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TEST & EVALUATION COMMAND

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USATECOM PROJECT NO. 8-5-0400-06
"LIMITED SERVICE TEST OF
SMALL ARMS WEAPONS SYSTEMS (SAWS)
FOR USE AS INDIVIDUAL WEAPONS
BY ARMY AIRCRAFT CREW MEMBERS" (U)
RDT&E PROJECT NO. Unknown
AD _____
Final Report of Test
Ralph L. Holloway

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DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
Aberdeen Proving Ground, Maryland 21005

AMSTE-BC

29 Dec 1965

SUBJECT: Reports of Engineering, Service, and Service-Type Tests of Small Arms Weapons Systems (SAWS) (USATECOM Project Nos. 8-5-0400-03 Through 8-5-0400-06) (U)

TO: Commanding General, US Army Weapons Command,
ATTN: AMCPM-RS, Rock Island, Illinois 61200
Commanding General, US Army Combat Developments
Command, ATTN: USACDC Liaison Officer, USATECOM,
Aberdeen Proving Ground, Maryland 21005

1. References:

a. Headquarters Department of the Army, Chief, of Staff Memorandum No. 64-555, 17 Dec 64, subj: Army Small Arms Weapons Systems (Class CONF).

b. Ltr, Hq USAMC (AMCPM-RS), 28 Apr 65, subj: Army Small Arms Weapons Systems (SAWS) (U) (Class CONF).

c. TT, USAWECOM 19371, 15 Dec 65.

2. Forwarded herewith are reports of tests of Army Small Arms Weapons Systems (SAWS) which were conducted by the US Army Test and Evaluation Command in accordance with the requirements of references 1a and 1b.

3. The Report of Engineering Test (Incl 1) is partial because testing is still in progress. A final report of engineering test covering those tests still in progress will be forwarded when available.

4. These reports are forwarded for information and to meet the deadlines established for the SAWS Program. A Headquarters USATECOM

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29 Dec 1965

SUBJECT: Reports of Engineering, Service, and Service-Type Tests of Small Arms Weapons Systems (SAWS) (USATECOM Project Nos. 8-5-0400-03 Through 8-5-0400-06) (U)

position with respect to these reports and their conclusions and recommendations will be provided upon completion of detailed analysis, now in progress; pending completion of this analysis, addressees are cautioned in the use of certain of the data presented for the reasons indicated below.

a. Tactical Firing Exercises (USA Infantry Board Report). -

The results obtained in tests of this nature are primarily dependent upon human performance; troop samples should be matched in size and quality, and test conditions should be identical for each weapon insofar as possible. However, although every effort was made, it was not possible to maintain optimum controls in SAWS testing due to circumstances that were largely unavoidable and beyond the control of the test agency.

(1) Weapons were not available in uniform quantity, and in some cases were delivered after testing had been initiated, because of contractor inability to meet the desired schedule. In consequence, the size of troop samples varied and in some instances the learning factor could not be kept equal for all weapons.

(2) Delays and suspensions imposed on the test agency for safety considerations and/or because of weapon malfunctioning resulted in some variance in test conditions.

b. Reliability and Durability (Engineering and Service Test Reports). - Weapons tested varied from some which have been in production for several years to others which are in an early stage of development. Data bearing upon reliability and durability must be carefully analyzed to correlate Engineering and Service Test results and to determine, where possible, whether malperformances are considered to be correctable in future development or reflect basic design deficiencies.

c. Ammunition (Engineering and Service Test Reports). - In SAWS tests ammunition of "average" quality, representative of that available for issue to troops, was used. In testing it was found that occasional unacceptable wide dispersion was obtained with the 7.62mm M80 ball cartridge, and that the 5.56mm M193 ball cartridge apparently

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contributed to relatively low functional reliability of some weapons. The degree to which ammunition contributed to these results must be analyzed in detail.

5. This Headquarters, in coordination with the USA Ballistic Research Laboratories, the USA Human Engineering Laboratories, and other agencies, is presently conducting the necessary analysis to determine whether and to what degree, SAWS test results were affected by the factors enumerated above. It is expected that this analysis will be forwarded on or before 31 January 1966.

FOR THE COMMANDER:

4 Incl	/s/ Austin Triplett, Jr.
1. Proj No. 8-5-0400-03 (APG) (Partial Report)	/t/ AUSTIN TRIPLETT, JR. Colonel GS Dir, Inf Mat Test
2. Proj No. 8-5-0400-04 (USAIB)	
3. Proj No. 8-5-0400-05 (USAAB)	
4. Proj No. 8-5-0400-06 (USA Avn Test Bd) (AMCPM-RS, w/5 cys ea incl) (USACDC Ln O, USATECOM, w/12 cys ea incl)	

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(6) LIMITED SERVICE TEST

OF

SMALL ARMS WEAPONS SYSTEMS (SAWS)

FOR USE AS

INDIVIDUAL WEAPONS BY ARMY AIRCRAFT CREW MEMBERS (U) (8)

(16) USATECOM ~~XXXXXXXXXX~~ 8-5-0400-06

~~RDT&E PROJECT NO. Unknown~~

(9) Final Report ~~about~~

(10) Ralph L. Holloway

(11) 29 Dec 65

(12) 63 p.

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama 36362

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ABSTRACT (U)

The USAAVNTBD conducted a limited service test of the Small Arms Weapons Systems (SAWS) at Fort Rucker, Alabama, during the period 1 July to 15 August 1965. The weapons were tested in ten types of aircraft to determine their suitability for use by aircraft crew members as individual weapons. None of the weapons was suitable for use as an individual weapon for all aircrew members, and there were no provisions for retaining any of the weapons on the person during bail-out. Weapon No. 1 was suitable in each area tested except for handling characteristics; Weapon No. 2 was suitable in each area tested; Weapon No. 3 was unsuitable because of its excessive length and weight; Weapon No. 4 was suitable in size, but its weight was excessive. There were no provisions to stow the weapons safely in the O-1, U-1, and U-6 airplanes. None of the weapons was compatible with the ejection seats of the OV-1 airplane. It was recommended that none of the weapons be considered suitable as the individual aircrew member's weapon; that Weapon No. 2 be considered suitable for use as an additional weapon for aircrew members; and that a quick-release clamp or device be installed on Army aircraft to retain shoulder weapons.

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FOREWORD

This test was directed by the Commanding General, US Army Test and Evaluation Command, in the following documents:

a. Letter, AMSTE-BC, Headquarters, US Army Test and Evaluation Command, 1 February 1965, subject: "Engineering and Service Test of Small Arms Weapons Systems (SAWS), USATECOM Project No.'s 8-5-0400-01 through 8-5-0400-07 (U)" (CONFIDENTIAL), with six inclosures.

b. Letter, AMSTE-BC, Headquarters, US Army Test and Evaluation Command, 30 April 1965, subject: "Small Arms Weapons Systems (SAWS) Program (U)" (CONFIDENTIAL).

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SELECTED BIBLIOGRAPHY

1. Letter, AMSTE-BC, Headquarters, US Army Test and Evaluation Command, 1 February 1965, subject: "Engineering and Service Test of Small Arms Weapons Systems (SAWS), USATECOM Project No's. 8-5-0400-01 through 8-5-0400-07 (U)" (CONFIDENTIAL), with six inclosures.
2. Letter, AMSTE-BC, Headquarters, US Army Test and Evaluation Command, 23 April 1965, subject: "Small Arms Weapons Systems (SAWS) Program (U)" (CONFIDENTIAL), with four inclosures.
3. Letter, AMCPM-RS, Headquarters, US Army Materiel Command, 28 April 1965, subject: "Army Small Arms Weapons Systems (SAWS) Program (U)" (CONFIDENTIAL).
4. Final Report, Project No. 4-4-63-08, "Stoner 63 Weapons Systems," Marine Corps Landing Forces Development Center, 29 April 1965.
5. Letter, AMSTE-BC, Headquarters, US Army Test and Evaluation Command, 30 April 1965, subject: "Small Arms Weapons Systems (SAWS) Program (U)" (CONFIDENTIAL).
6. Letter, AMCPM-RS, Headquarters, US Army Materiel Command, 4 May 1965, subject: "SAWS Information Letter Number 2."

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DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION TEST BOARD
Fort Rucker, Alabama 36362

"LIMITED SERVICE TEST

OF

SMALL ARMS WEAPONS SYSTEMS (SAWS)

FOR USE AS

INDIVIDUAL WEAPONS BY ARMY AIRCRAFT CREW MEMBERS" (U)

USATECOM PROJECT NO. 8-5-0400-06

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SECTION 1 - GENERAL (U)

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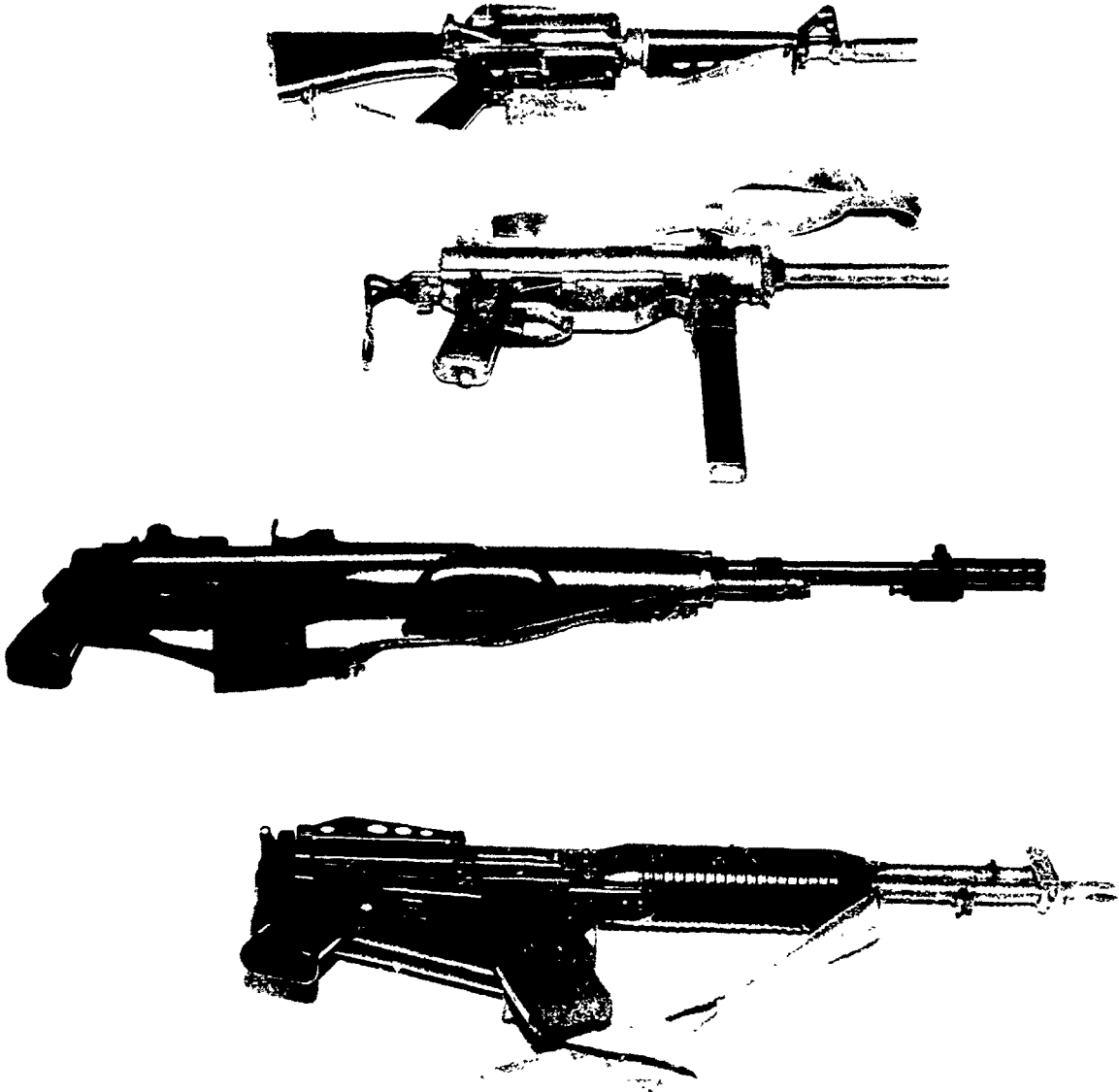


Figure 1. The candidate and comparison weapons from top to bottom: Weapon No. 2, Weapon No. 4, Weapon No. 3, and Weapon No. 1

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1.1. (U) OBJECTIVES.

1.1.1. Purpose.

To determine the suitability of the candidate weapons (Weapon No. 1 and Weapon No. 2) and the comparison weapons (Weapon No. 3 and Weapon No. 4) for use by aircraft crew members as individual weapons.

1.1.2. Test Objectives.

To determine:

- a. Handling characteristics
- b. Transportability
- c. Safety data
- d. Suitability comparison

1.2. (U) DESCRIPTION OF MATERIEL.

The candidate weapons (No. 1 and No. 2) are developmental small-arms weapons designed for use in the ground, vehicular, and aircraft-armament roles. The comparison weapons (No. 3 and No. 4) are standard small-arms weapons currently in Army use in these roles.

1.2.1. Weapon No. 1.

Weapon No. 1 is a 5.56mm, gas-operated, air-cooled, magazine-fed rifle designed for semiautomatic or full-automatic fire. This closed-bolt-type weapon is fed from a 30-round magazine. The weapon is 38.38 inches long (reducible to 26.60 inches with stock folded), 2.5 inches wide with stock extended, 3.25 inches wide with stock folded, and 9.8 inches high. The weapon weighs 9.37 pounds fully loaded. The maximum rate of fire is 700-800 rounds per minute with a maximum effective range of 460 meters as stated by the manufacturer. A bayonet is included as an accessory. Unique features are the folding stock and the commonality of parts and components with the manufacturer's family of weapons.

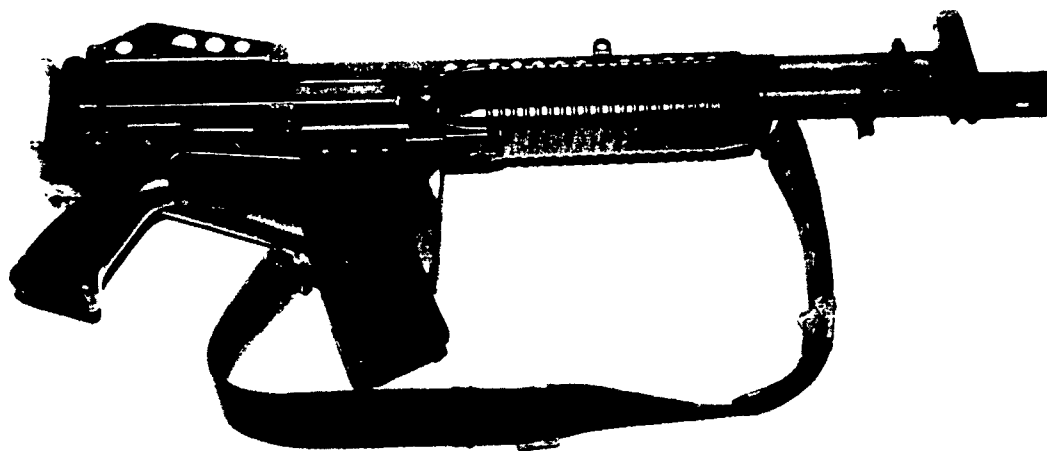


Figure 2. Weapon No. 1 with stock folded

1.2.2. Weapon No. 2.

Weapon No. 2 is a 5.56mm, gas-operated, air-cooled, magazine-fed submachine gun designed for semiautomatic or full-automatic fire. This closed-bolt-type weapon is fed from either a 20- or 30-round magazine. The weapon measures 28.7 inches long with stock extended and 26 inches long with stock retracted, 2.5 inches wide, and 10 inches high.

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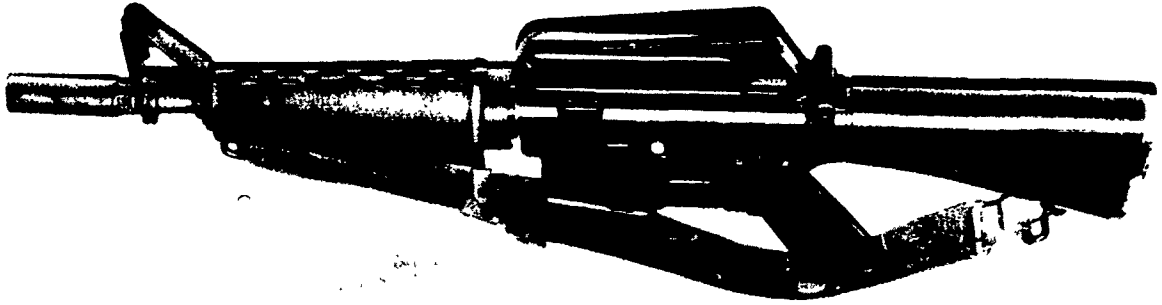


Figure 3. Weapon No. 2 with stock folded.

The weapon weighs 6.27 pounds fully loaded. It has a maximum rate of fire of 800 - 850 rounds per minute with a maximum effective range of 275 meters as stated by the manufacturer. Unique features are straight-line construction, simplicity of maintenance, a telescoping butt stock, and the commonality of parts and components with the manufacturer's family of weapons.

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Figure 4. Weapon No. 3 with stock folded.

1.2.3. Weapon No. 3.

Weapon No. 3 is a 7.62mm, gas-operated, air-cooled, magazine-fed rifle, designed for semiautomatic or full-automatic fire. This closed-bolt-type rifle feeds from a 20-round magazine. The weapon is 44.75 inches long (reducible to 34 inches with stock folded), 3.25 inches wide, and 7.5 inches high. This weapons weighs 11.9 pounds fully loaded. It is a standard M-14 rifle fitted with a folding stock.

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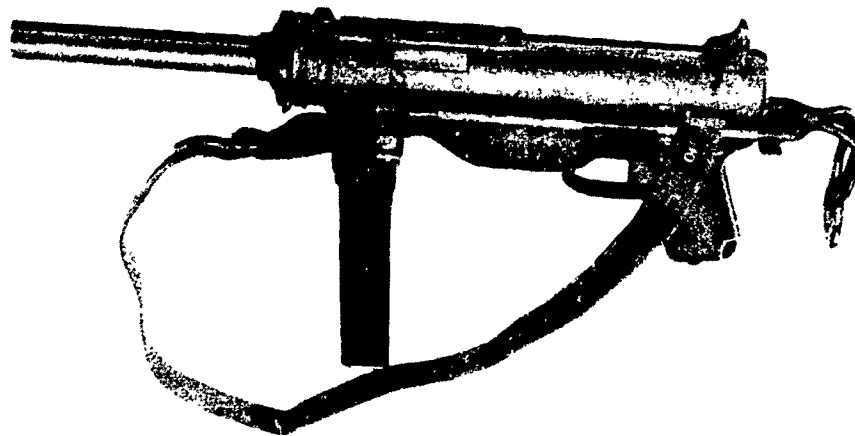


Figure 5. Weapon No. 4 with stock folded.

1.2.4. Weapon No. 4.

Weapon No. 4 is a .45-caliber, blow-back-operated, air-cooled submachine gun. This open-bolt-type weapon is fed from a 30-round magazine. The weapon is 30 inches long (reducible to 16 inches with stock retracted). It weighs 10.1 pounds and measures 3 inches wide and 12.25 inches high. It has a maximum rate of fire of 300 rounds per minute and a maximum effective range of 50 meters. The weapon is compact, rugged, and is constructed entirely of metal. The stock is a one-piece, formed steel rod which telescopes for ease of handling and is drilled and tapped for use as a cleaning rod. There are no provisions for semiautomatic fire, but because of the low cyclic rate of fire, the gunner is able to fire single rounds.

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Figure 6. Weapons with stocks extended.
Top to bottom: Weapon No. 2
Weapon No. 4
Weapon No. 3
Weapon No. 1

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1.3. (C) BACKGROUND.

1.3.1. The adoption of the 5.56mm M16/XM16E1 Rifle for US Air Force use and limited US Army use has stimulated the interest of industry in developing other weapons in this caliber for military use. In 1963-64, the Advanced Research Projects Agency (ARPA), Department of Defense, directed and coordinated Army and Marine Corps tests of the Weapon Family No. 1, a family of six 5.56mm weapons which features interchangeability of components. Army tests were limited to those necessary to determine the military potential of the system, while the Marine Corps conducted service and troop tests. The results of the Army tests indicated that the weapons of Family No. 1 were accurate and of good basic design, but that the machine guns appeared to be marginal in operating power and deficient in barrel life.

1.3.2. In November 1964, US Army Materiel Command (USAMC) requested that US Army Test and Evaluation Command (USATECOM) prepare plans for engineering and service test of the Weapon Family No. 1. Headquarters, USATECOM, issued a directive but suspended planning in December 1964 as it became apparent that this weapon family would be tested as a part of a larger, more comprehensive program.

1.3.3. On 17 December 1964, the Chief of Staff, US Army, directed a review and evaluation of small arms weapon systems either in being or feasible for adoption within the time frame 1965 - 1980. The objective of this program is to develop background upon which to base a program for replenishment of stocks of small arms as the inventory drops below requirements, and/or replacement of current small arms with weapons of demonstrated superiority.

1.3.3.1. The US Army Combat Developments Command (USACDC) in coordination with USAMC and US Continental Army Command (USCONARC) is responsible for:

- a. Exploring doctrine and identifying areas affected by weapons characteristics.
- b. Defining characteristics and standards against which engineering and service tests of candidate weapons will be conducted.
- c. Developing doctrine (tactics and techniques) for each candidate weapon or system to exploit its performance characteristics fully.

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- d. Conducting troop tests and field experiments as required.
- e. Conducting parametric design and cost effectiveness studies.
- f. Conducting a study to develop implications of adopting each candidate system and its associated doctrines; submission of recommendations as to preferred systems to Department of the Army (DA).

1.3.3.2. USAMC (in coordination with USACDC and USCONARC) is responsible for:

- a. Submission of recommendations as to candidate weapons and systems to be procured for engineering, service, and troop tests.
- b. Procurement of weapons, ammunition, and related materiel for engineering, service, and troop tests.
- c. Assistance and input to USACDC in discharging the responsibilities of that command outlined above.

1.3.3.3. The USATECOM was responsible for planning, execution, and reporting of engineering and service tests to be conducted under this program. The US Army Ballistic Research Laboratories and the US Army Human Engineering Laboratories supported the testing activity as directed by higher authority. The objectives of engineering and service tests to be conducted by USATECOM under this program are to determine:

- a. The technical properties, performance, capabilities, and limitations of each of the candidate weapons and systems, in comparison with those of 5.56mm and 7.62mm small arms weapons currently in Army use in the ground, vehicular, and aircraft-armament roles.
- b. The degree to which the candidate weapons and weapon systems fulfill requirements as expressed by the USACDC.
- c. The suitability of the candidate weapons and weapons systems for Army use, in comparison with counterpart small arms weapons and systems presently in Army use.

1.3.3.4. The USAMC Project Manager, Rifles, selected and procured Weapons No. 1 and No. 2 for engineering and service test.

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1.4. (U) FINDINGS.

1.4.1. Weapon No. 1 was suitable in each area tested except for handling characteristics and lack of provisions to secure the weapon firmly to the aircrew member in case of bailout. While aircraft maintenance was being performed, the slung weapon, because of its length, snagged on aircraft components, which could have resulted in damaged parts or personnel injury.

1.4.2. Weapon No. 2 was suitable in each area tested except for lack of provisions to secure the weapon firmly to the aircrew member in case of bailout. Its light weight and short length offered advantages in ease of handling, transportability, and safety.

1.4.3. Weapon No. 3 was unsuitable due to its excessive length and weight and lack of provisions to secure the weapon firmly to the aircrew member in case of bailout.

1.4.4. Weapon No. 4 was suitable in size, but its weight was excessive. There were no provisions to secure the weapon firmly to the aircrew member in case of bailout.

1.4.5. There were no provisions to stow the weapons safely in any of the aircraft tested.

1.4.6. None of the weapons was compatible with the OV-1 airplane because of the incompatibility of the weapon with the ejection seats.

1.5. (U) CONCLUSIONS.

1.5.1. None of the weapons tested is suitable for use as the individual Army aircrew member's weapon.

1.5.2. Weapon No. 2 is the most suitable of the weapons tested and could be used as an additional aircrew member's weapon.

1.5.3. A quick-release device is necessary in all Army aircraft if a shoulder weapon is to be transported as an additional weapon.

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1.6. (U) RECOMMENDATIONS.

It is recommended that:

- 1.6.1. None of the weapons be considered suitable as the individual aircrew member's weapon.
- 1.6.2. Weapon No. 2 be considered suitable for use as an additional weapon for aircrew members.
- 1.6.3. A quick-release device be installed in Army aircraft to retain shoulder weapons if they are to be transported as extra weapons.

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SECTION 2 - DETAILS AND RESULTS OF SUBTESTS (U)

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2.0. (U) INTRODUCTION.

2.0.1. Scope.

The service test was conducted at Fort Rucker, Alabama, during the period 1 July - 15 August 1965. Firing of the candidate and comparison weapons was not required. The weapons were tested in the following aircraft (an OH-6A Helicopter was not available during the test period):

- a. O-1 airplane
- b. U-1 airplane
- c. U-6 airplane
- d. U-8 airplane
- e. CV-2 airplane
- f. OV-1 airplane
- g. OH-13 helicopter
- h. OH-23 helicopter
- i. UH-1 helicopter
- j. CH-47A Helicopter

2.0.2. Subtests.

The subtests below were performed identically for each weapon except where a safety hazard was evident for one or all test items.

2.1. (U) HANDLING CHARACTERISTICS.

2.1.1. Objective.

To determine the handling characteristics of the candidate and comparison weapons.

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2.1.2. Method.

Operations as outlined in paragraphs 2.1.2.1 through 2.1.2.4 were accomplished in the aircraft listed in paragraph 2.0.1. The handling characteristics of the test items were evaluated and recorded. Advantages and disadvantages of each weapon and the time required to accomplish these operations were recorded.

2.1.2.1. Crew members boarded the aircraft and stowed their individual weapons as for in-flight operations.

2.1.2.2. Crew members disembarked from the aircraft with their individual weapons under normal and simulated emergency situations.

2.1.2.3. Crew members performed routine ground operations while carrying their individual weapons. Consideration was given to adequacy of the grips, handles, and slings used during the carrying, pointing, and simulated firing roles.

2.1.2.4. Crew members changed magazines to simulate loading and unloading.

2.1.3. Results.

2.1.3.1. There were no marked disadvantages with any of the weapons noted during boarding except that Weapon No. 3 was too long to be safely carried in the OH-13 and OH-23 helicopters. Weapon No. 2 and Weapon No. 4 were the easiest to handle while boarding all aircraft.

2.1.3.2. There were no specific provisions in any of the aircraft tested for securing the weapons. However, provisional means were used for securing the weapons in those aircraft which had available space.

2.1.3.3. No significant problems arose during off-loading under normal conditions. Under simulated emergency conditions, however, the sling on Weapon No. 1 with folded stock and Weapon No. 4 often tangled in the seat belt in the OH-13 and OH-23 helicopters.

2.1.3.4. Weapons No. 1 and No. 3 were awkward to handle during routine maintenance because of their length. The sling allowed the weapon to slide off the shoulder and catch on protruding parts of the aircraft, especially during rotor-head inspection. Weapon No. 2 was the least

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cumbersome to handle during maintenance operations. No problems were noted with any of the weapons during the pointing and simulated firing roles.

2.1.3.5. The magazine was difficult to remove from Weapon No. 4. Left-handed personnel had difficulty in removing magazines from all weapons.

2.1.3.6. Boarding and debarking times are shown in appendix I.

2.1.4. Analysis.

2.1.4.1. The handling and physical characteristics of Weapon No. 2 were the most suitable. Maintenance operations by personnel handling this weapon were slowed only slightly, with no impairment of quality.

2.1.4.2. Should a crew member be required to bailout of an aircraft or hastily evacuate it in an emergency, there is little likelihood that he would have access to or would retain the weapon.

2.2. (U) TRANSPORTABILITY.

2.2.1. Objective.

To determine the transportability of the candidate and comparison weapons with ammunition magazines.

2.2.2. Method.

Each crew member stowed his individual weapon with ammunition magazines in the test aircraft in a location and a manner most suitable considering available space, accessibility, and tie-downs. The advantages and disadvantages of in-flight transportability were determined and recorded (figures 9 through 26).

2.2.3. Results.

Detailed results are tabulated in appendix I.

2.2.3.1. Those aircraft whose crews included a crew chief or flight engineer had adequate room for weapon storage. While performing their duties in flight, the crew chiefs stowed their weapons under their designated seats.

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2.2.3.2. The length of Weapon No. 3 prevented it from being stowed in either the OH-13 or the OH-23. The copilot/observer had to hold the pilot's and copilot's weapons to prevent interference with flight controls.

2.2.3.3. There were no accessible provisions to stow the weapons in the O-1, U-1, and U-6 airplanes.

2.2.3.4. Because of the ejection seat and the confining cockpit, none of the test weapons was transported in the OV-1. The weapons could not be stowed in a location in the cockpit which would not interfere with either control movement or ejection procedure.

2.2.4. Analysis.

A quick-release clamp or device is necessary in all Army aircraft in which a shoulder weapon will be carried. See figures 7 and 8.

2.3. (U) SAFETY DATA.

2.3.1. Objective.

To determine unsafe features and operational data.

2.3.2. Method.

Safety aspects of each weapon during boarding, debarking, in-flight, and weapon-loading operations were observed and reported as applicable. Consideration was given to weapon-safety devices.

2.3.3. Results.

2.3.3.1. The slings of Weapon No. 1 with folded stock and Weapon No. 4 often became entangled with the seat belt of the OH-13 and OH-23 helicopters during simulated emergency debarking. The length of Weapons No. 1 and 3 made carrying these weapons at sling arms difficult and allowed the weapons to catch on aircraft components during routine maintenance.

2.3.3.2. When the test weapons were transported by crew members in the O-1, U-1, and U-6 airplanes, the weapons, when not restrained, interfered with the aircraft flight controls.

2.3.3.3. No problems were encountered with the aircraft weapon-safety devices.

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2.3.4. Analysis.

Use of the ejection seat in the Mohawk prevents the use of a shoulder weapon as a personal weapon by an OV-1 crew member. The "G" forces exerted on the aviator during ejection would cause him to lose the weapon and could result in injury.

2.4. (U) SUITABILITY COMPARISON.

2.4.1. Objective.

To determine the comparative suitability of candidate and comparison weapons for use as an individual weapon by aircraft crew members.

2.4.2. Method.

2.4.2.1. The results obtained in tests of handling characteristics, transportability, and safety were compared, noting advantages and disadvantages of each weapon. Utilizing the data tabulated, the following were qualitatively determined for each aircrew member:

- a. The weapon found most suitable.
- b. The weapon found suitable.
- c. The weapon found unsuitable.

2.4.2.2. For the weapons found suitable, the following were determined:

- a. The number of rounds/magazines to be carried.
- b. Weapon accessories required.
- c. Weapon storage provisions which would increase suitability.

2.4.3. Results.

2.4.3.1. The following is a comparison of the weapons tested:

<u>Aircraft</u>	<u>Most Suitable</u>	<u>Suitable</u>	<u>Unsuitable/Remarks</u>
O-1	Weapon No. 2	Weapon No. 1 Weapon No. 4	Weapon No. 3. /Inadequate stowage space.

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<u>Aircraft</u>	<u>Most Suitable</u>	<u>Suitable</u>	<u>Unsuitable/Remarks</u>
UH-1	Weapon No. 2	Weapon No. 1 Weapon No. 3 Weapon No. 4	
U-1	Weapon No. 2	Weapon No. 1 Weapon No. 3 Weapon No. 4	
U-6	Weapon No. 2	Weapon No. 1 Weapon No. 3 (increased accuracy) Weapon No. 4	
U-8	Weapon No. 2	Weapon No. 1 Weapon No. 3 Weapon No. 4	
CV-2	Weapon No. 2	Weapon No. 1 Weapon No. 3 Weapon No. 4	
OV-1			All weapons. /Ejection seat and inadequate stowage.
OH-13	Weapon No. 2	Weapon No. 1 Weapon No. 4	Weapon No. 3. /Unable to stow because of excessive length.
OH-23	Weapon No. 2	Weapon No. 1 Weapon No. 4	Weapon No. 3. /Unable to stow because of excessive length.
CH-47	Weapon No. 2	Weapon No. 1 Weapon No. 3 Weapon No. 4	

2.4.3.2. A quick-disconnect device mounted in the aircraft would enhance the suitability of each weapon. The following were determined:

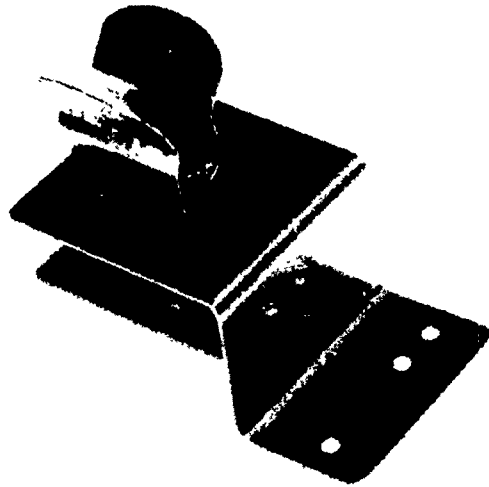
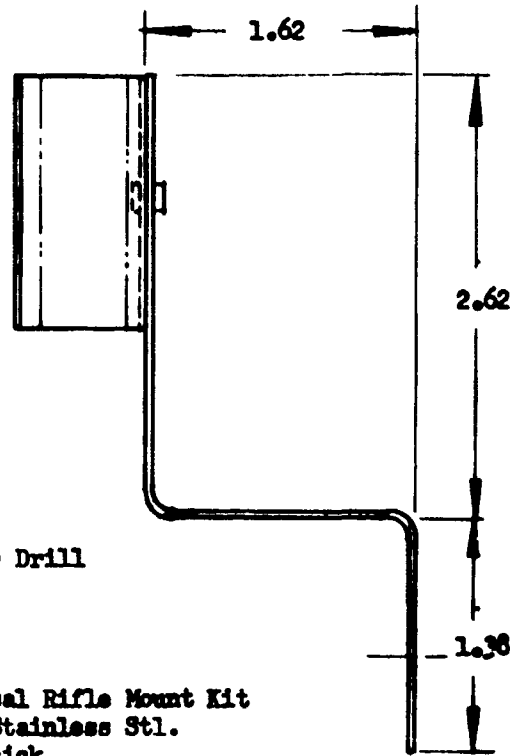
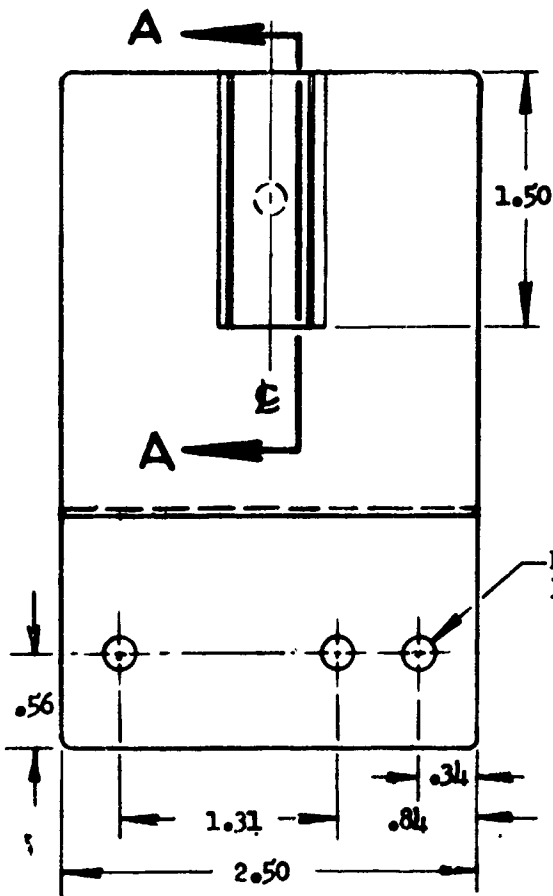
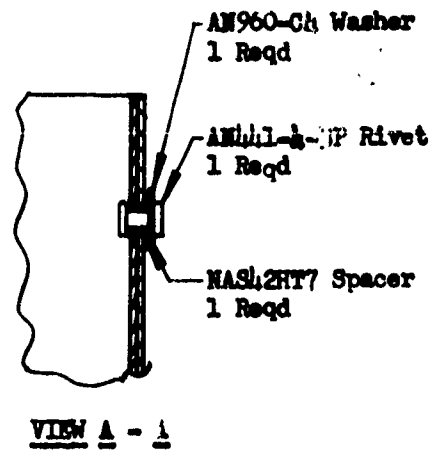
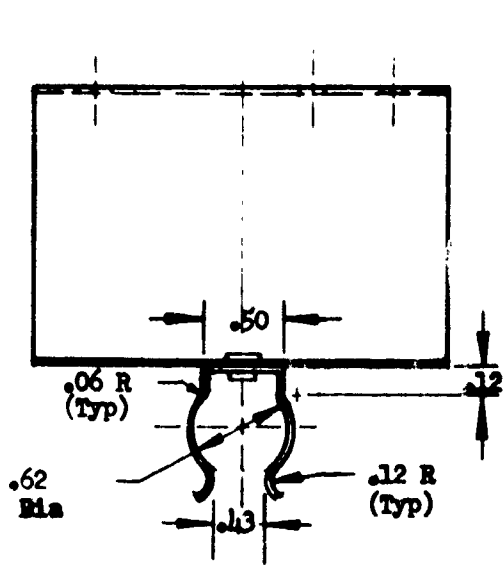


Figure 7. A locally-fabricated quick-release device.



No. 10 (.193) Drill
3 Req'd

Universal Rifle Mount Kit
Matl: Stainless Stl.
.040 thick

Full Scale

PAMI Dwg No. 10,193

Figure 8

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<u>Weapon</u>	<u>Number and Size of Magazines To Be Carried</u>	<u>Accessories</u>
No. 1	Three 30-round magazines	Three ammunition pouches
No. 2	Three 30-round magazines	Three ammunition pouches
No. 3	Four 20-round magazines	Four ammunition pouches
No. 4	Three 30-round magazines	Three ammunition pouches

2.4.4. Analysis.

2.4.4.1. Weapon No. 2 was the most suitable of the test weapons for use in all of the aircraft tested because of its weight, length, and portability. This weapon was easily transported at sling arms. No problems were noted during routine maintenance, and maintenance personnel preferred Weapon No. 2 over the others.

2.4.4.2. Weapon No. 3 was suitable in most of the aircraft tested. The size and effective range of the 7.62mm projectile make this weapon desirable, but the weight and length of the weapon prohibit its use in some Army aircraft.

2.4.4.3. Weapon No. 1 was suitable for use in most of the aircraft tested, but was bulky and long. If this weapon were fitted with a telescoping stock, it would be a more suitable aircrew member weapon, if an additional weapon is transported.

2.4.4.4. Weapon No. 4 was suitable in size, but its weight was excessive.

2.4.4.5. Suitability of all weapons would be enhanced by the fabrication of a quick-disconnect device mounted in the aircraft. Such a device would prevent a weapon from sliding or moving during aircraft maneuvers and reduce the possibility of interfering with aircraft flight controls (figures 7 and 8).

2.4.4.6. Because of the light weight of the candidate weapons, three 30-round magazines with ammunition-carrying pouch would be ideal for each crew member. No other accessories were required.

2.4.4.7. Weapon stowage provisions were not determined during this portion of the test, since all weapons are unsuitable as individual aircrew member's weapons.

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SECTION 3 - TEST DATA (U)

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Boarding and Debarking Times (U)

<u>Aircraft</u>	<u>Weapon</u>	<u>Boarding Time (Seconds)</u>	<u>Debarking Time (Seconds)</u>	<u>Emergency Debarking (Seconds)</u>
O-1	No. 1	29	18	14
	No. 2	28	19	15
	No. 3	30	20	13
	No. 4	27	18	15
U-1	No. 1	41	21	15
	No. 2	40	19	15
	No. 3	43	24	18
	No. 4	41	22	14
U-6	No. 1	44	24	17
	No. 2	41	22	15
	No. 3	47	27	19
	No. 4	42	22	17
U-8	No. 1	51	38	26
	No. 2	49	36	23
	No. 3	53	31	21
	No. 4	47	39	25
CV-2	No. 1	106	99	76
	No. 2	113	112	75
	No. 3	109	111	75
	No. 4	112	107	77
OV-1	See Note One			
OH-13	No. 1	35	24	17
	No. 2	31	21	13
	No. 3	See Note Two		
	No. 4	32	21	14
OH-23	No. 1	33	21	16
	No. 2	See Note Two		
	No. 3	37	21	14
	No. 4	29	23	13

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Boarding and Debarking Times (U) (continued)

<u>Aircraft</u>	<u>Weapon</u>	<u>Boarding Time (Seconds)</u>	<u>Debarking Time (Seconds)</u>	<u>Emergency Debarking (Seconds)</u>
UH-1	No.	32	21	13
	No. 2	29	20	11
	No. 3	37	21	14
	No. 4	29	23	13
CH-47	No. 1	48	46	34
	No. 2	49	42	32
	No. 3	49	49	37
	No. 4	51	47	29

Note One: Weapons were not tested in the OV-1 because of the ejection seat and inadequate stowage.

Note Two: Because of its length, Weapon No. 3 could not be transported safely in the OH-13 and OH-23 helicopters.

Note Three: Boarding time without weapons averaged one to two seconds less than with weapons.

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Weapon Stowage (U)

<u>Aircraft</u>	<u>Weapon</u>	<u>Stowage Location</u>	<u>Remarks</u>
O-1	All	Both weapons behind copilot's seat.	Not readily accessible or reliably secured.
U-1	All	Both weapons hung on back of pilot's and copilot's seats.	Not reliably secured.
U-6	All	Both weapons hung on back of pilot's and copilot's seats.	Not reliably secured.
U-8	All	In baggage compartment behind rear seat.	Not reliably secured.
CV-2	All	Electronic compartment.	Not reliably secured.
OV-1	All		Not compatible.
OH-13	All except No. 3	Ends of seat bench upright against fire-wall.	Secured with seat belts. Not reliably secured. No. 3 too long.
OH-23	All except No. 3.	Ends of seat bench upright against fire-wall.	Secured with seat belts: Not reliably secured. No. 3 too long.
UH-1	All	Hung on back of pilot's and copilot's seats by sling.	Can also be laid on floor to right of both seats. Not reliably secured.
CH-47	All	Hung on back of pilot's and copilot's seats by sling.	Can also be laid on floor to right of both seats. Not reliably secured.

NOTE: All aircraft that utilize a crew chief or flight engineer have several stowage points for an individual weapon, but the points are not reliably secured.

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Figure 9. Weapon No. 1 stowed in a U-1 airplane.

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Figure 10. Weapon No. 2 stowed in a U-1 airplane.

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Figure 11. Weapon No. 3 stowed in a U-1 airplane.

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Figure 12. Weapon No. 4 stowed in a U-1 airplane.



Figure 13. Weapon No. 1 stowed in a U-6 airplane.

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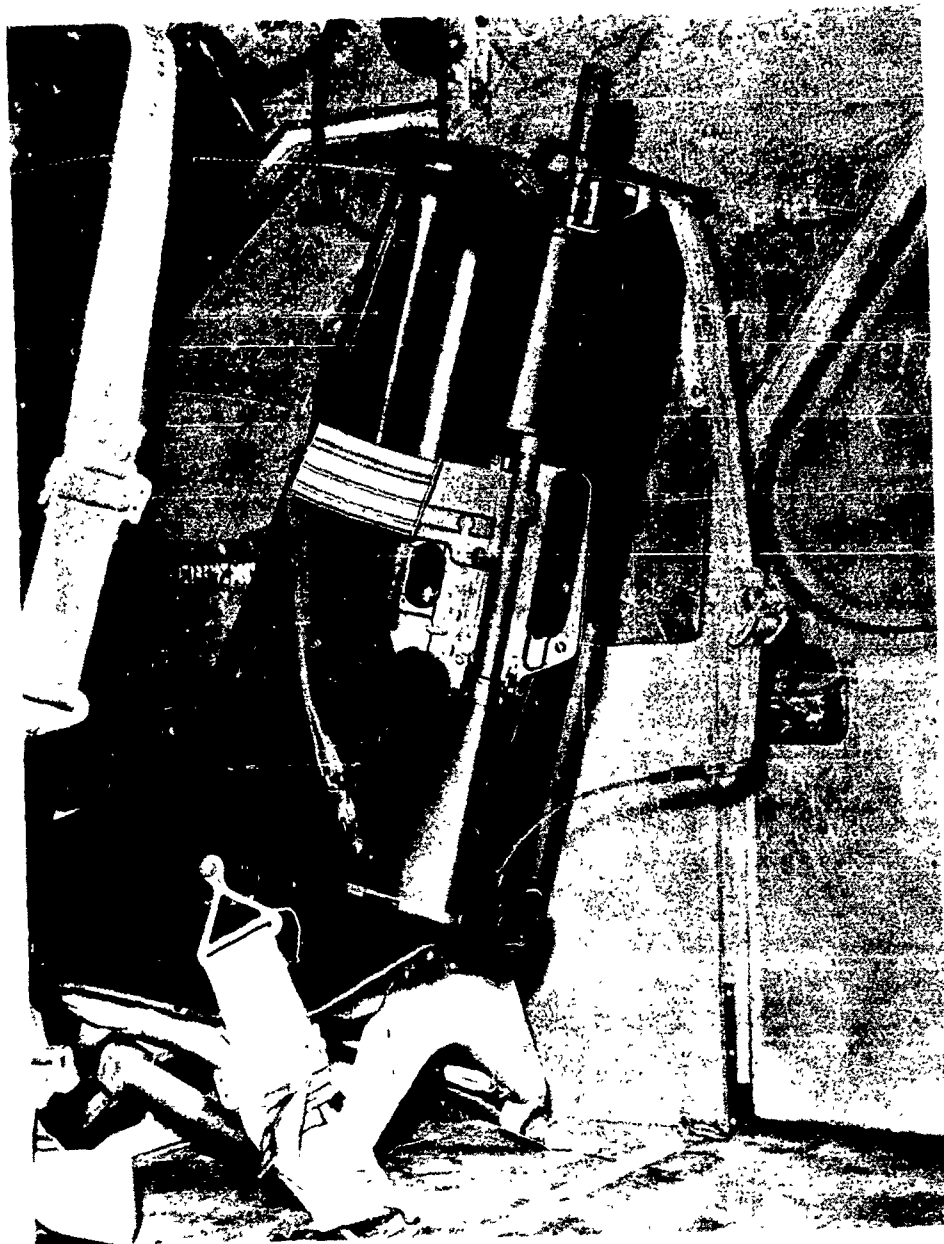


Figure 14. Weapon No. 2 stowed in a U-6 airplane.

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Figure 15. Weapon No. 3 stowed in a U-6 airplane.

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Figure 16. Weapon No. 4 stowed in a U-6 airplane.

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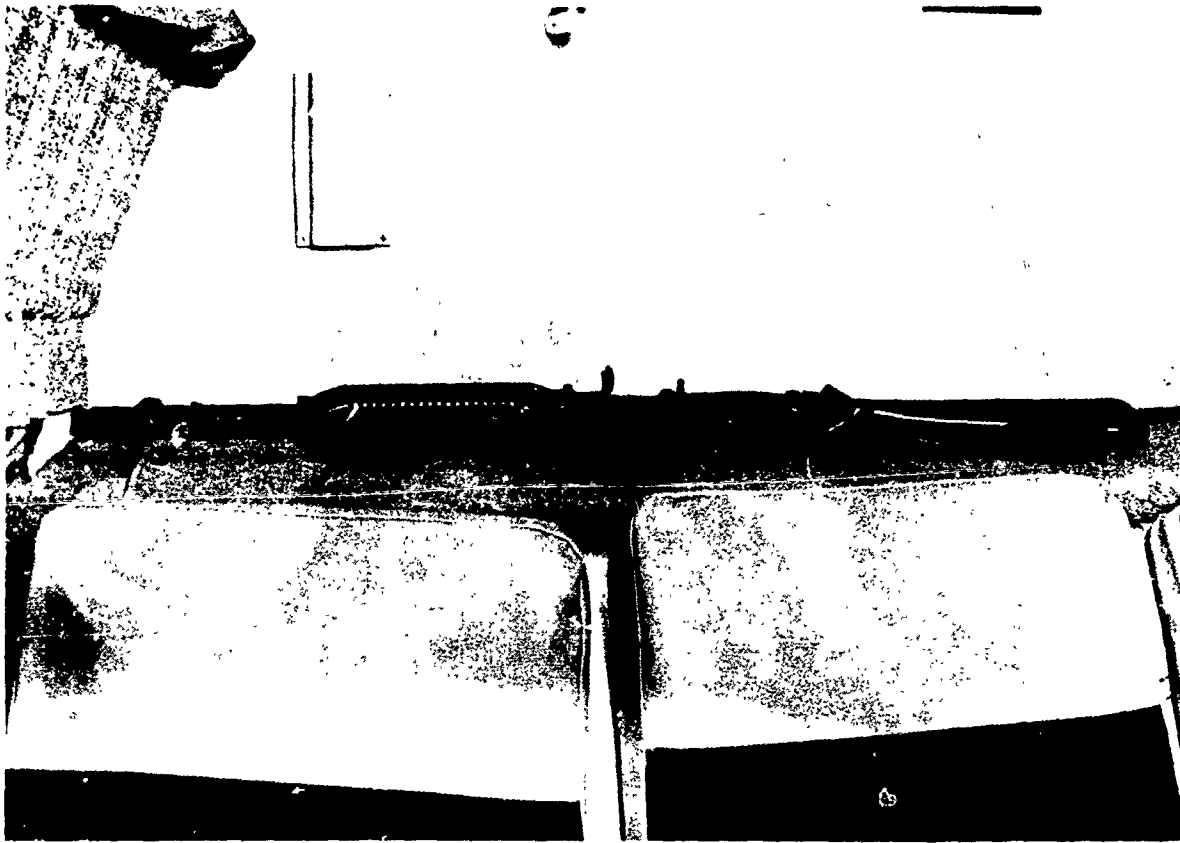


Figure 17. Weapon No. 1 stowed in a J-8 airplane.

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Figure 18. Weapon No. 2 stowed in a U-8 airplane.

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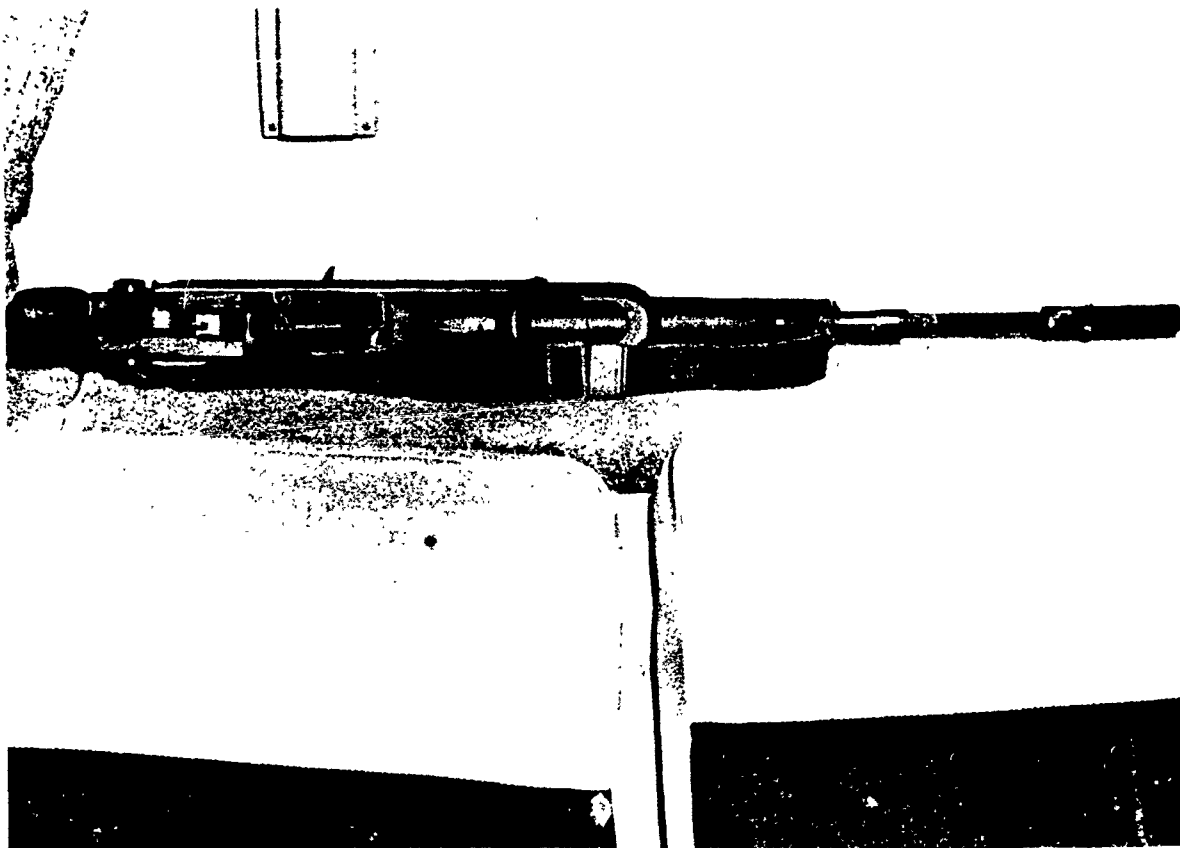


Figure 19. Weapon No. 3 stowed in a U-8 airplane.

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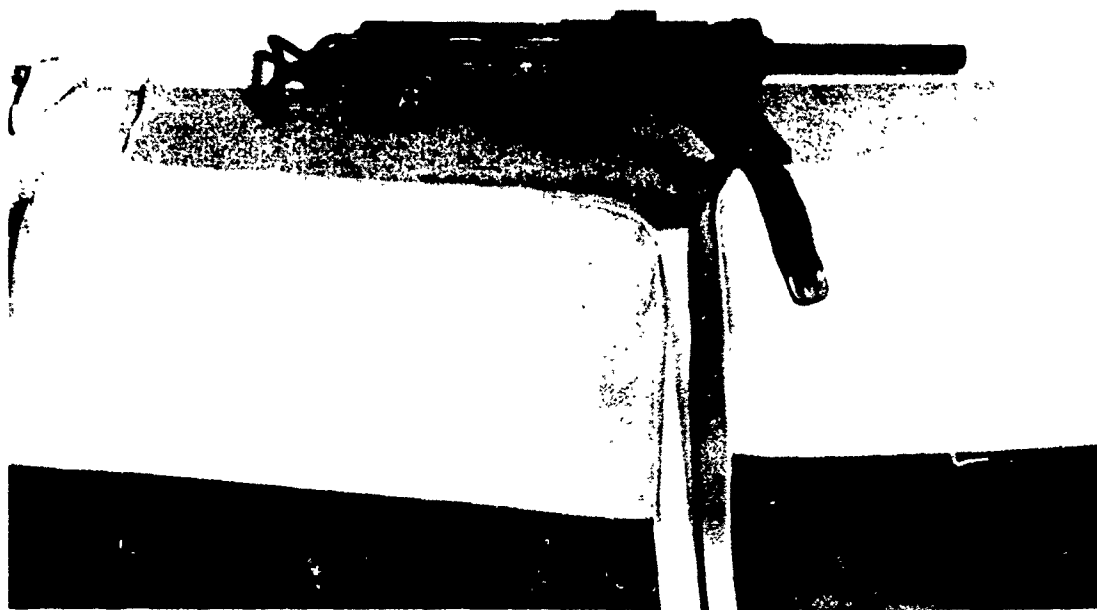


Figure 20. Weapon No. 4 stowed in a U-8 airplane.

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Figure 21. Weapon No. 1 stowed in an OH-13 helicopter.

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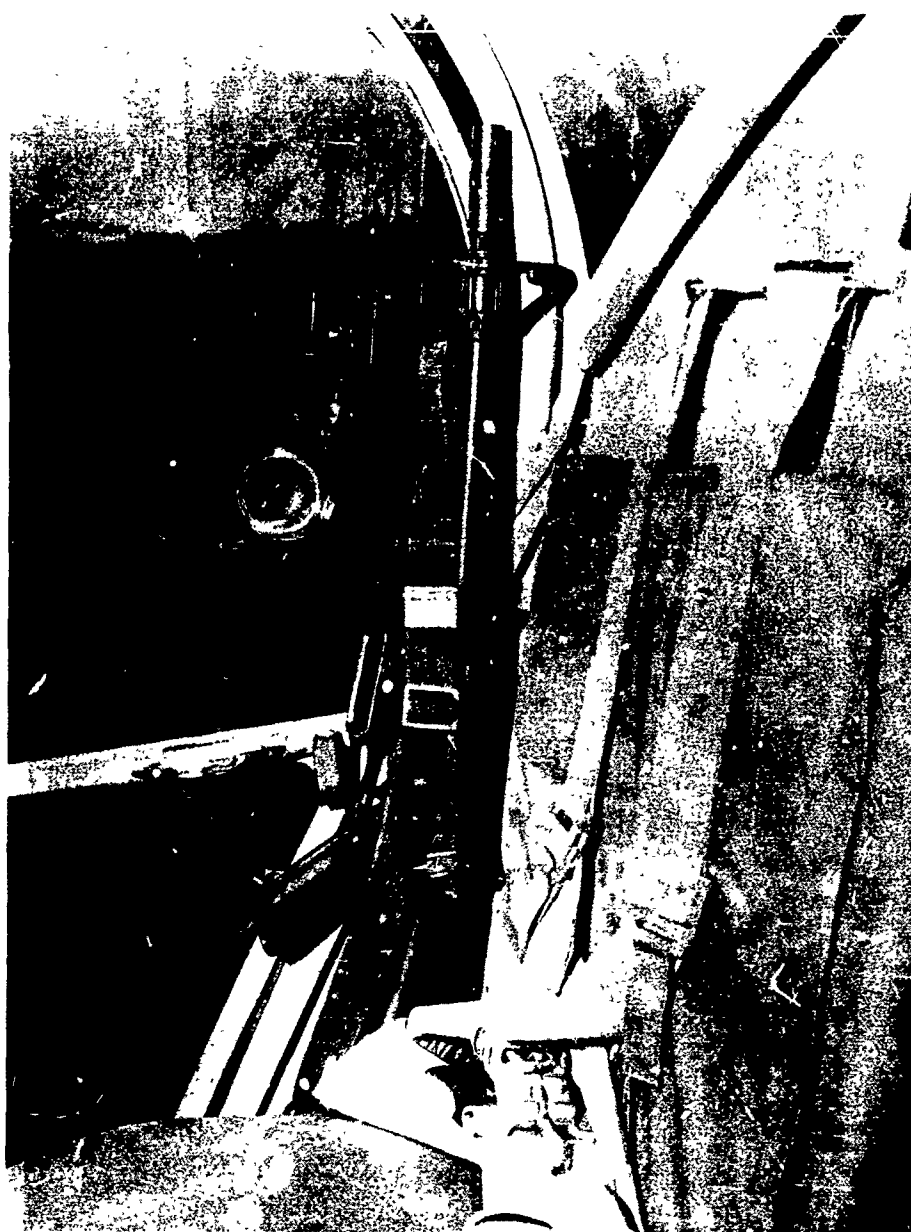


Figure 22. Weapon No. 2 stowed in an OH-13 helicopter.

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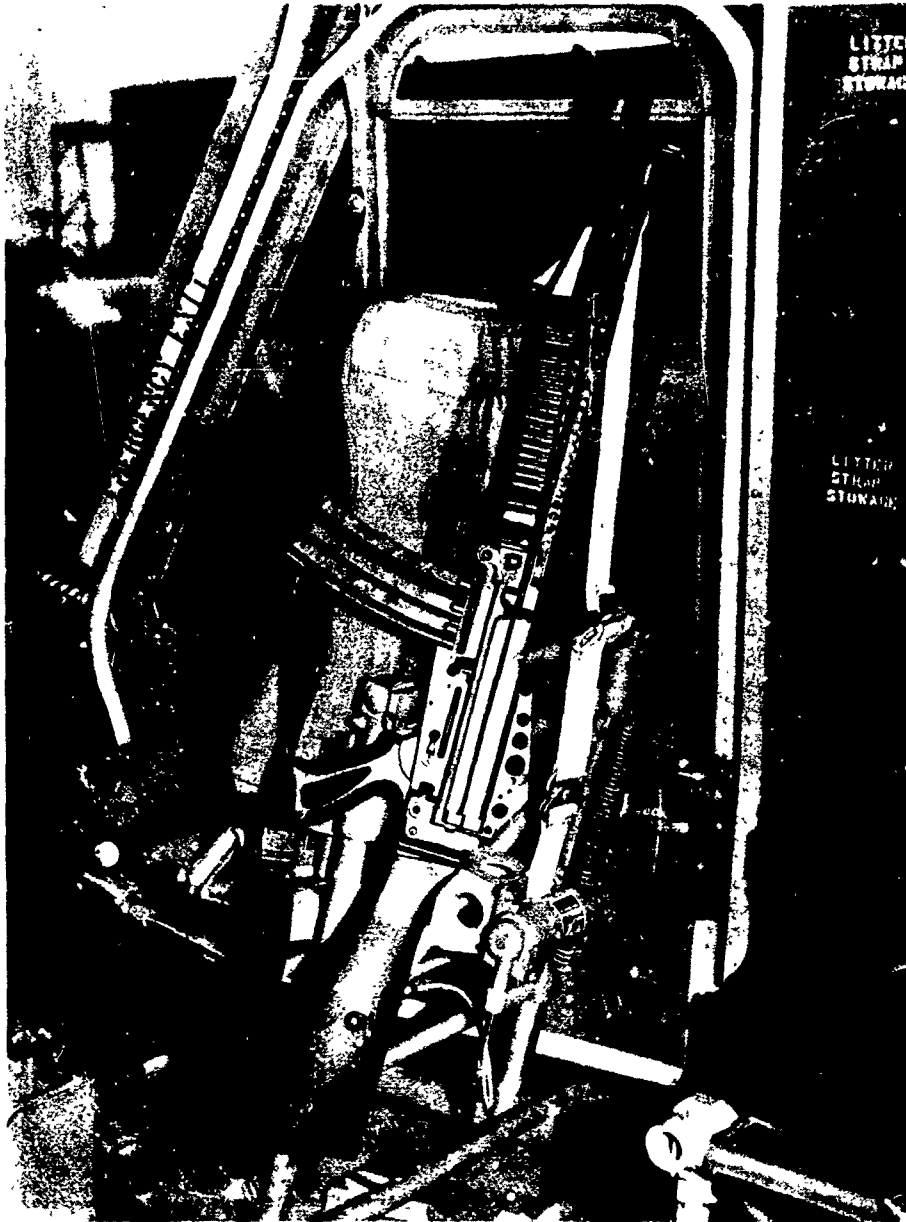


Figure 23. Weapon No. 1 stowed in a UH-1 helicopter.

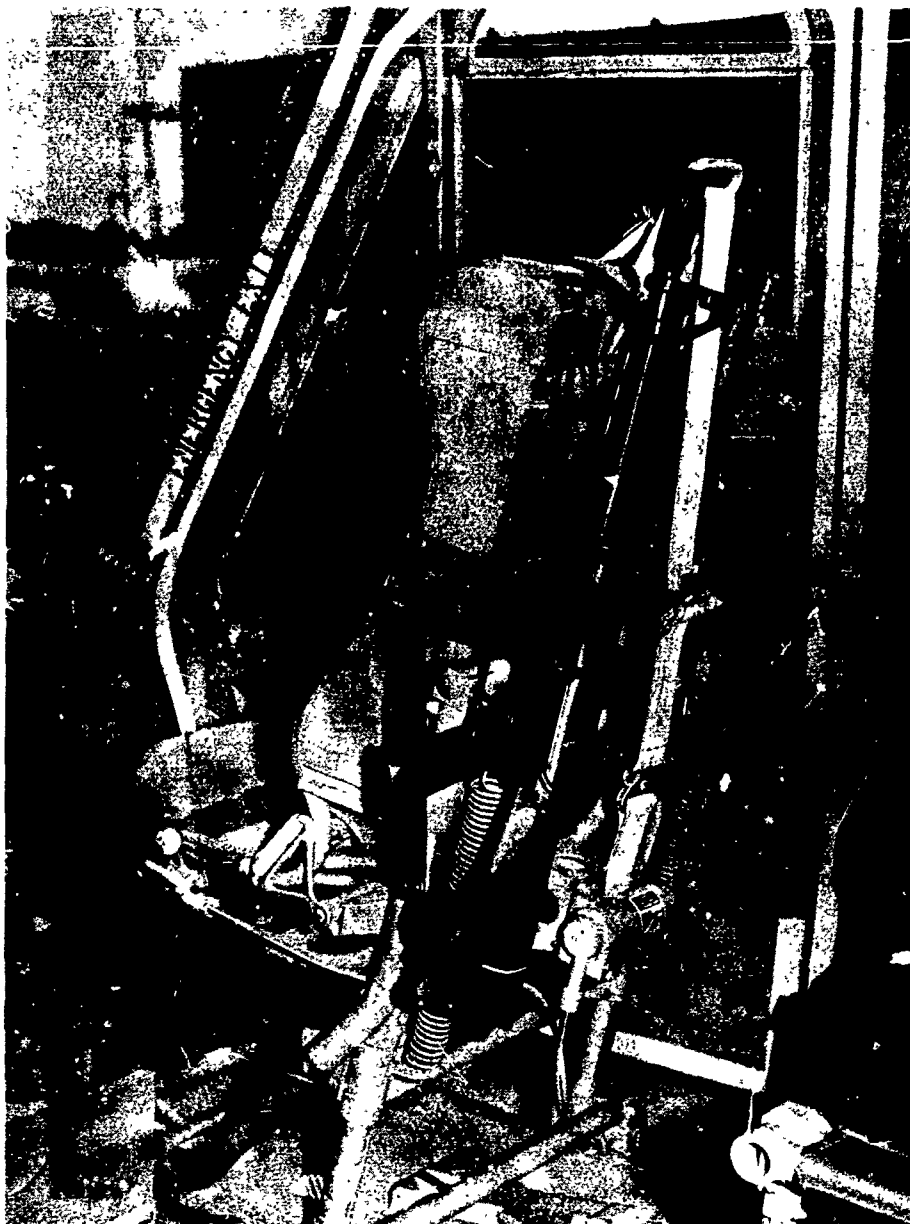


Figure 24. Weapon No. 2 stowed in a UH-1 helicopter.

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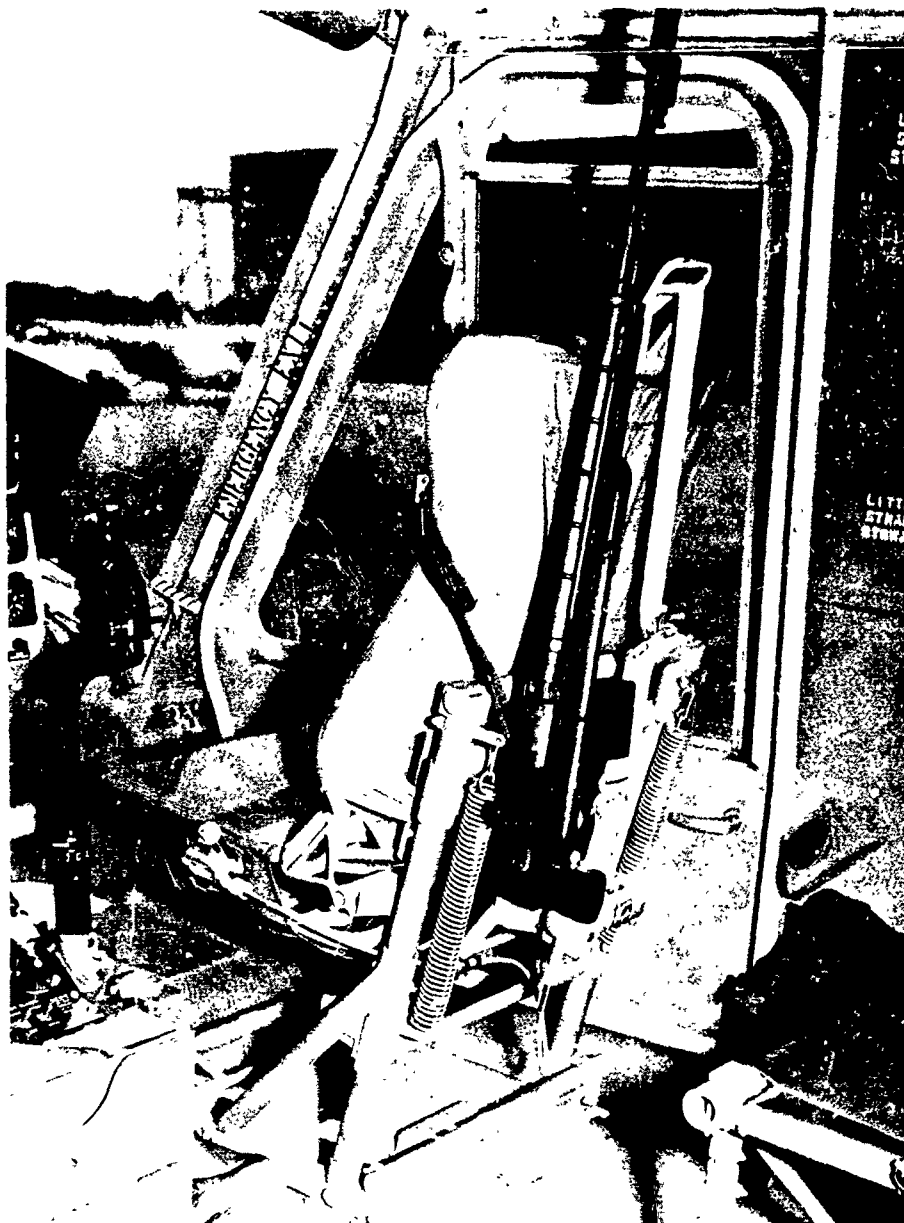


Figure 25. Weapon No. 3 stowed in a UH-1 helicopter.

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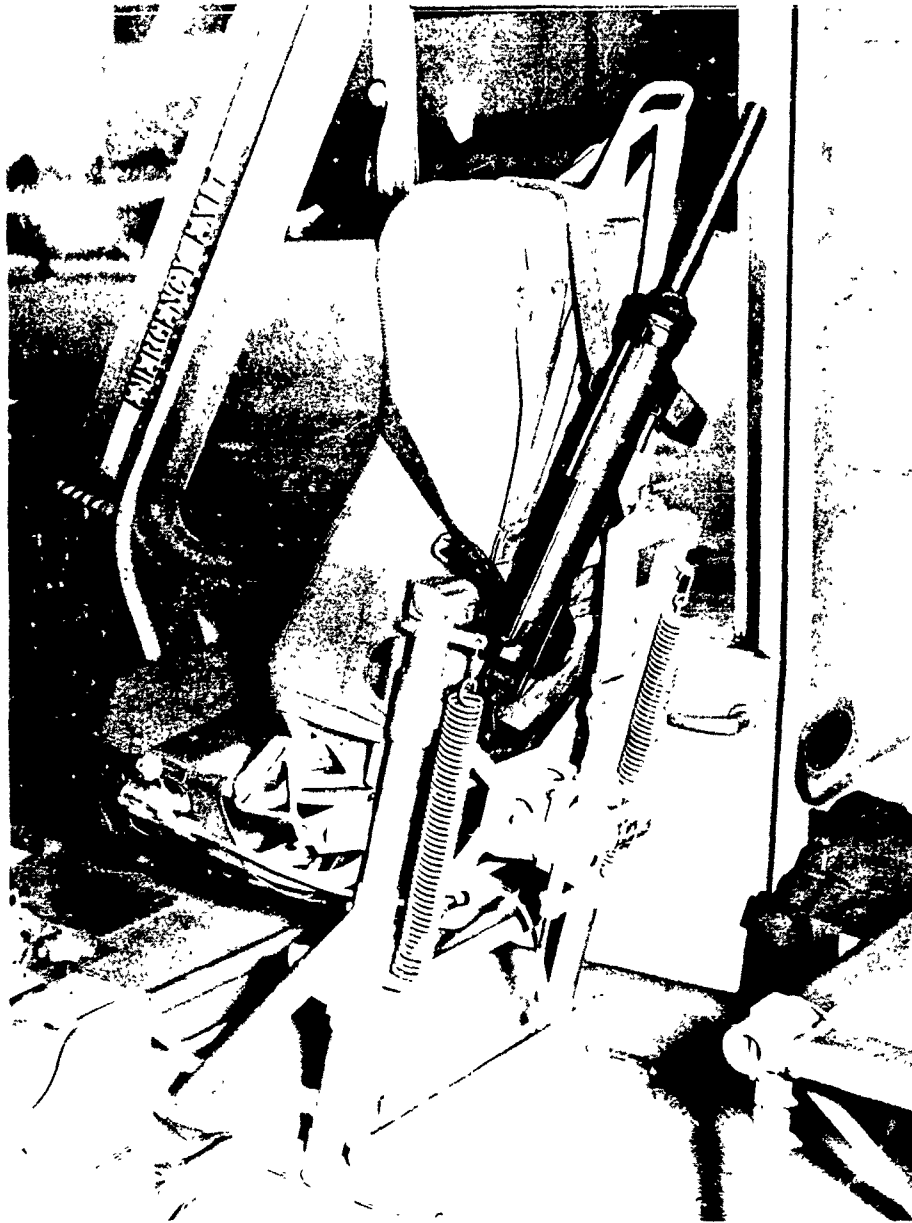


Figure 26. Weapon No. 4 stowed in a UH-1 helicopter.

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SECTION 4 - DISTRIBUTION (U)

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CODE SHEET

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Family of Weapons

Stoner 63 System
Colt System

Weapon Family No. 1
Weapon Famil, No. 2

Weapon Nomenclature

Code Designation

- a. Stoner 63 Carbine S-C
- b. Colt CAR-15 Submachine
Gun C-SMG
- c. M14E1 Type III Rifle
- d. M-3A1 Submachine Gun

Weapon No. 1
Weapon No. 2
Weapon No. 3
Weapon No. 4

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