

DEPARTMENT OF THE ARMY SUPPLY BULLETIN  
SIGNAL, SMOKE AND ILLUMINATION,  
MARINE: AN-MK 13 MOD 0  
(DODAC 1370-L275)  
AMMUNITION SURVEILLANCE  
PROCEDURES

Headquarters, Department Of The Army, Washington, DC  
20 October 1983

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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 Signal, Smoke and Illumination, Marine: AN-MK 13 Mod O (1370-L275). Visual inspections and 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, IL 61299. This bulletin is to be used in the serviceability assessment of specified signal lots based on an inspection and test of individual signals only. The provisions of this bulletin are mandatory for use by 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. SB 742-1 has additional information pertaining to frequency of test, sample selection, defect standards, reports and records.

**2. Errors, omissions, and recommended changes.** 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) may be completed and forwarded to Commander, ARRCOM, ATTN: DRSAR-QAS, Rock Island, IL 61299.

**3. Safety.** Visual inspections and surveillance function tests must be conducted in compliance with all appropriate safety regulations and instructions with special attention devoted to technical manuals describing the item. A Standing Operating Procedure (SOP) is also required for this operation and will delineate specific safety requirements.

\*This bulletin supersedes SB 742-1370-22, 27 July 71.

**4. Personnel.** Visual examination and function testing will be conducted under the direct control of a Quality Assurance Specialist (Ammunition Surveillance), hereinafter referred to as a QASAS. All other personnel must be familiar with the procedures and aware of the hazards involved.

**5. Size of sample.** Unless otherwise directed, a sample size of forty (40) signals is required to make up a representative sample from a lot for a visual examination and surveillance function test. To satisfy the requirements of the periodic inspection prescribed in conjunction with the surveillance function test, additional sampling of inner and outer packing is required by SB 742-1.

**6. Sample selection.** Sample signals will be selected in accordance with the provisions of SB 742-1 except that not more than twelve 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 completed prior to shipment. Samples to be shipped must be packed and marked in accordance with SB 742-1.

**7. Surveillance test equipment.** The surveillance function test of the signal requires a thermometer, two stopwatches, and appropriate personal safety equipment, such as safety glasses (goggles and/or face shield) and asbestos gloves. The following Ammunition Peculiar Equipment (APE) may also be used: Immersion tank, APE 1901; Testing table, APE 1903; and Cup-cased thermometer, APE 1912.

**8. Preparation for test.**

a. Number the sample signals I through 40 and identify each one as to the box from which it was drawn. Complete the periodic inspection in accordance with SB 742-1 and record the appropriate observations described in paragraphs 10 and 12 below.

b. Immerse half of the samples, signals I through 20, in water at  $70^{\circ} \pm 10^{\circ}\text{F}$  ( $21.1^{\circ} \pm 5.6^{\circ}\text{C}$ ) for 24 hours. Position them horizontally 6 to 9 inches (15 to 20 centimeters) below the water surface. The immersion tank (APE 1901) may be used for this purpose. These signals will be wiped dry and tested as outlined in paragraph 9 below within two hours after removal from the water.

c. The remaining samples, signals 21 through 40, will receive no treatment or conditioning prior to testing.

**9. Test procedure.** This test is to determine the ability of the signal to ignite and provide satisfactory smoke and illumination for the prescribed period of time. Testing will not be conducted in a strong wind; during an electrical, rain, or snow storm; or during any other conditions that might adversely affect the test results. Testing also must comply with all other applicable regulations; i.e., US Environmental Protection Agency (EPA), etc.

a. Signals with sample numbers I through 10 and 21 through 30 will be tested first for smoke emission and

then for flare burning. Signals numbered 11 through 20 and 31 through 40 will be tested first for flare burning and then for smoke emission. Therefore, the entire sample of forty signals will be divided into four groups (of ten each) depending on whether each signal was water conditioned or not and which end was tested first. The inspection report must clearly indicate by sample number the particular group to which every signal belongs.

b. The signal has an illustrated label or decal which shows in detail the method of operation. The plastic protective cap and/or the metal body on the flare end has protrusions or beads for night identification. The lanyard on the flare end pull ring has a washer tied to the end for further identification in darkness. The plastic protective cap on the smoke end is smooth.

c. Remove the protective cap which is fitted to the signal body on the end to be tested. The sample signal should then be placed in the holding device on the testing table (APE 1903) and canted at a  $45^{\circ}$  angle.

d. Keeping the face away from the signal, give a quick pull on the ring, which should come away from the cap, and thereby remove the pull strip from the cover and ignite the composition. If unable to remove the soldered cap in this manner, bring the pull ring down over the rim of the can and press down with the heel of the hand, using the ring as a lever to break the seal.

**CAUTION**

**Do not use a twisting motion on the pull ring since the pull tab may break precluding that end of the signal from functioning. If the smoke end flames, an attempt should be made to snuff out the flame by vigorously shaking, quickly rotating, and/or momentarily submerging the smoke end in water, sand, or dirt. Smoke should resume. Any time a burning signal is touched or held by hand, the operator must wear asbestoss gloves (or equivalent) and suitable eye protection (safety glasses, goggles, and/or face shield). The signal should be held at arm's length and canted at a  $45^{\circ}$  angle (except when snuffing out flame).**

e. After one end of the signal has been tested, it will be allowed to cool; and then the other end will be tested following the above instructions. The end that has been tested may be doused in water as soon as it stops burning in order to cool the metal parts rapidly so that the other end may be tested immediately. Do not completely submerge the whole signal in water (with one pull strip removed, it is no longer waterproof). Suitable gloves and eye protection must be worn while handling burning or hot signals.

f. After each end is tested, record the appropriate observations 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 report must provide the following information as a minimum.

a. Note any instance of marking which is misleading, incomplete, or unidentifiable.

b. Give the location and extent of rust or corrosion.

c. Record the smoke emission time to the nearest second. The smoke shall be emitted for 10 seconds minimum to 32 seconds maximum.

d. Record the flare burning time to the nearest second. The flare shall burn for 12 seconds minimum to 30 seconds maximum.

e. Note the density of the smoke (satisfactory or unsatisfactory). The smoke shall be of good or satisfactory volume and easily visible.

f. Note the intensity of the flare (satisfactory or unsatisfactory). The flare shall be easily visible.

g. The color of the smoke (orange) and the flare (red) shall be clearly distinguishable.

h. Record the occurrence of any or all nonstandard conditions or malfunctions classified as defects in paragraphs 12 and 13 below or in SB 742-1; and record any nonstandard condition or irregularity (even if not specifically classified as a defect) which, in the opinion of responsible personnel, merits consideration.

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

**12. Nonfunctioning defects.** a. Critical.

(1) Both protective cap and soldered cap are detached.

(2) Both protective cap and soldered cap are loose to the extent that normal handling might detach them.

b. *Major*

(1) Protective cap is missing.

(2) Protective cap is badly damaged.

(3) Soldered cap is not securely seated.

(4) Pull ring is not secure.

(5) Identification as to which end is for smoke and which end is for flare is missing, illegible, or misleading.

c. *Minor*.

Marking (other than that listed in b(5) above) is misleading, missing, or illegible.

**13. Functioning defects.** a. Critical. None.

b. *Major*.

(1) The cap (state which end) can not be removed either by pulling on the pull ring or by using the ring as a lever to break the seal.

(2) Pull ring breaks or is separated from the soldering cap.

(3) Pull wire breaks on either end (or both ends) of the signal.

(4) Signal fails to ignite. (Indicate whether the smoke or flare end failed and whether the failure to ignite occurred for the first part fired or the second part fired.)

(5) Smoke emission time is less than 10 seconds.

(6) Flare burning time is less than 12 seconds.

(7) Both ends smoke.

(8) Both ends flare.

(9) Smoke end continues to flame after snuff-out procedure has been used.

(10) Color of flare is other than red.

(11) Color of smoke is other than orange.

(12) Density of smoke is unsatisfactory.

(13) Intensity of flare is unsatisfactory.

b. *Minor*.

(1) Smoke emission time is more than 32 seconds.

(2) Flare burning time is more than 30 seconds.

**14. Evaluation.** Using the following criteria, and considering functional codes and nonfunctional characteristics separately, 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 any critical defects are observed.

a. *Nonfunctional characteristics.*

(1) Serviceable for Unrestricted Issue and Use. A lot not classified as Condition Code J shall qualify as serviceable for unrestricted issue and use if it meets the following requirements on inspection of 40 signals by attribute:

(a) not more than 2 major defectives,

(b) not more than 3 minor defectives.

(2) Serviceable for Priority of Issue. A lot not classified as Condition Code J or serviceable for unrestricted issue and use shall qualify as serviceable for priority of issue if it meets the following requirements on inspection of 40 signals by attribute:

(a) not more than 5 major defectives,

(b) not more than 8 minor defectives.

(3) Unserviceable. A lot not classified as serviceable for unrestricted issue and use or for 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 40 signals.

- (a) not more than 2 major defectives,
- (b) not more than 3 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 40 signals:

- (a) not more than 5 major defectives,

By Order of the Secretary of the Army:

Official

ROBERT M. JOYCE  
*Major General, United States Army*  
*The Adjutant General*

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To be distributed in accordance with DA Form 12-34, requirements for Storage Serviceability Standards, SB 740 Series.

(b) not more than 8 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.** The visual inspection and function test results will be recorded and reported on DA Form 984 and other appropriate forms as outlined in SB 742-1.

JOHN A. WICKHAM, JR.  
*General, United States Army*  
*Chief of Staff*

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RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

 <div style="border: 1px solid black; border-radius: 15px; padding: 5px; display: inline-block; margin-left: 20px;"> <p style="margin: 0;"><i>THEN...JOT DOWN THE DOPE ABOUT IT ON THIS FORM. CAREFULLY TEAR IT OUT, FOLD IT AND DROP IT IN THE MAIL.</i></p> </div>		SOMETHING WRONG WITH PUBLICATION		
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PUBLICATION NUMBER		DATE SENT		
PUBLICATION DATE		PUBLICATION TITLE		
BE EXACT PIN-POINT WHERE IT IS				
PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	<p style="text-align: center; font-weight: bold;">IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT.</p>
PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER			SIGN HERE	

## 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 decigram = .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

To change	To	Multiply by	To change	To	Multiply by
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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