

DEPARTMENT OF THE ARMY SUPPLY BULLETIN  
SIGNAL, ILLUMINATION, GROUND:  
STAR CLUSTER, GREEN, M125 SERIES (1370-L314);  
RED, M158 (1370-L306);  
AND WHITE, M159 (1370-L307)  
AMMUNITION SURVEILLANCE PROCEDURES

HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, DC

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The proponent agency of this supply bulletin is the U.S. Army Armament, Munitions and Chemical Command (AMCCOM). Direct reporting of errors, omissions, and recommendations for improving this bulletin is authorized and encouraged. DA Form 2028 (Recommended Changes to Publications and Blank Forms) should be completed and forwarded to Commander, AMCCOM, AMSMC-QAS-P, Rock Island, IL 61299-6000.

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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 items.

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 serviceability assessment of specified 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 frequency of inspection, sample selection, defect standards, and records and reports.

\*This bulletin supersedes SB 742-1370-30, dated 19 October 1971.

**2. Item description.**

a. These items are used for daytime and nighttime signaling.

b. Star cluster signals consist of five-star illuminant assemblies and a rocket motor propulsion assembly contained in a hand-held aluminum launching tube. The base of the launching tube contains a primer and an initiating charge. As shipped, the firing pin cap is assembled to the forward end and must be reversed for firing. The stabilizing fins on the tail assembly of the rocket are folded parallel to axis of signal. A bolt, that also transfers the initiating charge flash to the propellant, extends into the center of the solid propellant that fills the propulsion assembly. The illuminant assembly is mounted on top of the propulsion assembly with a delay assembly and an expelling charge between. A label specifying firing procedures is secured to the body of signal.

c. When the firing cap is placed on the initiator end in preparation for firing signal, the firing pin is aligned with the primer. Striking primer with the firing pin fires the initiating charge to ignite the rocket propellant. As the rocket emerges from launching tube, fins extend for flight stability. Before the rocket motor burnout at 200 feet, the black powder expelling charge is ignited performing the two-fold function of expelling and igniting the five-star illuminant assemblies. The burning time is 6 to 10 seconds with burnout occurring at 250 to 300 feet above ground.

**3. References.**

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

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

(2) SB 742-1, Ammunition Surveillance Procedures.

(3) TM 43-0001-37, Army Data Sheets for Military Pyrotechnics.

b. Each item of ammunition peculiar equipment (APE) has an operational manual that should be consulted prior

to and during use of that item. The manual is titled with the APE number and nomenclature of the APE item.

**4. Safety.**

a. The inspection and surveillance function testing must be conducted according to the provisions set forth in appropriate safety regulations and implementing instructions, with special attention given to technical manuals describing item. A standing operating procedure (SOP) for this operation is required and will delineate specific safety requirements. 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 condition or adversely affect test results. Testing must be conducted according to any other applicable regulations; i.e., U.S. Environmental Protection Agency (EPA) local regulations, etc. Signals will not be fired when wind velocity exceeds 15 mi/h.

c. In event of a misfire, personnel must remain inside the protective shelter for 5 minutes.

d. Recovery or destruction of duds will be accomplished according to all applicable safety regulations and an approved SOP including protective equipment such as heat-resistant gloves, full face shield, flame-resistant clothing, etc.

**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 60 items is required for a surveillance function test. To satisfy requirements of a periodic inspection performed in conjunction with a function test, additional sampling of item, inner and outer pack may be required according to SB 742-1.

**7. Sample selection.**

Sample items will be selected according to the provisions of SB 742-1 except that no more than 12 items may be selected from any one box.

a. If samples are to be function tested at an installation other than one at which 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.

b. Samples that are shipped must be packed and marked according to SB 742-1.

c. During sample selection, number the hermetic-sealed containers 1 through 60.

d. Do not select signals from metal containers that have been opened or that have punctures or other evidence of breaks in the hermetic seal. (If substitute samples are selected because original sample containers are defective, annotate this action on the DA Form 984, section A, block 13.)

### 8. Surveillance test equipment.

The following equipment is to be used in testing items according to this procedure.

- a. Device, holding, hand signal, APE 1918.
- b. Tank, immersion, APE 1901.
- c. Measuring device, altitude and drift, APE 1908.
- d. Oven, preconditioning, APE 1916M1.
- e. Kit, test M125, M126, and M127 signals, APE 1918E001.
- f. Chamber, low-temperature, APE 1938 or APE 1904.
- g. Stopwatch, 2 each.
- h. Thermometer.
- i. Table, function testing, APE 1903.
- j. Indicator, wind speed, APE 1915 or equivalent.

### 9. Preparation for test.

a. Immerse 60 signals, within sealed metal containers, horizontally in 70 +/-10 degrees F (21 +/-5 degrees C) water to a depth of 9 inches below surface of water for 15 to 20 minutes. Wipe containers dry and temperature condition as follows:

(1) Temperature condition signals (in containers) 1-20 for 24 hours at 165 +/-10 degrees F (74 +/- 5 degrees C).

(2) Temperature condition signals (in containers) 21-40 for 24 hours at 70 +/-10 degrees F (21 +/- 5 degrees C).

(3) Temperature condition signals (in containers) 41-60 for 24 hours at -65 +/-10 degrees F (-64 +/- 5 degrees C).

b. Signals must be tested as soon as possible (but not longer than 15 minutes) after temperature conditioning.

c. Set-up APE 1918 and 1918E001 according to the APE manuals so that the signals can be launched remotely from the personnel shelter.

Lock firing lanyard in lanyard control box in the shelter. The person who installs the signals in launcher will carry key to control box at all times to preclude unauthorized access to lanyard.

### 10. Test procedure.

Launch signals vertically from fixture and record appropriate observations for each signal as instructed in paragraph 11 below.

### 11. Observations.

All observations of nonstandard conditions and

malfunctions, especially those not included among defects listed in paragraphs 15 and 16, 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 that are incorrect, misleading, incomplete, or unidentifiable.

b. Give location and extent of any rust, corrosion, damage, or deterioration.

c. Give the time to nearest tenth of a second during which three or more stars are burning.

d. Give the time to nearest tenth of a second from ignition of first star until last star extinguishes.

### 12. Definitions.

None necessary.

### 13. Classification of defects.

Defects observed during inspection and testing will be classified and reported according to paragraphs 14 and 15 below and with 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 recommendations of a QASAS as to classification.

### 14. Non-functioning defects.

- a. Critical-
  - (1) Primer above flush.
  - (2) Color of cork disk incorrect.
  - (3) End color of container missing or incorrect.
  - (4) Embossing of container is either missing or incorrect.
  - (5) Firing cap assembled on primer end.
- b. Major-
  - (1) Cork disk improperly seated causing loose components.
  - (2) Key missing or with major damage precluding use.
  - (3) Instruction label missing or illegible to extent that firing instructions cannot be read.
  - (4) Metal container leaks.
  - (5) Signal damaged to preclude proper functioning.
  - (6) Major rust or corrosion.
  - (7) Signal cannot be removed from container even with handtool.
- c. Minor-
  - (1) Removal of signal from metal container requires use of handtools (pliers, etc.).
  - (2) Tear strip breaks preventing removal of signal without use of handtool.
  - (3) Minor rust or corrosion.
  - (4) Markings (other than instruction label) missing or illegible.

**15. Functioning defects.**

- a. Critical-
  - (1) Signal bursts in launcher (FK001).
  - (2) Signal bursts within 100 feet of launcher (FK002).
  - (3) Signal ejects within 50 feet above ground (FK006).
  - (4) Signal ejects between 50-100 feet above ground and within a horizontal distance of 250 feet from launcher (FK003).
  - (5) Signal incorrect color (FK005).
- b. Major-
  - (1) Signal fails to project (FK020).
  - (2) Signal bursts at 100 feet or more from launcher (FK022).
  - (3) Between 0 and 2 stars are expelled and ignite (FK029).
  - (4) Angle of departure from vertical is more than 30 degrees (FK025).\*
  - (5) Altitude of first trace of light is less than 500 feet (FK024).\*
  - (6) Three or more stars burn less than 3 seconds (FK032).\*
- c. Minor-
  - (1) Only three or four stars are expelled and ignite (FK053).\*
  - (2) Three or more stars burn more than seconds but less than 5 seconds (FK055).
  - (3) Extinction interval between third and fifth stars exceeds 4 seconds (FK056).\*

**NOTE**

**The codes following each functional defect is for use by testing facility personnel only.**

**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 according to 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 following requirements are met on inspection of 60 items:
      - (a) Not more than 3 major defectives,
      - (b) Not more than 5 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 following requirements are met on inspection of 60 items:
      - (a) Not more than 8 major defectives,
      - (b) Not more than 13 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 60 items:
      - (a) Not more than 3 major defectives,
      - (b) Not more than 5 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 60 items:
      - (a) Not more than 8 major defectives.
      - (b) Not more than 13 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.

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\*Will be counted as defects only for signals 21-60; will be reported for information only for signals 1-20.

By Order of the Secretary of the Army

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