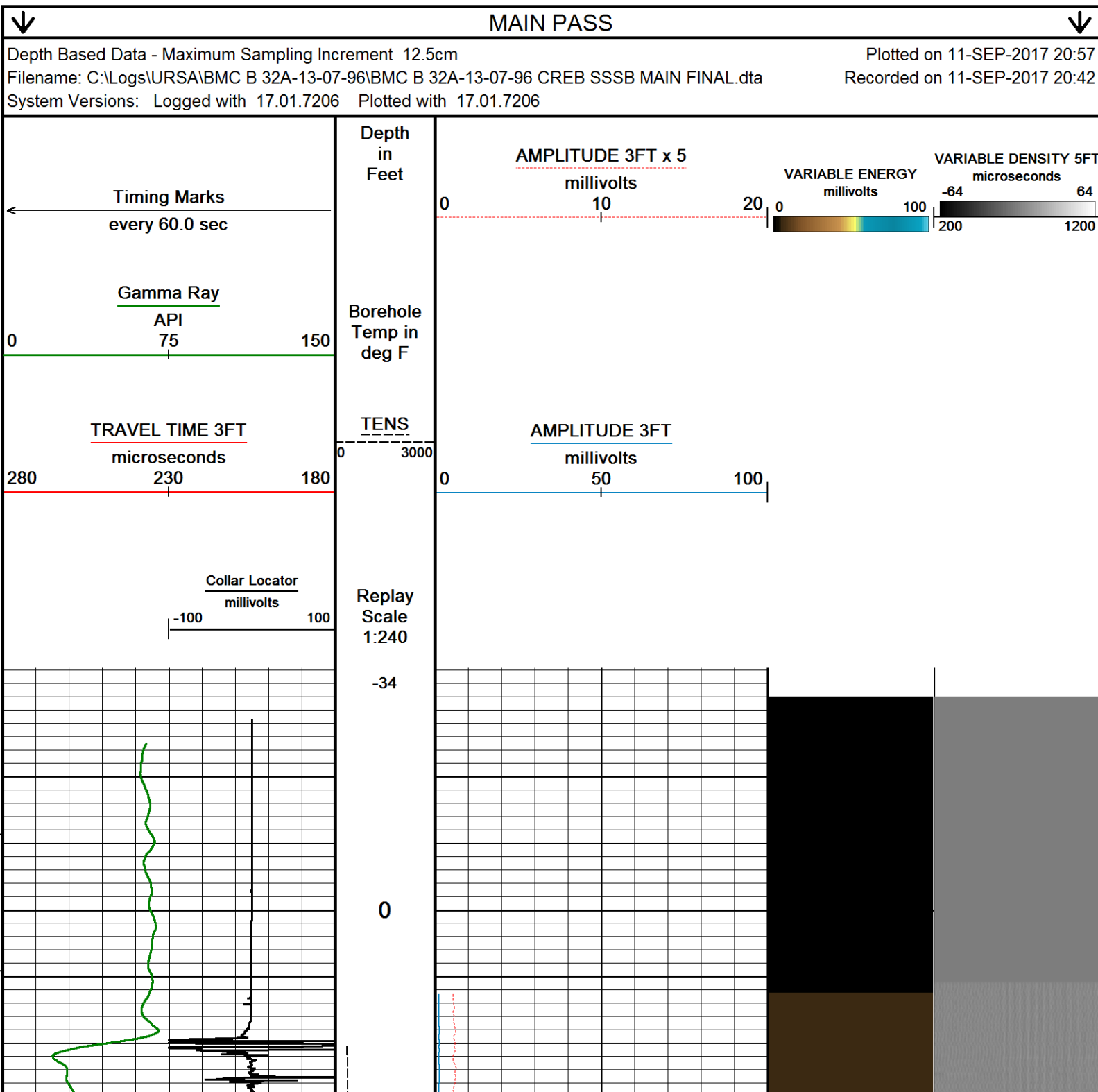
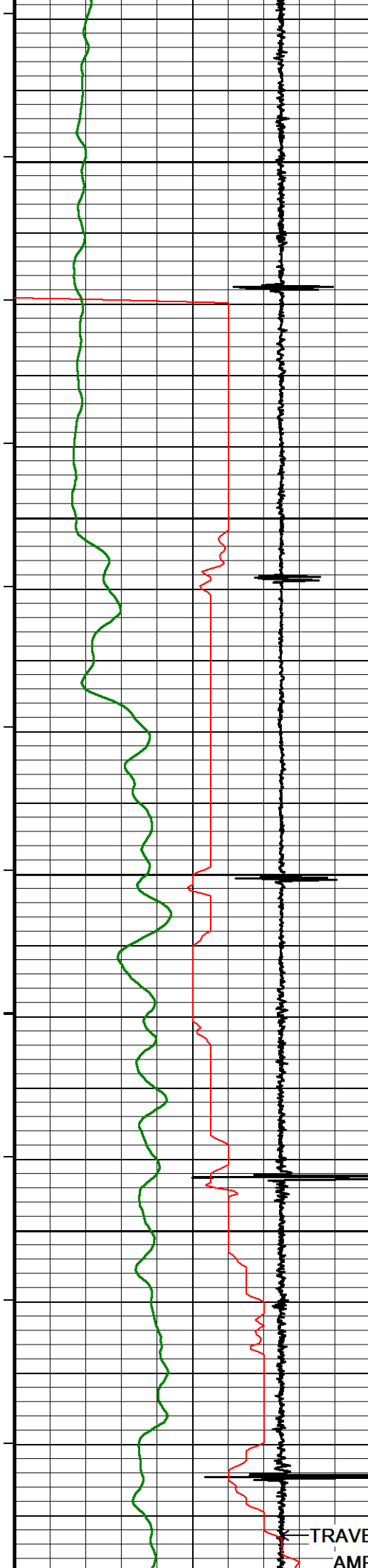
				SLIM SECTOR BOND LOG			
Weatherford®							
COMPANY				URSA OPERATING COMPANY			
WELL				BMC B 32A-13-07-96			
FIELD				WILDCAT			
PROVINCE/COUNTY				GARFIELD			
COUNTRY/STATE				USA / COLORADO			
LOCATION				2237' FNL & 647' FWL			
SEC 18	TWP 7S	RGE 95W	Other Services				
Latitude		CREB					
Longitude							
API Number		05-045-23482					
Permanent Datum GROUND LEVEL, Elevation 5100 feet				Elevations:			
Log Measured From KB, 17.00 feet above Permanent Datum				KB 5117.00			
Drilling Measured From KB				DF 5117.00			
				GL 5100.00			
Date	11-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	7389.00			feet			
Depth Logger	6953.00			feet			
Top Log Interval	0.00			feet			
Bottom Log Interval	6953.00			feet			
Hole Fluid Type	WATER						
Hole Fluid Level	0.00			feet			
Restriction ID	3.875			inches	Gun Type		
Max Recorded Temp	197.00			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	7389.00
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	7389.00	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 155 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. 197F

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.





61°

50

60°

100

60°

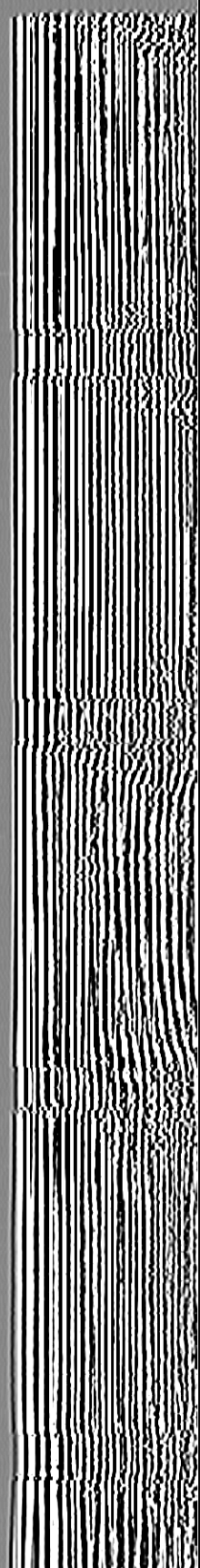
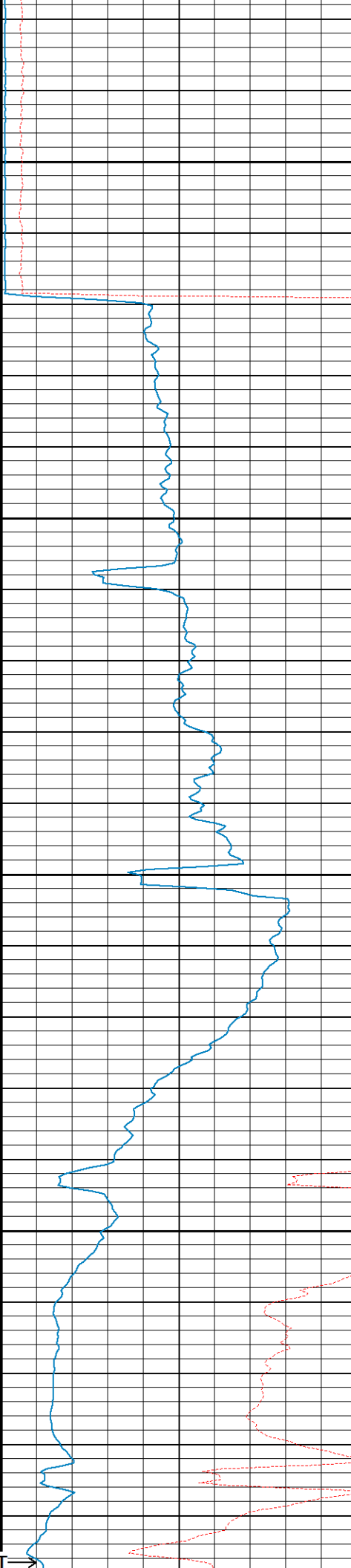
150

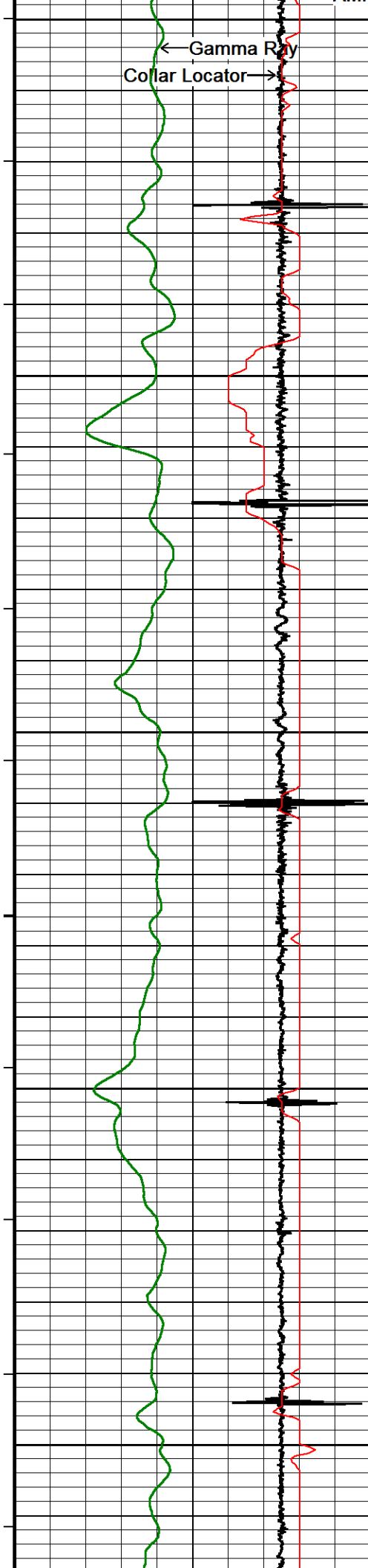
60°

200

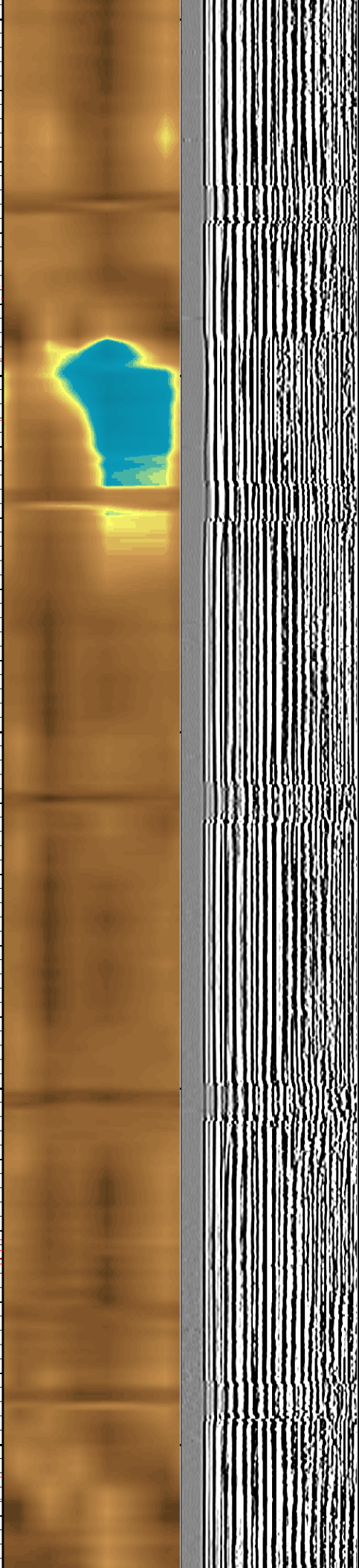
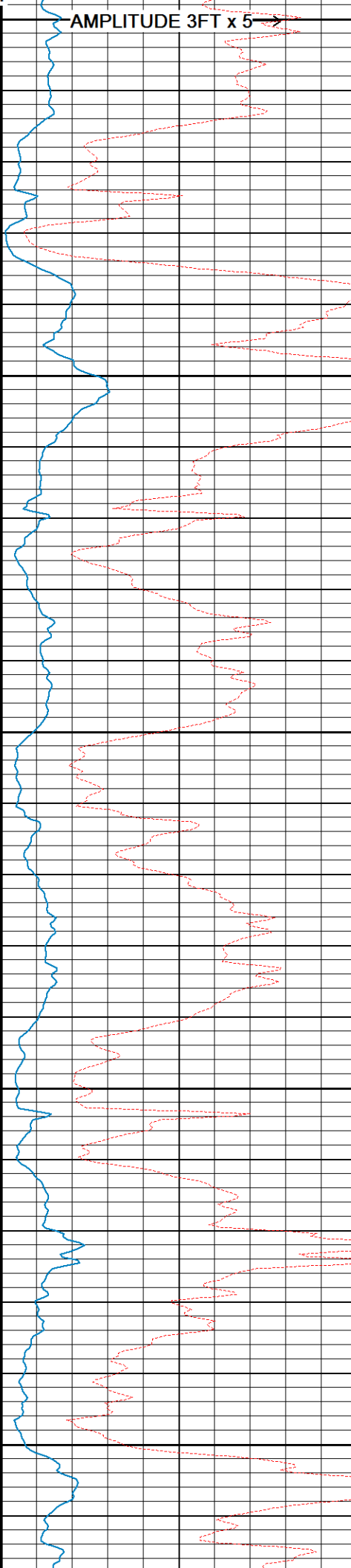
61°

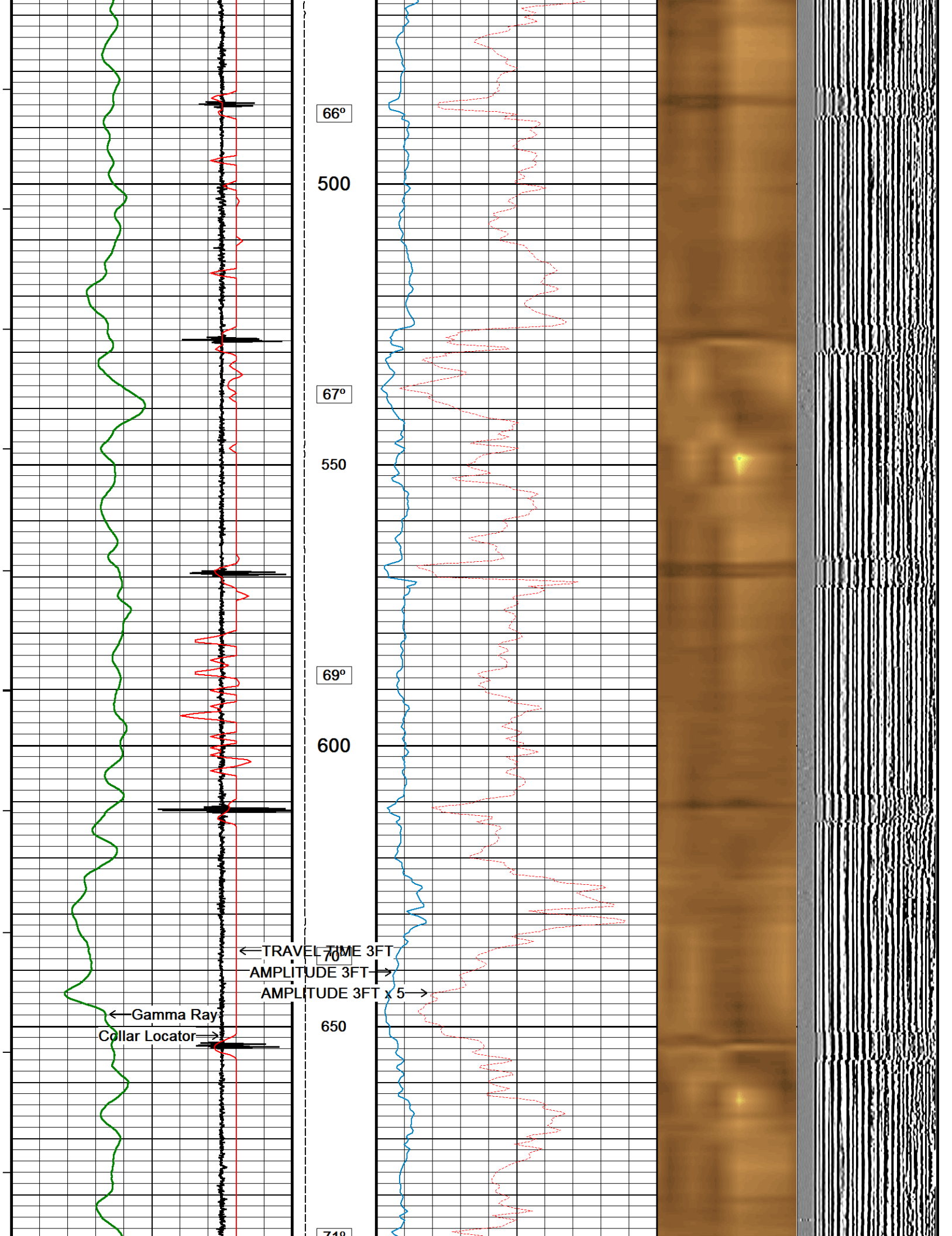
← TRAVEL TIME 3FT
AMPLITUDE 3FT →

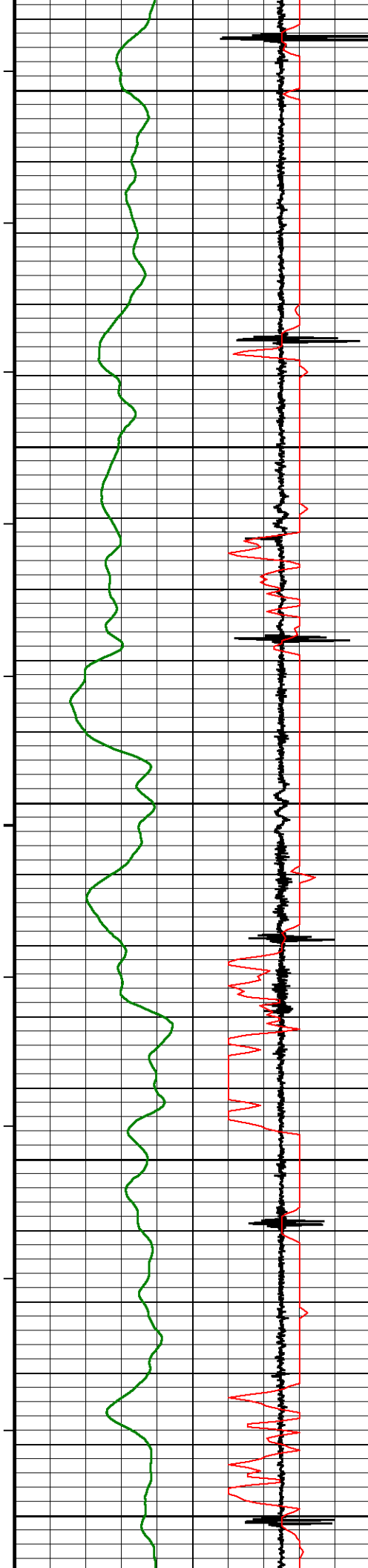




250
63°
300
63°
350
64°
400
65°
450







71°

700

72°

750

73°

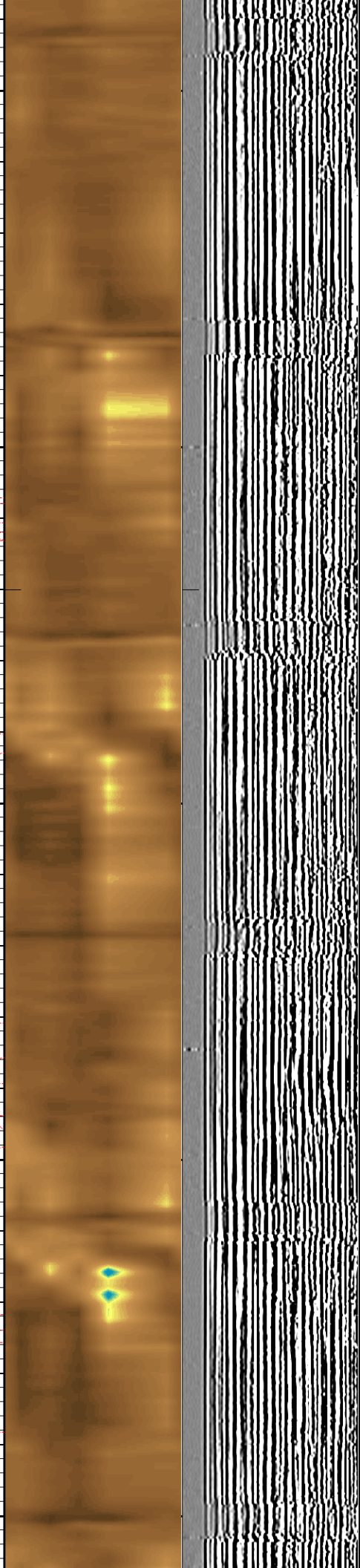
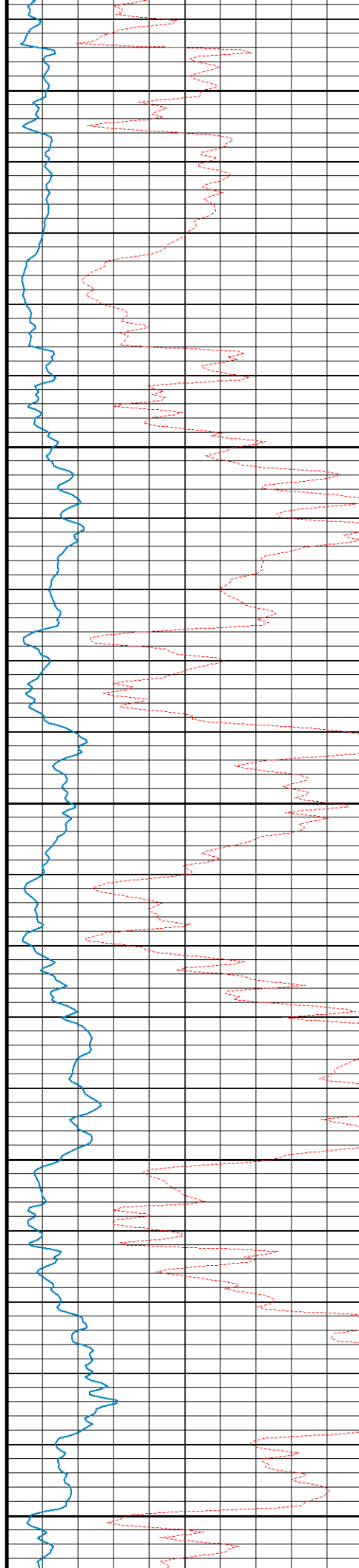
800

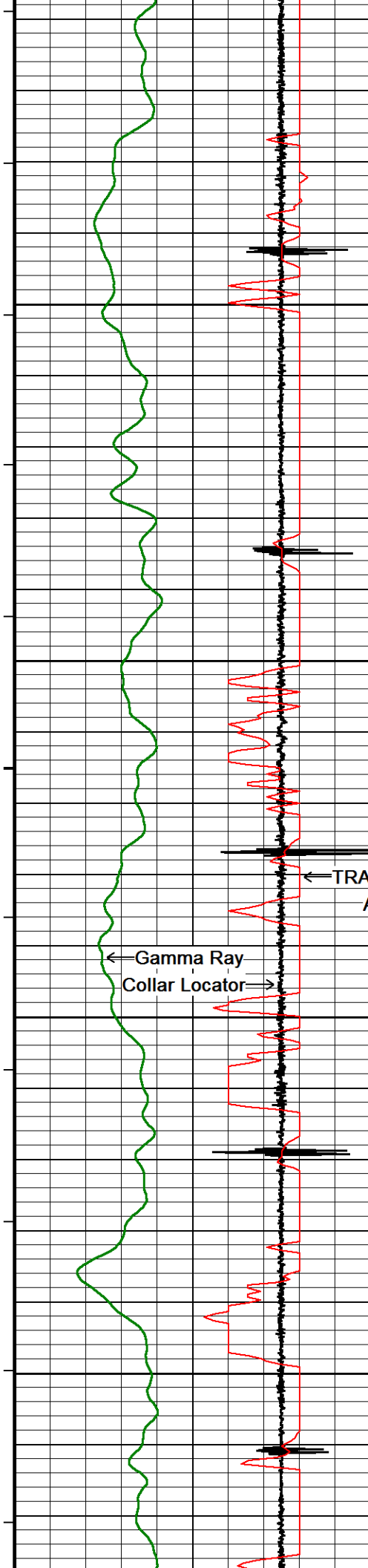
74°

850

76°

900





76°

950

77°

1000

← TRAVEL TIME 3FT
AMPLITUDE 3FT →

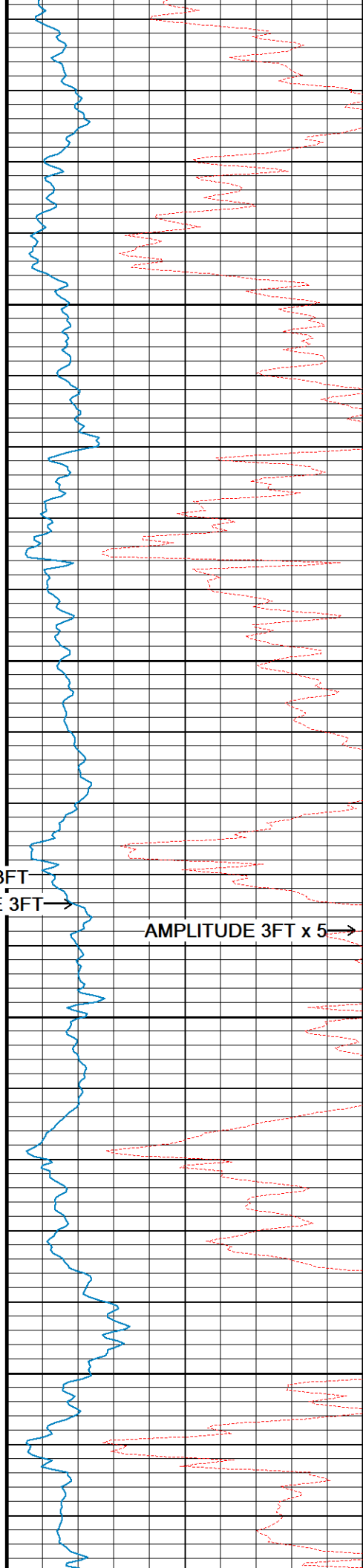
78°

1050

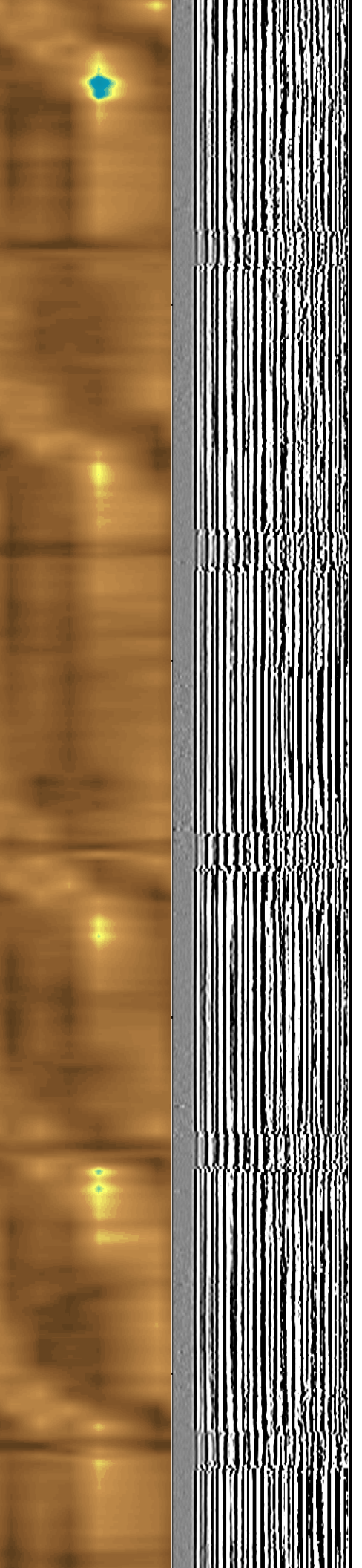
79°

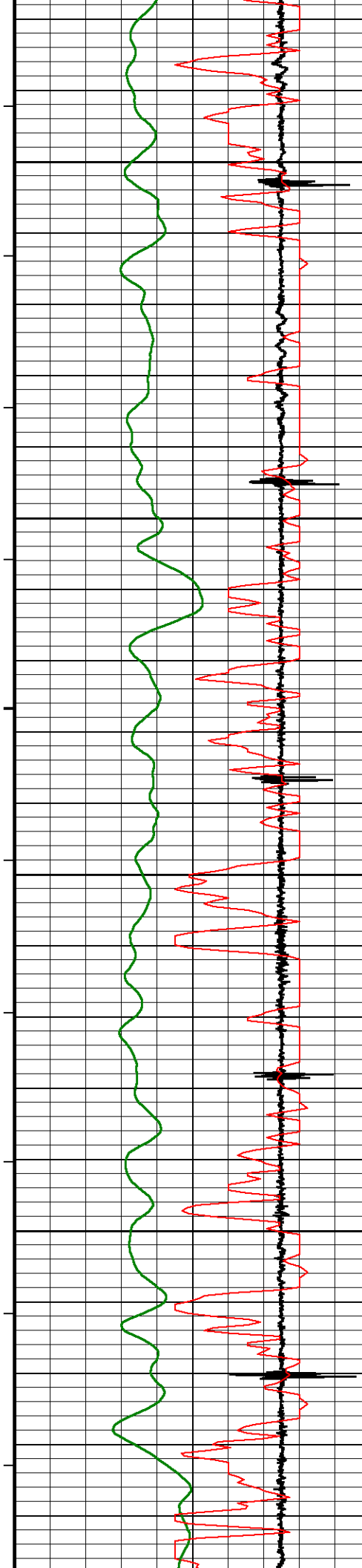
1100

← Gamma Ray
Collar Locator →



AMPLITUDE 3FT x 5 →





81°

1150

82°

1200

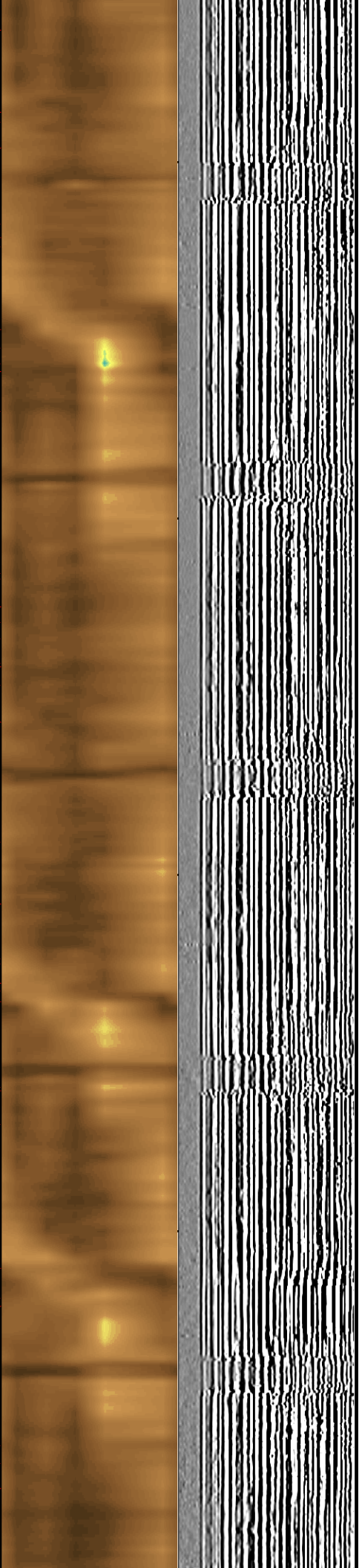
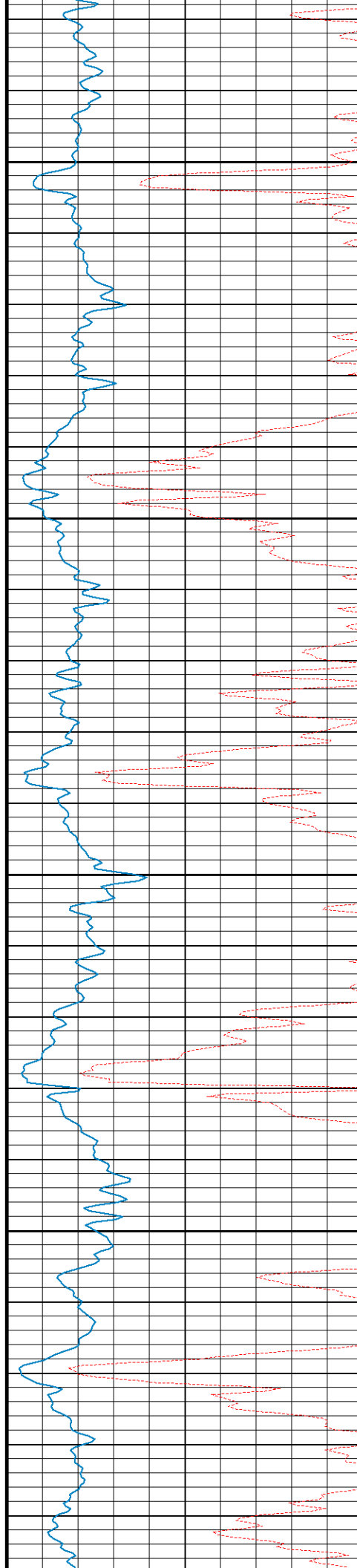
83°

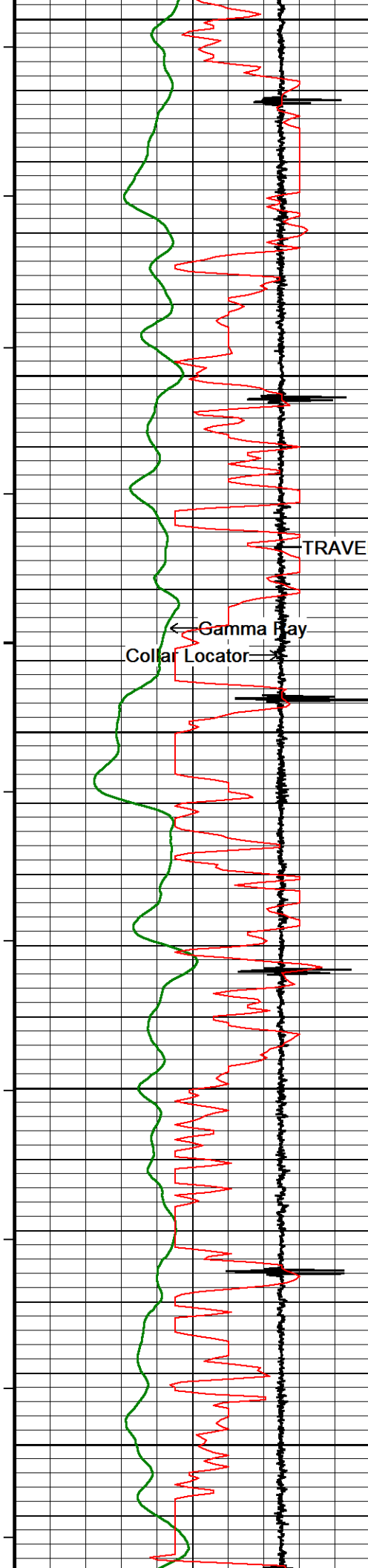
1250

84°

1300

85°

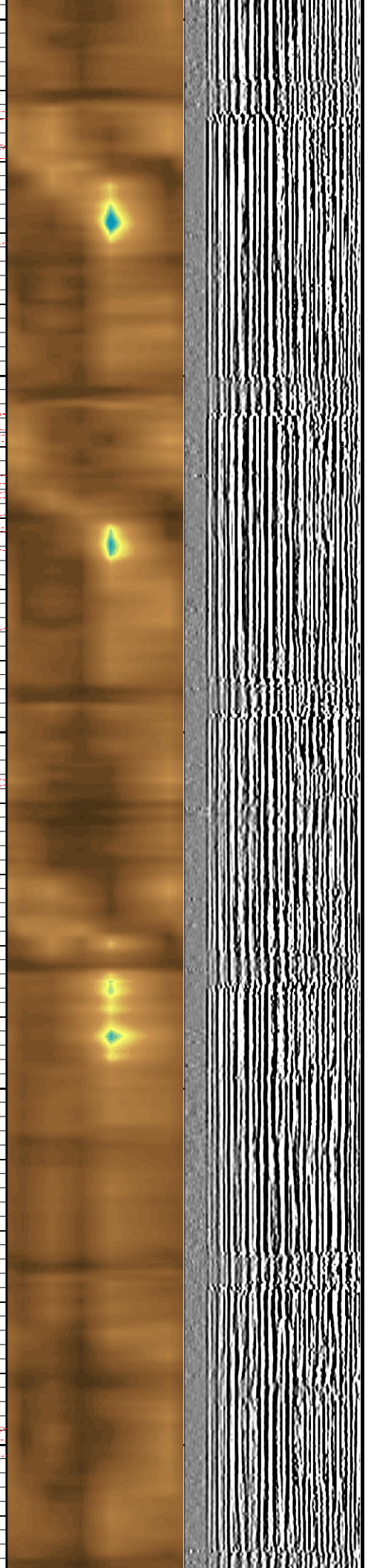
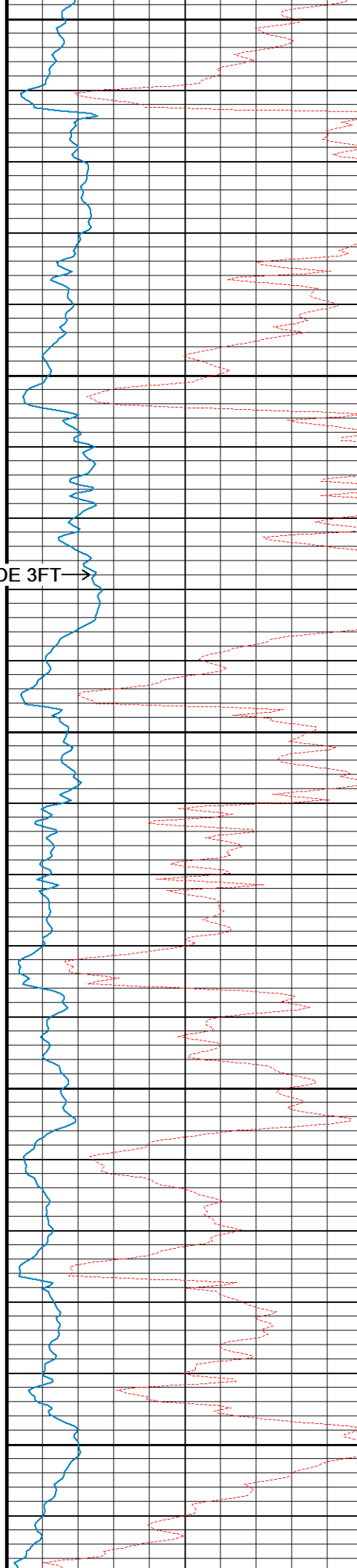


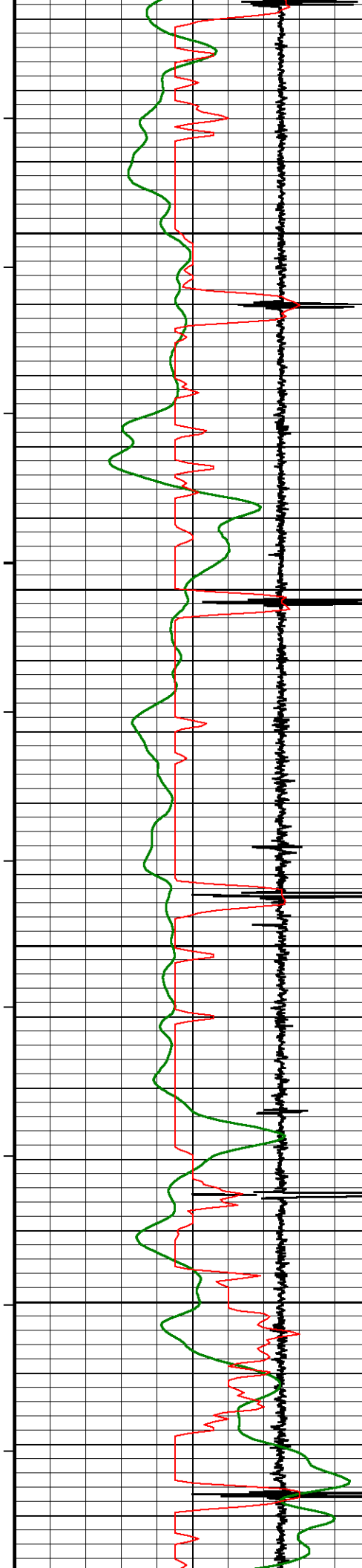


1350
86°
1400
86°
1450
87°
1500
88°
1550

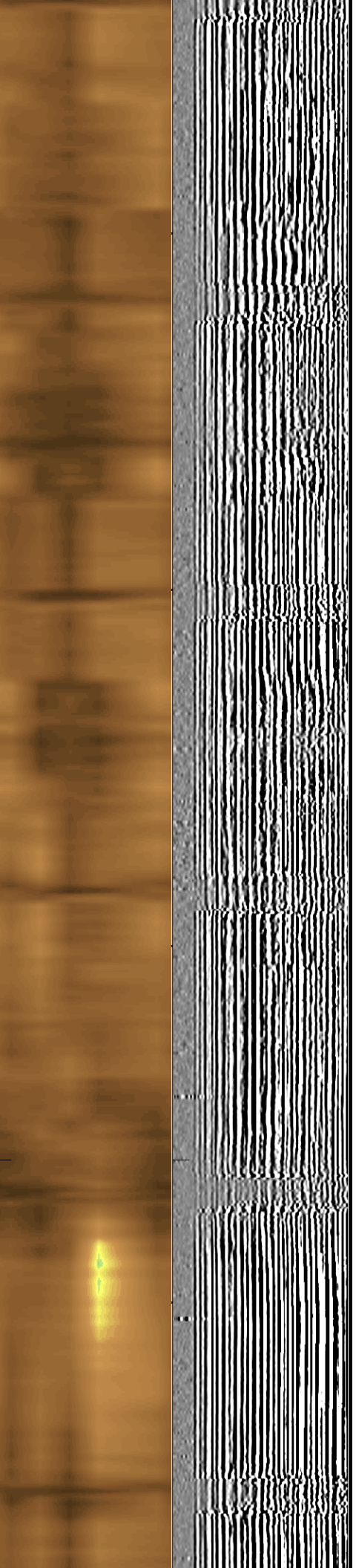
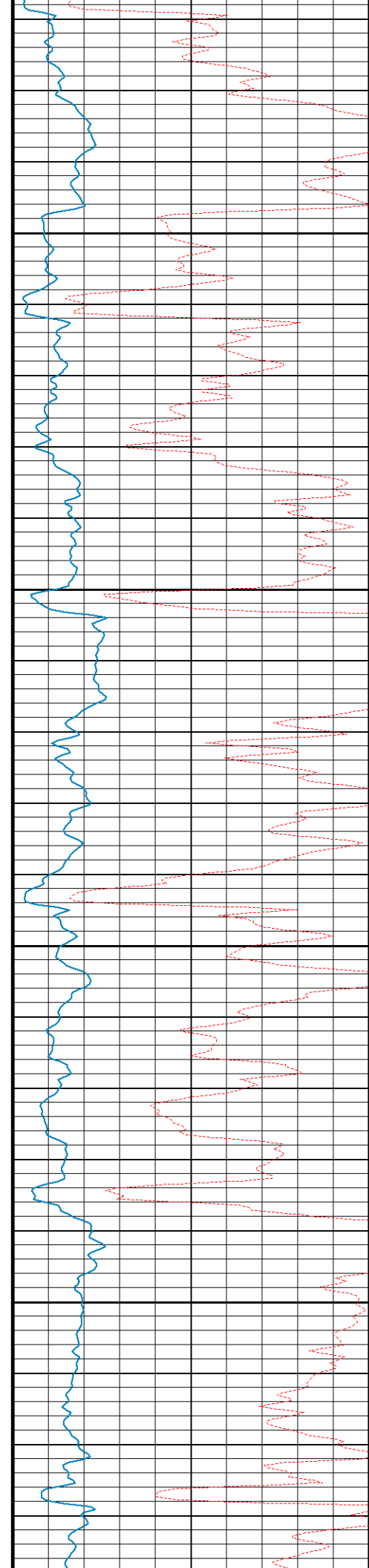
TRAVEL TIME 3FT
AMPLITUDE 3FT

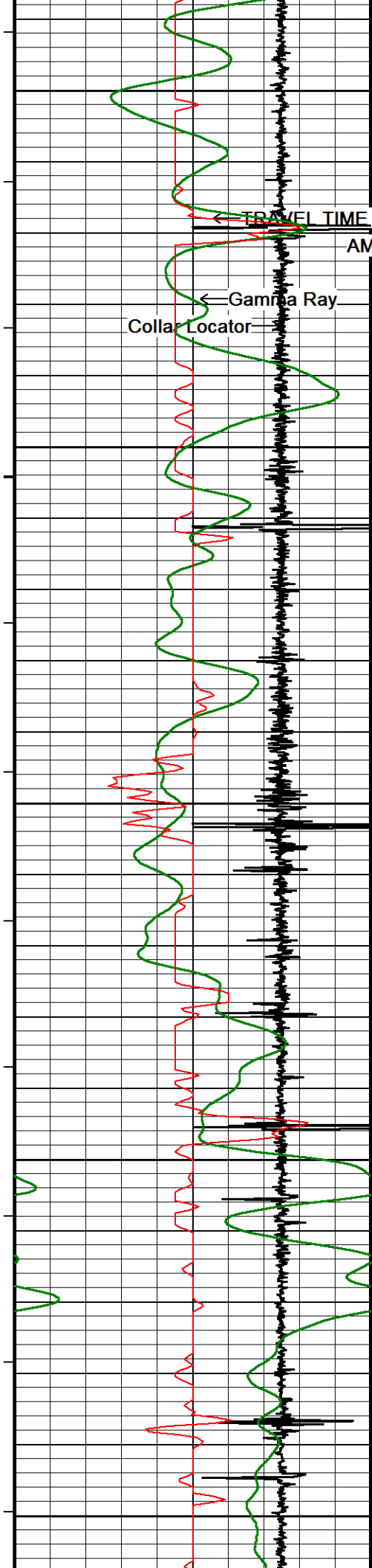
← Gamma Ray
Collar Locator →



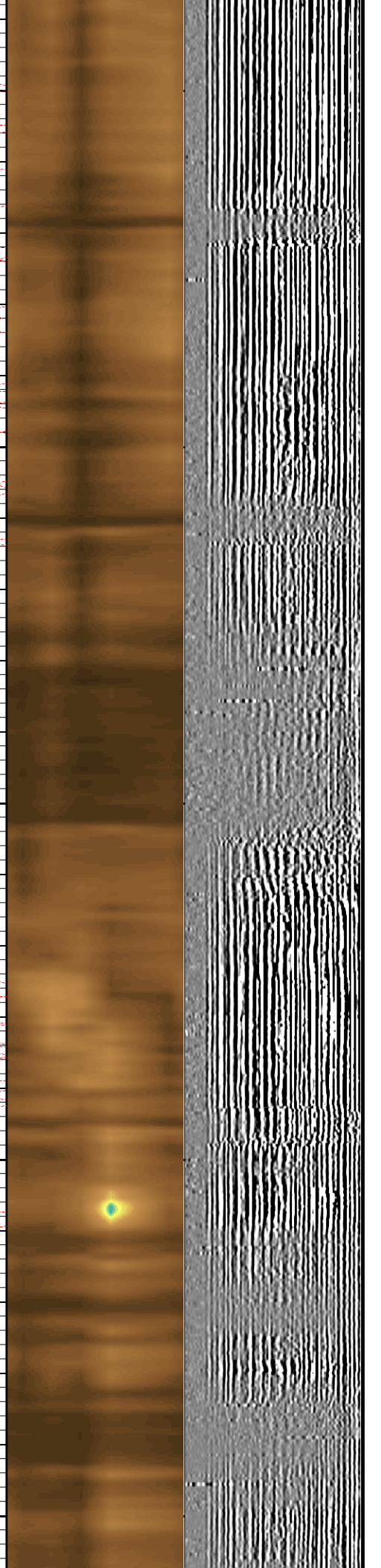
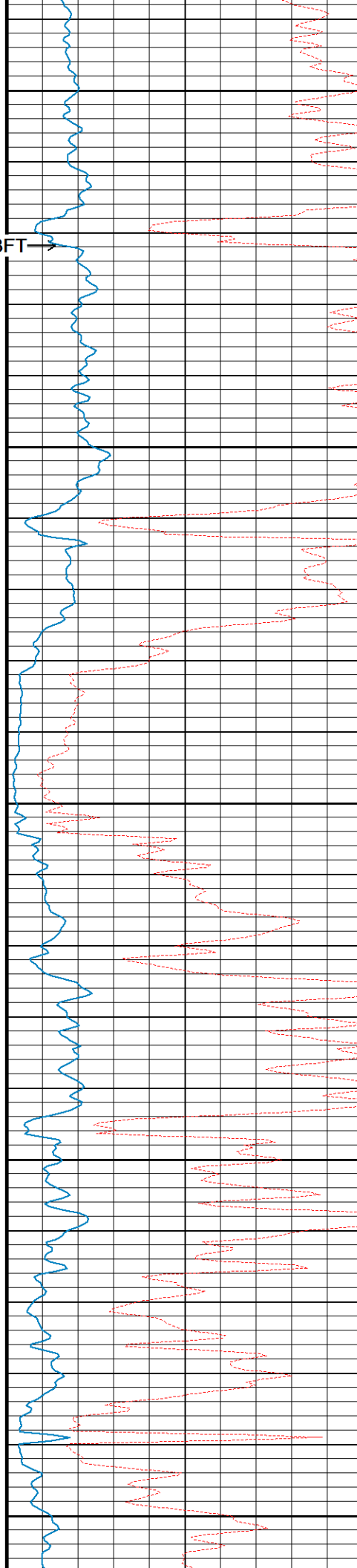


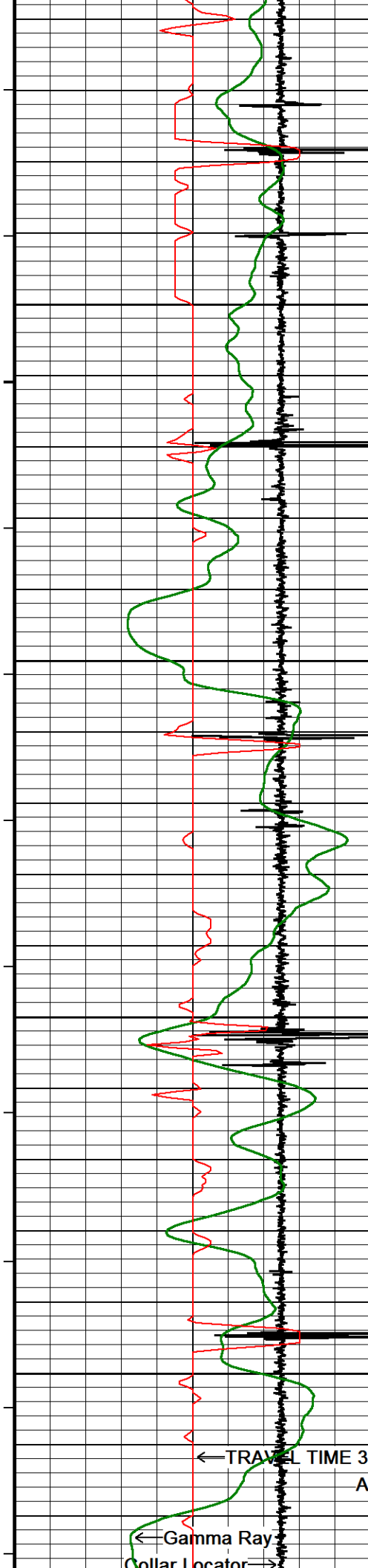
89°
1600
90°
1650
91°
1700
92°
1750
93°





93°
1800
94°
1850
95°
1900
96°
1950
97°
2000





97°

2050

98°

2100

99°

2150

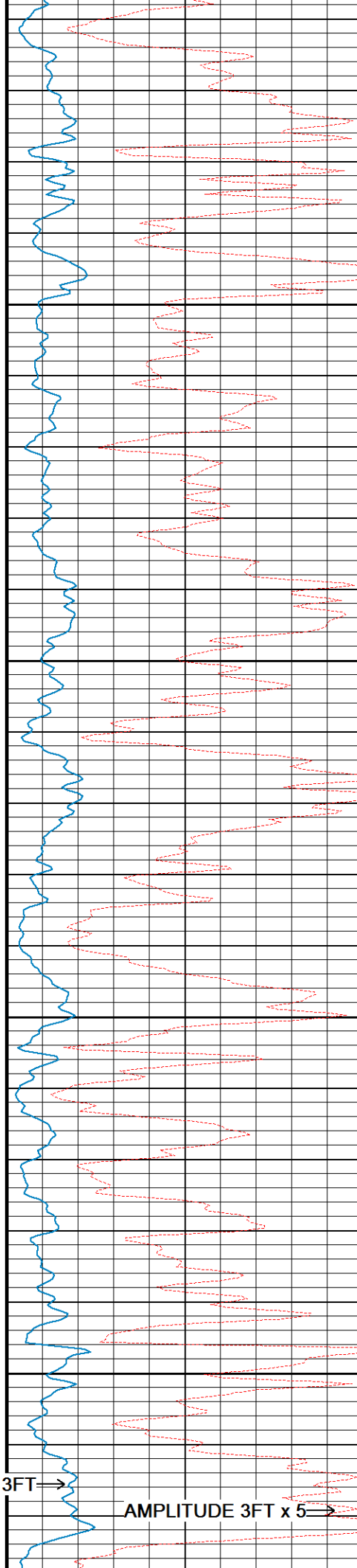
99°

2200

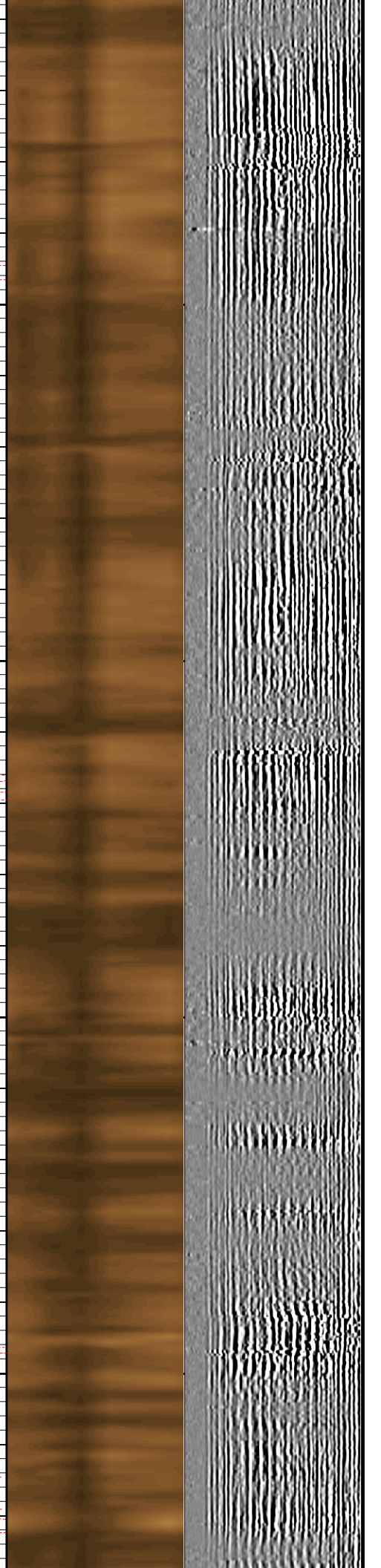
← TRAVEL TIME 3FT

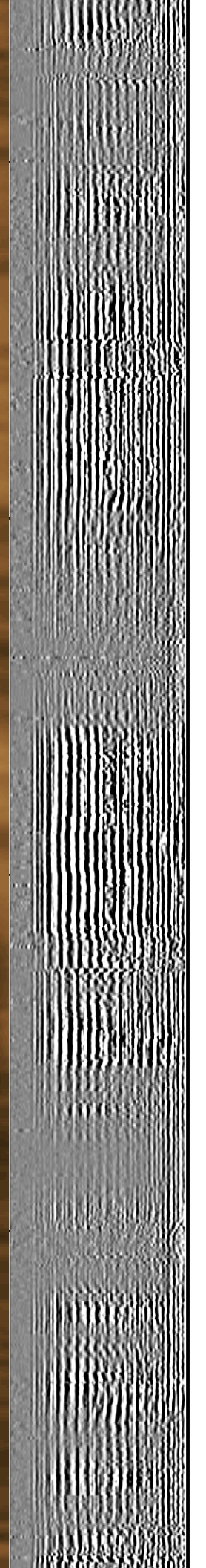
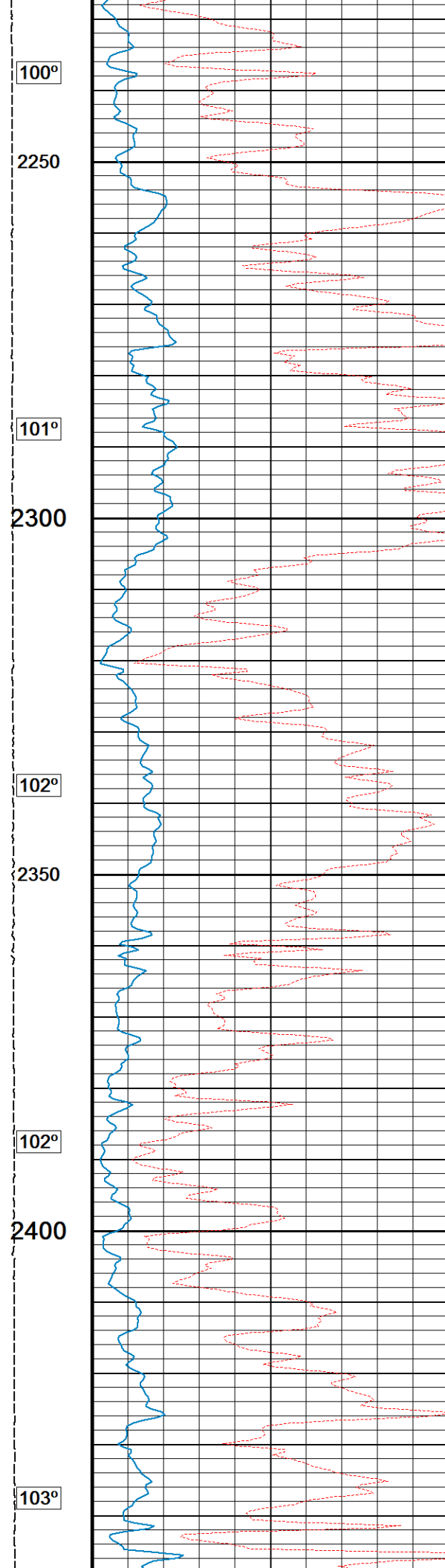
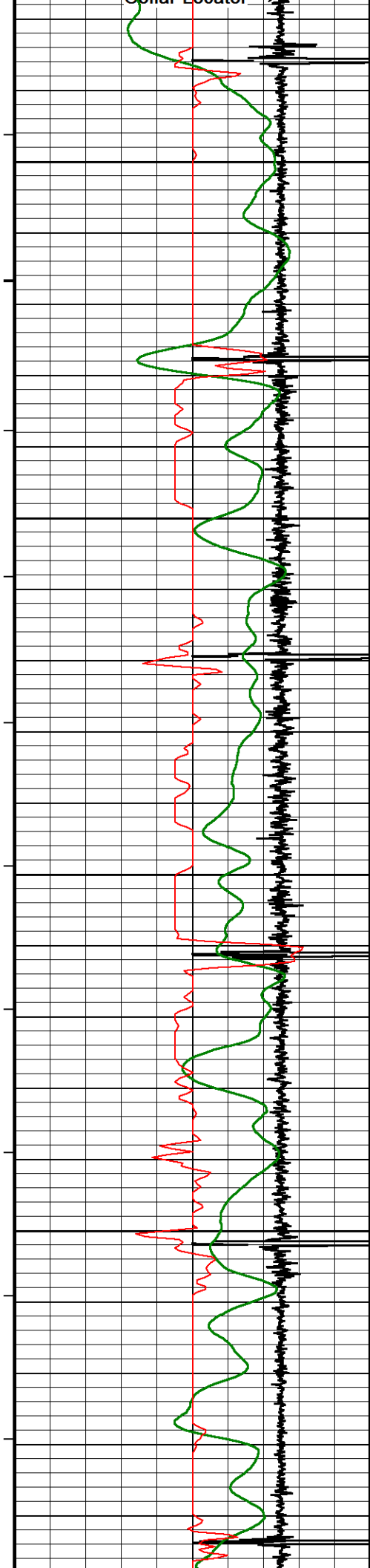
AMPLITUDE 3FT →

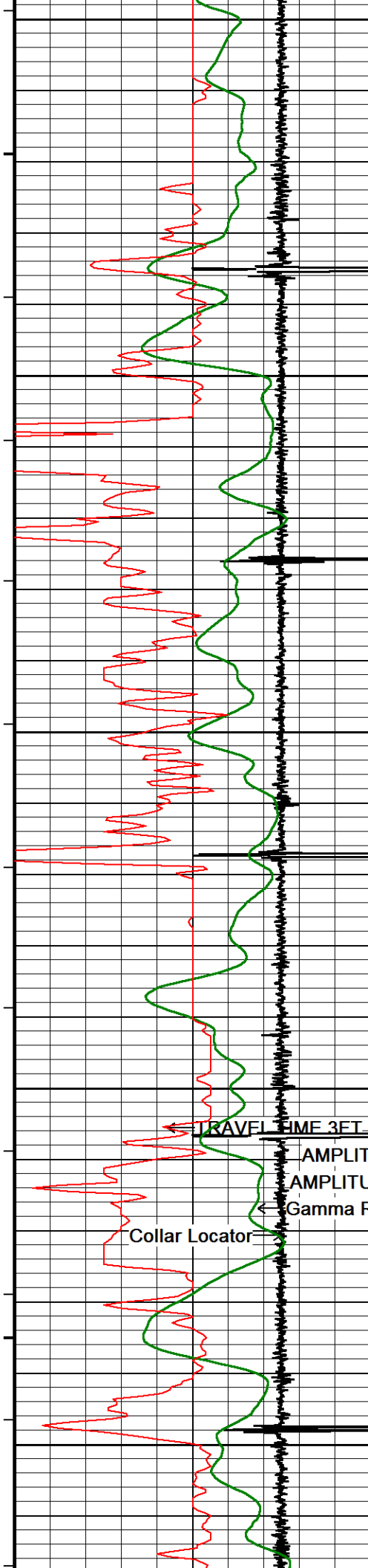
← Gamma Ray
Collar Locator →



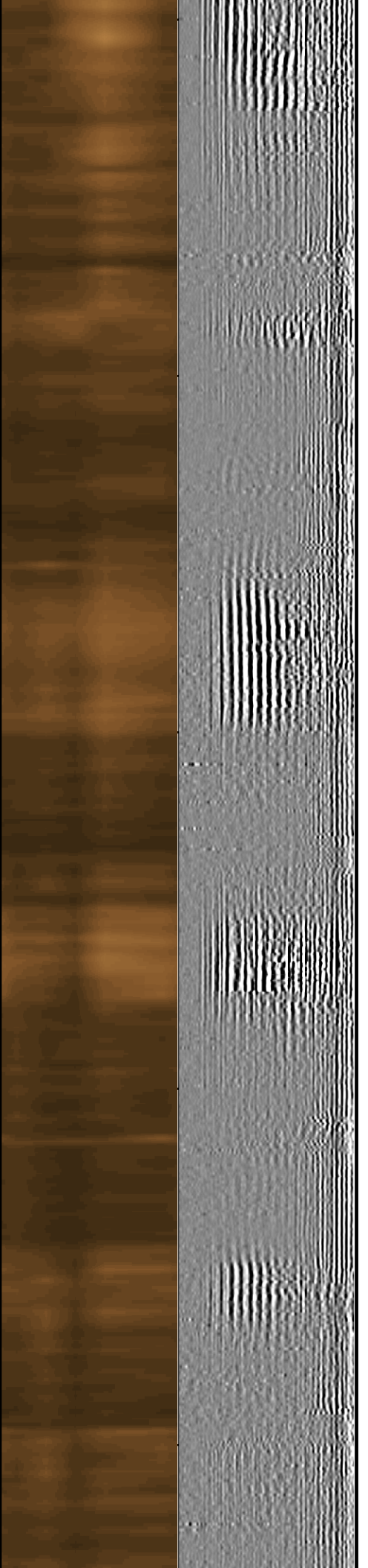
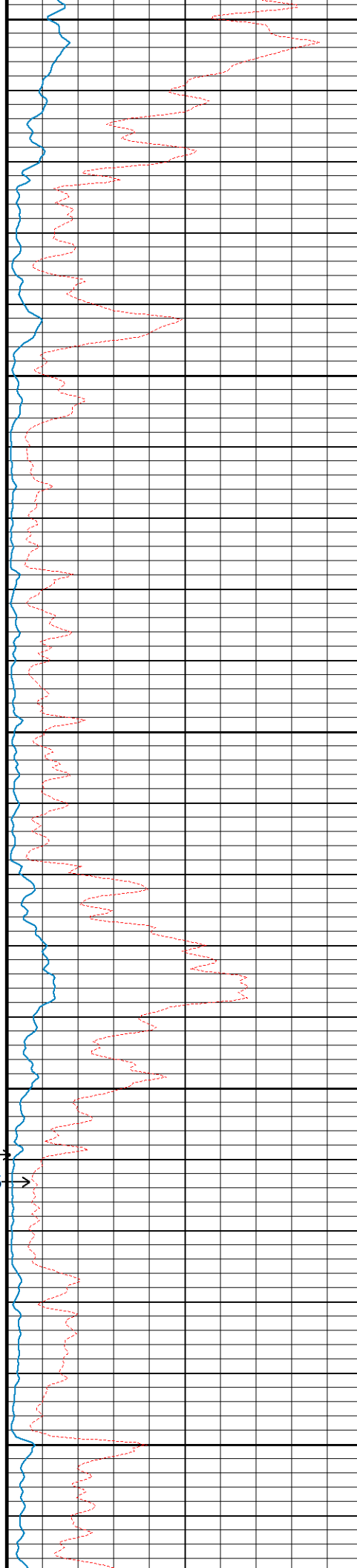
AMPLITUDE 3FT x 5 →



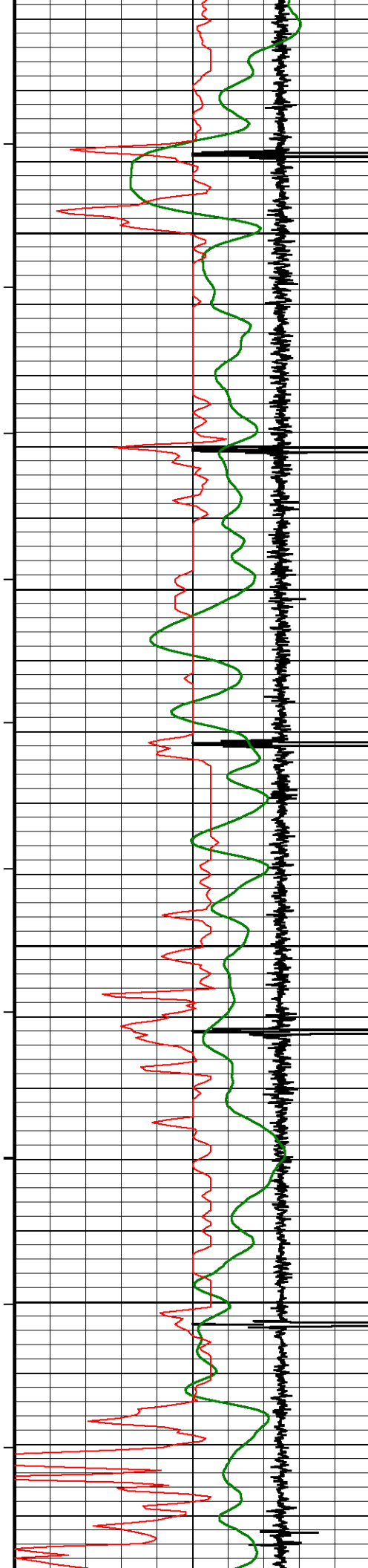




2450
104°
2500
105°
2550
105°
2600
106°
2650



← TRAVEL TIME 3FT
← AMPLITUDE 3FT
← AMPLITUDE 3FT x 5
← Gamma Ray
Collar Locator



107°

2700

108°

2750

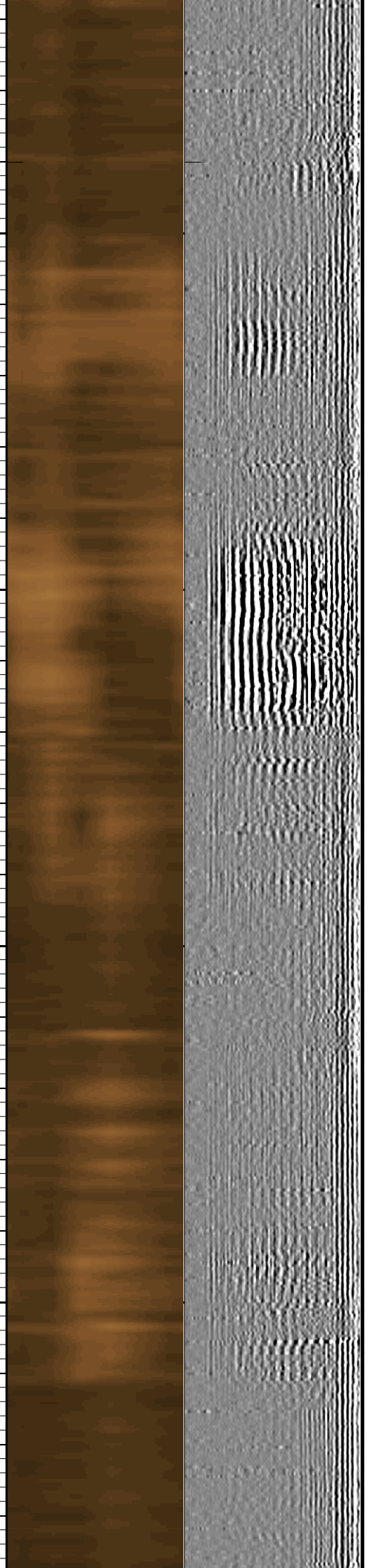
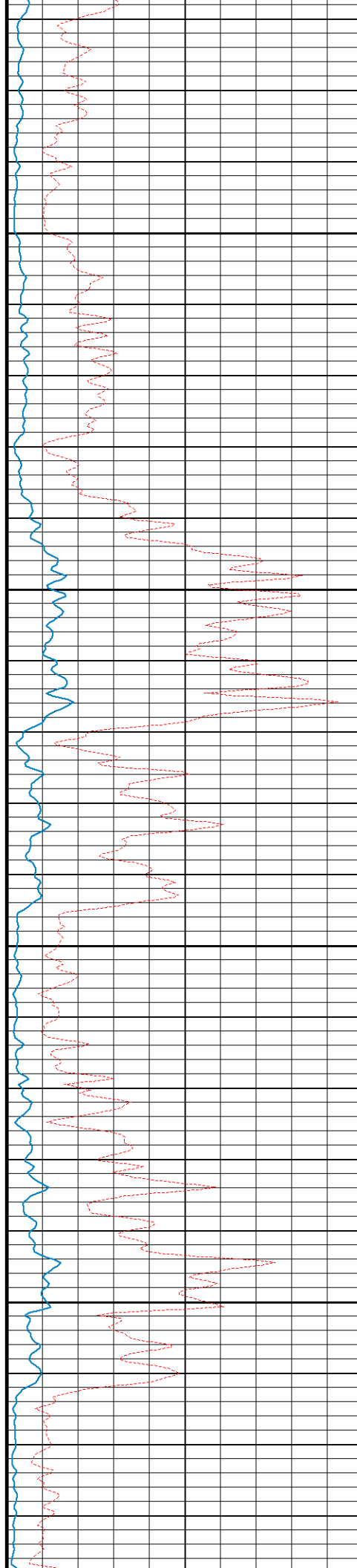
108°

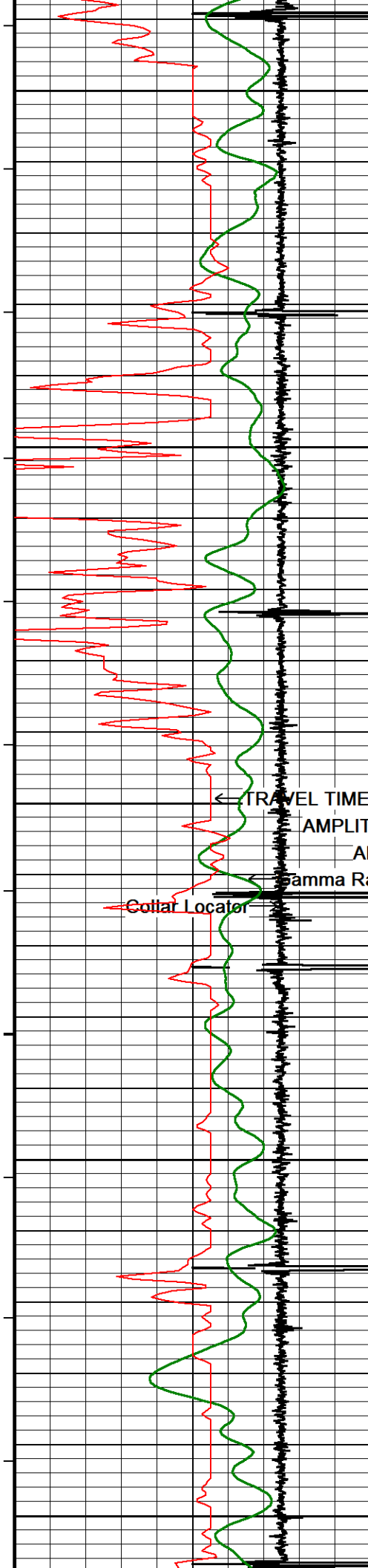
2800

109°

2850

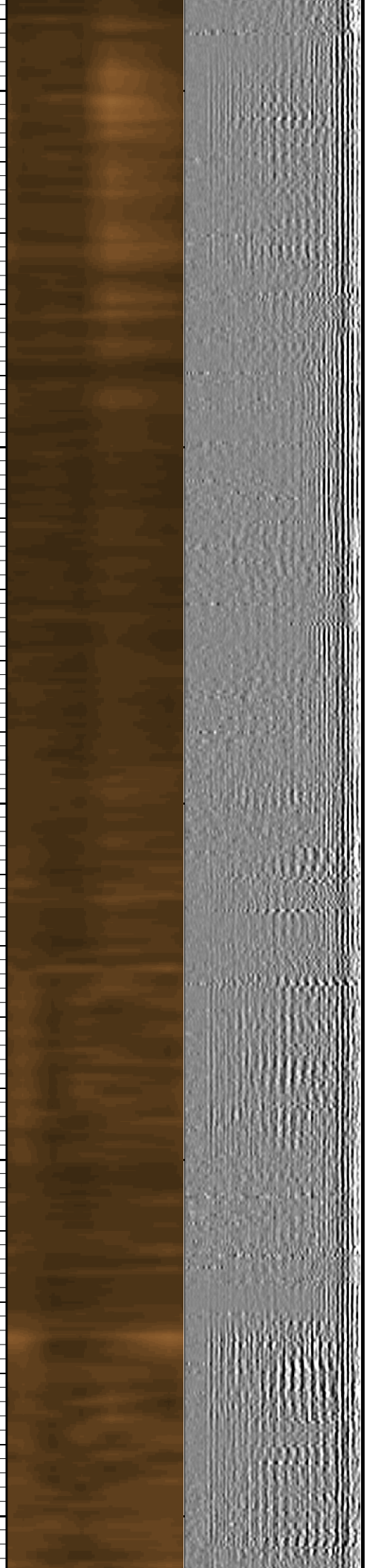
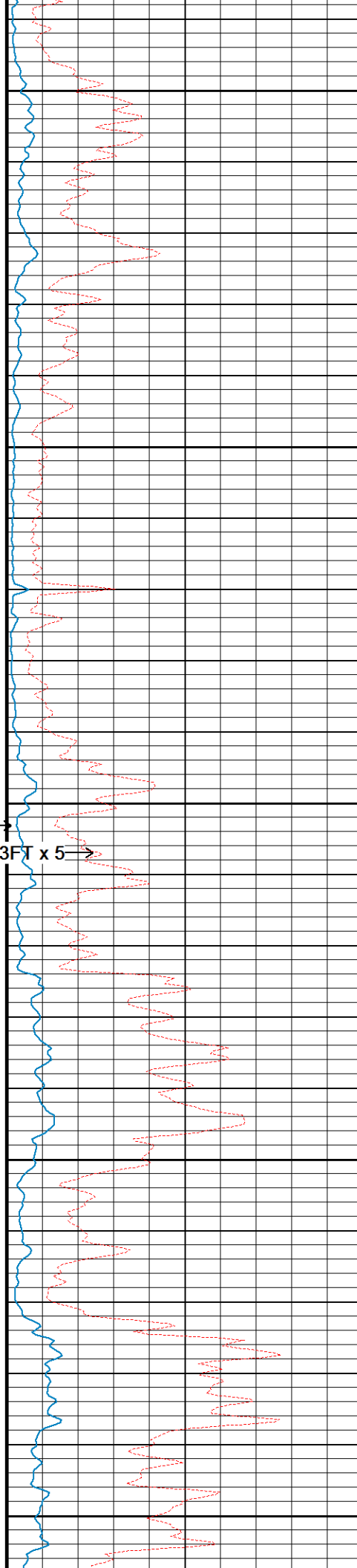
4100

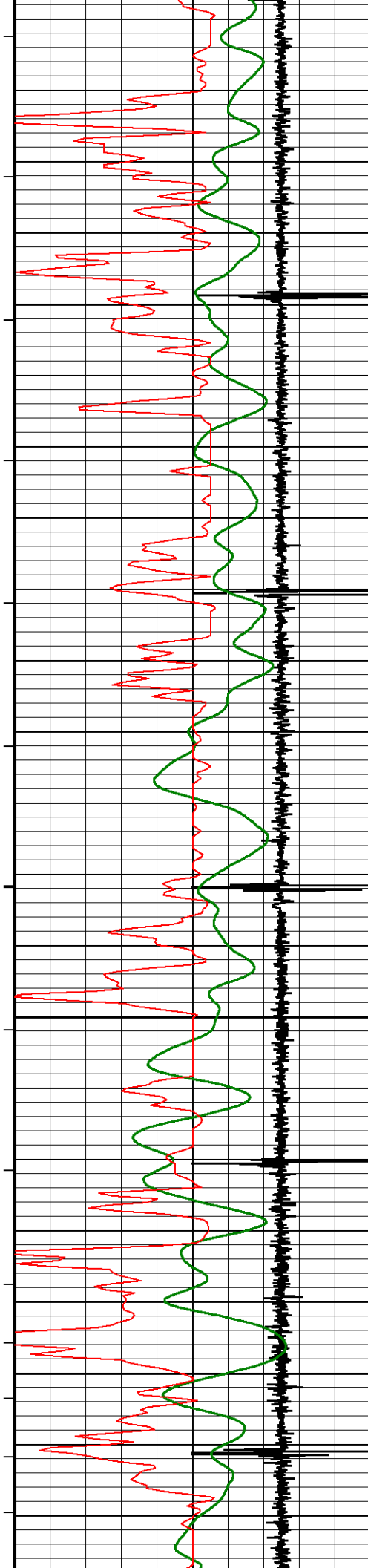




2900
111°
2950
112°
3000
112°
3050
113°
3100

← TRAVEL TIME 3FT
AMPLITUDE 3FT
← Gamma Ray
Collar Locator
AMPLITUDE 3FT x 5 →





114°

3150

115°

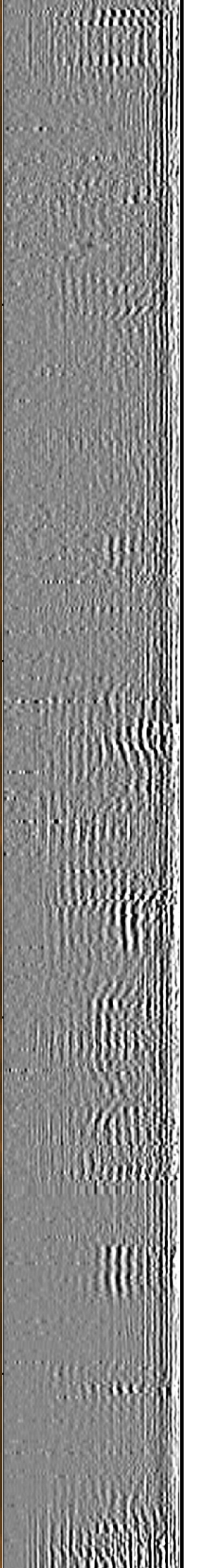
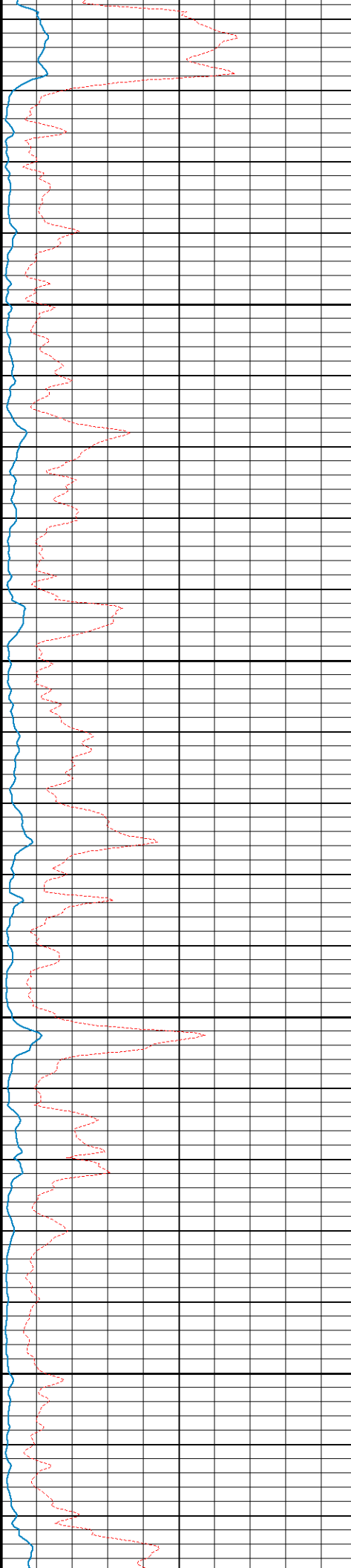
3200

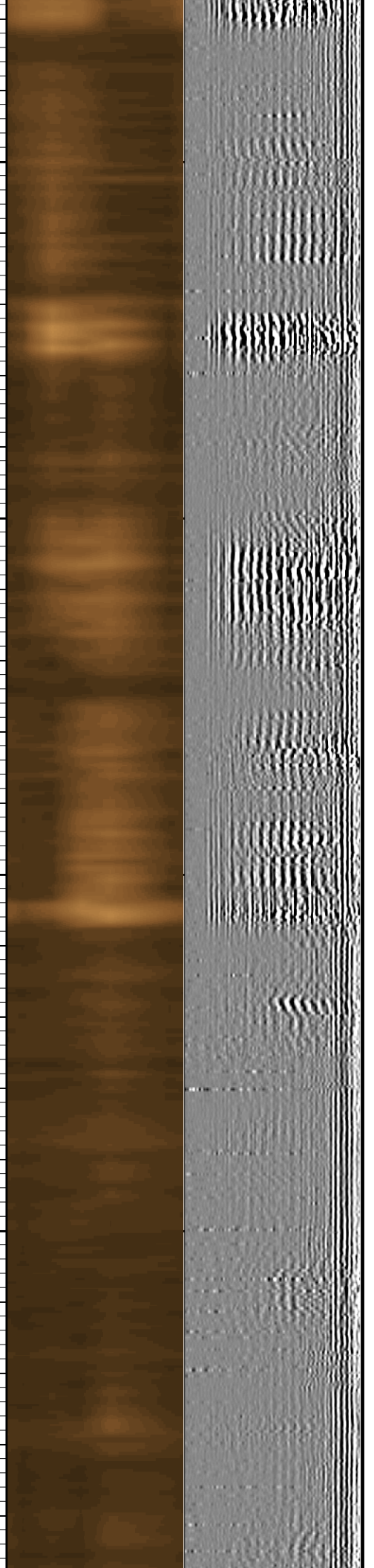
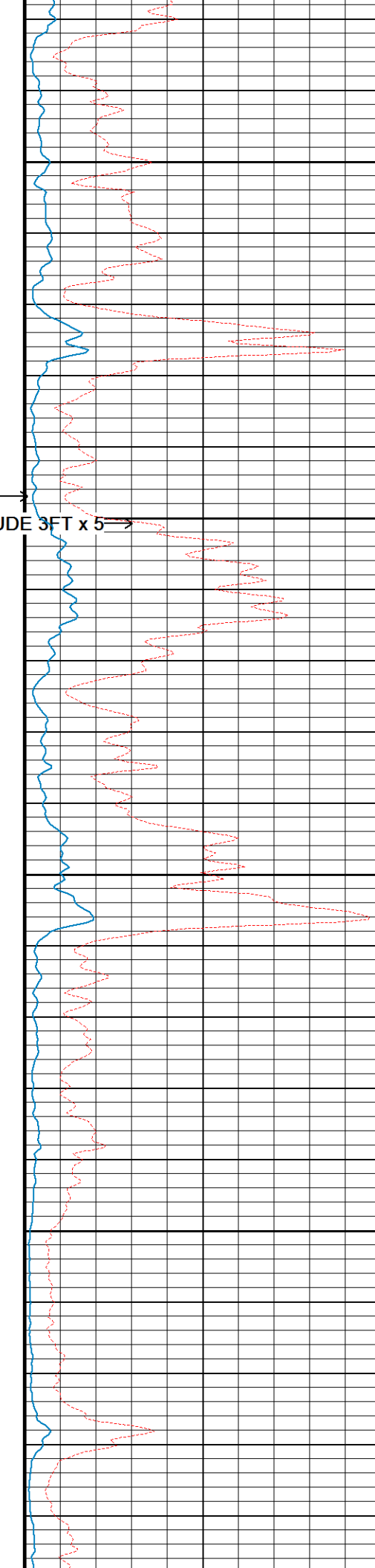
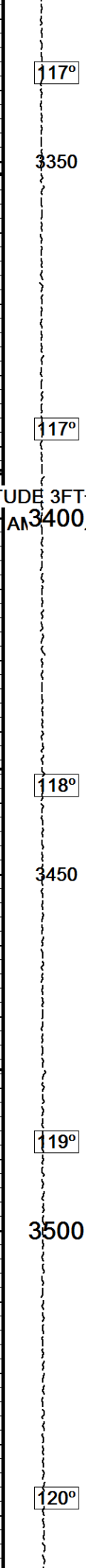
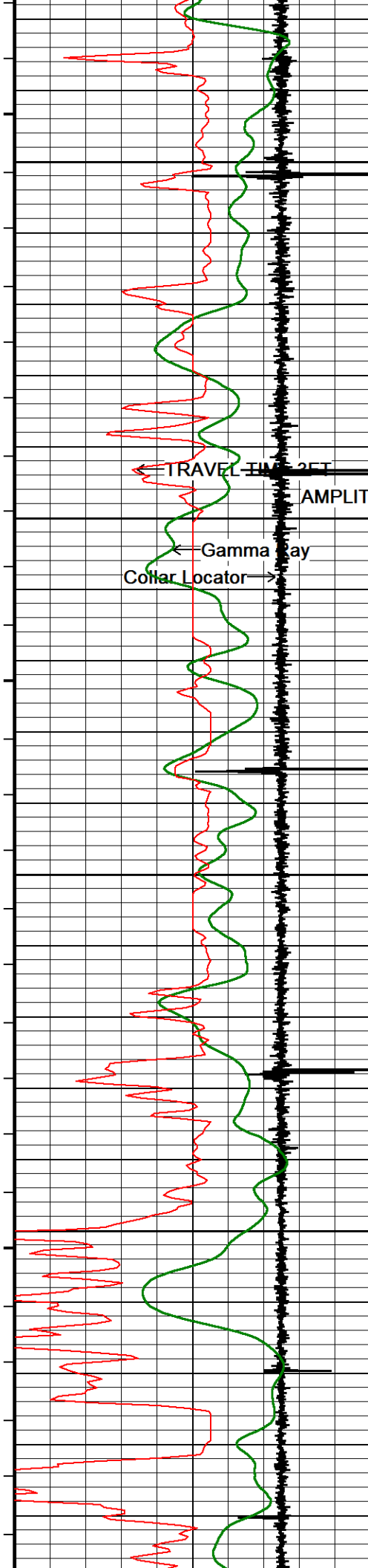
115°

3250

116°

3300





117°

3350

117°

118°

3450

119°

3500

120°

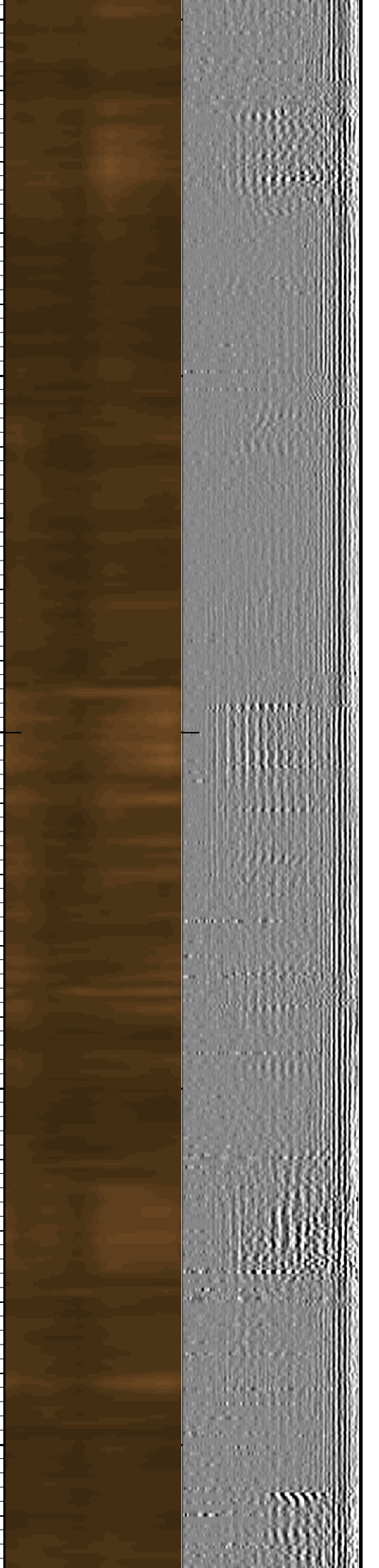
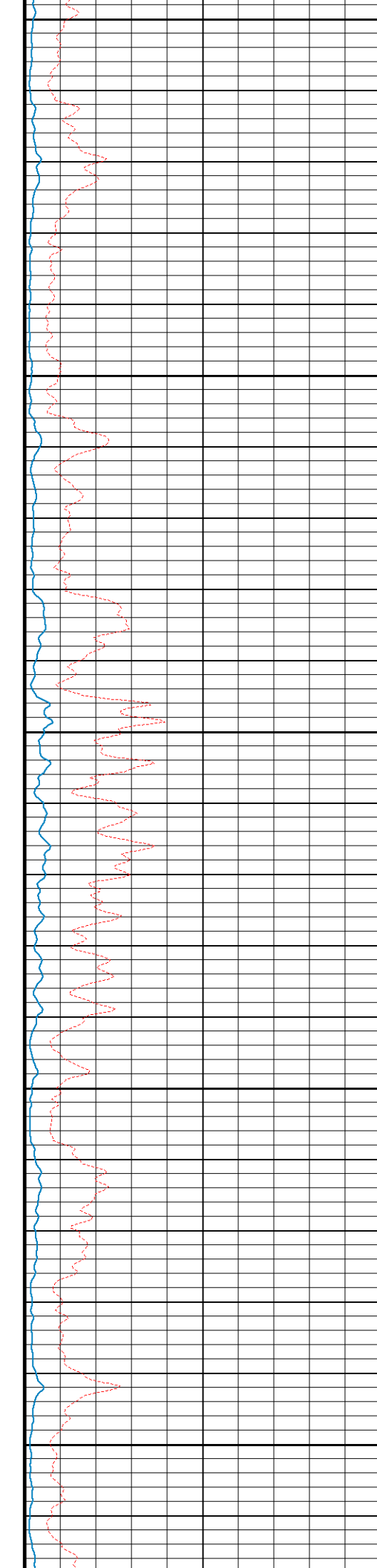
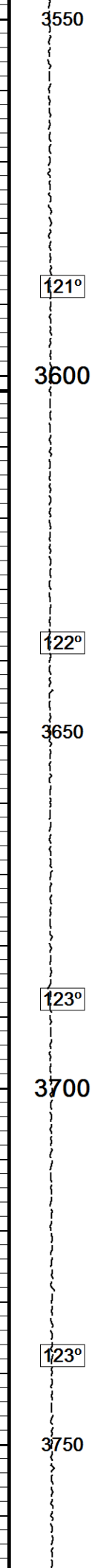
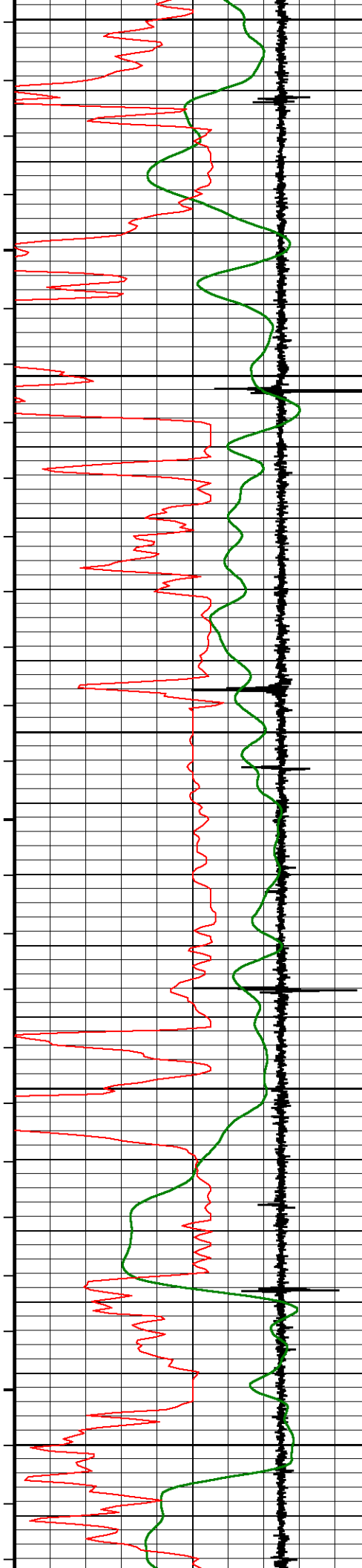
← TRAVEL TIME 2FT →

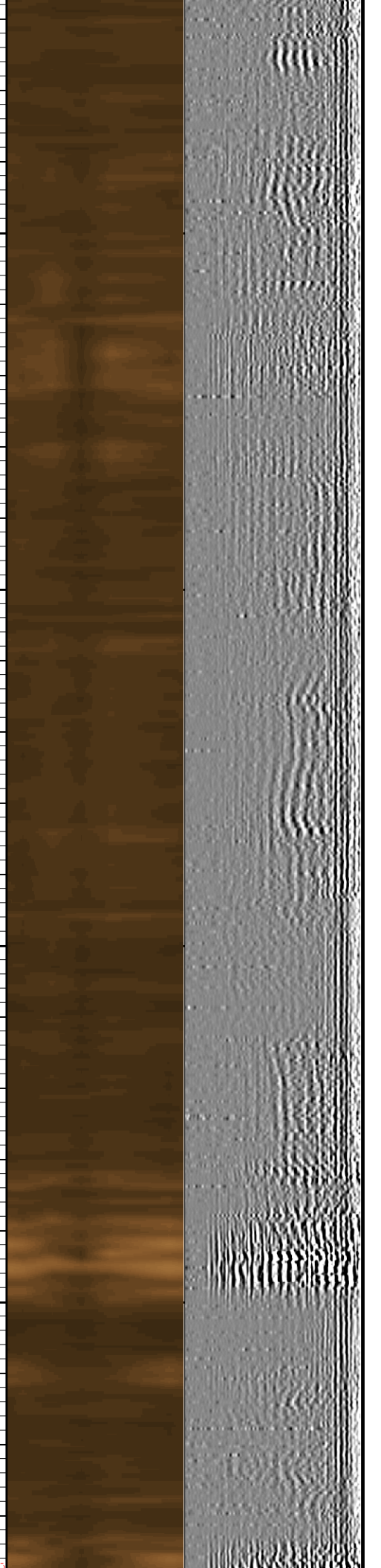
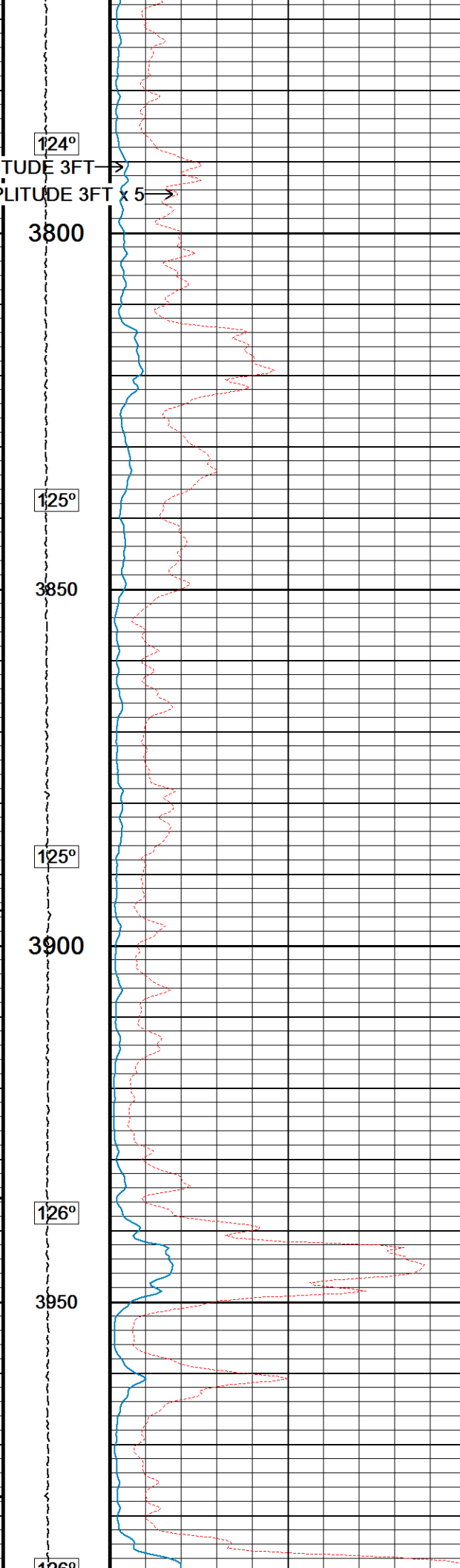
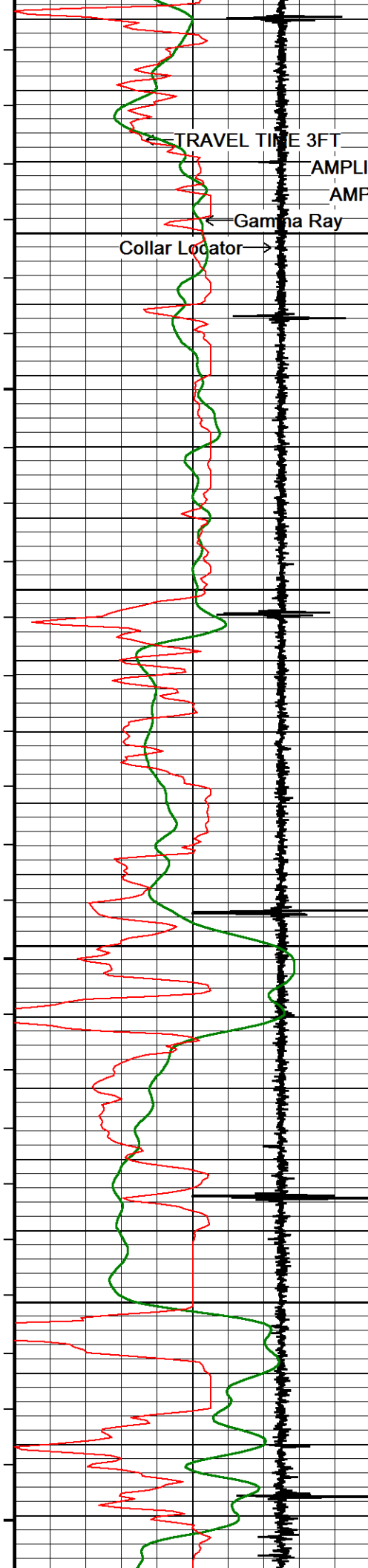
AMPLITUDE 3FT →

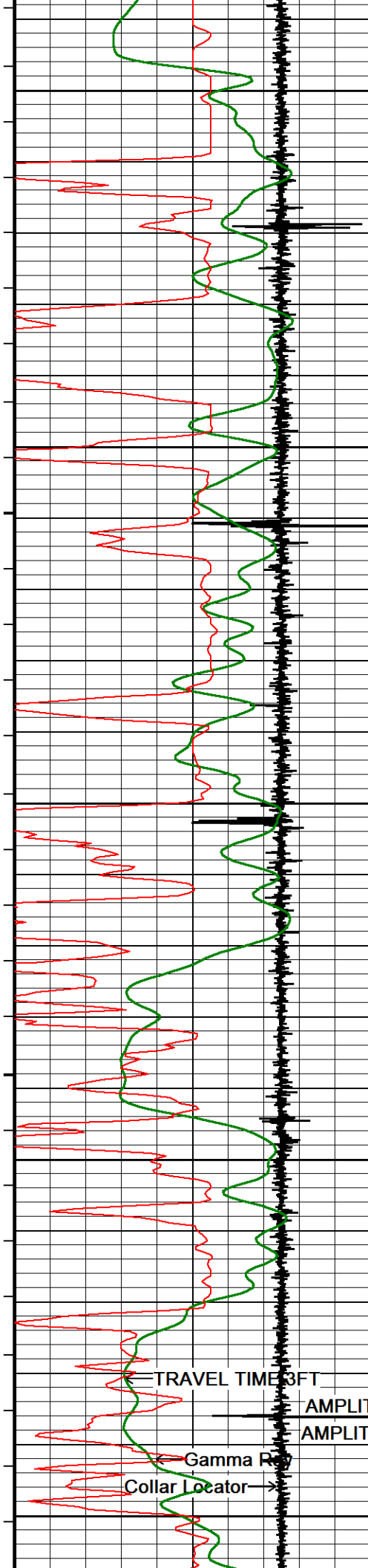
AN 3400 JDE 3FT x 5 →

← Gamma ray

Collar Locator →







126°

4000

127°

4050

128°

4100

129°

4150

130°

4200

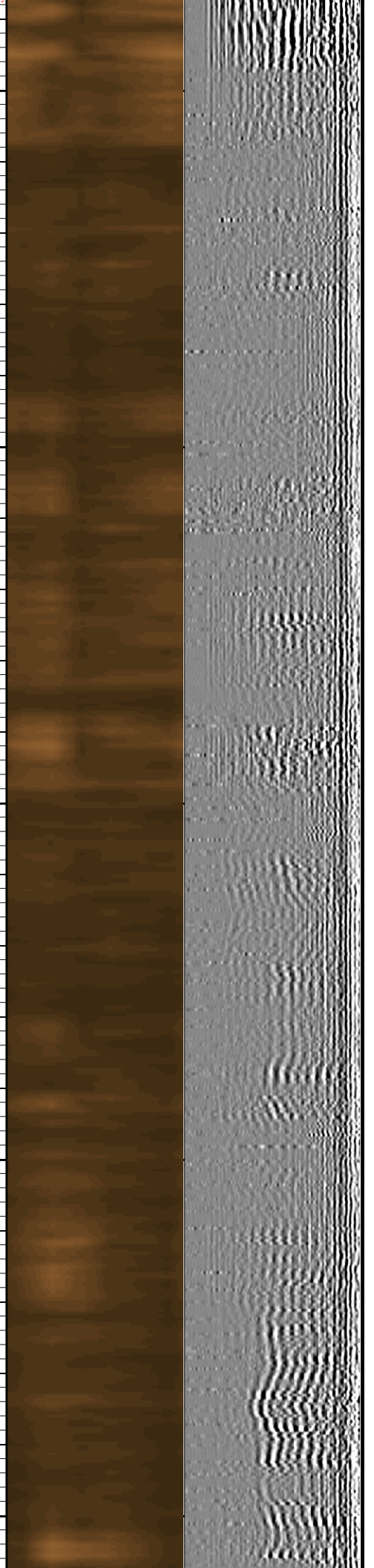
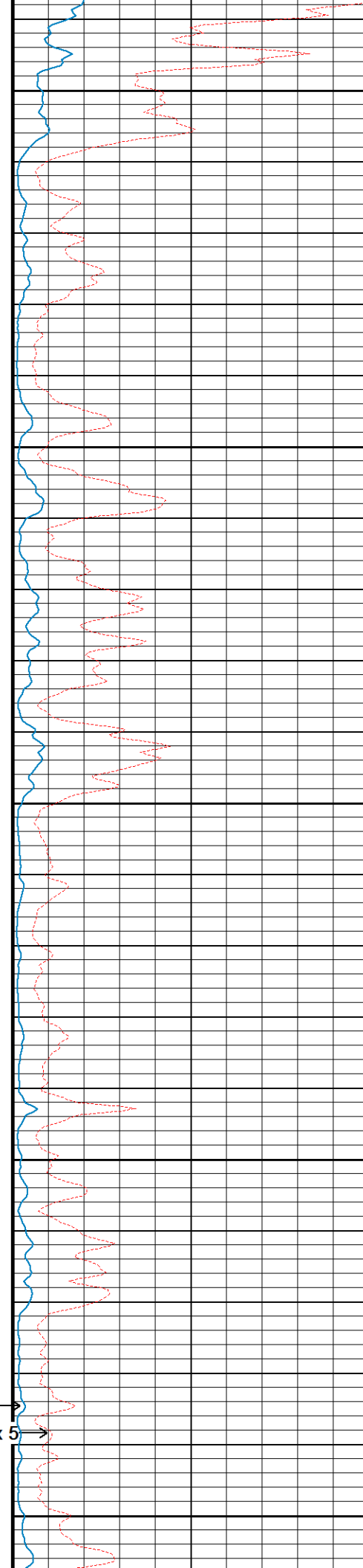
TRAVEL TIME 3FT

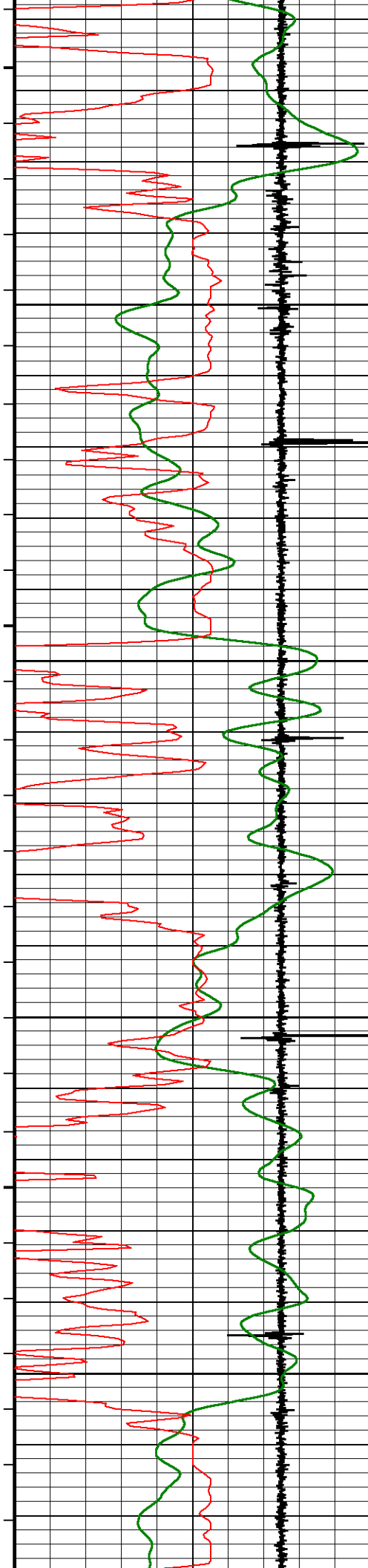
AMPLITUDE 3FT

AMPLITUDE 3FT x 5

Gamma Ray

Collar Locator





130°

4250

131°

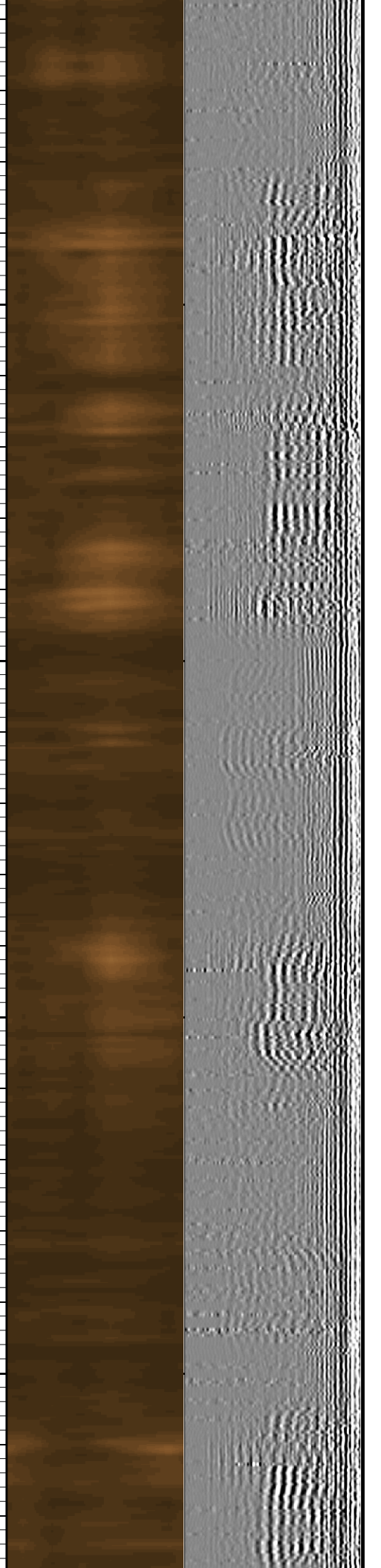
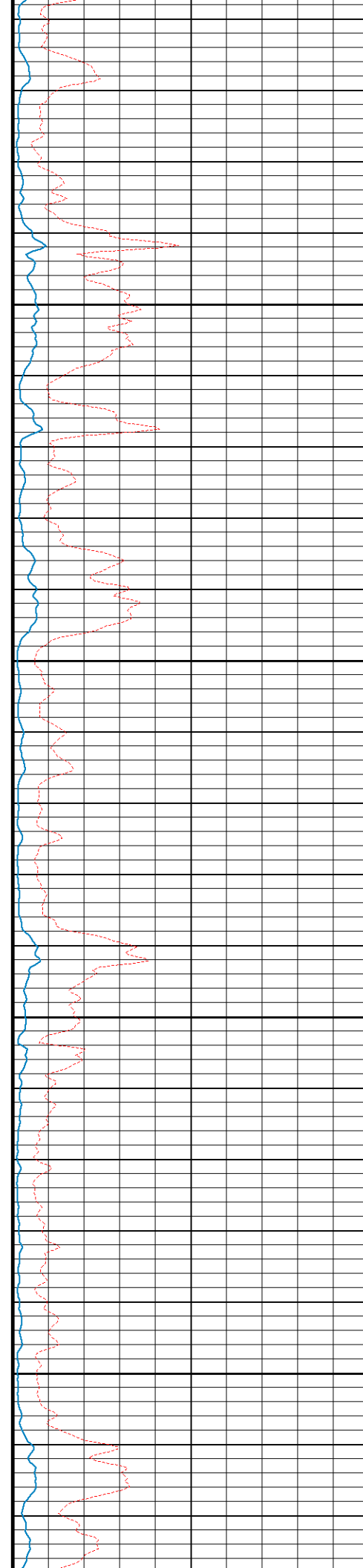
4300

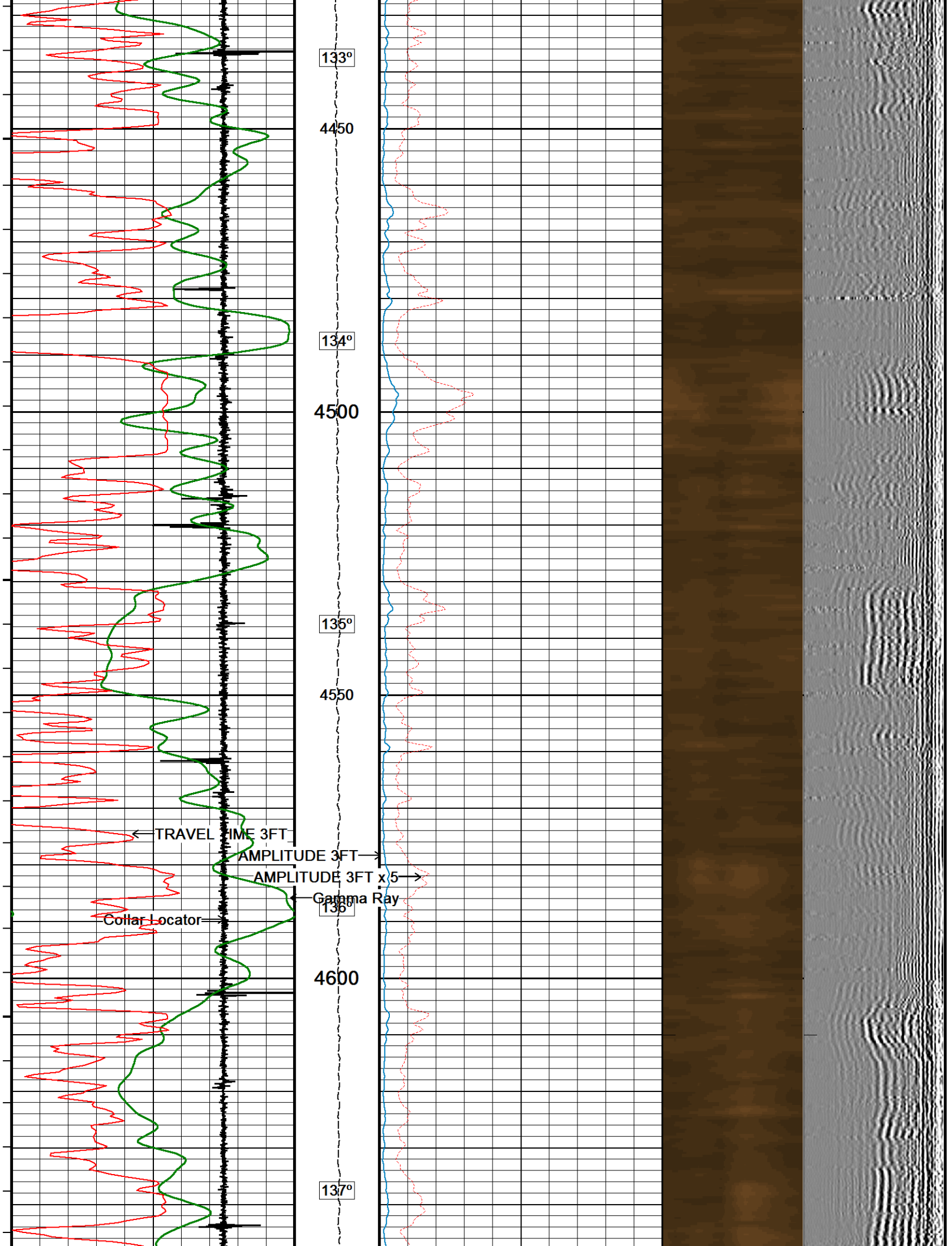
132°

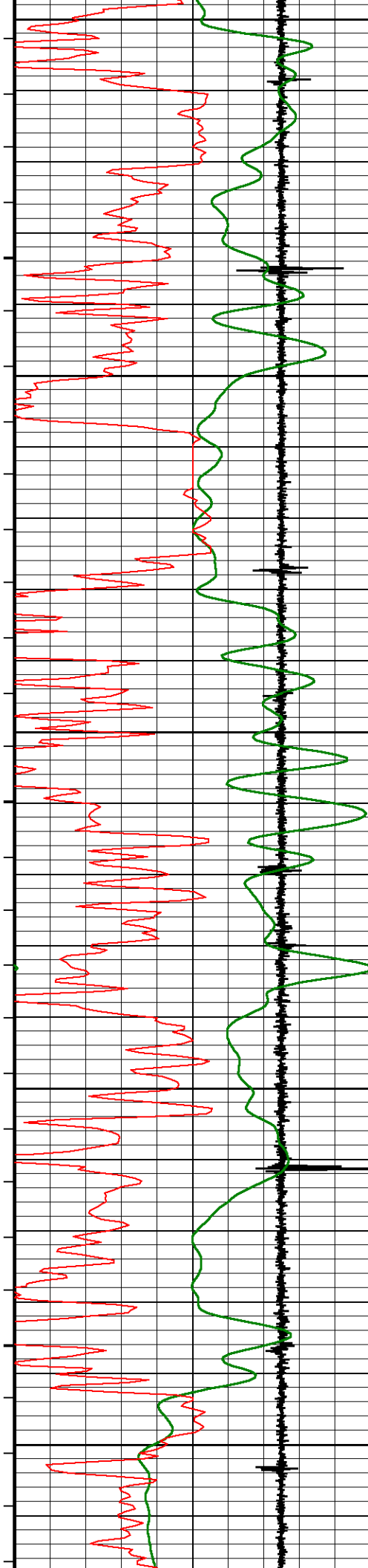
4350

132°

4400







4650

138°

4700

139°

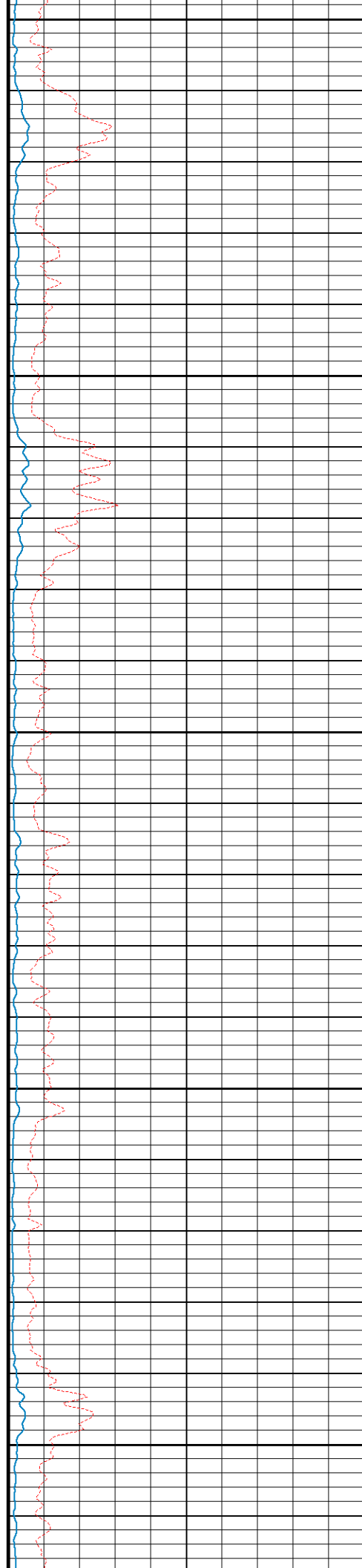
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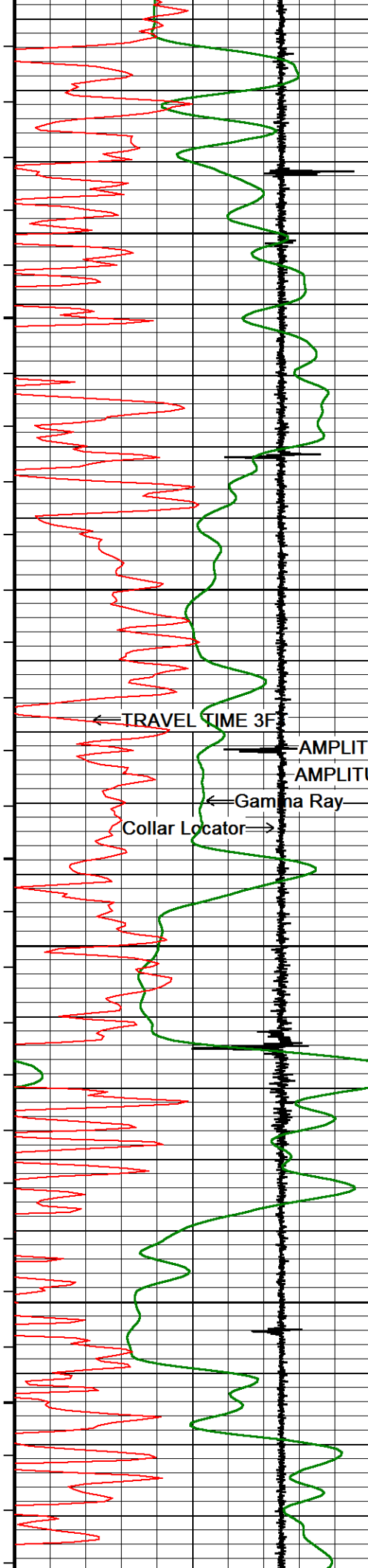
140°

4800

141°

4850





141°

4900

142°

4950

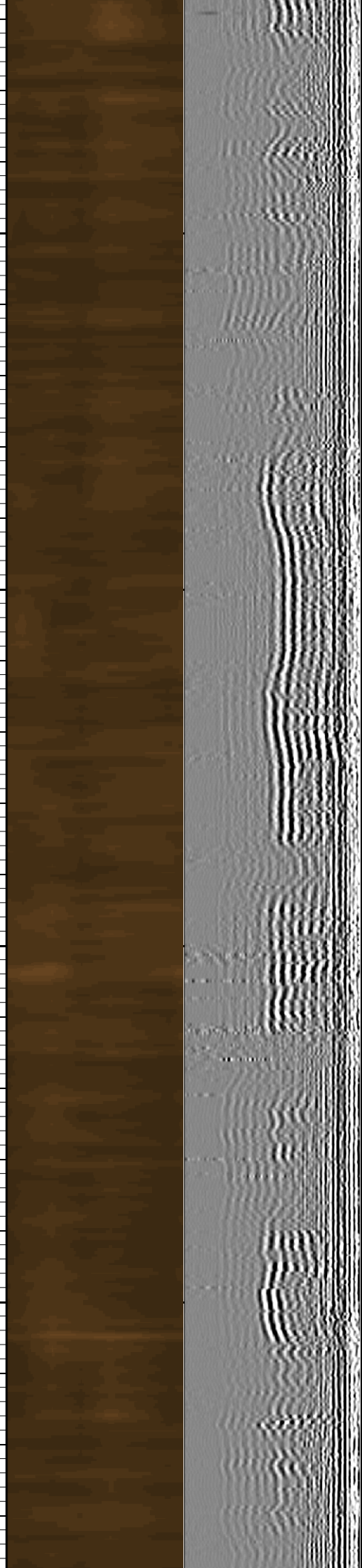
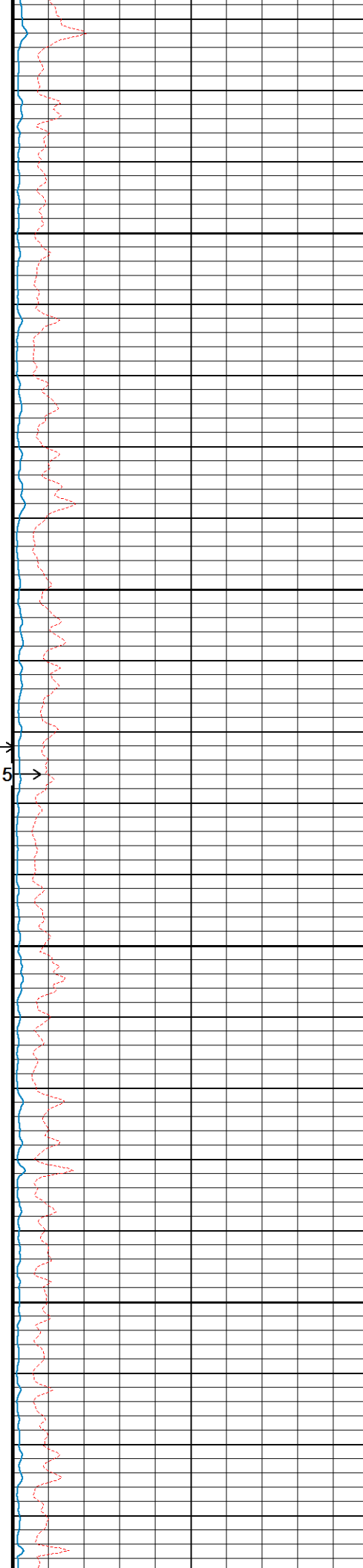
143°

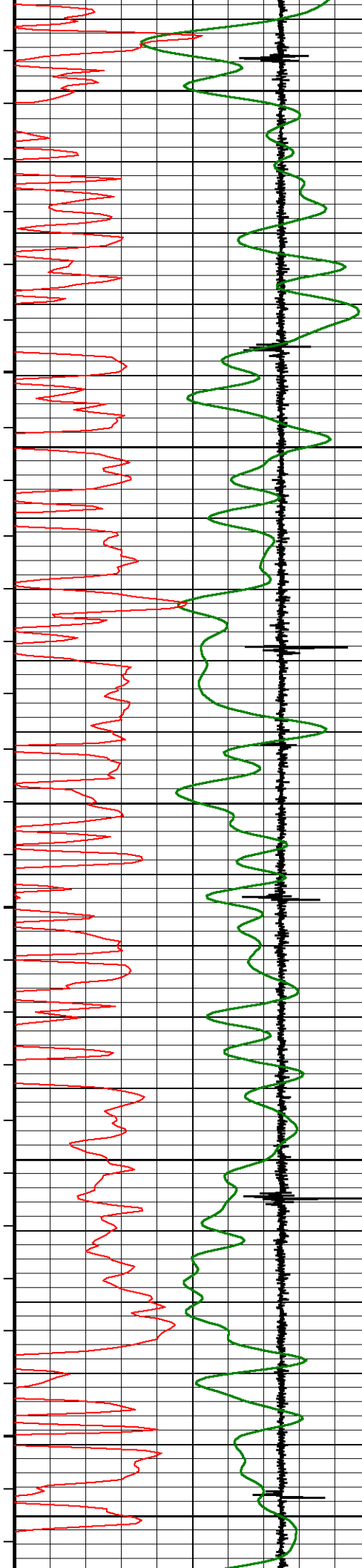
5000

144°

5050

145°





145^o

5100

146^o

5150

147^o

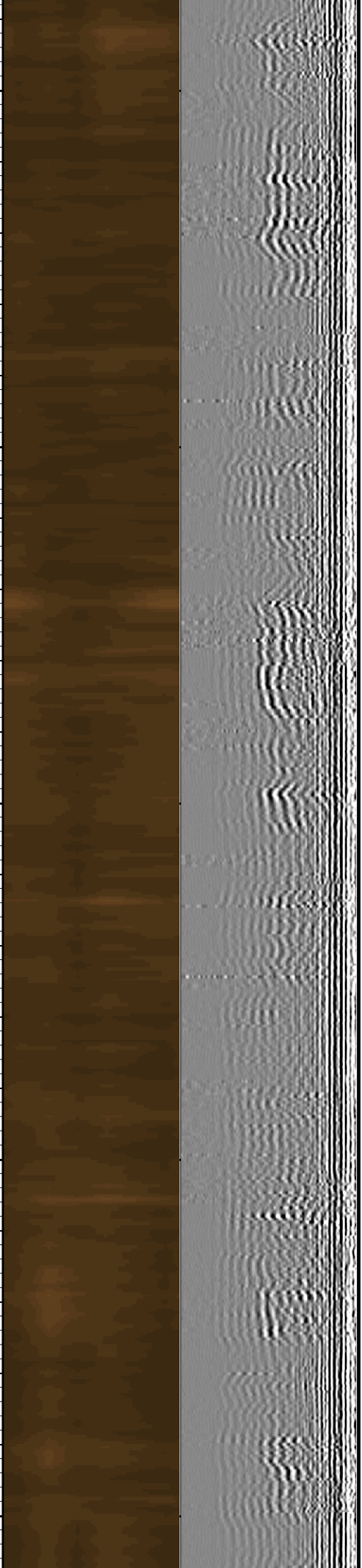
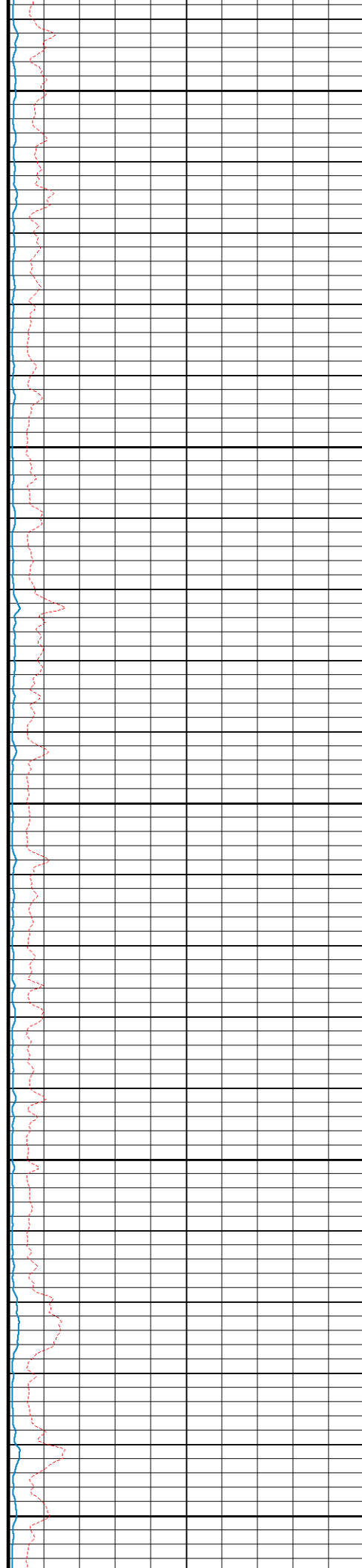
5200

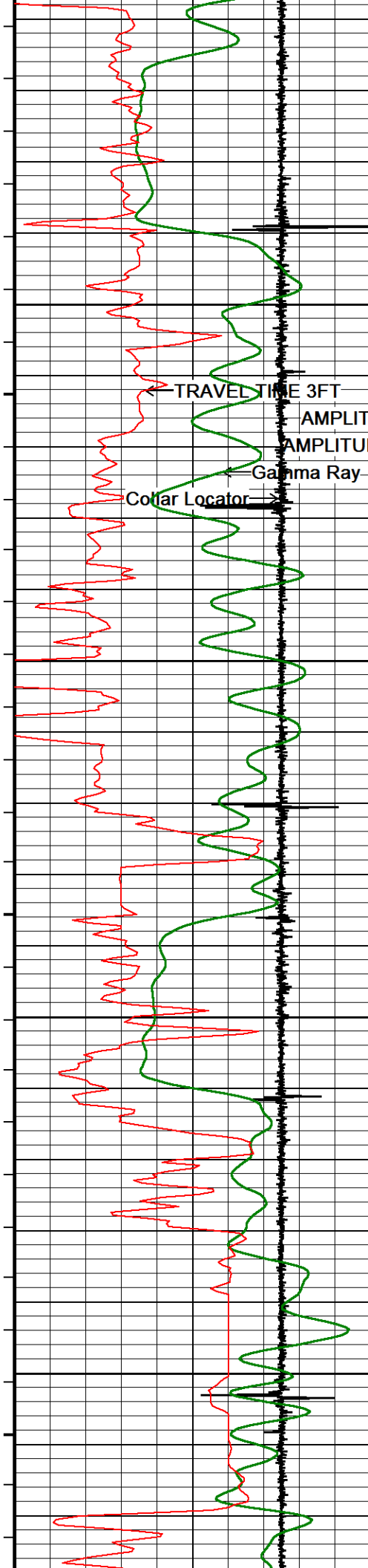
148^o

5250

149^o

5300





150°

5350

151°

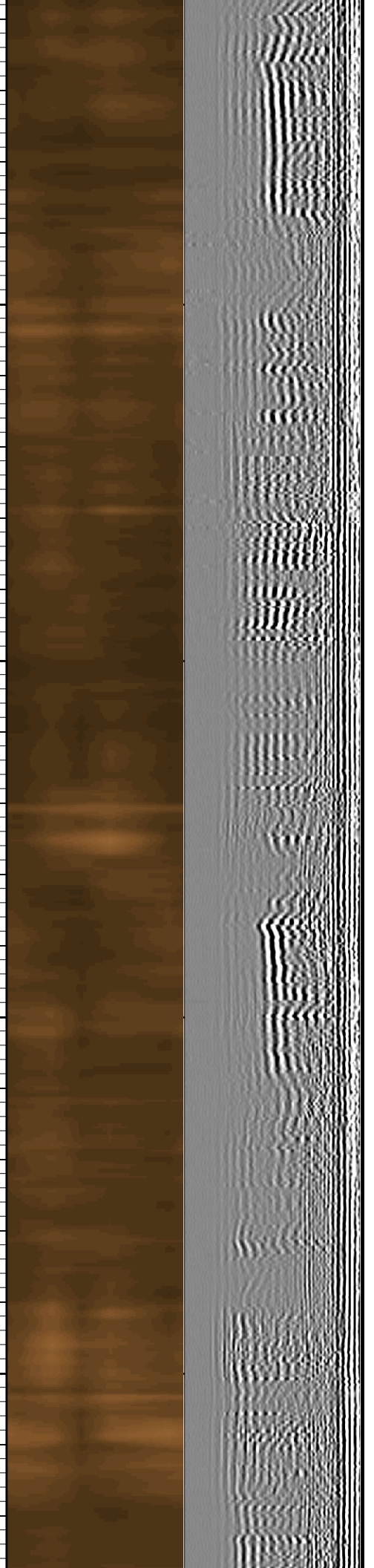
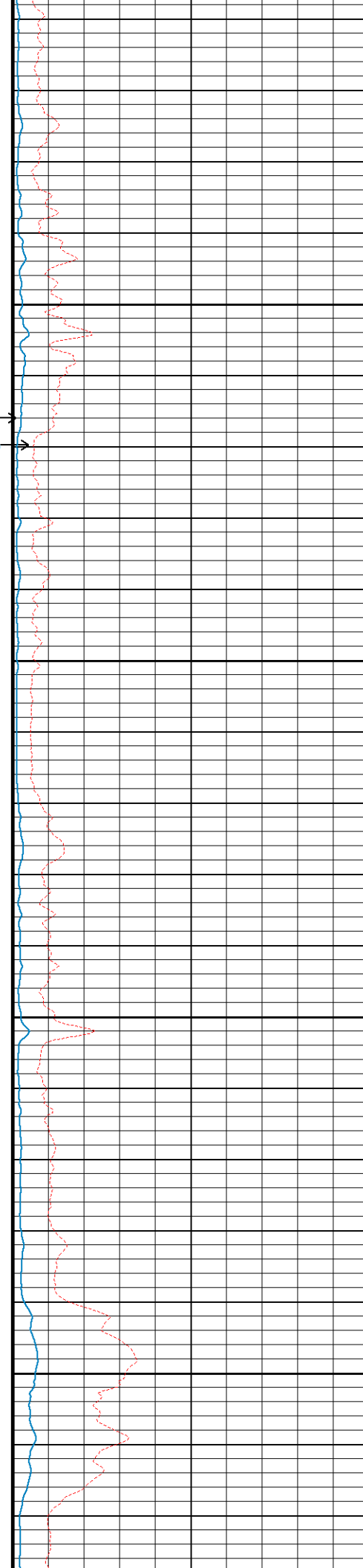
5400

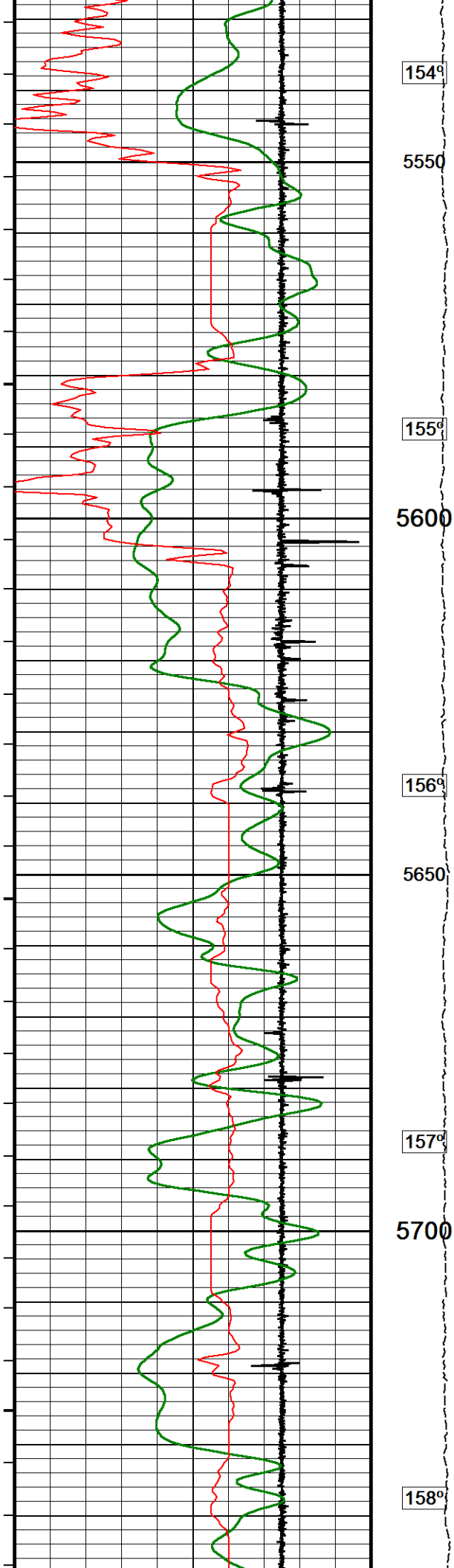
152°

5450

153°

5500





154°

5550

155°

5600

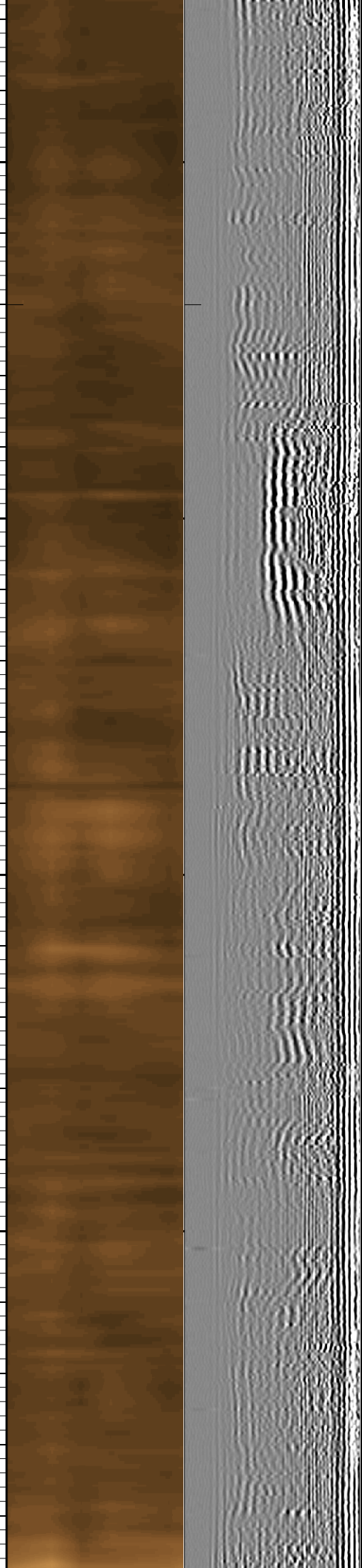
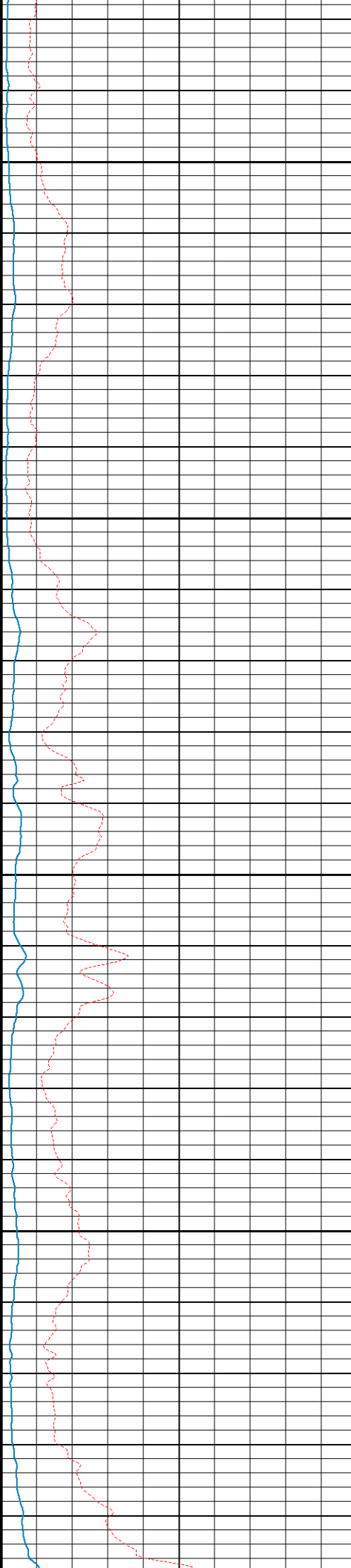
156°

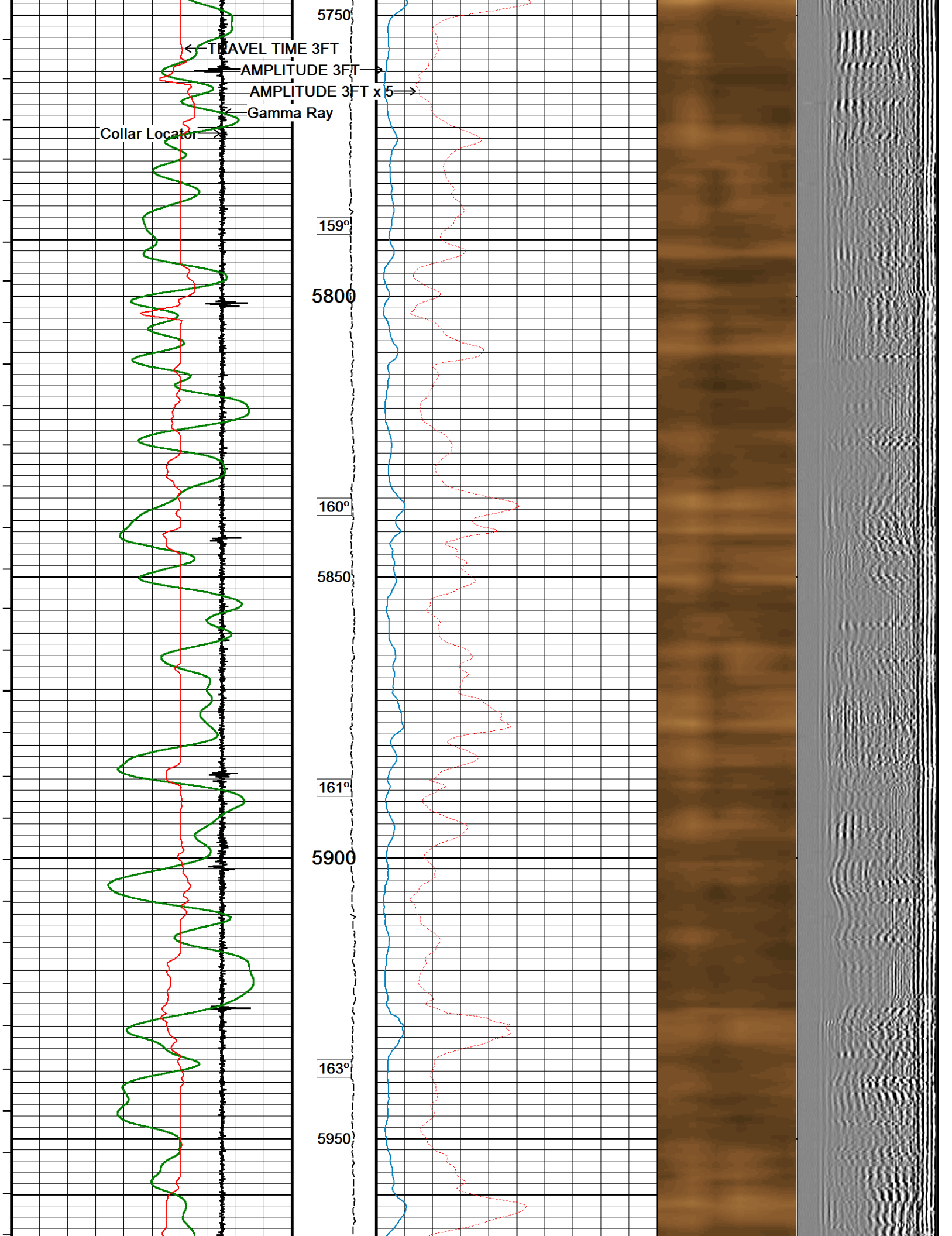
5650

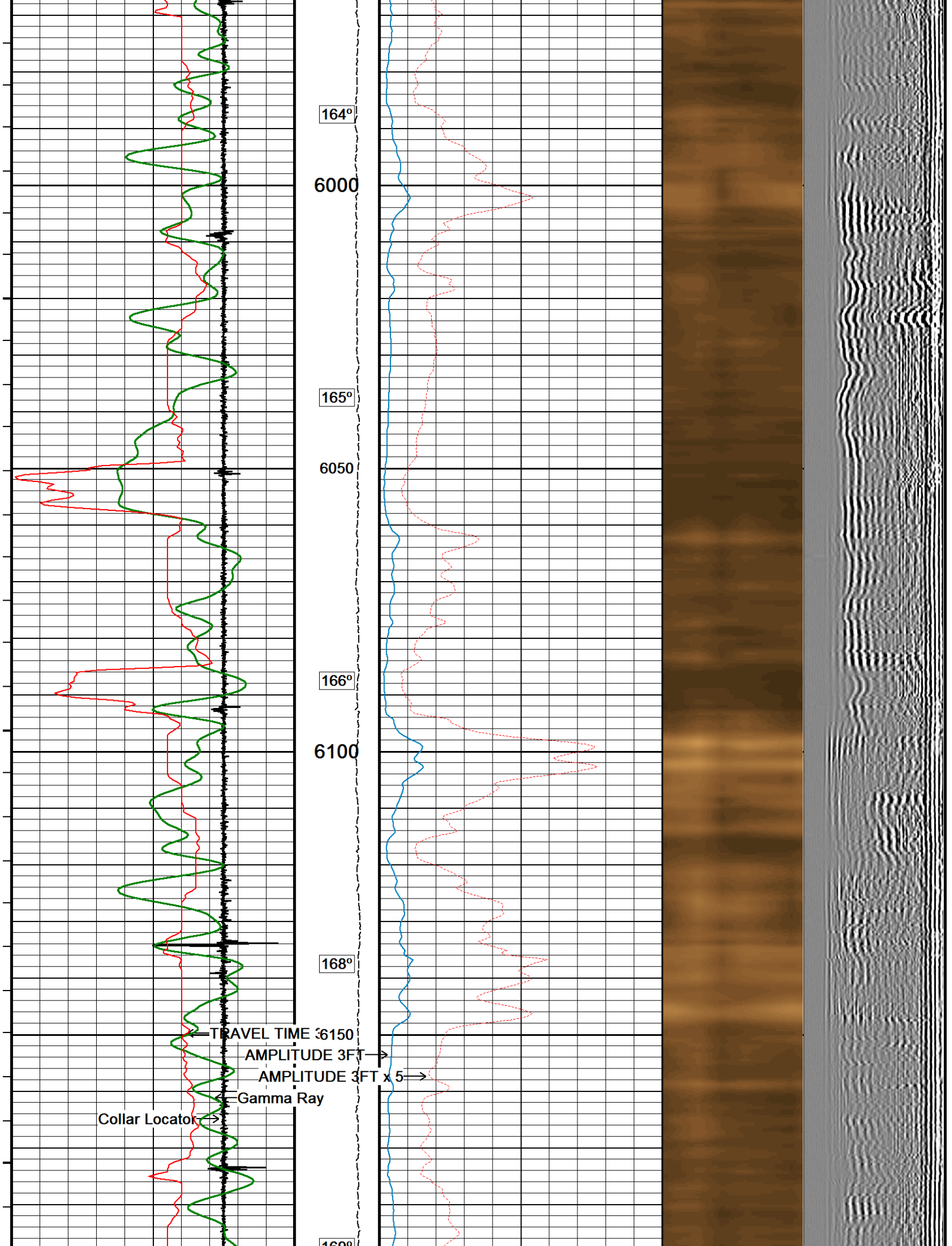
157°

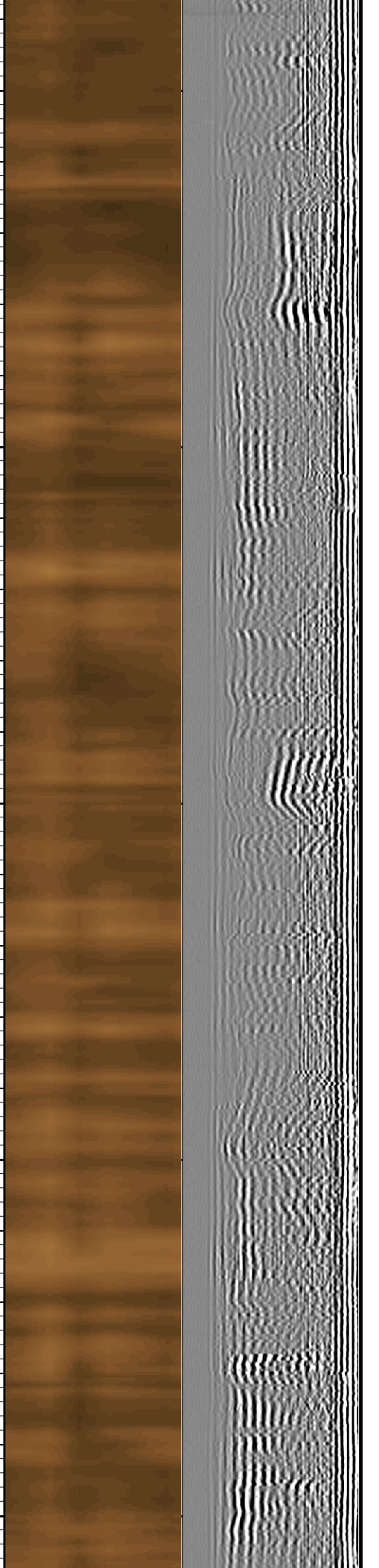
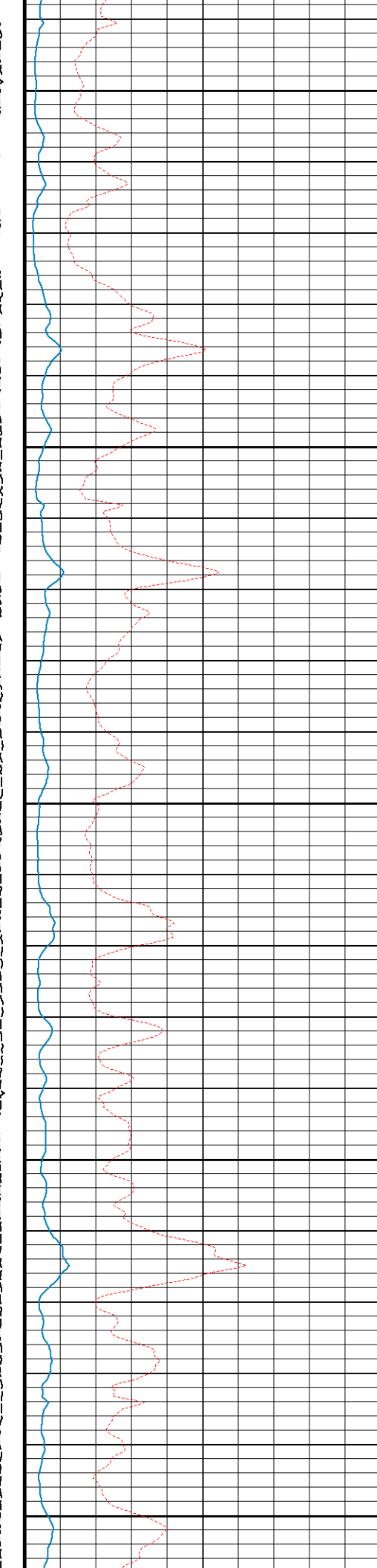
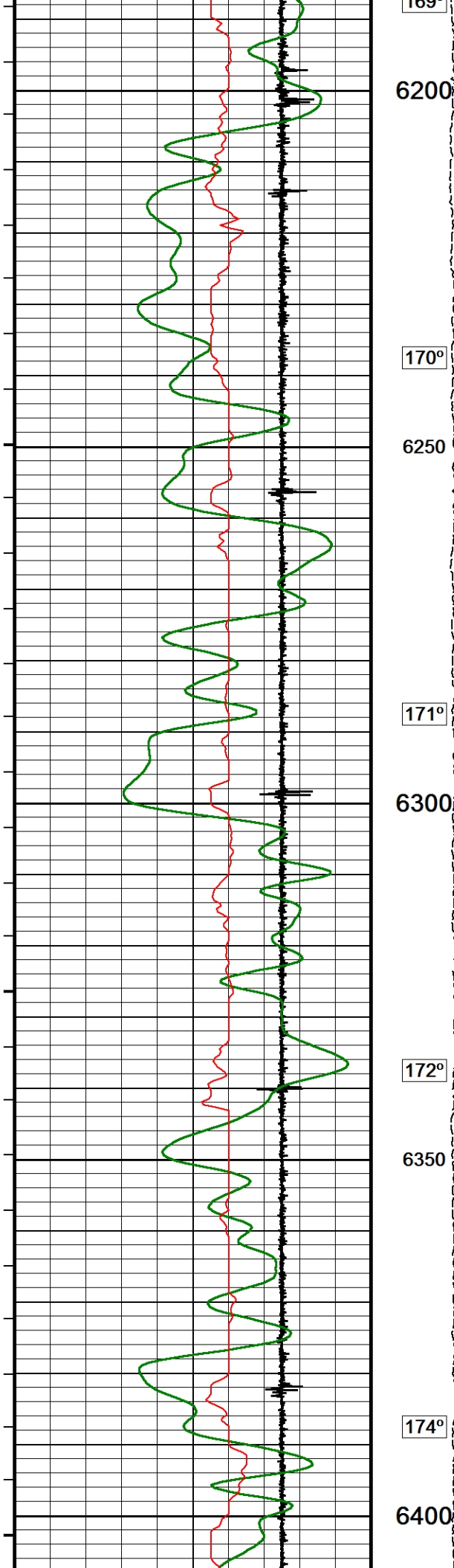
5700

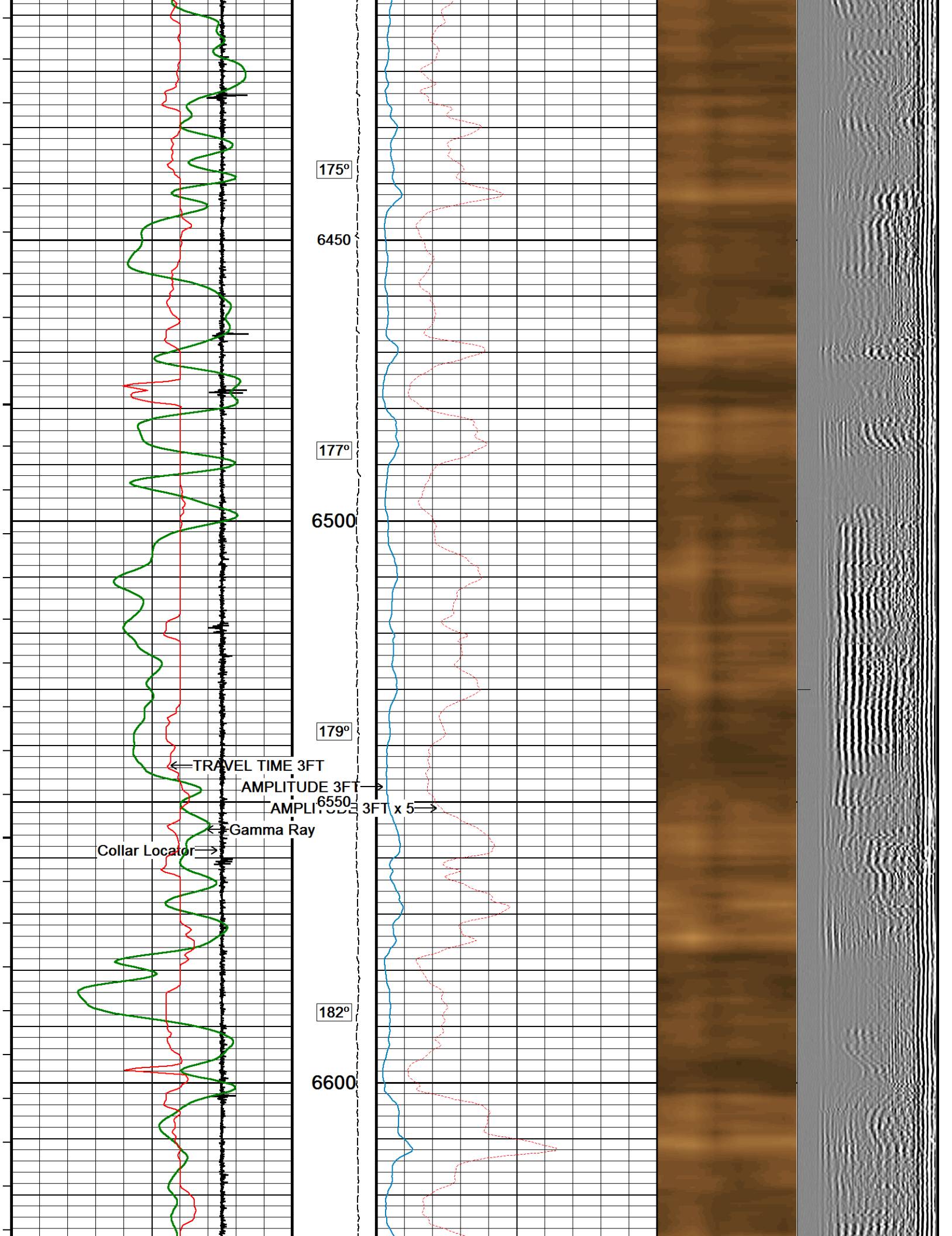
158°

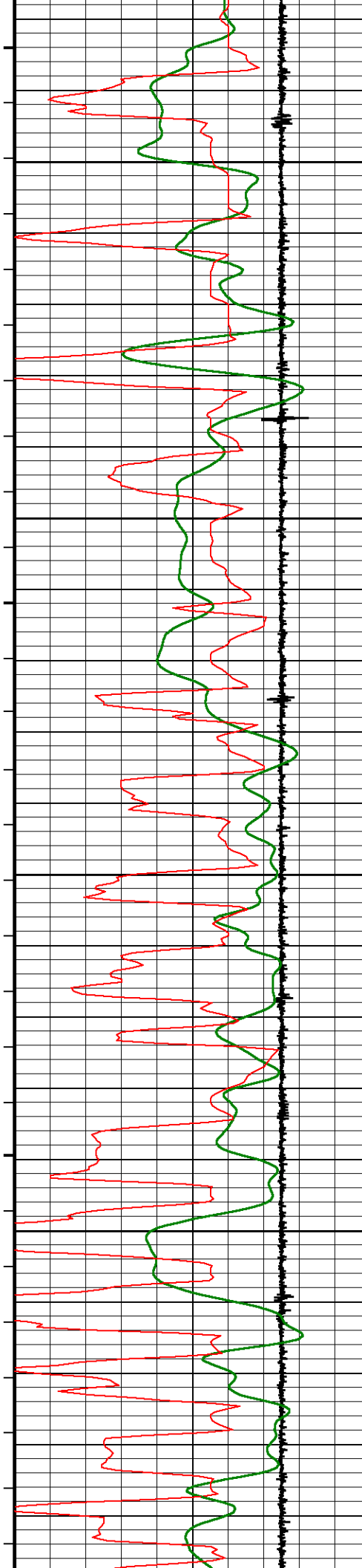












184°

6650

188°

6700

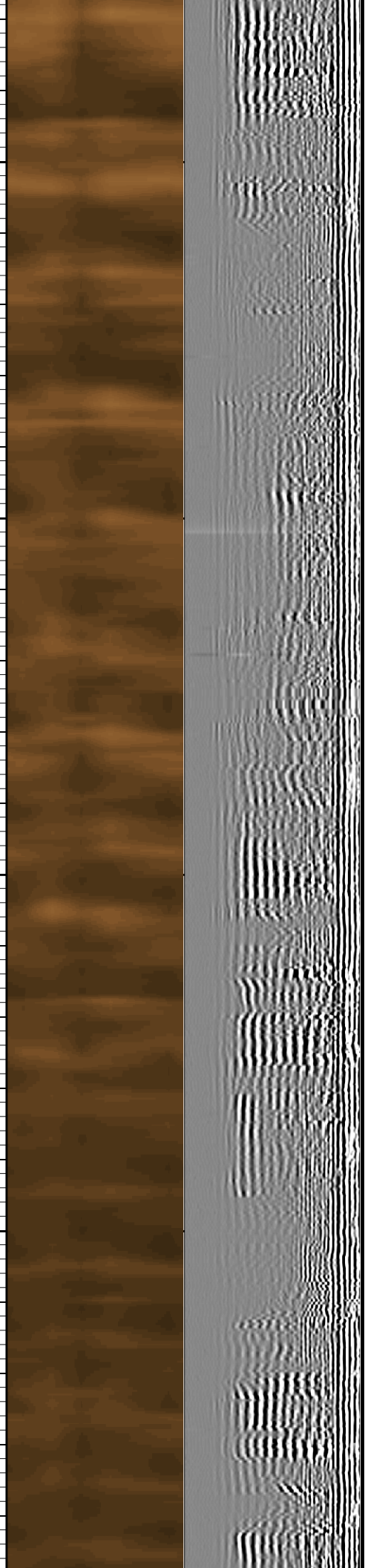
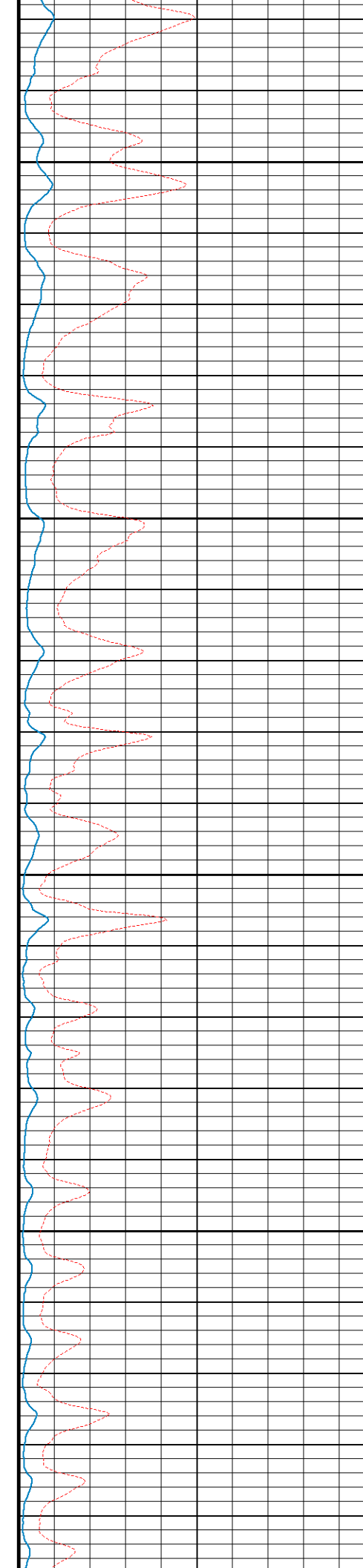
189°

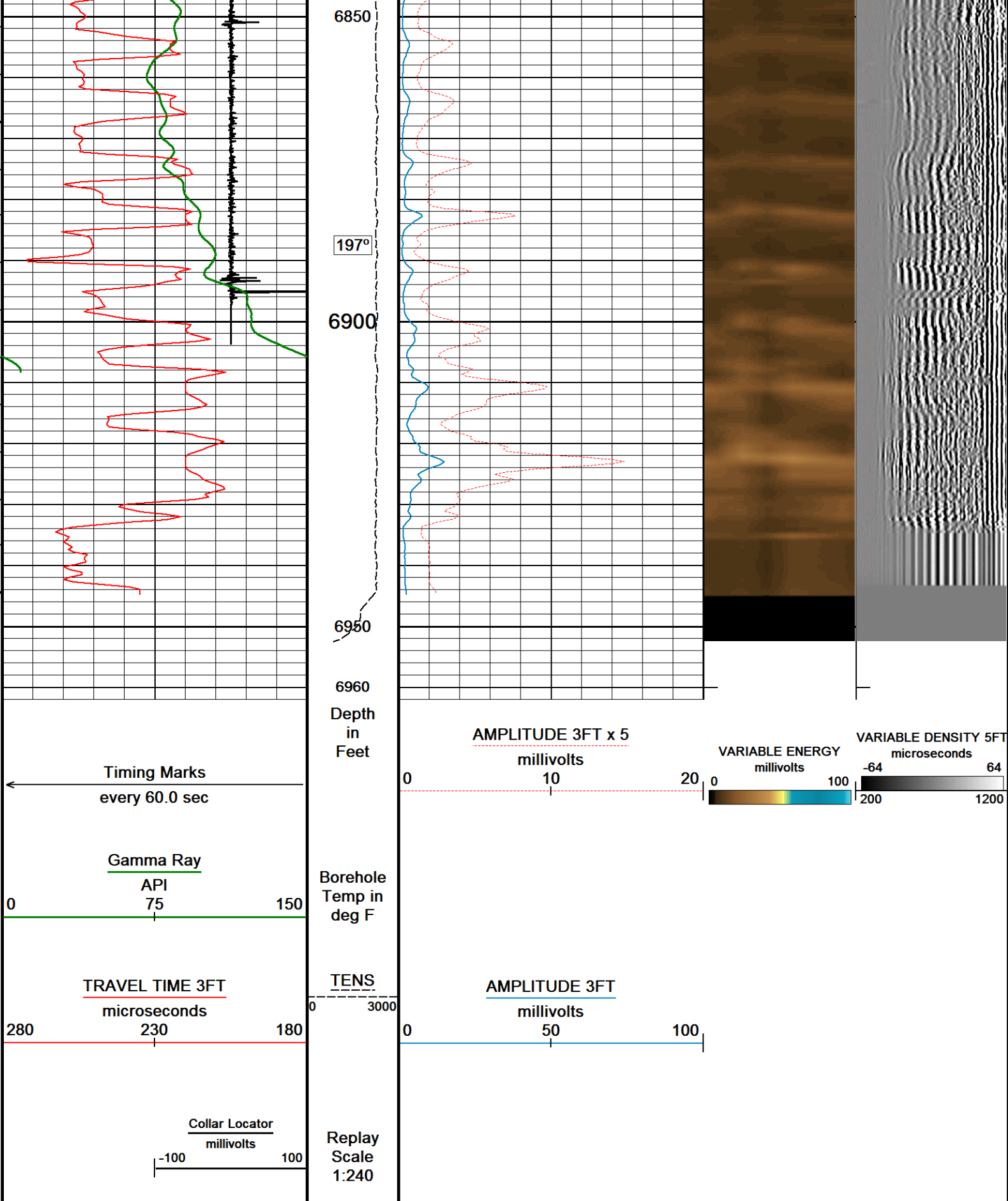
6750

191°

6800

196°





REPEAT PASS

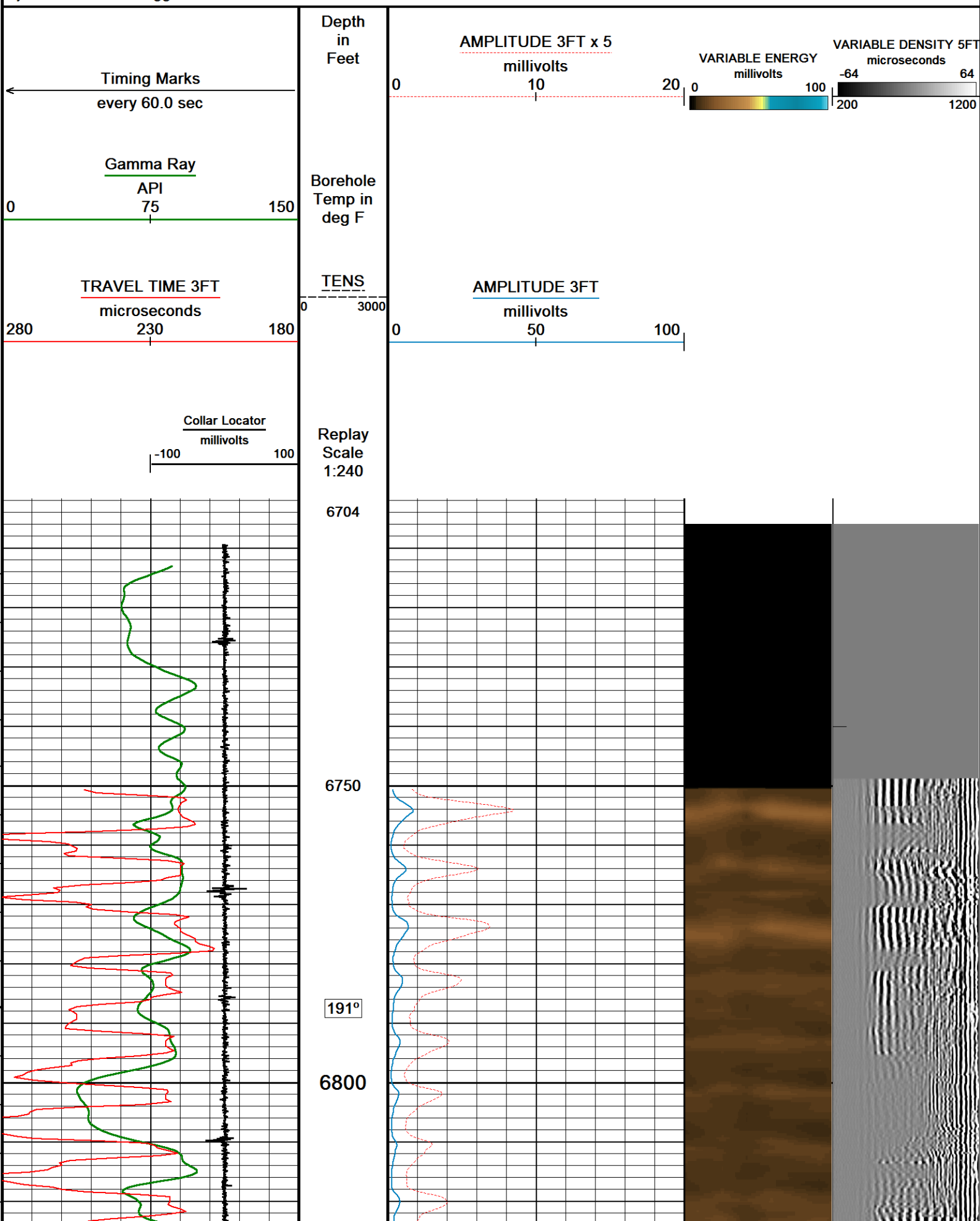
Depth Based Data - Maximum Sampling Increment 12.5cm

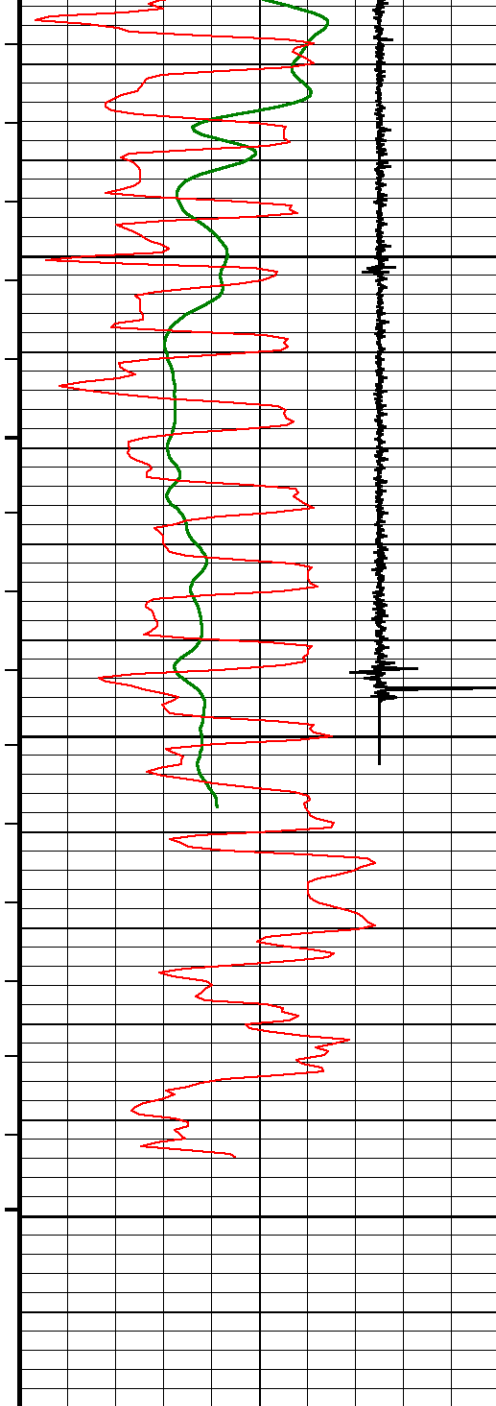
Plotted on 11-SEP-2017 20:57

Filename: C:\Logs\URSA\BMC B 32A-13-07-96\BMC B 32A-13-07-96 CREB SSSB REPEAT FINAL.dta

Recorded on 11-SEP-2017 20:55

System Versions: Logged with 17.01.7206 Plotted with 17.01.7206





196°

6850

197°

6900

6950

6968

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray

API

75

0 150

Borehole
Temp in
deg F

TRAVEL TIME 3FT
microseconds

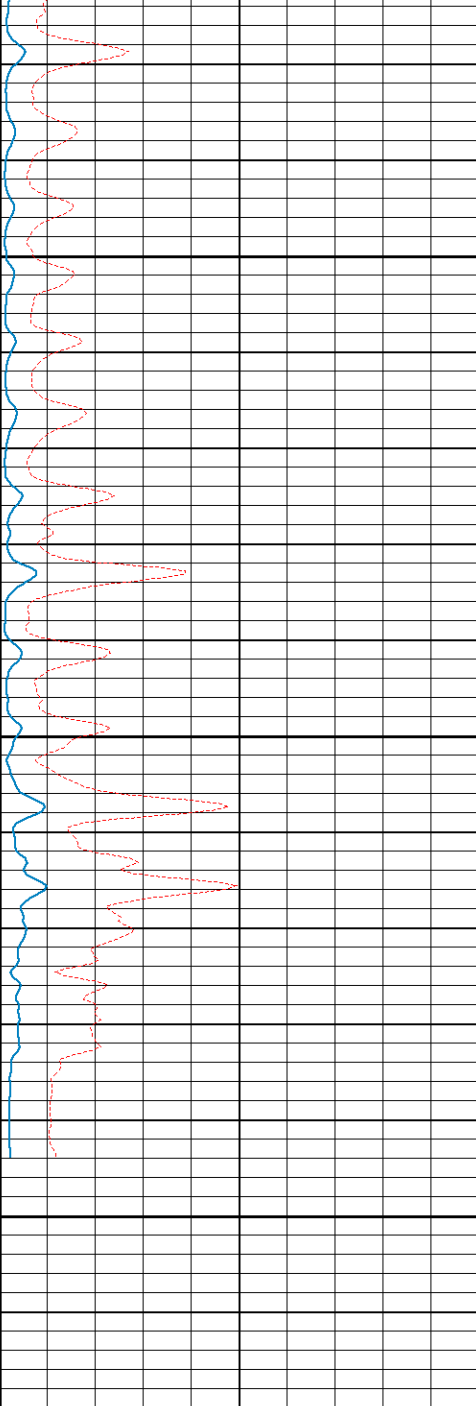
280 230 180

Collar Locator
millivolts

TENS

0 3000

Replay



AMPLITUDE 3FT x 5

millivolts

0 10 20

VARIABLE ENERGY
millivolts

0 100 200

VARIABLE DENSITY 5FT

microseconds

-64 64 1200

AMPLITUDE 3FT

millivolts

0 50 100

Plotted on 11-SEP-2017 20:57

Recorded on 11-SEP-2017 20:55



C:\Logs\URSA\BMC B 32A-13-07-96\BMC B 32A-13-07-96 CREB SSSB MAIN FINAL.dta

31.41 ft VC15 - NVis. capt. prox/long

- 31.41 ft VB24 - NVis. incl. near/far
- 31.41 ft VB15 - NVis. incl prx/long
- 31.41 ft VC24 - NVis. capt. near/far
- 31.41 ft VRBN - VRBN

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

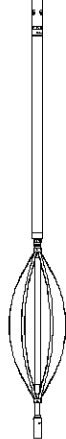


22.38 ft GR2 - Gamma Ray 2

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



Tool Zero (0.00ft from bottom)

All measurements relative to tool zero.

SHOP AND FIELD CALIBRATIONS

C:\Logs\URSA\BMC B 32A-13-07-96\BMC B 32A-13-07-96 CREB SSSB MAIN FINAL.dta

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	3675.0 mv	-1.000 G	1288.0 mv
Y Acc	1.000 G	3700.0 mv	-1.000 G	1286.0 mv
Z Acc	1.000 G	3721.0 mv	-1.000 G	1313.0 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	
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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
Calibrator No: 101

Serial No: 132

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	3.20
	Free Pipe	81.00	3216.90
AMP 5FT	100% Bond	0.40	0.30
	Free Pipe	54.00	2481.60
1 SECTOR AMP	100% Bond	5.00	4.30
	Free Pipe	95.00	1117.90
2 SECTOR AMP	100% Bond	5.00	6.30
	Free Pipe	95.00	957.00
3 SECTOR AMP	100% Bond	5.00	0.50
	Free Pipe	95.00	858.00
4 SECTOR AMP	100% Bond	5.00	2.50
	Free Pipe	95.00	617.20
5 SECTOR AMP	100% Bond	5.00	0.10
	Free Pipe	95.00	569.80
6 SECTOR AMP	100% Bond	5.00	1.00
	Free Pipe	95.00	858.70

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 32A-13-07-96
FIELD	WILDCAT

PROVINCE/COUNTY GARFIELD
COUNTRY/STATE USA / COLORADO

Elevation Kelly Bushing	5117	feet	Bottom Log Interval	6953.00	feet
Elevation Drill Floor	5117	feet	Depth Driller	7389.00	feet
Elevation Ground Level	5100	feet	Depth Logger	6953.00	feet



Weatherford[®]

SLIM SECTOR BOND LOG