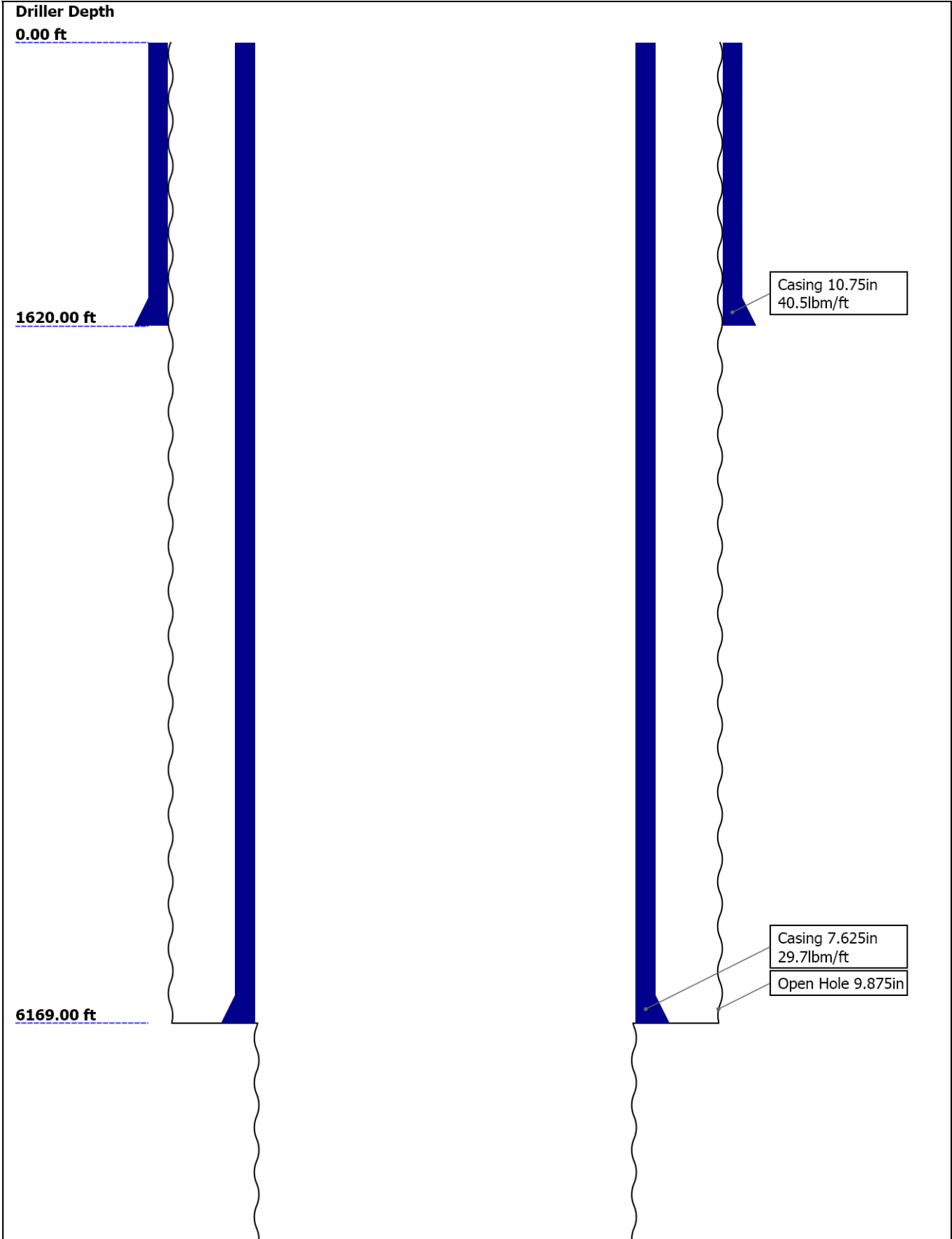


County: ROUTT State: COLORADO

Contents	
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Well Sketch



9233.00 ft

Open Hole 6.75in

Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	9.875	6.75				
Top Driller (ft)	0	6169				
Top Logger (ft)	0	6169				
Bottom Driller (ft)	6169	9233				
Bottom Logger (ft)	6169	8170				
Casing						
Size (in)	10.75	7.625				
Weight (lbm/ft)	40.5	29.7				
Inner Diameter (in)	10.036	6.875				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	1620	6169				
Bottom Logger (ft)	1620	6169				

Operational Run Summary

Parameter (unit)	2					
Date Log Started	26-Oct-2012					
Time Log Started	00:18:51					
Date Log Finished	26-Oct-2012					
Time Log Finished	05:59:09					
Top Log Interval (ft)	6169.00					
Bottom Log Interval (ft)	8170.00					
Total Depth (ft)	9233.00					
Max Hole Deviation (deg)	53.05					
Azimuth of Max Deviation (deg)	239.53					
Bit Size (in)	6.750					
Logging Unit Number	2379					
Logging Unit Location	VERNAL					
Recorded By	FOLAKE O., GARETH S.					
Witnessed By	CRAIG ROSENBAUM					

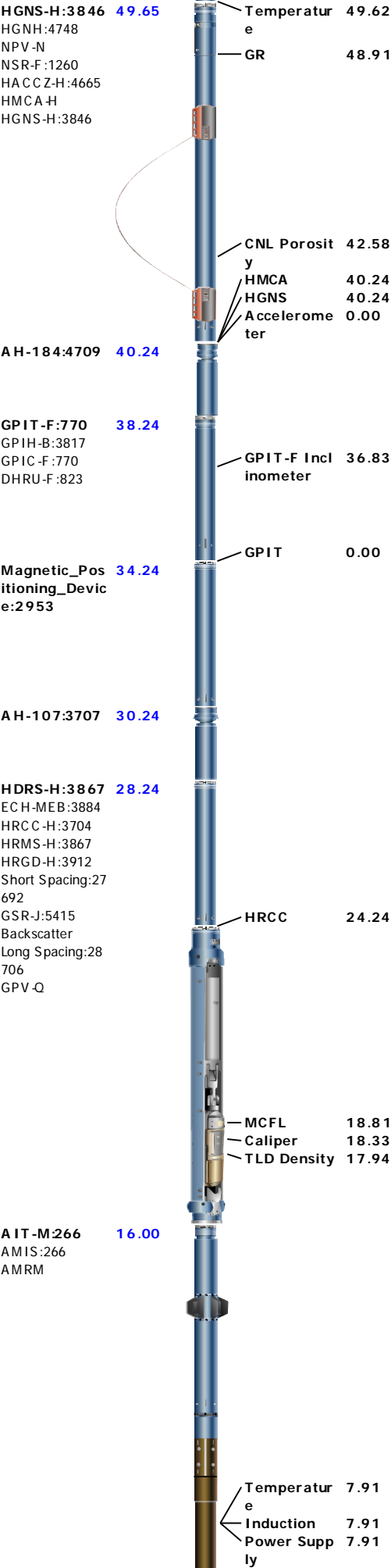
	ROSENBAUM					
Service Order Number	BXV3-00069					

Borehole Fluids

Parameter(unit)	2					
Fluid Type	Water					
Fluid Name	Silicate					
Max Recorded Temperatures (degF)	181					
Source of Sample	Active Tank					
Salinity (ppm)	2122.51					
Density (lbm/gal)	10.1					
Funnel Viscosity (s)	49					
Fluid Loss (cm3)						
PH	10					
Date/Time Circulation Stopped	25-Oct-2012 07:30:00					
Date Logger on Bottom	26-Oct-2012					
Time Logger on Bottom	02:50:42					
Source RMF	Calculated					
RMC	Calculated					
RM @ Meas Temp (ohm.m@degF)	2.5 @ 75					
RMF @ Meas Temp (ohm.m@degF)	1.88 @ 75					
RMC @ Meas Temp (ohm.m@degF)	3.13 @ 75					
RM @ BHT (ohm.m@degF)	1.5 @ 130					
RMF @ BHT (ohm.m@degF)	1.12 @ 130					
RMC @ BHT (ohm.m@degF)	1.87 @ 130					
Total Solid (%)	9					
High Gravity Solids (%)						

Remarks and Equipment Summary

2: Toolstring				2: Remarks
Equip name LEH-QT:2886 LEH-QT:2886	Length 65.72	MP name	Offset	Tool string run as per toolsketch
				Wireline tools bridged @ 8170'. Log data acquired from 8170' to casing shoe.
				No repeat pass done due to hole conditions.
DTC-H:8803 ECH-KC:10354 DTC-H:8803	62.8	CTEM HV	61.9 0.00	Maximum temperature 181 degF obtained from EDTC sensor
		ToolStatus TelStatus	59.8 59.8	Maximum deviation 53.2 deg obtained from GPIT
LDSC-B:322 LD SH-A LDSC-B:322	59.8			Bowspring used to eccentralize HGNS
		Tel Status	58.05	1 X 1" standoff used to centralize array induction tool
				Neutron data recorded on sandstone matrix.
ECS-A:130 EC SH-A EC SD-A ECS-A:130 NSR-F:4015	56.3	Detector	55.02	Matrix density of 2.68 g/cc used
				Hole size and standoff correction applied to neutron data.
				Log spliced at 8563' due to caliper malfunction at a tight spot
				Calibration check in casing is 6.875 +/- 0.1"





SP 0.08
Mud Resistivity 0.00
Head Tension
TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 6.000 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	2		
Conveyance Type	Wireline		
Log Sequence	SUBSEQUENT RUN IN HOLE		
Reference Log Date	15-Oct-2012		
Reference Log Name	PLATFORM EXPRESS		
Reference Log Run Number	1		
Rig Type	LAND		
Depth Remark Parameters	2		
Depth Remark 1	All depth procedures followed as per Schlumberger depth control standard dated April 7th, 2010.		
Depth Remark 2	IDW used as primary depth control.		
Depth Remark 3	Z chart used as secondary depth control.		
Depth Remark 4	Log correlated to reference log over the interval of 4500' - 6000'		
Depth Measuring Device	2		
Type	IDW-B		
Serial Number	5916		
Calibration Date	20-AUG-2012		
Calibration Cable Type	7-46 AXS		
Wheel Correction 1	-7		
Wheel Correction 2	-4		
Tension Device	2		
Type	CMTD-B/A		
Serial Number	8903		
Calibration Date	09-OCT-2012		
Calibrator Serial Number	100518A		
Calibration Points	10		
Calibration RMS	33		
Calibration Peak Error	78		
Logging Cable	2		
Type	7-46A-XS		
Serial Number	U711172		
Logging Cable Length (ft)	24000.00		

2

Main Pass

Integration Summary

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
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Software Version

Acquisition System	Version
MaxWell	3.1.9755.0
Application Patch	SP-20120723-3.1.9755.1112
	EXP_APL-MASTAXIS-3.1.9755.1221

Tool Elements	Description	Software Version	Firmware Version
ECS-A	The ECS sonde is used to measure elemental concentrations.	3.1.9755.0	
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	3.1.9755.0	2.0

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
2	Log[4]:Up	Up	2866.37 ft	8614.98 ft	26-Oct-2012 2:49:46 AM	26-Oct-2012 4:48:52 AM	26.08 ft	true

All depths are referenced to toolstring zero

Log

2: Log[4]:Up




Description: ECS SpectroLith Format: Log (ECS SpectroLith) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 26-Oct-2012 06:51:14

Channel	Source	Sampling
CS	WLWorkflow	6in
DWAL_WALK2	ECS-A:ECS-A:ECS-A	6in
DWAL_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWAL_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DWCA_WALK2	ECS-A:ECS-A:ECS-A	6in
DWCA_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWCA_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DWFE_WALK2	ECS-A:ECS-A:ECS-A	6in
DWFE_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWFE_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DWSI_WALK2	ECS-A:ECS-A:ECS-A	6in
DWSI_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWSI_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DWSU_WALK2	ECS-A:ECS-A:ECS-A	6in
DWSU_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWSU_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DWTI_WALK2	ECS-A:ECS-A:ECS-A	6in
DWTI_WALK2_MI	ECS-A:ECS-A:ECS-A	6in
DWTI_WALK2_PL	ECS-A:ECS-A:ECS-A	6in
DXFE_WALK2	ECS-A:ECS-A:ECS-A	6in
GR	HGNS-H:HGNS-H:HGNS-H	6in
LQC_SPEC	ECS-A:ECS-A:ECS-A	6in
TENS	WLWorkflow	6in
TIME_1900	WLWorkflow	0.1in

TIME_1900 - Time Marked every 60.00 (s)





SpectroLith LQC status image object (LQC_SPEC) ECS-A

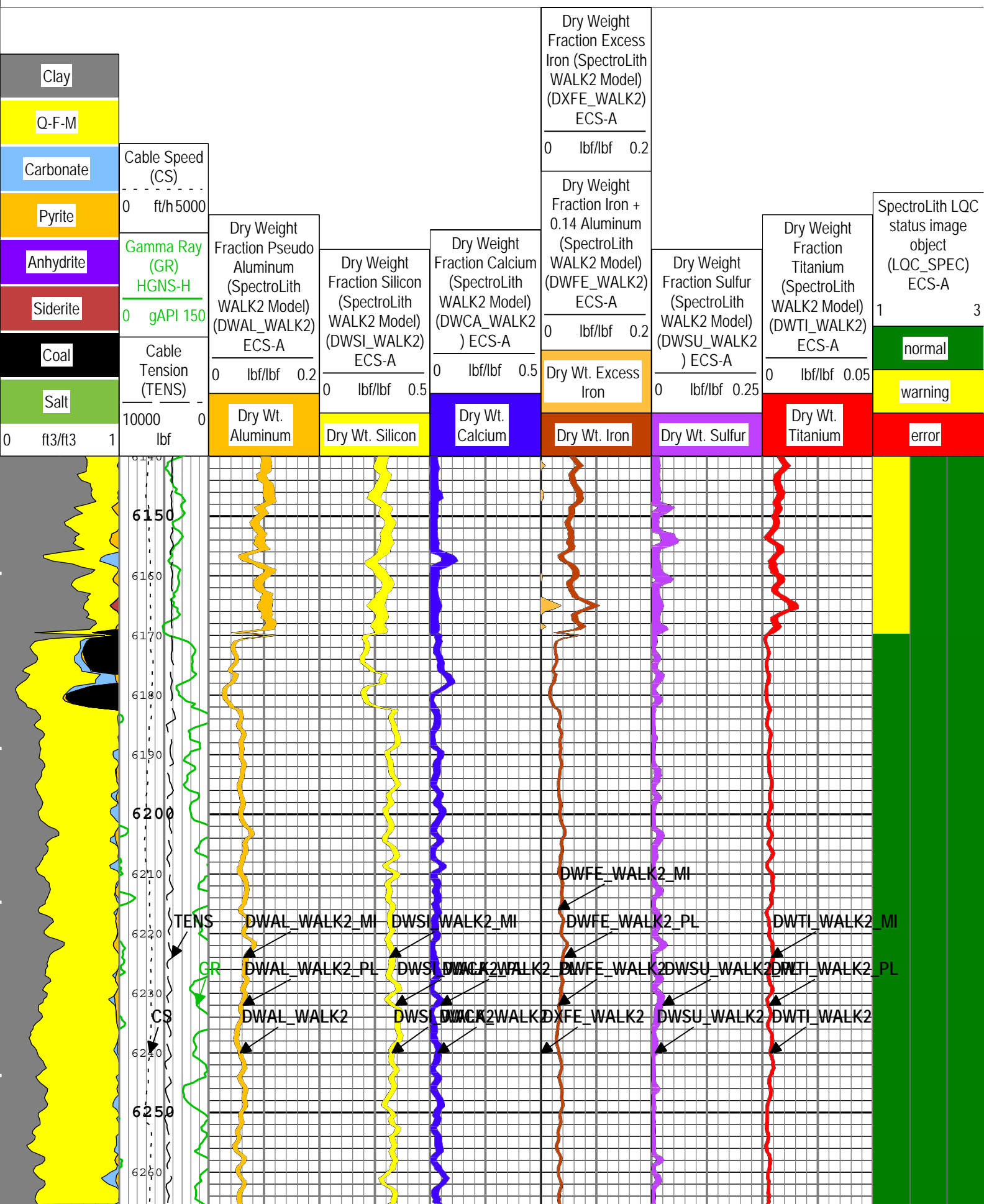
1 - Elemental Statistical Uncertainty Quality Check (ESUF_WALK2) - :

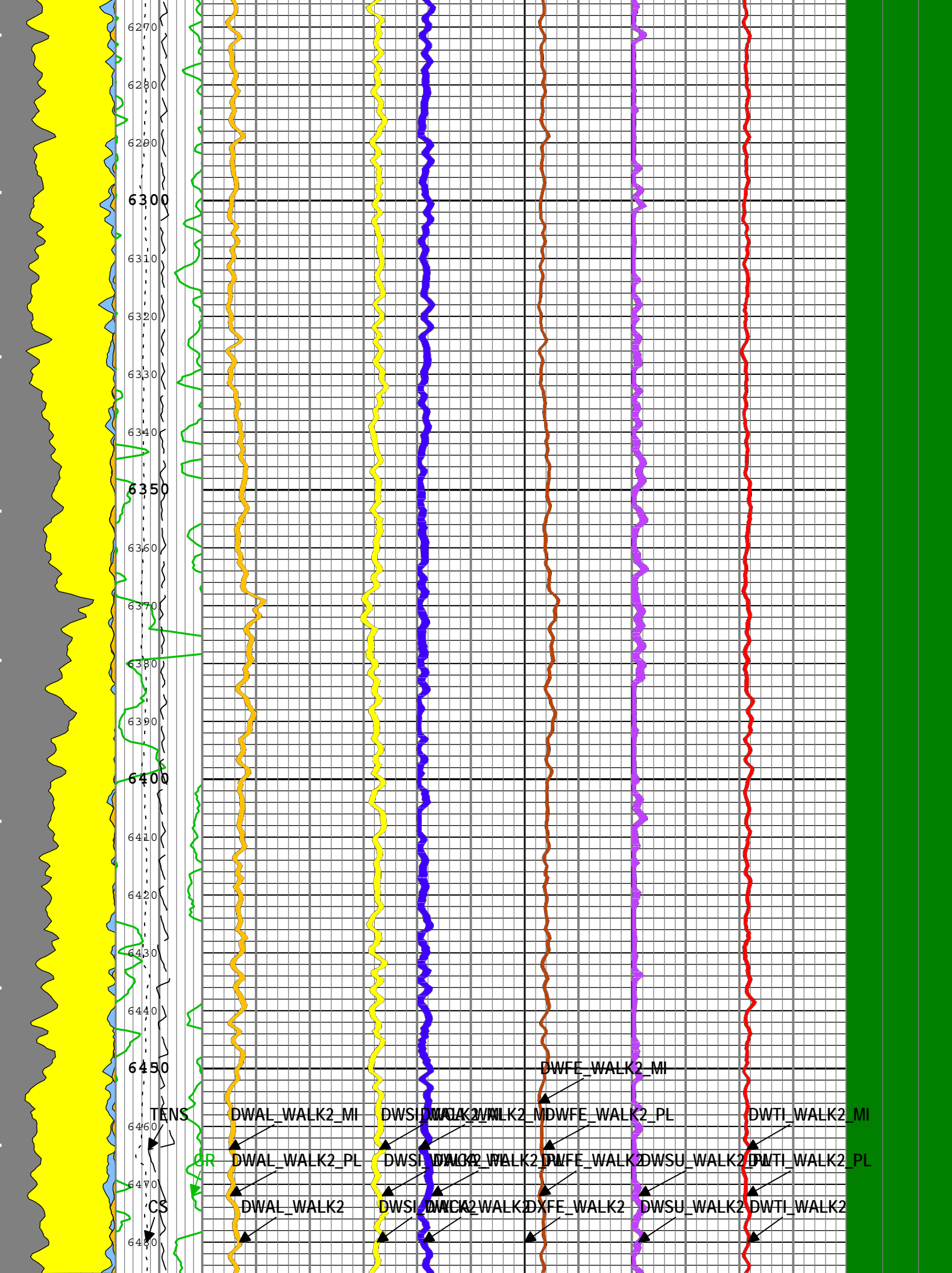
-  Elemental Statistical Uncertainty Quality Check: Normal
-  Elemental Statistical Uncertainty Quality Check: Warning
-  Elemental Statistical Uncertainty Quality Check: Error

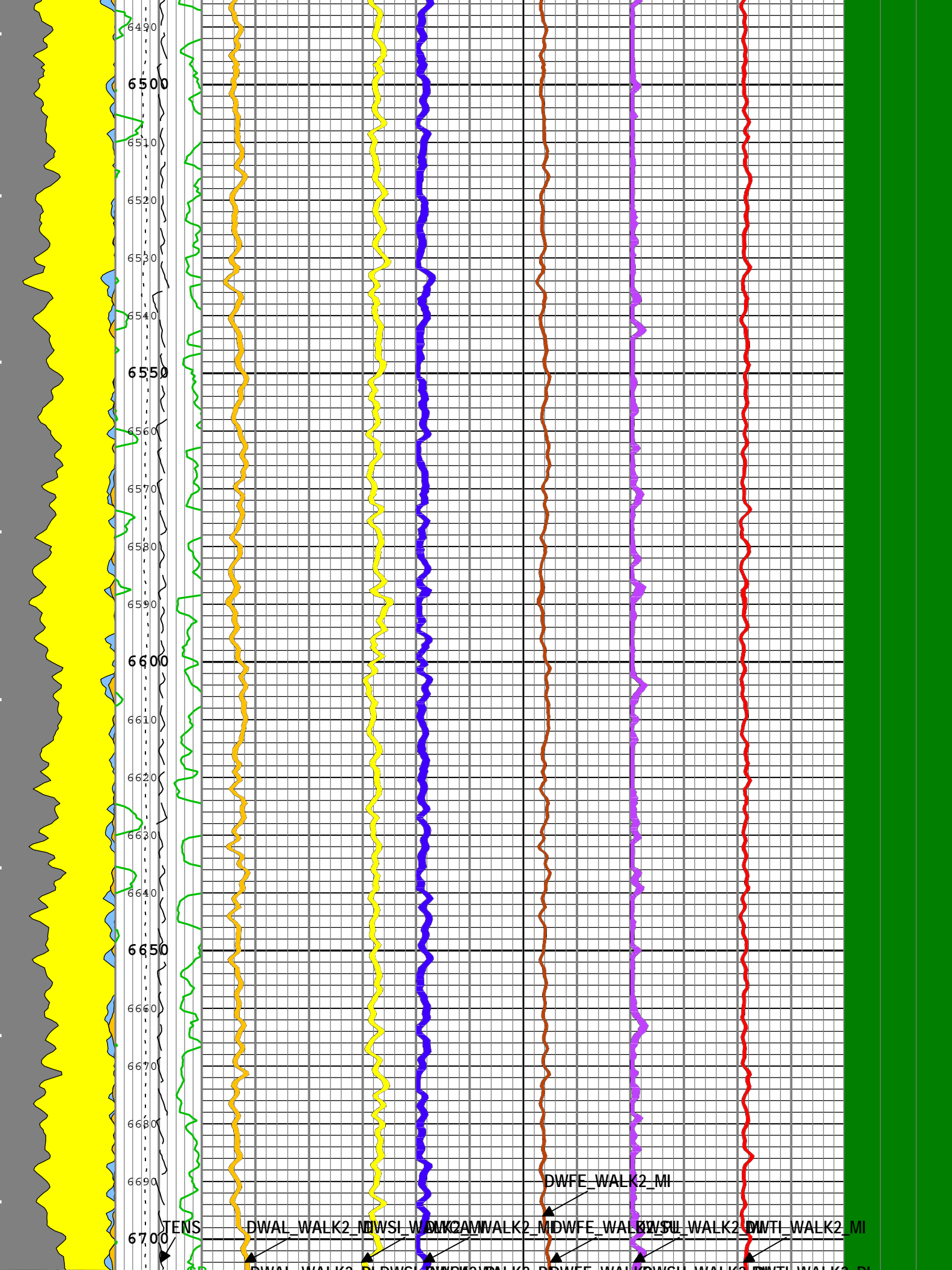
2 - BGO Crystal Temperature Quality Check (ECST) - :

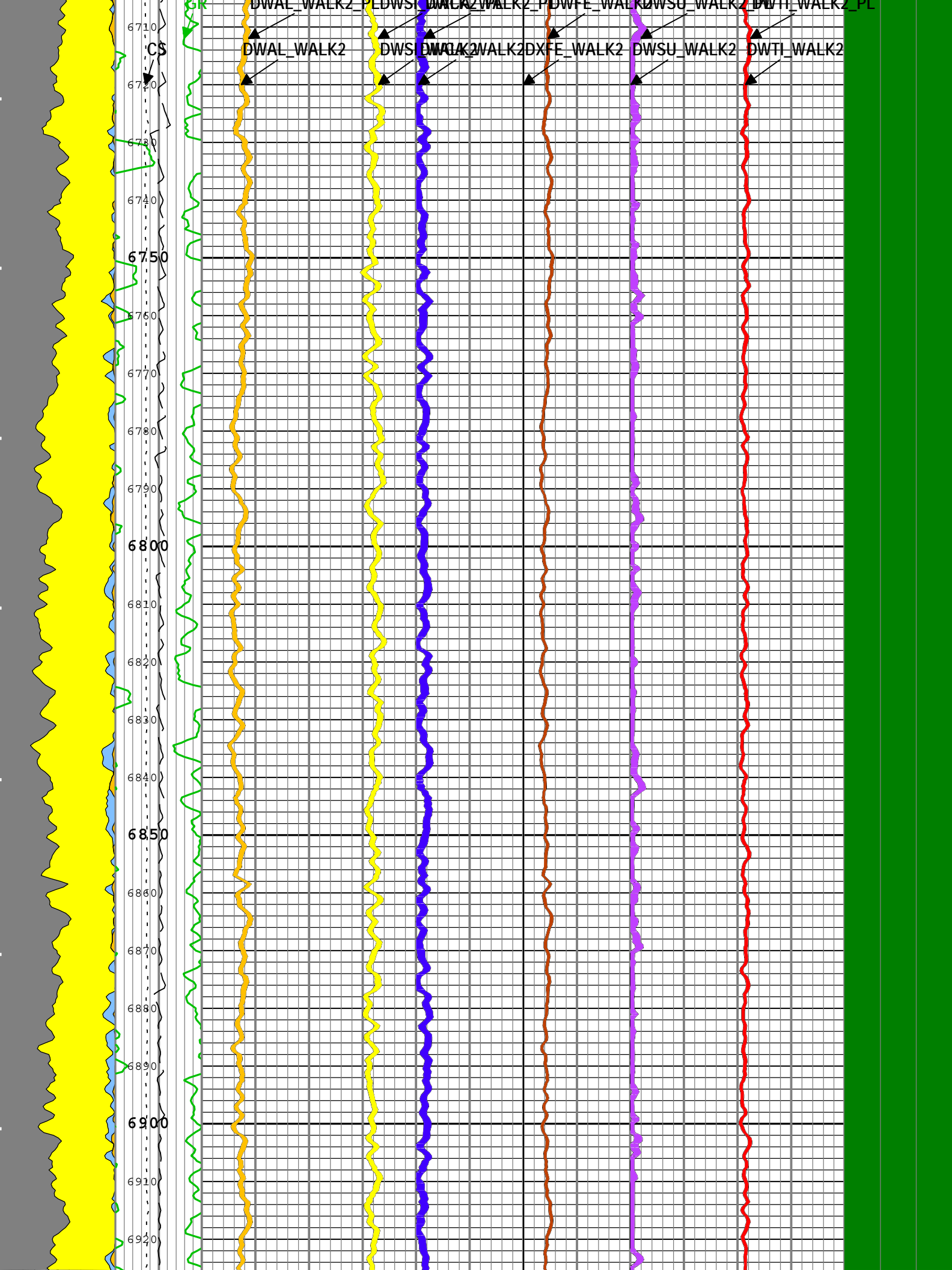
-  Temperature Quality Check < 40 °C

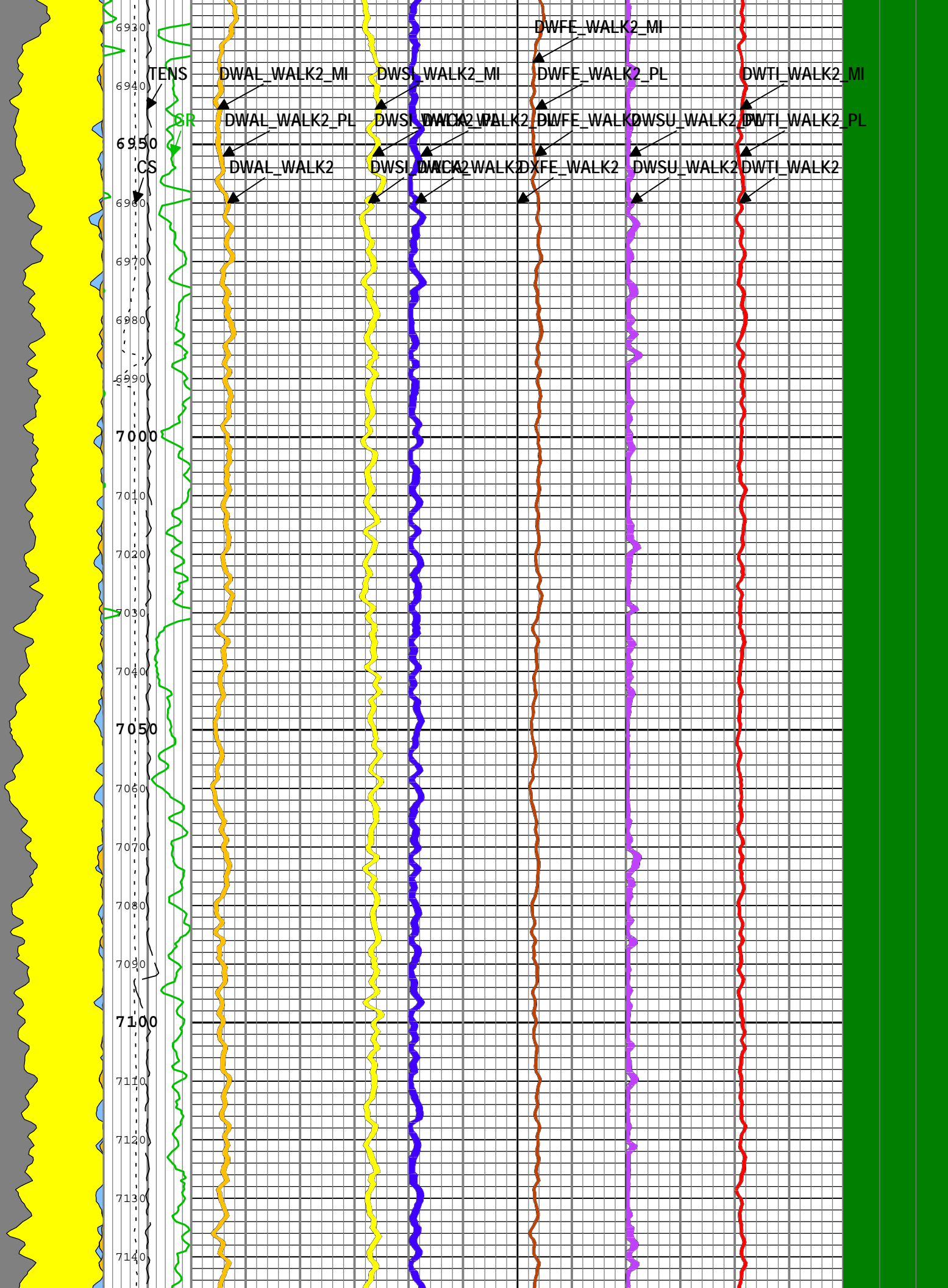
-  40 °C <= Temperature Quality Check < 70 °C
-  Temperature Quality Check >= 70 °C
-  Photomultiplier Status: Normal
-  Photomultiplier Status: Error (> 2.75)

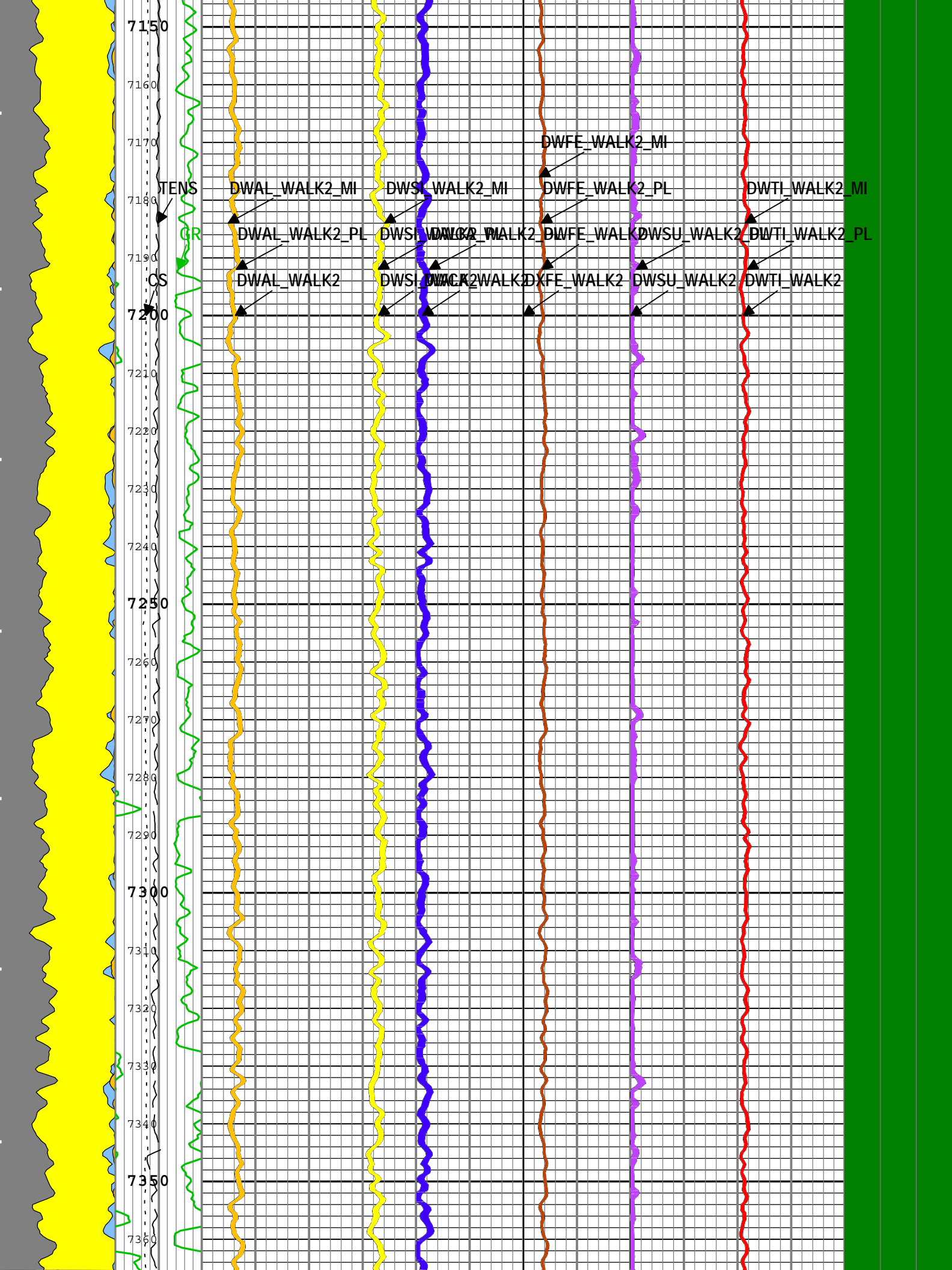


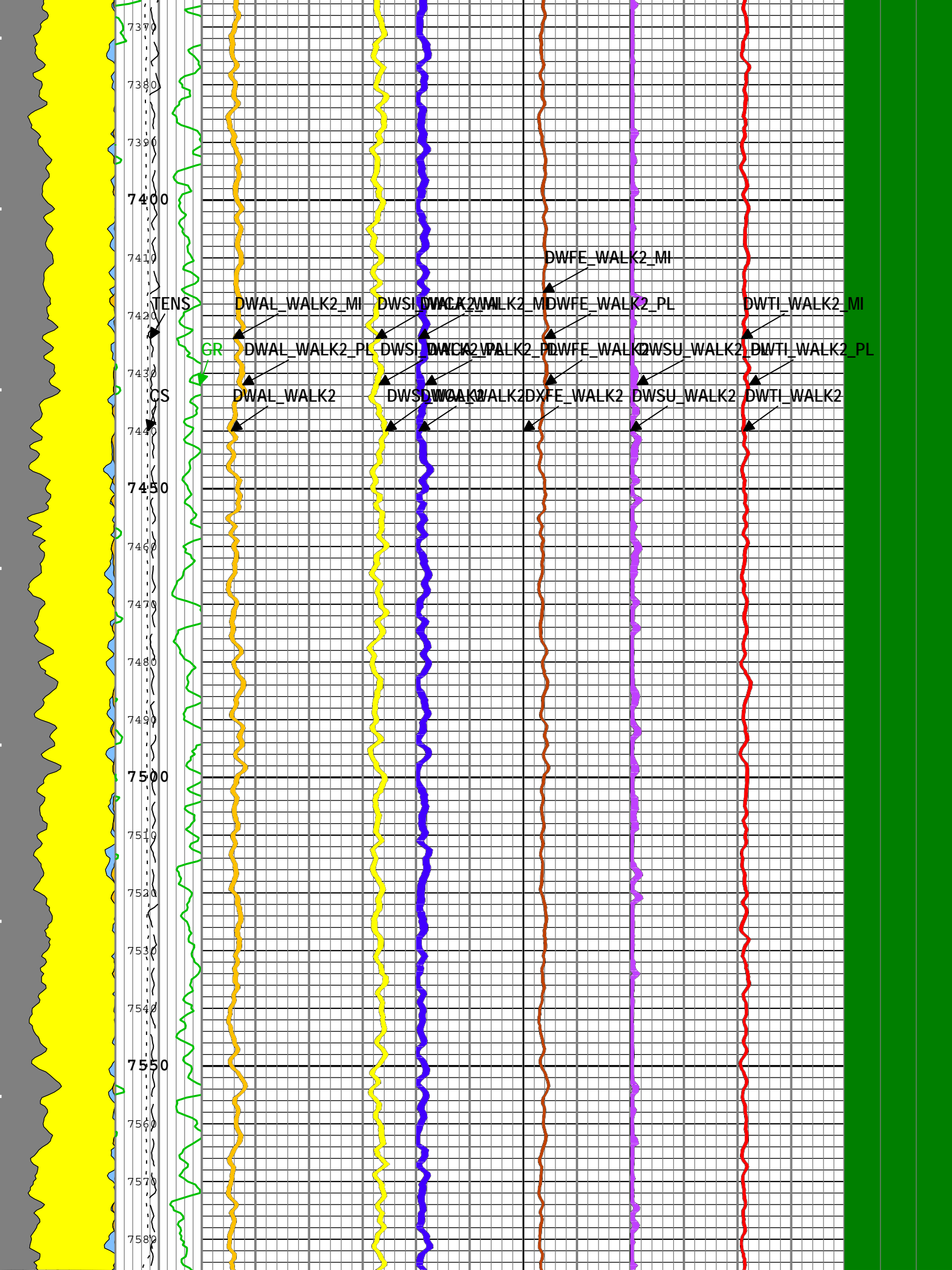


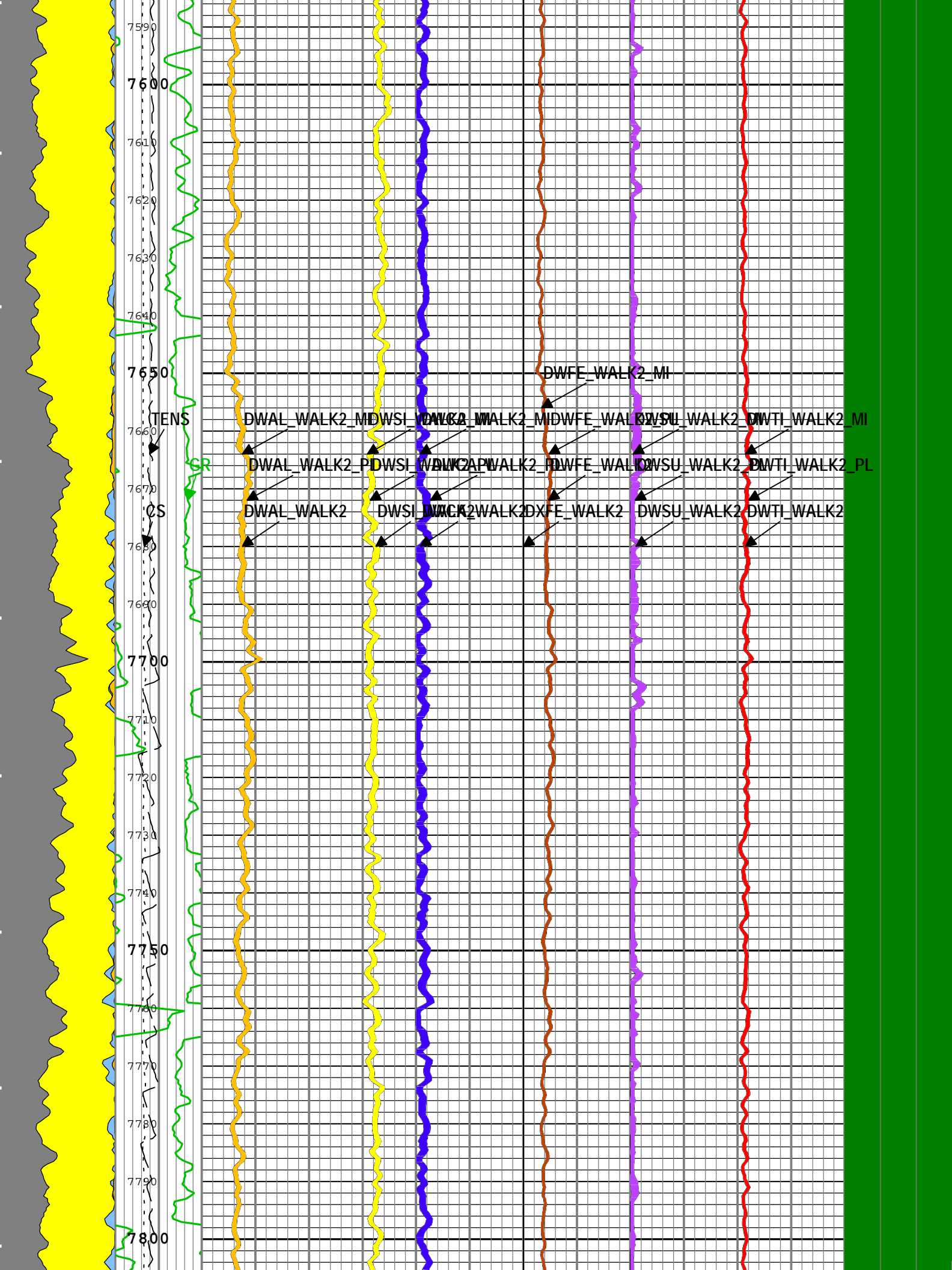


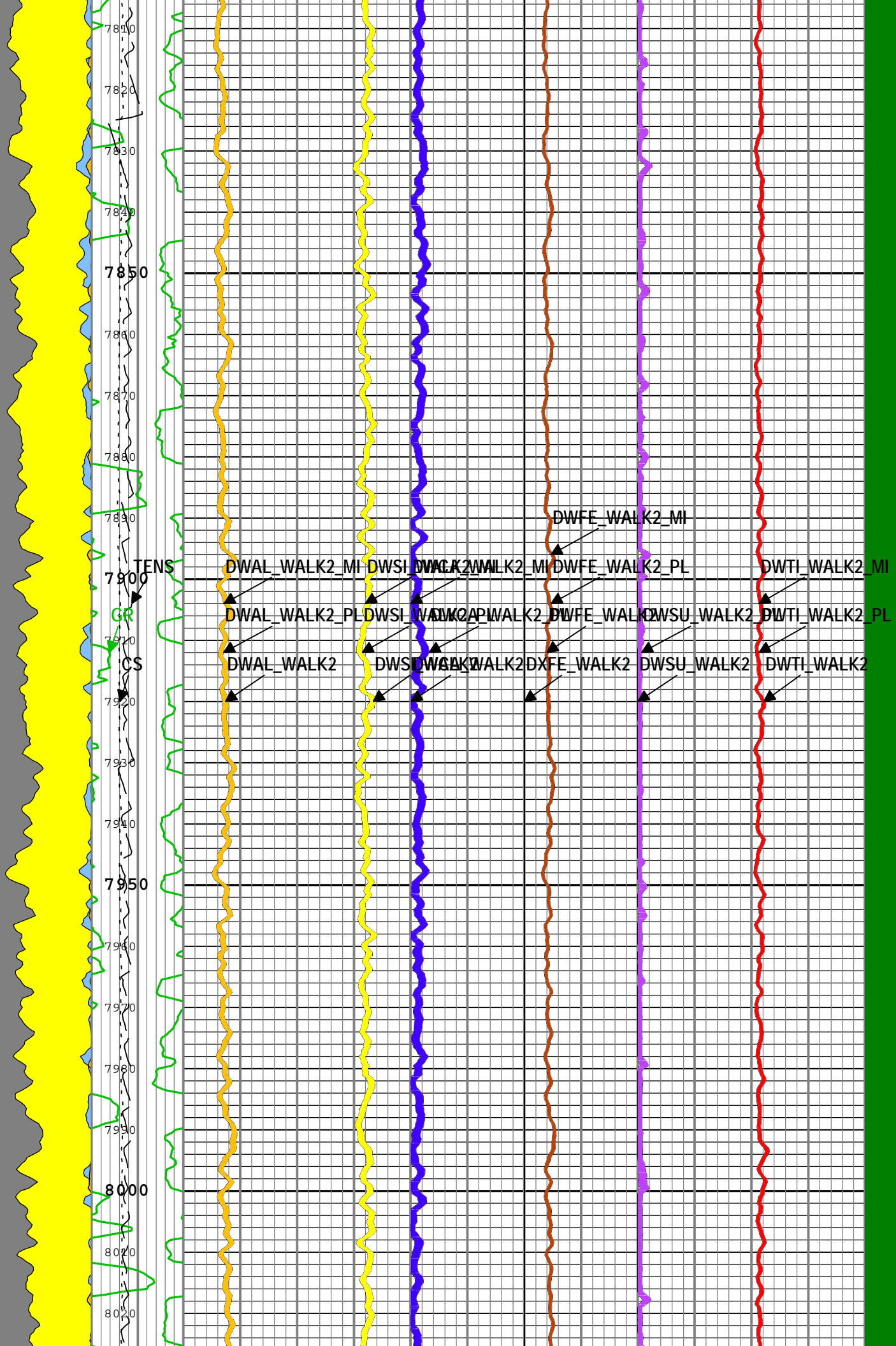


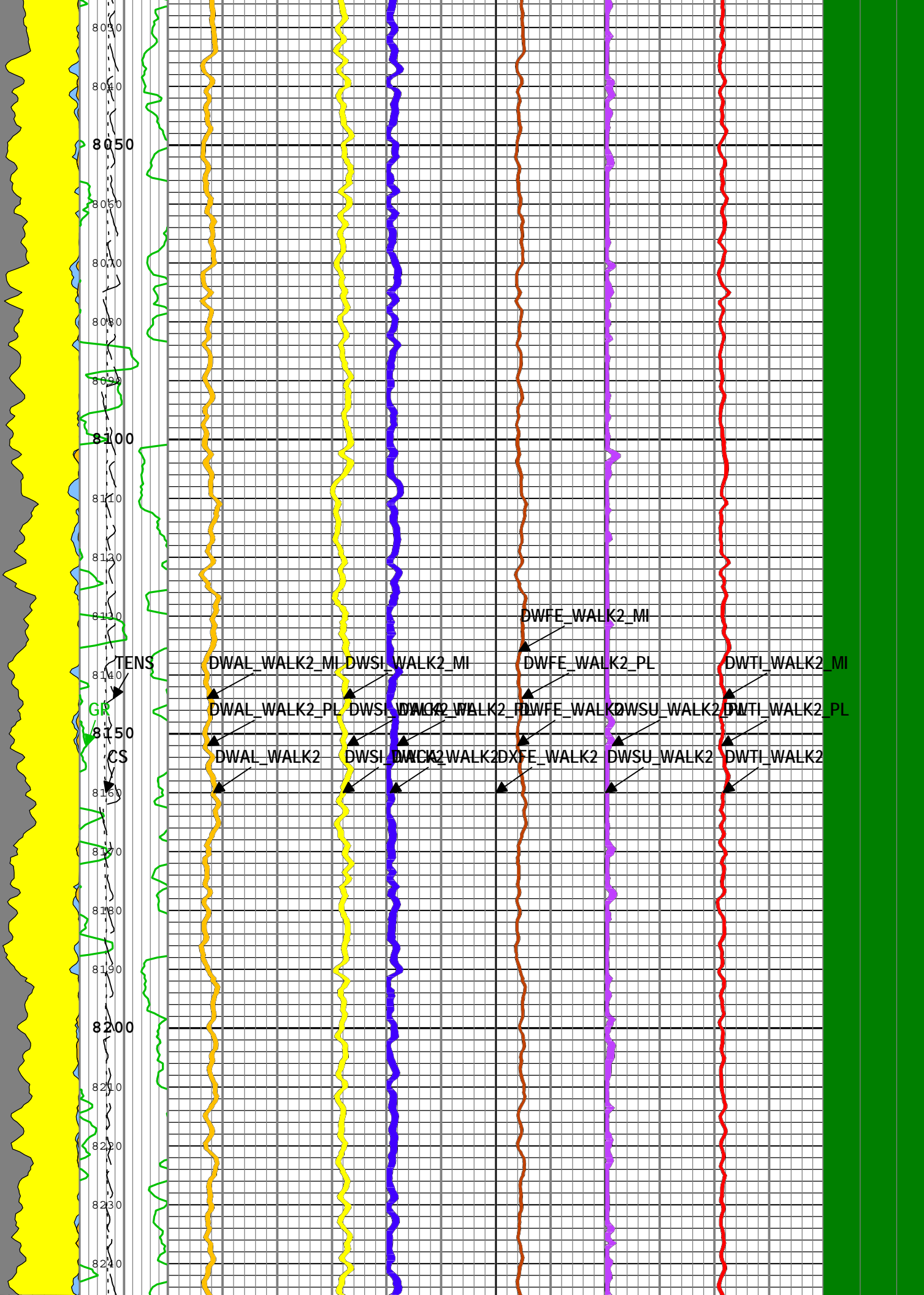


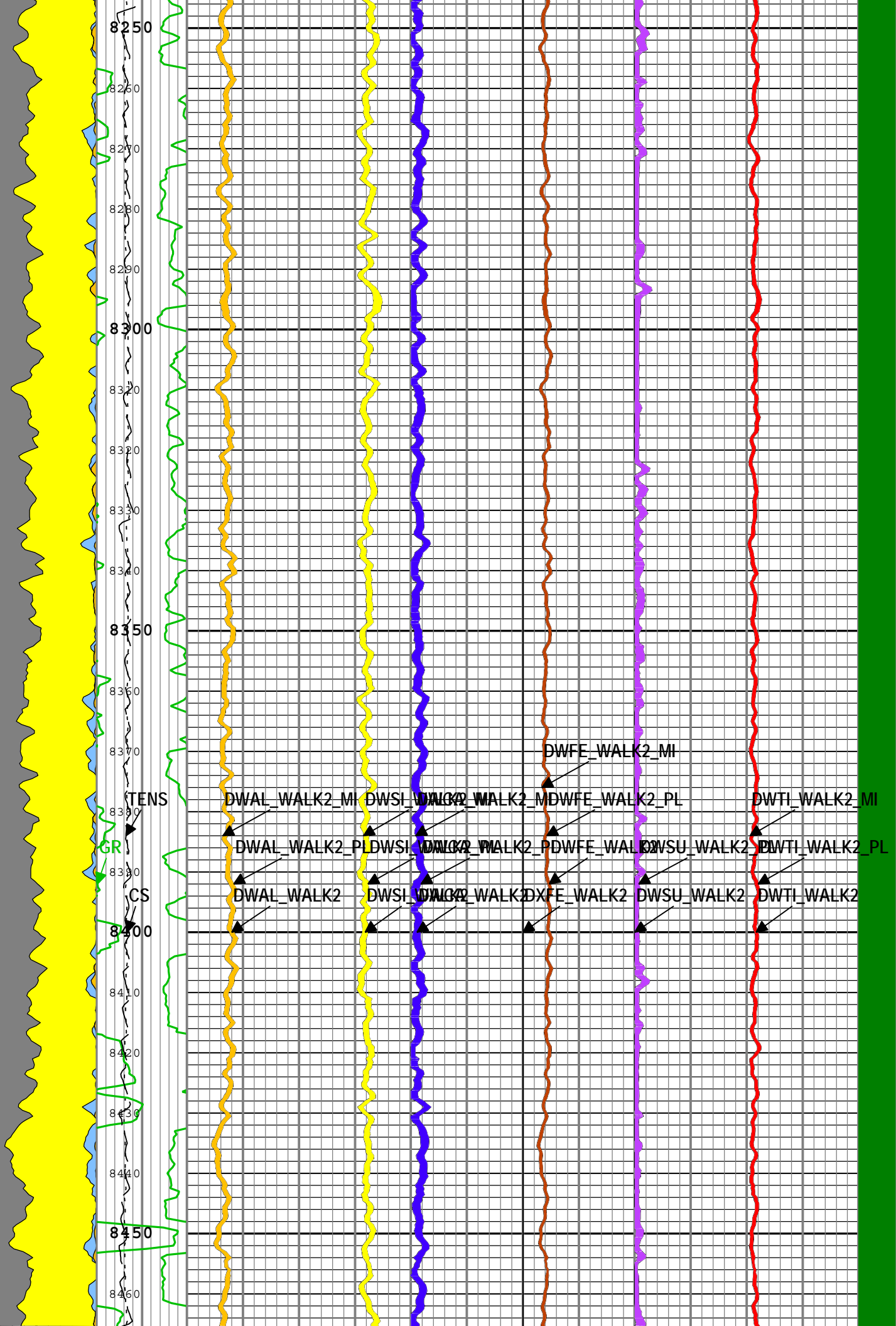


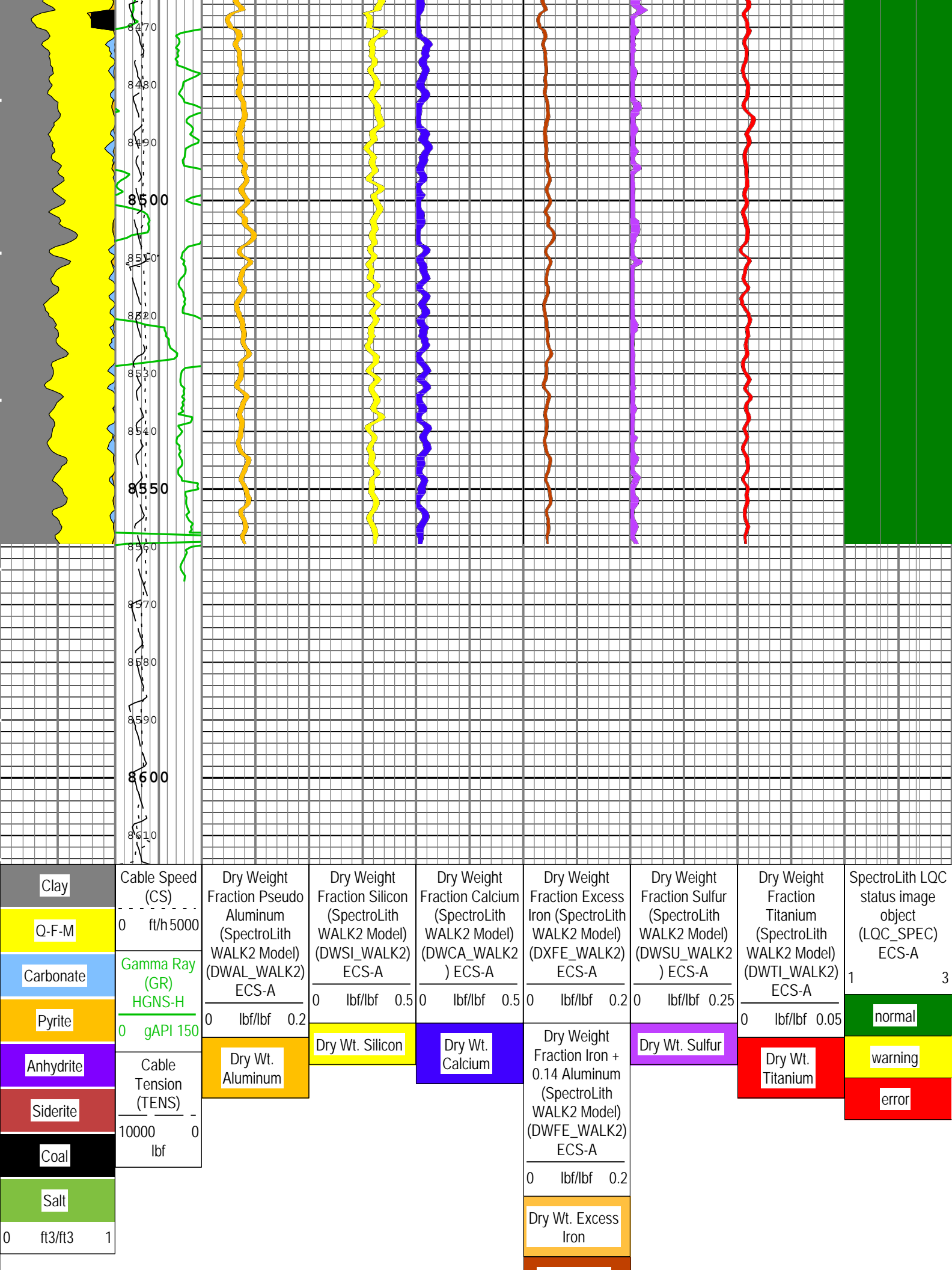












SpectroLith LQC status image object (LQC_SPEC) ECS-A

1 - Elemental Statistical Uncertainty Quality Check (ESUF_WALK2) - :



Elemental Statistical Uncertainty Quality Check: Normal



Elemental Statistical Uncertainty Quality Check: Warning



Elemental Statistical Uncertainty Quality Check: Error

2 - BGO Crystal Temperature Quality Check (ECST) - :



Temperature Quality Check < 40 °C



40 °C <= Temperature Quality Check < 70 °C



Temperature Quality Check >= 70 °C

3 - Photomultiplier Status (QCPMT) - :



Photomultiplier Status: Normal



Photomultiplier Status: Error (> 2.75)

TIME_1900 - Time Marked every 60.00 (s)

Description: ECS SpectroLith Format: Log (ECS SpectroLith) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 26-Oct-2012 06:51:14

Channel Processing Parameters				
Parameter	Description	Tool	Value	Unit
BARI	Barite Mud Presence Flag	Borehole	Yes	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-H	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	6169	ft
CDEN	Cement Density	HGNS-H	2	g/cm3
DFD	Drilling Fluid Density	Borehole	10.1	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
SOCO	Standoff Correction Option	HGNS-H	Yes	

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	9.875	6140	6169
BS	6.75	6169	8615

All depth are actual.

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h

Calibration Report

ECS-A (Elemental Capture Spectroscopy Tool) Calibration - Run 2

Primary Equipment :

The ECS sonde is used to measure elemental concentrations. ECS-A 130

Auxiliary Equipment :

Litho-Density Spectroscopy Cartridge LDSC-B 322

Housing for the LDSC LDSC-A

Housing to contain the ECS Sonde Assembly ECSC-A

The gamma ray BGO detector is used to detect prompt capture gamma rays for spectroscopy measurement. ECSD-A

The AmBe source provides neutrons for the prompt capture spectroscopy measurement. NSR-F 4015

ECS Background Measurement Check - ECS Calibration Check

Master: Before (Measured): 09:01:59 24-Oct-2012 After: Expired by 1 days

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Detector resolution (20 Bq/g)	%	Master	12.000	11.000	NOT DONE	14.000	

Detector resolution (20 DegC)	%	Master	13.000	11.200	NOT DONE	14.000	
		Before	13.000	11.200	13.125	14.000	
		After	13.000	11.200	NOT DONE	14.000	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

ECS Spectral Calibration - ECS Spectral Calibration

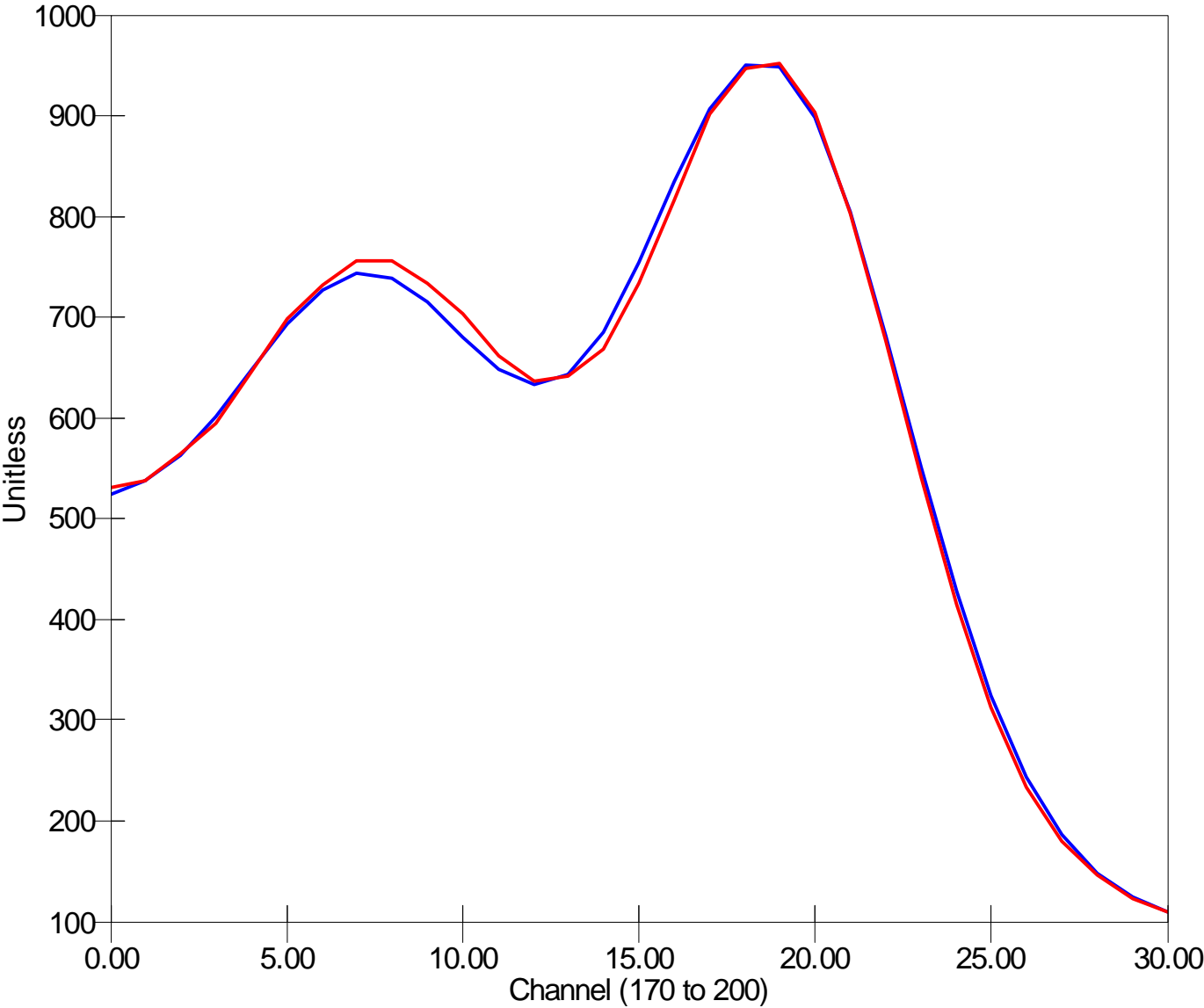
Master (EEPROM): 05:12:01 26-Oct-2012

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Spectral Shift Factor		Master	1.000	-0.500	-0.214	1.500	

Spectrum Without Shift Plot

SHOP

— FITTED_SPEC (FITTED_SPEC)
— DATA_SPEC (DATA_SPEC)

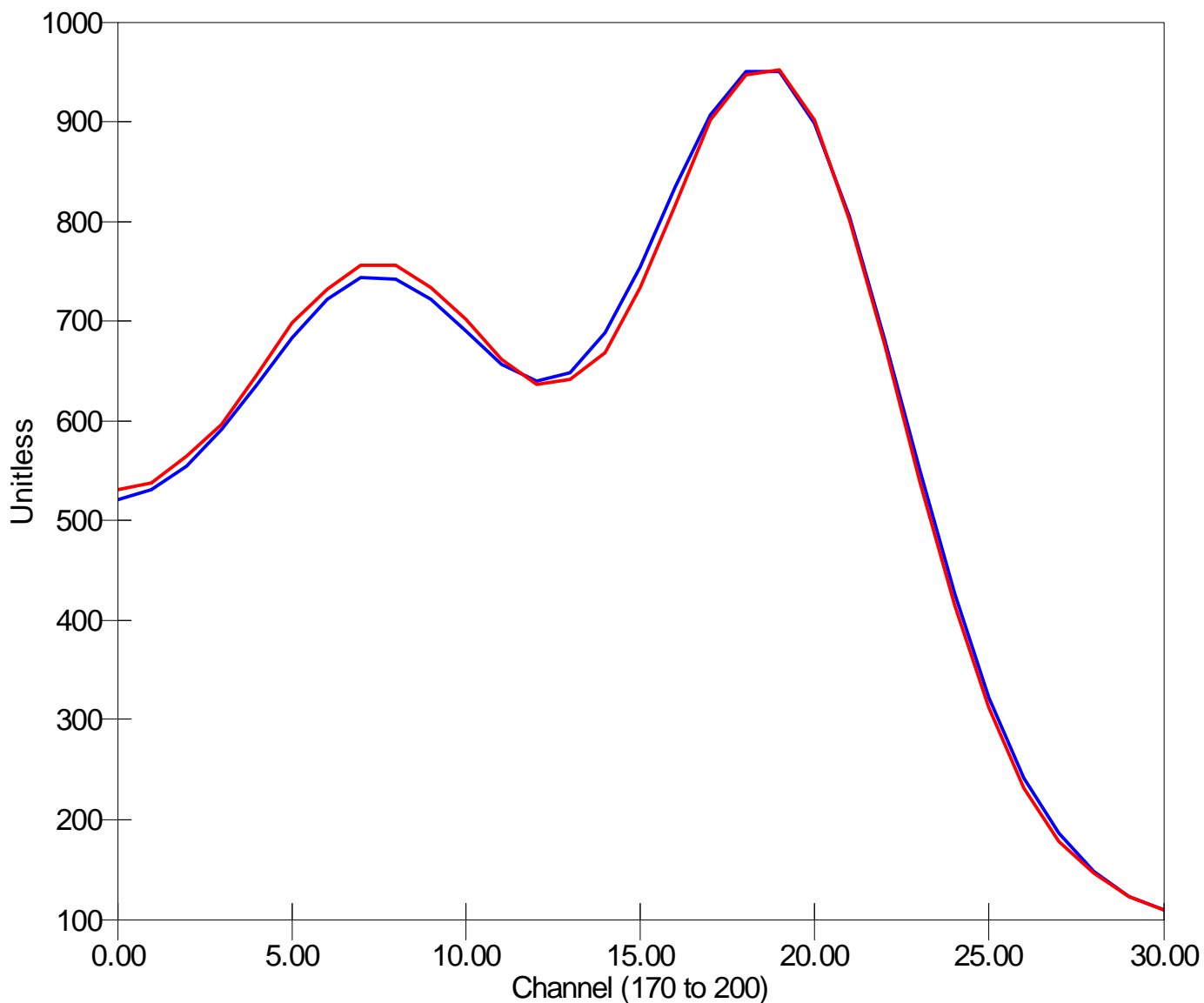


Spectrum With Shift Plot

SHOP

SHOP

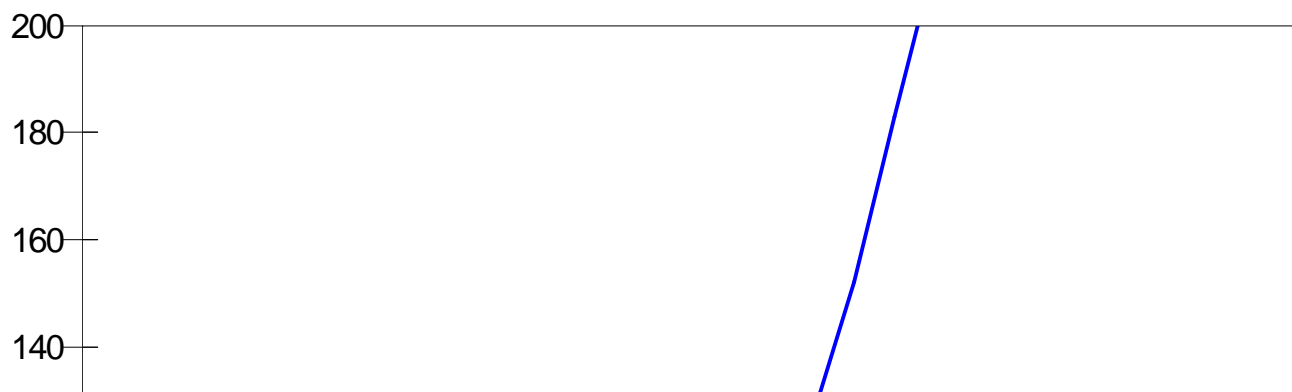
FITTED_SPEC_SF (FITTED_SPEC_SF)
DATA_SPEC_SF (DATA_SPEC_SF)

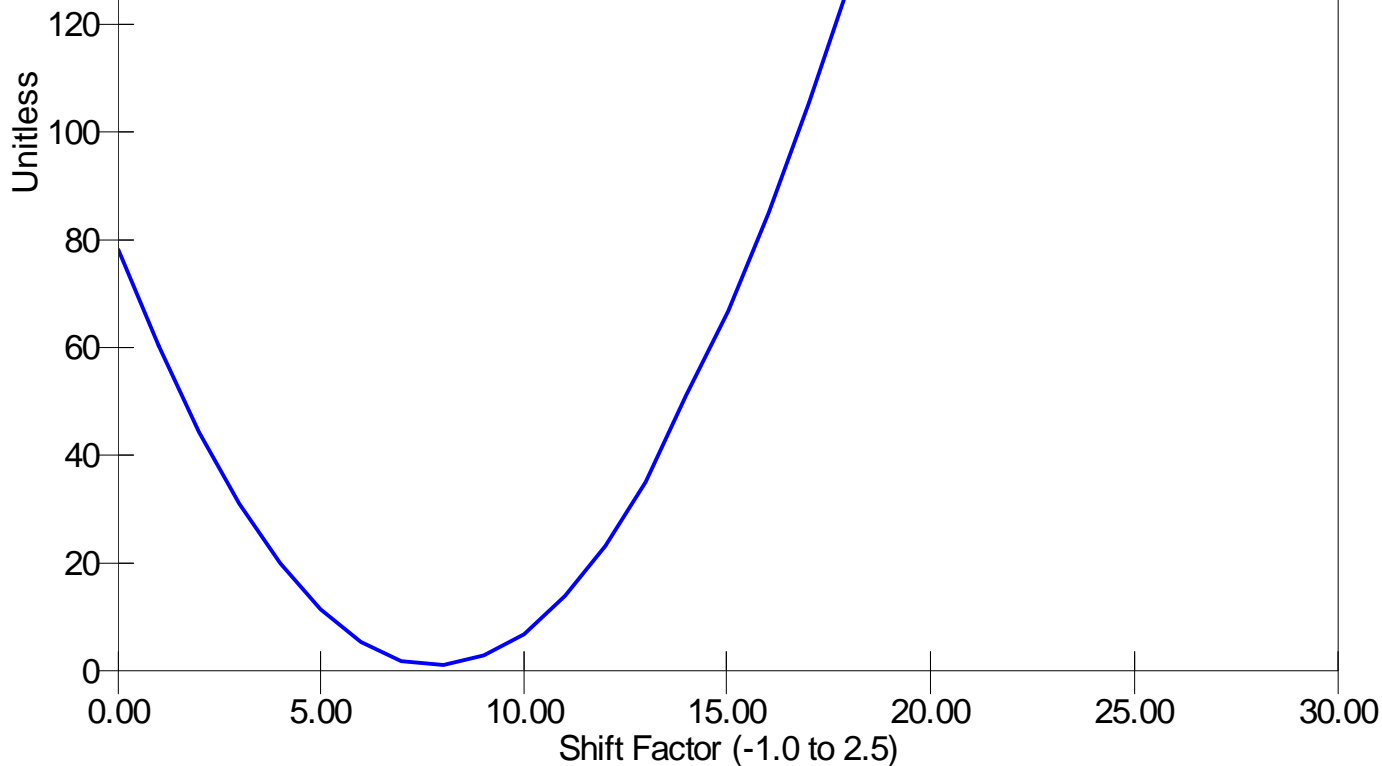


Chi Square for Spectral Fit Plot

SHOP

CHISQ_SPEC_FIT





Company:	SHELL	Schlumberger
Well:	DAWSON CREEK 1 25	
Field:	WILLIAMS FORK UNIT	
County:	ROUTT	
State:	COLORADO	

Elemental Capture Spectroscopy
Field Print