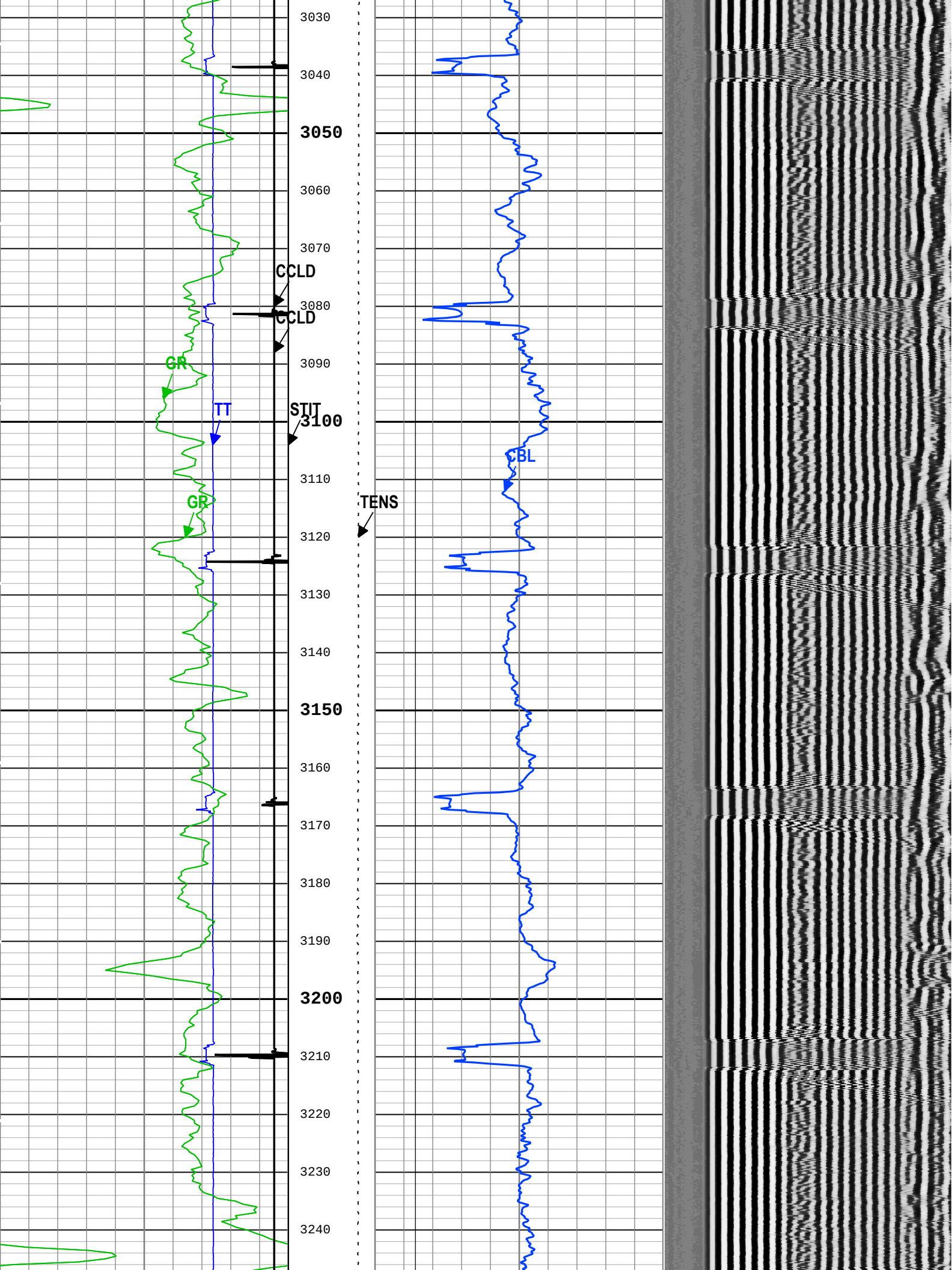
Log

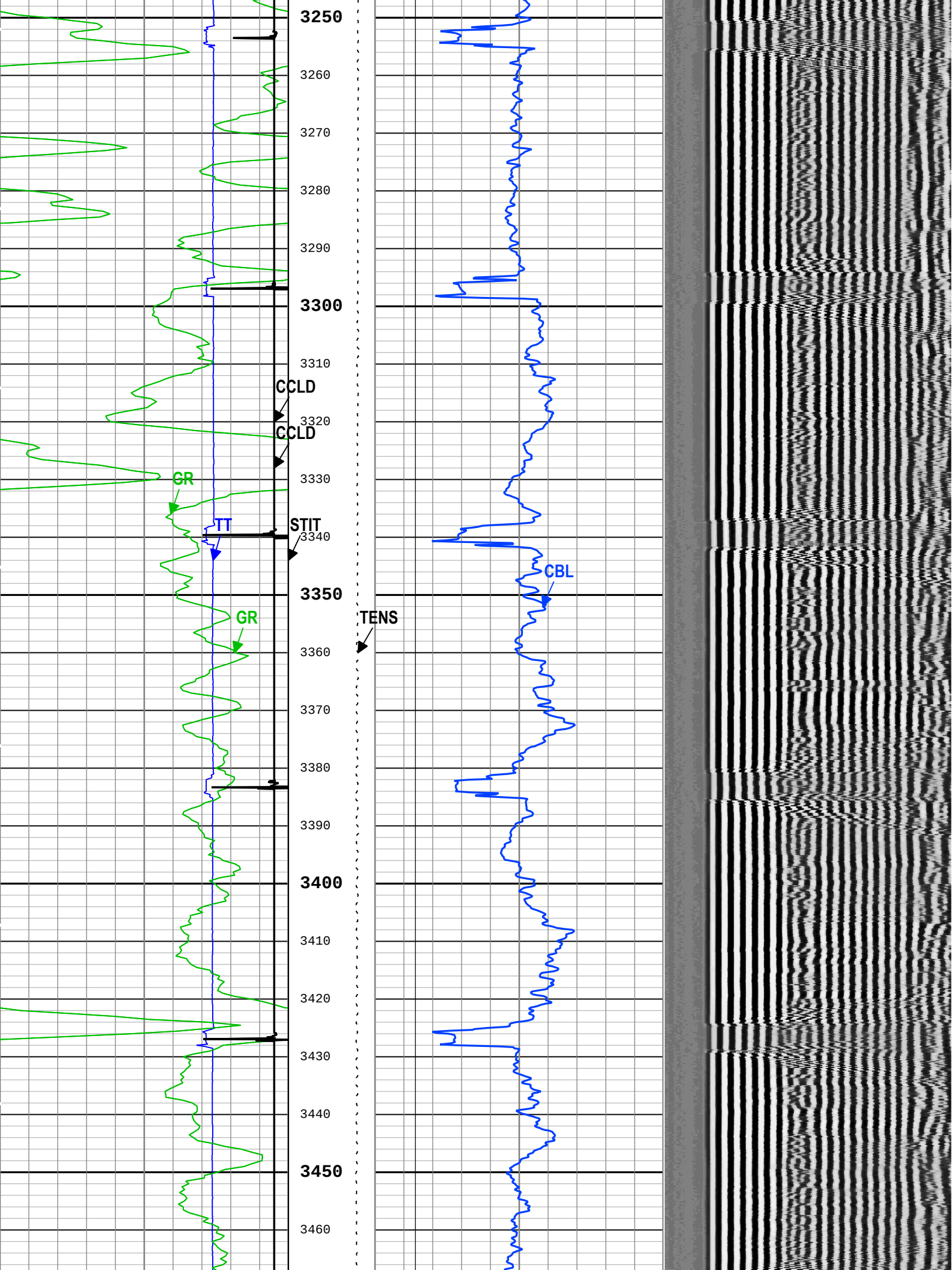
Company:Caerus Operating LLC Well:NPR 23B-10 596

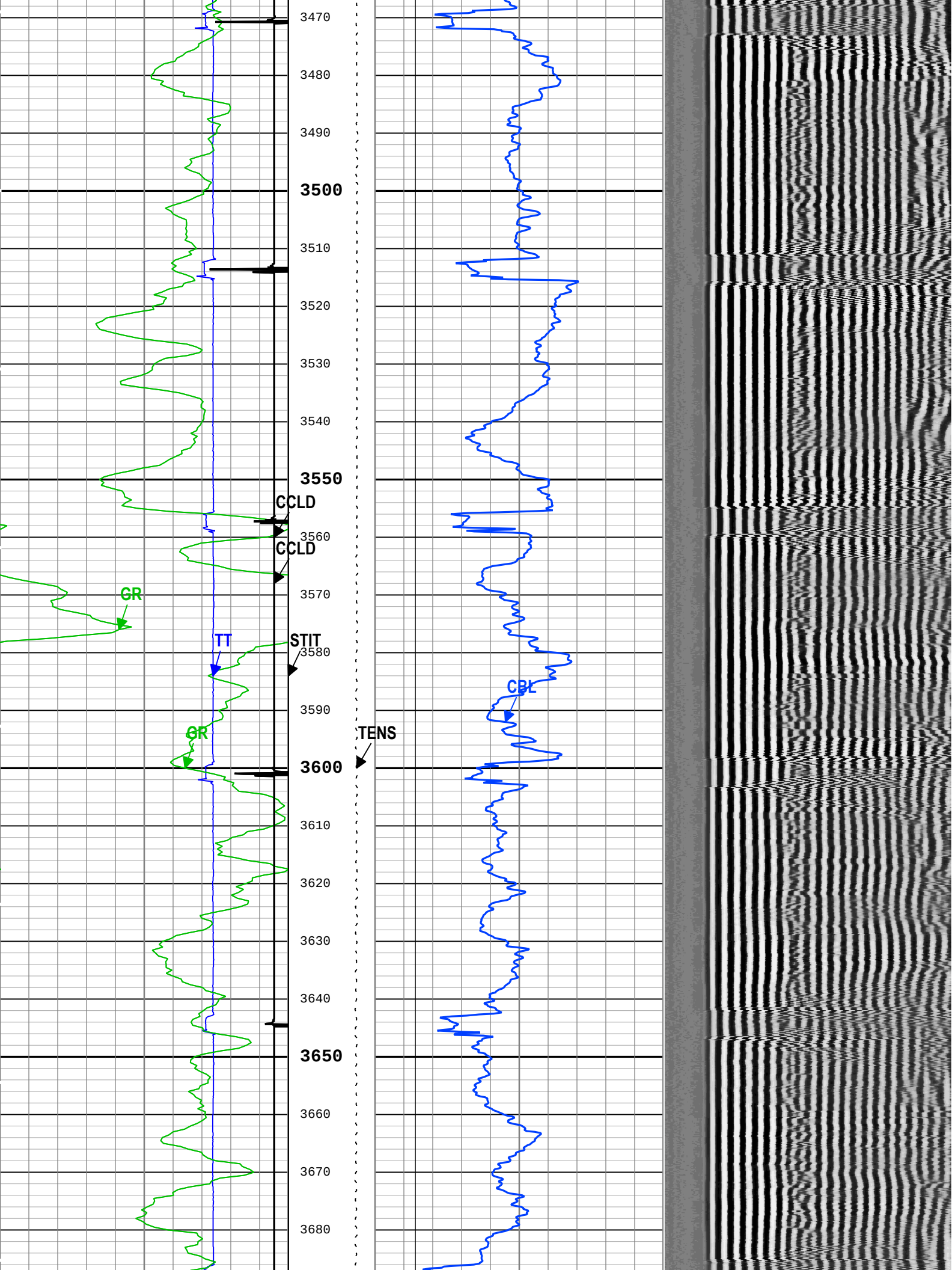
One: Log[3]:Up:S002

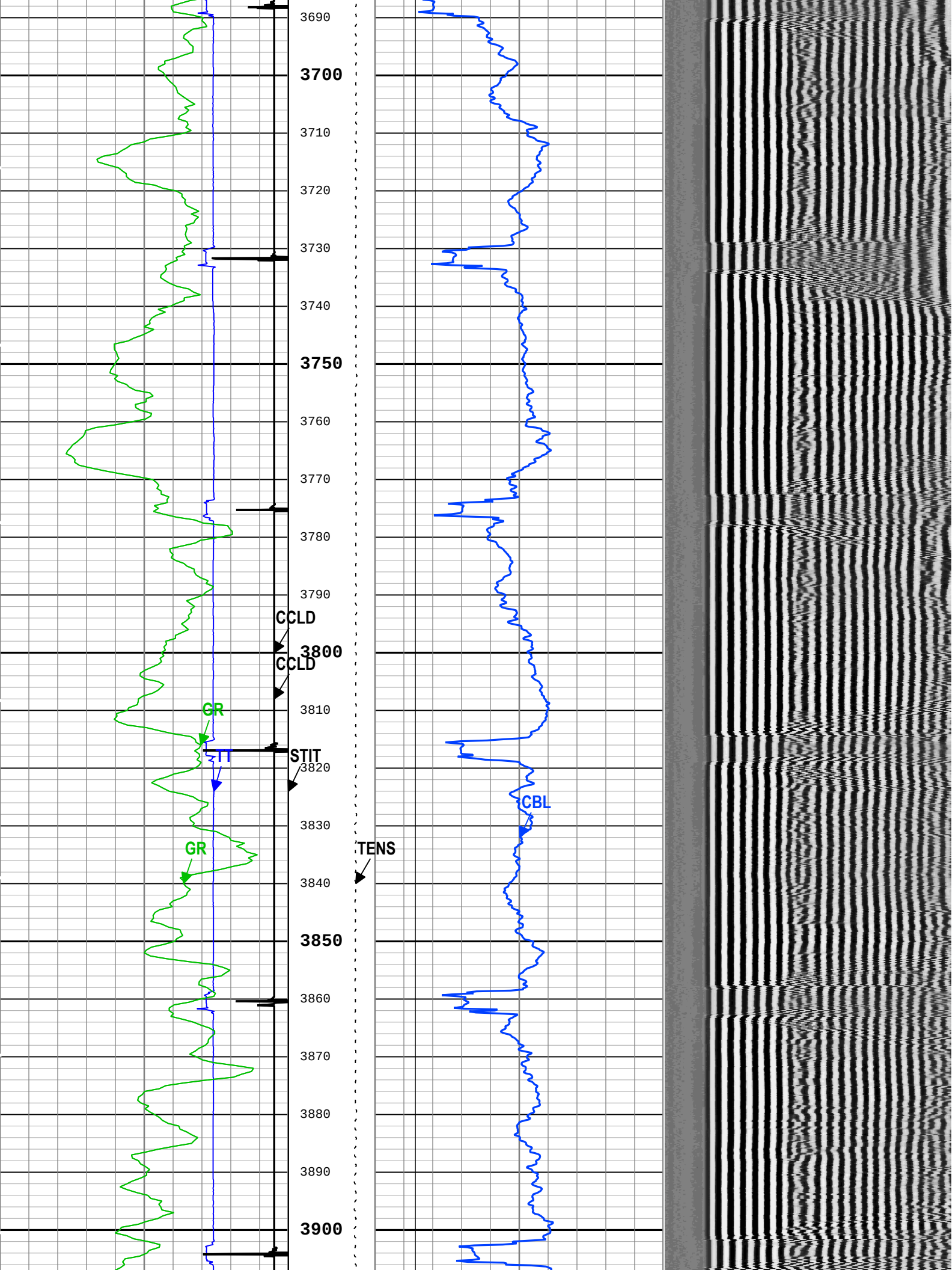
Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:33

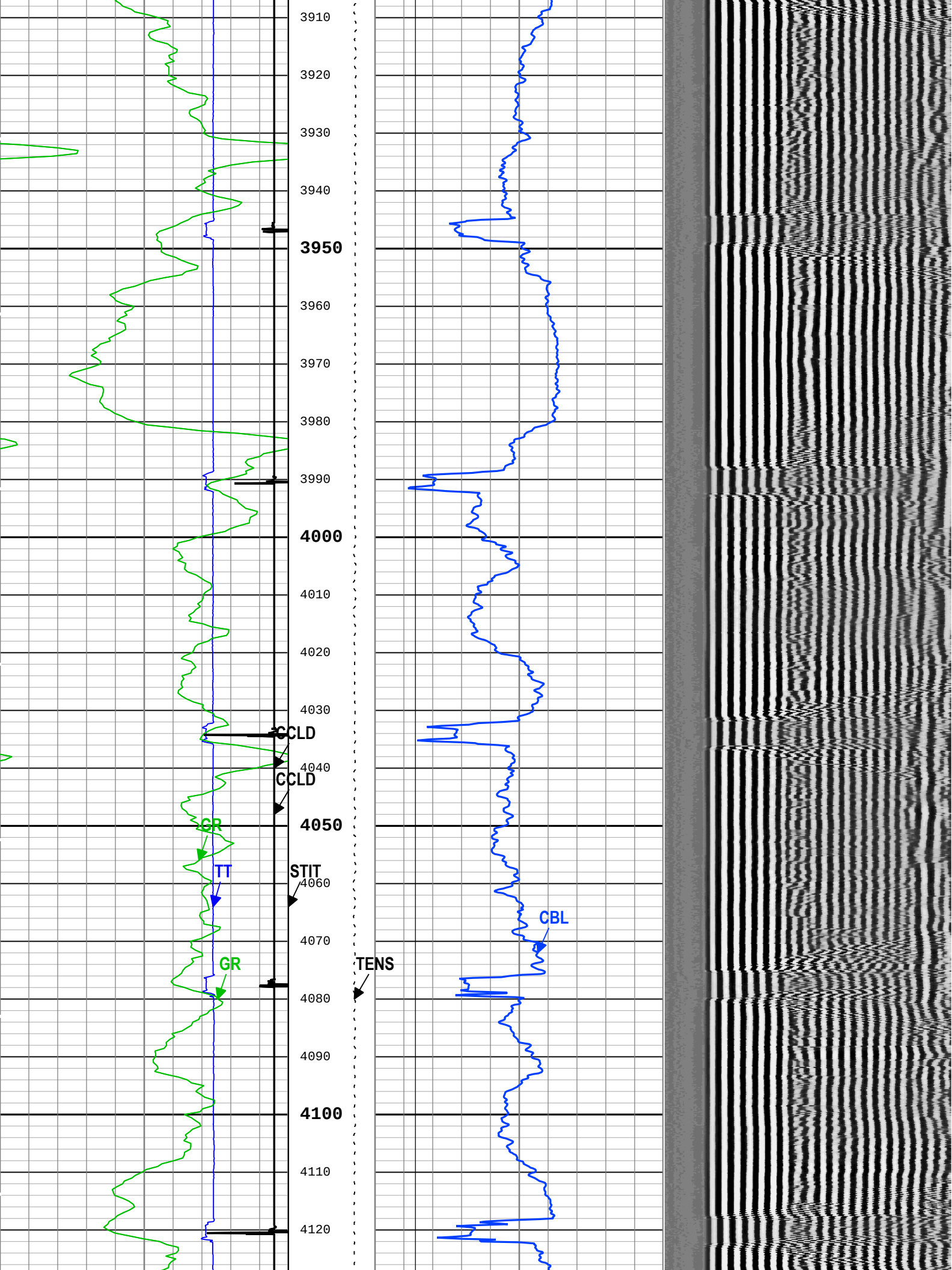


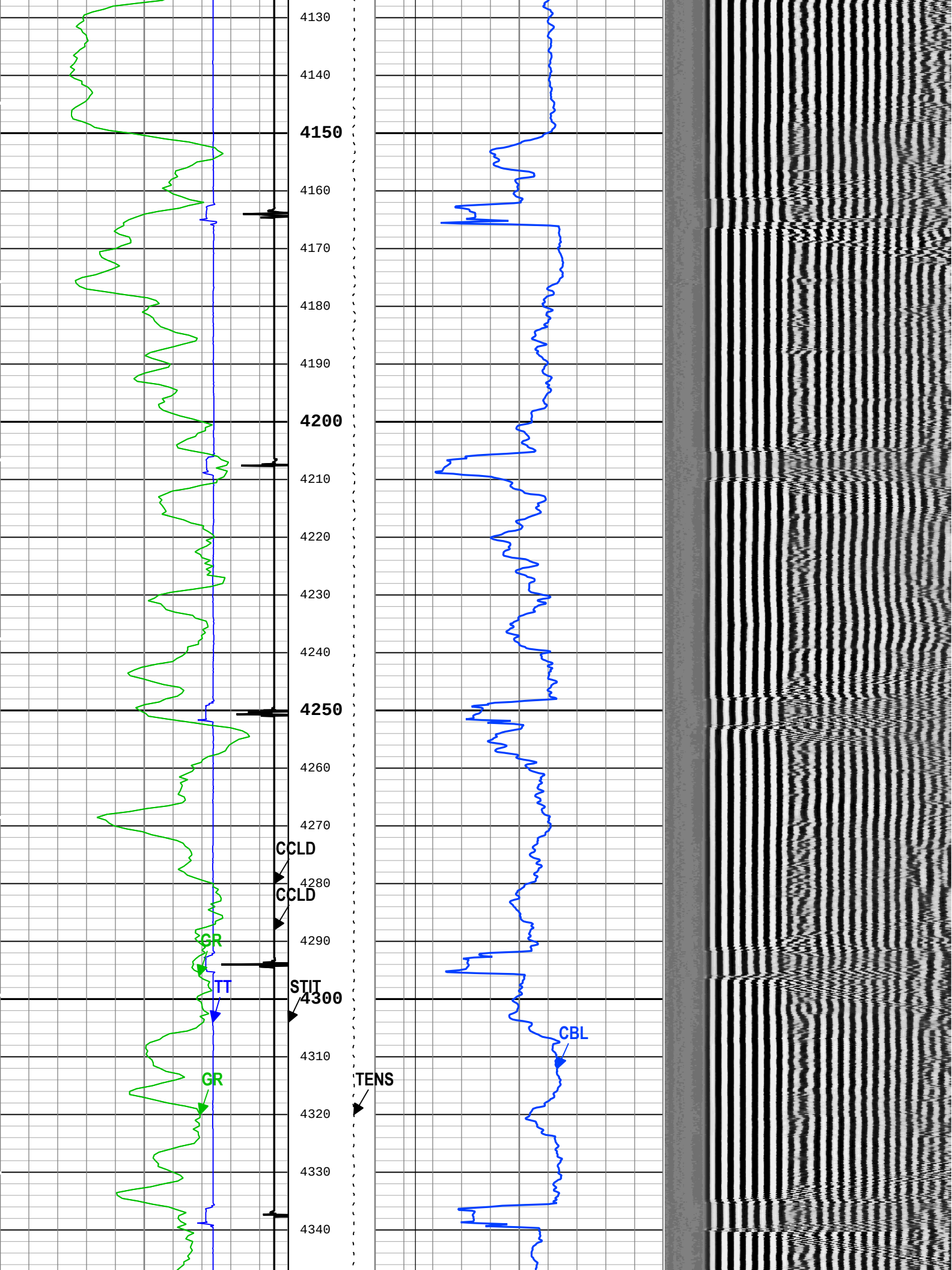

3030
3040
3050
3060
3070
CCLD
3080
CCLD
3090
GR
TT
STIT
3100
CBL
3110
GR
TENS
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240

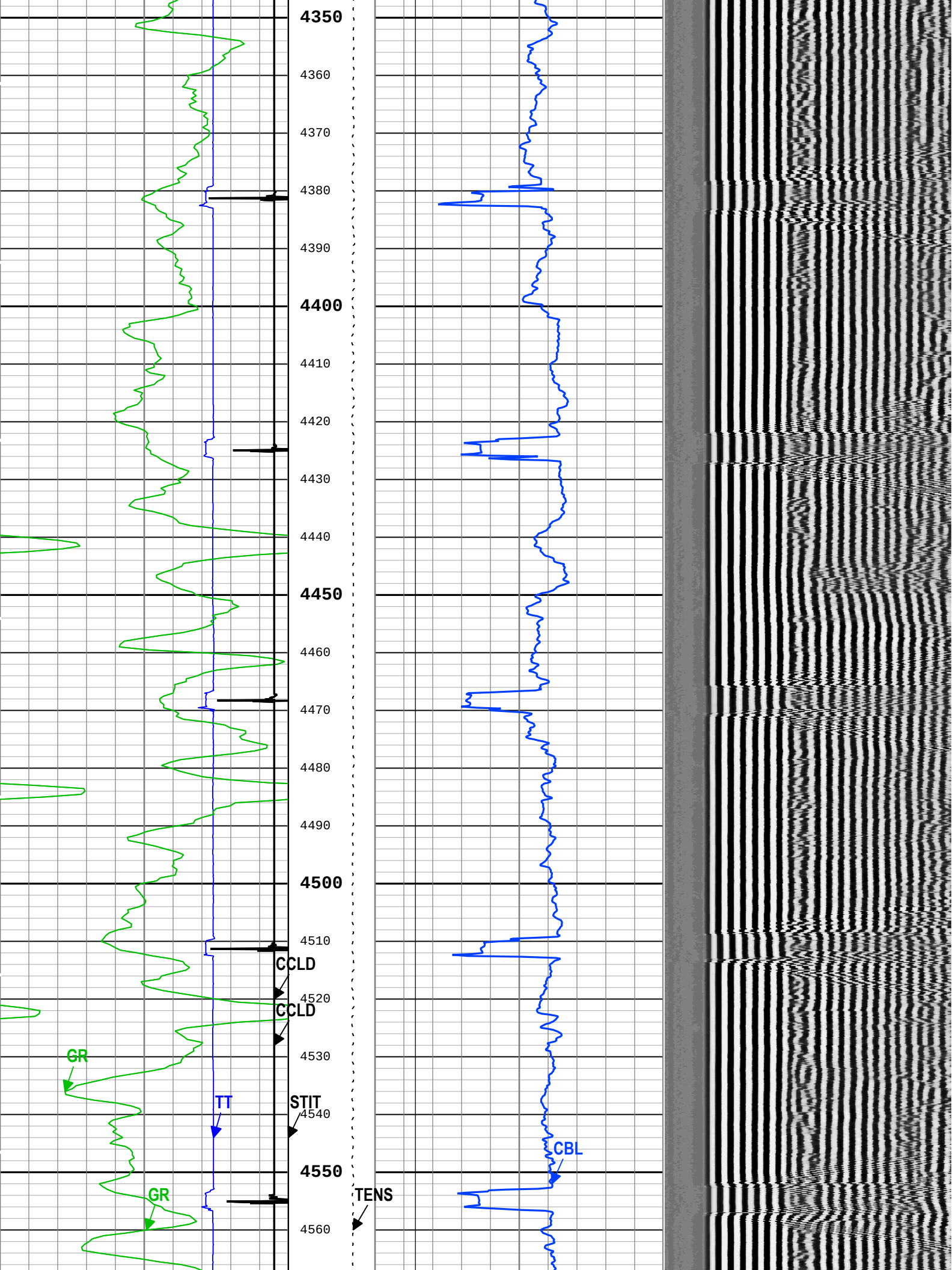

3250
3260
3270
3280
3290
3300
3310
CCLD
3320
CCLD
3330
GR
TT
STIT
3340
CBL
3350
GR
TENS
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460

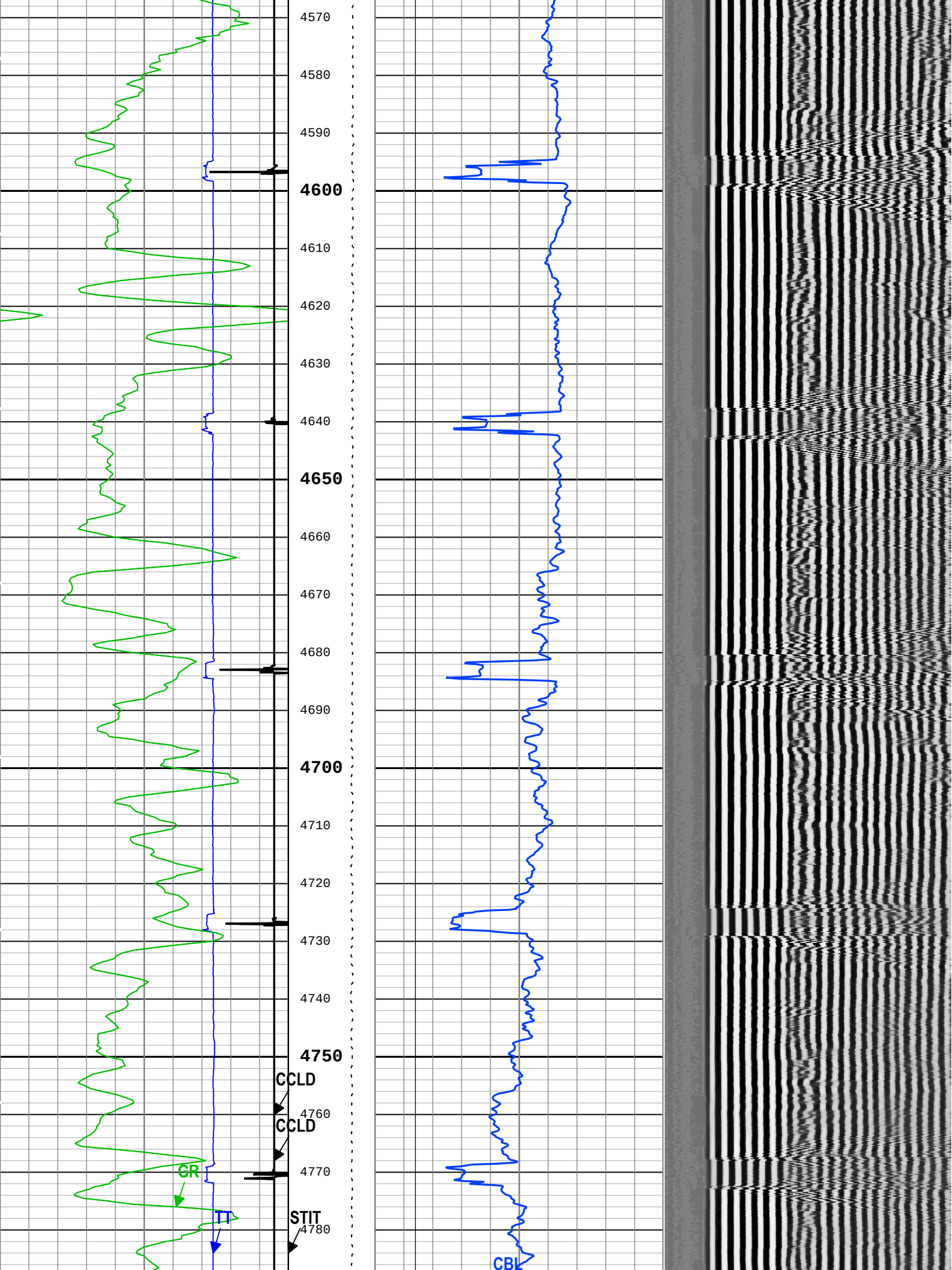

3470
3480
3490
3500
3510
3520
3530
3540
3550
CCLD
3560
CCLD
3570
GR
TT
STIT
3580
CBL
3590
GR
TENS
3600
3610
3620
3630
3640
3650
3660
3670
3680

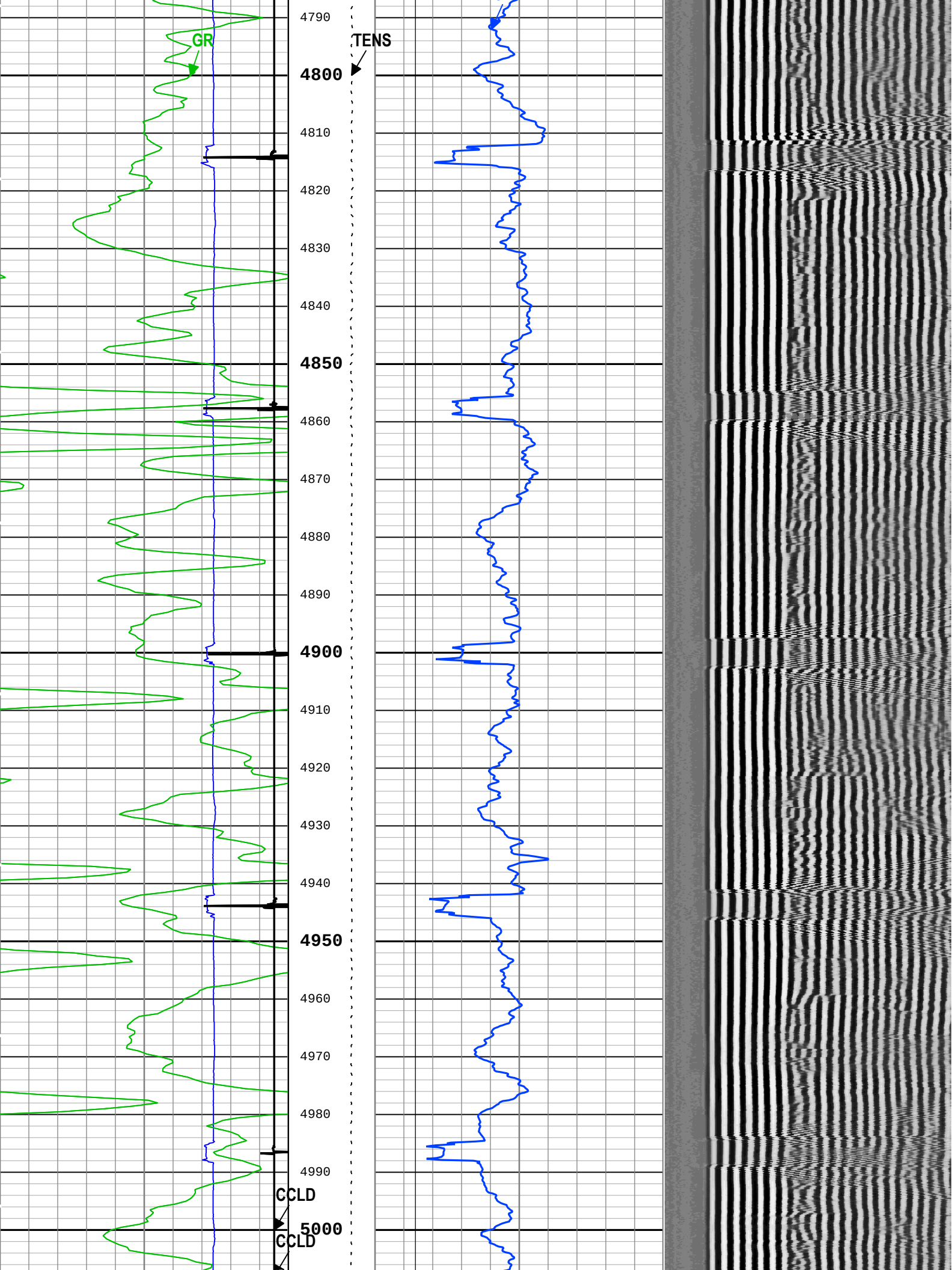

3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
CCLD
3800
CCLD
GR
3810
TT
STIT
3820
CBL
3830
GR
TENS
3840
3850
3860
3870
3880
3890
3900

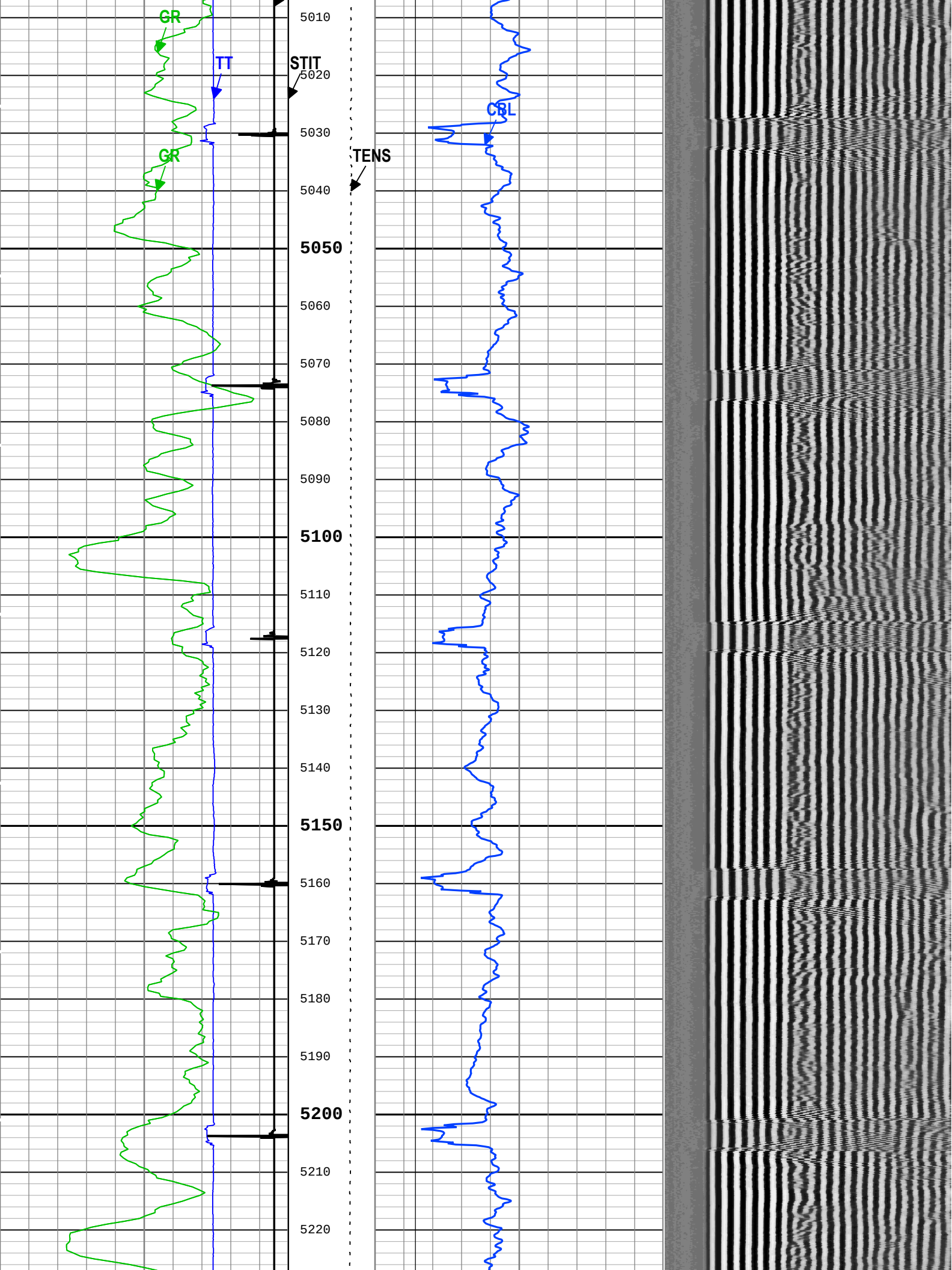

3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
CCLD
4040
CCLD
4050
GR
TT
STIT
4060
CBL
4070
GR
TENS
4080
4090
4100
4110
4120

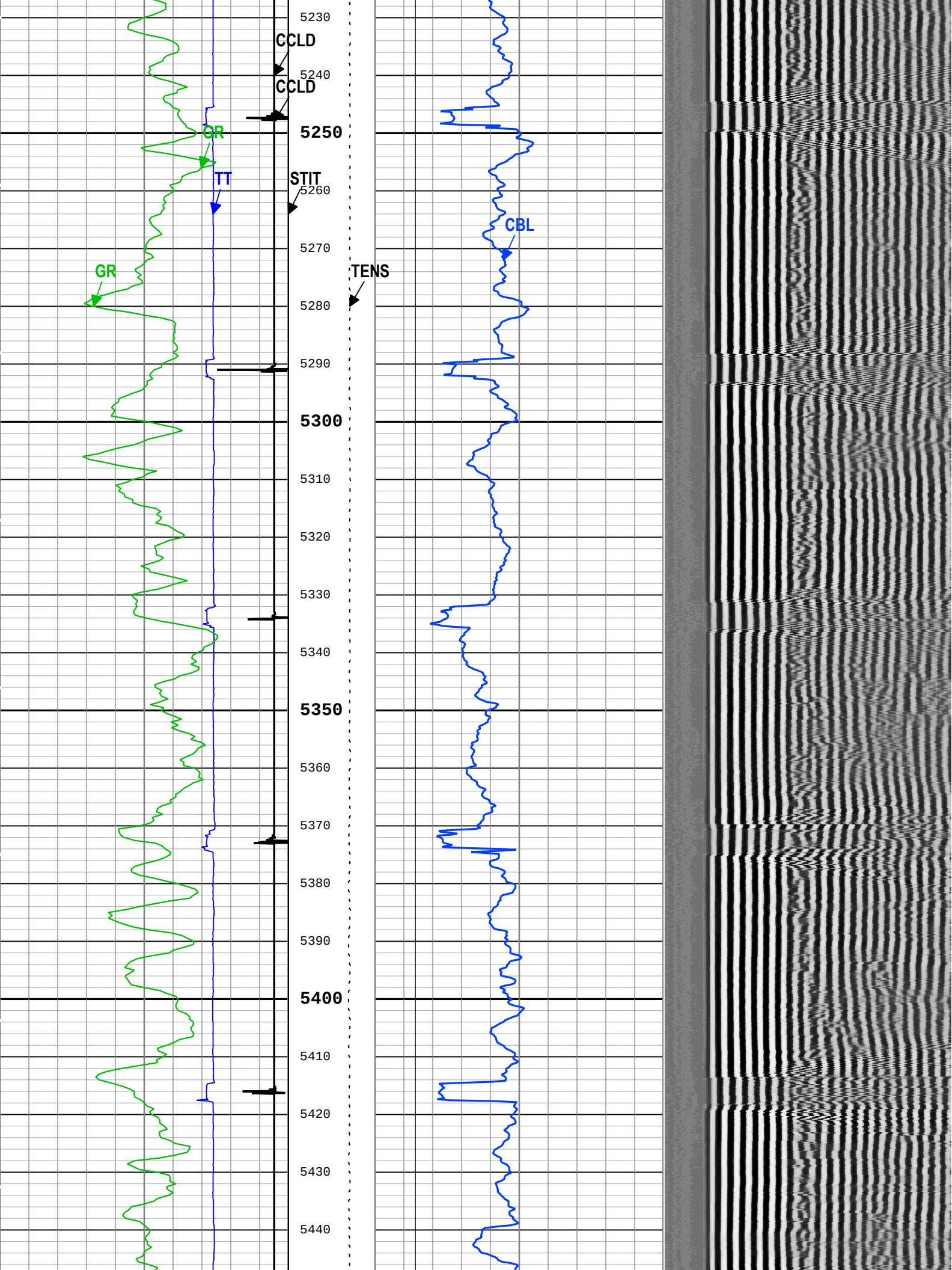

4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
CCLD
4280
CCLD
4290
GR
TT
STIT
4300
CBL
4310
GR
TENS
4320
4330
4340

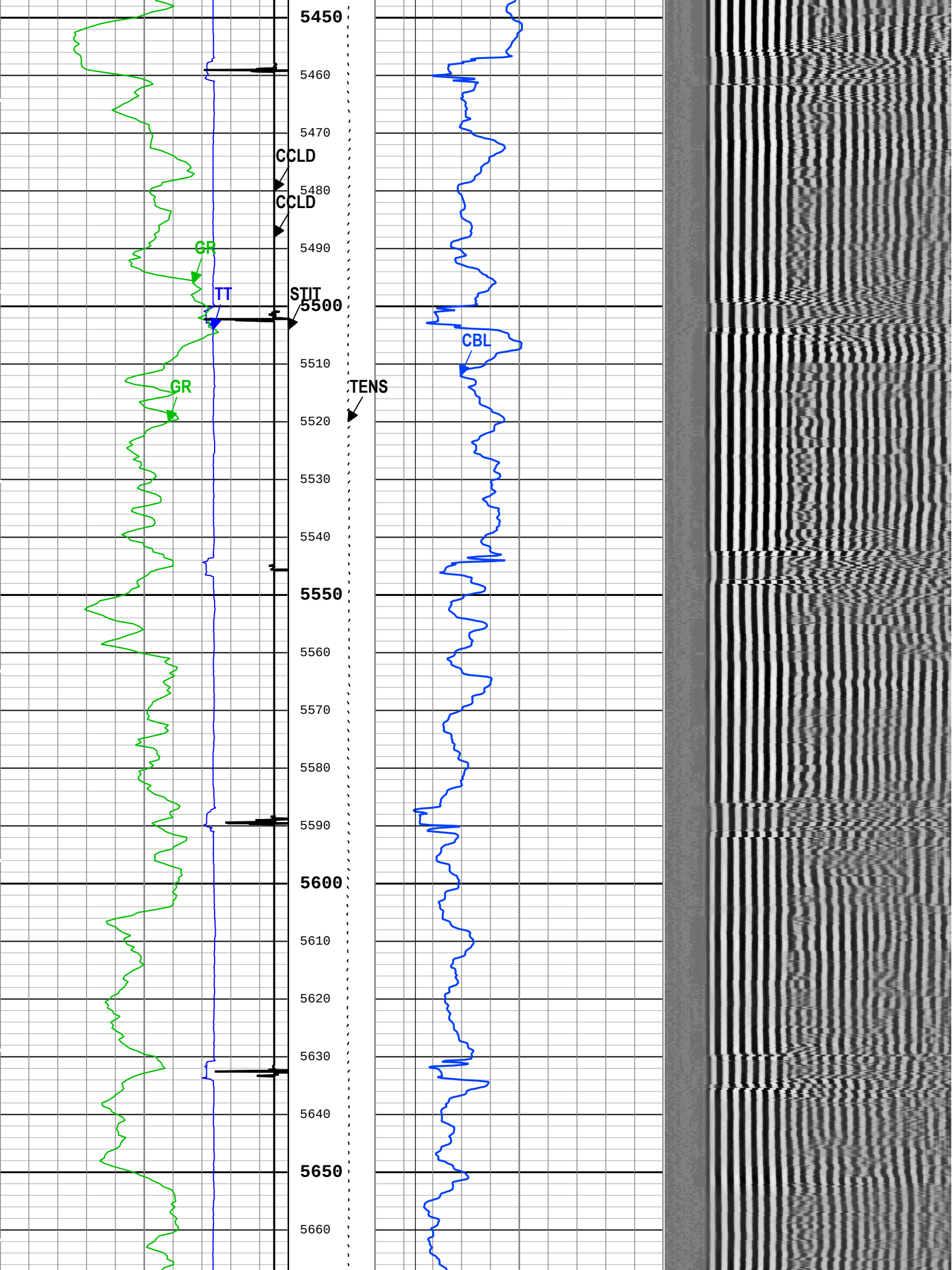

4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
CCLD
4520
CCLD
4530
GR
TT
STIT
4540
CBL
4550
GR
TENS
4560

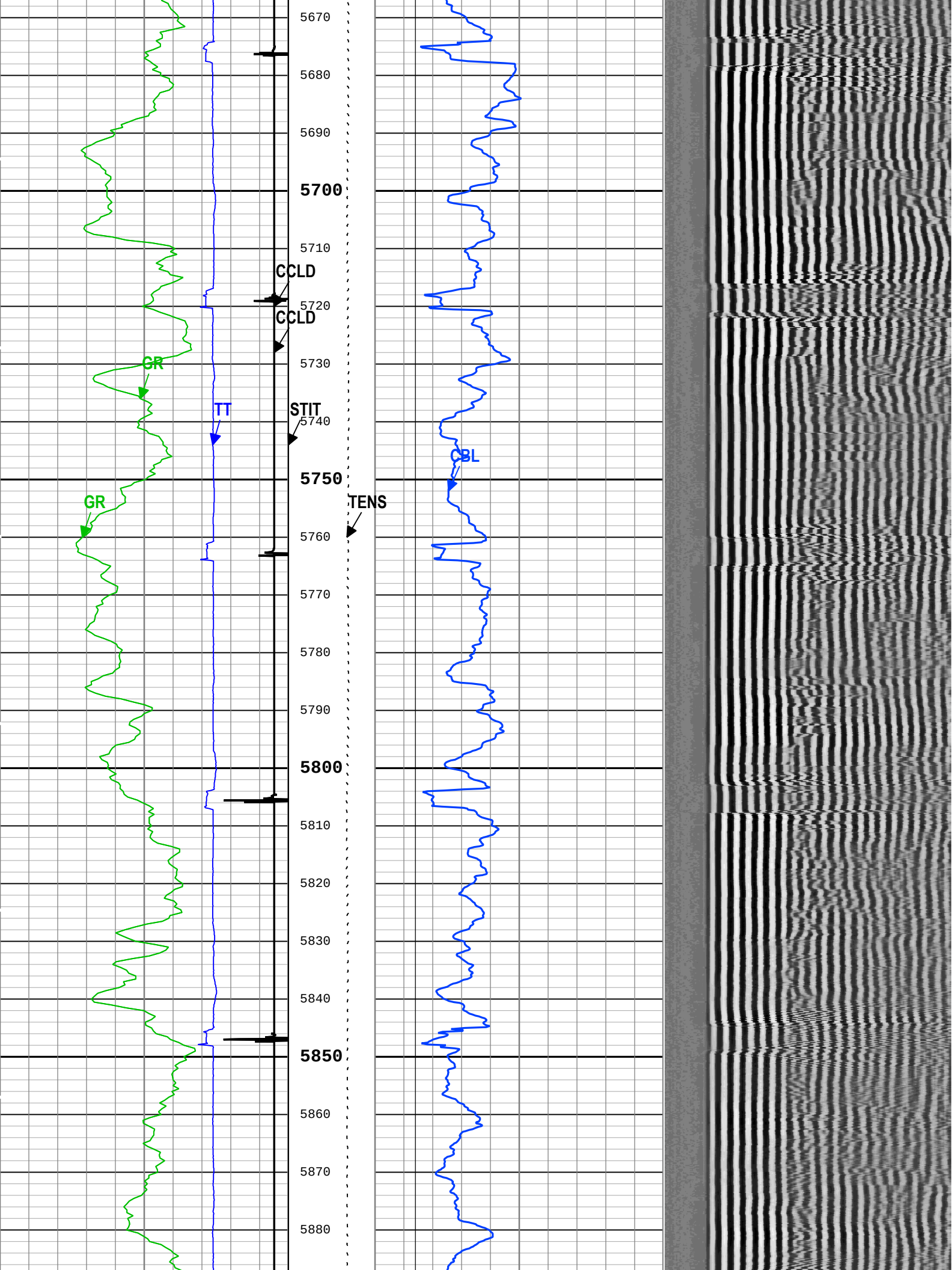

4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
CCLD
4760
CCLD
4770
GR
TT
STIT
4780
CBL

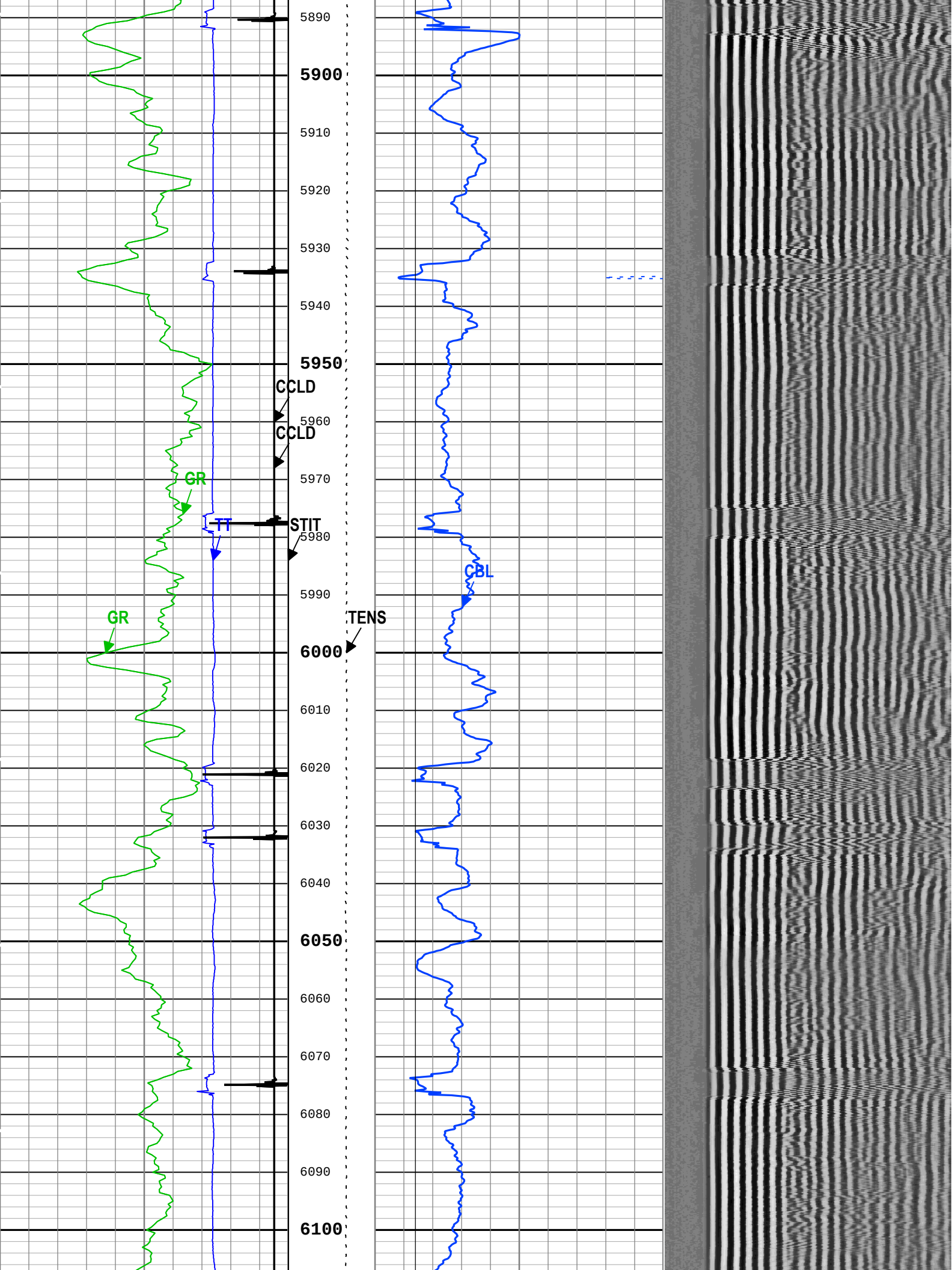

GR
TENS
CCLD
CCLD
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000

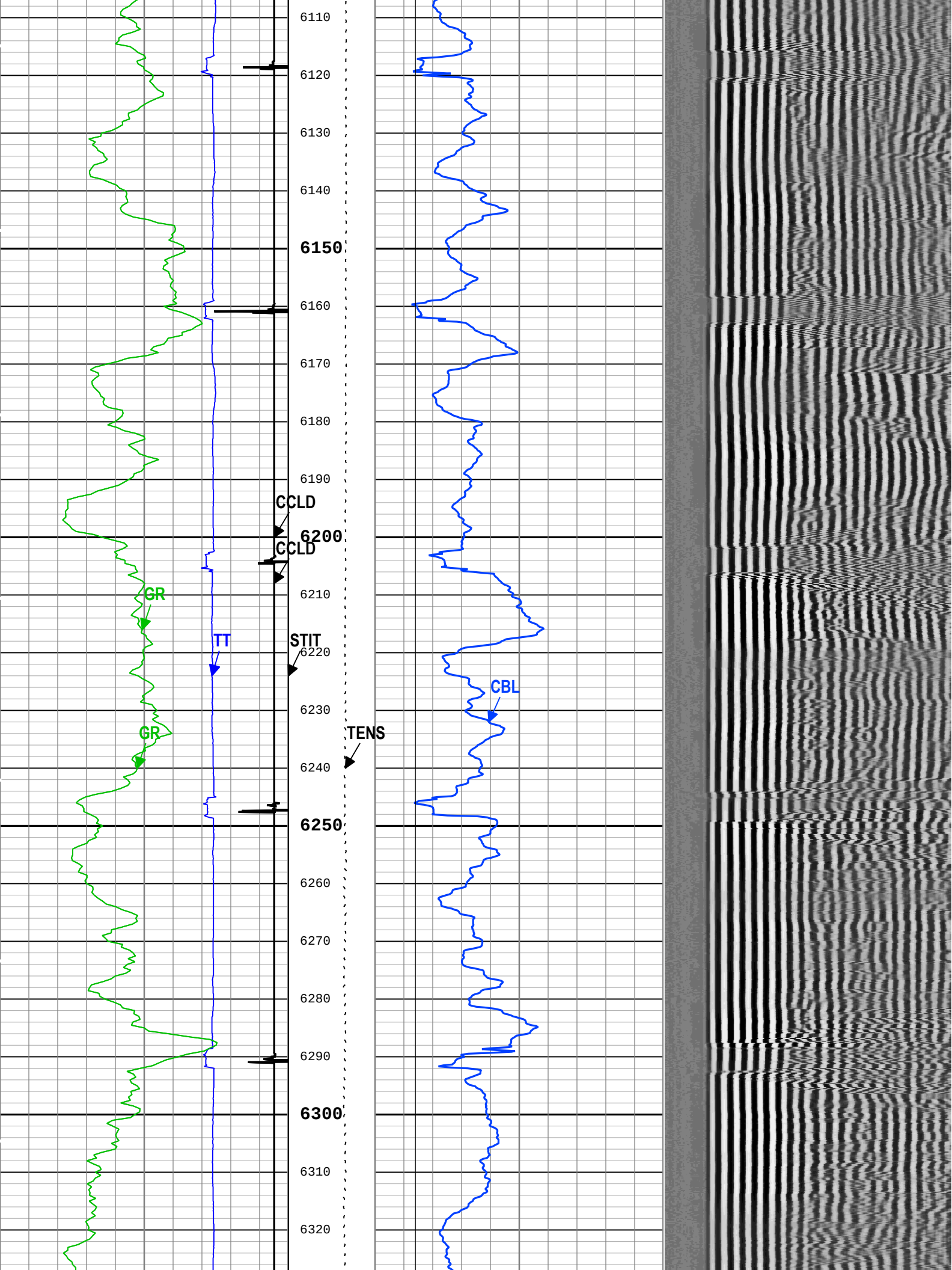

GR
TT
STIT
CBL
GR
TENS
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220

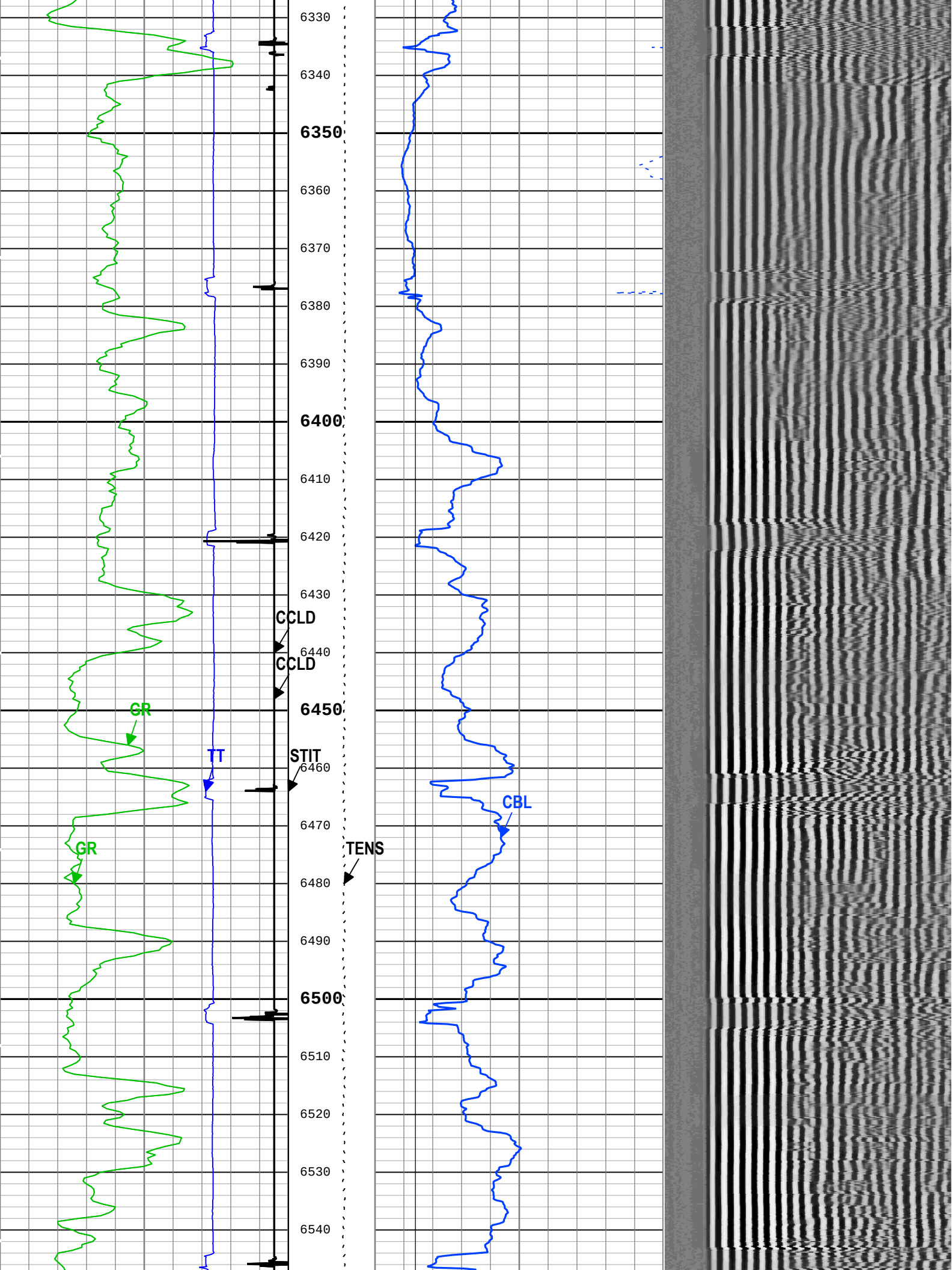

CCLD
CCLD
GR
TT
STIT
CBL
GR
TENS
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440

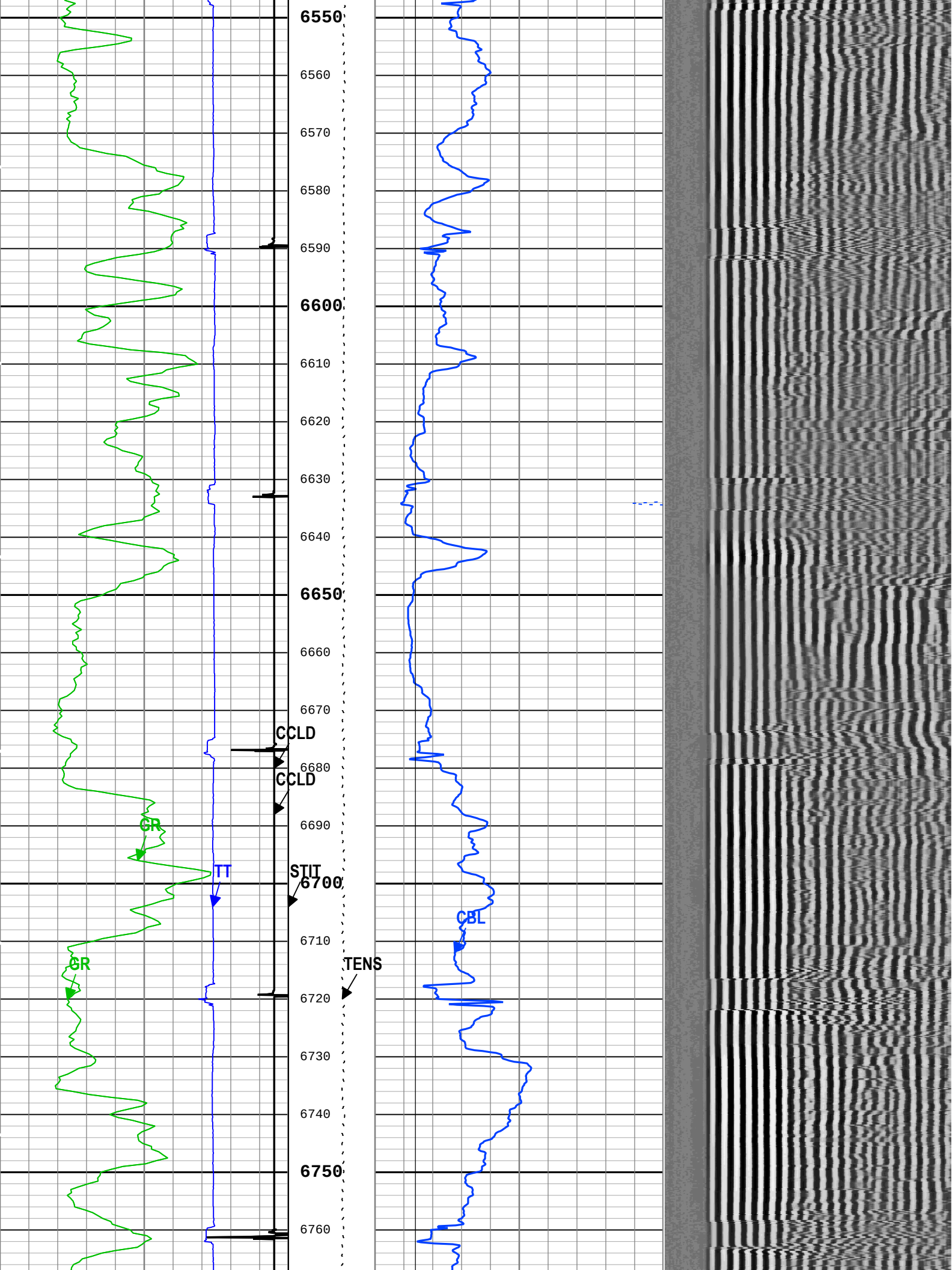

5450
5460
5470
CCLD
5480
CCLD
5490
GR
TT
STIT
5500
CBL
5510
GR
TENS
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660

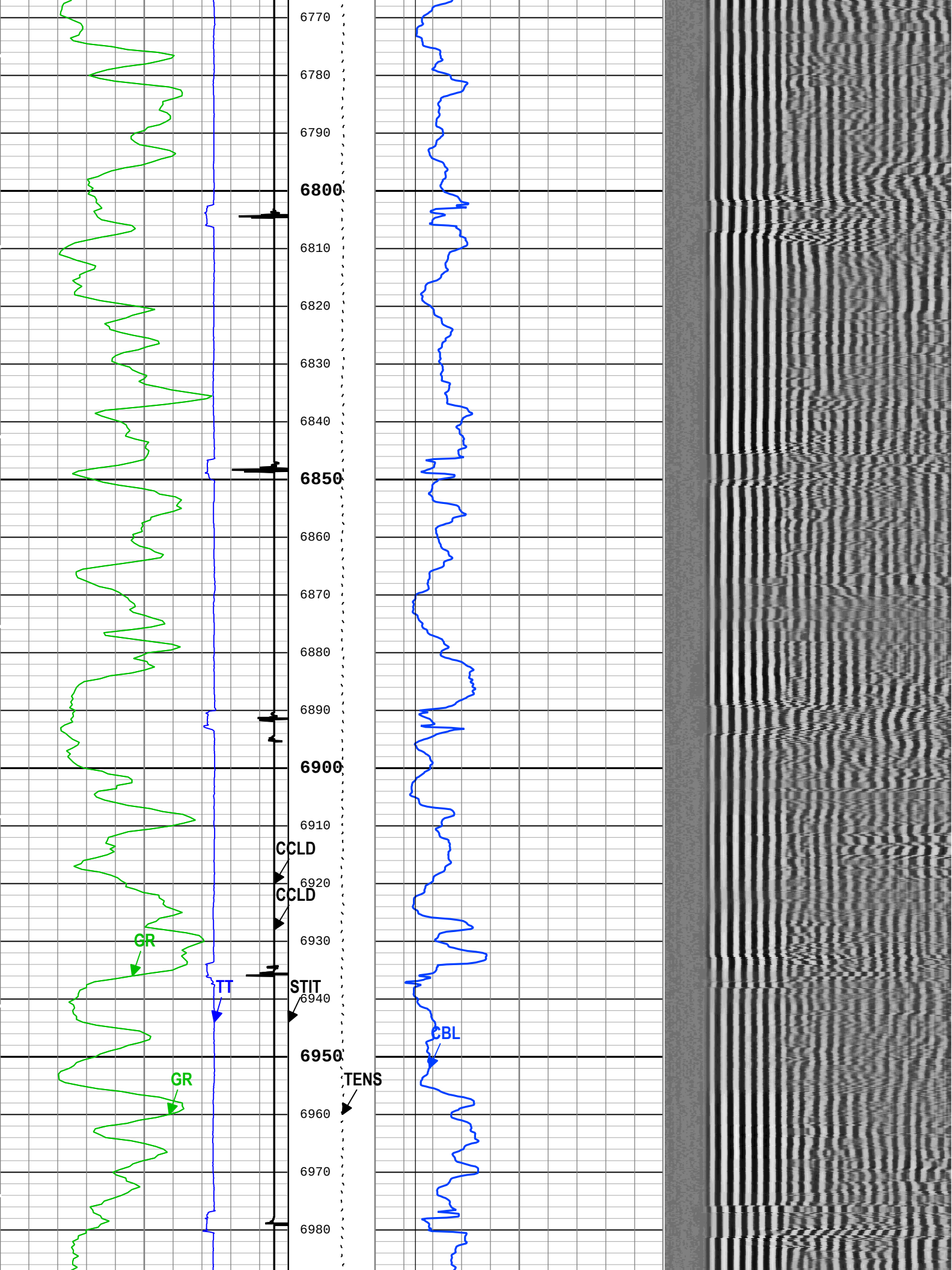

5670
5680
5690
5700
5710
CCLD
5720
CCLD
5730
GR
TT
STIT
5740
CBL
5750
GR
TENS
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880

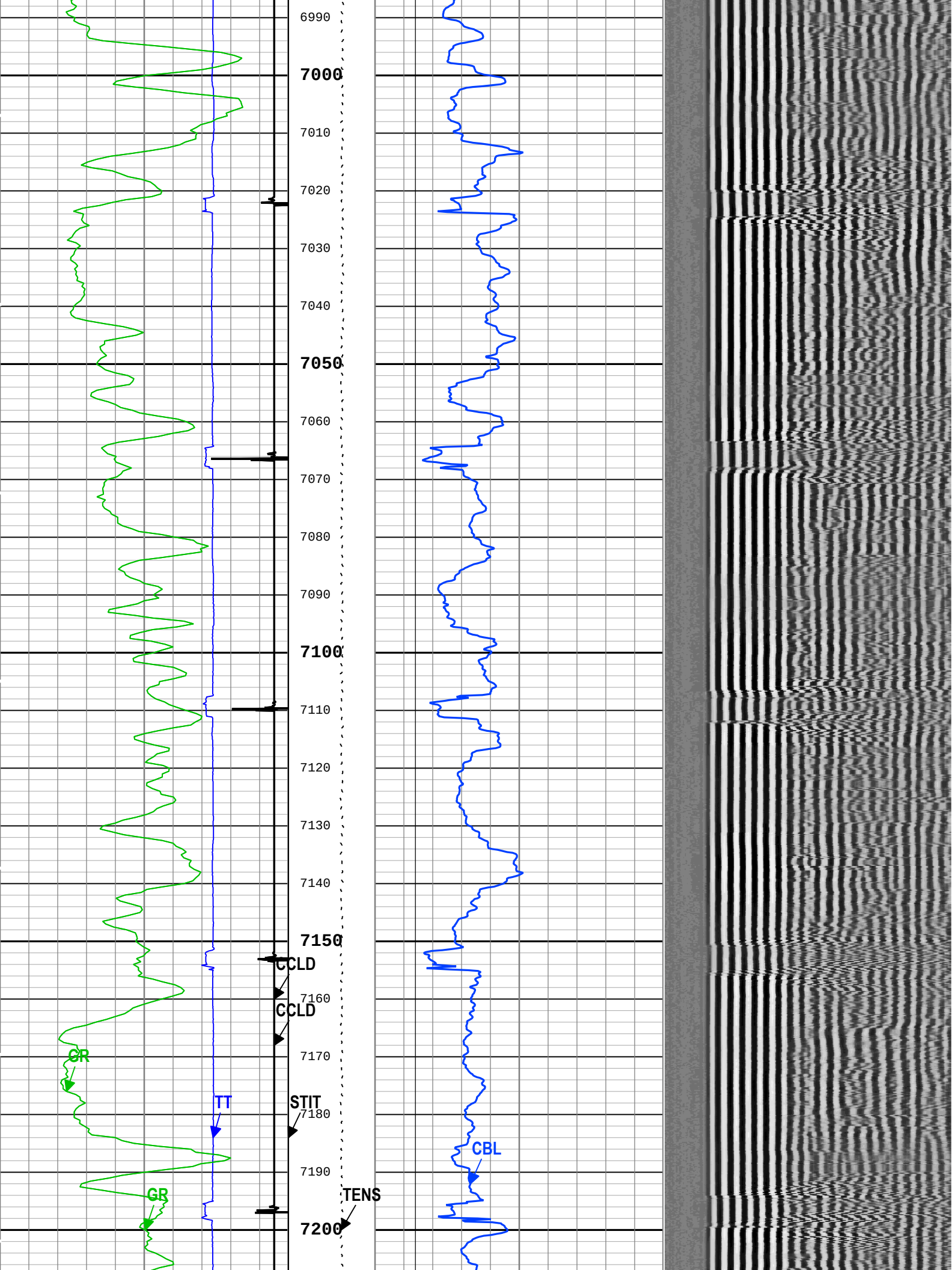

5890
5900
5910
5920
5930
5940
5950
CCLD
5960
CCLD
5970
GR
TT
STIT
5980
CBL
5990
GR
TENS
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100

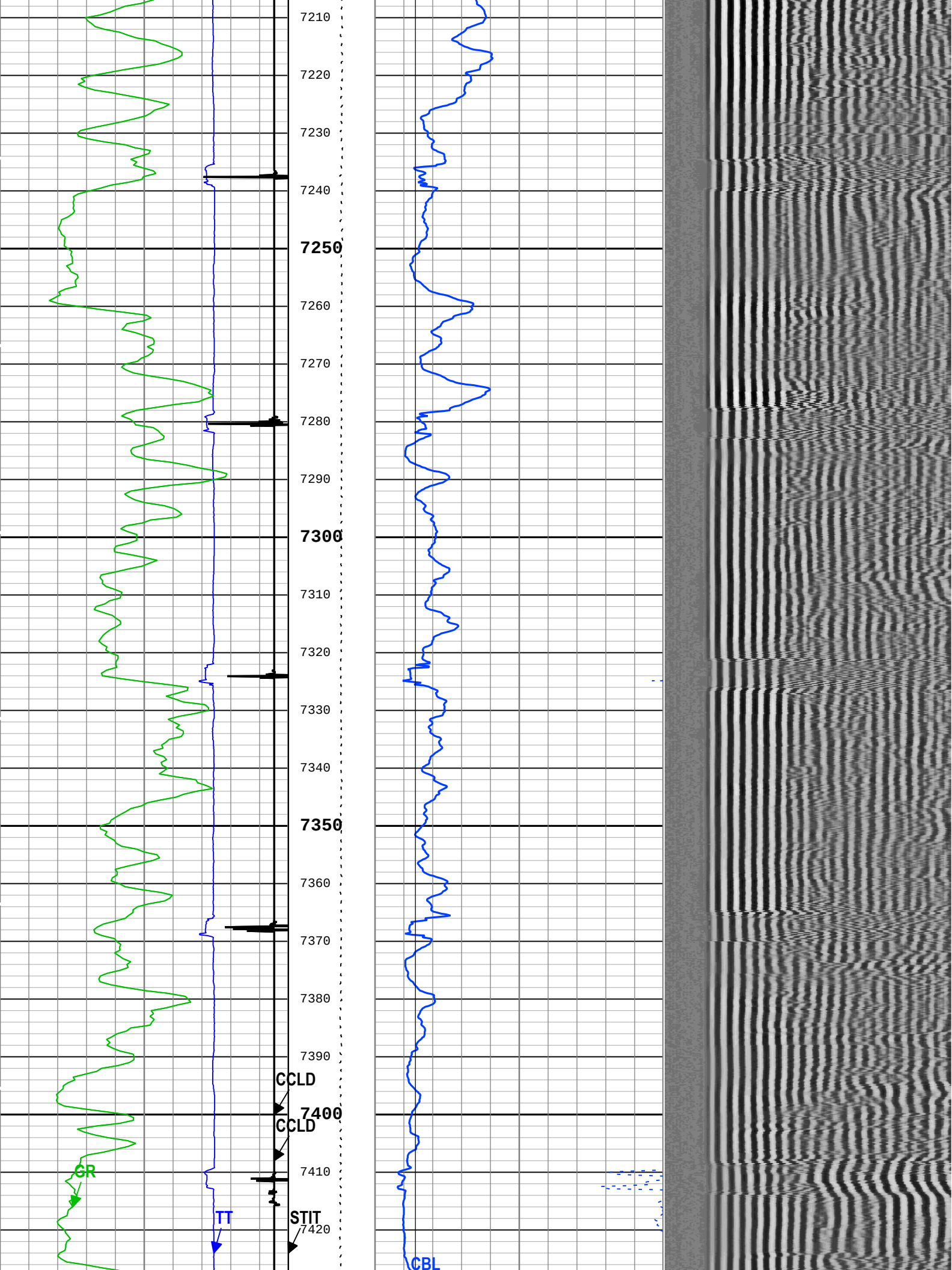

6110
6120
6130
6140
6150
6160
6170
6180
6190
CCLD
6200
CCLD
6210
GR
TT
STIT
6220
CBL
6230
GR
TENS
6240
6250
6260
6270
6280
6290
6300
6310
6320

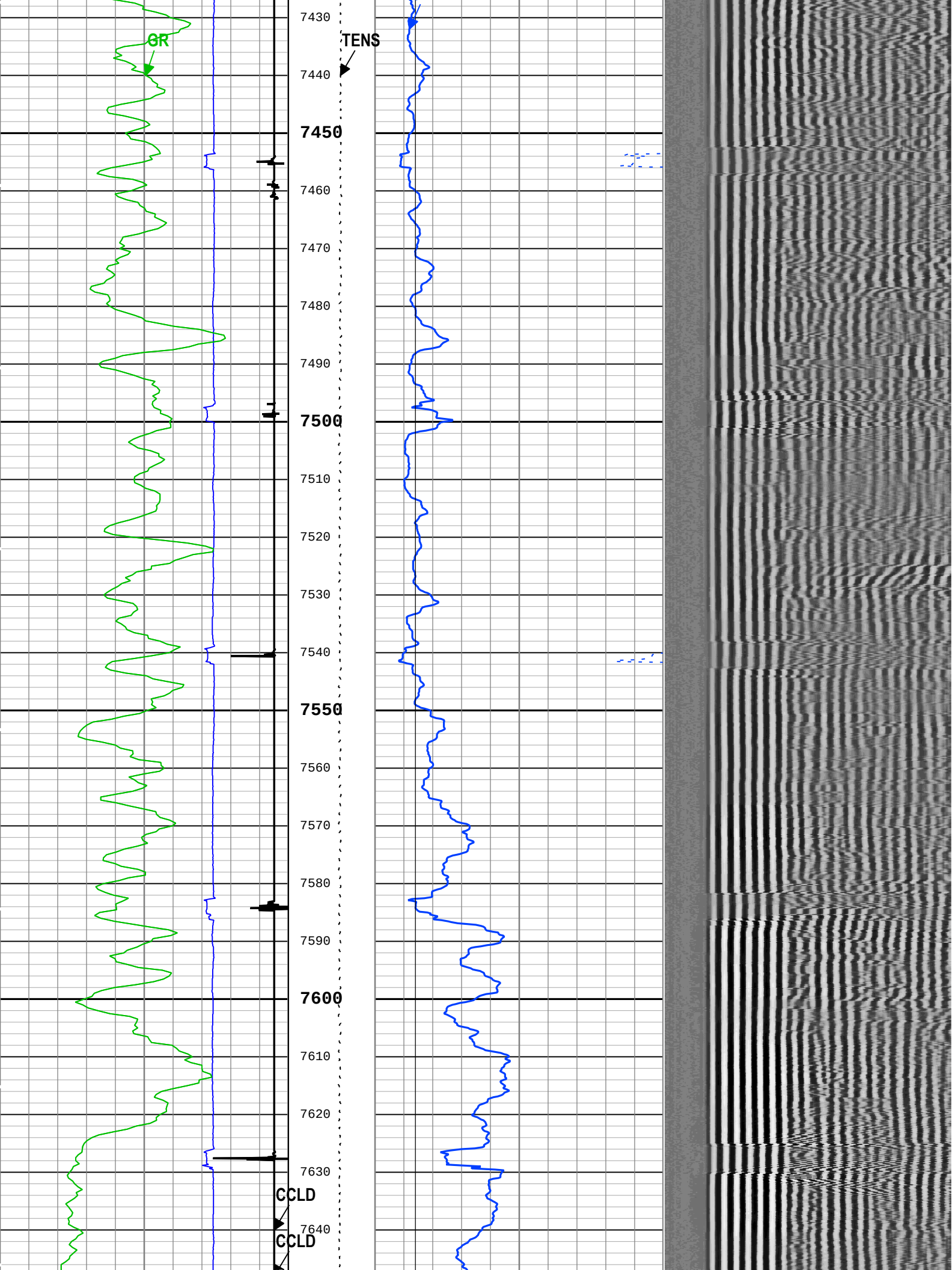

6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
CCLD
6440
CCLD
6450
GR
TT
STIT
6460
CBL
6470
GR
TENS
6480
6490
6500
6510
6520
6530
6540

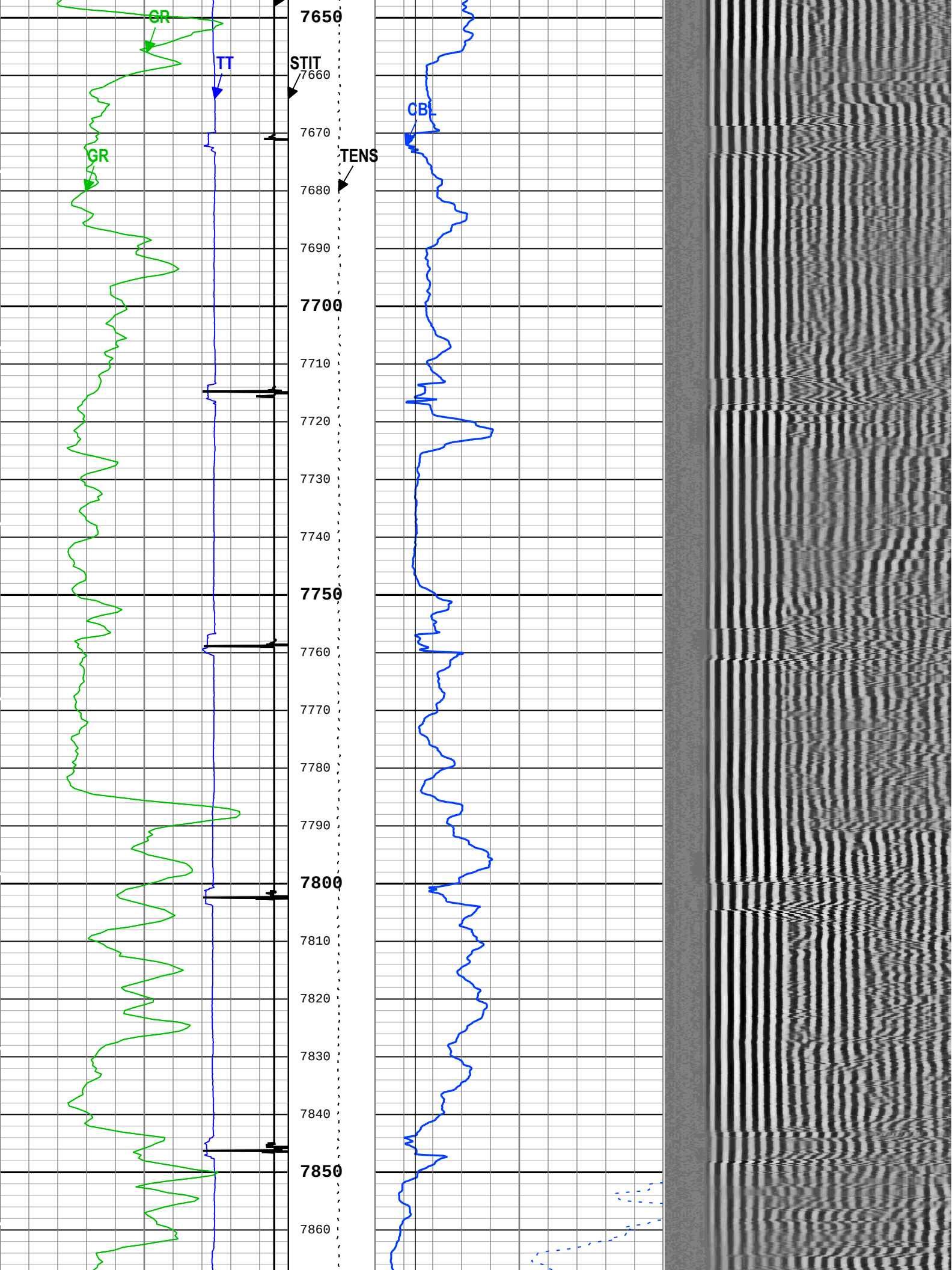

6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
CCLD
6680
CCLD
6690
GR
TT
STIT
6700
CBL
6710
GR
TENS
6720
6730
6740
6750
6760

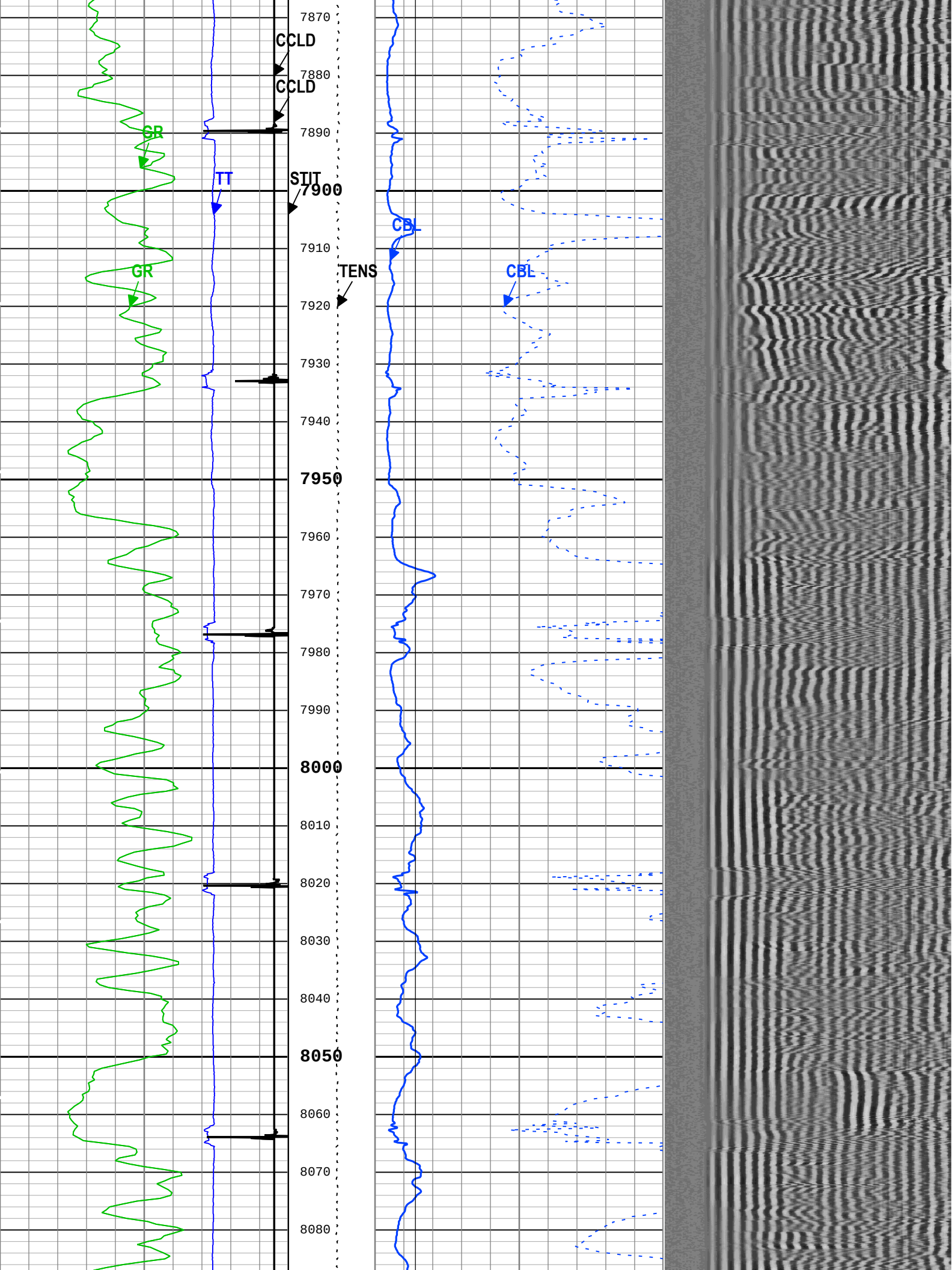

6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
CCLD
6920
CCLD
6930
GR
TT
STIT
6940
CBL
6950
GR
TENS
6960
6970
6980

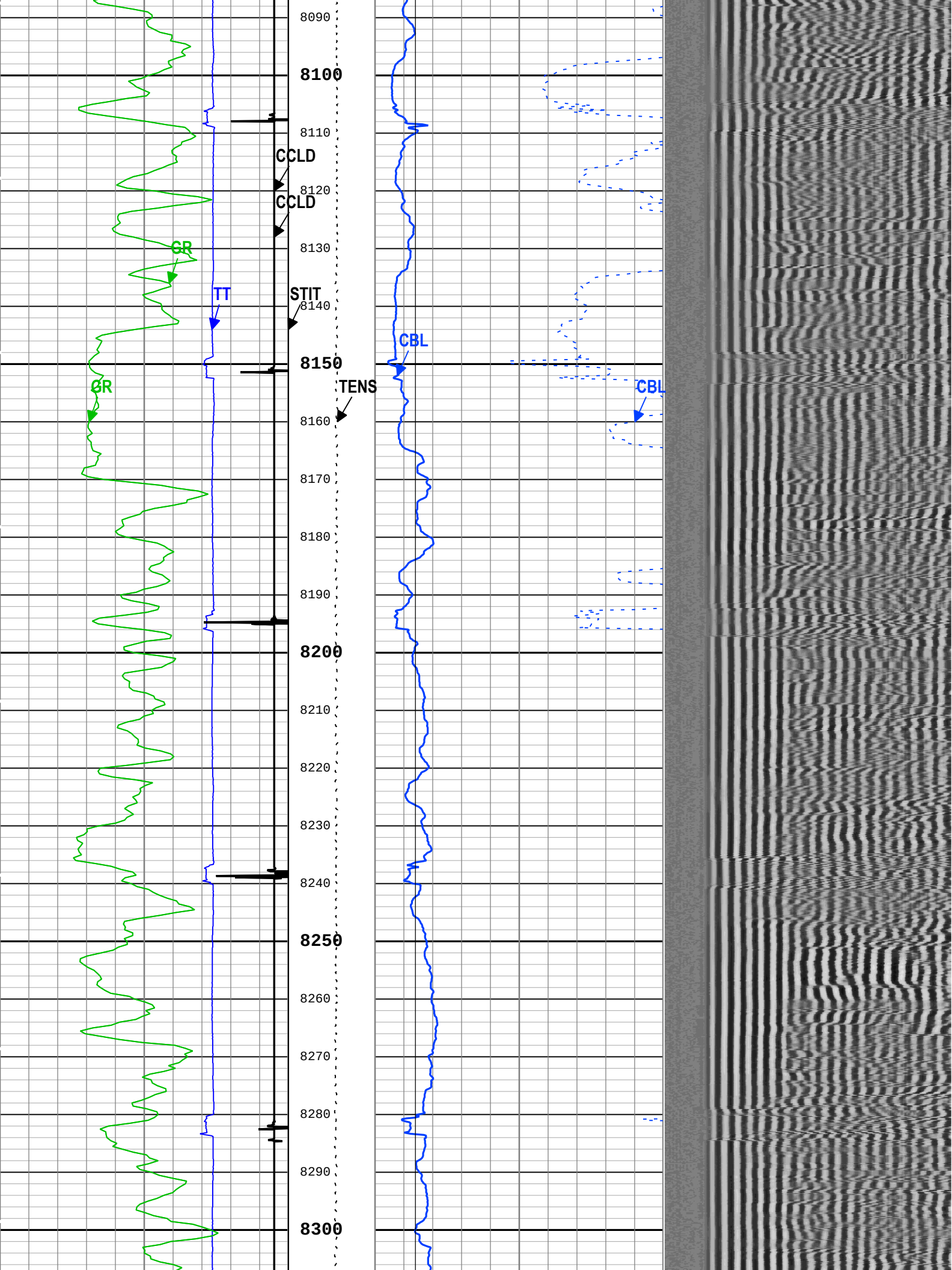

6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
7110
7120
7130
7140
7150
CCLD
7160
CCLD
7170
GR
TT
STIT
7180
CBL
7190
GR
TENS
7200

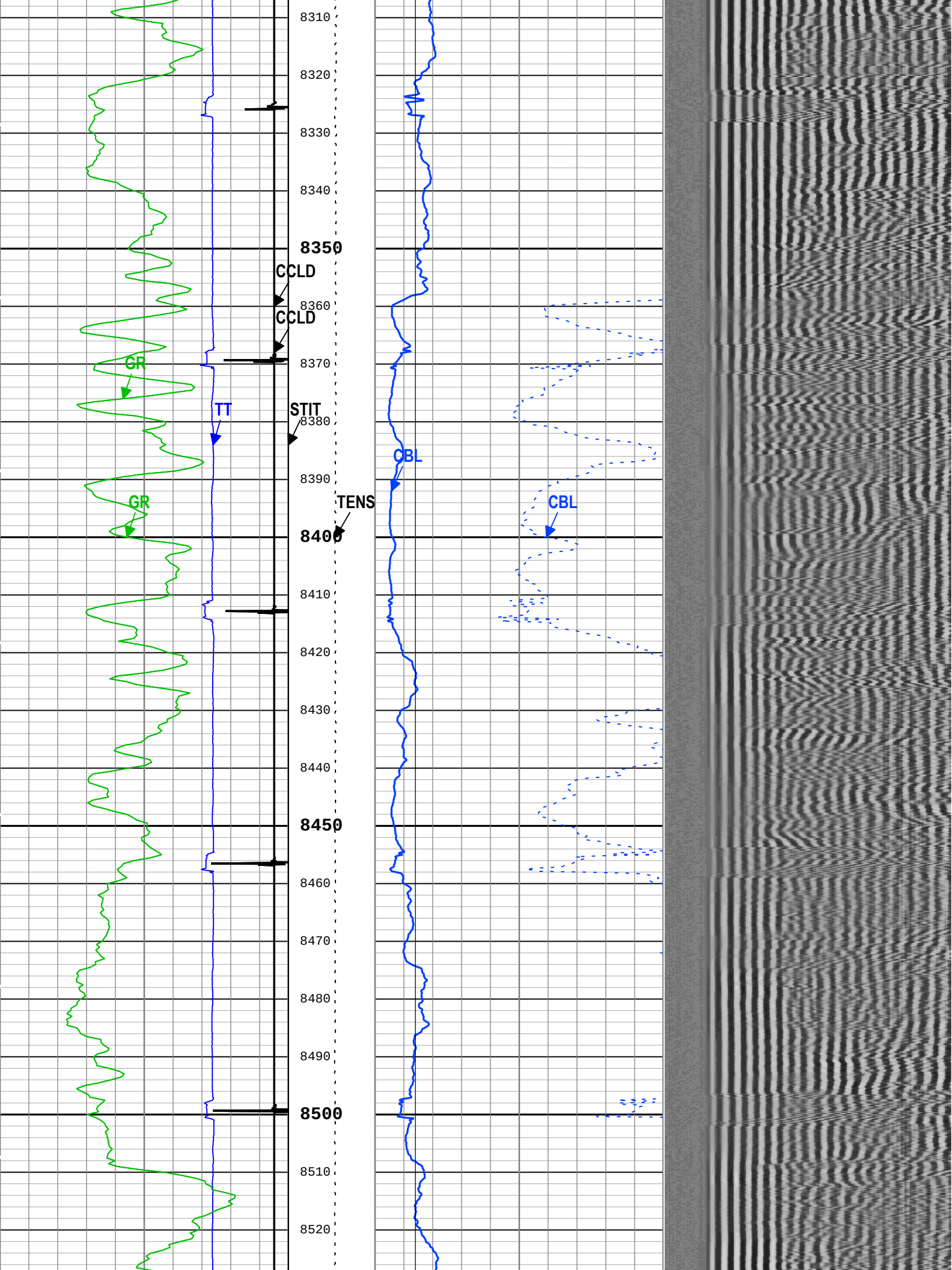

7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370
7380
7390
CCLD
7400
CCLD
7410
7420
GR
TT
STIT
CBL

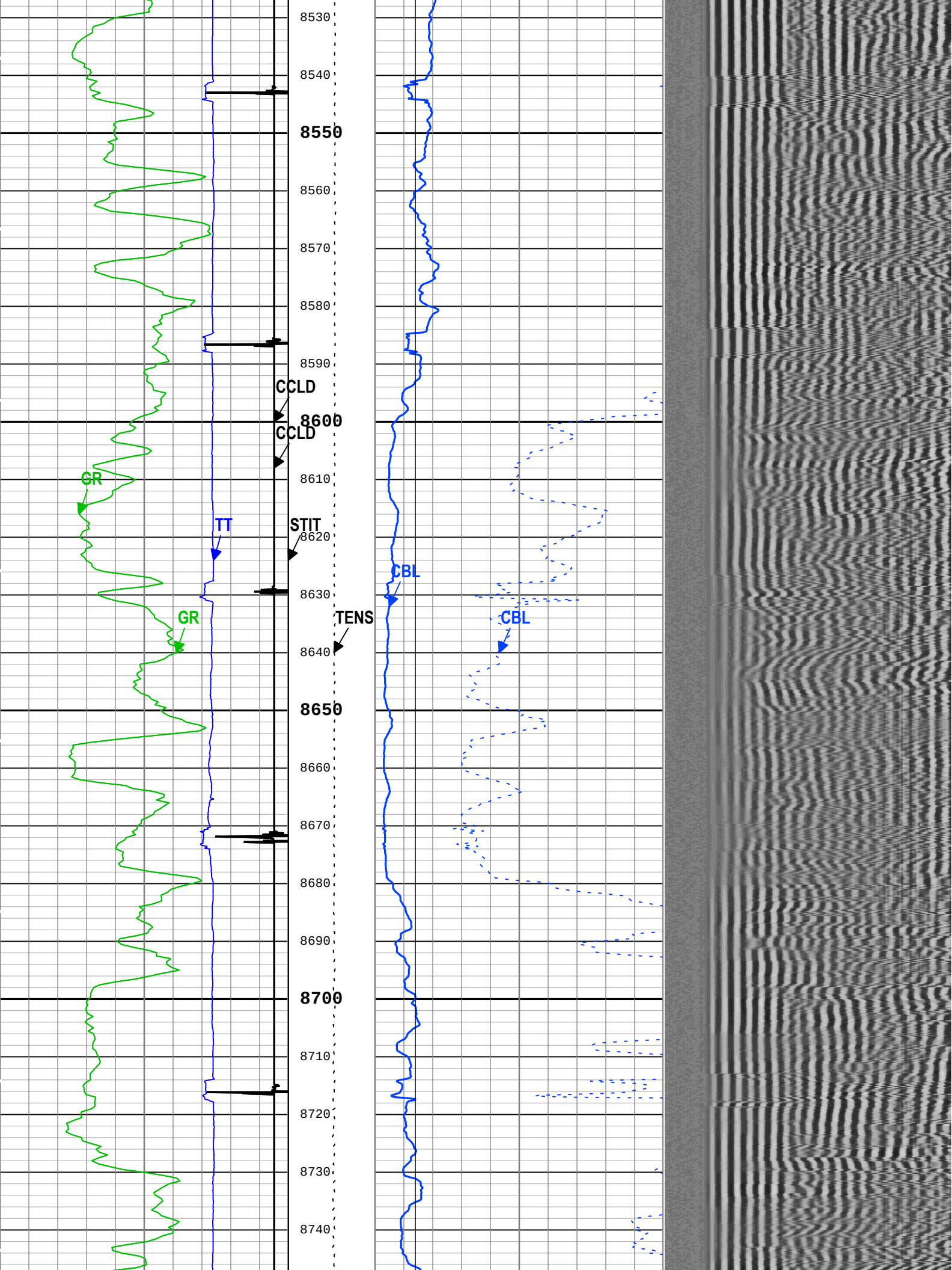

GR
TENS
CCLD
CCLD
7430
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
7550
7560
7570
7580
7590
7600
7610
7620
7630
7640

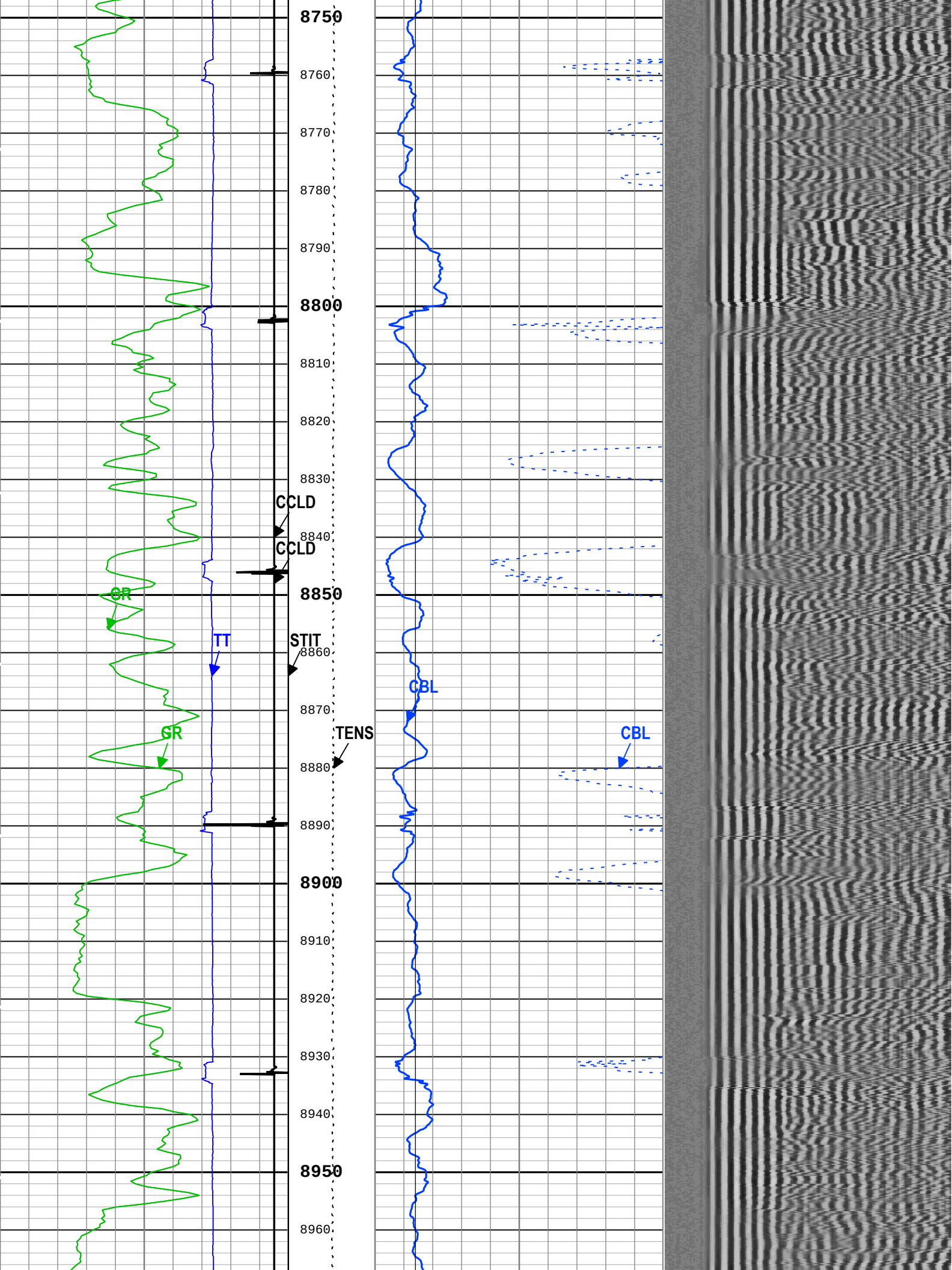

GR
TT
STIT
CBL
GR
TENS
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
7770
7780
7790
7800
7810
7820
7830
7840
7850
7860

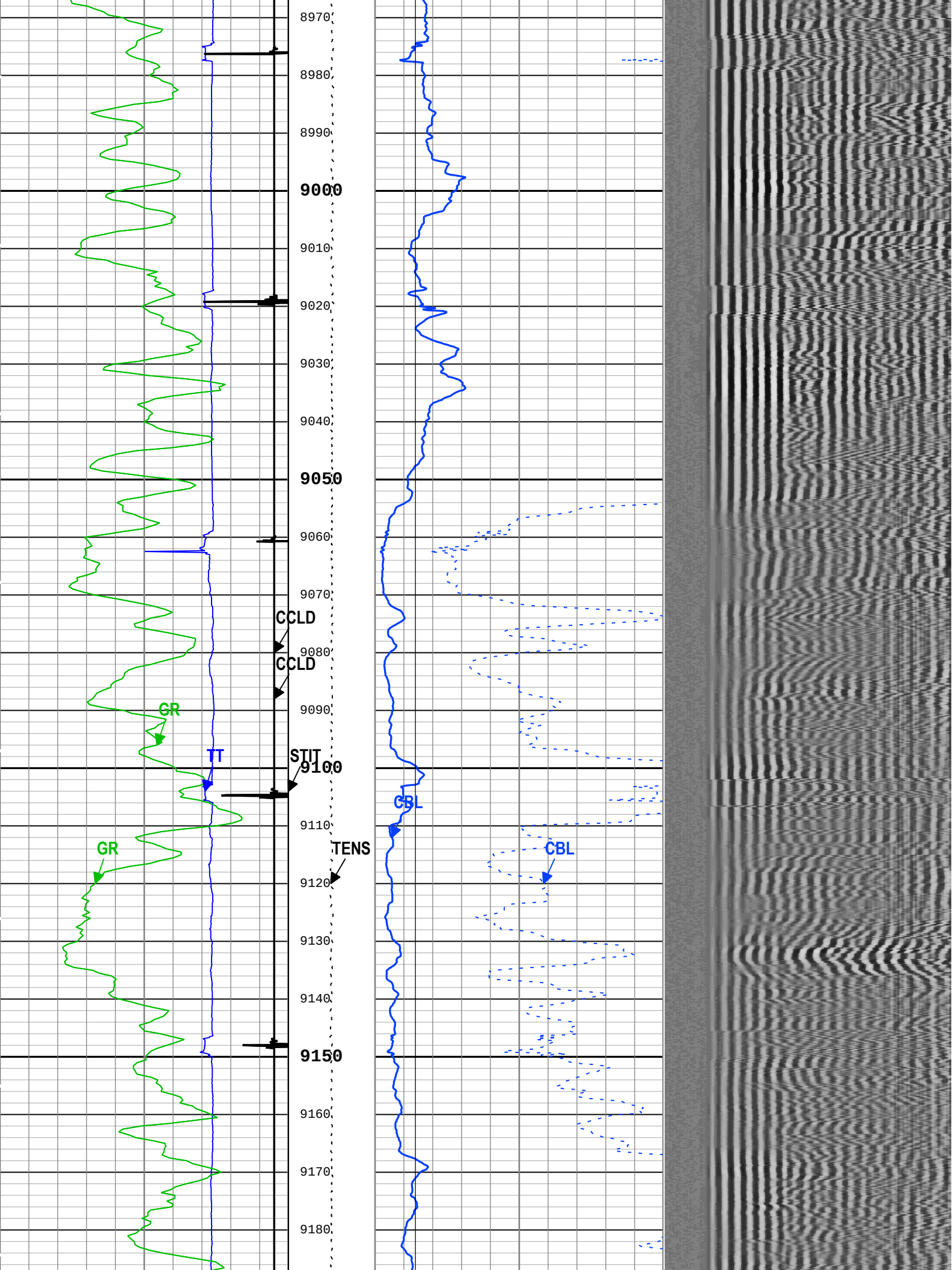

CCLD
CCLD
GR
TT
STIT
CBL
GR
TENS
CBL
7870
7880
7890
7900
7910
7920
7930
7940
7950
7960
7970
7980
7990
8000
8010
8020
8030
8040
8050
8060
8070
8080

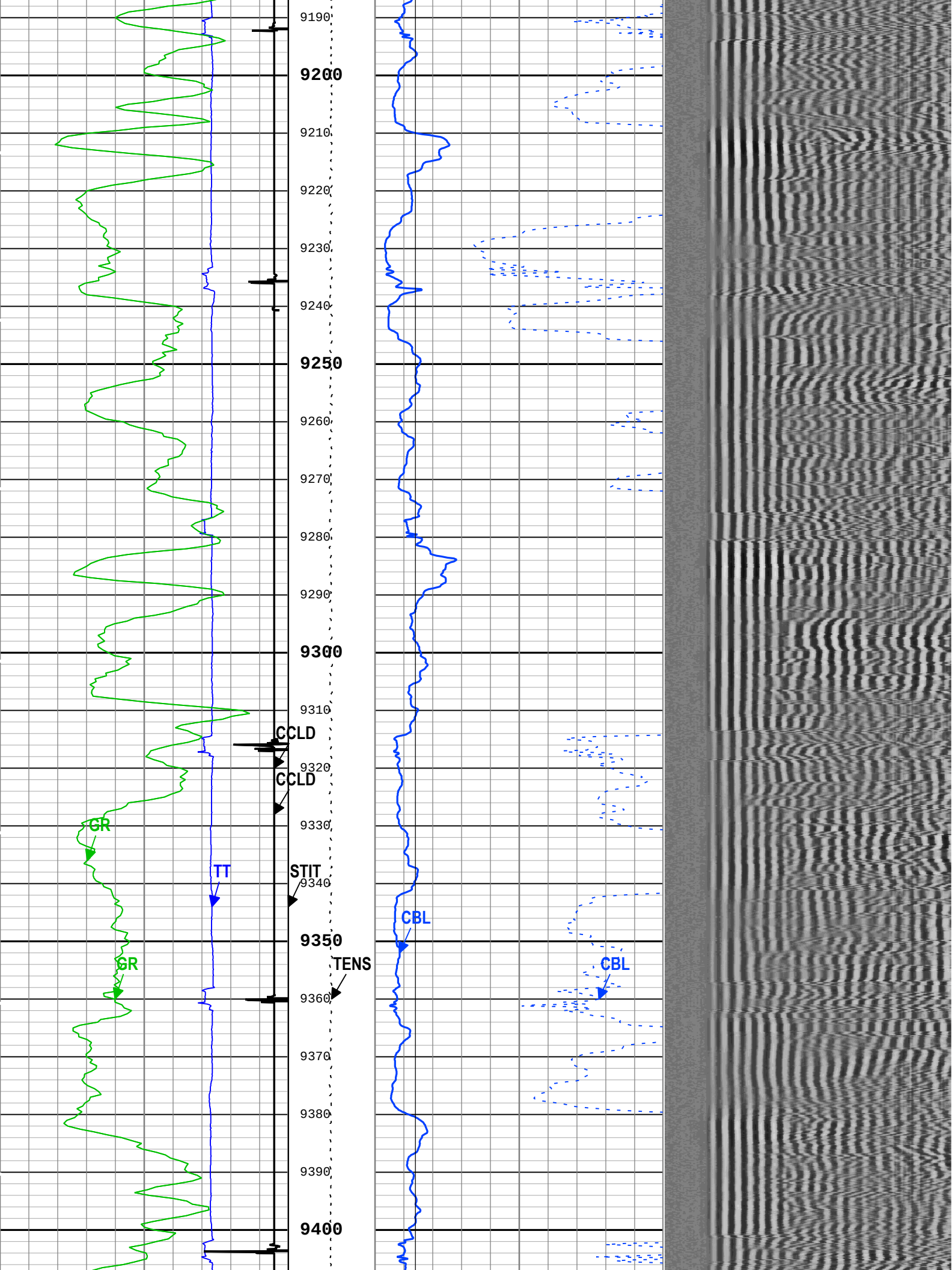

8090
8100
8110
CCLD
8120
CCLD
8130
GR
TT
STIT
8140
CBL
8150
GR
TENS
CBL
8160
8170
8180
8190
8200
8210
8220
8230
8240
8250
8260
8270
8280
8290
8300

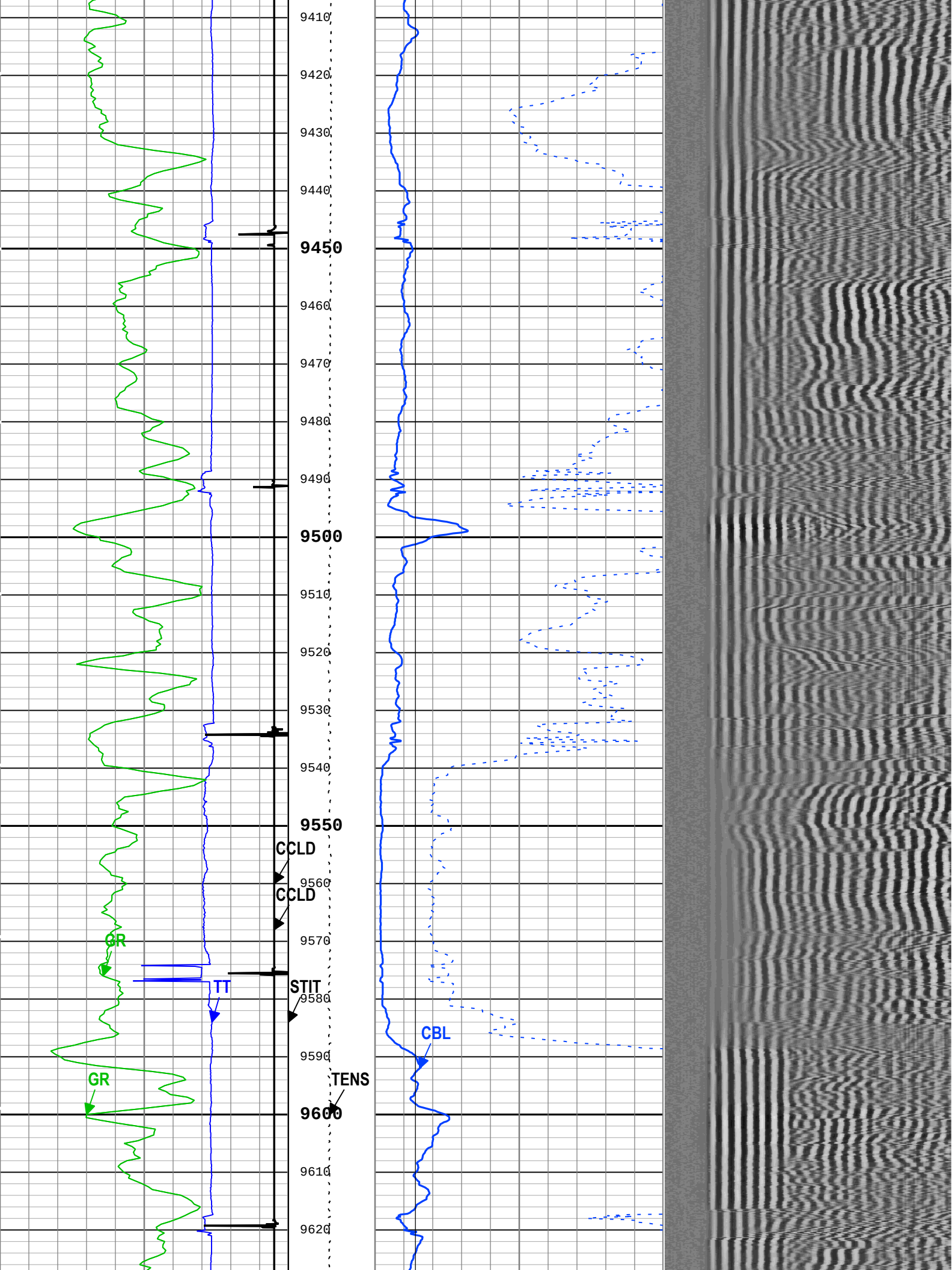

8310
8320
8330
8340
8350
CCLD
8360
CCLD
8370
GR
TT
STIT
8380
CBL
8390
GR
TENS
CBL
8400
8410
8420
8430
8440
8450
8460
8470
8480
8490
8500
8510
8520

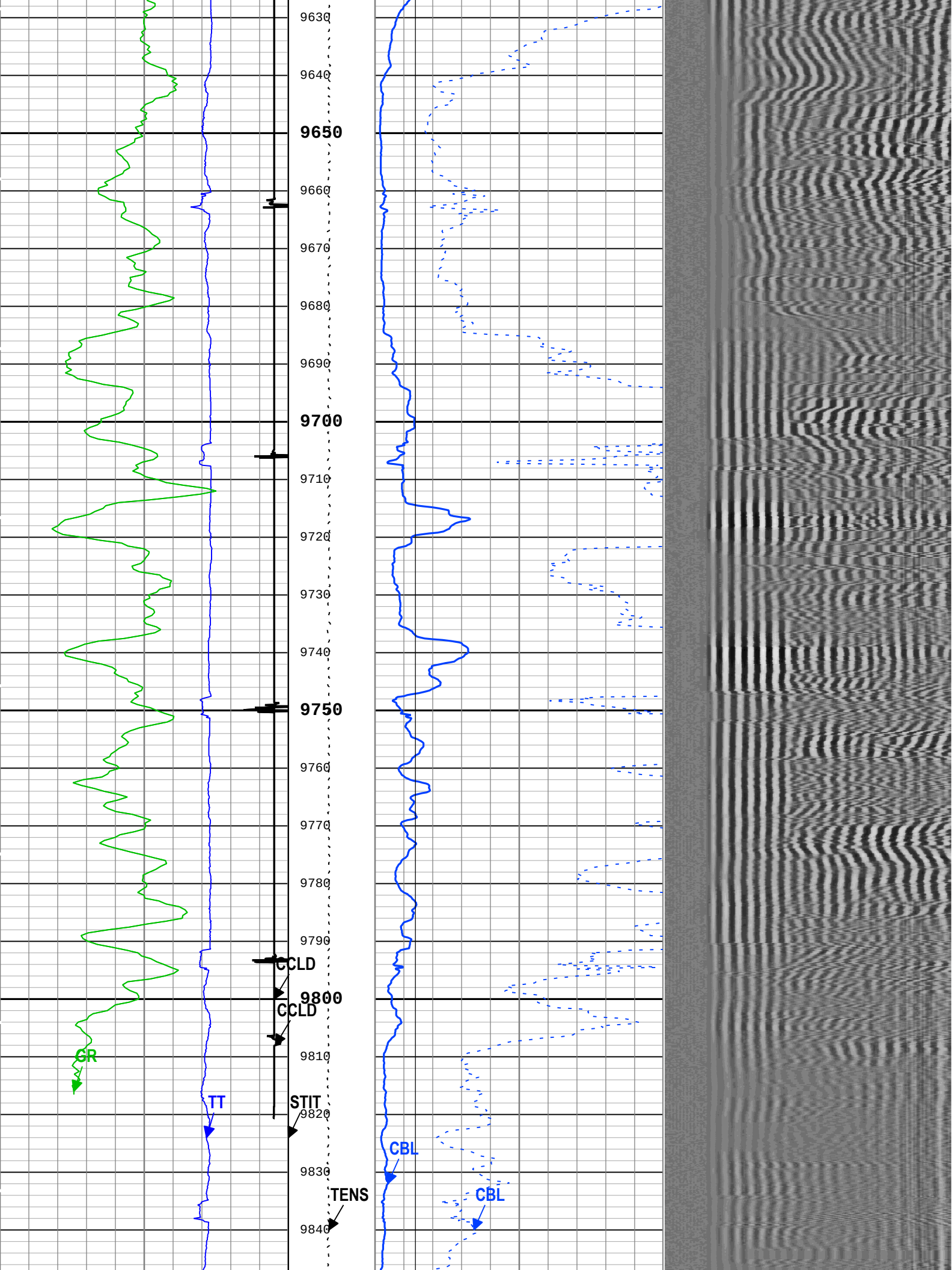

8530
8540
8550
8560
8570
8580
8590
CCLD
8600
CCLD
8610
GR
TT
STIT
8620
CBL
8630
GR
TENS
CBL
8640
8650
8660
8670
8680
8690
8700
8710
8720
8730
8740

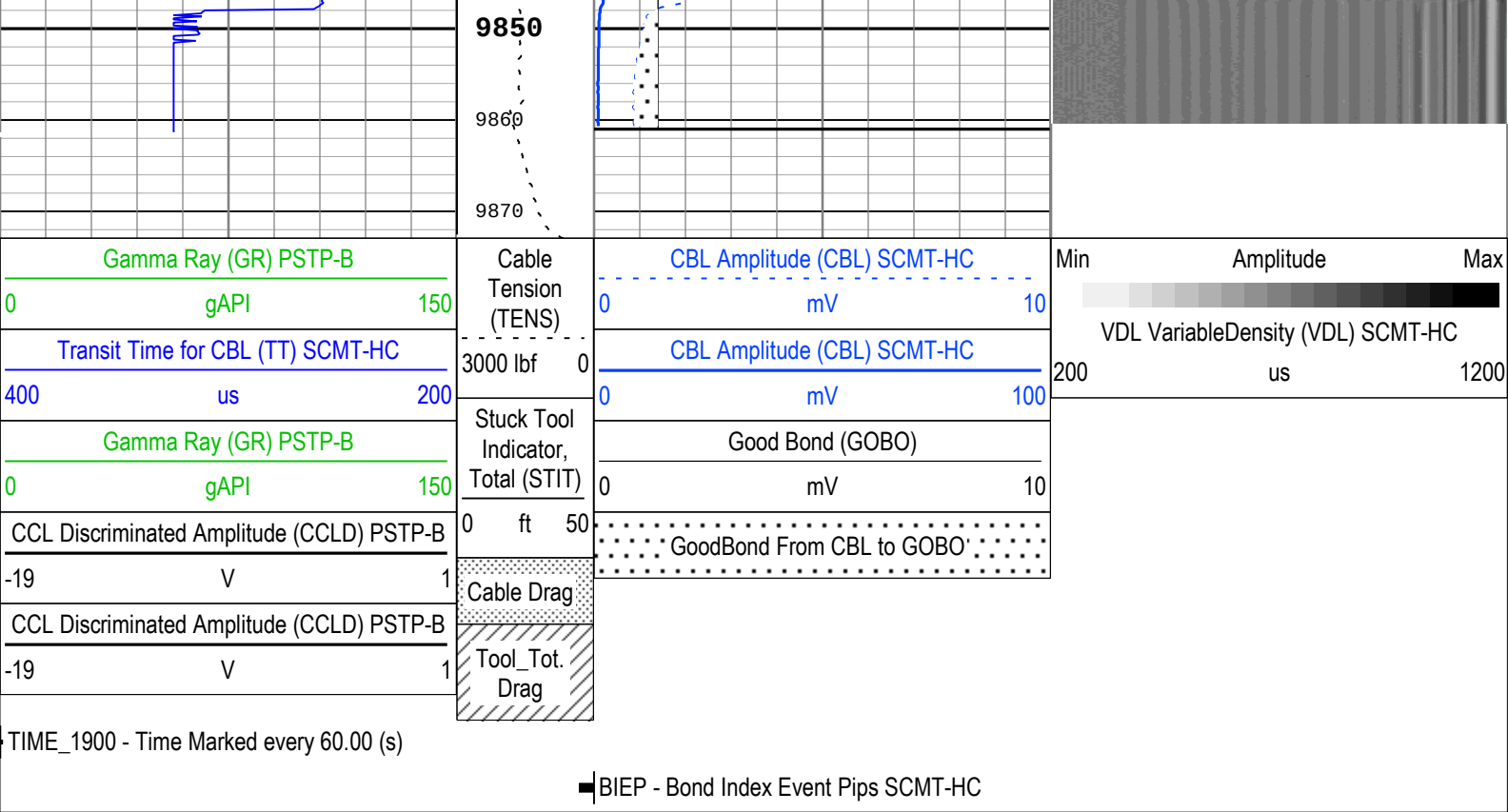

8750
8760
8770
8780
8790
8800
8810
8820
8830
CCLD
8840
CCLD
8850
GR
TT
STIT
8860
CBL
8870
GR
TENS
CBL
8880
8890
8900
8910
8920
8930
8940
8950
8960


8970
8980
8990
9000
9010
9020
9030
9040
9050
9060
9070
CCLD
9080
CCLD
9090
GR
TT
STIT
9100
CBL
9110
GR
TENS
CBL
9120
9130
9140
9150
9160
9170
9180


9190
9200
9210
9220
9230
9240
9250
9260
9270
9280
9290
9300
9310
CCLD
9320
CCLD
9330
GR
TT
STIT
9340
CBL
9350
GR
TENS
CBL
9360
9370
9380
9390
9400


9410
9420
9430
9440
9450
9460
9470
9480
9490
9500
9510
9520
9530
9540
9550
9560
9570
9580
9590
9600
9610
9620
CCLD
CCLD
GR
TT
STIT
CBL
GR
TENS


9630
9640
9650
9660
9670
9680
9690
9700
9710
9720
9730
9740
9750
9760
9770
9780
9790
CCLD
9800
CCLD
9810
GR
TT
STIT
9820
CBL
9830
TENS
CBL
9840



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: 15-Sep-2018 14:10:33

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	277	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-HC	Time Zoned	us
CBLG	CBL Gate Width	SCMT-HC	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-HC	Depth Zoned	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-HC	Depth Zoned	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-HC	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-HC	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-HC	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-HC	Depth Zoned	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
CBRA	80	2900	9861
CBRA	0	9861	9872.92
GOBO_CURR	1.4	2900	9861
GOBO_CURR	0	9861	9872.92
MATT_CURR	16.92	2900	9861
MATT_CURR	0	9861	9872.92
MCI	14.81	2900	3000
MCI	1.25	3000	9861

MCI	0	9861	9872.92
MSA	0.51	2900	9861
MSA	0	9861	9872.92
MSA_CURR	0.51	2900	9861
MSA_CURR	0	9861	9872.92

All depth are actual.

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
CB3G	224	15-Sep-2018 06:20:28	15-Sep-2018 06:22:36	9872.95	9815.52
CB3G	231.42	15-Sep-2018 06:22:36	15-Sep-2018 10:59:55	9815.52	67.72

All depth are at tool zero.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
CMTM	SCMT Operating Mode	SCMT-HC	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-B	24 dB	

One

Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100
Application Patch	Wireline_Hotfix-Mandatory-2018SP1_8.1.102865

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	9490.04 ft	9875.00 ft	15-Sep-2018 5:58:55 AM	15-Sep-2018 6:12:14 AM	ON	6.03 ft	No

All depths are referenced to toolstring zero

Log

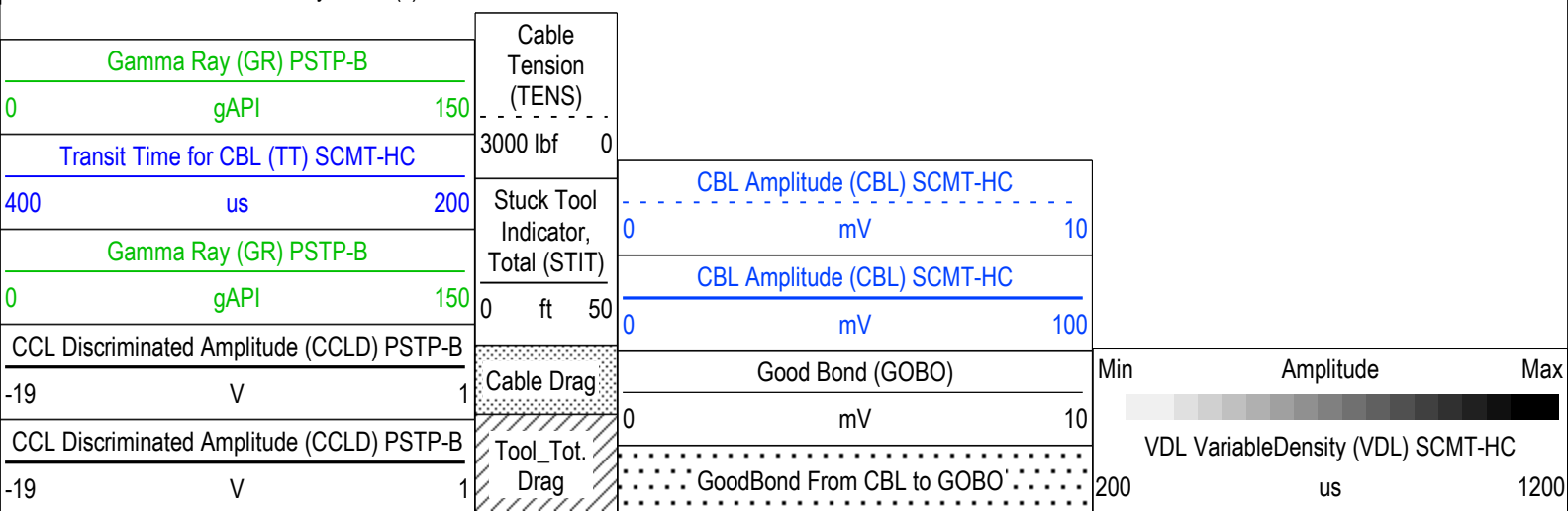
Company:Caerus Operating LLC Well:NPR 23B-10 596

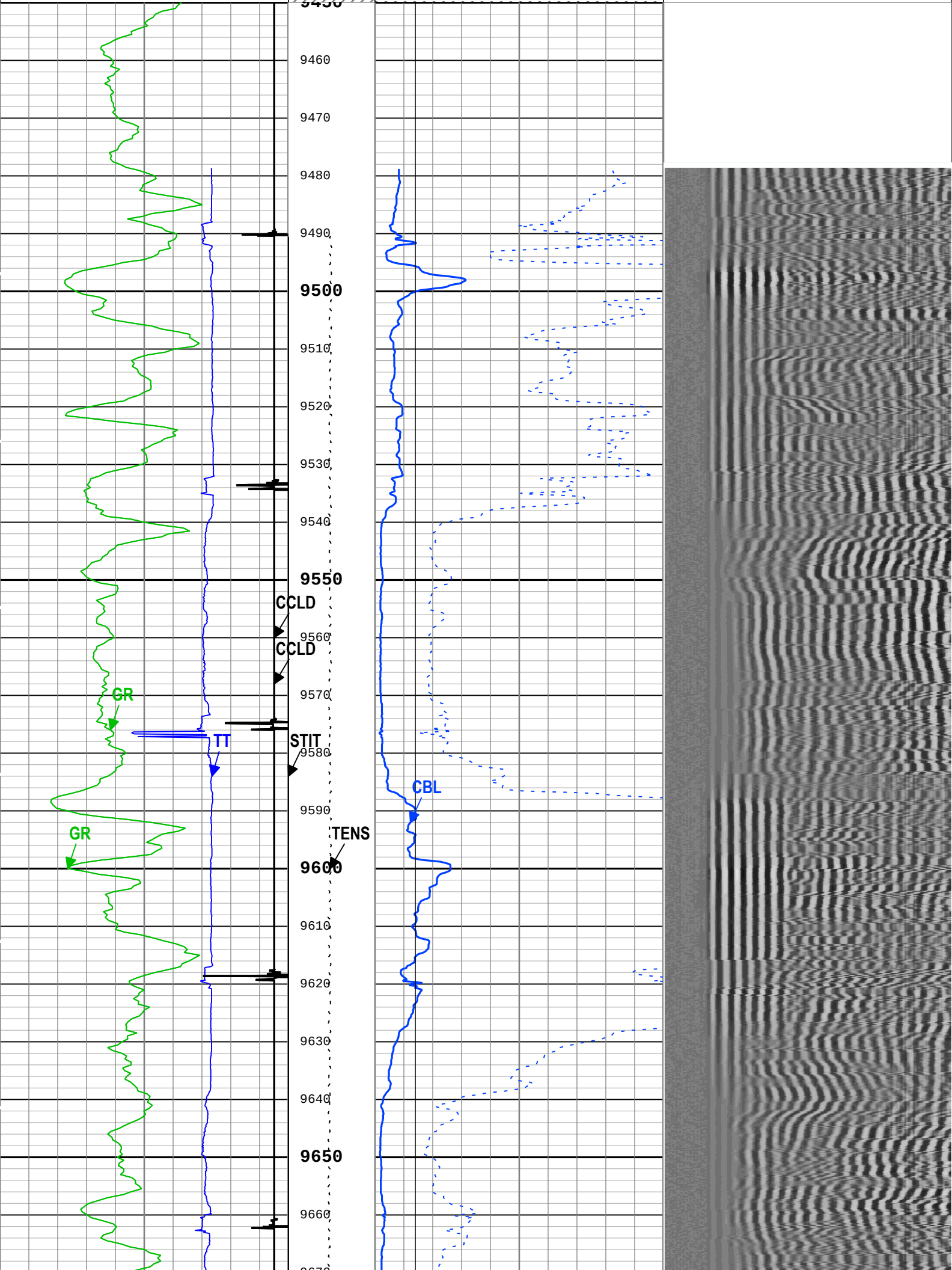
One: Log[2]:Up:S002

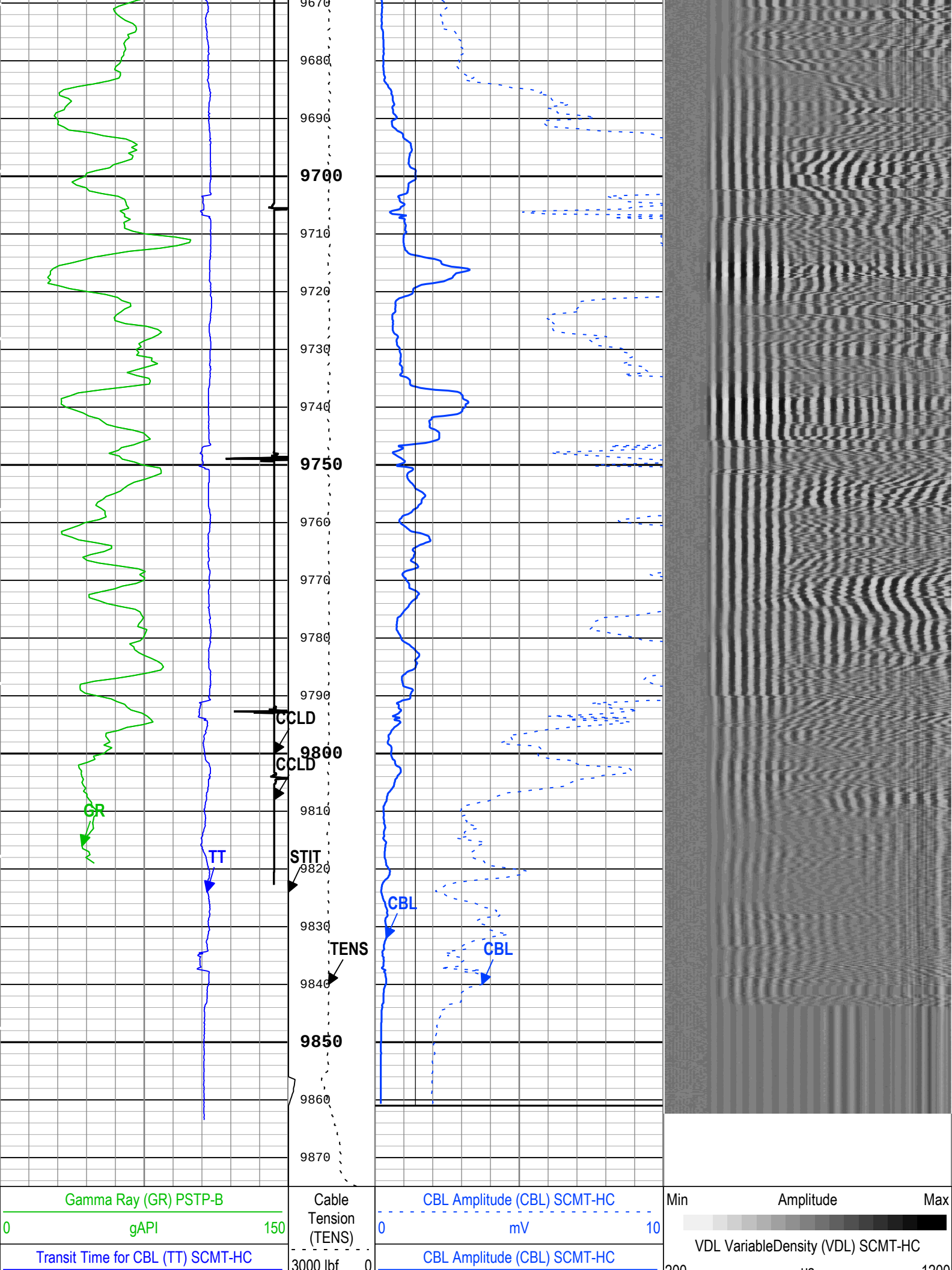
Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:40

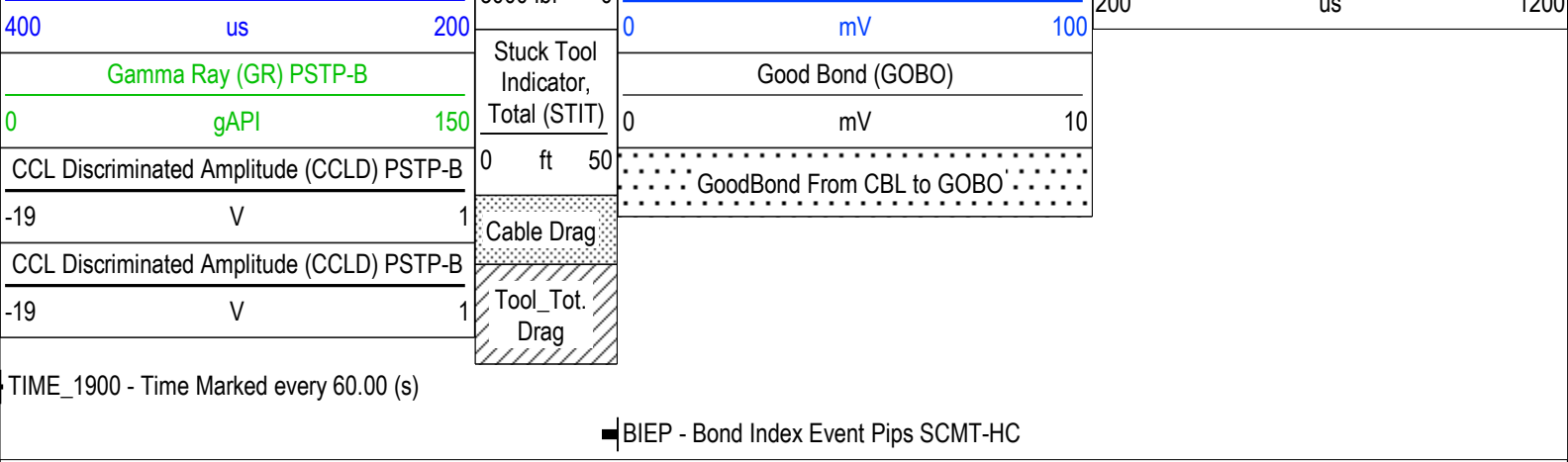
BIEP - Bond Index Event Pips SCMT-HC

TIME_1900 - Time Marked every 60.00 (s)




9450
9460
9470
9480
9490
9500
9510
9520
9530
9540
9550
CCLD
9560
CCLD
9570
GR
TT
STIT
9580
CBL
9590
GR
TENS
9600
9610
9620
9630
9640
9650
9660


9670
9680
9690
9700
9710
9720
9730
9740
9750
9760
9770
9780
9790
9800
9810
9820
9830
9840
9850
9860
9870
CCLD
CCLD
GR
TT
STIT
CBL
TENS
CBL
Gamma Ray (GR) PSTP-B
0
gAPI
150
Transit Time for CBL (TT) SCMT-HC
Cable Tension (TENS)
3000 lbf
0
CBL Amplitude (CBL) SCMT-HC
0
mV
10
CBL Amplitude (CBL) SCMT-HC
Min
Amplitude
Max
VDL VariableDensity (VDL) SCMT-HC
200
us
1200



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: 15-Sep-2018 14:10:40

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BHT	Bottom Hole Temperature	Borehole	277	degF
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	SCMT-HC	224	us
CBLG	CBL Gate Width	SCMT-HC	40	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	SCMT-HC	Depth Zoned	mV
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
GOBO_CURR	Good Bond in Arbitrary Cement	SCMT-HC	Depth Zoned	mV
GTSE	Generalized Temperature Selection, from Measured or Computed Temperature	Borehole	WTEP	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	SCMT-HC	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	SCMT-HC	Depth Zoned	ft
MSA	Minimum Sonic Amplitude	SCMT-HC	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	SCMT-HC	Depth Zoned	mV
RUN_SNUM	Run Sequence Number	WSDRUN	1	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
CBRA	80	9450	9861
CBRA	0	9861	9875
GOBO_CURR	1.4	9450	9861
GOBO_CURR	0	9861	9875
MATT_CURR	16.92	9450	9861
MATT_CURR	0	9861	9875
MCI	1.25	9450	9861
MCI	0	9861	9875
MSA	0.51	9450	9861
MSA	0	9861	9875
MSA_CURR	0.51	9450	9861
MSA_CURR	0	9861	9875

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit

CMTM	SCMT Operating Mode	SCMT-HC	Log	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-B	24 dB	

One

Main Pass

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100
Application Patch	Wireline_Hotfix-Mandatory-2018SP1_8.1.102865

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	67.72 ft	9872.95 ft	15-Sep-2018 6:20:28 AM	15-Sep-2018 10:59:55 AM	ON	7.11 ft	No

All depths are referenced to toolstring zero

Log

Company:Caerus Operating LLC Well:NPR 23B-10 596

One: Log[3]:Up:S002

Description: RST SIGMA Answer Format: Log (RST SIGMA Answer) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:42

TIME_1900 - Time Marked every 60.00 (s)

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

IHV - Integrated Hole Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

ICV - Integrated Cement Volume every 100.00 (ft3)

Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C
2.5 0

Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C
5 0

Borehole Salinity (BSAL) RST-C
450 ppk -50

Stuck Tool Indicator, Total (STIT)
0 ft 50

Gamma Ray (GR) PSTP-B
0 gAPI 150

Cable Drag From STIA to STIT

Inelastic Ratio Filtered (IRAT_FIL) RST-C
0.75 0

Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C
45 0

Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C
30000 1/s 0

Thermal Decay Porosity (TPHI) RST-C
0.6 ft3/ft3 0

Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C
45 0

Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C
12000 1/s 0

Tool_Tot. Drag From D3T to STIT

Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C
10000 1/s 0

Cable Tension (TENS)
5000 lbf 0

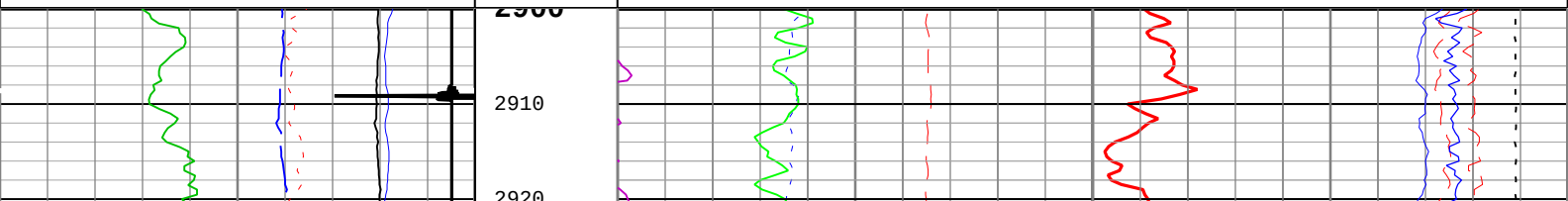
Sigma Borehole Fluid (SIBF) RST-C
100 cu 0

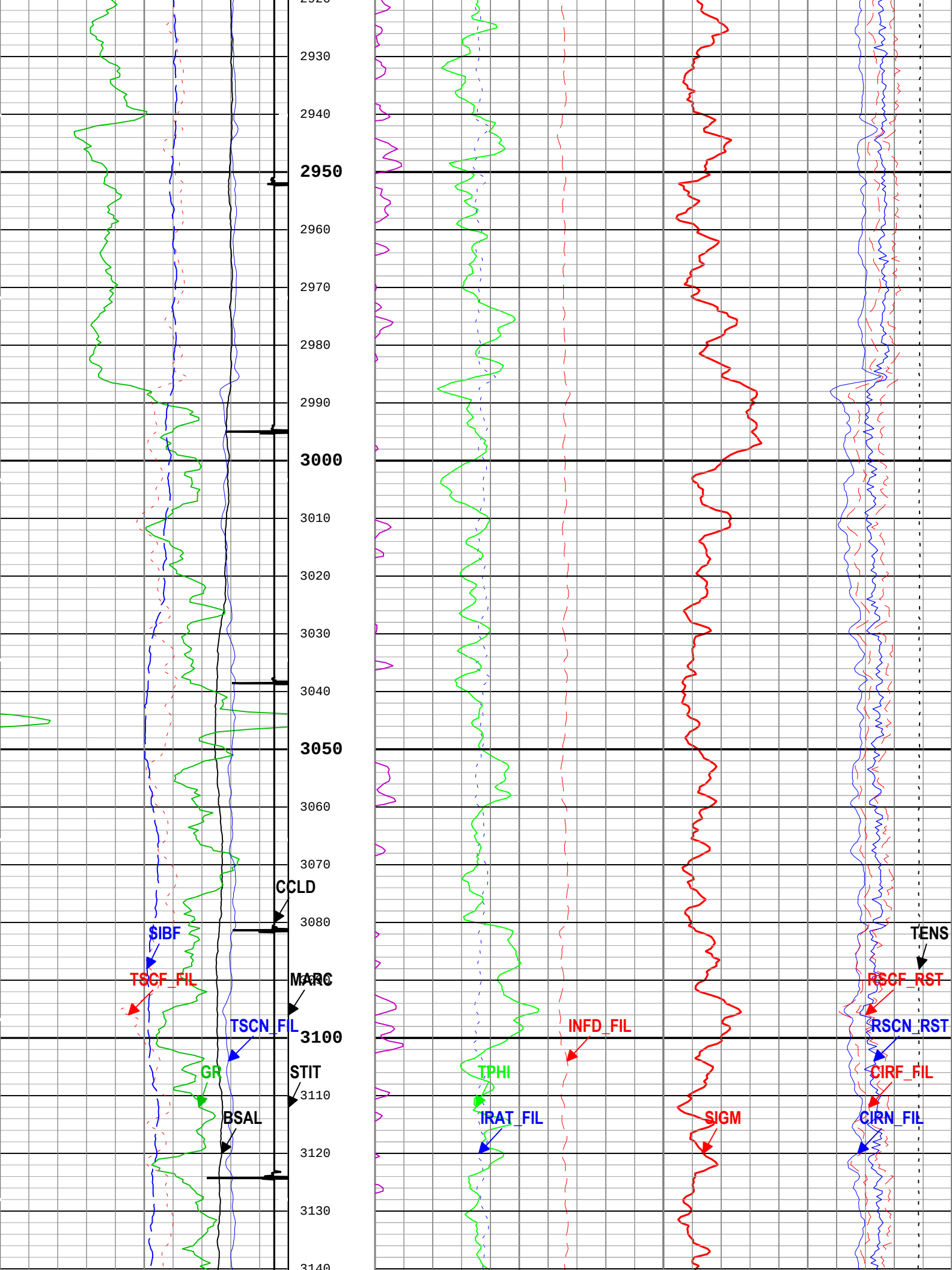
Minitron Arc Count (MARC) RST-C
0 5

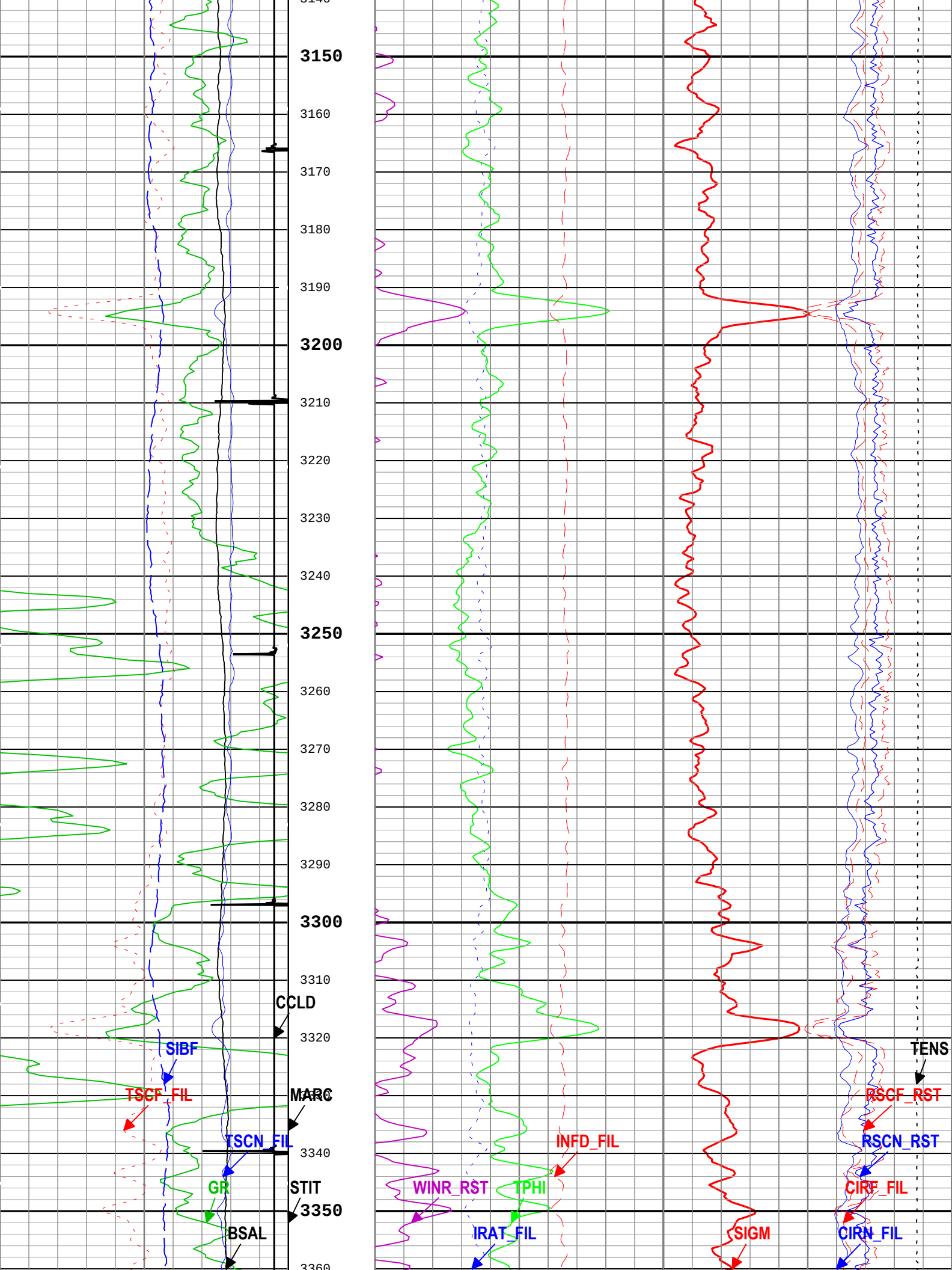
Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C
60 cu 0

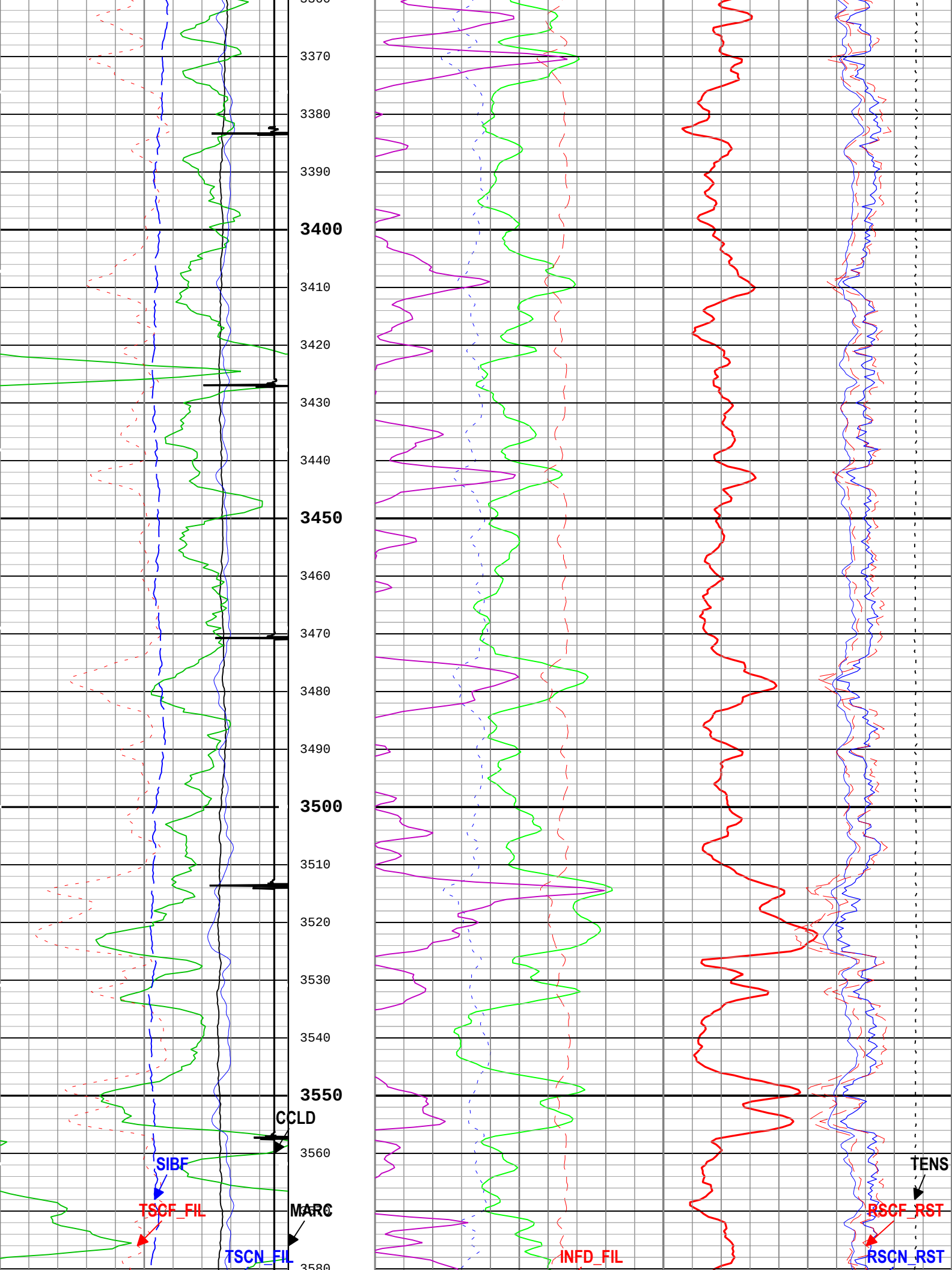
CCL Discriminated Amplitude (CCLD) PSTP-B
-19 V 1

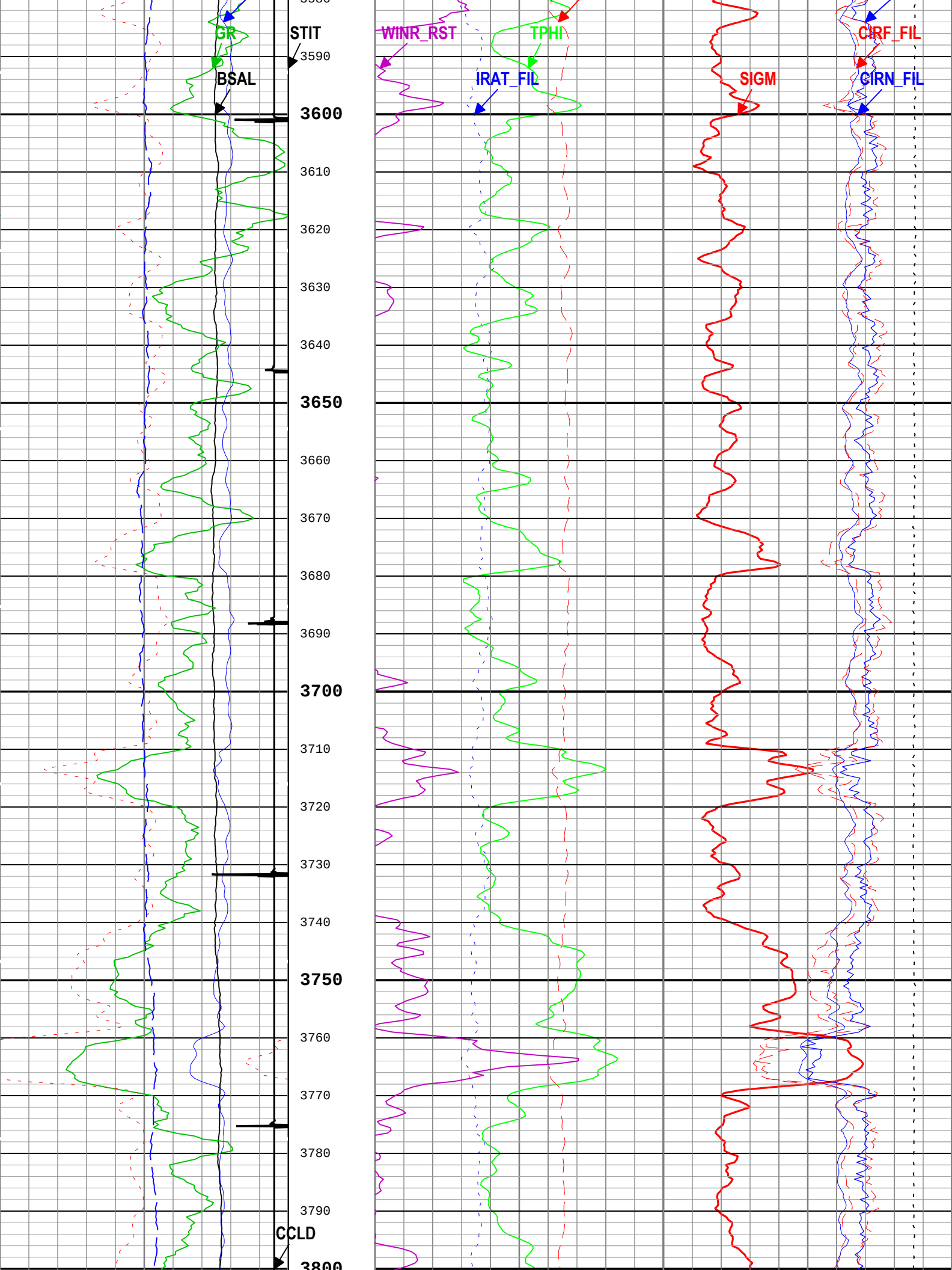
Weighted Inelastic Ratio (WINR_RST) RST-C
0 0.4

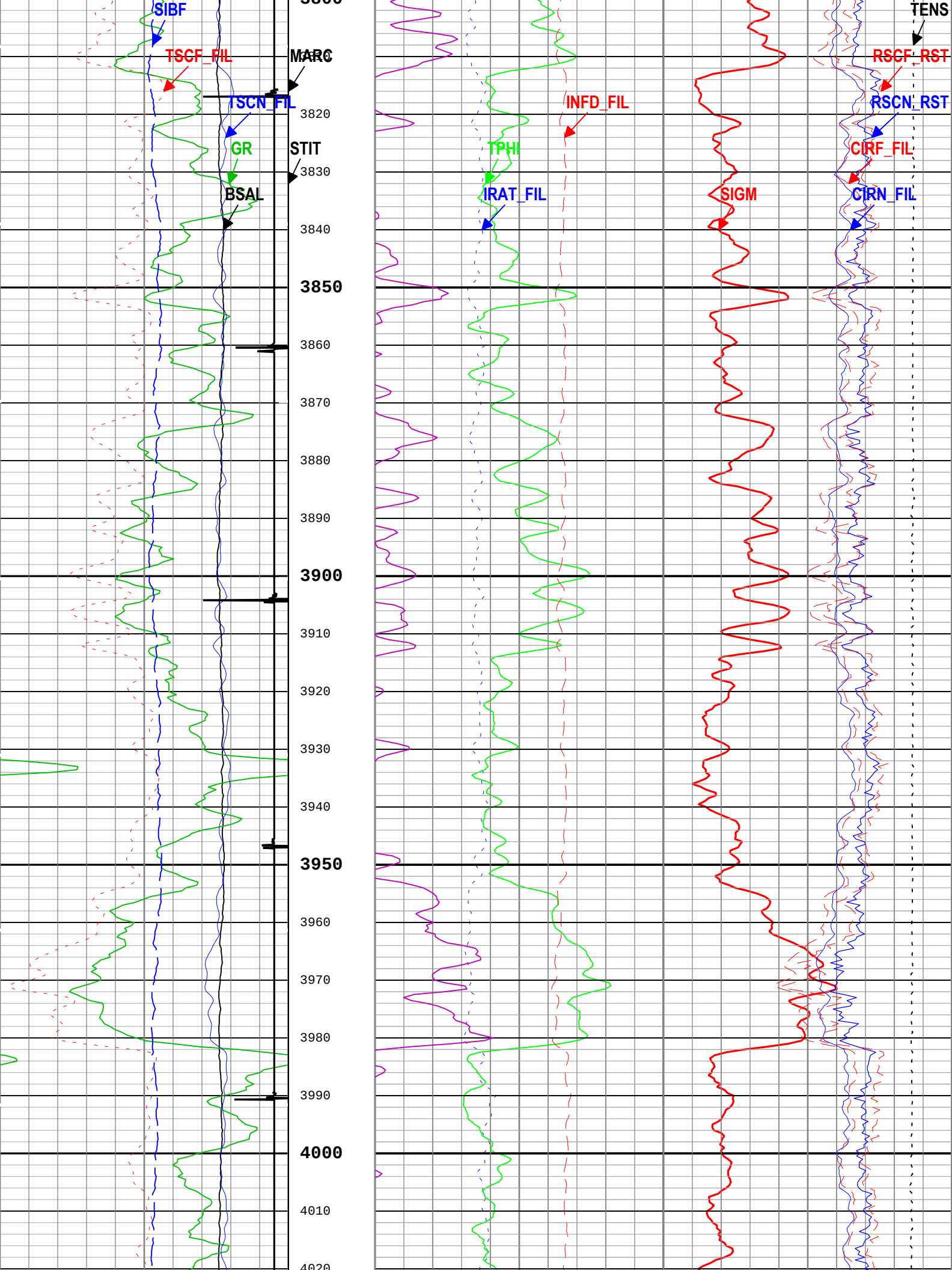


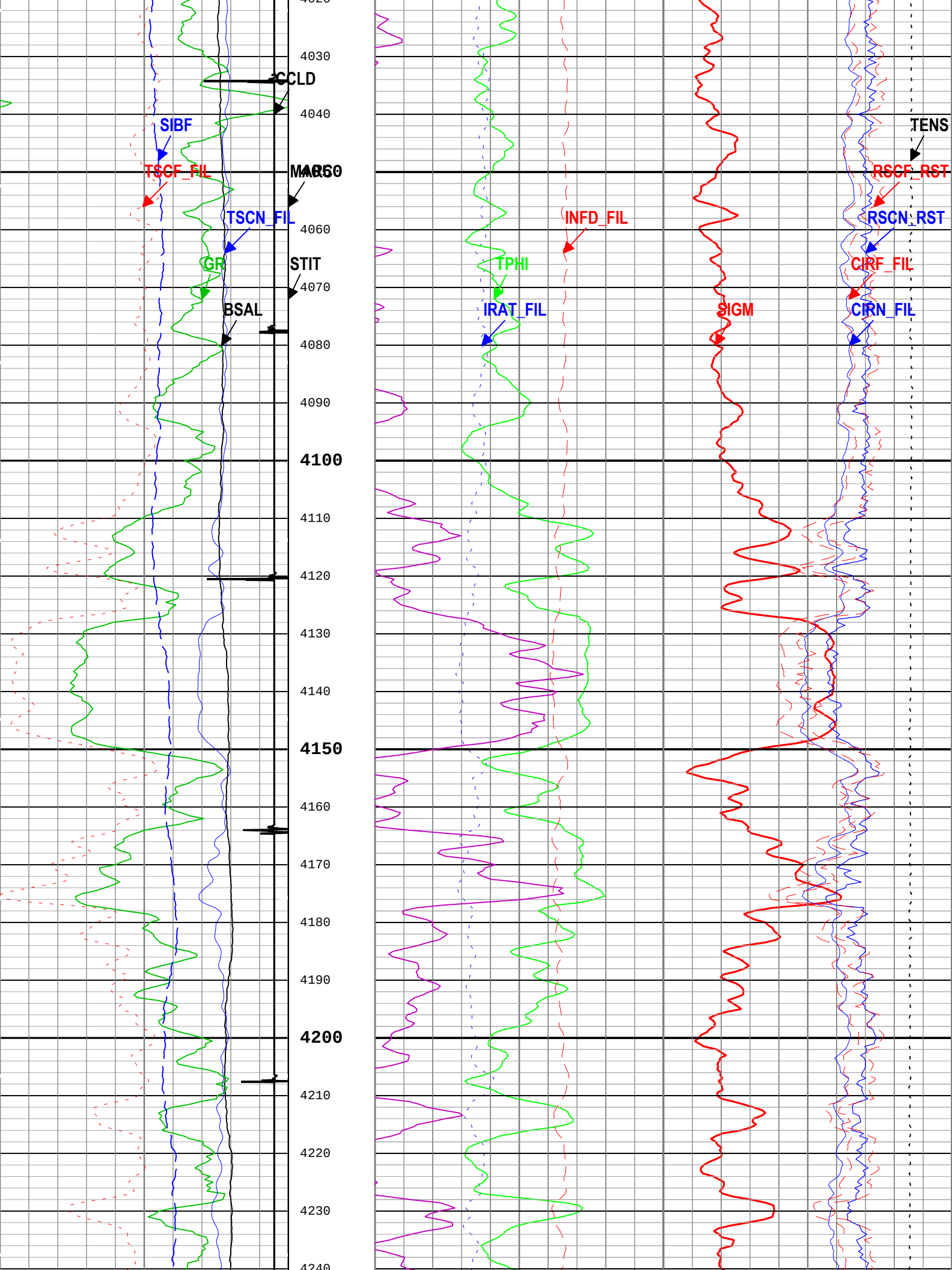

2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
CCLD
3080
SIBF
TSCF_FIL
MARC
TSCN_FIL
3100
GR
STIT
3110
BSAL
3120
3130
3140
TPHI
IRAT_FIL
INFD_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

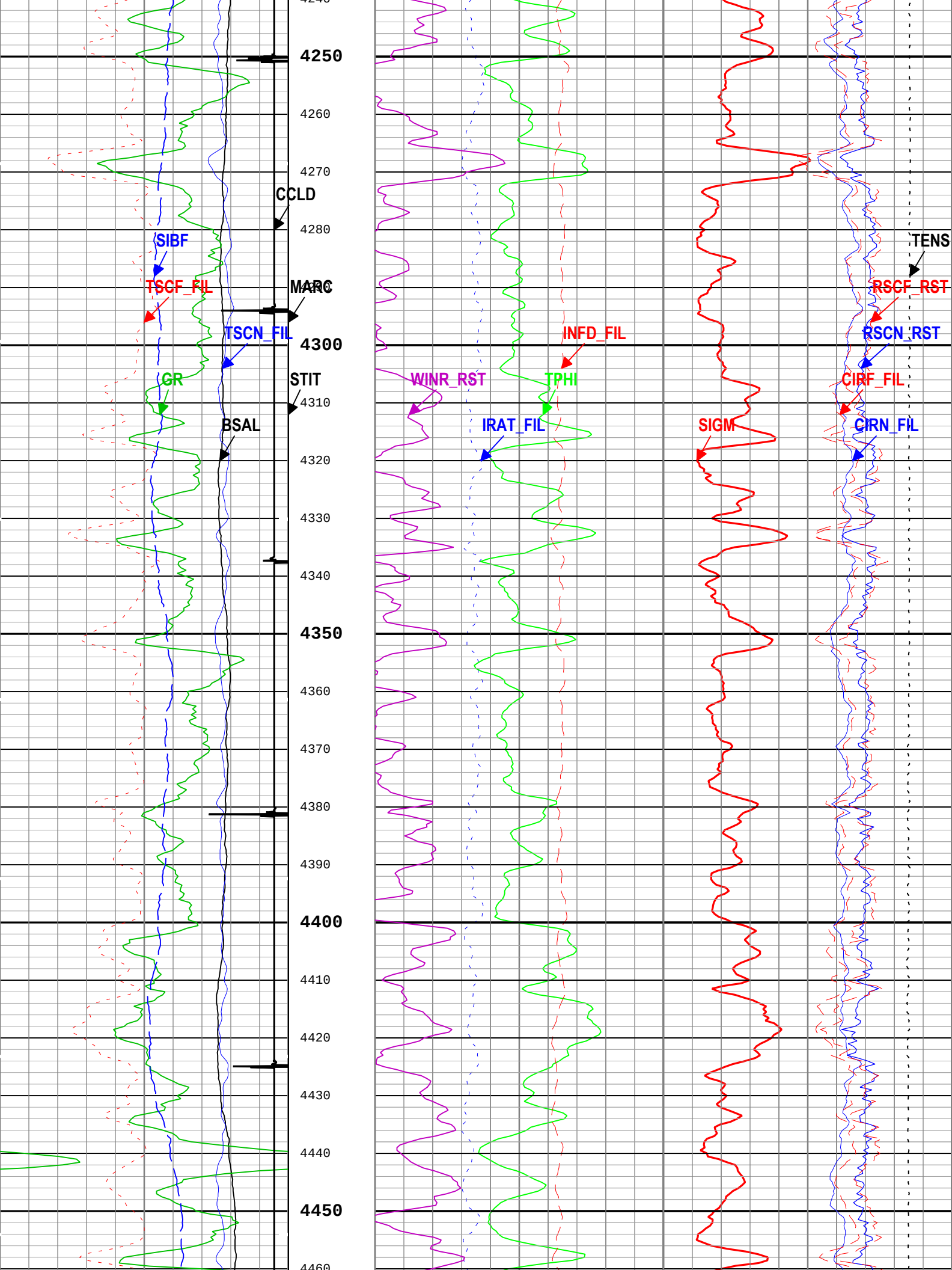

3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3340
3350
3360
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

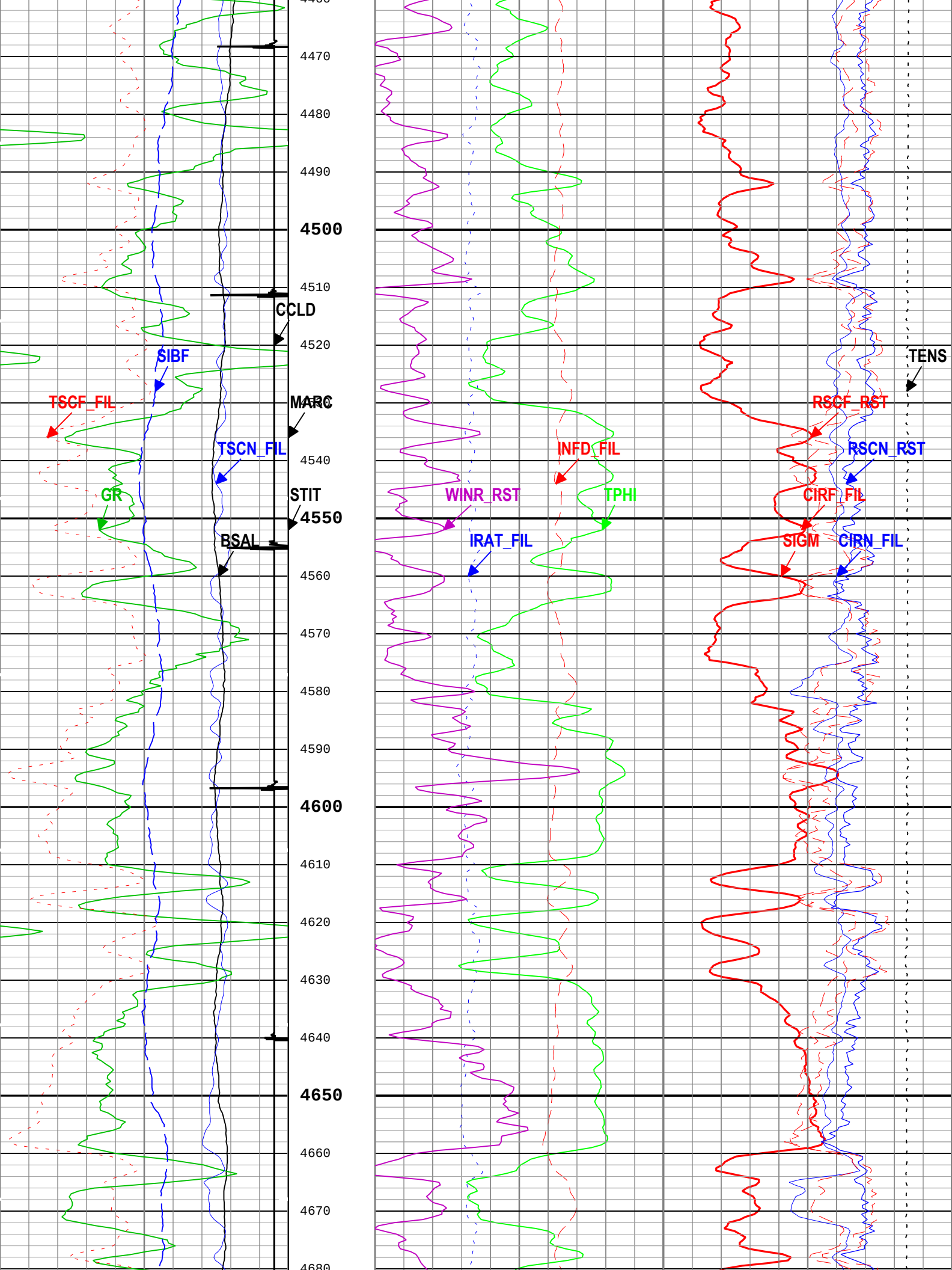

3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
CCLD
3560
SIBF
TSCF_FIL
MARC
TSCN_FIL
3580
INFD_FIL
TENS
RSCF_RST
RSCN_RST

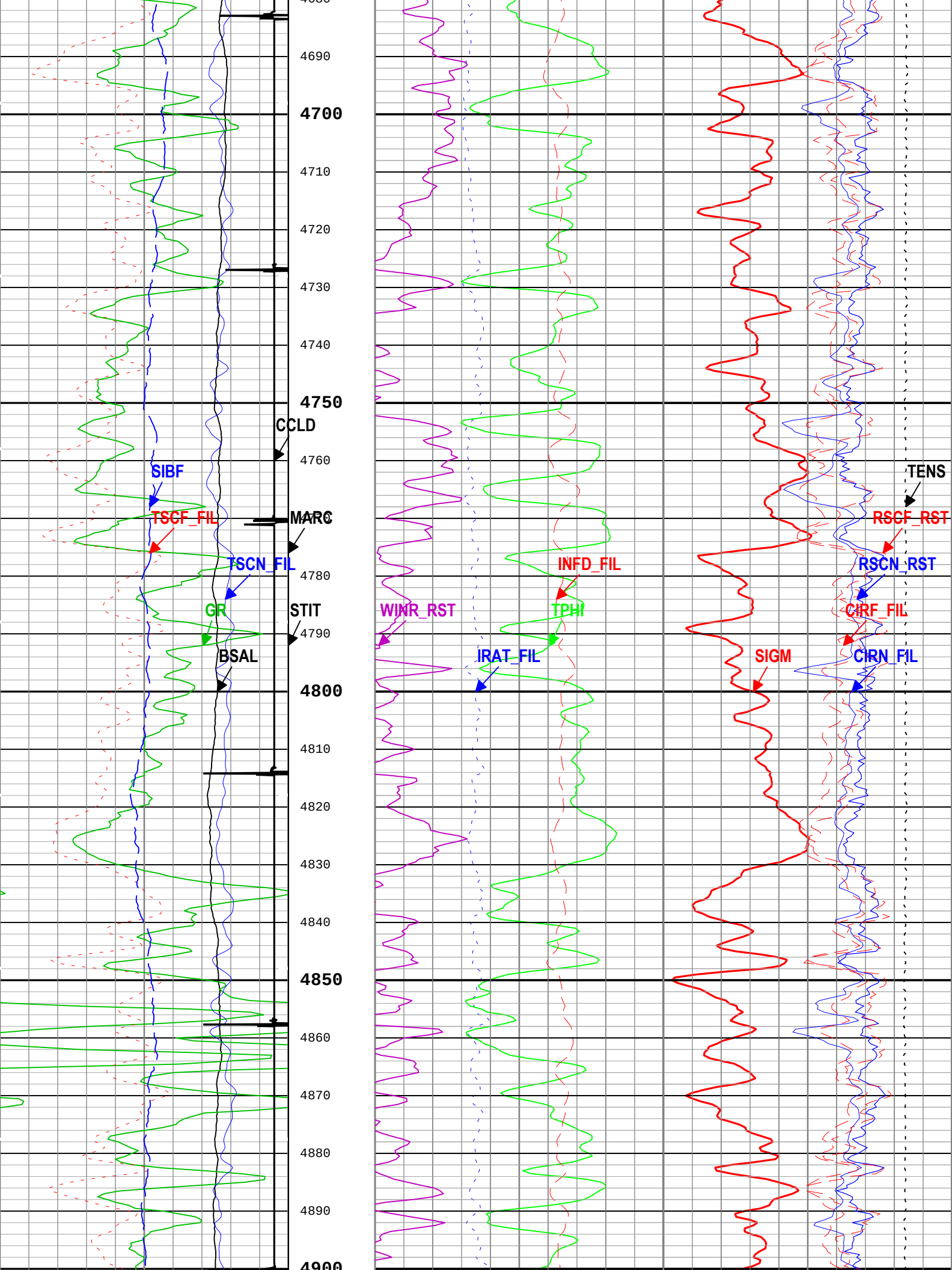

GR
STIT
BSAL
CCLD
WINR_RST
TPHI
IRAT_FIL
SIGM
CIRF_FIL
CIRN_FIL
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800

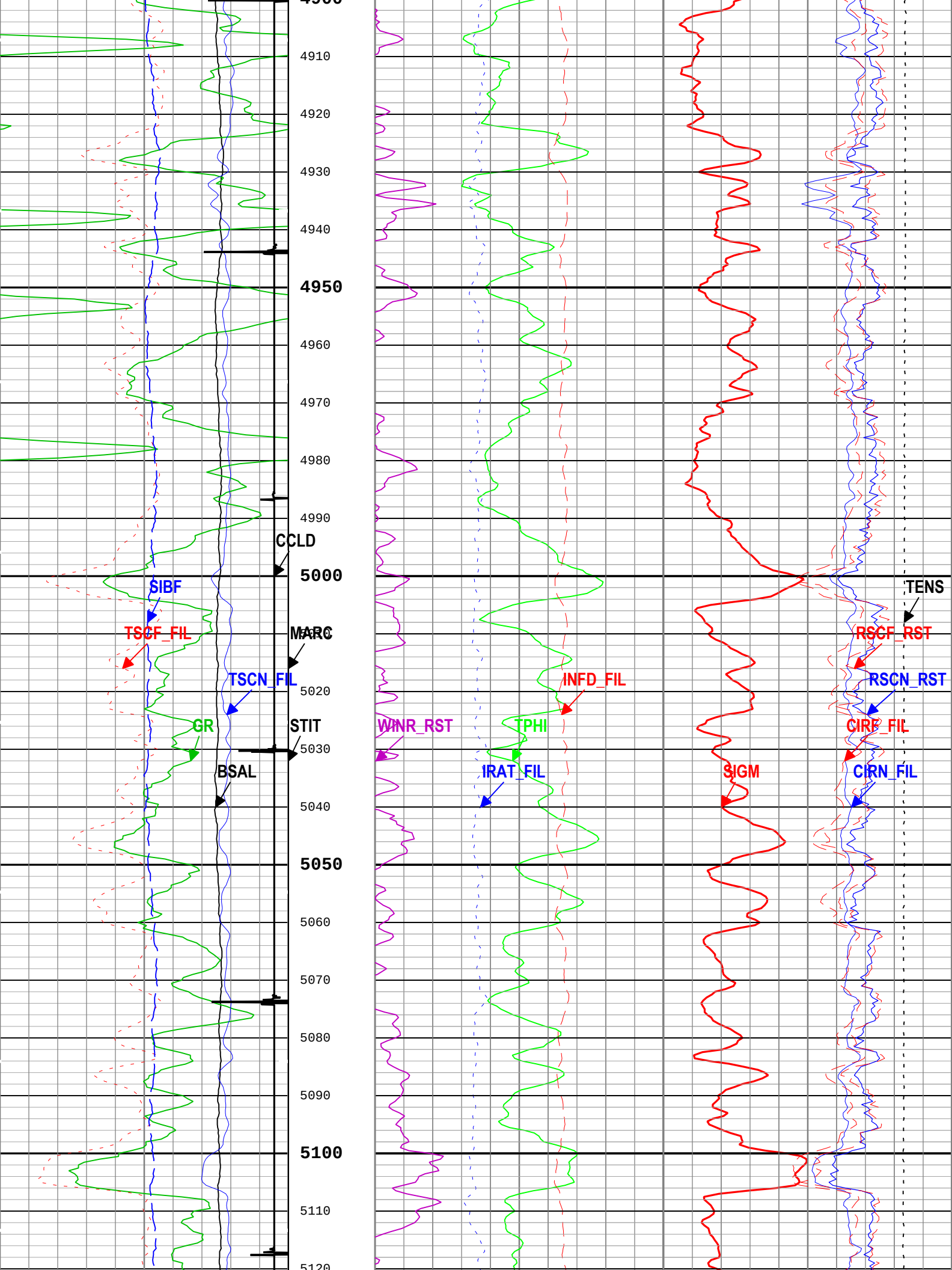

SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
TENS
RSCF_RST
RSCN_RST
INFD_FIL
TPHI
CIRF_FIL
IRAT_FIL
SIGM
CIRN_FIL
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020

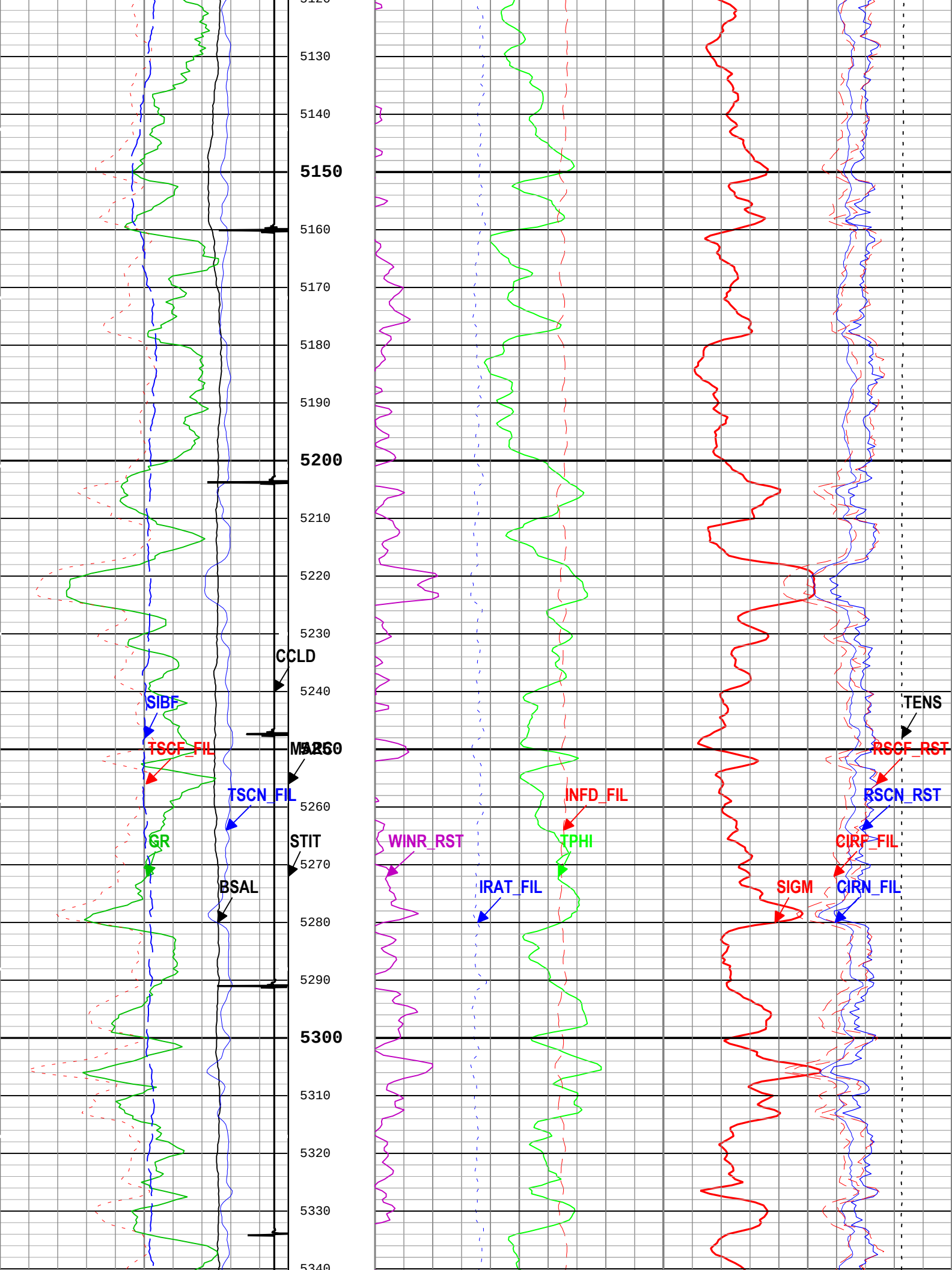

4030
CCLD
4040
SIBF
TSCF_FIL
MARG
4050
TSCN_FIL
4060
GR
STIT
4070
BSAL
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
INFD_FIL
TPHI
IRAT_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

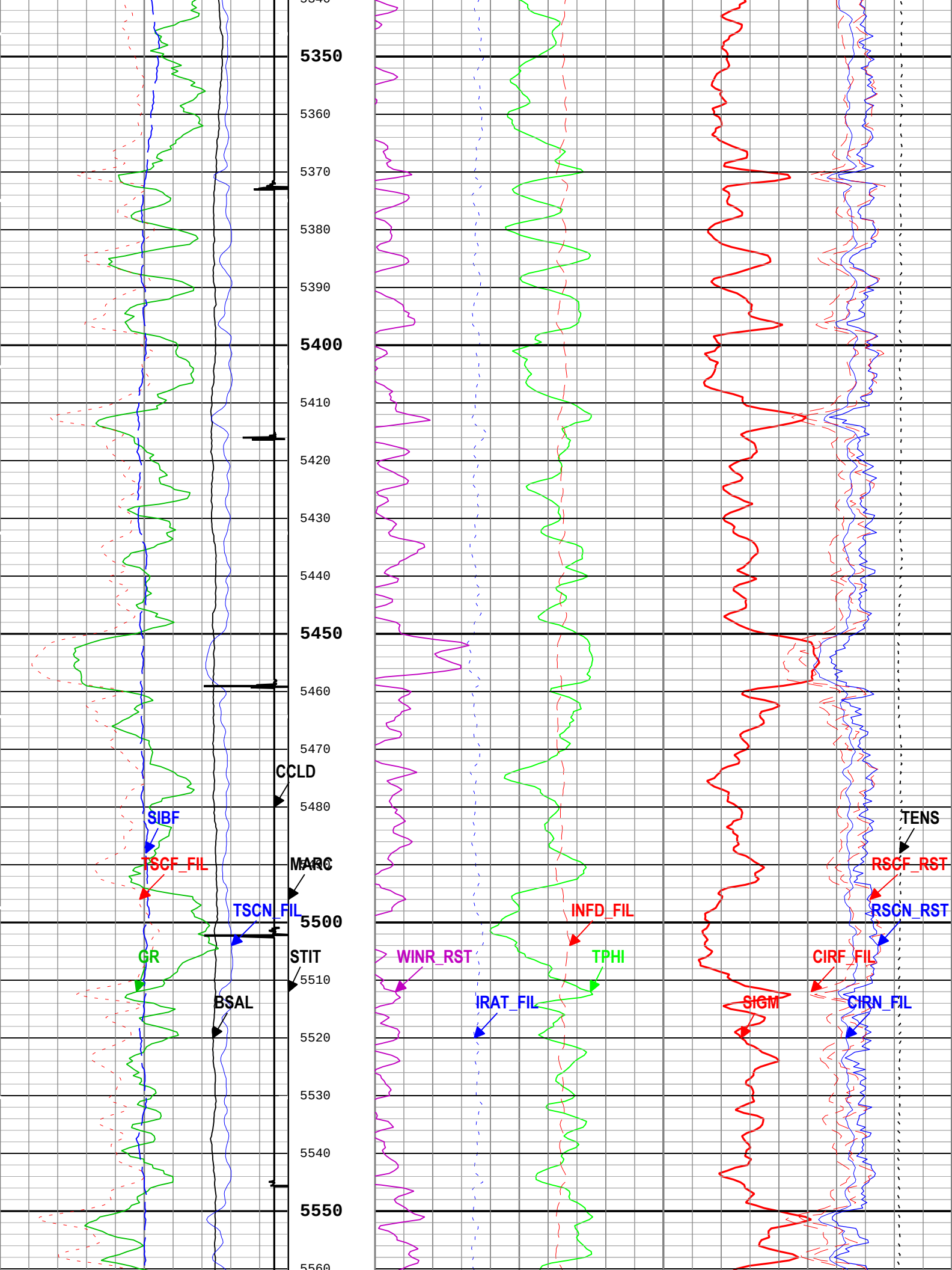

4250
4260
4270
CCLD
4280
SIBF
TSCF_FIL
MARC
TSCN_FIL
4300
GR
STIT
4310
BSAL
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

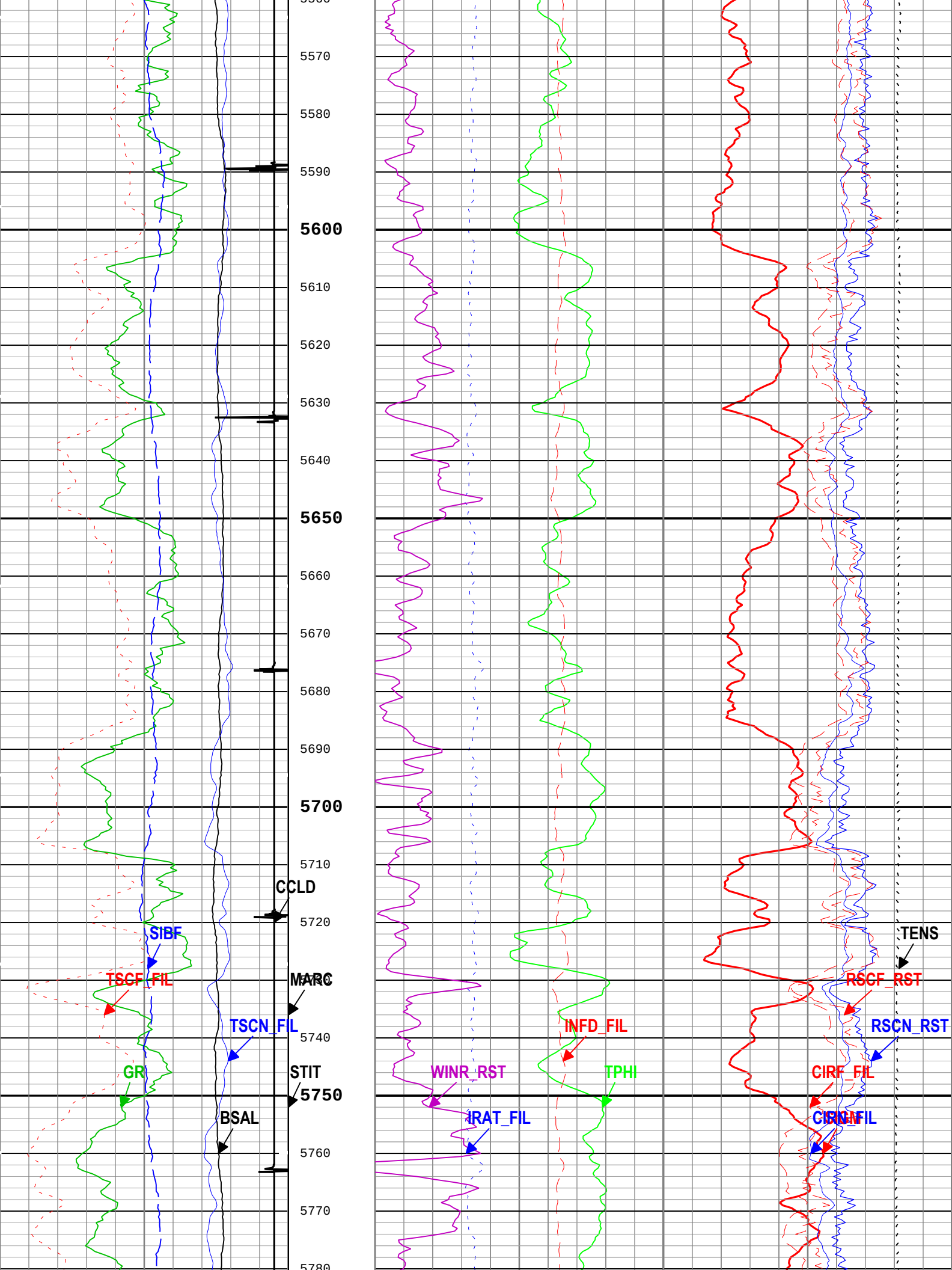

4470
4480
4490
4500
4510
CCLD
4520
SIBF
TENS
TSCF_FIL
MARC
RSCF_RST
TSCN_FIL
INFD_FIL
RSCN_RST
4540
GR
STIT
WINR_RST
TPHI
CIRF_FIL
4550
BSAL
IRAT_FIL
SIGM
CIRN_FIL
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680

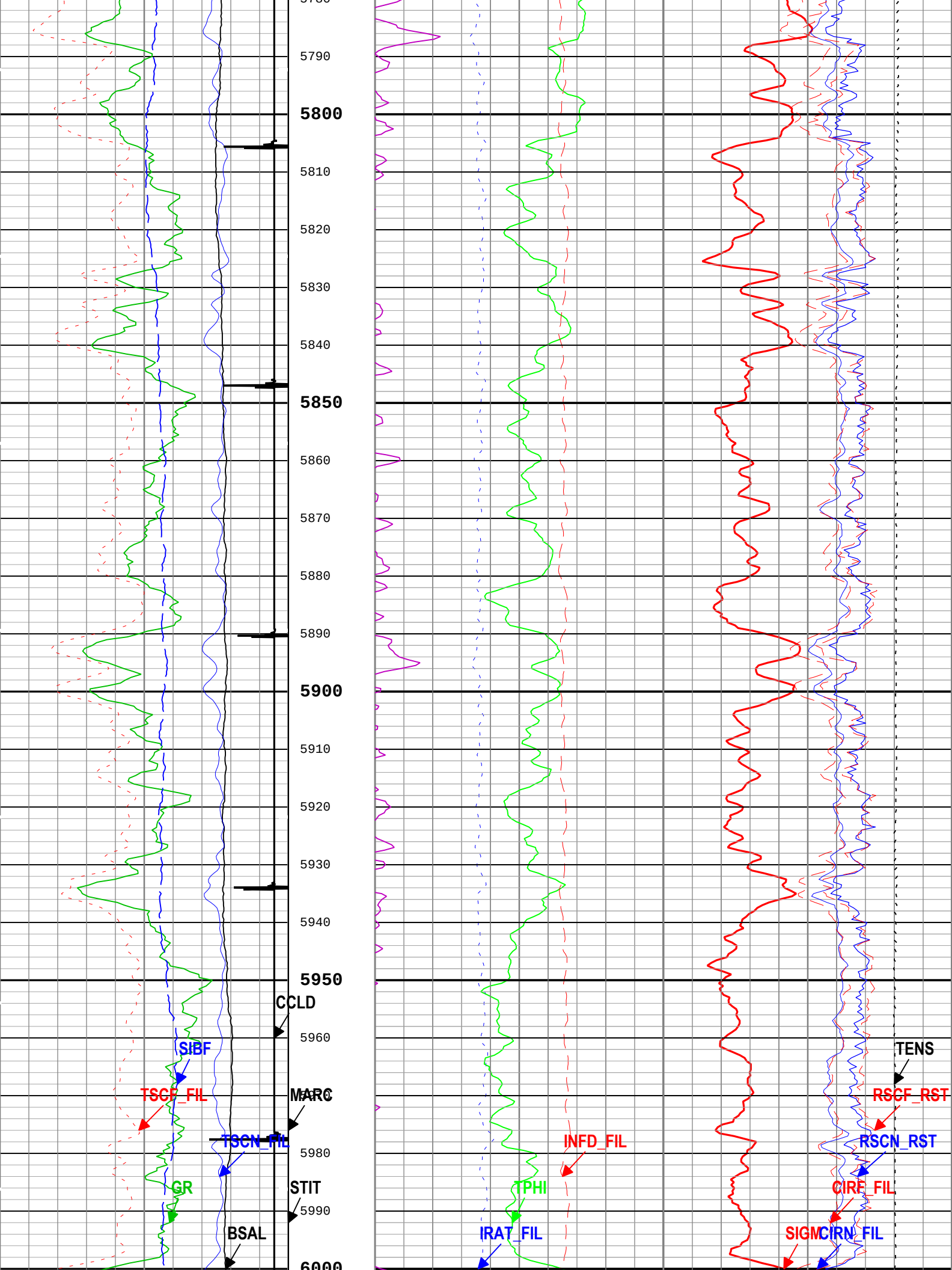

4690
4700
4710
4720
4730
4740
4750
CCLD
4760
SIBF
TSCF_FIL
MARC
TSCN_FIL
4780
GR
STIT
4790
BSAL
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

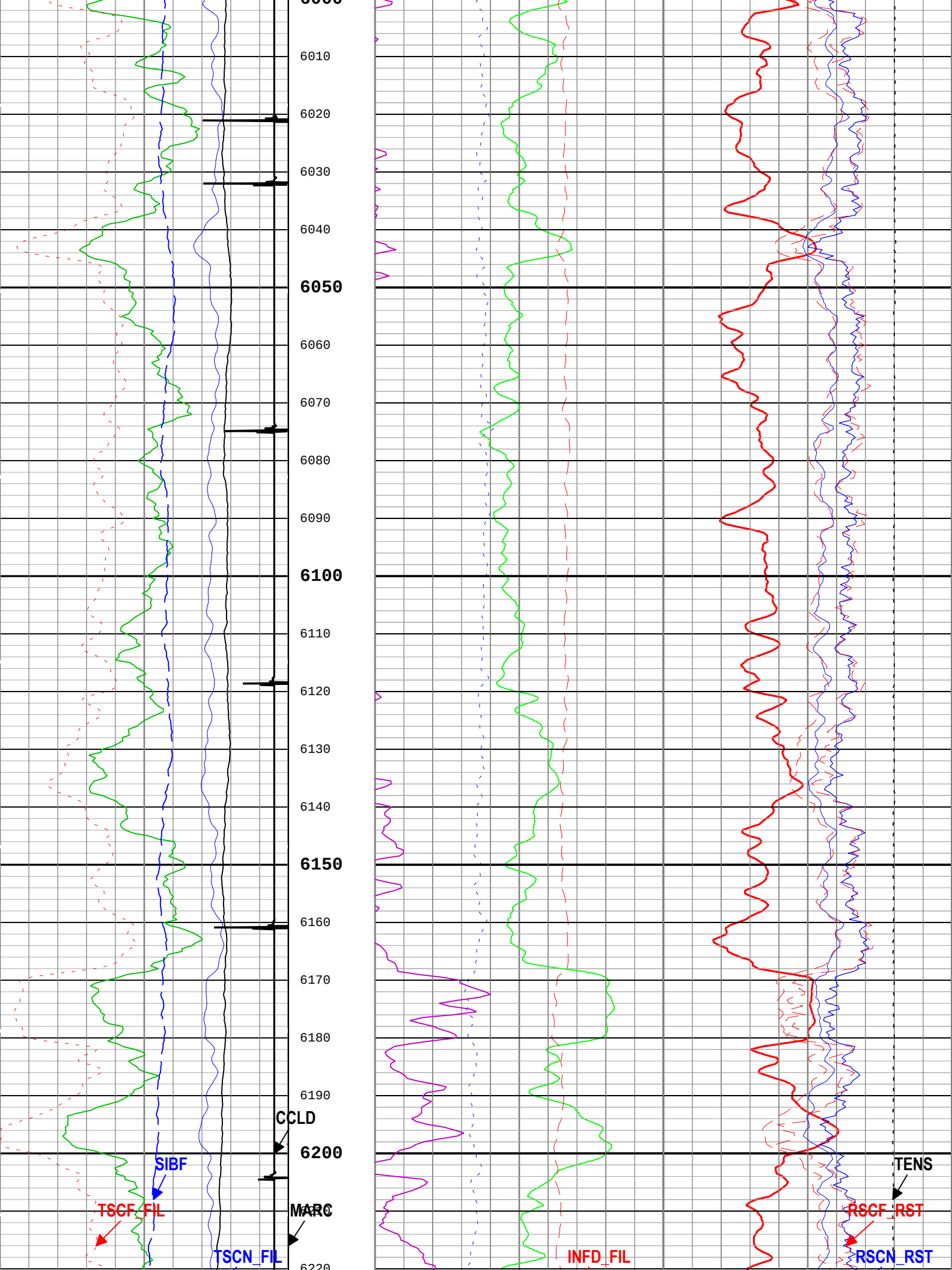

4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

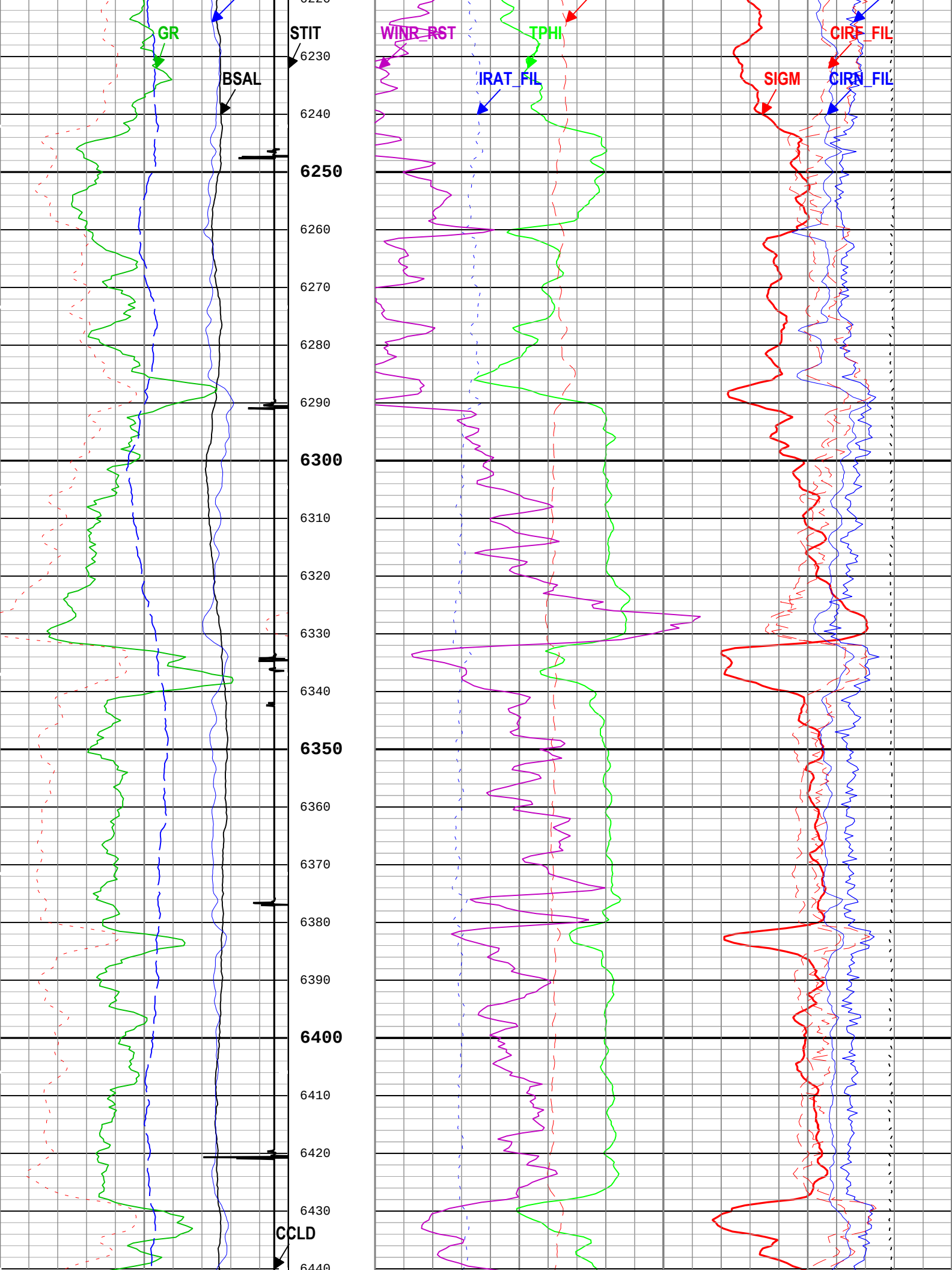

5130
5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
CCLD
5240
SIBF
TSCF_FIL
MARK
5250
TSCN_FIL
5260
GR
STIT
5270
BSAL
5280
5290
5300
5310
5320
5330
5340
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

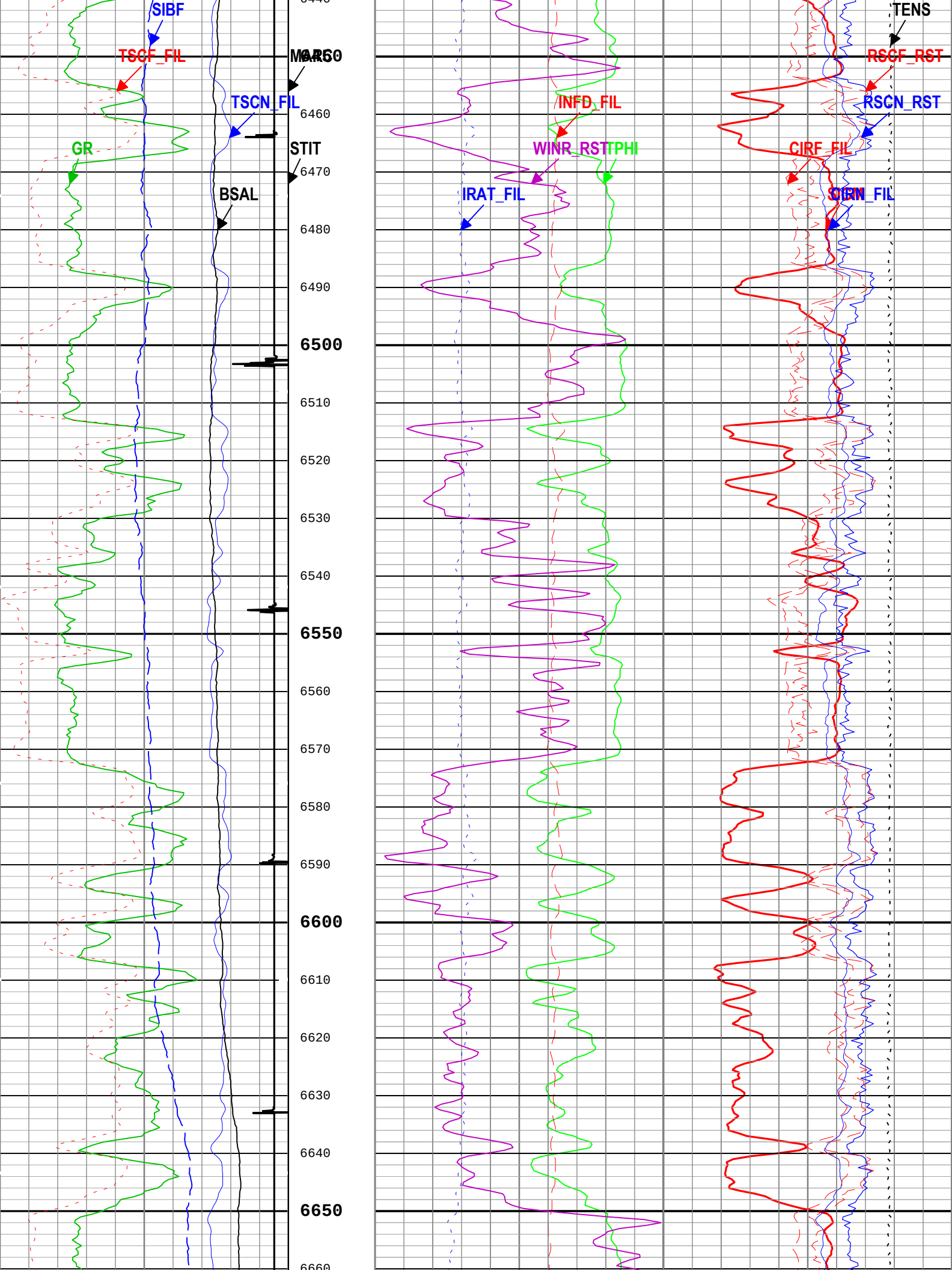

5350
5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
CCLD
5480
SIBF
TSCF_FIL
MARC
TSCN_FIL
5500
GR
STIT
5510
BSAL
5520
5530
5540
5550
5560
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

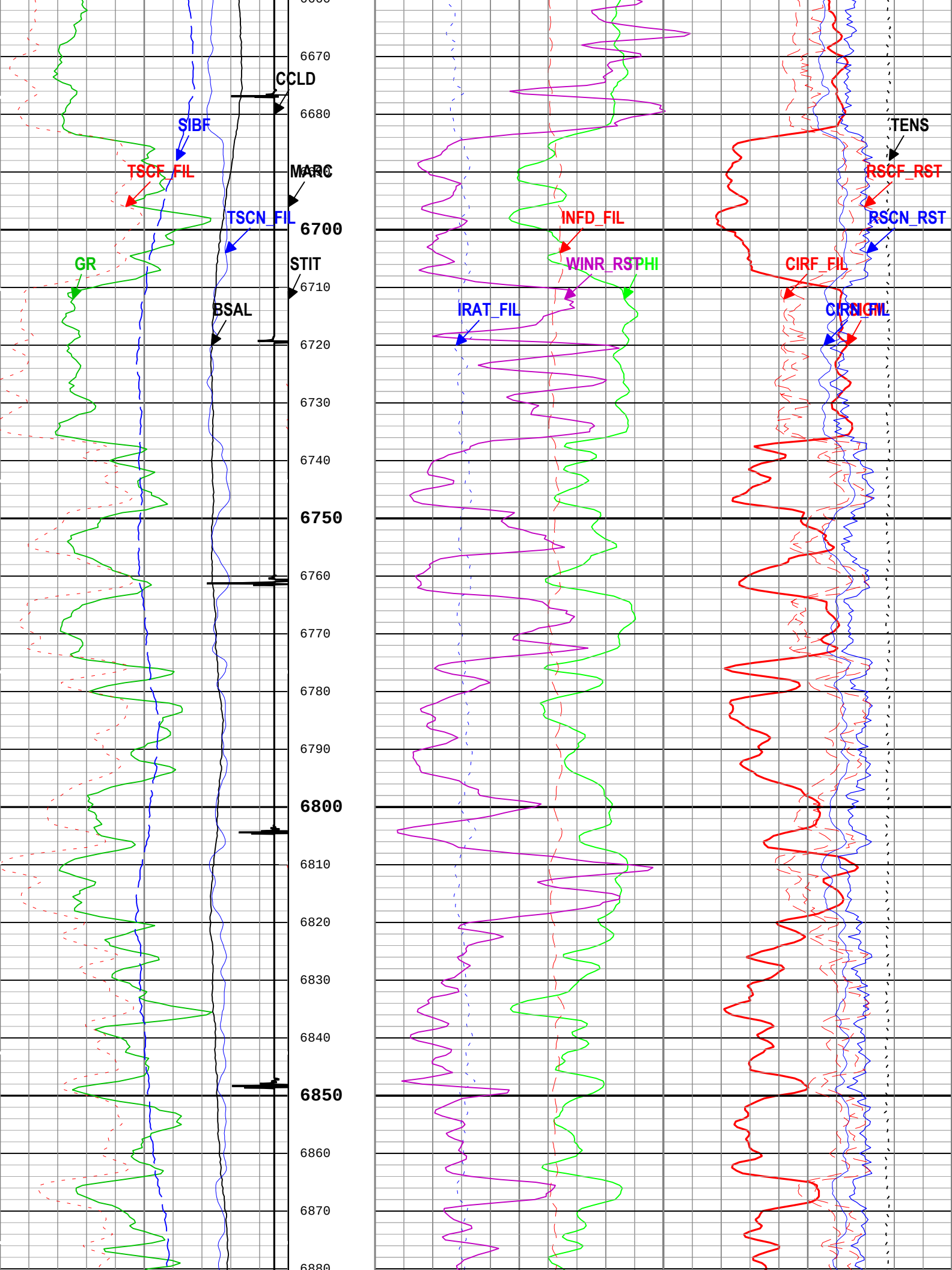

5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
CCLD
5720
SIBF
TSCF_FIL
MARC
TSCN_FIL
5740
GR
STIT
5750
BSAL
5760
5770
5780
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

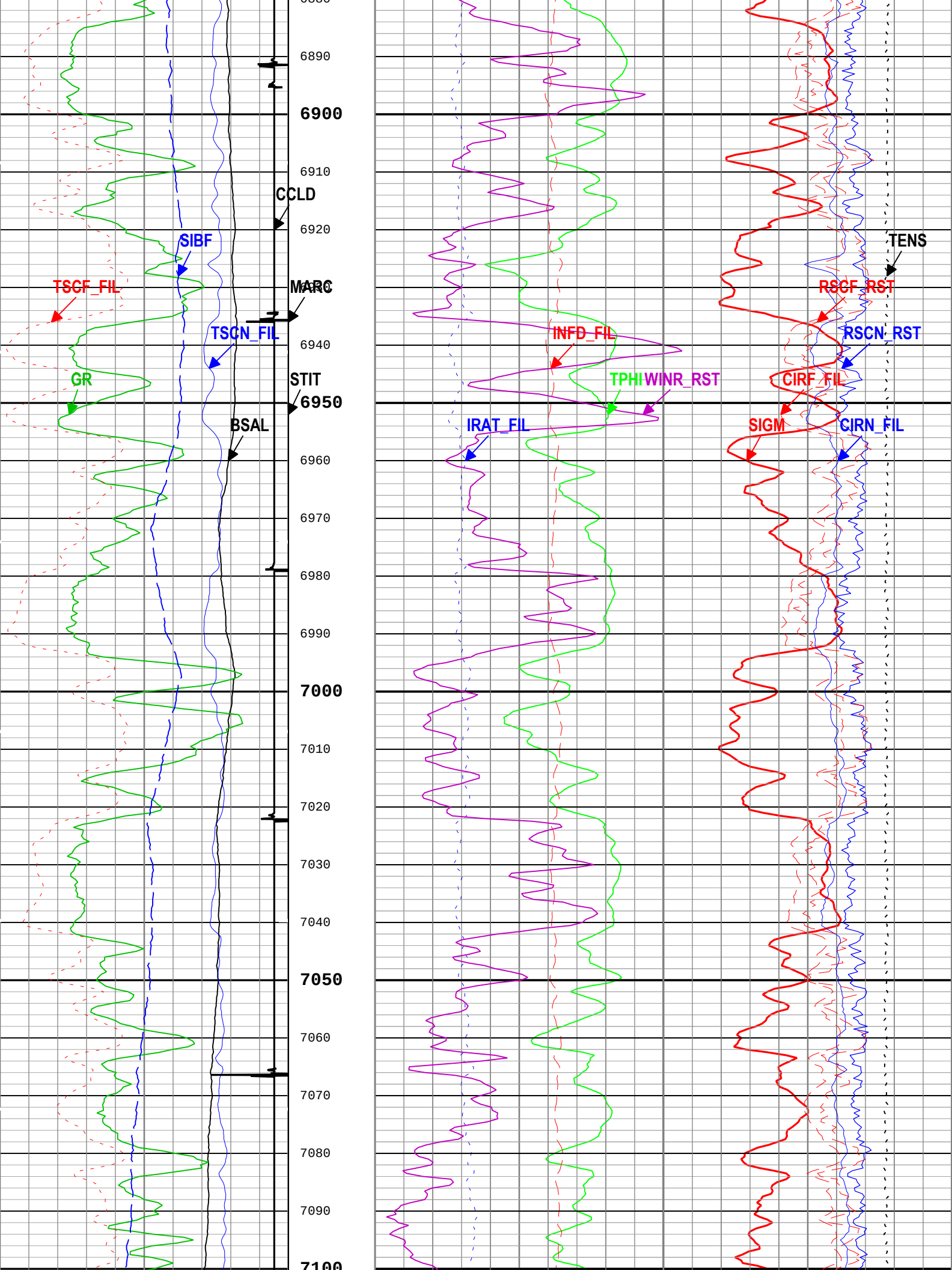

5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5980
5990
6000
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

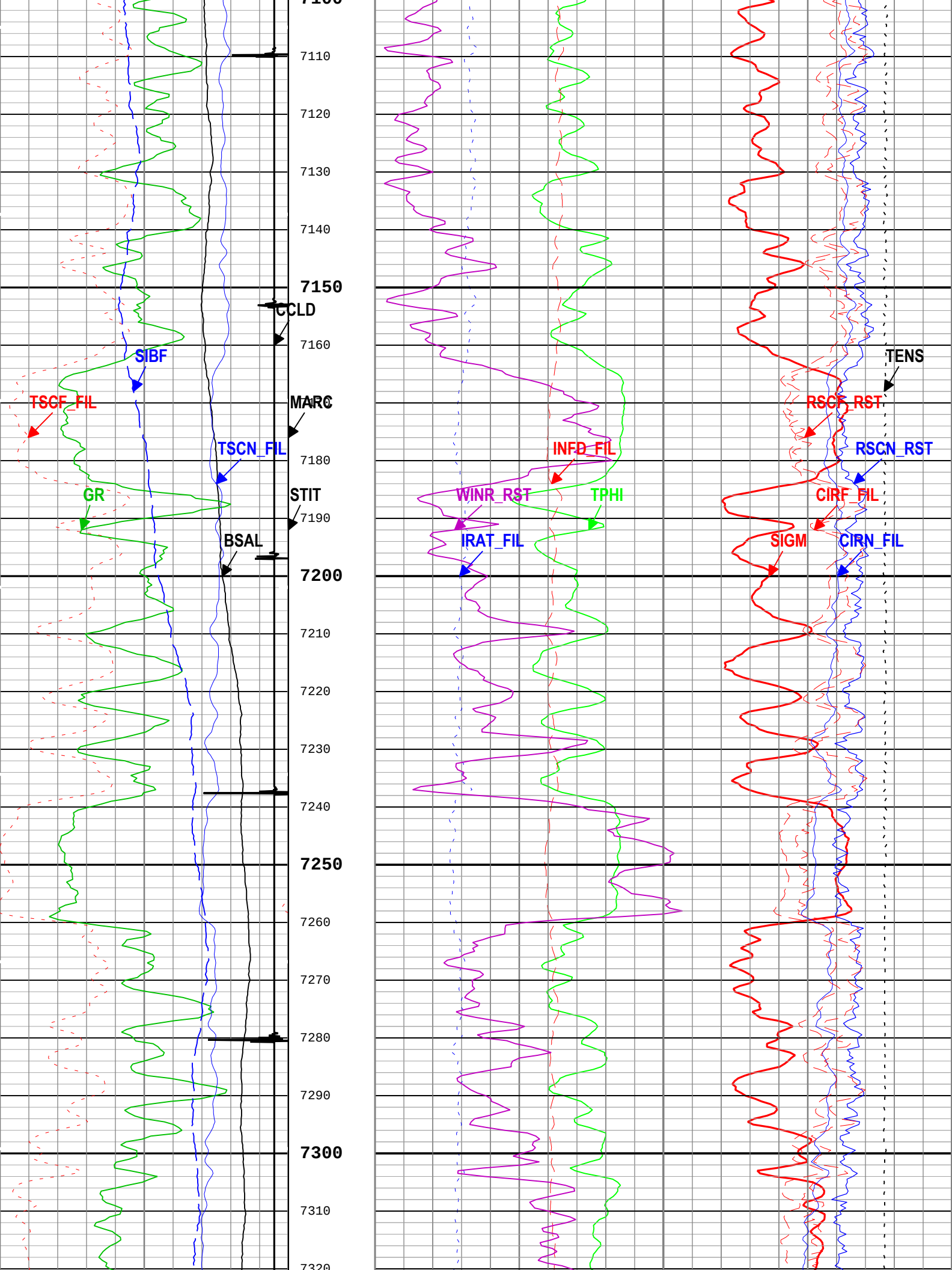

6010
6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6220
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
INFD_FIL
TENS
RSCF_RST
RSCN_RST

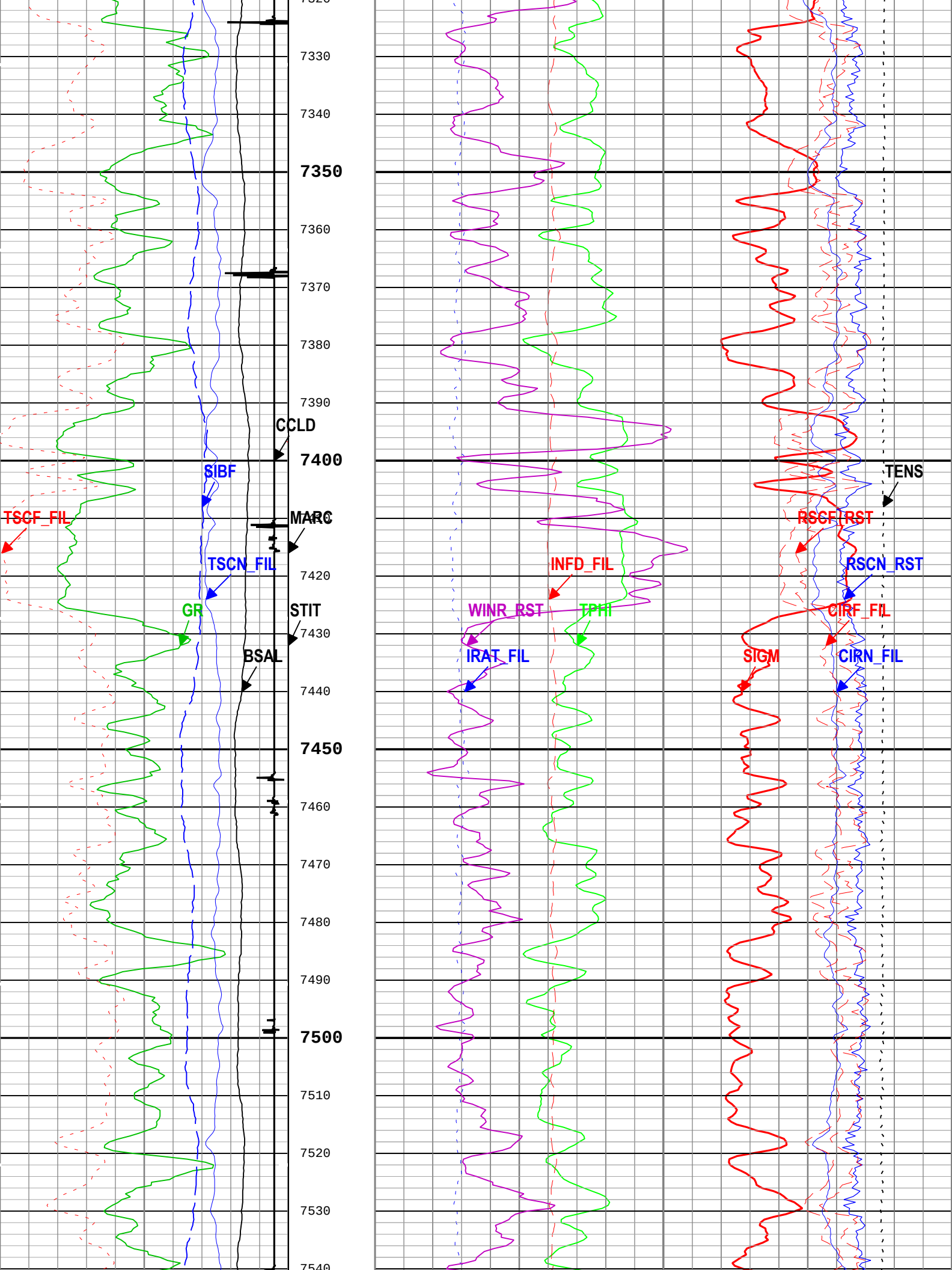

GR
STIT
BSAL
CCLD
WINR_RST
TPHI
IRAT_FIL
SIGM
CIRF_FIL
CIRN_FIL
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440

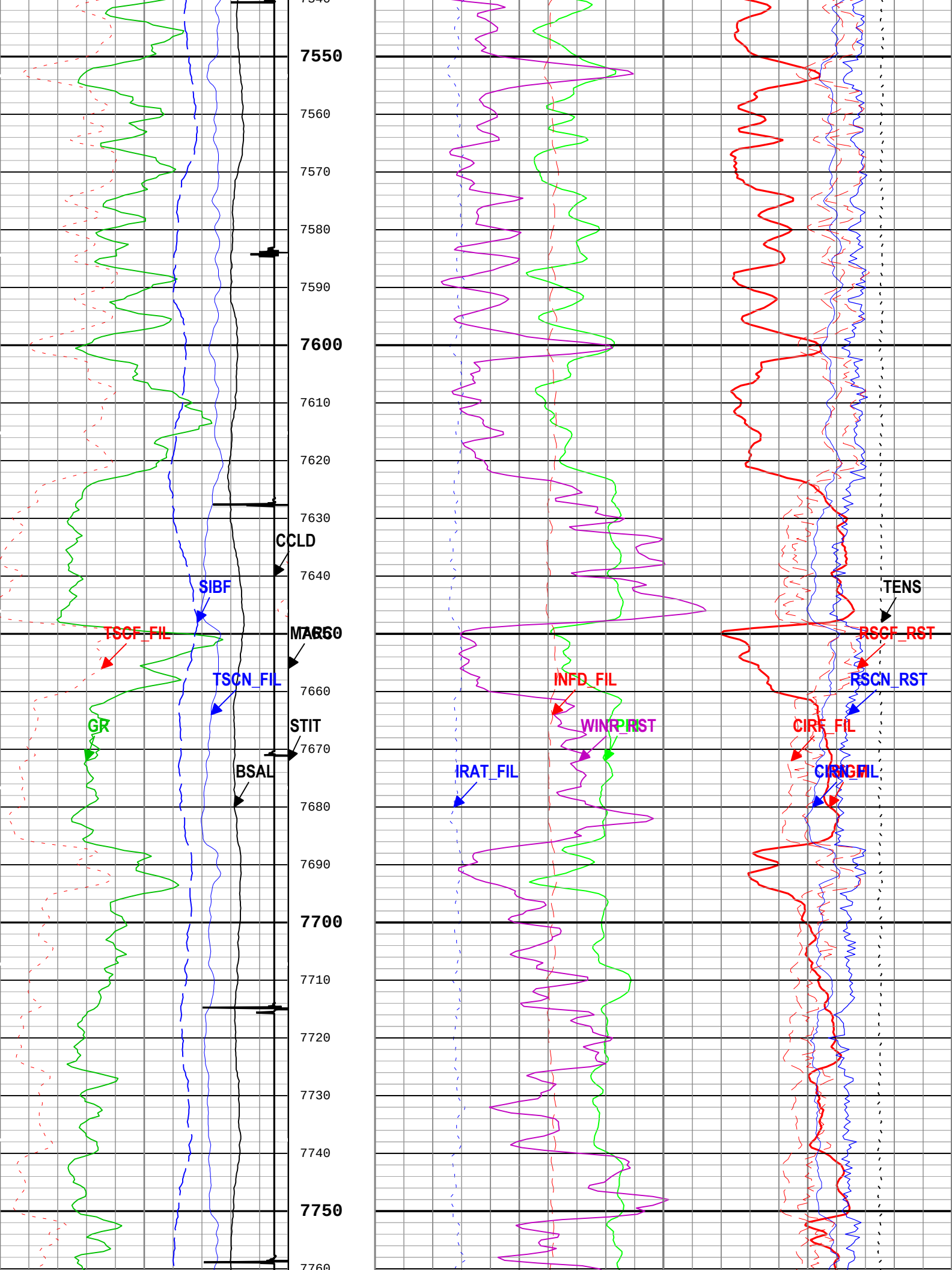

SIBF
TSCF_FIL
MARK
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RSTTPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660

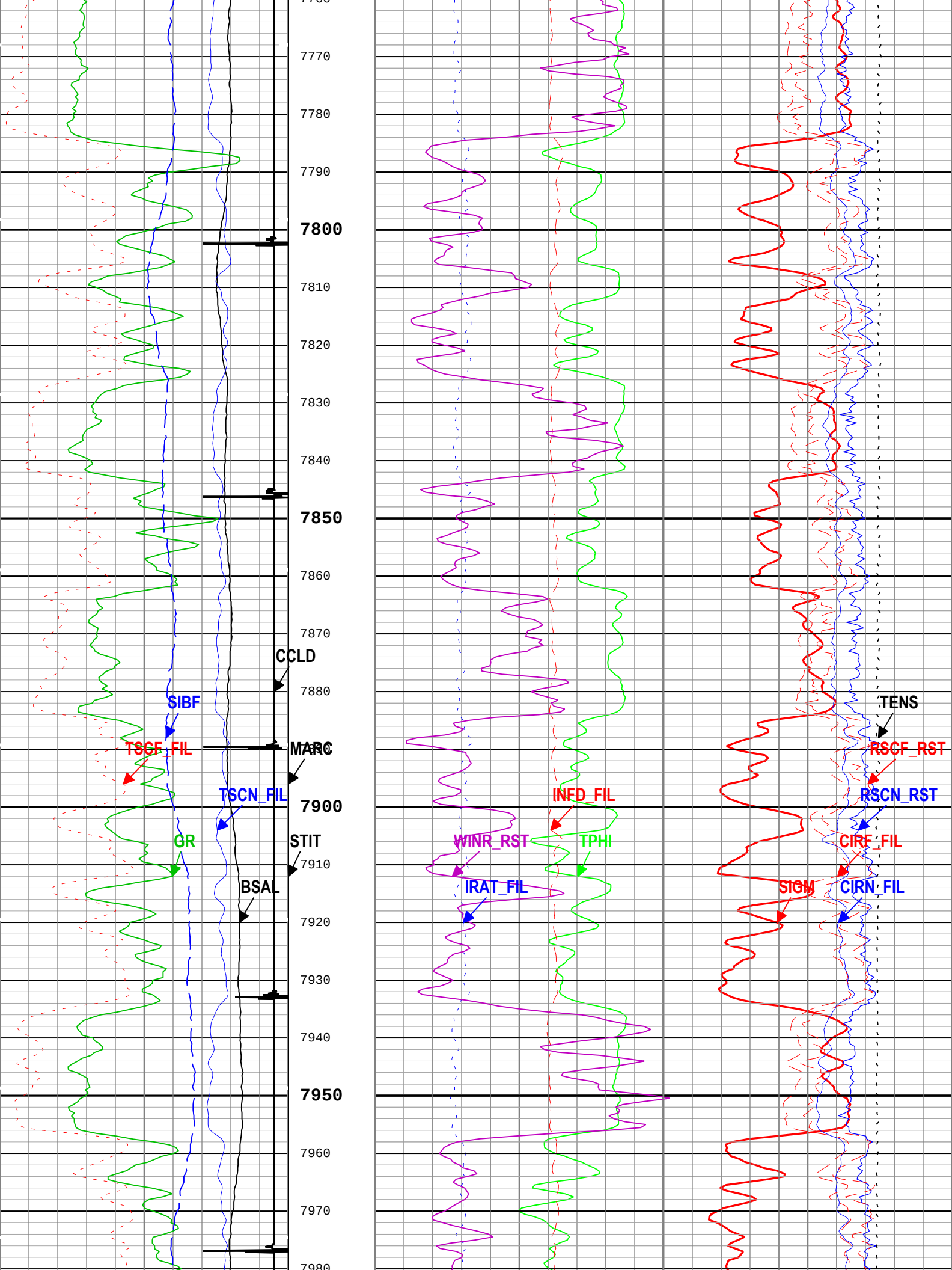

6670
CCLD
6680
SIBF
TSCF_FIL
MARC
TSCN_FIL
6700
GR
STIT
6710
BSAL
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
TENS
RSCF_RST
INFD_FIL
RSCN_RST
WINR_RSTPHI
CIRF_FIL
IRAT_FIL
CIRN_FIL

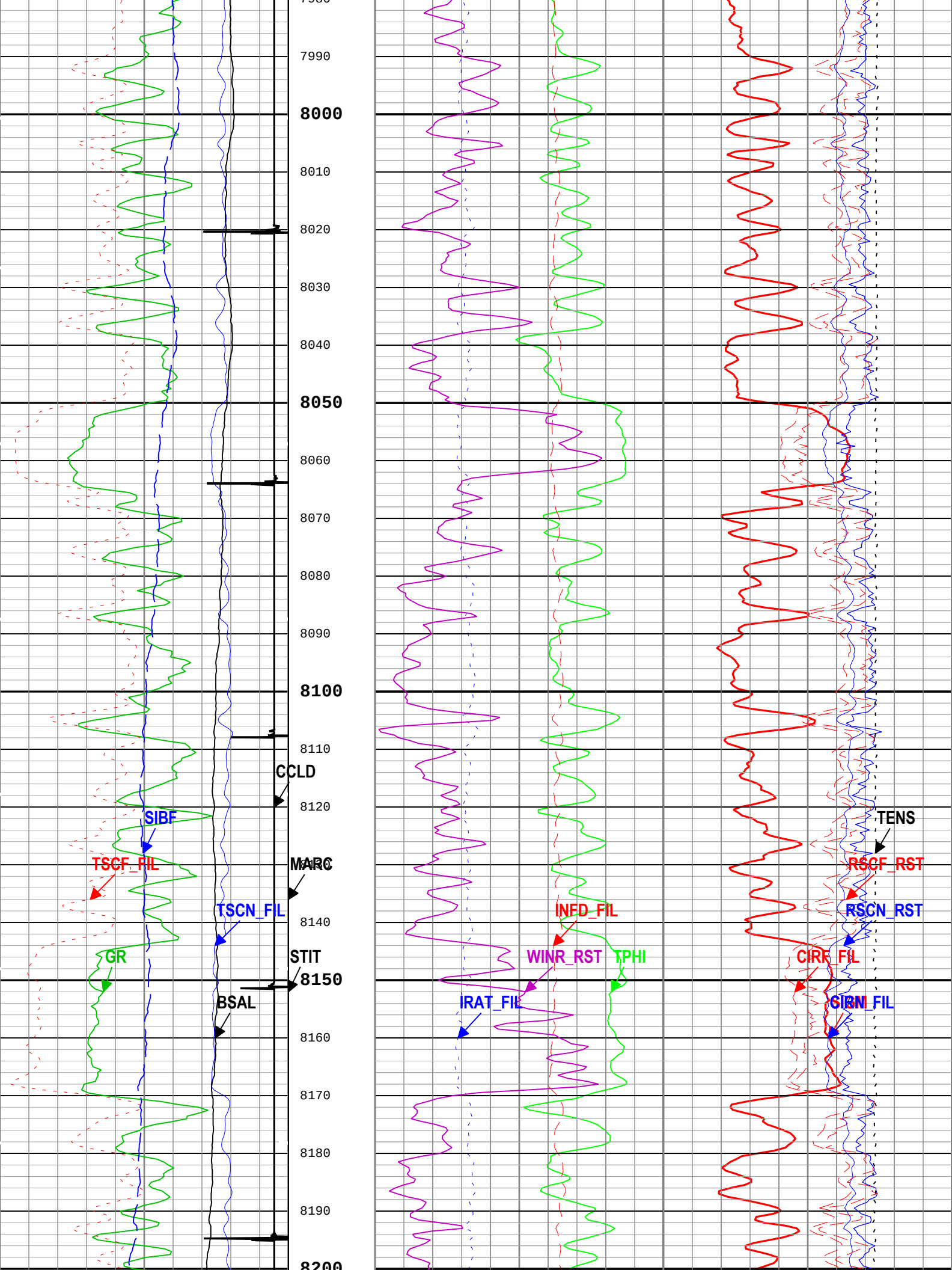

6890
6900
6910
CCLD
6920
SIBF
TSCF_FIL
MARC
TSCN_FIL
6940
GR
STIT
6950
BSAL
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
INFD_FIL
TPHI
WINR_RST
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

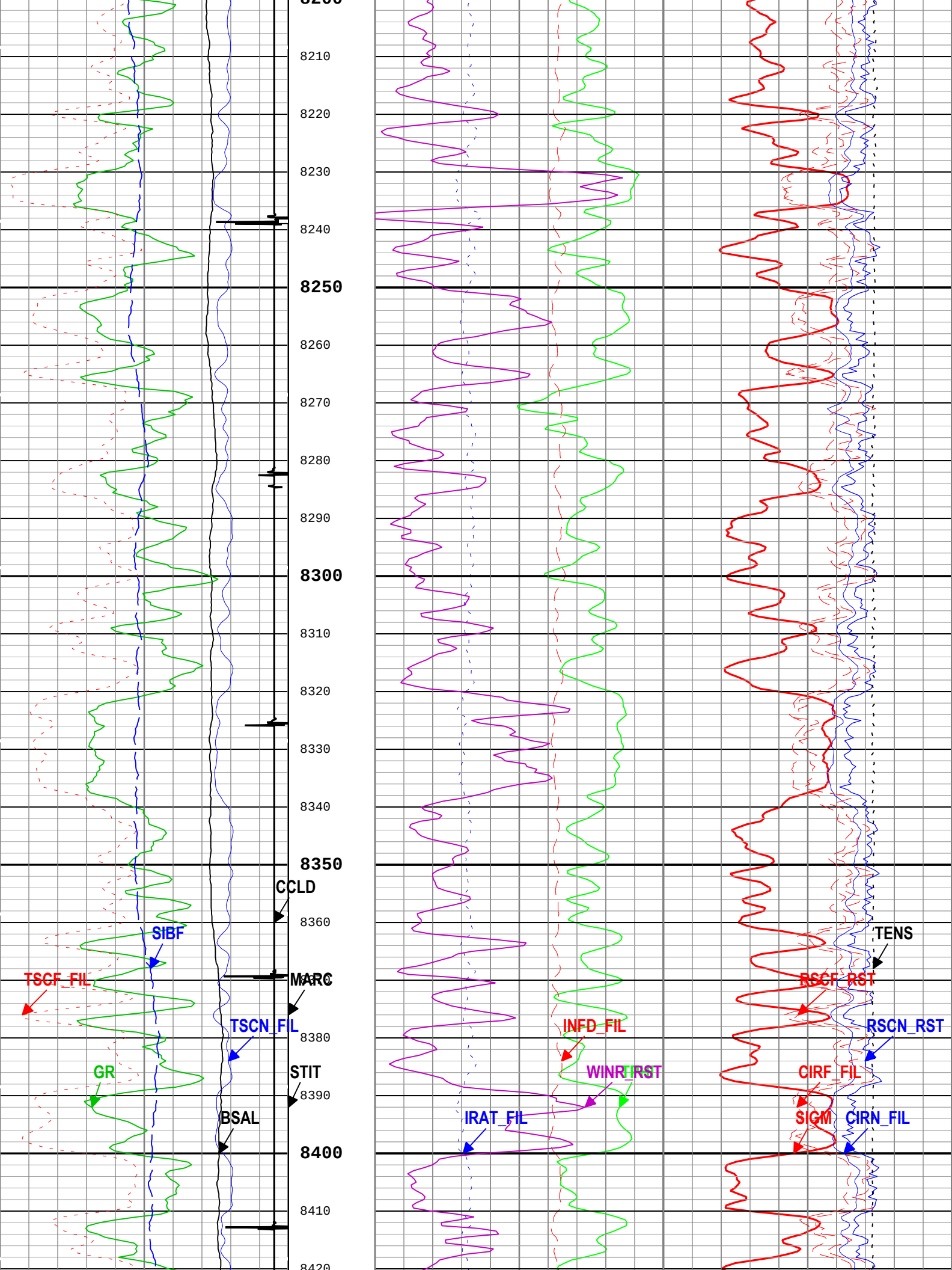

7100
7110
7120
7130
7140
7150
CCLD
7160
SIBF
TSCF_FIL
MARC
TSCN_FIL
7180
GR
STIT
7190
BSAL
7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

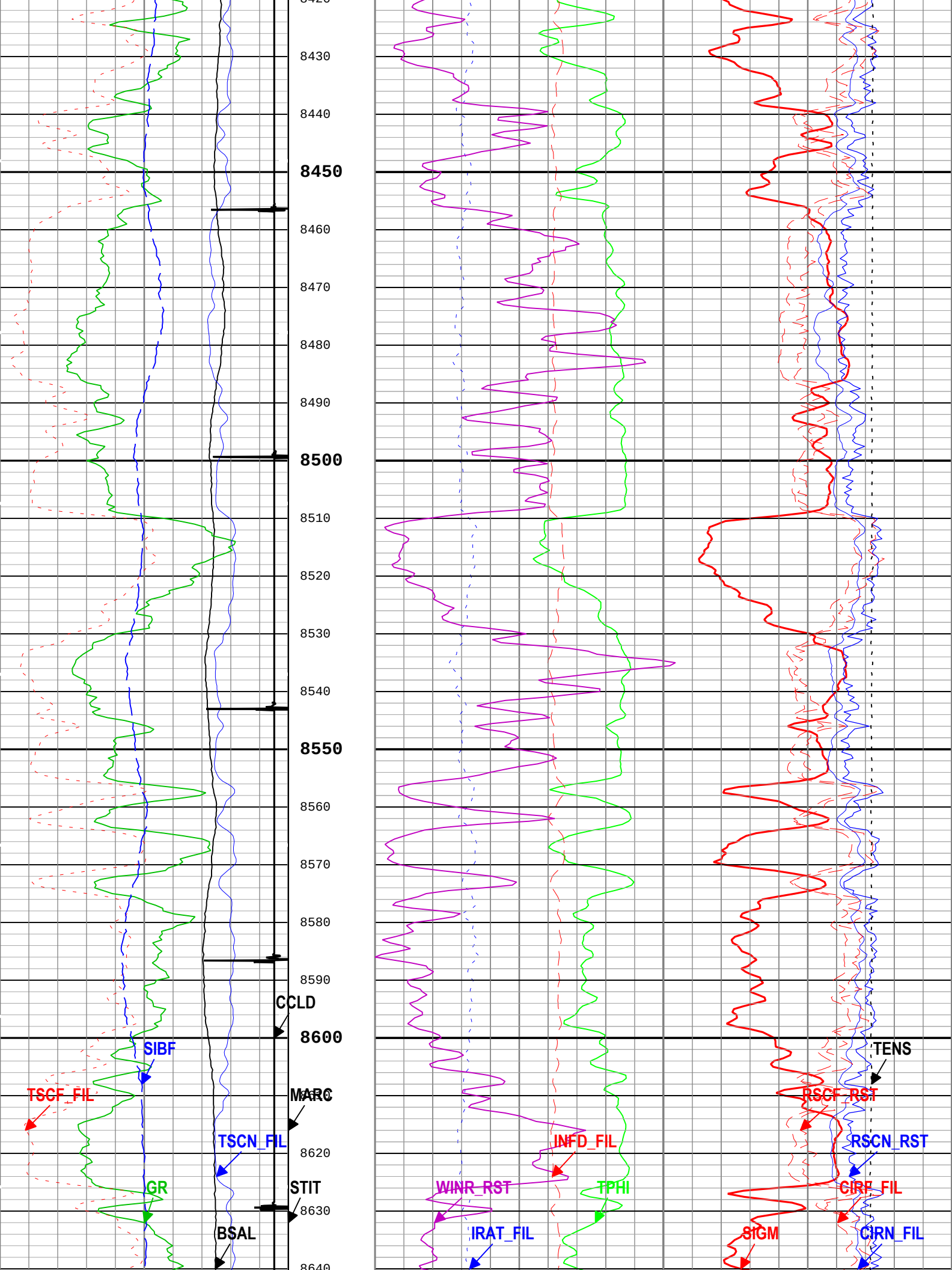

7330
7340
7350
7360
7370
7380
7390
CCLD
7400
SIBF
TSCF_FIL
MARC
TSCN_FIL
7420
GR
STIT
7430
BSAL
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

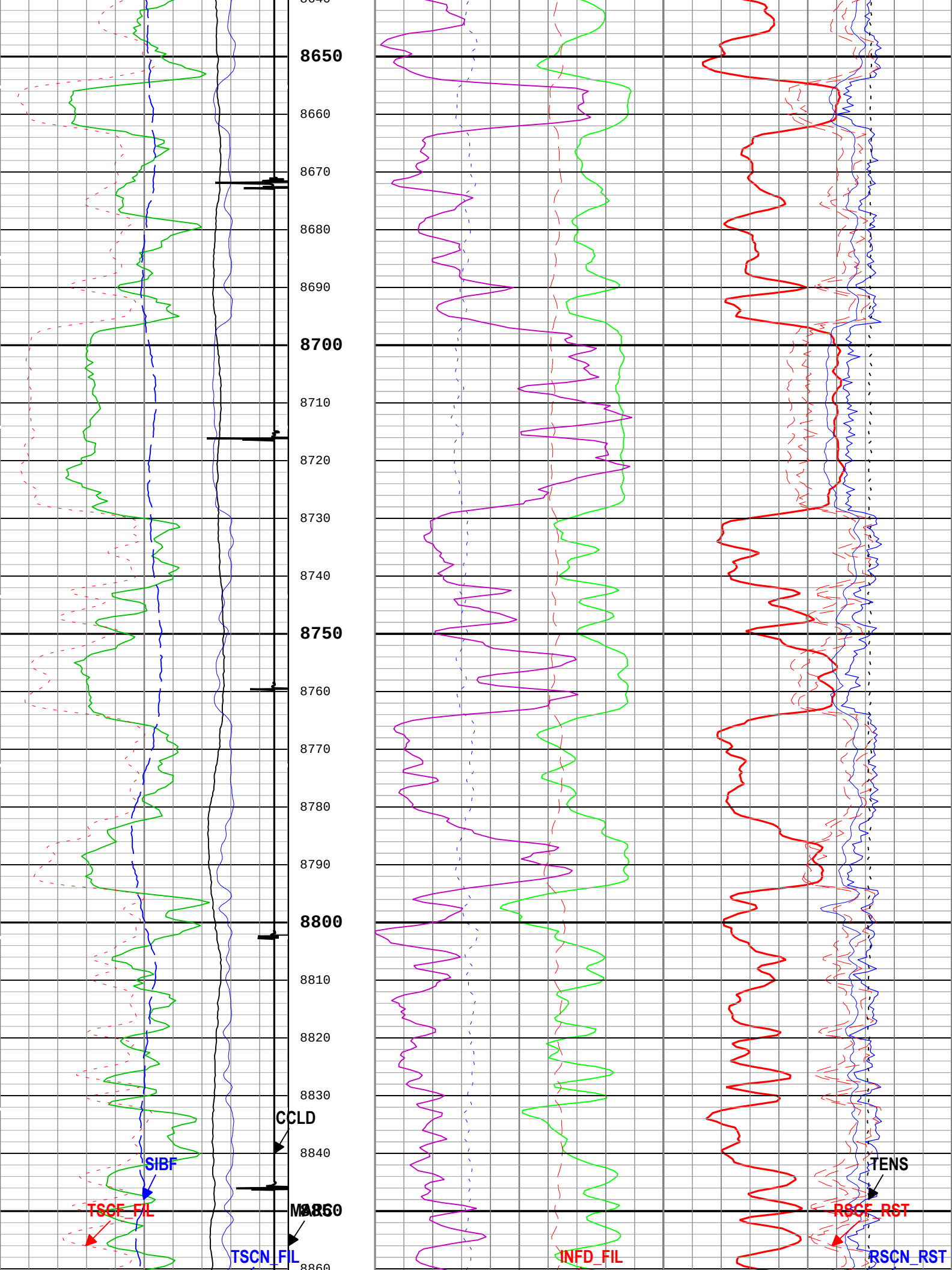

7550
7560
7570
7580
7590
7600
7610
7620
7630
7640
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
CCLD
SIBF
TSCF_FIL
MARK
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

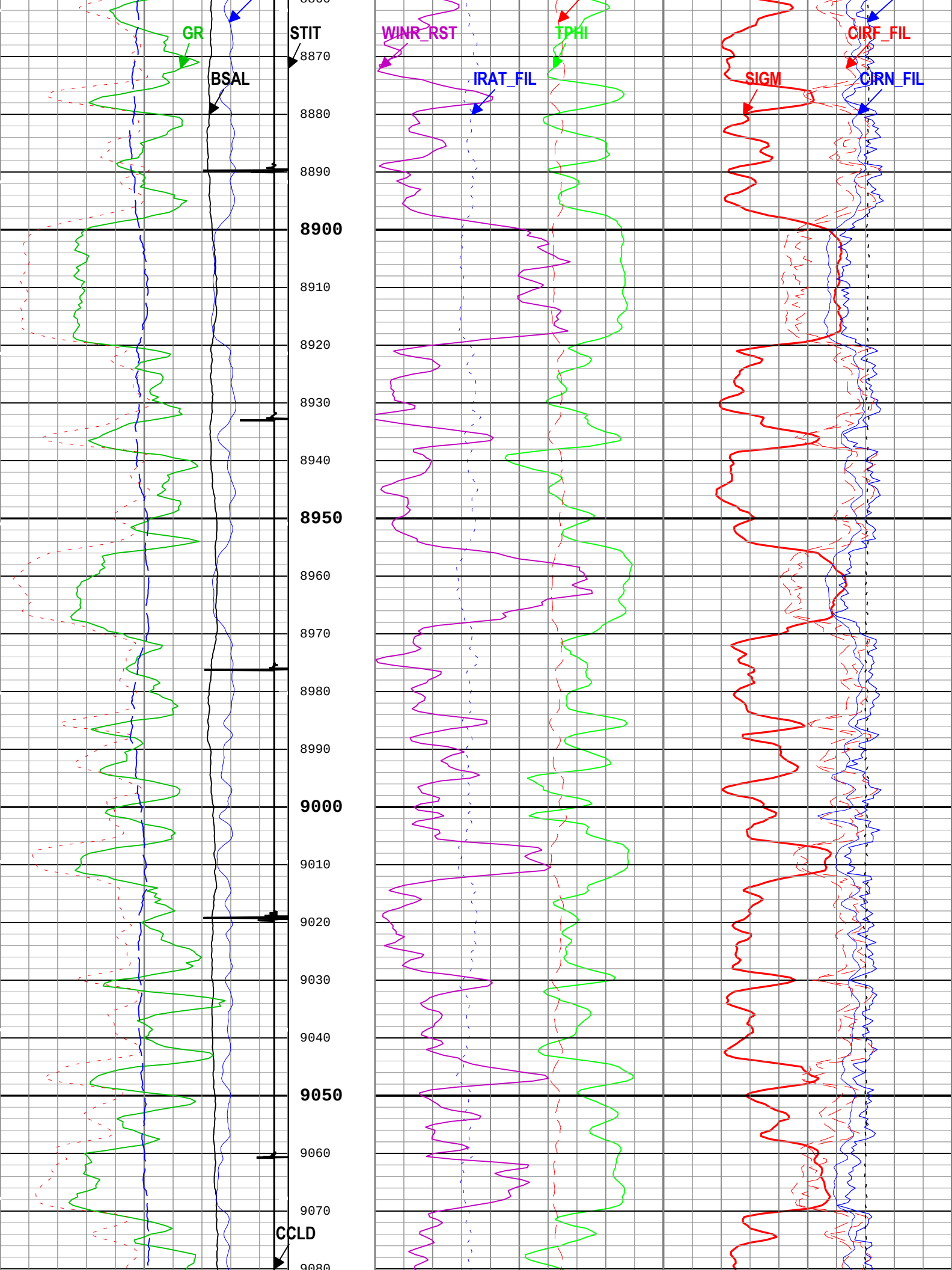

7770
7780
7790
7800
7810
7820
7830
7840
7850
7860
7870
7880
7900
7910
7920
7930
7940
7950
7960
7970
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

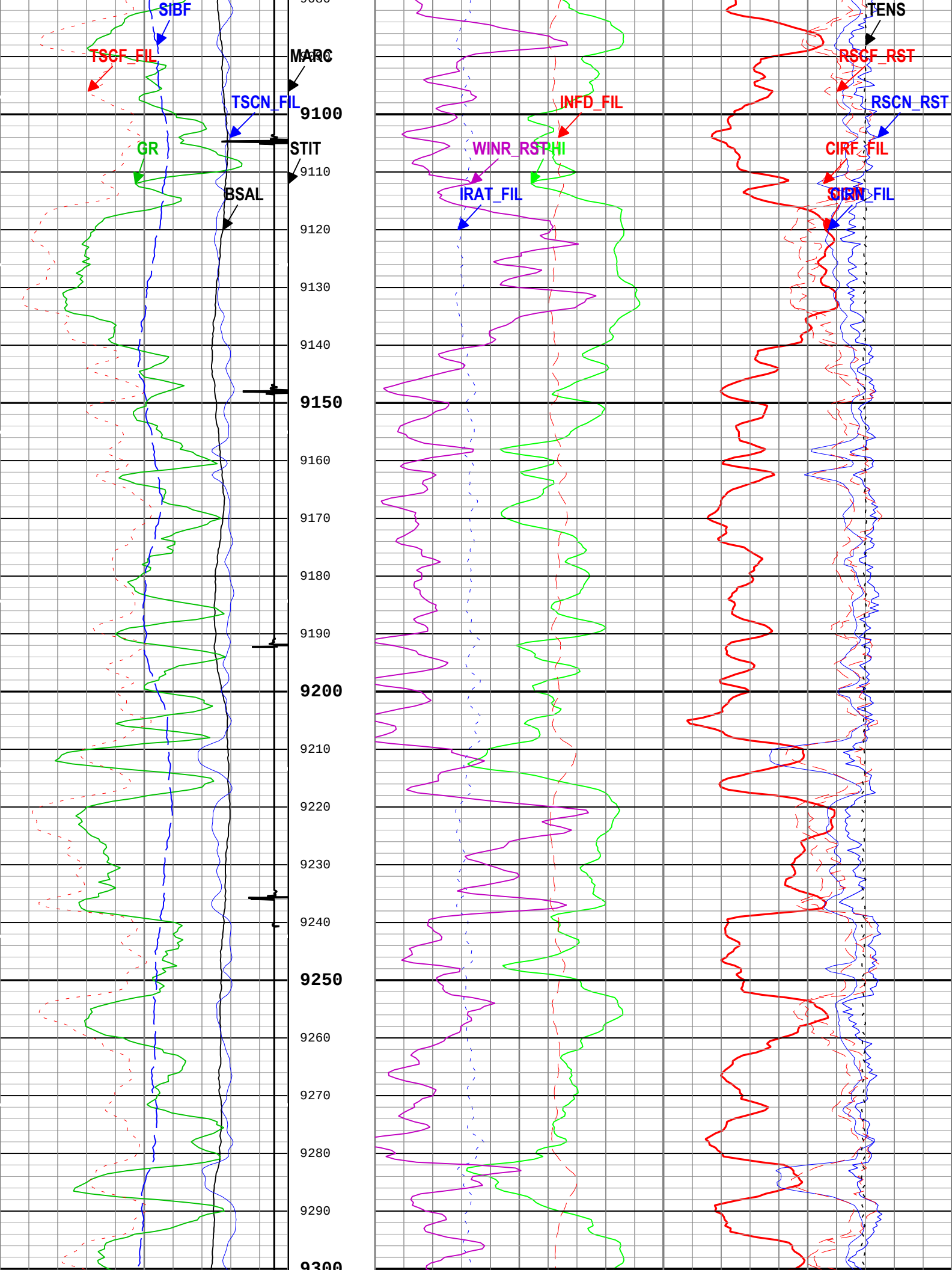

7990
8000
8010
8020
8030
8040
8050
8060
8070
8080
8090
8100
8110
8120
8140
8150
8160
8170
8180
8190
8200
CCLD
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

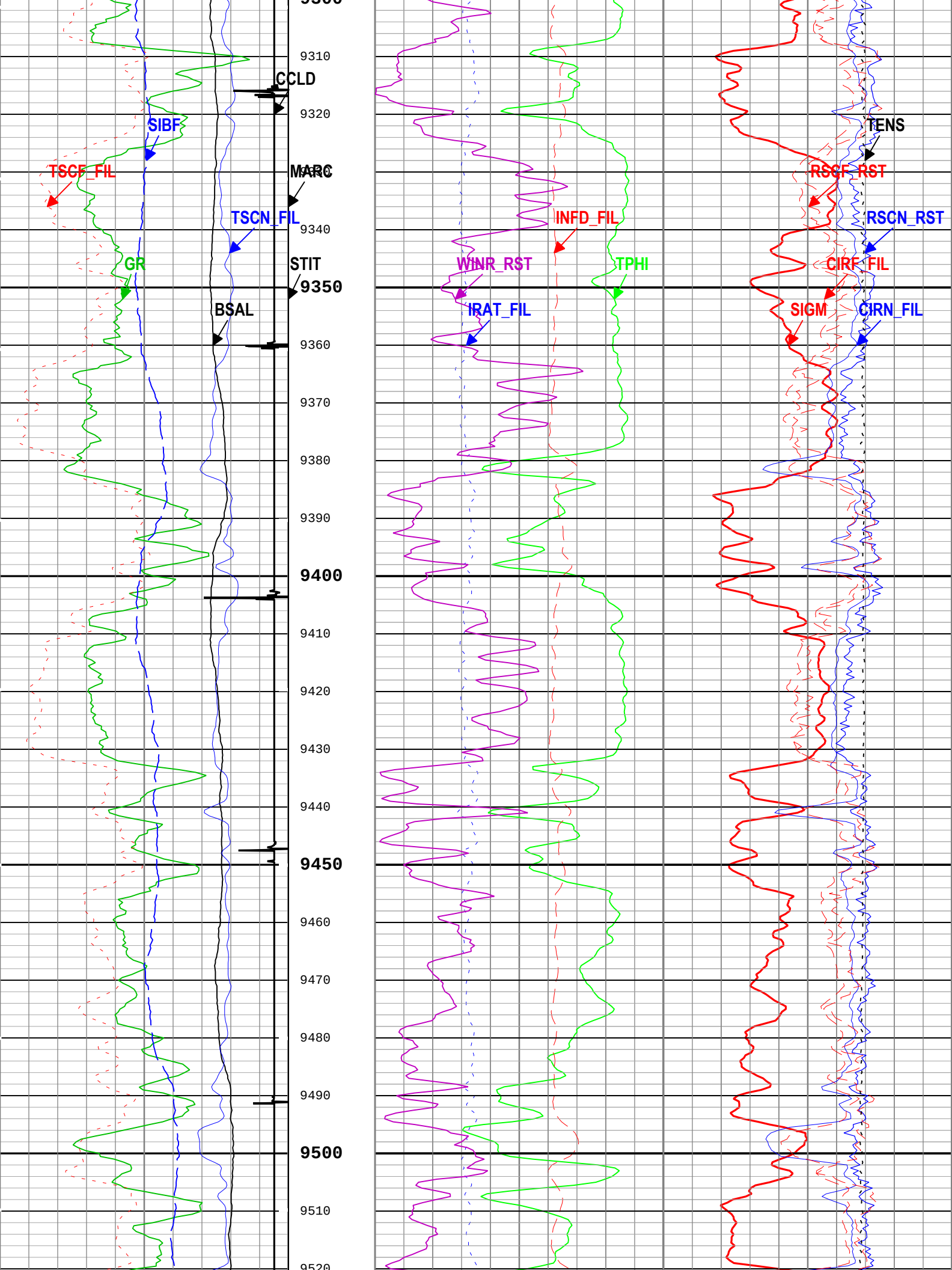

8200
8210
8220
8230
8240
8250
8260
8270
8280
8290
8300
8310
8320
8330
8340
8350
CCLD
8360
SIBF
TSCF_FIL
MARC
TSCN_FIL
8380
GR
STIT
8390
BSAL
8400
8410
8420
INFD_FIL
WINR_RST
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

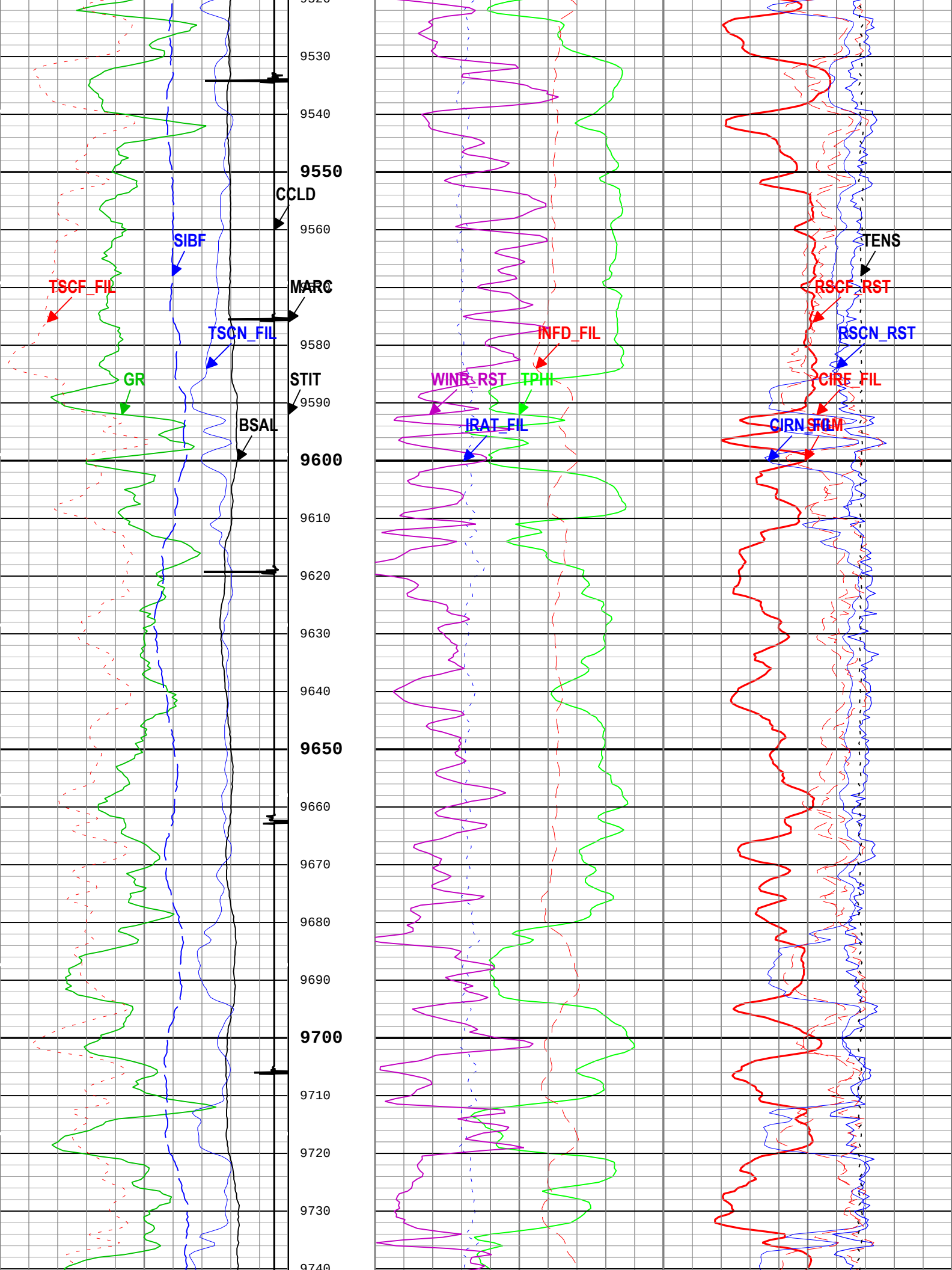

8430
8440
8450
8460
8470
8480
8490
8500
8510
8520
8530
8540
8550
8560
8570
8580
8590
CCLD
8600
SIBF
TSCF_FIL
MARC
TSCN_FIL
8620
GR
STIT
8630
BSAL
8640
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

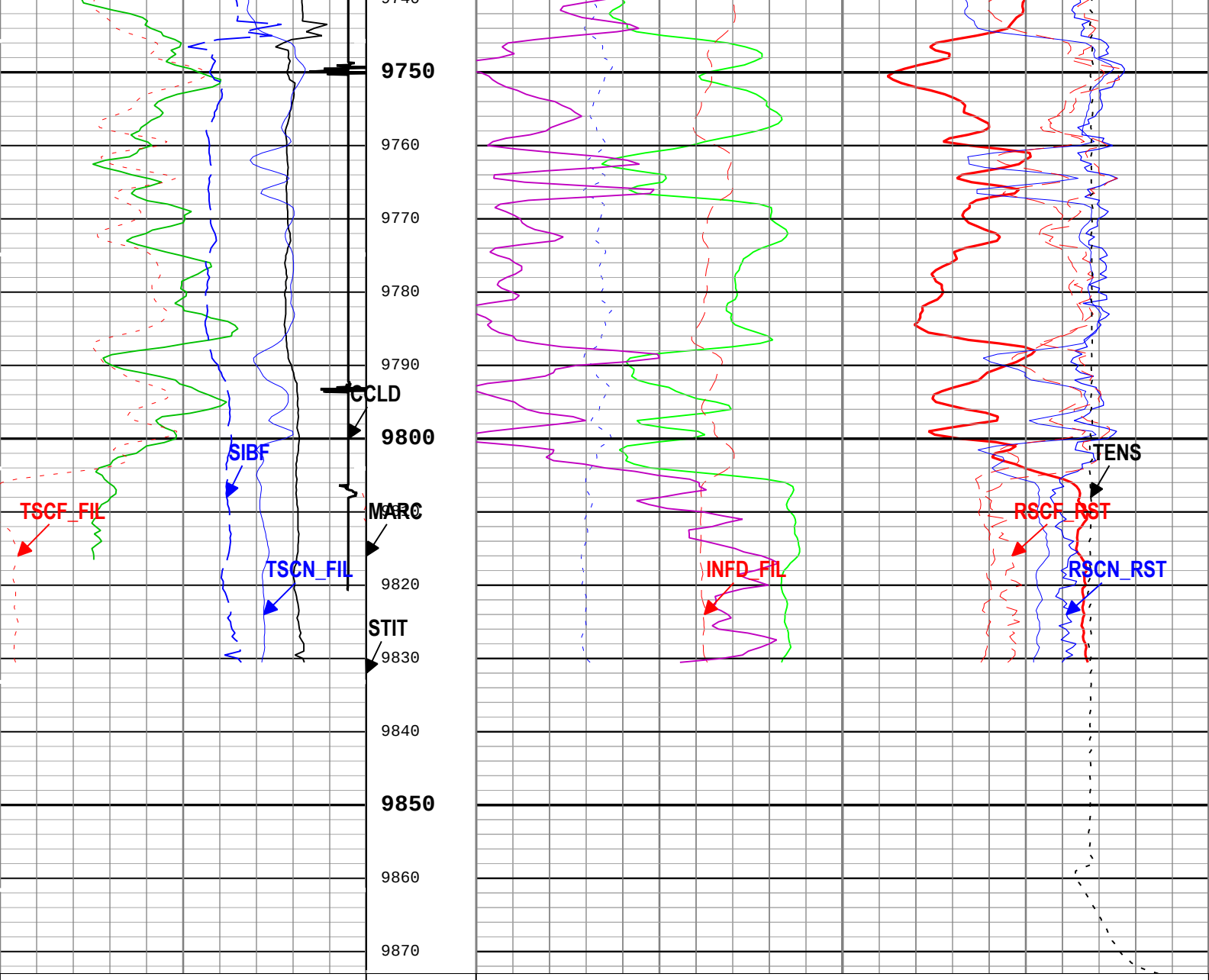

8650
8660
8670
8680
8690
8700
8710
8720
8730
8740
8750
8760
8770
8780
8790
8800
8810
8820
8830
CCLD
8840
SIBF
TSCF_FIL
MARK
8850
TSCN_FIL
8860
INFD_FIL
TENS
RSCF_RST
RSCN_RST


GR
STIT
BSAL
WINR_RST
TPHI
IRAT_FIL
SIGM
CIRF_FIL
CIRN_FIL
CCLD
8870
8880
8890
8900
8910
8920
8930
8940
8950
8960
8970
8980
8990
9000
9010
9020
9030
9040
9050
9060
9070
9080


SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
9100
9110
9120
9130
9140
9150
9160
9170
9180
9190
9200
9210
9220
9230
9240
9250
9260
9270
9280
9290
9300
INFD_FIL
WINR_RSTPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL


9300
9310
CCLD
9320
SIBF
TSCF_FIL
MARC
TSCN_FIL
9340
GR
STIT
9350
BSAL
9360
9370
9380
9390
9400
9410
9420
9430
9440
9450
9460
9470
9480
9490
9500
9510
9520
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL


9530
9540
9550
CCLD
9560
SIBF
TSCF_FIL
MARC
TSCN_FIL
9580
GR
STIT
9590
BSAL
9600
9610
9620
9630
9640
9650
9660
9670
9680
9690
9700
9710
9720
9730
9740
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
TENS
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL



Borehole Salinity (BSAL) RST-C
450 ppk -50

Gamma Ray (GR) PSTP-B
0 gAPI 150

Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C
30000 1/s 0

Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C
12000 1/s 0

Sigma Borehole Fluid (SIBF) RST-C
100 cu 0

CCL Discriminated Amplitude (CCLD) PSTP-B
-19 V 1

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag From STIA to STIT

Tool_Tot. Drag From D3T to STIT

Minitron Arc Count (MARC) RST-C
0 5

Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C
60 cu 0

Weighted Inelastic Ratio (WINR_RST) RST-C
0 0.4

Inelastic Ratio Filtered (IRAT_FIL) RST-C
0.75 0

Thermal Decay Porosity (TPHI) RST-C
0.6 ft3/ft3 0

Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C
10000 1/s 0

Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C
2.5 0

Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C
5 0

Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C
45 0

Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C
45 0

Cable Tension (TENS)
5000 lbf 0

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

TIME_1900 - Time Marked every 60.00 (s)

Description: RST SIGMA Answer Format: Log (RST SIGMA Answer) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:42

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
BSAL	Borehole Salinity	Borehole	0	ppm
BSALOPT	Borehole Salinity Option	RST-C	Unknown	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	14.75	2900	3000
BS	8.75	3000	9861

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-B	24 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

One

Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100
Application Patch	Wireline_Hotfix-Mandatory-2018SP1_8.1.102865

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	9490.04 ft	9875.00 ft	15-Sep-2018 5:58:55 AM	15-Sep-2018 6:12:14 AM	ON	6.03 ft	No

All depths are referenced to toolstring zero

Log

Company:Caerus Operating LLC Well:NPR 23B-10 596

One: Log[2]:Up:S002

Description: RST SIGMA Answer Format: Log (RST SIGMA Answer) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:46

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

TIME_1900 - Time Marked every 60.00 (s)

IHV - Integrated Hole Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

ICV - Integrated Cement Volume every 100.00 (ft3)

Borehole Salinity (BSAL) RST-C
450 ppk -50

Gamma Ray (GR) PSTP-B
0 gAPI 150

Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C
30000 1/s 0

Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C
12000 1/s 0

Sigma Borehole Fluid (SIBF) RST-C
100 cu 0

CCL Discriminated Amplitude (CCLD) PSTP-B
-19 V 1

Stuck Tool Indicator, Total (STIT)
0 ft 50

Cable Drag From STIA to STIT

Tool_Tot. Drag From D3T to STIT

Minitron Arc Count (MARC) RST-C
0 5

Inelastic Ratio Filtered (IRAT_FIL) RST-C
0.75 0

Thermal Decay Porosity (TPHI) RST-C
0.6 ft3/ft3 0

Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C
10000 1/s 0

Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C
2.5 0

Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C
5 0

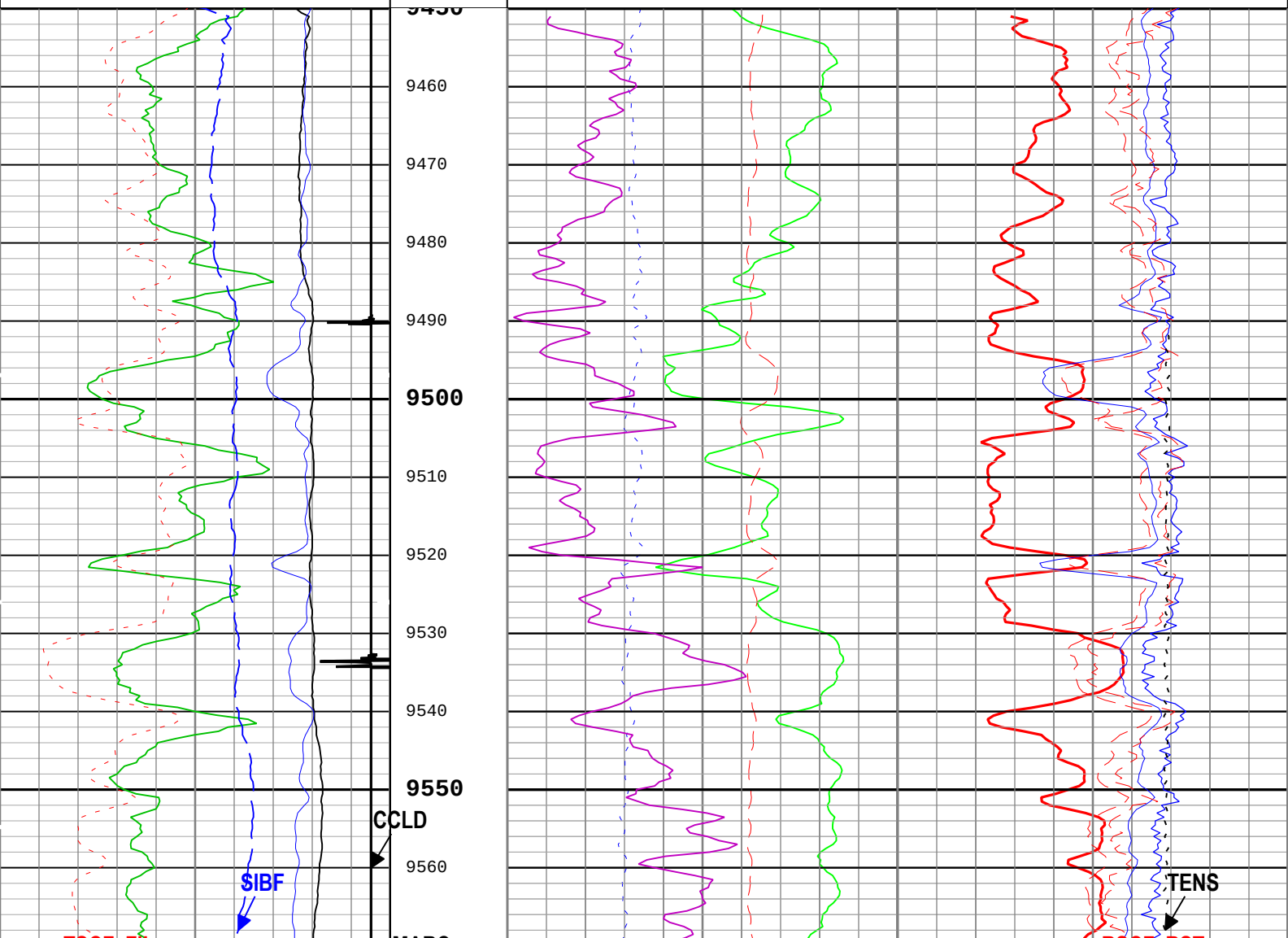
Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C
45 0

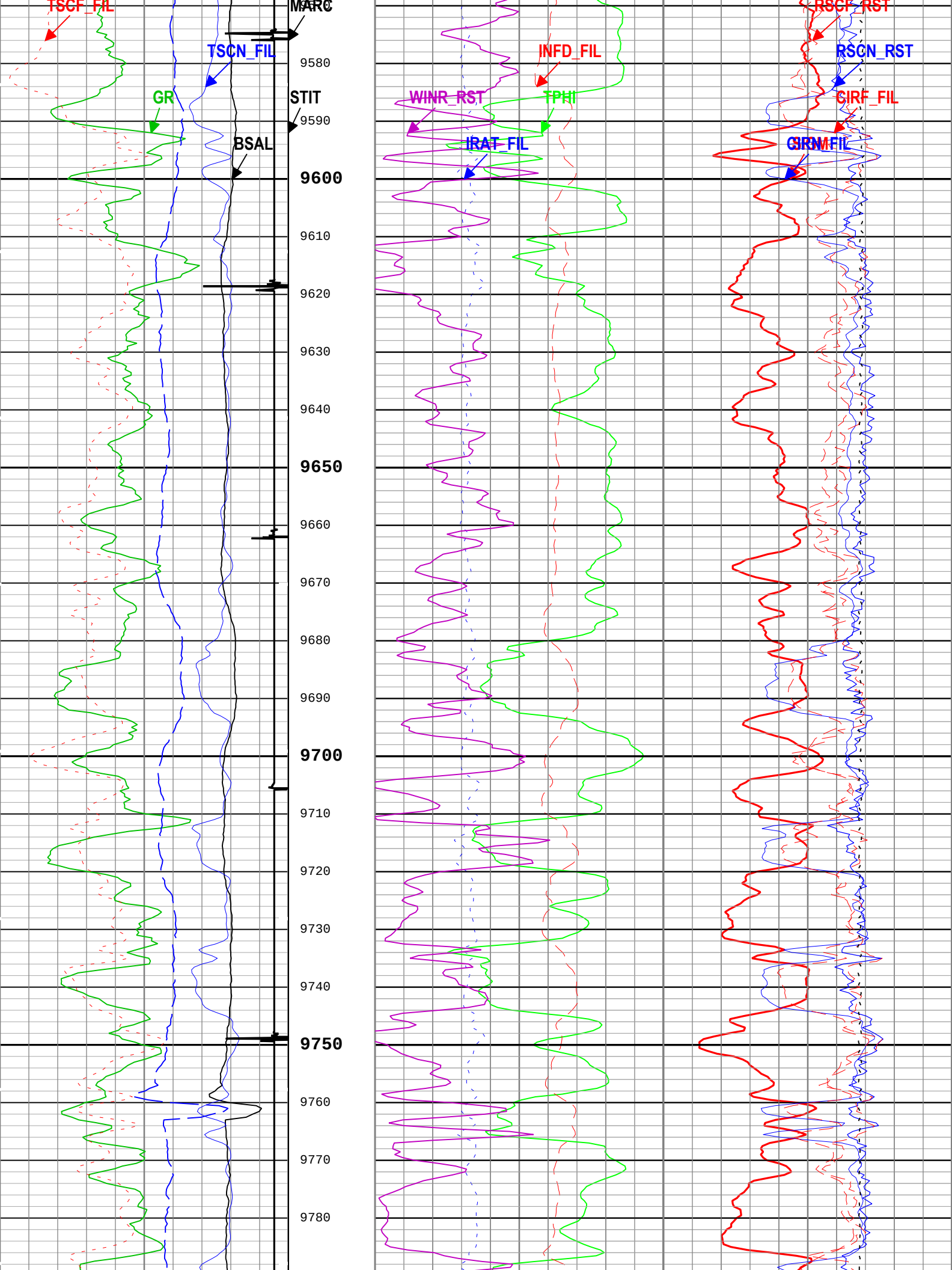
Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C
45 0

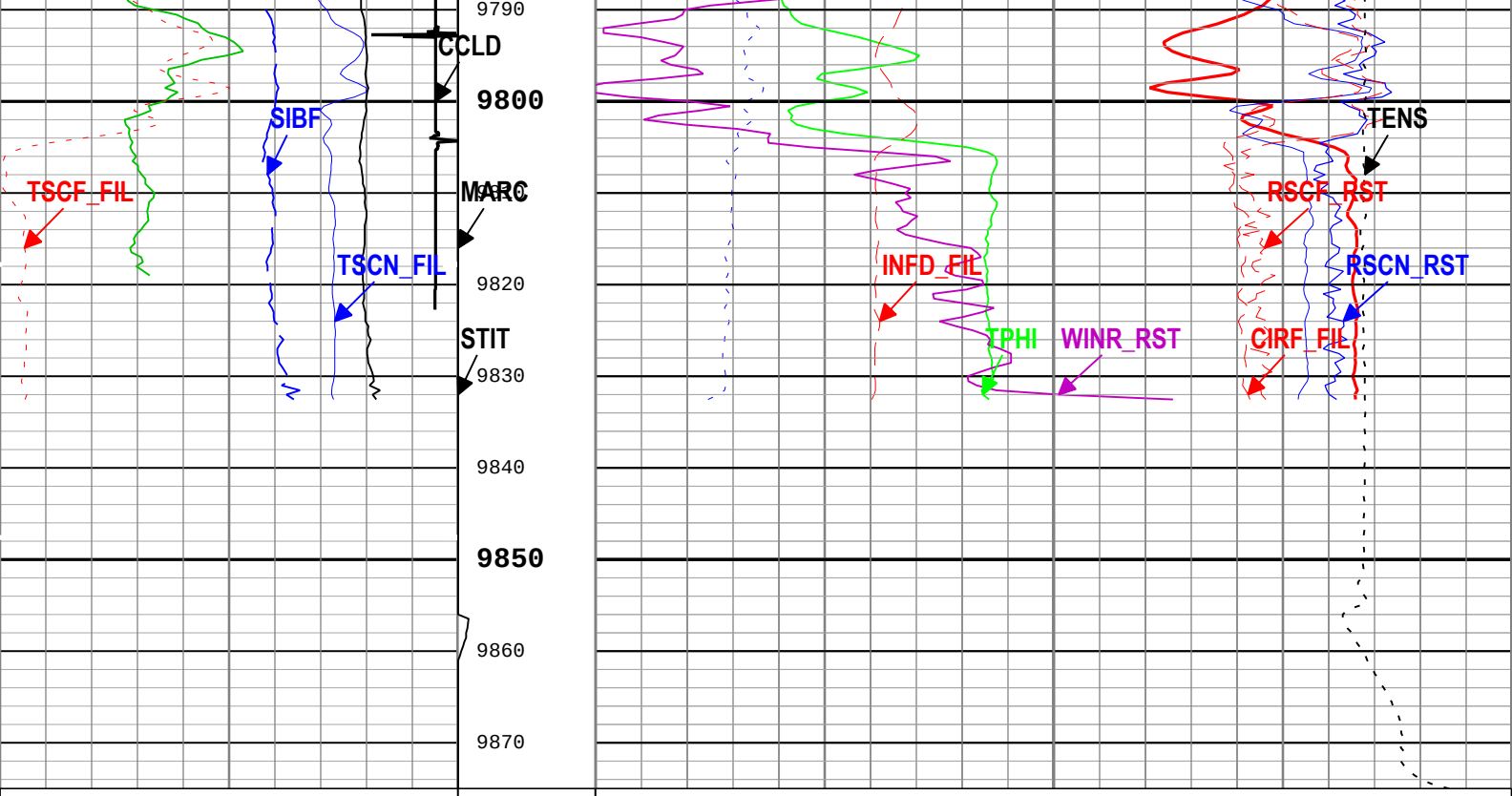
Cable Tension (TENS)
5000 lbf 0

Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C
60 cu 0

Weighted Inelastic Ratio (WINR_RST) RST-C
0 0.4




TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL
9580
9590
9600
9610
9620
9630
9640
9650
9660
9670
9680
9690
9700
9710
9720
9730
9740
9750
9760
9770
9780



Borehole Salinity (BSAL) RST-C	450 ppk -50	
Gamma Ray (GR) PSTP-B	0 gAPI 150	
Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C	30000 1/s 0	
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C	12000 1/s 0	
Sigma Borehole Fluid (SIBF) RST-C	100 cu 0	
CCL Discriminated Amplitude (CCLD) PSTP-B	-19 V 1	
Stuck Tool Indicator, Total (STIT)	0 ft 50	
Cable Drag From STIA to STIT		
Tool_Tot. Drag From D3T to STIT		
Minitron Arc Count (MARC) RST-C	0 5	
Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C	60 cu 0	
Weighted Inelastic Ratio (WINR_RST) RST-C	0 0.4	
Inelastic Ratio Filtered (IRAT_FIL) RST-C	0.75 0	
Thermal Decay Porosity (TPHI) RST-C	0.6 ft3/ft3 0	
Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C	10000 1/s 0	
Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C	2.5 0	
Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C	5 0	
Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C	45 0	
Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C	45 0	
Cable Tension (TENS)	5000 lbf 0	

ICV - Integrated Cement Volume every 100.00 (ft3)

ICV - Integrated Cement Volume every 10.00 (ft3)

IHV - Integrated Hole Volume every 100.00 (ft3)

IHV - Integrated Hole Volume every 10.00 (ft3)

TIME_1900 - Time Marked every 60.00 (s)

TIME_1900 - Elapsed time since midnight, 30 December 1899 every 60.00 (s)

Description: RST SIGMA Answer Format: Log (RST SIGMA Answer) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Sep-2018 14:10:46

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit

BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.75	in
BSAL	Borehole Salinity	Borehole	0	ppm
BSALOPT	Borehole Salinity Option	RST-C	Unknown	
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-B	24 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

Company:	Caerus Operating LLC
Well:	NPR 23B-10 596
Field:	NPR
County:	Garfield
State:	Colorado

Schlumberger

Cement Bond Log
RST Sigma Log
Gamma Ray - Collar Locator