

Company: Caerus Operating LLC

Well: NPR 24C-10 596

Field: NPR

County: Garfield State: Colorado

Reservoir Saturation Tool

RST Sigma Mode

Gamma Ray - CCL

County: Garfield  
 Field: NPR  
 Location: K10-596  
 Well: NPR 24C-10 596  
 Company: Caerus Operating LLC

Location:	K10-596	Elev.: K.B. 6733.00 ft G.L. 6709.00 ft D.F. 6733.00 ft
	Permanent Datum: Log Measured From: Drilling Measured From:	
Ground Level	Kelly Bushing	Elev.: 6709.00 f
Section:	Kelly Bushing	24.00 ft above Perm.Datum
API Serial No.	05045237720000	Township: 5S
Range:	10	96W

Logging Date	22-Sep-2018
Run Number	RST Sigma
Depth Driller	9741.00 ft
Schlumberger Depth	9675.00 ft
Bottom Log Interval	9675.00 ft
Top Log Interval	2400.00 ft
Casing Fluid Type	2% KCL Water
Salinity	
Density	8.49 lbn/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.75 in
From	2975.00 ft
To	9741.00 ft
Casing/Tubing Size	4.5 in
Weight	11.6 lbn/ft
Grade	P110
From	0.00 ft
To	9741.00 ft
Max Recorded Temperatures	276.74 degF
Logger on Bottom	22-Sep-2018
Unit Number	3007
Recorded By	Beatriz Guaita
Witnessed By	Trent Ray
Time	15:12:00
Location:	Evanston, WY

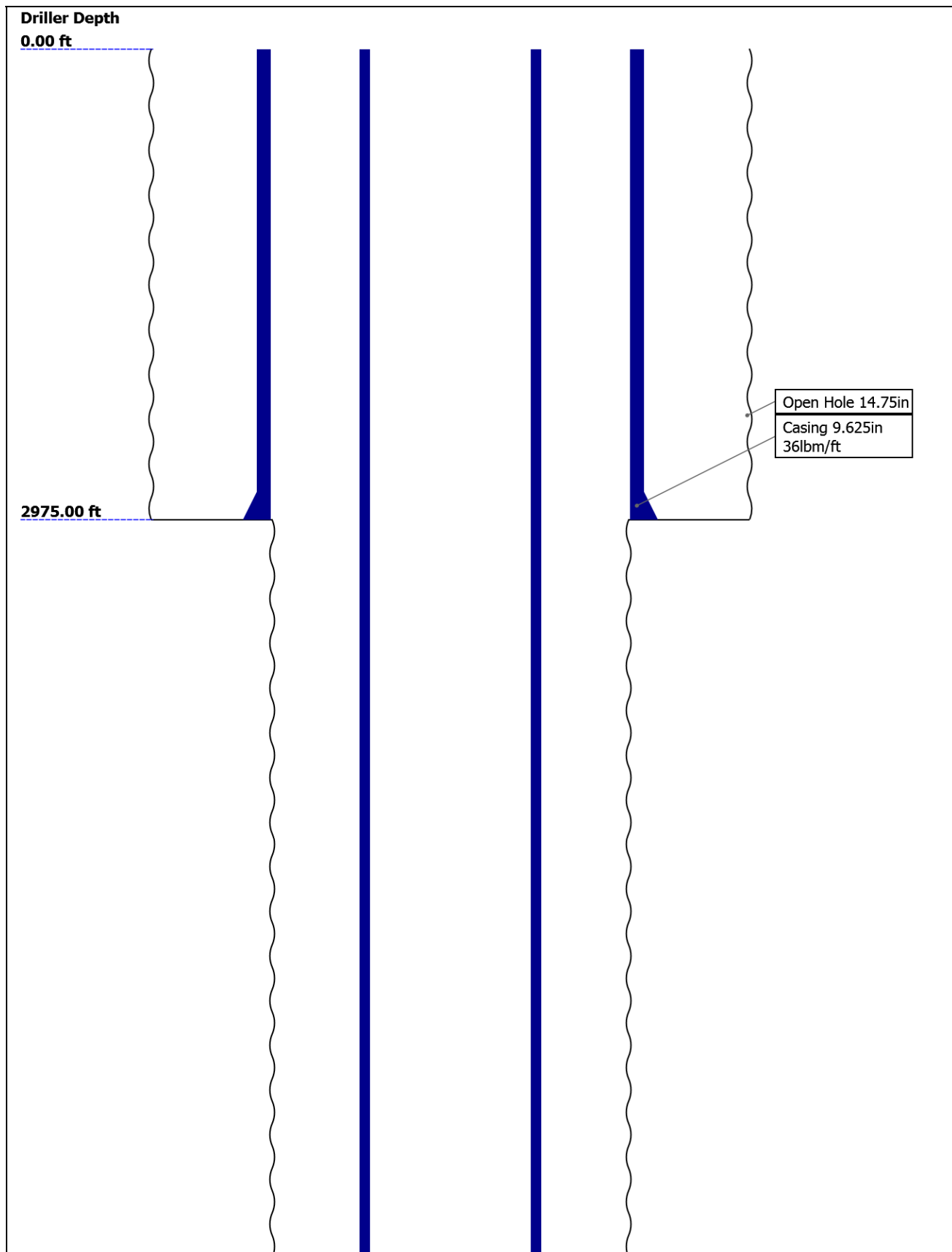
## Disclaimer

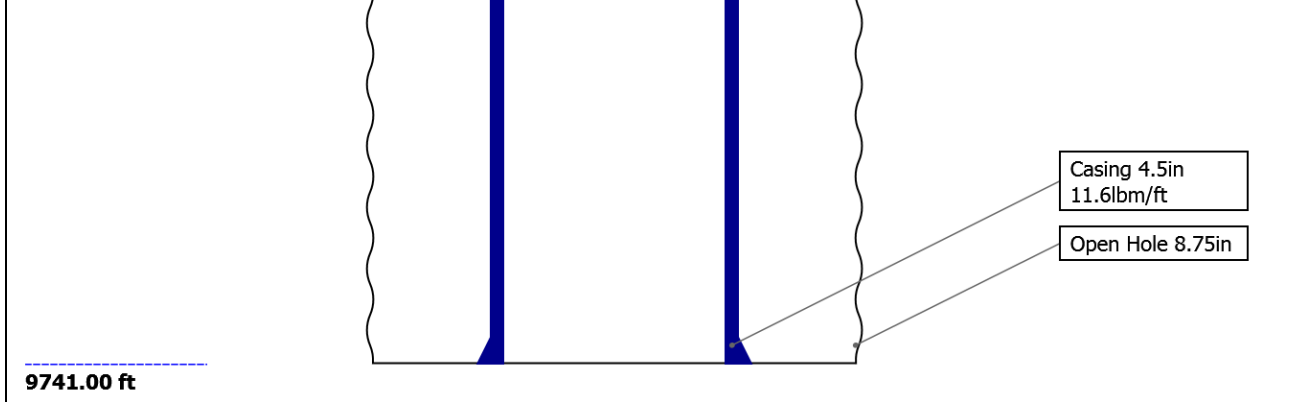
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA;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

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# Well Sketch



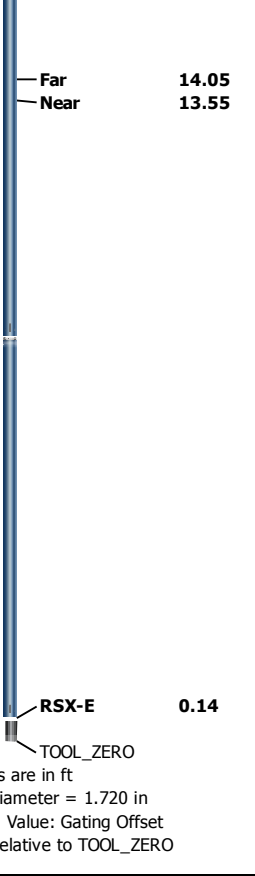


## Borehole Size/Casing/Tubing Record

Bit					
Bit Size ( in )	14.75	8.75			
Top Driller ( ft )	0	2975			
Top Logger ( ft )	0	2975			
Bottom Driller ( ft )	2975	9741			
Bottom Logger ( ft )	2975	9741			
<b>Casing</b>					
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 )	2975	9741			
Bottom Logger ( ft )	2975	9741			

## Remarks and Equipment Summary

RST Sigma: Toolstring	RST Sigma: Remarks																																																																													
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>Equip name</b></td> <td style="width: 15%;"><b>Length</b></td> <td style="width: 15%;"><b>MP name</b></td> <td style="width: 15%;"><b>Offset</b></td> </tr> <tr> <td>PEH-E</td> <td style="color: blue;">33.4</td> <td></td> <td></td> </tr> <tr> <td>AH-38</td> <td style="color: blue;">31.71</td> <td></td> <td></td> </tr> <tr> <td>PSTP-B:2826</td> <td style="color: blue;">31.43</td> <td></td> <td></td> </tr> <tr> <td>PSC-A</td> <td></td> <td>GR</td> <td>27.73</td> </tr> <tr> <td>PSTC-A:2826</td> <td></td> <td>PSTC</td> <td>27.43</td> </tr> <tr> <td>PBMS-B:2826</td> <td></td> <td>PSTC Tool String Bottom</td> <td>0.00</td> </tr> <tr> <td></td> <td></td> <td>Temperature</td> <td>24.68</td> </tr> <tr> <td></td> <td></td> <td>CQG Pressure</td> <td>24.33</td> </tr> <tr> <td></td> <td></td> <td>CCL</td> <td>23.92</td> </tr> <tr> <td></td> <td></td> <td>PBMS</td> <td>23.17</td> </tr> <tr> <td>RST-C:570</td> <td style="color: blue;">23.17</td> <td></td> <td></td> </tr> <tr> <td>RSCH-A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RSC-E:354</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RSS-A:440</td> <td></td> <td></td> <td></td> </tr> <tr> <td>MNTR-F:1263</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RSXH-A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>RSX-E:570</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>RSC-E</td> <td>16.81</td> </tr> </table>	<b>Equip name</b>	<b>Length</b>	<b>MP name</b>	<b>Offset</b>	PEH-E	33.4			AH-38	31.71			PSTP-B:2826	31.43			PSC-A		GR	27.73	PSTC-A:2826		PSTC	27.43	PBMS-B:2826		PSTC Tool String Bottom	0.00			Temperature	24.68			CQG Pressure	24.33			CCL	23.92			PBMS	23.17	RST-C:570	23.17			RSCH-A				RSC-E:354				RSS-A:440				MNTR-F:1263				RSXH-A				RSX-E:570						RSC-E	16.81	<p>Toolstring ran as per Toolsketch.</p> <p>RST sigma Mode.</p> <p>Matrix: Sandstone.</p> <p>SLB Depth: 9675ft</p> <p>Max Temperature Recorded: 276.74DegF</p> <p>Thank you for choosing Schlumberger!</p>	
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**BNS-P** 0.14

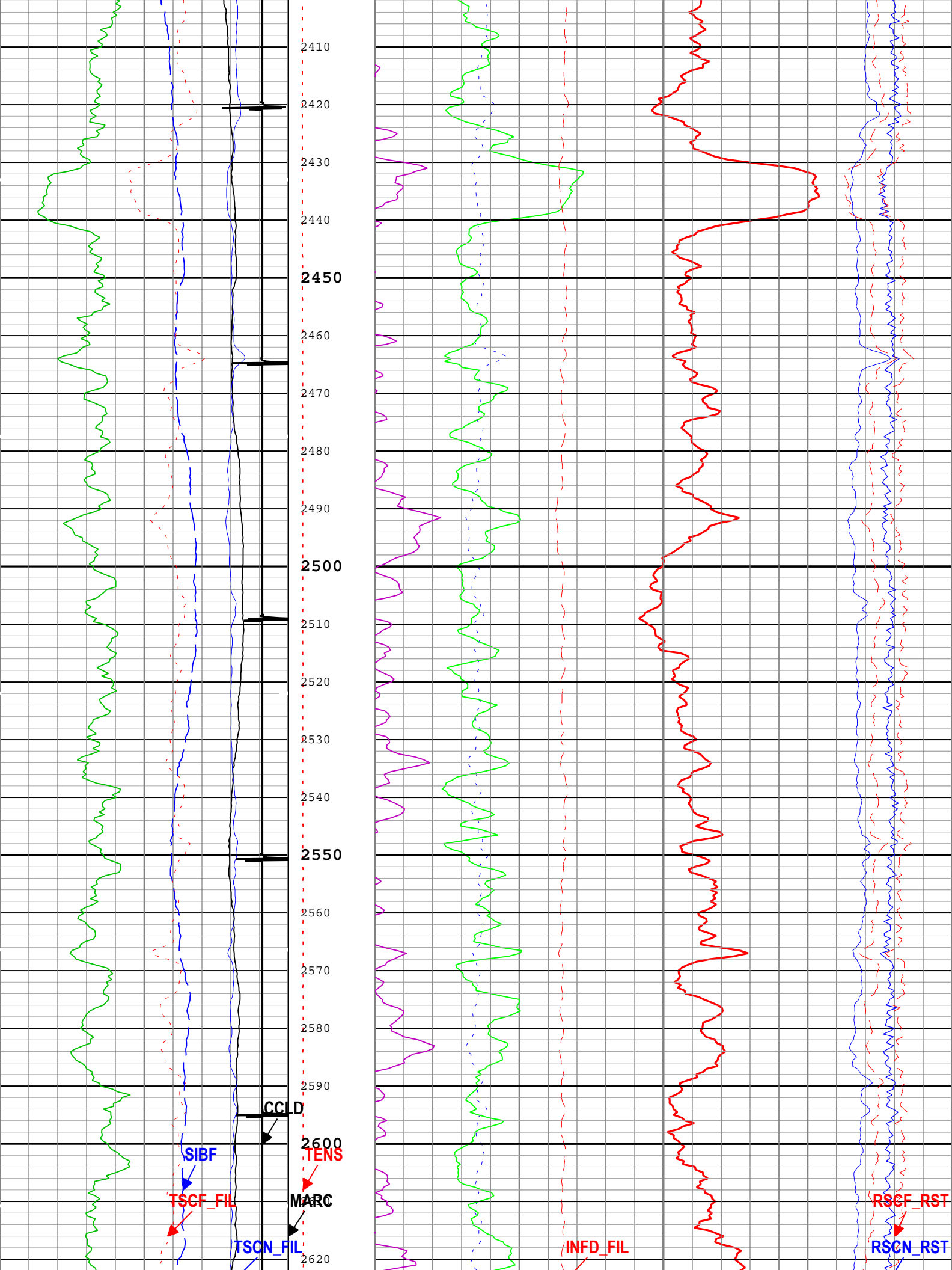
Lengths are in ft  
Maximum Outer Diameter = 1.720 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

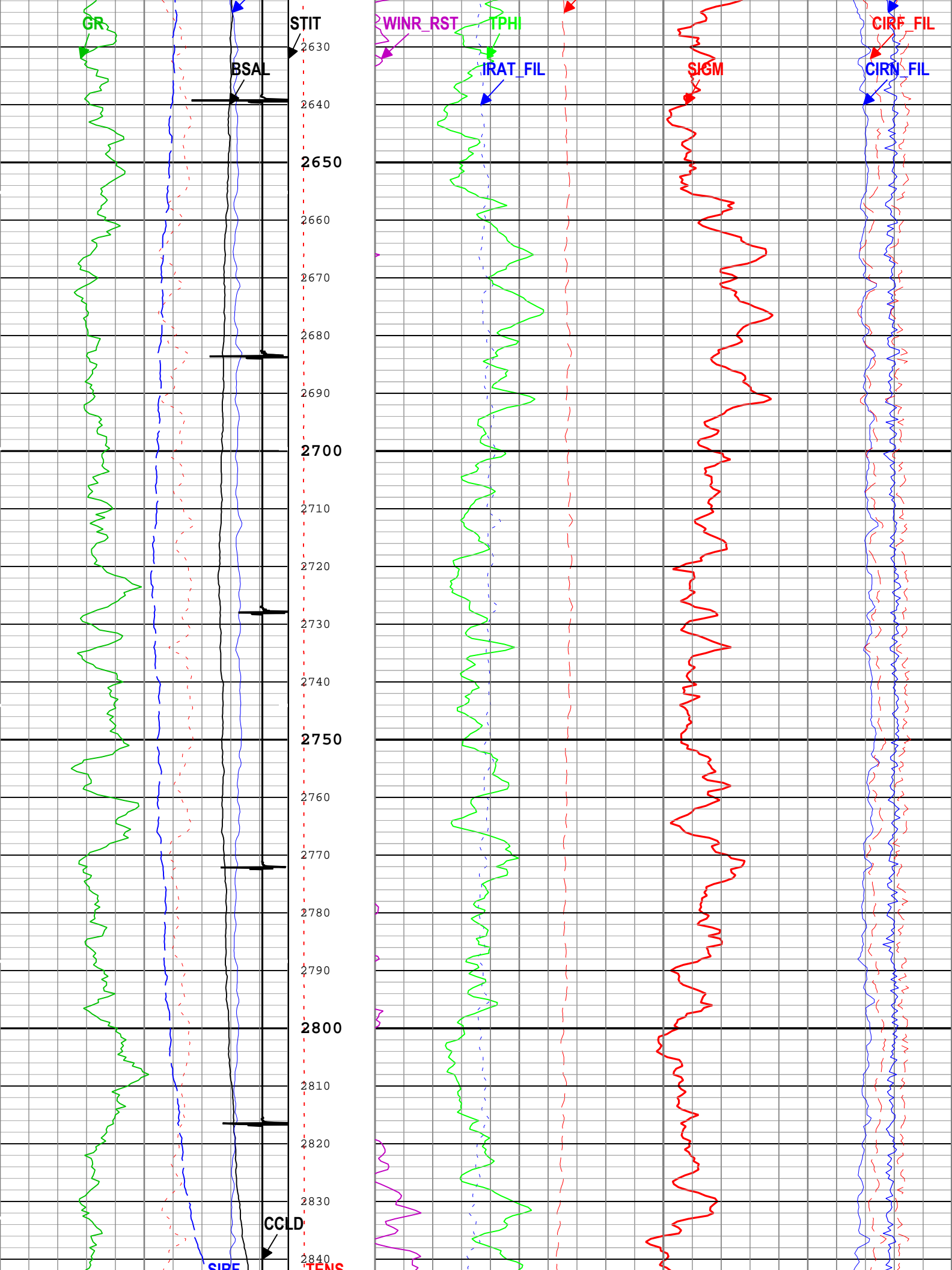
## Depth Summary

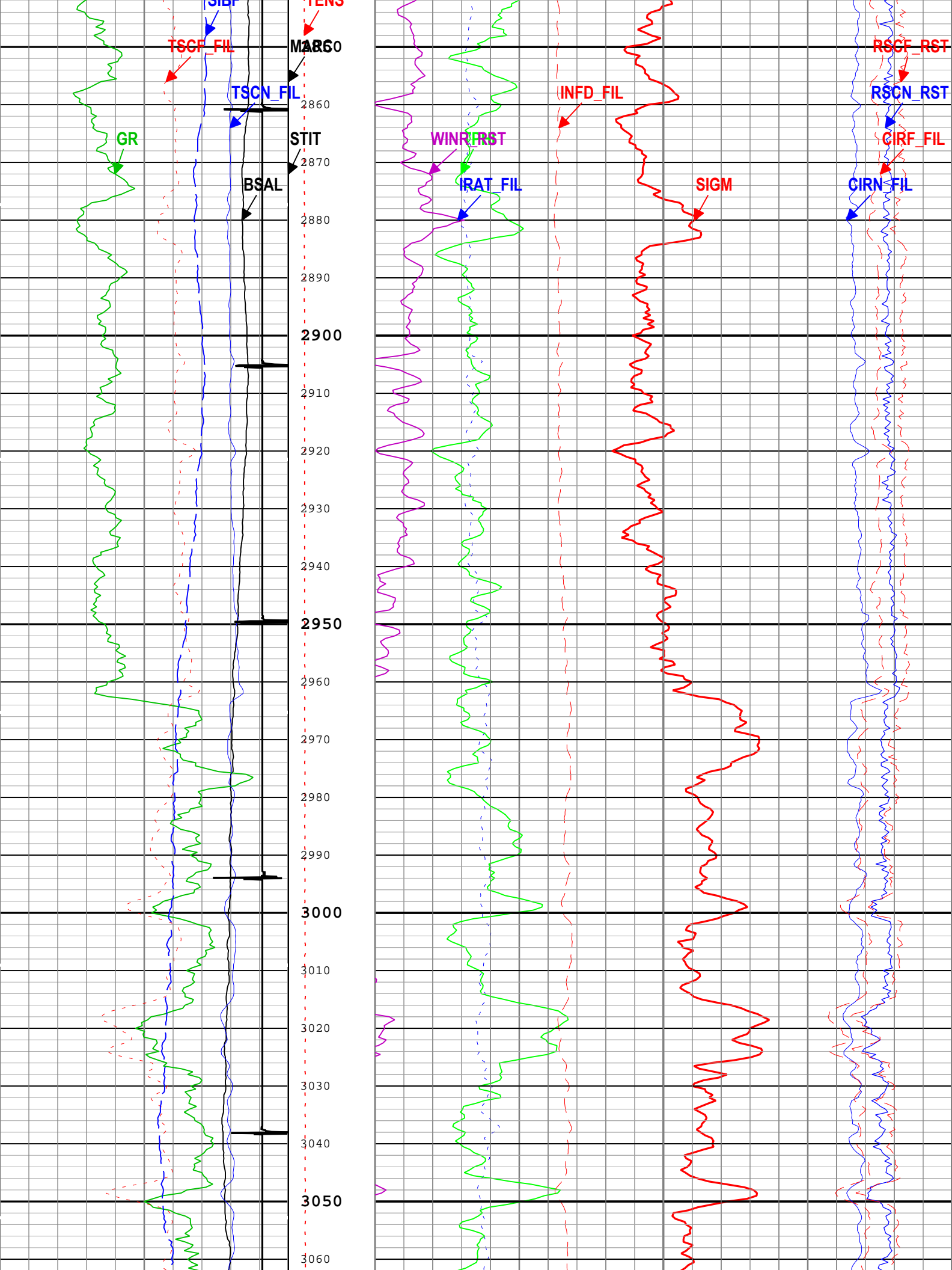
	RST Sigma		
<b>Depth Measuring Device</b>			
Type	IDW-JA		
Serial Number	5979		
Calibration Date	10-jun-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	IDW-JA		
Wheel Correction 1	-3		
Wheel Correction 2	-3		
<b>Tension Device</b>			
Type	CMTD-B/A		
Serial Number	5036		
Calibration Date	10-Sep-2018		
Calibrator Serial Number	112544A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	21		
Calibration Peak Error	10		
<b>Logging Cable</b>			
Type	1-25ZA		
Serial Number	F112140		
Length	16800.00 ft		
Conveyance Type	Wireline		
Rig Type			

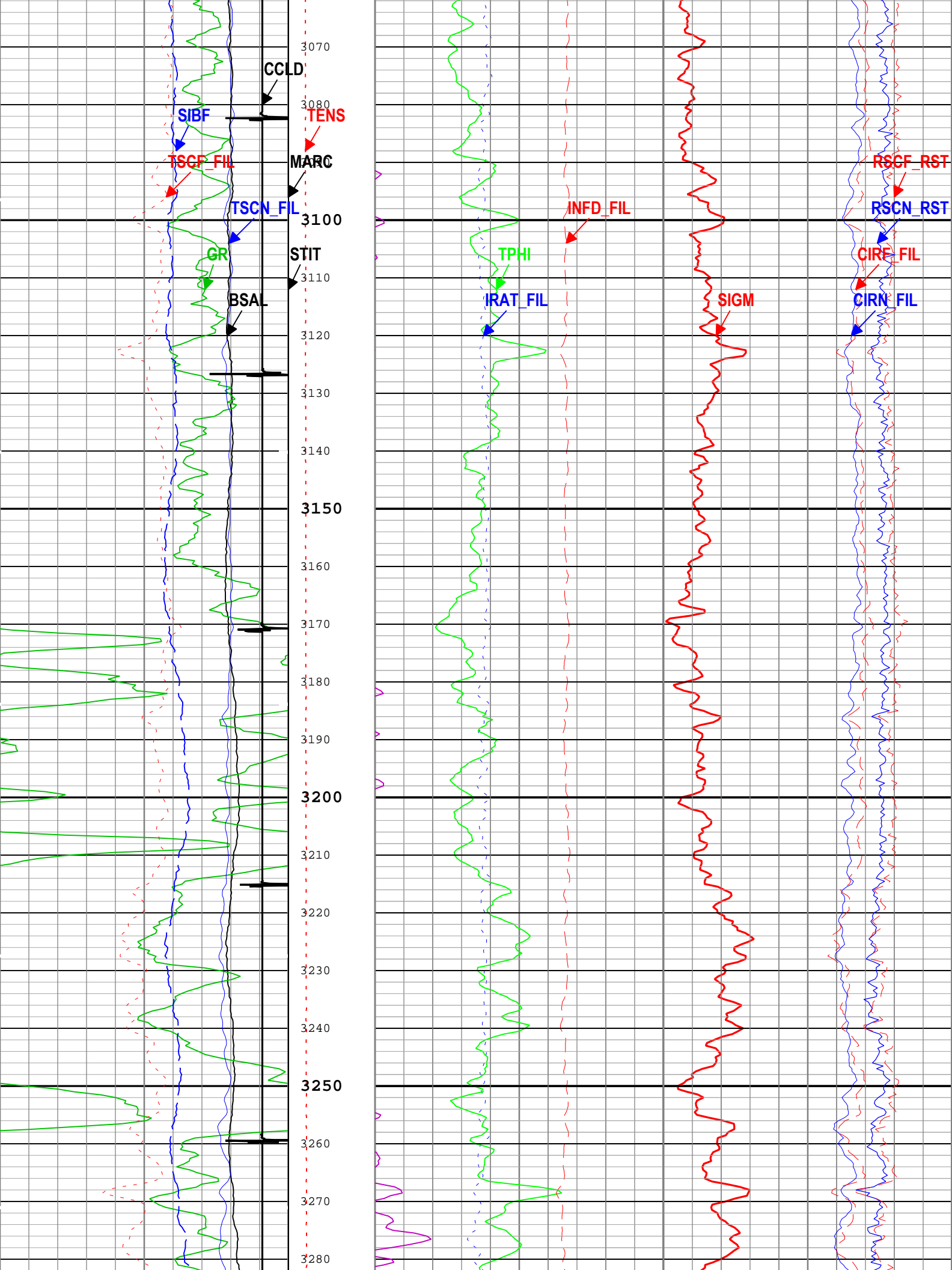
<b>RST Sigma:Depth Control Parameters</b>	<b>Depth Control Remarks</b>
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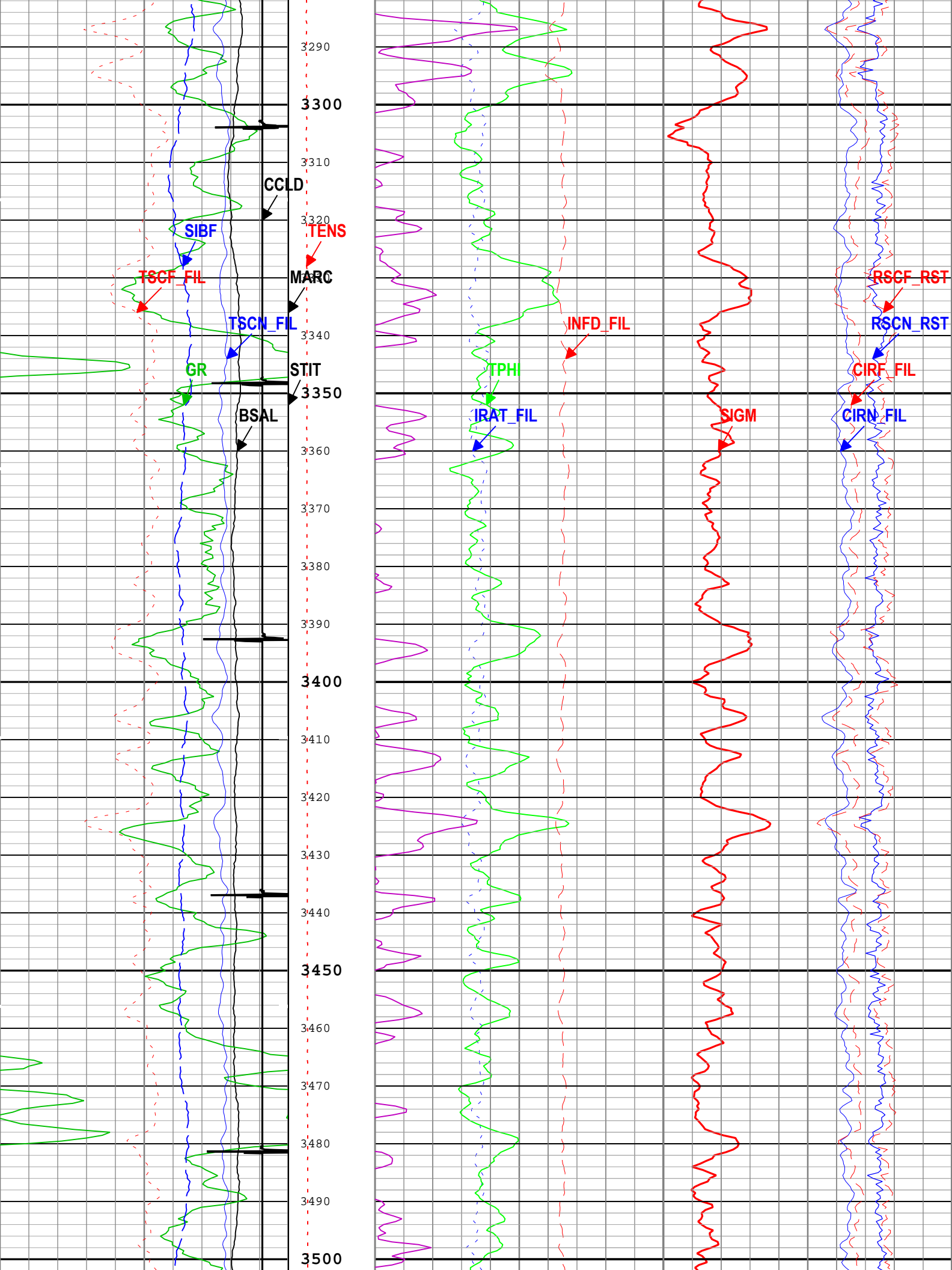


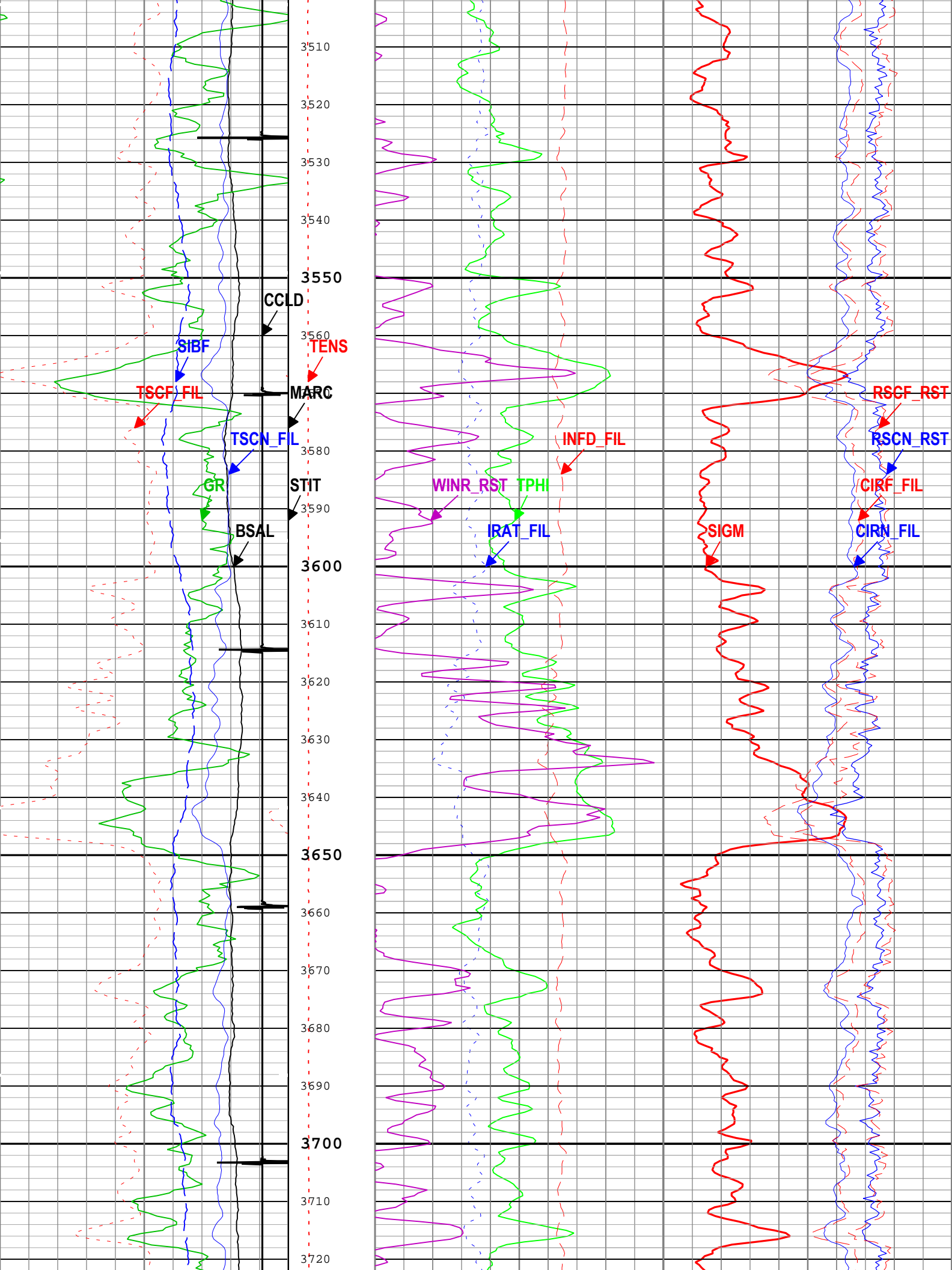


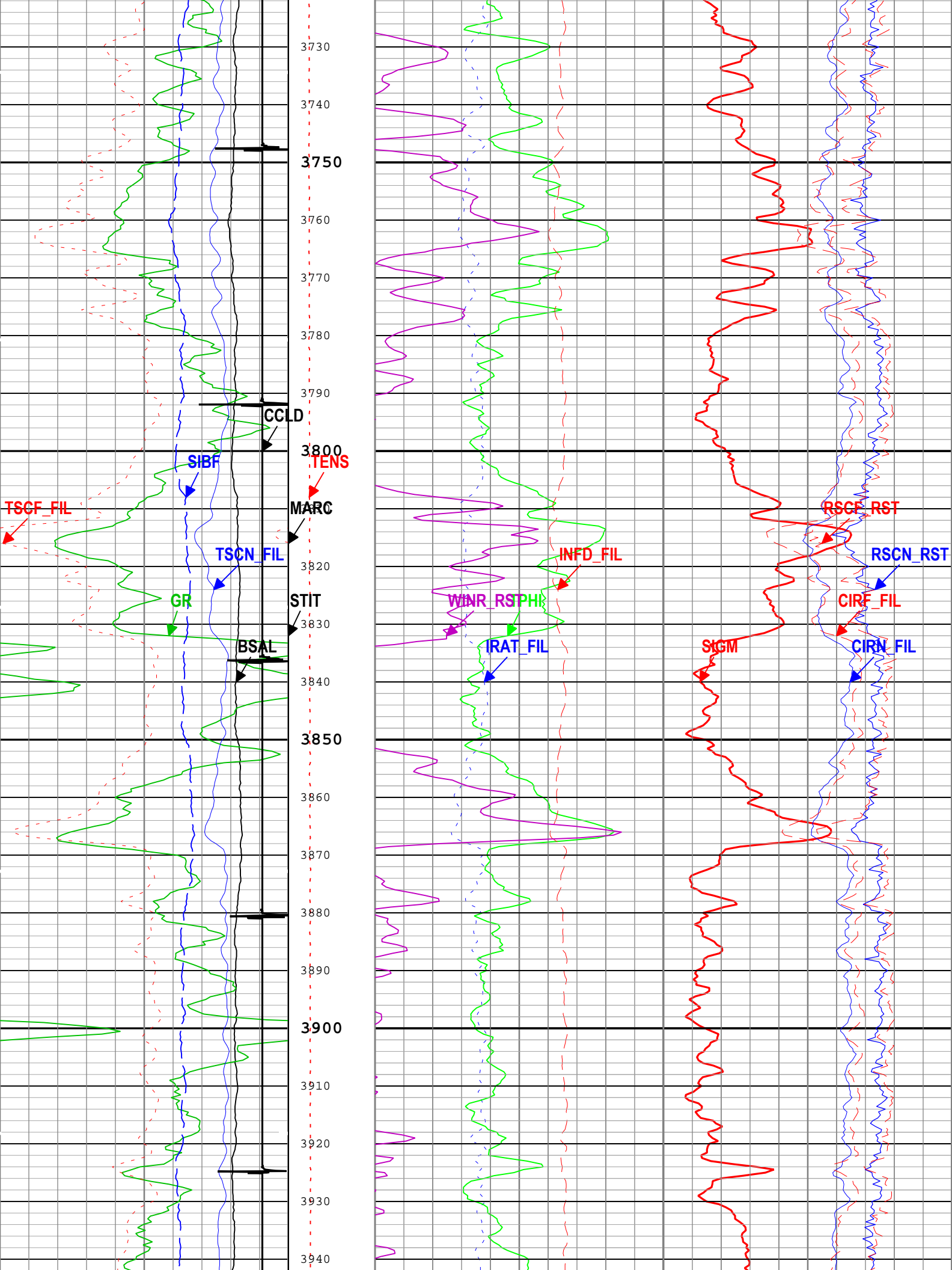


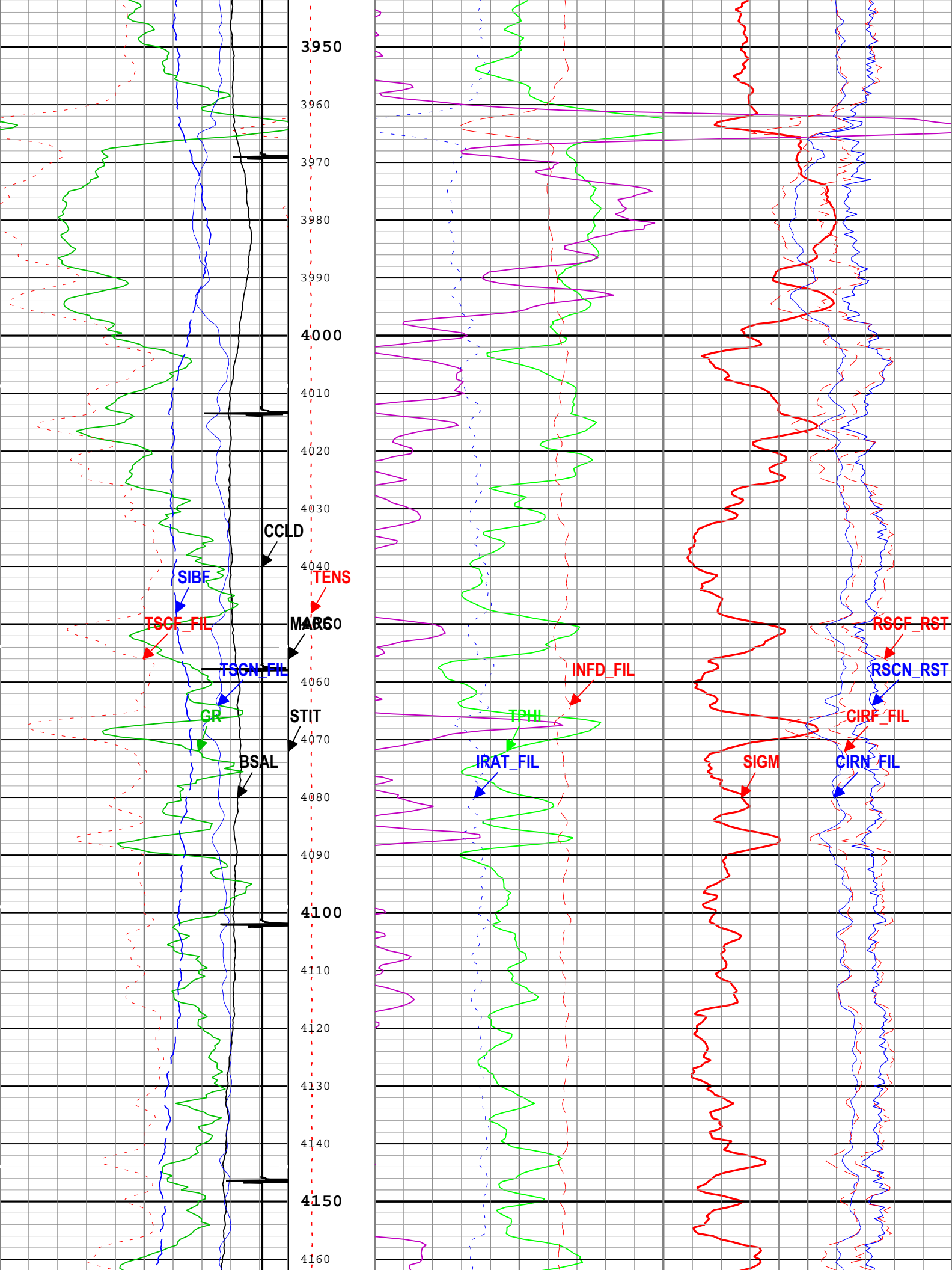


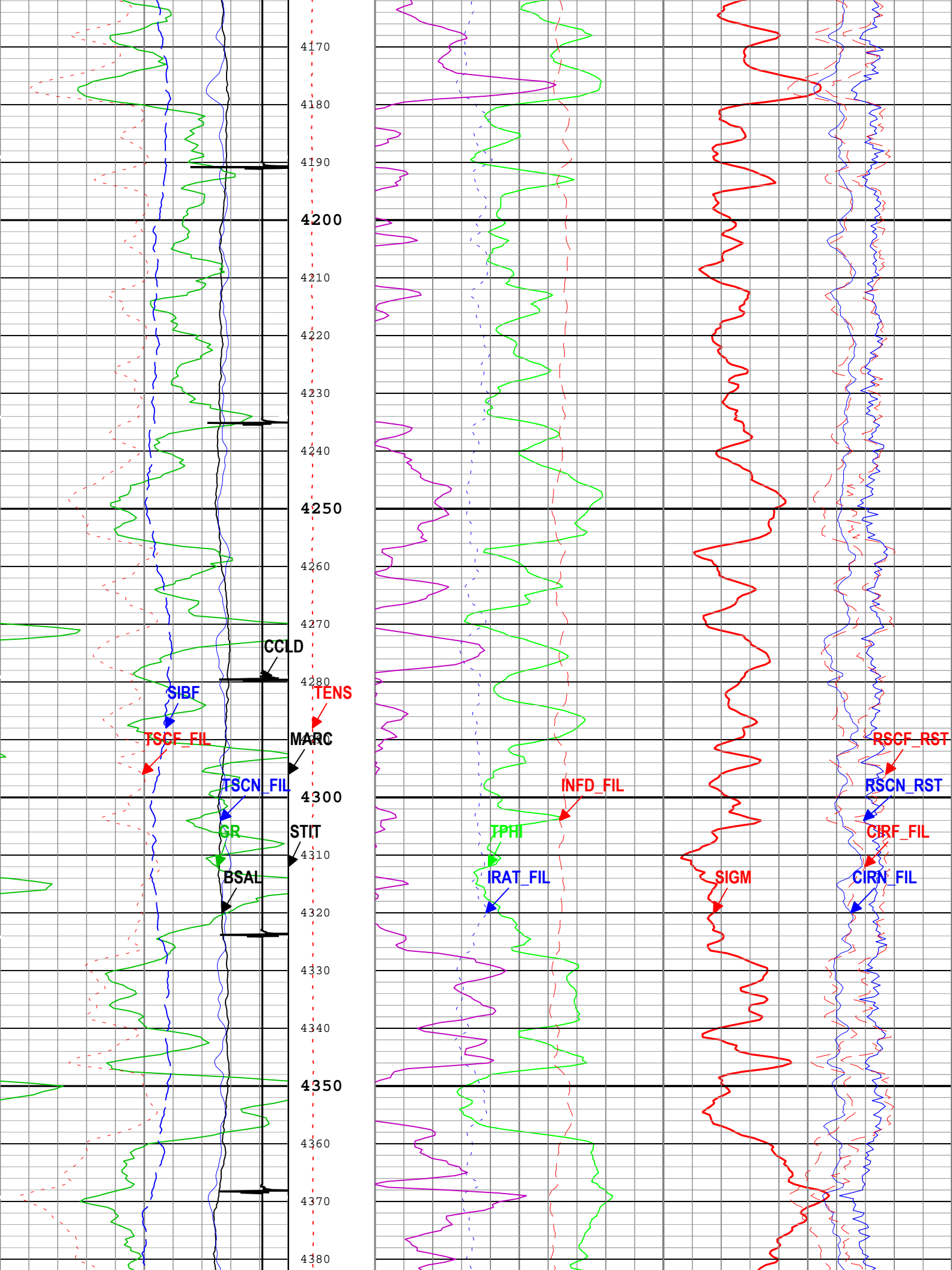


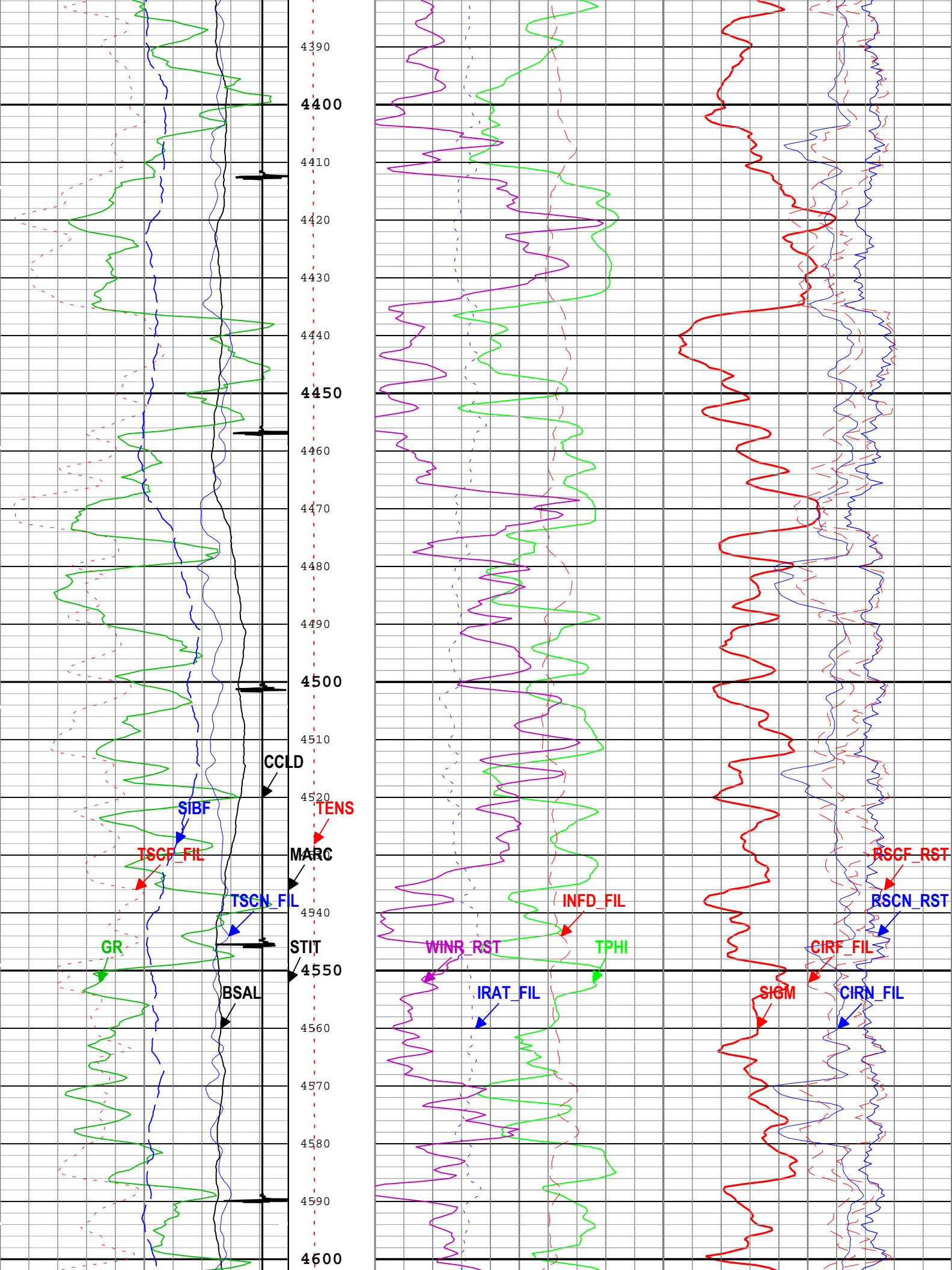


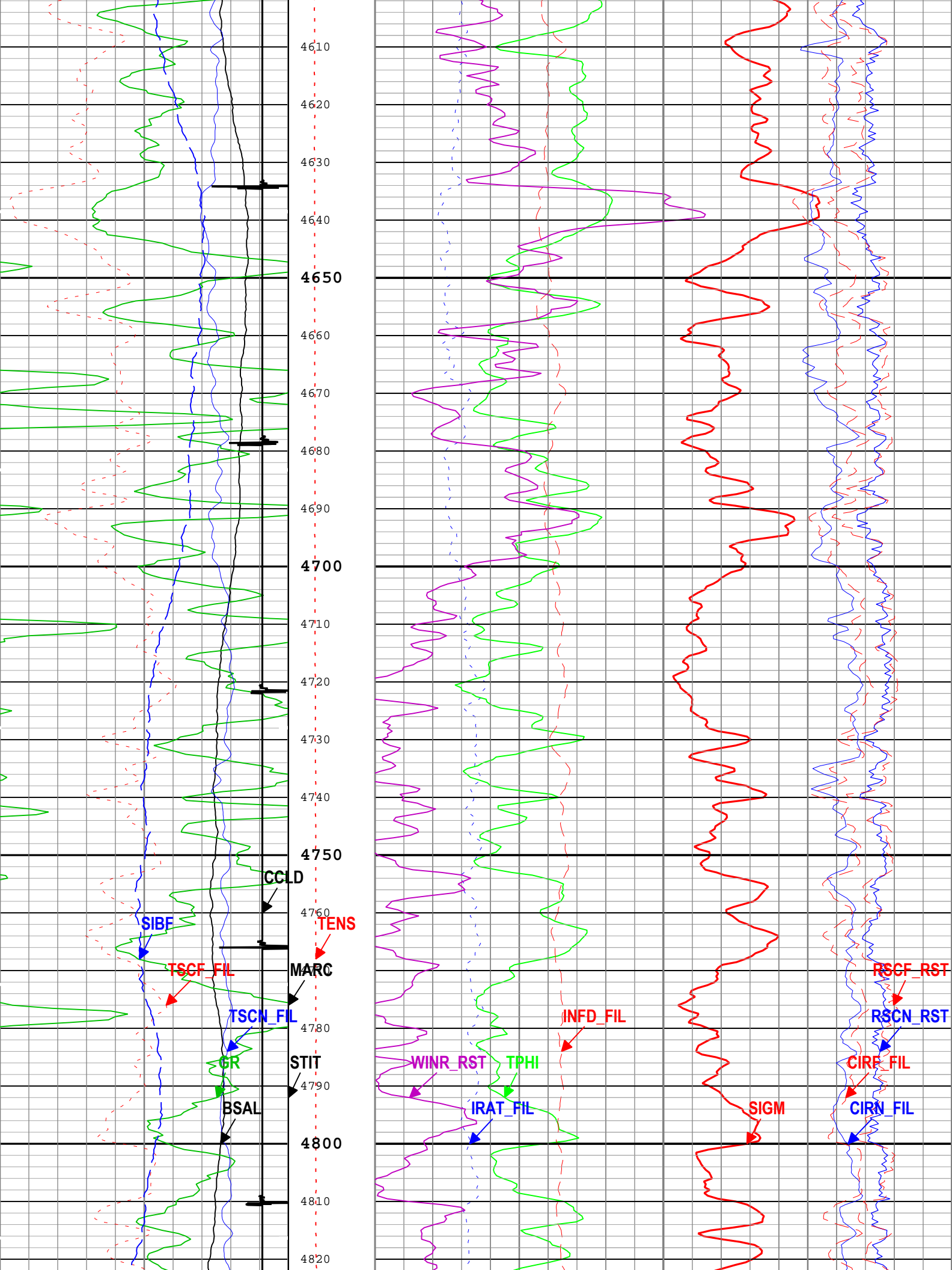


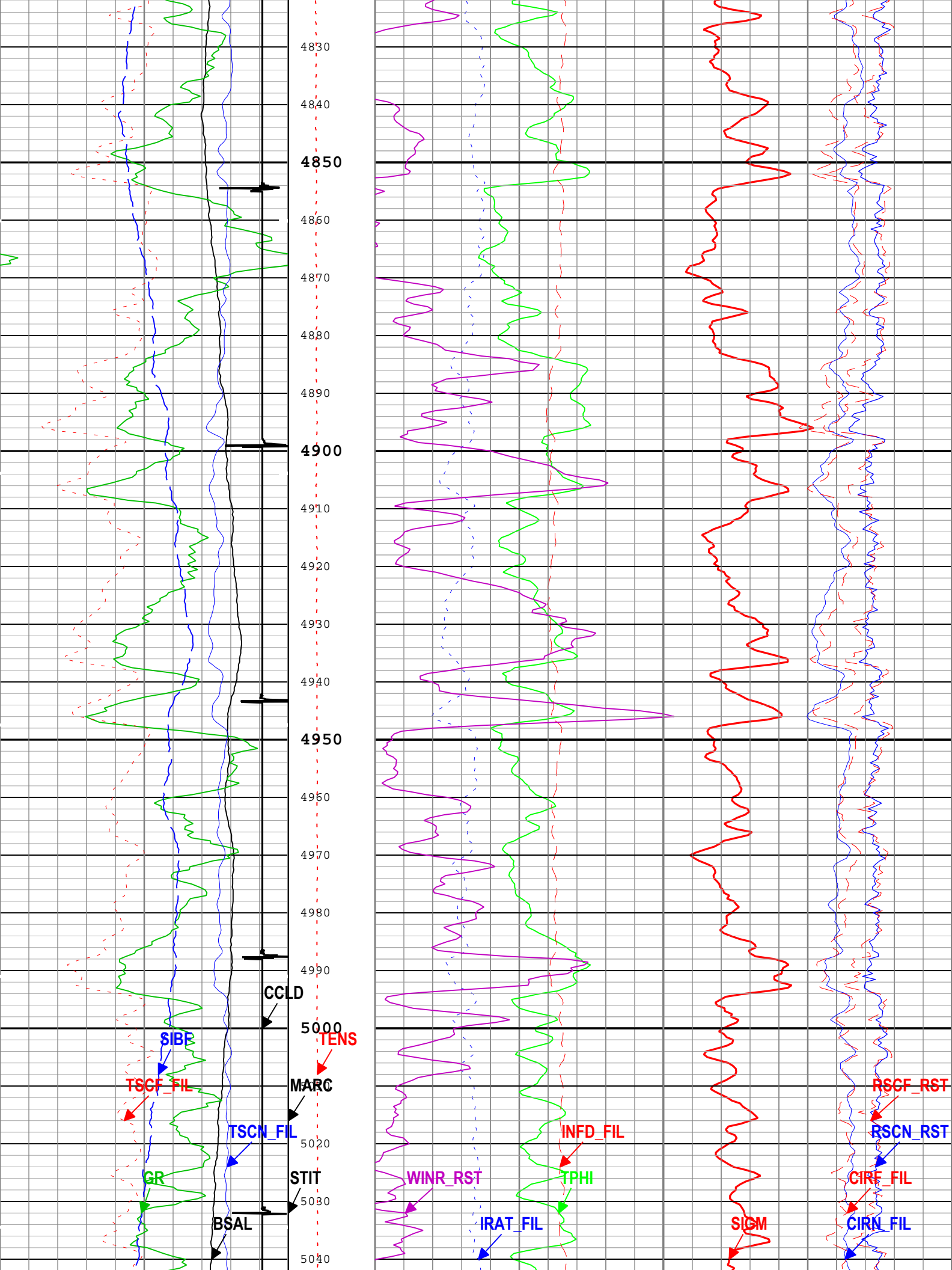


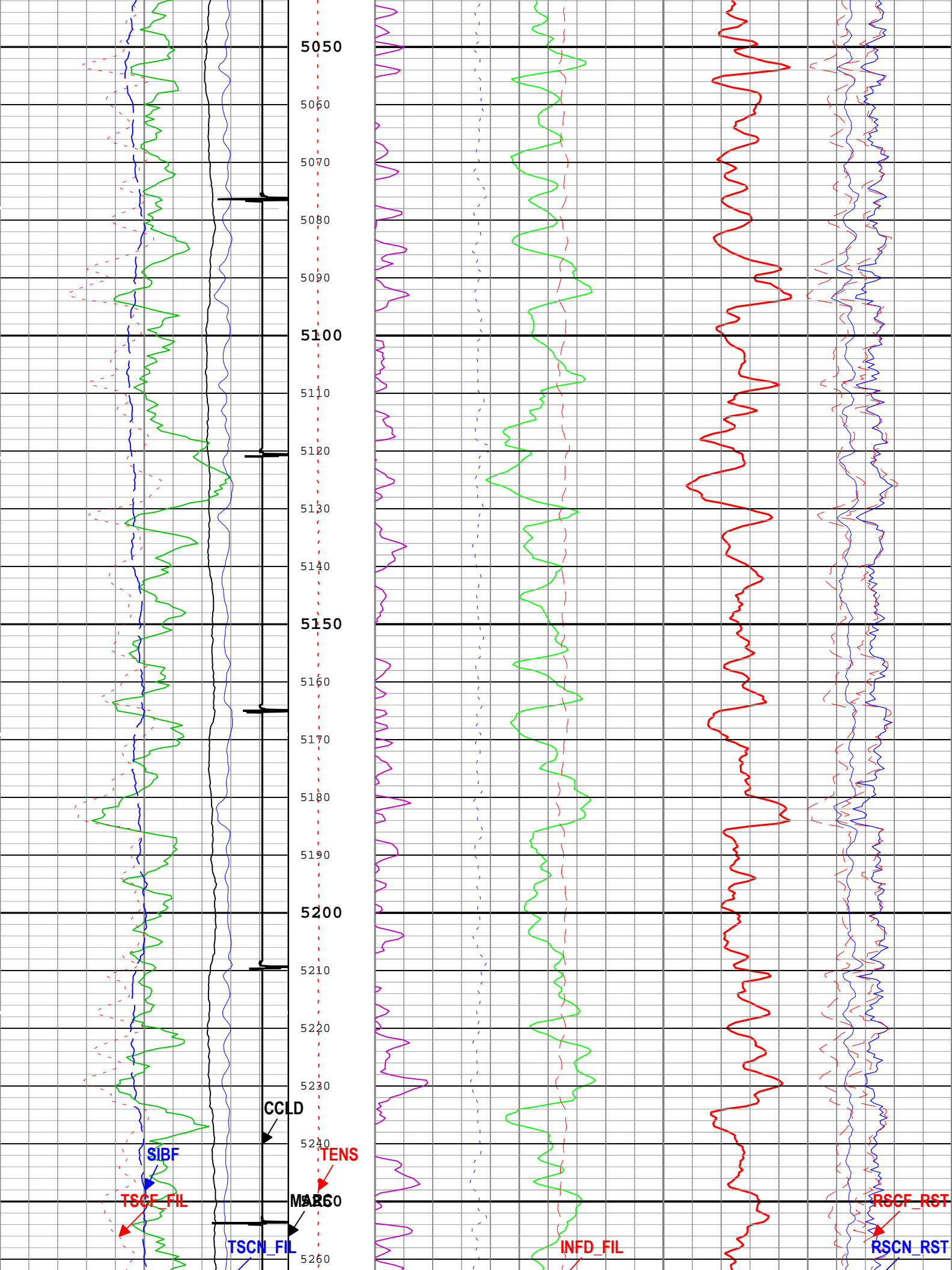


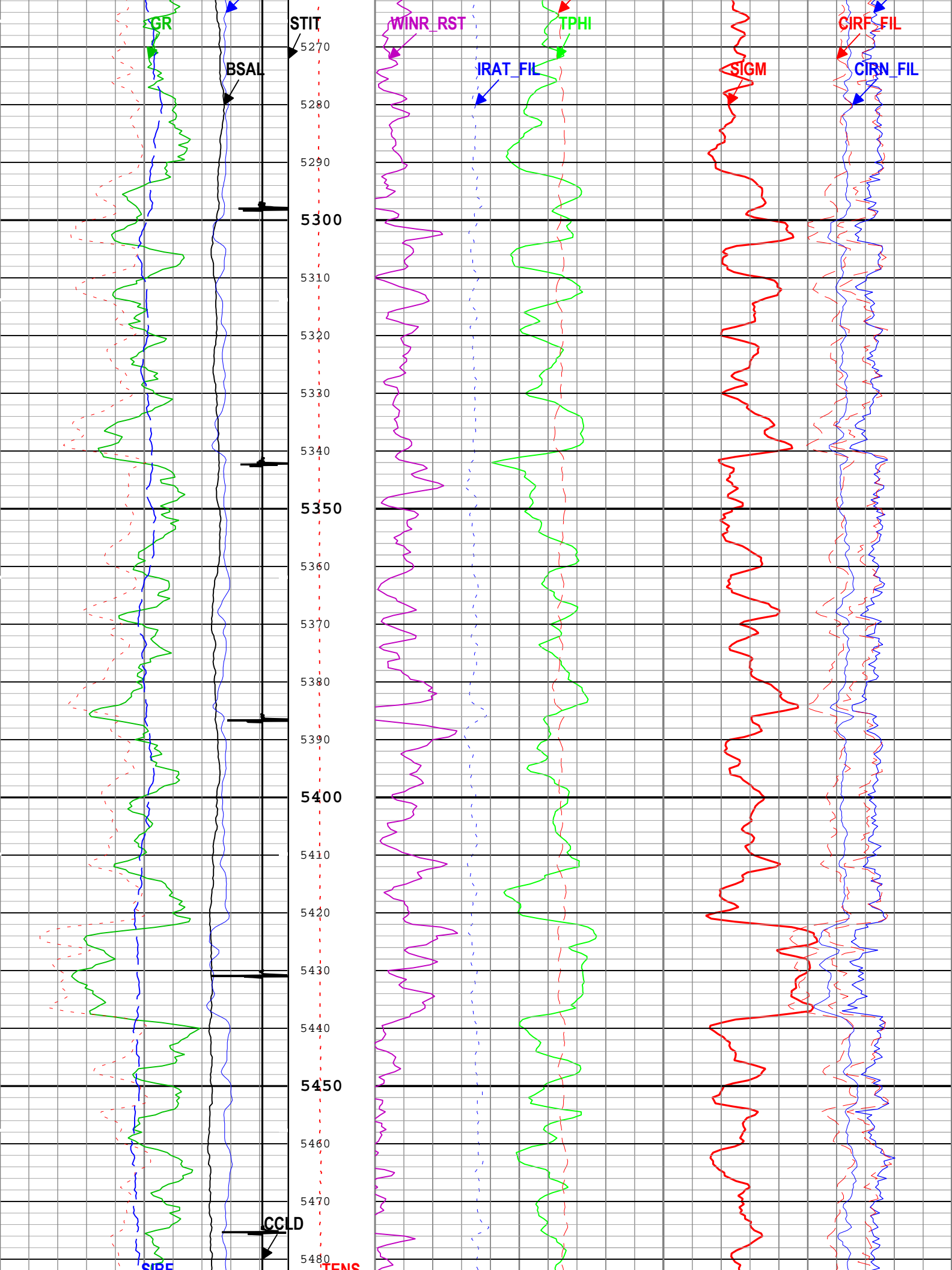


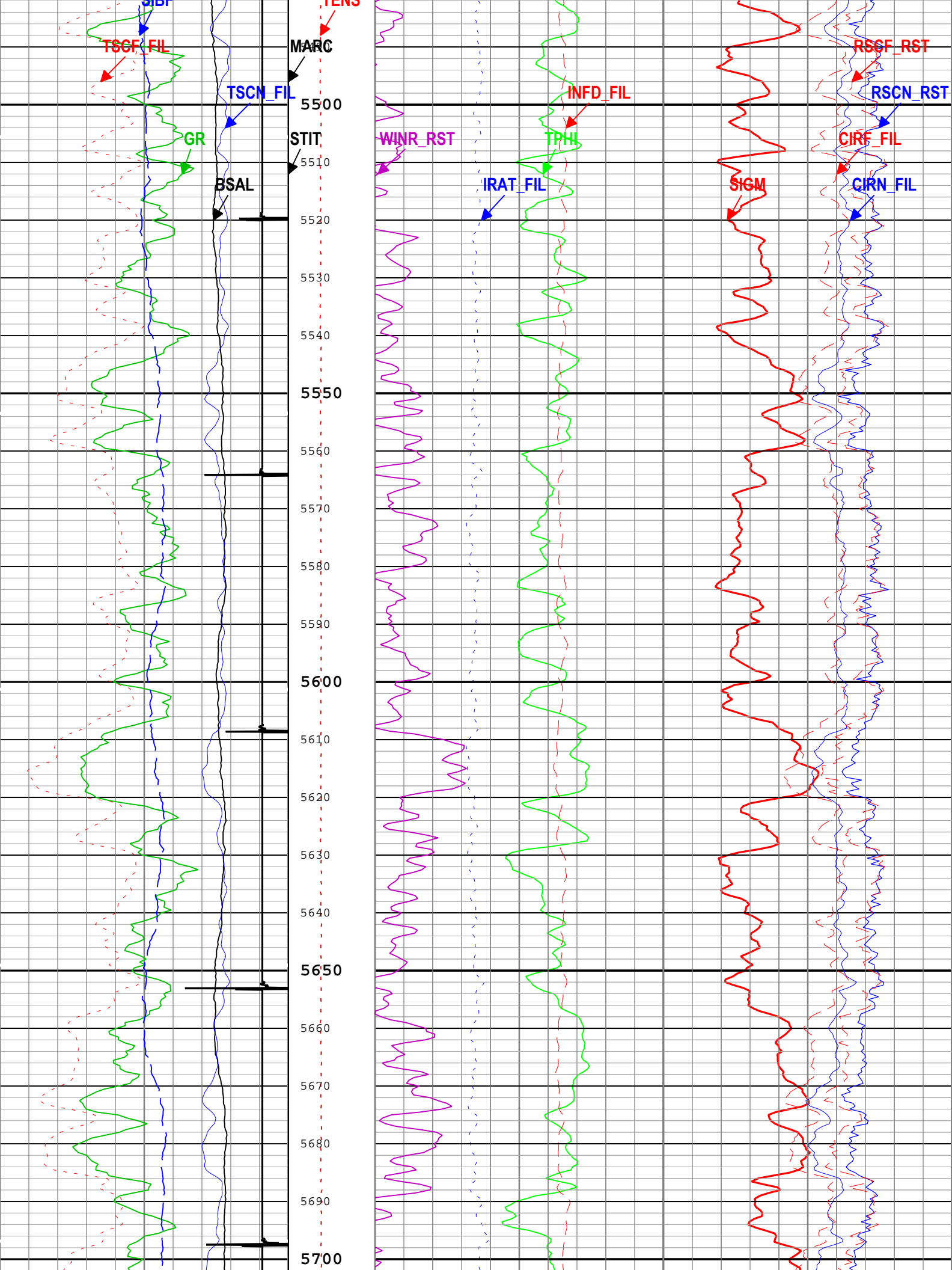


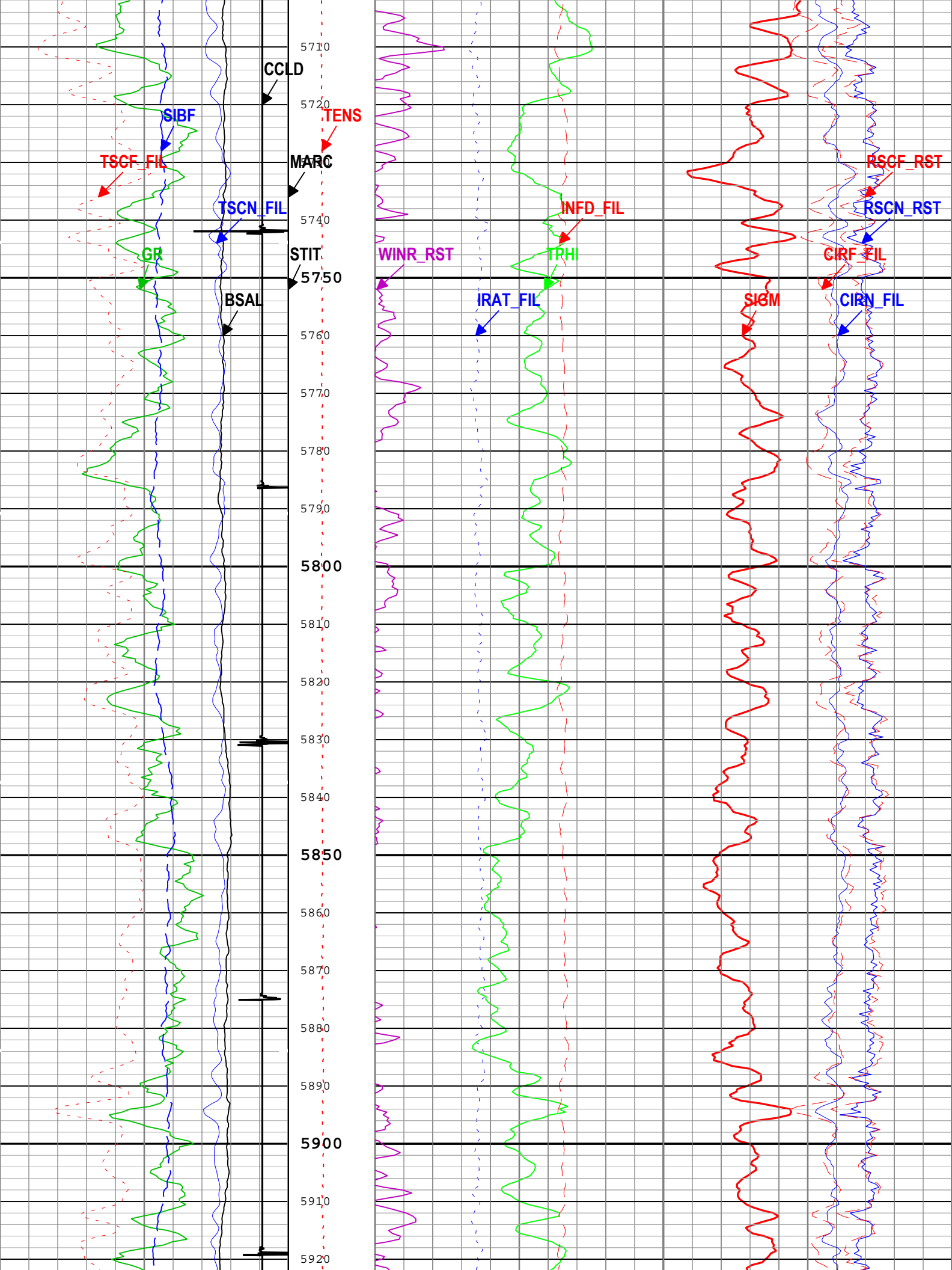


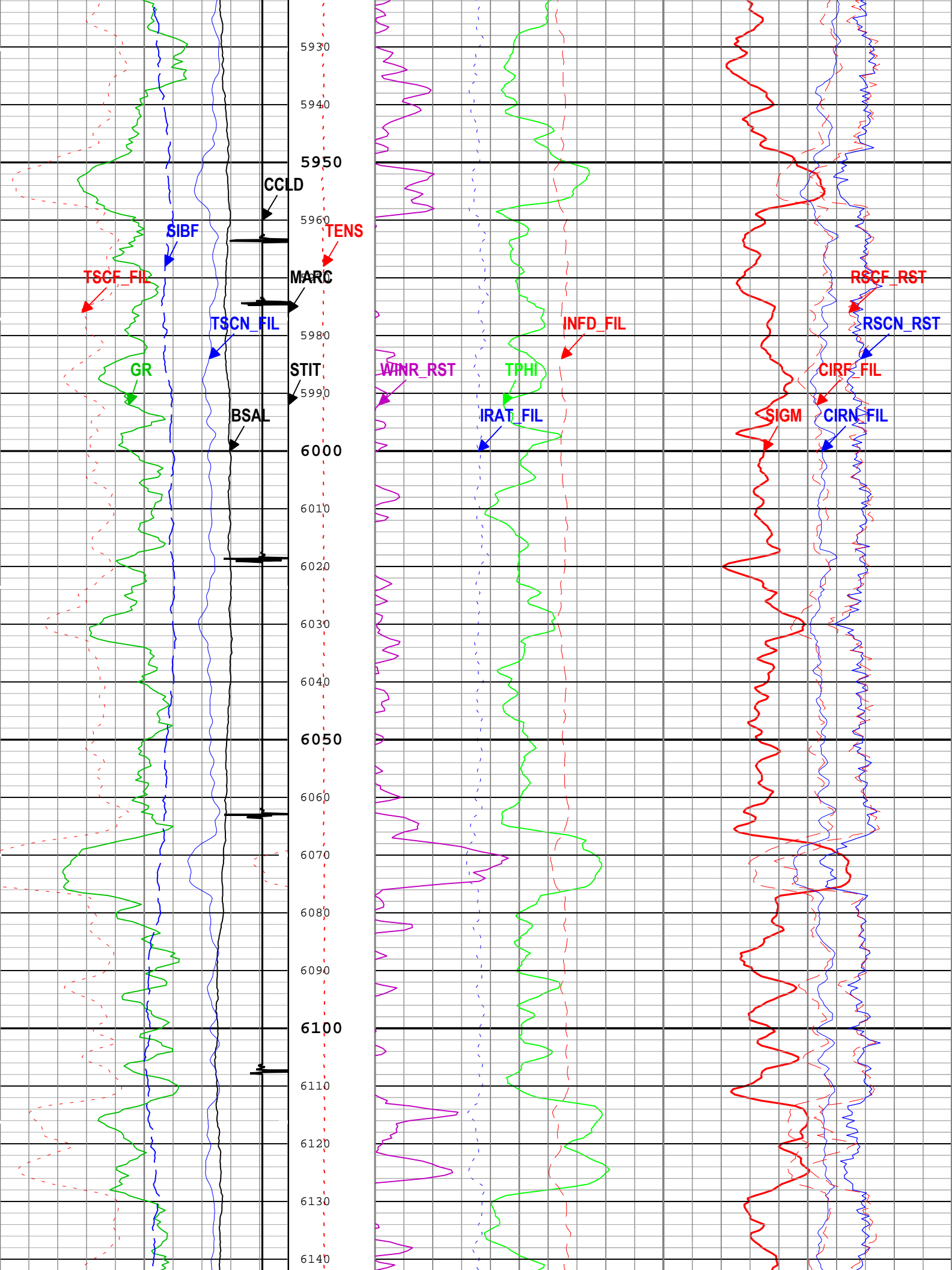


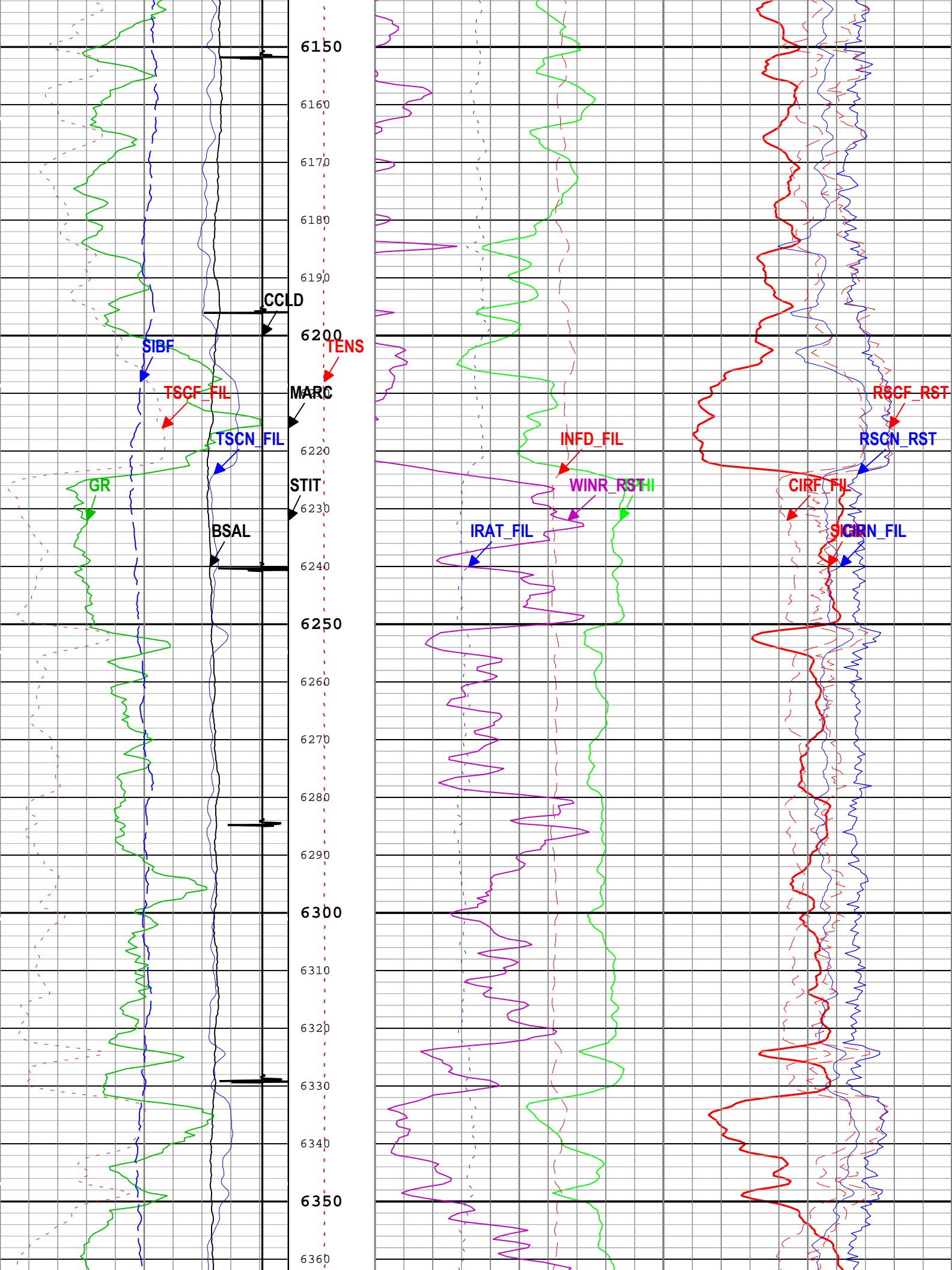


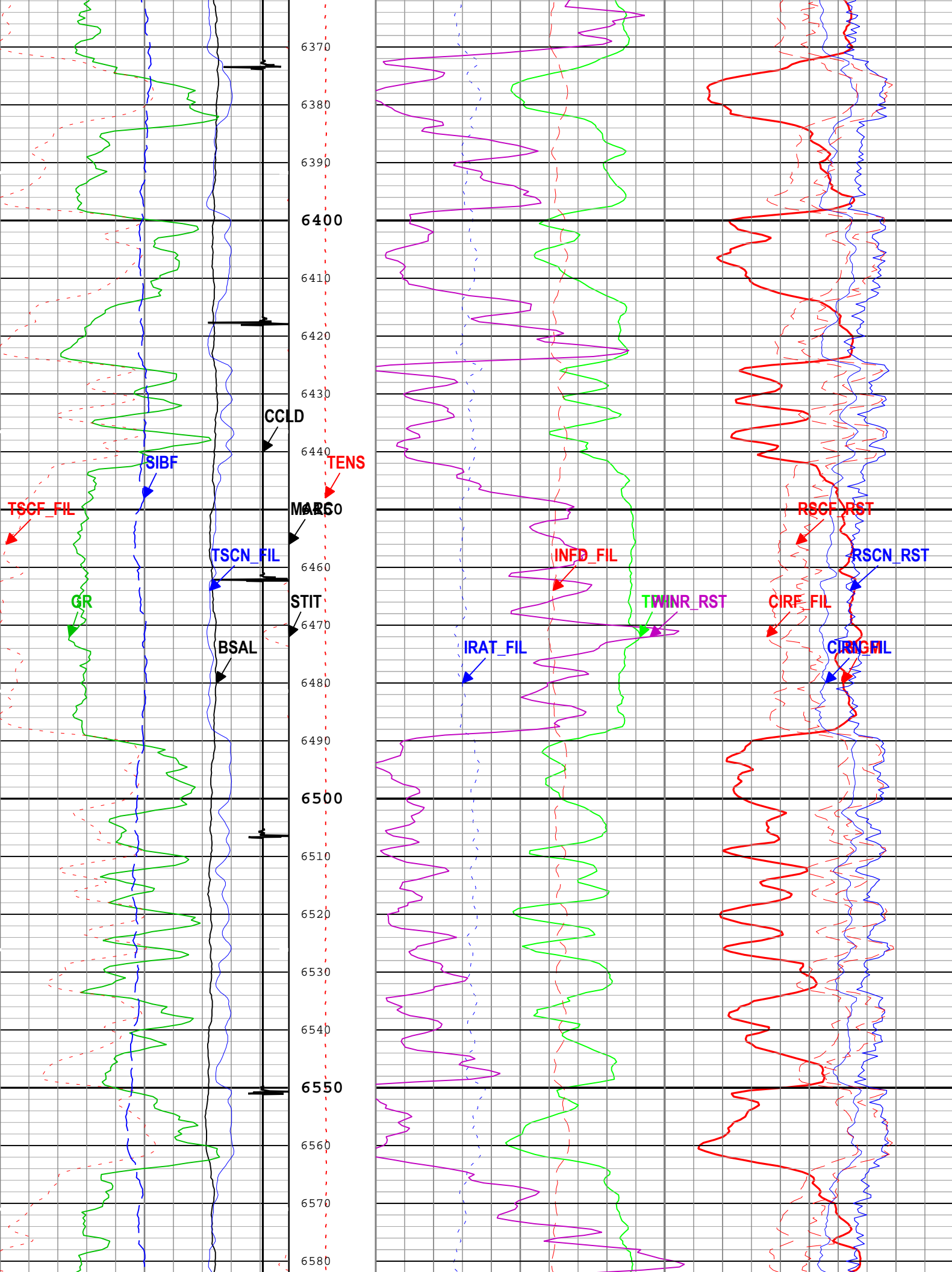


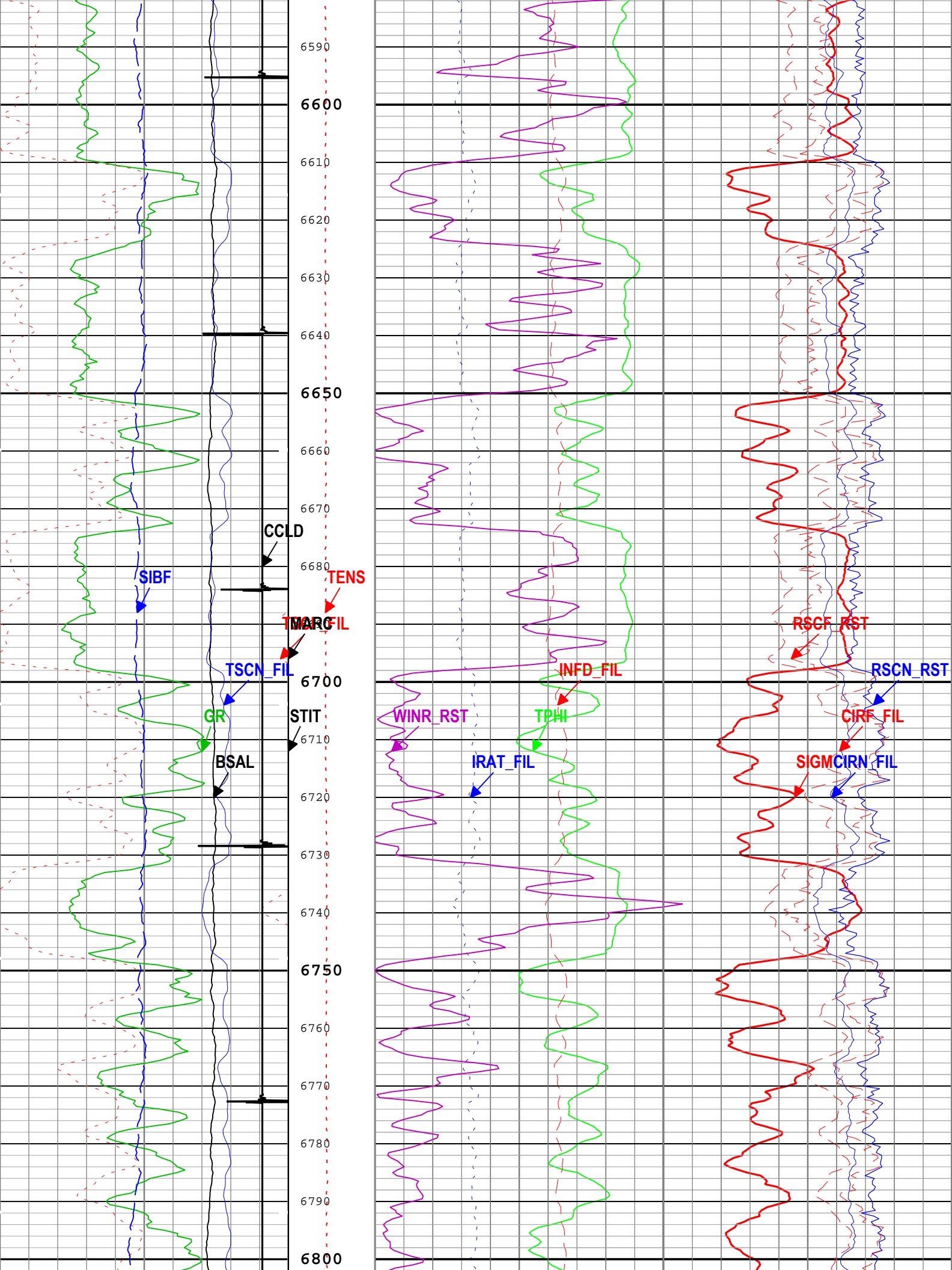


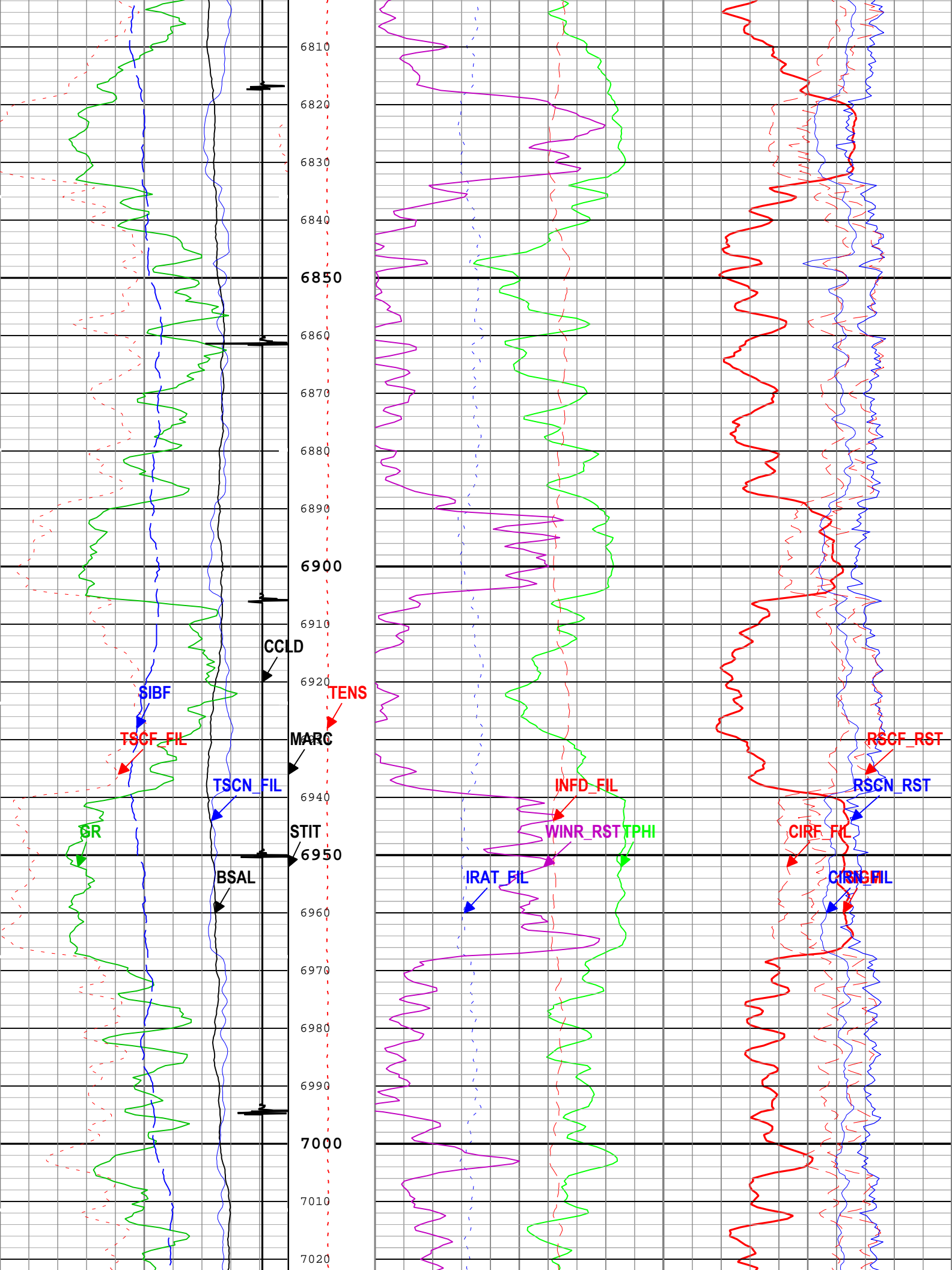


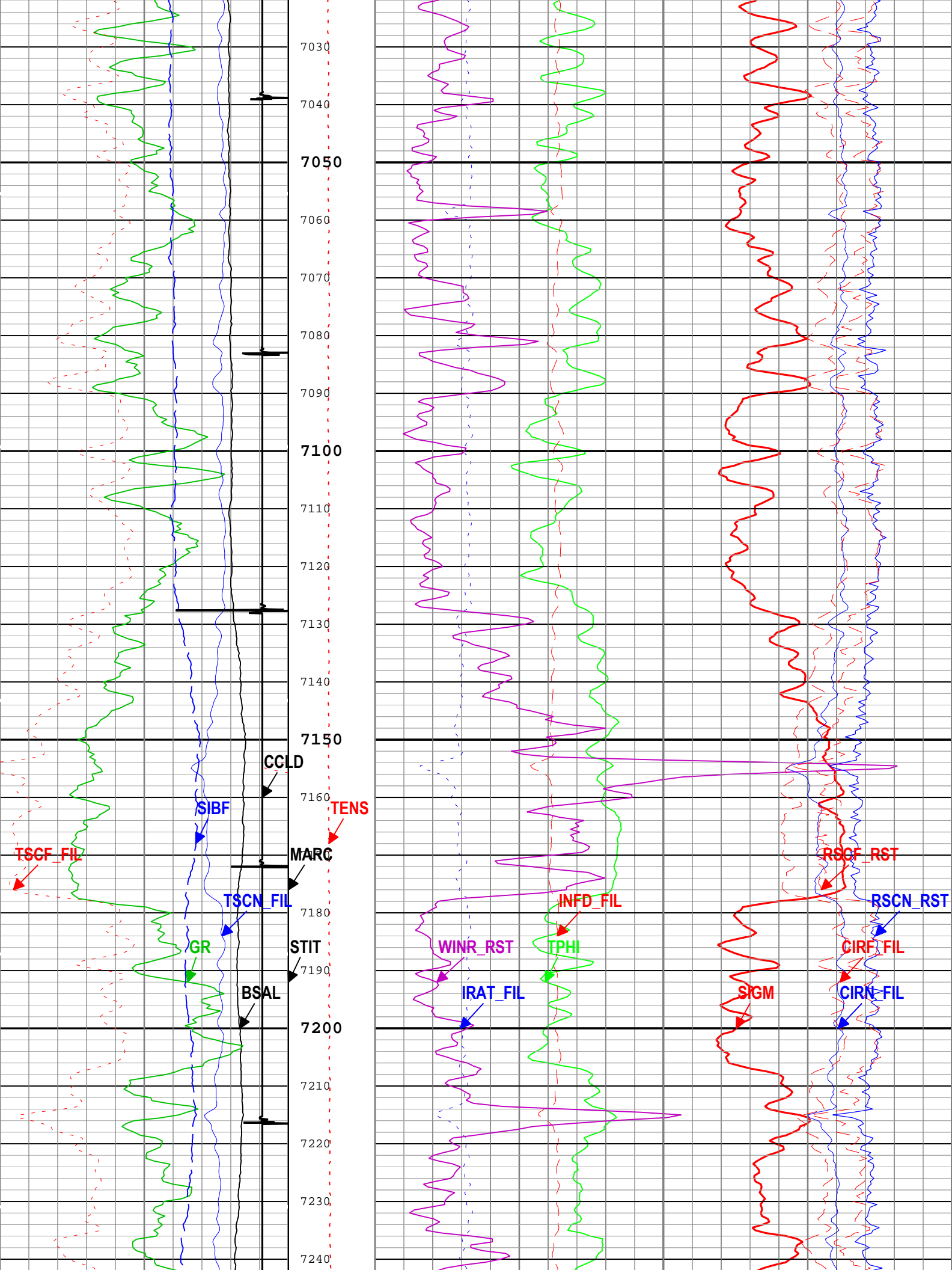




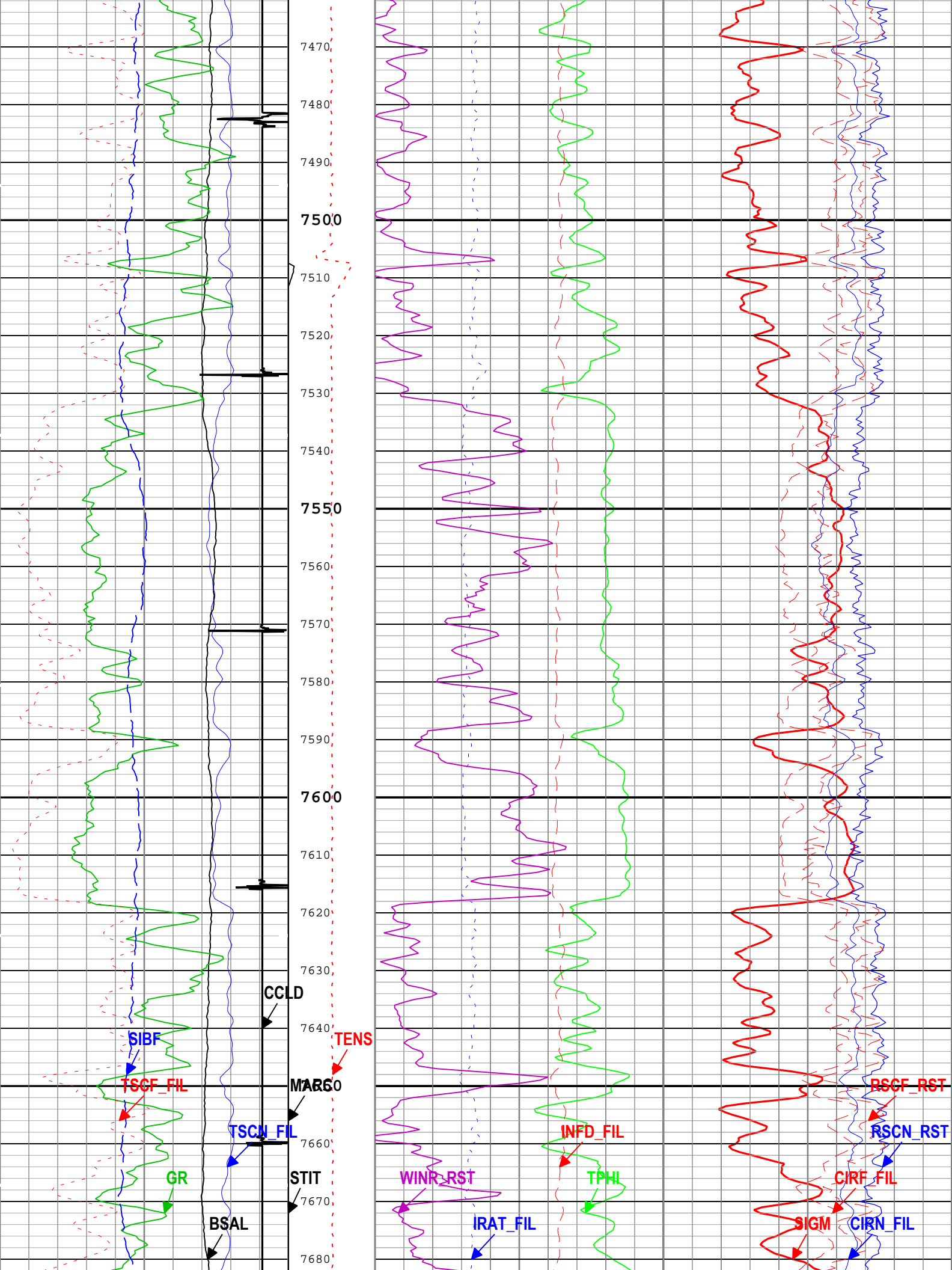






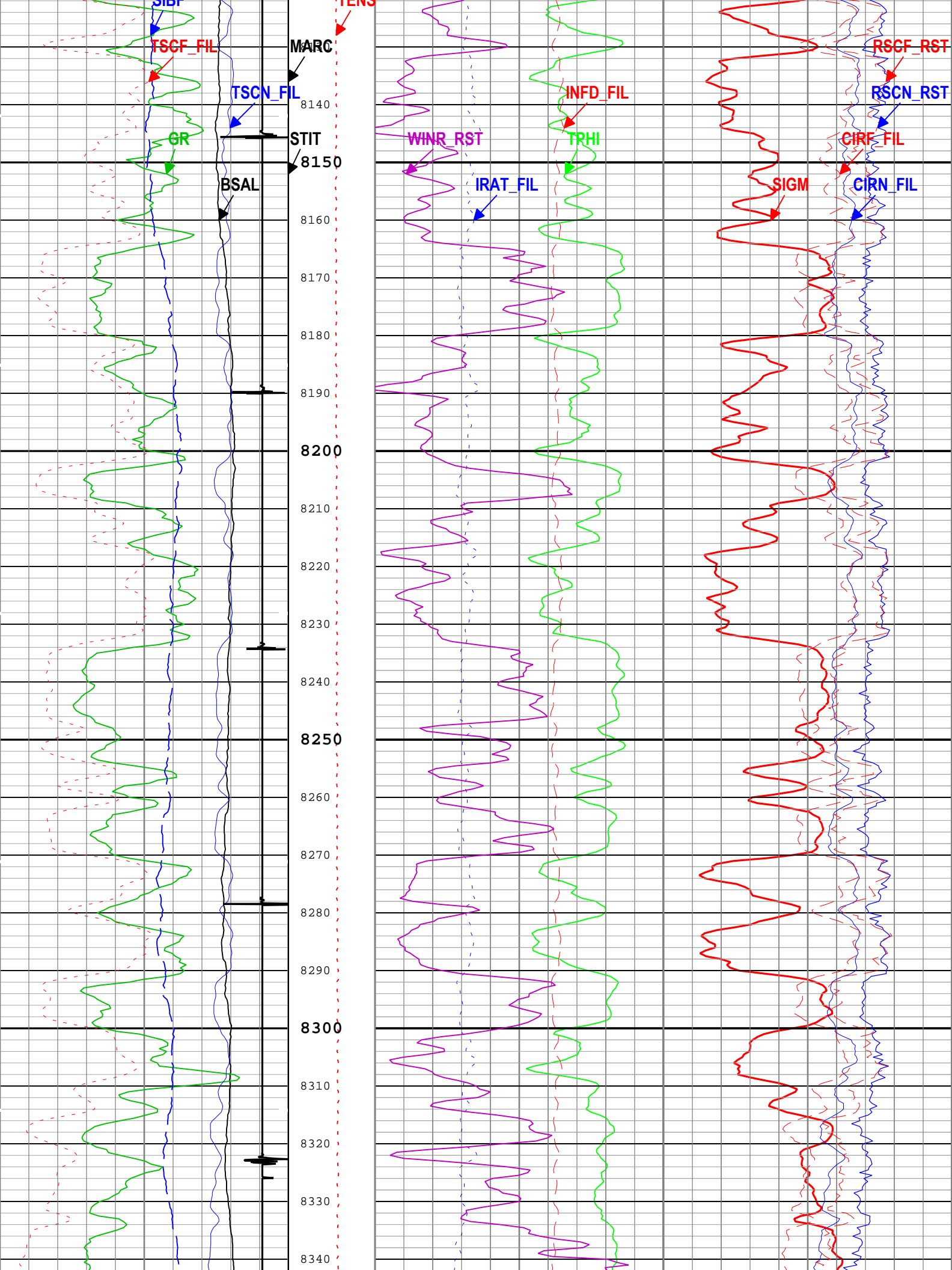


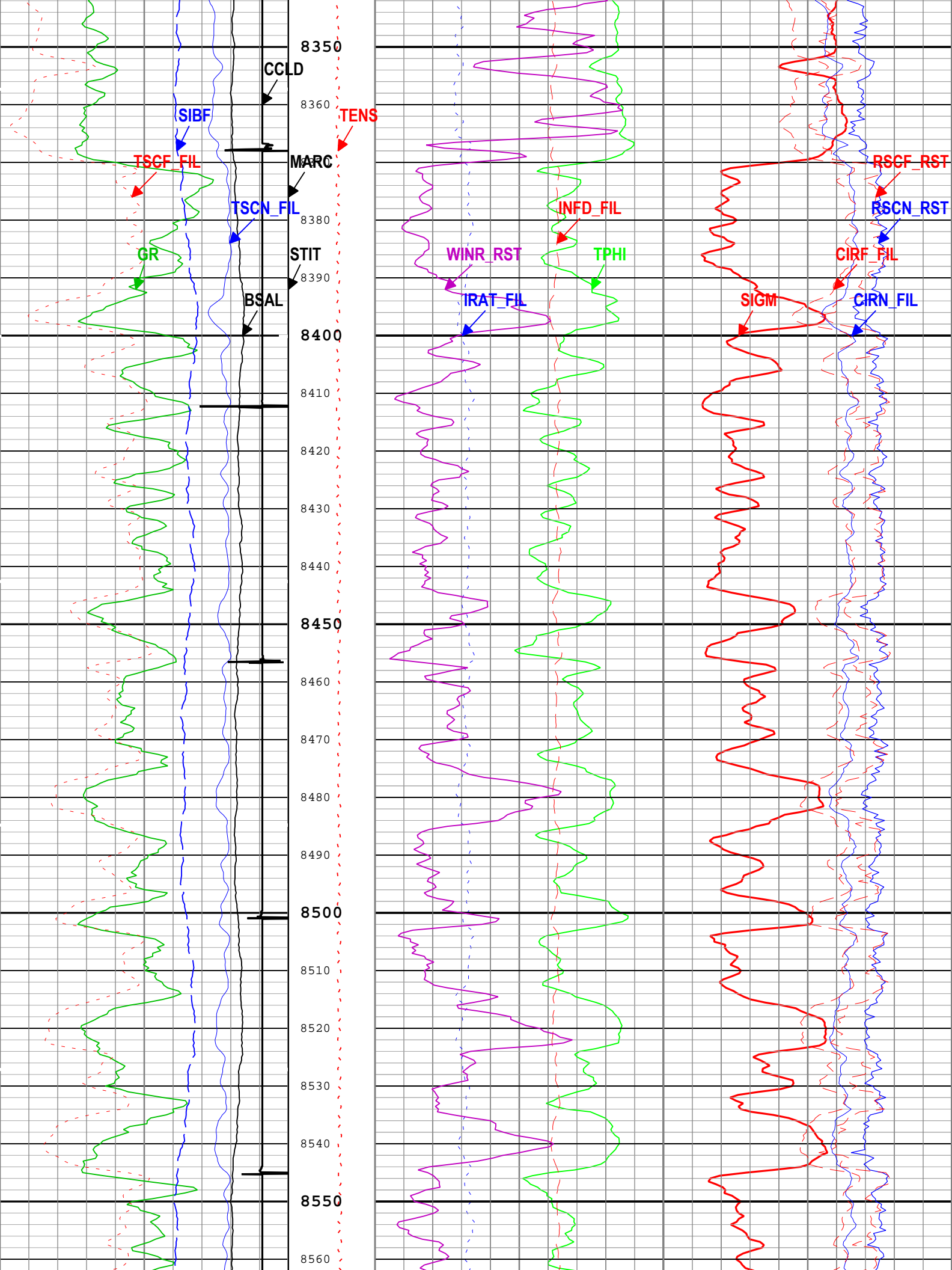


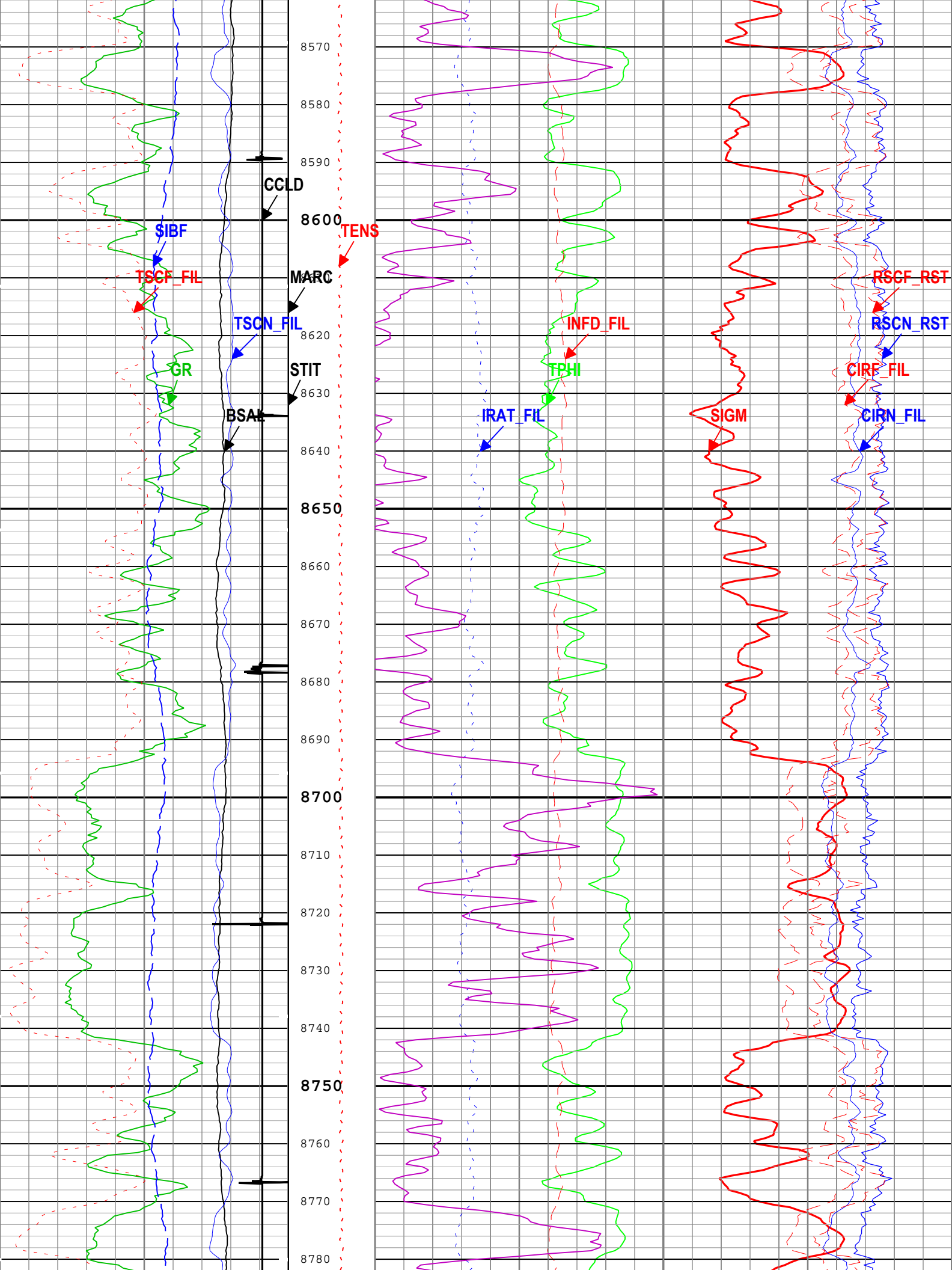


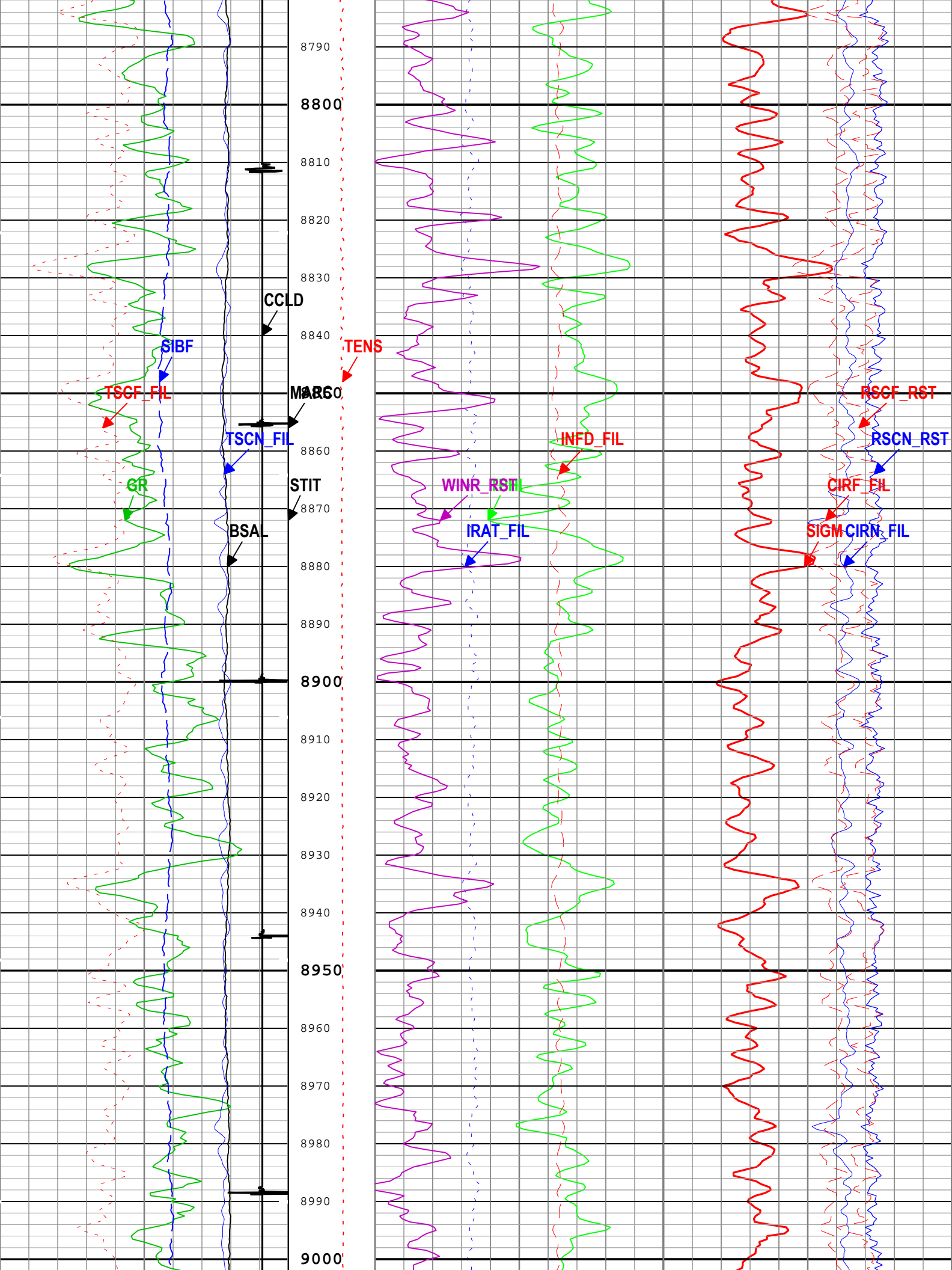


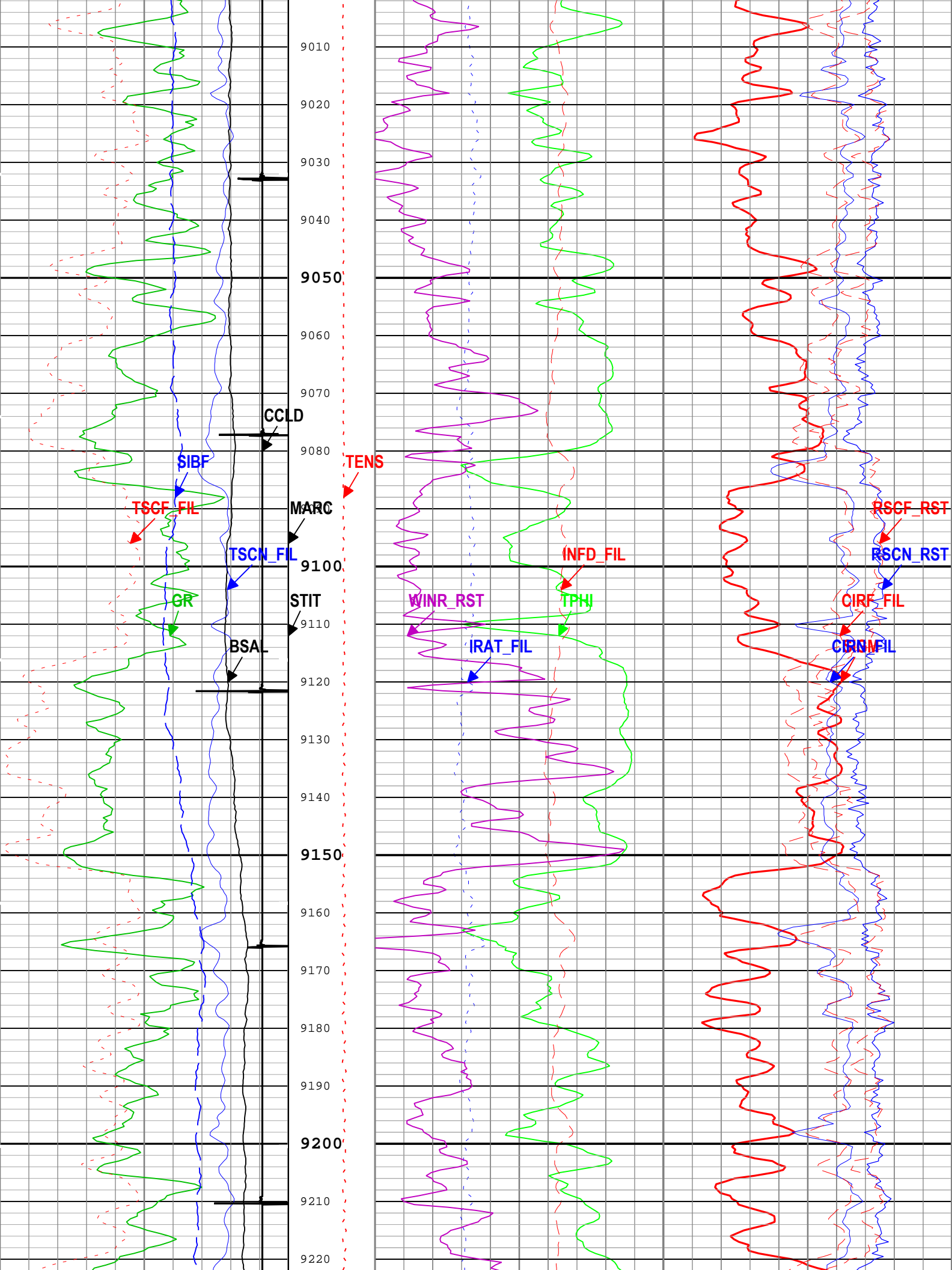


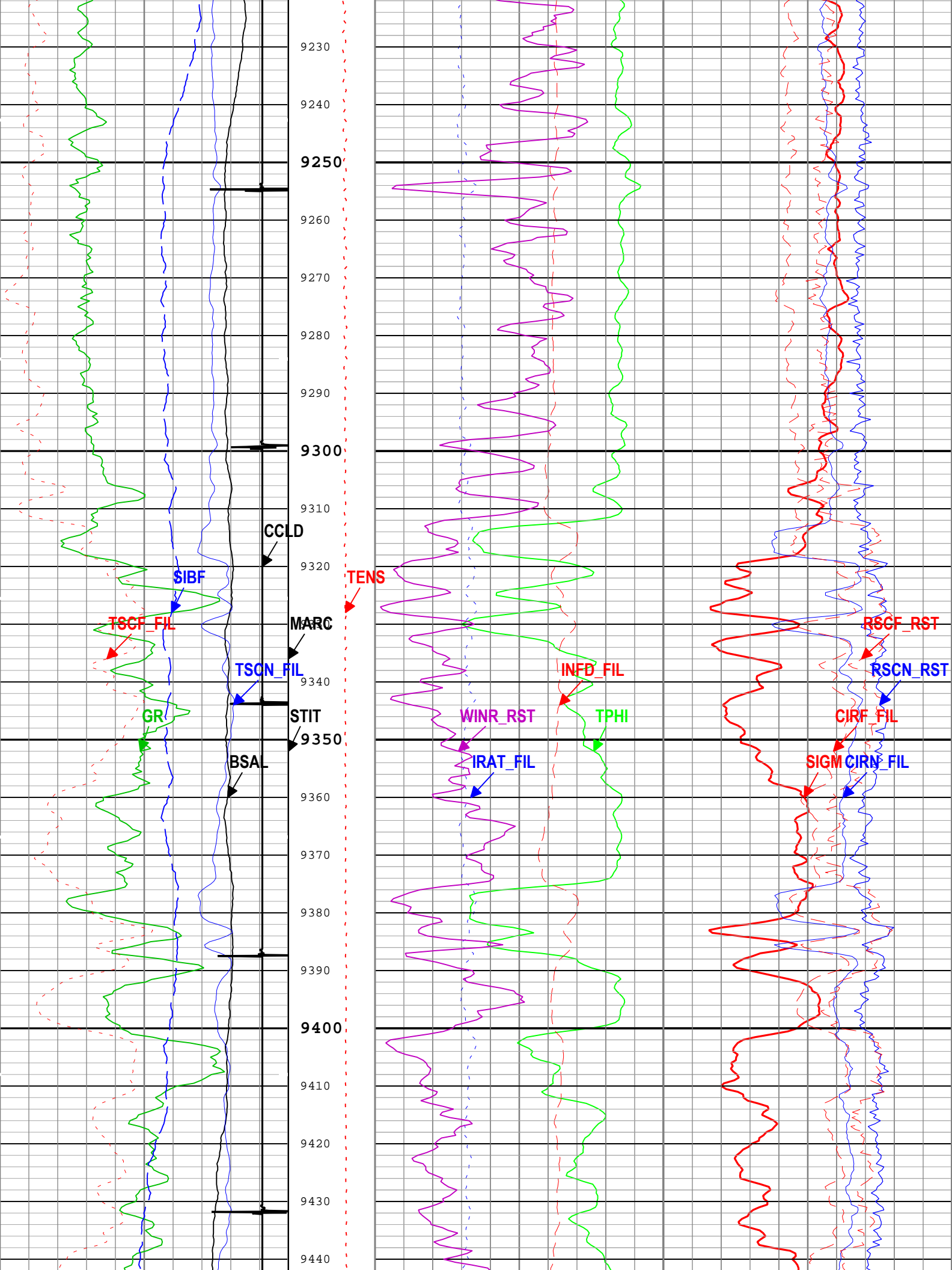


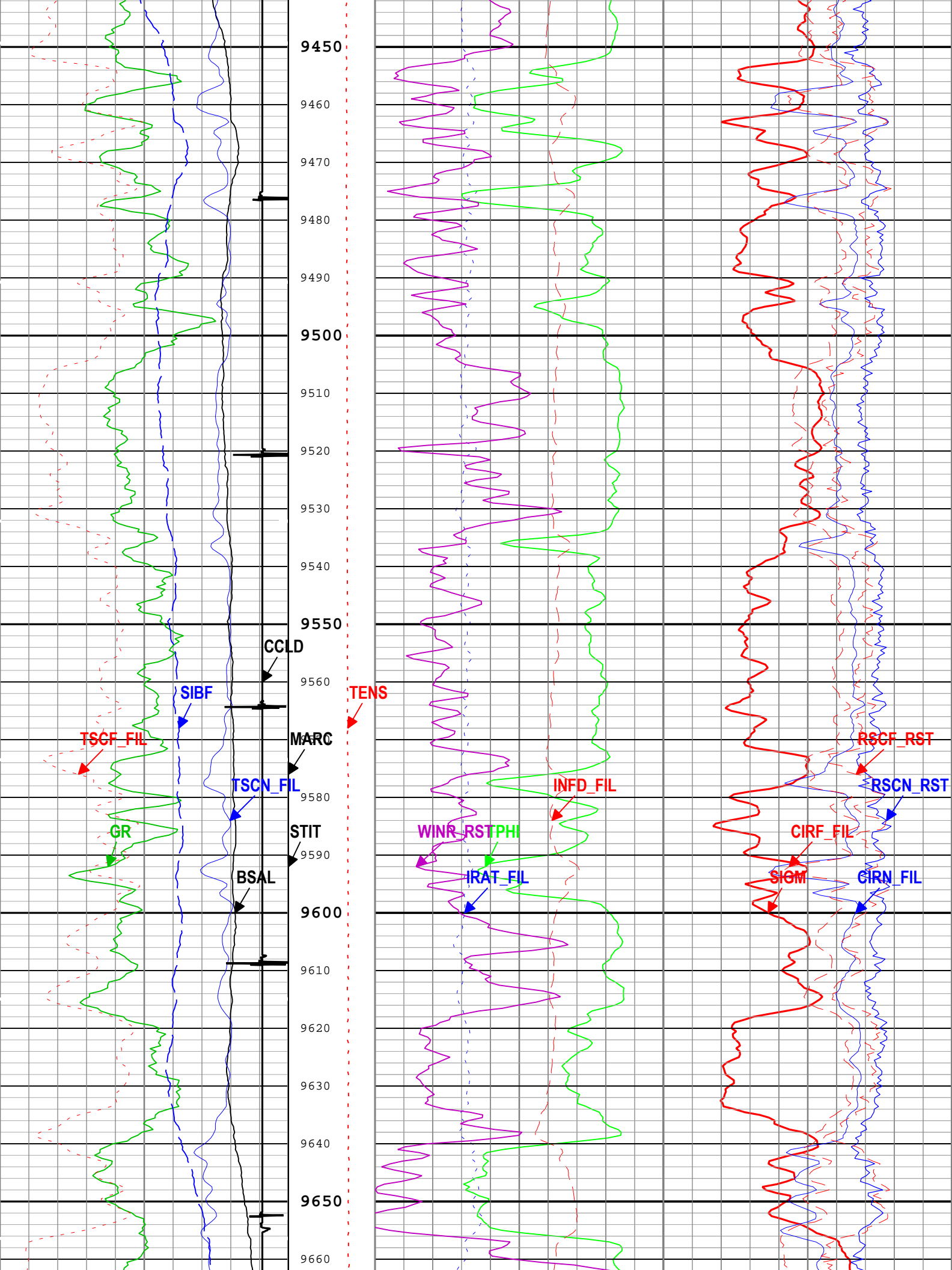


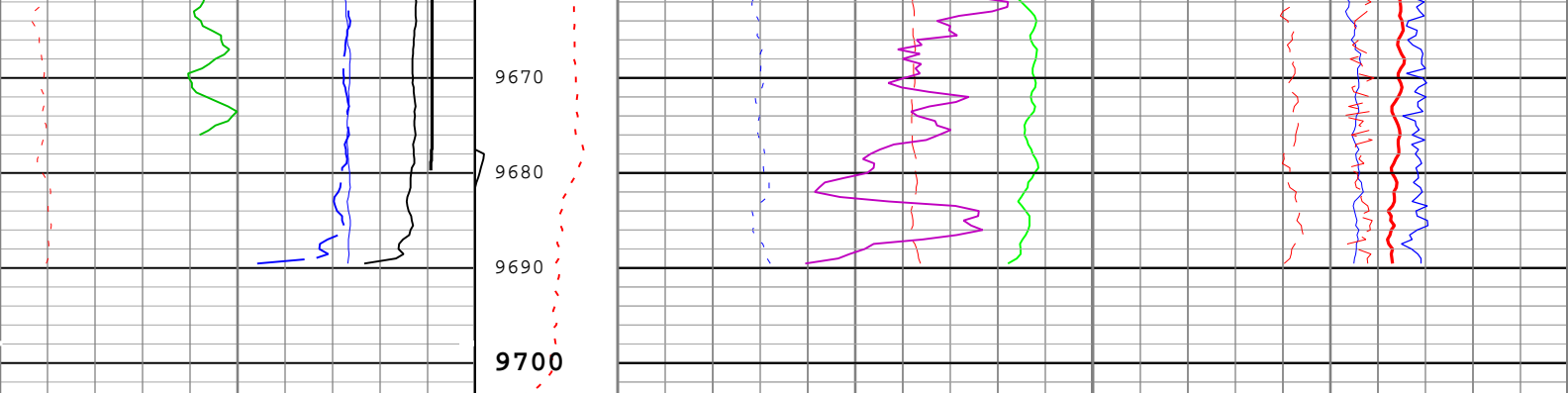












<b>Borehole Salinity (BSAL) RST-C</b> 450 ppk -50	<b>Stuck Tool Indicator, Total (STIT)</b> 0 ft 50	<b>Formation Sigma (Neutron Capture Cross Section) (SIGM) RST-C</b> 60 cu 0	
<b>Gamma Ray (GR) PSTP-B</b> 0 gAPI 150		<b>Weighted Inelastic Ratio (WINR_RST) RST-C</b> 0 0.4	
<b>Total Selected Count Rate Near Detector Filtered (TSCN_FIL) RST-C</b> 30000 1/s 0	<b>Cable Drag From STIA to STIT</b>	<b>Inelastic Ratio Filtered (IRAT_FIL) RST-C</b> 0.75 0	<b>Capture to Inelastic Ratio Near Filtered (CIRN_FIL) RST-C</b> 2.5 0
<b>Total Selected Count Rate Far Detector Filtered (TSCF_FIL) RST-C</b> 12000 1/s 0	<b>Tool Tot. Drag From D3T to STIT</b>	<b>Thermal Decay Porosity (TPHI) RST-C</b> 0.6 ft3/ft3 0	<b>Capture to Inelastic Ratio Far Filtered (CIRF_FIL) RST-C</b> 5 0
<b>Sigma Borehole Fluid (SIBF) RST-C</b> 100 cu 0	<b>Minitron Arc Count (MARC) RST-C</b> 0 5	<b>Gross Inelastic Count Rate Far Detector Filtered (INFD_FIL) RST-C</b> 10000 1/s 0	<b>Near Detector Effective Unregulated Capture Count Rate (RSCN_RST) RST-C</b> 45 0
<b>CCL Discriminated Amplitude (CCLD) PSTP-B</b> -10 V 1	<b>Cable Tension (TENS)</b> 0 lbf 2000		<b>Far Detector Effective Unregulated Capture Count Rate (RSCF_RST) RST-C</b> 45 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)

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: 22-Sep-2018 18:23:13

## Channel Processing Parameters

### RST Sigma: 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_CATEGORY	Drilling Fluid Type	Borehole	Water	
MATR	Rock Matrix for Neutron Porosity Corrections	Borehole	SANDSTONE	

### Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
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BS	14.75	2400	2975
BS	8.75	2975	9703.74

All depth are actual.

## Tool Control Parameters

### RST Sigma: Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	150	ft/h
PCCG	PSP Downhole CCL Gain	PSTP-B	12 dB	
RST_DLM	Depth Log Mode	RST-C	Sigma	

## No Data Assignment

## RST Repeat Pass

## Software Version

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

## Log

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: 22-Sep-2018 18:23:17

	<div style="border: 1px solid black; padding: 2px; text-align: center;">Cable Drag From STIA to STIT</div> <div style="border: 1px solid black; padding: 2px; text-align: center;">Tool_Tot. Drag From D3T to STIT</div>	
	<div style="border: 1px solid black; padding: 2px; text-align: center;">Cable Drag From STIA to STIT</div> <div style="border: 1px solid black; padding: 2px; text-align: center;">Tool_Tot. Drag From D3T to STIT</div>	

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: 22-Sep-2018 18:23:17

Company: Caerus Operating LLC

**Schlumberger**

Well: NPR 24C-10 596

Field: NPR

County: Garfield

State: Colorado

Reservoir Saturation Tool

RST Sigma Mode

Gamma Ray - CCL