SB 742-1

SUPPLY BULLETIN

INSPECTION OF SUPPLIES AND EQUIPMENT

# AMMUNITION SURVEILLANCE PROCEDURES

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HEADQUARTERS, DEPARTMENT OF THE ARMY

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AMMUNITION SURVEILLANCE PROCEDURES

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SUPPLY BULLETIN

No. 742-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 June 1998

# Inspection of Supplies and Equipment
# AMMUNITION SURVEILLANCE PROCEDURES

The Office of the Deputy Chief of Staff for Logistics, Headquarters, Department of the Army, is the proponent of this bulletin. Errors and omissions or other proposed changes will be reported on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, U.S. Army Materiel Command, ATTN: AMCAM-LG, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001. An information copy of each DA Form 2028 will also be furnished to:

a. Commander, Industrial Operations Command, ATTN: AMSIO-MASQ-SURV, Rock Island, IL 61299-6000 (Conventional Munitions).

b. Commander, Aviation and Missile Command, ATTN: AMSAM-RDQA-RA-QS Redstone Arsenal, AL 35898-5000 (Guided Missiles and Large Rockets).

c. Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 21010-5424.


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*This bulletin supersedes SB 742-1, dated 12 November 1990, SB 742-2, dated 21 May 1991 and SB 742-1300-94-895, dated 1 June 1998.

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# CHAPTER 1
# INTRODUCTION

## 1-1. Purpose.

The procedures in this supply bulletin (SB) implement the Department of the Army (DA) ammunition surveillance policy established by AR 702-6. Additionally, SB 742-1 describes the functions that constitute the DA Ammunition Surveillance Program as defined in AR 740-1, chapter 4. The SB also prescribes the policies and procedures to assure quality requirements are met for Class V materiel supplied to foreign governments under the Army Security Assistance Program.

## 1-2. Scope.

This bulletin encompasses conventional, chemical, rockets, guided missile ammunition, and research and development stocks in storage. The procedures contained herein apply to supply Class V materiel in the wholesale, retail, combat support and user stockpiles worldwide. Use of this publication is mandatory for each DA activity that has a receipt, storage, issue, maintenance, disposal, surveillance, or test mission for ammunition. This includes, but is not limited to, ammunition depots, ammunition supply points, basic load storage areas, ammunition plants, research development test and evaluation laboratories, and proving grounds.

## 1-3. Policy.

*a. Single Manager of Conventional Ammunition (SMCA) DOD 5160.65-M.*

(1) The inspection of the other services' (Navy, Marine Corps, or Air Force) stocks will be conducted according to the specific inspection requirements of the owning or configuration managing service.

(2) See paragraph 1-5*b* for SMCA technical assistance, paragraph 2-2 for inspection procedures for non-army owned ammunition and Appendix D, paragraph D-15, for further guidance on items belonging to other services.

*b. QASAS functions.* Functions identified by this SB must be accomplished by Department of the Army Civilian (DAC) Quality Assurance Specialists (Ammunition Surveillance) (QASAS), GS-1910 series (career program 20). Under the direction of a QASAS, military ammunition inspectors (SSG/SFC)(MOS 55B) and properly trained and designated civilian technicians (including local nationals outside the continental United States (OCONUS) locations) may supplement and assist the QASAS in the accomplishment of ammunition surveillance functions.

*c. QASAS in charge.* Throughout this bulletin, the term "QASAS in charge" is defined as the senior or chief QASAS of the local

surveillance organization. For application in organizations without an assigned QASAS the term relates to the "QASAS in charge" of the supporting ammunition surveillance organization.

*d. Technical publications.* Supply bulletins (SB), technical manuals (TM), drawings, specifications, and instructions issued by appropriate materiel developers will be used to supplement this bulletin. When needed documents and publications are not available, they will be requisitioned promptly.

(1) The Ammunition Surveillance Information System (ASIS), managed by IOC surveillance office, is a CD-ROM based electronic library of reference material. ASIS CD's, available at no cost from IOC surveillance office, consist of a program software disk and numerous CD's containing technical publications, administrative publications, ammunition drawings and storage and outloading drawings. Additionally, system software provides automated suspension/restriction, overhead fire, and an automated Ammunition Information Notice (AIN) database.

(2) ASIS is the recommended method of maintaining a technical library.

*e. Tests and inspections.* The only tests and inspections authorized for ammunition surveillance operations are those covered by applicable SBs, approved Depot Maintenance Work Requirements (DMWRs), or specific written authorization from the appropriate major command (MACOM) or major subordinate command (MSC).

(1) Test, measurement, and diagnostic equipment (TMDE); tools and gages; and ammunition peculiar equipment (APE) used in these operations will be limited to those specifically authorized for the item under test or examination.

(2) Modification or function of ammunition items will not be attempted unless specifically authorized by the above-mentioned publications or documents or by the appropriate major commodity command.

(3) Disassembly and reassembly of ammunition items may be authorized as part of the visual inspection provided that--

*(a)* There is reasonable cause to justify disassembly of samples.

*(b)* Disassembly and reassembly is conducted according to approved procedures.

*(c)* Approved facilities and equipment are available and used.

*(d)* Disassembly and reassembly will be conducted by a QASAS or under the direction of a QASAS.

*(e)* Approval of the QASAS in charge must be obtained prior to the start of such an operation.

*f. Word usage.* The words "will" and "must" are used in this bulletin to indicate mandatory requirements. The word "should" indicates a normally required method of accomplishment which can be deviated from only upon the documented authorization of the QASAS in charge. A written record of the justification or rationale for the deviation must be maintained. The term "may" indicates an acceptable or suggested means of accomplishment.

*g. Ammunition explosives safety.*

(1) The ammunition and explosive safety standards of DOD 6055.9-STD, AR 385-62, AR 385-63, AR 385-64, TM 9-1300-206, DA PAM 385-64, and AMC-R 385-100, as applicable, must be followed.

(2) All personnel engaged in operations involving explosive, radioactive, or other hazardous material will be thoroughly knowledgeable of the applicable standing operating procedures (SOP) and formally trained in safety.

(3) Prompt action will be taken to control any hazard. If a dangerous item or situation is encountered, all operations in the immediate area will be shut down (see para 10-1). Personnel will be evacuated to a safe site. The incident will be reported immediately through the proper chain of command. Explosive Ordnance Disposal (EOD) or other authorized personnel will be called for help in eliminating the hazard. Operations will not be resumed until the hazard has been eliminated.

(4) All serious or repetitive situations adversely affecting the explosive safety of the installation/organization will be made a matter of record to installation's/organization's commanding officer.

*h. Ammunition surveillance workload priorities.*

(1) Explosive safety inspections or functions; e.g., inspections for toxic leakers, safety in storage inspections on potentially unsafe munitions, monitoring of demilitarization operations, magazine inspections and actions in support of the Propellant Stability Program.

(2) Shipping and receiving operations to include preissue inspections and receipt inspections.

(3) Test sample preparation and function or trace testing.

(4) Periodic inspections of required stocks.

(5) Maintenance operations/area operations inspection.

(6) Basic load/technical assistance visits.

(7) Special inspections.

(8) Storage monitoring inspections.

(9) Safety in storage inspections of munitions not covered above.

1-4. Quality Assurance Specialist (Ammunition Surveillance) (QASAS). The qualifications, physical requirements, training, and development requirements for QASAS and management of the QASAS civilian career program are defined in AR 690-950-20 and AR 702-12.

1-5. Technical assistance.

*a.* Request for technical assistance concerning implementation of this bulletin or supplements will be directed to the appropriate command (listed below) having management responsibility for the commodity involved.

(1) U.S. Army Aviation and Missile Command, ATTN: AMSAM-RD-QA-RA-QS, Redstone Arsenal, AL 35898. DSN: 746-2781

(2) U.S. Army Industrial Operations Command, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000. DSN: 793-7534

(3) U.S. Army Chemical and Biological Defense Command, ATTN: AMSCB-SO, Aberdeen Proving Ground, MD 21010-5423. DSN: 584-3949

*b.* Queries concerning the surveillance of items under SMCA will be directed to IOC surveillance office. This includes items in industrial and field service accounts, regardless of the owning service.

*c.* Request for information on non-commodity problems will be addressed to HQ, AMC, 5001 Eisenhower Ave., ATTN: AMCAM-LG, Alexandria, VA 22333-0001.

# CHAPTER 2
# SURVEILLANCE OF AMMUNITION BY INSPECTION

## 2-1. General.

*a*. The ammunition surveillance inspection program is structured to ensure that materiel in the stockpile meets established explosives safety and serviceability criteria and is properly classified. Inspections are accomplished by trained and certified personnel using statistical sampling techniques and procedures. The program identifies items for timely maintenance, disposal, priority of issue, and restricted use. The classification of defects and standards in this publication provides the QASAS with necessary guidance to accomplish program goals and assigned missions.

b. Required vs. non-required stocks. The ammunition stockpile is separated into two parts: required stocks **(IOC Priority 1 and 2)** and non-required stocks **(IOC Priority 3).** Required stocks satisfy both power projection and training requirements. Retail stocks are required stocks. Non-required stocks are excess to requirements. Non-required stocks will be inspected to determine status for continued safe storage and will not be inspected to determine serviceability. IOC. surveillance office, will publish. on an annual basis, a listing identifying whether an item is required or non-required. MACOMs may modify this listing as appropriate.

(1) Ammunition not listed on the current priority listing is to be considered non-required stocks **(IOC Priority 3).**

(2) Unserviceable, **non-repairable** ammunition and all ammunition in B5A or B5B accounts, whether serviceable or unserviceable, is specifically identified as non-required stocks.

(3) All stocks of propellant items, including all owners and condition codes will receive a periodic inspection.

C. The general inspection policy of this chapter is supplemented by guidance for specific items in Appendices E through AA and Ammunition Information Notices. This supplemental guidance is based on known potential problem areas and may include exceptions and additional requirements for each specific item. Therefore, in the event of apparent conflict between general requirements and requirements for specific items, the specific requirements will have precedence.

## 2-2. Inspection procedures for non-army owned conventional ammunition.

a. SMCA index of items assigned lists conventional ammunition assigned to SMCA and indicates using services. This listing is available on the world wide web at: www.ioc.army.mil/sm/pubs.htm. SMCA managed stocks will be inspected as follows:

(1) Navy/Marine Corps owned (SMCA managed) stocks will be inspected IAW TW010-AC-ORD-010, TW010-AC-ORD-020 and this SB. Air

Force owned (SMCA managed) stocks will be inspected IAW TO 11A-1-10, this SB and the applicable specific item technical order: if a conflict in guidance exists, the specific item TO will take precedence. Authority to use these references is DOD 5160.65-M. Receipted ammunition will have a normal Receipt Inspection (RI) performed IAW this SB. All Navy owned assets will be then scheduled for next inspection using safety-in-storage scheduling procedures. Air Force and Marine Corps receipts will be scheduled as normal for Periodic Inspections (PI) as directed by this SB. All outer packs opened for RI of Navy/Marine Corps stocks will be resealed using a traceable seal. All other procedures related to the samples will be accomplished as directed by this SB.

(2) Lot clustering is applicable to all conventional stocks and shall be used.

(3) Ammunition containing depleted uranium will be scheduled for inspection IAW owing services criteria or this SB whichever is more restrictive.

(4) Owning service requirements will be used to assign ammunition condition code regardless of inspection procedure used. During inspections of Navy and Marine Corps owned ammunition, defect classification and assignment of condition code will be IAW TWO1O-AC-ORD-010: Air Force stocks defect classification and assignment of condition code will be IAW TO 11A-1-10. Service unique (SMCA managed) stocks will be Inspected IAW the owning services' criteria and scheduled for inspection IAW the owning services' inspection interval.

b. Following are clarifications/exceptions to specific requirements of TWO1O-AC-ORD-010 (Navy/Marine Corps stocks):

(1) A depot surveillance record (DSR) card, DA form 3022-R. will be maintained for each lot of ammunition. SMCA installations will use the DSR as the "receipt inspection record form".

(2) Where the TWO calls for a certification stamp, SMCA installations may use an authorized signature.

(3) Tags/labels and or bar codes are not required on serviceable stocks of Navy or Marine Corps ammunition in storage at SMCA installations. When ammunition is shipped to Navy or Marine Corps installations, bar codes encoded with National Item Identification Number (NIIN). owner and condition code will be affixed to the shipment. Material condition tags (DD Forms 1574 through 1577) will also be applied prior to shipment.

(4) SMCA installations should certify and seal empty containers being issued to Navy or Marine Corps activities. When empty containers cannot be sealed, SMCA installations may follow current army policy on identifying empty containers.

(5) Navy owned conventional ammunition not condition code A quality due to packaging deficiencies. but serviceable for intended

purpose, will be assigned condition code J and reported by an Ammunition Condition Report (ACR), DA Form 2415, to: Commanding Officer, Navy Ships Part Control Center (INSPCC), Box 2020 ATTN: 853a, Mechanicsburg, PA 17055-0788.

(6) Conventional ammunition suitable for Navy training use will only be assigned condition code B or condition code C as directed by a Navy Notice of Ammunition Reclassification (NAR).

c. Following are clarifications/exceptions to specific requirements of TO 11A-1-10 (Air Force stocks):

(1) A DSR card, DA Form 3022-R, will be maintained for each lot of ammunition. SMCA installations will use the DSR in lieu of AFT0 Form 15.

(2) AFT0 Form 15's received from Air Force units in support of munitions shipments contain valid inspection results. IOC surveillance organizations will utilize these inspections when determining date of next inspection. If AFT0 Form 15 indicates that item being received has a current inspection then any receipt inspection performed will be limited to a damage in transit inspection.

(3) Hermetically sealed containers will not be opened for inspection purposes. Review TO 11A-1-10, paragraph 3-3, for detailed instructions.

(4) If specific item technical order requires testing of stocks with equipment not available contact servicing Air Force liaison or IOC Surveillance Office for guidance.

2-3. Selection, inspection, and disposition of samples.

a. Sample selections.

(1) Sample will be selected and tagged in storage for inspection by a QASAS and must be representative of the entire lot or lot cluster under evaluation. The evaluation will include overall condition of the lot/lot cluster in storage and will be recorded on the inspection report. Judgement must be exercised by the QASAS to ensure maximum representation without unnecessary rewarehousing.

(2) Samples of items which cannot be feasibly returned to the original package configuration (e.g., hermetically sealed containers, small arms ammunition packed in metal (terneplate) lined M1917 boxes, and heat-sealed barrier bags) will be used on a recurring basis if sampled lot is not part of a cluster. If the recurring samples indicate progression of deterioration type defects, lot acceptability will be determined by inspection of an additional sample from original sealed containers. The criteria in paragraph 2-7 will apply. If the sampled items are part of a lot cluster, such samples will not be used on a recurring basis until all lots in the cluster have been inspected and the inspection cycle is repeated.

(3) Selection and preparation of stockpile laboratory test program samples will be accomplished according to instructions contained in paragraph 3-4, the applicable SB for the particular item, and instructions from the appropriate headquarters.

(4) Selection and preparation of function or trace test samples for shipment to a test facility will be accomplished according to instructions contained in this bulletin, the applicable SB for the particular item, and instructions from the appropriate headquarters.

(5) Selection and preparation of propellant samples for shipment to a test facility will be accomplished according to SB 742-1300-94-895.

*b. Sample inspection.*

(1) All inspections and tests will be conducted by or under the supervision of a QASAS.

(2) The use of applicable Supplemental Ammunition Surveillance Inspection Procedures (SASIP) contained in appendices E through AA, drawings, Ammunition Information Notices (AIN), specifications, SOPs, and Ammunition Data Cards (ADC) during all prescribed inspections is required and will be supplemented by related technical publications. Deviation from standards delineated in these references must be made a matter of record both in reports to other agencies and on Depot Surveillance Record (DSR) Cards.

*(a)* Ensure that the item being inspected is compared with a drawing or specification with the same revision under which it was manufactured or modified.

*(b)* In the event of a conflict between defect classifications in surveillance SBs and the specification, information in the SB will take precedence when classifying defects for ammunition.

*(c)* SASIPs supplement the criteria contained in the body of this bulletin. They are mandatory for use during the conduct of the surveillance inspections for applicable items.

*(1)* Each SASIP is tailored for a specific item or family of items. They are intended to enhance readiness of the U.S. Army by providing a standardized basis for the conduct of surveillance inspections worldwide; place emphasis of surveillance inspections on those components which are most susceptible to deterioration or change during long-term storage; and identify potential problem areas as early as possible during the life cycle, so that corrective action can be planned and accomplished in a timely manner.

*(2)* SASIPs are written, staffed, and approved for ammunition that has been accepted into the field service account. The primary emphasis is the detection of defects that would adversely affect the safe storage, transportation, or reliable use of the item. Therefore,

in some instances, acceptance and rejection criteria, defect classification, and permissible measured tolerances contained in the appendix will conflict with criteria contained on drawings and in specifications. Where this occurs, the criteria contained in the SASIP will take precedence (verification inspection conducted at time of renovation excluded).

(3) Requests for ammunition drawings will be made to the applicable command as follows:

(a) Army: (except chemical and GM/LR)--

Commander
Industrial Operations Command
ATTN: AMSIO-QAS
Rock Island, IL 61299-5000

(b) Army guided missiles and large rockets:

Commander
U.S. Army Aviation and Missile Command
ATTN: AMSMI-CIC-IS-OS-ED-WS
Redstone Arsenal, AL 35898-7462

(c) Army toxic chemical munitions:

Commander
U.S. Army Soldier and Biological Command
ATTN: AMSSB-OSM
5183 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5424

(d) Air Force:

Commander
Hill Air Force Base
ATTN: 00-ALC-TIED
Hill Air Force Base, UT 84056-5609
DSN 777-0889

(e) Navy, Marine Corps:

Commanding Officer
NAVSURFWARCEN Crane Division
Code 4021, Bldg 2084
300 Highway 361
Crane, IN 47522
DSN: 482-5588

(4) Ammunition Data Cards for conventional ammunition should first be requested through the Ammunition Lot Record and Malfunction System (ALRAM). If unavailable, request from the consignor or IOC surveillance office. Ammunition Data Cards for guided missiles and large rockets should be requested from the consignor or AMCOM Munitions Team Office.

(5) The examination of samples will normally be conducted at the ammunition surveillance workshop building; however, examinations may be performed at the storage site or elsewhere when in conformance with an approved SOP. Refer to the command explosive safety regulation, TM 9-1300-206, and/or DA PAM 385-64 as appropriate, for permissible operations inside and outside of storage structures.

(6) Lots will normally be inspected for deterioration, damage, unsafe conditions, and gross manufacturing defects. Use of gages and precision-measuring instruments during the conduct of sampling inspections will be according to paragraph 2-8.

(7) Inspection results for each lot or serial number (SN) inspected must be considered in conjunction with the results of previous inspections for that lot/lot cluster or SN. Trends in the serviceability of the lot/lot cluster must be analyzed to determine if action is required in addition to the condition coding of the lot/lot cluster inspected. Analysis could indicate that the inspection interval for the lot/lot cluster needs to be expanded or reduced (see para 2-5).

(8) The appropriate sampling plan of chapters 2, 7, 8 or 12, or applicable SASIP will be used in sampling inspections.

c. Sample disposition.

(1) Exterior packs from which samples were selected will be identified by a tag or label with "SURVL SAMPLE".

(2) Hermetically-sealed containers will be resealed with reinforced tape. The tape will be minimum of 1-1/2-inch in width and will be applied using three wraps with a 1-inch pull tab. The taped end of the container will be waxed dipped. Lot inspection samples will be used on a recurring basis for subsequent inspections. Exterior package of samples will be marked or tagged as surveillance samples which are not to be shipped unless the total lot quantity is being shipped.

(3) Inspection samples of small arms ammunition packed in metal-lined (terneplate) M1917 boxes will be used on a recurring basis. In all cases, the terneplate lids will be temporarily resealed using tape and wax as indicated in (2) above. Boxes will be identified as surveillance samples not to be shipped.

(4) Samples packaged in barrier material opened for inspection should have air evacuated and be resealed with sealing iron. Detailed instructions for sealing barrier material are contained in MIL-P-116 and MIL-B-117. New bags must be prepared if the original bag cannot be resealed and equivalent barrier material is available. Samples that have been properly resealed should not be used on a recurring basis.

(5) Due to extreme hygroscopic nature of styrofoam, following procedures will be implemented when unpacking or repacking M2A1 containers with styrofoam supports:

(a) M2A1 containers with styrofoam inserts will remain open for an absolute minimum amount of time.

(b) When possible, desiccant packed in M2A1 container will be replaced with fresh desiccant prior to repack. As an alternate method

of minimizing moisture absorption. place removed desiccant and Styrofoam inserts in an approved desiccant container. Removed desiccant and supports will not be returned to M2A1 container until immediately prior to material repack and container closing.

*(c)* If neither procedure in para 2-3*c*(5)*(b)* above is possible, then repack the desiccant and all inner packing in the M2A1 can immediately after removal of material. The M2A1 can will be closed until time of repack.

*(d)* Packs selected for item inspection will be the minimum number prescribed by this supply bulletin. All packs which are opened for inspection will be marked or tagged "Surveillance Samples: Not to be shipped until entire lot quantity is exhausted." and used on a recurring basis for future individual lot inspections only.

(6) Samples in jungle pack and those in barrier material which cannot be properly resealed for any reason must be resealed using pressure-sensitive adhesive tape. Inspection samples will be used on a recurring basis. Outer packs will be identified as surveillance samples not to be shipped. When the entire lot is scheduled for shipment, samples in barrier material must be resealed, if possible, according to paragraph 2-3*c*(4) above.

(7) Serviceable samples will be returned to storage with the parent lot.

(8) Ammunition with critical defects, considered hazardous to store, will be segregated with like items and destroyed as soon as possible according to approved procedures. When applicable, ammunition with critical defects will be rendered safe to permit safe handling.

*(a)* Emergency disposal of lethal and incapacitating chemical munitions will comply with applicable public laws. Disposal of lethal or incapacitating chemical munitions by detonation is prohibited unless specifically authorized by higher headquarters.

*(b)* Munitions are sometimes assigned condition code H or placed in the RRDA or disposal account. Such munitions must be identified at time of classification for more extensive inspection or priority for demilitarization (see para 2-4*e*).

(9) When lot is rejected the defective samples will be tagged or otherwise marked for identification and returned to the parent lot.

(10) Only serviceable samples will be returned to serviceable parent lots. Defective samples in insufficient quantities to cause rejection of a serviceable lot will be either repaired or stored separately.

(11) Sample inspection will apply to the entire lot or lot cluster and the accept or reject criteria in Table 2-3 will be used for lot classification. For inspections involving lot clusters,

disposition of inspection results will be in accordance with para 2-6*c*(15).

(12) Rejected lots/lot clusters or samples must be reported according to the requirements of DA PAM 738-750. In addition, lots and lot clusters containing critical defectives will be locally suspended, assigned CC-J, and reported to the appropriate commodity command by the most expeditious means (by message or e-mail for OCONUS or by telephone during duty hours within the continental United States (CONUS)). Item nomenclature, National Stock Number (NSN). lot or serial number, defect(s) encountered, number of defectives. and number of samples examined must be included in the report. One copy of the ammunition data card(s) and the depot surveillance record card(s) will also be forwarded to the appropriate commodity command. If possible and appropriate, photographs will be included.

**2-4. Types of inspection.**

The principal types of inspections to be performed on ammunition materiel are defined below.

*a. Initial Receipt Inspection (IRI).* Initial receipt inspection will be performed within 30 days after receipt or prior to shipment (whichever comes first) on materiel received directly from the manufacturer. vendor. or Government activity which has been inspected and accepted by the Government at the point of origin. This inspection is expected to identify gross manufacturer errors and is not intended as manufacturer's acceptance type inspection. **IRI is not required for materiel received from an IOC plant with an assigned QASAS that have received a periodic inspection IAW IOC 702-2 and this SB.**

(1) Lot Clustering procedures will be used according to instructions of para 2-6*c* . Lots selected will be inspected for gross manufacturer errors. certain type manufacturing defects and nonstandard conditions. All lots received. to include the clustered lot selected for item inspection. will be individually inspected for damage in transit to include inspection for packaging and marking deficiencies. correct unitization procedures, and other nonstandard conditions which may be observed without opening packaging.

(2) For materiel which cannot be lot clustered, inspection will be on a sampling basis by individual lot and will include inspection for damage in transit, packaging and marking deficiencies, correct unitization procedures, gross manufacturer errors. certain type manufacturing defects and nonstandard conditions on both packaging and item.

*b. Receipt Inspectron (RI)*

(1) Condition Code K will be assigned to all ammunition lots received without a valid inspection.

(2) When materiel is received from an activity with an assigned QASAS (see para 1-3b) and the DSR Card stipulates that required inspections/tests were performed on the lot within the specified time interval, inspection will be for damage in transit only.

If additional inspection is indicated, the scope will be determined by the QASAS in charge. Lot Clustering provisions of para 2-6c will be used whenever possible. If munitions are received without a DSR card, request it from the shipping activity. If DSR card is not available follow procedures listed in para 2-4b(3).

(3) Materiel received without an accompanying DSR card will be inspected as follows:

(a) Containers will be inspected 100 percent for presence of seals. Contents of unsealed containers will be inspected 100 percent. Gaging will be performed as required by paragraph 2-8.

(b) Sealed containers and their contents will be inspected on a sampling basis by lot for damage in transit, deterioration, and nonstandard conditions.

(c) The extent of inspection will be altered by the QASAS in charge when the documentation received or the condition or configuration of the materiel indicates that an increase or decrease in the scope of inspection is required or justified.

(4) Used packaging material (i.e., boxes, fiber containers, filler material, eye-bolt lifting plugs, closing plugs, etc.) will be inspected as follows:

(a) Receipts from storage installations, posts, camps, and stations with qualified ammunition surveillance personnel (assigned QASAS, military ammunition inspectors, MOS 55B, and properly trained and designated civilian technicians) and with documentation that certifies the materiel has been subjected to 100 percent inspection for serviceability and explosive contamination should be accepted in the condition assigned by the inspecting installation. Material certified free of explosive contamination by the shipping installation is suitable for storage in inert areas.

(b) Assignment of condition code K and 100 percent receipt inspection is not required for on-post accumulation of materiel generated from maintenance, demilitarization, load, assembly, and pack (LAP) operations which is stored in segregated areas set aside for the exclusive storage of class V materiel. The materiel shall be given a 100-percent inspection prior to shipment, use, disposal, or storage in an inert area.

(c) Materiel placed in inert storage areas or offered to Defense Reutilization Management Office (DRMO) must have had a 100 percent inspection, verified on a sampling basis by a QASAS, and be certified as explosive free according to DOD 4160.21M and DOD 4160.21M1. Certifications and inspection records must be maintained for materiel held in inert storage areas. Storage area and materiel must be controlled to ensure inspected and certified stocks are separated from materiel not properly inspected and certified as being free of explosive contamination.

(d) Serviceability will be determined using appropriate criteria given in paragraph 2-7. Degree of explosive contamination, if any, will be determined in con]unction with foregoing inspections. Wooden packing materials treated with pentachlorophenol (referred to as PCP or PENTA) must be properly identified. Containers which have contained depleted uranium cartridges will be tested according to AR 385-11 to ensure that they are free of radioactive contamination.

(d) Serviceability will be determined using appropriate criteria given in paragraph 2-7. Degree of explosive contamination, if any, will be determined in conjunction with foregoing inspections. Wooden packing materials treated with pentachlorophenol (referred to as PCP or PENTA) must be properly identified. Containers which have contained depleted uranium cartridges will be tested according to AR 385-11 to ensure that they are free of radioactive contamination.

(e) The extent of inspection will be altered by the QASAS in charge as required.

(f) Materiel received with proper certification or documentation described in paragraph 2-4b(4)(a) above can be shipped to other depots or plants without additional inspection prior to shipment. Copies of the certification and/or documentation will be provided to the consignee.

c. Acceptance inspection (AI). Acceptance inspection is performed on materiel received from contractor or plant requiring inspection and acceptance at destination, materiel inspected at origin and requiring acceptance at destination, and components from demilitarization to be reused or restored to stockpile. Instructions for AI will be furnished by the applicable commodity command, when required. Depots receiving materiel from procurement for stock will process DD Form 250 (Materiel Inspection and Receiving Report) according to **Defense FAR Supplement (DFARS), Appendix F.**

d. Periodic inspection (PI) (cyclic). All required stocks will be inspected periodically for deterioration and nonstandard conditions for classification of true level of serviceability. Lot clustering procedures per para 2-6c will be used.

(1) Where a previous inspection has established a static condition; e.g., a rocket continuity test failure that has established a requirement for 100-percent replacement or inspection of igniters), such tests should not be performed during subsequent inspections. Disassembly for inspection of manufacturing type defects (measuring, weighing, etc.) will not be performed unless required by a specific procedure or directed by the appropriate commodity command (see para 13e(3)).

(2) For SMCA managed required stocks in condition codes A, B, C, D and N, PIs will be performed at the time intervals specified in table 2-1. PIs will be performed on unserviceable SMCA managed required stocks at twice the listed inspection interval. Interval for U.S. Army Aviation and Missile Command (AMCOM) managed items will be as directed by the item SB. PIs will not be performed on stocks in the demil account.

(3) If stocks are stored under adverse conditions, the materiel must be examined more frequently as determined necessary by the QASAS in charge.

(4) All stocks of propellant items, including all owners and condition codes, stored at IOC locations will receive a PI.

e. Safety in storage inspection (SIS).

(1) Non-required stocks and all stocks in the Resource Recovery and Disposition Accounts (RRDA) will be inspected to ensure they are safe for continued storage and handling. Handling includes those preparatory actions necessary to demilitarize or transport the item. The QASAS will determine whether the conditions noted are immediately hazardous or could result in a hazardous situation for handling, storage, or transportation. SIS inspections are not required for inert ammunition. When performing SIS inspections, ammunition materiel will only be inspected for defects that could affect further safe storage and handling, such as exposed explosives, corrosion which could lead to exposed explosives, or missing safety devices.

(2) Lots determined to pose an immediate threat to life, health, or government property will be reported for emergency destruct.

(3) Lots or lot clusters determined to be potentially hazardous will be inspected as frequently as necessary to assure continued safe storage of the lot. Necessary actions will be taken to identified and ensure demilitarization of this materiel before it becomes hazardous. Intervals in Table 2-1 will be utilized. QASAS in Charge may reduce interval as required. Classify this materiel to Condition Code (CC) H and assign defect code C018EZ.

(4) Lots or lot clusters determined to be nonhazardous in terms of normal storage and handling will be inspected at twice the designated PI interval.

(a) Serviceable lots in SIS status will be classified CC-J and defect code C018TM will be assigned. NOTE: Navy owned stocks will receive SIS inspections and be maintained in their appropriate condition code, defect code C018DU will be assigned to these stocks. Navy stocks will receive an "issue" inspection IAW TWO10-AC-ORD-010, Chapter 6, prior to shipment.

(b) Unserviceable lots will be classified CC-H or CC-P and defect code C018FZ assigned. CC-P will be utilized only upon direction of higher headquarters.

(5) Sampling plans for SIS inspections will be determined by the QASAS in charge. The minimum sample size for potentially hazardous items is that indicated in table 2-3. The minimum sample size for nonhazardous items is one-half that indicated in table 2-3.

(a) Accept-reject criteria will not be used. The QASAS will determine whether or not the lot can be expected to remain nonhazardous during the SIS inspection interval. For lot clusters; defects found within the sampled lot which could affect safe storage or handling will cause a change in the status of the sampled lot IAW paragraphs 2-4e(2),(3), and (4) above and selection of additional samples IAW paragraph 2-6c(15).

(b) Testing or gaging is not required.

(6) SIS inspections will normally be performed in the surveillance workshop and must include inspection of outer pack, inner pack, and item. Palletized projectiles and small arms ammunition

(except cartridges with chemical or explosive projectiles) may be inspected in the storage location. Examination of outer packs in storage is normally sufficient for small arms ammunition up to .50 caliber.

f. Storage monitoring inspection (SMI).

(1) Storage monitoring inspection is performed as required by applicable technical instructions for specific items or as determined necessary by the QASAS in charge. It is performed on items while in the storage site and includes but is not necessarily limited to- -

(a) Inspection of lethal chemical agent munitions, containers of bulk lethal chemical agent, or containerized lethal chemical agent munitions to detect leakers and other visual defects.

(b) Reading and recording pressure and relative humidity of items packaged in pressurized or desiccated containers.

(2) Frequency of SMI will be as required by the technical instructions for the specific item. SMI may also be conducted when determined necessary by the QASAS in charge.

g. Special inspections (SPI). These inspections are performed at the direction of higher headquarters or to satisfy special or local requirements when approved by the QASAS in charge. Reason(s) for conducting SPI must be entered in the inspection remarks.

h. Preissue inspections (PII). This is an inspection other than a PI that must be performed prior to issue. Examples are ammunition requiring a special check for specific defects as determined by QASAS in charge or as directed by higher headquarters; or lots is SIS status which require a serviceability inspection prior to issue. A lot or lot cluster overdue for PI will be given a PI prior to shipment, not a PII. The appropriate sampling plan in paragraphs 2-6 or chapters 8 and 12 will be used. Reasons for conducting PII must be entered in inspection reports.

i. Verification inspection (VI). This inspection is performed on materiel processed during preservation and packaging (P&P) and maintenance (renovation, modification, overhaul, etc.) type operations. Verification inspection will be performed according to paragraphs 4-3 and 4-4.

j. Basic load inspection (BLI). Basic load inspection is performed on stocks of munitions (to include training, security, and contingency stocks) maintained by a military unit or civilian security forces. This includes security forces at installations where AR 50-6 applies. Chapter 8 of this SB contains additional instructions.

k. Surveillance function test inspection (SFTI). Function test of ammunition will be conducted according to paragraphs 3-1 through 3-3 and SB 3-series or SB 742-series publications for the specific item to

be tested. The visual inspection conducted in conjunction with the preparation of function test samples may satisfy the PI required for the lot(s) tested, however, additional samples may be required.

**2-5. Periodic inspection intervals.**

*a*. The normal interval of inspection for required stocks is based on the expected rate of deterioration for specific item types. These deterioration rates have been developed into inspection interval categories which are assigned to items as appropriate. For items in outside storage see para 10-3.

*b*. The normal interval of inspection for each category is given in Table 2-2. This interval is to apply unless specified otherwise in the inspection procedures for a specific item or is adjusted according to paragraphs c through e below. Serviceable lot(s) will be assigned defect code CO18DH (overdue for inspection) when the elapsed time since the date of the last inspection exceeds the assigned interval by 6 months. The lot/lot cluster will remain in the previously assigned condition code until either the required inspection is performed or the lot/lot cluster reaches twice the assigned interval. Condition code J will be assigned to the lot(s) that are not inspected by the time they reach twice the assigned inspection interval and defect code CO18TM (overdue for inspection by twice the interval) applied.

*C*. When the inspection results of a specific lot or lot cluster reveal progressive degradation of such degree that the lot may become unserviceable before expiration of the assigned category interval, the QASAS in Charge will schedule the next inspection at a shorter interval based on conditions detected, storage conditions, and materiel involved.

*d*. The normal interval of inspection may be expanded whenever local storage conditions. climatic conditions, and previous inspections justify. A prime concern in the area of climatic conditions must be the degree of relative humidity. The QASAS in charge is responsible for determining those items, specific lots and lot clusters that will be placed in an expanded inspection interval status. As a minimum, adjusting an interval of inspection for items, specific lots or lot clusters will be based on the following criteria:

(1) Each lot or lot cluster being considered for expanded interval status must have had either an IRI, RI, or VI.

(2) Data from previous inspections must indicate that no appreciable degradation has occurred.

(3) Lots and lot clusters will be stratified by Department of Defense Identification Code (DODIC). and any other criteria determined applicable (such as manufacturer. age, condition, storage history) and each stratum considered as a whole for possible interval expansion. This procedure is not intended to be used on a one-time basis to extend intervals on lots or lot clusters overdue for inspection. It is

intended to be used on a one-time basis to extend intervals on lots or lot clusters overdue for inspection. It is intended to identify types of ammunition that can be considered for change of category based on actual inspection history.

(4) An expanded inspection interval may consist of an increase of up to one whole interval. The QASAS in charge is authorized to implement an expanded inspection interval. A brief history of the lots involved and rationale for the expanded interval implemented must be furnished to IOC. Surveillance Office for use in future inspection interval research.

*e*. For operational efficiency, all similar items should be programmed during the same month of a given year's PI schedule. To establish and maintain a schedule by like items, it is permissible to vary the date of next inspection (DNIN) by decreasing the interval as much as 5 months or increasing the interval as much as 6 months (i.e.. a lot due for PI in Oct 98 may be scheduled as early as May 98 or as late as Apr 99). Adjusting the schedule in this manner will have no effect on the provisions of paragraph 2-5*b* above.

*f*. Priorities for periodic inspection.

(1) Materiel with high turn over rates, needed to fill issue requirements,

(2) Lots in CC-J for past due inspection by twice the interval.

(3) Lots six months or more past due inspection (but less than twice overdue).

(4) All other required materiel at normal inspection interval.

*g*. Lots and lot clusters overdue for PI will not be issued. Shipments to Posts, Camps, Stations locations will have a minimum of six months remaining on their inspection cycle. Ammunition lots issued to OCONUS locations and to users/installations without a QASAS must have at least one year remaining on the inspection cycle.

**2-6. Ammunition inspection categories and sampling plans.**

*a*. Ammunition items (except toxic chemical and AMCOM-managed items) are separated into categories for assignment of PI intervals as listed in table 2-1. Category determination is based primarily on susceptibility to and rate of deterioration. Items not listed under one of the existing categories will be reported to IOC Surveillance Office and be considered as category Z until a category is assigned. Change to a category will be disseminated by message pending formal change to this bulletin. Changes in categories are effective immediately and intervals for inspections must be adjusted at time of change. Categories for specific items or family of items covered by appendix E through AA supersede guidance given for general items in table 2-1.

b. Table 2-3 will be used to determine the inspection sample sizes for IRI, RI, PI, and PII.

c. Lot Clustering

(1) Ammunition lot clustering procedures are used to administratively combine ammunition lots into homogeneous groupings for the purpose of conducting classification (serviceability) inspections. This procedure is applicable to inspection of Army, Air Force and Marine Corps owned conventional ammunition stocks. This procedure also applicable to Navy owned conventional stocks for safety in storage inspection purposes. Those lots which do not meet the criteria for clustering will be evaluated using applicable guidance for individual lot inspections. Lot clusters may not contain more than 50 individual lots.

(2) Clustering will be performed within individual installations. The QASAS in charge is responsible for implementing the lot clustering program and is the final authority on acceptability of lots for clustering.

(3) When a cluster is being formed the date of next inspection will be based on the lot having the most recent date of last inspection (does not include inspection for damage in transit). If all lots within the new cluster are past due inspection, one lot must be inspected. This date then becomes the date of last inspection for the cluster.

(4) Lot clusters will use normal periodic inspection intervals of table 2-1.

(5) Lots may be added (up to 50 lots) or deleted from a cluster at any time. Suspension or restrictions issued by higher commands or receipt/issue of a lot at the installation may be cause for the addition/deletion, but will not alter the date of next inspection for the lot cluster.

(6) Inspection samples will be drawn from a single lot within the cluster (except as described in paragraph 2-6c(13)) and must be representative. A different lot will be selected at subsequent intervals until all lots in a cluster have been sampled.

(7) All lots within a cluster are considered equally suitable for issue. Further inspection will not be required for shipping individual lots of a cluster which is within inspection cycle, unless directed by higher headquarters for specific PII requirement. Receiving installation will apply the results and date of last inspection to the actual lot received from a cluster.

(8) Lots deleted from a cluster for any reason will retain the date of next inspection of the cluster. The DSR card will show the inspection results of the sampled lot from the cluster.

(9) Lot clustering of new materiel is authorized when directly received from the manufacturer. "Skip lotting" is no longer an acceptable method of inspection for initial receipts.

(a) Normally, the first lot received from a manufacturer which meets clustering criteria will be given an IRI per para 2-4a. Any cluster must have a minimum of one lot inspected at the time of receipt or prior to issue.

(b) Only materiel received directly from the same manufacturer can be added to an existing lot cluster of new materiel.

(c) Each individual lot of new materiel received will be inspected for damage in transit.

(10) Lot clustering of materiel requiring SIS inspection: (a) Multiple condition codes may be clustered for SIS inspections as long as clustering does not affect the safe storage and handling of the lot.

(b) Lots receiving SIS will have a PI performed prior to issue.

(11) In all cases, DSR cards for each lot in the cluster will be annotated with the inspection results of the sampled lot. Included in the inspection remark will be the cluster lot index number and the lot number sampled.

(12) Each individual lot within a cluster must be evaluated in its storage locations for visual degradation. Any indication that a particular lot is showing a different rate of deterioration will be cause for deletion of that lot from the cluster. This evaluation may be performed in conjunction with magazine inspections or at the time samples are selected in the storage structure.

(13) The clustering criteria which follows must be met by lots considered for inclusion into a lot cluster.

(a) Same model/series of ammunition. This will typically separate clusters by the Department of Defense Ammunition Code (DODAC) (e.g., 1305-A071).

(b) Same manufacturer. This will be indicated by the manufacturer prefix for ammunition lot numbers (reference MIL-STD1461). Depot lots (e.g., RR, SRD, RHN, etc.) that are formed from grouping ammunition lots will not be considered for lot clustering.

(c) Same lot interfix. All non-standard lots (lots with lot identifier codes, i.e. A, D, E, G, H, P, PG, R, S, SP SR, and PILOT) described in MIL-STD-1168 will not be clustered. The number of lots within a particular cluster is dependent on the number of lots within an interfix at the individual installation. There is no need to limit the number of lots beyond the scope of criteria noted here. Only

propelling charges for semi-fixed ammunition assigned a standard ammunition lot number are eligible for clustering. All other propelling charges and bulk propellants whose ammunition lot number is composed of the 5-digit number representing the propellant index or serial number will not be clustered.

*(d)* Similar method of pack. The intent here is to separate lots within the same DODAC which have significantly different types of packaging. Examples are mortar ammunition with and without jungle wrap.

*(e)* Same condition code. All lots must have the same condition code to be included in the cluster. Not applicable to SIS lot clusters.

*(f)* Similar lot history. The DSR card must be reviewed to ascertain the similarity of lot histories for the lots being considered for clustering. Lots that have been uploaded will not be clustered. A lot cluster of new materiel must only contain materiel received from a manufacturer.

(14) Record keeping for lot clusters will be in accordance with guidance of para 11-2*i*.

(15) Disposition of inspection results. Sample inspection will apply to the entire cluster and accept/reject criteria of table 2-3 will be used for cluster classification. If the sampled lot fails to meet serviceability criteria additional samples will be inspected.

*(a)* Lot clusters with 2 to 5 lots, inclusive: dissolve cluster and inspect each individual lot in accordance with this chapter.

*(b)* Lot cluster with 6 to 10 lots, inclusive: inspect 2 (two) additional lots. If neither of the additional lots fail to meet serviceability criteria, remove first inspected (failed) lot from cluster and retain cluster in appropriate serviceable condition code. If either of the additional lots fails to meet serviceability criteria, reject the entire lot cluster and assign condition code accordingly.

*(c)* Lot clusters with 11 to 20 lots. inclusive: inspect 3 (three) additional lots. If none of the additional lots fail to meet serviceability criteria, remove first inspected (failed) lot from cluster and retain cluster in appropriate serviceable condition code. If any of the additional lots fail to meet serviceability criteria, reject the entire lot cluster and assign condition code accordingly.

*(d)* Lot cluster with 21 to 50 lots, inclusive: inspect 5 (five) additional lots. If none of the additional lots fail to meet serviceability criteria, remove first inspected (failed) lot from cluster and retain cluster in appropriate serviceable condition code. If any of the additional lots fail to meet serviceability criteria, reject the entire lot cluster and assign condition code accordingly.

*(e)* Individual failed lots which are removed from the cluster due to conditions stated in paragraphs 2-6*c*(13)*(a)* through *(d)* above will be treated as individual lots and be assigned the appropriate condition code based upon original inspection.

*(f)* Sample sizes and accept/reject criteria for all lots inspected within a cluster subsequent to the failure of the first lot to meet serviceability criteria will be in accordance with cluster lot requirements of table 2-3.

2-7. Surveillance defect standards.

*a*. Ammunition defects are classified into the following four categories:

(1) Critical. A defect that is likely to result in hazardous or unsafe conditions for individuals using. maintaining, or depending on the item, or a defect that is likely to cause the destruction of/or serious damage to the weapon or launcher under normal training or combat conditions.

(2) Major. A defect other than critical that is likely to result in failure in tactical use or which precludes or reduces materially the usability of the item for its intended use.

(3) Minor. A defect other than critical or major that is not likely to result in failure during use or reduce the intended use of the item, but which should be corrected prior to issue.

(4) Incidental. Defects not of the critical, major, or minor types will be classified as incidental and corrected when maintenance is performed on the item. Incidental defects will not normally be reported to the commodity command unless specifically requested but will be recorded on the depot surveillance record card.

*b*. Defectives are items having one or more defects; e.g, an ammunition item or unit having one or more major defects is considered a major defective. An ammunition item or unit having one or more critical defects and one or more major defects and one or more minor defects will be classified as a critical defective, a major defective, and as a minor defective.

*c*. The following criteria are furnished as a guide to assist the QASAS in classifying metal, plastic. and rubber component deterioration or corrosion; mixed ammunition; damage; packaging; and marking defects into one of the four defect categories:

(1) Metal, plastic. and rubber component deterioration.

*(a)* Critical deterioration is deterioration which creates a hazardous condition for persons using or maintaining the item.

*(b)* Major deterioration is deterioration which significantly reduces or precludes the functioning or use of the item and requires maintenance or renovation prior to issue.

*(c)* Minor deterioration is deterioration which does not significantly reduce the functioning or use of the item but normally requires minor maintenance to restore the materiel to an issuable condition or to prevent the progression of deterioration to a more serious degree.

*(d)* Incidental deterioration is superficial deterioration which affects only the surface of the item and does not affect the intended use of the item. Items with incidental defects are acceptable for issue at the time of inspection.

(2) Corrosion.

*(a)* Critical corrosion is rust, or corrosion which has progressed to the point that the material is hazardous to retain.

*(b)* Major corrosion is rust, corrosion accompanied singly or in combination with etching, pitting, or more extensive surface damage; loose or granular condition.

*(c)* Minor corrosion is loose rust, corrosion accompanied by minor etching and pitting of the surface.

*(d)* Incidental corrosion is discoloration or staining with no direct visual evidence of pitting, etching, or other surface damage.

(3) Ammunition mixed.

*(a)* Critical is when the types of ammunition mixed within a lot can result in hazardous or unsafe conditions for persons using or maintaining the item, e.g., ball ammunition with grenade cartridges or blank ammunition, high explosive (HE) with practice ammunition, incorrect type or color of smoke or signal, etc.

*(b)* Major is when the types of ammunition mixed within a lot can result in failure during tactical use, e.g., HE instead of HEAT ammunition, incorrect fuze model, etc.

*(c)* Minor or incidental defects - none are defined.

(4) Damage.

*(a)* Critical damage is a condition where the damage can cause hazardous or unsafe conditions for persons using or maintaining the item, e.g., broken safety devices, broken fins on fin-stabilized projectiles, etc.

*(b)* Major is a condition where the damage can cause failure or materially reduce the intended use of an item, e.g., dented or

distorted cartridge cases, damaged rotating bands, misaligned components, etc.

*(c)* Minor or incidental defects - none are defined. Any damage other than defined above will be noted on DSR card for information. Damage other than critical or major will not be used as acceptance or rejection criteria (except for clearance of materiel pertaining to security assistance program) unless specifically required by appropriate item military standards or procedures.

(5) Packaging.

*(a)* Critical is a condition where the packaging or the absence of packaging components can cause hazardous or unsafe conditions for persons using, handling, transporting, or maintaining the materiel.

*(b)* Major is a condition where containers are damaged, weathered, or decayed to the extent that--

*1* The contents cannot be adequately protected.

*2* The containers require replacement.

*3* The containers are damaged to the extent that contents cannot be readily removed.

*4* The container cap or closure is damaged or insecure to the extent that contents cannot be adequately protected.

*5* The container contents are loose to the extent that the item cannot be adequately protected during handling and transportation.

*(c)* Minor is a condition where containers are weathered or deteriorated to the extent that maintenance is normally required prior to issue or use. Examples of minor packaging defects are wet, moldy, or mildewed inner containers (except metal) and improper or inadequate sealing of fiber containers.

*(d)* Incidental is any packaging defect other than critical, major, or minor that should be corrected if and when maintenance becomes necessary. (Examples of incidental packaging defects are: broken or missing handles or cleats, and broken, missing or ineffective hardware, banding, or packing components.) However, contents must be safe and adequately protected for storage and shipment.

(6) Used packing materiel. The standards for evaluating used packing materiel are SB 725-12 and SB 755-1 for IOC-managed items and the applicable SB 742 series ammunition surveillance procedures for AMCOM items. Packing materiel which is acceptable for use will be classified as condition code B.

(7) Marking. Marking that is missing, illegible, incorrect, or misleading will be classified defective as follows:

*(a)* Critical is a condition where the marking can result in hazardous or unsafe conditions for persons using or maintaining the item, e.g., incorrect delay time, incorrect color or type of smoke or signal, HE ammunition with practice marking.

*(b)* Major is a condition where the marking can cause misuse or failure, e.g., incorrect model or type of round or fuze, HE instead of HEAT, etc.

*(c)* Minor marking defects are those other than critical or major that normally should be corrected prior to issue. Examples of a minor marking defects are incorrect or missing lot number or Department of Transportation (DOT) name on the item or packing.

*(d)* Incidental marking defects are those other than critical, major, or minor which should be corrected if and when maintenance becomes necessary. Examples of incidental marking defects are use of ammunition identification code (AIC) versus NSN; illegible or missing marking such as nomenclature, NSN, DODIC, cube, weight; and incorrect weight format or placement. Also see appendix D, paragraph D-1.

2-8. Use of gages and precision-measuring instruments.

*a.* As a general policy, every lot of ammunition which can be gaged and is classified as logistics control code (LCC) A or B must be gaged at least once during its storage life cycle. However, ammunition lots for which the specified gages are not immediately available will not be reclassified to a lesser condition code, nor will shipments to users be denied, pending gaging. (FORSCOM, TRADOC, ARNG activities, and OCONUS commands, see para 5-2*a*(4).)

*b.* Gages must be requisitioned expeditiously by ammunition surveillance organizations for LCC-A or B ammunition on-hand or due-in from new production (see para 5-2). Retention an deployment of gages associated with the policies stated herein should be centrally managed on a theater, command, or other basis to minimize costs and maximize usage.

*c.* Gaging will be accomplished whenever possible during initial receipt inspection or at the next regularly scheduled periodic inspection. Sample size will be as specified in table 2-3. For a lot that has been gaged at least once during its storage life cycle, use of gages during subsequent inspections will only be required when specifically directed by this bulletin, IOC Surveillance Office, or when conditions (i.e., damage, deterioration, or exposure to adverse conditions) impel the QASAS to direct additional gaging.

*d.* Precision-measuring instruments that are not ammunition peculiar (e.g., torque wrenches, feeler gap gages, micrometers, etc.) will be used to inspect for critical and major defects whenever specifically required by this bulletin, the complete round drawing, military specification, or by direction from higher headquarters, under the same terms given above for gages.

*e.* Results of gaging will be entered on DSR cards. DSR cards received from installations with active surveillance organizations which state that gaging has been performed will be honored by the receiving installation.

*f.* Procedures and actions listed below will apply in the event that ammunition items fail to meet gaging requirements listed in the SASIP for a specific item, specification, or drawing during surveillance inspections. Gaging failures will be reported in detail and the report will contain the following information where applicable.

(1) NSN and lot number.

(2) Sample size.

(3) Type of failure.

(4) Number of failures.

(5) Gage drawing and revision number.

(6) Gage serial number.

(7) Number of passes since calibration.

(8) Gage dimensions at last calibration (if available).

(9) Actual measurements of item failing to gage.

(10) All other defects observed are to be identified.

*g.* Data required by paragraph 2-8*f* for individual items which fail to gage without causing lot rejection will be compiled and reported by letter on a quarterly basis to IOC Surveillance Office.

*h.* Lots rejected for failure to gage during IRI will be reclassified to condition code L and reported on SF 368 (Quality Deficiency Report). The SF 368 will contain the information required in paragraph 2-7*f* and will be preceded by a priority message to IOC Surveillance Office if the defect encountered is classified as critical.

*i.* Lots rejected according to Table 2-3 for failure to gage during other than IRI will be reclassified to condition code D (for major or minor defects) or J (for critical defects) pending receipt of disposition instructions from IOC. The information required by paragraph 2-8*f* above will be reported to IOC Surveillance Office by message (for critical defects) or memo (for major or minor defects).

2-9. Condition codes.

a. Information on the use of condition codes can be found in Appendix C.

b. All condition codes must be assigned by a QASAS. QASAS must review and approve any reclassification action.

*Table 2-1. Periodic Inspection Intervals.*

| Item | Category |
|---|---|
| Activators.....,.. | X |
| Additive Jacket..... | Y |
| Ammunition fixed and semi-fixed, 37mm through 165mn for guns and howitzers: | |
| a. Cartridge, 105mm, semi-fixed for howitzer assembled with M67 propelling charges less than 15 years old **(except M84 series HC, Smoke, and M629 Tactical CS).** . . . . . | Y |
| b. Cartridge, 105mm, semi-fixed for howitzer assembled with M67 propelling charges 15 years or older, M84 series HC Smoke, and M629 Tactical CS . . . . . | Z |
| c. **AP (except 105mm and 120mm tank ammo w/DU penetrator). APERS, CAN, HE (all types). WP and TP** . . . . . | W |
| d. Blank, illuminating and 120mm M830, M831, and M865..... | Y |
| e. Chemical, colored smoke, HC, leaflet, pyrotechnic, riot control..... | Z |
| Ammunition for mortars jungle pack): | |
| a. HE, WP, and practice with explosive components.... | V |
| b. Practice without explosive components (inert)..... | U |
| c. FS smoke, leaflet riot control..... | X |
| d. Illuminating..... | W |
| Ammunition for mortars regular pack): | |
| a. HE, WP, and practice with explosive components... | X |
| b. Practice without explosive components (inert)..... | W |
| c. Chemical, FS smoke, leaflet, riot control..... | Z |

| | |
|---|---|
| d. Illuminating . . . . . | Y |
| Ammunition for mortars (plastic Mono Pack)..... | Z |
| Ammunition for recoilless rifles.... | X |
| Ammunition, inert. all types.. | W |
| Ammunition, small arms, through 30mm (except through cal .50 packed in steel cans with gaskets)..... | W |
| Ammunition, small arms, through cal .50 packed in steel cans with gaskets. | U |
| Bag loading assemblies for mortars | Y |
| Bangalore torpedoes . . . . . | X |
| Black powder charges: | |
| a. In hermetically sealed containers. | Y |
| b. Not in hermetically sealed containers.. | Z |
| Blasting caps, non-electric | V |
| Blasting caps, electric... | Z |
| Bombs: | |
| a. HE, non-cluster type, unfuzed | U |
| b. Fragmentation and WP unfuzed. . . . . | W |
| c. HE, fragmentation, WP, fuzed or packed with fuze, and photoflash . . . . . | Y |
| Boosters. all types . . . . . | X |
| Bursters. . . . . | Y |
| Canisters. smoke..... | Z |
| Cartridge actuated devices (CADs) | Y |
| Cartridge. bomb ejection.. | Y |
| Cartridge cases. primed: | |
| a. Artillery..... | Z |
| b. Small arms..... | Y |

| | |
|---|---|
| Cartridge, delay..... | Y |
| Cartridge, engine starter. | Y |
| Cartridge, ignition..... | Y |
| Cartridge, impulse..... | Y |
| Cartridge, photoflash..... | Y |
| Cartridge. powder actuated | Y |
| Charge, practice, hand grenade | Z |
| Coupling base with primer | Y |
| Cutters | Y |
| Delay elements and delay plungers: | |
| a. Hermetically-sealed elements..... | Y |
| b. Not hermetically-sealed..... | Z |
| Demolition kit, projected charge.....,..... | X |
| Demolition block charges, C4 or TNT..... | V |
| Demolition block charges (except C4 or TNT)..... | X |
| Destroyers, all types (document. Cryptographic equipment, file) | Z |
| Destructors..... | Y |
| Detonating cord: | |
| a. In hermetically-sealed container..... | W |
| b. Not in hermetically-sealed container....,..... | Z |
| Detonation simulator. explosive M80..... | Z |
| Detonators..... | Y |
| Dispenser. aircraft mine, M56 and practice M132 loaded, and reload kits.....,..,..... | Y |
| Dispenser, riot control..... | Z |

| | |
|---|---|
| Dynamite, military (see para H-12 for commercial dynamite)..... | Y |
| Expelling charges: | |
| a. Black powder filled.... | Z |
| b. Propellant filled..... | Y |
| Explosive bolts.....,., | X |
| Fire starters..... | Z |
| Firing devices..... | Y |
| Flares.....,.. | Z |
| Fuse, blasting, time..... | Z |
| Fusees..... | Z |
| Fuzes, all types except fuzes with black powder time train rings or unsealed black powder delay elements: | |
| a. In hermetically-sealed containers.....,.....,,.. | W |
| b. Not in hermetically-sealed containers..... | Y |
| Fuzes containing black powder time train rings or unsealed black powder delay elements.. | Z |
| Grenades: | |
| a. HE, HEAT, offensive, WP, practice with explosive components..... | Y |
| b. Colored smoke, HC, incendiary, riot control... | Z |
| c. Practice, without explosive component, inert..... | W |
| High explosives, bulk..... | X |
| Igniters, all types..... | Z |
| Ignition cylinders..... | Z |
| Incendiary devices, all types | Z |
| Increment. propellant....., | Y |
| Inert ammunition, all types.. | W |

| | |
|---|---|
| **Inert** components and metal parts for ammunition items | W |
| Initiators for bomb fuzes | X |
| Launcher and 35-mm cartridges CS | Z |
| Launcher and grenade. smoke M176, M226 . . . . . | Z |
| Mines: | |
| a. APERS, AT, and practice with explosive components... | X |
| b. Practice without explosive components, inert. empty..... | W |
| Packing materiel..... | R |
| Primers: | |
| a. Artillery..... | Z |
| b. Small arms..... | Y |
| Projectiles, separate loading and Naval separated: | |
| a. Fuzed or unfuzed ADAM, RAAM, illuminating, practice with explosive components, 155mm M483A1. . . . . | Y |
| b. Fuzed HERA, baseburner, WP | Y |
| c. Unfuzed HERA, baseburner WP | W |
| d. Fuzed HE (except ADAM, RAAM, 155-mm M483A1)... | Y |
| e. Unfuzed ICM HE (except ADAM, RAAM, 155-mm M483A1) | W |
| f. Unfuzed non-ICM HE (except 8-inch M424.... | U |
| g. 8-inch M424..... | X |
| h. colored smoke. HC.. | Z |
| Projectile 64-mm, riot control M742, M743 . . . . . | Z |
| Propellant actuated devices (PADs) | Y |
| Propellant, bulk and component charges..... | Y |
| Propelling charge, separate loading: | |
| a. First interval..... | R |
| b. Subsequent interval | V |

| | |
|---|---|
| Reducer, flash..... | Y |
| Rocket motors..... | X |
| Rockets. complete rounds: | |
| a. Flechette, HE, WP, RP, MPSM and practice..... | X |
| b. flare and illuminating | Y |
| c. Incendiary riot control | Z |
| Shaped charges..... | Y |
| Signals ..... | Z |
| Simulators ..... | Z |
| Smoke pots ..... | Z |
| Spotting charges ..... | Z |
| Squibs ..... | Z |
| Supplementary charges ..... | X |
| Thermal batteries ..... | X |
| Thickener ..... | Z |
| Thrusters..... | Y |
| Tracers. all types.... | Y |
| Warheads. warhead sections: | |
| a. Flechette, HE, WP, RP, and practice with explosive components..... | X |
| b. Flare and illuminating | Y |
| c. Incendiary riot control | Z |

NOTE: Propelling charges for separated ammunition for naval guns are inherently different from other propelling charges. They are essentially like fixed cartridges in their deteriorative properties. Therefore. consider them as coming under ammunition, fixed, category W. Separated projectiles come under Fuzed HE (except ADAM, RAAM, 155MM M483A1). Category Y.

*Table 2-2. Periodic Inspection Categories*

| Category | Interval |
|---|---|
| R | 10 |
| S | 9 |
| T | 8 |
| U | 7 |
| V | 6 |
| W | 5 |
| X | 4 |
| Y | 3 |
| Z | 2 |

*Table 2-3. Sample Sizes and Acceptance/Rejection Numbers.*

| Item | Note | Sample Size | | Accept/Reject Numbers (defectives) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Critical | | Major | | Minor | |
| | | SAA | Other | AC | RE | AC | RE | AC | RE |
| Outer pack | (1) | 20 | 20 | 0 | 1 | 1 | 2 | 2 | 3 |
| Inner pack | | 20 | 20 | 0 | 1 | 1 | 2 | 2 | 3 |
| Belt, 5.56-mm | (2) | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Belt, 7.62-mm | (3) | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Belt, cal .30 | (3) | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Belt, cal .50 | (3) | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Belt, 20-mm | (3) | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Belt, 30-mm | | 10 | ..... | 0 | 1 | 1 | 2 | 1 | 2 |
| Item (Other)(Individual Lot) | | ..... | 20 | 0 | 1 | 1 | 2 | 2 | 3 |
| Item (Other)(Cluster Lot) | | ..... | 32 | 0 | 1 | 1 | 2 | 3 | 4 |
| Item (SAA)(Individual Lot | (4) | 300 | ..... | 0 | 1 | 14 | 15 | 21 | 22 |
| Item (SAA)(Cluster Lot) | (4) | 300 | ..... | 0 | 1 | 10 | 11 | 21 | 22 |

Notes to Table 2-3:

(1) Inner pack and item samples must be selected from a minimum of ten outer packs. Additional outer packs must be inspected at either the inspection or storage location(s) to make a total sample size of 20.

(2) If rounds are linked, a belt consisting of 6 links and 6 cartridges shall be capable of withstanding a tensile load of 19 lbs minimum without separation. Load shall be applied at a uniform rate and belt shall remain under tension for a minimum of 30 seconds.

(3) If rounds are linked, a belt consisting of 25 cartridges and 25 links shall be capable of withstanding a tensile load of 25 lbs for 7.62-mm and cal .30, 80 lbs for cal .50, and 115 lbs for 20-mm without separation. Load shall be applied at a uniform rate and belt shall remain under tension for a minimum of 30 seconds. No test for belts of 30mm is required.

(4) For the purpose of table 2-3, SAA is defined as up to and including caliber .50,

(5) Chapter 12 contains accept/reject criteria for Security Assistance Program inspections.

# CHAPTER 3
# SURVEILLANCE OF AMMUNITION BY TESTING

3-1. General.

Tests are performed at designated storage installations. ammunition test facilities, or laboratories according to procedures in the item's SB or ammunition surveillance test procedures (ASTP). These SBs and ASTPs prescribe the sample size, equipment to be used, test methods, data to be recorded, and the criteria for evaluating the lot tested. Small Arms tracer ammunition and items evaluated by the CCFTP selected for security assistance program customers will comply with chapter 12. **All candidate lots under test should be considered as functionally serviceable by the shipping installation unless otherwise notified by IOC.**

3-2. Small Caliber Stockpile Reliability Program (SCSRP) for Small Arms Ammunition (SAA).

*a*. Testing of SAA will be accomplished under a centralized control program managed by IOC Quality Assurance and Assessment Directorate.

(1) IOC will annually distribute a list of lots nominated for testing. IOC should be notified concerning availability of candidate lots.

(2) Appropriate management controls must be established to ensure the program is executed. The storage installation surveillance organization will monitor shipping actions to ensure arrival of surveillance samples at the test facility on or before the required delivery date (ROD).

*b*. Selection and preparation of samples for shipment to a test facility will be as follows:

(1) Samples are to be selected to assure proper representation of the lot,

(2) Ammunition lots should be in CC-A at the time of test. To ensure that the nominated lot has had no significant change since the last inspection, all lots with inspection intervals expiring prior to the RDD for the samples will undergo a periodic inspection prior to or during sample selection.

(3) Shipment of two of more lot samples within one shipping container is permissible provided each lot sample is fully identified and separated. Different models and types are also permissible within the same shipping container, provided positive identification of samples is maintained.

(4) Correct NSN and DODIC for the functional lot will be stenciled on the outer packing boxes and must agree with the NSN/DODIC shown on the shipping documents. Shipping documents and containers will be annotated "FOR SURVL TEST FY--SCSRP".

(5) Samples will be maintained on stock records under the NSN/ DODIC of the functional lot.

(6) The sample size required for SAA surveillance testing will be furnished with the request for samples. It is permissible to exceed the sample size by shipping full metal containers in sufficient quantity to provide the required sample. It is not necessary to delink and repack samples.

(7) Candidate lot test samples at the installation will be assigned CC-D and obligated for shipment. The material release order (MRO) for shipment of test samples to the test facility will normally be issued by IOC, SMCA Center.

(8) One end or side of the shipping container will be painted white and stenciled in black. The type of shipping container used must comply with Title 49 CFR.

(9) Ammunition in condition code H, J, or N will not be furnished for surveillance test unless specifically requested.

Trace tests for SAA tracer ammunition will be performed according to SB 742-1305-94-20.

3-3. Centralized Control Function Test Program (CCFTP).

*a*. The CCFTP includes all stocks reported under the Worldwide Ammunition Inspection and Lot Number Report (WARS), Part III (AR 700-22), for which an ammunition surveillance function test procedure exists. These procedures are published as DA supply bulletins.

*b*. Function testing will be accomplished under a centralized program managed by IOC, Quality Assurance and Assessment Directorate. The storing installations will be notified annually of the lots selected for testing.

*c*. Ammunition lots should be in CC-A at time of test. To ensure that the nominated lot has had no significant change since the last inspection, all lots with inspection intervals expiring prior to the RDD for the samples will undergo a periodic inspection prior to or during sample inspection.

*d*. Selection of samples and inspection results as applicable will be documented on DA Form 3022, Depot Surveillance Record (DSR) card. DSR card will be forwarded to testing facility upon shipment of samples. All samples will be selected by or under the supervision of a QASAS.

(1) IOC, Quality Assurance and Assessment Directorate will request samples and direct shipment to a designated test facility. If the lots requested are not available, the storage installation will furnish IOC Quality Assurance and Assessment Directorate a list of possible substitute lots from items of the same DODIC and lot series.

(2) The MRO authorizing the shipment of samples will list items by NSN, DODIC, lot number, quantity, and condition code. MRO will also specify RDD.

(3) Samples will be randomly selected from the lot according to the guidance contained in individual SBs for that item. Samples will be inspected at time of selection, see para 3-3d(6). If selected samples are inspected as part of a periodic (or equivalent) inspection, they will not be replaced if found to contain non-hazardous defects. However, if critical or hazardous conditions are noted, the affected samples will not be shipped. Defects/unusual conditions encountered will be noted on the DSR card.

(4) Box markings will be checked for legibility and, if necessary, markings will be made legible. The packing box must be marked to indicate items and lot numbers shipped therein. Packaging and marking must meet the standards of Title 49 CFR for hazardous materiel shipment.

(5) A Report of Shipment (REPSHIP) of samples will be furnished the designated test facility organization identified on the MRO and to IOC, surveillance office.

(6) Hermetically-sealed containers, waterproof bags, lead foil envelopes, etc. (that would be opened for an inspection conducted in conjunction with sample selection) will not be opened on samples requiring a wet phase test of the sealed container by the CCFTP SB.

*(a)* The visual inspection and wet phase test of the sealed container is specified by the SB. Only serviceable sealed containers (unopened containers without punctures, tears, etc.) will be included in the test sample.

(6) If substitute samples are selected because original sample containers are defective note this action on the DSR card.

(7) One end or side of each shipping container will be painted white and stencil in black the words "FOR SURVL TEST CCFTP FY___". The type of shipping container used must comply with Title 49 CFR.

(8) Shipping documents must be annotated "FOR SURVL TEST CCFTP FY____.

*f. Function test at designated function test facilities.*

(1) Scheduling of function test will be coordinated with IOC Quality Assurance and Assessment Directorate. When samples cannot be tested by the designated facility due to lack of required equipment or facilities, IOC Quality Assurance and Assessment Directorate will be contacted for further direction.

(2) Results of function test will be reported electronically to IOC Quality Assurance and Assessment Directorate within ten working days after completion of test.

(3) When a critical defect is encountered during the test, the QASAS in charge will be notified.

*(a)* If the QASAS in charge considers continuation of the function test to be hazardous, further testing of the lot will be discontinued immediately.

*(b)* If there is no apparent hazard to personnel performing the test, the test should be completed.

*(c)* In either case, the testing installations will notify IOC Quality Assurance and Assessment Directorate by the most expeditious means and give the nomenclature, lot number of the item, defect encountered, and the number of samples tested.

*(d)* In addition, Ammunition Data Card (ADC) and DSR card will be forwarded to IOC Quality Assurance and Assessment Directorate. If possible, photographs and video tape of test should be included.

*(e)* Except where safety precludes their retention, fragments of malfunctioned items should be retained and disposition instructions requested.

*(f)* Malfunction reports will be submitted according to AR 75-1.

(4) The testing activity will notify IOC Quality Assurance and Assessment Directorate by e-mail within 24 hours whenever functional code D lots are encountered. Information provided should include nomenclature, lot number of the item, defects encountered, and the number of samples tested.

(5) Function testing will not be discontinued at the point where sufficient functional defects have been observed to reject the lot involved. If extenuating circumstances dictate the discontinuation of the test, this will be made a matter of record on the test report.

*g. Functional code (FC).* The codes described below apply to all munitions included within the CCFTP.

(1) FC-A. Functionally serviceable and performs essentially equivalent to design intent for service use.

(2) FC-B. Functionally serviceable and completely satisfactory for service use. Although somewhat below FC-A in overall performance, the item is not sufficiently impaired to warrant reconditioning or demilitarization.

NOTE

Lots tested and evaluated as FC-A or B based on functional performance characteristics, are functionally serviceable for unrestricted SMCA issue and use unless there is a specific stipulation qualifying its use.

(3) FC-D. Markedly inferior to FC-B in functional performance. Issue would be justified only in emergency and the item should, as determined by the commodity command, be demilitarized, renovated, or used as priority for training to preclude loss of assets.

(4) FC-J. Lots considered to be hazardous for use due to a critical functional defect or malfunction encountered during testing.

3-4. Stockpile Laboratory Test Program (SLTP).

The SLTP is centrally managed by IOC Quality Assurance and Assessment Directorate. Stockpile laboratory tests of ammunition are conducted according to the ASTP for each item tested. Destructive and/or nondestructive tests are performed to detect trends or changes in the item's quality and to determine the items serviceability or safety status.

*a.* Chemical stability tests for propellant and propelling charges will be conducted as required by SB 742-1300-94-895 which describes the Propellant Stability Program. Letters nominating candidate lots for stability test are issued to the storage installations on an annual basis. Test results are furnished to CONUS storage installations and OCONUS commands by e-mail as an update to the annual propellant stability printout.

*b.* As additional items are added to the SLTP, specific instructions and information will be provided.

3-5. Large Caliber Stockpile Reliability Program (LCSRP).

*a.* LCSRP is managed by IOC Quality Assurance and Assessment Directorate. The program provides functional data on gun, howitzer, and mortar ammunition, mines, and small rockets. The testing is conducted at various proving grounds and test centers located in both CONUS and OCONUS.

*b.* Annually, CONUS and OCONUS commands will be queried on the availability of candidate lots for testing. After receiving confirmation of sample availability and finalizing the program, IOC will issue an MRO for shipment of samples. MROs will be issued 30-45 days prior to the required date for CONUS installations or 120-130 days for OCONUS commands.

*c.* Appropriate management controls must be established to ensure the program is executed. The storage installation surveillance organization will monitor shipping actions to ensure arrival of samples at the test facility on or before the ROD.

*d.* Selection and preparation of samples for shipment will be as follows:

(1) Samples will be assigned CC-D to preclude shipment for another purpose. The parent lot will be retained in its true condition code.

(2) Lots from which samples are selected will be in CC-A unless otherwise specified.

(3) Samples will be selected to assure maximum lot representation without rewarehousing.

(4) Inspection will be limited to that incidental to repackaging, marking, and shipment, except--

*(a)* The ammunition lots should be in CC-A at time of test. To ensure that the nominated lot has had no significant change since last inspection, all lots with inspection intervals expiring prior to the RDD for the samples will undergo a periodic inspection prior to or during sample selection.

*(b)* When inspection is specifically directed by IOC, Quality Assurance and Assessment Directorate.

(5) The preferred method of marking for shipment is to paint one end or side of each outer pack white and stencil in black, "SURVL SAMPLES- FY__ ASRP and project name" on the white background; otherwise CONUS installations may identify samples with pallet placards in lieu of painting and marking outer packs.

e. Any lot undergoing condition code change prior to shipment will not be shipped. Notify IOC Quality Assurance and Assessment Directorate of condition code change.

f. Forward one copy of DSR card and Ammunition Data Card to Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-QAA, Rock Island, IL 61299-6000. This distribution is in addition to that required in paragraph 11-4. DSR cards will be updated and screened for completeness prior to mailing.

# CHAPTER 4
# AMMUNITION QUALITY ASSURANCE PROCEDURES FOR MAINTENANCE OPERATIONS

## 4-1. General.

This chapter prescribes responsibilities and procedures to ensure that ammunition assembled, maintained, modified, disassembled for demilitarization, or renovated at installations meets the established quality requirements.

## 4-2. Responsibilities.

a. The USAMC commodity commanders are responsible for furnishing the technical requirements for each ammunition maintenance program. As a minimum, the technical requirements will include--

(1) Depot maintenance work requirements (DMWR) or Letter of Instruction (LOI).

(2) List of required drawings and specifications.

(3) List of required ammunition peculiar equipment (APE).

(4) Quality standards.

(5) Lot number/suffix assignment criteria.

(6) Pre-renovation requirements.

(7) Post-renovation test requirements.

(8) Data card requirement.

(9) Reports requirement.

(10) Valid restrictions which will apply post renovation.

b. The ammunition operations organization is responsible for producing a product of acceptable quality. Operations must be performed according to an SOP that contains the detailed production techniques, standards, and process control necessary to produce a quality product. A pre-operational check must be performed prior to beginning maintenance operations. Process control is critical as product quality and overall cost of the operations are determined by the process control techniques employed.

c. The ammunition surveillance organization is responsible for management of the installation ammunition quality program. It includes:

(1) Ensuring an economical system to control product quality.

(2) Reviewing the work authorization (job order), SOP, Drawings, SB's TM's and other required reference material for use by the operations organization prior to beginning the maintenance operation. Required procedures to review work authorizations are provided in Procedure C.

(3) Constructing a quality audit check sheet prior to start of maintenance operations. (See sample)

(4) In addition to providing other pertinent information, the SOP is the foundation of the ammunition quality control program. For this reason, it is essential that each SOP contain production techniques in detail, standards, and controls necessary to produce a quality product. As a function of quality management, the ammunition quality assurance organization's responsibility is to ensure that each SOP contains as a minimum--

(a) The required quality characteristics for each operation.

(b) Detailed description of the quality standards.

(c) Method used to assure quality characteristics conformance (gage, visual, etc.).

(d) Operator quality checks.

(e) Quality assurance audit procedures.

(f) Specific safety requirements.

(5) The ammunition surveillance organization will:

(a) Review the line layout and equipment setup during the pre-operational check.

(b) Review other procedural steps of the SOP that affect the quality of the product and safety of the operation.

(c) Evaluate the implementation of the SOP.

(6) The Ammunition Surveillance Organization will utilize Quality Audit Procedures to:

(a) Review procedures to control the calibration of electrical measuring and test equipment, gages, and precision measuring instruments.

(b) Review procedures for control of nonconforming materiel.

(c) Verify the Quality Control procedures of the ammunition operations element.

(7) Verify the process produces a quality item using quality audit techniques. Quality audit check sheets must be completed during each visit made to monitor the maintenance/production operation and are the only approved source for documenting a quality audit.

(8) Determining process capability and maintaining control can best be accomplished by using statistical quality control techniques, such as X and R charts, p-charts, np-charts, and c-charts. These are effective management tools and will be used by the ammunition organization wherever possible.

4-3. MIL STD 1916 establishes movement away from an AQL based inspection strategy to implementation of an effective prevention based strategy, including a comprehensive quality system and continuous improvement. The objective is to create an atmosphere where every noncompliance is an opportunity for corrective action and improvement rather than one where acceptable quality levels are the contractually sufficient goals.

4-4. Product verification sampling plan.

a. MIL-STD-1916 was approved for use in April 1996 and will be used as the preferred method for acceptance of product. It requires the demonstration and maintenance of an effective process-focused Quality System. Maintenance operation elements are encouraged to submit their systems as an alternative to acceptance sampling requirements.

The operational element must have:

A Quality System Plan
Prevention based system
Process focused quality system
Objective evidence that system works

Alternative acceptance can be submitted for one or more contractually specified sampling inspection requirements or for a systemic alternate acceptance method. Submission is made IAW the requirements of MIL STD 1916. If they do not have such a system, MIL STD 1916 provides the preferred acceptance sampling plans. When using MIL STD 1916, the following Verification Levels (VL) should be used:

VL VII should always be used for critical characteristics. At the normal level of severity, use VL IV for major characteristics and VL II for minor characteristics if not otherwise specified.

b. Continuous sampling is the preferred method of performing acceptance sampling for inspection by attributes. Lot or batch sampling will be used if continuous sampling procedures are not employed (for example, if the operations organization lacks adequate screening capability). Continuous sampling procedures are outlined in MIL STD 1916. In addition to sampling at frequency "f", the ammunition surveillance organization will monitor

the screening phases to ensure correct application of proper “i" values and verification levels.

c. Inspection by attributes - MIL STD 1916. If for any reason the continuous sampling procedure noted above is not employed (for example, if the operations organization lacks adequate screening capability), the appropriate plan from MIL STD 1916 will be used by the ammunition surveillance organization.

(1) Each inspection batch or lot will contain homogeneous material produced in a specified time interval (normally a single shift or day).

d. Inspection by variables - Variables sampling plans are provided in MIL STD 1916. Each inspection lot or batch will contain homogeneous material produced in a specified time interval (normally a shift or day). K and F Values will be provided upon request.

e. Inspection for critical characteristics. The operations organization will perform a 100% inspection for all critical characteristics. Surveillance will inspect for critical defects using VL VII and will always accept on zero defects and reject on one. The presence of a critical defect in any ammunition surveillance sample or in any other item which has passed 100-percent inspection by operation personnel will normally require rejection of all material processed since the process was last accepted regardless of which sampling plan is used. The extent of rejection may be modified depending on the circumstances creating the critical defect. If the defect cause can be isolated to a particular quantity of material or production interval then rejection may be limited to that quantity of material or production interval as determined by the QASAS in charge. Material that has been reprocessed and resubmitted for acceptance will be inspected IAW MIL STD 1916.

f. Lots: Continuous sampling procedures will always be on a moving product basis. Select on of samples for inspection by attributes may be on either a moving lot basis or on a stationary lot basis. Inspection by variables will be on a stationary lot basis. Inspections requiring disassembly will be performed on a moving lot basis as close as practical to the operations organization process on the part or parts being inspected.

g. Maintenance type operations of short duration and limited scope (5 days or less). These operations should be inspected using continuous sampling or lot/batch sampling plans. Regardless of the duration of a maintenance operation, a spot check or roving inspection may never be used in place of a quality audit.

4-5. Ammunition lot number and suffix assignment.

Ammunition to be modified, inspected loo-percent for a critical defect, or renovated will have a lot suffix assigned by the commodity command, or a lot number will be assigned locally as outlined in MIL-STD-1168. Assignment of local lot number must be approved by the commodity

command. Suffixes or approval of local lot number will be requested from Commander, U.S. Army Aviation and Missile Command, ATTN: AMSMI-MMC-LS-SM, Redstone Arsenal, AL 35898-5000 or Commander, Headquarters Industrial Operations Command, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000, for other Class V items. Additional information can be found in MIL STD-1168.

a. Requests for lot suffix for IOC managed assets should be e-mailed to amsio-qas@ria-emh2.army.mil. Organizations without e-mail capabilities may submit request by facsimile to DSN 793-7136, commercial (309) 782-7136, or by mail to address listed above. Lot suffixes are to be requested no earlier than 60 days and no later than 30 days prior to the start of approved or funded programmed projects. The ideal situation is for IOC/AMCOM to have 30 days from receipt of request to furnish the suffix to the requestor. Unplanned or unscheduled maintenance operations such as those which occur during PREP0 operations or other unanticipated emergencies are excepted from this limitation. The information in the request must include:

(1) A list including lot number/serial number, quantity, model number, and NSN of materiel to be reworked.

(2) Scope of rework to be accomplished, applicable DMWR and resulting model number and NSN if changed as a result of maintenance.

(3) List of replacement/added components involved by NSN, model, lot number, and manufacture date to include, where applicable, component reassessment/deterioration check test date. Lot suffix will be denied if these tests are not current.

(4) Established start date and date of availability of samples for shipment to proving ground (PG) for test.

(5) Should an emergency situation arise (such as a change in scope of work, a component becomes unserviceable, or a component is received at the last moment) then an expedited request for a lot suffix is in order.

(6) All correspondence on lot suffix requests from U.S. Army organizations in Korea, Japan, and Hawaii must provide an information copy to Commander, USARPAC, ATTN: APLG-MUM/MUS, Fort Shafter, HI.

b. Examples of operations requiring lot suffixes are:

(1) Where new components replace like components (i.e., same model number).

(2) When a component is removed or added.

(3) Where munitions were declared unserviceable or suspended by the appropriate commodity command and require 100 percent culling, testing, etc.

c. Where a lot number is to be assigned locally, such as in

creation of a regrouped lot, the information required in subparagraph a above will also be furnished to the applicable commodity command. Concurrence for assignment of local lot number will be obtained from the commodity command prior to initiating maintenance.

d. When an IOC-assigned lot suffix is not used, AMSIO-QAS must be notified in writing of desire to cancel requested suffix. When an AMCOM assigned lot suffix is not used, AMSMI-MMC-LS-SM must be notified.

e. When a change in the scope of work or components to be used is contemplated after a lot suffix has been assigned, the applicable commodity command must be notified of the proposed changes by an amendment to the request for the lot suffix.

f. Revised ammunition data cards will be prepared and submitted IAW MIL-STD-1168 when any rework results in a lot number change (see also para 11-2d). Lot will be maintained in CC-D until data cards are submitted.

9. To ensure uniformity of inspection/classification, the following definitions of lot "None", Mixed" and "Unknown" are provided.

(1) Lot none. Ammunition items and components without a lot number assigned at time of manufacture.

(2) Lot mixed. Ammunition items and components with a lot number assigned at time of manufacture that can be separated by lot when appropriate.

(3) Lot unknown. Ammunition items and components with a lot number assigned at time of manufacture that cannot now be identified and separated by lot.

4-6. Ballistic test of ammunition. The commodity command determines the requirement for testing of components and/or end items.

a. A ballistic test request (BTR) will be prepared by the commodity command for ammunition requiring PG test. Copies will be furnished the testing agency. Sample shipping instructions will be furnished to the shipping installation. On selection and preparation of samples, the installation ammunition surveillance organization will coordinate with local supply and transportation organization to assure timely shipment of samples.

b. The commodity command will determine the requirements for ballistic testing of items reworked.

(1) Information submitted according to paragraphs 4-5a and 4-5c will be reviewed by the commodity command to determine the necessity for ballistic test of the reworked lot. The submitting installation will then be notified whether or not ballistic testing is required.

(2) The commodity command will prepare a BTR for each reworked lot determined to require test. The BTR will provide necessary

direction for selecting and shipping samples, methods of test, and acceptance/rejection criteria. Copies of the BTR will be furnished the test agency and the shipping installation.

(3) An MRO will be issued by the commodity command for the movement of all test samples to a PG for ballistic test.

(4) The test facility will furnish ballistic test results to the commodity command. On acceptance notification by the commodity command, action will be taken by the installation to place the lot in the appropriate condition code for issue and use.

(a) If retest is determined appropriate by the commodity command, the installation will be requested to furnish additional samples.

(b) Special instructions as outlined in test facility request or shipping and marking instructions contained in the original BTR apply. Reference will be made to the original BTR on retest sample shipment to maintain continuity.

(c) In the event of ballistic failure, the commodity command will, if appropriate, initiate a request for waiver/deviation for subject materiel and advise each installation of the commodity command decision.

(d) The materiel involved will be retained in CC-D pending final decision and disposition.

c. Data cards for each lot shipped in a and b above will be furnished the test activity with the documentation covering the sample shipment. A data card will also be placed in box number one of each lot shipped for test. If data cards are not available, coordination will be made with the commodity command prior to release of shipment.

d. Ammunition that is restricted or remains suspended following renovation will be reported to the appropriate commodity command to provide for lot number inclusion in TB 9-1300-385.

4-7. Reassessment of bulk propellant and bulk-backed component charges will be accomplished IAW the Propellant Reassessment Program Requirements of SB 742-1300-94-895. Reassessment involves the test and evaluation of stored propellant to determine functional serviceability prior to loading into a major end item.

4-8. Deterioration Check Test. Specific explosives filled components including primers, ignition cartridges and delay elements require a deterioration check test (DCT) IAW the applicable military specifications. The DCT is a test of functional characteristics and moisture content of the black powder in the component. The DCT ensures suitability for use of these components before assembly into complete rounds. A successful test will allow components to be used (uploaded) for a period of two years.

4-9. Basic Surveillance Audit Procedures

a. The following are standard steps to follow when conducting an audit. Prior to conducting the audit:

(1). Create and maintain audit schedules for all operations to be audited.

(2). Obtain copies of and review MWO's, SOP, drawings, Specs, standards and prior audit reports. Place special emphasis on prior CARs. Review MWO's IAW Procedure C.

(3). Prepare audit checklist and develop sample plan IAW Procedure A and MIL STD 1916.

(4). Brief operation team leader on purpose and scope of audit.

b. Conduct audit and record observations. An observation is a statement of fact made during an audit and substantiated by objective evidence. Observations may be positive or negative. The terms nonconformances, nonconformities and findings will be used interchangeably to describe and report failures to comply with specifed product or quality system requirements (negative observations). Objective evidence is qualitative or quantitative information, records, or statements of fact pertaining to the quality of an item or service or to the existence and implementation of a quality system element, which is based on observation, measurement, or test and which can be verified.

c. Conduct audit of non-conforming materiel process and record results.

d. Audit Frequency: It is anticipated that ammunition maintenance operations audits will be conducted on a daily basis. When this is not possible, increase batch and sample sizes IAW MIL STD 1916.

e. Determine operation compliance and product acceptance IAW Procedure B.

f. Corrective Action Requests (CAR) must be completed every time a non-conformance is observed. CARS must have a suspense date.

(1) The first time a check point is found not in conformance, the CAR is addressed to the Operation Team Leader with a copy furnished to the QASAS in charge.

(2) If the same check point is found non-conforming during a subsequent audit, a CAR is completed referencing both the original and current non-conformance. Include the control number (CAR NO.) of the original CAR. This CAR is addressed to the Director of Ammunition Operations with copies furnished to the Operation Team Leader and QASAS in charge.

(3) If the same check point is found non-conforming a third

time, a CAR is completed referencing both prior non-conformances, (including CAR control numbers). This CAR is addressed to the installation commander with copies furnished to the Director of Ammunition Operations, the Operation Team Leader and the QASAS in charge.

g. After conducting audit:

(1) Brief operation team leader on findings after each audit.

(2) Distribute CARs.

(3) Complete audit and CAR status logs.

(4) File audit checklists and CARs.

h. Review CAR status log monthly for open CARs past suspense date. Send memo to operation team leader, Director of Ammo Ops and QASAS in charge if CAR response not received by suspense.

i. Schedule follow up inspection to review CAR compliance. Post follow up date on CAR, CAR status log and audit schedule.

j. Conduct follow up audit. Close out CAR if corrective action is effectively implemented.

k. If corrective action is not correctly implemented, issue second CAR referencing the original CAR and failure to correct the non-conformance. Include the control number (CAR NO.) of the original CAR. This CAR is addressed to the Director of Ammunition Operations with copies furnished to the Operation Team Leader and QASAS in charge.

1. Follow up the new CAR's as outlined in paragraphs i and j above.

m. If corrective action is still not effectively implemented, a third CAR is completed referencing both prior CARs and failures to correct the non-conformance (include CAR control numbers). This CAR is addressed to the installation commander with copies furnished to the Director of Ammunition Operations, the Operation Team Leader and the QASAS in charge.

*Procedure A: Audit Checklist and Sample Plan Preparation Procedure*

<u>Audit Checklist Preparation:</u>

1. Extract all check points from item SB's, SOP's, TM's, MWO's and special inspection requirements directed by higher headquarters.

2. List check points on audit checklist and classify as critical, major and minor defects.

3. Randomly select check points to monitor during the audit. Each check point is a sample. List the number of times you monitor each check point next to that check point on the audit checklist. Continue to select and monitor check points until your sample size is accomplished.

4. Sign and date the audit checklist and list the sample size.

Sample Plan Preparation (for inspection by lot or batch):

1. Multiply the number of inspection check points for critical characteristics by number of rounds run since completion of last audit. This yields critical characteristic batch size.

2. Using the batch size calculated in # 1 above, determine the sample size from Table II, MIL STD 1916 with Verification Level VII. This gives the number of critical characteristic check points that will be selected for the audit.

3. Multiply the number of inspection check points for major characteristics by number of rounds run since completion of last audit. This yields major characteristic batch size.

4. Using the batch size calculated in # 3 above, determine the sample size from Table II, MIL STD 1916 with Verification Level IV. This gives the number of major characteristic check points that will be selected for the audit.

5. Multiply the number of inspection check points for minor characteristics by number of rounds run since completion of last audit. This yields minor characteristic batch size.

6. Using the batch size calculated in # 5 above, determine the sample size from Table II, MIL STD 1916 with Verification Level II. This give the number of minor characteristic check points that will be selected for the audit.

7. Continuous sampling plans are provided in MIL STD 1916.

8. Remember that maintenance work flow limits the maximum number of samples that can be checked during an audit. When workload is such that an audit cannot be performed for several days and sample size becomes too great to allow performance of an audit, all production will be assigned CC-D or CC-J as determined by QASAS in charge.

9. To minimize lot rework, it is necessary to identify batches of production. Daily production runs are the recommended batch grouping.

10. Reduced audit intervals may be applied IAW MIL STD 1916.

Procedure B

Operation Compliance and Product Acceptance

1. Operation compliance and product acceptance will be determined through performance of quality audits using audit checklists.

2. If no deficiencies are noted, accept process and product produced since last inspection. Audit check points will be divided between process and product at the auditor's discretion. i.e.: You may check the operators performance of the operation, check the item after he has finished his step, or both.

3. If discrepancies are noted:

a. complete CAR

b. critical or major discrepancies - exercise rework option which was chosen during MWO preparation/review. (Two options exist, rework of rounds run since process was last accepted or implementation of 100% inspection by a line operator deemed suitable by the audit team. These options will be weighed on a case by case basis during each work order review. The selected option will be included in the work order prior to job start.) If rounds are to be reworked, place production run since process was last accepted in appropriate unserviceable condition code based on nature of defect and requirements of SB 742-l.

c. minor discrepancies - Tighten inspection for reject check point IAW MIL STD 1916. If no additional deficiencies are found correct defective round and accept process and production. If additional deficiencies are found, reject process and production as in "b" above.

**SAMPLE LOG**

CAR STATUS LOG

| CAR# | AUDIT DATE | FOR DIR | NON-CONFORMANCE | FOLLOW UP DATE | CLOSE OUT DATE |
|---|---|---|---|---|---|
| 9612 not w/C,SDD | 12/15/95 | I | 23ea CC:J mixed on 4 pllts w/ non-CC:J stocks | l/4/96 | resp rec'd l/2/96-prob resolved-discuss |
| 9613 not see | 12/15/95 | I | lea PB93 mixed on pllt w/ PB92 | l/4/96 | resp rec'd l/2/96-prob resolved-sent to CT to if completed |
| 9614 | 12/14/95 | I | SDS qty 8ea, MDC & multi pack qty lea | l/4/96 | |
| 9614A | 3/7/96 | I | Follow up 9614 | 3/22/96 | |
| 9615 | 12/21/95 | I | 2ea Torque screwdrivers on TOW-l-96 set too low | l/2/96 | 5/9/96 |
| 9615A | 3/7/96 | I | Follow up 9615 | 3/22/96 | 5/9/96 |
| 9616 | 12/21/95 | I | C&R test performed w/out test bay personnel barriers in place | Corrected OTS | 12/21/95 |
| 9617 | 12/27/95 | I | 2ea PD68 picked up on record by inventory without notifying Surv. Rounds also picked up in incorrect CC (CC:P vice CC:F) | 2/1/96 | |
| 9617A | 3/8/96 | I | Follow up 9617 | 3/29/96 | |

Sample CARs.

| CORRECTIVE ACTION REQUEST | | CAR NO. |
|---|---|---|
| COMPANY/PROCESS/DEPARTMENT AUDITED<br><br>ADDRESS | | AUDIT NO.<br><br>DATE OF AUDIT |
| AUDIT CRITERIA: | | |
| AUDITOR | COMPANY/DEPARTMENT PROCESS REPRESENTATIVE | AREA AUDITED |

1. NON-CONFORMANCE

SIGNATURE _____ SIGNATURE _____
(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE) AUDITOR

2. CORRECTIVE ACTION

DATE FOR COMPLETION OF CORRECTIVE ACTION
_____

SIGNATURE _____ DATE
_____
(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE)

3. ACTION TAKEN TO PREVENT RECURRENCE OF NON-CONFORMANCE

DATE FOR COMPLETION OF ACTION TO PREVENT RECURRENCE _____

SIGNATURE _____ DATE
_____
(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE)

4. FOLLOW-UP AND CLOSE OUT
PROPOSED FOLLOW-UP DATE _____
FOLLOW-UP DETAILS

CAR CLOSE OUT DATE _____ SIGNATURE
_____
AUDITOR

carform

| CORRECTIVE ACTION REQUEST<br>9631 | | CAR NO. |
|---|---|---|
| COMPANY/PROCESS/DEPARTMENT AUDITED<br>1<br><br>ADDRESS DA0 MSL DIV<br>Bldg. 168 Team Leader<br>Attn.: Joe Ammo cf: DMPO Planning | | AUDIT NO.<br><br>DATE OF AUDIT |
| 2/8/96<br>AUDIT CRITERIA:<br>SOP # AN-0000-J-054 | | |
| AUDITOR<br><br>QASAS | COMPANY/DEPARTMENT PROCESS REPRESENTATIVE<br>Joe Ammo | AREA AUDITED<br>EHB-1-96 |

NON-CONFORMANCE

P4 connection not shorted IAW procedures in SOP. (P4 wire cut and stripped ends covered with aluminum foil. Aluminum foil secured to wire with tape.) P4 leads connect to gas generator ignitor. Improperly shorted ignitor leads represent a potential safety hazard. This hazard is mitigated somewhat by the fact that the batteries are no longer present, the rounds are protected by the container and are scheduled for demil. Handling hazard at time of demil would increase.

SIGNATURE _____ SIGNATURE _____
(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE) AUDITOR

CORRECTIVE ACTION

Team leader and DMPO Planning office informed of non-conformance. Utilize existing SOP procedures or change SOP to allow cutting P4 cable, stripping ends of all three P4 cable wires and twisting and taping together to short.

Determine requirement to correct rounds processed using non authorized procedure.

DATE FOR COMPLETION OF CORRECTIVE ACTION
2/12/96

SIGNATURE _____ DATE
_____

(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE)

ACTION TAKEN TO PREVENT RECURRENCE OF NON-CONFORMANCE

Deviation from SOP must be approved in writing by all staffing parties prior to adopting a change in procedure.

DATE FOR COMPLETION OF ACTION TO PREVENT RECURRENCE N/A _____

SIGNATURE _____ DATE
_____
(COMPANY/DEPARTMENT/ACTIVITY REPRESENTATIVE)

FOLLOW-UP AND CLOSE OUT
PROPOSED FOLLOW-UP DATE 2/13/96

FOLLOW-UP DETAILS

CAR CLOSE OUT DATE _____ SIGNATURE

_____ AUDITOR

carform

Sample Quality Audit Check Sheet:

| | | | | |
|---|---|---|---|---|
| s: | NSN | Lot # | Acc: | DOM: |
| Rej: | Lnch Mtr Lot # | Whd Lot # | Signature: | |

CHECKLIST FOR AUDIT REPORT NO: COMB-X-96/COMB-X-96

page 1 of 3

| Item NO. | Requirement | Activity Compliance | |
|---|---|---|---|
| 1. | SOP: Posted/signed/current? | | |
| 2. | ATR's completed for ammo movement? | | |
| 3. | Workorder present/correct version? | | |
| 4. | Torque wrenches & test equipment properly calibrated? | | |
| 5. | Overpack & missile checked during disassembly for obvious damage? (Major) | | |
| 6. | Correct missile P/N (13060893) received to be modified? | | |
| 7. | Both launch motor igniter housing and launch motor nozzle passed inspection? (Major) (Movement/splitting/breaking away/powder loss) | | |
| a. | Old set screw teflon tip present? | | |
| 9. | Inside of tube inspected prior to inserting motor? | | |
| 10. | New set screw teflon tip present? | | |
| 11. | New set screw installed until protruding and then backed out? | | |

Procedure C.

PROCEDURES TO REVIEW AMMUNITION MAINTENANCE WORK ORDERS (MWO's)

1. Determine type of MWO.

a. Renovation MWO operations (Lot suffix, open box and work on round, etc.) require audit checklist preparation and audit. Renovation MWO review is a function of the audit team.

b. Pre-shipment MWO operations (For such things as palletization and outer pack re-marking) will be checked as workload permits. Pre-shipment MWO review is the responsibility of the shipping desk. Shipping desk will provide audit team an info copy of MWO after reviewing and initialing it.

2. Check for suspensions/restrictions on each lot to assure suitability for rework.

3. Determine shelf life, propellant reassessment and DCT of lots and components.

4. Check for applicable MIN's, AIN's, SOUM's, etc.

5. Review DSR and lot location & quantity records for each lot to be processed and verify that lot condition is adequately addressed by MWO scope of work. Check for any ACR's that apply and applicable defect codes. Make any changes required to scope of work to assure that all maintenance required is performed to yield the desired product condition code.

6. Verify proposed condition code, lot number and NSN are correct. Ensure all condition code segments of lot are upgraded if possible.

7. Verify accuracy of all marking information in MWO. (Hazard class/division, PSN, UN S/N, NSN, lot number, etc.) (Check AMDF, Fed Log, drawings, Joint Hazard Class Fiche, etc.)

a. Check whether a lot suffix is required/received/correct. Verify lot suffix is included in MWO.

9. Verify MWO includes project start and completion dates.

10. Obtain a copy of written authorization for every deviation from required procedures.

11. Discuss rework contingency option with planners. Assure that rework option has been chosen and is listed on MWO. (Two options exist, rework of rounds run since process was last accepted or implementation of 100% inspection by a line operator deemed suitable by the audit team. These options will be weighed on a case by case basis during each work order review. The selected option will be included in the work order prior to job start.)

12. Assure all required references are on hand. Check for most current version using DA PAM 25-30. Order if necessary. (Drawings, TM's, SB's, MWO's, SOP's, etc.)

# CHAPTER 5
# EQUIPMENT

## 5-1. General.

This chapter provides instructions for supply, certification, maintenance, storage, use, inspection, and disposition for ammunition gages; Test, Measurement and Diagnostic Equipment (TMDE); and Ammunition Peculiar Equipment (APE) used in ammunition quality assurance operations.

## 5-2. Field service ammunition gages.

*a.* Ammunition gages are used for surveillance and inspection. The requirement for gages will be based on the following:

(1) Required for surveillance inspections and tests for items actually in storage or for items to be placed in storage.

(2) Required for scheduled preservation and packaging or maintenance.

(3) The quantity of each gage must be locally determined based upon factors such as--

*(a)* Concurrent surveillance and maintenance requirements.

*(b)* Similar operations at several locations.

*(c)* Anticipated production levels that will require more than one gage.

(4) FORSCOM/TRADOC and ARNG activities storing class V materiel are exempt from these requirements except as directed on a case-by-case basis.

*b.* The ammunition gage mission has transferred to the national maintenance point and included with ammunition peculiar equipment (APE) to support maintenance and surveillance programs. Ammunition gages are centrally managed and ownership reverts to Headquarters, Industrial Operations Command. A request for gages for materiel managed by SMCA will be submitted to IOC, ATTN: AMSIO-SMK-M, Rock Island, IL 61299. Requisitions will include the following:

(1) Gage NSN and/or part number (NSNs and part numbers for gages may be found in Section III of TB 43-0180).

(2) Quantity and priority.

(3) Justification for gage (ammunition maintenance/ surveillance operation to be performed).

(4) Supplementary address of the receiving installation.

(5) Length of loan.

(6) If gages required are replacement gages, include the reasons for replacement.

*c.* Shipping orders will be issued by the commodity command for shipment of gages to the installation. Two DA Forms 3023 (Gage Record) will accompany each gage.

*d.* Gages for materiel managed by AMCOM are covered in the TM or DMWR for the item involved.

*e. Care and preservation.*

(1) Ammunition gages are precision-measuring instruments, difficult to procure, and generally expensive. Careful and intelligent use and storage will result in longer gage life and reduce replacement or extensive repairs.

(2) Because ammunition gages are easily damaged and are sensitive to dust and corrosion, they will be adequately processed and normally stored in a suitable cabinet provided for that purpose. Extremely large/heavy gages that cannot be stored in cabinets will be kept on racks or tables and must be covered and stored inside buildings. The following procedures apply to care and preservation of ammunition gages:

*(a)* Segregate the gages in a manner that will prevent them from damaging one another by contact.

*(b)* Never pile gages on top of one another.

*(c)* When gages are to be stored for short periods of time or over night, first clean each gage with an approved finger print neutralizer, rinse with a solvent and then apply a light noncorrosive oil to protect each gage against corrosion.

*(d)* When gages are to be stored for longer periods of time, process them according to TB 43-0180. Gages so stored will be examined quarterly to determine whether corrosion has set in.

*f. Inspection and certification.* Ammunition gages for use on materiel managed by IOC will be inspected, checked, and processed according to TB 43-0180.

*g.* Excess gages and disposition. Gage requirements must be reviewed at least annually to determine excesses. Any gage which does not meet at least one of the requirements of paragraph 5-2a above will be reported as excess. Disposition instructions for excess IOC managed gages will be requested from the address listed at para 5-2b. The request must include the NSN, gage drawing number, nomenclature, and serial number for each excess gage.

5-3. Equipment.

*a. TMDE.* Common items of TMDE are listed in the TM, DMWR, or SOP for the item involved.

*b. APE.*

(1) Conventional ammunition. Standard APE has been developed for quality assurance tests and inspections (reference AR 700-20 and TM 43-0001-47). The operation and maintenance instructions for this equipment are contained in the appropriate APE manual. Requisitions for APE and manuals must be made according to AR 725-50 to IOC, ATTN: AMSIO-SMK-M, Rock Island, IL 61299-6000. Installation, operation and maintenance of APE must be performed in strict compliance with the applicable APE manual and IOC directives. Instances of equipment failure or specific problems with stated directives must be expeditiously reported for resolution to address listed above. Non-standard APE is developed locally and submitted to IOC (address listed above) for review, tested and approval for use. APE and Non-Standard APE is listed in TM 43-0001-37, APE Data Sheets.

(2) Large rocket and guided missile ammunition. Test equipment is listed in the TM or DMWR for the item involved.

(3) Records and reports required by DA PAM 738-750 will be maintained and submitted.

(4) Surveillance organizations will identify APE necessary to perform inspection of stored stocks and APE will be used during all applicable inspections.

(5) For FORSCOM, TRADOC, and ARNG, provisions of paragraph 5-*2a(5)* apply.

(6) Local modification of APE and Non-Standard APE is strictly prohibited.

(7) The proper level of decontamination must be certified and documented according to TB 700-4 for all APE prior to shipment or storage.

*C.* Locally developed equipment will be reviewed by installation safety office and approved by installation Commander prior to use.

5-4. Calibration monitoring program.

*a.* The ammunition surveillance organization will establish a program to ensure constant adherence to policies and procedures of the Army Calibration System that apply to tools and equipment assigned to all serviced ammunition organizations. (See AR 750-43, TB 750-25, TB 742-94-1, TB 43-180, and implementing documents.)

*b.* SOPs will be established to assist the ammunition surveillance organization in ensuring that tools, gages, and TMDE in use during all operations involving ammunition are serviceable and have not exceeded the calibration interval.

*c.* The records and reports used in calibration of Army equipment are outlined in DA Pam 738-750.

## CHAPTER 6
## Large Rocket and Guided Missile Ammunition

6-l. Ammunition Surveillance Procedures: Surveillance inspection requirements for AMCOM missiles, rockets, and components are contained in individual Department of the Army Supply Bulletins - Ammunition Surveillance Procedures. Requirements of SB 742-1 also apply.

6-2. Storage Monitoring Inspections (SMI): Since most AMCOM missile systems require desiccant and humidity indicators, SMI's are a very important required inspection. SMI's must be conducted per intervals stated in the applicable SB. Intervals may be shortened depending on local storage conditions, or as deemed necessary by the QASAS-in-charge. Organizations storing desiccated systems must be knowledgeable and trained to promptly identify, report, and maintain these systems.

6-3. AMCOM Surveillance Test Vans:

a. The command has mobile surveillance test vans which perform functional testing on the STINGER and HELLFIRE missile systems. These vans perform electrical checkout of these systems on a worldwide basis as scheduled by the applicable system Project Office and/or AMCOM Product Assurance Directorate (AMSAM-RD-QA-RA). The purpose of the functional test is to identify the current missile stockpile reliability with high confidence, to assure the user of wartime readiness and to segregate failing hardware.

b. This testing is normally independent of local visual inspections conducted in depots, ASP's, and unit basic loads, as conducted by assigned surveillance personnel per the applicable SB. However, considerations should be given to simultaneously conducting other required inspections (IRI, RI, PI, PII, SMI), if due. This could result in personnel and labor savings.

C. A QASAS/Ammunition NC0 (MOS 55B), or other technically qualified person should accompany the Surveillance Test Team to assist in the coordination of the test/inspections and facilitate any administrative details. Test results will be briefed to the local commander or his representatives. The missiles found to be unserviceable will be reported on ACR or QDR, as appropriate.

# CHAPTER 7
# TOXIC CHEMICAL MATERIEL

## 7-1. General.

a. This chapter contains specific instructions relative to surveillance operations involving toxic chemical munitions (TCM) and agents. Surveillance operations will be performed using this publication, other SBs, TMs, drawings, specifications, local SOPs, and applicable publications. Under particular situations, however, certain TCM and agents have been classified as solid or hazardous waste items. Therefore, these specific items are also regulated under the Federal Resource Conservation and Recovery Act (RCRA) or an equivalent authorized state program for waste management. The activities directed in this chapter do not supersede or diminish the requirements placed on an installation by other federal, state, or local regulations, requirements, or agreements. Personnel involved with surveillance operations shall coordinate activities directed in this chapter with individuals that are responsible for the installation's compliance with environmental regulations.

b. Periodic inspections will no longer be performed on TCM and agents. Surveillance will, nonetheless, emphasize those inspections/operations that are necessary to assure items are safe for storage, on-post movement, and demilitarization. Such efforts may involve, but are not limited to, storage monitoring, leaker isolation/containerization, special inspections, and assessments.

c. Technical assistance. **The U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 210105424**, will provide technical assistance at the request of a chemical installation. All abnormal conditions encountered during surveillance operations will be reported in memorandum format via e-mail or datafax to the above.

## 7-2. Definitions.

a. Confirmed Agent Reading (confirmed detection). A second method of detection, of equal or greater sensitivity than the first method, that yields a second positive reading.

b. Containment. Actions taken to stop any form of agent leakage, whether it be from munitions, bulk container, or packed/overpacked items.

c. Filter Units. For the purpose of this document, are any type equipment designed to be attached to a storage structure containing leakers to create a negative air pressure in the storage structure. Use of this type equipment will create a closed containment system as defined in AR 50-6.

d. Inspection Intervals. As listed in Table 7-1, two intervals are identified for the SMI of chemical surety items.

(1) Quarterly inspection interval. Quarterly inspection implies one inspection per quarter at approximately 90-day intervals. By exception, this interval may be extended for a period of 30 days.

(2) Annual inspection interval. Annual inspection implies one inspection per year at 12-month intervals. By exception, this interval may be extended for a period of 3 months.

(3) Any extension of intervals will be at the discretion of the activity QASAS in charge. When intervals are extended, subsequent inspections may be scheduled based upon either the originally forecasted date of inspection or actual date of completion. All extensions will be documented and the documentation retained locally.

e. Leaker Lot. A munition lot designated by CBDCOM, or formerly designated by AMCCOM, as having a history of leakage and requiring surveillance or monitoring above and beyond normal requirements. Should a munition lot be stored at more than one installation, it will be declared by **SBCCOM** as a leaker lot for a specific location when it has met the criteria for declaration as a leaker lot at that location. The use of the term leaker lot within the context of this supply bulletin does not imply that all munitions within the lot are leaking.

f. Overpacked Munitions. Items previously identified as leakers, warheads from M55 rocket assessment, items found on post, recovered items, and Surveillance Program Lethal Chemical Agents and Munitions (SUPLECAM) samples which have been drilled and plugged that are containerized to preclude escape of agent. Bulk agent in ton containers or munitions in original shipping and storage containers, such as spray tanks and M23 mines are not considered to be overpacked.

g. TWA. As used in this SB, TWA is the Airborne Exposure Limit (AEL) for unprotected workers IAW AR 385-61.

**7-3. Equipment Calibration.** Prior to an inspection or test, equipment requiring calibration will be inspected for a valid calibration label/date to verify that the calibration interval and equipment limits have not been exceeded.

**7-4. Types of Inspections.**

a. Storage Monitoring Inspection (SMI.). SMIs will be conducted as indicated in Table 7-1 regardless of condition code. Each storage configuration (package, container, or item) will be visually inspected for evidence of leakage, condition of the outer pack, dunnage, or any other condition affecting suitability for continued safe storage, to the extent possible, without rewarehousing. Items, whether in original shipping and storage container or overpacks, will have outer pack inspected without opening.

*TABLE 7-1*
*SMI REQUIREMENTS FOR TOXIC CHEMICAL ITEMS*

| ITEM | NOT OVERPACKED | OVERPACKED |
|---|---|---|
| Ton Containers | Quarterly | N/A |
| Mines | Annual | Quarterly |
| Projectiles/Cartridges | Annual | Quarterly |
| Bombs | Annual | Quarterly |
| Spray Tanks | Quarterly | Quarterly |
| DOT Bottle | Quarterly | Quarterly |
| Rockets | Quarterly | Quarterly |
| SUPLECAM Samples | Quarterly | Quarterly |
| M56 Warheads | N/A | Quarterly |
| Binary | Quarterly | N/A |

b. Special Inspections (SI)/Assessments. Will be performed as directed by CBDCOM.

c. Magazine Inspection. Will be performed IAW Chapter 10 of this publication.

d. Storage Structure and Site Air Sampling. All TCM storage structures and sites will be monitored quarterly to TWA. Igloos containing leaker lots of non-overpacked M55 GB rockets will be monitored to TWA once every normal duty day, and those with non-leaker lots or overpacked leakers will be monitored a minimum of once weekly.

**7-5. Detection, isolation, and containerization of leaking munitions and/or containers (hereinafter referred to as leakers).**

a. Testing munitions for agent leakage will be performed with the appropriate equipment and methods, as defined in AR 385-61, DA Pam 385-61, and supporting publications. Selection of equipment and procedures should be based upon compatibility with the operation to be performed and, to the extent practicable, should incorporate the most sensitive and accurate technology available. Departures from this approach will be justified and documented in the leaker report. The proper use, maintenance, and calibration of equipment will be IAW applicable equipment or users' publications, TMs, TBs, and/or the organization's chemical agent monitoring plan and supporting Quality Assurance/Quality Control (QA/QC) plan.

b. The prompt identification, isolation, and containment of all agent leakage is of primary concern to ensure the safety of workers, the general public, and the environment. Monitoring is conducted IAW specified requirements for the type of munition or agent in storage, and prior to entry for the conduct of operations. If the presence of leaking agent is confirmed, steps will be initiated to ensure that isolation and containment operations are accomplished. In order to adequately determine the agent concentration inside a structure, the vents will be closed and filtration system(s) will be shut down for a period of not less than 20 minutes prior to beginning the monitoring process.

c. When evidence of a leaking chemical munition or container in storage is noted, the source will be located, isolated, and contained as soon as practical consistent with all safety, security, and environmental protection requirements. The chemical storage site commander or his designated representative, must evaluate safety and environmental risks associated with leakers prior to commencing or suspending leaker isolation operations. Risk assessment factors to be considered should include impending nightfall, weather conditions, protective clothing weartimes, time of day, availability of personnel, supplies, or equipment, or any other condition that impacts risk. Isolation operations need not extend beyond normal duty hours and should not prevent the accomplishment of unrelated, concurrent operations such as environmental monitoring and safety in storage inspections.

***** NOTE *****

**Upon confirmed detection of any agent, in addition to notifying SBCCOM IAW paragraph 7-7, the installation office designated to prepare the chemical event report, as required by AR 50-6, shall be notified.**

d. If monitoring of ton containers in open storage produces a confirmed, positive reading, leaker isolation procedures will begin immediately, regardless of concentration level. After isolation and repair of the leaking ton container is completed, monitoring of the repaired container will continue until the presence of agent can no longer be detected. Storage monitoring of the open storage location will be completed if not previously accomplished.

e. The following procedures apply to chemical munitions and storage containers stored in enclosed structures.

(1) Agent detected:

(a) Close storage structure vents.

(b) Perform confirmation procedures. If chemical agent is confirmed at, or above, the certified reporting limit (CRL), follow procedures contained in subparagraph 7-5e(2).

If confirmation cannot be obtained, at or above the CRL, the storage structure will not be considered contaminated and storage structure vents may be opened. However, actions should be taken to assess the cause of the original "false positive".

(2) Agent confirmed:

(a) Vents remain closed.

(b) Install and initiate filtration system(s) and open vents. Filtration system(s) will remain in operation until leaker

isolation and containerization operations are completed. However, filtration system(s) will be shut down when monitoring a structure to determine the presence or absence of chemical agent vapor (see paragraph 7-5b). If agent is not detected, the structure will be monitored for three (3) consecutive workdays. If results are negative, filtration system(s) may be removed from structure and no further action is required.

(c) Begin leaker isolation and containerization procedures.

(d) An inspection of the materiel in storage will be conducted to the maximum extent possible without rewarehousing in an attempt to visually locate the source of the contamination. Packaged items will have the outer pack inspected without opening. Peeling, discolored, or blistered paint, or the presence of liquid is considered evidence of possible leakage. Positive tests will be confirmed with a second test. The presence or absence of leakage will be as indicated by the second test.

(e) If during visual inspection the leaking item cannot be located, individual stacks, pallets, or items will be shrouded for additional localized monitoring.

(f) Shrouding consists of covering individual stacks, pallets, or items with any type of plastic sheeting (as an alternative, individual items, in lieu of using plastic sheeting, may be temporarily encapsulated in a locally approved container) in order to create a separate environment and concentrate agent for monitoring purposes. Proper shrouding is accomplished using plastic sheeting free of rips and tears. Suspect stacks or pallets should be completely enclosed from top to the floor. It is not necessary for the enclosure to be taped or otherwise sealed to the floor. Shrouding individual items or containers may involve completely enclosing the suspect item or probable source of leakage.

1 Shrouding will be completed with minimal rewarehousing.

2 Individual shrouded stacks, pallets, or items will be monitored using low-level monitoring procedures in order to isolate specific stacks, pallets, or munition with elevated readings.

3 Shrouded stacks, pallets, or items with elevated reading will be visually inspected and monitored in order to further isolate the leaker(s).

4 If operators elect to use a container to concentrate agent vapor, items that are not confirmed as leakers must be removed from containers after isolation is completed.

*(g)* For M55 rockets, intrusive low-level monitoring of the shipping and firing container may be required to confirm the presence of leaking agent.

(3) When the leaking item is located, it will be repaired and/or containerized as soon as practical. Leakers should only be containerized after all other approved containment procedures have been attempted. Use of leaker overpacks must be minimized due to the resultant loss of visibility of energetic components and the increased difficulty in demilitarization that the overpacks create. However, safety will take precedence in any decision to containerize leakers. Vapor leakers should not be decontaminated. A heavy-grade plastic bag, 4 mil or thicker, may be used as an interim drip container for leaking liquid agent. Liquid leakers should not be decontaminated unless it will reduce the spread of liquid contamination or reduce the potential for personnel exposure during containerization. No water or decontamination solution (except residual liquid on the item), sand, vermiculite, or other material, except interim drip bags, will be placed in overpack containers with leaking munitions. When drip bags are present, care must be taken to avoid tearing or catching bags between gaskets and flanges during packaging. All records regarding leaker packaging will include remarks on the absence or presence of drip bags. This includes DSR card, DD Form 1577, leaker report, and any other applicable record.

(4) Leakers overpacked in propelling charge containers will be transported and stored vertically with the lid up. The round will be placed into the container base first.

f. Leaker containment procedures for selected items. When overpacks are required, they will be selected from Table 7-2.

(1) Leaking 105mm and 4.2-inch cartridges. Leakers should not be repackaged in a fiber container if the original fiber container can be removed. Propellant should be removed from 4.2-inch and 105mm cartridges, whenever possible, and packaged separately prior to containerization. If possible, and without the use of excessive force, the 4.2-inch M3 ignition cartridge should also be removed from the round. A 105mm cartridge case and projectile should be containerized separately. Annotate records to fully identify the packaging configuration of the containerized cartridge.

(2) M23 land mines. Leaking mines encountered during the course of an operation will be returned to their original drum, if serviceable. If the original drum is unserviceable, the mines along with the original unserviceable drum will be overpacked.

(3) Overpacks that are stored vertically and appear to be leaking agent vapor from the lid/gasket area will have their gasket and/or lid replaced before additional containerization is considered. Leaking overpacks that are stored horizontally will not be repaired due to the potential for liquid agent release. They, as well as overpacks that are leaking from areas other than the lid gasket area, or for which gasket/lid repair is unsuccessful, will be placed into secondary overpacks.

(4) Leaking ton containers.

**WARNING**

**With time, the threads of brass plugs and valves on GB ton containers have been known to fail. To preclude dislodging a valve from a leaking GB ton container, no attempt will be made to tighten the valve stem(s) or cap(s), nor will any attempt be made to tighten a leaking plug.**

(a) Upon detection of a leaking GB ton container valve or plug, all valves and plugs on that container will be replaced with steel plugs manufactured IAW drawing numbers SK 69-4-30 (valve) and SK 72-6-5 (plug).

(b) Upon detection of a leaking VX or H-agent type ton container valve or plug, the following will be accomplished:

1 If a valve leaks from the safety cap or packing nut, the valve stem should be tightened and the area decontaminated. Follow-up inspections shall be accomplished within three days and again after one week to verify effectiveness of corrective action.

2 If the valve leaks from threaded area, replace both brass valves with steel plugs.

3 Leaking plugs will be replaced with steel plugs. When leaking plug(s) is replaced, all brass plugs on affected end of ton container will be replaced.

(c) Upon detection of a leaking GB ton container with steel plugs, in lieu of brass valves and plugs, the leaking plug will be tightened. Should tightening of the steel plug not mitigate the leak, the steel plug shall be replaced.

(d) If replacement of valves or plugs does not correct leaking condition, container contents will be transferred to a serviceable ton container.

g. For items not listed above, refer to Table 7-2 for applicable overpack.

h. Overpack Marking Requirements.

**NOTE**

**OVERPACK CONTAINERS FOR LEAKING CHEMICAL MUNITIONS 1)0O NOT REQUIRE COLOR CODE MARKINGS. EXISTING COLOR CODE MARKINGS MAY NOT BE A RELIABLE SOURCE OF INFORMATION. INFORMATION PERTAINING TO THE EXPLOSIVE MAKE UP OF AN OVERPACKED MUNITION WILL BE ANNOTATED ON DSR CARD(S).**

(1) Overpacks used in the containerization of leakers will have a properly prepared DD Form 1577 (Unserviceable [Condemned] Tag-Material) attached to container. Configuration of 105mm and 4.2 inch cartridges, presence or absence of fibers and drip bags, type leaker, and leaker report number will be annotated on the tag and DSR card(s). Additionally, the following data will be placed on the container either by stencil or a vinyl label (similar to hazardous waste labels):

(a) NSN and DODIC.

(b) Nomenclature.

(c) Lot number.

(d) Quantity.

(e) Date packaged.

(f) Type leaker.

(g) Leaker report number as assigned by Surveillance.

(h) "NOSE END" on appropriate end of rocket container.

*****NOTE *****

**VINYL LABEL MUST BE A HIGH STRENGTH, HIGH CONFORMITY, SOLID SAFETY HAZARD TAPE AND RESISTANT TO SOLVENTS. ALL HEADINGS AND MARKINGS WILL BE LEGIBLE AND APPLIED WITH PERMANENT INK (SEE EXAMPLE BELOW).**

Example

**TOXIC CHEMICAL MUNITION LEAKERS**

NSN/DODIC_____

NOMENCLATURE_____

LOT NUMBER_____

QUANTITY _____ TYPE LEAKER

DATE: OVERPACKED _____ DOUBLE OVERPACKED_____

ASSIGNED LEAKER NUMBER AS ASSIGNED BY SURVEILLANCE_____

**NOSE END**

**ON POST MOVEMENT ONLY**

(2) Paragraph 7-5h(1) does not apply to containerized leakers already in storage.

**7-6. Overpacks for TCM and Agents.**

a. This section provides a listing of approved types of overpacks for containerization of TCM and agents identified as leakers. Unless otherwise specified, listed overpacks are for depot storage and intradepot movement only. Overpack requisitioning procedures, inspection criteria, and storage requirements are also included.

b. Table 7-2 lists overpacks authorized for containerization of specific items. Primary overpacks are intended for use in the packaging of individual TCM and agent items identified as leakers.

Secondary overpacks are intended for use in the packaging of primary overpacks which contain leaking TCM or agent items. Containers are listed in Table 7-2 in descending order of preference for use. In part, this ranking is based upon leakage test results which generally indicate that propelling charge containers with a lesser circumference provide better agent containment at the gasket-flange interface. This characteristic should be considered during the conduct of hazard analyses/risk assessments which support leaker containerization and overpack operations. Use of overpacks other than those identified in Table 7-2 require prior approval of **HQ, SBCCOM, AMSSB-OSM, Aberdeen Proving Ground, MD 21010-5424.**

c. Leakers containerized prior to publication of this criteria will not be repackaged solely to meet this criteria.

*TABLE 7-2*
*APPROVED OVERPACKS FOR STORAGE OF TOXIC CHEMICAL MUNITIONS*

| ITEM | Primary Overpack & NSN | Secondary Overpack & NSN |
|---|---|---|
| 1. M55 RKT, GB & VX | a. M55 Single Round Container (SRC)<br>8140-01-286-0482 | 10" X 96" SRC<br>P/N ACV00402 |
| 2. 4.2 Inch | a. ID Set M1, 8110-00-340-2006<br>b. Prop Chg M14A2, 8140-00-859-8017<br>c. Prop Chg M13A2, 8140-00-864-3221<br>d. Prop Chg M18A, 8140-00-827-0510<br>e. Prop Chg M18A2, 8140-00-369-9118<br>f. Prop Chg M16A2, 8140-00-369-9120<br>g. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4[1]<br>8140-00-891-6194<br>b. Prop Chg M460A2<br>8140-00-891-6162<br>c. M500 (Modified)[2]<br>8140-01-386-5927 |
| 3. 105mm Proj Only | a. ID Set M1, 8110-00-340-2006<br>b. Prop Chg M14A2, 8140-00-859-8017<br>c. Prop Chg M13A2, 8140-00-864-3221<br>d. Prop Chg M18A1, 8140-00-827-0510<br>e. Prop Chg M 18A2, 8140-00-369-9118<br>f. Prop Chg M16A2, 8140-00-369-9120<br>g. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4[1]<br>8140-00-891-6194<br>b. Prop Chg M460A2<br>8140-00-891-6162<br>c. M-500 (Modified)[2]<br>8140-01-386-5927 |
| 4. 105mm W/Ctg Case | a. ID Set M1, 8110-00-340-2006<br>b. Prop Chg M13A2, 8140-00-864-3221<br>c. Prop Chg M16A2, 8140-00-369-9120<br>d. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4[1]<br>8140-00-891-6194<br>b. Prop Chg M460A2<br>8140-00-891-6162<br>c. M-500 (Modified)[2]<br>8140-01-386-5927 |
| 5. 155mm Proj | a. Prop Chg M16A2, 8140-00-369-9120<br>b. Prop Chg M 16A3, 8140-01-219-2277 | a. 12" X 56" Non-Standard<br>8140-01-375-7070<br>b. Prop Chg M10A4<br>8140-01-891-6194<br>c. M-500 (Modified) 2<br>8140-01-386-5927 |
| 6. 8-Inch Proj | a. M-500 (Modified), 8140-01-386-5927<br>b. Prop Chg M10A4, 8140-00-891-6194 | 12"X 56" Non-Standard<br>8140-01-375-7070 |
| 7. M23 Mines | Original Storage Container | Secondary Steel<br>Container (SSC)<br>8140-01-310-6929 |
| 8. MK 94, 500 lb. Bomb (Palletized) | AGM-12C Bullpup<br>(Modified IAW DMWR 3-1325-E388-P1) | SEE NOTE 3 |
| 9. MK94, 500 lb. bomb (Containerized, JI (Only) | Original Storage Container | SEE NOTE 3 |
| 10. MC-1, 750 lb. Bomb | AGM-12C Bullpup | SEE NOTE 3 |
| 11. MK116 Weteye | Original Storage Container | SEE NOTE 3 |
| 12. TMU28/B Spray Tank | Original Storage Container | SEE NOTE 3 |

NOTES:

1. ID Set Ml will not fit in M10A4; 12" X 56" Non-Standard Overpack is the approved overpack for the ID Set M1

2. This cntr should be used to overpack M16 & M18 series cntrs only as a last choice. Limited clearance in diameter can lead to gouges in flange during containerization and limited amount of space will not allow drip bags to be packed with item.

3. Use of overpacks other than those identified require prior approval of HQ, SBCCOM, ATTN. AMSSB-OSM, APG, MD 21010-5424

d. Requisitioning Procedures. Overpacks may be requisitioned through normal supply channels. Questions pertaining to supply status of these containers will be referred to the National Inventory Control Point (NICP) **(Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 21010-5424).**

e. Overpack Inspection and Storage Requirements.

(1) These requirements are applicable to containers authorized for use as overpacks for leaking chemical munitions and leaking overpacks in depot storage. Requirements presented herein do not supersede requirements of the Resource Conservation and Recovery Act (RCRA) or state environmental laws. Installations must ensure compliance with all current Environmental Protection Agency (EPA) regulations pertaining to these munitions and incorporate such information in local policy or SOPs, where appropriate.

(2) If procedures and requirements presented here are in conflict with those provided in container-specific Letter of Instruction (LOI) or similar work instructions, container-specific procedures will take precedence

(3) Inspection requirements and intervals are established to ensure that a serviceable stockpile of overpack containers is available to address current and future leaker contingencies. Installation personnel must compile and retain records of all inspections. Periodically, this information will be requested by the NICP/NMP to assess long-term container performance. All container defects must be recorded (by serial number, if applicable) even if user maintenance is successful and the container is suitable for use.

(4) Rejected overpacks that cannot be repaired at the user level will be assigned CC-F and reported by memorandum to the NICP Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 210105424 The memo should identify whether the container(s) is maintained in the wholesale account, local retail account, or as a contingency item.

(5) Receipt Inspection. Inspections should be performed in a clean, dry environment, protected from adverse weather conditions. Inspections should not be performed by individuals dressed in butyl rubber protective clothing. Installations will perform inspection for damage-in-transit

when overpacks are received directly from a government or contractor production facility and the overpacks have been subjected to 100 percent leak testing and inspection by the manufacturer. Containers not specifically designed or modified to serve as overpacks (e.g., propelling charge containers) and/or containers which were not subjected to 100 percent leak testing and inspection by the manufacturer, will be 100-percent tested and inspected IAW general and specific guidelines, as applicable, presented in paragraph 7-6e(6).

(6) Periodic Inspection. Inspections should be performed in a clean, dry environment, protected from adverse weather conditions. Inspections should not be performed by individuals dressed in butyl rubber protective clothing. The criteria for inspecting overpack containers can be found as follows:

- M55 Single Round Container (SRC): Table 7-3
- Propelling Charge Container: Table 7-4
- 10"X 96" SRC; M500 (Modified) SRC; & 12"X 56" Non-Standard Overpack: Container-Specific LOI
- Secondary Steel Container (SSC): Drawing Number, DA 100/2, Loading And Bracing In SSC Of M23 Mines In Drums Unitized 1 or 2 Drums Per Pallet.

Container-specific LOI's and/or Drawing may be obtained by contacting, Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 210089-5424

(a) Overpack containers (except SSC's) that are either (1) maintained in the wholesale account, under control of the NICP or (2) issued to local retail accounts but not designated as contingency stocks (as defined in paragraph 7-6e(6)(c)), will undergo visual inspection of the external surface of the container so that 20 percent of the containers are inspected annually and 100 percent of the stockpile is inspected each 5 years. It is neither necessary nor desirable to access the interior of the container to perform annual inspections, unless serviceability is in question, based upon an external inspection. Unnecessary handling can damage the container. A leak test is not required but may be performed at the discretion of the inspector if serviceability is in question, based upon visual inspection.

(b) The SSC requires an external visual inspection, IAW applicable portions of Drawing DA 100/2 prior to issue to retail accounts. Annual inspections of (1) wholesale assets or (2) containers issued to local retail accounts, but not designated as contingency stocks, are not necessary.

(c) 100 percent of contingency stocks at user installations will be visually inspected (internally and

externally, including components) and leak tested (except SSC) every 2 years IAW : table 7-3 or 7-4 or the container specific LOI. In addition, individual containers must be leak tested prior to use, unless leak testing has occurred within the preceding 90 days. SSCs do not require a leak test prior to use. Contingency stocks are defined as those quantities of containers issued to local retail accounts that are projected for use during a two-year period. Two year projections will be based on local leaker histories or, by exception, can be directed by higher headquarters.

(d) Leak Testing. Single Round Containers (SRCs) and propelling charge containers will be leak tested using the Defense Ammunition Center Validation Engineering Leak Detection System. Operator instructions for using this equipment are reflected in the Defense Ammunition Center publication, "Portable Helium Leak Test of Overpack Containers Operational Manual and Parts List for Harris Regulator Model 415-125 Type A Helium Dispenser, Matheson LeakHunter Plus 8066". The manufacturer's User Manual accompanying the Matheson LeakHunter Plus 8066 should also be consulted by planners and operators prior to leak testing. Containers, which successfully pass this leak test, can be assured of having an agent containment capability of at least lx10-4cc/He/0.5psi/sec. Leak tests must be conducted during biennial inspections and immediately prior to use, unless leak testing was performed within the preceding 90 days. A tag or label will be affixed to each overpack container indicating the date and results of last test.

1 For SRCs (except M55 SRCs) and modified overpacks assembled with shipping and storage O-rings (normally Buna N or Neoprene) and pre-packaged O-rings (normally Butyl rubber), the shipping and storage O-ring should be installed to perform leak testing. The pre-packaged O-ring is to be used only during actual containerization operations.

2 For M55 SRCs assembled with pre-packaged Teflon seals, a single Teflon seal should be used repeatedly until a test failure is encountered. Upon failure, the test seal will be destroyed and discarded, and a new test seal will be used. Extra Teflon seals, NSN 5330-01-302-0054, should be requisitioned from the NICP.

3 The AGM-12C BullPup Container will be leak tested using the APE 1052 modified with a gauge indicating a pressure range of 1-5 psi. The test will be conducted at 3 psi, with no pressure loss noted over a 3-minute period.

4 Secondary Steel Containers do not require a leak test unless directed by the NICP/NMP.

(7) All overpack containers will be visually inspected immediately prior to use, applying applicable portions of paragraph 76e(8) and Table 7-3 or 7-4.

(8) Care and handling of SRCs during Inspection. The following special precautions are to be observed during inspection, preventive maintenance, and preparation-for-use operations involving SRCs. If container-specific procedures are in conflict with guidelines published here, container-specific procedures will take precedence.

(a) The condition of the flange sealing surface and cover is critical to container performance. Care must be taken to prevent damage to these surfaces during inspection and testing. Foreign substances of any kind, to include skin oil, may interfere with obtaining a good seal. Particular care must be taken with unpainted flange or cover surfaces.

(b) Unpainted flanges and covers should be thoroughly cleaned with a specified solvent and liberally coated with a specified rust preventive coating after inspection and/or testing. Authorized solvents and rust preventive are listed below. Lubrication of the seal is not required.

1 Authorized solvents are Wipe Solvent DS-104 or Wipe Solvent DS-108. The previously specified solvent, Trichlorotriflouroethane (Freon 113) is an Ozone Depleting Substance (ODS). Further use of Freon 113 is banned. Pertinent packaging and ordering information is provided below.

| | | |
|---|---|---|
| Wipe Solvent, DS-104- | NSN 7930-01-367-1000 | 4 ea x 1 gallon container |
| | NSN 7930-01-367-1001 | 24 ea x 16 oz squeeze tube |
| Wipe Solvent, DS-108: | NSN 7930-01-367-0995 | 4 ea x 1 gallon container |
| | NSN 7930-01-367-0994 | 24 ea x 16 oz squeeze tube |

2 The preferred rust preventative is Grease, MIL-G14931. Acceptable substitutes are Grease, Silicone, MIL-G-46886; or Dow Corning Vacuum Grease, 2021846-0888. No NSN or military specification has been assigned to Dow Corning Vacuum Grease. It may be procured through a regional Dow-Corning sales representative.

f. Propelling charge container lid closure torque values are provided below:

| | | | |
|---|---|---|---|
| (1) M10A4 | 225-350 inch-pounds | (5) M16A3 | 200-325 inch-pounds |
| (2) M13A2 | 200-325 inch-pounds | (6) M18A1 | 225-350 inch-pounds |
| (3) M14A2 | 175-300 inch-pounds | (7) M18A2 | 225-350 inch-pounds |
| (4) M16A2 | 200-325 inch-pounds | (8) M460A2 | 225-350 inch-pounds |

Test plugs for all propelling charge container lids are to be seated with a torque of 2.5 foot-pounds (at least 30 inch-pounds) minimum.

g. ID Set M1, 8110-00-340-2006, lid closure torque requirements follow:

The bolts/nuts shall be torqued diametrically opposed from each other to 30 foot-pounds (plus or minus 2 foot-pounds). In addition, bolt threads must be fully engaged to nut. A minimum of two threads must extend from the nut after torque.

h. M55 Single Round Container (SRC), 8140-00-286- 0482: torque inspection plug to 25 ft-lbs (300 inch-lbs). For container cover, cross torque bolts in 20 ft-lbs (240 inch-lbs) increments to 60 ft-lbs (720 inch-lbs).

*TABLE 7-3*
*SINGLE ROUND CONTAINER (SRC) INSPECTION CRITERIA (M55)*

| CHECKPOINT | CORRECTIVE ACTION |
|---|---|
| Container body | |
| Cracks or holes. | Reject container. |
| Dents which preclude use. | Reject container. |
| Dents which do not preclude use. | None required. |
| Missing or damaged components. | Reject container. |
| Sealing flange machined surface | |
| Scratches which would prevent proper sealing. | Reject container. |
| Foreign material, rust, dust, Paint chips, etc. | Clean and apply rust preventive.* |
| Flange bolt hole | |
| Threads damaged. | Reject container. |
| Cover | Reject container. |
| Cracks or holes. | Reject container. |
| Missing or damaged component. | Attempt to find matching S/N. If not possible, perform leak test. |
| Serial number (S/N) does not match container body (when applicable). | Apply Teflon sealant (tape or liquid), torque 25ft-lbs min. |
| Loose inspection plug. | Reject container. |
| Scratches in sealing surface/groove. | Clean and apply rust preventative.* |
| Foreign matter, rust, etc., in seal groove. | |
| Container Seal | |
| Tetlon seals: Flat spots, irregularities, deformation, or scratches. O-rings: Cuts, irregularities, hardness, or deformation. | Destroy seal. Request replacement from NICP, AMSSB-OSM. Destroy seal. |
| Bolts | |
| Damaged bolt or threads. | Replace bolt. |
| Container Assembly | |
| Fails Leak Test. | Reject container.** |

* Leak test container upon completion of maintenance. If the rust cannot be removed with no coarser than fine grade steel wool and a soft rag, or there are pits or rough surfaces caused by the rust, reject the container(s).

** After initial failure, retest with a new teflon seal or o-ring. If failure occurs a second time, reject container.

*TABLE 7-4*
*INSPECTION PROCEDURES FOR PROPELLING CHARGE CONTAINERS*

| CHECKPOINT | CORRECTIVE ACTION |
|---|---|
| Metal container lid gasket missing, out of place, damaged, or deteriorated. | Replace gasket. |
| Failure to pass leak test. | Replace gasket and Retest. If fails second time, reject container. |
| Air sampling plug missing. | Replace plug. |
| Damaged threads on air sampling plug/port. | Replace sampling plug/lid. |
| Container dented precluding use; i.e., munition would not fit into container, container would not seal. | Reject container. |
| Foreign material, rust, dust, paint chips, etc., which would not allow container sealing or standards. If not markings to be stenciled on the container. | Repair and renovate container to Serviceable allow possible, reject container. retest. second time, reject container. |

**7-7. Reporting of leaking munitions.**

a. All occurrences of confirmed positive agent concentrations will be telephonically reported to, Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 21010-5424. Should this condition exist for more than 1 day, daily telephonic updates during normal duty days will be provided. As a close-out action, when the positive agent concentration no longer exists, and leaker(s) were found and containerized, a written leaker report will be submitted.

b. Written and telephonic munition leaker reports must contain, as a minimum, the information reflected below in the format provided. If the prescribed format for the munition leaker report is too restrictive to convey details, provide additional narrative. Memorandum reports,

as discussed below, will not require a report number, but will include the following information as a minimum.

(1) number (will consist of installation acronym, 2-digit calendar year, and a sequential number; i.e., TEAD 96-03).

(2) Date of report (DDMMYY).

(3) leaker detected (DDMMYY).

(4) Date leaker located (detected and confirmed) (DDMMYY).

(5) Date leaker overpacked (DDMMYY).

(6) Monitoring operation being performed when agent was first detected and confirmed (be specific, i.e., Daily/Weekly/Quarterly Headwall Monitoring, Ambient Air Monitoring, Breathing Zone Monitoring, etc.).

(7) Nomenclature, national stock number (NSN), and DODIC.

(8) Ammunition lot number and/or serial number (S/N).

(9) Number and type of leakers found to include storage structure number/location.

(10) Physical location of leak, if known; i.e., burster well, activator well, valve, plug, etc. For ton container valve or plug leakers, identify type of metal; i.e., steel or brass. (If brass, were all brass plugs replaced with steel plugs, and both valves replaced with steel plugs?)

(11) Operation being performed when the leaking munition was identified and the presence of agent was both detected and confirmed (be specific, i.e., SMI of M55 GB Rockets, FEM, SMIs, etc.).

(a) Description of test or equipment used to detect leaker (be specific) and agent concentrations, if applicable.

(b) Description of test or equipment used to confirm leaker (be specific) and agent concentrations, if applicable.

(12) Corrective measures taken to ensure safety-in-storage; i.e., decontamination, placed in special overpack, isolated, etc. Give type/model of overpack used. Was drip bag placed in overpack with item?

(13) Hazard or contamination (How much agent was involved?).

(14) Other pertinent information.

c. Items received at demilitarization facilities which leak prior to entry into the explosive containment vestibule will be classified as leakers. The leaker report must describe the ultimate disposition of these items, i.e., whether the items

were processed through the demilitarization facility or overpacked and returned to storage.

d. All leaks which are attributable to a mechanism other than stockpile deterioration will be reported telephonically, followed by a written memorandum. Although they will not be assigned a traditional leaker report number, we must formally account for such an occurrence. Examples include:

(1) Leaks which result from ineffective maintenance, e.g., ineffective ton container hardware replacement, being dropped or punctured, etc., cannot be attributed to stockpile deterioration.

(2) Overpacks containing leaking munitions which themselves subsequently leak, are not classified as leakers. Although leaks from overpacks may be the result of container deterioration, the leaking munition should have been reported previously.

(3) Munitions previously drilled, sampled and plugged in support of stockpile reliability testing programs which subsequently exhibit leakage.

(4) Items received at demilitarization facilities which leak after entry into the explosive containment vestibule will not be classified as, leakers. If processing can be accomplished, no reporting is necessary. If these items cannot be fully processed and are returned to storage, they will be reported by memorandum.

**7-8. Chemical Agent and Munitions Demilitarization Operations.**

a. Chemical agent and munitions demilitarization operations include those performed in support of the Program Manager for Chemical Demilitarization (PMCD) and the Project Managers for Chemical Stockpile Disposal (PMCSD) and Non-Stockpile Chemical Materiel (PMNSCM). Following requirements list minimum ammunition surveillance duties.

b. Each organization, at every level in the chain of command, will develop a comprehensive Ammunition Surveillance Plan (ASP) which defines their roles and responsibilities in the demilitarization program.

(1) Requirements apply to the contractors operating the chemical demilitarization facilities, government employees monitoring the contractor's performance, PMCD, PMCSD/PMNSCM field offices and/or COR staff, and host installation commander's oversight staff. It also applies to the government-operated Chemical Agent Disposal System (CAMDS) facility.

(2) The scope of the ASP shall, as a minimum, include the duties and responsibilities of all organizations performing surveillance activities listed in paragraph 7-8d, plus site-specific ammunition surveillance requirements and responsibilities.

*c.* Because of the requirements of chemical demilitarization plant/facility operations, the ASP shall require qualified personnel to perform ammunition surveillance duties. Regardless of personnel

assignments and ASP requirements, the QASAS in charge at the installation supporting demilitarization operations will have oversight responsibility for ASP implementation as it applies to the host installation. The QASAS in charge assigned to, and supporting, CSDP site operations and as a member of the COR staff, will have the authority to act on behalf of the demil facility project manager in stopping operations deemed unsafe, inappropriate, or in violation of regulatory requirements and will facilitate corrective action. Both QASAS will have direct line communication and access to their respective commanders regarding ASP implementation.

(1) Only properly qualified personnel; e.g., QASAS, or government, or contractor personnel with equivalent training, may perform and/or monitor the ammunition surveillance duties listed in paragraph 7-8d. Equivalent training for contractor personnel will be defined in the ASP.

(2) Organizations and/or operations contractors who do not have personnel with QASAS job titles may implement the ASP requirements using a variety of personnel from within their organization; i.e., ammunition surveillance, QA/QC, safety, surety, environmental, operations, etc.

(3) Host installation commander's representatives should receive appropriate demilitarization facility training to provide valid information to the installation commander.

d. Ammunition surveillance responsibilities encompass a number of specific requirements as identified in the local ASP. They are intended to assure accuracy of documentation, control of the operational process, safety and integrity of operations, and the compliance of processed explosives and agent material within established standards (safety, surety, environmental, and demilitarization). Ammunition surveillance activities required to meet the foregoing include, but are not limited to, the following:

(1) Verify the presence of approved operational procedures (SOPs, LOPs, etc.) for operations being performed.

(2) Verify that procedures contain provisions to assure that incoming material receipt documentation correctly identifies the items being demilitarized by proper NSN, DODIC, lot number, quantity, and nomenclature.

(3) Verify the presence and serviceability of all required safety and protective equipment.

(4) Verify that required lightning protection and grounding system inspections and tests have been performed as necessary.

(5) Verify that required calibration/load test for equipment has been performed and is current.

(6) Verify that demilitarization area(s) comply with explosive safety and personnel limits.

(7) Verify that destruction certificates are accurately prepared on a daily basis and copies are maintained.

(8) Verify that all approved operational procedures are complied with.

(9) Verify that noted operational deficiencies are properly documented and reported IAW site-specific ammunition surveillance plan and local procedures. Follow-up verification of corrective actions will be accomplished IAW local procedures to assure deficiencies have been corrected.

**7-9. Storage Monitoring Inspection Procedures for Specific Items.**

a. Ton Container, chemical agent. Quarterly SMI IAW paragraph 7-4a is required for all ton containers.

(1) Visual. Each container shall be visually inspected for defects as defined in paragraph 2-7 and for evidence of leakage. Liquid, paint peeling, paint discoloration, or paint blistering will be considered as evidence of possible leakage. Vapor tests will be accomplished directly adjacent to container closures or other suspect areas. Leakers will be reported IAW paragraph 7-7 and handled according to paragraph 7-5.

(2) Ends of ton containers will be examined for presence of rust and/or corrosion. Minor rust or corrosion covering 25 percent or less of container end surface will be recorded, for information, on the depot surveillance record card. If minor rust or corrosion exceeds 25 percent of end surface, the container will be placed in CC-E and reported according to DA Pam 738-750. If rust exists on areas immediately adjacent to valves or plugs in sufficient quantity to hinder detection of agent leakage, and derusting and repainting of areas is not performed during inspection cycle, container will be placed in CC-E.

(3) A ton container will be placed in CC-E for derusting, repainting, and remarking when any degree of rust or corrosion threatens to render identification markings illegible.

(4) Cylindrical surface of ton containers will also be examined for presence of rust or corrosion. Containers will be placed in CC-E when rust or corrosion on cylindrical surface has progressed to scaly, granular, or flaked condition accompanied with definite pitting or etching of metal, or with pits or irregular areas of material removed from item surface. Any lesser degree of rust or corrosion on cylindrical surface of containers will not result in a condition code change though it will be recorded for information on the depot surveillance record card.

(5) Ton containers need not be removed from the storage structure or stack solely for visual inspection of areas not accessible while in the normal storage configuration. If visual inspection indicates deterioration, container should be removed and given a more thorough inspection.

b. M55 GB Rockets.

(1) Vapor test. Samples from each lot, as indicated in Table 7-5, will be tested for agent contamination inside the M441 shipping and firing tube. Sampling plan A will be used for lots without leakers. Plan B will be used for lots containing leakers but not designated as leaker lots. Plan C will be used for leaker lots. Grand lots will not be created for the conduct of this test. Unless otherwise mandated by state or federal EPA requirements, there will be no deviation from the following sampling plan. Should state or federal EPA requirements require deviation, sampling plan will be submitted to Commander, U.S. Army Soldier and Biological Chemical Command, ATTN: AMSSB-OSM, Aberdeen Proving Ground, MD 21010-5424.

*TABLE 7-5*
*SAMPLING PLAN*

| M55 GB Rocket Storage Monitoring Inspection<br><br>Sampling Plans | | | |
|---|---|---|---|
| Lot Size | Quarterly (unless otherwise indicated) Sample Size | | |
| | | | |
| | A | B | C |
| 0-25 | 8[1] | 20[1] | 100% |
| 26-150 | 16[1] | 44[1] | 25[2] |
| 151-300 | 6 | 16 | 40[2] |
| 301-750 | 9 | 23 | 64 |
| 751-3000 | 12 | 30 | 75 |
| > 3000 | 15 | 35 | 85 |

[1]Quantity indicated is to be sampled every three years. This sampling may be accomplished at one time within the three years or in increments as determined by the QASAS-in-Charge.

[2]When total annual sample size exceeds the lot size, the lot will be sampled 100% each year. This 100% sampling may be accomplished at one time within the year or in increments as determined by the QASAS-in-Charge.

**NOTE**

**WHEN A ROCKET LOT(S), OR PORTION OF A LOT(S), HAS BEEN SCHEDULED FOR DEMILITARIZATION WITHIN A DESIGNATED CALENDAR QUARTER (THREE MONTHS), THE LOT(S), OR PORTION OF LOT(S), MAY BE EXCLUDED FROM SAMPLING DURING THAT QUARTER. IF DEMHLITARIZATION HAS NOT COMMENCED DURING THE SCHEDULED QUARTER (OR IS NOT IMMINENT), SAMPLING SHALL RESUNIE IN SUBSEQUENT QUARTERS. FURTHER DELAYS ARE NOT AUTHORIZED UNLESS JUSTIFIED IN WRITING BY THE QASAS-IN-CHARGE, BASED UPON CHANGES IN THE DEMILITARIZATION TIMELINE. SANPIE SIZE NEED NOT BE INCREASED IN ENSUING QUARTERS TO ACCOUNT FOR ROCKETS THAT WERE NOT SAMPLED IN A QUARTER DURING WHICH A LOT WAS SCHEDULED FOR DEMILITARIZATION. THIS DIRECTIVE DOES NOT SUPERSEDE OR DINHNISH THE REQUIREMENTS PLACED ON THE INSTALLATION BY OTHER FEDERAL, STATE, OR LOCAL REGULATIONS, REQUIREMENTS, OR AGREEMENTS.**

(2) Samples selected for quarterly SMI Will not be sampled again until all rockets in lot have been sampled. Tagging or marking of sampled rockets may be necessary to ensure proper sample selection.

(3) Description of Operation.

(a) Review previous magazine monitoring results.

1 Evaluate magazine monitoring results to determine appropriate inspection procedures and scope.

2 Magazines with detectable agent contamination should have leaker isolation procedures instituted. If SMI is combined with leaker isolation operation, full sample size must be tested, as a minimum.

(b) Identify M55 rocket lot selected for sampling.

(c) Visually inspect all M441 shipping and firing tubes in the lot for evidence of leakage or degradation of container integrity, to extent possible without rewarehousing.

(d) Identify individual rockets designated for testing.

**CAUTION**

**M441 shipping and firing tube may develop internal pressure during storage. Potential release of pressure associated with presence of liquid agent may result in expulsion of agent from sampling port when plug is removed. Equal care should be taken when removing either end sampling plug. Situations have been experienced in which agent under pressure sprayed from one end of the firing tube but not the other. Plug removal tool must be fitted with a splash shield.**

(e) Prior to air sampling, selected rockets should be rotated so that the front end cap sampling plug is in the 12 o'clock position. This plug should be removed prior to the removal of the aft end cap sampling plug. If the rocket cannot be rotated, the front end cap sampling plug or aft end cap sampling plug closest to the 12 o'clock position will be removed.

(f) If the front end cap sampling plug cannot be removed, and no evidence of agent leakage is present, replace the front end cap. Remove the front end cap from the M441 shipping and firing tube by raising the handle to an upright position, rotating the cap 900, and then pulling the cap free from the container. If unable to replace front end cap, the rocket will be overpacked, tagged, and moved to isolated storage. This action must be annotated on DSR card and DD Form 1577 Tag, which must be attached to item, in order to accurately identify item as a non-leaker.

(g) If aft end cap sampling plug cannot be removed, the rocket will be removed from the sample, tagged, and not subjected to future air sampling. The rocket will not be containerized unless other evidence indicates it is leaking. Another rocket will be selected to complete the sample.

(h) In the event damaged sampling port threads are noted, self tapping plugs that provide an equivalent closure and can be removed for future sampling will be used.

(i) Upon removal of sampling plugs from end caps, examine for presence of agent contamination. If contamination is suspected, test with M8 paper.

(j) Perform gross-level agent detection tests to determine if samples require low-level testing. Negative samples will be tested for low-level contamination.

*****NOTE*****

**Gross-level testing is performed to provide immediate identification of gross-level leakers and to identify handling, transportation, and analysis requirements for detector samples IAW DA Pam 385-61. When using low-level methods, which provide immediate results (20 minutes or less) at the site, gross-level testing may be omitted. The sample line of a low level detector, which utilizes a separation column, should maintain a 1/4 inch separation distance from the front end cap sampling port. Maintaining this distance will help prevent saturating the separation column when high levels of agent vapor are encountered.**

(k) Perform air sampling of M55 rocket samples using approved low-level test procedure; e.g., bubbler, ACAMS, MINICAM, DAAMS, HP 5890/Dynatherm, etc.

(l) Upon completion of air sampling, assure rubber airsampling plug gasket is serviceable and reinstall plug.

c. Binary (Projectiles, M20 and M21 Canisters, and Bulk QL).

Conduct SMI for all components of the binary round IAW paragraph 7-4a (except for structure monitoring requirements). It is not necessary to open outer packs or remove projectile base plate to inspect components within.

**WARNING**

**DF has a stinging, disagreeable odor, and QL has a strong fishy smell. Immediately evacuate area if either are present.**

(1) DF canister (M20) and bulk QL.

(a) Magazine will be monitored for presence of DF and QL and personnel will not enter until negative results are obtained.

(b) Personnel will carry appropriate respiratory gear for use if needed. Canisters will not be handled unless face protection is worn.

(2) Projectile and alcohol canister (M21).

(a) Magazine will be opened for ventilation for 15 minutes prior to entry.

(b) Personnel will carry appropriate respiratory gear for use if needed.

**7-10. Detection Methods.** The following gross-level detection methods may be used to supplement low-level detectors (bubblers, ACAMS, etc.) when detecting or confirming leakers, in addition to methods described in DA Pam 385-61.

a. Test for G-series vapor using blue band, NSN 6665-00-856-8236, or white band, NSN 6665-00-702-7136, tubes. Expiration date on detector kits and blue band tubes can be disregarded when used for G-agent detection.

(1) Preparation of indole/sodium pyrophosphate peroxide solution. This is the only solution authorized for use as a reagent with blue band tubes to test M55 GB rockets.

(a) Mix 0.13 grams indole (minimum 99% purity) and 0.24 grams of sodium pyrophosphate peroxide (NSN 6810-00-034-1319) with 8ml distilled water (not all of the indole will dissolve). The solution must be prepared daily and must be protected from direct sunlight. Indole powder should be white to cream or pale yellow; if color has changed significantly, discard and obtain fresh supply. Solution may be prepared by the laboratory.

(b) A volumetric scoop may be used in lieu of weighing indole and sodium pyrophosphate peroxide. The same size scoop should be used for both materials and should conform to any of the dimensions in Table 7-6 in order to provide the desired volume of approximately 0.31ml. Use 2 scoops of sodium pyrophosphate peroxide and 1 scoop of indole.

*TABLE 7-6*
*Volumetric Scoop Dimensions*

| Diameter (inches) | Height (inches) | |
|---|---|---|
| 1/4 | 26/64 | (- 1/64) |
| 5/16 | 1/4 | (- 1/64) |
| 3/8 | 11/64 | (- 1/64) |
| 7/16 | 1/8 | (- 1/64) |
| 1/2 | 3/32 | (- 1/64)' |

(2) Just prior to test, break off both ends of the sampling tube at the score marks. Insert the unbanded end of the sampling tube firmly into the tubing which leads to the air sampling device.

(3) Tubes may be used for more than one sample before adding solution. If a positive result is obtained, every item sampled by that tube must be retested individually. The test will be invalid for any sample tested by a single tube after the total air volume drawn through that tube exceeds 10 liters. Hose clamps may be used to temporarily halt the flow of air through the sampling tubes.

**WARNING**

**Multiple use of tubes is not authorized when ambient relative humidity exceeds 59%.**

(4) Obtain an air sample of 2 - 2 1/2 liters or 60 compressions of the aspirator bulb from the M18A2 kit.

(5) Remove the sampling tube from the tubing and add 1 or 2 drops of solution to the banded end. After 1 minute, place the sampling tube against a white background and observe the resulting color. In cold weather, color development may be slow, taking 5 minutes or more at temperatures below 55°F.

(6) Color of tube should remain unchanged in the absence of agent vapor. A green or blue-green color indicates the presence of G vapor when using indole/sodium pyrophosphate peroxide solution. A yellow color indicates the presence of G vapor when using solution from the green top bottle prepared IAW the directions with the M18A2 detector kit.

b. Test for H-series agent using blue band tube.

(1) Sodium hydroxide solution. Prepare an 8.5% solution of sodium hydroxide by dissolving 0.68 grams of sodium hydroxide in 8ml of distilled water. This solution may be prepared by the laboratory.

(2) Obtain air sample IAW 7-10a(2) through 7-10a(4).

(3) Remove the sampling tube from the tubing. Wait 2 minutes, then add 1 or 2 drops of solution to the banded end. In cold weather, color development may be slow.

(4) Color of tube should remain unchanged in the absence of agent vapor. A purple/blue color indicates the presence of H vapor when using sodium hydroxide solution or solution from the blue top bottle IAW directions of the M18A2 kit.

c. Test for VX vapor using Draeger Hydrazine tube, NSN 6665-00022-1357 (for M55 VX rockets only).

(1) A single tube may be used as many as three times if no color change has occurred and temperature is above 200F. If a positive result is obtained, each item sampled with that tube must be retested individually.

(2) Just prior to test, break off both ends of the sampling tube. Insert the sampling tube firmly into 5/16" ID plastic tubing which is attached to tubing from the sampling device. The arrow on the sampling tube must point in the direction of air flow. Tubes should not be used if they have been open for more than 24 hours.

(3) Obtain an air sample at a flow rate of 1 to 2 liters per minute IAW the following :

| | |
|---|---|
| above 50°F. | 3 minutes |
| 20-50°F. | 10 minutes |
| below 20°F. | 20 minutes |

(4) Observe the tube for color change immediately after obtaining sample.

(5) A change from yellow to deep blue over any portion of the tube indicates the presence of VX vapor.

d. Test for Lewisite vapor using single yellow band or double yellow band tubes.

(1) Sodium hydroxide solution may be prepared IAW paragraph 710b(1).

(2) Obtain an air sample IAW 7-10a(2) through 7-10a(4).

(3) Remove the sampling tube from the tubing and add 1 or 2 drops of solution to the banded end. Place the sampling tube against a white background and observe the resulting color. In cold weather, color development may be slow.

(4) Color of tube should remain unchanged in the absence of Lewisite vapor. Test solution will be sodium hydroxide solution or solution from the blue top bottle IAW directions of the M18A2 detector kit. A blue-green/yellow-green color indicates the presence of Lewisite vapor using the single yellow band tube. A red-brown color indicates the presence of Lewisite vapor when using the double yellow band tube.

e. Test for nerve agent vapor using enzyme detector ticket.

(1) Blue color on the square end of the ticket indicates absence of nerve agent vapor. If the square end of the ticket is colorless to orange, the presence of nerve agent vapor is indicated.

(2) If sample is obtained using an automated sample pump, obtain a sample volume of 2 - 2 1/2 liters. All other procedures are as described by TM 3-6665-254-12.

f. Test for liquid chemical agent using M8 paper.

(1) Color of M8 paper indicates the presence and type of agent. Test results should be considered suspect if the liquid to be tested is deeply colored, has a color similar to the color response expected, or if the area has been recently decontaminated.

(2) To test for the presence of liquid agent, detach a sheet of paper from the booklet and touch or blot the suspect liquid.

**WARNING**

**If liquid agent is believed to be present within an encrustation, a response will be obtained only if agent exists as a free liquid. If the agent has been absorbed into the media or has solidified, response to the M8 paper will be negative even though a percutaneous hazard may exist.**

g. In addition to the above, gross-level detection using the CAM and M8A1 may be accomplished IAW the applicable TM.

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## CHAPTER 8
## BASIC LOAD INSPECTION (BLI) AND TECHNICAL SUPPORT ASSISTANCE

### 8-1. General.

*a*. The following are to receive BLI and technical support assistance from QASAS. This will include technical assistance visits and inspection of operational load, training load, mission load and contingency stocks.

(1) Active Army

(2) Reserve Component units and activities

(3) National Guard units

(4) Security forces at installations where AR 50-6 applies.

(5) Activities and individuals located outside the real property boundaries of coordinating and/or supporting installations.

*b*. Ammunition surveillance support (BLI and technical support) in CONUS will be implemented by scheduling support on a periodic basis as established in a letter of agreement between the command providing QASAS support and the recipient activity. Provisions of AR 5-9 also apply.

(1) Theater regulations will govern frequency of support OCONUS. but in no case will the visit occur less frequently than 12-15 months. This inspection excludes war reserve stocks in storage for customer issue.

(2) Training ammunition drawn for immediate use from ASPS is excluded

*c*. Depot surveillance records (DSR) are not required for the above stocks of ammunition (see para 11-2a(1)).

### 8-2. Inspection requirements.

***a.*** FORSCOM or TRADOC installations (post, camp, station) with assigned QASAS will perform inspection of stored conventional and guided missile basic load and training munitions under unit control no less frequently than 12-15 months. Appropriate SBs and TMs will be used for the inspection.

***b.*** The BLI will be conducted by a QASAS, who may be supplemented and assisted by a military MOS 55B (SSG/SFC) and/or qualified wage grade or local national personnel. In addition, the unit inspected normally furnishes support personnel for efficient handling, unpacking, correction of minor deficiencies, repacking, and storage of munitions as required.

*c*. The local organization responsible for maintaining subject materiel may perform operator/organizational inspection/basic maintenance functions as authorized in the maintenance allocation chart of appropriate technical manuals. Any problems encountered that cannot be resolved locally will be brought to the immediate attention of the supporting QASAS. The results of such operations will be documented for review by the QASAS during periodic technical support visits.

*d*. BLI will be conducted on all uploaded munitions and all open (unsealed) containers. Munitions sealed in original package shall be opened and inspected to the extent necessary to verify serviceability based on such parameters as storage conditions, appearance of outer pack, lot size, or length of time in basic load.

(1) Barrier material packaged items will be treated according to paragraph 2-3c(4). Sampling criteria in paragraph 2-3 and table 2-2 do not apply.

(2) Ammunition lots must meet minimum serviceability standards for the specific type munition for retention in the basic load.

(3) The appropriate models and quantities of ammunition required to support the unit's applicable weapon systems will be in the UBL.

**8-3. Technical assistance visit.**

QASAS will conduct a review in the following areas in conjunction with BLI:

*a*. Explosive safety.

*b*. Ammunition storage.

*c*. Unit procedures for transportation of ammunition. upload plans, disposition of excess ammunition including training ammunition, and investigating and reporting malfunctions (see para 10-11).

*d*. Property books and ammunition records and reports.

*e*. Check lots against suspension/restriction files (TB 9-1300-385) and AINs. Check that units have an adequate suspension system.

**8-4. Reporting.**

A memorandum format report will be forwarded to the unit commander with n 30 days using local directives at theater or command level for distribution guidance with a copy sent to the appropriate materiel management activity. The memorandum will specify discrepancies noted and include recommended corrective action. For inspection of ARNG units, one copy will be sent to Army National Guard Reserve Component, ATTN: NGB-ARL-E, 111 South George Mason Drive, Arlington, VA 22204-1382. Response will be reviewed by the QASAS to evaluate corrective actions taken.

**8-5. Establishment of local directives.**

Supplemental guidance must be developed at local, theater, or command level to cover policies, procedures, and responsibilities for required basic load inspection.

## CHAPTER 9
## CLASS V MATERIEL SUPPLIED TO NON-SMCA CUSTOMERS

### 9-1. General.

*a*. This chapter pertains to all Class V Army owned stocks. supplied to non-SMCA customers.

*b*. Terms and definitions.

(1) SMCA customers -- Army, Navy. Air Force. and Marine Corps.

(2) Non-SMCA customers - Federal. State and Local departments. agencies, or institutions; commercial corporations: U.S Coast Guard: director of civilian marksmanship: rod and gun clubs: and veteran organizations,

### 9-2. Procedures.

*a*. Installations are required to obtain functional (performance) clearance for ammunition and explosive components including both shipments and in storage transfer of accountability. Shipment or transfer of accountability of caliber .22. shotgun shells and blank small arms ammunition does not require a functional clearance Once a lot and/or item has been declared free of waiver and functionally cleared for shipment to non-SMCA customers. it need not be cleared for subsequent shipments.

*b*. Materiel supplied to customers will comply with the following:

(1) Functional clearance by IOC. Surveillance Office.

(2) Materiel must be functionally serviceable and have been accepted without waiver. NOTE: Waivered materiel may be cleared on a case-by-case basis.

*c*. Functional clearance will be obtained from IOC. Surveillance Office. by e-mail. message. correspondence, or telephone. The following information is required for clearance of candidate materiel:

(1) Customer.

(2) Nomenclature, NSN, and DODIC.

(3) MRO number.

(4) Lot/SN and quantity to be shipped.

(5) Date of manufacture and latest test data.

(6) Functional deviations or waivers from local records.

(7) Restrictions or suspensions.

(8) Latest inspection results.

# CHAPTER 10
# AMMUNITION SURVEILLANCE PROGRAM FOR SAFETY AND LOGISTICS FUNCTIONS

10-1. General.

*a.* The organization performing an ammunition mission is primarily responsible for the safe and proper conduct of all operations.

NOTE

QASAS, military ammunition inspectors MOS 55B (SSG/SFC), and properly trained and certified civilian technicians (including local nationals in OCONUS locations) have the authority and responsibility to stop unsafe operations where imminent danger is involved.

***b.*** The safety and logistics functions described in this chapter are the responsibility of QASAS personnel. These functions include inspection of buildings and areas in which ammunition and explosives are stored, including ASPs, PSPs, and proving grounds; outside storage; operations involving handling, storing, maintenance, shipping, research, development, test, evaluation, and destruction of ammunition and explosives; and transport vehicles and vessels used for transportation of ammunition and explosives.

(1) Safety while conducting operations, compliance with SOPs, ammunition identity (lot integrity), and serviceability are primary concerns of such inspections. Unsafe practices, methods, or conditions must be corrected immediately and reported through appropriate channels for long-term corrective action.

(2) The QASAS in charge will maintain close coordination with the directors of both safety and operations on matters affecting the explosive safety at an installation and furnish copies of magazine inspection reports, follow-up actions.

(3) Applicable safety, transportation, storage, maintenance, demilitarization, supply regulations, and directives issued by responsible commands will be used in conducting such inspections. In the absence of such documents, the policies and procedures detailed in this chapter will take precedence and be followed.

*c.* Prior to conducting any operation involving functions covered in this SB, a SOP will be prepared. The SOP will be written within the guidelines contained in TM 9-1300-250 or AMC-R 700-107. The QASAS in charge will review the SOPs for currency of safety, operational, and quality requirements.

***d.*** The QASAS in charge will personally conduct periodic on-site reviews of ammunition operations to assure that these operations are being conducted satisfactorily from both a safety and a quality perspective.

10-2. Storage buildings and areas.

*a.* Magazines and other buildings in which ammunition and explosives are stored will be given a formal inspection annually (except as noted in para 10-2c). Such inspections will be performed by QASAS who will record and report the results. A formal record of the inspection results will be maintained to include discrepancy reports forwarded to responsible installation activities and the resolution or corrective actions resulting from these reports.

(1) Inspection results will be considered part of the technical history of the items in storage.

(2) Any unusual or changing conditions encountered during an inspection that have or could have an adverse effect on any of the stored items will be recorded on appropriate DSR cards. QASAS will apply knowledge of such conditions on specific lots of materiel to consider the potential effect on item serviceability or suitability for continued safe storage.

*(a)* Such conditions, along with any potentially hazardous conditions, will be specifically noted and reported to the appropriate organization for prompt corrective action.

*(b)* The QASAS in charge may deem it necessary to conduct special inspections or adjust the assigned inspection intervals for materiel which has been adversely affected by such storage conditions.

(3) A reinspection will be scheduled for locations where potentially serious conditions have been encountered to verify that they have been corrected.

(4) Conditions to be considered in the inspections of magazines and storage buildings include, but is not limited to, the following:

*(a)* Compliance with storage drawing.

*(b)* Segregation of lots and condition codes.

(c) Adequacy of aisles.

*(d)* Stability of stacks.

*(e)* Separation of stacks by safety distance where such are specified.

*(f)* Compliance with quantity distance limits in stacks and magazines.

*(g)* Storage compatibility of explosives and ammunition.

*(h)* Satisfactory housekeeping in the magazines for the type of materiel in storage.

*(i)* Suitability of the magazine for the type of materiel in storage.

*(j)* Condition of magazine, doors, and ventilators. (Magazine door flashings will not be inspected for defects and/or reported.)

*(k)* Maintenance of adequate firebreaks (where required) around magazines and storage sites.

*(l)* Presence and proper types of fusible links on doors and ventilators where required.

*(m)* Adequacy, composition, and depth of earthcover should be checked every 24 months.

*(n)* Capability of magazine contents to continue to be stored safely.

*(o)* Presence of required condition code tags (para 11-2) on unserviceable lots of ammunition.

*b.* Lightning protection systems within the ammunition area will receive a visual examination and a test for electrical continuity and adequacy of grounding at intervals contained in AR 385-64/DA PAM 385-64 and DOD 6055.9-STD. These inspections and tests will normally be conducted by a designated operations organization within the installation. The procedures and the results of these inspections and tests will be monitored and reviewed by the ammunition surveillance organization to assure that the lightning protection systems are properly inspected and tested. Copies of all inspection and test results will be maintained IAW DA PAM 385-64. Suitable commercial test equipment or APE 1952, lightning protection system test equipment may be used.

*c.* At the discretion of the QASAS in charge, the magazine inspection interval may be increased to a maximum of quarterly or reduced to a minimum of every 24 months depending on activity or local conditions which would increase or decrease the possibility for deficiencies to occur. Reasons for changing intervals (lack of funding or personnel does not constitute justification) must be documented.

*d.* Empty magazines will be inspected upon notification of removal of materiel. An empty magazine need not be reinspected before being reused for storage provided that--

(1) It was inspected after it was emptied.

(2) Magazines and storage sites having had chemical surety materiel stored therein have been certified free of toxic hazard (AR 50-6).

(3) All defects noted during the inspection have been verified as being corrected.

(4) Use for storage is accomplished within 24 months following the last inspection.

(5) Empty magazines must be sealed with a numbered seal to assure that ammunition is not stored without proper notification of the ammunition, security, and surveillance organizations. Local procedures must be prepared to assure above notification. Integrity of seals will be assured at least every 6 months.

*e.* Any magazine or storage building that is to be used for storage of nonexplosive or non-ammunition items (general supplies), or which is to remain empty for a long period of time, more than one year, should have the magazine inspection interval lengthened. These inspections may be conducted by qualified facilities engineer personnel instead of the ammunition surveillance organization.

(1) The lengthened interval is to be based on local conditions but should not be less than 24 months and must not exceed 36 months. Continued magazine inspection is required to detect any damage or deterioration before extensive and costly repairs may be necessary for restoration.

(2) The surveillance organization will document and report any damage and deterioration to the appropriate installation organization for planning or programming of preventive maintenance so that the magazine remains suitable for ammunition storage. The correction of all deficiencies must be verified by the ammunition surveillance organization.

(3) Installations that have been identified under the Base Realignment and Closure act, need not conduct inspections on empty magazines. A final inspection will be made prior to base transfer. This final inspection is limited to a check for ammunition items or residue.

10-3. Ammunition and explosive materiel in outside storage.

*a.* Ammunition placed in outside storage will be given adequate continuing inspection to ensure that packaging is not damaged or deteriorated to the extent that ammunition contents are exposed in any manner not intended by the original design of the package.

(1) Any damaged packages will be adequately repaired before placing in outside storage. All ammunition will be stored in stable stacks with ventilation provided according to existing requirements.

(2) DA policy requires that outside storage of ammunition and explosive materiel be held to an absolute minimum.

(3) It is recognized that there are situations where outside storage may be justified provided materiel is stored per explosive safety standards. Examples of these situations are as follows:

(a) Size precludes storage in magazines.

(b) Materiel is presently stored outside and scheduled for demilitarization or maintenance.

b. A formal examination will be made quarterly of each outside site in which ammunition is stored. This inspection will consist of a general exterior examination of the ammunition items and packages for evidence of deterioration or damage and for the presence of any conditions indicating the possibility of future deterioration.

(1) If the exterior examination reveals any evidence of deterioration or nonstandard conditions, additional detailed inspections will be made as necessary to determine the condition of the entire quantity of ammunition affected. Primary emphasis is to detect any evidence of deterioration or hazardous conditions that may affect the continued serviceability or storage safety of the ammunition.

(2) Each outside site will be examined immediately following any unusual weather condition, such as severe rain, snow, or wind storms, which might damage or affect the ammunition.

c. PI will be accomplished annually on required stocks in outside storage.

10-4. Handling, storage, and shipping operations.

a. QASAS personnel will review handling, storage and shipping operations for compliance with applicable safety and operational regulations. Reports of deficiencies will be forwarded through appropriate channels to obtain corrective actions, as required. Follow-up will be made to assure deficiencies are corrected.

b. A QASAS will clear all lots of ammunition, components, and related materiel designated for shipment or issue. Clearance will include reviewing DSR cards, suspension records, and other applicable references. Local procedures will be designed to assure that all necessary actions required prior to shipment are--

(1) Noted on the appropriate shipping documents.

(2) Provided to the operating element for action.

(3) Checked to assure completion prior to release of items for issue or shipment.

c. Lots and lot clusters overdue for PI will not be issued. Shipments to Posts, Camps, Stations locations will have a minimum of six months remaining on their inspection cycle. Ammunition lots issued to OCONUS locations and to users/installations without a QASAS must have at least one year remaining on the inspection cycle.

d. It is the responsibility of the ammunition operations organization to certify as inert/free of hazardous chemicals and/or

explosives materiel being transferred directly to the DRMO. This certification will be verified IAW DOD 4160.21-M-1.

10-5. Transport vehicles and vessels.

The examinations, inspections, and reports in paragraphs a and b below must be performed by or monitored by QASAS personnel in support of the transportation officer. Of particular interest are the safety aspects of equipment and operations.

a. When transport vehicles and vessels are to be used for transportation of ammunition and explosives, they (motor vehicles, rail cars, barges, ships, aircraft, MILVANs, and CONEX/ISO containers) must be given a thorough exterior and interior examination to determine suitability to transport the materiel involved.

b. Upon receipt at a military establishment, ammunition/explosives-laden transport vehicles and vessels must be given a thorough exterior and interior examination before unloading operations are started.

(1) The examination is performed to uncover evidence of tampering or sabotage (such as broken seals, wire twists, or other security devices), missing cargo, and possibly hazardous conditions resulting from damage in transit.

(2) The condition of the lading will be observed on receipt and during unloading operations to detect damaged cargo and to determine where improper blocking, bracing, and staying methods were employed. See paragraphs 11-3c and d for reporting of deficiencies.

c. Basic policy and guidance for transportation of ammunition and explosives are contained in AR 55-355. Guidance on specific areas of interest is contained in AR 55-228, AR 190-11, BOE 6000, 46CFR, 49CFR, TM 38-250, DA PAM 385-64 and TM 9-1300-206.

10-6. Demilitarization.

a. Demilitarization SOP will be submitted to the Ammunition Surveillance organization for review, concurrence and approval prior to start of operation.

b. Installation surveillance organization will monitor ammunition/explosives demilitarization operations and sites.

c. The surveillance organization will develop an SOP to support demil operations. The SOP will include the following information:

(1) Ammuniton surveillance pre-operational checklist with the following steps:

(a) Monitor DD Form 1348-1 and/or DA Form 4508 to verify that item being demilitarized is of the proper NSN, lot, quantity, and nomenclature.

(b) Verify that the proposed method of demilitarization is compatible with current demilitarization directives.

(c) Verify the availability of approved operation SOP and that operation SOP or a dedicated surveillance SOP contains all surveillance inspection criteria.

(d) Verify the availability (at demilitarization site) of environmental permit listing conditions and restrictions. Also, determine that demilitarization can be conducted without violation of environmental permit conditions or restrictions.

(2) Ammunition surveillance pre-inspection of demilitarization site.

(a) Verify site to be used is as authorized in SOP.

(b) Verify all safety and protective equipment required by SOP is available.

(c) Determine that all required references cited in SOP are available.

(d) Verify that a copy of the governing SOP is posted and available.

(e) Verify that all required fire and chemical hazard symbols are posted.

(f) Verify that operations are in compliance with environmental regulations as stated in the SOP.

(g) Verify that communication equipment is available and functioning properly.

(h) Determine that fire fighting equipment is available.

(i) Verify that sensitive items are provided proper security.

(j) Confirm that operators are properly qualified and certified and licensed according to pertinent regulations.

(3) Ammunition surveillance inspection and monitoring of demilitarization operations.

(a) Verify compliance with all requirements applicable to a specific demilitarization operation.

(b) Monitor demilitarization operations using all criteria prescribed in this procedure.

(c) Examine demilitarization area (including service magazines) for compliance with explosive limits reflected in SOP, good housekeeping, and storage compatibility.

(d) Verify personal protective equipment required is used on each operation per appropriate publications.

(e) Verify compliance with all environmental requirements as stated in the SOP. Demilitarization site and operation must be in compliance with MACOM policy. This policy as stated in AMC-R 755-8 is mandatory for AMC installations and should be used as guidance by other MACOMs. Assure compliance with all Federal, local, and host-nation regulations.

NOTE

All personnel must be alert for changes in environmental conditions that could create an unsafe or unfavorable operation.

(4) Ammunition surveillance survey of demilitarization or burning site after operation.

(a) Verify on completion of each prescribed interval that scrap metal, casings, fragments, and related items are recovered from open burning and open detonation grounds and disposed of according to local SOPs.

(b) Verify after each prescribed interval in the mission SOP that a search of the surrounding area is conducted to locate and identify any unexploded ordnance. Items or material such as lumps of explosives or unfuzed ammunition may be picked up and prepared for the next detonation. Recovery and detonation of fuzed ammunition or items will be performed per local SOPs.

(c) Verify that ammunition or explosives are not left unsecured.

(d) Discrepancies noted during the survey that require immediate remedial action must be corrected prior to continuing the operation. Unresolved problems will be reported immediately to the QASAS in charge.

(5) Ammunition surveillance of demilitarization residue.

(a) Inspection will be conducted on all items of demilitarization residue produced during one work shift. Material will be offered for ammunition surveillance inspection daily.

(b) The ammunition surveillance organization will, as a minimum, perform random sampling to verify the adequacy of the demilitarization and decontamination process performed by the activity generating demilitarization residue. Results of verification inspection and sampling will be documented.

*(c)* Materiel generated from demilitarization to be returned to stock or offered for sale (e.g.. propellant, explosives, etc.) will be inspected by a QASAS utilizing the same sampling plan as above. Functional classification and quality standards of components and materiel generated from demilitarization will be as specified by the appropriate DMWR or letter of instruction (LOI). Where classification and quality standards are not stated. data will be requested from the appropriate commodity command.

*(d)* All reclaimed propellant must be certified as stable for continued storage prior to re-use, return to stock, or offering for sale through Defense Reutilization and Marketing Office (DRMO) channels. Specific guidance and instructions for determining the chemical stability of propellant is contained in SB **742-1300-94-895.**

*(c)* Certification of reclaimed scrap

*(a)* Scrap will be certified by the generating activity (ammunition operations organization) as being properly processed, totally inert, and free of hazardous chemicals/explosives. Mutilation will be accomplished according to existing requirements (see DOD 4160.21-M-1. AMC-R 385-100. TM 9-1300-206, DA PAM 385-64 and demilitarization code in the AMDF) prior to turn-in to the DRMO.

*(b)* A sample of the scrap certified in (a) above will be selected and inspected by the surveillance organization according to paragraph *10-6c(5)(b)*. When the inspection results determine the processed scrap to be free of hazardous material, a QASAS will verify that the certification provided by the operations organization is valid. Both the certification and verification must be documented and maintained per current regulations.

*(7) Accountability.*

*(a)* Closed loop accountability must be maintained per local regulations at demolition/burning grounds and at temporary storage sites.

*(b)* A certification record of demilitarized items will be prepared on a daily basis.

(8) Surveillance reporting of demilitarization operations will be performed daily according to para 10-9.

**10-7. Protective Clothing.**

(1) Suitable personal protective clothing, equipment, and devices will be used to protect against hazards inherent in specific operations, according to AMC-R 385-100. TM 9-1300-206. DA PAM 385-64 or other appropriate publications.

(2) When conductive clothing or equipment is required in an operation, the conductive reliability of such equipment must be checked using APE 1953. conductive floor and conductive shoe tester, or other approved equipment. Utilization of APE 1953 must be according to applicable operator and maintenance manuals and must conform to local safety requirements. Daily records of results must be maintained.

**10-8. Handling of treated packing materiel.**

(1) Pentachlorophenol (PENTA)-treated packing material. Personnel handling PENTA-treated packing material must wear protective clothing and follow hygiene requirements as stated in applicable DMWR, Surgeon General directives. or U.S. Army Environmental Hygiene Agency Technical Guide Number 146, entitled "Pentachlorophenal treated material handling and disposal".

(2) Zinc Napthenate/Copper Napthenate-treated material. Personnel handling such material must observe precautions according to applicable DMWR or Surgeon General directives.

**10-9. Documentation.**

*a.* An internal reporting medium for all visits by QASAS personnel to operations will be established. Refer to Chapter 4 for further guidance.

*b.* Reports of deficiencies/operational improvements forwarded to responsible activities, and the resolution or corrective actions resulting from such reports, will be maintained. Follow-up will be made to ensure deficiencies are corrected.

**10-10. Ammunition Information Notices (AIN)/Missile Information Notices (MIN).**

*a. AINs are used to--*

(1) Disseminate technical information for IOC/SMCA-managed items.

(2) Provide information relating to the conduct of the surveillance program.

(3) Dispense precautions pertaining to specific munitions.

*b. MINs are used to--*

(1) Disseminate technical information for AMCOM managed items.

(2) Provide surveillance information regarding guided missiles and large rockets.

c. Surveillance organizations will implement guidance

**10-11. Major Training Area Operations.**

*a. QASAS responsibilities.*

(1) QASAS assigned to live firing training areas are responsible for providing technical assistance and support on ammunition quality and explosive safety matters to locally assigned personnel and to troops training at the facility. This includes. but is not limited to. range support during training exercises and investigating and reporting malfunctions involving ammunition in accordance with AR 75-1.

(2) QASAS should be available to assist range safety officers to assure that units are properly briefed prior to commencement of training exercises. This will include as a minimum, safety in handling and transportation, protection of ammunition from the elements, malfunction reporting requirements and turn-in procedures for unused ammunition and residue (packing material, fired cartridge cases, etc.). In addition, the need to inform the QASAS of any suspect or otherwise defective ammunition that might affect user safety or mission accomplishment should also be emphasized. Examples of defective ammunition are rounds that fail to chamber, assemble or disassemble, deteriorated propellant bags, excessive misfires, short ranges, etc.

(3) QASAS must be thoroughly familiar with the requirements of AR 75-1, AR 385-60, AR 385-62, AR 385-63, AR 385-64, AR 740-1, DA PAM 385-64, TM 9-1300-206, FM 9-6, FM 9-38, local procedures, and make extensive efforts to ensure they are met.

(4) QASAS will assure that suspended or restricted munitions and ammunition lots cleared or not cleared for overhead fire are identified and appropriate action taken.

(5) Actions required and reporting procedures for malfunctions involving ammunition will be as specified in AR 75-1 and supplements thereto. Local range procedures must assure that the provisions of this regulation are met.

b. Malfunction investigations. QASAS should be available to prepare or provide assistance in preparation of reports required by AR 75-1 and local procedures. Typical examples of steps that may be taken in the event of a malfunction are listed below. It must be understood that the following is not intended to be an all-inclusive list.

(1) Obtain general information concerning the incident at the time the initial report is made. Determine if incident is reportable IAW AR 75-1 criteria.

(2) Inform reporting individual that ammunition and weapons involved in the incident must be left in place and not disturbed until an investigation has been conducted.

(3) Conduct visual inspection of malfunction site in conjunction with AMC logistics assistance representative (ACALA for weapons and AMCOM for missiles), ammunition officer and/or EOD, if needed.

(4) Visually inspect unpackaged ammunition as well as any residue from the expended ammunition. Particular attention will be given to the condition of ammunition prepared for firing, i.e., tampering or unauthorized firing configurations or procedures, exposure to elements, and length of time unpackaged.

(5) Every effort will be made to interview all personnel involved in the malfunction and other personnel who witnessed the incident. Personnel will be thoroughly questioned on events, procedures, actions, etc., that took place before, during, and after the malfunction.

(6) Ammunition will be locally suspended from use when it has been determined that the ammunition is the possible cause of a malfunction.

(7) Preliminary malfunction feeder reports may be sent by email. Send reports on IOC managed material to: **amsio-ibq@ioc.almy.mil** and for AMCOM managed material to: **AMSAM-MMC-LS-M dredstone.army.mil.**

*c. Range area operations*

(1) QASAS should conduct area inspections periodically (daily when possible) of the ranges to assure that ammunition is properly handled, stored, and transported. Particular attention will be made to safety or operational requirements such as explosive limits, rough handling of ammunition, excessive amounts of ammunition packages opened, etc. When discrepancies are noted, on-the-spot corrections will be made. Discrepancies will be recorded and reported according to locally established procedures.

(2) When visiting firing ranges the QASAS will observe firing and, if possible, consult with troops to determine if problems were encountered with the ammunition during training. Problems that are brought to the attention of the QASAS must be investigated and reported through command channels to the appropriate commodity command.

**10-12. Army Prepositioned Ships (PREPO) and Marine Corps Maritime Prepositioned Ships (MPS).**

a. Introduction: Ammunition supplied for PREPO and MPS is intended for long term storage aboard ship and for rapid deployment in a combat situation. Surveillance functions, including sample selection and inspection, removal and replacement of suspended stocks, minor preservation and packaging (P&P), stock rotation and inventory actions, are accomplished during scheduled maintenance cycles, nominally at 24 month intervals, or ship downloads for other reasons.

b. Criteria applicable to both PREPO & MPS stock:

(1) Every effort must be given to assure lots selected will withstand shipboard environment for an extended period.

(2) When IOC managed assets from the appropriate account are not available; resolution will be accomplished by IOC according to DOD 5160.65M.

(3) Any supply/transportation action that frustrates or complicates inventory or surveillance procedures, contributes to delays in shipping or difficulty of handling, increases demurrage charges at the port, or increases battlefield litter during deployment should be avoided.

(4) Palletization of Ammo:

(a) Black banding is not suitable for palletizing units on PREPO/MPS ships. Galvanized/heavy duty zinc coated strapping (ASTM-D3953, grade 2) must be used. Grade 1 may be used until supply is exhausted. Size of strapping must be as specified in applicable drawings. All banding is required to be tight.

(b) Non-4 way entry skid base units must be replaced with 4-way entry pallets. However, munitions previously palletized on serviceable 4-way entry preserved skidded bases are acceptable provide gross weight of unit does not exceed 2200 pounds.

(5) Lot integrity must be maintained by supply source and all transshipment activities. To the maximum extent possible, an entire lot must be loaded in the same conveyance(s). Quantities of one lot that can all be contained in one conveyance must not be shipped in several railcars or trucks. When multiple lots within a conveyance are necessary, each lot will be segregated.

(6) Shipper must assure 155mm projectiles are assembled in bundles of three pallets (AMC DWG 1948-4076-20PE1001). Note that the 2 galvanized, 1-1/4 inch bundling straps on the pallets should pass inboard of end eyebolt lifting plugs in lieu of outboard of lifting plugs. Proper bundling significantly decreases loading/unloading time at ports and elsewhere.

(7) Functional Clearances are required for all lots. Shipping installations will contact IOC, AMSIO-MAS-Q. Verbal clearance will be furnished with hard copy available upon request. Functional clearance must be revalidated with AMSIO-MAS-Q if item is not shipped within 180 days.

(8) Ammunition storage/shipping installations are reminded to use all feasible procedures to prevent moisture contamination of ammunition and boxes during loading and shipment.

(9) Shippers should repair broken pallets/skids and loose banding at time of shipment. Having to do these repairs at the port with expensive contract labor is not cost effective.

(10) Shippers should assure all containers with air test plugs (propelling charges, 120mm, etc) have the plug in place. Over the 5 or more years munitions normally stay on board, just one round with a missing plug could cause premature deterioration in the more hostile shipboard environment, resulting in self-ignition, and potential loss of the whole ship and crew.

c. Criteria applicable to Army PREPO stock only:

(1) The Surveillance Program for PREPO stocks is designed to adequately describe current condition of ammunition and provide a basis for decisions concerning stock rotation and storage of ammunition on board ships.

(2) This program is managed by the senior QASAS at the Army War Reserve Support Command (AWRSPTCMD), SIOEC-COT, Rock Island, IL. HQ IOC, AMSIO-MAS-Q provides a matrix support QASAS to AWRSPTCMD to handle lot selection, ASRP test program planning and execution, DSR maintenance, and the like.

(3) Lot selection guidelines:

(a) Only Army owned munitions of unquestionable serviceability will be loaded on PREPO vessels. Lots will be selected by AWRSPTCMD/IOC, in coordination with AMSIO-MAS-R and storage installations.

(b) AWRSPTCMD/IOC will select lots to assure that two or more lots per DODIC are on board each ship, when possible. Multiple lots are needed to reduce impact of possible future suspension actions against stocks aboard the PREPO fleet.

(c) MROs will use exception data to advise storage locations of specific lot numbers requested for each DODIC. Selected lots will be functionally cleared, and quantities from each lot will be specified. Do not fill the order from only one lot when more than one lot is called for. Do not substitute lots without coordination with AWRSPTCMD/IOC.

(d) Small lots (less than one pallet) will be avoided in the selection process, where alternatives exist. For multiple pallet shipments, round up the shipment quantity to the next full pallet if requisition quantity does not equate to full pallets.

(4) Pre-issue inspections will be directed, as required, by AWRSPTCMD/IOC, AMSIO-MAS-Q, after review of individual lot histories.

(5) Project Codes are used to identify each PREPO ship. They will be MW_ with the last alpha character indicating a specific ship. Functional clearances are required for shipments with these project codes.

(6) MILVANS/ISO containers:

(a) Containers should have at least 24 months remaining on their CSC certification. It is imperative that CSC containers for PREPO be inspected IAW the provision of MIL HDBK 138A even if they have current CSC certification labels. When a container fails to meet the criteria, it must be rejected for use. Inspectors should not allow any deviation for the MIL HDBK criteria.

(b) Containers loaded with ammunition and explosives must be blocked and braced tightly IAW applicable drawings. Slack spaces normally allowed laterally (1" to 1 1/2") for road and rail transport are not allowable for vessel shipment.

(7) Repship data must be forwarded by shipper to IOC, ATTN: AMSIO-TMJ and AMSIO-MAS-Q, as well as the destination port. Weight, dimensions, number of pallets of each lot/DODIC must be listed. This information is required for final stow planning to expedite uploading of vessels.

(8) After receipt of MRO and completion of any required surveillance actions, shipping installation surveillance organization will mail Depot Surveillance Record (DSR) cards and Ammunition Data Cards (ADC) to:

CDR, AWRSPTCMD
ATTN: SIOEC-COT
Bldg. 90, Rm. 14
Rock Island, IL 61299-6500.

Alternatively, electronic transmission of DSRs and/or ADCs, such as with email, may be used.

(9) For ammo retrograded from a PREPO ship, AWRSPTCMD/AMSIO-MAS-Q will forward DSR cards to the storing installation. Receiving installations must submit ACRs on all unserviceable ammunition retrograded from ships.

(10) Questions pertaining to stock or shipment should be addressed to AWRSPTCMD/IOC, AMSIO-MAS-Q.

d. Criteria applicable to Marine Corps MPS stock only:

(1) Only the best within service-owned assets are to be loaded on MPS.

(2) Requires a minimum of two lots per DODIC per shipment be selected. Lots designated with "Y" (for Desert Storm) should not be issued/used.

(3) Lots with a normal current inspection will not require a pre-issue inspection.

(4) Project Codes are used to identify MPS shipments. Codes MEA, MEB, and MEC are used. Lot functional clearances must be obtained prior to shipment.

(5) For all lots failing functional clearance, AMSIO-MAS-Q will notify the IOC Marine Corps Liaison Office, MCLNO-LMA who will make final determination on acceptance of lots if no other assets are available to fill requirement.

(6) After receipt of MRO and completion of any required surveillance actions, shipping installation surveillance organization will mail Depot Surveillance Record (DSR) cards and Ammunition Data Cards (ADC) to:

OIC Naval ORD Center Pacific Division-Fallbrook Det
CODE 5133
700 Ammunition Road
Fallbrook, CA 92028-3187.

Fallbrook is responsible for ensuring that ADC and DSR cards are forwarded to installations receiving retrograded ammo.

(7) Questions pertaining to MPS stock or shipment should be addressed to the IOC USMC Liaison Office, ATTN: MCLNO-LMA, DSN 7935549/4808/Commercial (309)782-5549/4808.

**10-13. Water Port Operations**

a. QASAS assigned to water ports will act as advisor to the senior Department of Defense official operating the port and its support facilities (Military Traffic Management Command Detachment, Transportation Terminal Unit, Port Supply Activity, etc.).

b. Advice and planning support will be provided in the areas of explosives safety (site planning in accordance with quantity distance requirements, compatibility of ammunition and other cargo, etc.), ammunition handling procedures and techniques, preparation of hazardous cargo documents and repair/evaluation of damaged ammunition items/packages.

c. Pier and ship operations will be monitored to assure proper equipment and procedures are used in the handling, movement, lifting and securement of ammunition and explosives and that proper fire fighting precautions have been taken. At all operating locations, to include supporting marshalling areas, assure explosive weight limits are not exceeded and that pier and shipboard personnel observe common precautions for personnel handling or operating in the vicinity of ammunition and explosives.

d. Coordination with U.S. Coast Guard elements is essential for effective implementation of guidance.

e. Also see paragraph 10-5.

**10-14. Quantity Distance determinations.**

QASAS can assist the organization safety office in preparation of site plans, waivers and storage licenses. Detailed information in this area is in AR 385-64.

# CHAPTER 11
# RECORDS AND REPORTS

## 11-1. Technical history.

The technical history of each lot, serial, or group is maintained by the surveillance organization indicating the results of each inspection, test, investigation, and any unusual or changing condition affecting the ammunition. The technical history of materiel is an important record used in evaluating the serviceability and reliability of ammunition items, and it is important that all data recorded for inspections, tests, and investigations be accurate and concise.

a. The type of information required for recording and reporting is dependent on the type of information required by the organizations supported by surveillance, i.e., supply, maintenance, and stockpile reliability organizations.

(1) The information required for supply purposes is determined by local procedures for satisfying local and higher headquarters supply actions.

(2) The information required for maintenance purposes normally is more detailed on the extent of deficiencies and work required to return the item to an issuable condition.

b. The type of information required to evaluate the reliability of the stockpile includes condition of materiel, quantity, date of manufacture, type of storage, type of defects, assignable cause of defects, results of tests, etc.

c. Additionally, the surveillance organization is required to submit various other types of reports on materiel received or in storage and to maintain certain specified records.

d. Forms required by this chapter are available on ASIS and, where fielded, is the preferred method of completing these forms.

## 11-2. Records.

a. Army Depot Surveillance Record card fig 11-1 and 11-2).

(1) DA Form 3022-R, Army Depot Surveillance Record (DSR) will be prepared and maintained in an up-to-date status for each lot, serial, or group of ammunition in storage (for exceptions, see paragraph (6) below). A DSR card is used by all organizations which store ammunition or explosives at any level above the user level (such as depots, direct and general support units, ammunition supply points, etc.). The DSR card contains information on the technical history of the materiel such as the results of each investigation, examination, test, any unusual or changing condition affecting the ammunition, type of storage, etc.

(a) Surveillance organizations with access to the Standard Depot System (SDS) will use the automated DSR feature of that system.

(b) Surveillance organizations without SDS access but with computer capability should automate DSR information using the procedures detailed in Appendix B.

(c) Organizations operating on an automated DSR system will not continue to maintain a printed "hard copy" system.

(2) All DSR card data fields will be used unless the QASAS in charge determines that a certain data field is not applicable at a particular location. It is the responsibility of the QASAS performing the last inspection to assure that all data fields in use contain accurate and up to date information.

(3) The recorded inspection remark will contain:

(a) Date of inspection.

(b) Type of inspection accomplished.

(c) Condition code.

(d) Number of samples.

(e) Inspection reference(s).

(f) Approximate quantity. Quantity is for information only, is not intended as a stock record requirement, and will not be used if prohibited by a security classification. Quantity will be only that of individual lot, not entire cluster quantity.

(g) Type of storage.

(h) A brief and accurate description of conditions encountered. DSR cards for each lot in a cluster will be annotated with the inspection results of the sampled lot. Remarks will include the defect codes that best identify the defects observed during the inspection. Defect codes are identified in DA PAM 700-19 and Appendix AB.

(i) Statement of actions taken and assignment of condition code.

(j) Status of missile alteration or MWO (if applicable).

(k) Pertinent reference to documents other than normal inspection references such as ACRs, memoranda of disposition, etc.

(l) QASAS identification. The completed inspection will reflect the name (typed or printed) of the QASAS who conducted the inspection who will normally review the entry for accuracy.

*(m)* The latest entry should be compared with previous inspection results given on the DSR for possible findings that may require additional action. The chief of surveillance or first line supervisor should periodically monitor these remarks to assure that they are accurate and complete.

(4) Depot surveillance cards for missile materiel will normally be prepared for each lot or serial number item.

(5) DA Form 3022-R will be reproduced locally as required on 8- by lo-inch card stock (image size 7- by 9- 1/2-inch) to permit folding the card in the middle to an 8- by 5-inch size for filing. A copy of DA Form 3022-R is located at figures 11-1 and 11-2 for local reproduction purposes. Installations that have automated DSR cards are required to have a capability for printing a DSR card.

(6) Exceptions from the requirement to prepare and maintain DSR cards:

*(a)* CCFTP test samples held at the test site

*(b)* Army ammunition plants need not prepare DSR cards for new materiel in the industrial account, provided no significant events necessitating a DSR entry (such as suspensions, restrictions, releases, special inspections or conditions code changes) occur. Processed industrial stocks which have not yet "been accepted" by the government will have DSR's initiated as specified by appropriate regulatory requirements. For materiel identified as "work in process," logbooks containing pertinent information may be used in lieu of DSR's. If lots are shipped prior to initiation of DSR's. shipping documents will be annotated with a statement that DSR cards have not been initiated; reference this paragraph.

*(c)* Basic load munitions, see para 8-1c.

(7) DA Form 3022-R (fig 11-1) may be reproduced locally, as required, on 8-1/2 by 11-inch paper for use as an ammunition surveillance inspection worksheet (i.e., used to temporarily record inspection data for transposition to the formal DSR card).

*b. Amunition suspension record.* Ammunition suspected of being unsafe or containing a critical defect will be suspended to prohibit its issue and use. This action is based on malfunction or accident reports, function test reports, and inspection reports. An investigation is conducted to ascertain the quality of the lot or item and to determine disposition of quantities involved. Based on the results of the investigation, disposition instructions will be issued to release, rework, or demilitarize the ammunition under consideration.

(1) Army suspension. Worldwide ammunition suspension, restriction. and release notices are disseminated by IOC and AMCOM

teletype or electronic mail supplements to TB 9-1300-385 which is published quarterly by IOC surveillance office.

(2) Other service suspensions are covered in TO 11A-1-1 Air Force) and TWO 24-AA-ORD-010 (Navy/USMC).

(3) In accordance with SMCA guidelines, a temporary suspension issued by the Army. Navy/USMC or Air Force applies to all stocks regardless of owner. If a service does not agree with the temporary suspension it will release its stocks: that release applies only to that service's stocks. A permanent suspension issued by the Army, Navy/USMC or Air Force applies only to stocks of the service issuing the permanent suspension. Permanent suspensions issued by any service will apply to stocks in the demil accounts unless IOC surveillance non-concurs in the suspension action

(4) Suspension control. Control of suspended stocks is a responsibility of the ammunition surveillance organization and involves maintaining the installation's master suspension records. The ammunition surveillance organization is also responsible for assuring that suspended items that are restricted from handling or movement are not moved. handled. or shipped except as specifically authorized by higher headquarters. Munitions locally issued for training must be monitored for suspensions. Suspension notices received during non-duty hours at installations where non-duty hour training exercises are conducted must be checked against munitions in use for such exercises.

*(a)* Suspended stocks in storage must be appropriately identified using DD Form 1575 (Suspended Tag-Materiel) or DD Form 1575-1 (Suspended Label-Materiel) to preclude unauthorized handling or issue.

*(b)* In addition to applicable information as requested on the form. the tag will be annotated with one of the following remarks as applicable:

(1) "Suspended-- Issue Prohibited."

(2) "Suspended from Issue. Movement. and Use."

(3) "Suspended Except for Emergency Combat Use."

(c) Lettering will be the largest possible that is compatible with the forms. OCONUS commands may fabricate and use multilingual versions of forms as needed.

(d) Forms will be securely attached to the affected lot's stack in storage and to the magazine data card to preclude loss during magazine storage operations, etc. Presence of suspension tags will be verified during each magazine inspection.

*c. An-munition gage record card.* DA Form 3023 (Gage Record) is received with each gage and includes pertinent gage information. The card will be maintained in an up-to-date manner with the record of

actual gage usage recorded on the reverse side. The gage usage record is used to determine when gages should be submitted for a dimensional check. Gage record cards are returned with gages requiring use-test checks.

d. DD Form 1650 (Ammunition Data Card). When ammunition is renovated, inspected 100 percent for critical defects, modified or regrouped, new or revised data cards will be prepared by the appropriate ammunition operations organization and approved by the QASAS in charge. The requirement for new ammunition data cards is outlined in MIL-STD-1168 and specific instructions from the commodity command. Revised data cards will be sent to the central repository of the owning service. For Army send to: HQ, IOC, ATTN: AMSIO-MASQ-SURV, Rock Island, IL 61299; for other services see paragraphs 11-4a and b.

e. Equipment logbooks and maintenance logs. The results of inspection and maintenance of missiles and associated test and handling equipment will be maintained on applicable forms according to DA Pam 738-750.

f. Storage monitoring record. Results of the SMI monitoring and action taken to correct any discrepancies will be posted to the DSR card. Storage Monitoring inspection of toxic chemical munitions may be recorded on a locally devised form (manual or automated) for each ammunition lot or serially numbered item subjected to SMI. Records indicating that SMIs have been accomplished are part of the historical record and will be retained indefinitely. When SMIs reflect nonstandard conditions (e.g., evidence of leakage, damaged outerpack or container, dunnage, etc.) the results of the inspection and the actions taken to resolve discrepancies will be posted to the DSR card.

g. DA Form 4508 (Ammunition Transfer Record). DA Form 4508 will be used to accomplish local condition code, NSN, nomenclature, and lot or SN changes and will be processed through and concurred in by the ammunition surveillance organization. QASAS must review and approve any reclassification action.

h. Materiel condition tags and labels.

(1) All materiel destined for Navy or Marine Corps use will have materiel condition tags or labels affixed prior to shipment.

(2) Tags or labels will be used to identify suspended stocks, as required by paragraph 11-2b(4)(a) above, and to identify containerized chemical surety munitions.

i. Lot Cluster logs

(1) A log will be maintained for each cluster which identifies all lots belonging to the cluster.

(a) Figure 11-3 contains an example format and describes minimum data elements required for creating a local log. A master log will be maintained to identify all lot clusters. Figure 11-4 contains an example format and guidance on development of the master log. Local reproduction of Figures 11-3 and 11-4 is authorized.

(b) The surveillance test lot (STL) reporting system of the Standard Depot System (SDS) or a PC-based data base system using data elements from Figures 11-3 and 11-4 meet the requirements for lot cluster logs.

**11-3. Reports.**

a. DA Form 2415 (Ammunition Condition Report). The ACR is used to report failures, discrepancies, and other conditions of ammunition materiel. The instructions for use, completion, and distribution of DA Form 2415 are outlined in DA Pam 738-750.

b. SF 368 (Quality Deficiency Report). SF 368 is the authorized means for users of Army materiel to report--

(1) Equipment faults in design, operations, and manufacturing.

(2) Equipment improvement recommendation to suggest improvements in Army materiel.

(3) Unsatisfactory new equipment received that is a direct result of below standard quality or workmanship. Instructions on completion are contained in AR 702-7 and DA Pam 738-750.

c. SF 364 (Report of Discrepancy (ROD)). Installations receiving shipments with damage due to improper unitization, packaging, preservation; and with incorrect marking, quantity discrepancies or documentation discrepancies will report the discrepancies according to AR 735-11-2. SF 364 will not be used for reporting transportation discrepancies (see SF 361 below), except for materiel sent parcel post. The QA organization will normally report packaging discrepancies while the operations organization reports discrepancies in the item(s) shipped.

d. SF 361 (Transportation Discrepancy Report (DISREP)). Shipments received at an installation that are astray, lost, or damaged; improperly blocked and braced; incompatible; handled improperly by carrier; tender or use of carrier's inadequate equipment or facilities; misdirected shipments; improper documents; or shipped in violation of military regulation will be reported on SF 361 according to AR 55-38.

e. Ammunition inspection and lot number report. This report will be prepared according to AR 700-22 (WARS) for those commodities under the control of IOC and AR 710-9 for AMCOM-managed commodities. The preparation of required input data will be accomplished by or under the supervision of a QASAS.

f. The Small Arms Ammunition Trace Test Record will be used for recording and reporting the trace test results according to SB 7421305-94-20.

g. Reports of explosions, chemical agent releases, and serious accidents will be reported in accordance with AR 385-40 and applicable supplements.

h. DD Form 250 (Materiel Inspection and Receiving Report).

(1) The instructions and procedures for the preparation and distribution of DD Form 250, initiated in connection with shipment of supplies from vendor's plants (new procurement), are specified in DOD acquisition regulations. The requirement for inspection and/or acceptance of materiel (new procurement) received at depots from vendors as indicated on DD Form 250 is applicable to--

(a) Materiel inspected at origin and requiring acceptance at destination.

(b) Materiel requiring inspection and acceptance at destination.

(2) Installations receiving materiel from procurement for stock will process the DD Form 250 in accordance with applicable regulation (1) above.

(3) The SF 368 will be used to report defective products received at army installations for acceptance by the Government. In block 22 of SF 368, reference that this is a "Memorandum of Rejection" should be included.

**11-4. Distribution of DSR and Ammunition Data Cards (ADC) to Army activities.**

a. DSRs and ADCs are critically important supply documents for activities such as FORSCOM, TRADOC and ARNG Posts, Camps, Stations and Ammunition Supply Point, both CONUS and OCONUS, which issue ammunition directly to users. Lack of DSR and ADC may delay ammunition issues and burden these activities with the requirement to perform unnecessary inspections. Shipping installations will make every effort to ensure DSR and ADC are received in a timely manner. DSRs and ADCs may be transmitted electronically (automated, e-mail or fax) in lieu of mailing. DSRs and ADCs for each lot, SN, or group of ammunition, and ammunition components scheduled for shipment must be furnished.

b. Ammunition Data Cards for AMCOM managed items and for all shipments to OCONUS destinations will also be forwarded to the appropriate central repository listed below. Data Cards for a lot need to be sent only once to each central repository. Subsequent shipments of the same lot do not require additional mailings of the same data cards to the same repository.

(1) England and Germany -Commander, 200th Theater Army Materiel Management Center, ATTN: AERLA-MMC-MD, UNIT 23203, APO AE 09263, e-mail: md@200tammc.21tsc.arnm.mil, or fax DSN 484-8985.

(2) Italy Commander, Southern European Task Force, ATTN: AESE-GLO-Q, Unit 31401 Box 1, APO AE 09630, e-mail: aeseglo5@email.vicenze.army.mil, or fax DSN: 634-7742.

(3) Alaska -Commander, U.S. Army Garrison, Alaska, ATTN: APVR-DLCQ, 977 Davis Highway, Fort Richardson, AK 99505-5700, e-mail: apvrdlc2@richardson-emh2.army.mil or fax DSN: 317-384-3122.

(4) Hawaii -Commander, U.S. Army Garrison Hawaii, ATTN: APVG-GLS-MU, Schofield Barracks, HI 96857-5000, e-mail: **scottg@schofield-emhl.army.mil**, fax DSN: 668-3197.

(5) Japan -Commander, 83rd Ordnance Battalion, ATTN: APAJGH-AM-S, FPO AP 96310-5432, e-mail: apaj-gh-am-s@zama-emhl.army.mil, fax DSN: 256-2415.

(6) Korea -Commander, 6th Support Center (Materiel Management), ATTN: EANC-TIM-GQA, Unit 15016, APO AP 96218-0172, e-mail: eanc-tim-gqa@emh5. Korea.army.mil or fax DSN: 768-8261.

(7) War Reserve Stockpile Thailand Commander, USARPAC, ATTN: APLG-MUS, Ft. Shafter, HI 96858-5100, e-mail: millerm@shafteremh2.anny.mil or fax DSN: 438-7119.

c. Ammunition Data Cards for IOC managed can be retrieved from Automated Lot Record Malfunction (ALRAM) System. If ADC is not available through ALRAM the Consignee will contact the shipping organization and request the ADC. The shipper will also forward a copy of requested ADC to Commander, U.S. Army Industrial Operations Command (IOC), ATTN: AMSIO-QAS, Rock Island, IL 61299-6000. Appendix B contains ALRAM procedures.

**11-5. Distribution of DSR and ammunition data cards to other than Army activities.**

For all U.S. Navy and Marine Corps shipments, one copy of the ADC and DSR card for each lot or serial numbered item of ammunition will be forwarded to the consignee utilizing DA Form 200. Distribution for U.S. Air Force shipments will be according to T.O. 11-A-1-10 which specifies that surveillance records will be both mailed and sent with the ammunition shipment. Additional distribution will be made as follows:

a. For materiel furnished the U.S. Air Force, send one copy of ammunition data card and DSR card to Commander, OO-ALC/LIWGE, 6034 Dogwood Avenue, Hill Air Force Base, UT 84056, e-mail: harrisb@gateway.hill.af.mil, or fax DSN: 777-2186.

b. For NAVSEA, NAVAIR, and USMC shipments, forward the ADC and DSR card to the consignee and one copy of each to Commanding Officer, Naval Surface Weapons Support Center Crane Division, Code 402, 300 HWY 361, Crane, IN 47522-5090, e-mail: burns_chuck@crane.navy.mil or fax DSN: 482-1883.

c. Data cards for specific lots need to be sent only once to each service central repository. Subsequent shipments of the same lot do not require report submissions of the same data card to the same repository.

d. DSR card will not be provided to foreign military sales or security assistance customers. ADC will only be provided to these customers on a case by case basis as directed by the NICP. Refer to para 12-6c and 12-6d for further information.

11-6. Reporting of offshore procured ammunition.

a. There is ammunition in or entering the U.S. Army Inventory that was manufactured in foreign countries. This ammunition is commonly called "off-shore procured ammunition" and may or may not have restrictions on its use by U.S. Forces.

b. If during inspection it is determined that the ammunition is off-shore procured and there is a question as to the authorization for issue and use by U.S. Forces, the lot must be reported to the appropriate commodity command, regardless of quantity. Data reported will include nomenclature, NSN, lot number, pack, manufacturer markings, and details. Data will be sent as appropriate to--

(1) U.S. Army Industrial Operations Command, ATTN: AMSIO-SMK, Rock Island, IL 61299-6000.

(2) U.S. Army Missile Command, ATTN: AMSMI-MMC-LS-SM, Redstone Arsenal, AL 35898-5000.

c. Ammunition for which there is no question as to the authority for existence in the stockpile for use by U.S. Forces will have the appropriate condition code assigned based on inspection and test conducted according to this publication.

d. Lots that are questionable will be assigned a non-issuable condition code pending receipt of instructions from the commodity command.

# ARMY DEPOT SURVEILLANCE RECORD

**For use of this form, see SB 742-1. The proponent agency is AMC.**

| | | |
|---|---|---|
| NSN/SN: | DODIC: | LOT/SN: |
| ALT LOT/SN: | DOM: | SHELF LIFE EXP: |
| NOMENCLATURE: | | |
| PACKAGE WT: | PACKAGE CU: | EXPL WT/PACKAGE: |
| DOT CLASS: | CG CLASS: | HAZARD CLASS: |
| DOT NOMENCLATURE: | | |
| NAME OF INSTALLATION: | | SERVICE LIFE: |
| NSN/PN: | CONDITION: | LOT/SERIAL NUMBER: |

## RECORD OF INSPECTION

DA FORM 3022-R MAY 90 DA FORM 3022-R, 1 May 76 IS OBSOLETE

# RECORD OF INSPECTION

Figure 11-3

AMMUNITION LOT CLUSTER LOG

INDEX # _____ CC: _____

ITEM DESCRIPTION: _____

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1. INDEX #: A sequential number followed by the Department of Defense Identification Code (DODIC) (e.g. 001-A071). Each sequence number will be unique and will not be reused. If the items to be clustered do not have an assigned DODIC, the installation will assign a local DODIC for this purpose.

2. CC: Enter the condition code for the lot cluster.

3. ITEM DESCRIPTION: Enter the nomenclature of the item clustered.

4. LOT NUMBER: Enter the complete lot number of each lot in the cluster (e.g., IOP91FO12-024).

5. SAMPLED: Enter an X in this column if the lot has been used as the lot cluster sample; otherwise leave blank.

6. DATE: Enter the date the lot was used as a lot cluster sample; otherwise leave blank.

Figure 11-4

LOT CLUSTER MASTER LOG

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1. INDEX #: Enter the Index number as defined in Figure 11-1.

2. DATE: Enter the date the Lot Cluster was established.

3. # LOTS: Enter the number of lots in this cluster

4. CC: Enter the condition code of the cluster.

# CHAPTER 12
# SECURITY ASSISTANCE PROGRAM

## 12-1. General.

a. The requirements in this chapter are applicable to Security Assistance Program (SAP) shipments for the item and packing (intermediate, inner, and outer packs). These requirements are not intended to conflict with those of other DA publications. Only exceptions are for shipments requested "as is". All munitions will also meet the requirements prescribed by the technical publication(s) for the item concerned.

b. Only materiel that reflects favorably on the United States and meets the quality requirements as specified in this chapter will be supplied to foreign governments unless otherwise authorized by negotiated agreement. Materiel will be tested and quality checked to the same degree as that supplied to the U.S. Army.

c. Materiel selected for the SAP will be from the best available stocks and will be of unquestionable serviceability. Packaging will have no extraneous markings which might cause the identity or serviceability of the contents to be questioned.

d. IOC managed materiel will not be cleared for shipment by the quality organization or released by the consignor until clearance for functional suitability is obtained. Installations will not release IOC managed materiel which does not meet prescribed specifications without written authority from the IOC.

e. Materiel accepted on waiver at the time of acceptance, renovation, modification, etc., due to deviations from specifications or drawings affecting safety, reliability, interchangeability, or specified performance characteristics is not suitable unless the customer has been apprised of the nature and extent of the deviation and agrees to accept the materiel. Similarly, customer approval is required for any other deviation from the requirements specified in this chapter, Installations will not release such materiel until written authority has been obtained from the appropriate commodity command (IOC: AMSIO-IL; AMCOM: AMSMI-RD-QA). The commodity command will not provide written authority to the shipper until the customer has been fully informed of materiel characteristics and has agreed to accept the materiel.

f. Items in long supply and excess (MIMEX) materiel is furnished in "as is" condition with the recipient government waiving the right to submit claims against the U.S. Government through the Department of Defense (DOD) discrepancy report system. The letter of offer and acceptance (LOA) defines in general terms the condition constituting "as is" and states that preservation and packaging will be the minimum

for safety and to reduce further deterioration during shipment. Markings will comply with Department of Transportation (DOT) and United Nations Organization (UNO) requirements. Unless otherwise stated, the lack of a current inspection, trace test, function test, deterioration check test, or reassessment of materiel is not cause to disqualify a lot from shipment. A functional clearance is not required for MIMEX.

g. Additional inspection requirements or instructions for specific materiel may be provided by the appropriate commodity command on an "as required" basis for selected shipments.

12-2. Clearance procedures

a. IOC managed materiel.

(1) A clearance for functional suitability will be obtained from Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000. This clearance may be obtained by message, memorandum, electronic mail or telephone. Written confirmation will not be furnished to the shipping activity for clearance given by telephone. The following information is required for clearance of candidate materiel--

(a) Country and case designator.

(b) Nomenclature and national stock number (NSN).

(c) Materiel Release Order (MRO) number.

(d) Lot or serial number and quantity to be shipped

(e) Date of manufacture and latest test date (if applicable).

(f) Functional deviations or waiver S from local records.

(g) Restrict ions or suspensions.

(2) Materiel not shipped within 180 days from date of functional clearance must have functional clearance updated by IOC.

(3) Materiel not shipped within 180 days from date of SAP inspection will be reevaluated by the ammunition surveillance organization for continued suitability for SAP. Reevaluation should take into consideration type of storage and results of the last inspection or test. Reinspection need not be made unless the QASAS in charge deems it necessary to assure that the materiel meets the requirements of this supply bulletin.

(6) When an MRO is denied by the designated shipper, a detailed description of the conditions warranting the denial will be furnished IOC upon request.

b. AMCOM managed materiel will not require a clearance for functional suitability. TB 9-1300-385 will be queried to ensure proper

condition code; or inquiries may be made to Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-LS-M, Redstone Arsenal, AL 35898-5230.

12-3. Inspection criteria.

a. IOC managed materiel. Sample size (table 12-1) and criteria as outlined in paragraphs 12-4a and 12-5a will be used to determine the acceptability for SAP shipments and for the outer pack for Grant Aid (GRA). Classification of defects will be according to chapter 2 and acceptance criteria for defectives will be according to table 12-1.

b. AMCOM managed materiel.

(1) The sample size, defect classification and rejection criteria are contained in the applicable technical manual, supply bulletin, or other procedural documents.

(2) Pressurized and desiccated containers shall be 100-percent inspected prior to release for shipment to ensure that they have adequate internal pressure and a satisfactory internal relative humidity as specified in the applicable technical manual.

12-4. Materiel acceptability criteria.

a. IOC managed materiel.

(1) Materiel accepted on "skip lot" basis is ballistically acceptable.

(2) Small arms tracer ammunition selected for SAP will have a specification trace of 80 percent or greater. Absence of test data will not disqualify a lot from shipment.

(3) Materiel selected for GRA will be CC-A quality and comply with issue requirements for the U.S. Army.

(4) Munitions accepted without waiver of functional deficiencies at an Army Ammunition Plant (AAP) may be considered suitable for issue under SAP provided--

(a) Materiel has had an acceptance inspection (AI) or initial receipt inspection (IRI) encompassing criteria found in chapter 2 and paragraphs 12-4 and 12-5 of this chapter.

(b) Lots are in CC-A

(c) Containers have original manufacturer's seals.

(d) Lots will be shipped before interval of 180 days from date of AI or IRI and functional clearance.

(e) Functional clearance is requested and received from IOC.

(f) Should shipment occur after 180 days from date of AI or IRI, normal SAP inspection procedures will be applied.

(5) Materiel selected for SAP and GRA will be afforded preservation and packaging level A/B except for parcel post and air shipment for which level B/B is authorized as stated in AR 700-15. Guidance for less than level A/B packaging and preservation will be contained in the requisition and annotated on the MRO as exception data.

(6) Ammunition with the following conditions will not be released by the QA organization without written authorization from IOC. Materiel which does not meet the prescribed standards will be reported by the installation to IOC (AMSIO-IL) for waiver of deviation consideration and customer acceptance. Where applicable, detailed deficiencies and rework requirements (preservation, packaging, and maintenance) to include estimated cost(s) will be provided.

(a) Restricted from issue or use for any reason.

(b) Accepted at time of manufacture or renovation under a waiver which affects safety, reliability, interchangeability, specified performance characteristics, or maintainability.

(c) Appearance of the item or its related packing undesirable in that it could cause an unfavorable reaction from the customer.

(d) Preservation and packaging level is less than that prescribed by AR 700-15 based upon item, package configuration, shipment mode, and handling conditions, and storage conditions.

(7) Bulk propellant, propelling component charges and ammunition components.

(a) Bulk propellant and component charges. Materiel selected for SAP shipment will have a minimum of one year remaining on the Loading Authorization (as specified on IOC Form 210-R, Propellant Acceptance Sheet) at the time of shipment unless otherwise authorized by IOC.

(b) Ammunition components (such as primers, ignition cartridges, or delay elements) selected for SAP shipments will have a minimum of 1 year remaining on the deterioration check test interval unless otherwise authorized by IOC (AMSIO-QAS).

(c) Materiel selected for GRA shipments will be CC-A quality and comply with those issue requirements for the U.S. Army.

(8) High explosive (HE) and white phosphorous (WP) fixed and semi-fixed ammunition, mortar ammunition, separate loading projectiles, and separate loading propelling charges with less than 100 rounds per lot will not be issued for GRA or SAP shipments unless specifically authorized in the Letter of Offer and Acceptance (LOA) DD Form 1513

(U.S. DOD Offer and Acceptance) or the quantity requisitioned is less than 100 rounds.

(9) Tag end lots of ammunition and specifically a lot for which the quantity remaining is less than a standard pack will not be utilized for GRA or SAP unless authorized in the LOA, or the quantity required is less than one standard pack.

b. AMCOM managed materiel.

(1) All materiel selected for shipment under the SAP will be subjected to a pre-issue inspection prior to release for shipment. This inspection will be performed according to the applicable ammunition surveillance procedure and technical manuals.

(2) All outstanding URGENT Department of the Army Modification Work Orders (DAMWO) must be applied to materiel selected for SAP shipment prior to the required pre-issue inspection.

(3) All other DAMWOs should be applied to materiel selected for SAP shipments prior to the required pre-issue inspection. Exceptions to this criteria, which must have prior approval from AMCOM, AMSAM-SA, are as follows:

(a) Modifications developed for limited geographical application which are not required by the recipient.

(b) Modifications which are not available and application would delay the scheduled shipment release date.

(4) Missiles, rockets, and related separately packaged components selected for shipment to SAP customers must have at least 50 percent or 4 years, whichever is less, of the established shelf life remaining at the time the shipment is released to the carrier at the point of origin. Materiel selected for shipment to GRA customers must have at least 2 years of the established shelf-life remaining at the time the shipment is released to the carrier at the point of origin.

12-5. Special instructions.

a. IOC managed materiel.

(1) Renovated or reworked ammunition.

(a) Ammunition renovated or reworked will be repackaged according to the applicable drawing for the item concerned.

(b) Ammunition previously renovated or reworked and meeting the requirements of this bulletin will be considered suitable for GRA or SAP.

(c) Ammunition that is renovated or reworked to fill a GRA or SAP requirement must meet the requirements of this bulletin.

(d) Ammunition requiring a post renovation test will be tested prior to release for shipment.

(2) Marking defects.

(a) Marking defects that do not exceed the limits established by the inspection criteria of this supply bulletin are acceptable.

(b) Address marking will be applied according to the latest revision of MIL-STD-129, AR 725-50, and special instructions as may be furnished by the IL case manager.

(c) Lots of ammunition marked with an Ammunition Identification Code (AIC) or Federal Stock Number (FSN) in place of the National Stock Number (NSN) and Department of Defense Identification Code (DODIC) are acceptable. The DD Form 1348-1 (DOD Single Line Item Release/Receipt Document) and document accompanying the shipment must reflect either the AIC, the FSN and DODIC, or the correct NSN and DODIC. If the ammunition requires reworking, the correct NSN-DODIC will be applied according to applicable drawings.

(d) Weapon model designation on boxes need not be corrected to comply with drawing requirements unless containers required reworking at which time weapon designation will be applied according to applicable drawings.

(e) Changing the nomenclature from "shell" to "cartridge on the round, container, or box is not required unless the round, container, or box requires reworking. Items containing both nomenclatures within a lot (such as cartridges on boxes and fiber containers, and shell on round) are acceptable.

(f) Light boxes (less than a standard pack) will be marked drawing 8796522.

(g) When obliteration is done during processing through maintenance, packing or renovation facilities, the entire side, top, or end will be completely painted with sufficient coverage to effectively prevent "bleeding through" of previously applied markings.

(h) The color of the obliterating paint, or lacquer used will match as closely as possible the color of the boxes or containers. Care will be exercised when obliterating and remarking cleats of boxes to ensure that the color of the paint, size of lettering, and position of stenciling will clearly identify the contents and not cause misinterpretation of applicable color markings for practice, smoke, or chemical ammunition.

(i) Remarking will be according to the packing and marking drawing for the item concerned.

(j) When impressed marking is obliterated, the new marking will be stenciled on the opposite side of the box. Destination marking will be stenciled on the obliterated impressed marking side of the box.

Boxes previously stenciled over the obliterated impressed marking are acceptable if the stenciling is legible and the obliteration was accomplished over the entire panel of the box.

(k) Obliteration, when required, must be consistent throughout a lot (such as same color or paint, enamel, or lacquer; uniform coverage; and uniform lettering).

(l) Obliterated impressed marking on metal components due to changes in production or modification is acceptable if covered by X punch or knurling. When X punch or knurling is not feasible due to hardness of metal or possibility of component deformation, the ORD markings may be obliterated with black paint or lacquer. Obliteration will be applied neatly. New markings will be applied by stamping or stenciling as appropriate. Recipient will be advised that items have been remarked to comply with the proper nomenclature and that serviceability and reliability are not affected.

(m) The following specifications are for the paint and stencil ink authorized for obliteration and remarking of materiel required for GRA and SAP--

1. MIL-P-52108(MR), water emulsion paint for stenciling and obliteration.

2 A-A-208A, Type I, opaque stencil marking ink for nonporous surfaces.

3 A-A-208A, Type II, opaque stencil marking ink for porous surfaces.

4 A-A-208A, Type III, opaque stencil marking ink for both porous and nonporous surfaces (applied by a pressurized container).

5 A-A-208A, Type IV, opaque stencil marking ink for both porous and nonporous surfaces (applied by a stencil roller).

(n) Marking obliteration should be done according to the current MIL-STD-129. Repainting should be done with sand color paint for natural color wood boxes and remarked in black. For dark wood or weathered boxes use olive drab (OD) paint with yellow markings.

(o) All items selected for shipment to SAP recipients will have "U.S. Army" markings deleted.

(3) When loss of paint coverage is excessive, complete repainting will be required. Metal containers, metal boxes, or metal crates that have minor scratches and small unpainted areas which would present an unsightly appearance if retouched, may be shipped without repainting. Where packing supports in containers cause loss of paint coverage, repainting is not required (unless rust or corrosion is present).

(4) Metal strapping or wire bands must be properly and uniformly applied and must be tight. Tightening of existing loose wire bands is permissible by utilizing a suitable wire crimping tool to crimp the wire and staple the crimp to the box. Staples will be sufficient length to afford strength without protruding through the thickness of the applied surface. If wire bands are replaced with metal strapping, it is permissible to cover box markings if no unmarked spaces are available and if essential markings such as lot numbers are not covered. The same type of wire strapping will be used on an individual box. However, wire and strap banding are permitted within a lot. Flat steel strapping, specification ASTM-D3953, is the authorized strapping for GRA or SAP shipments. Lots presently banded with other strapping, which is satisfactory in appearance and application, are acceptable. Only authorized strapping will be used when strapping is replaced due to reworking of materiel, poor appearance, rust on loose bands, etc. Palletized projectiles or bombs (empty or loaded), required for GRA or SAP will be strapped using steel strapping, specification ASTM-D3953.

(5) Minor rust or corrosion on hasps, hinges, or screw heads is acceptable. Major rust or corrosion on hardware will be removed. Where the protective plating is affected by removal of rust or corrosion, the hardware will be painted the same color as the box.

(6) Boxes with dry rot, termite infestation, or other conditions conducive to eventual complete deterioration of the wood or having appearance of weathering or abuse are not acceptable.

(7) Boxes with cleats in different positions (vertical and horizontal) or without cleats within a lot are acceptable if the box meets all other requirements.

(8) Fiber containers opened for inspection or rework operations will be resealed using tape of the same type and size if the container meets appearance standards. If minor fraying occurs during removal of old tape and the waterproof impregnated layer beyond the area normally covered by tape is not destroyed, the container is considered acceptable. It is acceptable to use a wider tape of the same type to cover frayed edges at time of resealing when waterproof impregnated layer is destroyed. Retaping to merely cover frayed edges is not considered necessary. Fiber containers opened for inspection will be resealed with tape pressure sensitive adhesive, plastic film, filament reinforced, MIL-T-43036A if tape of original type and color is not available.

(9) Discoloration or fingerprints on cartridge cases or marks on base caused by felt pads and chipboard fillers are acceptable if no active corrosion is present. Efforts will be made to improve the appearance of the cartridge case base if reworking is required.

(10) Fixed and semi-fixed ammunition assemblies with fired or resized cartridge cases are not acceptable for SAP,

(11) Containers with tear strips or other self-destroying closing devices that destroy the hermetic seal when opened for any required sample inspection will be acceptable when lids are resealed by means of three wraps of plastic film, pressure sensitive, and filament reinforced adhesive tape (MIL-T-43036A) and taped end of container has been dipped in a compound sealing dip coating, federal specification VV-S-190. A pull-tab is also required for easy removal of the tape.

b. AMCOM managed materiel.

(1) Samples are to be selected by a QASAPS and must be representative of the entire lot under evaluation. The evaluation will include overall condition of the lot in storage.

(2) Rebuilt, repaired, or modified materiel must conform to applicable standards and drawing requirements.

(3) All items selected for shipment to SAP recipients will have "U.S. Army" markings deleted.

(4) Spot paint is allowable provided it does not detract from the appearance of the item and is not on a critical surface. Paint used for spot painting will blend as nearly as possible with the original paint. Brush marks are allowable if runs or sags are not evident. These criteria also apply to spot painting of containers, except that minor scratches (those not exposing the surface) need not be spot painted if they do not materially detract from the appearance of the containers.

(5) Containers with tear strips or other self-destroying closing devices that destroy the hermetic seal when opened for any required sample inspection will be acceptable when lids are resealed by means of three wraps of plastic film, pressure sensitive, and filament, reinforced adhesive tape (MIL-T-43036A) and taped end of container has been dipped in a compound sealing dip coating, federal specification VV-S-190. A pull-tab is also required for easy removal of the tape.

(6) Obliteration of box or container markings will be accomplished as specified by the current MIL-STD-129. The color of the obliterating paint, enamel or lacquer will match the original basic coloring of the boxes or containers, as nearly as possible. Sand color (30277 of federal standard 595) will be used on unpainted wooden boxes for obliteration of old markings. The same color and kind of ink will be used to obliterate original markings on any package surface. Embossed markings will be sanded or planed smooth or the panel(s) reversed and the corrected markings applied to match the balance of the markings on the box.

(7) Metal strapping or wire bands must be properly applied, uniform, and secured. Tightness should be determined by using procedures contained in AMC drawing 19-48-4116-20 PA 1002 (Unitizing Procedures for Boxed Ammunition and Components in Palletized Units-Strapped).

(8) Boxes with evidence of dry rot, termite infestation, or other conditions conducive to deterioration of wood or boxes or giving the appearance of weathering or abuse are unacceptable. Boxes must be serviceable.

(9) Items produced and accepted under various waivers and deviations, as indicated by remarks on ammunition data cards or log books, will be require AMCOM clearance prior to SAP shipment. Some clearances may also require customer approval.

12-6. Shipment procedures for IOC managed materiel.

a. Report of shipment (REPSHIP) notification will be forwarded to IOC for all SAP shipments. Installation quality assurance security assistance coordinators (SAPC) and transportation officers will effect appropriate procedures to ensure that a REPSHIP electrical transmission message is furnished within 3 days of shipment.

b. The IOC Joint Munitions Transportation Division (AMSIO-TMJ) will provide REPSHIP notification for SAP airlift shipments.

c. Form 1650 (ammunition data cards) for SAP shipments will be forwarded to the designated recipient in accordance with DOD 4000.25-8-M (Military Assistance Program Address Directory (MAPAD)). One copy of the ammunition data card for each item or lot will accompany SAP shipments according to DOD 5160.65M (Joint Conventional Ammunition Quality Assurance Policies/Procedures, Part 5). Ammunition data cards will be purified to eliminate remarks such as waivers granted, conversion of one type of ammunition to another type (such as anti-aircraft (AA) to tank ammunition) and other remarks which may be misconstrued by a recipient country.

d. DA Form 3022-R (DSR cards) will not be sent on SAP shipments. Any request for shipment of DSR cards in connection with SAP shipments will be referred to IOC, ATTN: AMSIO-QAS.

Table 12-1
Sample Size and Acceptance Criteria for SAP and GRA

| Lot Size | Sample Size | DEFECTIVE | | | | | |
|---|---|---|---|---|---|---|---|
| | | Critical | | Major | | Minor | |
| | | Ac | Re | Ac | Re | Ac | Re |
| Lot size | | | | | | | |
| 5000 or less | 40 | 0 | 1 | 0 | 1 | 1 | 2 |
| 5001 - 20,000 | 80 | 0 | 1 | 1 | 2 | 3 | 4 |
| 20,001 or more | 120 | 0 | 1 | 2 | 3 | 4 | 5 |
| SAA lot size (up to . 50 Caliber): | 450 | 0 | 1 | 7 | 8 | 19 | 20 |
| Inner pack size (all items): | | | | | | | |
| 5000 or less | 40 | 0 | 1 | 0 | 1 | 1 | 2 |
| 5001 - 20,000 | 80 | 0 | 1 | 1 | 2 | 3 | 4 |
| 20,001 or more | 120 | 0 | 1 | 2 | 3 | 4 | 5 |
| Outer pack size (all items): | | | | | | | |
| 5000 or less | 40 | 0 | 1 | 0 | 1 | 1 | 2 |
| 5001 - 20,000 | 80 | 0 | 1 | 1 | 2 | 3 | 4 |
| 20,001 or more | 120 | 0 | 1 | 2 | 3 | 4 | 5 |

# CHAPTER 13
# PROPELLANT AND PROPELLING CHARGES

13-1. **Purpose.** This chapter provides methods for determining serviceability and chemical stability of nitrocellulose-based propellant and propelling charges.

13-2. **Scope.** The provisions of this chapter apply to all Army organizations that store bulk propellant, bulk-packed propellant components, or propelling charges, regardless of ownership. Proper use of this chapter will ensure safe storage/serviceability of:

a. "Standard propellant items"; i.e., those that have been assigned standard DODIC's and/or National Stock Numbers (NSN's);

b. Non-standard propellant items; i.e., those that have not been assigned standard DODIC's and/or NSN's;

c. Bulk propellant used in the loading of production quantities of cartridge cases and also used in the assembly of component charges for field service items, such as mortar increments;

d. Separate loading charges; and

e. Propellant derived (downloaded) from rework or demilitarization operations.

**-- WARNING --**

**Nitroester-based propellants can become thermally unstable as they age. The normal aging process of the propellants involves deterioration of the nitroester (such as nitrocellulose and nitroglycerin) with an accompanying generation of heat. At some point, the propellant may reach a state where heat is generated at such an accelerating rate that it cannot be dissipated. The accumulation of heat can lead to combustion (auto-ignition). Chemical stabilizers are added to these propellants to slow the aging process. In time, the stabilizer levels will drop to a point where the level of remaining effective stabilizer (RES) is not sufficient to prevent the accelerated rate of decomposition of the nitroester. When this point is reached, the propellant may autoignite, with possible catastrophic results to property and life. Monitoring the stability level of each propellant lot is essential for continued safe storage (see Table 13-2).**

**Each installation, or tenant organization claiming ownership, is responsible for managing its propellant stocks, to include local monitoring of current RES. The Propellant Management Guide, published by U.S. Army Defense Ammunition Center, Logistics Review & Technical Assistance Office, should be utilized in this effort. Any stabilized propellant lot in storage on any Army installation, regardless of ownership, with unknown RES is potentially hazardous, and must be reported to the surveillance office at IOC immediately. Any stabilized propellant lot in storage, regardless of ownership, which has exceeded its "Next-Test-Date", must be reported to surveillance office at IOC for immediate stability testing. Stabilized propellant in quantities less than the minimum recommended lot size per installation (see Table 13-3) should be issued immediately, or coordination made with the demilitarization office at IOC for destruction as soon as practicable. Continued monitoring of stability test results per lot is required until destruction is completed.**

**13-3. Definitions.**

a. Bulk Propellant. All types and models of granular, sheet, stick, flake, or ball propellant packaged in a bulk container, to be used in loading cartridge cases, for production of separate loading or separated propelling charges, or component charges, or for any other application where nitrocellulose-based propellant is required. Bulk propellant is usually assigned FSC 1376.

b. Bulk-packed components. Propellant components used in the assembly of complete rounds. Includes made-up charges or increments, such as bagged charges for howitzer ammunition; propellant-loaded cartridge cases, primed or unprimed; mortar increments in sheets, bags, or capsules; expelling or expulsion charges (loaded with other than black powder); and small rocket motor grains (rocket assist grains). Component charges are usually assigned FSC 1310, 1315, or 1340.

c. Complete Round. For the purposes of this chapter, a complete round comprises all components used to fire a weapon once, and can be loaded into the weapon as a single unit.

d. Separate-loading charges. Made up charges stored and issued as end items. Separate-loading charges are usually assigned FSC 1320.

e. Propellant Stability List. Printed and distributed annually in October, the list identifies all nitrocellulose-based Army propellant lots under test by the Army Propellant Surveillance Laboratory (APSL), U.S. Army TACOM-ARDEC, Picatinny Arsenal, N. J., with the latest stability data shown. The same information can be accessed on the IOC ammunition surveillance web site, and the information is updated continually (www.ioc.army.mil/ib/ibq/surv/gen/surv5.htm/).

f. Propellant Stabilizer. Chemical ingredient added to propellant in a sufficient quantity to neutralize the deterioration products of nitrocellulose and/or nitroglycerin, by slowing down nitrogen oxide (NOx) attacks. Adding the stabilizer lengthens the effective life of the propellant and prevents auto-ignition from occurring during normal use and storage. The stabilizer level must be periodically monitored via laboratory testing and analysis throughout the storage life of the propellant. Commonly used stabilizers are:

(1) Diphenylamine (DPA). Most commonly used in single-base (nitrocellulose) propellant.

(2) 2-Nitrodiphenylamine (2-NDPA). A stabilizer often used in double base (nitrocellulose and nitroglycerin) propellants. Often found in large grain rocket propellants.

(3) Ethyl Centralite (EC). Also called "Centralite I" or "Carbamite." Most commonly used in double- and triple-base (nitrocellulose, nitroglycerin, and nitroguanadine) propellants.

(4) Methyl Diphenylurea (MD). Also called "Centralite II" or Methyl Centralite." Used in double- and triple-base propellants.

(5) Akardite (AK). Further designated as Akardite I (similar to EC), Akardite II (similar to MD), or Akardite III. Used in both double- and nitramine-base propellants.

g. Thermal Stability / Instability. The auto-ignition of a propellant can occur when a propellant becomes thermally unstable. Nitroester propellants naturally decompose over time, with an attendant generation of heat. Heat, in turn, can increase the rate of the decomposition reactions, which leads to more heat. As the rate of heat generation accelerates, and as the heat is accumulated, the system may reach a point where combustion occurs. A system is said to be thermally stable if the heat generated by propellant decomposition can be removed from the system at least as rapidly as it is generated.

h. Surveillance Test. The Surveillance Test is one of the oldest test methods used to assess the thermal stability of nitrocellulosebased propellants. It is described in test method 407.1, MIL-STD-286, Propellants, Solid: Sampling, Examination and Testing. It is often referred to as the "65.6 degree C Oven Test," or the "Fume Test."

13-4. **Safety.** Safety precautions cited in Department of Army and Army Materiel Command regulations, and DA Pam 385-64, as applicable, will be observed by all personnel using the guidance in this chapter.

13-5. **Personnel.** Visual inspection, sample selection, and air testing of containers will be conducted by, or under the technical supervision of QASAS careerists. At those installations without an assigned QASAS, such as National Guard Camps supported in accordance with AR 5-9, the responsible QASAS should designate, in writing, a trained individual authorized to perform these functions. Questions and concerns will be brought to the attention of the responsible QASAS for resolution.

13-6. **Surveillance.** Surveillance of propellant falls into two categories: Visual inspections performed at storage and production activities, and Testing, which is conducted as part of the Stockpile Laboratory Test Program. Surveillance determination of serviceability will be based on visual inspection, air testing of propelling charge containers and chemical stability test. For bulk-stored propellant, the currency of the loading authorization, as reflected in Appendix I, TB 91300-385, will also be considered.

13-7. **Visual Inspection and Air Test.** Sample size and frequency will be in accordance with SB 742-1, chapter 2.

a. Bulk Propellant. Inspection will generally be limited to inner and outer packaging, although any unusual conditions noted concerning the physical state or odor of the propellant will be reported. If condition of packing, such as obvious structural damage or water damage, requires opening the container to determine extent of damage, the condition of the propellant and any other unusual condition will be noted in writing. Acceptance and rejection criteria will be in accordance with SB 742-1, chapter 2.

b. Separate Loading and Component Charges.

(1) Containers for separate loading charges selected for visual inspection will be air tested prior to opening and after closing. Perform air test in accordance with operational manual for APE 1052, Air Test Kit. If the samples test satisfactorily before opening, all containers in the lot are considered to be satisfactory. Containers which leak only after closing shall not be considered defective for lot evaluation, but shall be repaired or replaced before returning to storage. Damaged gaskets on sample containers must be replaced.

(2) Visual inspection will include all external surfaces of each increment, including surfaces where individual increments abut one another. The APE 1991 should be used to test the tensile strength of 155mm propelling charges. Condition of bags, stitching, wrappings, etc., will be noted. Details of visual inspection and classification of defects are contained in paragraph 13-7c, below. The least humid weather conditions possible should be selected to perform visual inspections and, if applicable, sample preparation. If the inspections must be performed during periods of high humidity, exposure time of the propelling charge should be kept to a minimum.

(3) M67 Propelling charges for 105mm cartridges may be manufactured with or without lead foil assembled to increment number 5. If visual inspection reveals the absence of lead foil, the ADC will be reviewed to verify lead carbonate as a component. Lead carbonate, an acceptable substitute for lead foil, is an integral part of the propellant grain and its presence cannot be determined by visual inspection. Component propellant lots (charges 3 through 7) beginning with lot RAD84C-070356 and all subsequent lots contain lead carbonate.

c. Classification of Defects. Table 13-1 lists defects for separate loading and component charges that supplement surveillance defect standards in chapter 2.

*TABLE 13-1*
*PROPELLANT DEFECTS CLASSIFICATION AND STANDARDS*

| CLASSIFICATION | METHOD OF INSPECTION | *DEFECT STANDARD |
|---|---|---|
| **CRITICAL:** | | |
| a. Cracked/broken igniter tube | a. Visual/"Manual" - non-ferrous rod | |
| b. Assembly damaged to the extent that Clean Burning Igniter (CBI) or Black Powder Igniter (BPI) can escape without force. | b. Visual | |
| c. Igniter charge assembly missing | c. Visual | |
| d. Increments cracked, tom or missing | d. Visual | |
| **MAJOR:** | | |
| a. Metal container lid gasket missing, out of place, damaged, or deteriorated | a. Visual | |
| b. Failure to pass airtest | b. Air test | b. DS-1 |
| c. Deteriorated propellant bag | c. Manual | c. DS-2 |
| d. Damaged propellant bag | d. Visual | d. DS-3 |
| e. Mlildew or moisture stain on propellant bag | e. Visual | |
| f. Caked igniter | f. Manual | |
| g. Improper/inadequate assembly | g. Visual | g. DS-4 |
| h. Missing components (packing, primer, igniter, etc) | h. Visual | |
| i. Container (metal, fiber, barrier bag, wood, etc., excluding separate loading propelling charge containers) deteriorated or damaged to extent requiring replacement. Perforation/tears in plastic liners of Ml Additive jacket are acceptable if jacket remains Secure to charge. | i. Visual | |
| j. Container for separate loading propelling charges deteriorated or damaged to extent requiring replacement | j. Visual | |
| k. Flash reducer assembly damaged to the extent that salt can escape without force | k. Visual | |
| l. Test plug missing | l. Visual | |
| m Torque test failure of plug | m. Visual | |
| n. Damaged threads on air sampling port | n. Visual | |
| o. Damaged threads on air sampling plug | o. Visual | |
| **MINOR:** | | |
| a. Paint coverage inadequate | a. Visual | a. DS-5 |
| b. Loose lacing/wrapping | b. Visual | |
| c. Container (metal, fiber, barrier bag, wood, etc.) deteriorated or damaged to extent requiring reconditioning | c. Visual | c. DS-5 |
| d. Any seam or opening incompletely stitched | d. Visual | |
| e. Marking missing, misleading or unidentifiable | e. Visual | |
| f. Evidence of poor workmanship | f. Visual | |
| g. Test plug not greased | g. Visual | |
| h. Container seal missing or incorrectly applied | h. Visual | |
| i. Cover incompletely engaged | i. Visual | |
| j. Unit not palletized in accordance with approved drawings | j. Visual | |
| **INCIDENTAL:** | | |
| a. Discolored propellant bag | a. Visual | a. DS-6 |
| b. Container for separate loading propelling charge deteriorated or damaged | b. Visual | b. DS-5 |

* Defect Standards:

DS-1 Metal container is to be tested at 3-5 PSI, using APE 1052, before opening for inspection and after replacing container cover. Container must be capable of maintaining constant pressure for 10 seconds. Visible decrease in pressure gage reading during the 10-second interval will classify container as defective.

DS-2 Propellant bag with loss of tensile strength is usually accompanied by cloth discoloration as follows:

(a) Brown spots on white silk bags.
(b) Orange spots on green silk bags.
(c) Blue spots on white cotton or rayon blend bags.

The APE 1991 should be used to test the tensile strength of 155mm propellant bags.

DS-3 Propellant bag damaged or incompletely stitched to extent propellant can escape.

DS-4 Stitches, bags, and seals shall be without breaks, tears, grease, or noticeable foreign matter. Increment is in improper order; i.e., charge five assembled where charge three should be.

DS-5 Separate loading propelling charge containers should be considered serviceable if all the following are true:

(a) Sample passes air test regardless of visual condition of lid gasket. Torn or cracked gaskets on samples must be replaced.

(b) Marking is legible.

(c) Rust has not progressed to major defect stage {see para. 2-7.c(2), chapter 2}.

Above criteria apply only to material in storage, and not to new production or to renovated material.

DS-6 Propellant bag discolored (see DS-2) without loss of tensile strength. Lots exhibiting this defect will receive priority of issue for training.

13-8. **Ammunition Stockpile Reliability Program (ASRP) Testing.** The ASRP for propellant contains two distinct Stockpile Laboratory Test programs: The Propellant Stability Program and the Propellant Reassessment Program.

13-9. **Propellant Stability Program (PSP).** This program monitors and analyzes stability levels and stabilizer trends of Army-managed propellant lots, in order to identify potentially unstable propellants in sufficient time to safely remove them from the stockpile through use or through demilitarization. The PSP is centrally administered by surveillance at HQ IOC, and consists of two subprograms: Master Propellant Program and Stockpile Propellant Program.

a. Master Propellant Program. Within six months after initial production, a sample of each bulk propellant lot produced, along with its description sheet, is sent to the appropriate surveillance organization specified in the contract documentation. The five-pound Army samples are sent to Headquarters, Army Armament Research, Development and Engineering Center (ARDEC) Propellant Laboratory, Attn: AMSTA-AR-WEE-E (bldg. 938), Picatinny Arsenal, NJ. Samples are monitored throughout the life of the propellant, and Master Sample stabilizer trending is compared with field-stored propellant stabilizer trends.

(1) if any Master Sample lot's test results are stability category "D," a worldwide suspension of that specific lot stored in bulk form, as well as any components or separate loading propelling charges containing the suspended lot, will be initiated via a NAR, directing treatment within 60 days. Note that these suspension actions will not usually apply to propellant uploaded into fixed or semi-fixed rounds.

(2) A Master Sample with test results of stability category "C" will be compared with field sample results of that lot. Field samples from that lot (index) from all Army storage locations visible on the worldwide ammunition reporting system (WARS) will be sent to ARDEC. This additional testing may determine if any stabilizer trend anomalies exist in the lot stockpile. Worldwide disposition of the lot (index) will then be made. If additional testing confirms stabilizer trending anomalies, the lot will be reported on a NAR. The lot will be offered for Resource Recovery and Recycling (R3) disposal to a government or commercial receiver. Category "C" propellant lots on hand after one year will be re-tested. If the retest shows the lot has not yet deteriorated to category "D," it will be treated within 6 months. If the RES has dropped to category "D," it will be treated within 60 days.

(3) Notification of munitions suspension/restriction/release for Army account propellant will be managed in accordance with TB 91300-385. The Single Manager for Conventional Ammunition (SMCA) activities are required per DOD 5160.65M to apply TWO24-AA-ORD-010 to all Navy, Marine Corps, and Coast Guard-owned assets. The TWO24-AA-ORD010 provides a listing of suspended, limited use, and unserviceable ammunition and propellant. Temporary suspensions apply to all services; permanent suspensions apply to the owning service only, and to the owning service's assets that were transferred to Army demilitarization accounts.

**NOTE**

**Immediate demil directives disseminated by the Navy on Navy-specific bulk propellant or bulk-packed component charges will not apply to Navy propellant configured as fixed / semi-fixed munitions for weapon systems smaller than 5 inch (127mm), once the item is transferred to an Army demilitarization account. Army historical experience has demonstrated that potentially unstable propellant will not auto ignite when stored in small quantities, such as quantities found in ammunition items of gun systems smaller than 5 inches (127mm) diameter.**

b. Stockpile Propellant Program (SPP). The SPP program tests fielded Army propellant assets to assure that environmental effects are accounted for in determining their safe storage condition. All testing under this program is performed by the Propellant Surveillance Laboratory at Headquarters, ARDEC, Attn: AMSTA-AR-WEE-E, Picatinny Arsenal, NJ. The SPP test frequencies vary depending on propellant type, lot history and chemical stability. Propellant Surveillance Laboratory testing at ARDEC compares field sample test results with master sample test results. The laboratory also performs the Safe Interval Prediction Test (SIP) for each propellant lot, which is used to establish a Field Retest Date for every lot in the SPP. The SPP includes bulk propellant, bulk-packed components, and separate loading charges. The following items are not included in the SPP and will not be tested unless specifically directed by the surveillance office at IOC:

(1) Propellant assembled to complete rounds; i.e., mortar, fixed, semi-fixed, or separated ammunition.

(2) Propellant components when assembled as part of a projectile; i.e., expelling / expulsion charges and rocket assist grains.

(3) Rocket propellant (except rocket assist grains for artillery projectiles).

(4) Any high explosive or propellant ingredient not chemically stabilized; i.e., black powder, RDX, TNT.

(5) Liquid propellant.

(6) LOVA propellant.

(7) Propellant with lost lot identity (see para. 13-12).

(8) Combustible container components

**NOTE**

**All stabilized propellant lots stored on an Army installation, and not specifically excluded above, are part of the SPP (see paragraph 13-14). All stabilized propellant NOT assembled to a complete round, regardless of how it is stored, is part of the SPP. Bulk propellant and component items containing propellant are included in the SPP prior to loading into complete rounds, and the remaining quantities from the lot not uploaded remain in the program for future, periodic testing.**

**NOTE**

**If the entire worldwide quantity of a specific propellant lot is assembled into complete rounds, that specific lot is not part of the SPP and, therefore, is not undergoing periodic testing. It is imperative, therefore, that before any propellant lot is downloaded (removed) from an end item, its current stability be determined through stability testing of a sample. All propellant downloading performed as part of maintenance or demilitarization of the end item will be coordinated in writing with surveillance at IOC before commencing the operation. Lot integrity of the downloaded propellant lot, along with its current stability, will be maintained on record if the lot is to be bulk-stored for any period after downloading. Downloaded propellant that is being bulk-stored and marketed for sale must be physically removed from the installation after sale. Downloaded propellant should be scheduled for reuse, destruction, or transfer to a third party owner within one year of generation (see paragraph 13-11).**

(a.) At the beginning of each FY, IOC surveillance office will determine the specific candidate lots for SPP testing that FY. A list of candidate lots will be sent by electronic or hard copy memorandum from the surveillance office at IOC to specific installations, to determine the availability of samples.

(1) Prior to the shipment of any propellant lot, the applicable DSR will be reviewed for availability of the current stability category, the date of the last test, and the date of the next test. If the DSR does not reflect current information, the local QASAS should consult either the propellant stability database or the surveillance office at IOC.

(2) Installations will retain requested samples in condition code "D." Samples in CC-H at time of request will be retained in CC-H. Sample quantities will be obligated for shipment to the test facility at ARDEC. Parent lot quantities will be retained in the current condition code and may be issued, pending receipt of sample test results.

(b.) Requested samples will be selected and prepared for shipment to ARDEC in accordance with appendix AC, this SB. A complete copy of the DSR card will accompany each lot shipped. DA Form 984 (Munitions Surveillance Report) is not required for sample propellant lots. Material Release Orders (MRO) for shipment of samples will usually be issued by the supply item managers at IOC. Installations not in receipt of MRO's within 14 days of RDD should contact the surveillance office at IOC by telephone and by e-mail, for resolution.

(c.) After completion of testing from a test code group, the ARDEC laboratory will report the results to the IOC surveillance office. The propellant stability database maintained at IOC will be updated, and the test results forwarded by the IOC surveillance office to the installation from which the lot samples were drawn. The installation QASAS will annotate the results on the local DSR. IOC will transmit a NAR for any Army propellant lot in stability category "C" or "D."

**NOTE**

**Any stability-related suspensions or restrictions of Army bulk propellant or bulk-pack components will NOT apply to propellant configured as a component of fixed, semi-fixed, or separated munitions, for gun systems less than 5 inches (127mm) diameter. For example, an Army NAR directing the disposal of M67 (105mm) charge lot "X" because of category "D" stabilizer would apply to the bulk-stored M67 charge lot "X," but would not apply to the M67 charge lot "X" that is uploaded in the round. The Army considers propellant that is uploaded into Army owned complete rounds as incapable of auto-ignition, regardless of the stabilizer category of the uploaded propellant lot. If the subject M67 propellant lot "X" is downloaded (removed) from the end item, the stabilizer-related suspension will apply. If the subject M67 propellant lot "X" were ever downloaded in the future, it would not be bulk-stored for any period of time, but would be disposed of immediately (preferably weekly), to prevent possible auto-ignition.**

*TABLE 13-2*
*PROPELLANT STABILITY CATEGORY CODES*

| STABILITY CATEGORY | PERCENT EFFECTIVE STABILIZER |
|---|---|
| A | 0.30 OR MORE |
| C | 0.29 - 0.20 |
| D | LESS THAN 0.20 |

**NOTE: For propellant that is a loaded component of ammunition items for gun systems less than 5 inches (127MM) diameter, or for propellant in component items (expelling charges, mortar increments, etc.) that are uploaded into end items and NOT stored in bulk-pack configuration, NO action will be taken regarding the disposition actions described below for category C and D. Propellant stability data for such material may be entered on the end item DSR card for information purposes, at storing installation's discretion.**

A - Tolerable stabilizer loss. Lot has unlimited storage life.

C - Significant stabilizer loss. Lot does not represent an immediate hazard, but may reach a hazardous stabilizer level within 1 year. Loss of stabilizer does not adversely affect functioning in an uploaded configuration. Disposition instructions will be furnished by NAR. All stability category "C" assets on the installation must be reported in writing to the surveillance office at IOC. Report may be sent by fax, by message, or by e-mail.

BULK PROPELLANT and BULK-PACKED COMPONENT lots will be offered for Resource Recovery and Recycling as soon they become stability category "C." One year after becoming stability category "C," a sample of the bulk propellant lot or the bulk-packed component lot will be retested. If the lot has not deteriorated to category "D," it will be treated within 6 months. If the lot has degraded to category "D," it will be treated within 60 days.

SEPARATE LOADING PROPELLING CHARGES should be issued to preclude loss of assets. One year after becoming stability category 'C," a sample from the lot will be retested. If the lot has not deteriorated to category "D," it will be treated within 6 months. If the lot has degraded to category "D," it will be treated within 60 days.

D - Hazardous stabilizer loss. Lots identified as stability category "D" present a potential safety hazard and are unsafe for continued storage as bulk, bulk-packed components, or as separate loading propelling charges. The risk of auto-ignition of propellant in stability category "D" increases with time. The thermal stability decreases as the loss of the propellant's RES continues to increase. Bulk propellant, bulk-packed components, and separate loading propelling charges will be locally treated within 60 days after notification of category "D" status. When the lots are treated, written notification will be made to the surveillance office at IOC, which will forward the notification to the IOC Demilitarization Offices. If the 60-day demilitarization suspense cannot be met under any circumstance, local commanders will elevate this critical shortfall through their chain-of command. Notification will also be sent to the surveillance office at IOC.

SOUTHWEST ASIA (SWA) "Y" LOTS Stability test results for SWA "Y" lots will apply to the basic (non-SWA) lot as well, and vice versa.

13-10. **Propellant Reassessment Program (PRP).** This program involves the test and evaluation of stored propellant to determine the functional serviceability prior to loading into a major item. It does not apply to items intended exclusively for Research, Development, Test, Evaluation (RDTE). Whenever possible, the oldest propellant lot(s) will be selected for the PRP. HQ IOC is responsible for the final determination of functional serviceability of bulk propellant and component charges under the PRP, and the IOC surveillance office is responsible for providing the notification of loading authorization through the AIN system. Appendix I, TB 9-1300-385, lists all propellant lots with a current loading authorization, and the expiration date of that authorization. The functional serviceability will be determined by either a laboratory reassessment test or a laboratory / ballistic test combination. Sample selection and shipment will be in accordance with appendix AC, this SB, unless otherwise directed. Laboratory reassessment tests will be performed only when an actual need for the propellant exists. Propellant classified as "Master" or "Reference" lots are exempt from the PRP requirements in this bulletin. Bulk propellant and bulk-packed component charges having a current loading authorization, and otherwise serviceable, will be classified CC-A; those otherwise serviceable lots without a current loading authorization will be classified CC-D.

a. Advance planning is essential to assure sufficient lead-time for the completion of testing. Request for reassessment testing of field service stocks will be coordinated with the IOC supply item manager and the surveillance office at IOC no later than 120 days before the loading is to commence, and will contain:

(1) Lot number and NSN of propellant / propelling charge requiring reassessment;

(2) estimated start date of project requiring reassessed lot(s);

(3) NSN, lot number(s), and quantity of material to be reworked.

At the discretion of the program manager at IOC, reassessment tests will use either the laboratory at Radford or the laboratory at ARDEC (see app. AC). The laboratory must be in possession of the propellant samples no later than 60 days before the maintenance project is to commence.

b. Ballistic testing at a proving ground will be performed as required by the surveillance office at IOC.

c. Loading authorizations are issued at time of initial acceptance, and are provided via AIN for reassessments performed in accordance with the requirements of the PRP. Expiration dates of initial acceptance and reassessment are based on the following: (1) Propellant compositions M5, M10, M26, and M26E1 are valid for 2 years, regardless of pack; (2) Other types stored in metal or metal-lined wood containers (level A) are valid for 5 years; (3) Other types stored in fiber drums are valid for 2 years.

d. The expiration date of the loading authorization for the lot will be annotated on the DSR and will be on the shipping documents. All applicable propellant lots with a current loading authorization will be listed in appendix I of the latest edition of the TB 9-1300-385, or in the IOC Surveillance web page.

e. If a propellant lot's loading authorization expires during a maintenance program, a GS-12 QASAS from the servicing ammunition surveillance organization may permit an extension. This loading authorization extension can be granted for up to 180 days to allow completion of the active maintenance program under which the reassessment was requested. Otherwise, lots with expired loading authorizations cannot be loaded until reassessed.

f. All OCONUS shipments of bulk propellant or component charges will be cleared through the surveillance office at IOC, and only CC-A material will be approved for shipment. Material to be shipped must be in support of an upcoming or on-going maintenance operation, and material shipped must have a minimum of nine months remaining on the loading authorization upon arrival OCONUS.

13-11. **Reclaimed/Derived Propellant.** Written coordination with the surveillance office at IOC will occur before the start of any operation generating bulk propellant. Propellant will not be downloaded as part of a maintenance or demilitarization project until the following two steps occur:

a. The local QASAS and the surveillance office at IOC review the storage history of each end item lot, looking for records of extended temperature or moisture extremes in storage that might have negatively impacted the propellant;

b. A sample of each propellant lot to be downloaded is tested at the Propellant Surveillance Laboratory, ARDEC, or other, equally competent laboratory. In lieu of testing, the propellant can be downloaded if the quantity downloaded is demilitarized expeditiously. Both propellant that tests cat "D" and untested propellant should be destroyed weekly, but will be destroyed at least every 60 days.

**NOTE**

**Propellant lots that have been determined by the surveillance office at IOC to be potentially hazardous to retain in storage, regardless of stability category, will be destroyed within 60 days after download. Factors to be considered in this regard would be extended high-temperature and/or high-moisture storage, which might cause inhomogeneity and, thus, make test results suspect. All other category "A" or "C" downloaded propellant may remain in storage for up to one year, after which each propellant lot must be scheduled for reuse, destruction, or transfer to third party owner(s). Propellant downloaded from mortars will not be bulk-stored, but will be demilitarized at least weekly during the operation.**

13-12. **Lost Lot Identity.** Propellant lots with lost lot identity cannot be tested to determine current level of stabilizer, since the specific propellant index cannot be identified. Therefore, these lots represent a potential safety hazard. Propellant with lost lot identity will not be retained in storage in any account. Propellant with lot numbers "MIXED," "UNKNOWN," "NONE," as part of the lot number will be locally demilitarized within 60 days of discovery. These efforts will be coordinated in writing with the surveillance office at IOC, which will further coordinate with the IOC Demilitarization Offices.

13-13. **Minimum Lot Size.** Installations are responsible for managing their propellant stocks. Table 13-3 establishes a recommended minimum lot size per installation for retention.

*TABLE 13-3*
*PROPELLANT MINIMUM LOT SIZE**

| WEAPON SYSTEM | PROPELLANT CHARGES OR INCREMENTS |
|---|---|
| 105MM | 100 propelling charges |
| 155MM | 50 propelling charges |
| 60MM | 1200 increments |
| 81MM | 2400 increments B |
| | 300 increments A |
| 4.2 INCH | 7500 full increments |
| | 300 half-increments |
| 120MM | 1200 donut increments |
| BULK PROPELLANT | 50 pounds |

* Since performing stability tests on very small lots is not economically feasible, lot quantities less than the above should be transferred to CC-H, and disposition instructions obtained from HQ IOC. Organizations retaining less than 50 pounds per lot of bulk propellant for "special" projects will continue to monitor for stabilizer content. Lots retained for "special" projects, regardless of quantity, must be tested and the storing installation will ensure IOC surveillance is provided annual visibility by list each March.

13-14. **Reporting Requirements of Stabilized Propellant.** During periodic reviews of propellant lots in storage against the propellant stability list, local QASAS will ensure that stability information is current for each reviewed lot._ Any presumed errors that are noted in the propellant stability list will be immediately reported to the surveillance office at IOC.

a. Bulk propellant, bulk-packed components, and separate loading charges in storage in government owned facilities, and not reported via the Worldwide Ammunition Reporting System (WARS), will be reported to the surveillance office at IOC in accordance with the requirements of IOC Regulation 702-2. This reporting requirement will ensure that both the surveillance office at IOC and the local surveillance office have the latest stability test results for all non-WARS propellant inside the installation boundary that is in a configuration capable of auto-ignition (e.g. bulk packaged, separate loaded charges, etc.). Current stabilizer visibility must be maintained for all propellant lots stored on each government installation. The QASAS having direct oversight responsibilities at installation(s) not reporting propellant assets via the WARS will ensure the timely submission each March of the following data:

(1) NSN / DODIC

(2) Propellant Lot Number / Index number

(3) Quantity (pounds, charges, increments, etc.)

(4) Stability Category

(5) Date of Last Stability Test

(6) Gov't owned / non-gov't owned (indicate which)

b. Storage of propellant declared "excess" by IOC will not exceed two years at installations lacking non-emergency demil capability (without written notification of the surveillance office at HQ IOC).

13-15. **Propellant on Prepositioned (PREPO) Ships.** A listing of candidate propellant lots to be considered for storage aboard PREPO ships will be transmitted by a representative of the War Reserve Support Command (AWRSPTCMD) to the surveillance office at IOC for review.

a. Each propellant lot selected for PREPO storage must meet all the following criteria:

(1) Must have had a PI within 12 months of selection;

(2) must have had a stability test performed at ARDEC within past three years;

(3) must be in stability category "A";

(4) must have retest date interval of at least five years forward.

b. A lot will not be selected for PREPO storage unless current test results support a minimum of five years' safe shipboard storage.

c. No later than sixty days before the PREPO vessel returns to Concord, Sunnypoint, or other site for maintenance and inspections, the AWRSPTCMD representative will submit a listing to the IOC surveillance office of all propellant lots aboard the subject PREPO vessel. The surveillance office at IOC will direct that a sample from each lot not tested at ARDEC within the past three years be sent to the Propellant Surveillance Laboratory at ARDEC for stability tests, as part of the SPP.

13-16. **Safety Surveillance of Navy Gun Propellant.** This program applies to Navy-developed propellant, and is centrally administered by Gun Systems Branch at the National Center for Energetics, Indian Head Division, Indian Head, MD 20640. The Navy performs safety surveillance of gun propellant in a program that parallels that of the Army. The Navy relies heavily upon Fume Tests of master samples. It applies the results of fume test failures to the propellant lot in bulk and to the end item into which the propellant lot is assembled. Fume test failures are reported via a permanent Navy NAR, as a supplement to TWO24-AA-ORD010.

**NOTE**

**Since the Army is DOD's single manager for demilitarization, condemned Navy-developed materiel will be transferred to Army ownership for demilitarization. Once under Army ownership and control, most of the propellant stability management practices described in this chapter for Army propellant will prevail. One exception being that instead of performing stabilizer tests on Navy-developed propellant lots in Army demil accounts, the Army relies on the Navy's ongoing fume test results to determine continued safe storage of those propellant lots. Each installation must ensure that all Navy-developed propellant lots in its demilitarization account are undergoing Navy fume testing. When appropriate, the storage time of Navy-developed propellant may be extended by relying upon the Surveillance Test, in accordance with appendix F, SMCA Manual, DoD 5160.65M**

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# APPENDIX A
# REFERENCES

## A-1. DEPARTMENT OF DEFENSE PUBLICATIONS

| | |
|---|---|
| DOD 5100.76 | PHYSICAL SECURITY OF SENSITIVE CONVENTIONAL ARMS, AMMUNITION AND EXPLOSIVES |
| DOD 5160-65 | SINGLE MANAGER FOR CONVENTIONAL AMMUNITION |
| DOD 6055.9 | AMMUNITION AND EXPLOSIVES SAFETY STANDARDS |

## A-2. MILITARY STANDARDS

| | |
|---|---|
| MIL STD 129 | MARKING FOR SHIPMENT & STORAGE |
| MIL STD 1167 | AMMUNITION DATA CARDS |
| MIL STD 1168 | AMMUNITION LOT NUMBERING |
| MIL STD 1461 | AMMUNITION MANUFACTURERS AND THEIR SYMBOLS |

## A-3. MILITARY HANDBOOKS

| | |
|---|---|
| MIL-HDBK-138 | CONTAINER INSPECTION HANDBOOK FOR COMMERCIAL AND MILITARY INTERMODIAL CONTAINERS |

## A-4. ARMY REGULATIONS

| | |
|---|---|
| AR 5-9 | INTRASERVICE SUPPORT INSTALLATION AREA COORDINATION |
| AR 25-50 | PREPARING & MANAGING CORRESPONDENCE |
| AR 55-355 | DEFENSE TRAFFIC MANAGEMENT REGULATION |
| AR 75-1 | MALFUNCTIONS INVOLVING AMMUNITION AND EXPLOSIVES |
| AR 190-11 | PHYSICAL SECURITY OF ARMS AMMUNITION AND EXPLOSIVES |
| AR 385-60 | COORDINATING WITH THE DEPARTMENT OF DEFENSE EXPLOSIVE SAFETY BOARD |
| AR 385-62 | REGULATIONS FOR FIRING GUIDED MISSILE AND HEAVY ROCKETS FOR TRAINING, TARGET PRACTICE AND COMBAT |
| AR 385-63 | POLICIES AND PROCEDURES FOR FIRING AMMUNITION FOR TRAINING, TARGET PRACTICE AND COMBAT |
| AR 385-64 | AMMUNITION AND EXPLOSIVE SAFETY STANDARDS |
| AR 385-65 | IDENTIFICATION OF INERT AMMUNITION AND AMMUNITION COMPONENTS |
| AR 690-950-20 | CIVILIAN CAREER PROGRAM FOR QUALITY ASSURANCE SPECIALIST (AMMUNITION SURVEILLANCE) |
| AR 700-13 | WORLDWIDE AMMUNITION REVIEW AND ASSISTANCE PROGRAM |
| AR 700-20 | AMMUNITION PECULIAR EQUIPMENT PROGRAM |
| AR 702-6 | AMMUNITION STOCKPILE RELIABILITY PROGRAM |
| AR 702-12 | QUALITY ASSURANCE SPECIALIST (AMMUNITION SURVEILLANCE) |
| AR 710-2 | SUPPLY POLICY BELOW-THE WHOLESALE LEVEL (SUPPLY UPDATE) |
| AR 725-50 | REQUISITION & ISSUE OF SUPPLIES & EQUIPMENT |
| AR 740-1 | STORAGE AND SUPPLY ACTIVITIES |

A-5. DEPARTMENT OF ARMY PAMPHLETS

| | |
|---|---|
| DA PAM 385-64 | AMMUNITION AND EXPLOSIVES SAFETY STANDARDS |
| DA PAM 710-2-1 | USING UNIT SUPPLY SYSTEM (SUPPLY UPDATE) |
| DA PAM 710-2-2 | SUPPLY SUPPORT ACTIVITY SUPPLY SYSTEM (SUPPLY UPDATE) |
| DA PAM 738-750 | ARMY MAINTENANCE MANAGEMENT SYSTEM (MAINTENANCE UPDATE) |

A-6. TECHNICAL BULLETINS

| | |
|---|---|
| TB 9-1300-385 | MUNITIONS SUSPENDED OR RESTRICTED |

A-7. TECHNICAL MANUALS

| | |
|---|---|
| TM 9-1300-200 | AMMUNITION, GENERAL |
| TM 9-1300-206 | AMMUNITION AND EXPLOSIVES STANDARDS |
| TM 9-1300-214 | MILITARY EXPLOSIVES |
| TM 9-1300-250 | AMMUNITION MAINTENANCE |
| TM 38-250 | PREPARING HAZARDOUS MATERIALS FOR MILITARY AIR SHIPMENT |
| TM 43-0001-27 | ARMY AMMUNITION DATA SHHETS FOR SMALL CALIBER AMMUNITION |
| TM 43-0001-28 | ARMY AMMUNITION DATA SHEETS FOR GUNS, HOWITZERS, MORTARS RECOILLESS RIFLES, GRENADE LAUNCHERS AND ARTILLERY FUZES |
| TM 43-0001-29 | ARMY AMMUNITION DATA SHEETS FOR GRENADES |
| TM 43-0001-30 | ARMY AMMUNITION DATA SHEETS FOR ROCKET SYSTEMS, ROCKET FUZES AND ROCKET MOTORS |
| TM 43-0001-36 | ARMY AMMUNITION DATA SHEETS FOR LAND MINES |
| TM 43-0001-37 | ARMY AMMUNITION DATA SHEETS FOR MILITARY PYROTECHNICS |
| TM 43-0001-38 | ARMY AMMUNITION DATA SHEETS FOR DEMOLITION MATERIALS |
| TM 43-0001-39 | ARMY AMMUNITION DATA SHEETS FOR CARTRIDGES, CARTRIDGE ACTUATED DEVICES AND PROPELLANT ACTUATED DEVICES |
| TM 43-0001-47 | ARMY AMMUNITION DATA SHEETS FOR AMMUNITON PECULIAR EQUIPMENT |

A-8. FIELD MANUALS

| | |
|---|---|
| FM 9-6 | MUNITIONS SUPPORT IN THEATER OF OPERATIONS |
| FM 9-38 | CONVENTIONAL AMMUNITION UNIT OPERATIONS |

A-9. SUPPLY BULLETINS

| | |
|---|---|
| SB 742-1300-94-895 | PROPELLANT AND PROPELLING CHARGES AMMUNITION SURVEILLANCE PROCEDURES |
| SB 742-1305-94-20 | SMALL ARMS AMMUNITION TRACE TESTING |

A-10. ARMY MATERIEL COMMAND REGULATIONS

| | |
|---|---|
| AMCR 385-100 | SAFETY MANUAL |
| AMCR 700-107 | PREPARATION OF STANDING OPERATING PROCEDURES FOR AMMUNITION OPERATIONS |

A-11. DRAWINGS

| | |
|---|---|
| DWG 1948-75-5 | INDEX OF U.S. ARMY UNITIZATION, STORAGE, AND OUTLOADING DRAWINGS FOR AMMUNITION AND COMPONENTS |

## APPENDIX B
## DSR Card Automation

### B-1. General

a. Installations with the automated capability to append electronically transmitted DSR cards to their appropriate database systems include (but is not limited to) those listed in Table B-l. Electronic transmission of DSR cards is defined as forwarding a DSR card, which has been formatted according to the criteria in paragraph B-2, by EMAIL, 5-25" disk (high or low density), or 3.5" disk (high or low density).

Table B-1. Installations with Automation Capability

| Installation | Installation |
|---|---|
| 17th Ordnance Company | Fort McCoy |
| 65th Ordnance Company, SAACT #3 | Fort Polk |
| Aberdeen Proving Ground | Fort Stewart |
| ARCENT Training & Security, Kuwait | Picatinny Arsenal |
| Crane Army Ammunition Activity | Pine Bluff Arsenal |
| Dugway Proving Ground | Savanna Army Depot |
| Fort Bragg | Seneca Army Depot |
| Fort Campbell | U.S. Army, Pacific |
| Fort Drum | U.S. Army Spt Command, HI |
| Fort Hood | White Sands Missile Range |
| Fort Hunter Liggett | Yakima Training Center |
| Fort Leonard Wood | |

b. Electronic distribution of DSR cards between installations with the requisite capability meets the distribution requirements of para 12-4. Manual distribution of ammunition data cards to all locations and printed copies of an automated DSR card to installations without automation capability is still required according to para 12-4.

c. Conversion of an automated DSR card database back to a manual system is not authorized without approval from the appropriate major command.

### B-2. Format for electronic transmission of a DSR card,

a. Each data field will consist of printable charcters (ASCII text) and have all trailing blanks removed.

b. The beginning and end of each field will be delimited with a "I" character (ASCII code 124) followed by a line feed (ASCII code 10) after the 2nd "I".

c. To minimize problems with electronic mail systems, operating systems, and different video terminals, each field with a width greater than 80 characters (after trailing blanks have been removed) will be reformatted by replacing the last blank character before the 80th

column, and each line thereafter, with a line feed (ASCII code 10). These line feeds will be converted back to a blank character during the DSR card appending process.

d. The number of DSR cards in the file will be identified just prior to the beginning of the first DSR card. Identification will be the phrase "DSRNUM: 000" followed by a line feed. The number of DSR cards should be a three digit number (zero-filled).

e. Each DSR card will consist of a DSR card header and Ammunition Data Card information (identified by "BEGIN OOO"), inspection remarks (identified by "INSP 000") and lot component data (identified by "COMP 000" 1. The numerical field will be a zero filled three digit number (001, 002, etc.). There may only be one DSR card header for each DSR card but there may be multiple inspection remarks or lot component data.

f. Any field that is not used or is blank will be represented by 1 blank character (i.e. "| |". All numeric fields will be zero-filled (i.e., “1” in a 3-digit numeric field should be represented as “001”).

g. The required fields for the DSR card header are listed in Table B-2; inspection remarks are listed in Table B-3; and component data are listed in Table B-4. All fields are listed in the proper order they would appear in the electronic file. Figure B-1 provides a copy of a sample electronic DSR Card File.

Table B-2. DSR Card Header Fields

| Field Name | Maximum Length | Format |
|---|---|---|
| National Stock Number | 13 | Text |
| Lot Number | 20 | Text |
| Alternate Lot/Serial Number | 20 | Text |
| Date of Manuafacture | 4 | YYMM |
| Shelf Life Expiration | 4 | YYMM |
| Manufacturer | 40 | Text |
| Quantity Manufactured | 10 | Text |
| Contractor | 20 | Text |
| Contract Number | 20 | Text |
| Drawing Number | 20 | Text |
| Drawing Revision | 10 | Text |
| Military Specification | 20 | Text |
| Date Started | 8 | MM/DD/YY |
| Date Completed | 8 | MM/DD/YY |
| Date Inspected | 8 | MM/DD/YY |
| Maintenance Line | 10 | Text |
| Zone Weight | 10 | Text |
| Charge Weight | 10 | Text |
| Index of Powder | 10 | Text |
| MPD | 10 | Text |
| PPDR | 10 | Text |
| Muzzle Velocity | 10 | Text |
| Pressure | 10 | Text |
| Shell Weight | 10 | Text |
| Test Samples | 10 | Text |
| Sent To | 10 | Text |
| Date and Mode | 20 | Text |
| Disposition | 60 | Text |
| Inspector's Name | 20 | Text |
| ADC Remark | 500 | Text |
| DODIC | 4 | Text |
| Nomenclature | 230 | Text |
| Dot Nomenclature | 150 | Text |
| UN Number | 6 | Text |
| Shipping Name | 300 | Text |
| Shipping Labe | 14 | Text |
| Packaging | 150 | Text |
| Package Weight | 10 | Text |
| Package Cube | 10 | Text |
| Explosive Weight | 9 | Text |
| DOT Class | 10 | Text |
| CG Class | 10 | Text |
| Storage Compatibility Group | 8 | Text |
| Security Code | 1 | Text |
| Service Life | 4 | Text |

Table B-3. Inspection Remark Fields

| Field Name | Maximum Length | Format |
|---|---|---|
| Inspection Date | 8 | MM/DD/YY |
| Inspection Type | 5 | Text |
| Condition Code | 1 | Text |
| Inspection Category | 1 | Text |
| Security Assistance Prgm Code | 1 | Text |
| Storage Location | 20 | Text |
| Number of Samples | 3 | Numeric |
| Number of Boxes | 3 | Numeric |
| Inspection Reference | 60 | Text |
| Inspection Remark | 5,000 | Text |
| Defect Code #1 | 6 | Text |
| Defect Code #2 | 6 | Text |
| Defect Code #3 | 6 | Text |
| Defect Code #4 | 6 | Text |
| Defect Code #5 | 6 | Text |
| Inspection Installation | 15 | Text |

Table B-4. Component Fields

| Field Name | Maximum Length | Format |
|---|---|---|
| Component Description | 20 | Text |
| Component Drawing | 20 | Text |
| Component Model Number | 10 | Text |
| Component Manufacturer | 20 | Text |
| Component Date of Manufacture | 8 | MM/DD/YY |
| Component Lot Number | 20 | Text |
| Component Quantity | 9 | Text |

Figure B-1. Sample DSR Card File for Electronic Transmission

```
DSRNUM: 002\n          # TWO DSR CARDS MAKE UP THIS FILE
BEGIN: OO1\n           # IDENTIFIES THE BEGINNING OF THE FIRST DSR CARD
|1305001234567|\n      # NSN
|LC-1-10|\n            # LOT
| |\n                  # ALTERNATE LOT
|8901|\n               # DATE OF MANUF
|9001|\n               # SHLIFE LIFE EXPIRATION DATE
|LAKE CITY AAP|\n      # MANUFACTURER
|1000|\n               # QUANTITY MANUFACTURED
|LAKE CITY|\n          # CONTRACTOR
|1019-84-1002|\n       # CONTRACT NUMBER
87454433|\n            # DRAWING NUMBER
REV B|\n               # DRAWING REVISION
MIL-C-100B|\n          # MIL-SPEC
|08/O1/89|\n           # DATE STARTED
|09/01/89|\n           # DATE COMPLETED
|10/01/89|\n           # DATE INSPECTED
| |\n                  # MAINTENANCE LINE
| |\n                  # ZONE WEIGHT
| |\n                  # CHARGE WEIGHT
| |\n                  # INDEX OF POWDER
| |\n                  # MPD
| |\n                  # PPDR
| |\n                  # MUZZLE VELOCITY
| |\n                  # PRESSURE
| |\n                  # SHELL WEIGHT
| |\n                  # TEST SAMPLES
| |\n                  # SENT TO
| |\n                  # DATE AND MODE
|NONE|\n               # DISPOSITION
|JOHN SMITH|\n         # INSPECTOR'S NAME
|NONE|\n               # ADC REMARK
|A123|\n               # DODIC FOLLOWED BY NOMENCLATURE
|SMALL ARMS AMMUNITION, 5.56-MM, 20 ROUNDS CARDBOARD BOX, 20 CARDBOARD
BOXES\n METAL CAN, 2 METAL CAN (800 ROUNDS) WIREBOUND BOX.|\n
|SMALL ARMS AMMUNITION|\n   # DOT NOMENCLATURE
|2|\n                  # UN NUMBER
| |\n                  # SHIPPING NAME
| |\n                  # SHIPPING LABEL
| |\n                  # PACKAGE
|23 LBS|\n             # PACKAGE WEIGHT
|1.0 CU FT|\n          # PACKAGE CUBE
|1.111|\n              # EXPLOSIVE WEIGHT
|C|\n                  # DOT CLASS
|1|\in                 # CG CLASS
|1.4S|\n               # STORAGE COMPATIBILITY GROUP (SCG)
```

NOTES:

1. Linefeeds (\n) are identified for convenience.
2: Comments are identified with the "#" symbol and are not part of the actual text file.

Figure B-1. Sample DSR Card File for Electronic Transmission.

```
|2|\n                  # SECURITY CODE
| |\n                  # SERVICE LIFE
INSP 002               # BEGINNING INSPECTION REMARKS
|09/01/89|\n           # INSPECTION DATE
|PI|\n                 # INSPECTION TYPE
|A|\n                  # CONDITION CODE
|W|\n                  # INSPECTION CATEGORY
|7|\n                  # SECURITY ASSISTANCE CODE
|A101|\n               # STORAGE LOCATION
|020|\n                # NUMBER OF SAMPLES
|020|\n                # NUMBER OF BOXES
|SB 742-1|\n           # INSPECTION REFERENCE FOLLOWED BY INSPECTION
                         REMARK OUTER PACK: 20% WITH BROKEN BANDING.
                         REQUIRES REPAIR/REPLACEMENT PRIOR\n
                         TO SHIPMENT. INNER PACK: NO DEFECTS NOTED.
                         ITEM: NO DEFECTS NOTED.|\n
|C018AB|\n             # DEFECT CODE 1
|C018AC|\n             # DEFECT CODE 2
|C018AD|\n             # DEFECT CODE 3
| |\n                  # DEFECT CODE 4
| |\n                  # DEFECT CODE 5
|08/01/89|\n           # INSPECTION DATE
|ADMIN|\n              # INSPECTION TYPE
|A|\n                  # CONDITION CODE
|W|\n                  # INSPECTION CATEGORY
|7|\n                  # SECURITY ASSISTANCE CODE
|A101|\n               # STORAGE LOCATION
|OOO|\n                # NUMBER OF SAMPLES
|OOO|\n                # NUMBER OF BOXES
| |\n                  # INSPECTION REFERENCE FOLLOWED BY INSPECTION
                         REMARK THIS IS SAMPLE INSPECTION REMARK|\n
| |\n                  # DEFECT CODE 1
| |\n                  # DEFECT CODE 2
| |\n                  # DEFECT CODE 3
| |\n                  # DEFECT CODE 4
| |\n                  # DEFECT CODE 5
COMP 003               # BEGINNING OF COMPONENT DATA
|BALL|\n               # COMPONENT DESCRIPTION
|123456|\n             # COMPONENT DRAWING NUMBER
|M1|\n                 # COMPONENT MODEL NUMBER
|LAKE CITY|\n          # COMPONENT MANUFACTURER
|01/01/89|\n           # COMPONENT DATE OF MANUFACTURE
|LC-123|\n             # COMPONENT LOT NUMBER
|10000|\n              # COMPONENT QUANTITY
|TRACER|\n             # COMPONENT DESCRIPTION
|123456|\n             # COMPONENT DRAWING NUMBER
|M2|\n                 # COMPONENT MODEL NUMBER
```

NOTES:

1. Linefeeds (\n) are identified for convenience.
2: Comments are identified with the "#" symbol and are not part of the actual text file.

Figure B-1. Sample DSR Card File for Electronic Transmission (cont).

```
|LAKE CITY|\n          # COMPONENT MANUFACTURER
|02/02/89|\n           # COMPONENT DATE OF MANUFACTURE
|LC-1234|\n            # COMPONENT LOT NUMBER
|20000|\n              # COMPONENT QUANTITY
|BALL|\n               # COMPONENT DESCRIPTION
|123456|\n             # COMPONENT DRAWING NUMBER
|M3|\n                 # COMPONENT MODEL NUMBER
|LAKE CITY|\n          # COMPONENT MANUFACTURER
|03/03/89|\n           # COMPONENT DATE OF MANUFACTURE
|LC-1234|\n            # COMPONENT LOT NUMBER
|30000|\n              # COMPONENT QUANTITY
BEGIN 002               # BEGIN SECOND DSR CARD
|1305001234567|\n
|LC-1-20|\n
| |\n
|8901|\n
|9001|\n
|LAKE CITY AAP|\n
|1000|\n
|LAKE CITY|\n
| |\n
| |\n
| |\n
| |\n
|08/01/89|\n
|09/01/89|\n
|10/01/89|\n
| |\n
| |\n
| |\n
| |\n
| |\n
I |\n
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
|A123|\n
|SMALL ARMS AMMUNITION, 5.56-MM, 20 ROUNDS CARDBOARD BOX, 20 CARDBOARD
BOXES\n METAL CAN, 2 METAL CAN (800 ROUNDS) WIREBOUND BOX.|\n
|SMALL ARMS AMMUNITION|\n
```

NOTES:

1. Linefeeds (\n) are identified for convenience.
2: Comments are identified with the "#" symbol and are not part of the actual text file.

Figure B-1. Sample DSR Card File for Electronic Transmission (cont).

```
| |\n
|2|/n
| |\n
| |\n
|23 LBS|\n
|1.0 CU FT|\n
|1.111|\n
|C|/n
|1|\n
|1.4S|\n
|2|\n
| |\n
INSP 001
|09/01/89|\n
| |\n
| |\n
| |\n
| |\n
| |\n
| 000|\n
| 000|\n
| |\n
| SAMPLE INSPECTION REMARK #1.|\n
| |\n
| |\n
| |\n
| |\n
| |\n
COMP 000
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
| |\n
```

NOTES:

1. Linefeeds (\n) are identified for convenience.
2: Comments are identified with the "#" symbol and are not part of the actual text file.

# APPENDIX C
# AMMUNITION CONDITION CODES

| Definition: | Amplification: |
|---|---|
| **CODE A SERVICEABLE (ISSUABLE WITHOUT QUALIFICATION)** | |
| New, used, repaired, or reconditioned materiel which is serviceable and issuable to all customers without limitation or restriction. Includes materiel with more than 6 months shelf-life remaining. | Normal incidental requirements for additional packaging, packing, or marking, etc., that can be accomplished at time of issue (without additional resources or manpower or causing a delay) does not constitute a restriction. |
| **CODE B SERVICEABLE (ISSUABLE WITH QUALIFICATION)** | |
| New, used, repaired, or reconditioned materiel which is serviceable and issuable for its intended purpose; however it is restricted from issue to specific units, activities, or geographical areas by reason of its limited usefulness or short service-life expectancy. Includes materiel with 3 through 6 months shelf-life remaining. | Normal incidental requirements for additional packaging, packing, or marking, etc., that can be accomplished at the time of issue (without additional resources or manpower or causing a delay) does not constitute a restriction. Includes items restricted from or to specific missions. |
| **CODE C SERVICEABLE (PRIORITY OF ISSUE)** | |
| Items that are serviceable and issuable to selected customers, but which must be issued before conditions A and B materiel to avoid loss as usable assets. Includes materiel with less than 3 months shelf-life remaining. | |
| **CODE D SERVICEABLE (TEST/MODIFICATION)** | |
| Serviceable materiel that requires test, alteration, modification, conversion, or disassembly. This does not include items that must be inspected or tested immediately prior to issue. | |

CODE E UNSERVICEABLE (LIMITED RESTORATION)

Materiel which involves only limited expense or effort to restore to serviceable condition and that is accomplished in the storage activity where the stock is located.

Minor maintenance is exterior to the round or munitions. Includes all repair of external surfaces and repair or replacement of packaging, packing, palletization, and marking.

CODE F UNSERVICEABLE (REPAIRABLE)

Economically reparable materiel which requires repair, overhaul, or reconditioning (includes reparable items which are radioactively contaminated).

Major maintenance usually requires replacement of end item components or modification.

CODE G UNSERVICEABLE (INCOMPLETE)

Materiel requiring additional parts or components to complete the end item prior to issue.

CODE H UNSERVICEABLE (CONDEMNED)

Materiel which has been determined to be unserviceable and does not meet repair criteria (includes condemned items that are radioactively contaminated).

Includes material determined to be uneconomically repairable.

CODE J SUSPENDED (IN STOCK)

Materiel in stock which has been suspended from issue and use pending condition classification or analysis, where the true condition is not known.

Includes Temporarily Suspended material pending serviceability determination. Includes Air Force materiel that is identified and held for future test/surveillance requirements, either destructive or nondestructive in nature. May contain formerly serviceable assets that became unserviceable by reason of being reserved for test or shelf/service-life has expired. Army ammunition that has missed two scheduled periodic inspections is included.

CODE K SUSPENDED (RETURNS)

Materiel returned from customers or users and awaiting condition classification.

Includes items that have been identified by stock number and item name, but not examined for condition. Stocks in this CC will be inspected and properly classified as to condition according to the appropriate regulations. When more time is required, an extension of time may be granted by the applicable accountable supply distribution activity.

CODE L SUSPENDED (LITIGATION)

Materiel held pending litigation or negotiation with contractors or common carriers.

CODE M SUSPENDED (IN WORK)

Materiel identified on inventory control records but which has been turned over to a maintenance facility or contractor for processing.

CODE N SUSPENDED (SUITABLE FOR EMERGENCY COMBAT USE)

Ammunition stocks suspended from issue except for emergency combat use.

CODE P UNSERVICEABLE (RECLAMATION)

Materiel determined to be unserviceable, uneconomically reparable as a result of physical inspection, tear-down, or engineering decision. Item contains serviceable components or assemblies to be reclaimed.

## APPENDIX D

### SECTION I. LIST OF SPECIFIC ITEMS


Ammunition identification codes (AIC) or other outdated markings ..... D-1
Ammunition manufactured for special purposes ..... D-2
Ammunition. 25-mm ..... D-3
Ammunition. 40-mm ..... D-4
Ammunition. separate loading ..... D-5
Bursters, tetrytol ..... D-6
Cartridge actuated devices (CAD) and propellant actuated devices (PAD) D-7
Cartridge. 90-mm, HEAT. M371A1 (1315-C282) ..... D-8
Cartridges, 152-mm ..... D-9
Charges, supplementary ..... D-10
Components. explosive ..... D-11
Dynamite ..... D-12
Electric blasting caps ..... D-13
Improved conventional munitions (ICM) ..... D-14
Items belonging to other services ..... D-15
Mine, AT, HE, M15 ..... D-16
Mine, antipersonnel. M18-series ..... D-17
**Mine, AT Heavy M19 Non-Metallic.** ..... D-18
Projectile 155-mm. illuminating, M485 ..... D-19
Projectile, 8-inch, M404 ..... D-20
Propelling charges, separate loading ..... D-21
Items which not been Hazard Classified ..... D-22
HERA Projectile Defect Classification ..... D-23
Receipt Inspection of Projectiles ..... D-24
Projectile, 155MM, M825 Series Defect Classification ..... D-25
Rocket, 66MM. Incendiary, M74 ..... D-26


### SECTION II. INSTRUCTIONS FOR SPECIFIC ITEMS

**D-l. Ammunition Identification Codes (AIC) or other outdated markings.**

*a*. Ammunition lots marked with the AIC in lieu of NSN and DODIC (and otherwise acceptable) will be considered suitable for issue for training or interdepot shipment without remarking of the outer pack or palletized load. Annotation of the NSN and DODIC is required only on the shipping documents, ammunition data cards, and depot surveillance record cards.

*b*. Ammunition lots marked with the AIC in lieu of the NSN and DODIC and being shipped for potential inclusion in unit basic load or prepositioned war reserve stocks will be treated as follows:

(1) Unpalletized boxes and containers. The NSN/DODIC will be applied to the side of each exterior package prior to unitization for shipment.

(2) Palletized units. Properly palletized units will have the NSN/DODIC applied to the side or top of accessible boxes and containers prior to shipment.

(3) Palletized separate loading projectiles. The NSN/DODIC will be applied to the top of each pallet and DODIC applied to each projectile prior to shipment.

(4) The application of NSN/DODIC on two lines is permitted when required by space limitations.

(5) Ammunition data cards, DSRs and accountable records will be marked with both NSN/DODIC and AIC.

*c*. For information pertaining to the correct NSN/DODIC for a lot marked only with an AIC, contact the Commander, IOC, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000.

*d*. Incorrect DOT shipping names will normally be corrected on accessible exterior packages prior to shipment. When it can be determined by the shipper that the marking was correct at some previous time. the materiel need not be remarked, Shipping documents will be annotated with the correct DOT shipping name.

*e*. Weapon model designations on boxes and containers need not be corrected to comply with current drawings.

*f*. Items containing dual nomenclature markings within a lot (e.g.. "cartridge" on boxes and fiber containers and "shell" on the round) are acceptable.

*g*. Current markings will be applied whenever items or packaging are marked for other reasons.

**D-2. Ammunition manufactured for special purposes.**

*a*. Certain lots of conventional ammunition were manufactured for special purposes: i.e., proving ground tests. engineering tests, etc.. these lots were formerly identified by use of "PG", "SR", "SP". "A". "E". "P" lot interfix and/or word "PILOT" in the lot number. Special purpose ammunition of recent. manufacture with the 13-digit lot number, as directed by MIL-STD-1168, is identified by the letters "S", "E", "A", or "P" in position number 10 (position 8 for propellant lots).

*b*. Ammunition manufactured for special purposes generally is not intended for actual firing as service or training ammunition. Such issues must be specifically authorized by IOC.

*c*. Non-functioning ammunition items (dummy, inert, drill. etc.) do not require any special authorization for troop issue. Generally, identification of this materiel as a special lot implies manufacture using standard service round technical data package with "special lot" identifying the inert nature of the material.

*d*. To prevent issue of special purpose ammunition or components for unauthorized use by using units. the following will be accomplished:

(1) Lots other than non-functioning that are in field service. depot renovation, or similar accounts, and that have not been specifically authorized for troop use, will be reported by memorandum to HQ, IOC, ATTN: AMSIO-QAS. Report will provide NSN, nomenclature, lot number. quantity, and account. Copies of the ammunition data cards and DSR cards should be included. Authorization for troop issue shall be based upon verification that production complied with the technical data package requirements applicable to standard lots. Response from IOC must be annotated on the DSR card. Receipts of special purpose lots will be reported unless the DSR card indicates authorization was previously obtained. Serviceable lots will be assigned CC-D pending response from IOC.

(2) Reporting is not required for special purpose lots identified by non-standard NSN or maintained in supply accounts which preclude issue to using units. Examples are demilitarization, proving ground (TECOM), and research and development accounts.

e. Ammunition manufactured for calibration and reference purposes is assigned a 13-digit lot number with letter "C" or "R" in position 10 (position 8 for propellant lots). Reporting procedures for these lots are the same as for other special purpose lots except that reports will be submitted to HQ, IOC, ATTN: AMSIO-QAO. The response from IOC must be annotated on the DSR card.

**D-3. Ammunition, 25-mm.**

The following requirements for 25-mm cartridges M791 (APDS-T), M792 (HEI-T), and M793 (TP-T) are in addition to procedures contained in Table 2-3.

*a. Free hinging.* Linked ammunition shall hinge and fold over without binding, kinking, separating or any interference. Each belt shall be laid out full length with open side of links up. One end shall be drawn over remainder of belt until belt is completely reversed (open side of links down). One end of reversed belt shall then be drawn over remainder of belt until belt is returned to original (open side of links up) position. Belt must hinge freely throughout this process.

*b.* Air tightness testing is not required at this time.

*c.* Drawing 12013695 for linked ammunition requires specific inspections to be performed to assure serviceability. The sample sizes for these inspections will be according to paragraph 2-6 and all noted defects are classified as major:

(1) Inspect the height of cartridge from base of cartridge to forward tab (inspection method: vernier calipers or gage).

(2) Inspect the maximum height of cartridge from bottom of cartridge to top of link (inspection method: vernier calipers or gage).

(3) Inspect to assure dimple is engaged in cartridge case groove in two (2) places (inspection method: visual).

*d*. A standard gage has not been adopted to measure above characteristics. However, IOC has approved and made available engineering drawings on an aperture card from which a gage may be locally fabricated. Drawing should be requested through Commander, U. S. Army Industrial Operations Command, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000. Drawing number assigned is XM283910087.

**D-4. Ammunition, 40-mtn.**

Cartridges that are assembled into linked belts will not be removed from their links for inspection or gaging purposes. Cartridges that appear to be damaged to the extent they might not chamber in the weapon should be reported on ACR to AMSIO-SMA according to DA Pam 738-750.

**D-5. Ammunition, separate loading.**

*a*. To be suitable for OCONUS shipment and storage as prepositioned war reserve materiel (PPWR). separate loading projectiles, propelling charges, and their pallets should meet the following criteria for deteriorative type defects:

(1) Projectiles -- should be in such a condition that P&P would not be necessary for at least 3 years. Any rust should be removable by wiping. Surface and markings must not exhibit significant damage after wiping. Bare patches caused by rubbing of projectiles against pallet top or bottom are acceptable providing any rust present in these areas is not expected to reach the major stage within 3 years.

(2) Separate loading propelling charge containers -- for material in storage, containers should be considered serviceable if --

*(a)* Sample passes air test, regardless of visual condition of lid gasket, except torn or cracked gaskets on samples must be replaced.

*(b)* Markings are legible and are expected to remain legible for at least 3 years.

*(c)* Rust has not progressed to the extent that container integrity is threatened and is not expected to progress to the major defect stage (see para 2-**7c(2))** within the next 3 years. All defects noted will be annotated on the DSR card.

(3) Steel strapping used to reinforce pallet bottoms may exhibit any degree of rust and still be acceptable. Strapping used to hold the pallet together may exhibit any degree of surface rust that does not affect its breaking strength. Strapping must also be sufficiently tight to maintain pallet integrity during shipment and handling.

b. Torque testing assembled lifting plugs is required only in conjunction with renovation or manufacturing of projectiles. Such

projectiles will meet requirements of item drawing. Testing disassembly torque of lifting plugs is not required during any other inspection of projectiles (i.e., IRI, PI, PII, or SPI), unless specifically directed by IOC. Plugs removed for inspection purposes should be reassembled and re-torqued to drawing requirements. For munitions without torque values specified in item drawing, plugs should be re-torqued to 200 + 60 inch pounds.

D-6. Bursters, tetrytol -- All munitions with tetrytol bursters will be placed in CC-F for replacement of bursters. Screening for evidence of explosive growth or exudation prior to issue for use is not considered practical or timely.

D-7. Cartridge actuated devices (CAD) and propellant actuated devices (PAD).

a. All malfunctions, discrepancies, and accidents involving Army FSC 1377 CADS or PADS will be reported by the most expeditious means available to AMSIO-QAS according to AR 75-l. Suspected items (discrepant, malfunctioning, or involved in an accident) will be separated from condition code "A" materiel and clearly labeled "HOLD FOR ENGINEERING INVESTIGATION PENDING DISPOSITION INSTRUCTIONS."

b. CADS or PADS service limits. These time limits are designated as shelf life and installed life (service). Shelf life and installed life will not be combined. The usable life of a CAD or PAD is expired if either of these limits are exceeded. Expired CADS or PADS must not be used without specific approval of the designated technical command. Service limits are based on design verification tests and surveillance evaluation by stockpile/service return reliability test program. Compliance with these limits, which can be found in appendix D of TB 9-1300-385, is mandatory.

c. Computation of shelf life and installed life. CAD or PAD lives are based on shelf life or installation life, whichever date occurs first is the CAD or PAD service limit expiration date. To compute shelf life or installation life, use the criteria below:

(1) Shelf life. The date of manufacture (DOM) plus the Army-published shelf-life equals shelf-life expiration date. The DOM is denoted within the CAD or PAD lot number imprinted on the item or on a tag attached to the item. The year of manufacture is denoted as a two-digit number (spaces 4 and 5) immediately following the manufacturer's designation (spaces 1 through 3). The month of manufacture is denoted by an ALPHA character (space 6) immediately following the year designation ("A" represents January, "B" represents February, and so on. The letter “I” is not used).

(2) Installed life. Installed life begins when the CAD or PAD air-tight container is opened, regardless of the reason. This date plus the Army-published installed life limit equals the installed life expiration date. The installed life expiration date will never exceed the shelf life expiration date.

(3) All Army units (installation, ASP, user) will comply with limits cited in appendix D of TB 9-1300-385 and supplements thereto. Additional data can be found in TM 9-1377-200-20&P and TM 43-OO1-39-Series publications. If a conflict on service limits is encountered, TB 9-1300-385 takes precedence. Questions on Army service limits or requests for extension will be addressed to IOC, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000.

d. Shelf life and installed life expiration. All Army CAD or PAD lots with an expired shelf or installed life will be reclassified to CC-H and reported by memorandum to AMSIO-SMA-R for disposition instructions. The dollar limitation and disposal provisions of DA Pam 738-750 do not apply for this materiel.

(1) The following information should be included in the request for disposition:

(a) NSN and DODIC.

(b) Nomenclature.

(c) Lot number.

(d) Part number (if available).

(e) Quantity.

(f) Shelf and/or installed life expiration date.

(g) Reason for unserviceability, if lot is also unserviceable for reason(s) other than shelf life or installed life expiration.

(2) Expired items removed from mission configuration by using units will be returned to the supporting ASP/storage installation.

(3) The appropriate accountability, management controls, and documentation will be established or maintained for new item issues and to assure unit turn-in of all downloaded items.

(4) If the original packages are not available, packages for replacement items will be used for repack and turn-in of unserviceable CAD or PAD. See paragraph D-7f for information required for turn-in.

e. Condition code classification. CAD or PAD lots will be classified according to the provisions of AR 725-50 based upon the remaining shelf life and paragraph D-7d above.

f. Army service return test program for downloaded CAD or PAD. Potentially, each downloaded CAD or PAD could be used for this program to extend current limits.

(1) As such, each downloaded item should be tagged with the following information (as applicable):

(a) NSN/DODIC

(b) Nomenclature

(c) Lot Number.

(d) Installed date

(e) Removed date.

(f) Aircraft type/serial number.

(2) If an item is selected/required for the test program, ship the item(s) to Commanding Officer, Naval Surface Warfare Center. Indian Head Division, ATTN: CODE 5240A. Building 1557, Indian Head, MD 20640-5035. Documents/packages for shipment should be marked: "ARMY CAD/PAD SURVEILLANCE PROGRAM."

g. Army stockpile test program for CADS or PADS in storage. IOC will furnish a nomination memorandum to each storage location from which test samples are desired. The sample size required for test will be furnished with the request for samples. Only the specific quantity requested for each lot will be shipped.

(1) Each candidate lot from which samples have been selected for testing will be retained in the appropriate CC as determined by the local surveillance organization (QASAS). Candidate lot test samples at the installation will be placed in CC-D and obligated for shipment.

(2) The MRO for shipment of test samples to NSWC, IH, will be issued by ASIO-SMA-R except for the European Theater in which the MRO will be issued by the 200th Theater Army Materiel Management Center (TAMMC).

(3) One end or side of the shipping container will be painted white. Shipping documents and containers will be annotated "ARMY CAD/PAD SURVEILLANCE PROGRAM".

(4) Random sampling for selection of samples will be used where possible

h. Inspection requirements. The owning service establishes appropriate inspection, quality assurance standards, and serviceability requirements. The appropriate requirements in chapter 2 will apply in addition to the specific inspection/technical provisions of TM 9-1377-20 & P and TM 43-001-39. Hermetically sealed containers will not be opened except to inspect for suspected damage and verification of serviceability. Installed life begins on the date the container was opened. Hermetically sealed containers that have been opened must be tagged and DSR cards must be annotated with the date opened (month/year). Opened containers will be resealed per paragraph 2-3c.

**D-8. Cartridge, 90-mm, HEAT, M371A1 (1315-C282).**

*a.* Surveillance inspections of 90-mm, M371A1 cartridges will be limited to visual inspections. No disassembly is authorized.

*b.* Nose cap removal will be performed only as part of an authorized screening or renovation operation at a prescribed maintenance facility. Unauthorized nose cap removal and reassembly has been determined to allow metal particle contamination of nose, resulting in possible premature functioning of the fuze and projectile.

**D-9. Cartridges, 152-mm.**

Rounds assembled with the older M157 cartridge case that used an adhesive and lock ring system have been suspended. In that system looseness between the cartridge case and projectile was a major defect. The latest model cartridge case, the M205, is mechanically secured to the projectile. Since there may be some shrinkage in the case material. relative motion may occur between the M205 cartridge case and the projectile. If the cartridge case is intact (without cracks), the ignition element secured to the case. and the cartridge case is not separated from the projectile. the round will be considered serviceable.

**D-10. Charges, supplementary.**

*a.* The defect classification for supplementary charges with loose pellets, as shown in MIL-C-50417. amendment 2. is applicable for new manufacture only and will not be used during inspection of fielded stocks. Loose pellets are not considered cause for rejection of supplementary charges in either bulk pack or assembled in complete rounds/projectiles.

b. Polyethylene supplementary charge pads (DWG 8838203, rev D) in 155mm, M549A1 HERA projectiles may be compressed to less than 1/16-inch thickness. This condition occurs when projectiles are assembled with energy absorbing lifting plugs which have an intrusion depth 1/4-inch longer than shock attenuating or "G" type lifting plugs. Compressed polyethylene pads do not present a safety hazard during storage, transportation. handling. or firing and are not to be considered a defect.

c. Supplementary charges manufactured April 1987 or later have oversize pads to prevent the charge from exiting the projectile when mistakenly rammed without a fuze. Revision P of drawing 879790 has oversized pad and is only configuration authorized for assembly to howitzer projectiles. Bulk packed charges with smaller pads are to be placed in unserviceable condition code for replacement of pad.

**D-11. Components, explosive.**

*a.* Many explosive components such as primers, ignition cartridges. and delay elements require a deterioration check test according to the

applicable MIL-SPEC to assure suitability for use before assembly into a complete round. A successful test will allow the component to be used for a period of up to 2 years.

*b*. Lots of explosive components without current deterioration check test will be assigned CC-D and held as is, pending a requirement for use.

*c*. Explosive component lots requiring a deterioration check test may be tested by the storing installation for local use. Prior to performing the test, telephonic or written notification to AMSIO-QAS must be made to assure that a local test will not duplicate test efforts underway or completed elsewhere.

*d*. Deterioration check tests of explosive components will be reported to AMSIO-QAS by DA Form 984 with documentation necessary for test evaluation.

*e*. AMSIO-QAS will periodically issue letter instructions. Components that require testing will be listed by model and type.

*f*. When subject materiel is to be shipped between CONUS installations and the item has a current test, the receiving installation should be contacted by the shipping installation. This contact is to determine that the remaining portion of the required test interval will not expire prior to the intended date of use for the item.

*g*. When subject materiel is to be shipped to an OCONUS installation, it must have a minimum of one year remaining before expiration of test or assessment interval. To ensure that remaining time is compatible with overseas command's planned usage, the following must be accomplished:

(1) All lots selected for shipment to OCONUS will be telephonically reported to AMSIO-QAS for coordination with the consignee.

(2) The test or assessment expiration date will be annotated on the shipping documents.

**D-12. Dynamite.**

a. Commercial dynamite.

(1) Straight dynamite, 60-percent and over in strength, will be turned at regular intervals as directed in DA PAM 385-64 and will be annotated on a locally devised form that will be attached to the stack. Other types of dynamite, ammonia, ammonia-gelatin, and gelatin dynamites will not be turned in storage. However, yearly, at the conclusion of the hottest portion of the year, a representative sample will be selected and the containers examined for evidence of nitroglycerin exudation on the exterior of the cartridge. If exudation

is found, the lot or lots involved will be reported on DA Form 2415 with a recommendation for destruction.

(2) Dynamite contained in Canine Explosive Scent Kit (Dynamite. 60 percent ammonia nitrate and nitroglycerin) is shelf-life material **(18** months). This dynamite need not be turned in storage. However, at the conclusion of the hottest portion of the year. a representative sample, of the nitroglycerin based dynamite, will be selected and examined for evidence of nitroglycerin exudation. Dynamite exhibiting exudation will be destroyed in accordance with local procedures.

*b*. Military dynamite. Military dynamite does not require turning in storage but will be periodically inspected per procedures outlined in chapter 2 and the following information.

(1) Exudation, crumbling, disintegration. or cracking of military dynamite are classified as major defects. In the absence of these conditions, loose explosive that is wholly contained by the inner pack is not to be considered a defect.

(2) New production dynamite will have dark brown spots and colorations, It may also have a slick feel due to a wax coating applied to the outer wrapper. These are not defects unless accompanied by an oily exudate or crystallization.

(3) Lots known to contain loose explosives that have migrated outside the inner pack (in any amount) will be repacked prior to shipment.

**D-13. Electric blasting caps.**

Defect and inspection criteria outlined in appropriate TMs. drawings, specifications, and paragraph 2-7 of this bulletin will be used. In addition. the following criteria will be applied:

*a*. No more than one circumferential crack is permitted in the lead wire insulation at any or at all of the points where the wire is normally bent more than 90 degrees when in the authorized packaging configuration.

*b*. A longitudinal crack of less than 1/2-inch long with only one crack per 6-inch length of the wire is considered acceptable.

*c*. More than one circumferential crack. or more than one longitudinal crack of less than 1/2-inch. or combination of both in a segment of wire less than 6 inches is considered a minor defect.

*d*. Longitudinal cracks longer than 1/2-inch. longitudinal cracks terminating in a circumferential crack. or flaking of the insulation in any part of the wire are considered major defects.

**D-14. Improved conventional munitions (ICM).**

Separate loading projectiles assembled with fusible eyebolt lifting plugs. The fusible eyebolt lifting plug was developed to prevent cargo ejection from ICM separate loading projectiles if subjected to fire while in storage. The plug is painted yellow for identification purposes. Inspection of ICM projectiles will be as follows:

*a*. Inspect fuze cavity for rust. moisture. obstructions, or missing expulsion charge container or cover. Presence of any of these discrepancies is a major defect.

*b*. Inspect for and replace any deformed. cracked, or deteriorated rubber gaskets.

*c*. Install plug after inspection and tighten to a torque value of 200 + 60 inch-lbs.

*d*. Inspect fusible plugs for bent or cracked lifting rings, dislodged or missing fusible discs, or possible leakers. Leakers are recognizable by a ring of rust or cracked paint around the periphery at the interface of the disc and hole.

*e*. Presence of any lifting plug other than the fusible type is a major defect

*f*. Missing or unidentifiable diamond or triangular markings is a major defect.

**D-15. Items belonging to other services.**

Most conventional ammunition items belonging to other services and stored at CONUS installations by the Army will be inspected and tested in accordance with DOD 5160.65-M, Joint Conventional Ammunition Quality Assurance Policies and Procedures.

*a*. AMSIO-QAS is the focal point for QA matters concerning SMCA field service stocks.

*b*. Munitions stored for other government agencies not covered by SMCA or private contractors are subject (as a minimum) to a receipt inspection and safety-in-storage inspections.

*c*. Additional inspection procedures and their frequencies will be specific in the appropriate support agreement or memorandum with the owner. This includes, but is not necessarily limited to, foreign, experimental, and test ammunition.

**D-16. Mine, AT, HE, M15.**

*a*. Inspection of the M603 fuze packed with this mine is necessary to ensure that a detonator is present. Absence of this detonator could indicate that the inert fuze used with the practice mine M7A2 had been

inadvertently assembled to the M15. Inspection for presence of the detonator is accomplished as follows:

(1) Assure that safety clip is in place between pressure plate and body of fuze.

(2) Turn the fuze over and assure that varnished or painted lining compound on end of detonator shows in bottom of fuze.

(3) Absence of the detonator is classified as a major defect

*b*. Inspect the mine Belleville spring for deterioration or improper assembly (major defect).

(1) Test the resistance of the mine pressure plate by applying hand pressure to the unfuzed mine pressure plate. The amount of force applied (5 to 25-lbs is suggested) should not exceed approximately 50-lbs. If no movement of the pressure plate is detected, the Belleville spring is considered serviceable.

(2) Remove the arming plug and visually examine the Belleville spring for deterioration, misalignment. or improper assembly (use of a flashlight will be required). Verify that the setting knob of the arming plug is properly assembled (see drawing #C37-1-7 and TM 9-1345-203-12&P). Arming plugs failing to meet this requirement will be classified as critical defectives. (Improperly assembled units allow the plug to be armed while the arrow is pointed toward the "safe" position.)

(3) Examine the fuze retainer spring **in the arming plug** for deterioration or misalignment (major defect).

**D-17. Mine, antipersonnel, M18 series.**

Inspect the electric blasting cap assembly M4 using test procedures in TM 9-1345-203-12&P, paragraph 2-3. and the following:

*a*. Unpack the electric blasting cap assembly M4.

*b*. Unroll the electric firing wire and visually inspect for defects such as cracks or peeling of the insulation material (also see para D-13).

*c*. Reroll the firing wire on the spool and test with the M40 test set according to TM 9-1345-203-12 & P. paragraph 2-3d(9) *(a)* through *(f)*.

**WARNING**

THE M4 BLASTING CAP ASSEMBLY CONTAINS AN M6 ELECTRIC BLASTING CAP. PERSONNEL MUST BE SHIELDED FROM THE EFFECTS OF ACCIDENTAL INITIATION OF THE CAP.

*d*. Electrical continuity test failure and damage or deterioration to the insulation material that results in a bare wire exposure liable to cause failure are classified as major defects (see para D-13 for criteria).

**D-18. Mine, AT Heavy M19 Non-Metallic**

**Inspected the mine for damage (cracked/dented body) IAW TM 9-1345-203-34. and ensure the mine's firing pin is "SAFE" by performing the following steps:**

**a. Remove fuze and inspect rubber gasket.**

**b. Remove any foreign material found in fuze well.**

**c. Verify fuze is set to "S" and safety clip is in place.**

**d. Remove shipping plug from detonator well and remove any foreign material.**

**e. Verify the firing pin is located at the edge of the detonator well.**

**f. Remove safety clip and rotate fuze setting knob to "A"; verify that the firing pin moves to the center of the detonator well.**

**g. Return setting knob back to the "S" position; verify the firing pin returns to the side of the detonator well (critical defect if firing pin does not return).**

**h. Replace safety clip.**

**D-19. Projectile 155-mm, illuminating, M485.**

Defects found during inspection of the expelling charge will be classified as follows:

*a*. Bulged (incidental)

*b*. Cracks without exposure of contents (incidental).

*c*. Split, cracked, torn, or burst with contents exposed (major defect).

*d*. Cover separated with contents exposed (major defect)

*e*. If during the course of the surveillance inspection, stuck expelling charges are encountered with no exposed black powder or moisture on top of the visible expelling charge or in the fuze well. additional samples equal only to the number of stuck charges are to be selected. If these samples evidence no black powder contamination or moisture, the lot is to be accepted for unrestricted issue and use.

*f*. If stuck expelling charges exhibit cracks with exposed contents and/or moisture, they are to be treated as major defects, the lot condition coded accordingly, and reported per DA Pam 738-750.

*g*. Loose components, evidenced by rattle inside the projectile ogive during handling. is not a defect or a safety problem. Rattle is caused by looseness of spacers inserted in base of projectiles during loading and packing to assure a tight pack. Projectiles exhibiting this rattle are considered acceptable if otherwise serviceable.

**D-20. Projectile, 8-inch, M404.**

*a*. Inspection of 8-inch M404 projectiles will include inspection of expulsion charge bags. Bags may be made of 2-mil low density polyethylene film which is known to deteriorate over time due to environmental stress cracking. Emphasis should also be placed on condition of lifting plug gaskets.

*b*. Any crack or tear in an expulsion charge bag is a major defect if moisture can enter or propellant escape. Deterioration or damage to lifting plug gaskets to an extent which would permit entry of moisture is also a major defect.

*c*. Expulsion charge covers can be removed using a sparkproof tool. Following inspection, cover edges are to be snapped back under the stake marks in the cup using finger pressure.

**D-21. Propelling charges, separate loading.**

Certain charges, such as the 155-mm M3A1. contain flash reducer pads. Although a caked flash reducer pad in itself is not a defect, it is an indication that the charge may have been exposed to moisture. Lots found with caked flash reducers will have a second sample of 20 rounds inspected for major defects listed below, (Lot disposition will then be determined based on the total sample of 40 rounds. Accept on 2 defectives. reject on 3 defectives.) However, caking is considered a defect in M2 and M3 flash reducers. that are separate items of issue, since they contain black powder. When sample charges have caked flash reducers inspector should check for following associated defects:

*a*. Container not airtight due to a perforated container, defective gasket or cover, etc.

*b*. Igniter pad damp or with caked/lumpy powder.

*c*. Mildew or stain on propellant bag.

*d*. Discoloration of propellant bag accompanied by loss of tensile strength.

**D-22. Items which have not been Hazard Classified**

*a*. Items which have not received a hazard classification IAW TB 700-2 must be considered Hazard Class/Division 1.1 Compatibility Group L for storage.

*b*. These items cannot be cleared for shipment except that captured military ammunition of unknown characteristics can be shipped by military air from one military airfield to another military airfield. These items can be moved about on a military installation except as above.

*c*. Item hazard classification must be requested from Director, U.S. Army Technical Center for Explosives Safety (USATCES) IAW the procedures of TB 700-2.

*d*. The primary source for determination of item hazard classification data is the Joint Hazard Classification System available on CD-ROM, automated formats and the world wide web at http://www.dac.army.mil/ex/ext/hc.html.

## D-23. HERA Projectile Defect Classification

*a*. Projectiles, 155MM, M549, HERA (1320-D579) and Projectile 8-Inch. HERA, M650 (1320-D624) with missing or damaged obturating bands can cause a critically short round.

(1) A missing or damaged band evidencing a crack, cut or gouge extending across entire width of band is to be classified as a critical defect.

(2) A "loose" obturator band is a critical defect if the band will not remain in the groove. If band can be manually removed for groove, but can also be "snapped" back into groove, round is to be considered serviceable.

(3) Circumferential movement of obturator is not classified as a defect.

*b*. Excessive gap between warhead and motor body asembly is a critical defect for both 155MM, M549A1 (1320-D579) and 8-Inch, M650 (1320-D624) projectiles due to potential for motor separation Gap criteria is as follows:

(1) A 0.0075 inch feeler gage shall not enter joint at any point.

(2) A 0.0035 inch feeler gage may enter joint by more than one-eighth inch on any one 30 degree segment of joint, however, it may not enter by more than one-eighth inch on the remaining 330 degree segment.

*c*. Gap greater than 0.010 inches at any point between forward and aft warhead assembly of the 8-inch, M650 is a major defect.

*d*. Age and storage environment related deterioration causes 155MM, M549A1 projectile obturators to become excessively brittle especially in hot dry climates. Ductility will likely partially return if subsequently stored in a humid climate.

(1) Excess brittleness is to be checked during inspections by removing and then reassembling obturators to projectiles. Procedure for this operation is contained in DMWR 9-1320-D579-F20. operations 8 and 11.

(2) Obturators which break or exhibit obvious cracks or splits are to be considered critical defects. This damage is to be distinguished from incidental surface cracks or scratches which do not affect obturator functioning.

## D-24. Receipt Inspection of Projectiles

a. Projectiles, 8-Inch, M106 (1320-D680) with NPK metal parts are suspended, requiring ultrasonic test and assembly of ogive protector (OPA) and shock attenuating lifting plug. These projectiles have proven extraordinarily susceptible to developing cracks (due to residual stress) when subjected to impacts. Avoid striking projectile ogive area since any hard impact may cause projectile ogive to crack especially at cold temperature. Projectiles may be transported without special precautions as long as they remain palletized IAW approved drawings.

(1) Lots which have been ultrasonically tested (100%) for presence of cracks in area of ogive may be distinguished from other M106 projectiles by presence of polyethylene truncated cone (ogive protector assembly) assembled to ogive and shock attenuating lifting plug assembled to fuze well.

(2) Unit returns of projectiles which have indication of rough handling are to be classified as unserviceable requiring ultrasonic screening. Projectiles which have broken shock attenuating lifting plugs are not repairable.

(3) Field service returns are to be classified unserviceable, requiring ultrasonic screening unless it can be determined with reasonable certainty that ogive protector and lifting plug have not been removed by troops.

*b*. Any projectile which is known or suspected of having been rammed into a howitzer weapon is to be placed in CC-H and authorized for demilitarization. Howitzer user's manuals caution howitzer crews not to load a previously rammed projectile into a weapon. One exception is Copperhead projectiles when ramned into a cold tube.

**D-25. Projectile, 155MM, M825 Series Defect Classification**

a. Projectile, 155MM, M825/M825A1 WP (1320-D528) with missing or damaged obturating bands can cause a critically short round.

(1) A missing or damaged band evidencing a crack, cut or gouge extending across entire width of band is to be classified as a critical defect.

(2) A "loose" obturator band is a critical defect if the band will not remain in the groove. If band can be manually removed for groove, but can also be "snapped" back into groove, round is to be considered serviceable.

(3) Circumferential movement of obturator is not classified as a defect.

*b*. Cannister component lot numbers have been stenciled on each projectile. This is not a defect but makes end item lot identification more difficult. Item drawings provide correct, location for projectile lot number.

*c*. Corrosion on aluminum portion of M825 projectile base is a critical defect. Procedure for conduct of inspection and defect classification criteria is same as that for M483A1 projectiles with old type "green" bases (SASIP 742-1320-94-250). Steel portion of M825 projectile base is that portion from base/body joint extending rearward for one-fourth inch. Damage to protective coating should be repaired using M825 projectile drawings. provided there is no corrosion present.

*d*. M825 projectiles may rattle or exhibit other internal noise when nose is tipped or shaken. This condition is common due to slight looseness of components and does not affect safety, firing or end item performance.

## D-26. ROCKET. 66MM INCENDIARY, M74, TPA (1340-H11O)

a. Evidence of greyish/white residue on round/ warhead could in fact be an oxidation product from the triethyl aluminum, but could also be residue from excessive epoxy sealant used to secure fill plug.

b. If greyish/white residue is found on warhead, perform the following test:

Warning: Hydrochloric acid is corrosive and should be handled with care. If acid contacts skin, it should be immediately flushed with water and/or sodium bicarbonate solution (baking soda and water).

(1). Test solution is hydrochloric acid. Dilute concentrated hydrochloric acid (commercial muriatic acid or 12n laboratory acid) with an equal volume of water to give approximately 6n hydrochloric acid. Test solution should be poured into a dropper bottle for use. This solution should be obtained from the medical officer. post hospital, laboratory or pharmacy.

(2). Neutralizing/cleanup solution is a saturated solution of sodium bicarbonate (baking soda) in water. Mix the baking soda into a container of water until no more dissolves.

(3). Place 2-4 drops of acid solution directly on powder on warhead or on powder scraped off warhead into a plastic or ceramic container (dish).

(4). If residue is oxidation product from triethyl aluminum. it should dissolve away. Follow procedures of reference directing clip be submerged in oil. and report as a critical defect.

(5). Residue which is epoxy sealant will not be affected by the acid solution.

(6). After each test, acid wetted area should be neutralized by wiping with a rag wet with bicarbonate solution in paragraph 5b.

## SMALL ARMS CARTRIDGES THROUGH CALIBER .50

**E-1. Item Description.**

*a*. FSC: 1305.

*b*. SASIP: 742-1305-94-020.

*c*. Ammunition Type: Small arms cartridges through caliber .50.

*d*. The small arms family of cartridges (through caliber .50) are those which are complete assemblies consisting of all components necessary to fire a weapon (i.e., cartridge case, primer, propellant and bullet or shot). For a complete description of various cartridges. see TM 43-0001-27 and applicable drawings.

**E-2. Unique safety precautions.**

*a*. Reasonable care will be taken during inspection and handling. SAA may function if the primer is inadvertently struck.

b. To preclude the mixing and issue of other types of SAA with b lank ammunition, the following minimum precautions will be taken:

(1) Conduct no operations involving other types of SAA in bays or rooms in which operations involving blank SAA are being conducted.

(2) Inspect all equipment and work areas prior to use to insure service rounds are not present.

(3) Restrict use of all involved equipment to blank SAA until the operation is completed.

(4) Incorporate controls on linking machines that will prevent entry of all rounds except blank ammunition.

(5) Conduct a 100-percent visual inspection of all rounds prior to linking, clipping or carton packing and another 100-percent inspection before final packing to assure that only blank ammunition has been linked/clipped or packed in cartons.

*c*. Restrictive marking stenciled on the exterior container of SAA.

(1) Prior to 1976, it was common for Frankford Arsenal to instruct the manufacturers of SAA to stencil the exterior containers of restricted ammunition prior to containers leaving the manufacturing facility. The restrictions were not forwarded to higher headquarters for inclusion in TB 9-1300-385.

(2) There is no available record of the lots with restrictions stenciled on boxes and it is not anticipated that an attempt will be made to list these restricted SAA lots in TB 9-1300-385.

(3) Restrictions stenciled on boxes of SAA are considered valid and all ammunition lots so marked should be issued and used according to these restrictions.

*d. SAA for overhead fire.*

(1) SAA intended for overhead fire is manufactured to different, more stringent specifications and is identified by NSN, not by lot number.

(2) Only SAA identified for overhead fire in supply catalog SC 1305/30 IL or DOD Consolidated munition Catalog may be used for that purpose.

(3) AR 385-63. Policy and Procedures for Firing Ammunition for Training, Target Practice and Combat, states that units intending to use ammunition lots for overhead fire must have lots approved for such use. This guidance does not apply to SAA.

*e. Class V materiel supplied to non-SMCA customers.* Shipment or transfer of accountability of caliber .22 and blank small arms ammunition to non-SMCA customers does not require a functional clearance.

**E-3. Testing and equipment requirements.**

*a.* Profile and alignment gaging and pull and twist tests will be performed during IRI per paragraph 2-8, applicable drawings. and applicable specifications Pull and twist tests will also be performed during subsequent cyclic and receipt inspections.

*b.* Test cartridge according to Table E-1

Table E-1 Gaging Requirements

| Model | IRI | RI | PI | UBLI |
|---|---|---|---|---|
| All SAA | A,B,C | B,C,D | B,C,D | B,C,D |

Legend:
A - Profile and alignment gage.
B - Pull test. (See Table E-4 for specific pull requirements.)
C - Twist test. (See MIL-STD-644 for specific procedures.)
D - Profile and alignment gaging required only if not accomplished during IRI. or if round is visibly damaged. Lot will not be rejected if damaged round fails to gage. Gage failures will be reported IAW requirements of basic SB. (Profile and alignment gaging is required only one time during life cycle of lot.)

c. Table E-2 identifies test and measuring equipment.

**E-4. Inspection category and sampling plan.**

*a*. Inspection category: Category W (five years) for items not packed in steel cans with gaskets (includes inert items). Category U (seven years) for items packed in steel cans with gaskets (includes inert items).

*b*. Table 2-3 will be used to determine sampling plan for SAA.

Table E-2 Equipment Identification List

| Description | Caliber | NSN | Part Number | Model |
|---|---|---|---|---|
| **Gage. Profile and Alignment** | 5.56MM | 5220001198607 | 8654100 | M193, M195, M196, |
| | 7.62MM | 5220001190873 | 8648501 | M20O, M855, M856 M59, M61, M62, M64, M80, M82, |
| | CAL .30 | 5220001190871 | 8648308 | M118, M160, M198, M276, M852 |
| | CAL .30 | 5220001190872 | 8648580 | M1, M2, M14, M25, |
| | 9MM | 5220012856426 | 8649470 | M72, M1909 |
| | CAL .38 | 5220001190868 | 8651500 | M1, M27 |
| | CAL .45 | 5220001190869 | 8648570 | M882, M41 |
| | CAL .50 | 5220001190870 | 8648301 | M1, M9, M26, M1911, M1921 |
| | CAL .50 | 5220001190874 | 8648316 | M1, M2, M8, M10, M17, M20, M23, M33, M48A2, T249E2 |

*c*. Samples of small arms ammunition packed in metal (terneplate) lined M1917 boxes will be used on a recurring basis. Terneplate lined lids will be temporarily resealed utilizing tape and wax as indicated in basic SB. Boxes will be identified as surveillance samples, not to be shipped. In the event that the entire lot is scheduled for shipment, resolder the lids and include the samples in the shipment.

E-5. Specific inspection points.

a. Specific inspection points are in Table E-3. Item will be inspected and classified according to this table.

b. Refer to MIL-STD-644 and basic portion of this SB for inspection of packaging and marking.

Table E-3. Item Defects.

| | Critical | Major | Minor | Notes |
|---|---|---|---|---|
| 1. Complete Round: | | | | |
| a. Discolored, dirty, oil smeared | | | X | |
| b. Corroded or stained, if etched | | X | | |
| 2. Cartridge Case: | | | | |
| a. Round head | | X | | |
| b. Dent | | | | 2 |
| c. Split Case | X | | | 1 |
| d. Split Case | | X | | 1 |
| e. Perforated case | X | | | |
| f. Draw scratch | | | | 2 |
| g. Scratch | | | X | |
| h. Beveled underside of head | | X | | |
| i. Case mouth not crimped in cannelure | | X | | |
| j. Scaly metal | | | | 2 |
| k. No chamfer on head rim) | | X | | |
| l. Fold | | | X | |
| m. Wrinkle | | | X | |
| n. Buckle | | | X | |
| o. Bulge | | | X | |
| p. Illegible or missing head stamp | | | X | |
| q. Defective head | | | X | |
| r. Defective mouth | | | X | |
| s. No visible evidence of mouth anneal | | X | | |
| 3. Bullet: | | | | |
| a. Dent | | | X | |
| b. Scratch | | | X | |
| c. Split bullet jacket | | X | | |
| d. Loose bullet | | X | | |
| e. Missing cannelure | | X | | |
| f. Scaly metal bullet | | | | 2 |
| g. Upset (crooked) point | | | X | |
| h. Exposed steel (clad jacket) | | | X | |
| i. Blunt point | | | X | |
| j. Defective cannelure | | | X | |
| 4. Primer: | | | | |
| a. No primer | | X | | |
| b. Cocked primer | | X | | |
| c. Inverted primer | | X | | |
| d. Loose primer | | X | | |
| e. No waterproofing material (primer pocket joint) | | | X | |
| f. Defective crimp | | | X | |
| g. Nicked or dented primer | | | X | |
| h. Cartridge profile gaging failure | | | | 3 |

Notes:
1. Refer to MIL-STD-636 for position locations.
2. Classify per MIL-STD-636.
3. See paragraph E-3.

E-6. Additional guidance for SAA.

a. Small caliber stockpile reliability program (SCSRP) and centralized trace test program (CTTP) for SAA.

(1) Refer to basic portion of this SB for selecting and preparing for shipment lots nominated for SCSRP and CTTP.

(2) Trace Function Test Report, DA Form 3524-R with part 1 completed, is required only for tracer bearing SCSRP/CTTP candidate lots shipped to test facilities. DA Form 3524-R should be forwarded to designated facility by transmittal record (DA Form 200) for verification of receipt. Assure that all component lot data is listed for functional lots (ratio packed).

(3) Surveillance trace test of SAA will be performed as directed by IOC according to SB 742-1305-1.

b. Conglomerate lots of SAA.

(1) Individual lot quantities of SAA of less than a standard exterior pack will be accumulated for conglomeration only when directed by the commodity command. The commodity command will notify AMC storage activities and overseas command of items authorized for conglomeration. Unless otherwise notified, less than a standard pack will be assigned condition code P except as noted below.

(a) Calibers .22, .32, .38, 9mm, and .45, shotgun shells, rifle grenade cartridges, high pressure test items, caliber .50 spotter-tracer and dummy cartridges.

(b) Listed items will be maintained in stock by individual lot number regardless of lot size.

(2) When authorized, lots will be conglomerated by caliber, type, manufacturer and functional code. A local control number will be assigned and will consist of depot symbol, sequence and year established, e.g., TOD-1-86. A local record will be maintained of the individual component lots and related quantities which comprise conglomerated control numbers. Each box containing conglomerate stocks will have a card affixed to the interior, listing individual lots and quantities.

(3) Individual lots of SAA in a potential conglomerate stockpile need not be delinked or declipped prior to receipt of disposition instructions, Lots will be maintained by individual lot number, functional code, model number and caliber. Various models of tracer within one caliber, whether serviceable or deteriorated, may be placed into one conglomerate lot.

(4) Quantities will be accumulated and carried on record as usable assets under the appropriate condition code. Quantities of 50,000 and over of the same model and caliber will be reported on DA Form 2415 (Ammunition Condition Report) according to DA PAM 738-750 for disposition instructions.

(5) If relinking is authorized, only cartridges from one producer per type (regardless of year of manufacture) will be utilized in a belt of linked ammunition. A maximum of 100,000 cartridges will be packed as a lot. Lot number assignment will be according to MIL-STD-1168A. Data cards will be prepared and distributed according to MIL-STD-1167C and data item description DI MISC 80043.

(6) Conglomerate lots will be inspected for serviceability at the same interval as other category W items i.e., five years. Sample size will also be the same.

(7) Packed lots will be identified by DODIC and nomenclature furnished by IOC.

(8) Repackaging instructions will also be provided by IOC.

*C. SAA with lost lot identity.*

(1) All SAA with lost lot identity (excluding commercially procured items such as caliber ,22) will be picked up on accountable records in condition code K pending inspection and classification. Ammunition determined by inspection to be serviceable will be assigned condition code C priority-of-issue for training use in hand weapons (rifle. pistol or shotgun) or ground and vehicle mounted machine guns, M60 series (7.62-mm) and M2 or M3 series (caliber .50). Every effort will be made to expend the rounds in training. These rounds are also authorized for emergency combat use.

(2) Serviceable caliber .50 ammunition with lost lot identity will be used in the M85 machine gun for training provided that:

*(a)* M15A2 links which are suspected or known to have been previously cycled in M85 machine gun are not used. M15A2 link is designed for one time use.

*(b)* Field returns of loose rounds that were not linked in M15A2 links for use in M85 machine gun will not be issued for use in the M85 machine gun. Ammunition suitable for use in M85 is limited to assets known to be originally assembled with M15A2 link. and is limited to relinking of partial belts to standard pack configuration.

(3) SAA with lost lot identity is prohibited from use for overhead fire, All 7.62-mm ammunition with lost lot identity is also prohibited from firing in M73, M219 and M240 series machine guns.

(4) Munitions and configuration components (links. clip, etc.) will be segregated by caliber, type and model designation. A 100-percent visual inspection and classification of rounds and components will be made to include performance of required testing. where applicable. according to MIL-STDs. drawings and provisions of this appendix. Links which have been cycled through weapons will not be reused.

(5) Serviceable munitions will be assigned a local lot number consisting of a three digit activity symbol. lot sequence number. identification code "U" (unknown) and year established, e.g.. BAP-3U-80.

(6) Level of pack will depend on the local situation. As a minimum, preservation and packaging will be accomplished to assure adequate security, provide transportation safety and allow expected field handling by the user. In addition to standard markings. packaging will be identified by local lot number and training use marking, e.g.. DAP-3U-80, training use.

(7) Records and reports. DSR cards and accountable records will be maintained using the local lot number. Malfunction reports, WARS report, input, etc., on these munitions will be made in a usual manner using the local lot number. Ammunition Data Cards are not required for these lots.

(8) CONUS posts, camps or stations without adequate personnel and facilities to perform inspection and processing of SAA will report through command channels to IOC according to DA PAM 738-750 for disposition.

*d*. Repack of small caliber ammiunition. The following criteria is to be used when repacking stocks of ammunition through caliber .50 to different configurations:

(1) All lots must be certified for use in the weapon(s) for which they are being repackaged. Certification for each lot will be obtained by furnishing a list of component lots to AMSIO-QAS. Request for lot certification will indicate date repack is to start, designate the NSN to which ammunition will be repacked, and must be received by IOC at least three months before the operation is scheduled to begin. Lots not certified for use in weapons for which repack is being accomplished will require testing. Tests will be arranged by AMSIO-QAS upon request. Cost of tests must be borne by the requesting facility.

(2) Serviceability criteria.

(a) Ammunition will meet the visual inspection criteria specified by the appropriate Military Standard.

(b) Restricted or suspended ammunition will not be used in repack operations without specific authorization or instructions from the commodity command.

(c) Tracer lots will have more than one-half of the trace test interval remaining.

(3) Lot formation criteria.

(a) Functional lots must meet the requirements of appropriate military standards, specifications and drawings. The latest revision must be used unless otherwise directed by the commodity command. Small caliber ammunition assembled in metal link belts will be tested and inspected loo-percent according to the appropriate portion of MIL-STD-644, paragraph 5.1.6.

(b) No more than one lot of each component will be used in a functional lot.

(c) Functional lots will consist of a minimum of 30,000 rounds, unless otherwise specified by the commodity command. The maximum lot size will be controlled by the size of the major component (Ball, AP, API, etc.).

(d) When directed by the commodity command, hybrid lots may be authorized. In such cases, up to five major component lots and two minor component (tracer) lots may be used so long as each component displays the head stamp from one manufacture (i.e., all ball, all AP, all tracer, etc., have the same manufacturer). Year of manufacture may be disregarded. If two tracer lots are used, there must not be a variance of over lo-percent in any element of their tracer test (satisfactory, blind, specification trace) results. Hybrid lots will not exceed 250,000 rounds.

(e) Linked ammunition consisting of one component type and lot number will bear the lot number of the component lot, and an "L" will be used in the lot number to indicate functional pack. In some cases SAA will qualify for two identifier codes in place of a hyphen in the lot number (reference MIL-STD-1168A). In those cases where the functional pack identifier "L" conflicts with another identifier code, the "L" will be dropped and the other code will be used.

(f) Dummy small arms ammunition.

(1) Inspect dummy cartridges for such defects as damaged extractor groove/rim, damage which may preclude use, corrosion, and loose bullets.

(2) Dummy cartridges with defects other than those specified above will be considered serviceable as long as their intended purpose is unimpaired and they can be identified as dummy.

e. SAWS ammunition (5.56-mm cartridge, models M855 and M856) not fully seated in metallic link belts or with incidental dents on cartridge case shoulder should not be rejected. Such conditions do not affect serviceability of ammunition.

f. Load requirements for stockpile pull-testing of various SAA metal linked ammunition.

(1) The load requirements listed in table E-4 will apply.

(2) A belt consisting of the appropriate number of links and cartridges shall be capable of withstanding the appropriate tensile load without separation. Load shall be applied at a uniform rate and belt shall remain under tension as specified in Table E-4.

Table E-4. SAA Pull Test Requirements

| Type | #Belts | #Links | ##Ctgs | Load | Tension Time |
|---|---|---|---|---|---|
| 5.56mm | 10 | 6 | 6 | 19 lbs. | 30 seconds |
| 7.62mm | 10 | 25 | 25 | 25 lbs. | 30 seconds |
| Cal .30 | 10 | 25 | 25 | 25 lbs. | 30 seconds |
| Cal .50 | 10 | 25 | 25 | 80 lbs. | 30 seconds |

Note: Inner pack and item samples must be selected from a minimum of ten outer packs. Additional outer packs must be inspected at either the inspection or storage location(s) to make a total sample size of twenty. Pull test does not apply to caliber .50 M15A2.

g. Classification of primer defects.

(1) Visual standards for primer defects are contained in MIL-STD-636. The purpose of the standard is to provide a standard basis for inspection of small arms ammunition at various small arms manufacturing facilities.

(2) Defect classification of special in MIL-STD-636 is for new production. Table E-3 will be used for classification of primer defect criteria.

(3) Primer defects encountered while performing cyclic inspections will be reported IAW chapter 11.

## APPENDIX F
## CARTRIDGE, 60-MM MORTAR

**F-1. Item description.**

a. FSC: 1310.

b. SASIP: 742-1310-94-090.

c. Ammunition type: Cartridge, 60-mm mortar. Includes the M49series (HE), M50-series (TP), 1169 (training), M83-series illuminating), M302-series (WP), M720 (HE), and M888 (HE) models.

d. 60-mm cartridges are fin-stabilized rounds fired from smooth bore weapons. A complete round consists of a projectile, fin assembly, ignition cartridge, primer, propelling charge, and a fuze (the M69 trainer does not have a fuze). For a complete description of these rounds, see TM 43-0001-28 and the drawing for the particular round.

**F-2. Unique safety precautions.**

No unique safety precautions are applicable to this item.

**F-3. Testing and equipment requirements.**

a. All IRI samples will be gaged using a profile and alignment gage. Gaging is not normally required during PI, RI, or UBLI. Gaging, during these inspections (other than IRI), should be limited to individual rounds having visual evidence of damage or other conditions that may preclude loading and firing. Unless the rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

b. Table F-1 identifies test and measurement equipment.

*Table F-1. Equipment Identification List.*

| Description<br>Application | Drawing | NSN | Preferred Gage |
|---|---|---|---|
| Gage, profile and alignment ..... | 7256348 | 5220-00-305-6030 | YES |
| All models | | | |
| | 5539280 | 5220-00-395-4450 | NO |
| All models complete | | | |
| | 7256419 | 5220-00-395-4457 | NO |
| Short rounds only | | | |
| | 6518134 | 5220-00-395-4423 | NO |
| Short rounds only | | | |
| | 7258360 | 5220-00-395-4466 | NO |
| Short rounds only | | | |

**Note: Non-preferred gages will not be requisitioned or purchased but may be used if on-hand and serviceable.**

**F-4. Inspection category and sampling plan.**

a. Inspection category.

(1) Category V: 6 years (includes jungle pack HE, WP and TP).

(2) Category W: 5 years (includes inert items and jungle packed illuminating cartridges).

(3) Category X: 4 years (includes HE, WP and TP not in jungle pack).

(4) Category Y: 3 years (includes illuminating cartridges not in jungle pack).

(5) Inspection interval is to be reduced to 2 years for cartridge lots assigned condition code C due to discolored propellant.

b. The sampling plan for inspection is according to chapter 2.

**F-5. Specific inspection points.**

Items will be inspected and classified according to the appropriate paragraphs of this supply bulletin and table F-2.

**F-6. Inspection description and notes.**

a. All models with fuzes requiring safety wires.

b. All models with M65 series fuze.

c. All applicable fuze models.

d. Profile and alignment gage. Gage if visually questionable.

e. Place the damaged charge on a M27 fin, oriented so that the propellant rests against the damaged surface. Vigorously shake the fin and charge three times. If any propellant is spilled the damaged charge must be classified as a critical defect. If no propellant is spilled the damaged charge will be classed as a major defect.

f. Ignition cartridge must be assembled with red end next to the primers. (Dwg 9207925 and 9220383).

g. Normally done only during initial receipt inspection as stated in paragraph F-3a.

h. When a component is damaged, or incorrectly assembled, so as to affect the functioning or reliability of the round, it will be classified as a defect.

i. Discoloration of propelling charge containers is a result of high humidity and temperature in storage. Color change is from normal light yellow to dark yellow to light green progressing to darker shades of green. Change is evidenced by splotches of discoloration rather than a uniform transition of entire charge container. When discoloration is present inspections should focus on:

(1) possible residue buildup on the portion of the fin which is adjacent to the propellant containers.

(2) Deterioration of polyurethane foam lining of the propellant charge supports. Breakdown of this foam leaves residue on the charge containers.

Cartridges are to be considered serviceable if discolored propellant containers are hard, intact and buildup does not cover ignition flash holes. Cartridges exhibiting these conditions or with foam adhering to the propellant containers are to be assigned condition code C for priority of issue.

Table F-2. Item Defects and Method of Inspection.

| Classification | Application | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical: | | | |
| a. Warning label missing or illegible | M720 | Visual | |
| | M888 | Visual | |
| b. Fin blade damaged or distorted | M720 | Visual/Gage | Para F-6d |
| | M888 | Visual/Gage | Para F-6d |
| | M49-series | Visual/Gage | Para F-6d |
| | M83-series | Visual/Gage | Para F-6d |
| | M302-series | Visual/Gage | Para F-6d |
| c. Propelling charge support assembly missing or improperly positioned | M720 | Visual | |
| | M888 | Visual | |
| d. Propelling charge missing or damaged To the extent that propellant shall escape. | M720 | Visual/Manual | Para F-6e |
| | M888 | Visual/Manual | Para F-6e |
| e. Propellant increment missing | M49-series | Visual | |
| | M302-series | Visual | |
| f. Primer head above flush with rear surface of fin | M49-series | Straightedge | |
| | M50-series | Straightedge | |
| | M83-series | Straightedge | |
| | M302-series | Straightedge | |
| | M720 | Straightedge | |
| | M888 | Straightedge | |
| g. Fuze safety wire missing or insecure | Para 6a | Visual/Manual | |
| h. Fuze shear wire missing or insecure | Para 6b | Visual/Manual | |
| i. Ignition cartridge missing or inverted | M49-series | Visual | Para F-6f |
| j. Obturating ring missing | M720 | Visual | |
| | M888 | Visual | |

| | | | | |
|---|---|---|---|---|
| 2. | Major: | | | |
| | a. Propellant increment missing . . . . . | M83-series.. | Visual..... | |
| | b. Propellant increment cut or torn . . . . . | M49-series | Visual..... | |
| | | M83-series | Visual..... | |
| | | M302-series. | Visual..... | |
| | c. Propelling charge damaged but not to the extent that propellant will escape | M720.... | Visual/Manual. | Para F-6e |
| | | M888.. | Visual/Manual. | Para F-6e |
| | d. Fuze not fully seated . . . . . | M720.. | Visual ..... | |
| | | M888..... | Visual ..... | |
| | e. Fin assembly not fully seated . . . . . | M720..... | Visual ..... | |
| | | M888..... | Visual ..... | |
| | f. Obturating ring damaged . . . . . | M720..... | Visual ..... | |
| | | M888..... | Visual ..... | |
| | g. Obturating ring not flush or below . . . bourrelet diameter | M720... | Straightedge .. | |
| | | M888..... | Straightedge .. | |
| | h. Cartridge fails to fully enter profile and alignment gage | All..... | Gage ..... | Para F-69 |
| | i. Any component damaged or incorrectly assembled other than described elsewhere) | All.. | Gage ..... | Para F-6h |
| | j. Glue or asphalt on bourrelet area ... .. | All.. | Gage..... | |
| 3. | Minor: | | | |
| | a. Fuze not fully seated. | M49-series.. | Visual..... | |
| | b. Fin damaged or distorted . . . . . | M50-series.. | Visual/Gage... | Para F-6d |
| | | M69..... | Visual/Gage... | Para F-6d |
| | C. Propellant increment missing, cut, . . . or torn | M50-series.. | Visual..... | |
| | d. Ignition cartridge missing or inverted | M50-series.. | Visual ..... | Para F-6f |
| | e. Fuze not set on superquick (SQ) . . . . . | Para 6c..... | Visual ..... | |
| | f. Fuze not set on proximity (PROX) . . . . . | M734 fuze... | Visual ..... | |
| 4. | Incidental: | | | |
| | a. Propellant Container Discoloration | M888 | Visual | Para F-6i |
| | | M700-series | Visual | Para F-6i |

# APPENDIX G
# CARTRIDGE, 81MM MORTAR

G-1. Item description.

a. FSC: 1315.

b. SASIP: 742-1315-94-151.

c. Ammunition Type: Cartridge, 81mm mortar. Includes the following models:

(1) High explosive ammunition: M362 series, M374 series, M889 (improved mortar system), and M821 (improved mortar system).

(2) Red Phosphorous ammunition: M819 (improved mortar system).

(3) Illuminating ammunition: M301 series and M853A1 (improved mortar system).

(4) White phosphorous ammunition: M375 series.

(5) Training and practice ammunition: M43A1 (target practice), M68 (training), M879 (practice for improved mortar system), M880 (short range practice for improved mortar system), and a rebuild kit for M880 practice round.

d. Obsolete models not specifically addressed in this appendix include the M43 series (HE), M56 series (HE), M57 series (WP), and the M370 (WP). If these models are encountered, applicable portions of this supply bulletin will be used to inspect and classify these rounds.

e. Ml sabot and 22mm subcaliber cartridges are not to be inspected using this appendix. TM 9-1315-249-12&P provides procedures and criteria to supplement chapter 2 of this supply bulletin.

f. The 81mm cartridges are fin-stabilized rounds fired from smooth bore weapons. A complete round consists of a projectile, fin assembly, ignition cartridge, primer, propelling charge and, with the exception of the M68 trainer, a fuze. Improved 81mm ammunition (M800 series), M374A3, and M375A3 have an ignition cartridge assembly which includes a primer. Some models of HE cartridges are issued either with or without fuzes. All other rounds are issued fuzed (except the M68 which has no fuze). For a complete description of these rounds see TM 43-0001-28 and the drawings for the particular round.

g. The M374 and M375 series cartridges have differences between the basic and A1 projectile bodies depending on propelling charges for which they were originally designed. The basic M90 propelling charge has proven compatible and is authorized for use, with either basic or Al projectile bodies. The M90A1 propelling charge is only authorized for use with the A1 projectile bodies, due to a smaller bourrelet diameter than the basic. This reduction was necessary to cope with the greater bore fouling produced by the M90A1 propellant bag during firing. This dimensional difference between the basic and A1 model projectile body is not cause for gaging or measuring during inspection of a previously renovated lot. The ammunition data card should be checked to assure the propellant model is compatible with the projectile model. This difference must also be considered when planning replacement of the propellant.

h. Practice ammunition for the 81mm includes the M68 training cartridge and M1 sabot with separately issued 22mm subcaliber which is available in 4 charge levels (DODICs). Training ammunition for the improved 81mm system utilizes M1 sabots, full range practice rounds, M879, and a short range practice cartridge (M880). The M880 practice cartridge can be rebuilt by the unit from separately issued kits according to TM 9 1315 252 12 & P. Each kit contains replacement fuze, fuze windshield, ignition (propelling) cartridge, obturating ring, 3 plastic increment plugs, 3 dud plugs, and a breech plug assembly. All M880 cartridges must have been modified by drilling three holes and adding three dud plugs.

i. Many drawings for the improved 81mm (M800 series) cartridges are proprietary and therefore can not be reproduced or disseminated by IOC to other MACOMs.

j. Early procurement of improved 81mm HE cartridges from foreign sources was designated M821 or M889 depending on assembled fuzes. These model numbers will be changed to M984 or M983 respectively for later domestic production. Inspection criteria for M821 or M889 will also apply to M984 or M983 cartridges.

G-2. Unique safety precautions.

Packing clips are not to be removed from the M751 or M775 fuzes used with the M879 and M880 practice rounds during inspection. The packing clip is a positive safety mechanism that is to be removed only just prior to firing.

G-3. Testing and equipment requirements.

a. Gaging policy is provided in chapter 2 of this supply bulletin. Gaging is not normally required during PI, RI, or UBLI. Gaging, during these inspections (other than IRI), should be limited to individual rounds having visual evidence of damage or other conditions that may preclude loading and firing. Unless the rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

b. Table G-1 identifies test and measurement equipment.

*Table G-1. Equipment Identification List.*

| Description | Drawing | NSN | Application |
|---|---|---|---|
| Gage, profile and alignment ..... | 6518071 | 5220-00-395-4421 | All models |
| | 6518101 | 5220-00-395-4422 | Short rounds only |

**G-4. Inspection category and sampling plan.**

a. Inspection category.

(1) Category V: 6 years (includes jungle pack HE, WP, and practice cartridges).

(2) Category W: 5 years (includes inert items and jungle pack illuminating cartridges).

(3) Category X: 4 years (includes HE, WP and practice cartridges not in jungle pack).

(4) Category Y: 3 years (includes illuminating cartridges not in jungle pack, ignition cartridges and bulk propellant).

(5) Category Z: 2 years (includes cartridges in plastic mono pack, bulk primers, spotting charges and M880 rebuild kit).

(6) The 2 year inspection interval listed above does not apply to cartridges in plastic monopacks which have been overpacked in PA156 metal containers.

(7) Inspection interval is to be reduced to 2 years for cartridge lots assigned condition code C due to discolored propellant. Interval for all M819 and M853A1 cartridge lots manufactured prior to 1995 is also to be reduced to 2 years.

b. The sampling plan for inspection is according to chapter 2.

**G-5. Specific inspection points.**

Items will be inspected and classified according to this supply bulletin and table G-2.

*Table G-2. Item Defects and Method of Inspection.*

| Classification | Application | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical | | | |
| a. Fuze not set on safe | Para G-6a | Visual | |
| b. Fuze safety wire or bore riding pin missing, insecure or improperly engaged | Para G-6b | Visual/Manual | |
| c. Fuze packing clip missing, insecure, or not properly assembled | M751 fuzes | Visual | |
| | M775 fuzes | Visual | |
| d. Red band around striker pin is showing (possibly armed) | M751 fuzes | Visual | |
| | M775 fuzes | Visual | |
| e. Primer head above flush with rear edge of fin | M43 series | Straightedge | |
| | M301 series | Straightedge | |
| | M362 series | Straightedge | |
| | M374, A1, A2 | Straightedge | |
| | M375, A1, A2 | Straightedge | |
| f. Ignition cartridge head not below flush with rear edge of fin. | M374A3 | Straightedge | |
| | M375A3 | Straightedge | |
| | M800 series | Straightedge | |
| g. Any propellant increment cut, torn, or missing (with leaking propellant) | M301 series | Visual | |
| | M362 series | Visual | |
| | M374, A1, A2 | Visual | |
| | M375, A1, A2 | Visual | |
| h. Any propelling charge container missing or damaged (cracked or delaminated) so that propellant can escape | M374A3 | Visual | Para G-6m |
| | M375A3 | Visual | Para G-6m |
| | M800-series | Visual | Para G-6m |
| i. Fin assembly damaged, distorted, or cracked | Para G-6c | Visual/Gage | Para G-6g |
| j. Warning label on cartridge missing or illegible | M301A3 | Visual | |
| | M362 | Visual | |
| | M374 series | Visual | |
| | M375 series | Visual | |
| k. Obturating ring missing or broken | M374 series | Visual | |
| | M375 series | Visual | |
| | M800 series | Visual | |
| l. WP or RP leakage or evidence of leakage | M375 series | Visual | |
| | M819 | Visual | |
| m. One or more shear pins missing | M301 series | Visual | |
| | M853A1 | Visual | |
| | M819 | Visual | |
| n. Warning label on fuze missing or illegible (if required) | As required | Visual | Para G-6o |
| o. Crack(s) on projectile | All HE/WP | Visual | Para G-6n |
| 2. Major: | | | |
| a. Primer or ignition cartridge missing or inverted | Para G-6c | Visual | Para G-6l |
| b. Any propellant increment cut, torn, or missing | M43 series | Visual | |
| | M68 | Visual | |
| c. Propellant container damaged where propellant cannot escape | M374A3 | Visual | Para G-6m |
| | M375A3 | Visual | Para G-6m |
| | M800 series | Visual | Para G-6m |
| d. Any component damaged or incorrectly assembled (if not described elsewhere) | All | Visual | Para G-6h |
| e. Fuze assembly not fully seated | Para G-6d | Visual | |
| f. Fin assembly loose or not fully seated | Para G-6c | Visual/Manual | Para G-6i |
| g. Increment holders broken, loose, or improperly bent to hold increment. | Para G-6c | Visual/Manual | |
| h. Obturating ring not welded | M374 series | Visual | |
| | M375 series | Visual | |
| | M819 | Visual | |
| | M821 | Visual | |
| | M879 | Visual | |
| | M853A1 | Visual | |
| | M889 | Visual | |

| | | | |
|---|---|---|---|
| i. Obturating ring not flush or below bourrelet diameter | .M374 series. | Straightedge.. | Para G-6g |
| | M375 series. | Straightedge.. | Para G-6g |
| | M819..... | Straightedge.. | Para G-6g |
| | M821..... | Straightedge.. | Para G-6g |
| | M853A1..... | Straightedge.. | |
| | M879..... | Straightedge.. | Para G-6g |
| | M889..... | Straightedge.. | Para G-6g |
| j. Obturating ring damaged (other than broken) | .M374 series. | Visual..... | |
| | M375 series. | Visual..... | |
| | M800 series. | Visual..... | |
| k. Cartridge fails to freely enter profile and alignment gage. | All..... | Gage..... | Para G-6j |
| l. Glue, asphalt, wax, or cement on cartridge bourrelet area only). | All..... | Gage..... | Para G-6g |
| m. Fuze well liner missing or damaged . . . . . | .Para G-6e... | Visual ..... | |
| n. Monopack cracked completely through . . . . . | .M821..... | Visual..... | Para G-6p |
| | M889..... | Visual..... | Para G-6p |
| o. Monopack 0 Ring displaced out of groove . . . . . | .M821..... | Visual..... | Para G-6p |
| | M889..... | Visual..... | Para G-6p |
| p. Warning label on cartridges missing or illegible | M800 series. | Visual..... | |
| 3. Minor: | | | |
| a. Explosive in fuze well threads . . . . . | Para G-6e... | Visual ..... | Para G-6k |
| b. Closing plug not fully seated . . . . . | :Para G-6f... | Visual ..... | |
| C. Paint missing in an area greater than 1/4 inch square | .All..... | Visual ..... | |
| d. Fuzewell liner removeable by hand..... | .All..... | Manual ..... | Para G-6f |
| 4. Incidental: | | | |
| a. Propellant Container Discoloration | M374A3 | Visual | Para G-6r |
| | M375A3 | Visual | Para G-6r |
| | M800 series | Visual | Para G-6r |

G-6. Inspection description and notes.

a. All models with fuzes having a safe setting.

b. All models with fuzes requiring a safety wire, safety pin, or bore riding pin.

c. All except M68 models.

d. All fuzed cartridges.

e. All unfuzed HE cartridges.

f. All models with closing plugs.

g. Gage with a profile and alignment gage only if visually questionable. (4 power magnification permitted for identification of cracks.)

h. When the component is damaged to the extent that its functional effectiveness has been destroyed, it will be classified as a defect.

i. When the fin assembly can be turned upon application of hand pressure, it will be classified as a defect.

j. Normally done only during initial receipt inspection. See para G-3a above.

k. Caked explosive in threads will be classified as a defect. Explosive dust will not be considered a defect.

l. Ignition cartridge must be assembled with red end towards the fin (dwg 8881026). Cartridges with combined ignition cartridge and primer do not require specific orientation. These include trainers and improved 81 mm cartridges.

m. Rigid propellant containers have a water resistant finish to protect propellant from moisture contamination. Cracks, dents, seam, or propellant fill hole cover delamination or other damage would be classified as a major defect. If damage is severe enough to permit propellant to escape, the defect is critical. To check integrity of propellant containers, place the charge on a fin and hand shake vigorously three times.

n. Projectile body (HE or WP) with open or closed crack (cold-shut) is a safety hazard during firing.

o. Missing warning labels are not a defect for M524A5 and M524A6 fuzes. Cartridges missing warning labels will not be classified unserviceable based on this condition. DSR cards will be annotated and labels replaced during future renovation.

p. Any visual defect which would permit air and moisture to enter the container is to be classified as a major defect. Lots rejected for defective monopack containers are to be assigned condition code C.

q. Damaged metal outer containers for the M821 or M889 cartridges are not to be classified defective unless inspection indicates damage to inner container or damage is severe enough to require replacement for shipment. Internal cushioning will protect monopack inner container from damage even when metal container has dents one inch in depth.

r. Discoloration of propellant charge containers is a result of high humidity and temperature in storage. Color change is from normal light yellow to dark yellow to light green progressing to darker shades of green. Change is evidenced by splotches of discoloration rather than a uniform transition of entire charge container. When discoloration is present inspections should focus on:

(1) possible residue buildup on the portion of the fin which is adjacent to the propellant containers.

(2) deterioration of polyurethane foam lining of the propellant charge supports. Breakdown of this foam leaves residue on the charge containers.

Cartridges are to be considered serviceable if discolored propellant containers are hard, intact and buildup does not cover ignition flash holes. Cartridges exhibiting these conditions or with foam adhering to he propellant containers are to be assigned condition code C for priority of issue.

# APPENDIX H
# CARTRIDGE, 105MM HOWITZER

H-1. Item description.

a. FSC : 1315.

b. SASIP 742-1315-94-156

C. Ammunition Type: Cartridge, 105mm howitzer. Includes the following models: M1, HE; M760, HE; M60 series, WP; M84 series, HC, BE; M314 series, Illuminating; M327 series, HEP and HEP-T; M395, Blank; M444, HE (ICM); M546, APERS-T; M548, HERA; M913, HERA, and M629, Tactical CS. Does not include toxic filled or M413 (ICM), HE, and M84B1, Leaflet which are type classified obsolete. Does not include fixed (crimped) HE, M1 developed for Air Force use or M622, HEAT-T.

d. Army 105mm howitzer cartridges are semi-fixed and fired from rifled howitzers. A complete service round consists of a projectile, fuze, cartridge case with primer and propelling charge. Cartridges are issued fuzed or unfuzed. For a complete description of these rounds see TM 43-0001-28 and drawing for respective round.

H-2. Unique safety precautions.

a. Fuze MTSQ M501 and M501A1 are not drop safe. Dropping or rough handling of projectile assembled with either fuze can and has resulted in fuze functioning and expulsion of projectile contents.

b. Extra care should be taken when handling high explosive projectiles M1 and M760, as they are susceptible to sustaining non-visible cracks if dropped or struck on nose or ogive area against a hard surface. Potential for cracking increases greatly when temperature drops below 30 degrees Fahrenheit. Projectiles dropped onto hard surface during course of inspection, or suspected of having been dropped due to visible damage, should be segregated and assigned an unserviceable condition code.

c. All 105mm M14 dummy cartridges (C458) are to be assigned CC-H for disposal. These cartridges contain dummy M3 propelling charges which are loaded with "asbestos, short fiber, commercial." The M3 dummy propelling charges may be disposed of through local Defense Reutilization Marketing Organizations. Procedures for packaging and data required at time of turn-in can be obtained from IOC Safety Office.

H-3. Testing and equipment requirements.

a. All IRI samples will be gaged using gages identified in table H-l, as applicable. Gaging is not normally required during PI, RI, or UBLI. Gaging, during these inspections (other than IRI), should be limited to individual rounds having visual evidence of damage or other conditions that may preclude loading and firing. Unless the rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

b. Assure either Preformed Packing (O-ring), NSN 5330-00-584-1581 or 5330-00-265-1097 is available prior to conducting inspection of M444, HE. This will avoid delay in assembling torque tested fuzes to projectile. Always use new Preformed Packing for assembling fuze to projectile.

C. Pull tab type plastic closing plugs should not be reused with surveillance samples of HE cartridges, but be replaced by Plug, Closing for 105mm Cartridges, P/N 8785283, NSN 1315-00-077-2185 and Spacer, Deep Cavity, NSN 1395-00-077-2141. This will immobilize supplementary charge, as required by ammunition drawings.

Table H-1
Equipment Identification List

| Description | Drawing | NSN | Application |
|---|---|---|---|
| Gage, Profile & Alignment | 9280415 | 5220-01-295-5383 | All * |
| | 7258482 | 5220-00-313-3090 | All * |
| Gage, Concentricity (deep cavity) | 7304529 | 5220-00-395-4479 | All unfuzed M1, M760 and M913 |
| Gage, Plug, Thread and Concentricity | 6024125 | 5220-00-395-4397 | All unfuzed M84A1, M314 series, M60 series |

* Profile and Alignment Gages are interchangeable

NOTE: Special torque test equipment utilized to check fuze setting torque is specified in SASIP 742-1390-94-950.

H-4. Inspection category and sampling plan.

a. Inspection category.

(1) Category W: Lots with other than M67 propelling charges.

(2) Category Y: Lots with M67 propelling charges less than 15 years old, except M84 series, HC Smoke BE, and M629 Tactical CS.

(3) Category Z: Lots with M67 propelling charges 15 years and older, and M84 series, HC Smoke BE and M629, Tactical CS.

b. Cartridge, HE, M1; Smoke, WP M60 series; Smoke, HC M84 series; Illuminating, M314 series; Tactical CS, M629, and HE, M444 (ICM) offered for shipment and not inspected within the past year will be subjected to a preissue inspection.

C. Sampling plan for inspection is per chapter 2.

H-5. Specific inspection points.

a. Items will be inspected and classified according to this supply bulletin and table H-2.

b. Assembled fuzes will be inspected torque tested as required by SASIP 742-1390-94-950 (Appendix X). Remove fuze from projectile only if torque test is required.

C. Cartridge, 105mm, M60 series WP will be packaged with projectile base down. When packaged or unitized in other orientations and subjected to high temperatures (111+ degrees F) filler will melt, change position (hence center of gravity), and upon solidification cause poor ballistics with resultant short rounds.

d. HERA, M548 rocket motor spike may be contaminated with a yellow crystalline substance composed of 2-Nitrodiphenylamine. Double base cast propellants used in rocket motor also have a history of exuding a NG plasticizer which tests have proven to be quite insensitive. Both may give appearance of corrosion but presence of either substance is not a defect. Annotate occurrence on Depot Surveillance Record Cards for information purposes.

Table H-2

Item Defects and Method of Inspection

| Classification | Application | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical. | | | |
| a. Primer above flush. | All | Straightedge | Para H-6b |
| b. Loose primer. | All | Manual | Para H-6a |
| C. Cracks in projectile. | All | Visual | |
| d. Distorted or out of round projectile. | All | Visual/gage | |
| e. Exudation of filler around fuze well liner. | All HE | Visual | Para H-6i |
| f. Rocket-Off cap missing or pierced. | M548, M913 | Visual | |
| g. Incorrect number of propelling charge increments. | All with adjustable charges. | Visual | |
| h. Supplementary charge missing. | M1. M760 M548, M913 | Visual | Para H-6c |
| i. Fuze well liner missing. | M1, M760 M548, M913 | Visual | |
| j. Leaking black powder. | M84 series M314 series M395 blank | Visual | Para H-6j |
| k. Leaking WP | M60 series | Visual | Para H-6k |
| l. Projectile, HE; with damaged ogive/nose | M1, M760 | Visual | Para H-6d |
| m. Flash reducer missing insecure. | M913 | Visual | |

**2. Major.**

| | | | |
|---|---|---|---|
| a. Damaged rotating band | All | Visual | |
| b. Fuze well threads damaged. | All | Visual | Para H-6e |
| c. Fuze well threads fail to gage. | M1, M760 M548, M913 | Gage | Para H-6e |
| d. Fuze not staked or Improperly staked. | All fuzed cartridges | Visual/ Drawing | |
| e. Fuze fails disassembly torque test. | All fuzed Test | Torque | |
| f. Fuze fails setting torque test. | All with MTSQ (except M577 series) | Torque Test | Para H-6o |
| g. Cartridge case case severely dented. | All | Visual/ Gage | Para H-6f |
| h. 0-ring or fuze sealant missing. | M444 ICM | Visual | Para H-6g |
| i. Mixed zones. | All | Visual | |
| j. Propelling charge cut or torn. | All | Visual | Para H-6h |
| k. Deteriorated propellant bag. | All | Visual | Para H-6h |
| 1. Incorrect sequence of propelling charge increment. | All with adjustable charges. | Visual | |
| m. Foil side of bag. charge 5. not facing primer. | All w/M67 charges with lead foil. | Visual | Para H-6h |
| n. Lead carbonate or lead foil missing. | All | Visual | Para H-6h |
| o. Ctg case/proj fail to chamber gage. | All | Gage | Para H-6f |
| p. Hole through closing cup. | Blank, M395 | Visual | Para H-6n |
| q. Closure cup loose. | Blank. M395 | Manual | |
| r. Crack in closing cup. | Blank, M395 | Visual | Para H-6n |
| s. Tracer plug or disks damaged. | HEP-T, M327 | Visual | |
| t Excessive gap between rocket motor and warhead. | HERA, M548 M913 | Gage | Para H-6p |

**3. Minor**

| | | | |
|---|---|---|---|
| a. Closing cup seal damaged. | Blank. M395 | Visual | Para H-6n |
| b. Loose fuze well liners. | HE: M1, M760, M548, M913 | Manual | Para H-6m |
| c. Suppl charge pad missing. | M1, M760 M548, M913, | Visual | |
| d. Cord between increments broken. | All with adjustable increments. | Visual | |
| e. Fuze well spacer missing | All unfuzed HE and HERA | Visual | |

**H-6. Inspection description and notes.**

*a.* Remove propelling charge from cartridge case. Apply light side to side pressure to primer end with fingers. Primer is only press fit into cartridge case so care should be taken to avoid excess force. Slight movement of primer from side to side is not considered a defect unless movement results in primer head above flush with base of cartridge case.

*b.* A stiff non-sparking ruler with a true edge of at least 4 inches in length shall be swept across cartridge base. If resistance is noted, cartridge case will be considered to have a high primer.

*c.* Cartridges requiring supplementary charges may detonate in-bore if fired without charge. Supplementary charge prevents booster from striking base of fuze liner, should it separate from fuze.

*d.* HE projectiles known to have been dropped on ogive or evidencing damage to this area shall be classified unserviceable. Report this ammunition to. IOC, AMSIO-QAS by message, identifying lot number, quantity, and DODIC and include circumstances of incident causing damage. Retain cartridge, pending response to report.

*e.* Ascertain reason for gaging failure, ie. malformed threads, eccentric fuze well, cocked or shallow fuze well. etc. Projectiles with damaged threads which pass gaging are not defective. **A concentricity gage (deep cavity) is not available for M548 HERA cartridges. Utilize an inert M514A1 proximity fuze to assure acceptable concentricity and depth of fuze well. The M514A1 proximity fuze is available from IOC, ATTN: AMSIO-SMA; order part number 1920211-708153 I.**

*f.* Projectile should fit freely into mouth of cartridge case. Cartridges which fail gaging will be reported IAW para 2-7 of this bulletin.

*g.* Polysulfide rubber on fuze threads or O-rings between fuze and ogive are alternate methods to seal fuze well against intrusion of moisture. Absence of one or the other might cause degradation of expulsion charge with failure of cargo to eject properly.

*h. Propelling Charges.*

(1) M67 Propelling charge.

*(a)* Consists of seven numbered increment bags. Increments are stacked in cartridge case starting with increment one at the base.

*(b)* Charge 5 has lead foil sewn into bag (except for charges with integral lead carbonate). Foil must face primer. Visual inspection will indicate whether this is present.

(c) Lead carbonate has been introduced as an alternate to lead foil in new manufacture and was utilized exclusively, beginning with propellant lot RAD84C-070356. This compound is integral with the propellant grain in charges 3 through 7 and its presence cannot be determined by visual examination. Review of propelling charge Ammunition Data Card may not reveal lead carbonate or lead foil as components. Propelling charges manufactured with propellant manufactured prior to RAD84C-070356 require lead foil.

(d) Inspector will utilize SB-742-1300-94-2 in conjunction with this SASIP. Special emphasis will be placed on condition of cloth. Inspection history demonstrates loss of tensil strength may occur without prior discoloration.

(e) Assembled to HE, M1; Smoke, WP M60 series; HC Smoke, M84 series; Tactical CS, M629; Illuminating, M314 series; HE (ICM), M444.

(2) M176 Propelling Charge - Consists of five increments numbered 3 through 7 stacked starting with number 3 at the base. Charge assembled only to HERA, M548.

(3) M121 Propelling Charge - Consists of two increments numbered 6 and 7 with number 6 is found at the base. Assembled only to APERS-T, M546.

(4) Charge, Propelling for Cartridge, 105mm, HEP-T M327 (no model number) is a single increment charge assembled only to HEP, HEP-T M327.

(5) M200 Propelling Charge - Single increment charge assembled only to HE, M760.

(6) M229 Propelling Charge - Single increment, similar to M200 except for presence of flash reducer assembled to muzzle end of charge. Assembled only to HERA, M913

(7) Test tensile strength of cloth by placing parallel thumbs firmly on the propellant bag and applying tension to the cloth by spreading thumbs outward. Weakness of the cloth should be obvious and care must be taken so as not to severely rupture the bag, which would result in propellant spillage. Loss of tensile strength is usually accompanied by blue spots on bag. Cartridge lot should be given priority of issue for training and inspection cycle shortened (at discretion of QASAS in charge) if blue bags are encountered but not accompanied by loss of tensile strength. Ammunition not authorized for training will only be assigned a shorter inspection cycle.

(8) Small holes in bags are acceptable, providing they do not allow loss of propellant and are not attributable to deterioration.

i. Foreign matter in fuze well may be ascertained to be inert or high explosives by use of laboratory analysis. Webster's Reagent is unreliable and may only be utilized to confirm inertness. Color of explosives will range from burnt orange to brown color when reagent is applied to TNT or Composition B.

(1) Exudate may be identified as an oily liquid or resolidified mass at edges, bottom and/or sides of fuze well liner. Exudate results when explosives have been exposed to elevated temperatures (above authorized storage temperature), over a period of time and are forced through interface of fuze well liner and projectile. TNT contaminated with products residual to manufacturing process is prone to this. Lot history should be reviewed to expose extraordinary circumstances which could reveal cause of exudation, i.e. desert storage in South West Asia.

(2) Other causes of TNT explosives contamination are sloppy workmanship at time of manufacture and migration of small flakes from under fuze well liner. The latter form of contamination should not be cause for lot rejection but should be annotated on surveillance records and removed incidental to required minor maintenance.

j. Presence of black powder contamination in the fuze well due to defective expulsion charge is a critical defect.

k. Evidence of white phosphorus (WP) filler in fuze well is a critical defect. Submerge projectile in water filled container when condition is encountered.

l. Not used.

m. Remove supplementary charge, insert two fingers into fuze well, apply pressure to side of liner and attempt to remove it. Lot will not be rejected for loose fuze well liners. Instead, Depot Surveillance Record Card will be annotated and defect corrected at time of other required maintenance.

n. Superficial cracks in closure cup will not be cause for rejection. Cartridge is defective if cracks are deep enough to allow moisture contamination.

o. Procedures and accept/reject criteria are specified in SASIP appendix X.

p. A .006 feeler gage shall not enter this joint more than 1/8 inch for 360 degrees. This criteria is only applicable to ammunition in field service account.

# APPENDIX I
# CARTRIDGE, 105MM APFSDS-T. M735

I-1. Item description.

a. FSC: 1315.

b. SASIP: 742-1315-94-150.

c. Ammunition Type: Cartridge, 105mm Armor-Piercing Fin-Stabilized, Discarding-Sabot, with Tracer, (APFSDS-T) M735.

d. The M735 cartridge has six main components that are of particular concern in surveillance inspections. These components and their basic material compositions are as follows:

(1) Subprojectile: tungsten (core); steel/nickel (body).

(2) Sabot: aluminum (anodized).

(3) Bourrelet: steel.

(4) Obturating Band: nylon.

(5) Windshield: aluminum (anodized).

(6) Windshield tip: steel.

The design of the M735 round is typical of the new family of 105 mm APFSDS-T cartridges (such as the M735, M774 and M833) While lacking the depleted uranium (DU) core of the M774 or M833, the M735 cartridge does contain other design features characteristic of this family that warrant special emphasis during life-cycle surveillance of this round. These areas of emphasis are specified in paragraph I-5 of this appendix. For a complete, detailed description of this group of items, see appropriate TMs, drawings, and specifications.

I-2. Unique safety precautions.

No unique safety precautions are applicable to this item.

I-3. Testing and equipment requirements.

Table I-2 identifies test and measurement equipment and gaging requirements.

I-4. Inspection category and sampling plan.

a. Inspection category W: 5 years (for items in depot storage).

b. The sampling plan is according to chapter 2.

c. A stockpile reliability test program will be conducted on this cartridge. Samples selected for inclusion in this program will be inspected visually in accordance with table I-1 prior to shipment to the test site. Inspection results will be annotated on a DSR card and a copy of the card forwarded to HQ IOC, ATTN: AMSIO-IOE-S. The sampling interval will be as prescribed by HQ IOC. This program is designed to see what effect storage, uploading, handling, and downloading have on performance. Both ballistic testing and teardown inspection will be performed at designated CONUS locations.

d. Annual basic load inspection will be performed on this cartridge by QASAS according to chapter 8.

I-5. Specific inspection points.

Item will be inspected and classified according to chapter 2 and table I-1.

Table I-1. Item Defects and Method of Inspection.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical - none defined. | | |
| 2. Major. | | |
| a. Excessive lateral movement of projectile | Visual/Manual/Gage. | Para I-6a |
| b. Primer or igniter above flush | Visual/Gage | Para I-6b |
| c. Primer staking missing | Visual | Para I-6e |
| d. Windshield or windshield tip bent or damaged | Visual | Para I-6c |
| e. Windshield loose (lateral or longitudinal looseness only) | Manual | |
| f. Bourrelet cracked or loose | Visual | |
| g. Sabot cracked | Visual | |
| h. Missing parts (e.g., bourrelet, obturator, windshield tip, bourrelet screws). | Visual | |
| i. Hose clamp not removed from around sabot (reference TM 9-2350-series or dwg 9296707). | Visual | |
| j. Obturating band damaged (i.e., cracked, broken, or gouged) | Visual | |
| k. Failure of cartridge to gage | Gage | Para I-6d |
| 3. Minor: | | |
| a. Windshield cushion missing | Visual | |
| b. Evidence of poor workmanship | Visual | |

I-6. Inspection description and notes,

a. Inspection for excessive lateral movement of projectile:

(1) Surveillance samples with projectiles exhibiting lateral movement are not considered defective unless one or more of the following conditions are noted:

(a) Cartridge deformation preventing profile and alignment gaging or chambering.

(b) Crimp out of groove.

(c) Evidence of propellant dusting on the outside of the cartridge case or projectile.

(2) The ability to fully gage or chamber the round should be the determining factor in doubtful cases.

b. Testing has demonstrated that the electric primer assembled to this round is insensitive to initiation from mechanical impact. Primers or igniters above flush are therefore to be considered major defects rather than critical. (Any straight edge rule is suitable for checking this characteristic.)

C. Pending fielding of a gage calibrated to the maximum allowable amount of windshield or windshield tip deformation, any visible amount of bend, or other conformation irregularity is to be considered a major defect.

d. Perform gaging according to table I-2.

Table I-2. Equipment Identification List.

| Description | NSN | Application | inspection |
|---|---|---|---|
| Gage, ring . . . . . ..... | 5220-00-395-4486 | Projectile | IRI, RI, PI, UBLI |
| Gage, profile and alignment | 5220-00-231-7775 | Complete cartridge | IRI |

Note 1. Ring gaging required only if round fails profile and alignment gaging.

Note 2. Profile and alignment gaging required only if not accomplished during IRI, or if round is visibly damaged. (Profile and alignment gaging is required only one time during life cycle of lot.)

e. Primers must be staked in two places, approximately 180-degrees apart. Stakes should show evidence of moving cartridge case material into joint at cartridge case to primer. Stakes on primers with wrench holes will not necessarily deform wrench hole. If there is no evidence of metal deformation at cartridge case and primer joint, then perform the following:

(1) Mark a line across primer head and cartridge case.

(2) Apply disassembly torque of 175-inch pounds.

(3) Check line to verify no movement.

## APPENDIX J
## CARTRIDGE, 105MM APFSDS-T, M774, M833 and M900

J-1. Item description.

a. FSC: 1315.

b. SASIP: 742-1315-94-152.

Ammunition Type: Cartridge, 105mm Armor-Piercing Fin Stabilzed, Discarding-Sabot, with Tracer (APFSDS-T) M774: M833 and M900.

d. These rounds use a kinetic energy penetrator made from depleted uranium (staballoy). Because of the toxic nature of U238 when ingested into the body, more stringent inspection criteria must be used to assure that no hazard exists to personnel handling the items. Also, the design and material composition of the cartridges represents a departure from previous generations of armor-piercing tank ammunition. The design and material configuration warrant special emphasis during the life cycle surveillance of the cartridges. The basic material compositions of projectile components are as follows:

(1) Fin: aluminum (anodized).

(2) Windshield: aluminum (anodized).

(3) Sabot: aluminum (anodized).

(4) Windshield Tip: steel.

(5) Penetrator: staballoy (depleted uranium).

(6) Bourrelet: steel.

(7) Sabot Seal: rubber (silicon).

(8) Obturator: nylon.

(9) Sealing Band: polypropylene.

(10) Bourrelet Screws: steel.

J-2. Unique safety precautions.

a. Because of the toxic nature of depleted uranium (DU), SOPS will be developed locally to assure that personnel involved in operations with DU rounds are protected from possible ingestion. SOPS should include procedures covering accidents, storage, incidents, and reporting requirements involving rounds containing radioactive (DU) materials. (Reference TB 9-1300-278, Guidelines for Safe Response to Handling, Storage, and Transportation Accidents Involving Army Tank Munitions Which Contain Depleted Uranium).

b. Procedures for commercial transportation of radioactive (DU) materials must fully reflect the applicable requirements of 49CFR173 and AR 385-11, in addition to necessary actions required prior to commercial shipment of explosives. Procedures include a requirement to swipe test the exterior of all pallets and unpalletized outerpacks prior to shipment. Analyze swipe taken on pallet/outerpack according to paragraph J-7.

c. Cartridges are exempted by NRC license from labeling requirements for radiologic material. Shipments must comply with DOT Exemption DOT-E-9649.

d. Projectiles with evidence of damage and/or corrosion will be inspected and swipe (smear) tested for evidence of contamination. The swipe (smear) test will be conducted as specified in paragraph J-7.

e. Personnel handling DU rounds should wear gloves and should not eat, drink, or smoke until hands are thoroughly washed with soap and water.

f. Accidents and incidents involving DU munitions will be reported through the local RPO to the license RPO, IOC Safety, AMSIO-DMS. These include: theft or loss of control; functioning; fires, explosions, or accidents where DU munitions are, or could be damaged; or damage that exposes or releases DU to the environment.

g. QASAS conducting UBL Inspection at 105mm tank units should assure that only Ml Abrams tank units are in possession of Ctg, 105mm, APFSDS-T. M900.

J-3. Testing and equipment requirements.

Table J-1 identifies test and measurement equipment and gaging requirements.

Table J-1. Equipment Identification List.

| Description | NSN | Application | Inspection |
|---|---|---|---|
| Gage, profile and alignment . | 5220-00-231-2775 | Complete cartridge | IRI,RI,PI,UBLI |
| Proportional counter . . . . . | | As specified in para J-7 | IRI,RI,PI,UBLI |
| Swipe, Cloth, Test (NOTE 2) | 6665-01-198-7573 | Swipe Test | IRI,RI,PI,UBLI |

Note 1. Profile and alignment gaging required only if not accomplished during IRI, or if round is visibly damaged. (Profile and alignment gaging is required only one time during life cycle of lot.)

Note 2. Swipe (smear) test will only be performed on damaged and/or corroded projectiles.

J-4. Inspection category and sampling plan.

a. Inspection category: Category W (five years).

b. Sampling plan for inspection is according to chapter 2.

c. A stockpile reliability test program will be conducted on cartridges which will require samples to be selected from specific lots in basic load. Samples will be inspected visually according to table J-2 of this appendix prior to shipment for test. Inspection results will be annotated on a DA Form 984, and a copy forwarded to HQ, IOC, ATTN: AMSIO-QAS. Sampling intervals will be as prescribed by HQ, IOC. This program is designed to see what effect uploading, handling, and downloading by tank crews have on performance. Both ballistic testing and physical teardown inspection will be performed by designated licensed facilities. DU ammunition samples will not be individually swiped. Only exterior container swipe IAW paragraph J-7n will be done. Samples will be swiped as part of ASRP test.

d. Annual basic load inspections will be performed on cartridges by QASAS according to chapter 8 and table J-2. Ammunition contained in basic load stocks will not be rejected for minor correctable defects.

J-5. Specific inspection points.

Item will be inspected and classified according to Chapter 2 and table J-2.

**Table J-2. Item Defects and Method of Inspection.**

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical - Projectile loose in cartridge case (M900) | Visual/manual | Para J-6i(4) |
| 2. Major. | | |
| a. Windshield or windshield tip bent or damaged | Visual | Para J-6a |
| b. Windshield loose (lateral or longitudinal looseness only) | Visual/Manual | Para J-6a |
| c. Bourrelet cracked or loose | Visual/Manual | Para J-6a |
| d. Missing parts (e.g., bourrelet, obturator, windshield tip, bourrelet screws). | Visual | Para J-6a |
| e. Corrosion on projectile parts (pitting) | Visual | Para J-6a |
| f. Corrosion of primer as specified by TM 9-1300-251-20 | Visual | Para J-6a, J-6c |
| g. Yellow/yellowish white projectile corrosion | Visual/Swipe | Para J-6a, J-6d |
| h. Failure of cartridge to gage | Gage | Para J-6a, J-6e |
| i. Damaged inner or outer container | Visual | Para J-6a, J-6f |
| j. Hose clamp(s) not removed from sabot | Visual | Para J-6a |
| k. Primer or igniter above flush | Straightedge | Para J-6a, J-6g |
| 1. Primer staking missing | Visual | Para J-6a, J-6h |
| m. Obturating band damaged (e.g., cracked, broken, or gouged) | Visual/Gage | Para J-6a |
| n. Sabot damaged (e.g., cracked, broken, or gouged) | Visual/Manual | Para J-6a |
| o. Lateral movement of projectile (M774 and M833) | Visual/Manual | Para J-6a, J-6I |
| p. Rust, metal tears or cracks in cartridge case (M833 and M900) | Visual | Para J-6a |
| q. Damage to cartridge which may expose DU core | Visual/Swipe | Para J-6a, J-6d |

| | | |
|---|---|---|
| 3. Minor: | | |
| a. Damaged inner or outer container . . . . . | Visual/Manual.... | Para J-6b, J-6f |
| b. Protective windshield cushion missing . . . .. . . . . | Visual..... | Para J-6b |

J-6. Inspection description and notes.

a. Cartridges having any major defects will be reported according to DA PAM 738-750, regardless of dollar value. Defective quantities which are authorized for repair or demilitarization will be transferred as directed by HQ, IOC, to a facility licensed to perform these procedures.

b. Replacement containers and protective windshield cushion should be requisitioned as required according to the procedures in applicable technical manuals.

c. Refer to paragraph 3-5, TM 9-1300-251-20 for inspection criteria.

d. Projectile will be swipe tested according to paragraph J-7 if any of the following conditions exist: Corrosion in sabot gaps, windshield interfaces or if physical damage to projectile is noted which could expose DU core.

e. Perform gaging according to table J-1.

f. Inspect packing material according to chapter 2.

g. Testing to date has not shown electric primer assembled to these cartridges to be sensitive to initiation from mechanical impact. Primers or igniters above flush are therefore to be considered major defects rather than critical. (Any straight edge rule is suitable for checking this characteristic.)

h. Primers must be staked in two places, approximately 180 degrees apart. Stakes should show evidence of moving cartridge case material into joint at cartridge case to primer. Stakes on primers with wrench holes will not necessarily deform wrench hole. If there is no evidence of metal deformation at cartridge case and primer joint, perform the following:

(1) Mark a line across primer head and cartridge case.

(2) Apply disassembly torque of 175 inch pounds.

(3) Check line to verify no movement.

i. Surveillance samples with projectiles exhibiting lateral movement are not considered defects unless one or more of following conditions are noted:

(1) Cartridge case deformation preventing profile and alignment gaging or chambering.

(2) Crimp out of groove.

(3) Evidence of propellant dusting on outside of cartridge case or projectile.

(4) There shall be no movement of M900 projectile within the cartridge case; ie., rotating, wobbling, and/or evidence of an unsecured manner.

J-7. Swipe (smear) test.

a. Chance of any DU particles migrating to surface of projectile is considered remote, therefore, swipe test will only be performed under either of the following circumstances:

(1) damaged cartridge with possible core exposure

(2) cartridge with visible corrosion (powdery substance) on sabot, sabot gaps or windshield interfaces.

b. The following safety precautions should be observed when performing swipe test:

(1) Do not eat or drink while swipe testing. Radioactive materials pose the greatest harm if taken internally, such as by ingestion. Keep hands away from face.

(2) Do not perform swipe test with exposed open cuts or sores. Cover any open cuts or sores with bandages and wear protective rubber gloves. Radioactive material can also be taken internally through open cuts.

(3) Do not clean projectile prior to swipe test.

(4) Wash hands thoroughly with soap and water when testing is completed.

c. Fill in information required on front of swipe folder to include date, time, swipe number, location and technician.

d. Swipe does not have to be removed from paper strip during test.

Using moderate pressure, wipe surface of projectile along seams between sabot segments and seam of junction between windshield and sabot with swipe. Swipe should also include any area of the projectile with visible powder/corrosion. Use one swipe per cartridge.

f. Once swipe has been taken, care must be taken to prevent cross contamination. Do not touch side of swipe paper that was used for taking swipe.

g. Fold paper strip over once so that swipe is covered. Place swipe in resealable plastic pouch.

h. Swipes taken on individual cartridges will be tested for radioactivity with a proportional counter. Proportional counter may be located at a central location, and swipes forwarded for reading. Field locations may use AN/PDR 27 and AN/PDR 60 for identification of gross radiation hazards only. The proportional counter is required to measure limits specified in paragraph j below.

i. Exact procedure for measuring activity will depend upon equipment and facilities available. Each swipe must be marked so that a specific cartridge can be located again. Measurement of activity shall be performed by, or under guidance of, a Health Physicist or Radiation Protection Officer.

j. Activity levels exceeding background by 500 disintegrations per minute (DPM) alpha or 100 DPM beta-gamma may indicate a potential corrosion problem. Although activity levels at these DPM values are not considered to present a health hazard, it is desirable to identify initiation of a corrosion problem long before contamination results.

k. Any cartridge with reading which exceeds established background level by above amounts will be sealed in plastic, and the cartridge will be returned for examination to a facility licensed to disassemble DU cartridges (as directed by IOC).

l. Whenever activity levels exceed 500 disintegrations per minute (DPM) immediately notify:

(1) Commander, Industrial Operations Command, ATTN: AMSIO-QAS/DM, Rock Island, IL 61299-6000.

(2) Commander, ARDEC, ATTN: AMSTA-AR-QAC-T, Picatinny Arsenal, NJ 07806-5000.

m. A report will also be submitted to the addresses in paragraph 7 above when any activity levels are measured which exceed background levels of the counter being used by a factor of two. This report will include background and swipe readings; type, serial number, and calibration date of test instrument; and any other information deemed relevant.

n. Following procedure can be used to monitor pallet/outer pack prior to shipment. This procedure is not authorized for individual cartridges.

(1) Swipe at least a 300 square centimeter area of pallet/outer pack.

(2) Check swipe with an AN/PDR 27, 56 or 60 radiac meter, or equivalent. Reading of twice background is indicative of contamination.

(3) If readings indicate contamination, notify offices in paragraph 7 above.

J-8. References.

a. TM 9-1300-251-20.

b. TM 9-1300-251-34.

c. TM 43-0001-28.

d. TM 9-2350-305-10.

e. DMWR 9-1315-C523-X1.

f. DMWR 9-1315-C524-X20.

g. TM 9-2350-356-14

h. TB 9-1300-278

i. AR 385-11

APPENDIX K
CARTRIDGE, 4.2 INCH MORTAR

K-1. Item description.

a. FSC: 1315.

b. SASIP: 742-1315-94-153.

c. Ammunition type: Cartridge, 4.2 inch Mortar. Includes the following models: M328 series (WP), M329 series (HE), M335 series (illuminating), and the M630 (tactical CS). The M2 series WP or PWP and the M3 series HE are obsolete and not specifically addressed in this appendix. If these models are encountered they should be inspected and classified using the applicable portions of this supply bulletin as a guide.

d. The 4.2-inch cartridges are spin stabilized rounds fired from a rifled bore muzzle loading weapon. For a complete description of these rounds, see TM 43-0001-28 and the drawings for the particular round.

K-2. Unique safety precautions.

a. WP cartridges manufactured prior to 1966 may contain bursters loaded with tetrytol. Lots which contain tetrytol bursters will be placed in condition code F for replacement of bursters. Screening for evidence of explosive growth or exudation prior to issue for use is not considered practical or timely.

K-3. Testing and equipment requirements.

a. All IRI samples will be gaged using a profile and alignment gage and concentricity gage. Gaging is not normally required during PI, RI, or UBLI. Gaging, during these inspections (other than IRI), should be limited to individual rounds having visual evidence of damage or other conditions that may preclude loading and firing. Unless the rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

b. Table K-1 identifies test and measurement equipment.

**Table K-1. Equipment Identification List.**

| Description | Drawing | NSN | Application |
|---|---|---|---|
| Gage, profile and alignment . . . . . | 9278618 | 5220-01-165-4567 | M329A2 |
| Gage, profile and alignment ..... | 7258457 | 5220-00-313-3091 | All except M329A2 |
| Gage, depth and concentricity, deep cavity | 7304529 | 5220-00-395-4479 | M329 series unfuzed |

**K-4. Inspection category and sampling plan.**

a. Inspection category.

(1) Category V: 6 years (includes jungle pack HE and WP.

(2) Category W: 5 years (includes inert items and jungle pack illuminating cartridges.

(3) Category X: 4 years (includes CS in jungle pack and HE and WP not in jungle pack).

(4) Category Y: 3 years (includes illuminating cartridges not in jungle pack and bulk ignition cartridges or propellant).

(5) Category Z: 2 years (includes CS not in jungle pack and bulk primers)

b. The sampling plan for inspection is according to chapter 2.

**K-5. Specific inspection points.**

Item will be inspected and classified according to chapter 2 and table K-2.

*Table K-2. Item Defects and Method of Inspection.*

| Classification | Application | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical: | | | |
| a. Excessive number of increments | All | Visual | |
| b Insufficient number of increments | M328 series | Visual | |
| | M329 series | Visual | |
| c. Bag loading assembly missing or damaged to the | M328A1 | Visual | |
| extent that propellant can escape | M329A1 | Visual | |
| | M329A2 | Visual | |
| d. Pressure plate incorrectly assembled (reversed) | M329 | Visual | Para K-6d |
| | M329A1 | Visual | Para K-6d |
| e. WP leakage or evidence of leakage | M328 series | Visual | |
| f. Zone weight markings incorrect | M328 series | Visual | |
| | M329 | Visual | |
| | 329A1 | Visual | |
| g. Fuze not set on safe (except for Fuze, MT, M565) | Para K-6a | Visual | |
| h. Fuze safety wire or pin missing, broken, insecure or improperly engaged. | Para K-6b | Visual | |
| i. Supplementary charge pad missing (unfuzed) | M329 series | Visual | |
| j. Fuze well liner missing (unfuzed) | M329 series | Visual | |
| k. Explosive extends above the top of the fuze well liner | M329 series (unfuzed) | Visual | |
| l. Fuze well liner not fully expanded and not making contact with fuze well threads for full 360 degrees. | M329A2 (unfuzed) | Visual | |
| m. Explosive growth of burster | Para K-6c | Visual | |

| | | | | |
|---|---|---|---|---|
| 2. Major: | | | | |
| a. | Ignition cartridge missing | All | Visual | |
| b. | Insufficient number of propellant increments | M335 series | Visual | |
| | | M630 | Visual | |
| c. | Bag loading assembly missing or damaged to the extent that propellant can escape | M335A1 | Visual | |
| | | M335A2 | Visual | |
| | | M630 | Visual | |
| d. | Broken or chipped propellant increments | All | Visual | Para K-6e |
| e. | Any propellant holder missing | All | Visual | |
| f. | Rear propellant holder improperly seated | M329A2 | Visual | |
| g. | Pressure plate incorrectly assembled (reversed) | M328 series | Visual | Para K-6d |
| | | M335 series | Visual | |
| | | M630 | Visual | |
| h. | Pressure plate nut not properly staked | M328 series | Visual | |
| | | M329 | Visual | |
| | | M329A1 | Visual | |
| | | M335 series | Visual | |
| | | M630 | Visual | |
| i. | Rotating disc loose or improperly assembled | M328 series | Visual | |
| | | M329 | Visual | |
| | | M329A1 | Visual | |
| | | M335 series | Visual | |
| | | M630 | Visual | |
| j. | Rubber obturator improperly assembled, damaged or missing | M329A2 | Visual<br>Manual | Para K-6k |
| k. | Extension pin missing | M328A1 | Visual | |
| | | M329A1 | Visual | |
| | | M335A1 | Visual | |
| | | M335A2 | Visual | |
| l. | Supplementary charge missing or inverted (unfuzed) | M329 series | Visual | |
| m. | Any component missing, damaged or incorrectly assembled (other than described elsewhere). | All | Visual | Para K-6f |
| n. | Misalignment of fuze well liner with center line of M329 series projectile | Gage (unfuzed) | Para K-6g | |
| o. | Depth to bottom of fuze well liner - minimum | M329 series (unfuzed) | Gage | Para K-6g |
| p. | Fuze well liner loose | M329 series (unfuzed) | Manual | Para K-6g |
| q | Fuze not fully seated | M329 series (fuzed) | Visual | |
| r. | Glue asphalt, wax or cement on bourrelet area of cartridge. | All | Gage | |
| s. | Supplementary charge not removable by hand or tab is missing | M329 series (unfuzed) | Visual | |
| t. | Cartridges fails to freely pass through profile and alignment gage | All | Visual | Para K-6g |
| **u.** | **Fuze not set on safe** | **M565** | **Visual** | **Para K-6a** |
| 3. Minor: | | | | |
| a. | Fuze stake missing | All (fuzed). | Visual | |
| b | Supplementary charge spacer missing | M329 series (unfuzed) | Visual | Para K-6h |
| c. | Supplementary charge damaged | M329 series (unfuzed) | Visual | |
| d | Explosive on fuze well threads | M329 series (unfuzed) | Visual | Para K-6I |
| e. | Shear or twist pin above flush | M335 series | Visual | |
| | | M630 | Visual | |
| 4. Incidental | | | | |
| | Warning label missing or unidentifiable | M328 series | Visual | Para K-6j |
| | | M329 | Visual | Para K-6j |
| | | M329A1 | Visual | Para K-6j |
| | | M335 series | Visual | Para K-6j |
| | | M630 | Visual | Para K-6j |

## K-6. Inspection description and notes.

a. All models which have a safe setting, except for Fuze, MT, M565. Fuze, MT, M565 not set on safe is a major defect

b. All models with fuzes requiring a safety wire or pin.

c. M328 series with tetrytol bursters (see para K-2).

d. Red face must not be visible.

e. Propellant broken below the seam, or total loss of 1/8 to 1/2 increment, will be classified a major defect. Propellant broken, but not below the seam, or total loss less than 1/8 increment, will be classified an incidental defect.

f. When a component is damaged to the extent that its functional effectiveness has been destroyed, it will be classified as a defect.

g. Normally done only during initial receipt inspection. Assure that gage flange makes even contact with forward edge of projectile when fully inserted. If possible, establish cause for projectile's failure to gage (such as cocked liner, fuze well liner not fully inserted, foreign matter in threads, damaged threads, etc.).

h. Does not apply to new type plug (polyethylene) which does not require a spacer.

i. Caked explosive in the threads will be classified as a defect. Explosive dust will not be considered a defect.

j. This label which reads "Warning: Remove container extension and reduce propellant to not more than 25 and 1/2 increments before firing in 4.2 inch mortar M2" is applicable only to the M2 mortar. The M2 mortar was classified obsolete on 13 June 1957, and there are no known weapons in any U.S. inventory. Some allied countries may still be using the M2 mortar; therefore, whenever lots are encountered with missing labels, a remark should be included on the DSR card to ensure the lot is not shipped FMS or Grant Aid.

k. Obturator.

(1) The obturator bristles must slant clockwise when viewed from the rear of the cartridge.

(2) The bristle strips must be fully seated in the obturator groove with no obvious bulging of the bristle strips above the obturator groove.

(3) Two slits and white dots on the obturator must be oriented towards the rear of the round, the trailing edge of the obturator must be thinner than the leading edge when assembled to the cartridge.

(4) Other obturator damage (including the bristle strips) which would adversely affect the round's fit in the mortar tube or result in obturator failure will be cause for cartridge rejection.

APPENDIX L
CARTRIDGES, 120MM,
M829, M829A1, M829A2, M830, M830A1, M865, AND M831A1

L-1. Item Description:

a. DODACs AND AMMUNITION TYPE:

(1) 1315-C786: Cartridge, 120MM, APFSDS-T, M829.
(2) 1315-C380: Cartridge, 120MM, APFSDS-T, M829A1.
(3) 1315-C792: Cartridge, 120MM, APFSDS-T, M829A2.
(4) 1315-C787: Cartridge, 120MM, HEAT-MP-T, M830.
(5) 1315-C791: Cartridge, 120MM, HEAT-MP-T, M830A1.
(6) 1315-C784: Cartridge, 120MM, TP-T, M831A1.
(7) 1315-C785: Cartridge, 120MM, TPCSDS-T, M865.
(8) 1315-CA05: Cartridge, 120MM, HE-OR-T, XM908.

b. SASIP: 742-1315-94-154

c. M829 Series Cartridges: The M829 series cartridges contain several main components which are of particular concern during surveillance inspections. These components and their basic composition are as follows:

(1) Subprojectile: DU penetrator with aluminum fin, aluminum windshield, and steel windshield tip. The M829A1 has a blunt windshield tip which is not removable.

(2) Sabot:

(a) M829- Four segment aluminum & anodized.
(b) M829A1- Three segment aluminum & anodized.
(c) M829A2- Three segment composite.

(3) Centering Band: Nylon (M829 only).

(4) Obturator: Nylon.

(5) Combustible Cartridge Case: Painted and sealed nitrocellulose.

(6) Combustible Forward Adapter: Inert

(7) Case Base and Seal Assembly (AFT CAP): Steel with rubber.

d. M865 Cartridge, TPCSDS-T:

(1) Subprojectile: Steel Core (tactical rounds have penetrators, training sabot cartridges have cores) with an aluminum conical fin.

(2) Sabot: Aluminum (anodized).

(3) Rear Band: Nylon.

(4) Obturator: Rubber seal.

(5) Combustible Cartridge Case: Painted and sealed nitrocellulose.

(6) Case Base and Seal Assembly: Steel with a rubber seal.

e. M830 and M830A1, HEAT-MP-T; XM908, HE-OR-T and M831A1, TP-T

(1) Projectile:

(a) M830: Steel Body and spike with an aluminum boom and fin.

(b) M830A1: Three aluminum sabot segments and a steel warhead assembly with a stainless steel proximity switch, ogive, and aluminum fin and boom.

(c) XM908: Same as the M830A1 except that the proximity switch has been replaced with a solid steel nose cone.

(d) M831A1: Aluminum body and steel spike assembly with an aluminum stabilizer.

(2) Centering Band:

(a) M830: Copper.
(b) M830A1 & XM908: (Has Sabot)
(c) M831A1: Nylon

(3) Combustible Cartridge Case: Painted and sealed nitrocellulose. The M830 has a live forward adapter (nitrocellulose)

(4) Case Base & Seal Assembly: Steel with a rubber seal.

**L-2. Unique Safety Precautions:**

a. M829 Series:

(1) Because of the toxic nature of depleted uranium (DU), SOPs should be developed locally to assure personnel involved in operations with DU rounds are protected from possible ingestion. The SOPs should include procedures covering accidents, incidents, storage and reporting requirements involving round containing radioactive (DU) materials (reference TB 9-1300-278, "Guidelines for Safe Response to Handling, Storage, and Transportation Accidents Involving Army Tank Munitions Which Contain DU").

(2) Procedures for the commercial transportation of DU materials must fully reflect the applicable requirements of 49 CFR 173 and AR 385-11, in addition to the necessary actions required prior to a commercial shipment of explosives.

(3) Cartridges are exempted by NRC license from labeling requirements for radiological material. All shipments must comply with DOT exemption DOT-E-9649.

(4) Projectiles with evidence of damage and/or yellow corrosion will be inspected and swipe (smear) tested for evidence of DU contamination. The swipe test will be conducted as specified in paragraph L-7.

(5) Personnel handling DU cartridges should wear gloves and should not eat, drink, or smoke until they have thoroughly washed their hands with soap and water.

(6) Accidents and incidents involving DU munitions will be reported through the local Radiation Protection Officer (RPO), to HQ, IOC, ATTN: AMSIO-SF, Rock Island, IL 61299-6000. These include: theft or loss of control, functioning, fires, explosions or accidents where the DU munitions are or could be damaged, or damage that exposes or releases DU to the environment.

b. All 120MM Ammunition:

Care must be taken when handling ammunition assembled with combustible cartridge cases. The combustible cartridge case must not be damaged or scratched during handling. Handle the cartridge by the metal case base and projectile sabot.

**L-3. Gaging and Test Requirements:**

a. Gaging will be performed IAW SB 742-1, para 2-8:

(1) Every lot must be gaged at least once during its storage life cycle and results must be documented on Depot Surveillance Record card.

(2) Gaging will be accomplished whenever possible during initial receipt inspection or at the next scheduled periodic inspection, and/or whenever conditions such as exposure to adverse conditions, deterioration, damage, etc indicate a need to verify serviceability.

(3) M839A2 cartridges may exhibit a chambering problem if they have been exposed to water or a high humidity and high temperature environment such as standing water or visible condensation in the ammunition stowage compartment, or if they have been subjected to unpackaged storage. Cartridges should be checked for chamberability using a Man Portable Chamber Gage (MPCG) Set, P/N 12948079, on a monthly basis. P/N 12948079 includes Letter of Instruction for using MPCG, or refer to TM 9-1300-251-34&P. At the same time, cartridges should be inspected for corrosion on the projectile, the case base, and for water marks on the cartridge.

b. Swipe Test:

Swipe test will be performed only on damaged or corroded projectiles IAW paragraph L-7.

*TABLE L-1 EQUIPMENT IDENTIFICATION LIST*

| DESCRIPTION | PART NUMBER | APPLICATION |
|---|---|---|
| Man Portable Chamber Gage (MPCG) Set | 12948079 | All 120MM Ctgs |
| Proportional Counter | Commercial Equip | Swipe (Smear) Test |
| Ring Gage Set | PN: 12900358<br>NSN: 5220-01-359-3001 | ALL |

**NOTE: The ring gage set may be used in lieu of the man-portable chamber gage, if unavailable.**

**L-4. Inspection Category and Sampling Plan:**

a. All 120MM cartridge inspection category: Y (3 years, 20 round sample size).

b. Stockpile reliability testing is conducted periodically on selected samples from specific lots in the unit basic loads. This test program is designed to determine the effect uploading, handling, and downloading by tank crews and prolonged exposure to adverse storage conditions may have on performance. Ballistic testing and physical teardown inspection will be performed by the designated licensed facilities. Test intervals will be as prescribed by HQ, IOC, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000. DU ammunition samples will not be individually swiped. Only exterior PA-116 Shipping & Storage Container will be swiped in accordance with paragraph L-7n. (Samples will be swiped as part of the ASRP test).

c. An initial upload inspection will be conducted as cartridges are uploaded by a using unit during peace time loading.

d. The annual or semi-annual basic load inspections will be performed on cartridges by QASAS according to SB 742-1, Chapter 9 and this SASIP. Ammunition contained in basic load stocks will not be rejected for minor correctable defects.

e. Storage of empty PA-116 containers should be examined to verify that lids are in place and containers protected from the elements.

f. QASAS should report any observed stowage area that could affect serviceability of the ammunition. Examples of such areas are: tank stowage compartments including the hull racks which may have standing water, rust condensation, burred racks, or swing tubes, etc. Report findings to: HQ, IOC, ATTN: AMSIO-QAS, Rock Island, IL 61299-6000.

g. QASAS supporting upload operations in conjunction with armored unit deployments should assure that tank stowage compartments are thoroughly dry prior to ammunition upload. QASAS at the receiving end of deployment should assure uploaded ammunition serviceability at earliest opportunity to preclude potential moisture damage to the combustible cartridge case and forward adapter. HQ, IOC, AMSIO-QAS and AMSIO-SMA-T, must be advised of any damage or deterioration of ammunition or stowage compartments attributable to moisture damage in transit. Damage reports shall provide the bumper number and unit ID for the affected tank.

h. If M829A2 rounds are uploaded or stored in water or high humidity and high temperature environments outside of their original package, it may result in the round not chambering in the main gun. QASAS shall perform monthly chamber gage inspections, using a MPCG to verify chamberability of the cartridge. It is also recommended that M829A1 rounds, which have been exposed to freezing temperatures and rain or water, be chamber gage inspected by QASAS using a MPCG prior to their intended use to verify chamberability. This applies regardless of the position of the white mark(s) on the sabot segment. At the same time, cartridges should be inspected for corrosion on the projectile, the case base, and for water marks on the cartridge.

**L-5. Specific Inspection Points:**

Items will be inspected and classified according to Tables L-2 through L-6.

*TABLE L-2 PA-116 SHIPPING & STORAGE CONTAINER:*

| CLASSIFICATION | INSPECTION METHOD | INSPECTION REFERENCE |
|---|---|---|
| 1. CRITICAL -<br>none defined | | |
| 2. MAJOR. | | |
| a. Cover Assembly nonfunctional | a. VISUAL | |
| b. Gasket missing or defective | b. VISUAL | |
| c. Internal components/packaging missing or defective | c. VISUAL | |
| d. External components missing or defective | d. VISUAL | |
| e. Dents greater than h inch deep that prevent cartridge extraction | e. VISUAL | e.L-6e |
| f. Perforations/holes | f. VISUAL | f.L-61 |
| g. Internal components/packaging moisture soaked | g. VISUAL | |
| h. Markings Illegible, precluding proper identification of nomenclature and lot number. | h. VISUAL | |
| 3. MINOR -<br>Protective finish on container body (not rims and rings) with pitted corrosion over 10 percent of surface. | Visual | |

*TABLE L-3: CARTRIDGES, 120MM, APFSDS-T, M829 (C786), M829A1 (C380), AND M829A2 (C792)*

| CLASSIFICATION | INSPECTION METHOD | INSPECTION REFERENCE |
|---|---|---|
| 1. CRITICAL. | | |
| None Defined. | | |
| 2. MAJOR | | |
| a. Failure to chamber/gage | a. Gage | a. Para. L-6f |
| b. Sabot segments misaligned | b. Visual | b. Para. L-6c |
| c. Rear Obturator cracked/damaged | c. Visual | |
| d. Sabot cracked | d. Visual | d. Para. L-6d |
| e. Missing components | e. Visual | e. Para. L-6c |
| f. Cracked cartridge case forward adapter | f. Visual | |
| g. DU corrosion (yellowish or black powder or staining) in sabot gaps and/or windshield interfaces. | g. Visual | g. Para. L-7 |
| h. Corrosion on projectile body causing pitting | h. Visual | |
| i. Projectile partially or completely separated from the combustible cartridge case. | i. Visual | i. Para. L-6g |
| j. Marks on sabot and windshield not aligned properly (M829A1 only) | j. Visual | j. Para L-6o |
| 3. MINOR: | | |
| None defined. | | |

**NOTE. See Table L-6 for all cartridge case and case base defect criteria.**

*TABLE L-4: CARTRIDGE, 120MM TPCSDS-5, M865 (C785)*

| CLASSIFICATION | INSPECTION METHOD | INSPECTION REFERENCE |
|---|---|---|
| 1. CRITICAL: | | |
| None Defined. | | |
| 2. MAJOR | | |
| a. Rear nylon band defective | a. Visual | |
| b. Sabot cracked | b. Visual | b. Para. L-6d |
| c. Missing parts | c. Visual | |
| d. Failure to chamber/gage | d. Gage | d. Para. L-6f |
| e. Pitting corrosion on projectile assembly | e. Visual | |
| f. Obturators - loose, cracked or other damage which would preclude gas seal. | f. Visual | |
| g. Rubber seal on Sabot torn or split. | g. Visual | |
| 3. MINOR: | | |
| None defined | | |

**NOTE: See Table L-6 for all combustible cartridge case and case base and seal assembly defect**

*TABLE L-5: CARTRIDGES, 120MM, HEAT-MP-T, M830 (C787)*
*AND M830A1 (C791, TP-T M831A1 (C784) AND XM908 (CA05)*

| CLASSIFICATION | INSPECTION METHOD | INSPECTION REFERENCE |
|---|---|---|
| 1. CRITICAL'<br>None defined. | | |
| 2. MAJOR:<br>a. Missing parts<br>b. Copper/nylon band damaged to the point of precluding chambering.<br>c. Failure to chamber/gage<br>d. Spike tip damaged (M830 & 831A1)<br>e. Proximity sensor damaged M11830A1)<br>f. Sabot cracked or pitted (M830A1 & M908<br>g. Shoulder switch bent or cocked M830)<br>h. Spike shoulder damaged M830)<br>i. Projectile rubber seal damaged<br>j. Spike Tip loose (M830)<br>k. Pitting corrosion on projectile<br>l. Projectile partially or completely separated. from cartridge case.<br>m. Projectile rotates relative to forward adapter (M830 only).* | a. visual<br>b. Visual/gage<br>c. Gage<br>d. Visual<br>e. Visual<br>f. Visual<br>g. Visual<br>h. Visual<br>i. Visual<br>j. Visual/Manual<br>k. Visual<br>l. Visual/Manual<br>m. Visual/Manual | c. Para. L-6f<br>h. Para. L-6h<br>i. Para. L-6j |
| 3. MINOR,<br>None defined. | | |

**NOTES:**

**a. See Table L-6 for applicable combustible cartridge case and case base and seal assembly criteria.**

**b. * Potential exists for M830 projectile fins to break DIGL-RP stick propellant.**

*TABLE L-6 COMBUSTIBLE CARTRIDGE CASES AND*
*CASE BASE & SEAL ASSEMBLY, 120MM TANK AMMO*

| CLASSIFICATION | INSPECTION METHOD | INSP REF |
|---|---|---|
| 1. CRITICAL:<br>None defined. | | |
| 2. MAJOR.<br>a. Abrasion damage or peeling causing coating to be missing in one continuous area. Yellow-white nitrocellulose case material exposed in this area totaling 10% or more of the total cartridge case surface (30 sq. in. or 192 sq cm).<br>b. Case broken exposing internal propellant containment bag.<br>c. Skive joint (glue joint at case shoulder)separation<br>d. Case base and seal assembly (CBSA) separated from cartridge case body.<br>e. CBSA rubber seal torn or separated<br>f. Primer above flush<br>g. Corrosion of CBSA with visible pitting<br>h. Non-removable corrosion on primer<br>i. Evidence of moisture damage resulting in a softening or penetration of the combustible ctg. case (CCC) or forward adapter | a. Visual<br>c. Visual<br>d. Visual<br>e. Visual<br>f. Visual/Manual<br>g. Visual<br>h. Visual/Manual<br>i. Visual/Manual | |
| 3. MINOR:<br>a. Abrasion damage/peeling causing coating to be missing in one continuous area. Yellow-white nitrocellulose case material seen on this area totaling more than 0.25 sq/in or 1.6 sq/cm, but less than 10 percent of total surface.<br>b. Water mark on cartridge | a. Visual<br>b. Visual | a. Para L-6n |

**NOTE: The M830 (C787) has a live forward adapter.**

**L-6. Inspection Description and Notes:**

a. Movement between sub-projectile and sabot is permissible and shall not be considered a defect. M829, M829A1, and M829A2 projectile rotation at the case adapter/obturator joint is permissible.

b. Sabot segment gaps are permissible provided that the cartridge can be chambered.

c. The M829 projectile contains a forward nylon centering band composed of four individual segments attached to sabot petal. The gaps between centering band segments are aligned with sabot segment gaps. The M829A1 projectile does not contain a forward centering band.

d. The M829, M829A1, and M829A2 projectile assemblies contain a Depleted Uranium (DU) fin stabilized penetrator. The M829 series sub-projectiles consist of a penetrator, windshield, and fin. The number of sabot petals and their composition material vary. The M865 TPCSDS-T projectile assembly consists of a steel core encased in three aluminum sabot segments attached to rubber obturator and steel stabilizer.

e. Container dents that are less than 1/4 inch do not require repair. Dents greater than 1/4 inch that are impairing the structural integrity of the PA-116 container or prevent the removal of the cartridge are major defects. A cartridge that cannot be removed from the PA-116 shipping and storage container shall be placed in CC-F and reported to HQ, IOC, ATTN: AMSIO-SMA-T, Rock Island, IL 61299-6000, or emailed to amsio-qasria-emh2.army.mil.

f. Perform chamber gaging according to paragraph L-3. Standard ring gage set may be used in absence of man portable chamber gage. NOTE: Ring gages will detect oversized conditions for their specific profile dimension. However, gaging with projectile and case ring gages will not detect an out-of-alignment condition at the mating point of the projectile assembly and cartridge case forward adapter. Therefore, where available, the MPCG is the preferred gaging method to properly verify the entire profile and alignment of a 120MM cartridge.

g. Any deformity (such as tip bluntness or off-center displacement) of the windshield tip may affect the aero-ballistic performance of the sub-projectile.

h. Samples with projectiles exhibiting movement in relation to the cartridge case are not considered defects unless one or more of the following conditions are also noted:

(1) Cartridge deformation (profile misalignment) preventing gaging or chambering.

(2) Evidence of propellant dusting on outside of cartridge case or projectile.

(3) The affected cartridge is either an M829A2 (C792) or M830 (C787) with stick propellant that could become damaged by the movement of penetrator fins or projectile boom/fins.

i. Testing has demonstrated that the electric primer assembled to the round is insensitive to initiation by mechanical impact. Therefore, primers and igniters above flush are considered major defects, rather than critical. Any straight edge rule is suitable for checking primers for an above flush condition.

j. Any cut, nick, or gouge in the projectile rubber seal (M830 or M831A1) more than one half the width or more than 2 inches in circumference shall be cause for rejection.

k. Moisture noted within PA-116 containers indicates ammunition was either wet when containerized or the interior components of the PA-116 were wet when the ammunition was packed out. Containers with wet interior projectile supports and spacers are considered to be unserviceable until the moisture intrusion condition is corrected. Cartridges found in such containers must be closely examined for moisture damage according to the applicable tables.

l. Cartridge cases will be inspected for evidence of moisture, dents, or penetration. Defects can result from packaging or the cartridge not being dry at time of packaging, upload, and download operations during inclement weather, or exposure to standing water or heavy condensation in the bustle and hull ammunition storage racks. Inspect for water damage, soft cartridge cases, and forward adapters which easily deform under hand pressure, water marks indicating case exposure to standing water and metal parts rust or corrosion.

m. A windshield with a single longitudinal crack less than two inches in length is considered an incidental defect.

n. Cartridge cases which have yellowish-white combustible material showing, less than 10 percent of the total surface area of the cartridge case, will be touched up IAW procedures contained in TB 9-1300-251-34&P.

o. The projectiles are marked with white alignment marks on the sabot and windshield. There are two marking schemes. The first scheme has one mark on the sabot and one on the windshield. The two marks must either align perfectly or be offset by no more than the width of the mark. The second marking scheme has two marks on the sabot and one mark on the windshield. The windshield mark must be positioned between and not overlap the marks on the sabot (refer to the alignment schemes with Accept/Reject Criteria and Sabot/Windshield Marks Alignment Procedure in TM 9-1300-251-24&P).

**L-7. Swipe (Smear) Test (M829, M829A1, and M829A2, Cartridges Only):**

a. A swipe test is performed on a DU cartridge exhibiting external evidence of any DU corrosion or particles migrating to the surface of the sabot. Due to the extremely tight fit of the sabot segments, the potential for DU migration is considered to be very remote. Therefore, a swipe test shall only be performed under either of the following circumstances:

(1) Damaged M829 series cartridge resulting in an

(2) Cartridge with visible DU corrosion (yellowish or black powder or staining) on sabot, between sabot gaps or windshield interfaces.

b. The following safety precautions should be observed when performing a swipe test:

(1) Do not eat or drink while performing swipe testing. Radioactive ALPHA materials pose the greatest harm if taken internally, such as by ingestion. Inspectors should keep their hands away from their face.

(2) Do not perform swipe test with any exposed open cuts or sores. Cover any open cuts or sores with bandages and wear protective rubber gloves. Alpha radiation material can also be taken internally through open cuts.

(3) Do not clean suspect DU projectiles prior to a swipe testing.

(4) Wash hands thoroughly with soap and water when testing is completed.

c. Fill in information required on front of swipe folder to include date, time, swipe number, location, and technician.

d. Swipe does not have to be removed from the paper strip during test.

e. Using moderate pressure, wipe surface of the projectile along the seams between sabot segments and seam of junction between windshield and sabot with swipe. Swipe should also include any area of the projectile with visible powder/corrosion. Use one swipe per cartridge.

f. Once swipe has been taken, care must be taken to prevent cross contamination. Do not touch side of swipe paper that was used for taking swipe.

g. Fold paper strip over once so that swipe is covered. Place swipe in resealable plastic pouch.

h. Swipes taken on individual cartridges will be tested for radioactivity with a proportional counter. The proportional counter may be located at a central location and swipes forwarded for reading. Field locations may be used and AN/PDR 60 for identification of gross radiation hazards only, but these are not substitutes for the proportional counter required to measure limits specified in paragraph j below.

i. The exact procedure for measuring activity will depend upon the equipment and facilities available. Each swipe must be marked so that a specific cartridge can be located again. Measurement of activity shall be performed by, or under the guidance of, a Health Physicist or Radiation Protection Officer.

j. Activity levels exceeding background by 500 disintegrations per minute (DPM) alpha or 100 DPM beta-gamma, may indicate a potential corrosion problem. Although activity levels at these DPM values are not considered to present a health hazard, the initiation of a corrosion problem needs to be identified long before actual contamination results.

k. Any cartridge with a reading which exceeds the established background level by above amounts will be sealed in plastic, and the cartridge will be returned for examination to a facility licensed to disassemble DU cartridges as directed by HQ, IOC, ATTN: AMSIO-SMA-T, Rock Island, IL 61299-6000.

l. Whenever activity levels exceed 500 DPM, the following will be immediately notified: (E-MAIL reporting is acceptable)

(1) Commander
HQ, IOC
ATTN: AMSIO-MAS-Q/SF
Rock Island, IL 61299-6000
Email: AMSIO-MAS-QIOC.ARMY.MIL/
AMSIO-SFIOC.ARMY.MIL
DSN: 793-7552. COM: (309) 782-7552

(2) Commander
TACOM-ARDEC
ATTN: AMSTA-AR-QAT-A
Picatinny Arsenal, NJ 07806-5000

m. A report will also be submitted to the above addresses in paragraph 1 when any activity levels are measured which exceed background levels of the counter being used by a factor of two. This report will include the background and swipe readings; type, serial number, and calibration date of test instrument, and any other information deemed relevant.

n. Following procedure can be used to monitor pallet/outer pack prior to shipment. This procedure is not authorized for individual cartridges:

(1) Swipe at least a 300 square centimeter area of pallet/outer pack using the procedures outlined at subparagraphs c through k above.

(2) Check the swipe with an AN/PDR 27, 56, or 60 radiac meter, or equivalent. Readings of twice background is indicative of contamination.

(3) If readings indicate contamination, suspend shipment of the contaminated item(s) and notify offices in subparagraph 1 above.

(4) The analysis using a proportional counter is required regardless of the results of the field instrument check.

**L-8. References:**

a. TM 9-2350-288-10-1/2

b. TB 9-1300-278

c. TM 9-2350-264-10-1/2

d. TM 9-1300-251-20&P

e. TM 9-1300-251-34&P

f. TM 43-0001-28

g. AR 385-11

## APPENDIX M
## LAUNCHER AND CARTRIDGE, 84MM, HE M136 (AT4)

**M-1. Item description.**

a. FSC: 1315.

b. SASIP: 742-1315-94-155.

c. Ammunition Type: Launcher and Cartridge, 84mm, HE: M136 (AT4).

d. The M136 (AT4) is a fully self contained, lightweight, man-portable, right shoulder fired anti-armor weapon. The M136 consists of a free-flight fin stabilized projectile packaged and sealed in an expendable launcher. The launcher serves as a transport and storage container. It is issued as a complete round of ammunition.

e. Firing is mechanical. The rearward motion of the firing rod strikes a pin and initiates the percussion cap; the firing train is relayed to the propellant charge. The propellant charge is completely burned prior to the departure of the projectile from the launch tube.

f. The weapon's projectile is a ballistic trajectory fin stabilized Octol (HMX/TNT) shaped charge. The base fuze incorporates an out of line rotor which aligns the detonator with the explosive train 15-25 meters from the muzzle after firing. The Piezoelectric crystal generates voltage to initiate explosive train upon impact at angles as slight as 10 degrees.

g. The launch tube is a glass-fiber reinforced plastic 84-mm smooth-bore full caliber barrel. Tube consists of a rear aluminum venturi, fire-through muzzle cover, firing mechanism, fixed front and adjustable rear sight assemblies, face pad, shoulder stop and carrying sling.

h. The projectile is factory pressed and cemented into a cartridge assembly consisting of an aluminum case, base plate, 365 grams of double base propellant, percussion primer and igniter. The cartridge is factory loaded into launch tube.

i. M136 weapon system familiarization and training is provided by the M287 9mm subcaliber training weapon. The M287 is similar in function and appearance to the M136 tactical system except for a gold colored band (indicating trainer), lack of muzzle cover, and presence of a 9mm barrel and bolt assembly in rear venturi (in lieu of projectile and cartridge assembly). The 14287 utilizes the M939 9mm tracer cartridges (1305-A358) to simulate the ballistic trajectory of the tactical round. The M939 is marked with a red tip and one-half black base. The M939 cartridge will be inspected per the appropriate sections of this supply bulletin. The M287 trainer is considered a weapon, not ammunition (FSC 6920).

j. Stock number of expended launcher is 1315-01-273-9352.

M-2. Unique safety precautions.

The M136 (AT4) weapon system is a preloaded recoilless gun equivalent to a propulsive high explosive rocket. Due to the propulsive state of the M136 weapon system, orientation of muzzle (nose end) during handling, transport and storage will be according to the procedures established for propulsive state rockets.

M-3. Testing and equipment requirements.

None identified at this time.

M-4. Inspection category and sampling plan.

a. Inspection category X. Periodic inspection interval 4 years.

b. Sampling plan will be according to chapter 2.

c. No storage monitoring inspection is required.

M-5. Specific inspection points.

Item will be inspected according to chapter 2 and table M-1. Item is packed in a transparent barrier material and will not normally be opened for purposes of inspection. NOTE: Inspector must verify that the serial number on the round matches that on the outer pack, Annotate serial numbers, findings and any discrepancies to the DSR card; report any discrepancies to the local accountable officer.

Table M-1. Item Defects and Method of Inspection.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical: | | |
| a. Transport safety pin missing or ineffective ..... | Visual/Manual. | |
| b. Cocking lever in cocked (not safe) position, broken or missing. | Visual/Manual. | |
| c. Muzzle cover ruptured with obstruction (cover or foreign material) in bore of launch tube. | Visual ..... | |
| d. Launch tube perforated, broken. cracked, crazed, dented, bent, gouged or white plastic visible. | Visual..... | Para M-6e |
| 2. Major: | | |
| a. Sight covers or sight assemblies damaged or missing ..... | Visual/Manual. | Para M-6a |
| b. Markings or warning labels missing, illegible or incorrect. | Visual..... | Parr M-6b |
| c. Any part of weapon missing, damaged, or Inoperative (except as otherwise noted). | Visual/Manual. | Para M-6c |
| d. Barrier bag missing or damaged to extent environmental protection Is compromised. | Visual . . . . . | ..Para M-6d |
| e. Packaging damaged to extent that contents are not adequately protected. | Visual..... | |
| f. Shelf life exceeded (20 years) ..... | Visual ..... | |
| g. Venturi obstructed or foreign material present ..... | Visual..... | |
| 3. Minor: | | |
| a. Packaging hardware damaged, missing, or inoperative ..... | Visual/Manual. | |
| b. Packing loose, filler material inadequate or missing ... | Visual/Manual. | |
| c. Carrying strap damaged, deteriorated or missing ..... | Visual/Manual. | |

M-6. Inspection description and notes.

a. If accessible, inspection will verify serviceability of the sight, hinge pin and spring.

b. Early production units were color coded with a black band on the launch tube and marked with FSC 1340; later production is marked with a yellow band on a black band on launch tube and FSC 1315.

c. When component is damaged to the extent that functional effectiveness has been degraded, condition will be classified as a defect.

d. If the weapon is returned after removal from barrier bag, a complete visual inspection will be performed. If otherwise serviceable, weapon will be designated for priority issue. While barrier material is normally considered water and vapor proof, material which comprises the M136 "flat bag" is not vapor proof.

e. A rattling noise from fin assembly inside launch tube is not a defect.

M-7. References.

a. TM 9-1340-886-14

b. TM 9-6920-886-14&P.

c. Drawing 13229861.

d. Drawing 13230240.

# APPENDIX N
# PROJECTILE, 155MM, ICM FAMILY

N-1. Item description.

a. FSC: 1320.

b. SASIP: 742-1320-94-250.

c. Ammunition type: Projectile, 155mm HE, Improved Conventional Munitions (ICM). Includes model numbers M483A1, M692, M718, M718A1, M731, M741, and M741A1.

d. The M483A1 family of projectiles has metal parts comprised of four main components (less cargo). The components and basic material compositions are as follows:

(1) Ogive: aluminum (alodined).

(2) Body: steel/fiberglass.

(3) Base: aluminum (anodized).

(4) Fusible lifting plug: steel.

e. The design and material composition of the M483A1 family represents a departure from previous generations of artillery ammunition. These design and/or material changes warrant special emphasis during the life cycle surveillance of these munitions. Areas of emphasis are specified in para N-5 of this appendix. For a complete, detailed description of the M483A1 family, see TMs and Dwgs.

f. Projectile models M483A1, M692 and M731 are thin based projectiles. The aluminum bases on these models, manufactured prior to April 1988, are susceptible to stress corrosion cracking, evidenced by surface corrosion. Projectiles with base corrosion or stress corrosion cracks may malfunction inbore. New production bases are of an improved aluminum alloy which is less susceptible to stress corrosion cracking. New style bases are identified by black color and by the projectile's NSN. The improved alloy will be used in new production and replacement bases for all ICM projectiles, both thin based and remote anti-armor mine system (RAAMS). Appropriate stock numbers are provided in table N-1.

Table N-1. Projectile Stock Numbers.

| Model | Old Style Base | New Style Base |
|---|---|---|
| M483A1..... | 1320-00-126-7339-D563 | 1320-01-260-8720-D563 |
| M692..... | 1320-OO-434-8856-D501 | 1320-01-261-6043-D501 |
| M731..... | 1320-OO-434-8861-D502 | 1320-01-260-8719-D502 |
| M718..... | 1320-01-050-6059-D503 | 1320-01-268-0387-D503 |
| M718A1..... | 1320-01-151-9849-D515 | 1320-01-269-2257-D515 |
| M741..... | 1320-01-050-7966-D509 | 1320-01-268-0386-D509 |
| M741A1..... | 1320-01-150-7857-D514 | 1320-O1-268-0385-D514 |

N-2. Unique safety precautions.

Exercise extreme care when handling a projectile with an exposed or damaged cargo of submissiles (grenades or mines) or a loose base. Submissiles can fall out, arm, and explode with lethality of a fragmentation hand grenade.

N-3. Testing and equipment requirements.

Table N-2 identifies test and measurement equipment and gaging requirements. Ring and gap gaging will be conducted during IRI according to chapter 2 and appropriate drawings and specifications. Subsequent gaging will only be performed on those projectiles showing evidence of damage.

Table N-Z. Equipment Identification List.

| Description | Model | Application | Requirements |
|---|---|---|---|
| Gage, Ring.*..... | All ... | Upper and lower bourrelet..... | Para N-3 |
| Micrometer..... | All ... | Bourrelet gage failure area..... | Para N-3 |
| Gage, Feeler, Blade Type... | All ... | Base and body interface..... | Para N-3 |
| Gage, Depth..... | All... | Fiberglass wrap and rotating band | Para N-3 |

l Use gage, ring, P/N 7304558, NSN 5220-00-395-4487

N-4. Inspection category and sampling plan.

a. Inspection Category Y, Periodic Inspection interval - three years.

b. Sampling plan for inspection is according to chapter 2.

N-5. Specific inspection points.

Item will be inspected and classified according to chapter 2 and table N-3.

Table N-3. Item Defects and Method of Inspection.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical: | | | |
| Corrosion on base | | Para N-6n Visual | Para N-6g |
| 2. Major: | | | |
| a. Excessive base gap | All | Gage | Para N-6a |
| b. Lifting plug wrong type (not fusible) | All | Visual | Para N-6b |
| c. Diameter of bourrelet greater than maximum allowed | All | Gage | Para N-6c |
| d. Fiberglass wrapping damaged or loose | All | Visual/Gage | Para N-6d |
| e. Loose ogive at ogive and body joint | All | Manual | Para N-6e |
| f. Diamond or triangle marking missing, incorrect or unidentifiable. | All | Visual | Para N-6f |
| g. Corrosion on base (old style base) | | Para N-6o Visual | Para N-6g |
| h. Corrosion on ogive | All | Visual | Para N-6h |
| i. Obturator missing or damaged | All | Visual | |
| j. Lifting plug missing or damaged | All | Visual | Para N-6i, N-6h |
| k. Corrosion on fuze well threads | All | Visual | |
| 1. Expulsion Charge, not removable, or torn allowing propellent leakage | All | Visual | |
| 3. Minor: | | | |
| a. Rotating band damaged | All | Visual | Para N-6k |
| b. Protective coating with bare areas exceeding 1/4- inch square. | All | Visual | Para N-6l |
| c. Rust in base and body gap | All | Visual/Gage | Para N-6m |
| 4. Incidental: | | | |
| a. Corrosion on base (new style base) | All | Visual | Para N-6g |
| b. Expulsion charge cup loose or removable by hand | All | Manual | |

N-6. Inspection description and notes.

a. The gap between base and body interface will be gaged with a blade type feeler gage as follows:

(1) M483A1 projectile. Base gap criteria varies with drawing revision under which projectile was assembled. Projectiles manufactured according to drawing 9215220, revision K, or subsequent revisions, require base gap not to exceed 0.003-inch. Projectiles assembled according to drawing revisions prior to revision K require base not to exceed 0.010 inch. Round will be rejected if appropriate thickness feeler gage enters gap more than 0.060-inch depth'. (approximately 1/16th inch) for 360 degrees, or for 0.125-inch depth (approximately 1/8th inch) in one continuous 45 degree arc along base and body joint.

(2) M692 and M731 projectiles. Reject round if a 0.005-inch feeler gage enters gap for more than 0.060-inch depth for more than 180 degrees continuous arc along base and body joint.

(3) M718 and M741 projectiles. Reject round if a 0.023-inch feeler gage enters gap for more than 0.060-inch depth for more than 180 degrees continuous arc along base and body joint.

(4) All projectiles. Accept or reject criteria will be 0 and 1 respectively. Occurrence of one defective sample will require the lot to be locally suspended from issue and use. Lot should be scheduled for 100-percent screening for excessive base gap. Details (including actual gap and circumferential measurements) will be reported immediately to Commander, IOC, ATTN: AMSIO-QAS. Rejects are to be tagged and identified in storage pending receipt of disposition instructions.

(5) Sealant was used to fill base/body gap for later production and base replacement using black bases. Projectiles with sealant in this gap will not be gaged.

b. Fusible plug is painted yellow for identification purposes.

c. Projectiles that fail to ring gage will be measured with a micrometer to determine if the diameter is within tolerance at all points. Take micrometer readings 90 degrees apart in areas which fail to ring gage, then rotate micrometer completely around circumference of projectile to determine if diameter is within 6.0900 - 6.0984 inches at all points. Reports submitted per paragraph 2-8g of this supply bulletin will include micrometer readings.

d. Fiberglass wrap damage criteria is as follows:

(1) Missing olive drab (OD) paint on fiberglass is not a cause for rejection. Projectiles having paint missing on portions of the fiberglass wrap (i.e., due to rubbing) shall be touched up with OD paint. (Color No. 34088, MIL-E-52891).

(2) Projectiles having longitudinal gouges greater than one inch in length and a full length depth of 0.100-inch or more shall be rejected. Other longitudinal gouges shall have loose strands trimmed and be touched up with OD paint.

(3) Projectiles having loose strand(s) regardless of circumferential length resulting in a depth of less than .0625-inch and not exceeding .500-inch longitudinal width shall have loose strands trimmed and be touched up with OD paint.

(4) Projectiles having circumferential gouges greater than one inch in length with a full length depth of 0.100-inch or more and greater than 0.250-inch longitudinal width shall be rejected. All others shall have loose strands trimmed and be touched up with OD paint.

e. There shall be no movement when a rocking or rotating motion is applied to the ogive by hand.

f. Markings.

(1) M483 and M483A1 - Diamonds.

(2) M731, M741 and M741A1 - Triangles with "S". (Short mine self-destruct time).

(3) M692, M718 and M718A1 - Triangles with "L". (Long mine self-destruct time).

g. The following procedures apply to inspection for base corrosion on projectile bases:

(1) Corrosion on the new style base will be classified as an incidental defect. Rust in the base/body gap will be classified a minor defect if the gap meets tolerance as reflected in para N-6a.

(2) Remove the grommet and visually inspect the area at base/body joint for rust or corrosion and the entire base for corrosion. Aluminum corrosion is indicated by white aluminum oxide and roughening or pitting of base surface.

(a) If necessary for inspection, clean external surface of base with a clean, lint-free rag or soft brush. Do not use a wire brush or any material that may abrade coating on base. Damage to coating may contribute to development of corrosion during long-term storage. Alcohol (i.e., methyl, ethyl, or isopropyl) may be used sparingly as a cleaning agent. Do not use chlorinated or petroleum based agents (e.g., gasoline, mineral spirits, acetone, ketone, etc.). Obturator ring between rotating band and base is made of polyvinyl chloride (PVC), which may be damaged by exposure to improper solvents. Damage may not be immediately apparent, but such exposure could cause obturator to break during long-term storage.

(b) Reinspect any area in question to establish if coating surface is intact (not pitted). If coating is intact, area is not a defect. Surface irregularities may be present, including nicks and pings with aluminum base material displaced. Condition is a common result of manufacturing or handling and should not be considered a defect if corrosion is not present. If corrosion has blossomed (raised material resulting from corrosion formation), base is defective and must be classified according to table N-3.

(c) Red or brown discoloration on the base is generally a result of rust on projectile surfaces or in the base/body gap and should be treated as an incidental defect.

(3) If damage to the coating on the base with no indication of corrosion is noted during inspection, a touch-up coating shall be applied to bare spots as follows:

(a) Clean touch-up area with alcohol immediately prior to finishing operation.

(6) Apply a thin coat of wash primer DOD-P-15328, NSN 8010-01-124-8193 or 8010-01-127-6896. Allow 15 minutes minimum to two hours maximum drying time for primer.

(c) Apply enamel, color number 34088 of FED-STD-595, MIL-E-52891, NSN 8010-00-848-9272, 8010-00-297-2116, or 8010-00-297-2113. Allow one hour or more to dry enamel. Drying time may be minimized by application of heat and/or forced air.

(4) Take the following action when corrosion on old style bases is detected:

(a) Report any lot rejected due to base corrosion to HQ, IOC as required by this supply bulletin and DA PAM 738-750. This defect is considered to be a factor of environment. Lots will not be suspended worldwide based on reports of base corrosion.

(b) Lots rejected due to base corrosion will be retained in an unserviceable condition code, not authorized for emergency combat. As a rule, it is desirable to perform a 100 percent screening of rejected lots when identified. If local authorities determine that screening is not immediately required, defective lot will be scheduled for base replacement.

h. Remove pallet tops and inspect that portion of aluminum ogive which is in contact with pallet top for corrosion or pitting. This area is especially prone to removal of protective alodine finish.

i. Inspect fusible plugs for bent or cracked lifting ring, dislodged or missing fusible disc or possible leakers. Leakers are recognizable by a ring of rust or cracked paint around periphery at interface of disc and hole.

Do not reject a lot for deformed, cracked or deteriorated rubber gaskets, PN 8860552. Replace defective rubber gaskets encountered during inspection.

k. A cut across the entire width and to a depth of more than half the height of band above body surface. (Depth of cut not to exceed 1/16-inch). Hairline cracks which are a result of the production process are acceptable.

l. Inspect closely for onset of corrosion, especially on aluminum parts.

m. Rust in the base/body gap will be classified a minor defect if no base corrosion is in evidence and the gap meets tolerance as reflected in para N-6a.

n. M483A1, M692, and M731 with old style base.

o. M718 and M741 with old style base.

## APPENDIX O
## PROJECTILE, 155-MM, HEAT, M712 AND M823

### O-1. Item description.

*a*. FSC: 1320.

*b*. SASIP: 742-1320-94-252.

*c*. Ammunition Type: Projectile, 155mm HEAT, Cannon-Launched. M712 (Copperhead) and Projectile, 155mm Training, M823.

*d*. Item is a separate loading, laser-guided, high explosive projectile, M712 (Copperhead). Dummy projectile, M823 is a training item designed to train weapon crews in handling M712.

### O-2. Unique safety precautions.

No unique safety precautions are applicable to this item.

### O-3. Testing and equipment requirements.

No gaging or special testing is planned as part of the ammunition surveillance portion of the ASRP for this projectile. Extensive laboratory testing and detailed ballistic testing will be the primary source of data for reliability estimates according to AR 702-6.

### O-4. Inspection category and sampling plan.

*a*. **RI will be accomplished IAW Chapter 2 and criteria contained in Tables O-1 and O-2.** Container will not remain open for more than 72 hours. Prolonged exposure to environmental humidity will cause excessive damage to the projectile and possible degradation in reliability.

*b*. PI inspection is not required. In lieu of a PI. storage monitoring (SMI) of the M712 will be performed every 3 months. SMI will consist of 100 percent verification of the humidity indicator. Replacement, if indicated. will be performed according to TM 9-1300-251-34. Whenever the container is opened for replacement of desiccant, an inspection of the projectile will be performed according to table O-2 and results noted on DSR card.

### O-5. Specific inspection points.

Container and projectile will be inspected according to chapter 2. tables O-1 and O-2 (as appropriate). Opening of samples will be performed in such an environment as to limit possibility of moisture entering the container. These inspections will not be performed during periods of high humidity, (such as rainstorms). The time a container remains open or a projectile is removed from container will be kept to a minimum necessary to perform inspection. Accept or reject for the

inspection of projectile and inner pack will be 0 and 1 respectively for critical, major and minor defects. Outer pack accept or reject will be according to chapter 2.

Table O-1. Metal Container Exterior.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical None defined | | | |
| 2. Major: | | | |
| a. 40-percent sector on humidity indicator is not blue | M712. | Visual | Para 0-6a |
| b. Stiffening ribs damaged. | All.. | Visual | |
| c. Damaged latches | All.. | Visual | |
| d. Damaged or loose humidity indicator | M712. | Visual | |
| e. Loose or broken handles | All.. | Visual | |
| f. Container dented to the extent that contents are not protected | All.. | Visual | |
| 3. Minor. | | | |
| a. Rust or paint deterioration | All.. | Visual | |
| b. Container dented to the extent that contents are still protected. | All.. | Visual | |
| 4. Incidental: Container serial number missing or illegible. | M712 | Visual | Para 0-6f |

Table O-2. Projectile and Container Interior.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| **1. Critical:** | | | |
| a. Evidence of composition B leakage | M712 | Visual | |
| b. Cracked or deeply gouged obturator | M712 | Visual | |
| **2. Major:** | | | |
| a. Aft closure damaged to extent that it would prevent engagement of extractor. | M4712 | Visual | |
| b. Missing or loose splice screws | M712 | Visual | Para 0-6b |
| c. Loose or missing access cover | M712 | Visual. | Para 0-6c |
| d. Broken, cracked, or missing projectile ogive | M712 | Visual | |
| e. Crack or dent in any part of projectile body | M712 | Visual | |
| f. Wings extended | M712 | Visual | Para 0-6d |
| g. Fins are loose, broken. or not in retracted position | M712 | Visual | |
| h Water droplets condensed or fogged on interior surface of nose cone. | M712 | Visual | |
| i. Window portion of projectile ogive (nose cone) severely scratched or gouged | M712 | Visual | |
| j. Dirt, debris, or foreign objects in wing or fin slots | M712 | Visual | |
| k. Dials on code or time switches missing. broken. or illegible. | All | Visual | Para 0-6e |
| l. Excessive rust or pitting of bourrelets | All | Visual | |
| m. Switch bracket broken or damaged | All | Visual | |
| n. Cracked or deeply gouged obturator | M823 | Visual. | |
| o. Missing plastic inserts (preload tabs) | A11 | Visual | |
| p. Internal pressure pads missing. damaged or deteriorated | M712 Cntr. | Visual | |
| q. Cradle pads missing, loose or damaged | A11 Cntrs. | Visual | |
| r. Stitching loose or missing | All Cntrs. | Visual | |
| s. Straps ripped or broken | A1l Cntrs. | Visual | |
| t. Damaged, leaking or missing gasket | M712 Cntr. | Visual | |
| **3. Minor:** | | | |
| a. Abrasions or smudges on window portion (nose cone) of projectile ogive. | M712 | Visual | |
| b. Water droplets on or fogging interior surface of projectile ogive (nose cone). | M823. | Visual | |
| c. Window portion of projectile ogive (nose cone) abraded abraded. smudged. scratched or gouged | MB23 | Visual | |
| d. Dirt. debris or foreign objects in wing or fin slots | MB23 | Visual | |

**0-6. Inspection description and notes.**

*a. Humidity indicator.*

(1) If 40-percent sector on the humidity indicator is not blue for M712. desiccant will be changed according to TM 9-1300-251-34.

(2) The M823 training projectile container should not contain desiccant. If present, desiccant should be removed during IRI. The humidity indicator card will be marked "Dummy" and placed in humidity indicator unit.

b. The splice screws should be finger tight and at or below flush with the projectile surface.

c. Access cover missing; screw on cover loose and cannot be made finger tight by hand turning. Screws must be at or below flush with the cover surface.

d. Wings extended indicate squib has been fired.

e. Switches must rotate freely when firing codes are being set into projectile.

f. Decals are no longer required on Copperhead containers. However, container top and bottom are a matched set, identified by serial numbers and should be assembled as one unit. Mismatched top and bottom may prevent container from retaining seal against humidity. Serial number may be found on a decal or marked with stencil ink. If decal is peeled off, replace with stencil. If both top and bottom are missing or unidentifiable, stencil both top and bottom with prefix "CNTR" followed by projectile serial number.

## APPENDIX P
## SMOKE GRENADES

**P-l. Item description.**

a. FSC: 1330

b. SASIP: 742-1330-94-320

c. Ammunition Type: Grenade. Hand, Smoke, M18: Grenade. Hand. Smoke. HC. AN-MB: Grenade, Hand. Smoke. WP. M15: Grenade, Hand-Rifle. Smoke, WP. M34: Grenade. Hand. Smoke. Colored. M48: Grenade. Hand, Incendiary, TH3. AN-M14 and Grenade, Hand, Smoke. TA. M83.

d. Grenade, Hand, Smoke. HC. AN-M8 (G930). This is a burning type grenade used to generate white smoke for screening activities of small units. It is also used for ground-to-air signaling. The grenade body is a cylinder of thin sheet metal. It is filled with HC smoke mixture topped with a starter mixture directly under the fuze opening. The duration of smoke screen or signal is 105 to 150 seconds. Grenade is fuzed with the M201A1 pyrotechnic delay-igniting fuze.

e Grenade. Hand, Smoke, WP. M15 (G935). Bursting type grenade used for signaling, screening and incendiary purposes. The grenade body is of sheet steel and cylindrical in shape. The body has a fuze well liner and is filled with 15 ounces of WP. The grenades are assembled with the M206A1 or M206A2 pyrotechnic delay-detonating fuze. The screening effect of the smoke is limited because WP burns with such intense heat, the smoke tends to rise rapidly. Pieces of WP will burn for about 60 seconds. igniting any flammable substance contacted.

f. Grenade, Hand-Rifle, Smoke, WP. M34 (G937). Bursting type grenade used for signaling. screening, and incendiary purposes. It may be thrown by hand or launched from a rifle. using the M1A1 or M1A2 grenade projection adapter. The grenade body is of serrated steel and is cylindrical in shape. The body has a fuze well liner and is filled with WP. The M34 hand-rifle grenade has a safety pin which must be removed, and a safety lever which is released to cause the grenade to function. Newer models also contain a safety clip to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. The M34 hand-rifle grenade uses the M206A2 fuze.

g. Grenade, Hand. Smoke, M18 (G940/G945/G950/G955). These grenades are used for ground-to-air or ground-to-ground signaling and are a burning type munition. The grenades may be filled with any one of four smoke colors: red, green, yellow or violet. Each grenade will emit smoke for 50-90 seconds. The grenade body is of thin sheet metal and is filled with 11-1/2 ounces of red. green, yellow or violet smoke composition. The filler is topped with a starter mixture. Grenades are assembled with the M201A1 pyrotechnic delay-igniting fuze. Older versions may have fuze model E7R6 assembled to them. This model is experimental version of the M201A1 fuze.

h. Grenade, Hand, Smoke. Colored. M48 (G932). The M48 grenade is a special-purpose, burning-type munition used as the training aid for the M47 grenade. This grenade is a nonlethal-type munition that contains red smoke mixture. The grenade consists of rubber body assembly. an M227E1 fuze. and a filling of RS red smoke mixture, The grenade weighs 390 grams (approximately 1 lb), and is 3-1/2 inches in diameter. The gray grenade body is made of two rubber hemispheres vulcanized together. The top half of the grenade contains the fuze. and the bottom half contains the filling hole and the exhaust port. The grenade is filled with approximately 165 grams of RS mixture.

i. Grenade. Hand, Smoke, TA. M83 (G982). This is a burning type grenade used to generate smoke for screening activities of small units. The grenade body is a cylinder of thin sheet metal. It is filled with TA smoke mixture. The grenade is fuzed with the M201A1 pyrotechnic delay-igniting fuze.

j. Grenade, Hand. Incendiary. TH3. AN-M14 (G900). The TH3 incendiary hand grenade is used primarily to provide a source for intense heat to destroy equipment. It generates heat to 4000 degrees Fahrenheit. The grenade filler will burn from 30 to 45 seconds. The grenade body is of thin sheet metal and is cylindrical in shape. It is filled with an incendiary mixture. Thermite TH3 and First-Fire Mixture VII. Grenade is assembled with the M201A1 pyrotechnic delay-igniting fuze. Older models may contain fuze E7R6.

k. Fuze. Hand Grenade. M201A1 (G874). This is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column. and ignition mixture. Assembled to the body are a striker, striker spring. safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

1. Fuze. Hand Grenade. M206A1 and M206A2 (G872). These are pyrotechnic delay-detonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring. safety lever. safety pin with pull ring. and a detonator assembly. The split end of the safety pin has an angular spread or a diamond crimp.

m. Fuze. Hand Grenade, M227 (G869). This is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture. pyrotechnic delay column, and ignition mixture. Grenade fuze is restrained from functioning by the safety cotter pin. sliding safety latch. and handle. When the safety cotter pin is removed and the safety latch is pushed rearward from the lock pin. the handle is unlocked and grenade is armed. Releasing the handle causes the arming pin spring to eject the arming pin. This releases the firing pin, allowing the firing pin to activate the primer. The primer ignites the first-fire mixture, which flashes and ignites the delay mixture. This in turn. ignites the ignition mixture. The ignition mixture burns through an aluminum foil shield on the bottom of the fuze and ignites the pyrotechnic mixture in the grenade body.

**P-2. Unique safety precautions.**

a. WP smoke is poisonous upon prolonged or repeated inhalation. particularly in confined space. Normal concentrations in open air are not likely to be harmful. Have container of water close at hand for submerging items in case of WP leakage.

b. PTA (Terephthalic Acid) may cause eye irritation and mild skin irritation. When finely divided and suspended in air, material should be considered a combustible dust.

c. As HC reacts with water which can start it burning. do not submerge nor apply water to HC items.

d. In high concentrations or on prolonged exposures. HC Smoke irritates the nose and throat and may be quite dangerous when inhaled. Respiratory protection shall be worn by personnel exposed to any concentration of HC smoke.

e. The pin of the M201A1 fuze used on AN-MB HC: AN-M14 Incendiary; M83 TA Smoke, and M18 smoke grenades can be inadvertently pulled during processing: i.e.. handling. temporary storage in boxes, at the production plant. This can occur when grenades which are not in the fiber container are placed in boxes and the lever on one grenade catches in the ring of the pin of an adjacent grenade and either pulls or partially pulls the pin. The potential for the pin to be inadvertently pulled is significant up to the point when the grenade is placed in its fiber container. When the grenade is in its fiber container, there is almost no possibility of the pin being inadvertently pulled.

f. To preclude fuze pins from being inadvertently pulled. users are cautioned to comply with the following procedures:

(1) Retain the grenades in fiber container until they are to be used/inspected

(2) Always store and transport the grenades in the fiber container

(3) Prior to removing the grenade from the fiber container. observe the fuze safety pin. If it is missing, do not remove the grenade from the fiber container. If both legs of the pin are straight or if one leg is straight and the other is bent to an angle less than 45 degrees. bend each leg 90 degrees in opposite directions.

g. If the grenade is upside down in the fiber container (fuze not visible). or if any of the above discrepancies are noted, it should remain inside the container and action taken to dispose of it safely.

h. Grenades should never be lifted or handled by the safety pin pull ring

P-3. Testing and equipment requirements. Not applicable

P-4. Inspection category and sampling plan.

a. Inspection Category **Y;** Periodic inspection interval -- three years.

b. Sampling plan for inspection is according to chapter 2.

c. Inspection criteria for fuzes is contained in Appendix T (SASIP 742-1330-94-370).

d. Item will be inspected and classified according to chapter 2 and table R-l

Table P-l. Item Defects and Method of Inspection.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical. | | | |
| a. Unauthorized fuze installed | All | Visual | |
| b. Safety pin missing, or insecurely assembled to the extent that it endangers the user | All | Visual | |
| c. Grenades mixed within lot which can result in hazardous or unsafe conditions for persons using or maintaining items. | All | Visual | |
| d. Marking misleading as to color of smoke | M18 | Visual | |
| e. Evidence of leakage | M15, M34 | Visual | |
| f. Grenade packed upside down | M15, M34. | Visual | |
| g. Emission holes missing | AN-NE, AN-M14. .M48 | Visual/Manual | Para P-5b |
| 2. Major. | | | |
| a. Split seams or swollen body | All | Visual | |
| b. Tape missing. loose. or does not completely cover emission hale | All | Visual | |
| c. Fuze loose: not in full MO degree contact with gasket | All | Visual | |
| d Grenade contents leaking | AN-M8,M18 | Visual | |
| e Marking incorrect | All | Visual | |
| f. Rust or corrosion to the extent that grenade cannot be used as intended. | All | Visual | |
| g Grenade cannot be removed from container | All | Visual | |
| h Safety latch missing | M48 | Visual | |
| I. Grenade packed upside down | AN-M8.M14 M18. M48. | Visual | |
| 3. Minor. | | | |
| a Marking incomplete or illegible but type of grenade and lot number are identifiable. | All | Visual | |
| b. Minor rust/corrosion | All | Visual | |
| c. Layers of flaked rust which. when removed. leave pitting that will not affect functioning | All | Visual | |
| d. Inadequate paint coverage | All | Visual | |
| e. Grenade slurry mixture loose | M18 | Visual/Manual | Para P-5a |

P-5. **Inspection description and notes.**

a. Shake manually. If rattling sound is heard (Ml8 grenades with slurry starter mix only). smoke grenade is to be considered serviceable, with restrictions (BO1). (CO6) and defect classified as minor. Engineering changes for Ml8 smoke grenades provided for the use of starter mix slug in lieu of starter mix in slurry form. As a result. when grenade with slug starter mix is checked for looseness (manually shaken) there is a slight rattle. This is not a defect, but is inherent in the Ml8 design. Starter mix slug was introduced into Pine Bluff Arsenal lots as follows:

(1) 1330-G940 (Green) -- PB-89B013.... and after.

(2) 1330-G945 (Yellow) -- PB-89A033.... and after.

(3) 1330-G950 (Red) -- PB-88H055.... and after

(4) 1330-G955 (Violet) -- PB-88M072.... and after.

b. Feel where tape is covering emission hole to ensure there has actually been a hole made in the metal container underneath the tape.

**P-6. References:**

**a. TM 9-1300-200**

**b. TM 9-1330-200-12**

C. TM g-1330-200-34

**d. TM** 43-0001-29

**e. FM 23-30**

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# APPENDIX Q
# RIOT CONTROL GRENADES

Q-1. Item description.

d. FSC: 1330

b. SASIP 742-1330-94-321

c. Ammunition Type: Grenade, Hand, Riot, CN, M7, M7A1; CS, M7A3; CS, M47; CN1, ABC-M25A1; CS1, ABC-M25A2; and CS, M58

d. Riot control grenades are used to control insurgencies and for other tactical missions. They may also be used to simulate casualty agents during training.

e. Grenade, Hand, CN, M7 and M7A1 (G960).

(1) These grenades are burning type riot control agent grenades. CN has a powerful lachrymal effect and is irritating to the upper respiratory passages. In higher concentrations it is irritating to the skin, causing a burning and itching sensation. Incapacitation occurs at 15 to 30 seconds after exposure and endures for 5 to 20 minutes depending upon dosage concentration.

(2) The grenade bodies are of thin sheet metal and are cylindrical in shape. The filling is compressed into the grenade body, a tapered hole being formed through the body of the filling. The top surface of the filling and the tapered walls of the hole are coated with starter mixture (to aid ignition of the fuel by the fuze). Grenades are assembled with the M201A1 pyrotechnic delay-igniting fuze.

f. Grenade, Hand, CS, M7A3 (G963).

(1) The M7A3 grenade is a CS filled, burning type grenade. CS has a powerful lachrymal effect and is irritating to the upper respiratory passages causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. Incapacitation occurs 15 to 30 seconds after exposure and endures less than 10 minutes after personnel are removed to fresh air.

(2) The grenade body is a cylinder made of thin sheet metal. The filler is compressed into the grenade body with a starter mix. Grenades are assembled with the M2O1A1 pyrotechnic delay-igniting fuze.

g. Grenade, Hand, CS, M47 (G922). The M47 is a burning type grenade. It consists of a rubber body assembly, an M227 fuze, and a filling of CS pyrotechnic mixture. The grenade weighs 410 grams (approximately 1 lb), and is 3-1/2 inches in diameter. The gray qrenade body is made of two rubber hemispheres vulcanized together. The top half of the grenade contains the fuze, and the bottom half contains the filling hole and the exhaust port. The grenade is filled with approximately 185 grams of CS-pyrotechnic granulated mix.

h. Grenade, Hand, CN1, ABC-M25A1 (G927). This is a bursting type grenade. The grenade body is spherical. It is made of two plastic hemispheres cemented together. The two pieces together form a burster well and slider housing. It is assembled with a pyrotechnic delay-detonating type integral fuze. The fuzing components consist of an arming sleeve, arming pin, firing spring, slider assembly and firing pin. The slider assembly contains a primer, pyrotechnic delay column and a detonator. The grenade is assembled with a safety pin and pull ring. Safety clips are not required with these grenades.

i. Grenade, Hand, CS1, ABC-M25A2 (G924). This is a bursting type grenade.

(1) CS1 has a powerful lachrymal effect and is irritating to the upper respiratory passages, causing coughing, difficulty in breathing and chest tightness. Heavy concentrations will cause nausea and vomiting as well. Incapacitation occurs 15 to 30 seconds after exposure and endures from 30 minutes to several hours depending upon the dosage concentration. CS is more persistent and has a more severe reaction than CN.

(2) The grenade body is spherical. It is made of two plastic hemispheres cemented together. The two pieces together form a burster well and a slider housing.

(3) The fuze is an integral pyrotechnic delay-detonating type. The fuzing components consist of an arming sleeve, arming pin, firing spring slider assembly and firing pin. The slider assembly contains a primer, pyrotechnic delay column, and a detonator. The grenade is assembled with a safety pin and pull ring. Safety clips are not required with these grenades.

j. Pocket CS Grenade, M58 (G933). This is a burning type riot control agent grenade. The body is a thin-walled, two piece aluminum cylinder. It contains a CS-pyrotechnic composition. There is a hole in the base of the body which is used for agent emission after functioning. The grenade is fuzed with the M201A1E1 fuze which is similar to the M201A1.

k. Fuze, Hand Grenade, M201A1 (G874). This is a pyrotechnic delay igniting fuze. The body contains a primer, first fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

7. Fuze, Hand Grenade, M227 (G869). This is a pyrotechnic delay igniting fuze. The body contains a primer, first fire mixture, pyrotechnic delay column, and ignition mixture. Grenade fuze is restrained from functioning by the safety cotter pin, sliding safety latch, and handle. When the safety cotter pin is removed and the safety latch is pushed rearward from the lock pin, the handle is unlocked and grenade is armed. Releasing the handle causes the arming pin spring to eject the arming pin. This releases the firing pin, allowing the firing pin to activate the primer. The primer ignites the first fire mixture. which flashes and ignites the delay mixture. This in turn, ignites the ignition mixture. The ignition mixture burns through an aluminum foil shield on the bottom of the fuze and ignites the pyrotechnic mixture in the grenade body.

**Q-2. Unique safety precautions.**

a. Grenades should never be lifted or handled by the safety pin pull ring.

b. Before any grenade is removed from its fiber container, it must be thoroughly inspected to see that the safety pin is in place, undamaged, and prongs of the safety pin are spread approximately 45 degrees or diamond crimped. This inspection must also ensure that the fuze lugs are not cracked or broken and the safety lever ears are properly assembled under the lugs.

c. If the grenade is upside down in the fiber container (fuze not visible), or if any of the above discrepancies are noted. it should remain inside the container and action taken to dispose of it safely.

d. Any riot control agent may present an inhalation and irritant hazard. Prolonged exposure of the eyes and respiratory system should be avoided. Wear protective masks to avoid excessive exposure when loose or airborne riot control agent is present,

**Q-3. Testing and equipment requirements. Not applicable.**

**Q-4. Inspection category and sampling plan.**

a. Inspection Category Z: Periodic Inspection Interval -- two years

b. Sampling plan for inspection is according to chapter 2

c. Inspection criteria for fuzes is contained in Appendix S (SASIP 742-1330-94-370).

d. Item will be inspected and classified according to chapter 2 and table Q-l

Table Q-1. Item Defects and Method of Inspection.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1 Critical | | | |
| a. Safety Pin Missing or broken | All | Visual | |
| b Safety pin is insecurely assembled to an extent that it endangers the user. | All | Visual | |
| c. Incorrect model fuze model assembled to grenade | All | Visual | |
| d Grenades mixed within lot which can result in hazardous or unsafe conditions for persons using or maintaining items | All | Visual | |
| c. Marking misleading as to type of grenade. | All | Visual | |
| 2. Major | | | |
| a. Tape loose or does not completely cover emission holes | All | Visual | |
| b Grenades show signs of filler leakage. | All | Visual | |
| c. Grenade packed upside down in fiber or metal container. | All | Visual | |
| d Rust or corrosion to the extent items cannot be used as intended. | All | Visual | |
| e Grenades loose in containers to the extent items cannot be adequately protected durinq transit. | All | Visual | |
| f Lot number missing or illegible | All | Visual | |
| g. Grenade cannot be removed from container | All | Visual | |
| h Grenade body seams split | M7A3 | Visual | |
| i Grenade body swollen | M7A3 | Visual | |
| J Missing or loose filler plug | M25A2 | Visual | |
| k Safety latch missing | M47 | Visual | |
| 3. Minor. | | | |
| a. Marking missing or illegible | All | Visual | |
| b. Minor rust/corrosion | All | Visual | |
| c. Layers of flaked rust which. when removed leave pitting that will not affect functioninq. | All | Visual | |
| d. Inadequate paint coverage | All | Visual | |

## Q-5. References:

a. TM 9-1300-200

b. TM 9-1330-200-12

c. TM 9-1330-200-34

d. TM 43-0001-29

e. FM 23-30

# APPENDIX R
# FRAGMENTATION GRENADES

R-1. Item description.

a. FSC: 1330.

b. SASIP: 742-1330-94-350.

c. Ammunition Type: Grenade, Hand, Fragmentation, Delay M26, M26A1, M33, M61, M67

d. Fragmentation hand grenades are used to supplement small arms fire against the enemy in close combat. The grenade produces casualties by high velocity projection of fragments.

e. Delay grenades, M26, M26A1, and M61 (G890/G880). Bodies are constructed of two pieces of thin wall sheet steel and have a notched fragmentation coil liner. Bodies are filled with Composition B. Each grenade is assembled with M204A1 or M204A2 pyrotechnic delay detonating fuze. Difference between M26, M26A1 and M61 is that the M61 has a safety clip. Safety clip is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin. The safety clip, of spring steel wire, consists of a loop which fits around the fuze body and a clamp which fits over the safety lever.

f. Delay grenades, M33 and M67 (G888/G881). The grenade body is a 2.5 inch steel sphere which is designed to burst into numerous fragments when detonated. The grenade body contains 6.5 ounces of high explosive, Composition B. Each grenade is fitted with an M213 pyrotechnic delay detonating fuze. Difference between M33 and M67 is the M67 grenade has a safety clip.

g. Fuze, M204A1 and M204A2 (G877). These are pyrotechnic delay-detonating fuzes. They differ only in body construction. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or diamond crimp.

h. Fuze, pyrotechnic delay-detonating, M213 (G877).

(1) The body of the fuze contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin and pull ring, safety clip, and a detonator assembly.

(2) The M213 fuze is equipped with a steel safety pin and pull ring. The split end of the safety pin is either spread approximately 40 degrees or diamond shaped to prevent accidental removal and arming during shipping and handling. The pull ring is provided to facilitate easy removal of the safety pin.

(3) A second safety feature is the steel safety clip. The safety clip's purpose is to prevent the safety lever from snapping upward into a triggered position, in the event the safety pin is accidentally dislodged from the fuze.

R-2. Unique safety precautions.

a. Grenades should never be lifted or handled by the safety clip or the safety pin pull ring.

b. Before any grenade is removed from its fiber container, it must be thoroughly inspected to see that the safety pin is in place and undamaged and that the prongs of the safety pin are spread approximately 45 degrees or diamond crimped. This inspection must also ensure that the fuze lugs are not cracked or broken and the safety lever ears are properly assembled under the lugs.

c. If the grenade is upside down in the fiber container (fuze is not visible), or if any of the above discrepancies are noted, it should remain inside the container and action taken to dispose of it safely.

R-3. Testing and equipment requirements.

Test of fuze assembly torque will be according to the applicable portions of table R-2 and paragraph R-5b.

b. The required test equipment is listed in table R-1.

Table R-1. Equipment Identification List.

| Description | Stock Number |
|---|---|
| Fuze adapter, hand grenade . . . . . | 4925-01-033-4451 |
| Torque wrench, dial indicator, 50 inch pound capacity direct reading with memory indicator | As applicable |
| Scribe, metal ..... | As applicable |
| Pitch-in Barricade, Hand Grenade, Delay Type.... | APE 1213M1 |

R-4. Inspection category and sampling plan.

a. Inspection Category Y, periodic inspection interval -- three years.

b. Sampling plan for inspection is according to chapter 2.

c. Inspection criteria for fuzes is contained in Appendix S (SASIP 742-1330-94-370).

d. Items will be inspected and classified according to chapter 2 and table R-2.

Table R-2. Item Defects and Method of Inspection.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical: | | | |
| a Safety pin missing or broken | All | Visual | |
| b. Safety pin is insecurely assembled to an extent that it endangers the user | All | Visual | |
| c. Incorrect model fuze assembled to grenade | All | Visual | |
| d. Grenade packed upside down in fiber or metal container | All | Visual | |
| e. Safety clip (where applicable) missing or improperly positioned. | All | Visual | |
| f. Either or both lever hinge ears missing | All | Visual | Fig. S-1 |
| g. Both lever hinge ears not bent away from the body past the vertical center line of the body hinge bosses. | All | Visual | Fig. S-1 |
| h Ends of both lever hinge ears not bent upwards | All | Visual | Fig. S-l |
| i Grenades mixed within the lot which can result in hazardous or unsafe conditions for persons using or maintaining items. | All | Visual | |
| j. Marking misleading as to grenade type | All | Visual | |
| 2 Major. | | | |
| a. Cracks in neck area of grenade | All | Visual | Para R-5a |
| b. Lot number missing or illegible | All | Visual | |
| c. Pull ring is missing but safety pin is securely assembled. | All | Visual | |
| d. Pull ring is damaged to the extent that the safety pin cannot be easily extracted. | All | Visual | |
| e Rust or corrosion to the extent that the grenade cannot be used as intended. | All | Visual | |
| f any movement of fuze at torque values of less than 26 inch-pounds. | All | Visual/Manual | Para R-5b |
| 9 Grenade loose in containers to the extent items cannot be adequately protected in transit. | All | Visual | |
| h. Either lever hinge ear not bent away from the body past the vertical center line of the body hinge boss. | All | Visual | Fig. S-l |
| i End of either lever hinge ear not bent upwards | All | Visual | Fig. S-1 |
| j. Improperly assembled, seated, or loose fuze | All | Visual | |
| 3. Minor: | | | |
| a. Paint defects (i.e.. scale, peeling, blistering. etc.) | All | Visual | |
| b. Layers of flaked rust which leaves pitting when removed but does not affect functioning. | All | Visual/Manual. | |
| c. Marking of grenade incomplete or illegible but type of grenade and lot number are identifiable. | All | Visual | |
| d. Inadequate paint coverage | All | Visual | |
| e. Missing gasket between fuze and neck of grenade | All | Visual | |

## R-5. Inspection description and notes.

a.Visually inspect the neck area for cracks. Cracks (usually in the seam area) that extend downward from the upper edge of the neck to the body and are completely through the metal preclude proper torque being applied to the fuze. These will be classified as major defects.

b. Perform a test of fuze assembly torque according to the following procedures:

(1) Equipment required is listed in table R-l.

(2) Scribe a line across junction of fuze and grenade body to provide means of detecting movement between components. Apply 26 inch-pound torque in tightening direction (clockwise).

(3) Any movement of fuze at torque values of less than 26 inch-Rounds will be classified as a major defect. Otherwise serviceable lots rejected as a result of torque failure will be assigned condition code E and reported by memorandum to AMSIO-SMA-N with information copy to AMSIO-QAS. Report will include specific torque values obtained.

(4) Actual performance of test requires caution by operator when applying torque to fuze body Also avoid physically contacting fuze lever while torquing. as inaccurate values will result,

**R-6. References:**

**a. TM 9-1300-200**

**b. TM 9-1330-200-12**

**c. TM 9-1330-200-34**

**d. TM 43-0001-29**

**e. FM 23-30**

# APPENDIX S
# HAND GRENADE FUZES

S-1. Item description.

a. FSC: 1330

b. SASIP 742-1330-94-370

c. Ammunition Type: Fuze, Hand Grenade, M2O1A1; M204 Series; M213; Fuze, Hand Grenade, Offensive, M206; Fuze, Hand Grenade, Practice M205 and M228

d. Fuze, Hand Grenade M2O1A1 (G874). This is a pyrotechnic delay-igniting fuze. The body contains a primer, first-fire mixture, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular spread.

e. Fuzes, Hand Grenade M204A1 and M204A2 (G873).

(1) These are pyrotechnic delay-detonating fuzes. They differ only in body construction.

(2) The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and a detonator assembly. The split end of the safety pin has an angular spread or diamond crimp.

(3) The hand grenade safety clip (when applicable) is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin. The safety clip, of spring steel wire, consists of a loop which fits around the fuze body and a clamp which fits over the safety lever.

f. Fuzes, Hand Grenade M206A1 and M206A2 (G872).

(1) These are pyrotechnic delay-detonating fuzes. They differ only in body construction.

(2) The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring and a detonator assembly. The split end of the safety pin has an angular spread or a diamond crimp.

(3) When applicable, the hand grenade safety clip is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin.

(4) Safety clips, of spring steel wire, consist of a loop, which fits around the threaded section of the fuze, and a clamp, which fits over the safety lever. Because the loop fits around the threaded section of the fuze, the clip must be assembled to the grenade when the fuze is assembled to the grenade.

g. Fuze, Hand Grenade M213 (G877).

(1) This is a pyrotechnic delay-detonating fuze.

(2) The body of the fuze contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin and pull ring, safety clip, and a detonator assembly.

(3) The M213 fuze is equipped with a steel safety pin and pull ring. The split end of the safety pin is either spread approximately 40 degrees or diamond-shaped to prevent accidental removal and arming during shipping and handling. The pull ring is provided to facilitate easy removal of the safety pin.

(4) A second safety feature is the steel safety clip. The safety clip's purpose is to prevent the safety lever from snapping upward into a triggered position, in the event the safety pin is accidentally dislodged from the fuze.

h. Fuze, Hand Grenade, Practice, M205 Series (G870).

(1) The M205A1 and M205A2 are pyrotechnic delay igniting fuzes. They differ in body construction only. The body contains a primer and a pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, and an igniter assembly. The split end of the safety pin has an angular spread or a diamond crimp.

(2) The hand grenade safety clip (when applicable) is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin. The hand grenade safety clip, of spring-steel wire, is shaped in a special configuration for installation on the grenade. It consists of a clamp which fits around the fuze body and over the safety lever. It serves to prevent release of the grenade safety lever if the safety pin is accidentally released.

i. Fuze, Hand Grenade, Practice, M228 (G878).

(1) Practice fuze M228 is a pyrotechnic delay igniting fuze. The body contains a primer and pyrotechnic delay column. Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, safety clip (older models do not have the safety clip), and igniter assembly. The split end of the safety pin has an angular spread or a diamond crimp.

(2) The hand grenade safety clip is designed to keep the safety lever in place should the safety pin be unintentionally removed from the grenade. It is an additional safety device used in conjunction with the safety pin. The safety clip is assembled to the fuze. (Older models have the safety clip assembled to the grenade and positioned around the safety lever).

S-2. Unique safety precautions.

a. Fuzes should never be lifted or handled by the safety clip or the safety pull ring.

b. Before any fuze is removed from its fiber container, it must be thoroughly inspected to see that the safety pin is in place and undamaged and that the prongs of the safety pin are spread approximately 45 degrees or diamond crimped. This inspection must also ensure that the fuze lugs are not cracked or broken and the safety lever ears are properly assembled under the lugs.

S-3. Testing and equipment requirements. Not applicable.

S-4. Inspection category and sampling plan.

a. Inspection Category Y; Periodic inspection interval -- three years.

b. Sampling plan for inspection is according to chapter 2.

c. Items will be inspected and classified according to chapter 2 and table S-1.

Table S-1. Item Defects and Method of Inspection.

| Classification | Model | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical: | | | |
| a. Safety pin missing or broken..... | All | Visual | |
| b. Safety clip missing (where applicable)..... | All | Visual | |
| c. Safety pin insecurely assembled to the extent that user is endangered. | All | Visual | |
| d. Igniter case cracked to extent that pyrotechnic charge is exposed, free to escape, or may be pinched between broken surfaces. | M205<br>M228 | Visual | |
| e. Detonator case cracked to extent that explosive charge is exposed, free to escape, or may be pinched between broken surfaces. | M204<br>M206<br>M213 | Visual | |
| f. Both fuze lever hinge ears not properly assembled..... | All | Visual | Fig S-1 |
| g. Either or both hinge ears missing or broken..... | M204<br>M206<br>M213 | Visual | Fig S-1 |

| | | | |
|---|---|---|---|
| 2. Major: | | | |
| a. Any of the following missing or damaged to extent that precludes proper functioning. (1) Pull ring. (2) Fuze threads. (3) Any other item that precludes use of fuze in a hand grenade. | All | Visual | |
| b. Fuze marking incomplete, inaccurate, or illegible to extent it is misleading as to type of fuze. | All | Visual | |
| c. One fuze lever hinge ear not properly assembled | All | Visual | Fig S-1 |
| d. Aluminum foil ignition seal damaged or punctured | M4201A1 | Visual | |
| e. Rust or corrosion to the extent that fuze cannot be used as intended. | All | Visual | |
| 3. Minor: | | | |
| a. Marking incomplete or illegible but type of fuze and lot number are identifiable. | All | Visual | |
| b. Minor rust/corrosion | All | Visual | |

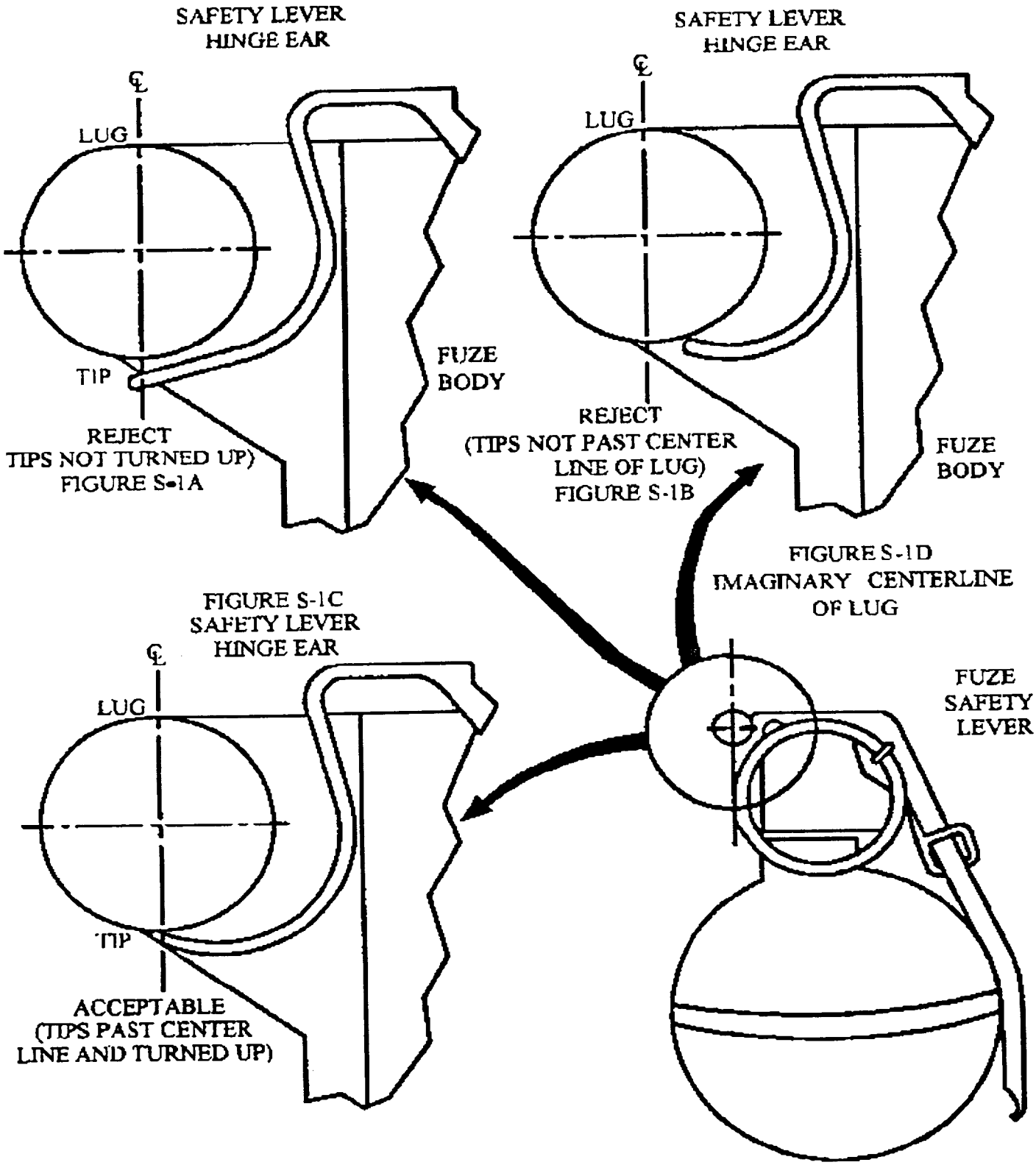


FIGURE S-1. SAFETY LEAVER HINGE

# APPENDIX T
# ROCKET, 3.5 INCH

T-1. Item description.

*a.* FSC : 1340.

*b.* SASIP: 742-1340-94-400.

*c.* Ammunition type: Rocket, 3.5-inch. Includes the following models: M28A2 (HEAT), M29A2 (practice), and M30 (WP).

*d.* The 3.5 inch is a fixed fin stabilized rocket, consisting of three major components: warhead, fuze, and motor. For a complete description of these rockets see TM 43-0001-30 and the drawings for the particular round. All 3.5 inch rockets with propellant or igniters over 10 years old require replacement of propellant and igniters. Replacement propellant must have a current load authorization. Replacement igniters must have been reassessed according to paragraph T-7 within 2 years from tentative date of replacement.

T-2. Unique safety precautions.

*a.* An RF energy survey should be performed prior to moving lots of 3.5 inch rockets known to have (or suspected of having) missing or ineffective shorting clips.

*b.* The maximum electromagnetic radiation (EMR) the 3.5 inch rocket may safely be exposed to in its storage and shipping configuration with a missing or ineffective clip is 20 volts per meter. In a truck or shipping container totally enclosed in metal, the 3.5 inch rocket can safely withstand EMR at levels 10 times (200 V/m) greater than in its storage configuration.

*C.* Following information pertains to movements where criteria of paragraph T-2b cannot be assured.

(1) Fiber containers, wooden boxes, or cardboard boxes do not provide adequate EMR protection. Seal rockets or container in MIL-B-131E foil barrier bag.

(2) Metal containers do provide adequate shielding for shipment of 3.5 inch Rockets provided containers have not been opened.

(3) Metal containers that have been opened must be resealed by either of the following methods:

*(a)* Seal with copper or aluminum foil tape. The electrical conductivity of the entire container is critical to EMR protection. To assure conductivity, remove all paint and tar from the tube in the vicinity of the opening. Securely seal the opening with copper or aluminum foil tape, attaching tape to shiny, bare metal.

*(b)* Seal rocket in MIL-B-131e foil barrier bag and repack into outer pack.

*(4)* Additional precautions to be taken during handling:

*(a)* Turn off radio frequency (RF) transmitters.

*(b)* Avoid exposure to RF fields such as the main beam of RADAR transmitters.

*(c)* Questions regarding EMR field levels should be cleared with safety office.

(5) No historical records exist to indicate that all rocket motor shunts are ineffective. The only way to ascertain whether a shunt is effective is by testing.

T-3. Testing and equipment requirements.

Test and measurement equipment and requirements are listed in table T-1. Specific tests listed in table T-1 are supplemental to the general inspection criteria of chapter 2 and the specific inspection criteria of table T-2. Inspection must not be limited to these tests.

Table T-1. Equipment Identification and Test Requirements.

| Description | Identification | Inspection | Application |
|---|---|---|---|
| Continuity test equipment (shielded). | 5220-00-313-3092 | IRI | Complete round gaging |
| Igniter circuit tester . . . . . | 4925-00-712-0205 | IRI, RI, PI | Igniter resistance test |

T-4. Inspection category and sampling plan.

*a.* Inspection category X, periodic inspection interval - 4 years.

*b.* The sampling plan for inspection is according to chapter 2.

T-5. Specific inspection points.

Item will be inspected and classified according to chapter 2 and table T-2.

Table T-2. Item Defects and Method of Inspection.

| Classification | Model. | Inspection Method | Inspection Description |
|---|---|---|---|
| Critical: | | | |
| a. Shorting clip missing or ineffective | All | Visual/Test | Para T-6*a* |
| b. Exuding filler | M28A2 | Visual | |
| C. Leaking UP | M30 | Visual | |
| d. Fuze ejection pin missing | M28A2 | Visual | Para T-6*b* |
| | M30 | Visual | Para T-6*b* |
| e. Gap between fuze and warhead | M28A2 | Visual | Para T-6*c* |
| | M30 | Visual | Para T-6*c* |
| Major: | | | |
| a. Nozzle assembly loose, cracked, or distorted | All | Visual | |
| b. Fuze safety band missing | M28A2 | Visual | |
| | M30 | Visual | |
| C. Assembly loose at any joint or not fully assembled | All | Visual/Manual | Para T-6*d* |
| d. Igniter circuit resistance below 0.675 ohms | All | Test | Para T-6 *e*, T-6*j* |
| e. Ejection pin frozen | M28A2 | Visual/Manual. | Para T-6*f* |
| | M30 | Visual/Manual. | Para T-6*f* |
| f. Igniter wires, electrical connections loose | All | Visual/Manual. | |
| g. Fins loose | All | Visual/Manual. | |
| h. Rocket not packed with head in direction indicated on pack. | All | Visual | |
| i. Contact ring damaged or improperly assembled | All | Visual | Para T-6*g* |
| 3. Minor: | | | |
| a. Igniter circuit resistance above 3.025 ohms | All | Test | Para T-6*e* T-6j |
| b. Tag missing from shorting clip | All | Visual | |
| c. Fuze safety band missing | M29A2 | Visual | |
| d. Ejection pin missing | M29A2 | Visual | |

T-6. Inspection description and notes.

*a*. Test with shorting clip in place must not exceed 0.055 ohms. The test will be performed without disturbing the shorting clip when removed from the container.

*6*. If the ejection pin is missing, the rocket will be considered armed and treated accordingly.

*C*. Any round with a discernible 360 degree gap between the fuze and the warhead is to be rejected.

*d*. Grasp the fuze with one hand and twist the rocket head with the other. Repeat holding the fuze with one hand and twisting the motor body with the other hand. Any movement rejects the rocket.

*e*. Test will be conducted from the copper contact band (live lead) or blue auxiliary lead to the unpainted groove in the support ring (ground contact).

*f*. Test the ejection pin for freedom of movement. This is done on the M404A1 fuze (square ejection pin) by merely depressing the pin with the fingers and releasing it. It is done on the M404A2 fuze (round ejection pin) by depressing the pin with the fingers and then twisting it and releasing. If the ejection pin binds while being depressed or twisted, reject the rocket.

*g.* When the contact ring is damaged or improperly assembled, so that its functional effectiveness has been destroyed it will be classified as a defect.

*h.* Lots already in an unserviceable condition code for replacement of propellant or igniters or requiring 100 percent test of igniter circuit or shorting clip do not require electrical test.

*i.* Gaging is not normally required during RI, PI, or UBLI. Gaging during these inspections should be limited to individual rounds having visual evidence of damage or other conditions which may preclude loading and firing. Unless such rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

*j.* Only igniter circuit testers meeting the specifications of MIL-T-11393 are authorized. Testers supplied under NSN 4925-00-712-0205 meet these requirements. Authorized testers include, but are not limited to, the Alinco No. 101-5BF, 101-5BFG, and the Simpson No. 4-000ITS.

T-7. Reassessment of rocket motor igniter M20A1.

*a.* Nonfunctional inspection criteria are given in table T-3. The sample size is fifty igniters.

Table T-3. Nonfunctional Inspection Criteria for M20A1 Rocket Motor Igniter.

| Defect | Classification | Accept | Reject |
|---|---|---|---|
| Powder leakage | Critical | 0 | 1 |
| Damaged igniter body | Major | 1 | 2 |
| Damaged lead wire | Major | 1 | 2 |
| Resistance not within 0.75 to 1.25 ohms | Major | 1 | 2 |

*b. Functional criteria.* Lots passing the nonfunctional test will have 50 samples functionally tested. These samples must be nonfunctionally acceptable. The igniter will be initiated using the firing mechanism from a 3.5 inch rocket launcher. A failure to ignite is a major defect, accept on one, reject on two.

# APPENDIX U
# ROCKET, 2.75 INCH

U-1. Item Description.

a. FSC: 1340.

b. SASIP 742-1340-94-402

C. Ammunition Type: Rocket, 2.75 Inch

d. Referred to as Hydra 70 Rocket, 2.75 Inch Rocket system consists of a variety of warheads and fuzes and uses the MK 40 or MK 66 series rocket motor. Complete description of rockets/components can be found in TM 43-0001-30.

e. 2.75 Inch Rockets are air to ground rockets designed for deployment from rotary and fixed wing aircraft.

f. Rockets with MK 40 motor are low spin, folding fin aircraft rockets (LSFFAR). Rockets with MK 66 motor are spin stabilized, wrap around fin air- craft rockets (SSWAFAR).

U-2. Unique safety precautions.

a. Palletized (boxed and fastpack container) rockets, or rocket motors dropped five feet or more will be placed in CC-H and reported IAW DA PAM 738-750.

b. Unpalletized/unboxed/unpackaged rockets or rocket motors dropped any distance will be placed in CC-H and reported IAW DA PAM 738-750.

C. Rocket motors are electrically initiated items and should be protected from sources of electromagnetic radiation and stray currents. Personnel will wear conductive safety shoes and will stand on conductive flooring or conduc- tive mats when handling rocket motor. Inspection tables and test equipment will be properly grounded IAW DA PAM 385-64.

d. Mk 40 Mod 1 and subsequent mods and Mk 66 all mods are considered propulsive at all times.

e. Fuze, Remote Settable, M439 has a resistance-capacitance element which is charged when attempting to fire the rocket, If fuze is set (charged) and motor fails to ignite, it may be loaded into another tube and fired. This second attempt to fire, however, will not be accurate. Though fuze remains safe, once set, fuze requires ten days to bleed charge to restore accuracy, and 45 days to completely discharge.

U-3. Testing and Equipment Requirement.

a. Test rockets IAW table U-l.

Table U-1. Test Requirements

| MODEL | IRI | RI | PI | BLI |
|---|---|---|---|---|
| MK 40 Rkt Motor | A,B | B | N/A | N/A |

A. Continuity Test: Test is not required for 2.75 inch Hydra Rocket with MK 66 Rocket Motor.

B. Torque test.

b. Table U-2 identifies test and measurement equipment.

Table U-2. Equipment Identification List

| Description | NSN | Application |
|---|---|---|
| APE 1189 | 4925AA11890000 | Rocket Motor/Complete Round |
| APE 1189 Kits | Various | Rocket Motor/Complete Round |
| Torque Fixture | 4925-00-781-6511 | Fuze/Warhead Interface<br>Warhead/Motor Interface |

U-4. Inspection category and sampling plan.

a. Inspection category.

(1) Category X: 4 years (includes Flechette, MPSM, HE, WP, RP, Practice warheads/rockets; MK 40 and MK 66 rocket motors)

(2) Category Y: 3 years (includes Flare and Illuminating warheads/rockets)

b. Sampling plan for inspection is IAW chapter 2.

U-5. Specific Inspection Points.

Items will be inspected and classified according to chapter 2 and tables U-3 through U-6.

## Table U-3. Complete Round

Note: See tables U-4 through U-6 for defect criteria on individual components of complete round.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical - none defined..... | | |
| 2. Major | | |
| a. Loosely assembled components (i.e., fuze to warhead or warhead to motor)..... | Visual/Torque Test | Para U-6b |
| b. Gap between fuze and warhead or warhead and motor..... | Visual | Para U-6f |
| c. Incorrect orientation in outer pack (i.e., nose end of rocket not pointing in direction of nose end marking on outer pack)..... | Visual | |
| 3. Minor - none defined..... | | |

## TABLE U-4. Warhead

Note: For fuzed warhead, see table U-5 for defect criteria on fuze.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. | | |
| a. Filler exudation or leakage..... | Visual | |
| b. Crack or dent in warhead..... | Visual | |
| c. Gouge in warhead..... | Visual/depth gage | Para U-6g |
| 2. Major | | |
| a. Corrosion/rust on metal surfaces or threads extensive enough to prevent assembly and/or affect metal integrity. | Visual | |
| b. Damaged threads that would prevent assembly..... | Visual | |
| c. Gouge in warhead..... | Visual/Depth Gage | Para U-6g |
| d. Blistering or peeling paint that would require complete repainting. | Visual | |
| e. Marking illegible/obliterated to extent that item cannot be positively identified..... | Visual | |
| f. Plastic nose cone damaged or loose (Flechette). | Visual | |
| g. Damaged or bent umbilical connector (XM255E1. M261, M267)..... | Visual | |
| h. Damaged umbilical cord (XM255E1, M261, M267)..... | Visual | |
| 3. Minor | | |
| a. Light corrosion/rust that does not affect assembly or metal integrity..... | Visual | |
| b. Markings faded, dim and/or partially illegible, but item can be identified..... | Visual | |
| c. Paint blistering or peeling in Spots..... | Visual | |
| d. Scratches through entire protective coating. | Visual | |

## Table U-5. Fuze

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical | | |
| a. Crack or dent in fuze body..... | Visual | |
| b. Gouge in fuze body..... | Visual/Depth Gage | Para U-6h |
| 2. Major | | |
| a. Corrosion/rust on metal surfaces or threads extensive enough to prevent assembly and/or affect metal integrity..... | Visual | |
| b. Damaged threads that would prevent assembly..... | Visual | |
| c. Gouge in fuze body..... | Visual/Depth Gage | Para U-6h |
| d. Marking illegible/obliterated to extent that item cannot be positively identified..... | Visual | |
| e. Loose ogive on fuze(M423 and M427)..... | Visual | Para U-6a |
| f. Umbilical assembly missing (remote set fuzes only)..... | Visual | |
| Protective cap missing or damaged (M4331..... . . . . | Visual | |
| h. Dents, gouges or scratches in impact switch (M433)..... | Visual | |
| 3. Minor | | |
| a. Light corrosion/rust that does not affect assembly or metal integrity. | Visual | |
| b. Markings faded, dim and/or partially illegible, but item can be identified..... | Visual | |
| c. Scratches through entire protective coating..... | Visual | |

## Table U-6. Motor

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical | | |
| a. Cracks, dents, or gouges in motor tube..... | Visual | Para U-6l |
| b. Hole in motor tube forward bulkhead..... | Visual | |
| C. Bulge on motor tube..... | Visual | Para U-6l |
| d. Shorting clip missing or improperly positioned (MK 40 motor)..... | Visual | |
| e. Shielding/fin restraint band missing/damaged (MK 66 Mod 1 and 2)..... | Visual | Para U-6i & U-8 |
| f. Electromagnetic Radiation Shield (EMR) missing or damaged (MK 66 Mod 3)..... | Visual | Para U-6j |
| g. Broken lead wire..... | Visual | Para U-6e |
| h. Loose nozzles on nozzle and fin assembly (MK 40 Motors)..... | Manual | |
| i. Nozzle and Fin Assembly loose, cracked, dented, gouged or distorted.....,..... | Visual/Manual | Para U-6c |
| J. Missing. cracked or damaged fin hinge pin..... | Visual | |
| k. Missing or damaged fin(s)..... | Visual | |
| l. Missing, damaged or loose nozzle seal/blow out seal (MK 40 motor)..... | Visual | |
| m. Missing or damaged weather seal (MK 66 motor)..... (Pin hole is acceptable) | Visual | Para U-6e |

| | | |
|---|---|---|
| 2. Major | | |
| a. Corrosion/rust on metal surfaces or threads extensive enough to prevent assembly and/or affect metal integrity..... | Visual | |
| b. Damaged threads that would prevent assembly..... | Visual | |
| C. Blistering or peeling paint that would require complete repainting..... | Visual | |
| d. Marking illegible/obliterated to extent that item cannot be positively identified..... | Visual | |
| e. Lockwire distorted or improperly assembled protrudes above surface of rocket motor tube..... | Visual | |
| f. Missing contact disc or fin retainer (MK 40 motor)..... | Visual | |
| g. Missing/damaged end shield(MK 66 motor)..... | Visual | Para U-6k & U-7 |
| h. Dent or bulge in EMR shield (MK 66 Mod 3)..... | Visual | |
| i. Igniter circuit resistance not within prescribed limits..... | Test | Para U-6d |
| 3. Minor | | |
| a. Light corrosion/rust that does not affect assembly or metal integrity..... | Visual | |
| b. Markings faded, dim and/or partially illegible, but item can be identified..... | Visual | |
| C. Paint blistering or peeling in spots..... | Visual | |
| d. Scratches through entire protective coating..... | Visual | |

U-6. Inspection Description.

a. In pre-1970 designs, a loose ogive (with rotation but without longitudinal looseness) does not represent a performance, safety or storability problem. For post-1970 designs, a loose ogive could represent a storability problem (seal broken) and is considered a major defect. The following defines P/ns for the different fuze designs:

| Fuze | Pre-1970 P/N | Post-1970 P/N |
|---|---|---|
| M423 | 8883683 | 9254708-1 |
| M427 | 8883745 | 9254708-2 |

b. Torque test

(1) Torque fixture listed in table U-2 (formerly APE 2075M1) will be used. Warheads without fuze wrench slots may be tested using a torque wrench adapter that must be locally fabricated using drawing AXMRR-7507A. This drawing may be obtained from USADACS, ATTN: SMCAC-DEM, Savanna, IL 61074-9639.

(2) A line will be scribed or drawn across the junctions (fuze to warhead and warhead to motor) to provide a means of detecting movement between components. 55 foot-lbs torque will be applied in a tightening direction. Any movement at less than 55 foot-lbs is a test failure.

C. Do not attempt to twist nozzle assembly. Should the nozzle assembly wobble or move lengthwise, it is defective.

d. Perform igniter circuit resistance test IAW Ammunition Peculiar Equipment Operational Manual and Parts List For APE 1189 Rocket Motor Continuity Tester. Igniter circuit resistance limit is as follows:

MK 40 series Motor: .63 to 4.0 ohms

e. For MK 66 motors, check to see if the end shield is damaged and requires replacement.

f. Gap is considered to exist if component is not seated for a full 360 degrees.

g. Criteria for gouge in warhead:

(1) M156, M257, M259, M264, M78: a gouge with visible depth will be considered a critical defect.

(2) XM255E1, M261, M267, WDU-4A/A: a gouge with visible depth will be considered a major defect.

(3) M151, M229, M230, M247, M274, WTU-1/B: a gouge having a depth of 1/16" or more and length of 1/2" or more will be considered a critical defect; other gouges will be considered a major defect.

h. Criteria for gouge in fuze body: a gouge having a depth of 1/16" or more and length of 1/2" or more will be considered a critical defect; other gouges will be considered a major defect.

i. Shielding/fin restraint band is considered damaged/ineffective if it contains a hole over 1/8 inch in diameter in vicinity of nozzle contact band or tape holding band to nozzle is missing.

j. EMR shield is considered damaged if it contains a hole or crack.

k. End shield is considered damaged if it contains a hole over 1/8 inch in diameter.

l. While any crack or bulge in the motor tube is a critical defect, particular attention should be given to the lockwire slot/area.

U-7. Repair procedures for missing/damaged end shield (MK 66 Mods)

a. Remove damaged end shield.

b. Inspect for damaged weather seal or igniter lead wire. Damage to weather seal and/or a broken igniter lead wire is considered a critical defect. Pin hole is acceptable.

C. Clean surface of the fin and nozzle assembly with clean rag and approved solvents.

d. Using Tape, pressure sensitive, aluminum, 3 inch wide (0.005 inch nominal thickness) procured to Fed Spec L-T-80, cut a piece of tape of sufficient area to cover nozzle assembly end. Suggested NSN for Tape is 7510-00-816-8077 and is available from regional GSA supply center.

e. Apply tape to nozzle end, noting the location of the 3 fin pin holes. Ensure that tape adheres to the surface and that tape is not wrinkled.

f. Using any suitable pointed tool, puncture tape at the location of the fin pin holes. Punctures serve as reference points when rkt is loaded into the launcher.

g. Trim off tape which extends beyond the circumference of nozzle end.

U-8. Repair procedures for missing/damaged shielding/fin restraint band on MK 66 Mods 1 and 2 rocket motors.

WARNING

The shielding/fin restraint band is designed to help protect the MK 66 Mods 1 and 2 rocket motors from accidental ignition by electrostatic discharge or other sources of electricity. If the shielding/fin restraint band is missing or damaged or the tape is missing, the rocket motor is not considered safe to store or transport. It is vital that only the tape identified below is used. Anything other than metallic foil tape will not protect against accidental ignition.

a. Collapse the wrap around fins by pushing forward on aft surface of each fin to move fin from the deployed position to the stowed position (flush with the motor tube).

b. Clean the fin and nozzle assembly (especially the contact band) by wiping with a clean, dry cloth.

C. Apply one and one half wraps of tape (see paragraph U-7 for type of tape) to rear area of fins. Assure aluminum foil tape completely covers the contact band.

d. Fold back a one inch length of tape to form a tear tab.

U-9. References:

a. TM 9-1340-222-20

b. TM 9-1340-222-34

c. TM 43-0001-30

d. TM 43-0001-47

e. DMWR 9-1340-0000-F20

f. Ammunition Peculiar Equipment Operational Manual and Parts List for APE 1189 Rocket Motor Continuity Tester.

## APPENDIX V
## CHARGE, DEMOLITION, HE, LINEAR M58 SERIES AND CHARGE DEMOLITION, PRACTICE, M68 SERIES

V-1. Item description.

a. FSC: 1375.

b. SASIP 742-1375-94-860

C. Ammunition type: Charge, Demolition, High Explosive Linear M58 Series and Charge, Demolition, Practice M68 Series.

d. Mine Clearing Line Charge (MICLIC) is a trailer mounted, rocket-towed demolition charge used to provide a clear path for combat vehicles during minefield breaching operations. The MICLIC is capable of clearing a path 14 meters wide by 100 meters long through a minefield. The launcher and trailer are fully reusable, and can be reloaded in thirty minutes.

e. The two linear charges available for use with the system are:

(1) Charge, Demolition, High Explosive Linear M58 Series. The charge assembly consists of PETN detonating cords and 700 Composition 4, unit charges, 2.5 pounds each, secured to 350 feet of nylon arresting cable. The primary explosive components are:

(a) Fuze, Electric, M1134 Series. The fuze is included in the container, but is separately packaged and is not connected to the charge assembly until item is prepared for deployment. Safe/arm mechanisms prevent initiation of the linear charge prior to launch. A window in the cylinder side of the fuze allows display of the safe/arm status of the fuze (green for safe, red for armed).

(b) Rocket Motor MK22 Series: A 5" rocket motor is used to tow the linear charge across the minefield. Item description and inspection criteria are contained in TM 9-1375-215-14 & P, Operator's, Unit, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools List - Demolition Kit Mine Clearing Line Charge (MICLIC).

(2) Charge, Demolition, Practice, M68 Series. The item is a non-explosive linear charge used only for training sessions. Rubber is used to simulate the explosive pellets in the unit charges. The charge can be launched a maximum of three times. The M68 series contains an inert fuze, but uses a live MK22 series rocket motor.

V-Z. Unique safety precautions.

Do not operate radio frequency transmitters within five feet of the M58 Series charge, or rocket motor. Safe distances from high powered transmitters are included in appendix C to TM 9-1300-206. Positive steps (conductive floor, mats, etc.) will be taken to eliminate static discharges.

V-3. Testing and equipment requirements.

None identified at this time.

V-4. Inspection category and sampling plan.

a. Inspection Category X: periodic inspection interval--4 years. Periodic inspection sample size and accept/reject criteria will be according to chapter 2.

b. Charges held by using units in Basic Load will be inspected on an annual basis according to chapter 9 and this appendix.

V-5. Specific inspection points.

The linear charge will be inspected and defects classified according to chapter 2 and Tables V-1 through V-4 of this appendix.

Table V-1. Packaging Defects, M58 and M68 Series.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. | | |
| Warning stencil (or decal) on pallet cover or pallet back missing or illegible. | Visual | Para V-6a |
| 2. Major. | | |
| a. Damage to container exposing contents, or preventing intended use (penetration, dents, etc.). | Visual | Para V-6b |
| b. Cover not secured properly in place. | Visual | |
| c. Rust or corrosion compromising container integrity or markings. | Visual | |
| d. Rocket motor electrical receptacle (bottom receptacle) detent not in proper position. | Visual | Para V-6N |
| 3. Minor. | | |
| a. Strapping loose, broken or improperly applied. | Visual<br>Manual | Para V-6c |
| b. Protective coating (paint) missing. | Manual | |
| C. Marking missing, misleading or unidentitiable. | Visual | |

Table V-2. Packaging Defects, Fuze MI134 and M1147 Series.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. None defined. | | |
| 2. Major. | | |
| a. Carton damaged, exposing inner pack. | Visual | |
| b. Contents loose (M1134). | Manual | |
| C. Carton wet (M1134). | Visual<br>Manual | Para V-6d |
| 3. Minor. | | |
| a. Marking missing, misleading, or unidentifiable (outer or inner carton and barrier bag). | Visual | |
| b. Carton damp. | Visual<br>Manual | Para V-6d |
| C. Barrier bag not evacuated or carton corners not blunted (M1134). | Visual | Para V-6e |

Table V-3. Item Defects, Linear Charge M58 and M68 Series

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. | | |
| a. Shorting loop missing or assembled improperly (M58). | Visual | Para V-6f |
| b. Linear charge improper type (M68). | Visual | |
| C. Fuze improper type (M68). | Visual | Para V-6g |
| 2. Major. | | |
| a. Components missing or damaged. | Visual | |
| b. Fuze missing or improper type (M58). | Visual | Para V-6g |
| c. Linear charge improper type (M58). | Visual | |
| d. Faking of first layer improper, layer not reversed faked, or layer with incorrect number of rows. | Visual | Para V-6h |
| e. Line missing from locked safety switch to charge (M58). | Visual | |
| f. Arresting cable hook not secured into pallet eye. | Visual | Para V-6i |
| g. Item wet. | Visual<br>Manual | Para V-6d |
| h. Improper orientation of cable guide in rocket motor cable receptacle. | Visual | Para V-6m |
| 3. Minor. | | |
| a. Knots in line to switch not coated (M58). | Visual | |
| b. Item damp. | Visual | Para V-6d |

Table V-4. Item Defects, Fuze M1134 and M1147 Series

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. | | |
| a. Red warning stencil (or decal) missing or illegible (M1134). | Visual | Para V-6j |
| b. Fuze armed. | Visual | Para V-6k |
| 2. Major. | | |
| Item damaged so as to be unusable (M1147). | Visual | |
| 3. Minor. | | |
| a. Protective coating (paint) missing, incomplete, or damaged. | Visual | |
| b. Dust cap missing. | Visual | Para V-6l |

V-6. Inspection description and notes.

Stencil (or decal) reads: "WARNING-ASSURE THAT FUZE IS NOT ARMED AND COTTER (SHEAR) PIN IS IN PLACE PRIOR TO FIRING".

b. The M58 shipping and storage container must be evaluated for the following:

(1) Damage that impairs structural integrity of container.

(2) Damage that would preclude loading of container onto MK55 launcher.

(3) Damage to electrical connector jacks to include missing protective caps.

C. Apply two 1-1/4 inch steel straps around container. Straps will be located 6 inches toward center from each skid. Corner protectors will be placed under strapping to prevent damage.

d. Packing material or items that are wet should be disposed of according to established procedures. Packing material of items that are damp should be allowed to dry thoroughly prior to repacking and storage.

e. Barrier bags will be evacuated, and sealed or taped closed.

f. Shorting loop is visible at the fuze holder end of arresting cable.

g. Electric fuze M1134 Series for M58 Series Linear Charge and M1147 Series for M68 Series Linear Charge.

h. Faking is a method of coiling a rope or line to allow free running. The method of faking is described in drawing 8845322. The bottom layer of charge will have 11 rows. Each successive layer will have 12 rows, except top layer.

i. For the M68, any damage that cuts rope core is a cause for rejection.

Stencil reads: "WARNING - BOTH SHEAR PIN AND GREEN INDICATOR MUST BE VISIBLE BEFORE FIRING".

k. A window in the cylinder side of the fuze allows display of the SAFE/ARM status (green for safe, red for armed) of the fuze. If the fuze is armed, attempt to restore fuze to an unarmed condition. Place fuze, detonators down, onto a solid surface and use a small block of wood to push in the extended arming rod. Pack disarmed fuze in an available cardboard or wooden box marked "MISFIRED AND DISARMED FUZE". Forward fuze for demilitarization. If fuze cannot be disarmed, mark box "ARMED FUZE" and request ASP or EOD assistance in disposal, or initiate immediate demilitarization action. Keep armed fuze isolated from other explosives, preferably with detonators against a sand bag, or other barrier, in a sturdy box (used ammunition box). Corners of fuze carton will be blunted to preclude damage to charge.

l. Replace dust cap.

m. Proper orientation of cable guide in rocket motor cable receptacle (bottom receptacle) is the 12 o'clock position.

n. Proper orientation of detent in rocket motor electrical receptacle is the 12 o'clock position.

V-7. Preissue Inspection of M68 Practice Charges.

Preissue Inspections will be performed on all M68 inert linear demolition charges by issuing installations. Charges will be inspected for:

a. Proper orientation of the detent in the rocket motor receptacle on the junction box. The rocket motor receptacle is the bottom receptacle. The detent should be in the 12 o'clock position.

b. Crushed/damaged wires in the junction box. Inspection procedures are as follows:

(1) Use a digital multimeter set to read ohms and capable of providing an audio alert when continuity or closed circuit is read,

(2) Remove protective caps from receptacles on linear charge junction box.

(3) Place one multimeter lead on receptacle #1, pin "A". Place other lead on receptacle #3, right side pin. Multimeter should register continuity. Receptacle #1 is the top receptacle. Receptacle #2 is the middle receptacle. Receptacle #3 is the bottom receptacle.

(4) Place one lead on receptacle #3, right side pin. Place other lead on shell of receptacle #3. There should be no continuity.

(5) Place one lead on receptacle #3, right side pin. Place other lead on right edge of panel between receptacles #2 and #3. Scratch paint to bare metal. There should be no continuity.

(6) If continuity is indicated in steps 4 and/or 5 then the junction box has damaged wires. Remove the junction box panel and verify the condition.

V-8. References:

a. TM 9-1375-215-14&P.

b. TM 43-0001-38.

c. FM 5-25.

d. DMWR 9-1375-000-X20.

# APPENDIX W
# CANINE EXPLOSIVE SCENT KIT

W-1. Item description.

a. FSC: 1375.

b. SASIP 742-1375-94-861

c. Ammunition Type: Explosive Scent Kit, Canine.

d. Canine Explosive Scent Kit is designed to provide realistic training for sentry dogs and increase their proficiency to search and detect various amounts of explosive materials used by terrorists and subversives. Kit consists of eight numbered M19A1 ammunition cans overpacked in a wooden box. Seven cans contain an identified explosive material. One container is empty to allow for addition of another type of explosive material which may be required in future.

e. Explosive material contained in kit--

(1) Container 1: Explosive, Water Gel, quantity - 6 each 2 lb lengths, NSN 1375-O1-180-5779-MY77.

(2) Container 2: Propellant powder (Smokeless Powder) (IMR), quantity - 2 each 1 lb containers, NSN 1376-OO-772-1370-MY57.

(3) Container 3: No explosives.

(4) Container 4: Charge, Demolition Block M112, quantity -3 each 1 1/4 lb blocks, NSN 1375-00-724-7040-M023.

(5) Container 5: Charge, Demolition Block 2 lb. TNT, quantity - 6 each 2 lb blocks, NSN 1375-OO-926-9316-MO31.

(6) Container 6: Cord, Detonating, quantity - 6 each 5 ft. lengths, NSN 1375-00-180-9356-M456.

(7) Container 7: Dynamite, Ammonium Nitrate, 60 Percent, quantity - 6 each 2 lb. sticks, NSN 1375-01-441-2961-MN32.

(8) Container 8: Dynamite, Nitroglycerin, 60 Percent, quantity - 6 each 2 lb. sticks, NSN 1375-01-436-6399-MN30.

f. Shelf-life requirements.

(1) NSN 1375-O1-441-2961-MN32, Dynamite, 60 percent ammonia nitrate - 18 months.

(2) NSN 1375-O1-436-6399-MN30, Dynamite, 60 percent nitroglycerin - 18 months.

(3)NSN 1375-O1-180-5779-MY77, Explosive, water gel, - 1 year when not associated with a kit. When water gel ages it becomes less sensitive, but does not lose the characteristics necessary for inclusion in the canine explosive scent kit. It will be retained in the kit, unless it becomes otherwise unserviceable.

W-2. Unique safety precautions.

a. Extreme care is necessary when handling commercial dynamite due to greater sensitivity to heat and shock than other commonly used explosives. Personnel handling commercial dynamite should wear rubber gloves. Handling of nitroglycerin-based explosives may cause severe headaches.

b. Exuding dynamite is highly sensitive and shall be handled carefully to prevent accidental initiation. Avoid contact of exudate with bare skin. Respiratory protection from vapors is required in non-ventilated areas.

c. Packaged charges dropped in excess of six feet, or an unpacked demolition charge dropped in excess of three feet shall be considered unserviceable, turned in, and reported in accordance with local procedures.

d. Commercial dynamite that has deteriorated from age or other causes can be identified by dark color, soft, mushy feel, or packing cases discolored by dark brown stains. Such dynamite should not be used, nor should cases be opened. See paragraph W-6i.

e. Ammonium nitrate, in presence of some organic materials, becomes more sensitive and subject to auto ignition. Ammonium nitrate dynamite with exposed explosives should be handled with caution.

W-3. Testing and equipment requirements.

None identified at this time.

W-4. Inspection category and sampling plan.

a. Canine Explosive Scent Kit, in depot storage, is assigned no inspection category: Periodic inspection interval - one (1) year. Sample size will be 20, or entire lot if total quantity is less than 20. Accept/reject criteria will be in accordance with Table 2-2 for depot stored stocks.

b. Annual periodic inspections will be scheduled to follow hottest portion of year.

C. Annual basic load inspection will be performed on kits in hands of using units in accordance with chapter 9. Inspection will be conducted by a QASAS. Defects will be identified and classified in accordance with table W-1. Kits containing commercial dynamite will be inspected at the conclusion of the hottest portion of the year. A representative sample will be selected and examined for evidence of nitroglycerin exudation on exterior of cartridge and or packing material. Individual items with defects requiring replacement will be turned in to the supporting ASP. The entire kit will not be turned in due to defects in individual items.

W-5. Specific inspection points.

Items will be inspected and classified according to this supply bulletin and table W-1.

Table W-1. Item Defects and Method of Inspection.

| Classification | Inspection Method | Inspection Description |
|---|---|---|
| 1. Critical. | | |
| a. Smokeless powder absorbing moisture. | Visual | |
| b. Smokeless powder container broken or leaking. | Visual | |
| c. Smokeless powder container missing top. | Visual | |
| d. Exudation (oily substance) on commercial dynamite. | Visual | Para W-6a |
| e. Crystallization on commercial dynamite. | Visual | Para W-6a |
| f. Commercial dynamite frozen. | Manual | Para W-6b |
| 2. Major. | | |
| a. Outer pack weathered or damaged to extent that contents cannot be protected. | Visual | Para W-6c |
| b. Outer pack with nail protruding into interior of box. | Visual | Para W-6d |
| c. Metal containers damaged. | Visual | |
| d. Water gel explosive plastic covering punctured, broken, torn, cut, gouged or otherwise damaged, exposing explosive. | Visual | Para W-6e |
| e. Water gel explosive with expired shelf life | Visual | Para W-6f |
| f. Commercial dynamite with expired shelf life | Visual | |
| g. Water gel explosive packing (sawdust) damp or wet. | Visual | Para W-6g |
| h. Charge, demolition block 2 lb. TNT crushed or with exudation, crumbling, disintegration of covering and cracking of explosive surface. | Visual | |
| i. Charge, demolition block 2 lb. TNT activator well plugged with foreign matter. | Visual | Para W-6h |
| j. Charge, demolition block 2 lb. TNT Fiberboard container of end plates cut, torn, gouged, or otherwise damaged to extent that explosive is exposed or flaking. | Visual | |
| k. Detonating cord broken, chewed, mutilated, exposing explosive. | Visual | |
| l. Detonating cord soaked (water). | Visual | |

| | | |
|---|---|---|
| m. Commercial dynamite wrapping loose, cut, torn, gouged. or otherwise damaged to extent that explosive is exposed. | Visual | |
| n. Commercial dynamite cartridge (sticks) broken. | Visual | |
| o. Commercial dynamite having a dark color, is soft and mushy. | Visual/ Manual | Para W-6i |
| 3. Minor. | | |
| a. Outer pack with board(s) loose, split, or warped. | Visual/ Manual | |
| b. Outer pack with evidence of dry rot, mildew, mold, dampness, or termite infestation. | Visual | |
| C. Outer pack missing wooden knot, size and location being such that material is not adequately protected. | Visual | |
| d. Outer pack markings missing, misleading, incomplete, or unidentifiable. | Visual | |
| e. Inner pack markings missing or obliterated. | Visual | |
| f. Container contaminated with explosives. | Visual | Para W-6j |
| g. Smokeless powder loose in M19A1 container. | Visual | Para W-6k |
| h. Demolition charge, M112 Mylar film covering punctured, torn, cut, gouged or otherwise damaged to extent that explosive is exposed. | Visual | Para W-6l |
| i. Demolition charge, M112 protective cover strip missing. | Visual | |
| j. Charge, demolition block 2 lb. TNT with presence of mildew, mold or dampness. | Visual | Para W-6m |

W-6. Inspection description and notes.

a. Commercial dynamite when stored in temperatures exceeding 70 degrees Fahrenheit will require increased surveillance procedures to inspect for presence of exudation. Exuding dynamite, identified by an oily substance and/or crystallization appearing on casing or sticks, will not be issued or used. The oily substance, stain or crystallization is caused by separation of nitroglycerin from porous base material (gelation or ammonia). Dynamite in this state is extremely sensitive and should be destroyed immediately in accordance with local procedures.

b. Commercial dynamite when stored in temperatures below 32 degrees Fahrenheit will be inspected for being frozen by using the Pin Test. A common pin will not penetrate frozen dynamite but can be pushed quite readily into dynamite that is merely stiff or hard. Frozen dynamite will be destroyed immediately in accordance with local procedures.

C. Damaged boards will be replaced. New box should be constructed from locally available material. Box will be marked in accordance with applicable drawings.

d. Remove nail and replace with nail of correct size and length.

e. Repair using scotch transparent tape, or equivalent.

f. Explosive water gel with expired shelf-life.

(a) Water gel installed in a kit will be retained in the kit, unless otherwise unserviceable. When the water gel is removed it will be placed in an appropriate condition code, but not better than condition code bravo, restricted to training use only. When the water gel is removed from the kit the lot number for the water gel will be reported to Commander, U.S. Army Industrial Operations Command, ATTN: AMSIO-DSM-M, Rock Island, IL 61299-6000.

(b) Water gel not installed in a kit will be placed in condition code bravo restricted to training use only (B01), if otherwise serviceable. Quantities will be reported by lot number to Commander, U.S. Army Industrial Operations Command, ATTN: AMSMC-QAS, Rock Island, IL 61299-6000.

g. Remove damp/wet sawdust and place in plastic bag, turn in for demolition. Replace with fresh sawdust from local sources.

h. Clean by brushing with copper or aluminum (non-sparking) brush (round brush preferred).

i. In recently manufactured dynamite, the nitroglycerin or nitro-cotton materials are produced in encapsulated micro-bubbles and do not leak/exude like older production dynamite. New production dynamite will have dark brown spots and colorations. It may also have a slick feel due to a wax coating applied to the outer wrapper. These are not defects unless accompanied by an oily exudate or crystallization.

j. Empty, burnable (not treated with PCP) containers that have been used for dynamite will be destroyed by burning in compliance with local environmental regulations and AMC-R 755-8. Oily stains of nitroglycerin will be scrubbed off non-burnable containers with a mixture of following solutions:

(1) Solution A. Sodium sulfide (pulverized) - 9 parts by weight, and water - 30 parts by weight.

(2) Solution B. Denatured ethyl alcohol - 70 parts by weight and acetone - 20 parts by weight. Immediately before decontaminating nitroglycerin, combine above solutions. If solutions are mixed and then stored, potency diminishes. Use of this mixture should be limited to very small quantities, such as oily film that adheres to surfaces after nitroglycerin has been removed with sponges or absorbed in wood pulp or sawdust. Operators using this solution should wear rubber gloves.

k. Clean and repack.

l. Repair using scotch transparent tape, or equivalent.

m. Demolition blocks will be dried, mildew or mold will be removed by wiping with a cloth or a bristle brush. Drying will be by natural means, no artificial heat will be utilized.

W-7. References.

a. TO 11A20-16-7.

b. TM 9-1300-214.

C. TM 9-1375-213-12.

d. TM 9-1375-213-34.

e. SB 742-1375-94-423.

APPENDIX X
FUZES, ARTILLERY

X-1. Item description.

*a*. FSC: 1390.

*b*. SASIP: 742-1390-94-950.

*c*. Ammunition Type: Artillery fuzes, including mechanical time (MT), mechanical time super quick (MTSQ), point detonating (PD), proximity (VT) and electronic time (ET). Mortar fuzes included in other appendices are not covered.

*d*. The M544 fuze is a M501A1 fuze modified by adding a XM137 booster and is assembled only to the M413 105mm HE cartridge.

*e*. For a complete description and related data, refer to chapter 7 of Army Ammunition Data Sheets (Federal Supply Class 1315, 1320 and 1390) and applicable Drawings.

X-2. Unique safety precautions.

a. No unique safety precautions are applicable to this item.

b. Proximity fuze M732 is required to be stored base up according to drawing 19-48-4116-PA1002/156G. This prevents deterioration of power supply. Container requires stencil marking with an arrow, pointing toward bottom of wirebound box and word "up". Containers should be maintained inverted in storage. Orientation of box should be an inspection point at time of sample selection.

X-3. Testing and equipment requirements.

*a*. Torque test fuzes according to table X-1 utilizing the APE 1223 torque fixture. Torque test of the fuzes during receipt inspection will be conducted on a sampling basis as determined by the QASAS in charge. Paragraph 2-2b(1) and (2) apply. This determination should be based on past and present inspection data.

Table X-1. Fuze Setting Torque Test Requirements.

| | | Torque limits | Sample | # Below Min | | # Above Max | | |
|---|---|---|---|---|---|---|---|---|
| Model | Inspection | Inch-Pounds | Size | Accept | Reject | Accept | Reject | Application |
| M501, MTSP | RI, PI | 50-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M501A1, MTSQ. | RI, PI | 50-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M520, MTSQ | RI, PI | 50-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M520A1, MTSQ. | RI, PI | 50-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M544, MTSQ | RI, PI | 50-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M548, MTSQ | RI, PI | 60-300 | 20 | 1 | 2 | 2 | 3 | Lower cap assembly |
| M563, MT | RI, PI | 60-300 | 20 | 1 | 2 | 2 | 3 | Lower cap assembly |
| M564, MTSQ | RI, PI | 60-300 | 20 | 1 | 2 | 2 | 3 | Lower cap assembly |
| M565, MT | RI, PI | 60-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M514A3, PROX. | RI, PI | 100-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M728, PROX | RI, PI | 100-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |
| M732, PROX | RI. PI | 100-300 | 20 | 2 | 3 | 2 | 3 | Lower cap assembly |

b. The M571, M592 and M711 fuzes are hand settable with a plunger which provides locking of lower cap in flight and do not require a fuze setting torque test.

**X-4. Inspection category and sampling plan.**

The inspection interval and sampling will be according to chapter 2.

**X-5. Specific inspection points.**

Item will be inspected and classified according to chapter 2 and table X-2. Disposition and proper handling of packing materiel will be according to paragraphs X-6g and h.

*Table X-2. Item Defects and Method of Inspection.*

| Classification<br>Description | Inspection Model | Inspection Method | |
|---|---|---|---|
| 1. Critical: | | | |
| a. Fuze with missing or broken safety pin or clip | M501A1 | Visual | |
| | M520 | Visual | |
| b. Fuze not set to safe “S” position | M564 | Visual | Para X-61 |
| c. Ogive and head assembly loose (removable by hand pressure). | M48-series | Visual/Manual | |
| | M51-series | Visual/Manual | |
| | M557 | Visual/Manual | |
| | M572 | Visual/Manual | |
| 2. Major: | | | |
| a. Cracked Ogive | Para X-6b | Visual | |
| b. Threads damaged to the extent precluding assembly | All | Visual | |
| c. Pull wire not inserted proper depth | M520 | Visual | |
| d Fuze not set on muzzle action (MA). MA line on lower cap not in line with zero line on body | M563 | Visual | |
| | M571 | Visual | |
| | XM711 | Visual | |
| e. Ogive loose interferes with setting sleeve | M48-series | Visual | |
| | M51-series | Visual | |
| | M557 | Visual | |
| | M572 | Visual | |
| f Hairline and number not visible through window | M577 | Visual | |
| | M582 | Visual | |
| g Fuze setting not in shipping position (93.5-95.5 seconds. | M577 | Visual | |
| | M582 | Visual | |
| h Fuze not set on SQ | M48A3 | Visual | |
| | M51A5 | Visual | |
| | M557 | Visual | |
| i. Booster cup damaged or loose pellets | Para X-6c | Visual | |
| j. Fuze fails torque test | Para X-6d | Manual | Para X-6a X-6f |
| k. Crack in setting window | M577 | Visual | Para X-6j |
| | M582 | Visual | Para X-6j |
| l. Fuze not set to "S” position | M565 | Visual | Para X-6k |
| 3. Minor: | | | |
| a. Firing pin closing disc or foil missing or damaged | Para X-6e | Visual | |
| b. Ogive loose (does not interfere with setting sleeve) or exhibits vertical movement | M48-series | Visual/Manual | |
| | M51-series | Visual/Manual | |
| | M557 | Visual/Manual | |
| c. Set line in improper position for shipping | M513-series | Visual | Para X-6k |
| | M514-series | Visual | Para X-6k |
| | M728-series | Visual | Para X-6k |
| | M732-series | Visual | Para X-6k |

**X-6. Inspection description and notes.**

a. Fuzes assembled to complete cartridge rounds will be removed from cartridge prior to testing. Torque is to be applied in the direction of increasing time and with a continuous motion. Desirable method is to complete test in one revolution of setting (lower) cap. In case of an over-run when setting fuze on "safe" or "MA", cap will not be backed off but rotated through a complete cycle.

b. Proximity (non-metallic ogive).

c. All fuzes with booster.

d. All MT, MTSQ and 3 proximity fuzes (M514A3, M728 and M732) listed in Table X-1 require a torque test.

e. All except proximity and solid nose types.

f. Disposition of fuzes bulk packed or assembled to complete rounds that fail torque requirements but not sufficient in number to reject entire lot will be as follows:

(1) Fuzes from bulk pack lots will be authorized for local destruction.

(2) Fuzes removed from cartridges for test will be reassembled to round, tagged, segregated and reported according to provisions of this supply bulletin.

g. Packs selected for item inspection purposes will be kept to a minimum. Additionally, all subject packs which are opened will be marked "Surveillance Samples: not to be shipped until entire lot quantity is exhausted" and used on a recurring basis for future inspections.

h. When opening bulk pack fuzes in M2A1 cans for item inspection purposes, containers will be left open for a minimum amount of time.

(1) When possible, desiccant packed in M2A1 container will be replaced with fresh desiccant prior to repack.

(2) Desiccant to be reused, and styrofoam packing supports removed from M2A1 cans must be stored in an approved desiccant container during item inspection. When containers are not available, styrofoam supports and desiccant will be placed back into M2A1 cans immediately after fuze samples have been removed. Cans will then be closed and not re-opened until fuzes are repackaged.

i. M728 and M514A1E1 (M514A3) fuzes will be classified defective if index line is off the 10 second shipping position by 3-seconds or more.

j. Crack in setting window is a major defect if it pierces the window permitting entry of moisture or obstructs view of setting scale. Surface stress marks/cracks are not defects.

k. Fuze not set on "S" position is considered a major defect for M565 fuze model. When discovered "OFF-S" during inspection, reset samples to "S." There is no hazard for use, handling or transportation.

l. M564 fuzes which have verniers over 1 interval to right or left of "S" position are considered critical defectives. If encountered, investigate possibility that fuzes could be field returns, not representative of lot.

## APPENDIX Y
## CARTRIDGE, 120MM MORTAR

*Y-1. Item description.*

*a.* FSC: 1315.

*b.* SASIP: 742-1315-94-157.

*c.* Ammunition type: Cartridges for 120mm, M120 towed and M121 carrier mounted mortar includes the following models:

*(1)* High explosive ammunition: M57, M933 and M934 cartridges.

*(2)* White phosporus ammunition: M929 cartridge.

*(3)* Illuninating ammunition: M91 cartridge.

NOTE: M930 ILLUM, M983 IR ILLUM and M931 full range practice cartridges are in development.

NOTE: M57 and M91 cartridges not authorized with carrier mounted M121 mortar due to overpressure safety concerns.

*d.* Early procurement of 120mm ammunition from foreign sources was designated M57 (C788) for high explosive or M91 (C790) for illuminating cartridges. A total of 57,000 HE, M57 and 9,000 Illum, M91 cartridges were purchased from foreign sources. This stock is frequently refered to as a nondevelopmental item (NDI). Thes NDI cartridges have a unique propelling charge configuration. Fuzes for M57 HE cartridges are US manufactured M935 PD fuzes. The one lot of M91 illuminating cartridges is assembled with DM93 mechanical time fuzes. Cartridge model numbers have been changed for later production in the USA. Inspection criteria will apply to both foreign procurement and US production unless indicated otherwise.

*e.* 120mm cartridges are fin stablized rounds fired from smooth bore weapons. Weapons include M120 mortar for ground emplacement and M121 carrier mounted mortar. Information pertaining to weapons, authorized cartridges and firing procedures is contained in TM 9-1015-250-10. A complete round (except NDI) consists of a projectile, fuze, M31 fin assembly, M981 ignition cartridge and four M230 propelling charges. For a complete description of these rounds see TM 43-0001-028 and TM 9-1300-251-20/34.

*f.* Subcaliber device, M303 is an 81mm, M29 series mortar tube with an adapter. This device, when inserted into the 120mm tube permits firing of 81mm M300 series and M880 short range (practice) ammunition. Ammunition fired from this subcaliber device will be inspected using SASIP for 81mm mortar ammunition. Information pertaining to weapon authorized cartridges and firing procedures is contained in TM 9-1015-254-13&P.

*g.* Drawings for 120mm mortar cartridges are proprietary and authorized only limited distribution. Any request submitted to Commander, Rock Island Arsenal, ATTN: SIORI-ITD, (DSN 793-6973) as required by para 2-2b must include adequate justification of need for drawings.

*h.* Packaging of NDI cartridges is 1 round per fiber container, 2 fiber containers per wooden box. Later US production is packed 1 cartridge per fiber container, PA 153, 2 fibers per metal can, PA 154.

*i.* Palletization of M800 series cartridges will be n accordance with drawing 19-48-4116, Appendix 38A.

Y-2. Unique safety precautions.

No unique safety precautions are applicable to this item.

Y-3. Testing and equipment requirements.

*a.* Gaging policy is provided in chapter 2 of this SB. Gaging is not normally required during PI, RI, or UBLI. Gaging, during these inspections (other than IRI), should be limited to individual rounds having visual evidence of damage or other conditions that may preclude loading and firing. Unless the rounds requiring gaging are truly representative of the lot being inspected, they should be disregarded in evaluating the lot.

--

*b.* A gage for 120mm ammunition is not available at this time. AMC Project Manager for Mortars is working to develop/procure a profile and alignment gage for 120mm cartridges.

Y-4. Inspection category and sampling plan.

*a.* Inspection category.

*(1)* Category V: 6 years (includes HE, WP, and practice cartridges overpacked in PA154 metal containers).

*(2)* Category W: 5 years (includes inert items and illuminating cartridges overpacked in PA154 metal containers).

*(3)* Category X: 4 years includes NDI HE cartridges in fiber containers in wooden boxes).

*(4)* Category Y: 3 years (includes NDI illuminating cartridges in fiber containers in wooden boxes, ignition cartridges and bulk propellant increments).

*b.* The sampling plan to be used for inspection is found in chapter 2.

Y-5. Specific inspection points.

*a*. Items will be inspected and defects classified according to this SASIP, table Y-1.

*b*. Drawings require packaging of all 120mm, M929 WP cartridges in fiber inner containers (PA153) and Metal outer containers (PA154) to be marked "this end up." This is to permit identification of correct orientation when palletized and in storage. Requirement is to store and transport WP cartridges in a nose up configuration. When packaged or unitized in other orientations and subjected to high tempaeratures (111+ degrees F) filler may melt, change position (hence center of gravity), and upon solidification cause poor balistics with resultant short rounds.

Table Y-1. Item defects and method of inspection

| Classification | Application | Inspection Meathod | Inspection Decription |
|---|---|---|---|
| 1. Critical | | | |
| a. Fuze not set on safe | M91 | Visual | |
| b. Fuze safety wire missing insecure, or improperly engaged | M57/M91 | Visual/Manual l | |
| c. Ignition cartridge head not flush with rear edge of fin. | All | Straightedge | Para Y-6a |
| d. Firing plug protrudes above primer head. | All | Straightedge | |
| e. Any propellant increment missing or damaged (cut or torn with leaking propellant) | M57/M91 | Visual | |
| f. Propellant increment not in correction sequence | M57/m91 | Visual | Para Y-6b |
| g. Any propellant charge container missing or damaged (broken or cover delaminated with leaking propellant). | M900 series | Visual | Para Y-6d |
| h. Propellant charge support assembly missing or improperly positioned. | M900 series | Visual | |
| i. Fin assembly damaged, distorted, or cracked. | All | Visual | |

| | | | |
|---|---|---|---|
| j. Obturating ring missing or broken. | All | Visual | |
| k. WP leakage or evidence of leakage. | M929 | Visual | |
| l. One or more shear pins missing. | M91 | Visual | |
| m. Crack in projectile. | All HE/WP | Visual | Para Y-6c |
| n. Explsove residue on projectile exterior. | M933/M934 / M57 | Visual | |
| 2. Major: | | | |
| a. Ignition cartridge missing | All | Visual | |
| b. Any propellant increment damaged where propellant cannot escape. | M57/91 | Visual | |
| C. Propellant charge container damage where propellant cannot escape. | M900 series | Visual | Para Y-6d |
| d. Any component damaged or incorrectly assembled (if not described elsewhere). | All | Visual | Para Y-6e |
| e. Fuze assembly not fully seated. | All | Visual | |
| f. Fuze adapter not fully seated. | All | Visual | |
| g. Fin assembly loose or not fully seated. | All | Visual/Manual | Para Y-6f |
| h. obturating ring not welded/bonded | All | Visual | Para Y-6g |
| i. Oburating ring not flush or below bourrelet diametwer. | All | Straightedge / gage | Para Y-6h |
| j. Obturating ring damaged (other than broken | All | Visual | |
| k. Cartridge fails to freely enter profile and alignment gage. | All | Gage | Para Y-6i |

| | | | |
|---|---|---|---|
| l. Glue, asphalt, wax, or cement on cartridge (bourrelet area only). | All | Visual/Gage | Para Y-6h |
| m. Arrow and/or "this end up" marking missing from pack or ctg incorrectly oriented in pack. | M929 | Visual | |
| n. Fuze not set on "PD". | All with M745 or M935 fuze | Visual | |
| 0. Fuze support missing from PA153 container. | M900 Series | Visual | |
| p. Fuze label missing or illegible. | M57 | Visual | |
| 3. Minor: | | | |
| a. Paint missing in an area greater than 0.25 square inch. | All | Visual | |
| b. fuze not set in the "PROX" mode. | All with M734 fuzes | Visual | |
| 4. Incidental: | | | |
| a. Propellant container discoloration | M900 series | Visual | Para Y-6j |
| b. Corrosion on fin. | M900 series | Visual | Para Y-6j |

Y-6. Inspection description and notes.

a. Primer is contained in M981 ignition cartridge. Ignition cartridge should be fully assembled and in contact with fin rear boss.

b. Propellant sequence for NDI cartridges starting from front of cartridge must be 4 each white increments, followed by 2 blue increments with 1 brown increment at rear.

c. Projectile body (HE or WP) with open or closed crack (cold shut) is a safety hazard during firing.

d. Rigid propellant containers have a water resistant finish to protect propellant from moisture contamination. Cracks, dents, seam, or propellant fill hole cover delamination or other damage would be classified as a major defect. If damage is severe enough to permit propellant to escape, the defect is critical. To check integrity of damaged propellant containers place the charge on an M31 fin, oriented such that the propellant would be resting against the damaged surface and hand shake vigorously three times.

*e*. When the component is damaged to the extent that its functional effectiveness is impaired significantly, it will be classified as a defect.

*f*. When the fin assembly can be turned upon application of hand pressure, it will be classified as a defect.

*9*. NDI M57/M91 cartridges have obturators heat welded. M900 series cartridge obturator ends are glued together with adhesive.

*h*. Gage with a profile and alignment gage only if visually questionable.

*i*. Normally done only during first inspection and documented on DSR card to preclude repeat gaging. See para Y-3a.

*j*. Discoloration of propellant charge containers is a result of high humidity and temperature in storage. Color change is from normal light yellow to dark yellow to light green progressing to darker shades of green. Change is evidenced by splotches of discoloration rather than a uniform transition of entire charge container. Corrosion on fin areas adjacent to propellant containers is normally associated with this discoloration. If this corrosion does not extend to other portions of fin and flash holes are not obstructed this condition is to be classified as incidental.

Z-1 Item description.

a. FSC: 1305.

b. SASIP: 742-1305-94-021.

C. Ammunition Type: Cartridge, 25mm. Includes the following models:

(1) Armor Piercing Discarding Sabot-Tracer (APDS-T), M791.

(2) High Explosive Incendiary-Tracer (HEI-T), M792 with fuze point-detonating self-destroying M758.

(3) Target Practice-Tracer (TP-T), M793.

(4) Dummy, M794.

(5) Target Practice Discarding Sabot-Tracer (TPDS-T), M910.

(6) Armor Piercing Fin Stabilized Discarding Sabot-Tracer (APFSDS-T), M919

Z-2. Unique safety precautions.

a. Ammunition malfunctions will be reported IAW AR 75-1.

b. Cartridge, 25mm, M919, APFSDS-T utilizes a depleted uranium (DU) penetrator that emits very low levels of radiation. Care must be taken when handling this round to limit direct contact with the DU penetrator.

(1) Evidence of depleted uranium corrosion is visible in the form of a yellowish or white powder or stain seen on the outer surface of the projectile and is a hazard to personnel. If corroded (Yellow or White Corrosion) APFSDS-T M919 ammunition is encountered, ammunition must be handled with gloves. The ammunition must be placed in the original pack, tagged unserviceable, and returned through normal supply channels. Avoid getting depleted uranium corrosion on hands, wash hands with water before eating or putting hands to face. Dispose of gloves IAW AR-385-11.

(2) When handling M919, 25mm, APFSDS-T Cartridges with exposed DU penetrators (i.e. cartridges missing aluminum sabots or plastic nose caps) always wear gloves regardless if corrosion is present or not. Even though gloves are worn, always wash hands before eating or touching face. Gloves need not be disposed of or treated as radioactive waste.

(3) Swipe test is not required on cartridge, 25mm. M919, APFSDS-T ammunition unless there is evidence corrosion or damage.

(4) Exposure to 25mm APFSDS-T ammunition results in exposure to low level radiation. The amount of radiation the soldiers receive is proportional to the time spent in the close vicinity of APFSDS-T M919 ammunition. Although the radiation exposure received is low, avoid unnecessary contact with packaged APFSDS-T M919 ammunition, within mission constraints.

(5) Loss or unauthorized firing of M919 rounds must be reported through the chain of command as soon as discovered. All transmissions regarding incidents of this nature must be marked, For Official Use Only (FOUO). HQ, IOC must be notified within 24 hours of discovery. Report to Commander IOC. ATTN: AMSIO-DMW (RPO) Rock Island IL. 61299 -6000 DSN: 793-0338/2969. Commercial: (309) 782-2965. After normal duty hours contact Staff Duty Officer (SD0) DSN: 793-6001. Commercial: (309) **782-6001.**

**2-3. Testing and equipment requirements.** Profile and alignment gaging is not authorized at this time. See paragraph Z-7 for M28 link gaging criteria.

**2-4. Inspection category and sampling plan.**

a. Inspection category: Category W (five years) for items not packed in steel cans with gaskets (includes inert items). Category U (seven years) for items packed in steel cans with gaskets (includes inert items).

b. Sampling plan for 25mm ammunition will be IAW basic portions of SB 742-1, Table 2-3, for Small Arms Ammunition (SAA) under column heading other.

Note: Inner pack and item samples must be selected from a minimum of ten outer packs. Additional outer packs must be inspected at either the inspection or storage location(s) to make a total sample size of twenty.

**Z-5. Specific inspection points.** Refer to MIL-STD-644. MIL-STD-129. DWG 8796522 for marking of wood boxes, DWG 12982865 for other than wood boxes, DWG AC00561 for palletized load marking procedures. and basic portion of SB 742-l for inspection of packaging and marking. DWGS can be ordered from HQ IOC. ATTN: AMSTA-AR-ESK. Rock Island 61299-6000.

**Z-6. Additional guidance for 25mm Ammunition.**

a. Cartridges. 25mm. M791, M910 and M919.

(1) Missing or cracked plastic nose caps from the discarding sabot are considered a minor defect (see table Z-3). Missing or cracked plastic nose caps do not affect the ballistic performance of these cartridges and do not pose any risk to the weapon. Rounds found with missing plastic nose caps must have the exposed aluminum windscreen visually inspected for dents or damage.

(2) Damaged windscreen will be classified as a major defect.

(3) When defective windscreen samples are noted in sufficient quantities to cause rejection of a serviceable lot, linked belt will not be separated from the serviceable lot, and lot will be reclassified and reported through command channels to the commodity command.

b. Conglomerate lots of 25mn ammunition. Individual lot quantities of 25mm ammunition of less than a standard exterior-pack will be accumulated for conglomeration and reported to the commodity command. The commodity command will notify IOC storage activities and overseas commands of items authorized for conglomeration. Automatic disposal of 25mn ammunition is not authorized.

(1) 25mm ammunition will be maintained in stock by individual lot number regardless of lot size.

(2) Quantities will be accumulated and carried on record as usable assets under the appropriate condition code. 25mn ammunition will be reported on DA Form 2415 Ammunition Condition Report (ACR) according to DA PAM 738-750 for disposition instructions.

(3) If authorized, relinking will be IAW basic portions of SB 742-l

(4) Conglomerate lots will be inspected for serviceability at the same interval as other category W items i.e., five years. Sample size will also be the same.

(5) Packed lots will be identified by DODIC and nomenclature furnished by HQ. IOC.

c. 25mm with lost lot identity.

(1) Firing of 25mm with lost lot identity is prohibited.

(2) All 25mm with lost lot identity (Lot UNKNOWN) will be picked up on accountable records in condition code K pending inspection and classification.

(3) Ammunition determined by inspection to be serviceable and lot number identified will be assigned appropriate condition code. Ammunition determined by inspection to be unserviceable and lot number identified will be assigned appropriate condition code and reported through command channels to the commodity command.

(4) Field returns of loose 25mm rounds with lot number not identifiable will be reclassified unserviceable and reported to the commodity command for disposition.

d. Records and reports. DSR cards and accountable records will be maintained IAW basic portions of SB 742-1.

e. Repack of 25mm ammunition. CONUS posts, camps or stations without adequate personnel and facilities to perform inspection and processing of 25mm ammunition will report through command channels to HQ, IOC IAW DA PAM 738-750 for disposition.

f. Serviceability criteria.

(1) Ammunition will meet the visual inspection criteria specified in basic portions of this SB and the additional criteria in Table Z-3

(2) Restricted or suspended ammunition will not be used in repack operations without specific authorization or instructions from the commodity command.

g. Lot formation criteria. 25mm ammunition lots will be formed IAW basic portions of SB 742-1.

*Table Z-3 Ammunition Serviceability Criteria*

| | M791 APDS-T | M792 HEI-T | M793 TP-T | M910 TPDS-T | M919 APFSDS-T |
|---|---|---|---|---|---|
| 1. Cartridge Case: | | | | | |
| a. Perforated or corroded primer | Major | Major | Major | Major | Major |
| | | | | | |
| 2. Projectile Assembly: | | | | | |
| a. Nose cap split or missing | Minor | | | Minor | Minor |
| b. Cracked, gouged or missing sabot segment | Major | | | Major | Major |
| c. Windscreen bent, cracked, or cap missing | Major | | | Major | Major |
| d. Loose M758 Fuze | | Major | | | |
| e. Loose penetrator | | | | | Major |
| f. Corroded penetrator if cap missing | | | | | Major |
| g. Missing or split obturator | | | | | Major |
| h. Damaged Obturator | | | | | Minor |

h. Dummy 25mm ammunition.

(1) Inspect dummy cartridges for such defects as damaged extractor groove/rim, damage which may preclude use, corrosion, and loose projectiles.

(2) Dummy cartridges with defects other than those specified above will be considered serviceable as long as their intended purpose is unimpaired and they can be identified as dummy.

i. Air test of 25mm container. Air test of M621 and PA125 is not required during cyclic inspections. Air testing of container is usually performed during maintenance operations only. HQ, IOC will provide instructions for testing in SOW of DMWR or LOI.

**Z-7. Link gaging requirements.**

a. A standard gage has not been developed to measure for correct positioning of link on cartridge. Engineering elements have approved and made available drawings from which a gage may be locally fabricated.

b. Drawings should be requisitioned from AMSIO-QAS. Drawing number assigned for the gage is XM283910087.

c. Cartridges not fully seated in metallic link belts or with incidental dents on cartridge case shoulder should not be rejected. Such conditions do not affect serviceability of ammunition.

d. Check for compliance with drawing 12013695, Characteristics, Linked Belt, 25mm, M28, using locally fabricated 25mm gage and criteria in Table Z-4 below.

*Table Z-4 Link Gaging Requirements*

| EXAMINATION | METHOD OF INSPECTION | DEFECT CLASSIFICATION |
|---|---|---|
| 1. Height from bottom of cartridge to forward tab of M28 link. | Vernier calipers/gage | Major |
| 2. Dimple not engaged in cartridge case groove, two (2) places. | Visual | Major |

**Z-8. Inspection of linked belts.**

a. The M28 link is a two piece assembly intended to hold and link the 25mm ammunition for guiding the ammunition through the weapon system. The assembly consists of hardened steel main and pivot links hooked together and contoured accordingly for its intended purpose.

b. Links for Cartridges, 25mm, M791. M792. M793. M910, and M919 shall be inspected to assure free hinging. Linked 25mm ammunition shall hinge freely and fold over smoothly without binding, kinking, separating or any interference when belt is pulled over itself. Each belt shall be laid out full length with open side of links up. One end shall be drawn over remainder of belt until belt is completely reversed (open side of link down). One end of reversed belt shall then be drawn over remainder of belt until belt is returned to original (open side of link up) position. Belt must hinge freely throughout this process. Failure to hinge freely will be classified as a major defect.

## APPENDIX AA
## GRENADE, LAUNCHER, SCREENING SMCKE

**AA-l. Item Description.**

**a. FSC: 1330**

b. **SASIP 742-1330-94-380**

C. munition Type: Grenade, Launcher, Smoke: Screening, RP, (UK) L8Al & L8A3; Grenade Launcher, Smoke: IR Screening, M76; Grenade, Launcher, Smoke: Simulant Screening, M82.

d. These grenades are used with the four tube launchers (M243, M257 or M259) or the six tube launchers (M239 or M250) mounted on armored/tactical vehicles.

Grenade, Launcher, Smoke: Screening, RP, (UK) L8Al & L8A3 (G815). These grenades are used to provide a self-screening smoke capability for armored/tactical vehicles. The grenade consists of a rubber cylindrical body and a metal base. The rubber body contains 360 grams of red phosphorous/butyl rubber in a 95/5 proportion and a central plastic burster tube containing a burster charge of 15 grams of black powder. The metal base contains the electrical clips, F92 squib type electric fuze, propellant charge of 3.0 grams black powder; and the delay assembly with delay composition (0.26 grams black powder, L8Al; 0.36 grams black powder, L8A3). The metal base contains eight gas propulsion holes covered by a metal foil diaphragm.

f. Grenade, Launcher, Smoke: IR Screening, M76 (G826). This grenade is used to provide an infared and visual smoke screening capability for armored/tactical vehicles. The grenade consists of a plastic cylindrical body that contains 1200 grams of IR composition (brass flake material), a central burster containing 31 grams of Comp A-5 with a booster of 0.47 grams of Comp CH-6, a safe and arm (S&A) mechanism, and a propellant assembly. The S&A mechanism consists of an out-of-line spring loaded slider/bore rider containing an explosive lead with 0.07 grams of PBXN5 and a spring loaded setback lock. The propellant assembly contains a propellant charge of 1.2 grams of black powder, a pyrotechnic delay detonator, and a propellant retainer which has the electrical contacts and the electric match. The delay detonator contains 0.06 grams of A-IA powder, 0.3 grams of delay composition, 0.09 grams of lead azide, and 0.04 grams of RDX.

g. Grenade, Launcher, Smoke: Simulant Screening, M82. This grenade is used to provide visual screening capability for armored/ tactical vehicles during training exercises. This grenade has the same components as the M76 grenade except the 1200 grams of IR.

**AA-2. Unique Safety Precautions.**

a. If the M76 smoke grenade is armed (slider/borerider projecting from the body, red showing on slider), DO NOT attempt to remove grenade from container. Under no cirsumstances should attempts be made to return the slider to a safe position by hand. Replace packing, close cover, and notify EOD personnel for disposal.

b. Red phosphorous grenades produce smoke which may present an inhalation and irritant hazard. Prolonged exposure of the eyes and respiratory system should be avoided. Personnel shall wear protective masks to avoid excessive exposure when exposed to an RP smoke concentration.

c. A phosphine gas atmosphere is generated from the smoke mix in L8Al and L8A3 grenades. As a result, the following safety handling guidance is to be observed.

(1) Store all L8Al & L8A3 grenades in a ventilated area or magazine.

(2) Storage magazines containing these grenades shall be opened and allowed to ventilate three to five minutes prior to entry by personnel.

(3) These grenades shall only be unpacked out of doors or in a well ventilated area.

(4) Do not open storage containers in the vicinity of open flame or flame producing devices.

AA-3. Testing and Equipment Requirements.

Table 3-l. Equipment Identification List.

| Description | Identification | Model |
|---|---|---|
| **Test Equipment for L8 Series Grenades & M76 Kit** | **APE 1974**<br>**APE 19743002** | **L8Al/A3**<br>**M76** |
| **Universal Resistance Test Instrument** | **APE 1980** | **All** |

AA-4. Inspection Category and Sampling Plan.

a. Inspection category Z; Periodic Inspection Interval -- 2 years.

b. Sampling plan and accept/reject criteria for inspection is IAW SB 742-l.

c. Item will be inspected and classified IAW SB 742-l and Table 3-1 this SASIP.

AA-5. Specific Inspection Points.

Table AA-1
Item Defects
Defect and Method of Inspection

| Classification | Application | Inspection Method | Inspection Description |
|---|---|---|---|
| 1. Critical | | | |
| a. Grenade armed, slider/bore-rider extended, showing red. | M76 | Visual | |
| b. Markings misleading as to type of grenade. | All | Visual | |
| c. Grenades show signs of filler leakage. | L8Al/A3 | Visual | I-l |
| 2. Major | | | |
| a. Metal base punctured. | L8Al/A3 | Visual | |
| b. Rubber body torn or dry rotted. | L8Al/A3 | Visual | |
| c. Plastic body cracked or damaged. | M76 | Visual | |
| d. Bore seal damaged or missing. | M76 | Visual | |
| e. Electrical contacts missing or corroded to the extent that metal is affected. | L8Al/A3 | Visual | I-l |
| f. Electrical contact clips damaged, bent, corroded, or missing. | M76 | Visual | |
| g. Metal foil covering gas propulsion holes missing or punctured. | L8Al/A3 | Visual | |
| h. Grenade distortion preventing insertion into launcher (discharger). | L8Al/A3 | Visual | |
| 1. Resistance of electrical match is less than 1.0 ohms or greater than 1.5 ohms. | M76 | Test | I-2 |
| j. Resistance of electric circuit is less than 0.9 ohms or greater the 1.6 ohms (All L8Al lots and L8A3 lots manufactured prior to PB-89G002-001). | L8Al/A3 | Test | I-2 |
| k. Resistance of electric circuit is less than 0.9 ohms or greater than 2.1 ohms (Lot PB-89G002-001 and later). | L8A3 | Test | I-2 |
| 1. Markings illegible. | All | Visual | |

3. Minor

| | | |
|---|---|---|
| a. Slight scratches attributable to normal handling or shipping. | L8Al/A3 | Visual |
| b. Paint defects (e.g., rust scale, peeling, blistering, etc.) | L8Al/A3 | Visual |
| c. Inadequate paint coverage. | LBAl/A3 | Visual |

AA-6. Inspection Description.

a. Inspection Description I-l. A black or green buildup of material can occur around firing clips on the L8Al of L8A3 grenades. This substance is not leaking filler but a type of galvanic corrosion resulting from chemical reaction between copper rivets holding electrical contacts and phosphine gas generated from the main filling (red phosphorous). This external corrosion does not normally affect performance. The firing clips on the grenade connect with a knurled pin contact assembly in the grenade launcher where the knurling will make electrical contact through the corrosion. If the corrosion is to the extent that metal integrity is questionable, classify as major defect. If not, corrosion will be considered incidental.

b. Inspection Description I-2. Install grenade into Continuity Test Fixture. Measure and record resistance of grenade using APE 180. Lots of L8Al grenades which fail continuity test will be reclassifed to Condition Code H (CC-H), demil indicated. Lots of L8A3 which fail continuity test will be reclassified to CC-F.

AA-7. References:

a. TM 9-1330-200-12

b. TM 9-1330-200-34

c. TM 43-0001-29

d. TM 9-1330-209-14

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## APPENDIX AB
## DEFECT CODES

Defect codes are listed in DA PAM 700-19, they are utilized to identify and clarify the serviceability of materiel. For conventional ammunition they are inputted to the Worldwide Ammunition Reporting System (WARS) and for Toxic Chemical Munitions (TCM) they are inputted to the Chemical Accountability Management Information Network (CAMIN). Defect codes are composed of six alpha/numeric characters: First character is the percent defective indicator; the second and third characters identify the type of assembly; fourth character indicates the classification of defect: and the fifth and sixth characters are the defect narrative. Indicators for each defect code element are listed below.

### PERCENT DEFECTIVE

| INDICATOR | PERCENT |
|---|---|
| 0 | 0 |
| 1 | 1-14 |
| 2 | 15-24 |
| 3 | 25-34 |
| 4 | 35-44 |
| 5 | 45-54 |
| 6 | 55-64 |
| 7 | 65-74 |
| 8 | 75-84 |
| 9 | 85-94 |
| C | 95- 100 |

### ASSEMBLY/COMPONENT/PACKAGING

| INDICATOR | NARRATIVE |
|---|---|
| 01 | Assembly (complete round or item of issue) |
| 02 | Fuze (nose fuze if item has two fuzes) |
| 03 | Boster |
| 04 | Bomblets |
| 05 | Warheads |
| 06 | Body, filled or empty (for projo, grenade, mine, rocket, etc.) |
| 07 | Filler (inert. exposive. pyrotechnic compound, non-lethal chemical agent) |
| 08 | Rotating Band |

| | |
|---|---|
| 09 | Cartridge case or cartridge case with liner |
| 10 | Fuze well liners |
| 11 | Propellant (bag, increment, train, etc.) |
| 12 | Gasket |
| 13 | Primer (artillery, small arms, ignition, etc.) |
| 14 | Fittings (tubes, pipes, valves, detents, etc.) |
| 15 | Initiator (ignition, igniter assembly, ignition cartridge) |
| 16 | Charge (supplementary, expelling) |
| 17 | Tracer |
| 18 | Motor (rocket) |
| 19 | Stabilizer or fin (bomb, rocket, grenade, artillery) |
| 20 | Firing device |
| 21 | Canister (smoke, illuminating, shot) |
| 22 | Parachute or parachute assembly |
| 23 | Burster or burster assembly |
| 24 | Adapter or adapter booster |
| 25 | Safety device (pin, block, lever, shorting clip, etc.) |
| 26 | Closure (closing plug, lifting plug, nozzle closure, baseplate, etc.) |
| 27 | Link, belt, clip |
| 28 | Bandoleer |
| 29 | Hardware (screw, nut, bolt, pin, gasket, etc.) |
| 30 | Skid or pallet |
| 31 | Inner packing |
| 32 | Outer packing |

33 Banding

34 Burster well

35 Detonator

36 Delay elements

37 Desiccant

38 Relative humidity indicator cards

39 Electrical connector (cables, plugs, wiring)

40 Launcher

41 Dispenser

42 Lead wire seals

43 Felt pads

44 Gas check gasket

45 Lug/suspension

46 Wind shield

47 Grommet

48 Base/tail fuze

49 Propelling charge container

50 Desiccant holder

51 Obturator band

52 Lethal chemical agent

Classification

0 Critical

1 Major

2 Minor

3 Incidental

4 Suspended - suitable for emergency combat

| | |
|---|---|
| 5 | Suspended - from issue and use (SIU) |
| 6 | Suspended - from issue, movement and use (SIMU) |
| 7 | Restricted |
| 8 | Special remarks |
| 9 | Special remarks - maintenance |

DEFECTS/SPECIAL REMARKS

| INDICATOR | NARRATIVE |
|---|---|
| AA | Missing |
| AB | Loose |
| AC | Wrong model |
| AD | Wrong type |
| AE | Wrong lot number |
| AF | Mixed lots |
| AG | Mixed models |
| AH | Mixed ammunition types |
| AJ | Leaking (excluding TCM) |
| AK | Exuding |
| AL | Agent contamination (excluding TCM) |
| AM | Armed |
| AN | Foreign matter |
| AP | Corrosion (verdigris) |
| AQ | Deterioration |
| AR | Weathered (packing) |
| AS | Dry rot (packing) |
| AT | Blue bag with loss of tensile strength (propellant) |

| | |
|---|---|
| AU | Blue bag without loss of tensile strength (propellant) |
| AV | Authorized for demilitarization |
| AW | Dented |
| AX | Gouged |
| AY | Scratched |
| AZ | Split or cracked |
| BA | Cut or torn |
| BB | Inadequate torque |
| BC | Inadequate stake, crimp or weld |
| BD | Excessive torque |
| BE | Excessive tightness |
| BF | Missing (packing) |
| BG | Incorrect type (packing) |
| BH | Damaged (packing) |
| BJ | Insecure (packing) |
| BK | Incorrect size (packing) |
| BL | Zone weight punch marks defective |
| BM | Failed air pressure test |
| BN | Failed ring gaging |
| BP | Minimum retainable lot size |
| CA | Rust preventative compound missing |
| CB | Rust preventative compound ineffective |
| CC | Rust preventative lubricant missing |
| CD | Rust preventative lubricant ineffective |
| CE | Paint peeling |
| CF | Paint missing |

| | |
|---|---|
| CG | Paint chipped |
| CH | Inadequate paint coverage |
| CJ | Protective coating missing |
| CK | Sealing compound missing |
| CL | Sealing compound ineffective |
| CM | Rust |
| CN | Greater than 30 percent RH |
| CP | Greater than 40 percent RH |
| CQ | Greater than 50 percent RH |
| CR | Excessive moisture |
| CS | Caked igniters (black powder only) |
| CT | Oxidation |
| CU | Bent |
| CV | Excess paint coverage |
| CW | Requires notched banding |
| CX | Base gas check seal improper |
| CY | Base fuze hole plug improper |
| DA | Requires replacement |
| DB | Requires radiographic inspection |
| DC | Requires gaging |
| DD | Requires inspection for critical defect |
| DE | Pending malfunction investigation (class code 4, 5, or 6) |
| DF | Resource recovery indication (for TCM to be used at the direction of the Designated Disposition Authority) |
| DG | Requires ultrasonic inspection |
| DH | Past due inspection by six months |

| | |
|---|---|
| DJ | Requires replacement of unserviceable components |
| DK | Requires special inspection |
| DL | Requires replacement of desiccant and humidity indicator |
| DM | Requires 100 percent inspection or segregation |
| DN | Requires eddy current test |
| DO | Requires dye penetrant test |
| DP | Requires magnetic particle test |
| DQ | Requires chemical test (excluding TCM) |
| DR | Requires mechanical test |
| DS | Requires electrical test |
| DY | Requires inspection for other than critical defects |
| DU | Requires PII for fleet issue |
| DV | Requires torque test |
| DW | Component missing |
| DX | Component incorrect type |
| DY | Component damaged |
| DZ | Component insecure |
| EA | Failed chemical test (excluding TCM) |
| EB | Failed mechanical test |
| EC | Failed electrical test |
| ED | Failed functional test |
| EE | Failed environmental test |
| EF | Failed non-destructive test |
| EG | Failed radiographic inspection |
| EH | Failed ultrasonic test |

| | |
|---|---|
| EJ | Failed eddy current test |
| EK | Failed dye penetrant test |
| EL | Failed magnetic particle test |
| EM | Functional code downgrade |
| EN | Quantity of tracers in lot too small for trace test |
| EP | Misfire |
| EQ | Cannibalized |
| ER | Salt water damaged |
| ES | Damaged threads |
| ET | Unitized/palletized load not acceptable for shipment, handling, storage and transfer at sea |
| EU | Broken |
| EV | Waterproof protective cover missing or damaged |
| EW | Pallet adapters missing (Navy pack) |
| EX | Incorrect pallets for Navy issue |
| EZ | Hazardous, unserviceable, non-repairable (for TCM to be used at the direction of the Designated Disposition Authority) |
| FA | Marking missing |
| FB | Marking illegible |
| FC | Marking incorrect |
| FD | Marking misleading |
| FE | Label missing |
| FF | Label damaged |
| FG | Label incorrect |
| FH | Color coding incorrect |
| FJ | Extraneous markings |

| | |
|---|---|
| FK | Thermal coating missing |
| FL | Thermal coating soft |
| FM | Packed for local use |
| FN | Held for grand lotting |
| FO | Contains restricted/suspended components |
| FP | Contains serviceable components |
| FQ | Damaged in shipment |
| FR | Barrier bags not sealed |
| FS | Wet pack |
| FT | Base tracer hole plug improper |
| FV | Identified with ammo ident code (AIC) |
| FW | Ammo not palletized/unitized |
| FX | Ammo improperly palletized |
| FZ | Non-hazardous, unserviceable, non-repairable (for TCM to be used at the direction of the Designated Disposition Authority) |
| HA | Overpacked leaking toxic chemical munition |
| HB | Multiple overpacks due to leaking overpack |
| HC | Toxic chemical munition leaker lot |
| HD | Non-leaking M23 Mine, packed with leaking M23 Mine in original drum |
| HE | Toxic chemical agent filler restricted due to decrease in agent casualty ratio |
| HF | Toxic chemical munition that has been drilled to obtain agent sample |
| HG | Toxic chemical munition that has been overpacked for reasons other than leaking |
| HH | Toxic chemical munition overpacked with explosive component(s) |
| HO | CFO metal parts |

| | |
|---|---|
| PB | Propellant Stability Cat B |
| PC | Propellant Stability Cat C |
| PD | Propellant Stability Cat D |
| SA | Lot less than minimum size for overseas shipment |
| SB | Pending evaluation from NICP |
| SC | ASRP Test Samples - Centralized Trace Test, Small Caliber Stockpile Reliability Program, Centralized Controlled Function Test Program Large Caliber Test Program, Stockpile Propellant Program, Propellant Stability Program, Propellant Reassessment Program, Mater Sample Program, Deterioration Check Test Program |
| SD | Assigned priority of issue |
| SE | Directed by TB 9-1300 -385 (class codes 4, 5, 6 or 7) |
| SF | Non-standard pack |
| SG | Accepted on waiver |
| SH | Less than one standard exterior package |
| SJ | Pending ballistic test results |
| SK | Limited to in country issue (due to level of packaging) |
| SL | Limited issue. CC-E is due to marking, packaging or material discrepancies not affecting functional reliability, safety or transportability. Items require normal maintenance for long term storage but are suitable for issue and use for training purposes. |
| SM | Shelf life will expire in one year or less |
| SN | Shelf life expired |
| SP | 50 to 69 percent specification trace test (SAA) |
| SQ | 50 percent of better satisfactory trace test (SAA) |

| | |
|---|---|
| SR | 49 percent or less satisfactory trace test (SAA) |
| SS | Salvaged or used components or material |
| ST | Directed by higher HQ/command other than malfunction (not published in TB 9-1300-385) |
| SU | Pending reassessment |
| SV | Pending propellant analysis |
| SW | Held in environmental storage |
| SX | Storage configuration prevents inspection of item |
| SY | Restricted from overhead fire |
| SZ | Pending deterioration check test |
| TA | Service life expired |
| TB | Explosive contamination |
| TC | Assembly incorrect |
| TD | Obsolete (for TCM to be used at the direction of the Designated Disposition Authority) |
| TE | Overhaul cycle exceeded |
| TF | Direct by T.O. 11A-1-1 (Air Force) |
| TG | Directed by TWO 024-AA-ORD-010 (Navy) |
| TH | Directed by NAVSEA/NAVAIR |
| TJ | Directed by Air Force |
| TK | Directed by Marine Corps |
| TL | Previously stored in Southwest Asia |
| TM | Overdue for inspection by twice the interval |
| TN | Requires Magnaflux testing |
| WW | Pending inspection (found during wall to wall inventory) |

| | |
|---|---|
| XX | Designated a "waste munition" by the Designated Disposition Authority. Only to be used at the direction of the Designated Disposition Authority. |
| ZX | Cannot be found in storage |
| ZY | Not inspected by QASAS |
| ZZ | No meaning assigned; used to fill space (not authorized unless directed by IOC Surveillance Office |

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## APPENDIX AC
## SELECTION, PREPARATION, AND SHIPMENT OF SAMPLES

1. Samples for Stockpile Propellant Program will be prepared as follows:

a. Sample Selection.

(1) Bulk packed increments and charges for mortars will be shipped in quantity specified by sample requests. The propellant will not be removed from the increment bags. Sample shipment will be made using the current NSN and lot number. The sample size will be approximately one-half pound of propellant per lot, with every effort made to request sample quantities that are standard units of issue.

(2) Unless otherwise designated, the bulk propellant sample size will be one pound.

(3) Separate loading charges and 105MM propelling charges will consist of complete charges to be shipped in the quantity specified by the sample request (usually one pound).

b. Sample Preparation.

(1) Outer pack for samples will consist of standard ammunition packs meeting the requirements of Title 49, Code of Federal Regulations (CFR), or latest Bureau of Explosives (BOE) Tariff 6000. Approved outer packs for propellant samples include Special Packaging Instruction (SPI) ADP1376-002 (Revision B or later for M2A1 ammunition container), metal-lined wood boxes, metal drums, and fiber drums, which meet both the maximum container load limit for which they were Performance Oriented Packaging (POP) tested, and the applicable packaging drawing marking requirement.

(2) Place samples in a plastic bag of minimum size to hold the sample and allow grounding if necessary. Seal bag by one of the three following methods: (1) folding the opening over three times to close and apply two single wraps of tape that overlaps itself a minimum of one inch; (2) gather the opening together and tie with a twist tie; (3) use a zip-lock closure. Place the cushioned samples in an M2A1 Small Arms Container, in accordance with SPI ADP 1376-002. Alternate packaging methods that meet POP requirements are as follows:

(a) Plastic bags may either be polyethylene (L-P-378), static dissipative (MIL-PRF-81705), or conductive/velostat (MIL-B82647) material. If additional moisture protection is desired for the inner bags, it may be overpacked (double-bagged) in a barrier bag (MILB-131), and heat-sealed.

(b) Refer to MIL-STD-652 for bulk container using metal drums, fiber drums, or metal-lined wood boxes.

(c) If a telescoping spiral-wound fiber container having metal ends and double-foil inner wrap is used for bagged propellant/increment(s), add cushioning at both ends as required to obtain a tight pack, and close with two wraps of tape.

(d) If large grain or stick propellant is to be shipped, wrap each item with plastic wrap, or bag and tape it. Cushion as required with bubble-wrap or closed-cell foam material.

(3) Expose samples to the air for the minimum time needed to package. Do not desiccate samples. Type or print legibly on a card the following information: NSN, lot number (if dual granulation, both lot numbers), name of the submitting installation, and test. Enclose card with sample in the inner pack. Include DSR card and ammunition data card for each lot. Pack dual grain charges separately; on the identification card, identify the grain as single-perforated (SP) or multi-perforated (MP). Do not print sample data directly on inner pack, i.e., aluminized bag. Flaking of bag material results in loss of sample data.

c. Sample Shipment. Samples will be shipped to:

(1) Army.

Commander
U.S. Army Armament Research, Development
and Engineering Center
Attn: AMSTA-AR-WEE-E (bldg. 938)
Picatinny Arsenal, NJ 07806-5000

(2) Navy.

Commander
Indian Head Division
Naval Surface Warfare Center
Attn: 6210F
Indian Head, MD 20640-5035

2. Samples for Propellant Reassessment Program test of field service stocks will be prepared as follows:

a. Sample selection.

(1) select five containers which are representative of the entire lot.

(2) remove two pounds of propellant from each container. If charge is of dual granulation, remove 2 pounds of each component propellant lot from each container. If propellant is packaged as component charges, bags must be removed. After sample quantity has been removed, residue from component charges is authorized for disposal.

b. Sample preparation.

(1) seal and package separately each two pound sample as specified in paragraph lb(2) and (3) of this appendix.

(2) each two-pound sample container will be marked with propellant nomenclature, lot number, and number of container from which removed; e.g., container 1, 2, 3, 4, or 5. Do not print sample data directly on the inner pack; e.g., aluminized bag. Flaking of bag material results in loss of sample data.

(3) the outer pack will be as specified in paragraph lb(l), except for one end, which will be painted white and stenciled in black ink, "For Reassessment Test PROP-QAS (assigned number). The outer pack will contain the entire 10-pound sample.

c. Sample shipment. Samples will be shipped to one of the below addresses, as directed:

Commander
Radford Army Ammunition Plant
Attn: SIORF-OP-Q
Radford, VA 24141-0099.

Commander
ARDEC
Attn: AMSTA-AR-WEE-E (bldg. 938)
Picatinny Arsenal, NJ 07806-5000

3. A material release order (MRO) will be issued by HQ, IOC for shipment of samples to the designated test installation.

4. Samples for ballistic test will be selected, prepared, and shipped as directed by HQ, IOC.

## APPENDIX AD
## NSNs for Electrostatic Packing Material

MIL-PRF-81705 ELECTROSTATIC PROTECTIVE BARRIER MATERIAL

| NSN | TYPE | SIZE |
|---|---|---|
| 8135-01-185-6816 | type I | 36 inches X 150 ft roll |

POLYETHYLENE BAG WITH INTERLOCKING SEAL CLOSURE

| NSN | SIZE |
|---|---|
| 8105-00-837-7756 | 10 inches wide X 10 inches length |
| 8105-00-837-7757 | 12 inches wide X 12 inches length |

# GLOSSARY

AADCS automated ammunition data card system

AAP Army ammunition plant

ACALA Armament Chemical and Ammunition Logistics Activity

ADC ammunition data card

AEL airborne exposure limit

AI acceptance inspection

AIC ammunition identification code

ALRAM Army lot record malfunction

AMDF Army management data file

AMSAA Army Materiel Systems Analysis Activity

APDS-T armor piercing discarding sabot - tracer

APE ammunition peculiar equipment

APF afloat prepositioned force

AQL acceptable quality level

AR Army regulation

ARNG U.S. Army National Guard

ASIS ammunition surveillance information system

ASP ammunition supply point

ASRP Ammunition Stockpile Reliability Program

ASTP ammunition surveillance test procedures

BLI basic load inspection

BTR ballistic test request

CAD cartridge actuated devices

CAMDS Chemical Agent Munitions Disposal System

CC condition code

CCFTP Centralized Control Function Test Program

CFA controlled firing area

CFR code of federal regulation

CONUS continental United States

COR contracting officer representative

CSDP chemical stockpile disposal plant

CTTP Centralized Trace Test Program

DA Department of Army

DAC Department of Army civilian

DAMWO Department of Army modification work order

DISREP discrepancy report

DMWR depot maintenance work requirement

DODAC Department of Defense ammunition code

DODIC Department of Defense identification code

DOT Department of Transportation

DRMO Defense Reutilization Marketing Office

DSR depot surveillance record

DU depleted uranium

EMR electromagnetic radiation

EOD explosive ordnance disposal

ET electronic time

FAA Federal Aviation Administration

FC functional code

FMS foreign military sales

FORSCOM U.S. Army Forces Command

FY fiscal year

GFM government furnished material

GRA grant aid

HE high explosive

HEAT high explosive antitank

HEI-T high explosive incendiary - tracer

ICM improved convential munitions

ILLUM illuminating

IOC U.S. Army Industrial Operations Command

IR infrared

IRI initial receipt inspection

LAP load, assembly, and pack

LCC logistics control code

LCSRP large caliber stockpile reliability program

LOA letter of offer and acceptance

LSFFAR low spin, folding fin aircraft rockets

MACOM major command

AMCOM U.S. Army Missile Command

MIMEX major items in long supply and excess

MOS military occupational specialty

MPCG man portable chamber gage

MPS maritime prepositioning ships

MPSM multipurpose submunitions

MRO materiel release order

MSC major subordinate command

MT mechanical time

MTSQ mechanical time super quick

MWO modification work order

NDI nondevelopmental item

NICP National Inventory Control Point

NOSIH Naval Ordnance Station, Indian Head

NSN national stock number

OCONUS outside the continental United States

OPA ogive protector

P&P packing and preservation

PAD propellant actuated device

Para paragraph

PCP pentachlorophenol

PD point detonating

PENTA pentachlorophenol

PG proving ground

PI periodic inspection

PII preissue inspection

PMCD Program Manager for Chemical Demilitarization

PMCSD Project Manager for Chemical Stockpile Disposal

PMNSCM Project Manager for Non-Stockpile Chemical Materiel

PPWR prepositioned war reserve

PREPO prepositioning

QA/QC quality assurance/quality control

QASAS in charge The senior Quality Assurance Specialist (Ammunition Surveillance) at an installation

QASAS Quality Assurance Specialist (Ammunition Surveillance)

RAAMS remote anti-armor mine system

RCRA Resource Conservation Recoverability Act

RCS requirement control symbol

RDD required delivery date

REPSHIP report of shipment

RI receipt inspection

ROD report of discrepancy

RRDA resource recovery and distribution account

SA security assistance

SAA small arms ammunition

SAC security assistance coordinators

SB supply bulletin

**SBCCOM Soldier and Biological Chemical Command**

SCSRP small caliber stockpile reliability program

SDS standard depot system

SFC sergeant first class

SFTI surveillance function test inspection

SI special inspection

SIMU suspended from issue, movement, and use

SIS safety in storage

SLTP Stockpile Laboratory Test Program

SMCA single manager for conventional ammunition

SMI storage monitoring inspection

SOP standing operating procedure

SPI special inspection

SSG staff sergeant

SSI special surveillance instructions

SSWAFAR spin stabilized, wrap around fin aircraft rockets

STL surveillance test lot

SUPLECAM Surveillance Program Lethal Chemical Agents and Munitions

TAMMC Theater Army Materiel Management Center

TB technical bulletin

TCM toxic chemical munitions

TM technical manual

TMDE test, measurement, and diagnostic equipment

TP-T target practice - tracer

TRADOC U.S. Army Training and Doctrine Command

TWA time weighted average

UNO United Nations organization

USAMC U.S. Army Materiel Command

VI visual inspection

VT variable time

WARS Worldwide Ammunition Inspection and Lot Number Report, Part III

WP white phosphorus

WQEC Navy Weapons Quality Evaluation Center

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

**DENNIS J. REIMER**
*General, United States Army*
*Chief of Staff*

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