*SB 742-1410-92-002

DEPARTMENT OF THE ARMY SUPPLY BULLETIN

Ammunition Surveillance Procedure for USAMICOM Materiel:

GUIDED MISSILES, AGM-22B (SS-11B1) and ATM-22B FOR GUIDED MISSILE LAUNCHER HELICOPTER ARMAMENT SUBSYSTEM M22

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

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SECTION I.
INTRODUCTION

1. Purpose. This bulletin provides criteria required by AR 740-1 and SB 742-1 for utilization in determining the serviceability of guided missile ammunition items.

2. Scope. The information contained herein applies to all Department of the Army activities within CONUS and overseas, with a receipt, storage, maintenance, and issue mission for the AGM22B, ATM-22B missiles and containers.

3. Reporting of Equipment Publications 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 General, U. S. Army Missile Command, ATTN: AMSMI-NPE, Redstone Arsenal, AL 35809.

4. Item Description. *a. AGM-22B Missile.* The complete missile consists of a warhead section and missile body section which are shipped in a stratified polyester (fiberglass) shipping and storage container. The missile batteries are shipped, stored and issued in a separate container. The explosive cartridge is issued with the missile. These components are assembled prior to use. The missiles three principal parts are:

(1) *Missile Body Section.* The missile body section consists of the on-board guidance package, the booster and sustainer motor and the warhead fuzing

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system. The motor assembly is a cylindrical aluminum alloy casing with a convex rear and the front end is closed by the fuze body. The aluminum casing is divided into two chambers (sustainer motor in front and booster motor in the rear).

(a) The booster chamber contains seven tubular powder grains. These grains are held in front by a spring grid and at the rear by a fixed grid. The fixed grid carries an annular igniter casing containing black powder into which are inserted two filament igniters. The firing current passes through two single pole lead-ins, which are set apart at 180 degrees on the rear of the motor casing. The booster chamber opens directly into two lateral nozzles also spaced 180 degrees apart in the rear part of the motor casing, the nozzles are 90 degrees to the igniter lead-in. Each nozzle axis is inclined 18 degrees to the longitudinal missile axis. The chamber head has two ball valve squibs which bears on the booster chamber side.

(b) The sustainer chamber contains a cylindrical powder grain which is coated with varnish. Three tubes are molded into the powder grains at 120 degrees from each other and opening toward the front, this ensures that the detonator fuze arms after combustion. The sustainer chamber opens into a connecting tube which is screwed into the chamber head. The rear of the tube fits inside the sustainer nozzle, the front end is plugged to ensure the sustainer sealing.

(c) The detonator fuze consists of a cylindrical duralumin body containing a central inertial striker retained by the stem of a piston worked in a crosswise cylinder by a flexible sealed diaphragm. The piston is locked by a shear pin. A light coil spring housed in a cavity at rear of striker, ensures the striker contact with the primer after the detonator is armed. The missile head (warhead) is screwed onto the fuze body during assembly.

(2) *Wing assembly.* The wing assembly consists of 4 cross mounted wings which are identical with one another, each with a symmetrical section and having a rounded leading edge and a sharp trailing edge. The wings are constructed of a light aluminum sheet which is glued to a balsa filler. The wings are mounted on the body by a mounting flange. They are mounted 48 degrees to the body axis. A balancing weight made of lead is fixed into the outer edge of each wing corresponding with each other.

(a) The battery holder is mounted to the missile body by four screws. The holder carries two battery plugs, each composed of two guide pins and a stainless steel safety blade which prevents the mounting of the warhead before inserting the batteries and also holds the batteries in place. The two batteries are connected in series with the missile Electromagnetic Circuit by the 4 blades and 4 jacks in the connector box. Each battery supplies a minimum of 12 volts.

(b) The rear casing includes the gyro-decoder and the deflector assembly which are inserted into the rear of the casing and held by screws. The gyro-decoder consists of one gyroscopic commutator, one transistorized decoder and one set of ject deflectors. The gyroscopic commutator is composed of a frame pivoted on the missile roll axis carrying a powder charged gyroscope having two degrees of freedom and a commutator. The assembly is mounted in a plate on the left inside surface of the rear casing. The gyroscope rotor contains a powder charge in which is sunk an igniter filament. The firing current is brought to the igniter by two wires passing through one nozzle. After ignition of the powder charge, these wires are retracted by a spring contained in the forward part of the gyrocase. When at rest, the gyroscope is caged in its starting position by a spring loaded lever which is held in place by a solenoid armature. The opposite end of the armature operates a double pole open switch which controls the battery circuit; this feeds the deflector electromagnets. The commutator is four pole with four coaxial slip rings. Four brushes connected to the deflector electromagnets which rubs against the commutator. Four more brushes are set 90 degrees in relation to the above and rub on the slip rings.

(c) The transistorized decoder is a collection of printed circuits soldered directly to the exterior wiring and consists of resistors and condensers with different electrical characteristics. After assembly and wiring, the decoder is covered with a potting plastic. It is then attached to its two supports with four consoles mounted on rubber shock absorbers. Two shielded wires are connected to the spool assemblies which are connected to the positive power circuit. It is connected to the batteries by two wires whose positive circuit is in series with a switch which is operated when the gyro is uncaged. It is also connected to the gyroscopic commutator slip rings by four wires.

(d) The deflector assembly is composed of four jet deflectors each controlled by two electromagnets. Each deflector is composed of a specially shaped molybdenum arm which may be completely outside or partially inserted into the jet cross section at the sustainer nozzle outlet. The deflector assembly is mounted on nozzle supports on the rear casing. The nozzle supports which has two detachable 4 pin socket connectors ensures the ignition circuit continuity before missile launch. The two spool assemblies which are made of anodized aluminum and mounted symmetrically on the rear casing

contains a coil of enameled steel wire 0.18 mm in diameter and the final diameter reaches approximately 0.29 mm and is 3300 meters long.

(e) The spool housing is machined in the shape of a radiator to prevent excessive heat caused by the unwinding wire. Inside the rear casing, the wires are connected to the decoder. The free ends of the wire are connected to tip jacks in the junction box. The rear casing is a cylindrical magnesium alloy casing screwed to the rear of the motor casing. The rear cover plate contains two tracer flares which are sealed metal tubes containing a fuzing powder. Each tracer also contains two electric igniters connected in parallel and a plug closes the rear end. This plug is ejected immediately after ignition of the tracer.

(3) *Missile head (Warhead).* The missile head (warhead) is screwed onto the front of the winged body. The rear end of its casing enters the front end of the motor body when it is completely screwed on. The warhead is a pointed pressure moulded cover fixed to the charge.

b. *ATM-22B Missile.* The ATM-22B missile is constructed the same as the AGM-22B (tactical) missile except that the warhead is inert.

c. *Completely Inert Missile.* The completely inert missile is the same construction as the AGM-22B and ATM-22B except that no explosive (Class V) items are in the missile.

Note. The warheads *shall not*, under any circumstances, be interchanged. The HEAT warhead will mate to the body section of the ATM-22B missile but will not function properly as there is no explosive detonator on the ATM-22B. The overall dimensions of the missiles assembled is 4 feet long, 6.5 inches in diameter, with a total wingspan of 20 inches and weighs 64 pounds.

d. *Container, Shipping and Storage.* The container is made of stratified polyester (fiberglass) material which contains one complete round missile (tactical, Inert warhead or completely Inert). The missiles are shipped disassembled in the two-section container. The top half of the container holds the warhead. The missile body section with wings attached is stored in the bottom half of the container. The explosive cartridge is also stored in this container. The physical dimensions of the container are: height 20.7 inches, length 36.1 inches, width 19.15 inches, weight (empty) is 40.5 pounds and weight (loaded) is 110 pounds, the cubage is 6.7 cu. ft.

Note. When a quantity of Containers, Shipping and Storage becomes empty they are to be reported to U. S. Army Missile Command, ATTN: AMSMI-SSHB, as excess material.

e. *Component Assemblies.* The component assemblies for the Guided Missile Launcher Helicopter Armament Subsystem M22 are illustrated and described in TM 9-1400-461-20 and TM 9-1400-461-35.

f. *Containers.* For nomenclature, federal stock numbers, item drawing numbers, and marking numbers, refer to Appendix A.

SECTION II.
STORAGE AND SURVEILLANCE

5. Storage. (Reference TM 9-1300-206, TM 9-1400-461-20 and TM 9-1400-461-35). Prior to storage, the missiles must be inspected for assurance that items are adequately painted, marked, preserved, color coded, packaged, and otherwise suitable for storage in accordance with instructions contained in above references and applicable drawings (Appendix A).

a. *Approved Types.*

(1) Igloo (standard types).

(2) Above Ground Magazine.

(3) Open, Paulin Covered (emergency only).

b. *Storage Temperature Limits.* Storage Temperature Limits — 22 F to 122 F, and should not be exceeded for any one period to exceed 6 hours.

c. *Class.*

(1) The AGM-22B missile is Quantity Distance Class 7 compatibility group F.

(2) The ATM-22B missile is Quantity Distance Class 5 and compatibility group F.

d. *DOT.* The Department of Transportation (DOT) marking is "Rocket Ammunition with Explosive Projectile" for the AGM-22B and "Rocket Ammunition with Inert Projectile" for the ATM-22B.

e. *Placard.* The placard class for the AGM-22B missile is A Explosive and for the ATM-22B missile it is B Dangerous.

f. *Age (Issue) Control.* The missiles will be issued from storage in accordance with SB 9-219 (old stock first).

g. *Shelf Life*

(1) The missiles are subject to deterioration during storage and are required to be inspected for serviceability changes during storage as directed in this publication.

(2) The complete round missiles and the explosive cartridge tentative shelf life is indefinite.

6. Surveillance. a. *General.* The guidance furnished in TM 9-1300-206, TM 9-1400-461-20 and TM 9-1400-461-35 is to be used in storage quality control of the missiles. These references prescribe standard methods for identification, examination, evaluation of test failures and generally encountered defects of marking, deterioration damage and packaging.

b. Special Requirements.

(1) The missile is packed to withstand all conditions ordinarily encountered in storage and transit, except extremes in temperature. Damage caused by dropping or other mishandling could cause malfunction when the missile is fired.

(2) Electrical continuity checks are required to be performed in accordance with instructions in TM 9-1400-461-35 utilizing the Test Set M-22 Set D, FSN 4935-953-9962.

(3) Whenever a shipping container is opened, the dessicant should be replaced. Use four 16-unit bags of activated dessicant, FSN 6850-264-6563.

c. Sample Size and Frequency. Refer to table 1 for sample size and frequency.

d. Inspection Method. Inspect the missile in accordance with TM 9-1400-461-35.

e. Defect Classification.

(1) Defect Acceptance Number (see table 2).

(2) Inspection Criteria (see table 3).

(3) Container, Shipping and Storage (see table 4).

7. Other Instructions. *a. Records and Reports.* Surveillance and storage records and reports reflecting condition of missiles will be prepared and kept current in accordance with TM 38-750 and TM 9-1400-461-35 (see Appendix B for list of report forms).

b. Repackaging of Samples Inspected. Restore packaging of samples inspected and accepted to level of the lot from which the samples were taken.

8. Evaluation of Inspection Results. After evaluation of sample quality, materiel is to be classified to identify the degree of serviceability, condition, and completeness in terms of readiness for issue and use (reference AR 725-50). If the results of original sample examination are not conclusive, additional samples must be selected and the cumulative results used in making the final serviceability decision. Report rejected lots on Ammunition Condition Report, DA Form 2415 (reference TM 38-750).

Table 1. Sample Sizes and Frequency For Inspection (Inspect Annually)

Lot Size	First Sample	Second Sample	Accumulative Sample Size
0-8	3	Balance of Lot	8
9-15	3	Balance of Lot	15
16-25	5	Balance of Lot	25
26-40	5	10	15
41-65	7	14	21
66-110	10	20	30
111-180	15	20	30
181-300	25	50	75
301-500	35	70	105
501-800	50	100	150
801-1300	75	150	225

Note. The sample sizes should be used in all inspections. The size of sample may be increased by inspecting authority, provided that inspection is not conclusive. Materiel received from the user may have been subjected to severe conditions and should be inspected 100 percent as required, to assure a conclusive inspection.

Table 2. Sample Inspection Acceptability Criteria Defective Acceptance Number

Sample size	Defective acceptance number			
	Critical	Major A	Major B	Minor
1-5	0	0	0	0
6-10	0	0	1	1
11-20	0	0	2	2
21-40	0	0	3	4
41-60	0	0	3	5

Notes.

1. Critical defective acceptance number is the maximum number hazardous-type defects permitted in the sample.
2. Major A defective acceptance number is the sample's maximum number of mechanical or electrical inspection failures permitted which will cause item failure.
3. Major B defective acceptance number is the sample's maximum number of visual inspection defectives permitted which would cause failure or materially reduce the usability of product.
4. Minor defective acceptance number is the sample's maximum number of visual inspection defectives permitted in the sample not materially reducing the usability of product.
5. Defects discovered in a sample for a lot with acceptance based on inspection criteria will be corrected prior to placing samples with the balance of the lot.

Table 3. Defect Classification for Missiles AGM-22B ATM-22B, and Completely Inert

Critical Defects	Major A Defects	Major B Defects	Minor Defects
Warhead arming device protruding above the surface of the rim.	Failure of continuity check.	Missing or misleading marking. Defective paint. Dents or breaks in the skin. Loose or damaged fins. Missing or damaged junction box and components. Broken or missing flares. Missing or damaged guidance wires. Broken or deteriorated electrical wiring. Broken or clogged exhaust ports. Break or dents on spool housing. Missing or damaged support ring. Bent or broken pins on electrical plug and connector. Missing or damaged attaching hardware. Missing or damaged fuze protector plug. Improper mating of warhead. Dents or cuts in warhead. Presence of oxidation, rust, on warhead.	Defective paint and improper color coding and marking. Minor corrosion or rust that can be removed from external skin.
None	None	Breaks, splits and holes in skin. Improper installation of container seal. Damaged, missing or improper operation of clamp assemblies. Missing or damaged warhead straps. Presence of warhead cushioning material.	Improper Color Code and marking. Defective paint. Presence of rust and corrosion on latches. Presence and condition of cartridge holder.

APPENDIX A.
NOMENCLATURE, STOCK NUMBERS AND DRAWING NUMBERS

Nomenclature	*FSN*	*Dwg No.*	*Marking Dwg No.*
Missile, AGM-22B W/HEAT WARHEAD	1410-987-9432	10022258	8034926
Missile, ATM-22B (W/Inert Warhead)	1410-957-3625	10173289	8034926
Missile, Completely Inert	1410-083-0229	10022222	8034926
Container, Shipping and Storage	8140-999-9578	10173311	8034927

APPENDIX B.
REPORT FORMS AND REFERENCES

Form Number	*Nomenclature*	*Reference*
Transceiver EAM Cards (as prescribed in pending rev to AR 742-10)	Ammunition Inspection and Lot Report	AR 742-10
DA Form 2407	Equipment Improvement Recommendation	TM 38-750 Chapter 5
DA Form 2415	Ammunition Condition Report	TM 38-750 Chapter 5
DD Form 6	Damaged or Improper Shipment Report	AR 700-58

By Order of the Secretary of the Army:

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