DEPARTMENT OF THE ARMY SUPPLY BULLETIN

SIMULATOR, FLASH, ARTILLERY: M21
Ammunition Surveillance Procedure
(DODAC 1370-L602)

Headquarters, Department Of The Army, Washington, DC
5 August 1982

1. Purpose and Scope. This bulletin, when used in conjunction with SB 742-1, provides a method for determining the serviceability of Simulator, Flash, Artillery: M21. The function testing in this procedure will be accomplished under a centralized control program managed by the US Army Armament Materiel Readiness Command (ARRCOM), DRSAR-QAS, Rock Island, Illinois 61299. This bulletin is to be used in the serviceability assessment of individual lots of simulators only. The provisions of this bulletin are mandatory for use by all. Department of the Army organizations within CONUS and OCONUS with an ammunition receipt, storage, and distribution mission. This bulletin is not intended for use by organizations with stocks in basic loads. Additional information pertaining to frequency of test, sample selection, defect standards, reports, and records are contained in SB 742-1.

2. Errors, Omissions, and Recommended Changes.

Reporting of errors, omissions, and recommendations for improving this bulletin is authorized and encouraged. DA Form 2028 (Recommended Changes to Publications and Blank Forms) will be completed and forwarded to Commander, ARRCOM, ATTN: DRSAR-QAS, Rock Island, Illinois 61299.

3. Safety. The surveillance visual examination and function testing must be conducted in accordance with the provisions set forth in appropriate safety regulations and implementing instructions, with special attention devoted to technical manuals describing the item. If any simulator fails to function, special safety measures must be taken according to local Standing Operating Procedures.

4. Personnel. Visual examination and function testing will be conducted under the control of a Quality Assurance Specialist (Ammunition Surveillance) hereinafter referred to as QASAS.

5. Size of Sample. Unless otherwise directed, a sample size of 45 simulators is required to make up a representative sample from a lot for visual examination and function test.

6. Sample Selection. Sample simulators will be selected in accordance with the provisions of SB 742-1 with the exception that not more than nine simulators may be selected from any one box.

7. Surveillance Test Equipment. The following equipment is to be used in testing M21 Artillery Flash Simulators in accordance with this procedure:

a. Ammunition Peculiar Equipment (APE).

APE 1916 MI Oven, Preconditioning
APE 1937 Shelter, Personnel Protection
APE 1938 Low Temperature Chamber

b. Additional Test Equipment.

Nicolet Transient Recorder; Explorer III (Digital Oscilloscope), or equivalent
Simulator, Tank Gunfire Device 17-61 (NSN 6920-01-046-1418)
*Mounting plate
24 Volt DC Power Supply Battery Box
Connecting cables

8. Preparation for Test. In the preparation for test, each sample simulator will be numbered, indentified as to the box from Which it was drawn, and visually inspected. Classify any defects found in accordance with paragraphs 12 and 13 below. Simulators will be conditioned as follows:

a. Low Temperature: -31.7° ±2.8°C (-25° ±5°F). Simulators 1 through 9 will be conditioned at the low temperature for 16 hours, minimum, immediately prior to firing.

b. Ambient Temperature: 21.1° ±5.6°C (70° ± 10°F). Simulators 10 through 36 will be conditioned at the ambient temperature for 16 hours, minimum immediately prior to firing.

c. High Temperature 51.7° ±2.8°C (125° ± 5 °F). Simulators 37 through 45 will be conditioned at the high temperature for 16 hours, minimum, immediately prior to firing.

9. Test Procedure. This test is to determine the ability of the simulators to be electrically ignited from a 24 volt DC power supply and to simulate the optical (flash and smoke) and acoustical (explosive sound) signatures of a tank or antitank gun in night and day training operations. The flash and smoke should be visible and the firing report should be audible over the full distance of 2,000 meters. Testing will not be conducted during an electrical, rain, or snow storm. Testing will be in accordance with applicable US Army regulations and the applicable regulations of other agencies such as the Environmental Protection Agency (EPA).

a. For simulators 1 through 9, conditioned at the low temperature, remove the tape and protective cap. Insert the nine simulators singly into the nine firing drums of the Simulator, Tank Gunfire Device 17-61, and electrically connect their plugs to the corresponding sockets of the firing drums. Electrical ignition is effected from the actuator. Observe that the simulators function in place and produce the visible and audible simulation of the tank or antitank gun. To determine if the optical flash and smoke signatures are satisfactory, place an observer at the distance of 2,000 meters. To determine if the acoustical (explosive sound) signature is satisfactory, place a sound level meter at a three meter distance and a one meter height from the firing drums.

b. For simulators 10 through 36, conditioned at the

*See Attachment

ambient temperature, load simulators 10 through 18 into the nine firing drums and proceed as directed in paragraph 9a above. Function simulators 19 through 27 and 28 through 36 similarly.

c. For simulators 37 through 45, conditioned at the high temperature, proceed as directed in paragraph a above.

WARNING

There is a zone of danger in front of the simulator. The safety distance is 50 meters in front of and 25 meters each to the right and left of the simulator. Personnel must remain behind the device during and after loading.

10. Observation. All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 12 and 13 below, should be described in full detail. Pictorial evidence of nonstandard conditions should be included whenever pertinent and practical. The observations to be reported are as follows:

a. Visible flash and smoke-satisfactory or unsatisfactory with regard to being visible over the distance of 2,000 meters. If unsatisfactory, give an explanation, such as: low visibility, no flash, no smoke, uncharacteristic flash and/or smoke, etc.

b. Sound level meter reading.

c. All instances of any of the following:

(1) Marking misleading, incomplete, or unidentifiable.

(2) The occurrence of any nonstandard conditions or malfunctions classified as defects in paragraphs 12 and 13 below or in SB 742-1.

(3) The occurrence of any nonstandard conditions or malfunctions not classified as defects in paragraphs 12 and 13 below or in SB 742-1; but which, in the opinion of responsible personnel, merits consideration.

11. Classification of Defects. Defects observed during inspection and testing will be classified in accordance with paragraphs 12 and 13, and with SB 742-1. Any defects observed which are not listed in paragraphs 12 and 13, or in SB 742-1, will be described fully and reported with the recommendation of the QASAS as to classification.

12. Nonfunctioning Defects.

a. Major.

Major damage to component, such as:

(1) Plastic body, to the extent that the pyrotechnic charge is exuding.

(2) Protecting cap.

(3) Electrical plug.

b. Minor.

(1) Marking incorrect.

(2) Protecting cap not removable.

(3) Igniter cable damaged.

(4) Short circuit cap missing.

(5) Short circuit cap not removable from electrical plug.

13. Functioning Defects.

a. Major.

(1) Ignition failure.

(2) Simulator burns off without detonation.

(3) Heavy parts of simulator fly behind safety zone.

(4) Flash and/or smoke are unsatisfactory, ie flash and/or smoke not visible at 2,000 meters.

(5) Sound of detonation too weak, ie less than 175 decibels.

b. Minor. None.

14. Evaluation. A functional code and a nonfunctional classification will be recommended in accordance with the following criteria. Based on the functional code and the nonfunctional classification, an interim condition code will be assigned in accordance with SB 742-1.

A lot will be classified as Condition Code J and reported in accordance with SB 742-1 if one or more critical defects are observed.

a. Nonfunctional Classifications.

(1) *Serviceable*. A lot not classified as Condition Code J shall qualify as serviceable if it meets the following requirements on inspection of 45 simulators by attributes:

(*a*) Not more than 2 major defectives.

(*b*) Not more than 4 minor defectives.

(2) *Priority of issue*. A lot not classified as Condition Code J or serviceable shall qualify for priority of issue if it meets the following requirements on inspection of 45 simulators by attributes:

(*a*) Not more than 6 major defectives.

(*b*) Not more than 9 minor defectives.

(3) *Unserviceable*. A lot not classified as Condition Code J, serviceable, or priority of issue, shall be classified as unserviceable.

b. Functional Codes.

(1) Code A. A lot not classified as Condition Code J shall qualify for Functional Code A if it meets the following requirements in the test of 45 simulators:

(*a*) Not more than 2 major defectives.

(*b*) Not more than 4 minor defectives.

(2) Code B. A lot not classified as Condition Code J or Functional Code A shall qualify for Functional Code B if it meets the following requirements in the test of 45 simulators:

(*a)* Not more than 6 major defectives.

(*b)* Not more than 9 minor defectives.

(3) Code D. A lot not classified as Condition Code J, Functional Code A, or Functional Code B shall be Functional Code D.

15. Records and Reports. Visual examination and function test results will be recorded and reported on DA Form 984 as outlined in SB 742-1.

Attachment

Mounting Plate.
The mounting plate is a welded item, consisting of a steel plate on to which is welded the receiver for the rectangular lug of the firing device. The receiver has a rectangular guideway for inserting and guiding the rectangular lug.
The four cross profile anchor bolts are pushed through the mating holes in the mounting plate and driven into the ground, thus effecting a firm anchorage of the firing device. Four cylindrical rings are specified to be placed between the tops of the mating holes and the heads of the anchor bolts.

Assembly of the Mounting Plate.
1. Knock mounting plate by its spur into the ground.
2. Drive in the four anchor bolts through the four mating holes in the mounting plate. Before inserting the anchor bolts, apply the four cylindrical rings intermediately.
3. Mount the firing device by inserting it by its rectangular lug into the corresponding guideway on the mounting plate.
4. Pass wedge collar over threaded end of lug. Screw on the hexagon nut and tighten with spanner.

By Order of the Secretary of the Army:

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