Schlumberger

Company: Caerus Piceance LLC

Well: Puckett 12D-1

Field: Wildcat

County: US State: Colorado

Reservoir Saturation Tool

Sigma

County: US
Field: Wildcat
Location: SHL: S2, T7S, R97W
Well: Puckett 12D-1
Company: Caerus Piceance LLC

Location:
SHL: S2, T7S, R97W
2215' FNL & 632' FEL
LAT: 39.475711 / LONG: -108.180239

Elev.: K.B. 8509.00 ft
G.L. 8479.00 ft
D.F. 8508.00 ft

Permanent Datum: Ground Level Elev.: 8479.00 f
Log Measured From: Kelly Bushing 30.00 ft above Perm.Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section:	Township:	Range:
05-045-22619	2	7S	97W

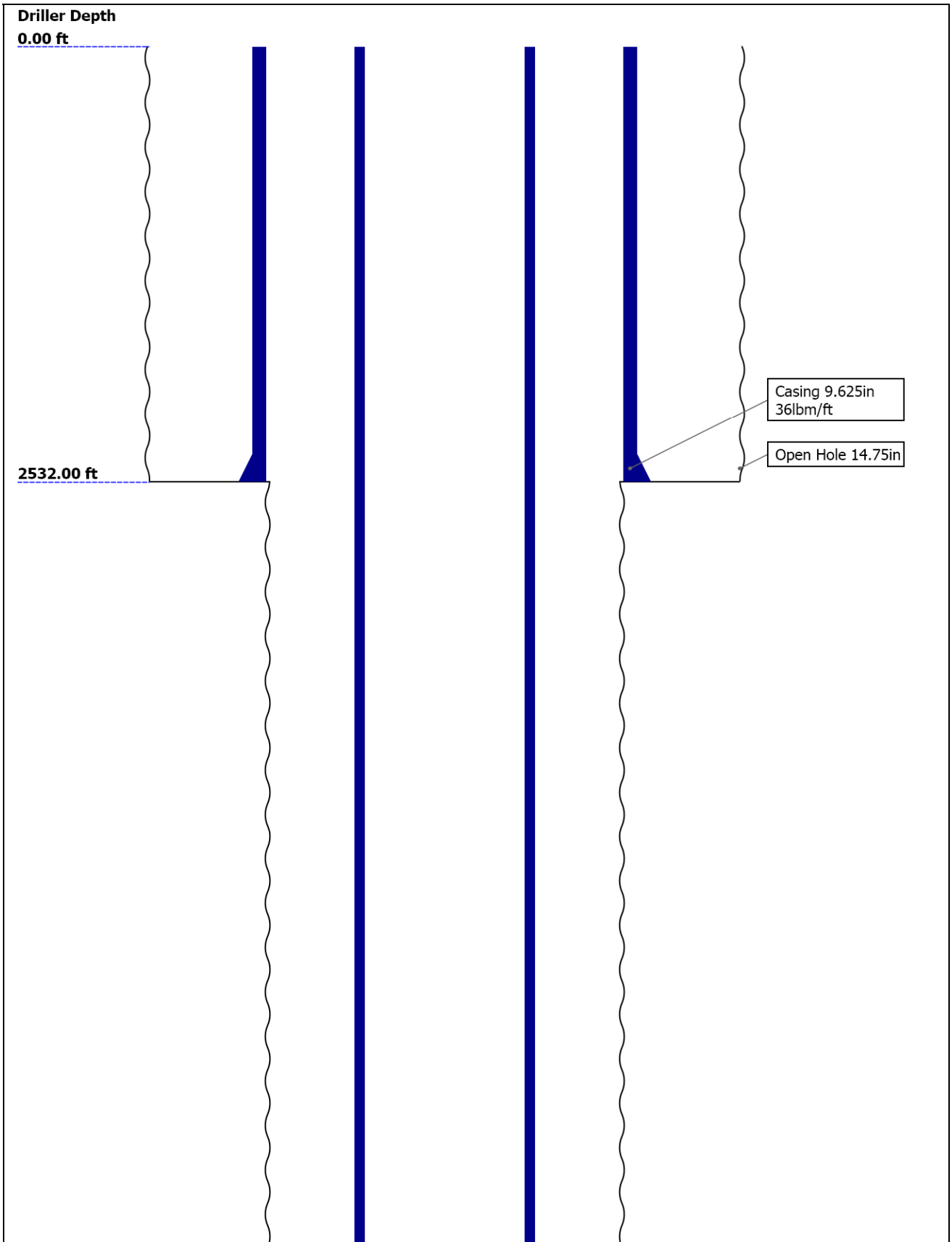
Logging Date		24-Jul-2015			
Run Number		ONE			
Depth Driller		8977.00 ft			
Schlumberger Depth		8977.00 ft			
Bottom Log Interval		8898.00 ft			
Top Log Interval		2500.00 ft			
Casing Fluid Type		3% KCl			
Salinity					
Density		9 lbm/gal			
Fluid Level		0.00 ft			
BIT/CASING/TUBING STRING					
Bit Size		8.75 in			
From		2532.00 ft			
To		8977.00 ft			
Casing/Tubing Size		4.5 in			
Weight		11.6 lbm/ft			
Grade		P110			
From		0.00 ft			
To		8977.00 ft			
Max Recorded Temperatures		239 degF			
Logger on Bottom	Time	24-Jul-2015	09:44:00		
Unit Number	Location:	9108	Fort Morgan, CO		
Recorded By		Brett Dobinsky / Ben Marmon			
Witnessed By		Natalie Naeve			

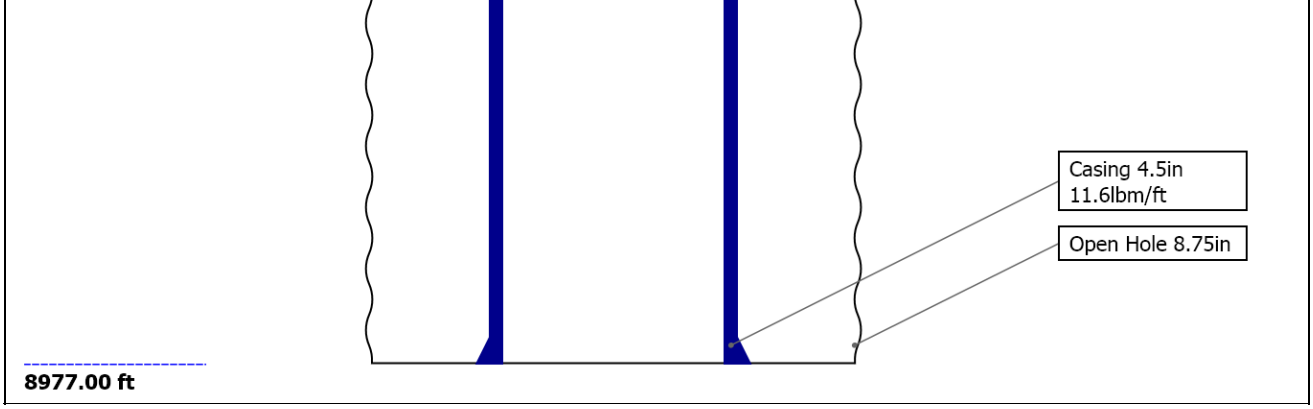
Disclaimer

Contents

11. Calibration Report
12. Tail

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	14.75	8.75				
Top Driller (ft)	0	2532				
Top Logger (ft)	0	2532				
Bottom Driller (ft)	2532	8977				
Bottom Logger (ft)	2532	8977				
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)	2532	8977				
Bottom Logger (ft)	2532	8977				

Operational Run Summary

Parameter (unit)	ONE					
Date Log Started	24-Jul-2015					
Time Log Started	07:08:46					
Date Log Finished	24-Jul-2015					
Time Log Finished	13:50:50					
Top Log Interval (ft)						
Bottom Log Interval (ft)						
Total Depth (ft)	8898.00					
Max Hole Deviation (deg)						
Azimuth of Max Deviation (deg)						
Bit Size (in)	8.750					
Logging Unit Number	9108					
Logging Unit Location	Fort Morgan, CO					
Recorded By	Brett Dobinsky / Ben Marmon					

Witnessed By	Natalie Naeve					
Service Order Number	D5ND-00074					

Remarks and Equipment Summary

ONE: Toolstring

Equip name	Length	MP name	Offset
LEH-QT	**58.91**		
LEH-QT			
AH-63	**56.00**		
AH-79	**55.68**		
PSTP-A:1814	**54.85**	**GR**	**51.14**
PSC-A		**PSTC**	**50.85**
PSTC-A		**PSTC Tool String Bottom**	**0.00**
PBMS-A:1814			
Sapphire 10 kPSI		**Temperature**	**48.06**
		Sapphire Pressure	**47.94**
		CCL	**47.33**
		PBMS	**46.58**
RST-C:1787	**46.58**		
RSCH-A:469			
RSC-E:381		**RSC-E**	**40.22**
RSS-A:461			
MNTR-F:1			
RSXH-A:275			
RSX-E:1787		**Far**	**37.46**
		Near	**36.96**
		RSX-E	**23.56**
SCMT-CB:8372	**23.56**		
SECH-CA			
SCMC-CA			
CMIR-AG			
SCMS-CB:8372			
SCMX-CA			
AH-278			
TTG-C:8295			

ONE: Remarks

Tool ran as per tool sketch
This is the first run in the hole.
Main and Repeat passes are correlated to downlog.
RST ran in Sigma mode
Matrix: Sandstone, 2.68 g/cc
Tagged float collar at 8898'.
Reapeat pass is done with 0 psi.
Main pass logged with 2500 psi.
Logged stopped at 2500' as per client request.

Lengths are in ft
Maximum Outer Diameter = 3.375 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	6510		
Calibration Date	29-Mar-2015		
Calibrator Serial Number			
Calibration Cable Type	7-46 AXS		
Wheel Correction 1	-4		
Wheel Correction 2	-2		
Tension Device			
Type	CMTD-B/A		
Serial Number	171		
Calibration Date	26-JUN-2015		
Calibrator Serial Number	123		
Number of Calibration Points	10		
Calibration Root Mean Square Error	13		
Calibration Peak Error	31		
Logging Cable			
Type	7-46A-XS		
Serial Number	U714071		
Length	17500.00 ft		
Conveyance Type	Wireline		
Rig Type	MAST		

ONE:Depth Control Parameters		Depth Control Remarks
Log Sequence	First Log In the Well	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		Logs correlated to downlog
Stretch Correction	5.90 ft	

Stretch Correction	0.00 ft
Tool Zero Check At Surface	

ONE

Software Version

Acquisition System	Version
Maxwell 2014 SP3	5.3.45427.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	1993.23 ft	8911.14 ft	24-Jul-2015 9:44:41 AM	24-Jul-2015 1:36:22 PM	ON	5.99 ft	No

All depths are referenced to toolstring zero

Log

Company:Caerus Piceance LLC Well:Puckett 12D-1

ONE: Log[4]:Up:S011

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: 24-Jul-2015 14:06:25

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-A
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

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

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

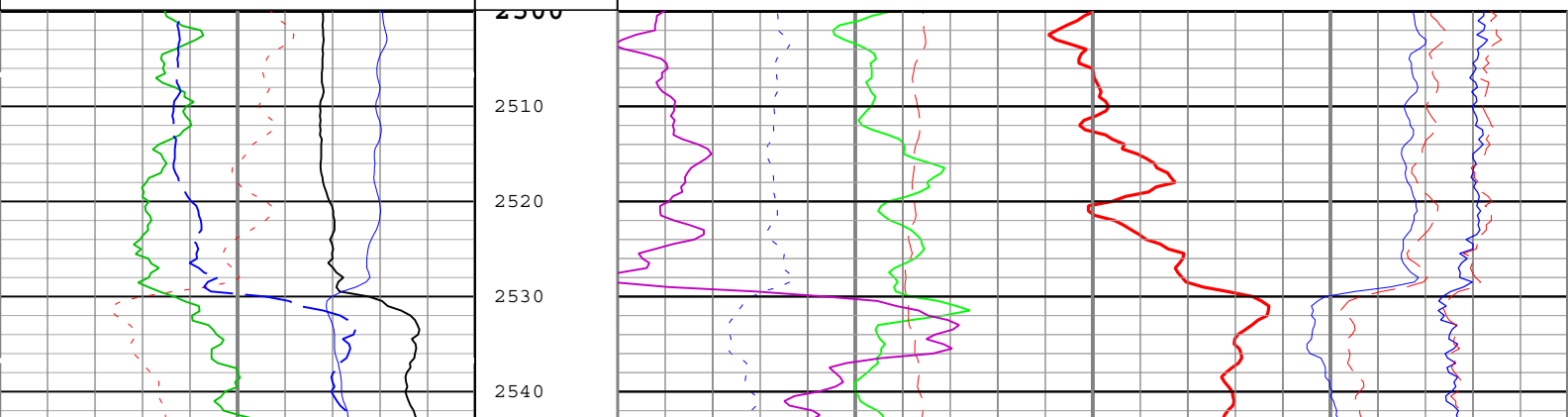
Weighted Inelastic Ratio (WINR_RST) RST-C
0 0.4

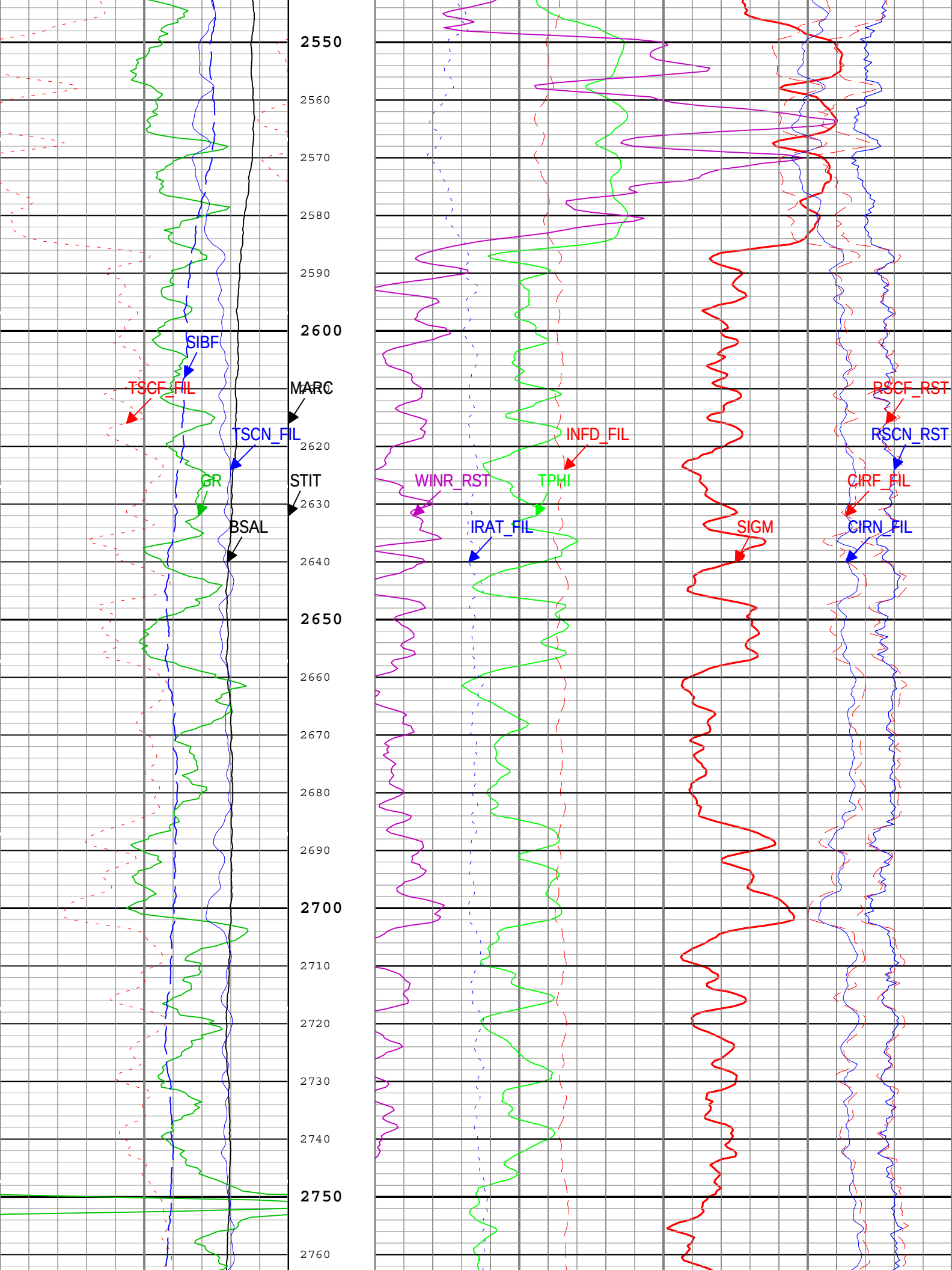
Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C
2.5 0

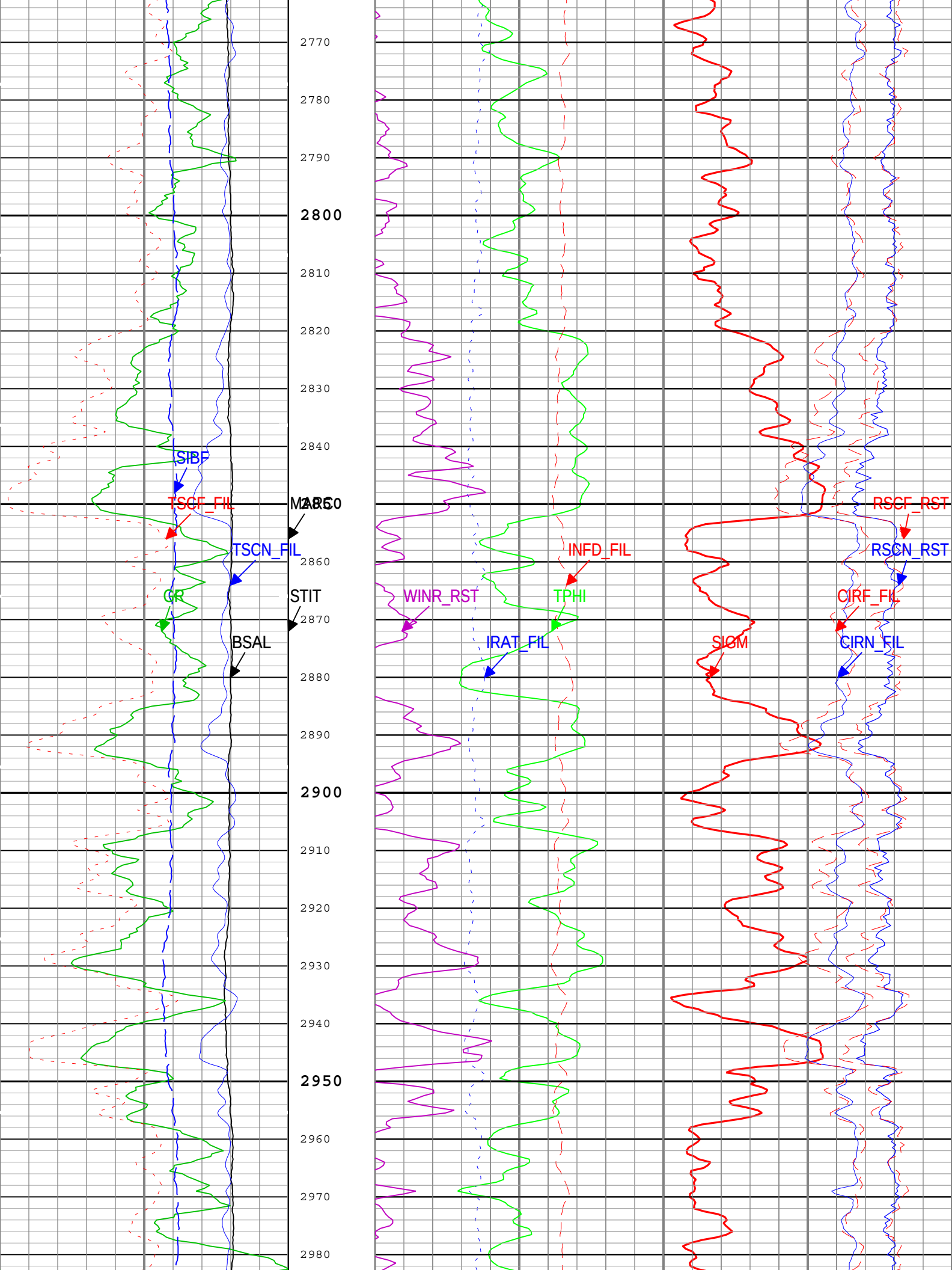
Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C
5 0

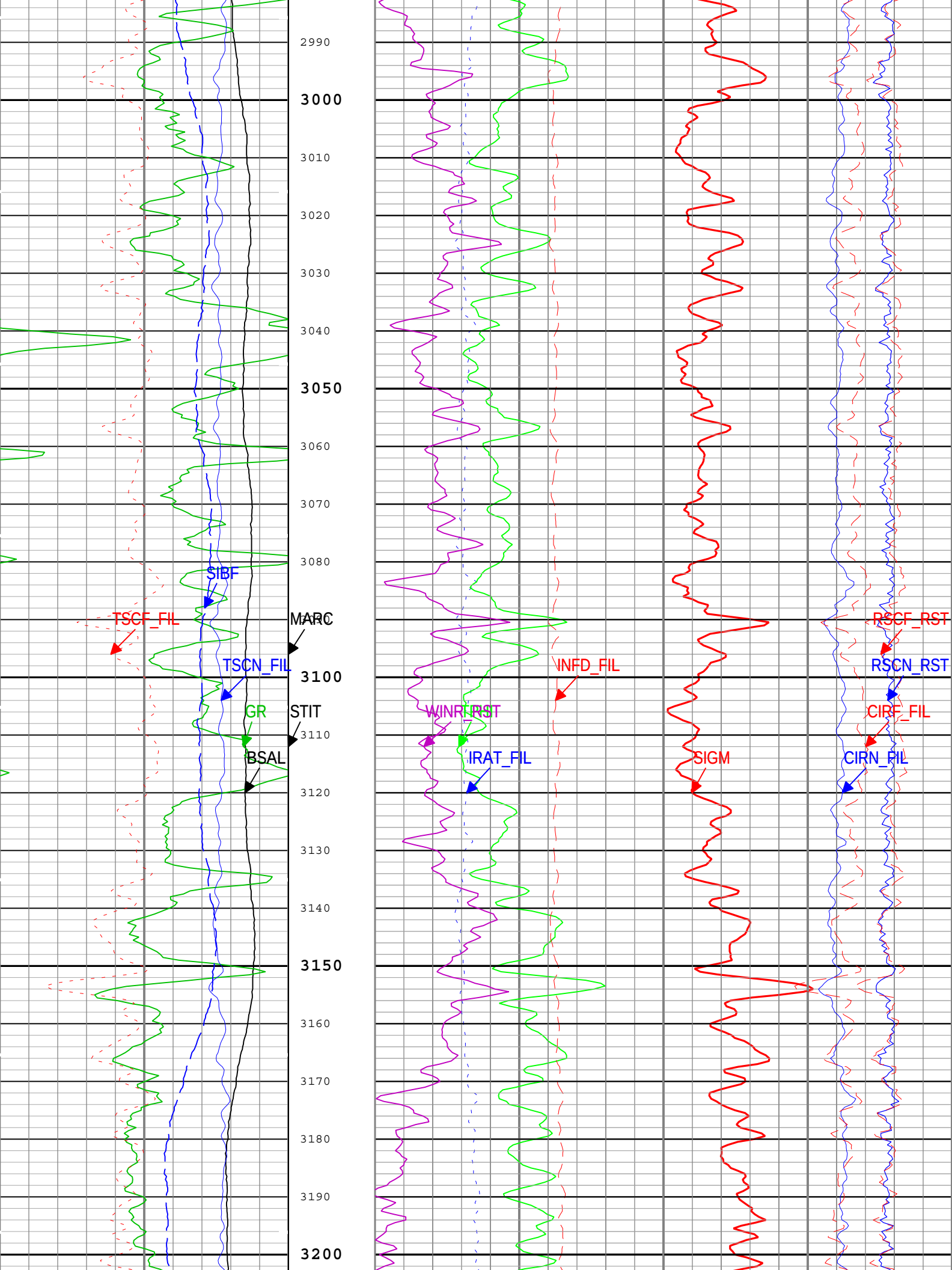
Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C
45 0

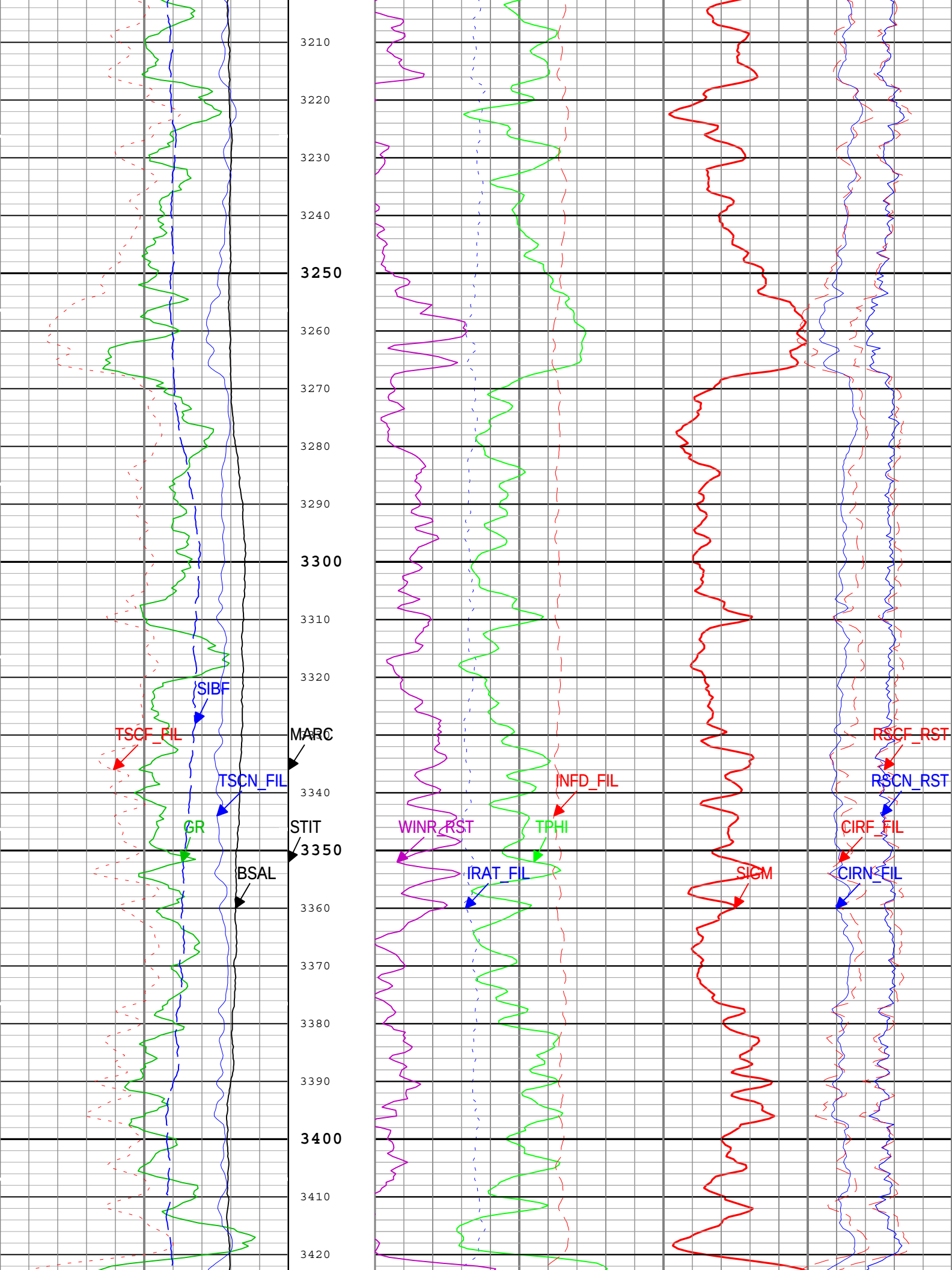
Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C
45 0

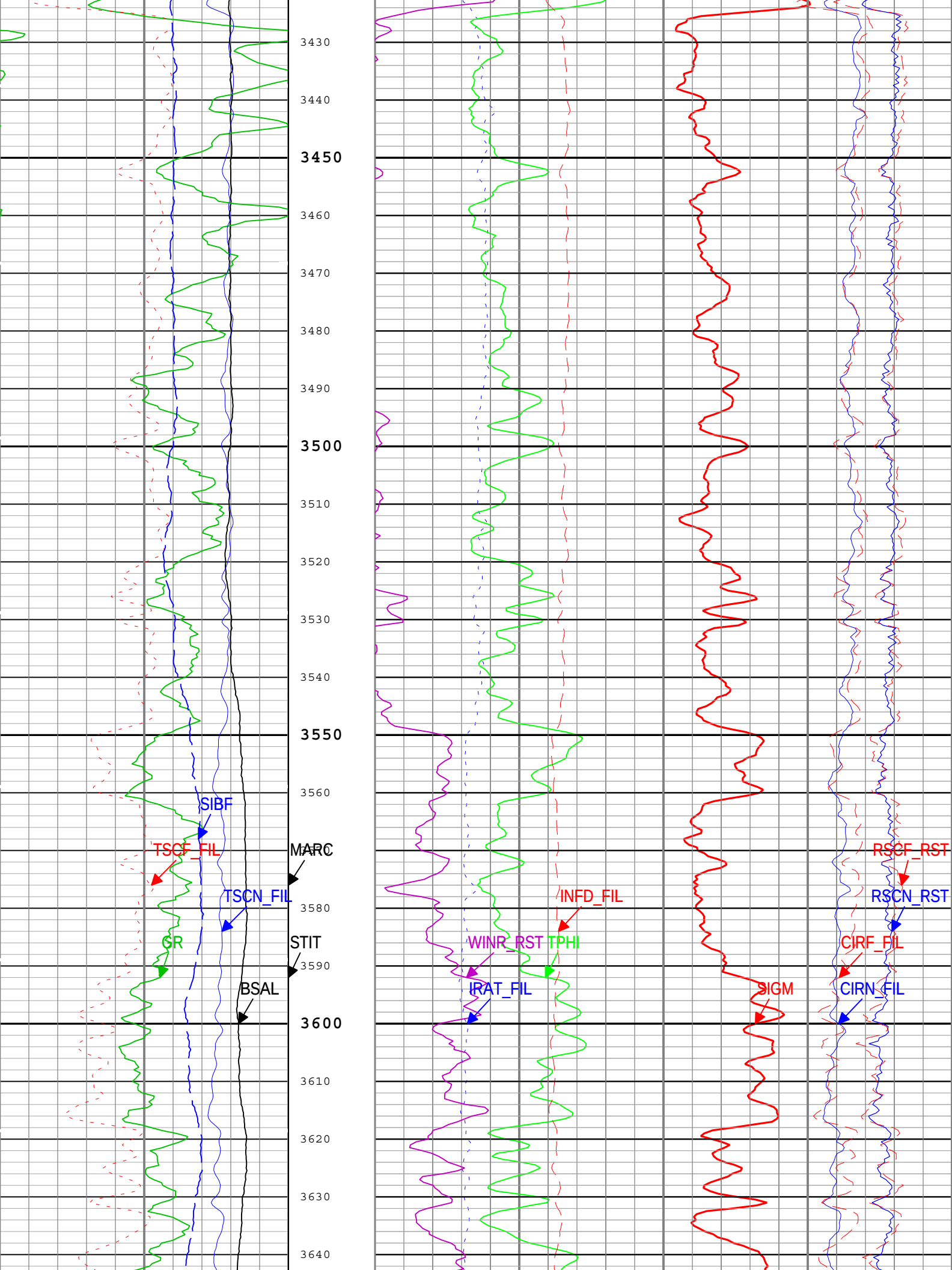


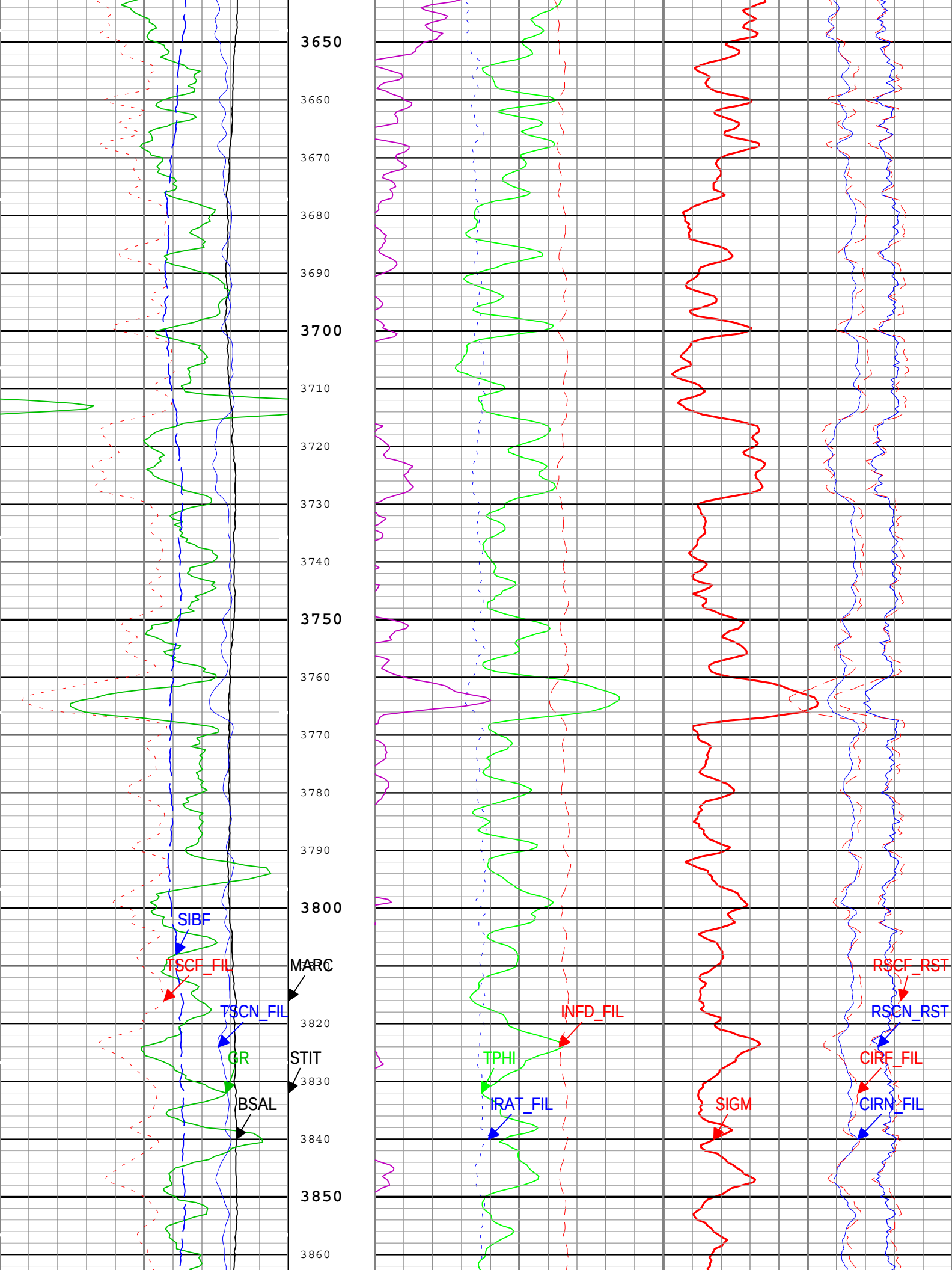

2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

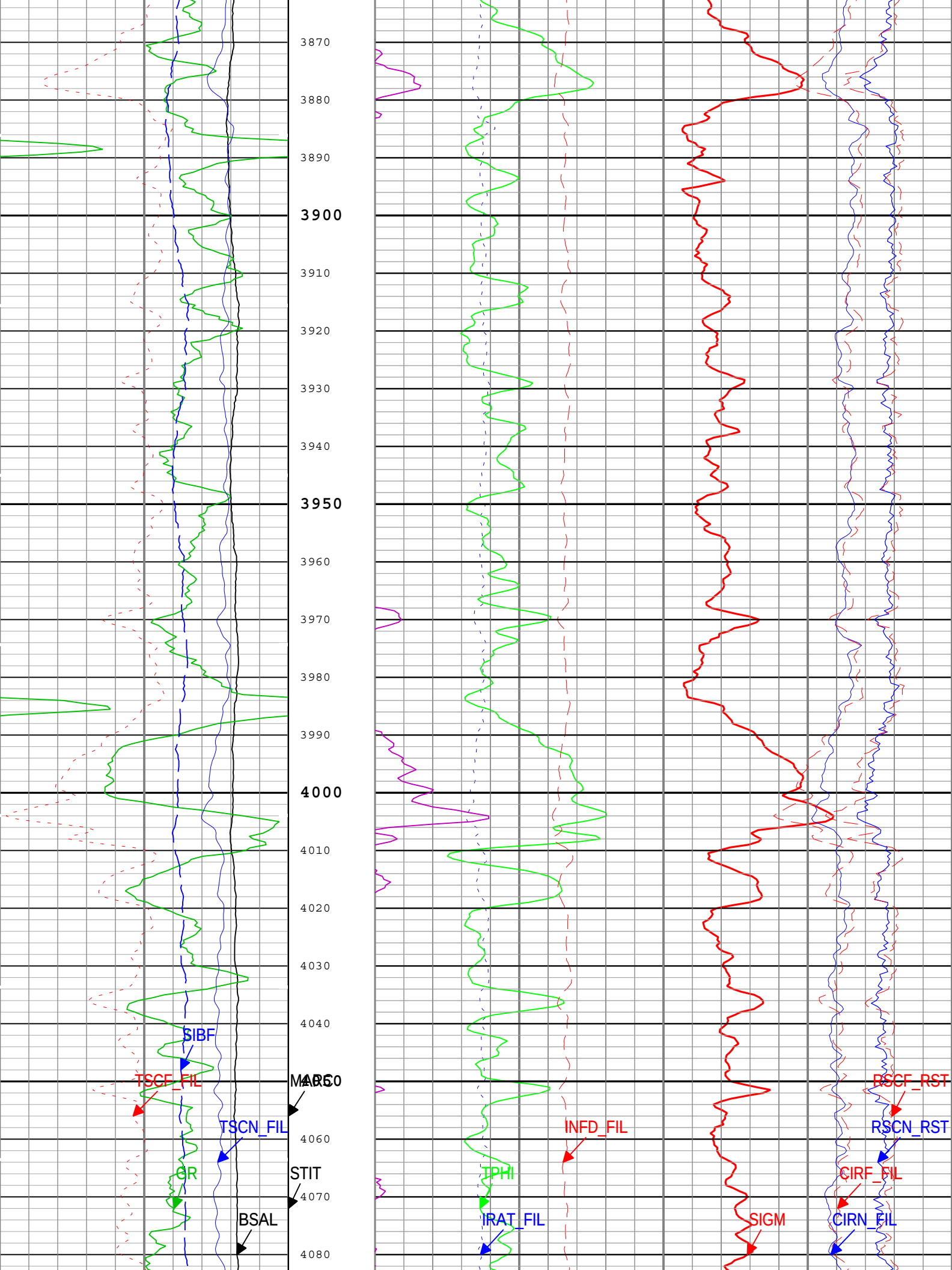

2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
SIBF
TSCF_FIL
TSCN_FIL
GR
BSAL
STIT
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

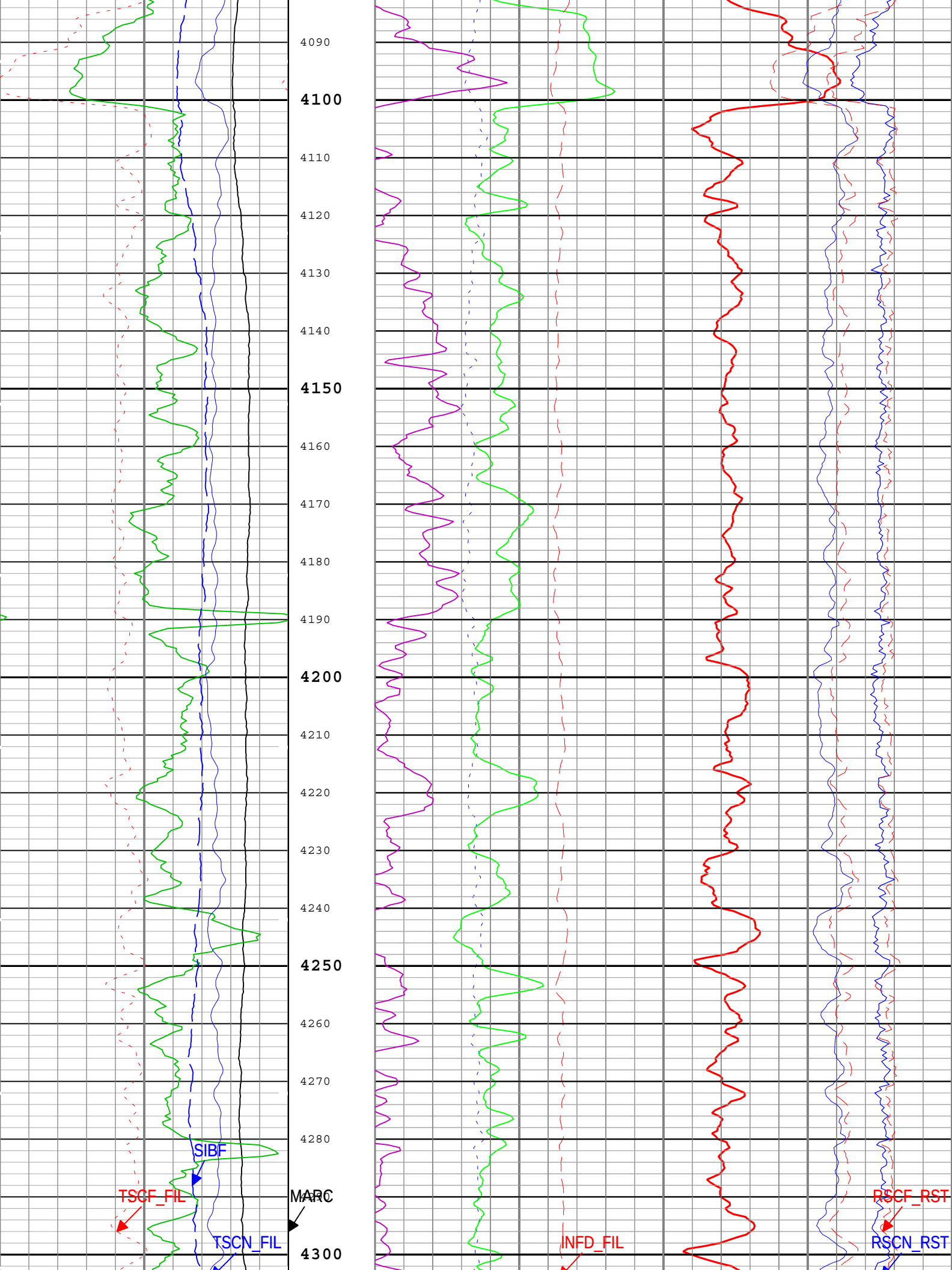

2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINRI_RST
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

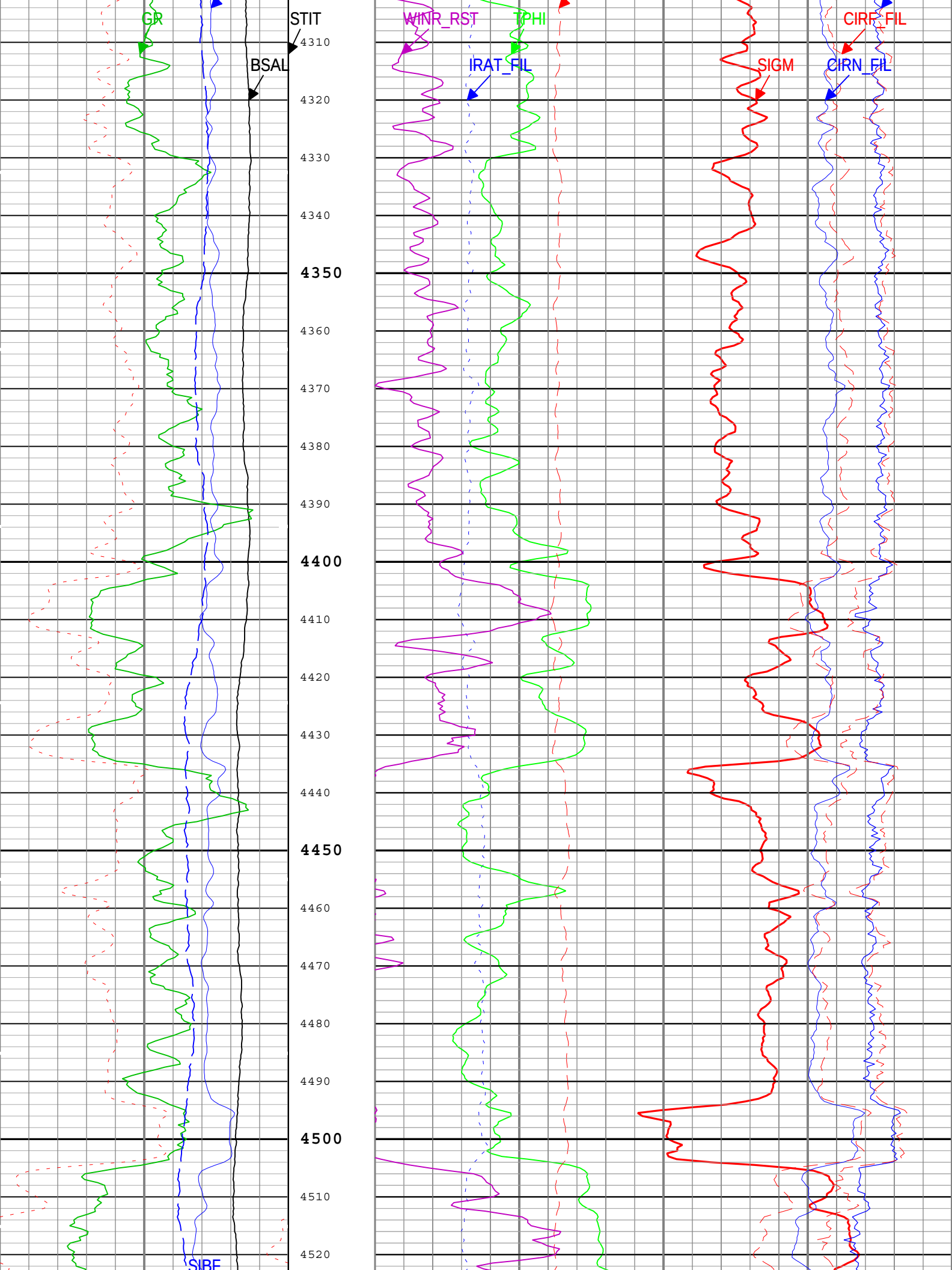

3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3340
3350
3360
3370
3380
3390
3400
3410
3420
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

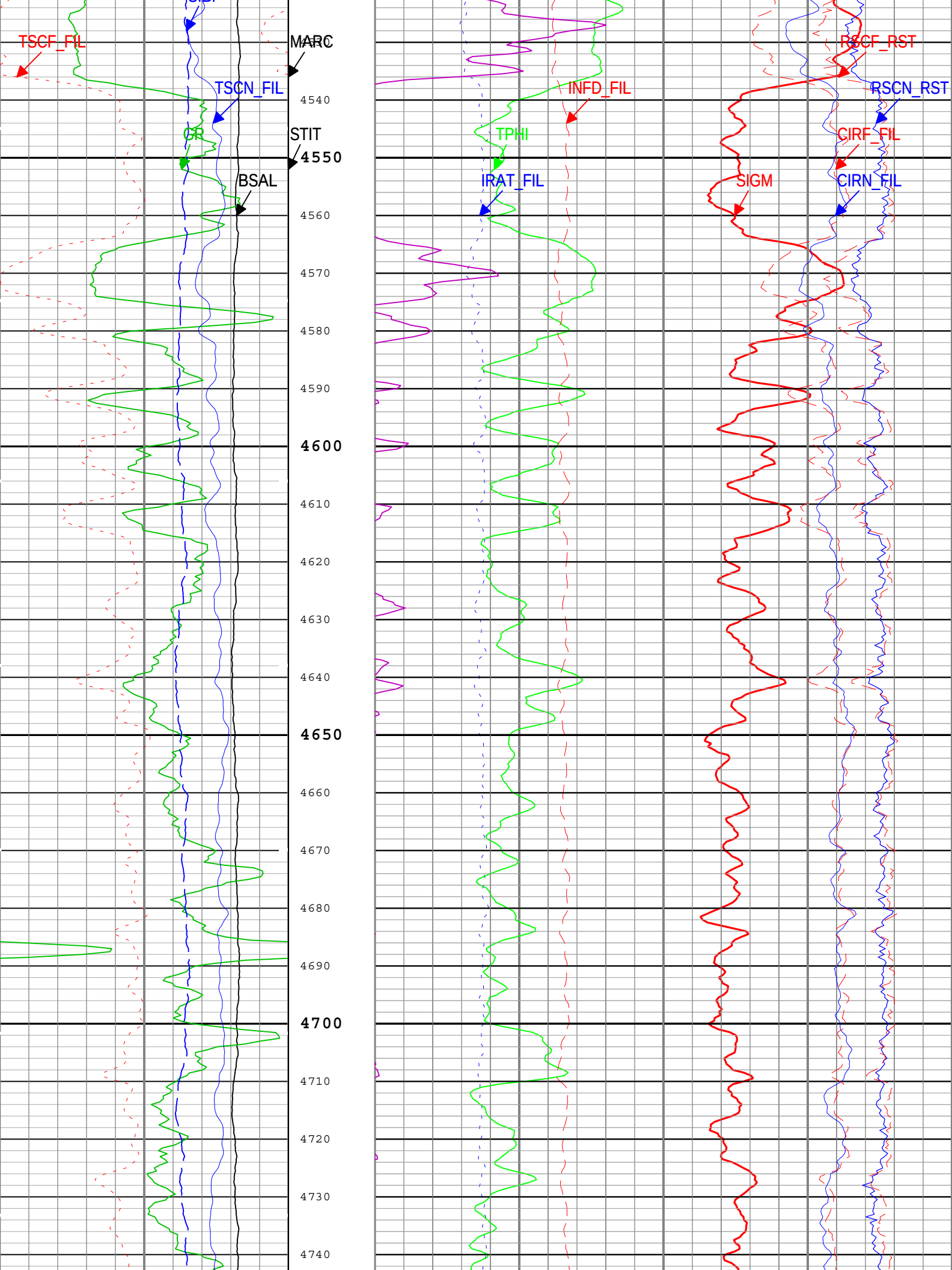

3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3580
3590
3600
3610
3620
3630
3640
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

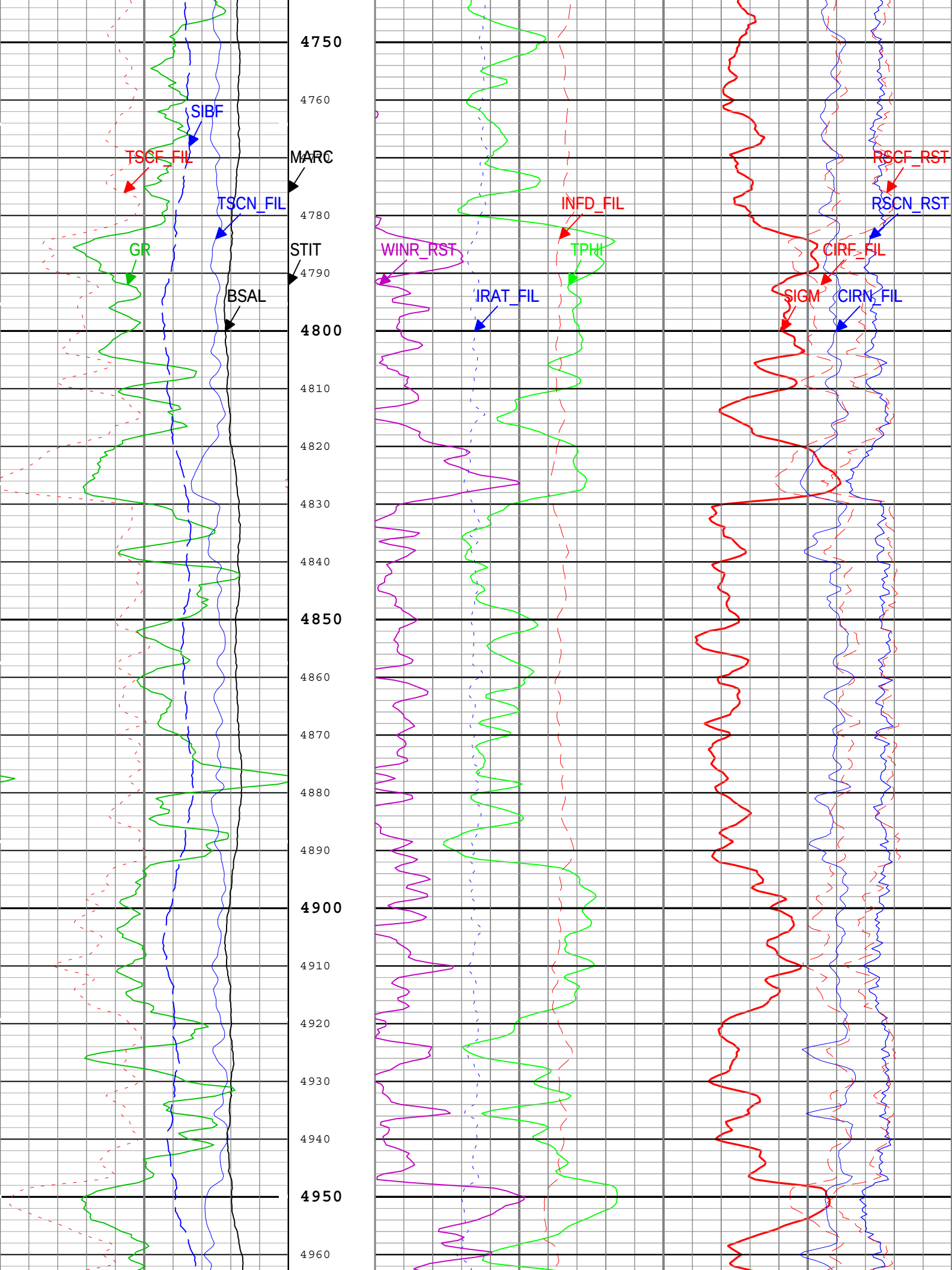

3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

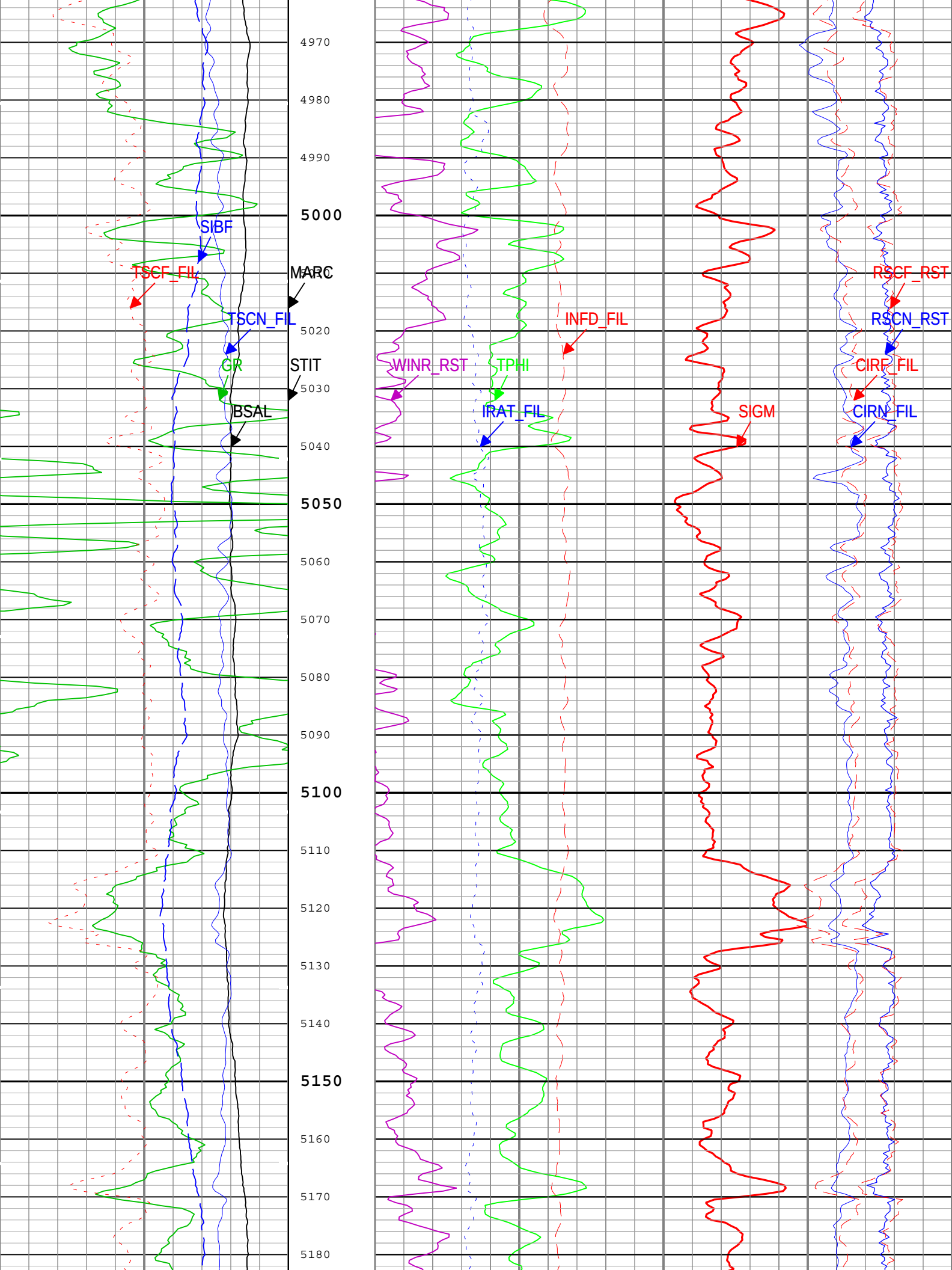

3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
SIBF
TSCF_FIL
TSCN_FIL
GR
BSAL
MARC
STIT
INFD_FIL
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

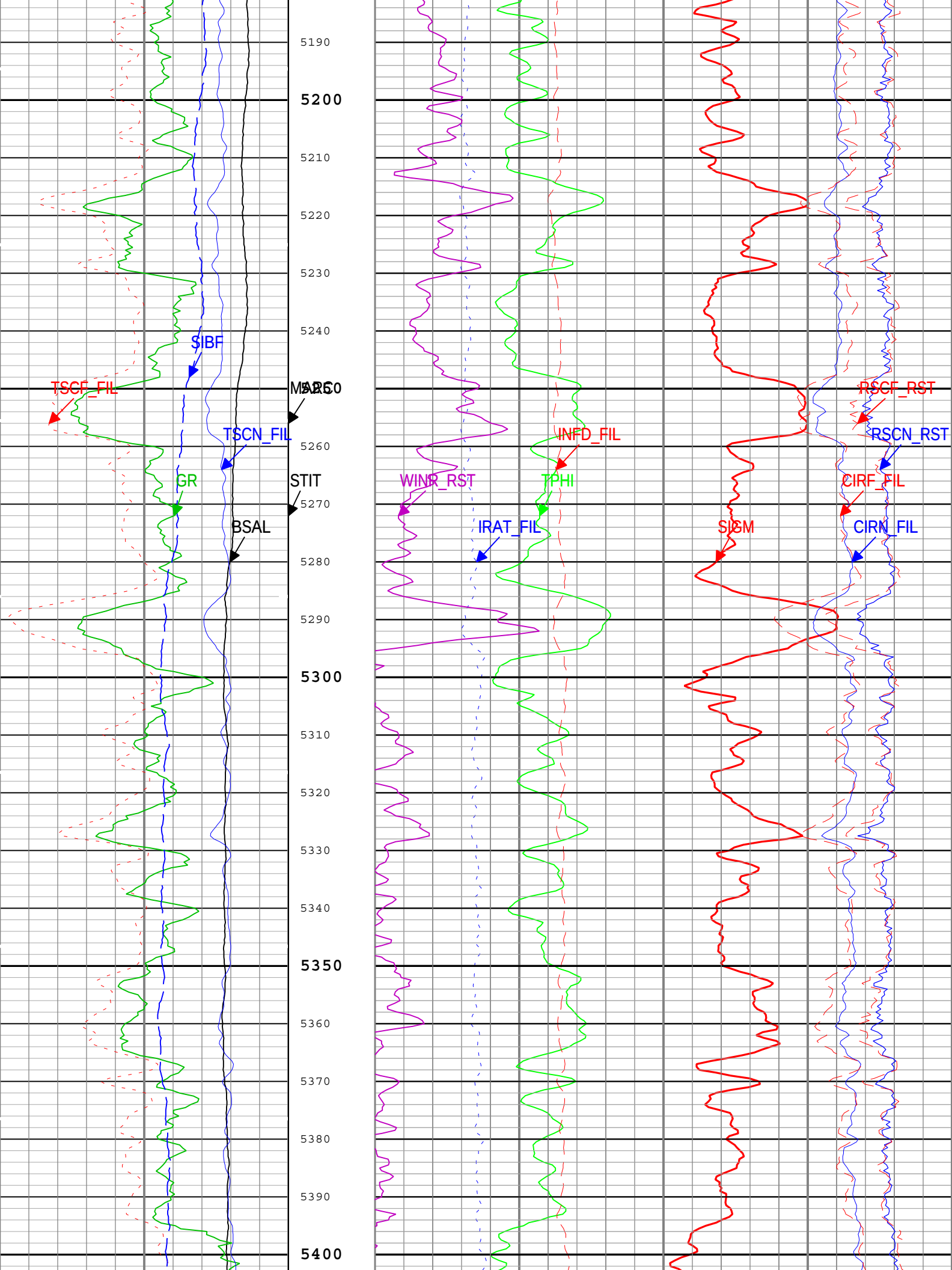

4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4300
SIBF
TSCF_FIL
MARC
TSCN_FIL
INFD_FIL
RSCF_RST
RSCN_RST

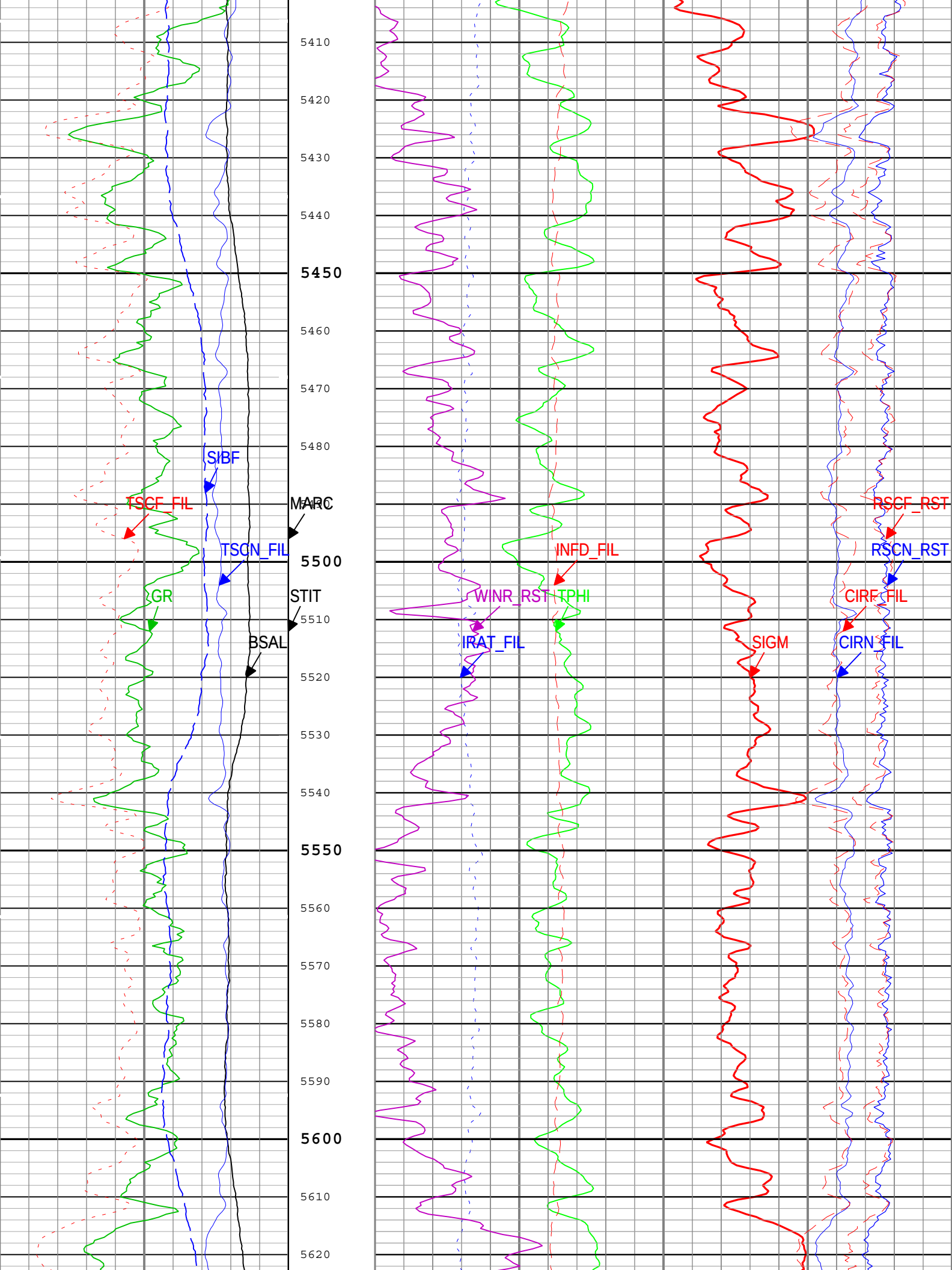

GR
STIT
BSAL
WINR_RST
TPHI
IRAT_FIL
SIGM
CIRF_FIL
CIRN_FIL
SIBF
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520

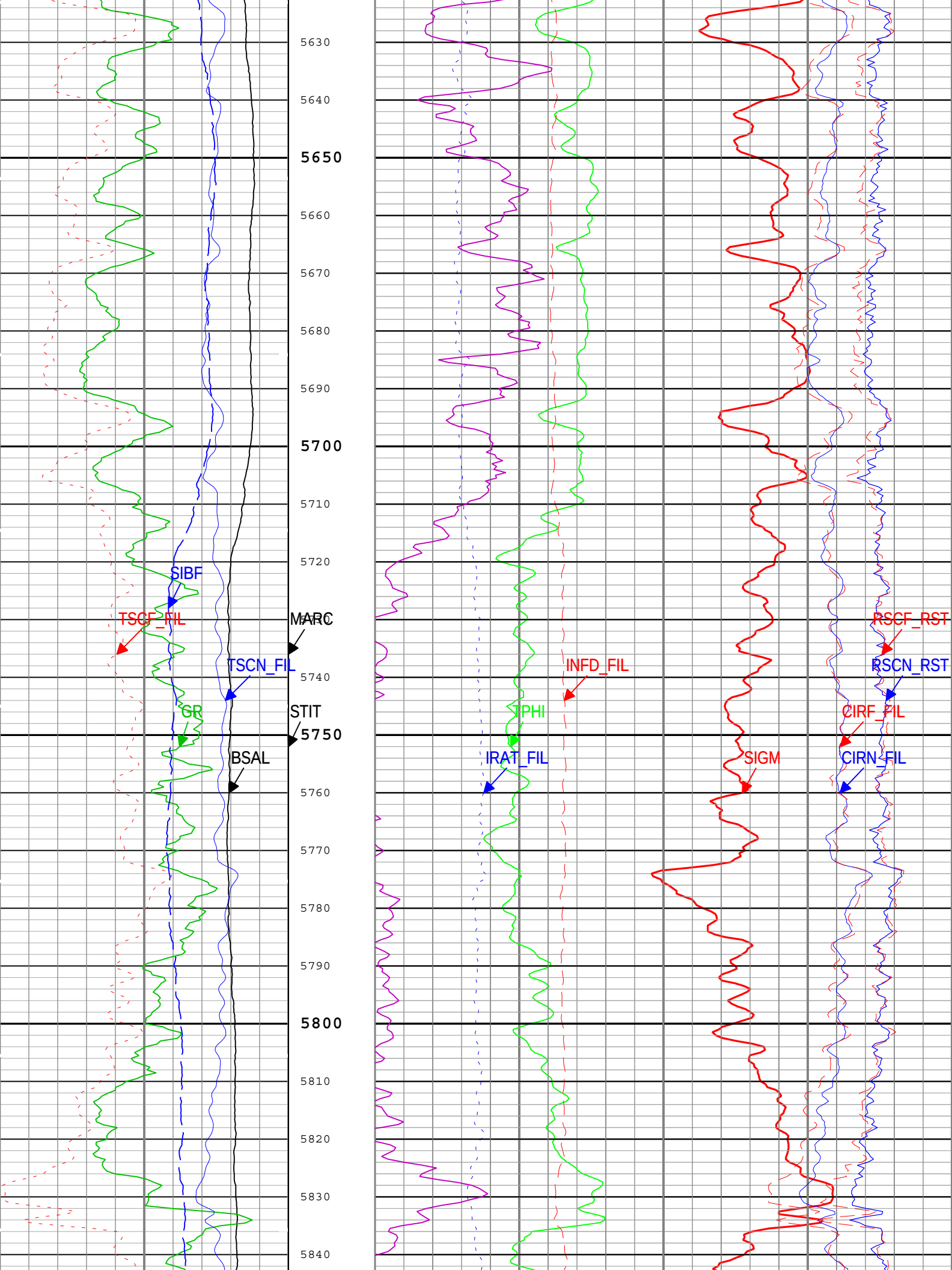

TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
INFD_FIL
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

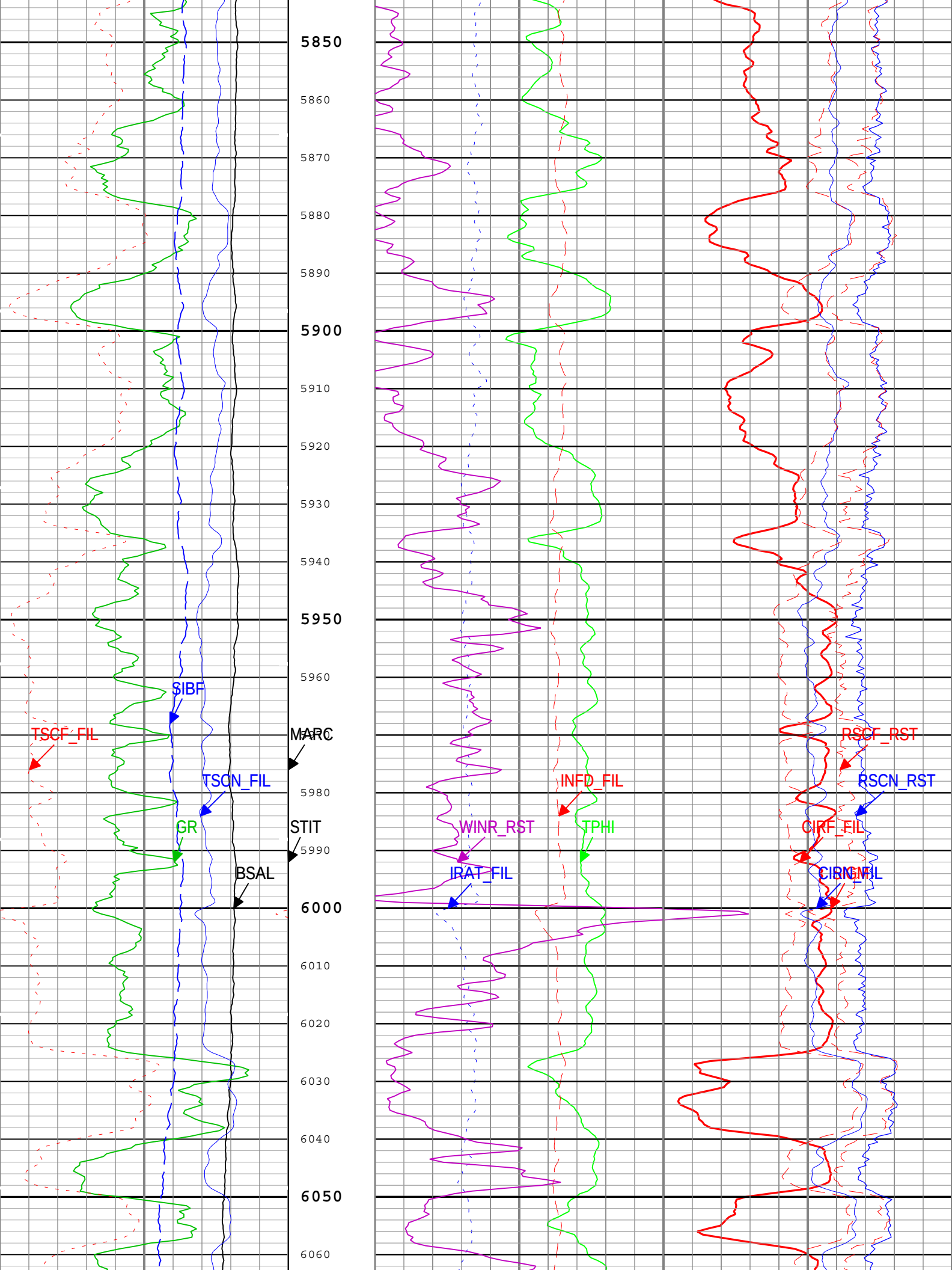

4750
4760
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

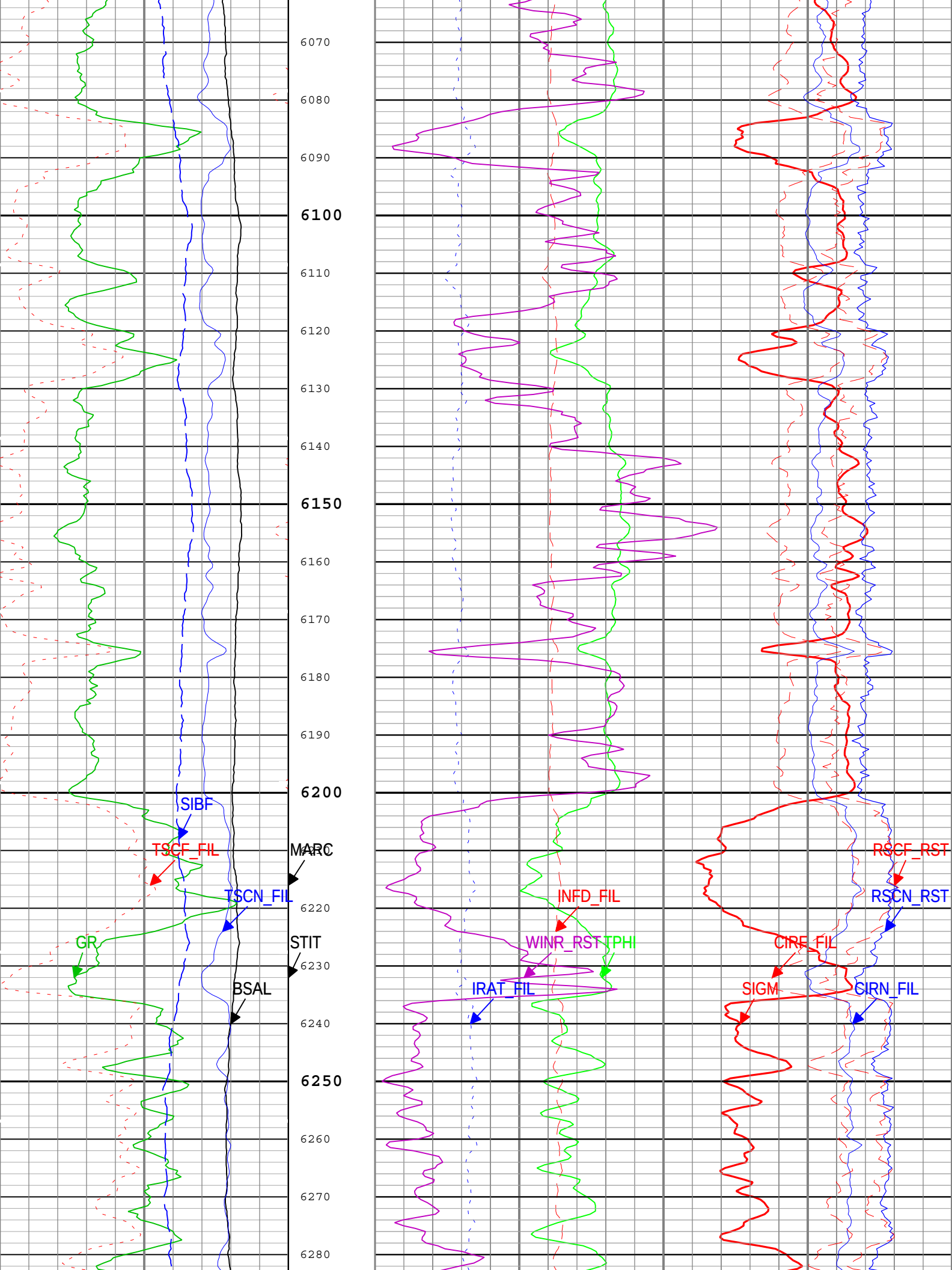

4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
WINR_RST
TPHI
INFD_FIL
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

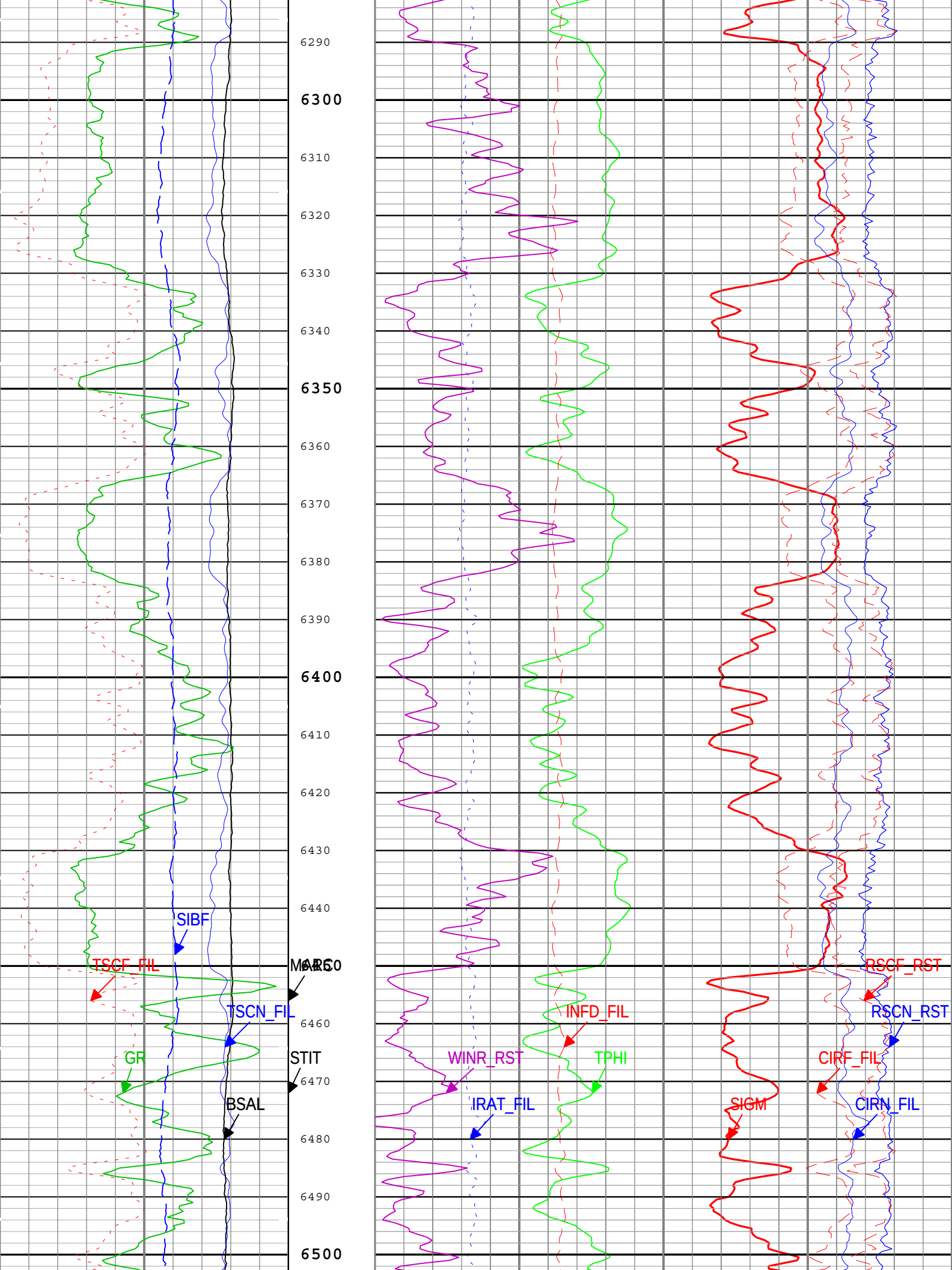

5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
SIBF
TSCF_FIL
TSCN_FIL
GR
STIT
BSAL
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

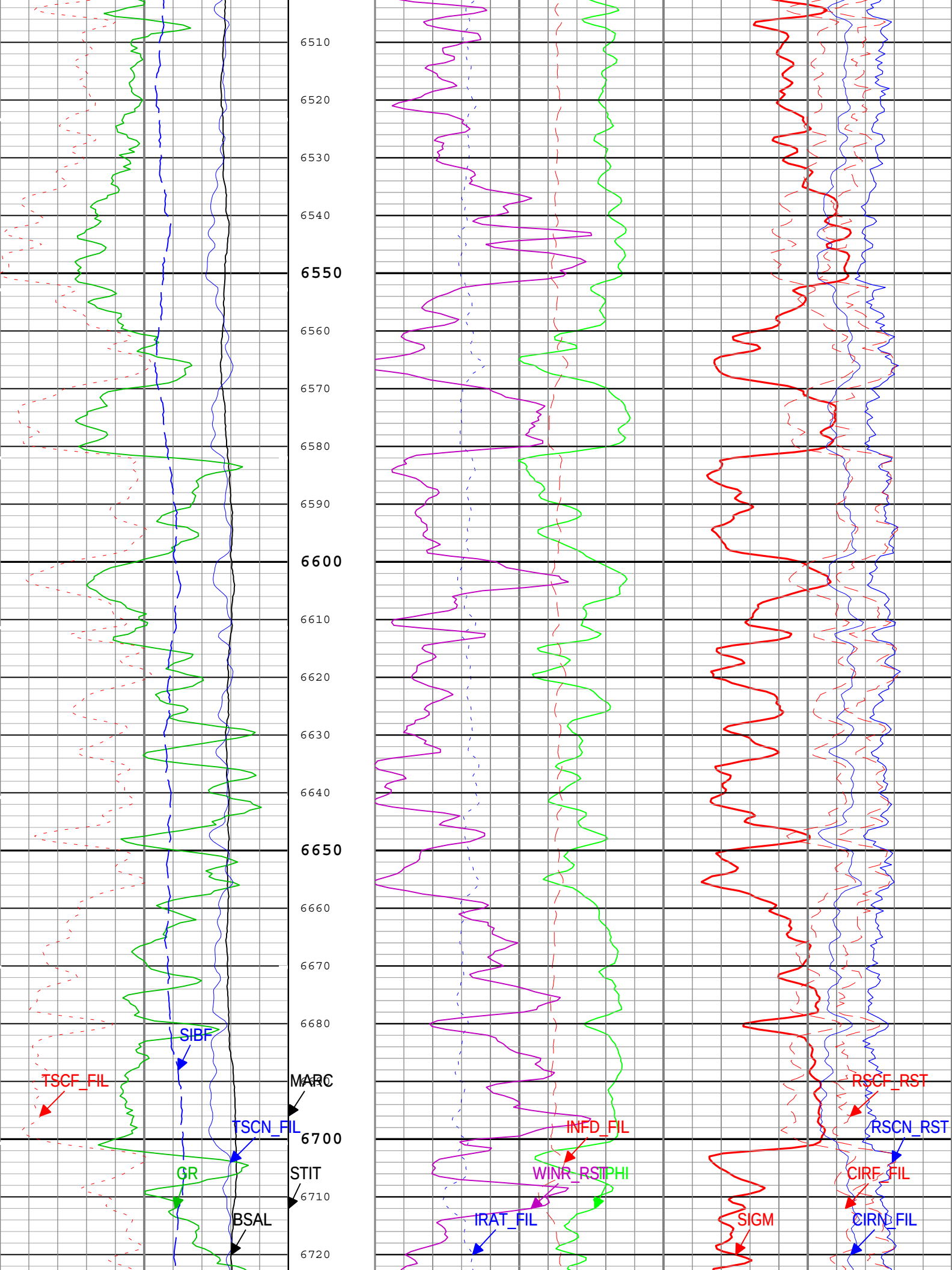

5410
5420
5430
5440
5450
5460
5470
5480
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

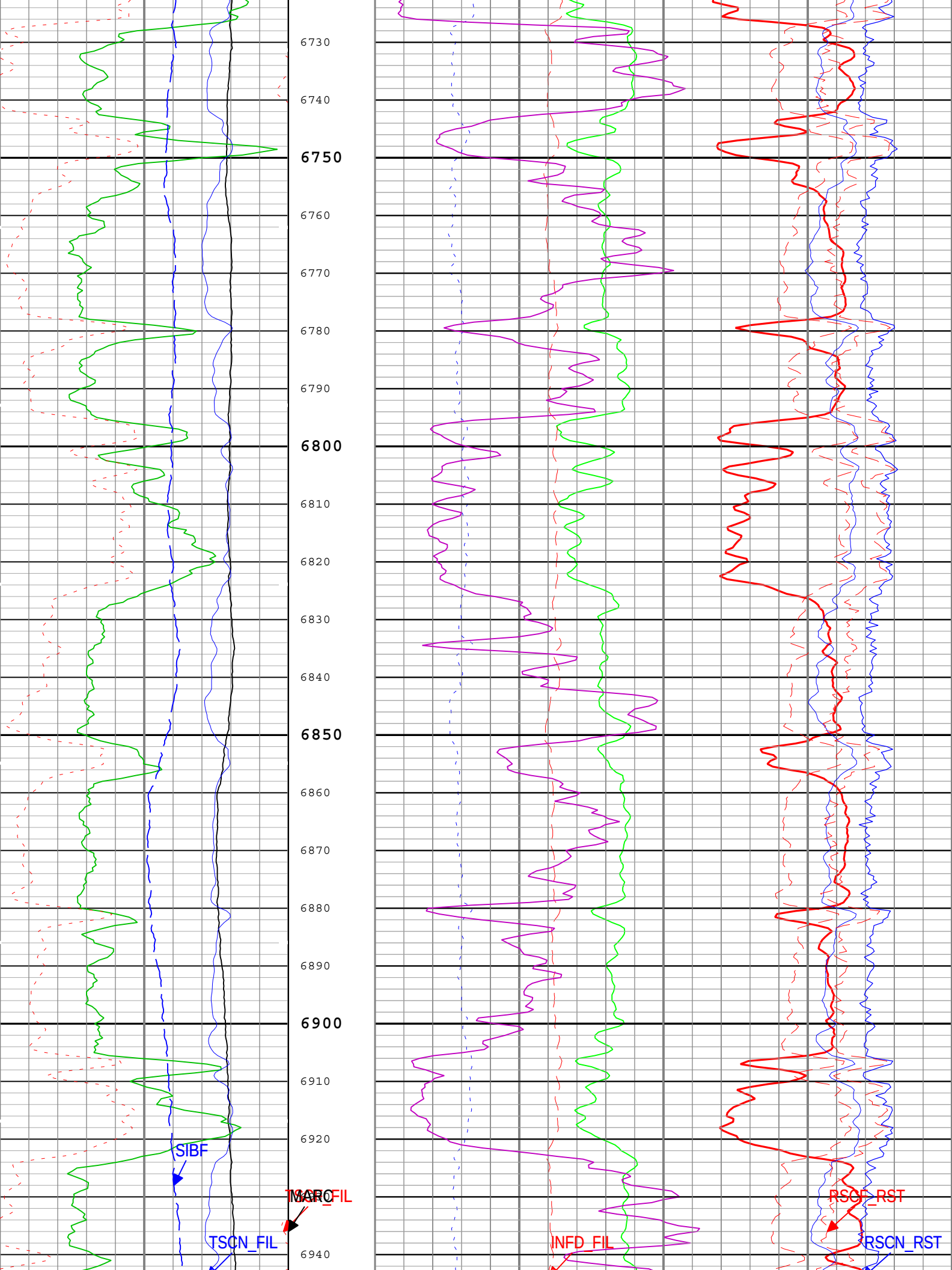

5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
SIBF
TSCF_FIL
TSCN_FIL
GR
BSAL
MARC
STIT
INFD_FIL
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

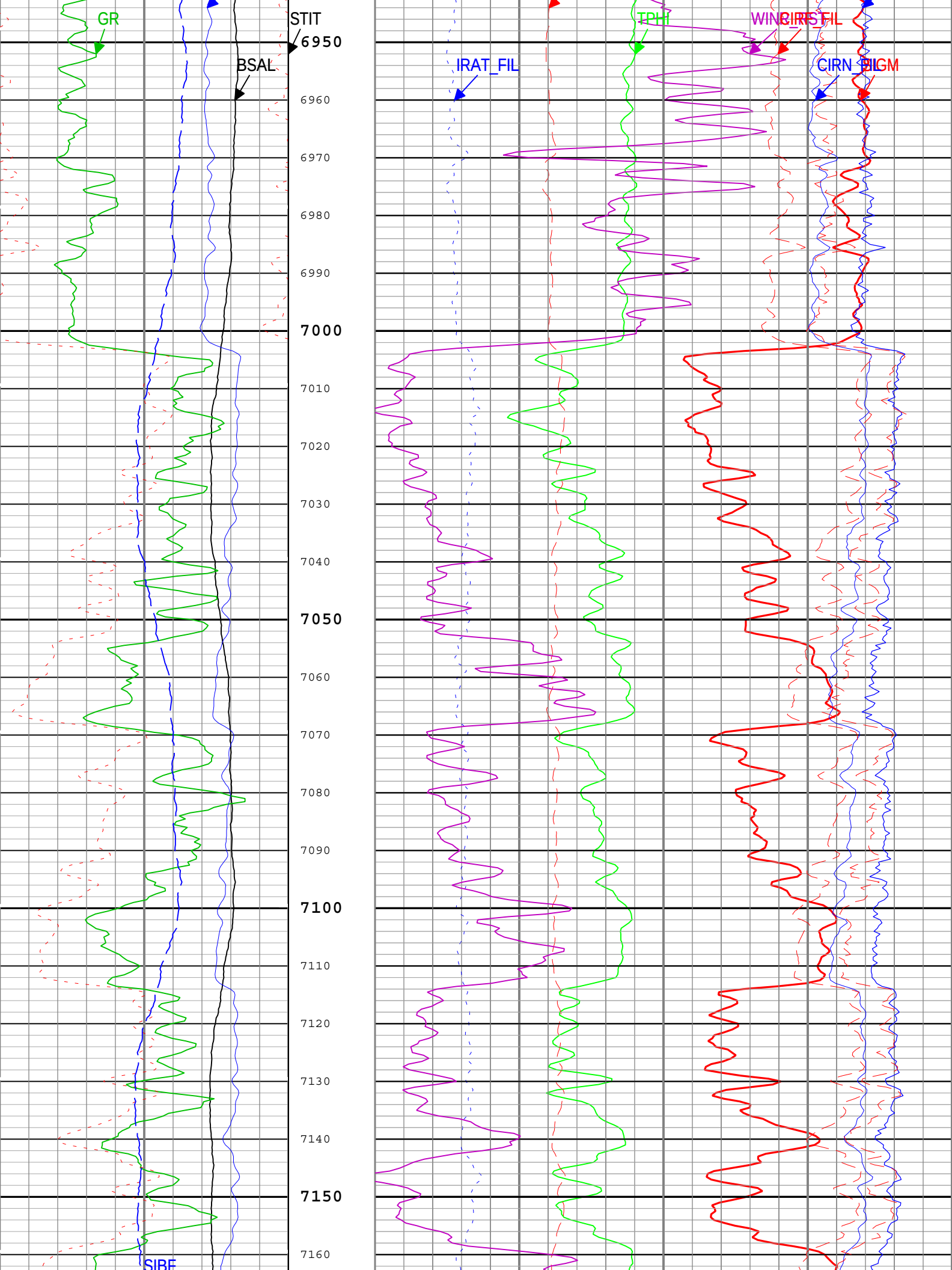

5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5980
5990
6000
6010
6020
6030
6040
6050
6060
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL

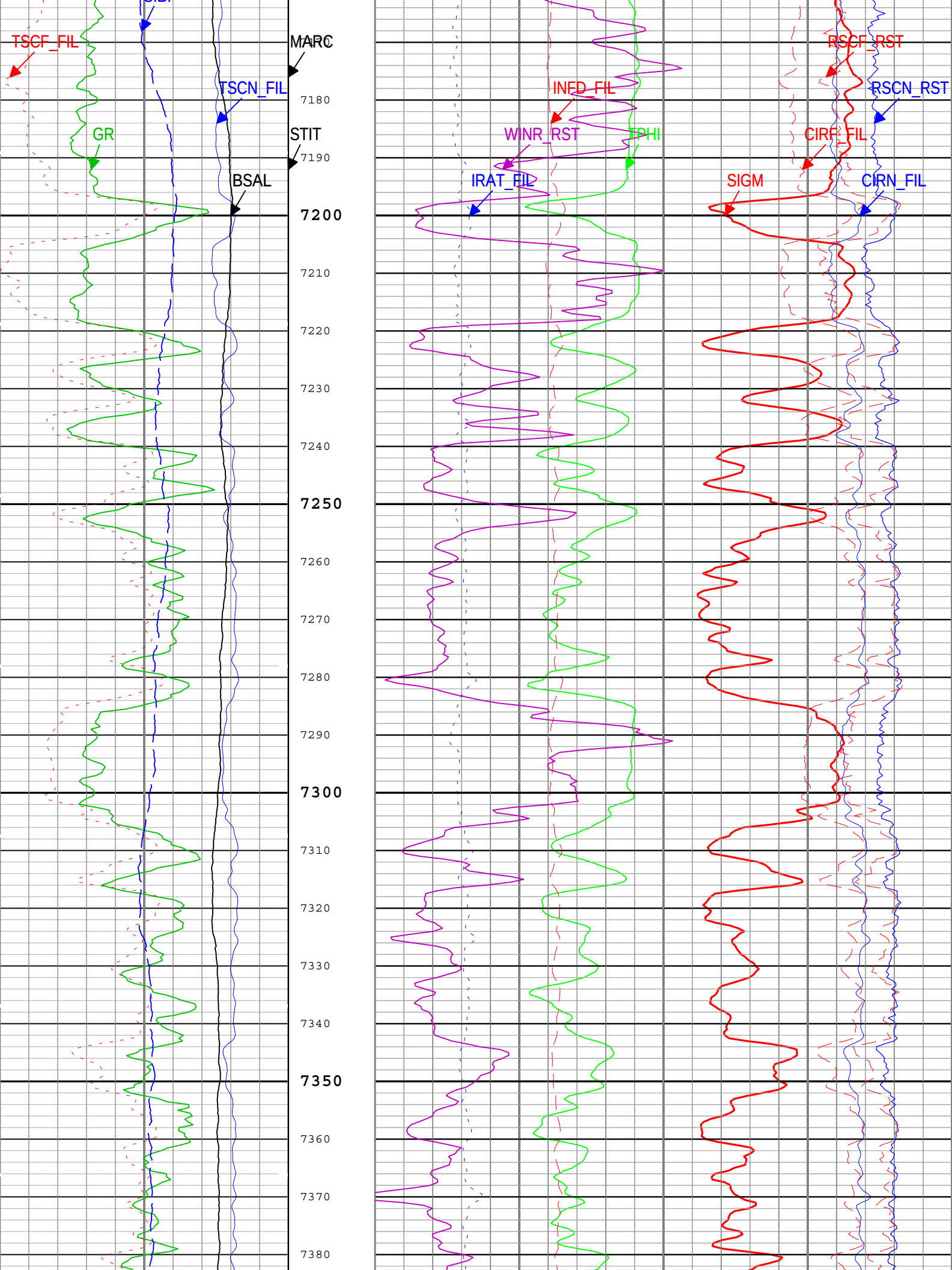

6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6220
6230
6240
6250
6260
6270
6280
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

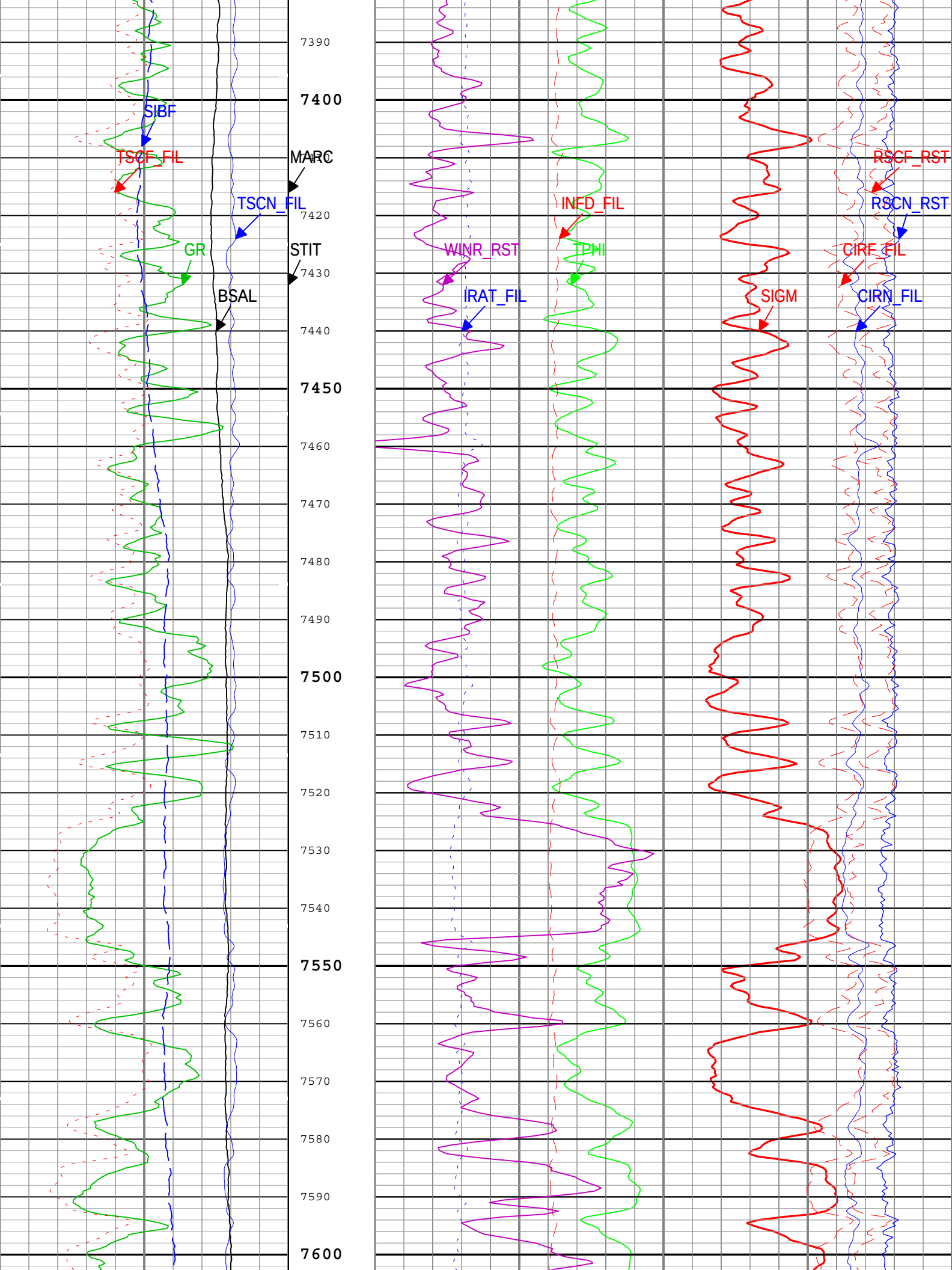

6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
SIBF
TSCF_FIL
TSCN_FIL
GR
BSAL
STIT
WINR_RST
IRAT_FIL
INFD_FIL
TPHI
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

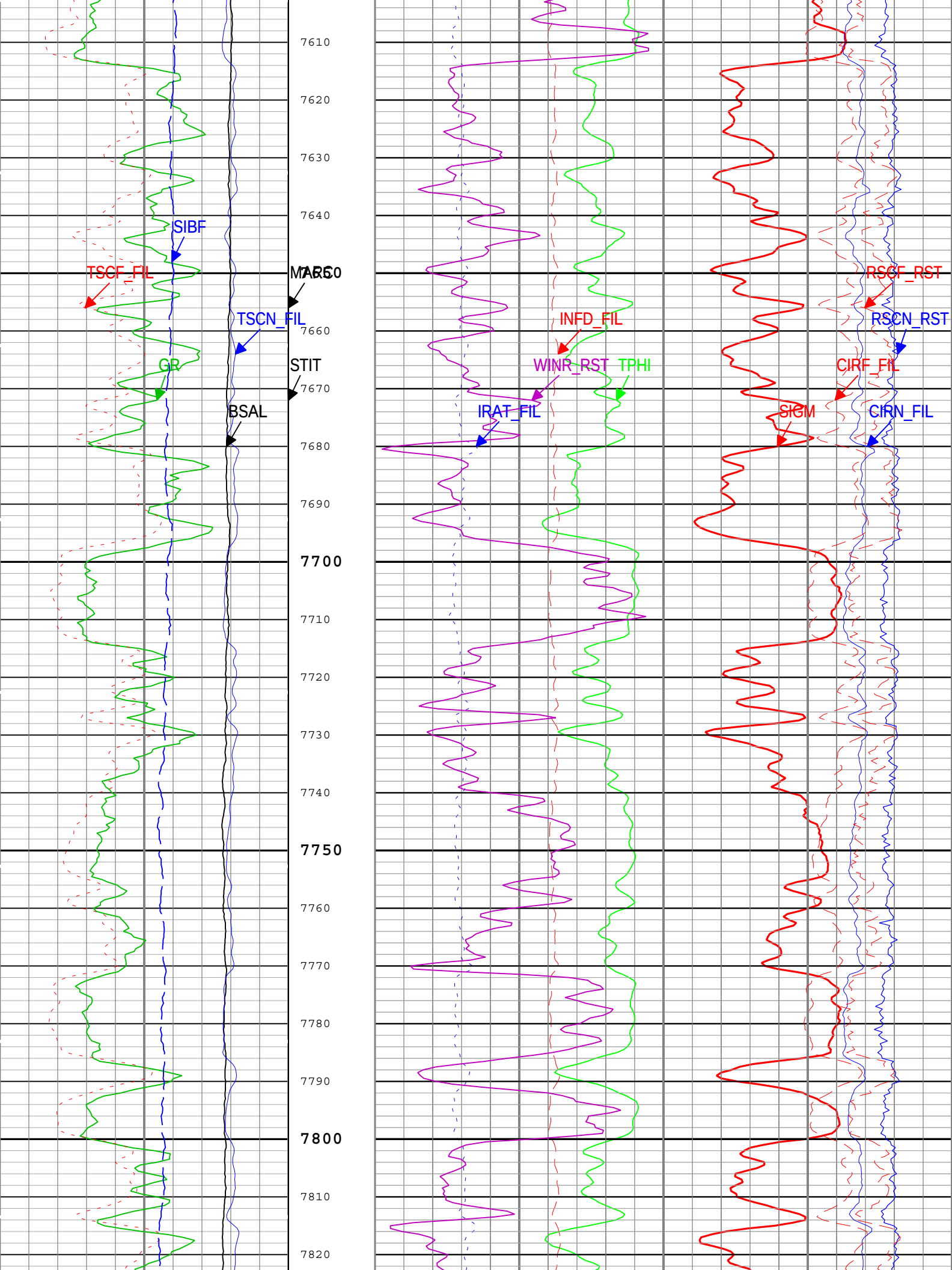

6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6700
6710
6720
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
PHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL

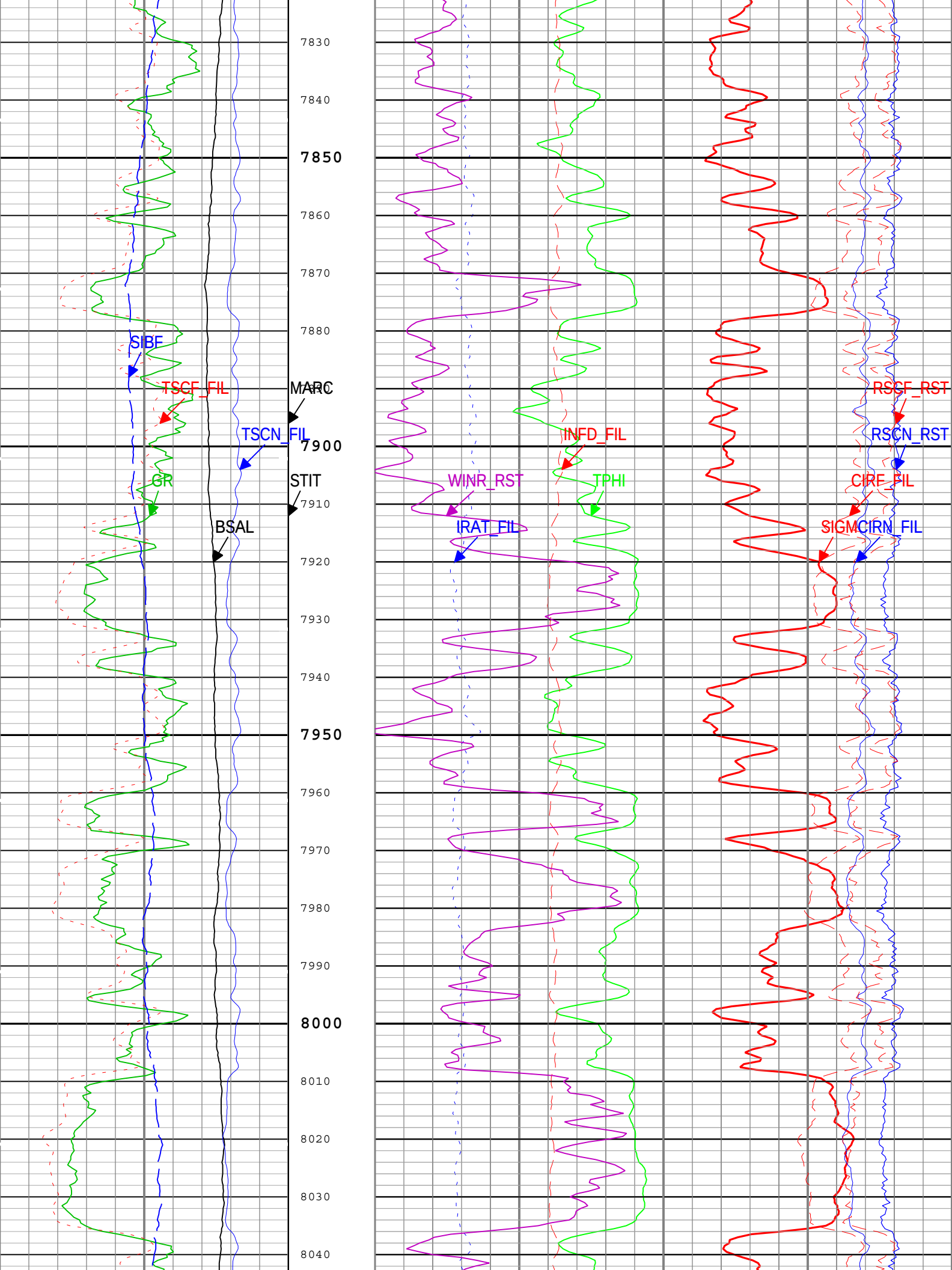

6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6940
SIBF
TSCN_FIL
INFD_FIL
RSCN_RST

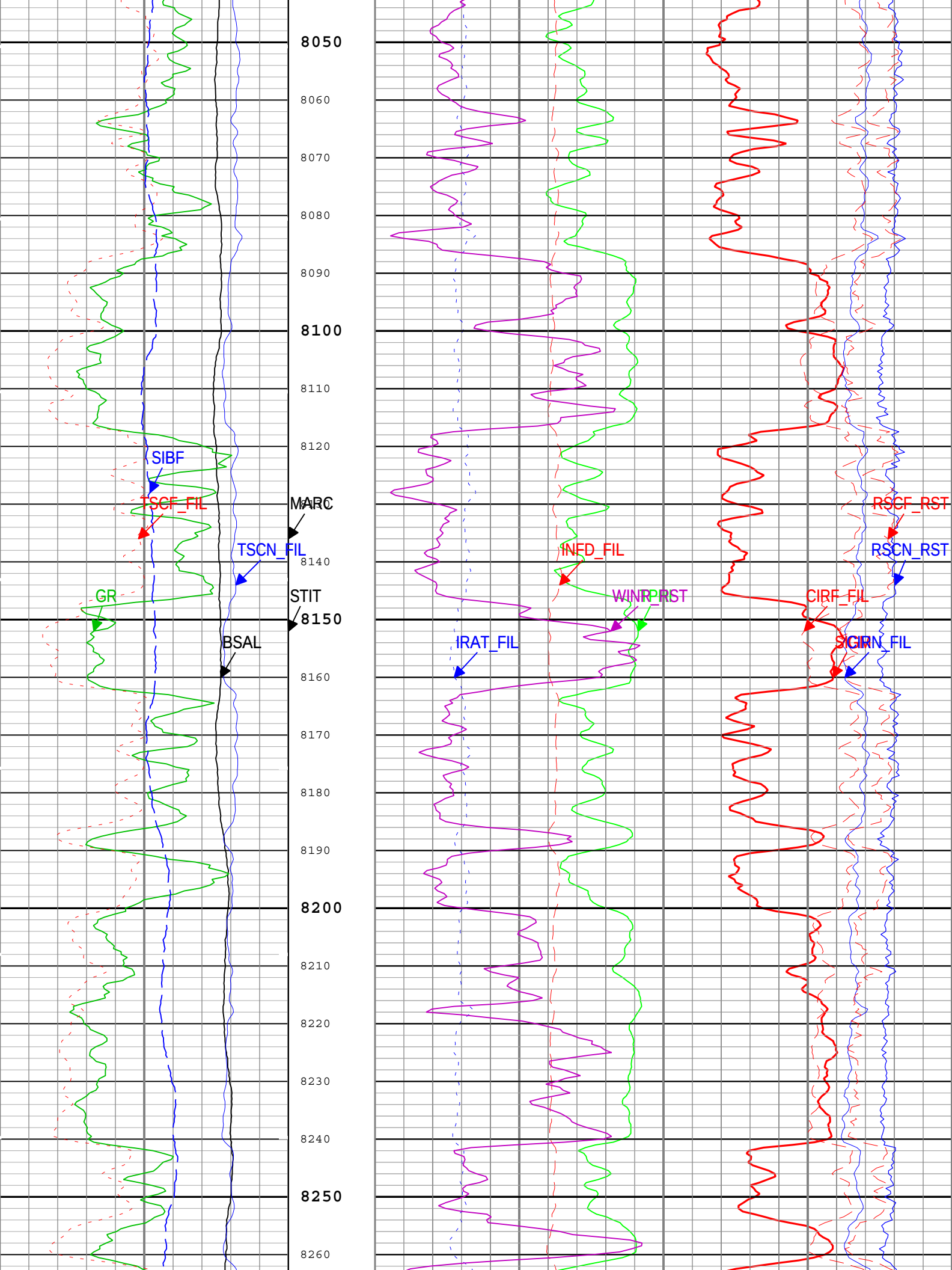

GR
STIT
BSAL
TPHI
IRAT_FIL
6950
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
7110
7120
7130
7140
7150
7160

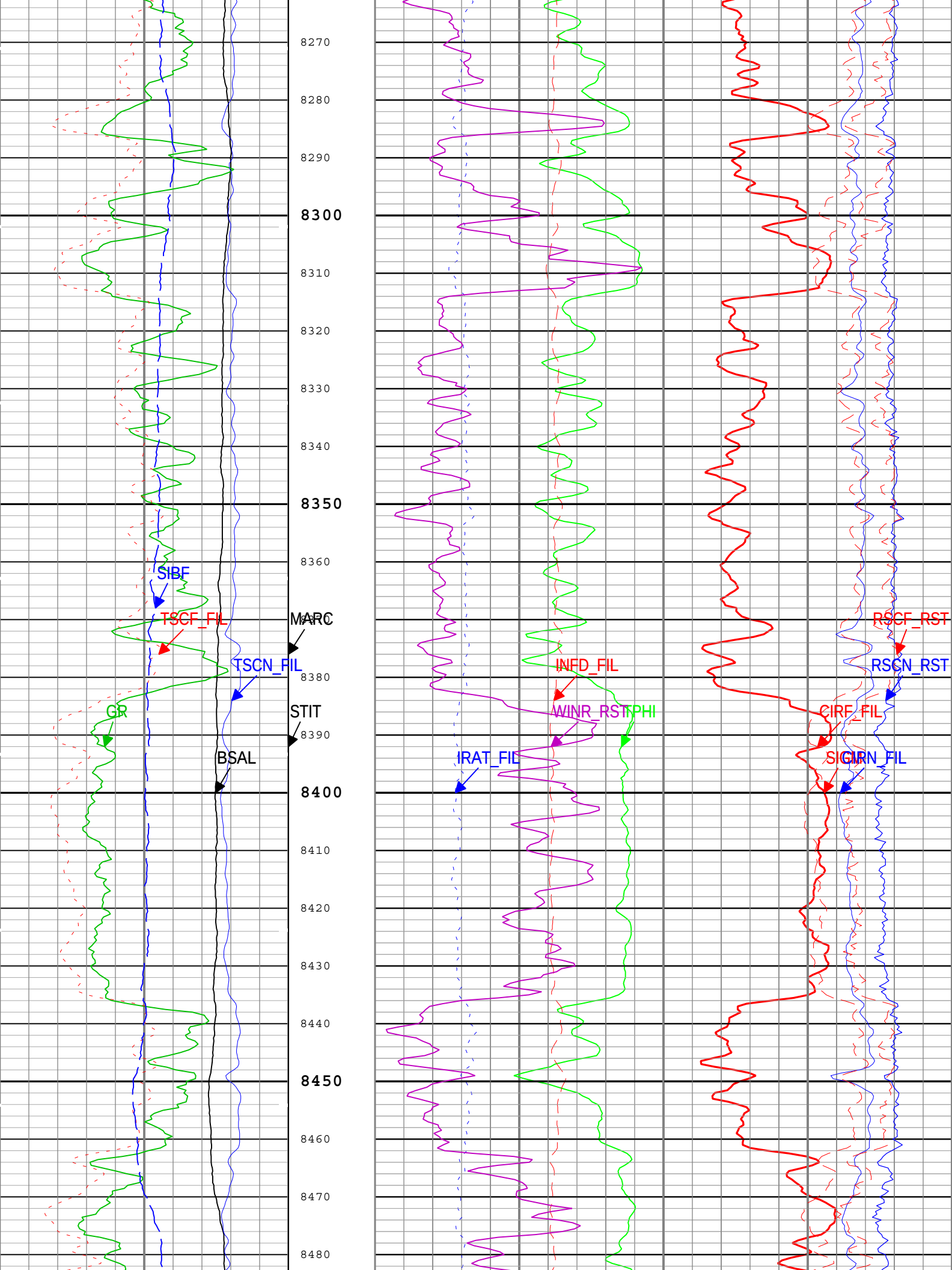

TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL
7180
7190
7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370
7380

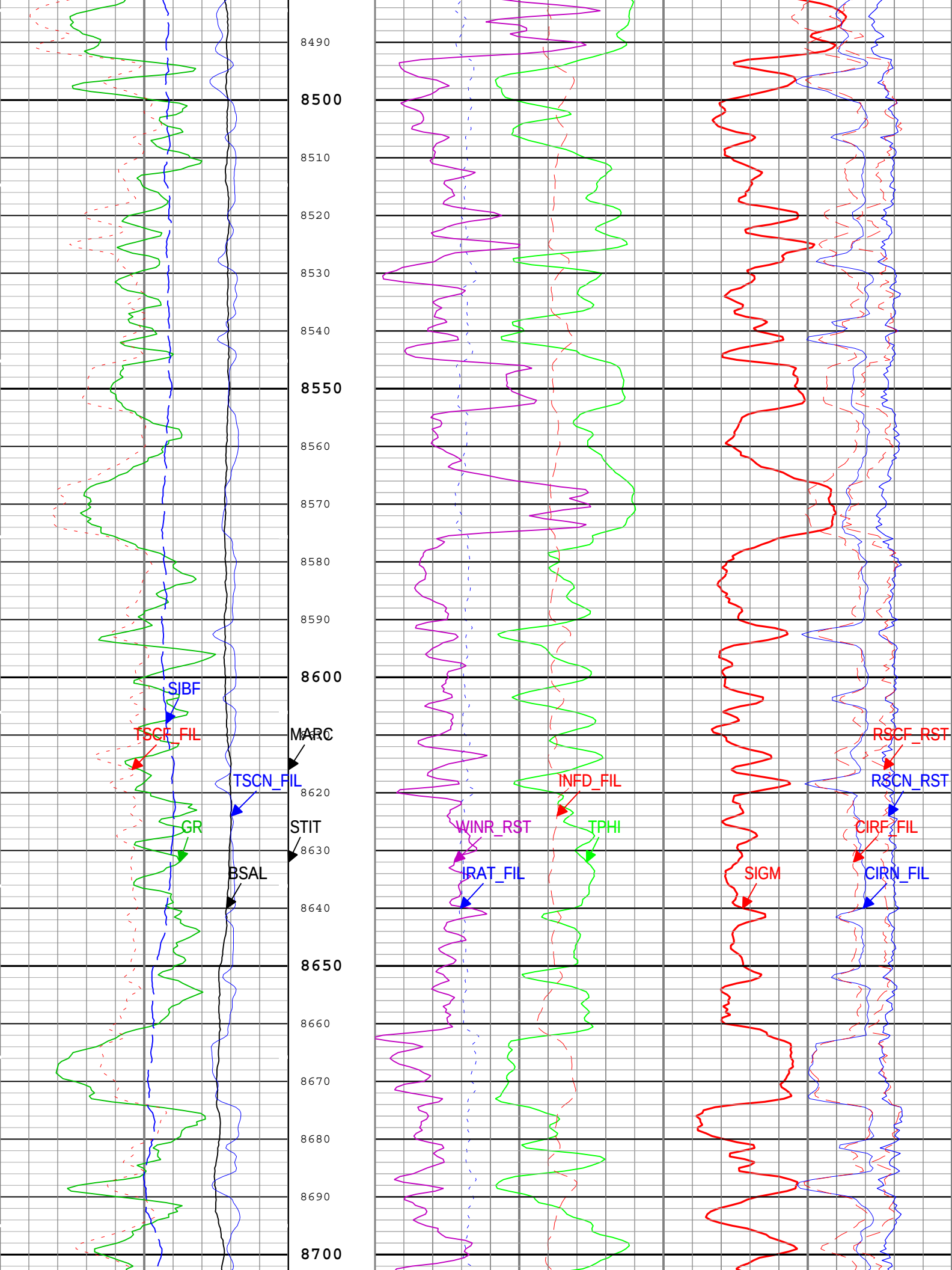

SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
WINR_RST
INFD_FIL
TPHI
IRAT_FIL
SIGM
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL
7390
7400
7410
7420
7430
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
7550
7560
7570
7580
7590
7600

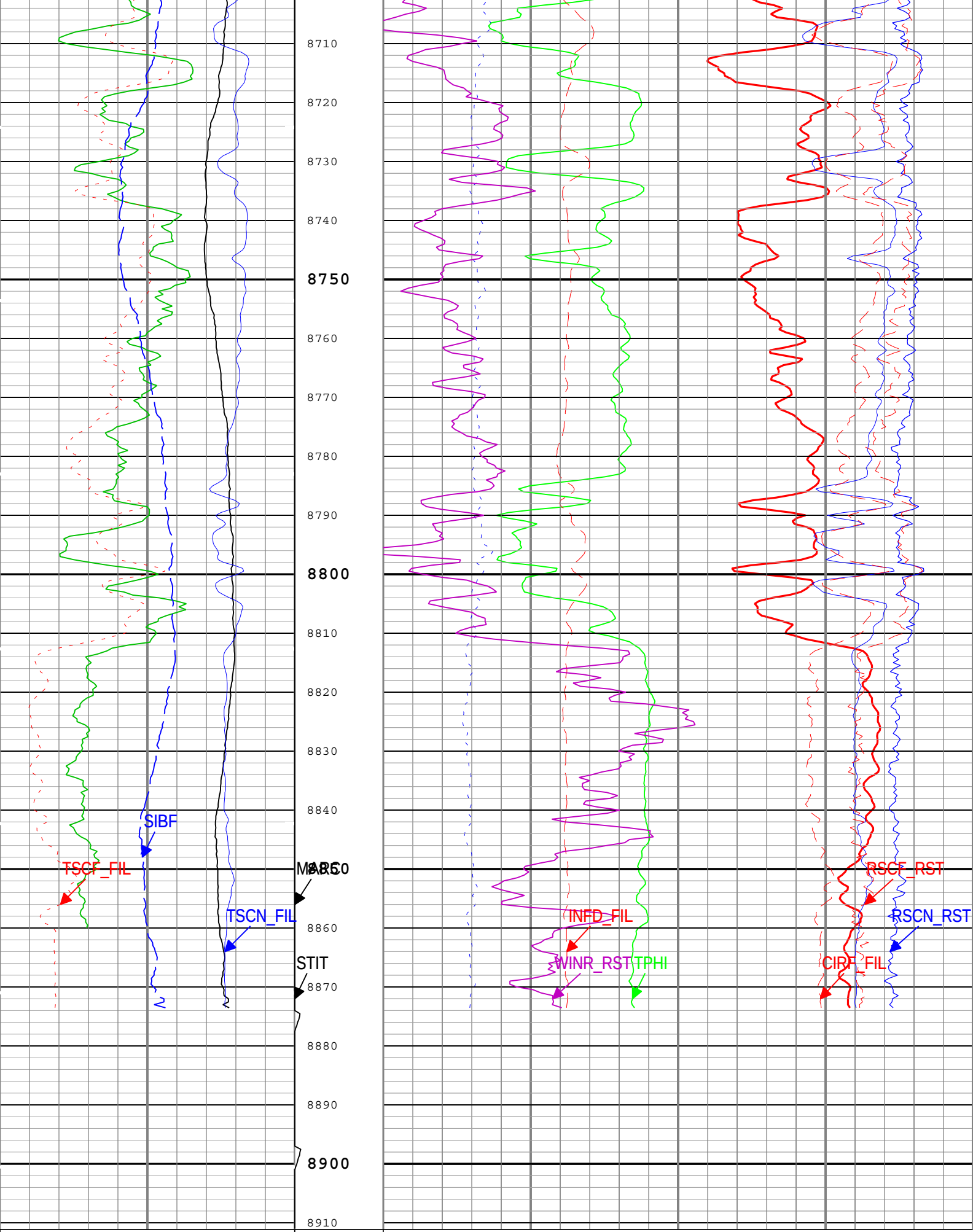

7610
7620
7630
7640
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
7770
7780
7790
7800
7810
7820
SIBF
TSCF_FIL
TSCN_FIL
GR
MARK
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL


7830
7840
7850
7860
7870
7880
7900
7910
7920
7930
7940
7950
7960
7970
7980
7990
8000
8010
8020
8030
8040
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGMCIRN_FIL

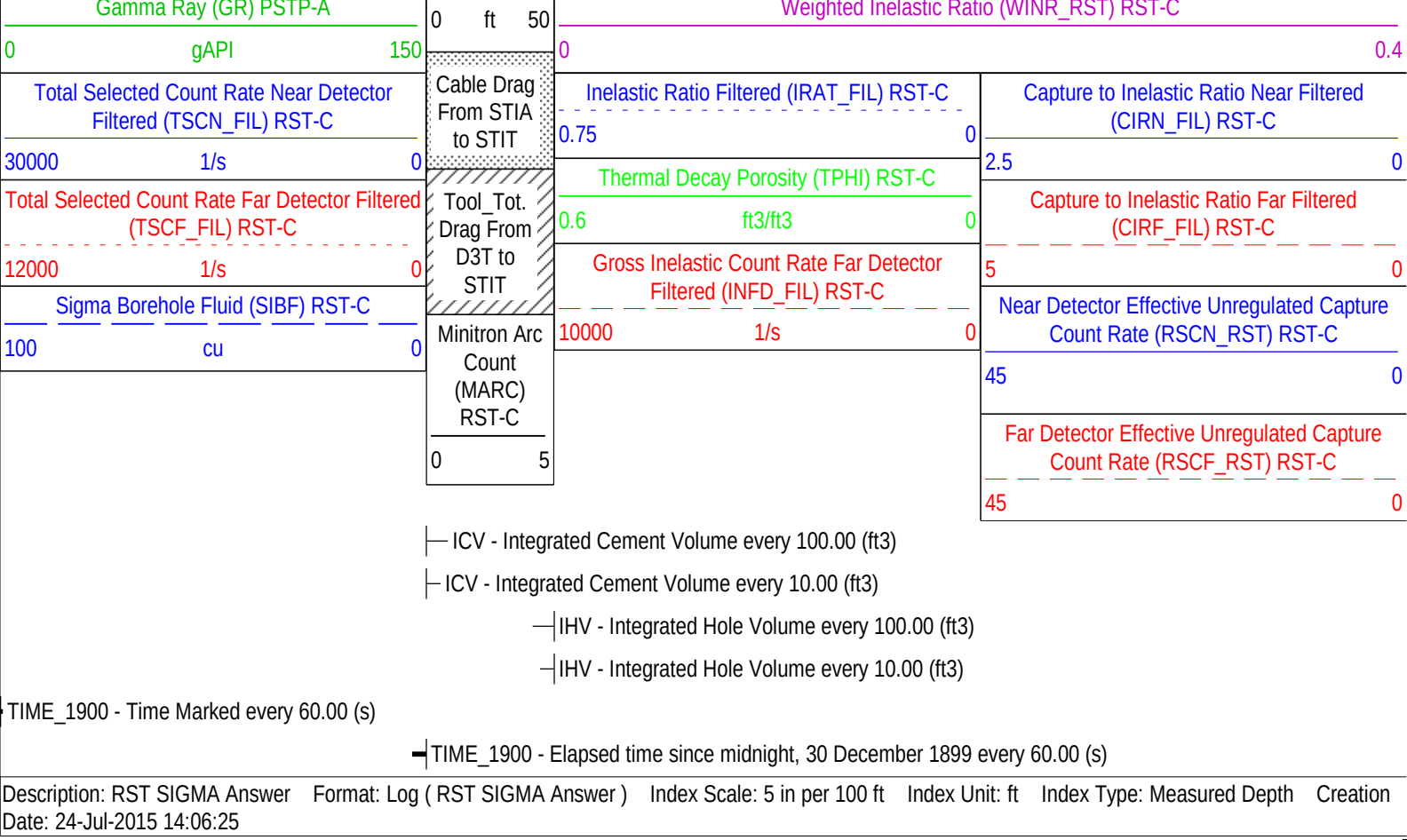

8050
8060
8070
8080
8090
8100
8110
8120
8140
8150
8160
8170
8180
8190
8200
8210
8220
8230
8240
8250
8260
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINP_RST
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
CIRN_FIL


8270
8280
8290
8300
8310
8320
8330
8340
8350
8360
8370
8380
8390
8400
8410
8420
8430
8440
8450
8460
8470
8480
SIBF
TSCF_FIL
TSCN_FIL
GR
MARC
STIT
BSAL
INFD_FIL
WINR_RST
PHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL


8490
8500
8510
8520
8530
8540
8550
8560
8570
8580
8590
8600
8620
8630
8640
8650
8660
8670
8680
8690
8700
SIBF
TSCF_FIL
MARC
TSCN_FIL
GR
STIT
BSAL
INFD_FIL
WINR_RST
TPHI
IRAT_FIL
RSCF_RST
RSCN_RST
CIRF_FIL
SIGM
CIRN_FIL



Borehole Salinity (BSAL) RST-C	Stuck Tool Indicator, Total (STIT)	Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C
450 ppk -50		60 cu 0



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: 24-Jul-2015 14:06:25

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	
DFT	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	
RST_CSIZ	RST Virtual Casing Outer Diameter	RST-C	4.5	in
RST_CWEI	RST Virtual Casing Weight	RST-C	11.6	lbm/ft
TD	Total Measured Depth	Borehole	8898	ft

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	14.75	2500	2532
BS	8.75	2532	8911.14

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
RST_DLM	Depth Log Mode	RST-C	Sigma	

ONE

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Repeat[3]:Up	Up	8548.20 ft	8904.90 ft	24-Jul-2015 9:11:38 AM	24-Jul-2015 9:25:23 AM	ON	2.60 ft	No
ONE	Log[4]:Up	Up	1993.23 ft	8911.14 ft	24-Jul-2015 9:44:41 AM	24-Jul-2015 1:36:22 PM	ON	5.99 ft	No

All depths are referenced to toolstring zero

Log

Company:Caerus Piceance LLC Well:Puckett 12D-1

ONE: Log[4]:Up:S011

Description: RST SIGMA Answer Format: Log (RST SIGMA Answer RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 24-Jul-2015 14:06:28

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)

Main To Repeat

Repeat To Main

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

45 0

Main To Repeat

Repeat To Main

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

45 0

Main To Repeat

Repeat To Main

Borehole Salinity (BSAL) RST-C

450 ppk -50

Main To Repeat

Repeat To Main

Sigma Borehole Fluid (SIBF) RST-C

100 cu 0

Main To Repeat

Repeat To Main

Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C

10000 1/s 0

Main To Repeat

Repeat To Main

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

2.5 0

Main To Repeat

Repeat To Main

Cable Speed (CS)

0 ft/h 50000

Main To Repeat

Repeat To Main

Inelastic Ratio Filtered (IRAT_FIL) RST-C

0.75 0

Main To Repeat

Repeat To Main

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

5 0

Main To Repeat

Repeat To Main

Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C

30000 1/s 0

Main To Repeat

Repeat To Main

Minitron Arc Count (MARC) RST-C

0 5

Main To Repeat

Repeat To Main

Thermal Decay Porosity (TPHI) RST-C

0.6 ft3/ft3 0

Main To Repeat

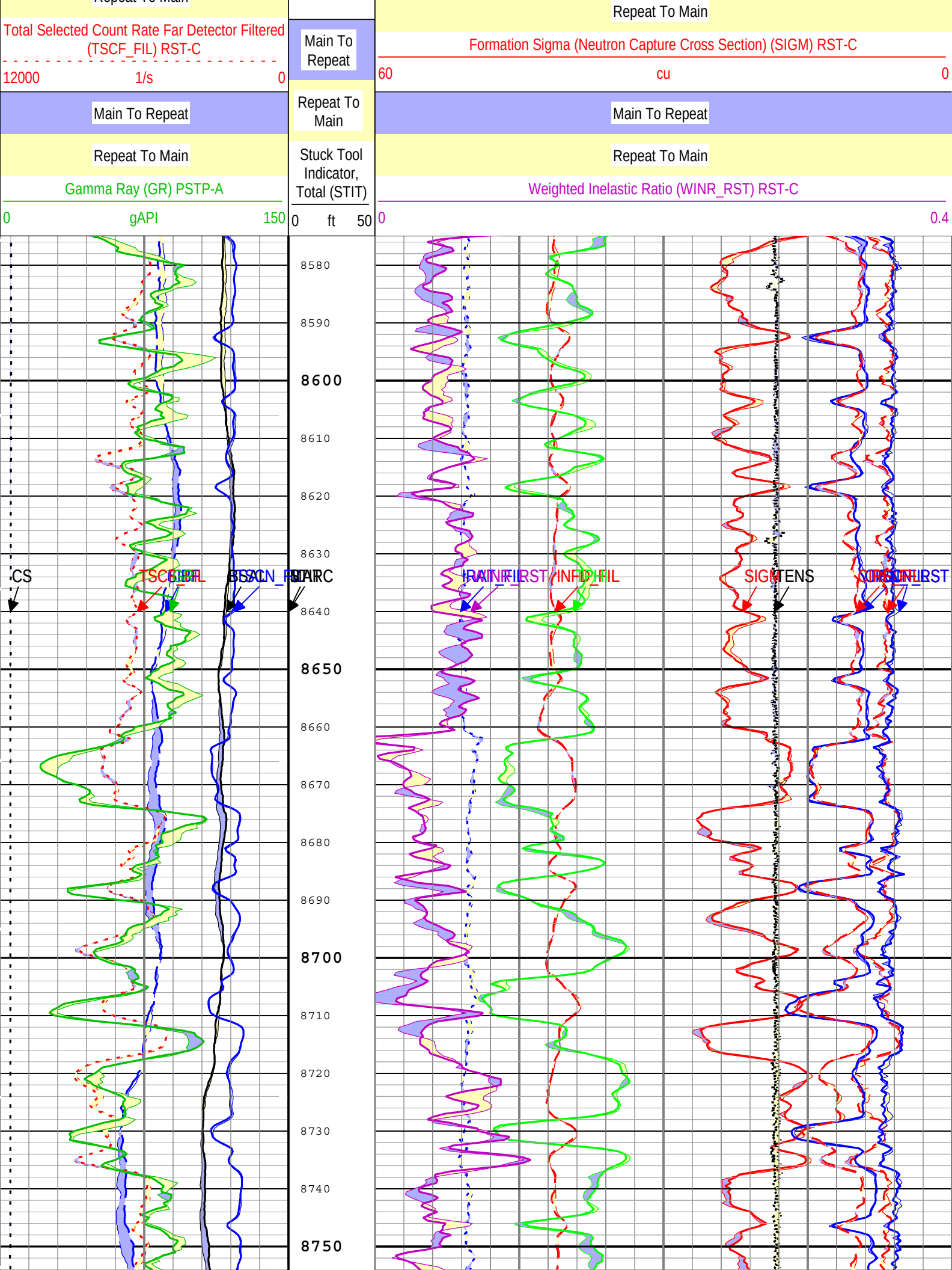
Repeat To Main

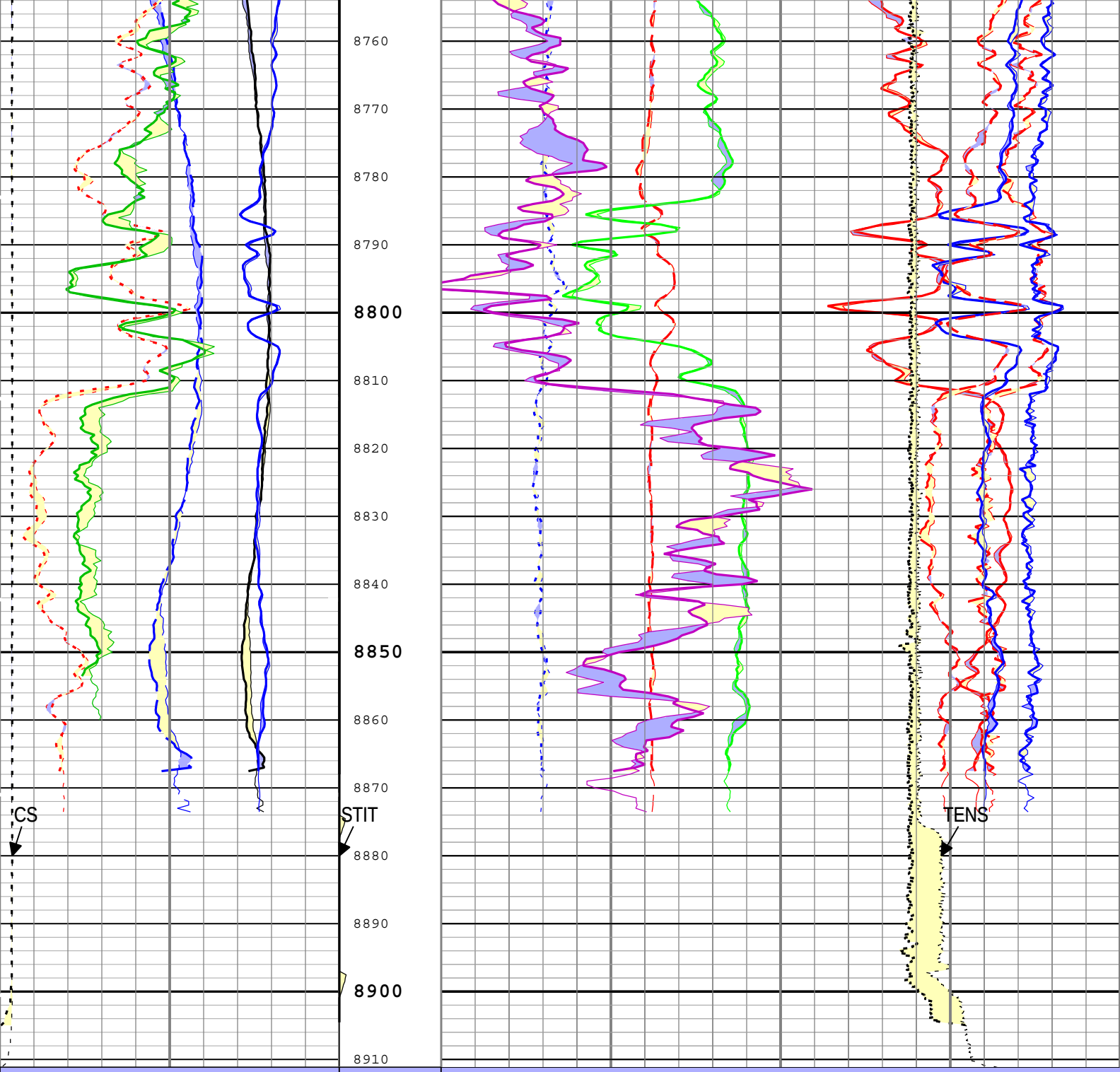
Cable Tension (TENS)

5000 lbf 0

Main To Repeat

Repeat To Main


Repeat To Main
Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C
12000
1/s
0
Main To Repeat
Repeat To Main
Repeat To Main
Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C
60
cu
0
Main To Repeat
Repeat To Main
Gamma Ray (GR) PSTP-A
0
gAPI
150
Stuck Tool Indicator, Total (STIT)
0
ft
50
Weighted Inelastic Ratio (WINR_RST) RST-C
0
0.4
8580
8590
8600
8610
8620
8630
8640
8650
8660
8670
8680
8690
8700
8710
8720
8730
8740
8750
CS
TSCF_FIL
SIGM_FIL
SIGM_PSTAR
IRAT_FIL
INFD_FIL
SIGM_TENS



Main To Repeat

Repeat To Main

Borehole Salinity (BSAL) RST-C

450 ppk -50

Main To Repeat

Repeat To Main

Sigma Borehole Fluid (SIBF) RST-C

100 cu 0

Main To Repeat

Repeat To Main

Main To Repeat

Repeat To Main

Minitron Arc Count (MARC) RST-C

0 5

Main To Repeat

Repeat To Main

Main To Repeat

Repeat To Main

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

60 cu 0

Main To Repeat

Repeat To Main

Weighted Inelastic Ratio (WINR_RST) RST-C

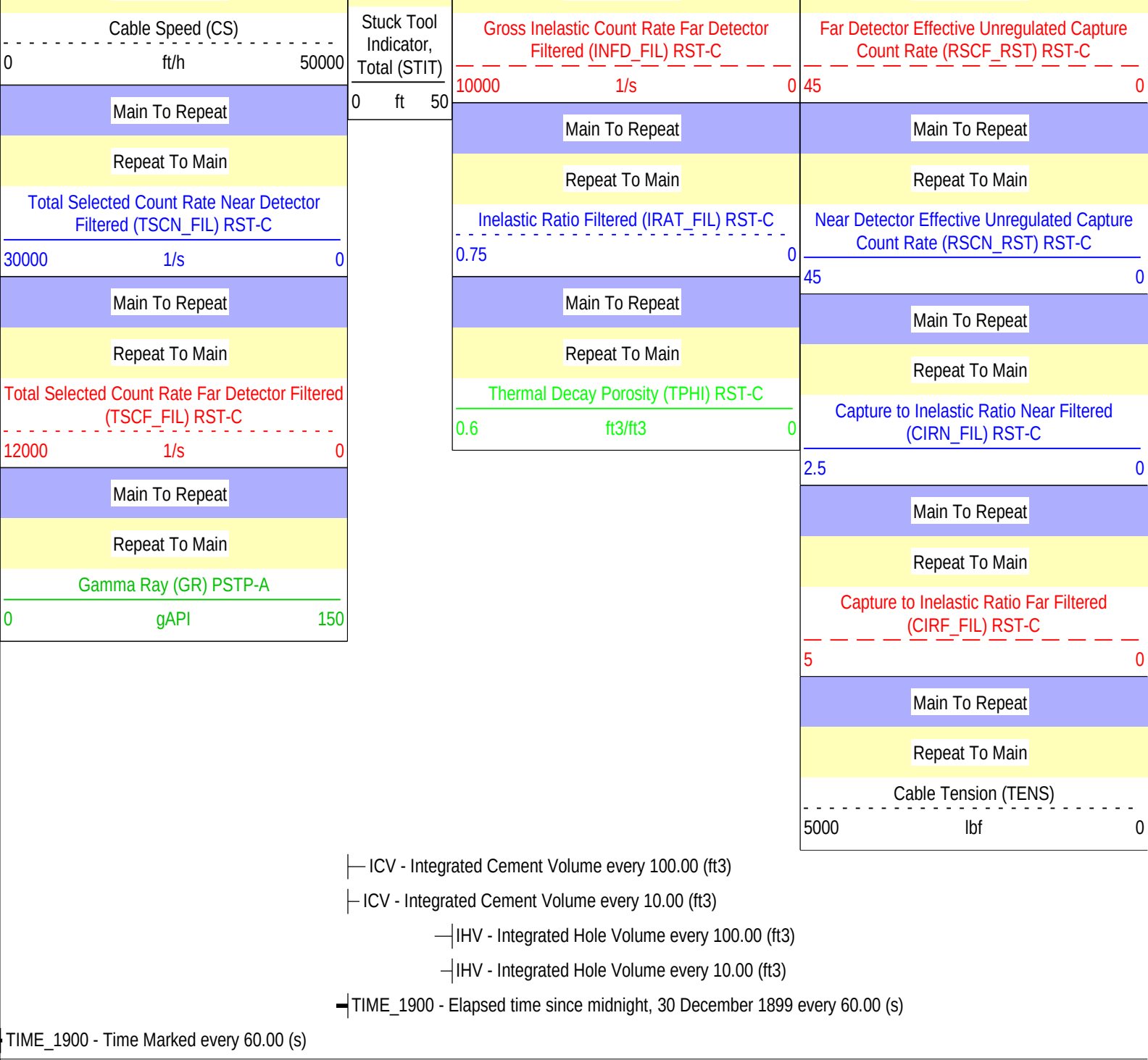
0 0.4

Main To Repeat

Repeat To Main

Main To Repeat

Repeat To Main



Description: RST SIGMA Answer Format: Log (RST SIGMA Answer RA) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 24-Jul-2015 14:06:28

Calibration Report

SCMT-CB (Slim Cement Mapping Tool, 1-11/16 OD) Calibration - Run ONE

Primary Equipment :

Slim Cement Mapping Sonde	SCMS-CB	8372

CBL and MAP Amplitude Normalization - Measurements

Master (File): 10:12:32 22-Jul-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	

MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 0 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 90 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 180 degree) - 0	mV	Master	-----	-----	-----	-----	
CBL 3 ft Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 1 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 2 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 3 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 4 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 5 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 6 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 7 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	
MAP 8 Temperature/Pressure Compensated Raw Amplitude (at 270 degree) - 0	mV	Master	-----	-----	-----	-----	

CBL and MAP Amplitude Normalization - Coefficients

Master (File): 10:12:32 22-Jul-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Normalization Temperature in SFT Tube	degF	Master			74.10		
CBL Correction Factor		Master			0.062		
MAP 1 Correction Factor		Master			0.090		
MAP 2 Correction Factor		Master			0.111		
MAP 3 Correction Factor		Master			0.112		
MAP 4 Correction Factor		Master			0.112		

MAP 4 Correction Factor		Master			0.112		
MAP 5 Correction Factor		Master			0.109		
MAP 6 Correction Factor		Master			0.096		
MAP 7 Correction Factor		Master			0.094		
MAP 8 Correction Factor		Master			0.104		

CBL and MAP Amplitude Adjustment - Measurements

Before (Manual Entry): 13:42:40 24-Jul-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude - 0	mV	Before	-----	-----	-----	-----	
Average MAP Amplitude (Fluid Compensated) - 0	mV	Before	-----	-----	-----	-----	
Measurement Depth - 0	ft	Before	-----	-----	-----	-----	

CBL and MAP Amplitude Adjustment - Coefficients

Before (Manual Entry): 13:42:40 24-Jul-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before			0.700		
CBL LQC Reference Amplitude in Free Pipe	mV	Before			80.00		
MAP Adjustment Factor		Before			0.759		
Depth of Before Calibration	ft	Before			2010.58		

RST-C (Reservoir Saturation Pro Tool C) Calibration - Run ONE

Primary Equipment :

RSC Acquisition Cartridge	RSC-E	381

RST IC Tank Calibration - RST IC Tank Calibration

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Spectral Acquisition Time Calibration Coefficient - 0	s	Master	-----	-----	-----	-----	
Near Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near Windows Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far Windows Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near IC Mode Capture Optimization Resolution Degradation Factor Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far IC Mode Capture Optimization Resolution Degradation Factor Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Far Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Near Photomultiplier High Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Far Photomultiplier High Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Minitron Measured Beam Current Calibration Coefficient - 0	uA	Master	-----	-----	-----	-----	
Grid Current Peak Calibration Coefficient - 0	mA	Master	-----	-----	-----	-----	
Minitron Measured Extractor Current Calibration Coefficient - 0	uA	Master	-----	-----	-----	-----	
Minitron Measured High Voltage Calibration Coefficient - 0	kV	Master	-----	-----	-----	-----	
Near Instantaneous Count Rate Calibration Coefficient - 0	kHz	Master	-----	-----	-----	-----	
Near/Far Count Rate Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	

RST IC Tank Check - RST IC Tank Check

Master:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Spectral Acquisition Time Calibration Coefficient	s	Master			NOT DONE		

Near Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near Windows Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far Windows Carbon/Oxygen Ratio Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near IC Mode Capture Optimization Resolution Degradation Factor Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Far IC Mode Capture Optimization Resolution Degradation Factor Calibration Coefficient - 0		Master	-----	-----	-----	-----	
Near Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Far Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Near Photomultiplier High Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Far Photomultiplier High Voltage Setting Echo Calibration Coefficient - 0	V	Master	-----	-----	-----	-----	
Minitron Measured Beam Current Calibration Coefficient - 0	uA	Master	-----	-----	-----	-----	
Grid Current Peak Calibration Coefficient - 0	mA	Master	-----	-----	-----	-----	
Minitron Measured Extractor Current Calibration Coefficient - 0	uA	Master	-----	-----	-----	-----	
Minitron Measured High Voltage Calibration Coefficient - 0	kV	Master	-----	-----	-----	-----	
Near Instantaneous Count Rate Calibration Coefficient	kHz	Master			NOT DONE		
Near/Far Count Rate Ratio Calibration Coefficient		Master			NOT DONE		

RST Sigma Tank Check - RST Sigma Tank Check

Master (Measured): 14:57:24 17-Jul-2015

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Spectral Acquisition Time Calibration Coefficient	s	Master		300.0	300.3		
Near/Far Capture Ratio Calibration Coefficient		Master	0.980	0.930	0.982	1.030	
Sigma Formation Near Apparent Calibration Coefficient - 0	1/m	Master	-----	-----	-----	-----	
Sigma Formation Far Apparent Calibration Coefficient - 0	1/m	Master	-----	-----	-----	-----	
Near Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient	V	Master	3.500	2.445	3.700	4.555	
Far Pulse Shape Compensation Voltage Setting Echo Calibration Coefficient	V	Master	3.325	2.095	2.433	4.555	
Near Photomultiplier High Voltage Setting Echo Calibration Coefficient	V	Master	1400.000	1100.000	1145.795	1700.000	
Far Photomultiplier High Voltage Setting Echo Calibration Coefficient	V	Master	1400.000	1100.000	1183.172	1700.000	
Minitron Measured Beam Current Calibration Coefficient	uA	Master	75.000	50.000	85.102	100.000	
Grid Current Peak Calibration Coefficient	mA	Master	60.000	58.000	60.036	62.000	
Minitron Measured Extractor Current Calibration Coefficient	uA	Master	499.500	0	0.000	999.000	
Minitron Measured High Voltage Calibration Coefficient	kV	Master	73.000	50.000	80.028	96.000	
Near Instantaneous Count Rate Calibration Coefficient	kHz	Master	400.000	340.000	349.576	460.000	
Near/Far Count Rate Ratio Calibration Coefficient		Master	1.300	1.000	1.471	1.600	

PSTP-A (PSP Telemetry Platform A - Sapphire) Calibration - Run ONE

Primary Equipment :

PBMS-A PBMS-A 1814

Calibration Parameter :

JIG-BKGD (Jig minus background reference) 150

PBMS Gamma Ray Check - PBMSA Gamma Ray Accumulations

Before (Measured): 11:24:31.22 Jul 2015 After:

Before (Measured): 11:24:31 22-Jul-2015 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
GR Zero Average	gAPI	Before	30	0	84.70583	120
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
GR Zero Standard Deviation	gAPI	Before			31.55005	
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
GR Zero Max Deviation	gAPI	Before			108.3667	
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
GR Plus Average	gAPI	Before			226.5573	
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
GR Plus Standard Deviation	gAPI	Before			53.35671	
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
GR Plus Max Deviation	gAPI	Before			223.9452	
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
Jig-Background	gAPI	Before	150	135	141.8515	165
		After			NOT DONE	
		After-Before	-----	-----	-----	-----

PBMS Well Temp Master Calibration

Master (EEPROM): 00:00:00 11-Mar-2002

PBMS_RTD_THERM (Master) RTD Coefficients

	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tt**0	166.2169	-442.9836	222.5367	-39.3639	2.621679	0

PBMS Gamma Ray Master Calibration

Master (EEPROM): 00:00:00 14-Nov-2001

PBMS_GR_MODEL (Master) GR Coefficients

	Rt**0	Rt**1
Rt**0	1500	3840

PBMS A Reference Clock Master Calibration

Master (EEPROM): 00:00:00 11-Mar-2002

PBMS_REF_CLOCK (Master) PBMS A Clock Coefficients

	Temp**0	Temp**1	Temp**2	Temp**3	Temp**4	Temp**5
Temp**0	-278.6698	2.064625	-0.2005075	0.001553137	-2.817383E-07	0

PBMS A Sapphire Master Calibration

Master (EEPROM): 00:00:00 11-Mar-2002

PBMS_P_GAUGE_PRES (Master) Sapphire Pressure Model Coefficients

	Tt**0	Tt**1	Tt**2	Tt**3	Tt**4	Tt**5
Tp**0	-30895.39	22304.77	-7131.54	1088.081	-64.84312	0
Tp**1	22708.98	-15815.74	5200.516	-813.7849	49.69807	0
Tp**2	-206.2166	83.83393	-9.064614	0	0	0
Tp**3	3.194887	-0.7157836	0	0	0	0

Tp**4	0	0	0	0	0	0
Tp**5	0	0	0	0	0	0

PBMS_P_GAUGE_TEMP (Master)	Sapphire Temperature Model Coefficients					
	Tp**0	Tp**1	Tp**2	Tp**3	Tp**4	Tp**5
Tt**0	2222.343	-1.531535	-1.735451	0.3578298	-0.04106665	0
Tt**1	-1381.82	3.050812	0.4269152	-0.03685322	0.004793864	0
Tt**2	302.3562	-1.086123	-0.04274265	0	0	0
Tt**3	-23.36074	0.1179722	0	0	0	0
Tt**4	0	0	0	0	0	0
Tt**5	0	0	0	0	0	0

Company:	Caerus Piceance LLC
Well:	Puckett 12D-1
Field:	Wildcat
County:	US
State:	Colorado

Schlumberger

Reservoir Saturation Tool

Sigma