Schlumberger

Company: **ENCANA OIL & GAS (USA) INC**

Well: **ROSE 22−11B (K22W)**

Field: **MAMM CREEK**

County: **GARFIELD** State: **COLORADO**

County: GARFIELD
Field: MAMM CREEK
Location: SHL: 2328 FSL & 2218 FWL
Well: ROSE 22−11B (K22W)
Company: ENCANA OIL & GAS (USA) INC

RESERVOIR SATURATION LOG
SIGMA MODE
GAMMA RAY−CCL

LOCATION

SHL: 2328 FSL & 2218 FWL
BHL: 2513 FSL & 1544 FWL

Elev.: K.B. 6973.00 ft
G.L. 6951.00 ft
D.F. 6972.00 ft

Permanent Datum: GROUND LEVEL Elev.: 6951.00 ft
Log Measured From: KELLY BUSHING 22.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
05−045−22117−0C	22	7S	93W

Logging Date	4−Jan−2014		
Run Number	1		
Depth Driller	9140 ft		
Schlumberger Depth	9035 ft		
Bottom Log Interval	9001 ft		
Top Log Interval	2000 ft		
Casing Fluid Type	FRESH WATER		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	100 ft		
BIT/CASING/TUBING STRING			
Bit Size	7.875 in		
From	7158 ft		
To	9140 ft		
Casing/Tubing Size	4.500 in		
Weight	11.6 lbm/ft		
Grade	S−80		
From	22 ft		
To	9114 ft		
Maximum Recorded Temperatures	249 degF		
Logger On Bottom / Time	4−Jan−2014	19:00	
Unit Number / Location	391	GRAND JUNCTION	
Recorded By	KIRSTIE BUNTING		
Witnessed By	UNWITNESSED		

PVT DATA	Run 1	Run 2	Run 3
Oil Density			
Water Salinity			
Gas Gravity			
Bo			
Bw			
1/Bg			
Bubble Point Pressure			
Bubble Point Temperature			
Solution GOR			
Maximum Deviation			
CEMENTING DATA			
Primary/Squeeze	Primary		
Casing String No			
Lead Cement Type			
Volume			
Density			
Water Loss			
Additives			
Tail Cement Type			
Volume			
Density			
Water Loss			
Additives			
Expected Cement Top			

Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Fluid Type			
Salinity			
Density			
Fluid Level			
BIT/CASING/TUBING STRING			
Bit Size			
From			
To			
Casing/Tubing Size			
Weight			
Grade			
From			
To			
Maximum Recorded Temperatures			
Logger On Bottom / Time			
Unit Number / Location			
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

Date Created: 14−AUG−2013 11:54:57

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−JB	Type:	CMTD−B/A	Type:	1−25ZT
Serial Number:	6349	Serial Number:	3421	Serial Number:	112136
Calibration Date:	7−31−2013	Calibration Date:	14−AUG−201	Length:	19000 FT
Calibrator Serial Number:		Calibrator Serial Number:	174878		
Calibration Cable Type:	1−25ZT	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−5	Calibration RMS:	3	Rig Type:	LAND
Wheel Correction 2:	−4	Calibration Peak Error:	8		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	
Tool Zero Check At Surface:	

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES USED
2. IDW USED AS PRIMARY DEPTH REFERENCE
3. SPWT DRUM COUNTER USED AS SECONDARY DEPTH REFERENCE
4.
5.
6.

OTHER SERVICES1	OTHER SERVICES2
OS1: SLIM CEMENT MAPPING	OS1:
OS2: LOG	OS2:
OS3: CBL−VDL	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST RUN IN HOLE CORRELATED TO DOWN LOG	
TOOL RAN AS PER TOOL SKETCH	
ENTRANCE: 14:30	
TIME ON BOTTOM: 19:00	
EXIT: 21:30	

MAXIMUM RECORDED TEMPERATURE: 249 DEGF

MAXIMUM RECORDED PRESSURE: 3828 PSIA

SHORT JOINTS: 6795 FT & 7789 FT

SANDSTONE MATRIX

CREW: KBUNTING, KJOHNS, JMANN, SKRAMER

THANK YOU FOR CHOOSING E&P WIRELINE, A SCHLUMBERGER COMPANY

RUN 1		RUN 2	
SERVICE ORDER #:	CGF9−00194	SERVICE ORDER #:	
PROGRAM VERSION:	19C0−187	PROGRAM VERSION:	
FLUID LEVEL:	100 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

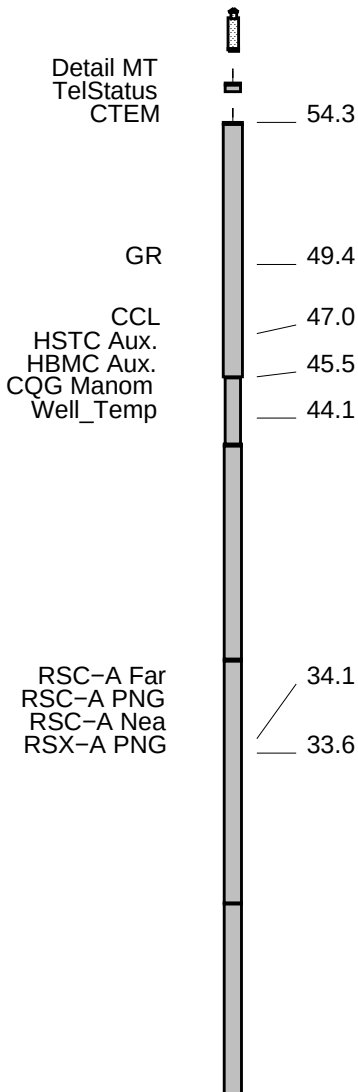
EQUIPMENT DESCRIPTION

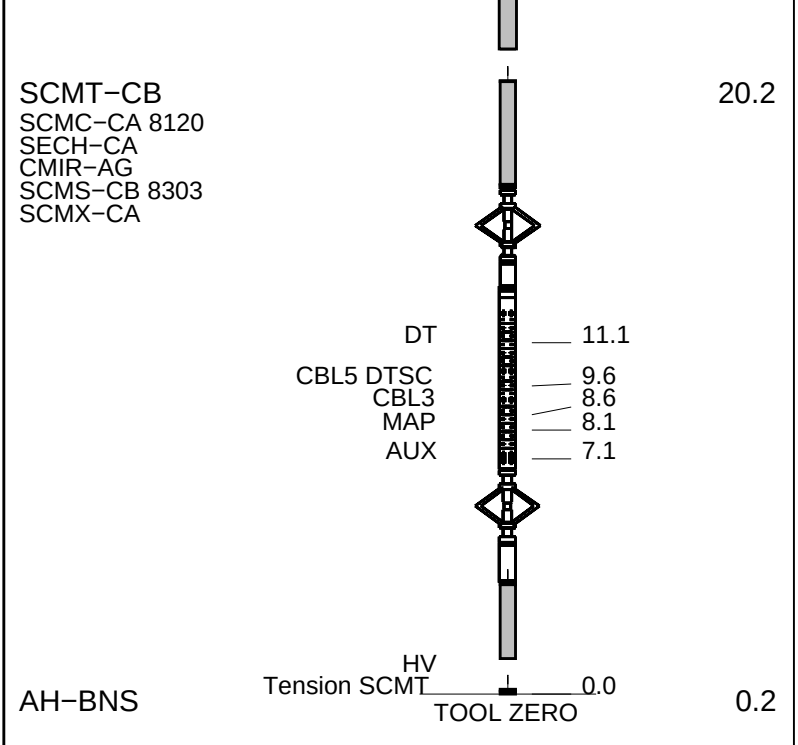
RUN 1 RUN 2

SURFACE EQUIPMENT

WITM−A
PSC_16MHZ

DOWNHOLE EQUIPMENT





MAXIMUM STRING DIAMETER 2.07 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Schlumberger

MAIN PASS RST SIGMA

MAXIS Field Log

Input DLIS Files

	SCMT_RST_HBMS_019LUP	FN:18		04−Jan−2014 18:56	9038.0 FT	−17.0 FT

Output DLIS Files

DEFAULT	SCMT_RST_HBMS_024PUP	FN:23	PRODUCER	04−Jan−2014 21:32	9043.0 FT	−59.5 FT

OP System Version: 19C0−187

SCMT−CB	19C0−187	RST−C	19C0−187
HBMS−B	19C0−187		

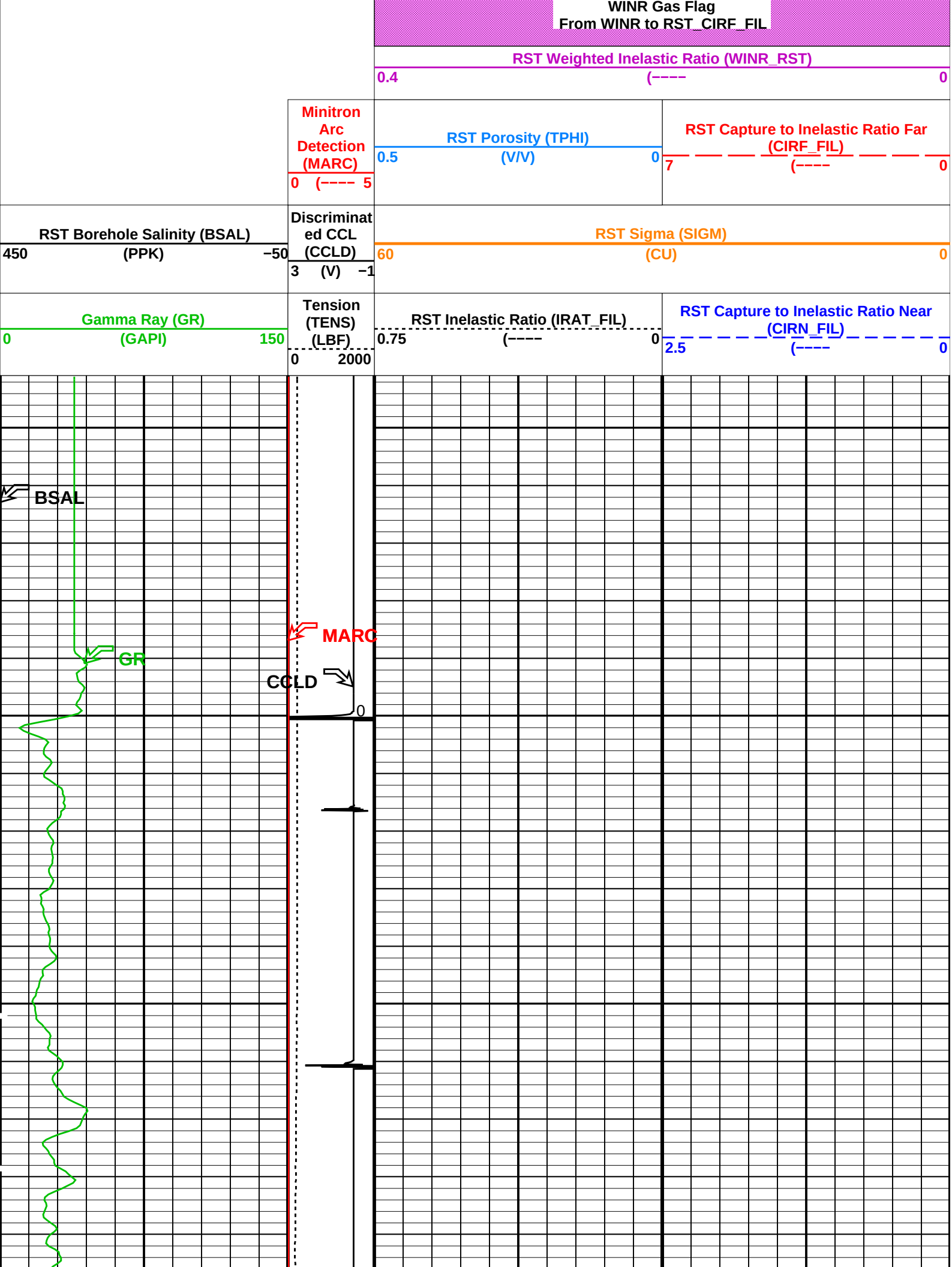
Changed Parameter Summary

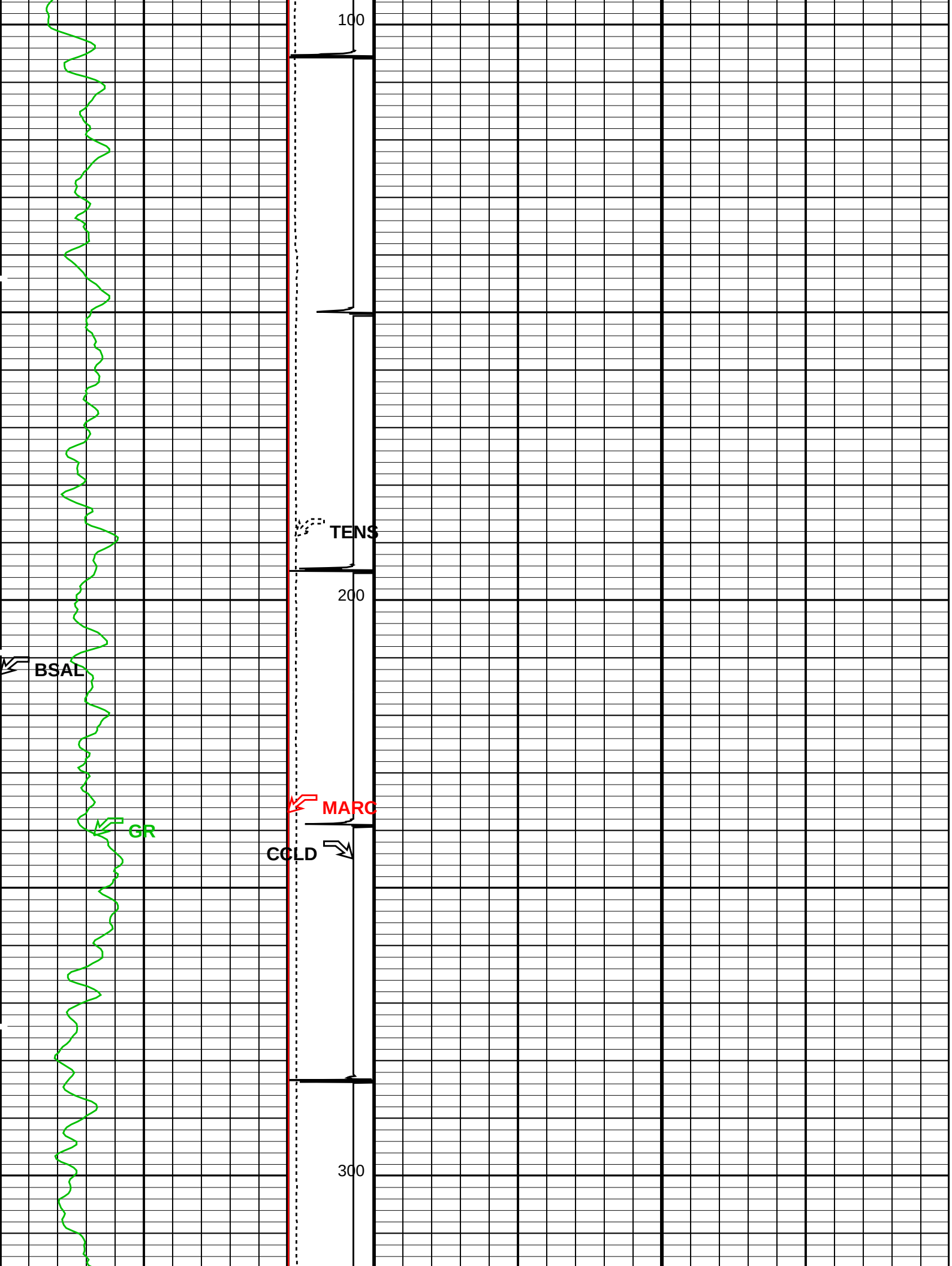
DLIS Name	New Value	Previous Value	Depth & Time
BS	7.875 IN	7.875 IN	9043.0 21:32:13
	8.750 IN	7.875 IN	7158.0 21:33:11

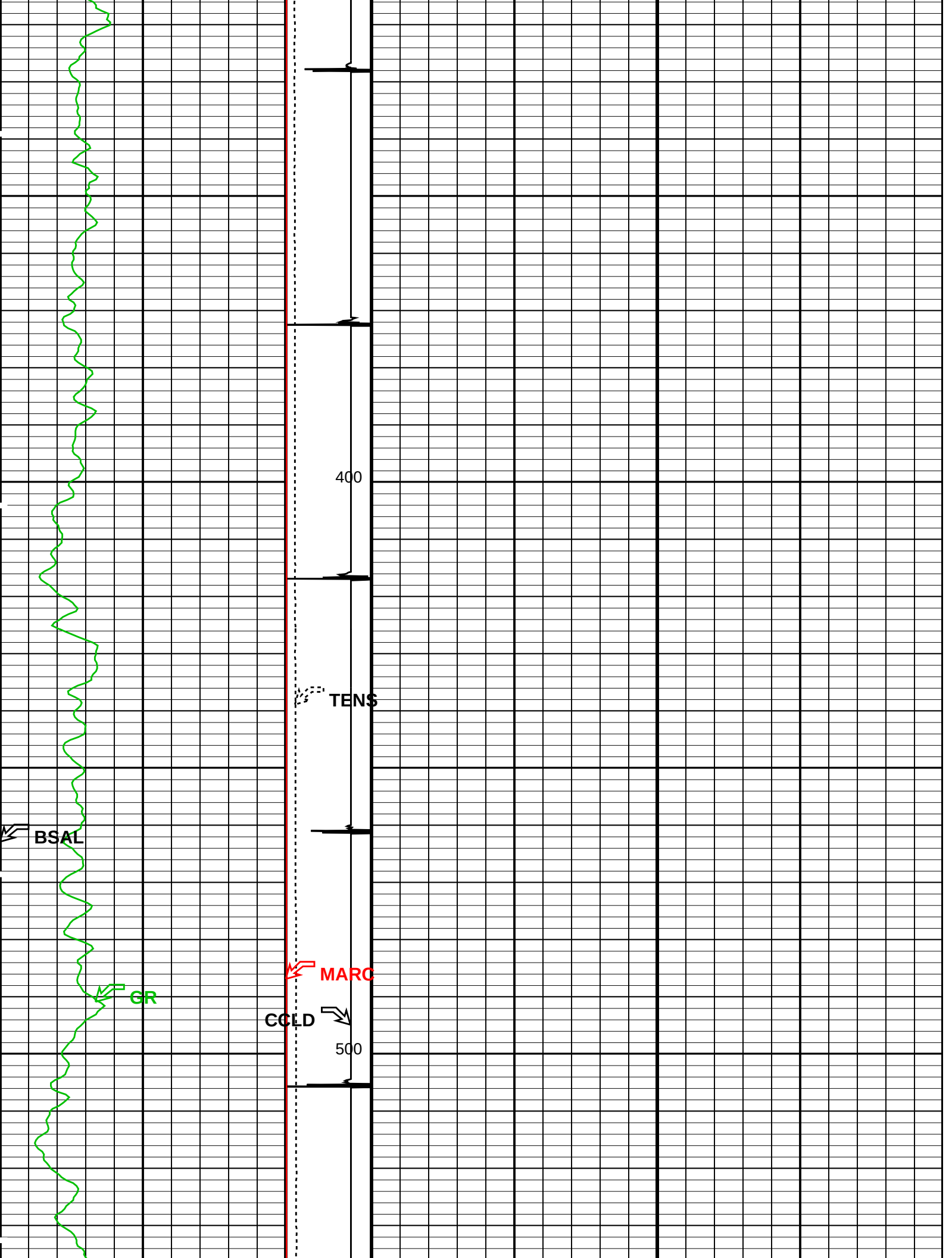
PIP SUMMARY

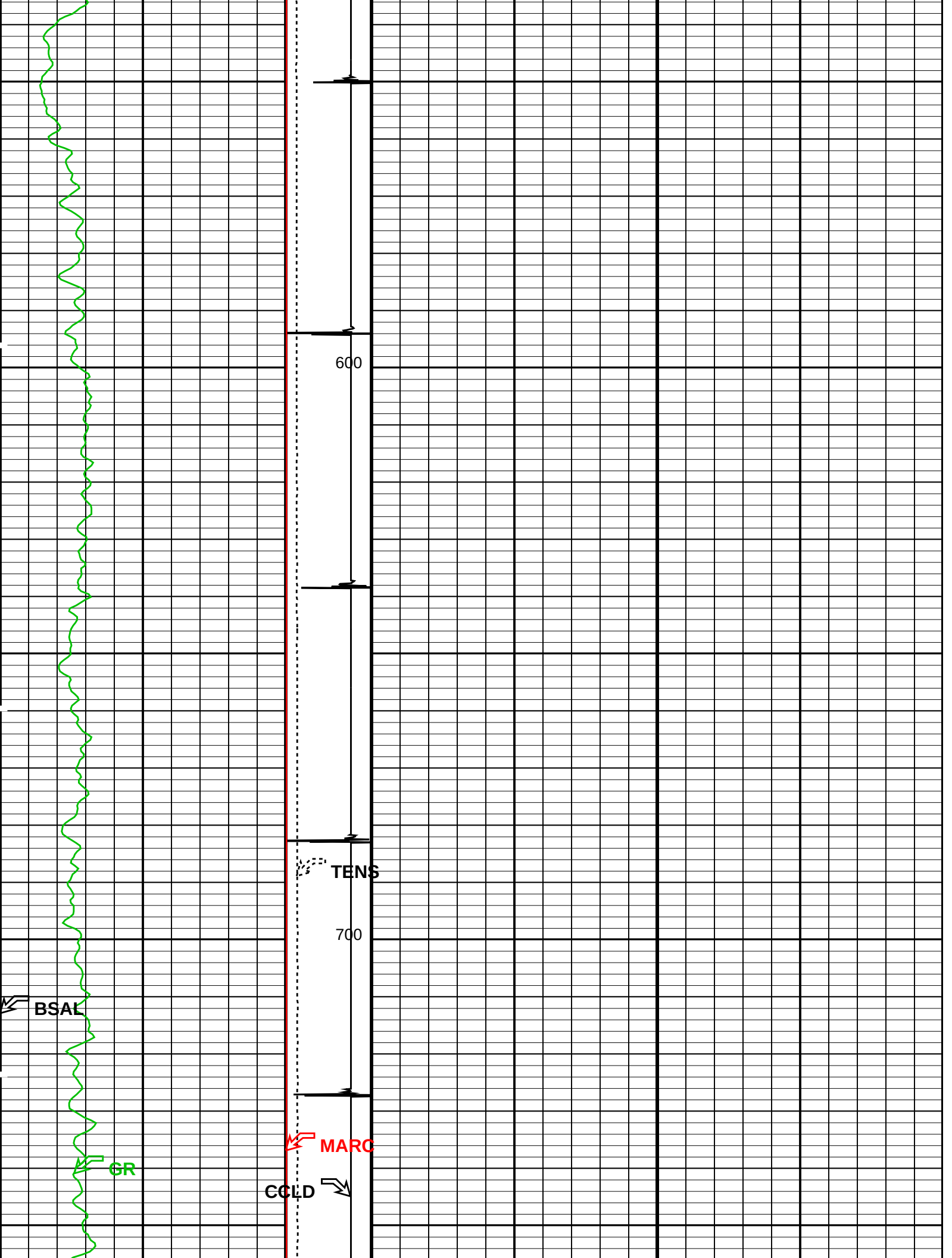
Time Mark Every 60 S

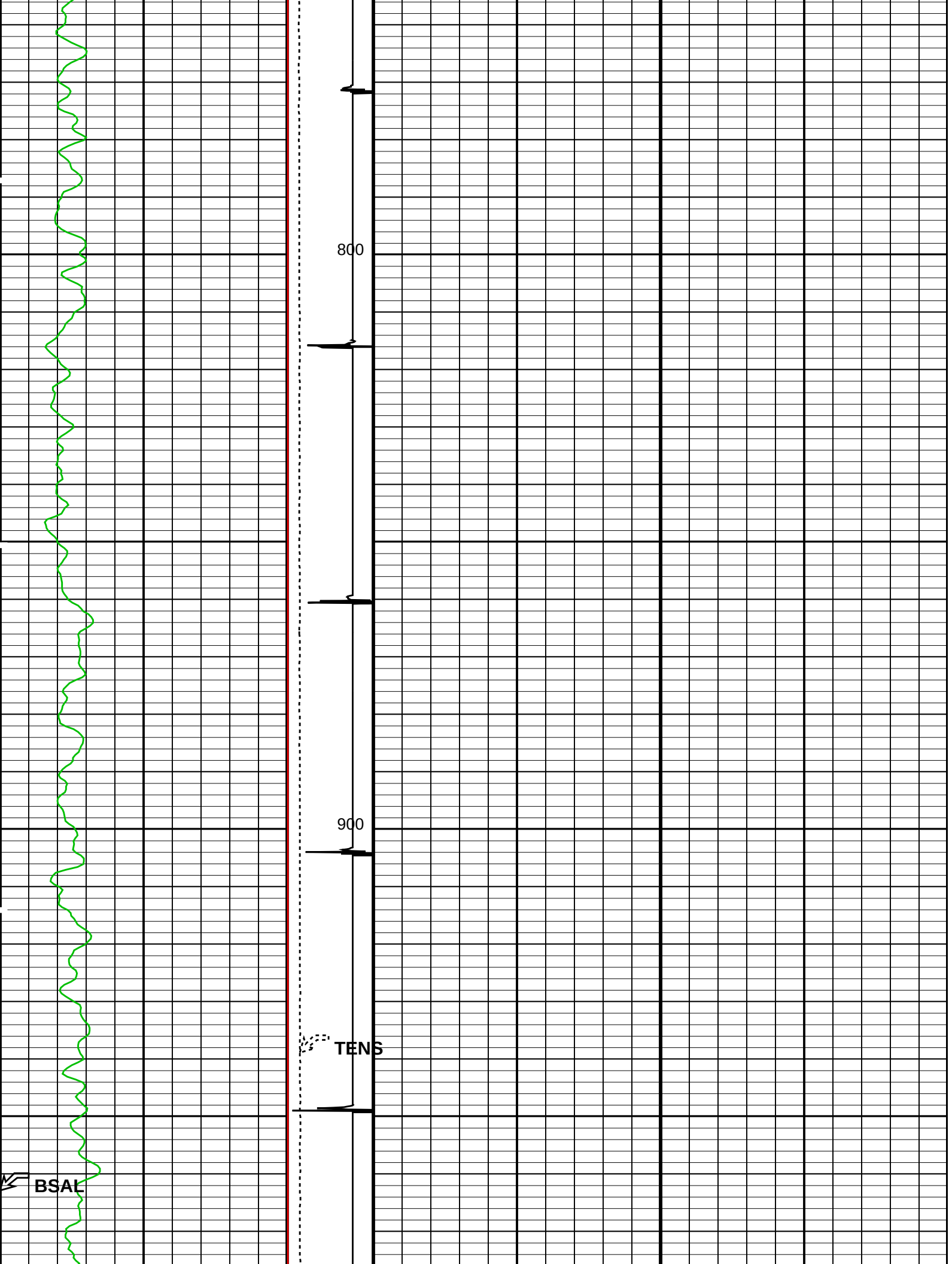
Crossover in sand
From RST_CIRF_FIL to RST_CIRN_FIL

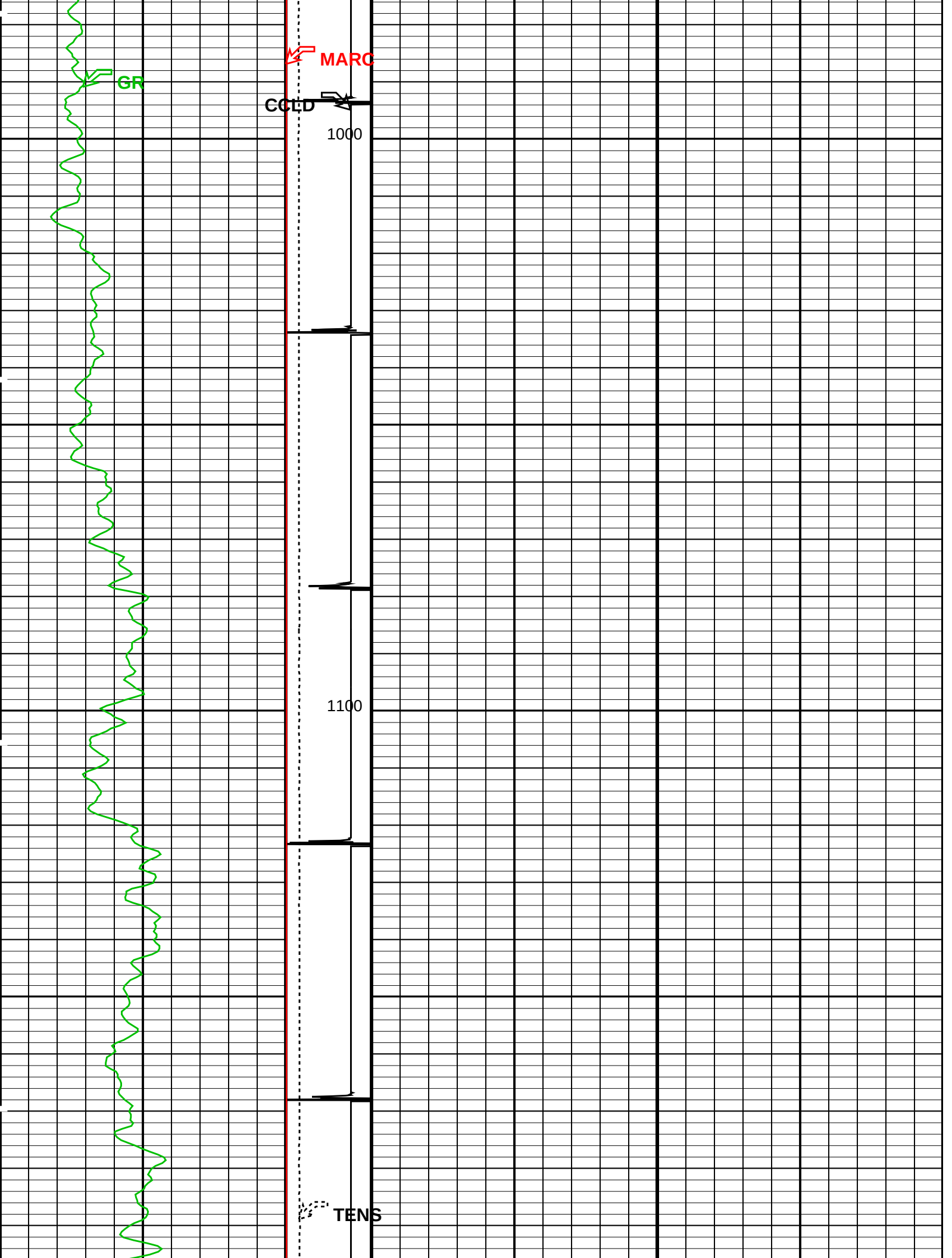

WINR Gas Flag
From WINR to RST_CIRF_FIL
RST Weighted Inelastic Ratio (WINR_RST)
0.4
(----
0
Minitron Arc Detection (MARC)
0 (---- 5
RST Porosity (TPHI)
0.5
(V/V)
0
RST Capture to Inelastic Ratio Far (CIRF_FIL)
7
(----
0
RST Borehole Salinity (BSAL)
450
(PPK)
-50
Discriminated CCL (CCLD)
3 (V) -1
RST Sigma (SIGM)
60
(CU)
0
Gamma Ray (GR)
0
(GAPI)
150
Tension (TENS)
(LBF)
0 2000
RST Inelastic Ratio (IRAT_FIL)
0.75
(----
0
RST Capture to Inelastic Ratio Near (CIRN_FIL)
2.5
(----
0
BSAL
MARC
GR
CCLD
0

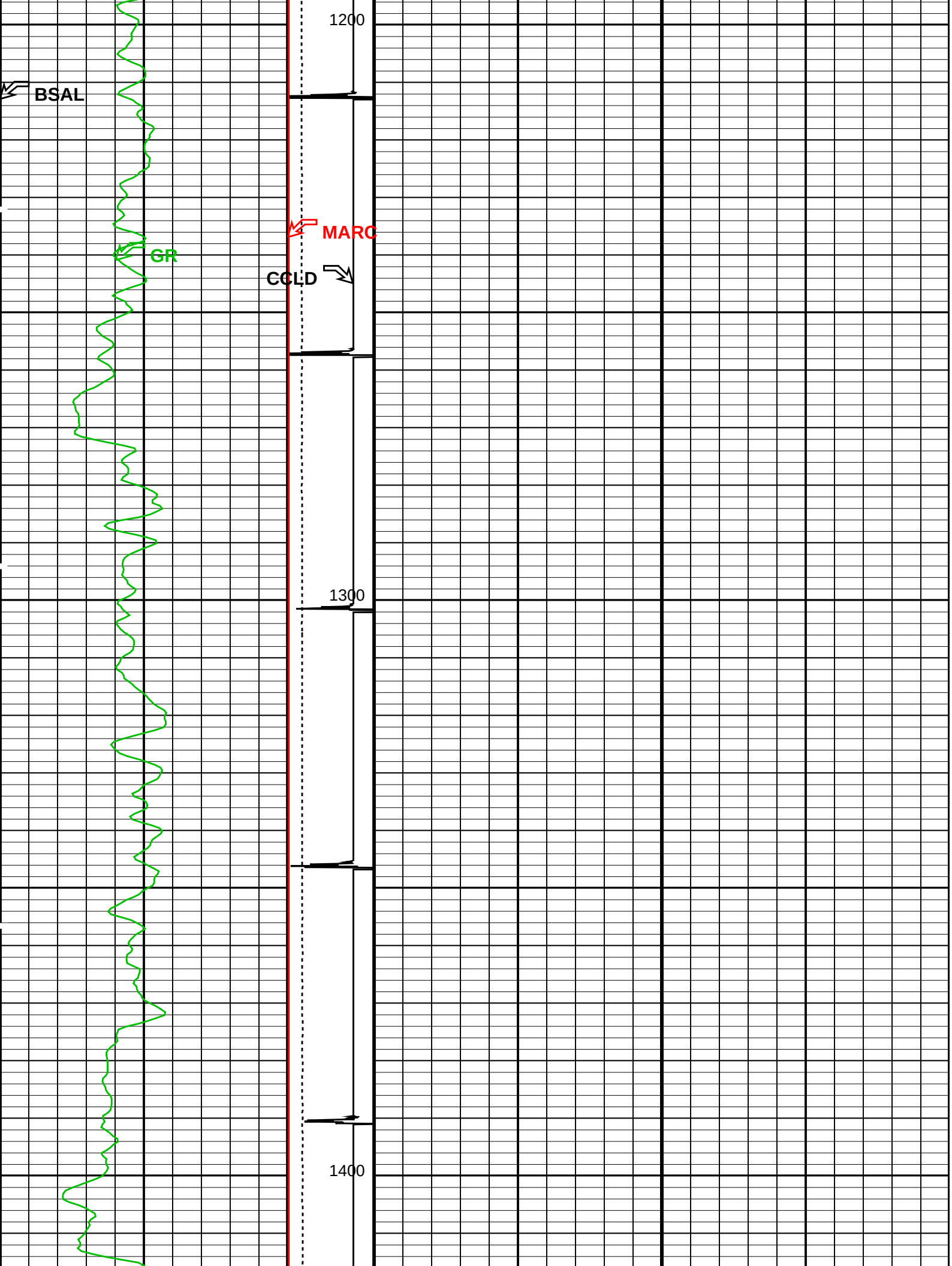

100
TENS
200
BSAL
MARC
GR
CCLD
300

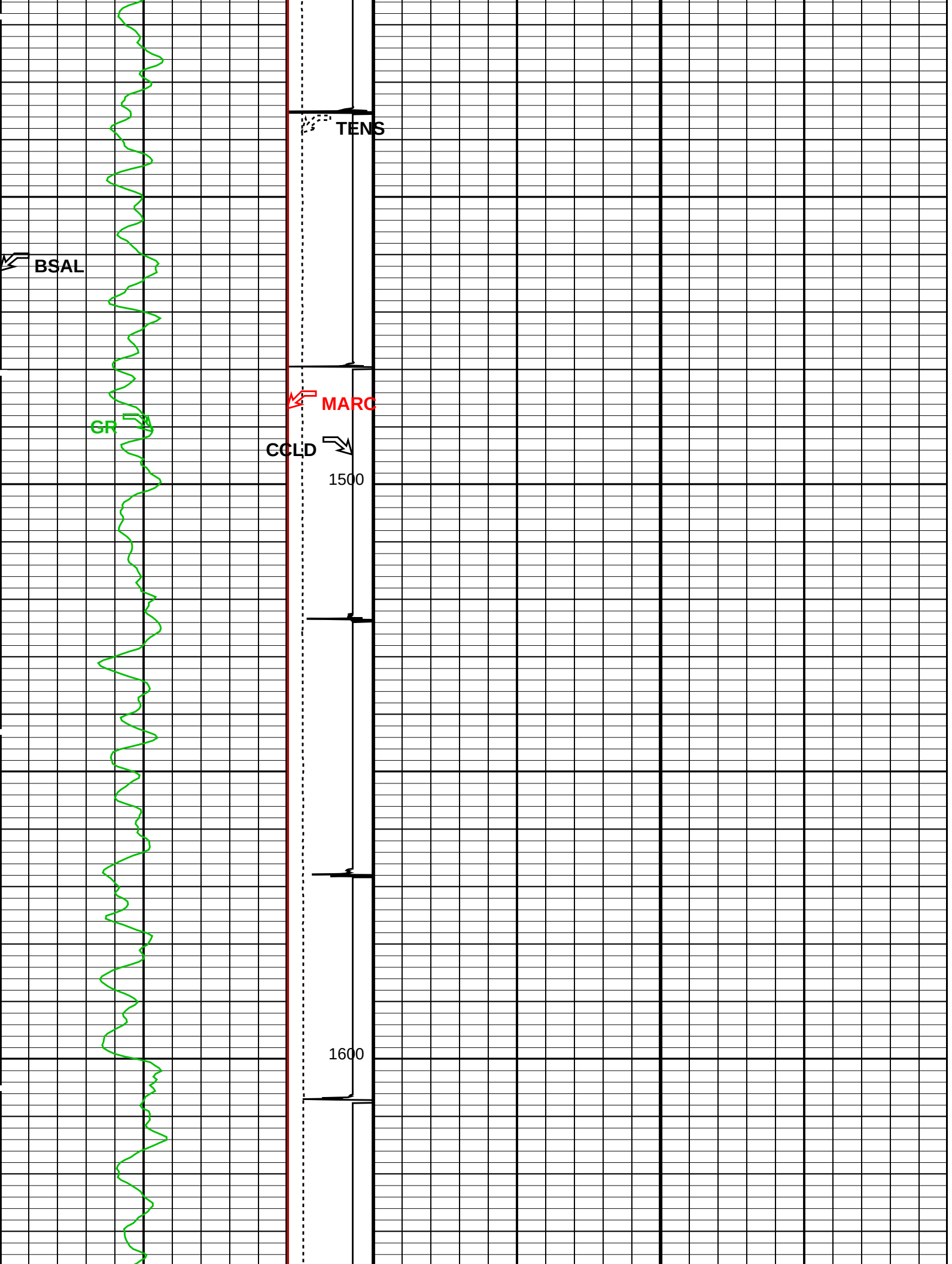

400
TENS
BSAL
MARC
GR
CCLD
500

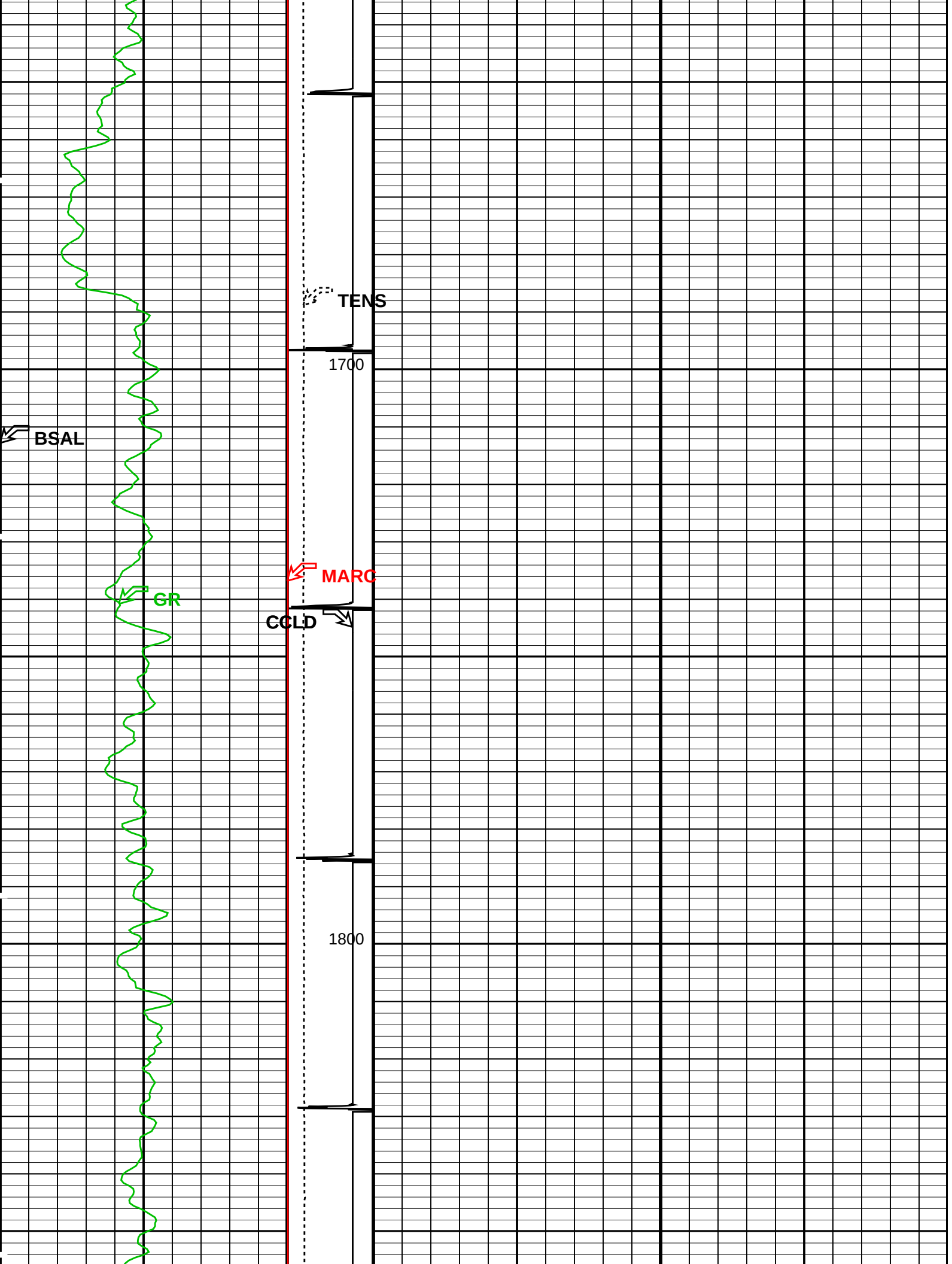

600
TENS
700
BSAL
MARC
GR
CCLD

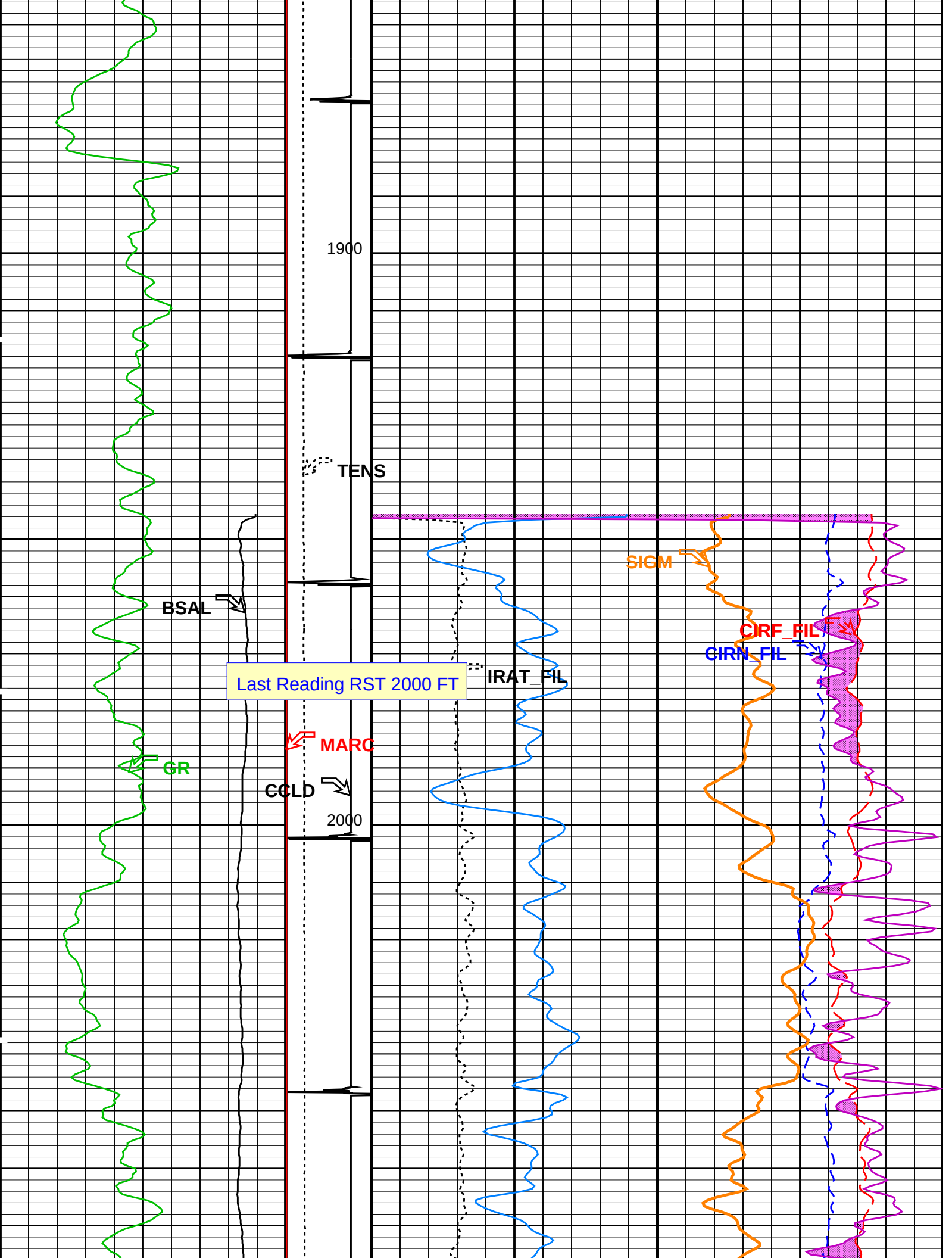

800
900
TENS
BSAL

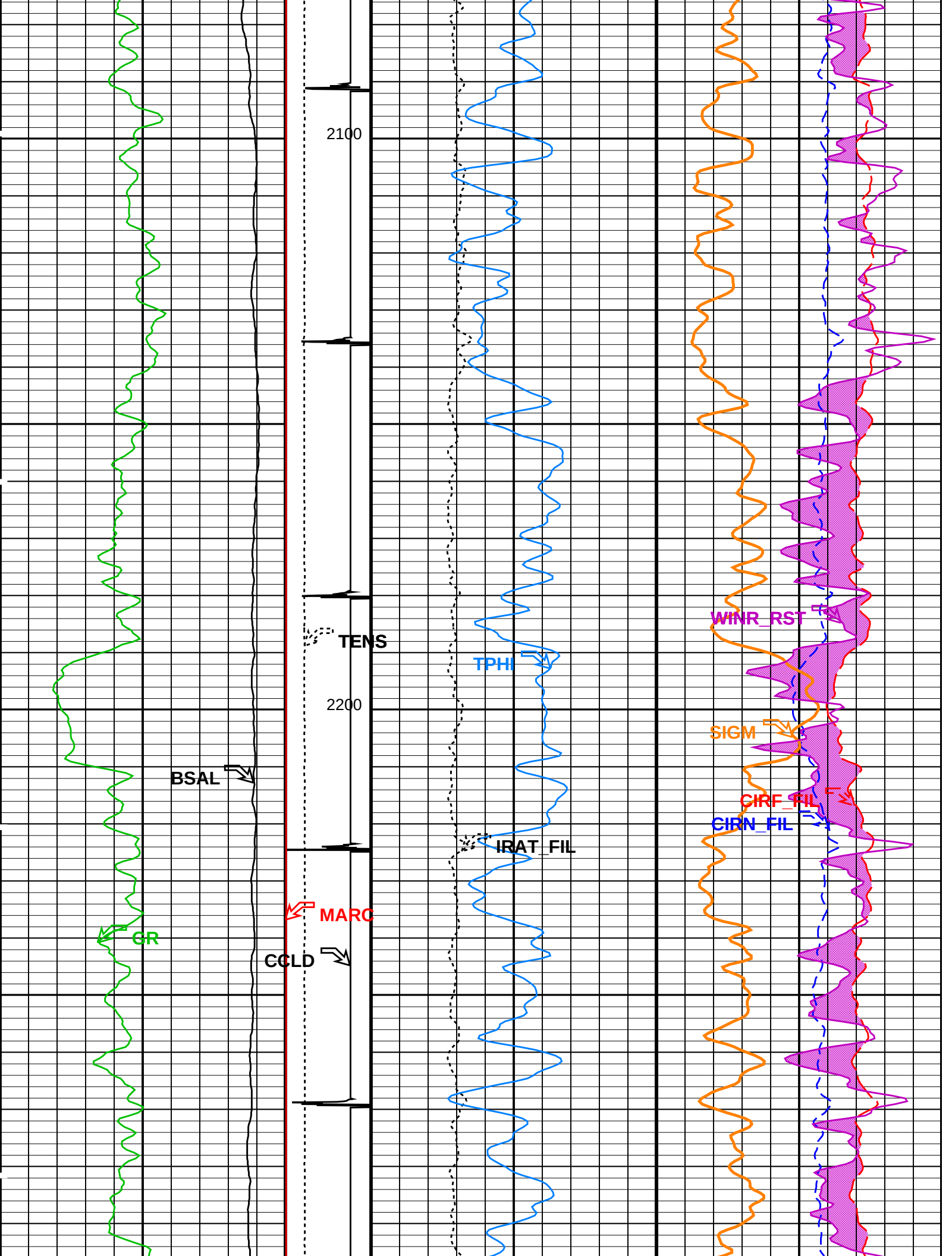

MARC
GR
CCLD
1000
1100
TENS

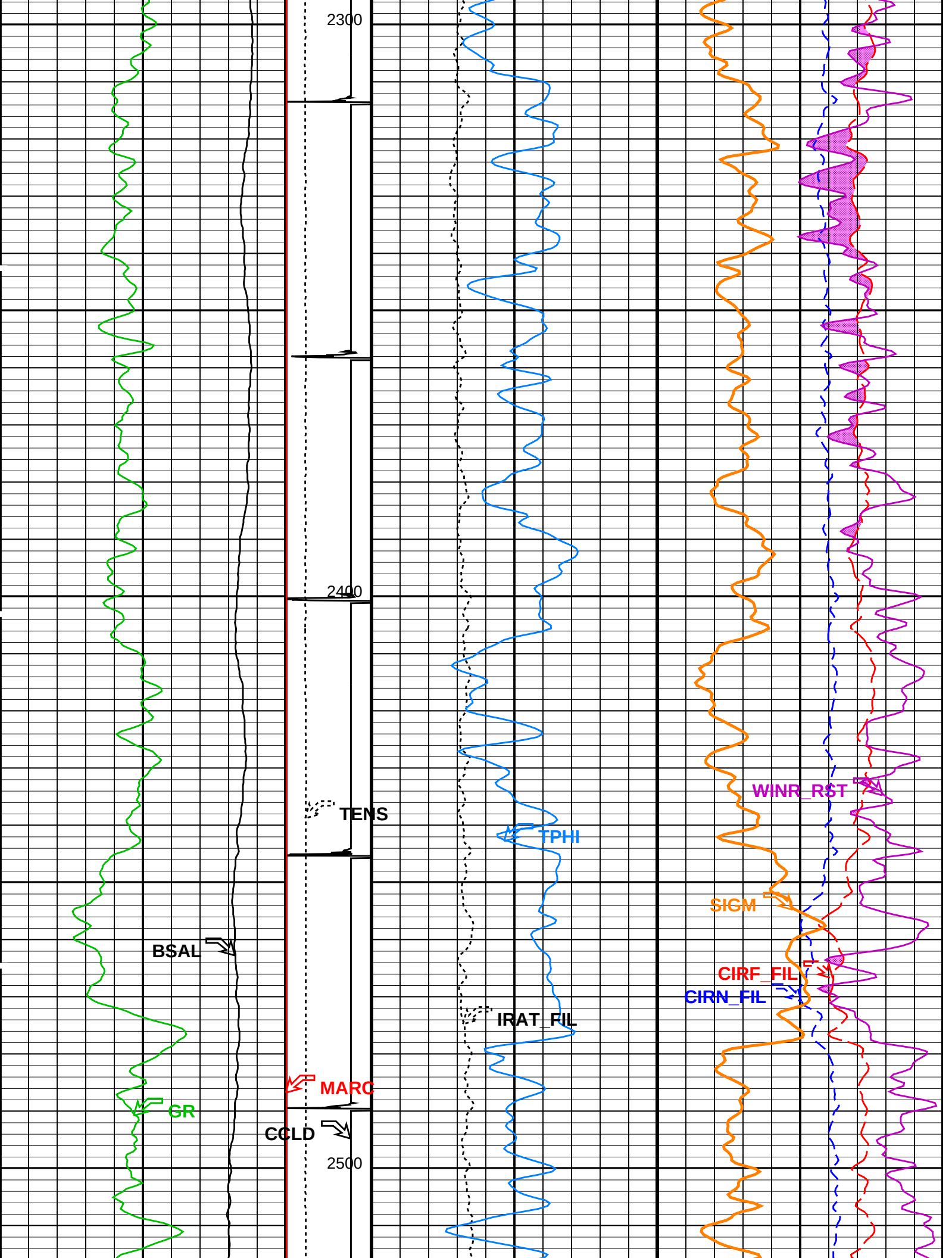

1200
BSAL
MARC
GR
CCLD
1300
1400

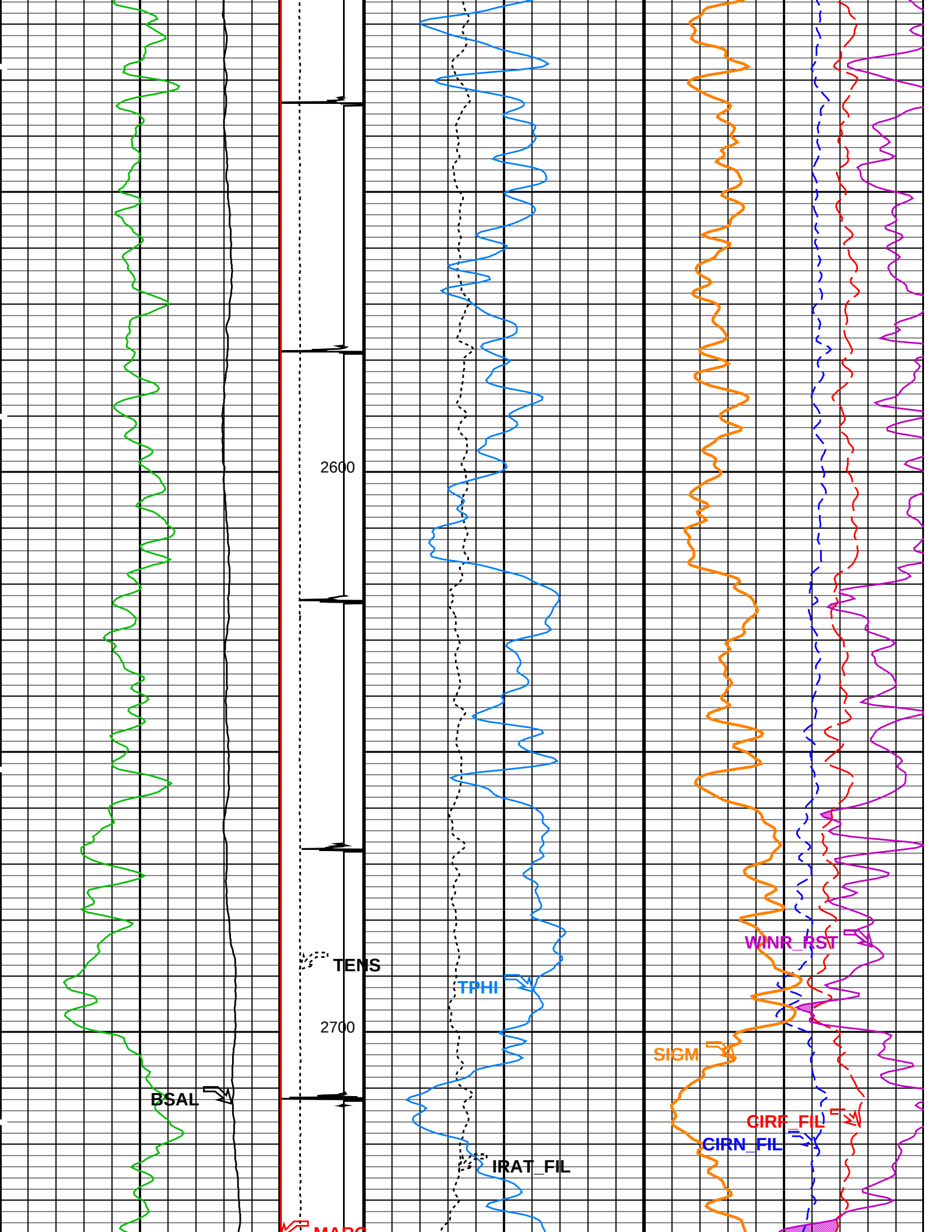

TENS
BSAL
MARC
GR
CCLD
1500
1600

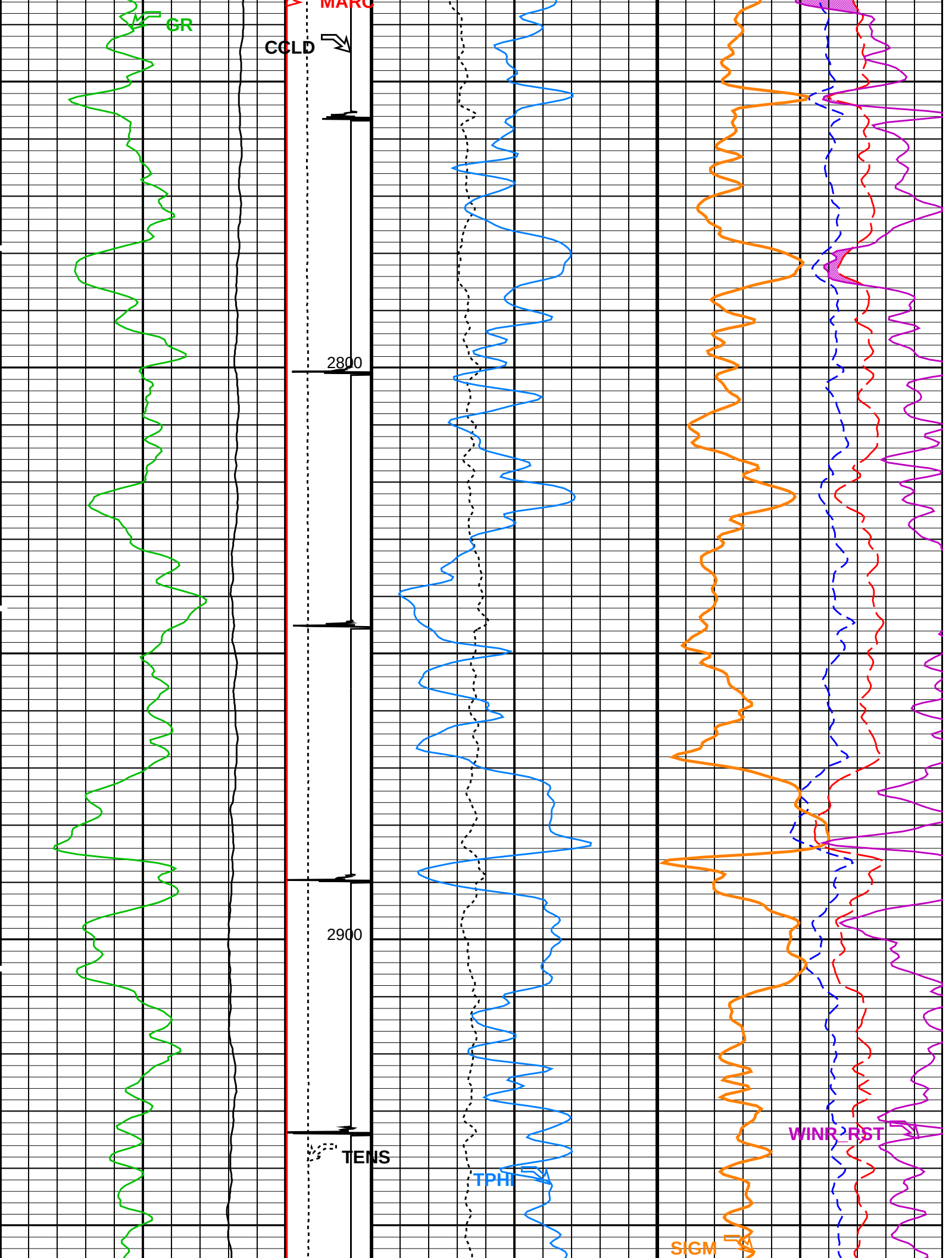

TENS
1700
BSAL
MARC
GR
CCLD
1800

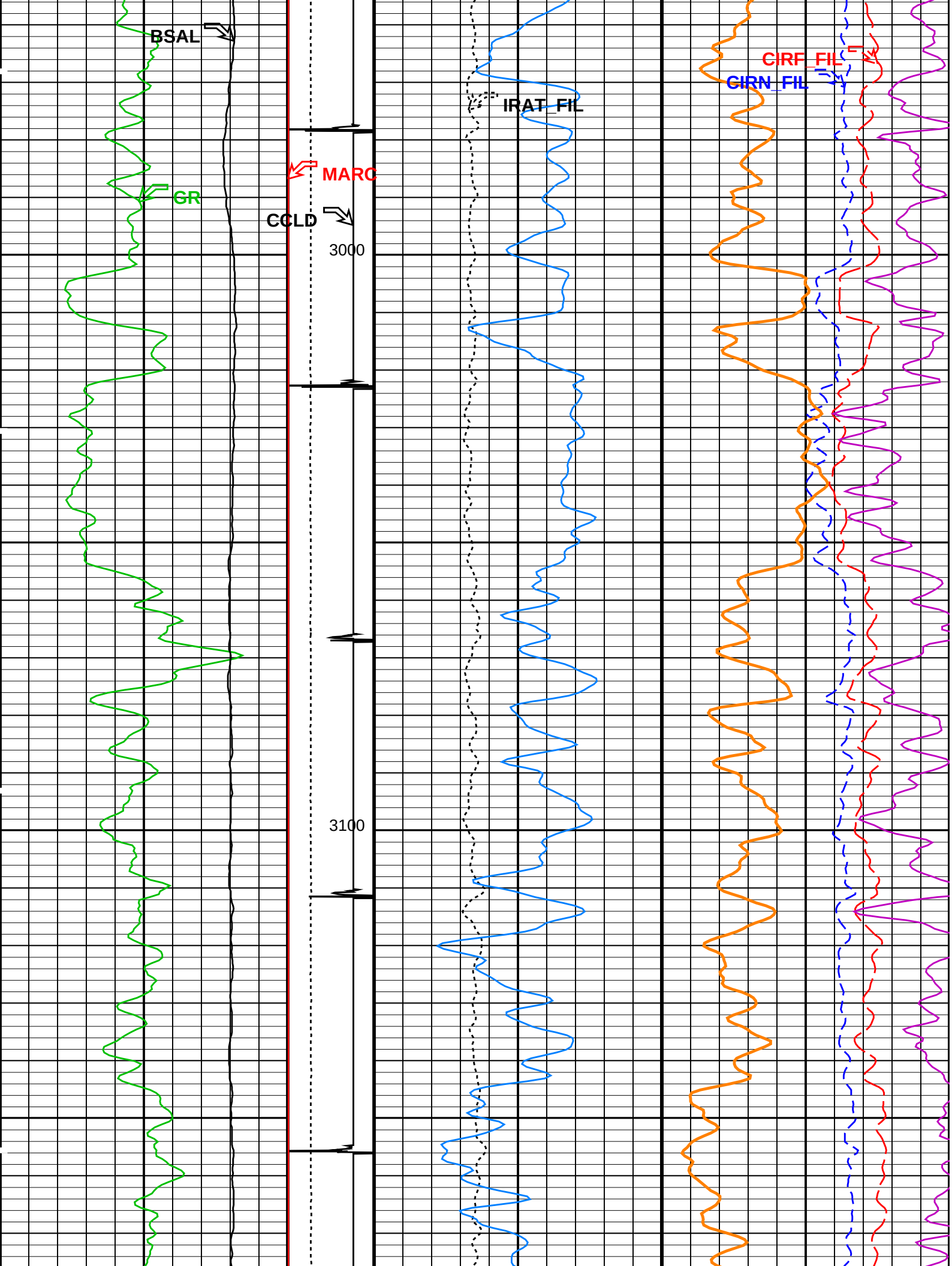

1900
TENS
SIGM
BSAL
CIRF_FIL
CIRN_FIL
Last Reading RST 2000 FT
IRAT_FIL
MARC
GR
CCLD
2000

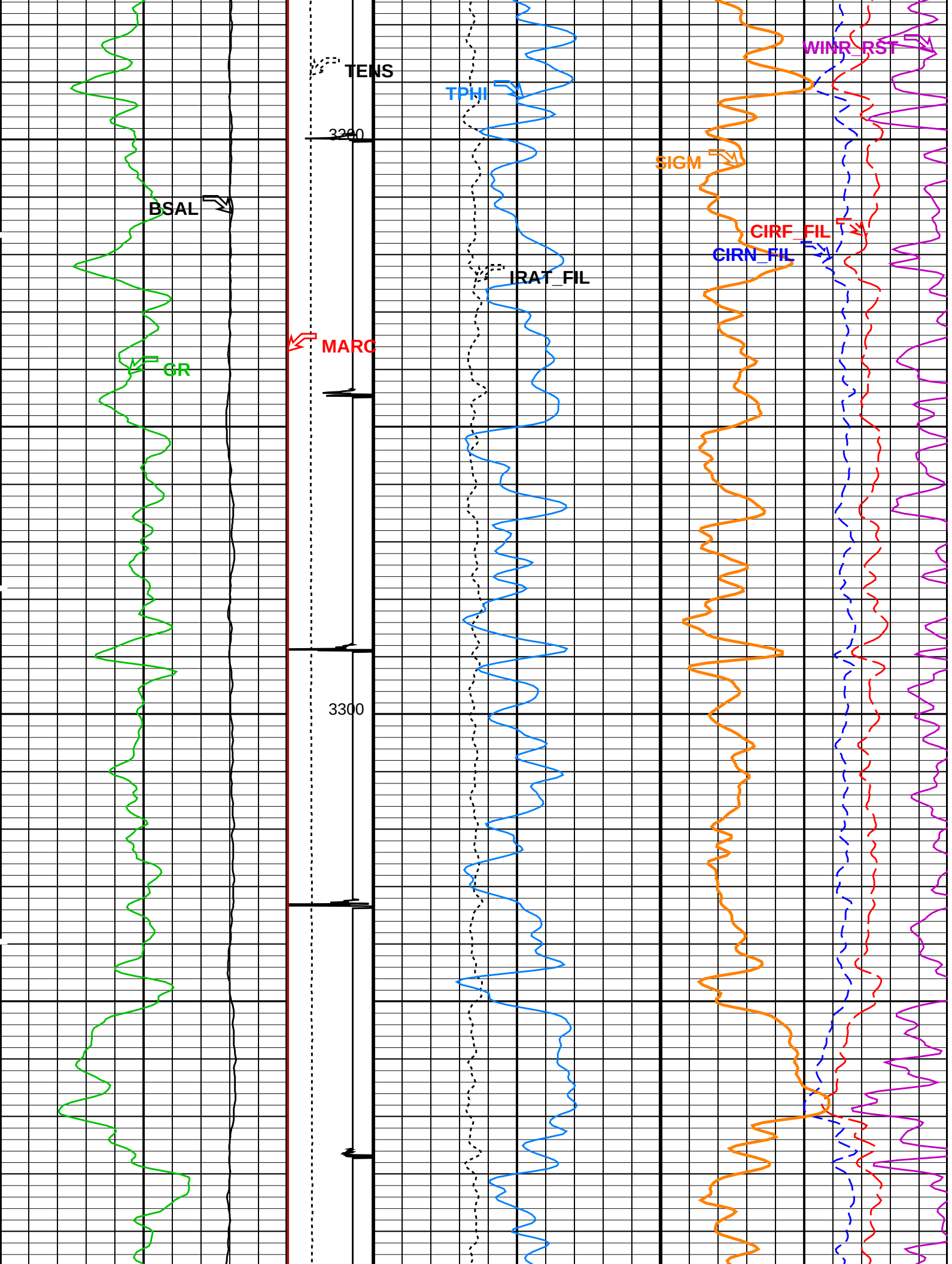

2100
TENS
2200
BSAL
GR
MARC
CCLD
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL

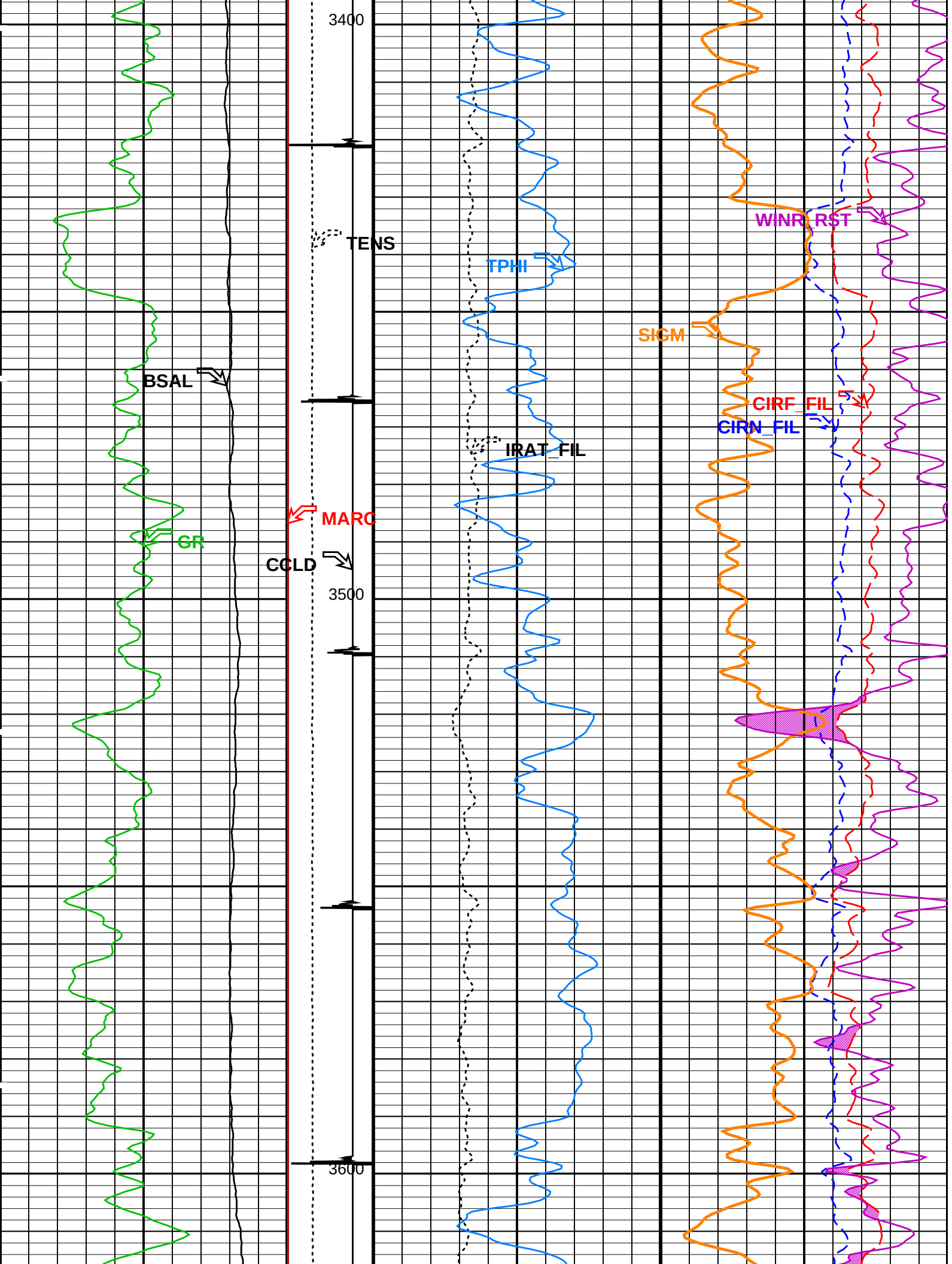

2300
2400
2500
TENS
TPHI
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD

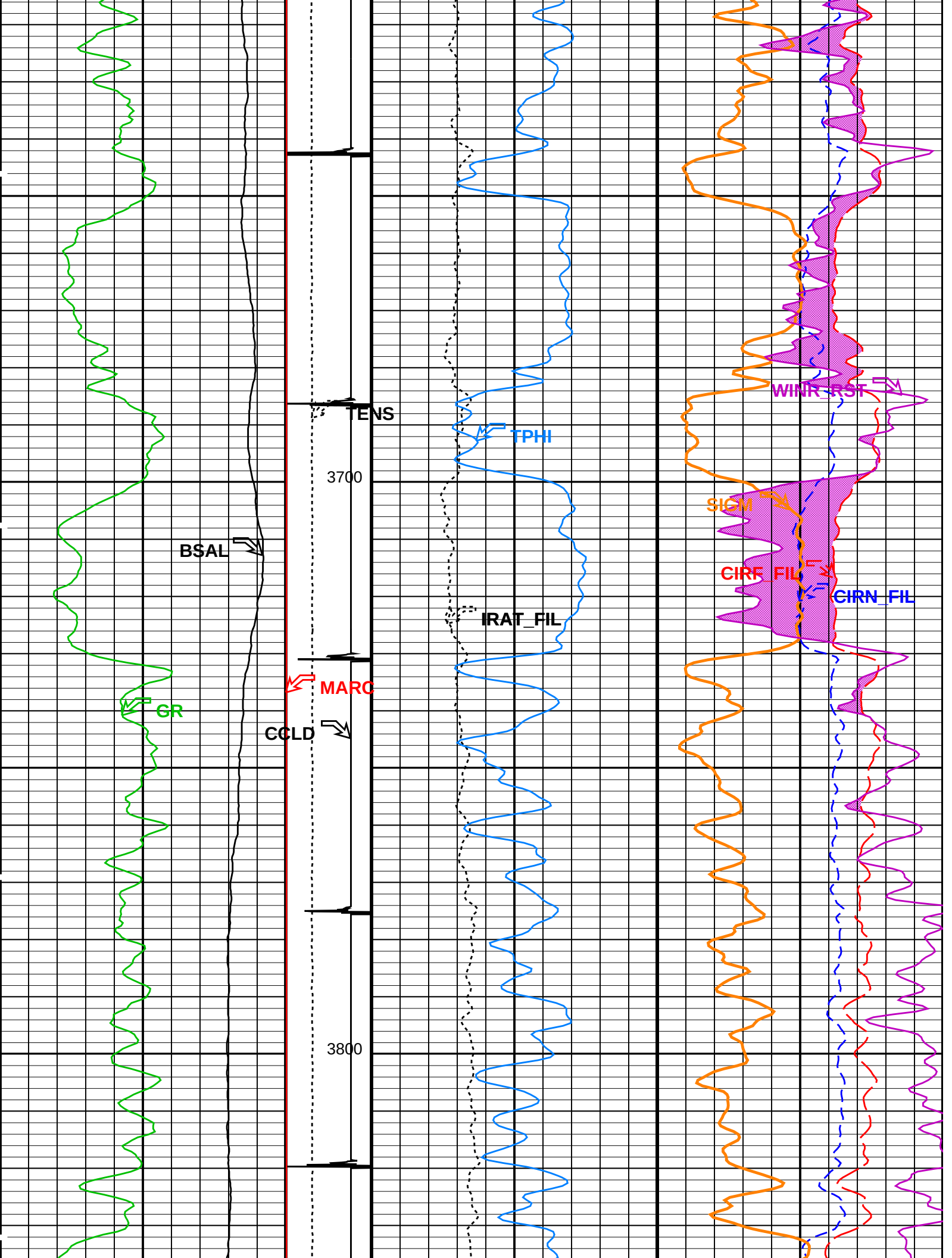

2600
TENS
2700
BSAL
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL

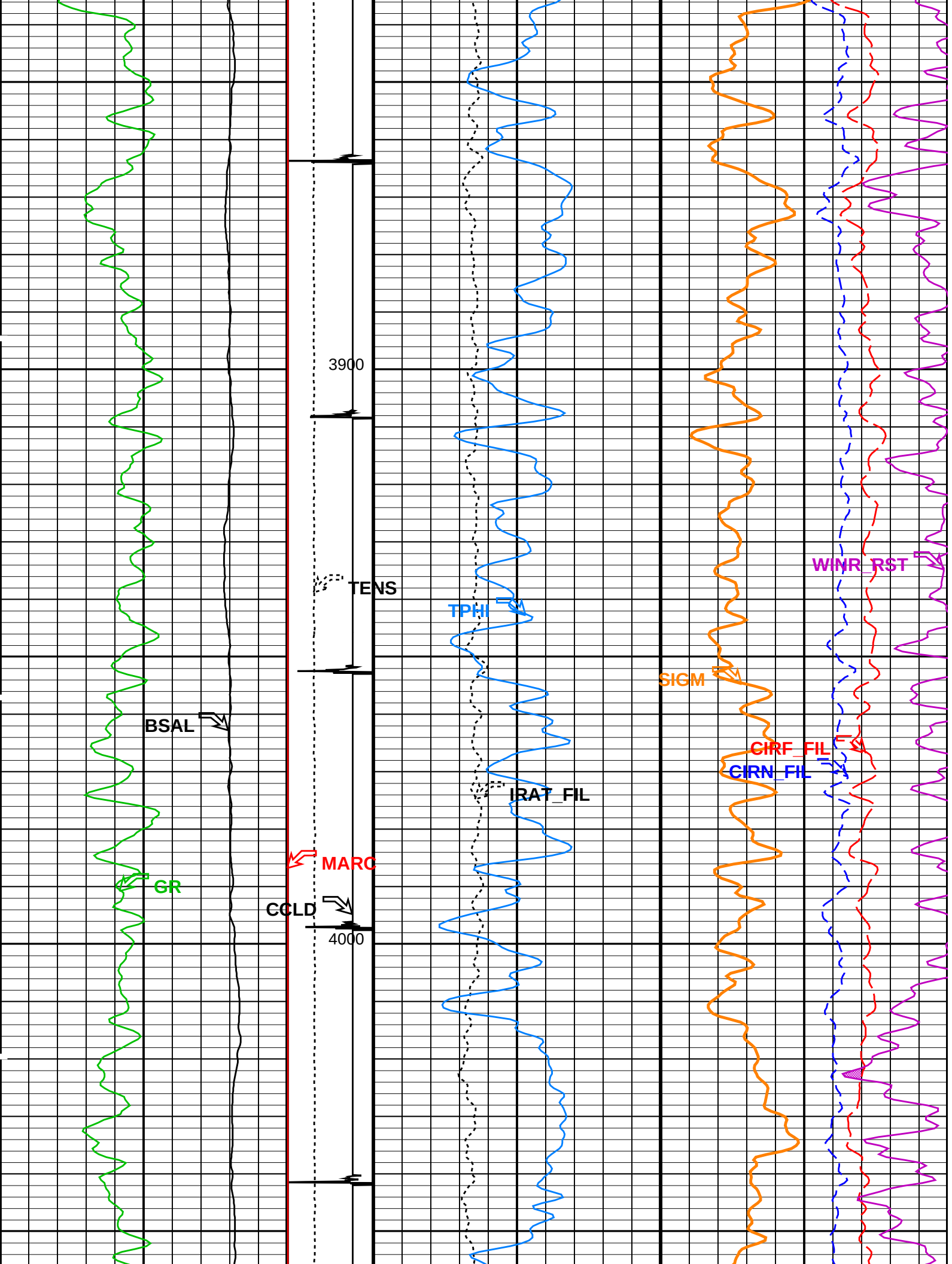

GR
MARC
CCLD
2800
2900
TENS
TPHI
WINR
RST
SIGM

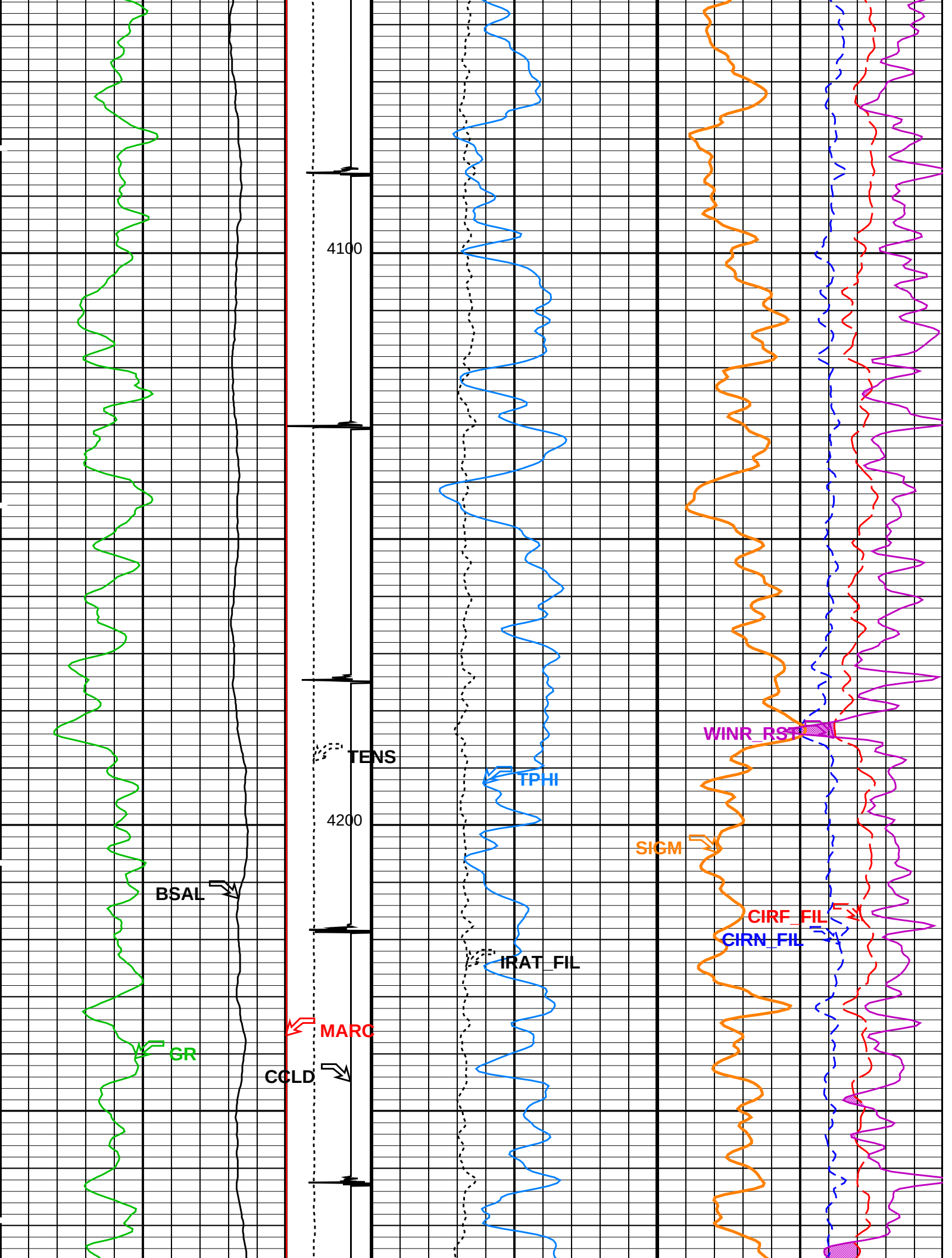

BSAL
GR
MARC
CCLD
IRAT_FIL
CIRF_FIL
CIRN_FIL
3000
3100

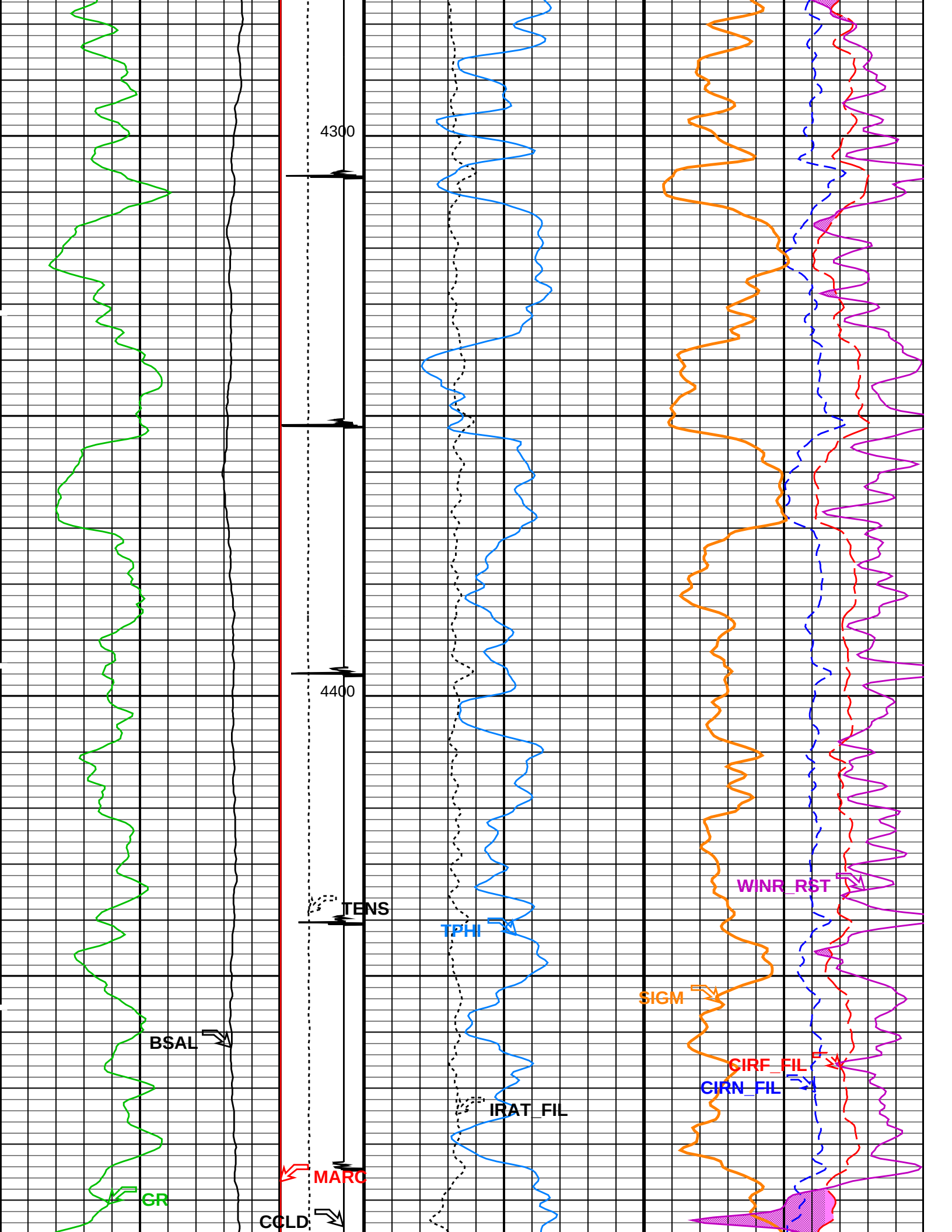

TENS
TPHI
WINR_RST
3200
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
3300

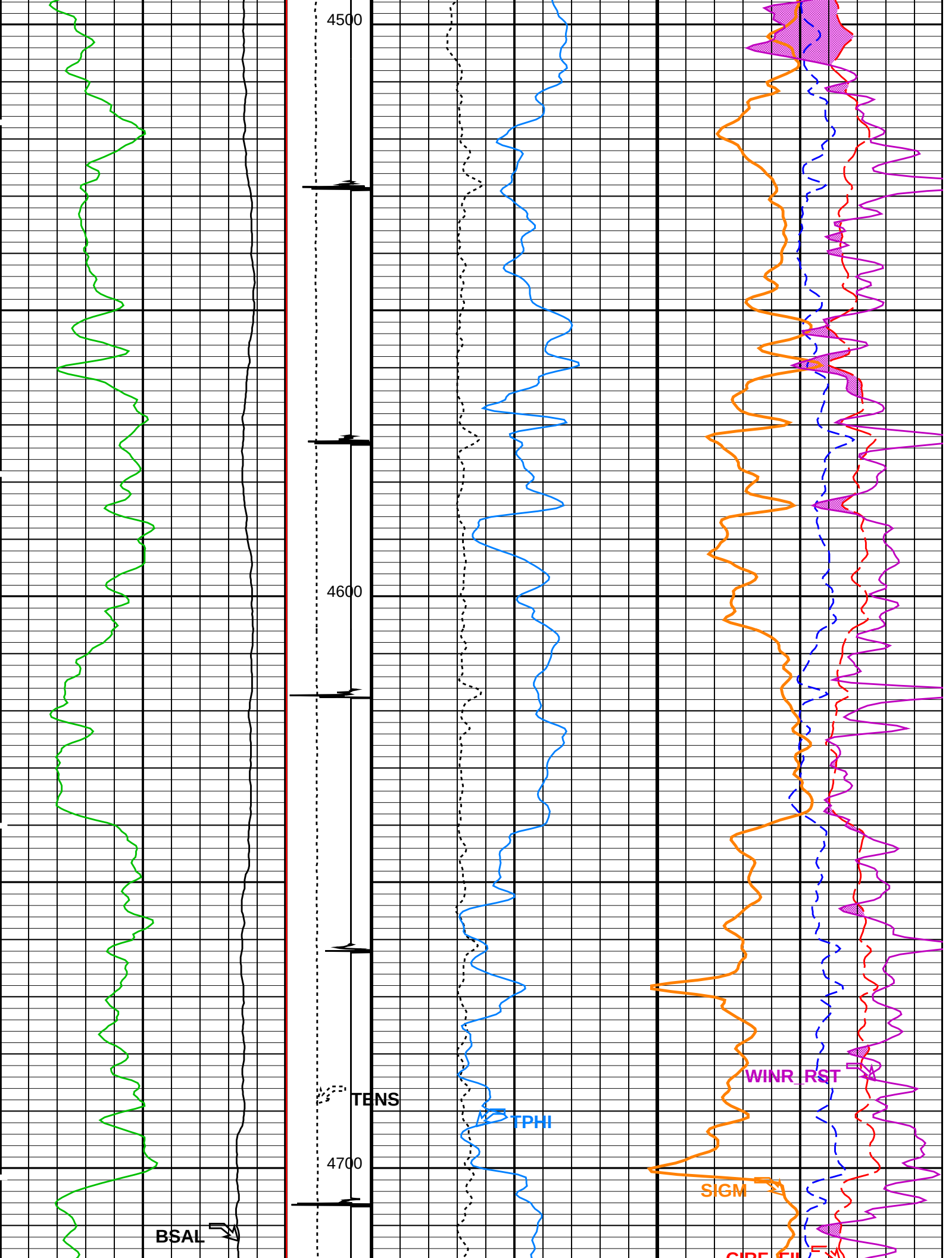

3400
TENS
TPHI
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
3500
3600

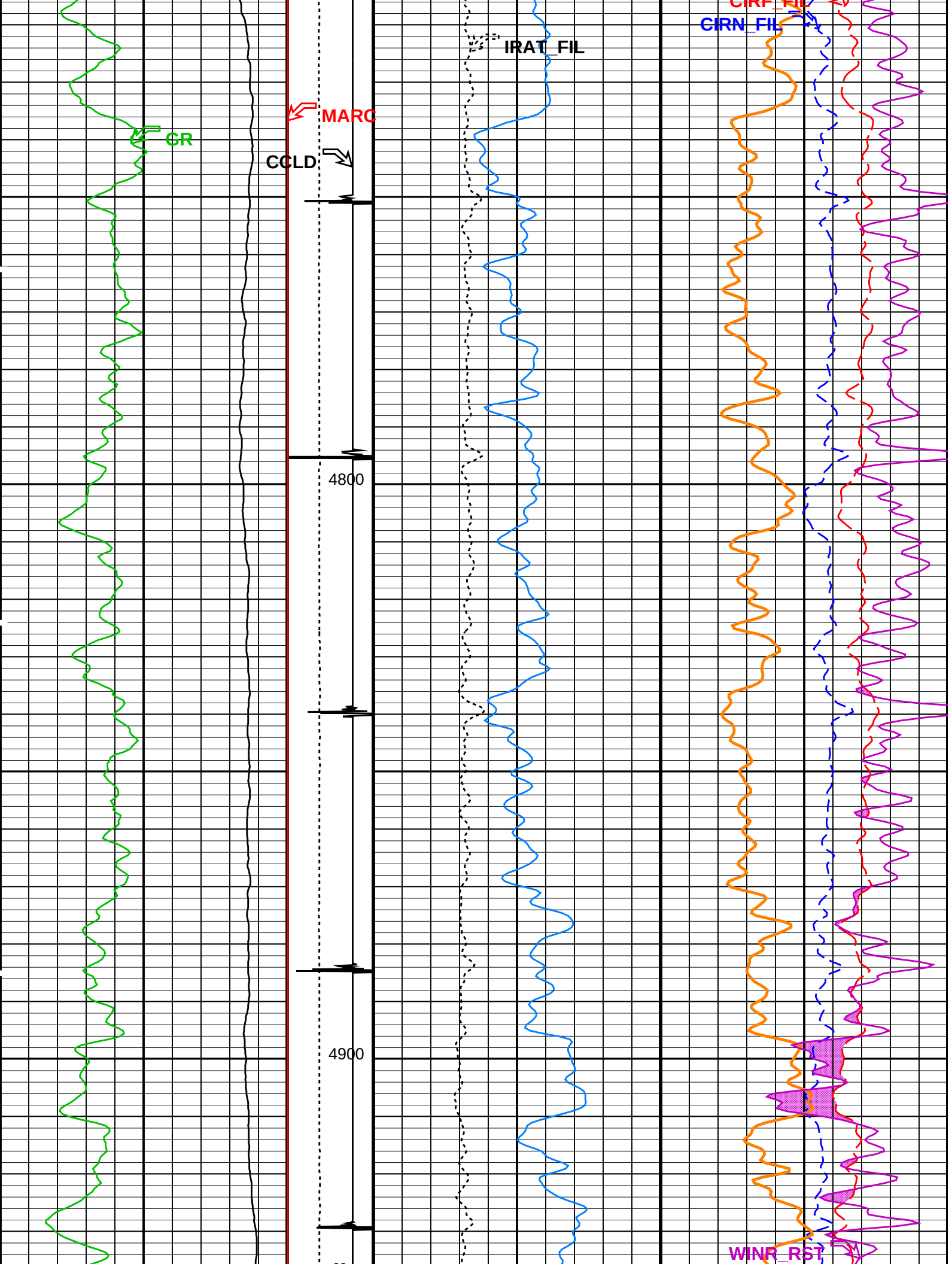

TENS
TPHI
3700
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
3800

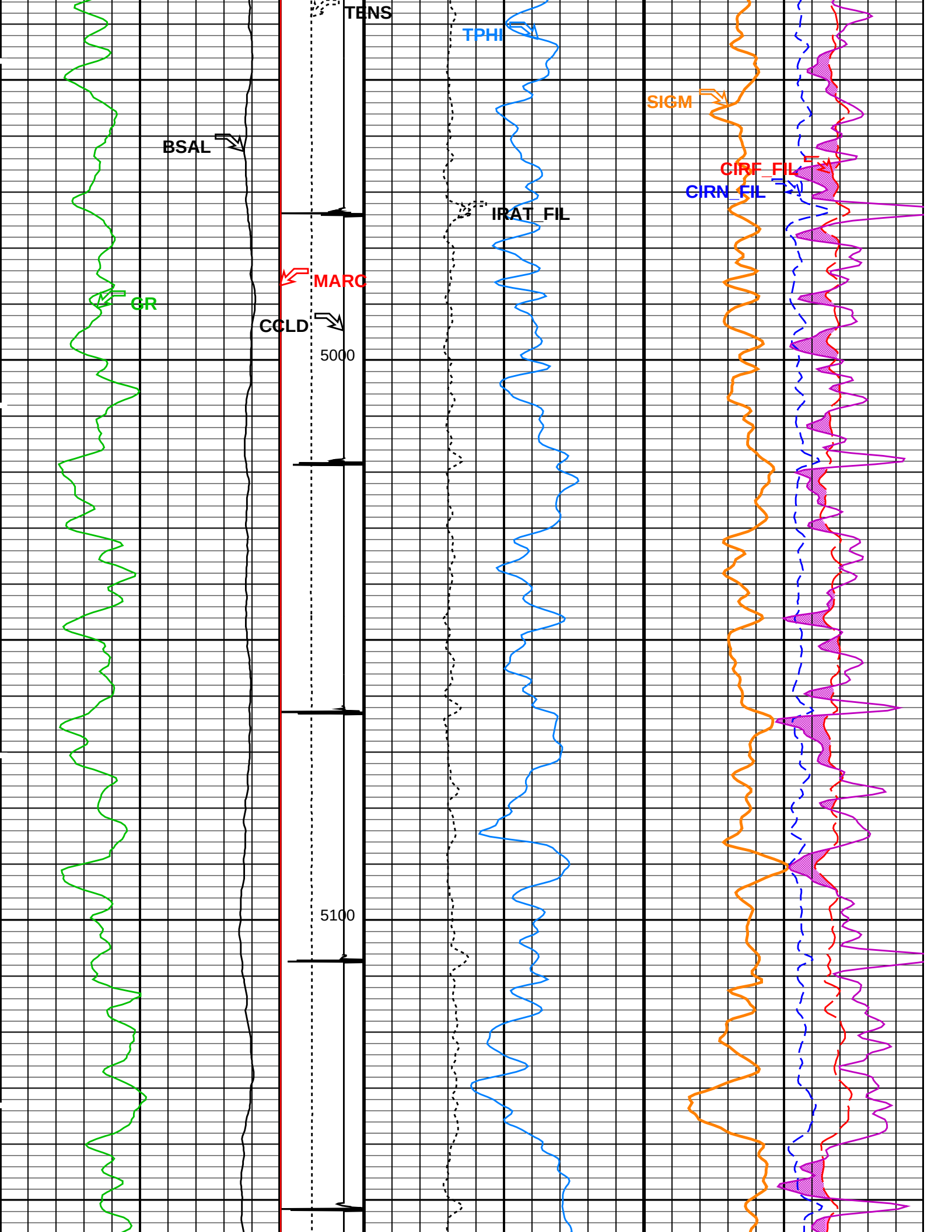

3900
TENS
TPHI
SIGM
WINR_RST
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
4000

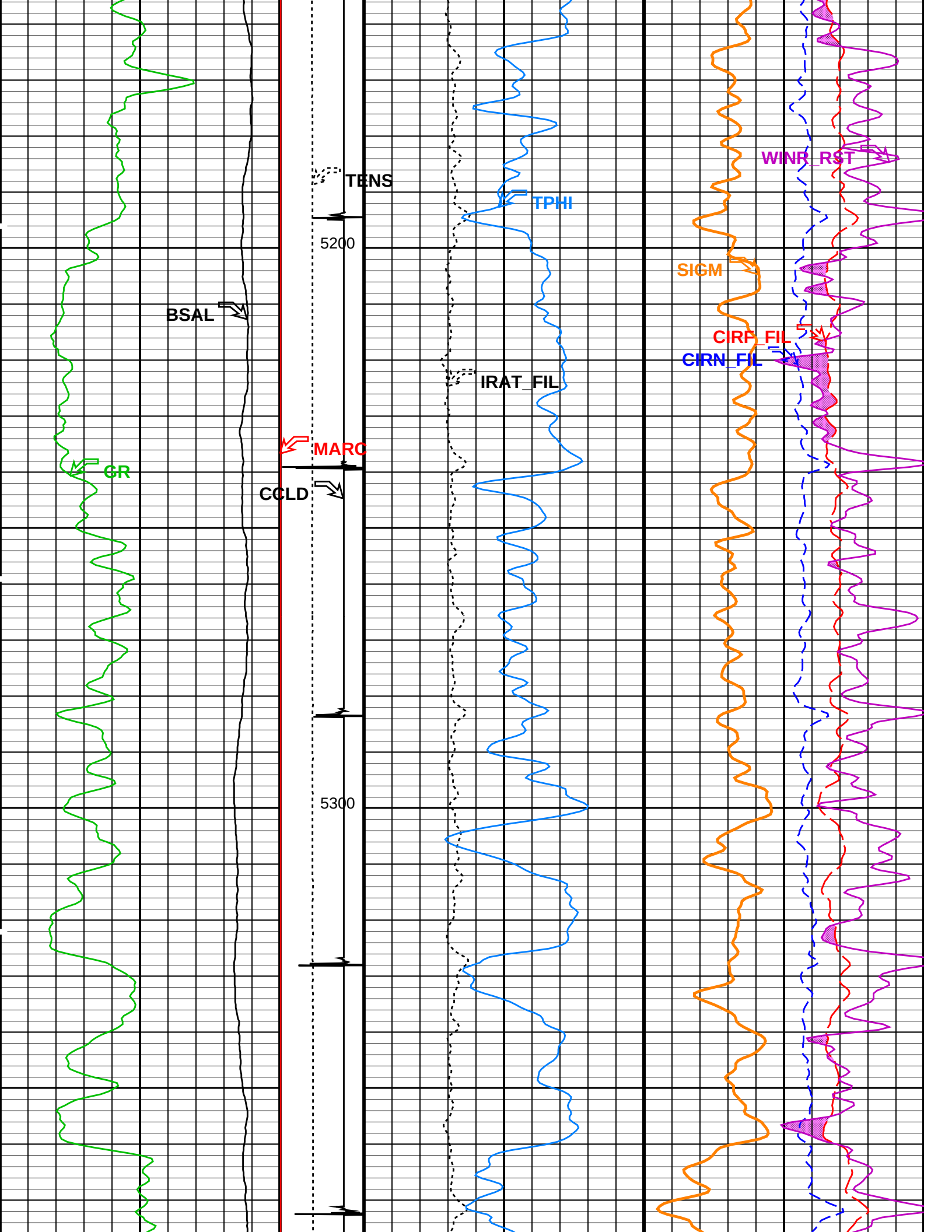

4100
4200
TENS
TPHI
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD

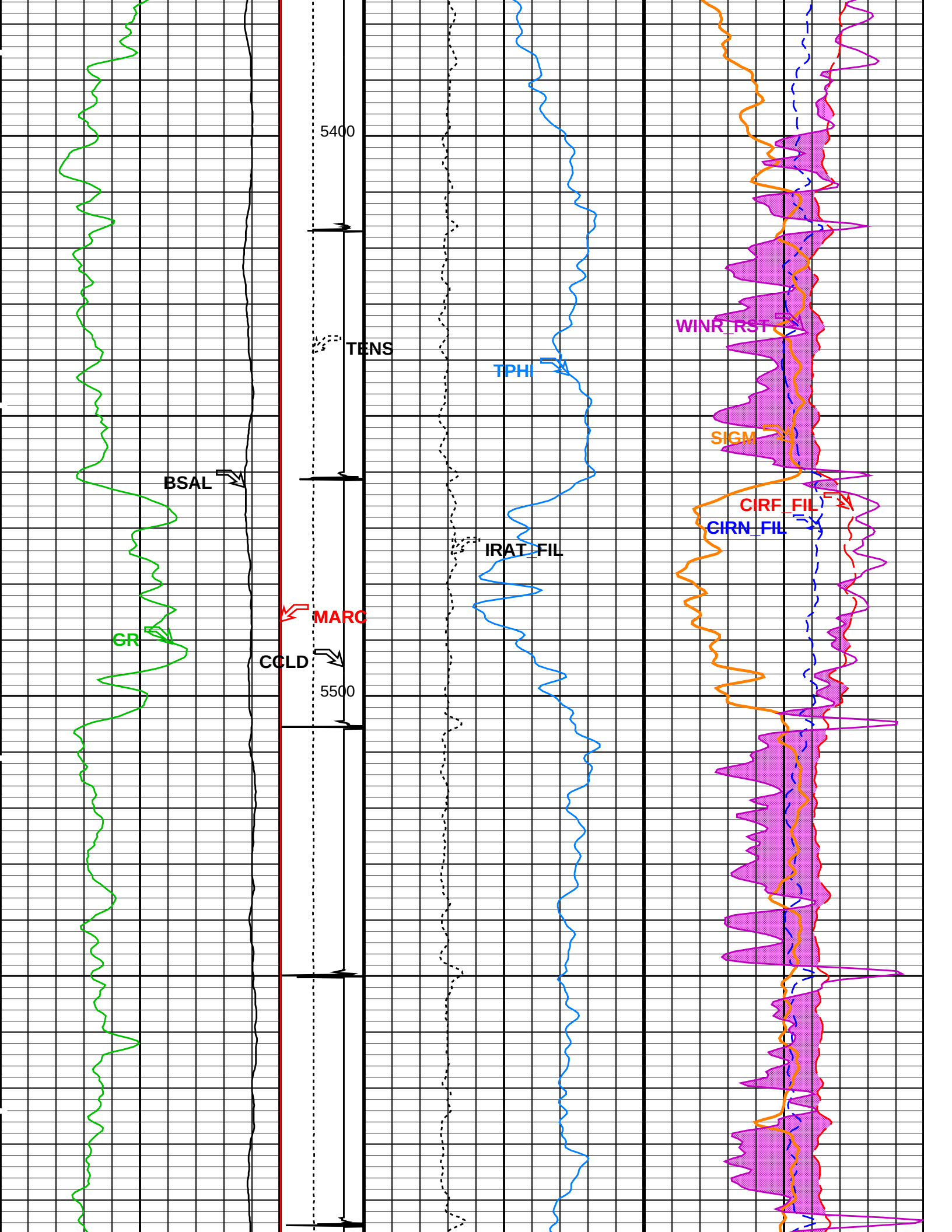

4300
4400
TENS
TPHI
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD

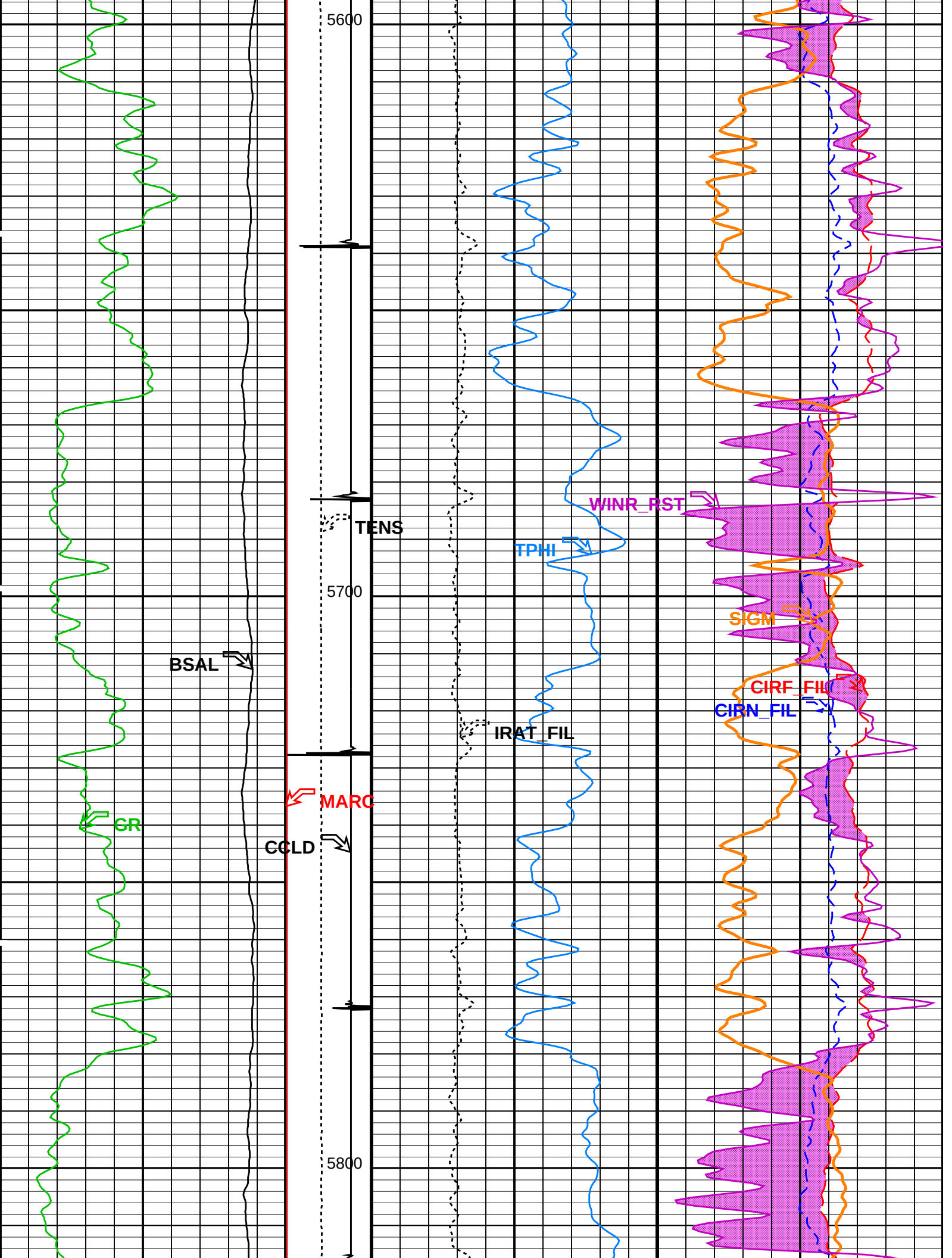

4500
4600
4700
TENS
TPHI
WINR_RST
SIGM
BSAL

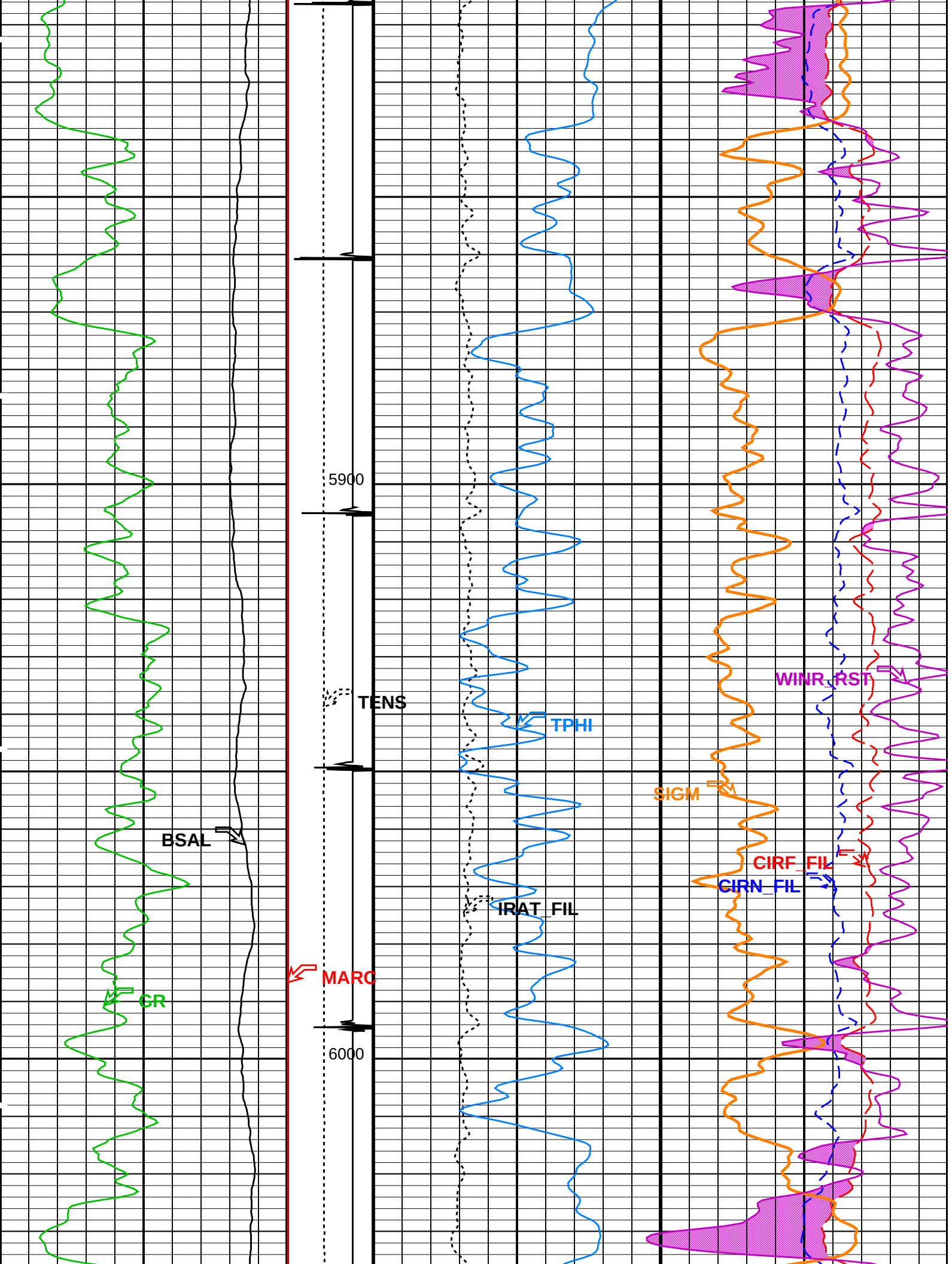

GR
MARC
CCLD
IRAT_FIL
CIRF_FIL
CIRN_FIL
4800
4900
WINR_RST

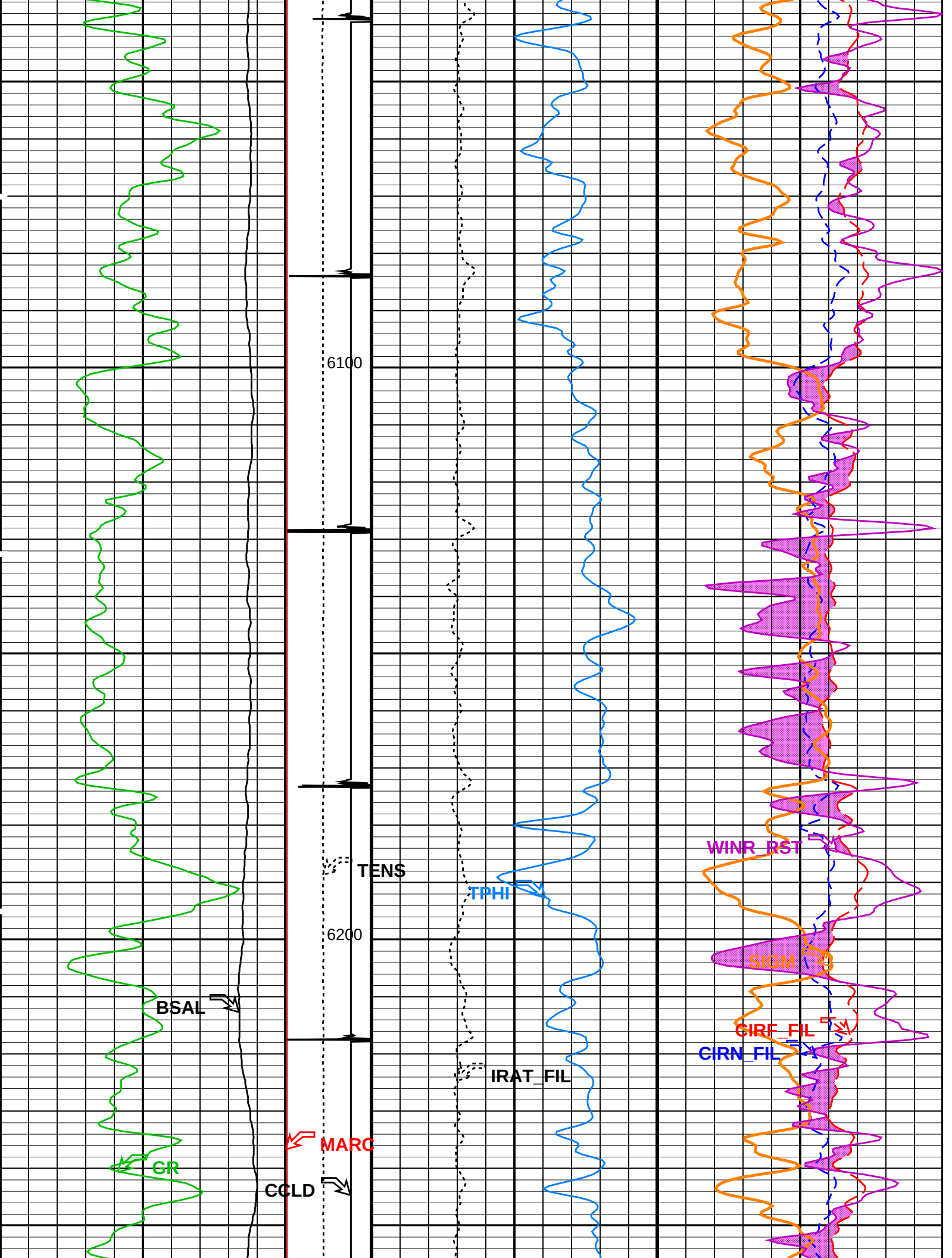

TENS
TPHI
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
5000
5100

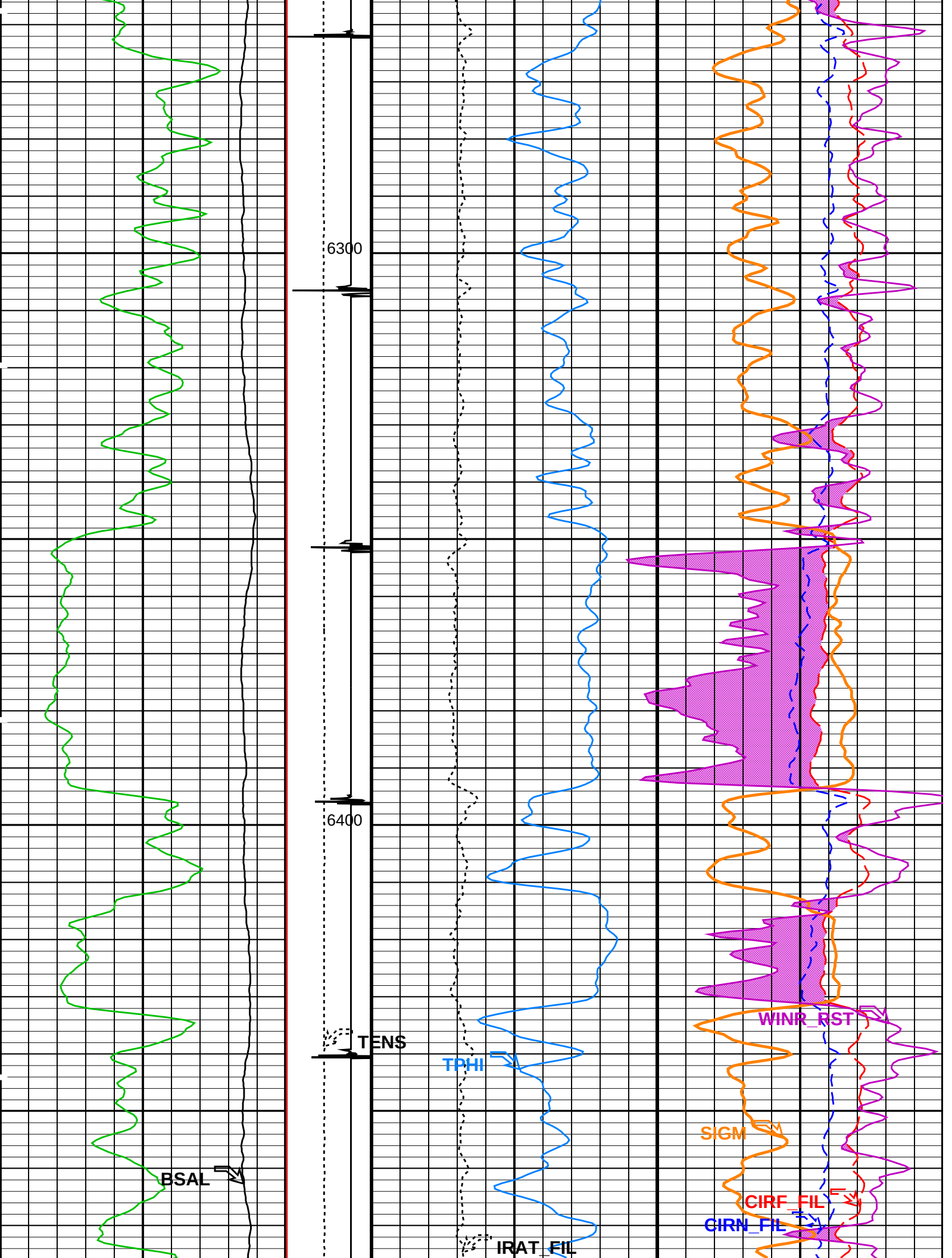

TENS
TPHI
WINR_RST
5200
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
5300

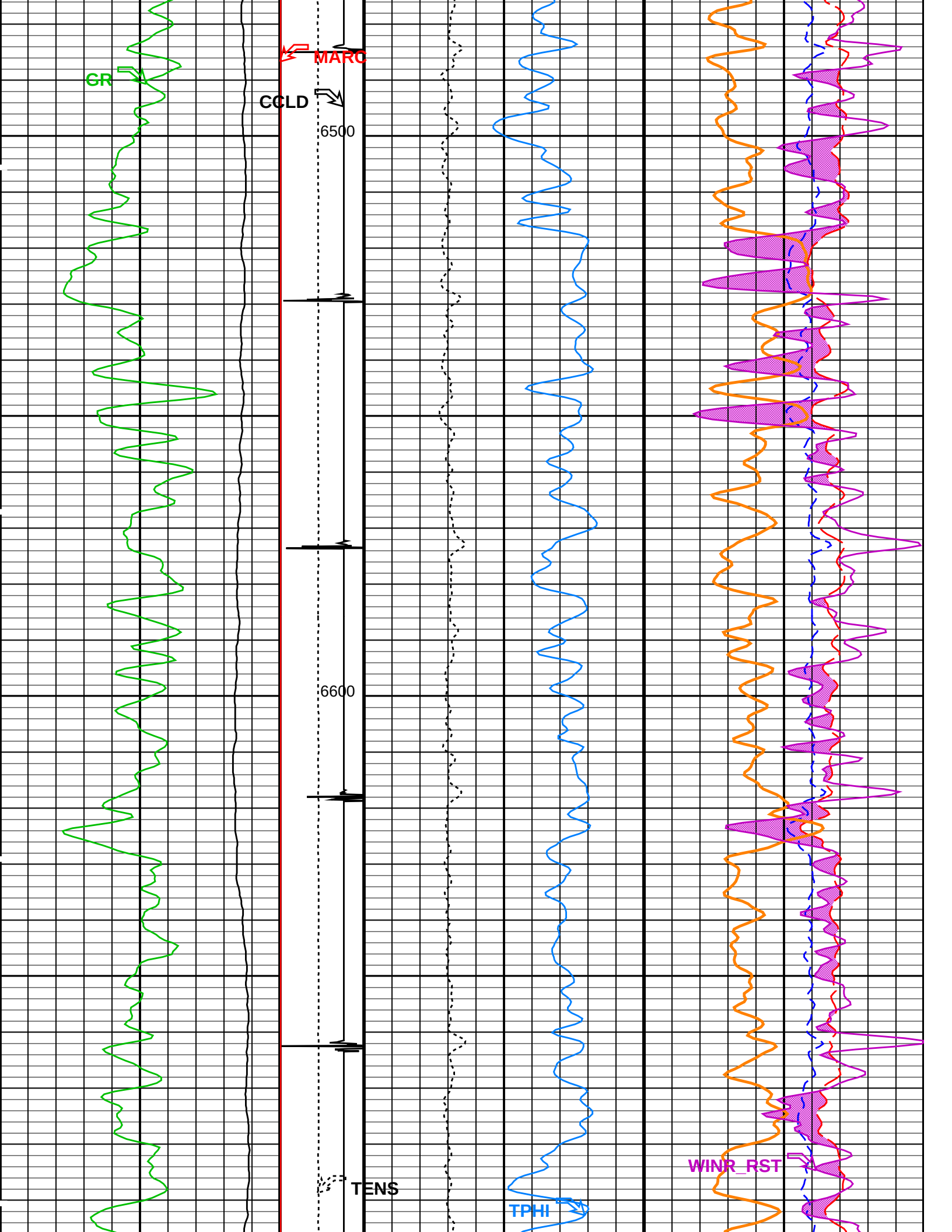

5400
TENS
TPHI
WINR_RST_FIL
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
5500

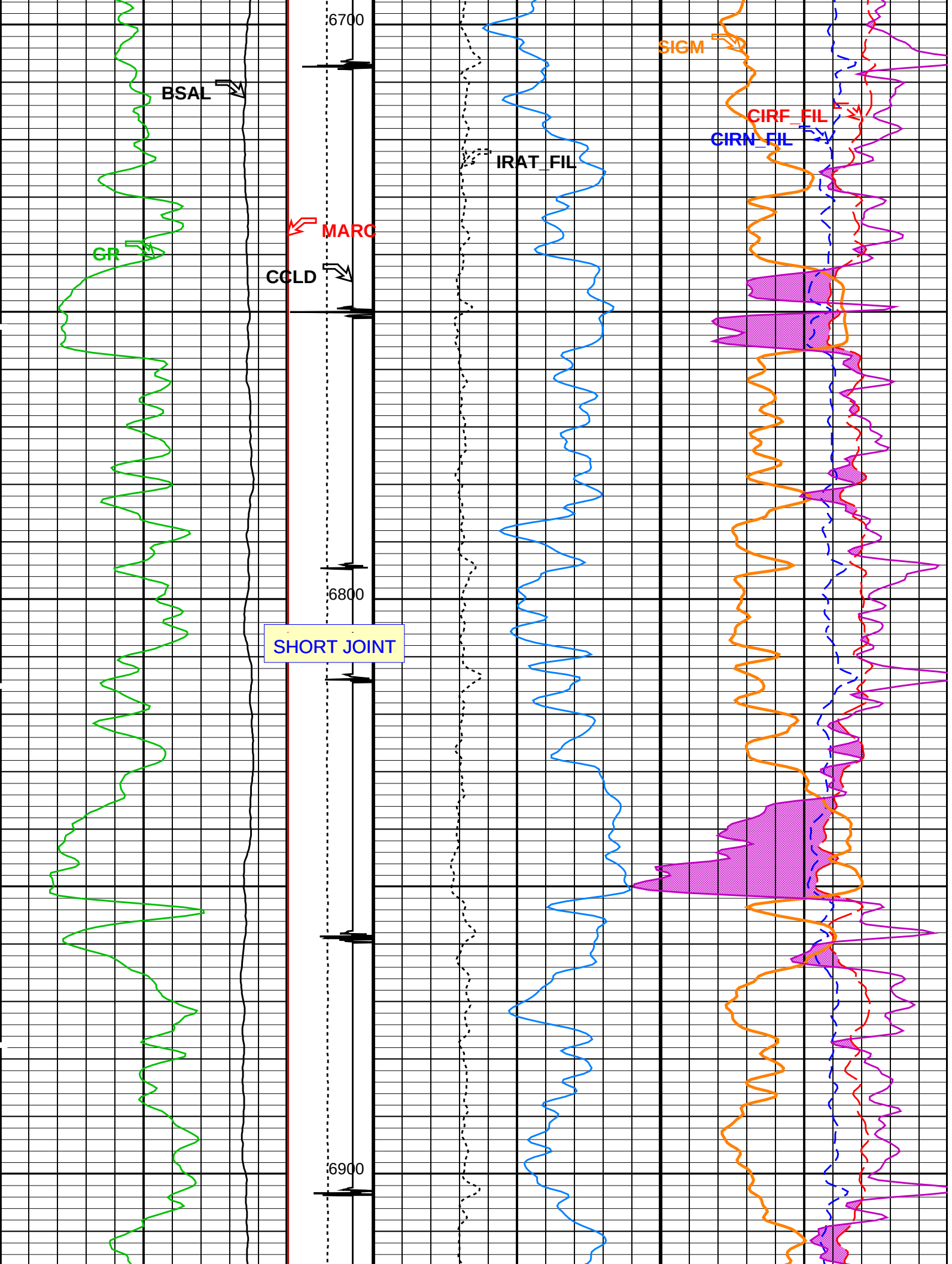

5600
TENS
5700
BSAL
MARC
GR
CCLD
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL
5800

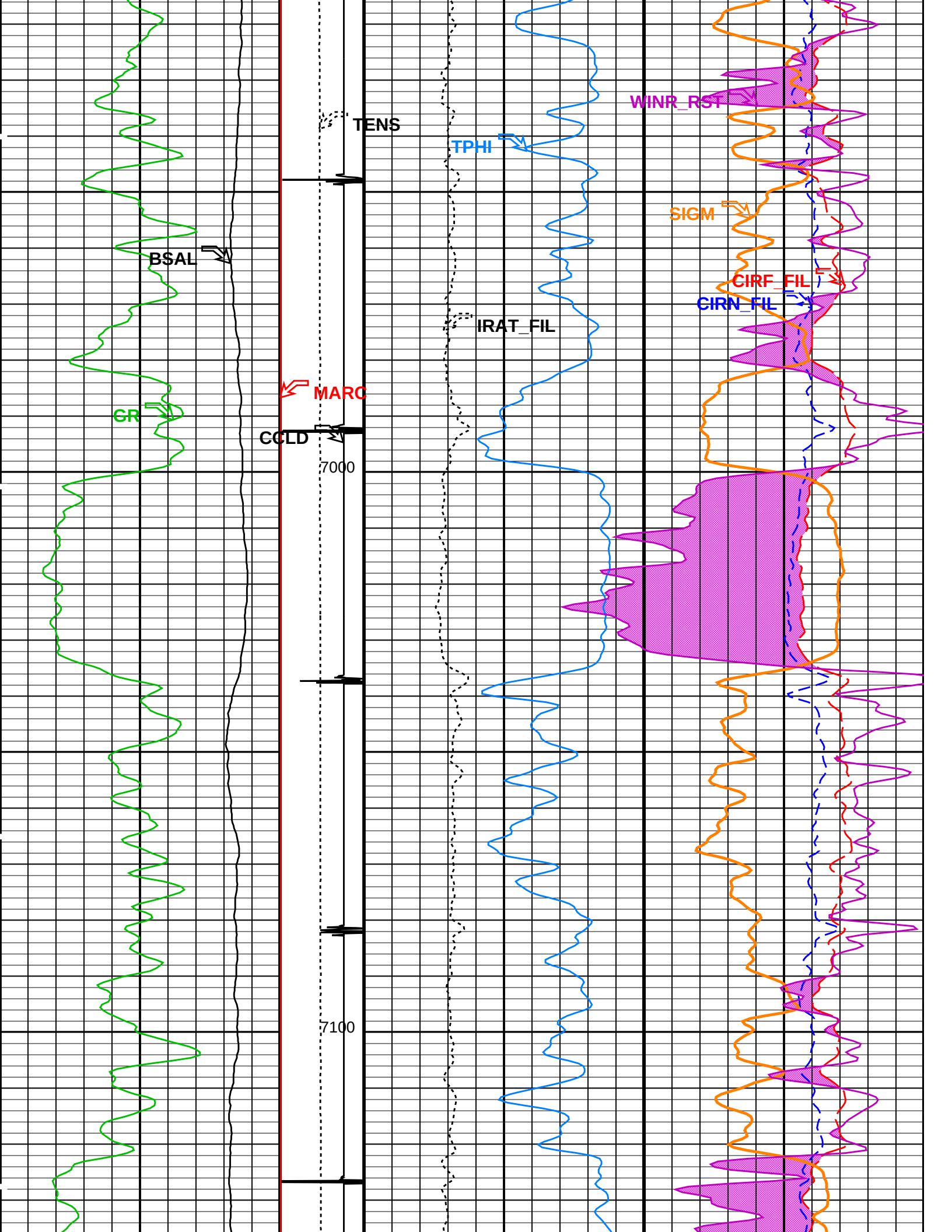

5900
6000
TENS
BSAL
MARC
GR
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL

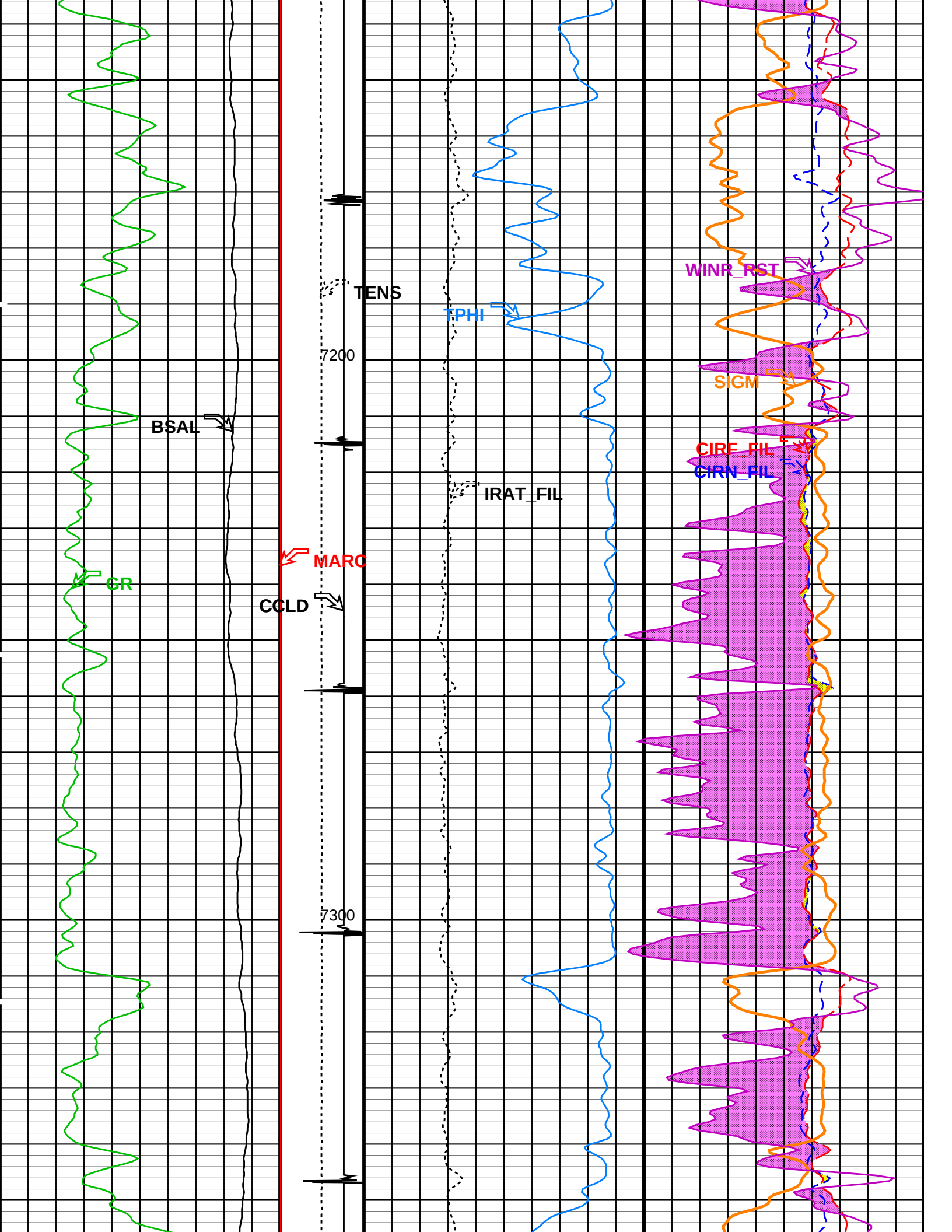

6100
TENS
6200
BSAL
MARC
GR
CCLD
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL

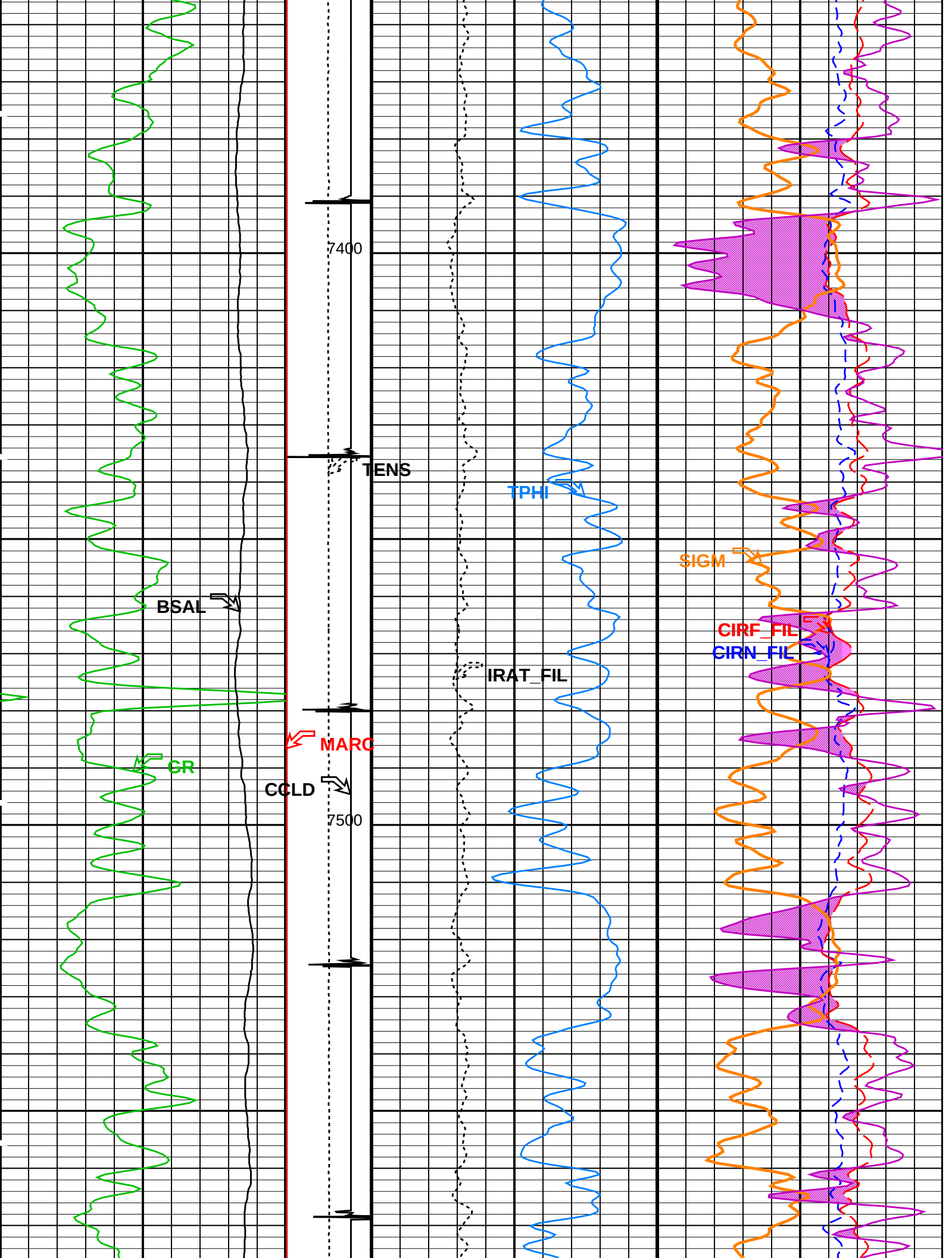

6300
6400
TEN$
TPHI
BSAL
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL

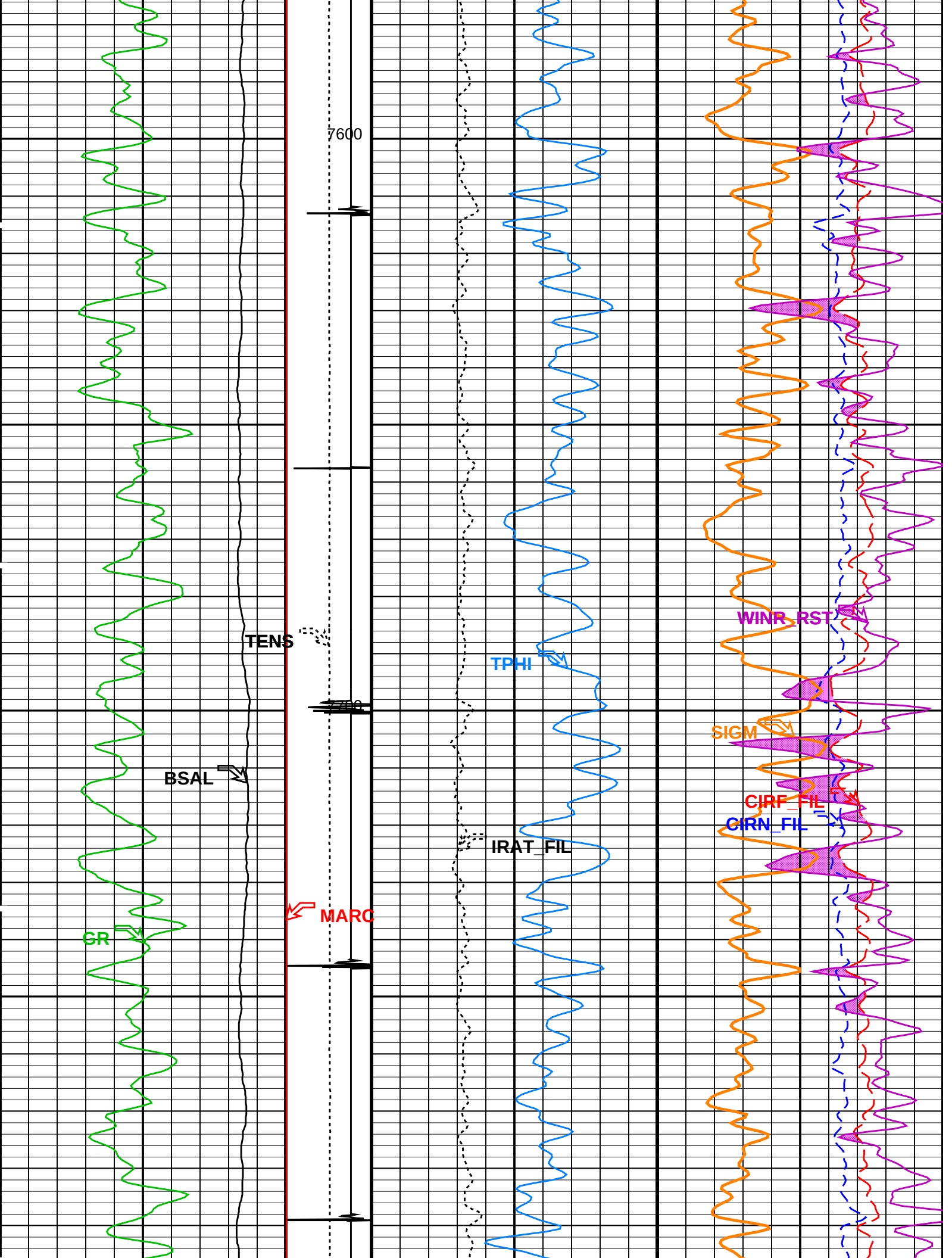

MARC
GR
CCLD
6500
6600
TENS
TPHI
WINR_RST

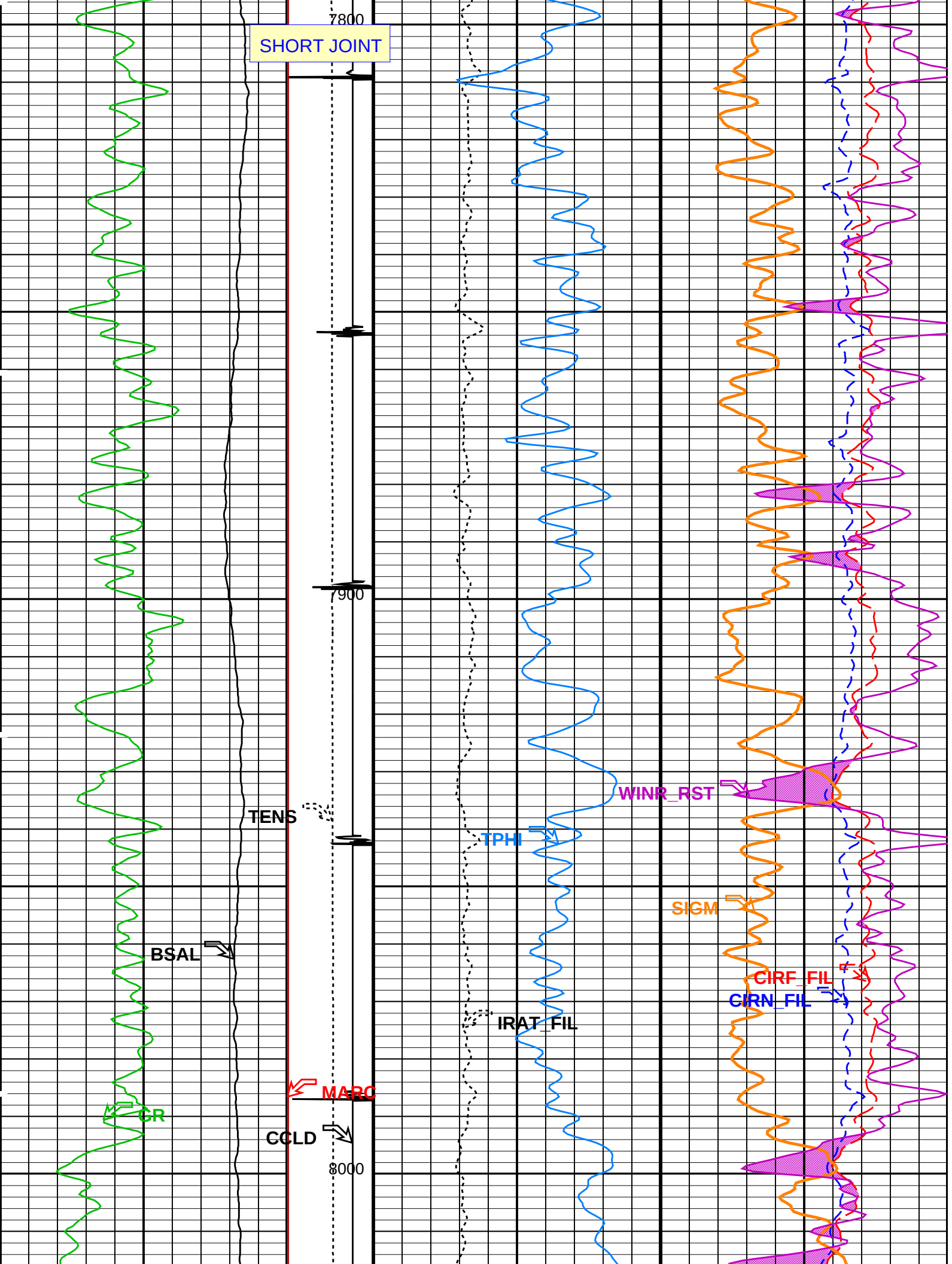

6700
BSAL
SIGM
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
6800
SHORT JOINT
6900

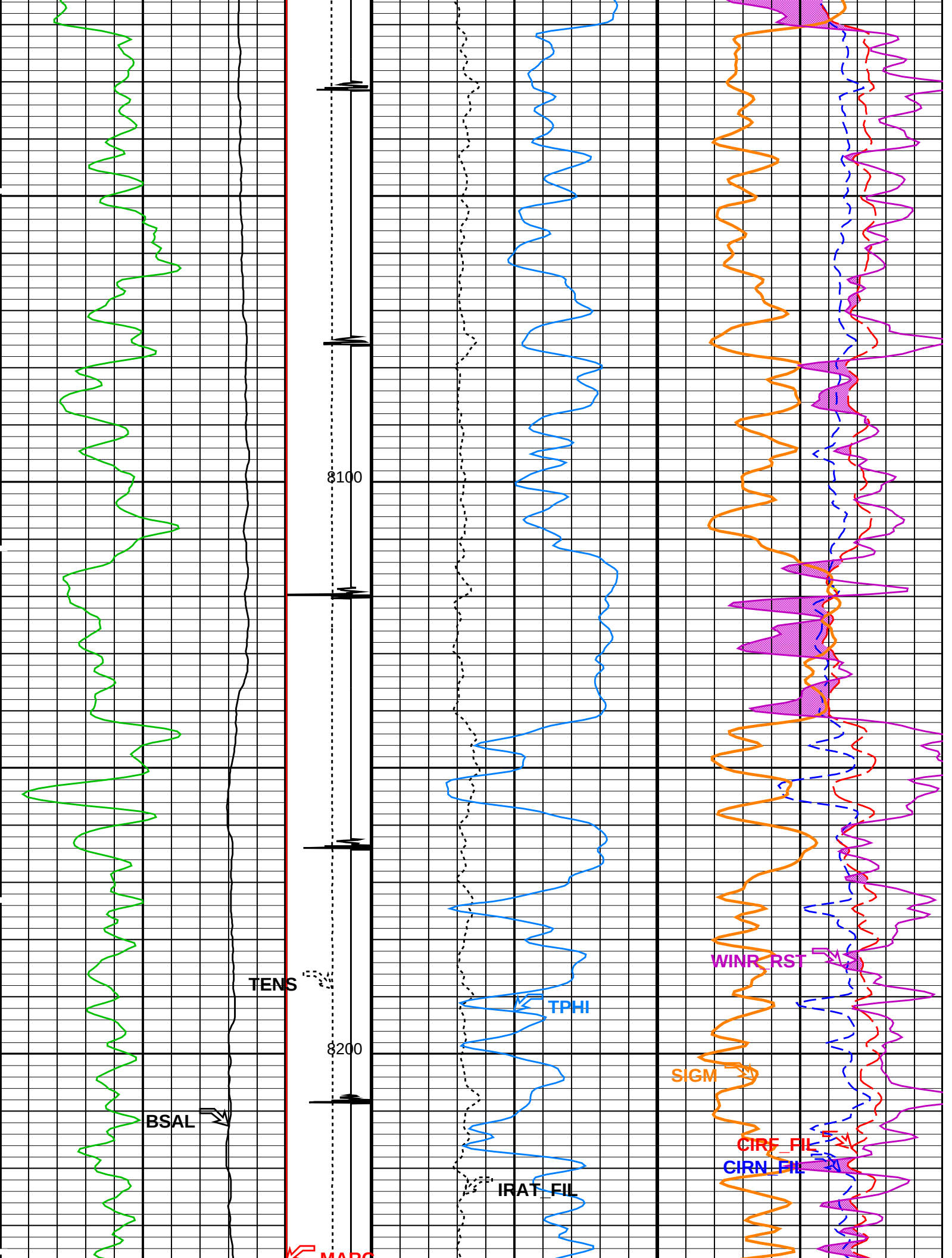

TENS
TPHI
WINR_RST
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
7000
7100

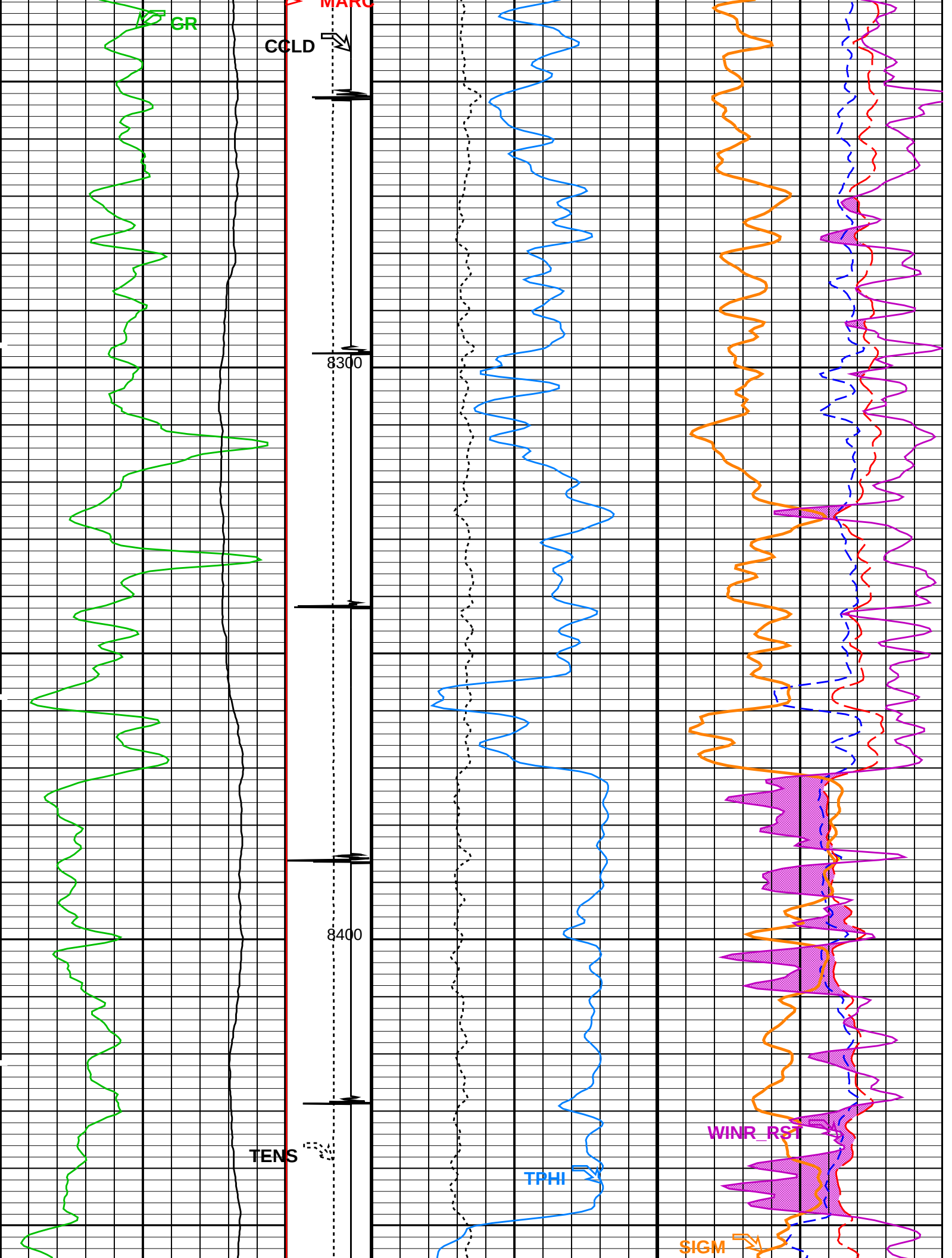

TENS
TPHI
WINR_RST
7200
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
7300

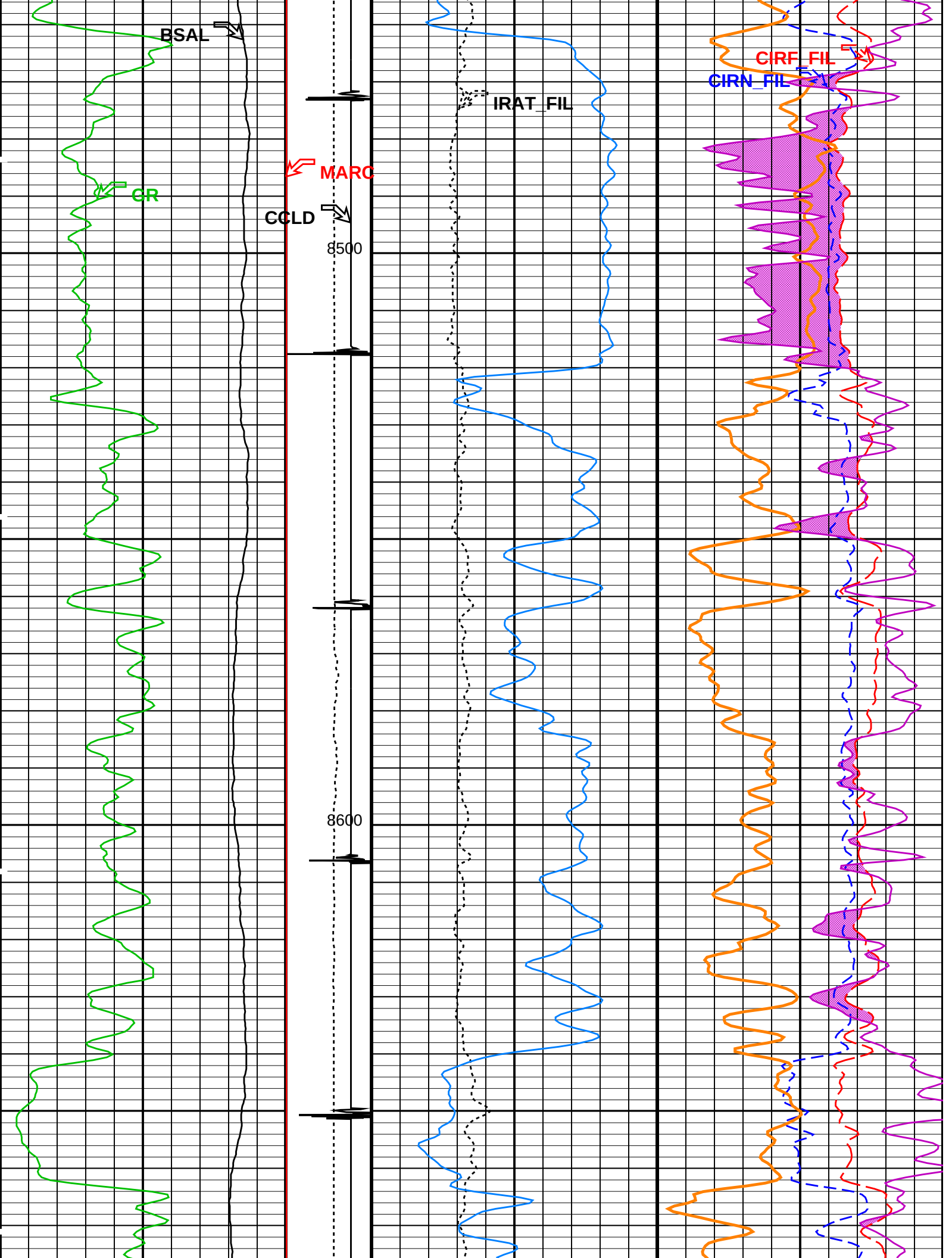

7400
TENS
TPHI
SIGM
BSAL
CIRF_FIL
CIRN_FIL
IRAT_FIL
MARC
GR
CCLD
7500

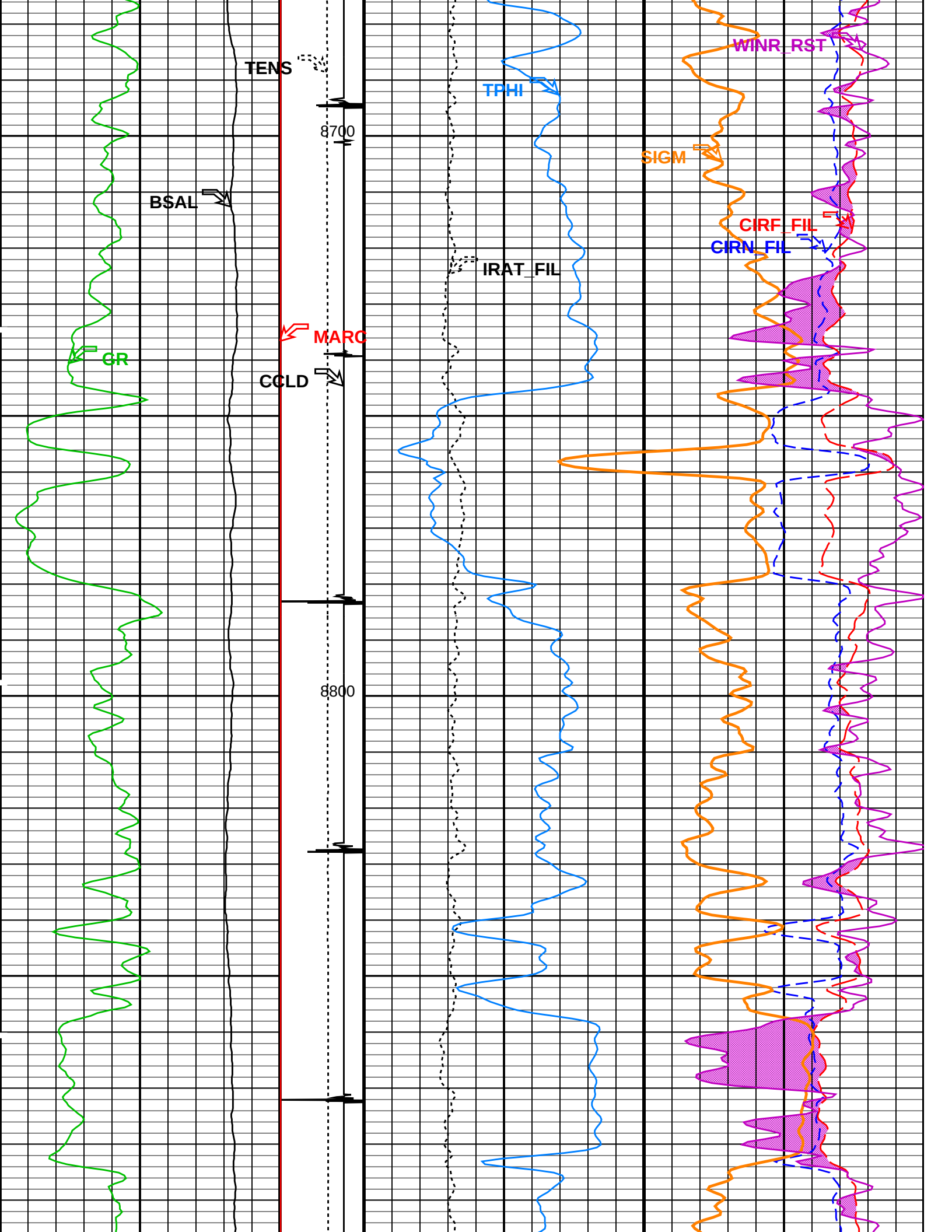

7600
TENS
TPHI
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL
BSAL
IRAT_FIL
MARC
GR

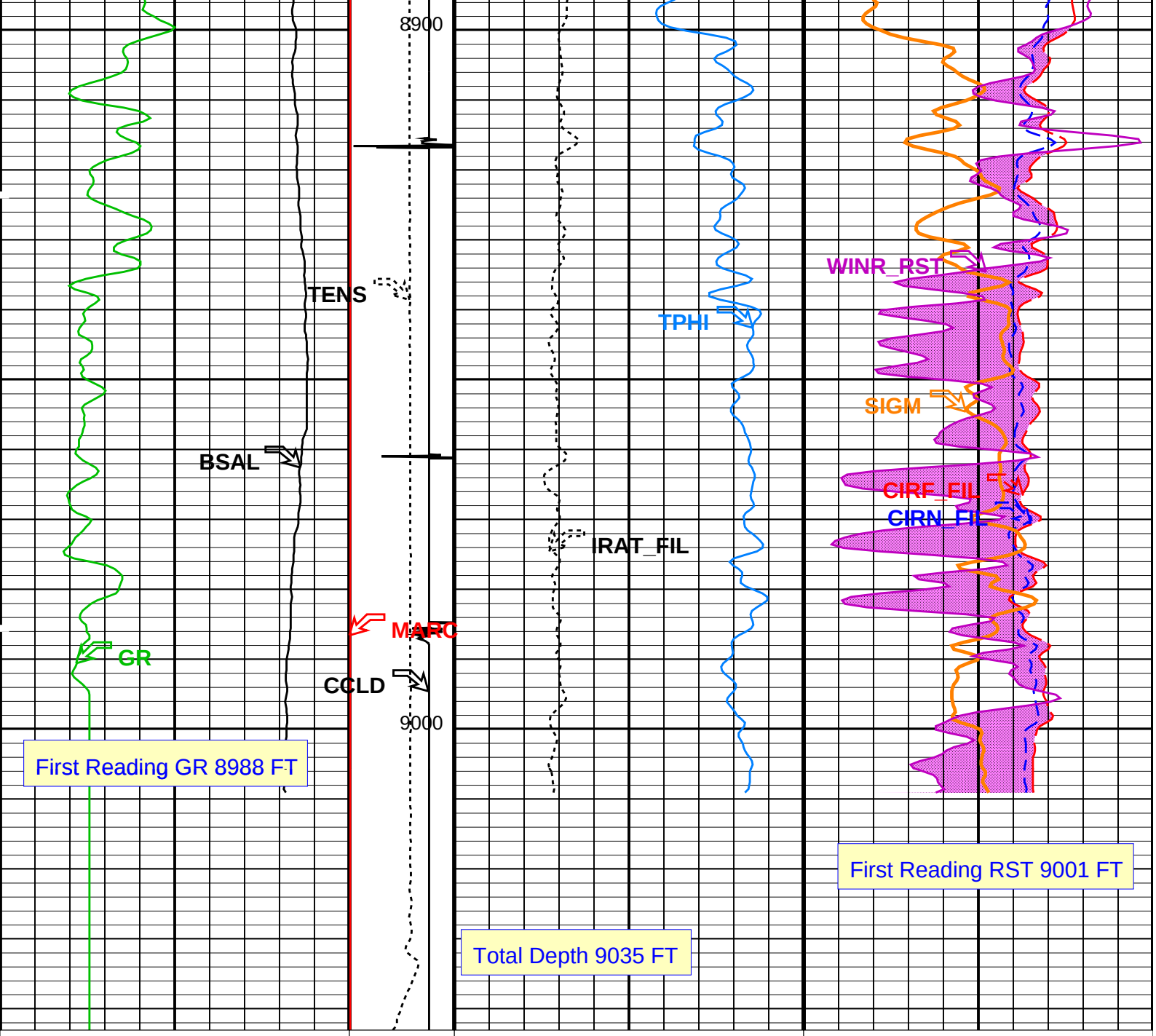

7800
SHORT JOINT
7900
TENS
BSAL
MARC
CR
CCLD
8000
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL


8100
8200
TENS
BSAL
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL


MARC
GR
CCLD
8300
8400
TENS
TPHI
WINR_RST
SIGM


BSAL
GR
MARC
CCLD
IRAT_FIL
CIRF_FIL
CIRN_FIL
8500
8600


TENS
8700
BSAL
MARC
GR
CCLD
TPHI
IRAT_FIL
WINR_RST
SIGM
CIRF_FIL
CIRN_FIL
8800



Gamma Ray (GR) 0 (GAPI) 150	Tension (TENS) (LBF) 0 2000	RST Inelastic Ratio (IRAT_FIL) 0.75 (---- 0	RST Capture to Inelastic Ratio Near (CIRN_FIL) 2.5 (---- 0
RST Borehole Salinity (BSAL) 450 (PPK) −50	Discriminated CCL (CCLD) 3 (V) −1	RST Sigma (SIGM) 60 (CU) 0	
	Minitron Arc Detection (MARC) 0 (---- 5	RST Porosity (TPHI) 0.5 (V/V) 0	RST Capture to Inelastic Ratio Far (CIRF_FIL) 7 (---- 0
		RST Weighted Inelastic Ratio (WINR_RST) 0.4 (---- 0	
		WINR Gas Flag From WINR to RST_CIRF_FIL	
			Crossover in sand

Parameters

DLIS Name	Description	Value	
	SCMT−CB: Slim Cement Mapping Tool, 1−11/16 OD		
BILI	Bond Index Level for Zone Isolation	0.8	
BISS	Bond Index Source Selection for BIQL	BI	
CB3D	SCMT CBL 3 ft Peak Detection Mode	PEAK	
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	224.559	US
CB3T	SCMT CBL 3 ft Fixed Threshold Level	20	MV
CB5D	SCMT CBL 5 ft Peak Detection Mode	PEAK	
CB5G	SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate	338.559	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	45	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	80	MV
CMCF	CBL Cement Type Compensation Factor	1	
CMTC	SCMT Slow Channel Multiplexer Mode	SCAN	
CMTM	SCMT Operating Mode	LOG	
CMTP	SCMT Tool position on CAN	5	
CSCS	SCMT Slow Channel Index	VCC	
CTHI	Casing Thickness	0.255617	IN
DTF	Delta−T Fluid	189	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	0.924277	
GOBO	Good Bond	1.55185	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	167.559	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	16.5449	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	1.25	FT
MMSA	MAP Minimum Sonic Amplitude	4.32284	MV
MSA	Minimum Sonic Amplitude	0.579149	MV
PEDE	Peak Detection On/Off Switch in Playback	OFF	
RBC	Relative Bearing Correction Allow/Disallow	ALLOW	
VDLG	VDL Manual Gain	5	
ZCMT	Acoustic Impedance of Cement	6.8	MRAY
	RST−C: Reservoir Saturation Pro Tool C		
	Tractor Available in Tool String	NO	
AIRB	RST Air Borehole	No	
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSALOPT	RST Borehole Salinity Option	Unknown	
BSFL	RST Borehole Salinity Filter Length	51	
CSID	Casing Size I.D.	4	IN
DFPC	RST Depth Filter Processing Constant	One	
DFPC_TDTL	RST Depth Filter Processing Constant (TDT−like)	Two	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
NORM_IRAT_RST	RST Normalized Inelastic Ratio	0.48	
NORM_SIGM_RST	RST Normalized Sigma	30	CU
PTIER	RST Tiered Presentation Selection	0_Customer	
PVL_PSNT_PRST	PVL Peak Signal/Noise Threshold	3	
RGAI	Near/Far Gain Calibration Ratio	1	
SHT	Surface Hole Temperature	68	DEGF
TIER_IC	RST IC Acquisition Mode	0_CO_Yield_and_Spectrolith	
TIER_SIGM	RST Sigma Acquisition Mode	0_RST_Sigma	
WOFSL_PRST	RST WFL−Off Subcycle Length	0	
WONSL_PRST	RST WFL−On Subcycle Length	0	
WSCOM_PRST	RST Station Log Comment		
	HBMS−B: High Temperature PSP Basic Measurement Sonde		
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
CSID	Casing Size I.D.	4	IN
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
PBPO	PSP Basic Sub Position	2	
PCCG	PSP Basic Sub CCL Gain	DB24	

PSTP	PSP Telemetry Cartridge position on CAN Bus	1	
SHT	Surface Hole Temperature	68	DEGF
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	7.875	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	11.60	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	5.0	FT
FLEV	Fluid Level	100.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	9035	FT
TDD	Total Depth − Driller	9140.00	FT
TDL	Total Depth − Logger	9035.00	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: RST_SIGMA_S5 Vertical Scale: 5" per 100' Graphics File Created: 04−Jan−2014 21:32

OP System Version: 19C0−187

SCMT−CB	19C0−187	RST−C	19C0−187
HBMS−B	19C0−187		

Input DLIS Files

	SCMT_RST_HBMS_019LUP	FN:18	04−Jan−2014 18:56	9038.0 FT	−17.0 FT

Output DLIS Files

DEFAULT	SCMT_RST_HBMS_024PUP	FN:23	PRODUCER	04−Jan−2014 21:32	

Schlumberger

REPEAT ANALYSIS RST SIGMA

MAXIS Field Log

Input DLIS Files

DEFAULT	SCMT_RST_PSP_005LUP	FN:4	PRODUCER	04−Jan−2014 15:03	6945.5 FT	6644.0 FT
DEFAULT	SCMT_RST_HBMS_024PUP	FN:23	PRODUCER	04−Jan−2014 21:32	9043.0 FT	−59.5 FT

Output DLIS Files

DEFAULT	SCMT_RST_HBMS_025PUP	FN:24	PRODUCER	04−Jan−2014 21:37	6938.5 FT	6589.5 FT

OP System Version: 19C0−187

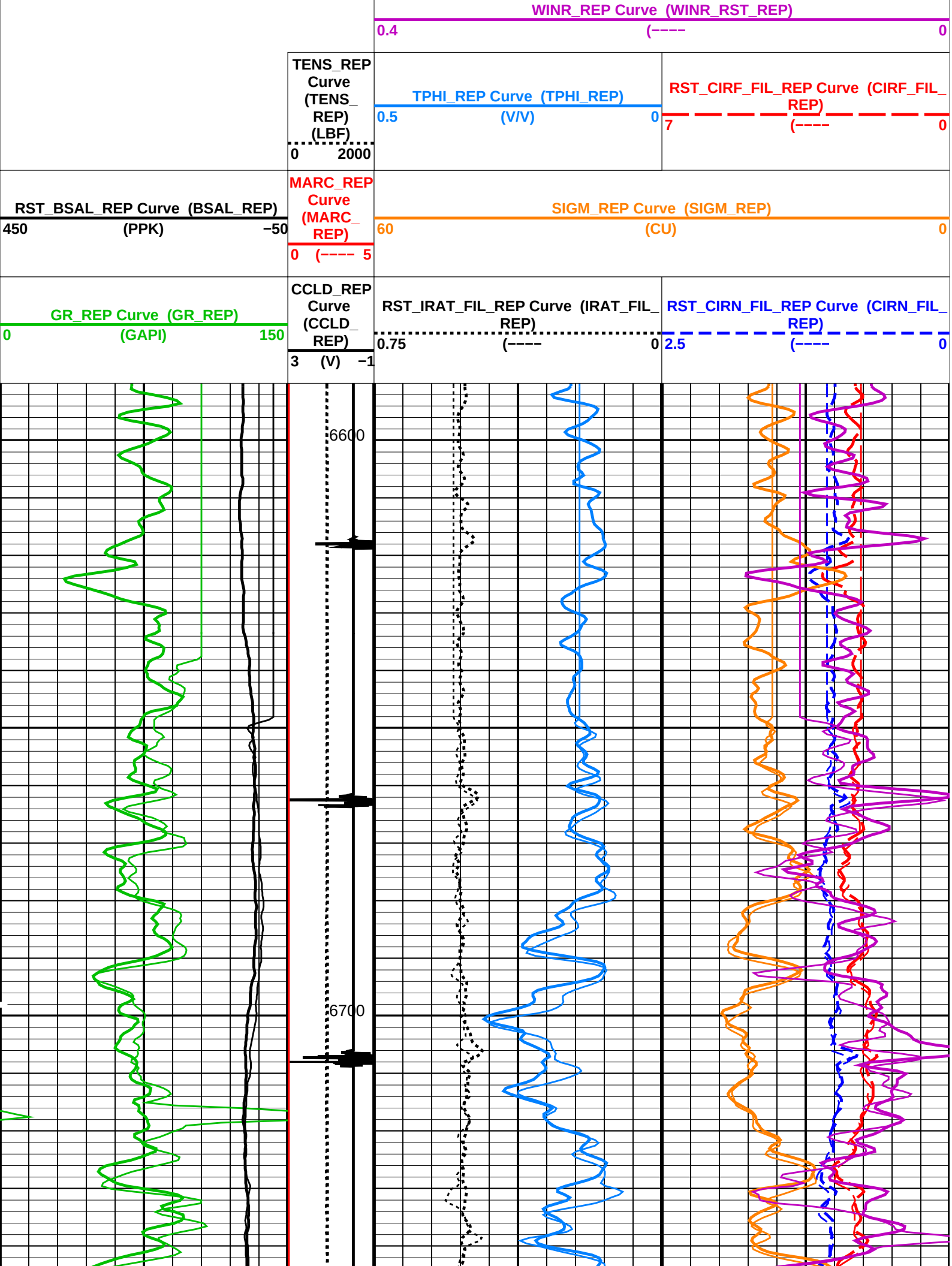
SCMT−CB	19C0−187	RST−C	19C0−187
HBMS−B	19C0−187		

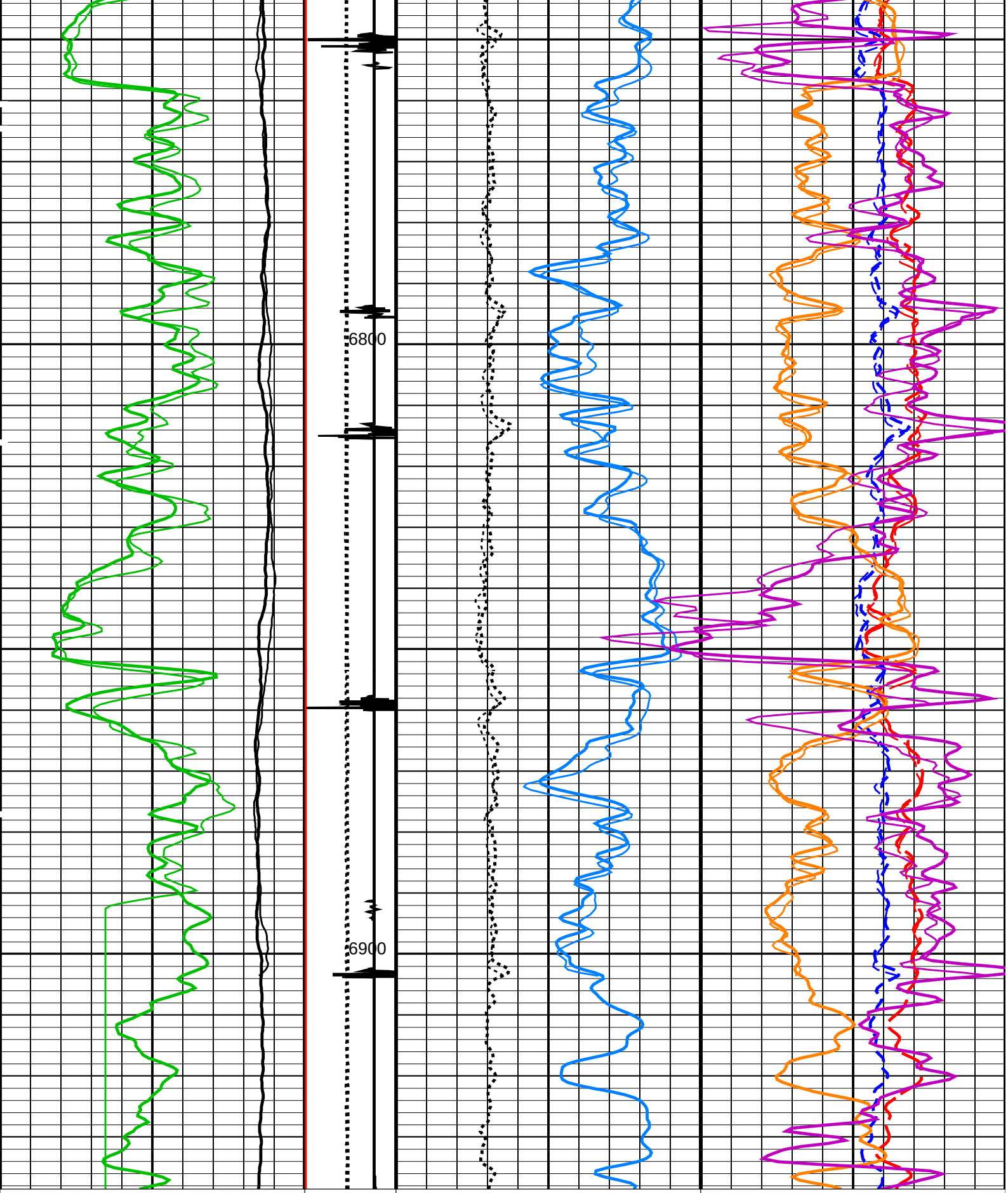
Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BS	8.750 IN	8.750 IN	6938.5 21:37:57

PIP SUMMARY

Time Mark Every 60 S


WINR_REP Curve (WINR_RST_REP)
0.4 (----- 0
TENS_REP Curve (TENS_REP) (LBF)
0 2000
TPHI_REP Curve (TPHI_REP)
0.5 (V/V) 0
RST_CIRF_FIL_REP Curve (CIRF_FIL_REP)
7 (----- 0
RST_BSAL_REP Curve (BSAL_REP)
450 (PPK) -50
MARC_REP Curve (MARC_REP)
0 (---- 5
SIGM_REP Curve (SIGM_REP)
60 (CU) 0
GR_REP Curve (GR_REP)
0 (GAPI) 150
CCLD_REP Curve (CCLD_REP)
3 (V) -1
RST_IRAT_FIL_REP Curve (IRAT_FIL_REP)
0.75 (---- 0
RST_CIRN_FIL_REP Curve (CIRN_FIL_REP)
2.5 (---- 0
6600
6700



GR_REP Curve (GR_REP)
0 (GAPI) 150

CCLD_REP Curve (CCLD_REP)
3 (V) −1

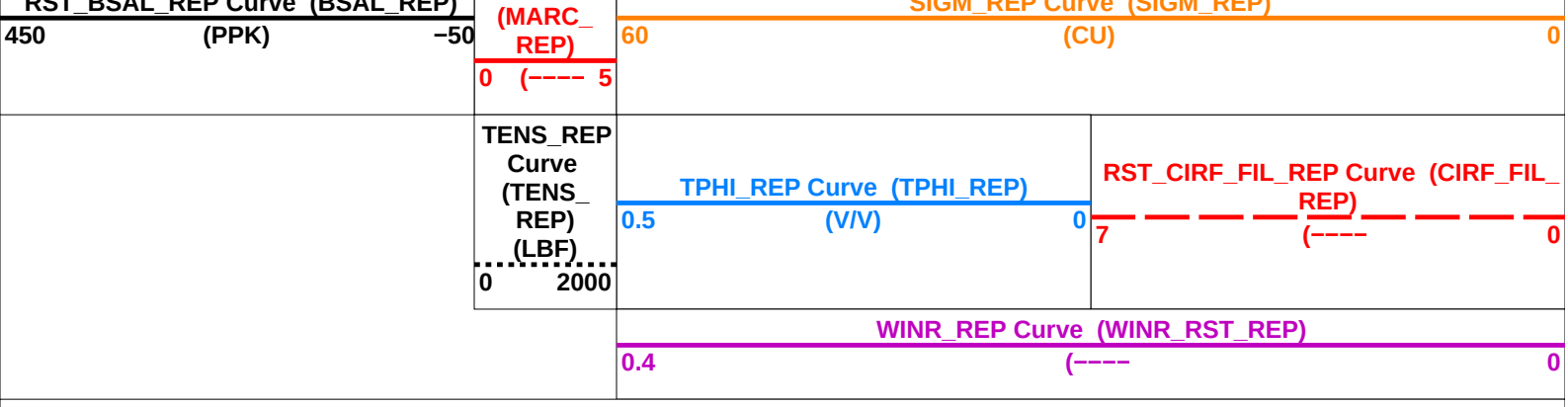
RST_IRAT_FIL_REP Curve (IRAT_FIL_REP)
0.75 (---- 0

RST_CIRN_FIL_REP Curve (CIRN_FIL_REP)
2.5 (---- 0

RST_RSAL_REP Curve (RSAL_REP)

MARC_REP Curve

SIGM_REP Curve (SIGM_REP)



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	SCMT−CB: Slim Cement Mapping Tool, 1−11/16 OD		
BILI	Bond Index Level for Zone Isolation	0.8	
BISS	Bond Index Source Selection for BIQL	BI	
CB3D	SCMT CBL 3 ft Peak Detection Mode	PEAK	
CB3G	SCMT CBL 3 ft Peak Detection T0_Delay and Noise Gate	224.559	US
CB3T	SCMT CBL 3 ft Fixed Threshold Level	20	MV
CB5D	SCMT CBL 5 ft Peak Detection Mode	PEAK	
CB5G	SCMT CBL 5 ft Peak Detection T0_Delay and Noise Gate	338.559	US
CB5T	SCMT CBL 5 ft Fixed Threshold Level	20	MV
CBLG	CBL Gate Width	45	US
CBRA	CBL LQC Reference Amplitude in Free Pipe	80	MV
CMCF	CBL Cement Type Compensation Factor	1	
CMTC	SCMT Slow Channel Multiplexer Mode	SCAN	
CMTM	SCMT Operating Mode	LOG	
CMTP	SCMT Tool position on CAN	5	
CSCS	SCMT Slow Channel Index	VCC	
CTHI	Casing Thickness	0.255617	IN
DTF	Delta−T Fluid	189	US/F
FATT	Acoustic Attenuation due to Fluid	0	DB/F
FCF	CBL Fluid Compensation Factor	0.924277	
GOBO	Good Bond	1.55185	MV
MAPD	SCMT MAP Peak Detection Mode	PEAK	
MAPG	SCMT MAP Peak Detection T0_Delay and Noise Gate	167.559	US
MAPT	SCMT MAP Fixed Threshold Level	30	MV
MATT	Maximum Attenuation	16.5449	DB/F
MCCF	MAP Cement Type Compensation Factor	1	
MCI	Minimum Cemented Interval for Isolation	1.25	FT
MMSA	MAP Minimum Sonic Amplitude	4.32284	MV
MSA	Minimum Sonic Amplitude	0.579149	MV
PEDE	Peak Detection On/Off Switch in Playback	OFF	
RBC	Relative Bearing Correction Allow/Disallow	ALLOW	
VDLG	VDL Manual Gain	5	
ZCMT	Acoustic Impedance of Cement	6.8	MRAY
	RST−C: Reservoir Saturation Pro Tool C		
	Tractor Available in Tool String	NO	
AIRB	RST Air Borehole	No	
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSALOPT	RST Borehole Salinity Option	Unknown	
BSFL	RST Borehole Salinity Filter Length	51	
CSID	Casing Size I.D.	4	IN
DFPC	RST Depth Filter Processing Constant	One	
DFPC_TDTL	RST Depth Filter Processing Constant (TDT−like)	Two	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
NORM_IRAT_RST	RST Normalized Inelastic Ratio	0.48	
NORM_SIGM_RST	RST Normalized Sigma	30	CU
PTIER	RST Tiered Presentation Selection	0_Customer	
PVL_PSNT_PRST	PVL Peak Signal/Noise Threshold	3	
RGAI	Near/Far Gain Calibration Ratio	1	
SHT	Surface Hole Temperature	68	DEGF
TIER_IC	RST IC Acquisition Mode	0_CO_Yield_and_Spectrolith	
TIER_SIGM	RST Sigma Acquisition Mode	0_RST_Sigma	
WOFSL_PRST	RST WFL−Off Subcycle Length	0	
WONSL_PRST	RST WFL−On Subcycle Length	0	

WSCOM_PRST	RST Station Log Comment		
HBMS−B: High Temperature PSP Basic Measurement Sonde			
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
CSID	Casing Size I.D.	4	IN
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	NOBARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
PBPO	PSP Basic Sub Position	2	
PCCG	PSP Basic Sub CCL Gain	DB24	
PSTP	PSP Telemetry Cartridge position on CAN Bus	1	
SHT	Surface Hole Temperature	68	DEGF
System and Miscellaneous			
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	8.750	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	4.500	IN
CWEI	Casing Weight	11.60	LB/F
DFD	Drilling Fluid Density	8.40	LB/G
DO	Depth Offset for Playback	−7.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
FLEV	Fluid Level	100.00	FT
MST	Mud Sample Temperature	−50000.00	DEGF
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	−50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	9035	FT
TDD	Total Depth − Driller	9140.00	FT
TDL	Total Depth − Logger	9035.00	FT
TWS	Temperature of Connate Water Sample	100.00	DEGF

Format: RST_SIGMA_S5_REP Vertical Scale: 5" per 100’ Graphics File Created: 04−Jan−2014 21:37

OP System Version: 19C0−187

SCMT−CB	19C0−187	RST−C	19C0−187
HBMS−B	19C0−187		

Input DLIS Files

DEFAULT	SCMT_RST_PSP_005LUP	FN:4	PRODUCER	04−Jan−2014 15:03	6945.5 FT	6644.0 FT
DEFAULT	SCMT_RST_HBMS_024PUP	FN:23	PRODUCER	04−Jan−2014 21:32	9043.0 FT	−59.5 FT

Output DLIS Files

DEFAULT	SCMT_RST_HBMS_025PUP	FN:24	PRODUCER	04−Jan−2014 21:37

Schlumberger

HBMS COEFFICIENTS

MAXIS Field Log

Client:	ENCANA OIL & GAS (USA) INC	Tool:	PSP
Field:	MAMM CREEK	Sub Type:	PBMS
Well:	ROSE 22−11B (K22W)	Sensor:	GR
Run date:	4−Jan−2014		

PBMS Gamma Ray

Sonde Serial NB	**RESISTORS FOR GR SENSOR N.37166,TOOL HBMS−BA2955. SENSOR S/N:**
Sensor Serial NB	**37166**
Calib Date ddmmyy	**280912**
Matrix Size	**12**
Coeff CRC	**6646**

GR HV Rt

	Rt**0	Rt**1
Rt0**	**+.200000000000e+04**	**+.193000000000e+04**

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**MAMM CREEK**	**Sub Type:**	**PBMS**
Well:	**ROSE 22−11B (K22W)**	**Sensor:**	**WellTemp RTD**
Run date:	**4−Jan−2014**		

PBMS RTD Well Thermometer

Sonde Serial NB	**COEFFICIENTS FOR RTD THERMOMETER PBMS−B.2955 S/N:**
Sensor Serial NB	**2955**
Calib Date ddmmyy	**140513**
Matrix Size	**16**
Coeff CRC	**9ABB**

WTemp Coeff

	Tt**0	Tt**1	Tt**2
Tt0**	**−.579466850375E+03**	**+.321000211776E+03**	**−.769493413393E+02**

	Tt**3	Tt**4	Tt**5
Tt0**	**+.118371810108E+02**	**−.654027317127E+00**	**0.0**

Client:	**ENCANA OIL & GAS (USA) INC**	**Tool:**	**PSP**
Field:	**MAMM CREEK**	**Sub Type:**	**PBMS**
Well:	**ROSE 22−11B (K22W)**	**Sensor:**	**CQG**
Run date:	**4−Jan−2014**		

PBMS Quartz Gauge type F

Sonde Serial NB	**COEFFICIENTS FOR CQG PBMS−B.2955 S/N:**
Sensor Serial NB	**2955**
Calib Date ddmmyy	**140513**
Matrix Size	**66**
Coeff CRC	**AD6E**

Pres Coeff

	Fb0**	**Fb**1**	**Fb**2**
Fc0**	+.805218055799E+04	+.230687803777E−01	+.120020876821E−07
Fc1**	−.107970514637E+01	−.131245085272E−04	−.102678735701E−09
Fc2**	+.111466223414E−05	+.524200534425E−10	+.949904926223E−15
Fc3**	+.255809900188E−11	+.160726360322E−15	0.0
Fc4**	0.0	0.0	0.0
Fc5**	0.0	0.0	0.0

	Fb3**	**Fb**4**	**Fb**5**
Fc0**	−.772560939667E−10	−.145379238115E−14	−.218737246914E−19
Fc1**	+.968642492374E−16	+.223810216552E−19	0.0
Fc2**	0.0	0.0	0.0
Fc3**	0.0	0.0	0.0
Fc4**	0.0	0.0	0.0
Fc5**	0.0	0.0	0.0

PBMS Quartz Gauge type F

Sonde Serial NB	**:**
Sensor Serial NB	**2955**
Calib Date ddmmyy	**140513**
Matrix Size	**66**
Coeff CRC	**EC8A**

Temp Coeff

	Fc0**	**Fc**1**	**Fc**2**
Fb0**	+.120725065588E+03	−.313379211795E−03	+.708634488020E−08
Fb1**	−.596325013256E−02	+.182626448637E−07	+.104269551703E−12

Fb**1	−.596235012256E−02	+.182626448637E−07	+.104369551702E−12
Fb**2	−.295513003186E−07	+.341136223414E−12	−.998721617444E−18
Fb**3	−.375208992867E−12	+.712560466778E−17	0.0
Fb**4	0.0	0.0	0.0
Fb**5	0.0	0.0	0.0

	Fc**3	Fc**4	Fc**5
Fb**0	+.136541410168E−12	−.403343086990E−17	−.830542374631E−21
Fb**1	−.618398112617E−18	+.429129395353E−21	0.0
Fb**2	0.0	0.0	0.0
Fb**3	0.0	0.0	0.0
Fb**4	0.0	0.0	0.0
Fb**5	0.0	0.0	0.0

PBMS Quartz Gauge type F

Sonde Serial NB	**:**
Sensor Serial NB	**2955**
Calib Date ddmmyy	**140513**
Matrix Size	**16**
Coeff CRC	**6C01**

Clock Freq Coeff

	(Fb'−Fc')**0	(Fb'−Fc')**1	(Fb'−Fc')**2
(Fb'−Fc')**0	+.310812532328E+05	+.224728840165E−02	+.742962292518E−06

	(Fb'−Fc')**3	(Fb'−Fc')**4	(Fb'−Fc')**5
(Fb'−Fc')**0	−.673865003325E−10	−.911707425039E−16	−.961889742081E−20

PBMS Quartz Gauge type F

Sonde Serial NB	**:**
Sensor Serial NB	**2955**
Calib Date ddmmyy	**140513**
Matrix Size	**16**
Coeff CRC	**D6FA**

Clock Temp Coeff

	(Fb'−Fc')**0	(Fb'−Fc')**1	(Fb'−Fc')**2
(Fb'−Fc')**0	+.122085335110E+03	−.602096613375E−02	−.167139647989E−07

	(Fb'−Fc')**3	(Fb'−Fc')**4	(Fb'−Fc')**5
(Fb'−Fc')**0	−.105604526136E−11	−.109719083283E−15	+.100037226713E−19

Company: **ENCANA OIL & GAS (USA) INC**

Schlumberger

Well: **ROSE 22−11B (K22W)**
Field: **MAMM CREEK**
County: **GARFIELD**
State: **COLORADO**

RESERVOIR SATURATION LOG
SIGMA MODE
GAMMA RAY−CCL