

DEPARTMENT OF THE ARMY SUPPLY B ULLETIN

SIGNAL, SMOKE, GROUND: PARACHUTE,
M128A1, GREEN (1370-L324); M129A1, RED 1370-L323);
M194, YELLOW (1370-L293)

AMMUNITION SURVEILLANCE PROCEDURES

Headquarters Department of the Army, Washington, D.C.

20 November 1987

The proponent agency of this supply bulletin is the Commander, U.S. Army Armament, Munitions and Chemical Command. 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, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAS-P, Rock Island, IL 61299-6000

	Paragraph	Page
Purpose and scope	1	1
Item description	2	1
Safety	3	1
Personnel	4	2
Size of sample.....	5	2
Sample selection	6	2
Surveillance test equipment	7	2
Preparation for test.....	8	2
Test procedure	9	2
Observations	10	3
Classification of defects.....	11	3
Nonfunctioning defects.....	12	3
Functioning defects	13	3
Evaluation.....	14	4
Records and reports.....	15	5

1. Purpose and scope. This bulletin, when used in conjunction with SB 742-1, provides a method for determining serviceability of the subject signals. The visual inspection and function testing in this procedure will be accomplished under a centralized control program managed by the US Army Armament, Munitions and Chemical Command (AMCCOM), AMSMCQAS Rock Island, IL 61299-6000. This procedure is to be used in the serviceability assessment of specified signal lots based on inspection and testing of individual signals only.

a. The provisions of this bulletin are mandatory for all Department of the Army organizations within CONUS and OCONUS with an ammunition receipt, storage, and distribution mission.

b. This bulletin is not intended for use by organizations with stocks in basic loads. SB 742-1 contains additional information pertaining to frequency of test, sample selection, defect standards, records and reports.

2. Item description. Parachute smoke signals consist of a parachute suspended smoke composition element and a rocket motor propulsion assembly enclosed in a hand-held aluminum launching tube. The base of the 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. Stabilizing fins on the rocket are folded parallel to the axis of the signal. An assembly bolt which also transfers the initiating charge flash to the propellant extends into the center of the solid propellant filling the propulsion assembly. The parachute with suspension cord is packed on top of the smoke charge, and the tube end is sealed with a rocket barrel seal.

3. Safety. The inspection and surveillance function

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testing must be conducted in accordance with provisions set forth in appropriate safety regulations and implementing instructions, with special attention given to technical manuals describing the item. A Standing Operating Procedure (SOP) for this operation is required and will delineate specific safety requirements. The absence of a safety requirement in this or any other publication is not to be construed that precaution is unnecessary.

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

5. Size of sample. Unless otherwise directed, a sample size of 60 signals is required to make up a representative sample from a lot for surveillance function test.

7. Surveillance test equipment. The following equipment is to be used in testing signals in accordance with this procedure.

a. Ammunition Peculiar Equipment (APE) required will be:

APE 1901,	Tank, Immersion;
APE 1908,	Measuring Device, Altitude and Drift;
APE 1912,	Thermometer, Cup-Cased (commercial or equivalent);
APE 1914,	Anemometer (commercial or equivalent);
APE 1915,	Indicator, Wind Speed (commercial or equivalent);
APE 1916M1,	Oven, Preconditioning;
APE 1918 (or M1),	Device, Holding, Hand Signal;
APE 1918E001,	Kit, Test M125, M126, and M127 Signals;
APE 1937,	Shelter, Personnel Protection;
APE 1938,	Chamber, Low Temperature.

b. Additional test equipment required will be two stopwatches, each accurate to a tenth of a second.

8. Preparation for test.

a. Number the sample signals 1 through 60 and identify each one as to the box from which it was drawn.

b. Immerse the 60 signals, without removing them from their metal containers, in water at 70 degrees + 10 degrees F (20 degrees + 5 degrees C) for 15 to 20 minutes. Position signals horizontally 6-9 inches (15-23 centimeters) below the water surface. The immersion tank, APE 1901, should be used for this purpose. Wipe the packed signals dry and temperature condition them as indicated below.

c. Cold temperature condition signals 1 through 20 for a minimum of 16 hours at 65 degrees + 10 degrees F (55 degrees + 5 degrees C).

d. Normal temperature condition signals 21 through 40 for a minimum of 16 hours at 70 degrees + 10 degrees F (20 degrees + 5 degrees C).

e. Hot temperature condition signals 41 through 60 for a minimum of 16 hours at 160 degrees + 10 degrees F (70 degrees + 5 degrees C).

To satisfy the requirements of a periodic inspection prescribed in conjunction with the surveillance function test, additional sampling of the item, inner and outer packing is required according to SB 742-1.

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

9. Test procedure. This test is to determine the ability of the signal to function at the proper altitude and emit an effective smoke for the prescribed length of time while airborne. Signals should be tested immediately after temperature conditioning.

a. Function testing will be conducted during daylight hours only.

b. Testing will not be conducted when the wind velocity exceeds 15 miles (24 kilometers) per hour, during an electrical, rain, or snow storm, or during any other conditions that might adversely affect the test results or create a hazardous condition.

c. Testing should also comply with all other applicable regulations, i.e., U.S. Environmental Protection Agency (EPA), local restrictions, etc.

d. Set up the signal holding device as instructed in the APE 1918 Operational Manual. The sample signals will be launched vertically.

e. Lock the firing lanyard in the lanyard control box of the personnel protection shelter, APE 1937. The

person assigned to set-up and function the device will carry the control box key at all times to prevent unauthorized access to the lanyard.

f. Open the metal signal container, take out the signal, and remove the aluminum firing cap from the lower end of the signal.

g. Complete the visual inspection for non-functioning defects according to this SB and SB 742-1; and record the appropriate observations as instructed in paragraphs 10 and 12 below.

h. Point the ejection end of the signal upward and away from personnel, and slowly push the firing cap onto the primer end of the signal until open end of the cap is in alignment with the red band.

i. Place the signal in the holding device, and attach the lanyard as shown in the APE 1918 Operational Manual.

j. From inside the shelter, unlock the lanyard control box and pull on the lanyard to launch the signal.

k. Record the appropriate observations for each signal as instructed in paragraphs 10 and 13 below.

10. Observations. All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 12 and 13 below or in SB 742-1, should be described in full detail. Pictorial evidence of nonstandard conditions should be included whenever pertinent and practical. The following observations, as a minimum, must be reported:

a. Report any marking which is incorrect, misleading, incomplete or unidentifiable.

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

c. Record the launch angle from the vertical to the nearest degree. This angle is measured between a vertical line from the point of launch and a line from the point of launch to the point of functioning.

d. Report the functioning altitude to the nearest 5 feet (1.5 meters). Altitudes will be measured from the point at which the smoke assembly ejects and the point at which the first trace of smoke is visible. The altitude and drift measuring device, APE 1908, should be used for these measurements.

e. Record the smoke emission time to the nearest half-second. This is the time during which smoke is of good volume, easily visible, and with color that is clearly distinguishable.

NOTE

While an improper emission time (too short or too long) is a defect only for those signals preconditioned by cold temperature (para 9c) or by normal temperature (para 9d), the smoke emission time for all signals must be recorded and reported. The emission time for those signals preconditioned by

hot temperature (para 9e) will be reported for information only.

f. Report the occurrence of all malfunctions or nonstandard conditions classified as defects in paragraphs 13 and 14 below or in SB 742-1; and report anything, even if not classified as a defect, which, in the opinion of responsible personnel, merits consideration.

11. Classification of defects. Defects observed during inspection and testing will be classified and reported in accordance with paragraphs 13 and 14 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 the recommendations of the QASAS as to classifications.

12. Nonfunctioning defects.

a. Critical

(1) Primer is above flush.

(2) Firing cap is assembled on the primer end.

b. Major

(1) Instruction label is missing.

(2) Container key is missing.

(3) An internal component is missing. NOTE: :

Shake the signal in an up-and-down (vertical) movement. A noticeable "clanking" sound would indicate that a component is missing (major defects). However, some feeling of movement can be expected with older signals as sealing components tend to "settle"; this phenomenon is not a defect.

(4) There is major damage to any important component, such as the

(a) Key.

(b) Inner sealed container.

(c) Launch tube (or rocket barrel).

(d) Firing cap assembly.

(e) Or any other component (specify).

(5) Primer is missing or not sealed.

(6) Signal cannot be removed from its container (even by using tools).

(7) Cork sealing disc is loose.

c. Minor-

(1) Marking (other than color) is misleading, illegible or unidentifiable.

(2) There is evidence of moisture inside the sealed container.

(3) Removal of the signal from its container requires the use of hand tools.

(4) The container tear strip breaks or terminates, preventing normal removal of the signal.

13. Functioning defects.

a. Critical

(1) Signal bursts (explodes) in the launcher. (FK001)

(2) Signal bursts (explodes) within 100 feet (30 meters) of the launcher. (FK002)

(3) Smoke assembly ejects at an altitude (vertical

distance) of less than 100 feet (30 meters) but not less than 50 feet (15 meters) above the ground and within a horizontal (ground distance of 250 feet (76 meters) of the launcher. (FPOO1)

(4) Smoke assembly ejects at an altitude of less than 50 feet (15 meters) above the ground regardless of the horizontal distance from the launcher. (FP002)

(5) Smoke color is incorrect. (FP003)

b. Major-

(1) Signal fails to launch. (FK020)

(2) Signal launches but projects less than 100 feet (30 meters) from the launcher and the smoke assembly fails to eject. (FK021)

(3) Signal bursts (explodes) at a distance of 100 feet (30 meters) or more from the launcher. (FK022)

(4) Smoke assembly ejects at an altitude of less than 300 feet (91 meters) but not less than 50 feet (15 meters) above the ground beyond 250 feet (76 meters) horizontal distance from the launcher. (FP028).

(5) Smoke assembly ejects at an altitude of less than 300 feet (91 meters) but not less than 100 feet (30 meters) within a horizontal distance of 250 feet (76 meters) from the launcher. (FP029).

(6) Altitude of the first trace of smoke is less than 500 feet (152 meters) for normal temperature conditioned signals (see para 9d). (FP021)

(7) Angle of departure from the vertical is greater than 30 degrees for normal temperature conditioned signal (see para 9d). (FK025)

(8) Smoke assembly is not ejected. (FP022)

(9) Smoke assembly fails to emit any smoke. (FP023)

(10) Emission time of smoke in the air for signals preconditioned by cold temperature (para 9c) or by normal temperature (para 9d) is less than 4 seconds for M128A1 and M129A1 (green and red) signals. (FP024)

(11) Emission time of smoke in the air for signals preconditioned by cold temperature (para 9c) or by normal temperature (para 9d) is less than 7 seconds for M194 (yellow) signals. (FP030)

(12) Parachute malfunctions causing emission time of smoke in the air to be less than 4 seconds for M128A1 and M129A1 (green and red) signals (cold and normal temperature conditioned signals). Describe the type of malfunction, such as

(a) Parachute separated from assembly.

(FP027)

(b) Parachute failed to open. (FP027)

(c) Parachute opened only partially.

(FP027)

(d) Parachute delayed opening. (FP027)

(13) Parachute malfunctions causing emission time of smoke in the air to be less than 7 seconds for M194 (yellow) signals (cold and normal temperature conditioned signals). Described the type of malfunction such as4

(FP031) (a) Parachute separated from assembly.

(b) Parachute failed to open. (FP031)

(c) Parachute opened only partially.

(FP031)

(d) Parachute delayed opening. (FPO31)

c. Minor

(1) Primer ruptures. (FK060)

(2) Smoke assembly ejects at an altitude of less than 500 feet (152 meters) but not less than 300 feet (91 meters) above the ground. (FP050)

(3) Altitude of first trace of smoke is less than 600 feet (183 meters) but not less than 500 feet (152 meters). (FP051)

(4) Emission time of smoke in the air for signals preconditioned by cold temperature (para 8c) and by normal temperature (para 9d) is less than 6 seconds, but not less than 4 seconds, for M128A1 and M129A1 (green and red) signals. (FP052) (5) Emission time of smoke in the air for signals preconditioned by cold temperature (para 8c) and by normal temperature (para 9d) is less than 9 seconds, but not less than 7 seconds, for M194 (yellow) signals. (FP056)

(6) Emission time of smoke in the air for signals preconditioned by normal temperature (para 8c) is greater than 24 seconds for M128A1 and M129A1 (green and red) signals. (FP054)

(7) Emission time of smoke in the air for signals preconditioned by cold temperature (para 8c) is greater than 20 seconds for M194 (yellow) signals.(FP057)

(8) Emission time of smoke in the air for signals preconditioned by normal temperature (para 8d) is greater than 20 seconds for all signals (all models). (FP055)

NOTE

The five digit functioning defect code listed after each defect is for use at testing facilities only.

14. Evaluation. Using the following criteria, and considering nonfunctional characteristics and functional codes separately, an interim condition code will be assigned according to SB 742-1. A lot will be classified condition code J and reported in accordance with 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 it meets the following requirements on inspection by attributes of 60 signals:

(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 it

meets the following requirements on inspection by attributes of 60 signals: (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 it meets the following requirements in the test of 60 signals:

- (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 shall qualify if it meets the following requirement signals.

- (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, shall be functional code D.

15. 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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