



DEPARTMENT OF THE ARMY
UNITED STATES ARMY MATERIEL COMMAND
PROJECT MANAGER - RIFLES
ROCK ISLAND ARSENAL
ROCK ISLAND, ILLINOIS 61201

10-1A

IN REPLY REFER TO:
AMCPM - RS

22 NOV 1967

SUBJECT: Engineering ~~Design~~ Test of the XM15 Blank Firing Attachment

TO: Commanding General
U. S. Army Test and Evaluation Command
ATTN: AMSTE-BC/Mr. Crider
Aberdeen Proving Ground, Maryland 21005

1. Reference 17 November 1967 telephone conversation between Mr. Clyde Bradley, AMCPM-RS, and Mr. Charles Crider, AMSTE-BC; same subject.
2. This letter will confirm the referenced telephone conversation requesting that engineering tests of the subject BFA be resumed and a firing schedule incorporated based upon the Springfield Armory Test Program revised date 14 Jul 65, which is included as Inclosure 1, and the Frankford Arsenal Engineering Description revised date 14 Jul 65, which is included as Inclosure 2. The Springfield Armory Test Plan outlines the test criteria establishing acceptability of the BFA design model submitted by Remington Arms Company. The objective of the D&PS engineering test program should be three fold and should:
 - a. Ascertain whether the production models submitted for engineering tests meet the acceptance criteria established by the 14 July Springfield Armory Test Plan.
 - b. Determine the firing schedule which will achieve a 5000 round service life based upon cooling the rifle to ambient after each 100 rounds fired.
 - c. Compare the XM15 BFA test results with previous tests on the M12 BFA where possible, especially as relates to endurance and durability, and comment on the overall effect on service life and safety where trade-offs are possible.

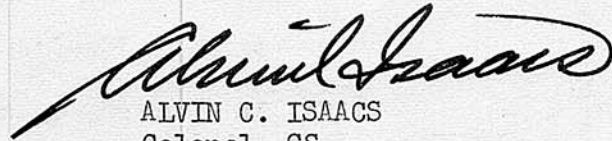
22 NOV 1967

AMCPM-RS

SUBJECT: Engineering Design Test of the XM15 Blank Firing Attachment

3. It is requested that the Project Manager, Rifles be advised by teletype when testing will be resumed, probable completion date for testing, and the target date for completion of a final test report. It is imperative that this test program be resumed and completed at the earliest possible date.

2 Incl
as



ALVIN C. ISAACS
Colonel, GS
Project Manager, Rifles

Copy furnished:
CO, APG, ATTN: STEAP-DS-TI,
Mr. F. Hines

Revised 14 July 1965

SPRINGFIELD ARMORY TEST PROGRAM

BLANK CARTRIDGE AND
BLANK FIRING ATTACHMENT
FOR
5.56MM, M16 (AR-15) RIFLE

THIS TEST PROGRAM APPLIES TO BLANK FIRE AMMUNITION
WITH BLANK FIRE ATTACHMENTS OR TO BLANK FIRE
AMMUNITION ALONE, IF ATTACHMENT IS NOT REQUIRED, BY
DELETION OF SPECIFIC TESTS FOR THE ATTACHMENT.

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INCLOSURE 1

1. INTRODUCTION

1.1 This test program is designed to evaluate final prototype blank cartridges and blank firing attachments and initial ET/ST quantity samples of blank cartridges and firing attachments for the 5.56mm, M16 rifle. The prototype samples will be extensively tested to determine the weapon performance as compared to performance when firing ball ammunition. Comparable tests will be conducted with both blank ammunition and ball ammunition whenever it is deemed necessary or desirable. The majority of the initial ET/ST quantity samples will be subjected to limited acceptance testing to determine their suitability for use in User Tests at other agencies. The remaining initial ET/ST quantity samples will be tested at Springfield Armory to confirm that they are comparable to the final prototype samples previously tested.

2. PROTOTYPE BLANK FIRING ATTACHMENT (BFA)

2.1 Material

2.1.1 Six prototype BFA's. Each BFA will be marked for identification and assigned to an M16 rifle, all testing of a BFA to be with its assigned weapon.

2.1.2 Six 5.56mm, M16 rifles and three magazines for each weapon. The rifles and three magazines for each weapon are to be of the latest design.

2.1.3 12,000 rounds of 5.56mm, blank ammunition.

2.2 General Data

2.2.1 Weigh: each BFA.

2.2.2 Measure BFA metering orifice.

2.2.3 Obtain other dimensions and weights that BFA design indicates may be important or critical.

2.2.4 Examine the BFA's and record comments pertaining to workmanship.

2.3 Prefiring Inspection

2.3.1 Check ability of each BFA to be properly assembled to all rifles without tools and without disassembly of the weapon.

2.3.2 Check ability to use weapon sights with BFA assembled.

2.3.3 Check ability of user to identify that BFA is assembled to weapon. Record coloring and other methods employed to make BFA identifiable.

2.3.4 Check ability to use pipod when BFA is assembled.

2.3.5 Examine the blank cartridges for defects as defined by MIL-C-9963 whenever applicable.

2.4 Cartridge Identification

2.4.1 While blindfolded (or in a completely darkened room) select all blank cartridges from the following mixtures.

2.4.1.1 Mix 40 blank cartridge with 40 M133 cartridges in a single container.

2.4.1.2 Mix 40 blank cartridges with 40 grenade cartridges in a single container.

2.4.2 Record the number and types of cartridges in each selection.

2.5 Kinematic Data

2.5.1 Five time-displacement curves of the bolt carrier motion during firing will be obtained for each weapon with its assigned BFA. Curves will be obtained for each of the following type fire:

2.5.1.1 Without magazine.

2.5.1.2 Semiautomatic, first five rounds in full magazine.

2.5.1.3 Full automatic, first five rounds in full magazine.

* *From text also* 2.6 Muzzle Flash

2.6.1 Photographs of the muzzle flash of two weapons firing blank ammunition will be obtained for each of the following cartridges:

2.6.1.1 Single round

2.6.1.2 Ten rounds, full automatic

2.6.1.3 Twenty rounds, full automatic.

2.6.2 Three, ten round, magazines of blank ammunition will be fired semiautomatically with each of two rifles in a completely darkened range. The weapons will be directed towards observers behind protective shield, located successively at 100, 200, 300, 400 and 500 yards from the firing point to determine if the muzzle flash is visible.

* 2.7 Noise Level

2.7.1 Establish location for sound pickup so that sound level from 120 to 130 decibels is obtained when firing ball ammunition.

2.7.2 Record sound level of firing five, 20 round, full automatic bursts from each of two rifles using blank ammunition.

* 2.8 Smoke Test

2.8.1 The smoke test will be conducted with two rifles on an outdoor range.

2.8.2 A 36" screen consisting of kraft paper will be supported by a suitable frame at 10° from the muzzle of the weapon

2.8.3 If the range is dry and dusty it will be wet down to eliminate dust.

2.8.4 Firing will be directed at the screen and firing will consist of:

2.8.4.1 Five 20 round bursts of blank ammunition in each rifle with the assigned BFA.

2.8.4.2 Five 20 round bursts of M193 ammunition in each rifle.

2.8.5 The bursts will be fired at intervals sufficient to insure clearance of the smoke from the preceding burst.

2.8.6 The visibility of the screen through the smoke will be reported, immediately after each burst, by the shooter.

2.9 Fire Hazard

2.9.1 Using one rifle and its assigned BFA fire blank cartridges from a prone position

2.9.1.1 with the muzzle in dry grass fire 100 rounds, 40 shots per minute, in three and four round bursts

2.9.1.2 with the muzzle in another section of dry grass fire 100 rounds, 40 shots per minute in 20 round bursts

2.9.2 Terminate the test if the grass ignites and record the number of rounds fired before ignition.

2.10 Ambient Temperature Function and Casualty Test

2.10.1 Two hundred round function and casualty tests will be conducted with five rifles firing blank ammunition at normal room temperature.

2.10.2 Alternate the type of fire from semiautomatic to full automatic with one half minute interval between magazines.

2.10.3 Cool the weapons to ambient temperature after each 60 rounds fired.

2.10.4 The quantity of toxic gas present in the proof room will be monitored during the function and casualty test with at least one rifle.

2.11 Sub-zero Temperature Function and Casualty Test

2.11.1 One hundred round function test will be conducted with five rifles firing blank ammunition at -65°F. The weapon and ammunition will be conditioned for six hours at -65°F before firing and reconditioned for one hour after each 20 rounds fired. The type of fire will be alternated between semiautomatic and full automatic after each 20 rounds fired.

2.11.2 a 100 round function test will be repeated at +25°F.

2.12 High Temperature Function and Casualty Test

2.12.1 One hundred round function tests will be conducted with five rifles firing blank ammunition at +125°F. The weapon and ammunition will be conditioned for four hours at +125°F before firing commences. No further conditioning will be required during the test firing. The type of firing will be semiautomatic and full automatic alternated after each 20 rounds, allow one half minute interval between each 20 rds and cool the weapon after each 60 rounds.

2.13 Screen Perforation Test

2.13.1 The screen perforation test will be conducted simultaneously with function and casualty test at ambient temperature.

2.13.2 The firing will be directed at the center of a 6 ft x 6 ft screen at 15 ft from the muzzle consisting of a single sheet of 0.0025 in. thick Kraft paper firmly attached to a substantial frame.

2.13.3 Any perforations of the paper will be recorded.

2.14 Fouling Test

2.14.1 A 500 round test will be conducted with one rifle and its assigned BFA.

2.14.2 Fire blank cartridges in 20 round bursts of full automatic fire at an average sustained rate of 40 spm.

2.14.3 Record the cyclic rate of fire for the first five (5) bursts and the last five (5) bursts. Cool the rifle to ambient temperature after each 100 rounds fired.

2.15 Durability Test

2.15.1 Using one rifle and its assigned BFA fire 750 blank cartridges in fully automatic bursts at the maximum sustained rate attainable (but not to exceed 175 spm).

2.15.2 Record handguard temperatures during the test.

2.15.3 Construct fragmentation targets around the muzzle to determine if the BFA breaks up in hazardous manner.

2.16 Weapon Performance Test

2.16.1 A 600 round weapon performance test will be conducted with each of the six weapons with assigned BFA, firing blank ammunition. The firing schedule will be

2.16.1.1 100 rounds, semiautomatic, normal hold

2.16.1.2 100 rounds, spasmodic, normal hold

Data obtained during this experiment

conduct fire portion

Thompson

Safety please

not necessary at 100 rounds and down and out

2 .1.3 100 rounds, full automatic normal hold

2.16.1.4 40 rounds, semiautomatic, loose hold

2.16.1.5 40 rounds, automatic, loose hold

2.16.1.6 40 rounds, semiautomatic, loose hold, rotated 90° left

2.16.1.7 40 rounds, semiautomatic, loose hold, rotated 90° right

2.16.1.8 40 rounds, automatic, loose hold, rotated 90° left

2.16.1.9 40 rounds, automatic, loose hold, rotated 90° right

2.16.1.10 60 rounds, automatic, normal hold

2.16.2 Rates of fire will be recorded for all full automatic fire

2.16.3 The ejection pattern will be recorded (distance and direction) for all semi automatic and full automatic, normal hold firing.

2.16.4 The WPT will be conducted on three weapons without allowing the weapons to remain uncleaned overnight. One weapon will be allowed to remain overnight, uncleaned or lubricated, after firing 300 rounds; remainder of WPT will be fired next day. One weapon will be allowed to remain overnight, uncleaned, or lubricated, after firing 400 rounds; remainder of WPT will be fired next day. One weapon will be allowed to remain overnight, uncleaned or lubricated, after firing 500 rounds; remainder of WPT to be fired next day.

X 2.17 Endurance Test

2.17.1 A 5000 round endurance test will be conducted, firing blank ammunition, with one rifle. The rounds previously fired with the rifle will be considered as part of the endurance test. The type of fire will be alternated between semi automatic, spasmodic and full automatic after each 100 rounds. Twenty round magazines to be fired at 1/2 minute intervals.

2.17.2 The weapon will be cooled after each 100 rounds.

2.17.3 Cyclic rates of fire will be recorded for all full automatic fire.

2.17.4 The weapon and BFA will be inspected and cleaned after each 1000 rounds.

2.17.5 The ability to clean the BFA will be recorded.

X 2.18.2. Safety Test

2.18.1 One round of ball ammunition will be fired from each of two weapons with the BFA assembled.

2.18.2 Fragmentation targets will be obtained.

3. INITIAL ET/ST QUANTITY BFA's FOR SPRINGFIELD ARMORY TESTS

3.1 Material

3.1.1 Six initial ET/ST quantity BFA's. Each BFA will be marked for identification and assigned to an M16 rifle, all testing of a BFA to be with its assigned rifle.

3.1.2 Two 5.56mm, M16 rifles and three magazines for each weapon. The weapons and magazines are to be of the latest design.

3.1.3 6000 rounds of blank ammunition.

3.2 Tests

3.2.1 Identical tests will be conducted, except the endurance test, with the initial ET/ST quantity BFA's as was performed with the prototype BFA's. The weapons performance test will be reduced to 280 rounds.

* It is expected that at least four of the rifles used in the testing of the prototype BFA's will be still serviceable.

4. INITIAL ET/ST QUANTITY BFA'S FOR USERS TESTS

4.1 Material

4.1.1 Twenty initial production BFA's. BFA's will not be marked for identification.

4.1.2 No additional rifles will be required. The rifles used in testing the prototype and SA initial production BFA's will be used.

4.1.3 2000 rounds of blank ammunition.

4.2 Prefiring Inspection

4.2.1 Check ability of each BFA to be properly assembled to at least three rifles.

4.2.2 Check ability to use weapon sights with BFA assembled.

4.2.3 Check ability of user to identify that BFA is assembled to weapon.

4.2.4 Measure metering orifice diameter.

4.3 Preshipment Function Check

4.3.1 Each BFA will be assembled to an M16 rifle and 100 rounds of blank ammunition fired. The firing schedule will be

4.3.1.1 20 rounds semiautomatic

4.3.1.2 20 rounds spasmodic

4.3.1.3 60 rounds, full automatic

4.3.2 Cyclic rates of fire will be measured for each 20 round automatic burst.

4.4 Post Firing Inspection

4.4.1 Each BFA will be cleaned and inspected for material failures.

Revised 14 July 1965

FRANKFORD ARSENAL

ENGINEERING DESCRIPTION
FOR FABRICATION AND/OR SUPPLY
OF CARTRIDGE, 5.56MM, BLANK, XM200
AND WEAPON ATTACHMENT FOR M16 (AR-15) RIFLE

1. SCOPE

1.1 Scope of this Engineering Description.- This engineering description covers the requirements applicable to the fabrication and/or supply of a quantity of blank cartridges and weapon attachments, as necessary to provide the 5.56mm, Rifle, M16 (AR-15) with a blank firing capability in both the semi and fully automatic modes. The blank cartridge must simulate the noise and smoke of the M193 ball cartridge, meet the general safety requirements for blank cartridges and require no modification or alteration to the standard weapon and magazine.

2. APPLICABLE DOCUMENTS

2.1 The following specifications, standards, drawings and publications, of the issue in effect on the date of award of contract, form a part of this engineering description.

SPECIFICATIONS

Military

MIL-I-45206

MIL-C-9963C

MIL-D-70327

MIL-W-13855

- Inspection Requirements, General Specification for
- Cartridge, 5.56mm: Ball, M193
- Drawings, Engineering and Associated Lists
- Weapons, Small Arms, General Specification for

STANDARDS

Military

INCLOSURE 2

MIL-STD-105

MIL-STD-109

MIL-STD-636

- Sampling Procedures and Tables for Inspection by Attributes
- Quality Assurance Terms and Definitions
- Visual Inspection Standards for Small Arms Ammunition through Caliber .50

DRAWINGS

Munitions Command

D10523632

C7643674

F10523635

IEL-10523632

- Cartridge, 5.56mm: Ball, M193
- Classification of Cartridge Case Defects
- Packing and Marking, Cartridges, 5.56mm: Cartons; Box, Ammunition M2A1; Box, Wirebound
- Inspection Equipment List for Cartridges, 5.56mm; Ball, M193

PUBLICATIONS

Munitions Command

ORD-SFI-S324

ORDM 608-14,
Part III

PB5-1

- Standard Inspection Procedures for Packing of Small Arms Ammunition
- Ammunition Ballistic Acceptance Test Methods; Test Procedures for 7.62mm Cartridges
- Preparation of Research and Development Management Reports

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 General Requirements:-

3.1.1 The blank cartridge must simulate the noise, and smoke of the M193 ball cartridge when used in conjunction with any weapon

attachments. Exception: Smoke and flash may exceed that of the ball cartridge, provided no fire, toxic or other safety hazard is generated.

3.1.2 The blank cartridge must be capable of feeding from the standard magazine and functioning the M16 rifle in the semi-automatic and full automatic modes when used in conjunction with any weapon attachments.

3.1.3 The blank cartridge must not present a safety hazard to the shooter in training.

3.1.4 If a blank firing attachment is required to permit weapon functioning, it must be of a simple design; have a durability as specified in 3.2.14; have a reliability as specified in 3.2.6.3; be easily cleaned, weigh 8 oz or less, be of a conspicuous color to provide constant recognition that attachment is on the weapon, thus minimizing inadvertent firing of live ammunition with BFA attached, be easily attached to and removed from the weapon without the use of tools or disassembly of the weapon (assembly, disassembly and use will cause no damage to the rifle), be securely attached to the weapon to preclude accidental loosening and propulsion down range, cause no greater wear of parts than when firing cartridge, ball, M193, and permit use with bipod attached. The blank firing attachment need not be used with bayonet attached.

3.2 Specific Requirements. -

3.2.1 Prototype Samples. - Prototype samples shall be required.

3.2.2 Initial ET/ST Quantity Sampling. - Initial ET/ST quantity sample shall be required.

3.2.3 Primer sensitivity. - The energy imparted by a 4 ounce steel ball falling 12 inches shall cause initiation of the primer. The energy imparted by a 4 ounce steel ball falling 3 inches shall not cause initiation of the primer.

3.2.4 Noise level. - The noise level from a 20 round burst of blank cartridges fired fully automatic shall not be less than 100 decibels when the noise level from a 20 round burst of M193 ball cartridges tested under identical conditions and using the same equipment, except for the use of any weapon attachments, is 120 to 130 decibels. The noise level of the blank cartridge shall not exceed that of the M193 ball cartridge.

3.2.5 Muzzle Flash.- The flash produced at the muzzle of the weapon from a single round shall be visible 100 yards from the weapon under conditions of darkness, but not visible at 500 yards.

3.2.6 Function and Casualty.- The blank cartridges must function without casualty at -25 degrees to +125 degrees Fahrenheit (F).

3.2.6.1 It is desirable that the cartridges function without casualty at -65 degrees to +125 degrees Fahrenheit (F).

3.2.6.2 The blank cartridges must be capable of feeding from the standard magazine and functioning the M16 rifle in the semi-automatic and full automatic modes when used in conjunction with any weapon attachments.

3.2.6.3 Malfunctions per gun per 1000 function fired cartridges attributable to weapon attachments shall not be more than two.

3.2.7 Cyclic Rate.- The blank cartridge shall operate the M16 rifle at a cyclic rate of not less than 650 cartridges per minute, nor more than 900 cartridges per minute.

3.2.8 Fouling.- The fouling produced by the firing of 500 cartridges shall not cause a decrease in the cyclic rate of more than 15 percent from the first to the last burst.

3.2.9 Screen Perforation.- The cartridge, when fired, shall not cause perforation in a paper screen placed 15 feet from the muzzle of the gun.

3.2.10 Identification.- The blank cartridge shall be positively and readily identifiable under all conditions of illumination, including total darkness

3.2.10.1 Identification shall be similar to M1909 caliber .30 and M82, 7.62mm, NATO blank cartridges, if practical.

3.2.10.2 If a blank firing attachment is required, it shall have a conspicuous color. Method and color shall be similar to blank ammunition firing attachment, M12.

3.2.11 Workmanship.- The requirements for workmanship shall be the same as the applicable requirements for the M193 ball cartridge.

3.2.12 Safety.- A blank firing attachment, cartridge weapon

system, if used in any of the firing schedules herein specified, shall present no danger to the shooter and shall result in no damage to the basic weapon. No damage to the basic weapon is interpreted to permit damage to the flash suppressor if bulletted ammunition is fired when the blank firing attachment is assembled to the weapon.

3.2.13 Attachment to the weapon.- Any attachments shall readily attach to and detach from the weapon and when attached shall be securely retained.

3.2.14 Durability.- The durability of any blank firing attachment shall be for a minimum of 750 rounds at the automatic rate of 150 to 200 rounds per minute in 20 round bursts.

4. QUALITY ASSURANCE PROVISIONS

4.1 The applicable quality assurance provisions for small arms ammunition and weapons, as specified in the referenced applicable documents, shall apply to this engineering description unless otherwise specified.

4.2 Prototype Samples.- The contractor shall submit samples of the final prototype design blank cartridge and blank firing attachment, if required, to Springfield Armory. The samples submitted for evaluation shall consist of 12,000 cartridges and, if necessary, 6 firing attachments.

4.3 Initial ET/ST Quantity Sample.- Prior to the initiation of fabrication of the ET/ST quantity, the contractor shall submit a sample to Springfield Armory. The sample submitted shall consist of 6,000 cartridges and, if required, 6 weapon attachments. The sample shall be manufactured in the same manner, using the same materials, equipment, processes and procedures as will be used for remainder of lot. All parts and materials, including packaging and packing must be the same as will be used in the remainder of the lot and shall be obtained from the same source of supply. The contractor shall inspect the sample in accordance with his inspection system and other inspection requirements of Specification MIL-I-45208.

4.4 Lot

4.4.1 The requirements for the size of lot and lot identification shall be in accordance with the provisions of the referenced applicable documents.

4.5 Examination.

4.5.1 The examination for critical, major and minor cartridge defects shall be performed by the contractor in accordance with the provisions of the referenced applicable documents.

4.6 Acceptance Tests.- The acceptance tests listed in Table I shall be conducted at Springfield Armory in accordance with the methods and procedures specified in 4.7 and attached Springfield Armory Test Program.

4.6.1 Test Equipment.- The contractor will be provided with the following quantity of the latest design M16 rifles for test purposes: five rifles to be used at the contractor's facility.

4.6.2 Test Samples.- The quantities for the various tests shall be as specified in Table I. Only cartridges having met the visual and dimensional requirements shall be used in the ballistic tests, and shall have been selected in such a manner that the sample is representative of the entire lot. The cartridges selected shall be thoroughly mixed before being divided into test samples.

TABLE I

<u>TEST</u>	<u>NUMBER OF CARTRIDGES</u>
Screen Perforation <u>1/</u>	200
Noise Level	20
Flesh <u>2/</u>	60
Fouling	500
Function and Casualty <u>3/</u>	2500
Cyclic Rate <u>4/</u>	

1/ The lot shall be rejected if more than one cartridge fails to comply with the applicable requirement.

2/ The lot shall be rejected when more than 10% of the cartridges fail to comply with the applicable requirements.

3/ The lot shall be rejected when function and casualty defects exceed the acceptance number in Table II.

4/ The cyclic rate shall be determined during the firing of the function and casualty test. Failure of any burst to comply with the applicable requirement shall cause rejection of the lot.

4.6.3 Firing Defects.- Firing defects and acceptance numbers shall be as specified in Table II.

TABLE II

<u>DEFECTS</u>	<u>ACCEPTANCE NUMBERS</u>
1. Primer	
Escape of gas through or around primer cup.	30
Blown primer or primer falls out of pocket on retraction of bolt.	0
2. Case	
Splits, neck, shoulder, or mouth	30
Bulges, mouth or neck	30
Splits, body	4
Splits, through head	1
Complete rupture	0
Partial rupture	2
Detached metal <u>1/</u>	0
3. Weapon Stoppage <u>2/3</u>	20
4. Misfire	2

1/ Any particle of metal which becomes separated from the case between the mouth and the juncture of the shoulder and neck shall be classified as detached metal.

2/ All stoppages attributable to the ammunition, with the exception of misfire or complete rupture, observed in all tests shall be included.

4.7 Test Methods and Procedures.-

4.7.1 Screen Perforation.- The test shall be conducted in accordance with Publication ORDM 608-14, Part III.

4.7.2 Noise Level.- The microphone shall be placed in such location that the noise level produced by a 20 round burst of 5.56mm, M193 cartridges is 120 to 130 decibels. With the microphone in this location, a 20 round burst of the test cartridges shall be fired and the noise level recorded.

4.7.3 Muzzle Flash.- The test shall be conducted on a darkened indoor range. The cartridges shall be fired semiautomatically and

observation for flash shall be made from a safe vantage point at a distance of 100, 200, 300, 400, and 500 yards from the muzzle of the weapon.

4.7.4 Firing.- The cartridges shall be fired in bursts of 20 cartridges, and the weapon shall be cooled to ambient temperature after the firing of every 100 cartridges. The cyclic rate of the first and last burst shall be determined and recorded.

4.7.5 Function and Casualty.- In these firings the weapon shall be at room temperature at the beginning of the test. Five rifles shall be used and the following numbers of cartridges, conditioned at the specified temperatures, shall be fired in each weapon:

<u>No. of Rounds</u>	<u>Temperature</u>
200	Ambient
100	+125°F
100	- 65°F
100	- 25°F

The test shall be conducted in accordance with Publication ORDM 603-14; Part III, with the following exception: In all rifle firing, magazines containing 20 cartridges each shall be fired alternately semi-automatic and full automatic.

4.7.6 Cyclic Rate.- The cyclic rate shall be determined during the function and casualty test. The cyclic rate of each magazine fired full automatic in the rifle shall be recorded.

4.7.7 Defect Penalty.- In any ballistic test, except function and casualty, in which the occurrence of a firing defect prevents the obtaining of a reliable result for the characteristic being tested, an additional shot or shots shall be fired. That particular test shall not be penalized, but the acceptance sample shall be penalized for such defects in accordance with Table II.

5. PACKAGING

5.1 Packaging of all material shall be in accordance with requirements of referenced applicable documents.

5.2 Marking and labeling shall be in accordance with requirements of referenced applicable documents.

5.3 Weapon attachments shall be preserved and packaged for domestic shipment in accordance with contractor's best commercial practice.

Shipping containers shall afford adequate protection during shipment and storage.

6. DELIVERY SCHEDULE

6.1 Supply prototype samples for tests, 12,000 blank cartridges and 6 blank firing attachments, 3 months after award of contract.

6.2 Supply ET/ST quantity samples for tests, 6,000 blank cartridges and 6 blank firing attachments, 1 month after notification of acceptance of prototype sample.

6.3 Supply remainder of ET/ST quantity, 52,000 blank cartridges and 21 blank firing attachments, 1 month after notification of acceptance of final prototype ET/ST quantity samples.

7. REPORTING

7.1 Management reports shall be furnished in accordance with PE5-1, "Preparation of Research and Development Management Reports."

7.2 The contractor shall prepare monthly progress reports which will be distributed by the tenth day of the month following the reporting period.

7.3 The report shall be of the brochure type and will contain as a minimum design modification, test results, analysis of data and future plans.

7.4 Five copies of the monthly progress reports will be supplied to each of the following agencies: United States Army Munitions Command, United States Army Weapons Command, Frankford Arsenal, and Springfield Armory.

7.5 The contractor shall prepare a final report which will be distributed within 30 days after final delivery of components.

7.6 The distribution and number of copies will be the same as specified for the monthly progress reports.

7.7 The final report shall include all drawings and specifications of final selected design cartridge and blank firing attachment, including primer and propellant data.