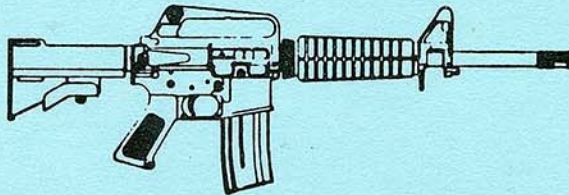


GO-AHEAD IN PROCESS REVIEW

CARBINE, 5.56mm, XM4

**IPR CHAIRMAN
PATRICK A. SERAO
SMCAR-RAR(D)**



5 DECEMBER 1984



**US ARMY ARMAMENT RESEARCH AND
DEVELOPMENT CENTER
FIRE CONTROL AND SMALL CALIBER
WEAPON SYSTEMS LABORATORY
DOVER, NEW JERSEY**

DISTRIBUTION LIMITED TO U.S. GOVERNMENT AGENCIES ONLY

TABLE OF CONTENTS

	<u>Page</u>
KEY PERSONNEL	2
DELEGATION OF APPROVAL AUTHORITY	3
APPROVAL OF CHAIRPERSON	4
IPR APPROVAL MEMORANDUM FOR RECORD	5
REVISED IPR DOCUMENTATION	7
Quick Response Program Document (QRPD)	
System Concept Paper (SCP)	
Test and Evaluation Master Plan (TEMP)	
Basis of Issue Plan (BOIP) and Quantitative	
Personnel Requirement Information (QPRI)	
Operational and Organizational (O&O) Plan	
Integrated Logistic Support (ILS) Plan	
IPR REVIEW DOCUMENTATION	74
CHANGES TO GO-AHEAD IPR DOCUMENTATION	80
MINUTES OF PRE-START IPR FOR 5.56mm CARBINE MEETING OF 17 AUGUST 1983	95
MINUTES OF PLANNING MEETING FOR XM4, 5.56mm CARBINE OF 12 JUNE 1984	113
PHOTOGRAPHS	164

XM4, 5.56mm CARBINE

KEY PERSONNEL

WEAPONS SYSTEM MATRIX MANAGER:

Mr. John Post
AMSMC-ASI(R)

DEVELOPMENT PROJECT OFFICER:

Mr. Vince De Siena
SMCAR-SCJ(D)

CONFIGURATION MANAGER M16 SERIES WEAPONS:

Mr. Loren Brunton
SMCAR-ESW-S(R)

PROJECT ENGINEERS:

Mr. Emil Merz
Mr. Anthony Buono
Mr. David Javorsky
SMCAR-SCA-W(D)

TRAINING AND DOCTRINE COMMAND:

CAPT Mills
ATCD-ML

ARMY DEVELOPMENT AND EMPLOYMENT AGENCY:

MAJ C. Ostrand
MODE-FDD-CCB

LOGISTICS EVALUATION AGENCY:

Mr. Frosty McKown
DALO-LEI

US ARMY INFANTRY SCHOOL:

CAPT Smith
ATSH-CD-MIS-F



REPLY TO
ATTENTION OF:

AMSMC-CG

DEPARTMENT OF DEFENSE
ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
ROCK ISLAND, ILLINOIS 61299-6000

75K R 9/24
Orig - Cdr
JL TD
JL DC
NJT
9/25

JSSAP

Brigadier General Robert W. Pointer, Jr.
Deputy Commanding General for Armament and Munitions
U. S. Army Armament, Munitions and Chemical Command
Dover, New Jersey 07801-5001

Dear General Pointer:

Go-Ahead IPR approval authority for the quick reaction development program for a 5.56mm Carbine is hereby delegated to AMSMC-DCG (D). This authority is not to be further delagated.

Sincerely,

Peter G. Burbules
Major General, U. S. Army
Commanding

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is TAGO.

REFERENCE OR OFFICE SYMBOL

SMCAR-SC

SUBJECT

Nomination of Chairperson for Go-Ahead In-Process Review (IPR) for XM4 Carbine

TO

AMSMC-DOG

FROM

SMCAR-SC

DATE

OCT 5 1984

CMT 1

Mr. DeSiena/msm/7074

1. I am recommending Mr. Patrick Serao as Chairperson for the subject IPR for your approval. Mr. Serao is currently a GS-0801-14 Armaments Engineer in the Requirements and Analysis Office. Mr. Serao has had extensive experience in armaments development and acquisition programs having served sixteen years at Picatinny Arsenal in various positions. Prior to his current assignment Mr. Serao was assigned to the Joint Service Small Arms Program Office, Fire Control and Small Caliber Weapon Systems Laboratory. As such he has extensive knowledge of our small arms program and has been thoroughly briefed on the XM4 Carbine Program.

2. It is our intent to convene the IPR Meeting by 31 October 1984. Inasmuch as you have approved the IPR Package and the recommended AMC Position to proceed with the program during our 3 Oct 84 briefing, the package will be disseminated directly to the voting members under signature authority of the IPR Chairperson.



RAYMOND R. ROSS II
COL, OrdC
Commander/Director, FSL

APPROVED:



ROBERT W. POINTER, Jr
Brigadier General, USA
Deputy Commander for
Armament and Munitions

SMCAR-SCJ

NOV 20 1984

MEMORANDUM FOR RECORD

SUBJECT: XM4, 5.56mm Carbine Go-Ahead In Process Review (IPR)

1. Reference is made to:

- a. LOI for Quick Reaction Program (QRP) Procedures dated 31 Jan 84.
- b. Letter, DRCDE-SG, HQ DARCOM, 1 May 84, subject: Program Initiation in Response to Quick Reaction Program (QRP) Document 3-3 for a Carbine, 5.56mm XM177E2.

2. Subject IPR was scheduled IAW guidance provided in Reference a and b and conducted via correspondence by agreement of the voting members.

3. The AMC position was forwarded to all voting members on 9 October 1984. The AMC position is proceed into Engineering Development with the carbine concept as prescribed in the IPR documentation attached at encl 1.

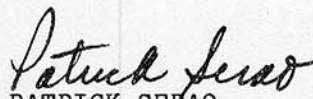
4. Concurrences with the AMC position were obtained from LEA (encl 2) ADEA (encl 3) and TRADOC (encl 4), the three voting members during the period 29 Oct - 27 Nov 84.

5. TRADOC's concurrence was provided on condition that minimum RAM values be included as requirements and that attainment of these requirements be validated prior to a Milestone III IPR. Coordination with LEA and ADEA was conducted by the IPR Chairman and both concurred with TRADOC's position.

6. As delineated in encl 5, coordination comments will either be incorporated in the IPR Package or will be addressed in the development program.

7. Based on the above it is recommended that the program be immediately initiated as described in the AMC position.

5 Encl
as


PATRICK SERAO
IPR Chairman

Memorandum for Record

SUBJECT: XM4, 5.56mm Carbine Go-Ahead In Process Review (IPR)

NOV 29 1984

CONCURRENCE:

Mr. F. McKown concurred by FONECON
on 29 November 1984

LEA - IPR Voting Member

MAJ C. Ostrand concurred by FONECON
on 29 November 1984

ADEA - IPR Voting Member

CPT S. Smith concurred by FONECON
on 29 November 1984

TRADOC - IPR Voting Member

Patrick Serao

AMC - IPR Voting Member

PATRICK SERAO

Chairman, Go-Ahead IPR

COMMANDER:

APPROVED

DISAPPROVED

SEE ME

PORTER 5 Dec 84

GO-AHEAD IN-PROCESS REVIEW (IPR) DOCUMENTATION

for

5.56mm XM4 CARBINE

(QUICK REACTION PROGRAM)

Revised 29 Nov 84

TABLE OF CONTENTS

1. QUICK RESPONSE PROGRAM DOCUMENT (QRPD)
2. SYSTEM CONCEPT PAPER (SCP)
3. TEST & EVALUATION MASTER PLAN (TEMP)
4. PRELIMINARY QUANTITATIVE ANALYSIS (PQA)
(Not required for this Program)
5. BASIS OF ISSUE PLANS (BOIP) AND QUANTITATIVE PERSONNEL REQUIREMENT
INFORMATION (QQPRI)
6. OPERATIONAL & ORGANIZATIONAL (O&O) PLAN
7. INTEGRATED LOGISTIC SUPPORT (ILS) PLAN

QUICK REACTION PROGRAM DOCUMENT (QRPD)

9ID QRP REQUIREMENT DOCUMENT

1. TITLE:

- a. Descriptive Title: XM4 5.56mm Carbine
- b. Catalog of Approved Requirement Document (CARDS) Reference Number:

2. NEED/THREAT:

a. Need. There is a need for an automatic carbine to replace .45 caliber pistols and standard rifles for selected soldiers. This meets an operational need for a personal defense weapon producing a high volume of fire but shorter and lighter than standard rifles so that it may be carried and used by vehicle soldiers. A logistics requirement is for commonality of ammunition and repair parts for combat unit small arms.

b. Threat. The primary threat to be serviced by personnel armed with this weapon will be dismounted infantry units equipped with small arms and automatic weapons.

3. TIMEFRAME: 1986

4. OPERATIONAL/ORGANIZATIONAL CONCEPT:

a. Operational Concept. The 5.56 Carbine will be a shorter, lighter version of the standard service rifle. It will retain the same basic operating characteristics as the M16A2 as well as commonality of ammunition and most repair parts. It will replace selected pistols and sub-machine guns in those positions where a more effective personal defense weapon is needed or, in the case of rifles, where a smaller, more easily handled weapon is required.

b. Organizational Concept. The 5.56 Carbine will replace the .45 caliber pistol carried for self-protection by TOW and mortar crews,

Dragon gunners and other crew served weapons personnel. The 5.56 Carbine will replace all .45 caliber submachine guns and M16A1/A2 rifles for selected vehicle crewmen, crew served weapons personnel, and selected command and staff personnel. The weapon will be supported by organic unit and direct support maintenance. Projected initial estimates of total quantities for 9ID (MTZ) are 4,195 weapons.

5. ESSENTIAL CHARACTERISTICS: The characteristics of the 5.56 Carbine must meet the following requirements:

- a. The weapon must be a 5.56mm NATO caliber and be capable of firing the same ammunition as the M16A2.
- b. The weapon must have maximum parts commonality with the M16A2 consistent with other specified characteristics.
- c. The overall length, with the butt stock collapsed, must be between 26 and 31 inches.
- d. The overall length, with the butt extended, must be between 29 and 34 inches.
- e. The weight without magazine must be no more than 6.5 pounds.
- f. The maximum effective range desired is 300 meters.
- g. The weapon must have a fully automatic fire capability. A three round burst capability is not desired.
- h. Maximum flash suppression is desired.
- i. RAM performance comparable to that achieved by the M16/M16A2 family is desired.
- j. The weapon shall be safe to handle, operate and maintain. The weapon will comply with Human Engineering Requirements of MIL STP 1472 Section 5.4-5.6, 5.9 and follow the Design Guidance of MIL-HDBK 759

Section 7.2.3. The weapon will be operable by soldiers wearing NBC and arctic clothing.

k. NBC contamination survivability is required.

l. The weapon must be capable of operation in hot, basic, cold and severe cold climate design types as defined in AR 70-38.

m. Should the weapon be incompatible with the M12 weapons security rack, modification of the rack or a new rack may be required.

Similarly, should the standard blank firing adaptor not be compatible with this weapon, modification of the adapter or a new adapter may be required.

6. TECHNICAL ASSESSMENT. The XM4 5.56mm Carbine is a modification of the 5.56mm XM177E2 Submachinegun which is already a derivative of the M16 series rifle. The changes will eliminate some known deficiencies in the XM177E2 Submachinegun. Technological risks are minimized because of the significant parts commonality with the M16A1/A2 Rifles and their extensive support methodology which already exists. Based on the maturity of the basic mechanism, i.e., its use in the M16 series rifles and previous use and evaluation of the XM177E2 Submachinegun, the XM4 Carbine will be a suitable candidate to meet the 9ID requirements.

A potential problem, however, may develop if the M15A2 BFA currently used with the M16A2 rifle will not perform satisfactorily with the XM4 Carbine. Additional funding may be required to develop a suitable BFA. Another more serious problem could be the availability of the new M855 and M856 ammunition required for Developmental and Operational Testing of the weapon. This could have a detrimental impact to the program schedule.

7. LOGISTIC SUPPORT CONCEPT. New operator and maintenance MOSs will be minimized. The maintenance concept will be consistent with the division support organization, concept of operation, and repair level policies. Maximum utilization will be made of existing TOE tools, TMDE, and other support equipment and/or presently approved emerging TMDE or support equipment to minimize proliferation. The range and quantity of repair parts and other supply requirements to include POL must be consistent with division support capabilities. The LSA/LSAR process will be used to determine and define support requirements and personnel tasks and skills for the operation, maintenance and support of the system. The System Support Package will be tested in conjunction with the user test.

8. TRAINING ASSESSMENT. The materiel developer and the TRADOC proponent will develop a complete training subsystem specifically designed to support all phases of training from initial entry training to individual/crew sustainment training to include New Equipment Training (NET) for user testing and initial fielding.

a. Training devices required to support system training will be developed by the materiel developer under the authority of this document.

b. All training products, developed as a part of this weapon's training subsystem, will be designed according to the Instructional System Development (ISD) model utilizing data generated/developed IAW DARCOM PAM 750-16.

c. System technical manuals and extension training materials will be developed by the materiel developer IAW AR 310-3. Requirements for Skill Performance Aids (SPAs) shall be a specific issue. Maximum utilization will be made of contractor manuals consistent with the level

of understanding of military personnel and the need of 9th ID. Contractor manuals will be replaced by standard manuals within two years for any follow-on acquisition or procurement.

d. The requirement for extension training materials will be determined during the Full Scale Development Phase.

e. The Training Support Package will be tested during OT II.

9. MANPOWER/FORCE STRUCTURE ASSESSMENT. The 5.56 Carbine will replace selected weapon systems, and will not impact on manpower requirements or force structure.

10. OTHER SERVICE/ALLIED INTEREST. Currently, the USMC, Navy, Air Force and Coast Guard have expressed an interest in the 5.56mm Carbine as a replacement for selected weapons. Allied interests are to be determined.

11. LIFE CYCLE COST. The total life cycle cost cannot be made until sufficient RAM-D data is available.

12. MILESTONE SCHEDULE.

TASKS

DATE

Go Ahead IPR	OCT 84
Weapon Contract	Nov 84
Ammunition Contract	Jan 85
Delivery of Prototype Weapons	Jun 85
Delivery of Ammunition	Jun 85
Initiate DT II Testing	Jun 85
Initiate OT II Testing	Aug 85
Complete OT II Testing	Sep 85
Complete DT II Testing	Dec 85
Development Acceptance IPR	Mar 86

12. MILESTONE SCHEDULE (continued).

TASKS

DATE

Weapon Production Contract

Apr 86

Production Acceptance T&E

Jul 86

Complete Production Accept. T&E

Sep 86

Weapon Production Delivery

Sep 86

First Unit Equipped

Oct 86

NOTE: Program schedule is contingent upon availability of ammunition.

DATE

TASKS

OCT 84

Go Ahead IPR

Nov 84

Weapon Contract

Jan 85

Ammunition Contract

Jan 85

Delivery of Prototype Weapons

Jan 85

Delivery of Ammunition

Jan 85

Initiate DT II Testing

Aug 85

Initiate DT II Testing

Sep 85

Complete DT II Testing

Dec 85

Complete DT II Testing

Mar 86

Development Acceptance IPR

SYSTEM CONCEPT PAPER (SCP)

SYSTEM CONCEPT PAPER

FOR

XM4 CARBINE

I. SYSTEM DESCRIPTION:

The XM4 5.56mm Carbine is a shorter, lighter version of the standard M16A1 service rifle.

It retains the same basic operating characteristics as the M16A1/A2, as well as commonality of ammunition and many parts. It replaces selected pistols and submachineguns in those positions in which a more effective personal defense weapon is needed, or in the case of replacing rifles, in those positions in which a smaller, more easily handled weapon is required.

II. HISTORY:

In Jun 83, The US Army Armament Research and Development Center (ARDC) responded to a request to review a 9th Infantry Division (9ID) Quick Reaction Program (QRP) for a 5.56mm Carbine dated 19 Apr 83. The QRP centered around the XM177E2 Submachinegun which has several areas that required modifications. Initially it was felt that a change in plastics for the handguard and pistol grip and a new barrel with 1 turn in 7 twist rate would satisfy the 9ID requirements cited in their QRP. The Jun 83 ARDC response cited the following problem areas:

- a. The muzzle device for the XM177E2 Carbine stripped bullet jackets.
- b. The handguard did not offer sufficient protection to the shooter from heat.
- c. The gas system must be changed to insure function with M855/M856 ammunition.

A program plan costing \$637K was prepared to address the needed improvements, test and update the TDP. Specific recommendations were:

- a. Modification of the weapon to insure function with M193/M196 and M855/M856 ammunition.
- b. Modification of sight alignment to accommodate trajectory of M855/M856 ammunition.
- c. Change in buttstock material to the new plastic material used in the M16A2 Rifle to achieve approximately 40% reduction in cost of the buttstock.
- d. Change in barrel length to 14½ inches to eliminate the need for significant design change to the muzzle device to reduce noise, flash and blast on a short barrel and associated testing to prove accomplishment. This action also allowed the use of the M16A2 Rifle muzzle device, which is of proven quality. Further, the M15A2 Blank Firing Attachment (BFA) fits on this M16A2 Rifle muzzle device and would not fit on the XM177E2 muzzle device.
- e. Use the M16A2 Rifle pistol grips without change.
- f. Modify the handguard by transfer of the M16A2 Rifle handguard technology to resolve the heat problem. A by-product of this action would improve the cook off point and the sustained fire rate. The program duration was 18 months and was a highly compressed schedule. This was in response to the 9ID's desire to have the shortest possible success orientated schedule.

On 21 Feb 84 the US Army Development and Employment Agency (ADEA) QRP #3-3 was approved by Headquarters, Department of the Army (letter, Appendix E).

The Operational and Organizational (O&O) Plan prepared by the 9ID is being staffed for final approval.

On 12 Jun 84 a major planning meeting was held at ARDC for the XM4 Carbine. As a result of this and subsequent meetings, the supporting documentation contained in this IPR Package was generated.

III. THREAT ASSESSMENT:

Many Army personnel including commanders, staff officers, vehicle drivers, weapon crewmen, and others are armed with a pistol by TOE authorization as a personal defense weapon for use in combat. During past combat operations, many of these personnel have armed themselves with other weapons that provided greater range, accuracy and volume of fire. Various types of rifles, shotguns, submachineguns, and other small arms weapons were available in combat and were used for this purpose. These weapons usually provided better firepower than the pistol; however, most are so large and unwieldy that they interfere with the primary military duties or functions, i.e., the full size of a rifle will not store properly in the tank and/or the roll bars on the fast attack vehicles prevent the full swing of the rifle. As a solution, some of the current TOE pistols and submachineguns will be replaced with a lightweight, short barreled rifle with a telescopic buttstock that will provide greater firepower without being cumbersome to carry or a hindrance to perform military duty. In addition, the XM4 Carbine will have common ammunition with the M16A2 Rifle, thus, eliminating the logistic problem of using different caliber of ammunition.

IV. SHORTFALLS OF EXISTING SYSTEMS:

The XM4 5.56mm Carbine will replace the XM177E2 5.56mm Submachinegun in a program enhancement initiated to correct known deficiencies in the XM177E2 in response to the 9ID QRP.

a. The XM4 will be a derivative of the M16 series rifle design. The carbine will be compatible with the M193, M196, M855 and M856 series of ammunition; therefore, the barrel will be changed to 1 turn in 7 inch twist rate.

b. The barrel length will be increased from 11 inches to 14½ inches and will use the M16A2 muzzle compensator. The elongated flash suppressor used on the XM177E2 caused the stripping of the bullet jackets during firing.

c. The collapsible buttstock will be changed to the plastic material currently used in the M16A2. This will eliminate the current problems with chipping of the surface finish of the XM177E2 buttstock. In addition, the change will produce a weight reduction as well as an approximate 40% reduction in cost of the buttstock.

d. The XM4 will make use of the M16A2 lower receiver and will utilize several improved characteristics of the M16A2 including; the improved dust cover, strengthened receiver extension ring, improved rear aperture, and spent case deflector.

e. The handguard and pistol grip will be made from the same plastic material used in the M16A2 making the part more durable.

f. The use of the M16A2 muzzle compensator will enhance the potential for use of the M15A2 BFA.

V. DESCRIPTION OF SELECTED ALTERNATIVE:

The XM4 5.56mm Carbine is a gas-operated, air-cooled, selective fire, shoulder weapon with a telescoping buttstock. It is fed by either 20 or 30 round aluminum magazines which are totally interchangeable with those of the M16 family. The mode of fire of the XM4 is identical to the M16A1 Rifle.

The weapon will be capable of firing the same ammunition and will have maximum parts commonality with the M16 family of weapons. The overall length, with the buttstock collapsed will be between 26 and 31 inches. The overall length, with the buttstock extended will be between 29 and 34 inches. The weight without the magazine will be no more than 6.5 pounds.

The maximum effective range will be 300 meters and the cyclic rate between 700 and 900 rounds per minute (rpm). The weapon meets the operational need for a self-defense weapon producing a high volume of fire but is shorter and lighter than standard rifles so that it may be carried and used by vehicle crewmen, crew served weapons operators and selected command and staff soldiers.

VI. TECHNOLOGICAL RISKS OF SELECTED ALTERNATIVE:

Based on the full development of the basic mechanism of the M16 series rifles, and previous use, testing and evaluation of the XM177E2 Submachine-guns, the technological risks are minimal, however, the accelerated acquisition plan may have an impact on the risk assessment with respect to the XM4 program schedule. Key areas which may affect the program are:

- a. Availability of the new M855 and M856 ammunition required for Developmental and Operational Testing.
- b. Current litigations with Colt Industries (prime contractor for the development of the XM4 Carbine) on royalty rights.
- c. The use of M15A2 BFA (currently used with the M16A2 rifle) may not function satisfactory with the XM4 Carbine.
- d. The existing M12 Arms Rack may need some redesign to accommodate the XM4 Carbine.

VII. ACQUISITION STRATEGY: See Appendix D.

VIII. KNOWN ISSUES:

a. The XM4 Carbine effort has been established as a Level II program requiring intensive management with aggressive and innovative action on the part of all personnel associated with the program. This level of effort is required in order to meet the established quick reaction program goal to provide ADEA with a 5.56mm Carbine capability in 1986.

b. It is recognized that the program plans and milestones schedule contained in this Go-Ahead IPR Package are success oriented, have been telescoped and contain no time to absorb slippage and still meet the established goal.

c. A number of problems areas and issues associated with this program since its inception have been resolved, one by one. All personnel associated with this program must put forth a maximum effort and resolve the remaining issues.

d. The remaining known issues which have been identified must now be addressed and resolved are:

1. Availability of M855 ammunition for DT/OT II.

2. Adequate funding to complete the program.

3. Settlement of the royalty dispute with the Colt Company.

e. This package is approved for distribution, with the knowledge that the clock is running, and a maximum effort will be put forth to develop plans to resolve these issues before adverse schedule impact occurs.

XI. DECISIONS NEEDED:

Program approval as outlined in this IPR Package with potential modifications resulting from the Go-Ahead IPR.

APPENDIX A

THRESHOLDS

MILESTONE II

MILESTONE III

COST

RDTE (total)	Not Applicable	1.189M
Procurement (total)*		9.0M
Fly-away (unit)*		624.70
Procurement (unit)**		624.70

SCHEDULE

Milestone II		
Milestone III		Mar 86

PERFORMANCE

Technical

Speed (muzzle velocity)	2900 feet/sec
Maximum Range (effective)	300 meters
Rate-of-fire	700/900 RPM

Operational

Sortie Rate	***SEE NOTE
Hit Probability	
Kill Probability	

READINESS/SUPPORTABILITY

Operational

Reliability (Field)	600 MRBS
Maintainability	***SEE NOTE
Operational Availability (Ao)	
Resupply Time	
Manning	

NOTES:

- *Total Cost 86-90
- **Unit Cost FY86 \$587 out years - escalated using May 84 indices
- ***Data not available at preparation of IPR package. Will be forwarded for review subsequent to receipt of analysis of DT Data

APPENDIX B

RESOURCES (COST TRACK SUMMARY)

(Millions of Dollars)

	FY84 Constant (Base Year)\$	Escalated\$
	Planning/ development estimate	Current estimate
<u>DEVELOPMENT PHASE</u>		
RDTE		
Validation phase	.037	.037
Full-scale development		
Contractors	.097	.125
In-House	.503	.657
Contingency (Service)	0	0
Other System Costs	0	**.200
TOTAL RDTE APPROPRIATION	.637	1.0190
OTHER ⁴		1.176
TOTAL DEVELOPMENT PHASE		
<u>PRODUCTION PHASE</u>		
PROCUREMENT (WTCV ARMY)	9.0M	9.0M
System Cost		
Flyaway	(14407)	(14407)
Initial spares		
Other line item procurement		
TOTAL PROCUREMENT APPROPRIATION		
OTHER	0	0
TOTAL PRODUCTION PHASE	9.0	9.0
TOTAL OPERATING & SUPPORT PHASE		
TOTAL LIFE-CYCLE REQUIREMENTS		
AVERAGE ANNUAL SYSTEM O&O COSTS		
No. of Systems:	No. of Years:	
MILITARY MANPOWER		
Unit Manning		
Program Totals (Active/Reserve)		

**NOTE: Cost of new manuals were note included in original estimate.

APPENDIX C

RESOURCES (FUNDING PROFILE)¹ (Millions of Dollars)

	FY 1984 PRIOR	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990	TOTAL
ACQUISITION QUANTITIES								
Development Qty.	40							
Production Qty. by FY	0	0	4685	4517	1917	3288	0	14407
Deliveries by FY	0	0		4980	4200	1920	3307	14407
DEVELOPMENT PHASE"								
RDTE	.037	0						.037
Validation phase								
Full-scale development								
Contractors	.138	.200						.338
In-house	.071	.515	.090					.676
Contingency (Service)			.050					.050
Other System Costs			.075					.075
TOTAL RDTE APPROPRIATION	.246	.715	.215					1.176
TOTAL DEVELOPMENT PHASE								
PRODUCTION PHASE								
PROCUREMENT	0	0	2.8	2.7	1.3	2.2	0	9.0M
System cost : 3211								
Flyaway, rollaway	0	0	4685	4517	1917	3288	0	14407
(provide one level of WBS indenture based on program requirements)								
Other system costs								
Long lead requirements (nonadd entry for each year)								
Initial spares	0	0	.070					.070
TOTAL PROCUREMENT APPROPRIATION	0	0	2.8	2.7	1.3	2.2	0	9.0M
CURRENT APPROVED FYDP, PROCUREMENT								
OTHER								
TOTAL PRODUCTION PHASE	0	0	2.8	2.7	1.3	2.2	0	9.0M
OPERATING AND SUPPORT PHASE								
MIPERS								
O&M			11.8	11.4	4.8	8.3	0	36.3
Procurement	0	0	0	0	0	0	0	0
TOTAL OPERATING AND SUPPORT PHASE								

APPENDIX C (continued)

RESOURCES (FUNDING PROFILE)¹ (Millions of Dollars)

	FY 1984 PRIOR	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990	TOTAL
OTHER FUNDING								
During development								
During production								
Industrial capacity investment								
Total "other" costs								
TOTAL LIFE CYCLE REQUIREMENTS								
Production (Validated)	0	0	16.1M	16.3M	7.3M	13.1M	0	52.8M
TOTAL LIFE CYCLE REQUIREMENTS RDT&E) (Validated)	.246K	.715K	.215K	0	0	0	0	1.176M
TOTAL LIFE CYCLE REQUIREMENTS	.246K	.715K	16.315M	16.3M	7.3M	13.1M		53.976M

APPENDIX D

ACQUISITION STRATEGY

1. Program Structure:

The management options included the development of a new weapon system specifically designed to meet the specific requirements of the 5.56mm Carbine QRP, the modification of an existing weapon such as the M16A2 Rifle or the procurement of an existing 5.56mm Carbine.

The new weapon development option was not viable because the time frame when the item is to be fielded in 1987, precludes a new development program starting in 4th Qtr FY84. The modification of an existing weapon or procurement of an available 5.56mm Carbine were more viable options. These options, however, were restricted by the requirement to maximize parts commonality with the standard service weapon, the M16A2 Rifle. The only commercial carbine available that provides maximum parts commonality is from the Colt Company. This weapon is essentially the same as the XM177E2 Submachinegun with respect to the buttstock, handguards and gas system. When these changes are incorporated into Colts' commercial weapon, the resultant weapon will be an untested XM4 Carbine as proposed.

The option selected for this QRP was to modify an existing US Military weapon with existing TDP. The weapon chosen to modify was the XM177E2 5.56mm Submachine Gun, which is already a modification of the M16 series rifle. The proposed modifications will increase parts commonality with the M16A2 Rifle and eliminate some known deficiencies in the XM177E2 design. This option is the least risk option with regard to fielding a 5.56mm Carbine in CY87 with a high percentage of parts commonality with the 5.56mm standard service rifle. The primary modifications of the XM177E2 considered involve the use of a 14½ to 15 inch barrel with a 1 in 7 twist, modified M16A2 handguards, a plastic telescoping buttstock and the M16A2 upper receiver.

2. Contracting Strategy:

This program is for a relatively small acquisition quantity compared to the M16A2 Rifle with which it shares an estimated 75 percent of its parts;

therefore, the contracting strategy will make maximum use of the existing M16 production contracts and facilities. Additionally, because of the high percent commonality of parts with the M16A2 Rifle and the minimum time available for production prior to fielding, it is not anticipated that competition will be a major factor in the procurement strategy. Tying the small production quantities of the XM4 Carbine to the larger planned production quantities of M16A2 Rifles scheduled for FY86-90 will provide an economical method of procurement. Initial spare and repair parts for the XM4 Carbine, which differ from M16A2 parts will be procured in conjunction with the first production contract.

3. Tailoring the Acquisition Process:

The planned acquisition process is being accelerated because of the XM4 design similarity to the M16A2 Rifle and the XM177E2 Submachine Gun. The fact that each of these similar weapons has successfully completed extensive testing has allowed this program to proceed directly through the prototype validation phase into DT II/OT II with a high degree of confidence in its successful completion. This program will start with the Go-Ahead IPR, proceed through Engineering Development (prototype weapons/DT II/OT II) to the DEVA IPR and then into the production/deployment phase.

4. Supportability:

Supportability issues are minimized because of the significant parts commonality with the M16A1/A2 Rifles and their extensive support methodology which already exists. Initial spare and repair parts peculiar to the XM4 Carbine will be procured in conjunction with the first production contract. Training impacts will also be minimized because of the familiarity using troops will have through their M16A1/A2

training. Also, maintenance training will be minimized because of similarity with the maintenance requirements of the existing M16 series rifles. Armorers, for instance, will find a few changes between this weapon and the M16A1/M16A2, which they will already have been trained on.

5. Manufacturing and Production:

The XM4 5.56mm Carbine will be manufactured primarily on the same facilities used for the M16 series rifles and M231 Port Firing Weapon. Approximately 75 percent of its parts are identical with M16A2 Rifle parts and are already in production. Because of the low technical risk involved and the urgent need to field this weapon in CY86, the development contract will include provision for initial tooling design for the prototype weapons to be suitable for the low rate production planned for this weapon.

Current planned production quantities include only weapons for the 9ID and LID. As Army-wide requirements are identified and funded, the planned production rate may increase; however, it is not anticipated it will ever approach the economic production rate of the M16 series weapon of 8,500 wpns/mo. With the 75 percent commonality with the M16A2, which is in production, it is intended to take advantage of its production rate to reduce the procurement cost of the Carbine.

The M16A2 Enhancement Program may alter the design of the upper receiver to include an integral fixed scope mounting rail. If the M16A2 TDP is changed to include this modification in May 85 the change will be included in the XM4 Carbine TDP to maintain parts commonality, improve capabilities and minimize cost and support requirements.

6. Test and Evaluation:

Based on the maturity of the basic mechanism, i.e., its use in the M16 series rifles and previous use and evaluations of the XM177E2, the tests and evaluation effort on this program can be minimized. USAIB conducted a Concept Evaluation Program (CEP) on the XM177E2, in which it was determined that it was, with few modifications an acceptable candidate to meet the 9ID Carbine requirement. This mechanism maturity allows the concept validation and DT I/OT I phase to be largely by-passed and proceed into Engineering Development Prototypes and DT II/OT II. It is intended to contract sole source with Colt Firearms, Inc. to obtain 40 development prototype weapons by Jun 85 to submit to testing in the Jun-Dec 85 timeframe. Development testing (DT II) will be conducted by TECOM at APG or an authorized contractor and will require 16 weapons. This weapon will be tested with its intended ammunition the M855/856 series 5.56mm ammunition. The US Marine Corps will provide up to 1/3 of the test personnel required for OT which will enhance the Joint Service acceptability aspects of the program. Operational testing (OT II) will be conducted at Fort Benning, GA by the USAIB and will require 20 weapons. Test reports will be available during the Dec 85 -Jan 86 timeframe.

7. Cost and Growth Drivers:

This weapon system is closely allied to the M16A2 Rifle which will be obtained through a multi-year procurement in the FY85-90 timeframe. During this period the XM4 Carbine procurement contract will be negotiated in concert with the M16A2 contract to minimize cost growth. The use of M16A2 parts to the maximum extent possible including going to the new design upper receiver if/and when it's adopted, will eliminate

the cost growth associated with continuing to use a low volume part in lieu of going to the new high volume part.

8. Technical Risks:

The XM4 Carbine is a low risk program. Some minimal risk will be encountered during the development phase in adopting the 1 in 7 twist barrel and switching to a plastic buttstock in place of the aluminum buttstock now used.

9. Safety and Health:

The basic design of the XM4 Carbine is essentially fixed, in that it is a derivative of the M16 series rifle design. Design changes required to incorporate the M16A2 barrel twist and change the buttstock material to plastics will have little effect on overall system safety. DT II and OT II will verify that the system safety and health hazard performance of the M16 series rifle has not been significantly degraded.

10. Soldier-Machine Interface:

This development is essentially in the full scale engineering development phase which precludes major design changes which would upset the current soldier-machine interface of the basic M16 series rifle design. The buttstock will telescope and the barrel will be approximately 5 inches shorter; however, when the buttstock is extended the man-machine interface of the XM4 Carbine approximates that of the M16 series rifle. When the buttstock is retracted and shortened overall length facilitates weapons usage in close quarters, which is the intended use. The man-machine interface will be evaluated during OT II scheduled for the Aug-Sep 85 timeframe.

11. Survivability and Endurance:

The XM4 5.56mm Carbine RAM requirements are to be comparable with the M16A1/A2 series rifle. This will be tested and verified during DT II/OT II testing.

12. Type Classification Considerations:

It is intended to type classify the XM4 Carbine, Standard in March 1986, based on successfully completing DT II/OT II. The significant commonality of parts and technical design with the M16 series rifle indicates the maturity of the design and enhances this decision to go directly to TC standard.

The acquisition strategy has been structured to facilitate direct TC Standard by initiating the program into the full scale development phase, conducting DT II/OT II testing to demonstrate performance and planning to consolidate procurement contracts for the XM4 Carbine with the ongoing M16A2 contract to obtain quantity pricing on small volume procurements.

13. Short Term Issues:

The primary short term issue that must be addressed prior to the next milestone review which could result in funding shortfalls is to determine the acceptability of the M15A2 Blank Firing Attachment (BFA).



DEPARTMENT OF THE ARMY LTC Young/79663
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON, DC 20310

REPLY TO
ATTENTION OF DAMO-FDD


21 February 1984

SUBJECT: Quick Reaction Program (QRP) Document for a 5.56mm Carbine

Commander
TRADOC
ATTN: ATCD-E
Fort Monroe, Virginia 23551

1. Reference: TRADOC msg 0321341 Oct 84 SUBJ: US Army Development and Employment Agency (ADEA) High Technology Motorized Division (HTMD) Quick Reaction Program Document (QRP-D).
2. In the reference cited above TRADOC recommended approval of the QRP-D for the XM-177 5.56mm carbine. The QRP-D is approved and implementing instructions are as follows:
 - a. System designation: Non-major, ~~DA~~ IPR
 - b. Materiel Developer: DARCOM
 - c. Combat Developer: TRADOC
 - d. Trainer: TRADOC
 - e. Logistician: USALFA
 - f. Operational Tester: TRADOC
 - g. CARDS Reference Number: 0268
3. This response must be subjected to a prioritization process. The HTMD should provide input on relative priorities. Request TRADOC recommend priorities and zero-sum adjustment to the Long Range RDA plan.

FOR THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS:


WAYNE KNUDSON
Brigadier General, GS
Director of Force Requirements
and Army Aviation Officer
ODCSOPS

CF:

DAMO-FDR/FDT

DAMA-WSW

Cdr, CALDA (ATZL-CAM-I)

✓ Cdr, DARCOM (DRUDE-A)

Chief, HTTB (AFVD-TB)

TEST & EVALUATION MASTER PLAN (TEMP)

TEST AND EVALUATION MASTER PLAN (TEMP)

FOR

XM4 CARBINE

PART I - DESCRIPTION

1. MISSION - There is a need for a carbine capable of automatic fire to replace Cal .45 Pistols and Submachineguns and M16A1 Rifles for selected troops. The XM4 Carbine will meet an operational need for the personal defense of combat vehicle crewman, crew served weapons operators and selected command and staff soldiers. The primary threat to be addressed by the increased effective firepower of the XM4 Carbine will be dismounted infantry units equipped with small arms and other automatic weapons. The XM4 Carbine will be issued primarily for the self-protection of TOW and mortar crews, Dragon gunners, and other crew served weapons personnel.

2. SYSTEM - To meet the compressed schedule against the 9th Infantry Division's urgent need, which is supported by a Quick Reaction Program (QRP), the XM4 Carbine has been selected as the most viable alternative. This 5.56mm Carbine will incorporate design improvements over the XM177E2 Carbine that has previously been tested by the User. The XM4 Carbine will be capable of both semi-automatic and automatic fire of the 5.56mm M855/M856 family of ammunition (NATO Second Caliber STANAG Ammunition). This feature will provide ammunition commonality with the M16A2 Rifle and the M249 Machinegun. The XM4 Carbine utilizes the proven mechanism of the M16A1/A2 Rifles and approximately seventy-five percent of its parts will be common to the M16A2. The Carbine will be magazine fed via the standard twenty-second thirty round magazine used in the M16A1/A2 Rifles.

3. CRITICAL TEST AND EVALUATION (T&E) ISSUES

a. TEST ISSUES - The US Army Development and Employment Agency (ADEA) has staffed a Quick Reaction Program Document (QRPD) and the development of the Technical (Developmental) and Operational test issues is the responsibility of the US Army Test and Evaluation Command (TECOM) and the US Army Infantry School (USAIS) respectively. These issues are identified in paragraphs 3.b. and 3.c. below.

b. TECHNICAL ISSUES - The key areas of technological or engineering risk to be addressed in DT II testing are reliability and durability while firing the M855 ammunition. Other test issues identified by TECOM include:

- (1) Are the accuracy, dispersion and targeting characteristics of the XM4 Carbine acceptable?
- (2) Can MOS qualified troops operate and maintain the XM4 Carbine?
- (3) Is the XM4 Carbine safe to use (including noise levels not exceeding the levels prescribed in MIL-STD-1474A)?
- (4) Does the firing of M193 and M856 rounds present any functioning or safety problems in the XM4 Carbine?
- (5) Does the XM4 Carbine operate properly under all environments in which it can be expected to be used?
- (6) Can the XM4 Carbine be operated by troops wearing protective clothing required for NBC environment and cold weather?
- (7) Can the M15A2 Blank Firing Attachment be utilized with the XM4 Carbine?

c. OPERATIONAL ISSUES - The key operational issues identified by the USAIS in coordination with ADEA are reliability and availability of the XM4 Carbine. Other operational test issues include:

(1) What are the hit probabilities of the XM4 Carbine when fired by trained infantry soldiers at stationary point targets at ranges from 50-300 meters in range bands of 50 meters?

(2) Are there any human factors or safety problems associated with the XM4 Carbine?

(3) How maintainable is the XM4 Carbine?

(4) Using the M16 Rifle airdrop rigging procedures, can the XM4 Carbine be jumped by a military parachutist without damage to the weapon or injury to the jumper?

PART II - PROGRAM SUMMARY

1. MANAGEMENT - The XM4 Program will be managed by the US Army Armament, Munitions and Chemical Command (AMCCOM). A Test Integration Working Group (TIWG) has been chartered with participation from all appropriate Army agencies and the Joint Services. The Test Manager for the DT II Test is TECOM with testing to be conducted by the US Army Combat Systems Test Activity (PROV) (USACSTA). The US Army Human Engineering Laboratory and the US Army Systems Analysis Activity will support the DT II test and evaluation as required by TECOM who will prepare the Independent Evaluation Report (IER). The Test Manager for the OT II or Innovative Test is the USAIS. The OT II Tester will be the USAIB. The USAIS, as the Independent Evaluator, will coordinate with ADEA, TRADOC and the US Army Operational Test and Evaluation Agency (OTEA).

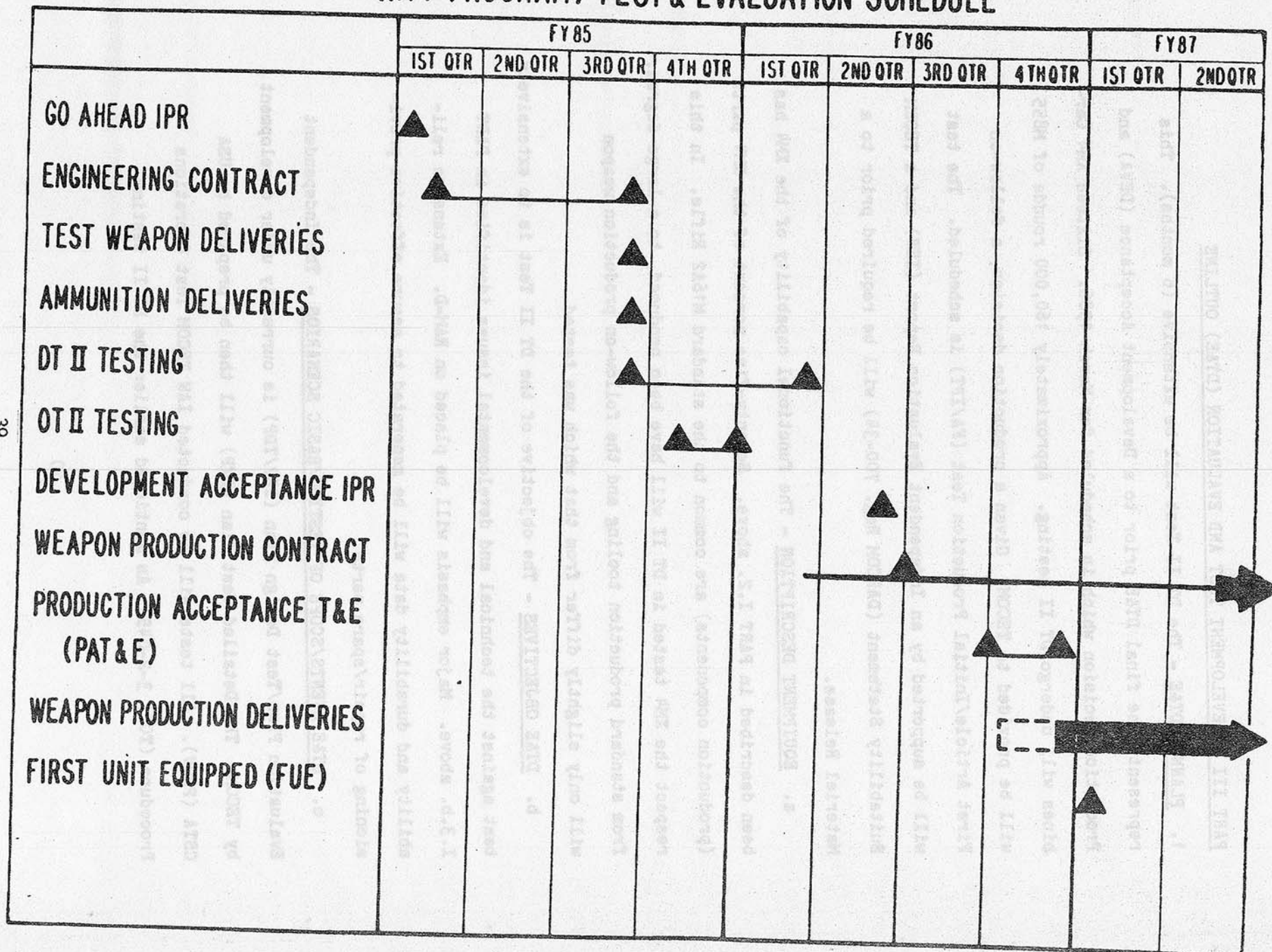
The XM4 Carbine is an improved version of the XM177E2. Inasmuch as the USAIB conducted a Concept Evaluation Program (CEP) on the XM177E2 as recently as April-May 1984, a two month (August-September 1985) OT II or Innovative Test has been determined to be adequate in providing

confidence in test results. Furthermore, a number of the User's critical issues will also be addressed during a more extensive DT II. The USMC will provide troops in support of the OT II Test. This will provide the USMC with "hands-on" experience with the XM4 Carbine in addressing their potential future need for such a weapon.

The DT II Test will be more extensive than the OT II and will cover a six month period (June-December 1985). This test has been determined to be adequate in establishing confidence in the test results.

2. INTEGRATED SCHEDULE - The XM4 PROGRAM/TEST & EVALUATION SCHEDULE is enclosed.

XM4 PROGRAM/TEST & EVALUATION SCHEDULE



PART III - DEVELOPMENT TEST AND EVALUATION (DT&E) OUTLINE

1. PLANNED DT&E - The DT II Test will be extensive (6 months). This represents the final DT&E prior to a Development Acceptance (DEVA) and Production Decision which is scheduled for March 1986. Sixteen XM4 Car-bines will undergo DT II testing. Approximately 160,000 rounds of M855 will be provided to TECOM. Given a production decision, a follow-on First Article/Initial Production Test (FA/IPT) is scheduled. The test will be supported by an Independent Evaluation Report (IER) and a TECOM Suitability Statement (DARCOM Reg. 700-34) will be required prior to a Materiel Release.

a. EQUIPMENT DESCRIPTION - The functional capability of the XM4 has been described in PART I.2. above. Seventy-five percent of the XM4 parts (production components) are common to the standard M16A2 Rifle. In this respect the XM4 tested in DT II will have been produced, to a large degree, from standard production tooling and the follow-on production weapon will only slightly differ from that which was tested.

b. DT&E OBJECTIVES - The objective of the DT II Test is to extensively test against the technical and developmental issues identified in PART I.3.b. above. Major emphasis will be placed on RAM-D. Extensive reliability and durability data will be generated to assure effective provisioning of repair/spare parts.

c. DT&E EVENTS/SCOPE OF TESTING/BASIC SCENARIOS - The Independent Evaluation Plan/Test Design Plan (IEP/TDP) is currently under development by TECOM. The Detailed Test Plan (DTP) will then be prepared by USA CSTA (PROV). All tests will be conducted IAW TECOM Test Operations Procedure (TOP) 3-2-045. As mentioned earlier the DT II testing

will be extensive with major emphasis on RAM-D. Extensive reliability and durability data will be generated to assure the predicted probabilities of these performance characteristics at high confidence levels. The XM4 system support package will also be evaluated during DT II. As the aforementioned IEP/TDP and DTP became available this section of the TEMP will be supplemented by annexes.

PART IV - OPERATIONAL TEST & EVALUATION (OT&E) OUTLINE

1. PLANNED OT&E - The OT II or Innovative Test will represent the final operational test prior to a Development Acceptance (DEVA) and Production Decision which is scheduled for March 1986. Inasmuch as the XM4 is an improved version of the XM177E2 the previously mentioned CEP Test serves to represent the initial IOT&E of this system. The proposed modifications to be incorporated into the XM4 are expected to result in improved performance. The OT II Test environment at Fort Benning, GA represents that which can be expected of the XM4 Carbine under combat conditions. This will be supplemented by TECOM during DT II to include testing under temperature extremes, sand, mud, dust, etc. The follow-on FAT/IPT tests will specifically address any residual operational issues or deficiencies surface during OT II. The remaining issues will be assessed in the Independent Evaluation of FAT/IPT and Suitability Statement for Materiel Release. The Army will provide trained infantry soldiers in OT II supplemented by USMC troops.

a. OT&E OBJECTIVES - The objective of the OT II or Innovative Test is to address the operational issues identified in PART I.3.c. above. The OT&E Events/Scope of Testing/Basic Scenarios outlined below were

developed specifically to address the operational effectiveness and suitability of the XM4 System. Furthermore, the previous CEP of the XM177E2 and actual combat experience with its predecessor have resulted in well defined operational and suitability issues to be tested against in OT

II. The CEP test of the XM177E2 provided data for resolving the majority of the operational issues to the User's satisfaction. Consequently, the planned OT II Test will be principally driven by RAM requirements.

Additional data will also be gathered in the areas of hit probability and human factors. The evaluation will also determine if the heat buildup which was deemed a marginal safety hazard reported from the CEP test has been eliminated. Future testing will also consider the adequacy of proposed jump procedures for the XM4.

b. OT&E EVENTS/SCOPE OF TESTING/BASIC SCENARIOS - A summary of these events, tests and scenarios is as follows:

(1) Evaluate the XM4 probability of hit performance using trained representative infantry soldiers as firers. Probability of hit performance will be evaluated while firing at stationary personnel silhouette targets in both the semi-automatic and automatic modes.

(2) Evaluate the operational reliability, operational availability, and maintainability of the weapon. Reliability will be assessed throughout the test in terms of stoppages and failures occurring while the weapon is employed by User troops in an operational environment. Failures will be scored in accordance with approved Failure Definition/Scoring Criteria. All RAM performance values will be calculated in accordance with procedures outlines in AR 702-3.

(3) Evaluate the human factors engineering features of the weapon. Throughout the test data will be collected to determine if there are any

weapon design features that impact on the capabilities of representative User troops to effectively use the XM4 within an operational environment. Particular attention will be paid to the excessive heat buildup reported from previous testing.

(4) Evaluate the safety requirements associated with use of the XM4. Safety restrictions, if any, included within the safety release will be noted and adhered to. Additionally, safety will be assessed throughout testing to determine if any previously unrecorded safety considerations exist. Particular attention will be paid to determine if the marginal safety hazard (heat buildup) has been eliminated.

(5) Evaluate the adequacy of the proposed jump procedures for the XM4. The airdrop rigging procedures for the M16 Rifle will be used as a baseline procedure. Any required changes to the procedures will be documented and coordinated with the Natick Research and Development Center.

As the User's IEP/TDP and DTP become available this section of the TEMP will be supplemented by annexes.

The OT II will be supported by twenty XM4 Carbines, approximately 85,000 M855 cartridges and the system support package.

PART V - PRODUCTION ACCEPTANCE TEST AND EVALUATION (PAT&E)

Tailoring of the PAT&E will be sensitive to the results of DT II/OT II and clarification of User acceptance criteria. Emphasis will be given to the dimensional and performance adequacy relative to the new or modified components of the XM4 Carbine (seventy-five percent of components are common to M16A2). Thirteen production XM4 Carbines plus repair parts will be required for the PAT&E.

PART VI - SPECIAL RESOURCE SUMMARY

1. **TEST ARTICLE** - The test articles and support requirements for the various testing are as follows:

a. **DT II TESTS**

- (1) 16 XM4 Carbines (Pilot Production)
- (2) 160,000 M855 Cartridges (Production)
- (3) 5,000 M856 Cartridges (Production)
- (4) 5,000 M193 Cartridges (Production)
- (5) XM4 System Support Package
- (6) 2 M15A2 BFAs

b. **OT II TESTS**

- (1) 20 XM4 Carbines (Pilot Production)
- (2) 85,000 M855 Cartridges (Production)
- (3) XM4 System Support Packages
- (4) 2 M15A2 BFAs

c. **PAT&E**

- (1) 13 XM4 Carbines (Production)
- (2) 50,000 M855 Cartridges (Production)
- (3) 2,000 M856 Cartridges (Production)
- (4) 2,000 M193 Cartridges (Production)
- (5) 2 M15A2 BFAs

2. **SPECIAL SUPPORT REQUIREMENTS** - The USAIB, TECOM and the contractor have adequate test facilities and equipment for the aforementioned tests.

PRELIMINARY QUANTITATIVE ANALYSIS (PQA)

(Not required for this Program)

OPERATIONAL & ORGANIZATIONAL (O&O) PLAN



DEPARTMENT OF THE ARMY

ARMAMENT RESEARCH AND DEVELOPMENT CENTER
US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
DOVER, NEW JERSEY 07801

REPLY TO
ATTENTION OF:

SMCAR-RAR

SUBJECT: Operational and Organizational Plan for the XM4 Carbine

SEE DISTRIBUTION

1. Subject plan was received on 10 Oct 1984 by this Center and is being forwarded for inclusion in the XM4 Carbine Go-Ahead In-Process Review Package currently being staffed.
2. The classified mission profile portion of the Operational and Organizational Plan has been withheld and will be provided at the Go-Ahead In-Process Review scheduled for 31 Oct 1984.

FOR THE COMMANDER:

Patrick A. Serao

PATRICK A. SERAO
Chairman, Go-Ahead IPR
for XM4 Carbine

DISTRIBUTION:

Commander, US Army Logistics and Evaluation Agency, ATTN: DALO-LEI
New Cumberland, PA 17070
Commander, Headquarters, Training and Doctrine Command, ATTN: ATTE/P/ATCD-M,
Ft. Monroe, VA 23651
Commandant, US Army Infantry School, ATTN: ATSH-CD-TE, ATSH-CD-MLS-F,
ATZB-IB-SA, Ft. Benning, GA 31905
Commander, Combined Arms Center, ATTN: ATZL-CAM-C, Ft. Leavenworth, KS 66027
Commander, 9th Infantry Division, ATTN: MOD-FDD, CB, DRXTB-MS, Ft. Lewis, WA 98433
Commander, US Army Armor School, ATTN: ATSB-CD-ML, Ft. Knox, KY 40121
Commander, Marine Corps Development and Education Command, ATTN: D091,
Quantico, VA 22134
Headquarters, Air Force Office of Security Police, ATTN: SPP, Kirtland AFB, NM
87115
Commandant, US Coast Guard, ATTN: G-OMR-2, Washington, DC 20590
Headquarters, Department of the Army, ATTN: DAMO-RQD, Washington, DC 20310
Commander, Office of Testing and Evaluation Agency, ATTN: CSTE-P00, Falls Church,
VA 22041
Commander, Materiel, Readiness and Support Activity, ATTN: DRXMD-ED, Lexington, KY
40507

SMCAR-RAR

SUBJECT: Operational and Organizational Plan for the XM4 Carbine

DISTRIBUTION Cont'd:

Commander, US Army Materiel Command, ATTN: AMCDE-SC, Alexandria, VA 22333
Commander, Armament Munitions and Chemical Command, ATTN: SMCAR-LEW, SMCAR-ASI,
SMCAR-MAG, Rock Island, IL 61299-5001
Commander, Testing and Evaluation Command, ATTN: DRSTE-CM-F, STEAP-NT-IW-W,
Aberdeen Proving Ground, MD 21005
Director, Army Materiel Systems Analysis Activity, ATTN: DRXSY-PO, Aberdeen
Proving Ground, MD 21005
Commander, US Army Materiel Command Equipment Authorization Review Activity,
ATTN: DEXEA-C, Alexandria, VA 22333
Director, Human Engineering Laboratory, Dover Detachment, ATTN: Mr. Jack Carlock,
Dover, NJ 07801-5001



DEPARTMENT OF THE ARMY

HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

5 October 1984

AMCDE-SG

SUBJECT: Operational and Organizational Plan for the XM4 Rifle

Commander
US Army Armament Research and Development Center
ATTN: SMCAR-RAR
Dover, NJ 07801

1. Reference AR 71-9.
2. A copy of the final draft of subject plan provided by ADEA is forwarded for review and the preparation of Paragraph VIII Funding Implications.
3. Request that your comments and cost data be provided directly this office with a copy to Capt. Ostrand, MODE-FOD-CCB at ADEA.

FOR THE COMMANDER

1 Enclosure
as

Philip L. Yeats
PHILIP L. YEATS
Colonel, GS
Chief, Ground Combat Systems
Division - DCS for Development,
Engineering and Acquisition -
Systems Management

Copies Furnished:

→ Cdr, US Army Armament Research and Development Center, ATTN:
SMCAR-SCJ, Dover, NJ 07801

Cdr, US Army Armament, Munitions Chemical Command, ATTN: AMSMC-ASI, Rock
Island, IL 61299

CONFIDENTIAL

~~CONFIDENTIAL~~ BEW 9/26

DRAFT

OPERATIONAL AND ORGANIZATIONAL PLAN
FOR THE
XM4 (5.56MM) RIFLE



I. PURPOSE.

a. This Operational and Organizational (O&O) Plan explains the need for and use of the 5.56mm rifle (XM4) in an operational setting. This O&O plan describes the XM4 general capabilities, employment and training concepts, and logistical and personnel consideration.

b. There is a need to provide selected soldiers that now carry a pistol or a .45 caliber submachine gun with a weapon that can provide better self-protection and additional firepower. A small, lightweight weapon would also be advantageous to those soldiers presently designated to carry a 5.56mm rifle and whose primary duties call for full use of both hands to accomplish their mission. The specific mission area analysis deficiencies that the use of this weapon will help compensate for are dependent upon the duty position that will be equipped with this weapon. General needs are to minimize firepower in the dismounted infantry or maintain firepower while decreasing excessive loads. Common ammunition in the Infantry and other combat units will simplify some of the present logistical requirements.

II. THREAT/DEFICIENCY.

a. Threat. There is no known threat to the XM4, but the operator is subject to the threats discussed in Chapter 4 of Threat to the Individual Soldier, Clothing, and Equipment, STAR, May 1983. The primary threat to be countered by personnel armed with this weapon will be dismounted infantry units equipped with small arms and automatic weapons.

b. Deficiency. Soldiers currently armed with the .45 cal pistol for personal protection will not be able to adequately defend themselves or contribute to the battle, once their primary weapon has been fired. Selected

~~CONFIDENTIAL~~ BEW 9/26
REGRADED UNCLASSIFIED
WHEN SEPARATED FROM
CLASSIFIED INCLOSURES

UNCLASSIFIED

DRAFT

soldiers armed with the M16A2 must have their combat load weight reduced and still be able to contribute to the battle when not performing their primary mission duty. Additionally, there are many soldiers armed with the M16A2 rifle, whose primary mission calls for the full use of both hands. The compactness, lighter weight, and different carry and storage capabilities of the XM4 will improve the compatibility of the user's equipment.

III. OPERATIONAL PLAN.

a. The basic combat arms mission and how it is fought will not be affected by the integration of the XM4 into the TO&E. It will retain the same operational characteristics as the present 5.56mm rifles, as well as commonality of ammunition and most parts. It will replace selected pistols, all submachine guns and selected rifles in those positions where a smaller, more effective, or easily handled weapon is desired. Since the weapon will retain the operational characteristics of the 5.56mm rifle, operational impact will be minimal.

b. The replacement of certain pistols, submachinegun³ and selected M16A2 rifles with the XM4 will provide an improved capability for a more effective force. The weapon characteristics that this O&O plan is based on are:

(1) Commonality of individual weapons ammunition at the squad level. The only small arms weapons that will not be 5.56mm are the Bradley forces' M60, which will be stowed on the BFV and CFV and used on a mission basis and the two M60s in each headquarters section of the Light Infantry Division platoon.

(2) The weapon must have an effective range that will exceed 200 meters.

(3) Weight of the unloaded weapon must not exceed six and one-half pounds and the combined weight and length will not interfere with the individual's primary tasks (Dragon gunner, mortarman, certain gun crews,

UNCLASSIFIED

~~UNCLASSIFIED~~

DRAFT

drivers, etc.).

(4) The materiel design concept must permit the use of most spare parts to be interchangeable between the XM4 and M16A2.

c. The Mission Profile is attached as ANNEX A (CONFIDENTIAL).

IV. ORGANIZATIONAL CONCEPTS.

a. In the Infantry Battalion the XM4 will replace selected .45 caliber pistols carried for self-protection, all .45 caliber submachine guns, and selected 5.56mm rifles carried under certain TO&E positions. Proposed changes for the Infantry Battalion are shown below:

<u>CURRENT TO&E</u>	<u>REPLACEMENT</u>
Battalion Staff Officers - M16/Pistol	XM4
Battalion Executive Officer - Pistol	"
Company Executive Officer - M16	"
Platoon Leaders - M16	"
Command Sergeant Major - Pistol	"
Company First Sergeants - M16	"
Platoon Sergeants - M16	"
APC/M2 Drivers - Pistol/M16	"
Mortar Gunners and Assistant Gunners - Pistol	"
DRAGON Gunners - M16	"
TOW Gunners and Assistant Gunners - Pistol	"
Recovery Vehicle Operators - Pistol/Submachinegun	"
Administrative (S-1, 2, 3 and 4) Personnel - M16	"
Radio Telephone Operators - M16/Pistol	"

b. Other organizations have expressed enthusiastic support for replacing selected weapons in their TO&Es. Comments received from other schools to date are listed below:

(1) Military Police at Divison, MP companies, Corps and TAACOM MP

~~UNCLASSIFIED~~

UNCLASSIFIED

DRAFT

brigades, and separate MP battalions would replace selected .45 caliber pistols carried for self-protection with the XM4. Also, M16A2 rifles carried by MP whose primary duties require the use of both hands (e.g., small unit leaders, crew served weapons gunners, mechanics, and administration personnel) will be replaced by this weapon. Proposed changes for the MP battalion are:

<u>DUTY POSITION</u>	<u>CURRENT WEAPON</u>	<u>REPLACEMENT</u>
BN CDR	.45	XM4
BN XO	.45	XM4
STAFF	.45 AND M16	XM4
CO CDR	M16	XM4
PLT LDR	M16	XM4
1SG	M16	XM4
PLT SGT	M16	XM4
MK19 GUNNER	M16	XM4
MECHANICS	M16	XM4
ADMIN SPEC	M16	XM4
RTO	M16	XM4
DOG HANDLERS	M16	XM4

(2) Signal Center. The replacement of current M16 and .45 cal. pistols, for select members of the following TO&E's, will greatly reduce the size restriction and weight experienced over the M16, while increasing the self protection capability over the .45 cal. pistol. The proposed changes for the Signal Battalion and select division units are shown below:

Forward Area Signal Platoons	1 Each Driver
Relay Teams	" " "
RAU Teams	" " "
Division and Below Communications Teams	" " "
Direct Support Contact Teams	1/Indiv
Division COMSEC Custodian and Personnel	"
Battalion Commander and Driver	"

UNCLASSIFIED

UNCLASSIFIED

DRAFT

Battalion Executive Officer and Driver "
Battalion Operation Officer and Driver "
Company Commanders and Driver "
CE Maintenance Chief "
Motor Maintenance Chief "
Battalion Command Sergeant Major and Driver "
Company First Sergeant "

(3) Engineer School. Combat engineers will be issued one XM4 rifle for each individual assigned to combat engineer battalions, separate companies, and detachment with the exception of the battalion, company, and detachment commanders and those personnel assigned the M-203 grenade launcher and M-249 SAW. The XM4 will enable combat engineers to better accomplish their engineer tasks and still be armed with an effective infantry weapon.

(4) USAJFKSWC is interested in replacing at least selected M16s with .45 caliber pistols with the XM4. A determination of which weapons will be replaced will depend on not only the characteristics of the final product of the XM4 but also that of the M16A2.

(5) The Armor School has expressed an interest in replacing the M3 SMG with a more effective ^{val} personnel defense weapon. (The XM4 is the only readily available weapon and in support of the combined arms team concept should be aggressively proposed.)

(6) The Artillery School has stated a need to decrease the combat load of the fire support personnel attached to the maneuver units. Of particular concern are the two man FO parties at each rifle platoon and the three member team at Company FIST level.

V. PERSONNEL IMPACT. The introduction of the XM4 will not increase or decrease the manpower of the force structure and will not generate any new MOS's for employment. Maintenance support for this weapon can be provided by our current capabilities. The standardization of ammunition and spare parts will reduce the number of hours consumed in stocking, handling and shipping of

UNCLASSIFIED

DRAFT

same. The net results will be better equipment, a sustained firepower capability, and fewer ammunition resupply problems.

VI. TRAINING IMPACT. The materiel developer and the TRADOC proponent will develop a complete training subsystem specifically designed to support all phases of training from initial entry training to individual training to include New Equipment Training (NET) for user testing and initial fielding.

a. Training devices required to support system training and the strategy for use of these devices will be developed by the materiel developer under the authority of this document and will not exceed the requirements for the M16A2.

b. All training products developed as a part of this system's training subsystem will be designed according to the Instructional System Development (ISD) model utilizing data generated/developed IAW DARCOM PAM 750-16.

c. System technical manuals and extension training materials will be developed by the materiel developer IAW AR 310-3. Requirements for Skill Performance Aids (SPAs) shall be a specific issue. Maximum utilization will be made of contractor manuals consistent with the level of understanding of military personnel and the needs of the Infantry. Contractor manuals will be replaced by standard manuals within two years of any acquisition or procurement.

d. The requirement for extension training materials will be determined during development. This requirement will be reflected in OICTP and finalized in the ITCP.

e. Any additional training requirements over those established for the M16A2 will be demonstrated during the Concept Evaluation Program (CEP).

VII. LOGISTIC IMPACT. There will be no new maintenance MOSs created. Small Arms Repairman, MOS 45B, will perform intermediate maintenance. The maintenance concept will be consistent with current support organization, concept of operation, and repair level policies. Maximum utilization will be

UNCLASSIFIED

DRAFT

made of existing TOE tools, TMDE, and other support equipment and/or presently approved emerging TMDE or support equipment to minimize proliferation. The range and quantity of repair parts and other supply requirements to include POL must be consistent with current support capabilities. The LSA/LSAR process will be used to determine and define support requirements and personnel tasks and skills for the operation, maintenance and support of the system.

UNCLASSIFIED

BASIS OF ISSUE PLANS (BOIP)

AND

QUANTITATIVE PERSONNEL REQUIREMENT INFORMATION (QQPRI)

Mrs. Farnham/clj/AUTOVON
793-4523

AMSMC-LSO-C

26 OCT 1984

SUBJECT: Final Basis of Issue Plan (FBOIP) and Final Qualitative and
Quantitative Personnel Requirements Information (FQQPRI)
Carbine: 5.56mm XM4 (213153)

Director
US Army Equipment Authorization Review Activity
ATTN: AMXEA-MC/Mr. Hemenway
5001 Eisenhower Avenue
Alexandria, VA 22333-0001

Subject reports (encl 1 and 2) are forwarded IAW AR 71-2 (19 copies).
POC for this office is Wanita Farnham, AUTOVON 793-4523/6796.

ORIGINAL SIGNED:

MICHAEL L. HART
Chief, LSA and Compliance Branch

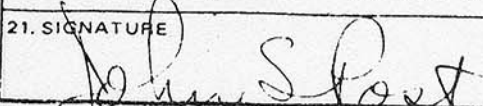
2 Encl
as

CF:
SMCAR-SCJ ✓
AMSMC-LSO-A
AMSMC-ASI
AMSMC-MAO-N

MEMORANDUM FOR RECORD

Self-explanatory

W. Farnham
Action Officer

BASIS OF ISSUE PLAN FEEDER DATA For use of this form, see AR 71-2; the proponent agency is DCSOPS.		1. BOIP PLAN NUMBER <p style="text-align: center;">NYA</p>	2. <input type="checkbox"/> TENTATIVE <input type="checkbox"/> AMENDED <input checked="" type="checkbox"/> FINAL <input type="checkbox"/> AMENDED	PAGE 1 of 1 84 08 21	
4. DESCRIPTION					
a. GENERIC CARBINE: 5.56mm XM4					
b. NATIONAL NYA					
7. LINE ITEM NUMBER					
a. DEV Z13153	b. STD NYA	c. SC 7M	d. SN G0310000MHW	e. NATIONAL NYA	
9. DESCRIPTION The 5.56mm Carbine will be a shorter, lighter version of the standard service rifle (the M16A2). It will use the same ammunition and approximately 75 percent of its parts will be common to the M16A2 Rifle. Its features include the capability for full automatic fire lieu of the M16A2's 3d burst control, a telescoping buttstock and a shortened barrel with the same twist rate as the M16A2.					
10. PRIMARY USAGE (Non-technical Description of Major uses) This weapon will replace selected pistols and sub-machine guns in positions where a more effective personal defense weapon is needed. The carbine will retain the same basic operating characteristics of the M16A2 Rifle and will be effective to 300M.					
11. ASSOCIATED/SUPPORT ITEMS (Use blank sheet if additional space is required)					
LINE ITEM NUMBER (a)	NOMENCLATURE (b)	CC/SICC (c)	NEW/OLD STD LCC (d)	LEVEL OF MAINTENANCE (e)	QUANTITY (f)
Q13030	Rack Storage Small Arms w/o M203GL, M12**	B14	LCC-STA	DS	SEE BLOCK
W51910	Tool Kit, Small Arms Repair NSN 5180-00-357-7770 *	B14	LCC-STA	DS	SEE BLOCK
12. ITEMS TO BE REPLACED/ASSOCIATED SUPPORT					
LINE ITEM NUMBER (a)	NOMENCLATURE (b)	COMPLETE OR IN PART (c)	RECOMMENDATION (d)		
N96741	PISTOL CAL .45 AUTOMATIC	M1911A1	PARTIAL	CONTINUE	
U56346	SUBMACHINE GUN CAL .45	M3A1	PARTIAL	CONTINUE	
13. DA APPROVED STATEMENT OF REQUIREMENT (LOA, LR, ROC, TDR, TDIR, OTHER DA AUTHORITY) QRP 3-3 20 Jan 84 (Revised) 9ID QRP Requirement Document					
14. REFERENCE NO. 2068	15a. ABA J	15b. RIC B14	15c. DEV CODE 1A	15d. NETP N/A	16. EST COST PER \$587
17. RDTE PROJECT OR TASK (If Applicable)					
a. NUMBER			b. TITLE XM4 CARBINE		
18. REMARKS This qualifies for FASTRAC *Kits already in field to support small arms weapons. No Data Interchange required. **Racks already fielded. No Data Interchange required.					
19. DEVELOPING AGENCY, LOCATION, FILE SYMBOL, AND TELEPHONE NUMBER HQ AMCCOM SMCAR-SCJ Dover, NJ 07801 880-7074			20. TYPED NAME AND TITLE OR PREPARER JOHN POST General Engineer AV 793 4491		
			21. SIGNATURE 		

FINAL QUALITATIVE AND QUANTITATIVE
PERSONNEL REQUIREMENTS INFORMATION (FQQPRI) FOR

CARBINE: 5.56mm XM4
Z11N Z13153, NETP N/A

1. STATEMENT OF REQUIREMENT

- a. Quick Reaction Program (QRP) 3-3, 20 Jan 84 (Revised) prepared by the 9th ID.
- b. New Equipment Training Plan (NETP) - none required.
- c. This FQQPRI was prepared by Mr. Robert G. Miller, 9 Oct 84, HQ, AMCCOM, ATTN: AMSMC-MAO-NW, Rock Island, Illinois 61299-6000, Autovon 793-2143/2382.

2. DESCRIPTION

The XM4 5.56mm Carbine is similar to the M16A2 Rifle. It has a shorter barrel and hand guard, a telescoping butt stock and different type flash suppressor. Features of the XM4 Carbine are (1) uses the same 5.56mm ammunitions as the M16A2 Rifle, (2) estimated 75% parts commonality with the M16A2 Rifle, (3) semi and full automatic fire only (less three round burst control), and barrel length will be 14½-15 inches with a 1 in 7 inch twist rate.

3. DIRECT PRODUCTIVE ANNUAL MAINTENANCE MAN-HOURS (DPAMMH)

- a. Z13153, Carbine, 5.56mm, XM4

<u>MOS</u>	<u>UNIT</u>	<u>INTERMEDIATE</u>
76Y	6	0
45B	0	11

- b. Q13030 Rack, Storage, Small Arms, w/o M2G3GL, M12

MOS

N/A

- c. W51910 Tool Kit, Small Arms Repair

MOS

N/A

4. NUMBER OF DIRECT OPERATORS REQUIRED TO OPERATE THE ITEM

No additional personnel are required to operate the system. Existing resources will be used.

5. DUTY POSITION BY DESCRIPTIVE TITLE

	<u>DESCRIPTIVE TITLE</u>	<u>RECOMMENDED MOS</u>
Operator	As designated by the Commander	
Unit Maintenance	Unit Supply Sergeant	76Y
Intermediate Maint	Small Arms Repairer	45B

6. INDIVIDUAL DUTIES AND TASKS

Duties and tasks as listed in AR 611-201.

INTEGRATED LOGISTIC SUPPORT (ILS) PLAN

(DRAFT)

INTEGRATED LOGISTIC SUPPORT PLAN
FOR
5.56MM XM4 CARBINE

AUGUST 1984

Prepared by Mr. F. R. Cheng
AMCCOM Integrated Logistics
Support Office
Rock Island Arsenal
Rock Island, IL 61299-600

PREFACE

This Integrated Logistic Support Plan (ILSP), in draft form, for the 5.56mm XM4 Carbine is an iterative and dynamic document and will be updated when additional information becomes available.

The information contained herein reflects the logistic posture and management decisions as of 27 Jul 84. This plan is being maintained at this Headquarters, and any comments, recommendations or questions should be addressed to HQ, AMCCOM, ATTN: DRSMC-LSO-A(R), Rock Island Arsenal, Rock Island, IL 61299-6000.

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
I.	System Description and Application	1
	A. Purpose	1
	B. Background	1
	C. System Description	1
II.	Logistics Management	2
	A. AMCCOM ILS Management Team	2
	B. Key ILS Milestones	2
	C. Planned Production Schedule	3
	D. Applicable Reference	3
III.	ILS Planning Factors	3
	A. Program Status	3
	1. 5.56mm XM4 Carbine	3
	2. Ammunition	3
	B. Acquisition Strategy	4
	C. Logistic Support Analysis	4
	D. Test and Evaluation	5
IV.	Maintenance Planning	5
	A. Maintenance Concept	5
	B. Manpower and Personnel	6
V.	Special Tools	6
VI.	Support Support	6
	A. Repair Parts	6
	B. Provisioning	6
VII.	Training and Training Aids	6
VIII.	Technical Data	7
IX.	Packaging, Handling, and Storage	7
X.	Transportation and Transportability	7
XI.	Funding	7
XII.	Management Data	7
XIII.	Ammunition	7

I. SYSTEM DESCRIPTION AND APPLICATION

A. PURPOSE

This Integrated Logistic Support Plan was developed by the Integrated Logistic Support Manager at the U.S. Army Armament, Munitions and Chemical Command (AMCCOM), Rock Island Arsenal, Rock Island, IL, to support pending procurement of the XM4 Carbine Program.

B. BACKGROUND

A need exists for an automatic carbine to replace .45 caliber pistols and standard rifles for selected soldiers in support of the 9ID. The user needs a personal defense weapon capable of producing a high volume of fire but shorter and lighter than standard rifles to ease carrying and use of it by vehicle crewmen, crew served weapons operators, and selected military personnel.

C. SYSTEM DESCRIPTION

The XM4 5.56mm Carbine is similar to the M16A2 Rifle. It has a shorter barrel and handguard, a telescoping buttstock, and different type flash suppressor. Features of the XM4 Carbine are (1) use the same 5.56mm ammunitions as the M16A2 Rifles, (2) estimated 75% parts commonality with the M16A2 Rifle, (3) semi and full automatic fire only (no 3 round burst control), and barrel length will be of 14½-15 inches with a 1 in 7 inch twist rate.

II. LOGISTIC MANAGEMENT

A. AMCCOM ILS MANAGEMENT TEAM MEMBERS

ILSM	F. R. Cheng	DRSMC-LSO-A(R)	AV 793-6788
WSMM	John Post	DRSMC-ASI(R)	AV 793-4491
ARDC DPO	Vince Desiena	SMCAR-SCJ	AV 880-5074
Equip Spec	Rick Rasmussen	DRSMC-MAG-SS(R)	AV 793-6171
Maint Engineer	Neil Burchell	DRSMC-MAG-FI(R)	AV 793-6993
Equip Publication	Celia Riesebieter	DRSMC-MAS-TB(R)	AV 793-4670
Procurement Spec	Gerald Apperson	DRSMC-PCW-S(R)	AV 793-3710
Item Manager	Tara McAndrews	DRSMC-MML-S(R)	AV 793-6403
Product Assurance	Bill Axup	DRSMC-QAE-C(R)	AV 793-3031
			X18
Logistic Eng	Richard Emory	DRSMC-LEW-A(R)	AV 793-4894
Production Spec	Steve McNinch	DRSMC-PDA-D(R)	AV 793-5001
Materiel Mgmt Rep	Linda Hirst	DRSMC-MMP-IP(R)	AV 793-4569
Provisioning	Gale Hart	DRSMC-MAF-A(R)	AV 793-3106

B. KEY ILS MILESTONES FOR XM4 CARBINE

<u>EVENT</u>	<u>DATE</u>
Go-Ahead IPR	10/84
IPR Approval	10/84
Sole Source Contract to Colt Ind. (Including Publication Contract)	11/84
Publication Start-of-Work Meeting	1/85
Provisioning of Repair Parts	1/85
Deliver Tech Manuals (Draft)	6/85
Delivery of Test Weapons	6/85
Initiate DT II Tests	6/85

B. KEY ILS MILESTONES FOR XM4 CARBINE (continued)

<u>EVENT</u>	<u>DATE</u>
TM Validation	7/85
Final Draft Manuals Delivered	8/85
Award Delivery Order for Spares	8/85
Initiate OT II Tests	8/85
Complete OT II Tests	10/85
TM Verification	10/85
TDP Delivery	11/85
Camera Ready Copy to TAG	12/85
Complete DT II Tests	12/85
TC IPR Package Available	1/86
TC IPR	3/86
Initial Production Testing (IPT)	7/86
Initial Delivery of Weapons	9/86
FUE	10/86

C. PLANNED PRODUCTION SCHEDULE

Projected Procurement - 18,000 Wpns

9th ID - 4,000

LT ID - 14,000

Detailed delivery schedule will be established at a later date.

D. APPLICABLE REFERENCE

1. AR 700-127 - ILS.
2. AR 70-10 - Test and Evaluation During Development and Acquisition of Material.

III. ILS PLANNING FACTORS

A. PROGRAM STATUS

1. 5.56mm XM4 Carbine

To be determined at a later date.

2. Ammunition

The NATO standard 5.56mm cartridges will be procured beginning in FY84.

a. M855/M855A1 Ball Cartridge

<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>
--------------	--------------	--------------	--------------	--------------

Quantity (M)

\$(M)

b. M856/M856A1 Tracer Cartridge

<u>FY 84</u>	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>
--------------	--------------	--------------	--------------	--------------

Quantity (M)

\$(M)

B. ACQUISITION STRATEGY

1. To meet the 9ID requirement for development of a lightweight carbine within a compressed timeframe, it was necessary to modify the 5.56mm XM177 Submachinegun, which is already a modification of the M16 series rifle. This approach will increase parts commonality with the M16A2 Rifle to approximately 75% and eliminate some known deficiencies in the XM177 design. The primary changes to the XM177 involve the use of a 14½ to 15 inch barrel with a 1 in 7 twist, standard M16A2 handguards, a plastic telescoping buttstock, and the M16A2 upper receiver.

2. Supportability issues are minimized because of the significant parts commonality with the M16A1/A2 Rifles and their extensive

support methodology which already exists. Training impacts will also be minimized because of the familiarity using troops will already have through their M16A1/A2 training. Also, maintenance training will be minimized because of similarity with the maintenance requirements of the existing M16 series rifles. Armorers, for instance, will find few changes between this weapon and the M16A1/M16A2, on which they will already have been trained.

C. LOGISTIC SUPPORT ANALYSIS (LSA)

A limited in-house LSA/LSAR will be conducted at this Headquarters. Specifically, LSAR "H" sheets on the peculiar repair parts will be filled in using the new drawing package to be furnished by the contractor. There are no plans to fill in "B", "C", and "D" sheets since the maintenance task analyses developed for M16A2 will be used for the XM4 Carbine. There is essentially no change in the functioning of the carbine except for changes in configuration and use of alternate materials.

D. TEST AND EVALUATION

Based on the maturity of the basic mechanism, i.e., its use in the M16 series rifles and previous use and evaluations of the XM177 Sub-machineguns, the test and evaluation effort on this program, can be minimized. USAIB conducted a Concept Evaluation Program (CEP) on the XM177 in which it was determined that it was, with few modifications, an acceptable candidate to meet the 9ID Carbine requirement. This mechanism maturity allows the concept validation and DT I/OT I phase to be largely by-passed and proceed into Engineering Development Prototypes and DT II/OT II. It is intended to contract sole source with Colt Firearms,

Inc. to obtain 40 development prototype weapons by Jun 85 to submit to testing in the Jun - Dec 85 timeframe. Development testing (DT II) will be conducted by TECOM at APG or an authorized contractor and will require 16 weapons. The US Marine Corps will provide up to 1/3 of the test personnel required for OT which will enhance the Joint Service acceptability aspects of the program. Operational testing (OT II) will be conducted at Fort Benning, GA, by the USAIB and will require 20 weapons. Test reports will be available by the Dec 85 - Jan 86 timeframe.

IV. MAINTENANCE PLANNING

A. MAINTENANCE CONCEPT

New maintenance MOSs will be minimized. The maintenance concept will be consistent with current support organization, concept of operation, and repair level policies. Maximum utilization will be made of existing TOE tools, TMDE, and other support equipment and/or presently approved emerging TMDE or support equipment to minimize proliferation. Maintenance tasks contained in the Maintenance Allocation Chart (MAC) for the M16A2 Rifle will be applicable to the XM4 Carbine with minor modifications. The range and quantity of repair parts will be provisioned consistent with the current support capabilities. The system support packages will be tested in conjunction with the user test.

B. MANPOWER AND PERSONNEL

The existing Military Occupational Specialities (MOS) or annual maintenance manhours developed for the M16A2 Rifle, will be applicable to the XM4 Carbine.

V. SPECIAL TOOLS —

To be determined at a later date.

VI. SUPPLY SUPPORT

A. REPAIR PARTS

The initial provisioning of repair parts will be delivered concurrently with the XM4 Carbine procurement. Replacement parts support will be provided by AMCCOM, Rock Island, Illinois.

B. PROVISIONING

To be determined at a later date.

VII. TRAINING AND TRAINING AIDS

No significant changes to marksmanship training are anticipated with the introduction of the XM4 Carbine. Procurement of three each cutaway XM4 Carbine which will be used as training aids, will be incorporated into the contract. A New Equipment Training Plan (NETP) will be required.

VIII. TECHNICAL DATA

The three required ILS program pre-requisites are:

1. Availability of production drawings (DOD-D-1000B, level 3).
2. Availability of production configured hardware (2 each).
3. Publications: A Scope of Work on the contents for the publication will be furnished by AMCCOM. Two new technical manuals are to be prepared as follows:

- a. TM9-1005-320-10, Operator's Manual.
- b. TM9-1005-320-24&P, Org, DS/GS Maintenance Manual.
- c. Revision to the current DMWR for the M16A2 Rifle.

IX. PACKAGING, HANDLING, AND STORAGE (PHS)

The XM4 Carbine will be packaged in accordance with Level C packing, handled, and stored in much the same way as the M16A2 Rifle. ARDC will provide a packaging data sheet for the overall weapon.

X. TRANSPORTATION AND TRANSPORTABILITY (T/T)

The XM4 Carbine can be transported from, to, or between the Contractor's plant, ANAD, and using units throughout the world via rail, truck, air, or water carriers.

XI. FUNDING

TM preparation \$200K

TDY Travel 25K
 \$225K

XII. MANAGEMENT DATA

ARDC will provide configuration management support for the XM4 Carbine.

XIII. AMMUNITION

To be provided at a later date.



DEPARTMENT OF THE ARMY

ARMAMENT RESEARCH AND DEVELOPMENT CENTER
US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
DOVER, NEW JERSEY 07801

REPLY TO
ATTENTION OF:

OCT 05 1984

SMCAR-RAR

SUBJECT: Documentation for Go-Ahead In-Process Review (IPR) for the XM4 Carbine

SEE DISTRIBUTION

1. Attached is subject documentation for your review, comment and development of a recommended AMC position for the Carbine IPR. This action is in support of the 9th Infantry Division Quick Reaction Program 3-3.

2. In view of the low technical risk, as detailed in subject package, it is recommended that the AMC position for the Carbine IPR be as follows:

Proceed into Engineering Development with the concept as proposed in the IPR Documentation.

3. Your comments and concurrences relative to subject documentation and the proposed AMC position are required by return message by COB 18 Oct 84. The Go-Ahead IPR Chairman, Mr. Patrick Serao will coordinate and finalize the AMC position by 22 Oct 84.

4. In order to shorten the IPR review cycle, the subject documentation is being reviewed concurrently by the AMC Community and other Army, IPR participants in preparation for the Go-Ahead IPR.

5. The XM4 Carbine Go-Ahead IPR is scheduled for 31 Oct 84 at 0830 hours, in Room 224, Building 1, ARDC, Dover, NJ.

6. The POC for this action is Mr. Patrick Serao, AUTOVON 880-6974.

FOR THE COMMANDER:

PATRICK A. SERAO
Chairman, Go-Ahead IPR
for XM4 Carbine

OCT 05 1984

SMCAR-RAR

SUBJECT: Documentation for Go-Ahead In-Process Review (IPR) for the XM4 Carbine

DISTRIBUTION:

Commander, Armament Research and Development Center, ATTN: SMCAR-SCJ,
Dover, NJ 07801

Commander, US Army Materiel Command, ATTN: AMCDE-SG, Alexandria, VA
22333

Commander, Armament Munitions and Chemical Command, ATTN: SMCAR-LEW,
SMCAR-ASI, SMCAR-MAG, Rock Island, IL 61299-5001

Commander, Testing and Evaluation Command, ATTN: DRSTE-CM-F,
STEAP-NT-IW-W, Aberdeen Proving Ground, MD 21005

Director, Army Materiel Systems Analysis Activity, ATTN: DRXSY-PO,
Aberdeen Proving Ground, MD 21005

Commander, US Army Materiel Command Equipment Authorization Review
Activity, ATTN: DEXEA-C, Alexandria, VA 22333

Director, Human Engineering Laboratory, Dover Detachment,
ATTN: Mr. Jack Carlock, Dover, NJ 07801-5001



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY
FIRE CONTROL AND SMALL CALIBER WEAPON SYSTEMS LABORATORY
US ARMY ARMAMENT RESEARCH AND DEVELOPMENT CENTER
DOVER, NEW JERSEY 07801

SMCAR-RAR

OCT 9 1984

SUBJECT: XM4 5.56mm Carbine Go-Ahead In-Process Review (IPR)

SEE DISTRIBUTION

1. The data package for the subject Go-Ahead IPR is enclosed for review and comment/concurrences. The IPR will be held in Room 224, Bldg 1, ARDC, Dover, NJ at 0830 on 31 Oct 84. The IPR Chairman is Mr. Patrick A. Serao, AUTOVON 880-6974.
2. Concurrent with your review of this package, the AMC position is being finalized. The proposed AMC position is: proceed into engineering development with the carbine concept as proposed in the IPR documentation. The official AMC position will be finalized and distributed by message by 23 Oct 84.
3. In accordance with the LOI for Quick Reaction Program (QRP) procedure dated 31 Jan 84 each addressed agency is requested to identify the voting members for subject IPR by return message. Additionally in the event of a nonconcurrence in the proposed AMC position, the IPR Chairman or ARDC POC must be notified by COB 26 October 1984.

FOR THE COMMANDER:

PATRICK A. SERAO
Chairman, Go-Ahead IPR
for XM4 Carbine

DISTRIBUTION:

Commander, US Army Logistics and Evaluation Agency, ATTN: DALO-LEI
New Cumberland, PA 17070
Commander, Headquarters, Training and Doctrine Command,
ATTN: ATTE/P/ATCD-M, Ft. Monroe, VA 23651
Army Development and Employment Agency, ATTN: MODE-FDD-CCB,
Ft. Lewis, WA 98433-5001



SMCAR-RAR

SUBJECT: XM4 5.56mm Carbine Go-Ahead In-Process Review (IPR)

CF:

Commandant, US Army Infantry School, ATTN: ATSH-CD-TE, ATSH-CD-MLS-F,
ATZB-IB-SA, Ft. Benning, GA 31905

Commander, Combined Arms Center, ATTN: ATZL-CAM-C, Ft. Leavenworth,
KS 66027

Commander, 9th Infantry Division, ATTN: MOD-FDD, CB, DRXTB-MS,
Ft. Lewis, WA 98433

Commander, US Army Armor School, ATTN: ATSB-CD-ML, Ft. Knox, KY
40121

Commander, Marine Corps Development and Education Command, ATTN: DO91,
Quantico, VA 22134

Headquarters, Air Force Office of Security Police, ATTN: SPP,
Kirtland AFB, NM 87115

Commandant, US Coast Guard, ATTN: G-QMR-2, Washington, DC 20590

Headquarters, Department of the Army, ATTN: DAMO-RQD, Washington, DC
20310

Commander, Office of Testing and Evaluation Agency, ATTN: CSTE-POO,
Falls Church, VA 22041

Commander, Materiel, Readiness and Support Activity, ATTN: DRXMD-ED,
Lexington, KY 40507

PATRICK A. SHAW
Commander, Go-Ahead IPR
for XM4 Carbine



DEPARTMENT OF THE ARMY
ARMAMENT RESEARCH AND DEVELOPMENT CENTER
US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
DOVER, NEW JERSEY 07801

REPLY TO
ATTENTION OF:

SMCAR-RAR

OCT 12 1984

SUBJECT: Operational and Organizational Plan for the XM4 Carbine

SEE DISTRIBUTION

1. Subject plan was received on 10 Oct 1984 by this Center and is being forwarded for inclusion in the XM4 Carbine Go-Ahead In-Process Review Package currently being staffed.
2. The classified mission profile portion of the Operational and Organizational Plan has been withheld and will be provided at the Go-Ahead In-Process Review scheduled for 31 Oct 1984.

FOR THE COMMANDER:

Patrick A. Serao
PATRICK A. SERAO
Chairman, Go-Ahead IPR
for XM4 Carbine

DISTRIBUTION:

Commander, US Army Logistics and Evaluation Agency, ATTN: DALO-LEI
New Cumberland, PA 17070
Commander, Headquarters, Training and Doctrine Command, ATTN: ATTE/P/ATCD-M,
Ft. Monroe, VA 23651
Commandant, US Army Infantry School, ATTN: ATSH-CD-TE, ATSH-CD-MLS-F,
ATZB-IB-SA, Ft. Benning, GA 31905
Commander, Combined Arms Center, ATTN: ATZL-CAM-C, Ft. Leavenworth, KS 66027
Commander, 9th Infantry Division, ATTN: MOD-FDD, CB, DRXTB-MS, Ft. Lewis, WA 98433
Commander, US Army Armor School, ATTN: ATSB-CD-ML, Ft. Knox, KY 40121
Commander, Marine Corps Development and Education Command, ATTN: D091,
Quantico, VA 22134
Headquarters, Air Force Office of Security Police, ATTN: SPP, Kirtland AFB, NM
87115
Commandant, US Coast Guard, ATTN: G-OMR-2, Washington, DC 20590
Headquarters, Department of the Army, ATTN: DAMO-RQD, Washington, DC 20310
Commander, Office of Testing and Evaluation Agency, ATTN: CSTE-POO, Falls Church,
VA 22041
Commander, Materiel, Readiness and Support Activity, ATTN: DRXMD-ED, Lexington, KY
40507

001 12 1984



SMCAR-RAR

SUBJECT: Operational and Organizational Plan for the XM4 Carbine

DISTRIBUTION Cont'd:

- Commander, US Army Materiel Command, ATTN: AMCDE-SC, Alexandria, VA 22333
- Commander, Armament Munitions and Chemical Command, ATTN: SMCAR-LEW, SMCAR-ASI, SMCAR-MAG, Rock Island, IL 61299-5001
- Commander, Testing and Evaluation Command, ATTN: DRSTE-CM-F, STEAP-NT-IW-W, Aberdeen Proving Ground, MD 21005
- Director, Army Materiel Systems Analysis Activity, ATTN: DRXSY-PO, Aberdeen Proving Ground, MD 21005
- Commander, US Army Materiel Command Equipment Authorization Review Activity, ATTN: DEXEA-C, Alexandria, VA 22333
- Director, Human Engineering Laboratory, Dover Detachment, ATTN: Mr. Jack Carlock, Dover, NJ 07801-5001

1. Subject plan was received on 10 Oct 1984 by this Center and is being forwarded for inclusion in the XM4 Carbine Go-Ahead In-Process Review Package currently being staffed.

2. The classified mission profile portion of the Operational and Organizational Plan has been withheld and will be provided at the Go-Ahead In-Process Review scheduled for 31 Oct 1984.

FOR THE COMMANDER:

Patrick A. Sero
PATRICK A. SERO
Chairman, Go-Ahead IPR
for XM4 Carbine

DISTRIBUTION:

- Commander, US Army Logistics and Evaluation Agency, ATTN: DAEO-LXI, New Cumberland, VA 22070
- Commander, Headquarters, Training and Doctrine Command, ATTN: ATTE/PATCD-M, Ft. Monrovia, VA 22051
- Commander, US Army Infantry School, ATTN: ATSH-CD-MIS-V, ATSB-1B-2A, Ft. Benning, GA 31905
- Commander, Combined Arms Center, ATTN: ATCL-CAM-C, Ft. Leavenworth, KS 66027
- Commander, 7th Infantry Division, ATTN: MOD-PDN, CA, INDIANAPOLIS, IN 46203
- Commander, US Army Armor School, ATTN: ATSE-CD-MI, Ft. Knox, KY 40131
- Commander, Marine Corps Development and Education Command, ATTN: D091, Quantico, VA 22134
- Headquarters, Air Force Office of Security Police, ATTN: SFP, Kirtland AFB, NM 87115
- Commander, US Coast Guard, ATTN: C-OM-2, Washington, DC 20580
- Headquarters, Department of the Army, ATTN: DAHQ-RD, Washington, DC 20310
- Commander, Office of Testing and Evaluation Agency, ATTN: CSTB-POB, Balla Gwath, VA 22041
- Commander, Materiel, Readiness and Supply Activity, ATTN: DRXSY-ED, Lexington, KY 40507

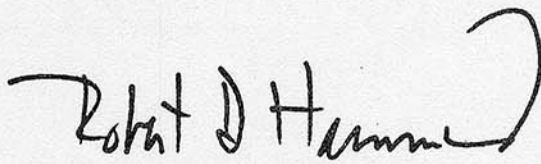
AMCDE-PA (5 Oct 84) 1st Ind
SUBJECT: Documentation for Go-Ahead In-Process Review (IPR) for the XM4 Carbine

HQ, USAMC, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001 9 NOV 1984

TO: Commander, US Army Armament, Munitions and Chemical Command, ATTN:
SMCAR-RAR, Dover, NJ 07801

1. Concur in proposed Go-Ahead position subject to inclusion of the following:
 - a. System Concept Paper, Appendix C (Page 21): Life cycle totals should include RDTE costs.
 - b. System Concept Paper, Appendix D, Acquisition Strategy: Paragraph 1 should be expanded to provide further documentation as to why the modification option rather than the procurement option was selected.
2. AMSAA letter of 23 October 1984, copy attached, has also identified several changes/concerns which should be made and/or addressed.
3. The TEMP, Page 8, Part IV1b(5) states that the airdrop rigging procedures for the M16 Rifle will be used as a baseline procedure and required changes documented. Changes should be coordinated with Natick Research and Development Center as the responsible activity for airdrop rigging procedures.

FOR THE COMMANDER:



ROBERT D. HAMMOND
Major General, USA
Deputy Chief of Staff for
Development, Engineering
and Acquisition

2 Encl
1 wd
2 added as



DEPARTMENT OF THE ARMY

U. S. ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY

Aberdeen Proving Ground, Maryland 21005-5071

REPLY TO
ATTENTION OF

AMXS-Y-GI

23 OCT 1984

SUBJECT: Documentation for Go-Ahead In-Process Review (IPR) for the XM4 Carbine

Commander

US Army Materiel Command

ATTN: AMCDE-SG (Mr. Seidman)

5001 Eisenhower Avenue

Alexandria, VA 22333-0001

1. Reference letter, SMCAR-RAR (D), ARDC, 5 October 1984, SAB.
2. AMSAA has reviewed the subject documentation and concurs with the proposed Go-Ahead position, subject to the resolution of the following concerns.
3. Clarify whether the XM4 will replace all .45 caliber submachine guns or just selected ones. The statement in section 4b of the QRP is ambiguous on this point. AMSAA's position is that the XM4 should replace all .45 caliber submachine guns, in the interests of logistical commonality. This is especially true, due to the planned replacement of the .45 caliber pistol by the 9mm pistol, leaving the M3A1 submachine gun as the only one for which .45 caliber ammunition is needed.
4. Part V of the System Concept Paper states the mode of fire of the XM4 is identical to other M16 weapons except the M16A2 and Firing Port Weapon. This leaves only a single Army weapon (i.e., M16A1), which does not constitute a family. Suggest a change in wording to eliminate the erroneous impression that is being given of greater weapon firing compatibility than what would occur.
5. Appendix A gives the impression that a task to produce probabilities for hit and kill is outstanding. Normally, AMSAA would be tasked to provide this. However, no such tasking was received nor could it be satisfied until accuracy tests are conducted. Suggest the appropriate wording to the footnote be: "***... will be forwarded for review subsequent to receipt of analysis of DT test data."
6. Appendix D, Section 5. This could be taken by some as meaning a scope is planned for the XM4. However, a scope would not be cost-effective for the XM4. Suggest that the discussion state that only an iron sight is to be used with the carbine. However, it may attach to the integral mounting rail for commonality with the M16A2 parts.

AMXSY-GI

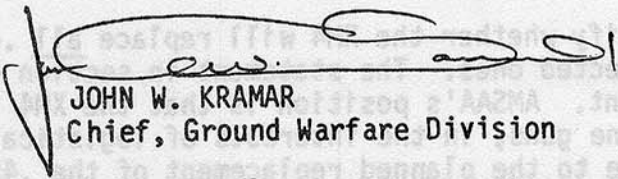
23 OCT 1984

SUBJECT: Documentation for Go-Ahead In-Process Review (IPR) for the XM4 Carbine

7. Appendix D, Section 6. Although this program is termed as "low risk" technically, the potential for problem areas exists and, where feasible, should be planned for. In particular, the reliability may vary greatly with respect to ammunition types and environments (e.g., cold temperature). The Firing Port Weapon program provides a "lessons learned" example along these lines. Large ammunition expenditures during endurance testing resulted in a configuration which gave excellent reliability results at ambient temperatures with high confidence. Cold temperature testing results were poor, leading to configuration changes which caused reliability at ambient temperatures to be altered. The effect of this was a long program as testing was continually redone. The testing for the XM4 program should be "front-end loaded" with the (short) environmental and ammunition sensitivity test which documents reliability in these areas prior to endurance testing.

8. AMSAA POC for this correspondence and for the XM4 project is Mr. Julian Chernick, AUTOVON 283-5648.

FOR THE DIRECTOR:


JOHN W. KRAMAR
Chief, Ground Warfare Division

CF:
Commander, Armament Research and Development Center, US Army Armament, Munitions and Chemical Command, ATTN: SMCAR-RAR(D) (Patrick Serao), Dover, NJ 07801-5001

PT 04060 72 3/3/71507

PAGE 03

SECTION INFO SMCAR-CO DO TO CS GS GSP IN EE SF SS AS PP RAK RA I
FAM PT PTH PTC PTP-T PTA PTA-M MS CP CPF LC LCA LCE LCM LC LCP
LCS LCU- SC SA SCA SCF SCJ SCS SCM CA IS ISE ISI ISL ISL-T
TSD TSE TSE-TSE TSE-GLCAS COMSY APT APT-TC 9020 USASSO HND
SECTION INFO RASMC-MAY MAY-B MAY-F MAY-T MAY-L MAY-H LS ISM-A ISM-F
GAT GEF GAN GAR GAG PC PCP ECP ACT HCP TDA CA TG AVD
SECTION INFO PE AL NUC CAWS TRAS TSP CRK SFA HLLPONT
SECTION

• 100K:

2YUW BUENANA7676 3032129-ULGU--RUEOER A.

សម្រេច

01130Z OCT : 4

FOR USALFA 1044 NEW JERSEYLAND PA //DALO-1 EI//

SECRET 11/11/48-RECEIVED-SEC-50011

SECRET

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED
DATE 01-14-2009 BY 60322 UCBAW

[illegible]

1-12-5A//

WIFHA/CDR USAC/CS FT BELLEVILLE KS //ATZL-044-77

REF ID: A66041

10014FB/CDR USAMCECOM ROCK ISL IL-//ANSMC-AS I//

111

110145

SUBJ AMS 5.56MM CARBINE 60-AHEAD IN-PROCESS REVIEW

1. LTR, USAREC, SMCAR-BAR, DOVER, NJ, 9 OCT 84, SAB.

1. USARFA WILL BE UNABLE TO ATTEND SUBJ MEETING ON 1 NOV 84. THIS
 ALSO COINCIDES WITH THE BASIC PROPOSAL WITH THE FOL CMT:

IF ANY PROBLEMS OR DEFICIENCIES MUST BE IMMEDIATELY ADDRESSED. IF NECESSARY, ACTIONS ARE REQUIRED ALL NEC PROCUREMENT ACTIONS MUST COMPLY WITH THE REQUIREMENTS OF RGR. IF MODIFICATIONS TO THE EXISTING AGREEMENT ARE REQUIRED, FEASIBLE THEM BEING, INSTRUCTIONS SHOULD BE PROVIDED AT THE EARLIEST OPPORTUNITY.

PAGE 02 RUEMAA47876 UNCLAS

ABILITY OF LOCAL INSTL TO COMPLY WITH THE MGO MUST BE CONSIDERED.

6. THE ADDITION OF 4,000 FULLY AUTOMATIC-CAPABLE WARPS WILL
DYNAMICALLY AFFECT DAILY APPROXIMATE RATES AND STOCKS OF THE
SUPPLY POINT (P. 15). AN IMPROVED ANAL MUST BE CONDUCTED IN
FURTHER FIELD STUDIES.

C. A MAT TRANSFER PLAN FOR THE DISPLACED WEAPONS MUST BE CONSIDERED.

1. SURFACE TRANSPORTABILITY RIGHTS (CONTAINERS, SECURITY, ETC.)
EXPRESSED EARLY SO THAT FILLING DATES CAN BE MET.

U.S. AIR FORCE IS MR. FOREST MCKOWN, AV 977-6704.

N H N H

ROUTINE

* U N C L A S S I F I E D *

PT 02359 332/1228Z

PAGE 01

ACTION INFO SMCAR-CD DC TD CS GS GSP IN EE SF SS AS PM RA **RA**

RAM PT PTH PTC PTP-T PTA PTA-M MS CP CPF LC LCA LCE LCM LC LCP

LCS LCU- SC SA SCA SCF SCJ SCS SCM CA IS ISE ISI TISL ISL-T

ISO TS TSF TSA TSE GLOAS COMSY APT APT-TC 9020 USASSU HHO

ACTION INFO AMSMC-MAY MAY-W MAY-P MAY-T MAY-S MAY-F LS ISM-A DSM-B

QAA QAT QAF QAN QAR QAO PC PCC PCM PCT PCW TD TOA CA MG AVD

ACT INFO PR AL NUC CAWS THAS SGT YORK SFA HELIPORT

ACTION INFO

ACTION: INFO:

RT TUZYUW RUWMFDK0923 3320459-UUUU-RUEOEKA.

ZNR UUUUU

R 212300Z NOV 84

FM CDR ADEA FT LEWIS WA //MODE-FDD-CCR//

TO RUEOEKA/CDR ARDC DOWVER NJ //SMCAR-RAR//

INFO RUEADWD/DA WASHDC //DAMO-FDD/DAMO-WSW/DAMO-RDD/DAMO-FDT//

RUCLAIA/CDR TRADOC FT MONROE VA //ATCO-ML//

RUCLDNA/CMOT INFSCB FT BENNING GA //ATSH-CD-MLS-F//

ZEN/CDR CORPS FT LEWIS WA //AFZH-CS/AFZH-DPT-I//

BT

UNCLAS

0000

SUBJ XM4 CARBINE GO AHEAD IPR

A. REFERENCE 21 NOV 84 FONECON MAJ ROBERTS/MR SERAO, SAB.

1. ADEA HAS REVIEWED THE IPR POSITIONS AND CONCURS WITH THE TRADOC

RAM MINIMUM ACCEPTABLE VALUES OF 600 RDS MEAN ROUNDS BETWEEN

STOPPAGE AND 4039 MEAN ROUNDS BETWEEN FAILURES.

2. XM4 SHOULD BE DEVELOPED. ADEA CONCURS WITH THE ARDC GO AHEAD

DECISION FOR FIELDING THE XM4 IN FY86.

BT

#0923

NNNN

ROUTINE

* U N C L A S S I F I E D *

PRIORITY

* U N C L A S S I F I E D *

PT 02379 332/15147

PAGE 00111111

ACTION INFO SMCAR-CD DC TO CS SS GSP IN EE EF SS AS PM RA RAL
RAM PT PTM PTC PTP-T PTA PTA-M MS CP CPE LC LCA LCE LCM LC LCP
LCS LCU- SC SA SCA SCF SCJ SCS SCM CA IS ISE ISI ISL ISL-T
ISU TS TSF TSA TSE GLOAS COMSY APT APT-TC 9020 USASSD M-D

ACTION INFO AMSMC-MAY MAY-W MAY-P MAY-T MAY-S MAY-F LS DSM-A LSM-B
GAA QAT QAF QAN QAR QAO PC PCC PCM PCT PCW TO TDA CA MG AVU
ACT INFO PE AL NUC CAWS TRAS SGT YORK SFA HELIPORT

ACTION INFO

ACTION: INFO:

FTTUZYUW RUCLAIA9149 3321504-UUUU--RUEDEKA.

ZNR UUUUU

P R 271448Z NOV 84

FM CDR TRADOC FT MONROE VA //ATCO-ML//

TO RUEDEKA/CDR ARDC COVER NJ //SMCAR-RAR//

RUEPANA/CDR USALEA NEW CUMBERLAND PA //DALO-LE//

RUEWFOA/CDR ACLA FT LEWIS WA //MODE-FDD-CCR//

INFO RUEADWD/HQ DA WASHDC //DAMO-FDD/DAMA-WSW//

RUEHHA/CDR USACAD FT LEAVENWORTH KS //ATZL-CG/ATZL-CAM-1//

ATZL-TIE//

RUEGAGE/CDR USALOGC FT LEE VA //ATCL-M//

RUEAHOF/CDR SOLDIER SPTCEM MCR ALEX VA //ATZI-NCP-M//

RUECLBFA/CDR JCATA FT HOOD TX //ATTE-ZA//

RUECLONA/CDR USAIC FT BENNING GA //ATSH-CD//

BT

UNCLAS

0000

SUBJ: XM4, 5.56 CARBINE GO-AHEAD IN PROCESS REVIEW (IPR)

A. LETTER, CDR ARDC (SMCAR-RAR), 9 OCT 84, SUBJ: SAB.

1. REF A ANNOUNCED THAT A GO-AHEAD IPR WILL BE CONDUCTED TO APPROVE
THE PROPOSED ACQUISITION STRATEGY IN RESPONSE TO THE HQDA APPROVED
MID QUICK REACTION PROGRAM (QRP) DOCUMENT 3-3 FOR A 5.56MM CARBINE.

2. TRADOC CONCURS WITH THE AMC POSITION THAT THE CARBINE SHOULD

PAGE 02 RUCLAIA9149 UNCLAS

PROCEED INTO ENGINEERING DEVELOPMENT AS PROPOSED IN THE IPR DOCU-
MENTATION, PROVIDED THAT THE FOLLOWING RAM ISSUES ARE ACCEPTED BY
THE IPR VOTING MEMBERS:

A. THAT A MINIMUM ACCEPTABLE VALUE (MAV) OF 4095 MEAN ROUNDS
BETWEEN OPERATIONAL MISSION FAILURE BE INCLUDED AS AN ESSENTIAL RAM
REQUIREMENT FOR THE XM4 CARBINE.

B. THAT A MAV OF 600 MEAN ROUNDS BETWEEN STOPPAGES BE INCLUDED
AS AN ESSENTIAL RAM REQUIREMENT FOR THE XM4 CARBINE.

C. THAT ATTAINMENT OF THE RAM REQUIREMENTS BE VALIDATED PRIOR
TO A MILESTONE III IPR.

D. THE MINIMUM RAM VALUES WILL INSURE THAT THE XM4 CARBINE IS

PRIORITY

***** 85

* U N C L A S S I F I E D *

PRIORITY

 * U N C L A S S I F I E D *

CAPABLE OF FIRING A BASIC LOAD MISSION WITHOUT FAILURE WITH A 95 PERCENT CONFIDENCE LEVEL.

4. THE OPERATIONAL ISSUES AND CRITERIA STATED IN THE TEST AND EVALUATION MASTER PLAN (TEMP) ARE DRAFT AND REQUIRE TRADOC APPROVAL PRIOR TO FINAL TRADOC CONCURRENCE WITH THE TEMP. AN OPERATIONAL TEST WILL BE REQUIRED.

4. THE TRADOC VOTING MEMBER FOR THE GO-AHEAD IPR IS CPT SMITH. SAYS. POC THIS HEADQUARTERS IS CPT MILLS, AV 680-4414.

BT

#0149

NNNN

NNNN

NNNN

NNNN

NNNN

NNNN

NNNN

NNNN

NNNN

NNNN

PRIORITY

 * U N C L A S S I F I E D *

NNNN

ROUTINE

* U N C L A S S I F I E D *

PT 02359 332/1228Z

PAGE 01

ACTION INFO SMCAR-CO DC TO CS GS GSP IN EE SF SS AS PM RA **RAD**
RAM PT PTM PTC PTP-T PIA PTA-M MS CP CPF LC LCA LCL LCM LC LCP
LCS LCU- SC SA SCA SCF SCJ SCS SCM CA IS ISE ISI ISL ISL-T

ISO TS TSE TSA TSE GLOAS COMSY APT APT-TC 9020 USASSL M-D

ACTION INFO AMSMC-MAY MAY-W MAY-P MAY-T MAY-S MAY-F LS LSM-A USM-B

QAA QAT QAF QAN QAR QAQ PC PCC PCM PCT PCW TO TOA CA NG AVD

ACT INFO PP AL NUC CAWS TMAS SGT YORK SFA HELIPORT

ACTION INFO

ACTION: INFO:

RT TUZYUW RUWMEFK0923 3320459-UUUU--RUEOEKA.

ZNR UUUUU

R 212300Z NOV 84

FM COR ADEA FT LEWIS WA //MODE-FDD-CCR//

TO RUEOEKA/COR ARDC DOVER NJ //SMCAR-RAR//

INFO RUEADWD/DA WASHDC //DAMO-FDD/DAMO-WSW/DAMO-RDD/DAMO-FDT//

RUCLATA/COR TRADOC FT MONROE VA //ATCD-ML//

RUCLDMA/COMDT INF SCH FT BENNING GA //ATSH-CJ-MLS-F//

ZEN/CORICORPS FT LEWIS WA //AFZH-CS/AFZH-DPT-1//

BT

UNCLAS

0000

SUBJ XM4 CARBINE GO AHEAD IPR

A. REFERENCE 21 NOV 84 FONECON MAJ ROBERTS/MR SERAO, SAB.

1. ADEA HAS REVIEWED THE IPR POSITIONS AND CONCURS WITH THE TRADOC
RAM MINIMUM ACCEPTABLE VALUES OF 600 RDS MEAN ROUNDS BETWEEN
STOPPAGE AND 4039 MEAN ROUNDS BETWEEN FAILURES.

2. XM4 SHOULD BE DEVELOPED. ADEA CONCURS WITH THE ARDC GO AHEAD
DECISION FOR FIELDING THE XM4 IN FY86.

BT

01923

NNNN

ROUTINE

* U N C L A S S I F I E D *

ROUTINE

* U N C L A S S I F I E D *

PT 01832 325/1515Z

PAGE 01

ACTION INFO SMCAR-CD DC TO CS GS GSP IN EE SF SS AS EX RA RAI
RAM PT PTH PTC PTP-T PTA PTA-M MS CP CPF LC LCA LCL LCM LC LCP
LOS LCU- SC SA SC SCF SCJ SCS SCM CA IS ISE ISI ISL ISL-T
ISO IS ISF ISA TSE GLOAS COMSY APT APT-TC 9020 USASSE HRL

ACTION INFO AMSFC-MAY MAY-W MAY-P MAY-T MAY-S MAY-F LS 16-A USM-B
QAA QAT QAF QAN QAR QAO TC PCC PCM PCT PCW TD TDA L MS AVD
ACT INFO PR AL MUC CANS THAS SGT YORK SFA HELIPORT

ACTION INFO

ACTION:

INFO

INFO: RAR

RTTUZYUW RUCLDUA2504 3251459-UUUU--RUEDEKA.

ZNR UUUUU

R 201430Z NOV 84

FM PRES INF SD FT BENNING GA //ATZB-IB-SA//

TO RUCLAIA/CDR TRADOC FT MONROE VA //ATCD-ML//

RUWTFHA/CDR USACAC FT LEAVENWORTH KS //ATZL-CG/ATZL-CAM-1/ATZL-IE //ATZL-IE

RUCLBF/CDR TRADOC COMB ARMS TEST ACTV FT HOOD TX //ATTE-ZA//

INFO RUEOAGA/CDR USALOGC FT LE VA //ATCL-M//

RUCNAAA/CDR SOLDIER SPT CEN FT BEN HARRISON IN //ATZI-MCS-J//

ZEN/COMDT INFSC FT BENNING GA //ATSH-CD// (COURIER)

RUWMEJA/CDR ADEA FT LEWIS WA //MODE-FDO-CCB//

RUEDEKA/CDR ARRADCOM DOVER NJ //SMCAR-RAR//

RUEAHOF/CDR SOLDIER SPT CEN NCP ALEXANDRIA VA //ATZI-MCP-4//

BT

UNCLAS

0000

SUBJ DECISION MESSAGE, TRADOC PROPOSED POSITION FOR THE XX4 5.56MM

CARBINE GO-AHEAD IN-PROCESS REVIEW (IPR)

A. MSG TRADOC, ATCD-ML, 051335Z NOV 84, SUBJECT AS ABOVE.

1. USAIB CONCURS WITH THE OPERATIONAL TEST (OT) PORTION OF THE IPR PACKAGE SUBJECT TO TIMELY RECEIPT OF ADEQUATE WEAPONS AND AMMUNITION FOR TESTING.

PAGE 02 RUCLDUA2504 UNCLAS

2. POC USATR, WILLIAM E. PRESOTT, AV 835-3456/4072.

BT

#2504

NNNN

88

ROUTINE

* U N C L A S S I F I E D *



CHANGES TO GO-AHEAD IPR PACKAGE

- o COMMENTS FROM TRADOC
 - o ADD FOLLOWING RAM REQUIREMENTS
 - MEAN ROUNDS BETWEEN FAILURE - 4095
 - MEAN ROUNDS BETWEEN STOPPAGE - 600
 - VALIDATION PRIOR TO MILESTONE III

REFERENCE TRADOC MESSAGE R271448 NOV 84

- o COMMENTS FROM ADEA
 - o CONCURS WITH AMC POSITION

REFERENCE ADEA MESSAGE R212300 NOV 84

CHANGES TO GO-AHEAD IPR PACKAGE

- COMMENTS FROM LEA
 - ADDRESS PROBLEMS WITH THE M12 STORAGE RACK.
 - ACCOMPLISHED-THE XM4 CARBINE WILL FIT IN THE M12 RACK
 - ADDRESS INCREASED DAILY AMMUNITION USAGE RATES AND STORAGE REQUIREMENTS
 - AMMUNITION REQUIREMENTS FOR THE XM4 CARBINE ARE CURRENTLY BEING ADDRESSED BY AMCCOM
 - SELECTED M16A1 RIFLES, PISTOLS AND SUBMACHINEGUNS WILL BE REPLACED BUT THE ROLES FOR THESE WEAPONS ARE NOT EXPECTED TO CHANGE SIGNIFICANTLY. THEREFORE, THE QUANTITY OF AMMUNITION REQUIRED IS NOT EXPECTED TO CHANGE SIGNIFICANTLY. STORAGE REQUIREMENTS SHOULD BE EASED BASED ON COMMONALITY OF AMMUNITION BEING STORED.
 - CONSIDER A MATERIAL TRANSFER PLAN (MTP)
 - A MTP WILL BE PREPARED BASED ON INFORMATION FROM TRADOC, AND SUBMITTED FOR APPROVAL AT THE DEVA IPR.
 - ADDRESS SURFACE TRANSPORTABILITY REQUIREMENTS.
 - TRANSPORTABILITY REQUIREMENTS WILL BE ADDRESSED BY AMCCOM PRIOR TO THE DEVA IPR. REQUIREMENTS ARE NOT EXPECTED TO CHANGE FROM EXISTING M16A1/M16A2 RIFLE.

REFERENCE 3 LEA MSG R291130Z OCT 84

CHANGES TO GO-AHEAD IPR PACKAGE

- COMMENTS FROM TECOM
 - THE PRODUCTION ACCEPTANCE T&E WILL BE COMPLETE JAN 87
 - THE TEST REPORT COMPLETE MAR 87
 - THE INDEPENDENT EVALUATION REPORT COMPLETE MAY 87
 - BASED ON RESULTS OF A MEETING AT TECOM ON 15 NOV 1984, TECOM AND ARDC PROPOSES TO PERFORM A COMBINED DT/IPT WHICH WILL ENABLE THE CURRENT SCHEDULE TO BE MET.

REFERENCE 4 TECOM MSG R191410Z OCT 84
- COMMENTS FROM OTEA
 - DT TEST ISSUES - TROOP ORIENTATION/MAINTENANCE AND OPERATION WITH PROTECTIVE CLOTHING SHOULD BE OT ISSUES.
 - THESE RECOMMENDATIONS WILL BE ADDRESSED AT THE FIRST TIWG.

REFERENCE 5 OTEA LTR 9 OCT 84
- COMMENTS FROM HEL
 - HEL STRESSES THE IMPORTANCE OF ADHERANCE TO THE NOISE LEVELS ESTABLISHED IN MIL-STD-1474.

REFERENCE 6 AMXHE-HE-AR DF 10 OCT 84



CHANGES TO GO-AHEAD IPR PACKAGE

• COMMENTS FROM AMC

- LIFE CYCLE TOTALS SHOULD INCLUDE RDTE COSTS APPENDIX C, LAST PAGE WILL BE UPDATED.
- EXPANSION OF INFORMATION RELATIVE TO PROCUREMENT OPTION APPENDIX D, PARAGRAPH 1 WILL BE EXPANDED
- COORDINATION OF CHANGES FOR AIRDROP RIGGING PROCEDURES THE TEMP, PAGE 8, PART IV 1b(5) WILL BE AMENDED REQUIRING COORDINATION WITH THE NATICK RESEARCH AND DEVELOPMENT CENTER
- REQUIRE THE BOIPFD/QQPRI/DI.
 - ACCOMPLISHED - COPY ATTACHED (ENCL 1)

REFERENCE 1 AMC LTR 5 OCT 84

CHANGES TO GO-AHEAD IPR PACKAGE

- COMMENTS FROM AMSAA

- REPLACE ALL .45 CALIBER SUBMACHINEGUNS
 - NOT A SUBJECT FOR DISCUSSION AT THE GO-AHEAD IPR.
 - WILL BE ADRESSED IN CONJUNCTION WITH INFANTRY SCHOOL DEVELOPMENT OF ARMY WIDE REQUIREMENT FOR A CARBINE.
- CORRECTION OF PART V OF THE SYSTEM CONCEPT PAPER RELATIVE TO MODE OF FIRE.
 - PART V, PAGE 4 AND 5 WILL BE CORRECTED
- CORRECTION OF APPENDIX A RELATIVE TO AVAILABILITY OF PROBABILITIES FOR HIT AND KILL
 - APPENDIX A WILL BE CORRECTED TO SHOW DATA WILL NOT BE AVAILABLE UNTIL AFTER ANALYSIS OF DT DATA IS COMPLETED.

CHANGES TO GO-AHEAD IPR PACKAGE

CHANGES TO GO-AHEAD IPR PACKAGE

- COMMENTS FROM AMSAA (CON'D)
 - CORRECTION OF APPENDIX D, SECTION 5 TO CLARIFY REASON FOR USE OF THE ENHANCED M16A2 RIFLE UPPER RECEIVER ON THE XM4 CARBINE.
 - SUGGESTION NOT ACCEPTED. WHEREAS IT IS AGREED THAT A SCOPE FOR THE XM4 CARBINE IS NOT COST EFFECTIVE, THE USE OF THE SAME UPPER RECEIVER IS COST EFFECTIVE OVER THE LIFE CYCLE OF THE WEAPON.
 - PLAN ENVIRONMENTAL TESTS PRIOR TO ENDURANCE TEST TO IDENTIFY WEAPON/AMMUNITION PROBLEMS EARLY.
 - THIS RECOMMENDATION APPEARS TO BE WELL FOUNDED BASED UPON M231 PROGRAM EXPERIENCE AND WILL BE ADDRESSED AT THE FIRST TIWG.

REFERENCE 2 AMSAA LTR 23 OCT 84

CHANGES TO GO-AHEAD IPR PACKAGE



DEPARTMENT OF THE ARMY

HEADQUARTERS US ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND
DOVER, NEW JERSEY 07801

REPLY TO
ATTENTION OF:

DRSMC-RAR(D)

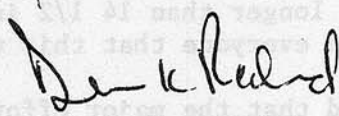
29 August 1983

SUBJECT: Minutes of the Pre-start IPR for 5.56 Carbine (QRP 3-3)

SEE DISTRIBUTION

1. Attached are the minutes of the pre-start IPR for the 5.56 Carbine (QRP 3-3) held at the Armaments Research and Development Center (ARDC), Dover, NJ on 17 Aug 83.
2. Correspondence on these minutes may be submitted to Commander, USAARDC, ATTN: DRSMC-RAR(D), CPT Redmond, AV 880-6974.

1 Encl
as


DENNIS K. REDMOND
CPT, IN
Chairman

DISTRIBUTION:

Cdr, DARCOM (DRCDE-SG, DRCDE-O), Alexandria, VA 22333
Cdr, TRADOC (ATLD, ATLD-M), Ft Monroe, VA 23651
Cdr, USACAC (ATZL-CAM-C), Ft Leavenworth, KS 66027
Cdr, AMCCOM (DRSMC-LEW(R), DRSMC-ASP(R)), Rock Island, IL 61202
Cdr, 9ID (ADEA-MODE-IS, DRXTB-T), Ft Lewis, WA 98433
Cdr, TECOM (DRSTE-CM-F), APG, MD 21005
Cdr, SOCOM (ATSU-CD-M), Ft Bragg, NC 28307
Comdt, USAIS (ATSH-CD-MLS-F, ATZB-IB-SA), Ft Benning, GA 31905
Dir, AMSAA (DRXSY-PO), APG, MD 21005

CF: DESMC - SEC (O)

DRSMC-RAR(D)

SUBJECT: Minutes of the 5.56 Carbine Pre-Start IPR (QRP 3-3) Meeting,
17 Aug 83

1. General. The pre-start IPR was held 17 Aug 83 in Rm 320, Bldg 1, at USAARDC, Dover, NJ, to provide an information forum for all attendees. Current program (Encl 2) was reviewed with little or no comments from the attendees. A list of attendees is at Encl 1.

2. Key Issues and Actions.

a. All participants agreed with subject presentation and were very enthusiastic about supporting the program.

b. One concern expressed by Ft Benning A/O was to evaluate an engineering study to increase the barrel O.D. A lighter weight and thinner barrel has been looked at by others, maybe this has some application to the 5.56 carbine program.

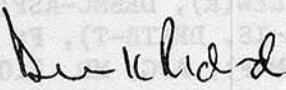
c. Most participants emphatically stated that a barrel (to include flash suppressor) longer than 14 1/2 inches would not be acceptable. Mr DeSiena assured everyone that this will not be the case.

d. All agreed that the major effort now in the program is to push the QRP document through HQs for early approval.

3. General Conclusions. This pre-start IPR was beneficial to all participants. The current status of the program was briefed and accepted by all. Further efforts to expedite the approval of the QRP program should be pursued by all concerned.

4. The meeting was adjourned at 1100 hrs.

2 Encl
as


DENNIS K. REDMOND
CPT, IN
Chairman

<u>NAME</u>	<u>ORGANIZATION</u>	<u>OFFICE SYMBOL</u>	<u>AVN</u>
CPT Dennis Redmond	USA ARDC, Dover	DRSMC-RAR(D)	880-6974
Vincent De Siena	JSSAP - ARDC, Dover	DRSMC-SCJ(D)	880-5074
CPT Lloyd Mills	HQ TRADOC	ATCD-ML	680-4414
LTC J. M. DeChant	TRADOC Ln Officer	ATFE-LO-AC	880-5971
CPT Dan Webb	USAJFKSWC	ATSU-CD-M	236-7117
William E. Prescott	USAIB Ft Benning	ATZB-IB-SA	835-3456
Emil Merz	FSL, Weapons Br	DRSMC-SCA-W(D)	880-6071
C. E. Pritchard	HQ USAIS Ft Benning	ATSH-CO-MLS-F	835-1016
Robert Van Bodegon	FSL - Weapons Br	DRSMC-SCA-W(D)	880-6075
Matt Roberts	ADEA - Close Combat	MODE-IS	357-7662
MAJ Gary Martin	DARCOM MSA, ADEA	DRXTB-T	357-6403
CPT Malcholm Reese	HQ CAC	ATZL-CAM-C	552-5683
Leonard Cichucki	PAD, ARDC, Dover	DRSMC-QAF-S(D)	880-5401
Fernando Fuentes	Safety Office, Dover	DRSMC-SFS(D)	880-4550
Clarence Glover	Safety Office, Dover	DRSMC-SFS(D)	880-4550

P R E S T A R T I P R

F O R

5 . 5 6 S E R I E S C A R B I N E
(X M 1 7 7 E 2)

1 7 A U G 1 9 8 3

PRE START IPR

TOPICS

- o NEED
- o CURRENT WEAPON
- o CHANGES AND IMPROVEMENTS REQUIRED
- o RATIONALE FOR CHANGES AND IMPROVEMENTS
- o RECOMMENDED ENGINEERING PROGRAM
- o RECOMMENDED TEST PROGRAM
- o PROGRAM COSTS
- o PROGRAM MILESTONE CHART

9 I D R E Q U I R E M E N T S

Q R P 3 - 3

o MUST HAVE:

- 5.56MM NATO CALIBER; FIRE SAME AMMO AS M16A2
- UPPER/LOWER RECEIVER ASSEMBLIES & BOLT OF M16A2;
MAX M16A2 PARTS COMMONALITY
- OVERALL LENGTH
 - + BUTT STOCK EXTENDED/OPEN - 20 - 34 INCHES
 - + BUTT STOCK COLLAPSED - 26 - 31 INCHES
- WEIGHT W/O MAGAZINE NO MORE THAN 6.5 LBS
- MAX RANGE GREATER THAN SMG & .45 CAL PISTOL
- FULL AUTOMATIC CAPABILITY
- MAX FLASH SUPPRESSION HIGHLY DESIRED

NEED

o 9ID QRP-RD

o INTEREST EXPRESSED:

• USA FT BENNING

• USMC QUANTICO

• SARP OFFICE CANADA

CURRENT WEAPON

o XM177E2 CARBINE

- LENGTH 33 - 29.75 IN
- BARREL LENGTH 14.5 IN
- WEIGHT LOADED W/30 RDS 6.9 LBS
- UNLOADED 5.9 LBS
- CYCLIC RATE 700 To 900 RPM
- VELOCITY 2,900 FPS
- MAX EFFECTIVE RANGE APPROX 360 M

o TDP STATUS TYPE CLASSIFIED OBSOLETE 1972

NEED

CHANGES / IMPROVEMENTS REQUIRED

- O STABILIZE M855 AND M856 AMMO
- O CURRENT SIGHT ALIGNMENT FOR M855 AND M856 AMMO
- O ELIMINATE MUZZLE DEVICE PROBLEM
- O ASSESS PERFORMANCE AND, IF REQUIRED, MODIFY WEAPON
TO INSURE FUNCTION WITH M856
- O CHANGE PLASTIC MATERIAL
- O IMPROVE HANDGUARD DESIGN
- O IMPROVEMENTS - NO COST BYPRODUCTS FROM ABOVE

RECOMMENDED CHANGES AND RATIONALE

- o CHANGE TWIST RATE TO 1 TURN IN 7 INCHES
 - WILL STABILIZE M855 AND M856 AMMUNITION
 - EQUAL TO M249 SAW AND M16A2 RIFLE
 - KNOWN PRODUCTION CAPABILITY
- o ENGINEERING DEVELOPMENT REQUIRED TO INSURE FUNCTION WITH M855 AND M856 AMMUNITION
 - M856 GENERATES LOWER PORT PRESSURE THAN M196 AMMO
 - AMMO CAN NO LONGER BE CHANGED BECAUSE OF EXISTING BALANCE BETWEEN AMMO, SAW AND M16A2 RIFLE
 - PORT SIZE OF XM177E2 WAS INCREASED TO EXISTING M193/M196 AND M855/M856 AMMUNITION
 - QUICK SOLUTION APPEARS TO BE FURTHER INCREASE OF PORT SIZE AND POSSIBLE OTHER CHANGES TO INSURE FUNCTION OF WEAPON WITH M856 AMMO
 - END RESULT MAY BE DECREASE IN PARTS LIFE WITH INCREASE IN CYCLIC RATE OF WEAPON WITH M193, M196 AND M855 AMMO

RECOMMENDED CHANGES AND RATIONALE

0 ENGINEERING CHANGES TO SIGHTS

- CHANGES FRONT AND REAR SIGHTS TO ACCOMMODATE TRAJECTORY OF M855/M856 AMMO
- CHANGE REAR APERTURE TO M16A2 TYPE
 - .065 IN DIA FOR PRECISE AIM (300 M ZERO)
 - 5MM DIA FLIP TO 100 M RANGE FOR QUICK FIRE, MOVING TARGETS AND POOR LIGHT CONDITIONS

0 IMPROVEMENTS TO RECEIVERS

- M16A2 UPPER AND LOWER RECEIVERS NOT RECOMMENDED
- 800M ADJUSTMENT AND 3 ROUND BURST NOT REQUIRED
- RECOMMEND USE OF IMPROVED M16A1 RECEIVERS
- WILL INCORPORATE:
 - STENGTHENED LOWER RECEIVER EXTENSION RING
 - FULL AUTOMATIC FIRE
 - IMPROVED REAR APERTURE
 - IMPROVED DUST COVER
 - SPENT CASE DEFLECTOR

RECOMMENDED CHANGES AND RATIONALE

O ENGINEERING CHANGES TO HANDGUARDS

- CONVERT TO M16A2 MATERIAL
- TRANSFER TECHNOLOGY IMPROVEMENTS FROM M16A2 PROGRAM TO CARBINE PROGRAM
- WILL IMPROVE COOKOFF POINT AND SUSTAINED RATE OF FIRE
- WILL IMPROVE RUGGEDNESS

O ENGINEERING CHANGE TO ADD FRONT PISTOL GRIP

- WILL IMPROVE HANDLING OF WEAPON

O CHANGE TO M16A2 PISTOL GRIP

- WILL IMPROVE HANDLING OF CARBINE
- WILL IMPROVE RUGGEDNESS
- WILL STANDARDIZE PARTS

O ENGINEERING STUDY TO INCREASE BARREL O.D.

- WILL IMPROVE HEAT DISSIPATION
- INCREASE FROM MUZZLE TO CHAMBER WITH UNIFORM O.D.
- WILL IMPROVE RUGGEDNESS
- WEIGHT INCREASE SHOULD NOT BE MORE THAN 5 TO 6 OZ.

RECOMMENDED CHANGES AND RATIONALE

o ADDITION OF SLIDE SLING SWIVEL MOUNT

- WILL IMPROVE METHOD OF CARRYING CARBINE

- WILL ENHANCE ABILITY TO FIRE FROM HIP

o RECOMMEND USE OF 14 1/2 INCH BARREL INCLUDING M16A2 FLASH SUPPRESSOR

- THIS COMBINATION SHOULD PROVIDE ADEQUATE NOISE
AND FLASH REDUCTION

- WILL HAVE LEAST COST IMPACT FOR ENGINEERING
DEVELOPMENT AND TESTING

- * WILL ACCOMMODATE EXISTING BFA

- WILL ACCOMMODATE EXISTING BAYONET

RECOMMENDED CHANGES AND RATIONALE

- SHORTER 10 1/2 INCH BARREL WITH M16A2 FLASH SUPPRESSOR
WILL NOT SATISFY NOISE AND BLAST REQUIREMENTS

O ALTERNATE SOLUTION FOR BARREL LENGTH

- USE 10 1/2 INCH BARREL WITH IMPROVED XM177E1 FLASH
SUPPRESSOR
- 1968 TECOM REPORT OF M196 JACKETS BEING STRIPPED
- ENGINEERING DEVELOPMENT PROGRAM TO MODIFY XM177E2 SUPPRESSOR
AND EXPAND TEST PROGRAM TO PROVE ACCOMPLISHMENT
- INCLUDE EXTERNAL MODIFICATION TO ACCOMMODATE BAYONET
- DESIGN AND TYPE CLASSIFY NEW BFA IF REQUIRED
- ALTERNATE SOLUTION NOT COSTED

RECOMMENDED ENGINEERING PROGRAM

0 ENGINEERING DEVELOPMENT CONTRACT

● PERFORM ENGINEERING WORK NECESSARY FOR

- BARREL
- HANDGUARDS
- FRONT PISTOL GRIP
- SIGHTS
- RECEIVERS
- INSURE FUNCTION WITH M855 AND M856 AMMO
- UPDATE TDP
- BUILD 10 PROTOTYPE WEAPONS
- FINAL REPORT

0 LOGISTIC SUPPORT

0 INHOUSE ENGINEERING SUPPORT

0 ENGINEERING AND OPERATIONAL TESTING

0 TYPE CLASSIFICATION

RECOMMENDED TESTING

o TECOM WILL PREPARE ENGINEERING TEST PLAN

- TESTING WILL BE EXTRACTS FROM M16A2 PROGRAM

- TESTS REQUIRED

- BARREL ENDURANCE - 3 WEAPONS
- HOT
- COLD 3 WEAPONS
- ROUGH HANDLING
- COOKOFF

- APG WILL PERFORM TESTING

o FT BENNING WILL PREPARE OPERATIONAL TESTING PLAN

- FT BENNING WILL PERFORM TESTING - 4 WEAPONS

o TEST ALTERNATE IF APG CANNOT PERFORM ON TIME

- PERFORM ENGINEERING TEST IN CANADA IN

ACCORDANCE WITH TECOM TEST PLAN

PROGRAM COSTS

0 DEVELOPMENT AND PRODUCIBILITY ENGINEERING
INCLUDING CONTRACT PREPARATION

\$ 97,659.01

0 UPDATE TDP AND PREPARE NEW DRAWINGS

137,661.85

0 TYPE CLASSIFICATION, ESIP AND
LOGISTIC SUPPORT

99,075.99

0 TESTING INCLUDING TEST PLAN
PREPARATION AND AMMUNITION

303,237.22

PROGRAM TOTAL
(ESTIMATED FY 85 DOLLAR)

\$ 637,634.07

0 UNIT COST (ESTIMATED):

PROGRAM MILESTONE CHART

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

RECEIPT OF FUNDING

PREPARATION OF SCOPE
OF WORK

CONTRACT NEGOTIATION

ENGINEERING CONTRACT

FABRICATE TEST WEAPONS

UPDATE TDP

FINAL CONTRACT REPORT

WEAPON INSPECTION PRIOR
TO TESTING

TESTING (OT AND DT)

COMPLETE FINAL TEST
REPORT

9TH ID SAFETY
RELEASE

TYPE CLASSIFICATION

MONTHS AFTER RECEIPT OF FUNDING

112

112

MINUTES OF MEETING

on
XM4 5.56mm Carbine
at
ARDC

12 June 1984

1. List of Attendees attached as Enclosure 1.
2. Vince De Siena presented a detailed description of the weapon system and program. Mr. John Post discussed the logistical support concept and the program for a Go-Ahead IPR.
3. The following is a list of comments and/or suggestions pertaining to the XM4 Carbine program:

UPPER RECEIVER

- a. There will not be interchangeability with other weapons if the A1 Upper Receiver is used instead of the A2 Upper Receiver.
- b. The cost of the A2 Upper Receiver is approximately 40 to 50 dollars more than the A1 Upper Receiver because of the adjustable Rear Sight. Also, new calibration adjustments would be necessary, however, the advantage of interchangeability overshadows the cost.

AMMUNITION

- a. The reliability of the weapon will be reduced if it is designed to use the M856 Tracer ammunition. When establishing the MRBS, the results of the M856 ammunition should not be a critical issue.
- b. Tracer ammo will overpower the weapon and should not adversely affect it as long as the cyclic rate stays below 1000 rpm.

FRONT PISTOL GRIP

The Front Pistol Grip is advantageous when firing from the standing position. However, the Pistol Grip (as shown at meeting) does not fold back out of the way and scratched the finish off the barrel very quickly.

If a Front Pistol Grip is incorporated into the system, it will have to fold out of the way and pass ruggedness tests.

BLANK FIRING ATTACHMENT

The physical dimensions of the XM4 will allow the use of the existing BFA used on the M16A2.

FUNDING

Funding should be approved and available no later than November or December 1984.

CRITICAL ISSUES

Critical issues must be discussed and established with the developer and user.

TESTING

- a. Every attempt should be made to combine DT and OT testing, in order to minimize time.
- b. 10 prototype weapons are not adequate for testing; an attempt should be made to purchase 30.

COMPLETED IPR

Inputs from responsible organizations should be received by ARDC no later than 15 August 1984. IPR should be completed by 30 August 1984.

12 June 1984

XM4 CARBINE PLANNING MEETING

ATTENDANCE SHEET

<u>NAME</u>	<u>ORGANIZATION</u>	<u>PHONE</u>
Fernando Fuentes	Safety, DRSMC-SFS(D)	2860
Edward Uhl	CACDA, Mid, Ft Lvn	5683
Richard Douglas	DRSMC-QAF-S(D)	5401
Bob Uhler	DEINVT-SI (NVEOL)	A 354-1326
Anthony Buono	DRSMC-SCA-W(D)	6071
David Javorsky	DRSMC-SCA-W(D)	7075
Lloyd W. Mills	HQ TRADOC ATCD-ML	680-4414
S. Seidman	HQ DARCOM DRCDE-SG	A 284-9870
Loren Brunton	DRSMC-LEW-A(R)	A 793-3109/3142
John Post	DRSMC-ASI(R)	A 793-4491/4454
C. E. Pritchard	USAIS-DCD-MLS-F	835-1016
Thomas J. Miskovich	DRSMC-SCA-W(D)	6462
Ed Brennan	DRSMC-SCA-W(D)	6074
Richard J. Rasmussen	HQ AMCCOM DRSMC-MAG-SS(R)	A 793-6171/6303
SSO James Crump	ATSC-TS Ft Eustis VA	A 927-4631/4632
Jim Donahue	ARDC Test Site, Ft Dix	A 944-4766/6940
Robert J. Spine	HEL-ARDC, DRXHE-AR	A 880-3227/5618
CWO-4 Bruce Wincentzen	DO91, Dev Ctr, MCDEC	A 278-2136
L. Geo Van Syckle	RAO	A 880-6306
R. E. Snodgrass	DRSMC-SCA-ES(D)	A 880-3943
Julian Chernick	DRXSY-G1	A 283-5648

AGENDA

12 June 1984

CARBINE XM-4

0830-0845 Welcome - Administrative Comment

0845-1630 Discussions of the following topics:

9ID QRP (Approved 21 Feb 84)

Need for changes to XM177E2

Deliveries for 9ID & Army

Army O&O Plan, status of

Army ROC, status of

Program Initiation Documentation

Current Funding (May to Oct 84)

Work to be accomplished (May to Oct 84)

Short-of-Award Authority for Engineering Effort

Work to be accomplished to TC

Specific requirements for Weapons

Go-ahead IPR - Requirements in accordance with LOI

for Quick Reaction Program Procedures

IPR Approval authority delegated to Commander, AMCCOM

Co-Chairman - Logistics - Mr. John Post

Engineering - Mr. Vincent DeSiena

Weapons System Matrix Manager

Program DPO



PLANNING MEETING
FOR
5.56 SERIES CARBINE
XM4

12 JUNE 1984

PLANNING MEETING



TOPICS

- NEED
- CHANGES/IMPROVEMENTS REQUIRED
- RECOMMENDED CHANGES AND RATIONALE
- RECOMMENDED ENGINEERING PROGRAM
- PROGRAM MILESTONE CHART
- XM4 CARBINE REQUIREMENTS
- RECOMMENDED TEST PROGRAM



NEED



- 9ID QRP (APPROVED)

- INTEREST EXPRESSED:

- USA FORT BENNING

- USMC QUANTICO

- SARP OFFICE CANADA

- AUSTRALIA





CHANGES/IMPROVEMENTS REQUIRED



- STABILIZE M855 AND M856 AMMO
- CURRENT SIGHT ALIGNMENT FOR M855 AND M856 AMMO
- ELIMINATE MUZZLE DEVICE PROBLEM
- ASSESS PERFORMANCE AND, IF REQUIRED, MODIFY WEAPON
TO INSURE FUNCTION WITH M856
- CHANGE PLASTIC MATERIAL
- IMPROVE HANDGUARD DESIGN
- IMPROVEMENTS - NO COST BYPRODUCTS FROM ABOVE
 - A. USE OF BFA WITH M16A2 MUZZLE DEVICE
 - B. UPPER AND LOWER RECEIVERS

RECOMMENDED CHANGES AND RATIONALE



- CHANGE TWIST RATE TO 1 TURN IN 7 INCHES
 - WILL STABILIZE M855 AND M856 AMMUNITION
 - EQUAL TO M249 SAW AND M16A2 RIFLE
 - KNOWN PRODUCTION CAPABILITY
- ENGINEERING DEVELOPMENT REQUIRED TO INSURE FUNCTION WITH M855 AND M856 AMMUNITION
 - M856 GENERATES LOWER PORT PRESSURE THAN M196 AMMO
 - AMMO CAN NO LONGER BE CHANGED BECAUSE OF EXISTING BALANCE BETWEEN AMMO, SAW AND M16A2 RIFLE
 - PORT SIZE OF XM177E2 WAS INCREASED TO EXISTING M193/M196 AND M855/M856 AMMUNITION
 - QUICK SOLUTION APPEARS TO BE FURTHER INCREASE OF PORT SIZE AND POSSIBLE OTHER CHANGES TO INSURE FUNCTION OF WEAPON WITH M856 AMMO
 - END RESULT MAY BE DECREASE IN PARTS LIFE WITH INCREASE IN CYCLIC RATE OF WEAPON WITH M193, M196, AND M855 AMMO

RECOMMENDED CHANGES AND RATIONALE



- ENGINEERING CHANGES TO SIGHTS
 - CHANGE FRONT AND REAR SIGHTS TO ACCOMMODATE TRAJECTORY OF M855/M856 AMMO
 - CHANGE REAR APERTURE TO M16A2 TYPE
 - .065 IN DIA FOR PRECISE AIM (300M ZERO)
 - 5MM DIA FLIP TO 200M RANGE FOR QUICK FIRE, MOVING TARGETS AND POOR LIGHT CONDITIONS
- IMPROVEMENTS TO RECEIVERS
 - M16A2 LOWER RECEIVER RECOMMENDED
 - M16A1 UPPER RECEIVER RECOMMENDED
 - 800M ADJUSTMENT AND 3-ROUND BURST NOT REQUIRED
 - WILL INCORPORATE:
 - STRENGTHENED LOWER RECEIVER EXTENSION RING
 - FULL AUTOMATIC FIRE
 - IMPROVED REAR APERTURE
 - IMPROVED DUST COVER
 - SPENT CASE DEFLECTOR

Ball
Trace



RECOMMENDED CHANGES AND RATIONALE



- ENGINEERING CHANGES TO HANDGUARDS
 - CONVERT TO M16A2 MATERIAL
 - TRANSFER TECHNOLOGY IMPROVEMENTS FROM M16A2 PROGRAM TO CARBINE PROGRAM
 - WILL IMPROVE COOK-OFF POINT AND SUSTAINED RATE OF FIRE
 - WILL IMPROVE RUGGEDNESS
- ENGINEERING CHANGE TO ADD FRONT PISTOL GRIP
 - WILL IMPROVE HANDLING OF WEAPON
- CHANGE TO M16A2 PISTOL GRIP
 - WILL IMPROVE HANDLING OF CARBINE
 - WILL IMPROVE RUGGEDNESS
 - WILL STANDARDIZE PARTS

RECOMMENDED CHANGES AND RATIONALE



- ADDITION OF SIDE SLING SWIVEL MOUNT
 - WILL IMPROVE METHOD OF CARRYING CARBINE
 - WILL ENHANCE ABILITY TO FIRE FROM HIP
- RECOMMEND USE OF 14½ INCH BARREL
 - THIS COMBINATION SHOULD PROVIDE ADEQUATE NOISE AND FLASH REDUCTION WITH M16A2 FLASH SUPPRESSOR
 - WILL HAVE LEAST COST IMPACT FOR ENGINEERING DEVELOPMENT AND TESTING
 - WILL ACCOMMODATE EXISTING BFA

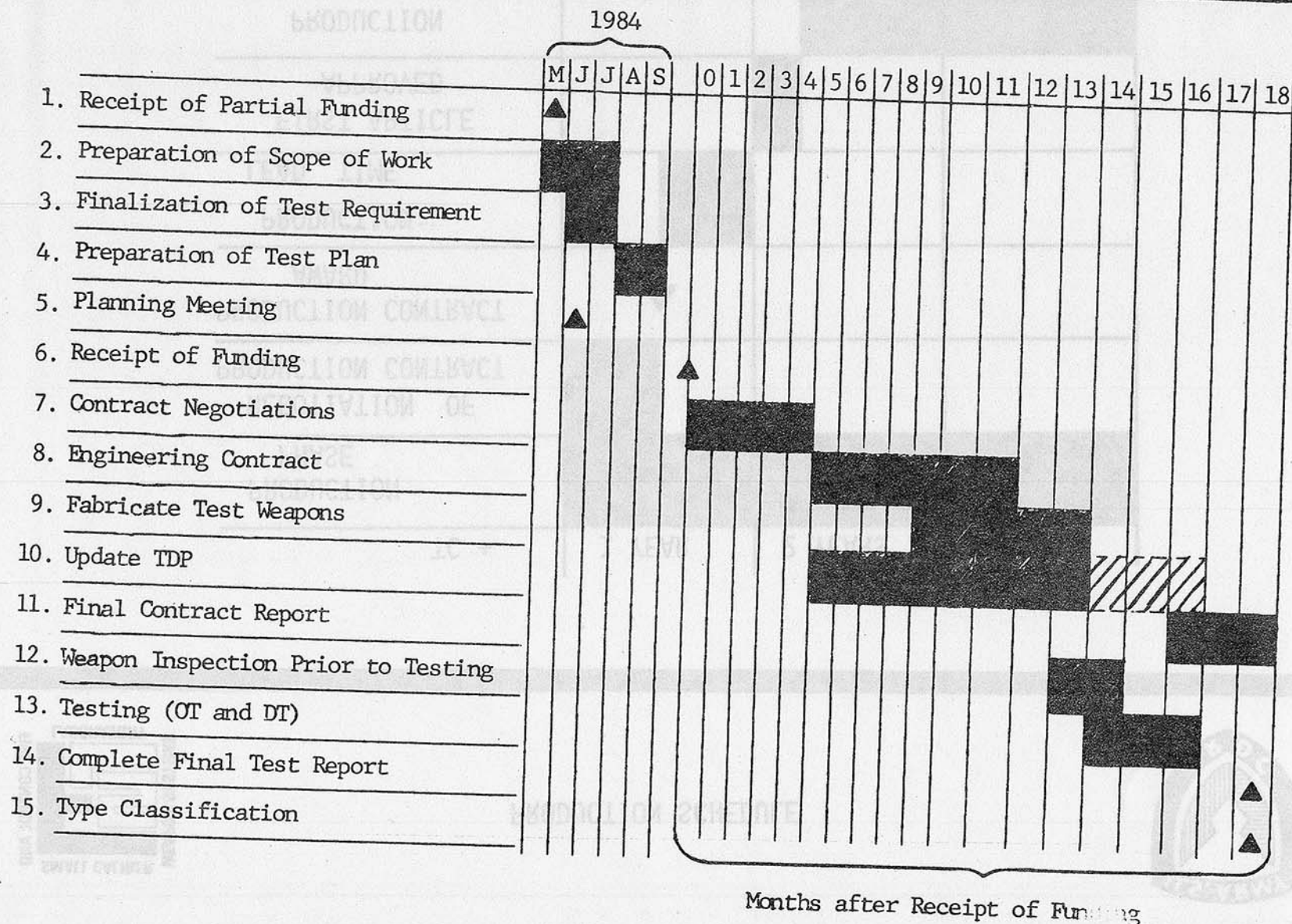
BARREL FLASH ARRESTER

RECOMMENDED ENGINEERING PROGRAM



- ENGINEERING DEVELOPMENT CONTRACT
 - PERFORM ENGINEERING WORK NECESSARY FOR:
 - BARREL
 - HANDGUARDS
 - FRONT PISTOL GRIP
 - SIGHTS
 - RECEIVERS
 - INSURE FUNCTION WITH M855 AND M856 AMMO
 - UPDATE TDP
 - BUILD 10 PROTOTYPE WEAPONS
 - FINAL REPORT
- LOGISTIC SUPPORT
- IN-HOUSE ENGINEERING SUPPORT
- ENGINEERING AND OPERATIONAL TESTING
- TYPE CLASSIFICATION

RDT&E PROGRAM MILESTONE CHART



PRODUCTION SCHEDULE



TC +	1 YEAR	2 YEARS	3 YEARS
PRODUCTION PHASE			
NEGOTIATION OF PRODUCTION CONTRACT			
PRODUCTION CONTRACT AWARD	▲		
PRODUCTION LEAD TIME			
FIRST ARTICLE APPROVED			
PRODUCTION			
IPT		▲	

XM4 CARBINE REQUIREMENTS



1. BE CAPABLE OF FIRING M193, M196, M855 AND M856 FAMILY OF AMMUNITION.
2. BARREL SHALL HAVE A 1 TURN TO 7 INCH TWIST.
2. BARREL LENGTH TO BE 14½ INCHES LONG FROM BREECH FACE TO THE MUZZLE.
4. BE CAPABLE OF FUNCTIONING WITH THE M200 BLANK CARTRIDGE AND THE M15A2 BFA.
5. CARBINE SHALL BE CAPABLE OF FIRING IN THE SEMI-AUTOMATIC AND FULL AUTOMATIC MODE.
6. CAPABLE OF UTILIZING THE M16A2 MUZZLE COMPENSATOR (PART No. 9349051).
7. CARBINE SHALL USE SAME PLASTIC MATERIAL FOR THE HANDGUARD AS THE M16A2.
8. CARBINE SHALL USE SAME PISTOL GRIP (PART No. 9349127) AS THE M16A2.
9. COLLAPSIBLE BUTTSTOCK, MADE OF PLASTIC MATERIAL CURRENTLY USED ON THE M16A2.
10. CARBINE SHALL BE ADAPTABLE FOR A TDP SLING MOUNT.

XM4 CARBINE REQUIREMENTS



CONTINUED . . .

11. LOWER RECEIVER SHALL BE THE SAME AS THE M16A2, EXCEPT MARKING SHALL BE DESIGNATED XM4 - CARBINE, CALIBER 5.56MM.
- ~~12.~~ THE UPPER RECEIVER SHALL BE THE SAME AS THE M16A1 WITH THE IMPROVED DUST COVER AND SPENT CASE DEFLECTOR.
13. REAR SIGHT APERTURE SHALL BE THE SAME AS THE M16A2.
14. THE FRONT SIGHT SHALL BE SQUARE FRONT POST SAME AS THE M16A2.
15. WEAPON SHALL HAVE IMPROVED HEAT DISSIPATION CHARACTERISTICS OVER THE PREVIOUS XM177.
16. FRONT PISTOL GRIP IS DESIRABLE.
17. LENGTH EXTENDED: 29-34 INCHES.
18. LENGTH COLLAPSED: 26-31 INCHES.
19. MAXIMUM WEIGHT WITHOUT MAGAZINE SHALL BE NO MORE THAN 6.5 POUNDS.
20. CYCLIC RATE SHALL BE 700-900 RPM.

RECOMMENDED TESTING



- TECOM WILL PREPARE ENGINEERING TEST PLAN
 - TESTING WILL BE EXTRACTS FROM M16A2 PROGRAM
 - TESTS REQUIRED:
 - BARREL ENDURANCE - 3 WEAPONS
 - HOT
 - COLD - 3 WEAPONS
 - ROUGH HANDLING
 - COOK-OFF
 - APG WILL PERFORM TESTING
- FORT BENNING WILL PREPARE OPERATIONAL TESTING PLAN
 - FORT BENNING WILL PERFORM TESTING - 4 WEAPONS
- TEST ALTERNATE IF APG CANNOT PERFORM ON TIME
 - PERFORM ENGINEERING TEST IN CANADA IN ACCORDANCE WITH TECOM TEST PLAN

QRP 3-3
20 Jan 84
(Revised)

91D QRP REQUIREMENT DOCUMENT

1. TITLE:

- a. Descriptive Title: 5.56 carbine
- b. Catalog of Approved Requirement Document (CARDS) Reference Number:

2. NEED/THREAT:

a. Need. There is a need for an automatic carbine to replace .45 caliber pistols and standard rifles for selected soldiers. This meets an operational need for a self defense weapon producing a high volume of fire but shorter and lighter than standard rifles so that it may be carried and used by vehicle crewmen, crew served weapons operators and selected command and staff soldiers. A logistics requirement is for commonality of ammunition and repair parts for combat unit small arms.

b. Threat. The primary threat to be serviced by personnel armed with this weapon will be dismounted infantry units equipped with small arms and automatic weapons.

3. TIMEFRAME: 1986

4. OPERATIONAL/ORGANIZATIONAL CONCEPT:

a. Operational Concept. The 5.56 Carbine will be a shorter, lighter version of the standard service rifle. It will retain the same basic operating characteristics as the M16A2 as well as commonality of ammunition and most repair parts. It will replace selected pistols and submachine guns in those positions where a more effective personal defense weapon is needed or in the case of replacing rifles, where a smaller, more easily handled weapon is required.

b. Organizational Concept. The 5.56 carbine will replace the .45 cal pistol carried for self-protection by TOW, mortar crews, Dragon gunners and other crew served weapons personnel. The 5.56 carbine will replace all .45 Cal submachine guns and M16A1/A2 rifles for selected vehicle crewmen, crew served weapons personnel, and selected command and staff personnel. The weapon will be supported by organic unit and direct support maintenance projected initial estimates of total quantities for 91D (MTZ) are 4,195 weapons.

5. ESSENTIAL CHARACTERISTICS: The characteristics of the 5.56 carbine must meet the following requirements:

- a. The weapon must be a 5.56mm NATO caliber and be capable of firing the same ammunition as the M16A2.

b. The weapon must have maximum parts commonality with the M16A2 consistent with other specified characteristics.

c. The overall length, with the butt stock closed collapsed, must be between 26 and 28 inches.

d. The overall length, with the butt extended, must be between 29 and 31 inches.

e. The weight without magazine must be no more than 6.5 pounds.

f. The maximum effective range must be 300 meters.

g. Weapon must have a fully automatic fire capability. A three round burst capability is not desired.

h. Maximum flash suppression is desired.

i. RAM. RAM performance comparable to that achieved by the M16/M16A2 family is desired.

j. Weapon shall be safe to handle, operate and maintain.

k. NBC contamination survivability is required.

6. TECHNICAL ASSESSMENT. To be determined by DARCOM.

7. LOGISTICS SUPPORT CONCEPT. New operator and maintenance MOSs will be minimized. The maintenance concept will be consistent with the division support organization, concept of operation, and repair level policies. Maximum utilization will be made of existing TOE tools, TMDE, and other support equipment and/or presently approved emerging TMDE or support equipment to minimize proliferation. The range and quantity of repair parts and other supply requirements to include POL must be consistent with division support capabilities. The LSA/LSAR process will be used to determine and define support requirements and personnel tasks and skills for the operation, maintenance and support of the system. The System Support Package will be tested in conjunction with the user test.

8. TRAINING ASSESSMENT. The materiel developer and the TRADOC proponent will develop a complete training subsystem specifically designed to support all phases of training from initial entry training to individual/crew sustainment training to include New Equipment Training (NET) for user testing and initial fielding.

a. Training devices required to support system training will be developed by the materiel developer under the authority of this document.

b. All training products developed as a part of this system's training subsystem will be designed according to the Instructional System Development (ISD) model utilizing data generated/developed IAW DARCOM PAM 750-16.

c. System technical manuals and extension training materials will be developed by the materiel developer IAW AR 310-3. Requirements for Skill Performance Aids (SPAs) shall be a specific issue. Maximum utilization will be made of contractor manuals consistent with the level of understanding of military personnel and the needs of 9th ID. Contractor manuals will be replaced by standard manuals within two years for any follow-on acquisition or procurement.

d. The requirement for extension training materials will be determined during the Full Scale Development Phase.

e. The Training Support Package will be tested during OT II.

9. MANPOWER/FORCE STRUCTURE ASSESSMENT. The 5.56 carbine will replace selected existing weapon systems, therefore causing no impact on manpower requirements or force structure.

10. OTHER SERVICE/ALLIED INTEREST. Currently, the USMC, Navy, Air Force and Coast Guard have expressed an interest in 5.56mm carbine as a replacement for selected weapons. Allied interests to be determined.

11. LIFE CYCLE COSTS: To be provided by DARCOM.

12. ADEA POC: MAJ Cornell, AV 357-7662, Comm (206) 967-7662.

ROUTINE

* U N C L A S S I F I E D *

PT 00114 094/1209Z

PAGE 01

ACTION **INFO** DRSMC-CG DCG CS TD GS GSP SF PA PSI Sn EO GC
LC LCA LCE LCM LCS LW LCN LCP LCU LCU-CT LCI-CV CP CPF
SC SA **SCJ** SCA SCF SCS SCM QA QAT QAF QAM QAN QAR QAS
PS PSC PSE PSQ-H PSL-TA PSL-E PSL-T PSL NC 9020 USASSO AS
PT PTF PTC PTP PTP-T PTM TS TSF TSA TSE TSI TST-T PM MS
GELNO COMMISSARY AFET-LO-AC RA RAI RAM PR PRC PRM PPT PRW
MARINES DSM-C DSM-B CLINC MAS-M MAP-D MAY-A MAY-B APT APT-TC
ACTION INFO PM-PBM NUC CAWS TMA5 SGT YORK SFA HQ DET HELIPORT

ACTION: INFO:

RTTUZYUW RUKLDAR6119 0941026-UUUU-RUEOEKA.

ZNR UUUUU

R 021955Z APR 84

FM CDRDARCOM ALEX VA //DPCDE-SG//

TO RUCLATA/CDRTRADOC FT MONROE VA //ATCD-MI//

INFO RUEADWD/DA WASHDC //DAMA-WSW/DAMO-FDD/DAMO-FDT//

RUEOEKA/CDRPARDC DOVER NJ //DRSMC-SCJ//

RUEWTFHA/CDR ASACAC FT LEVENWORTH KS //ATZL-CAM-IS/ATZL-

CAM-C//

RUCLDNA/COMDT USAIS FT BENNING GA //ATSH-CD-MLS-F//

BT

UNCLAS

SUBJ: QRP 3.3 FOR 5.56 CARBINE DATED 20 JAN 84

THIS HEADQUARTERS IS IN RECEIPT OF SUBJECT QRP APPROVED BY DA ON
21 FEB 84. PLANNING FOR THE DEVELOPMENT, PROCUREMENT AND FIELDING
OF SUBJECT WEAPON WILL SOON BE INITIATED. REQUEST CONFIRMATION THAT
TECHNICAL REQUIREMENTS OF SUBJECT WEAPON FOR LIGHT DIVISIONS AND
BALANCE OF ARMY FORCES WILL BE THE SAME AS THAT DEFINED IN SUBJECT
QRP FOR ADEA.

BT

#0119

NNNN

VINUR

200

ROUTINE

* U N C L A S S I F I E D *

PRIORITY

* U N C L A S S I F I E D *

PT 00307 124/1115Z

PAGE 01

ACTION INFO DRSMC-CG DCG CS TD GS GSP SF PA PSI SK EO GC
LC LCA LCE LCM LCS LCW LCN LCP LCU LCU-CT LCU-CV CP CPF
SC SA SCJ SCA SCF SCS SCM QA QAT QAF QAM QAN QAR QAS
PS PSC PSE PSQ-H PSL-TA PSL-E PSL-IT PSL NC 902D USASSD AS
PT PTF PTC PTP PTP-T PTM TS TSF TSA TSE TST TST-T PMO/MS
GELNO COMMISSARY AFET-LO-AC RA RAI RAM PR PRC PRM PRT PRW
MARINES DSM-C DSM-B CLINC HAS-M MAP-D MAY-A MAY-B APT APT-TC
ACTION INFO PM-PBM NUC CAWS TMA SGT YORK SFA HQ DET HELIPORT

ACTION:

INFO:

PTTUZYUW RUKLDAR6339 1240822-UUUU--RUEOEKAL

ZNR UUUUU

P 021845Z MAY 84

FM CORDARCOM ALEX VA //ORCDE-PRB//

TO RUEADWD/DA WASHDC //DAMO-FDU//

INFO RUCLAIA/CDRTRADOC FT MONROE VA //ATCD-ML//

RUEADWD/DA WASHDC //DAMO-FDR/DAMO-FDT/DAMA-WSW/DAMA-PBB//

DALO-SMM//

RUEOEKA/CDRARDC DOVER NJ //DRSMC-PMP-R(D)/DRSMC-SC(D)//

BT

UNCLAS

SUBJECT: 5.56MM CARBINE

A. DAMO-FDD MSG 181528Z APR 84, SAB.

1. RTE FUNDS FOR THE 5.56MM CARBINE ARE PROGRAMED IN FY 86 (\$434M) AND FY 87 (\$203M) UNDER PROGRAM ELEMENT 6.43.23 PROJECT DE67.

2. IN RESPONSE TO HQDA REQUEST (REF A) TO INITIATE PROGRAM DEVELOPMENT, ARDC HAS DEVELOPED AN 18 MONTH EFFORT TO ACHIEVE TYPE CLASSIFICATION. THIS PLAN REQUIRES THAT PROJECT DE67 BE "OPENED EARLY" IN FY 84 AND FY 85. FUNDING REQUIRED IS AS FOLLOWS:

	FY 84	FY 85
6.3.A CONCEPT EXPLORATION PHASE	.037M	0
6.43.23 DE67	.490M	.110M

PAGE 02 RUKLDAR6339 UNCLAS

3. DARCOM IS PREPARED TO RESOURCE THE FUNDING REQUIRED FOR THE CONCEPT EXPLORATION PHASE. A SOURCE FOR THE FUNDING REQUIRED FOR DE67 HAS NOT BEEN IDENTIFIED.

4. DARCOM DOES NOT PLAN TO PROCEED WITH THE CONCEPT EXPLORATION PHASE PENDING CONFIRMATION FROM HQDA THAT THE URGENCY OF THE CARBINE PROGRAM WARRANTS INITIATING THE PROJECT 2 YEARS EARLY--WHICH WILL REQUIRE CONGRESSIONAL NOTIFICATION/APPROVAL.

5. POC FOR THIS ACTION IS MRS. SHIRLEY GALBRAITH, AUTOVON 284-9860.

BT

#6339

PRIORITY

* U N C L A S S I F I E D *

PRIORITY

* U N C L A S S I F I E D *

PT 03487 125/1718Z

PAGE 01

CTION INFO DRSMC-CG DCG CS TD GS SSP SF PA PSI SD EO GC
C LCA LCF LCM LCP LCU LCU-CT LCU-CV CP CPF
J SA SCU SCA SCF SCS SCM GA GAT GAF GAN GAN GAS
S PSC PSE PSQ-H PSL-TA PSL-E PSL-T PSL NC 9020 USASSD AS
T PTF PTC PTP PTP-T PTW TS TSF TSA TSE TST TST-I DMPMS
ELNO COMMISSARY AFET-LO-AC RA RAI RAM PR PRC PRM PRT PRW
ARINES DSM-C DSM-B CLINC MAS-M MAP-D MAY-A MAY-B APT APT-TC
CTION INFO PM-PBM NUC CAWS TMS SGT YORK SFA HQ DET HELIPORT

CTION:

INFO:

TTUZYUW RUKLDAR6465 1251656-UUUU--RUEDEKA.

NR UUUUU

051300Z MAY 84

M CORDARCOM ALEX VA //DRCDE-PRR//

O RUEADWD/HQDA WASHDC //DAMO-FED//

WFO RUCLAIA/CORTRADUC FT MONROE VA //ATCD-E//

JEADWD/HQDA WASHDC //DAMO-FDR/DAMO-FDT/DAMA-WSW/DAMA-PRR/

ALO-SMM//

JEDEKA/CORPARDC DOVER NJ //DRSMC-PMP-R(D)/DRSMC-SC(D)//

T

UNCLAS

UPJ: 5.56MM CARBINE

• DRCDE-PRR MSG 021845Z MAY 84, SAR.

• PARA 4 OF REF A IS CORRECTED TO READ: DARCOM WILL PROCEED WITH THE CONCEPT EXPLORATION PHASE PENDING CONFIRMATION FROM HQDA THAT THE URGENCY OF THE CARBINE PROGRAM WARRANTS INITIATING THE PROJECT YEARS EARLY - WHICH WILL REQUIRE CONGRESSIONAL NOTIFICATION/ APPROVAL.

• POC FOR THIS ACTION IS MRS. SHIRLEY GALBRAITH, DRCDE-PRR, UTOVON 284-9460.

T

0465

NNN

PRIORITY

* U N C L A S S I F I E D *

SUMMARY SHEET (DARCOM SUPPL 1 TO AR 340-15)						DATE: 29 MAR 1984
TO			FOR			FROM
C	DRSMC-MM (R)		R	DRSMC-CS (R) A	APPROVAL	STAFF ACTIVITY: DRSMC-AS (R)
C	DRSMC-CA (R)		R	DRSMC-CS	X SIGNATURE	
C	DRSMC-SC (D)		R	DRSMC-DCG (R)	COORDINATION	ATTENTION OFFICER/TELEPHONE/OFC SYM: Mr. Post/DRSMC-ASI (R)/4491
C	DRSMC-DCG (D)		X	DRSMC-CG	R REVIEW	
SUBJECT: Program Initiation in Response to Quick Reaction Program (QRP) Document 3-3 for a Carbine, 5.56mm XM177E2						
IMPLICATIONS: (The implications checked below are involved in this action, are discussed below or in a separate inclosure, and have been considered in the final recommendation.)						
<input type="checkbox"/> BUDGET <input type="checkbox"/> CONGRESSIONAL <input type="checkbox"/> ENVIRONMENTAL <input type="checkbox"/> LEGAL <input type="checkbox"/> MANPOWER <input type="checkbox"/> MORALE <input type="checkbox"/> PUBLIC RELATIONS <input type="checkbox"/> SECURITY <input type="checkbox"/> NONE <input type="checkbox"/> _____ PROGRAM						
<p>1. PURPOSE: To obtain CG's signature on 1st Indorsement reply to DARCOM establishing the 5.56 carbine as a Level II project. Concurrences are at TAB A.</p> <p>2. DISCUSSION:</p> <p>a. DARCOM has requested (TAB B) that a Quick Reaction Program (QRP) be initiated to provide ADEA with a 5.56mm carbine capability in 1986. This program is initially to be funded under a JSSAP project line until HQDA establishes a new project line.</p> <p>b. The approach to be taken to provide a 5.56mm carbine is that it will be a derivative of the M16 Series Rifle design. The carbine is to be compatible with the M855/M856 Series Ammunition, therefore, the barrel twist will be similar to that of the M16A2 Rifle.</p> <p>c. It is expected that this development will be based on the design of a previously developed 5.56mm carbine/submachine gun, the XM177. The weapon will share common parts with other M16 Rifle series weapons to reduce the development time required to field a mature system. However, while much of the previous design is applicable to this program, the requirement to use the same ammunition as the M16A2 Rifle poses some significant design problems. This development also involves some additional complexities:</p> <p>(1) TRADOC has to determine if the weapon developed under the ADEA QRP also has application to other US Army requirements.</p> <p>(2) A distribution plan for this weapon has not been developed.</p> <p>(3) A Technical Data Package (TDP) for the weapon is not available.</p> <p>(4) Repair parts, technical manuals and other ILS requirements have to be planned for.</p> <p>(5) The acquisition strategy must be developed.</p> <p>d. Based on the above circumstances, and the requirement for weapon availability in 1986, this project has been determined to qualify for intensive management as a Level II item in accordance with AMCCOM 700-3, 4 Apr 84. This will provide a</p>						

DARCOM FORM 1 SEP 79
DRSMC UP-31-84

2514-R (Supersedes DARCOM Form 1136 which is obsolete and HQ DARCOM Form 280 which will be used until stock is exhausted.)

★ U.S. GOVERNMENT PRINTING OFFICE: 1984 754-099/4354

DRSMC-AS (R)

29 APR 84

SUBJECT: Program Initiation in Response to Quick Reaction Program (QRP)
Document 3-3 for a Carbine, 5.56mm XML77E2

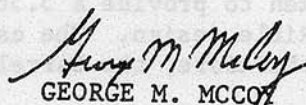
management team consisting of representatives of all elements involved, to assure that all aspects of the life cycle development are met in a timely manner. It is intended that this project will be shifted to Level III management when the full materiel release for issue is approved.

e. The Weapon System Matrix Manager (WSMM) for this project will be Mr. John Post, DRSMC-ASI (R), who will also continue as WSMM for the M16A2 Rifle. Mr. Vince DeSiena, DRSMC-SCJ (D), who coordinated the Army and Marine Corps test of the M16A2 Rifle, will serve as DPO. Other team members will be added at the discretion of each AMCCOM Director.

3. CONCLUSION: This project, based on urgency, interaction with other major commands, and ILS requirements, warrants designation as a Level II-managed item.

4. RECOMMENDATION: It is recommended that the accompanying 1st Indorsement accepting responsibility for the 5.56mm carbine development and establishing it as a Level II-managed item, be signed.

2 Encl
as


GEORGE M. MCCOY

Acting Director, Weapon Systems Management

CF:

DRSMC-CG RF
DRSMC-MM (R)
DRSMC-OA (R)
DRSMC-SC (D)
DRSMC-DCG (D)
DRSMC-LE (R)
DRSMC-QA (R)
DRSMC-PC (R)
DRSMC-PD (R)
DRSMC-SCJ (D)
DRSMC-MA (R)
DRSMC-IR (R)
DRSMC-CP (R)

DRSMC-AS (R)

SUBJECT: Program Initiation in Response to Quick Reaction Program (QRP) Document
3-3 for a Carbine, 5.56mm XM177E2

APPROVAL FOR COORDINATION:

Henry M. Mc Coy 14 May 84

COORDINATION:

DRSMC-MM (R) CONCUR

SEE NEXT UNDER

DRSMC-OA (R) CONCUR

SEE NEXT UNDER

DRSMC-DCG (D) CONCUR

SEE NEXT UNDER

DRSMC-SC (D) CONCUR

SEE NEXT UNDER

DRSMC-CG (1 May 84) 1st Ind
SUBJECT: Program Initiation in Response to Quick Reaction Program (QRP)
Document 3-3 for a Carbine, 5.56mm XM177E2

HQ, AMCCOM, Rock Island, IL 61299 30 MAY 1984

TO: Commander, US Army Materiel Development and Readiness Command,
ATTN: DRCDE-SG, 5001 Eisenhower Avenue, Alexandria, VA 22333

Based on the requirement to expeditiously provide ADEA with a 5.56 Carbine in 1986, AMCCOM will implement a program to accomplish this goal. The intensive management techniques required to assure the timely accomplishment of this task are prescribed by AMCCOM-R 700-3, 4 Apr 84. Accordingly, Mr. John Post, DRSMC-ASI (R), AUTOVON 793-4491/4454, has been designated as the Weapon System Matrix Manager (WSMM) for this project and is the AMCCOM point of contact. Mr. Vince De Siena, DRSMC-SCJ (D), AUTOVON 880-7074, has been designated the Development Project Officer.

wd all encl



PETER G. BURBULES
Major General, USA
Commanding



DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY MATERIEL DEVELOPMENT AND READINESS COMMAND
5001 EISENHOWER AVENUE, ALEXANDRIA, VA. 22333

DRCDE-SG

1 MAY 1984

SUBJECT: Program Initiation In Response to Quick Reaction Program
(QRP) Document 3-3 for a Carbine, 5.56mm XM177E2

Commander
US Army Armament, Munitions and Chemical Command
Rock Island, IL 61299

1. References:

- a. ADEA QPR for 5.56 Carbine dated 20 Jan 84, Enclosure 1.
- b. Letter, DAMO-FDD, HQDA, 21 Feb 84, subj: QRP Document for a 5.56 Carbine, approving the QRP, Enclosure 2.
- c. Message, HQDA, DAMO-FDD, 181528Z Apr 84, subj: 5.56 Carbine, Enclosure 3.
- d. Message, HQ DARCOM, DRCDE-SG, 022107Z Apr 84, SAB.
- e. LOI for QRP Procedures dated 31 Jan 84.

2. References a and b identify an approved QRP for the 5.56 Carbine. Reference c requested DARCOM initiate program development in accordance with the provisions of reference e. Accordingly it is requested that the Concept Exploration Phase be initiated to plan for the development, testing and fielding of the subject weapon for the ADEA. Costs for this phase are to be absorbed by JSSAP Project line 6.36.07.D627. DARCOM is requesting that HQDA establish a new project line, 6.43.23.A DE67, 5.56 Carbine in FY84 to provide funds for the initiation of subsequent contractual and inhouse developmental efforts.

3. Plans should be based on providing ADEA with a 5.56 Carbine capability in 1986. With regard to reference e, the following actions are required.

- a. AMCCOM should develop an Acquisition Strategy to describe how the development will be accomplished for ADEA. By reference d, DARCOM has requested HQ TRADOC confirm that the approved ADEA QRP also defines the weapon required for the Light Divisions and other Army forces.

1 MAY 1984

DRCDE-SG

SUBJECT: Program Initiation In Response to Quick Reaction Program
(QRP) Document 3-3 for a Carbine 5.56mm

b. AMCCOM should select an IPR chairman and schedule a Go-Ahead IPR. Full coordination with the IPR voting members should be effected on all issues prior to the IPR. Formal agreements should be reached with HQ TRADOC regarding their role in providing the required documentation as defined in Enclosure 4 to reference e for the IPR.

c. To support the program Go-Ahead IPR, AMCCOM will also prepare the Systems Concept Paper (SCP) and Test and Evaluation Plan (TEMP).

d. As a minimum, representatives of HQ TRADOC, USAIS, ADEA, LEA, AMSAA, HQ DARCOM, HEL, TECOM and HQDA should be invited to participate in the IPR. The Pre-IPR package shall be furnished to reach each of the participating agencies at least 30 working days prior to the IPR. Twenty copies of the Pre-IPR package should be provided HQ DARCOM, ATTN: DRCDE-P. Voting members will be limited HQ TRADOC, ADEA, LEA and the AMCCOM chairman.

4. The procurement funding profile for this program is currently as follows:

	<u>FY86</u>	<u>FY87</u>	<u>FY88</u>	<u>FY89</u>
Dollars	2.8M	3.3M	1.4M	2.4M
Quantity	3834	4517	1917	3288

5. The program has been designated a non major IPR program and IPR approval authority is delegated to the Commander, AMCCOM.

6. Request that this office be advised of the DPO/PCC for this effort. PCC at HQ DARCOM will be S. Seidman, AUTOVON 284-9870.

FOR THE COMMANDER:

3 Enclosures
as

John B. Oblinger, Jr.
JOHN B. OBLINGER, JR.
Major General, USA
Director of Development,
Engineering and Acquisition

Copies Furnished:

Cdr, US Armament Research and Development Center, ATTN: DRSMC-SCJ,
Dover, NJ 07801

Cdr, US Army Training & Doctrine Command, ATTN: ATCD-ML, Ft. Monroe,
VA 23651

HQDA (DAMO-FDD, DAMA-WSW) WASH, DC 20310

QUICK REACTION PROGRAM DOCUMENT (QRPD)

FORMAT

(Document should be one to four pages in length.)

<u>PARA</u>	<u>TITLE</u>	<u>AUTHOR</u>
1	Title	ADEA
2	Need-Threat	ADEA, with CAC, TRADOC School/ Center, and DARCOM Assistance
3	Time Frame	Same as above
4	O&O Plan Summary	Same as above
5	Essential Characteristics	Same as above
6	Technical Assessment	DARCOM
7	Logistical support concept and proponent logistical oriented school assignment.	Logitics Center
8	Training Assessment	TRADOC proponent school
9	Manpower-force structure assessment.	Soldier Support Center
10	Standardization and Interoperability	Combined Arms Center
11	Life Cycle Cost Assessment	DARCOM
12	Milestone schedule	DARCOM

Encl 1

System Concept Paper
for (insert title of system)

- I. Brief Description of System. One short paragraph.
- II. History. Summarize any previous guidance, decisions, and so forth.
- III. Threat Assessment. Describe threat, emphasizing interactive effects of system and threat.
- IV. Shortfalls of Existing Systems. Describe inadequacies of existing systems.
- V. Description of Selected Alternative. Describe system in more detail than Section I. Define operational concept. Verify that system is affordable, even at reduced top-line budgets. Discuss readiness/sustainability and economy of manpower, and how they are to be achieved. Do not duplicate from Appendixes.
- VI. Technological Risks of Selected Alternative. Identify key areas of technological risk which must be reduced by R&D and validated by T&E before Milestone II. Discuss impact of accelerated acquisition on risk assessment.
- VII. Acquisition Strategy. Discuss general strategy for entire program, and detailed strategy for proceeding to next milestone. Emphasize program structure. Specifically address competition and contracting for all phases.

Discuss cost control. Indicate those regulations and management principles in AR 1000-1 and AR 70-1 which will not be applied to the proposed system. Discuss provisions to expedite each stage of the acquisition process. *f*o not duplicate from Appendixes.
- VIII. Known Issues. Discuss issues identified by the Decision Authority.
- IX. Decisions Needed. Identify decision required from Decision Authority at the Milestone I IPR.

APPENDIXES (These apply to the selected alternative only):

- A. Thresholds (one or two pages).
- B. Resources - Cost Track Summary (one or two pages).
- C. Resources - Funding Profile (one or two pages).
- D. Acquisition Strategy (10 pages maximum).

System Concept Paper Format

THRESHOLDS¹

	<u>Milestone II</u>	<u>Thresholds²</u>	<u>Milestone III³</u>
--	---------------------	-------------------------------	----------------------------------

COST⁴

RDTE (total)
 Procurement (total)
 Fly-away (unit)
 Procurement (unit)

SCHEDULE

Milestone II
 Milestone III

PERFORMANCE⁵Technical

Speed
 Maximum Range
 Rate-of-fire

Operational

Sortie Rate
 Hit Probability
 Kill Probability

READINESS/SUPPORTABILITY⁵Operational

Reliability (Field)
 Maintainability
 Operational Availability (A₀)
 Resupply Time
 Manning

NOTES:

1. Includes Goals or Threshold Ranges, where appropriate.
2. Performance and Readiness/Supportability thresholds should be verified by T&E at Milestones.
3. If program structure includes more than one Milestone III (IIIA, IIIB, etc.), show column for each.
4. Show costs in constant, base-year dollars.
5. Select appropriate parameters, these are examples only.

RESOURCES (COST TRACK SUMMARY)¹
(Millions of Dollars)

	Planning/ development estimate ²	FY Constant (Base Year)\$ Current estimate ³	Escalated\$ Current estimate ³
DEVELOPMENT PHASE			
RDTE	() ⁵	() ⁵	() ⁵
Validation phase			
Full-scale development			
Contractors			
In-house			
Contingency (Service)			
Other System Costs			
TOTAL RDTE APPROPRIATION			
OTHER⁴			
TOTAL DEVELOPMENT PHASE			
PRODUCTION PHASE			
PROCUREMENT			
System Cost ⁶	() ⁵	() ⁵	() ⁵
Flyaway			
(Provide one level of WBS indenture based on program requirements)			
Initial spares			
Other line item procurement ⁷			
TOTAL PROCUREMENT APPROPRIATION			
OTHER⁴			
TOTAL PRODUCTION PHASE			
TOTAL OPERATING & SUPPORT PHASE			
TOTAL LIFE-CYCLE REQUIREMENTS			
AVERAGE ANNUAL SYSTEM O&O COSTS			
No. of Systems: No. of Years:			
MILITARY MANPOWER			
Unit Manning			
Program Totals (Active/Reserve)			

NOTES:

1. Apply footnotes as required to explain the chart. Adjustments to format are authorized to accommodate pr such entries will be decided on at the initial milestone planning meeting.
2. Identify basis for estimate and date of SADM.
3. The preferred alternative or the latest approved baseline cost estimate contained in the SADM will be sho both constant and current (escalated) estimate columns.
4. Other life-cycle related costs (such as installation, project manager office, and civilian salaries) fund O&M and MILPERS during development or production phases.
5. Enter quantity.
6. Equal to weapon system cost.
7. Industrial preparedness program (industrial facilities, manufacturing technology, and technology modernization) and other system peculiar costs identified as a separate line item, or as a portion of a separate line item, in another part of the procurement budget. Identify each by the program elements for which funding is required and the amount in each.

Explain reasons for significant variation in estimate by footnote (such as schedule slippage and Congressional funding).

RESOURCES (FUNDING PROFILE)¹
(Millions of Dollars)

(Appendix to be completed in escalated dollars using current FYDP rates and ground rules.)

	FY 19__ PRIOR	FY 19__	FY 19__	FY 19__	FY 19__	FY 19__	FY 19__	TOTAL P
ACQUISITION QUANTITIES²								
Development Qty.								
Production Qty. by FY								
Deliveries by FY								
DEVELOPMENT PHASE								
RDTE								
Validation phase								
Full-scale development								
Contractors								
In-House								
Contingency (Service)								
Other System Costs								
TOTAL RDTE APPROPRIATION								
OTHER³								
TOTAL DEVELOPMENT PHASE								
PRODUCTION PHASE								
PROCUREMENT ⁴								
System cost ⁵								
Flyaway, rollaway								
(provide one level of WBS indenture based on program requirements)								
Other system costs								
Long lead requirements (nonadd entry for each year)								
Initial spares								
Other line item procurement ⁶								

FY 19__ FY 19__ FY 19__ FY 19__ FY 19__ FY 19__ FY 19__ FY 19__ TOTAL PROGI

TOTAL PROCUREMENT APPROPRIATION
CURRENT APPROVED FYDP, PROCUREMENT
OTHER³

TOTAL PRODUCTION PHASE

OPERATING AND SUPPORT PHASE

MILPERS

O&M

Procurement⁷

TOTAL OPERATING AND SUPPORT PHASE

OTHER FUNDING⁸

During development

During production

Industrial capacity investment

Total "other" costs

TOTAL LIFE-CYCLE REQUIREMENTS

NOTES:

1. Apply footnotes as required to explain the chart. Adjustments to format are authorized to accommodate program; such entries will be decided on at the initial milestone planning meeting. Use as many columns necessary to show every year of acquisition funding, and operation and support funding until steady state operations are achieved.
2. Identify the number of development and production units to be funded and delivered by FY.
3. Other life-cycle related costs (such as installation, project manager office, and civilian salaries) fund other appropriations; for example, O&M and MILPERS during development or production phase or later.
4. Enter the costs by appropriation, such as, aircraft procurement, missile procurement, or other procurement. If more than one applies, identify it separately.
5. Equal to weapon system cost.
6. Industrial preparedness program (industrial facilities, manufacturing technology, and technology modernization) and other systems peculiar line items in another part of the procurement budget. Identify each by program element from which funding is required and the amount in each.
7. Procurement costs associated with operation and owning a weapon system, such as modification, replenishment, spares, and ground equipment.
8. For example, installation, project manager's office, civilian salaries, and other system-peculiar costs carried elsewhere in the budget.

(Note: The following elements of the system's acquisition strategy will be addressed. If a particular element is not applicable to a specific system, then a brief justification for the exclusion should be provided).

1. PROGRAM STRUCTURE. Explain the management options which were considered and justify the one selected.
2. CONTRACTING STRATEGY. Discuss the types of contracts contemplated for succeeding phases. Explain the manner in which competition will be encouraged. Discuss plans for competitive prototyping, shoot-offs, etc. Describe planning for competing production contracts. Identify if the program is a candidate for multi-year contracting.
3. TAILORING THE ACQUISITION PROCESS. Describe the major efforts to be accomplished during each phase of the acquisition process. Discuss plans to compress the process and accelerate acquisition (to include skipping phases or using concurrency). Describe the plans to reduce risks if a compressed process or acceleration is planned. List any waivers obtained or required for an accelerated program. Identify the specific events and criteria to be met for the Milestone II and III decisions.
4. SUPPORTABILITY. Discuss how this system will be supported when fielded in both the 9th ID and the Army as a whole. Summarize plans to ensure that ILS considerations have been evaluated during system design. If a compressed acquisition process is being used, or purchase of a commercial item is planned, summarize the actions being taken or planned to reduce support risks.
5. MANUFACTURING AND PRODUCTION. Describe the activities necessary to bring the system to a state of production readiness, assuring a smooth transition to production. Summarize the Producibility Engineering and Planning efforts planned for the program. What is the economic production rate for this system? Discuss plans to achieve the economic production rate.
6. TEST AND EVALUATION. Provide an overview of the test and evaluation planned for this program. Discuss the plans to insure that a system support package and test support package will be provided. Discuss the plans to insure that adequate quantities of test hardware will be provided. Identify the Development Tester and Operational Tester.
7. COST GROWTH AND DRIVERS. Identify readiness, operation and support, and manpower costs drivers in predecessor systems. Discuss planned improvements on proposed systems. Summarize plans for containing cost growth during development and the transition to production. Identify trade-offs which may be considered in succeeding phases to help control resource requirements.
8. TECHNICAL RISKS. Summarize the unknown technical risks and the plans to reduce or eliminate such risks in succeeding phases.

Acquisition Strategy (Cont'd)

9. **SAFETY AND HEALTH.** Summarize plans to insure that system safety and health hazard assessment/control is considered throughout the design process.
10. **SOLDIER-MACHINE INTERFACE.** Summarize plans to insure that soldier-machine interface considerations will be achieved during system design.
11. **SURVIVABILITY AND ENDURANCE.** What major survivability and endurance design goals require validation?
12. **SHORT-TERM ISSUES.** Discuss any issues which need to be resolved prior to the next milestone review, including any shortfalls in required funding.

TEST AND EVALUATION MASTER PLAN (TEMP) GUIDELINES

A. SCOPE AND APPLICABILITY

The provisions of these Guidelines apply to all programs proposed under the Quick Reaction Program (QRP).

B. POLICIES AND PROCEDURES

1. The TEMP is the primary document used in the Army review and decision process to assess the adequacy of the planned testing and evaluation. As such, the TEMP must be of sufficient scope and content to explain the entire T&E program.

2. Each TEMP submitted to the Milestone I IPR should be a summary document of not more than 20 pages, detailed only to the extent necessary to show the rationale for the kind, amount, and schedules of the testing planned. It must, however, clearly relate the T&E effort to technical risks, operational issues and concepts, system performance, reliability, criteria, availability, maintainability, RAM and logistic requirements, and major decision points. It should also explain the relationship of the various simulations, subsystem tests, integrated system development tests and initial operational test which, when analyzed in combination, provide confidence in the system's readiness to proceed into the next acquisition phase or into fully capable service.

The TEMP must address the T&E to be accomplished in each program phase, with the next phase addressed in the most detail. TEMPs supporting the production and initial deployment decision must include the T&E planned to verify correction of deficiencies, production acceptance testing, and follow-on OT&E.

3. The TEMP will be submitted along with the SCP NLT 10 days prior to the Milestone I IPR.

C. CONTENT OF TEMP

Every TEMP submitted to an IPR should contain the same kind of information. The following format should be used as a guide. If more detail for internal use is desired, the developer may supplement the TEMP with detachable annexes.

Part I - Description

1. Mission. Summarize the operational need, mission to be accomplished, and planned operational environment (conditions, natural and induced, in which it will operate). This section should relate directly to the QRPD and planned system operational concept.

2. System. Briefly describe the system and how it works. Since this is also in the SCP, this section should be very brief, just enough to orient the reader to the test issues.

Encl 3

TEST AND EVALUATION MASTER PLAN (TEMP) GUIDELINES (Cont'd)

3. Critical T&E Issues

a. Test Issues. If separate approval has not been obtained, list the test issues and criteria provided by TRADOC and approved by the decision maker.

b. Technical Issues. Briefly describe key areas of technological or engineering risk that must be addressed by testing.

c. Operational Issues. Briefly describe key operational effectiveness or suitability issues that must be addressed by testing.

Part II - Program Summary

1. Management. Outline the program and T&E management responsibilities of participating organizations. Highlight arrangements between participants for test data sharing, responsibilities for test management decisions, and management interfaces for multiservice T&E efforts. Discuss the adequacy of the planned test periods and schedule to provide confidence in test results.

2. Integrated Schedule. Display on one page (a foldout, if necessary) the integrated time sequencing of T&E for the entire program and related key events in the acquisition decisionmaking process. Include events such as program decision milestones, key subsystems demonstrations, test article availability, first flights, critical support resource availability, critical full-up system demonstrations, key OT&E events, first production deliveries, and initial operational capability date.

Part III - DT&E Outline. Discuss all DT&E in sufficient detail so that test objectives are related to the system operational concept and are clearly identified for each phase. Relate the planned testing to the critical technical issues appropriate to each phase. The near-term portion of the plan should contain the most detail; the long-range portions should be as specific as possible. The following information should be included.

1. Planned DT&E. Discuss all remaining DT&E planned, beginning with the date of the current TEMP revision and extending through completion of planned production and modifications. Address separately each remaining phase of DT&E, including the following for each phase:

a. Equipment Description. Summarize the equipment's functional capability and how it is expected to differ from the production model.

b. DT&E Objectives. Summarize the specific DT&E objectives to be addressed during this phase. The objectives identified should be the discrete major goals of the DT&E effort, which, when achieved, will provide solutions to critical technical issues and demonstrate that the engineering effort is progressing satisfactorily. Broad, general objectives, such as demonstrate that the design and development process is complete, are of no value.

c. DT&E Events/Scope of Testing/Basic Scenarios. Summarize the key DT&E events planned to address the objectives. In addition, describe in sufficient detail the scope of testing and basic test scenarios so that the relationship between the testing and the objectives, and the amount and thoroughness of testing, are clearly apparent. Includes subsystem tests and simulations when they are key elements in determining whether or not objectives will be achieved. Discuss reliability, availability, and maintainability testing, and define terms.

2. Critical DT&E Items. Highlight all items the availability of which are critical to the conduct of adequate DT&E prior to the next decision point. For example, if the item is not available when required, the next decision point may be delayed. If appropriate, display these critical items on the integrated schedule.

Part IV - OT&E Outline

Discuss all planned DT&E, from the earliest IOT&E through the FOE during initial production and deployment which addressed operational effectiveness and suitability and identifies deficiencies in the production system, in similar format and detail as that described in the DT&E outline (Part III). In Planned OT&E be sure to discuss the degree to which the test environment, including procedures and threat simulations, is representative of the expected operational environment. Also discuss the reliability testing concept, and the training and background of operational test personnel. In OT&E Objectives, present the major objectives that, when achieved, will establish the operational effectiveness and suitability of the system. Either present the objectives in terms of, or relate the objectives to, the system's operational effectiveness and suitability. In OT&E Events/Scope of Testing/Basic Scenarios, relate the testing to be performed to the OT&E objectives (for instance, specify test outcomes that satisfy the objectives). When development and operational testing are combined, some of Parts III and IV may be combined, as appropriate.

Part V - Production Acceptance Test and Evaluation (PAT&E).

Briefly describe the PAT&E planned to demonstrate that items procured fulfill the requirements and specifications of the procuring contract of agreements.

Part VI - Special Resource Summary

Provide a brief summary of the key resources for DT&E, OT&E, and PAT&E that are unique to the program.

1. Test Article. Identify the actual number of articles, including key support equipments, of the system required for testing in each phase and for each major type of T&E (DT&E, OT&E, PAT&E). If key subsystems (components, assemblies, or subassemblies) are to be tested individually, identify each such subsystem and the quantity required. Specifically identify prototypes, pilot production, and production models.

TEST AND EVALUATION MASTER PLAN (TEMP) GUIDELINES (Cont'd)

2. Special Support Requirements (instrumentation, targets, threat simulations, test sites, facilities). Identify the special support resources required for T&E, and briefly describe the steps being taken to acquire them. Identify short comings that will lower the realism of testing.

QRP Milestone I IPR Program Documentation

Section I: IPR Package

1. QRPD

- a. Reference. LOI
- b. Responsibility: ADEA
- c. Summary of Content: See Encl 1 this LOI.
- d. Approval authority: HQDA (ODCSOPS)
- e. Review and update: See LOI

2. System Concept Paper (SCP)

- a. Reference: AR 70-1 and Encl 2 to LOI
- b. Responsibility: Materiel Developer
- c. Summary Content: SCP supports QRP Milestone I IPR, documents the results of the brief Concept Exploration Phase, and provides the Acquisition Strategy for the program (See LOI and AR 70-1).
- d. Approval authority: As specified by HQDA
- e. Review and update: None required

3. Test & Evaluation Master Plan

- (a) Reference AR 70-10, AR 71-3 and LOI.
- (b) Responsibility: Materiel Developer for DT and Combat Developer for OT.
- (c) Summary of Content: Identifies required testing and test resources for implementing test program.
- (d) Approval authority: As specified by HQDA.
- (e) Reviews and updates: As changes occur.

Section II: IPR Supporting Documentation

4. Preliminary Quantitative Analysis (PQA) (for Milestone I only and normally

QRP Milestone I IPR Program Documentation (Cont'd)

only for IAP and Major systems.)

- (a) Reference AR 71-9
- (b) Responsibility: Combat Developer
- (c) Summary of Content: Preliminary estimate of cost and operational effectiveness of proposed program.
- (d) Approval authority: Combat Developer
- (e) Reviews and updates: Reviewed 30 days prior to the Milestone decision review I (MDR I). Updates as required prior to MDR I. A COEA is required for MDR II and COEA update for MDR III (By exception).

5. Basis of Issue Plans (BOIP) and Quantitative Personnel Requirement Information (QQPRI).

- (a) Reference AR 71-2
- (b) Responsibility: Combat Developer
- (c) Summary of Content: (BOIP) Delineates quantities of system and personnel required in 9th ID organization authorization document. (QQPRI) A compilation of organization, training, duty position, and personnel information.
- (d) Approval Authority: (BOIP) HQDA
(QQPRI) Combat Developer
- (e) Review on Update: Each Milestone

6. Operational & Organizational (O&O) Plan

- (a) Reference: AR 71-9
- (b) Responsibility: ADEA.

TRADOC for Total Army applications.

- (c) Summary of Content: Delineation of proposed tactical and organizational

concepts for utilization of items.

(d) Approval Authority: Combat Developer

(e) Review and Update: Each IPR

7. Integrated Logistics Support (ILS) Plan

(a) Reference: AR 700-127

(b) Responsibility: Materiel Developer

(c) Summary of Content: Outlines planning to ensure the effective and economical support of a system at all levels throughout the systems life cycle.

(d) Approval Authority: Materiel Developer

(e) Review and Update: Each IPR

