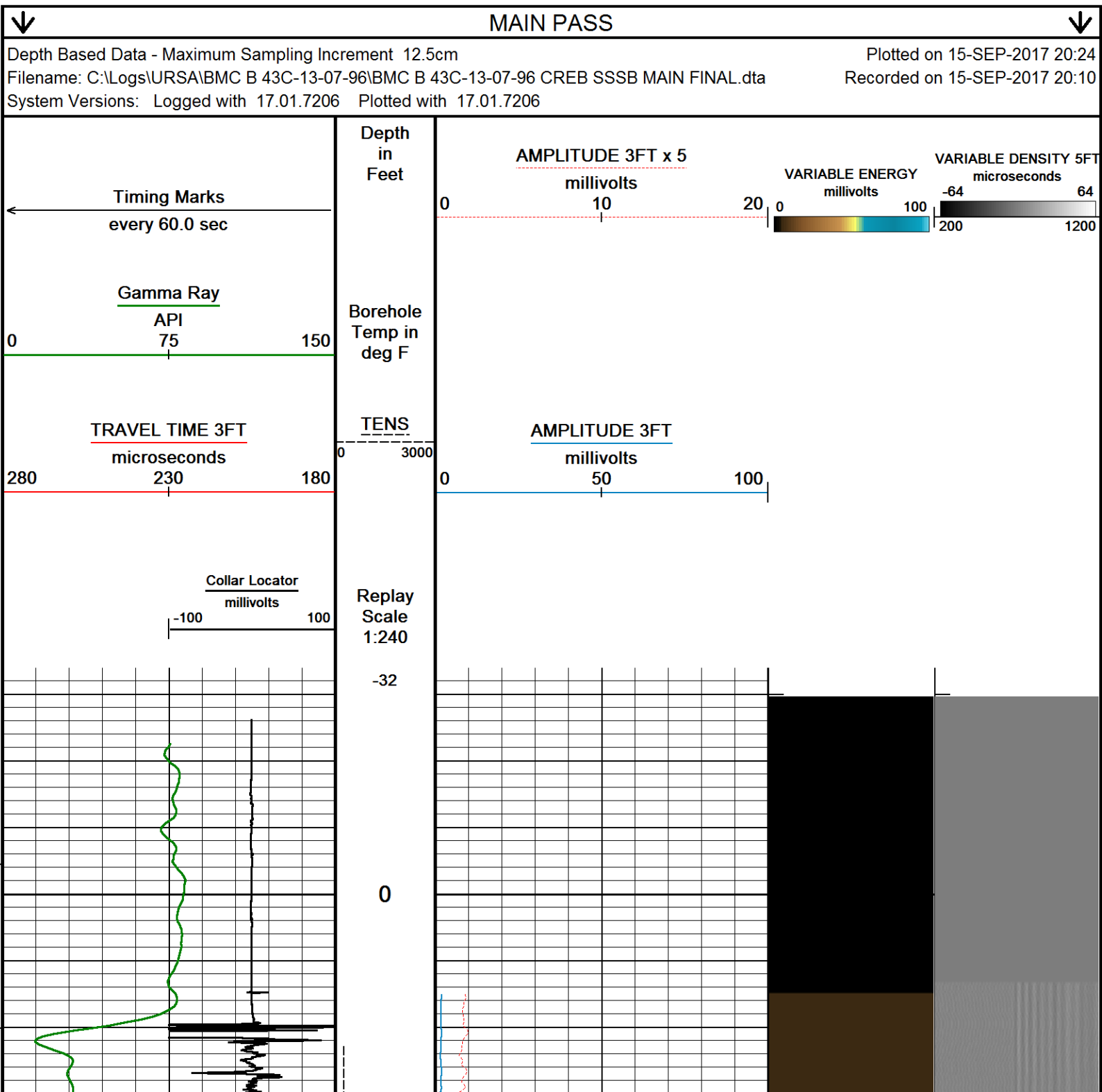
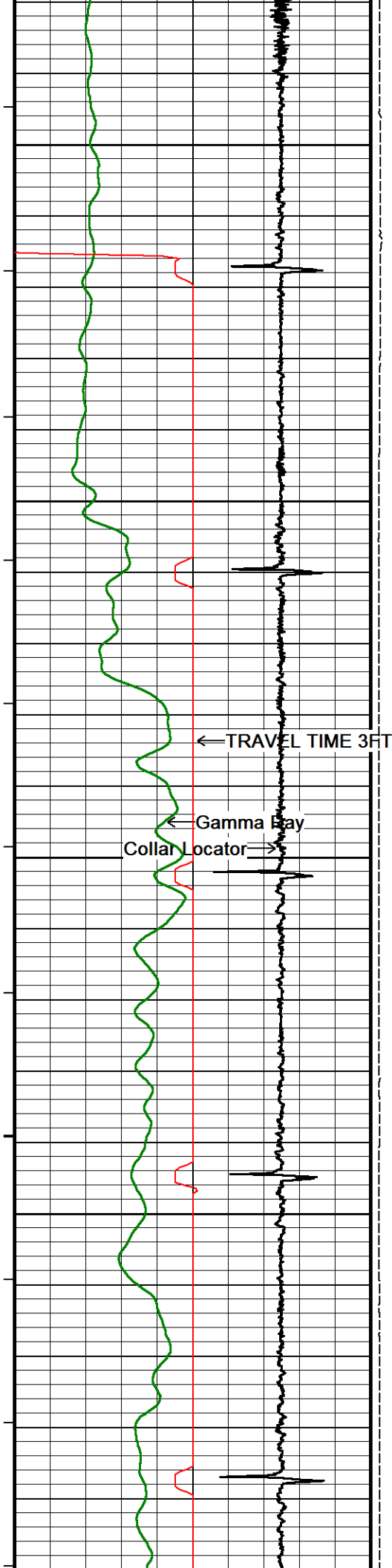
										SLIM SECTOR BOND LOG									
COMPANY										URSA OPERATING COMPANY									
WELL										BMC B 43C-13-07-96									
FIELD										WILDCAT									
PROVINCE/COUNTY										GARFIELD									
COUNTRY/STATE										USA / COLORADO									
LOCATION										2260' FNL & 0633' FWL									
SEC 18		TWP 7S		RGE 95W		Other Services						Elevations:		feet					
Latitude		Longitude		CREB						KB		5117.00							
API Number		05-045-23486								DF		5117.00							
Permanent Datum GROUND LEVEL, Elevation 5100 feet										GL		5100.00							
Log Measured From KB, 17.00 feet above Permanent Datum																			
Drilling Measured From KB																			
Date		15-SEP-2017		PERFORATION RECORD															
Run Number		ONE		Shot		Number		Depth From		Depth To									
Service Order				Density		of Shots		feet		feet									
Type Log		SSSB																	
Depth Driller		6816.00		feet															
Depth Logger		6450.00		feet															
Top Log Interval		0.00		feet															
Bottom Log Interval		6450.00		feet															
Hole Fluid Type		WATER																	
Hole Fluid Level		0.00		feet															
Restriction ID		3.875		inches		Gun Type													
Max Recorded Temp		196.00		deg F		Gun Size													
Well Head Pressure		0.00		psi		CASING / TUBING RECORD													
Well Head Equipment		N/A		Size		Weight		Depth From		Depth To									
Time Well Ready		ROA		inches		pounds/ft		feet		feet									
Time Logger Bottom		SEE LOG		8.625		32.00		0.00		1700.00									
Unit		14115		4.500		11.60		0.00		6816.00									
Equipment Name		WSS-E																	
Base		CASPER																	
Recorded By		P. MAZUR																	
Witnessed By		NOT WITNESSED																	

CASING / TUBING RECORD						
Type	Grade	TypeJoint	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE			8.625	0.00	1700.00	32.00
PRODUCTION			4.500	0.00	6816.00	11.60

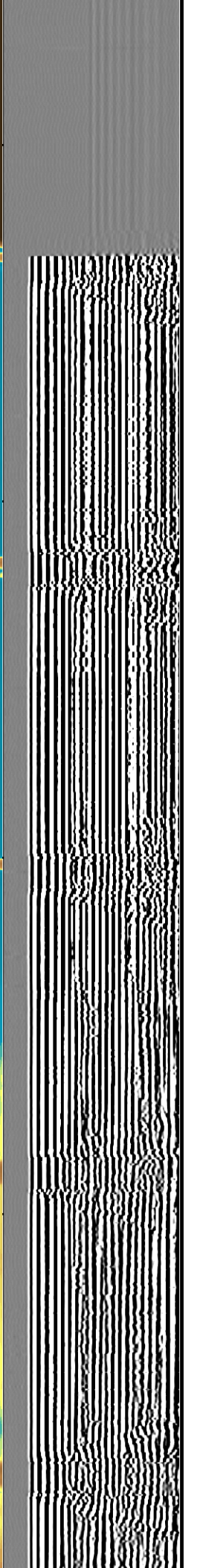
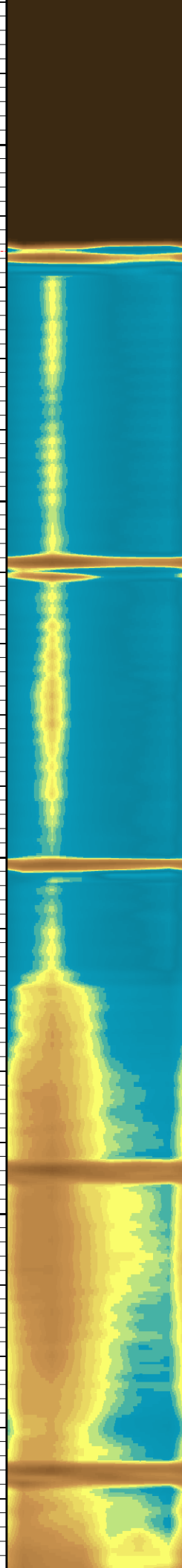
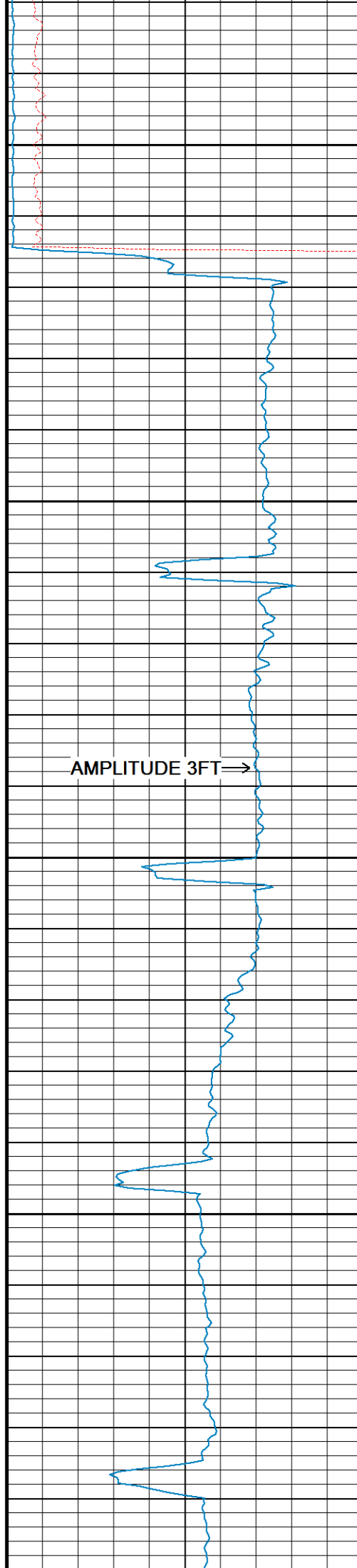
REMARKS
SOFTWARE VERSION 17.01.7206 - COMMERCIAL VERSION
ALL DEPTH CONTROL PROCEDURES FOR SUBSEQUENT RUN IN HOLE WERE FOLLOWED. LOG RUN FROM 17' K.B.
SURFACE SYSTEM USED: WCM-D 160
TOOLS RUN: WCCC, UGRK, QPGE, CR3B, TMPN, CRPB, CRMB, CR3B, UGRK, SUEC, SSSB, STEB, CENA WERE RAN IN COMBINATION
GAMMA RAY COUNTS ON SUBSEQUENT PASSES ARE AFFECTED BY RESIDUAL NEUTRON ACTIVATION CAUSED BY THE PREVIOUS PASS
PREDICTED 3' AMPLITUDE FOR 4.5" WITH 11.6 LB/FT CASING: 81 mv
FREE PIPE CALIBRATION DONE AT 140 FT
UNKNOWNEN CEMENT CLASS DUE MISSING DATA FROM CLIENT
UNKNOWNEN CEMENT JOB ENDED TIME DUE TO MISSING DATA FROM CLIENT
BOTTOM HOLE TEMPERATURE WAS DEG. 196F

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.



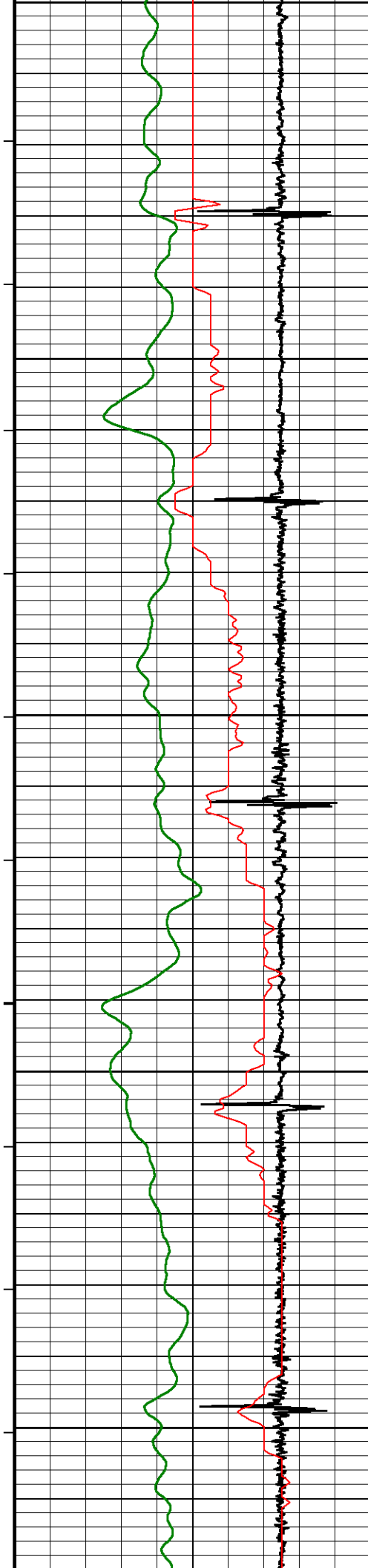


57°
50
56°
100
56°
150
57°
200
58°
250

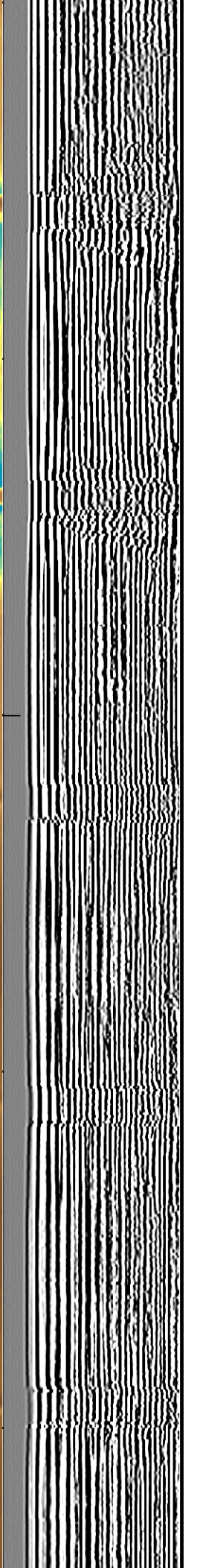
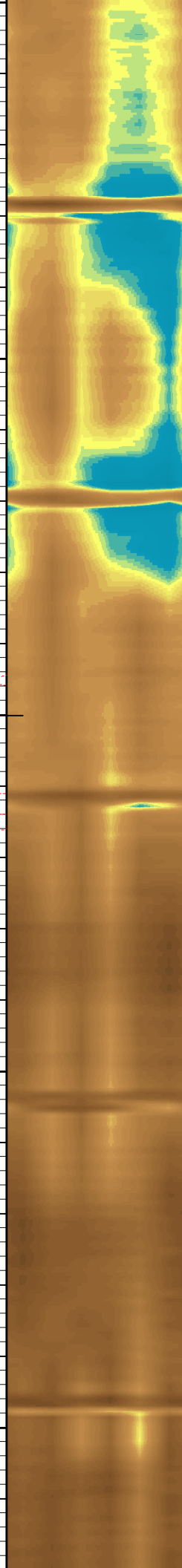
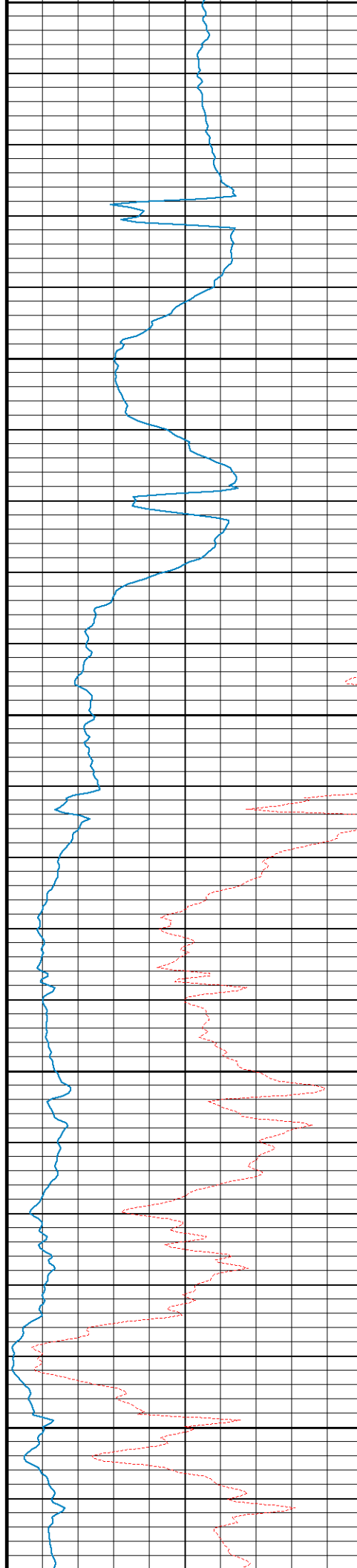


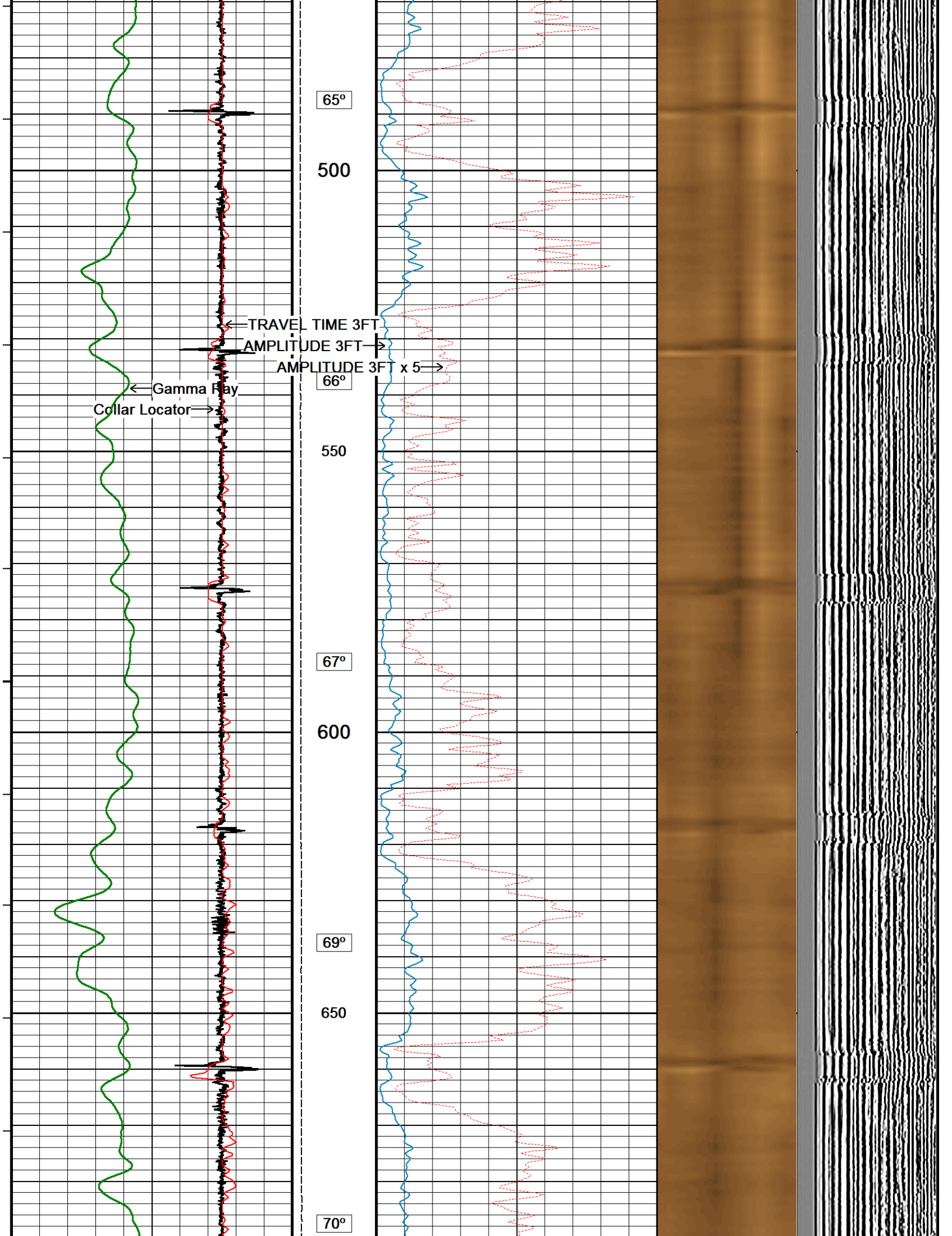
← TRAVEL TIME 3FT
← Gamma Ray
Collar Locator →

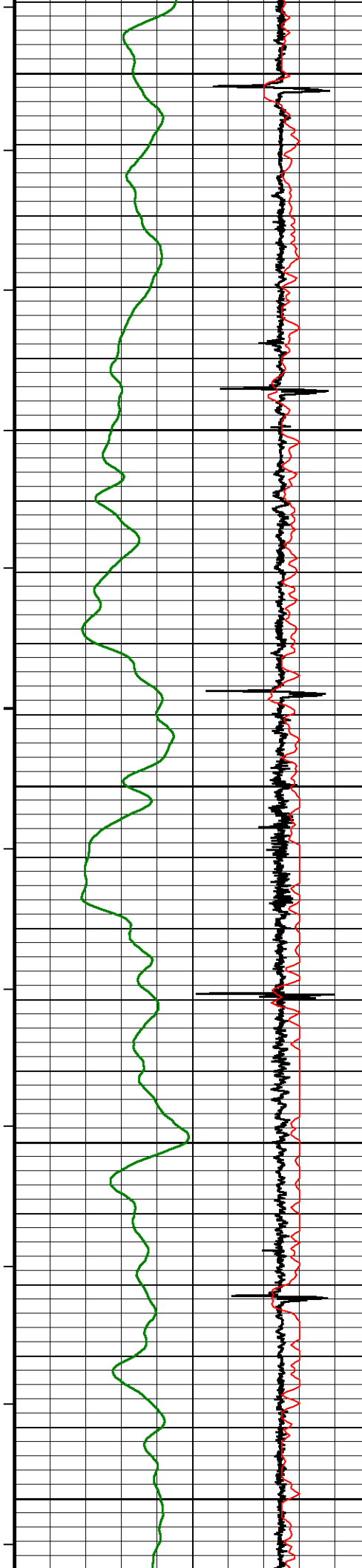
AMPLITUDE 3FT →



250
60°
300
61°
350
62°
400
63°
450







700

71°

750

72°

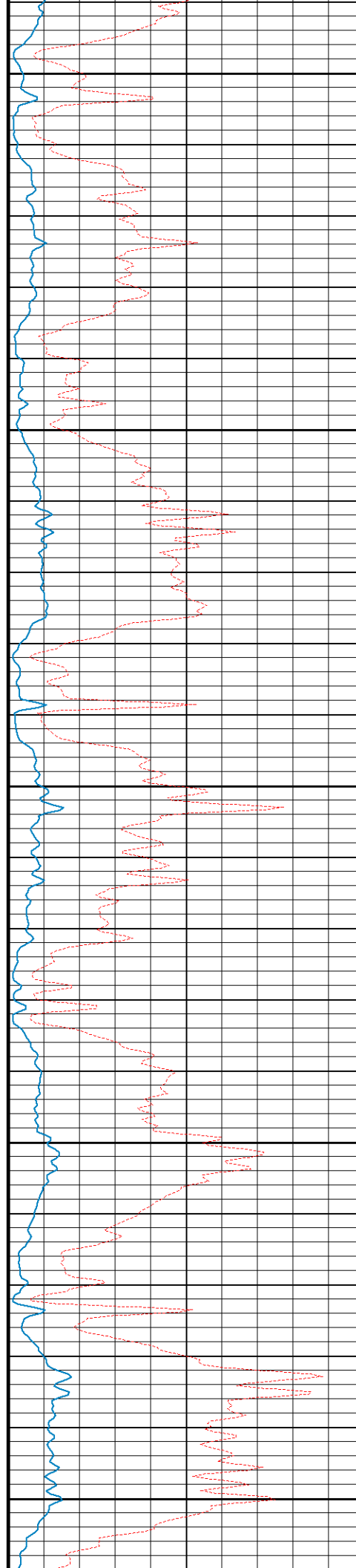
800

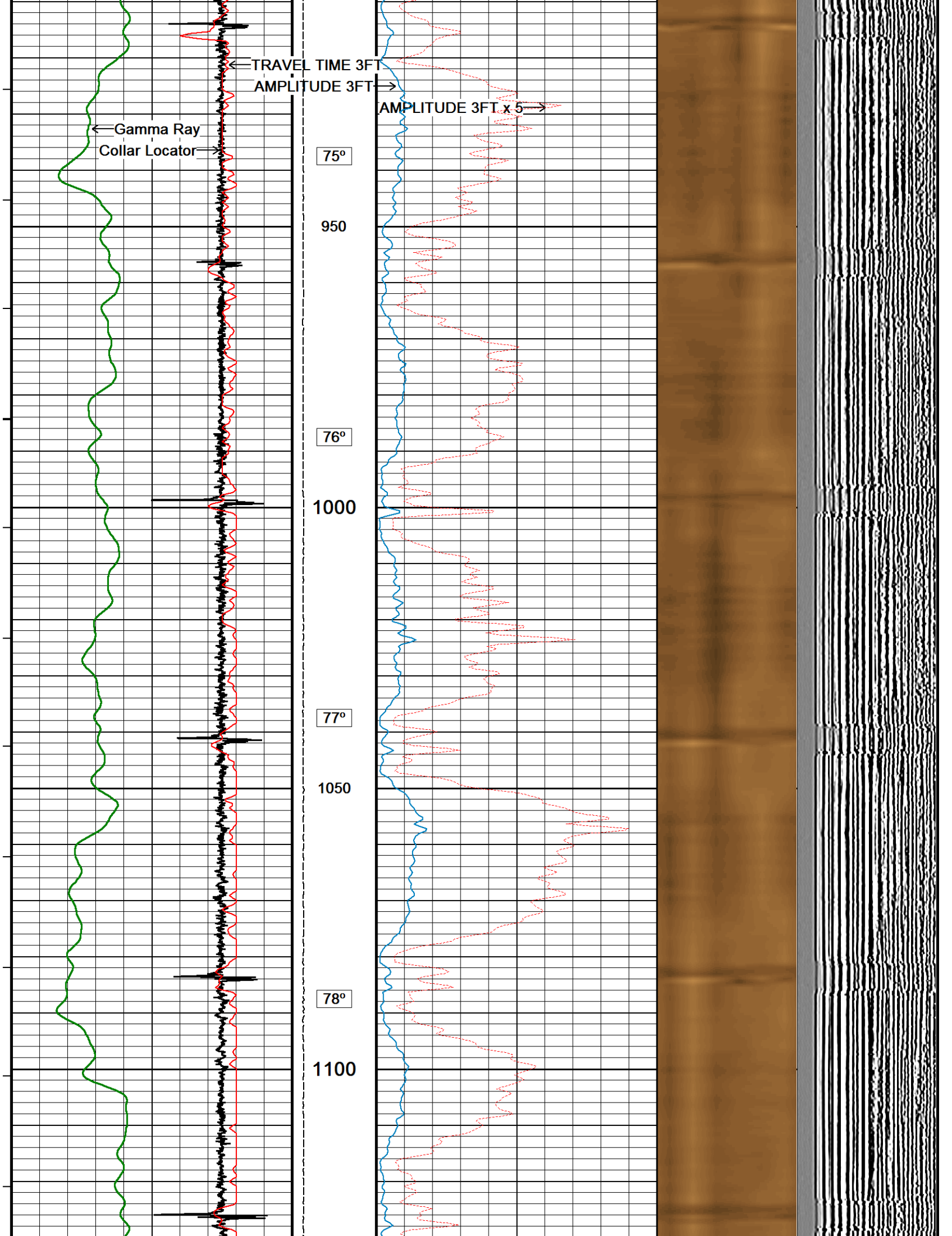
73°

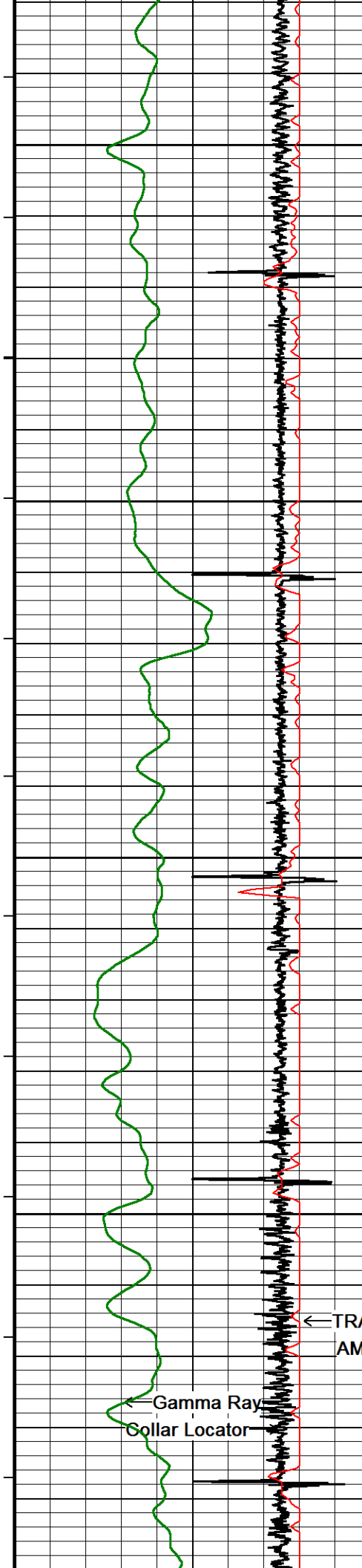
850

74°

900







79°

1150

80°

1200

81°

1250

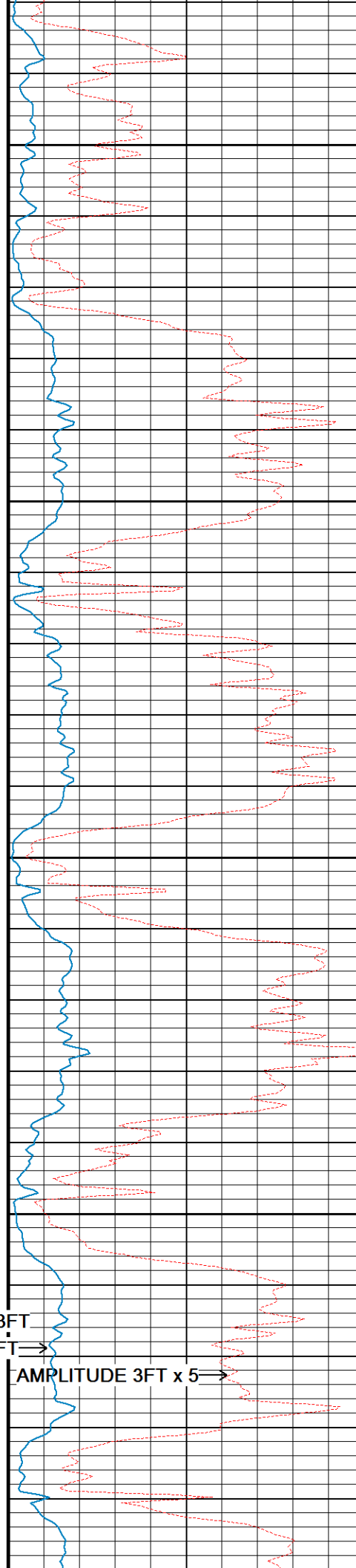
82°

1300

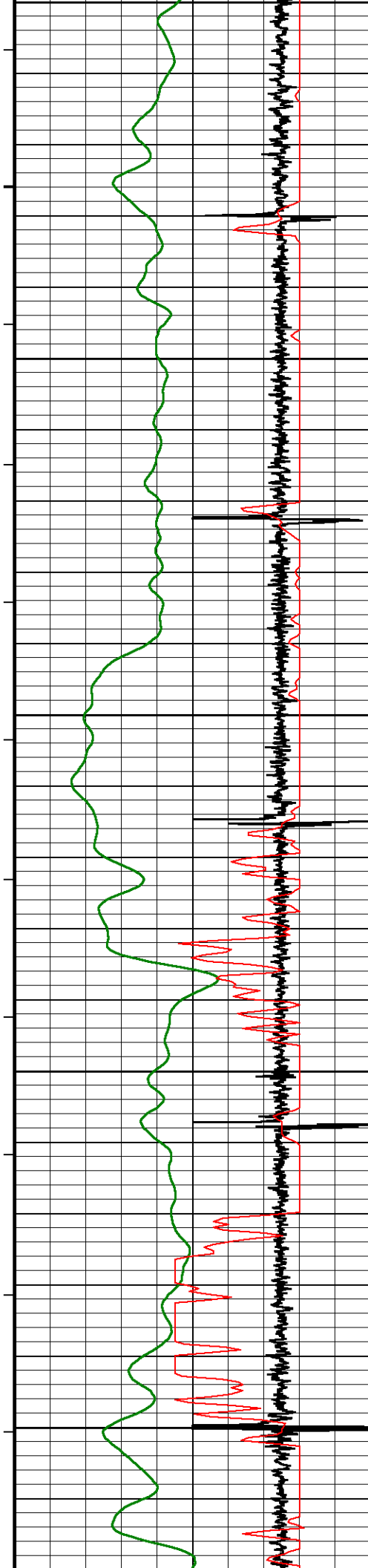
← TRAVEL TIME 3FT
AMPLITUDE 3FT →

83°

1350



AMPLITUDE 3FT x 5 →



1350

84°

1400

85°

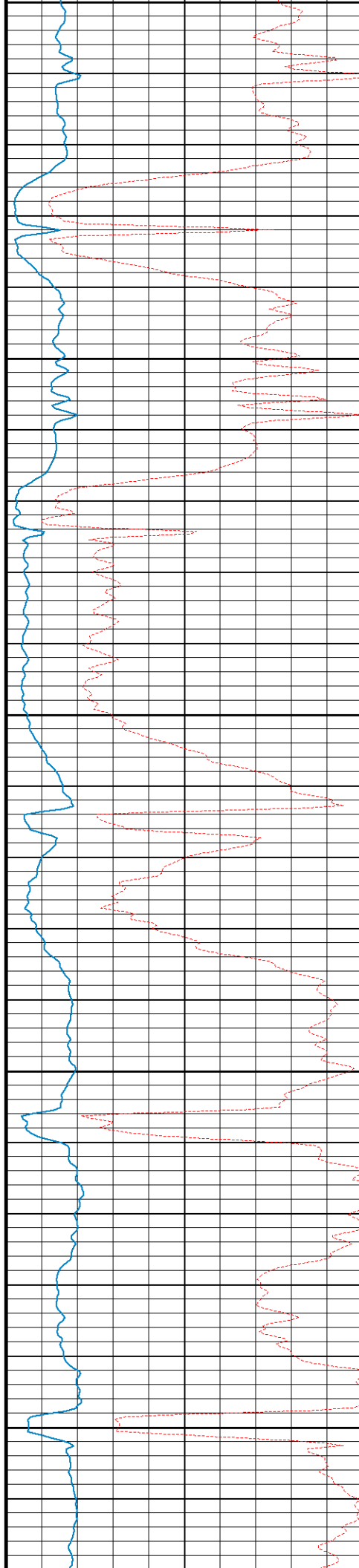
1450

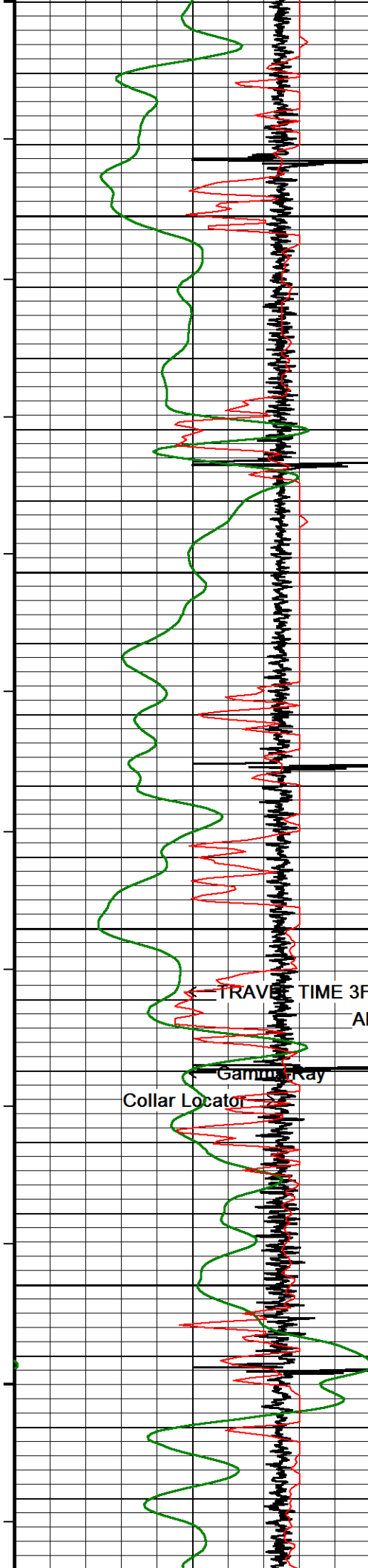
86°

1500

87°

1550





87°

1600

88°

1650

89°

1700

91°

1750

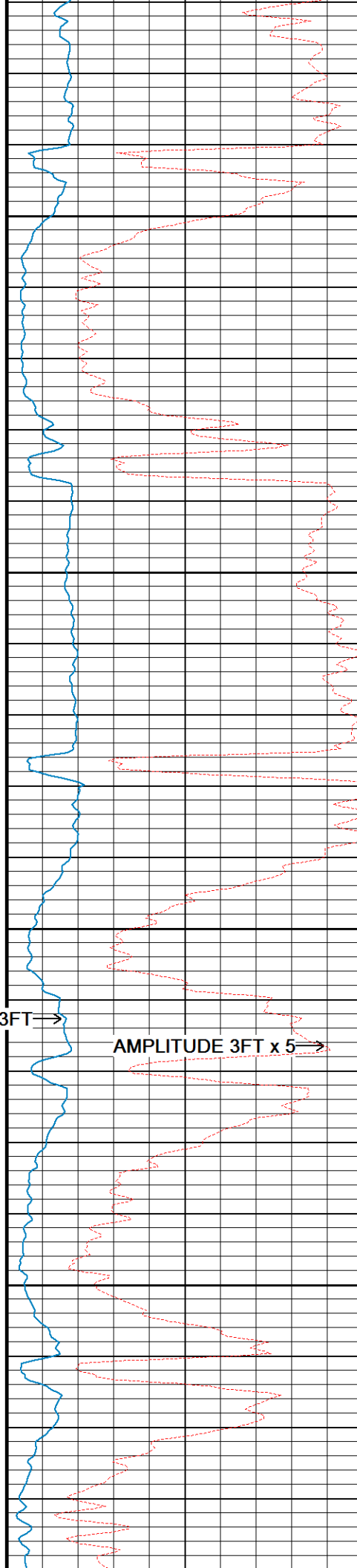
92°

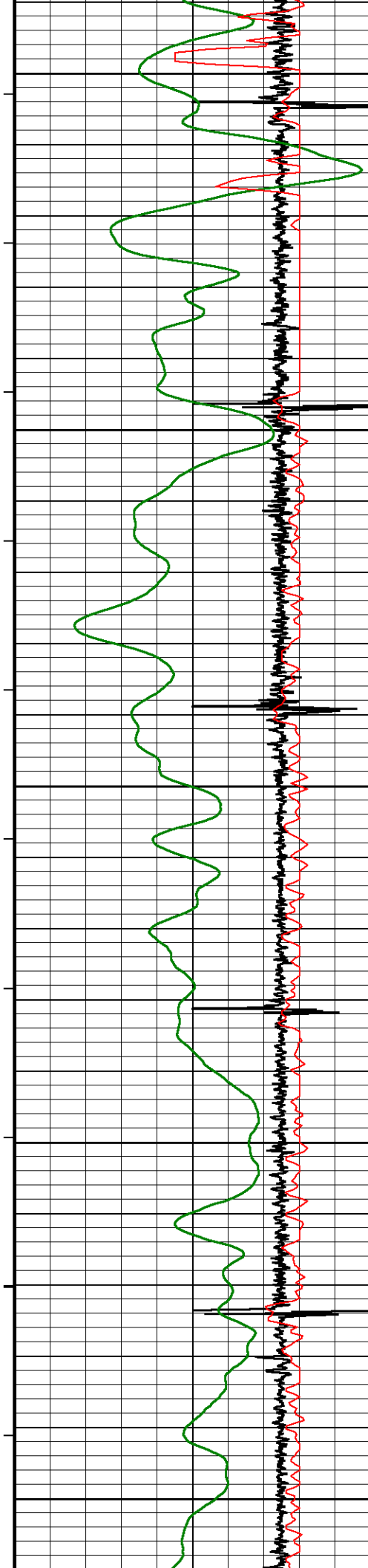
← TRAVEL TIME 3FT

AMPLITUDE 3FT →

← Gamma Ray
Collar Locator

AMPLITUDE 3FT x 5 →





1800

93°

1850

94°

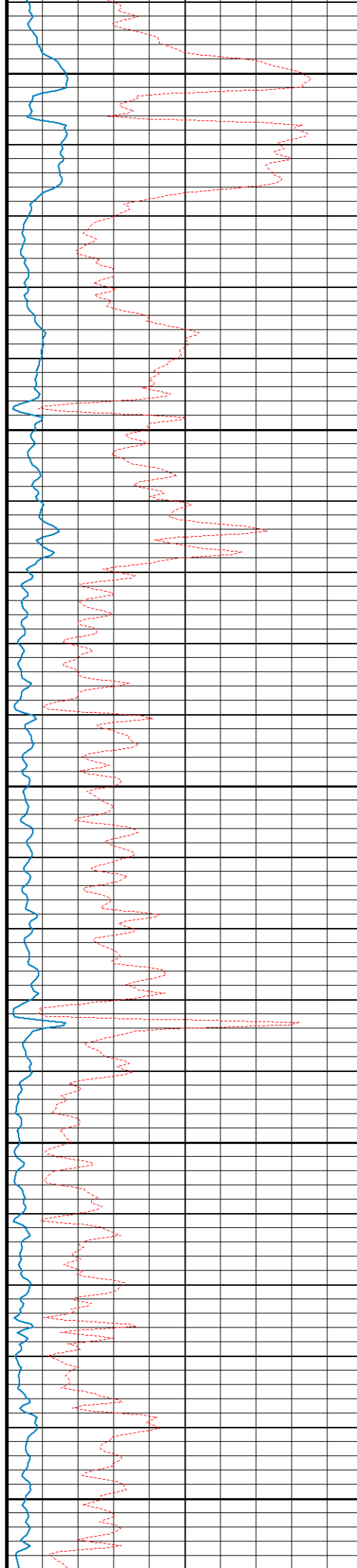
1900

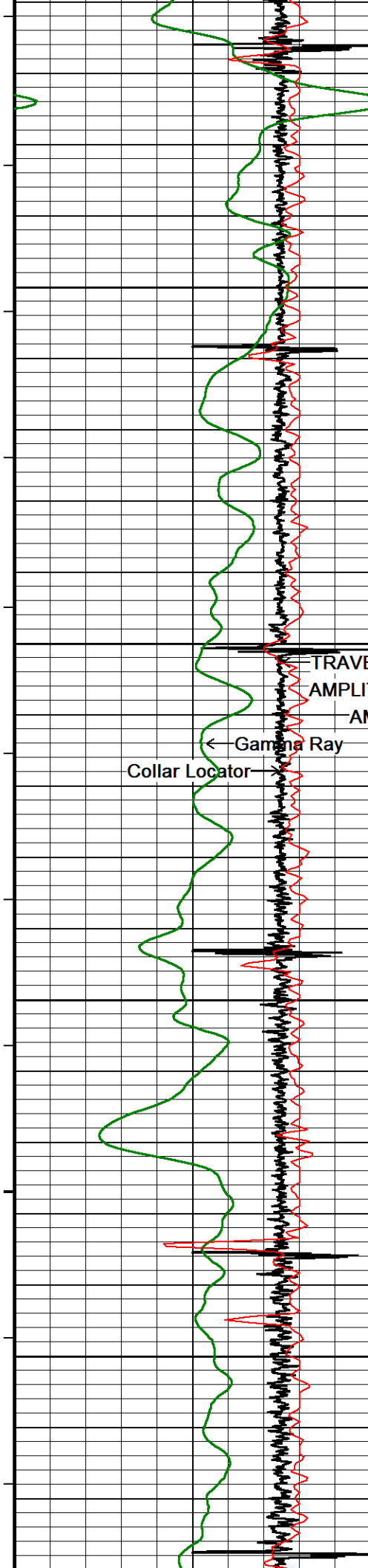
95°

1950

96°

2000





97°

2050

98°

2100

TRAVEL TIME 3FT
AMPLITUDE 3FT
AMPLITUDE 3FT x 5

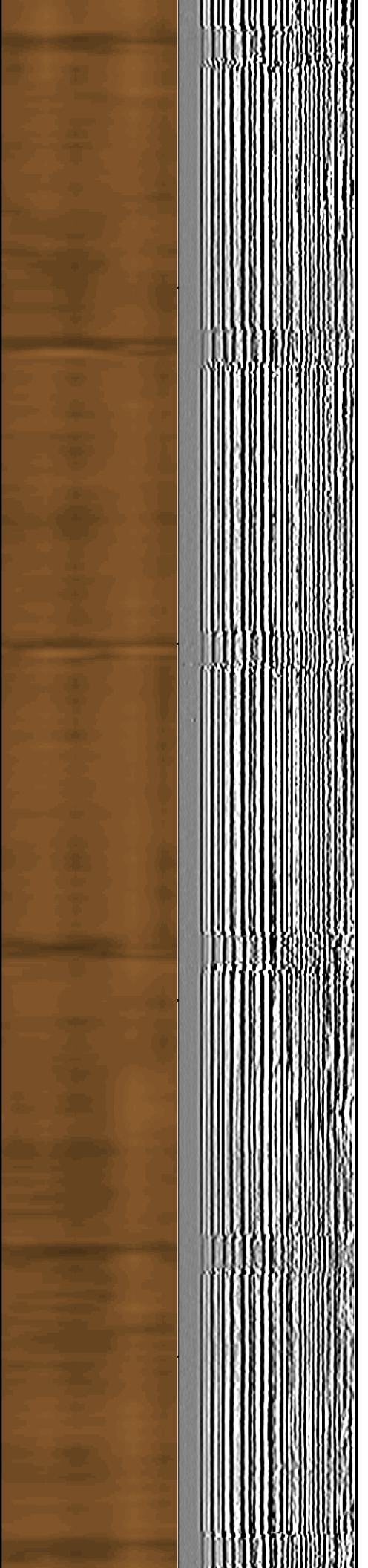
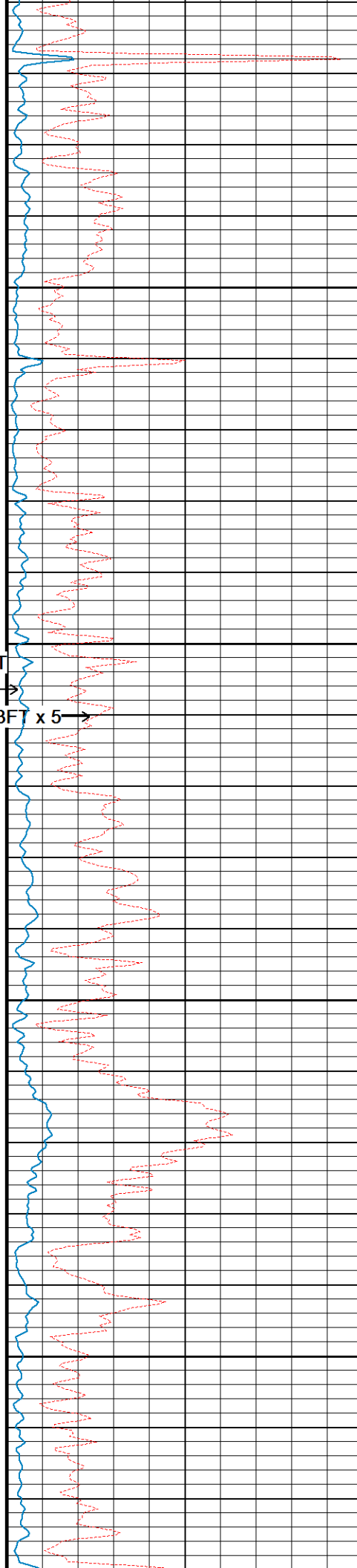
← Gamma Ray
Collar Locator →

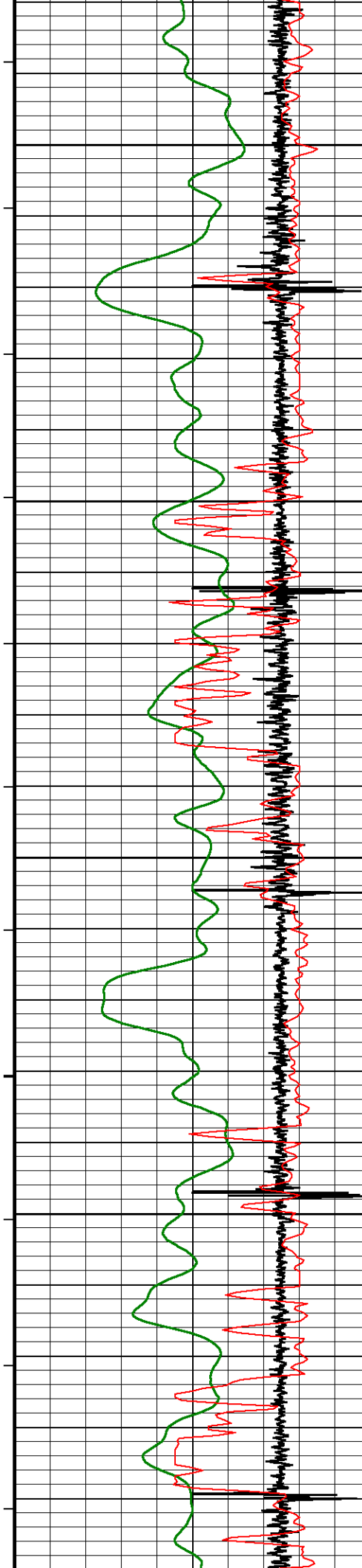
99°

2150

100°

2200





101°

2250

102°

2300

102°

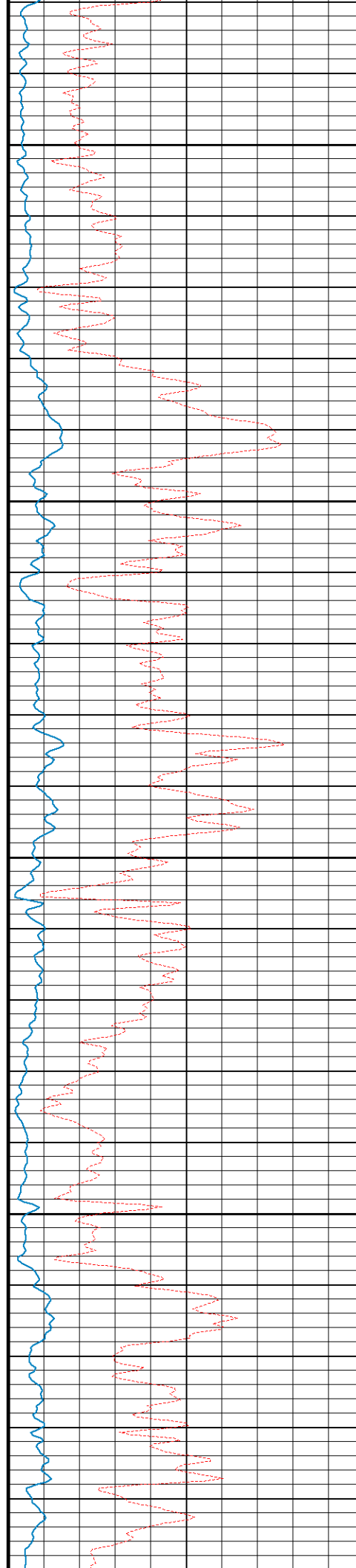
2350

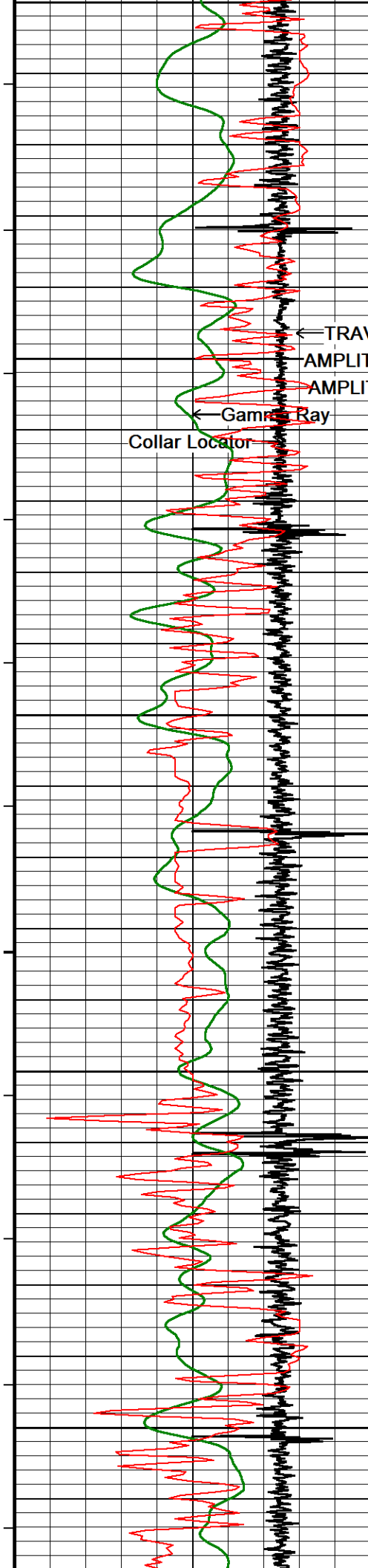
103°

2400

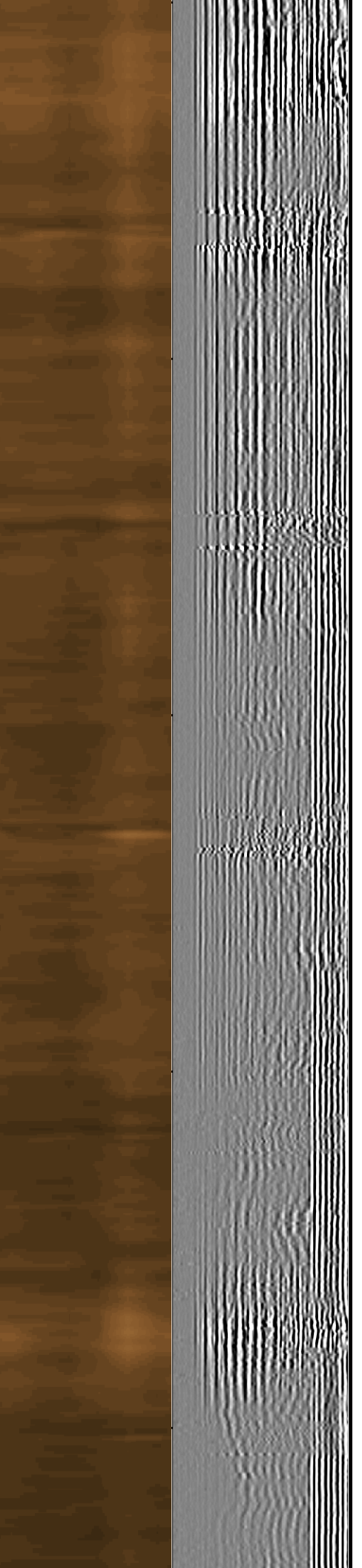
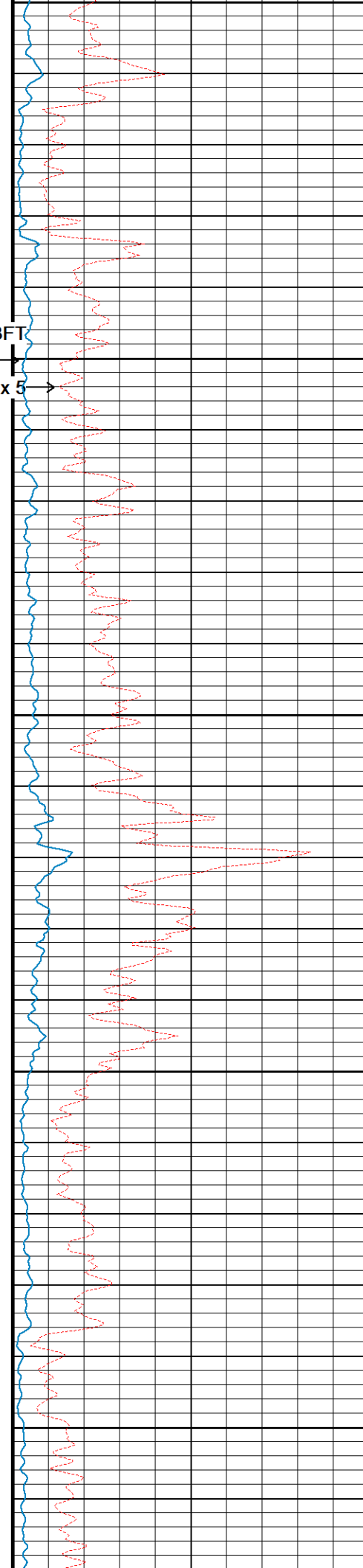
104°

2450



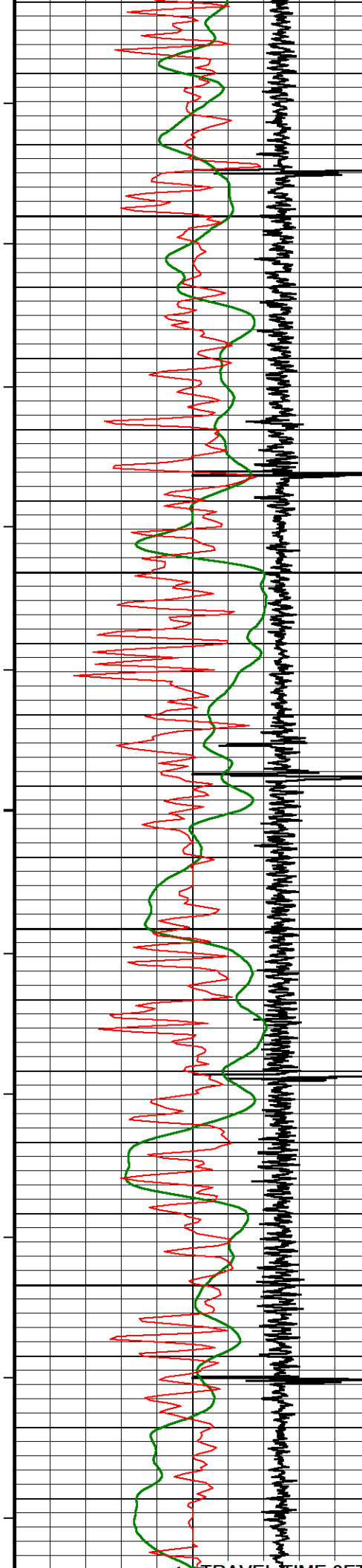


2450
105°
2500
2550
106°
2600
107°
2650
108°



← TRAVEL TIME 3FT
AMPLITUDE 2500
AMPLITUDE 3FT x 5 →

← Gamma Ray
Collar Locator



108°

2700

109°

2750

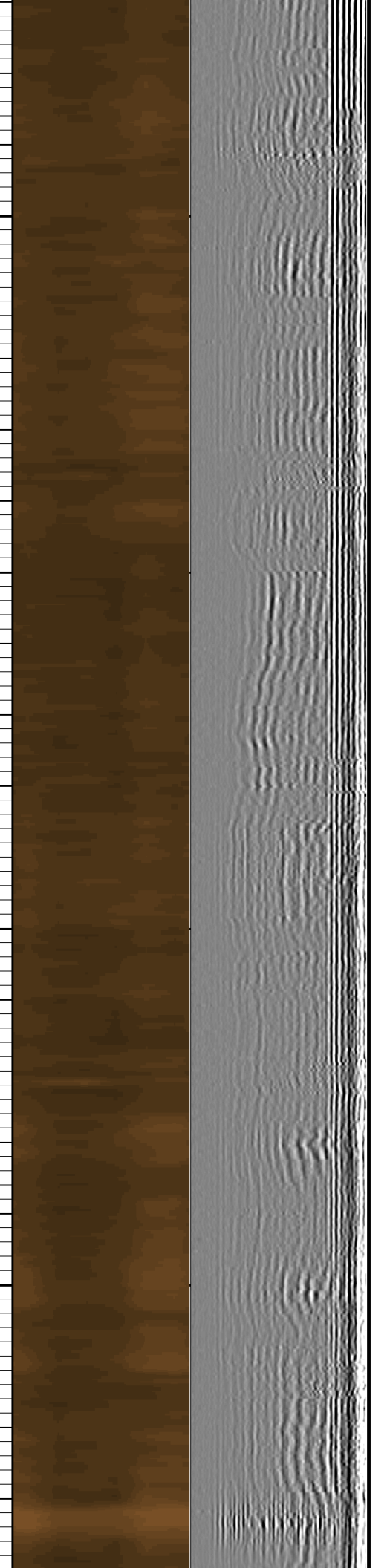
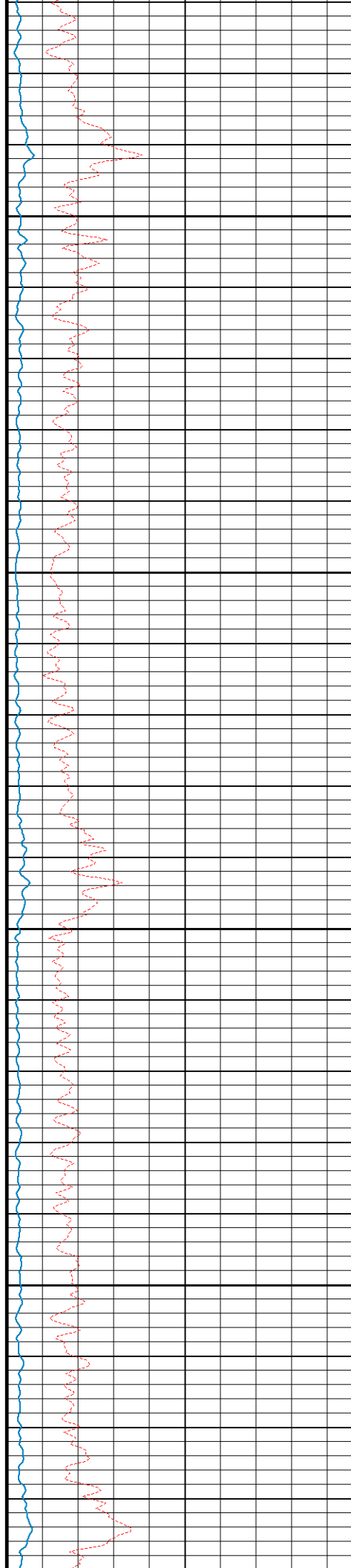
110°

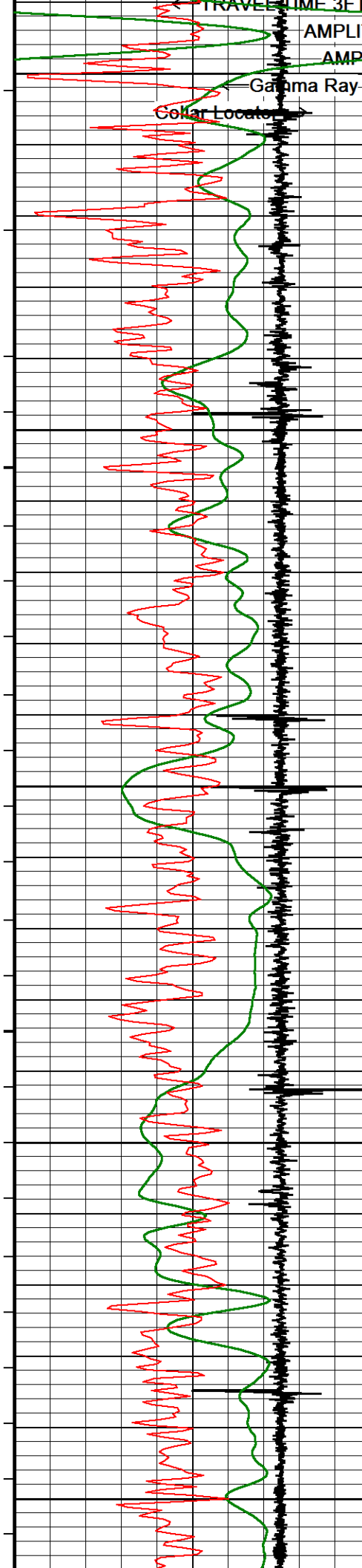
2800

111°

2850

112°





AMPLITUDE 3FT

AMPLITUDE 3FT x 5

Gamma Ray

Collar Locator

112°

2950

113°

3000

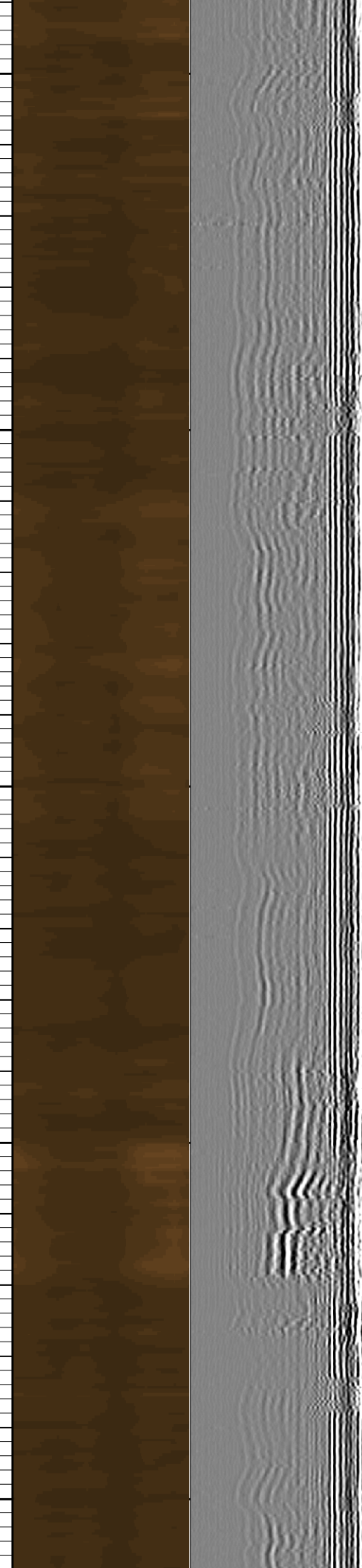
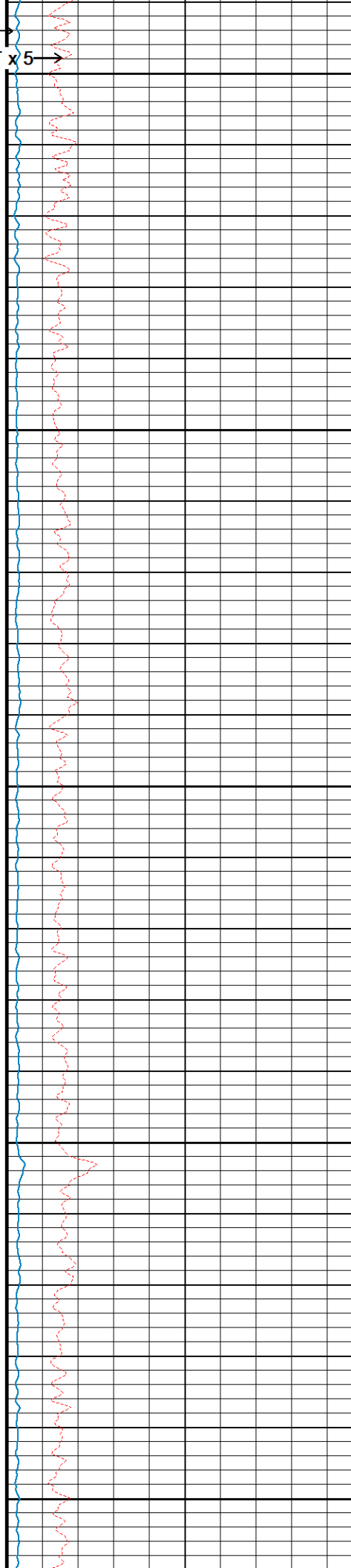
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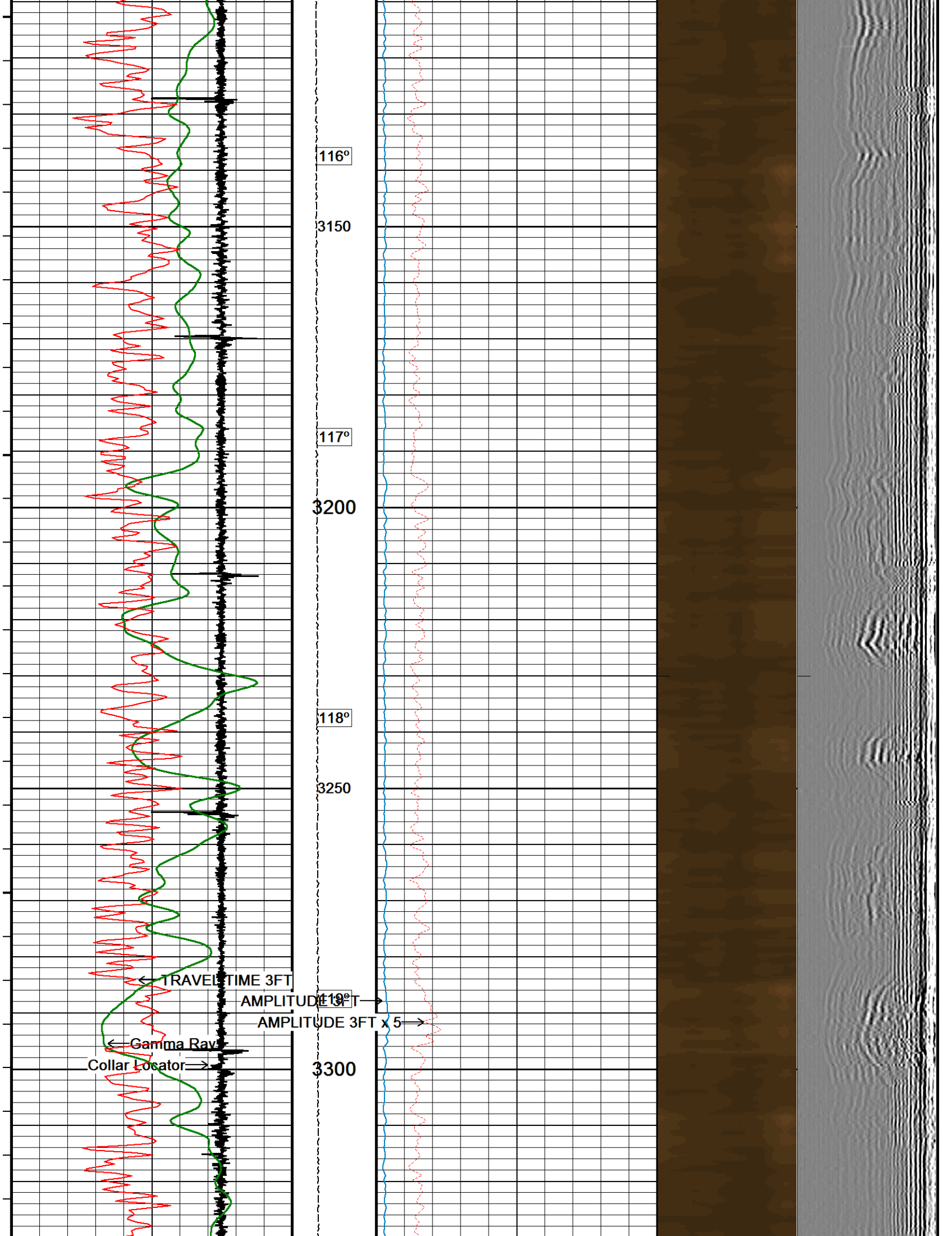
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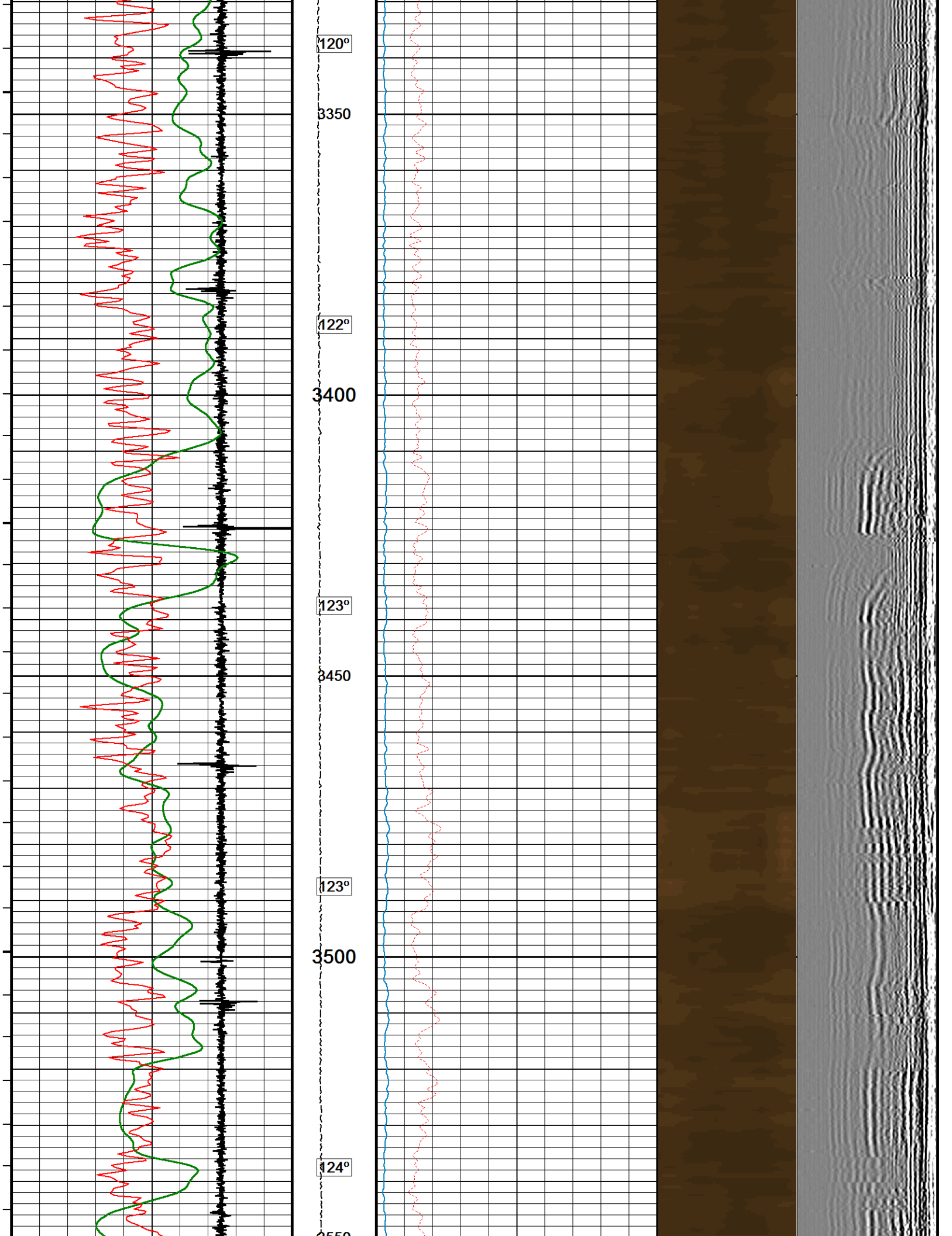
115°

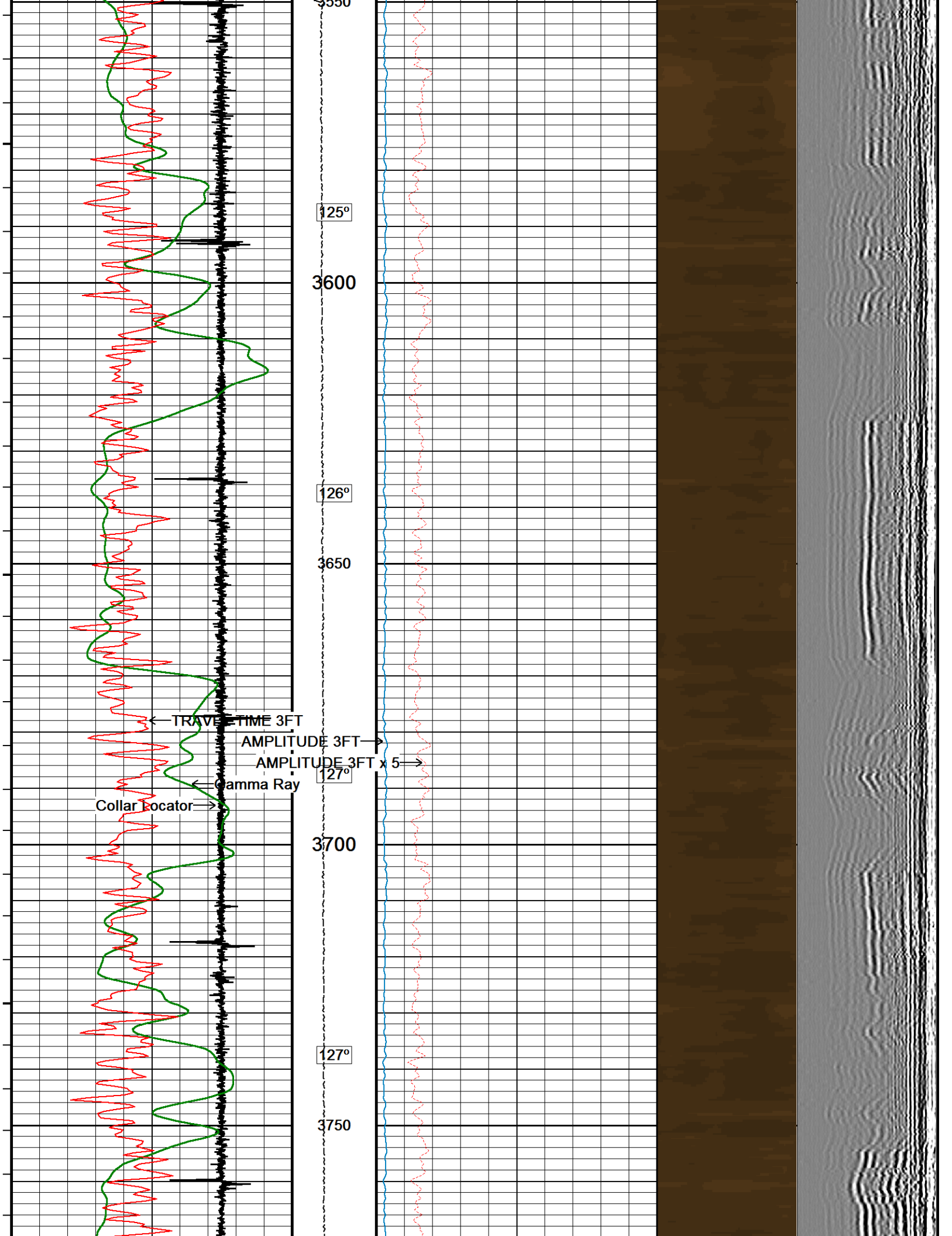
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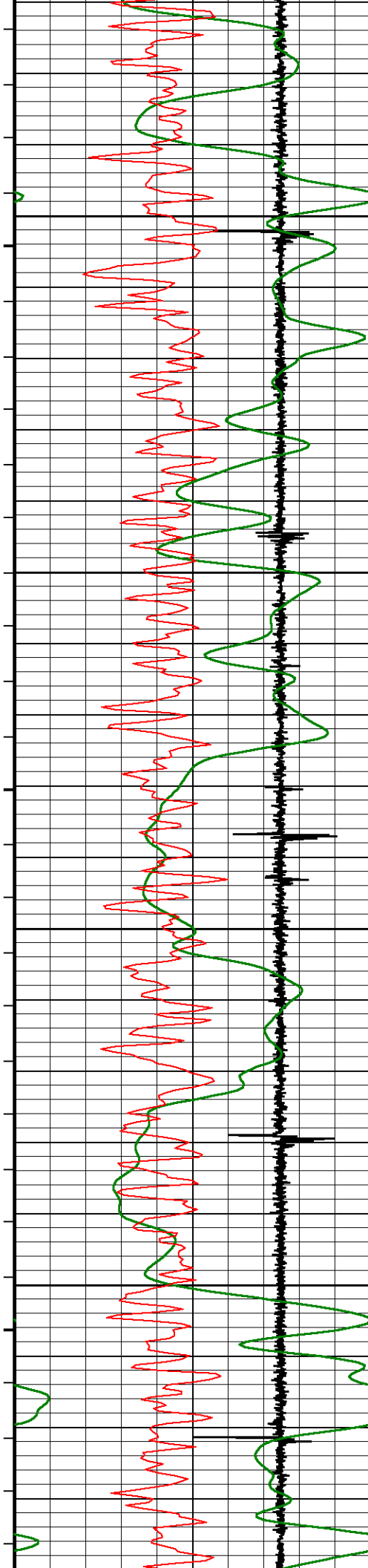
2900











128°

3800

129°

3850

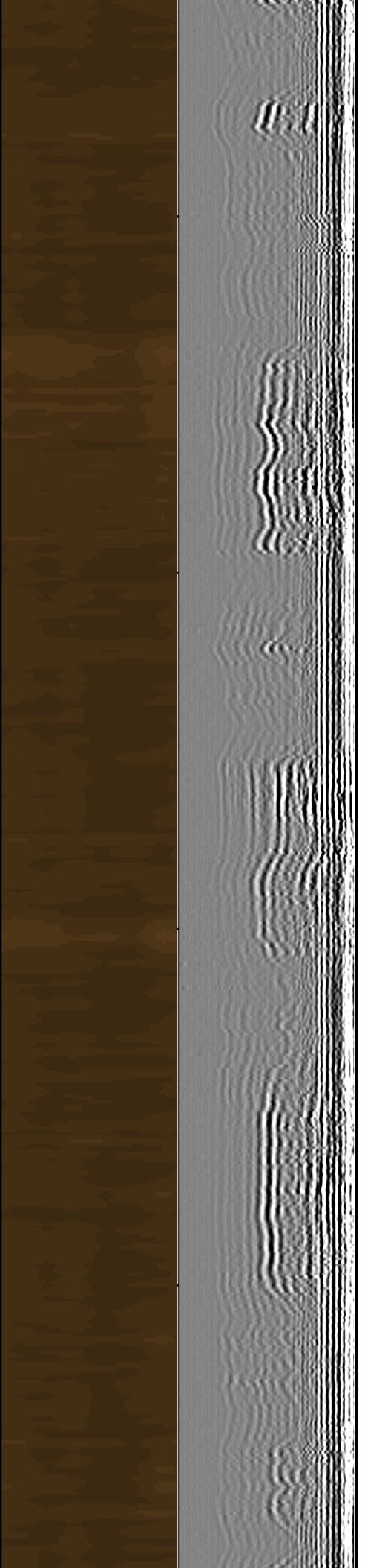
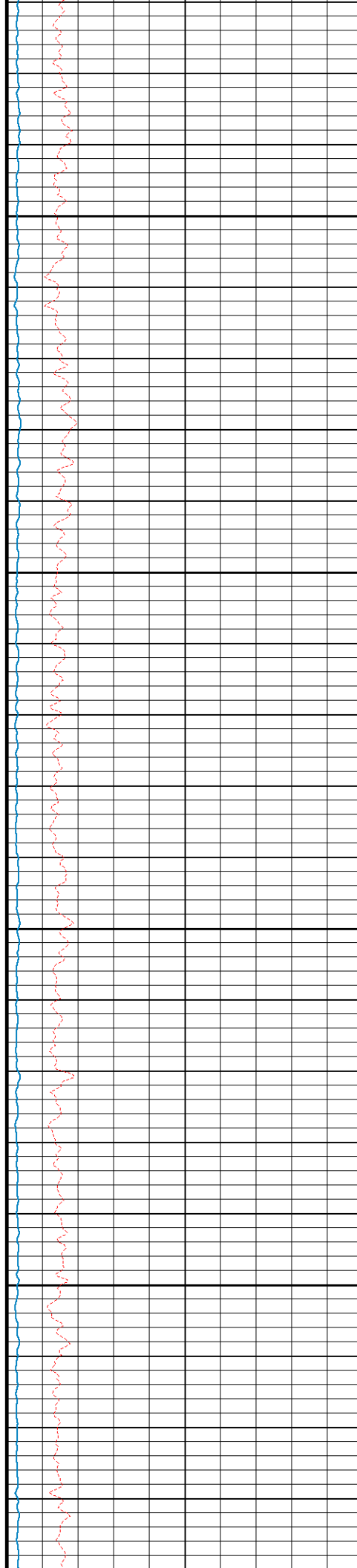
130°

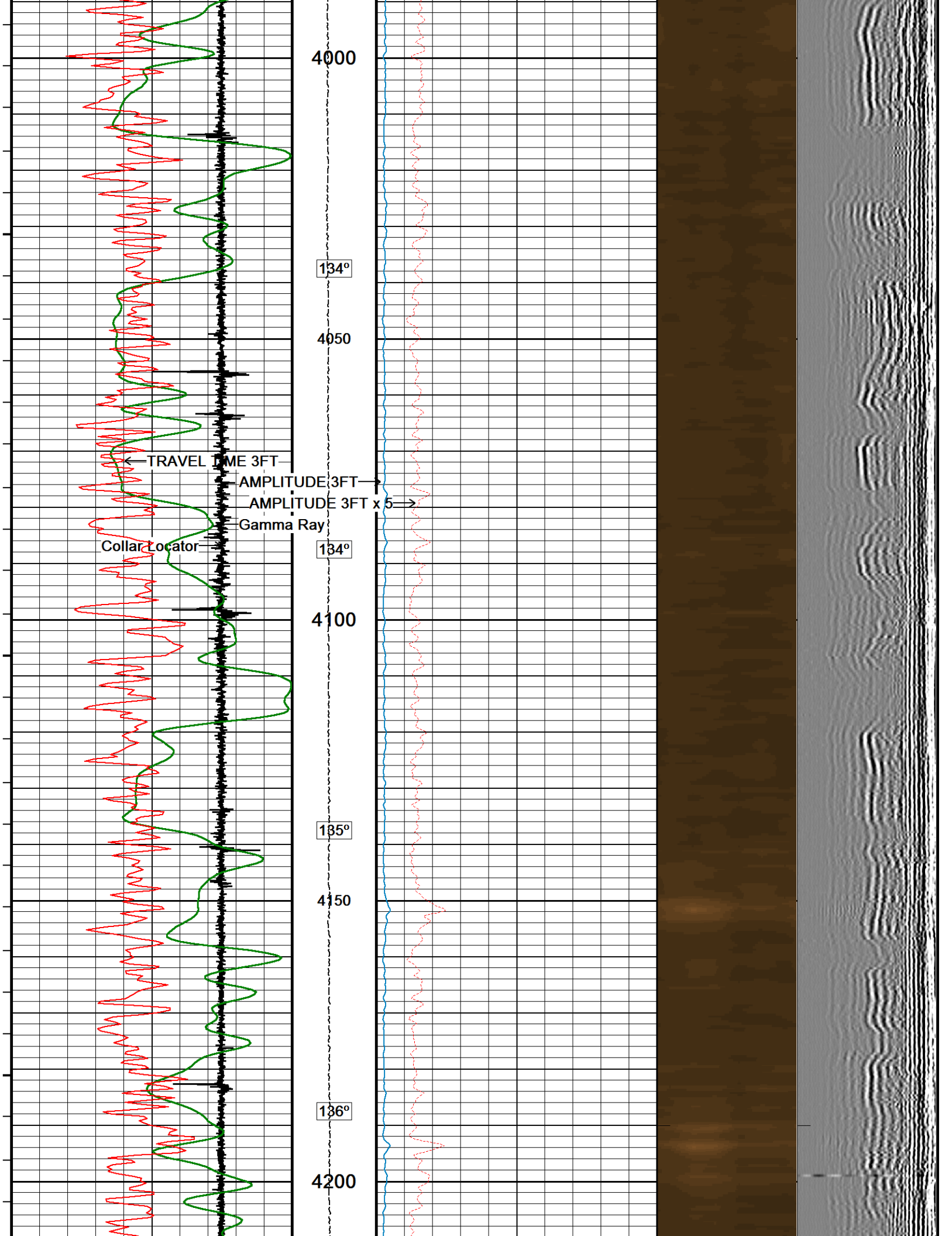
3900

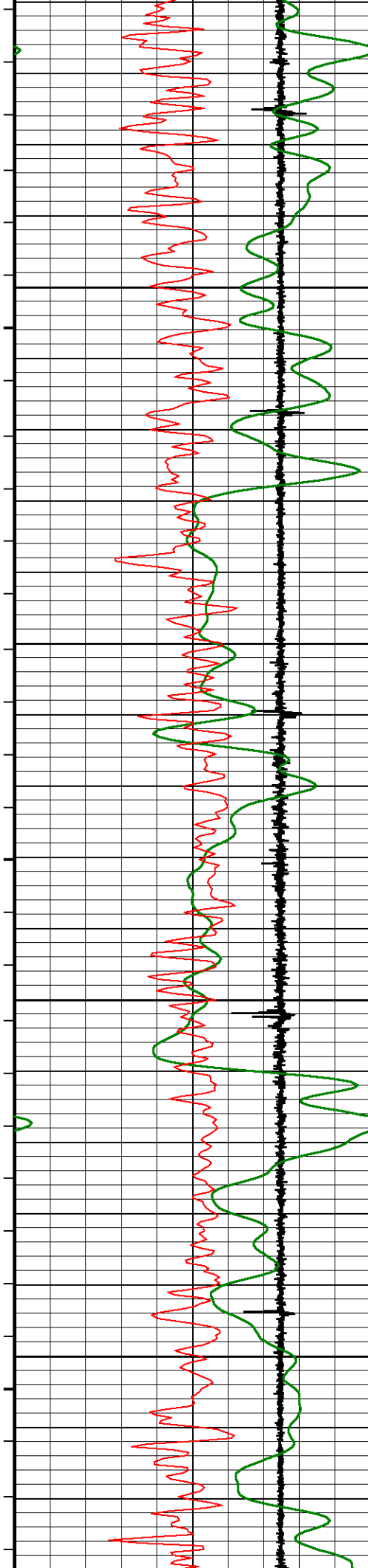
131°

3950

132°







137°

4250

138°

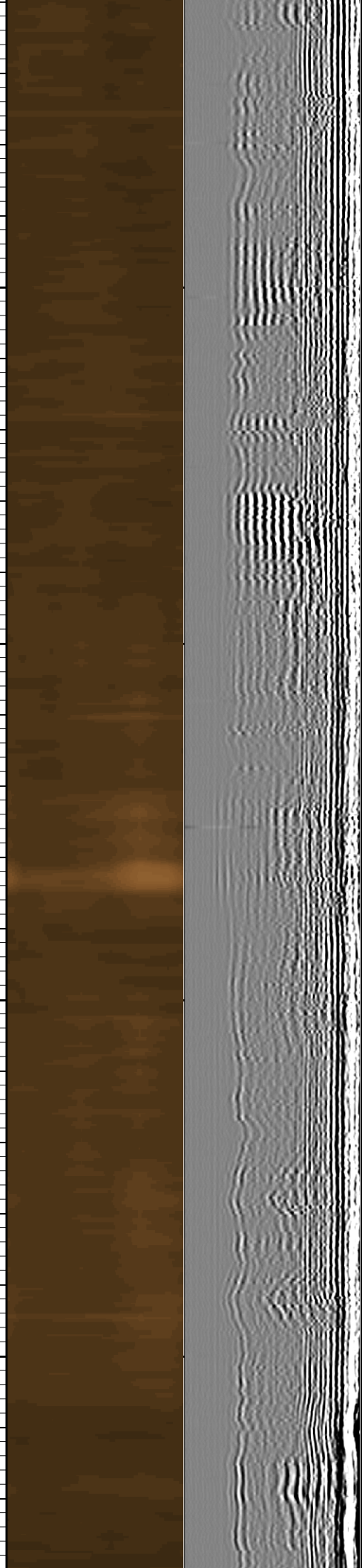
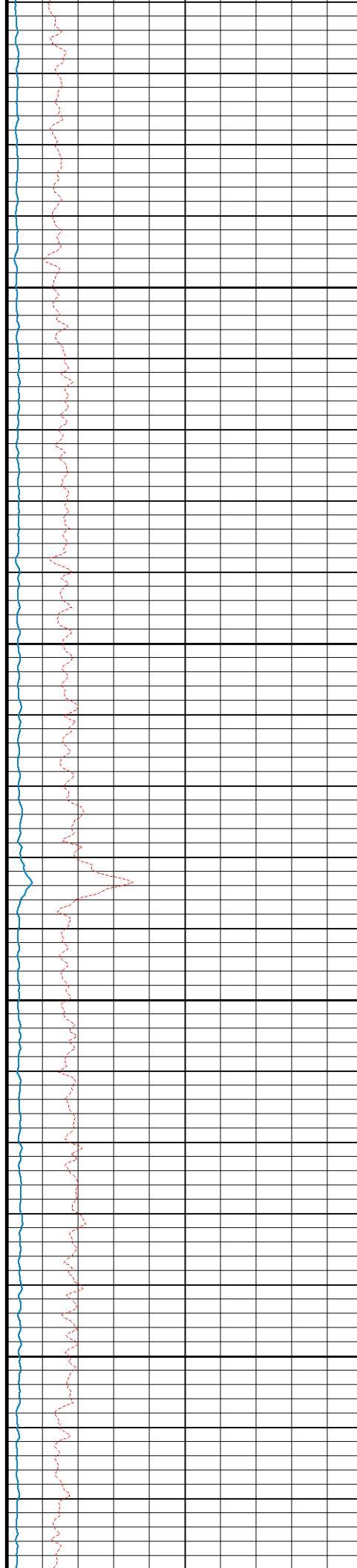
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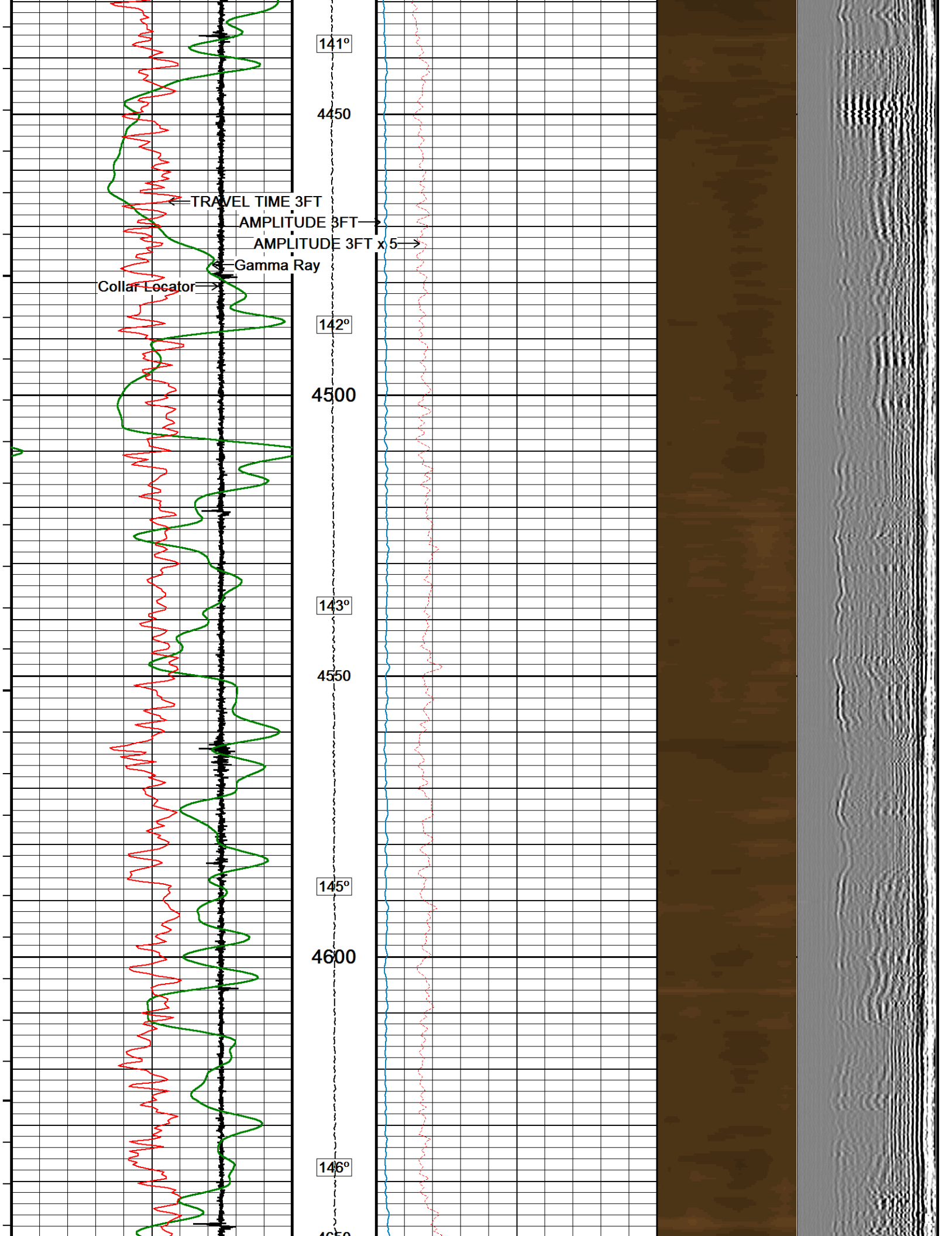
139°

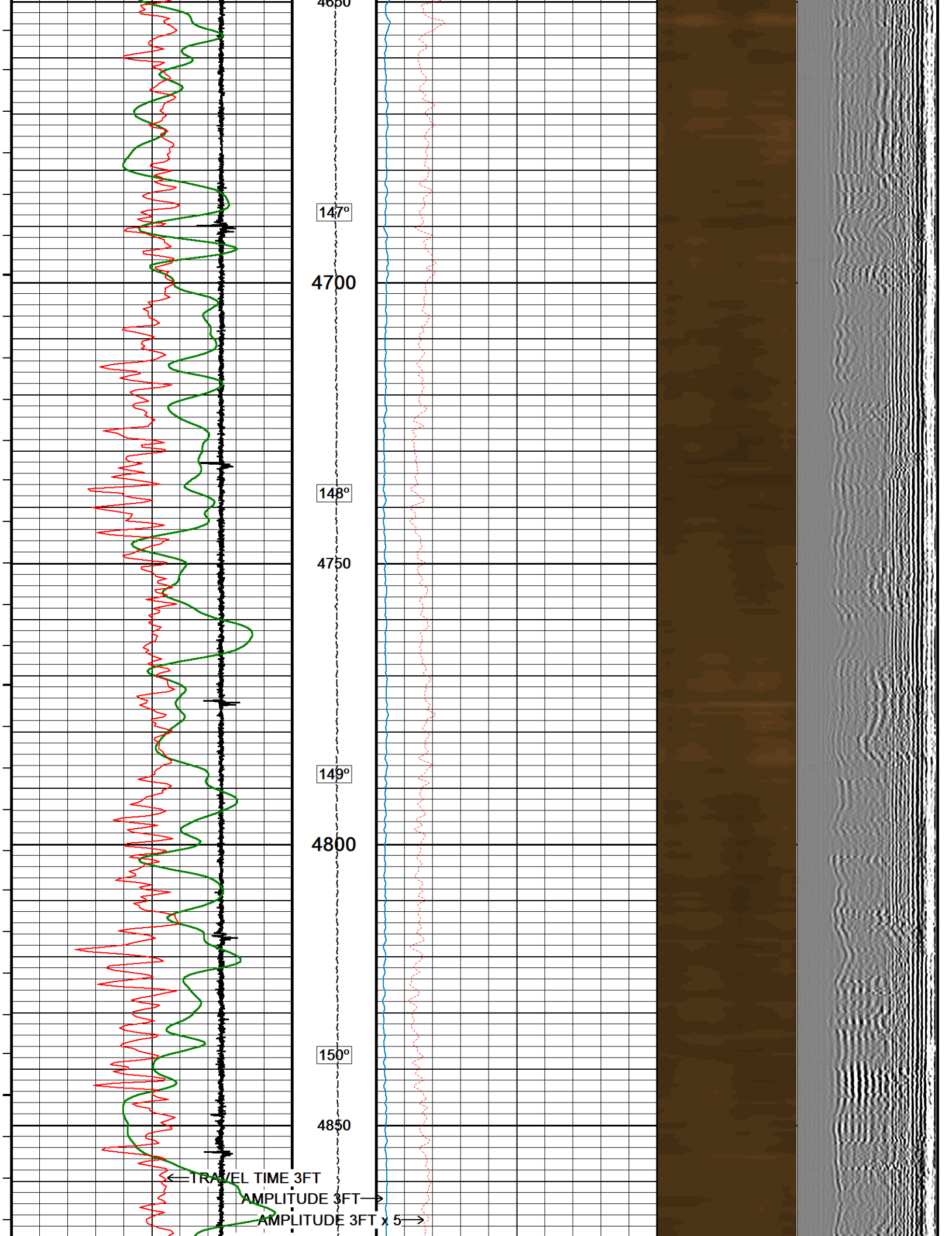
4350

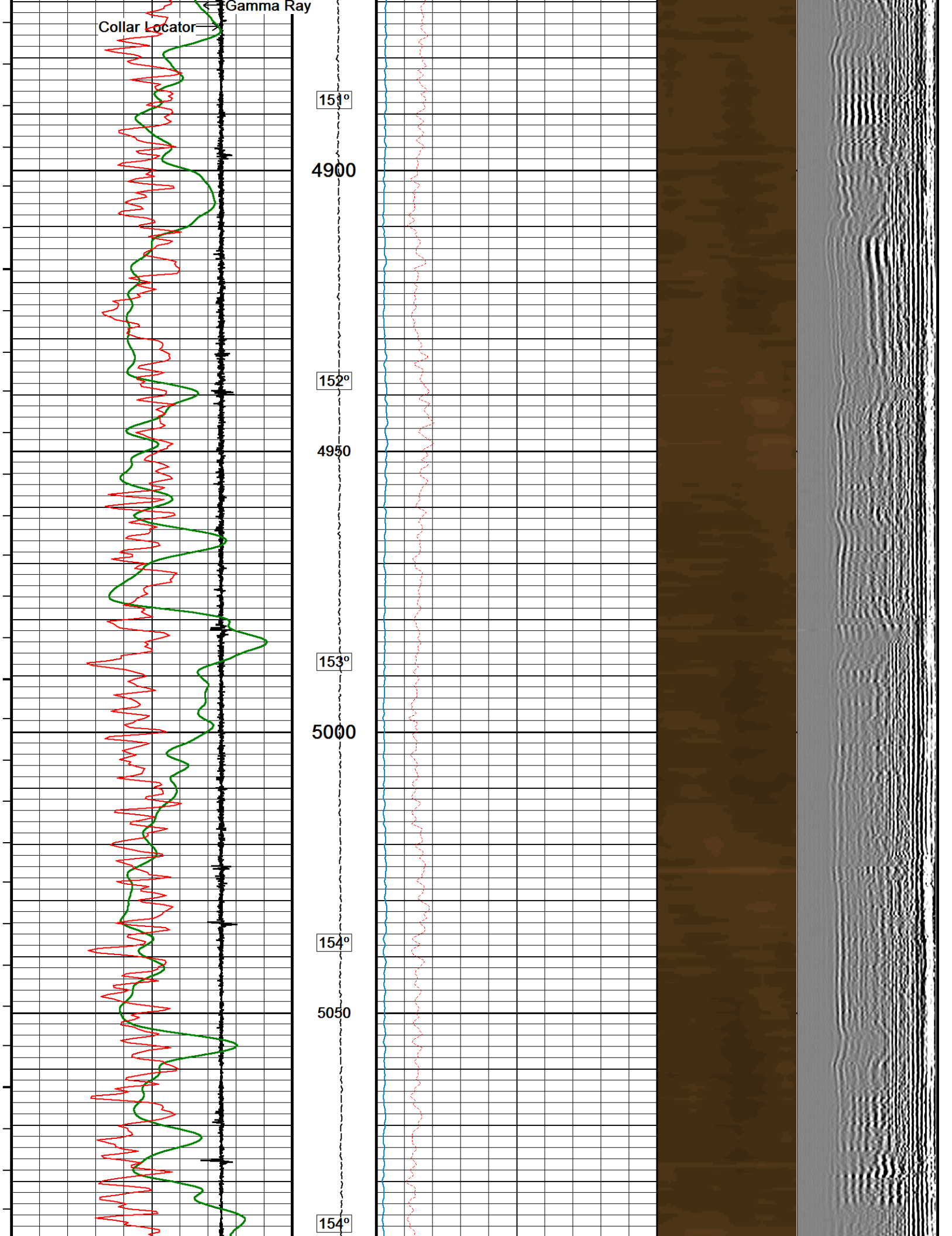
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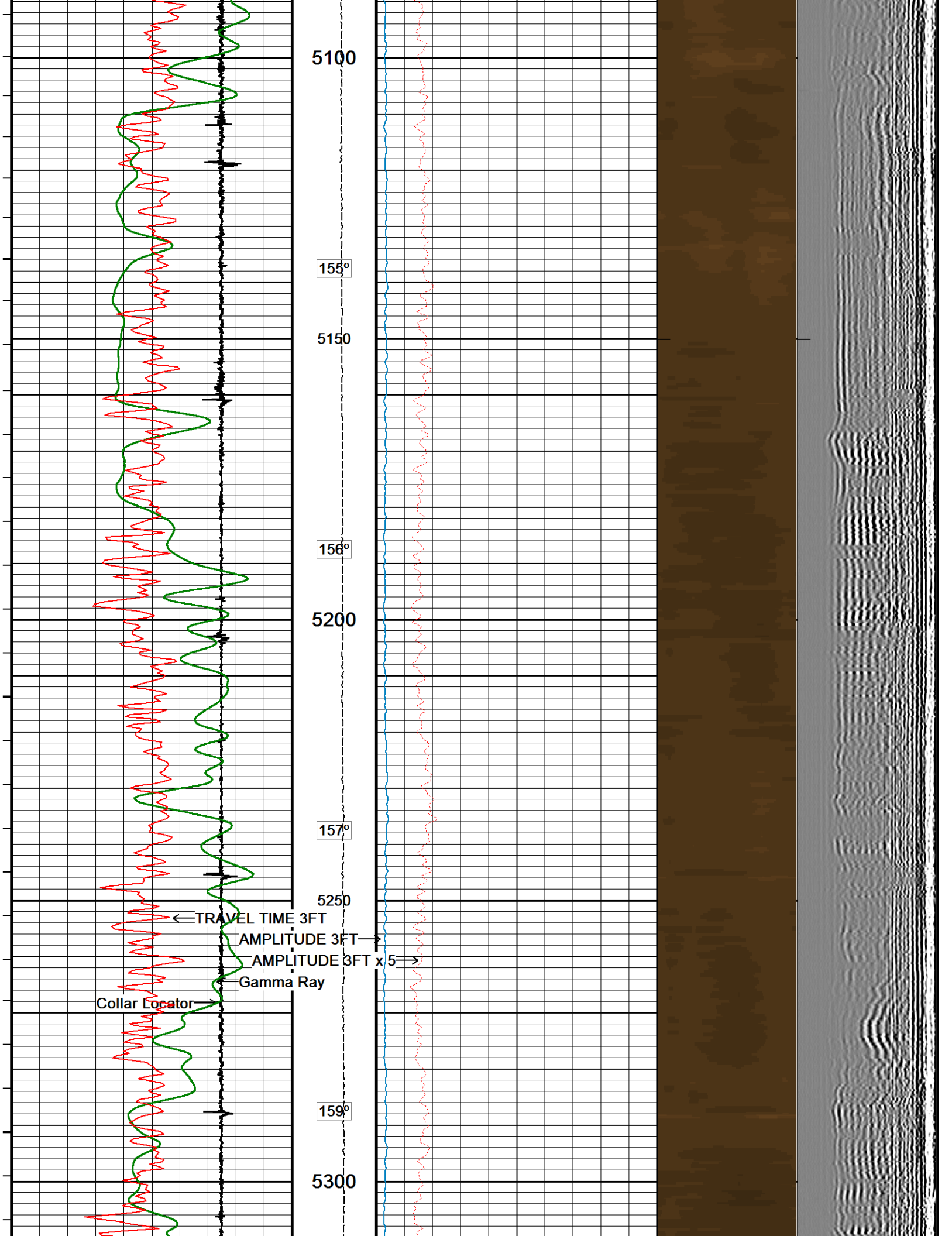
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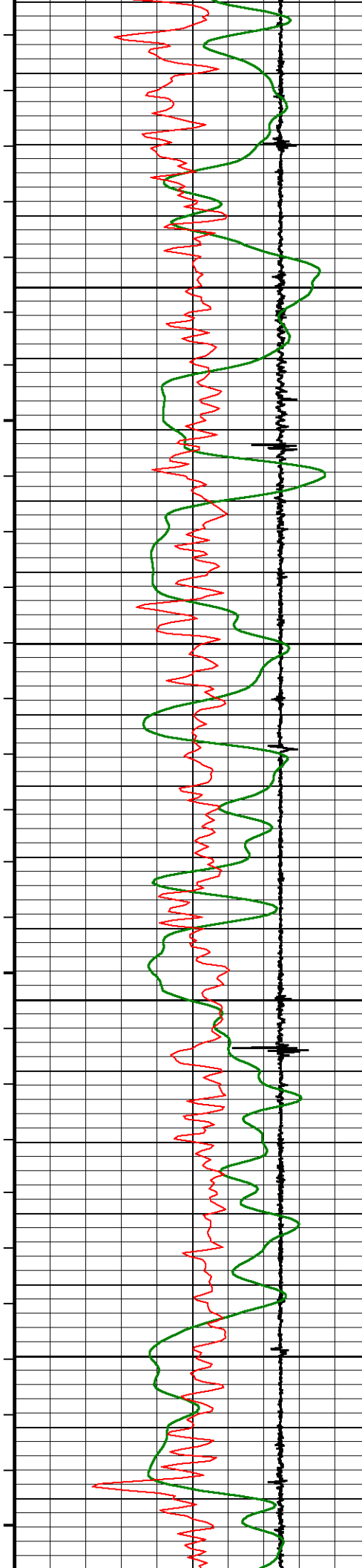












160°

5350

161°

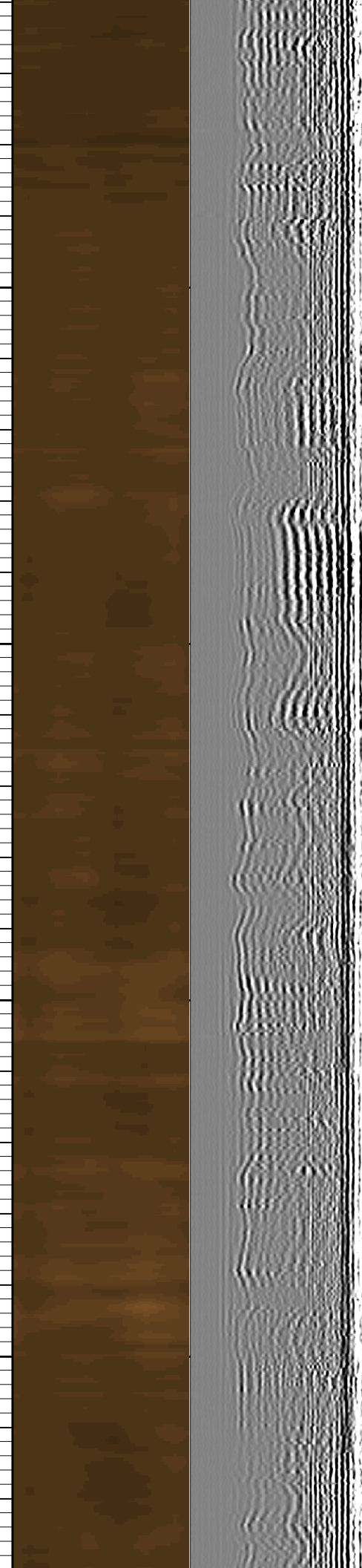
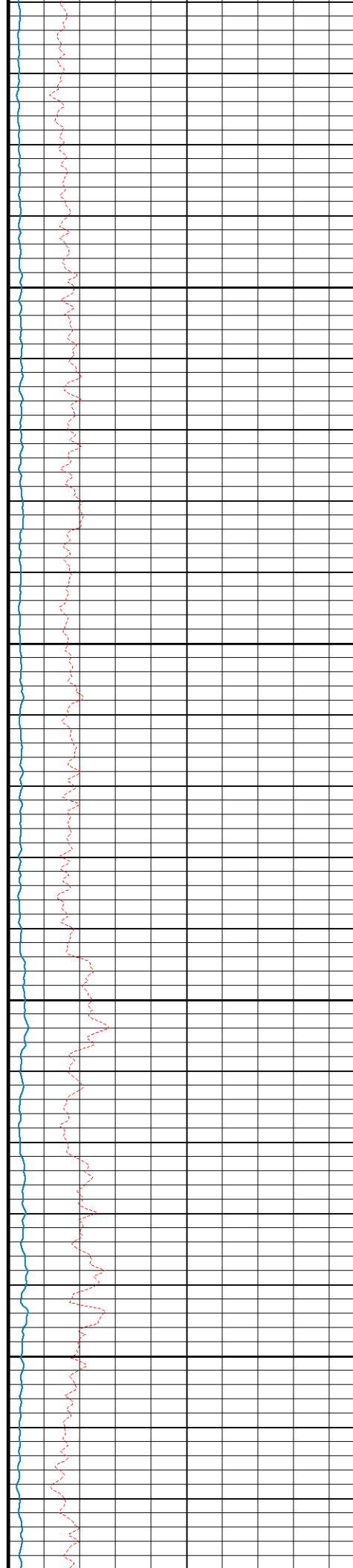
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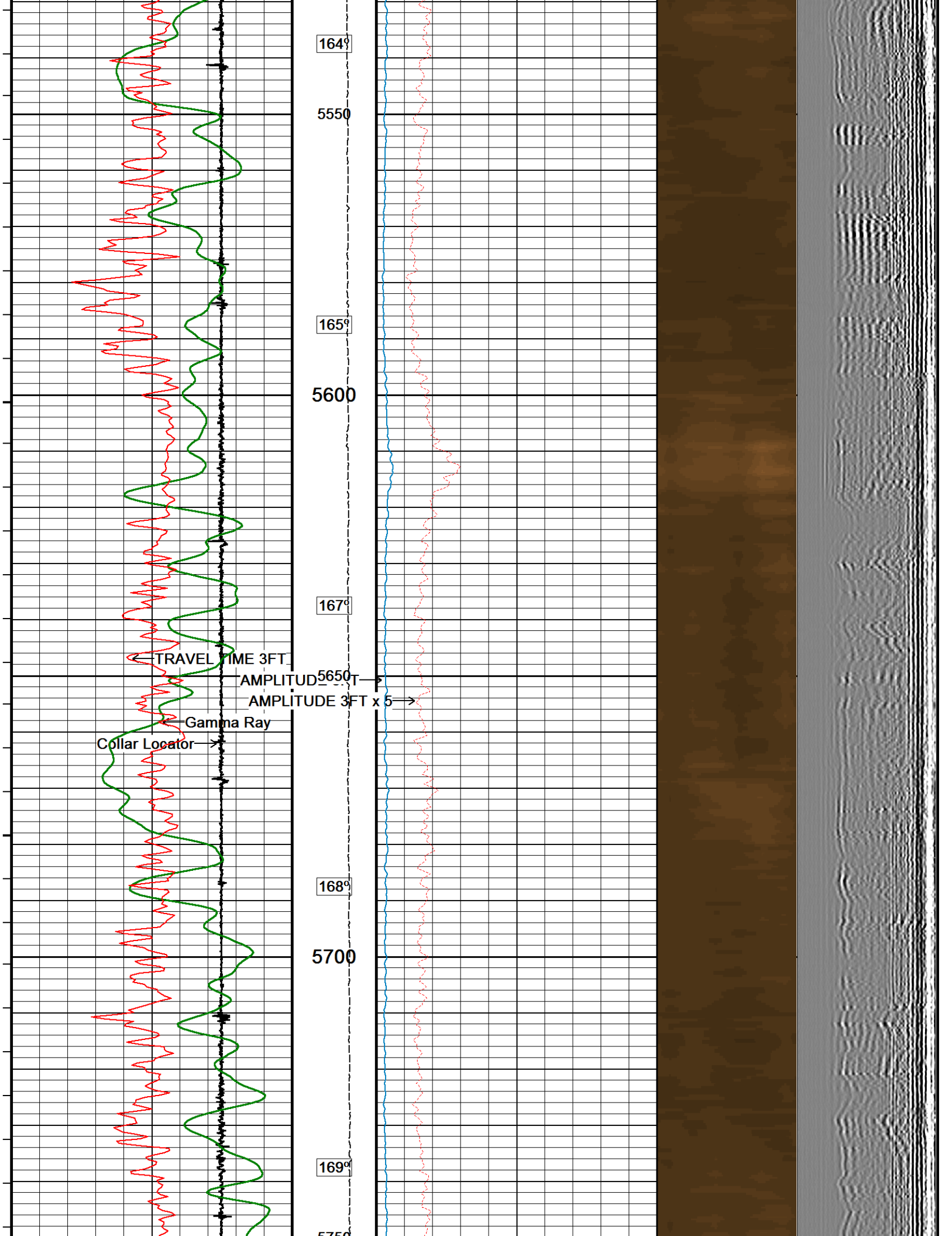
162°

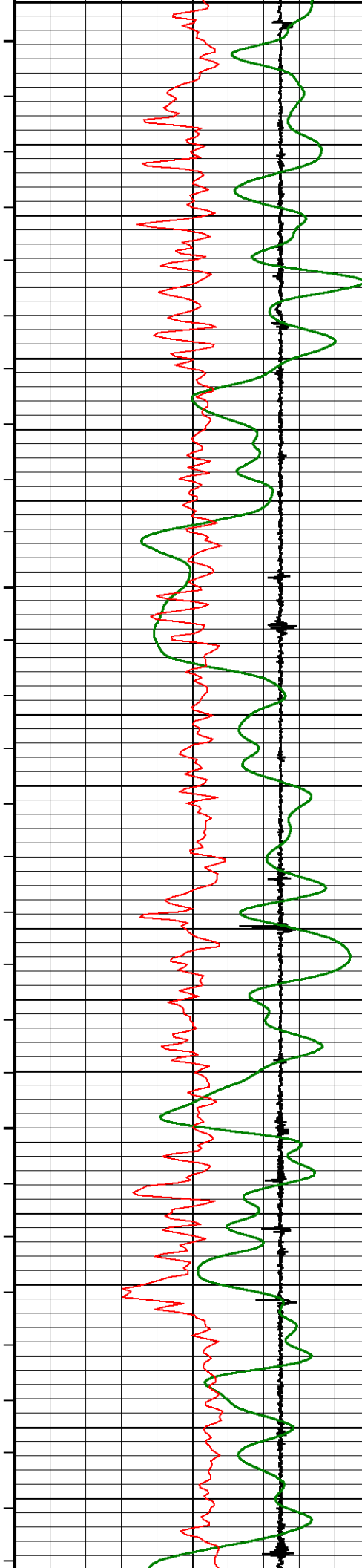
5450

163°

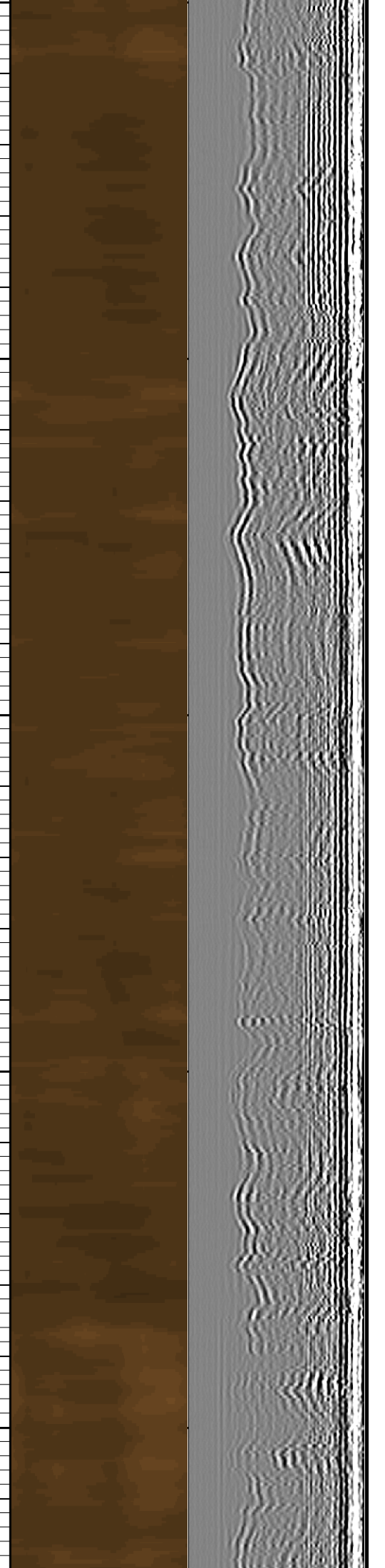
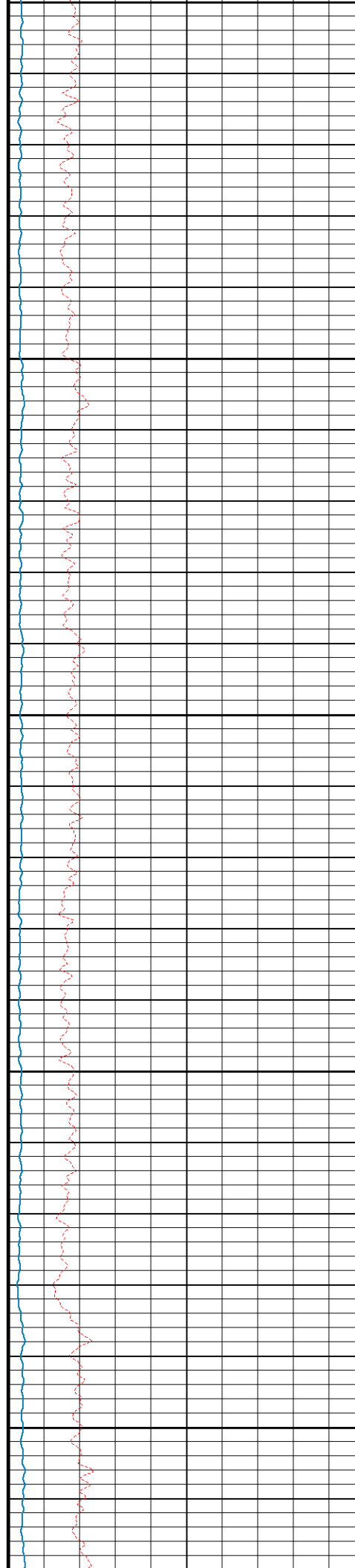
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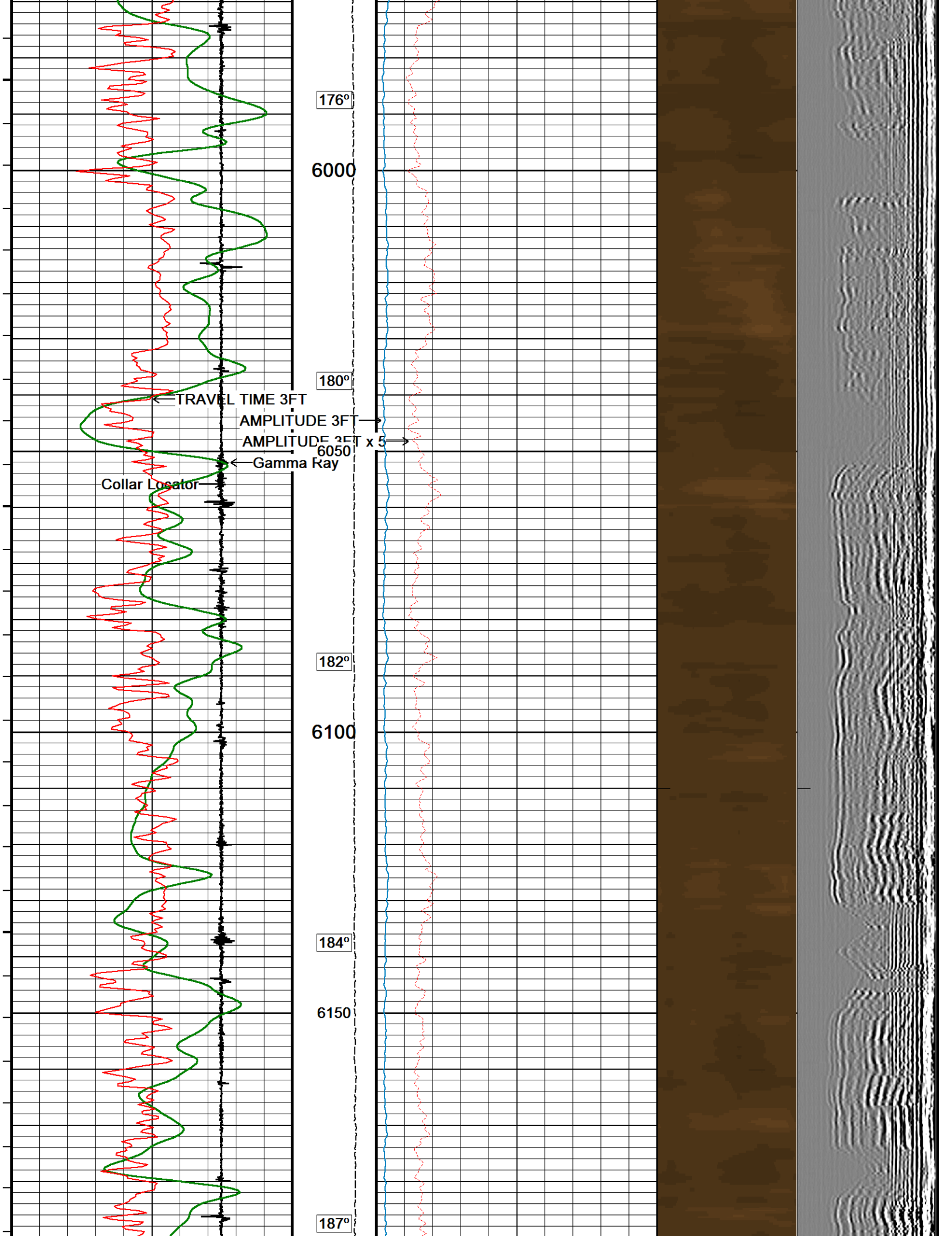


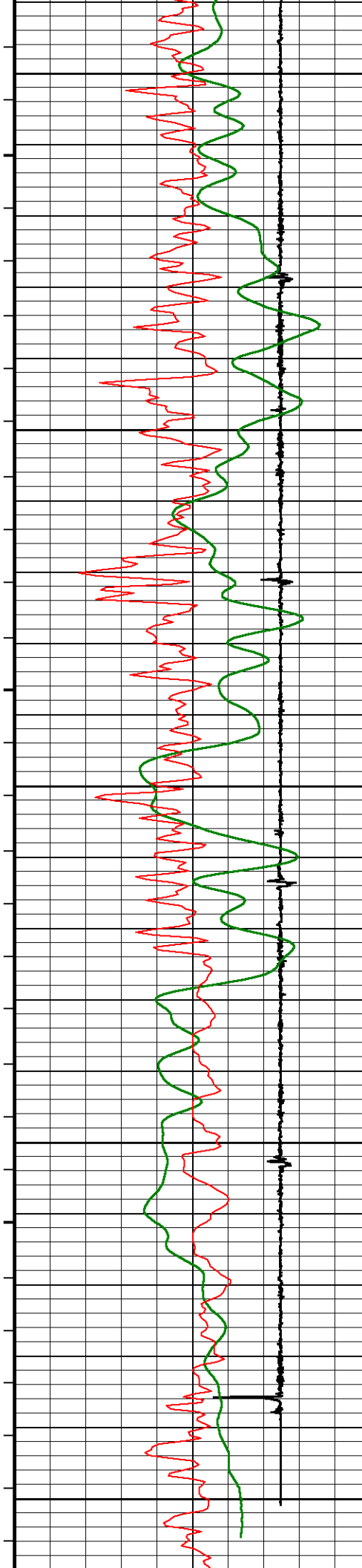




5750
170°
5800
172°
5850
173°
5900
175°
5950







6200

188°

6250

191°

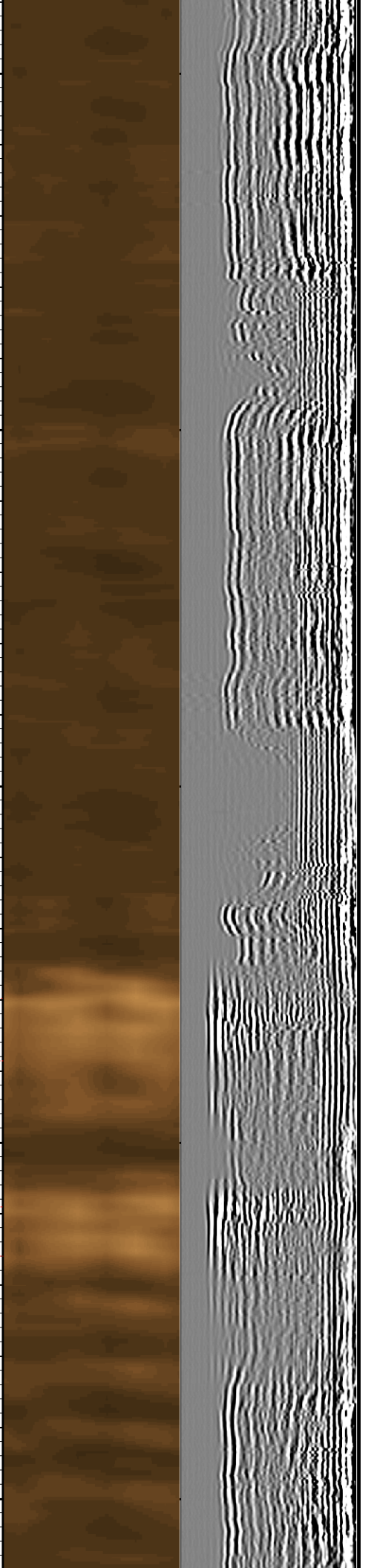
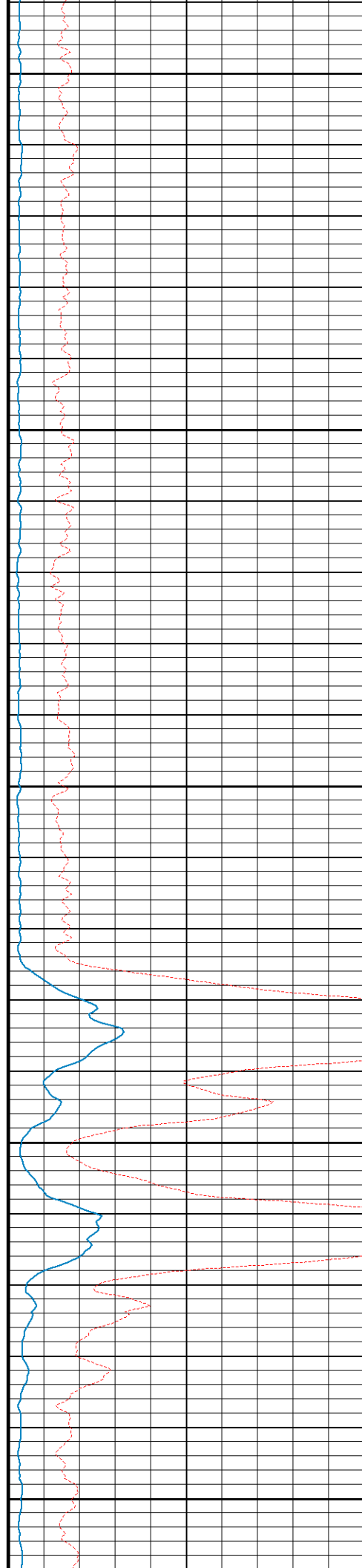
6300

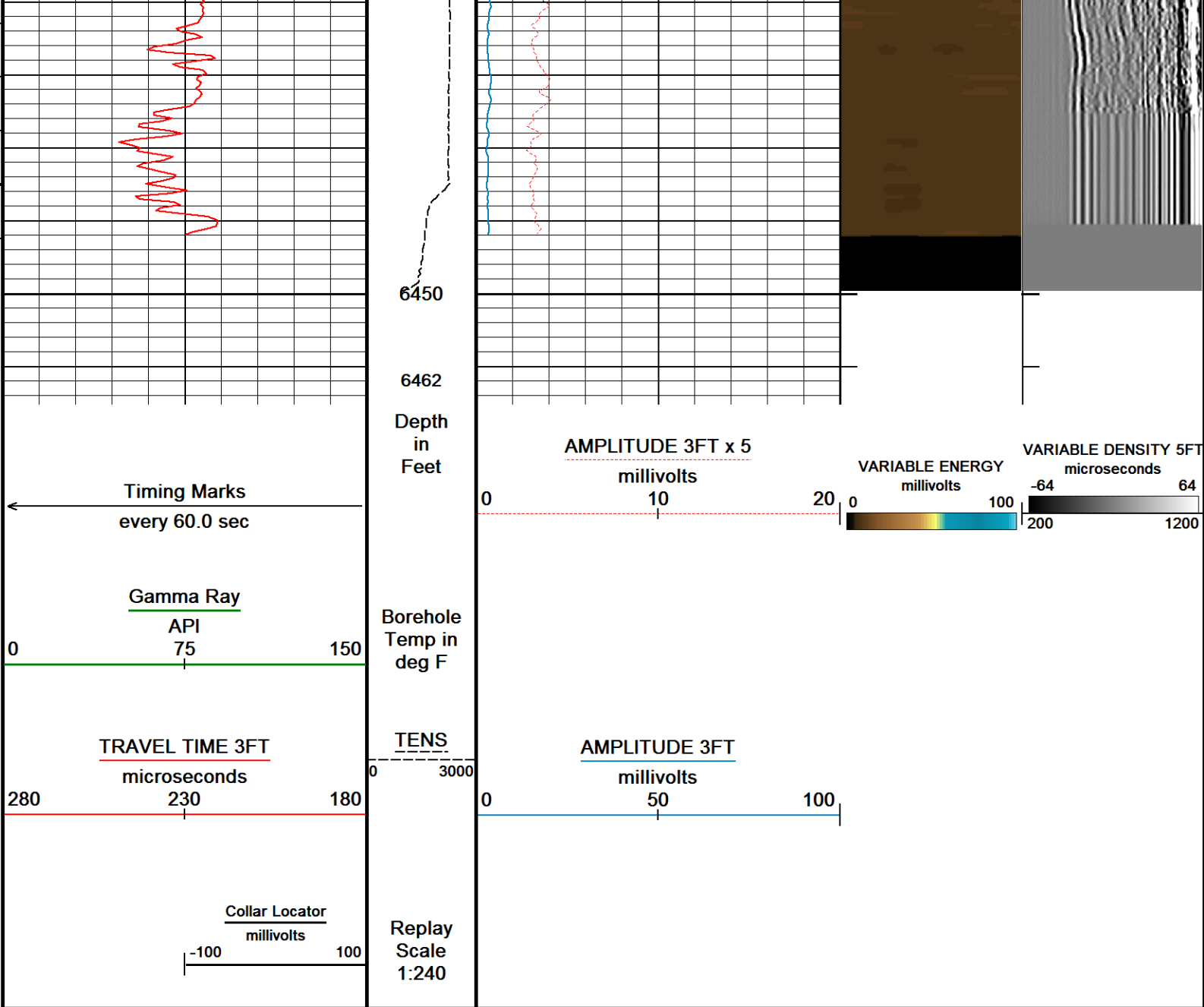
195°

6350

196°

6400





Depth Based Data - Maximum Sampling Increment 12.5cm
Filename: C:\Logs\URSA\BMC B 43C-13-07-96\BMC B 43C-13-07-96 CREB SSSB MAIN FINAL.dta
System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

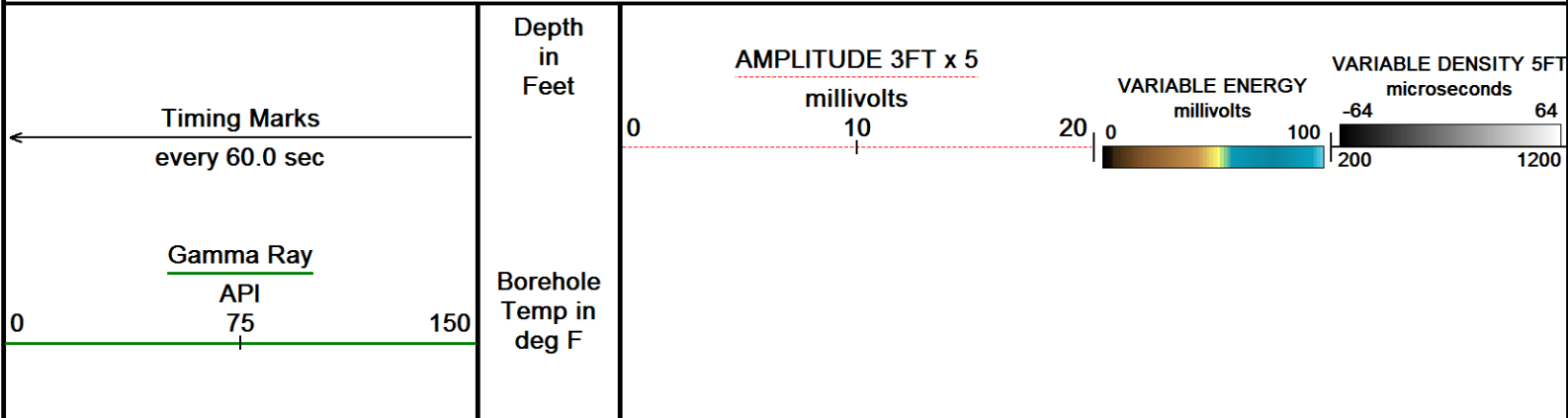
Plotted on 15-SEP-2017 20:24
Recorded on 15-SEP-2017 20:10

↑ MAIN PASS ↑

↓ REPEAT PASS ↓

Depth Based Data - Maximum Sampling Increment 12.5cm
Filename: C:\Logs\URSA\BMC B 43C-13-07-96\BMC B 43C-13-07-96 CREB SSSB REPEAT FINAL.dta
System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

Plotted on 15-SEP-2017 20:24
Recorded on 15-SEP-2017 20:19



TRAVEL TIME 3FT

microseconds

280 230 180

Collar Locator

millivolts

-100 100

TENS

0 3000

AMPLITUDE 3FT

millivolts

0 50 100

Replay
Scale
1:240

6200

188°

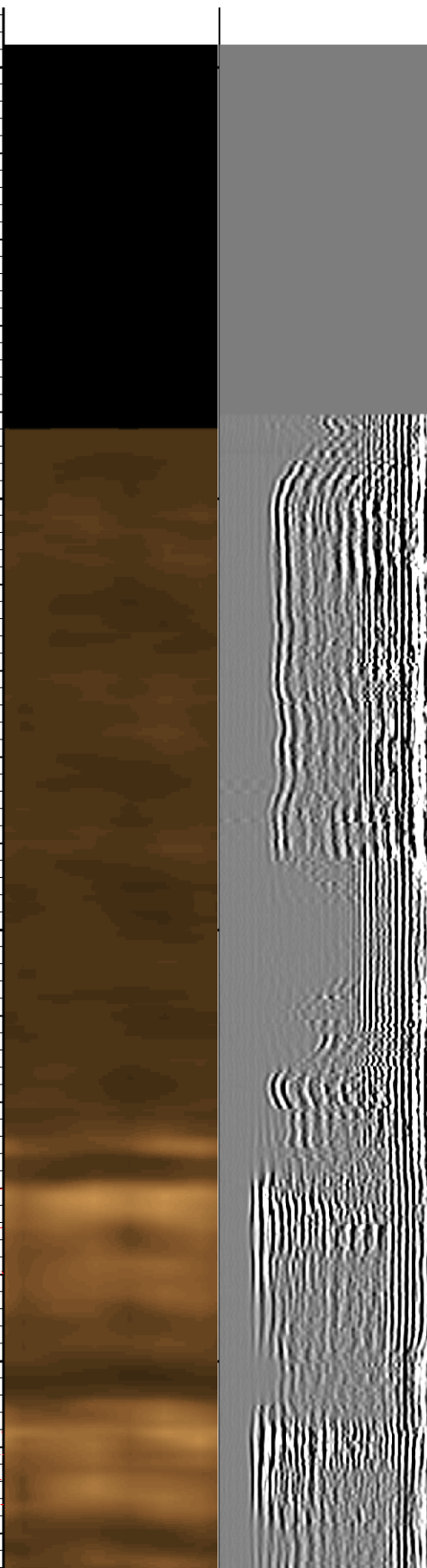
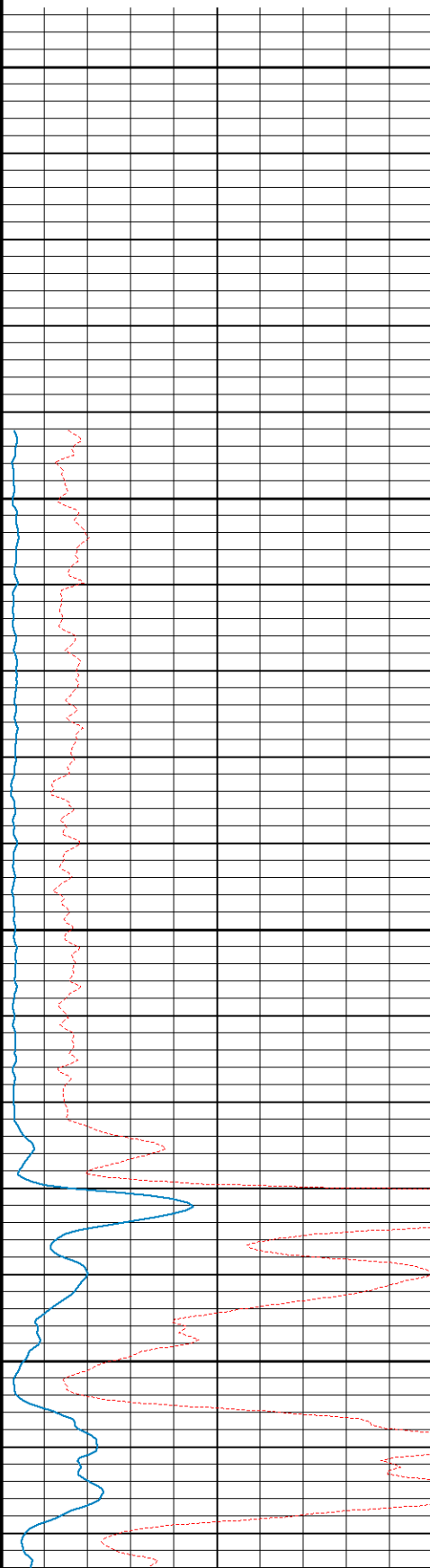
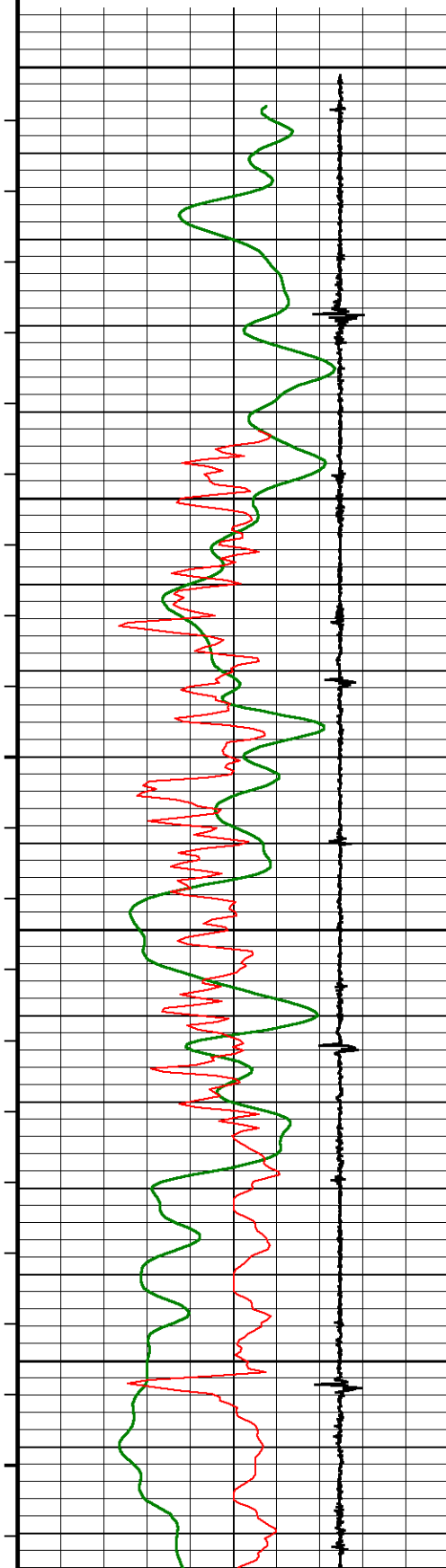
6250

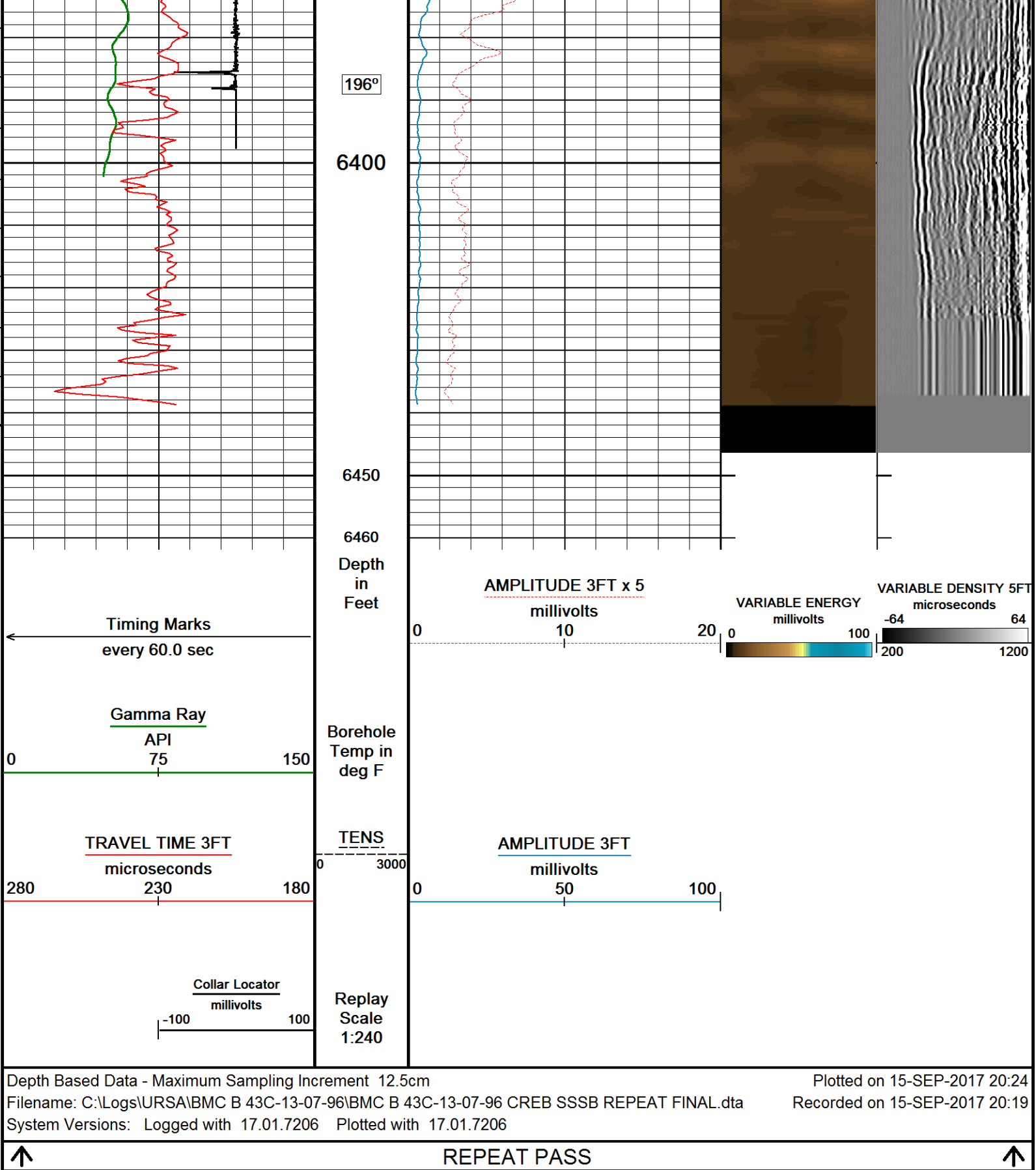
190°

6300

195°

6350





DOWNHOLE EQUIPMENT

C:\Logs\URSA\BMC B 43C-13-07-96\BMC B 43C-13-07-96 CREB SSSB MAIN FINAL.dta

Mono-Cablehead
MCH-AA 0 LG: 1.03 ft WT: 2.2 lb OD: 1.457 in

Comm Sub



WCC-CB 107 LG: 5.97 ft WT: 24.3 lb OD: 1.693 in

Gamma Ray K
UGR-KA 108 LG: 2.34 ft WT: 17.6 lb OD: 1.693 in

Quartz Press, Dual ITB, 43mm
QPG-EA 106 LG: 2.23 ft WT: 8.8 lb OD: 1.693 in

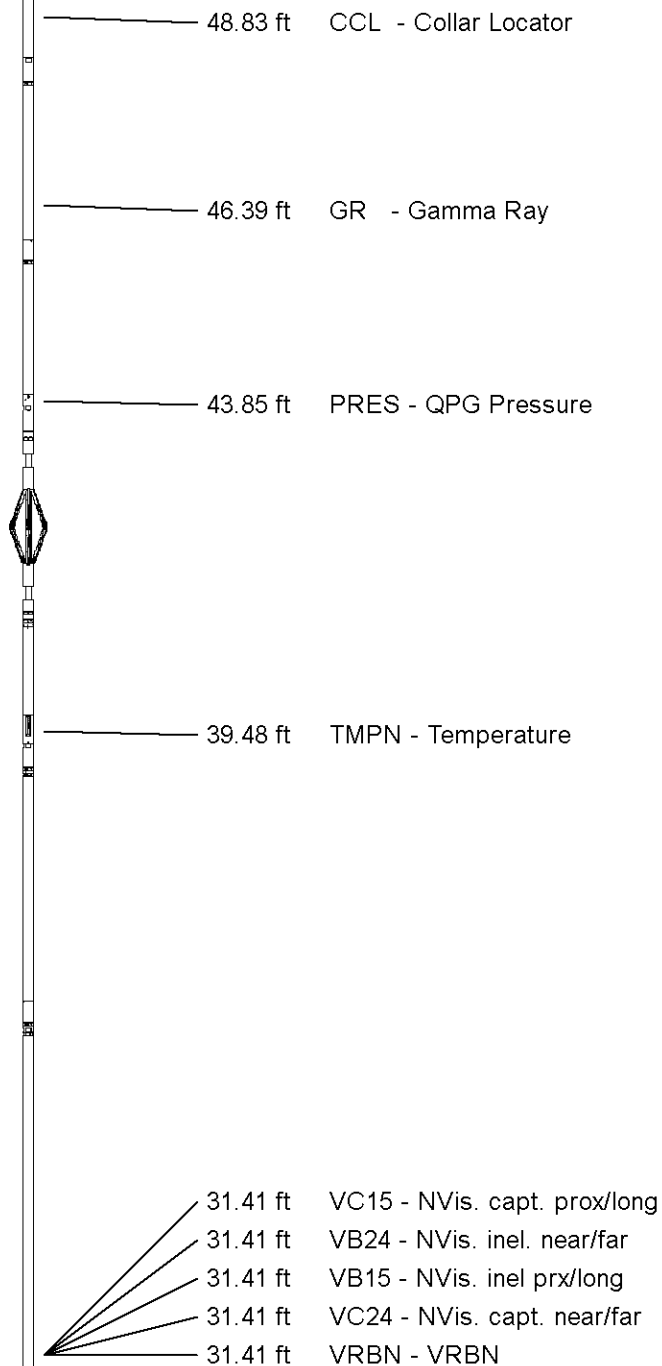
Centroller, 43mm, ITB, 3-arm Bi-Direct
CR3-BA 138 LG: 2.51 ft WT: 8.8 lb OD: 1.693 in

Tool Temperature, 43mm, 177C, 10-pin ITB
TMP-NA 138 LG: 1.93 ft WT: 8.8 lb OD: 1.693 in

CRE series II processor section
CRP-BA 129 LG: 3.31 ft WT: 15.4 lb OD: 1.654 in

Casing Reservoir Evaluation Tool Sonde
CRM-BA 129 LG: 9.19 ft WT: 46.3 lb OD: 1.693 in

Centroller, 43mm, ITB, 3-arm Bi-Direct
CR3-BA 105 LG: 2.51 ft WT: 8.8 lb OD: 1.693 in



GRS DA 103 LG: 2.31 ft WT: 6.8 lb OD: 1.693 in

Gamma Ray K
UGR-KA 132 LG: 2.34 ft WT: 17.6 lb OD: 1.693 in

SSB Upper Electronics, ITB
SUE-CA 137 LG: 7.64 ft WT: 26.5 lb OD: 1.654 in

SSB Receiver Sonde
SSS-BA 117 LG: 8.76 ft WT: 30.9 lb OD: 1.693 in

SSB Transmitter Section
STE-BA 129 LG: 2.64 ft WT: 17.6 lb OD: 1.654 in

Centralizer, 35mm, ITB, uni-directional
CEN-LA 370 LG: 2.60 ft WT: 8.8 lb OD: 1.380 in

Total Length: 54.99 ft Weight: 242.5 lb



22.38 ft GR2 - Gamma Ray 2

Tool Zero (0.00ft from bottom)

All measurements relative to tool zero.

WCC Shop Calibration WCC-CB 107

Calibration on 00-JAN-1988 00:00

Tension Compression Shop Calibration

Tool Type: WCC-CB

Serial No: 107

	standard	+1G Measured	standard	-1G Measured
X Acc	1.000 G	250000.0 mv	-1.000 G	0.0 mv
Y Acc	1.000 G	250000.0 mv	-1.000 G	0.0 mv
Z Acc	1.000 G	250000.0 mv	-1.000 G	0.0 mv

UGK Before Survey Cal UGR-KA 108

Field Calibration on 15-AUG-2017 11:53

Gamma Ray Before Survey Calibration

Tool Type: UGR-KA
Calibrator No: 101

Serial No: 108

Background	Calibrator	Standard	Units
46.3	786.0	470.2	API
Delta Counts Per Sec: 739.7		CPS/API = 1.573	

QPG Master Calibration QPG-EA 106

Gauge

Serial Number	220928	Calibration Date	15 Sep 2012
Gauge Type	QHB108-16-177	Base Check Date	
Max Pressure	16000 PSI	Max Temperature	177 Deg C
Min Pressure	13 PSI	Min Temperature	25 Deg C

Pressure

Pressure polynomial order 3			Temperature polynomial order 3		
T0	T1	T2	T3	T4	
P0 13.6402	-0.585455	-0.0197893	9.3116e-006		
P1 9.3116e-006	42.1819	-0.0208838	2.62627e-005		
P2 2.62627e-005	-5.38063e-008	-0.00199429	8.64228e-006		
P3 8.64228e-006	-3.99023e-008	3.69856e-011	6.96299e-007		
P4					

Temperature				
Temperature polynomial order 3				
T0	T1	T2	T3	T4
25.2302	-0.731527	-0.000858522	-6.86634e-007	

Temperature Tool Shop Survey Calibration		TMP-NA 138
Temperature Tool Shop Survey Calibration		
Tool Type: TMP-NA		Serial No: 138

Calibration		
Standard		Measured
32	DEGF	36714 Hz
212	DEGF	50849 Hz

UGK Before Survey Cal		UGR-KA 132
Field Calibration on 15-AUG-2017 12:40		
Gamma Ray Before Survey Calibration		
Tool Type: UGR-KA		Serial No: 132
Calibrator No: 101		

Background	Calibrator	Standard	Units
42.6	812.4	470.2	API
Delta Counts Per Sec: 769.8		CPS/API = 1.637	



SSBC Field calibration				SSS-BA 117
Field Calibration on 08-SEP-2017 15:24				
Slim Sector Bond Field calibration				
Tool Type	SSS-BA		Serial No	117
Sensor	Description	Standard	Measured	
AMP 3FT	100% Bond	1.00	2.00	
	Free Pipe	81.00	2515.50	
AMP 5FT	100% Bond	0.40	5.30	
	Free Pipe	54.00	3741.80	
1 SECTOR AMP	100% Bond	5.00	5.80	
	Free Pipe	95.00	2561.00	
2 SECTOR AMP	100% Bond	5.00	8.70	

	Free Pipe	95.00	2535.30
3	SECTOR AMP	100% Bond	5.00 1.20
		Free Pipe	95.00 2158.50
4	SECTOR AMP	100% Bond	5.00 4.60
		Free Pipe	95.00 2065.90
5	SECTOR AMP	100% Bond	5.00 10.50
		Free Pipe	95.00 1949.80
6	SECTOR AMP	100% Bond	5.00 1.60
		Free Pipe	95.00 2254.40

SSBC Constants SSS-BA 117		Last Edited on 00-JAN-1988 00:00	
Min Ampl	100% Bond	3.63	MV
Max Ampl	0% Bond	81.03	MV
Casing Size		4.50	IN
Casing Weight		11.6	LB/F
3' TT Correction		0.0	US
DT Fluid		200.0	US/F
Fast Formation TT		38.5	US/F
Cement Cmpr Strength		580	PSI
Casing Velocity		57.00	US/F
Maximum Attenuation		12.00	DB/F

SMS Constants SMS-A 0		Last Edited on 00-JAN-1988 00:00	
Cement Weight		0.00	LB/G
Cement Weight		0.00	LB/G

COMPANY	URSA OPERATING COMPANY		
WELL	BMC B 43C-13-07-96		
FIELD	WILDCAT		
PROVINCE/COUNTY	GARFIELD		
COUNTRY/STATE	USA / COLORADO		
Elevation Kelly Bushing	5117	feet	Bottom Log Interval 6450.00 feet
Elevation Drill Floor	5117	feet	Depth Driller 6816.00 feet
Elevation Ground Level	5100	feet	Depth Logger 6450.00 feet

SLIM SECTOR BOND LOG

