DEPARTMENT OF THE ARMY SUPPLY BULLETIN

SIGNAL, ILLUMINATION, RED STAR, DISTRESS, PARACHUTE, M131 SURVEILLANCE FUNCTION TEST

Headquarters, Department of the Army, Washington, DC
9 October 1971

1. **Purpose and Scope.** This bulletin when used in conjunction with SB 742-1 provides a method for deter mining the serviceability of the subject item. The bulletin is to be used in the assessment of the serviceability of individual signals and their containers when the signals are packed one per container. When more than one signal is packed per container, this bulletin applies to the individual signals only. The provisions of this bulletin are mandatory for use by all Department of the Army organizations within CONUS and overseas with a 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 recommendation for improving this bulletin by the individual user is encouraged. Reports should be submitted on DA= Form 2028 (Recommended Changes to Publications) and forwarded direct to Director, US Army Materiel Systems Analysis Agency, ATTN: AMXSY-RM-WM, Aberdeen Proving Ground, MD 21005.

3. **Safety.** The surveillance 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.

4. Size of Sample. The number of signals required to make up a representative sample from a lot for a surveillance function test is as follows:

For check investigation	as directed
For classification investigation	50
For confirmation investigation	as directed

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

6. Preparation for Test.

a. Number the signals 1 through 50 and identify them as to the box from which they were drawn.

b. Immerse the 50 signals (without removing them from their containers) in water at $^{70^\circ}$ F. + 10 $^\circ$ F. for- 15 to 20 minutes. Position signals horizontally 6 to 9 inches below the water surface. APE 1901 should be used for this purpose. Wipe the signals dry and temperature condition them as indicated below

c. c. Temperature condition signals 1 through 25 for 24 hours at 700 + 100F.

d. Temperature condition signals 26 through 50 for 24 hours at -650 +± $^{10^\circ}$ F.

7. Test Procedure. Launch the signals vertically from a suitable fixture as soon as possible after temperature conditioning. Holding device for hand signals APE 1918 should be used for this purpose. Signals will not be fired when the wind velocity exceeds 15 mph, during electrical, rain, or snow storms, or during any other weather conditions that might make the observations inaccurate.

8. Observations. All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 10 and 11 should be described in full detail. Pictorial evidence of nonstandard conditions, whenever pertinent and practical, should be included. The observations to be reported are as follows:

a. The ignition altitude is measured from the point of launch to the point (identified by a puff of smoke) where the parachute and illuminant assembly eject from the motor assembly.

b. Altitude (to the nearest foot) of signal after 27 seconds of burning for signals conditioned at 70 + 10 F. only.

c. Angle from the vertical (angle between a vertical line from the point of launch and a line from the point of launch to the point of functioning) to the nearest degree.

d. Burning time (to the nearest tenth of a second) of signal in air. This is the time during which the illuminant is of good volume, easily visible, and with color easily distinguishable.

e. All instances of any of the following:

(1) In nonstandard marking state whether misleading, incomplete, or unidentifiable.

(2) Where rust or corrosion appear give location and extent.

(3) The occurrence of any nonstandard conditions or malfunctions classified as defects in paragraphs 10 and 11.

(4) The occurrence of any nonstandard conditions or malfunctions not classified as defects in paragraphs 10 and 11, but which in the opinion of responsible personnel merits consideration.

9. Classification of Defects. Defects observed during inspection and testing will be classified in accordance with paragraphs 10 and 11 and SB 742-1. Any defects observed which are not listed in paragraphs 10 and 11 will be fully described and reported with the ammunition inspector's recommendation as to classification.

10. Nonfunctioning Defects.

a. Critical.

(1) Safety latch missing.

(2) Safety latch damaged to the extent that the hooked portion does not protect the primer.

b. Major.

(1) Any of the following components missing:

(a) Pull tab.

(b) Tear strip extension.

(c) Striker arm spring.

(d) Any other component. Specify.

(2) Major damage to components such as:

(a) Pull tab.

(b) Tear strip extension.

(c) Striker arm spring.

(d) Any other component. Specify.

(3) Major rust.

(4) Major corrosion.

(5) Signal cannot be removed from container even with hand tools such as pliers.

(6) Marking misleading as to type of signal.

c. Minor.

(1) Marking is unidentifiable but is not misleading as to type of signal.

(2) Evidence of moisture inside sealed container.

(3) Tear strip breaks or terminates, preventing the removal of the signal from its container.

(4) Removal of signal from container requires use of handtools such as pliers.

(5) Pull ring is missing.

(6) Striker arm is cracked.

(7) Minor rust.

(8) Minor corrosion.

11. Functioning Defects.

a. Critical.

(1) Premature burst.

(a) Signal bursts in launcher.

(b) Signal bursts within 100 feet of the launch-

(c) Star ejects within 100 feet of the launcher.*
(2) Incorrect color of star.

b Major.
(1) Signal fails to project.
(2) Signal projects less than 100 feet from the launcher but fails to ignite.
(3) Signal bursts at a distance of 100 feet or more from the launcher.
(4) Altitude of functioning is less than B but not less than A of table 1.
(5) Angle of departure from the vertical is greater than C of Table 1.
(6) Star is not expelled.
(7) Star fails to ignite.
(8) Altitude of the signal after 27 seconds of star burning is less than B of table 1 below.
(9) Star burning time in air is less than B of table 1 below.
(10) Parachute malfunctions* and star burning time in air is less than B of table 1 below.

c. Minor.
(1) Altitude of functioning is less than C but not less than A of table 1 below.
(2) Angle of departure from the vertical is greater than B but is not greater than C of table 1 below.
(3) Altitude of the signal after 27 seconds of star burning is less than C but not less than B of table 1 below.
(4) Star burning time in air is less than C but is not less than B of table 1 below.
(5) Parachute malfunctions* and star burning time in air is less than C but is not less than B of table 1 below

Table 1. Limits for Functioning Characteristics

Observation	70 + 10 F			-65 + 10 F		
	A	B	C	A	B	C
Altitude of functioning (ft)100	100	1100	1300	100	900	1050
Altitude after 27 seconds (ft)		750	850			
Angle of departure from vertical (deg)		30	40		70	75
Burning time (sec)		25	27		25	27

*Specify type of parachute malfunction such as- separation from assembly. failed to open, opened only partially, delayed opening, etc.

12. Evaluation. Functional and nonfunctional codes will be recommended in accordance with the following criteria and the interim condition code will be assigned in accordance with SB 700-1300-1. A lot will be classified Condition Code J and reported if one critical defect is observed.

a. Nonfunctional codes.

(1) Code A. A lot not classified as Code J shall quality for Code A if it meets the following requirements on inspection of 50 signals by attributes:
(a) Not more than 2 major defectives.
(b) Not more than 4 minor defectives.

(2) *Code B.* A lot not classified as Code J or Code A shall qualify for Code B if it meets the following requirements on inspection of 50 signals by attributes:
(a) Not more than 7 major defectives.
(b) Not more than 10 minor defectives.

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

b. *Functional Codes.*

(1) *Code A.* A lot not classified as Code J shall qualify for Code A if it meets the following requirements in the test of 50 signals:
(a) Not more than 2 major defectives.
(b) Not more than 4 minor defectives.

(2) *Code B.* A lot not classified as Code J or Code A shall qualify for Code B if it meets the following requirements in the test of 50 signals:
(a) Not more than 7 major defectives.
(b) Not more than 10 minor defectives.

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

13. Records and Reports. Function test results will be recorded and reported as outlined in SB 742-1.

*Star ejection upon ground impact due to fuse failure after normal flight will not be considered a critical defect.

By Order of the Secretary of the Army:

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ARNG: None
USAR: None
For explanation of abbreviations used, see AR 310-50.

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