DEPARTMENT OF THE ARMY SUPPLY BULLETIN

SMOKE POT: FLOATING, SGF2, AN-M7(MK5-MOD 3) and AN-M7A1 STORAGE SERVICEABILITY STANDARD

Headquarters, Department of the Army, Washington, D. C.
5 August 1971

1. Purpose and Scope. This bulletin when used in conjunction with SB 3-30 and SB 742-1 provides the method of determining the serviceability of the Smoke Pots: Floating, SGF2, AN-M7(MK5-MOD 3) and AN-M7A1.

b. Scope. The provisions of this bulletin are mandatory for use in conducting surveillance on the Smoke Pots: Floating, SGF2, AN-M7(MK5MOD 3) and AN-M7A1. This bulletin is not intended for use by organizations with stocks in basic loads.

2. Applicable Documents. The following Government documents referenced herein form a part of this bulletin to the extent specified.

SB 3-30 ..... Serviceability Standard for CB Materiel.
SB 742-1 ..... Ammunition Surveillance and Quality Evaluation Procedure
TM 38-750 ..... The Army Maintenance Management System.
TM 743-200 ..... Storage and Materials Handling (DOD).
TM 743-200-1 ..... Storage and Materials Handling (DA).
TM 9-1300-206 ..... Care, Handling, Preservation, and Destruction of Ammunition.

3. Safety Provisions. During testing and handling of chemical material, inspection personnel shall observe the safety precautions prescribed in SB 3-30, TM 9-1300-206 and approved standing operating procedures.

4. Surveillance. *a. Surveillance Interval*.

(1) *Initial receipt and prestorage inspection*. Initial receipt and prestorage inspection will be conducted in accordance with SB 3-30 and SB 742-1.

(2) *Periodic cycle*. Surveillance will be performed at periodic cycles of one year. The first scheduled surveillance will be conducted within six months from the date of receipt at the depot.

(3) *Preissue inspection*. Preissue inspection of the subject item will be performed in accordance with SB 3-30 and/or SB 742-1 and the provisions of paragraphs 5 and 6 of this bulletin when one half or less of the periodic cycle remains. A visual examination will be performed (in accordance with para 5) on the subject item if more than one half of the periodic cycle remains prior to shipment of the item. If no initial cycle examination has been performed, a complete examination as specified in paragraphs 5 and 6 will be performed prior to shipment.

*This bulletin supersedes SB 3-30-174 9 November 1964.

b. Basis of surveillance. Surveillance for the subject item will be conducted on the basis of grand lots, manufacturer's lots and/or miscellaneous lots which ever is applicable

c. Formation of surveillance lots.

(1) *Grand lot*. A grand lot is created by grouping all lots from one manufacturer into one large single lot for the purpose of economy in surveillance.

(a) Kind, type and model. All lots must be the same kind, type and model; i.e., Smoke Pot: Floating, SGF2, AN-M7 (MK-MOD 3) or AN-M7A1.

(b) Manufacture. All lots must be the product of the same manufacturer or reconditioning agency.

(c) Packing. All lots must have the same type packing and identification markings.

(d) Storage. All lots must be stored under similar conditions at the same depot.

(e) Serviceability lot status. All lots must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu of prior surveillance.

(2) Manufacturer's lot. A manufacturer's lot consists of those items manufactured or assembled by one manufacturing or reconditioning activity and bearing the same manufacturing or reconditioning agency's lot identification number.

(a) Packing. All items must have the same type packing and identification marking.

(b) Storage. All items must be stored under similar conditions at the same depot.

(c) Serviceability lot status. All lots must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu of prior surveillance.

(3) Miscellaneous lot. A miscellaneous lot containing not more than 100 smoke pots, will be created by combining small manufacturer's lots or lot fragments possessing the same technical history; i.e., manufactured by the same technical procedure (indicated by the same lot series number).

(a) Kind, type and model. All items must be of the same kind, type and model; i.e., Smoke Pot: Floating, SGF2, AN-M7(MK5-MOD 3) or AN-M7A1.

(b) Manufacturer. Each small lot or lot fragment must be the product of the same manufacturing or reconditioning agency.

(c) Packing. All items must have the same type packing and identification marking.

(d) Storage. All items must be stored under similar conditions at the same depot.

(e) Serviceability lot status. All items must possess the same serviceability lot status; i.e., serviceability known (based upon prior surveillance) or serviceability unknown. However, when new procurement is involved, serviceability will be based upon acceptance inspection in lieu of prior surveillance.

d. Sampling. Sampling will be conducted as follows:

(1) Containers. A sample quantity of containers will be randomly selected as indicated in table 1 and a visual examination will be performed for packaging, packing, marking and preservation as specified in SB 742-1.

(2) End item. A sample quantity of smoke pots will be randomly selected as indicated in table 1 and subjected to a visual examination. In addition, the sample will be subjected to the tests specified in paragraph 6.

Table 1. Sampling Plan

Lot Size	1	2	3	4	5	6	7	8
Up to 100	15*	0	1	**	-	-	-	1
101 to 500	19	0	0	9	28	1	3	2
501 to 1000	28	1	1	14	42	2	5	4
1001 to 5000	36	2	3	18	54	3	8	6
5001 to 10,000	45	3	5	22	67	4	11	8
10,001 and over	54	4	8	27	81	5	15	11

Explanation of columns and symbols
*Where sample size exceeds lot size, do 100% inspection
**Single sampling only for this lot size
1 First sample size (visual and test)
2 Acceptance number - Major defectives (visual)
3 Acceptance number - Minor defectives (visual)
4 Second sample size (visual)
5 Combined sample size (1st and 2d sample combined)
6 Acceptance number - Major defectives (visual)
7 Acceptance number - Minor defectives (visual)
8 Acceptance number - Function test defectives

(3) *Second sample size*. When the number of major defectives exceeds the quantity specified in column 2, but does not exceed the quantity specified in column 6, a second sample equal in size to that specified in column 4, will be taken, and the acceptance number specified in column 6 will be used for acceptance. A second sample is never taken for minor defectives alone. When the number of minor defectives exceeds that of column 3, but does not exceed that of column 7 the lot will be considered serviceable. However, should a second sample be required due to major defectives, the minor defectives will be counted and reported in accordance with paragraph 7. Column 7 will be the acceptance number for minor defectives.

(4) *Combined sample size*. When the surveillance interval has been exceeded by six months,

or when the approximate date of the last inspection is unknown, the combined sample plan specified in columns 5, 6, and 7 will be used. The combined sample plan may also be used when additional assurance of quality is desired, e.g., after rework of an item where component quality is unknown. If, during inspection, a leaking item is found, the entire lot will be screened for this defect. In addition, the stack containing the leaker, and the stacks physically adjacent to the leaker will be examined for leakage and contamination. Leaking items will be removed and disposed of in accordance with current directives.

(5) *Critical defects*. When examination or testing of an item reveals a critical defect, the lot represented will be declared unserviceable. Lots containing a functional critical defect will be immediately suspended from issue and use.

(6) *Visual examination*. Only a visual examination of packing for a new or reprocessed unit upon receipt at a depot storage area is required. If used units are received unprocessed at a storage area, a complete visual and functional examination shall be performed in accordance with the instructions contained in this bulletin when reprocessing and repacking.

e. Testing. Oversea commands and installations other than depots need not perform the tests specified in paragraph 6. Depots that do not possess testing and/or laboratory facilities will forward smoke pots for testing to the Commanding Officer, Edgewood Arsenal, ATTN: SMUEAQAER, Edgewood Arsenal, MD 21010.

5. Inspection. *a. Visual examination*. The sample will be examined for defects listed in b below.

b. Classification of defects. Refer to table 2 for classification of defects. Defects other than those listed in this table will be reported to Commanding Officer, Edgewood Arsenal, Quality Assurance Directorate, Engineering Division, Specifications Branch to determine proper defect category into which the unlisted defect belongs.

c. Other. On all M7A1 smoke pots, the fuel block shall be removed and a visual examination performed to determine if there has been any growth and/or distortion of the fuel block. Record any defects. Reassemble pots for functional testing.

Table 2. Smoke Pot: Floating, SGF2, AN-M7 (MK5, MOD 3) and AN-M7A1

Categories Critical	*Defects*	*Inspection methods*
1	Fuse type incorrect (other than M208 or M209 when applicable)	Visual
2	Safety pin inadequately spread (less than 80 d4laew or less than 1/4 inch gap at open end. Applicable to M208 fuse only)	Visual

Table 2. Smoke Pot: Floating, SGF2, AN-M7 (MK5, MOD 3) and AN-M7A1

Categories Critical	*Defects*	*Inspection methods*
Major:		
101	Tape missing, loose or does not completely cover emission holes	Visual
102	Smoke pot malfunction (duds)	Section 6
103	Fuze delay	Section 6
104	Intermittent smoke	Section 6
105	Screening smoke emission	Section 6
106	Leakage	Visual
107	Fuel block growth and distortion (M7A1 only)	Visual
Minor:	See SB 742-1	

c. Packaging, packing, marking and preservation. See SB 742-1.

6. Tests. *a. Requirements*. The pot shall ignite and emit a continuous cloud of screening smoke (except as noted in 6d (2) below) for a period of not less than six minutes nor greater than 15 minutes. Measure to the nearest quarter of a minute.

b. Equipment required.

(1) Two stop watches--FSN 6645-628-7751.

(2) Fog oil, SGF2 Quantity as required (when applicable).

(3) Kerosene Quantity as required (when applicable).

c. Procedure.

(1) *Preparation of smoke pots for test.*

(a) For pots stored with fuze and with an oil fill, remove the outer cover and perform the visual examination indicated in paragraph 5a.

(b) For pots stored unfuzed and with no oil fill, do the following:

1. Remove the outer cover and perform the visual examination indicated in paragraph 5b, less the fuze checkpoints.

2. Place the pot on its side and fill with oil to the bottom of the oil filling plug. For operating temperature above 0° F., use 100 percent SGF2 Oil; for operating temperatures of 0° F. to -25° F., use a mixture of 75 percent SGF2 Oil and 25 percent kerosene; for operating temperatures of -25° F. to -40° F., use a mixture of 50 percent SGF2 Oil and 50 percent kerosene.

3. Remove the plastic fuze plug and insert either an M208 or M209 fuse, as required, fingertight. Use the washer supplied with the fuze in assembling.

(2) *Functioning of smoke pots*. Pots stored unfuzed shall be fuzed prior to functioning only with fuses which are acceptable under the applicable specification or surveillance procedure.

(a) M208 fused pots.

1. Place the smoke pots in a natural body of water or in a water-filled tank of sufficient sizes permit lateral or vertical movement of at least 3 times the pot height.

2. Firmly holding the fuze lever, pull the safety ring, release the fuze lever and start recording time from the instant of fuze lever release.

(b) M209 fuzed pots.

1. Place pot or pots in water (c(2) (a)1 above).

2. Wire the pots to a suitable power source able to produce at least 1.5 volts per fuze at the pot.

3. Fire the pots by closing the electrical circuit (see Warning).

4. Start recording time from instant the electrical circuit is closed.

(c) Retest of dud or weak fuzes. Whenever a pot fails to function as a result of the fuel block starter mix failing to ignite, refuze, with fuzes conforming to applicable standards, and retest following a waiting period of at least 80 minutes. Only one refusing permitted.

WARNING: Before firing electrically ignited pots, the operator should be at least 20 feet to the windward side of the nearest pot since no time delay is incorporated into the M209 Fuse.

d. Test defects and definitions.

(1) *Dud*. Any pot which fails to emit screening smoke, as evidence by white smoke emitted under pressure and accompanied by a distinct "hissing" sound, shall be considered a dud. However, fuze failure, as noted in (3) below will not be considered a dud.

(2) *Intermittent smoke failure*. Any pot which exhibits intermittent screening smoke characteristics, as evidenced by the lack of white smoke at the vent holes and a distinct reduction in the volume of the "hissing" sound, shall be considered as intermittent smoke defect if the total time of intermittency is greater than 80 seconds.

(3) *Fuze failure*. Any pot which does not function when tested in accordance with c (2) (a) and (b) above but does function when tested in accordance with c (2) (c) above shall be considered a fuse failure. Only pots stored fuzed will be classified as having a fuze failure defect.

(4) *Screening smoke emission failure*. Any pot which is not considered a dud, an intermittent smoke failure, or a fuse failure, but fails to emit a cloud of screening smoke as evidenced by white smoke emitted under pressure and accompanied by a distinct "hissing" sound, for a period of not less than 6 minutes nor greater than 15 minutes. Measure to the quarter of a minute. The time shall be recorded commencing with the emission of screening smoke under pressure, and ending when screening smoke is not longer emitted under pressure or is replaced by the bluish smoke characteristics of a burning fuel block.

7. Documentation. *a. Report forms*. When reporting data, the following forms will be used:

DA Form 984	Materiel Serviceability Report. (See SB 742-1).
DA Form 985	Data Sheet for Grand Lots, Miscellaneous Lots or Depot Lots (See SB 3-830).
DA Form 2028	Recommended Changes to DA Publications.
DA Form 2415	Ammunition Condition Report.

b. Reporting.

(1) *Data*. When reporting data, forms specified in a above will be prepared in accordance with instructions contained in SB 3-30, SB 742-1, and TM 38-750. Record all visual defects and results of functioning of individually numbered sample smoke pots.

(a) *Recording information*. Whenever possible the exact cause of malfunction will be recorded. Any pertinent information causing failures discovered during tests shall be reported in detail. The exact cause of any failure if known shall be recorded. Burning time of each smoke pot shall be recorded to the nearest quarter of a minute.

(b) *Data recorded*. The following characteristic and data will be used to determine serviceability:

1. *Dude*. For all pots declared duds, record as such and indicate the contributing factor and defective component which may, though not necessarily, be limited to the following:

(a) Fuse fires but does not ignite the starter mixture.

(b) Pot expodes.

(c) Fuel block burns but no screening smoke is emitted.

(d) Fuel block fails to ignite (M7A1 only).

2. *Fuze Delay Time*. The time as measured from the release of the fuze lever (M208), or closing of the electrical circuit (M209), to the time the ignition powder is ejected onto the fuel block. This is evidenced by a distinct "spitting" sound.

3. *Smoke Emission Lag Time*. The time as measured from the release of the fuse lever (M208), or closing of the electrical circuit (M209), to the emission of screening smoke under pressure and accompanied by a "hissing" sound.

4. Fuel Block Burning Time. The time as measured from the release of the fuze lever (M208 Fuze), or closing of the electrical circuit (M209 Fuze), until the fuel block is completely consumed as indicated by the complete absence of smoke emission from the pot (para 8).

5. Pot Sinking Characteristics. Indicate whether or not the pot sinks below the water surface within a 45-minute period, following the end of smoke emission.

6. Fuze Failures. For all fuze failures, so far as possible, indicate the contributing factor and defective component causing the failure.

7. Dents. Dents will not be considered in determining serviceability unless functioning is affected. Specific attention shall be directed to the extent and location of dents.

8. Recording Test Data. Pots selected for visual examination and tests will be numbered 1, 2, 3, etc. Pots selected for functioning tests will be from those previously selected for visual examination. Record all visual defects and results of functioning of subject pots individually, as numbered. Elaborate on type of failure, such as poor screening smoke, first fire failing to ignite, vigorous burning of the fuel bloc or exploder.

(2) *Submission*. Reports required by this document will be submitted as follows:

(a) Original and one copy to the Commanding Officer, Edgewood Arsenal, ATTN: SMUEA-QAER, Edgewood Arsenal, MD 21010.

(b) One copy to the Commanding General, US Army Ammunition Procurement and Supply Agency, ATTN: SMUAP-QA-LM, Joliet, IL 60436.

(3) *Critical defects report*. When a critical defect is found, it will be reported immediately to the Commanding General, US Army Ammunition Procurement and Supply Agency, ATTN: SMUAP-QA-LM, Joliet, IL 60436. The incident will be reported via teletype, telephone, or letter stating the nomenclature, the lot number of the item involved and the defect encountered. (See SB 742-1).

8. Special Instructions. *a. Equipment calibration*. see SB 742-1.

b. Errors or omissions. Comments regarding errors or omissions will be forwarded to Commanding Officer, Edgewood Arsenal, ATTN:
SMUEA-QAES-B, Edgewood Arsenal, MD 21010.

c. Unserviceable samples. Sample smoke pots will be functionally tested for information purposes if found unserviceable by visual inspection unless a safety hazard is found to exist.

d. Advisory Information. Fuel blocks at least 95 percent consumed and oil at least 85 percent consumed will be considered completely consumed, providing the pot meets the burning time requirements. If quantities of oil in excess of 15 percent remain in the pot, determine the percentage of the fuel block consumption and record the information. Radiography may be used for determining the percentage of fuel block consumption, when available. Where possible, remove bottom of smoke pot to determine the percentage of fuel block consumption and record for information.

(1) Radiography, wherever available, may be used to determine rate of growth of fuel block, distortion of assembly as result of extended storage and shipping, and as an aid in determination of cause of failures, etc.

(2) Time should be recorded as follows:

(a) Fuze delay Seconds.

(b) Lag time Seconds.

(c) Smoke emission time To the nearest quarter of a minute.

By Order of this Secretary of the Army:

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

Official:

VERNE L. BOWERS,
Major General, United States Army,
The Adjutant General.

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ARNG: State AG (3); Div (1)
USAR: None
For explanation of abbreviations used, see AR 310-50.

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR RECOMMENDATION MAKE A CARBON COPY OF THIS AND GIVE IT TO YOUR HEADQUARTERS.

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 milliters = .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

PIN: 022451-000