

Company: Noble Energy Inc

Well: Mahalo State AA09-78HNC  
Field: Wattenberg  
County: Weld State: Colorado

County: Weld			
Field: Wattenberg			
Location: SWSW Sec. 4 T6N R63W			
Well: Mahalo State AA09-78HNC			
Company: Noble Energy Inc			
USI-LITE (2500 psi)			
Permanent Datum: Log Measured From: Drilling Measured From:		GL KB KB	Elev: K.B. 4722.0 F G.L. 4698.0 F D.F. 4721.0 F
API Serial No. 05-123-39099-0000		Section 4	Township 6N
Logging Date 03-Mar-2015		Range 63W	
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Fluid Level			
Salinity			
Density			
Fluid Level			
BIT/CASING/TUBING STRING			
Bit Size			
From			
To			
Casing Size			
Weight			
Grade			
From			
To			
Max Recorded Temp			
Logger on bottom (date)			
Location			
Recorded By			
Witnessed By			

DEPTH SUMMARY LISTING

DEPTH SYSTEM EQUIPMENT

Depth Measuring Device	Tension Device	Logging Cable
Type: Serial Number: Calibration Date: Calibration Cable Type: Wheel Correction 1: Wheel Correction 2:	Type: Serial Number: 1109 Calibration Date: Calibrator Serial Number: Number Of Calibration Points: Calibration RMS: Calibration Peak Error:	Serial Number: U711136 Length: 17300.00000

DISCLAIMER

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0 PSI run on repeat pass and 2500 PSI run on main pass.

Top of cement seen at @ 330'. Expected TOC @ 1000'.

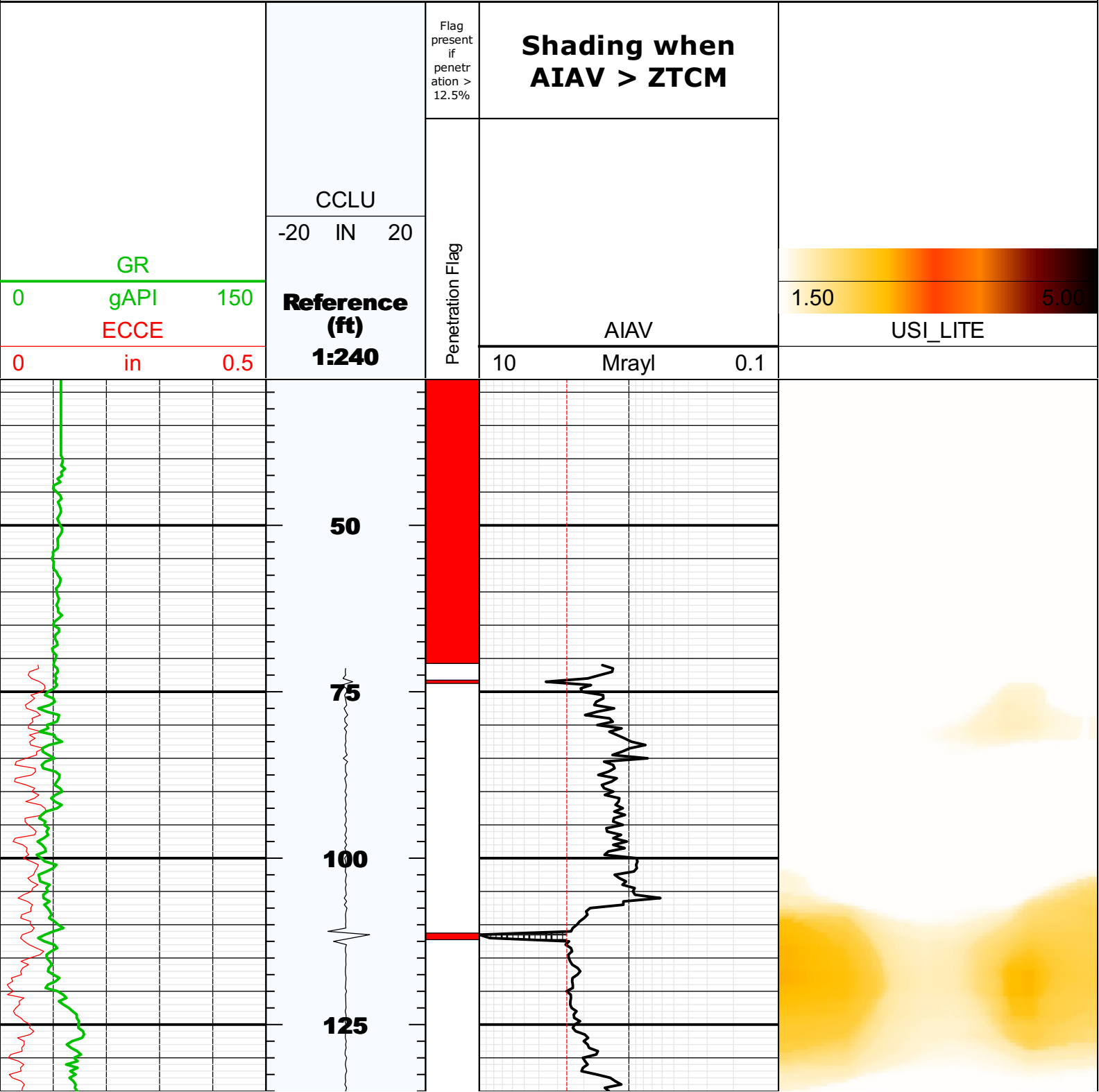
Top of 4.5 liner at 6851.4'.

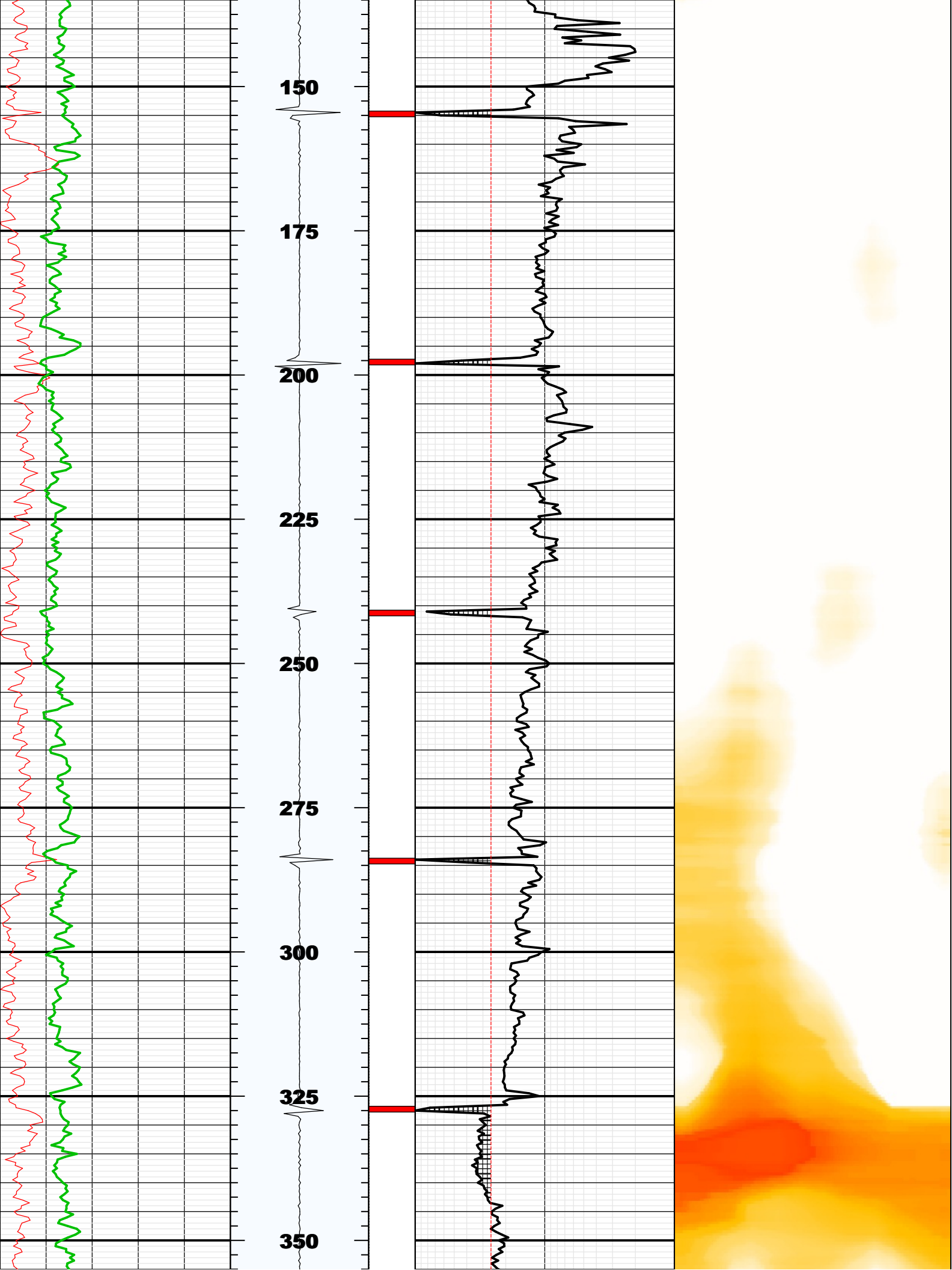
Bottom log interval at 6840' to maintain distance from top of liner.

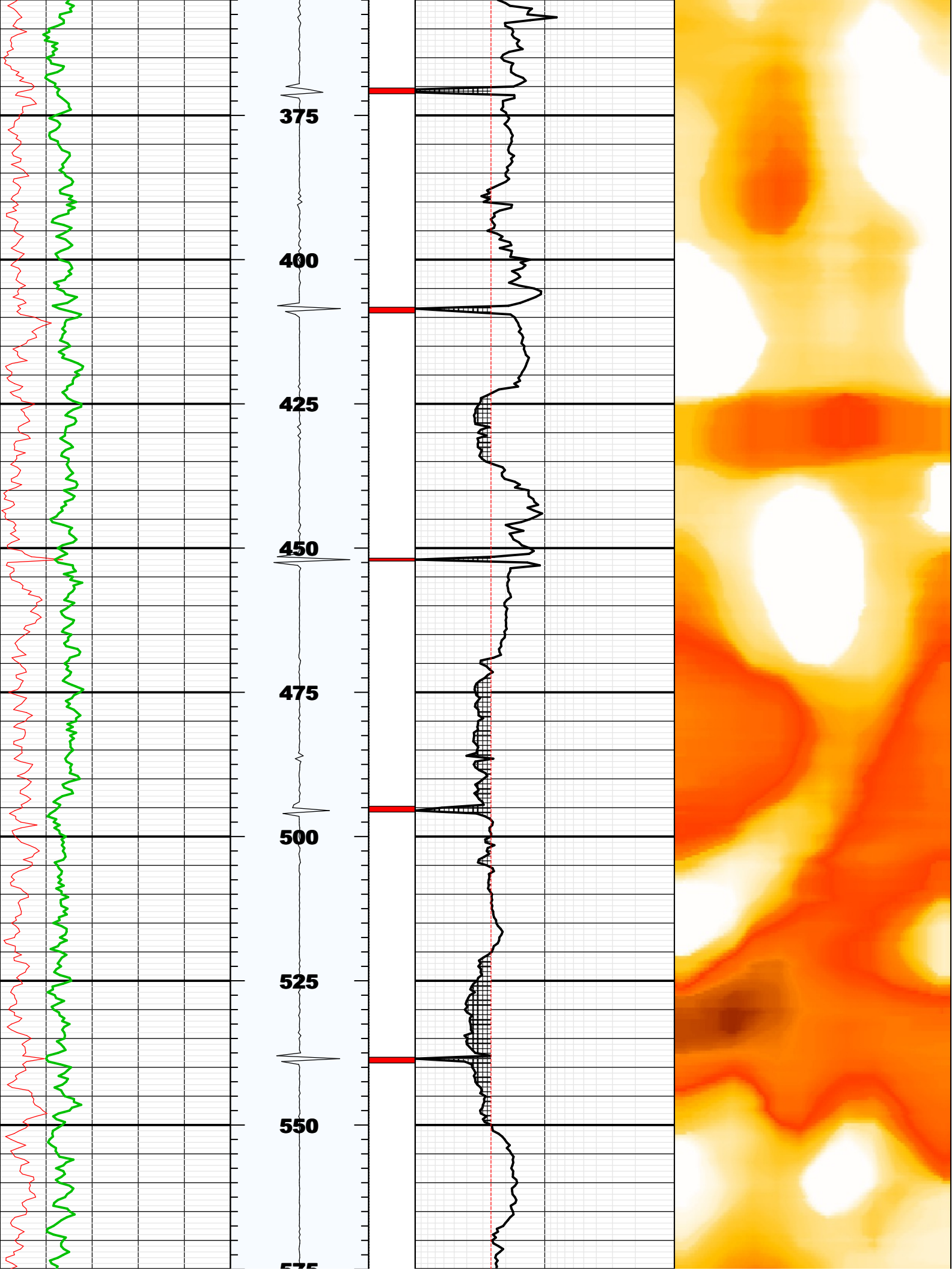
Bottom hole temperature was 225 degF measured at depth.

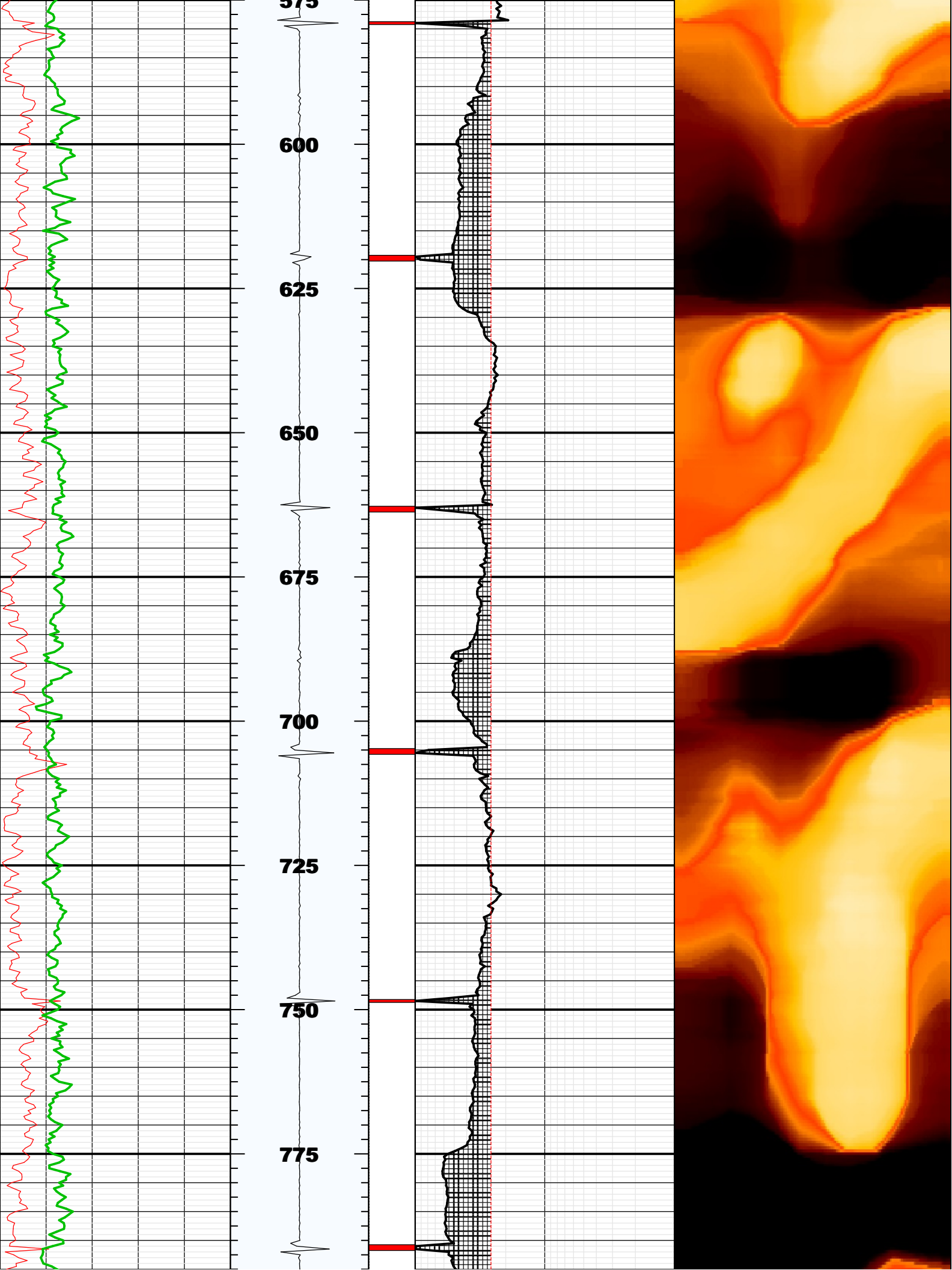
Main Pass

Company: Noble Energy Inc  
Well: Mahalo State AA09-78HNC  
Field: Wattenberg

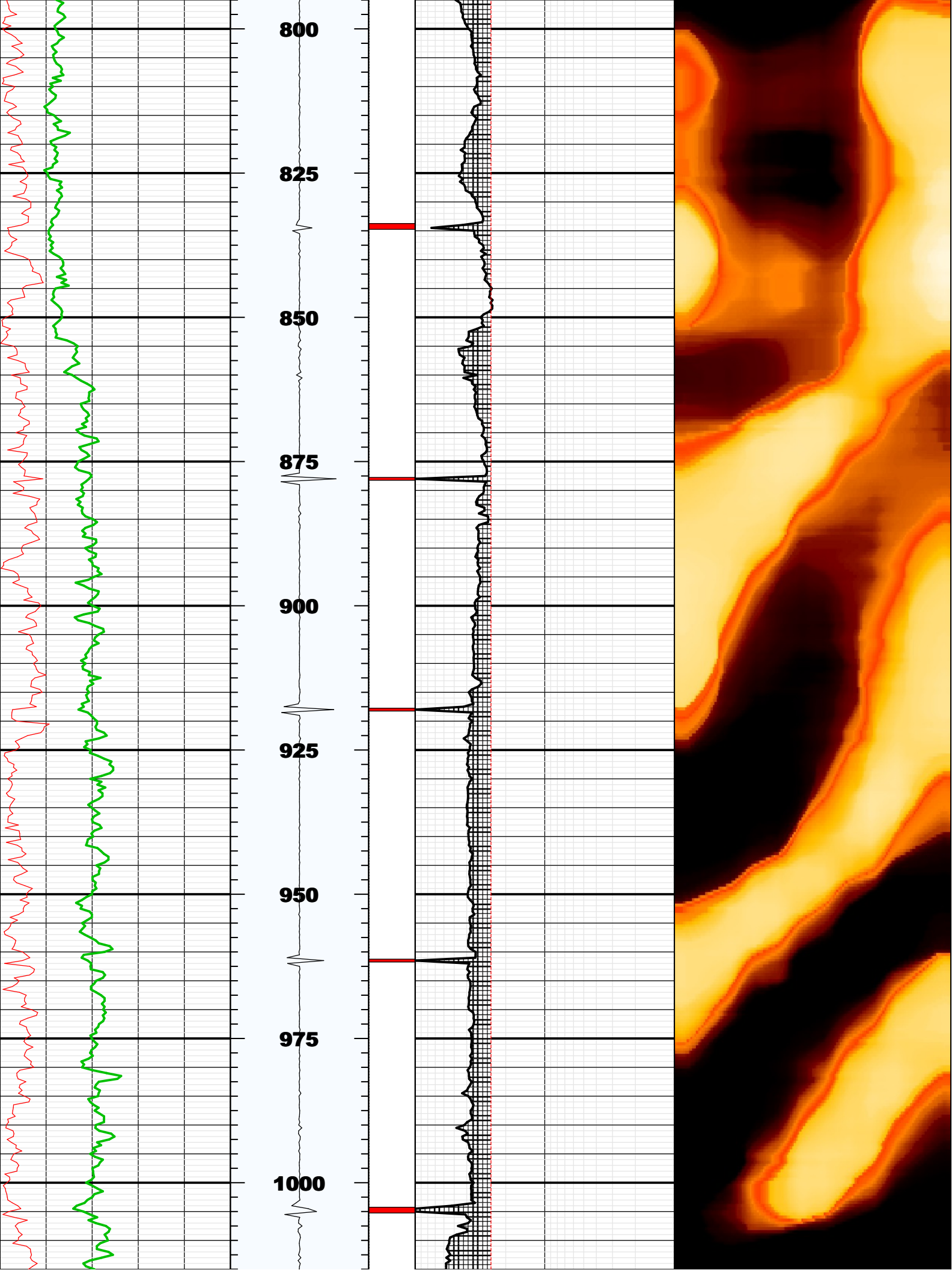


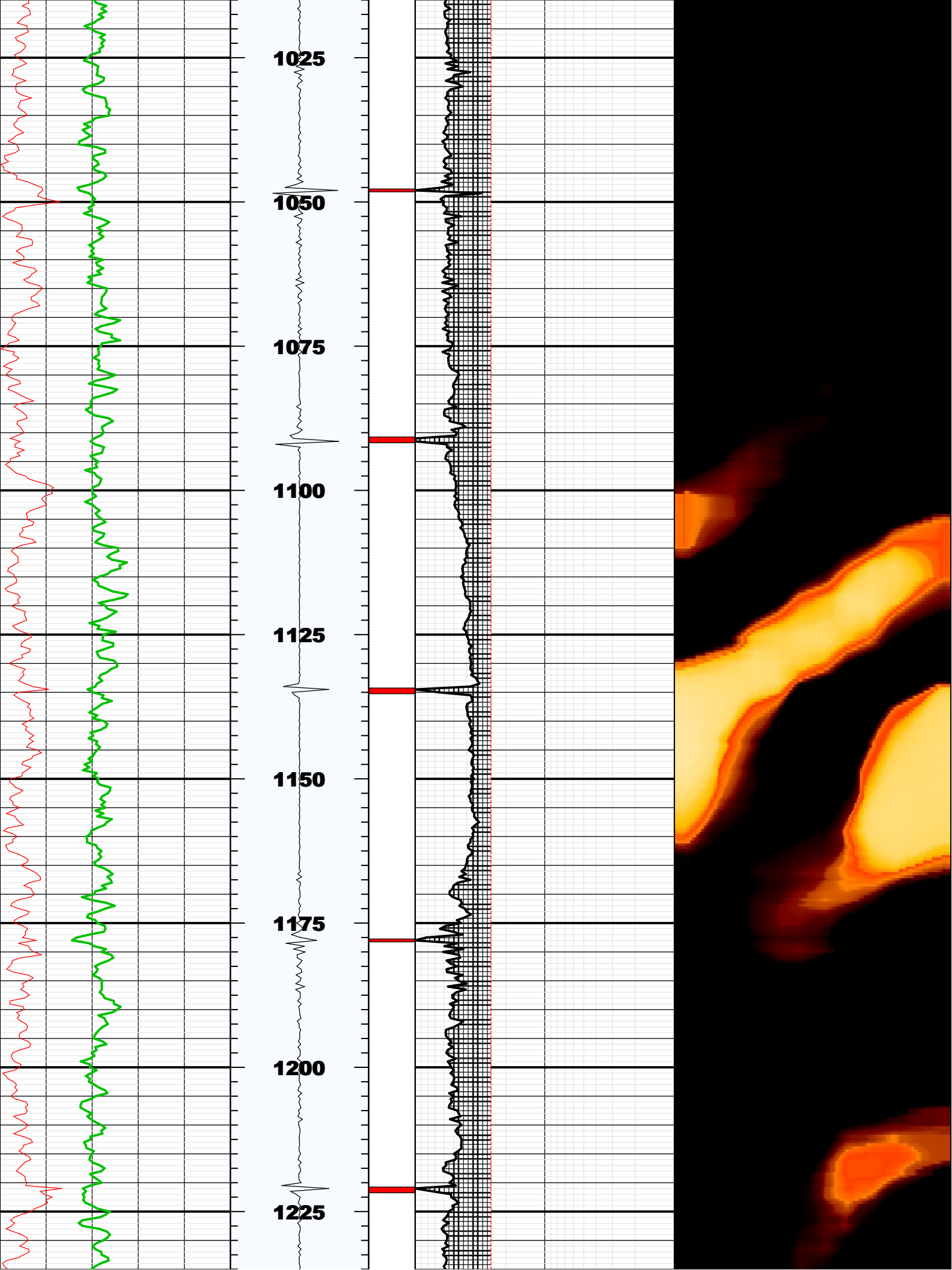




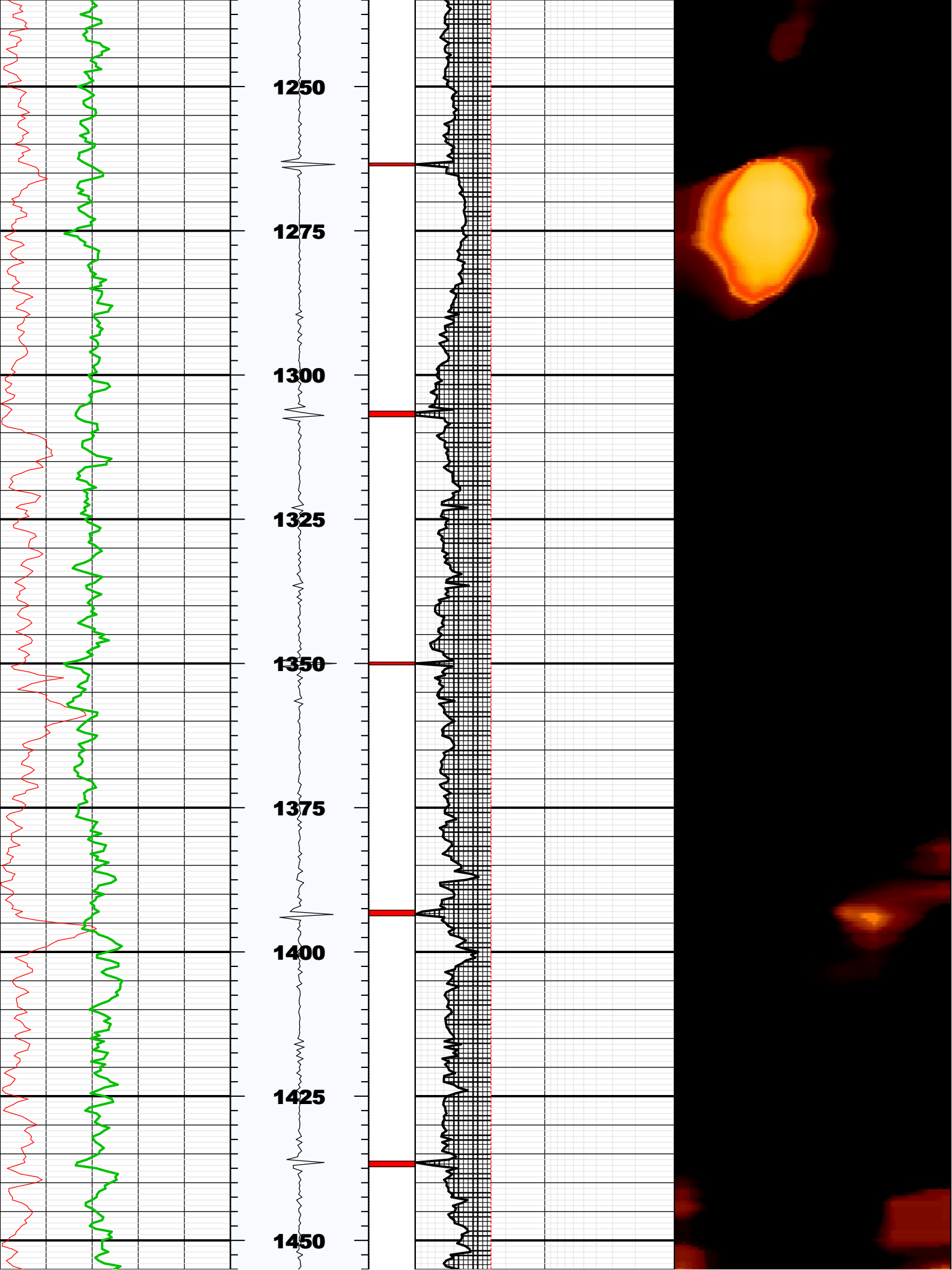


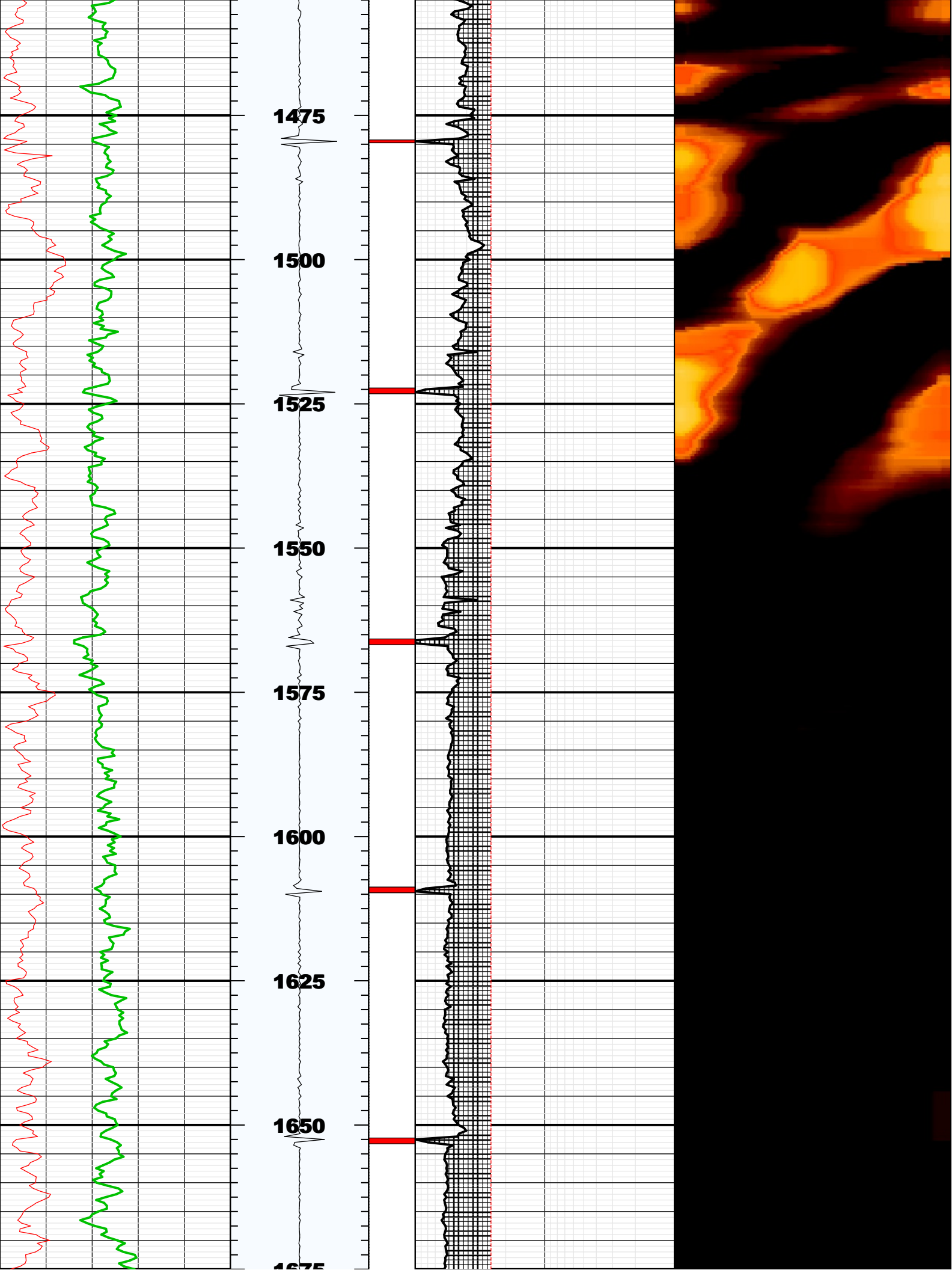


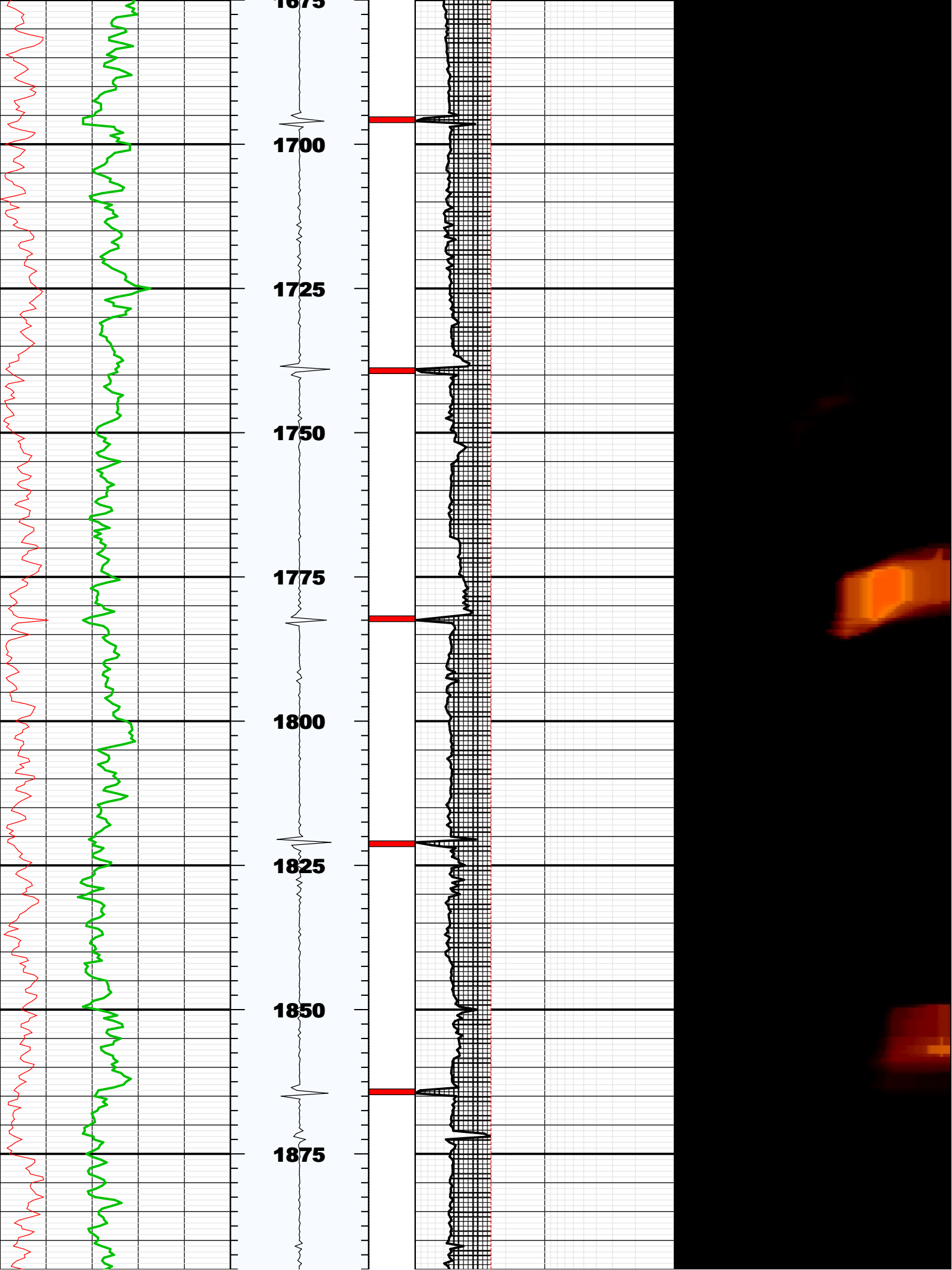


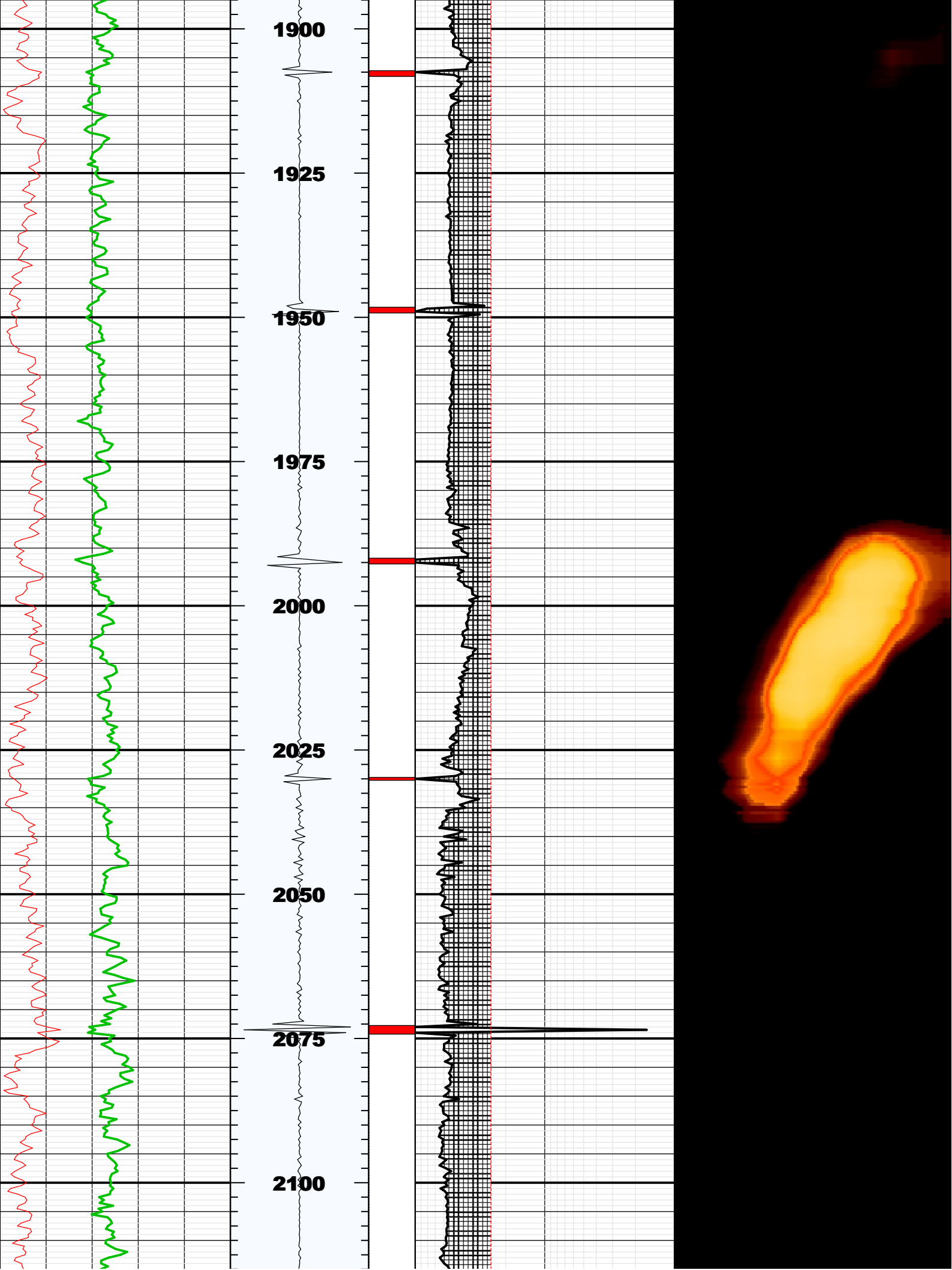


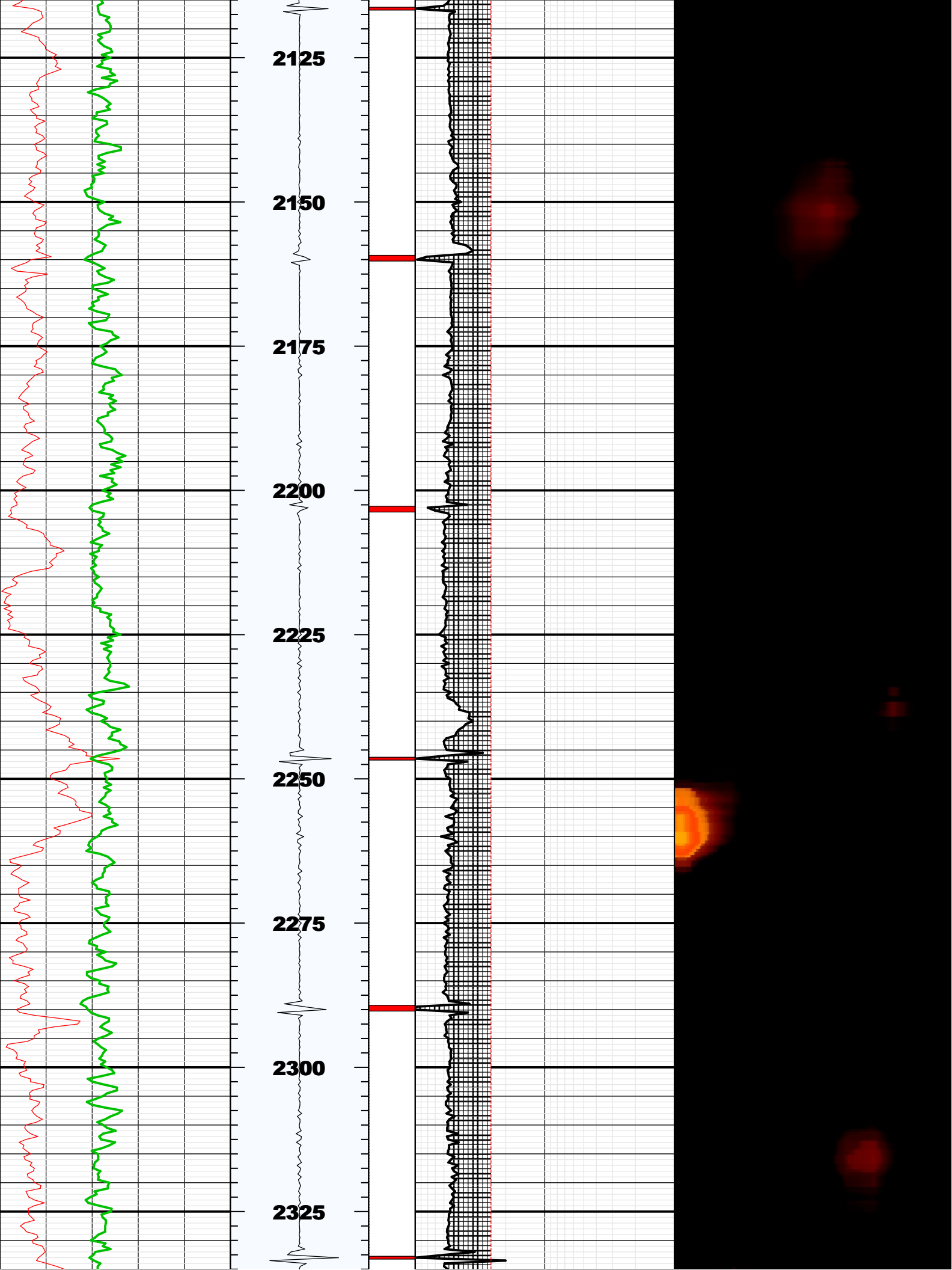


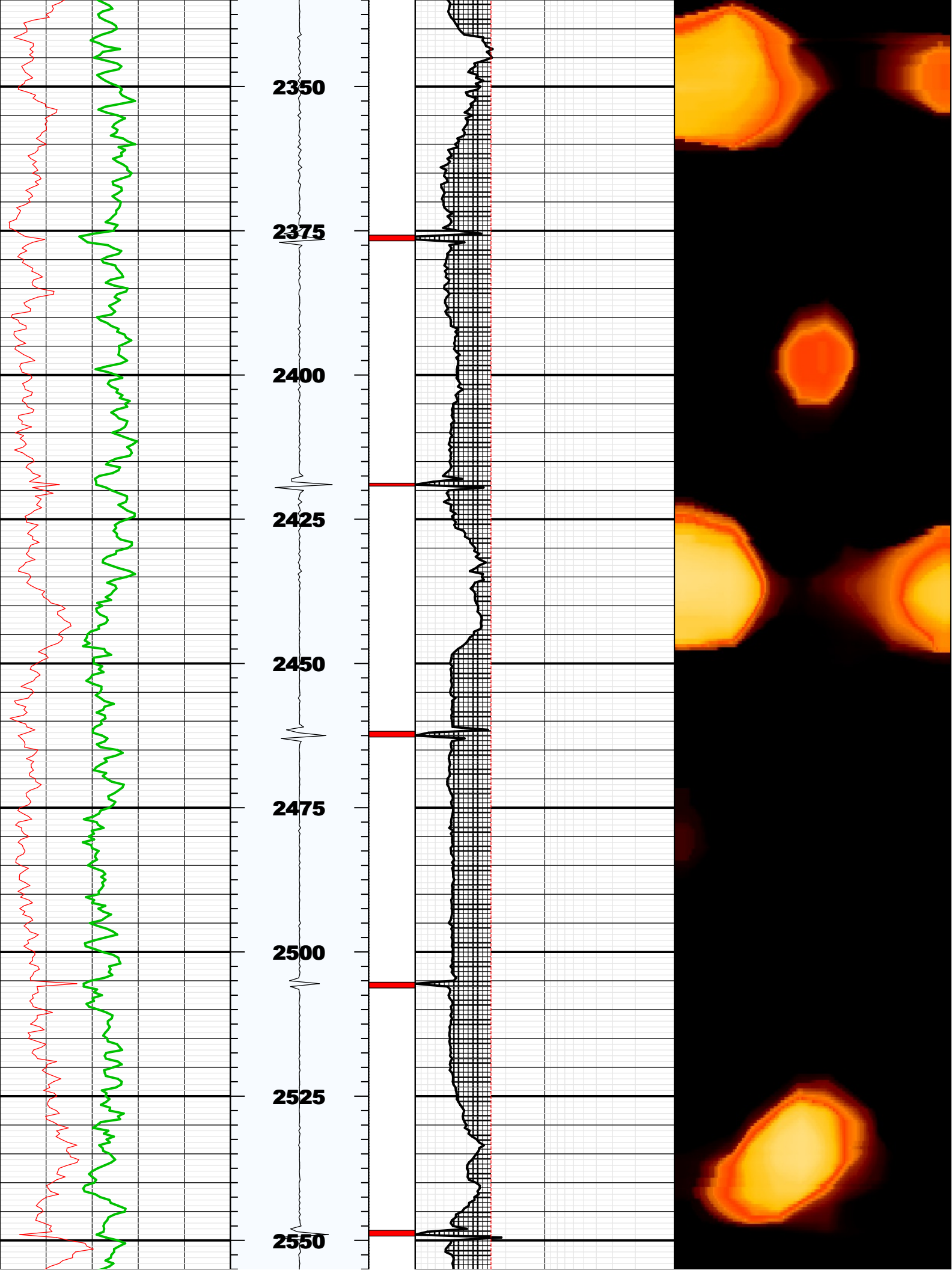




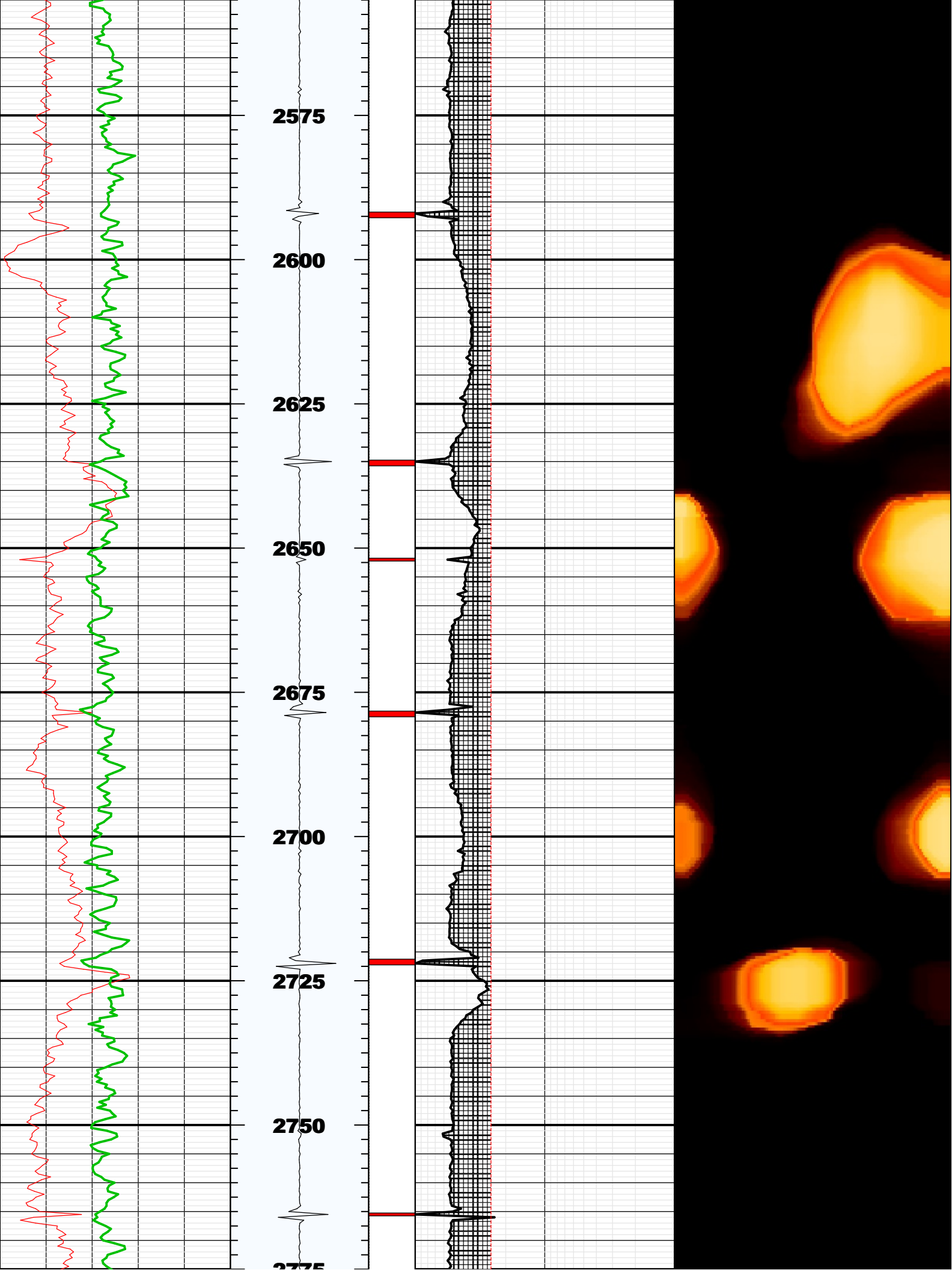


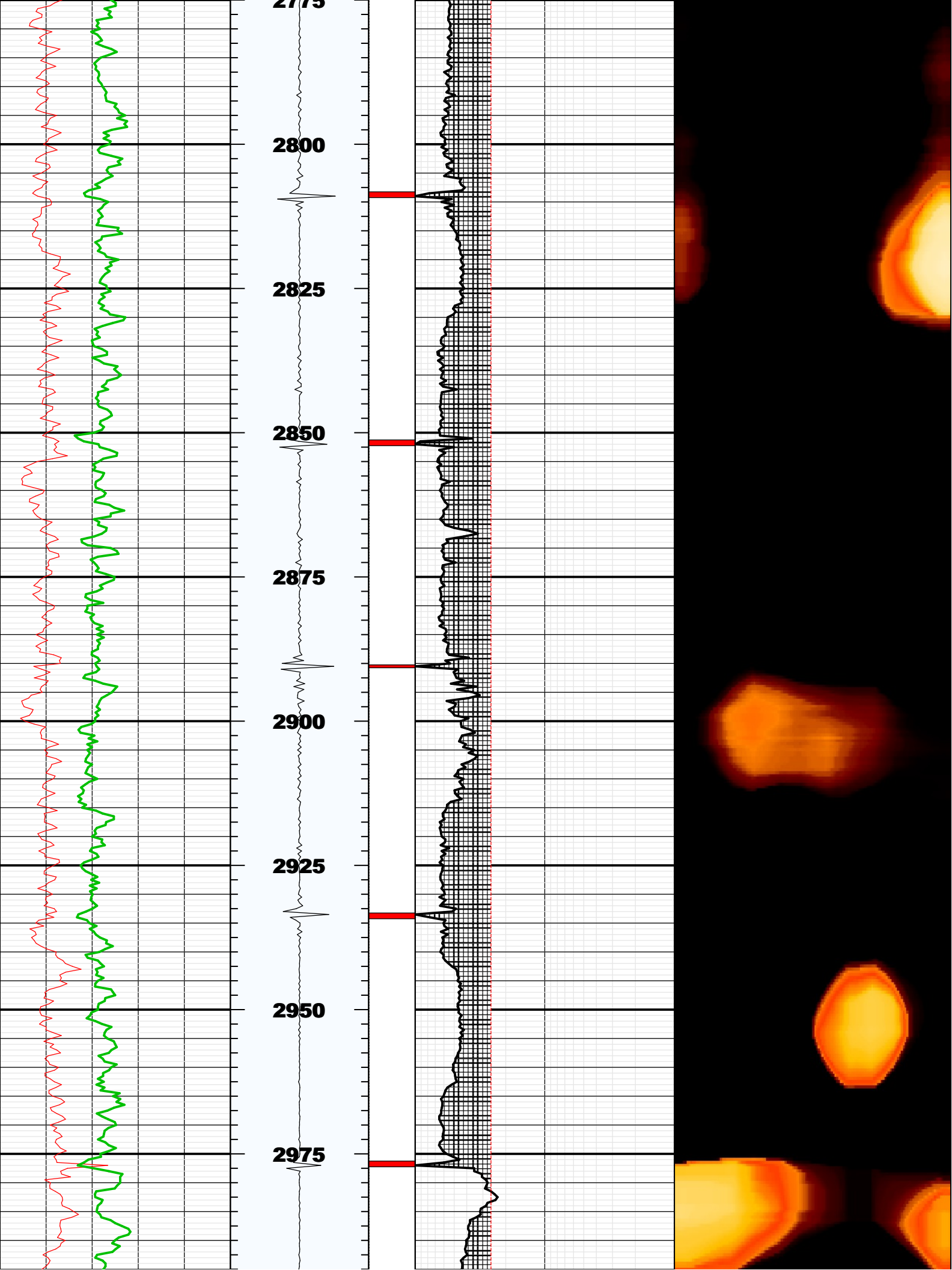


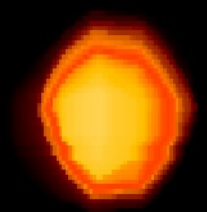
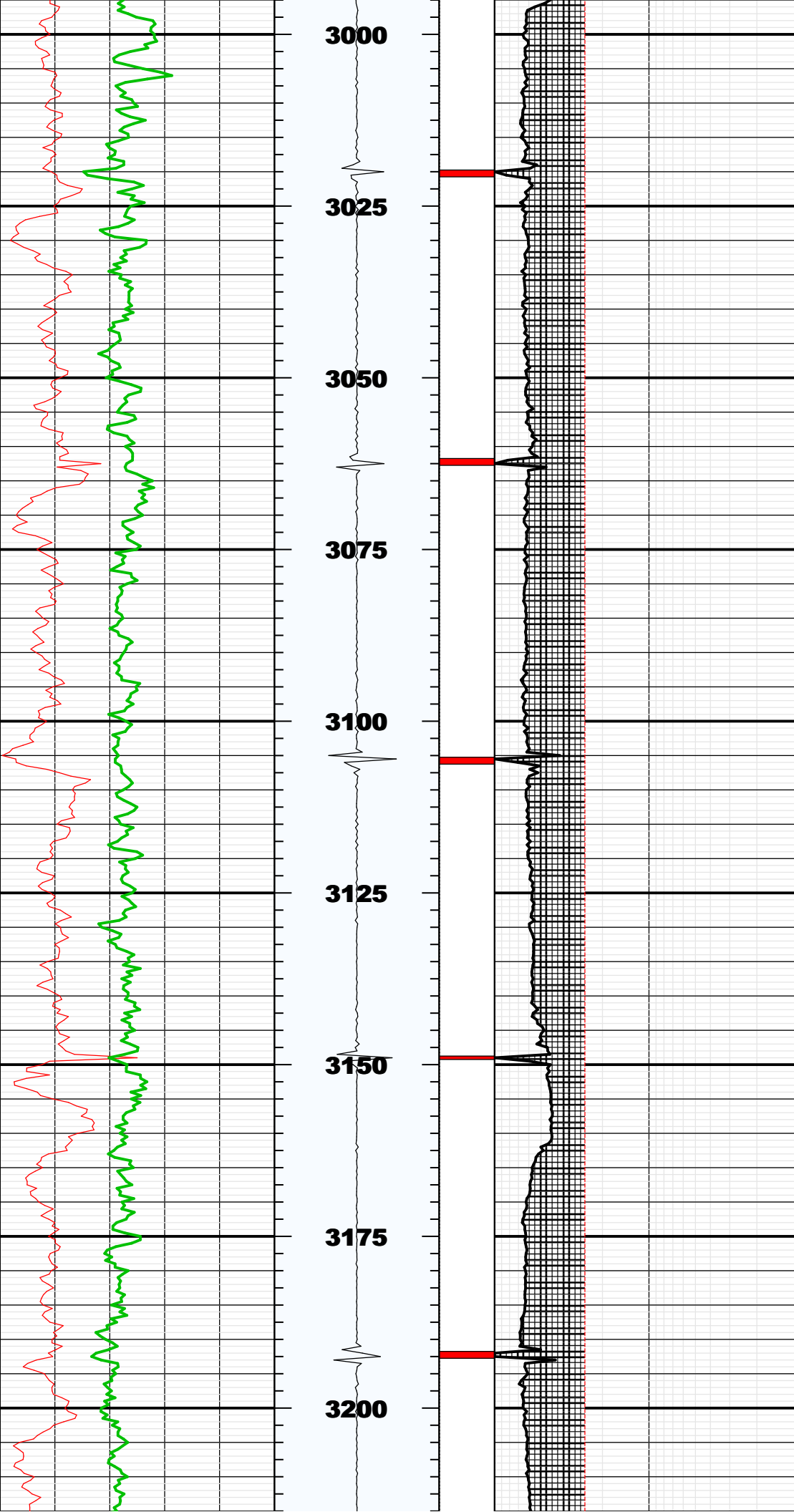


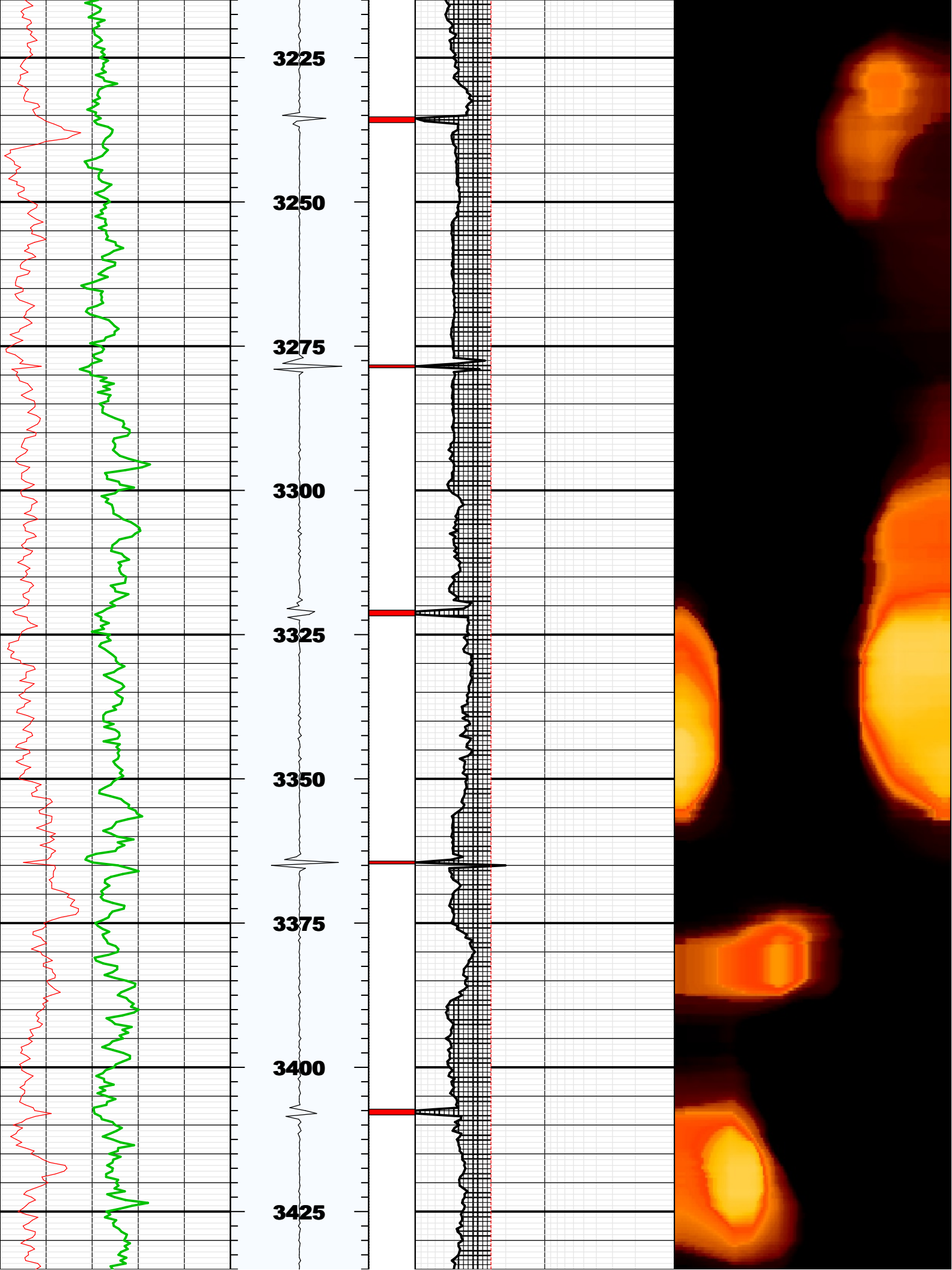


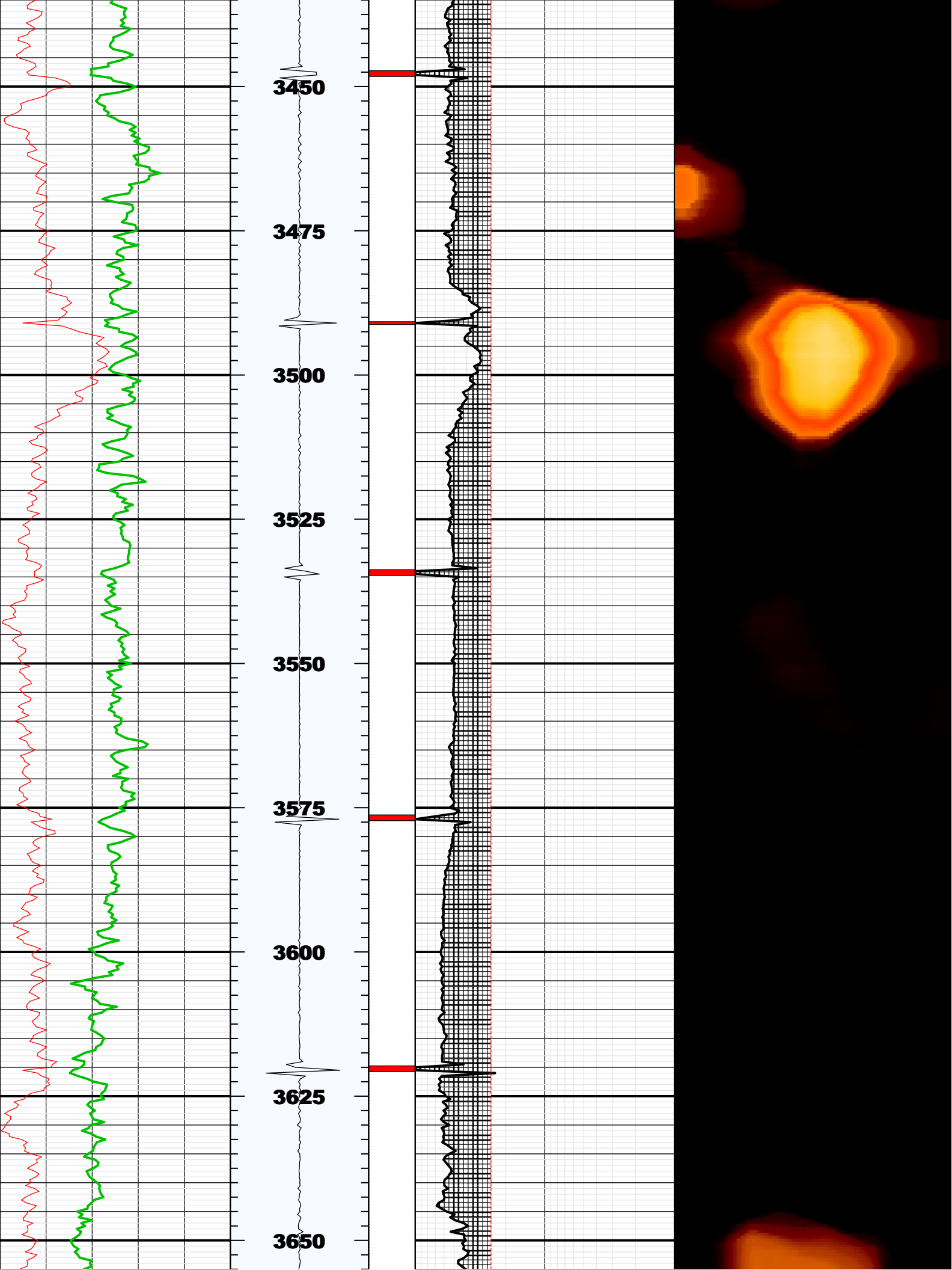


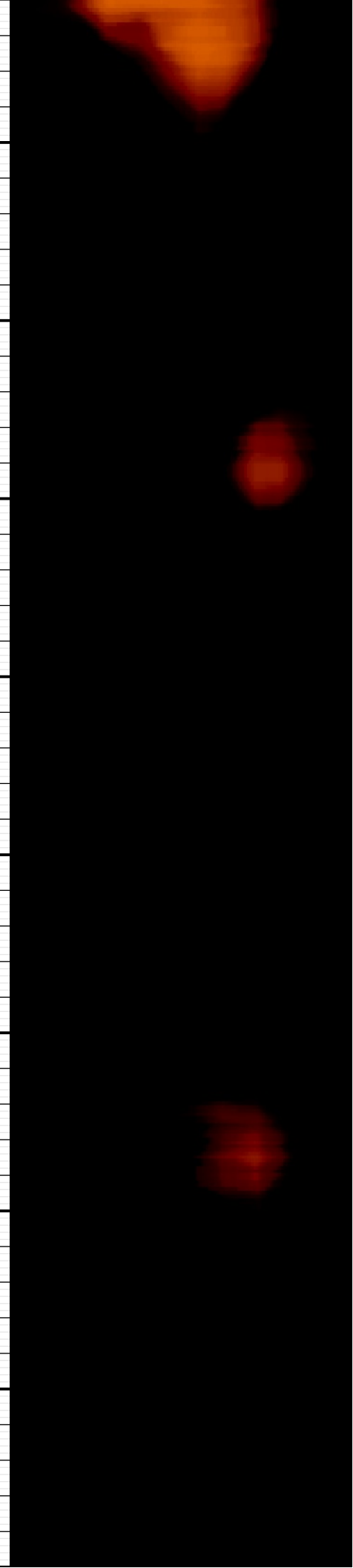
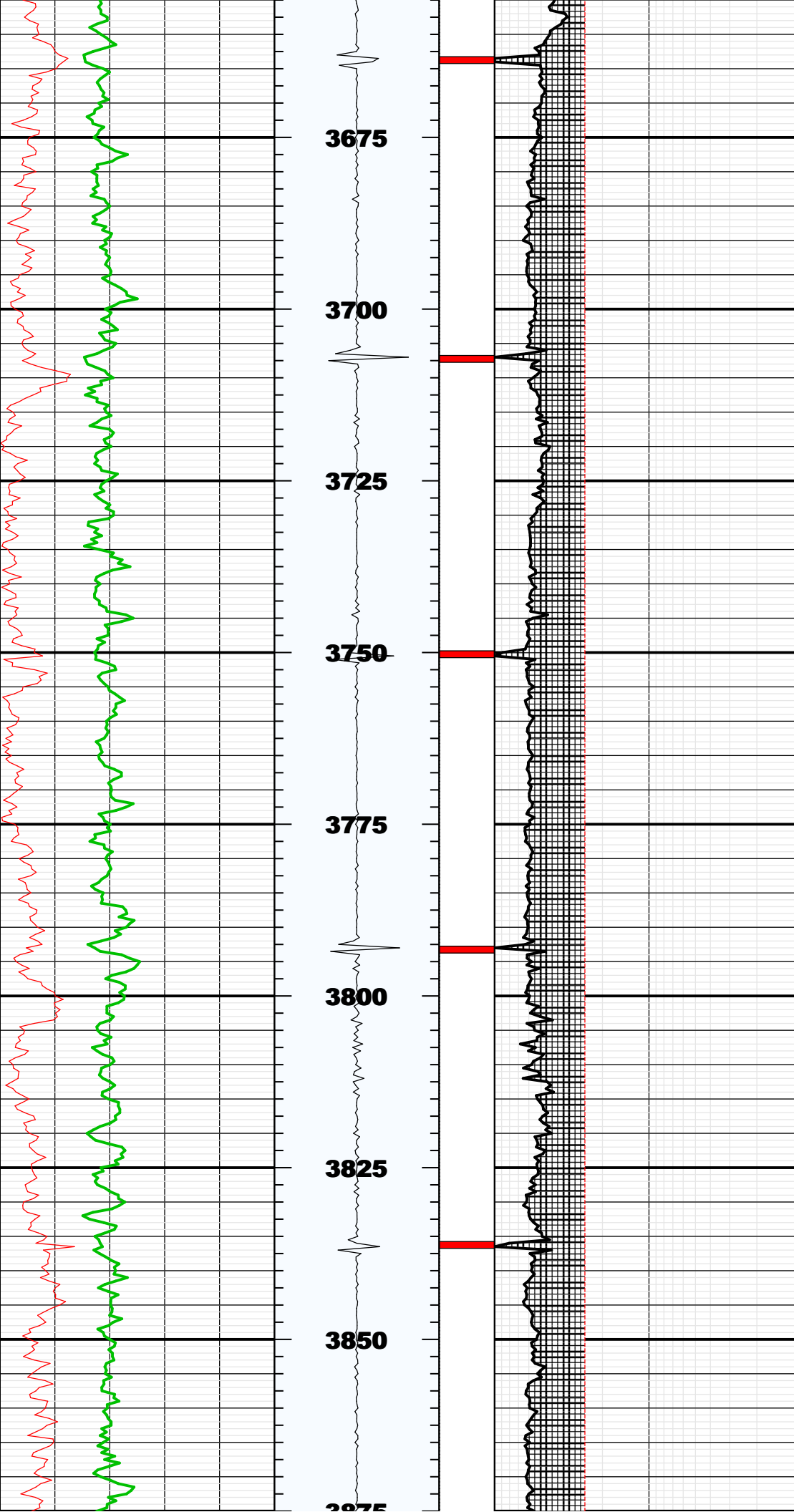




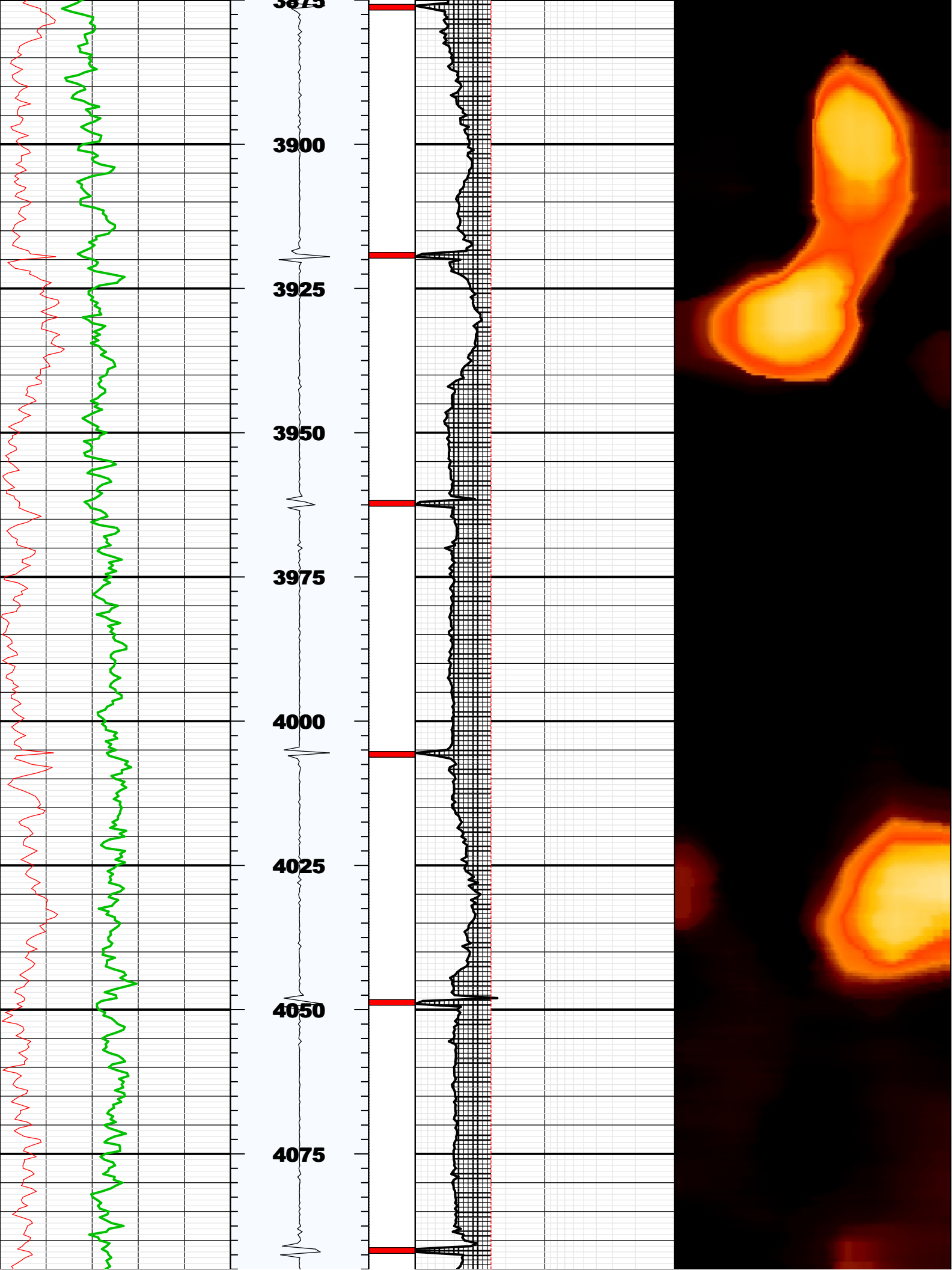


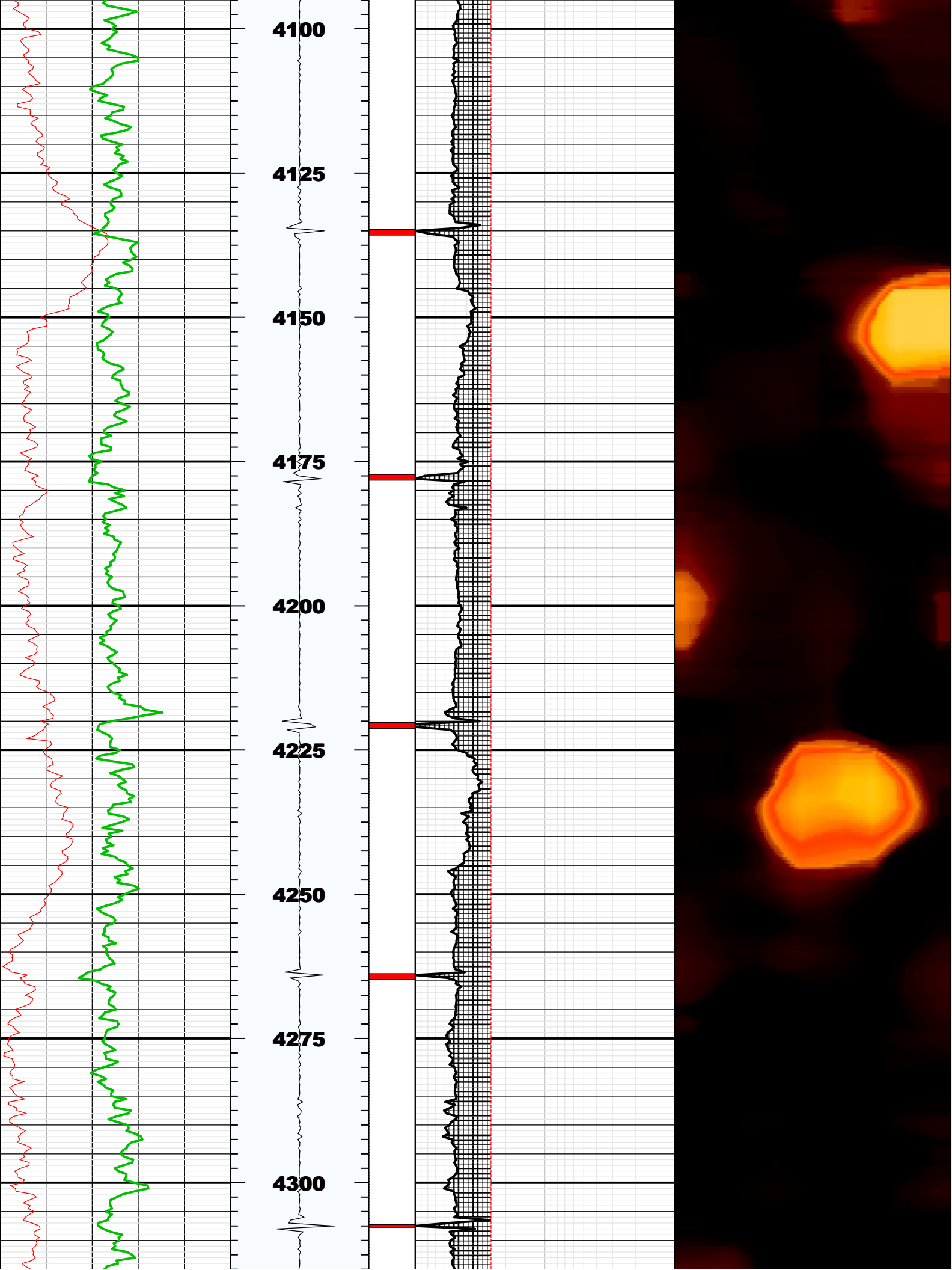


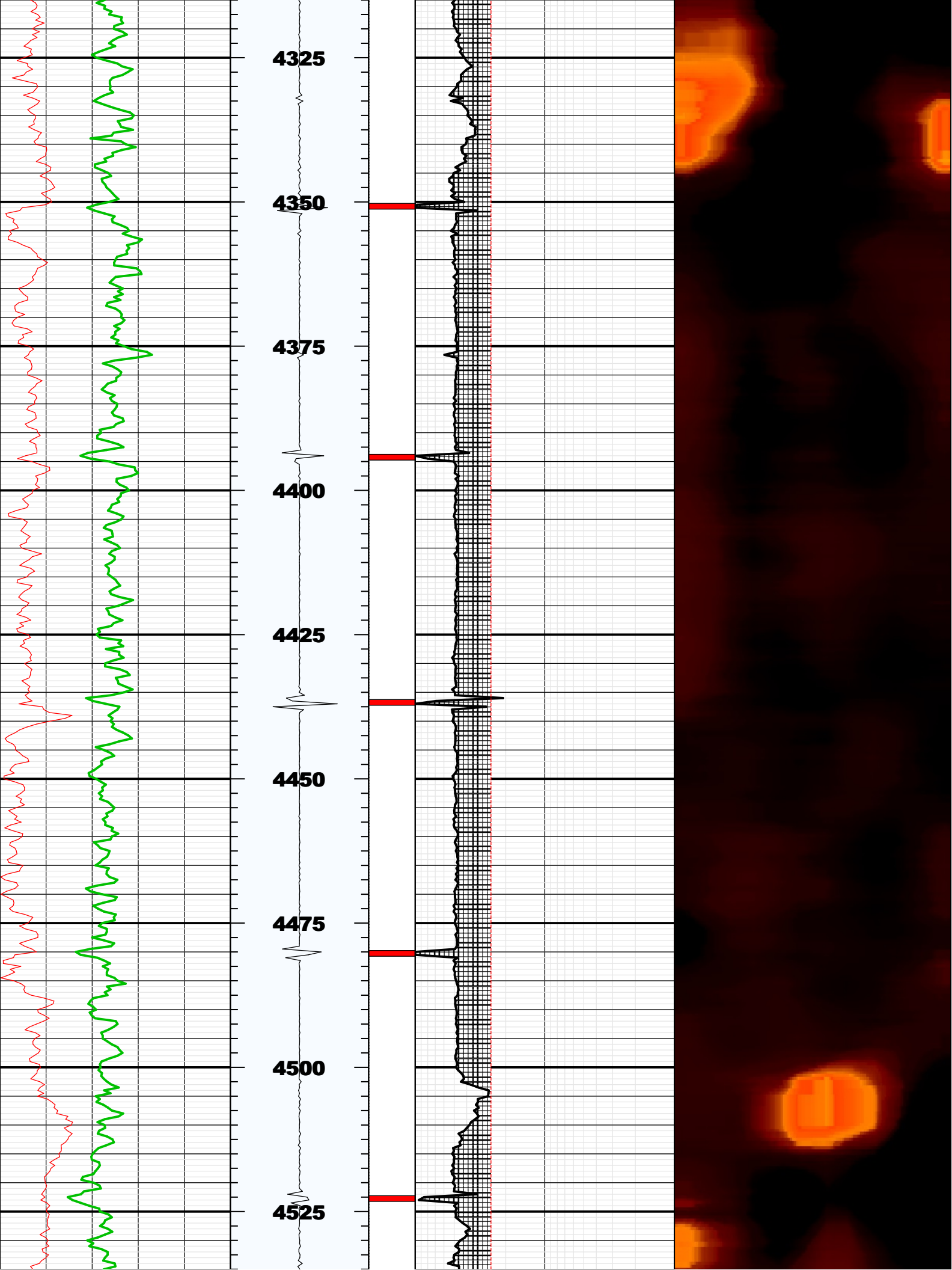


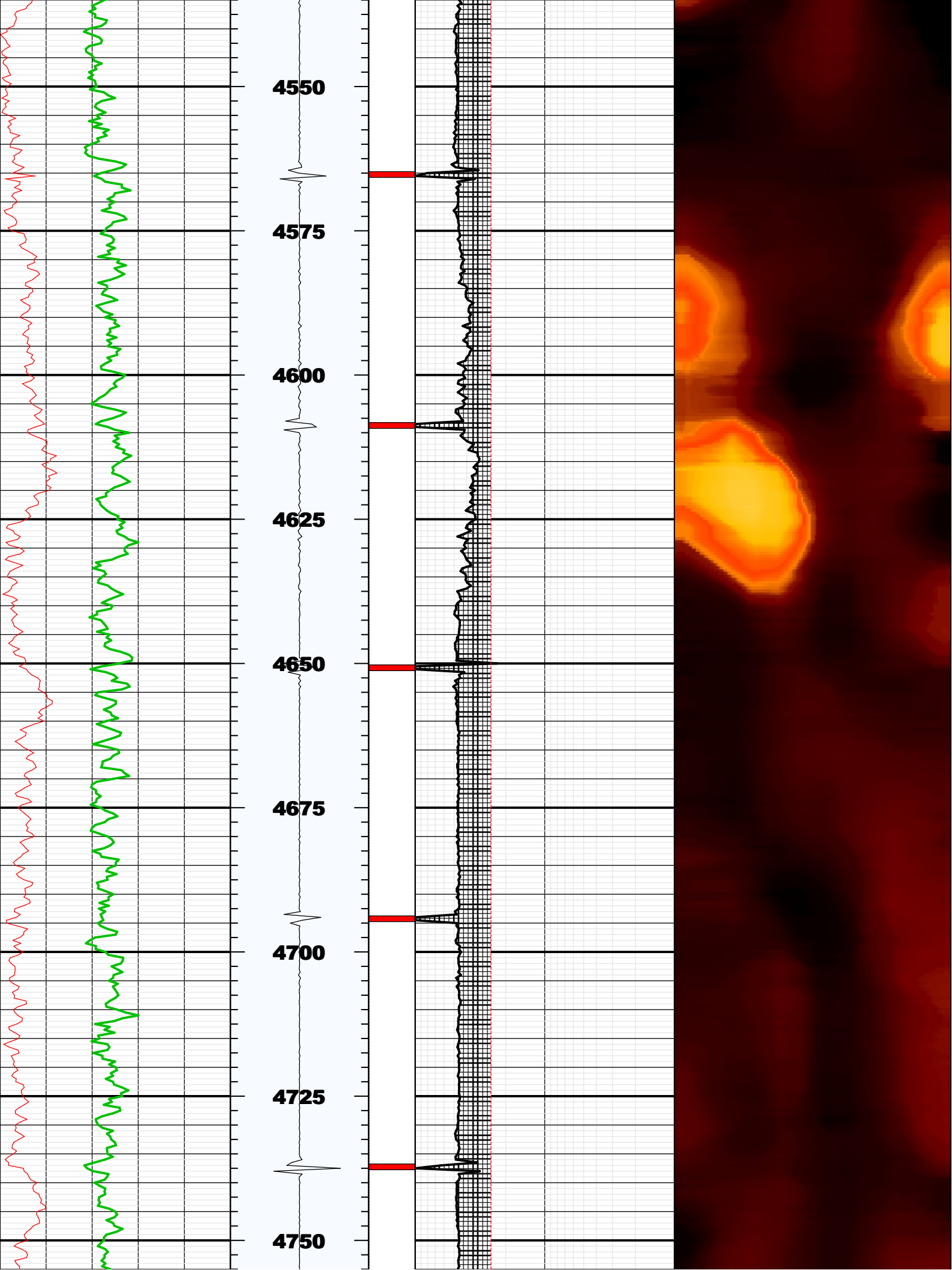


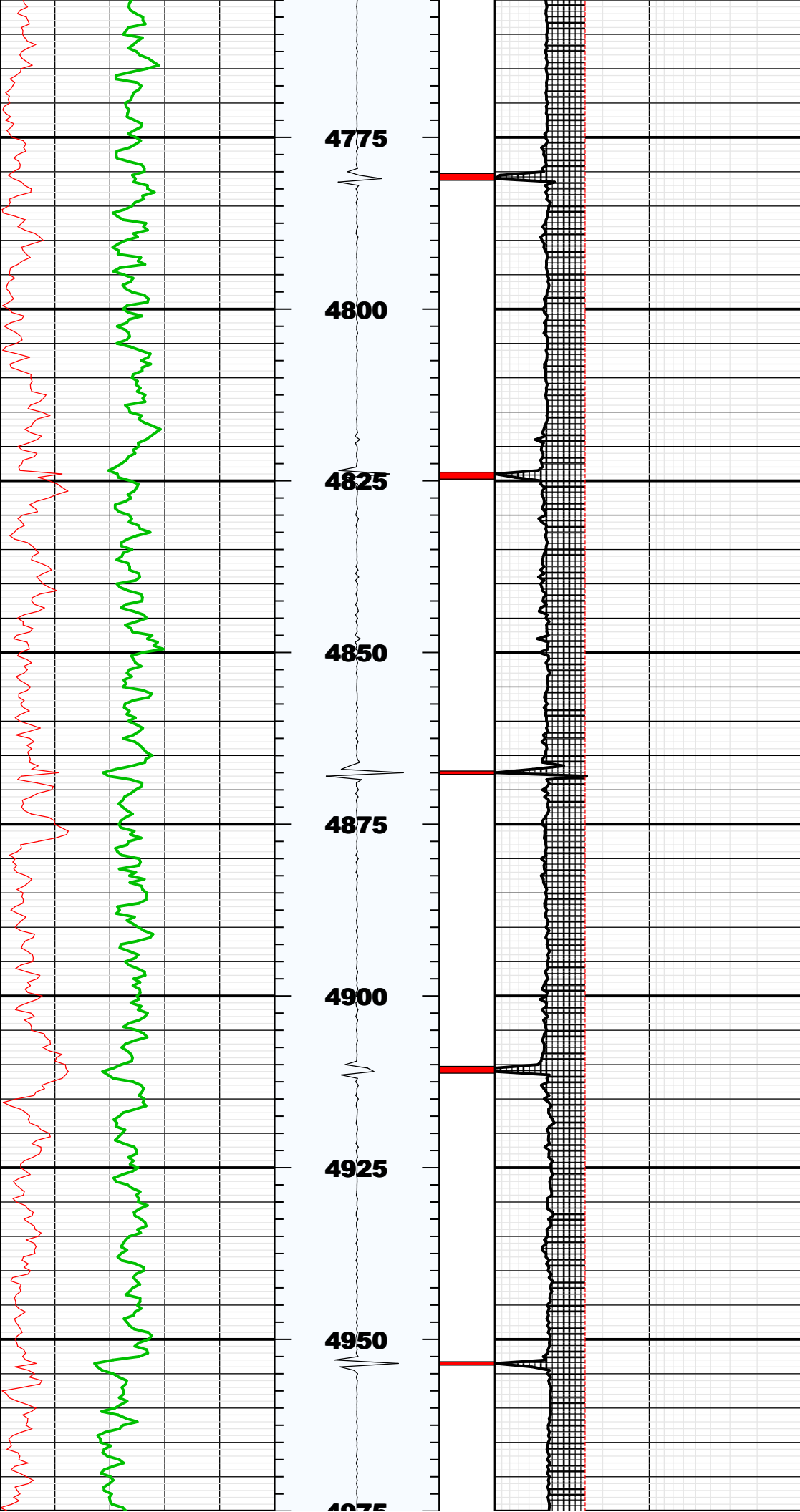




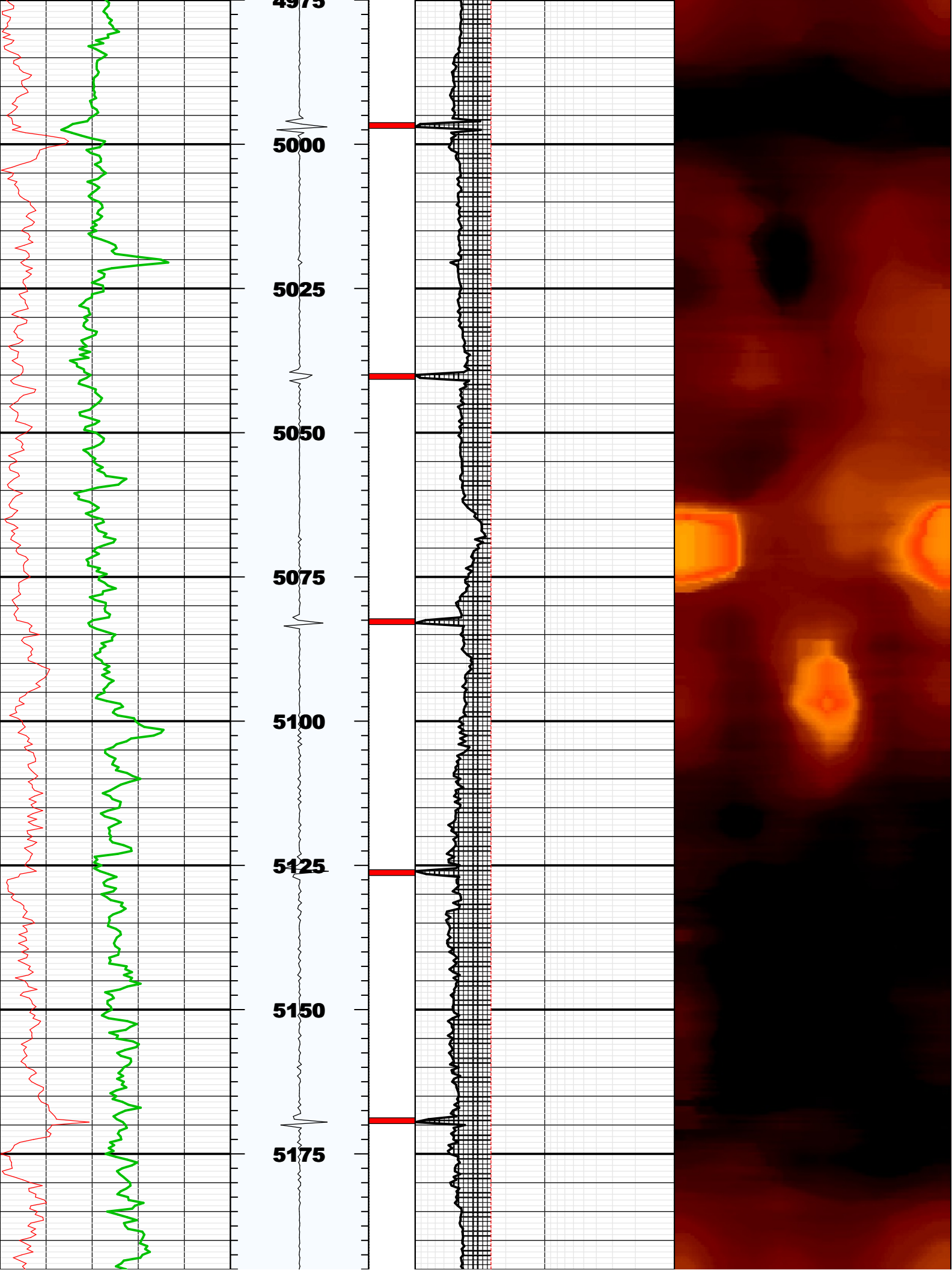




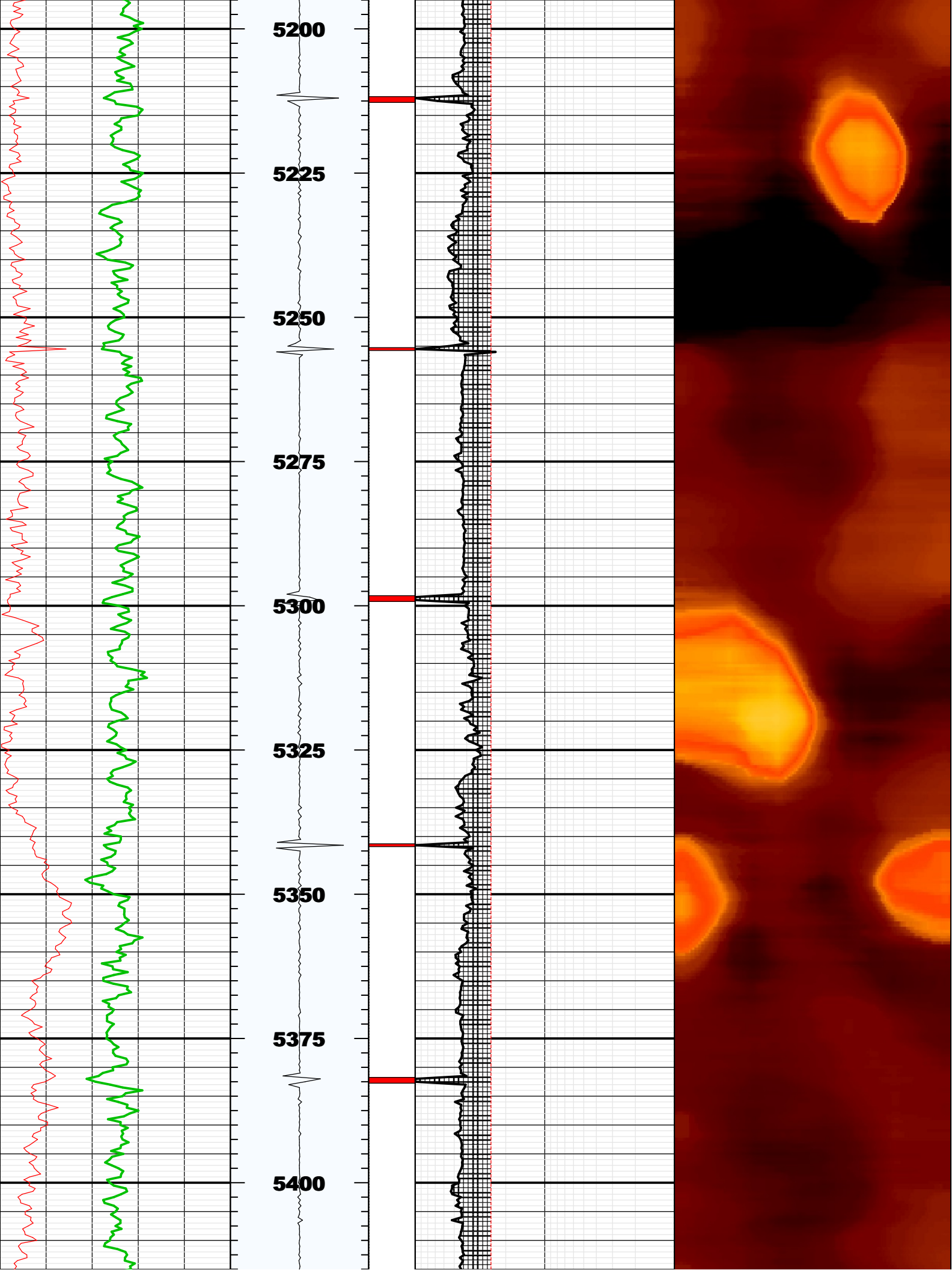


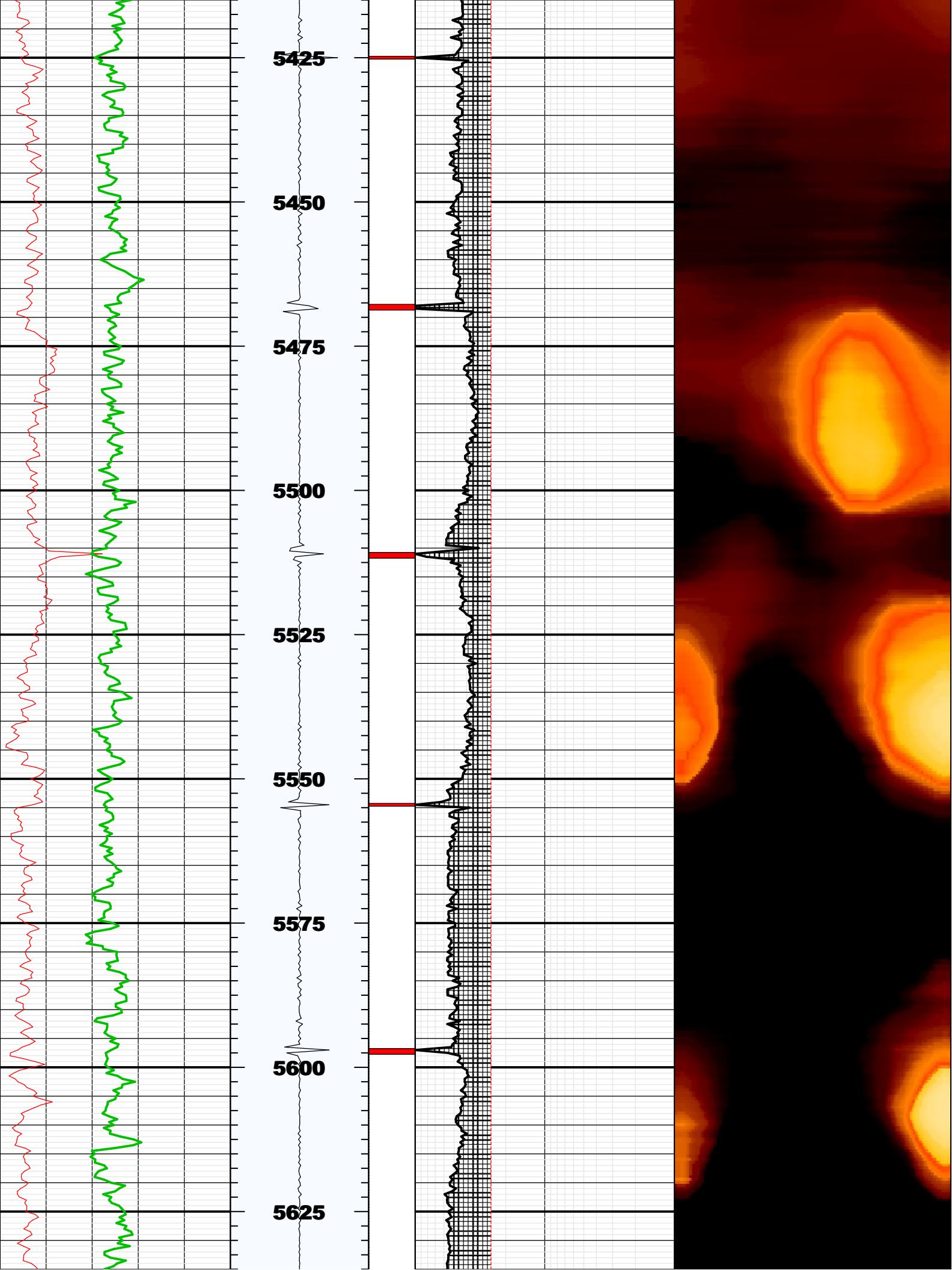


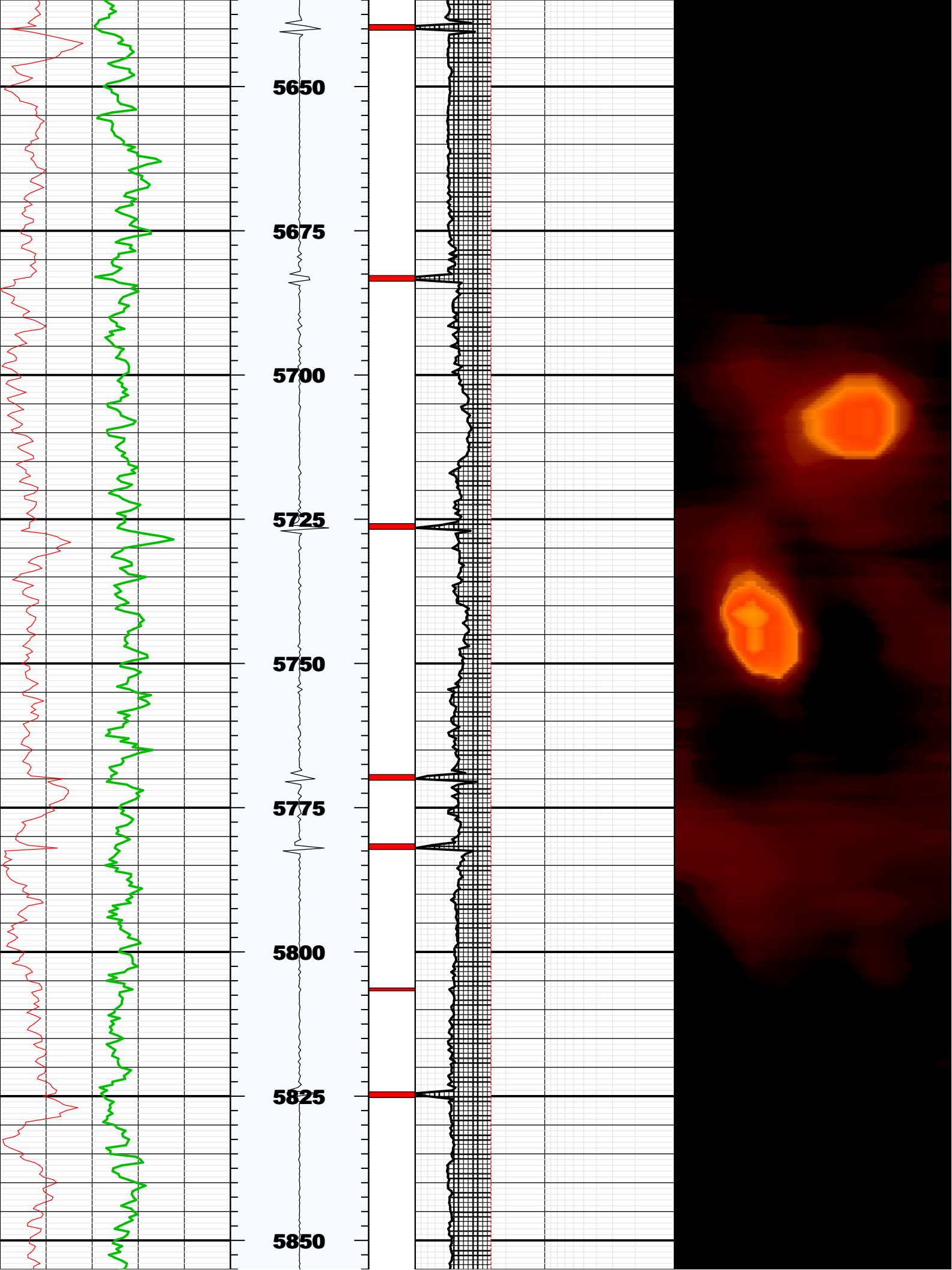


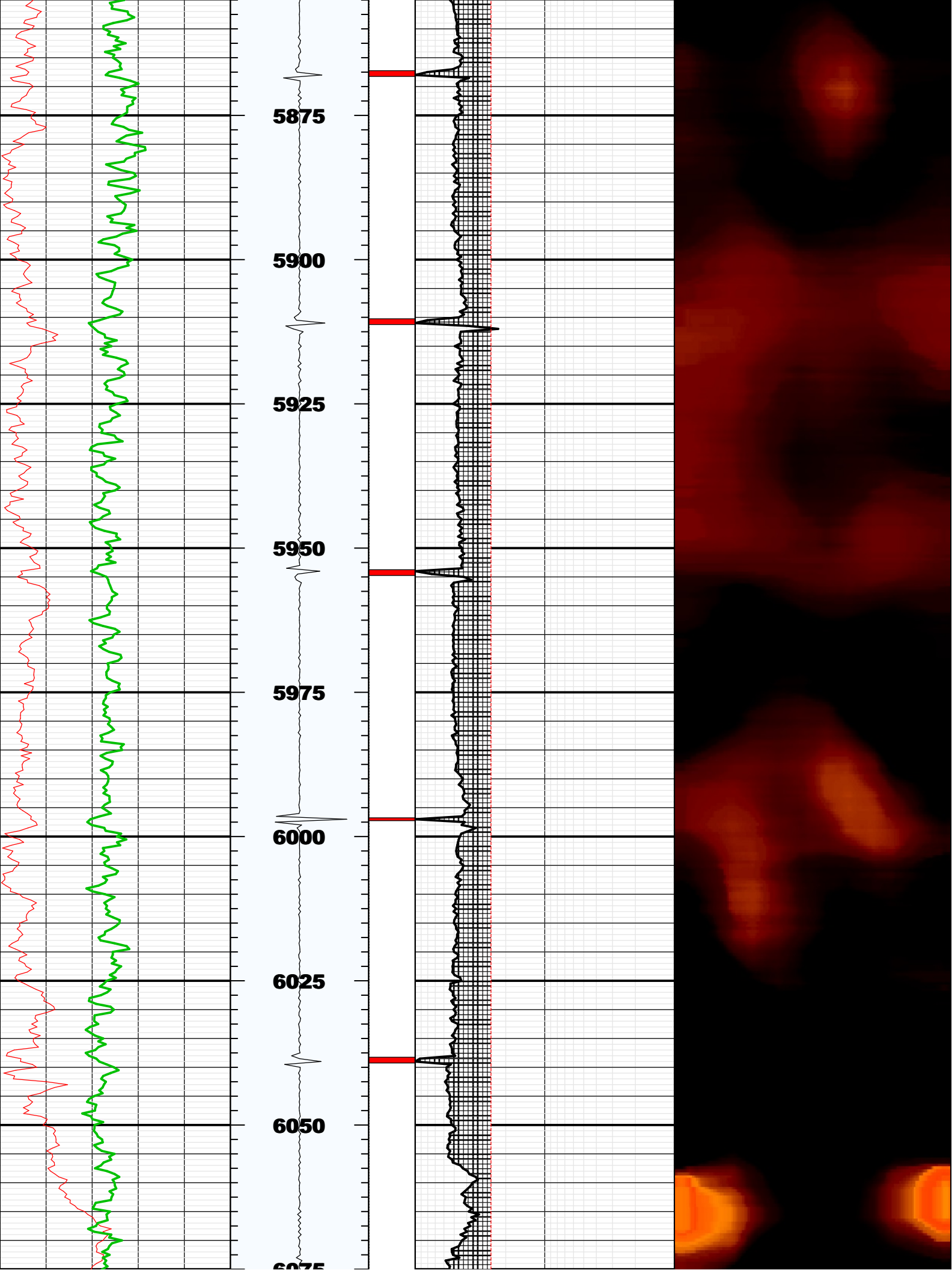




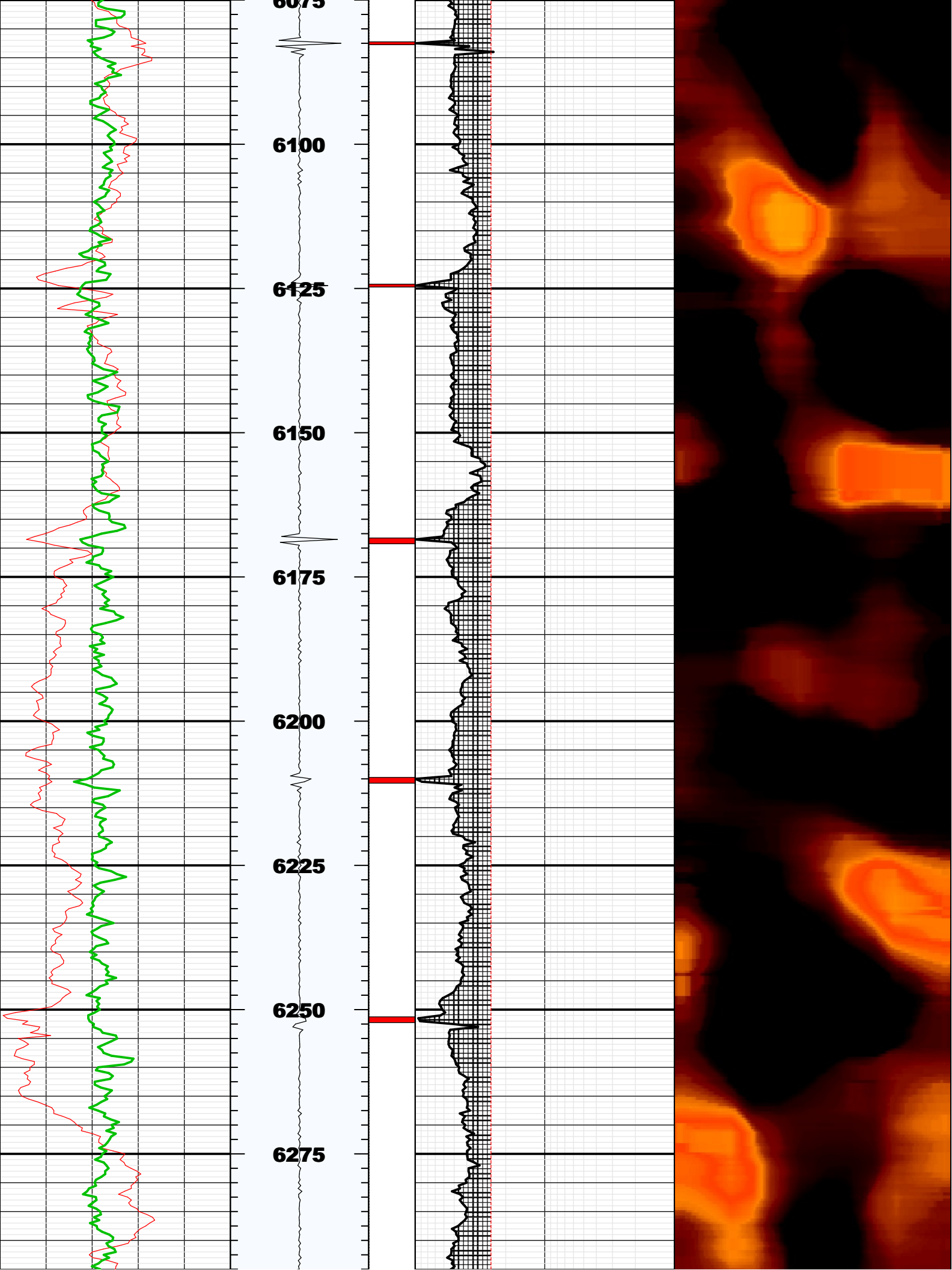


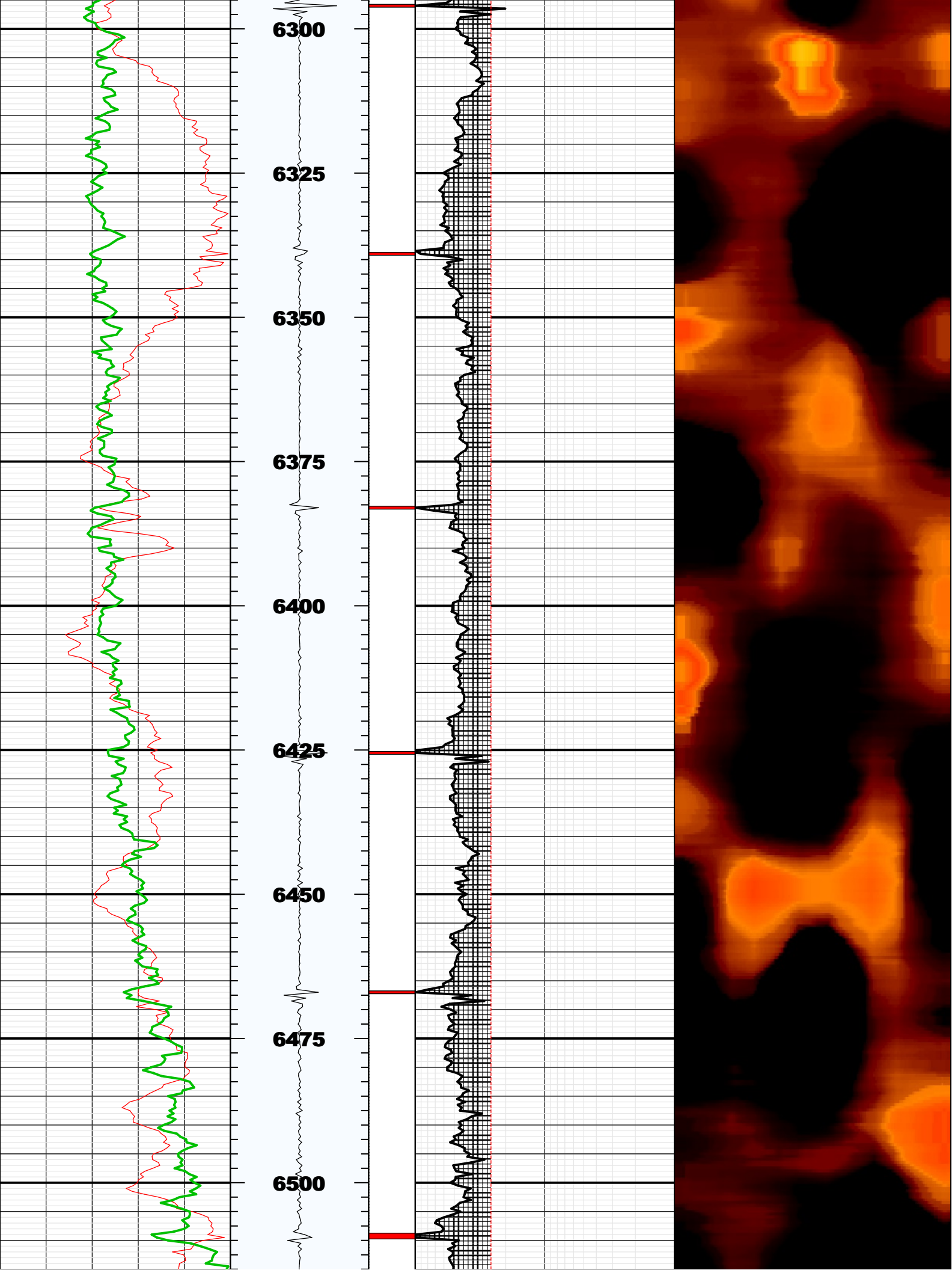




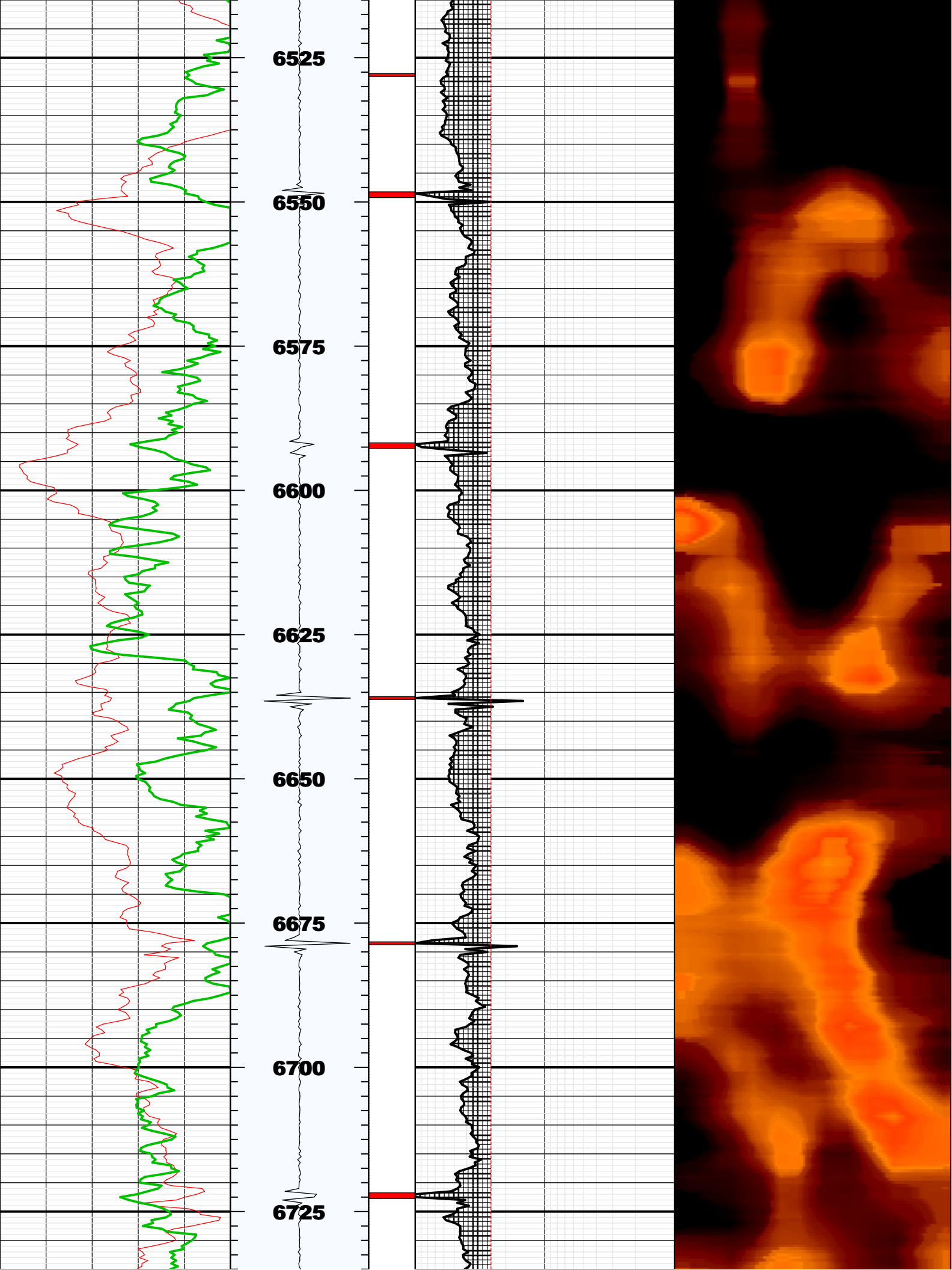


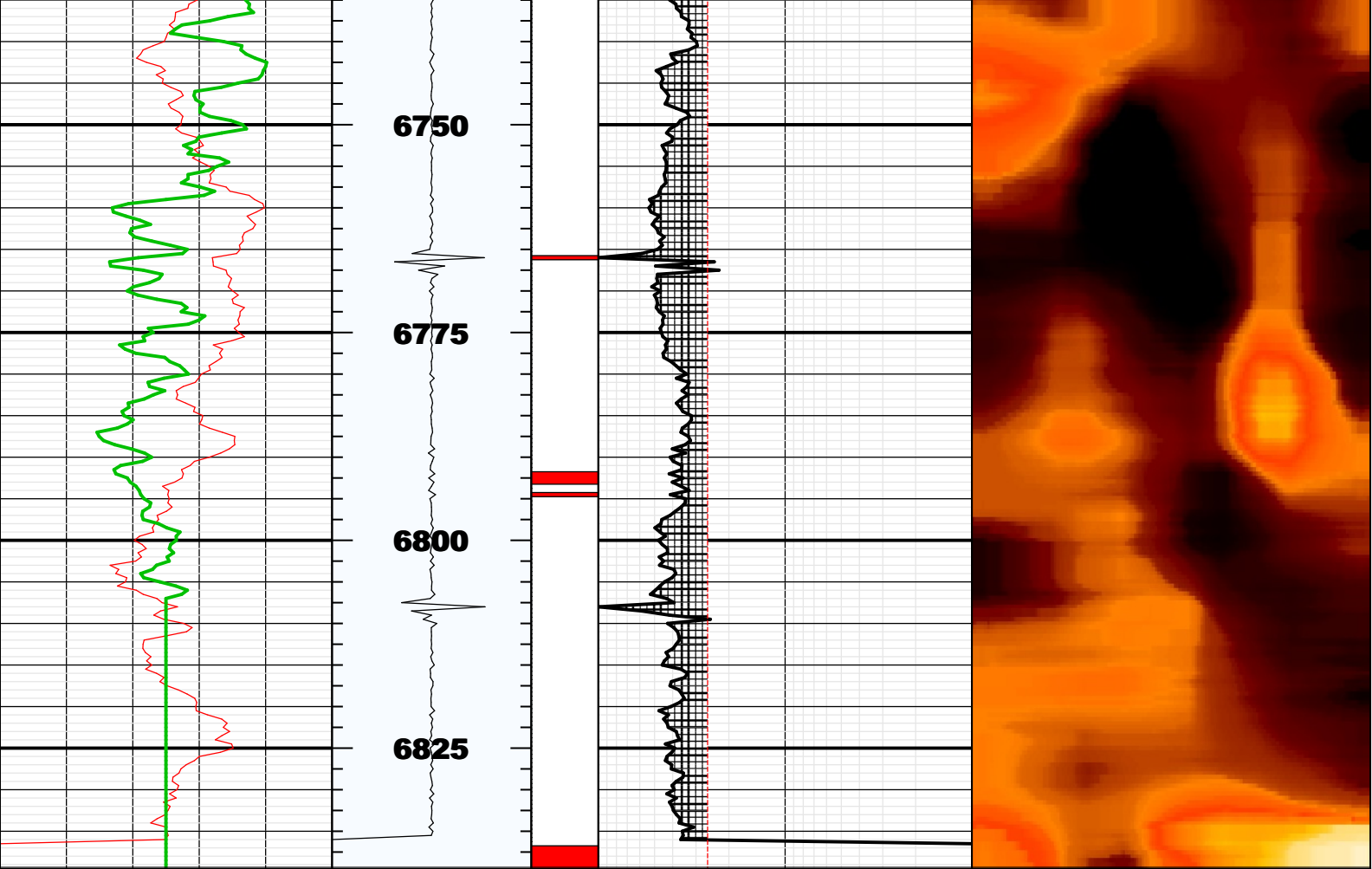








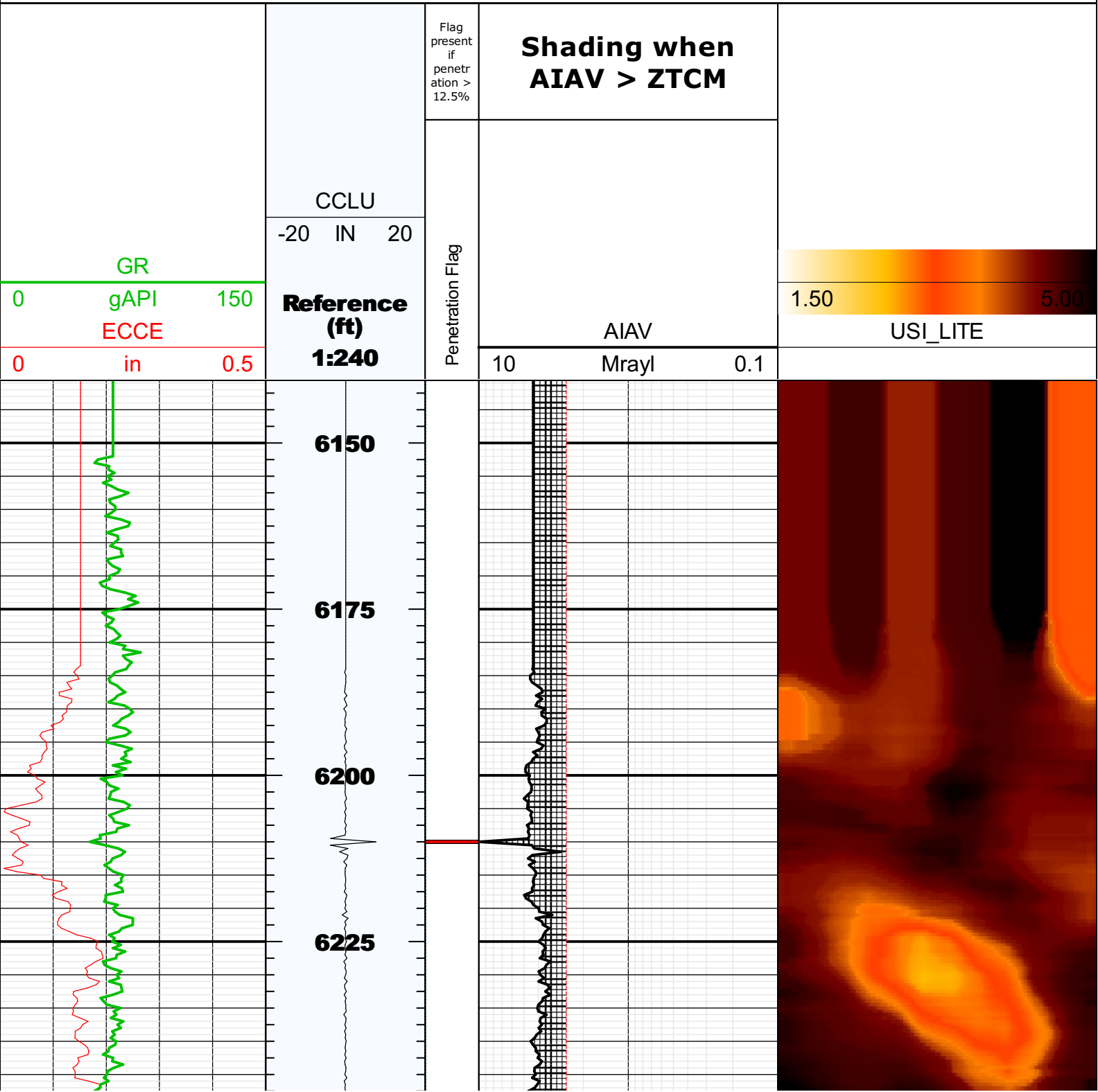


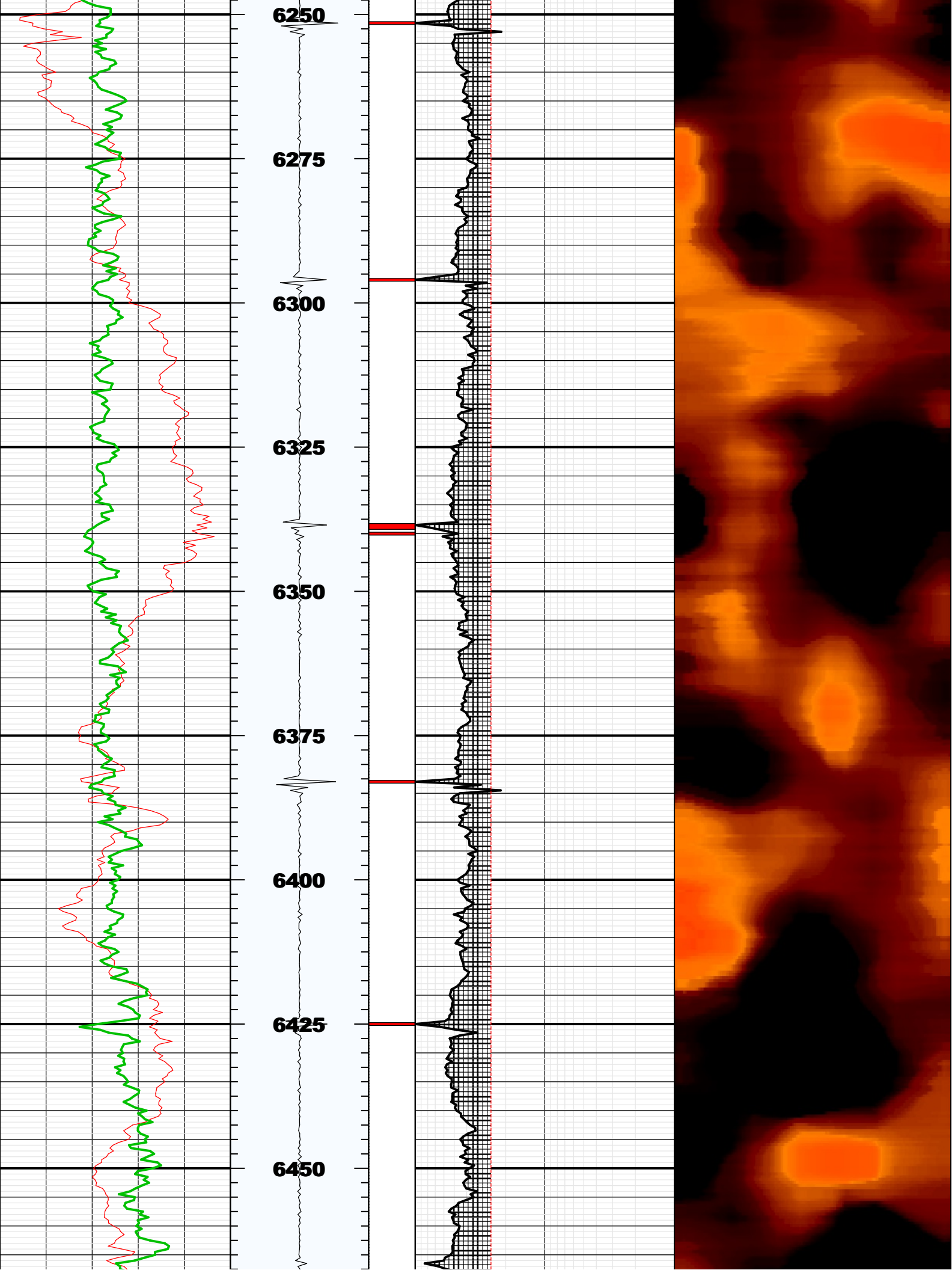


BS	8.75000	IN	Bit Size
CASG	P110		Casing Grade
CDIA	7.00000	IN	Casing Outer Diameter
CSID	6.27600	IN	Casing Inner Diameter
CSIZ	7.00000	IN	Current Casing Size
CWEI	26.00000	LB/F	Casing Weight
DFD	8.70000	LB/G	Drilling Fluid Density
DFVL	206.00000	US/F	Default Fluid Velocity
DO			
DOT	2.87400	IN	Diameter of Transducer Sensor
EMXV	88	V	EMEX Voltage
FDII	0.00000	F	FPM Data Interpolation Interval
FSOD	0_OFF		Fluid Slowness Fits Casing Outer Diameter
LOGMODE			
PP			
STEP	-0.5	F	STEP
THDH	130.00000	%	Maximum Search Thickness (percentage of nominal)
THDL	70.00000	%	Minimum Search Thickness (percentage of nominal)
THDP	Fundamental		Thickness Detection Policy
THNO	0.36200	IN	Nominal Thickness of Casing
TMUC	WRM		Type of Mud
U-USIT_DT3P			
UPAT	375K		Emission Pattern
USUB	7INC		USIT Sub Identifier
UWKM	D603010L		Working Mode
VCAS	51.40000	US/F	Ultrasonic Transversal Velocity in Casing
WINB	29.19602	US	Window Begin Time
WINE	78.40100	US	Window End Time
ZCAS	46.25000	MRAY	Acoustic Impedance of Casing
ZINI	-1.00000	MRAY	Initial Estimate of Cement Impedance
ZMUD	1.79000	MRAY	Acoustic Impedance of Mud
ZTCM	2.60000	MRAY	Acoustic Impedance Threshold for Cement
ZTGS	0.30000	MRAY	Acoustic Impedance Threshold for Gas
WLEN	22.50350	US	T <sup>^</sup> 3 Processing Length

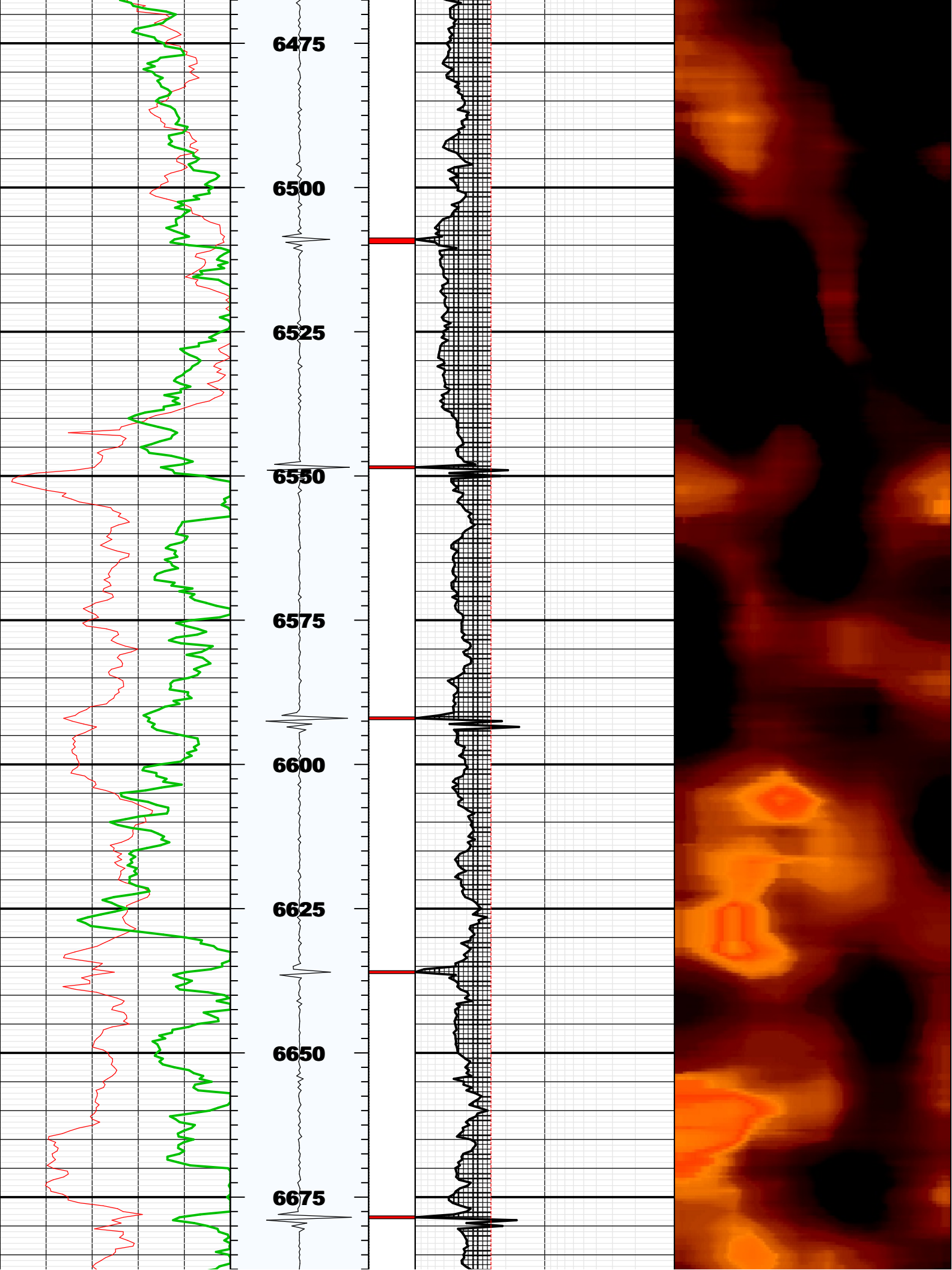
Repeat Pass

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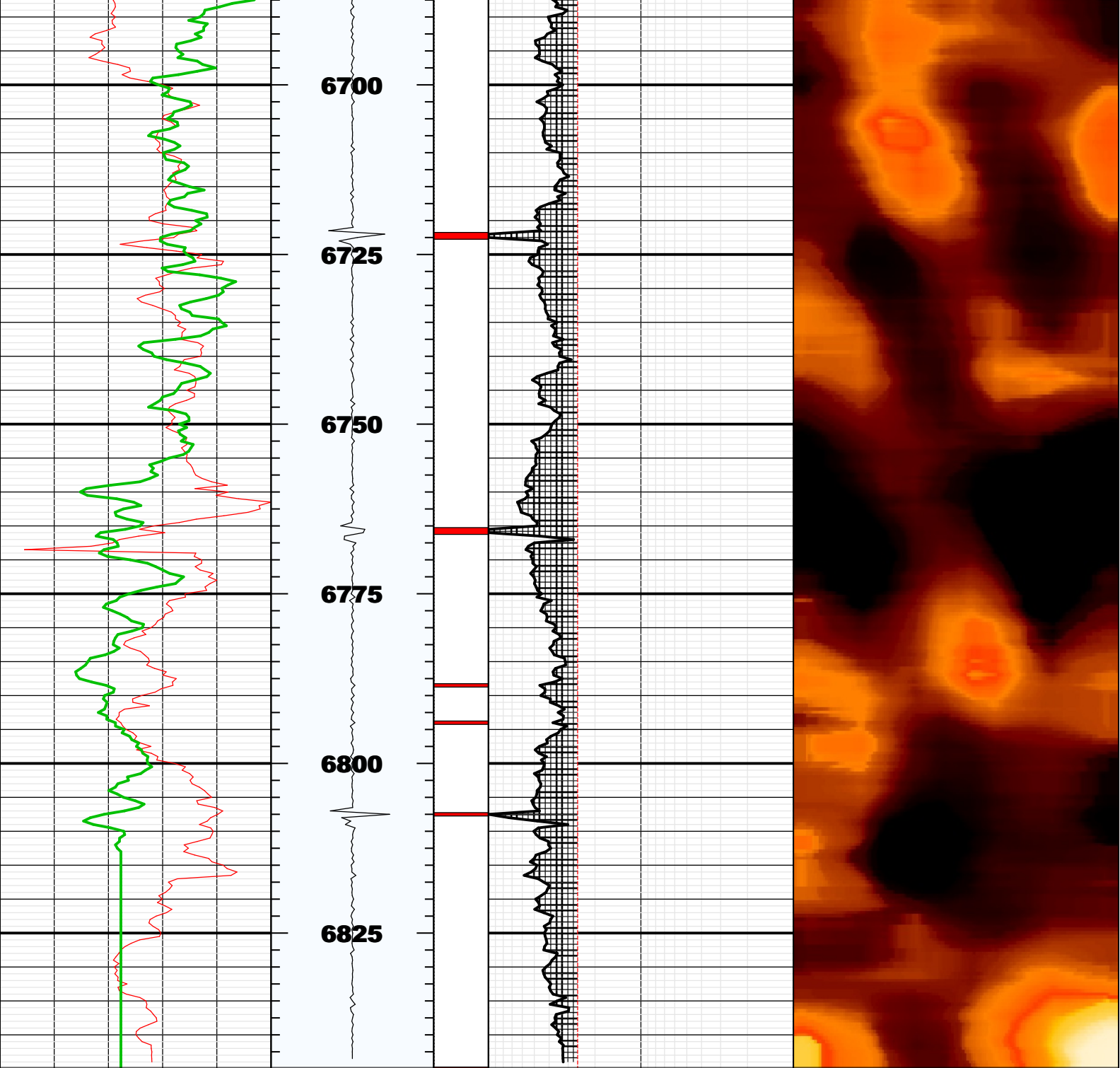












## Fluid Properties Used for Main Pass

