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T-12045 SEP 23 1966 File: P-20.000
RS 7331/424

VIBRATION TEST OF
STRYPI 4 - HALBERD

(U)

Organization 7300 Environmental Test Report

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SEP 26 1966

CENTRAL TECHN FILE

R. R. Horton, Org. 7324

Approved by: Arthur F. Witte
Project Leader - 7324

Approved by: D. Hamilton
7331 Test Project Engineer

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ACCOUNTABILITY CARD	<u>PC</u>
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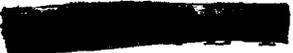
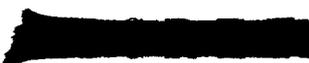

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T-12045
RS 7331/424VIBRATION TEST OF
STRYPi 4 - HALBERD
(U)

Introduction

An acceleration controlled vibration test run was performed on the Strypi 4 - Halberd. The test run was performed with the input in the direction of the longitudinal axis of the unit.

The object of this test was to determine the response of the structure and selected components to a known vibration input.

A list of instrumented components can be found in Table I.

The requested test specifications were a $\frac{1}{2}$ g input along the longitudinal axis of the unit from 20-2000 cps. No sweep time was specified.

The test was requested by R. E. Diesing, 9225, on July 25, 1966. The unit was instrumented and ready for testing on August 29, 1966. The test was completed on August 31, 1966.

Summary

The unit was tested at the required test specifications. The recorded data is shown in Table I. No structural failures were noted.

Procedure and Results

Instrumentation of the test unit consisted of accelerometers mounted on several internal components and at several external locations. Figures 1 through 4 are photographs showing the installation of these accelerometers. Table I lists the accelerometer locations and the corresponding figure numbers of the installation photographs. Eight force gauges were mounted under the test fixture as shown in Figure 1. The signals of these eight force gauges were instantaneously averaged and the resultant data indicates the force required to maintain the $\frac{1}{2}$ g input from 20-2000 cps.

The input control consisted of a single accelerometer mounted to the test fixture as shown in Figure 1. Control was maintained on the filtered input signal using a 10 cps bandwidth filter from 20-100 cps and a 100 cps bandwidth filter from 100-2000 cps.

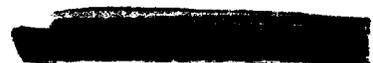
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RS 7331/424

The response data signals were recorded on a magnetic tape recorder and played back through a 25 cps bandwidth filter.

For the test run, the unit was mounted to the vibration shaker as shown in Figure 1. The unit was vibrated at a $\frac{1}{2}g$ input from 20 to 2000 cps using a 10-minute sweep. The unit was then vibrated at a $\frac{1}{2}g$ input from 2000-20 cps using a 5-minute sweep. Total test time was 15 minutes. The figure numbers of response data and input control data are shown in Table I.

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TABLE I **UNCLASSIFIED**
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Accel.	Orien- tation	Install- ation Photo	Location	Response Plots
1	Vert	Fig. 2	Antenna	Fig. 6
2	Lat	Fig. 2	Antenna	Fig. 7
3	Long	Fig. 2	Antenna	Fig. 8
4	Vert	Not Avail	Timer TC-64	Fig. 9
5	Lat	Not Avail	Timer TC-64	Fig. 10
6	Long	Not Avail	Timer TC-64	Fig. 11
7	Vert	Fig. 3	TC-270	Fig. 12
8	Lat	Fig. 3	TC-270	Fig. 13
9	Long	Fig. 3	TC-270	Fig. 14
10	Vert	Fig. 2	Pressure Plate	Fig. 15
11	Lat	Fig. 2	Pressure Plate	Fig. 16
12	Long	Fig. 2	Pressure Plate	Fig. 17
13	Long	Not Avail	Ejection Tube Flange	Fig. 18
14	Long	None	On side of TEM 442	Fig. 19
15	Long	Fig. 4	Ejection Tube Aft Cover	Fig. 20
16	Long	Fig. 1	First Junction Lower Unit	Fig. 21
17	Long	Fig. 1	First Junction Second Unit	Fig. 22
18	Long	Fig. 1	Second Junction Second Unit	Fig. 23
19	Long	Fig. 1	Second Junction Third Unit	Fig. 24
20	Long	Fig. 1	Third Junction Third Unit	Fig. 25
21	Long	Fig. 1	Third Junction Upper Unit	Fig. 26
22	Long	Not Avail	Top of Nose	Fig. 27
Input	Long	Fig. 1	Test Fixture	Fig. 5
Force	Long	Fig. 1	Test Fixture	Fig. 23

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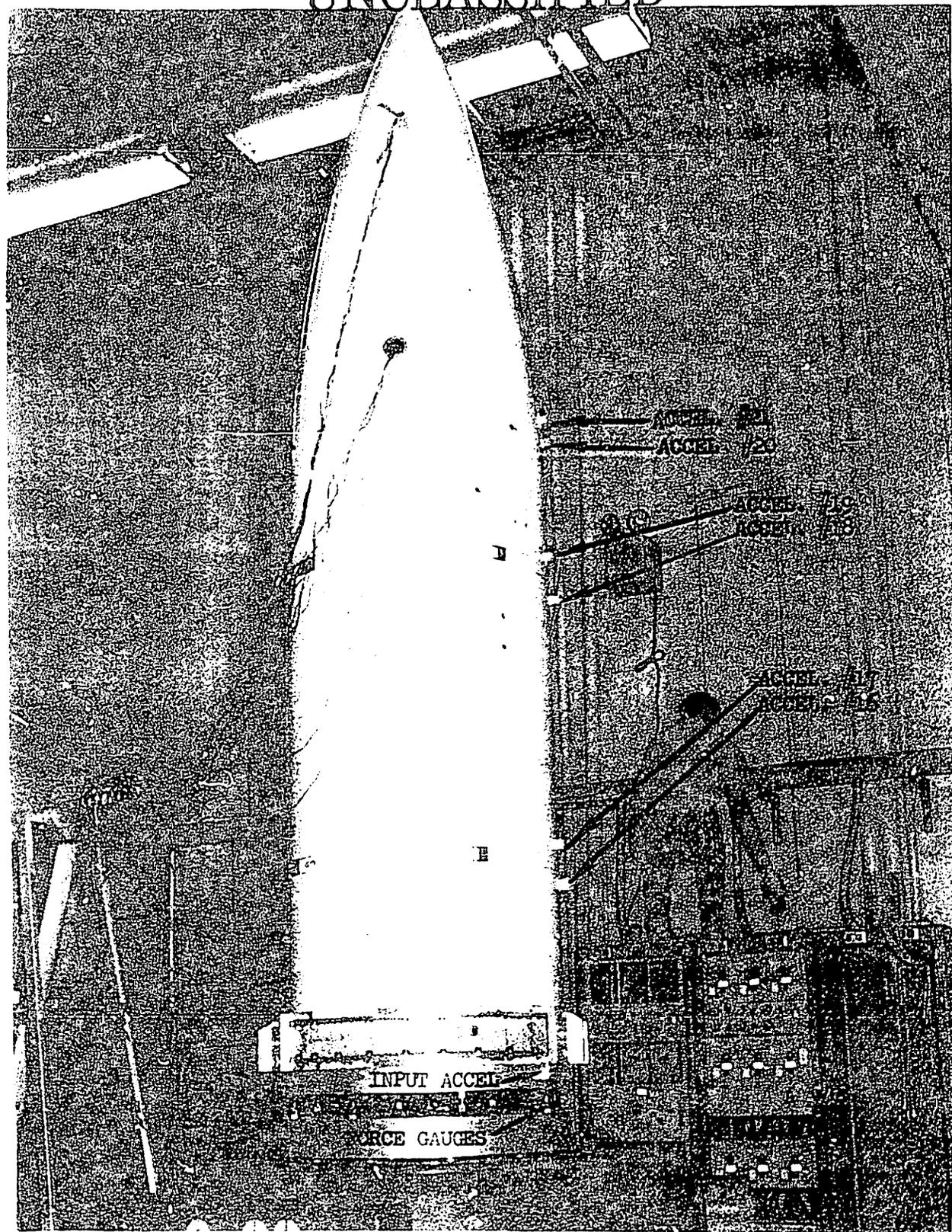


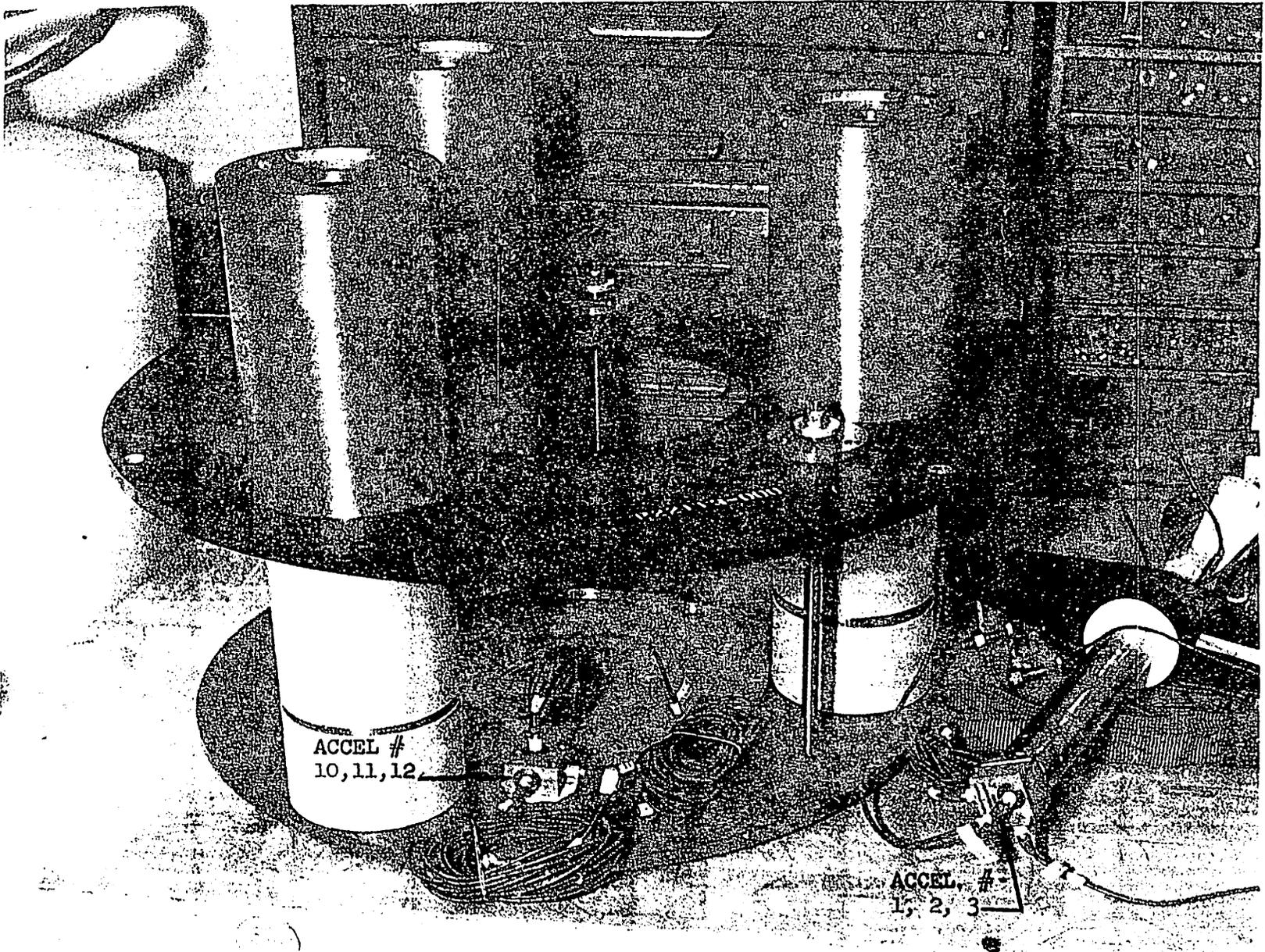
FIGURE 1. TEST SETUP AND ESSENTIAL ACCELEROMETER LOCATIONS.

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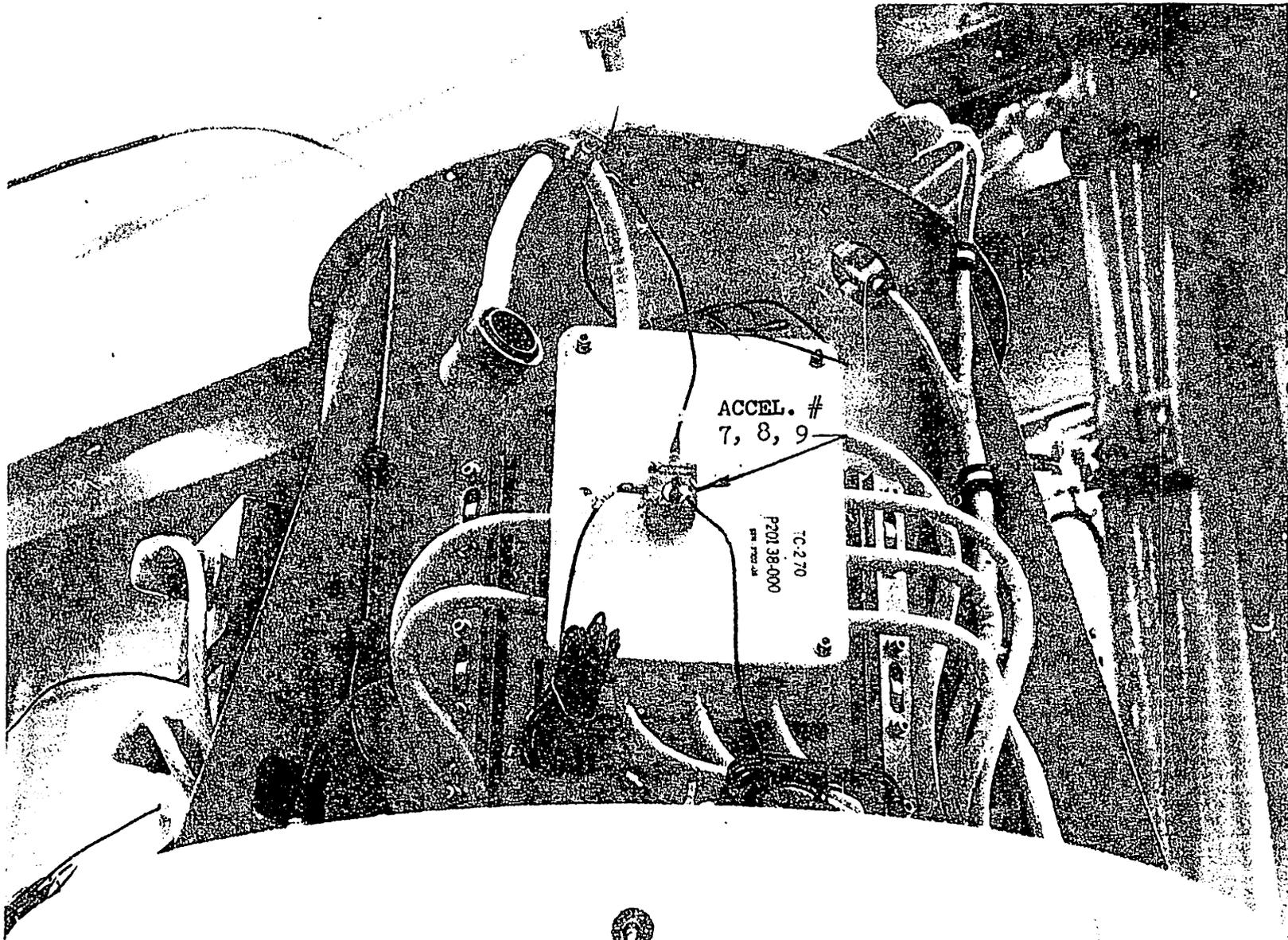
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FIGURE 1. RANLIER NETTING MOUNTED ON THE ANTENNA AND THE PRESSURE VAC. TR.

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FIGURE 1. ACCELEROMETERS MOUNTED ON TC-270.

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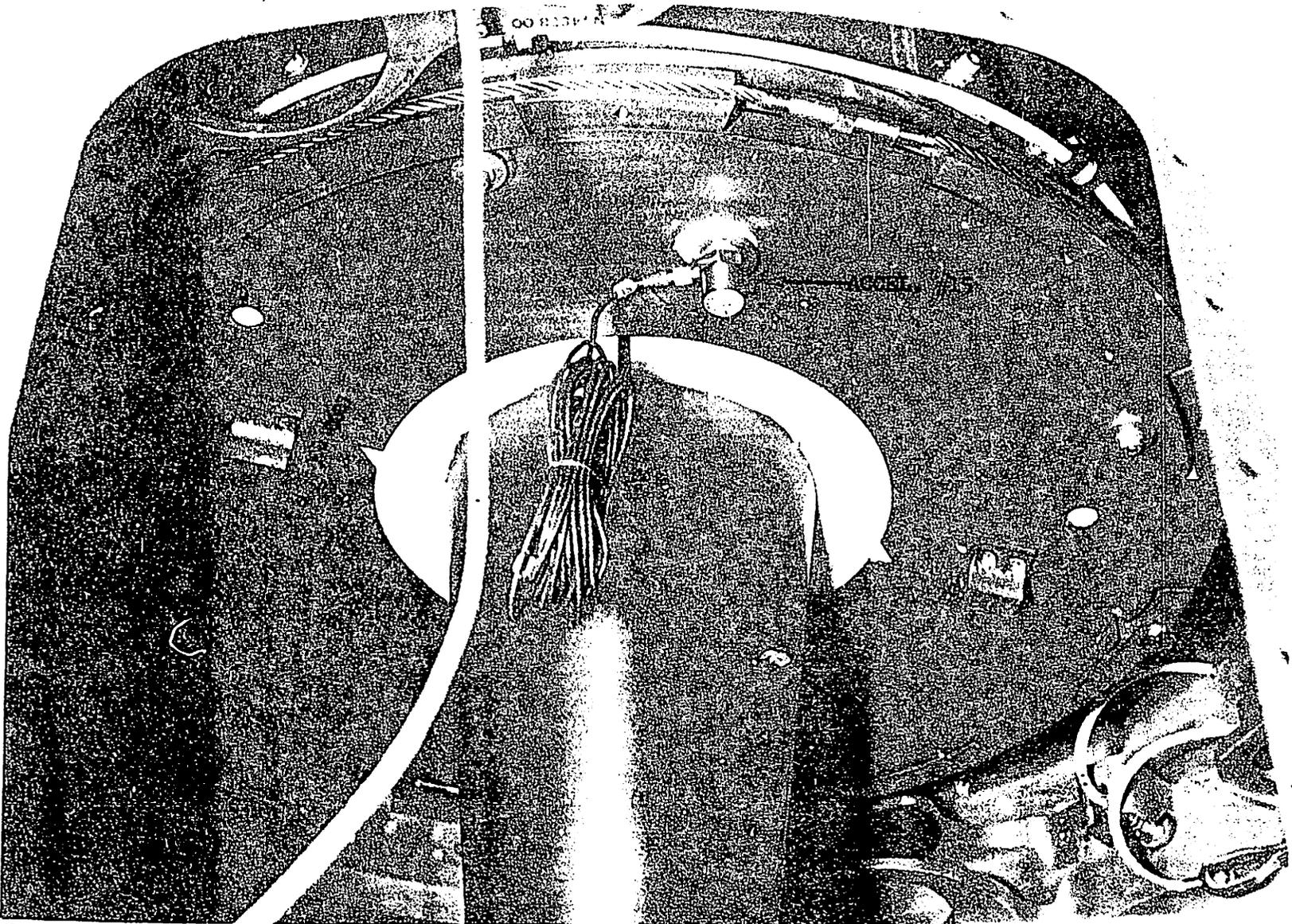
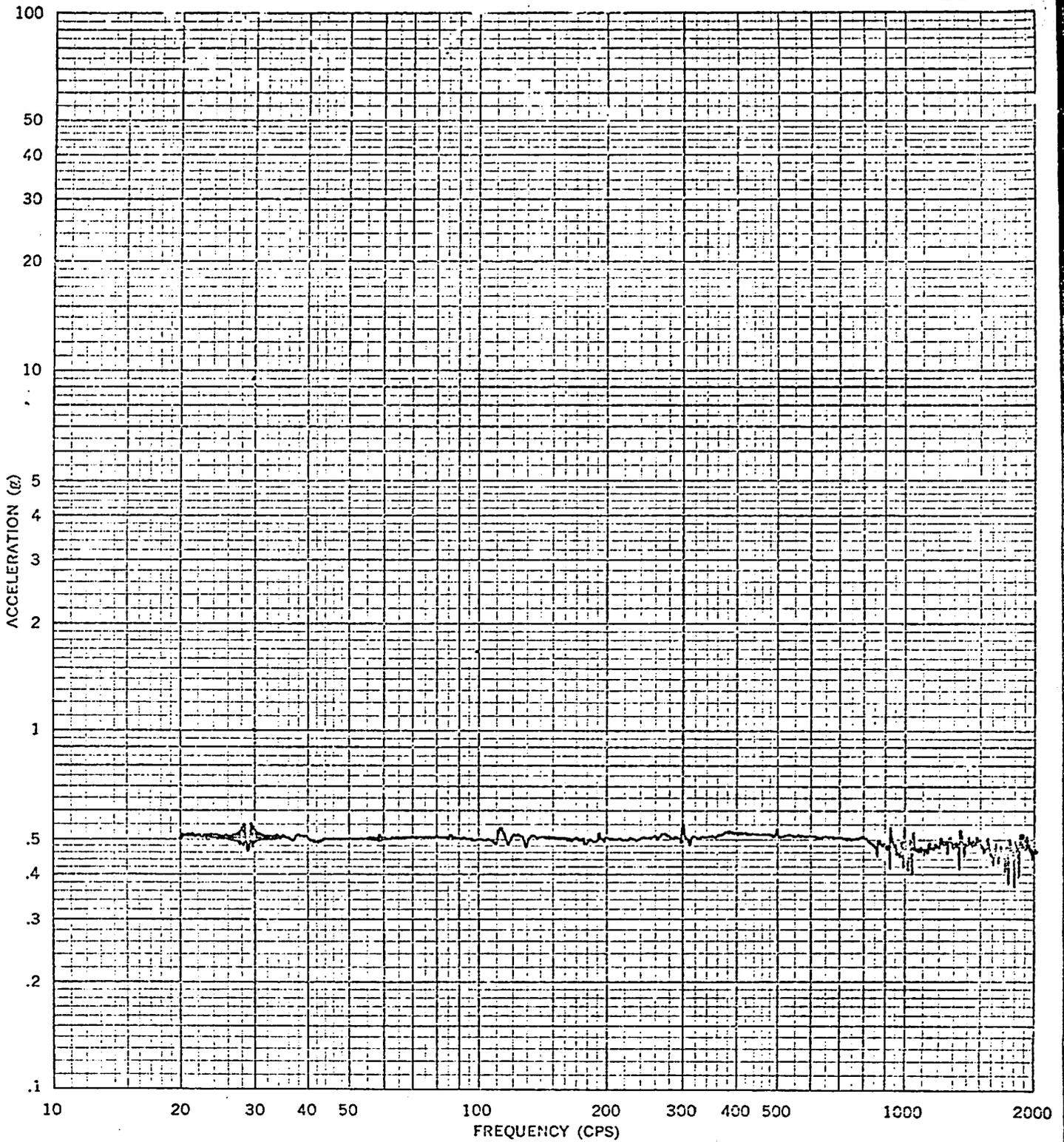


FIGURE 1. ACCELEROMETER EQUIPPED ON THE EJECTION TUBE AFT COVER.

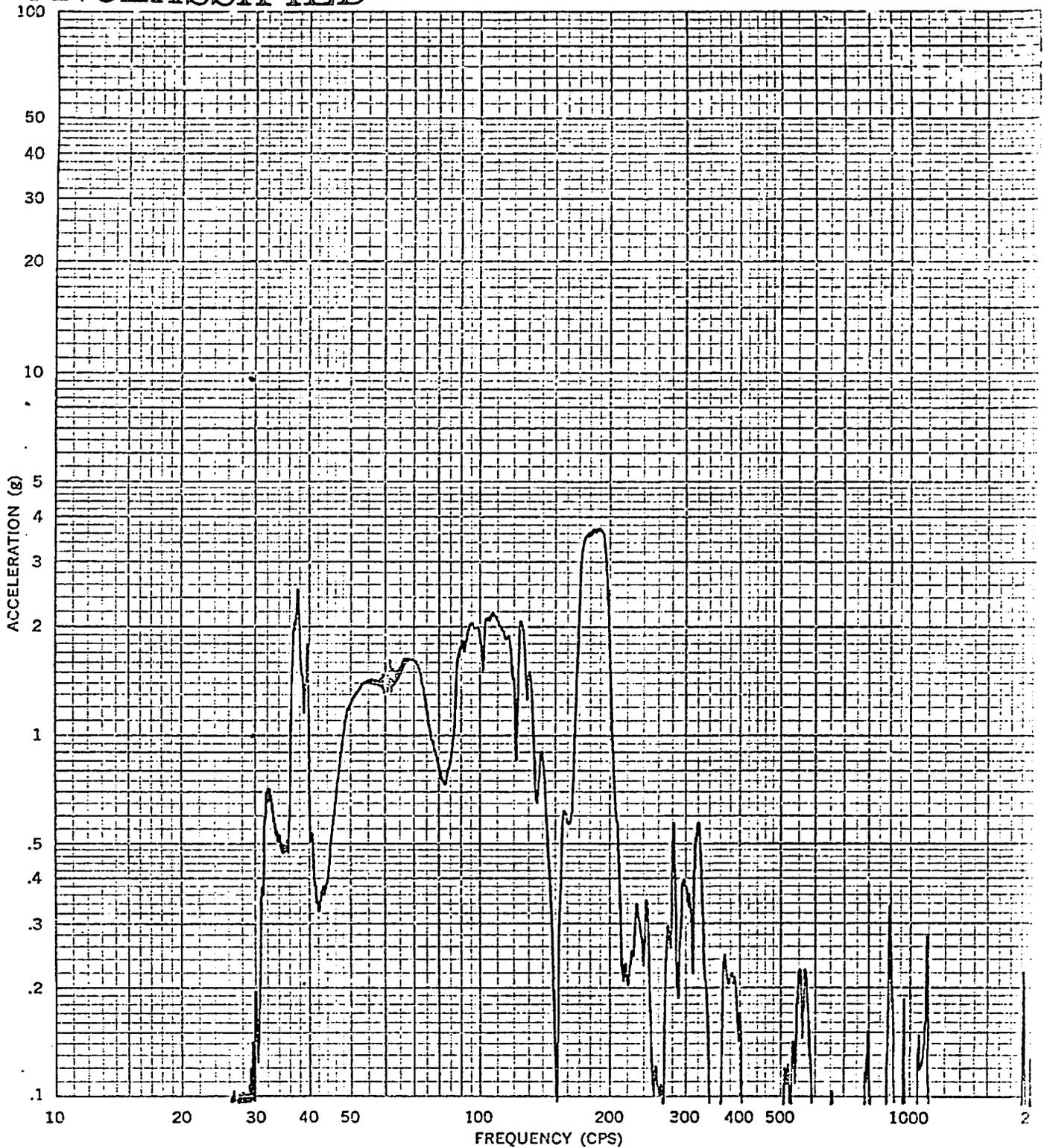
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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION Input REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Longitudinal **UNCLASSIFIED** FIGURE 5
 FILTER BANDWIDTH 25 CPS PAGE 10

7331-1-20005



VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F

T- 12045

ACCEL. LOCATION A-1

REF. SYM. 7331/424

FIGURE REFERENCE 2

TEST DATE 8/30/66

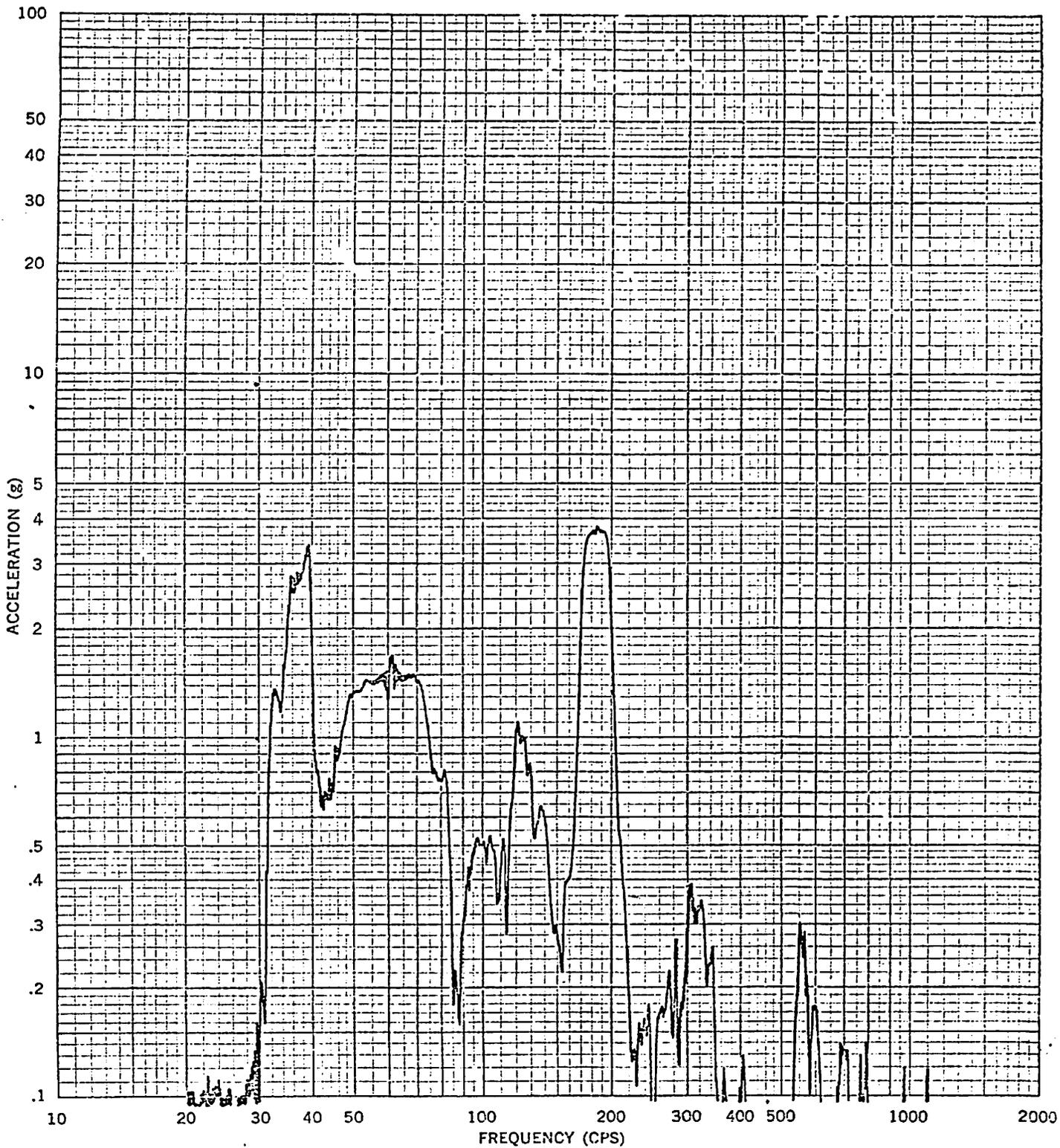
AXIS Vertical

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FIGURE 6

FILTER BANDWIDTH 25 CPS

PAGE 11



VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045

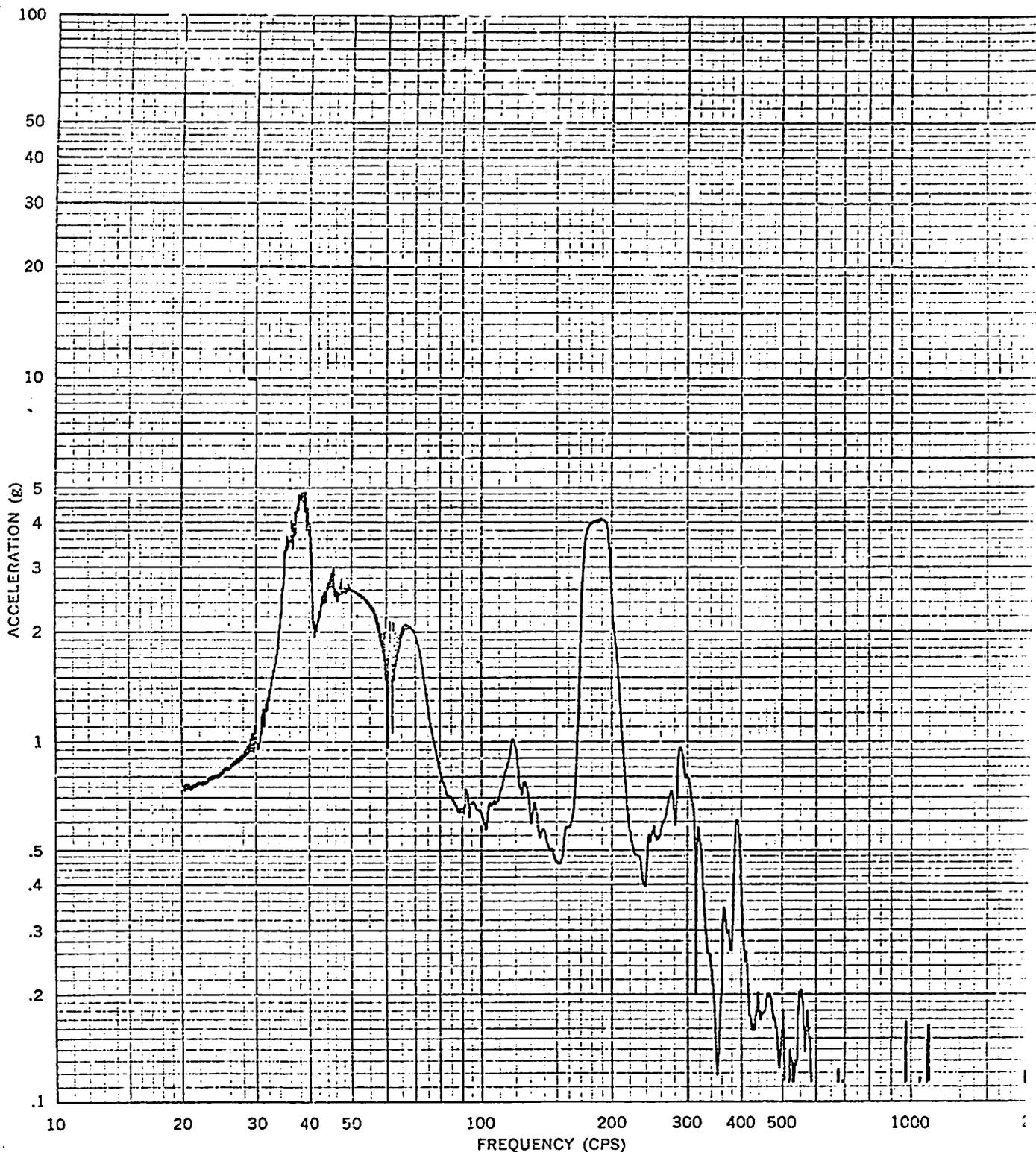
ACCEL. LOCATION A-2 REF. SYM. 7331/424

FIGURE REFERENCE 2 TEST DATE 8/30/66

AXIS Lateral FIGURE 7

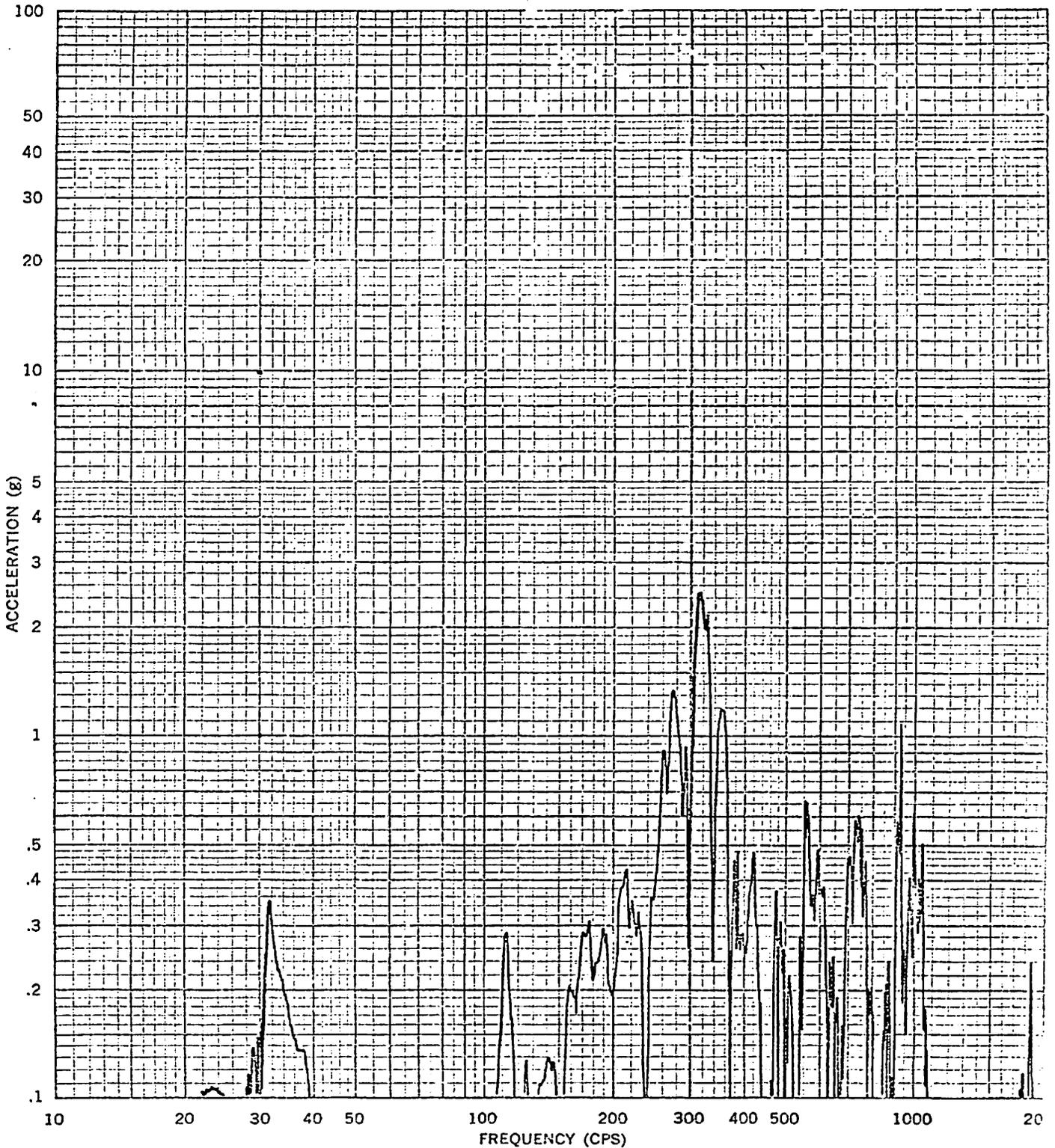
FILTER BANDWIDTH 25 CPS PAGE 12

7331-1-7000C

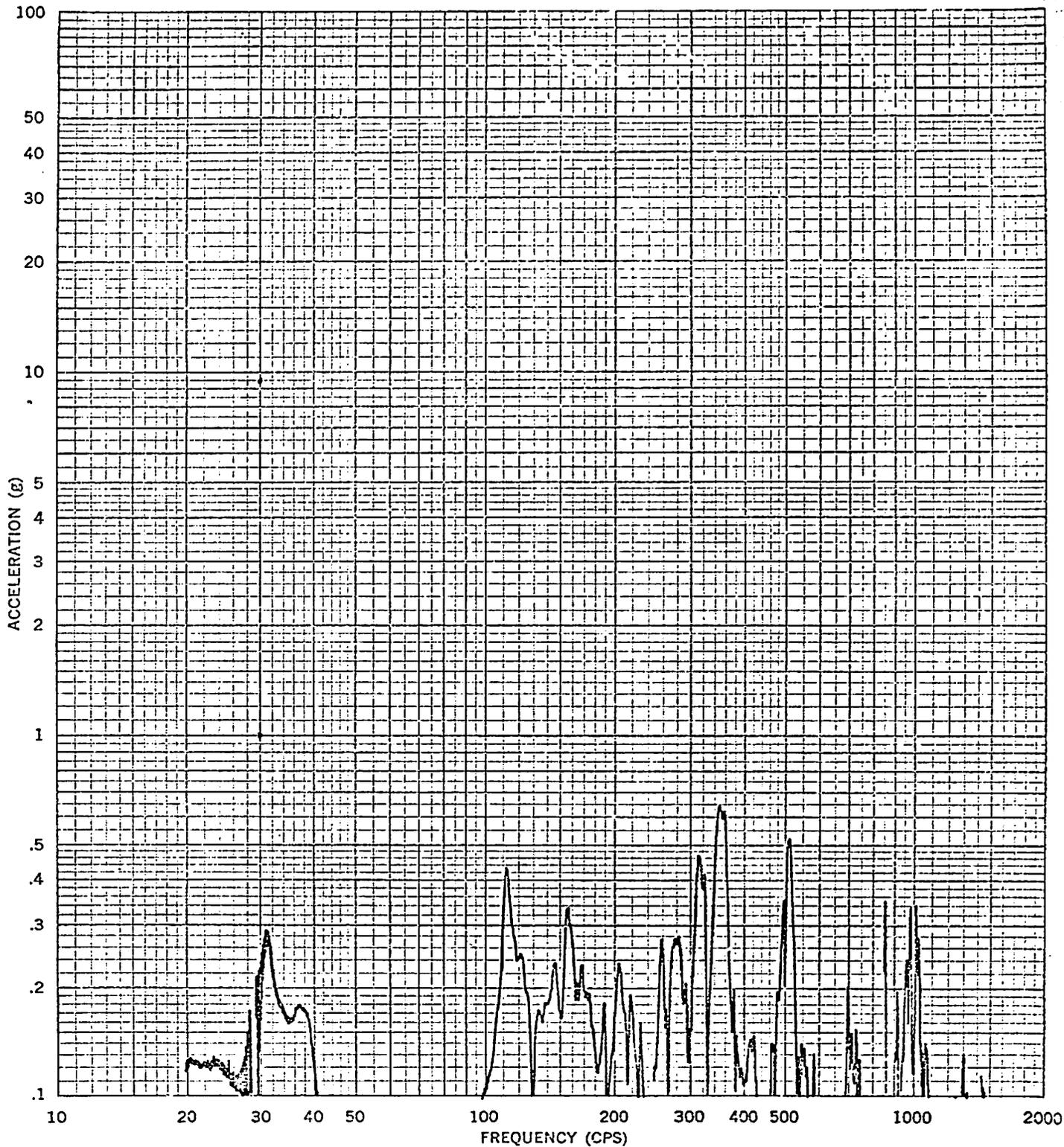


VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-3 REF. SYM. 7331/421
 FIGURE REFERENCE 2 TEST DATE 8/30/66
 AXIS Longitudinal FIGURE 8
 FILTER BANDWIDTH 25 CPS PAGE 13

7331-1-20000

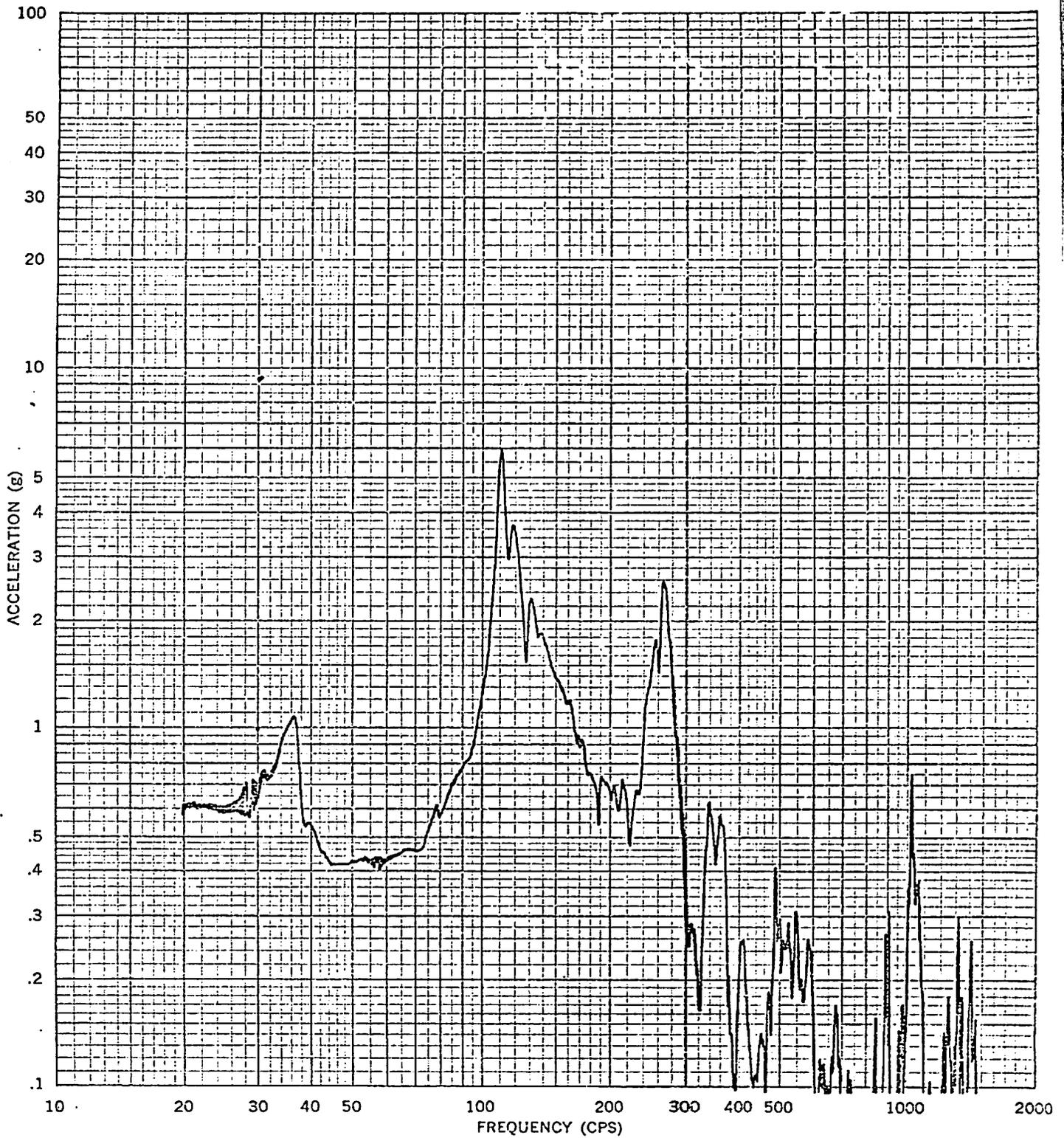


VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-4 REF. SYM. 7331/424
 FIGURE REFERENCE 3 TEST DATE 8/30/66
 AXIS Vertical FIGURE 9
 FILTER BANDWIDTH 25 CPS **UNCLASSIFIED** PAGE 14



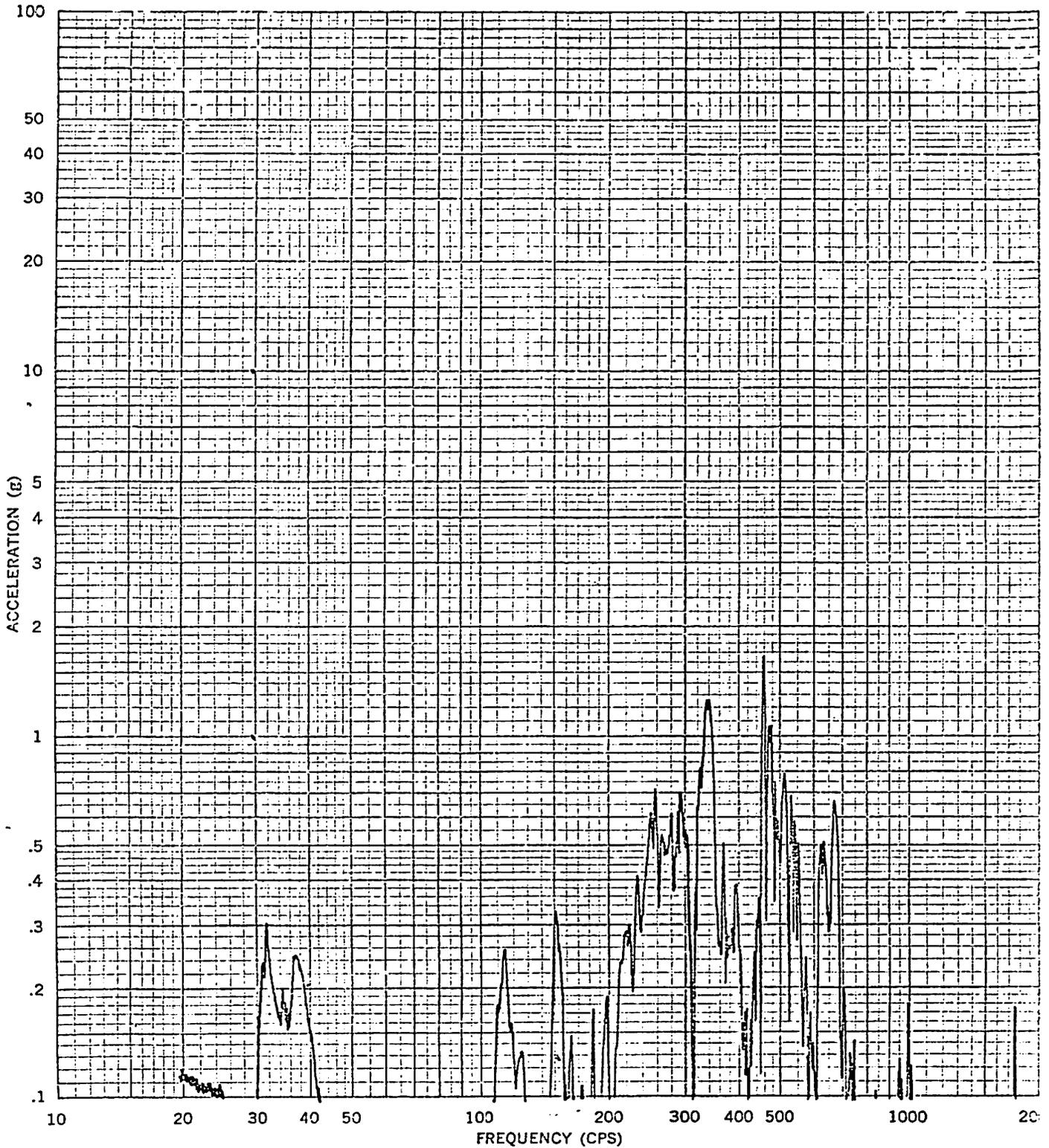
VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-5 REF. SYM. 7331/424
 FIGURE REFERENCE 3 TEST DATE 8/30/66
 AXIS Lateral **UNCLASSIFIED** FIGURE 10
 FILTER BANDWIDTH 25 CPS PAGE 15

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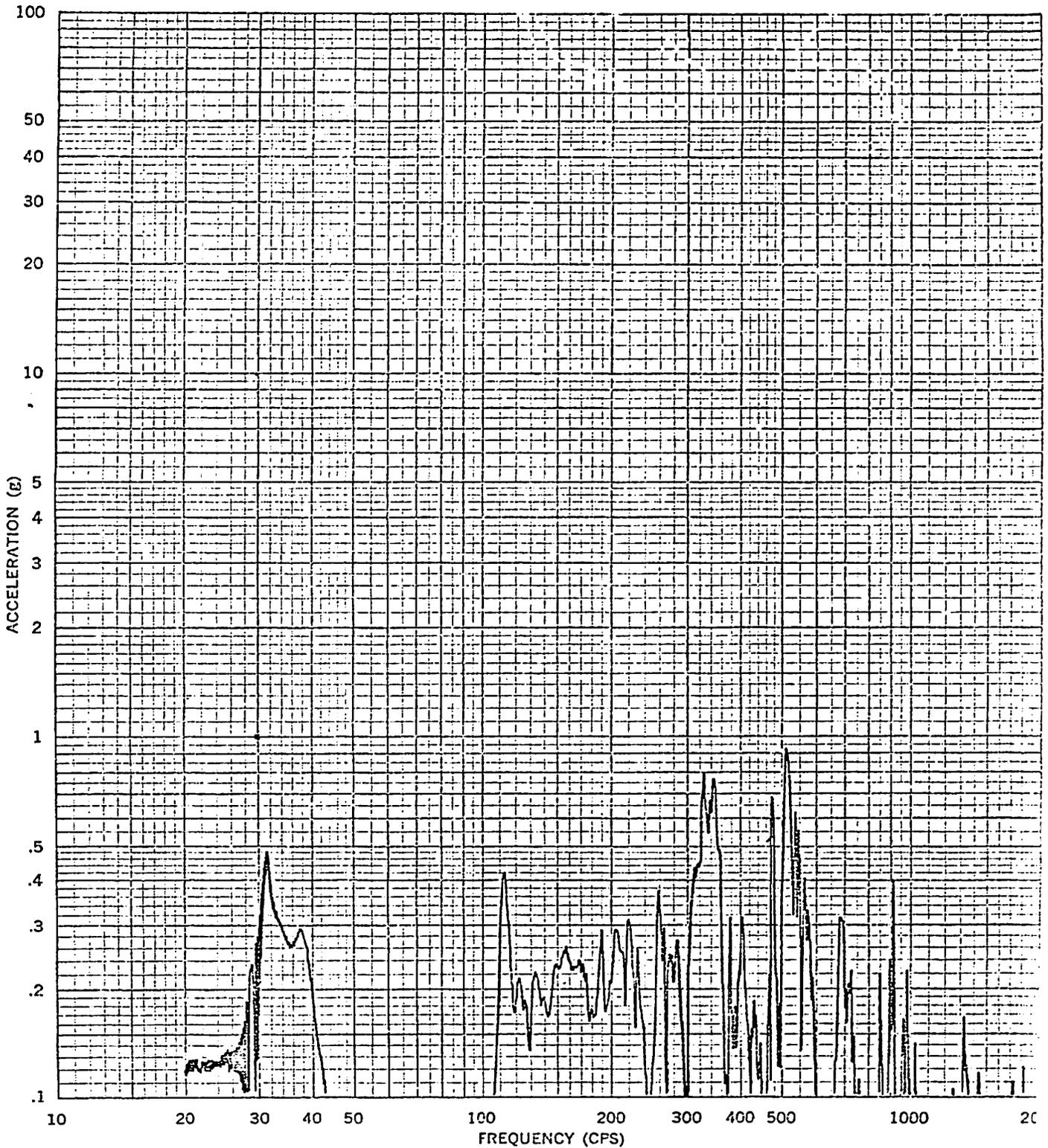


VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-6 REF. SYM. 7331/24
 FIGURE REFERENCE 3 TEST DATE 8/30/66
 AXIS Longitudinal FIGURE 11
 FILTER BANDWIDTH 25 CPS PAGE 16

7333-1-20000



VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-7 REF. SYM. 7331/424
 FIGURE REFERENCE 4 TEST DATE 8/30/66
 AXIS Vertical FIGURE 12
 FILTER BANDWIDTH 25 CPS PAGE 17



VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045

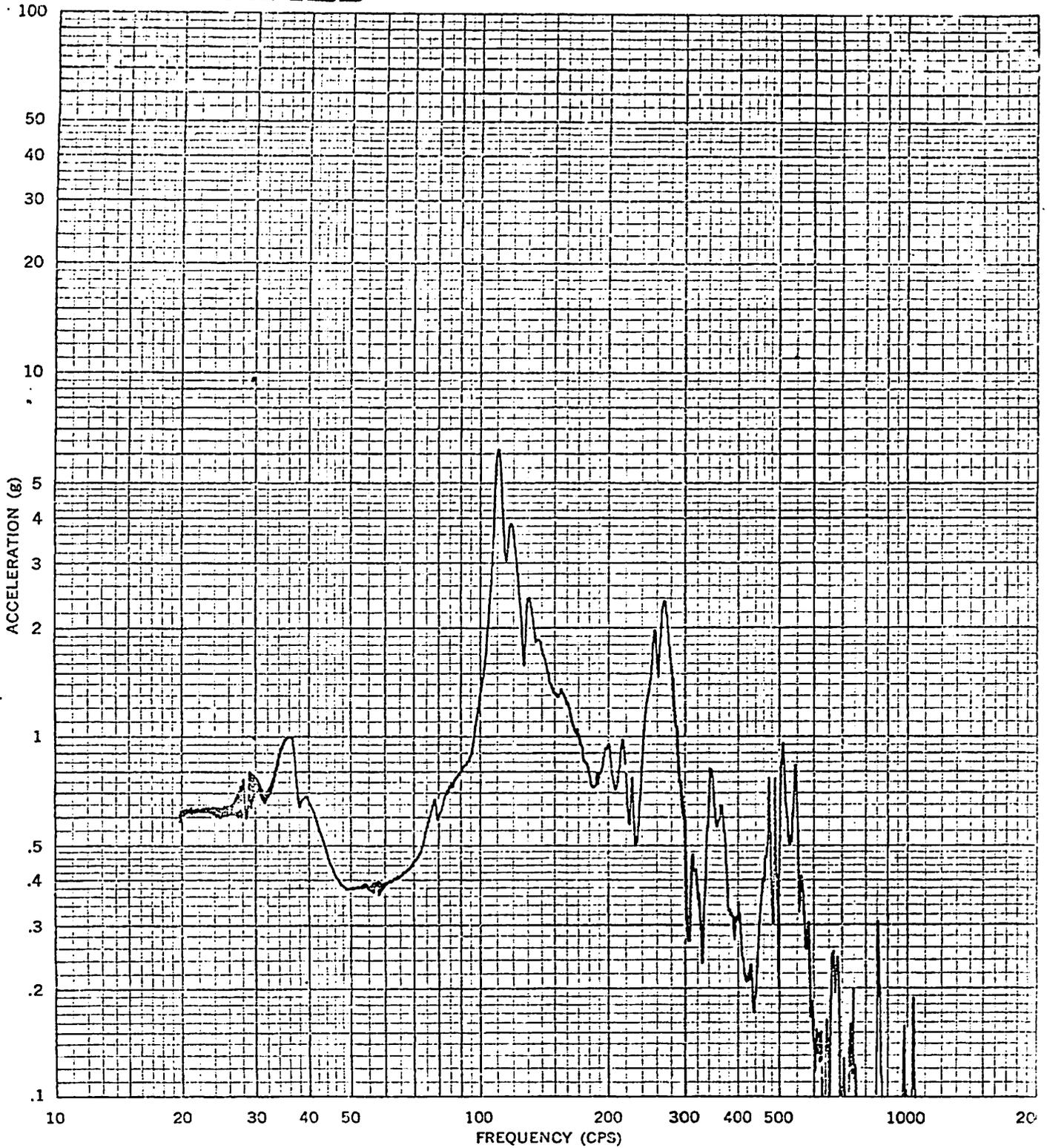
ACCEL. LOCATION A-8 REF. SYM. 7531/424

FIGURE REFERENCE 4 TEST DATE 8/30/66

AXIS Lateral UNCLASSIFIED FIGURE 13

FILTER BANDWIDTH 25 CPS PAGE 18

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VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F

T- 12045

ACCEL. LOCATION A-9

REF. SYM. 7331/42

FIGURE REFERENCE 4

TEST DATE 8/30/66

AXIS Longitudinal

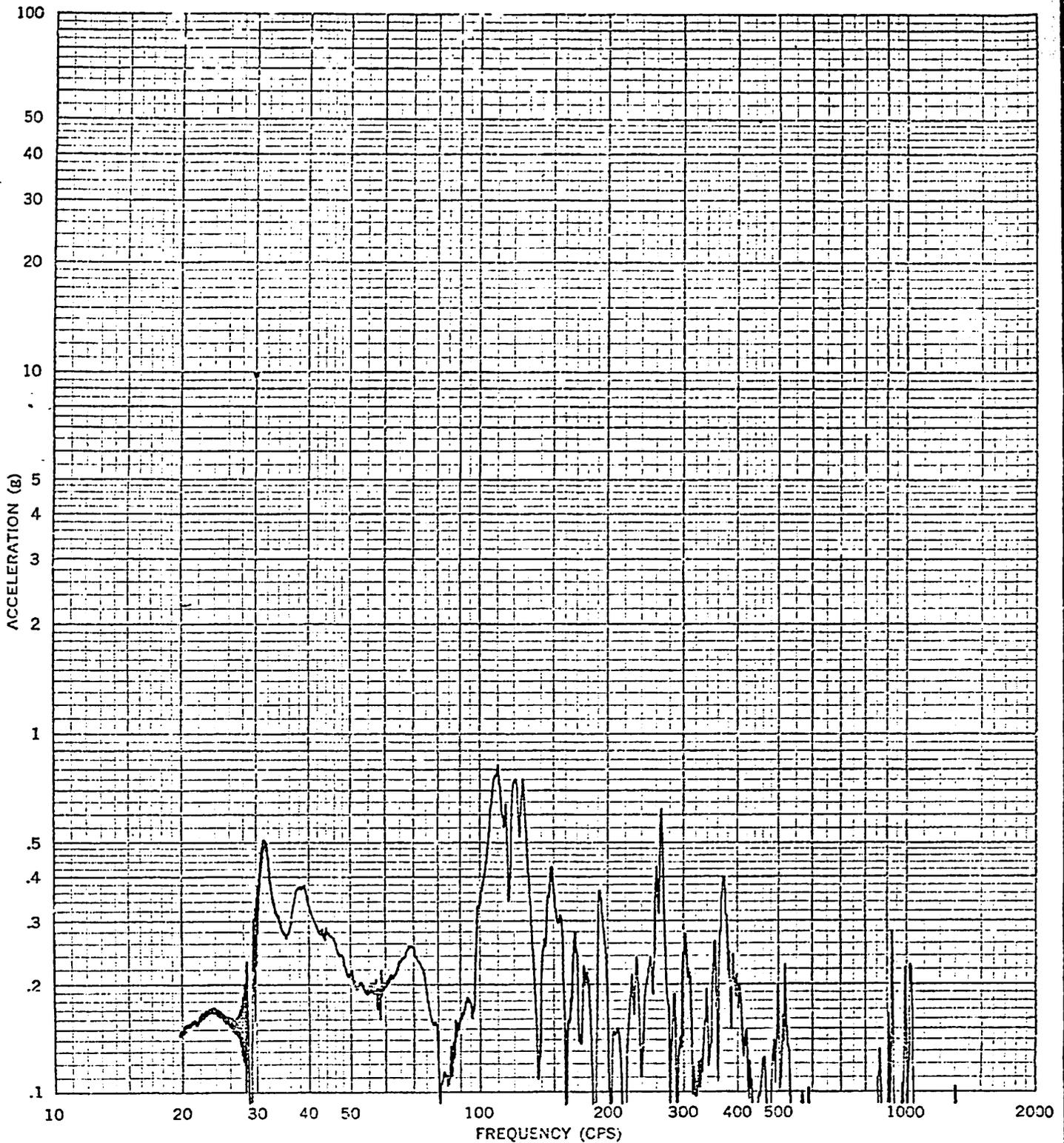
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FIGURE 14

FILTER BANDWIDTH 25 CPS

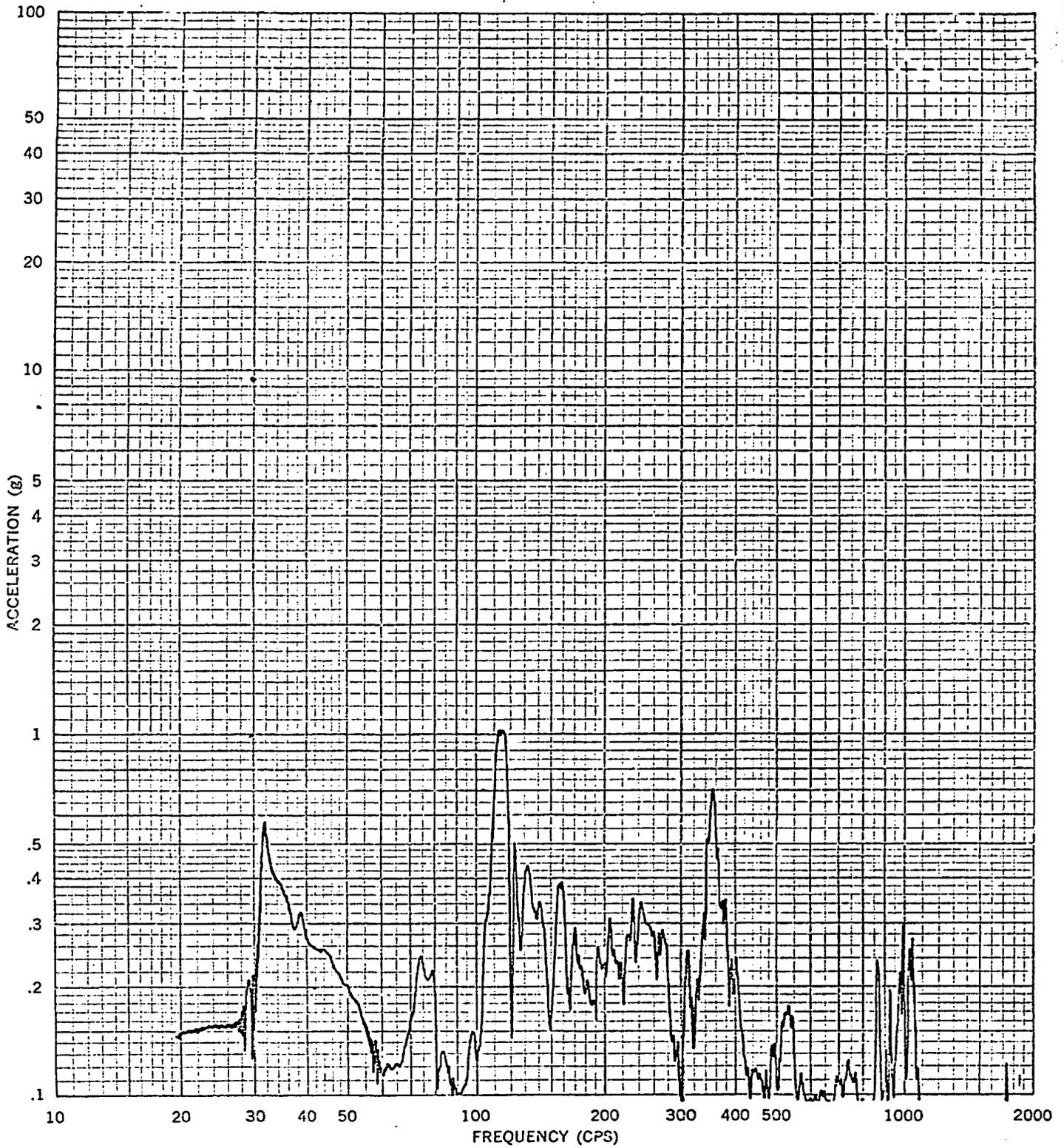
PAGE 19

7331-1-2000G



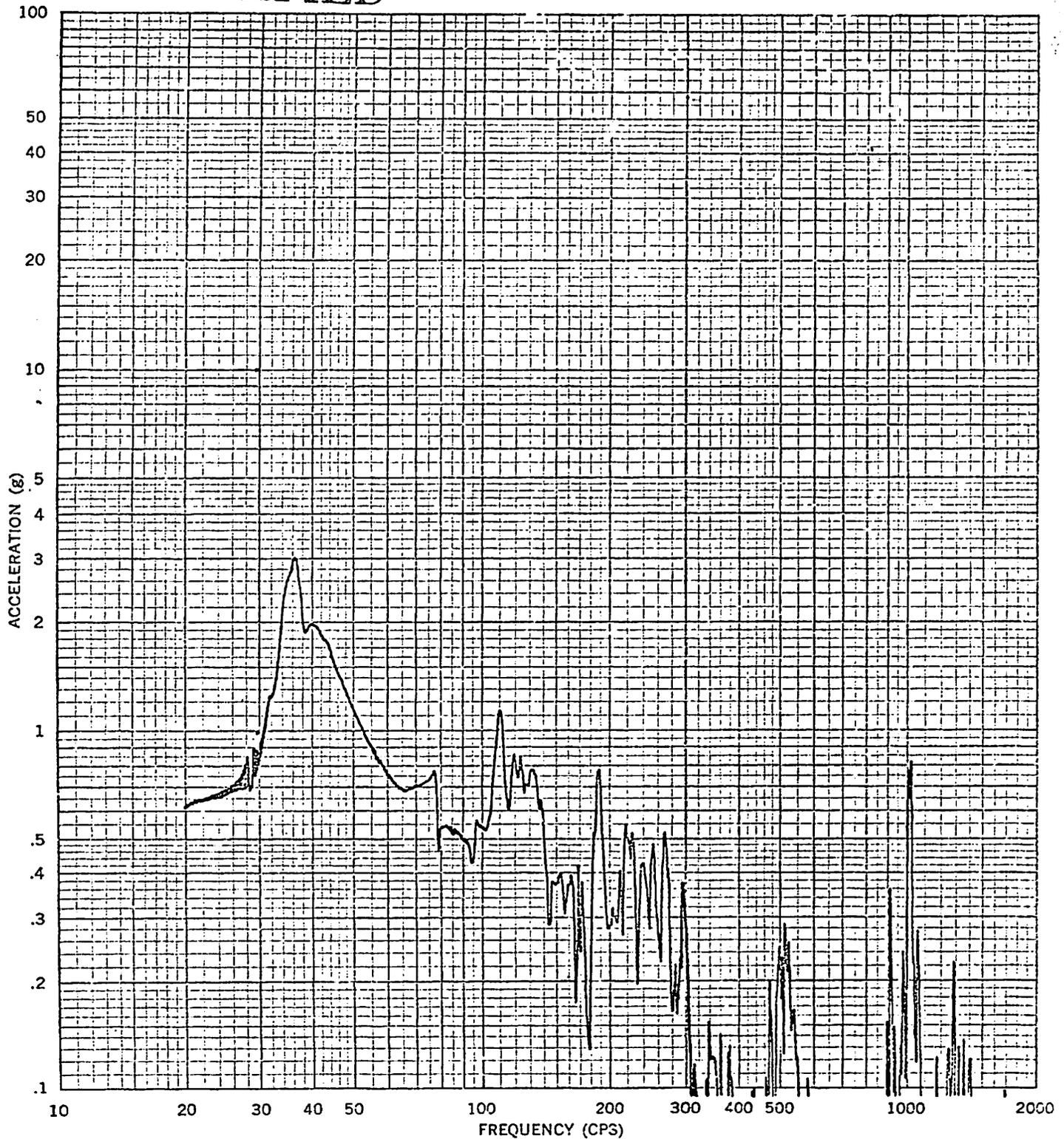
VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-10 REF. SYM. 7331/424
 FIGURE REFERENCE 2 TEST DATE 8/30/66
 AXIS Vertical FIGURE 15
 FILTER BANDWIDTH 25 CPS PAGE 20

7331-1-20000



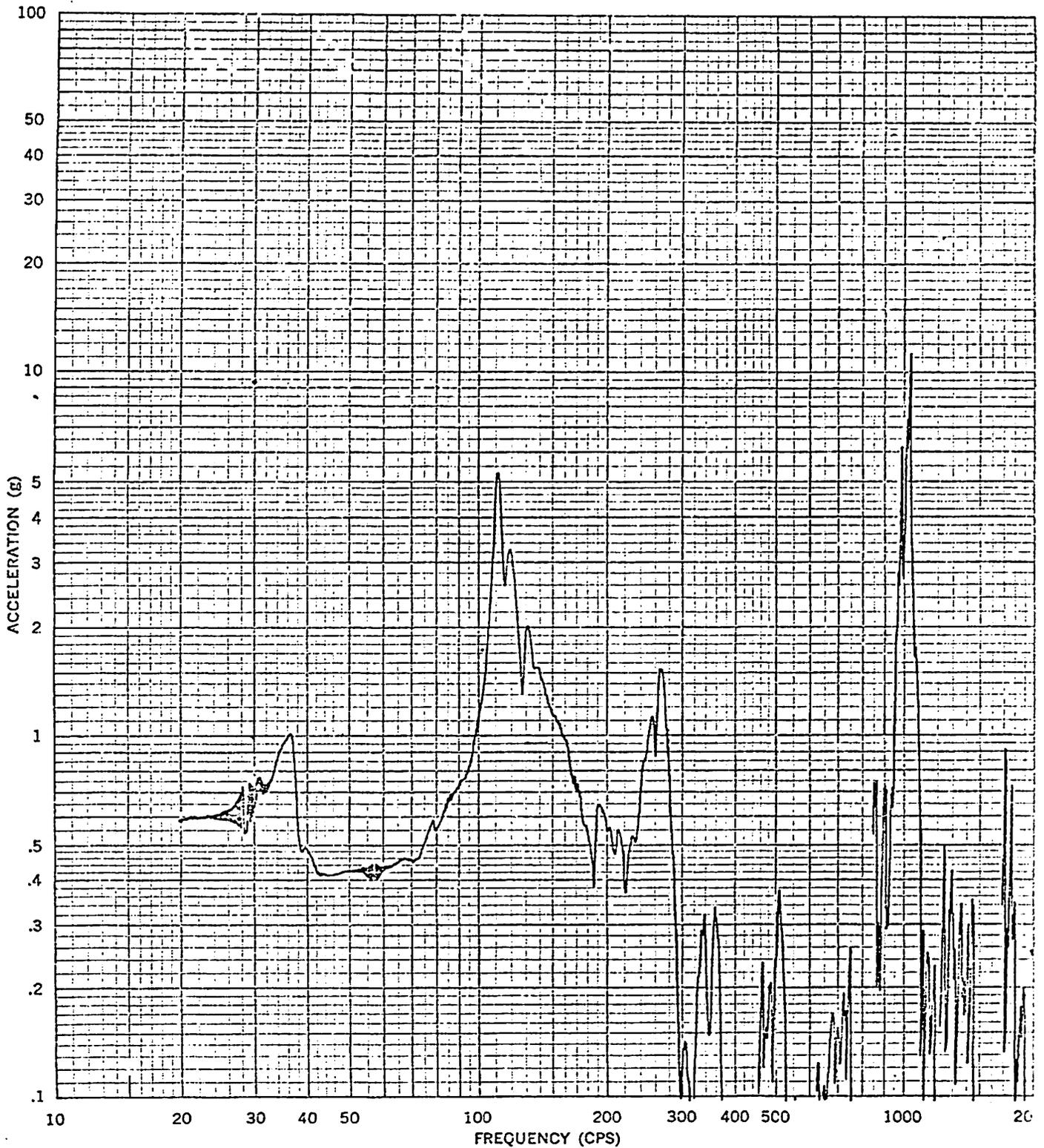
VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-11 REF. SYM. 7331/424
 FIGURE REFERENCE 2 TEST DATE 8/30/66
 AXIS Lateral **UNCLASSIFIED** FIGURE 16
 FILTER BANDWIDTH 25 CPS PAGE 21

7331-1-20000



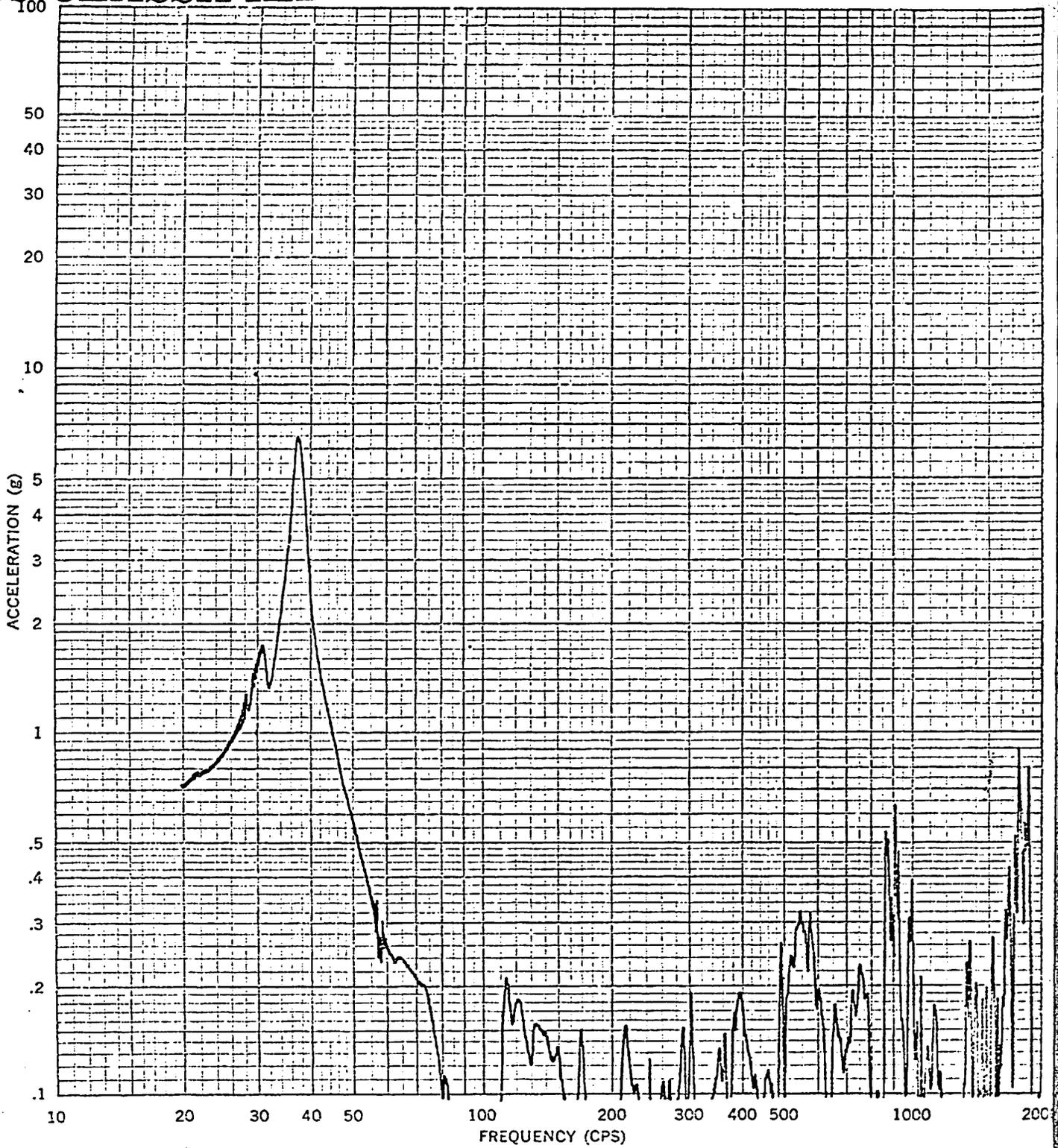
VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL LOCATION A-12 REF. SYM. 7331/424
 FIGURE REFERENCE 2 TEST DATE 8/30/66
 AXIS Longitudinal FIGURE 17
 FILTER BANDWIDTH 25 CPS PAGE 22

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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-13 REF. SYM. 7331/424
 FIGURE REFERENCE 3 TEST DATE 8/30/66
 AXIS Long. FIGURE 18
 FILTER BANDWIDTH 25 CPS PAGE 23

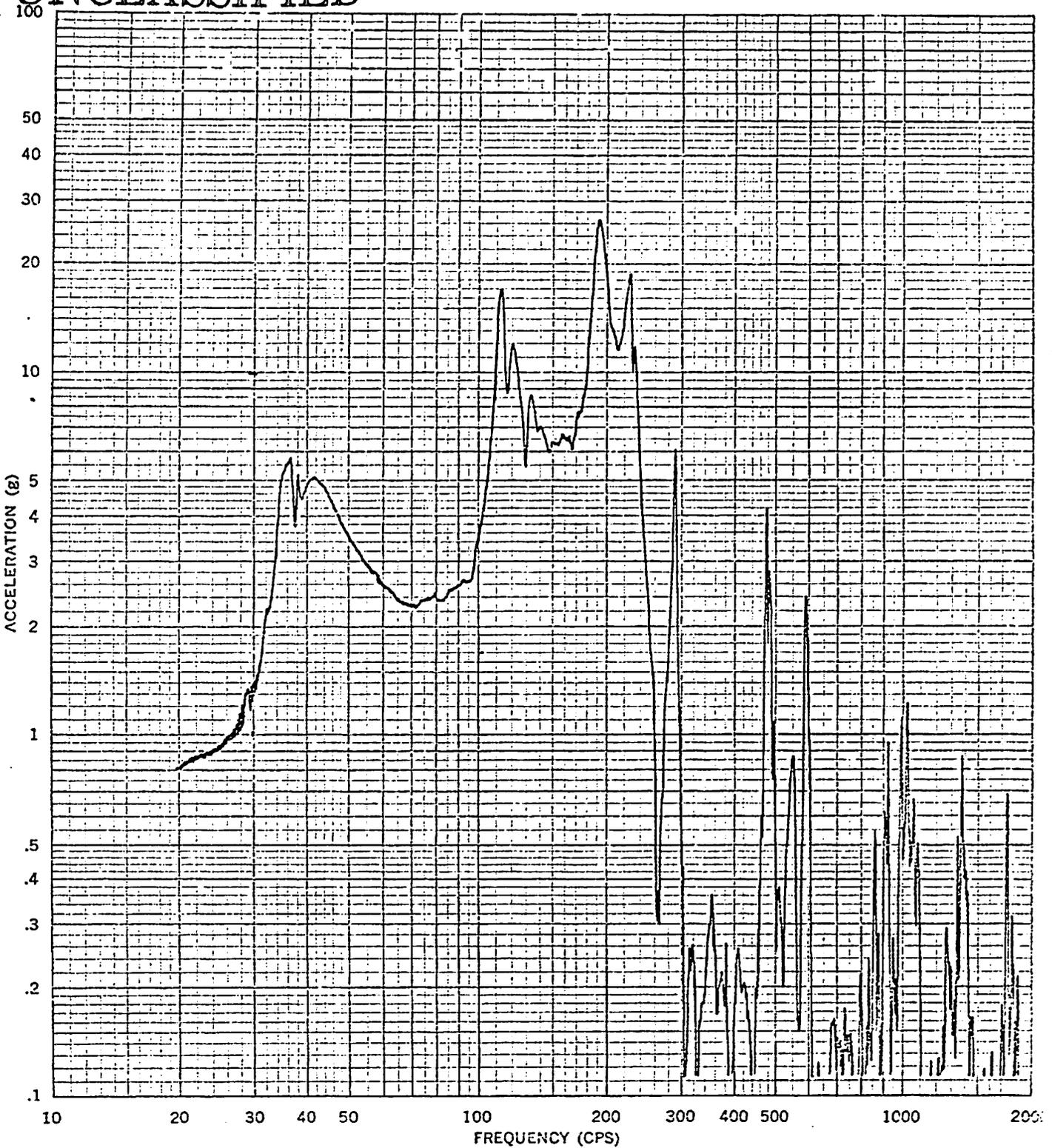
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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-14 REF. SYM. 7331/42!
 FIGURE REFERENCE Table I TEST DATE 8/30/66
 AXIS Long. FIGURE 19
 FILTER BANDWIDTH 25 CPS PAGE 24

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VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F

T- 12045

ACCEL. LOCATION A-15

REF. SYM. 7331/4214

FIGURE REFERENCE 5

TEST DATE 8/30/66

AXIS Long.

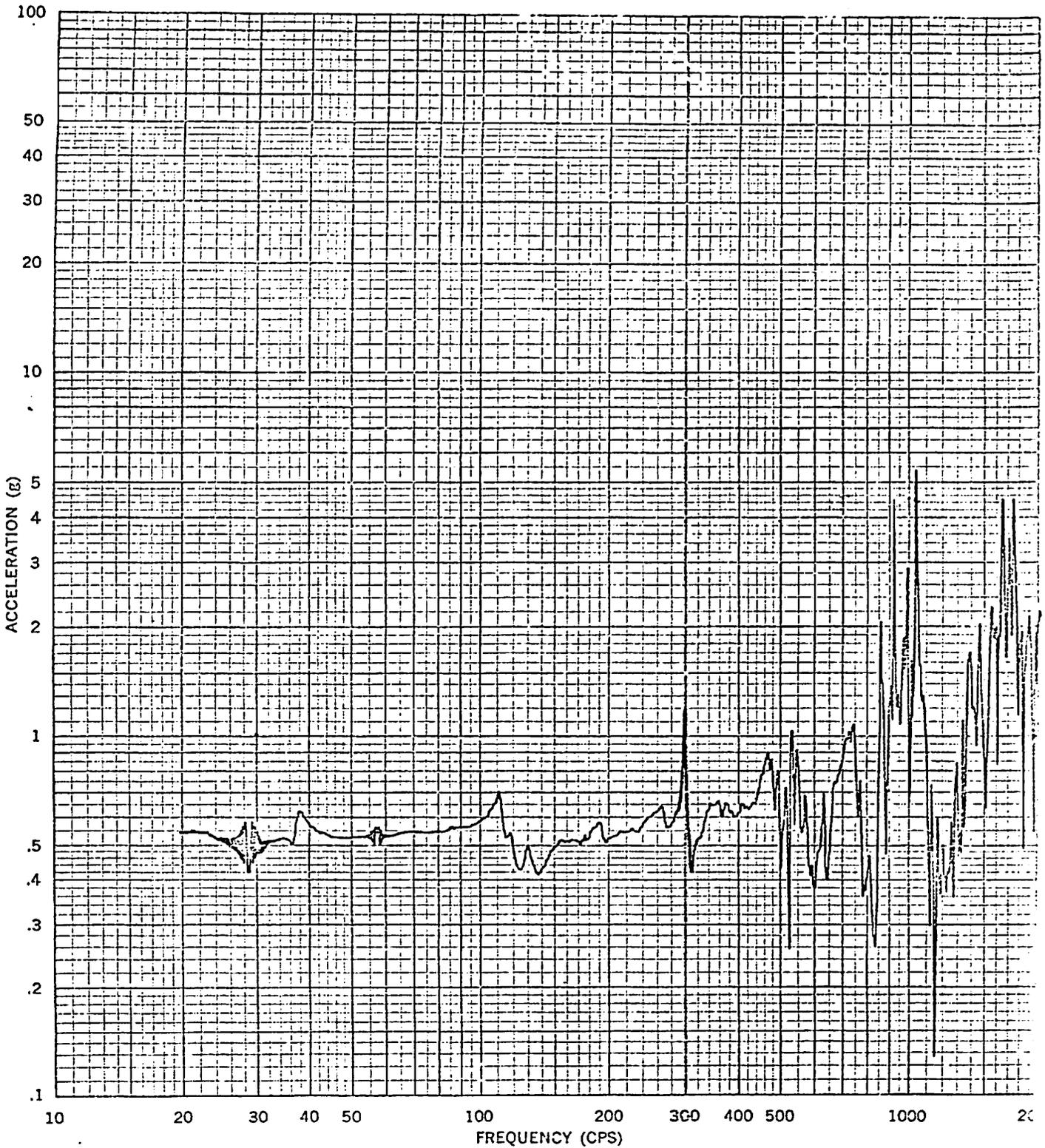
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FIGURE 20

FILTER BANDWIDTH 25 CPS

PAGE 25

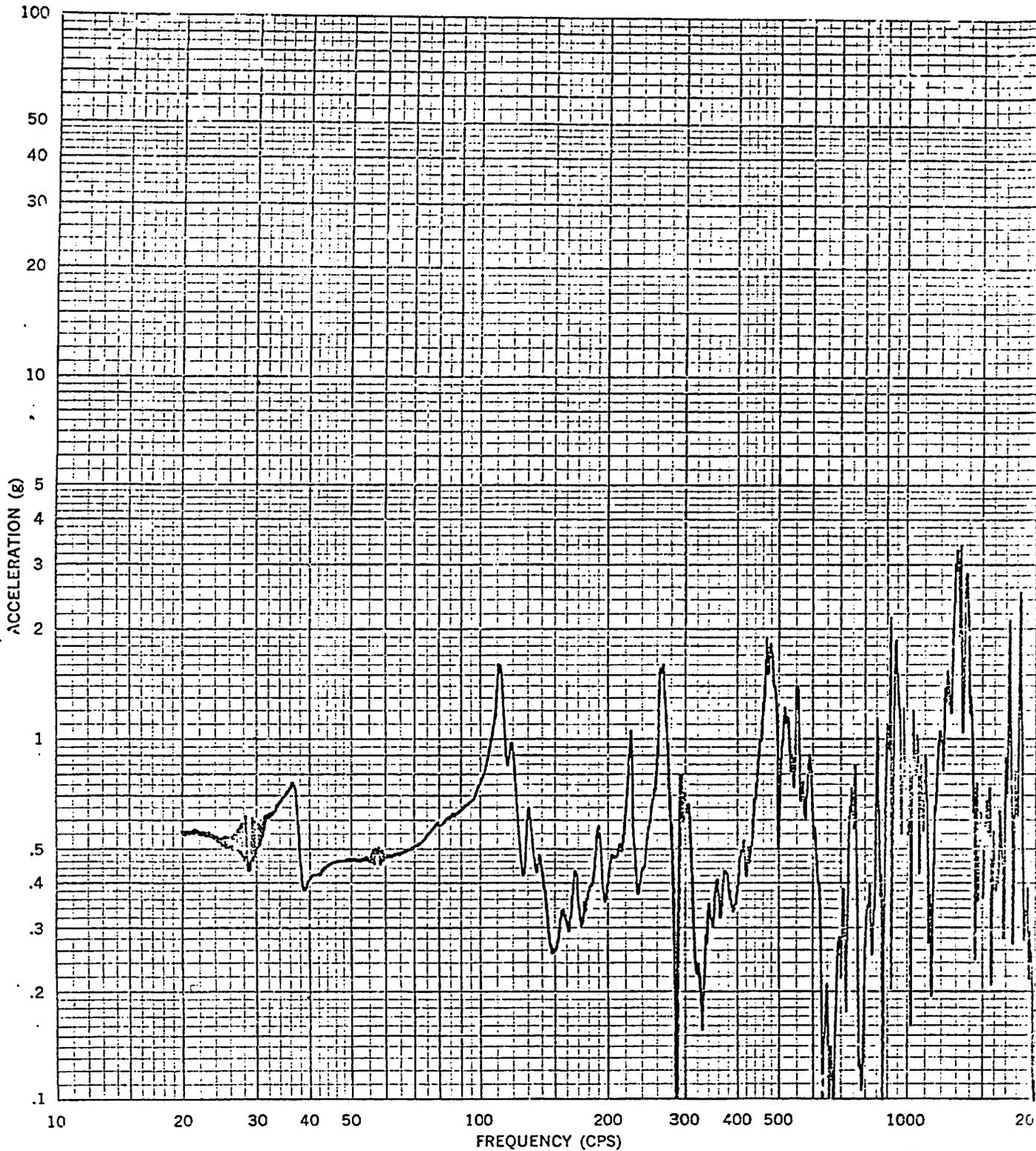
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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-16 REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. UNCLASSIFIED FIGURE 21
 FILTER BANDWIDTH 25 CPS PAGE 26

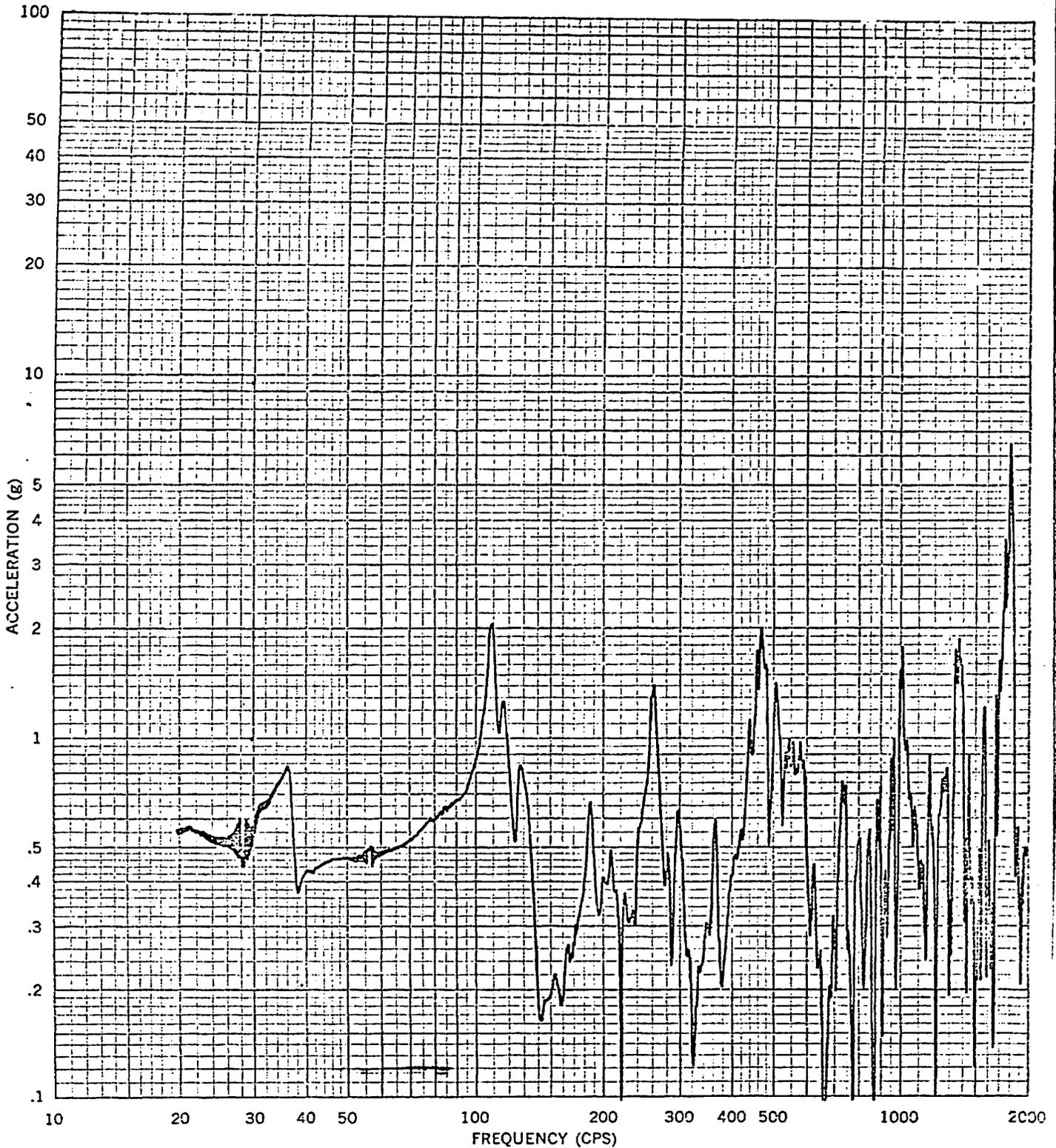
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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-17 REF. SYM. 7331/121
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. FIGURE 22
 FILTER BANDWIDTH 25 CPS PAGE 27

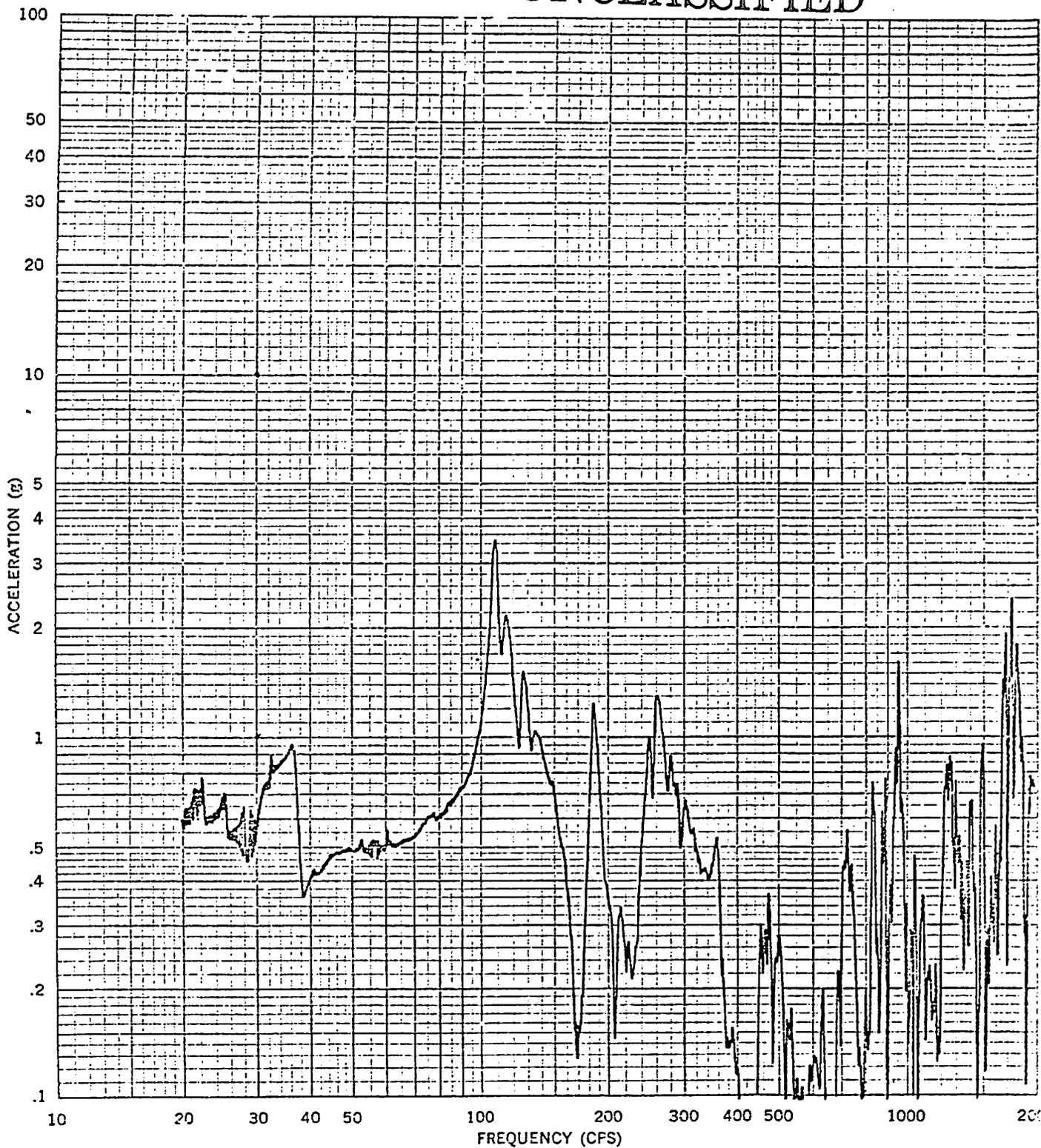
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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-18 REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long, FIGURE 23
 FILTER BANDWIDTH 25 CPS PAGE 28

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VIBRATION TEST OF Strypi 4 - Halberd

WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F

T. 12045

ACCEL. LOCATION A-19

REF. SYM. 7331/424

FIGURE REFERENCE 1

TEST DATE 8/30/66

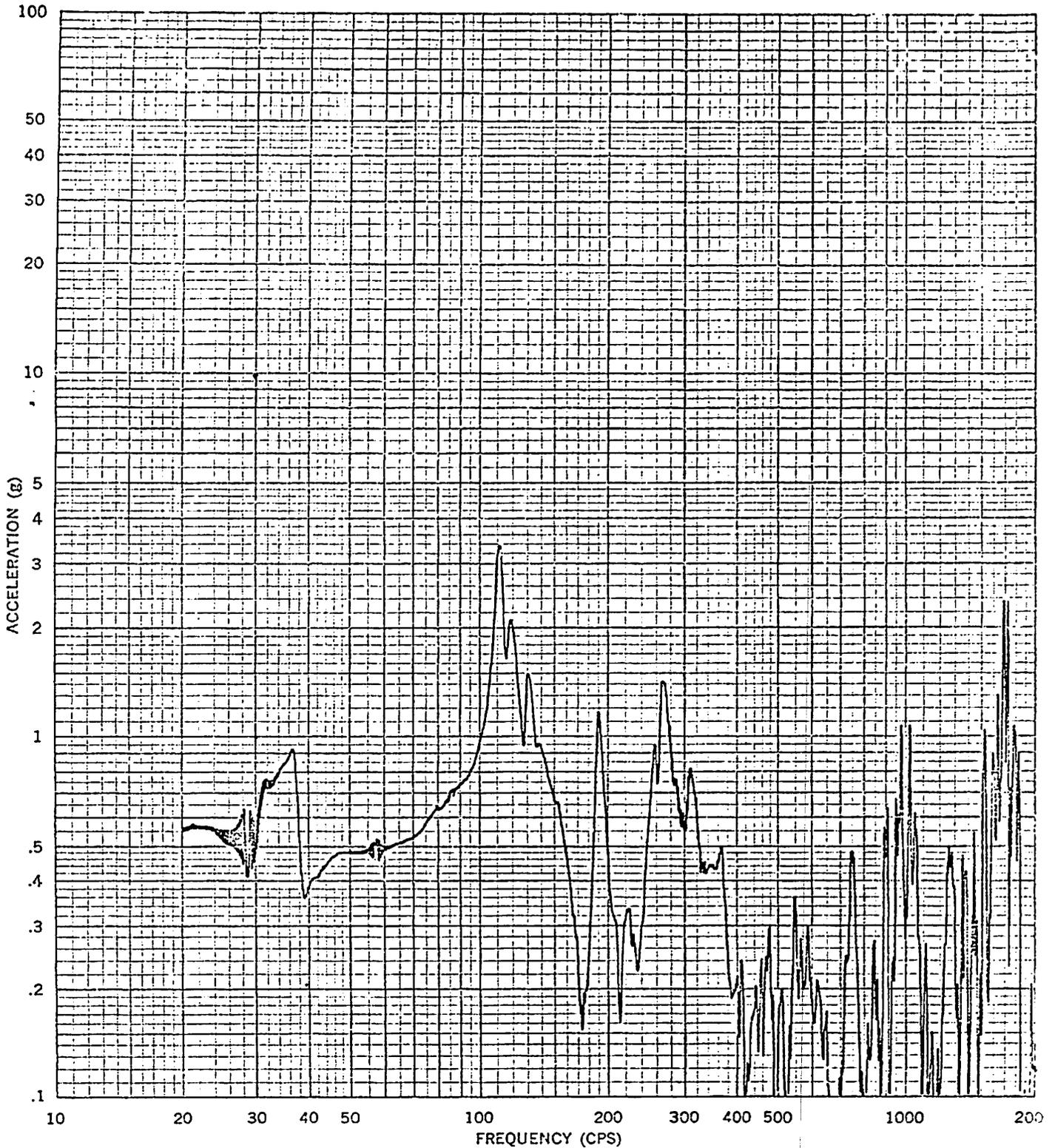
AXIS Long.

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FIGURE 24

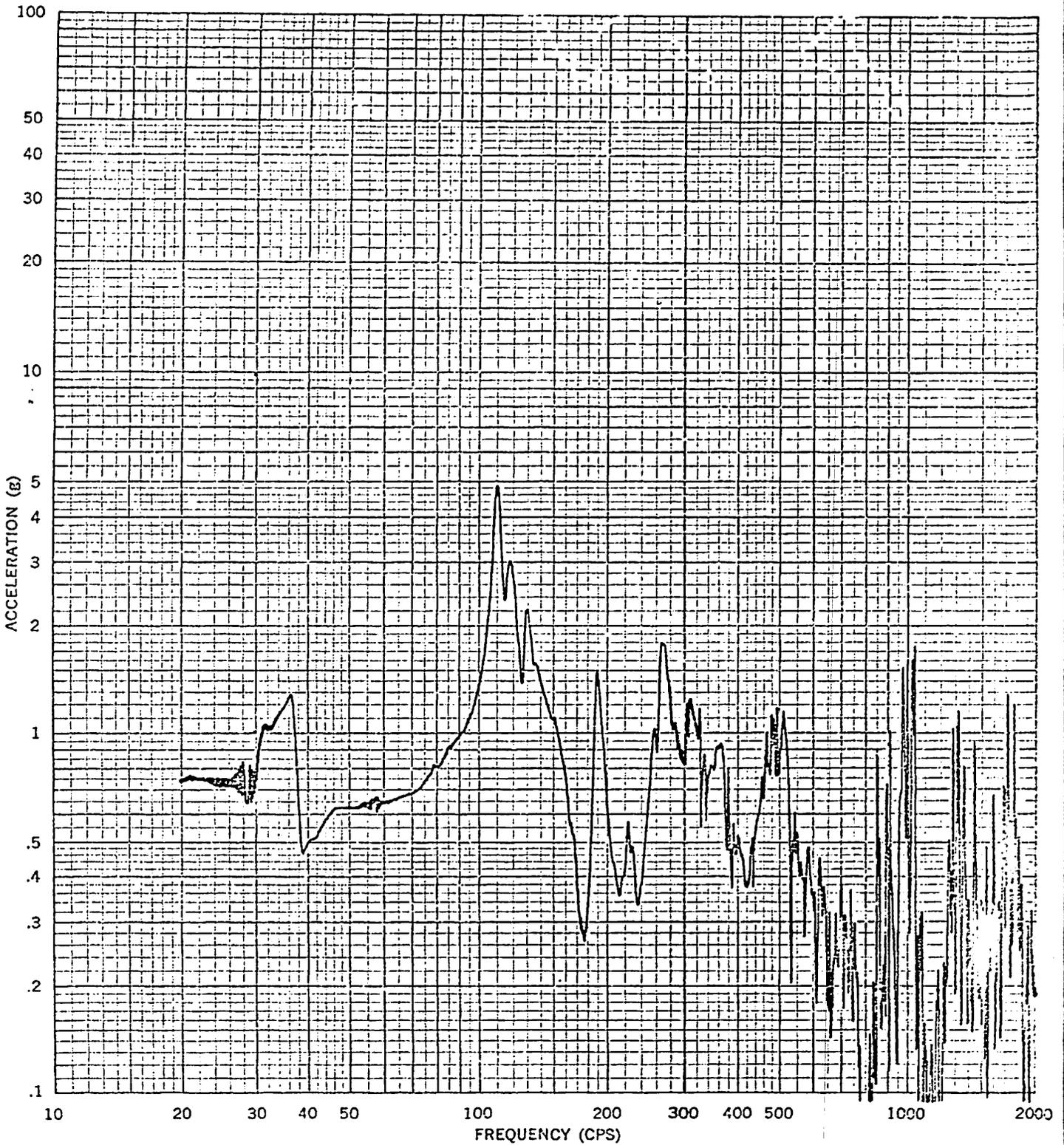
FILTER BANDWIDTH 25 CPS

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VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-20 REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. FIGURE 25
 FILTER BANDWIDTH 25 CPS PAGE 30

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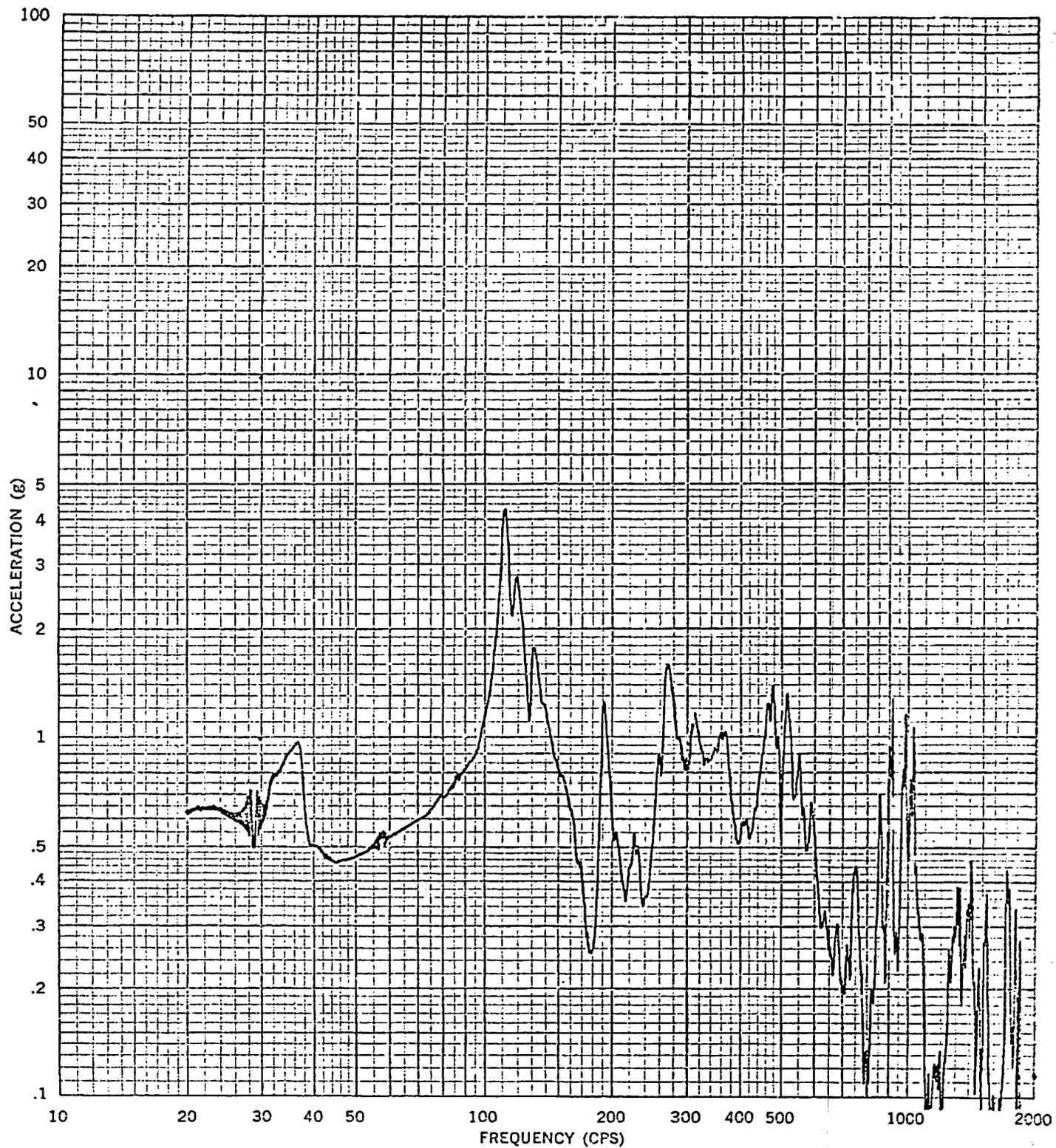
VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T- 12045
 ACCEL. LOCATION A-21 REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. FIGURE 26
 FILTER BANDWIDTH 25 CPS PAGE 31

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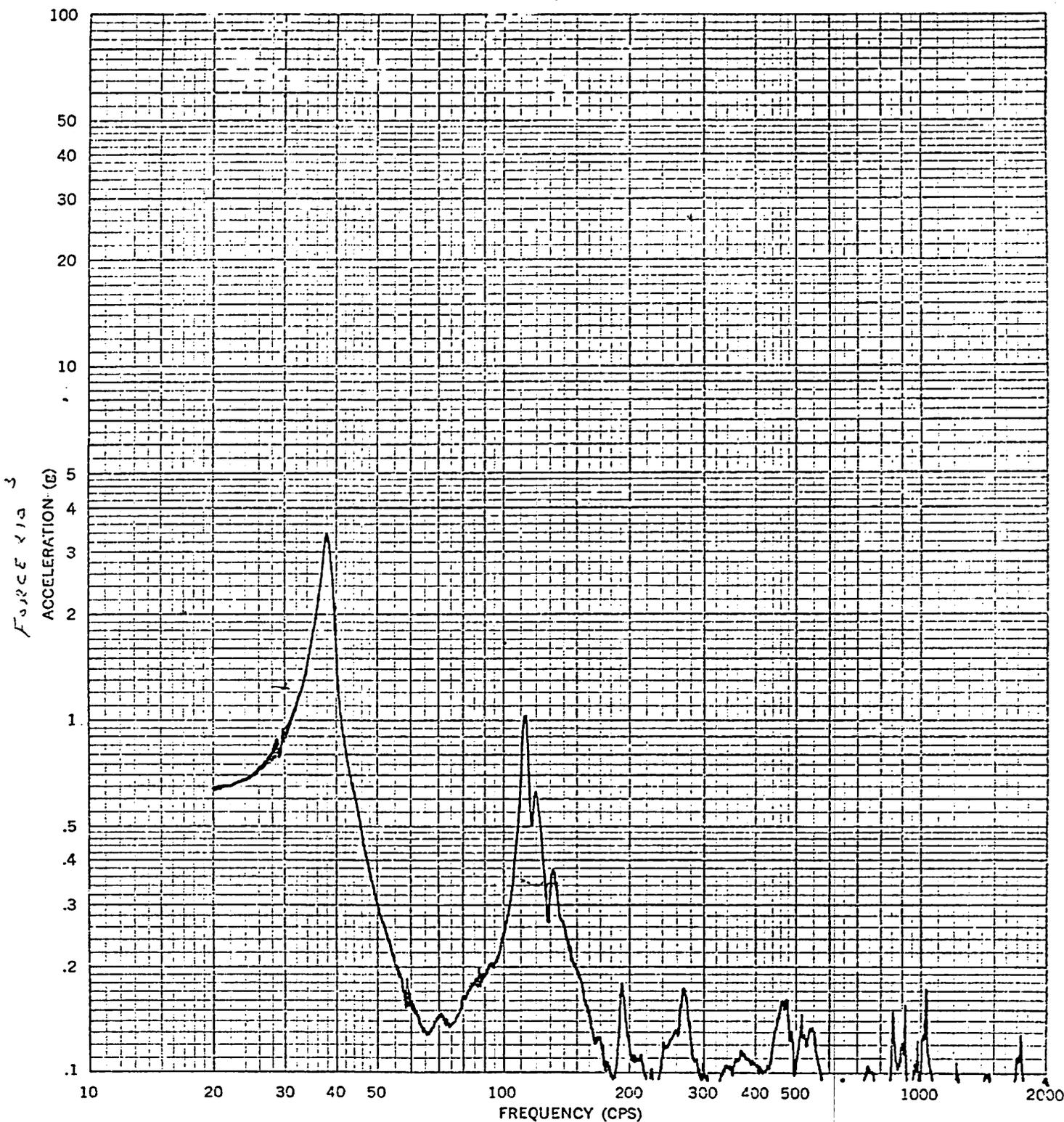
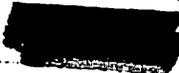


VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION A-22 REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. UNCLASSIFIED FIGURE 27
 FILTER BANDWIDTH 25 CPS PAGE 32

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Force x 10³

VIBRATION TEST OF Strypi 4 - Halberd
 WITH INPUT ALONG THE Longitudinal AXIS, AT Room °F T. 12045
 ACCEL. LOCATION Force REF. SYM. 7331/424
 FIGURE REFERENCE 1 TEST DATE 8/30/66
 AXIS Long. FIGURE 28
 FILTER BANDWIDTH 25 CPS PAGE 33

