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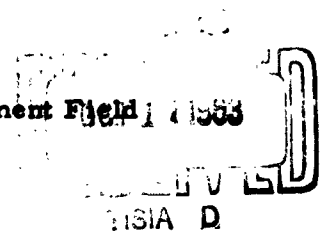
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**ADVANCED RESEARCH PROJECTS AGENCY
Washington 25, D. C.**

20 August 1962

**To: Addressees
From: OSD/ARPA
Subject: Field Test Report, AR-15 Armalite Rifle
Enclosure: Final Report, OSD/ARPA Research and Development Field Unit - Vietnam**



AS AD No. 343778

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1. The AR-15 Armalite rifle has been subjected to a comprehensive field evaluation under combat conditions in Vietnam. The results of this evaluation, contained in the attached report, are forwarded for your information.
2. Because of the controversy which has surrounded this weapon, particular care was exercised to insure that the tests were objective, thorough and adequately documented, and to insure that valid data and conclusions were derived therefrom.
3. The suitability of the AR-15 as the basic shoulder weapon for the Vietnamese has been established. For the type of conflict now occurring in Vietnam, the weapon was also found by its users and by MAAG advisors to be superior in virtually all respects to the - a. M-1 rifle, b. M-1 and M-2 Carbines, c. Thompson Sub-machine gun and d. Browning Automatic rifle.
4. Test data derived from recent Service evaluations of the AR-15 in the U.S. support the technical conclusions of the report. The Central Intelligence Agency has conducted similar tests; it is understood that the results of that evaluation are essentially identical to those contained in the report.
5. Photographs 7 and 8, Appendix D, pictures of Viet Cong KIA showing the wound effect of the AR-15 bullet, were deleted from the attached report by this office.
6. The conclusions and recommendations of this report have been made available to COMUSMACV and CINCPAC by the originator and to DOD and CIA by OSD/ARPA.

R. C. Phelps
R. C. Phelps

Asst Director, for AGILE

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RESEARCH & DEVELOPMENT FIELD UNIT
Advanced Research Projects Agency
Office of the Secretary of Defense
APO 143, San Francisco, California

MACRD

31 July 1962

SUBJECT: Report of Task No. 13A, Test of Armalite Rifle, AR-15 (U)

THRU. Commander (3)
U. S. Military Assistance Command, Vietnam
APO 143, San Francisco, California

TO: Commander in Chief, U. S. Pacific (3)
c/o Fleet Post Office
San Francisco, California

Advanced Research Projects Agency (3)
Office of the Secretary of Defense
The Pentagon
Washington 25, D. C.

1. (C) Forward herewith is the final report of the test of the Armalite Rifle (AR-15). It should be noted that the report proper in its present form reflects the views of the U. S. element of CDTC only. It is being handled in this fashion to avoid the inference that the Vietnamese, in seeking a newer weapon, might have influenced the recommendations in the report.

2. (C) However, combat evaluations in Vietnam are necessarily joint ventures and the results must be made known to appropriate GVN authorities. This report will now be coordinated with the Vietnamese element in CDTC and will be officially closed out as a combined report. It is thought that this is unlikely to

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result in any substantive change in the report as now written.

1 Incl.
AR-15 Report w/5 Annexes

WILLIAM P BROOKS, JR.
Colonel, Arty
Chief

Copies furnished:
CHMAAG, VIETNAM (4)

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**RESEARCH & DEVELOPMENT FIELD UNIT
Advanced Research Projects Agency
Office of the Secretary of Defense
APO 143, San Francisco, California**

REPORT OF TASK NO. 13A

TEST OF

ARMALITE RIFLE. AR-15 (U)

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REPORT OF TASK NO. 13A TEST OF ARMALITE RIFLE, AR-15 (U)

1. (U) REFERENCES.

- a. (U) OSD Message, DEF 907037, DTG 122354Z December 1961.
- b. (U) MACRD Message 367, DTG 050203Z June 1962.
- c. (U) US Army Infantry Board Report of Project 2787, 27 May 1958, Subject: Evaluation of Small Caliber, High Velocity Rifle - Armalite (AR-15).
- d. (U) Final Report, Lightweight High Velocity Rifle Experiment, US Army Combat Development Experimentation Center, Fort Ord, California, dtd 30 May 1959.
- e. (U) Evaluation Report of the Colt Armalite AR-15 Automatic Rifle, US Air Force Marksmanship School, Lackland AFB, Texas, dtd 22 September 1960.
- f. (U) Report No. DPS-96, A Test of Rifle, Caliber .223, AR-15, Aberdeen Proving Ground, Maryland, dtd 9 January 1961.
- g. (U) Fourth Report on the Test of the US Carbine, Cal. .30, M1, ORD Program #4972, Aberdeen Proving Ground, Maryland, dtd 13 Aug 1942.
- h. (U) First Report on Test of Production Models of the Carbine, Cal .30, M2, ORD Program #4972, Aberdeen Proving Ground, dtd 1 Aug 1945.
- i. (U) US Army Infantry Board Supplemental Report of Project No 2787, "Evaluation of Small Caliber, High Velocity Rifles - Armalite (AR-15)", dtd 13 August 1958.

2. (C) PURPOSE.

The purpose of this test was to determine if the AR-15 Rifle is compatible with the small stature, body configuration and light weight of the Vietnamese Soldier and to evaluate the weapon under actual combat

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conditions in South Vietnam. At the request of MAAG, Vietnam, the scope of the test was expanded to include a comparison between the AR-15 and the M2 Carbine to determine which is a more suitable replacement for other shoulder weapons in selected units of the Republic of Vietnam Armed Forces (RVNAF).

3. (U) DESCRIPTION OF MATERIEL:

The AR-15 Rifle is a lightweight, gas-operated rifle equipped with a 20-round, detachable magazine. It is chambered for Cartridge, Caliber .223. When fired in the rifle, this round gives the 55 grain bullet a muzzle velocity of 3200 feet per second. It has a plastic stock with a rubber butt, assembled in line with the bore. This, in conjunction with its high line of sight and separate hand grip, is designed to minimize rotation about the shoulder during firing. The two piece upper hand guard is made of metal and plastic and is designed for easy disassembly and rapid dissipation of heat. A lever above the grip on the left side of the receiver provides a selector for the trigger safety, semi-automatic and automatic fire. A bolt catch holds the bolt to the rear after the last round has been fired. A cover is provided for the ejection port in the receiver. A three-pronged muzzle attachment, threaded to the barrel, serves as a flash suppressor, grenade launcher, and a front support for a bayonet. The lower part of the front sight is machined to form a bayonet lug. Standard accessories include: Bayonet w/scabbard; bipod w/case; grenade-launching sight; and a cleaning rod. Photographs of the weapon appear in Annex "D".

4. (C) BACKGROUND.

a. (U) The problem of selecting the most suitable basic weapon for the Vietnamese soldier is complicated by his small stature and light weight. The average soldier stands five feet tall and weighs ninety pounds. Principle US weapons presently issued to Vietnamese troops include the M1918A2; the Thompson Sub-Machine Gun, Caliber .45; and the US Carbine, Caliber .30, M1.

b. (U) Because of its availability and the results of extensive studies and previous testing by military agencies, the Colt Armalite AR-15 Rifle was selected in July 1961 as the most suitable weapon for initial tests. This weapon was developed by the Armalite Division of Fairchild Aircraft Corporation to meet the military characteristics for a lightweight rifle utilizing the high velocity small caliber principle. It was first tested by the US Army Infantry Board in 1958 (Ref 1.c.). Since then, the weapon

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and its ammunition have undergone extensive engineering and service tests by: Aberdeen Proving Ground; the Combat Development Experimentation Center, Fort Ord, California; and the US Air Force at Lackland Air Force Base, Texas, (Refs l.d., l.e., l.f.). The rifle, with several modifications resulting from these tests, is presently being manufactured by Colt's Patent Firearms Manufacturing Company, Hartford, Connecticut. (Prior to completion of this report, the U. S. Air Force adopted the AR-15 as its basic shoulder weapon, replacing the M2 Carbine, the Browning Automatic Rifle and the M3 Sub-Machine Gun).

c. (C) Based upon favorable observations of the AR-15 by both US Advisors and RVNAF Commanders following limited firing demonstrations conducted in Vietnam during August 1961, weapons were requested in numbers sufficient to conduct a full scale combat evaluation of the AR-15 by selected units of the RVNAF. In December 1961, the Secretary of Defense approved the procurement of 1000 AR-15 Rifles, necessary ammunition, spare parts and accessories for evaluation.

d. (C) OSD/ARPA negotiated a contract with the firm of Cooper-MacDonald, Inc., Baltimore, Maryland, for procurement and air shipment of all materiel. The first shipment was received on 27 January 1962 and subsequent increments arrived approximately every three weeks until the contract was fulfilled on 15 May 1962. Operational evaluation and testing began on 1 February and terminated on 15 July 1962.

5. (C) SUMMARY OF TESTS:

a. (C) General.

(1) (C) To accomplish the stated purpose of this test, it was divided into two parts. One part was a combat evaluation of the AR-15 in which the weapons were issued to specially selected ARVN Units for use in their operations against the Viet Cong. Along with the rifles and ammunition, Vietnamese Unit Commanders and US Military Advisors were given weapon preference and operational questionnaires and requested to complete and return them after training and combat use of the AR-15. Samples of these questionnaires appear as Appendices 1, 2, and 3 of Annex "A".

(2) (C) The other part of the test consisted of a comparison between the AR-15 Rifle and the M2 Carbine. Areas in which the two weapons were compared included: physical characteristics; ease of disassembly and assembly; marksmanship ability at known distances, semi-automatic and automatic fire; marksmanship ability at unknown distances, semi-

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automatic and automatic fire; ruggedness and durability; adequacy of safety features; effects of open storage in a tropical environment; ability to penetrate dense brush and heavy foliage; and, the individual Vietnamese soldier's preference between the two weapons.

b. (C) Results, Combat Evaluation.

(1) (C) For detailed report see Annex "A".

(2) (C) Summary. The Vietnamese Unit Commanders and US Advisors who participated in the evaluation consider the AR-15 Rifle to be a more desirable weapon for use in Vietnam than the M1 Rifle, BAR, Thompson Sub-Machine Gun, and M1 Carbine for the following reasons:

(a) (C) It is easier to train the Vietnamese troops to use the AR-15 than the M1 Rifle, BAR, M1 Carbine, or the Sub-Machine Gun.

(b) (C) The AR-15's physical characteristics are well suited to the small stature of the Vietnamese soldier (see photographs 1 and 2, Annex "D").

(c) (C) It is easier to maintain the AR-15 both in the field and in garrison than the M1 Rifle, BAR, Sub-Machine Gun, or the M1 Carbine.

(d) (C) The ruggedness and durability of the AR-15 are comparable to that of the M1 Rifle and superior to that of the BAR, Sub-Machine Gun, and M1 Carbine.

(e) (C) The AR-15 imposes less logistical burden than any of the four principal weapons presently being used by Vietnamese Forces.

(f) (C) The AR-15 is tactically more versatile than any present weapon being used by Vietnamese Forces.

(g) (C) In semi-automatic fire, the accuracy of the AR-15 is considered comparable to that of the M1 Rifle, and superior to that of the M1 Carbine.

(h) (C) In automatic fire, the accuracy of the AR-15 is considered comparable to the Browning Automatic Rifle and superior to the Sub-Machine Gun.

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c. (C) Results, Comparison Test of the AR-15 Rifle and the M2 Carbine.

(1) (C) For detailed report see Annex "B".

(2) (C) Summary:

(a) (C) Test #1, Comparison of physical characteristics

(i) (C) The AR-15 is comparable to the M2 Carbine in size and weight.

(ii) (C) The addition of an integral grenade launcher, telescope mount, and an accessory bipod the AR-15 Rifle capabilities that the M2 Carbine does not possess at present and attainment of which would require modification of the weapon (see photograph 3, Annex "D").

(iii) (C) Both the AR-15 and the M2 Carbine are compatible with the light weight and diminutive stature of the Vietnamese soldier (see photographs 4 and 5, Annex "D").

(b) (C) Test #2, Comparative ease of disassembly and assembly.

(i) (C) The AR-15 is simpler than the M2 Carbine and requires less time to disassemble and re-assemble for normal field c. abing (see photograph 6, Annex "D").

(ii) (C) The average Vietnamese soldier can be trained in the disassembly and assembly of the AR-15 in less time than for the M2 Carbine.

(c) (C) Test #3, Marksmanship ability, known distance.

(i) (C) The ARVN soldier's ability to deliver accurate semi-automatic fire at known distances up to 200 meters with the AR-15 and the M2 Carbine is comparable. (It is noted that a higher percentage of test participants fired qualifying scores with both the AR-15 and the M2 Carbine than with the M1 Rifle.)

(ii) (C) The ARVN soldier can deliver far more accurate automatic fire at known distances up to 200 meters with the AR-15 than he can with the M2 Carbine.

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(d) (C) Test #4, Marksmanship ability, unknown distance.

(i) (C) The ARVN soldier's ability to deliver accurate semi-automatic fire on targets of unknown range using the AR-15 and the M2 Carbine is comparable.

(ii) (C) The ARVN soldier can deliver more accurate automatic fire on targets of unknown range with the AR-15 than he can with the M2 Carbine.

(e) (C) Test #5, Comparative ruggedness and durability

(i) (C) The AR-15 is more durable than the M2 Carbine under conditions that require prolonged firing.

(ii) (C) The AR-15 will stand up to rough handling normally encountered in combat situations better than the M2 Carbine.

(f) (C) Test #6, Comparison of the adequacy of safety features.

(i) (C) The safety features on the AR-15 and the M2 Carbine are comparable with regard to their adequacy and the ARVN soldier's ability to understand how they function.

(ii) (C) The location of a single selector switch, which combines the functions of safety and type of fire selector, on the left side of the AR-15's receiver where it is easily accessible to the thumb, enables the ARVN soldier to get the first round off faster with the AR-15 than he can with the M2 Carbine. He must manipulate the safety selector on the M2 Carbine with his trigger finger, then return it to the trigger to fire. With the AR-15, he can keep his finger on the trigger while manipulating the safety selector with his thumb.

(g) (C) Test #7. Effects of open storage in a tropical environment.

(i) (C) The functioning capability of the AR-15 is less affected by prolonged exposure to tropical weather than that of the M2 Carbine.

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(h) (C) Test #8, Brush penetration

(i) (C) The trajectory of the AR-15 bullet is not significantly affected when fired through dense underbrush at ranges up to 50 meters.

(ii) (C) The AR-15 round will penetrate jungle undergrowth equally as well as the M2 Carbine round at ranges up to 50 meters.

(i) (C) Test #9, Troop opinion poll

(i) (C) The great majority of the ARVN soldiers who participated in the comparison test prefer the AR-15 to the M2 Carbine.

6. (C) DISCUSSION:

a. (C) The extremely mobile type of offensive warfare being stressed by US Advisors in Vietnam and the small stature and light weight of the Vietnamese soldier place a high premium on small, lightweight weapons. In addition, the violent short clashes at close ranges which are characteristic of guerrilla warfare in Vietnam make it highly desirable to have a dependable weapon capable of producing a high rate of accurate and lethal full automatic fire.

b. (C) From the viewpoint of standardization and simplicity of training and the resultant long range reduction of the logistics burden, characteristics of existing weapons were studied to determine if a single weapon could be found that would meet the requirements for a basic shoulder weapon for Vietnamese troops. It is believed that such a weapon should encompass the following desirable characteristics of individual weapons:

- (1) The effective range of the M1 Rifle.
- (2) The light weight and small size of the M1 Carbine.
- (3) The full automatic capability of the BAR.
- (4) The simplicity of the SMG.

Other highly desirable, if not mandatory, features would include a bayonet, grenade launching and sniper capability.

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c. (C) The AR-15 appeared to more nearly satisfy the above prescribed characteristics than any other US weapon. The import of the AR-15 weapon/ammunition weight for units that conduct extended operations without normal resupply capabilities can be seen in comparing the 24 lb. weight of an M1 with a battle load of 220 rounds of ammunition with the 12 lb. weight of the AR-15 with 220 rounds. This weight difference equals approximately 430 rounds of AR-15 ammunition.

d. (C) The Comparison Test (Annex "B") shows the AR-15 to be distinctly superior to the M2 Carbine. Although the M2 Carbine is sufficiently light for use by the Vietnamese soldier, it does not possess the essential characteristics of a basic weapon for offensive warfare. It lacks the effective range of the M1 Rifle and has a high malfunction rate (Ref l. e. and l. h.). However, it is apparently available and was considered by MAAG as the prime competitor against the AR-15.

e. (C) The Combat Evaluation (Annex "A") shows that all US Advisors and Vietnamese Commanders who participated in the evaluation prefer the AR-15 to any other weapon with which the RVNAF are now armed. The lethality of the AR-15 and its reliability record were particularly impressive. All confirmed casualties inflicted by the AR-15, including extremity hits, were fatal (see photographs 7 and 8, Annex "D"). The high degree of reliability and trouble-free performance of the weapon reflected in previous test reports (Ref l. c., l. d., and l. f.) was also noteworthy during the testing and evaluation here. No parts breakage was encountered while firing approximately 80,000 rounds during the Comparison Test. Only two parts have been issued to date to replace breakage for the entire 1,000 weapons. Stoppages on the AR-15 are easily cleared by the individual soldier through the application of "immediate action".

f. (C) A thorough review of the numerous stateside AR-15 test reports referenced in paragraph 1 reveals nothing which would make the foregoing views unsound. The reported poor performance of the AR-15 under cold weather conditions is of no concern in Vietnam. The widely held view that the AR-15 operates poorly under rainy conditions was disproved in the weapon's second test by Aberdeen Proving Ground (Ref l. f.). Those results were confirmed here during field operations. No deficiencies in the weapon requiring correction prior to adoption were found during the test in Vietnam, although two minor changes are recommended for product improvement. These recommendations appear in Annex "C".

g. (C) The combat evaluation part of this test is somewhat subjective since it is based on the individual judgments of many users. It is

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believed, however, that the professional judgments of the senior US Advisors and Vietnamese Commanders of the units testing the weapon, all of whom are mature, experienced soldiers, does provide for a sound combat appraisal.

h. (C) From an operational viewpoint, it is believed that the tests conducted in Vietnam show the superiority of the AR-15 over the M2 Carbine and over other weapons now issued to RVNAF. It is believed that the decision as to what units might be issued the AR-15 or which weapons the AR-15 might replace is dependent on cost and logistical factors which are beyond the purview of this unit.

7. (C) CONCLUSIONS: It is concluded that:

a. (C) The AR-15 is more compatible with the light weight and small stature of the Vietnamese soldier than the M1 Rifle, the Browning Automatic Rifle, and the Thompson Sub-Machine Gun.

b. (C) The AR-15 is superior to the M2 Carbine.

c. (C) The M2 Carbine lacks the necessary dependability and versatility for consideration as the basic shoulder weapon for Vietnamese troops.

d. (C) The AR-15 is capable of replacing any or all of the shoulder weapons currently being used by the Armed Forces of the Republic of South Vietnam.

e. (C) The AR-15 is considered by both Vietnamese Commanders and U.S. Military Advisors who participated in the tests as the best "all around" shoulder weapon in Vietnam.

8. (C) RECOMMENDATIONS: It is recommended that:

a. (C) The AR-15 be considered for adoption as the basic weapon for all RVNAF with a view toward improving effectiveness and simplifying training and weapons/logistics systems.

b. (C) Priority for adoption of the AR-15 be given to those units which frequently operate in jungle environment for extended periods, because

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of the significant operational and logistical advantages accruing to their having the lightest and most effective weapon/ammunition combination available.

c. (D) The M1 and/or M2 Carbine continue to be issued only to those individuals who, because of their duty or position, can function effectively with a weapon best suited for a defensive role.

ANNEXES:

- A. Combat Evaluation w/3 Appendices
- B. Comparison Test
- C. Suggested Corrective Actions
- D. Photographs 1 through 8

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ANNEX "A"

DETAILS OF THE COMBAT EVALUATION OF THE AR-15

I. (C) GENERAL.

Selected Vietnamese Units which had previously been engaged in considerable combat were issued AR-15 Rifles and ammunition for use against the Viet Cong. In addition, each Unit Commander and US Military Advisor with these units was given questionnaires in which he was requested to evaluate the AR-15 in comparison with the other weapons presently used by the RVNAF. (See Appendices 1, 2, and 3 for samples of questionnaires.)

II. (C) DISTRIBUTION OF WEAPONS AND AMMUNITION.

<u>Unit</u>	<u>AR-15 Rifles</u>	<u>Ammunition</u>
7th Infantry Division	100	50,000 rds
Rangers	100	50,000 rds
Airborne Brigade	390	195,000 rds
VN Marines	100	50,000 rds
VN Special Forces	100	50,000 rds
Special Battalions	125	120,000 rds
5th Infantry Division	40	25,000 rds
Father Hoa	10	10,000 rds
Total	<u>965</u>	<u>550,000 rds</u>

III. (C) DETAILS OF TEST.

A. (C) Purpose: To evaluate the performance of the AR-15 Rifle under actual combat conditions and to compare this performance to that of the weapons presently being used by the RVNAF.

ANNEX "A"

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B. (C) Method: Each Unit Commander and US Military Advisor of those units receiving AR-15 Rifles evaluated its performance in combat and compared it to the performance of those weapons presently being used by the RVNAF. Areas in which the AR-15 was evaluated and compared included: training; physical characteristics; ease of maintenance; ruggedness and durability; logistical considerations; accuracy; and tactical versatility. In the questionnaires given them, Commanders and Advisors were instructed to award 5 points to the most desirable weapon, 4 points to the second, 3 points to the third, 2 points to the fourth, and 1 point to the least desirable weapon in each category delineated above.

C. (C) Results: The results from the questionnaires are set forth in the table below and reflect the evaluation of the AR-15 by Commanders and Advisors of most of the different types of tactical units in Vietnam (as listed in paragraph II above). The figures indicate the total number of points awarded to each weapon by Vietnamese Unit Commanders and U. S. Military Advisors in their joint responses to the questionnaires.

1. <u>Training.</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Simplest to train the troops to use	59	44	15	37	55	70
b. Simplest to train in functioning	61	50	15	37	47	70
c. Simplest to train in disassembly and assembly	63	48	14	37	48	70
Total	183	142	44	111	150	210
2. <u>Physical Characteristics</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Easiest for soldier to aim and fire	60	29	17	42	62	70
b. Easiest to carry over open terrain	59	29	14	43	64	70
c. Easiest to carry through jungle terrain	59	29	14	45	63	70
d. Easiest to hold on a target while firing several rounds	69	40	24	24	53	70
Total	247	127	69	154	242	280

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3. <u>Maintenance</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Simplest to disassemble and assemble	65	43	14	39	49	70
b. Easiest to maintain in the field	63	51	16	34	46	70
Total	128	94	30	73	95	140
4. <u>Ruggedness & Durability</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Most rugged weapon	52	59	33	35	31	70
b. Had fewest stoppages or malfunctions during firing	59	59	20	32	39	70
c. Most reliable under all conditions	57	60	28	30	35	70
Total	168	178	81	97	105	210
5. <u>Logistics</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Imposes least logistical burden	66	47	17	30	50	70
Total	66	47	17	30	50	70
6. <u>Tactical</u>	M1					
	<u>AR-15</u>	<u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>	<u>Max. Poss.</u>
a. Easiest to employ	64	40	18	39	49	70
b. Preferred in ambush/counter-ambush situations	69	28	36	48	29	70
c. Preferred against massed troops	65	32	61	33	19	70
d. Tactically most versatile	69	43	38	29	31	70
Total	267	143	153	149	128	280

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7. <u>General</u>	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>	<u>Max. Poss.</u>
a. Preferred by troops	67	28	18	46	51	70
b. Preferred by commanders and advisors	64	33	21	39	43	70
c. Most suited to VN soldier under present tactical conditions	67	30	21	42	50	70
d. Most effective at most common range for engaging VC (0-200 meters)	63	46	49	22	30	70
Total	<u>261</u>	<u>137</u>	<u>109</u>	<u>149</u>	<u>174</u>	<u>280</u>

Recapitulation: In all aspects covered, the total ratings for all weapons were as follows:

<u>AR-15</u>	<u>M1Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1Carbine</u>	<u>Maximum Possible</u>
<u>1320</u>	<u>868</u>	<u>503</u>	<u>763</u>	<u>894</u>	<u>1470</u>

8. Accuracy. Advisors and Unit Commanders were requested to evaluate the accuracy of the AR-15 and compare it with other present weapons in both automatic fire and semi-automatic fire. Their evaluation is reflected in the following table:

	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>	<u>Max. Poss.</u>
a. Semi-automatic fire	61	62			45	70
b. Automatic fire	65		57	42		70

9. (C) Remarks. Unit Commanders' and Advisors' remarks concerning the value of the AR-15 to Vietnamese Units and its worth as a combat weapon in the war in South Vietnam as opposed to existing weapons were also requested. Generally, the comments were extremely favorable to the AR-15. All of the comments received are presented below in their entirety and in the form in which they were received.

(1) (C) "On 160900 June 62, one platoon from the 340 Ranger Company was on an operation vic. YT260750 and contacted 3 armed VC in heavily forested jungle. Two VC had carbines, grenades, mines, and one had a

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SMG. At a distance of approximately 15 meters, one Ranger fired an AR-15 full automatic hitting one VC with 3 rounds with the first burst. One round in the head-took it completely off. Another in the right arm, took it completely off, too. One round hit him in the right side, causing a hole about five inches in diameter. It cannot be determined which round killed the VC but it can be assumed that any one of the three would have caused death. The other 2 VC ran, leaving the dead VC with 1 carbine, 1 grenade and 2 mines. " (Rangers)

(2.) (C) "On 9 June a Ranger Platoon from the 40th Inf Regt was given the mission of ambushing an estimated VC Company. The details are as follows:

- a. Number of VC killed: 5
- b. Number of AR-15's employed: 5
- c. Range of engagement: 30-100 meters
- d. Type wounds:
 1. Back wound, which caused the thoracic cavity to explode.
 2. Stomach wound, which caused the abdominal cavity to explode.
 3. Buttock wound, which destroyed all tissue of both buttocks.
 4. Chest wound from right to left, destroyed the thoracic cavity.
 5. Heel wound, the projectile entered the bottom of the right foot causing the leg to split from the foot to the hip.

These deaths were inflicted by the AR-15 and all were instantaneous except the buttock wound. He lived approximately five minutes.

The following is a list of minor deficiencies noted during this period:

- a. The stock and heat deflector will reflect light. This light is visible for approximately 150 feet at night.
- b. A brass brush is needed to remove carbon from the bolt carrier. " (Rangers)

(3.) (C) "72 AR-15 Rifles were carried into this action (airborne assault). The drop zone was barely acceptable and many troops landed in high trees. Several LMG's and BAR's were not operational after the drop. Only one AR-15 was reported slightly damaged (damaged pistol grip) and all were operational. Throughout the entire operation, which lasted 6 days and covered over 40 kilometers of difficult terrain including dense jungle and frequent water crossings, the weapons (AR-15) held up exceptionally well. " (Airborne Brigade)

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(4.) (C) "The AR-15 proved to be an effective weapon on this operation for the following reasons:

a. The weapon held up very well on the paradrop which took place on a small drop zone surrounded by dense forests. Landings of the troopers were much rougher than normal. Many troops landed in high trees. This subjected the individual weapons to a much more severe test than usual. Some of the LMG's and BAR's were not operational after the jump. All AR-15's were functional.

b. Field maintenance on this weapon (AR-15) proved to be much simpler than on the other weapons.

c. While no decisive engagement was made so that the striking power of this weapon (AR-15) could be observed, the troops had great confidence in it and it is my belief that it would have greatly increased our overall firepower had it been tested." (Airborne Brigade)

(5.) (C) "During the period from 16 April to 11 May 1962, the 8th Battalion, Airborne Brigade, participated in two (2) operations of five (5) and four (4) days duration.

The AR-15 was carried during both operations. I was not in a position to observe the engagement of Viet Cong with the AR-15 during either operation although it was fired on different occasions.

The following remarks therefore, are confined to other observations and personal opinions on the AR-15:

a. Maintenance requirements for the AR-15 were negligible. I inspected numerous weapons throughout the entire period stated above and always found the weapons in excellent firing condition.

b. A great simplification in the small arms weapons could be effected by the adoption of the AR-15 to replace the BAR, M1, and Carbine. The effectiveness of the weapon (AR-15), however, I cannot attest to at this time.

c. The troopers have a great amount of respect for the AR-15. If the weapon were adopted as TO&E for Airborne Units, there would be a tremendous psychological uplift in the individual soldier's belief in his ability to shoot and kill." (Airborne Brigade)

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(6.) (C) "One company (96 off & EM) completely equipped with the AR-15. Six operations took place prior to any real use of the weapon.

Five VC were hit, all five with body wounds, and all five killed. Four were probably killing wounds with any weapon listed, but the fifth was essentially a flesh wound. The AR-15 made it a fatal wound.

The troops have a great deal of respect for the weapon and prefer it to all others. They take excellent care of it.

One left upper handguard was cracked and broke during routing a stubborn captive from a wooded area. The soldier concerned placed the handguard against a VC head with considerable force." (7th Infantry Division)

(7.) (C) "On 23-24 May 1962, one company completely equipped with AR-15's (87) plus Bn Hq elements was involved in one light and one heavy action. No wounded were captured and all casualties were inflicted with the AR-15. 27 Viet Cong were killed (24 counted by the advisor) and 25 captured. Grenades were used for the first time and were very effectively employed at ranges of 100-500 meters. They served as the real artillery support as we could not get the artillery to fire any closer than 400 meters. About 36 grenades were utilized in the heavy action, all propelled from the AR-15. The troops are very enthusiastic about the weapon and treat it with greater care than usual." (7th Infantry Division)

(8.) (C) "To date, this weapon has been used only for training. The simplicity of construction has reduced training time necessary for maintenance by approximately fifty per-cent. It is believed that this is an ideal weapon for this type weather and terrain." (Special Battalions)

(9.) (C) "On 13 April, 62, a Special Forces team made a raid on a small village. In the raid, seven VC were killed. Two were killed by AR-15 fire. Range was 50 meters. One man was hit in the head; it looked like it exploded. A second man was hit in the chest; his back was one big hole." (VN Special Forces)

(10.) (C) "This weapon is ideal for this country primarily for these reasons:

- a. Durability & ease of maintenance.
- b. Good Accuracy.
- c. Rapid rate of fire.
- d. Light weight (size & shape make it easy for Vietnamese to handle).
- e. Excellent killing or stopping power." (Airborne Brigade)

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D. (C) Analysis: Based on the numerical ratings and the comments of US Advisors and VN Unit Commanders, the AR-15 is the most desirable weapon for use in Vietnam for the following reasons:

1. Ease of training.
2. Suitable physical characteristics.
3. It is easy to maintain.
4. It is more rugged and durable than present weapons.
5. It imposes the least logistical burden.
6. It is the best weapon for all-around tactical employment.
7. Its semi-automatic firing accuracy is comparable to that of the M1 Rifle, while its automatic firing accuracy is considered superior to that of the Browning Automatic Rifle.
8. Vietnamese troops, Commanders and US Advisors prefer it to any other weapon presently being used in Vietnam.

APPENDICES:

1. Weapons Questionnaire
2. For the RVNAF Unit Commander
3. Questionnaire for the Senior MAAG Advisor

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WEAPONS QUESTIONNAIRE

Based upon your experience and observation as the Commander or Advisor of a unit of the RVNAF, rate the weapons on the right side of this questionnaire in order of preference with respect to the characteristics and questions listed. Your answers should reflect your opinion as to the value of the weapons to the Vietnamese, not the US Forces.

Rating Key: 5 - first choice 2 - fourth choice
 4 - second choice 1 - last choice.
 3 - third choice

A. TRAINING

	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon is easier to train the troops to use?	_____	_____	_____	_____	_____
2. Which weapon is easier to train the troops in functioning?	_____	_____	_____	_____	_____
3. Which weapon is easier to train the troops to disassemble and assemble?	_____	_____	_____	_____	_____

B. PHYSICAL CHARACTERISTICS

	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon, because of its size and shape, is easiest for the soldier to aim and fire?	_____	_____	_____	_____	_____
2. Which weapon, because of size, shape and weight, is easier for the soldier to carry over open terrain?	_____	_____	_____	_____	_____
3. Which weapon, because of size, shape and weight, is easier for the soldier to carry in the jungle?	_____	_____	_____	_____	_____
4. Which weapon is easiest to hold on a target while firing several rounds?	_____	_____	_____	_____	_____

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<u>C. MAINTENANCE</u>	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon is simplest to disassemble and assemble?	_____	_____	_____	_____	_____
2. Which weapon is easiest for the troops to maintain in the field?	_____	_____	_____	_____	_____
<u>D. RUGGEDNESS & DURABILITY</u>	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon is most rugged?	_____	_____	_____	_____	_____
2. Which weapon had the fewest stoppages and malfunctions?	_____	_____	_____	_____	_____
3. Which weapon is the most reliable under all conditions?	_____	_____	_____	_____	_____
<u>E. LOGISTICS</u>	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon imposes the smallest logistical burden? (Consider weight, spare parts, ease of repair, etc.)	_____	_____	_____	_____	_____
<u>F. TACTICAL</u>	<u>AR-15</u>	<u>M1 Rifle</u>	<u>BAR</u>	<u>SMG</u>	<u>M1 Carbine</u>
1. Which weapon is easiest to employ? Why?	_____	_____	_____	_____	_____
2. Which weapon would you prefer in ambush/counter-ambush situations? Why?	_____	_____	_____	_____	_____
3. Which weapon would you prefer against mass attacks? Why?	_____	_____	_____	_____	_____

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	<u>AR-15</u>	M1 <u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	M1 <u>Carbine</u>
4. Which weapon do you consider most versatile? (Consider all capabilities)	_____	_____	_____	_____	_____
G. <u>ACCURACY</u> (Rate 5, 4 & 3)	<u>AR-15</u>	M1 <u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	M1 <u>Carbine</u>
1. Which weapon appears most accurate when fired semi-automatically?	_____	_____	_____	_____	_____
2. Which weapon appears most accurate when fired automatically?	_____	_____	_____	_____	_____
H. <u>GENERAL</u>	<u>AR-15</u>	M1 <u>Rifle</u>	<u>BAR</u>	<u>SMG</u>	M1 <u>Carbine</u>
1. Which weapons do the troops prefer?	_____	_____	_____	_____	_____
Why?					
2. Which weapon would you prefer for your personal use?	_____	_____	_____	_____	_____
Why?					
3. Which weapon do you think is most suited to the Vietnamese soldier under present tactical conditions?	_____	_____	_____	_____	_____
Why?					
4. At what range do you think most Viet Cong are engaged?	_____	_____	_____	_____	_____
5. Which weapon do you think is most effective at that range?	_____	_____	_____	_____	_____
6. If the TO&E of your unit only allowed a single weapon, which one would you choose?	_____	_____	_____	_____	_____
Why?					

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I. REMARKS: In the space below, please make any pertinent remarks you may have concerning the AR-15 Rifle, its effectiveness in South Vietnam, its assets or its shortcomings (Continue on back of page if necessary).

Unit _____

Date _____

Signature _____

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FOR THE RVNAF UNIT COMMANDER

QUESTION NO. 1:

How many weapons of each of the following types were carried into the combat engagement, how many rounds of ammunition per weapon were carried, and how many rounds fired?

	<u>No. Weapons</u>	<u>Ammo rds/weap.</u>	<u>Ammo rds. fired</u>
BAR	_____	_____	_____
M1	_____	_____	_____
SMG	_____	_____	_____
Carbine	_____	_____	_____
AR-15	_____	_____	_____

QUESTION NO. 2:

How many VC were killed? _____
wounded? _____

How many of the VC were KIA by the AR-15? _____

How many of the VC were wounded by the AR-15? _____

QUESTION NO. 3:

What percentage of the friendly fire was full automatic? _____

What percentage of the AR-15 fire was full automatic? _____

What percentage of the AR-15's had the safety device installed that allowed either full or semi-automatic fire? _____

QUESTION NO. 4:

What was the maximum range at which shots were fired at the VC? _____

What was the average range? _____

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QUESTION NO. 5:

Were aimed shots fired through light brush? _____

If so, about what percent of the total fire from all weapons (BAR, SMG, M1, Cargine, AR-15) were aimed shots through light brush?

Less than 5% _____

Less than 20% _____

Less than 50% _____

More than 50% _____

In your opinion were shots from the AR-15 missed because of brush deflection? _____

If your answer to this question is yes, is it your opinion that the full automatic feature of the AR-15 and the extra rounds that can be carried for a given weight allowance do or do not compensate for this brush deflection? Yes _____ No _____ No Opinion _____

QUESTION NO. 6:

Were any rifle barrels bent in air drops or other rough handling and hard usage? _____

Were any barrels damaged by being fired with water in the bore? _____

Were there any malfunctions of any type? _____

If yes, please elaborate in the remarks section of this questionnaire.

QUESTION NO. 7:

As a unit commander of the RVNAF, how would you rate the AR-15 Rifle in the guerrilla warfare action you expect to fight as compared with the other types of weapons listed?

- In each space use: A - For the AR-15 is better than
- B - For there is no difference
- C - For the AR-15 is worse than
- D - For no opinion

	<u>M1</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>
Speed of employment	_____	_____	_____	_____
Accuracy	_____	_____	_____	_____

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	<u>M1</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>
Striking power	_____	_____	_____	_____
Fire power	_____	_____	_____	_____
Reliability	_____	_____	_____	_____
Field maintenance	_____	_____	_____	_____
Weight	_____	_____	_____	_____
Size	_____	_____	_____	_____
Overall	_____	_____	_____	_____
Overall for ambushes only	_____	_____	_____	_____

QUESTION NO. 8:

If the VC tactics grow into large scale attacks and the "human sea" type tactic is used, how would you rate the AR-15 overall against these other weapons? (Same scale as above: A, B, C, D)

<u>M1</u>	<u>BAR</u>	<u>SMG</u>	<u>Carbine</u>
_____	_____	_____	_____

QUESTION NO. 9:

Would the soldier who carried the AR-15 into this engagement choose it again over the weapon he formerly carried?

	<u>% would choose AR-15</u>	<u>% would choose other</u>
Formerly carried the BAR	_____	_____
Formerly carried the M1	_____	_____
Formerly carried the SMG	_____	_____
Formerly carried the Carbine	_____	_____

QUESTION NO. 10:

As an RVNAF unit commander, if you had your choice of weapons consisting of all four of the following: BAR, M1, SMG, Carbine or the AR-15, which would be your choice?

OPTION A: BAR, M1, SMG, Carbine _____.

OPTION B: AR-15 _____.

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QUESTIONNAIRE FOR THE SENIOR MAAG ADVISOR

1. In the engagement with the VC covered by this questionnaire, how many of each of the following weapons were carried by your unit?

BAR _____ SMG _____ M1 _____ Carbine _____ AR-15 _____

2. If the AR-15 had not been used, how many of each would have been carried?

BAR _____ SMG _____ M1 _____ Carbine _____

3. As a MAAG Advisor to the RVNAF you obtain insight into the combat situation in SVN not available to the CDTC or to other US Government officials. These questionnaires can only gain a little part of the whole individual weapons problem. Some of the questions asked of the RVNAF unit commander are, therefore, repeated here because they are considered of prime importance.

QUESTION: How do you as a MAAG Advisor rate the AR-15 Rifle in the SVN guerrilla war as compared to the following weapons?

	<u>BAR</u>	<u>M1</u>	<u>SMG</u>	<u>Carbine</u>
A. The AR-15 is better.	_____	_____	_____	_____
B. No difference.	_____	_____	_____	_____
C. The AR-15 is worse.	_____	_____	_____	_____
D. No opinion.	_____	_____	_____	_____

How would you rate the AR-15 against these weapons for ambushes only?

How would you rate the AR-15 in a "human sea" attack against these weapons?

As a MAAG Advisor to RVNAF, if you were to recommend the TO&E of the above weapons or the AR-15 only which would you recommend? _____.

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4. If you would not recommend completely replacing all four of the above weapons with the AR-15, would you recommend completely replacing any one of the four?

Would recommend completely replacing BAR _____.
Would recommend completely replacing M1 _____.
Would recommend completely replacing SMG _____.
Would not completely replace any of these weapons _____.

5. Remarks: In the space below or on additional sheets please elaborate on any points not adequately covered above.

(Signature)

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ANNEX "B"

DETAILS OF COMPARISON TEST BETWEEN THE AR-15 AND M2 CARBINE

I. (C) GENERAL.

Personnel from a Vietnamese company that had just completed advanced individual training were used as test subjects for most of this comparison. The unit of 180 men was divided into two groups of 90 men each. Group A received one M2 Carbine per man, while Group B received an AR-15 for each man. Each group was then given a course of instruction on their respective weapon. The instruction for each was identical in time and scope of material covered. Following this, both groups underwent an identical test program which consisted of: assembly and disassembly; known distance firing, both semi-automatic and automatic fire; unknown distance firing, semi-automatic and automatic fire; bayonet course; and, infiltration course. This phase lasted for one week (44 hours). At the end of the first week, the two groups traded weapons and the course of instruction and the tests were repeated.

II.(C) SUMMARY OF TESTS.

To arrive at a valid conclusion concerning the relative suitability of the AR-15 as opposed to the M2 Carbine for possible use by selected units of the Armed Forces of the Republic of Vietnam, a total of nine tests were conducted. They were:

1. Comparison of Physical Characteristics.
2. Comparative Ease of Disassembly and Assembly.
3. Marksmanship Ability - Known Distance (semi-automatic and automatic fire).
4. Marksmanship Ability - Unknown Distance (semi-automatic and automatic fire).
5. Comparative Ruggedness and Durability.
6. Adequacy of Safety Features.
7. Effects of Open Storage in a Tropical Environment.
8. Comparative Ability to Penetrate Dense Foliage.
9. Troop Preference Poll.

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III. (C) DETAILS OF TESTS.

Test No. 1. Comparison of Physical Characteristics.

Purpose: To compare the physical characteristics of the AR-15 Rifle and the M2 Carbine.

Method: Both weapons were weighted and measured and the resulting data recorded.

Results:

a. Weights (lbs.):	<u>AR-15</u>	<u>M2 Carbine</u>
Weapon (less sling, magazine and accessories)	6.24	5.98
Magazine (empty)	0.18*	0.25*
Magazine (loaded - 20 rds)	0.68	-
Magazine (loaded - 30 rds)	-	1.02
Bayonet	0.62	0.72
Bipod	0.50	(No Bipod)
Sling	<u>0.19</u>	<u>0.07</u>
Totals: w/20 rd mag loaded	8.23	
w/30 rd mag loaded		7.79

*Figure not included in totals.

Relative Battle Load (lbs.) - including accessories of sling, bayonet, bipod.

Weapon w/12 magazines (240 rds)	15.71	
Weapon w/8 magazines (240 rds)		14.93
b. Dimensions (inches):	<u>AR-15</u>	<u>M2 Carbine</u>
Length of barrel	20.00	18.00
Overall length	37.50	35.58
Overall length w/bayonet	42.98	42.26

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Analysis: The Ar-15 and the M2 Carbine are comparable in size and weight and both are compatible with the light weight and small stature of the VN soldier. An integral grenade launcher and telescope mount and an accessory bipod are included in the weapon weight of the AR-15. These are not standard items for the M2 Carbine.

Test No. 2. Comparative Ease of Disassembly and Assembly.

Purpose: To compare the ease of disassembly and assembly of the AR-15 Rifle and the M2 Carbine and the difficulties of training encountered therein.

Method:

a. Each group of test subjects received a two hour period of instruction in the disassembly and assembly of their respective weapons. After completing this instruction, test personnel selected random samples of 10 men and had them disassemble and reassemble their weapons. This procedure was repeated with each group until 100 men had been tested with each weapon. Times were recorded by Non-Commissioned Officers and the weapons were inspected for proper assembly by Test Committee Cadre.

b. For the purpose of this test, both weapons were disassembled only as far as was necessary for field cleaning, i. e., "field stripped".

Results:

	<u>AR-15</u>	<u>M2 Carbine</u>
a. Average time required for disassembly & assembly.	1 min. 17 sec.	3 min. 17 sec.
b. Could not reassemble (percent)	0%	19%
c. Reassembled improperly (percent)	4%	10%
d. Number of parts handled by soldier in field stripping	7	11

Analysis:

a. The AR-15 is simpler and requires less time to disassemble and assemble for normal field cleaning.

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b. The average Vietnamese soldier can be trained in the disassembly and assembly for field cleaning of the AR-15 in a shorter time than for the M2 Carbine. This is further emphasized by the fact that all test subjects had previously received 12 hours of instruction on the M1 Carbine while undergoing basic combat training.

Test No. 3. Marksmanship Ability, Known Distance.

Purpose: To compare the ability of ARVN soldiers to deliver accurate semi-automatic and automatic fire on targets at known ranges using the AR-15 and the M2 Carbine.

Method:

a. Each group of test subjects received 10 hours of preliminary marksmanship training on their respective weapon. Upon completion of formal instruction, zeroing of weapons and practice firing at 26, 100 and 200 meters, each group fired a qualification course for test purposes. Each test participant completed this qualification course with both the AR-15 and M2 Carbine.

b. In semi-automatic fire, the course fired for the test was the standard ARVN M1 rifle qualification course. The scores obtained by the test subject with both weapons in this firing were compared with each other and with previous scores fired by the test subjects in qualifying with the M1 Rifle while undergoing Basic and Advanced Individual Training.

c. In automatic fire, the test subjects engaged the standard ARVN silhouette target at ranges of 75, 100 and 200 meters. Each individual fired a total of 40 rounds from each range. Scores were computed on the basis of 5 points per target hit and an average of 50% hits was used as the basis for qualification.

d. Throughout all firing, stoppages or malfunctions due to mechanical failures were noted and recorded.

e. Throughout all firing, observations concerning the adequacy of safety features and the ARVN soldier's ability to understand them were recorded.

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Results:

	<u>AR-15</u>	<u>M2 Carbine</u>	<u>M1 Rifle</u>
Semi-automatic:			
Percent qualified	26%	27%	15%
Automatic:			
Percent qualified	71%	7%	

Analysis:

a. The ability of the ARVN soldier to deliver accurate semi-automatic fire on targets of known range with the AR-15 and the M2 Carbine is comparable. Test participants, as a group, fired a higher percentage of qualifying scores with both the AR-15 and M2 Carbine than they had previously fired with the M1 Rifle.

b. The ARVN soldier's ability to deliver accurate automatic fire on targets of known range is far greater with the AR-15 rifle than with the M2 Carbine.

Test No. 4. Marksmanship Ability, Unknown Distance.

Purpose: To compare the ARVN soldier's ability to deliver accurate semi-automatic and automatic fire on targets of unknown range using the AR-15 Rifle and the M2 Carbine.

Method:

a. The standard ARVN Transition firing course was used for this test.

b. Semi-automatic fire. Each man received 40 rounds to engage 20 targets at varying ranges from 50 to 250 meters. For a first round hit, he was awarded 10 points. For a second round hit, he was awarded 5 points. Qualification score for the course was 100 points.

c. Automatic Fire. Each man received 80 rounds to engage 20 targets in short bursts. Targets were located at varying ranges from 50 to 250 meters. Scores were computed on the basis of 5 points per target hit. Qualification score for the course was 100 points.

d. Throughout all firing, stoppages or malfunctions due to mechanical failures were noted and recorded.

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e. Throughout all firing, observations concerning the adequacy of safety features and the ARVN soldier's ability to understand them were recorded.

Results:

	<u>AR-15</u>	<u>M2 Carbine</u>
Semi-automatic run:		
Percent qualified	23%	22%
Automatic run:		
Percent qualified	23%	15%

Analysis:

a. The ARVN soldier's ability to deliver accurate semi-automatic fire on targets of unknown range using the AR-15 and the M2 Carbine is comparable.

b. The ARVN soldier's ability to deliver accurate automatic fire on targets of unknown range is greater with the AR-15 than with the M2 Carbine.

Test No. 5. Comparative Ruggedness and Durability.

Purpose: To compare the ruggedness and durability of the AR-15 Rifle and the M2 Carbine.

Method:

a. Concurrent with all other testing, observations concerning the ruggedness and durability of each weapon were recorded. During all firing exercises, any stoppage or malfunction of either weapon caused by mechanical failure was noted and recorded.

b. Fifty AR-15 Rifles and fifty M2 Carbines were each run through the standard ARVN Bayonet Assault Course twice. At the completion of the course, the weapons were inspected and "dry fired". Any deficiencies noted were recorded.

c. Fifty AR-15 Rifles and fifty M2 Carbines were each run through the standard ARVN Infiltration Course twice. At the completion of the course, the weapons were inspected and "dry fired". Any deficiencies noted were recorded.

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Results:

a. After the first week of firing, seven M2 Carbines were eliminated from the test. Six of these would not fire automatically because of defective disconnecter springs; the other would not fire at all because of a broken disconnecter pin. In contrast, all AR-15's functioned properly throughout the entire test period.

b. After negotiating the Bayonet Assault Course the second time, two M2 Carbines were eliminated from the test because of broken stocks. No AR-15 Rifles were damaged.

c. Both the M2 Carbine and the AR-15 were carried through the Infiltration Course twice without adverse effect.

Analysis:

a. The AR-15 is considered to be more rugged and durable than the M2 Carbine under conditions which require prolonged firing.

b. The AR-15 will stand up to rough handling normally encountered in combat situations better than the M2 Carbine.

Test No. 6. Comparison of the Adequacy of Safety Features.

Purpose: To compare the adequacy of the safety features of the AR-15 Rifle and the M2 Carbine with respect to their function and location and the ARVN soldier's ability to understand them.

Method:

a. Concurrent with all firing and tests in which ARVN soldiers handled the AR-15 and M2 Carbine, test committee cadre made observations concerning the adequacy of the safety features with respect to their function and location and the soldier's ability to understand them.

Results:

a. No misfires occurred throughout the firing that were attributable to improper functioning of the safety mechanism on either the AR-15 or the M2 Carbine.

b. The ARVN soldiers had no difficulty in understanding the function and operation of the safety mechanisms on either weapon.

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Analysis:

a. The safety features on the AR-15 and the M2 Carbine are considered comparable with regard to function and the ARVN soldier's ability to understand them.

b. The location of a single selector switch which combines the functions of safety selector and rate of fire selector, on the left side of the receiver where it is easily accessible to the thumb, enables the ARVN soldier to get the first round off faster with the AR-15 than he can with the M2 Carbine. With the M2 Carbine, he must manipulate the safety selector with his trigger finger, then return it to the trigger to fire. With the AR-15 he can keep his finger on the trigger while manipulating the safety selector with his thumb.

Test No. 7. Effects of Open Storage in a Tropical Environment.

Purpose: To determine the effects of open storage in a tropical climate on the AR-15 Rifle and the M2 Carbine and compare the results of such storage on each weapon.

Method:

a. Two AR-15 Rifles and two M2 Carbines were stored in the open for a period of two weeks without any care or maintenance. At the end of the storage, the weapons were examined and pertinent observations recorded.

Results:

a. M2 Carbines:

1. Because of rust and sand which had collected in the receivers, operating handles on both weapons could not be operated manually and force was required to open the bolts.
2. The operating slide stops would not function properly because sand and grit had fouled the operating slide stop springs.
3. Both magazines were rusty and had collected enough sand to prevent them from operating properly without first being thoroughly cleaned.
4. The chambers and bores of both weapons were rusty.

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5. The rear sights on both weapons could not be adjusted for windage due to the collection of rust and grit on the windage screws.

6. Approximately twenty minutes were required to clean each weapon before test personnel considered it safe to fire.

b. AR-15 Rifles:

1. The charging handles on both weapons were difficult to operate because sand had collected within the receiver.

2. The bolt and bolt carriers of both weapons were rusty.

3. The chambers and bores of both weapons were rusty.

4. Approximately five minutes were required to clean each weapon before test personnel considered them safe to fire.

Analysis: The AR-15 Rifle, because it has fewer moving parts, will function more readily than the M2 Carbine after extended periods of storage in the open under tropical conditions.

Test No. 8. Brush Penetration.

Purpose: To determine whether dense brush and undergrowth affects the trajectory of the AR-15 bullet and to compare its ability to penetrate heavy foliage with that of the M2 Carbine.

Method:

a. Silhouette targets were positioned behind dense underbrush which generally consisted of bamboo saplings, bush, grass and vines. From a distance of 15 meters, both the AR-15 Rifle and the M2 Carbine were fired at the targets.

b. The distance was then increased to 50 meters and the targets were fired upon again. (Beyond 50 meters it was impossible to distinguish a target, so this was considered an acceptable maximum distance for the test).

c. Procedures a and b above were repeated several times with foliage of varying density.

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<u>Results:</u>	<u>Type of Underbrush</u>	<u>Range</u>	<u>No. of rounds fired</u>	<u>No. of hits</u>	
				<u>AR-15</u>	<u>M2</u>
	Light underbrush	15 meters	6	6	6
	Moderate underbrush & bamboo thicket	15 meters	6	6	6
	Heavy underbrush & bamboo thicket interwoven with vines	15 meters	6	6	6
	Light underbrush	50 meters	6	6	6
	Moderate underbrush & bamboo thicket	50 meters	6	6	6
	Heavy underbrush & bamboo thicket interwoven with vines	50 meters	6	6	5

Analysis:

a. The trajectory of the AR-15 bullet is not significantly affected when fired through dense underbrush at ranges up to 50 meters.

b. The AR-15 round will penetrate jungle undergrowth equally as well as the M2 Carbine round at ranges up to 50 meters.

Test No. 9. Troop Preference Poll.

Purpose: To obtain subjective data concerning the ARVN soldier's individual preference between the AR-15 Rifle and the M2 Carbine.

Method: Upon completion of all tests by participating personnel, each individual present for duty (158) was questioned with regard to preference between the two weapons.

Results:

a. Thought the AR-15 had the best "feel"	129	
Thought the M2 Carbine had the best "feel"		29

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b.	Thought the AR-15 had the best sight Thought the M2 Carbine had the best sight	66	92
c.	Thought the AR-15 would stand up best under combat conditions Thought the M2 Carbine would stand up best under combat conditions	107	51
d.	Preferred the AR-15 grip Preferred M2 Carbine grip	129	29
e.	Thought AR-15 easier to load Thought M2 Carbine easier to load	120	38
f.	Thought AR-15 easier to get ready to use Thought M2 Carbine easier to get ready to use	81	77
g.	Thought AR-15 easier to disassemble Thought M2 Carbine easier to disassemble	140	18
h.	Liked the AR-15 better from recoil standpoint Liked M2 Carbine better from recoil standpoint	106	52
i.	Thought AR-15 easier to get back on target after firing a round Thought M2 Carbine easier to get back on target after firing a round	117	41
j.	Thought AR-15 more dependable Thought M2 Carbine more dependable	107	51
k.	Thought AR-15 best all around weapon for Infantry use Thought M2 Carbine best all around weapon for Infantry use	100	58
l.	Thought AR-15 climbed least when fired auto- matically Thought M2 Carbine climbed least when fired automatically	117	41

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m.	Thought AR-15 more accurate when fired full automatic	136	
	Thought M2 Carbine more accurate when fired full automatic		22
n.	Would prefer AR-15 in combat	130	
	Would prefer M2 Carbine in combat		28

Analysis:

a. The majority of test subjects preferred the AR-15 Rifle to the M2 Carbine in all aspects covered by the poll, except for the sights. Further questioning of the subjects by test committee personnel disclosed that this preference was due to greater familiarity with carbine-type sights, not because of an inability to understand the AR-15 sights. This is not considered a shortcoming of the weapon but a matter of training and familiarization.

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ANNEX "C"

SUGGESTED CORRECTIVE ACTIONS

<u>DEFICIENCY/ SHORTCOMING</u>	<u>SUGGESTED CORRECTIVE ACTION</u>	<u>REMARKS</u>
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SECTION I

This section contains deficiencies requiring elimination in order to make the item acceptable for use on a minimum basis.

None

None

None

SECTION II

This section lists those deficiencies and shortcomings in the item which were discovered during test and satisfactorily corrected prior to completion of the test. They no longer represent a defect in the item tested. The correction must be applied to the production model of this item.

None

None

None

SECTION III

This section contains shortcomings which are desired to be corrected as practicable, either concurrent with elimination of deficiencies in Section I, or in production engineering or by product improvement.

1. The upper hand guard is hard to grip when hands are sweaty.

Roughen surface.

Ltr. from OSD/ARPA on 11 Jul 62 states that manufacturer is now moulding "checkering" on upper hand guards.

2. The weapon cleaning rod is of minimum length and hard to grip.

Add one (1) additional section and provide "T" shaped handle.

ANNEX "C"

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ANNEX "D"

PHOTOGRAPHS

This Annex contains miscellaneous photographs which visually depict pertinent aspects of the evaluation of the AR-15 conducted in South Vietnam.

PHOTOGRAPHS:

- 1. VN Soldier with AR-15 and M1 Rifle**
- 2. VN Soldier with AR-15 and BAR**
- 3. M2 Carbine and AR-15 Rifle with Accessories**
- 4. VN Soldier with AR-15 and M2 Carbine**
- 5. M2 Carbine and AR-15 Rifle**
- 6. M2 Carbine and AR-15 Rifle "Field Stripped"**
- 7. VC Casualty by AR-15 - 150 Meters**
- 8. VC Casualty By AR-15 - 15 Meters**

ANNEX "D"

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VN Soldier with AR-15.

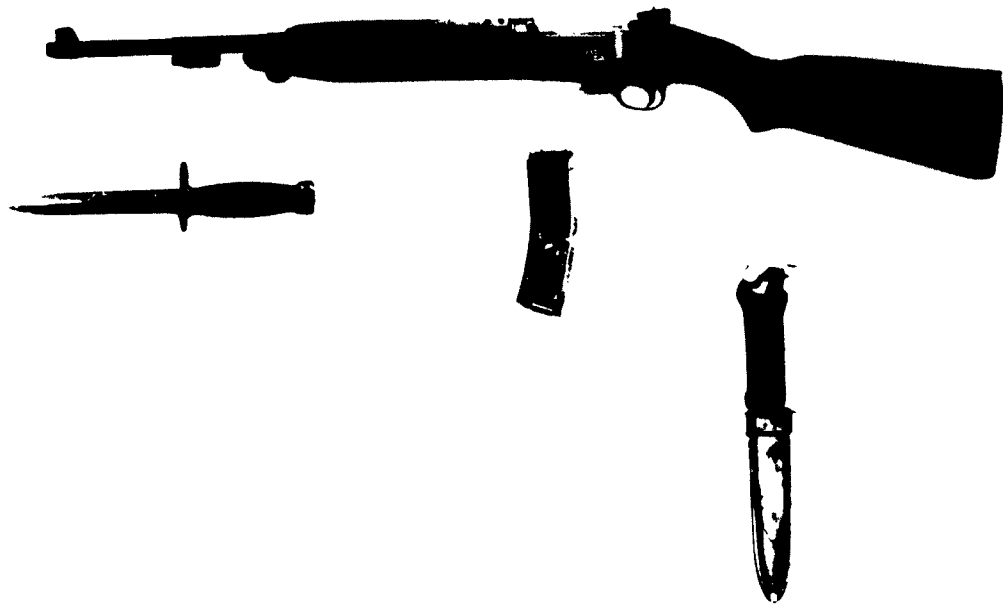


VN Soldier with M1 rifle.

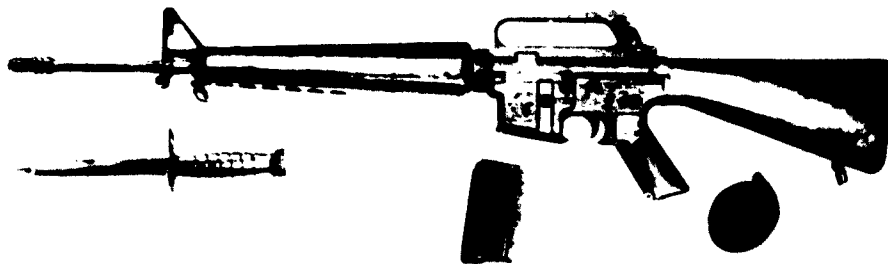


100-1000-1000-1000





Rifle, Cal. .30, 12, w/standard accessories



Rifle, Assault Rifle, AR-15, Cal. .223 w/standard accessories.



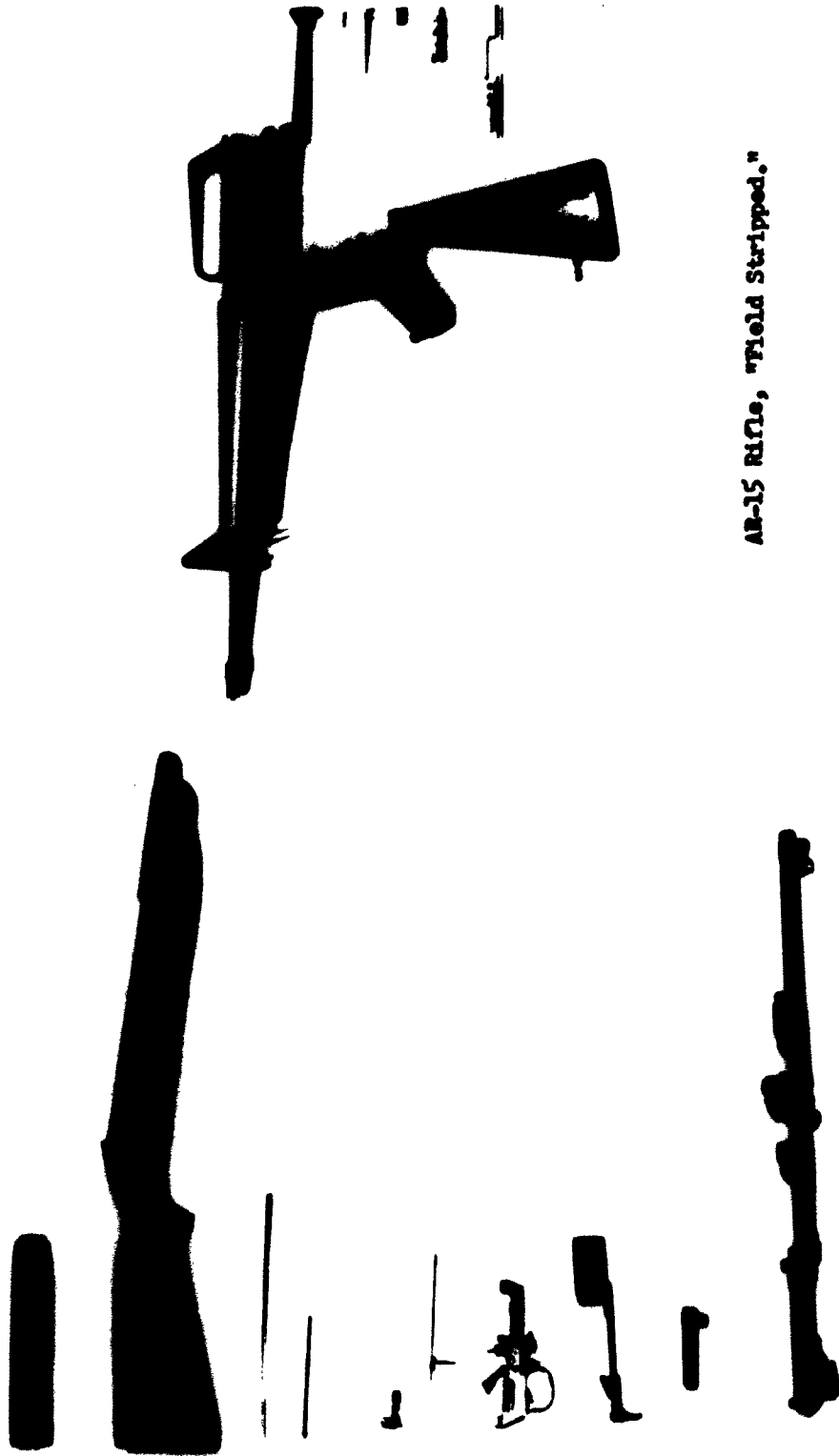


Assault Position with Carbine.



Assault Position with AR-15.

PHOTOGRAPH 6, ANNEX "D"



AR-15 Rifle, "Field Stripped."

M2 Carbine, "Field Stripped."