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CENTRAL TECHNICAL FILE

File No: MC1805, 3-2
T-19693
Test Completed: 7-15-63

MR. L. A. DUNN - 1511
Attn: T. K. Hill

Re: Vibration Test of MC1805 Potted in Bendix Vibration Fixture

A series of vibration tests on the MC1805 was requested in ETO T-19693, dated 6-5-63. The test objectives were (1) to evaluate the vibration characteristics of the MC1805 vibration fixture developed by Bendix Corporation, (2) conduct a resonant survey in all three axes from 10-2000 cps with an input of 0.2" DA from 10-31 cps and 10.0g from 31-2000 cps, and (3) investigate the structural integrity of the MC1805 and determine that the electrical components remained functionable following one hour of vibration (logarithmic cycles from 10-2000-10 cps) at the inputs outlined above. This test cycle was to be conducted along each axis.

The longitudinal test setup is shown in Figure 1. The MC1805 was potted in the Bendix fixture, which was bolted to the base plate. The base plate was bolted to the armature of the vibration machine. The accelerometer locations are shown in Figure 1. A description of the accelerometer locations is given in Table 1A.

Prior to taping a resonant survey sweep from 10-2000 cps, a meter survey was made to determine the calibrate values to be used. During this survey it was found that the MC1805 experienced unfiltered acceleration responses of 85.0g at 850 cps, 150g at 1400 cps, and 250g at 1800 cps. Due to the small amounts of distortion on the wave shape of these responses, it is safe to assume that the filtered and unfiltered readings were in close agreement.

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 9-16-98
Authority: ☐ ADC ☒ ADD
Name: W. Fayne
2nd Review Date: 9/21/98
Authority:
Name: R.B. Craner
Determination (Circle Numbers):
1 Classification Retained
2 Classification Changed to: U
3 Contains No DOE Classified Information
4 Coordinate With:
5 Contains UCAI? NO
6 Comments: OK for Approval

CENTRAL TECHNICAL FILE
ACCOUNTABILITY CARD: SAB
FILE NO. MC 1805 3-2

[redacted]

[redacted]

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
Emilda Selph 9/24/98
PERSON CHANGING MARKING & DATE
W. Fayne 9/28/98
PERSON VERIFYING MARKING & DATE
AUTHORITY: R. B. Craner
RECORD ID: 98SN397
DATED: 9/21/98

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Investigation of the responses at the above frequencies led to the following conclusions.

(A) 85.0g at 850 cps

This response was probably due to the resonance of the MC1805 mounted in the fixture.

(B) 150g at 1400 cps

This response was probably due to feed back from the top portion of the fixture which resonated at 1400 cps.

(C) 250g at 1800 cps

This response was probably due to plate resonance of the plate bolted to the shaker armature. At this frequency, all longitudinal accelerometers mounted on the fixutre and test item had high responses.

The responses at the different accelerometer locations are listed in Table 1B. The responses at 850, 1400 and 1800 cps are included.

Following the meter survey, it was recommended to the Division 1511 consultant engineer that the test be cancelled until a more rigid fixture could be designed. The taped survey and the study of the structural integrity of the MC1805 were thus deleted. With the Bendix fixture, the MC1805 is subjected to high acceleration levels at frequencies which probably have no relationship to the MC1805's actual field environment. Also, as can be seen from Table 1B the acceleration gradient around the fixture is quite different at any one frequency. Thus, due to the complex response of the fixture it would be hard to define the actual input into the MC1805.

In summary, for a valid test on the MC1805 it is recommended that a rigid mounting be used. This would allow a programmed input, derived from vibration data of the MC1805 mounted in the B-43, to be used.

J. V. Otts

J. V. OTTS - 7324-2

R. E. Howell

Test Project Engineer: R. E. HOWELL - 7331-1

JVO:7324-2:mw

E. White

Encl: Figure 1
Table I

Approved By: E. WHITE - 7331-1

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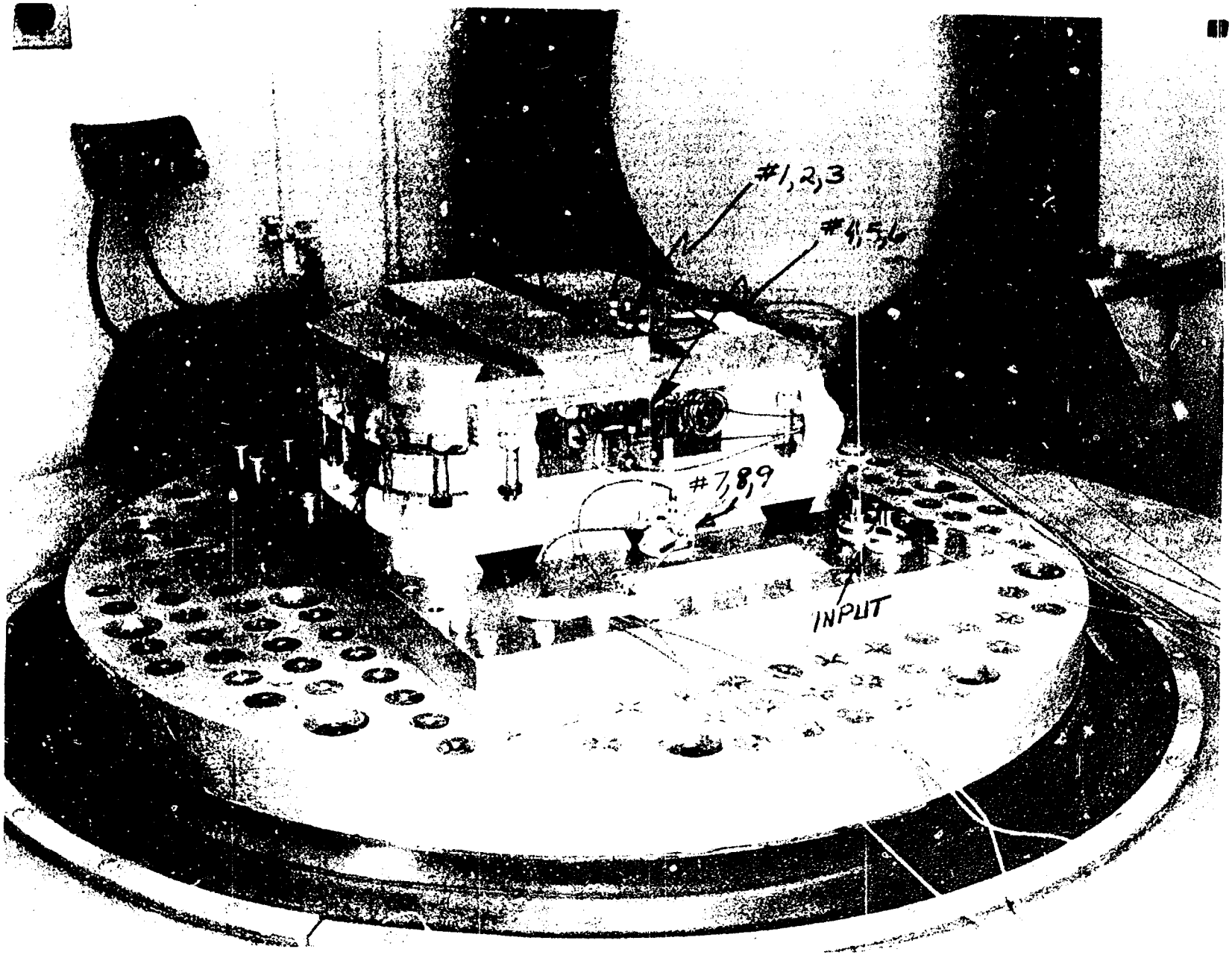

FIG 1 -- TEST SETUP FOR LONGITUDINAL VIBRATION OF [illegible]

D#63-7587

TABLE 1A

ACCELEROMETER LOCATIONS

Accelerometer No.	Location	Axis
1	Top of Bendix Fixture	Longitudinal
2	Top of Bendix Fixture	Vertical
3	Top of Bendix Fixture	Lateral
4	Face of MC1805	Longitudinal
5	Face of MC1805	Vertical
6	Face of MC1805	Lateral
7	Base Plate	Longitudinal
8	Base Plate	Vertical
9	Base Plate	Lateral
10	Top Section of Fixture	Longitudinal
11	Bottom Section of Fixture	Longitudinal

T-19693

TABLE 1B

LONGITUDINAL RESPONSES OF FIXTURE AND MC1805

Accelerometer No.	Frequency	Response	Axis	Location
1	1800 cps	150g	Long.	Top of vibration fixture
	1400 cps	170g		
	850 cps	40g		
4	1800 cps	250g	Long.	Face of MC 1805
	1400 cps	150g		
	850 cps	85g		
7	1800 cps	250g	Long.	Base Plate
	1400 cps	12g		
	850 cps	11g		
10	1800 cps	150g	Long.	Top section of fixture
	1400 cps	50g		
	850 cps	11g		
11	1800 cps	150g	Long.	Bottom section of fixture
	1400 cps	15g		
	850 cps	11g		