

MIL-R-45012E

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SUPERSEDING

MIL-R-45012D

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MILITARY SPECIFICATION

RIFLE, 7.62MM: M14

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers one type of 7.62 millimeter (mm) lightweight, air-cooled, gas-operated, magazine-fed, combat rifle designed for semiautomatic or full 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 part of the specification to the extent specified herein.

SPECIFICATIONS

<u>Military</u>		
MIL-P-116	-	Preservation, Methods of.
MIL-W-13855	-	Weapons, Small Arms and Aircraft Armament Subsystems, General Specification for.
MIL-I-45607	-	Inspection Equipment, Acquisition, Maintenance, and Disposition of.
MIL-S-45921	-	Stock, Gun, Shoulder: Fiberglass Reinforced Plastic (Premix)(For Rifle, 7.62MM: M14).

STANDARDS

<u>Military</u>		
MIL-STD-105	-	Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-109	-	Quality Assurance Terms and Definitions.

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DRAWINGS

U.S. Army Weapons Command

F7267000 Rifle, 7.62MM, M14.
 EPL 8413866 - Engineering Parts List - Equipment
 Manufacturer Installed.
 IEL 7314350 - Index of Inspection Equipment Lists.

(Product drawings referenced in this specification are specified on Drawing F7267000 and related assembly drawings; acceptance inspection equipment drawings form a part of Drawing IEL 7314350.)

PUBLICATIONS

U.S. Army Weapons Command

P8413566 Packaging Data Sheet for Rifle, 7.62MM
 M14, W/Equipment.

(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 First article. Requirement for submission of the first article shall be as specified in the contract (see 6.1). The first article sample shall include the pilot pack (see 5.1).

3.2 Materials and construction. Rifles and parts shall conform to the materials and construction requirements specified herein, on Drawing F7267000 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 F7267000 and drawings applicable thereto, and shall be in accordance with the applicable design provisions of MIL-W-13855.

3.3.1 Barrel and receiver assembly. The barrel shall be assembled to the receiver in the position specified on the applicable drawing (see 3.3.18).

3.3.1.1 Barrel. The barrel shall be free of cracks and seams. The chromium plating shall be free of nodules, flaking, pits, stripping, anode burns, and evidence of etched base steel. There shall be no machining, such as honing or grinding, after application of the chromium plating except as maybe required for obtaining the specified headspace and dimensional requirements at the muzzle. Burs and sharp edges shall be removed from chamber edges. Scratches or marks, occurring in a chamber which otherwise meets the surface roughness requirements, shall be permitted provided they do not cause marks on the case of a high-pressure test cartridge fired in the chamber.

3.3.1.2 Cartridge clip guide. The cartridge clip guide shall be fastened securely to the receiver by the spring pin. The cartridge clip guide shall position and retain the clip to allow recharging of the magazine without removing the magazine from the rifle.

3.3.1.3 Connector locking pin. The connector locking pin shall be retained in the receiver by the flared retaining pin and shall move through its full range of travel without binding.

3.3.2 Bedding of receiver and trigger housing. The receiver and the trigger housing shall bear on the stock contact surfaces and shall grip the stock securely.

3.3.3 Bolt assembly and operating rod action. With the firing mechanism, stock, operating rod spring, and operating rod spring guide disassembled from the rifle, and with the connector assembled, the bolt assembly with the operating rod connected shall move of its own weight in either direction through its full range of travel in the receiver when the axis of the rifle is manually changed from the horizontal to the vertical position.

3.3.4 Bolt assembly. The bolt assembly, with the operating rod disconnected, shall move through its full range of travel in the receiver without binding and when in the fully locked (forward) position, the bottom surface of the right hand locking lug shall be capable of seating on the receiver only when light finger pressure is applied. Firing pin protrusion and intrusion shall be as specified on the applicable drawing.

3.3.4.1 Bolt and roller assembly. The bolt roller shall be retained on the bolt by the retaining ring and shall rotate without binding on the bolt shaft,

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3.3.4.2 Ejector. The ejector shall be retained in the bolt by the extractor shank and shall be held in the forward position by the ejector spring. The ejector shall move through its full range of travel under spring action without binding in the bolt and shall eject cartridge cases completely out of the rifle when the rifle is function fired or manually operated.

3.3.4.3 Extractor. The extractor shall be retained in the bolt by the extractor spring and plunger assembly. The extractor shall move through its full range of travel under spring action without binding and shall extract cartridge cases from the barrel when the rifle is function fired or manually operated.

3.3.4.4 Firing pin. The firing pin shall be retained in the bolt by the extractor shank and shall move of its own weight through its full range of travel in the bolt with the bolt axis vertical. The chromium plating of the firing pin shall be free of nodules, flaking, stripping, anode burns, and evidence of etched base steel, except as specified on the applicable drawing.

3.3.5 Bolt stop. The bolt stop shall be retained on the receiver by the spring pin and shall be held in the "down" position by action of the bolt stop spring. The bolt stop shall move through its full range of travel, and when positioned manually or by action of the magazine follower, it shall hold the bolt in the open (rearward) position. The bolt stop shall disengage from the bolt by action of the bolt stop spring when the magazine follower is disengaged and the operating rod is retracted.

3.3.6 Connector assembly. The connector assembly shall be retained on the receiver by the connector locking pin and spring action of the connector plunger and it shall prevent the operating rod handle from popping out of the receiver way.

3.3.7 Flash suppressor. The flash suppressor shall be aligned in accordance with the applicable drawing and shall be fastened securely to the barrel by the flash suppressor nut which in turn shall be fastened securely by a set screw.

3.3.8 Firing mechanism. The firing mechanism shall be capable of assembly to the rifle without the use of tools, and shall be capable of disassembly from the rifle when the trigger-guard is manually unlatched from the trigger housing using a tool simulating a cartridge.

3.3.8.3. Hammer. The hammer shall pivot on the hammer pin through - its full range of travel without binding, and when the hammer is released from the cocked position it shall pivot forward to the stop position on the trigger housing under spring action.

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3.3.8.2 Safety. The safety shall be capable of being manually moved from one position to the other, and shall remain in the position set until reset manually. The safety shall block the trigger and lock the hammer in a position out of contact with the trigger when the hammer is cocked and the safety is moved to the safe (rearward) position; and when the safety is moved to the "fire" (forward) position, the hammer shall release when the trigger is pulled.

3.3.8.3 Sear. When the trigger is retained rearward and the hammer is retracted the sear shall engage and hold the hammer until the trigger is released and allowed to move forward.

3.3.8.4 Trigger. The trigger hooks shall hold the hammer in the cocked position the trigger is pulled, After partial or completed trigger pull the trigger shall return to its normal forward position under spring action.

3.3.8.5 Trigger guard. The trigger guard shall be capable of being latched to and unlatched from the housing, When unlatched and rotated the trigger guard shall be capable of cocking the hammer.

3.3.9 Gas cylinder group. The gas cylinder shall be securely retained on the barrel by the gas cylinder lock and plug. The gas piston shall move of its own weight in either direction through its full range of travel in the gas cylinder with the rifle axis vertical. The gas cylinder plug shall be assembled with the torque specified on the applicable drawing. The gas cutoff valve shall rotate from one position to the other only when manually pressed inward and rotated, and when indexed and released shall return to the outward Position by spring action.

3.3.10 Handguard assembly. The handguard shall be securely retained on the barrel by the rear handguard band and the front band.

3.3.11 Magazine assembly and magazine latch. The magazine follower shall function through its full range of travel under spring action without binding. When the last cartridge from the magazine has been fired, the follower shall position the bolt stop to hold the bolt open. The magazine shall assemble to the rifle without manual depression of the magazine latch and shall be retained in the magazine-well of the receiver by the magazine latch and the operating rod spring guide. When the magazine latch is pressed forward, it shall permit manual removal of the magazine from the rifle.

3.3.12 Operating rod guide. The operating rod guide shall be securely retained on the barrel by the spring pin.

3.3.13 Operating rod spring and spring guide. With the magazine assembled to the receivers the operating rod spring shall seat on the operating rod spring guide and not on the receiver.

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3.3.14 Selector. The selector shall rotate from one position to the other when manually pressed inward and rotated, and when indexed and released, shall return to the outward position by spring action and remain in place until reset manually. When the selector is set with the letter "A" facing to the rear, it shall position the sear release and the connector assembly so that the rifle is capable of automatic firing (continuous firing until the trigger is released). When the selector is set with its blank face to the rear, it shall position the sear release and the connector assembly so that the rifle is capable of only semiautomatic firing (single shot with each pull of the trigger).

3.3.15 Selector shaft lock. When the selector shaft lock is used, the rifle shall be capable of only semiautomatic firing; and it shall not be possible to rotate and index the selector shaft.

3.3.16 Sights.

3.3.16.1 Front sight. The front sight shall be capable of lateral adjustment on the tenon of the flash suppressor and when adjusted as specified in 4.5.7.3, shall be fastened securely by the front sight screw.

3.3.16.2 Rear sight assembly. The windage knob and the elevating knob shall function without binding through their full range of travel and shall produce positive retention perceptible by touch for each detent notch when the sight is adjusted manually. The aperture shall function in the base without binding and the rear sight cover shall bear on the aperture when the elevation knob is rotated manually. When the aperture is raised by setting the elevation knob to the 1000 meter position and finger pressure is applied to the rear of the aperture in an upward direction and then released, spring tension of the cover shall return the aperture back to the original 1000 meter position. The windage knob shall fit in the base. The rear sight shall be adjusted as specified in 4.5.7.3. The aperture shall not move more than 0.002 inch after being elevated 45 clicks.

3.3.17 Stock assembly.

* 3.3.17.1 Butt plate assembly with shoulder rest. The butt plate assembly with shoulder rest shall be securely retained on the stock by the butt plate screws so that there shall be no metal overhanging the stock. The butt plate cap shall be retained in the opened position by the action of the butt plate plunger and spring and shall be retained in the closed and locked position by the plunger operated catch. The butt plate elongated contour shall align with the accessory storage holes. The shoulder rest plate shall be retained in the opened or closed position by action of the ball and lock spring. When the shoulder rest plate is in the closed position it shall seat against the butt plate.

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3.3.17.2 Ferrule. The ferrule shall be bonded to the stock in accordance with the applicable drawing.

* 3.3.17.3 Plastic stock. The plastic stock shall be in accordance with the applicable drawings and MIL-S-45921, and shall be capable of being securely attached to the mating assembly of the rifle.

3.3.17.4 Swivels. The butt swivel shall be retained securely to the stock by the long butt plate screw and the sling swivel assembly shall be retained securely on the stock by the rivets, except that the swivel loop shall be capable of being rotated using light finger pressure.

3.3.18 Tightness of draw of barrel and receiver assembly. When the barrel assembly is drawn up in the receiver to the position specified on the applicable drawing, the draw shall not be broken by a disassembly torque of 80 pound-feet when tested as specified in 4.4.3.1 and 4.5.1.

3.3.19 Headspace. The headspace shall be as specified on the applicable drawing when tested as specified in 4.4.3.2 and 4.5.2.

3.3.20 Firing pin indent. The firing pin indent shall not be less than 0.016 inch and it shall not be off center more than one-half the diameter of the firing pin point when tested as specified in 4.4.3.3 and 4.5.3.

3.3.21 Trigger pull. The trigger pull shall be free of creep and shall be greater than 5.5 pounds but shall not exceed 7.5 pounds when tested as specified in 4.4.3.3 and 4.5.4, Creep shall be interpreted to mean any rough movement between the time the trigger slack is taken up and the hammer is released.

3.3.22 High-pressure resistance. Rifles shall withstand the high-pressure resistance test (proof firing) when tested as specified in 4.4.3.4 and 4.5.5. Parts shall be free of cracks, seams, and other injurious defects after proof firing as evidenced by visual and magnetic particle inspection.

3.3.23 Functioning. Rifles shall operate without malfunctions or unserviceable parts and the cyclic rate of fire for a 10-round continuous burst shall be within 650 to 780 rounds per minute, and the ejection pattern shall be from 15° to 90° (12:30 to 3:00 o'clock to the right of the longitudinal axis of the rifle) when tested as specified in 4.4.3.4 and 4.5.6.

3.3.24 Targeting and accuracy.

3.3.24.1 Targeting. Ten rounds fired from the rifle at a range of 100 yards shall be within the targeting area specified on Drawing C11686842 when tested as specified in 4.4.3.4, 4.5.7.3 and 4.5.7.4.

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3.3.24.2 Accuracy.

3.3.24.2.1 Process qualification rifles. The accuracy of process qualification rifles shall be such that when fired 10-shot targets at a range of 100 yards, the average figure of merit (FM) shall not be more than 3.2 inches and the standard deviation shall not be more than 0.6 inch when tested as specified in 4.5.7.1 and 4.5.7.4 using selected lots of ammunition (see 4.4.4.2).

3.3.24.2.2 Individual rifle acceptance. The accuracy of individual rifles shall be such that when fired 10-shot targets at a range of 100 yards, the figure of merit (FM) shall be not more than 3.2 inches when tested as specified in 4.5.7.2 and 4.5.7.4, using selected lots of ammunition (see 4.4.4.2). When using unselected lots of ammunition (see 4.4.4.2), the accuracy of individual rifles shall be in accordance with the acceptance criteria established by firing the ammunition to be used for testing in the process qualification rifles (see 4.4.3.4, 4.5.7.2 and 4.5.7.4).

3.3.25 Interchangeability. Unless otherwise specified on the drawings, all parts shall be interchangeable. (In normal assembly operations there shall be no objections interposed to preferential assembly of parts provided that all parts are dimensionally acceptable.) Rifles and repair parts shall be capable of meeting the interchangeability tests specified in 4.4.3.5 and 4.5.8.

3.3.26 Endurance. Rifles shall be capable of passing a 6,000 round endurance test as specified in 4.4.3.6 and 4.5.9 with not more than the number of malfunctions and unserviceable parts allowed in Table I, and the average cyclic rate of fire for the entire test shall be within the limits specified in 3.3.23.

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 the workmanship requirements of MD-W-13855.

TABLE I. Malfunctions and unserviceable parts

Code	Malfunctions	Number permitted in the 6,000-round endurance test
FBL	Failure of bolt to lock	3
ESO	Failure of bolt stop to hold bolt open	1
FEJ	Failure to eject cartridge case	4
FEV	Failure to feed (cartridge visible)	4
FFNV	Failure to feed (cartridge not visible)	3
FFS	Failure to fire semiautomatic (single rounds)	3
LB	Light blow	3
PP	Punctured primer	1
	Total malfunctions - above malfunctions combined	12

* Code	Unserviceable Parts ¹	Number permitted in the 6,000-round endurance test	
		First 3,000 rounds	Second 3,000 rounds
EJ	Ejector	0	1
EJS	Ejector spring	0	1
EX	Extractor	0	1
EXS	Extractor spring	0	1
FP	Firing pin	0	1
RR	Retaining ring	0	1
	Total unserviceable parts - above unserviceable parts combined	0	2

¹When malfunctions are traceable to particular parts it is permissible to replace such parts and record them as unserviceable, subject to limitations of Table I. When it is definitely established 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. An unserviceable part is one that causes malfunctions or impairs the safety of the weapon. Malfunctions attributable to defective ammunition shall not be counted against the rifle being tested, however, such malfunctions shall be recorded

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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 specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Quality assurance terms and definitions. Quality assurance terms and definitions used herein are in accordance with MIL-STD-109.

* 4.3 First article inspection. First article sample shall be selected from early production and submitted for testing in accordance with the contract requirements (see 6.1). The sample shall be representative of production processes to be used during quantity production. The first article sample shall be subjected to all inspection and tests specified herein, and such other inspection as necessary to determine that all the requirements of the contract have been met.

* 4.4 Quality conformance inspection.

4.4.1 Inspection lot.

* 4.4.1.1 Rifles. The number of rifles in an inspection lot shall be either 500 or one month's production, whichever is smaller. Rifles shall be assembled from lots of component parts that have met all inspection requirements specified herein. Endurance test lot size shall be as specified in 4.4.3.6.1.

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

4.4.2 Examination.

4.4.2.1 Component parts and concurrent repair parts. Examination of component parts and concurrent repair parts shall be performed in accordance with the criteria specified in the contract (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.

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4.4.2.2 Rifles. Final examination of each rifle shall be performed after completion of all testing and just prior to preservation and packaging. Each rifle shall be examined as specified below. Each step in the examination shall include a visual examination for proper cleaning and presence of the specified protective coating and to determine the general quality, completeness of manufacture, assembly, clarity and legibility of markings, and workmanship. Rifles failing to meet the requirements shall be rejected.

4.4.2.2.1 Magazine assembly and magazine latch. Manually examine the function of the magazine assembly and magazine latch to determine compliance with 3.3.11.

4.4.2.2.2 Bedding of receiver and trigger housing.

(a) Visually and manually examine the bedding of the receiver and trigger housing to determine compliance with 3.3.2.

(b) Visually examine to assure that the periphery of the back end of the receiver is seated on the stock (see 3.3.2).

4.4.2.2.3 Bolt stop. Visually and manually examine the bolt stop to determine compliance with 3.3.5.

4.4.2.2.4 Firing mechanism. (The trigger guard should be retained in the latched position for examination of the safety, hammer, sear, and trigger functions.)

(a) Manually examine for ability of the firing mechanism to be disassembled from the rifle (see 3.3.8).

(b) Visually examine the firing mechanism to assure proper assembly and freedom from broken or mutilated components.

4.4.2.2.4.1 Safety. Manually examine the function of the safety to determine compliance with 3.3.8.2.

4.4.2.2.4.2 Hammer. Manually examine the function of the hammer to determine compliance 3.3.8.1.

4.4.2.2.4.3 Sear. Manually examine the function of the sear to determine compliance with 3.3.8.3.

4.4.2.2.4.4 Trigger. Manually examine the function of the trigger to determine compliance with 3.3.8.4.

4.4.2.2.4.5 Trigger guard. Manually examine the function of the trigger guard to determine compliance with 3.3.8.5.

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4.4.2.2.5 Stock assembly. Disassemble the stock assembly from the rifle and visually examine to assure freedom from cracks, mutilations, and injurious defects

4.4.2.2.5.1 Plate assembly with shoulder rest.

(a) Visually and manually examine the plate assembly with shoulder rest to determine compliance with 3.3.17.1

(b) Visually and manually examine the butt plate to assure the metal does not overhang the stock (see 3.3.17.1).

(c) Visually and manually examine the butt plate elongated contour opening (with the shoulder rest plate and the cap in the opened position) to assure for proper alignment of the accessory storage holes using gage B7271641 (see 3.3.17.1).

(d) Visually and manually examine the shoulder rest plate (with the cap and the shoulder rest plate in the closed position) to assure it seats against the butt plate (see 3.3.17.1).

4.4.2.2.5.2 Ferrule. Visually and manually examine the ferrule to determine compliance 3.3.17.2 (see Drawing F11686427).

4.4.2.2.5.3 Swivels. Visually and manually examine the swivels to determine compliance 3.3.17.4.

4.4.2.2.6 Operating rod spring and spring guide.

(a) With the stock assembly disassembled from the rifles visually and manually examine the operating rod spring and spring guide to determine compliance with 3.3.13.

(b) Disassemble the spring and guide and visually examine the spring to assure freedom from mutilations and cracked or broken ends.

(c) Visually examine the spring guide to assure freedom from burrs and mutilations.

4.4.2.2.7 Bolt assembly and operating rod action. Manually examine the action of the bolt assembly and operating rod to determine compliance with 3.3.3.

4.4.2.2.8 Connector assembly.

(a) Manually examine the connector assembly to determine compliance with 3.3.6.

(b) Disassemble the connector assembly and visually examine to assure proper assembly and freedom from broken or mutilated parts.

4.1.2.2.9 Operating rod.

(a) Disassemble the operating rod and visually examine to assure freedom from burs and mutilations in the bolt roller cam surfaces and on the receiver way lugs.

(b) Manually examine the operating rod to assure secure welding of the tube to the handle (see Drawing F7267064 - two piece design).

4.4.2.2.10 Bolt assembly.

(a) Manually examine the bolt assembly to determine compliance with 3.3.4.

(b) Disassemble the bolt assembly from the receiver and visually examine to assure freedom from burs, cracks, and deformations on the bolt lugs.

(c) Examine firing pin protrusion and intrusion using inspection equipment in accordance with Drawing D7796327 (see 3.3.4 and Drawing C7790187).

4.4.2.2.10.1 Bolt and roller assembly.

(a) Manually examine the bolt and roller assembly to determine compliance with 3.3.4.1.

(b) Visually examine bolt and roller assembly to assure presence of proof and magnetic particle inspection marks (see Drawing C7790186).

4.4.2.2.10.2 Ejector.

(a) Visually and manually examine the ejector to determine compliance with 3.3.4.2.

(b) Visually examine the ejector to assure freedom from burs and mutilations.

4.4.2.2.10.3 Extractor.

(a) Visually and manually examine the extractor to determine compliance with 3.3.4.3.

(b) Visually examine the extractor to assure freedom from burs, cracks, and mutilations on the extractor lip.

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4.4.2.2.10.4 Firing pin.

(a) Visually and manually examine the firing pin to determine compliance with 3.3.4.4.

(b) Disassemble firing pin from the bolt and visually examine the firing pin to assure freedom from pits, burs, and mutilations on the striker point.

(c) Visually examine the firing pin to assure chrome plating is in accordance with 3.3.4.4 (see Drawing D11686413) then reassemble firing pin to the bolt.

4.4.2.2.11 Handguard assembly.

(a) Visually and manually examine the handguard assembly to determine compliance with 3.3.10.

(b) Visually examine the handguard assembly to assure freedom from cracks, burs, and mutilations.

4.4.2.2.12 Operating rod guide. Visually examine the operating rod guide to determine compliance with 3.3.12.

4.4.2.2.13 Receiver assembly. Visually examine the receiver assembly to assure presence of proof and magnetic particle inspection marks and that the identification markings and windage graduations are clear and legible (see Drawing F7790189).

4.4.2.2.14 Cartridge clip guide. Visually and manually examine the cartridge clip guide to assure secure retention to the receiver by the spring pin (see 3.3.1.2).

4.4.2.2.15 Connector locking pin. Visually and manually examine the connector locking pin to determine compliance with 3.3.1.3.

4.4.2.2.16 Selector. Visually and manually examine the selector to determine compliance with 3.3.14.

4.4.2.2.16.1 Selector shaft lock. Visually and manually examine to assure secure assembly of selector shaft, sear release and selector shaft lock to the receiver (see 3.3.15).

4.4.2.2.17 Rear sight assembly. Visually and manually examine the rear sight assembly to determine compliance with 3.3.16.2.

4.4.2.2.18 Gas cylinder group.

(a) Visually and manually examine the gas cylinder group to determine compliance with 3.3.9.

(b) Examine the alinement of the gas port holes in the gas cylinders the gas cutoff valve, and the barrel using inspection equipment in accordance with Drawing A11015316.

(c) Disassemble gas cylinder plug and visually examine threads of plug and gas cylinder for evidence of cross-threading or mutilations.

(d) Reassemble gas cylinder plug using light finger pressure; if binding results, use assembly device C11015427 to prevent cross-threading and mutilation of threads (see 3.3.9).

4.4.2.2.19 Front sight.

(a) Manually examine the front sight to determine compliance with 3.3.16.1.

(b) Visually examine the front sight to assure that there is no overhang on the tenon of the flash suppressor.

4.4.2.2.20 Flash suppressor.

(a) Manually examine the flash suppressor to determine compliance with 3.3.7.

(b) Visually examine the flash suppressor to assure freedom from burs, cracks, and mutilations.

(c) Examine alinement of the flash suppressor to the barrel using inspection equipment in accordance with Drawing C7271723 or C7271724.

4.4.2.2.21 Barrel.

(a) Visually examine the barrel to determine compliance with 3.3.1.1.

(b) Visually examine the barrel to assure presence of proof and magnetic particle inspection marks (see Drawing F7790190).

4.4.2.2.22 Rifle assembly.

(a) Reassemble the rifle to assure reassembly can be accomplished without the use of hand tools.

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(b). Manually examine to assure that the trigger guard latches to the housing securely retain the firing mechanism to the rifle (see 3.3.8 and 3.3.8.5).

(c) Insert a dummy round in the magazine before reassembling the magazine to the rifle. Assemble the magazine to the rifle to assure that it will assemble without manual depression of the magazine latch (see 3.3.11).

(d) Manually withdraw the operating rod and bolt to the open (rearward) position and allow to return to the closed position under spring action to determine proper stripping of the cartridge from the magazine by the bolt.

(e) Manually withdraw the operating rod and bolt to the open position to determine proper extraction and ejection of the cartridge (see 3.3.4.2 and 3.3.4.3).

(f) With the magazine assembled, examine centrality of cartridge clip guide with the magazine opening using inspection equipment in accordance with Drawing D11015522 (see 3.3.1.2).

(g) With the magazine removed, the rifle set for semi-automatic fire, the safety in the "off" position, and the trigger depressed, the hammer shall not fall when the rifle is charged and the rear of the connector is pushed forward (see 3.3.15).

4.4.2.2.23 Rifles which have passed all examinations after successful completion of testing shall be stamped by the contractor with the Department of Defense complete inspection approval stamp as specified on the applicable drawing. The Government representative will observe the stamping operation and control the stamps used for such stampings.

4.4.2.3 Packaging. Examination of packaging Of rifles shall be performed in accordance with the classification of defects and acceptable quality levels (AQL's) specified in 4.4.2.3.1 (see 6.1). Sample size shall be in accordance with MIL-STD-105, using inspection level I. The following provisions shall apply:

(a) The AQL's are specified as percent defective.

(b) The AQL listed for each defect shall be reapplied to the individual defect, not to a group of defects.

(c) Examination for packaging defects specified in 4.4.2.3.1 shall apply to each sample of rifles, interior packages, or exterior containers, as applicable.

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4.4.2.3.1 Classification of defects for packaging. (Unless otherwise specified in each listed defect, the packaging requirements are specified on Packaging Data Sheet P8413866.)

<u>Categories</u>	<u>Defect</u>	<u>AQL</u>
Critical:	None defined	
Major:		
101	Illegible or incorrect marking	1.0
102	Improper level of packaging and packing (see procurement documents)	1.0
103	Missing items of equipment	1.0
104	Inadequate cleaning and drying	1.5
105	Improper preservative application and drainage	1.5
106	Missing or improper protectors	1.5
107	Improper assembly of unit package	1.5
108	Improper closure of bags and boxes	1.5
109	Rifles not properly positioned In cells	1.5
110	Improper closure and strapping of shipping containers	1.5
Minor:	none defined	

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

4.4.3 Testing.

* 4.4.3.1 Tightness of draw testing. The contractor shall test a sample of three barrel and receiver assemblies selected by the Government representative from each day's production for draw using the test method specified in 4.5.1. Failure of any assembly in the sample to meet the requirements shall cause rejection of the represented lot. Test frequency may be reduced to not less than a test of three assemblies from each week's production when a record of satisfactory results has been established for ten consecutive samples.

4.4.3.2 Headspace testing. The contractor shall test each rifle for headspace using the test method specified in 4.5.2. Rifles failing to meet the requirements shall be rejected.

4.4.3.3 Firing pin indent and trigger pull testing. The contractor shall test a sample of ten rifles selected by the Government representative from each inspection lot for firing pin indent and trigger pull using the test methods specified in 4.5.3 and 4.5.4 respectively. Failure of any rifle in the sample to meet the requirements shall cause rejection of the represented lot.

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4.4.3.4 High-pressure resistance, functioning, and targeting and accuracy firing testing. The contractor shall test each rifle for high-pressure resistance, functioning, and targeting and accuracy using the test methods specified in 4.5.5, 4.5.6, and 4.5.7 respectively. Rifles failing to meet any of the requirements shall be rejected.

4.4.3.5 Interchangeability testing.4.4.3.5.1 In plant.

* 4.4.3.5.1.1 Rifles. The contractor shall subject a sample of ten rifles selected by the Government representative from each inspection lot to interchangeability testing using the test method specified in 4.5.8.1.1. Rifles taken for interchangeability testing shall have been found satisfactory in all other examinations and tests.

The ten rifles shall be tested for and shall comply with the requirements for headspaces firing pin indent, and trigger pull before and after interchange of parts, using the test methods specified in 4.5.2, 4.5.3, and 4.5.4 respectively. In addition, the rifles shall be tested for functioning and targeting and accuracy requirements after interchange of parts using the test methods specified in 4.5.6 and 4.5.7. Hand refinement of parts will be allowed on not more than two rifles during interchange of parts provided that no part is altered beyond drawing requirements. No malfunctions shall be allowed in the functioning firing test and failure of not more than two rifles shall be allowed in the targeting and accuracy firing test. Overhang of the front sight on the flash suppressor tenon will be allowed on all rifles in the targeting and accuracy firing test. However, rifles failing in the targeting and accuracy test with in the limitations above, and rifles having overhanging front sights shall be corrected by the contractor to meet the targeting and accuracy requirements (see 3.3.24 and 4.5.7) before they are returned to the represented lot for final acceptance. Failure of the interchangeability test shall cause retest or rejection of the represented lot. At the discretion of the Government representative, an interchangeability retest may be allowed without reconditioning the lot of rifles. Failure in the retest shall cause rejection of the represented lot subject to reconditioning and further test as a reconditioned lot. A sample of 20 rifles from each retest or reconditioned lot shall be tested using the same procedure described above except that hand refinement and failure in the targeting and accuracy firing will be allowed on not more than 4 rifles.

4.4.3.5.1.2 Concurrent repair parts. The contractor shall subject at least two parts from each inspection lot of concurrent repair parts to the interchangeability test specified in 4.5.8.1.2, Failure of any part to meet the requirements shall be cause for rejection of the represented lot of parts subject to reconditioning and further test as a reconditioned lot. A sample of double the number of parts used in the original test shall. be tested from each reconditioned lot using the test method specified in 4.5.8.1.2.

4.4.3.5.2 Interplant. When rifles are manufactured concurrently by more than one contractor, each contractor shall forward monthly six rifles for the interplant interchangeability test specified in 4.5.8.2 (see 6.1). The contractor will be informed of any failure of the rifles to meet prescribed requirements.

* 4.4.3.6 Endurance testing.

* 4.4.3.6.1 Lot size. The first five inspection lots for endurance testing shall each consist of 500 rifles or a month's production whichever is smaller. When five successive lots meet the endurance requirements the lot size shall be increased to 2,500 rifles or a month's production, whichever is smaller. When five successive lots of the increased size have met the endurance requirements, the lot size shall be further increased to 5,000 rifles or a month's production, whichever is smaller. If rejection of a lot occurs at any time, the next smaller test lot size criteria shall be reinstated and the above procedure repeated in returning to the larger lot size.

* 4.4.3.6.2 Procedure. One rifle and 12 magazines selected by the Government representative from each inspection lot shall be tested by the contractor for endurance using the test method specified in 4.5.9. The contractor shall provide replacement parts as required to complete this test. The initial test rifle from each lot shall be fired 6,000 rounds and if the rifle fails to meet the endurance requirements but has not more than 21 malfunctions and 3 unserviceable parts (in accordance with Table I), a second rifle may be taken by the Government representative from the same lot without reconditioning the rifles in the lot and subjected to the endurance test. The second rifle shall meet all endurance requirements, and the combined totals for both rifles (each fired 6,000 rounds) shall not exceed 21 malfunctions and 3 unserviceable parts. If the above requirements are not met, the represented lot shall be rejected subject to reconditioning and further test as a reconditioned lot. Prior to submission of a lot of rifles as a reconditioned lot, the cause of failure shall be determined and contractor correction shall be effected on all rifles in the lot. A sample of 2 rifles and 24 magazines from each reconditioned lot shall be tested using the test methods specified in 4.5.9. Failure of either rifle to meet the requirements shall cause rejection of the represented lot subject to further reconditioning and testing.

* 4.4.3.7 Certification. For each inspection lot of rifles, the contractor shall provide the Government representative with a certified report of touch-up paint compliance with the applicable drawings and touch-up procedures of MIL-W-13855.

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4.4.3.8 Component parts and concurrent repair parts testing. Raw material testings part testing, and certification shall be performed in accordance with the criteria specified in the contract (see 6.1). This will include chemical analysis and physical tests of materials, and tests of protective finish, heat treatment, bonding, and function of parts as applicable. The contractor shall accomplish these tests prior to assembly of parts into the end item.

4.4.3.9 Packaging testing.4.4.3.9.1 Rifles.

4.4.3.9.1.1 The contractor shall furnish the Government representative with certification that the packaging materials conform to the applicable packaging data sheets and specifications.

4.4.3.9.1.2 Determination of cleanliness testing. The contractor shall test items from each inspection lot for determination of cleanliness using the test method specified in 4.5.10.1. Sampling shall be in accordance with MIL-P-116.

4.4.3.9.1.3 Heat-sealed seam and vacuum retention testing. The contractor shall test level A unit packages from each inspection lot for heat-sealed seam and vacuum retention using the test methods specified in 4.5.10.2 and 4.5.10.3 respectively. Sampling shall be in accordance with MIL-P-116.

4.4.3.9.2 Manufacturer installed equipment. (See Engineering Parts List EPL-8413866, Equipment, Manufacturer installed.) The contractor shall test manufacturer installed equipment packages from each inspection lot for leakage using the test method specified in 4.5.10.4. Sampling shall be in accordance with MIL-P-116.

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

4.4.4 Inspection equipment.

4.4.4.1 Unless otherwise specified in the procurement documents (see 6.1), responsibilities for acquisition, maintenance and disposition of measuring and testing equipment prescribed on lists contained on the Index of Inspection Equipment Lists, Drawing IEL-7314350, and for all other inspection equipment required to perform inspection required by applicable specifications, shall be in accordance with MIL-I-45607.

4.4.4.2 Ammunition. The M60 high pressure test cartridge shall be used for the high pressure resistance test, selected lots of M80 ball cartridge which gave an average mean radius of 4 inches or less in 600) yard ammunition acceptance tests shall be used in the targeting and accuracy tests and unselected lots of M80 ball cartridge shall be used in the functioning and reliability tests (see 6.1).

4.5 Test methods.

4.5.1 Tightness of draw test. The barrel and receiver assemblies shall be tested for tightness of draw requirements (see 3.3.18) using the inspection equipment in accordance with Drawing F7271792. The barrel and receiver holding fixture shall be secured to a bench or other suitable surface. The barrel and receiver assembly shall then be secured in the fixture as specified on the applicable drawing and the torque applied to the receiver in the direction to disassemble it from the barrel.

4.5.2 Headspace test. Rifles shall be examined for headspace requirement (see 3.3.19) after proof firing, prior to acceptance, using the inspection equipment in accordance with Drawing F7274733. The rifle shall be held in a horizontal position with the bolt open. The spring loaded plug shall then be inserted in the barrel chamber and the bolt manually returned to the fully locked position. The indicator portion of the gage shall be set to zero using the setting check as specified on the applicable drawing and then inserted in the barrel from the muzzle end until it contacts the spring loaded plug. The indicator shall then be read to determine if the headspace is within the specified requirements.

4.5.2.1 In the event of a dispute over the test results when tested as specified in 4.5.2, the referee test method shall be as specified in 4.5.2 except that rifles shall be examined with the operating rod disconnected from the bolt.

4.5.3 Firing pin indent test. Rifles shall be tested for firing pin indent requirement (see 3.3.26) using the inspection equipment in accordance with Drawings D7271741 and C7318984. The rifle shall be held in a horizontal position with the bolt held open and the copper compression cylinder holding fixture containing the copper compression cylinder shall be inserted in the barrel chamber. The bolt shall be manually returned to battery position and the trigger pulled to release the hammer and indent the copper cylinders. 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. The indent shall be visually examined to determine if the concentricity requirement has been met.

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4.5.4 Trigger pull test. Rifles shall be tested for trigger pull requirement (see 3.3.21) using the inspection equipment in accordance with Drawing D11015517 and D11015518. The rifle shall be cocked and the safety shall be in the "fire" position when each load is gradually applied to the trigger in the direction specified on the applicable drawing. When the minimum load is applied the hammer shall not release and when the maximum load is applied the hammer shall release. The trigger pull shall also be tested for creep by applying pressure manually to the trigger at a uniform rate of increase over a period of not less than 3 seconds.

4.5.5 High-pressure resistance test. Rifles shall be tested for high-pressure resistant requirement (See 3.3.22) by firing one high-pressure test cartridge (see 4.4.4.2) in each rifle. Proof firing shall be accomplished with the rifle held in a firing stand in a horizontal position simulating shoulder firing and conforming to Drawing F7273901. Each receiver shall have been magnetic particle inspected, and each barrel shall have been proof fired and magnetic particle inspected, in accordance with the applicable drawings before assembly to the rifle for this test. After proof firing rifles shall be visually examined for cracks, deformations and other evidence of damage and cartridge cases shall be visually examined for bulges, splits, rings, and other defects caused by defective barrels. The receiver and the bolt and roller assembly of each rifle shall be magnetic particle inspected in accordance with the applicable drawings after completion of all firing tests (high-pressure resistance, functioning, and targeting and accuracy). Proof marks and magnetic particle inspection marks shall be applied as indicated on the applicable drawings on rifles that have passed this test. Proof marks shall not be applied to the stocks.

4.5.6 Functioning firing test.

4.5.6.1 Testing of rifles for functioning requirement (see 3.3.23) shall be accomplished with the rifles held in a firing stand simulating shoulder firing and conforming to Drawing F7273901. The rifles shall be assembled with the selector and the compression helical spring (used with the selector) and shall be functioned fired as follows using the ball cartridges (see 4.4.4.2): 5 rounds semiautomatic (selector set with the blank face to the rear); 3 to 5 rounds automatic in one burst (selector set with the letter "A" facing to the rear); and the remaining rounds in the magazine shall be fired in one burst. During all firing the ejection pattern shall be visually checked to assure that the ejection pattern is within the limits specified in 3.3.23. During the semi-automatic firing, rifles shall be checked to assure that no double shots are fired and, during the interrupted burst firing; rifles shall be checked to assure that firing stops immediately when the trigger is released. The cyclic rate of fire shall be taken and recorded on each rifle when firing the remaining rounds in the magazine for a 10-round burst using a timer gage conforming to Drawing B11015934.

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4.5.6.2 All firing in this test shall be performed using one fully loaded 20-round magazine.

4.5.7 Targeting and accuracy firing test. Rifles shall be fired at a range of 100 yards (91.4 meters) for targeting and accuracy. However, rifles may be fired at a range of other than 100 yards but not less than 25 meters with suitable correlation in the targeting and accuracy requirements, and as approved by the contracting officer.

4.5.7.1 Process qualification rifle test.

4.5.7.1.1 Assemble 100 rifles using parts that have been inspected and accepted in accordance with the applicable criteria specified in the contract (see 6.1). Barrels, bolts, receivers, stock assemblies, flash suppressors, gas cylinders, and operating rods shall have been subjected to 100% inspection for the criteria specified in the contract; other parts maybe taken from lots of accepted parts that have been inspected by sampling. Each assembled rifle shall be subjected to and shall conform to the applicable requirement for headspace, firing pin indent, trigger pull, high-pressure resistance, semiautomatic function firing of 10 rounds, and the final examination specified in 4.4.2.2 through 4.3.2.2.22.

4.5.7.1.2 Rifles shall be fired for accuracy at a range of 100 yards (91.4 meters) using selected lots of ammunition (see 4.4.4.2) as follows:

(a) The rifle shall be inserted and clamped in an accuracy firing fixture conforming to Drawing F6511841. (This fixture shall have been evaluated by the Government representative prior to firing to assure that it holds a rifle at a constant aiming point through a series of 10 shots fired semiautomatically.)

(b) The rear sight of each rifle shall be set at zero windage and eight clicks elevation.

(c) Two warming and setting shots shall be fired at a target located in an enclosed range 100 yards from the muzzle of the rifle.

(d) A new target shall be set up and the sight alined at the six o'clock position of the target sighting image.

* (e) Ten shots shall be fired semi-automatically at this target at a rate which assures that the rifle has come to rest between shots,

4.5.7.1.3 Target measuring and calculations. The following data shall be obtained:

(a) The figure of merit, extreme horizontal (EH) plus extreme

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vertical (EV) divided by two $\frac{EH+EV}{2}$ shall be measured and recorded for each 10-shot target. Measuring of targets shall be to the nearest tenth of an inch using the center of the bullet holes as reference points.

(b) The average figure of merit for the group of 100 rifles shall be obtained by adding the figure of merit obtained for each of the individual targets and then dividing by 100.

The formula is: $\bar{x}_{FM} = \frac{\sum x}{n}$

(c) The standard deviation for the group of 100 rifles shall be calculated using the following formula (or equivalent):

$$\sigma_{FM} = \sqrt{\frac{n \sum x^2 - (\sum x)^2}{n}}$$

(d) Definition of symbols used above:

n = number of targets

x = figure of merit of individual target

\sum = sum of

σ_{FM} = standard deviation of figure of merit

\bar{x}_{FM} = average figure of merit

4.5.7.1.4 If the average FM and the standard deviation are within the requirement (see 3.3.24.2.1) the group of 100 rifles shall be considered as "process qualification rifles:" and shall be used to determine the accuracy limits for individual rifle acceptance when using unselected lots of ammunition (see 4.4.4.2). If the average FM and the standard deviation are not within the requirements (see 3.3.24.2.1), the contractor shall determine the cause of failure and shall take necessary corrective action. After corrective action has been taken, all of the rifles shall be refired using the procedure specified above, At the discretion of the Government representative refiring may be limited to only those rifles which caused the failure of the group and the data thus obtained substituted for the original data for those rifles.

4.5.7.2 Individual rifle acceptance. When using selected lots of ammunition (see 4.4.4.2) individual rifles shall be fired 10-shot targets for accuracy using the procedure specified in 4.4.7.1.2, and the targets measured as specified in 4.5.7.1.3 (see 3.3.24.2.2). When using unselected lots of ammunition (see 4.4.4.2), individual rifles

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shall be fired 10-shot targets for accuracy using the procedure specified in 4.5.7.1.2 and the specific sequential test plan and acceptance criteria (see 3.3.24.2.2 and figures 1 through 5) determined for each lot of ammunition used.

4.5.7.2.1 Determination of the specific sequential test plan to be used for each ammunition lot.

(a) The process qualification rifles shall be fired and targets measured as specified in 4.5.7.1.2 and 4.5.7.1.3 using the lot of ammunition furnished for rifle accuracy testing. If the same lot of ammunition for establishing the process qualification rifles is to be used for individual rifle testing, additional firing will not be required.

(b) The ratio of the standard deviation to the average in percentage shall be calculated using the following formula:

$$R = \frac{\sqrt{\overline{FM}}}{\bar{x}} \times 100$$

(c) Determination of the specific sequential test plan shall be made by selecting the plan which has an R value numerically nearest the above calculated R value for the ammunition being used (see figures 1 through 5).

4.5.7.2.2 Use of sequential sampling plan.

* 4.5.7.2.2.1 Determination acceptance and rejection criteria by entering the sequential test plan at the average FM value of the process qualification rifles and reading vertically to the intersection of the maximum criteria curves. Read horizontally to the left from each intersection to find the requirement value for each maximum criteria curve.

4.5.7.2.2.2 Fire one 10-shot target and calculate the FM, If the FM is less than the maximum acceptance requirement for 1 target, accept the rifle; if greater than the maximum rejection requirement for 1 target, reject the rifle; if in between these limits, fire 2 more 10-shot targets and calculate the average FM of the 3 targets.

4.5.7.2.2.3 If the average FM of the 3 targets is less than the maximum acceptance requirement for 3 targets, accept the rifle; if the average FM of the 3 targets is greater than the maximum rejection requirement for 3 targets, reject the rifle; if in between these limits, fire 3 more 10-shot targets and calculate the average FM of the 6 targets.

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4.5.7.2.2.4 If the average FM of the 6 targets is less than the maximum acceptance requirement for 6 targets, accept the rifle; if the average FM is greater than the maximum rejection requirement for 6 targets, reject the rifle.

4.5.7.2.2.5 Example of use of sequential sampling plan.

(a) Test results of ammunition fired in the 100 process qualification rifles:

$$\bar{x}_{FM} = 3.25 \text{ inches}$$

$$FM = 0.67 \text{ inches}$$

$$R = 20.6\%$$

(b) From the value $R = 20.6\%$, the nearest plan numerically would be the plan identified with $R = 20\%$.

(c) Using this plan and using the $FM = 3.25$ inches, the following accuracy requirements are obtained when reading vertically to the intersection of the maximum criteria curves:

<u>Requirement</u>	<u>Value</u>
Maximum acceptance criteria for 1st 10-shot target	3.1 inches
Maximum rejection criteria for 1st 10-shot target	5.4 inches
Maximum acceptance criteria for average of three 10-shot targets	3.4 inches
Maximum rejection criteria for average of three 10-shot targets	4.8 inches
Maximum acceptance criteria for average of six 10-shot targets	4.1 inches

4.5.7.3 The first target fired for accuracy for each individual rifle shall be used to determine if the targeting requirement has been met (see 3.3.24.1). The front sight shall not be filed or bent but it may be moved as necessary to bring all of the shots within the targeting area specified in Drawing C1168642 provided that it does not overhang the tenon on the flash suppressor. If all shots cannot be brought into the targeting area without the front sight overhanging the tenon of the flash suppressor the rifle shall be rejected. If rifles are acceptable, the front sight shall be locked in place by the screw and the rear sight elevating knob shall be set at the 100-meter graduation mark with the aperture elevated 8 clicks from the lowest position. (For each 0.008 inch lateral movement of the front sight, the point of aim will change 1.0 inch at 100 yards.)

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* 4.5.7.4 All rifles shall be assembled with the selector shaft lock for targeting and accuracy testings. During targeting and accuracy firing, the occurrence of a malfunction or unserviceable part shall be cause for rejection of the rifle in accordance with the functioning requirements of 3.3.2.3.

* 4.5.7.5 Ten percent of the targets from each month's production shall be forwarded to Commanding General, U.S. Army Weapons Commands Attn: AMSWE-QA, Rock Island, Illinois 61201. The targets shall be identified with the rifle serial number, the range, the ammunition lot number, the specific test plan used, the acceptance criteria and individual FM.

4.5.7.6 Cleaning, preservation, and storage of process qualification rifles.

(a) After firing rifles to develop necessary accuracy data, the rifles shall be treated in the following manner:

(1) The bore and chamber shall be cleaned and preserved using applicable cleaning rods, bore cleaner and preservative oil. All other external surfaces, as necessary, shall be lightly oiled.

(2) The trigger of each rifle shall be tested to assure the hammer is not cocked.

(3) The trigger guard attached to the housing shall be unclamped but not removed from the rifle.

(4) Each rifle shall be placed in a volatile corrosion inhibitor bag (VCI) and then placed in its own individual cardboard container.

(b) The rifles shall then be stored in a secured area that has a cool dry environment. Each individual container shall be marked with the rifle serial number and "PROCESS QUALIFICATION RIFLE" and the group of rifles identified in such a manner to assure that they are not released or lost inadvertently.

4.5.8 Interchange of parts test.

4.5.8.1 In plant.

4.5.8.1.1 Rifles. Rifles shall be tested for interchange of parts (see 3.3.25) by disassembling and then reassembling parts using the parts and pre-arranged system specified below. Interchange of parts shall be accomplished by dividing the parts of each rifle into 10 groups of non-mating parts as shown below and distributing the groups into 10 different trays until each tray contains parts for a complete rifle. Groups of parts from the first rifle shall be taken in order and placed in trays 1 through 10; groups of parts from the second rifle shall be taken in

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order and placed in trays 2 through 10 to 1; groups of parts from the third rifle. shall be taken in order and placed in trays 3 through 10 to 2; etc. Commercial parts, with the exception of those listed on the interchange list, such as screws, spring pins, etc., shall be placed in the same tray as their mating or associate part. Any commercial part rendered unserviceable by disassembly shall be replaced without penalty to the interchangeability test. The rifles shall be reassembled using only those parts which are in the same tray. However, the 10 rifles for the function firing test will be assembled with the selector (7267071) and the compression helical spring (7267081), and the same 10 rifles for the targeting and accuracy test will be assembled with the selector shaft lock (7267172).

Groups of non-mating parts

Group I

Barrel and Receiver assembly
(7790191)
Plate assembly, with shoulder
rest (7790686)
Sight, front (7791445)
Spring, helical, compression
(7267079) (Used with
operating rod- 7267064)

Group III

Band, front (7267001)
Bolt and roller assembly
(7790186)
Lock, gas cylinder (7790188)
Shaft, selector (7267072)

Group V

Guard assembly, hand (7791286)
Guide, operating rod (7267025)
Housing, spring (6008883)
ring (11686413)
Pinion assembly, rear sight
elevating (11010363)
Swivel, butt (6008889)

Group II

Pin, trigger (7791367)
Lock, selector shaft (7267172)
Spring, helical, compression
(7267081) (Used with selector -

Spring, safety (7267080)

Group IV

Cylinder, gas (7790902)
Nut, flash suppressor (17267039)
Plunger, hammer spring (6008880)
Selector (7267071)

Group VI

Extractor (7791578)
Knob, windage, rear sight assembly
(7312737)
Latch, magazine (7267032)
Release, sear (7790192)
Spring, helical, compression
(6008887) (Used with firing
mechanism - 7790195)
Spring, helical, compression
(7790427) (used with connector-

Trigger and sear assembly (7267090)

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Group VII

Aperature (6008868)
 Guard, trigger (7790990)
 Plunger, extractor spring,
 assembly (6008618)
 screw, machine, slotted (7791267)
 Spring, helical, compression
 (7267605) (Used with valve-
 Stop, Bolt (7267034)

Group VIII

Cover, rear sight (6008872)
 Ejector assembly, cartridge
 (7267015)
 Pin, hammer (5013668)
 Piston (7267047)
 Spring, helical, compression
 (7267074) (used with bolt
 stop - 7267034)
 Spring, helical, compression
 (7267041) (used with latch
 Stock assembly w/o butt plate
 (premix) (11686427) (with
 nut - 7791339 and retainer
 11010414)

Group IX

Base, rear sight (5546001)
 Connector (7790425)
 Guide, spring (7267027)
 Housing, Trigger (7267030)
 Supperssor, flash (7791053)
 Valve, gas cutoff (7267604)

Group X

Hammer (5546008)
 Magazine assembly (7790183)

4.5.8.1.2 Concurrent repair parts. Concurrent repair parts shall be tested for interchangeability requirement (see 3.3.25) by disassembling two rifles, previously tested in 4.4.3.5.1.1, as necessary and then re-assembling them using the concurrent repair parts. No hand refinement of parts will be allowed, and the rifles shall. operate and function properly. This test may be performed independently of the rifles interchangeability test specified in 4.4.3.5.1.1, and at more frequent intervals using accepted rifles taken from current production.

4.5.8.2 InterPlant. Rifles to be sub jected to the interplant interchangeability test shall be given preliminary hand functioning to assure proper operation before parts are disassembled from the rifle. The rifles shall be tested for headspace, firing pin indent, and trigger pull requirements before and after interchange of parts using the test methods specified in 4.5.2.4.5.3, and 4.5.4 respectively. In addition, the rifles shall be tested for functioning and targeting and accuracy requirements after interchange of parts using the test methods specified in 4.5.6 and 4.5.7 respectively. Rifles shall be interchanged in a manner similar to the detailed plan specified in 4.5.8.1.1 except that parts shall be divided into six groups and that when disassembling, every other rifle used shall be one produced by a different manufacturer.

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* 4.5.9 Endurance test.

* 4.5.9.1 Testing of rifles for endurance requirements (see 3.3.26) shall be accomplished with the rifles held in a firing stand simulating shoulder firing and conforming to Drawing F7273901.

4.5.9.2 The initial test rifle from each test lot shall be fired 6,000 round regardless of the number of malfunctions or unserviceable parts requiring replacement in order to complete the test.

* 4.5.9.3 The rifles shall be assembled with the selector and the compression helical spring (used with the selector). The firing schedule for each 300 rounds shall be as follows: 100 rounds semi-automatics 100 rounds in bursts of approximately 5 rounds each, and 100 rounds in bursts of 20 rounds each. The cyclic rate of fire shall be taken and recorded for one 20-round burst of each 100 rounds fired in a 20-round burst. Fully loaded magazines shall be used and they shall be used in rotation so that approximately 500 rounds will be fired from each magazine. During semiautomatic firing, rifles shall be checked to assure that no double shots are fired; and during the interrupted burst firing, rifles shall be checked to assure that firing stops immediately when the trigger is released. The ammunition shall be in accordance with 4.4.4.2.

4.5.9.4 The barrel shall be cooled to approximately ambient temperature by air after each 100-round series. Rifles shall be cleaned and lubricated after each 1,000 rounds, and at the close of each day's firing the rifles shall be protected against corrosion. No cleaning of the gas system shall be allowed. No parts shall be altered and only parts broken or worn to the extent that they are unserviceable shall be replaced.

4.5.9.5 Complete accurate records shall be kept for each reliability test, showing each malfunction and part replacement including the number of the round at which each occurred.

* 4.5.9.6 At the completion of the endurance test, rifles shall be disposed of as specified in the contract (see 6.1).

4.5.10 Packaging tests.

4.5.10.1 Determination of cleanliness. The applicable surfaces (except for interior surfaces of the barrel, operating rod, gas cylinder, and flash suppressor) of each sample unit 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 bichromate protective coatings. The interior surfaces of the barrel, operating rod, gas cylinder, and flash suppressor 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.

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

4.5.10.3 Vacuum retention. A sufficient vacuum shall be drawn to cause the flexible barrier of level A unit packages to cling snugly to the enclosed item. Care shall be exercised to insure that an excessive amount of vacuum is not applied which might cause puncture or rupture of the barrier.

4.5.10.3.1 Interpretation of results. After remaining undisturbed at room temperature for two hours, the barrier shall be examined to determine whether it is still taut and retracts against the item when drawn away and quickly released.

4.5.10.4 Manufacturer installed equipment test. Manufacturer installed equipment packaged shall be subjected to the leakage test specified in MIL-P-116.

5. PREPARATION FOR DELIVERY

* 5.1 Pilot pack. A pilot pack consisting of complete and packed unit and intermediate packages, as applicable, packaged in accordance with Packaging Data Sheet P8413866 to the level of protection specified in the contract (see 6.1) and packed level C shall be forwarded as specified in 3.1.

5.2 Reservations packaging, packing, and marking. Rifles with equipment shall be preserved, unit packaged, packed, and marked in accordance with the requirements of Packaging Data Sheet P8413866 for the level of protection specified (see 6.1).

5.3 Repair parts. Repair parts shall be prepared for delivery in accordance with the applicable packaging data sheets 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) Inspection criteria for components (see 4.3.4.4.2.1, 4.4.2.3.2, 4.4.3.8, 4.4.3.9.3, and 4.5.7.1.1).
- (d) Index of inspection equipment lists pertinent to the rifle, showing applicable revision dates.
- (e) Number of production samples required for tests (see 3.1).

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- (f) That packages opened for examination shall be repackaged by the contractor at the contractor's expense (see 4.4.2.3).
- g Disposition of endurance tested rifles (see 4.5.9.6),
- (h) Shipping instructions for production samples and pilot pack (see 3.1 and 5.1).
- (i) Selection of applicable levels of preservation, packaging and packing.
- (j) Packaging instructions for repair parts (see 5.3).
- (k) Place of final inspection and acceptance (see "Notes" in MIL-W-13855).
- (l) List of acceptance inspection equipment to be furnished the contractor and responsibilities for other Government property to be furnished the contractor (see 4.4.4.1 and 6.7).
- (m) Responsibilities for furnishing ammunition (see 4.4.4.2 and 4.5.7).
- (n) Shipping instructions for rifles and parts when an inter-plant interchangeability test is required (see 4.4.3.5.2).
- (o) Procedures and methods for demilitarizing and disposing of rejected material.
- (p) Disposition of Government furnished property.
- (q) Responsibility for test firing facilities and operating procedures (see 6.3).

6.2 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 maybe viewed upon application to the contracting officer.

6.3 When action by a testing agency is required, work programing will be effected with the testing agency at the earliest practicable date.

6.4 To avoid delay in test firing, the Government representative should maintain a minimum of two months' supply of ammition as determined by anticipated firing requirements.

6.5 Monthly reports of the results of final examination and functioning firing, targeting and accuracy, reliability and interchangeability tests shall be made to Commanding General, U.S. Army Weapons Command, Attn: AMSWE-RES, Rock Island, Illinois 61201 and to Commanding General, U.S. Army Weapons Command, Attn: AMSWE-QA, Rock Island, Illinois 61201

6.6 When warranted, the contract should specify the application of MIL-Q-9858 or MIL-I-45208, as appropriate, on the Management Control Systems Summary List, DD Form 1660.

6.7 Unless otherwise specified (see 6.1p), the contract should specify the application of MIL-I-45607 and MIL-C-45662 on the Management Control Summary List, DD Form 1660.

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6.8 The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue,

Custodians:

Army-WC
Navy - OS
Air Force - 84

Preparing activity:
Army-WC

Project No. 1005-0411

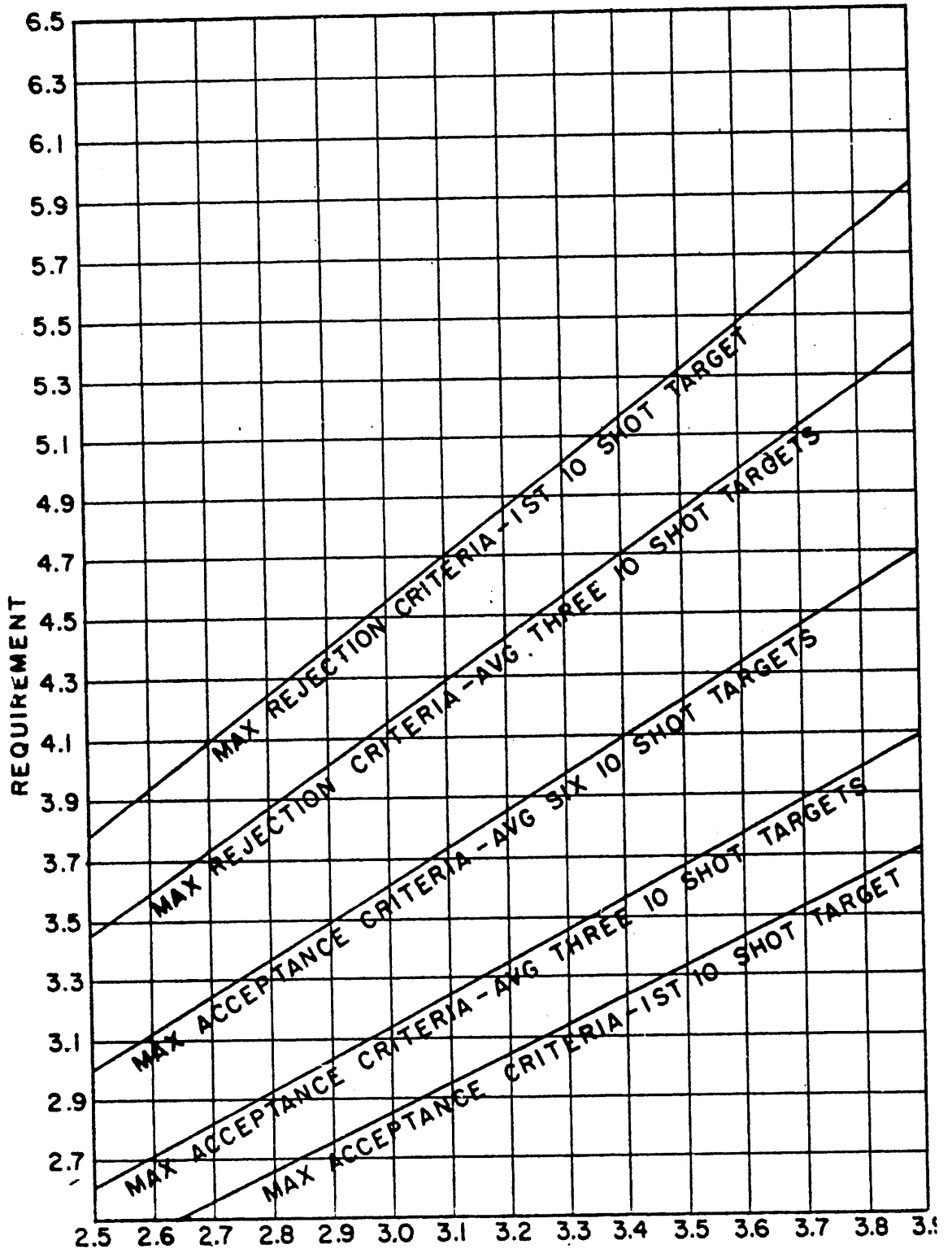
Review activities:

Army - MU
Navy -
Air Force -

User activities:

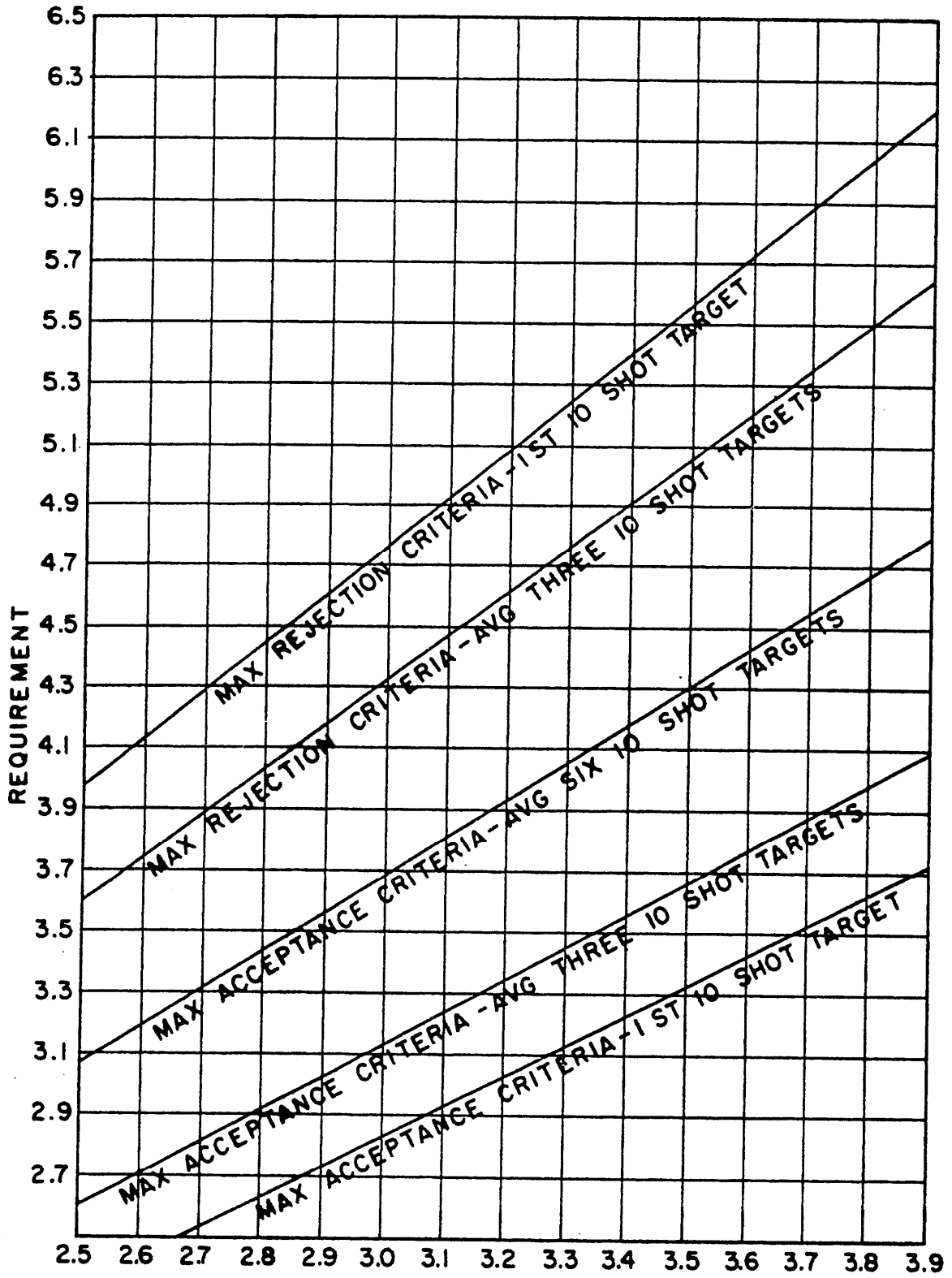
Army - None
Navy - MC
Air Force -

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Average figure of merit for process qualification rifles

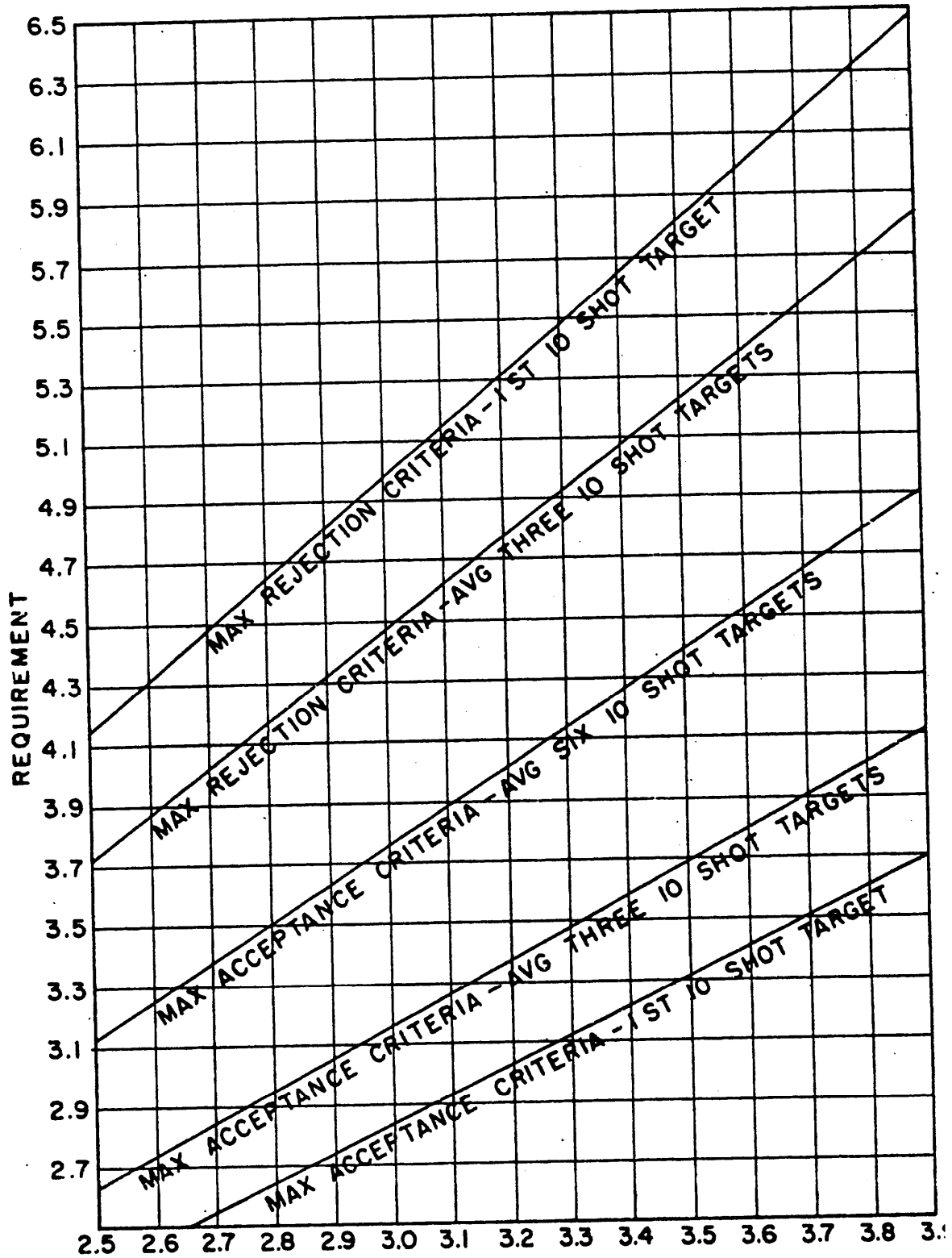
Figure 1. Sequential test plan R 16.00&



Average figure of merit for process qualification rifles

Figure 2. Sequential test plan R 18.00%

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Average figure of merit for process qualification rifles

Figure 3. Sequential test plan R 20.00%

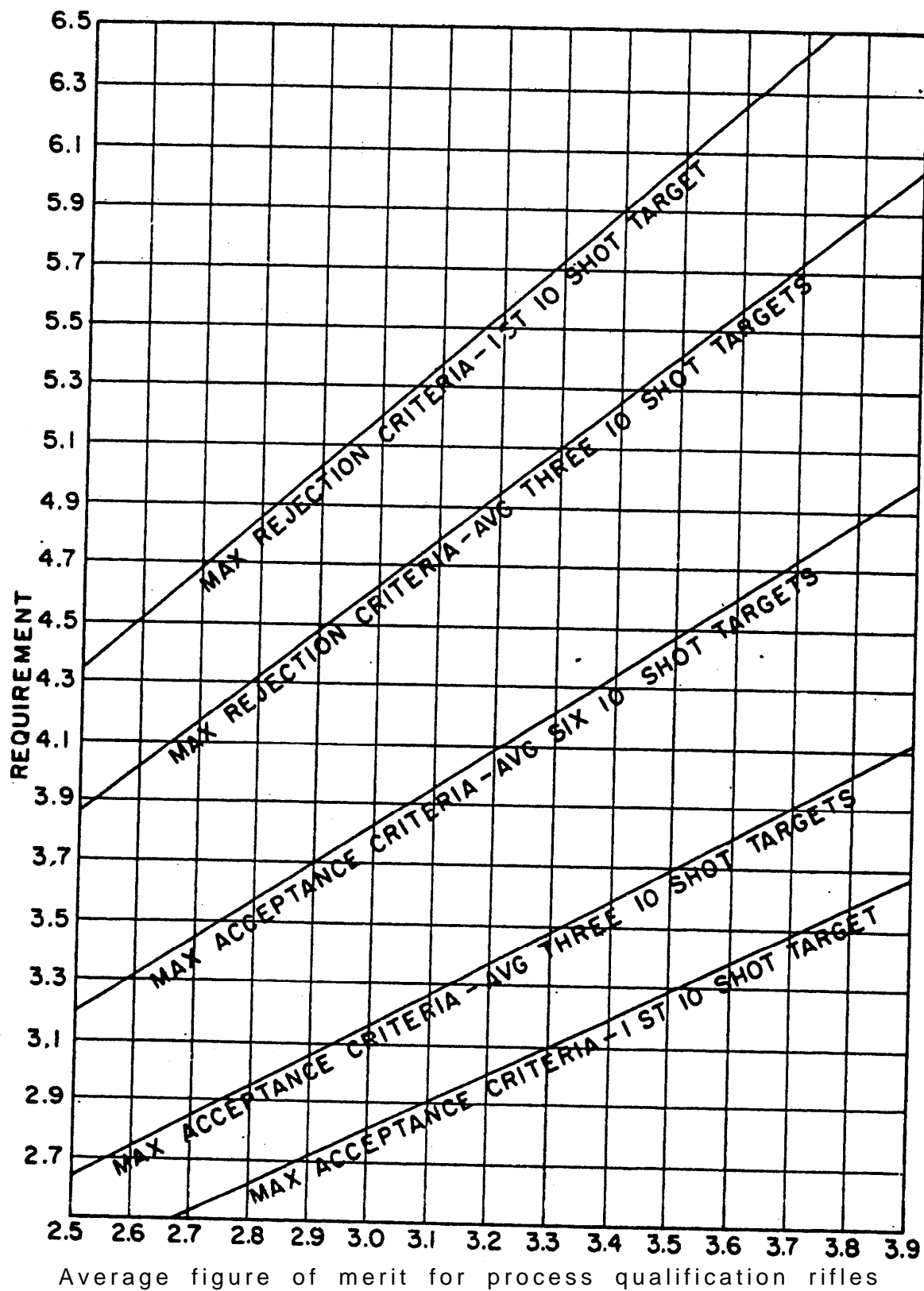
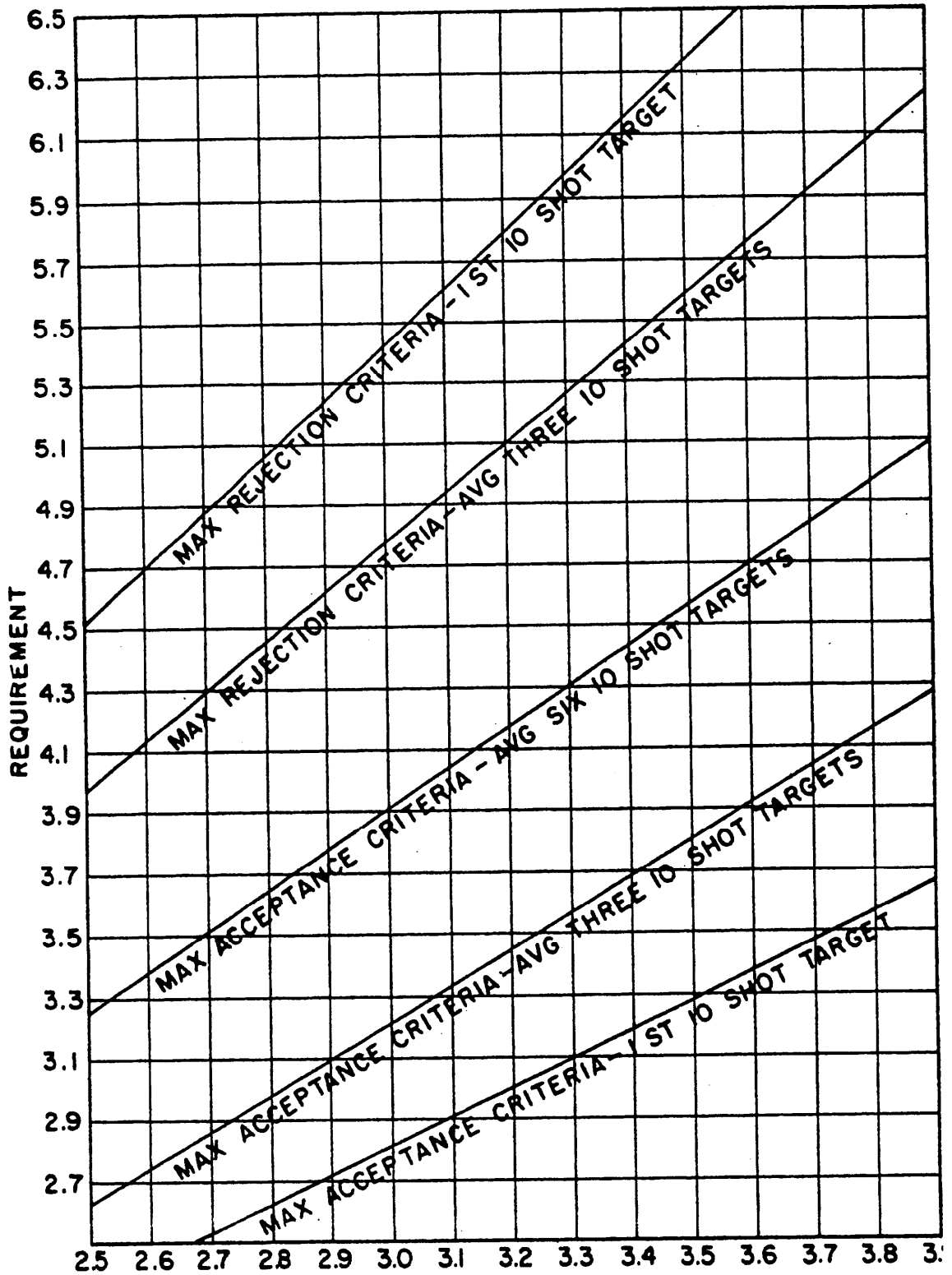


Figure 4. Sequential test plan R 22.00%

MIL-R-45012E



Average figure of merit for process qualification rifles

Figure 5, Sequential test plan R 24.00%

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION MIL-R-45012E Rifle, 7.62MM: M14

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

 DIRECT GOVERNMENT CONTRACT SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

YES NO (If "yes", in what way?)

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity - Optional)

DATE

To detach this form, cut along this line.

FOLD

DEPARTMENT OF THE ARMY
HEADQUARTERS
U. S. ARMY WEAPONS COMMAND

ROCK ISLAND, ILLINOIS 61201

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DEPARTMENT OF THE ARMY

Commanding General
U. S. Army Weapons Command
ATTN: ANSWE-REE-S
Rock Island, Illinois 61201

FOLD

NOTICE OF
VALIDATION

MIL-R-45012E
NOTICE 1
17 April 1986

MILITARY SPECIFICATION

RIFLE, 7.62MM: M14

This notice should be filed in front of MIL-R-45012E, dated 6 January 1971.

MIL-R-45012E has been reviewed and determined to be valid for use in acquisition.

Custodian:
Army - AR
Navy - OS
Air Force - 99

Preparing activity:
Army - AR

User Activity:
Navy - MC