

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

SIGNAL, ILLUMINATION, GROUND:  
GREEN STAR, PARACHUTE, M19 SERIES  
SURVEILLANCE FUNCTION TEST

HEADQUARTERS, DEPARTMENT OF THE ARMY, WASHINGTON, D. C.

7 June 1971

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**1. Purpose and scope.** This bulletin when used in conjunction with SB 742-1 provides a method for determining 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 issue 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 standard, reports, and records are contained in paragraph 1-9 of SB 742-1.

**2. Reporting Of Equipment Publication Improvements.** The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding Officer, U.S. Army Aberdeen Research and Development Center, ATTN: AMXRD-ARW, 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 material.

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

- For cheek investigation.....as directed
- For clarification investigation ..... 48
- For confirmation investigation.....as directed

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

**6. Preparation for test.** a. Number the signals 1 through 48 and identify them as to box from which drawn.

b. Immerse signals 1 through 24 (without cartridges and without fiber containers) in water at 70° F ± 10°F for 15 to 20 minutes. Position signals horizontally 6 to 9 inches below the water surface. APE 1901 equipment should be used for this purpose. Signals will be wiped dry and tested as outlined in paragraph 7 below within two hours after removal from the water.

c. Signals 25 through 48 will receive no treatment prior to testing.

**7. Test procedure.** a. Signals will be projected from a rifle grenade launcher of the M7 series attached to the muzzle of a service rifle using caliber .30 grenade cartridge M3. The rifle will be fired in a vertical position mounted on Holding Device APE 1902. Signals will not be fired when wind velocity exceeds 15 mph. Signals with cracked, bent, or otherwise distorted bodies or stabilizer assemblies will not be fired but will be reported by type of defect as outlined in paragraph 10 below.

b. Cartridges packed with corresponding signals will be used in these tests unless their use is precluded because they are not standard for the rifle being used, in which case, other rifle grenade cartridges that are standard for the rifle being used may be substituted. If substitute cartridges are used, the grade for the lot will not apply to the cartridges packed with the signals.

**8. Observations.** All observations of nonstandard conditions and malfunctions, especially those not included among the defects listed in paragraphs 10 and 11 below, 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. Time, to nearest tenth of a second, from firing to ignition of signal composition (for information purposes).

b. Functioning altitude, to the nearest foot. APE 1908 equipment should be used for this purpose.

c. Altitude at extinction, to the nearest foot (for information purposes).

d. Total burning time above 100 feet, to the nearest tenth of a second.

e. All instances of any of the following

(1) Nonstandard marking. State whether misleading, incomplete, or unidentifiable.

(2) Rust or corrosion. Give location and extent.

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

(4) The occurrence of any nonstandard conditions or malfunctions not classified as defects in paragraphs 10 and 11 below, 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 below, and 1-5 of 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. *Major*

(1) Disk and disk lining missing.

(2) Major damage (para 1-5c (5) (b), SB 742-1) to components such as:

(a) Container bulges, indicating serious gas formation.

(b) Identification top disassembled to the extent that the waterproof seal is broken.

(c) Identification top damage to the extent that the waterproof seal is broken.

(d) Either of the following cracked to an extent which precludes use of the signal:

1 Case

2 Stabilizer

(e) Disk and disk lining damaged to the extent that propelling charge can escape.

(3) Major rust (para 1-5c (4) (b), SB 742-1).

(4) Major corrosion (para 1-5c (4) (c) 2, SB 742-

1).

b. *Minor.*

(1) Plug pulled out of assembly.

(2) Identification top not fully seated.

(3) Identification top inadequately lacquered.

(4) Cork plug not removable by hand.

(5) Minor rust (para 1-5c (4) (b), SB 742-1).

(6) Minor corrosion (para 1-5c (4) (c) 1, SB 742-

1).

**11. Functioning defects.** a. *Critical.*

(1) Signal bursts on launcher or less than 50 feet from launcher.

(2) Candle is wrong color.

b. *Major.*

(1) Misfire

(2) Hangfire

(3) Signal functions at less than 150 feet but not less than 50 feet from launcher.

- (4) Stabilizer assembly bursts.
- (5) Stabilizer assembly ruptures.
- (6) Stabilizer assembly separates from body.
- (7) Star fails to ignite.
- (8) Star color is not clearly distinguishable.
- (9) Star is not expelled.
- (10) Star breaks up.
- (11) Burning time is less than 14 seconds.
- (12) Parachute malfunctions\* and burning time in air is less than 14 seconds.
- (13) Burning time is greater than 36 seconds.

*c. Minor.*

- (1) Parachute fails to open properly.
- (2) Star breaks away from parachute.
- (3) Star burns parachute.
- (4) Star burns shroud lines.
- (5) Case split upon firing.
- (6) Burning time is less than 17 seconds but is not less than 14 seconds.
- (7) Altitude of functioning is less than 500 feet but not less than 150 feet.
- (8) Parachute malfunctions\* and burning time in air is less than 17 seconds but not less than 14 seconds.
- (9) Burning time is greater than 33 seconds but not greater than 36 seconds.

**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 qualify for Code A if it meets the following requirements on inspection of 48 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 48 signals by attributes.

- (a) Not more than 6 major defectives.
- (b) Not more than 10 major defectives.

(3) Code C. A lot not classified as Code J, Code A, or Code B shall qualify for 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 48 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 48 signals.

- (a) Not more than 6 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 qualify for Code D.

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

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

**By Order of the Secretary of the Army:**

**W. C. WESTMORELAND,**  
*General, United States Army,*  
*Chief of Staff.*

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**VERNE L. BOWERS,**  
*Major General, United States Army,*  
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CONARC (5)

OS Maj Comd (10)  
LOGCOMD (2)  
Armies (10)  
Br Svc Sch (51)  
USAAPSA (25)  
PG (5)  
Gen Dep (10)  
Army Dep (10)  
Dep (10)  
Arsenals (5)

*NG:* None


*USAR:* None

For explanation of abbreviations used, see AR 310-50.

**\* U.S. GOVERNMENT PRINTING OFFICE : 1995 O - 164-983**

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

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## The Metric System and Equivalents

### Linear Measure

1 centimeter = 10 millimeters = .39 inch  
 1 decimeter = 10 centimeters = 3.94 inches  
 1 meter = 10 decimeters = 39.37 inches  
 1 dekameter = 10 meters = 32.8 feet  
 1 hectometer = 10 dekameters = 328.08 feet  
 1 kilometer = 10 hectometers = 3,280.8 feet

### Weights

1 centigram = 10 milligrams = .15 grain  
 1 decigram = 10 centigrams = 1.54 grains  
 1 gram = 10 decigrams = .035 ounce  
 1 decagram = 10 grams = .35 ounce  
 1 hectogram = 10 decagrams = 3.52 ounces  
 1 kilogram = 10 hectograms = 2.2 pounds  
 1 quintal = 100 kilograms = 220.46 pounds  
 1 metric ton = 10 quintals = 1.1 short tons

### Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce  
 1 deciliter = 10 centiliters = 3.38 fl. ounces  
 1 liter = 10 deciliters = 33.81 fl. ounces  
 1 dekaliter = 10 liters = 2.64 gallons  
 1 hectoliter = 10 dekaliters = 26.42 gallons  
 1 kiloliter = 10 hectoliters = 264.18 gallons

### Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch  
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches  
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet  
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet  
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres  
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

### Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch  
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches  
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

## Approximate Conversion Factors

<i>To change</i>	<i>To</i>	<i>Multiply by</i>	<i>To change</i>	<i>To</i>	<i>Multiply by</i>
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

### Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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