

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

CARTRIDGE, 40-MM: TACTICAL
CS, M651 '1310-B567)
AMMUNITION SURVEILLANCE PROCEDURES

HEADQUARTERS, DEPARTMENT OF THE ARMY
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**CARTRIDGE, 40-MM: TACTICAL
CS, M651 (1310-B567)
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SECTION I. INTRODUCTION

1. Purpose and scope. This bulletin, when used in conjunction with SB 742-1, provides a method for determining serviceability of subject cartridges.

a The visual inspection and function testing criteria in this procedure will be accomplished under a centralized control program managed by the U. S. Army Armament, Munitions and Chemical Command (AMCCOM), AMSMC-QAS, Rock Island, IL 61299-6000. This procedure is to be used in the serviceability assessment of specified cartridge lots based on inspection and testing of individual items.

b. The provisions of this bulletin are mandatory for all Department of Army organizations within the

continental United States (CONUS) and outside the continental United States (OCONUS) with an ammunition receipt, storage, and distribution mission. This bulletin is not intended for use by organizations with stocks in basic loads.

c. SB 742-1 contains additional information pertaining to the frequency of test, sample selection, defect standards, and records and reports.

2. Item description. The cartridge consists of a projectile containing 53 grams of CS pyrotechnic mixture, a M581 fuze, and a cartridge case con

*This bulletin supersedes SB 3-1310-3, 6 October 1971.

taining a propellant charge and percussion primer. Upon firing, setback frees fuze rotor for movement. After the projectile has traveled approximately 30 meters, the fuze is armed. Impact with the target causes the ignition of the CS pyrotechnic mixture which burns approximately 25 seconds. The projectile should have a velocity of 242 +/-12 ft/s.

3. References.

a. The following publications will provide more information on the surveillance of the subject items. This list is not to be considered all inclusive.

(1) AR 75-1, Malfunctions Involving Ammunition and Explosives.

(2) TM 3-1010-205-10, Launcher, Grenade, 40MM: M79.

(3) TM 3-1310-243-10, Cartridge, 40MM: Tactical CS, M651.

(4) TM 9-1005-249-10, Rifle, M16A1.

(5) TM 9-1010-221-10, Launcher, Grenade, 40MM: M203.

b. Each item of ammunition peculiar equipment (APE) has an operational manual that should be consulted prior to and during the use of that item. The manual is titled with the APE number and nomenclature of APE item.

4. Safety.

a; Visual examinations and surveillance function testing in this bulletin must be conducted according to the provisions set forth in the appropriate safety regulations and implementing instructions with special attention devoted to the technical manuals describing the item. These cartridges are filled with an irritant agent. All personnel must have a field protective mask immediately available when conducting an inspection or function test. A Standard Operating Procedure (SOP) that specifies the safety requirements will be posted at the inspection and test site. The absence of a safety requirement in this or any other publication is not to be construed as meaning that precaution is unnecessary.

b. Function testing will be conducted during daylight hours only, and only in an area that is clear of flammable material such as dry grass, weeds, etc. Testing will not be conducted during electrical, rain or snow storms, or during any other conditions that might create a hazardous situation or adversely affect test results.

(1) The test site should be situated so that the prevailing wind blows away from the personnel shelter and the CS cloud dissipates before it reaches occupied areas. CS is an irritant and can cause dermatitis or skin burns.

(2) Protective measures should be taken to prevent CS contamination during inspection or test. Work clothing made from closely woven smooth finish fabric such as standard fatigues or coveralls will provide adequate protection. Gloves should be worn.

(3) Personnel should stay in the shelter while the cartridge is emitting CS.

(4) Testing must be conducted according to any other applicable regulations, e.g., U.S. Environmental Protection Agency (EPA), local regulations, etc. Cartridges will not be fired when the wind velocity exceeds 15 mph.

c. Any concentration of smoke is potentially hazardous when inhaled. If personnel are required to be in concentrations of smoke, a protective mask must be worn. Visible evidence of smoke will require personnel to mask.

(1) Personnel experiencing breathing difficulties or discomfort will also serve as a signal for all similarly exposed personnel to mask. If smoke enters the shelter, personnel must remain masked until smoke is removed.

(2) Precautions should be taken to ensure that concentrations of smoke in the personnel shelter do not exceed the capability of the protective mask. Assistance should be sought from the local medical authority's industrial hygienist to determine potential in-shelter concentrations.

(3) Bathing and laundering of clothing following function test operations will eliminate the risk of skin irritation following exposure to smoke.

d. Dud cartridges will be recovered and destroyed according to all applicable safety regulations and an approved SOP including protective equipment such as heat-resistant gloves, full faceshield, heat-resistant clothing, etc. A waiting time of 15 minutes minimum will be observed before approaching dud cartridges.

5. Personnel. Visual examination and function testing will be conducted under the direct control of a Quality Assurance Specialist (Ammunition Surveillance) (QASAS).

SECTION II. SURVEILLANCE

6. Sample size. Unless otherwise directed, a representative sample size of 48 cartridges is 2 required

for a surveillance function test. To satisfy requirements of a periodic inspection prescribed in

conjunction with a surveillance function test, additional sampling of item, inner and outer packing may be required according to SB 742-1.

7. Sample selection. Sample cartridges will be selected according to the provisions of SB 742-1, except that no more than six cartridges may be selected from any one box. If samples are to be function tested at an installation other than the one that the parent lot is stored, packing boxes and containers that are not shipped will also be inspected. The appropriate part of DA Form 984 (Munitions Surveillance Report) will be completed prior to shipment. Samples that are shipped must be packed and marked according to SB 742-1. During selection, samples must be numbered 1 to 48.

8. Surveillance test equipment. The following equipment is to be used in testing signals according to this procedure

- a. Launcher, grenade, 40-mm: M79 or M203.
- b. APE 1902, mount, combination gun, small arms ammunition testing.
- c. APE 1902-E004 kit, accessory holding, M79 or APE 1902-E006 kit, accessory holding, M203 launcher.
- d. APE 1937, shelter, personnel protection, or equivalent.
- e. Two stopwatches accurate to one-tenth second.
- f. Target, locally fabricated, 10 ft x 10 ft, of 3/4-inch white pine or a double layer of 1/2-inch thick celotex.
- g. Protective mask, M9 or M17, for each crew member and observer at test site.
- h. APE 1901, tank, immersion.
- i. Thermometer.
- j. Approved velocity-measuring equipment.

9. Preparation for test.

- a. Assure cartridges have been numbered 1 to 48 and identified as to the box from which they were selected.
- b. Submerge cartridges numbered 1 to 24 under 8 inches of water for 2 hours. Assure that the water temperature is within +5 degrees F of the temperature of the cartridge cases.
- c. Remove cartridges from the water and wipe dry. Function test within 1 hour.
- d. Cartridges 25 to 48 will receive no preparation prior to test.
- e. Mount the launcher for remote operation using APE 1902 and the appropriate APE kit. Operate the launcher according to the instructions listed in the TM for the launcher. The cartridge should be launched at an angle such that the SB 742-1310-94-51 projectile will strike a target 125 meters from point of firing.
- f. Lock the firing lanyard in the lanyard control box of APE 1937.

- g. Set up the velocity-measuring equipment according to the manufacturer's instructions.

10. Test procedures.

NOTE

The person installing cartridges into the launcher will carry the key to the control box at all times to prevent unauthorized access to the lanyard.

- a. Place sample cartridge into the launcher, assure that the lanyard is properly attached to the launcher, and return to the personnel shelter.
- b. From inside the shelter, unlock the lanyard box and pull on the lanyard to function the launcher.
- c. Note and record the observations listed in paragraphs 11 and 15 below.
- d. Function test the remaining sample as instructed above.

11. Observations. All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 14 and 15, below, or in SB 742-1, should be included whenever pertinent and practical. The following observations, as a minimum, must be reported:

- a. Report any markings which are incorrect, misleading, incomplete, or unidentifiable.
- b. Give the location and extent of any rust, corrosion, damage, or deterioration.
- c. Note and record any deflagration.
- d. Note and record the burning time of CS pyrotechnic to nearest second.
- e. Note and record the delay time between projectile impacting the target and initial release of smoke.
- f. Note and record the velocity of the projectiles (for information only).

12. Definitions.

- a. Dud. The projectile fails to emit CS.
- b. Misfire. The cartridge fails to function.
- c. Deflagration. A sudden and violent increase in the rate of burning which causes the violent expulsion of the solid filler mixture or parts of the projectile.

13. Classification of defects. Defects observed during inspection and testing will be classified and reported according to paragraphs 14 and 15 below and SB 742-1. Any defects or nonstandard conditions observed, that are not listed below or in SB

742-1, will be described fully and reported with the recommendation of the QASAS as to classification.

The code following each functioning defect is for use by testing personnel only.

14. Non-functioning Defects.

- a. Critical-Primer above flush.
- b. Major
 - (1) Missing component.
 - (2) Major damage to the cartridge.
 - (3) Major rust/corrosion.
 - (4) Marking illegible as to type of cartridge.
- c. Minor
 - (1) Minor damage to cartridge.
 - (2) Minor rust/corrosion.
 - (3) Marking illegible but not misleading as to type of cartridge.

15. Functioning Defects.

- a. Critical
 - (1) Projectile bursts in launcher (BA001).
 - (2) Projectile bursts within 50 feet of launcher (BA002).
 - (3) Projectile assembly sticks in launcher (BA004).
- b. Major
 - (1) Dud (BC021).
 - (2) Hangfire (CC021).
 - (3) CS pyrotechnic burns prior to striking target (BE031).
 - (4) CS pyrotechnic burns under pressure less than 12 seconds (CF030).
 - (5) Cartridge case fails to extract from launcher by spring operation of extractor and without auxiliary aid (BE027).
 - (6) Projectile explodes or deflagrates after impacting target (BE028).
 - (7) Projectile strikes but does not penetrate target (BE022).
 - (8) Cartridge will not chamber in launcher (BE029).
 - (9) CS pyrotechnic mixture flames and does not produce an effective cloud of CS (BE030).
 - (10) Delay time between projectile striking target and initial release of smoke is greater than 5 seconds (BE023).
- c. Minor
 - (1) CS pyrotechnic burns under pressure for more than 37 seconds (BE050).
 - (2) CS pyrotechnic burns under pressure less than 15 seconds but not less than 12 seconds (CF050).

NOTE

16. Evaluation. Using the following criteria and considering nonfunctional and functional characteristics separately, an interim condition code will be assigned according to SB 742-1. A lot will be classified condition code J and reported per SB 742-1 if any critical defect is observed.

a. Nonfunctional characteristics.

(1) Serviceable for unrestricted issue and use. A lot not classified as condition code J will qualify as serviceable for unrestricted issue and use if the following requirements are met on inspection of 48 items:

- (a) Not more than 3 major defectives.
- (b) Not more than 6 minor defectives.

(2) Priority of issue. A lot not classified as condition code J or as serviceable for unrestricted issue and use will qualify as serviceable for priority of issue if the following requirements are met on inspection of 48 items:

- (a) Not more than 8 major defectives.
- (b) Not more than 15 minor defectives.

(3) Unserviceable. A lot not classified as condition code J or as serviceable for unrestricted issue and use or for priority of issue will be classified as unserviceable.

b. Functional codes.

(1) Code A. A lot not classified as condition code J will qualify for functional code A if following requirements are met in test of 48 items:

- (a) Not more than 3 major defectives.
- (b) Not more than 6 minor defectives.

(2) Code B. A lot not classified as condition code J or functional code A will qualify for functional code B if following requirements are met in test of 48 items:

- (a) Not more than 8 major defectives.
- (b) Not more than 15 minor defectives.

(3) Code D. A lot not classified as condition code J, functional code A, or functional code B will be classified functional code D.

17. Records and reports. Inspection and function test results will be recorded and reported on DA Form 984 and other appropriate forms as outlined in SB 742-1.

By Order of the Secretary of the Army:

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