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HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC,

AMMUNITION SURVEILLANCE PROCEDURES

SB 742-1, 1 June 1998, with C1, 30 October 1999, is changed as follows:

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2. File this change in front of the publication for reference purposes.

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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-QAS, Rock Island, IL 61299-6000 (Conventional Munitions).

b. Commander, Aviation and Missile Command, ATTN: AMSAM-RD-QA-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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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-QSM
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

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. Materiel 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 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.

(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 1-3e(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 identify 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 TW010-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 in 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

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-STD-1461). 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

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 21010-5424**, 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 DO 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 intra-depot 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) 8140-01-286-0482 | 10" X 96" SRC P/N ACV00402 |
| 2. 4.2 Inch | a. ID Set M1, 8110-00-340-2006 b. Prop Chg M14A2, 8140-00-859-8017 c. Prop Chg M13A2, 8140-00-864-3221 d. Prop Chg M18A1, 8140-00-827-0510 e. Prop Chg M18A2, 8140-00-369-9118 f. Prop Chg M16A2, 8140-00-369-9120 g. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4 ¹ 8140-00-891-6194 b. Prop Chg M460A2 8140-00-891-6162 c. M500 (Modified) ² 8140-01-386-5927 |
| 3. 105mm Proj Only | a. ID Set M1, 8110-00-340-2006 b. Prop Chg M14A2, 8140-00-859-8017 c. Prop Chg M13A2, 8140-00-864-3221 d. Prop Chg M18A1, 8140-00-827-0510 e. Prop Chg M18A2, 8140-00-369-9118 f. Prop Chg M16A2, 8140-00-369-9120 g. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4 ¹ 8140-00-891-6194 b. Prop Chg M460A2 8140-00-891-6162 c. M-500 (Modified) ² 8140-01-386-5927 |
| 4. 105mm W/Ctg Case | a. ID Set M1, 8110-00-340-2006 b. Prop Chg M13A2, 8140-00-864-3221 c. Prop Chg M16A2, 8140-00-369-9120 d. Prop Chg M16A3, 8140-01-219-2277 | a. Prop Chg M10A4 ¹ 8140-00-891-6194 b. Prop Chg M460A2 8140-00-891-6162 c. M-500 (Modified) ² 8140-01-386-5927 |
| 5. 155mm Proj | a. Prop Chg M16A2, 8140-00-369-9120 b. Prop Chg M16A3, 8140-01-219-2277 | a. 12" X 56" Non-Standard 8140-01-375-7070 b. Prop Chg M10A4 8140-01-891-6194 c. M-500 (Modified) ² 8140-01-386-5927 |
| 6. 8-Inch Proj | a. M-500 (Modified), 8140-01-386-5927 b. Prop Chg M10A4, 8140-00-891-6194 | 12" X 56" Non-Standard 8140-01-375-7070 |
| 7. M23 Mines | Original Storage Container | Secondary Steel Container (SSC) 8140-01-310-6929 |
| 8. MK 94, 500 lb. Bomb (Palletized) | AGM-12C Bullpup (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 M1 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 21010-5424. 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.

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(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 1×10^{-4} cc/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 7-6e(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, Trichlorotrifluoroethane (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-G-14931. 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 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <u>Container body</u> Cracks or holes. Dents which preclude use. Dents which do not preclude use. Missing or damaged components. | Reject container. Reject container. None required. Reject container. |
| <u>Sealing flange machined surface</u> Scratches which would prevent proper sealing. Foreign material, rust, dust, Paint chips, etc. <u>Flange bolt hole</u> Threads damaged. | Reject container. Clean and apply rust preventive.* Reject container. |
| <u>Cover</u> Cracks or holes. Missing or damaged component. Serial number (S/N) does not match container body (when applicable). Loose inspection plug. Scratches in sealing surface/groove. Foreign matter, rust, etc., in seal groove. | Reject container. Reject container. Attempt to find matching S/N. If not possible, perform leak test. Apply Teflon sealant (tape or liquid), torque 25ft-lbs min. Reject container. Clean and apply rust preventative.* |
| <u>Container Seal</u> Teflon seals: Flat spots, irregularities, deformation, or scratches. O-rings: Cuts, irregularities, hardness, or deformation. | Destroy seal. Request replacement from NICP, AMSSB-OSM . Destroy seal. |
| <u>Bolts</u> Damaged bolt or threads. | Replace bolt. |
| <u>Container Assembly</u> 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 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Metal container lid gasket missing, out of place, damaged, or deteriorated.</p> <p>Failure to pass leak test.</p> <p>Air sampling plug missing.</p> <p>Damaged threads on air sampling plug/port.</p> <p>Container dented precluding use; i.e., munition would not fit into container, container would not seal.</p> <p>Foreign material, rust, dust, paint chips, etc., which would not allow container sealing or allow markings to be stenciled on the container.</p> | <p>Replace gasket.</p> <p>Replace gasket and retest. If fails second time, reject container.</p> <p>Replace plug.</p> <p>Replace sampling plug/lid.</p> <p>Reject container.</p> <p>Repair and renovate container to serviceable standards. If not possible, reject container.</p> |

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) Report 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) Date 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 (PMCSO) 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, PMCSO/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 | | | |
|---------------------------------------------|----------------------------------------------------|-----------------|-----------------|
| 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 |

¹Quantity 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.

²When 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 DEMILITARIZATION HAS NOT COMMENCED DURING THE SCHEDULED QUARTER (OR IS NOT IMMINENT), SAMPLING SHALL RESUME IN SUBSEQUENT QUARTERS. FURTHER DELAYS ARE NOT AUTHORIZED UNLESS JUSTIFIED IN WRITING BY THE QASAS-IN-CHARGE, BASED UPON CHANGES IN THE DEMILITARIZATION TIMELINE. SAMPLE 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 DIMINISH 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 90°, 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 ¼ 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 air-sampling 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 6665-00-022-1357 (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 20°F. 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 7-10b(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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(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 e-mail. Send reports on IOC managed material to: amsio-ibq@ioc.army.mil and for AMCOM managed material to: AMSAM-MMC-LS-M@redstone.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 793-5549/4808/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.

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-MAS-Q-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. SMIs reflect nonstandard conditions (e.g., evidence of leakage, damaged open pack 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 742-1305-94-20.

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.army.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: aese-glo5@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-emh1.army.mil, fax DSN: 668-3197.

(5) Japan -- Commander, 83rd Ordnance Battalion, ATTN: APAJ-GH-AM-S, FPO AP 96310-5432, e-mail: apaj-gh-am-s@zama-emh1.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@shafter-emh2.army.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, 00-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.

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 auto-ignite, 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 (NO_x) 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 nitrocellulose-based 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 9-1300-385, 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.

* 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 9-1300-385. 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-ORD-010 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-ORD-010.

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 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 M49-series (HE), M50-series (TP), M69 (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 Application | Drawing | NSN | Preferred Gage |
|-------------------------------------------|---------|------------------|----------------|
| Gage, profile and alignment All models | 7256348 | 5220-00-305-6030 | YES |
| All models complete | 5539280 | 5220-00-395-4450 | NO |
| Short rounds only | 7256419 | 5220-00-395-4457 | NO |
| Short rounds only | 6518134 | 5220-00-395-4423 | NO |
| Short rounds only | 7258360 | 5220-00-395-4466 | NO |

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-3*a*.

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.

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.. M775 fuzes.. | Visual..... Visual..... | |
| d. Red band around striker pin is showing (possibly armed) | M751 fuzes.. M775 fuzes.. | Visual..... Visual..... | |
| e. Primer head above flush with rear edge of fin | M43 series.. M301 series. M362 series. M374, A1, A2 M375, A1, A2 | Straightedge.. Straightedge.. Straightedge.. Straightedge.. Straightedge.. | |
| f. Ignition cartridge head not below flush with rear edge of fin. | M374A3..... M375A3..... M800 series. | Straightedge.. Straightedge.. Straightedge.. | |
| g. Any propellant increment cut, torn, or missing (with leaking propellant) | M301 series. M362 series. M374, A1, A2 M375, A1, A2 | Visual..... Visual..... Visual..... Visual..... | |
| h. Any propelling charge container missing or damaged (cracked or delaminated) so that propellant can escape. | M374A3..... M375A3..... M800-series. | Visual..... Visual..... Visual..... | Para G-6m Para G-6m 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..... M362..... M374 series. M375 series. | Visual..... Visual..... Visual..... Visual..... | |
| k. Obturating ring missing or broken..... | M374 series. M375 series. M800 series. | Visual..... Visual..... Visual..... | |
| l. WP or RP leakage or evidence of leakage | M375 series. M819..... | Visual..... Visual..... | |
| m. One or more shear pins missing | M301 series. M853A1..... M819..... | Visual..... Visual..... 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-6j |
| b. Any propellant increment cut, torn, or missing | M43 series.. M68..... | Visual..... Visual..... | |
| c. Propellant container damaged where propellant cannot escape. | M374A3..... M375A3..... M800 series. | Visual..... Visual..... Visual..... | Para G-6m Para G-6m 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. M375 series. M819..... M821..... M879..... M853A1..... M889..... | Visual..... Visual..... Visual..... Visual..... Visual..... Visual..... Visual..... | |

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 M329 series | Visual | |
| c. Bag loading assembly missing or damaged to the extent that propellant can escape. | M328A1 M329A1 M329A2 | Visual | |
| d. Pressure plate incorrectly assembled (reversed) | M329 M329A1 | Visual | Para K-6d Para K-6d |
| e. WP leakage or evidence of leakage | M328 series | Visual | |
| f. Zone weight markings incorrect | M328 series M329 M329A1 | 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 | M329 series (unfuzed) | Visual | |
| j. Fuze well liner missing | M329 series (unfuzed) | 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... M630..... | Visual..... Visual..... | |
| c. Bag loading assembly missing or damaged to the extent that propellant can escape. |M335A1..... M335A2..... M630..... | Visual..... Visual..... 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... M335 series... M630..... | Visual..... Visual..... Visual..... | Para K-6d |
| h. Pressure plate nut not properly staked |M328 series... M329..... M329A1..... M335 series... M630..... | Visual..... Visual..... Visual..... Visual..... | |
| i. Rotating disc loose or improperly assembled |M328 series... M329..... M329A1..... M335 series... M630..... | Visual..... Visual..... Visual..... Visual..... | |
| j. Rubber obturator improperly assembled, damaged or missing. |M329A2..... | Visual..... | Para K-6k |
| k. Extension pin missing |M328A1..... M329A1..... M335A1..... M335A2..... | Visual..... Visual..... Visual..... Visual..... | Manual |
| l. Supplementary charge missing or inverted |M329 series (unfuzed) | 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 projectile. |M329 series (unfuzed) | Gage..... | 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... M630..... | Visual..... Visual..... | |
| 4. Incidental: | | | |
| Warning label missing or unidentifiable |M328 series... M329..... M329A1..... M335 series... M630..... | Visual..... Visual..... Visual..... Visual..... Visual..... | Para K-6j Para K-6j Para K-6j Para K-6j 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).

- (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 storage 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 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 - none defined | | |
| 2. MAJOR. a. Cover Assembly nonfunctional b. Gasket missing or defective c. Internal components/packaging missing or defective d. External components missing or defective e. Dents greater than ¼ inch deep that prevent cartridge extraction f. Perforations/holes g. Internal components/packaging moisture soaked h. Markings illegible, precluding proper identification of nomenclature and lot number. | a. VISUAL b. VISUAL c. VISUAL d. VISUAL e. VISUAL f. VISUAL g. VISUAL h. VISUAL | e.L-6e f.L-6l |
| 3. MINOR - 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 b. Sabot segments misaligned c. Rear Obturator cracked/damaged d. Sabot cracked e. Missing components f. Cracked cartridge case forward adapter g. DU corrosion (yellowish or black powder or staining) in sabot gaps and/or windshield interfaces. h. Corrosion on projectile body causing pitting i. Projectile partially or completely separated from the combustible cartridge case. j. Marks on sabot and windshield not aligned properly (M829A1 only) | a. Gage b. Visual c. Visual d. Visual e. Visual f. Visual g. Visual h. Visual i. Visual j. Visual | a. Para. L-6f b. Para. L-6c d. Para. L-6d e. Para. L-6c g. Para. L-7 i. Para. L-6g 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 b. Sabot cracked c. Missing parts d. Failure to chamber/gage e. Pitting corrosion on projectile assembly f. Obturators - loose, cracked or other damage which would preclude gas seal. g. Rubber seal on Sabot torn or split. | a. Visual b. Visual c. Visual d. Gage e. Visual f. Visual g. Visual | b. Para. L-6d d. Para. L-6f |
| 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: None defined. | | |
| 2. MAJOR: a. Missing parts b. Copper/nylon band damaged to the point of precluding chambering. c. Failure to chamber/gage d. Spike tip damaged (M830 & 831A1) e. Proximity sensor damaged M830A1) f. Sabot cracked or pitted (M830A1 & M908 g. Shoulder switch bent or cocked M830) h. Spike shoulder damaged M830) i. Projectile rubber seal damaged j. Spike Tip loose (M830) k. Pitting corrosion on projectile l. Projectile partially or completely separated. from cartridge case. m. Projectile rotates relative to forward adapter (M830 only).* | a. visual b. Visual/gage c. Gage d. Visual e. Visual f. Visual g. Visual h. Visual i. Visual j. Visual/Manual k. Visual l. Visual/Manual m. Visual/Manual | c. Para. L-6f h. Para. L-6h i. Para. L-6j |
| 3. MINOR: 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: None defined. | | |
| 2. MAJOR: 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). b. Case broken exposing internal propellant containment bag. c. Skive joint (glue joint at case shoulder)separation d. Case base and seal assembly (CBSA) separated from cartridge case body. e. CBSA rubber seal torn or separated f. Primer above flush g. Corrosion of CBSA with visible pitting h. Non-removable corrosion on primer i. Evidence of moisture damage resulting in a softening or penetration of the combustible ctg. case (CCC) or forward adapter. | a. Visual b. Visual c. Visual d. Visual e. Visual f. Visual/Manual g. Visual h. Visual/Manual i. Visual/Manual | |
| 3. MINOR: 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. b. Water mark on cartridge | a. Visual 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-qas@ria-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-Q@IOC.ARMY.MIL**/
 AMSIO-SF@IOC.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 l 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 l 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 M287 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).

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.

| Description | Classification | Inspection Model | Inspection Method |
|-------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. Critical: | | | |
| a. Fuze with missing or broken safety pin or clip | | M501A1..... M520..... | Visual..... Visual..... |
| b. Fuze not set to safe "S" position | | M564..... | Visual..... Para X-6l |
| c. Ogive and head assembly loose (removable by hand pressure). | | M48-series... M51-series... M557..... M572..... | Visual/Manual. Visual/Manual. Visual/Manual. 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..... M571..... XM711..... | Visual..... Visual..... Visual..... |
| e. Ogive loose interferes with setting sleeve | | M48-series... M51-series... M557..... M572..... | Visual..... Visual..... Visual..... Visual..... |
| f. Hairline and number not visible through window | | M577..... M582..... | Visual..... Visual..... |
| g. Fuze setting not in shipping position (93.5-95.5 seconds). | | M577..... M582..... | Visual..... Visual..... |
| h. Fuze not set on SQ | | M48A3..... M51A5..... M557..... | Visual..... Visual..... 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..... M582..... | Visual..... Para X-6j 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... M51-series... M557..... | Visual/Manual. Visual/Manual. Visual/Manual. |
| c. Set line in improper position for shipping | | M513-series. M514-series. M728-series. M732-series. | Visual..... Para X-6k Visual..... Para X-6k Visual..... Para X-6k 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.

(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 |

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-B-82647) material. If additional moisture protection is desired for the inner bags, it may be overpacked (double-bagged) in a barrier bag (MIL-B-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 1b(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 1b(1), 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 | Commander |
| Radford Army Ammunition Plant | ARDEC |
| Attn: SIORF-OP-Q | Attn: AMSTA-AR-WEE-E (bldg. 938) |
| Radford, VA 24141-0099. | 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 conventional 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

LCSRFP 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

PMCS D 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

