UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Processed Strong-Motion Records From Monasavu Dam, Fiji; Earthquakes of February 13, 14, and 23, 1983

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ABSTRACT

The U.S. Geological Survey (USGS) has maintained limited contact with operators of other strong-motion accelerograph networks throughout the world. As a result, the USGS occasionally receives a small number of records for routine processing. This report describes the processing of three records from Monasavu Dam, Fiji, on February 13, 14, and 23, 1983.

Processed Strong-Motion Records from Monasavu Dam, Fiji:
February 13, 1983, 0953 UTC; February 14, 1983, 1218 UTC;
and February 23, 1983, 1517 UTC

Earthquake and Station Data

In February 1983, three small earthquakes were recorded by a strong-motion accelerograph at Monasavu Dam on the island of Fiji (see figs. 1 and 2). The source parameter information for these events is listed in Table 1. The site is located at 17.76° S. lat. and 178.06° E long.*.

DIGITIZING AND PROCESSING

The computer plots provide a visual description of the recorded accelerations and their processed results; they are reproduced in the appendix. These plots may be used to measure specific earthquake or record parameters directly and to select records for further study using available digital data.

The steps currently used 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, at an average of 600 samples per second.
2. If a strong-motion record has a duration longer than about 10 s, then it is divided into approximately 10 s segments, each segment being digitized separately. The segments are reassembled using specially inserted vertical lines, the lines mark the end and/or beginning of each segment. Each vertical line is digitized twice, once in each adjacent segment, and then used in reassembling the record.

* Everingham, I. B., 1983 written communication.

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. The instrument sensitivities are used to scale the ordinates to accelerations.

4. The data are passed through a correction algorithm that applies a high-frequency filter (25 Hz in this case), instrument corrections, base line correction (in the form of a low frequency filter), and decimation to 200 samples per second. Plots of the CORRECTED ACCELERATION, VELOCITY, and DISPLACEMENTS for the three components of each recording are included.

5. The maximum relative velocity response spectra (RV) are calculated for damping values of 0, 2, 5, 10 and 20 percent of critical. These RESPONSE SPECTRA are calculated for a period range starting at 0.04 s and ending with the long period corresponding 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, FAS, calculated at the same periods as the relative velocity response spectra.

   The second RESPONSE SPECTRUM plot is that of the pseudo-velocity response spectra, PSRV, calculated for the same five damping values used in calculating the RV spectra. This tripartite plot also has the values for the maximum relative displacement response spectrum (RD) as well as the pseudo-acceleration spectrum (PSAA).

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.

Initial selection of filters for Step 4 are based on the convention of retaining a period content somewhat longer than the strong-motion duration of the records. The final Butterworth filter parameters are chosen to eliminate any apparent serious noise content in the calculated displacements.

Table 2 presents the peak values obtained through processing.

The digital data from which these plots are produced are available on tape from the National Geophysical Data Center (NGDC), NOAA, Mail Stop E/GC11, 325 Broadway, Boulder, Colorado 80303.

For a more complete description see: Converse, A., 1984; AGRAM: A Series of Computer Programs for Processing Digitized Strong-Motion Accelerograms, Version 2.0; USGS Open-File Report 81-525.

Computer Plots

The Appendix contains computer plots for the following processing stages:

Uncorrected accelerogram.

Corrected acceleration velocity and displacement.

Relative velocity response spectra linear plot.

Response spectra, tripartite log-log plot.

Fourier amplitude spectrum calculated by FFT, linear plot.

Fourier amplitude spectrum calculated by FFT, log-log plot.

Table 1: Source Parameters for Fiji Island Events*

1.	Date	February 13, 1983
	Time	0953 00.3 UTC
	Epicenter	17.744° S. 178.067° E.
	Magnitude	M_L 3.2
2.	Date	February 14, 1983
	Time	1218 41.6 UTC
	Epicenter	17.755° S. 178.056° E.
	Magnitude	M_L 2.7
3.	Date	February 23, 1983
	Time	1517 30.3 UTC
	Epicenter	17.764° S. 178.018° E.
	Magnitude	M_L 2.9

* Everingham, I. B., 1983, written communication.

Table 2. Processed Records (Peak Values)

Earthquake	Station	Epicenter Distances	Components	Peak Acceleration	Corrected Peak Motion		
				Digitized (cm/s^2)	Accel. (cm/s^2)	Vel. (cm/s)	Disp. (cm)
13 Feb. 1983	Monasavu Dam	1.93	West	- 49.91	- 49.67	-1.79	0.21
0953 UTC	Fiji		Up	36.08	33.99	1.35	0.16
			South	-125.99	-124.57	3.53	0.15
14 Feb. 1983	Monasavu Dam	0.70	West	- 30.16	- 28.38	-1.29	0.14
1218 UTC	Fiji		Up	29.83	28.36	0.96	0.11
			South	65.16	63.46	1.81	0.08
23 Feb. 1983	Monasavu Dam	4.47	West	19.69	17.56	0.65	0.04
1517 UTC	Fiji		Up	- 9.26	- 9.03	0.33	-0.03
			South	39.52	- 38.59	1.22	0.06

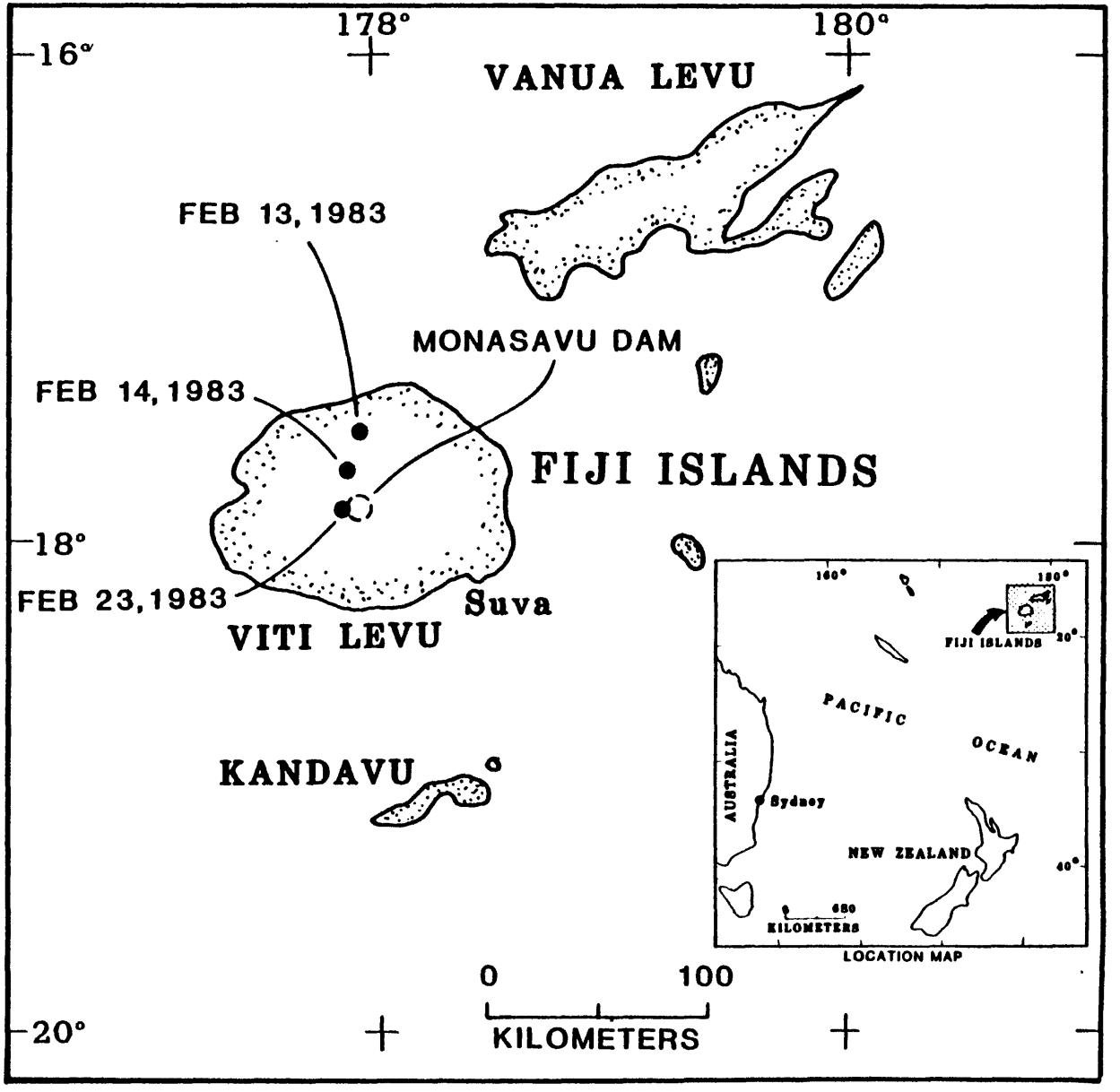

FIGURE 1. MAPS SHOWING LOCATION OF FIJI, EPICENTER, AND MONASAVU DAM.

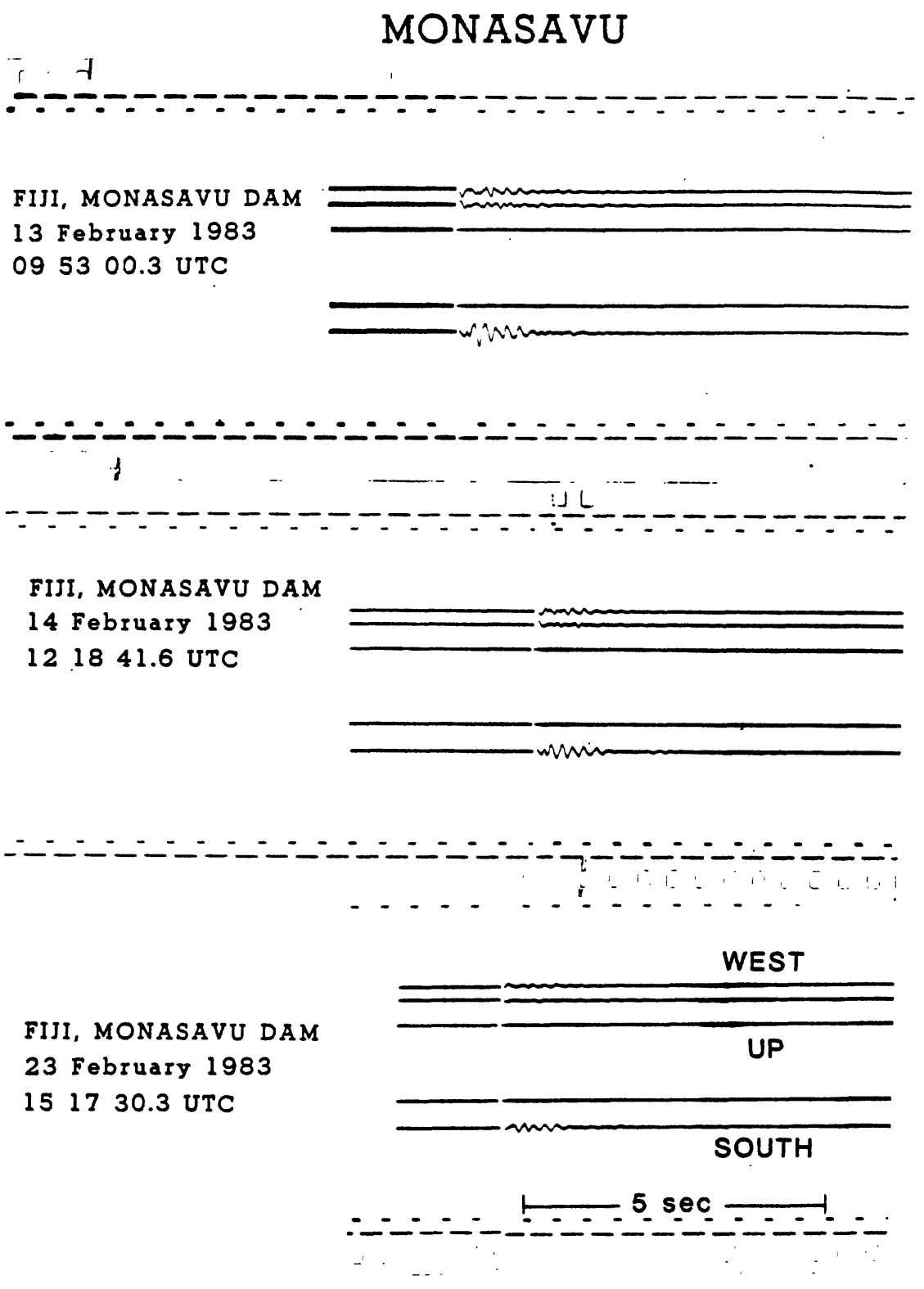

FIGURE 2. COPIES OF ORIGINAL RECORDS.

Appendix for Computer Plots

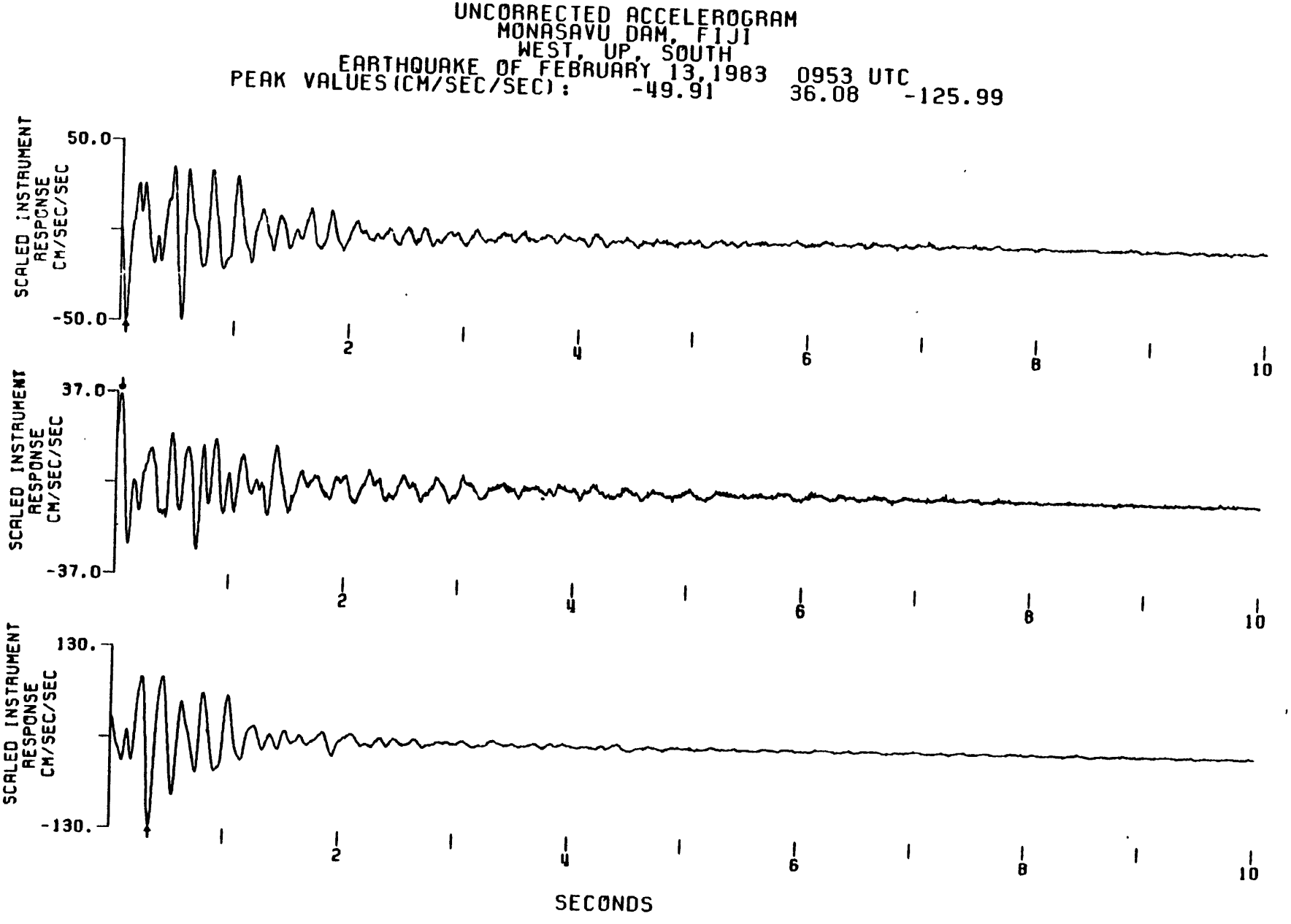
UNCORRECTED ACCELEROGRAM
MONASAVU DAM, FIJI
WEST, UP, SOUTH
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
PEAK VALUES(CM/SEC/SEC): -49.91 36.08 -125.99
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
50.0
-50.0
37.0
-37.0
130.
-130.
2
4
6
8
10
SECONDS

FIGURE 3.

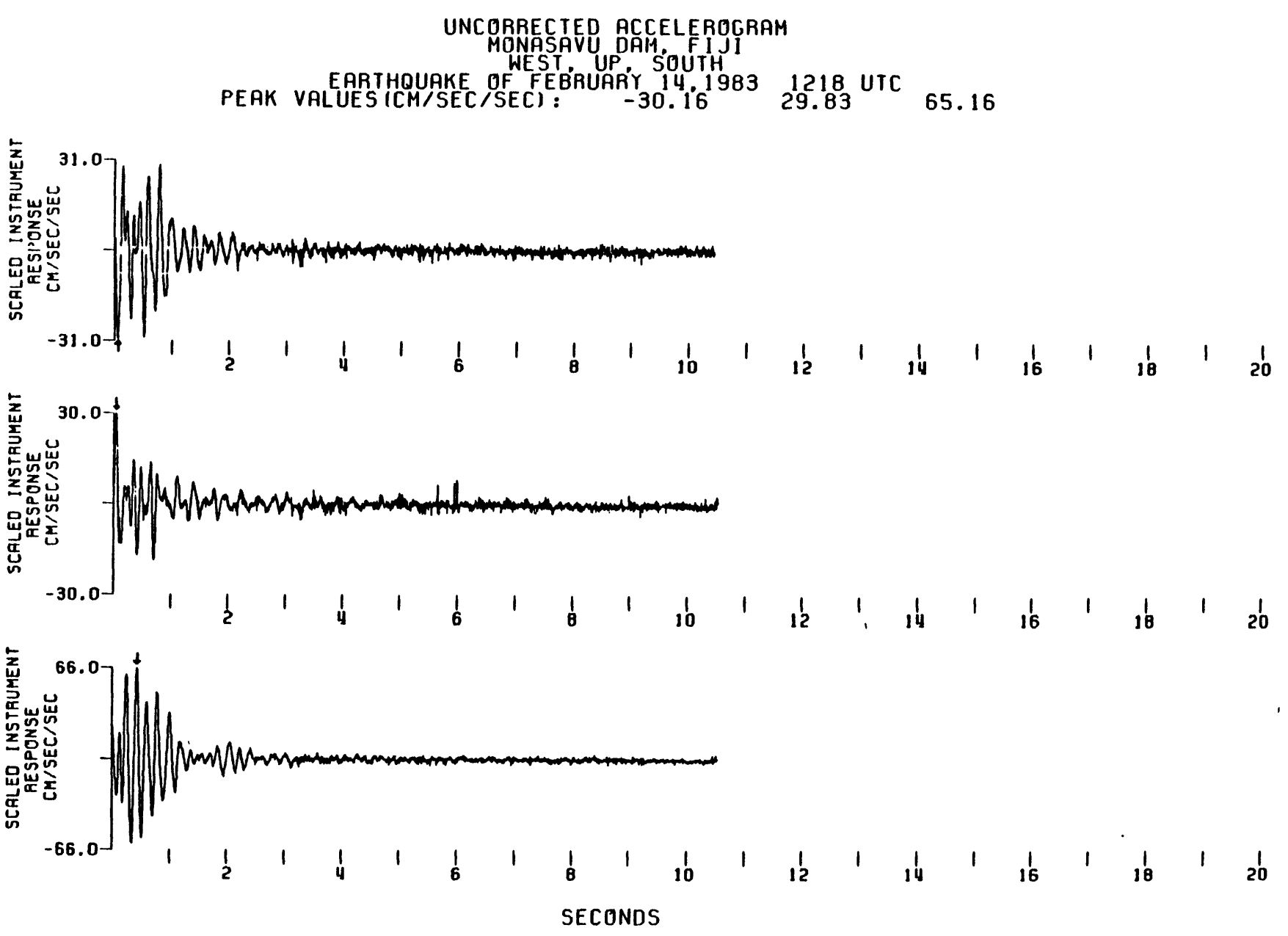
UNCORRECTED ACCELEROGRAM
MONASAVU DAM, FIJI
WEST, UP, SOUTH
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
PEAK VALUES(CM/SEC/SEC): -30.16 29.83 65.16
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
31.0
-31.0
30.0
-30.0
66.0
-66.0
2
4
6
8
10
12
14
16
18
20
SECONDS

FIGURE 4.

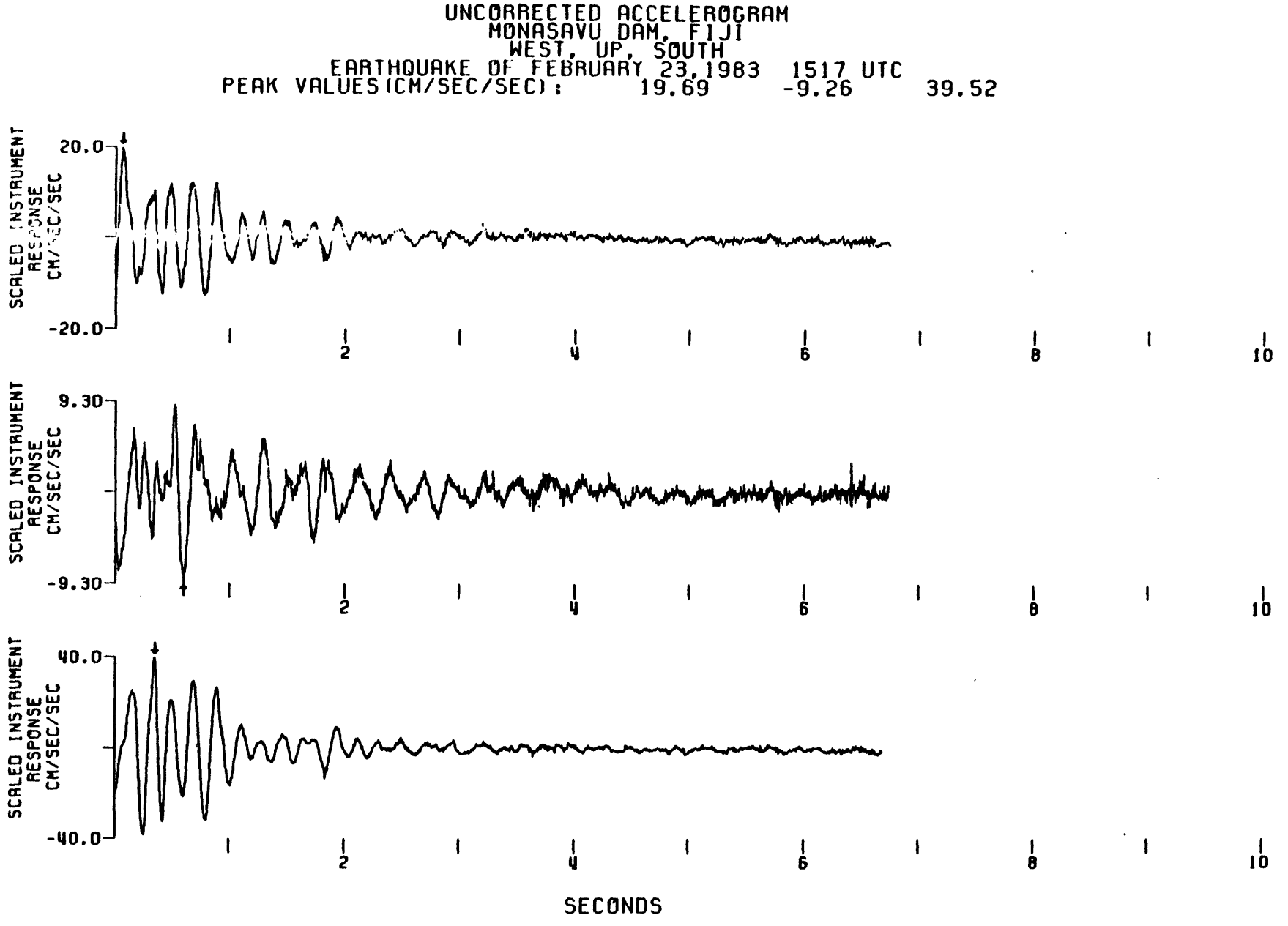
UNCORRECTED ACCELEROGRAM
MONASAVU DAM, FIJI
WEST, UP, SOUTH
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
PEAK VALUES(CM/SEC/SEC): 19.69 -9.26 39.52
SCALED INSTRUMENT RESPONSE CM/SEC/SEC
20.0
-20.0
9.30
-9.30
40.0
-40.0
2
4
6
8
10
SECONDS

FIGURE 5.

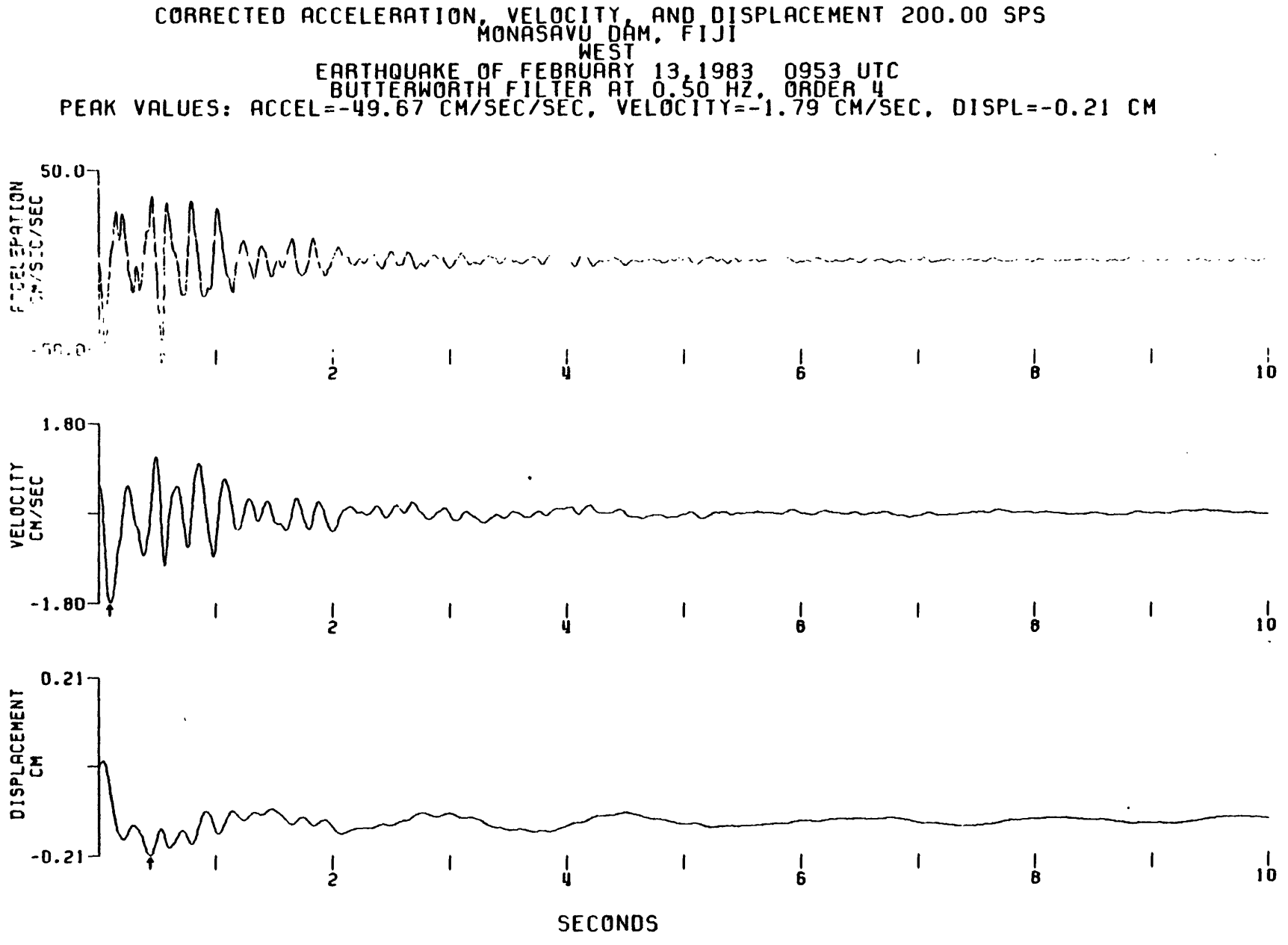
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=-49.67 CM/SEC/SEC, VELOCITY=-1.79 CM/SEC, DISPL=-0.21 CM
50.0
-50.0
1.80
-1.80
VELOCITY CM/SEC
0.21
-0.21
DISPLACEMENT CM
2
4
6
8
10
SECONDS

FIGURE 6.

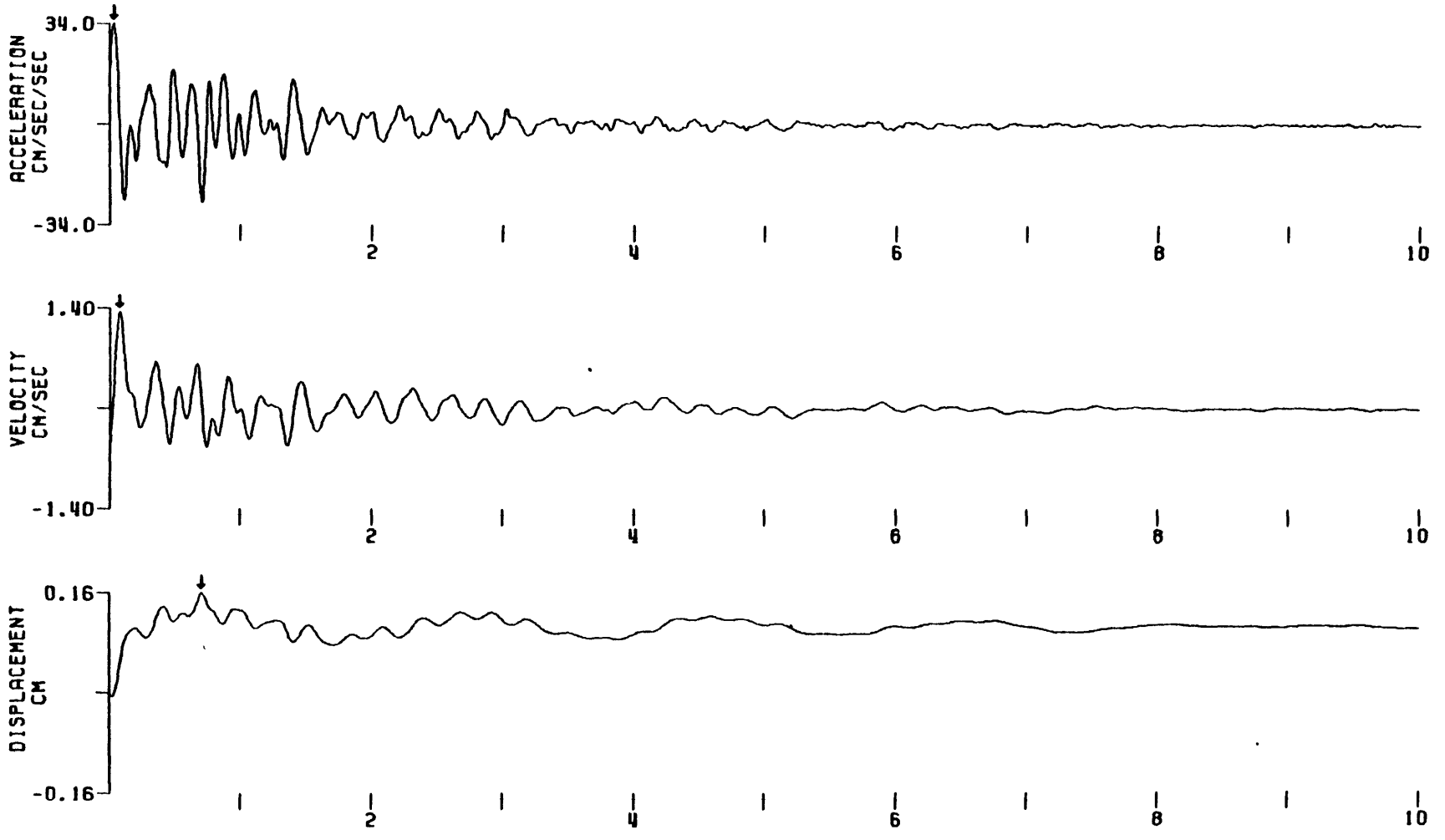
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=33.99 CM/SEC/SEC, VELOCITY=1.35 CM/SEC, DISPL=0.16 CM
ACCELERATION CM/SEC/SEC
34.0
-34.0
VELOCITY CM/SEC
1.40
-1.40
DISPLACEMENT CM
0.16
-0.16
2
4
6
8
10
SECONDS

FIGURE 7.

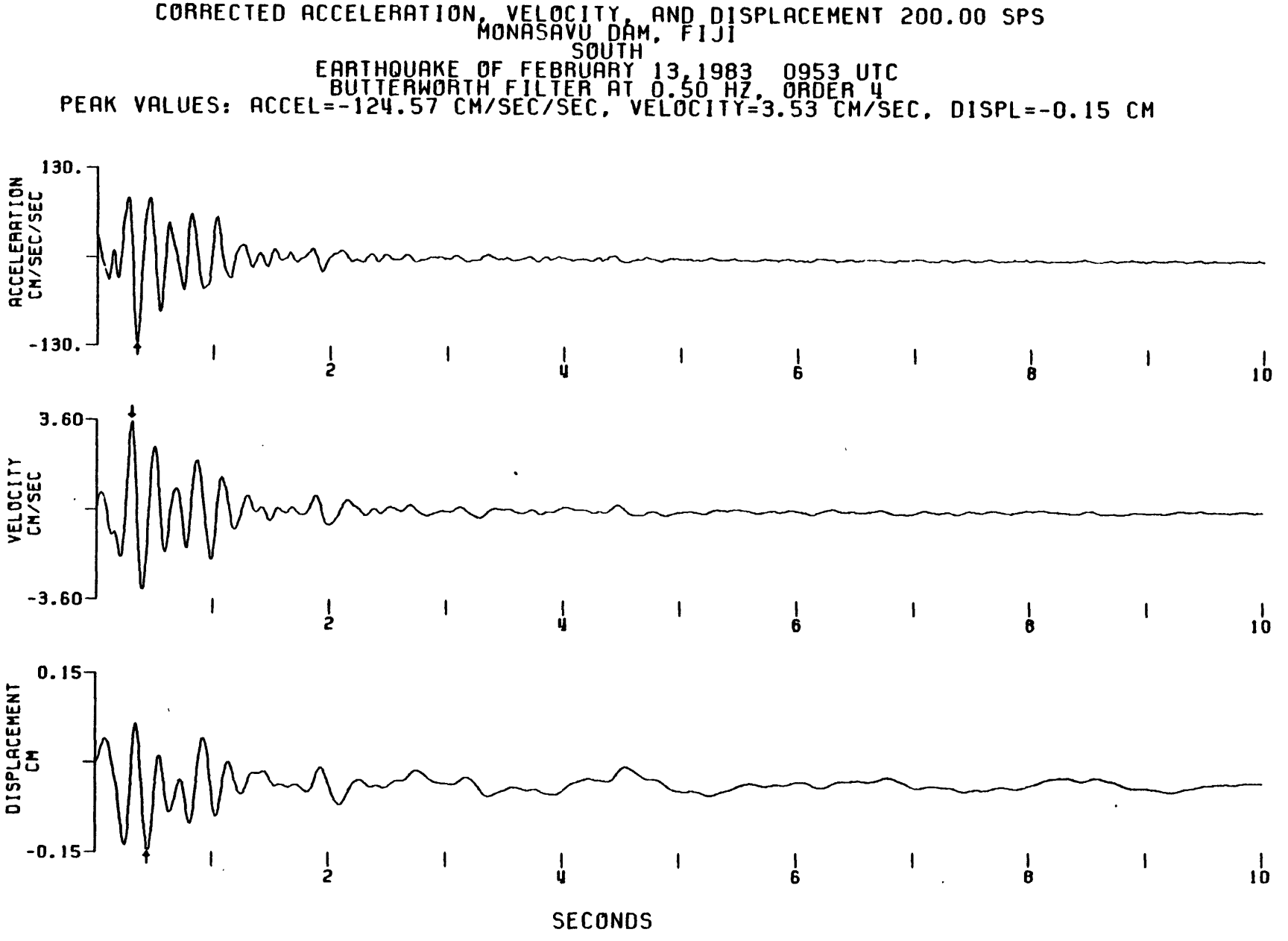
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=-124.57 CM/SEC/SEC, VELOCITY=3.53 CM/SEC, DISPL=-0.15 CM
ACCELERATION CM/SEC/SEC
130.
-130.
VELOCITY CM/SEC
3.60
-3.60
DISPLACEMENT CM
0.15
-0.15
2
4
6
8
10
SECONDS

FIGURE 8.

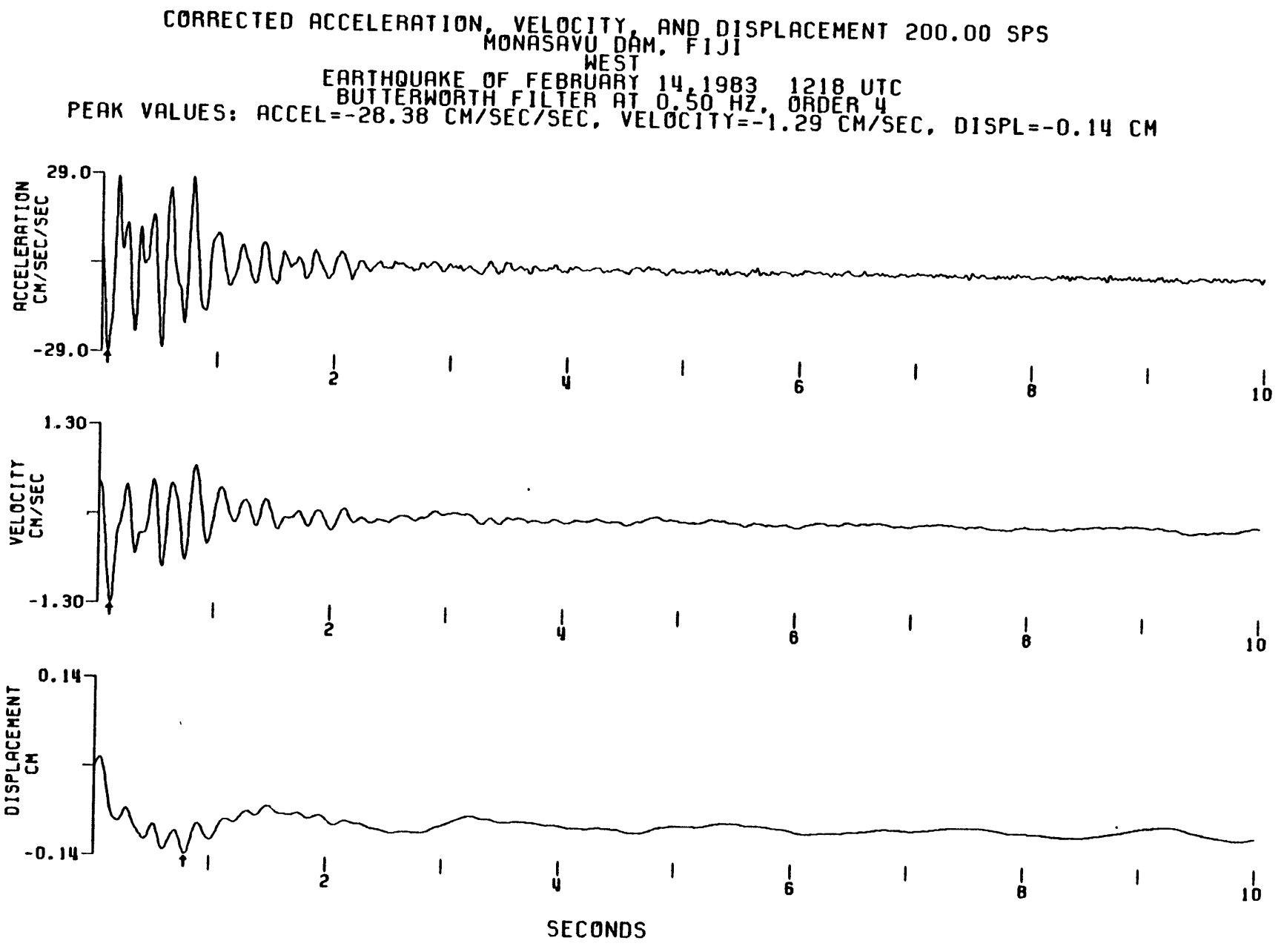
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=-28.38 CM/SEC/SEC, VELOCITY=-1.29 CM/SEC, DISPL=-0.14 CM
ACCELERATION CM/SEC/SEC
29.0
-29.0
VELOCITY CM/SEC
1.30
-1.30
DISPLACEMENT CM
0.14
-0.14
2
4
6
8
10
SECONDS

FIGURE 9.

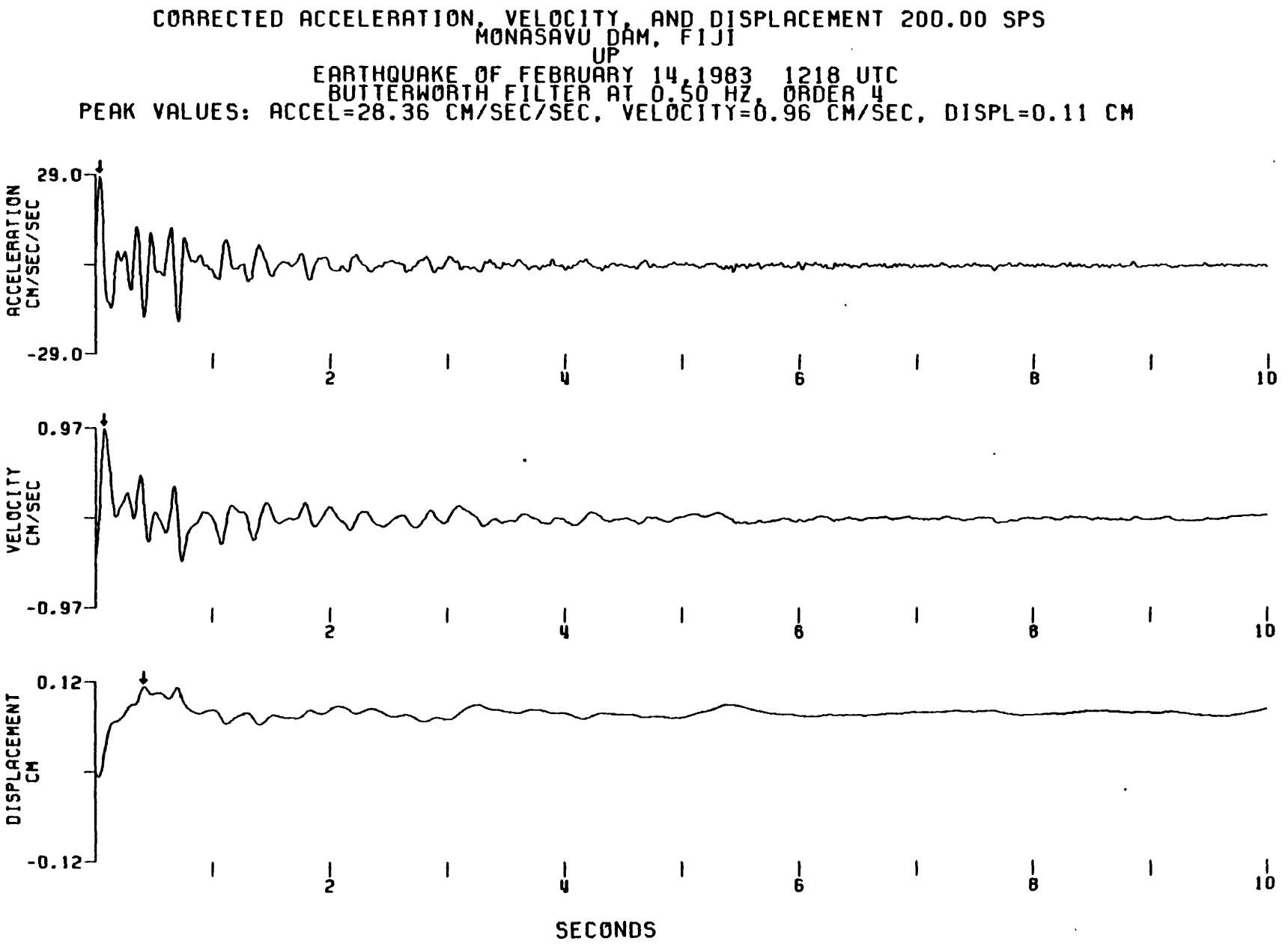
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=28.36 CM/SEC/SEC, VELOCITY=0.96 CM/SEC, DISPL=0.11 CM
ACCELERATION CM/SEC/SEC
29.0
-29.0
VELOCITY CM/SEC
0.97
-0.97
DISPLACEMENT CM
0.12
-0.12
2
4
6
8
10
SECONDS

FIGURE 10.

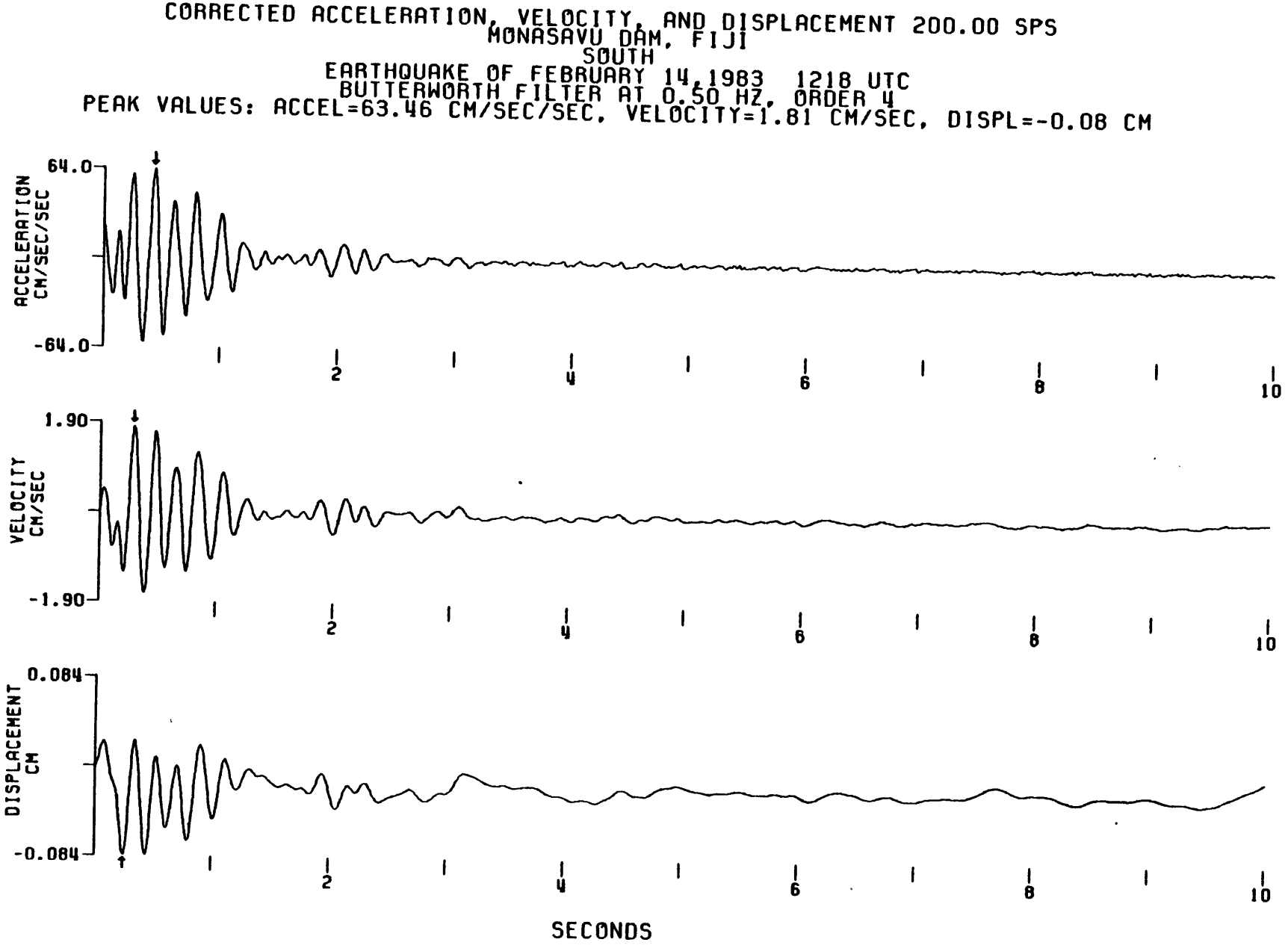
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
PEAK VALUES: ACCEL=63.46 CM/SEC/SEC, VELOCITY=1.81 CM/SEC, DISPL=-0.08 CM
ACCELERATION CM/SEC/SEC
64.0
-64.0
VELOCITY CM/SEC
1.90
-1.90
DISPLACEMENT CM
0.084
-0.084
2
4
6
8
10
SECONDS

FIGURE 11.

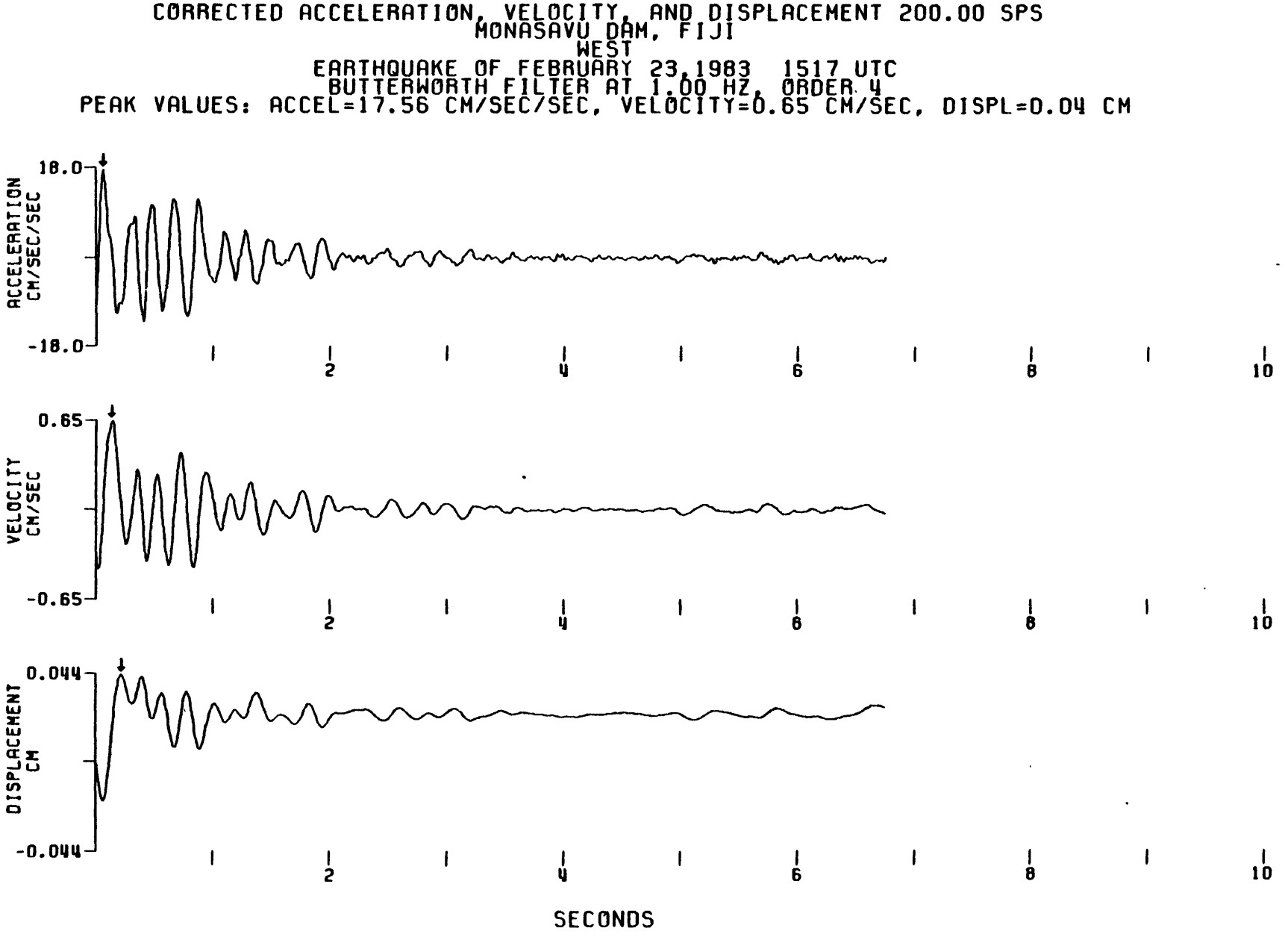
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
PEAK VALUES: ACCEL=17.56 CM/SEC/SEC, VELOCITY=0.65 CM/SEC, DISPL=0.04 CM
ACCELERATION CM/SEC/SEC
18.0
-18.0
VELOCITY CM/SEC
0.65
-0.65
DISPLACEMENT CM
0.044
-0.044
2
4
6
8
10
SECONDS

FIGURE 12.

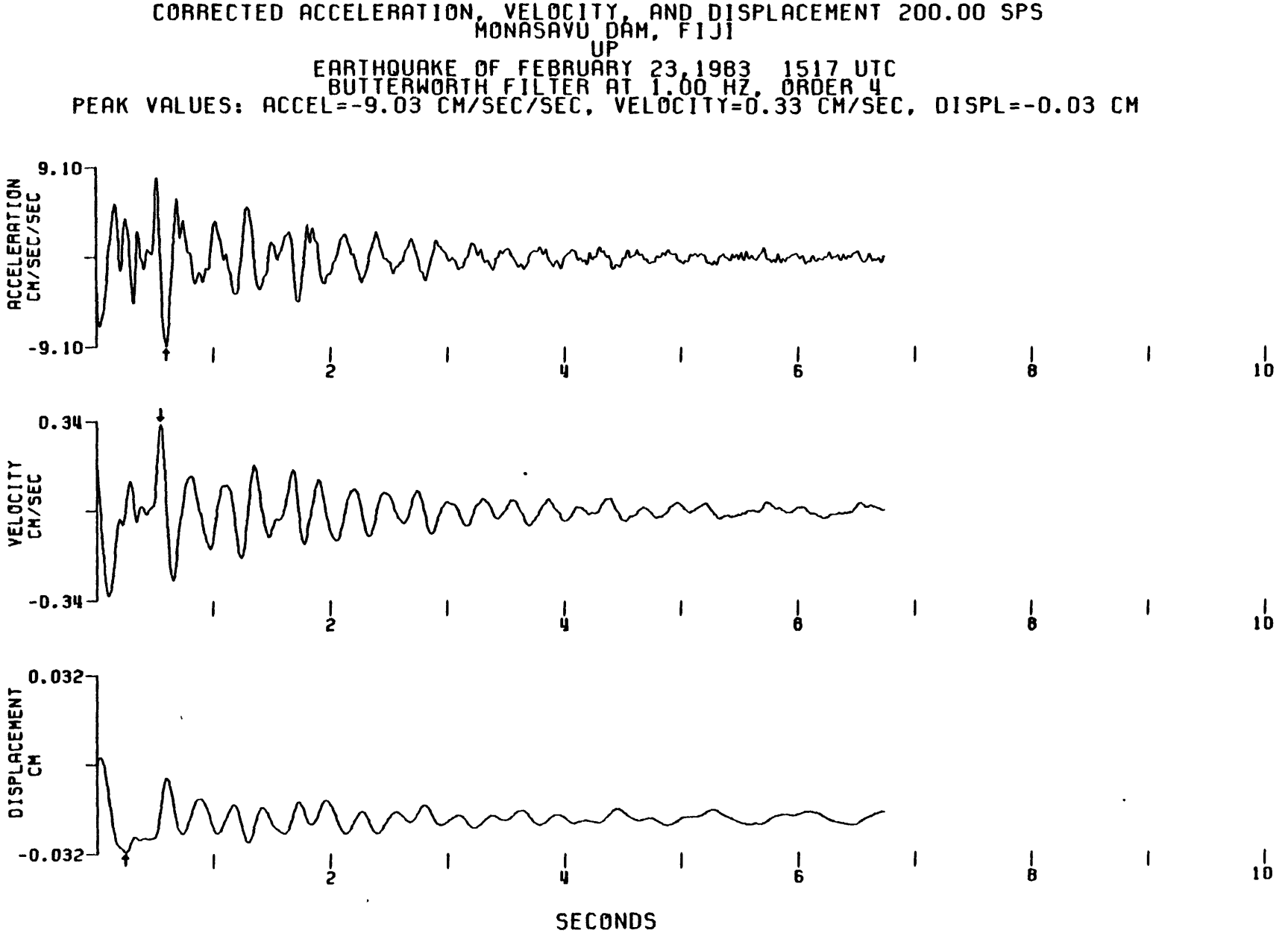
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
PEAK VALUES: ACCEL=-9.03 CM/SEC/SEC, VELOCITY=0.33 CM/SEC, DISPL=-0.03 CM
ACCELERATION CM/SEC/SEC
9.10
-9.10
VELOCITY CM/SEC
0.34
-0.34
DISPLACEMENT CM
0.032
-0.032
2
4
6
8
10
SECONDS

FIGURE 13.

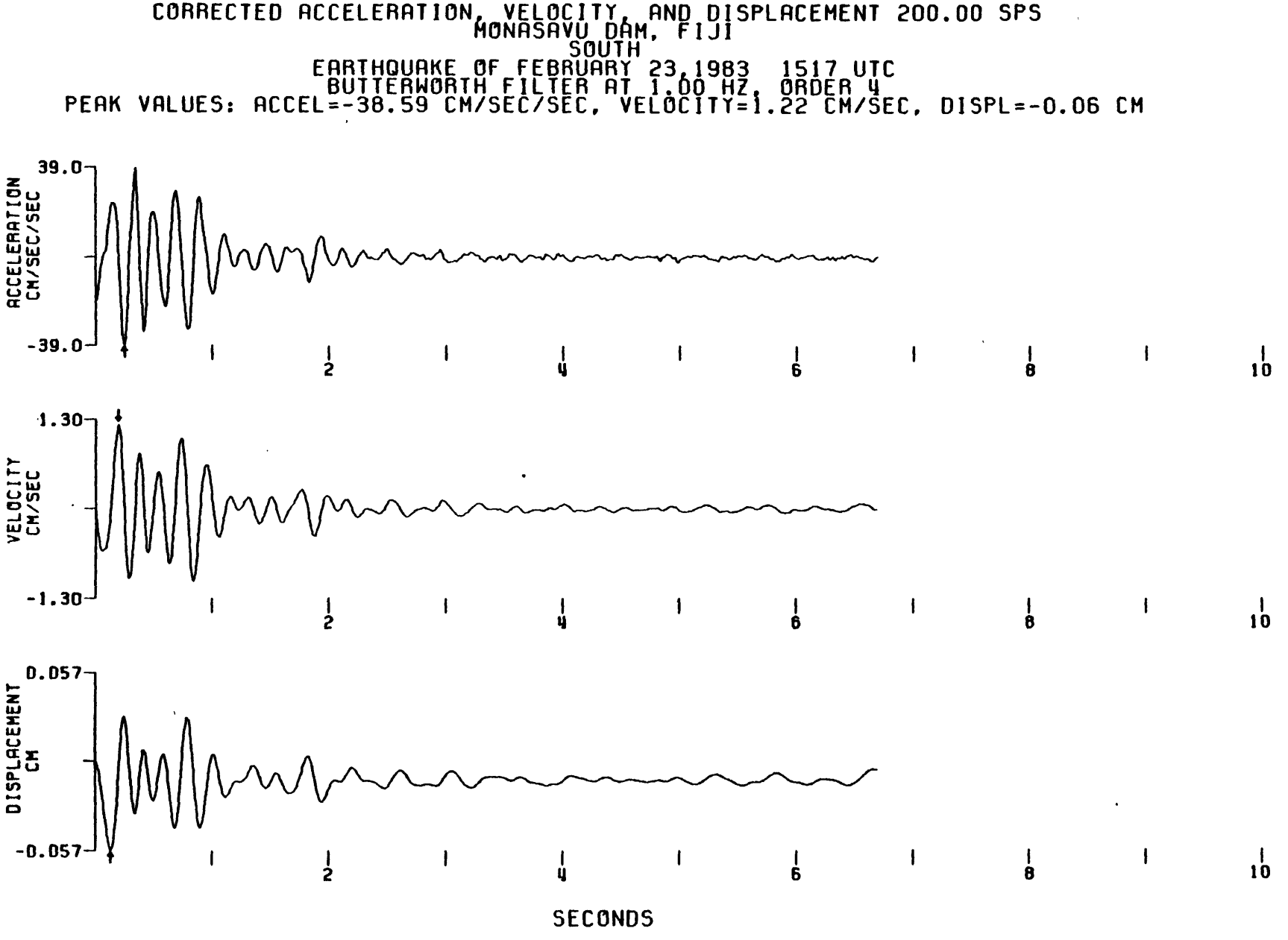
CORRECTED ACCELERATION, VELOCITY, AND DISPLACEMENT 200.00 SPS
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
PEAK VALUES: ACCEL=-38.59 CM/SEC/SEC, VELOCITY=1.22 CM/SEC, DISPL=-0.06 CM
ACCELERATION CM/SEC/SEC
39.0
-39.0
VELOCITY CM/SEC
1.30
-1.30
DISPLACEMENT CM
0.057
-0.057
2
4
6
8
10
SECONDS

FIGURE 14.

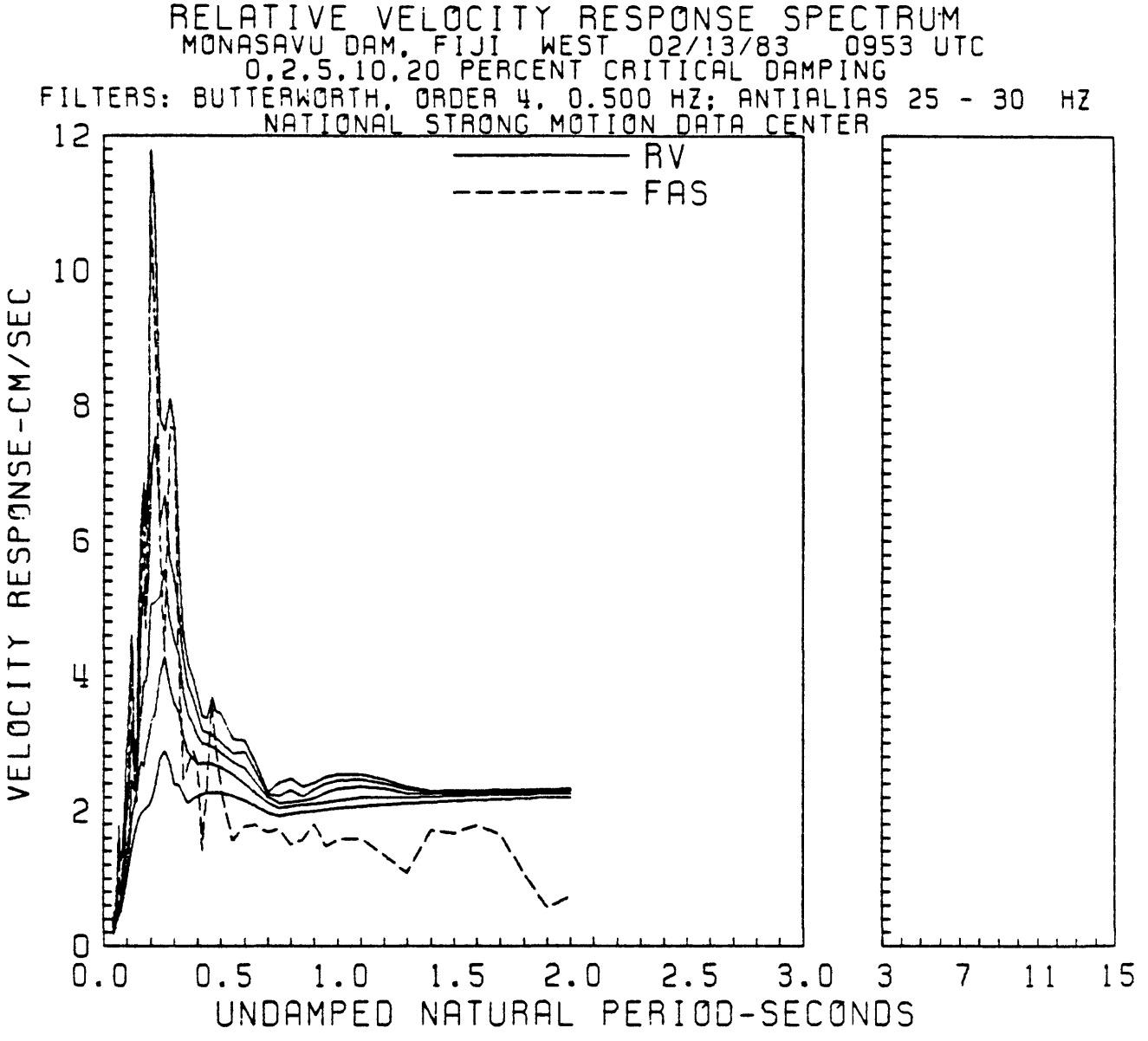
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI WEST 02/13/83 0953 UTC
0.2.5.10.20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
2
4
6
8
10
12
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 15.

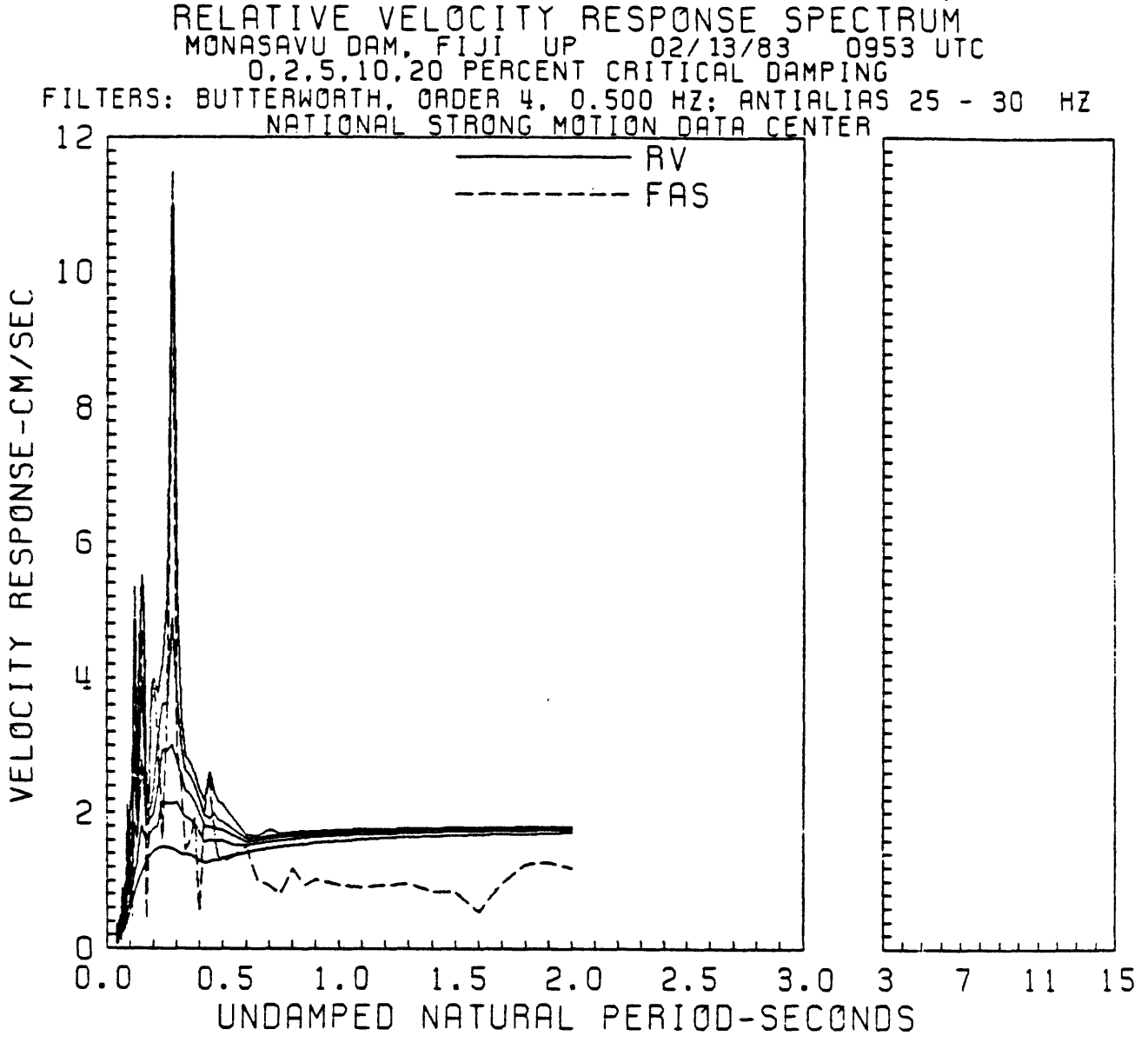
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI UP 02/13/83 0953 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
2
4
6
8
10
12
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

FIGURE 16.

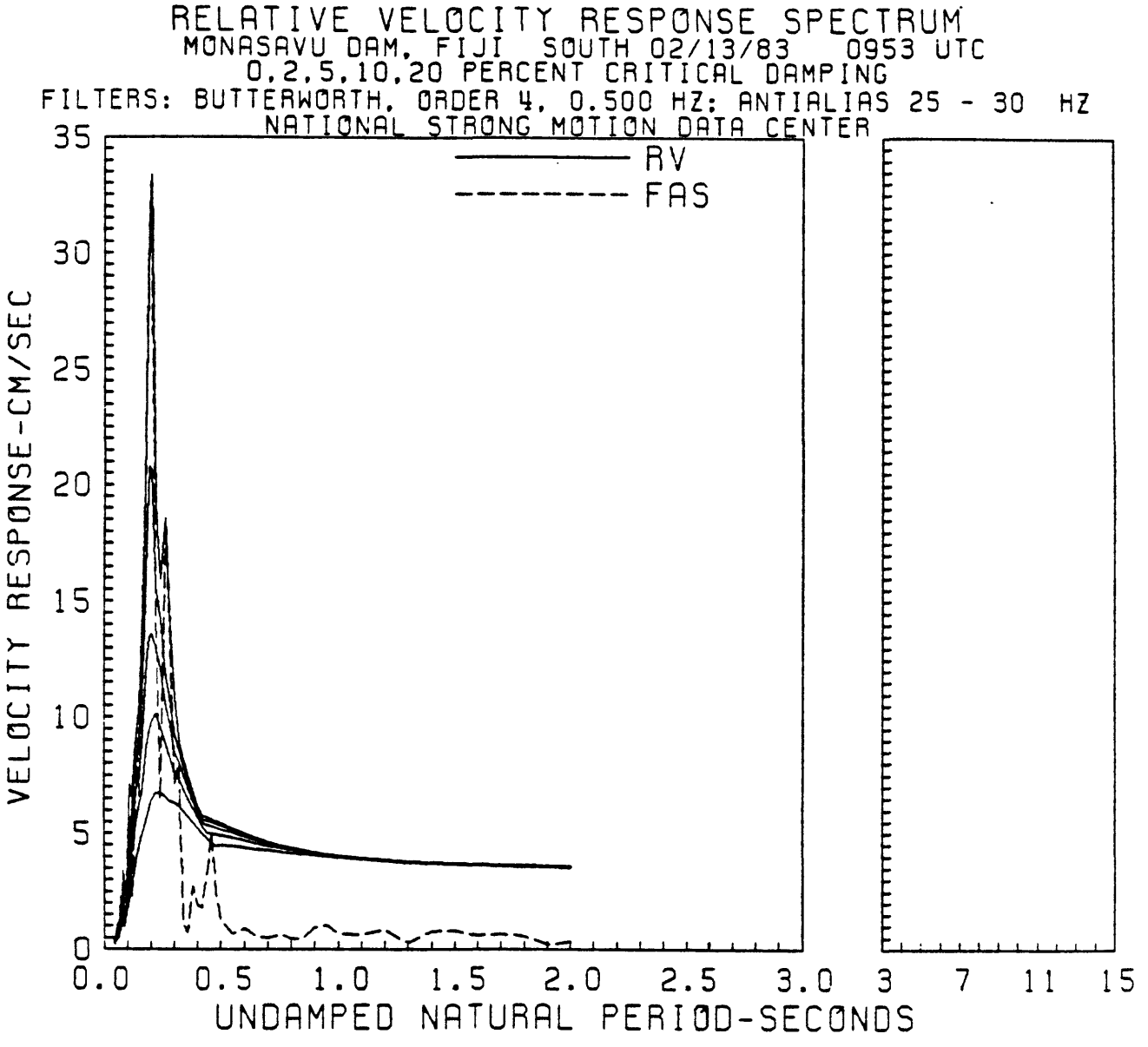
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI SOUTH 02/13/83 0953 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
0
5
10
15
20
25
30
35
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15

FIGURE 17.

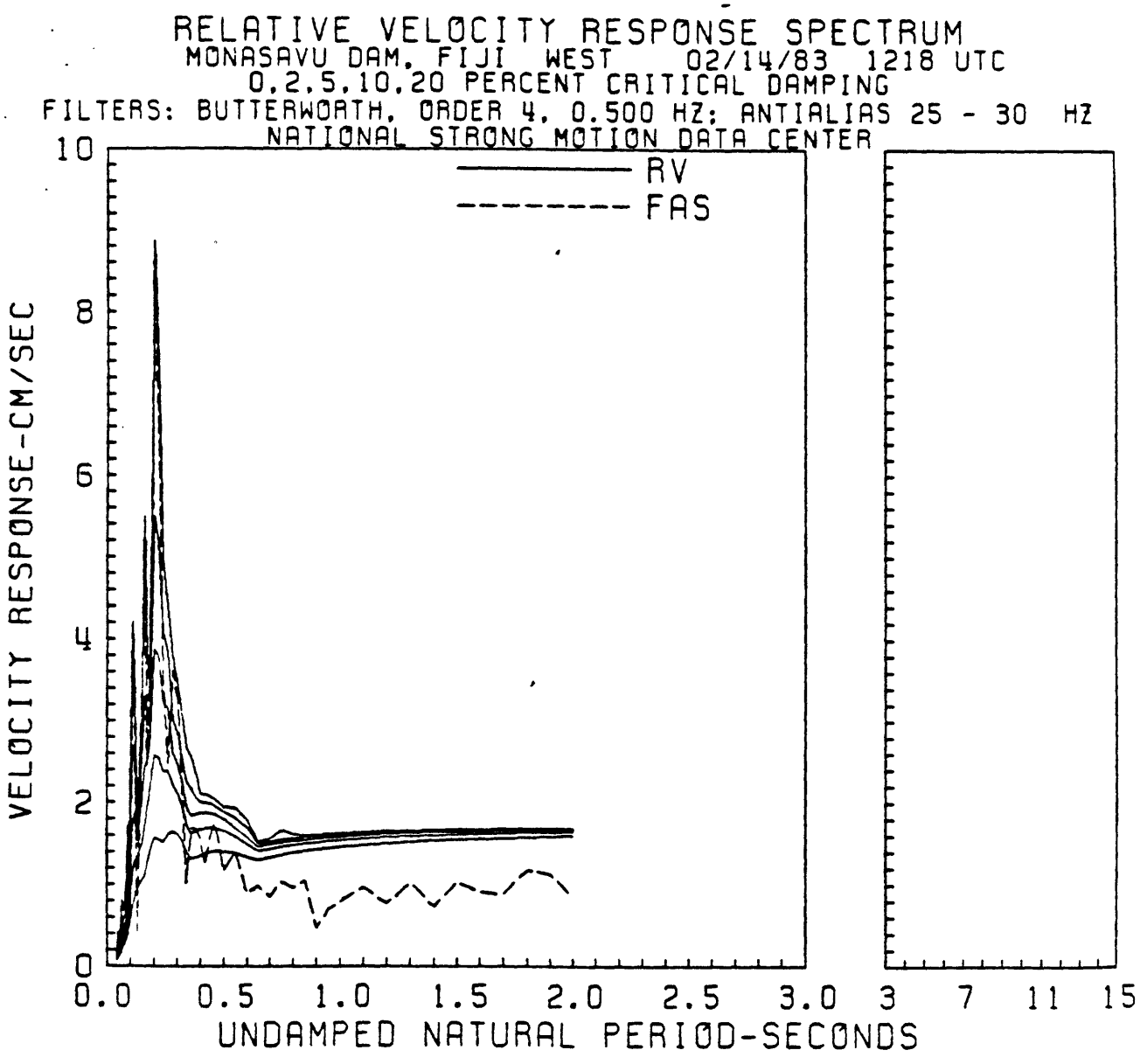
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI WEST 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
2
4
6
8
10
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 18.

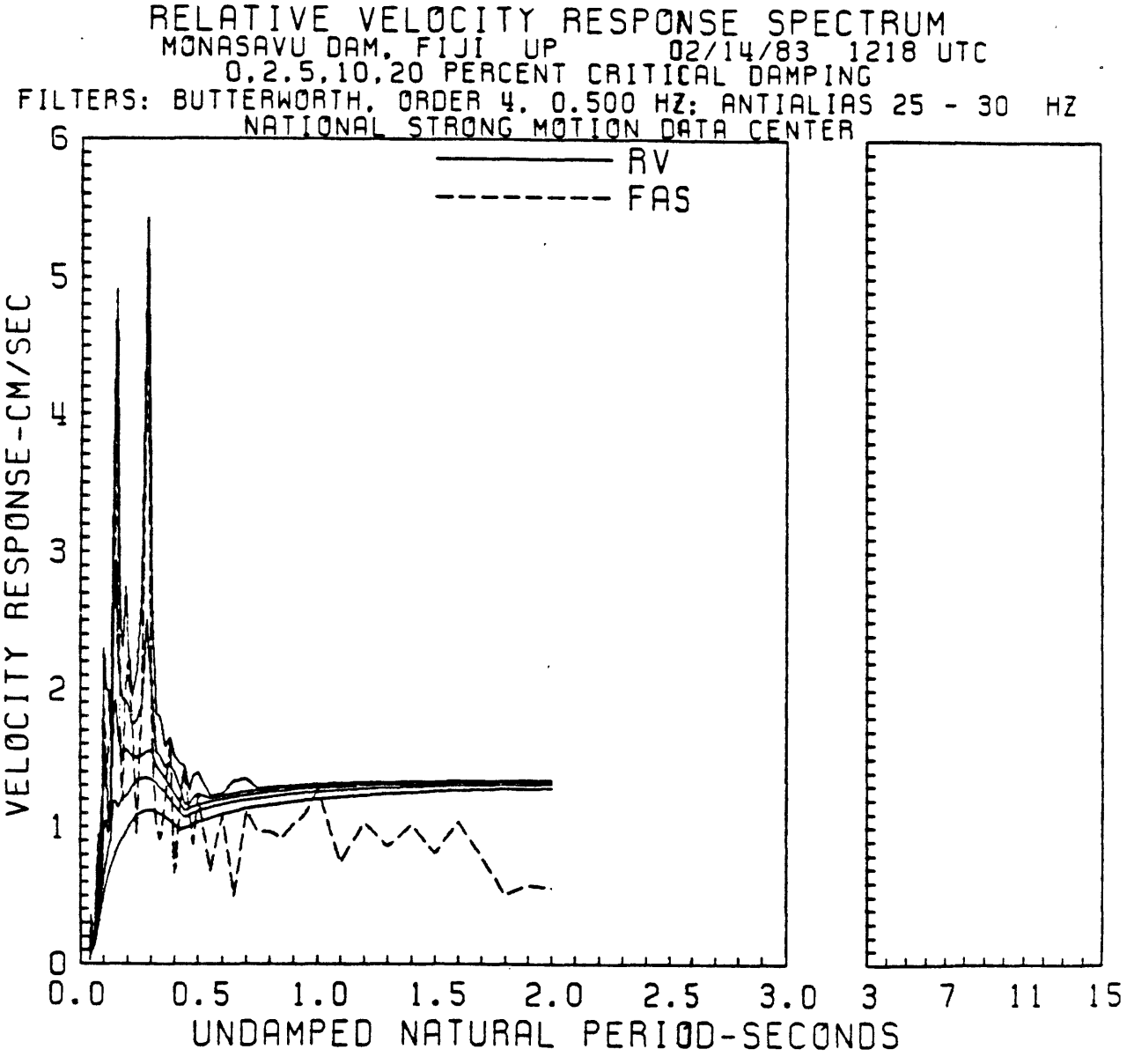
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI UP 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
1
2
3
4
5
6
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 19.

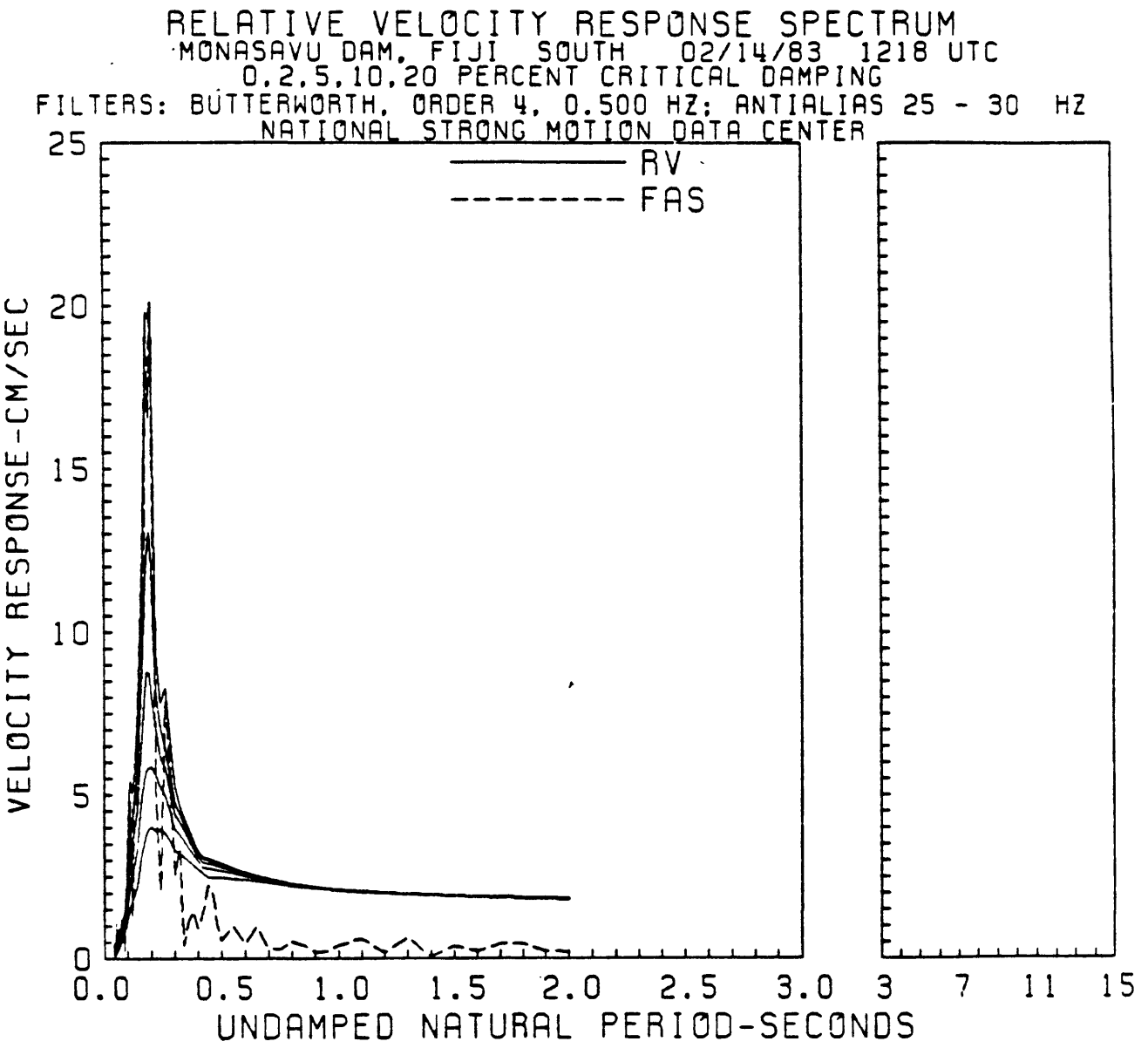
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI SOUTH 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
5
10
15
20
25
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 20.

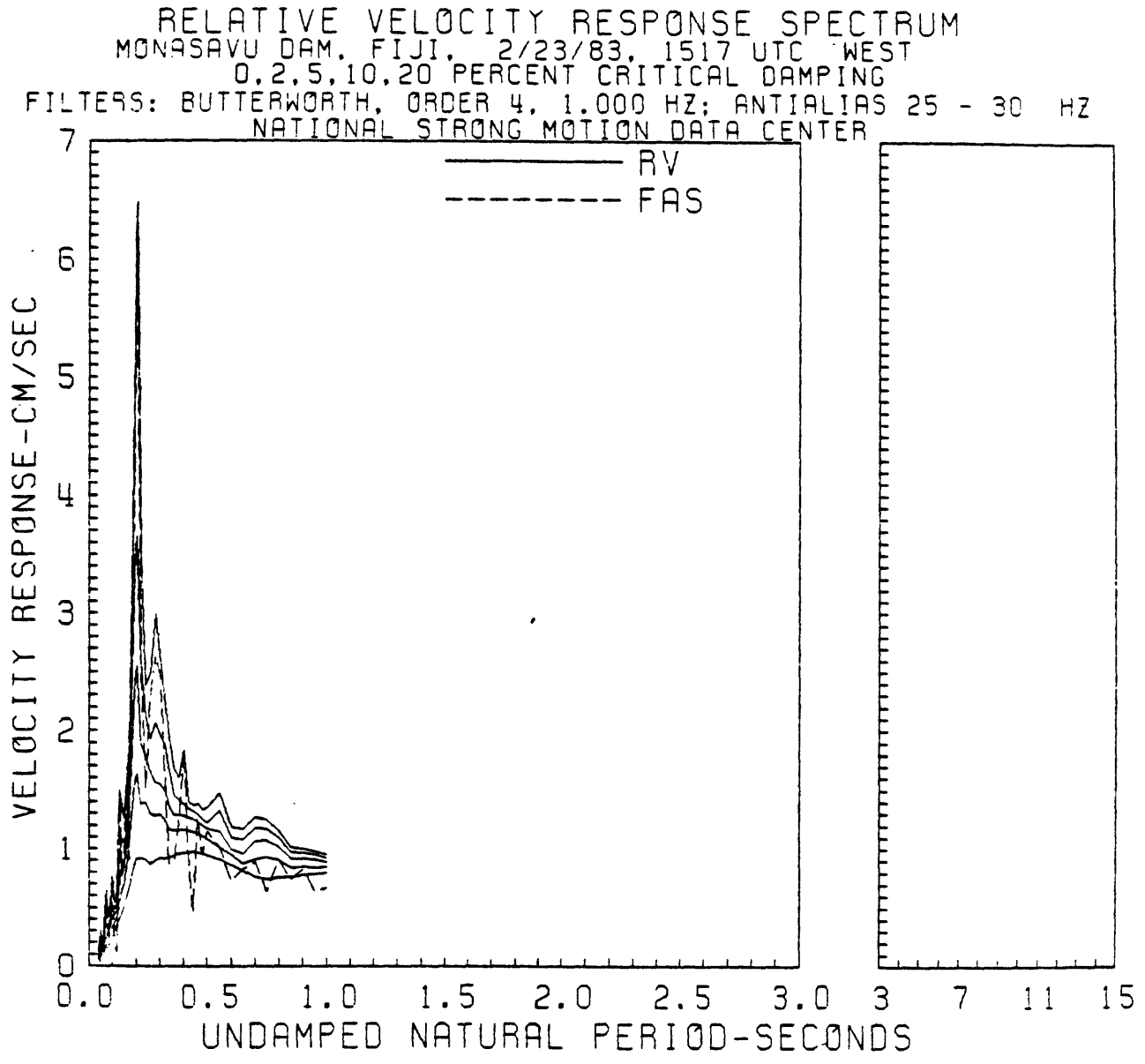
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC WEST
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
1
2
3
4
5
6
7
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 21.

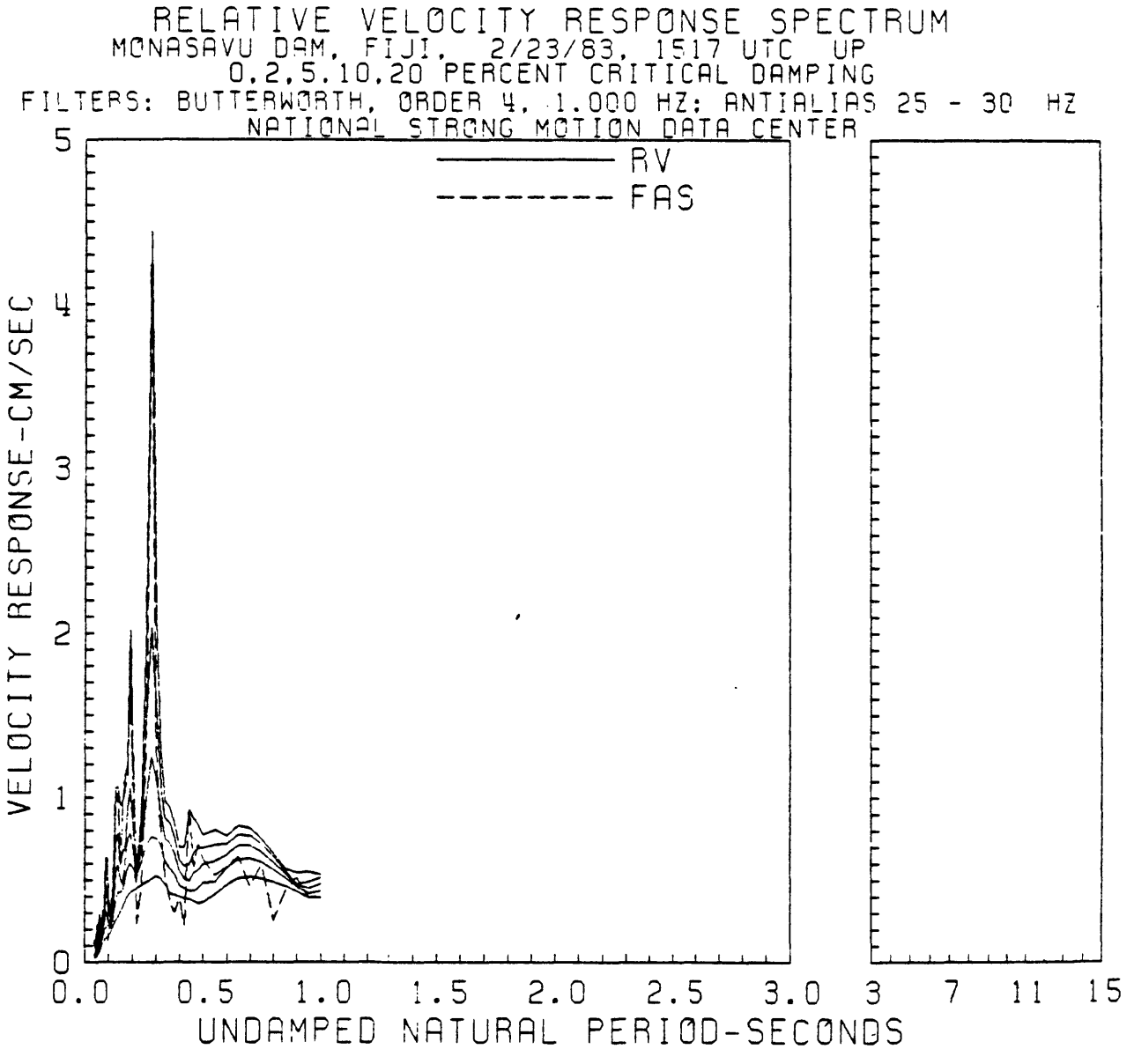
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
1
2
3
4
5
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 22.

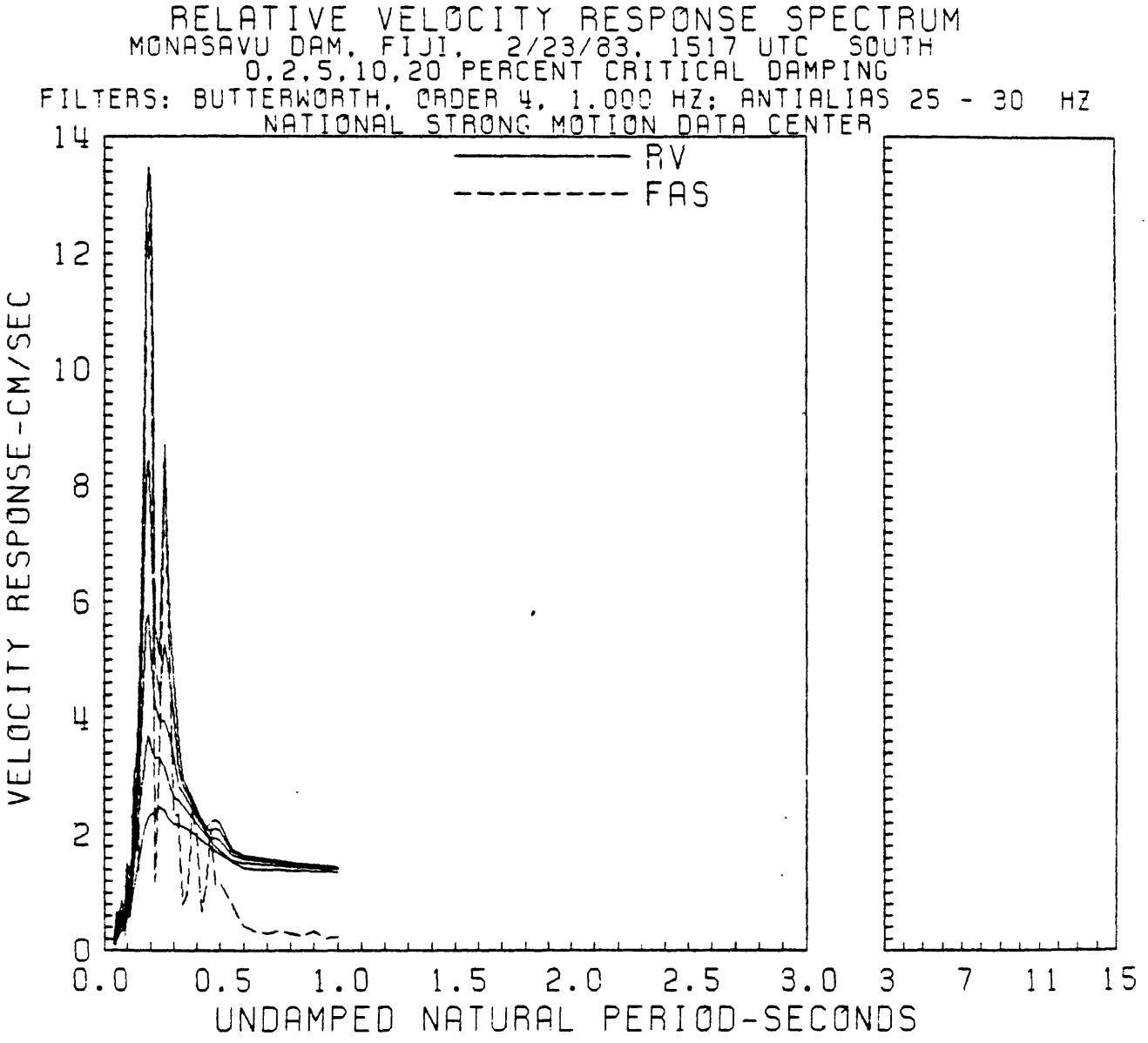
RELATIVE VELOCITY RESPONSE SPECTRUM
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC SOUTH
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
RV
FAS
VELOCITY RESPONSE-CM/SEC
0
2
4
6
8
10
12
14
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3
7
11
15
UNDAMPED NATURAL PERIOD-SECONDS

FIGURE 23.

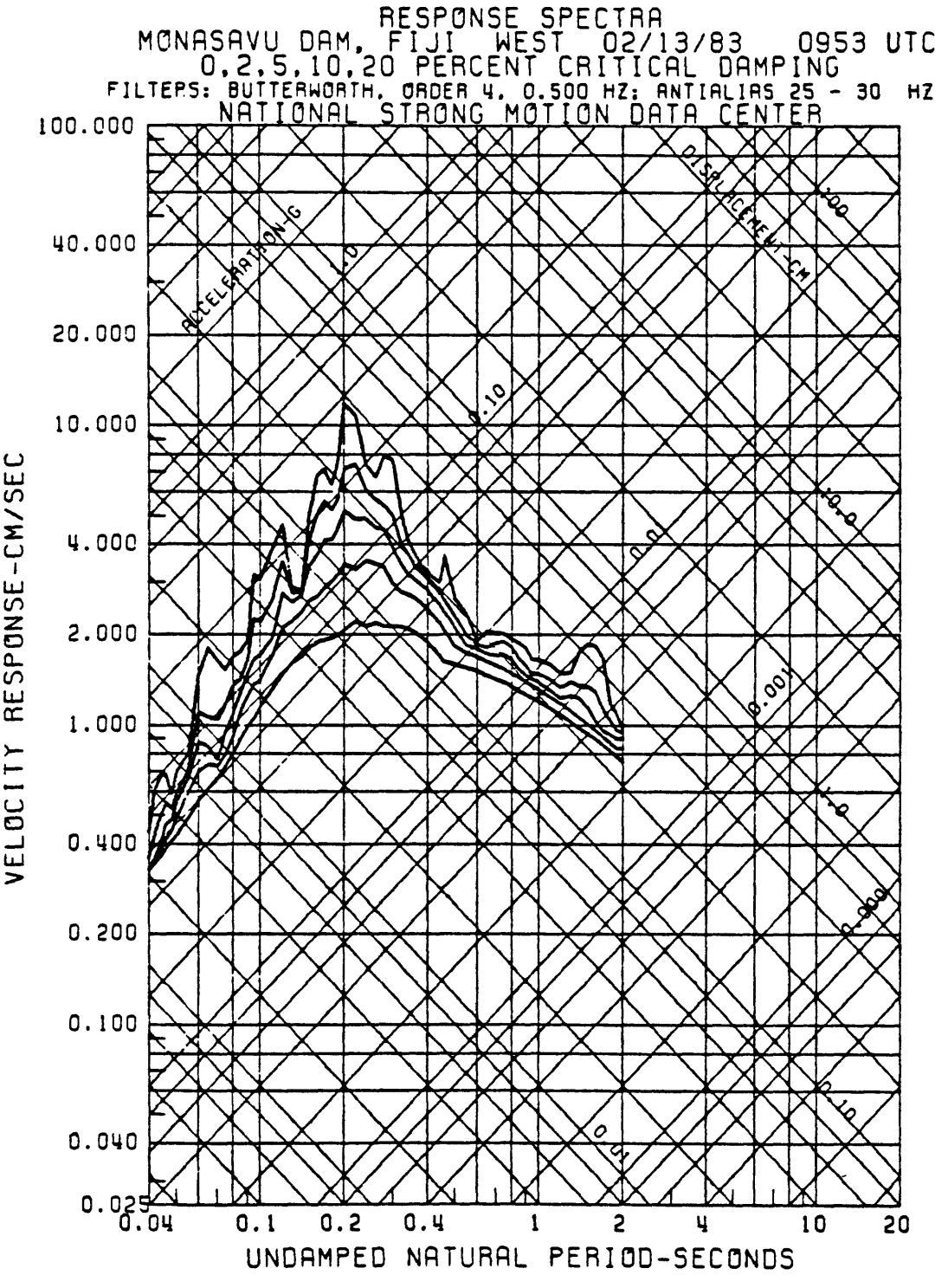
RESPONSE SPECTRA
MONASAVU DAM, FIJI WEST 02/13/83 0953 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 24.

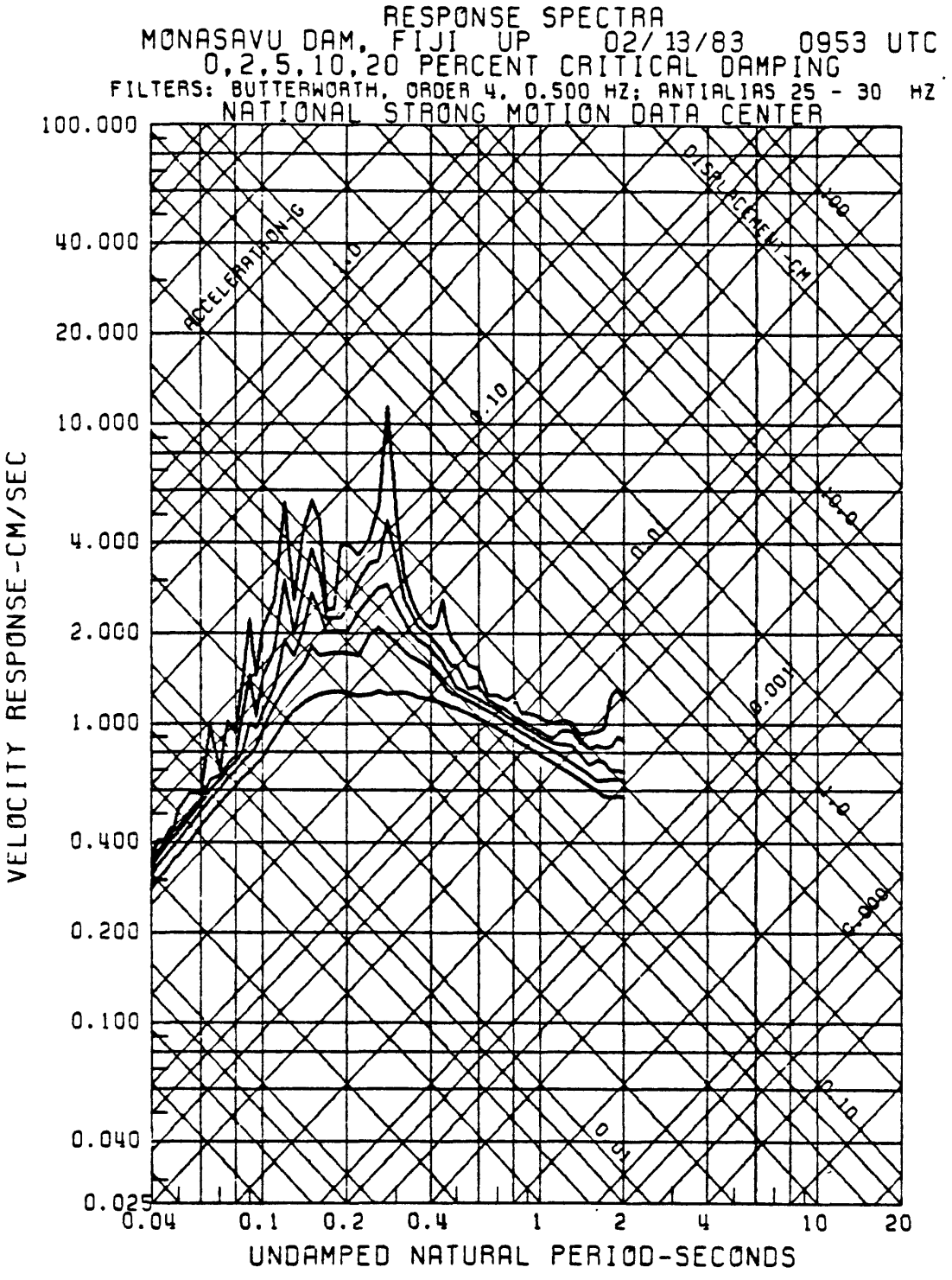
RESPONSE SPECTRA
MONASAVU DAM, FIJI UP 02/13/83 0953 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 25.

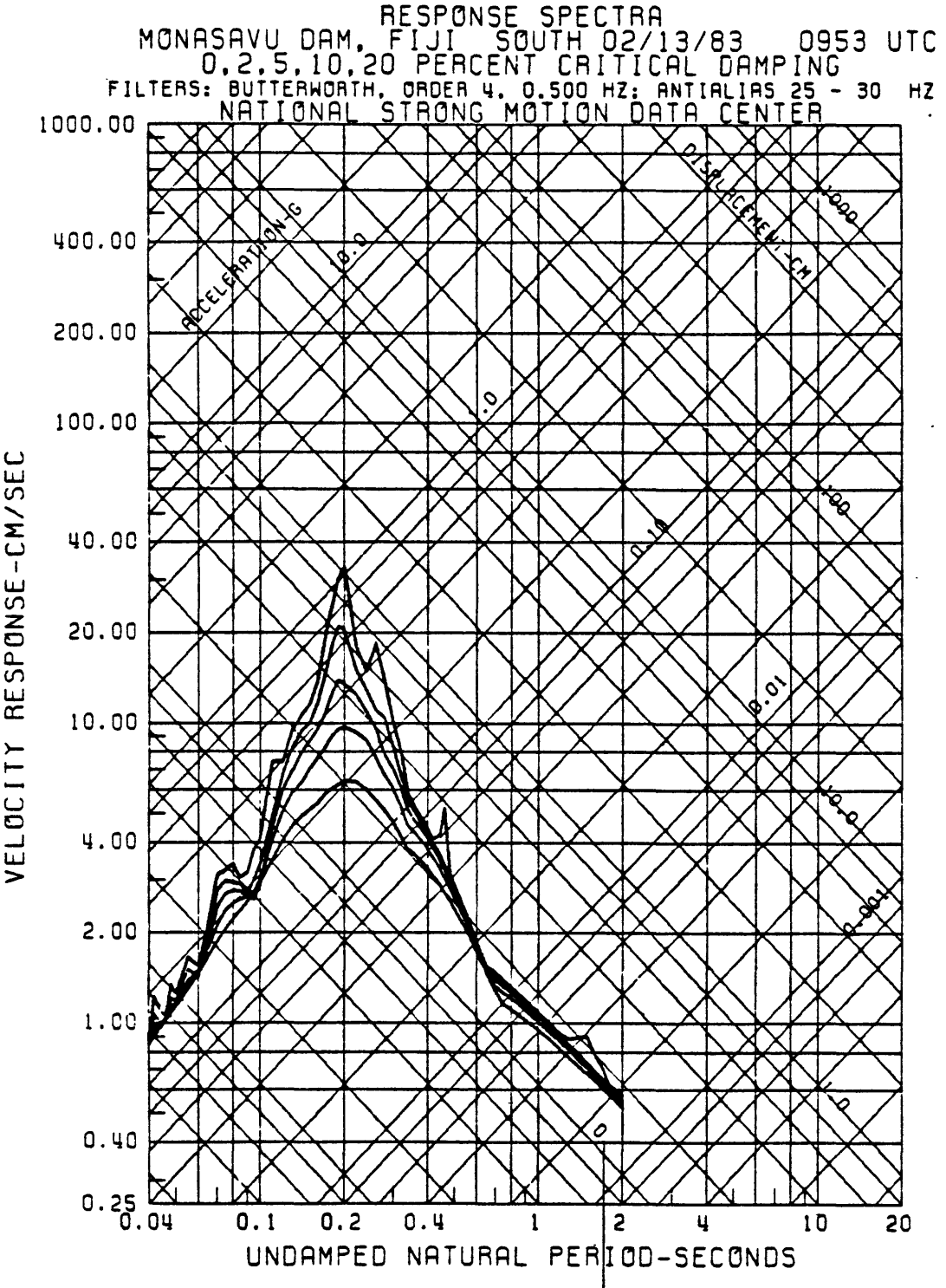
RESPONSE SPECTRA
MONASAVU DAM, FIJI SOUTH 02/13/83 0953 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
10.0
1.0
0.1
0.01
0

FIGURE 26.

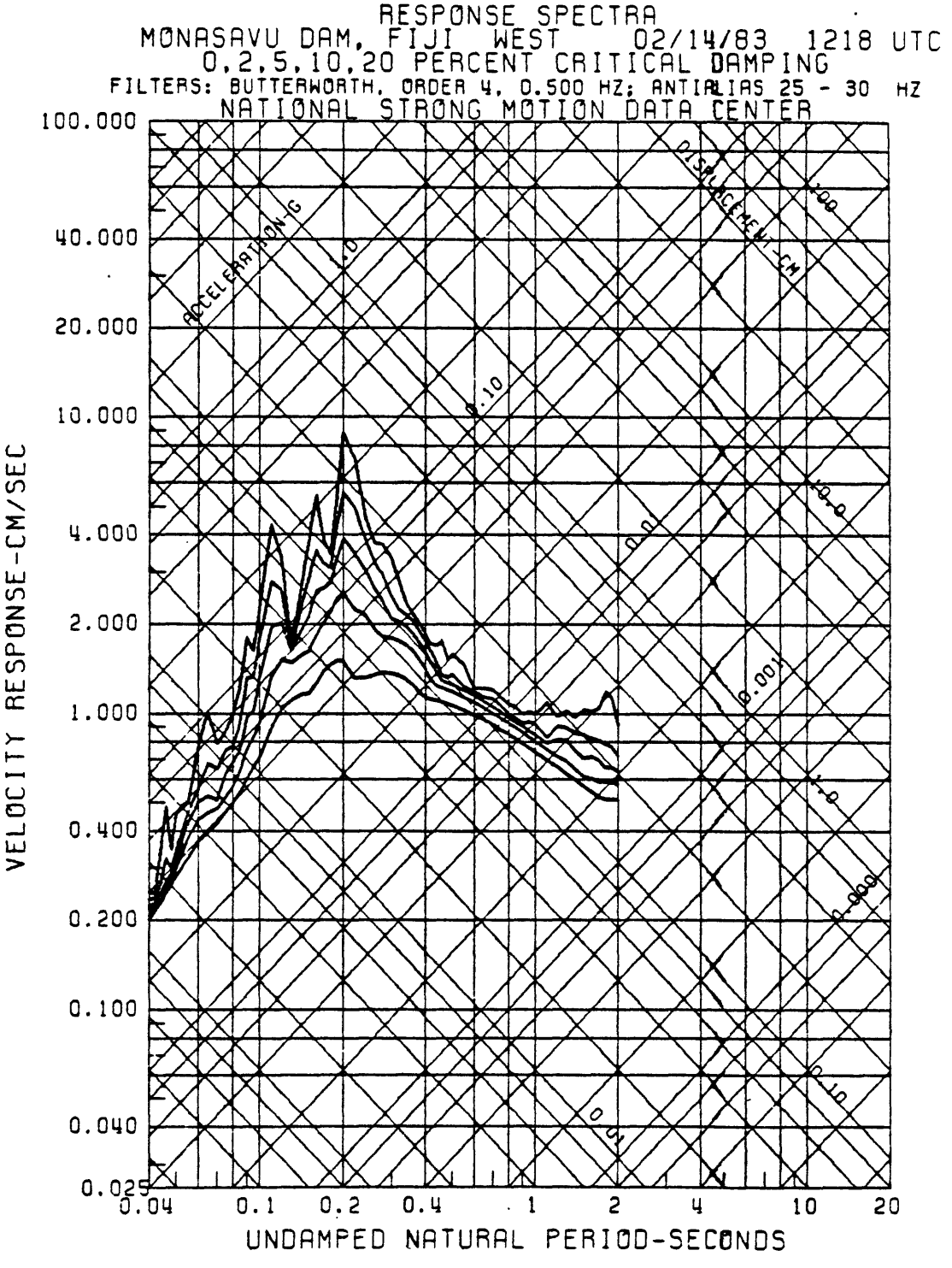
RESPONSE SPECTRA
MONASAVU DAM, FIJI WEST 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 27.

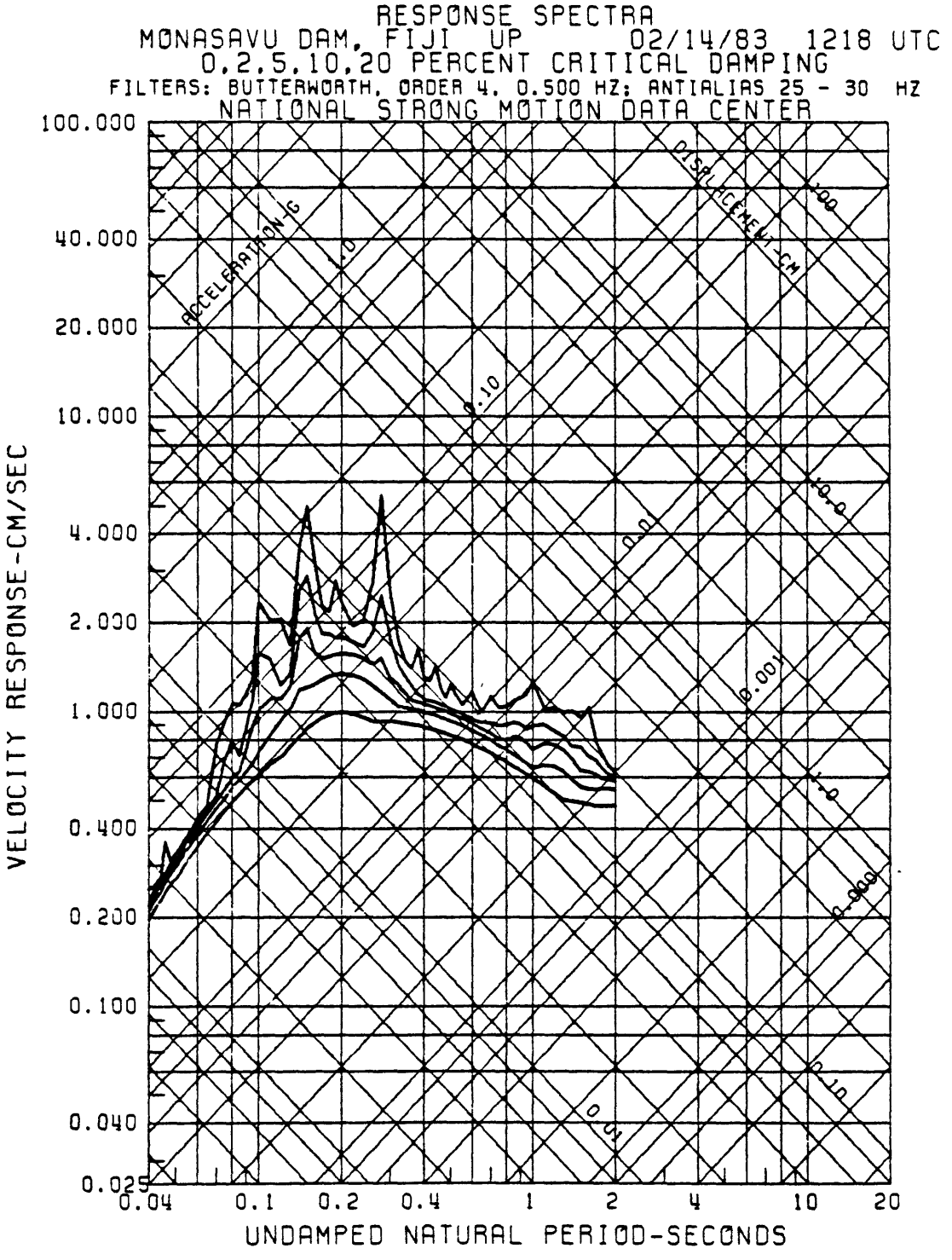
RESPONSE SPECTRA
MONASAVU DAM, FIJI UP 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 28.

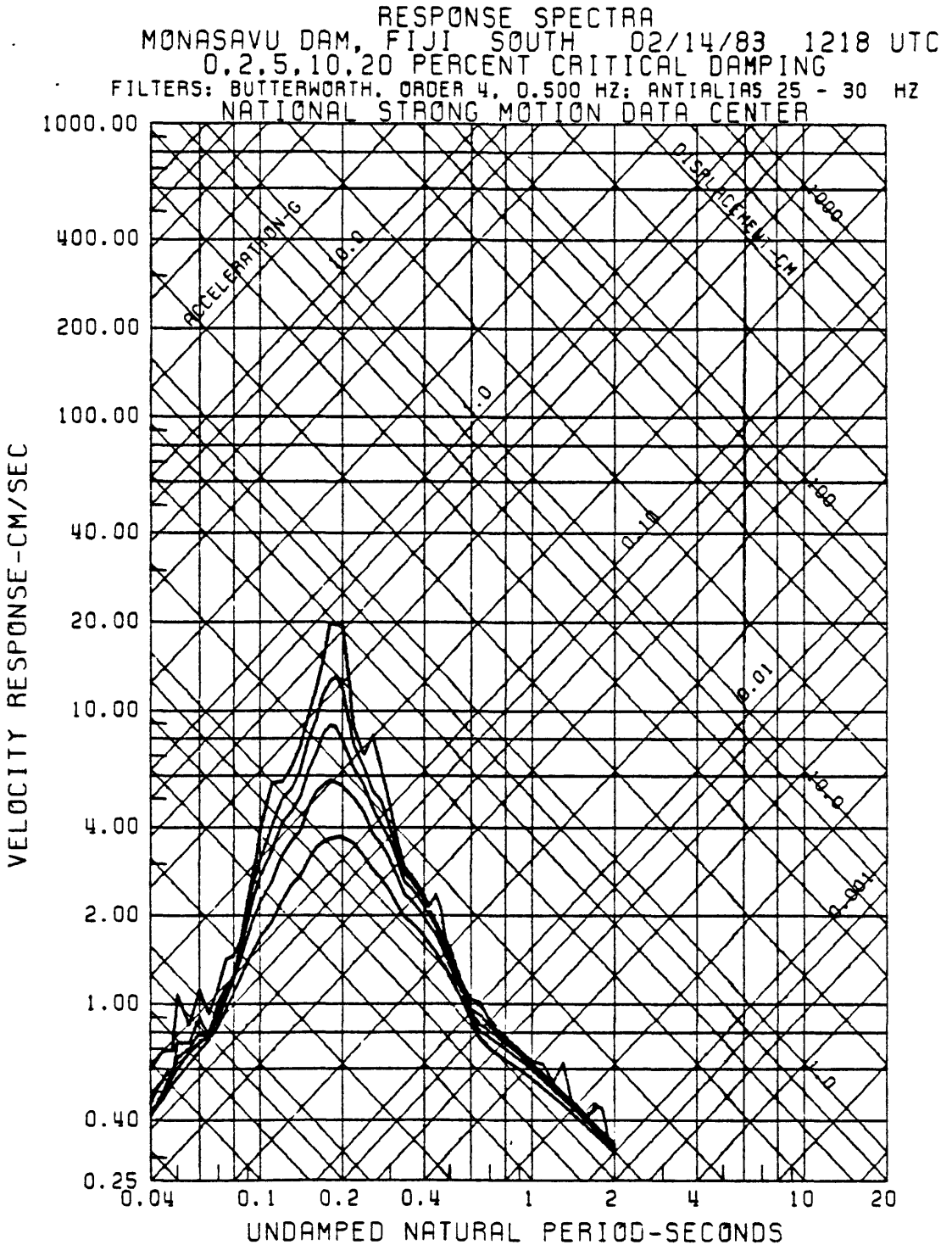
RESPONSE SPECTRA
MONASAVU DAM, FIJI SOUTH 02/14/83 1218 UTC
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 0.500 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
1000.00
400.00
200.00
100.00
40.00
20.00
10.00
4.00
2.00
1.00
0.40
0.25
0.04
0.1
0.2
0.4
1
2
4
10
20
ACCELERATION-G
10.0
1.0
0.1
0.01
DISPLACEMENT-CM
1000
100
10.0
1.0
0.001

FIGURE 29.

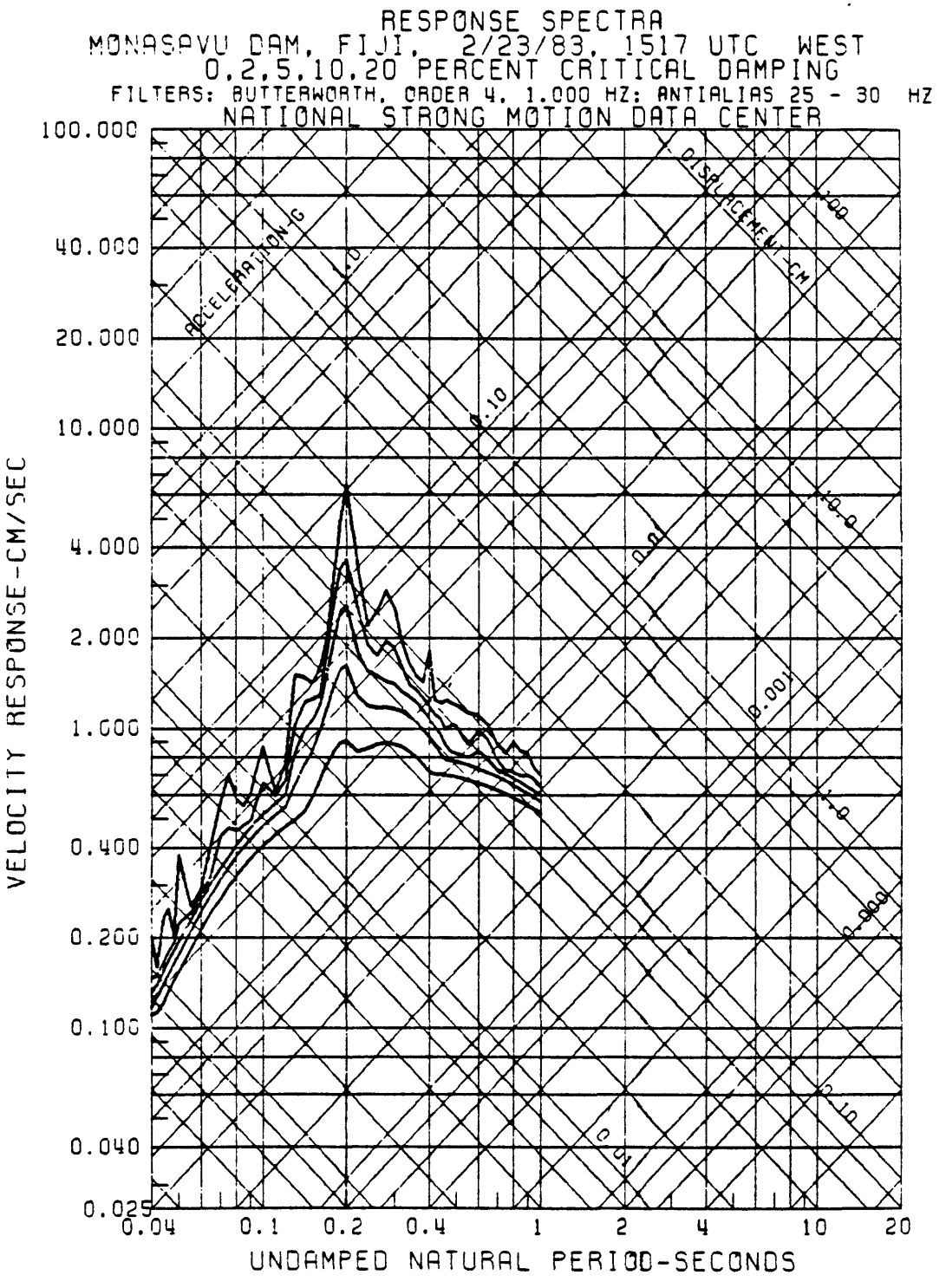
RESPONSE SPECTRA
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC WEST
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 30.

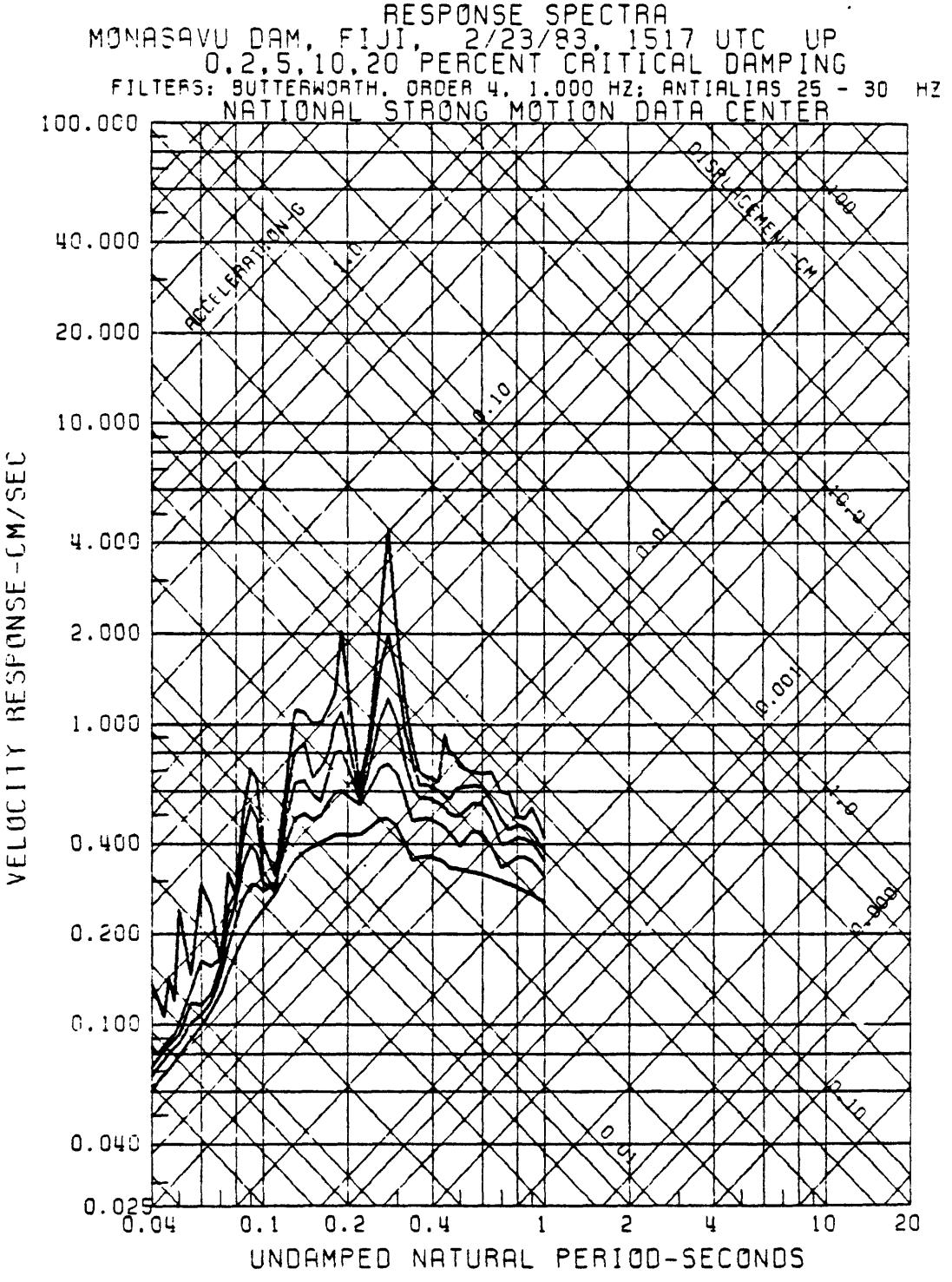
RESPONSE SPECTRA
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC UP
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
100.000
40.000
20.000
10.000
4.000
2.000
1.000
0.400
0.200
0.100
0.040
0.025
0.04
0.1
0.2
0.4
1
2
4
10
20
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
1.0
0.10
0.01
DISPLACEMENT-CM
100
10
1.0
0.1
0.01

FIGURE 31.

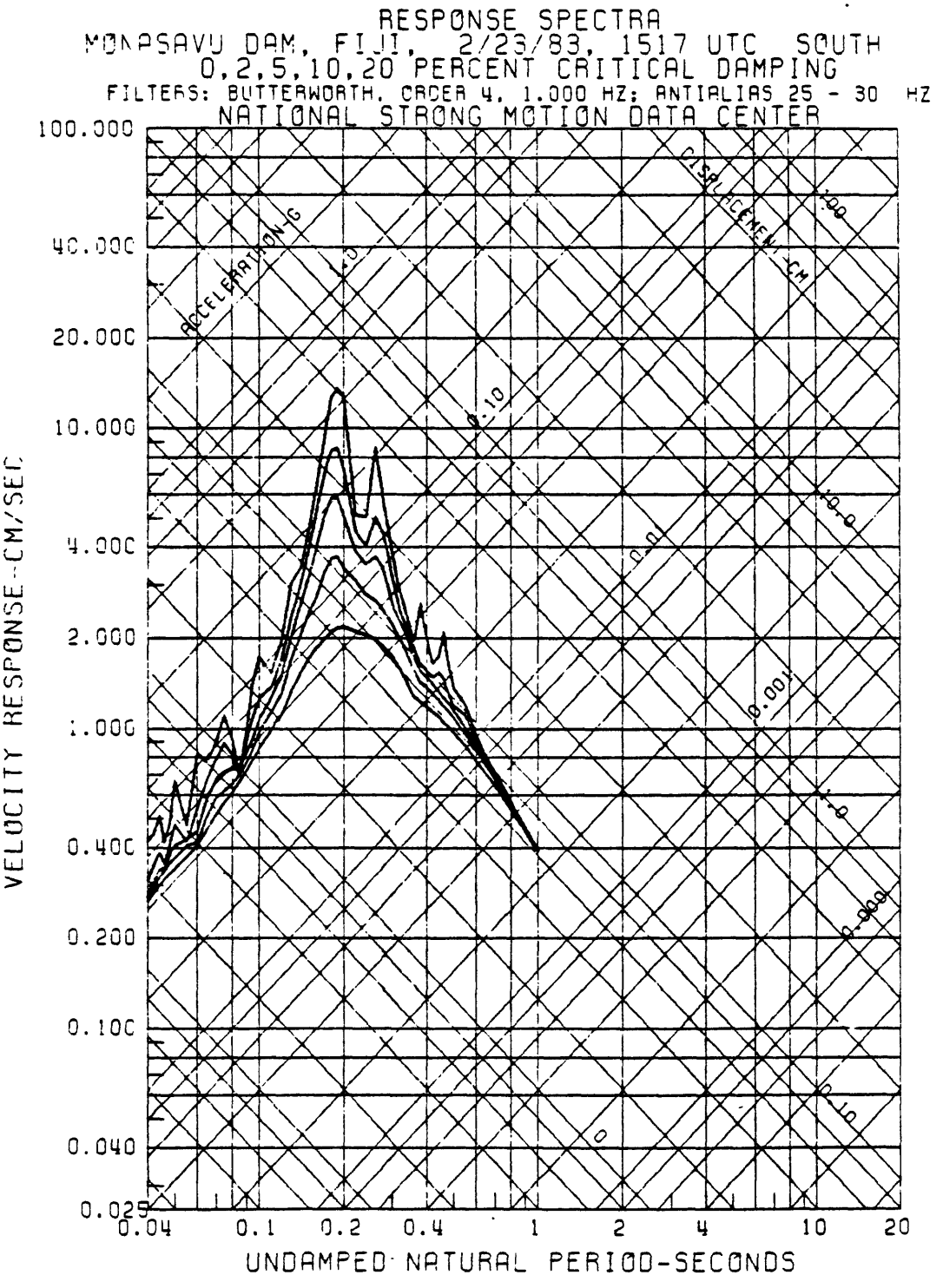
RESPONSE SPECTRA
MONASAVU DAM, FIJI, 2/23/83, 1517 UTC SOUTH
0,2,5,10,20 PERCENT CRITICAL DAMPING
FILTERS: BUTTERWORTH, ORDER 4, 1.000 HZ; ANTIALIAS 25 - 30 HZ
NATIONAL STRONG MOTION DATA CENTER
VELOCITY RESPONSE-CM/SEC
UNDAMPED NATURAL PERIOD-SECONDS
ACCELERATION-G
DISPLACEMENT-CM
100.000
40.000
20.000
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 32.

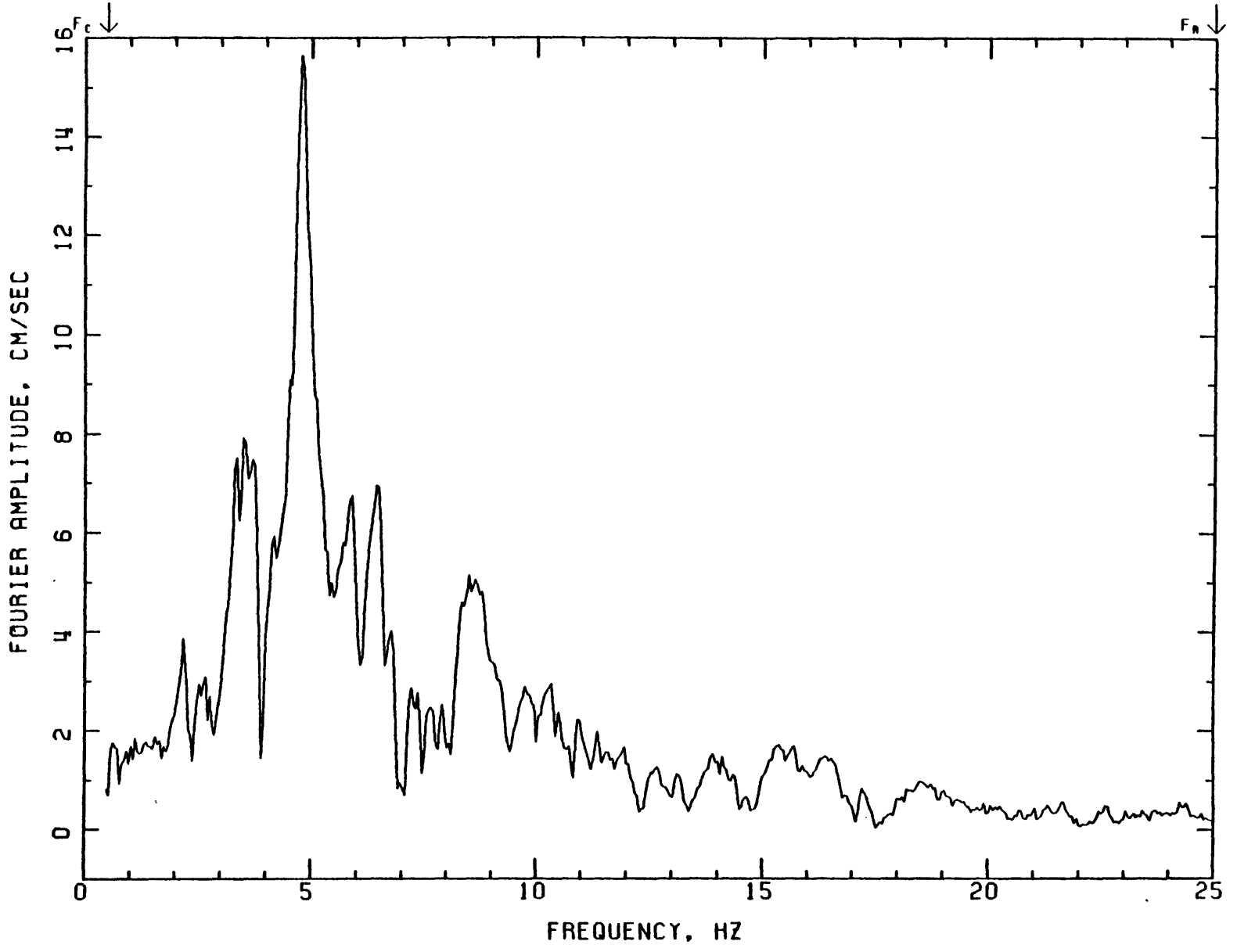

FIGURE 33.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

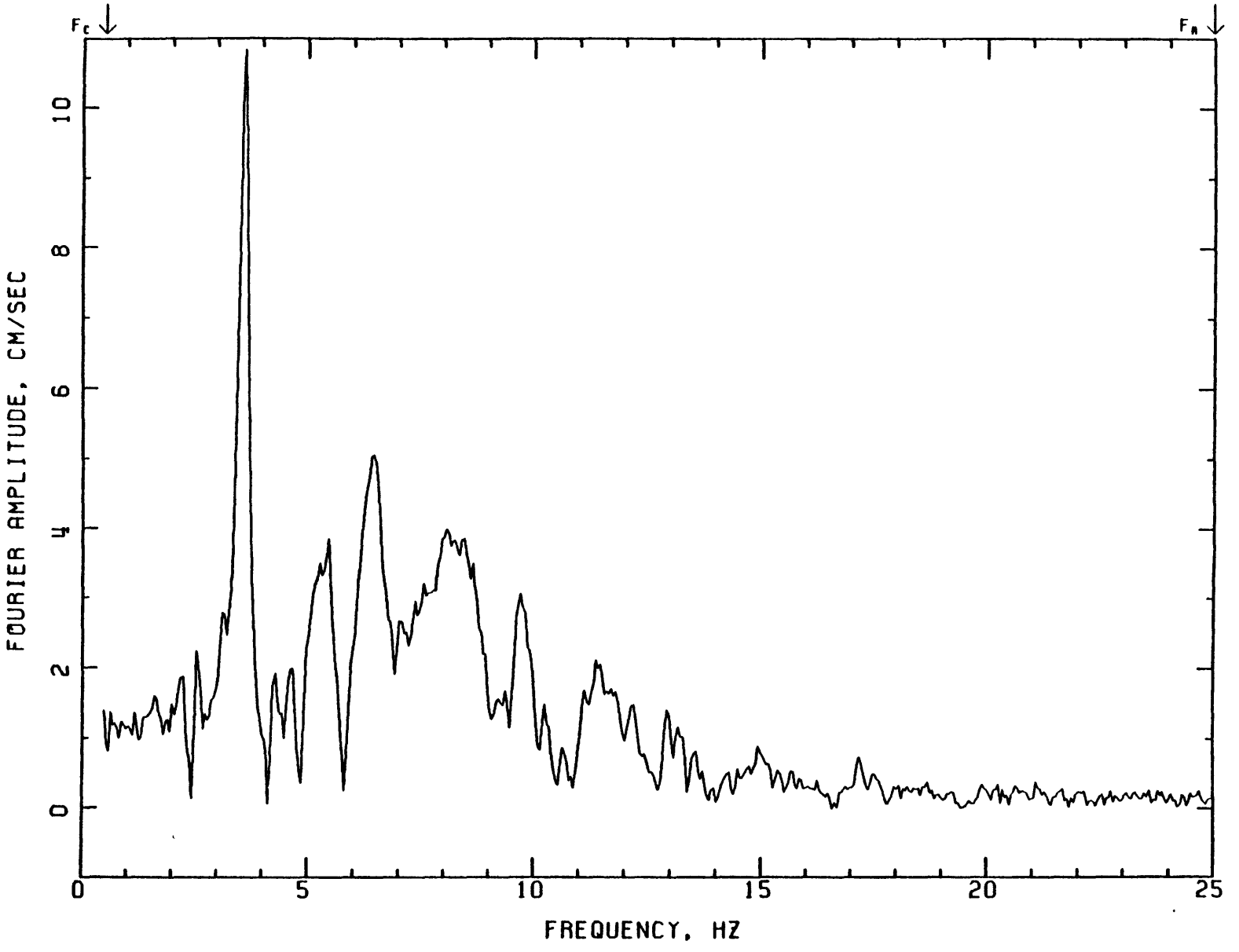

FIGURE 34.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

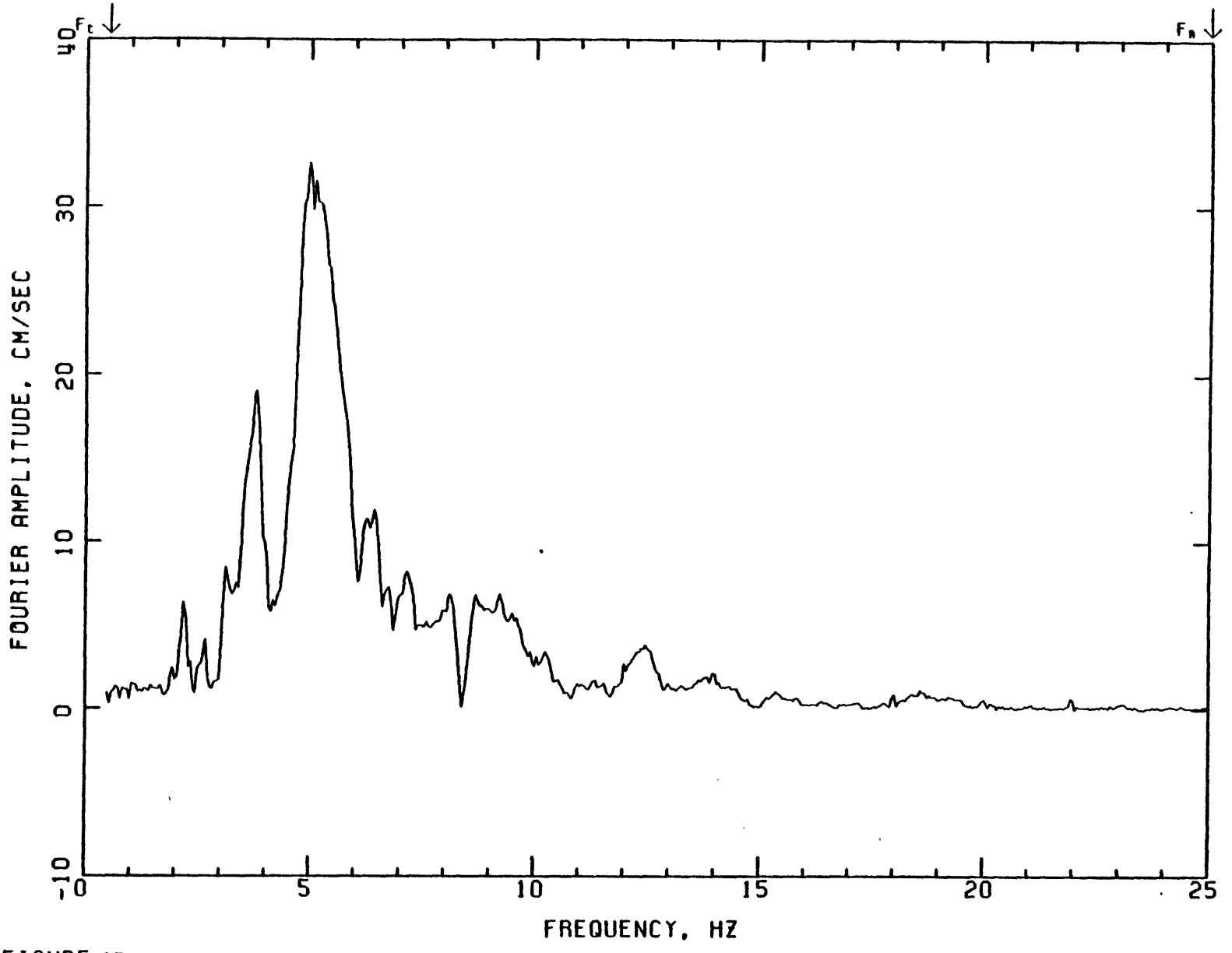

FIGURE 35.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

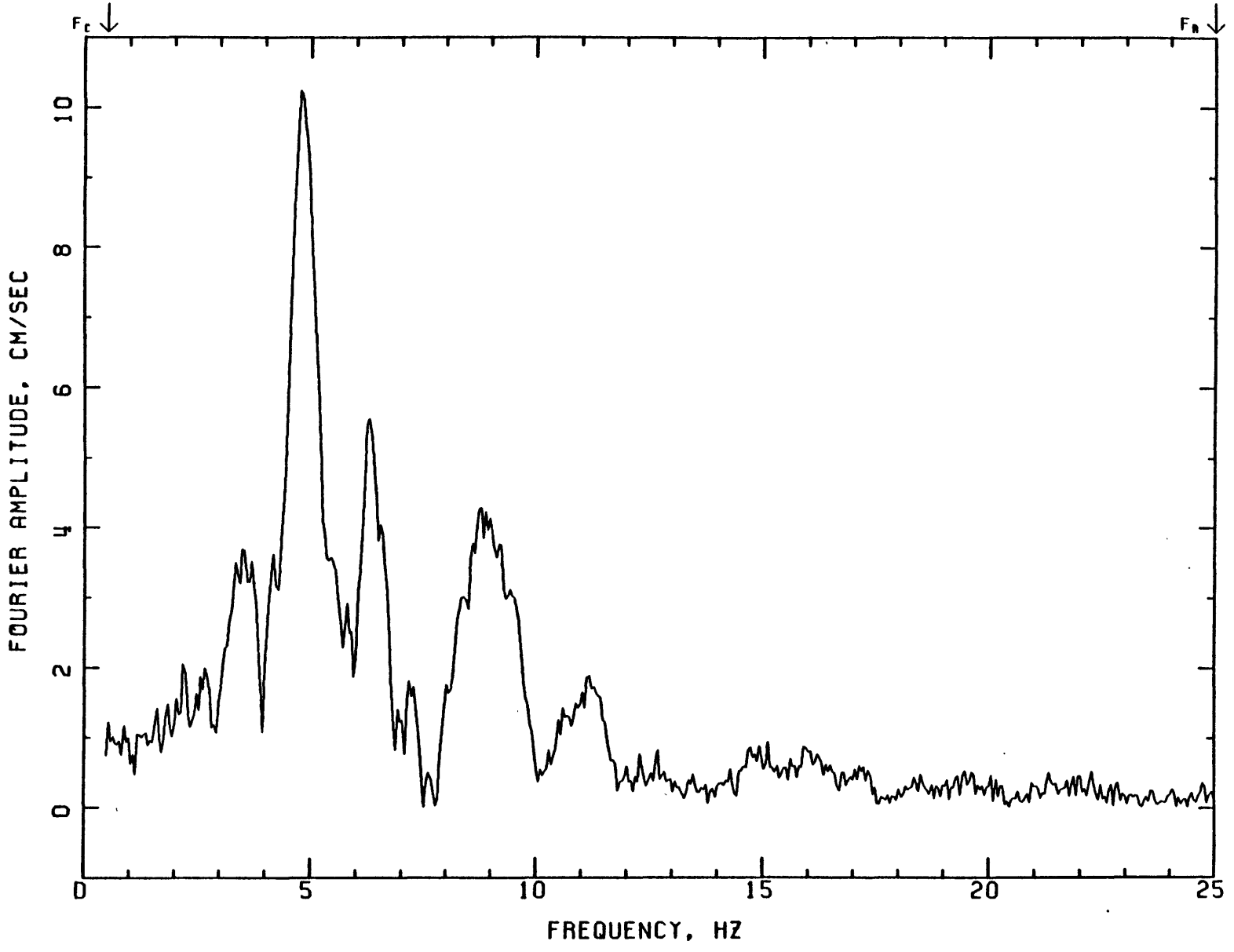

FIGURE 36.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

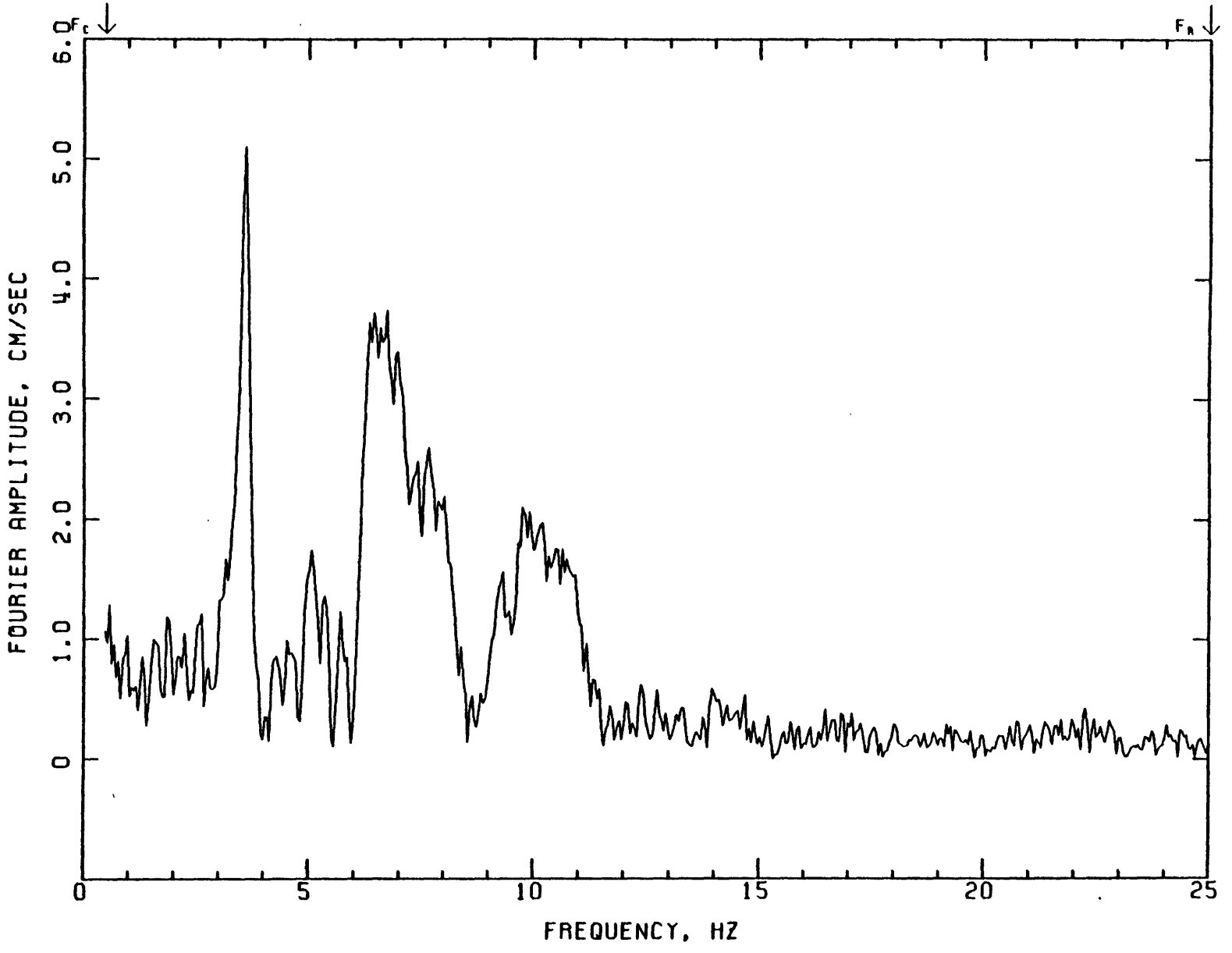

FIGURE 37.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

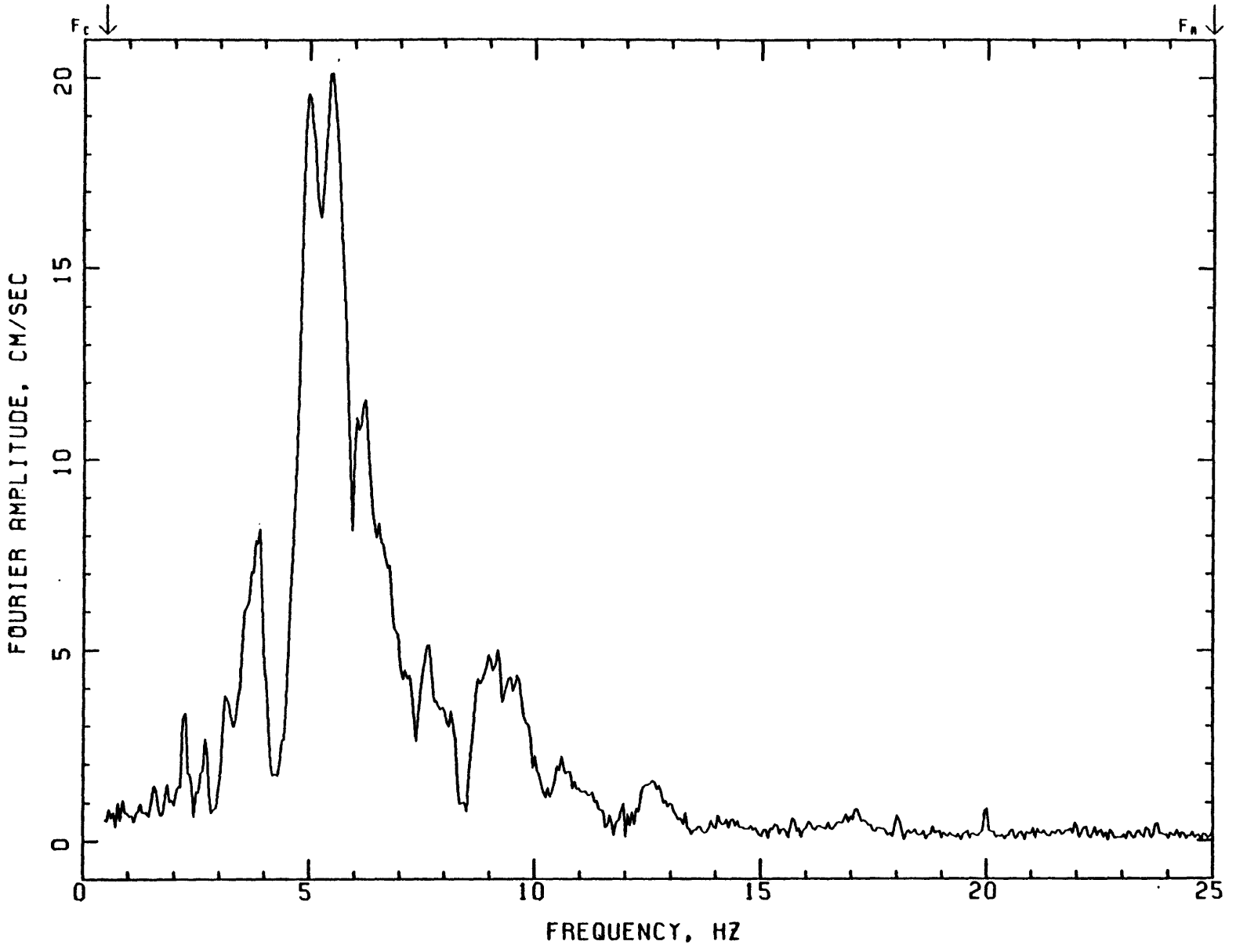

FIGURE 38.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

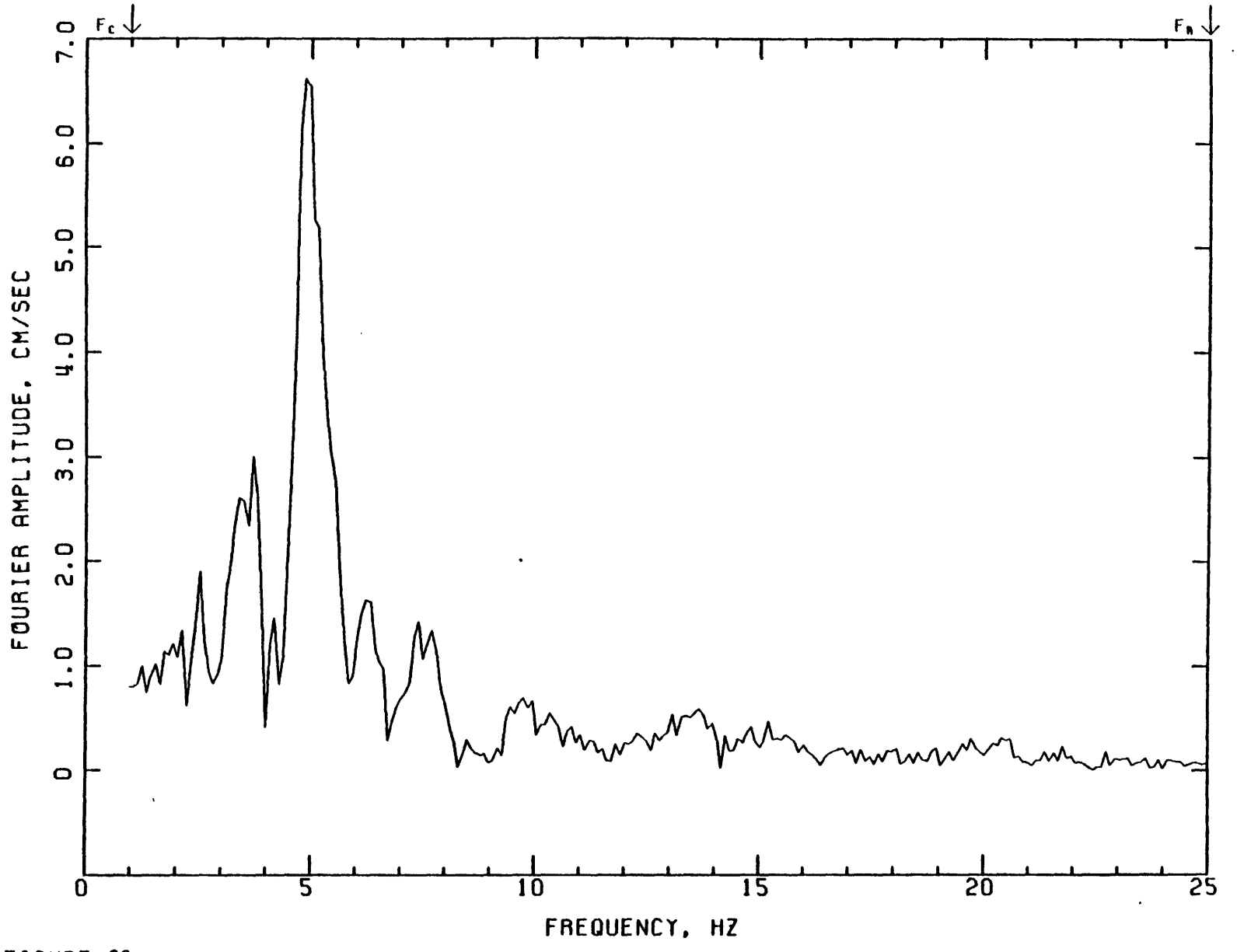

FIGURE 39.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

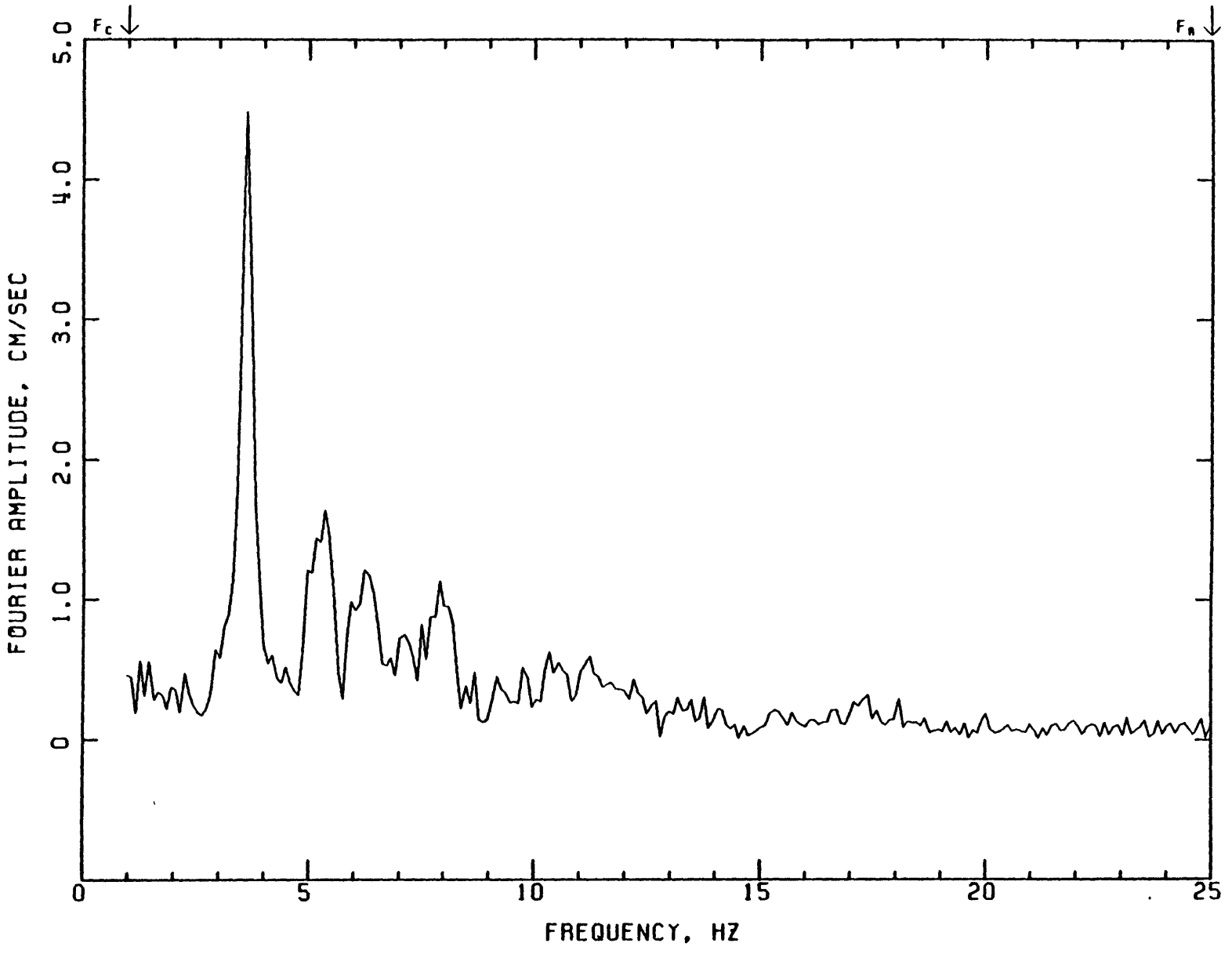

FIGURE 40.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ. ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

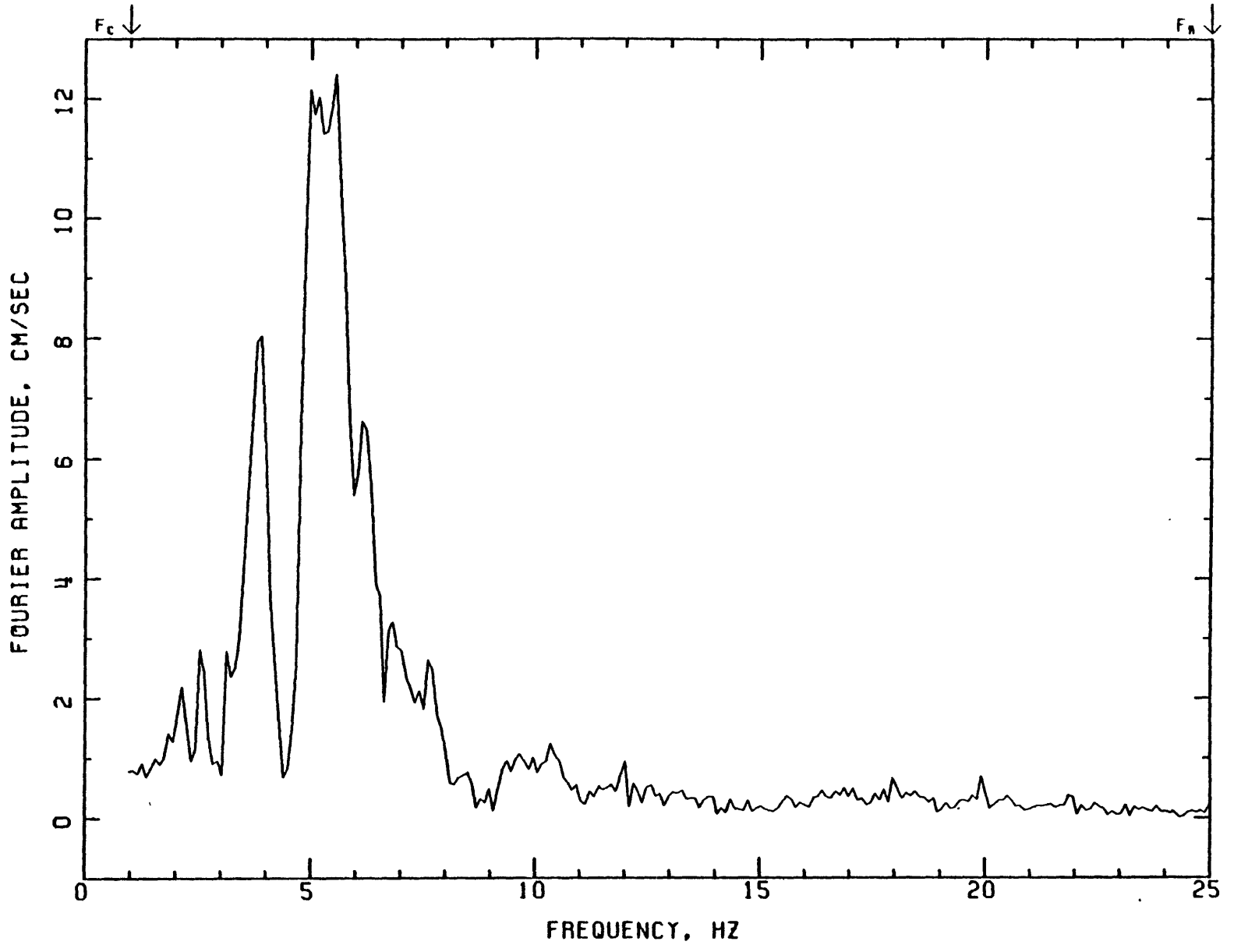

FIGURE 41.

FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

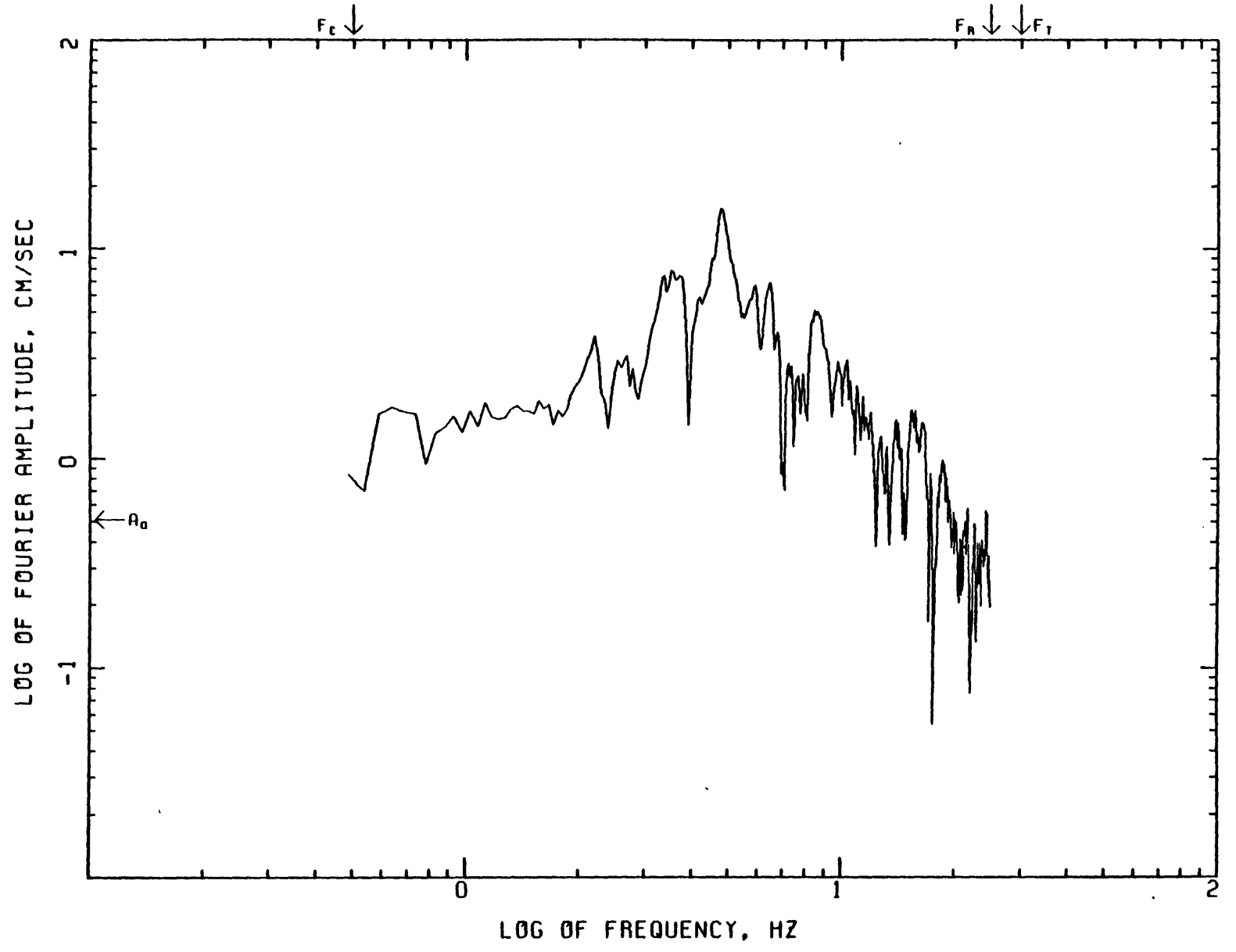

FIGURE 42.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

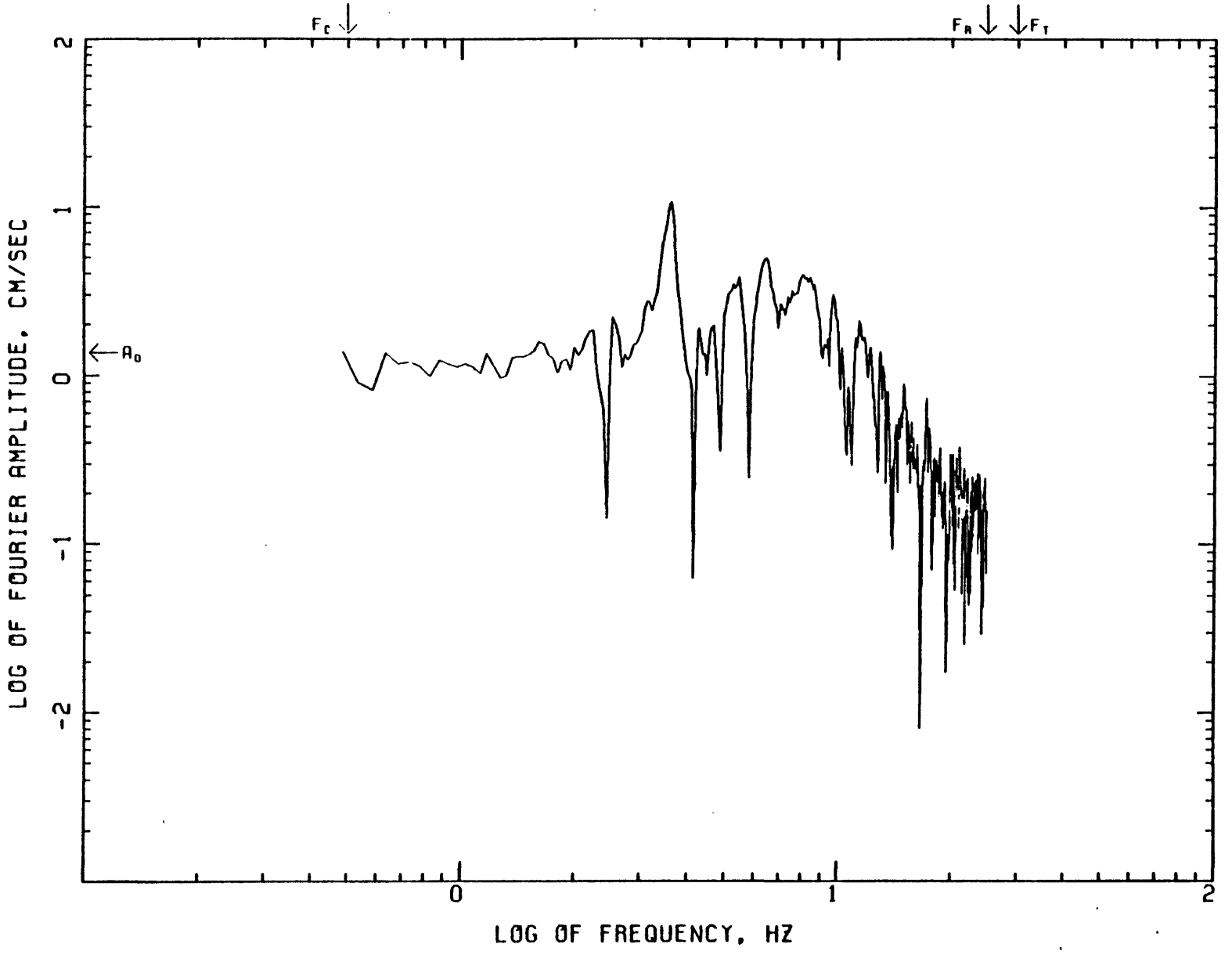

FIGURE 43.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

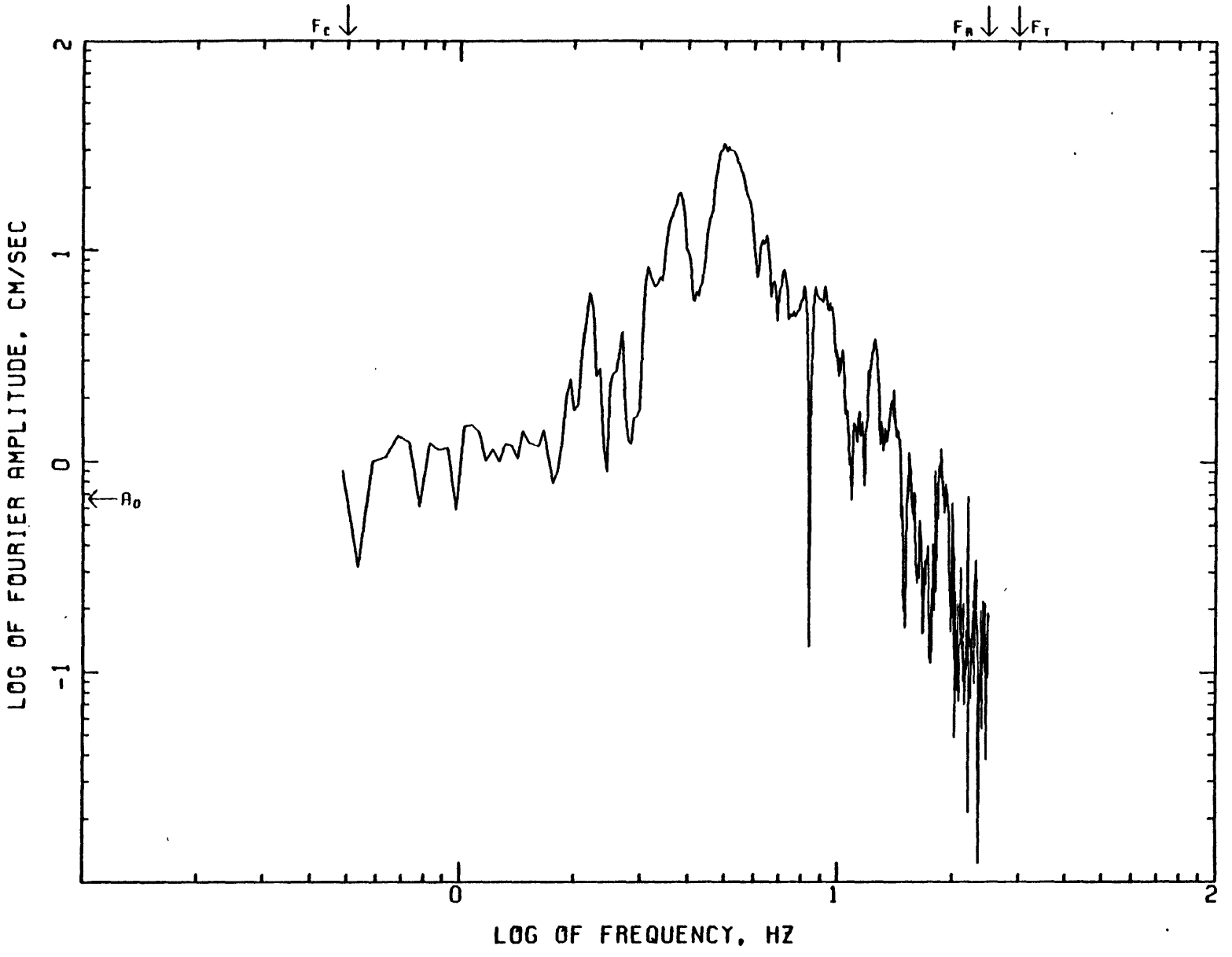

FIGURE 44.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 13,1983 0953 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

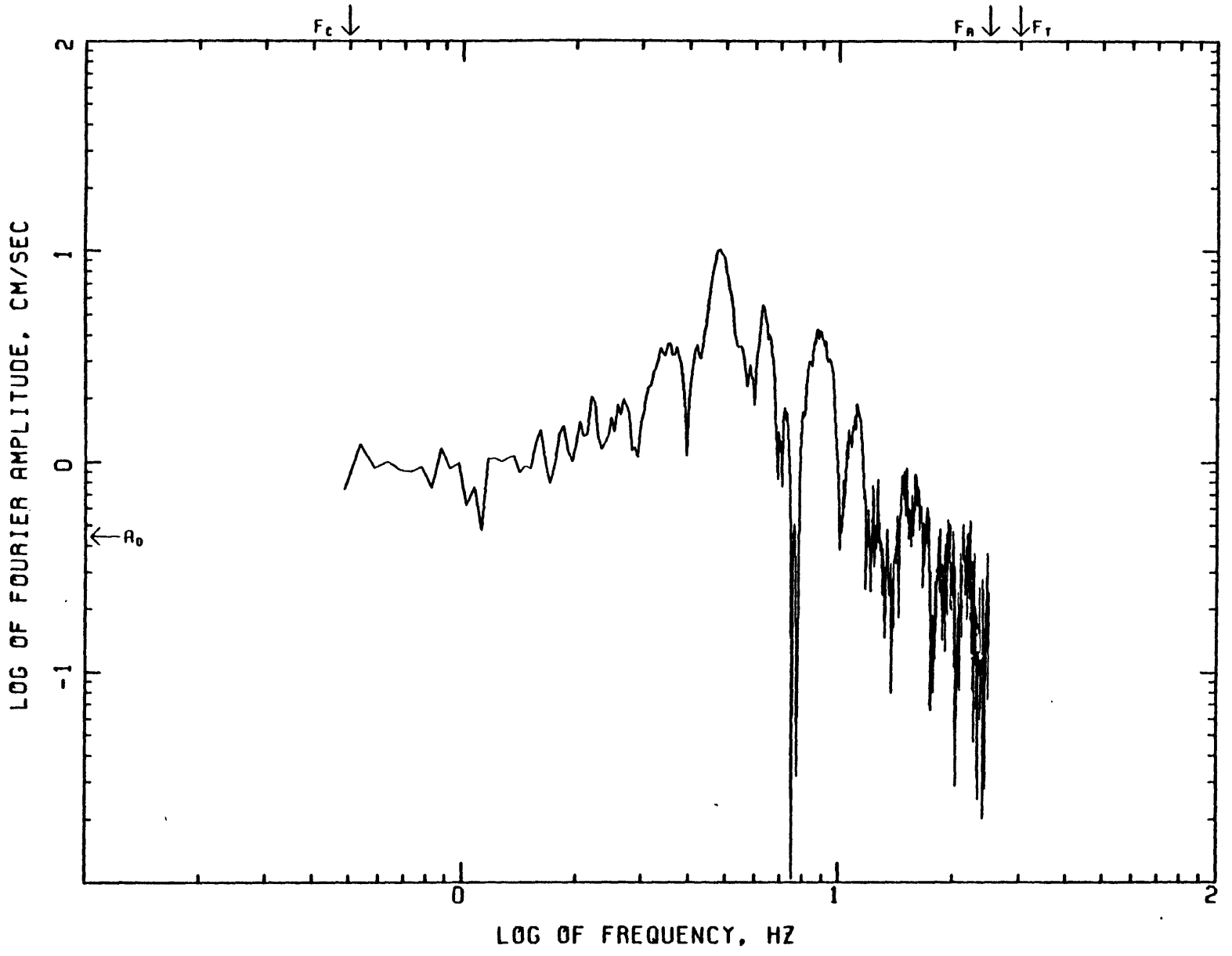

FIGURE 45.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

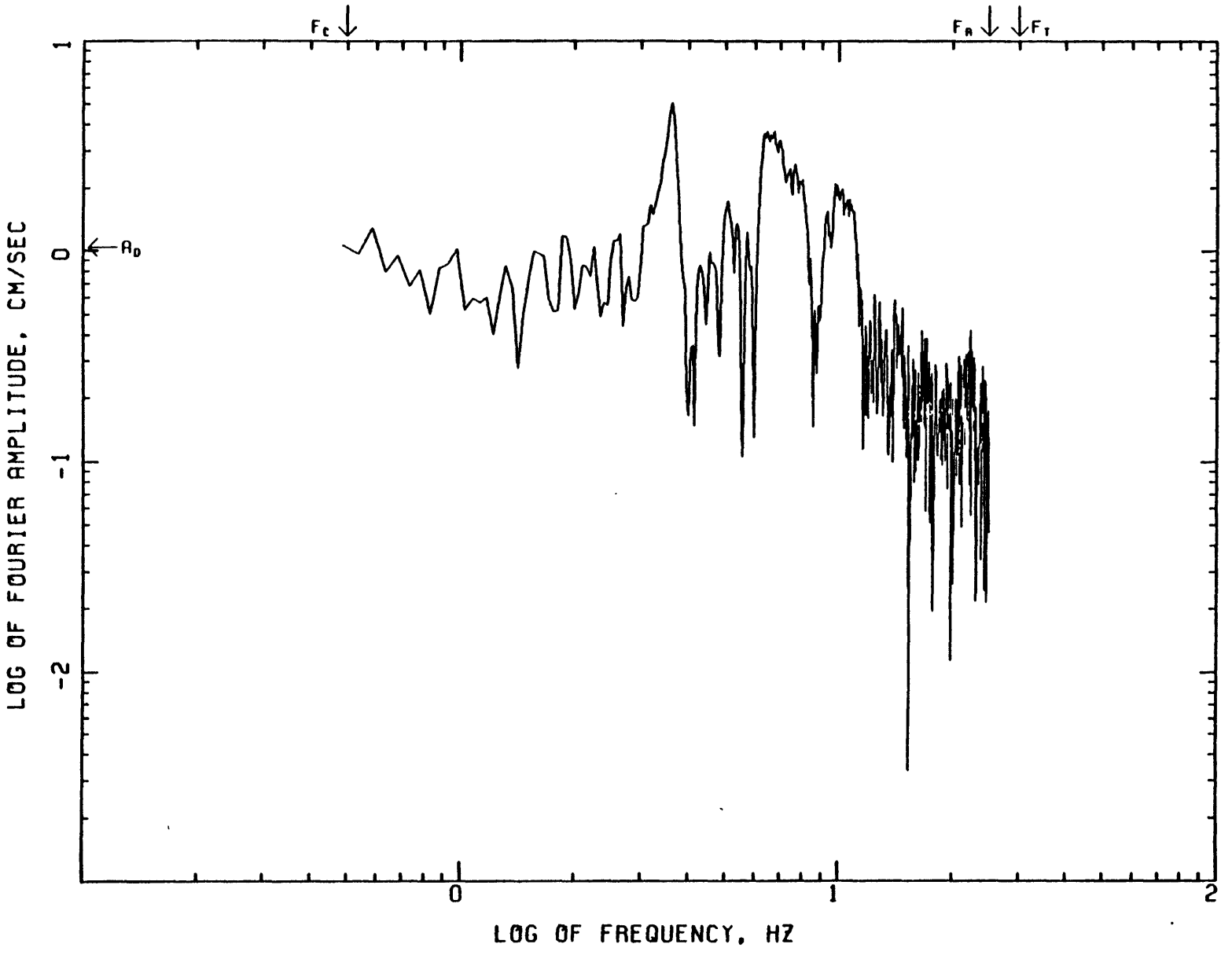

FIGURE 46.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

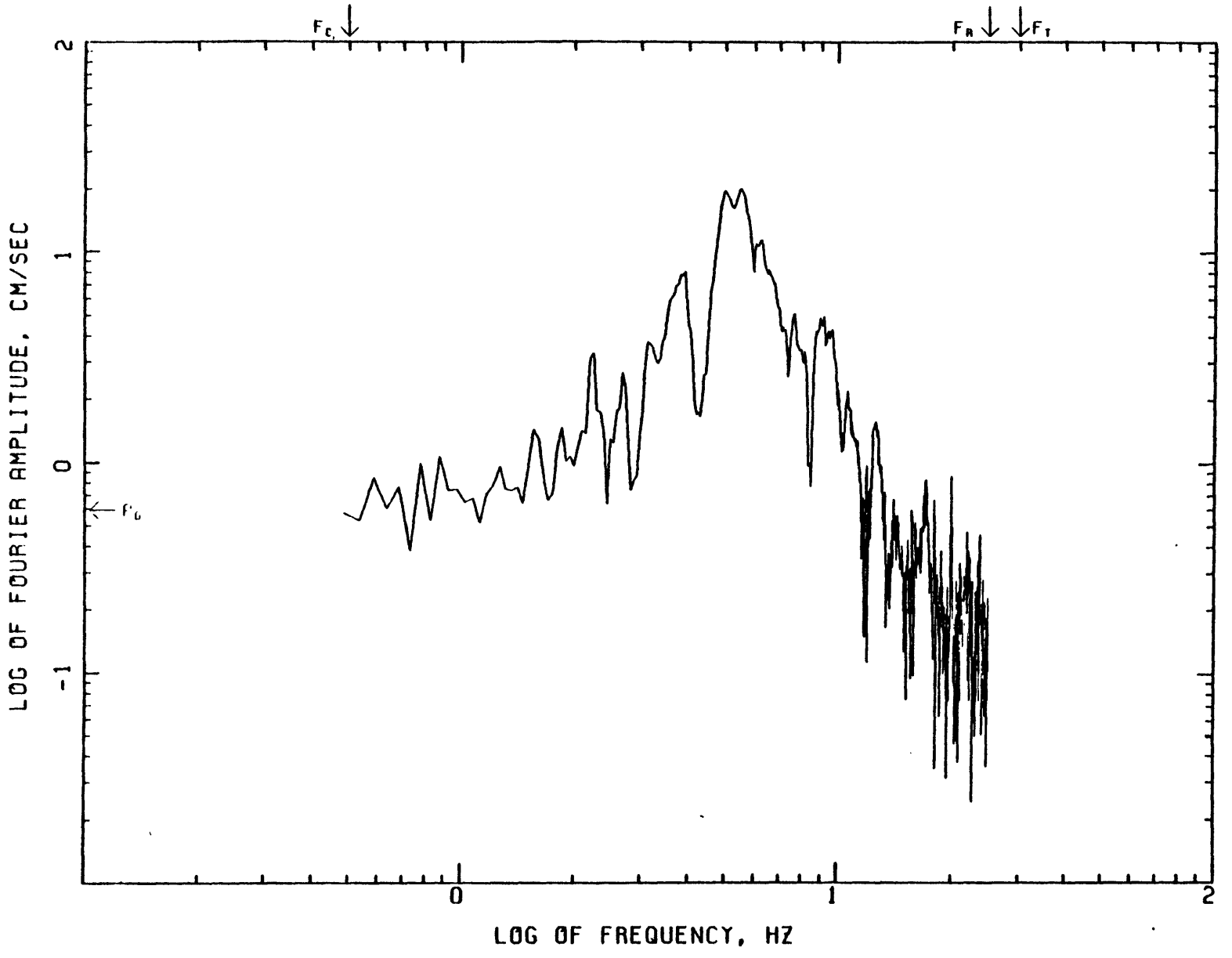

FIGURE 47.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 14,1983 1218 UTC
BUTTERWORTH FILTER AT 0.50 HZ, ORDER 4
DATA BAND PASSED FROM 0.50 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

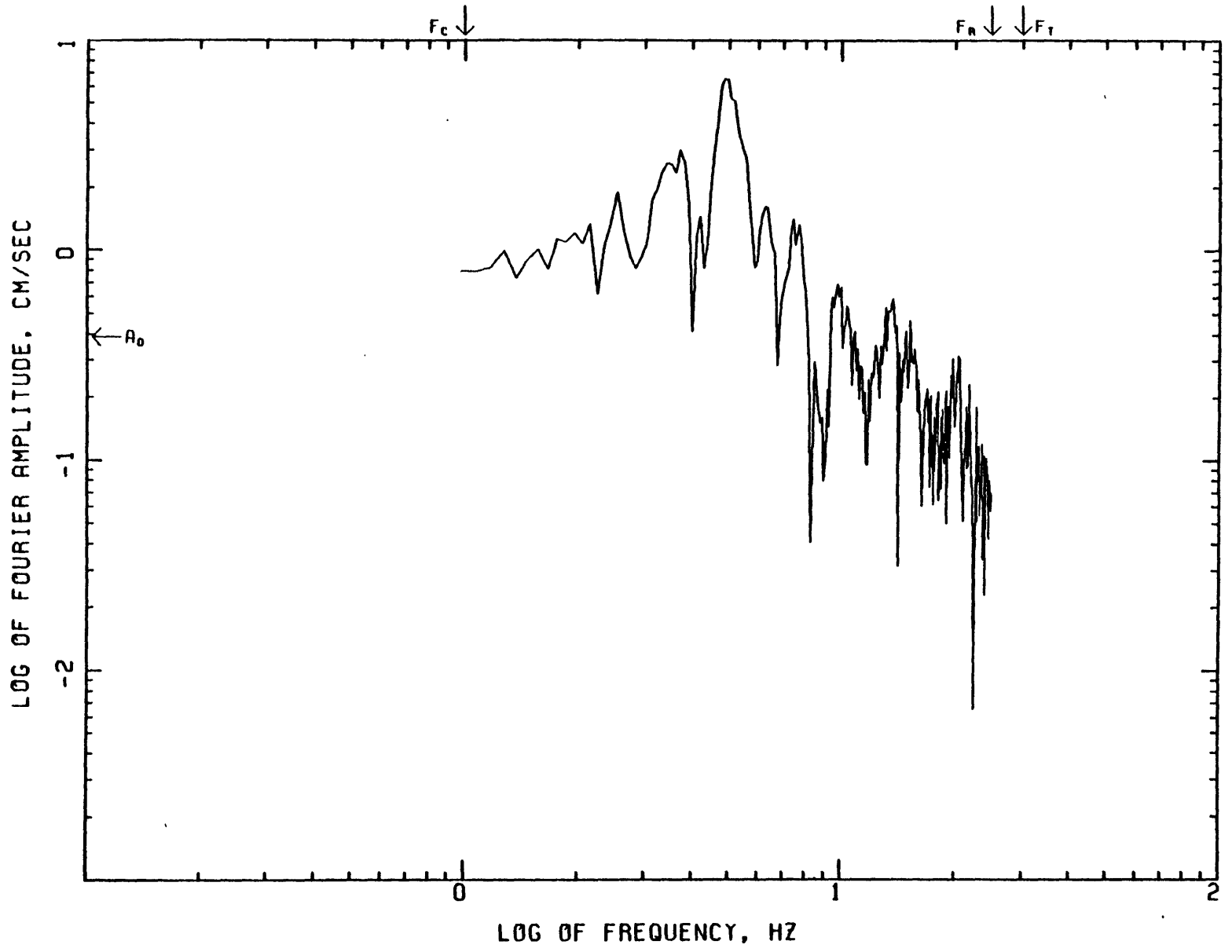

FIGURE 48.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
WEST
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

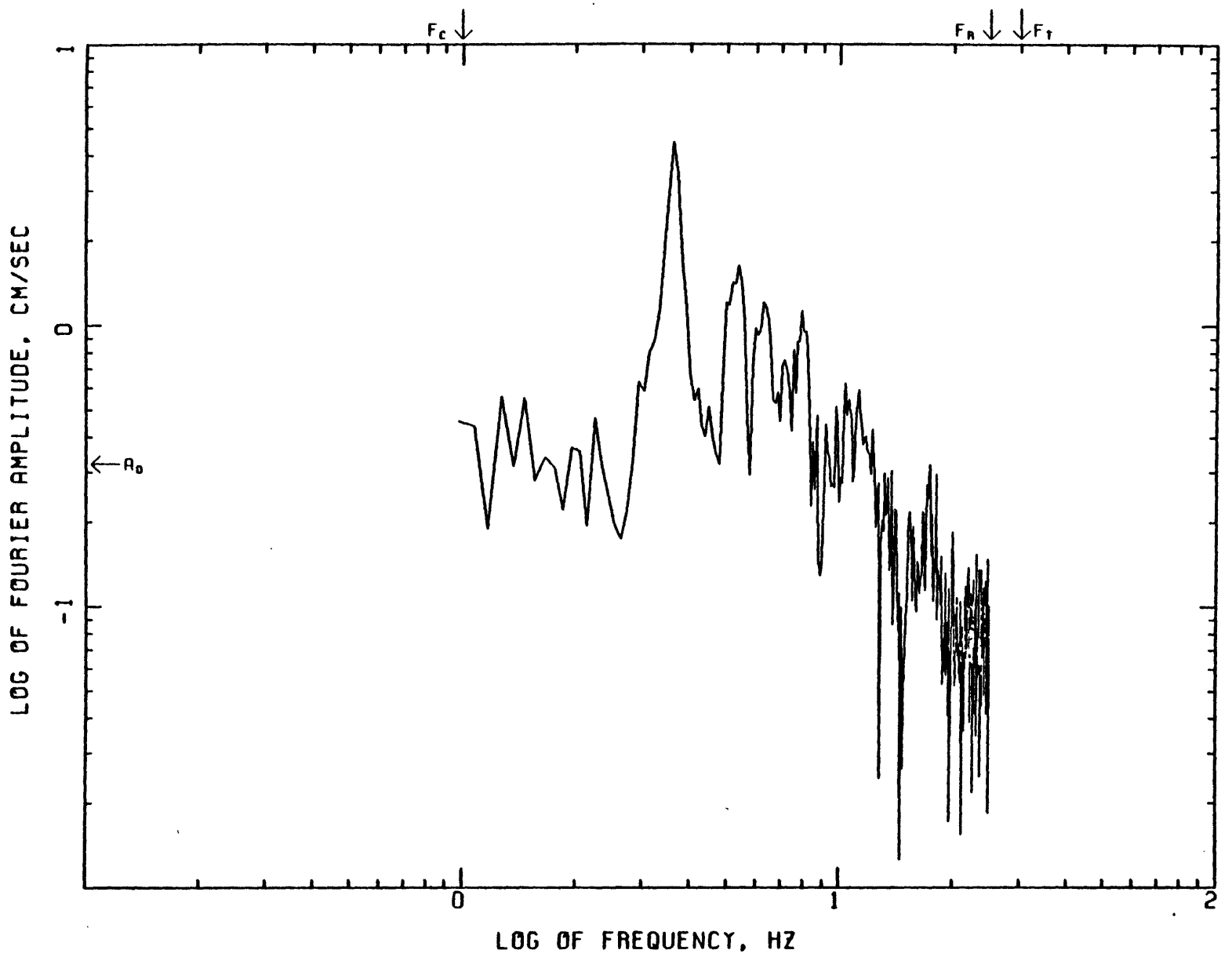

FIGURE 49.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
UP
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.

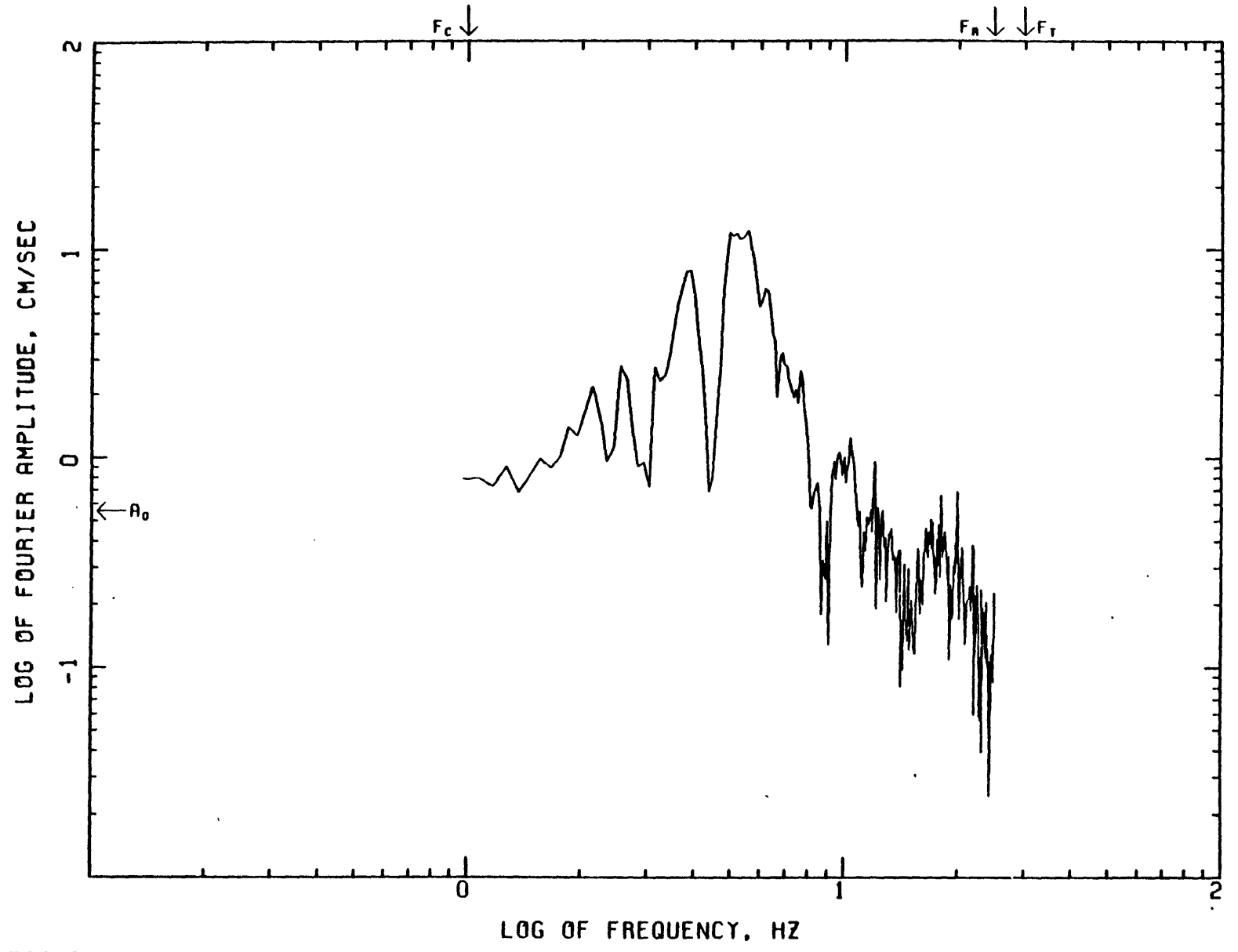

FIGURE 50.

LOG-LOG FOURIER AMPLITUDE SPECTRUM OF ACCELERATION.
MONASAVU DAM, FIJI
SOUTH
EARTHQUAKE OF FEBRUARY 23,1983 1517 UTC
BUTTERWORTH FILTER AT 1.00 HZ, ORDER 4
DATA BAND PASSED FROM 1.00 TO 25.00 HZ.
COMPUTING OPTIONS= ZCROSS,NONOISE.