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AUTHORITY

ST-A AFSWC, LTR, 3 FEB 1976

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ICING TESTS OF THE MAU-12B/A BOMB EJECTOR RACK

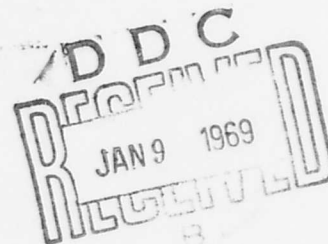
R. L. Posey



AIR FORCE SPECIAL WEAPONS CENTER
Air Force Systems Command
Kirtland Air Force Base
New Mexico

TECHNICAL REPORT NO. AFSWC-TR-68-30

December 1968



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R. L. Posey

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FOREWORD

This testing was performed under Program Element 6.47.12.F, Project 5708, Job Work Order Code 570814. Inclusive dates of testing were 26 August 1968 through 9 September 1968. This report was submitted on 25 November 1968 by the Air Force Special Weapons Center Test Director, Mr. R. L. Posey (SWTEE).

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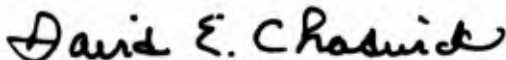
This technical report has been reviewed and is approved.



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ABSTRACT

(Distribution Limitation Statement No. 2)

Four MAU-12B/A Bomb Ejector Racks were subjected to 11 icing tests each according to MIL-R-38953B(USAF). The nuclear safety interlock failed to function once on each of two racks. The hooks on two other racks could not be opened manually on another test. It was determined that failure of the MAU-12B/A during the icing tests was a random function and was not inherent to a specific rack.

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SECTION I

INTRODUCTION

The purpose of this test program was to subject four MAU-12B/A Bomb Ejector Racks to a series of icing tests according to MIL-R-38953B(USAF) to determine if failure of the racks in this environment was inherent to a specific rack or random in nature. Six of the 34 racks tested in the sample testing program,* Project 921A-9224-02144, and two of the four racks tested during the program which is still in progress failed the icing tests.

*Traylor, Mahlon E., Jr., Sample Testing of MAU-12B/A Bomb Ejector Rack, AFSWC-TR-68-4, AFSWC, Kirtland AFB, NM, July 1968.

SECTION II
TEST PROCEDURES AND RESULTS

1. Test Item

The MAU-12B/A Bomb Ejection Rack (figure 1) is designed to carry either conventional or nuclear stores (weighing as much as 5000 pounds) externally under a fighter-bomber. Two pairs of mutually coupled hooks allow for weapon lug spacing of either 30 or 14 inches. The payload can be forcibly ejected or allowed to fall free from the aircraft. The MAU-12B/A is compatible with a variety of store casings whose minimum external diameter is from 10.7 inches to a maximum of 33 inches. When forced ejection is used, the pistons which kick the weapon free of the aircraft retract into the rack, thus presenting a clean profile to the airstream. Another main feature of this bomb rack is the nuclear safety interlock, which must be actuated before the store can be released. The total weight of this rack comes to slightly less than 100 pounds.

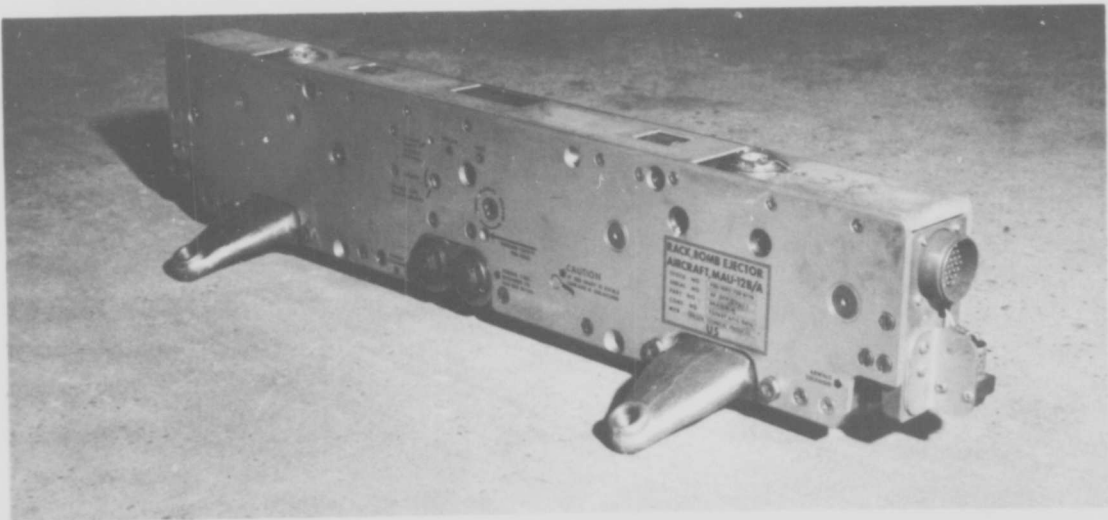


Figure 1. MAU-12B/A Bomb Ejection Rack

Four MAU-12B/A Bomb Ejector Racks, Serial Numbers 06397, 08300, 08770, and 09273, were used for the tests. Serial Number 06397 had been subjected to an entire sequence of testing: icing, life firing, static load, and vibration. The other three racks had been subjected to the icing test only. Serial Numbers 08300 and 08770 failed the icing test. Serial Numbers 08300, 08770, and 09273 are being subjected to life firing, vibration, and static load testing at this time.

2. Test Procedure

The MAU-12B/A was first stabilized at -70°F for 2 hours, then placed in a 100°F , 90 percent relative humidity environment until the frost disappeared. The rack was again stabilized for 2 hours at -70°F . At this time the nuclear safety interlock was operated and the hooks opened manually.

The test was conducted 11 times on each rack. Only 10 tests were scheduled, but because of an error during one test the racks were subjected to a low temperature of -80°F .

The chamber used for the low temperature environment has internal dimensions of 48 inches by 48 inches by 120 inches. All four racks were tested at the same time.

3. Results

The results of the test are shown in Table I. The nuclear safety interlock failed to operate twice, once on rack 08770 during test 1 and once on rack 06397 during test 6. The hooks could not be opened manually on rack 06397 during test 7 or on rack 09273 during test 7. Test 7 was inadvertently run at -80°F instead of -70°F . However, this temperature difference had no effect on the other two racks and should have had no effect on 06397 and 09273. Since no fixtures were available, the racks had to be hand held when the hooks were opened. Two-hundred foot pounds was the maximum torque that could be applied.

The results of this testing program show that failure of the MAU-12B/A in the icing environment is random and is not inherent to a specific rack.

Table I

TORQUE REQUIRED TO OPEN HOOKS IN FOOT-POUNDS

MAU-12B/A Bomb Ejector Racks

<u>Test</u>	<u>06397</u>	<u>08300</u>	<u>08770</u>	<u>09273</u>
1	10	15	*	60
2	5	10	10	15
3	10	10	20	10
4	10	20	20	15
5	10	10	10	20
6	*	5	15	5
7**	***	20	10	***
8	15	10	30	15
9	10	20	15	5
10	15	15	10	5
11	30	20	10	10

*Nuclear Safety Interlock Failed to Function.

**Temperature -80°F.

***Nuclear Safety Interlock Functioned. Hooks could not be opened with 200 ft-lb of torque.

SECTION III

CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

a. Forty-four individual icing tests were conducted on four different MAU-12B/A Bomb Ejector Racks. There were four failures during the testing program. The nuclear safety interlocks failed to function twice and on two occasions the hooks could not be opened manually.

b. Failure of the MAU-12B/A in an icing environment is a random function and is not inherent to a specific rack.

2. Recommendations

a. Proper cold-temperature preflight maintenance should be performed before use in the field.

b. The icing test specified in MIL-R-38953B(USAF) should be revised to more closely simulate field conditions.

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Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)

Air Force Special Weapons Center (SWTEE)
Kirtland Air Force Base, New Mexico 87117

2a. REPORT SECURITY CLASSIFICATION

UNCLASSIFIED

2b. GROUP

3. REPORT TITLE

ICING TESTS OF THE MAU-12B/A BOMB EJECTOR RACK

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

26 August-9 September 1968

5. AUTHOR(S) (First name, middle initial, last name)

R. L. Posey

6. REPORT DATE

December 1968

7a. TOTAL NO. OF PAGES

14

7b. NO. OF REFS

None

8a. CONTRACT OR GRANT NO.

b. PROJECT NO. 5708

c. Job Work Order

Code 570814

d.

9a. ORIGINATOR'S REPORT NUMBER(S)

AFSWC-TR-68-30

9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

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11. SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY

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Kirtland AFB, NM 87117

13. ABSTRACT

(Distribution Limitation Statement No. 2)

Four MAU-12B/A Bomb Ejector Racks were subjected to 11 icing tests each according to MIL-R-38953B(USAF). The nuclear safety interlock failed to function once on each of two racks. The hooks on two other racks could not be opened manually on another test. It was determined that failure of the MAU-12B/A during the icing tests was a random function and was not inherent to a specific rack.

DD FORM 1 NOV 65 1473

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
MAU-12B/A Bomb Ejector Rack Bomb rack icing test Environmental test						