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JUL 20 1962

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
1 st Review Date: <u>8/15/98</u>	Determination (Circle Number): <u>U</u>
Authority: <u>W. C. Layne</u>	1. Classification Retained
2 nd Review Date: <u>8/20/98</u>	2. Classification Changed to:
Authority: <u>ADD</u>	3. Contains No DOE Classified Information
Name: <u>W. Layne</u>	4. Contains UCR:
	5. Contains UCAF:
	6. Comments: <u>See Summary</u>

T-14
T-18673
Completed: 4-19-62

MR. W. V. HERRFORD, 7215

RECEIVED

ATTN: MR. T. C. LOONEY

JUL 23 1962

Re: Vibration Test of TX-28 Companion Unit

CENTRAL RECORD FILE

Test Summary

The TX-28 Companion Unit was subjected to a 1 g vibration resonant survey from 10 to 120 cps in the vertical and lateral orientations. The test specifications were changed from 200 to 120 cps on instructions from the consultant.

During the lateral orientation at 10 and 60 cps, the input was reduced to 1/2 g because the vibration machine could not drive the unit to the desired 1 g.

The first mode of resonance of the Signal Conditioner Box Mounting Plate was found to be 65 cps. The highest observed acceleration was 1 1/4 g in the longitudinal direction in the vertical resonant survey.

There was no visible damage to the unit observed.

Object of Test

The object of this test was to establish the vibration input to the Signal Conditioner Box in the TX-28 Companion Unit when the TX-28 Companion Unit is subjected to a vibration resonant survey from 10-120 cps with a 1 g input.

The TX-28 Companion Unit contains radiation detection equipment and is to be dropped in conjunction with Project Saguro.

Authorization for Test

This test was requested in an Environmental Test Order T-18673 from W. T. Smith, 7211, to R. S. Hooper, 7321-5, dated 4-16-62. J. Reynolds, 7211, was the consultant.

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: <u>U</u>	AUTHORITY: <u>W.C. Layne</u>
PERSON CHANGING MARKING & DATE: <u>W.C. Layne 8/25/98</u>	RECORD ID: <u>98SN3783</u>
PERSON VERIFYING MARKING & DATE: <u>W.C. Layne 8/25/98</u>	DATED: <u>8/20/98</u>

CENTRAL RECORD FILE	
ADDITIONAL MARKS: <u>PT</u>	
FILE No. <u>TX 2 4</u>	
<u>3-2</u>	

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-2-

T-18673

Setup for Test

Table I is a list of the components tested. Figures 1 and 2 show the setup for the vertical and lateral orientation vibration tests respectively. Figures 3 and 4 illustrate the instrumentation used for the vibration tests.

Procedure

For vibration in the vertical and lateral orientation, the unit was instrumented as shown in Figures 3 and 4 and placed in the vertical vibration fixture. Figure 1 shows the setup for the vertical orientation.

The resonant survey in the vertical direction was run with a 1 g input from 10 to 120 cps, controlled by accelerometer No. 1, illustrated in Figure 3. The input was filtered per SC-4452. All outputs were read through a Sandia passive filter with an 800 cps cutoff. All acceleration readings were read with a Model 320 Ballantine TRMS Voltmeter. No reading less than 0.1 g was recorded.

After completion of the vertical resonant survey, the unit was removed and placed into the lateral vibration fixture. Figure 2 shows the setup for the lateral orientation. Instrumentation for the lateral orientation was the same as in the vertical orientation, illustrated in Figures 3 and 4.

The resonant survey in the lateral orientation was run with a 1 g input from 10 to 120 cps but could not be attained by the vibration machine so was lowered to 1/2 g at 10 and 60 cps. The input was controlled by accelerometer No. 2 illustrated in Figure 3. The input was filtered per SC-4452.

All outputs were read through a Sandia passive filter with an 800 cps cutoff. All acceleration readings were read with a Model 320 Ballantine TRMS Voltmeter. No reading less than 0.1 g was recorded.

Results

Upon completion of the test, investigation of the data indicated that the first mode of resonance of the signal conditioner box mounting plate was 65 cps. The highest acceleration value was 1 1/2 g filtered in the longitudinal direction during the vertical resonant survey.

Figure 5 and 6 are plots of the response ratios vs frequency of the accelerometers in the vertical orientation. Figure 7 and 8 are plots of the response ratios vs frequency of the accelerometers in the lateral orientation.

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-3-

T-18673

D. E. Bishop

D. E. BISHOP - 7324-2

R. M. Workhoven

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D. L. Krenz

TEST PROJECT ENGINEER: D. L. KRENZ - 7321-5

APPROVED BY:

R. S. Hooper

R. S. HOOPER - 7321-5

DEB:7324-2:mep

Enc. Figs. 1-8
Table I

Copy to:

J. M. Wiesen, 1442

D. S. Bliss, 2344

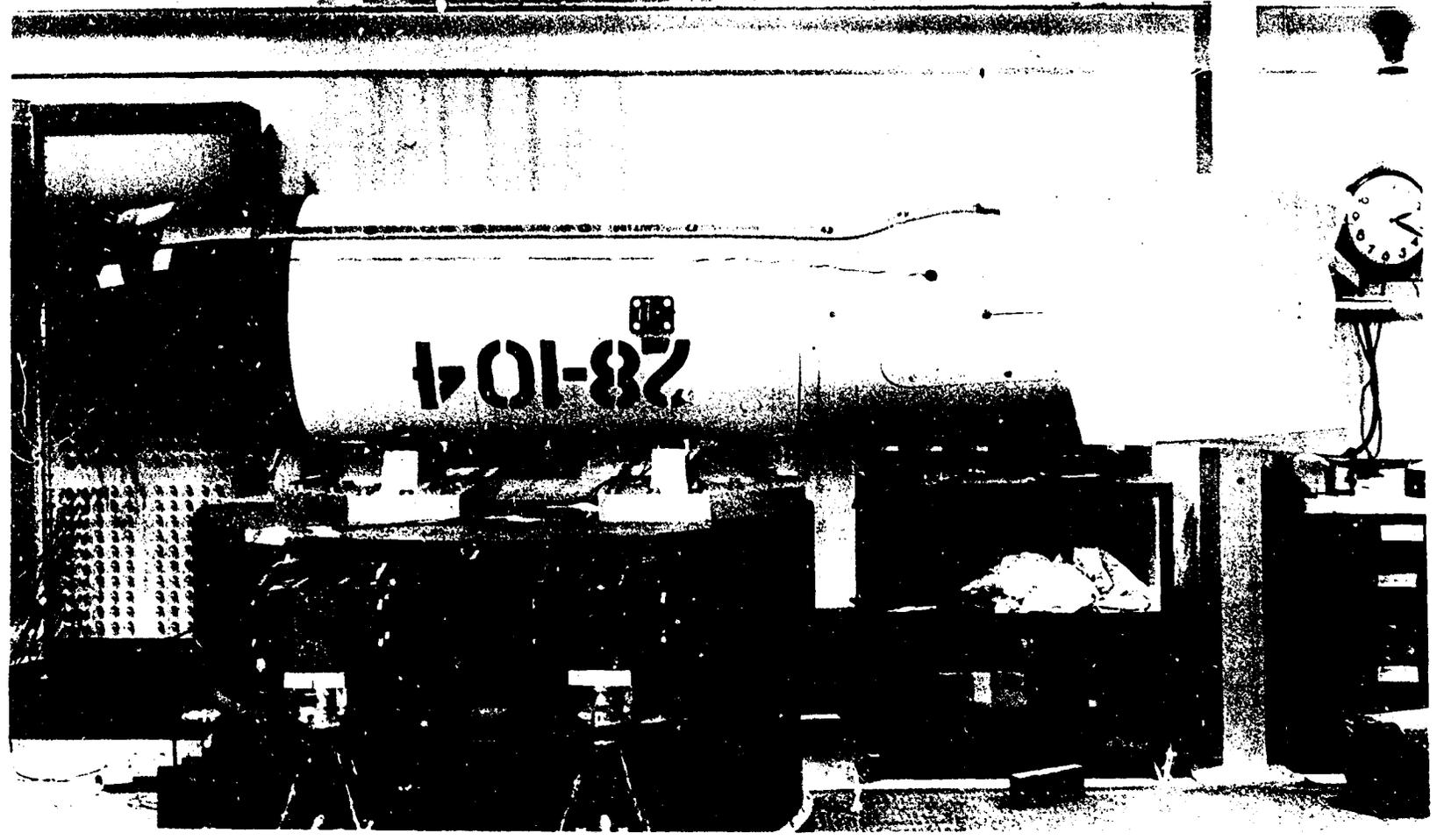
E. H. Copeland, 7321

C. L. Johnson, 7523

K. K. Smeltzer, 3421-3

#1133

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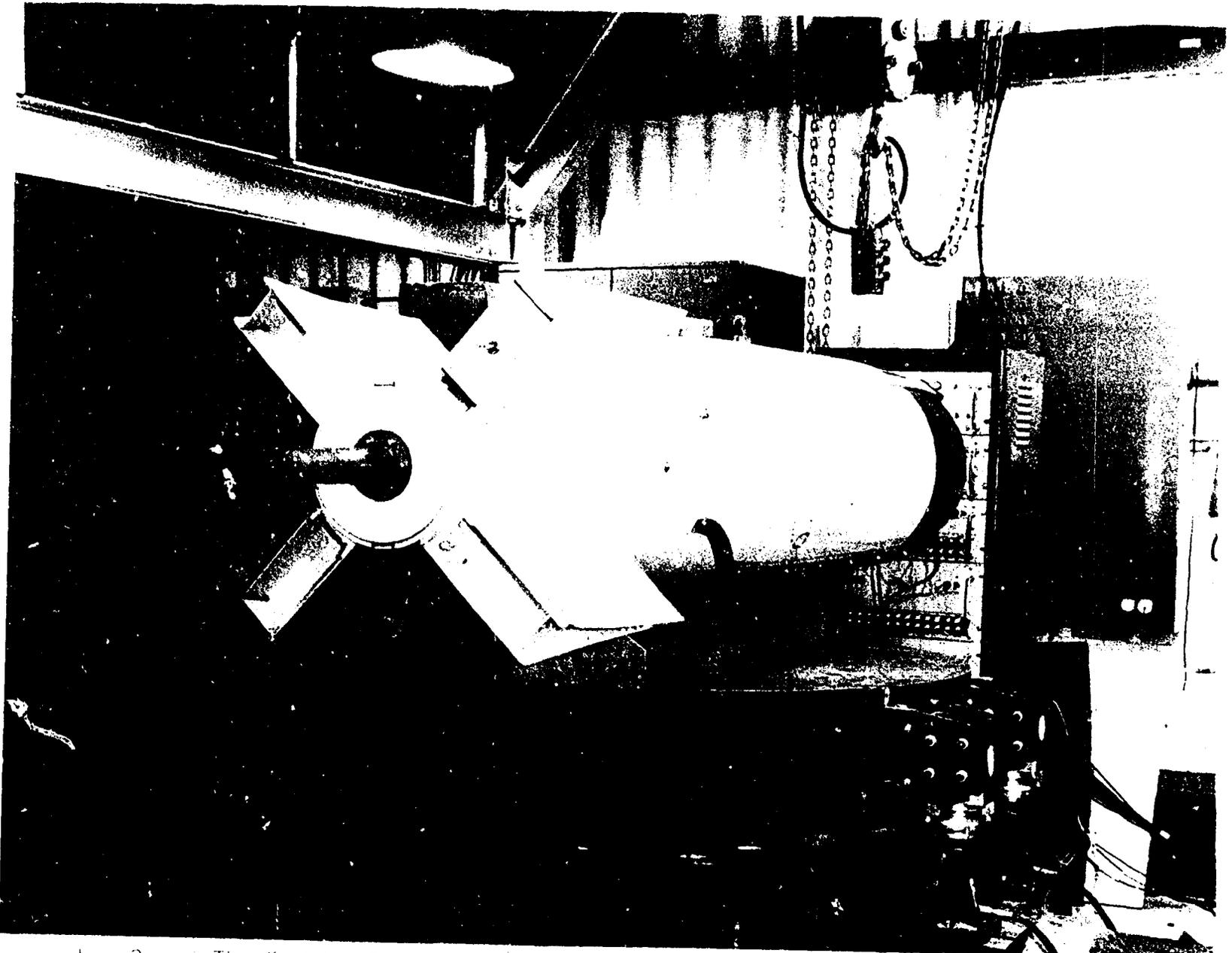


28-104

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D# 62-16923

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FIG. 2 - SET UP FOR LATERAL ORIENTATION.

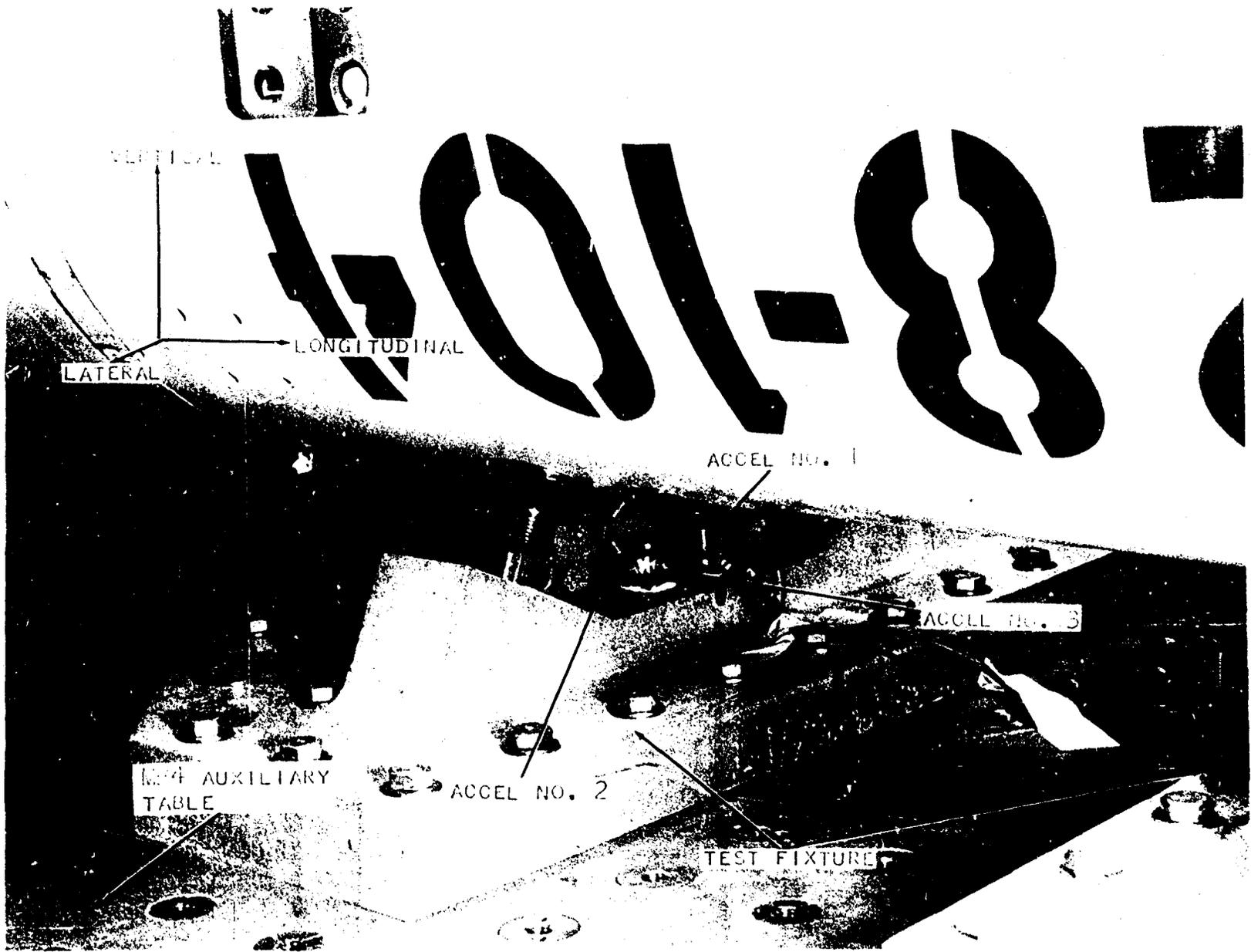
A#62-16924

WILSON TEST CENTER, WASHINGTON, D.C.

271130



401-8



VERTICAL

LONGITUDINAL

LATERAL

ACCEL NO. 1

ACCEL NO. 3

M-4 AUXILIARY TABLE

ACCEL NO. 2

TEST FIXTURE

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#1735

FIG. 3 - VERTICAL AND LATERAL EXTENSION OF TEST FIXTURE

D# 62-16925

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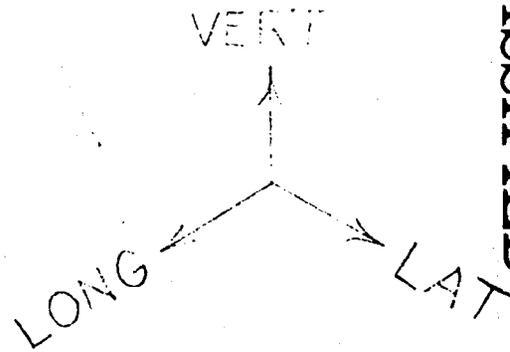
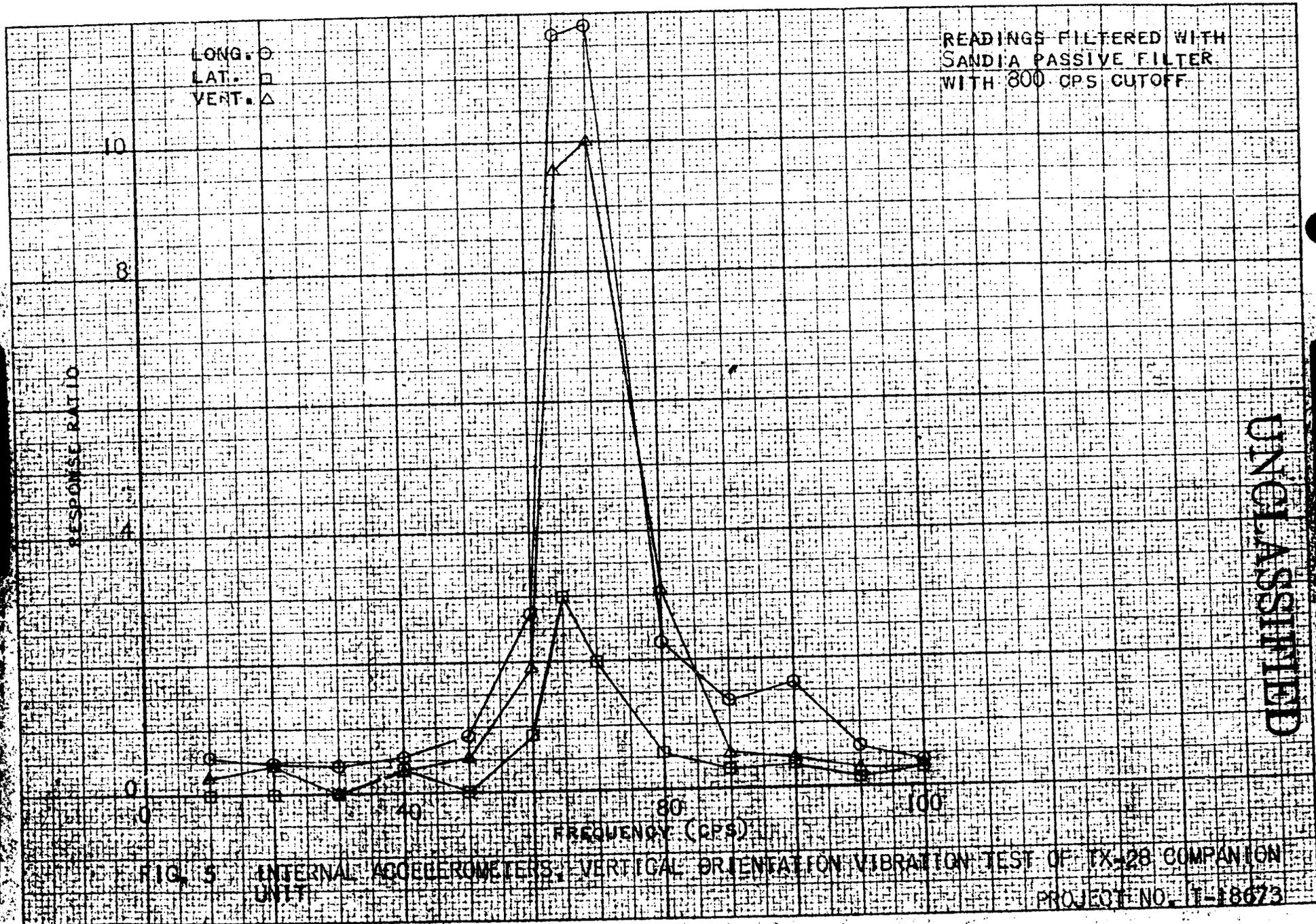


FIG. 4 INTERNAL INSTRUMENTATION OF TX-28 COMPANION UNIT
PROJECT NO. T-18673



READINGS FILTERED WITH
SANDIA PASSIVE FILTER
WITH 800 CPS CUTOFF

LONG. O
LAT. B
VERT. Δ

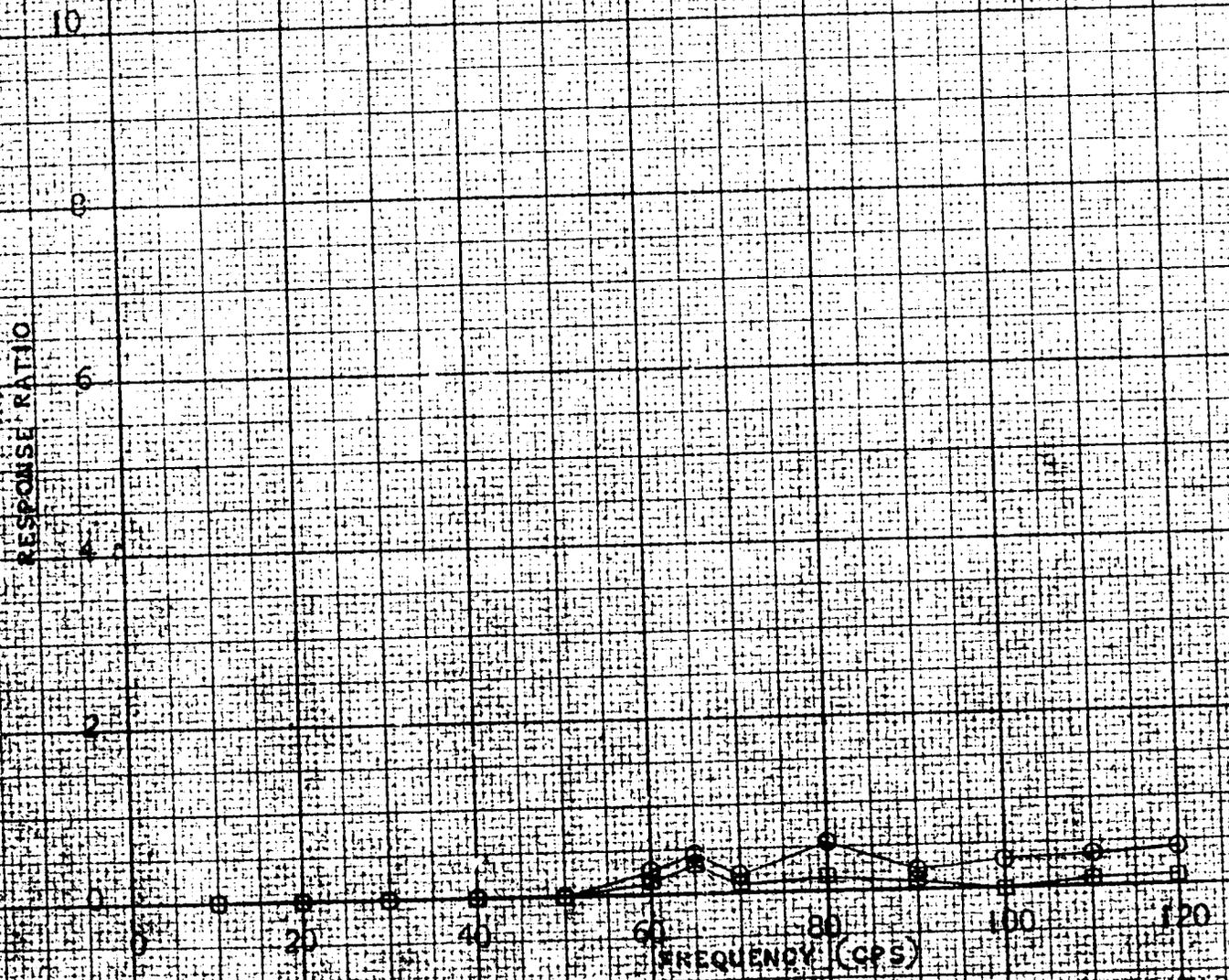


FIG. 6 EXTERNAL ACCELEROMETERS, VERTICAL ORIENTATION VIBRATION TEST OF TX-28 COMPANION UNIT PROJECT NO. T-18673

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LONG. ○
LAT. □
VERT. △

READINGS FILTERED WITH
SANDIA PASSIVE FILTER
WITH 800 CPS CUTOFF

RESPONSE RATIO

10
8
6
4
2
0
0 20 40 60 80 100 120

FREQUENCY (CPS)

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FIG. 7 INTERNAL ACCELEROMETERS, LATERAL ORIENTATION VIBRATION TEST OF TX-28 COMPANION UNIT

PROJECT NO. 1-18673

UNCLASSIFIED

LONG. ○
LAT. □
VERT. △

READINGS FILTERED WITH
SANDIA PASSIVE FILTER
WITH 800 CPS CUTOFF

RESPONSE RATIO

10
8
6
4
2
0
10 20 40 60 80 100 120

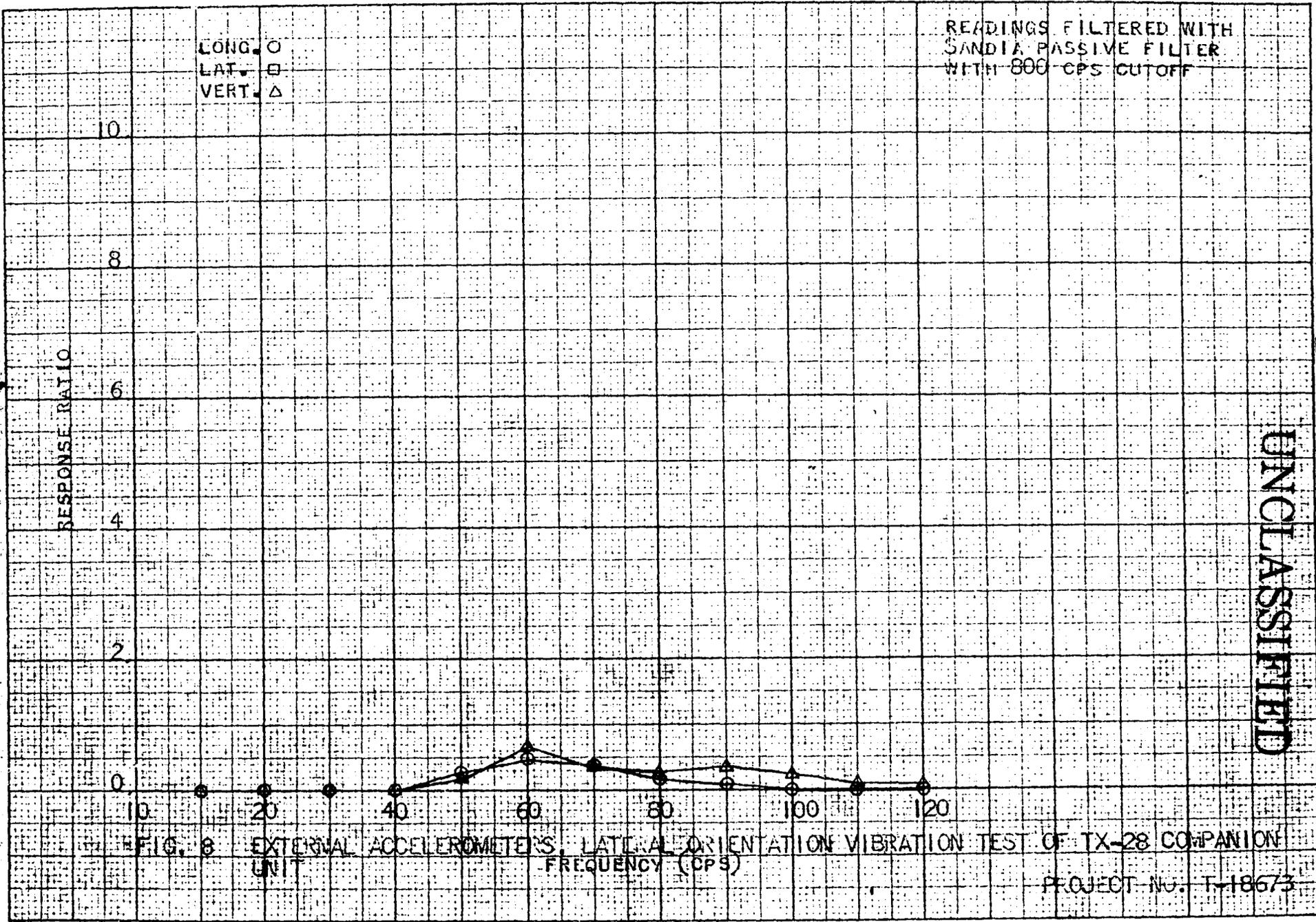
FIG. 8

EXTERNAL ACCELEROMETERS, LATERAL ORIENTATION VIBRATION TEST OF TX-28 COMPANION UNIT
FREQUENCY (CPS)

PROJECT NO. T-18673

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18673
T-18693

TABLE I

MC-No.	Name of Component	Dwg. or Part No.	Serial No.
TX-28	Companion Unit	-	28-104

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