UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Processed Strong-Motion Records Recorded on Bougainville Island, Papua New Guinea; Earthquakes of December 13, 1981 and March 18, 1983

by

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U.S. Geological Survey
Open-File Report 86-264

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*Processing stages and plot format:

1) Uncorrected accelerogram
2) Corrected acceleration, velocity, displacement
3) Relative velocity response spectrum, linear plot
4) Response spectrum, tripartite log-log plot
5) Fourier amplitude spectrum, linear plot
6) Fourier, amplitude spectrum, log-log plot

In column 1 each plot contains all three components. For columns 2 through 6, the indicated page number refers to the first of three components for this record.

INTRODUCTION

U.S. Geological Survey National Permanent Network

In a continuing effort to present processed strong-motion earthquake data to the engineering and seismological communities and the general public, the U.S. Geological Survey (USGS) maintains a nation-wide network of federally owned permanant strong-motion earthquake recorders and routinely processes and reports on records obtained from them. The network also includes instruments owned by other federal agencies, but maintained by the USGS. The National Strong-Motion program also occasionally produces joint reports with other agencies (see Cooperative Efforts).

The main purposes of these reports are to present the computer plots of corrected accelerograms and their spectra, and to provide sufficient information on the earthquakes, stations, records, and results so that the reader may make an informed decision whether further study is warranted. A list of completed reports is given in Appendix II. Digital data is available on tape from the National Geophysical Data Center (NGDC), NOAA, Mail Stop E/GC11, 325 Broadway, Boulder, Colorado 80303.

Note: This report supercedes Open File Report 85-261, Processed Strong-Motion Records from the Solomon Islands Earthquakes of December 13, 1981 and March 18, 1983. The response spectra for the BVE records were corrected, the Arawa records were redone with a Butterworth filter a 0.20 Hz to match the other records of the same event, and a frequency domain filter with a transition band of 25-50 Hz was applied to eliminate high-frequency noise that sometimes occurs during the digitization of low-amplitude records. The latter filter replaces the standard time-domain method usually used.

Cooperative Efforts

The permanent strong-motion network is managed by several projects within the Branch of Engineering Seismology and Geology of the USGS. The program and its predecessors have been involved with strong-motion recording and processing since the early 1930's. As procedures and techniques have improved within the areas of network planning, instrument maintenance, record processing, and associated research, the USGS has been able to exchange knowledge in cooperative efforts with other agencies in the field of strong-motion earthquake engineering and engineering seismology.

Cooperative efforts have included those with:

a) Federal agencies such as the Bureau of Reclamation, the Army Corps of Engineers, the Veterans Administration, the Federal Highways Administration, and others.

b) State agencies such as the California Division of Mines and Geology, the California Department of Water Resources, the Washington State Highways Administration, and others.

c) Universities such as the California Institute of Technology, the University of Southern California, Columbia Universtity, and others.

d) Foreign and domestic agencies sometimes jointly responsible for strong-motion networks including those in Fiji, Greece, Italy, the Soviet Union, Yugoslavia, and others.

Record Description

The records processed in this report are from stations on Bougainville Island in Papua New Guinea, obtained from earthquakes in the Solomon Islands region of the southwest Pacific Ocean. This particular part of the major circum-Pacific plate bounderies does not have as high a seismic potential or probability of a great earthquake as other parts, but incomplete historical records might be a contributing factor to this assesment (McCann and others, 1979).

The records were provided by K. McKue formerly with Bougainville Copper Limited, Panguna, Bougainville, Papua New Guinea and currently with Seismology Section, Bureau of Mineral Resources, P.O. Box 378, Canberra A.C.T., Australia. Two small events (M5-6) resulted in peaks of 2 percent g, 4 percent g, and 30 percent g at three different sites having epicentral distances of abouf 270km. See table 3 for furthur record descriptions and details.

Station Data

Arawa Town	1/4g SMA-1 located on rock. Elevation 30m.
Bato Bridge	1/2g SMA-1 located on rock. Elevation 30m.
Bench (Panguna Mine)	1/2g SMA-1 located on rock.
BVE 80 (Panguna)	1g SMA-1 located on volcanic ash over weathered rock. (Elevation 300m).

Seismological Data

Figure 1 is a map showing the location of Bougainville Island. Figure 2 shows the epicenters and strong-motion accelerograph locations.

The largest of these earthquakes, a magnitude 7.9 (Ms) on March 18, 1983 was recorded by the Arawa Town, Bato Bridge and BVE 80 (Panguna) stations, located in the Arawa and Panguna areas on Bougainville Island (K. McKue, Bougainville Copper, written commun., October, 1983).

The two earthquakes on December 13, 1981, were recorded by the Bench station. These events were magnitude 5.9 Mb (0139 Gmt) and 5.5 Mb (1324 Gmt). Source data for all three events are listed in Table 1.

DIGITIZATION AND PROCESSING

Current USGS Processing

The current USGS steps for processing are:

1. A commercial digitizing firm (IOM-TOWILL in Santa Clara, California) digitizes the records on a trace-following, computer-controlled laser scanner. The data is digitized at unequal time intervals, although close to equispaced in time when clear of sharp peaks, at an average of 600 samples per second.
2. If more than 10-cm of a record is digitized (film speed = 1cm/s) the digitized portion is divided into approximately 10-cm frames and each frame is digitized separately with 2.5 cm overlaps. The frames are reassembled using specially inserted vertical lines; the lines mark the end and/or beginning of each frame. Each vertical line is digitized twice, once in each adjacent frame, and then used in reassembling the record.

3. The uncorrected data are prepared by subtracting the digitized reference traces from the data traces, and using the digitized time marks to determine the time scale, and subtracting the mean. The instrument sensitivities scale the ordinates to acceleration.

4. The data are passed through a correction algorithm that applies a high-frequency filter a 50 Hz low-pass filter instrument correction, base-line correction in the form of a low-frequency filter, and decimation to 200 sps. Plots of the corrected acceleration, velocity, and displacement for the three components of each record are included.

   Initial selection of long-period filters is based on the convention of retaining a period content greater than or equal to the strong-motion duration of the records. The final Butterworth filter parameters are chosen to eliminate any visible serious noise content in the calculated displacements taking into account the guidelines described in Basili and Brady (1978).

   In some instances a frequency domain filter with a transition band of 25-50 Hz is applied to eliminate high frequency noise that may occur during the digitization of low amplitude records. This latter procedure replaces the standard time-domain method usually used.

5. The maximum relative velocity response spectra are calculated for damping values of 0, 2, 5, 10, and 20 percent of critical. These response spectra are calculated for the period range that commences at 0.04 s and ends with the long period that corresponds to the low-frequency filter limit used in the base-line correction algorithm. The dashed curve on this plot is the unsmoothed Fourier amplitude spectrum, calculated at the same periods as the response spectra.

The second response spectrum plot is the pseudo-velocity response spectra, calculated for the same five damping values. This tripartite plot also has the values for the maximum relative displacement response spectrum as well as the pseudo-absolute acceleration spectrum.

6. Fourier amplitude spectra, calculated by FFT, are presented on linear and log-log axes to accent the particular characteristics at each end of the spectrum.

For a more complete description of the processing method see Converse (1984).

Results and Summary

Reproduced in Appendix I are computer-generated plots that provide a visual description of the recorded accelerations and their processed results. These plots may be used to measure specific earthquake characteristics or record parameters, and to select records for further study using the digital data.

The unusually large differences between the digitized and corrected peak values of the Bench transverse traces, are due to the manual digitizing of isolated single peaks at those locations subsequently treated as high frequency triangular spikes and amplified during the instrument correction.

ACKNOWLEDGMENTS

Modern digital processing of strong-motion accelerograms has evolved over many years, from the work of Trifunic and Lee at Cal Tech and of Virgilio Perez at the USGS, to the present ongoing refinements of the process in April Converse's AGRAM series. The authors acknowledge these and other contributions to strong-motion processing.

REFERENCES

Basili, M., and Brady, G., 1978, Low frequency filtering and the selection of limits for accelerogram corrections: *Sixth European Conference on Engineering Seismology*, Dubrovnik, Yugoslavia, 8 p.

Converse, A.M., 1985, AGRAM: A series of computer programs for processing digitized strong-motion accelerograms, version 2.0: *U.S. Geological Survey Open-File Report 81-525*, 118 p.

McCann, W.R., Nishenko, S.P., Sykes, L.R. and Krause, J., 1979, Seismic gaps and plate tectonics: seismic potential for major plate boundaries: *Pure and Applied Geophysics*, v.117, pp. 1082-1147.

Table 1: Source Parameters for Solomon Islands Earthquakes and the New Ireland Earthquake*

1.	Date	12/13/81 (Solomon Islands)	
	Time	0139 14.3 Gmt	
	Epicenter	6.387S, 154.929E	
	Depth	50 Km	
	Magnitude	5.9 M_B, 6.0 M_L+	
2.	Date	12/13/81 (Solomon Islands)	
	Time	1324 17.3 Gmt	
	Epicenter	6.343S, 154.923E	
	Depth	48 Km	
	Magnitude	5.5 M_B, 5.7 M_L+	
3.	Date	03/18/83 (New Ireland)	
	Time	0905 50.0 Gmt	
	Epicenter	4.833S, 153.581E	
	Depth	89 Km	
	Magnitude	7.9 M_S, 7.7 M_S+	

* Unless otherwise noted, all seismological data in this report is taken from Preliminary Determination of Epicenters (PDE) published by the U.S. Geological Survey.

+ Kevin McCue, Bougainville Copper, written communication, Oct. 1983.

Table 2: Peak Values of Processed Records

Earthquake	Station	Distances (Km) Epi (distances ± 10 km)	Distances (Km) Hypo (distances ± 10 km)	Components	Peak Acceleration Scaled* (g)	Peak Acceleration Digitized (cm/s^2)	Corrected Peak Motion Accel. (cm/s^2)	Corrected Peak Motion Vel. (cm/s)	Corrected Peak Motion Disp. (cm)
13 Dec. 1981 0139 Gmt	460 Bench, Panguna Mine	≈ 63	≈ 80	Long.	.07	- 70.56	- 73.10	- 1.54	0.11
				Up	.02	22.13	27.94	- 0.78	0.11
				Tran.	.08	- 79.99	- 95.33	- 1.36	- 0.19
13 Dec. 1981 1324 Gmt	460 Bench, Panguna Mine	≈ 64	≈ 80	Long.	.03	- 25.16	25.74	0.61	- 0.03
				Up	.02	15.56	16.15	0.32	0.02
				Tran.	.04	41.31	- 62.43	0.91	- 0.07
18 March 1983 0905 Gmt	Arawa Town	≈267	≈281	Long.	.02	- 22.06	- 20.99	- 3.60	- 1.31
				Up	.02	17.97	17.54	- 4.94	- 2.16
				Tran.	.02	- 25.34	- 25.61	- 4.91	1.93
	Bato Bridge	≈271	≈285	Long.	.04	- 34.94	- 33.07	- 4.00	- 1.20
				Up	.02	18.62	17.77	- 3.39	1.27
				Tran.	.03	- 32.59	- 31.62	- 4.12	- 1.92
	BVE 80 [Panguna]	≈271	≈285	Long.	.30	283.43	282.37	28.63	3.56
				Up	.12	115.15	114.42	- 5.62	1.07
				Tran.	.27	271.54	268.72	-17.90	- 2.61

* Scaled from contact positives of original records

Table 3: Long-Period, Low Frequency, Filter Parameters

	Final Butterworth (Hz)	Order	Original Butterworth (Hz)	Order
Bench (0139)	0.50	4	0.25	4
Bench (1324)	1.0	4	0.125	4
Arawa Town	0.20	4	0.083	4
Bato Bridge	0.20	4	0.125	4
BVE 80 (Panguna Mine)	0.20	4	0.125	4

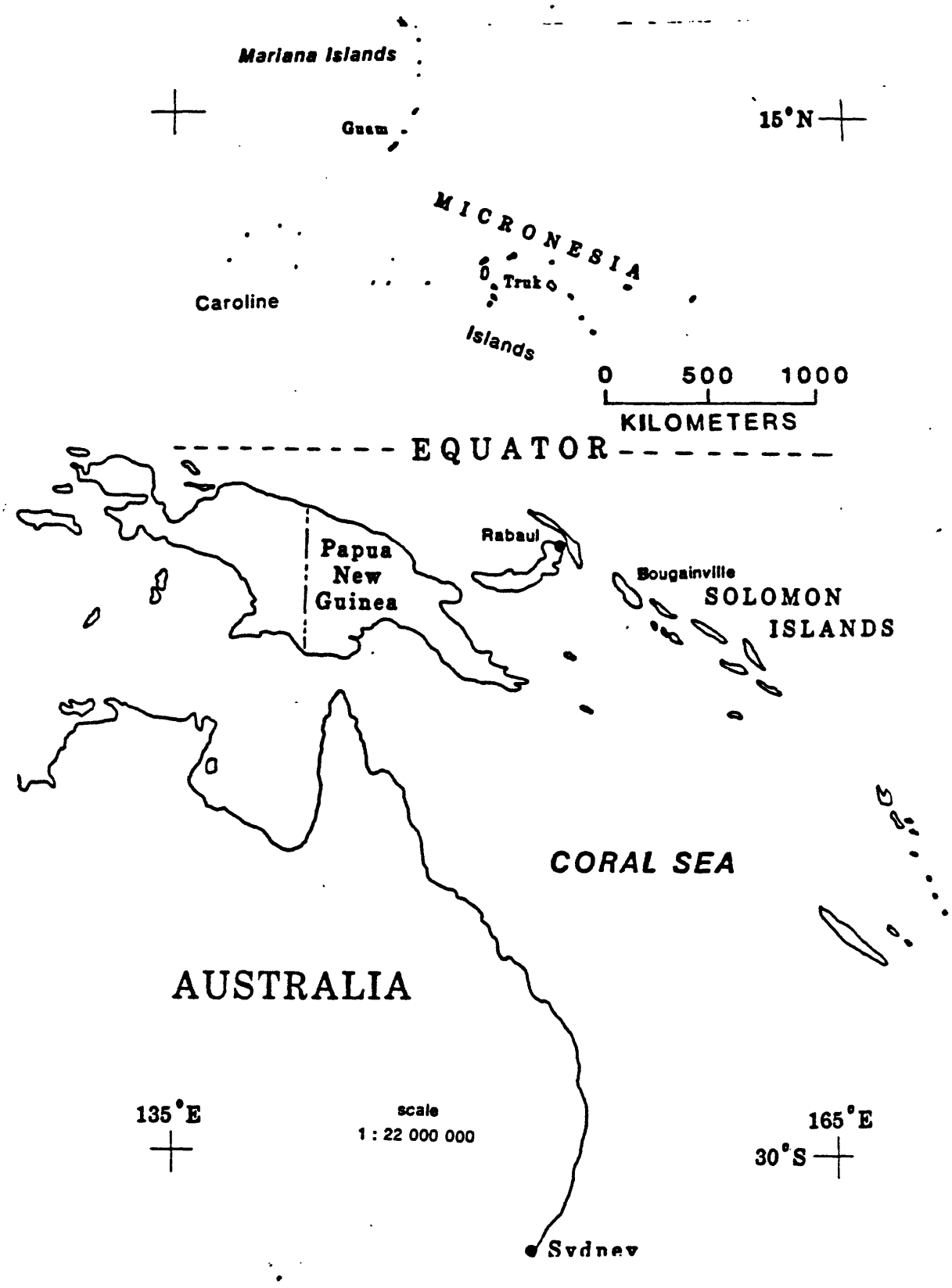


Figure 1: Map showing location of Bougainville Island.

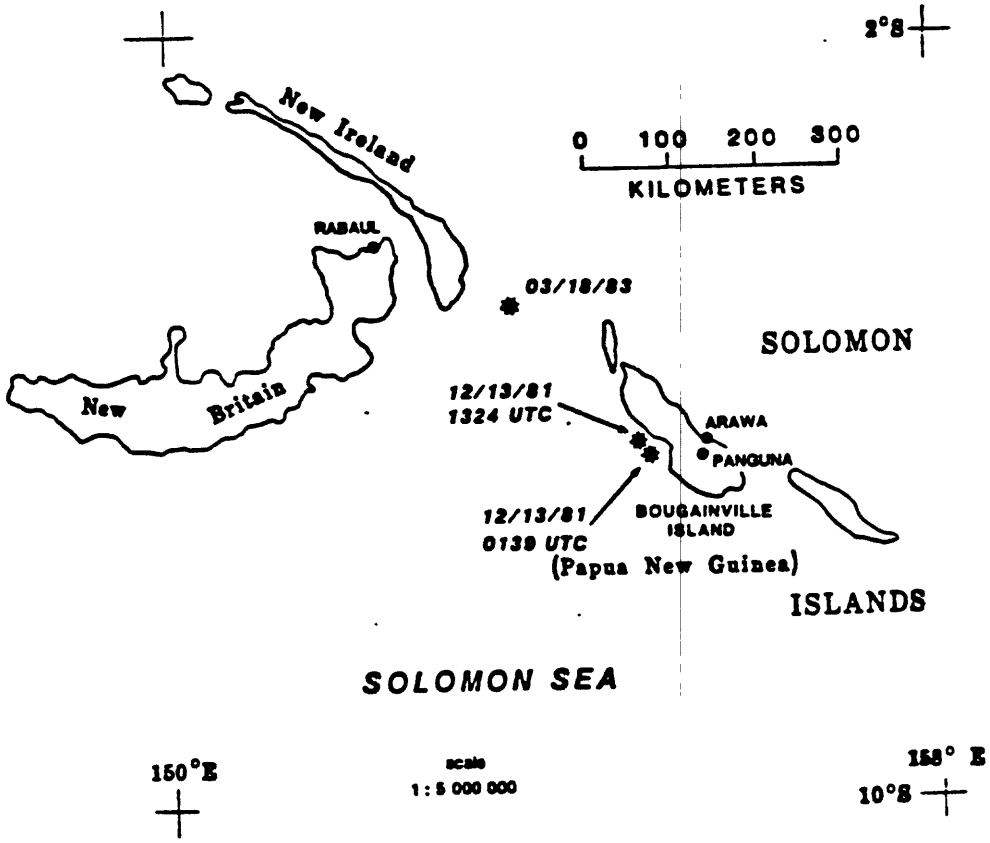
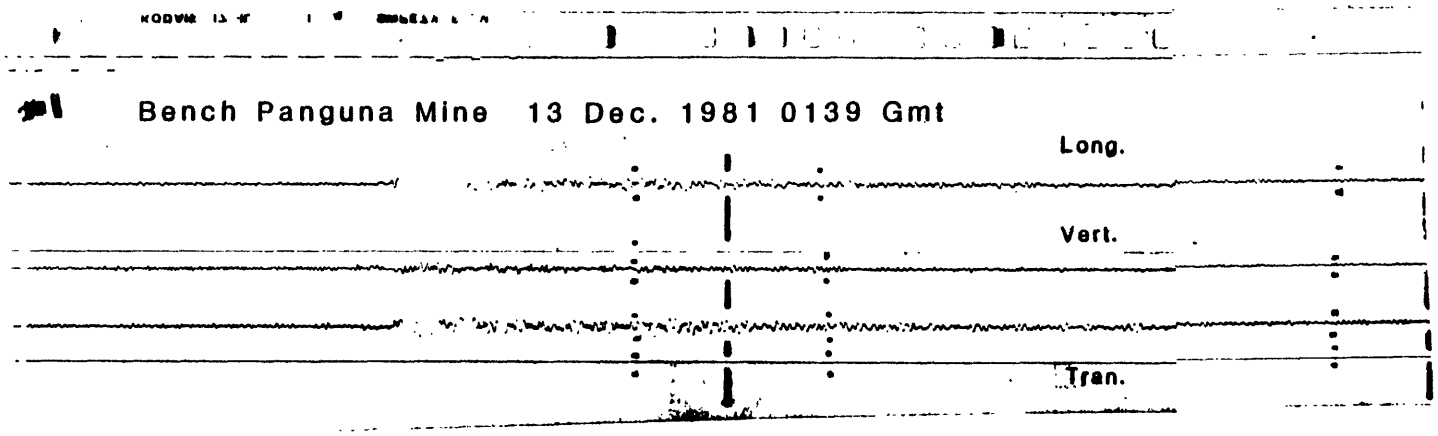


Figure 2: Map showing epicenters and strong-motion instrument locations.



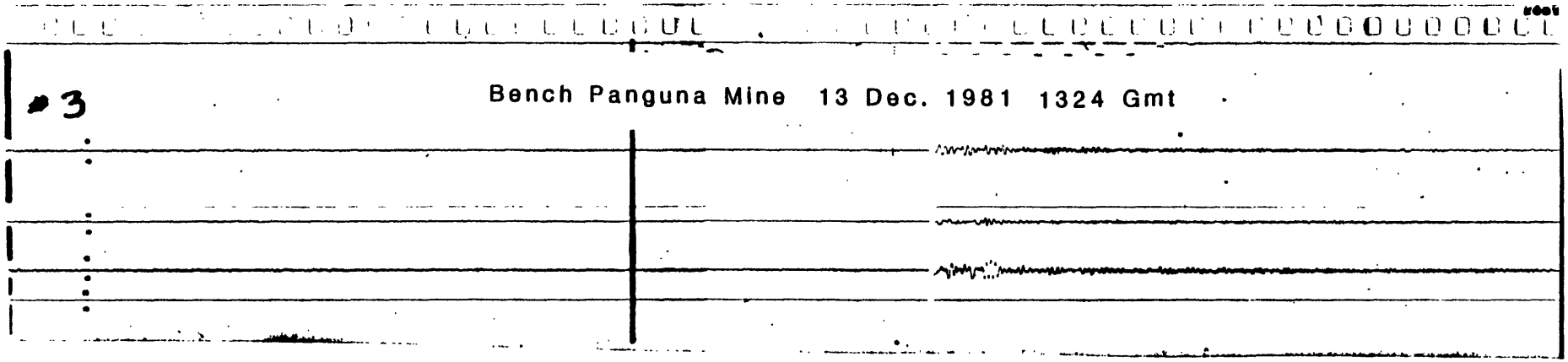


Figure 3A: Copies of original records, Bench, Panguna Mine

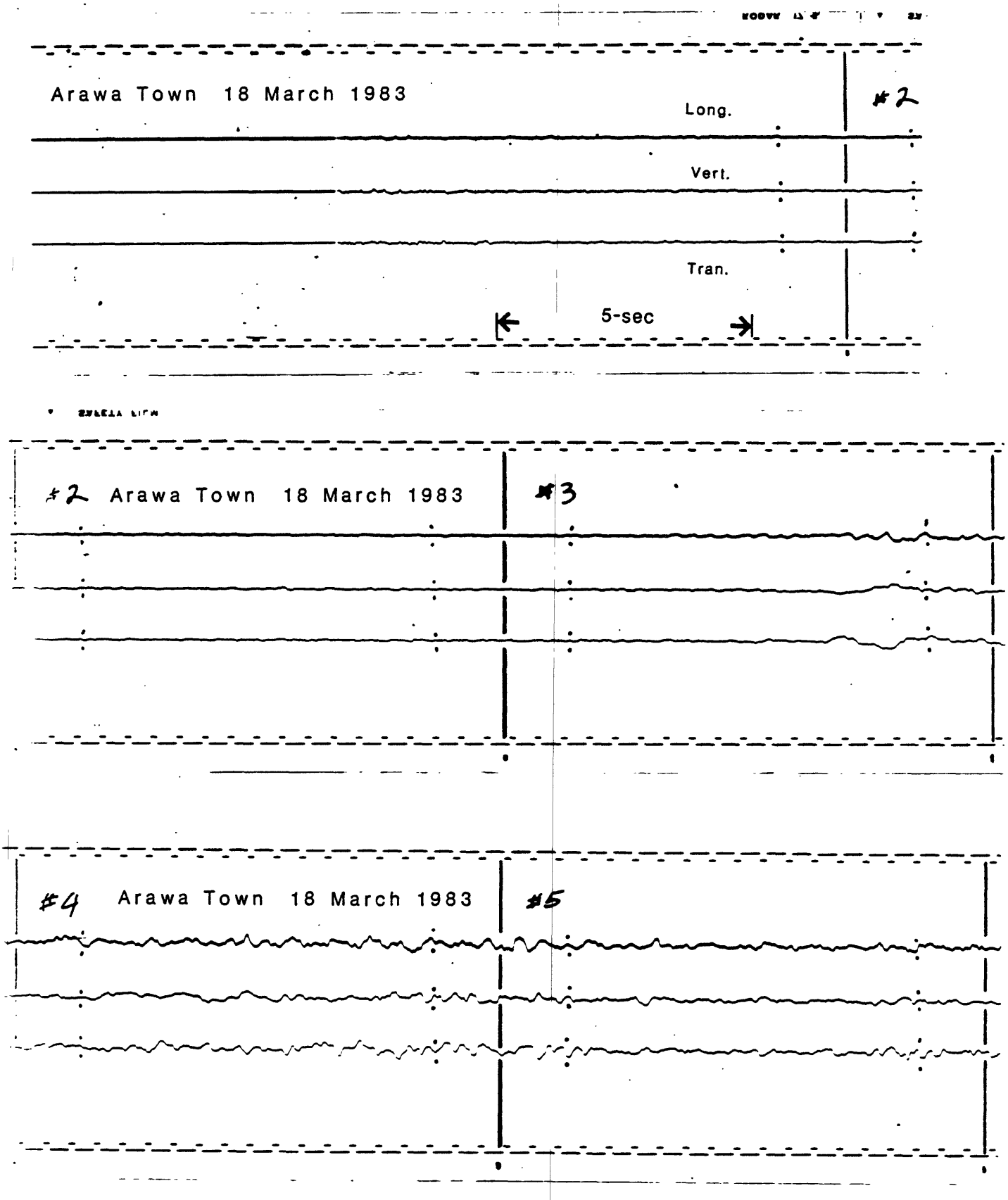
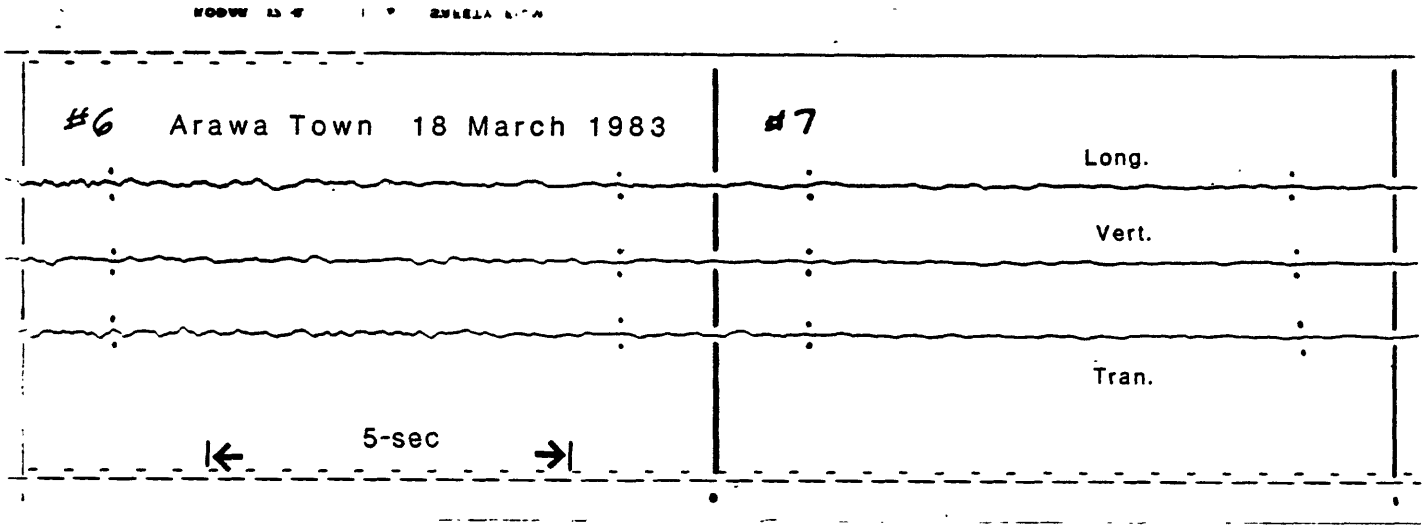
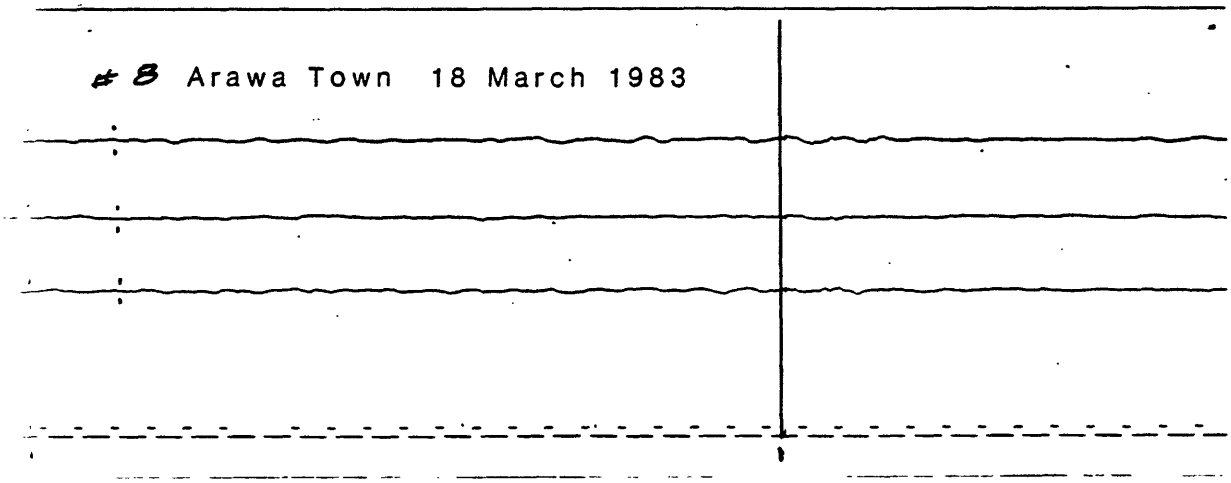


Figure 3B: Copies of original records, Arawa Town





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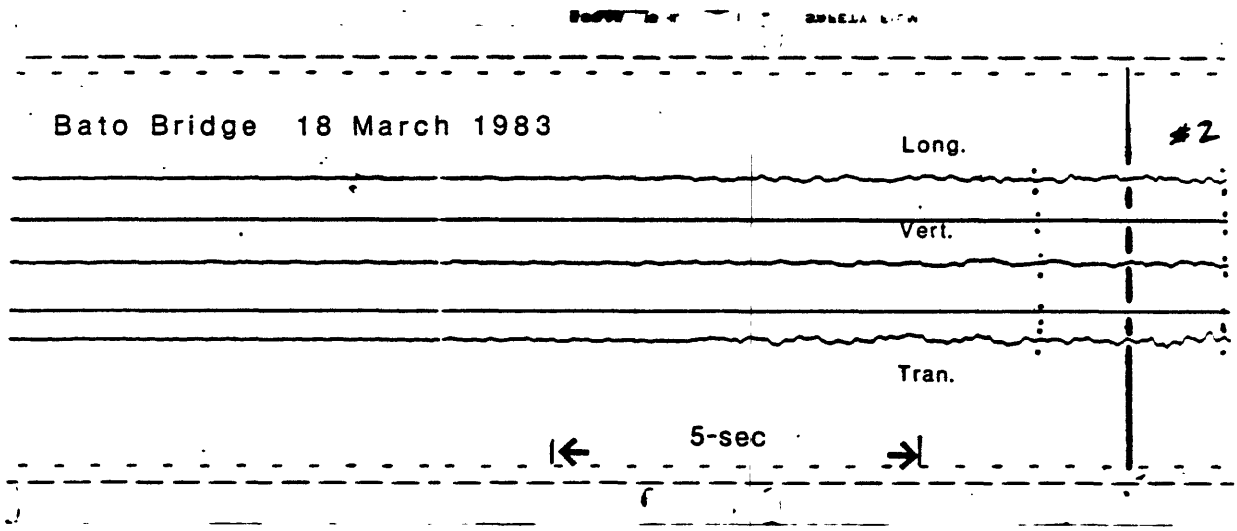
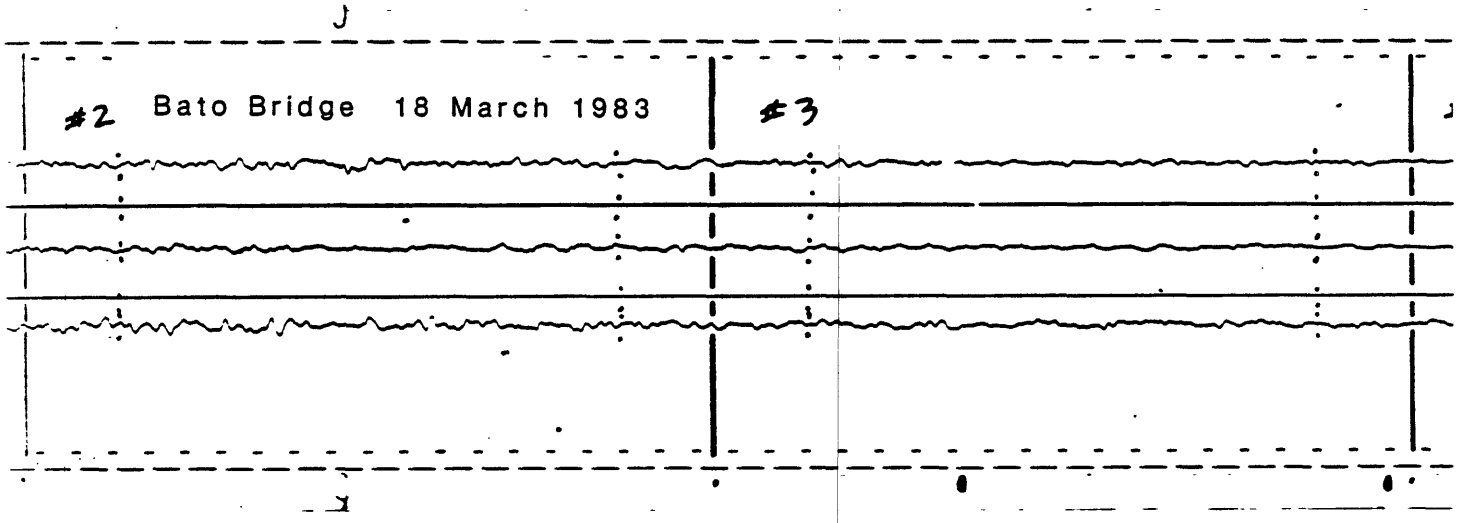




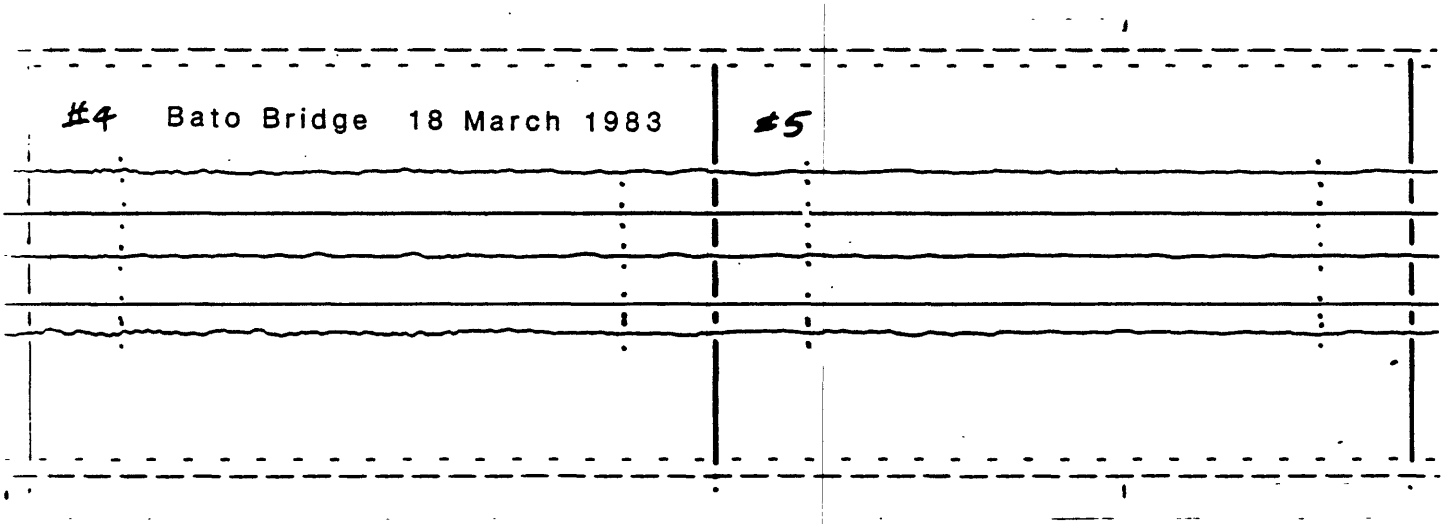
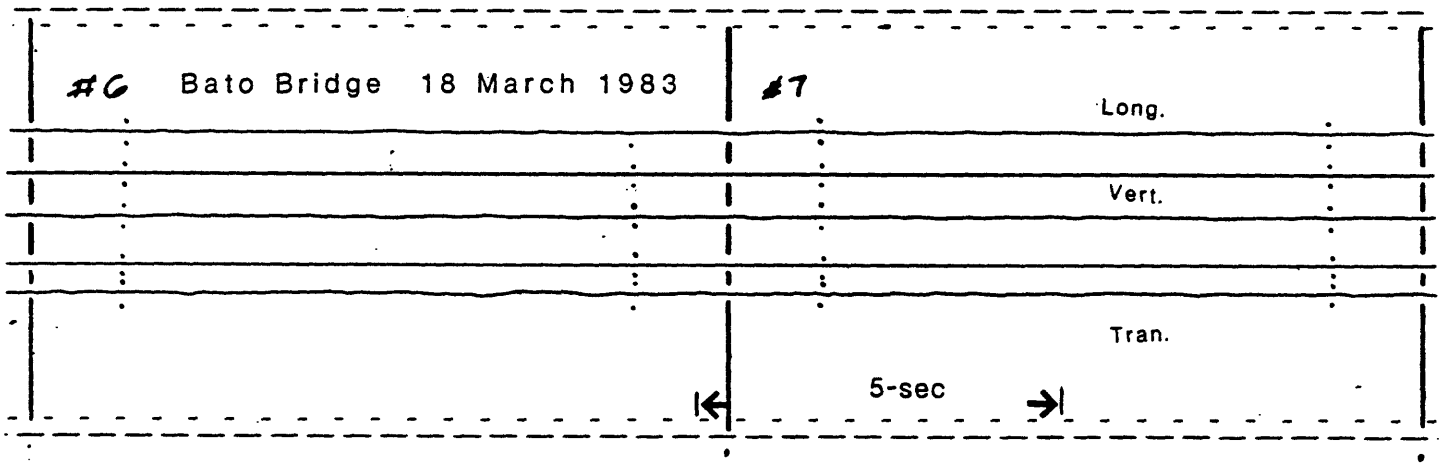
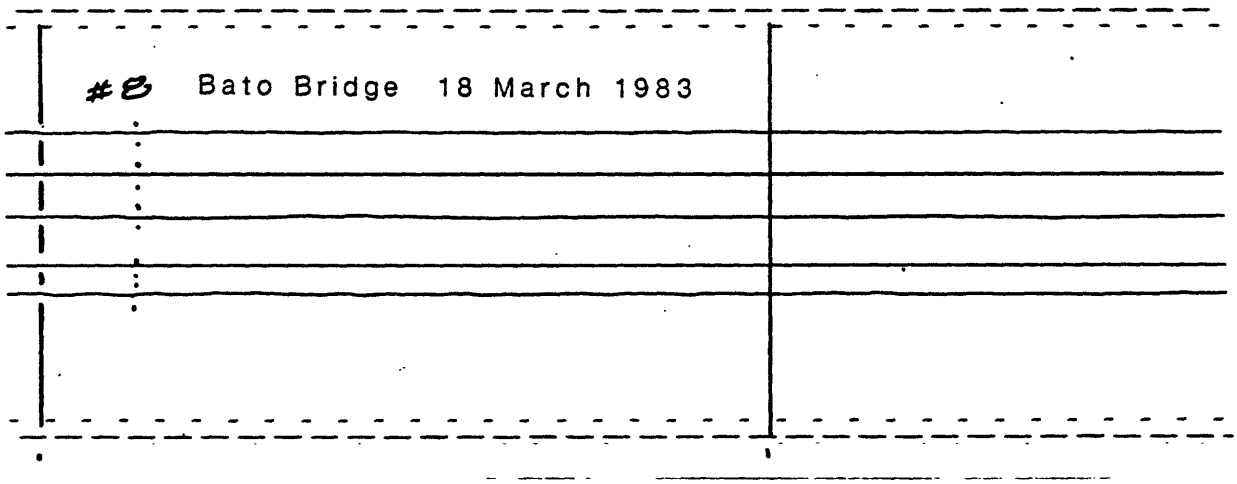


Figure 3C: Copies of original records, Bato Bridge.





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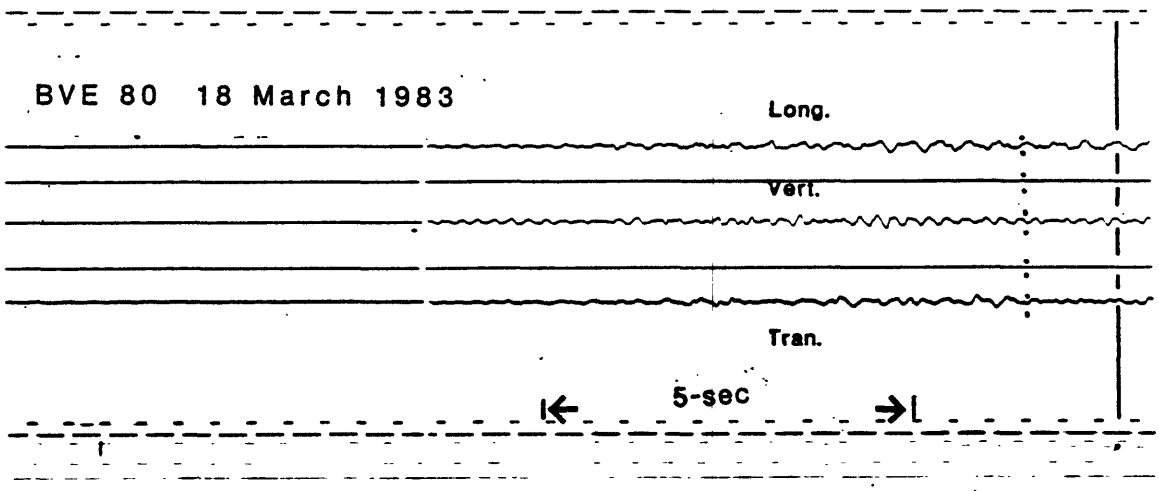
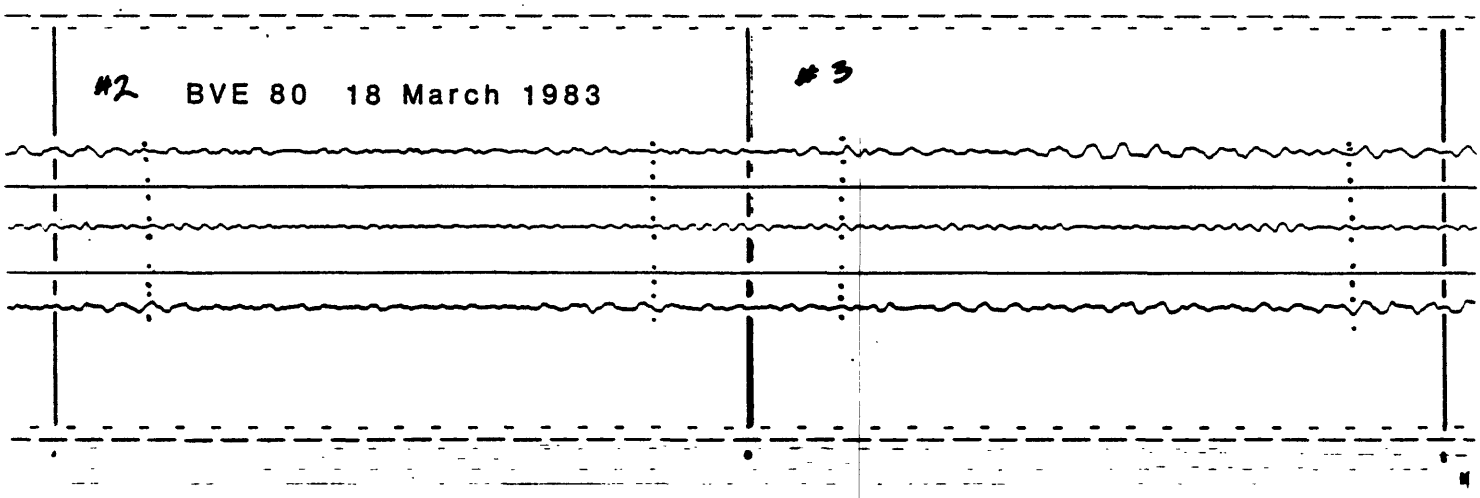




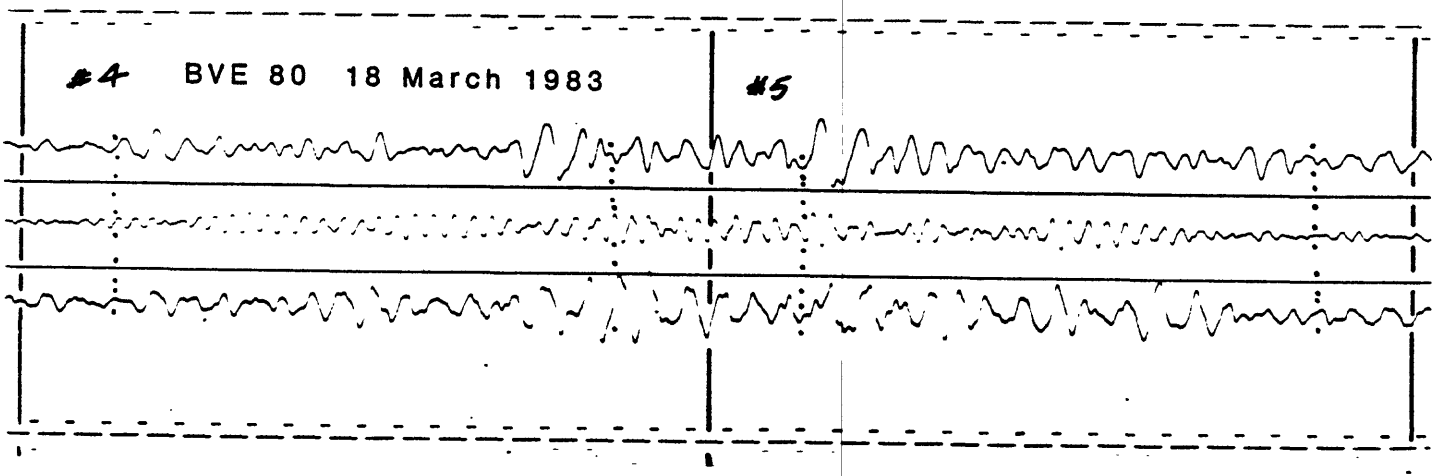
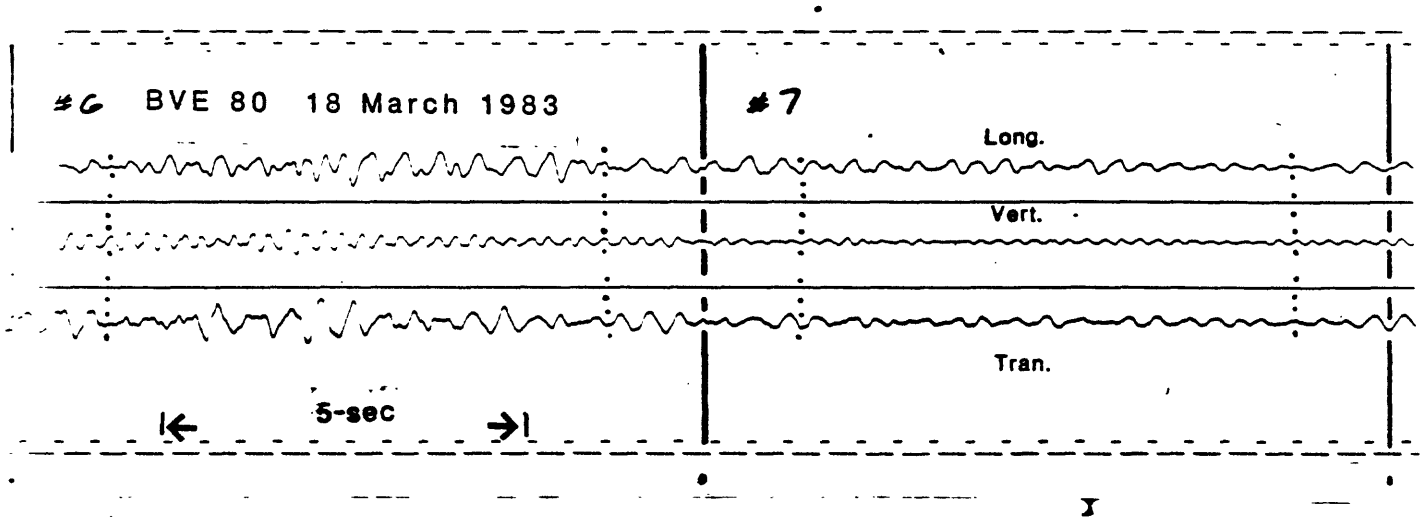


Figure 3D: Copies of original records, BVE 80.



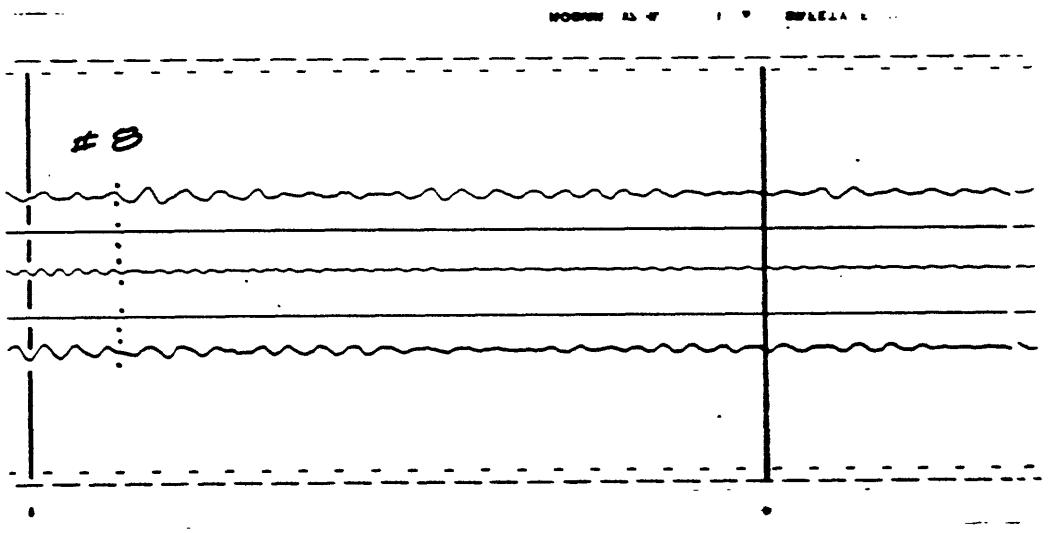
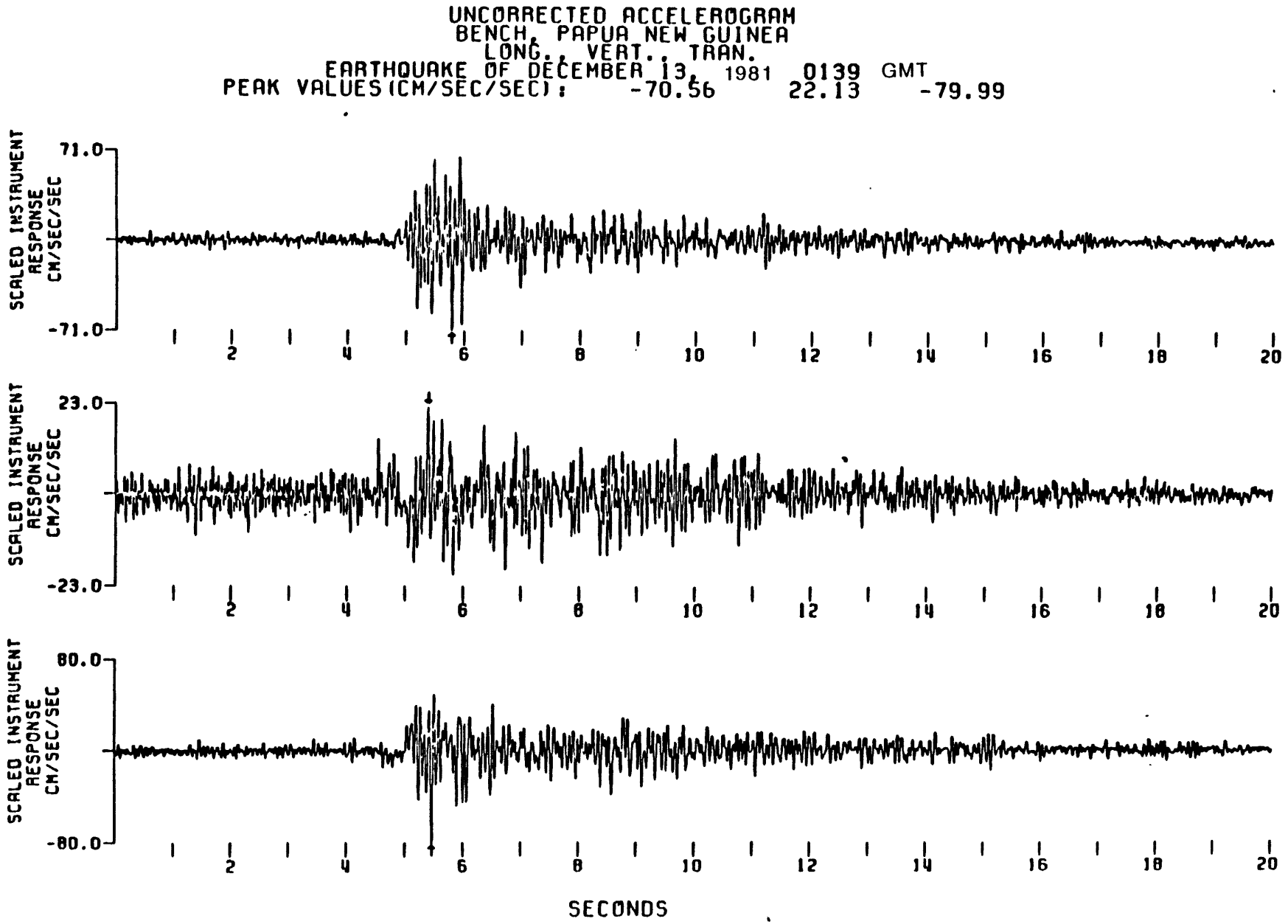


Figure 3D: continued

Appendix I

Computer Plots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-80.0
2
4
6
8
10
12
14
16
18
20
SECONDS

UNCORRECTED ACCELEROGRAM
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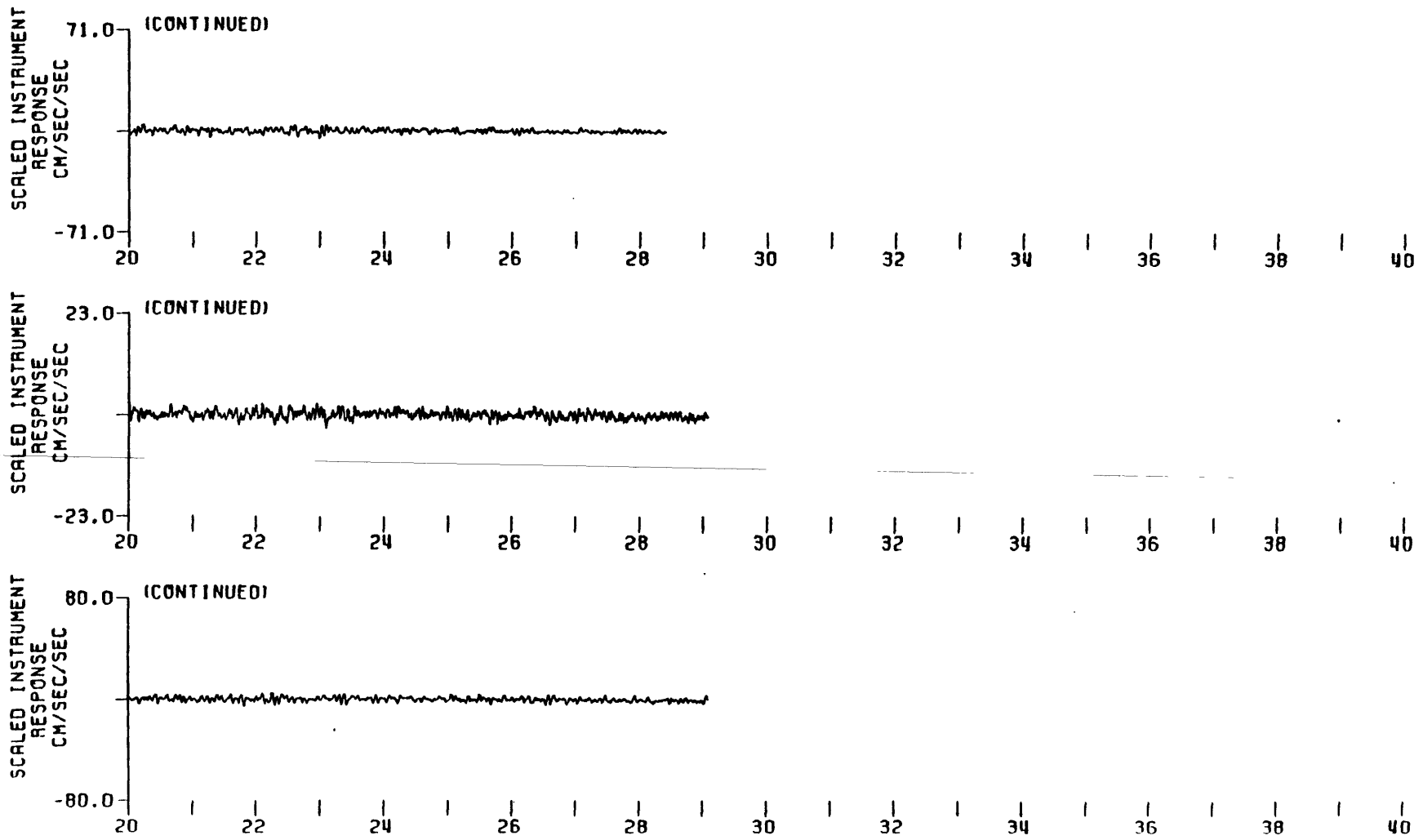

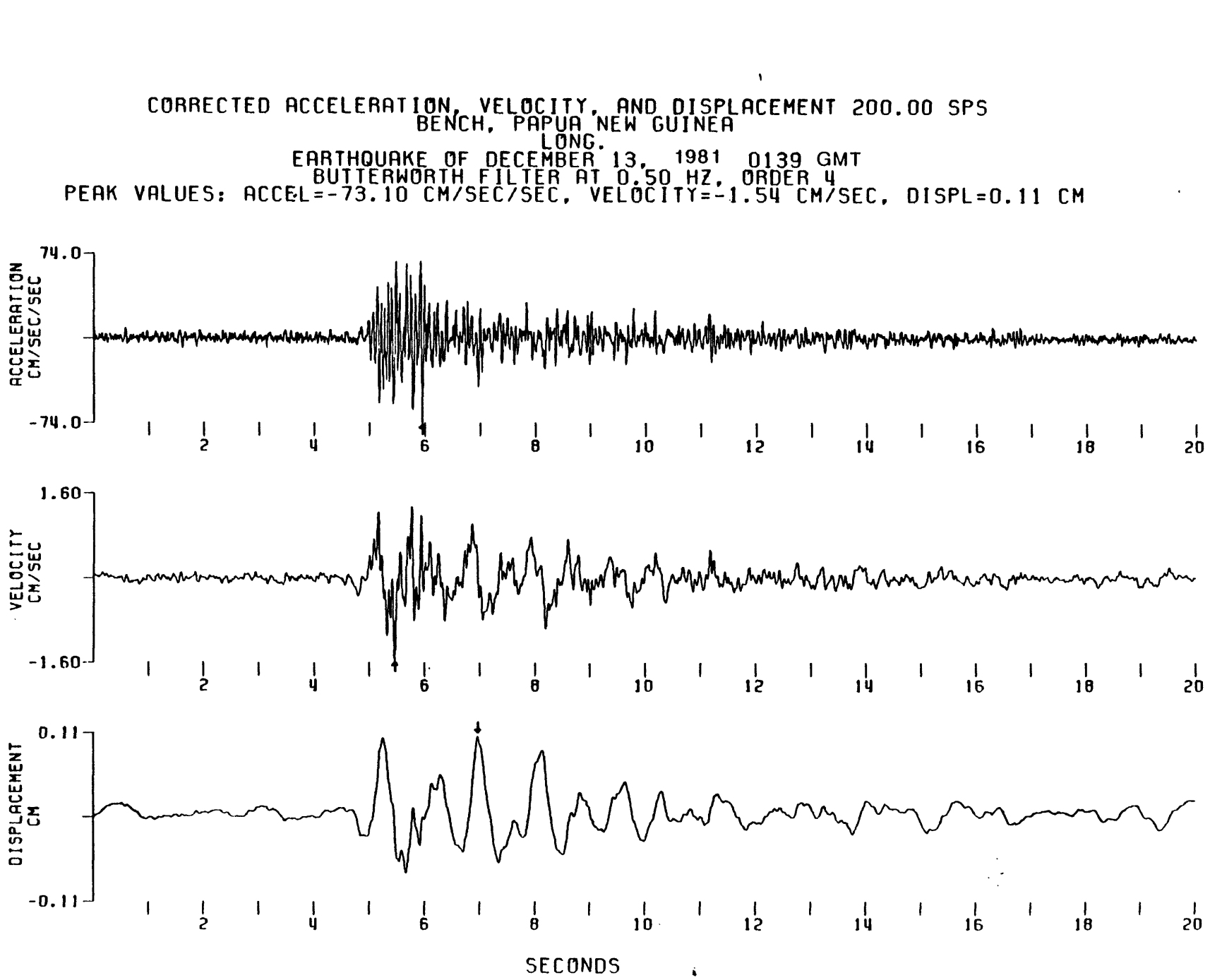
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
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EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
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-74.0
VELOCITY CM/SEC
1.60
-1.60
DISPLACEMENT CM
0.11
-0.11
2
4
6
8
10
12
14
16
18
20
SECONDS

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
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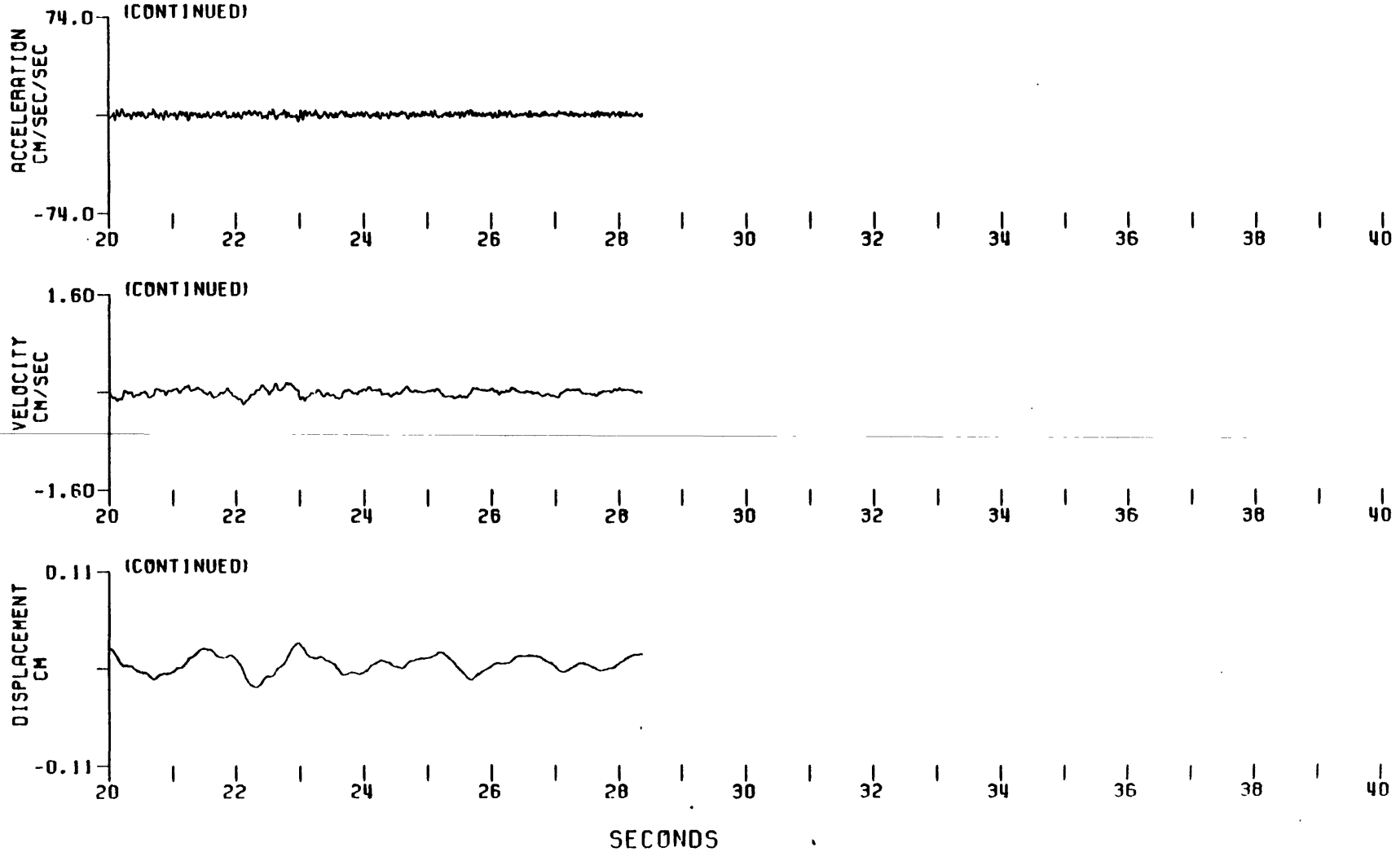

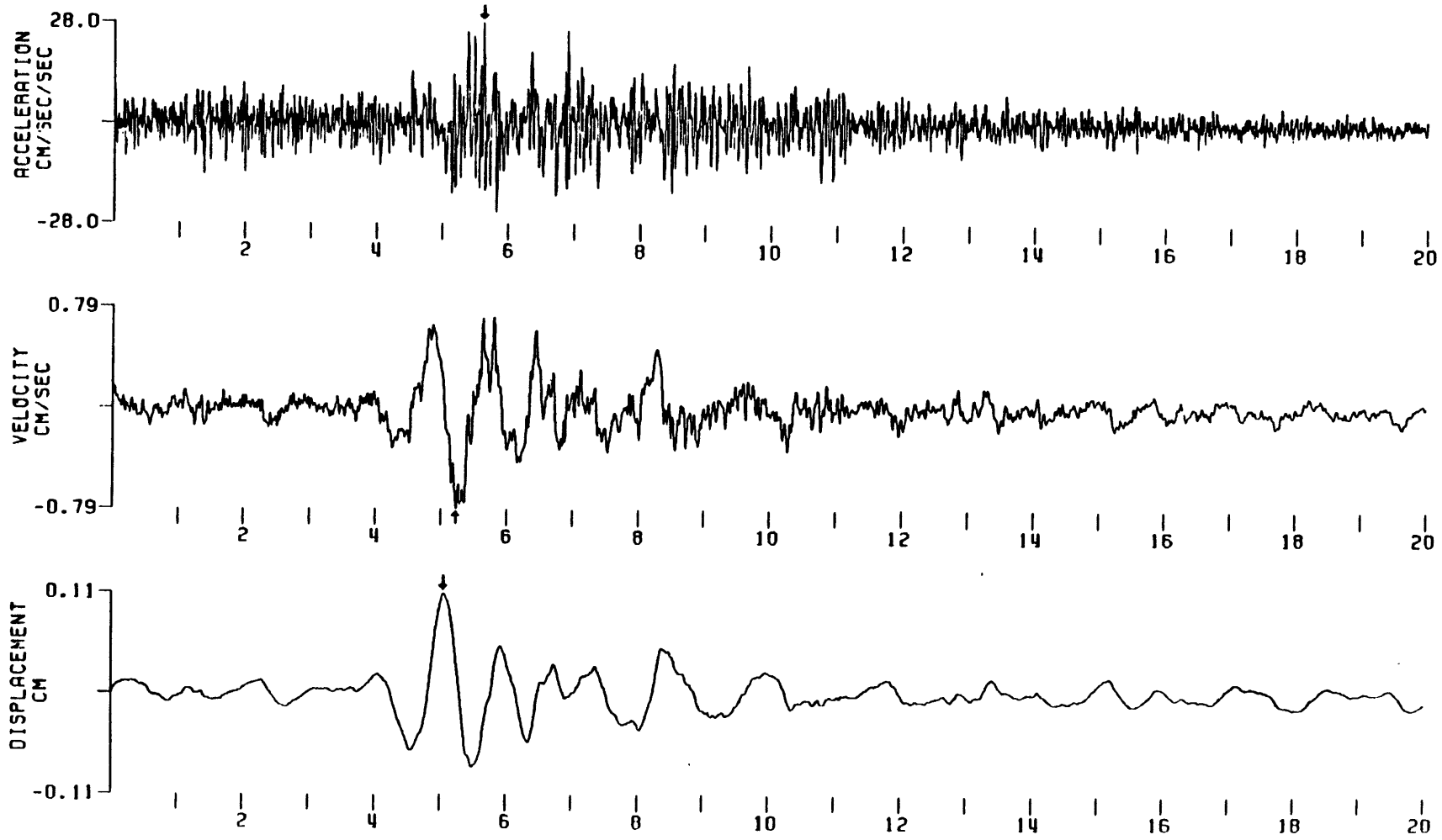
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EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
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DISPLACEMENT CM
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-0.11
2
4
6
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16
18
20
SECONDS

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
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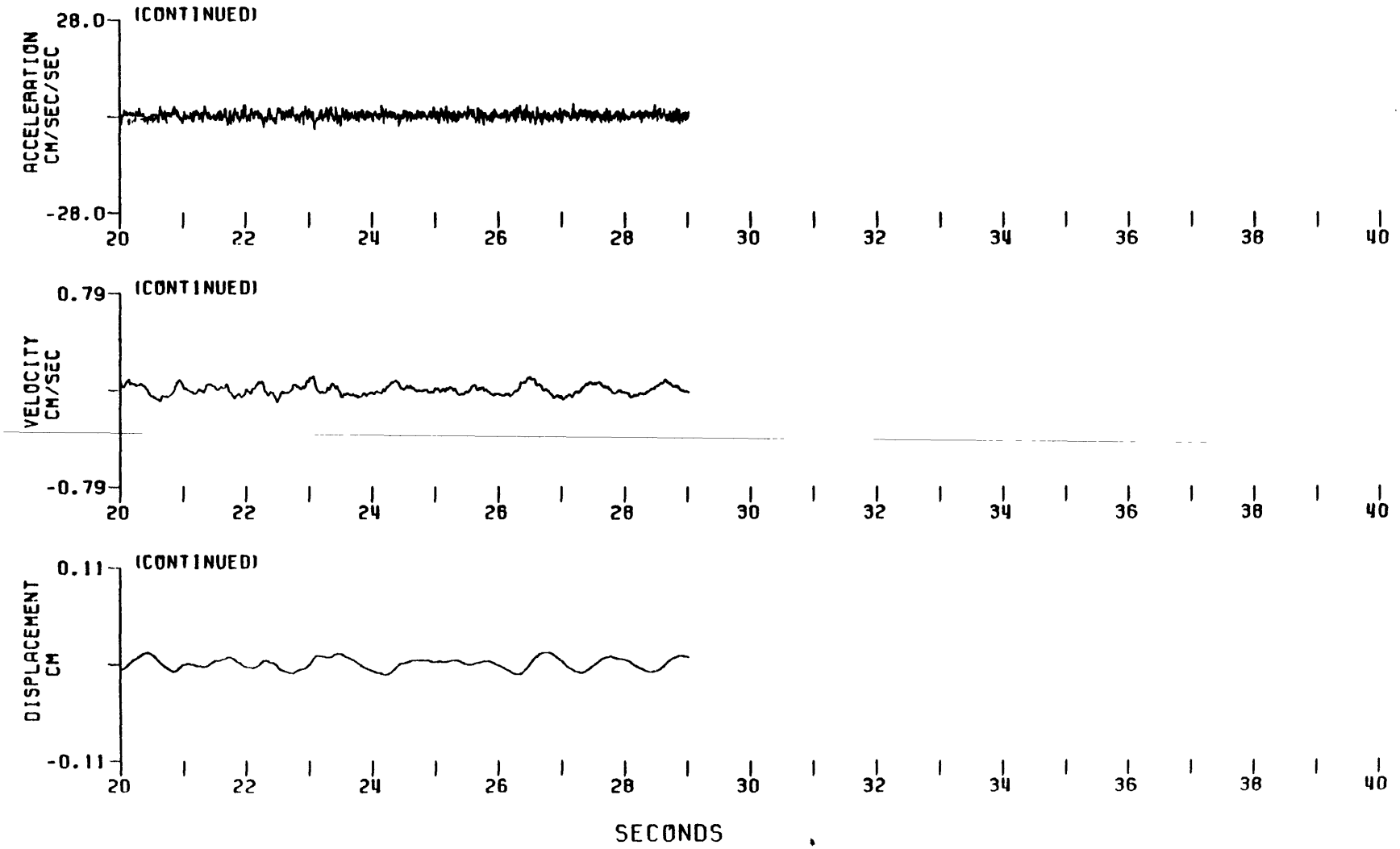

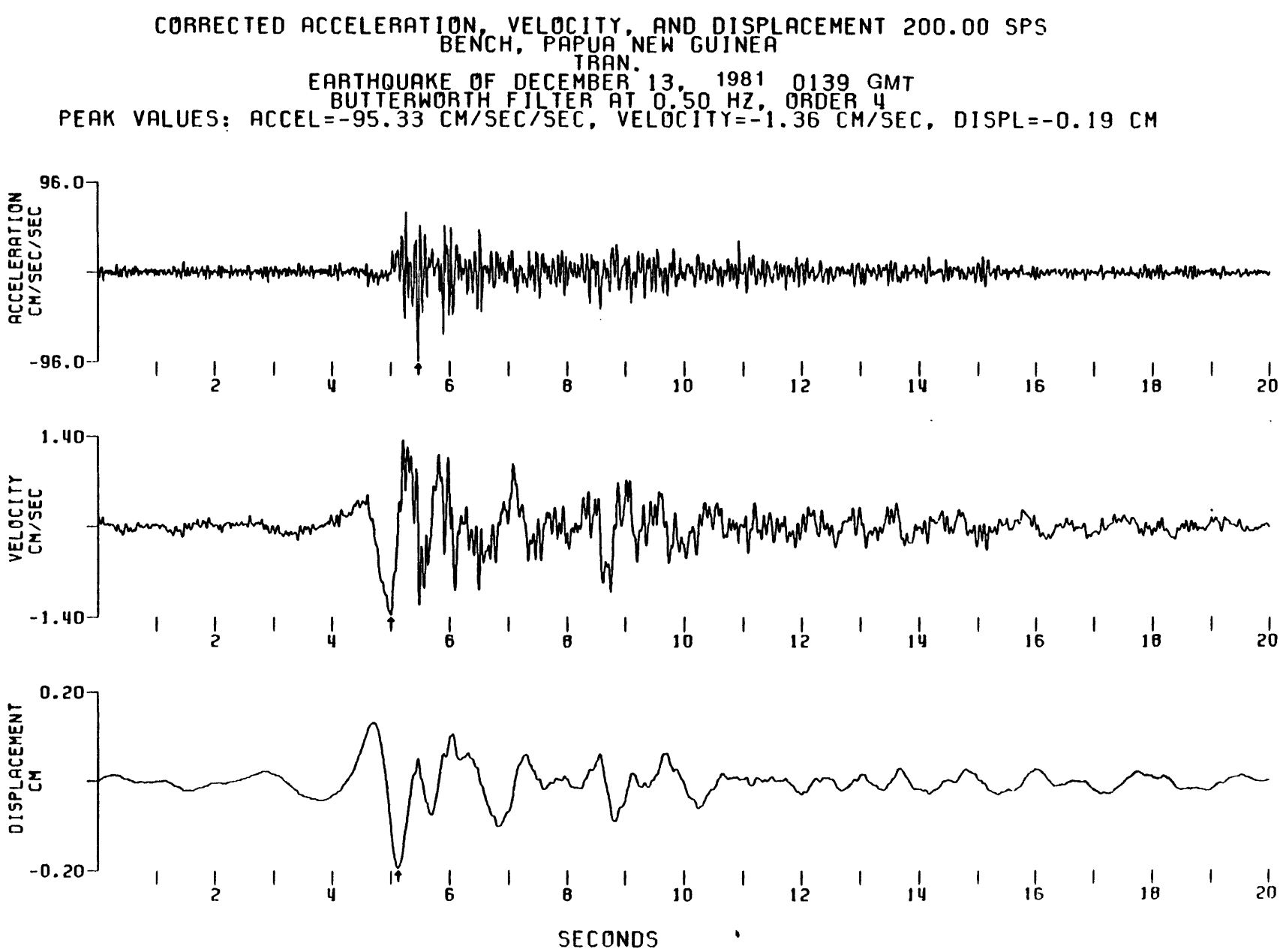
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EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
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-96.0
VELOCITY CM/SEC
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-1.40
DISPLACEMENT CM
0.20
-0.20
2
4
6
8
10
12
14
16
18
20
SECONDS

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
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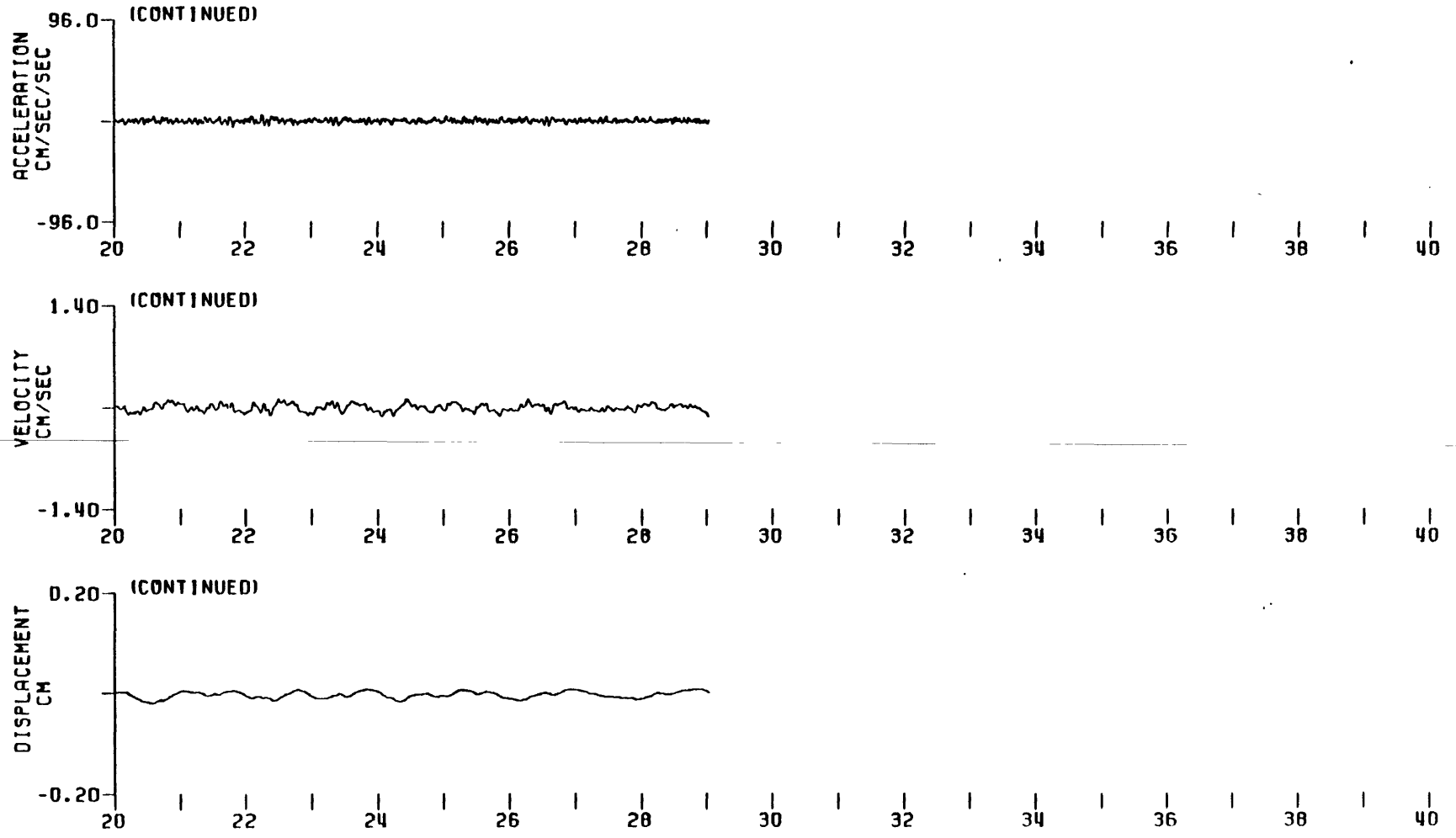

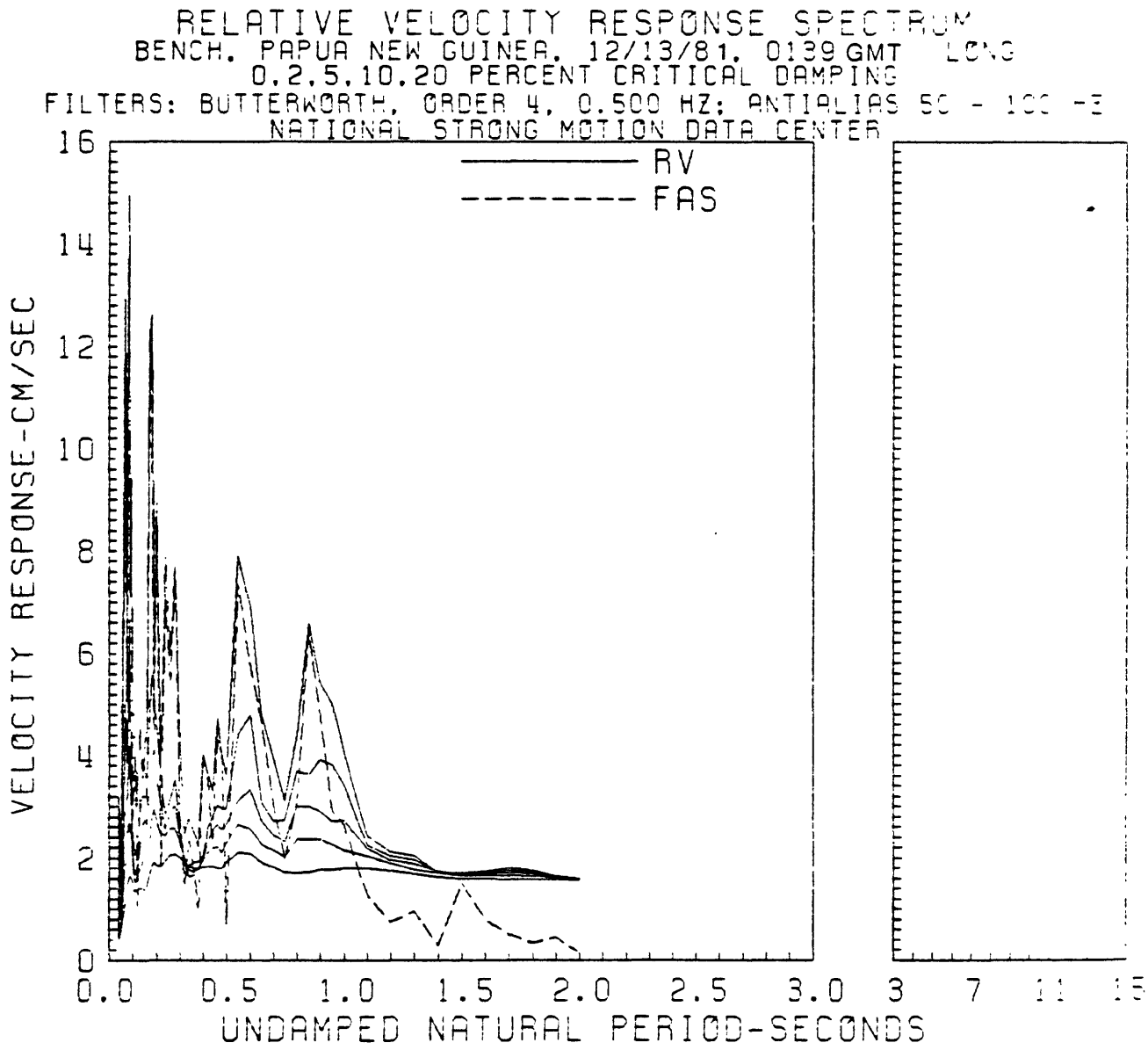
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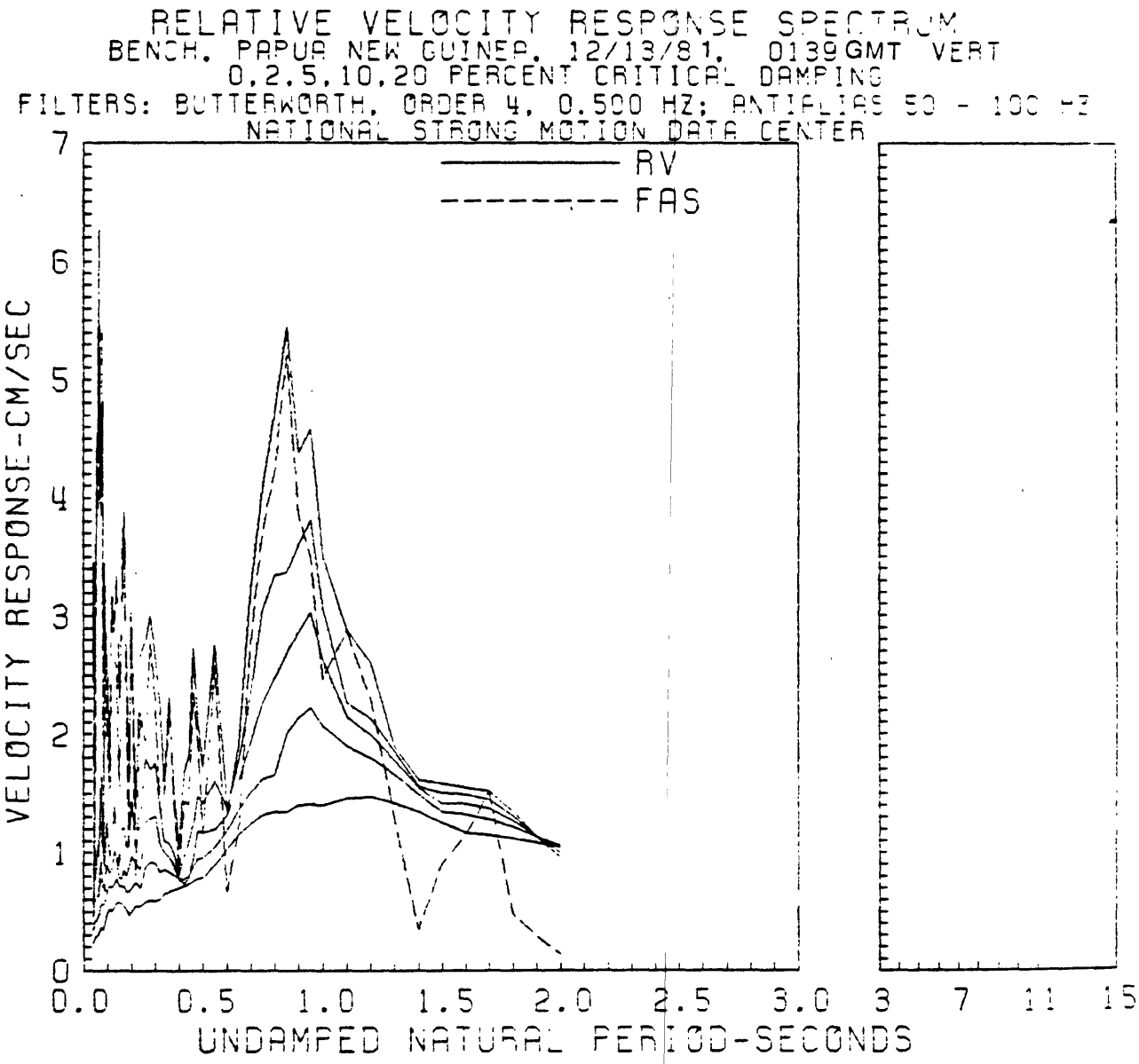
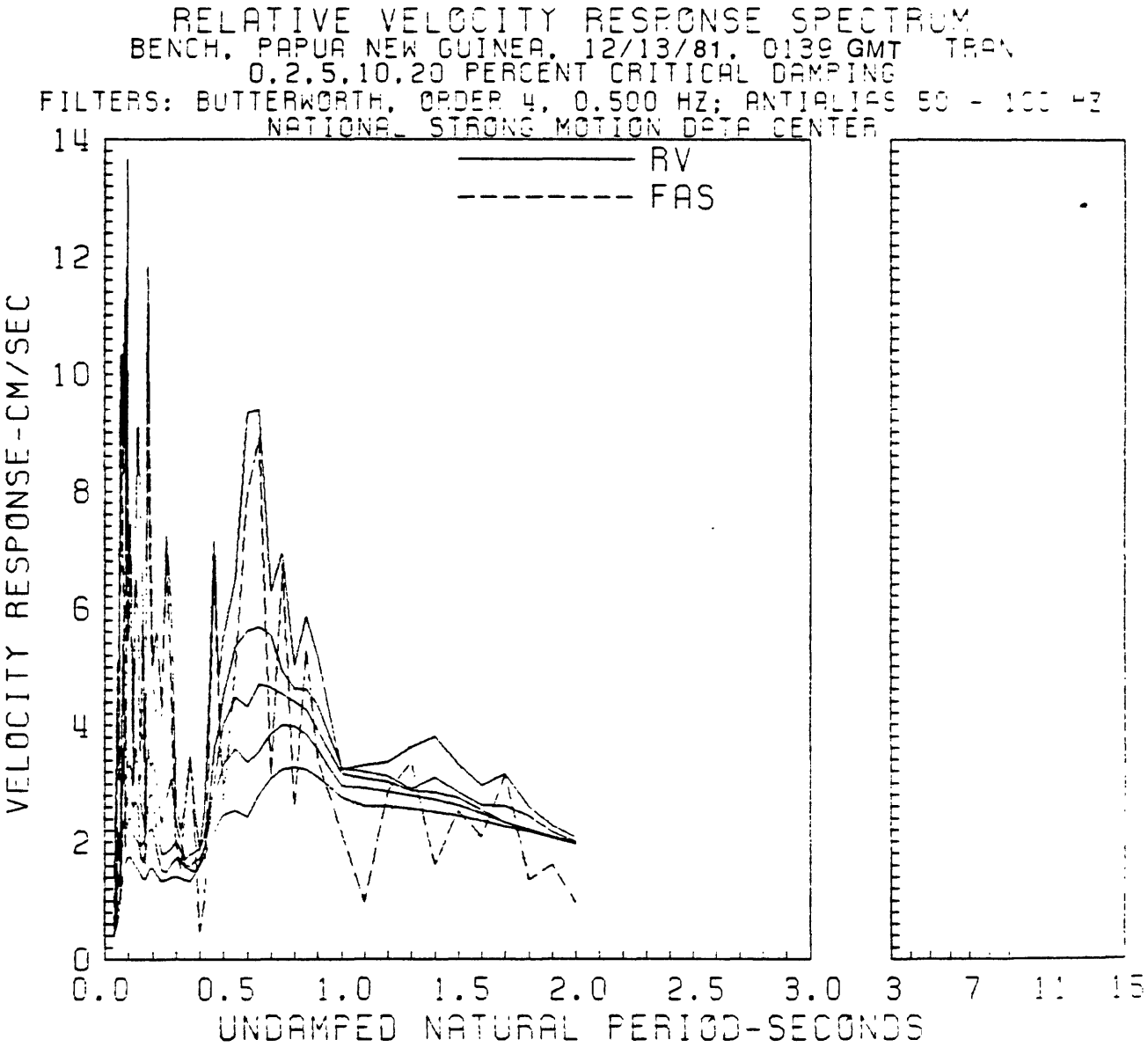
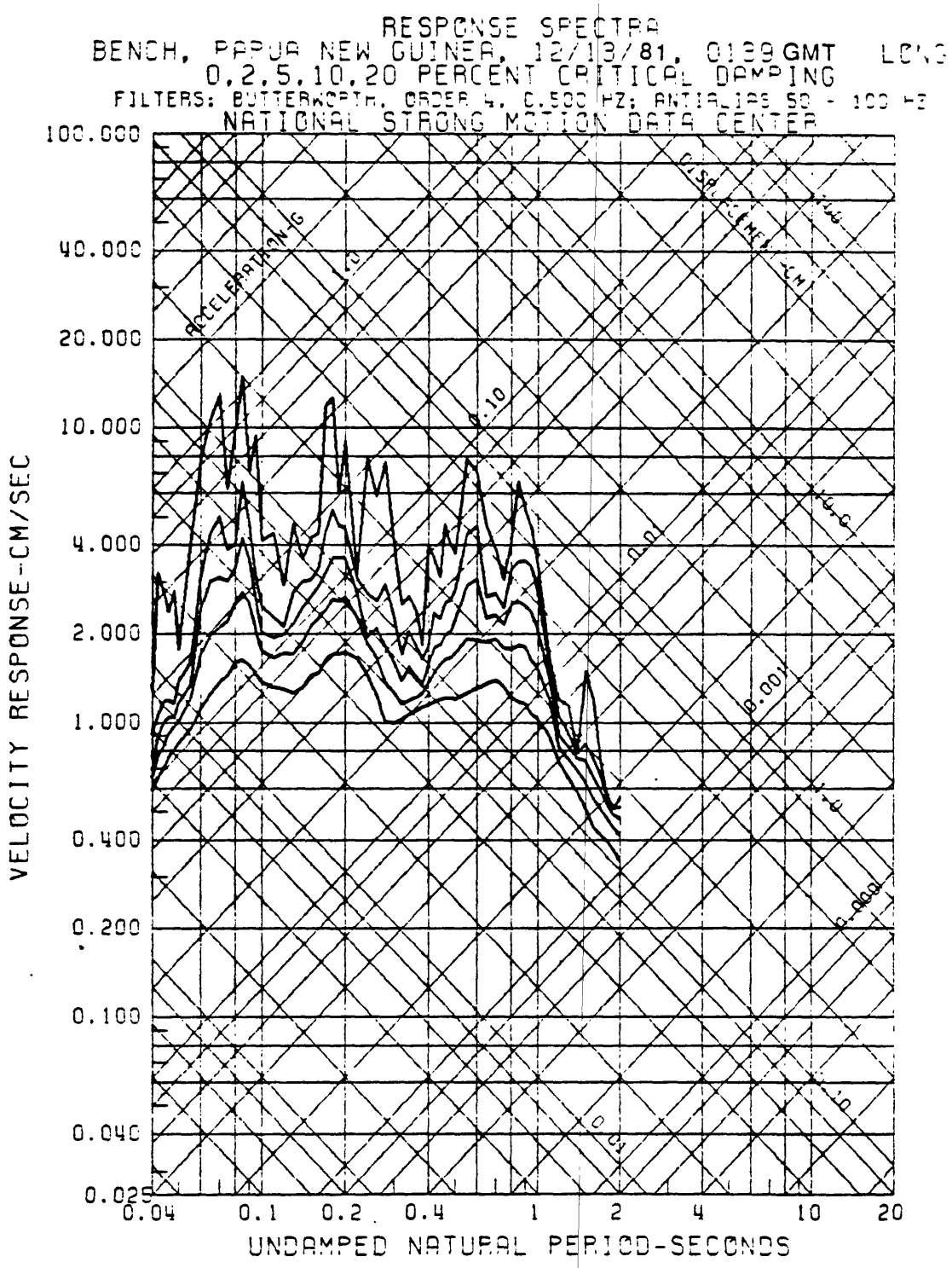
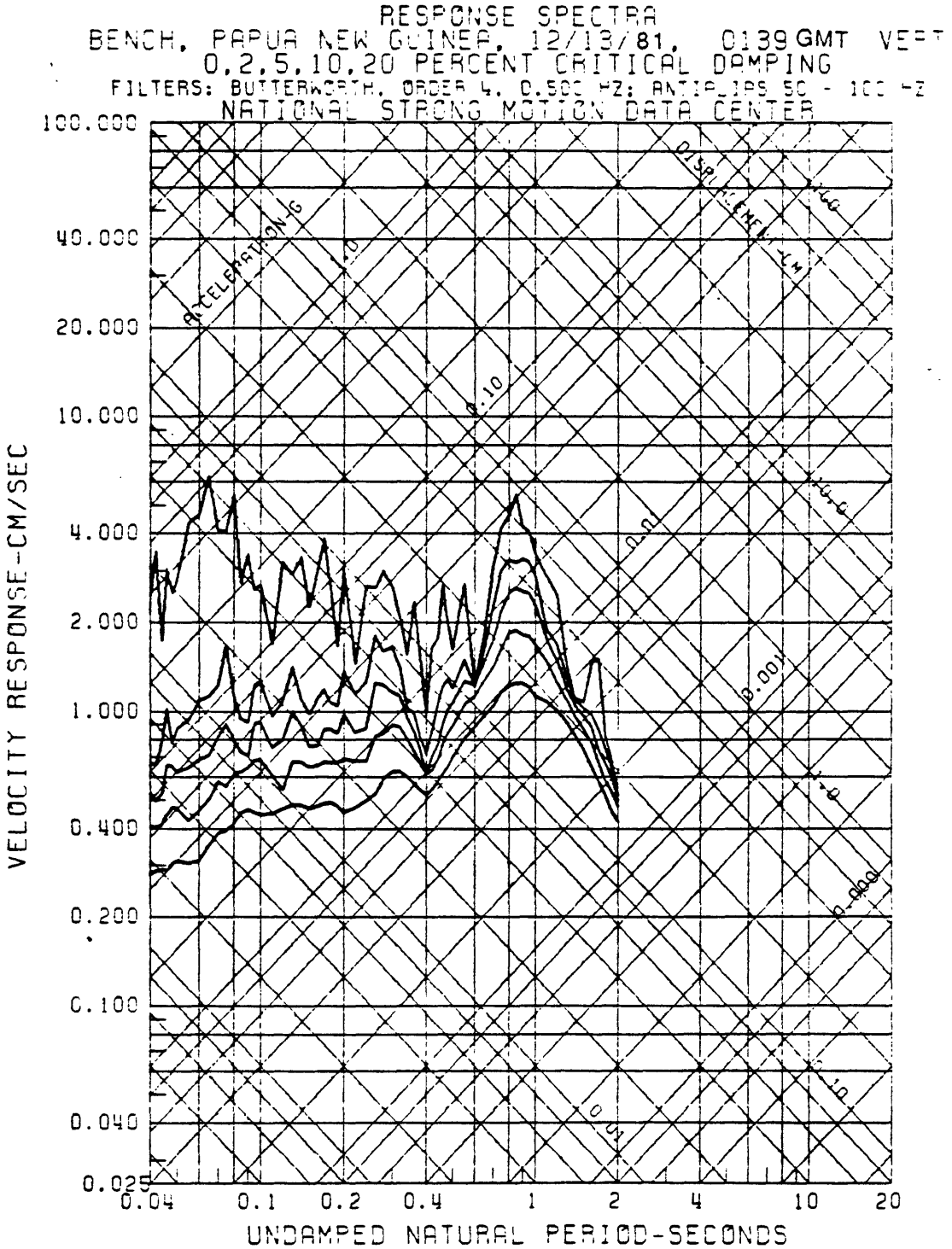
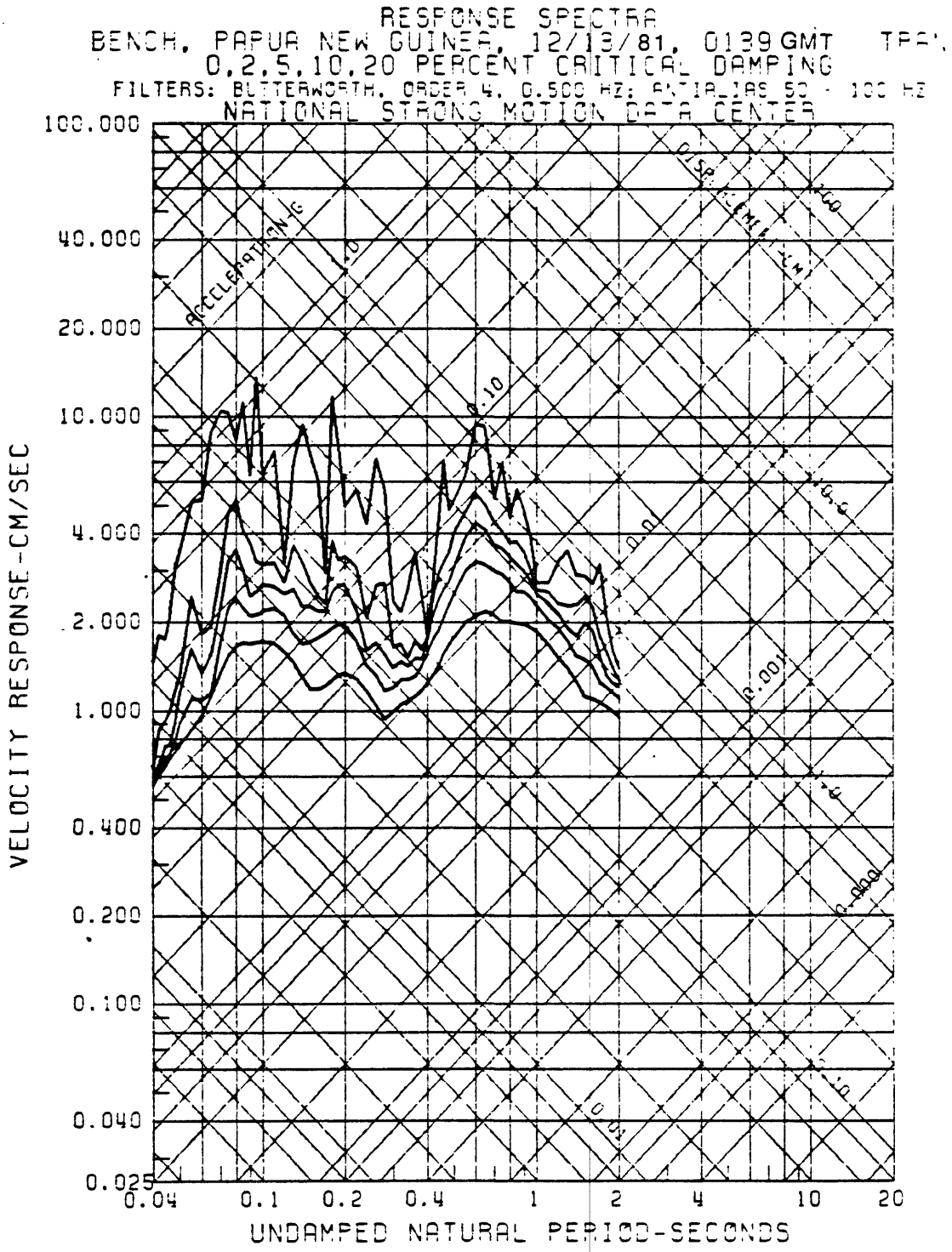
FILTERS: BUTTERWORTH. ORDER 4. 0.500 HZ; ANTIALIAS 50 - 100
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
2
4
6
8
10
12
14
16
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
UNDAMPED NATURAL PERIOD-SECONDS

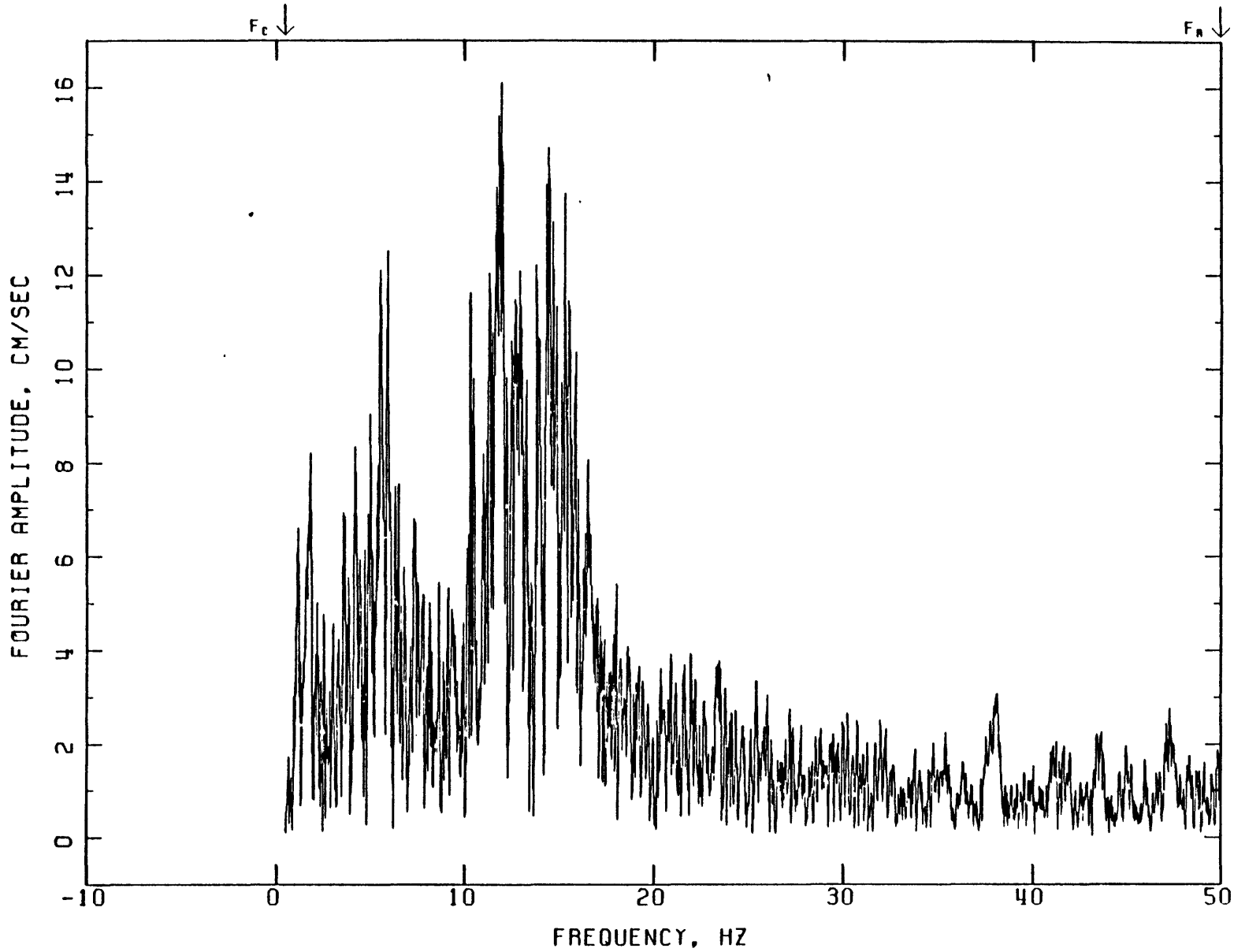

RELATIVE VELOCITY RESPONSE SPECTRUM
BENCH. PAPUA NEW GUINEA. 12/13/81. 0139GMT VERT
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH. ORDER 4. 0.500 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15


RELATIVE VELOCITY RESPONSE SPECTRUM
BENCH, PAPUA NEW GUINEA, 12/13/81, 0139 GMT TRA
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
2
4
6
8
10
12
14
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15


RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 0139 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
ACCELERATION-G
DISPLACEMENT-CM
0.10
0.01
0.001
0.0001
0.02

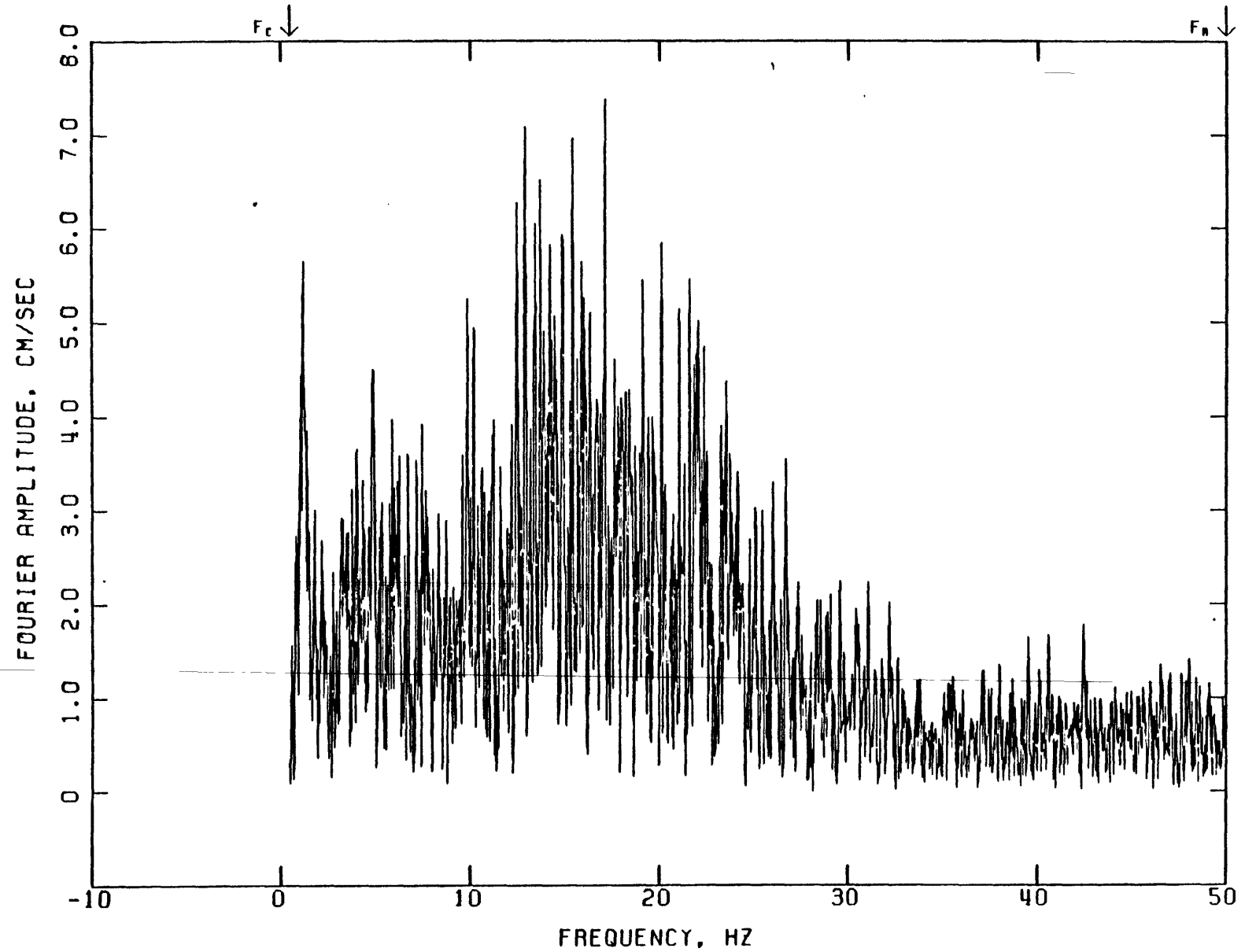

RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 0139 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
ACCELERATION-G
0.10
0.01
0.001


RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 0139 GMT TRA
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
1.0
0.10
0.01
0.001
0.0001
0.00001



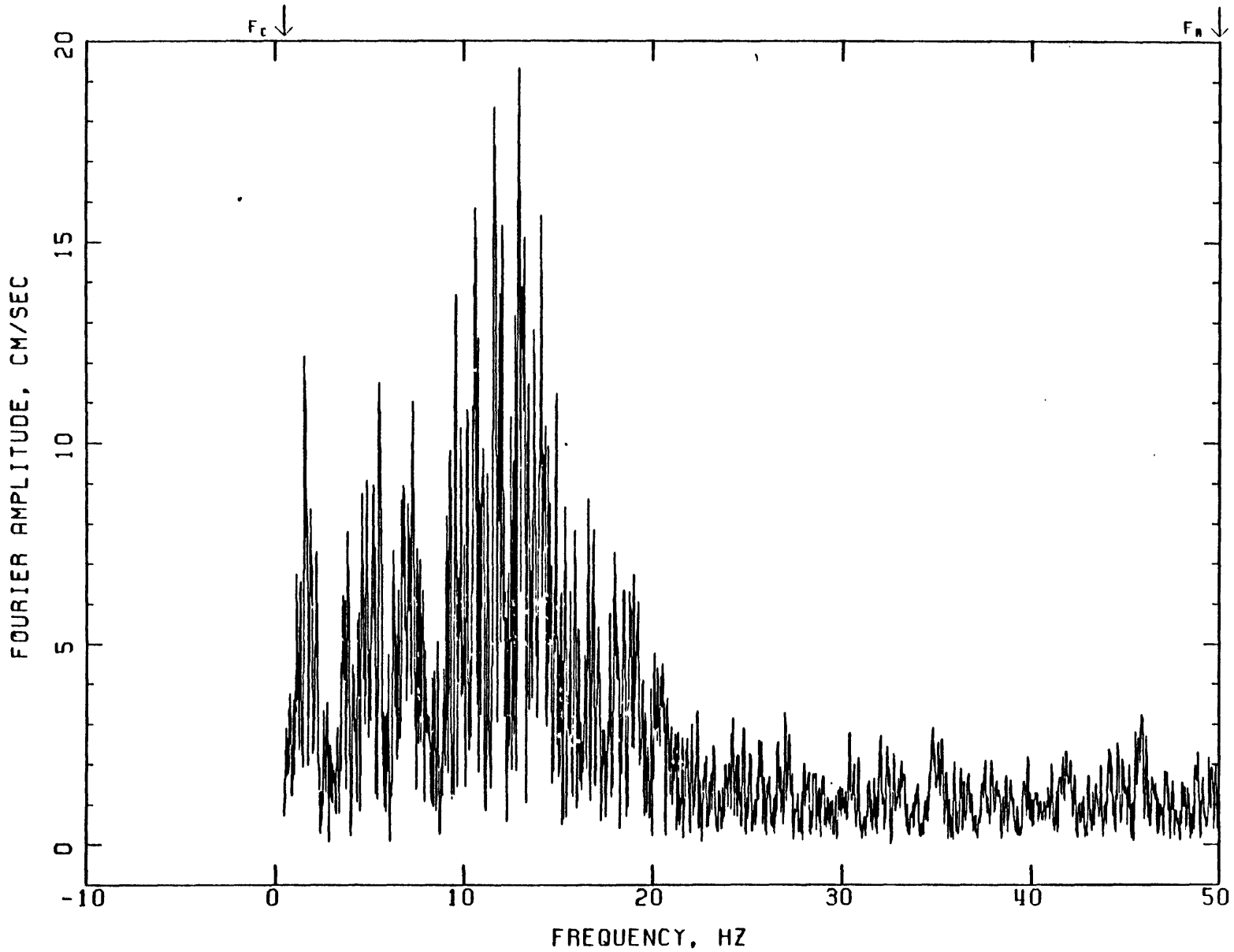
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



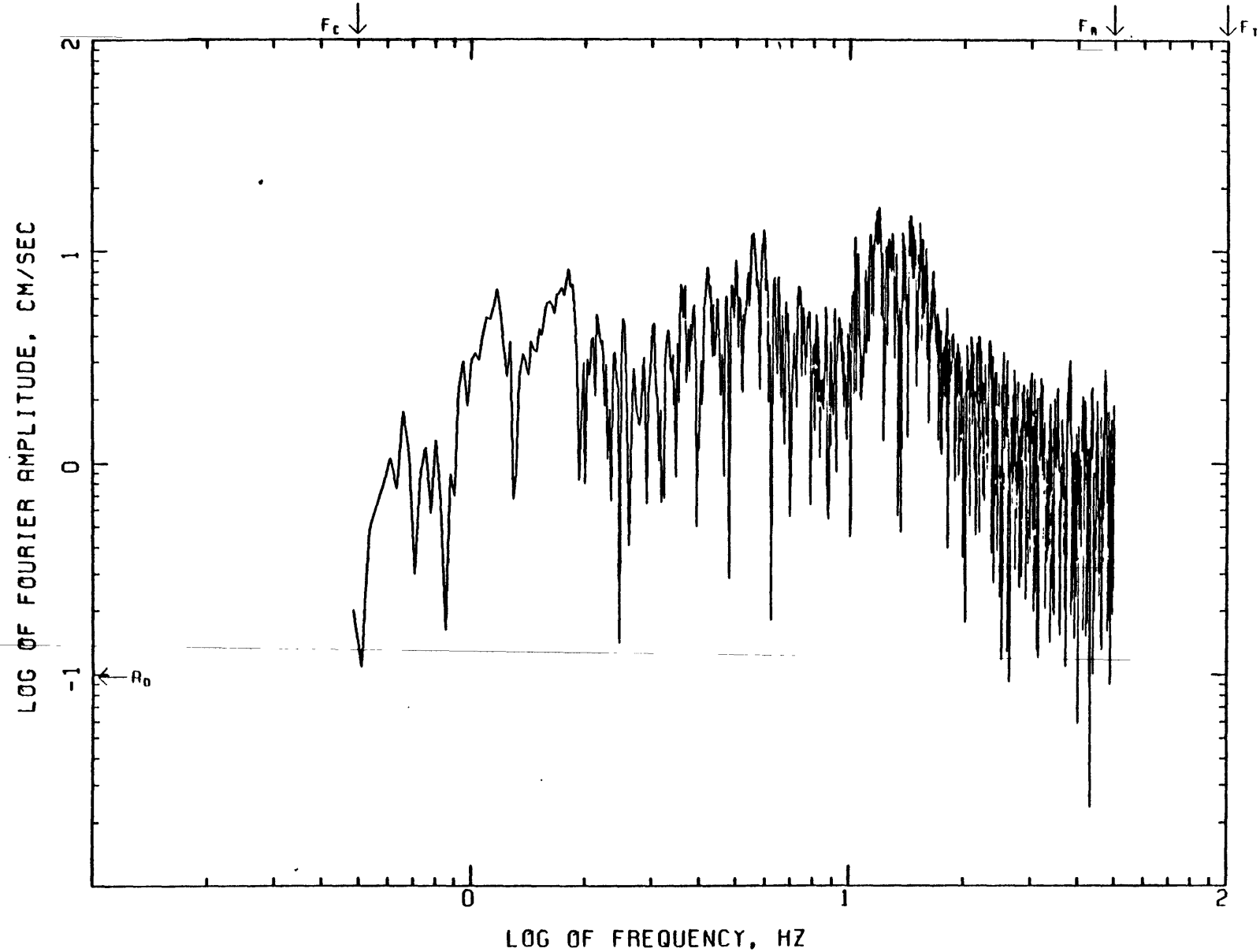
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



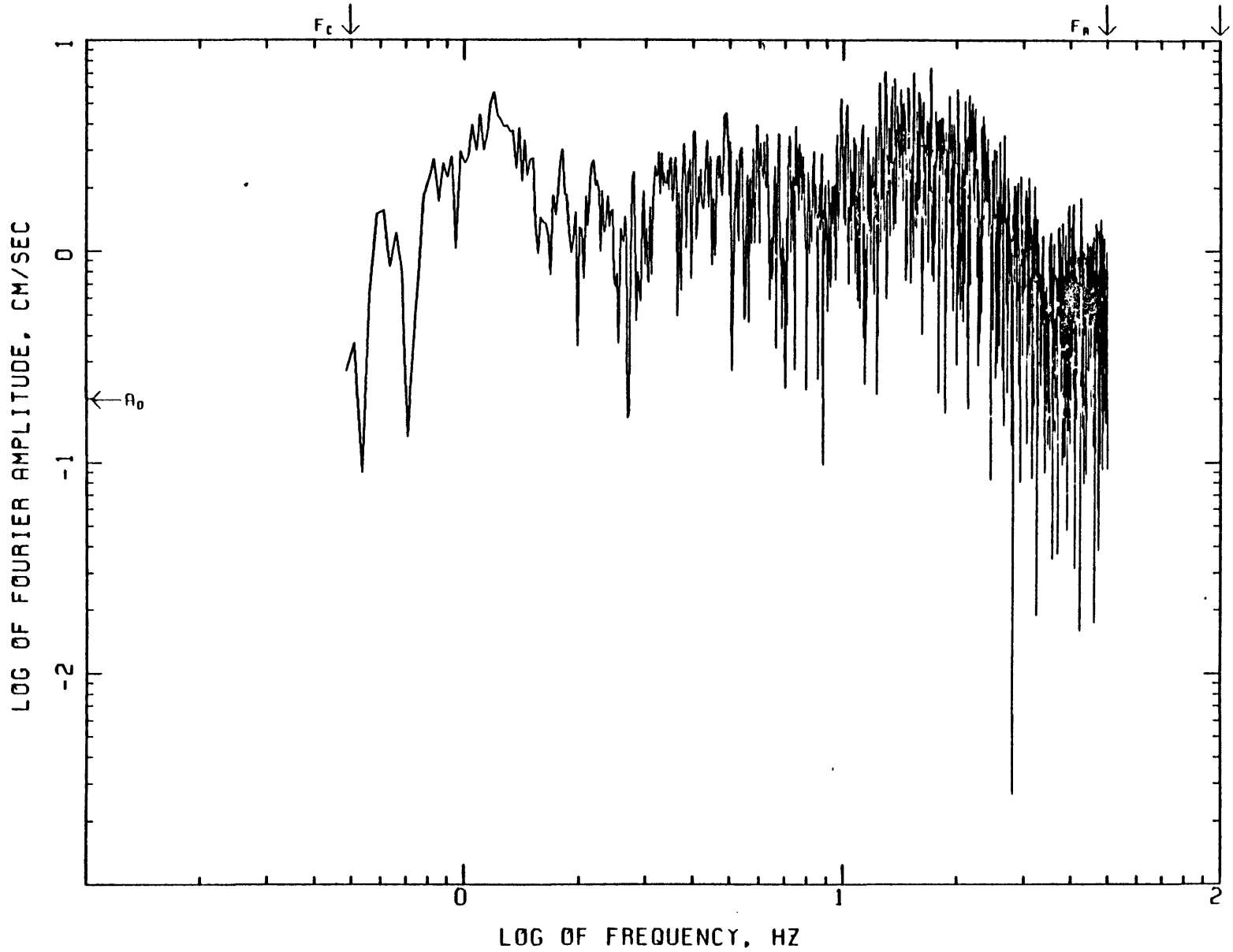
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



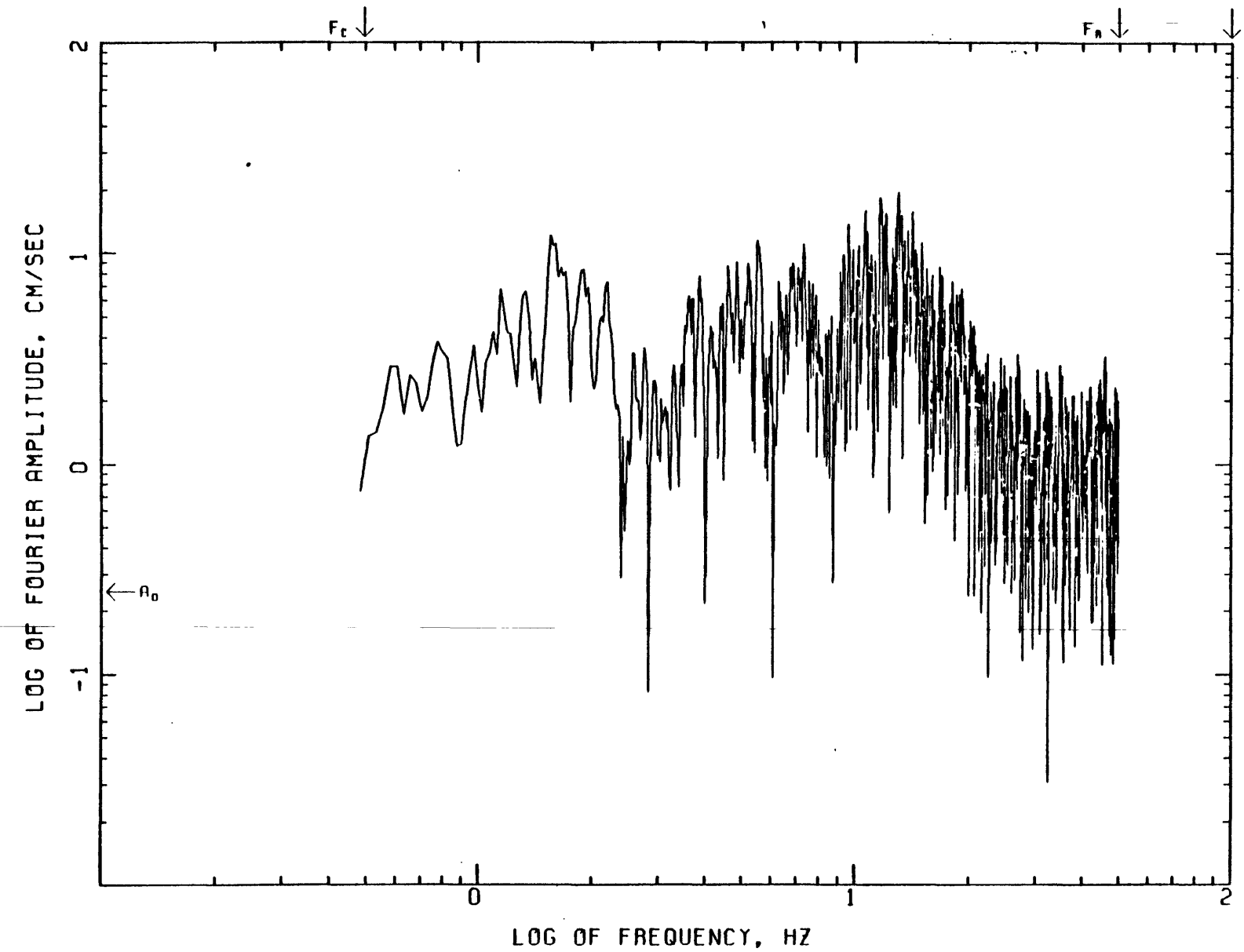
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



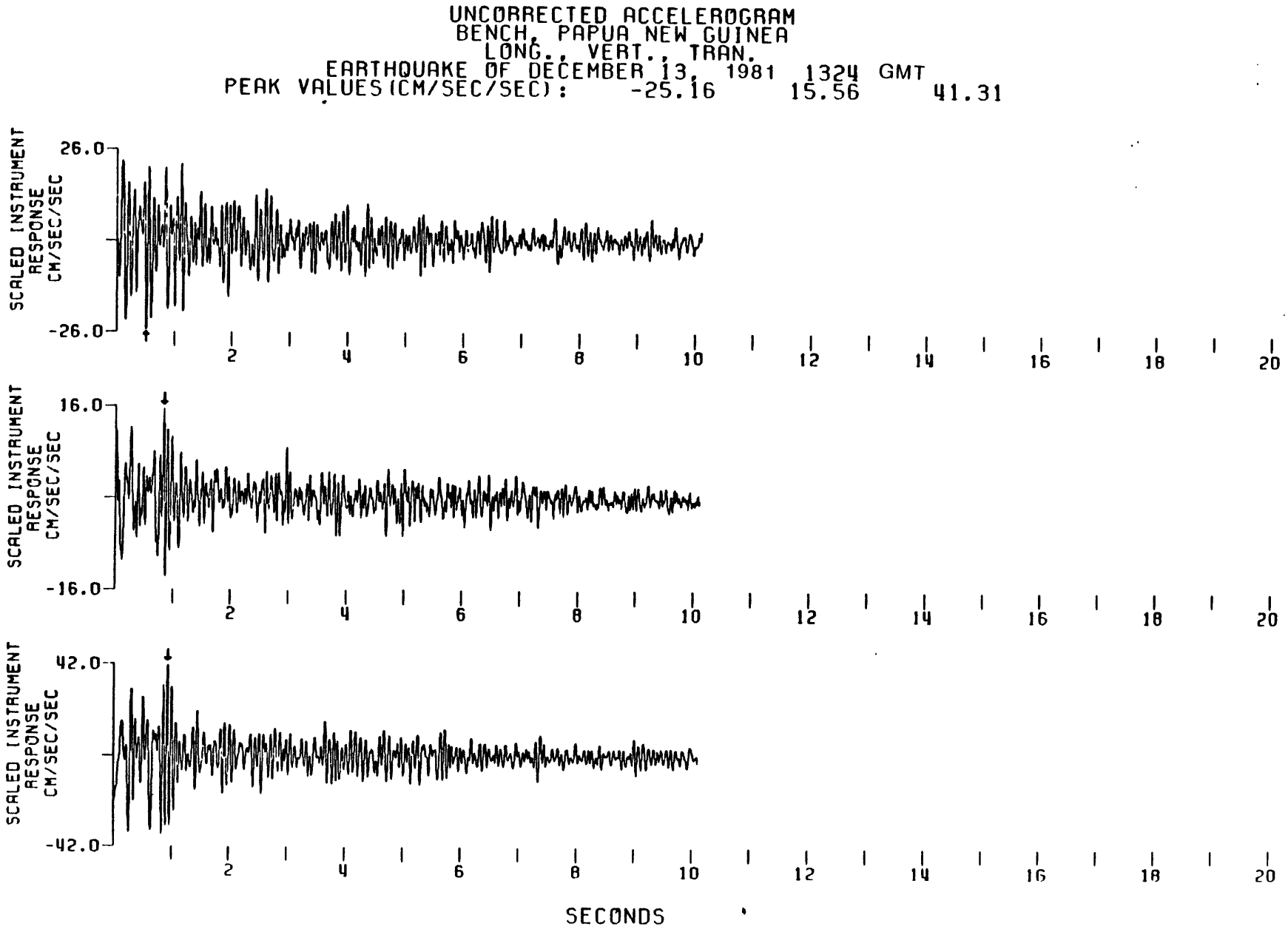
FIGURE

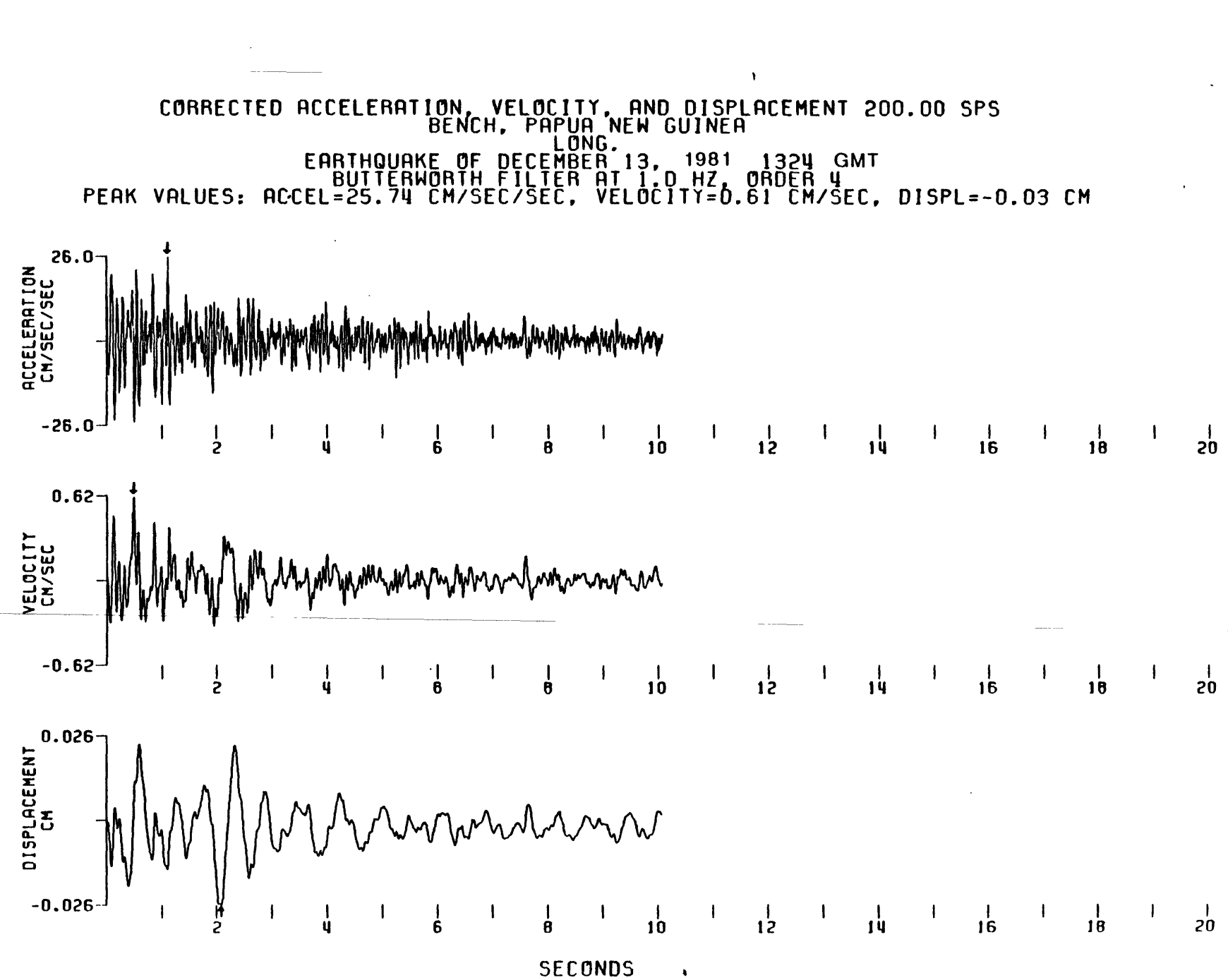
LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF DECEMBER 13, 1981 0139 GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



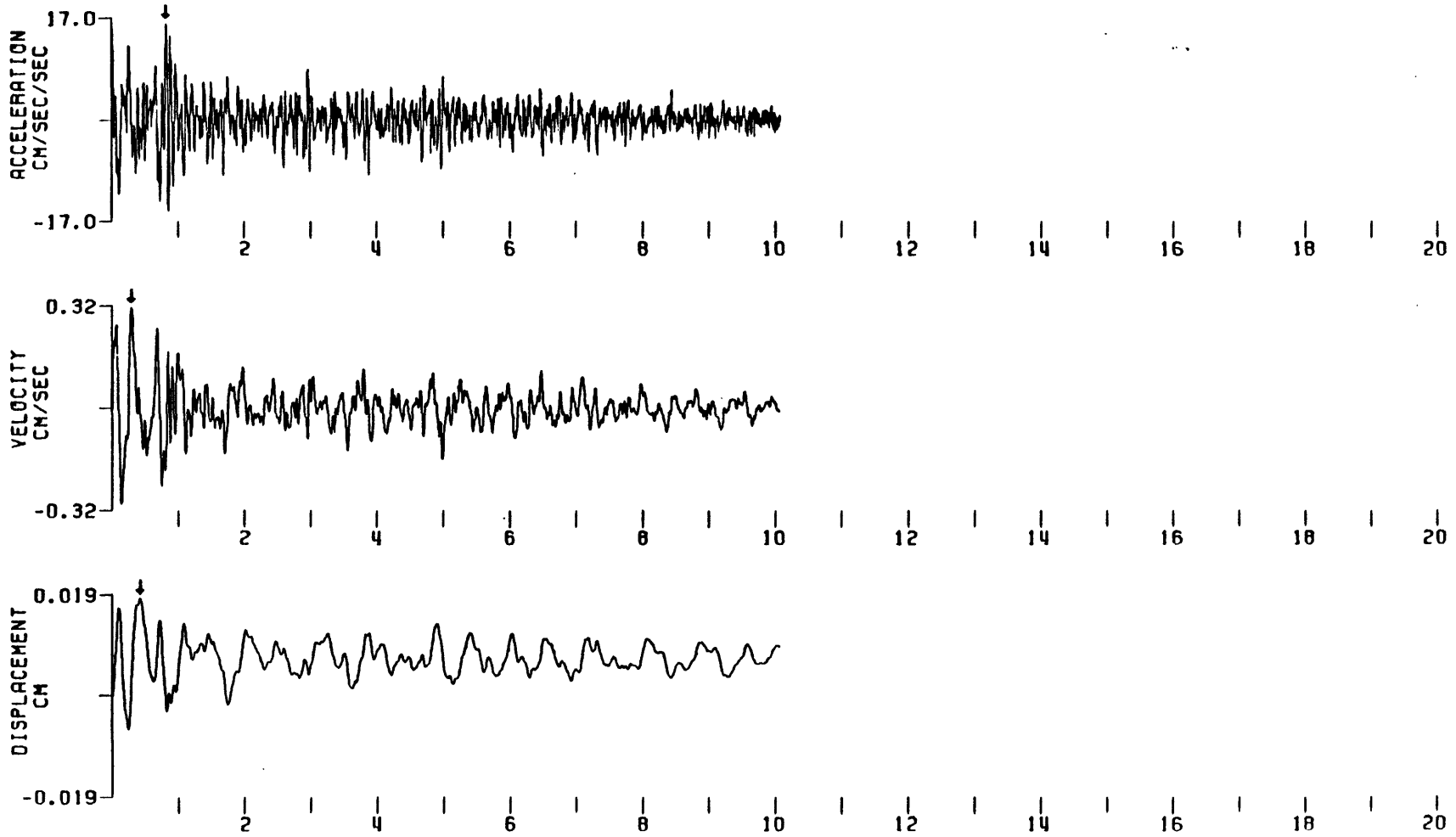
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 0139GMT
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

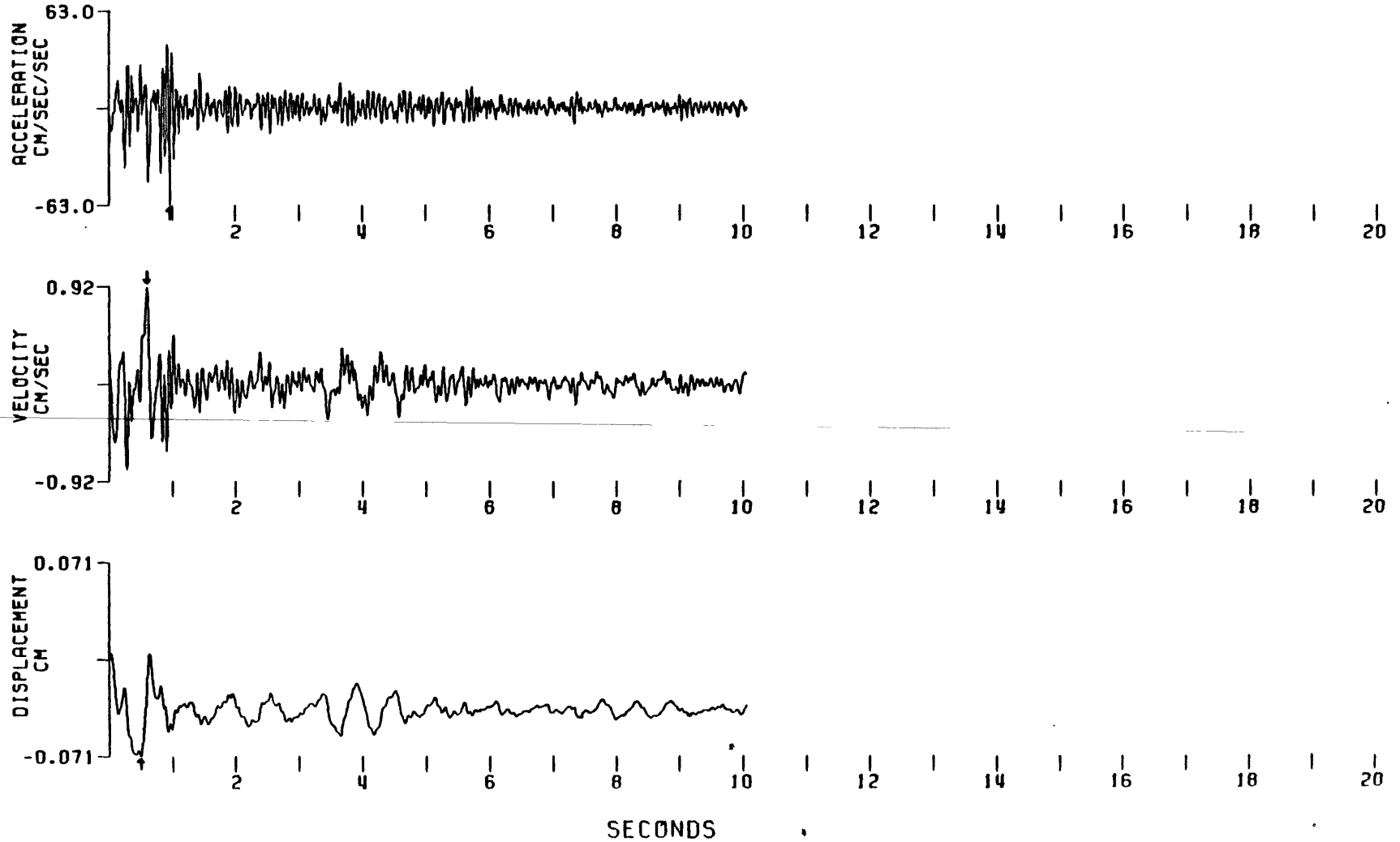

UNCORRECTED ACCELEROGRAM
BENCH, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
PEAK VALUES(CM/SEC/SEC): -25.16 15.56 41.31
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
26.0
-26.0
16.0
-16.0
42.0
-42.0
2
4
6
8
10
12
14
16
18
20
SECONDS

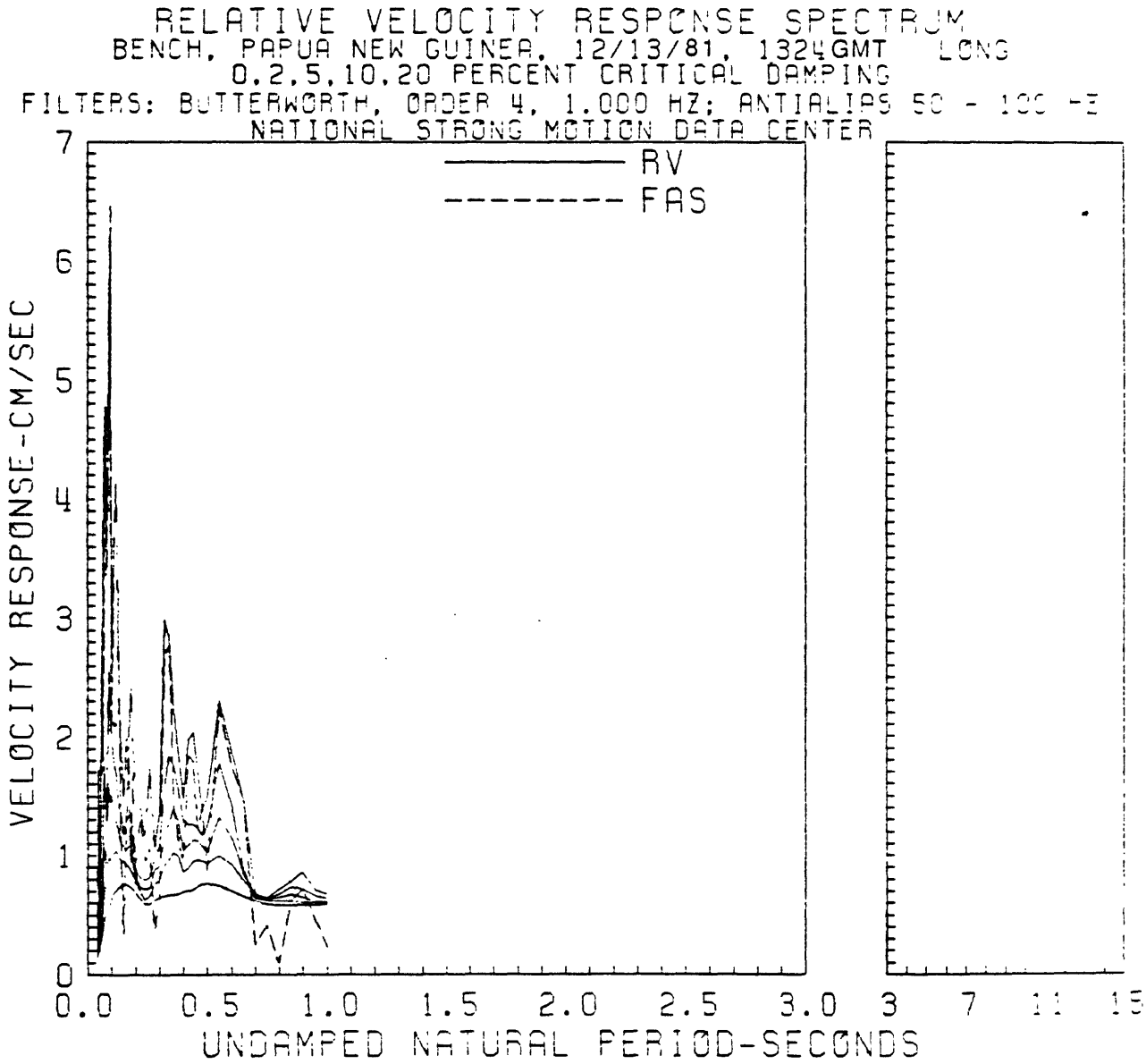

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
PEAK VALUES: ACCEL=25.74 CM/SEC/SEC, VELOCITY=0.61 CM/SEC, DISPL=-0.03 CM
ACCELERATION CM/SEC/SEC
26.0
-26.0
VELOCITY CM/SEC
0.62
-0.62
DISPLACEMENT CM
0.026
-0.026
2
4
6
8
10
12
14
16
18
20
SECONDS

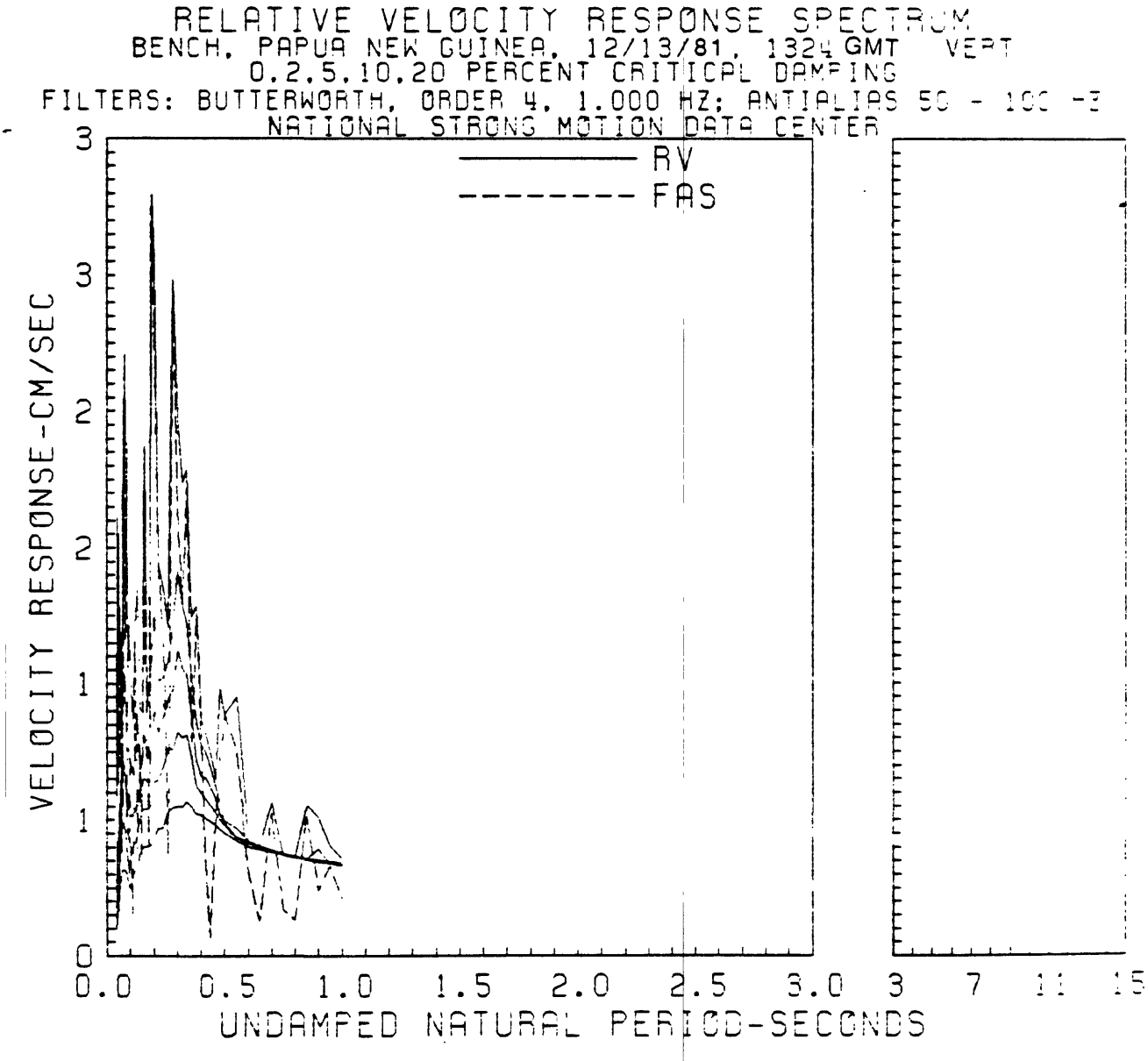
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BENCH, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
PEAK VALUES: ACCEL=16.15 CM/SEC/SEC, VELOCITY=0.32 CM/SEC, DISPL=0.02 CM

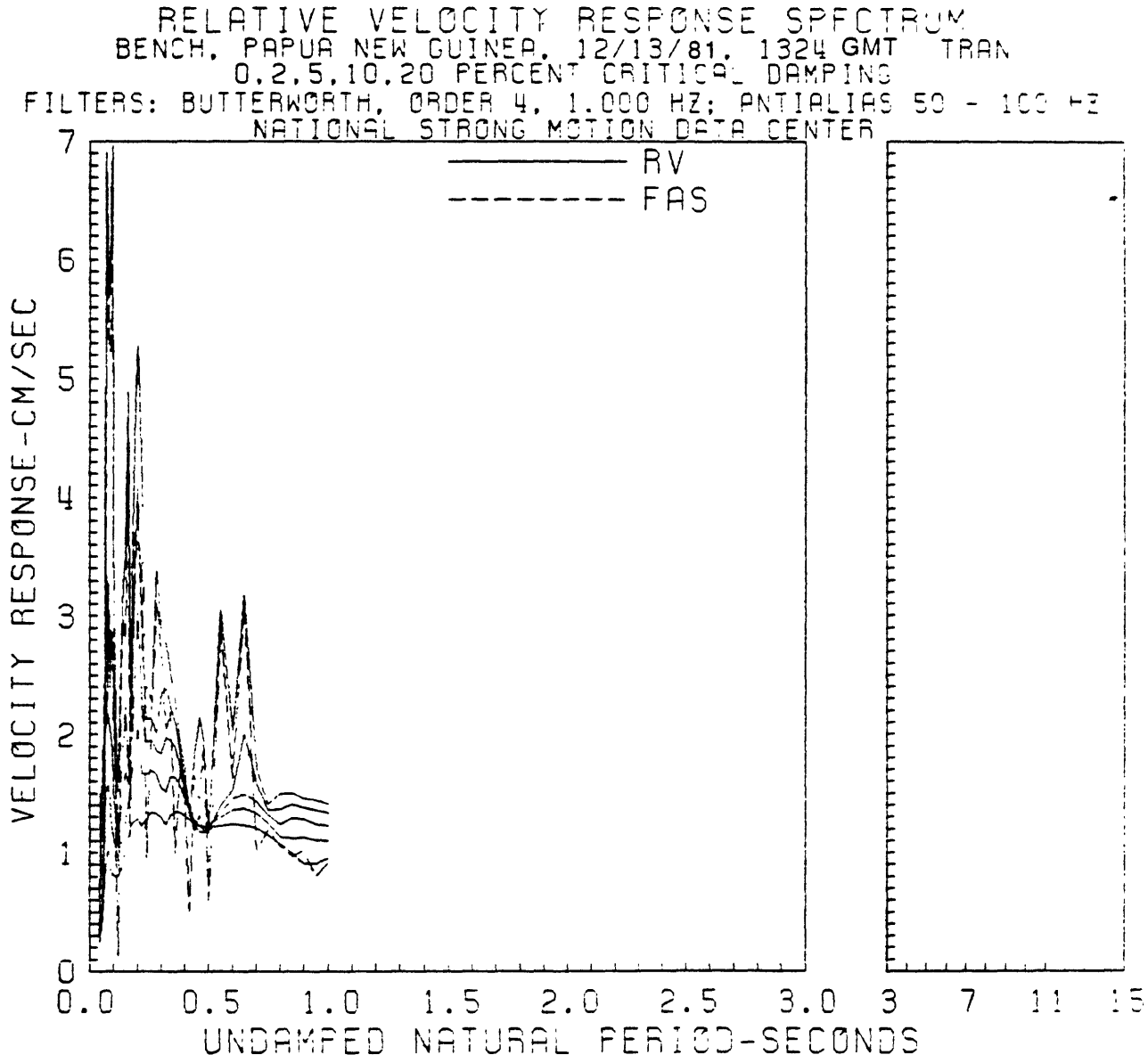


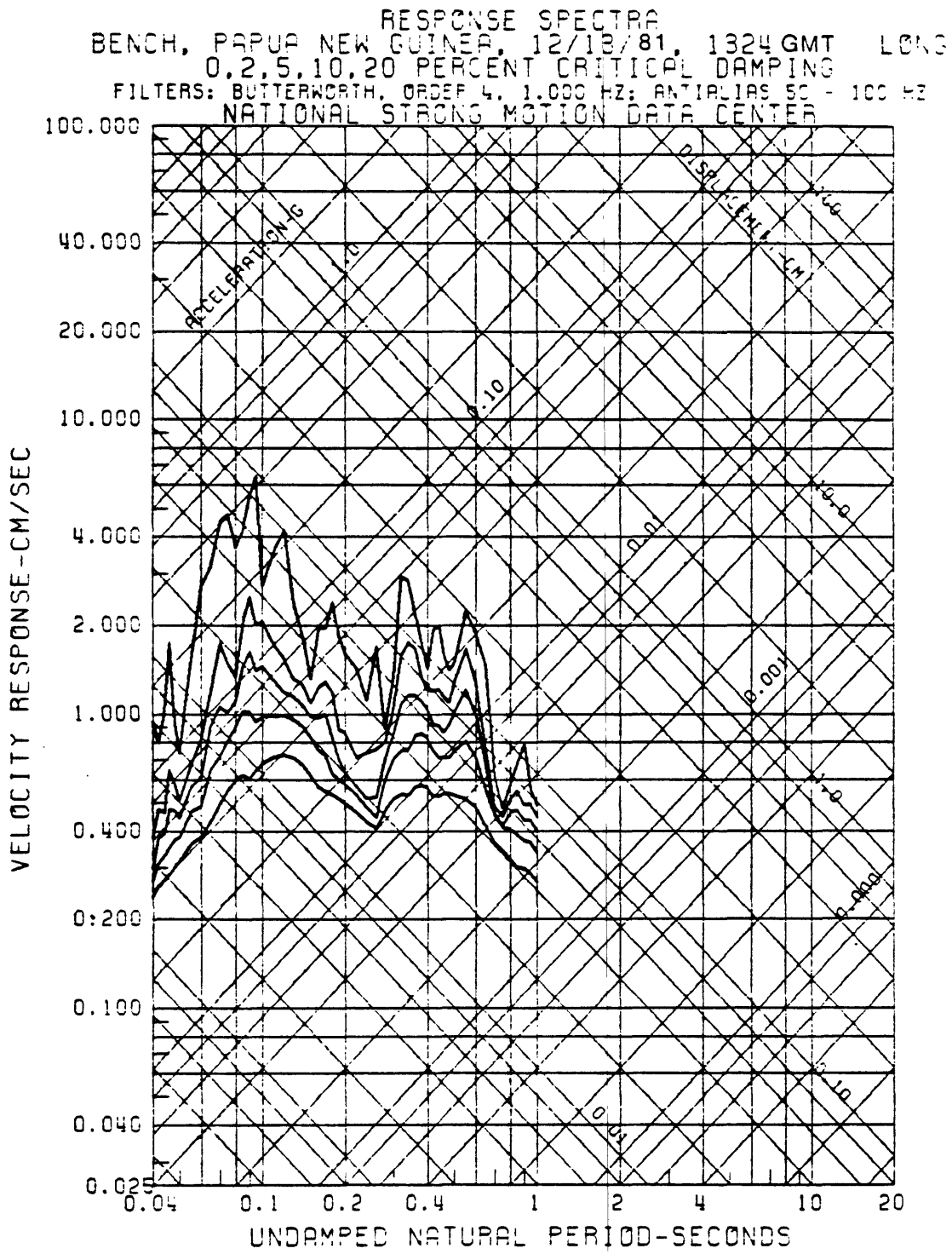
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
PEAK VALUES: ACCEL=-62.43 CM/SEC/SEC, VELOCITY=0.91 CM/SEC, DISPL=-0.07 CM

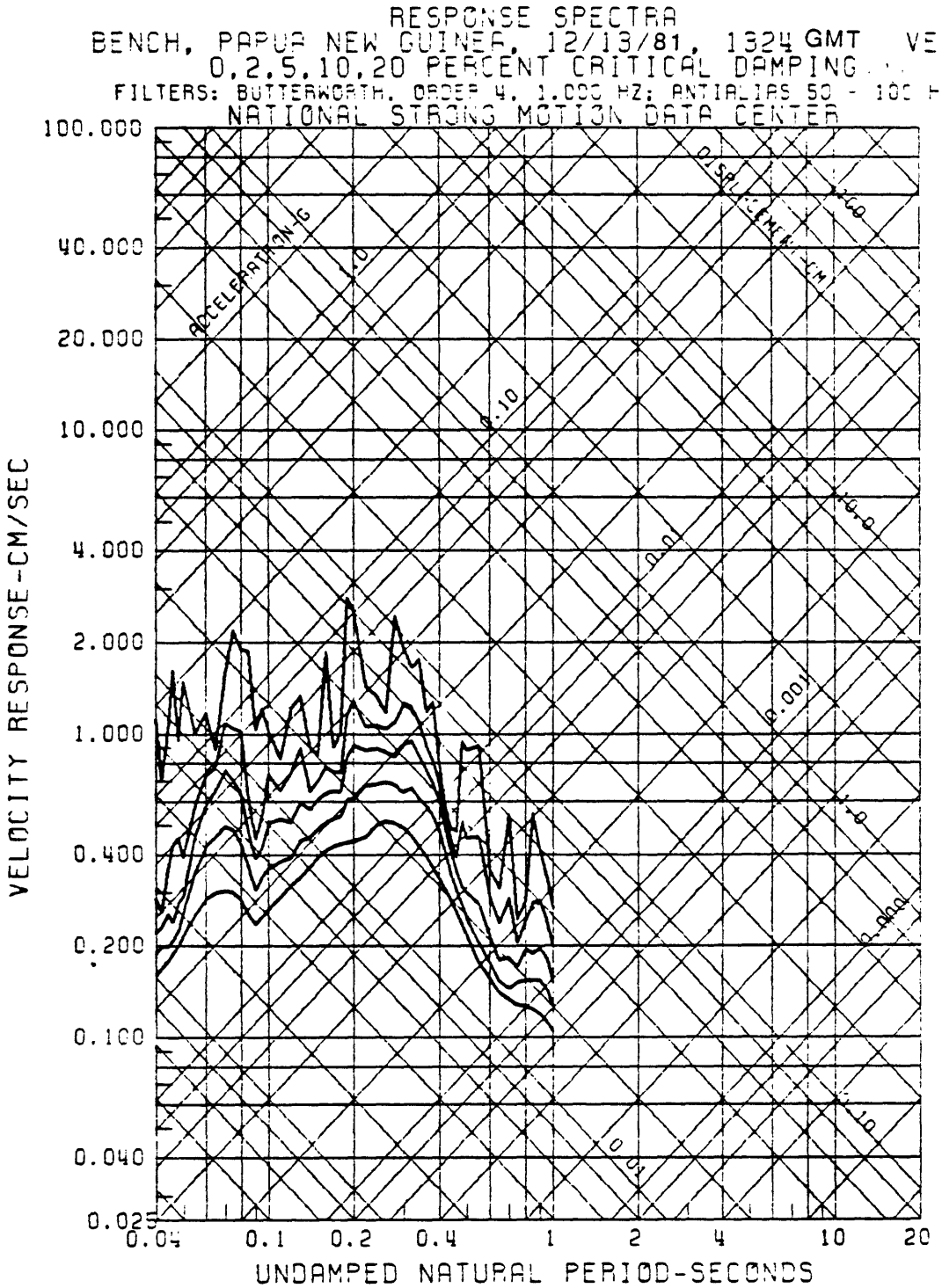


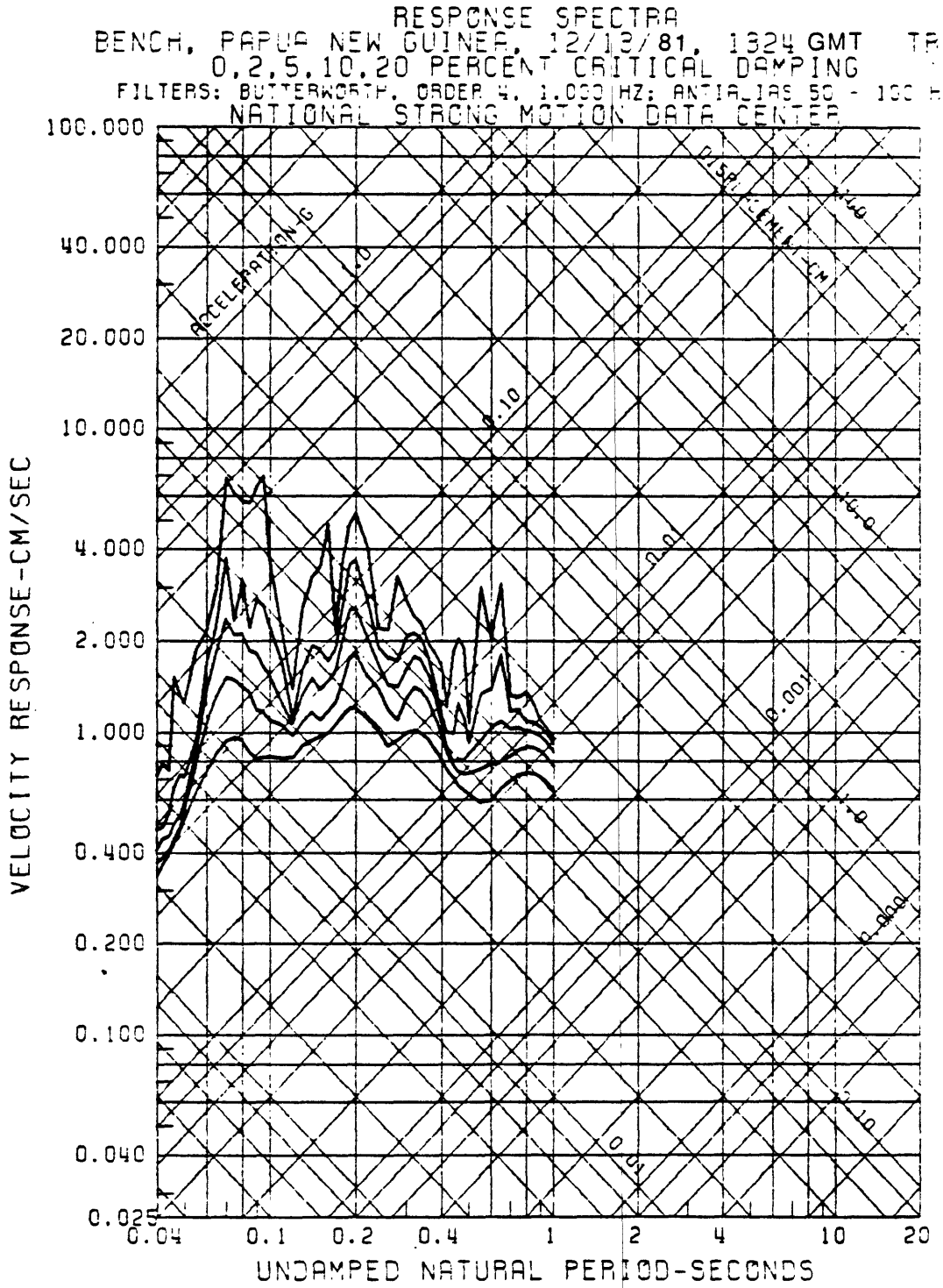

RELATIVE VELOCITY RESPONSE SPECTRUM
BENCH, PAPUA NEW GUINEA, 12/13/81, 1324GMT LONG
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 50 - 100 -E
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

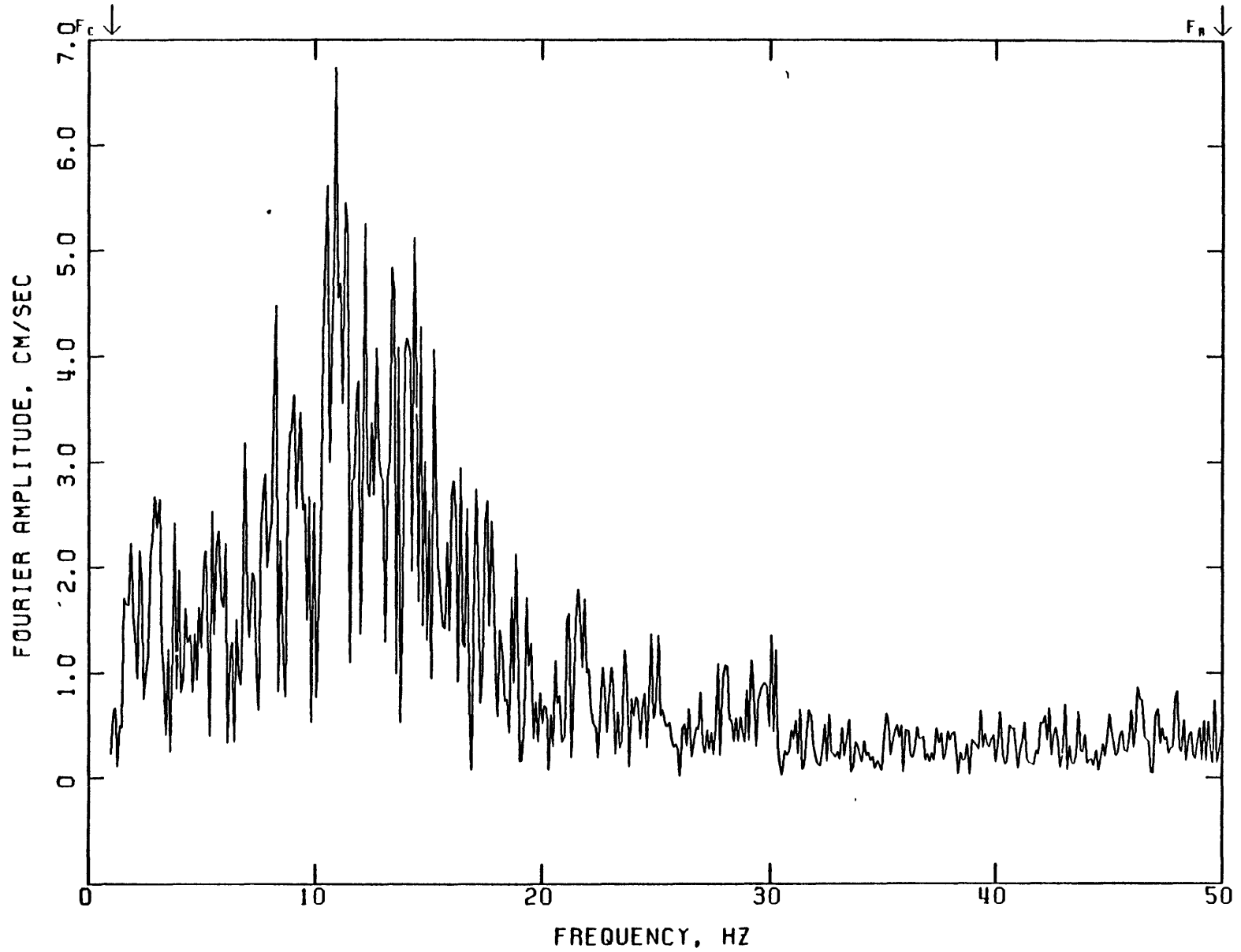

RELATIVE VELOCITY RESPONSE SPECTRUM
BENCH. PAPUA NEW GUINEA. 12/13/81. 1324 GMT VERT
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH. ORDER 4. 1.000 HZ; ANTIALIAS 50 - 100 -3
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
0
1
2
3


RELATIVE VELOCITY RESPONSE SPECTRUM
BENCH, PAPUA NEW GUINEA, 12/13/81, 1324 GMT TRAN
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15


RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 1324 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
0.10
0.01
0.001
0.05

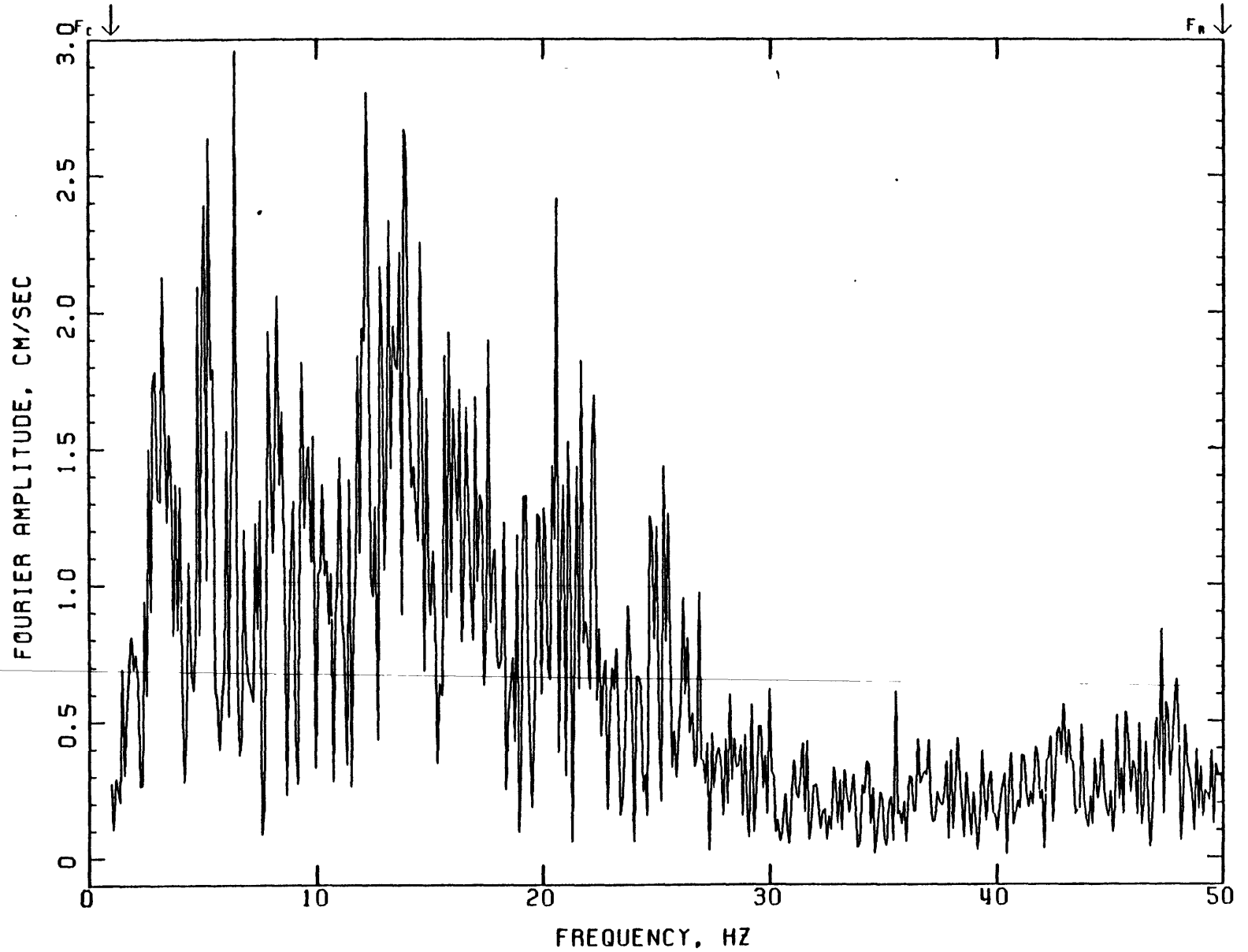

RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 1324 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
1.0
0.10
0.01
0.001
0.04


RESPONSE SPECTRA
BENCH, PAPUA NEW GUINEA, 12/13/81, 1324 GMT TRA
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 50 - 100 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20



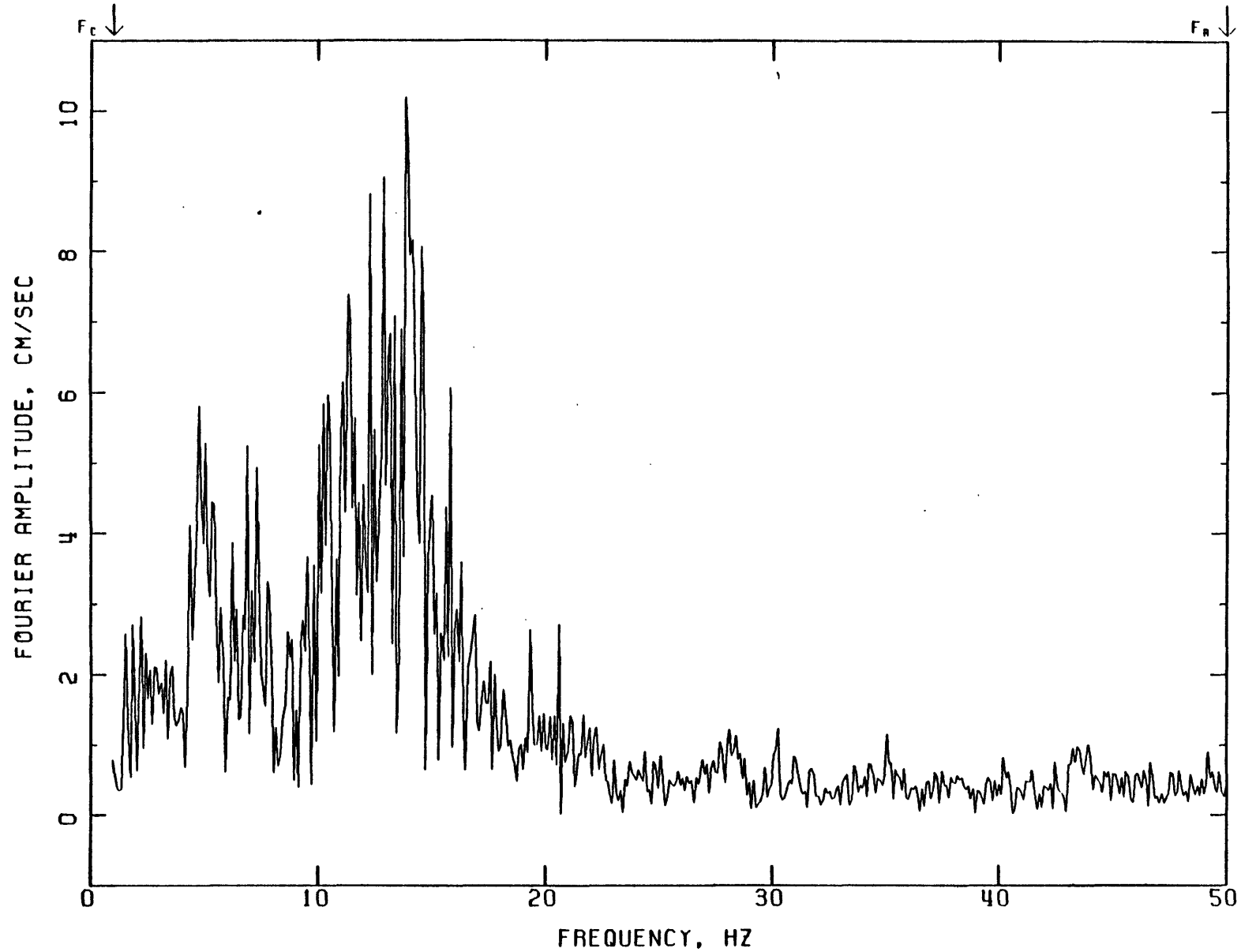
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



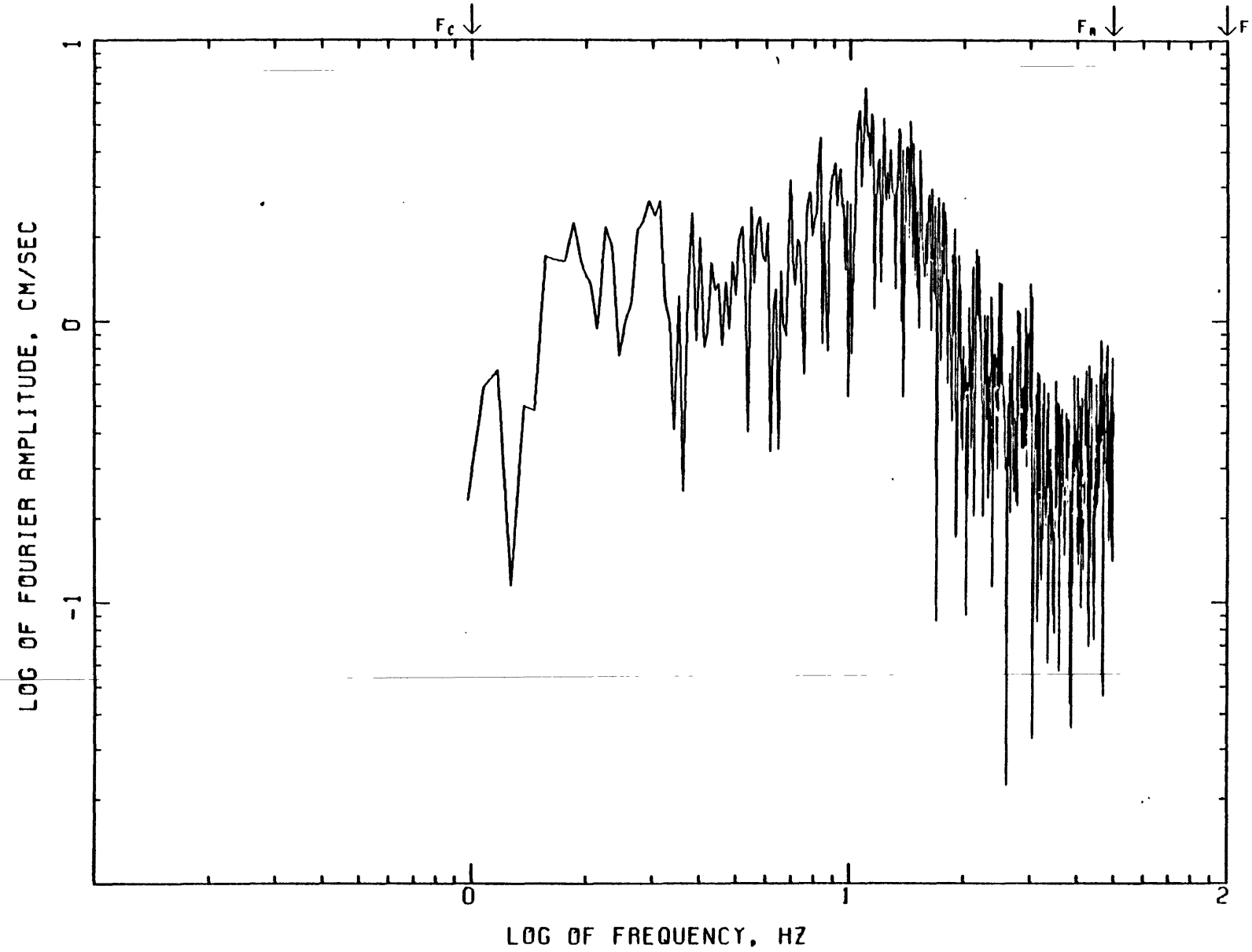
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



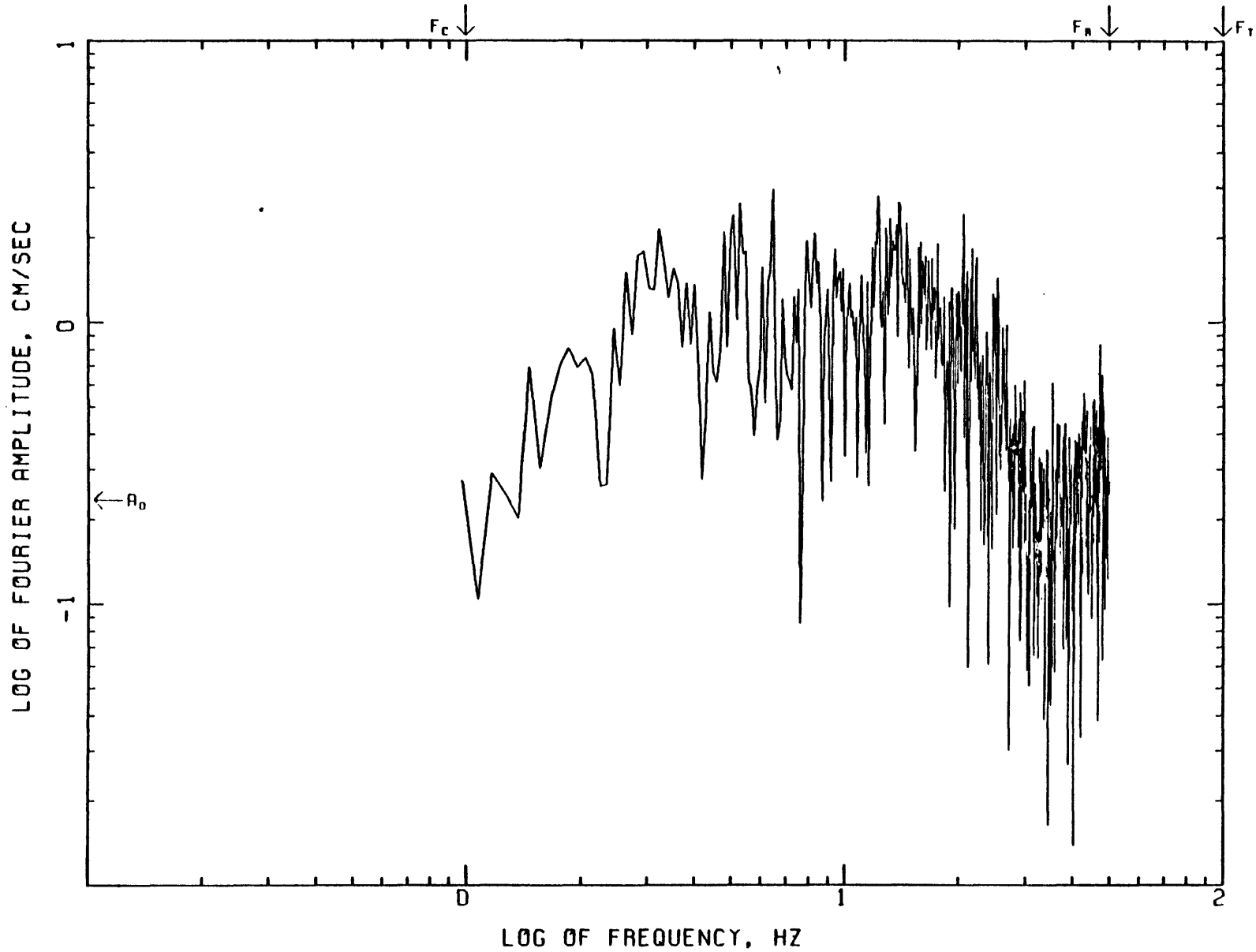
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



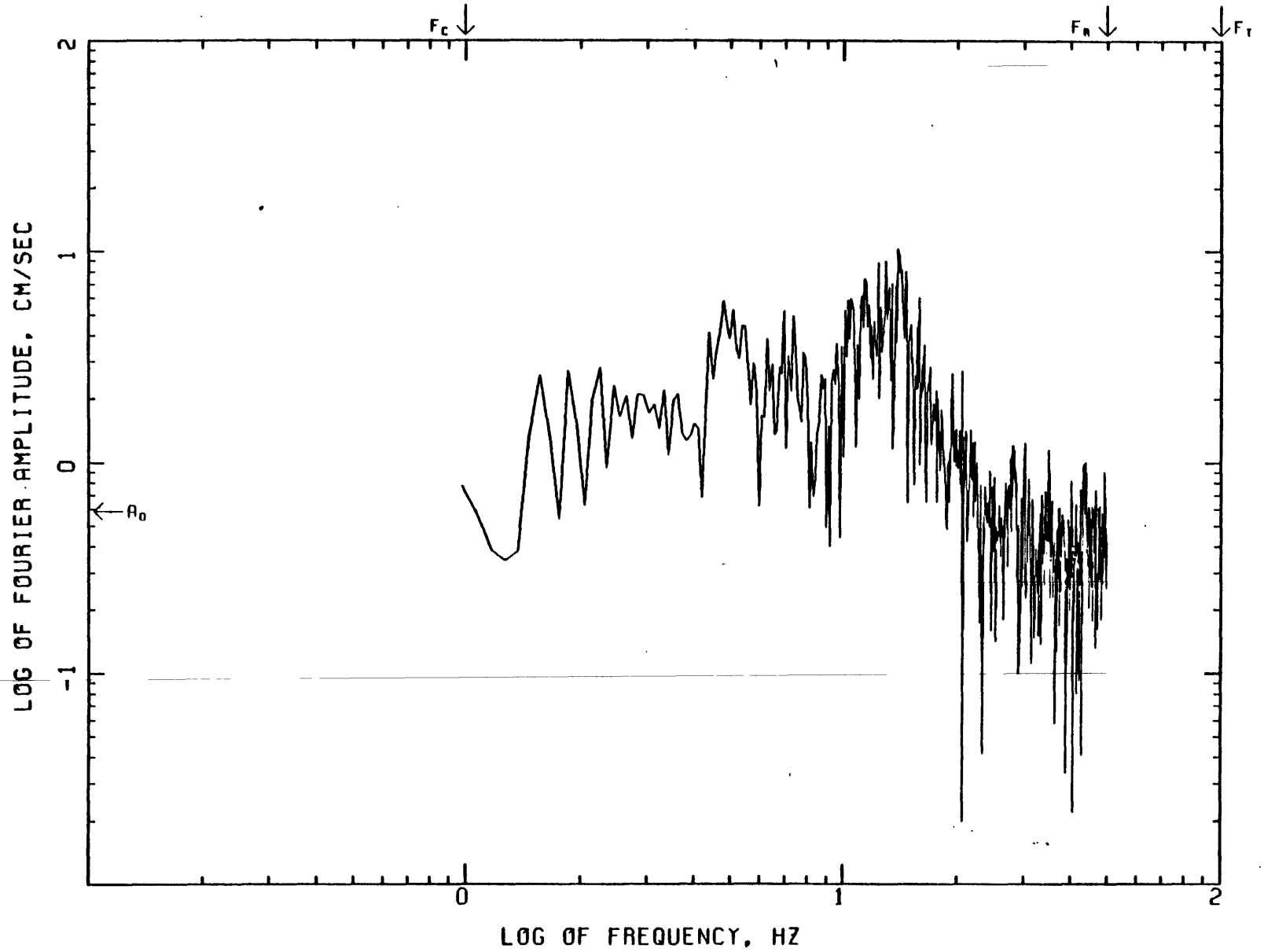
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT,
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



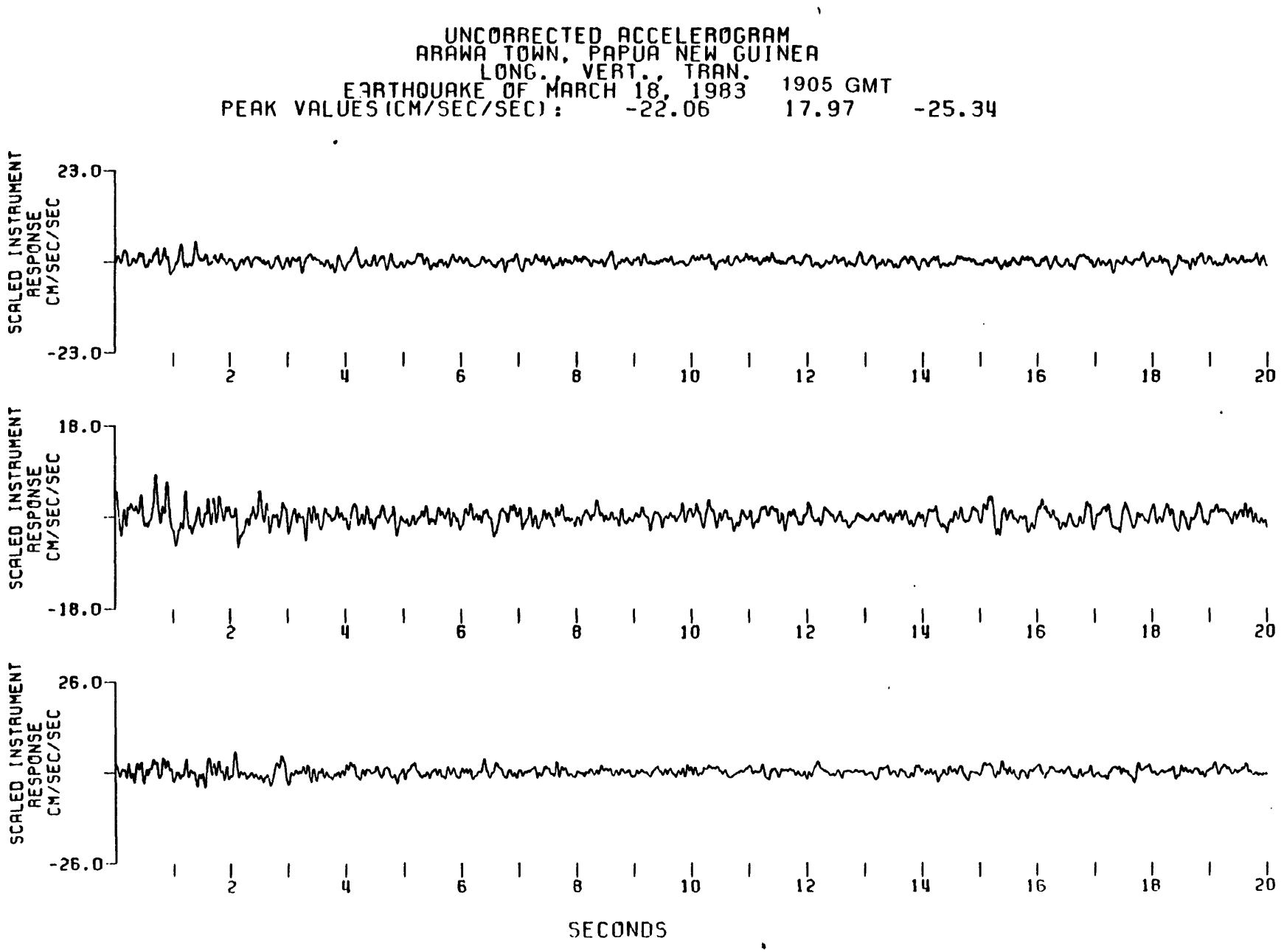
FIGURE

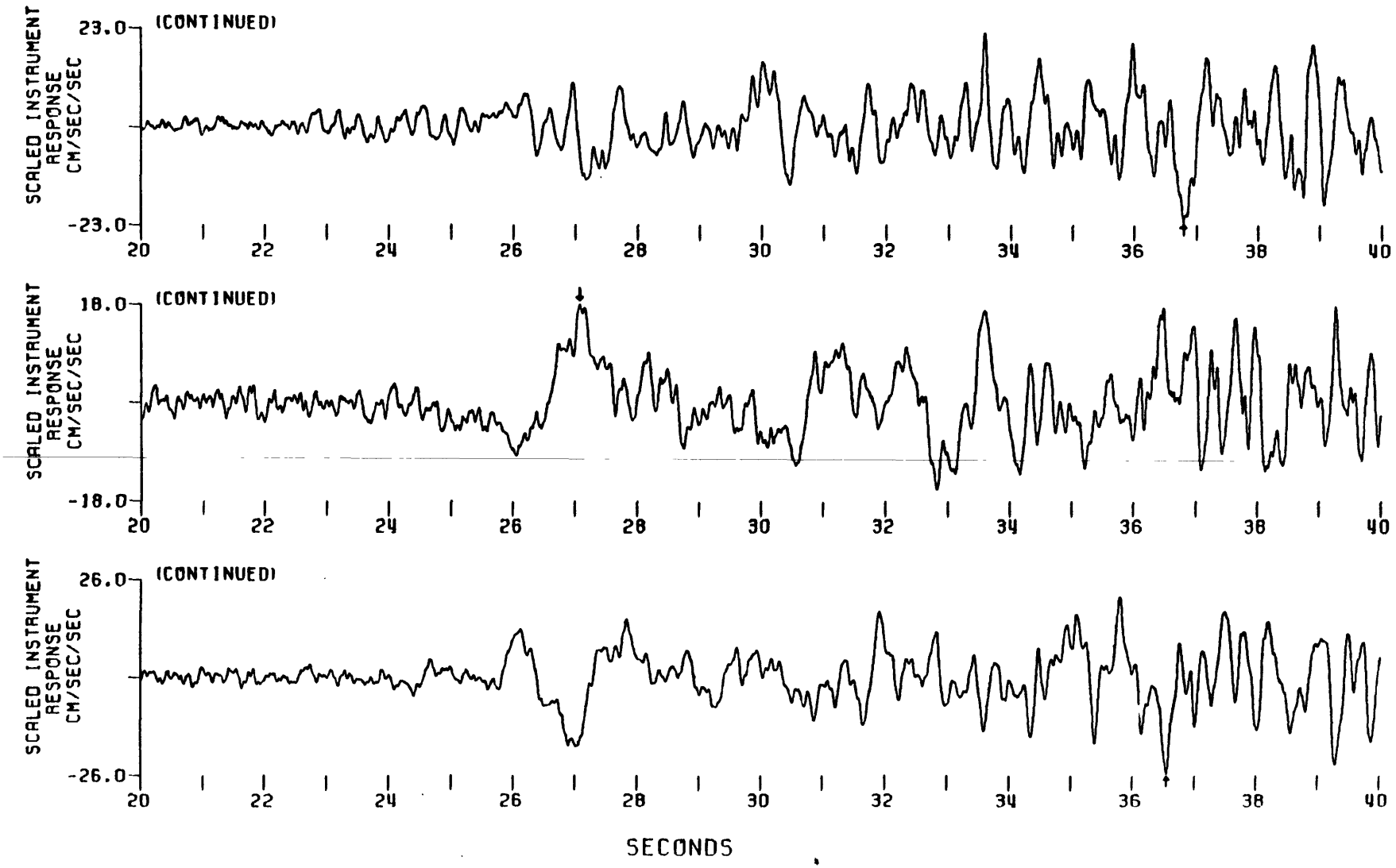
LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT ,
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

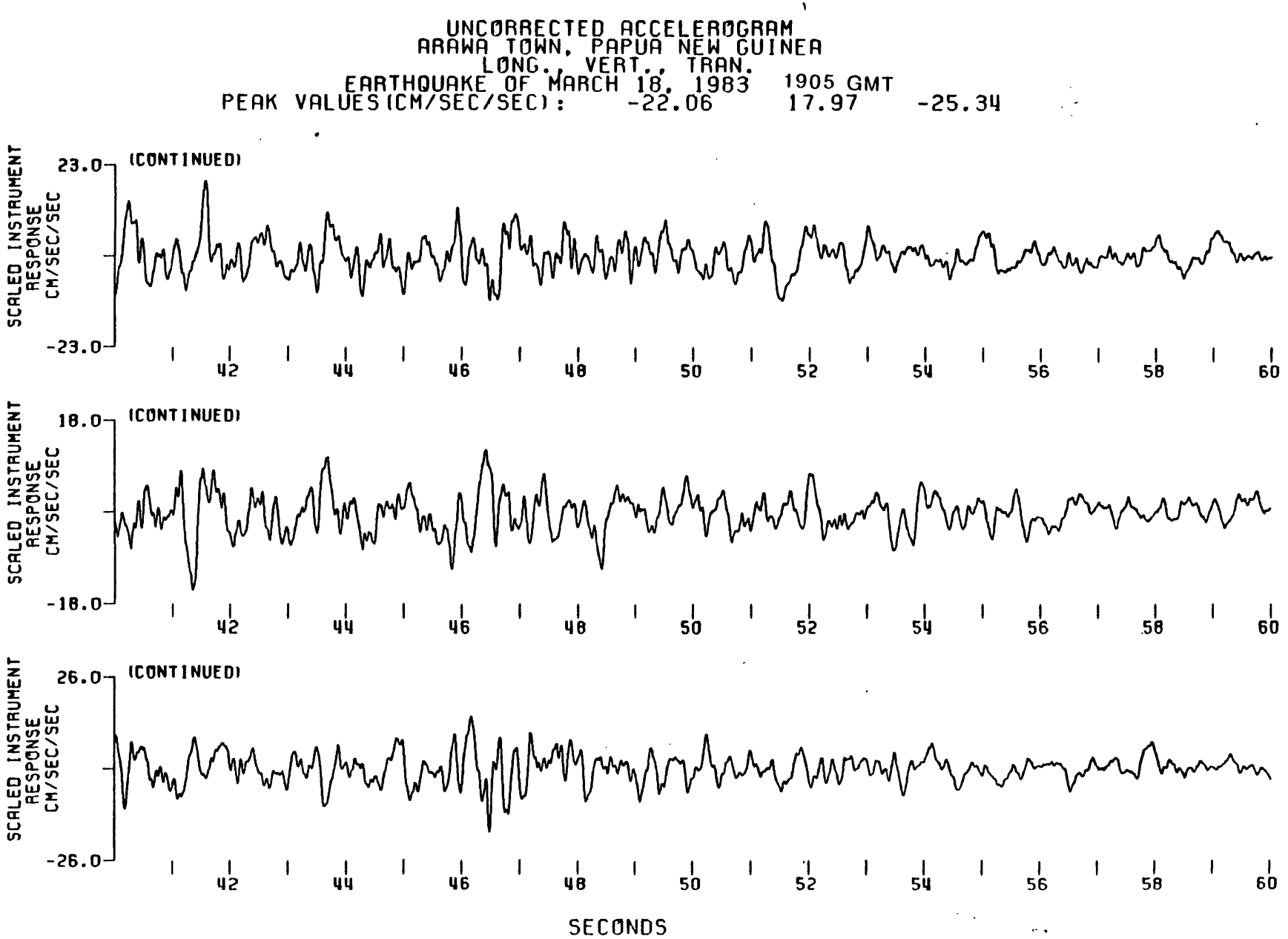


FIGURE

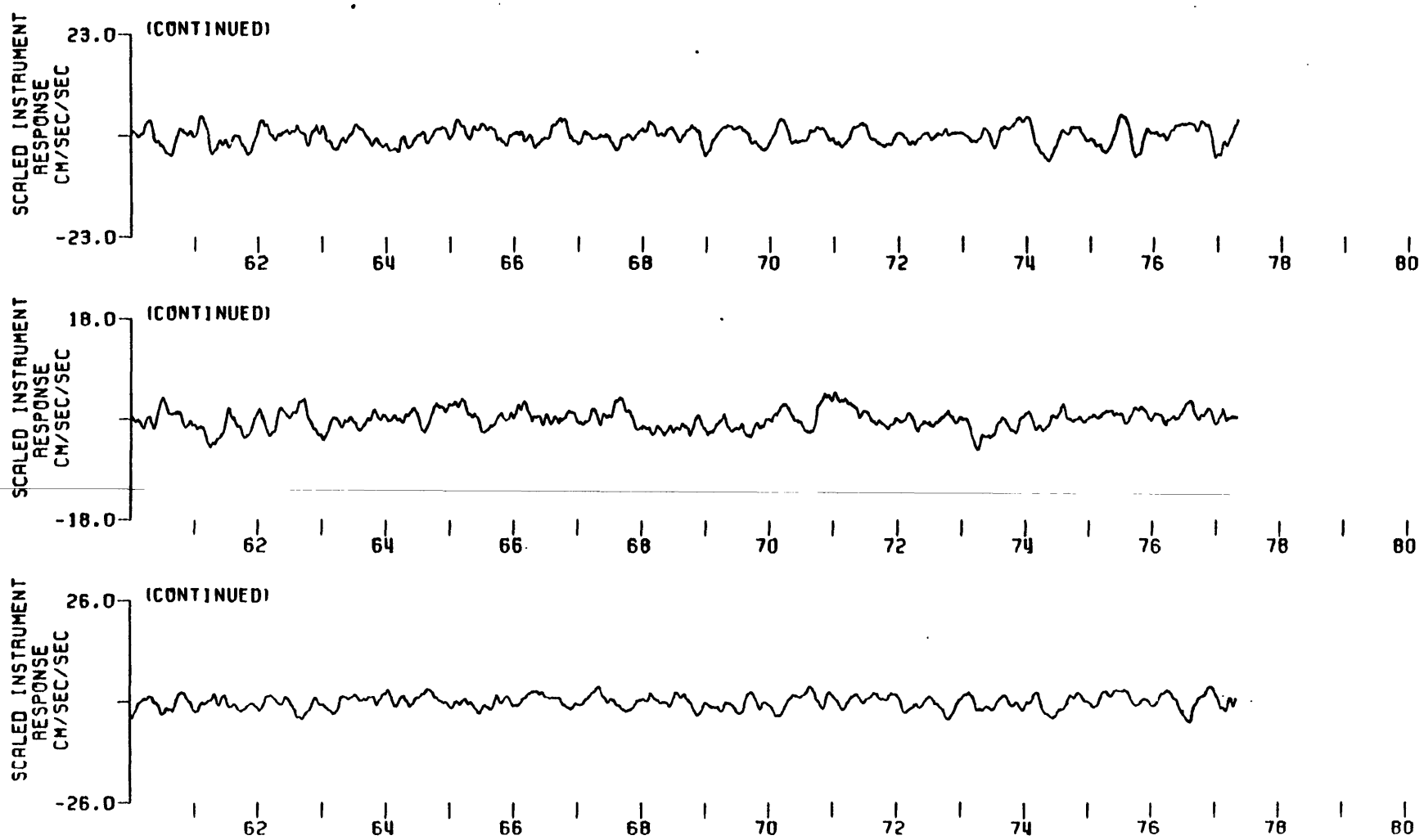
LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BENCH, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF DECEMBER 13, 1981 1324 GMT .
BUTTERWORTH FILTER AT 1.0 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 50.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

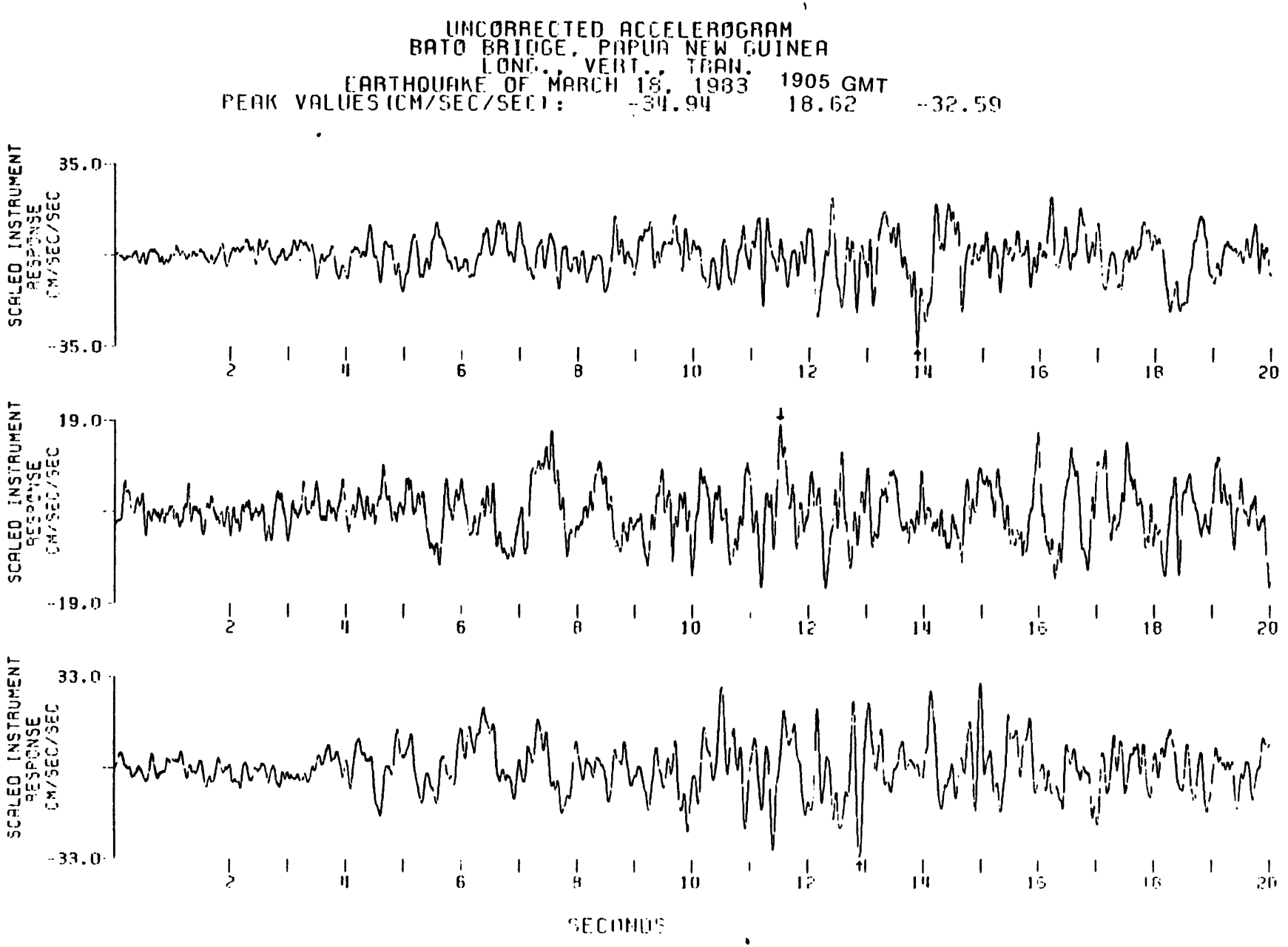

UNCORRECTED ACCELEROGRAM
ARAWA TOWN, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): -22.06 17.97 -25.34
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
23.0
-23.0
18.0
-18.0
26.0
-26.0
2
4
6
8
10
12
14
16
18
20
SECONDS

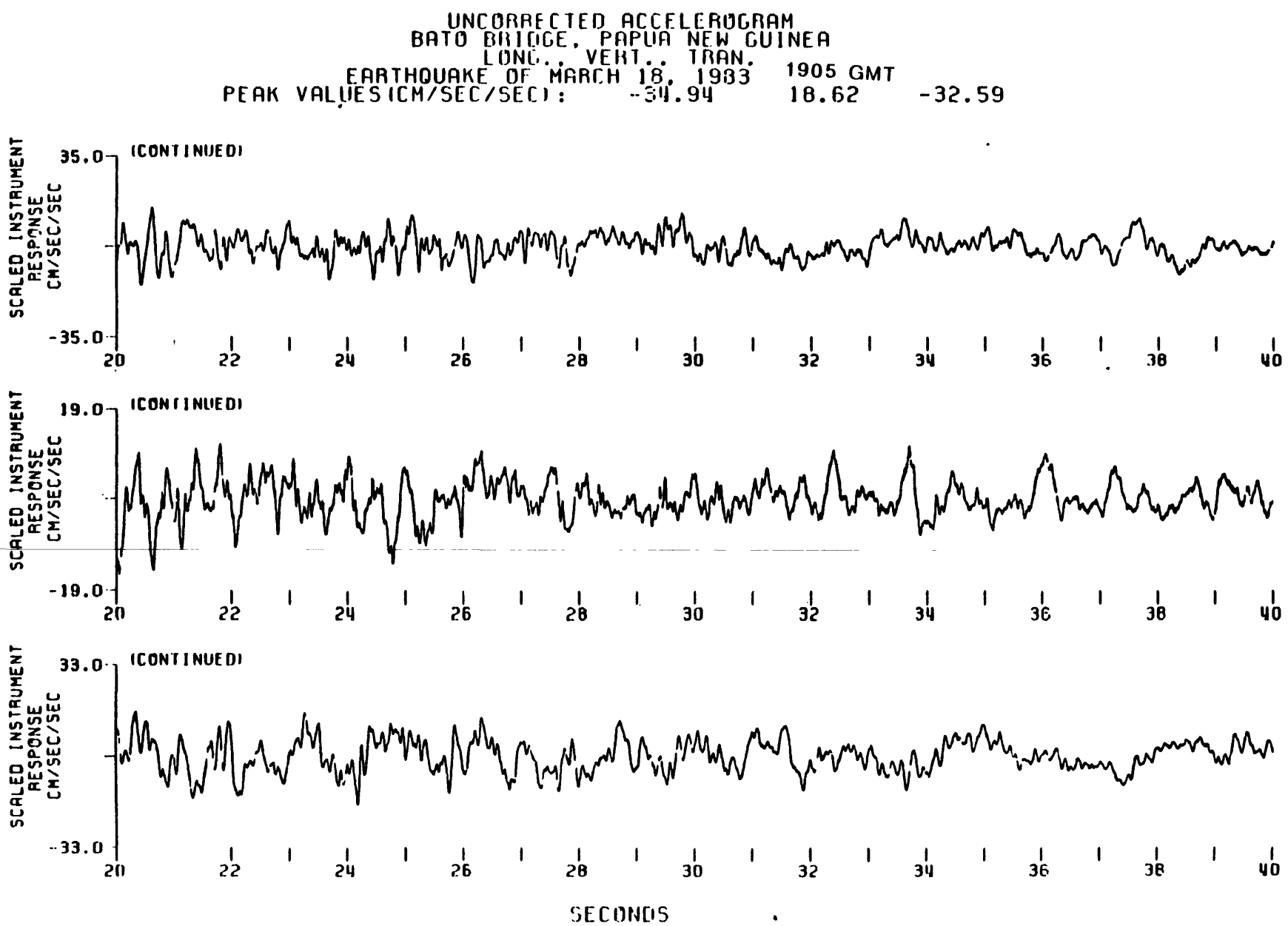

UNCORRECTED ACCELEROGRAM
ARAWA TOWN, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): -22.06 17.97 -25.34
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
23.0
-23.0
(CONTINUED)
18.0
-18.0
26.0
-26.0
20
22
24
26
28
30
32
34
36
38
40
SECONDS

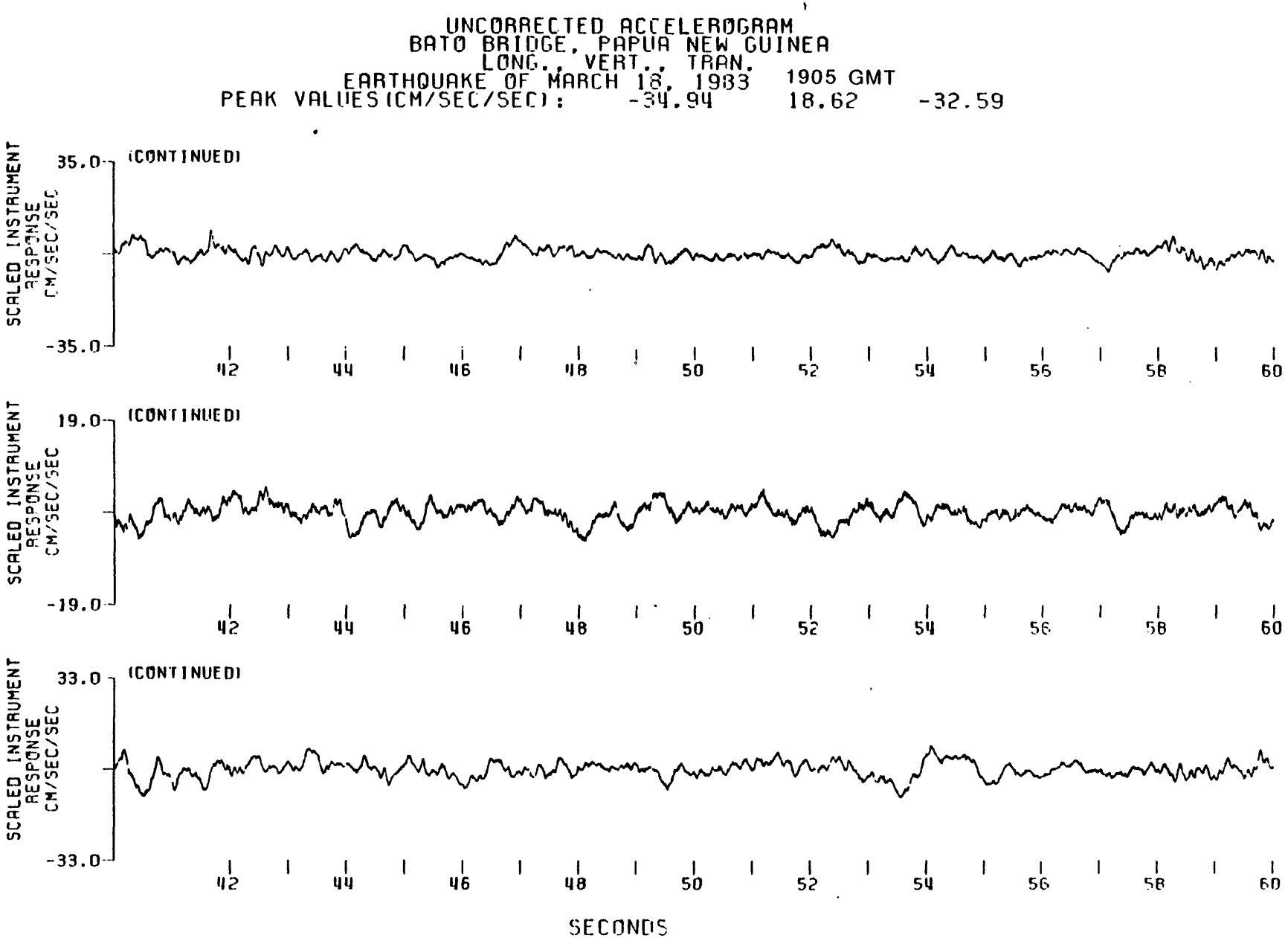

UNCORRECTED ACCELEROGRAM
ARAWA TOWN, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): -22.06 17.97 -25.34
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
23.0
-23.0
(CONTINUED)
18.0
-18.0
26.0
-26.0
42
44
46
48
50
52
54
56
58
60
SECONDS

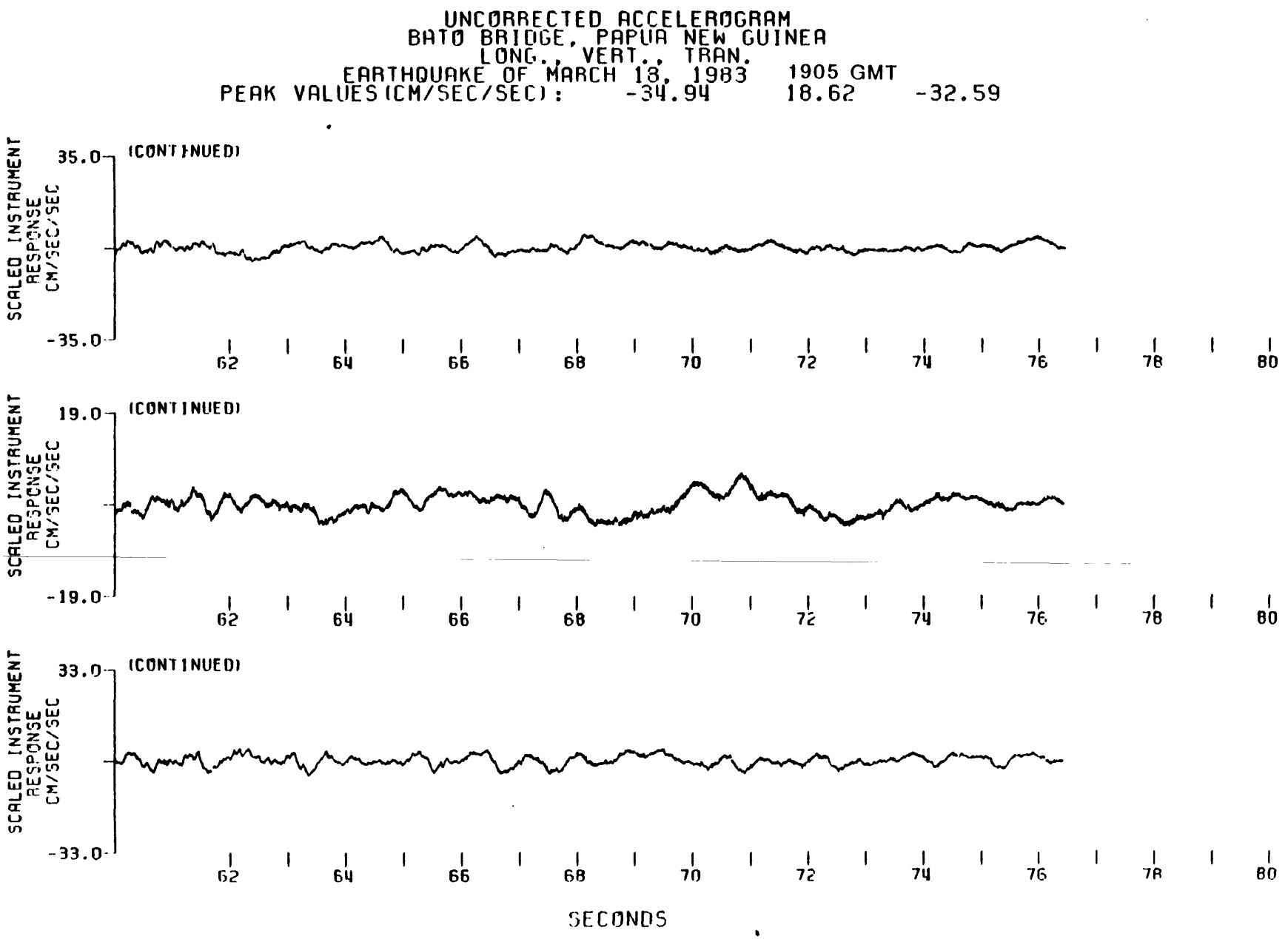
UNCORRECTED ACCELEROGRAM
ARAWA TOWN, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES (CM/SEC/SEC): -22.06 17.97 -25.34

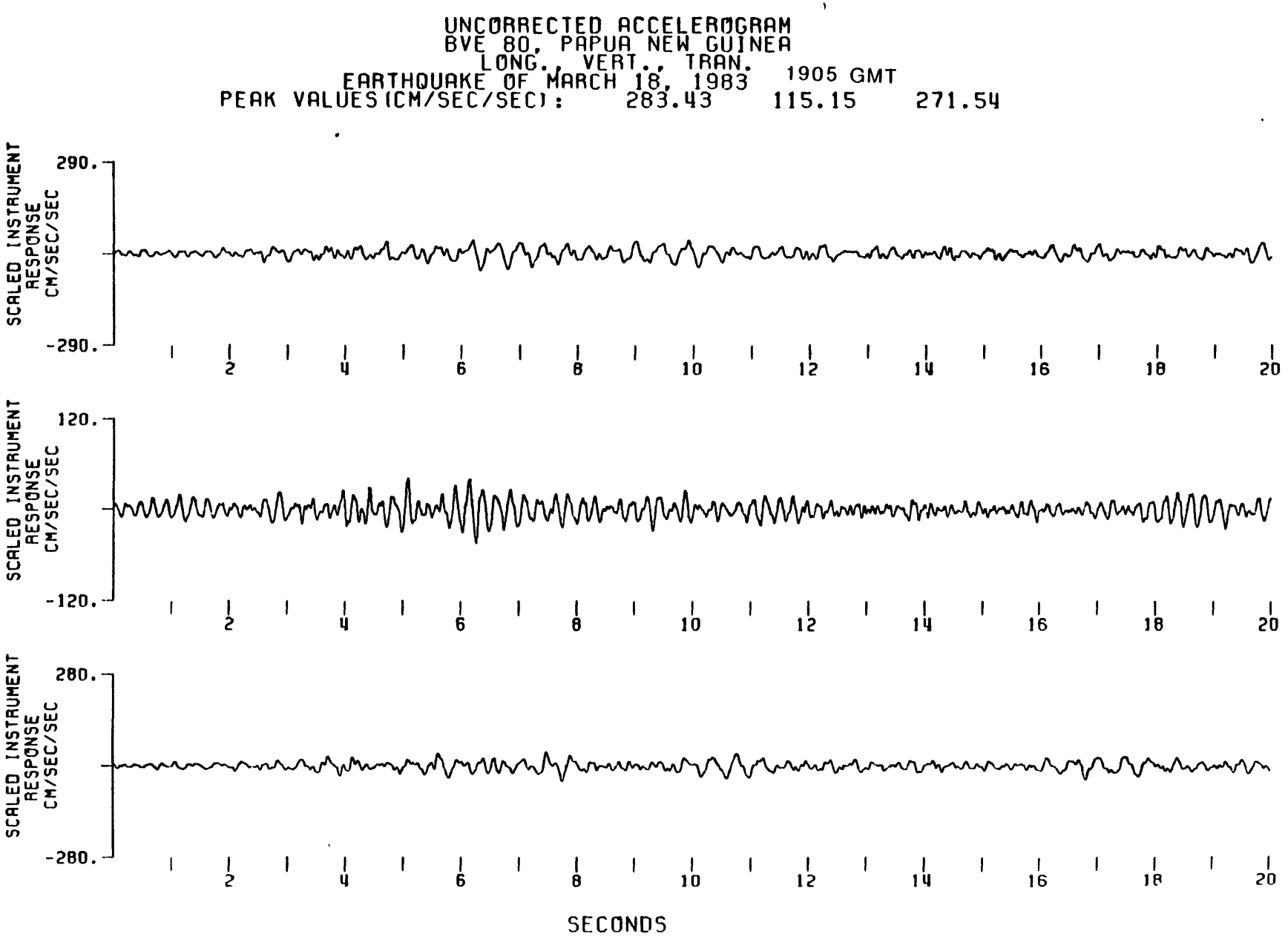



UNCORRECTED ACCELEROGRAM
BATO BRIDGE, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): -34.94 18.62 -32.59
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
35.0
-35.0
19.0
-19.0
33.0
-33.0
2
4
6
8
10
12
14
16
18
20
SECONDS

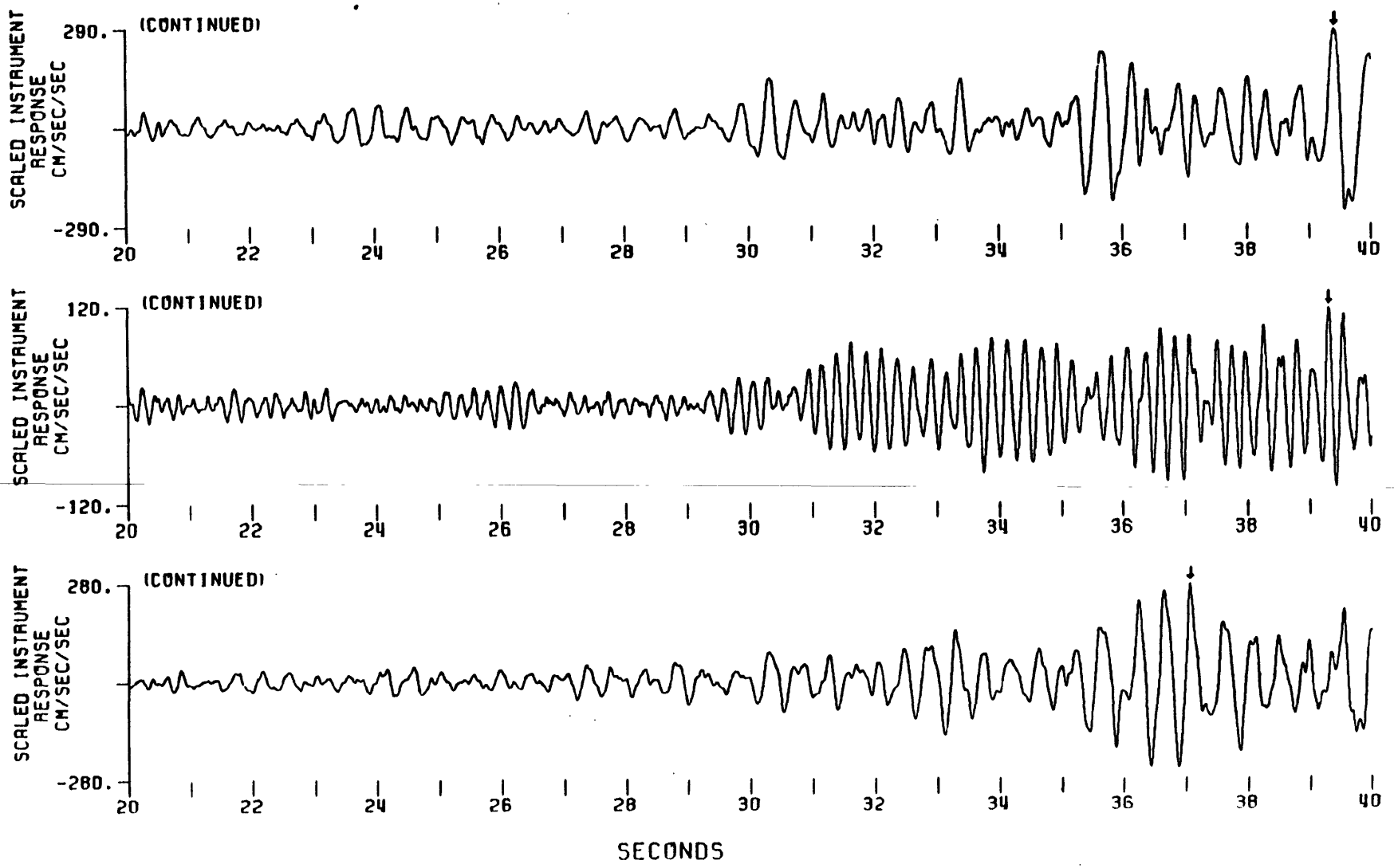

UNCORRECTED ACCELEROGRAM
BATO BRIDGE, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES (CM/SEC/SEC): -34.94 18.62 -32.59
(CONTINUED)
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
35.0
-35.0
19.0
-19.0
33.0
-33.0
20
22
24
26
28
30
32
34
36
38
40
SECONDS


UNCORRECTED ACCELEROGRAM
BATO BRIDGE, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): -34.94 18.62 -32.59
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
35.0
(CONTINUED)
-35.0
19.0
(CONTINUED)
-19.0
33.0
(CONTINUED)
-33.0
42
44
46
48
50
52
54
56
58
60
SECONDS

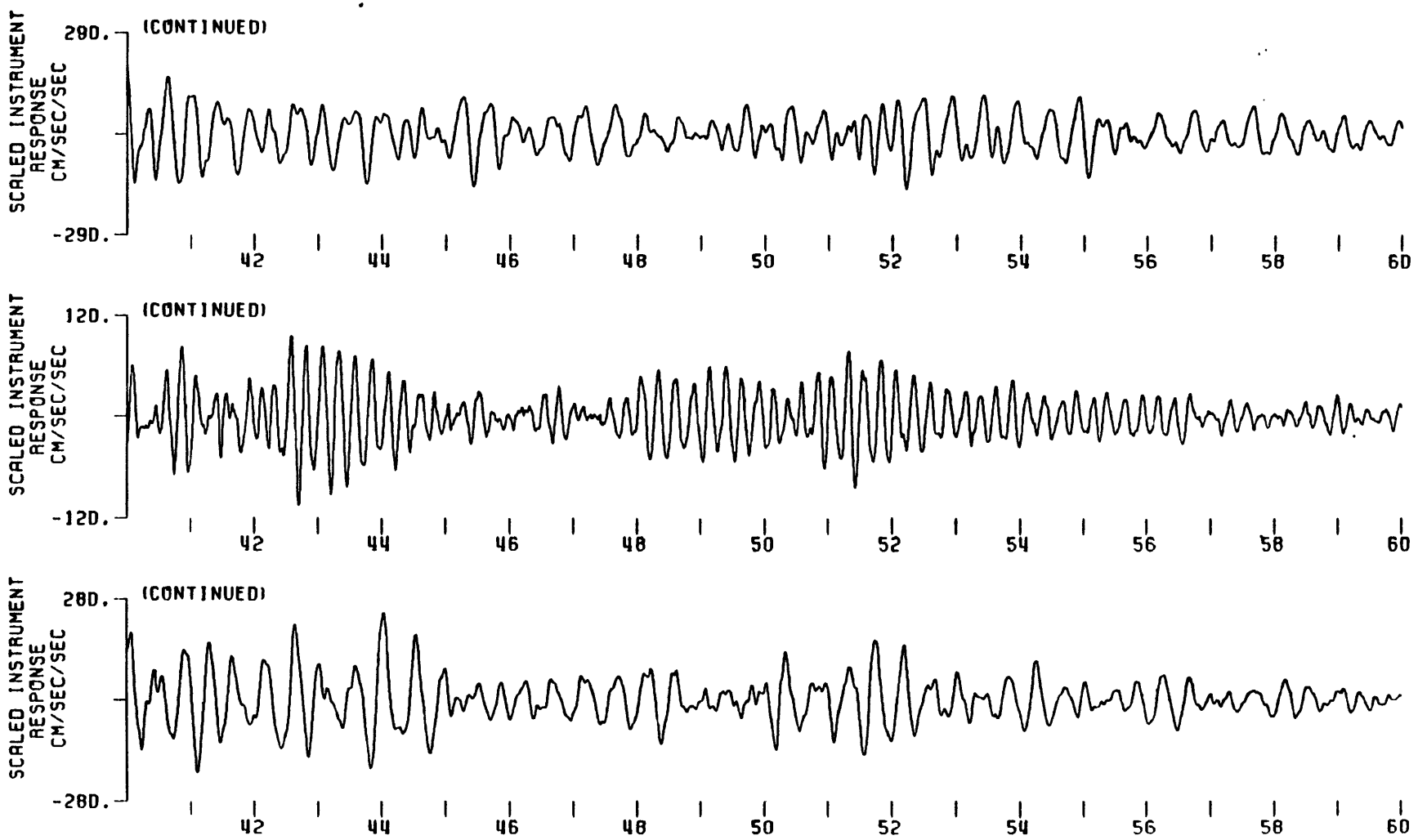

UNCORRECTED ACCELEROGRAM
BATO BRIDGE, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES (CM/SEC/SEC): -34.94 18.62 -32.59
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
35.0
(CONTINUED)
-35.0
19.0
(CONTINUED)
-19.0
33.0
(CONTINUED)
-33.0
62
64
66
68
70
72
74
76
78
80
SECONDS

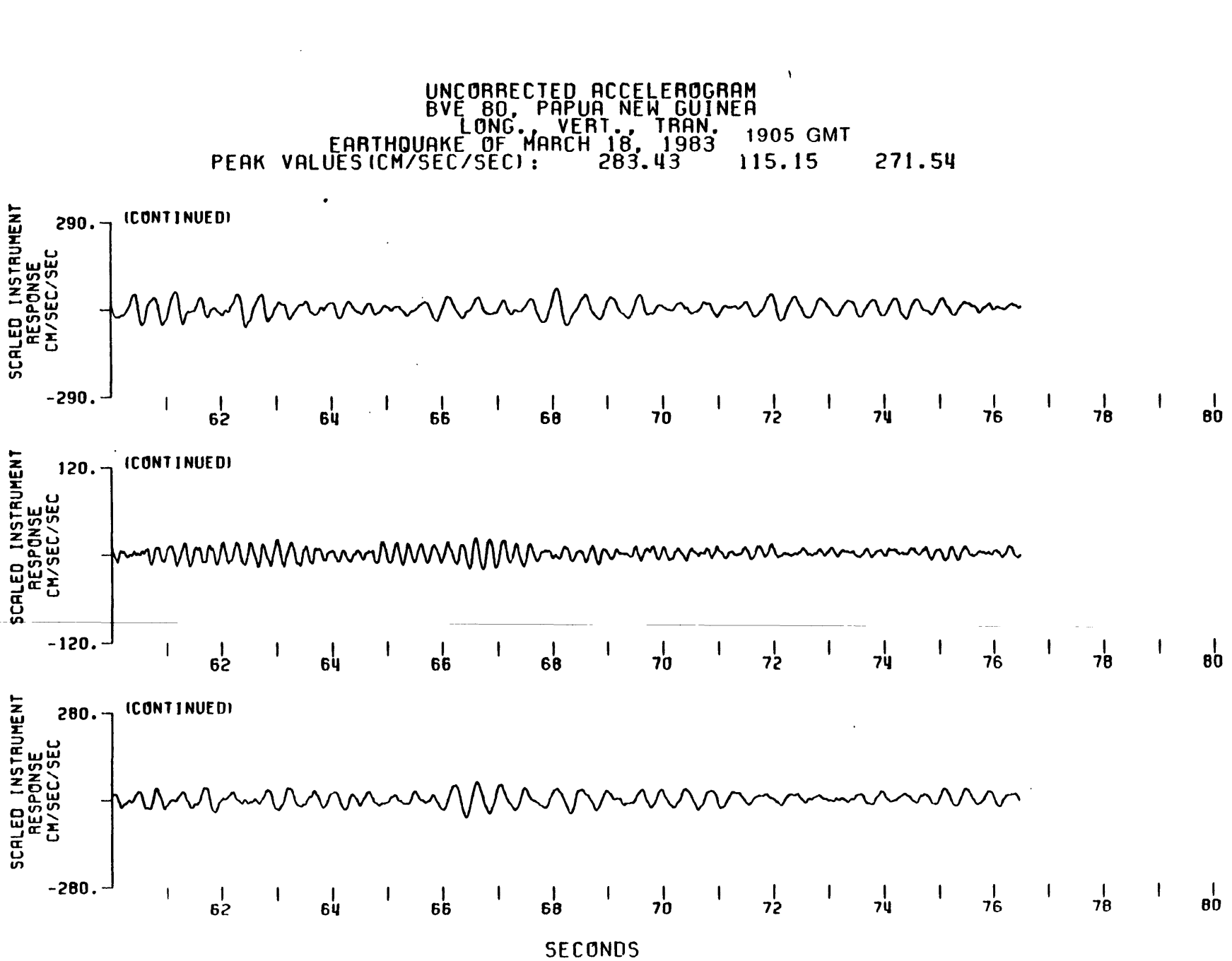

UNCORRECTED ACCELEROGRAM
BVE 80, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): 283.43 115.15 271.54
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
290.
-290.
120.
-120.
280.
-280.
2
4
6
8
10
12
14
16
18
20
SECONDS

UNCORRECTED ACCELEROGRAM
BVE 80, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES (CM/SEC/SEC): 283.43 115.15 271.54

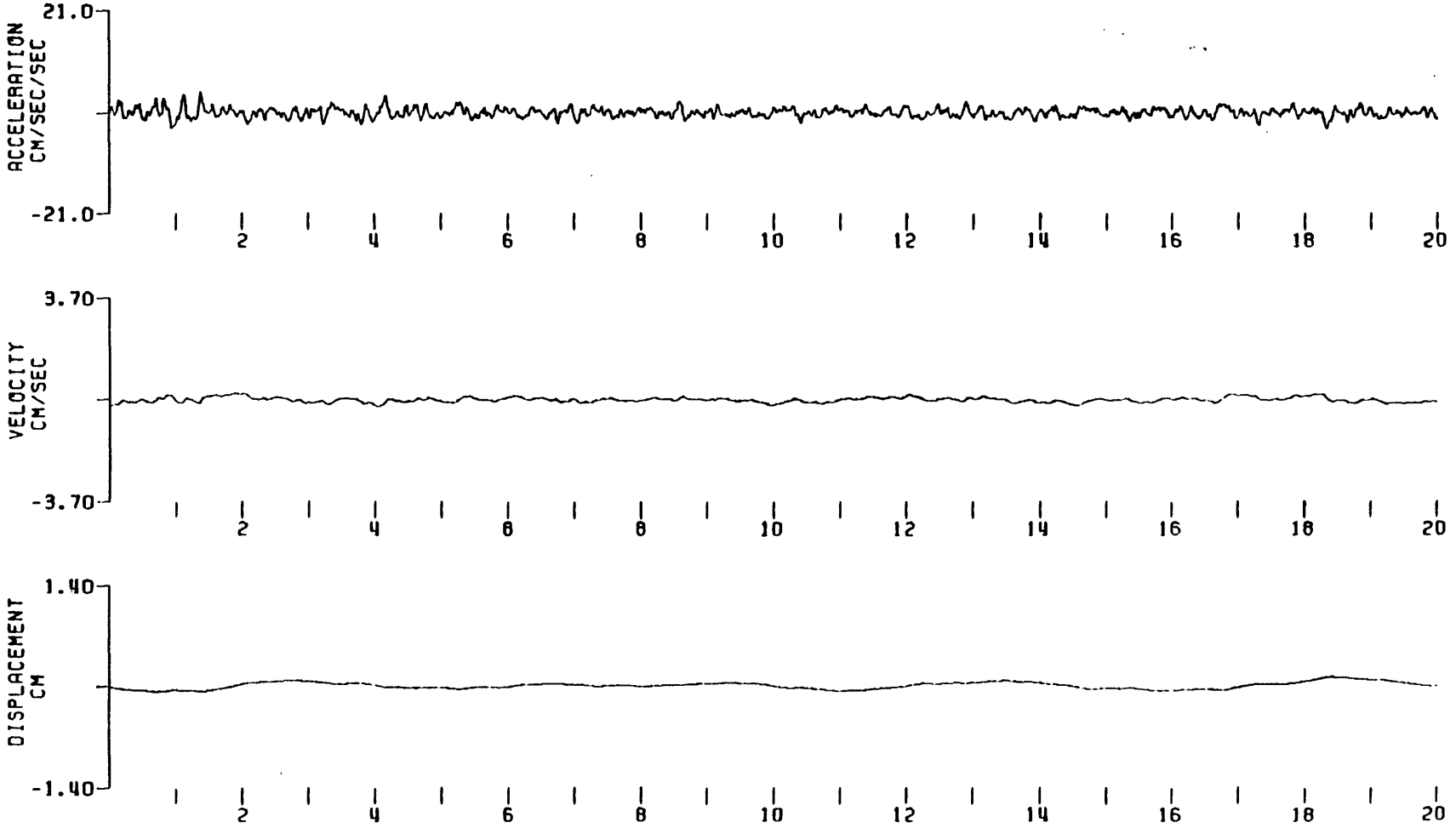


UNCORRECTED ACCELEROGRAM
BVE 80, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): 283.43 115.15 271.54

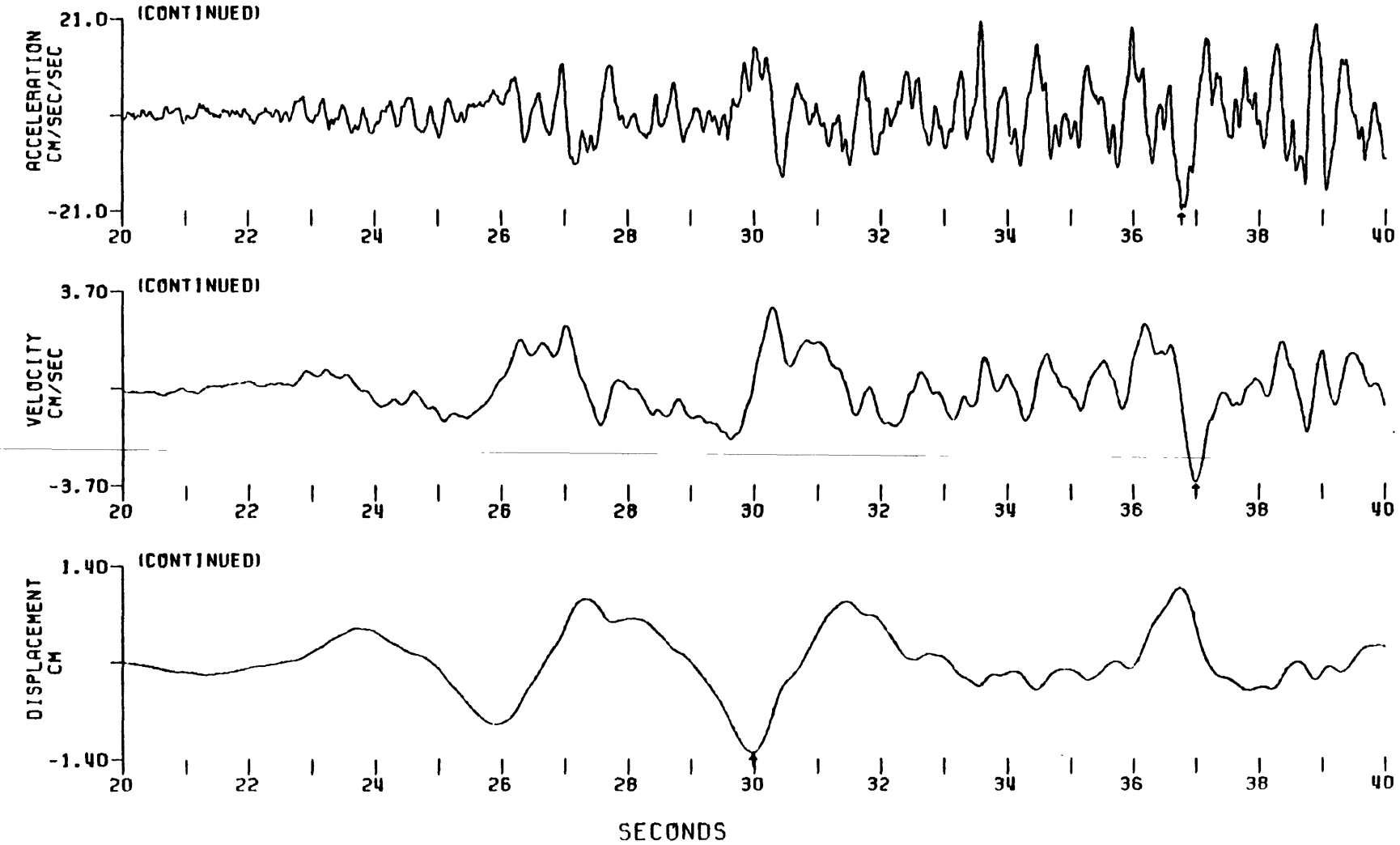



UNCORRECTED ACCELEROGRAM
BVE 80, PAPUA NEW GUINEA
LONG., VERT., TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
PEAK VALUES(CM/SEC/SEC): 283.43 115.15 271.54
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
290.
(CONTINUED)
-290.
120.
(CONTINUED)
-120.
280.
(CONTINUED)
-280.
62
64
66
68
70
72
74
76
78
80
SECONDS

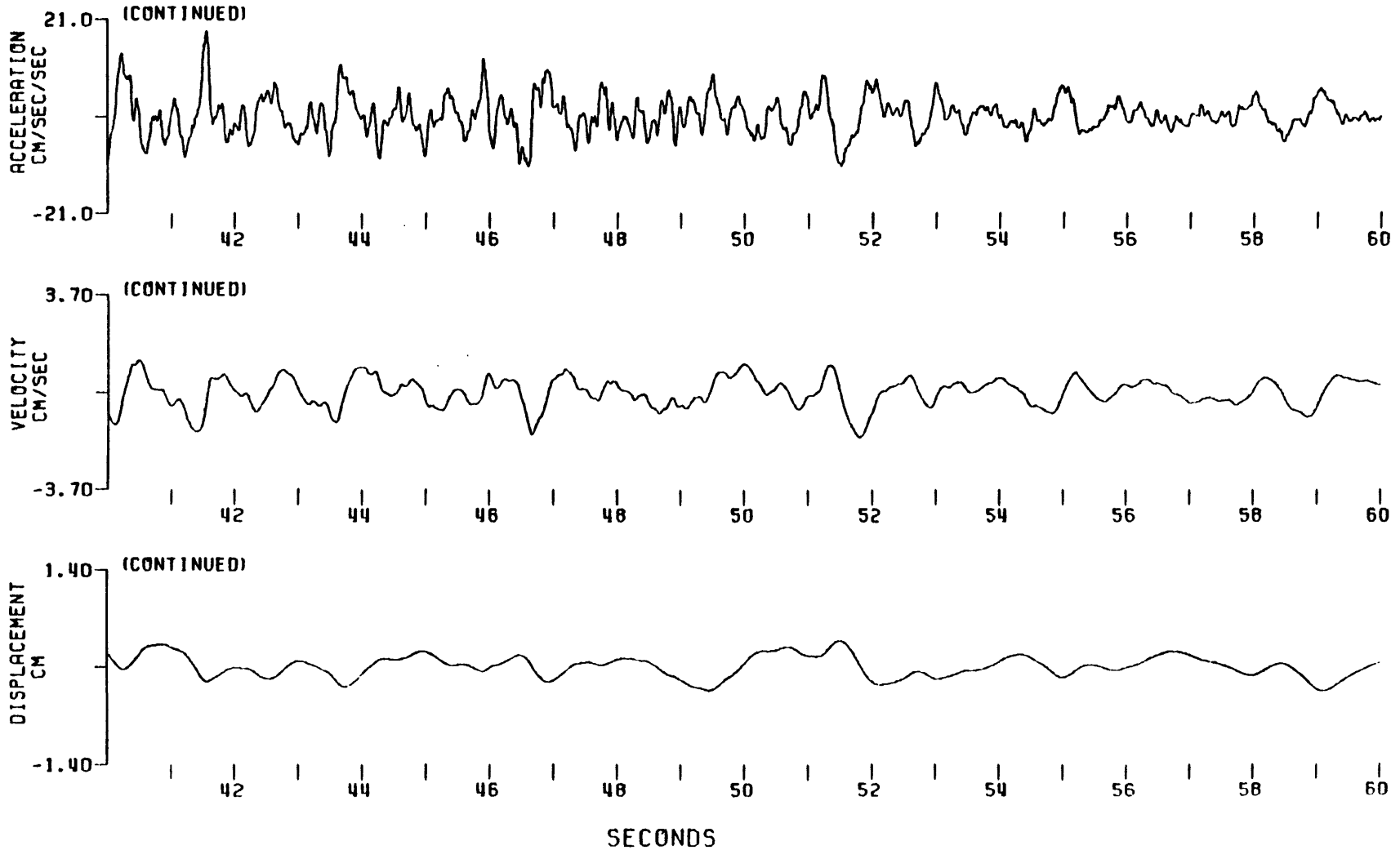
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-20.99 CM/SEC/SEC, VELOCITY=-3.60 CM/SEC, DISPL=-1.31 CM



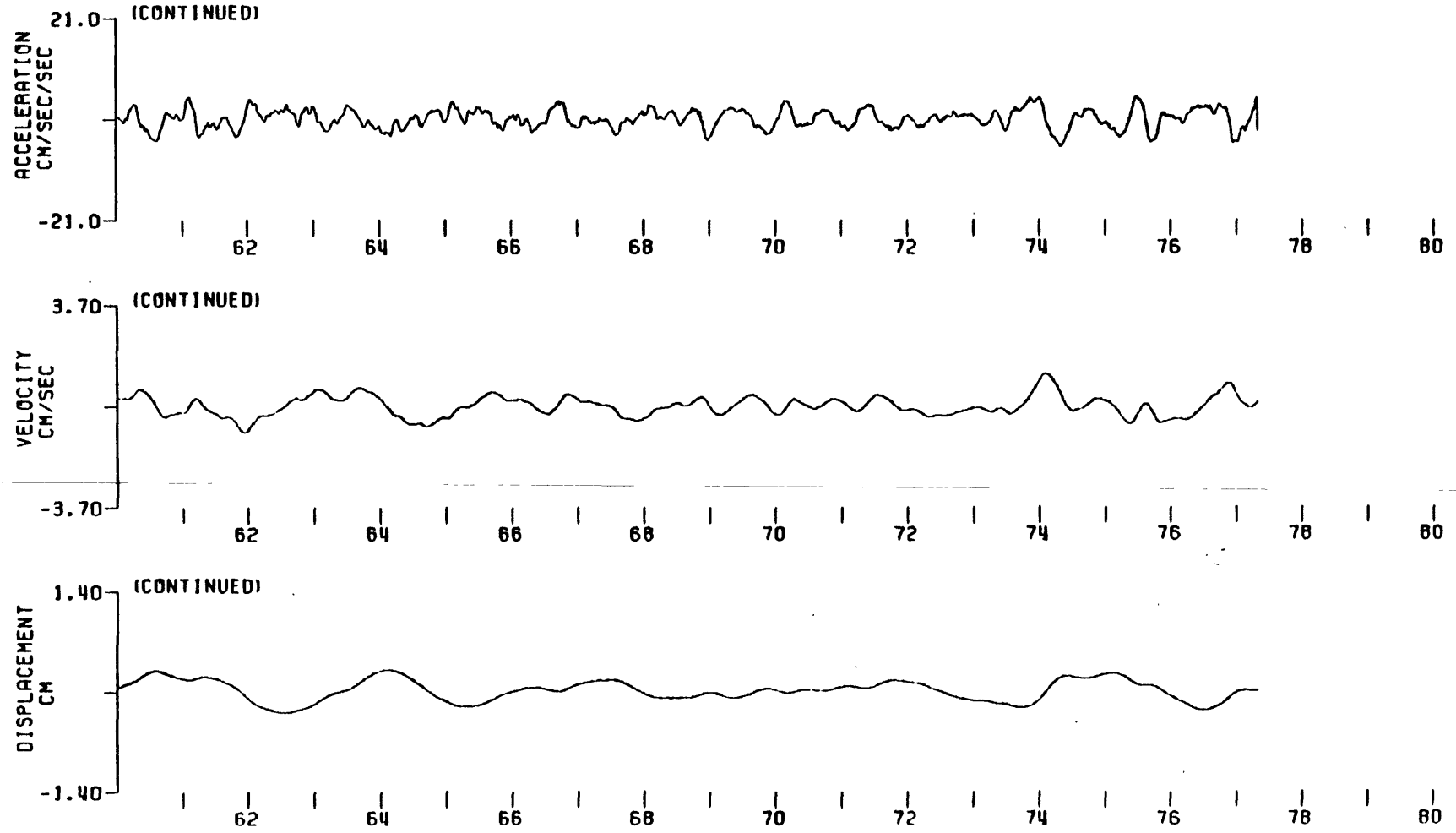
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-20.99 CM/SEC/SEC, VELOCITY=-3.60 CM/SEC, DISPL=-1.31 CM

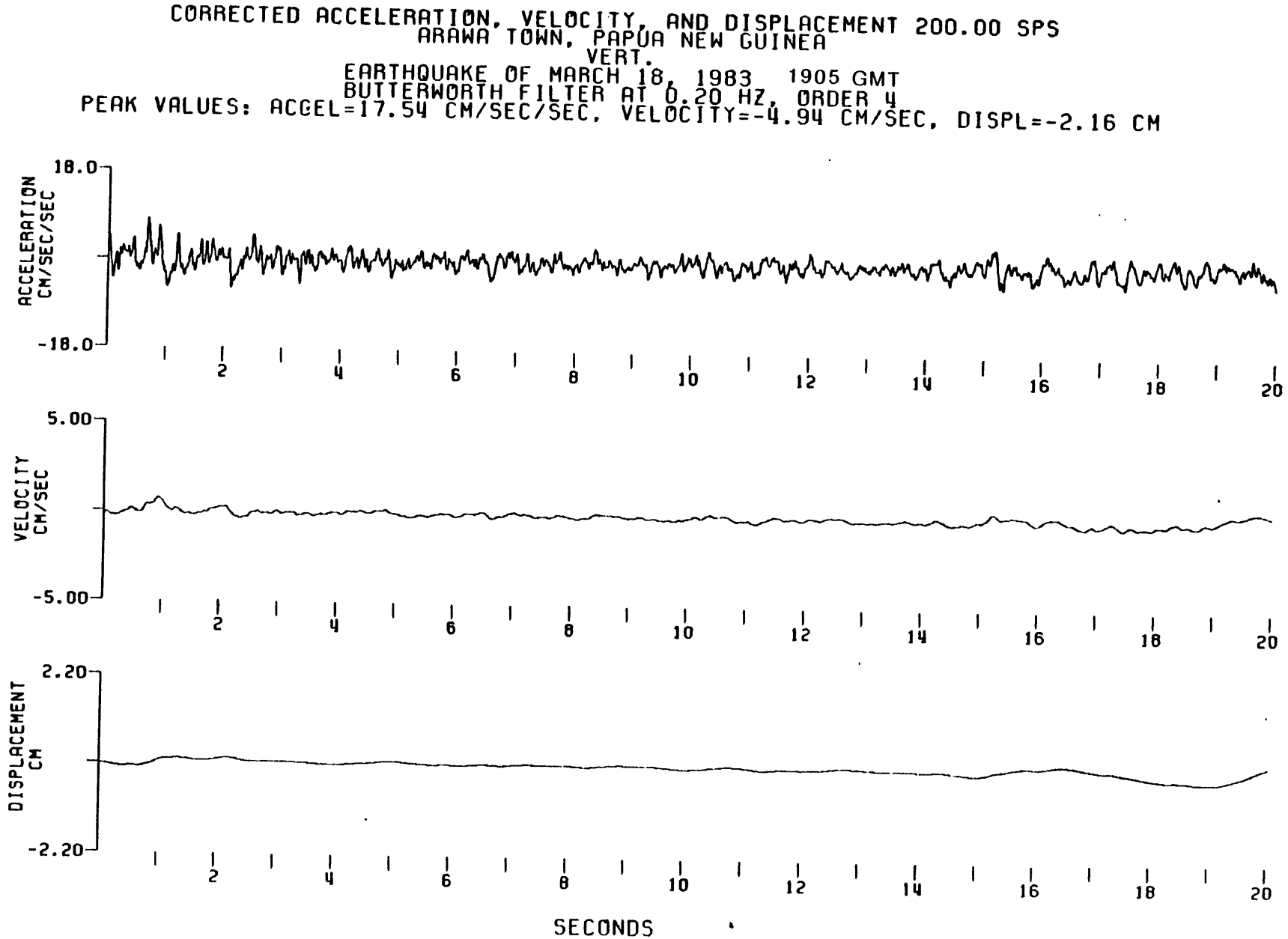


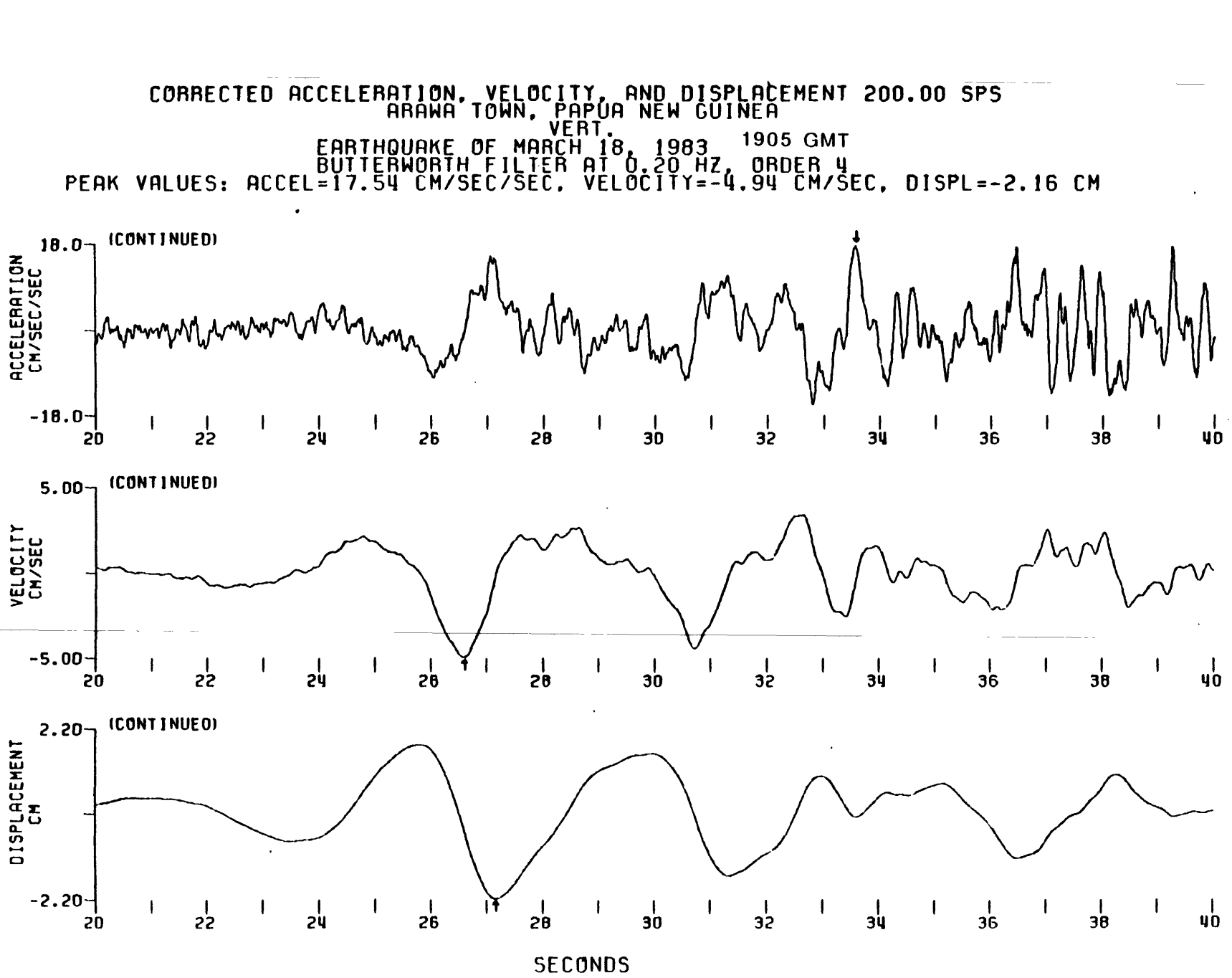
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-20.99 CM/SEC/SEC, VELOCITY=-3.60 CM/SEC, DISPL=-1.31 CM



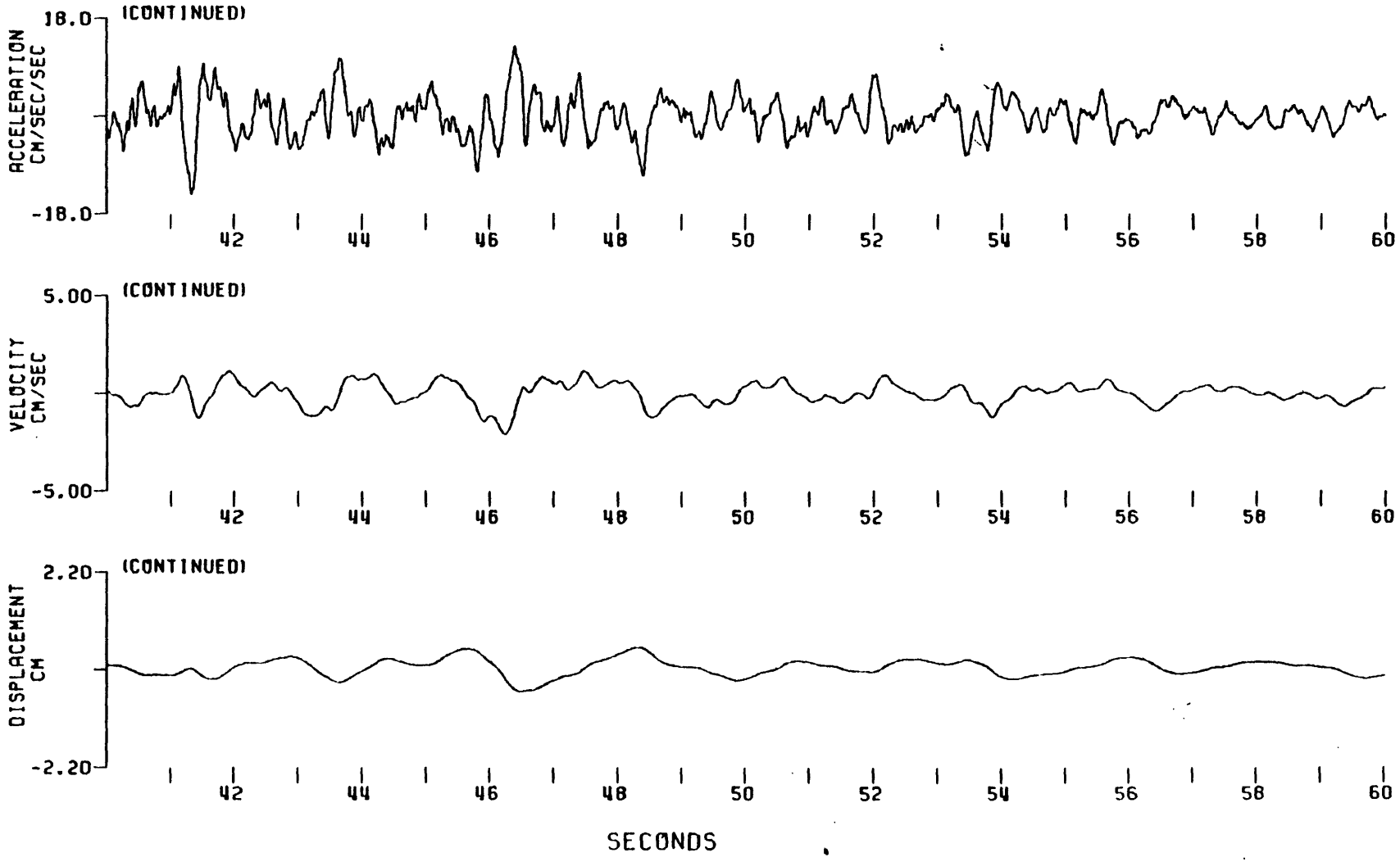
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-20.99 CM/SEC/SEC, VELOCITY=-3.60 CM/SEC, DISPL=-1.31 CM



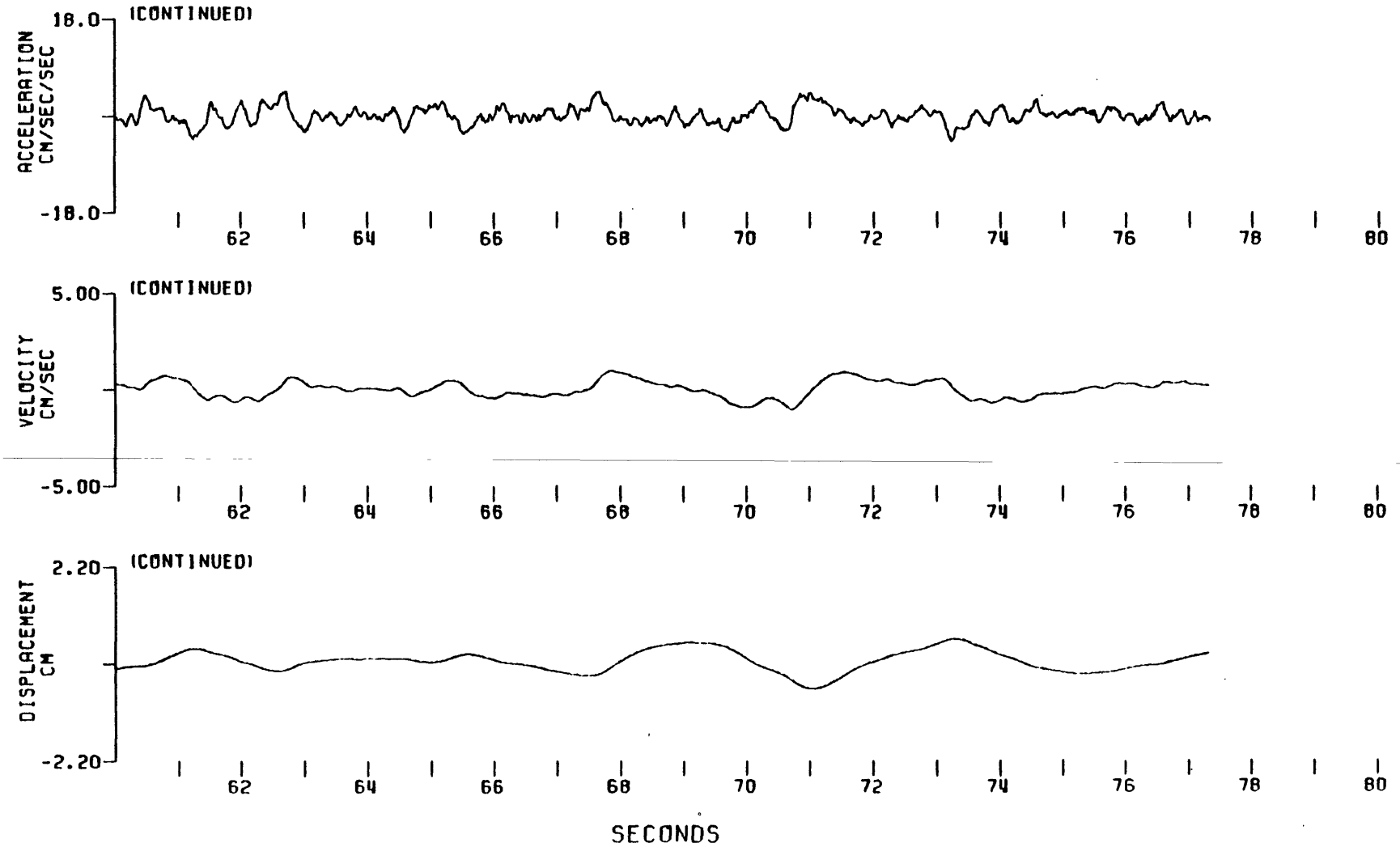

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.54 CM/SEC/SEC, VELOCITY=-4.94 CM/SEC, DISPL=-2.16 CM
ACCELERATION CM/SEC/SEC
18.0
-18.0
VELOCITY CM/SEC
5.00
-5.00
DISPLACEMENT CM
2.20
-2.20
2
4
6
8
10
12
14
16
18
20
SECONDS


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.54 CM/SEC/SEC, VELOCITY=-4.94 CM/SEC, DISPL=-2.16 CM
(CONTINUED)
ACCELERATION CM/SEC/SEC
18.0
-18.0
(CONTINUED)
VELOCITY CM/SEC
5.00
-5.00
(CONTINUED)
DISPLACEMENT CM
2.20
-2.20
20
22
24
26
28
30
32
34
36
38
40
SECONDS

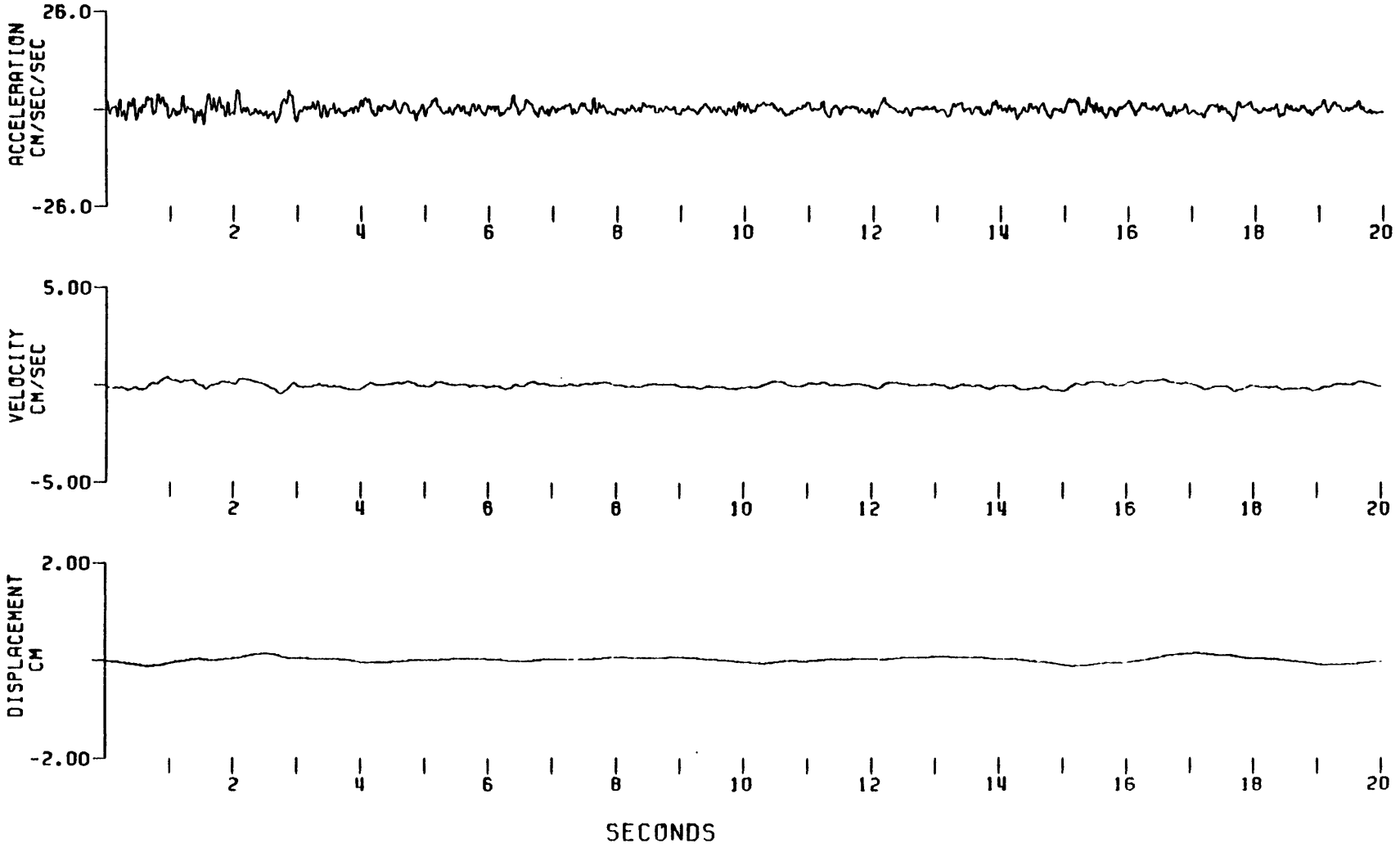
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.54 CM/SEC/SEC, VELOCITY=-4.94 CM/SEC, DISPL=-2.16 CM

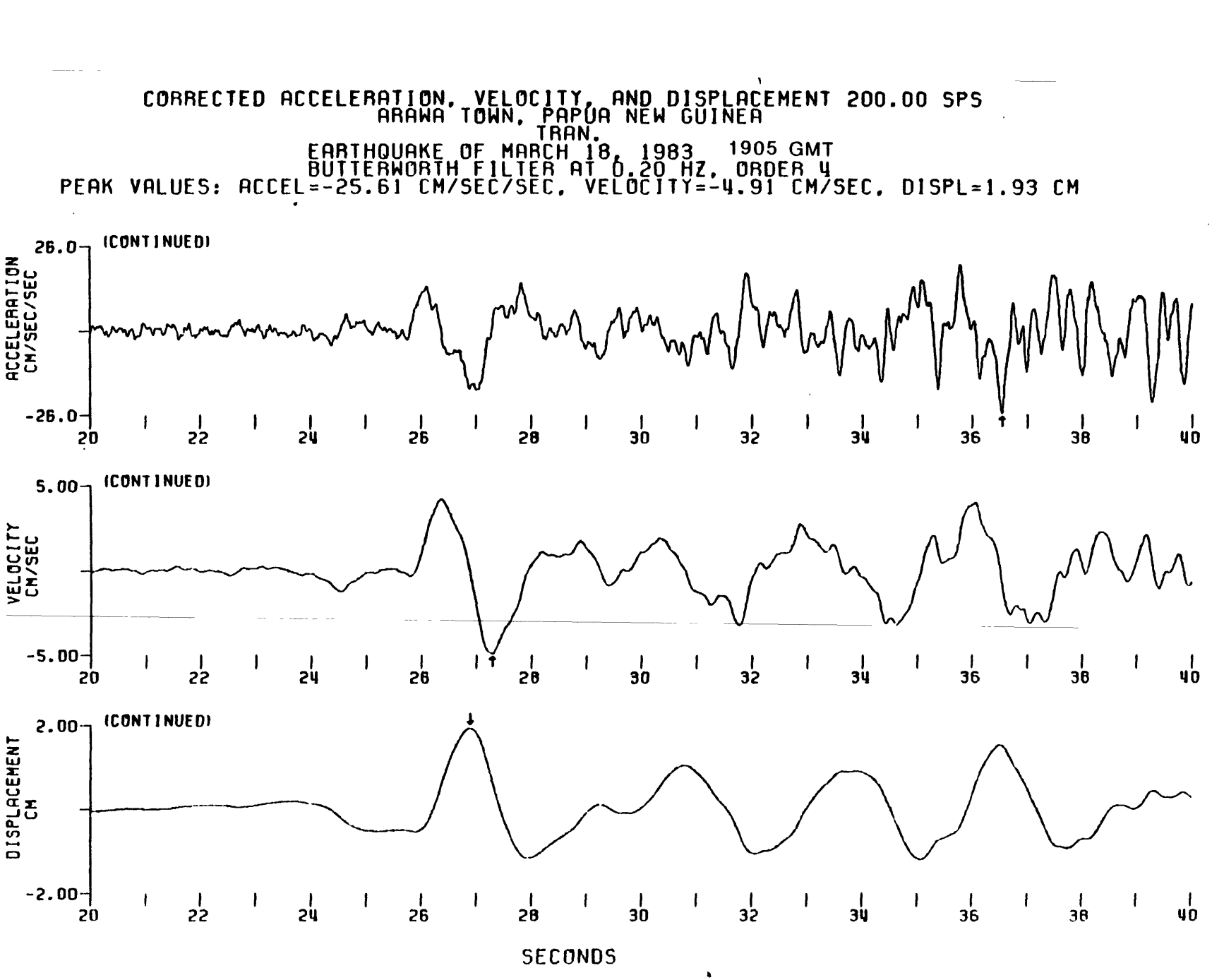


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.54 CM/SEC/SEC, VELOCITY=-4.94 CM/SEC, DISPL=-2.16 CM

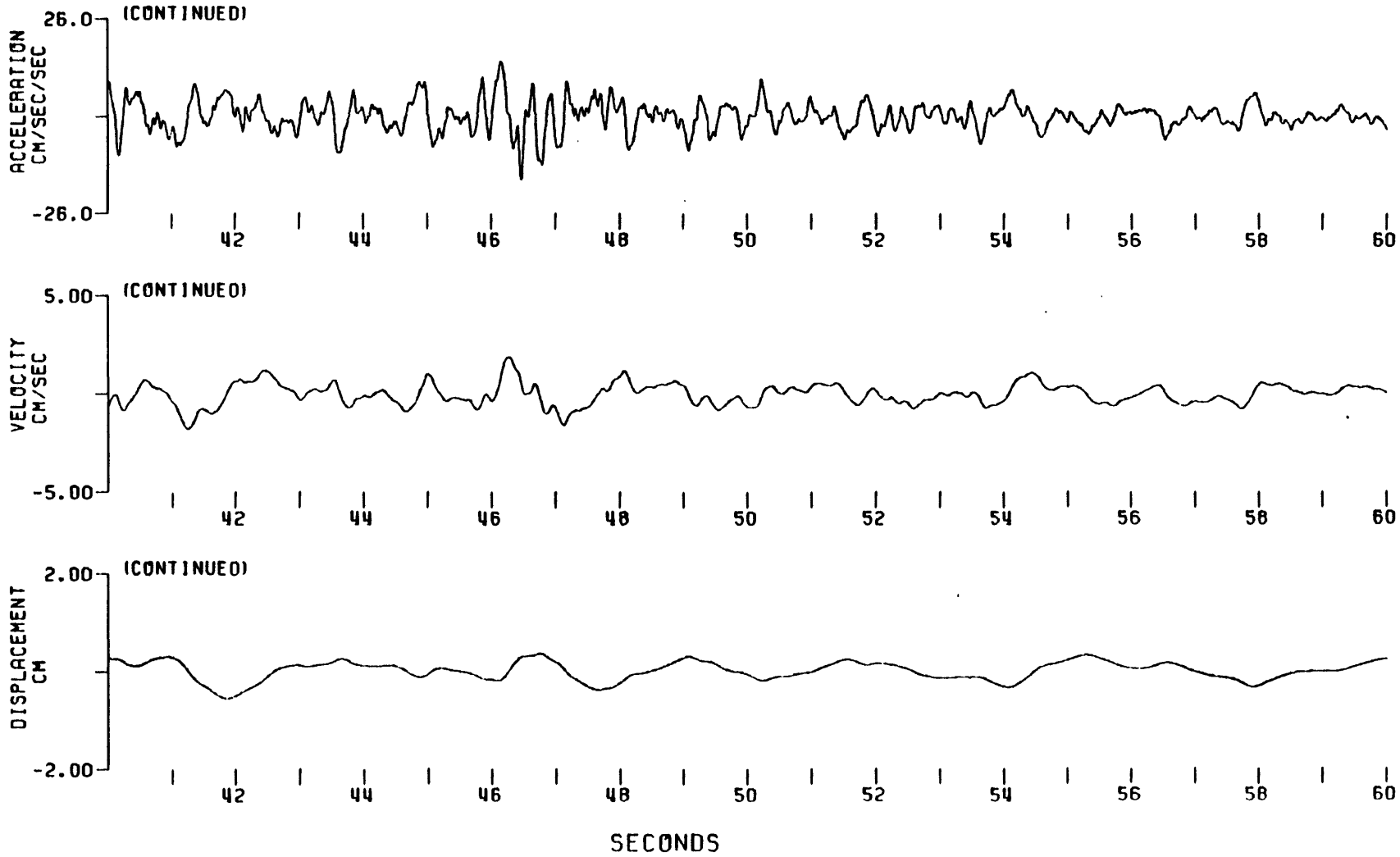


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-25.61 CM/SEC/SEC, VELOCITY=-4.91 CM/SEC, DISPL=1.93 CM

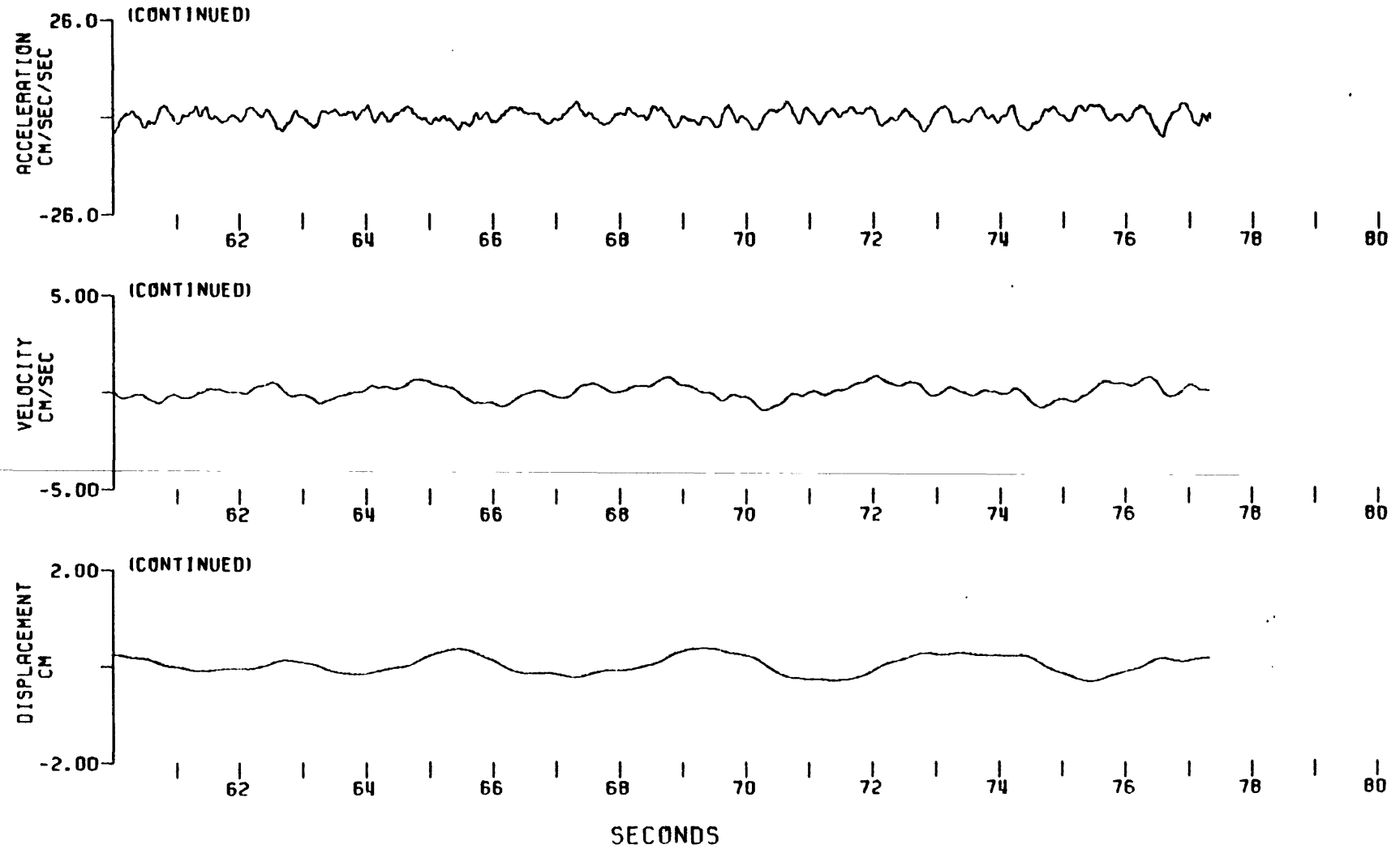


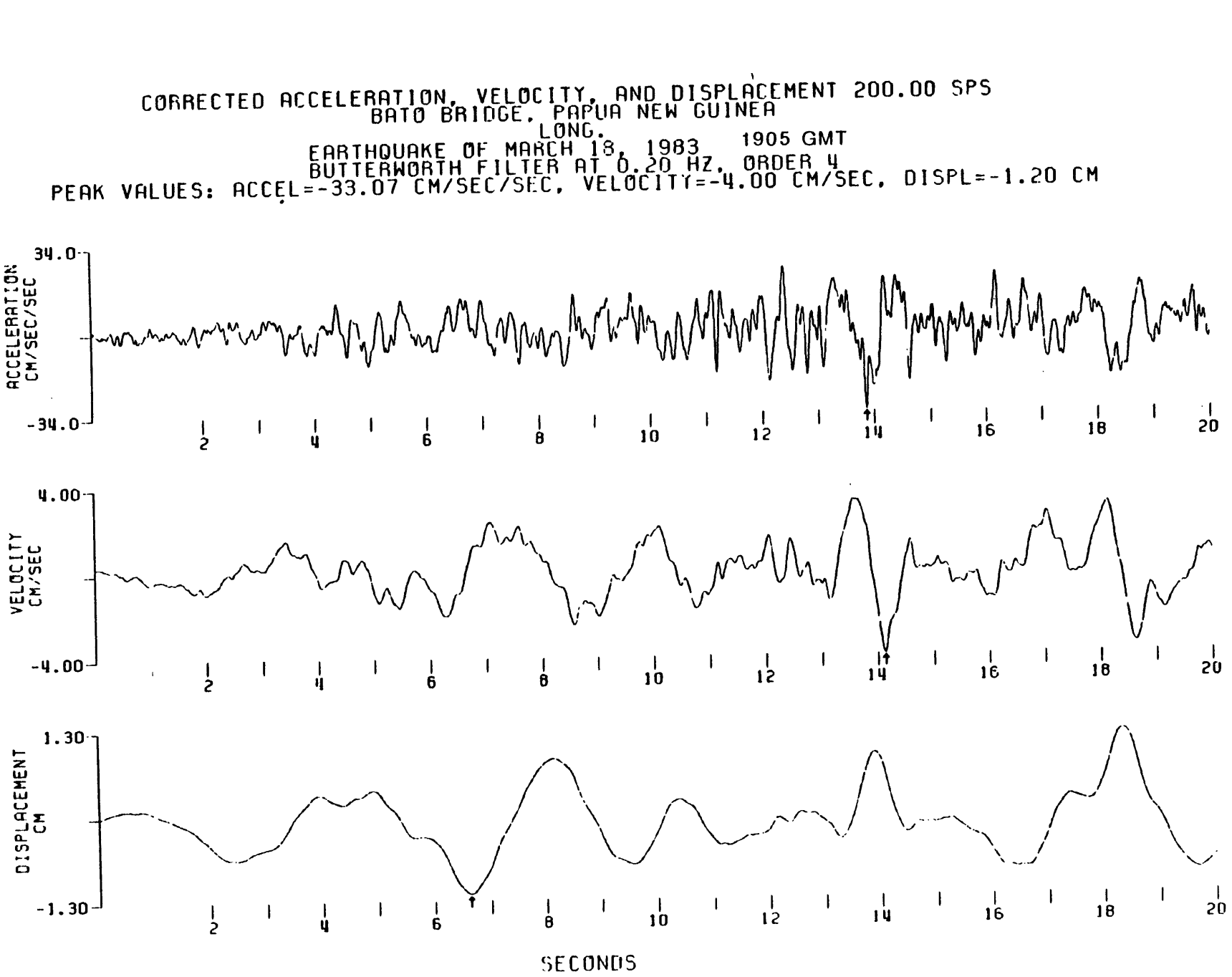

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-25.61 CM/SEC/SEC, VELOCITY=-4.91 CM/SEC, DISPL=1.93 CM
(CONTINUED)
ACCELERATION CM/SEC/SEC
26.0
-26.0
(CONTINUED)
VELOCITY CM/SEC
5.00
-5.00
(CONTINUED)
DISPLACEMENT CM
2.00
-2.00
20
22
24
26
28
30
32
34
36
38
40
SECONDS

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-25.61 CM/SEC/SEC, VELOCITY=-4.91 CM/SEC, DISPL=1.93 CM

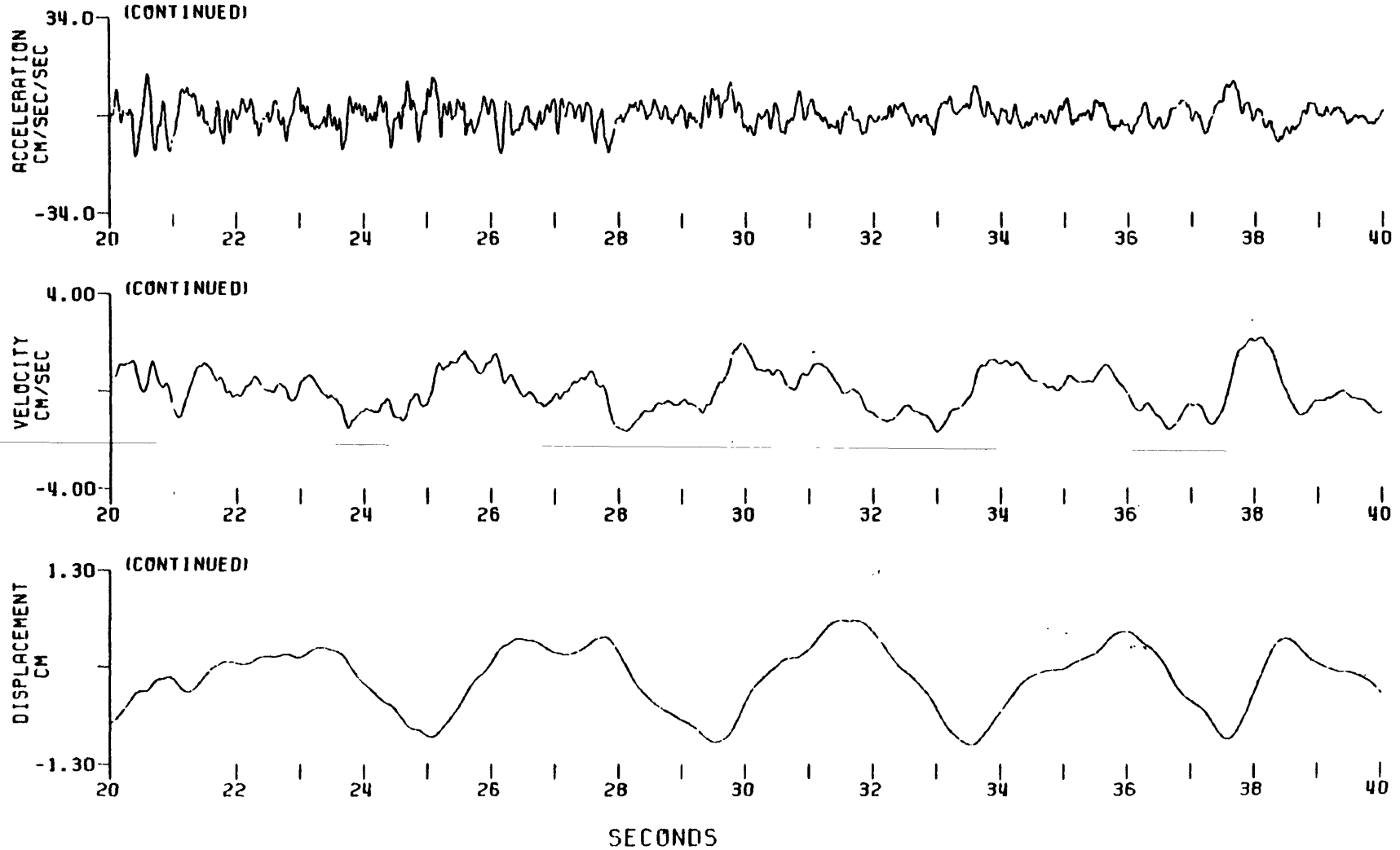


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-25.61 CM/SEC/SEC, VELOCITY=-4.91 CM/SEC, DISPL=1.93 CM

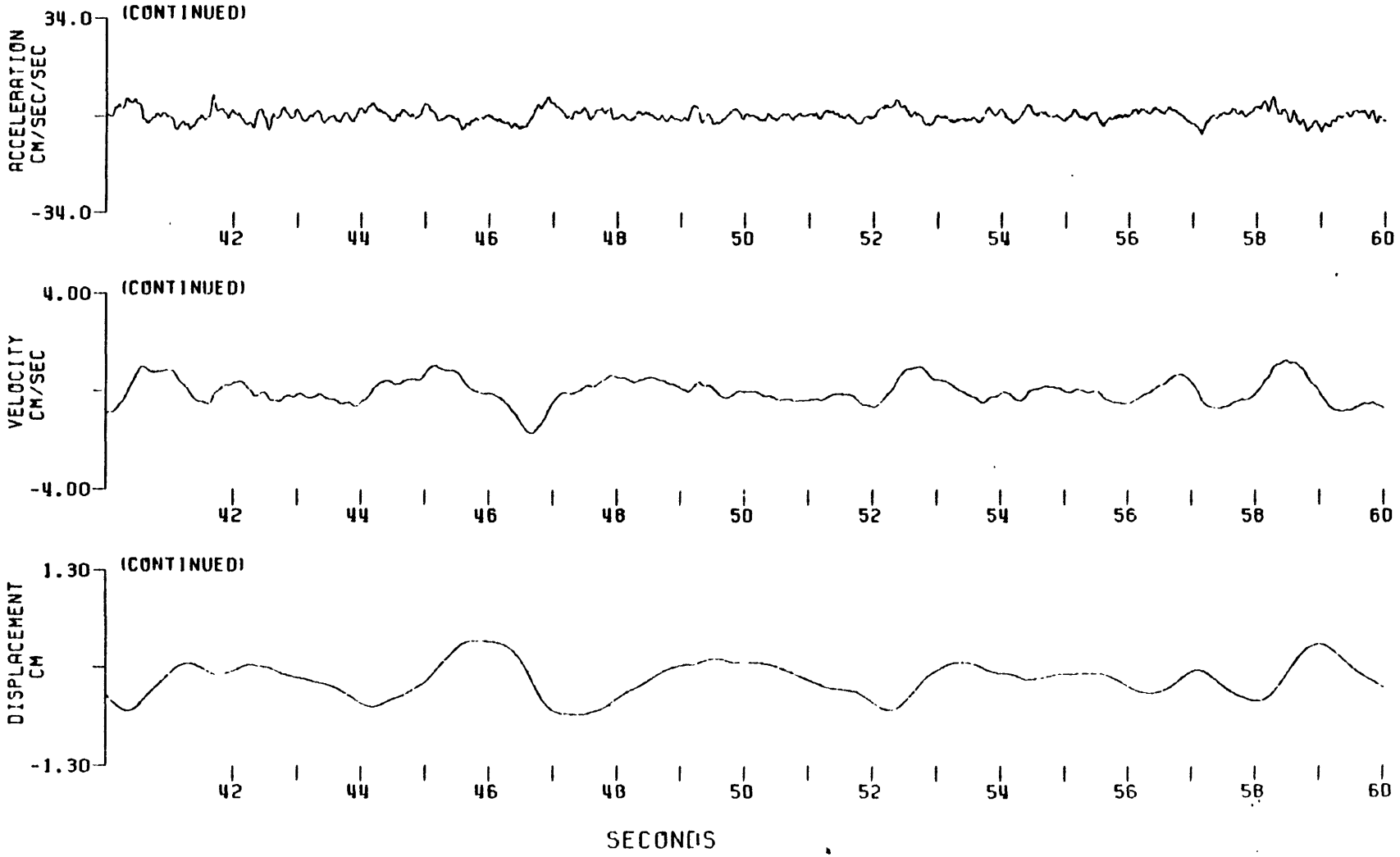



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-33.07 CM/SEC/SEC, VELOCITY=-4.00 CM/SEC, DISPL=-1.20 CM
ACCELERATION CM/SEC/SEC
34.0
-34.0
VELOCITY CM/SEC
4.00
-4.00
DISPLACEMENT CM
1.30
-1.30
2
4
6
8
10
12
14
16
18
20
SECONDS

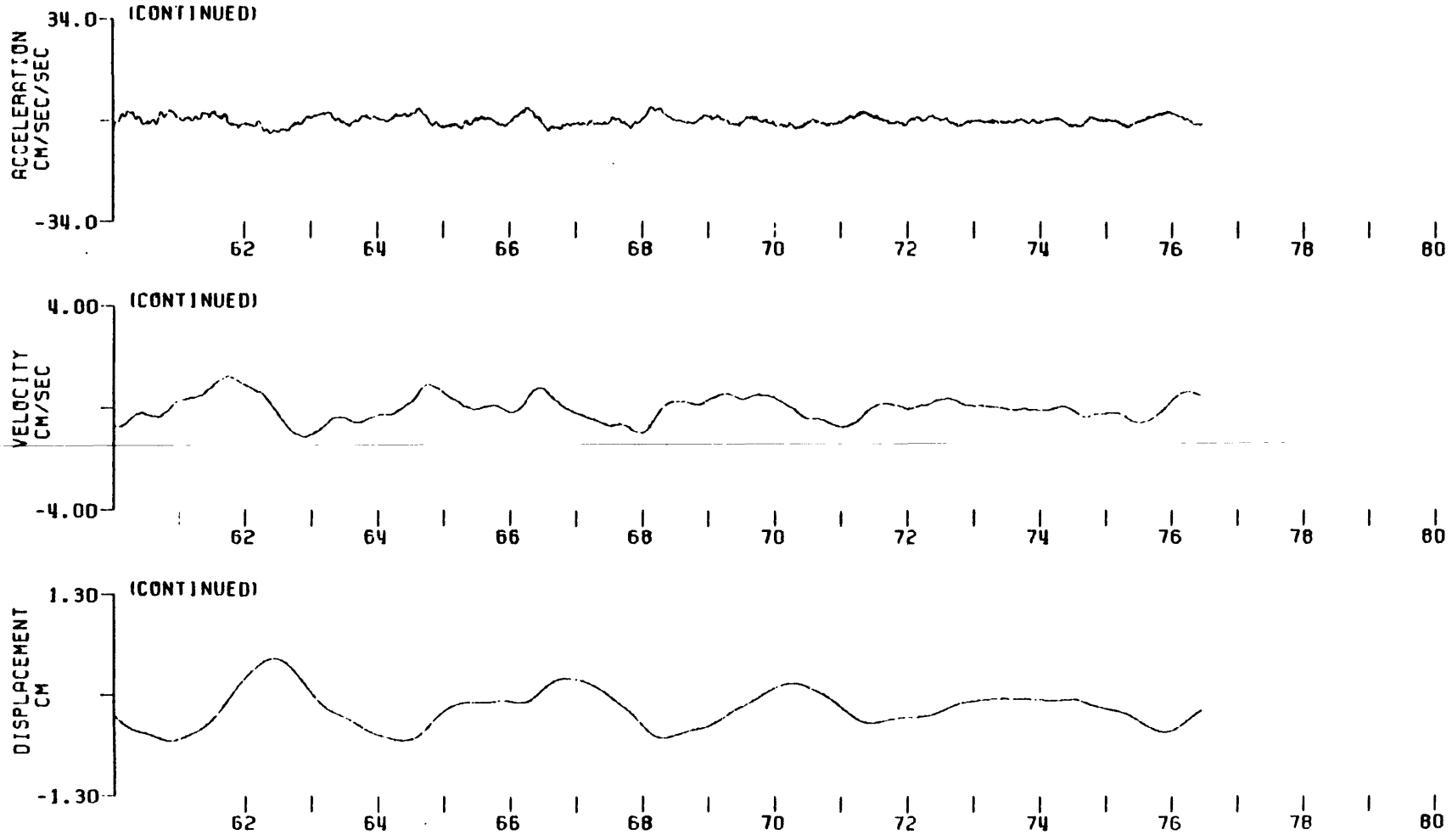
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-33.07 CM/SEC/SEC, VELOCITY=-4.00 CM/SEC, DISPL=-1.20 CM

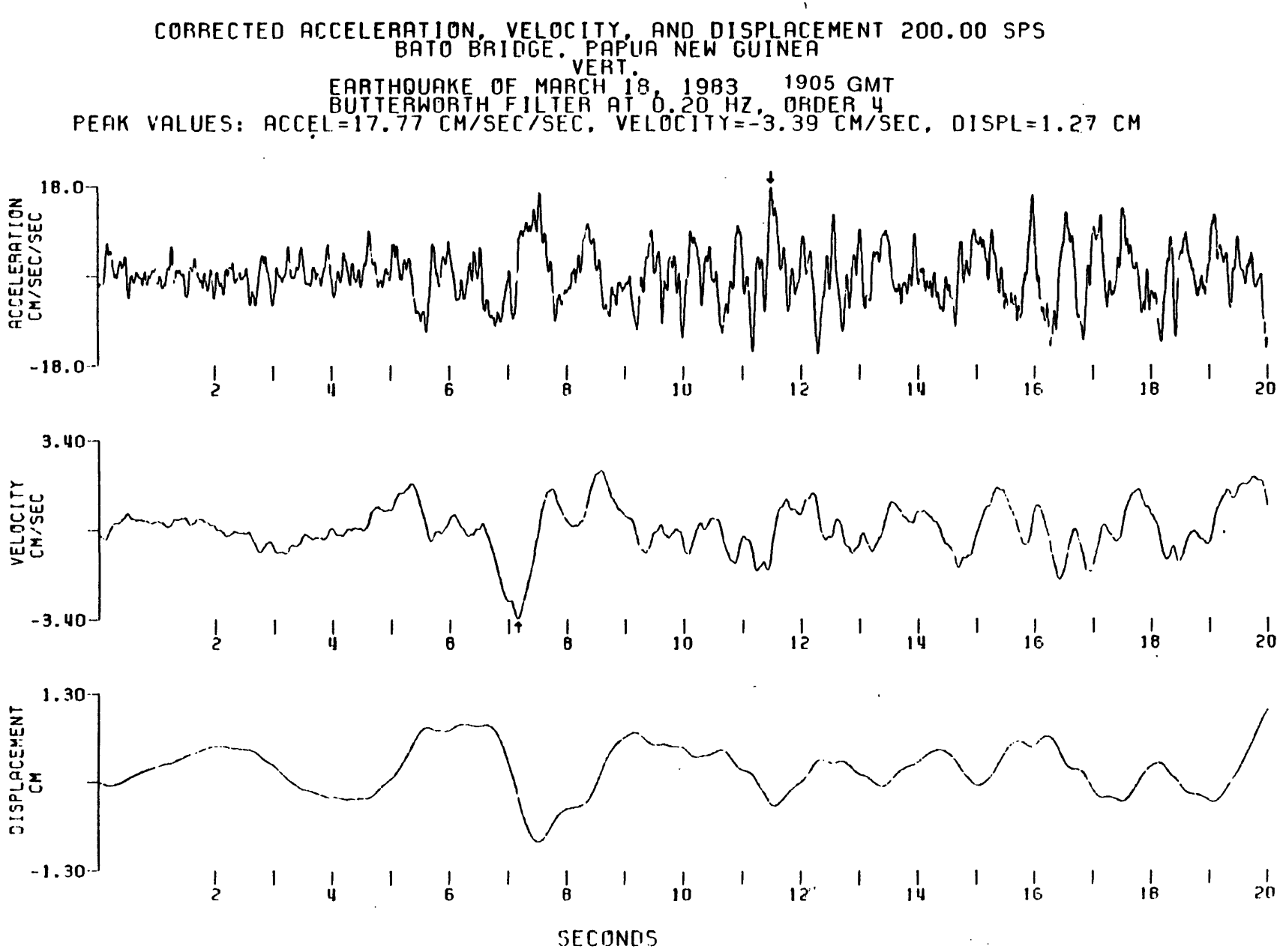


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-33.07 CM/SEC/SEC, VELOCITY=-4.00 CM/SEC, DISPL=-1.20 CM

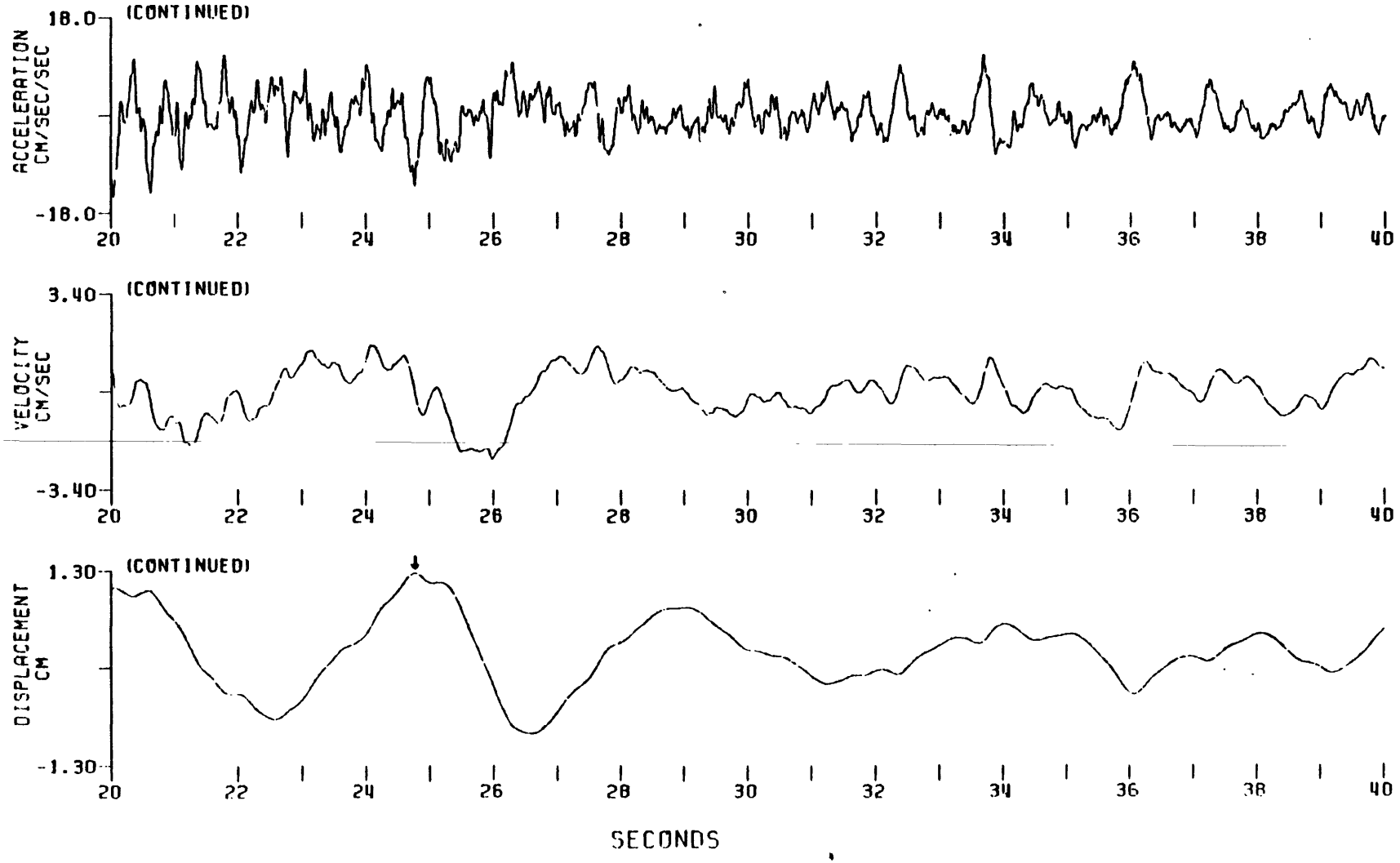


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-33.07 CM/SEC/SEC, VELOCITY=-4.00 CM/SEC, DISPL=-1.20 CM

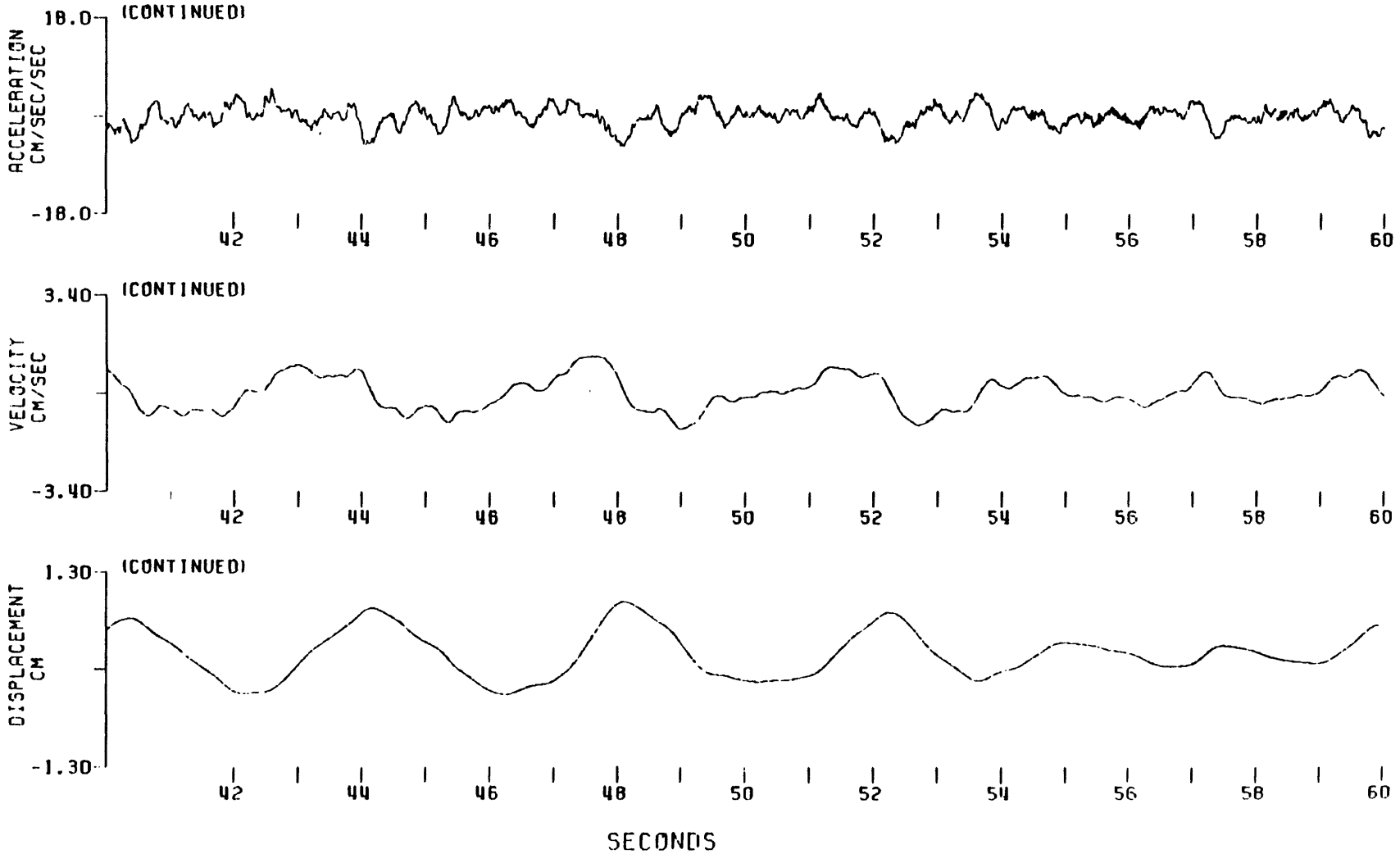



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.77 CM/SEC/SEC, VELOCITY=-3.39 CM/SEC, DISPL=1.27 CM
ACCELERATION CM/SEC/SEC
18.0
-18.0
VELOCITY CM/SEC
3.40
-3.40
DISPLACEMENT CM
1.30
-1.30
2
4
6
8
10
12
14
16
18
20
SECONDS

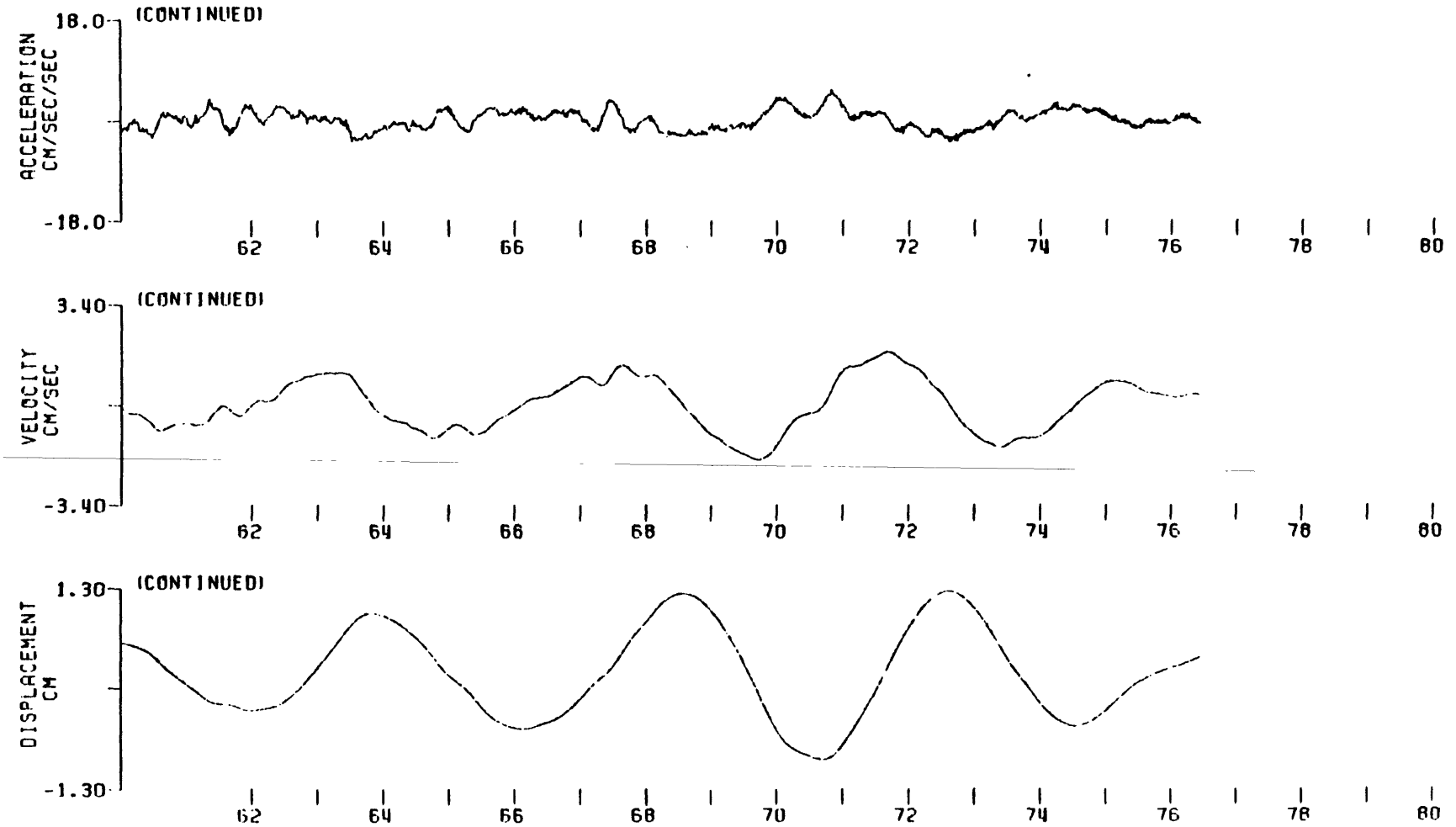
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.77 CM/SEC/SEC; VELOCITY=-3.39 CM/SEC, DISPL=1.27 CM

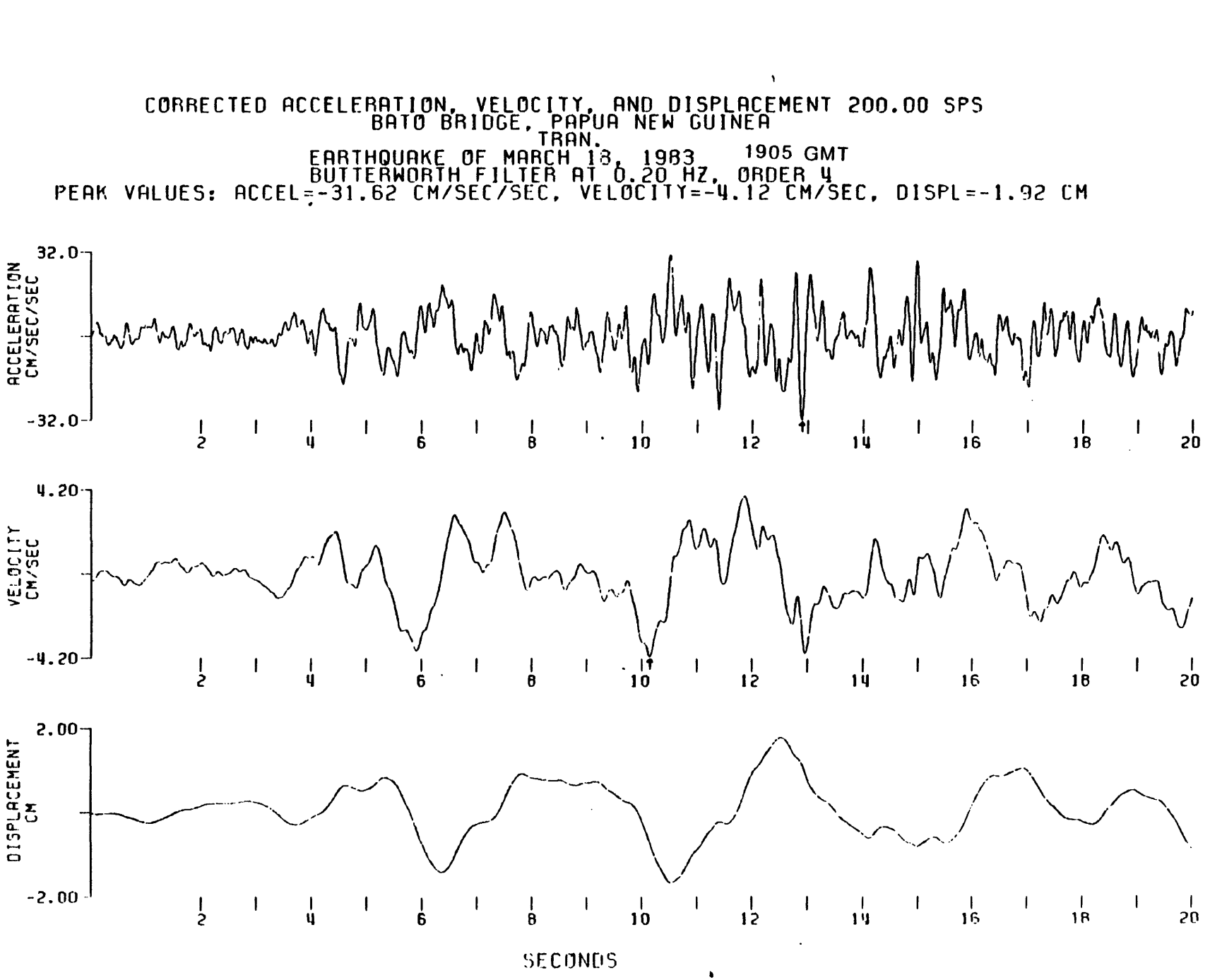


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.77 CM/SEC/SEC, VELOCITY=-3.39 CM/SEC, DISPL=1.27 CM

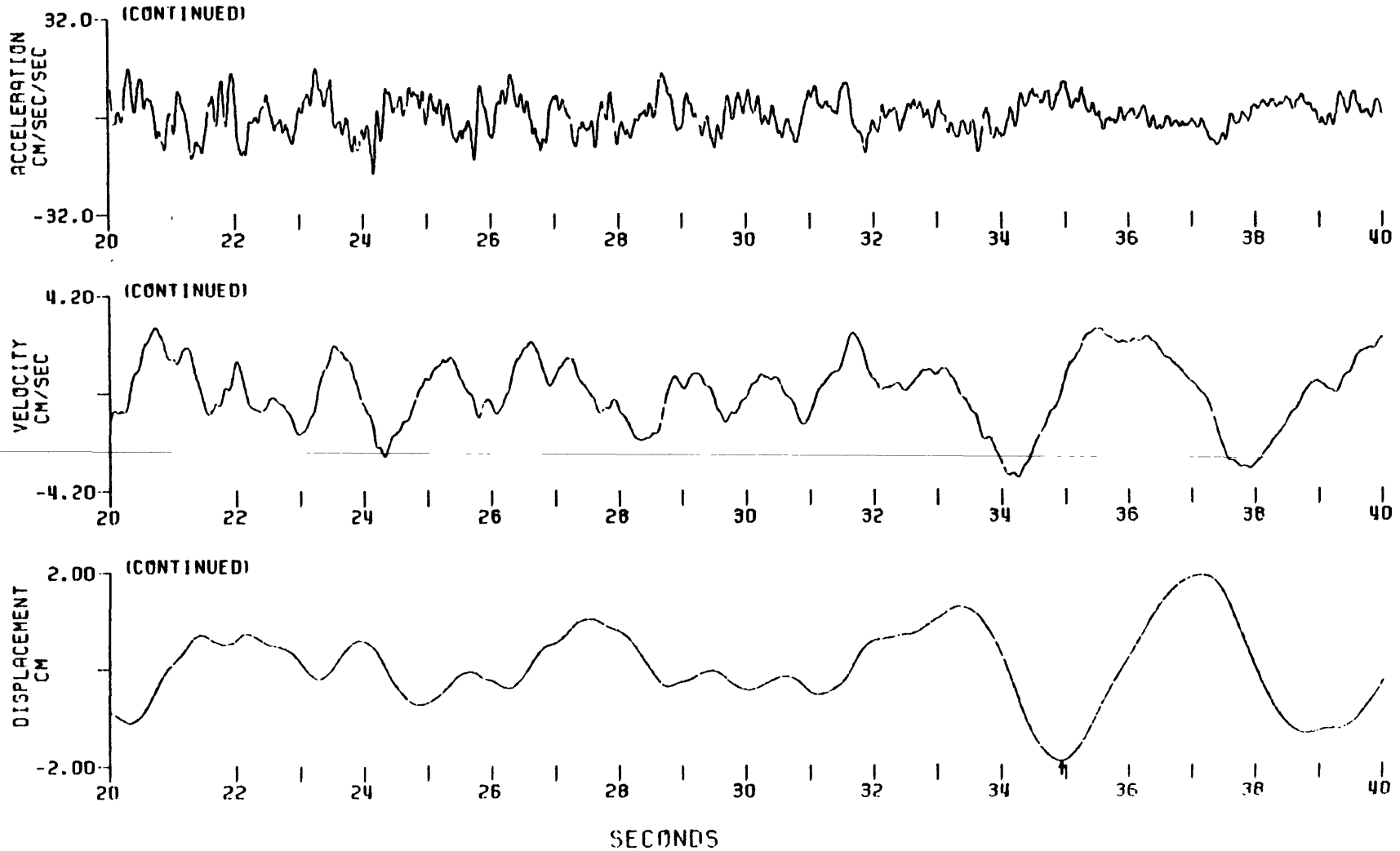


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=17.77 CM/SEC/SEC, VELOCITY=-3.39 CM/SEC, DISPL=1.27 CM

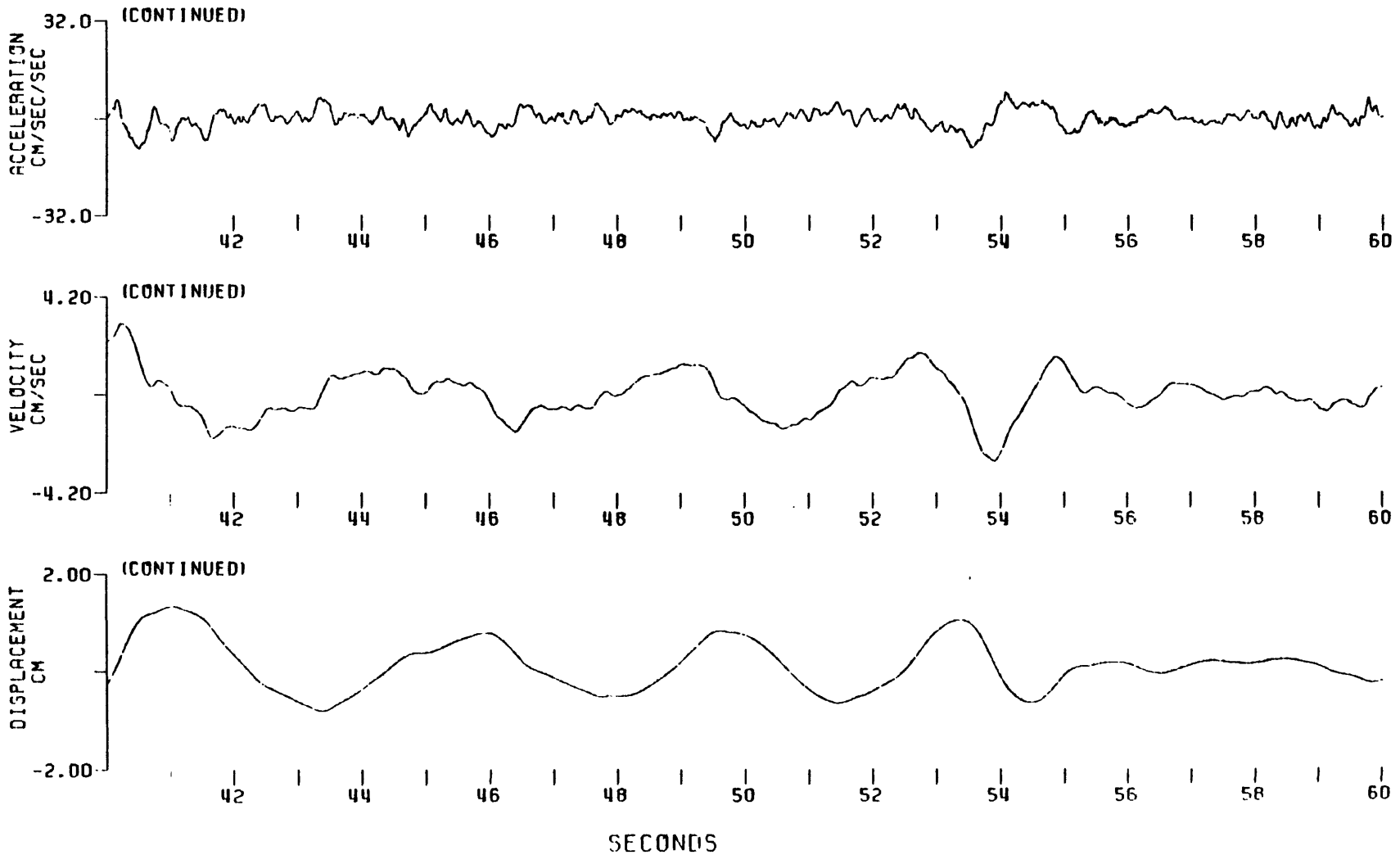



CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-31.62 CM/SEC/SEC, VELOCITY=-4.12 CM/SEC, DISPL=-1.92 CM
ACCELERATION CM/SEC/SEC
32.0
-32.0
VELOCITY CM/SEC
4.20
-4.20
DISPLACEMENT CM
2.00
-2.00
2
4
6
8
10
12
14
16
18
20
SECONDS

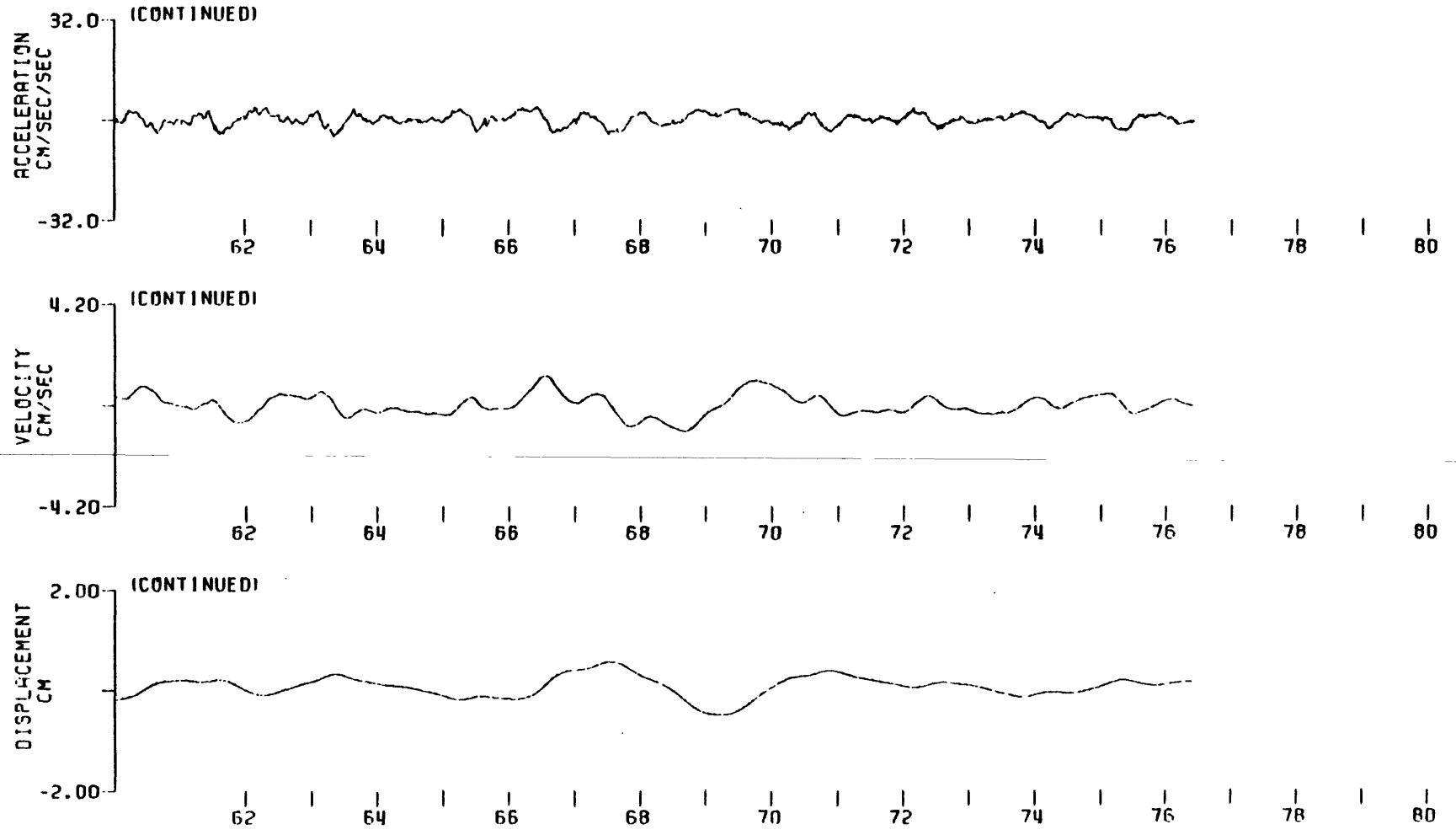
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-31.62 CM/SEC/SEC, VELOCITY=-4.12 CM/SEC, DISPL=-1.92 CM

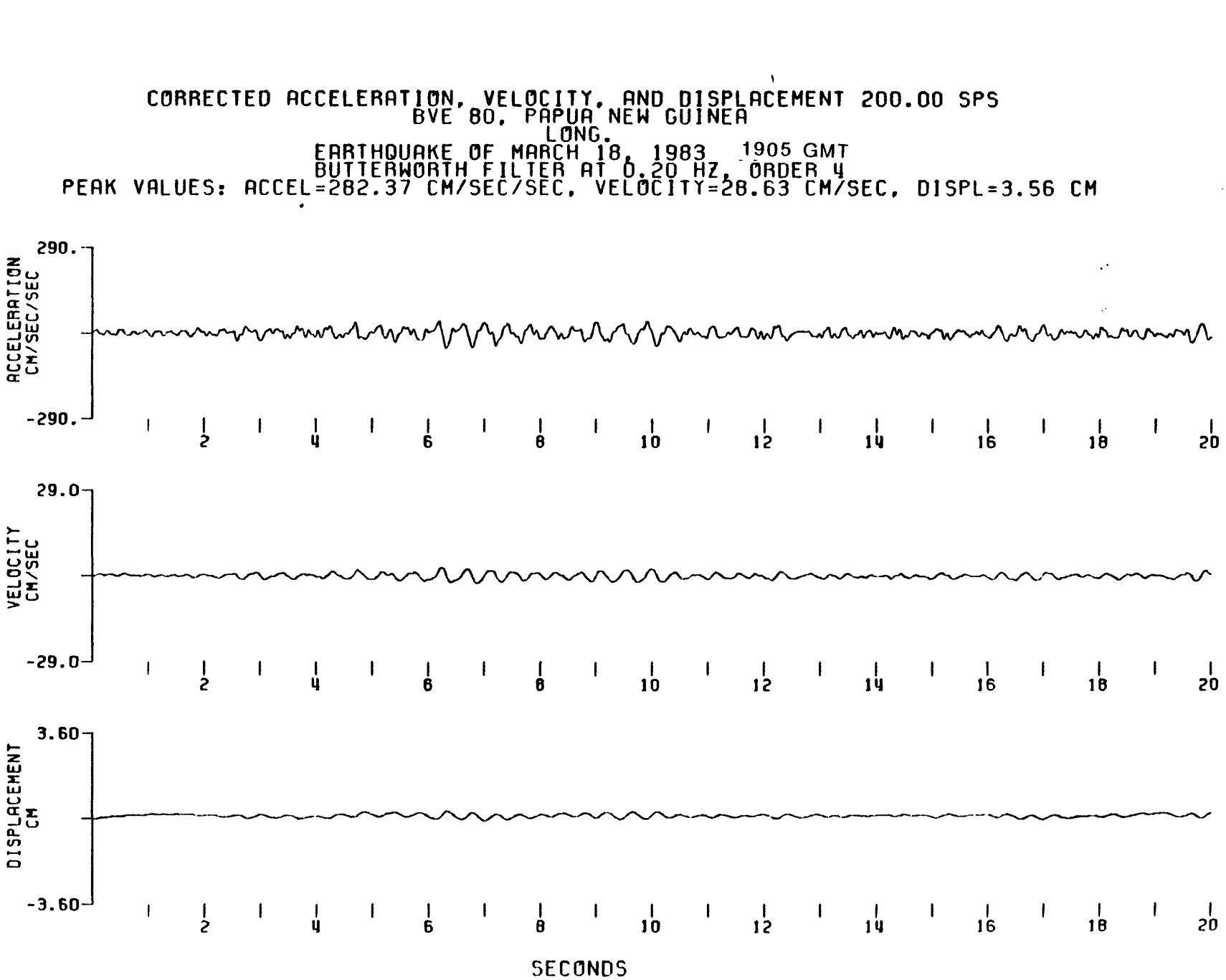


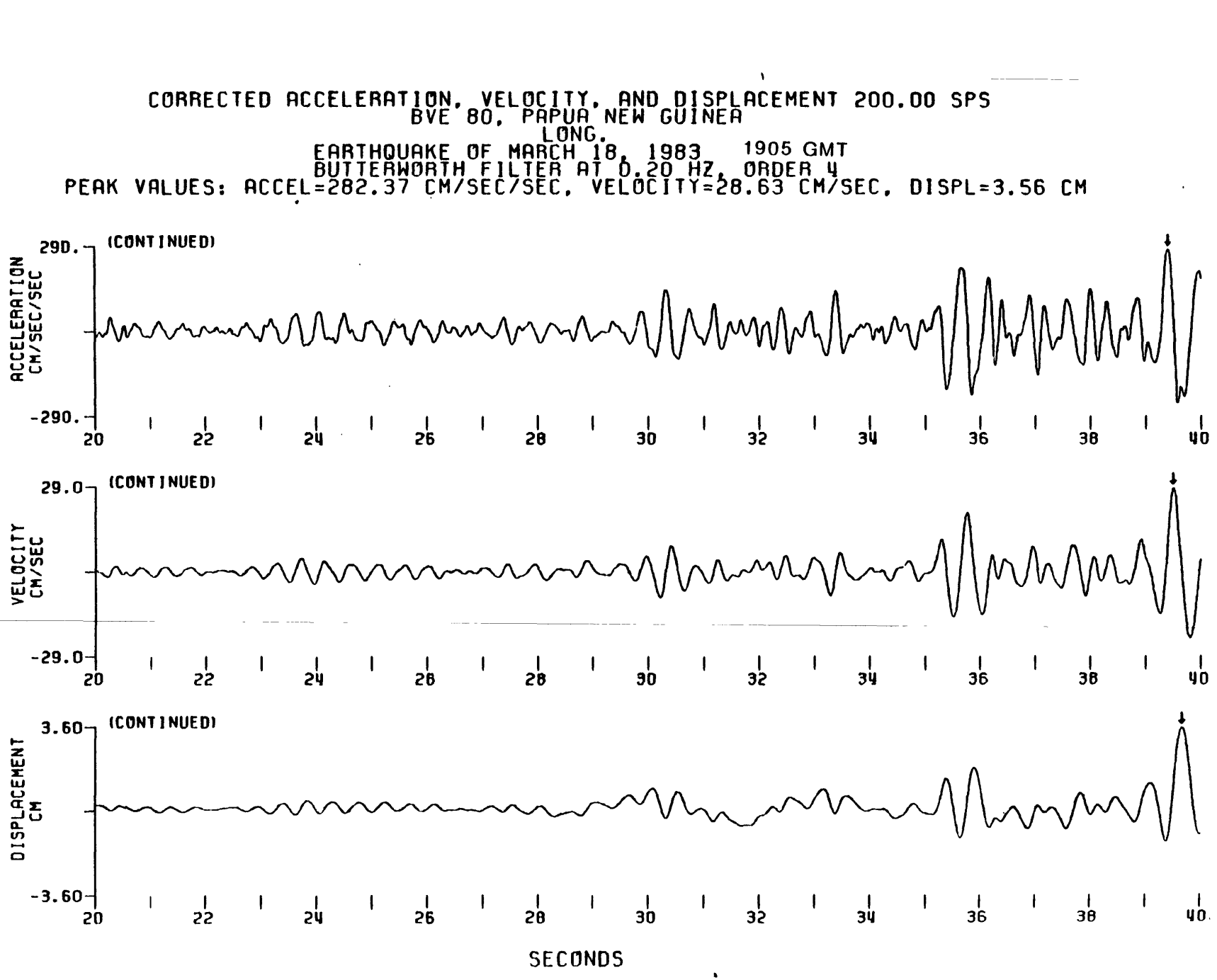
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-31.62 CM/SEC/SEC, VELOCITY=-4.12 CM/SEC, DISPL=-1.92 CM



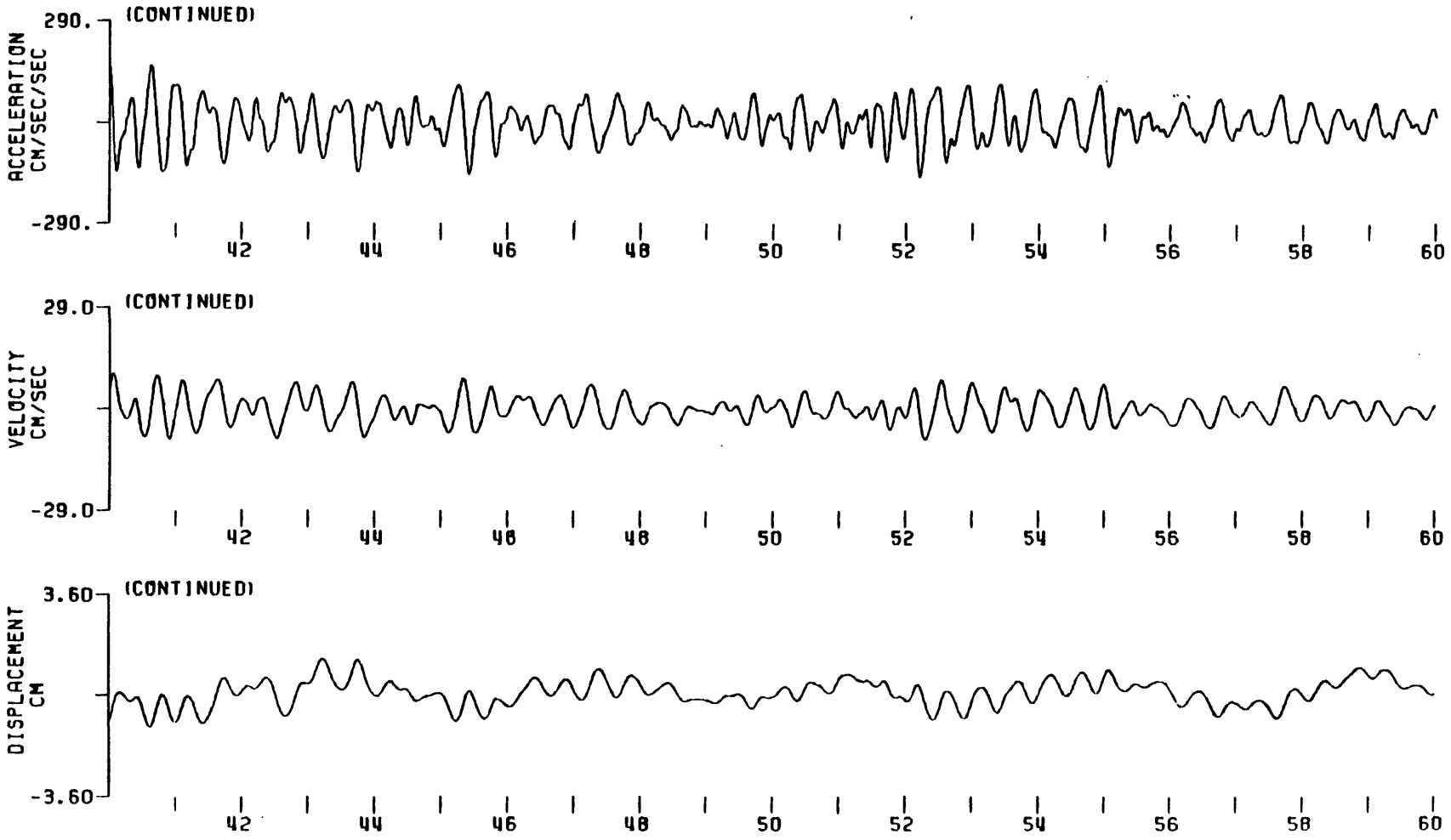
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=-31.62 CM/SEC/SEC, VELOCITY=-4.12 CM/SEC, DISPL=-1.92 CM



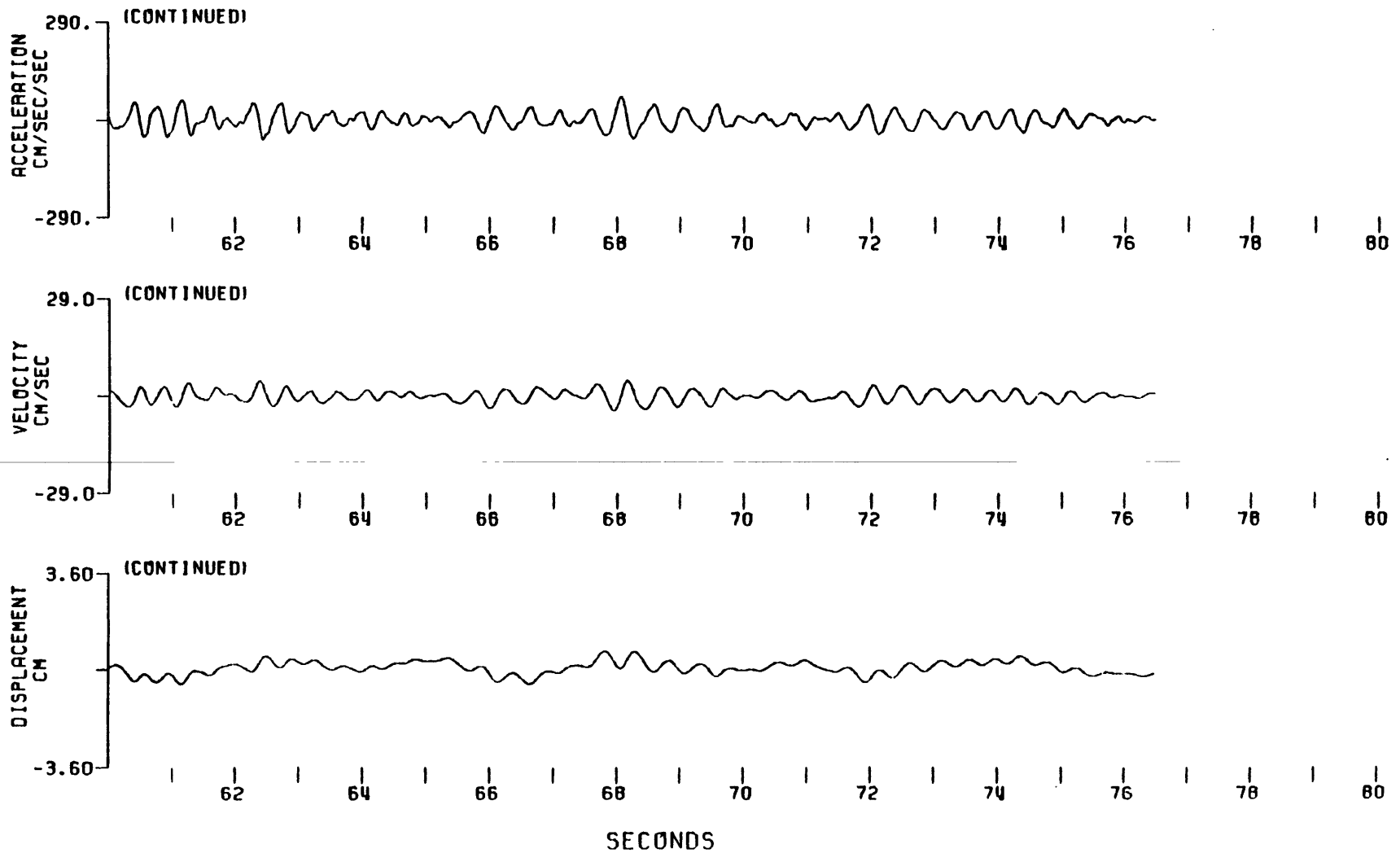

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=282.37 CM/SEC/SEC, VELOCITY=28.63 CM/SEC, DISPL=3.56 CM
ACCELERATION CM/SEC/SEC
290.
-290.
VELOCITY CM/SEC
29.0
-29.0
DISPLACEMENT CM
3.60
-3.60
2
4
6
8
10
12
14
16
18
20
SECONDS

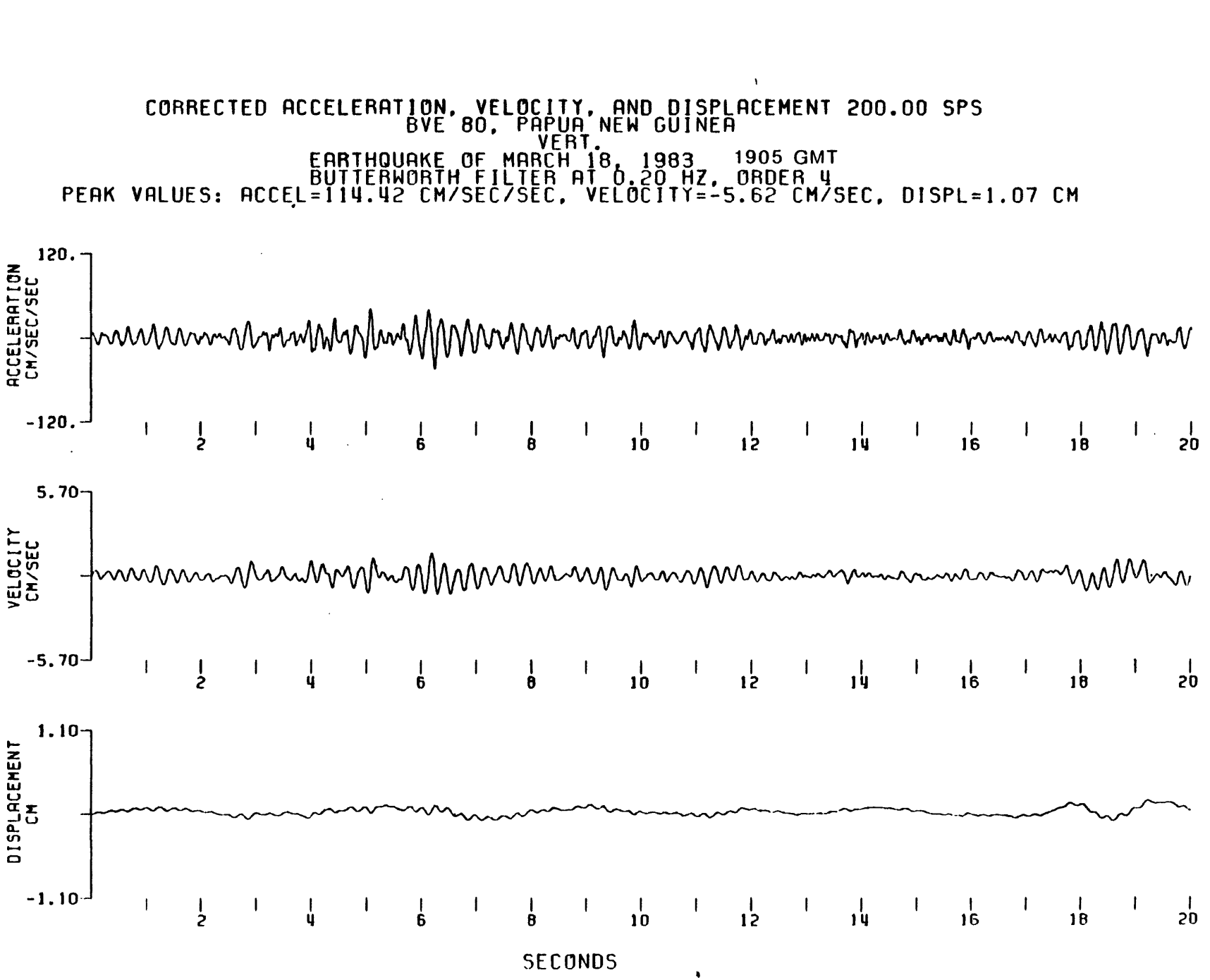

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=282.37 CM/SEC/SEC, VELOCITY=28.63 CM/SEC, DISPL=3.56 CM
(CONTINUED)
ACCELERATION CM/SEC/SEC
290.
-290.
(CONTINUED)
VELOCITY CM/SEC
29.0
-29.0
(CONTINUED)
DISPLACEMENT CM
3.60
-3.60
20
22
24
26
28
30
32
34
36
38
40
SECONDS

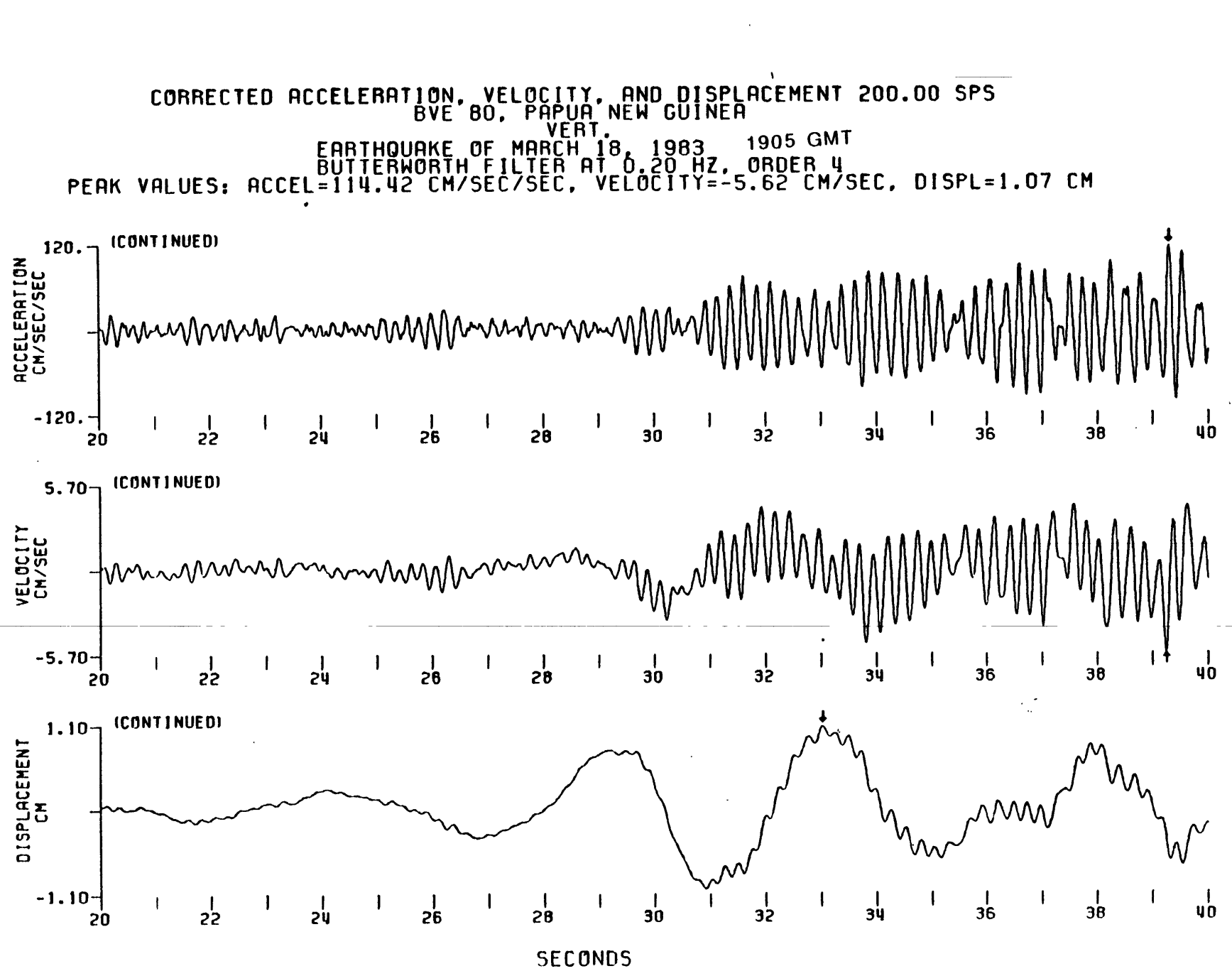
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=282.37 CM/SEC/SEC, VELOCITY=28.63 CM/SEC, DISPL=3.56 CM



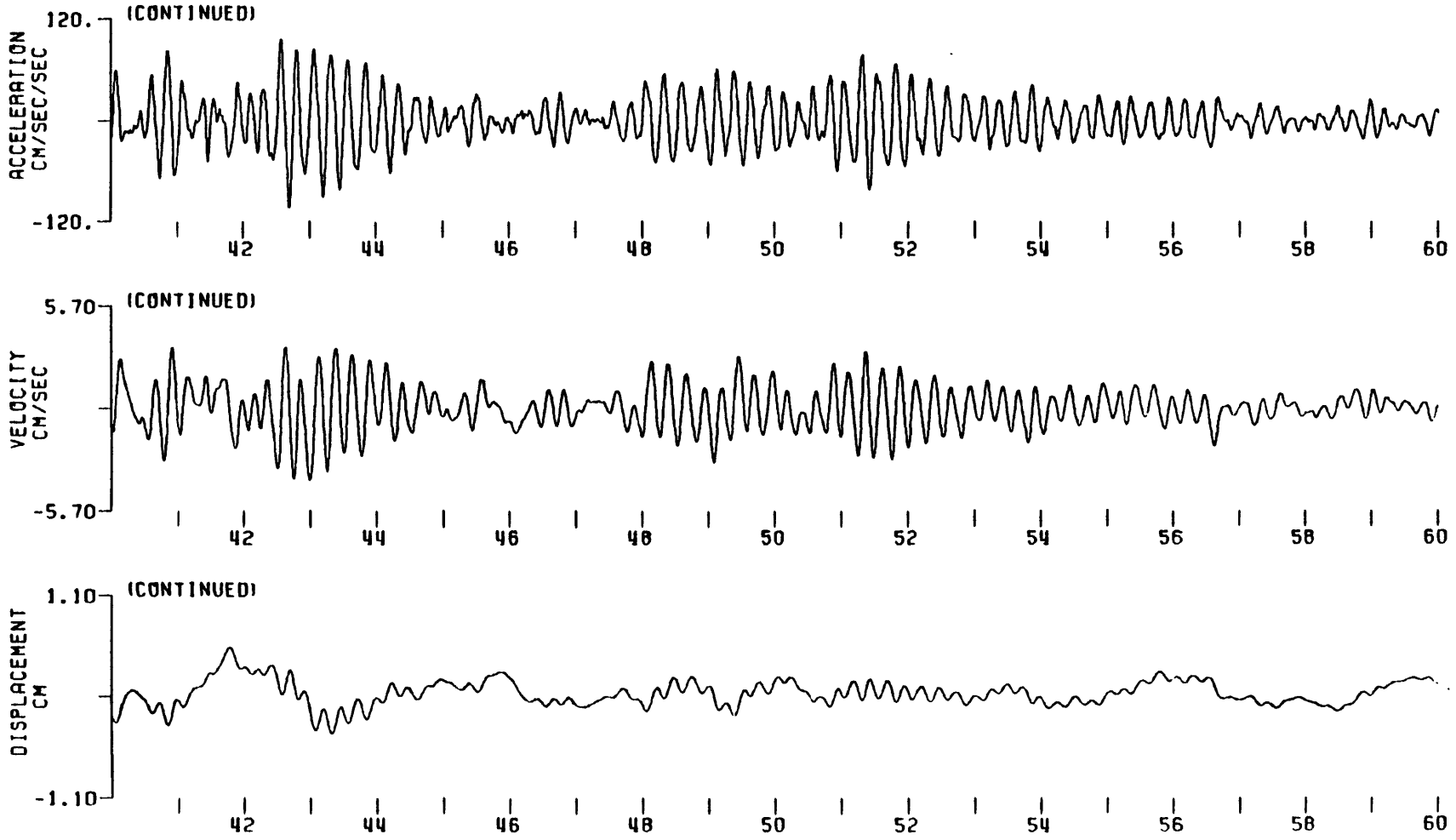
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=282.37 CM/SEC/SEC, VELOCITY=28.63 CM/SEC, DISPL=3.56 CM



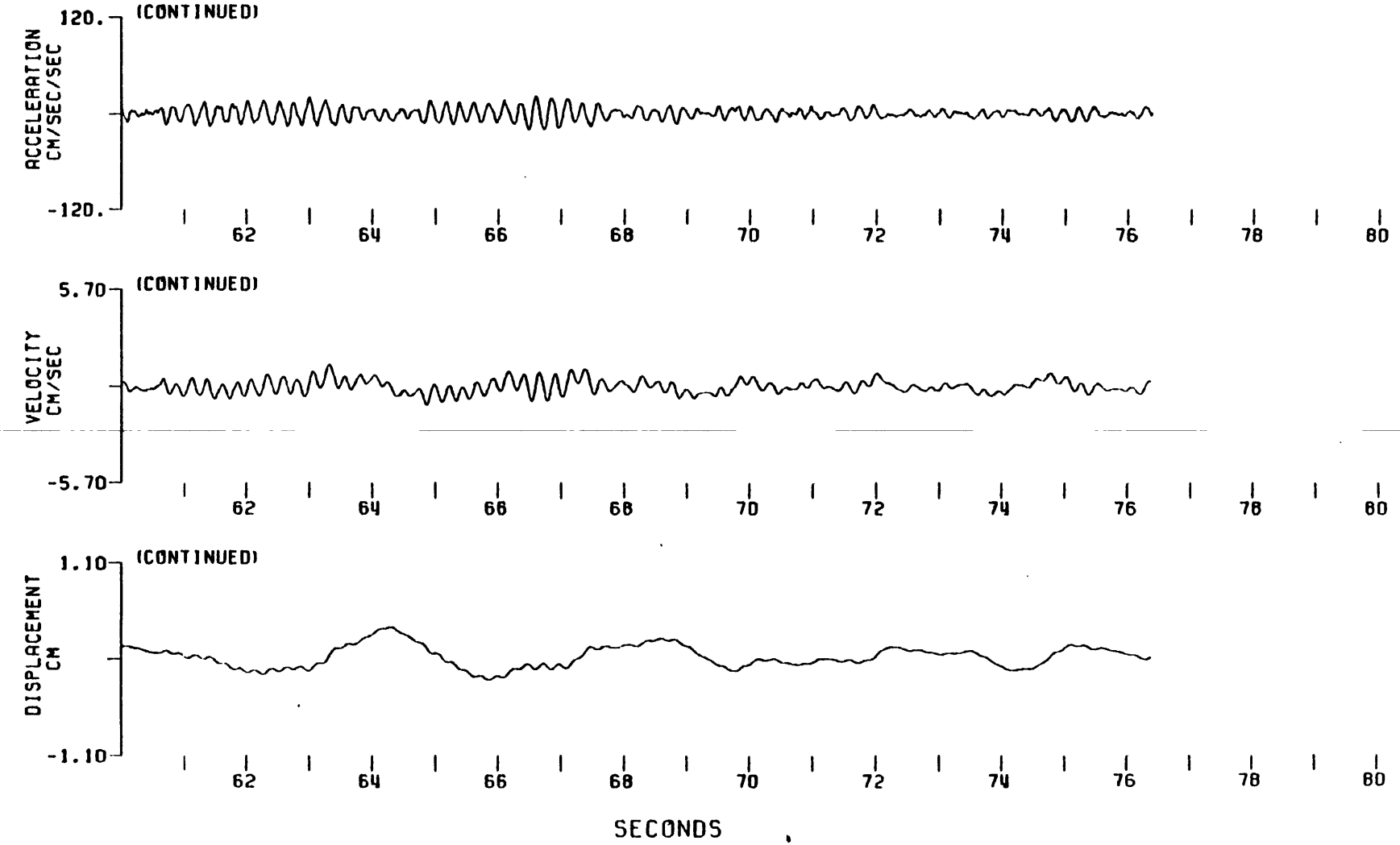

CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=114.42 CM/SEC/SEC, VELOCITY=-5.62 CM/SEC, DISPL=1.07 CM
ACCELERATION CM/SEC/SEC
120.
-120.
VELOCITY CM/SEC
5.70
-5.70
DISPLACEMENT CM
1.10
-1.10
2
4
6
8
10
12
14
16
18
20
SECONDS


CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=114.42 CM/SEC/SEC, VELOCITY=-5.62 CM/SEC, DISPL=1.07 CM
(CONTINUED)
ACCELERATION CM/SEC/SEC
120.
-120.
(CONTINUED)
VELOCITY CM/SEC
5.70
-5.70
(CONTINUED)
DISPLACEMENT CM
1.10
-1.10
20
22
24
26
28
30
32
34
36
38
40
SECONDS

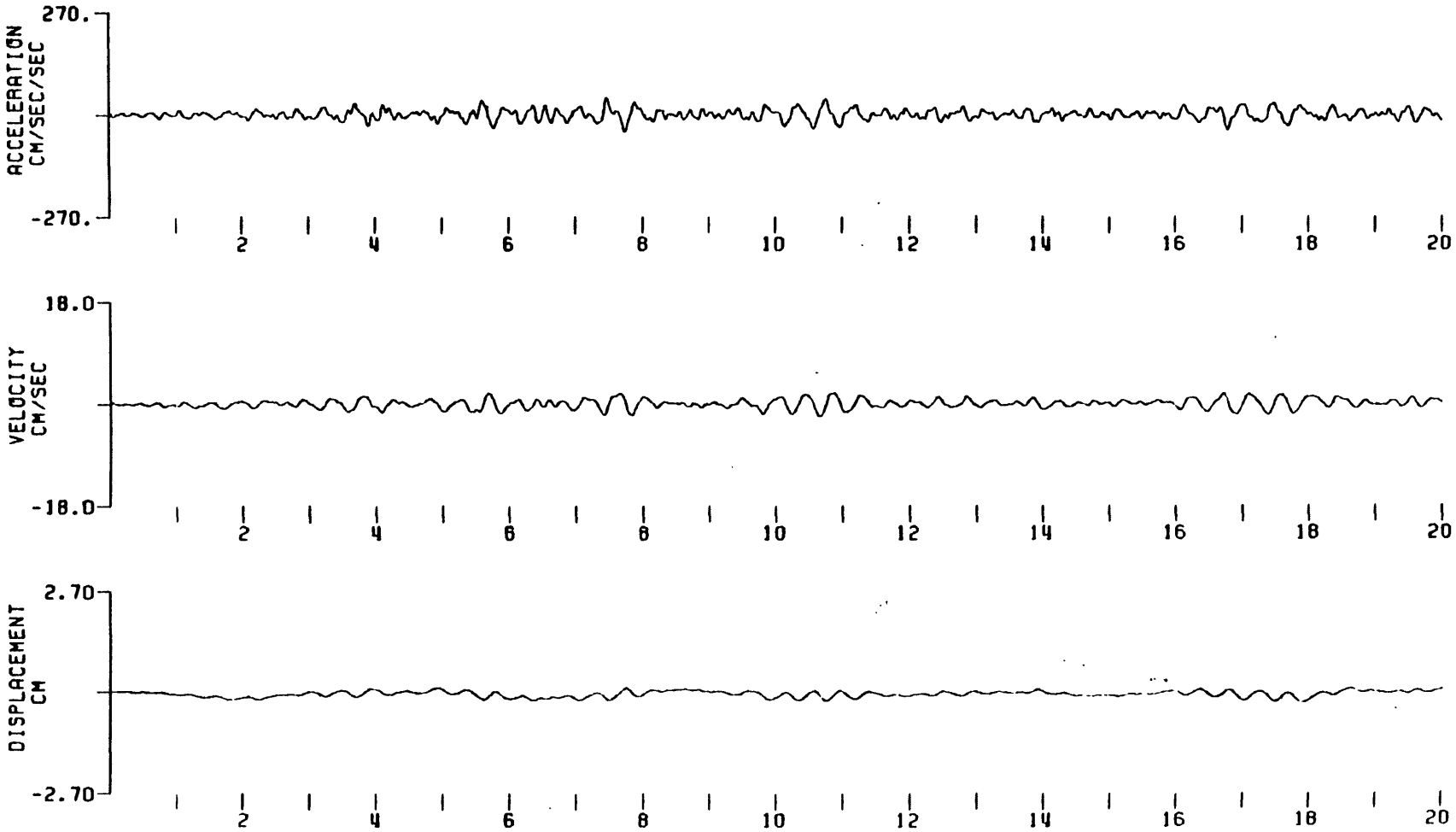
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=114.42 CM/SEC/SEC, VELOCITY=-5.62 CM/SEC, DISPL=1.07 CM



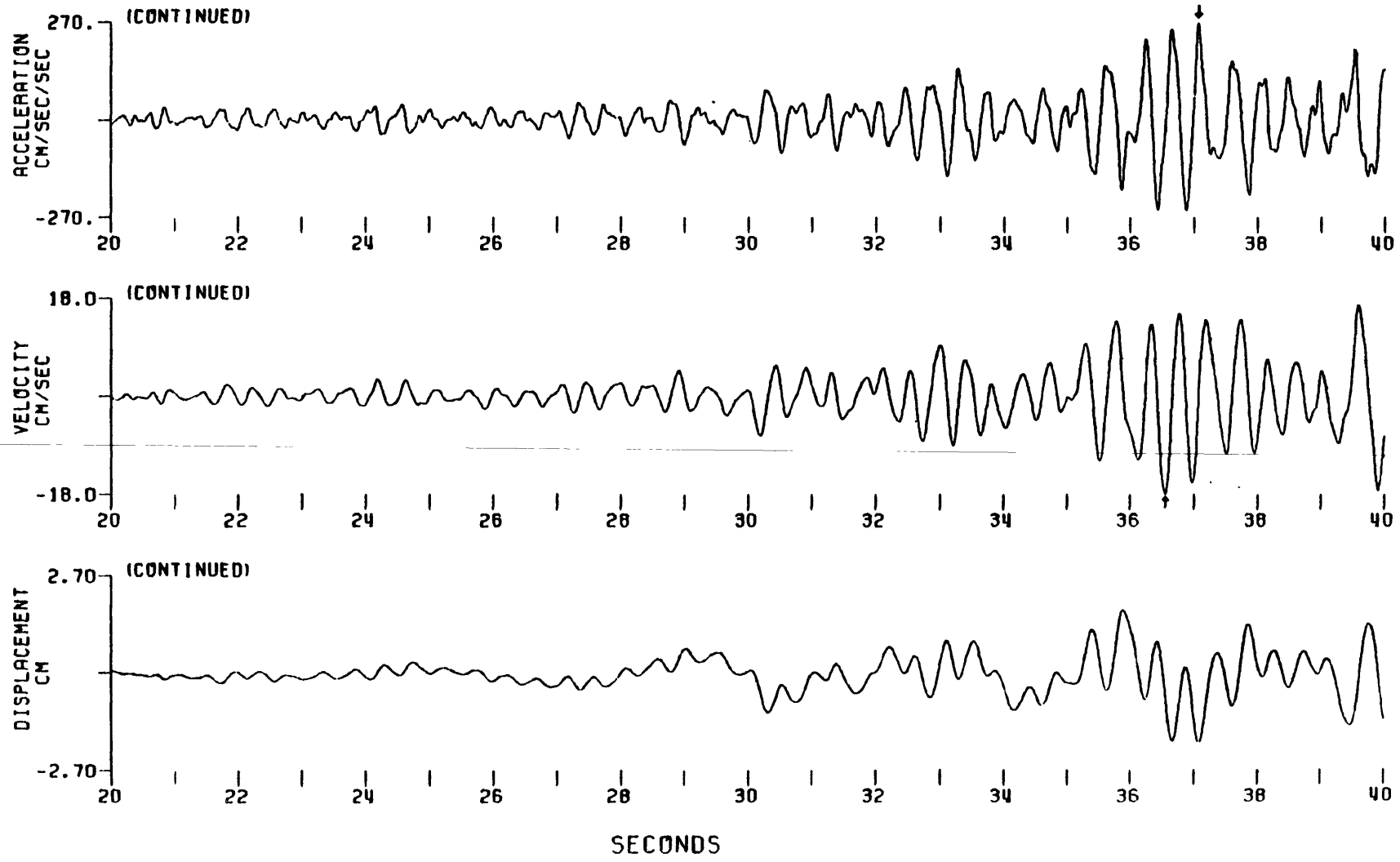
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=114.42 CM/SEC/SEC, VELOCITY=-5.62 CM/SEC, DISPL=1.07 CM



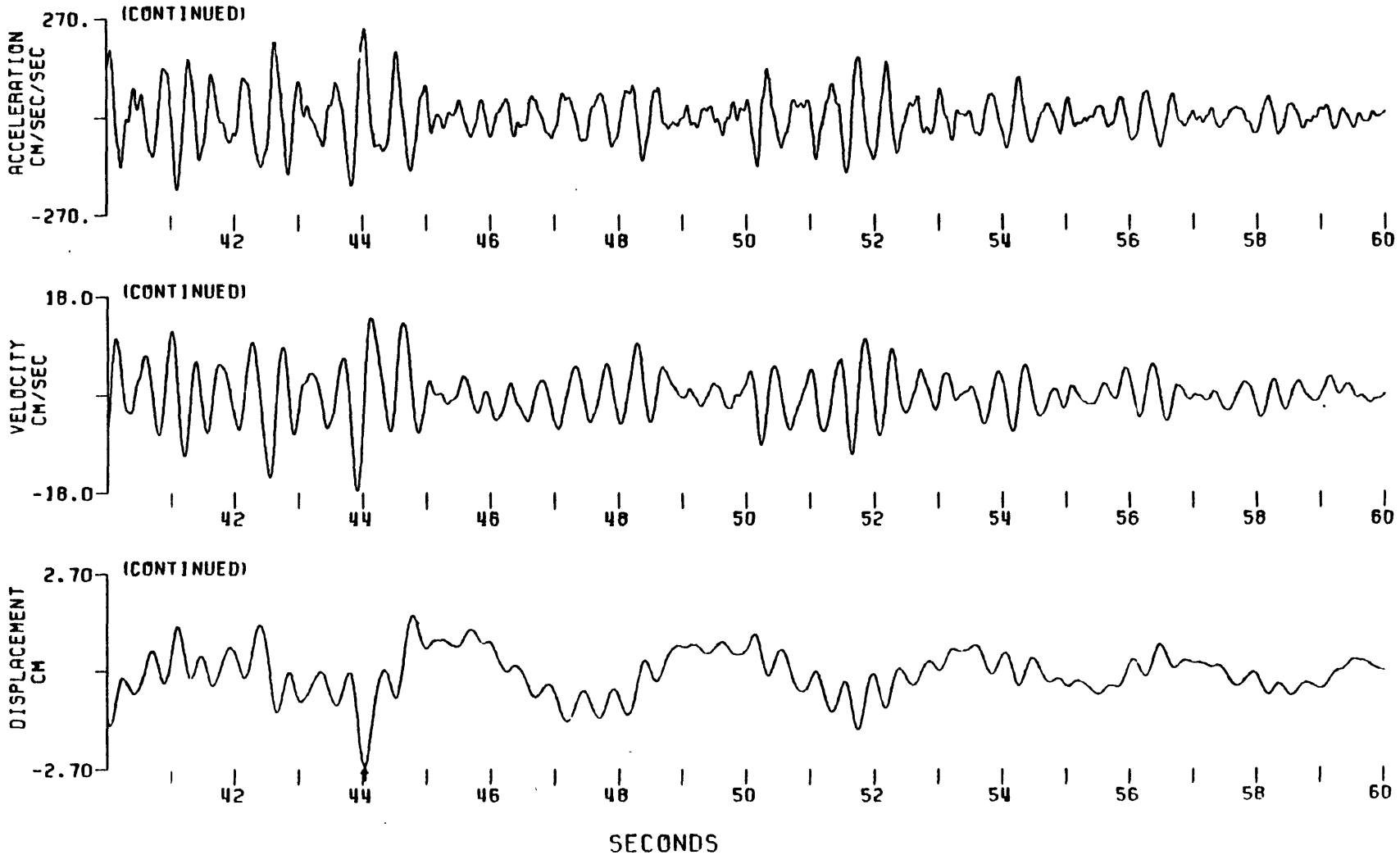
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=268.72 CM/SEC/SEC, VELOCITY=-17.90 CM/SEC, DISPL=-2.61 CM



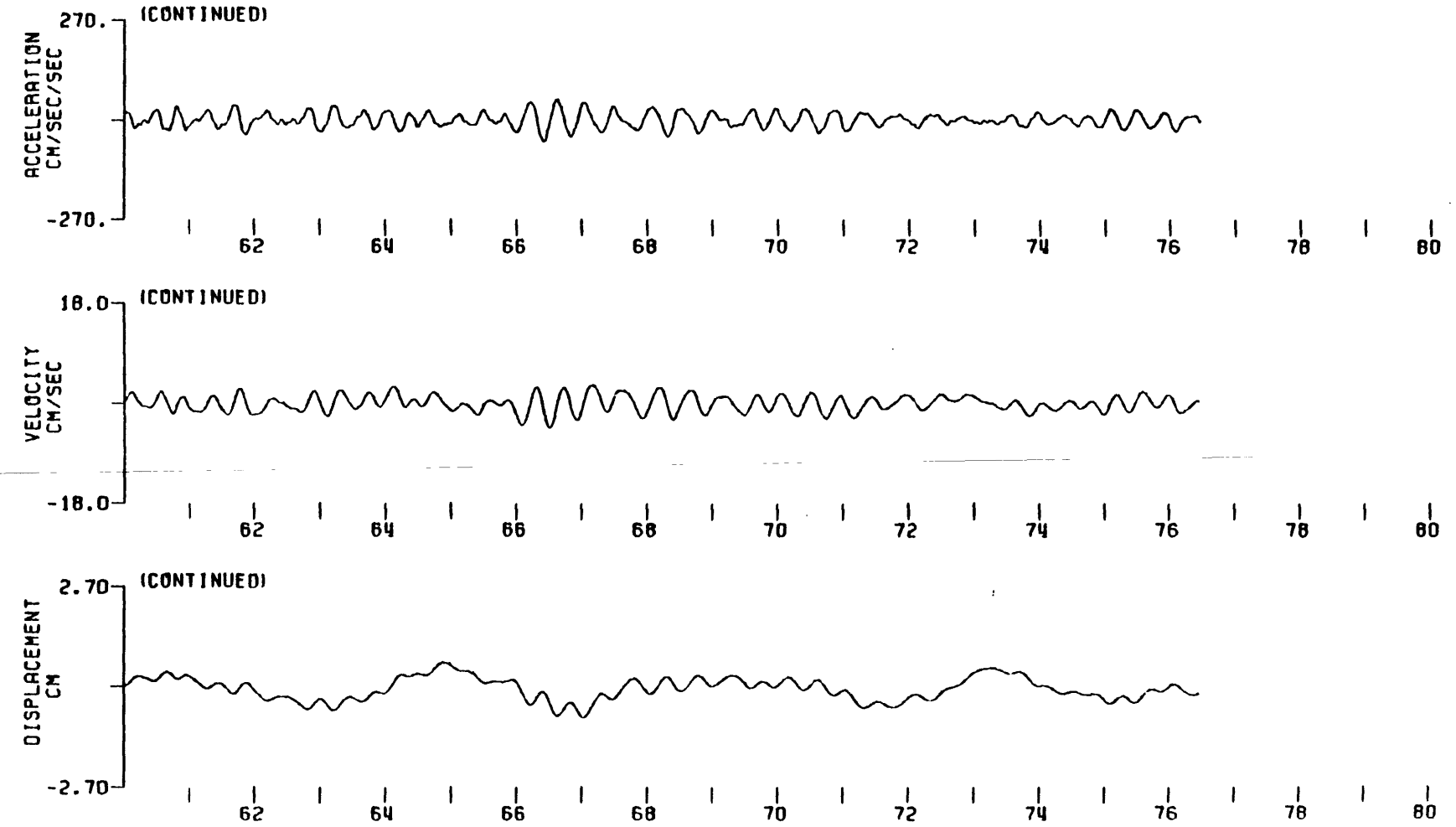
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=268.72 CM/SEC/SEC, VELOCITY=-17.90 CM/SEC, DISPL=-2.61 CM

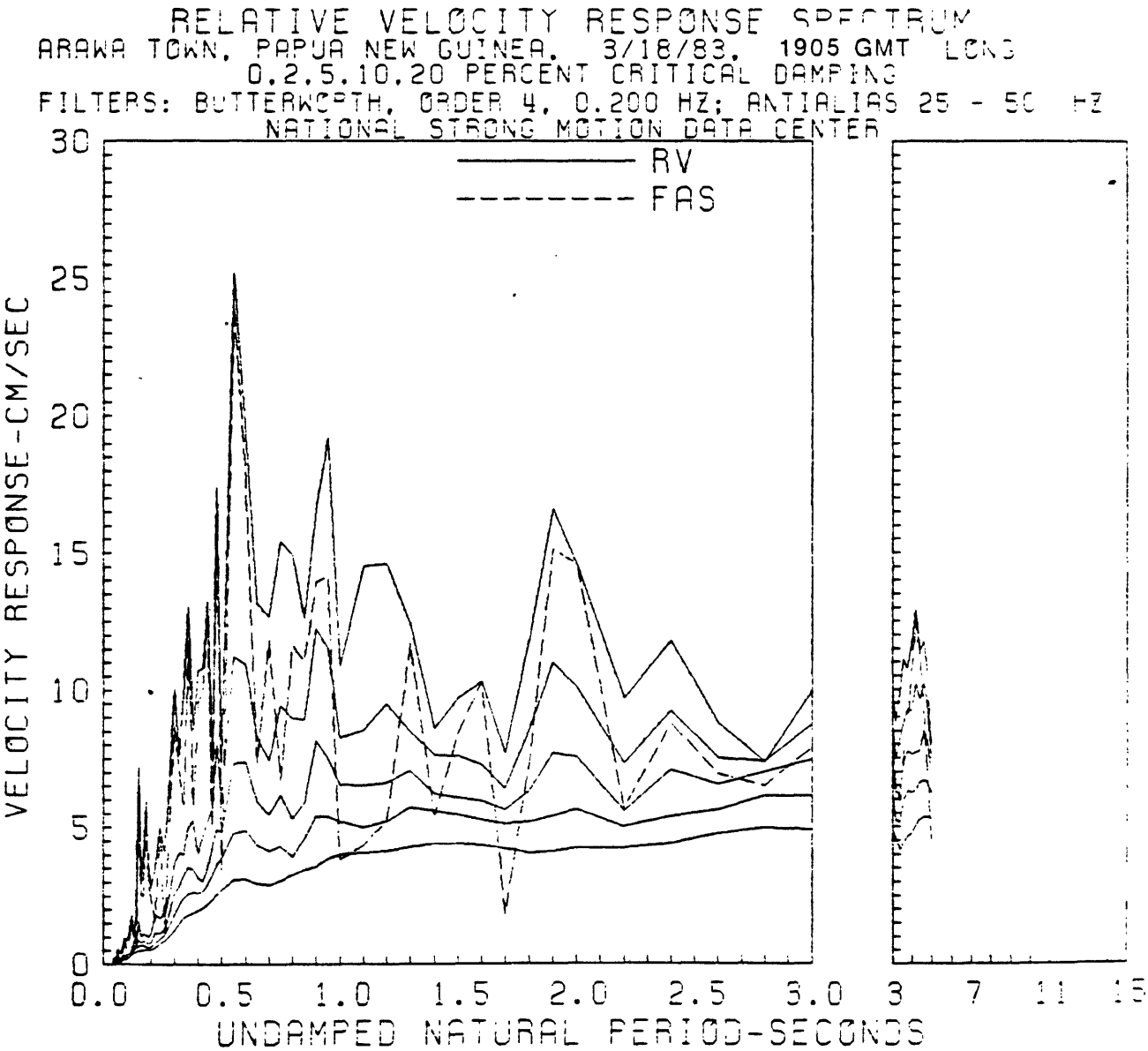


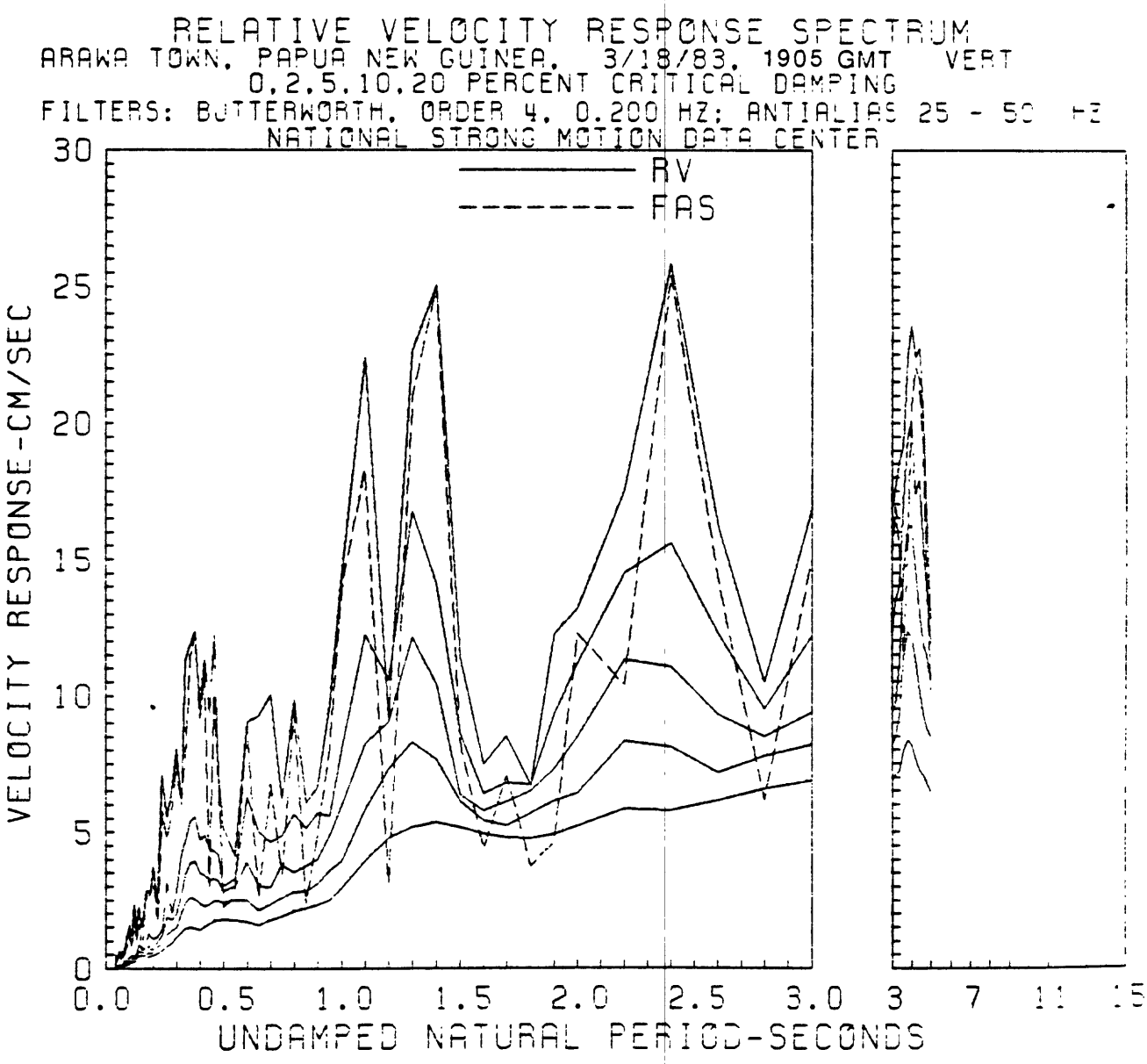
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=268.72 CM/SEC/SEC, VELOCITY=-17.90 CM/SEC, DISPL=-2.61 CM

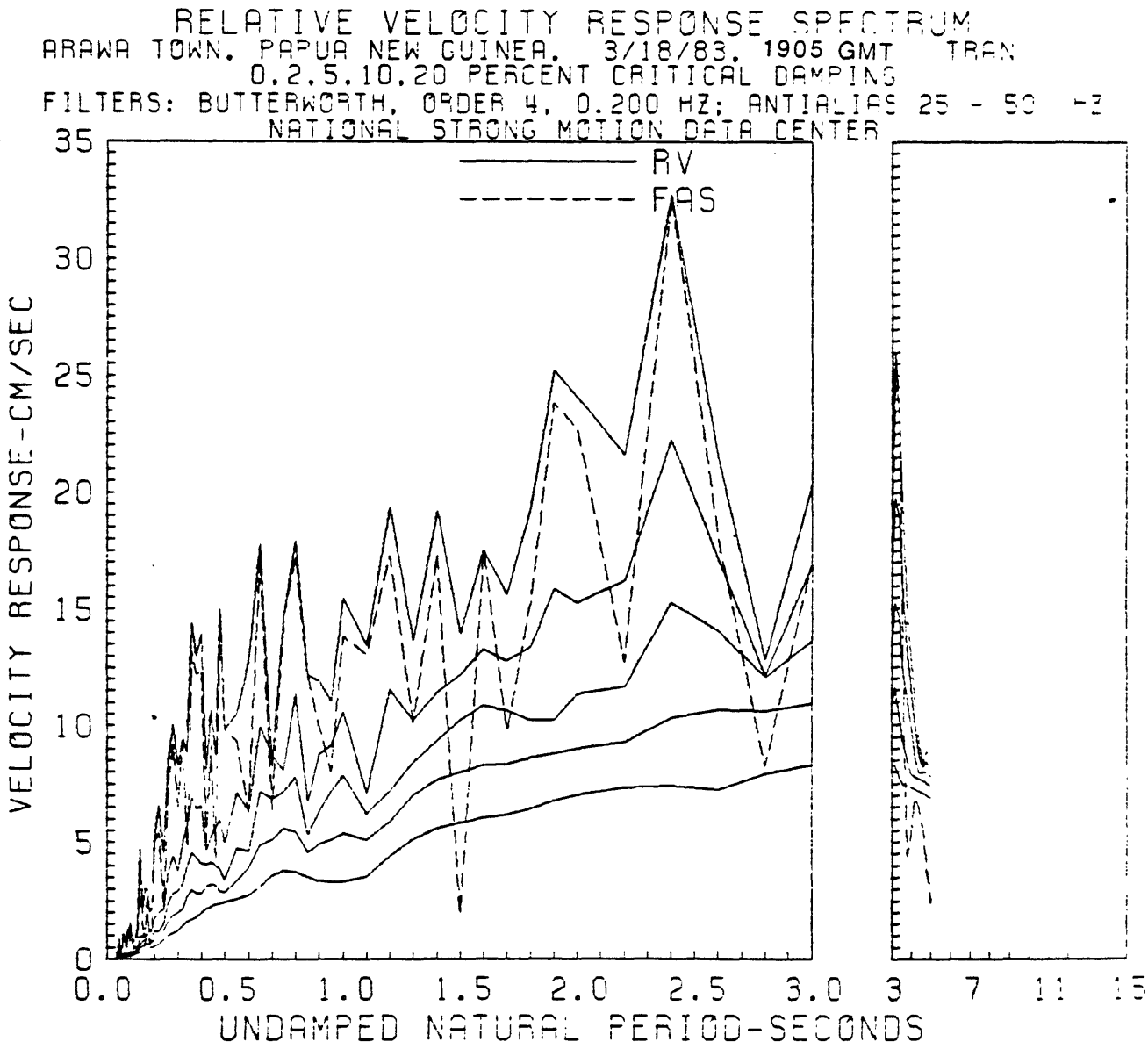


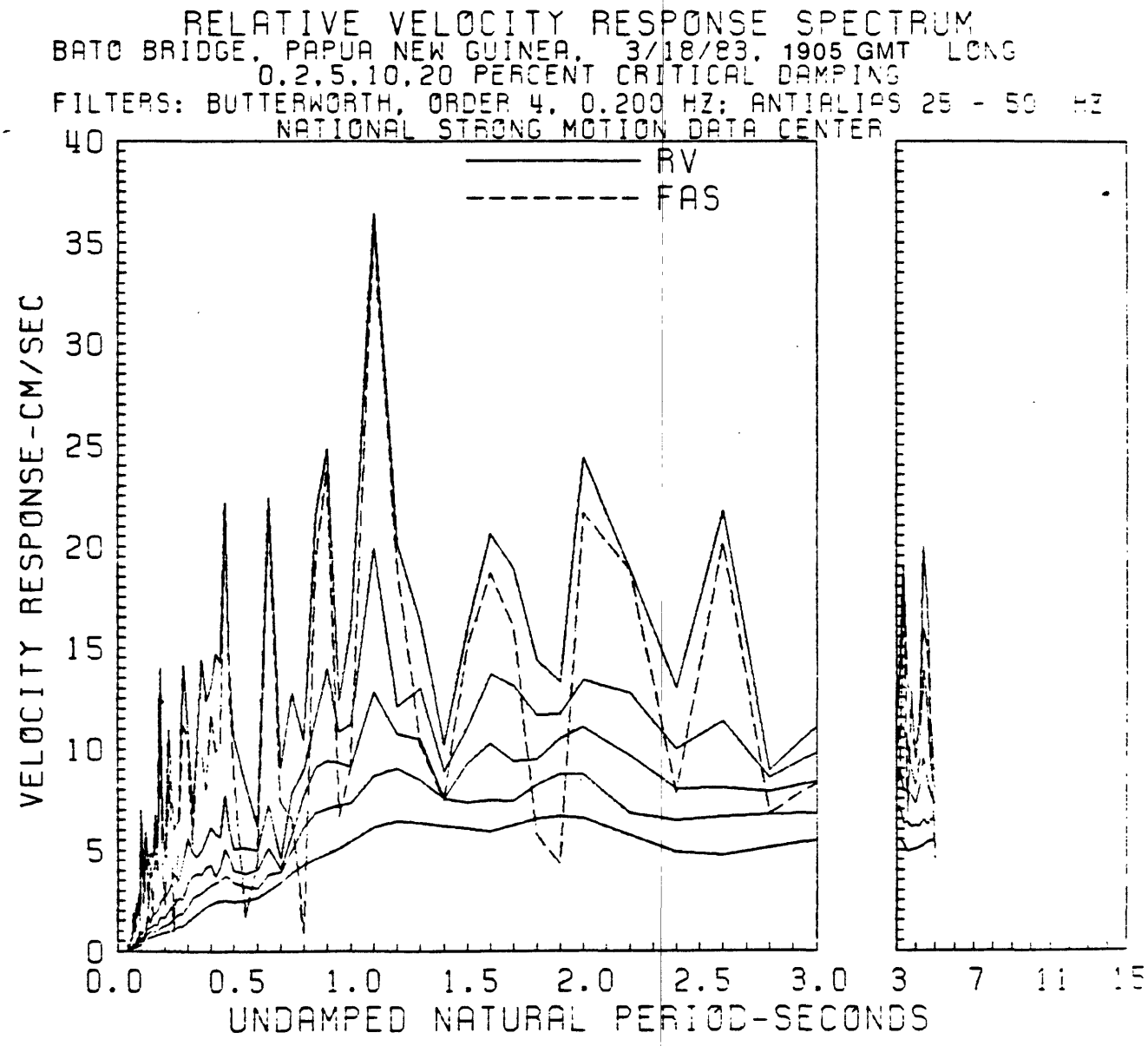
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
PEAK VALUES: ACCEL=268.72 CM/SEC/SEC, VELOCITY=-17.90 CM/SEC, DISPL=-2.61 CM

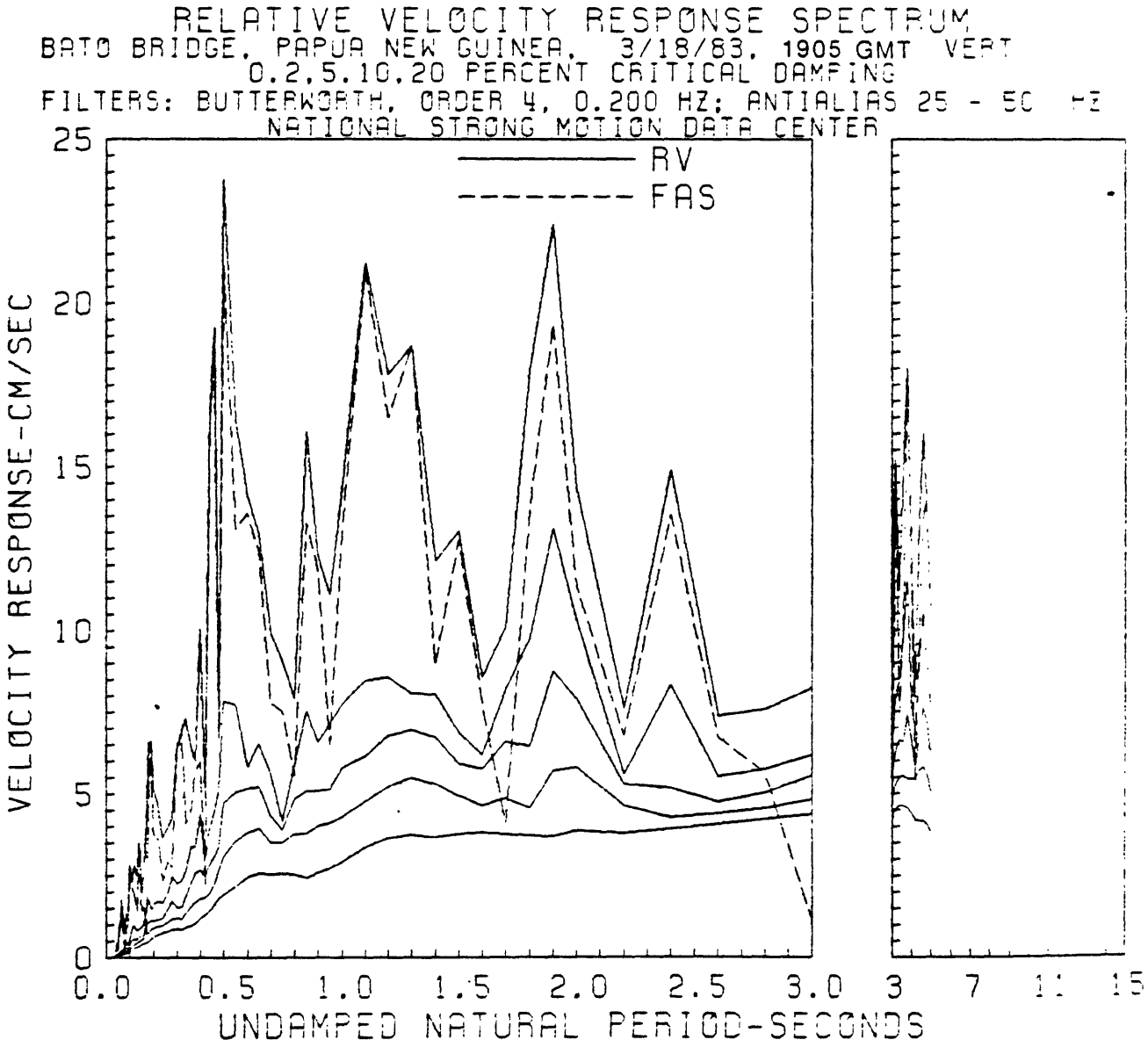


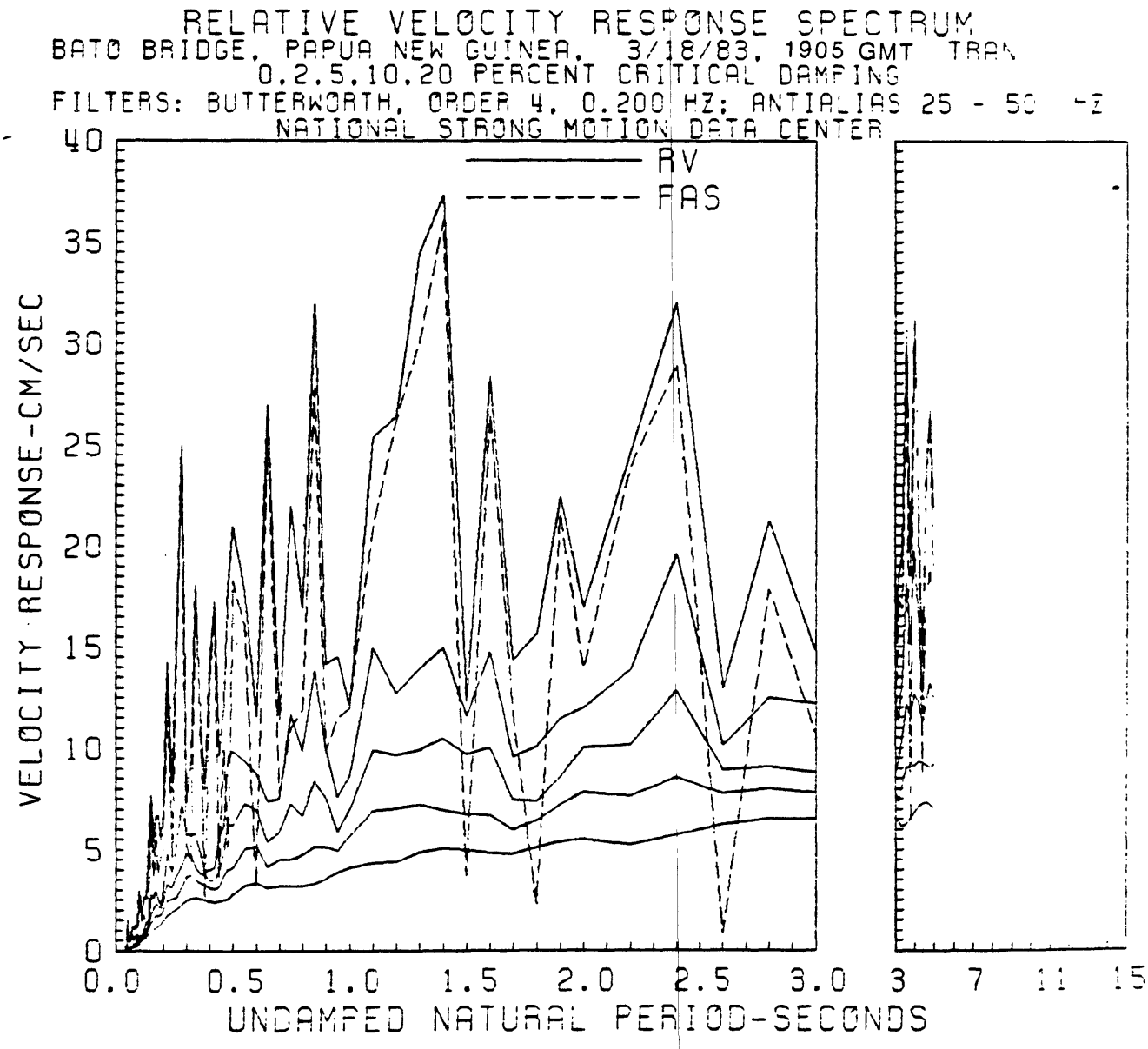

RELATIVE VELOCITY RESPONSE SPECTRUM
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT LCNC
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

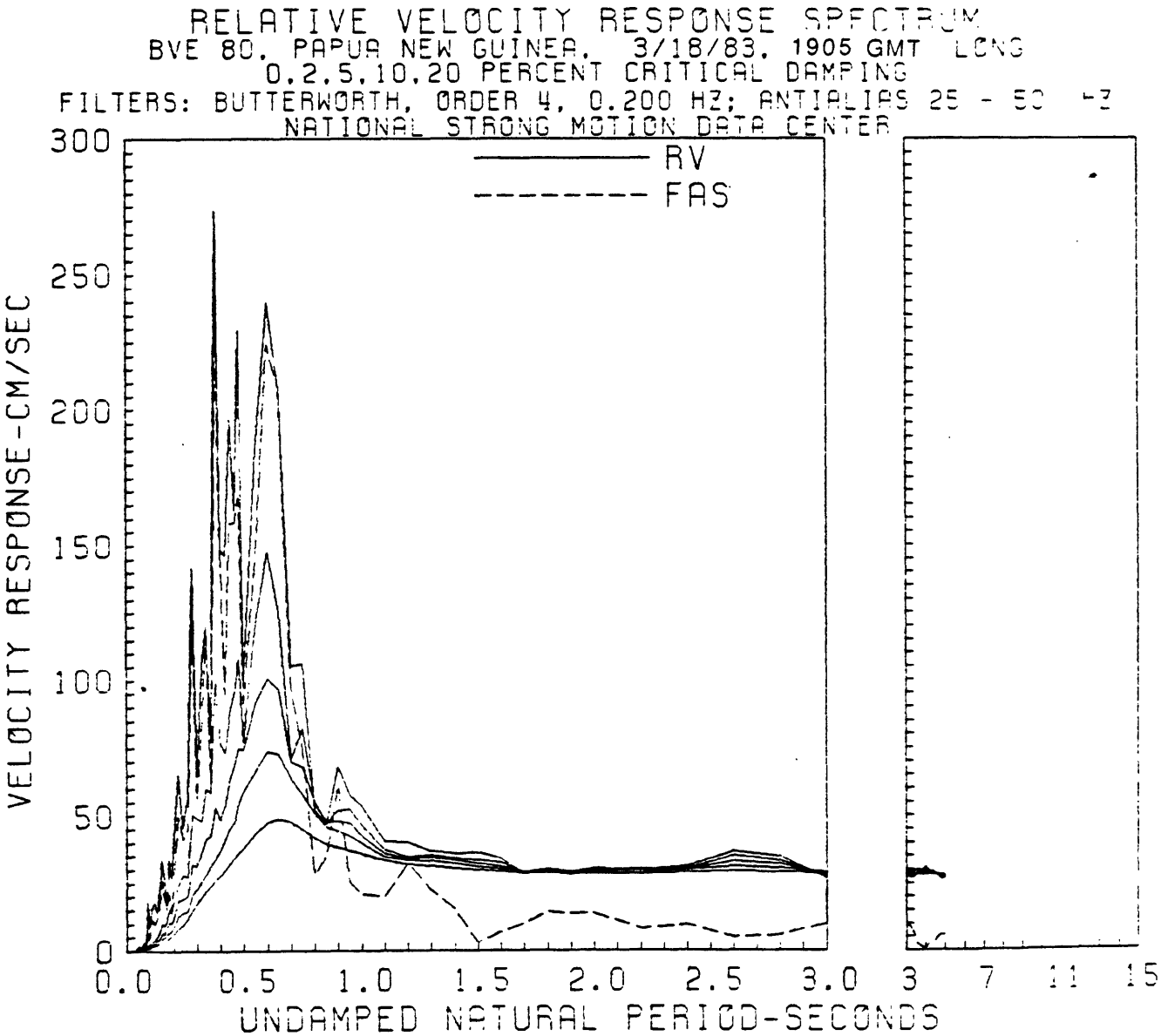

RELATIVE VELOCITY RESPONSE SPECTRUM
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

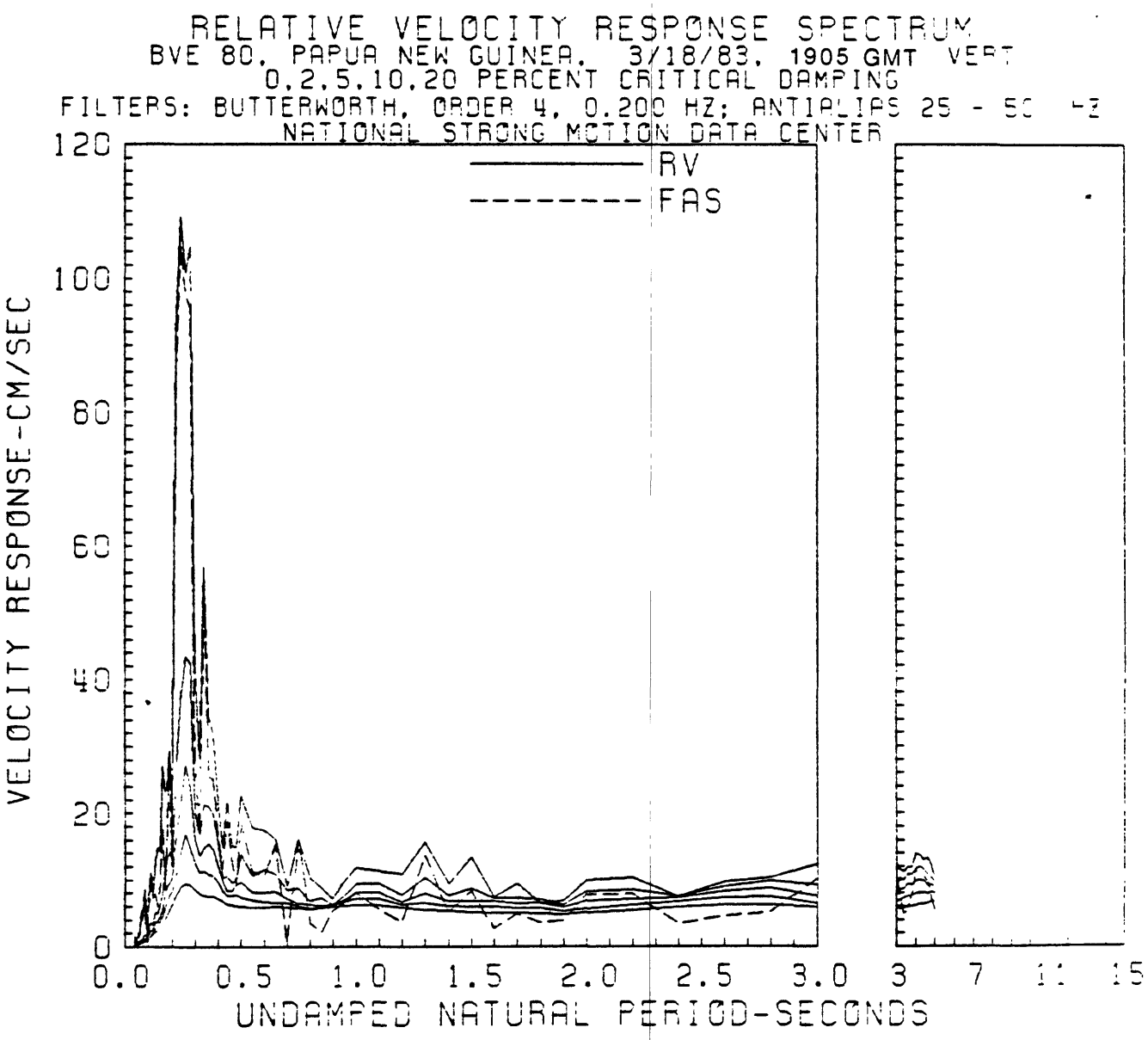

RELATIVE VELOCITY RESPONSE SPECTRUM
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT TRAN
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
35
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

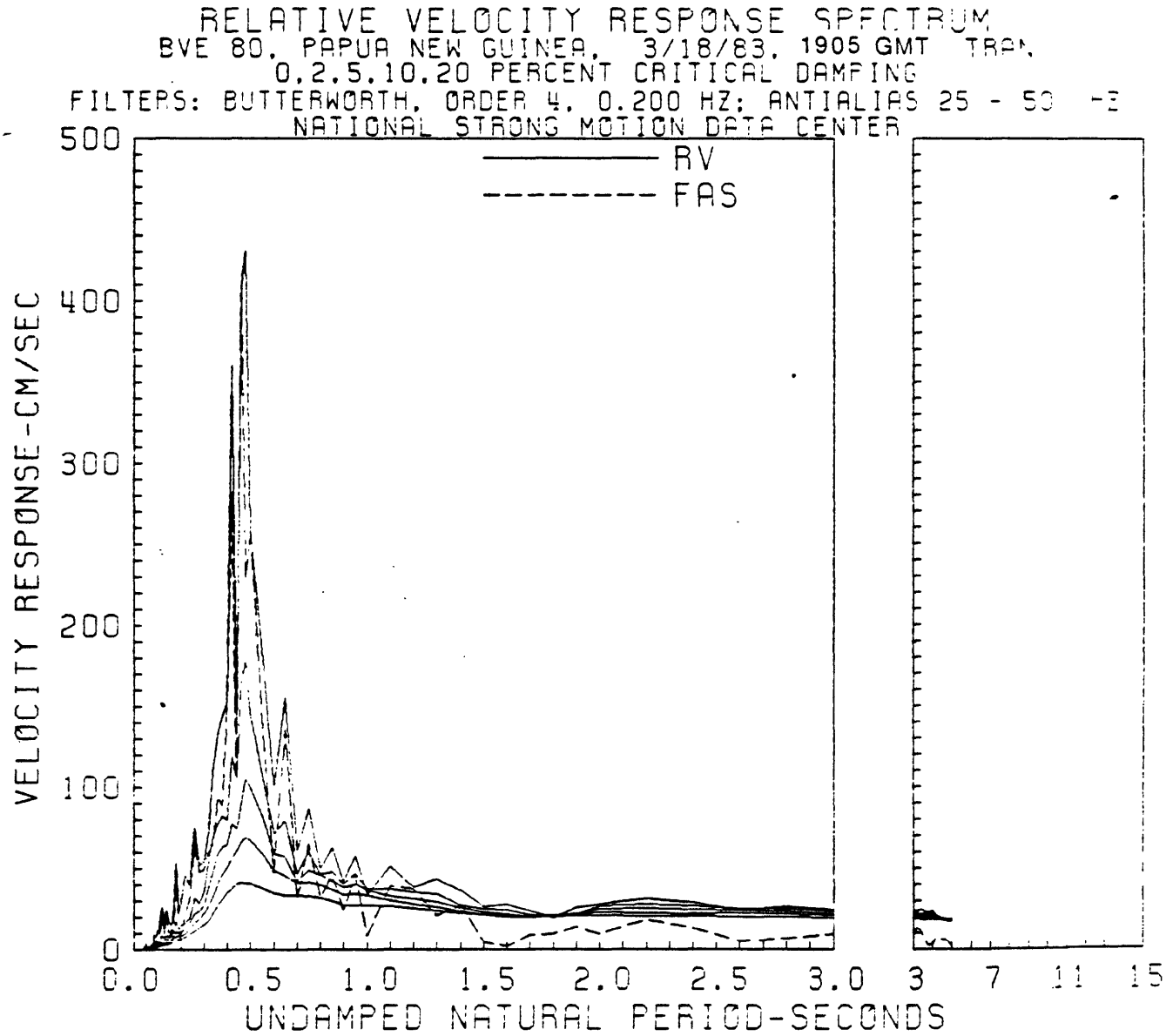

RELATIVE VELOCITY RESPONSE SPECTRUM
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
35
40
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

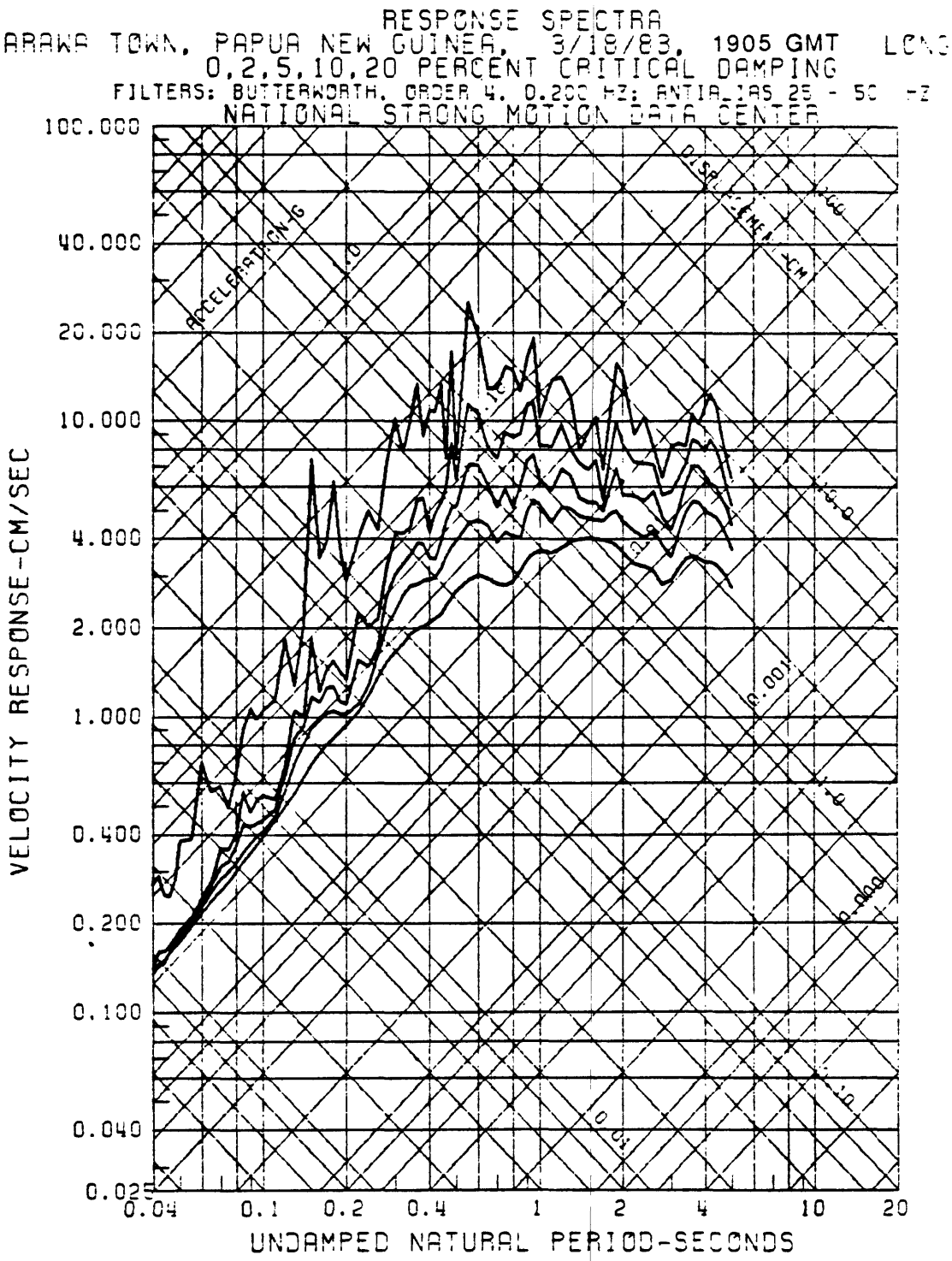

RELATIVE VELOCITY RESPONSE SPECTRUM
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT
0.2,5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

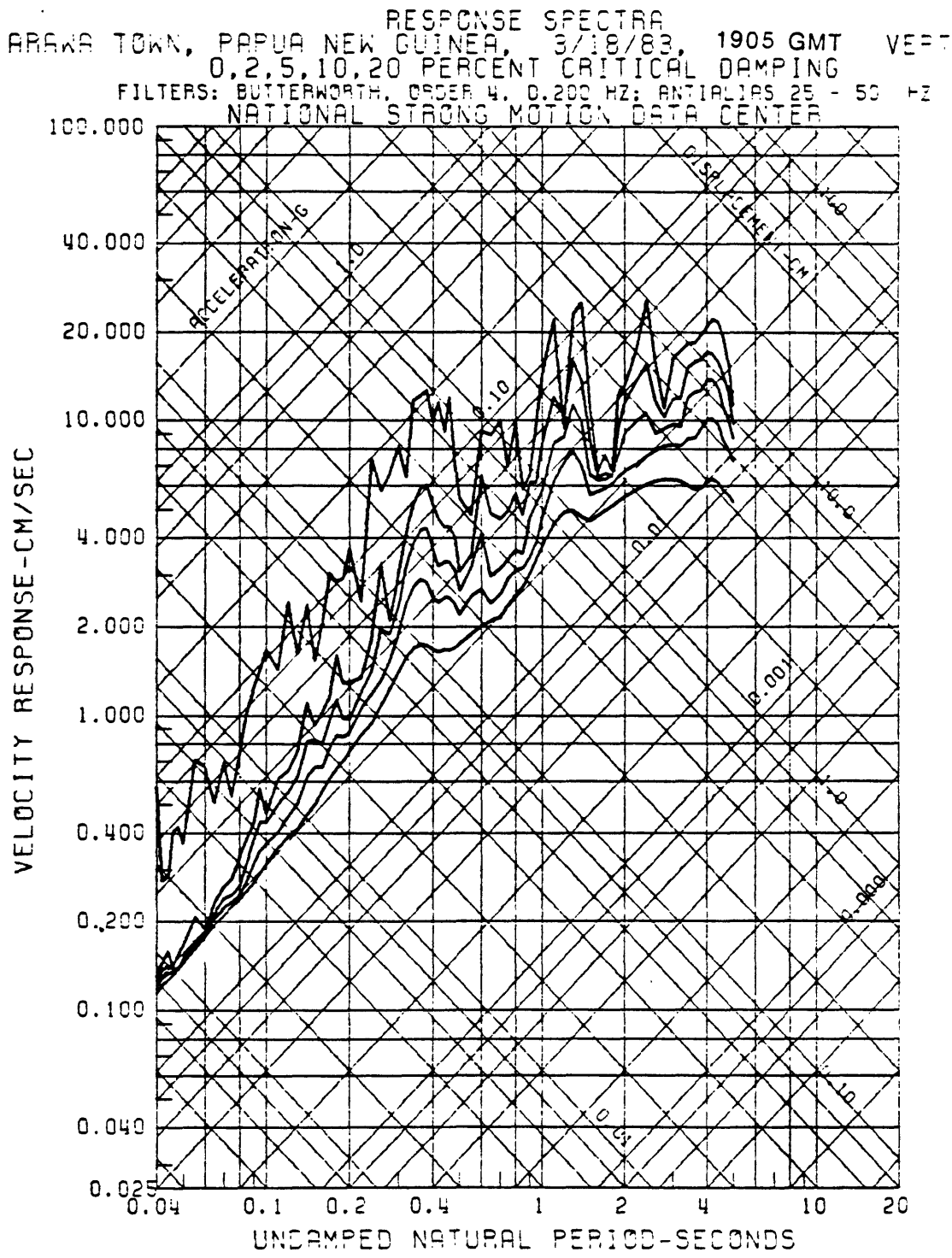

RELATIVE VELOCITY RESPONSE SPECTRUM
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT TRAN
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 -Z
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
35
40
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

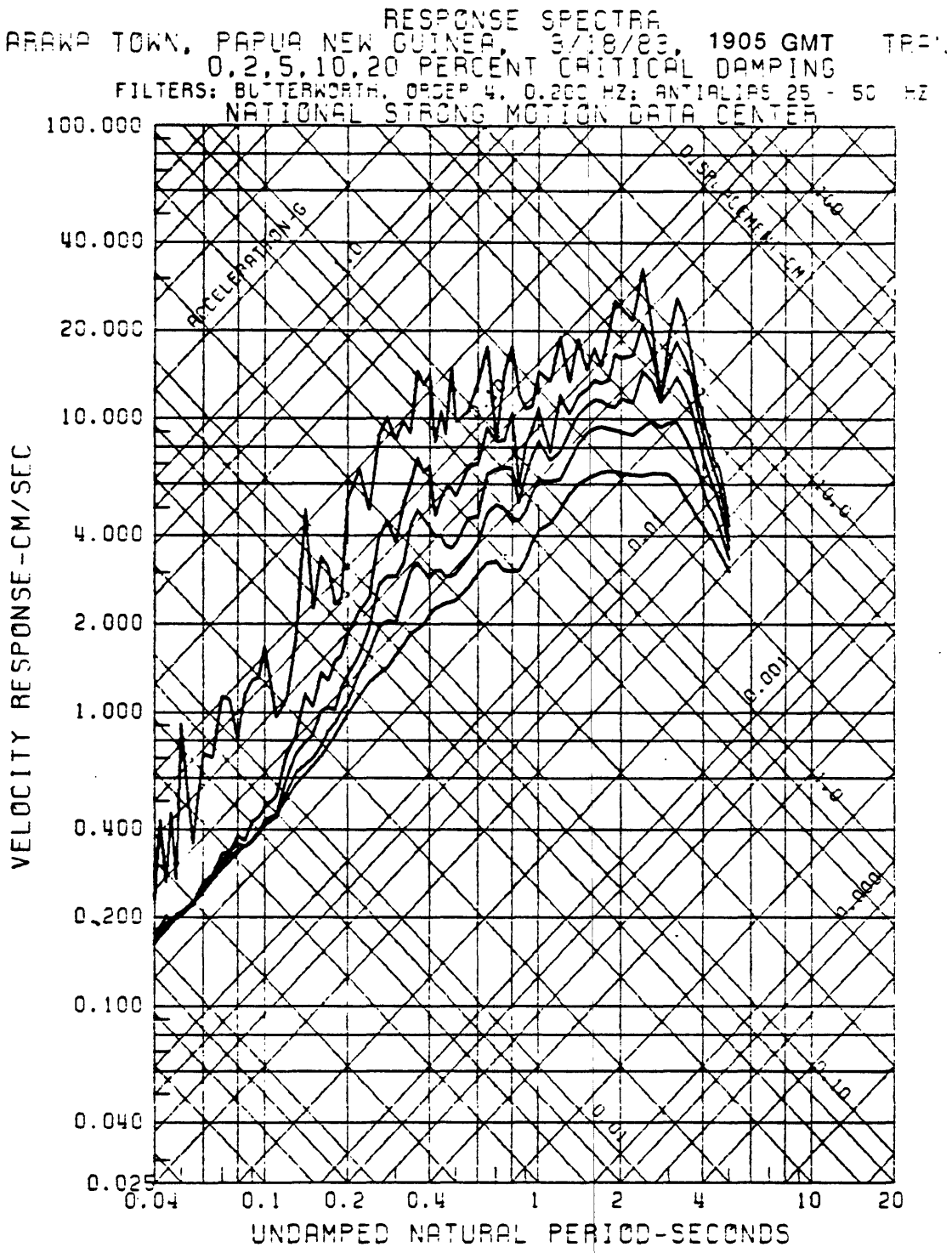

RELATIVE VELOCITY RESPONSE SPECTRUM
BVE 80. PAPUA NEW GUINEA. 3/18/83. 1905 GMT LONG
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
300
250
200
150
100
50
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

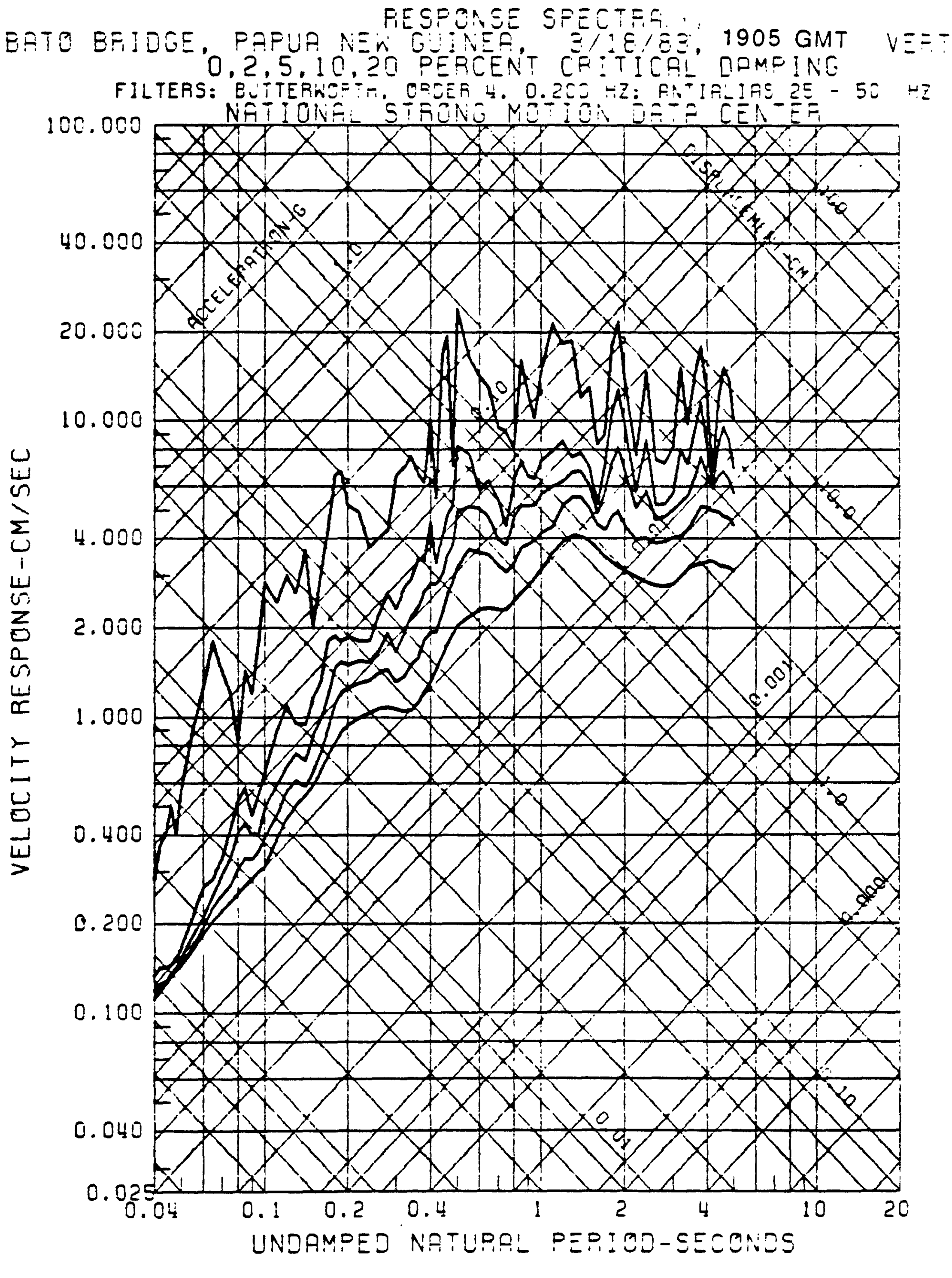

RELATIVE VELOCITY RESPONSE SPECTRUM
BVE 80, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
120
100
80
60
40
20
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

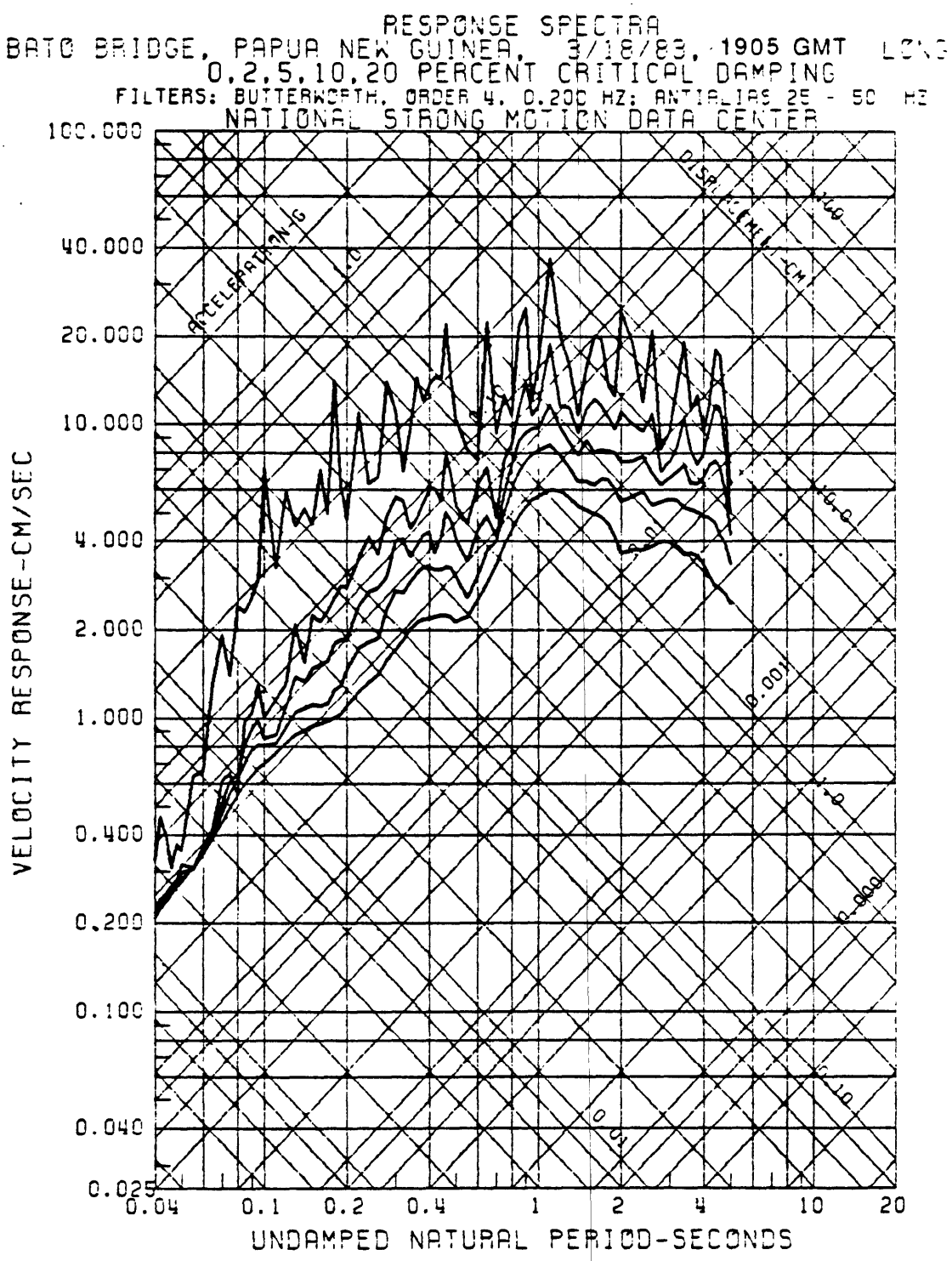

RELATIVE VELOCITY RESPONSE SPECTRUM
BVE 80. PAPUA NEW GUINEA. 3/18/83. 1905 GMT TRA
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH. ORDER 4. 0.200 HZ; ANTIALIAS 25 - 50 -E
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
500
400
300
200
100
0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

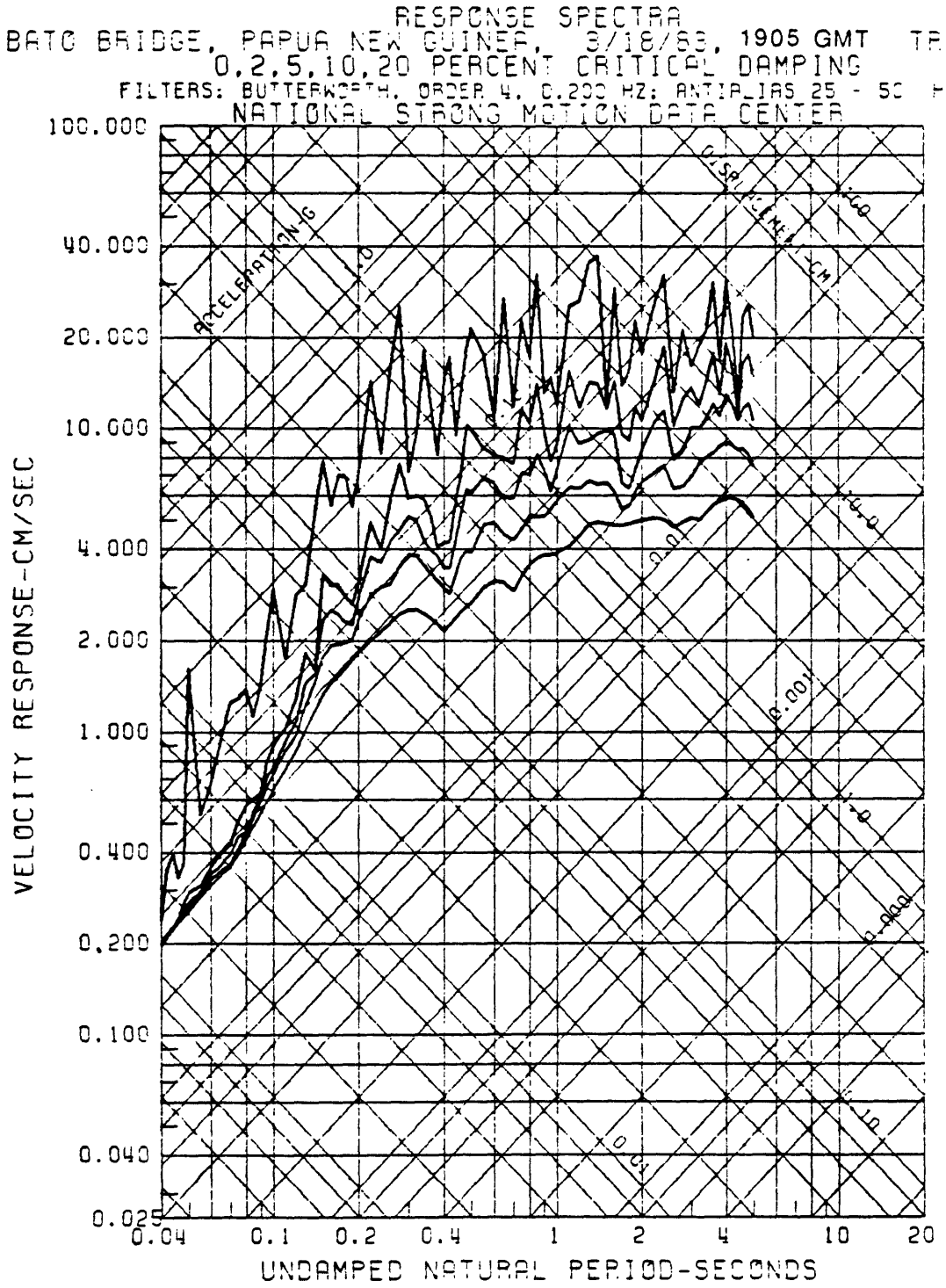

RESPONSE SPECTRA
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
0.001
0.0001
0.01

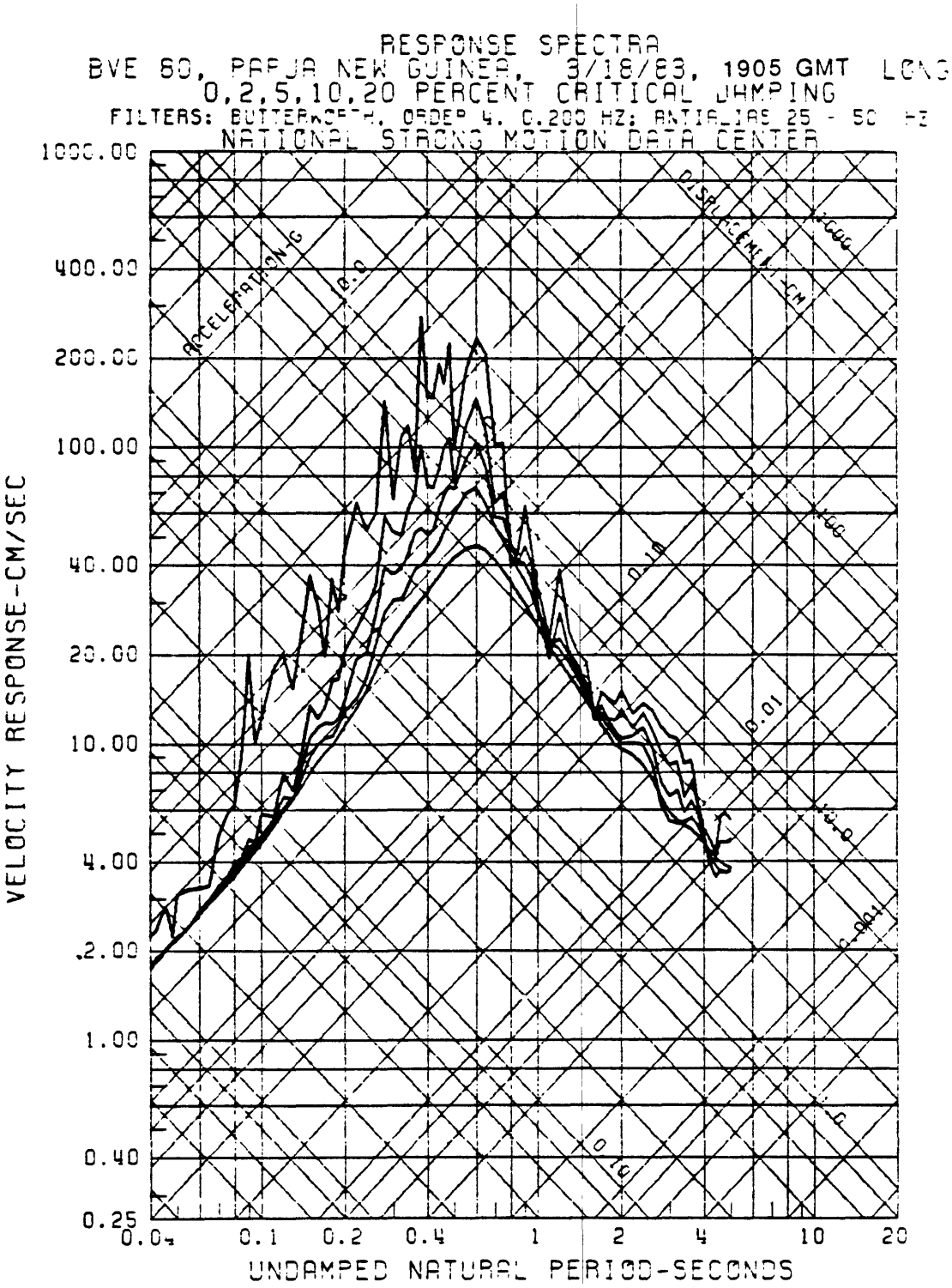

RESPONSE SPECTRA
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
0.10
0.0
0.001

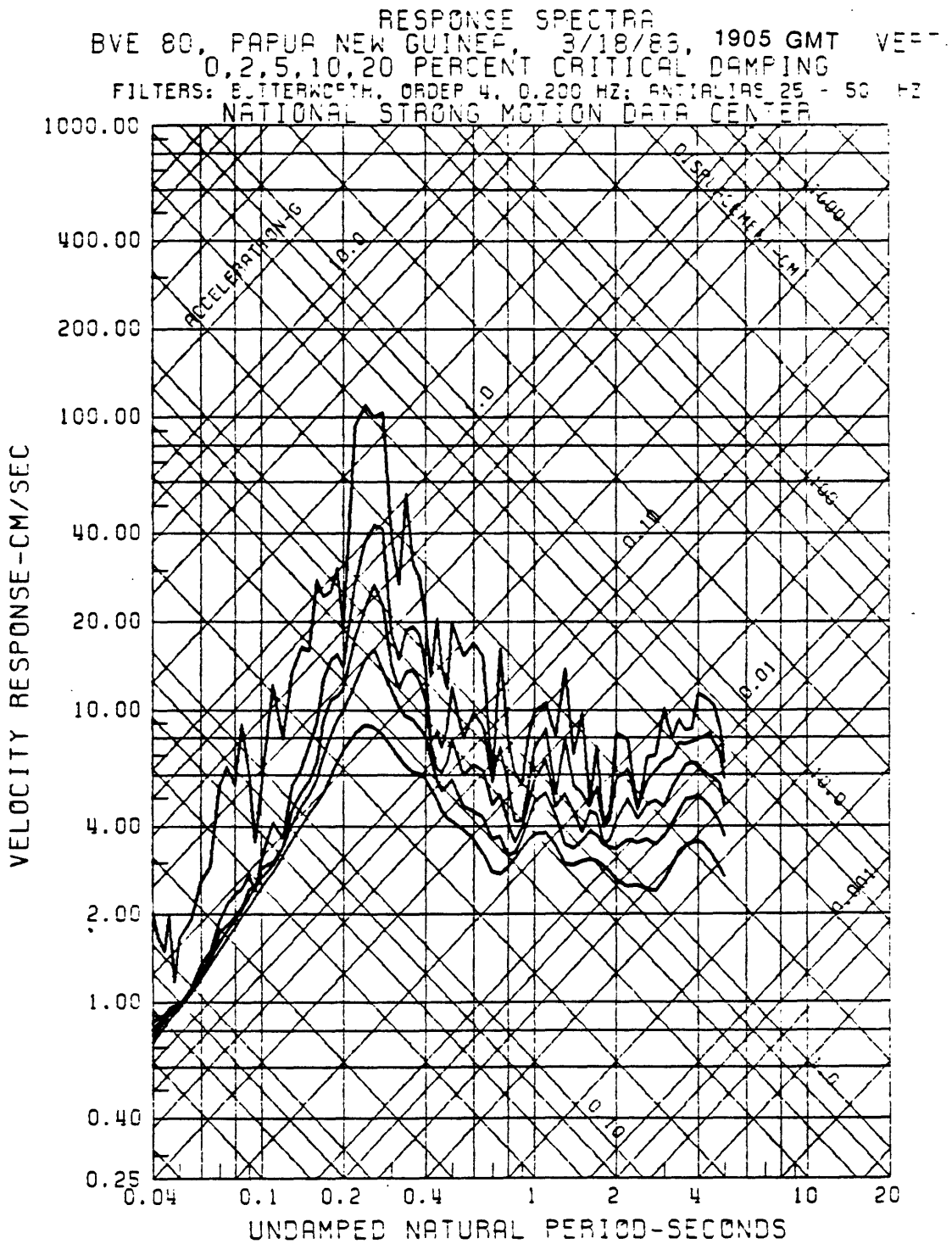

RESPONSE SPECTRA
ARAWA TOWN, PAPUA NEW GUINEA, 3/18/83, 1905 GMT TRI
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM

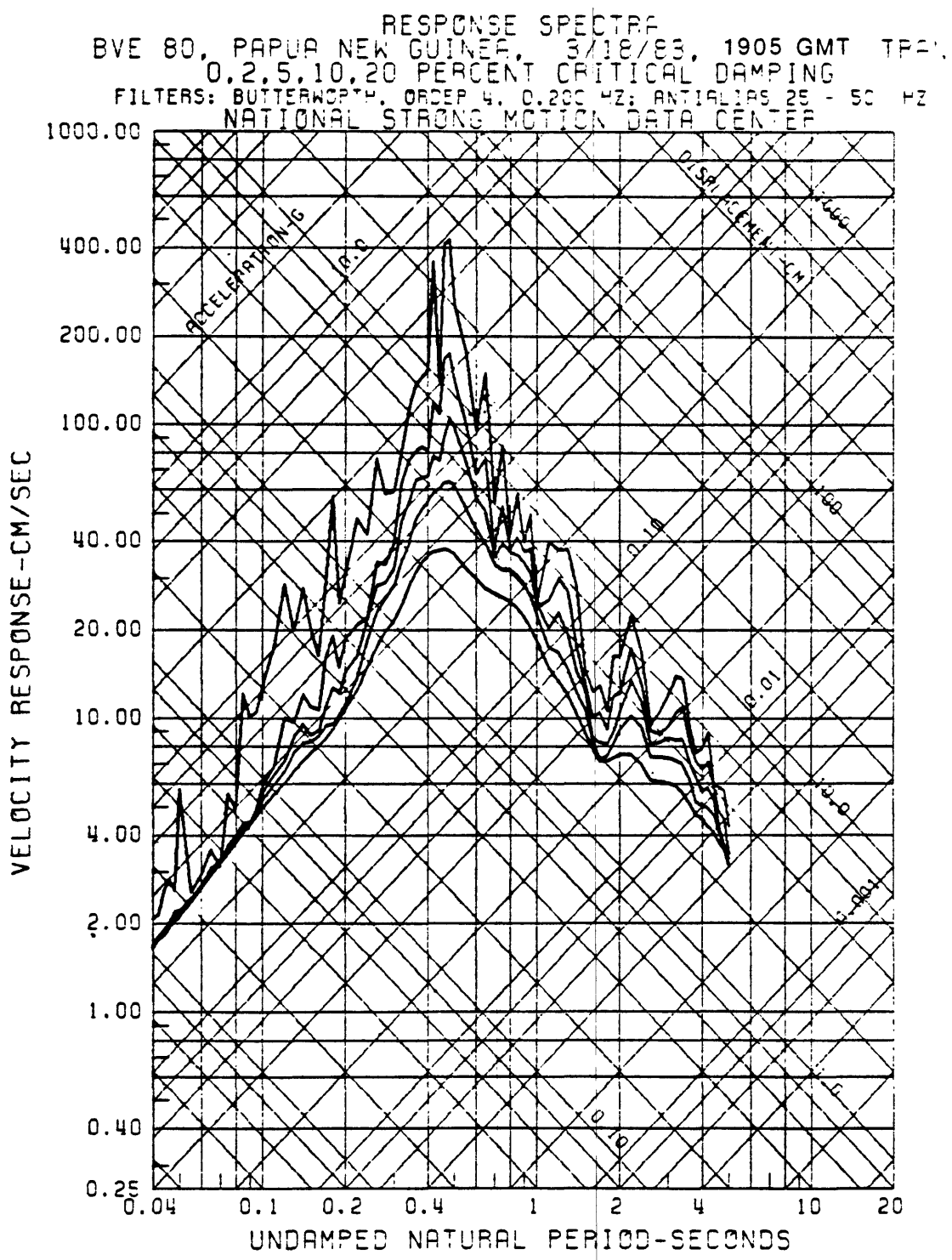

RESPONSE SPECTRA
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20

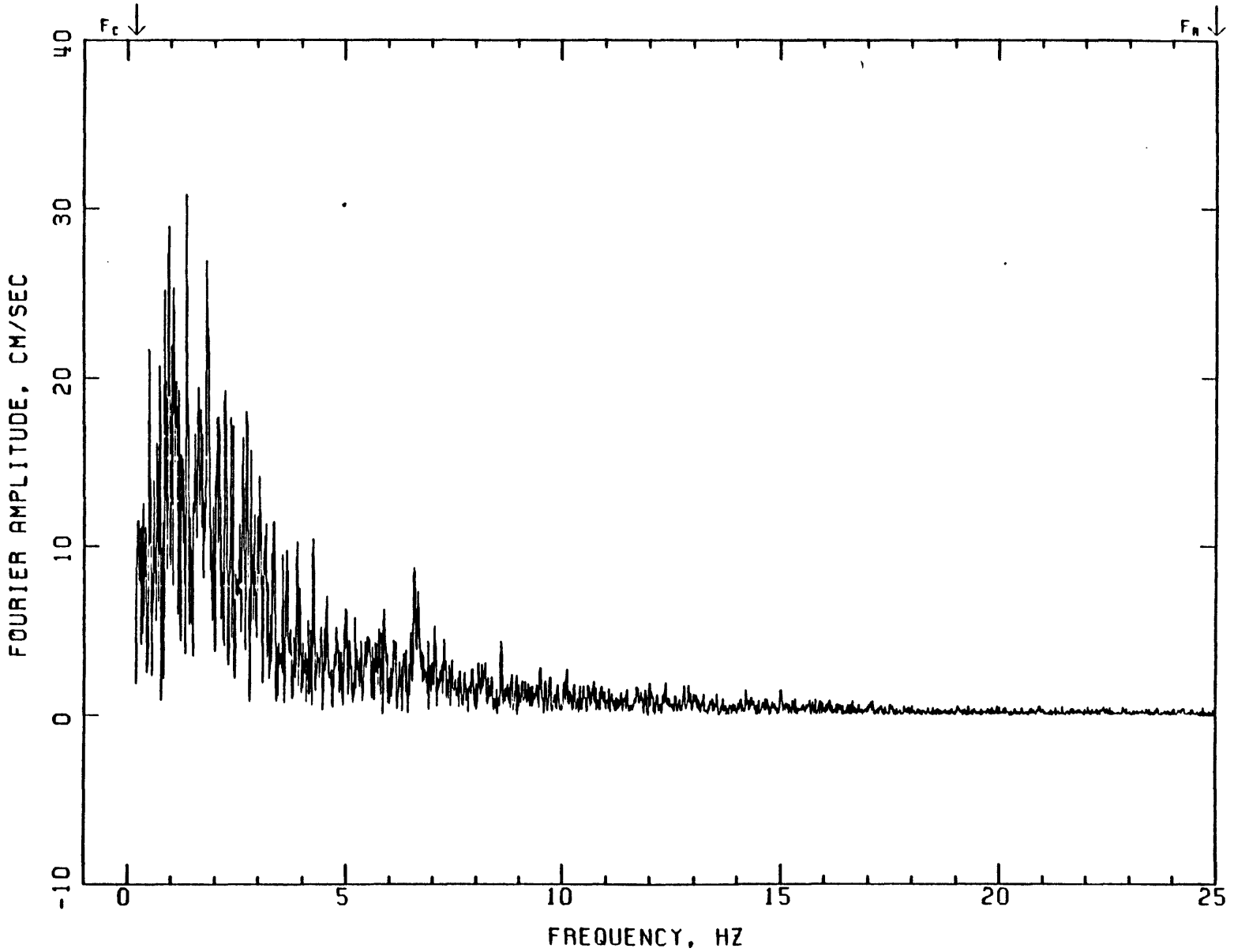

RESPONSE SPECTRA
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
0.001
0.01
0.10


RESPONSE SPECTRA
BATO BRIDGE, PAPUA NEW GUINEA, 3/18/83, 1905 GMT TRA
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
0.5
0.2
0.1
0.05
0.02
0.01
0.005
0.002
0.001


RESPONSE SPECTRA
BVE 80, PAPUA NEW GUINEA, 3/18/83, 1905 GMT LONG
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
0.10
0.01
0.001

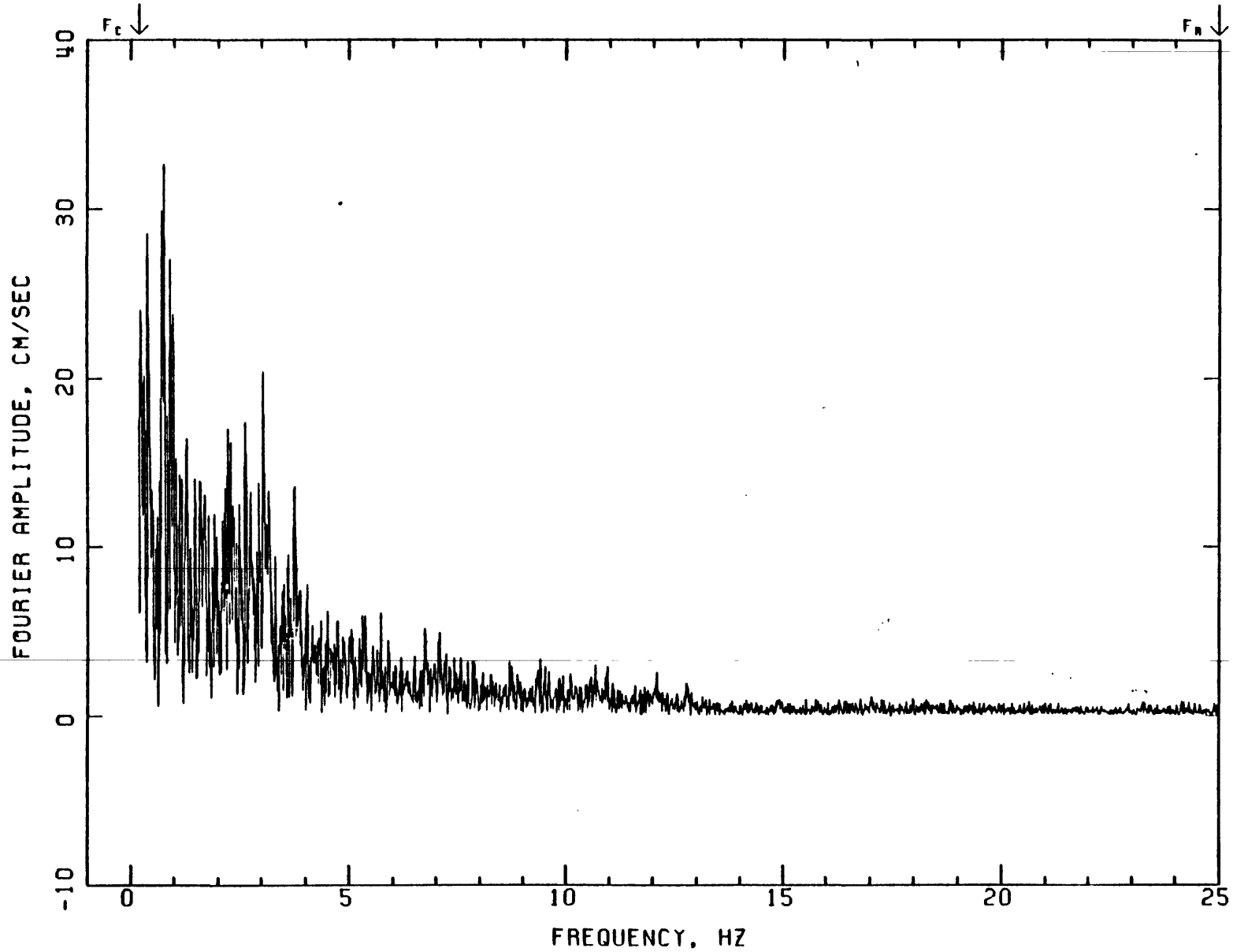

RESPONSE SPECTRA
BVE 80, PAPUA NEW GUINEA, 3/18/83, 1905 GMT VERT.
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
1.0
0.1
0.01
0.001
0.0001
0.10


RESPONSE SPECTRA
BVE 80, PAPUA NEW GUINEA, 3/18/83, 1905 GMT TRA
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.200 HZ; ANTIALIAS 25 - 50 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
10.0
DISPLACEMENT-CM
1000
100
10.0
1.0
0.1
0.01
0.10



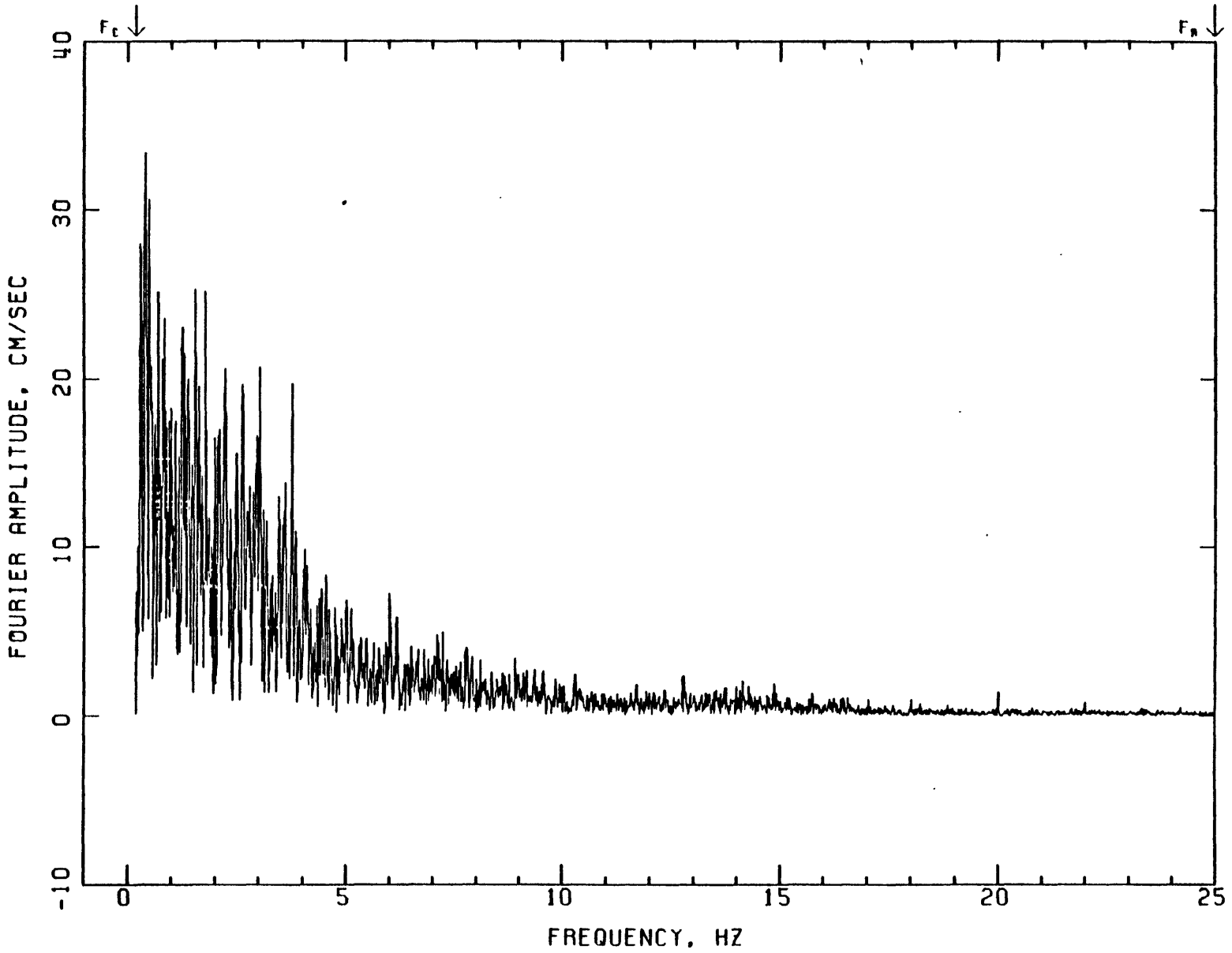
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



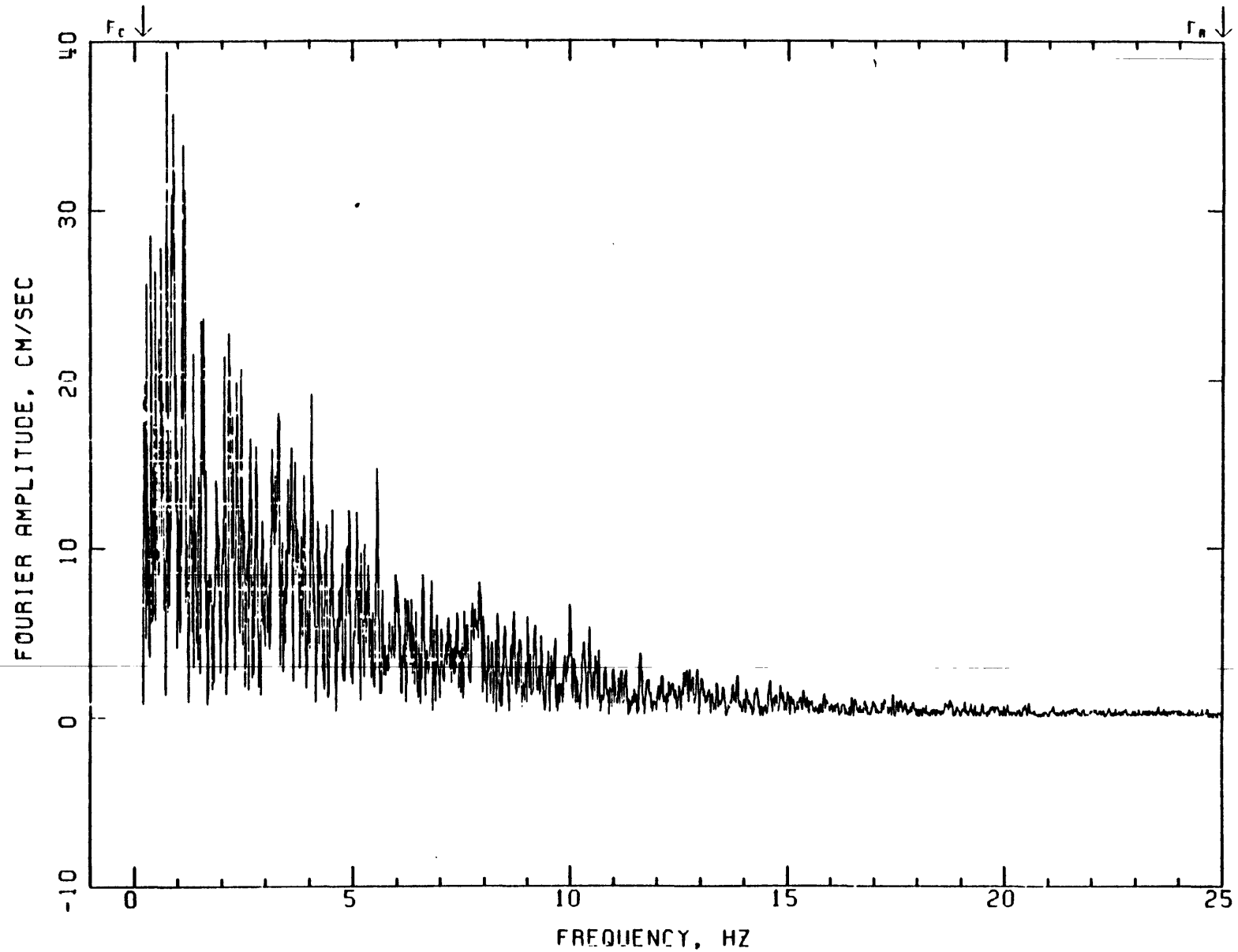
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



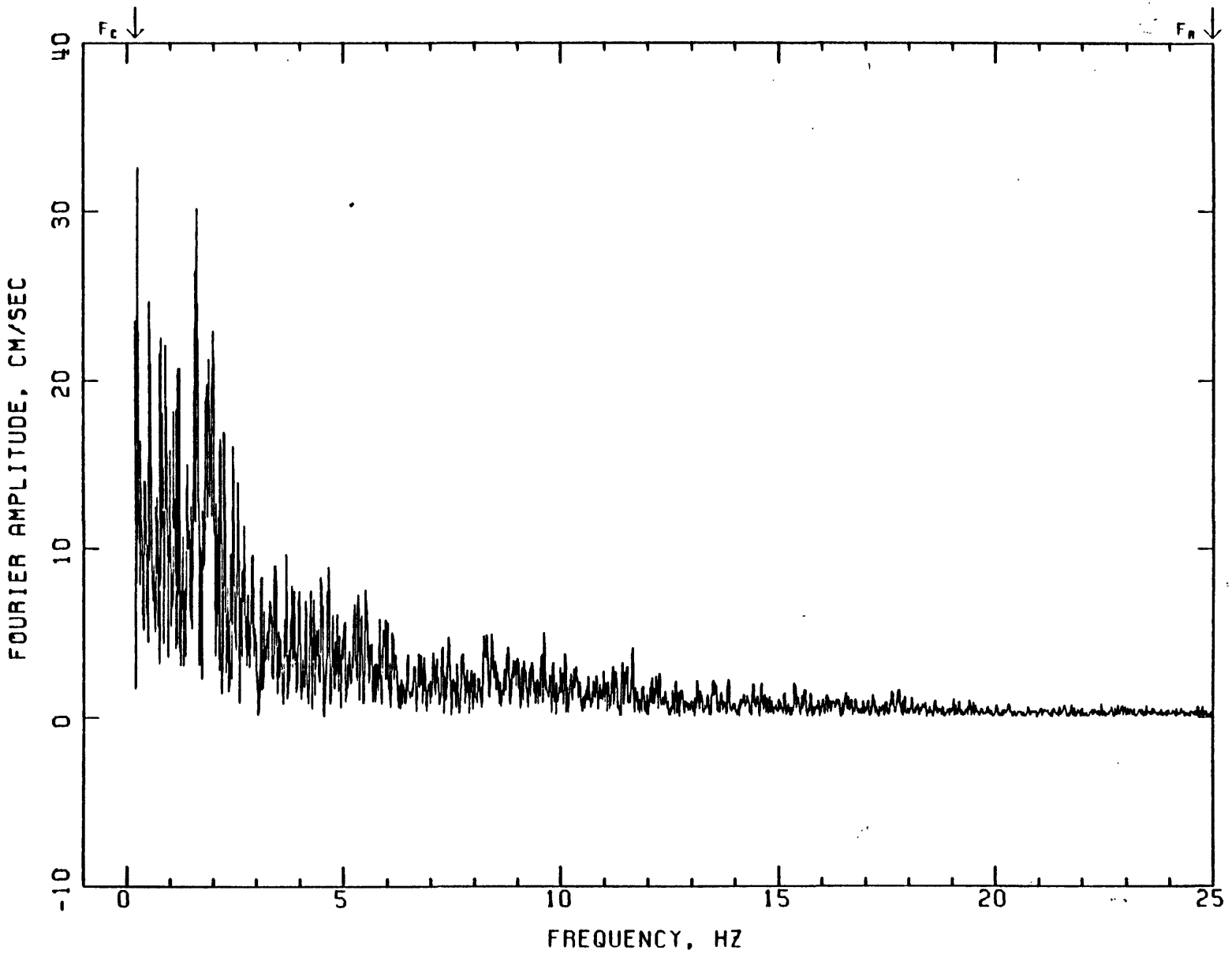
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



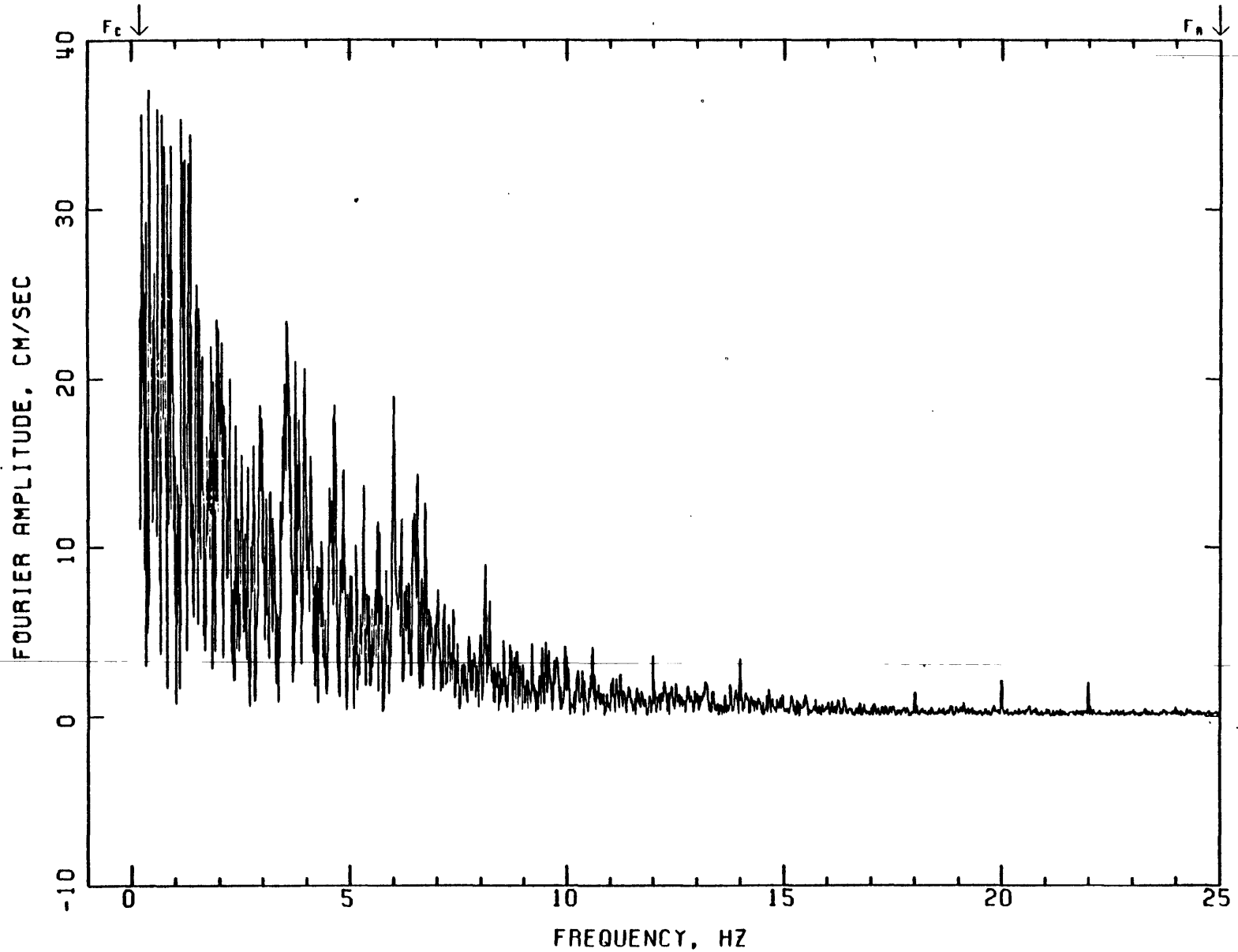
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



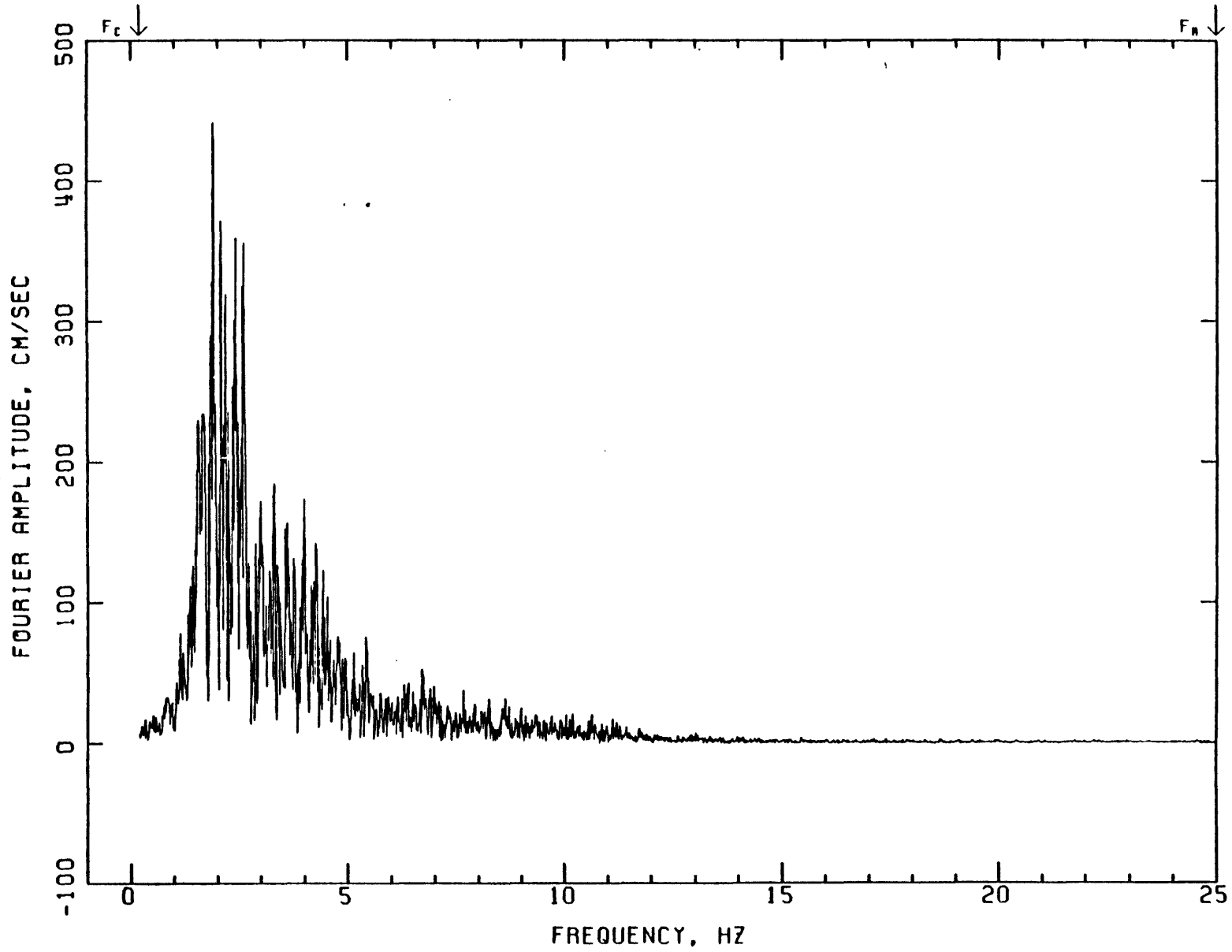
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



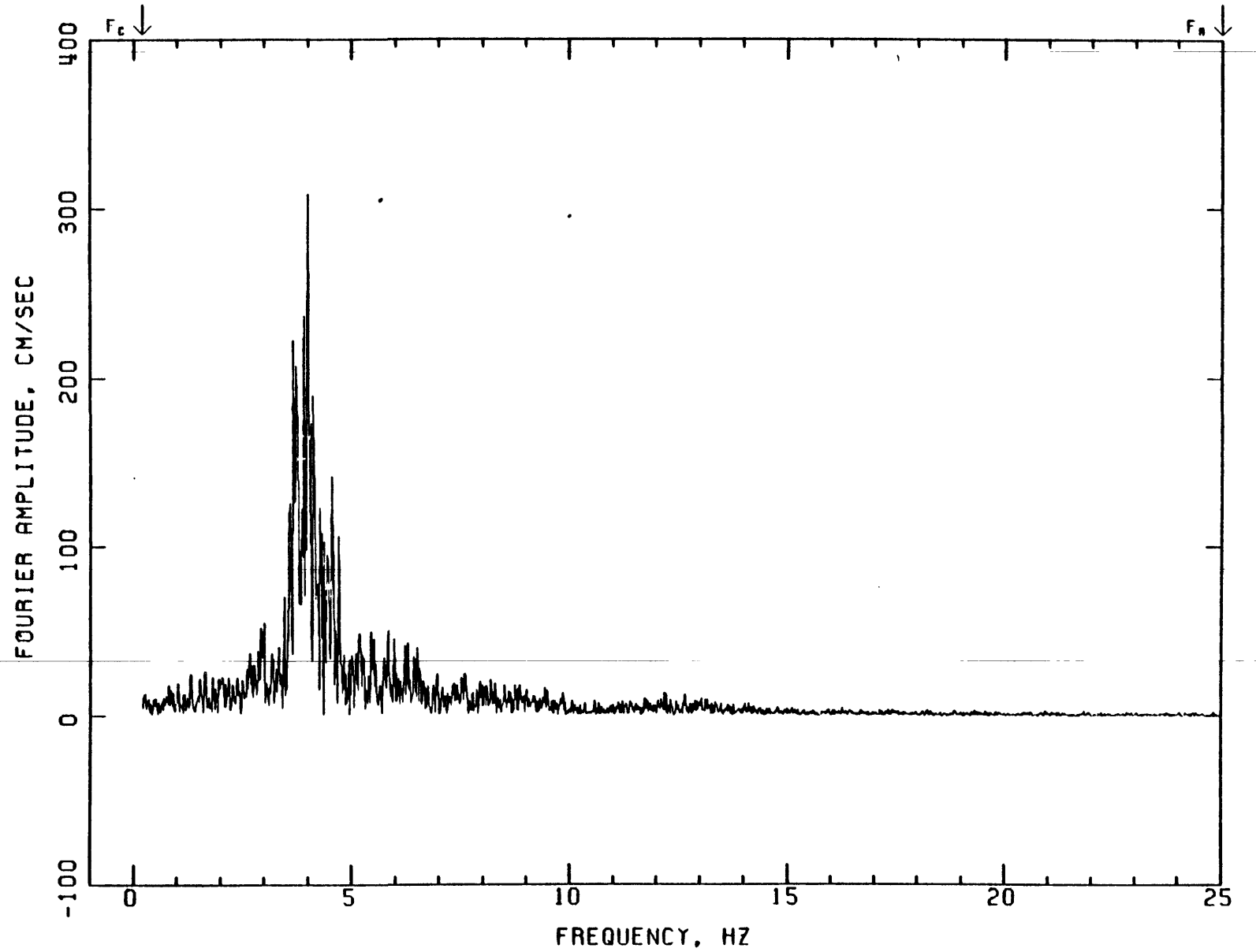
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



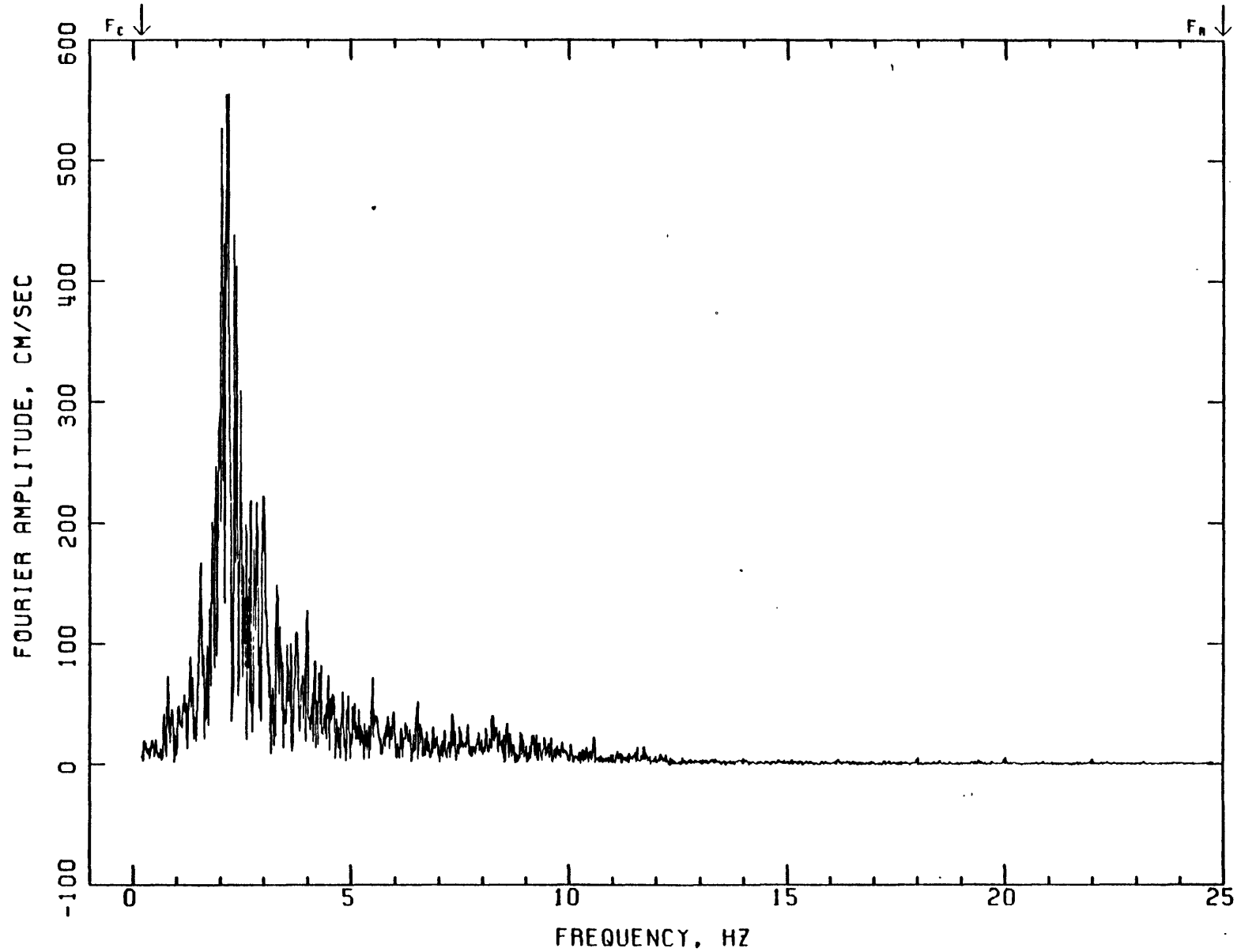
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



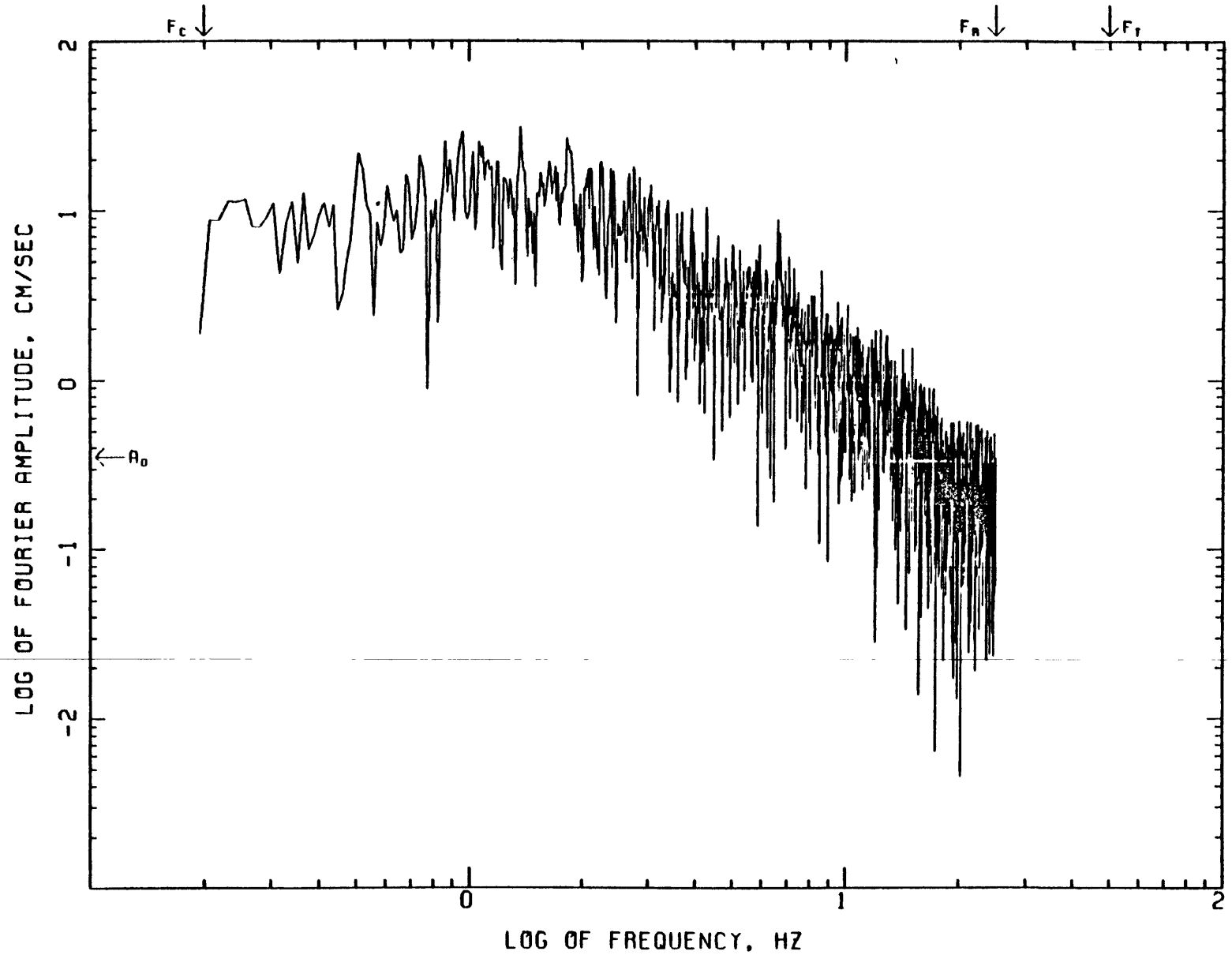
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



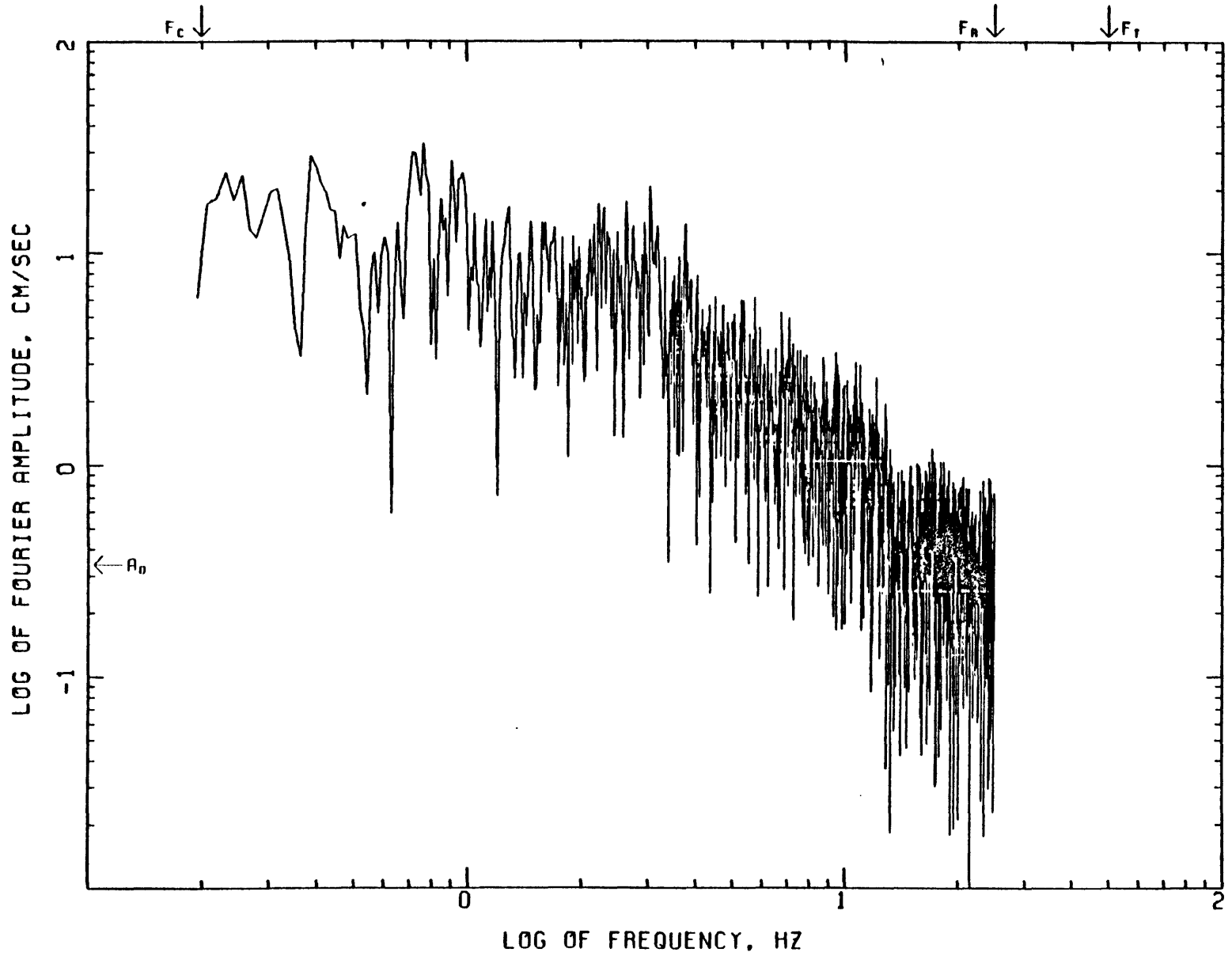
FIGURE

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



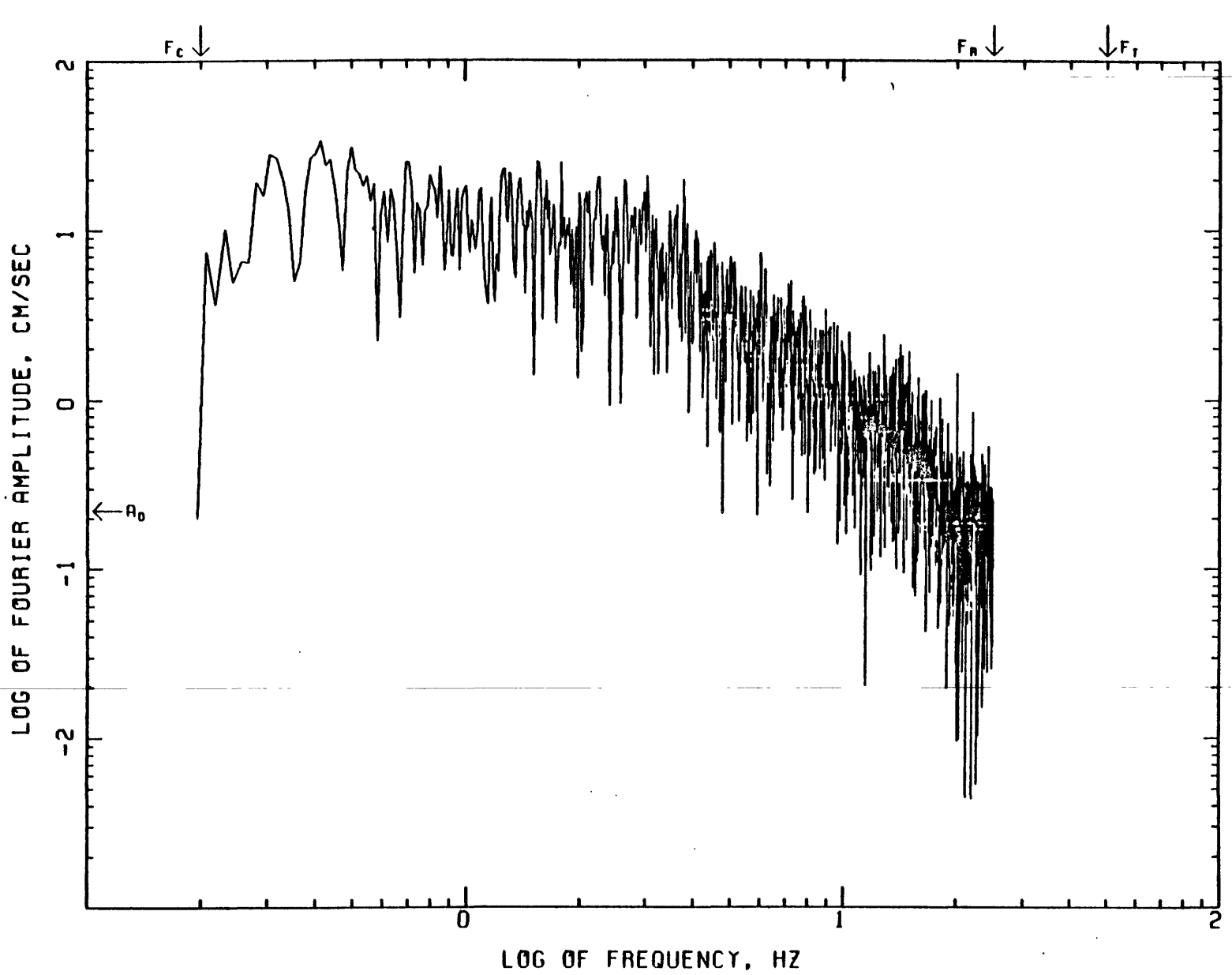
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



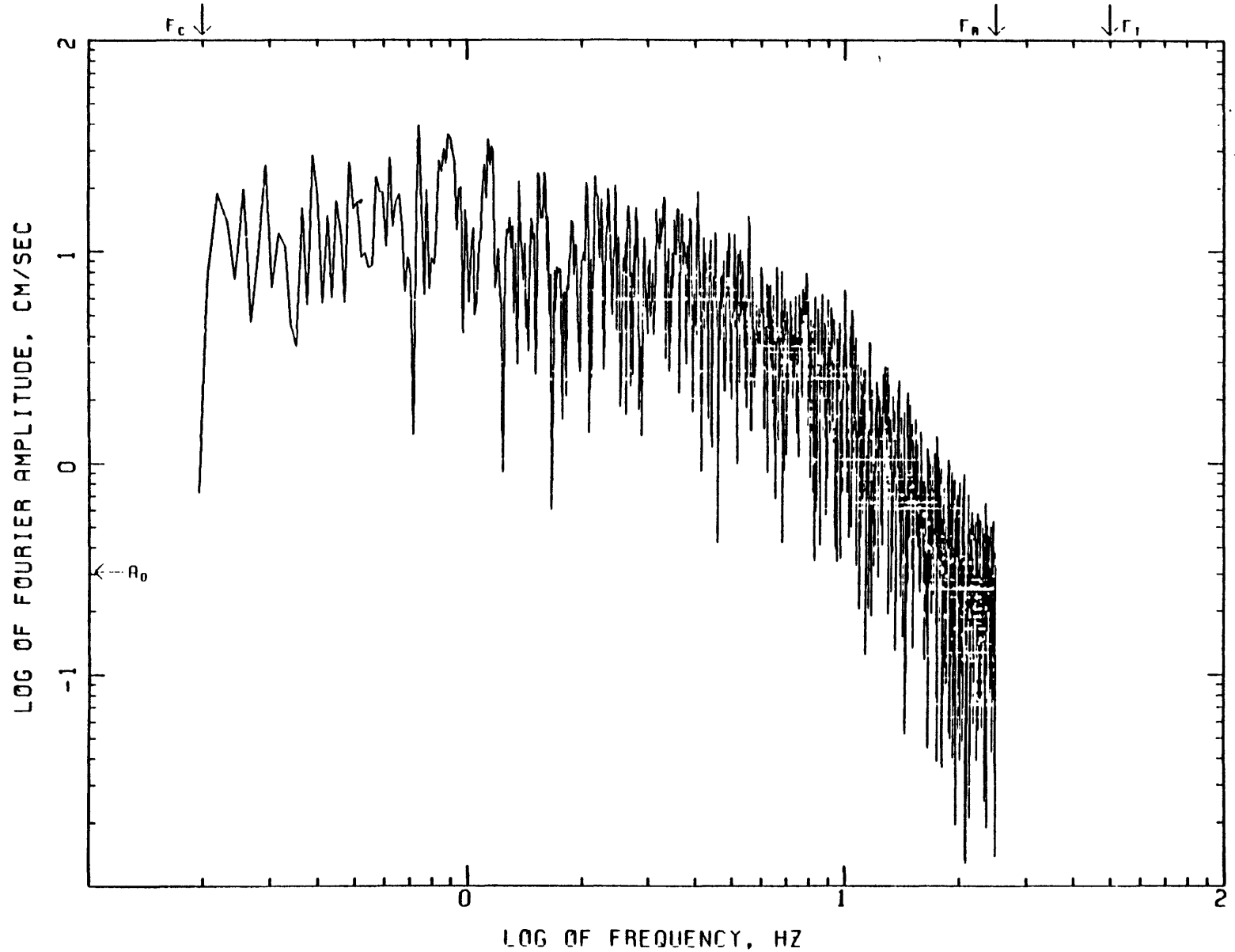
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



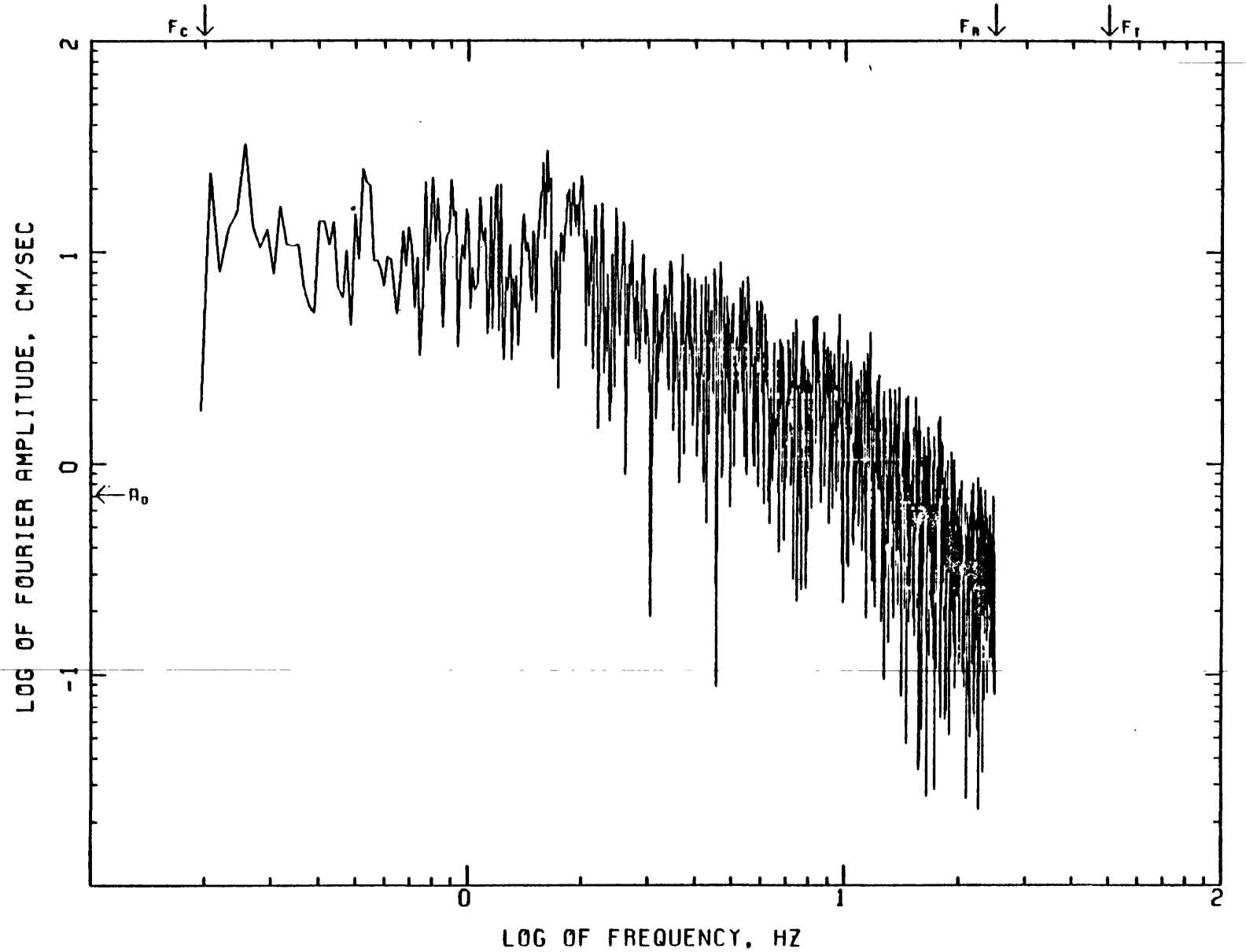
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
ARAWA TOWN, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



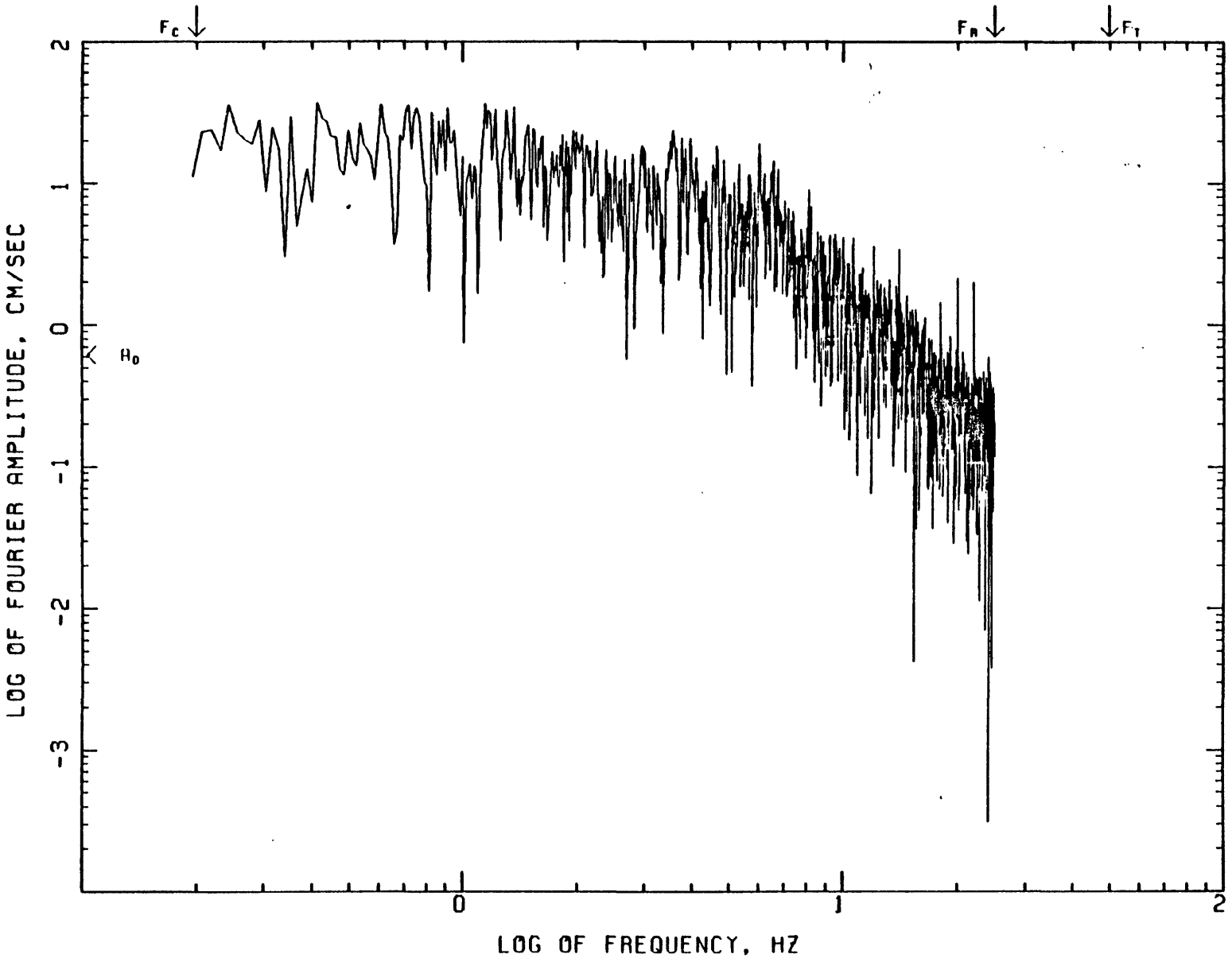
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



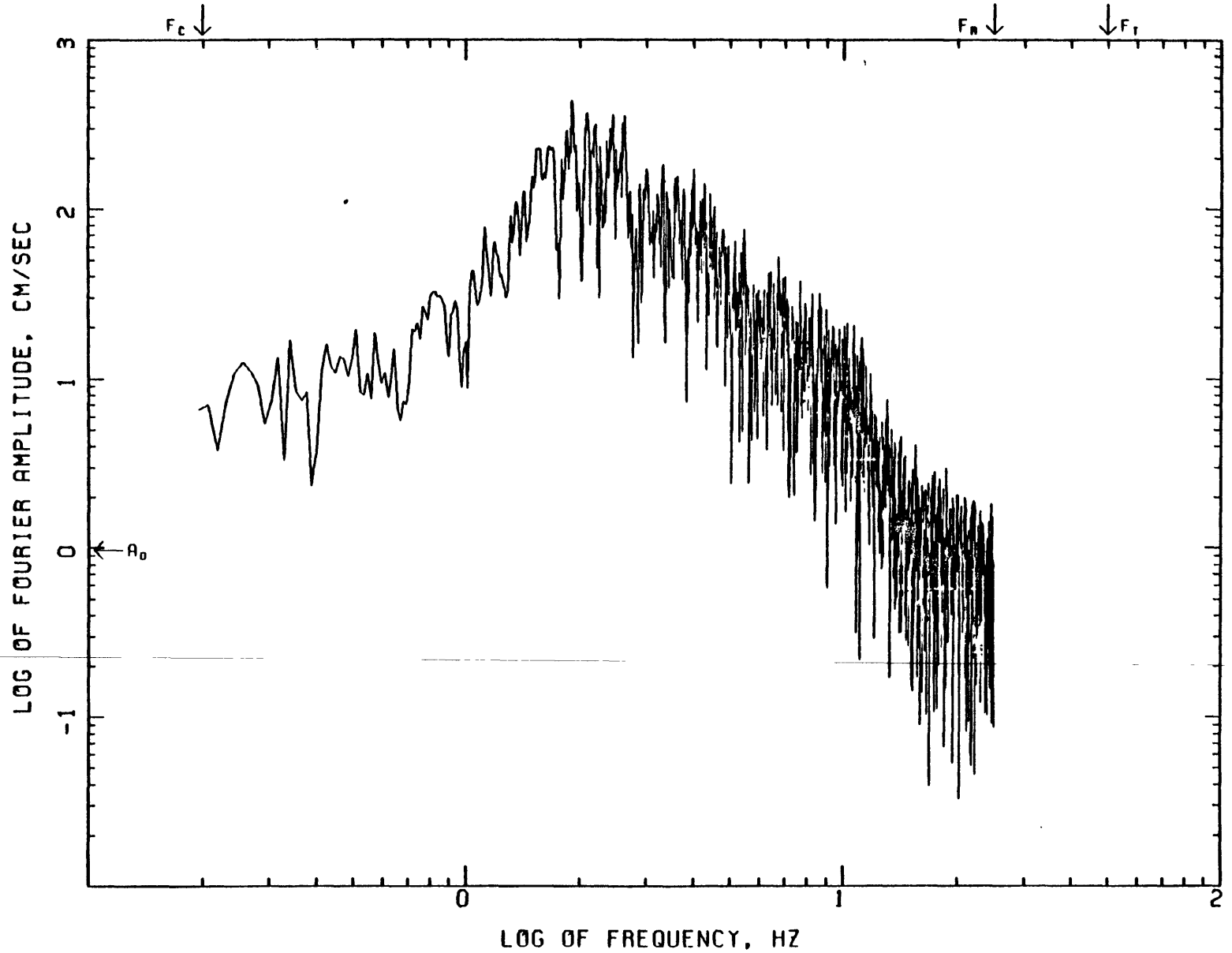
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



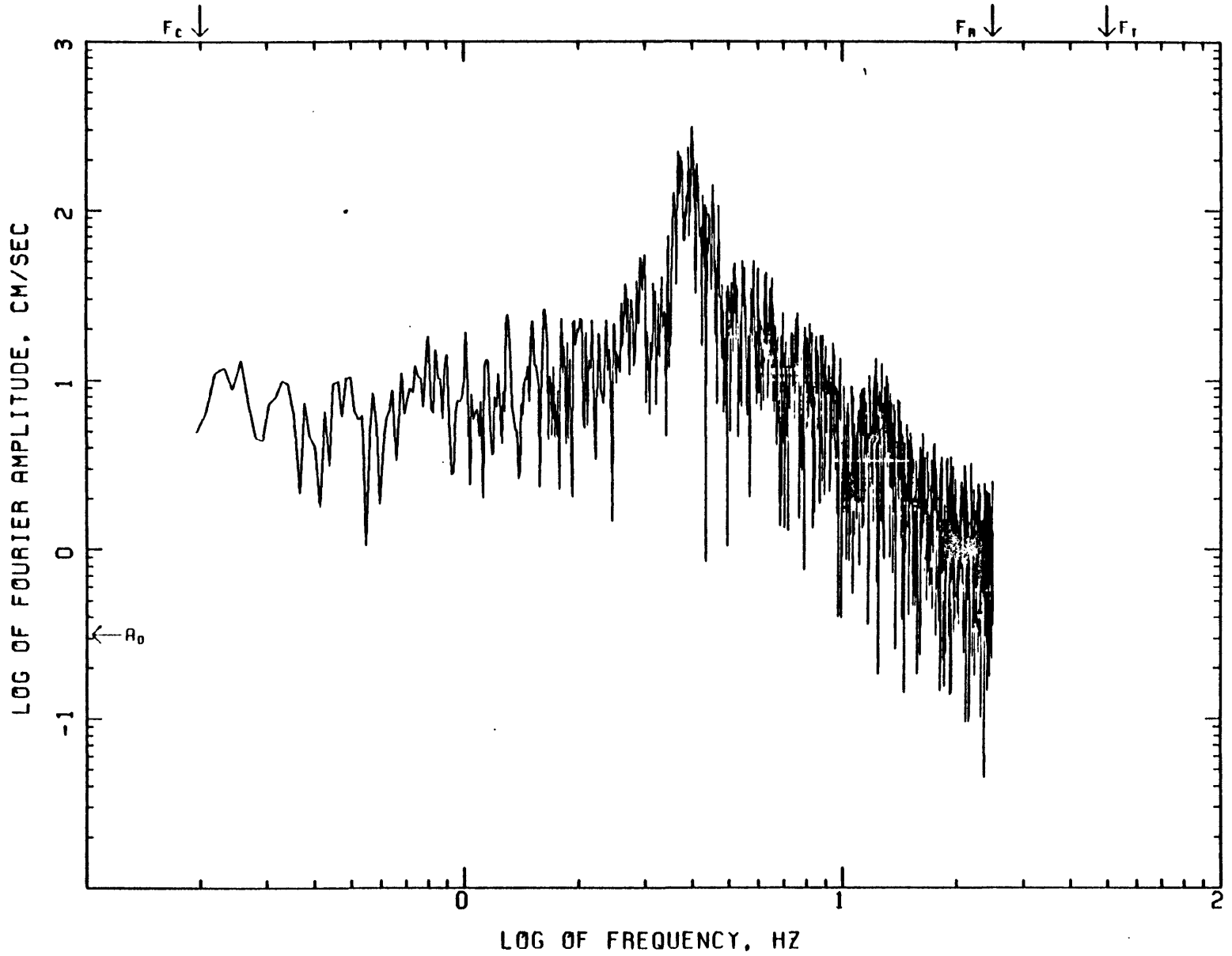
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BATO BRIDGE, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



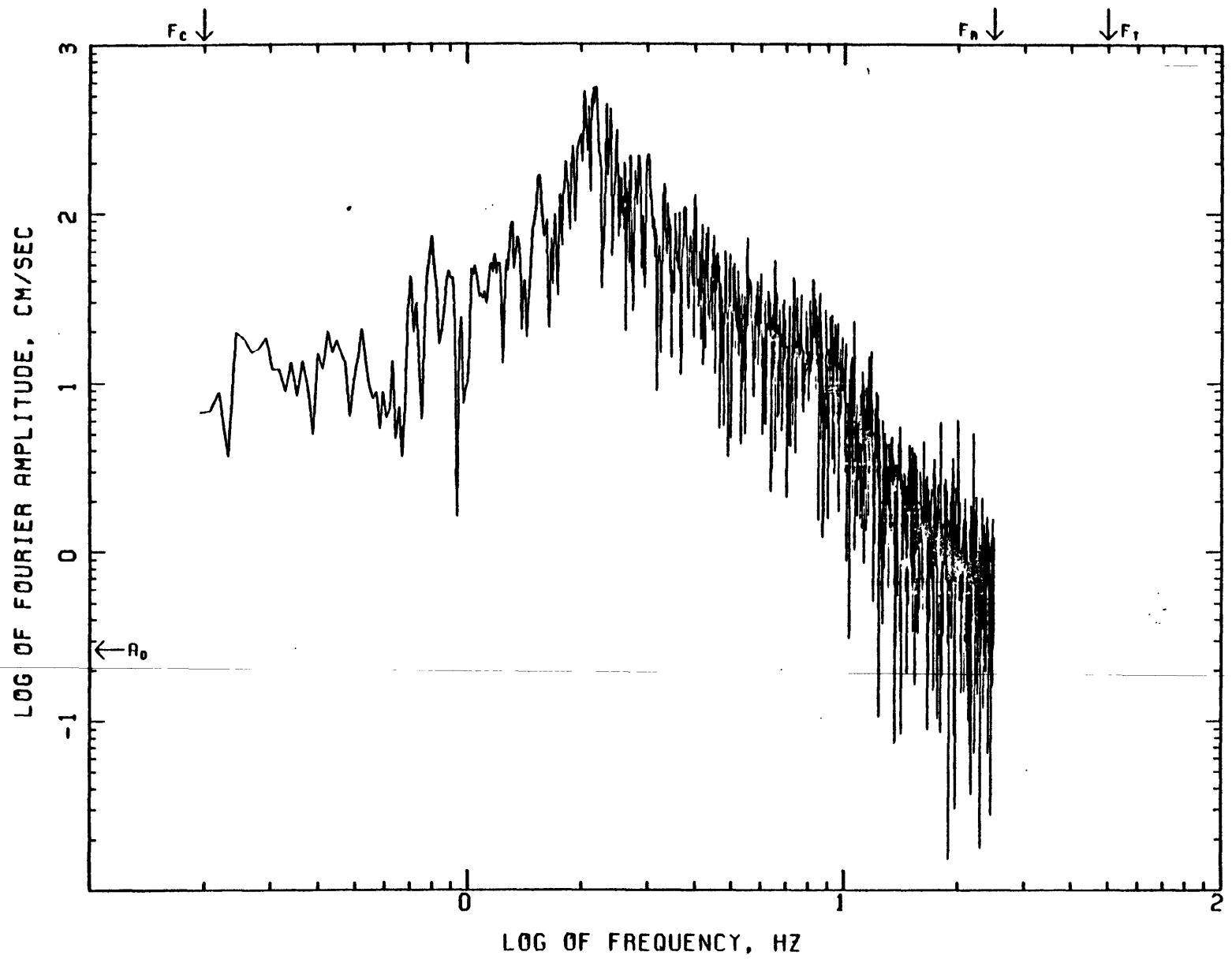
FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
LONG.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
VERT.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.



FIGURE

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
BVE 80, PAPUA NEW GUINEA
TRAN.
EARTHQUAKE OF MARCH 18, 1983 1905 GMT
BUTTERWORTH FILTER AT 0.20 HZ, ORDER 4
DATA BAND PASSED FROM 0.20 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

Appendix II

Current Lists of Processed Records

APPENDIX II

CURRENT LISTS OF PROCESSED RECORDS

TABLE 1. Chronological list of events and associated reports describing the existence, processing, analysis, and availability of digital data on tape from NOAA, or from the National Strong Motion Data Center in Menlo Park. USGS processing of records from the USGS permanent network of strong-motion accelerographs and associated networks. Strong motion data from earthquakes 1978* and later.

Date & Time (Gmt)	Earthquake	Reference (see attached list)
January 1, 1975; 0355	Southern Alaska;	OFR 86-191 (Silverstein, Brady, Mork, 1986b)
March 25, 1978;	Coyote Dam, California	OFR 83-166 (Brady & Perez, 1983)
August 27, 1978 and two later shocks;	Monticello Dam, Jenkinsville, South Carolina;	OFR 81-0448 (Brady & others, 1981)
August 6, 1979;	Coyote Lake, California	OFR 81-42 (Brady & others, 1980)
October 15, 1979;	Imperial Valley, California;	OFR 80-703 (Brady, Perez & Mork, 1980)
October 15, 1979;	Imperial Valley, California;	OFR 82-183 (Perez, 1982)
October 15, 1979; 2317:41, 2318:20, 2318:40	Imperial Valley California aftershock	OFR 86-____ (in preparation) (Brady, Mork, Silverstein)
October 16, 1979, 0706;	Monticello Dam, Jenkinsville, South Carolina;	OFR 81-1241 (Mork & Brady, 1981)
December 13, 1981 and March 18, 1983;	Solomon Islands;	OFR 86-264 (Silverstein, Brady, Mork, 1986a)
February 13, 14, and 23, 1983;	Monasavu Dam, Fiji;	OFR 85-375 (Silverstein, 1985a)
May 2 and May 9, 1983;	Coalinga, California;	OFR 84-626 (Maley & others, 1984)
July 9, 1983; 0740;	Coalinga, California;	OFR 85-584 (Silverstein, 1985b)
July 22, 1983; 0239;	Coalinga, California;	OFR 85-250 (Silverstein and Brady, 1985)

*With inclusion of isolated earlier events recently processed.

TABLE 1. Chronological list of events and associated reports (continued)

Date & Time (Gmt)	Earthquake	Reference (see attached list)
April 24, 1984;	Morgan Hill, California;	OFR 84-498, Vol I and II (Compiled by Seena Hoose)
December 23, 1985; 0516 GMT and Nov. 9, Dec. 23, Dec 25	Northwest Territories, Canada	OFR 86-____, (Weichert and others, 1986)
January 26, 1986; 1920 GMT	Hollister, California	OFR 86-156, (Brady and others, 1986)

TABLE 2. Processed records in each report

January 1, 1975; 0355; southern Alaska; OFR 86-191
Records (4): Anchorage, 500 W. Third St., Basement
Anchorage, Alaskan Methodist University
Anchorage, Government Hospital
Talkeetna, FAA-VOR Building

March 25, 1978; Coyote Dam, California; OFR 83-166.
Records (3): Coyote Dam, Ukiah, California: abutment, toe, crest.

August 27, 1978, 1023 and 2 later shocks; Monticello Dam, South Carolina, OFR 81-0448.
Records (3): Jenkinsville, S.C. Monticello Dam
Shared abutment (center crest)
August 27, 1978, 1023 GMT
Two later unidentified events

August 6, 1979, Coyote Lake, California; OFR 81-42
Records (6): Coyote Creek, San Martin, California
Gilroy Array: Station 6, San Ysidro, California
Gilroy Array: Station 4, San Ysidro School, California
Gilroy Array: Station 3, Sewage Treatment Plant, California
Gilroy Array: Station 2, Mission Trails Motel, California
Gilroy Array: Station 1, Gavilan College, California

October 15, 1979, 2317; The Imperial Valley Earthquake; OFR 80-703.
Records (22): El Centro Array 7, Imperial Valley College, California
El Centro Array 6, Huston Road
El Centro, Bonds Corner, Hiways 98 & 115
El Centro Array 8, Cruickshank Road
El Centro Array 5, James Road
El Centro Differential Array
El Centro Array 4, Anderson Road
Brawley, Brawley Municipal Airport
Holtville, California, Holtville Post Office
El Centro Array 10, Keystone Road
Calexico, California, Calexico Fire Station
El Centro Array 11, McCabe School
El Centro Array 3, Pine Union School
Parachute Test Facility
El Centro Array 2, Keystone Road
El Centro Array 12, Brockman Road
Calipatria, California, Calipatria Fire Station
El Centro Array 13, Strobel Residence
El Centro Array 1, Borchard Ranch
Superstition Mountain, California
Plaster City, California, Storehouse
Coachella Canal Number 4, California

TABLE 2. Processed records in each report. (continued)

October 15, 1979, 2317:41; Imperial Valley Aftershocks; OFR 86-___
Records (6) El Centro Array 5, James Road
El Centro Array 6, Huston Road
El Centro Array 7, Imperial Valley College
El Centro Array 8, Cruickshank Road
El Centro Array 9, Commercial Ave.
El Centro Differential Array

October 15, 1979, 2318:20; Imperial Valley Aftershocks; OFR 86-___
Records (6) El Centro Array 5, James Road
El Centro Array 6, Huston Road
El Centro Array 7, Imperial Valley College
El Centro Array 8, Cruickshank Road
El Centro Array 9, Commercial Ave.
El Centro Differential Array

October 15, 1979, 2318:40; Imperial Valley Aftershock; OFR 86-____
Records (7) El Centro Array 6, Huston Road
El Centro Array 7, Imperial Valley College
El Centro Array 8, Cruickshank Road
El Centro Array 9, Commercial Ave.
El Centro Differential Array
Bonds Corner, Highways 115 & 98
Holtville Post Office

October 15, 1979; The Imperial Valley, California; OFR 82-183;
Records (22): This report contains the time-dependent response spectrum plots for the same records as in OFR 80-703, above.

October 16, 1979, 0706 GMT, Monticello Dam, South Carolina, OFR 81-1214.
Records (1): Jenkinsville, South Carolina, Monticello Dam shared abutment (center crest)

December 13, 1981 and March 18, 1983; Solomon Islands, OFR 86-264
Records (5): Dec. 13, 1981, 0129 GMT: 460 Beach, Panguna Mine, Bougainville Island.
Dec. 13, 1981, 1324 GMT: "
March 18, 1983: Arawa Town
Bato Bridge
BVE80, Panguna Mine.

February 13, 14, and 23, 1983; Monasavu Dam, Fiji; OFR 85-375
Records (3): Feb 13, 14, 23, 1983: Monasavu Dam.

TABLE 2. Processed records in each report. (continued)

May 2 and May 9, 1983; Coalinga, California; OFR 84-625.
Records (13): May 2, 1983, 2342 UTC:
Pleasant Valley Pump Plant: switchyard, basement

May 9, 1983, 0249 UTC
Anticline Ridge: freefield and pad
Burnett Construction
Oil City
Oil Fields Fire Station
Palmer Avenue
Skunk Hollow
Pleasant Valley Pump Plant: switchyard, basement, 1st floor, roof

July 9, 1983; 0740; Coalinga, California; OFR 85-584
Records (7): Anticline Ridge: freefield and pad
Burnett Construction
Oil City
Oil Fields Fire Station: freefield and pad
Palmer Avenue
Skunk Hollow
Transmitter Hill

July 22, 1983; 0239; Coalinga, California; OFR 85-250
Records (12): Anticline Ridge: pad site
Burnett Construction
Oil City
Oil Fields Fire Station: freefield and pad
Palmer Avenue
Pleasant Valley Pump Plant: 1st floor, basement, roof, switchyard, freefield
Skunk Hollow
Transmitter Hill

April 24, 1984; Morgan Hill, California; OFR 84-498B, Vol. II.
Records (11): Anderson Dam: downstream, crest
Hollister City Hall Annex
Hollister Differential Array
San Justo Damsite: right abutment, left abutment
San Jose 101/280/680 bridge
Hollister Differential Array No. 1, 3, 4, 5

December 23, 1985; with foreshock and aftershocks; Northwest Territories, Canada; OFR 86-___
Records (6): Nov. 9, 1985; 0446 GMT: Nahanni Site 2
Dec. 23, 1985; 0516 GMT: Nahanni Sites 1, 2, 3
Dec. 23, 1985; 0548 GMT: Nahanni Site 1
Dec. 25, 1985; 1543 GMT: Nahanni Site 3

January 26, 1986; Hollister, California; OFR 86-156
Records (5): Hollister Digital Differential Array, Stations 1, 3, 4, 5, 6

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