UNCLASSIFIED [redacted] 1571

OCT 18 1954

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Case No. 423.00
Ref. Symbol: 1611
Project No. ET-1792
Testing Period through 6-27-54

TO: DISTRIBUTION TCG-NNT-1

Re: TX-13 Program Interim Report (Vibration Test of MC-355 and MC-385)

Object of Test

This was a developmental vibration test to determine the structural performance of the MC-355 (cone and mounting ring, Drawing No. 120267) and the MC-385 (fuze plate with components, Drawing No. 120067) mounted on the MC-355, and to determine the operational performance of the components mounted on the MC-385, which consisted of an MC-394, MC-273, MC-73, and MC-384.

Authorization for Test

This test was requested by Division 1211 in a Work Order Authorization dated March 12, 1954. Mr. W. Green was the consultant.

Procedure and Results

Vibration was performed along axes I and II (Fig. 1) in accordance with the instructions of the consultant as follows: 10-25-10 cps in 2 minutes at a double amplitude of 0.035 inch for 4 minutes per axis; 25-60-25 cps in 2 minutes at a double amplitude of 0.010 inch for 4 minutes per axis; and 10-60-10 cps in 15 minutes at a double amplitude of 0.035 inch for 45 minutes. Accelerometers were mounted at the locations shown in Fig. 1 and accelerations were recorded using a Consolidated System "D" bridge amplifier set and a Hathaway S-14C 6-channel oscillograph. All accelerometers were aligned with their axes of sensitivity parallel to the axes of vibration. Accelerations were recorded during the 10-25 cps and 25-60 cps runs but not during the 10-60 cps run at 0.035 inch double amplitude. During this run CAT tests were performed on the components by Division 1213. CAT tests were also performed before and after the 10-25 cps and 25-60 cps runs. The MC-394 and MC-273 contacts were arranged for net output and were monitored for chatter throughout the runs using a neon lamp chatter tester. The MC-394 was set at 6000 feet above sea level and a constant differential pressure of -4 mm of Hg from the static setting was held, making use of a mercury manometer. The MC-273 was set at 20,000 feet above sea level and a constant differential of +500 feet was held, using a T-1 baroswitch tester. Accelerations recorded are plotted in Figs. 2 and 3. Inspection of the curves shows no resonant points. No damage occurred to the structures, no chatter occurred throughout the runs, and no failures occurred during the CAT tests.

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CDL No.
ACCOUNTABILITY CARD
FILE No. MC-355 MC-385 3-2

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For vibration along axis III the assembly was mounted on a knee jig supplied by 1211, and since it was felt that resonance of the knee jig would occur, vibration was performed from 10-60-10 cps in 15 minutes at a double amplitude of 0.010 inch for 15 minutes. Accelerations were recorded, CAT tests were made before and after the test, and chatter monitoring was performed as before. The accelerations recorded are shown in Fig. 4. A severe resonance of the jig, which corresponded to a maximum amplification factor with respect to the table of 14.1, was evident at about 54 cps. It was then decided to perform the continuous CAT testing and chatter testing during vibration from 10-45 cps in 10 minutes at a double amplitude of 0.010 inch for 30 minutes. The CAT tests were satisfactory throughout the tests. The CAT tests did not include the MC-273 and MC-394. Chatter occurred on the MC-273 contacts. Inspection of the MC-273 showed that three screws holding the inner frame, which supports the mechanism, to the outer case had come loose allowing the MC-273 mechanism to rattle around inside the case. No structural damage occurred throughout the test.

R. S. Jacobson

Test Conducted by R. S. JACOBSON - 1611-1

R. R. Daubert

Approved by R. R. DAUBERT - 1611-1

Enc.
Figs. 1 through 4

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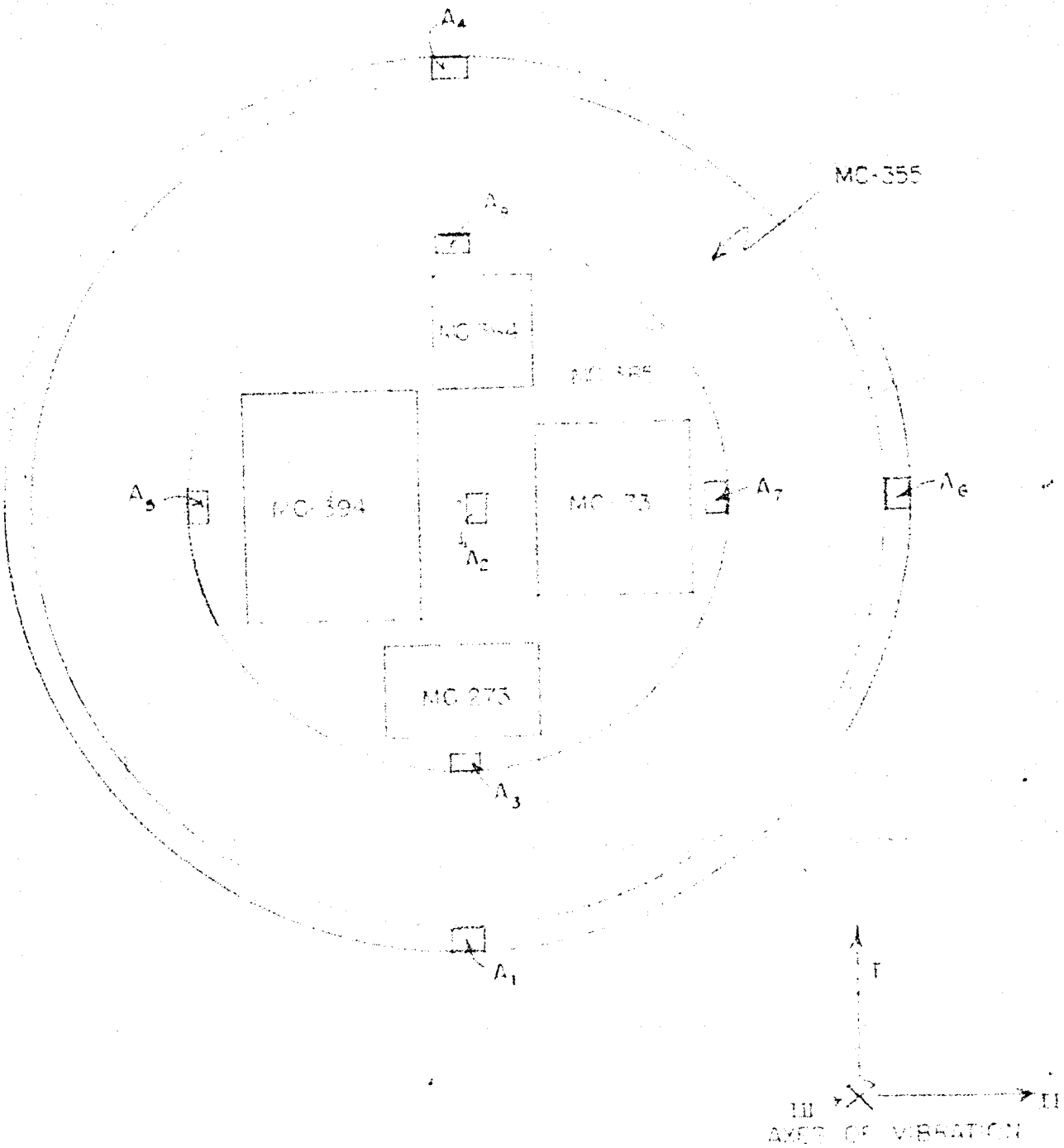

FIG 1- TX-13 PROGRAM VERATION TEST ON MC 355 AND MC 356
AXES OF VERATION AND LOCATIONS OF ACCELEROMETERS

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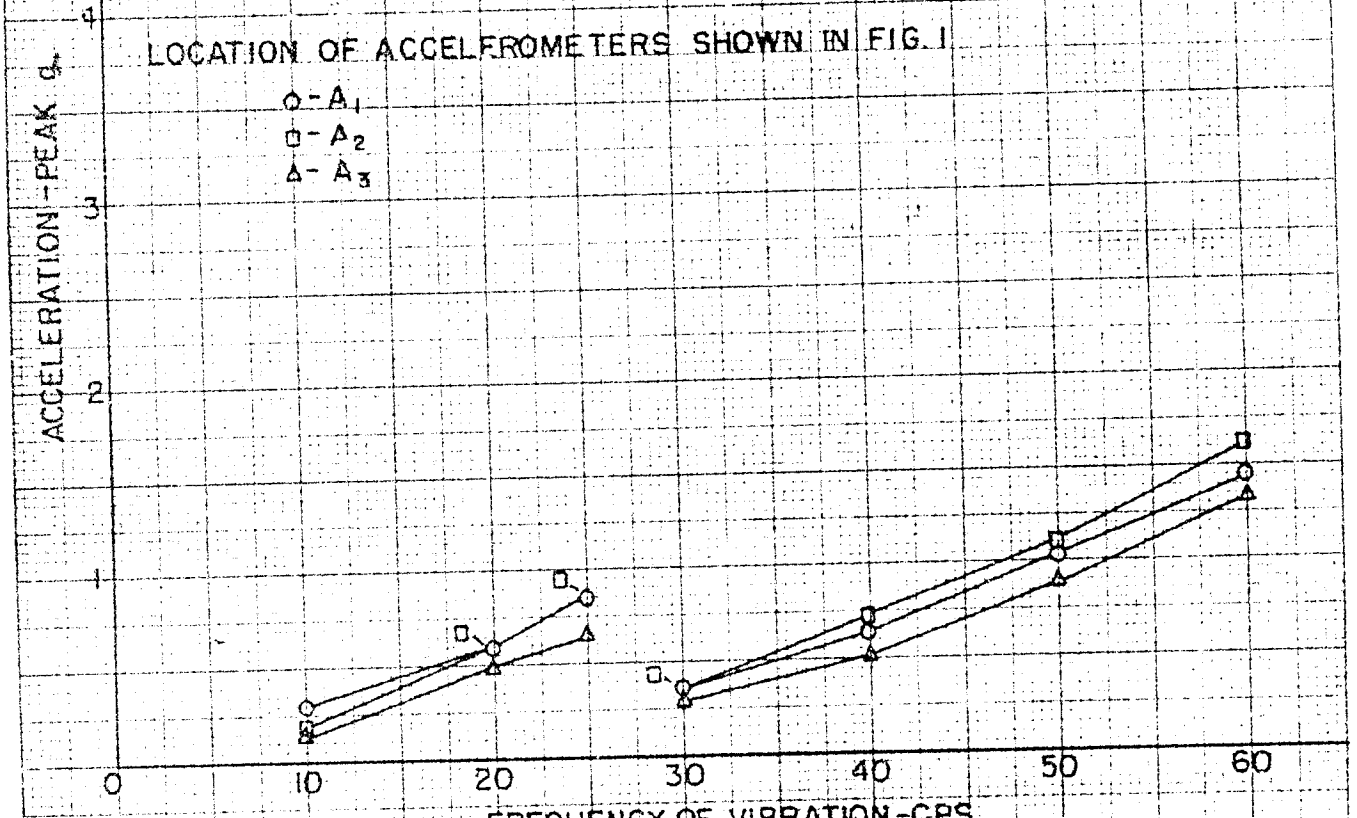

FIG. 2 - TX-13 PROGRAM VIBRATION TEST ON MC-355 AND MC-385
AXIS I

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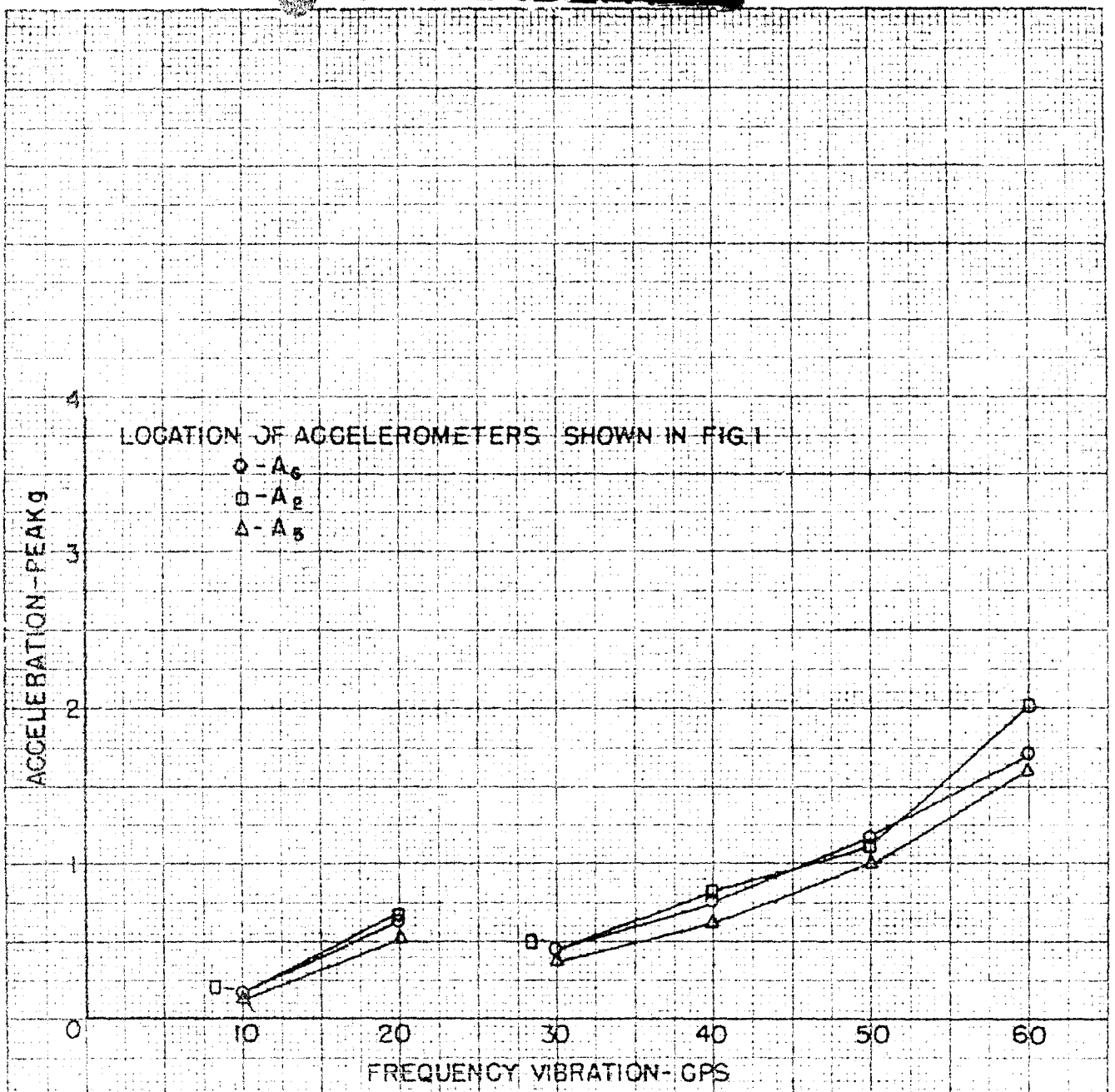

FIG. 3 - TX-13 PROGRAM VIBRATION TEST ON MC-355 AND MC-385 AXIS II

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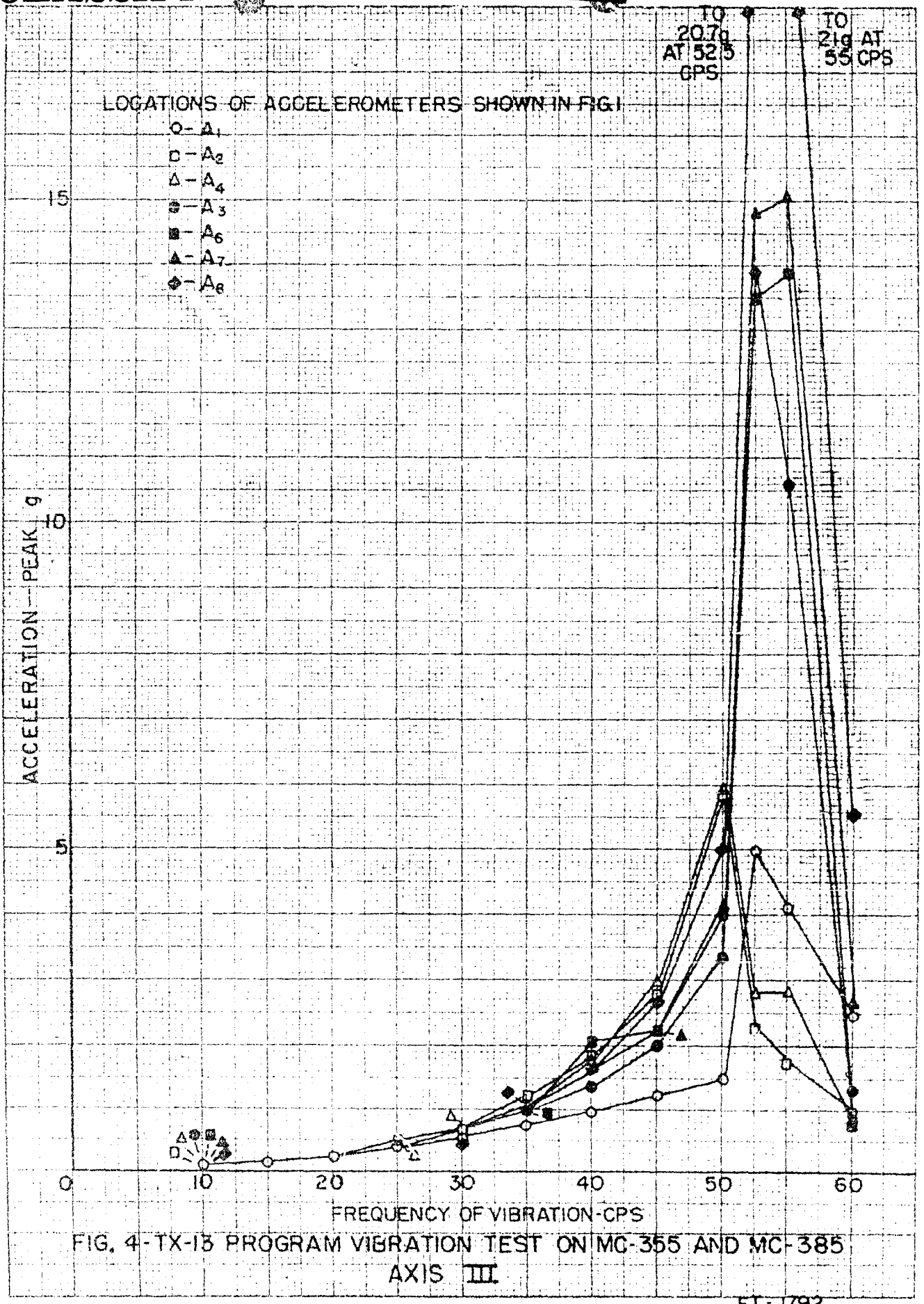

FIG. 4-TX-13 PROGRAM VIBRATION TEST ON MC-355 AND MC-385
AXIS III.

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