

NOTE: This Purchase Description is issued for use only until superseded by an Applicable Military Specification.

Doug Spears 4579

JA 2/3

McLocklin 4410

SAFD-253F  
22 November 1968  
Superseding  
SAFD-253E  
5 July 1968

SMALL ARMS

PURCHASE DESCRIPTION

RIFLES, 5.56mm: M16 and M16A1

115 p

2 cc

siting

1. SCOPE

1.1 This Purchase Description covers two models of 5.56mm lightweight, air-cooled, gas-operated, magazine-fed rifles designed for either full automatic or semi-automatic fire.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this Purchase Description to the extent specified herein.

SPECIFICATIONS

Federal

VV-L-800 Lubricating Oil, General Purpose, Preservative, Water-Displacing, Low Temperature

Military

MIL-P-116	Preservation, Methods of
MIL-C-372	Cleaning Compound, Solvent
MIL-I-6868	Inspection Process, Magnetic Particle
MIL-C-9963	Cartridge, 5.56mm: Ball, M193
MIL-W-13855	Weapons, Small Arms, General Specification for
MIL-I-45607	Inspection Equipment, Supply and Maintenance of
MIL-C-45662	Calibration System Requirements
MIL-L-46000	Lubricating Oil, Semi-Fluid (Automatic Weapons)
MIL-C-46936	Cartridge, 5.56mm, Test, High Pressure, XM197

1 wk for Mar 19 meeting  
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STANDARDS

Military

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109	Quality Assurance Terms and Definitions
MIL-STD-1235	Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes

DRAWINGS

J 62400	Rifle, M16A1
J 62500	Rifle, M16

PUBLICATIONS

- 62500 - Packaging Data Sheet for Rifle, M16 w/BILL
- 8427000 - Packaging Data Sheet for Rifle, M16A1 w/BILL

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

3. REQUIREMENTS

3.1 Production Samples. On each contract, samples of parts, rifles, and packaging materials representing initial production shall be forwarded for quality evaluation (see 4.2).

3.2 Materials and Construction. Rifles and parts shall conform to the materials and construction requirements specified herein, on Drawing J62400 (M16A1) or Drawing J62500 (M16) and drawings applicable thereto, and shall be in accordance with the applicable materials and construction provisions of MIL-W-13855.

3.3 Design. Rifles and parts shall conform to the design specified herein, on Drawing J62400 (M16A1) or Drawing J62500 (M16) and drawings applicable thereto, and shall be in accordance with the applicable design provisions of MIL-W-13855.

3.3.1 Headspace. The headspace shall not be less than 1.4646 inches or more than 1.4706 inches when measured to the 0.330 inch datum diameter on the first shoulder when tested as specified in Appendix D.

3.3.2 Firing Pin Ident.

3.3.2.1 When the bolt is closed and the firing mechanism is released, the firing pin indent shall not be less than 0.020 inch; and it shall not be off center more than one-half the diameter of the firing pin point when tested as specified in Appendix F.

3.3.2.2 When the bolt is closed and the firing mechanism is not released, the firing pin indent shall not be more than 0.008 inch when tested as specified in Appendix F.

3.3.3 Trigger Pull. The trigger pull shall be free of creep and shall be within the range of 5.5 and 8.5 pounds when tested as specified in Appendix E. Creep shall be interpreted to mean any perceptible rough movement between the time the trigger slack is taken up and the hammer is released. After partial or completed trigger pull, the trigger shall return to its normal forward position (cocked and uncocked) under spring action.

3.3.4 High-Pressure Resistance. Each barrel assembly and bolt shall be capable of withstanding the high-pressure resistance test specified in Appendix A. Parts shall be free of cracks, seams, and other injurious defects after proof firing as evidenced by magnetic particle inspection.

3.3.5 Functioning. Rifles shall operate without malfunctions or unserviceable parts and the cyclic rate of fire for a 20 round continuous burst shall be within 700 to 900 rounds per minute when tested as specified in Appendix B.

3.3.6 Targeting and Accuracy. A series of 10 rounds fired from the rifle at a range of either 91.4 meters or 45.7 meters shall be within the extreme spread and targeting area (heavy outline) specified in Figure 1, when tested in accordance with Appendix C. Maximum utilization shall be made of the 91.4 meter range. Cartridges shall be certified by the Government to be of a quality that will group within a mean radius of 1.2 to 1.4 inches at 200 yards as measured in accordance with the applicable specifications.

3.3.7 Interchangeability. Unless otherwise specified on the drawings, all parts shall be interchangeable. Rifles and repair parts shall pass the interchangeability tests specified in Appendix H.

3.3.8 Endurance. Rifles shall pass the 6,000 round endurance test specified in Appendix G. When the allowable number of malfunctions listed in Table I for both single rifle and four rifles combined is exceeded, the lot will have failed. The number of unserviceable parts shall also be within the limits of Table I. In addition, the cyclic rate of fire on each rifle shall be within 700 to 900 rounds per minute. When more than one reading on a single rifle or two readings on four rifles combined fall outside these limits, the lot will have failed.

3.4 Marking. Each rifle shall be clearly marked in accordance with the applicable drawings and MIL-W-13855.

3.5 Workmanship. Workmanship shall be in accordance with workmanship requirements of MIL-W-13855.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specifications where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Quality Assurance Terms and Definitions. Quality Assurance terms and definitions used herein are in accordance with MIL-STD-109.

4.2 Production Samples. Inspection of rifles, component parts, and pilot pack (see 3.1) shall be performed at a designated testing agency. Rifles, component parts, and pilot pack will be subjected to such inspection and testing by the Government as is necessary to determine compliance with the requirements of the contract (see 6.1). Samples shall be representative of materiel which has been determined to be acceptable.

#### 4.3 Inspection Provisions.

##### 4.3.1 Inspection Lot.

##### 4.3.1.1 Rifles

4.3.1.1.1 Formation and presentation. The formation and presentation of inspection lots shall be in accordance with MIL-STD-105. Lot formation shall be established after final examination of rifles by the contractor and prior to conducting tests specified in Table IV.

4.3.1.1.2 Lot Size. Unless otherwise specified herein, an inspection lot shall consist of 1000 rifles or a single shift's production, whichever is larger. These rifles shall be assembled from lots of component parts that have met all inspection requirements. Resubmitted lots shall consist of a minimum of 500 Rifles.

4.3.1.1.3 Lot Identification. Each inspection lot shall be identified with a lot number. The serial number of each rifle in a lot shall be recorded on the individual rifle record. The reason for rejection of any inspection lot shall be recorded. When a rejected inspection lot is resubmitted after reconditioning, it shall be identified as such.

4.3.1.2 Parts and Packaging. The formation, size, and presentation of inspection lots of parts and packaging shall be in accordance with MIL-STD-105. Inspection lots shall be as large as practicable in consideration of quality history, manufacturing conditions, contractor's delivery schedule, and shall be within the limitations of MIL-W-13855.

#### 4.3.2 Examination.

4.3.2.1 Component Parts and Repair Parts. Examination of component parts and repair parts shall be performed in accordance with the applicable Inspection Instruction Sheets (see 6.1). The contractor's examination of these parts shall be accomplished prior to their assembly into the end item or submission for acceptance as repair parts.

4.3.2.2 Rifles. Each rifle shall be subjected to the examination specified in Appendix J.

4.3.2.2.1 Rifles which have passed all examinations after successful completion of testing shall be rubber stamped by the contractor with the Department of Defense complete inspection approval stamp on the lower right hand side of the Lower Receiver. The Government representative shall observe the stamping operation and shall control the stamps used for such stamping.

4.3.2.3 Packaging. Examination of packaging of rifles shall be performed in accordance with the classification of defects and acceptable quality level (AQL) specified in Table II. Sample size for each lot shall be in accordance with Inspection Level I of MIL-STD-105 or a continuous sampling plan per MIL-STD-1235 which will provide equivalent discrimination. A visual inspection shall be performed to assure that the processes specified in the contract (see 6.1) result in parts and packages meeting the acceptable quality level.

4.3.2.3.1 Examination of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

#### 4.3.3 Testing.

4.3.3.1 Qualification Testing. Ten rifles and 120 magazines randomly selected by the Government representative from the first two weeks production shall be tested by the contractor using the test method specified in Appendix G. The ten rifles shall be test fired by the contractor in two complements totaling 10,000 rounds. The first complement of 6000 rounds on each of the ten rifles tested shall meet the criteria of Table I for a single rifle prior to offering product to the Government for acceptance purposes.

4.3.3.1.1 In the event any rifle during the first 6000 round complement fails to meet the requirements of 3.3.8 the contractor shall:

- a. Defer further testing.

b. Determine cause of failure.

c. Institute necessary corrective action in the manufacturing processes and associated quality control procedures.

d. Screen all components, subassemblies and assemblies for similar defects and purge all product at the prime or vendors plants and in final stores.

e. Provide objective evidence to the Government that corrective action has been accomplished.

f. Resume testing with corrected rifles. In the event a failure occurs on one of the last 3 of the 10 rifles tested, 3 additional rifles shall be tested and shall meet the criteria of 4.3.3.1 to determine adequacy of corrective actions.

4.3.3.1.2 During the firing of the second complement of 4000 rounds, all malfunctions, parts replacements and the cause of such failures shall be recorded and presented to the Government for evaluation.

4.3.3.2 Acceptance Testing

4.3.3.2.1 High Pressure Resistance Test. Bolt and Barrel Assemblies shall be tested at the frequency specified in Table III and as specified in Appendix A.

4.3.3.2.2 Function. Rifles shall be tested at the frequency specified in Table III and as specified in Appendix B.

4.3.3.2.3 Cyclic Rate. Rifles shall be tested at the frequency specified in Table III and as specified in Appendix B.

4.3.3.2.4 Targeting and Accuracy. Rifles shall be tested at the frequency specified in Table III and as specified in Appendix C.

4.3.3.2.5 Headspace. Rifles shall be tested at the frequency specified in Table III and as specified in Appendix D.

4.3.3.2.6 Trigger Pull. Rifles shall be tested at the frequency specified in Table III and as specified in Appendix E.

4.3.3.2.7 Firing Pin Indent. Rifles shall be tested at the frequency specified in Table IV and as specified in Appendix F.

4.3.3.2.8 Endurance. Rifles selected by the government representative shall be tested at the frequency specified in Table IV and as specified in Appendix G.

4.3.3.2.9 Interchangeability. Rifles and component parts selected by the government representative shall be tested at the frequency specified in Table IV and as specified in Appendix H.

4.3.3.3 Component Parts and Repair Parts Testing. Raw material testing, part testing, and certification shall be performed in accordance with the applicable Inspection Instruction Sheet (see 6.1). This will include chemical analysis and physical tests of materials, and tests of protective finish, heat treatment, and function of parts as applicable. The contractor shall accomplish these tests prior to assembly of parts into the end item.

4.3.3.4 Packaging Testing.

4.3.3.4.1 Rifles

4.3.3.4.1.1 The contractor shall have available for review by the Government representative a statement of findings that the packaging materials conform to the applicable packaging data sheets and specifications.

4.3.3.4.1.2 Determination of Cleanliness Testing. The contractor shall test items from each inspection lot for determination of cleanliness using the test method specified in 4.4.2.1. Sampling shall be in accordance with MIL-P-116.

4.3.3.4.1.3 Heat-Sealed Seam and Leakage Testing. The contractor shall test level A unit packages from each inspection lot for heat-sealed seam and leakage (as applicable to the packaging methods specified in the contract) using the test methods specified in 4.4.2.2 and 4.4.2.3 respectively. Sampling shall be in accordance with MIL-P-116.

4.3.3.4.2 Repair Parts. Testing of packaging of repair parts shall be performed in accordance with the criteria specified in the contract (see 6.1).

4.3.4 Inspection Equipment. Unless otherwise specified in the contract (see 6.1), responsibilities for acquisition, maintenance, and disposition of measuring and test equipment required to perform the inspection and test specified herein in the Inspection Instruction Sheets, and for all other inspection equipment required to perform inspection required by applicable specifications, shall be in accordance with MIL-I-45607 and MIL-C-45662.

4.4 Test Methods.

4.4.1 Rifles. Rifles shall be tested for headspace, firing pin indent, trigger pull, high pressure resistance, function, targeting and accuracy, interchangeability, and endurance in accordance with the applicable Appendix.

4.4.2 Packaging Tests.

4.4.2.1 Determination of Cleanliness. The applicable surfaces of each sample unit (except for barrel bores and chambers) shall be subjected to the determination of cleanliness test specified in MIL-P-116, except that the wipe test shall not be applicable to parts with black oxide or anodized protective coatings. Barrel bores and chambers shall be wipe tested for cleanliness using clean white bore cleaning swabs and the degree of cleanliness shall be verified by comparison of test swabs with standard swab samples furnished by the contracting officer.

4.4.2.2 Heat-Sealed Seam. The sample level A rifle unit packages shall be subjected to the heat-sealed seam test specified in MIL-P-116.

4.4.2.3 Leakage Test. The sample level A rifle unit packages shall be subjected to the appropriate leakage test specified in MIL-P-116.

5. PREPARATION FOR DELIVERY.

5.1 Pilot Pack. A pilot pack consisting of an intermediate package with packaging materials for two unit packages representing initial production shall be forwarded in accordance with 3.1.

5.2 Preservation, Packaging, Packing, and Marking. Rifles with equipment shall be preserved, unit packaged, packed, and marked in accordance with the packaging instructions specified in the contract (see 6.1).

5.3 Repair Parts. Repair parts shall be prepared for delivery in accordance with the packaging instructions specified in the contract (see 6.1).

6. NOTES.

6.1 Ordering Data. Procurement documents should specify the following:

- a. Title, number, and date of this specification.
- b. Lists of drawings and specifications pertinent to the rifle, showing applicable revision dates.
- c. Master Indexes of Inspection Instruction Sheets (see 4.3.2.1, 4.3.2.3.1, 4.3.3.3, 4.3.3.4.2).
- d. Master Lists of Inspection and Test Equipment (see 4.3.4.).
- e. That packages opened for examination shall be repackaged by the contractor at the contractor's expense (see 4.3.2.3).
- f. Disposition of endurance tested rifles.
- g. Selection of applicable levels of preservation, packaging, and packing.
- h. Shipping instructions for production samples (see 3.1 and 5.1).
- i. Packaging instructions for repair parts (see 5.3).
- j. Place of final inspection and acceptance.
- k. Lists of acceptance inspection equipment to be furnished the contractor (see 4.3.4) and responsibilities for other Government property to be furnished the contractor.
- l. Responsibilities for furnishing ammunition. To avoid delay in test firing, the contractor should maintain a minimum of two month's supply of ammunition as determined by anticipated firing requirements.

m. Shipping instructions for rifles and parts when an interplant interchangeability test is required.

n. Procedures and methods for demilitarizing and disposing of rejected material.

o. Disposition of Government furnished property.

p. Responsibility for test firing facilities and operating procedures.

q. Packaging instructions for rifles (see 5.2).

r. Disposition of qualification tested rifles and endurance tested weapons.

Custodian:  
Army - WC

Preparing Activity  
Army - WC

TABLE L. Malfunctions and Unserviceable Parts  
Permitted in 6,000 Round Endurance Test

Malfunctions <sup>1</sup>	Single Rifle	Four Rifles
Failure of bolt to lock <sup>2</sup>	2	4
Failure to fire	2	4
Failure to feed (from magazine)	(4)	9
Failure to eject	2	4
Failure to chamber	3	7
Failure to extract	1	2
Bolt fails/hold rear	3	8
All other malfunctions <sup>4</sup>	0	0
Total - above malfunctions combined	9	22

Unserviceable Parts <sup>1</sup>	Minimum Life <sup>5</sup> Rounds	Four Rifles <sup>6</sup> Combined
Magazine Assembly	250	2
Ejector Spring	3,000	2
Extractor Spring	2,000	4
Other parts	3,000	1 (See Note 3)
Total unserviceable parts - above unserviceable parts combined		4

<sup>1</sup>When malfunctions are traceable to particular parts, it is permissible to replace such parts and record them as unserviceable, subject to the limitations of Table J. When verified by the government representative that previously recorded malfunctions are attributable to an unserviceable part, such malfunctions shall not be counted against the rifle being tested, provided that they occurred not more than 200 rounds prior to replacement of the unserviceable part. These 200 rounds shall have been fired with the unserviceable part. However, such malfunctions shall remain recorded and properly identified. Malfunction attributable solely to ammunition defects, as verified by the government representative, shall not be counted against the rifle; however, such malfunctions shall be recorded.

<sup>2</sup>In the event of any failure of bolt to lock malfunction, the forward assist assembly shall be operated. Failure of the forward assist assembly to remain engaged with the bolt carrier assembly during manual attempt to lock bolt shall be considered an additional malfunction in the category of "other malfunctions".

<sup>3</sup>Other parts shall be limited to trigger spring, disconnect spring, hammer spring, extractor pin, and extractor.

<sup>4</sup>Other malfunctions include, but are not limited to: occurrence of doubling (two shots fired with a single trigger pull) during semi-automatic firing; failure to immediately stop firing when the trigger is released (uncontrolled fire) during burst firing; and failure of forward bolt assist assembly to remain engaged with bolt carrier assembly during manual attempt to lock the bolt, etc.

<sup>5</sup>Minimum life rounds is the minimum allowable life of an individual part, whether it is the original part or a replacement part, expressed in the number of weapon rounds fired prior to failure. For example, an extractor spring failing prior to firing 2000 rounds on a new rifle, has not met the minimum life rounds. The failure shall be recorded and shall be cause for test failure.

<sup>6</sup>The allowable number of unserviceable parts shown for 4 rifles combined applies only to parts failing after the minimum life rounds have been fired on the weapon. For example, ejector springs failing at 3500 rounds on one rifle and at 4100 rounds on a second weapon fall within the allowable limits of 2 on 4 rifles combined; however, failure of an ejector spring on a third rifle after firing 3000 rounds, exceeds the allowance and shall be cause for test failure.

TABLE II. Classification of Defects for Packaging

<u>Categories</u>	<u>Defect</u> <sup>2</sup>	<u>AQL</u> <sup>3</sup>
<u>Major (Interior Packaging)</u>		1.5
101	Illegible or incorrect marking	
102	Improper level of packaging	
103	Missing items of BILL	
104	Improper cleaning and drying	
105	Improper preservative application and drainage	
106	Missing or improper protectors	
107	Improper assembly of unit package	
108	Improper closure of bags and boxes	
109	Rifles not properly positioned	
<u>Major (Exterior Container)</u>		1.0
101	Illegible or incorrect marking	
102	Improper level of packing	
108	Improper closure of box	
110	Improper closure and strapping of shipping containers	

<sup>1</sup>Unless otherwise specified in the contract, the packaging requirements are specified on Packaging Data Sheets 62500 (M16) and 8427000 (M16A1) as applicable.

<sup>2</sup>Examination for packaging defects specified above shall apply to each sample of rifles, interior packages, or exterior containers, as applicable.

<sup>3</sup>The AQL is specified as percent defective and shall be applied to a group of defects, not to an individual defect.

TABLE III

SAPD-253F

TEST	SAMPLE <sup>1</sup>	ITEM	REQUIREMENT	REFER TO:
Headspace <sup>4</sup>	100%	Rifle	3.3.1	Appendix D
Trigger pull <sup>4</sup>	100%	Rifle	3.3.3	Appendix E
High Pressure Resistance	100%	Barrel Assy & Bolt	3.3.4	Appendix A
Function <sup>2</sup> Cyclic rate of fire	100% 190 <sup>3</sup>	Rifle	3.3.5	Appendix B
Targeting and Accuracy <sup>2</sup>	100%	Rifle	3.3.6	Appendix C

<sup>1</sup>Rifles failing to meet the applicable requirement shall be rejected.

<sup>2</sup>Magazines for the firing tests shall be selected from accepted magazines in the contractor's current production lots. No magazine shall be used more than once.

<sup>3</sup>The cyclic rate of fire shall be taken and recorded on each rifle until 190 consecutive rifles have met the cyclic rate of fire requirement specified in 3.3.5. When 190 consecutive rifles on their initial test have met the cyclic rate of fire requirement, every 10th rifle tested for function firing requirements shall be tested for cyclic rate of fire requirement. If a rifle fails to meet the cyclic rate of fire requirement during sample testing of one from every ten, an additional sample of ten rifles shall be tested for cyclic rate. If one rifle exceeds the cyclic rate specified in 3.3.5, or the sum of the cyclic rates of the ten rifles fails to fall within the interval of  $8000 \pm 360$ , 100% sampling for the cyclic rate of fire requirement shall be reinstated and the above procedure repeated in returning to the firing of one rifle from every ten rifles. However, if the cyclic rate requirements for the sample of ten rifles are met, the contractor shall continue testing every 10th rifle for cyclic rate.

<sup>4</sup>This test shall be conducted during the final examination specified in paragraph 4.3.2.2.

TEST	SAMPLE <sup>1</sup>	SAMPLE FOR RESUBMITTED LOTS	REQUIREMENT	REFER TO:
Firing Pin Indent	32 <sup>4</sup>	32 <sup>2</sup>	3.3.2	Appendix F
Interchangeability			3.3.7	Appendix H
Inplant Rifles	10 <sup>4</sup>	20		
Repair parts <sup>5</sup>	5	10		
Interplant Rifles <sup>6</sup>	5	-----		
Endurance			3.3.8	Appendix G
Rifles	4 <sup>7</sup>	4		
Magazines <sup>3</sup>	48	48		

<sup>1</sup>Failure of the sample, unless otherwise specified in the applicable Appendix, to meet the requirements shall cause rejection of the represented lot.

<sup>2</sup>Failure of one rifle in the sample of thirty-two to meet the requirements shall cause a second sample to be tested from the same lot. The second sample shall consist of thirty-two rifles, exclusive of the first thirty-two, (cumulative, sixty-four rifles). Failure of two or more rifles in the first sample or the combined first and second sample shall be cause for rejection of the represented lot.

<sup>3</sup>Magazines shall be selected by the Government representative from accepted magazines in the Contractor's inspection sample of current production lots.

<sup>4</sup>When five successive inspection lots meet the requirements, the sample shall be selected from groups of five consecutive lots or a week's production, whichever is larger. If rejection of a group of five lots (or more) occurs at any time, the inspection lot size of 1000 shall be reinstated and the above procedure repeated in returning to the five lot (or larger) groups.

<sup>5</sup>The sample shall be selected from each inspection lot of repair parts.

<sup>6</sup>When rifles are produced concurrently by more than one manufacturer, each manufacturer shall forward five rifles monthly (see 6.1) for the interplant interchangeability test. The contractor will be informed of any failure of the rifles to meet the prescribed requirements.

<sup>7</sup>Reference Appendix G, paragraph 7.0.

## APPENDIX A

## High Pressure Resistance Test Method

1.0 Equipment.

1.1 This test shall be conducted with the bolt and barrel assembly held in a Government approved fixture.

1.2 Cartridges used in this test shall be Government standard XM197 5.56mm high pressure test cartridges in accordance with MIL-C-46936.

1.3 Equipment for magnetic particle inspection shall be in accordance with MIL-I-6868.

2.0 Test Procedure.

2.1 One high pressure test cartridge shall be fired in each bolt and barrel assembly.

2.2 After firing, the following examinations and inspections shall be made.

2.2.1 Cartridge Cases. Cartridge cases shall be examined for bulges, splits, rings, and other defects caused by defective chambers.

2.2.2 Barrel Assembly. Each barrel assembly shall be magnetic particle inspected in accordance with MIL-I-6868 using a current of 400 to 500 amperes for circular continuous magnetization. The barrel assembly shall be examined for evidence of cracks, seams, and other injurious defects.

2.2.3 Bolt. Each bolt shall be magnetic particle inspected in accordance with specification MIL-I-6868 using a standard five turn magnetizing coil with a current of 200 to 300 amperes. Circular and longitudinal continuous magnetization and wet fluorescent solution shall be used. The bolts shall be examined for evidence of cracks, seams, and other injurious defects.

2.3 Proof marks and magnetic particle inspection marks shall be applied on barrel assemblies and bolts that have passed this test.

3.0 Recording of Data.

3.1 The following shall be recorded:

3.1.1 The reason for each failure.

## Function Firing Test

1.0 Equipment.

1.1 Equipment in accordance with the Inspection Equipment List shall be used.

1.2 Firing Facilities. Test firing facilities and operating procedures shall be designed by the contractor in conformance with local, state, and federal regulations and suitable for carrying out prescribed firing tests with safety of operating and visiting personnel. Copies of these contractor designs shall be forwarded to the contracting officer. Government facilities may be viewed upon application to the contracting officer.

1.3 Firing Stand. A Government approved firing stand simulating shoulder firing shall be used.

1.4 Timing Gage. A Government approved timing gage shall be used for measurement of Cyclic rate of fire.

1.5 Ammunition. Cartridges for this test shall be Government standard M193 5.56mm ball cartridges in accordance with MIL-C-9963.

2.0 Test Procedure.2.1 Preparation for Firing.

2.1.1 Lubrication. Prior to this test each rifle shall have been lubricated using lubricant in accordance with VV-L-800 and the following procedure:

2.1.1.1 Apply a light coat of oil to all surfaces of the bolt carrier group. Apply one drop of oil in each hole on the right side of the bolt carrier and in the open end of the bolt carrier key. (Do not apply excessive oil in the bolt firing pin recess. Excessive oil in this area may contribute to a light struck primer or failure to fire.)

2.1.2 The rifle shall be given a pre-firing examination to assure that no safety hazards exist. Five rounds shall be fired by the Contractor to assure proper sealing of the gas system and distribution of oil. No other warm-up or pre-function test firing shall be conducted.

2.2 Firing Procedure.

2.2.1 Each rifle shall be checked to assure that the rifle cannot be fired when set in the "safe" position.

2.2.2 Fully loaded magazines (20 rounds) shall be used for automatic firing and no magazine shall be used more than once.

2.2.3 Firing Sequence. The rifle shall be fired as follows:

- a. Rifle shall be set for "automatic" firing.
- b. Two bursts of approximately three rounds each shall be fired.
- c. The remaining rounds in the magazine shall be fired in one burst.
- d. Rate of Fire. Not more than three minutes after completion of the above, the rate of fire measurement shall be taken by firing a twenty round continuous burst.
- e. Rifle shall be set for "semi-automatic" firing. Ten rounds shall be fired (at a rate of ten to thirty rounds per minute). The semi-automatic firing shall be accomplished simultaneously with the targeting and accuracy test specified in Appendix C.

2.3 During the interrupted burst firing, rifles failing to stop firing immediately when the trigger is released shall be rejected.

2.4 During semi-automatic firing, doubling (i.e., two shots fired with a single trigger pull) shall be recorded as a malfunction.

2.5 Each rifle shall be examined to assure capability to disassemble the magazine assembly from the lower receiver. Manually examine function of magazine catch and visually examine function of bolt catch in assisting magazine ejection. Depressing of magazine catch button shall cause magazine assembly to be ejected, with spring assist from bolt catch, without binding.

2.6 Malfunctions attributable solely to ammunition defects shall not be counted against the rifle.

3.0 Recording of Data.

3.1 The following data shall be recorded.

3.1.1 Number of rifles tested and number of rifles rejected per shift.

3.1.2 Test date.

3.1.3 Ammunition lot number.

3.1.4 For each rifle that fails, record:

- a. Serial number
- b. Type of malfunction or failure
- c. Class of malfunction:
  - (1) Class I: Immediately clearable (clearable by gunner through operation of charging handle, removal of magazine or manually removing round without aid of tools or equipment).
  - (2) Class II: Clearable by gunner with available equipment. (Basic Issue Items)
  - (3) Class III: Not clearable by gunner.
- d. Round number at which failure occurred
- e. Type of firing (semi-automatic or automatic)
- f. Round number of magazine at which failure occurred

3.1.5 Ammunition Defect.

- a. Rifle in which ammunition defect occurred
- b. Description of defect

4.0 Rejected Rifles.

4.1 In the event any rifle is rejected due to a malfunction or unserviceable part during the 30 round test, or during the 20 round burst for cyclic rate, the non-conforming rifle shall be corrected and the corrective action shall be recorded. In the event the malfunction cause is classified as serious, the contractor shall immediately initiate action in accordance with paragraph 6.2.1 of this appendix.

4.1.1 The rifle shall be retested by firing two thirty-round sequences in accordance with paragraph 2.2.3 of this Appendix, except that the automatic firing during the second sequence shall be one twenty round burst and the cyclic rate shall be recorded. The rifle shall operate without malfunction or unserviceable part(s) and shall meet the cyclic rate requirements.

4.1.1.1 In the event the rifle fails the retest, the procedure in paragraph 4.1 shall be followed and the rifle retested by firing three thirty-round sequences in accordance with paragraph 2.2.3 of this Appendix except that the automatic firing during the second sequence shall be one twenty round burst and the cyclic rate shall be recorded. The rifle shall operate without malfunction or unserviceable part(s) and shall meet the cyclic rate requirement during this test.

## 5.0 Definitions.

### 5.1 Malfunctions.

5.1.1 Failure of Bolt to Lock. Failure of the bolt to lock is defined as failure of the bolt to fully close and rotate to the locked position in the barrel extension.

5.1.2 Failure of Forward Assist Assembly to Assist Bolt Closure. Failure of forward assist assembly to assist bolt closure is defined as failure of the pawl of the forward assist assembly to engage or remain engaged with the bolt carrier serrations during manual attempt to lock the bolt, when the bolt fails to lock on return to the battery position.

5.1.3 Failure to Fire. Failure to fire is defined as a failure of the rifle to fire the cartridge, when the cartridge has been fully chambered; bolt has been locked in the battery position, and the trigger has been pulled.

5.1.4 Failure to Feed (From Magazine). Failure to feed (from magazine) is defined as a failure of the bolt to completely strip the next round from the magazine.

5.1.5 Failure to Eject. Failure to eject is defined as a failure of the rifle to eject a round from the rifle, when the cartridge has been fired and the cartridge case has been completely extracted from the chamber.

5.1.6 Failure to Chamber. Failure to chamber is defined as a failure of the rifle to chamber a cartridge that has been completely stripped from the magazine.

5.1.7 Failure to Extract. Failure to extract is defined as a failure of the rifle to remove a cartridge case or unfired cartridge from the chamber.

5.1.8 Bolt Fails/Hold Rear. Bolt fails to hold to the rear is defined as failure of the bolt to remain in the rearward position after the last round in the magazine has been fired.

5.2 Unserviceable Part. An unserviceable part is one that causes malfunction of the rifle or impairs the safety of the user.

5.3 Malfunction Causes.

5.3.1 NON-SERIOUS. A rifle non-conformance that caused Class I type malfunction(s).

5.3.2 SERIOUS. A rifle non-conformance that caused Class II or Class III type malfunction(s).

6.0 Process Control Criteria.

6.1 The process average for total rifles tested during one shift shall not exceed 2.0% defective. The process average for each shift shall be maintained and be available for government review.

6.2 When the process average exceeds 2.0% defective during one shift, the contractor shall review the failure causes for determination of seriousness. The contractor, in addition, shall provide the government representative with objective evidence of his determination.

6.2.1 When malfunction cause(s) is classified as serious, the contractor shall institute corrective action in the manufacturing processes and associated quality control procedures to preclude recurrence of the cause and to assure that all rifles and components containing similar defects are purged from the prime and/or vendor facilities. When authorized by the government representative, this corrective action need not include the screening of rifles previously tested for function firing. The contractor, upon completion of the preceding, shall retest the reconditioned rifles as specified in paragraph 4.1.1 of this appendix.

6.2.2 When the malfunction cause(s) is classified as non-serious or the malfunction cause(s) cannot be determined, the contractor shall take action in accordance with paragraph 4.1 of this Appendix and shall test the first eighty rifles on the following shift by firing two thirty round sequences in accordance with paragraph 4.1.1 of this Appendix. When the number of malfunctions occurring during the test of eighty rifles exceeds three, the contractor shall continue function firing acceptance testing in accordance with paragraph 4.1.1 until corrective action has been accomplished to the applicable manufacturing process and/or quality assurance procedures, as evidenced by the testing of eighty consecutive rifles with 3 or less malfunctions. In the event the malfunction number is three or less during this test, all subsequent rifles submitted during this shift shall be tested by firing thirty rounds in accordance with 2.2.3 of this Appendix.

TARGETING AND ACCURACY TEST

1.0 Equipment.

1.1 Equipment in accordance with the Inspection Equipment List shall be used.

1.2 Firing Facilities. Test firing facilities and operating procedures shall be designed by the contractor in conformance with local, state and federal regulations and suitable for carrying out prescribed firing tests with safety of operating and visiting personnel. Copies of these contractor designs shall be forwarded to the contracting officer.

1.3 Firing Stand. A Government approved firing stand simulating shoulder firing shall be used.

1.4 Targets in accordance with Figure 1 shall be used.

1.5 Ammunition. Cartridges for this test shall be Government standard M193 5.56mm ball cartridges in accordance with MIL-C-9963. Cartridges used for this test shall have been certified by the Government to be of a quality that will group within a mean radius of 1.2 to 1.4 inches at 200 yards as measured in accordance with MIL-C-9963.

2.0 Test Procedure.

2.1 Preparation for Firing.

2.1.1 The normal rear peep sight shall be used and shall be set centrally in the slot for windage within plus or minus 2 clicks.

2.1.2 The front sight shall be set with the top of the front sight flange flush with or not more than .030 inch below the front sight slot.

2.1.3 Except for rounds fired during function testing, firing of not more than three warm-up shots off the target shall be allowed before the rifles are used for targeting and accuracy.

2.2 Firing.

2.2.1 The rifle sights shall be aligned on the point of aim specified in Figure 1.

2.2.2 The rifle shall be set for semi-automatic.

2.2.3 Ten rounds shall be fired (at a rate of ten to thirty rounds per minute). This firing shall be accomplished simultaneously with semi-automatic firing in Appendix B.

2.2.4 The target shall then be checked to determine that the targeting and accuracy requirements have been met.

2.3 The optimum sight setting obtained during the targeting and accuracy test shall be maintained on accepted rifles being prepared for shipment.

2.4 Targets with evidence of a flyer or keyhole shall be cause for the contractor to repeat the test by firing a ten round complement.

### 3.0 Recording of Data

3.1 The following data shall be recorded:

3.1.1 Number of rifles tested and number of rifles rejected per shift.

3.1.2 Test date.

3.1.3 Ammunition lot number.

3.1.4 Extreme spread of shot group.

3.1.5 Reason for any retest (keyholing or flyer).

3.1.6 For each rifle that fails, record:

a. Serial number

b. Type of malfunction or failure

### 4.0 Definitions.

4.1 A flyer is defined as a shot hole which is a greater distance from the nearest shot hole than the extreme spread of the other nine holes (including the shot hole nearest the flyer).

4.2 Keyholing is defined as any shot hole on the target that is not circular.

### 5.0 Rejected Rifles.

5.1 In the event any rifle is rejected for failure to conform to requirements stated in paragraph 3.3.6 (requirements) and Figure 1, the non-conforming rifle shall be corrected and the corrective action recorded.

5.1.1 The rifle shall be retested by firing a ten round complement at each of two targets. The rifle shall conform to the targeting and accuracy requirements stated in paragraph 3.3.6 and Figure 1, for both targets. The rate of fire will be at the contractor's option.

5.1.1.1 If the retested rifle fails to meet the requirements for both targets the rifle shall be rejected. In the event the rifle fails to meet the accuracy requirements for either of the two targets, a ten round complement shall be fired at a third target. The average of the extreme spreads for the three targets shall conform to the requirements stated in paragraph 3.3.6 and Figure 1.

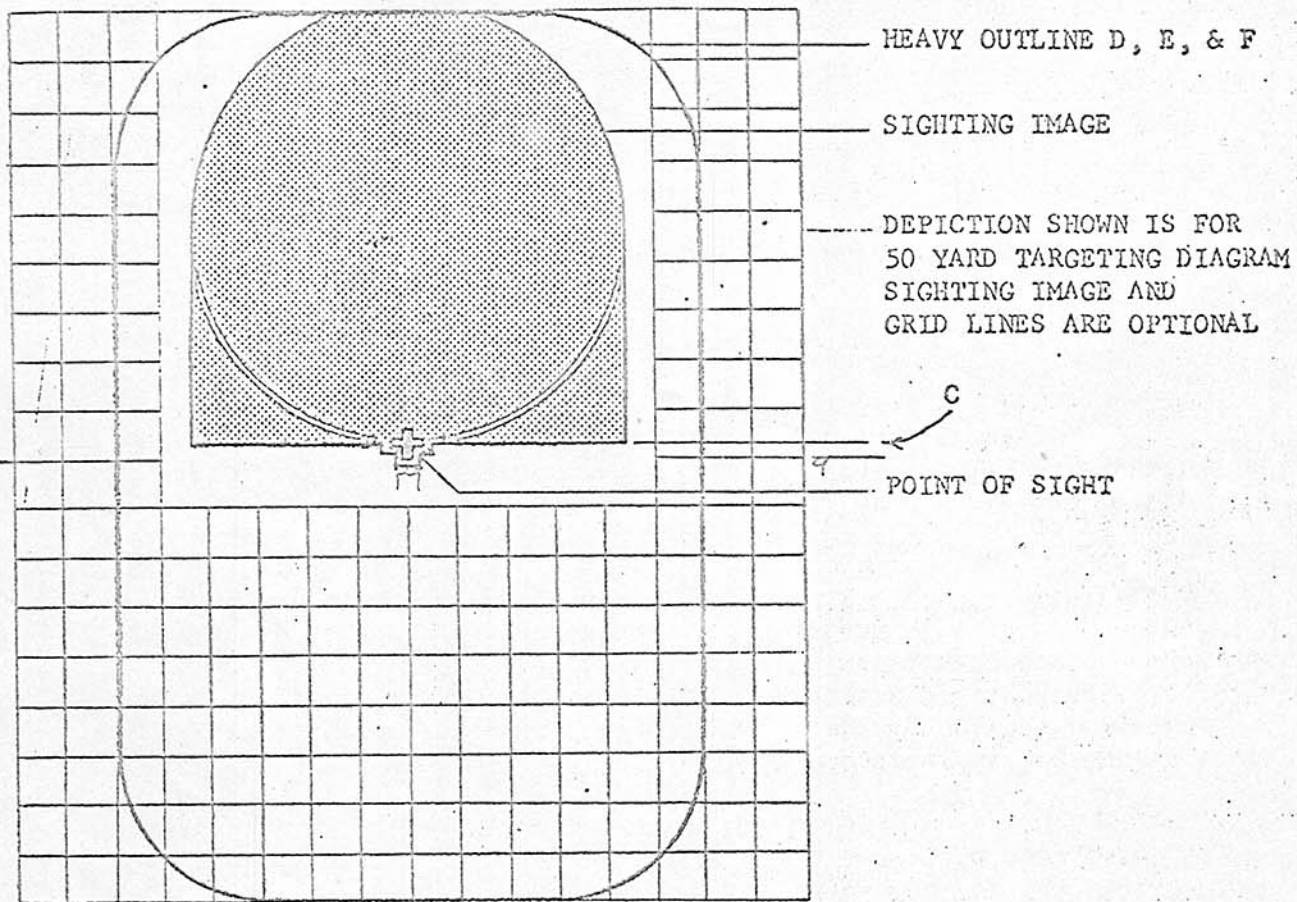
5.1.2 For rifles failing the retest, the procedures in paragraph 5.1 shall be followed. The rifle shall then be retested by firing a ten round complement at three targets and the average of the extreme spreads for the three targets shall conform to the requirements stated in paragraph 3.3.6 and Figure 1.

#### 6.0 Process Control Criteria.

6.1 The process average for total rifles tested for targeting and accuracy on one shift shall not exceed 6.0% defective for each requirement. If 6.0% is exceeded, the first eighty rifles submitted for testing during the succeeding shift shall be tested for the requirement that exceeded the process limit, by firing a ten-round complement at two targets in accordance with paragraph 5.1.1.

6.1.1 When the number of failures occurring during the test of eighty rifles exceeds seven, the contractor shall continue targeting and accuracy testing in accordance with paragraph 5.1.1 until corrective action has been accomplished to the applicable manufacturing process and/or quality assurance procedures as evidenced by the testing of eighty consecutive rifles as specified in paragraph 5.1.1 of this appendix with seven or less failures.

6.1.2 In the event seven or less failures occur during the test of eighty rifles, all subsequent rifles submitted during this shift shall be tested by firing a ten-round complement at one target.



- A - 10 SHOT GROUP EXTREME SPREAD
- B - SIGHTING IMAGE DIAMETER
- C - DISTANCE POINT OF AIM ABOVE HORIZONTAL  $\angle$  OF HEAVY OUTLINE
- D - HEIGHT OF HEAVY OUTLINE
- E - WIDTH OF HEAVY OUTLINE
- F - RADIUS OF CORNERS OF HEAVY OUTLINE
- G - GRID DIMENSIONS

TARGET DIAGRAM FOR		DIMENSIONS IN INCHES						
		GROUP	IMAGE		HEAVY OUTLINE			GRID
METERS	YARDS	A	B	C	D	E	F	G
91.4	100	4.8	8.0	0.5	17.6	11.6	2.8	1.00
45.7	50	2.4	4.4	0.14	8.95	5.95	1.5	.50

Figure 1. Targeting and accuracy diagram.

## Headspace Test

1.0 Equipment.

1.1 Inspection equipment representing maximum headspace of 1.4706 inches between the bolt face and the 0.330 inch datum diameter on the first shoulder of the chamber shall be used.

1.2 Inspection equipment representing minimum headspace of 1.4646 inches between the bolt face and the 0.330 inch datum diameter on the first shoulder of the chamber shall be used.

1.3 Inspection equipment used in this test shall be Government approved.

2.0 Test Procedure.

2.1 This test shall be performed during final examination.

2.2 The rifle bolt shall be returned to the rearward position.

2.3 The minimum headspace gage shall be inserted in the chamber and the bolt shall be returned to the battery position. Only finger pressure shall be applied to close the bolt. To be acceptable the bolt shall fully close. The minimum gage shall be removed.

2.4 The maximum headspace gage shall be inserted in the chamber and the bolt shall be returned to the battery position. Only finger pressure shall be applied to close the bolt. To be acceptable the bolt shall not fully close.

2.5 If the above results are in dispute, the rifle shall be disassembled and the 1.6206 + .0030 barrel dimension and the .156 - .003 bolt dimension shall be measured to determine conformance to drawing requirements.

APPENDIX E

Trigger Pull Test

1.0 Equipment.

1.1 Inspection equipment listed on the Inspection Equipment List shall be used.

2.0 Test Procedure.

2.1 This test shall be performed during final examination.

2.2 The rifle shall be cocked and selector shall be in the "semi" position.

2.3 The minimum load shall be gradually applied to the center of the trigger and exerted in a line parallel to the axis of the barrel bore. To be acceptable the hammer shall not release.

2.4 The rifle shall be manually examined to assure that the trigger pull is free of creep.

2.5 The maximum load shall be gradually applied to the center of the trigger and exerted in a line parallel to the axis of the barrel bore. To be acceptable the hammer shall release.

2.6 The rifle shall be manually examined to assure that the trigger returns under spring action to its normal forward position after partial or complete trigger pull. This shall be accomplished for the cocked and uncocked condition.

3.0 Definitions.

3.1 Creep. Creep shall be interpreted to mean any perceptible rough movement between the time the trigger slack is taken up and the hammer is released.

## Firing Pin Indent Test Method

1.0 Equipment.

1.1 Equipment listed on the Inspection Equipment list shall be used.

1.2 Copper compression cylinders as furnished by the Government shall be used.

1.3 A copper compression cylinder holding fixture for insertion in the rifle chamber.

1.4 An indicator for measuring the depth of the firing pin impression.

2.0 Test Procedure.

2.1 Firing pin indent, when bolt is closed and the firing mechanism is released, shall be obtained as follows:

2.1.1 The rifle shall be held in a vertical position (muzzle down) with the muzzle end supported.

2.1.2 The bolt shall be held open and the copper compression cylinder holding fixture containing the copper compression cylinder shall be inserted in the barrel chamber.

2.1.3 The bolt shall be manually returned to the battery position.

2.1.4 The firing mechanism shall be released by pulling the trigger.

2.1.5 The holding fixture shall be removed from the rifle and the depth of the indent in the copper cylinder computed by measuring the distance from the original surface of the copper cylinder (before indentation) to the bottom of the firing pin impression.

2.1.6 The firing pin impression shall be examined to assure that it is not off center more than one-half the diameter of the firing pin point.

2.2 Firing pin indent, when the bolt is closed and the firing mechanism is not released, shall be obtained as follows:

2.2.1 The rifle shall be held in a vertical position (muzzle down) with the muzzle end supported.

2.2.2 The bolt shall be held open and the copper compression cylinder holding fixture containing the copper compression cylinder shall be inserted in the barrel chamber.

2.2.3 The bolt shall be released from the full open position and under spring action allowed to go into the battery position.

2.2.4 The holding fixture shall be removed from the rifle and the depth of the indent in the copper cylinder computed by measuring the distance from the original surface of the copper cylinder (before indentation) to the bottom of the firing pin impression.

3:07 Recording of Data.

3.1 Results of this test shall be recorded as follows:

3.1.1 Inspection lot number.

3.1.2 Rifle serial numbers.

3.1.3 Firing pin indent measurement when bolt is closed and the firing mechanism is released.

3.1.4 Firing pin indent measurement when bolt is closed and the firing mechanism is not released.

## Endurance Test

1.0 Equipment

1.1 Equipment in accordance with the Inspection Equipment shall be used.

1.2 Firing Facilities. Test firing facilities and operating procedures shall be designed by the contractor in conformance with local, state, and Federal regulations and suitable for carrying out prescribed firing tests with safety of operating and visiting personnel. Copies of these contractor designs shall be forwarded to the contracting officer.

1.3 Firing Stand. A Government approved firing stand simulating shoulder firing shall be used.

1.4 Timing Gage. A Government approved timing gage shall be used for measurement of cyclic rate of fire.

1.5 Ammunition. Cartridges for this test shall be Government standard M193 5.56mm ball cartridges in accordance with MIL-C-9963.

2.0 Test Procedure.

2.1 Cleaning and Lubrication. The rifles shall be cleaned and lubricated as specified below at the beginning of the test and at the end of every 10 cycles thereafter. No other cleaning and lubrication shall be performed during the test. At the close of each day's firing the rifle shall be protected against corrosion.

2.1.1 Lubrication. Rifles shall have been lubricated using lubricant in accordance with MIL-L-46000 and the following procedure:

2.1.1.1 Apply a light coat of oil to all surfaces of the bolt carrier group. Apply one drop of oil in each hole on the right side of the bolt carrier and in the open end of the bolt carrier key. (Do not apply excessive oil in the bolt firing pin recess. Excessive oil in this area may contribute to a light struck primer or failure to fire.)

2.1.2 Cleaning. Rifles shall be cleaned with a cleaning solvent in accordance with MIL-C-372 and the following procedure.

2.1.2.1 Barrel. Brush bore thoroughly with a brush soaked in cleaning solvent. Brush the bore from the chamber to the muzzle using straight through strokes. Do not reverse direction of brush until it extends beyond the muzzle. Continue brushing until the bore is covered with solvent. Dry the bore by pushing clean dry patches through the bore. Continue until the patch comes out clean and dry. Clean dry compressed air may be used for preliminary drying.

2.1.2.2 Barrel Chamber. Insert the cleaning rod section and chamber brush that has been dipped in cleaning solvent into the chamber and use reciprocating plunge strokes and rotational, 360° motions. Dry chamber with cleaning swabs.

2.1.2.3 Barrel Extension. Using a small bristle brush that has been dipped in cleaning solvent, clean the locking lugs in the barrel extension. Remove excess cleaning solvent.

2.1.2.4 Bolt Carrier Group. With the exception of the Bolt Carrier Key, Bolt Rings, Extractor Spring, and the Ejector, disassembly all parts, wash these parts in cleaning solvent and remove all carbon deposits. Particular attention should be given to the areas under the face of the extractor and behind the three rings on the bolt. Clean the gas key hole with a worn bore brush that has been dipped in cleaning solvent by rotating the brush clockwise (repeat several times until clean). Remove excess cleaning solvent.

2.1.2.5 Upper Receiver. Clean with cleaning solvent and remove all powder fouling. Clean the protruding gas tube using a bore brush attached to a section of the cleaning rod. Saturate the brush with cleaning solvent. (Do not use any type of abrasive material to clean the gas tube.) Remove excess cleaning solvent.

2.1.2.6 Lower Receiver. Remove all carbon residue from lower receiver group assembly using cleaning solvent. Drain excess solvent from lower receiver cavity and dry.

2.2 Magazines. The twelve magazines used with each rifle shall be numbered and shall be used in rotation during this test. Magazines shall be fully loaded for each use.

2.3 Measurements. The following measurements shall be made during this test:

2.3.1 Headspace. Headspace shall be measured and recorded at the beginning of the test and at the completion of the 60th cycle. After the 60th cycle, the headspace shall not be more than .0028 inch greater than the initial measurement and shall not exceed .0024 inch over maximum.

2.3.2 Cyclic Rate of Fire. The cyclic rate of fire shall be measured and recorded during the 20 round automatic burst firing during the first cycle and every 10th cycle thereafter.

2.4 Sequence of Firing. Firing shall be accomplished in 100 round cycles for a total of 60 cycles. Each cycle shall be as follows:

- a. Twenty rounds automatic (in bursts of approximately five rounds each).
- b. Twenty rounds automatic (in one burst).
- c. Twenty rounds semi-automatic (at a rate of ten to thirty rounds per minute).
- d. Twenty rounds automatic (in bursts of approximately five rounds each).

e. Twenty rounds semi-automatic (at a rate of ten to thirty rounds per minute).

f. Cool the barrel to the point that it is capable of being held by the bare hand. Supplemental cooling is permissible in the hand guard area.

2.5 During the 20th and 40th cycles, the semi-automatic firing shall be conducted outside the firing stand by firing the rifle held in the hands not touching the shoulder and without restraining the normal recoil of the rifle.

2.6 In the event of a failure of the bolt to lock, the forward assist assembly shall be operated.

2.7 During semi-automatic firing, rifles shall be checked to assure that no doubling occurs (i. e., two shots fired with a single trigger pull).

2.8 During the interrupted burst firing, rifles shall be checked to assure that firing stops immediately when the trigger is released (uncontrolled fire shall be recorded as a malfunction).

2.9 Malfunctions attributable solely to ammunition defects, as verified by the government representative, shall not be counted against the rifle; however, such malfunctions shall be recorded.

2.10 No parts shall be altered and only parts broken, or worn to the extent that they are unserviceable shall be replaced. The contractor shall provide replacement parts as required to complete the test at no additional cost to the Government.

3.0 Analysis. A failure analysis of each unserviceable part shall be made to determine the cause of failure.

#### 4.0 Recording of Data.

4.1 The following data shall be recorded:

4.1.1 Inspection lot number.

4.1.2 Rifle serial numbers.

4.1.3 Each malfunction and unserviceable part:

a. Rifle round at which it occurred.

b. Magazine round at which it occurred.

c. Type of firing (automatic or semi-automatic).

d. Class of malfunction:

(1) Class I: Immediately clearable (clearable by gunner through operation of charging handle, removal of magazine or manually removing round without aid of tools or equipment).

(2) Class II: Clearable by gunner with available equipment. (Basic Issue Items)

(3) Class III: Not clearable by gunner.

4.1.4. Ammunition: Not a number.

4.1.5 Headspace measurement.

4.1.6 Each rate of fire measurement with identification of which cycle.

4.1.7 Each ammunition defect.

4.1.8 The cause of each rifle failure.

4.1.9 If applicable, cause(s) of test failure.

5.0 Definitions.

5.1 Malfunctions.

5.1.1 Failure of Bolt to Lock. Failure of the bolt to lock is defined as failure of the bolt to fully close and rotate to the locked position in the barrel extension.

5.1.2 Failure of Forward Assist Assembly to Assist Bolt Closure. Failure of forward assist assembly to assist bolt closure is defined as failure of the pawl of the forward assist assembly to engage or remain engaged with the bolt carrier serrations during manual attempt to lock the bolt, when the bolt fails to lock on return to the battery position.

5.1.3 Failure to Fire. Failure to fire is defined as a failure of the rifle to fire the cartridge, when the cartridge has been fully chambered; bolt has been locked in the battery position, and the trigger has been pulled.

5.1.4 Failure to Feed (From Magazine). Failure to feed (from magazine) is defined as a failure of the bolt to completely strip the next round from the magazine.

5.1.5 Failure to Eject. Failure to eject is defined as a failure of the rifle to eject a round from the rifle, when the cartridge has been fired and the cartridge case has been completely extracted from the chamber.

5.1.6 Failure to Chamber. Failure to chamber is defined as a failure of the rifle to chamber a cartridge that has been completely stripped from the magazine.

5.1.7 Failure to Extract. Failure to extract is defined as a failure of the rifle to remove a cartridge case or unfired cartridge from the chamber.

5.1.8 Bolt Fails/Hold Rear. Bolt fails to hold to the rear is defined as failure of the bolt to remain in the rearward position after the last round in the magazine has been fired.

5.2 Unserviceable Part. An unserviceable part is one that causes malfunction of the rifle or impairs the safety of the user.

### 5.3 Malfunction Causes.

5.3.1 NON-SERIOUS. A rifle non-conformance that caused Class I type malfunction(s).

5.3.2 SERIOUS. A rifle non-conformance that caused Class II or Class III type malfunction(s).

5.4 PREVALENT. Lot condition shall be considered prevalent when the sample does not meet the acceptance criteria of MIL-STD-105D, General Inspection Level II, Table 11A, at an Acceptable Quality Level of 0.65.

## 6.0 Inspection Lots of Rifles Failing the Endurance Test.

6.1 Defer further submission of product until the following have been accomplished and the subsequent resubmittal for endurance testing, as specified in Table IV, has been successfully completed.

6.1.1 Examine the non-conforming rifle(s) by performing a dimensional, physical and visual examination, as required, of the rifle and magazine component that are suspected to be the cause of the malfunction.

6.2 In the event the cause of the malfunction cannot be determined, the Contractor shall provide the Government representative with objective evidence of the results of this analysis. Upon concurrence of the Government representative, the Contractor shall retest an additional sample of four rifles for the endurance test requirements. Failure of the additional four rifles to pass endurance test requirements shall be reason for the Contractor to determine failure cause. If cause of retest failure cannot be determined, technical assistance shall be requested through normal contractual channels.

6.3 In the event the cause of the malfunction can be determined, the Contractor shall make a determination as to the seriousness of the cause. The Contractor, in addition, shall provide the Government representative with objective evidence of his determination.

6.3.1 When malfunction cause is classified as non-serious, as verified by the Government representative, the Government representative shall select, from the represented lot, an additional sample per MIL-STD-105D, General Inspection Level II, Table IIA, at an Acceptable Quality Level of 0.65. This sample shall then be inspected by the Contractor for the rifle non-conformance determined to be the cause.

6.3.1.1 When the additional sample reveals prevalence of the rifle non-conformance, the Contractor shall examine and correct all rifle in the lot and institute corrective action in the Manufacturing processes and associated quality control procedures to preclude recurrence of the cause and to assure that materiel containing similar defects is purged from the prime and/or vendor facilities.

The contractor, upon completion of the preceding, shall resubmit the reconditioned lot for the endurance test as specified in Table IV.

6.3.1.2 Lots which have been screened shall be reconditioned by the Contractor prior to resubmittal for endurance testing specified in Table IV. Rifles reconditioned by part(s) replacement shall be retested in accordance with Table III prior to resubmittal for endurance testing.

6.3.1.3 When the additional sample does not show prevalence of a rifle non-conformance, the Government representative shall select a second sample of four rifles for the endurance test as specified in Table IV.

6.3.2 When malfunction cause is classified as serious, the Contractor shall examine and correct all rifles in the lot and institute corrective action in the manufacturing processes and associated quality control procedures to preclude recurrence of the cause and to assure that materiel containing similar defects is purged from the prime and/or vendor facilities. The Contractor, upon completion of the preceding, shall resubmit the reconditioned lot for the endurance test as specified in Table IV.

6.3.3 Upon identification of the cause of failure, acceptance of product may be resumed on those components (repair parts) which have been determined to meet contract requirements and did not contribute to the failure.

7.0 When five successive inspection lots meet the requirements, the sample shall be selected from groups of five consecutive lots or a week's production, whichever is greater. If rejection of a group of five lots (or more) occurs due to an identifiable serious malfunction cause, to an identifiable non-serious malfunction cause which is prevalent in the lot, or failure of a retested lot, the inspection lot size of 1000 shall be reinstated and the above procedure repeated in returning to the five lot (or larger) group.

## Rifle and Repair Part Interchangeability Test

### 1.0 Equipment.

1.1 Equipment required to conduct pre-interchange and post interchange tests shall be as specified in the applicable appendix.

1.2 Five rifles which have met the requirements of Table III, firing pin indent tests, and requirements of paragraph 5.0 of Appendix J shall be used for the repair part interchangeability test.

### 2.1 Interchange of Rifles.

#### 2.1.1 Pre-interchange of Parts.

2.1.1.1 The firing pin indent of each rifle shall be measured in accordance with Appendix F.

2.1.1.2 Measure and record cyclic rate of fire for each rifle prior to the interchange of parts.

2.1.2 Interchange of parts shall be accomplished by dividing the parts of each rifle into 10 groups of mating parts as shown below and distributing the groups into 10 different trays until each tray contains a complete rifle. Groups of parts from rifle number 1 shall be taken in order and placed in trays 1 through 10; groups of parts from rifle number 2 shall be taken in order and placed in trays 2 through 10 to 1; groups of parts from rifle number 3 shall be taken in order and placed in trays 3 through 10 to 2, etc. The rifles shall be reassembled using only those parts which are in the same tray.

#### 2.1.3 Post Interchange of Parts.

2.1.3.1 The headspace, firing pin indent, trigger pull, function, (including cyclic rate of fire) and accuracy tests specified in Appendixes D, F, E, B, and C respectively shall be conducted on the ten rifles.

### 2.2 Repair Part Interchangeability Test

2.2.1 Interchange. The five rifles shall be disassembled as necessary and then reassembled using the concurrent repair parts. No hand refinement shall be permitted during interchange of parts.

2.2.2 Post Interchange. A function firing test (including cyclic rate of fire) specified in Appendix B shall be performed on rifles when the following repair parts are interchanged:

Receiver - Upper (62306 for M16 or 62278 for M16A1)	Ejector & Safety Detent Spring (61569)
Magazine Catch Spring (61759)	Trigger and Hammer Pin (61654 (2)
Trigger (61955)	Spring, Disconnect (61925)
Bolt (61538) and remaining parts	Bolt, Cam Pin (61704)
Trigger Spring (61657)	Bolt, Catch (62301)
Magazine Catch (61604)	Buffer Assembly (62339)
Disconnect (61918)	Firing Pin (62294)
Ejector (61564)	Bolt Catch Spring (62177)
Gas Tube Assembly (61645)	Hammer, Spring (61697)
Hammer Detail Assembly (62317)	Safety (61959)
Flash Suppressor (62348)	Key (61547)
Bolt Catch Plunger (62178)	Extractor (61562 w/Spring (65168)
Barrel & Sight Assembly (62516) & remaining parts	Automatic Sear Assembly (61622)
Extractor Pin (61563)	Action Spring (61581)
	Bolt Carrier (62274)

### 3.0 Interplant Interchangeability Test.

3.1 Rifles to be subjected to the interplant interchangeability test shall be given preliminary hand functioning to assure proper operation before parts are disassembled from the rifle. (Reference Paragraph 6.1 Ordering Data)

### 4.0 Recording of Data.

4.1 The following data shall be recorded:

4.1.1 Inspection lot number.

4.1.2 Rifle serial numbers.

4.1.3 All measurements required by Appendixes B, C, D, E, and F.

4.1.4 Cyclic rate of fire before and after interchange of parts.

4.1.5 Failure of any part to interchange.

4.1.6 Any damaged part that was replaced.

### 5.0 Groups of Nonmating Parts.

#### Group I

Takedown Pin Detent (61698)  
Receiver - Upper (62306 for M16  
or 62278 for M16A1)

#### Group II

Lower Receiver (62222), Receiver  
Extension (61574) with Retainer  
Buffer (61582) and Spring, Buffer  
Retainer (61694)  
Rear Sight Detent Spring (61754)

Group I

\*Rear Sight Windage Drum Pin  
(95101)

Magazine Catch Spring (61759)  
Trigger (61955)  
\*Socket Head Cap Screw (Key)(92201)  
Front Sight Post (61706)

Group III

Bolt (61538) w/Bolt Rings (61540, 3 pcs)  
Ejection Port Cover Pin (61658)  
and \*Snap Ring (90402)  
Front Sight Detent (61705)  
\*Trigger Guard Pivot Pin (95106)  
Trigger Spring (61657)  
Takedown Pin (61555)  
Magazine Catch Button (62032)  
Barrel Nut (61902)

Group V

Butt Stock Assembly Complete (62302)  
Ejection Port Cover Spring (61518)  
Hand Guard Slip Ring Spring Assy (61962)  
Front Swivel (62280)  
\*Ejector Pin (95102)  
Magazine Catch (61604)  
Disconnect (62334)  
Plunger Assembly (62265 for M16A1 only)

Group VII

Ejector (61764)  
Rear Sight Spring (61703)  
\*Pistol Grip Screw (92701)  
Gas Tube Assembly (61645)  
Hammer Detail Assembly (62317)  
Flash Suppressor (62348)  
Firing Pin Retaining Pin (62335)  
Bolt Catch Plunger (62178)  
Pawl (62269 for M16A1 only)

Group II

Barrel & Sight Assembly (Barrel:  
62181; Barrel Extension 61575,  
Barrel Indexing Pin 61571, Front  
Sight 62063, Taper Pin 62085(2),  
Hand Guard Cap 62037).  
Extractor Pin (61553)  
Butt Cap Screw (92501)  
\*Lockwasher (90001)  
Ejection Port Cover Assy (62112)

Group IV

Takedown Pin Detent Spring (61692)  
Bolt Carrier (62294)  
Hand Guard Slip Ring (61901)  
Ejector & Safety Detent Spring  
(61559)  
Trigger and Hammer Pin (61694) (2)  
Front Sight Detent Spring (61709)

Group VI

Rear Sight (61700)  
\*Hand Guard Snap Ring (90403)  
Spring, Disconnect (61925)  
\*Front Swivel Pin (95103)  
Bolt, Cam Pin (61704)  
Bolt, Catch (62301)  
Pistol Grip (62194)  
Buffer Assembly (62339)  
\*Pawl Pivot Pin (95113 for M16A1  
only)

Group VIII

Receiver Pivot Pin (62221)  
Firing Pin (62294)  
Rear Sight Windage Screw (61702)  
\*Gas Tube Pin (95108)  
Hand Guard Assembly, L.H. (62195)  
Flash Suppressor, Lock Washer (62126)  
Bolt Catch Spring (62177)  
Automatic Sear Pin (61615)  
Pawl Detent (62270 for M16A1 only)

Group IX

Rear Sight Windage Drum (61703)  
 Charging Handle Assembly (62290)  
 \*Bolt Catch Pin (95105)  
 Hammer, Spring (61697)  
 Safety (61959)  
 Bolt Spring (50381 for M16A1 only)  
 Key (61547)

Group X

Extractor (61562) w/Spring (61568)  
 Rear Sight Detent (61755)  
 Hand Guard Assembly, R.H. (62198)  
 Trigger Guard Assembly (61970)  
 Automatic Sear Assembly (61622)  
 Action Spring (61581)  
 Safety, Detent (61785)  
 Plunger Spring (62271 for M16A1 only)

\*In the event that these parts are damaged during disassembly, they shall be replaced without penalty to the Interchangeability Test.

6.0 Failure of Interchangeability Test6.1 Rifle

6.1.1 Failure of parts to reassemble properly during parts interchange or failure of any rifle to meet the headspace, firing pin indent, trigger pull, functioning, or accuracy requirements shall be cause for selection of an additional sample of rifles from the represented inspection lot to determine the prevalence of a similar defect. The sample shall consist of 20 rifles when the lot size is 1000 and 50 rifles when the five lot (or larger) group is represented.

6.1.2 In the event a defect is not found, the non-conforming rifles shall be corrected and the lot shall be accepted.

6.1.3 In the event that a defect is found, the inspection lot shall be rejected and the contractor shall examine and correct all rifles in the represented lot to ensure that material containing the defects or similar defects revealed during testing are purged from the represented lot and are not presented to the Government for acceptance. The contractor shall also correct the applicable production and inspection processes and procedures to prevent the recurrence of defects revealed during the test.

6.1.4 Rifles failing to meet the targeting requirements during the accuracy test due to misalignment of sights shall be corrected by the contractor to meet the requirements before they are returned to the represented lot for final acceptance.

6.2 Repair Parts. Failure of any repair part to meet the interchangeability requirements shall cause the contractor to determine the cause of failure and inspect the represented lot of parts to determine the prevalence of a similar defect. Sampling shall be in accordance with MIL-STD-105, using Inspection Level II with an AQL of 0.65. Upon completion of inspection, the lot shall be reconditioned as necessary prior to submitting the lot for retesting. The contractor shall evaluate and correct the applicable production and inspection processes and procedures to prevent recurrence of the defects revealed during the testing.

APPENDIX J  
FINAL EXAMINATION RIFLES

SAPD-253F

1.0 Examination Procedure

1.1 Final examination of rifles shall be performed after completion of all testing and just prior to preservation and packaging.

1.2 Unless otherwise specified herein, each rifle shall be examined for the 93 defects listed in paragraph 5.0 of this Appendix. All non-conforming rifles shall be rejected.

2.0 Rejected Rifles

2.1 In the event any rifle is rejected, the non-conforming rifle shall be corrected and the corrective action shall be recorded.

2.1.1 The rifle shall be reexamined for all defects listed in the applicable groups in Paragraph 5.0 of this Appendix.

2.1.2 When any of the following parts are replaced to correct a non-conforming rifle, the rifles shall be resubmitted to the function firing test and/or targeting and accuracy test as indicated by asterisks.

	<u>Function Firing Test</u>	<u>Target &amp; Accuracy Test</u>
1. Barrel Assembly	*	*
2. Gas Tube Assembly	*	
3. Front Sight Assembly	*	*
4. Bolt Carrier Assembly-Carrier & Key	*	
5. Bolt	*	
6. Extractor	*	
7. Extractor Spring	*	
8. Ejector	*	
9. Ejector Spring	*	
10. Firing Pin	*	
11. Bolt Catch	*	
12. Bolt Catch Spring	*	
13. Disconnect	*	
14. Disconnect Spring	*	
15. Hammer Assembly	*	
16. Automatic Sear Assembly	*	
17. Buffer Assembly	*	
18. Action Spring	*	
19. Safety Selector	*	
20. Rear Sight		*
21. Flash Suppressor & Lockwasher		*
22. Lower Receiver Assembly	*	*
23. Upper Receiver Assembly	*	*
24. Front Sight Post		*

3.0 Recording of Data

3.1 The following data shall be recorded:

3.1.1 Number of rifles examined and number of rifles rejected per shift.

3.1.2 Examination date.

3.1.3 For each rejected rifle record:

- a. Serial number
- b. Reason for rejection

4.0 Process Control Criteria

4.1 The process average for total rifles examined during one shift shall not exceed the following:

- a. Major A Defect - 1.0%
- b. Major B Defect - 4.0%
- c. Minor Defect - 8.0%

If the process average is exceeded for any one of the defect categories, a quantity of rifles submitted for examination during the first half of the succeeding shift shall be reexamined for the applicable defect category as specified in paragraph 5.0 of this Appendix.

4.1.1 The quantity of rifles to be reexamined shall be in accordance with MIL-STD-105D, Level II. The quantity of rifles tested during the prior shift shall be considered the lot size. An AQL Value shall be assigned as follows:

- a. Major A Defect - 0.15%
- b. Major B Defect - 0.25%
- c. Minor Defect - 2.5 %

4.1.2 In the event the reject number specified in Table IIA of MIL-STD-105D is reached during the reexamination specified in 4.1.1 for a group of characteristics, the contractor shall:

- a. Record the reason for rejection
- b. Correct the non-conforming rifles
- c. Evaluate and correct the applicable production and inspection processes and procedures to prevent recurrence of significant or repetitive defects revealed during final examination.

d. Reexamine all rifles 100% for the remainder of shift for the defect category failing to meet the assigned process average.

4.1.3 In the event the reject number specified in Table IIA of MIL-STD-105D is not reached during reexamination specified in 3.1.1, the rifles in the sample and all subsequent rifles submitted during the shift shall be examined 100% as specified in 1.1 and 1.2.

## 5.0 Classification of Defects

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	MANUAL			
	<u>Lower Receiver, Pistol Grip, and Stock Assembly Group:</u>			
1.	Failure of upper receiver to pivot freely on pivot pin when takedown pin is withdrawn to the stop position	I	X	
2.	Failure of lower receiver to readily disassemble from upper receiver when pivot pin is withdrawn to the stop position	I		X
	VISUAL			
	<u>Automatic Sear Group:</u>			
3.	Burrs, cracks or mutilation of hammer catch surface and bolt carrier contact for the sear	I	X	
4.	Mutilation, distortion or improper assembly of sear spring	I		X
	MANUAL			
	<u>Automatic Sear Group:</u>			
5.	Failure of sear group to return to rest position under spring action	I	X	
	VISUAL			
	<u>Hammer Group:</u>			
6.	Burrs, cracks or mutilation of trigger disconnect, and automatic sear catch surfaces	I	X	
7.	Burrs, cracks or mutilation of firing pin striking surface.	I	X	
8.	Mutilation, distortion or improper seating of hammer spring on trigger pin	I	X	
9.	Improperly assembled or missing hammer pin retaining spring.	I	X	
	<u>Trigger Group:</u>			
10.	Burrs, cracks or mutilation of hammer catch surface, and safety contact surface.	I	X	
11.	Mutilation, distortion or improper assembly of trigger spring.	I	X	

MANUAL (cont'd)

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	MANUAL			
	<u>Trigger Group:</u>			
12.	Improper functioning of disconnect due to missing/or deformed disconnect spring.	I ↓	X	
	MANUAL			
	<u>Selector Group:</u>			
13.	Failure of spring loaded detent plunger to positively engage selector lever, when lever is in safe, semi, and automatic position.	A	X	
	VISUAL			
	<u>Selector Group:</u>			
14.	Burrs, cracks, or mutilation of selector lever disconnect and sear contact surfaces.		X	
	MANUAL			
	<u>Bolt Catch Group:</u>			
15.	Failure of catch to pivot upward when lower button is pressed, and failure of catch to return to original position under spring load when pressure of button is released.		X	
	VISUAL			
	<u>Bolt Catch Group:</u>			
16.	Burrs, cracks or mutilation of bolt contact surface.		X	
	MANUAL			
	<u>Trigger Guard Assembly:</u>			
17.	Failure of trigger guard to release, pivot to stop position against pistol grip, retain this position without manual assistance, then return to its locked position and lock.			X

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	<u>MANUAL</u>			
	<u>Buffer Retainer Group:</u>			
18.	Improper spring load action of buffer retainer.	all	X	
	<u>VISUAL</u>			
	<u>Buffer Retainer Group:</u>			
19.	Burrs, cracks or mutilation of buffer retainer.	I		X
	<u>Buffer Group (Remove Buffer &amp; action Spring)</u>			
20.	Burrs, cracks or mutilation of buffer.			X
21.	Distortion or mutilation of action spring.			X
	<u>Pistol Grip:</u>			
22.	Missing lock washer.			X
23.	Cracks or mutilation of pistol grip.			X
	<u>Stock Assembly:</u>			
24.	Cracks or mutilation of stock.			X
25.	Improper assembly of stock.			X
26.	Improper assembly of stock swivel.			X
	<u>Lower Receiver: (Reassemble buffer assembly)</u>			
27.	Burrs, cracks, or mutilation of magazine well and trigger mechanism housing.			X
	<u>MANUAL</u>			
	<u>Charging Handle Assembly:</u>			
28.	Failure of charging handle assembly to have positive latching action to upper receiver during forward travel without manual assist to latch, and to require manual action to unlatch for rearward travel.			X
29.	Failure of charging handle assembly to disassemble from upper receiver without bending.			X

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	VISUAL			
	<u>Charging Handle Assembly:</u>			
30.	Burrs, cracks or mutilation of latch contact surfaces, carrier key engagement surface, and guide surfaces.			X
	<u>Bolt and Bolt Carrier Group:</u> (Disassemble firing pin)			
31.	Burrs, cracks or mutilation of firing pin retaining pin.			X
	<u>Firing Pin:</u>			
32.	Burrs, cracks or mutilation of firing pin striker point.		X	
33.	Pits or erosion of striker point.		X	
	MANUAL			
	<u>Bolt Cam Pin:</u>			
34.	Failure to remove Bolt Cam Pin from bolt carrier without removal of carrier key.		X	
	VISUAL			
	<u>Bolt Cam Pin:</u>			
35.	Burrs, cracks or mutilation of cam pin.		X	
	<u>Extractor:</u>			
36.	Burrs, cracks or mutilation of extractor lips.		X	
	MANUAL			
	<u>Extractor:</u>			
37.	Improper function of extractor spring action.		X	
	<u>Ejector</u>			
38.	Improper function of ejector spring action.		X	

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	VISUAL			
	<u>Ejector:</u>	I		
39.	Burrs, cracks or mutilation of ejector tip.			X
40.	Improper assembly of ejector retaining pin. Both ends must be flush or below bolt surface.			X
	<u>Bolt Rings:</u>			
41.	Mutilated, distorted or improperly positioned bolt rings. (Rings shall not be positioned with slots in line)		X	
	<u>Bolt:</u>			
42.	Burrs, cracks, or mutilation of bolt cartridge face, bearing surfaces, locking lugs or bolt ring slot.		X	
43.	Pits and erosion of bolt face.			X
44.	Missing proof and/or magnetic particle inspection mark.	X	X	
	MANUAL			
	<u>Bolt:</u>			
45.	Failure of firing pin to have free movement when assembled into a bolt.		X	
46.	Missing swedging operation on cam pin hole permitting improper assembly of bolt into bolt carrier.		X	
	<u>Bolt Carrier and Key Assembly:</u>			
47.	Failure of key to be properly seated on bolt carrier or improper staking of bolt carrier key screws.	X		X
48.	Burrs, cracks or mutilation of key.		X	
49.	Burrs, cracks or mutilation of bolt carrier. (Particular attention should be given to bolt cam area). Reassemble the bolt and carrier group.		X	

## 5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	MEASURE	I		
	<u>Bolt and Bolt Carrier Group:</u>			
50.	Improper firing pin protrusion.	X		
	MANUAL			
	<u>Upper Receiver and Barrel Assembly Group:</u>			
51.	Failure of spring action on slip ring to securely retain handguards to rifle.			X
	VISUAL			
	<u>Handguard L. Hand R. Hand:</u>			
52.	Cracks or mutilation of handguard.			X
	<u>Flash Suppressor:</u>			
53.	Burrs, cracks or mutilation of flash suppressor.			X
	MANUAL			
	<u>Flash Suppressor:</u>			
54.	Failure to securely assemble flash suppressor to rifle.			X
	<u>Front Sight Group:</u>			
55.	Failure to securely assemble front sight to barrel.	II	X	
	<u>Front Swivel:</u>			
56.	Failure to securely assemble front swivel to front sight.	I		X
57.	Failure of front swivel to pivot.			X

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	<u>Front Sight Post Group:</u>			
58.	Failure of front sight post to be positioned flush or not more than 0.030 in below front sight flange after rifle is zeroed. Twenty clicks of downward travel shall remain after zeroing. Rotate sight downward and return to approximate original setting. This inspection may be done during pre-function check in order not to disrupt zero setting obtained during target and accuracy test firing. (see 4.4.7)	ACC on 7	X	
	<u>Front Sight:</u>			
59.	Burrs or deformation of front sight.			X
60.	Illegible marking on front sight.			X
	MANUAL			
	<u>Front Sight:</u>			
<del>61.</del>	Failure to meet approved functional bayonet gages.	Not	X	
	<u>Gas Tube:</u>			
62.	Failure to securely assemble gas tube so there is no relative movement between gas tube and front sight, and gas tube and receiver.	all	X	
	VISUAL			
	<u>Gas Tube:</u>			
63.	Mutilation of gas tube.	I		X
	<u>Barrel Assembly:</u>			
64.	Pockets, rings, bulges or other deformations in bore and/or chamber. Particular attention shall be given flash suppressor shoulder area of bore for rings or bulges.		X	
65.	Burrs, cracks, or mutilation of bolt locking lugs.		X	

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
66.	Missing proof marks, magnetic particle inspection stamp, and chrome chamber marking.  MANUAL  <u>Barrel Assembly:</u>	X	X	
<del>67.</del>	Failure of grenade launching diameter of flash suppressor to meet an approved gage.	Not	X	
<del>68.</del>	Failure of barrel to meet approved "Go" bore plug gages.  VISUAL		X	
	<u>Ejection Port Cover Assembly Group:</u>	I		
69.	Burrs or deformation of cover assembly.			X
70.	Failure of port cover assembly to close and open when rifle is hand cycled.		X	
71.	Improperly assembled port cover assembly spring.  MANUAL			X
	<u>Rear Sight Group:</u>	Ace 7		
72.	Failure of rear sight drum to rotate when spring loaded detent is depressed. Drum shall be capable of rotating six (6) complete revolutions, moving rear sight from extreme left or extreme right. (This examination may be accomplished during the pre-functional check in order not to disrupt the optimum sight setting obtained during the targeting and accuracy firing test.)		X	
73.	Failure of rear sight to pivot to vertical position from normal and long peeps when sight in extreme left or extreme right position. (This examination may be accomplished during the pre-functional check in order not to disrupt the optimum sight setting obtained during the targeting and accuracy firing test.)	11	X	

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
VISUAL				
<u>Rear Sight Group:</u>				
74.	Improper marking on drum.			X
75.	Improper marking on sight.			X
<u>Upper Receiver:</u>				
76.	Burrs, cracks, or deformation of upper receiver.	H	X	
77.	Burrs, cracks, or deformation of bolt carrier contact surfaces on forward assist pawl.			X
MANUAL (M16A1 RIFLE)				
<u>Upper Receiver:</u>				
78.	Failure of forward assist assembly to be depressed and return to extended position under spring action without binding.	H/D		X
79.	Failure of pawl to be depressed and return under spring action without binding.			X
MEASURE				
<u>Rifle Assembly:</u>				
80.	Failure to meet headspace requirement using Government approved gages. (Reassemble upper receiver assembly and bolt assembly groups and examine headspace using Government approved gages. The bolt shall fully lock on minimum plug and shall not lock on maximum plug. Sighting for headspace requirement shall be through magazine opening of upper receiver.)	H		X
VISUAL				
<u>Rifle Assembly:</u>				
81.	Improper assembly of hammer, trigger and sear pins.	H		X

5.0 (Cont'd)

NO.	DEFECTS AND METHOD OF INSPECTION	MAJOR A	MAJOR B	MINOR
	VISUAL AND MANUAL			
	<u>Rifle Assembly:</u>			
	Examine cyclic hand function of rifle using one dummy round in its magazine assembly for the following:			
82.	Failure of magazine to be securely retained by rifle when magazine is inserted in magazine well.	All tests	X	
83.	Failure of ejection port cover to open when bolt is charged.		X	
84.	Failure of bolt to strip cartridge from magazine and feed cartridge into chamber when bolt returns to battery.		X	
85.	Failure of bolt when charged to extract and eject dummy cartridge and cause follower of magazine to activate bolt catch to retain bolt in rear.		X	
86.	Failure of magazine assembly to be ejected without binding with spring assist from the bolt catch when magazine catch button is depressed.		X	
87.	Failure of bolt to be released when bolt catch button is depressed.		X	
88.	Failure of rifle to meet trigger pull requirements as specified in 3.3.3.		X	
89.	Missing or illegible receiver markings (serial number, manufacturer's identifications, etc.)	2/11		X
90.	Fires with selector lever on SAFE (with hammer cocked and selector lever set on "safe" the trigger shall not release the hammer when trigger is pulled).		X	