ATP 4-35.1

TECHNIQUES FOR MUNITIONS HANDLERS

May 2013

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Headquarters, Department of the Army

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Techniques for Munitions Handlers

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Preface

ATP 4-35.1, Techniques for Munitions Handlers, provides doctrine on munitions handling techniques for all munitions handlers in the Army regardless of assignment or military occupational specialty. It is intended to provide greater emphasis on explosives safety during all munitions handling operations.

The principal audience for ATP 4-35.1 is commanders, staffs, supervisors, and Soldiers in all organizations at all levels that have roles in munitions handling. This includes not only personnel in ammunition support activities but any unit, operation, or task where munitions are handled. Trainers and educators throughout the Army will also use this manual.

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable US, international, and, in some cases, host-nation laws and regulations. Commanders at all levels ensure their Soldiers operate in accordance with the law of war and the rules of engagement.

ATP 4-35.1 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text. ATP 4-35.1 does not introduce any new terms, rescind any terms or modify any terms.

ATP 4-35.1 applies to the Active Army, Army National Guard/Army National Guard of the United States, and United States Army Reserve unless otherwise stated.

The proponent of ATP 4-35.1 is the United States Army Ordnance School. The preparing agency is the United States Army Combined Arms Support Command (USACASCOM), G3 Doctrine Division. Send comments and recommended changes on a DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, U.S. Army Combined Arms Support Command, ATTN: ATCL-TS, 2221 Adams Avenue, Fort Lee, Virginia 23801-1809, or submit an electronic DA Form 2028 by e-mail to: usarmy.lee.tradoc.mbx.leee-cascom-doctrine@mail.mil.

Unless this ATP states otherwise, masculine nouns and pronouns do not refer exclusively to men.

Introduction

Soldiers, civilians and contractors that handle munitions for the Army perform a vital role of keeping their units and Army personnel safe while maintaining and providing the effective munitions needed to accomplish the mission. Munitions handlers, as identified in this manual, include every person that plays a role in handling, storing, moving and maintaining munitions. This includes professional munitions handlers, such as ammunition officers, ammunition technicians, 89B30/40s, Quality Assurance Specialist (Ammunition Surveillance) (QASAS), and QA/QC ammunition inspectors. It also includes more generalized professions such as accountability personnel, supply personnel, transportation personnel and storage managers.

All personnel involved in munitions support and handling need to understand the environment in which they operate. This manual provides information on Class V support to unified land operations to include the Joint environment. Joint integration of ammunition support is crucial to unity of effort in most operational areas.

It is imperative for all personnel engaged in munitions support operations have an understanding of the various staff organizations that have a role in munitions planning and support. It will be necessary for an ammunition support activity to contact the higher, lower, or adjacent headquarters (both sustainment and operational) to coordinate support, report status, request technical assistance, or request additional resources. This manual will present the roles and mission of the various munitions organizations so that proper coordination can be conducted.

Ammunition supply operations are addressed to include receipt, turn-in, issue, shipment and retrograde. Storage procedures and consideration are presented and maintenance functions are addressed. Logistic Information Technology is presented both in terms of specific Information Systems needed to perform munitions handling functions and Information Technology enablers that will assist personnel in accomplishing the mission.

This manual is intended to provide munitions handlers the information necessary to safely perform munitions operations and fully support the operational requirement. The primary focus of explosives safety is to reduce the probability and limit the damage caused by unintended initiation of munitions. Safety, fire protection, prevention, and safety awareness during munitions is every soldier's responsibility. The guidelines in this publication should be followed as closely as possible within the constraints and restrictions of the tactical situation.

ATP 4-35.1 does not introduce any new terms, rescind any terms or modify any terms.

Chapter 1

Ammunition (Class V) Operations Overview

Munitions handling occurs at many different levels and locations throughout Army operations. This requires all personnel involved in munitions support and handling to understand the environment in which they operate. This chapter provides an overview of Class V operations from a general standpoint to provide a basis for understanding the roles and responsibilities of munitions handling. Furthermore, to increase the awareness of explosive safety the specific hazards associated with Class V operations are brought to the forefront.

SECTION I – CLASS V SUPPORT DURING UNIFIED LAND OPERATIONS

UNIFIED LAND OPERATIONS

1-1. Army forces combine offensive, defensive, and stability or civil support operations simultaneously to create opportunities to achieve decisive results. Regardless of the type of operation conducted, munitions of all types will be distributed (replenishment and retrograde), handled, and stored. Although types, quantities, and pace of operations will vary widely based upon circumstances proper munitions handling is imperative to ensure successful and safe operations in all instances. Understanding the differences in situations and the unique challenges of each will allow commanders, staffs, and munitions handlers at all levels to properly and safely support the force

THE ARMY MODULAR FORCE

1-2. The Army's transformation to the modular force significantly changed the sustainment support structure and its relationship with operational headquarters. Under the modular construct Army operational headquarters from the Army Service Component Command (ASCC), corps, division, and brigade have remained intact. The sustainment headquarters, in some cases previously organic to an operational headquarters (corps and division), were centralized under the theater sustainment command (TSC). The expeditionary sustainment command (ESC), sustainment brigades, CSSBs, and other functional sustainment organizations trace a command relationship back to the TSC. The sustainment headquarters are generally in a support relationship with the operational headquarters at the appropriate level. The exception to this is the brigade support battalion which is assigned to the brigade combat team (BCT). The primary purpose of modularity is to eliminate redundancy and to streamline support by reducing unnecessary layers and effort in the sustainment hierarchy.

AMMUNITION SUPPORT STRUCTURE AND MISSION

1-3. The mission of the ammunition support structure is to provide CL V support in terms of correct type and quantity to the force as responsively as possible with minimum handling and reconfiguration. Effective and efficient ammunition support requires integrated information management at all levels from the factory to the operating area. The unique characteristics of ammunition complicate the system of ammunition distribution. These factors include its weight, cube, compatibility and explosive nature. It requires special handling, storage, accountability, quality assurance, and security at every level of operations where ammunition is handled, transported or stored regardless of the type or quantity. The munitions support structure must be flexible to meet changing requirements in simultaneous operations.

1-4. Similar to other logistics support, ammunition support requires units to have the appropriate mix of personnel, military occupational specialty (MOS) skills, tools, and equipment to accomplish the mission. The use of modular ammunition companies and platoons increases the Army's ability to meet theater munitions requirements. BCT brigade ammunition office (BAO)/ammunition transfer and holding point (ATHP) and ammunition platoons can provide ammunition technical assistance, SOP, advice and direct support to unit ammunition handlers and should be the utilized to the maximum extent possible when any type, size or quantity of ammunition is on hand or used at the unit level. These units are equipped, trained and ready to handle a wide aspect of ammunition actions, operations and needs at any level.

1-5. The concept of modular units permits the building of ammunition units tailored for specific functions. Modules consisting of a modular ammunition platoon, or a combination of ammunition platoons and rough terrain container handlers (RTCH) teams, can be employed to support forces as required. The headquarters platoon should always be located with a minimum of one ammunition platoon. The modular structure can be tailored to effectively meet all challenges.

1-6. The theater storage area (TSA) encompasses storage facilities where the bulk of the theater reserve ammunition stocks are located. Ammunition companies, with a mixture of ammunition platoons and RTCH teams operate and maintain TSAs. The primary mission of the TSA is to receive munitions from the national level, conduct the bulk of operational level reconfiguration, and distribute munitions to forward ammunition support activity (ASA) locations and BCT ATHPs. In addition to shipping ammunition to ASP's and ATHPs, the TSA provides ammunition support to unit's areas by establishing a retail ASP collocated or near to the TSA. The ASCC determines the TSA stockage objective.

1-7. Ammunition supply points (ASP) normally operate as close to the division area of operations (AO) as possible. The ASPs maintain a stockage of high-volume munitions and are alternate sources of ammunition for units located in a division area (ATHP being the primary). The ASPs are operated by an EAB ammunition unit. Additional information may be found in FM 4-30.1.

1-8. The brigade ammunition office is the primary class V advisor to the brigade. This office has technical oversight of the ATHP and consolidates brigade ammunition requirements and forwards them to the EAB support structure. It also provides technical assistance for unit issue and turn-in and maintains status and in-house visibility of open unit documents. The ATHP transloads CL V items from above brigade assets to BSB or other unit assets and temporarily holds ammunition pending issue to brigade units.

STANDING OPERATING PROCEDURES

1-9. Units that receive, transport, store and or handle ammunition in support of any level of operations should have a standing operating procedure (SOP) published that is approved by the unit BAO, safety officer and commander. This SOP must detail standards, expectations, and processes that will be used by the unit personnel in ALL aspects dealing with ammunition, explosives and like items. Use DA Pam 385-64 and local command policy to develop unit field SOPs.

1-10. At a minimum, external SOPs must cover the following:

- Unit and Class V Wartime Host Nation Support (WHNS).
- Communications, engineer, and transportation support.
- Safety.
- Ammunition issue and turn-in procedures.
- Protecting ammunition from the elements.
- Emergency resupply procedures.

1-11. At a minimum, internal SOPs must cover the following:

- Deployment (i.e., staging) procedures.
- Field setup, including storage, perimeter defense, and storage facility layout plans.
- Operational procedures, including ammunition receipt, storage, issue, and maintenance operations.
- Link to Command element.

- Routine and emergency destruction plans.
- Fire-protection plans and other safety concerns.
- Air resupply procedures.
- Plans for required augmentation elements (e.g., QASAS personnel).

SECTION II – AMMUNITION STAFF OPERATIONS

1-12. It is imperative for all personnel engaged in munitions support operations have an understanding of the various staff organizations that have a role in munitions planning and support. It will be necessary for a ammunition support activity to contact the higher, lower, or adjacent headquarters (both sustainment and operational) to coordinate support, report status, request technical assistance, or request additional resources.

ASCC

1-13. The ASCC focuses on strategic level ammunition requirements to meet all operational needs for the Army forces operating in the assigned AOR. The ASCC compiles and validates all munitions stockage objectives required at ASAs, which include TSA, ASP and the ATHP. Normally the ASCC G3 & G4 coordinate with HQDA and the Joint Munitions Command (JMC) as well as the TSC on all levels of ammunition operations, reporting, accountability and distribution of munitions.

CORPS AND DIVISION G3 AND G4

1-14. The Corps and Division G3 and G4 will establish ammunition required supply rates and priorities. These staff elements will work in conjunction with the ASCC G3 and G4 and the senior sustainment headquarters to ensure ammunition support priorities are understood and implemented.

TSC

1-15. The TSC provides primary sustainment support to the ASCC in the direct management of requirements, stockage objectives and distribution of ammunition. The Class V branch within the TSC coordinates with the ESC or at times directly with a sustainment brigade Class V support operations if an ESC is not assigned within the joint operations area/area of operation. The TSC Class V branch collects requirements data, forecast data, stockage objective requirements, and directly manages Class V assets and support activities to include assigned sustainment brigade(s) and BCT(s). The TSC Class V Branch is composed of ammunition officers, technicians, quality assurance, ammunition inspectors and other support personnel that provide direct support to the ASCC AOR and advise the commander on all aspects of ammunition operations. The TSC staff will also coordinate with the corps and division staff to ensure priority of effort is understood.

ESC

1-16. The ESC is may be employed to execute sustainment mission command within a joint operations area (JOA)/AO as an extension of the TSC. Its capabilities are identical to the TSC but smaller in scope. The ESC Class V branch coordinates directly with the Sustainment Brigades and in some occasions, the Brigade Combat Teams directly. The ESC manages all Class V assets, stock pile, safety and storage actions within the JOA/AO. The ESC staff will also coordinate with the corps and division staff to ensure priority of effort is understood.

SUSTAINMENT BRIGADE

1-17. The sustainment brigade (SB) provides sustainment support to forces operating within a JOA/AO. This may include supporting one or more divisions. The SB CL V branch consists of ammunition officers, technicians, 89B30/40 QA/QC ammunition inspectors, accountability, and storage managers. The CL V branch directly manages ASPs assigned to it. The CL V branch coordinates directly with the BAO and

BSB support operations offices and receives data directly from the ATHP. The SB CL V branch performs all levels of ammunition operations such as ammunition distribution, storage point establishment, explosive safety, policy, reporting, and requirement/stockage objective requirements to provide and sustain the force. The sustainment brigade will coordinate with the division staff to ensure priority of effort is understood. If the sustainment brigade is the senior logistics headquarters it may also coordinate with the corps or ASCC staff.

COMBAT SUSTAINMENT SUPPORT BATTALION (CSSB)

1-18. If employed, the CSSB may provide mission command over modular ammunition companies and/or platoons on an area or direct support basis. The CSSB support operations staff will coordinate with the sustainment brigade staff for support and mission priorities. The CSSB support operations staff will also coordinate with the brigade support battalion staff to understand the support requirements of BCTs operating within the area.

BRIGADE COMBAT TEAM

1-19. The BAO/ATHP is the BCT primary direct ammunition support activity. All units assigned or attached to the BCT or operating within the BCT AO normally receive support from the BAO and draw all Class V assets from the ATHP. The BAO/ATHP is comprised of an ammunition officer, technician, 89B30/40 QA/QC ammunition inspector, and stock accountability and storage specialists. The ATHP receives shipments of ammunition from the SB/ESC, temporarily stores, maintains, and issues ammunition and ammunition support items directly to the brigade to meet all ammunition requirements. The BAO collects requirements data for all ammunition, forecasts, and operational needs, maintains accountability of assets within the ATHP and reports shortages to the SB. The BAO tracks and keeps visibility of ammunition assets within the BCT AO, monitors and directs explosive safety, storage and transportation actions for all units.

JOINT AND MULTINATIONAL OPERATIONS

1-20. Providing the correct types and quantities of ammunition units at the right place and time is critical to the success of combat, and stability and civil operations. Munitions units must be prepared to support other U.S. services and allied forces when the Army fights as part of a joint, multinational, or combined force. Planners consider the concept of operations and organizations, the availability of stocks and storage locations, and deployability into various theaters.

1-21. Joint integration of ammunition support is crucial to unity of effort in most operational areas. The Army is the Department of Defense manager for production for many common items used across the force and as such, many Army units will support the requirements of other services during joint operations upon approval by National level managers and commands. Units should seek active awareness of the requirements of all units they support in considering storage requirements, forecasting, movement and distribution they will perform. Duplication of logistics support to obtain, distribute and store common items can impact unit's already limited resources in many forward areas. Army policy provides commanders ammunition processes that allow Army units to support common items to other services as well as coalition nations in some cases.

1-22. Failure to plan for this support may result in severe shortages of critical ammunition items and handling capability. Commanders and their staff must consider efficiencies gained by having integrated ammunition support. The plans must be coordinated with the various services involved to ensure adequacy of personnel, storage requirements, container/materials handling equipment (C/MHE), accountability procedures, and safety.

1-23. Combined and coalition logistics operations require integration for unity of effort. Procedures for ammunition support must be worked out during the mission analysis and planning phase of a deployment or operation. This ensures interoperability and availability of materials handling equipment.

SECTION III – MUNTIONS AND EXPLOSIVES HAZARDS

OPERATIONS HAZARDS

1-24. All operations involving munitions or explosives will follow the Cardinal Rule: "Expose the minimum number of people for the minimum period to the amount of explosives required to perform a safe and efficient operations." Tasks not necessary to an operation must be prohibited. Personnel not required for an operation will be denied entry to the area during operations. Nonessential personnel will be prohibited from visiting the site of operation. This restriction does not prohibit official visits by safety, quality control (QC), management, inspection or other personnel authorized by the commander. Established personnel limits will be observed at all times.

1-25. Although some operations can be performed by one individual if the tactical situation permits, at least one additional person must be present to assist in an emergency. All operations must be supervised properly to ensure that safety precautions are observed and enforced.

STORAGE HAZARDS

1-26. Munitions and explosives hazards include (but are not limited to) fire, explosion, fragmentation, and contamination. Fire and excessive heat are among the greatest hazards to explosives. Fires in storage areas may be spread by hot fragments from one stack to another or by fire spreading along the ground through combustible materials.

HANDLING HAZARD

1-27. Identification systems assist in identifying specific hazards associated with different types of munitions. Appendix D explains in detail methods for identifying munitions using NSN, DODIC lot numbering, and the color coding system.

1-28. Munitions and explosives must be handled carefully. Any improper, rough, or careless handling may cause them to detonate/initiate. These items are safe to handle as long as proper consideration is given to the characteristics of each type of munitions or explosive, how it is assembled, the operation, and normal safety precautions. All soldiers working with munitions must observe the following safety precautions:

- If a hazardous operation is observed, report it immediately to a supervisor. Hazardous operations must be corrected at once.
- Don't conduct operations without an approved SOP.
- Don't carry heat- or fire-producing items (matches, lighters, etc.) into a storage area.
- Don't smoke in a storage location, except in a designated area.
- Ensure munitions are handled only by trained soldiers who fully understand the hazards and risks involved. (See DOD 6055.09-M, AR 385-10, DA Pam 385-64 and SB 742-1.)
- Don't use bale hooks to handle munitions.
- Don't tumble, drag, drop, throw, roll, or walk on containers of munitions.
- Don't tamper, disassemble, or alter any munitions item.
- Keep munitions in containers as long as possible to prevent exposure to the elements. This is especially true of items packed in barrier bags or sealed metal containers.
- Open munitions boxes carefully. Return all inner packaging material to the container, and close it to keep out the elements.
- Repack munitions that are opened and not used.
- Don't use familiarity or experience with munitions as an excuse for carelessness.
- Don't carry initiating devices in your pocket. Detonators, initiators, squibs, blasting caps, and other initiating devices must be carried in protective containers. The containers must prevent item-to-item contact. Also, mark the container to identify the contents.
- Don't drive nails into shipping or storage containers containing munitions.

- Don't allow waste materials or litter to accumulate in storage areas.
- Be familiar with the location of fire points, the fire plan, and the organization of firefighting crews.
- Ammunition should only be opened when required.

PALLETIZED MUNITIONS HAZARDS

1-29. Before moving palletized/containerized munitions, pallets and containers must be visually inspected for broken banding or for damage to containers and/or pallets. Repair or replace damaged items. Use USAMC unitization drawings to palletize properly. Select the appropriate drawing using AMC DWG 19-48-75-5. At minimum, handlers will wear proper protective gloves, safety shoes, and eye protection. Repalletization and replacement of defective banding is authorized inside the storage magazine, however if there is not enough space to work safely, the operation is permitted on the adjacent apron. Note: Except for the preservation and packaging of small arms ammunition, containers of explosives and ammunition will not be opened or repaired in any ASA magazine containing explosives or ammunition. See DA Pam 385-64 for required separation distances based on storage magazine types.

1-30. Banding is extremely sharp and may cause injuries. Such injuries are among the most frequent to occur during palletizing operations. Use of PPE is required to minimize the risk to personnel.

LIGHTNING HAZARDS

1-31. The fundamental principle for protecting life and property against lightning is to allow a lightning discharge to enter or leave the earth without resulting damage or loss. Protection from lightning is another essential part of protecting soldiers, munitions, and equipment involved in storage operations. For more on protection systems, grounding, bonding, surge protection, testing, and warning systems, see DA Pam 385-64. Ammunition will be stored in areas that offer lighting protection if at all possible to minimize or mitigate these risks. Field storage planning should consider the use of lightening protection & equipment requirements.

STATIC ELECTRICITY HAZARDS

1-32. The generation of static electricity is not in itself a hazard. The hazard arises when the static is allowed to accumulate and discharges a spark in the presence of combustible material, thus providing a source of ignition. This hazard can include sparks discharged from a person. Areas containing combustible dusts, flammable gases or vapors, or ignitable fibers are especially vulnerable to static electricity. Exposed explosives (e.g., primers, initiators, detonators, igniters, tracers, incendiary mixtures, and pyrotechnics) are also sensitive to static electricity. See DA Pam 385-64 for procedures to mitigate static electricity hazards.

HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO)

1-33. The situations in which transmitting equipment (for example, radios, radar, electronic countermeasures, electronic counter-countermeasures, ground penetrating radar) or other electromagnetic emitting devices can generate radiation of sufficient magnitude to exceed specified safety and/or reliability margins in electrically initiated devices (EIDs) contained within the ordnance, or cause radiation-induced damage or degradation of performance in ordnance containing EIDs.

TRANSPORTATION HAZARDS

1-34. Transportation hazards are extremely varied. The commander of any unit transporting ammunition is responsible for the coordinating safe transit. Safety precautions for night operations must receive special emphasis. Several publications dictate procedures for transporting hazardous materials. These include DTR 4500.9-R, 49 CFR, TM 38-250, and HN regulations.

Surface Transportation

1-35. Railcar inspections are a critical part of shipping by rail. Shippers ensure that railcars receive a valid inspection. DTR 4500.9-R, DA Pam 385-64, and 49 CFR cover safety inspection criteria, precautions, loading, blocking and bracing, certification of railcars, and spotting of loaded railcars.

1-36. Before loading ammunition on any motor vehicle it must be inspected to ensure it meets standards for movement of ammunition and explosives, MHE has been load tested, brakes have been set before loading and unloading, wheels are chocked, and munitions are properly prepared and packaged. DA Pam 385-64 covers safety requirements, inspection criteria, blocking and bracing, loading, placarding, and compatibility. FM 55-60 covers shipper and carrier responsibilities and placard requirements.

1-37. The USCG regulates transportation of explosives and/or ammunition by water under US jurisdiction and in water transport vessels engaged in commercial service.

Air Transportation

1-38. Aircraft movements of munitions require special procedures, packaging and different standards of compatibility than normal operations. Units will coordinate with Air Force Loadmasters, movement units and ammunition professionals before attempting to process or move ammunition by air (military or commercial).

EQUIPMENT HAZARDS

1-39. Tools and equipment may pose safety hazards during munitions operations. These hazards can be overcome through awareness training and using well-written SOPs.

Electrical Equipment

1-40. Many munitions are extremely sensitive to electricity. When using electrical equipment, soldiers must follow operating instructions exactly. Only approved electrical equipment will be used. To prevent electrical sparking, all electrical switches, sockets, plugs, and outlets must be of the standard explosion-proof type. Use of electrical equipment in facilities containing explosives must comply with DA Pam 385-64 and the latest edition of NFPA Standard 70.

Tools and Equipment

1-41. Hand tools are widely used by munitions soldiers. Only tools made from non-sparking materials (i.e., bronze, lead, beryllium, alloys, K-model, or polymers) may be used in a hazardous environment. Tools of lead or beryllium alloys that require sharpening or reshaping may be sharpened only if the area has adequate exhaust ventilation. Specialized materials, such as copper wool and nonflammable solvents, are often used with non-sparking tools. Only properly maintained tools will be used around hazardous concentrations of flammable dust, gases, vapors, or exposed explosives units should utilize their ammunition tool kit.

1-42. If it is necessary to use ferrous metal hand tools because of their strength, the immediate area should be free from exposed explosives and other highly combustible materials except in specific operations approved by the installation safety officer.

Material Handling Equipment

1-43. Material handling equipment (MHE) is of primary importance to munitions operations as it provides the means by which large and heavy packages of ammunition are moved quickly and efficiently. Various types of MHE include forklifts, towing tractors, cranes, pallet jacks, PLS trucks, and conveyors. The operation of MHE presents numerous hazards to munitions handlers and other personnel that might be in the area. Constant movement both forward and backward in relatively confined spaces, the frequent lifting of extremely heavy loads to over-head levels, fork extensions with wide arcs of movement, and limited visibility must all be considered during MHE operations. Commanders, operators, supervisors,

maintenance, and safety personnel are all responsible for ensuring a safe MHE operating environment. See DA Pam 385-64 for more information.

1-44. Some primary safety considerations when operating MHE are:

- Ensure all operators are properly trained and licensed on the MHE in operation.
- Ensure all scheduled maintenance is performed to include load testing.
- Inspect MHE prior to use IAW the appropriate technical manual and do not use faulty equipment.
- Ground guides are required unless the tactical situation prohibits their use.
- Do not exceed the rated capacity of the MHE.
- Follow proper lifting procedures.
- Reduce transportation distances whenever possible.

UNEXPLODED ORDNANCE (UXO) HAZARDS

1-45. Although not specifically an aspect of munitions handling, all soldiers must be able to recognize and react to UXO hazards. Reactions include avoiding the hazard if possible and marking and reporting it. Under no circumstances will soldiers approach, touch, or pick up UXO items. This rule is valid whether the items are identified as US or enemy.

1-46. Reporting UXOs on the battlefield requires timely and accurate information. It is the initial report by the soldier who found the UXO that supplies the information needed to task resources and prioritize the UXO response.

The UXO Spot Report format is:

- Line 1: Date/Time group discovered.
- Line 2: Reporting activity (UIC) and location (Grid).
- Line 3: Contact Method: Radio frequency and call sign or telephone number.
- Line 4: Type of munition (Dropped, placed, projected, or thrown).
- Line 5: CBRN contamination.
- Line 6: Resources threatened.
- Line 7: Impact on mission.
- Line 8: Protective measures taken.
- Line 9: Recommended priority (Immediate, indirect, minor, or no threat).

ACCIDENT AND INCIDENT CONTROL PLAN

1-47. Every unit that handles or stores munitions must develop plans for controlling accidents and incidents. These plans are part of the command accident/incident control plan, which includes procedures for the following:

- Reporting accidents or incidents.
- Getting assistance from supporting emergency forces.
- Supporting area military and civilian agencies.
- Establishing unit emergency technical escort teams.
- Radiation control.
- Munitions safety control.
- Disarmament.
- Munitions evacuation.
- Unit firefighting teams.
- Unit decontamination teams.

1-48. Training plans, including emergency exercises designed to maintain team efficiency and readiness, are part of the command accident/incident control plan. Such plans encourage personnel assigned to

emergency response teams to remain proficient in individual and team duties. Accidents or incidents involving munitions are reported and investigated IAW DA Pam 385-40.

REPORTING MUNITIONS MALFUNCTIONS

1-49. A munitions malfunction is the failure of an item to function as designed when fired, launched, employed, or subjected to functional tests. Malfunctions include abnormal or premature functioning of an item when properly handled, maintained, stored, transported, or deployed. Malfunctions don't include accidents or incidents resulting from negligence, vehicular system accidents, fires, and misuse.

1-50. A munitions malfunction may have been caused by operator error, equipment failure, environmental conditions, or defect in the munitions item. The following steps must be taken to determine the cause of the malfunction:

- User immediately secures the site, equipment, and munitions.
- Commander of the using unit reports all facts through command channels.
- Higher headquarters may assemble a team to investigate the incident.
- The operational command may suspend from use the munitions or equipment involved, based on METT-TC.
- Investigating team determines cause of the malfunction and provides disposition instructions for the items involved.
- The team provides reports required by higher headquarters IAW AR 75-1.

SECTION IV – EMERGENCY DESTRUCT (ED) OPERATIONS

ED OBJECTIVES

1-51. Emergency destruction of munitions is conducted to prevent enemy use and to prevent disclosure of information about classified munitions. The object of ED is to render munitions inoperable, destroy munitions and documents of value to the enemy, and render what is left too hazardous to use.

AUTHORIZATION TO DESTROY

1-52. The authority to destroy munitions must be established in command operating procedures. The applicable OPLAN or SOP must specify who in the chain of command is authorized to order the ED of ASA or ATHP stocks. The commander may delegate this authority to subordinate commanders when the situation demands. Also, the command may dictate when and how to conduct ASA or ATHP ED, including the types of items authorized for destruction and the destruction methods.

1-53. The decision to destroy, the method to be used, and the items to be destroyed all depend on factors involving command policy and the logistical and tactical situation. Some of the more important things to consider include:

TACTICAL SITUATION

1-54. The current tactical situation will greatly influence the decision for ED of munitions and the methods by which to accomplish ED. Time available is of primary consideration and will drive destruction priorities. If time allows, the decision to authorize ED must be made at a higher command level. However, the senior person at the ASA or ATHP may be required to authorize ED to prevent enemy capture and use.

AMOUNT OF AMMUNITION/TIME REQUIRED

1-55. The amount of demolition resources and the time required to destroy an ammunition stockpile are directly related to the amount of ammunition to be destroyed and its degree of dispersion. ED by burning

or demolition requires significant preparation time. Burning is faster because demolition requires setting up and priming explosive charges and setting up an initiation system.

1-56. A tradeoff may need to be made. With an artillery strike, the munitions may not all be destroyed. By burning or explosive demolition, the possibility of complete destruction of the ASA or ATHP is much greater.

MUNITIONS SECURITY CLASSIFICATION

1-57. Classified munitions must be evacuated if at all possible. If not possible, classified munitions will be the first to be destroyed. To ensure complete destruction, classified munitions are destroyed by the most reliable demolition method.

AVAILABLE MATERIEL AND TRAINED PERSONNEL

1-58. If the ASA or ATHP has no demolition or flammable material, destruction methods are limited. Also, demolition materiel may be more critical for offensive purposes than for ASA or ATHP ED. In this case, destruction must be carried out by burning or other available methods. Only personnel trained in ED operations and thoroughly familiar with the unit ED SOP should be permitted to conduct demolition operations.

PLANNING

1-59. Planning for ED must start immediately and must be accomplished at all levels of staff that are responsible for munitions storage and handling. ED should be included in the ASA operating SOP as an annex. To ensure the plan is complete and feasible, staff it through technically qualified personnel and division, corps, or theater staff elements (i.e., EOD, the safety office, G3, and G4).

1-60. ASA and ATHP personnel must be trained in ED methods and procedures. All personnel must be thoroughly familiar with the unit ED SOP and methods of destruction.

PRIORITIES

1-61. Priorities for ED are based on the tactical situation and the types of munitions stored at the ASA or ATHP. ED priorities must be established in OPLANs and SOPs. Priorities may change based on the logistical and tactical situation. Munitions vital to the defense of the unit will not be destroyed.

1-62. ED priorities are:

- Priority 1: Classified munitions, associated manuals, records, reports, test sets, and equipment.
- Priority 2: Munitions that can be used in immediate retaliation and deployed without a weapon system (grenades, mines, small rockets, and munitions for which the enemy has weapons system capability).
- Priority 3: Casualty producing munitions (high explosive and antipersonnel) not included in priorities 1 and 2.
- Priority 4: Non casualty producing and pyrotechnic munitions (signals, illuminating projectiles).

SAFETY

1-63. Observance of safety precautions is mandatory regardless of the ED method used or the urgency of the situation. Only trained, experienced personnel may conduct ED procedures. Safety requirements determine the number of personnel engaged in ED operations. Safety considerations include the amount and type of munitions being destroyed and the size of the ASA or ATHP. A minimum of two personnel must be present during all operations.

1-64. Tactical situation permitting, coordination with and warning of those units endangered by the ED operation must be accomplished to prevent casualties.

1-65. No matter which ED method is used, special care must be taken when destroying ICM, rockets, missiles, and ejection-type munitions. ICM and ejection-type munitions may expel their payload when detonated or burned. These sub munitions must be treated as UXO. Rockets and missiles will be pointed away from friendly troops since they could be set off by accident during the ED process and propelled in the directions they were pointed.

1-66. When using electrical or remote firing devices during ED operations, a minimum distance of 400 meters must be maintained from radio transmitters.

METHODS OF DESTRUCTION

1-67. Choose methods of destruction that cause such damage that the munitions will not be restorable to a usable condition within the combat zone by repair or by cannibalization. Destruction should be planned to impede enemy troop movements without creating hazards to friendly troops.

1-68. The actual method or methods used in a given tactical situation depend on time, personnel, type of munitions, and available means of ED. Methods of destruction include:

- Firing/fire support: expend all munitions on enemy positions if time allows or request a fire mission on the ASA location.
- Burning: Although less time consuming burning is not recommended for all types of munitions because it rarely accomplishes total destruction. To guarantee an extremely brisk fire, diesel fuel, gasoline, paint thinner, or other suitable combustible or flammable liquid should be used.
- Demolition: Properly executed demolition is extremely effective in destruction of munitions sores. ED teams must understand how and where to place demolition charges on different munitions to achieve complete destruction or to make the item unusable by the enemy. Quantity/ distance factors must be taken into consideration.

SUMMARY

1-69. All personnel involved in munitions support and handling need understand the environment in which they operate. This chapter provides an overview of Class V operations from a general standpoint to provide a basis for understanding the roles and responsibilities of munitions handling. Class V operations require an understanding of the organizations or units involved and the roles and missions of those units. Increased awareness of explosive safety needs to be considered in all aspects of Class V operations.

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Chapter 2
Munitions Supply Procedures

This chapter describes ammunition supply operations. These operations include receipt, turn-in, issue, shipment, and retrograde. The sections below will describe each of these operations in more detail and offer detailed procedure maps to assist in performing these operations.

SECTION I – RECEIPT

2-1. The term receipt refers to a shipment of ammunition received from an ASP, or a TSA, or directly from a port, depot, or manufacturing plant. Receipt must not be confused with unit turn-in. Ammunition receipt operations include completion of administrative details, inspection of vehicles, and unloading of ammunition at the designated storage location. Tactical situation permitting stocks received by an ammunition supply unit are recorded on stock records or other formal property records.

2-2. Once the unit receives a shipment notice, it selects storage locations and makes plans to unload and store the ammunition. During the planning stage, the unit must examine storage compatibility, Q-D requirements, and security factors. Also, it must consider any mission requirements for configuring stocks into MCLs. It may be necessary to re-warehouse or consolidate some stocks already in storage to make room for additional stocks and to facilitate vehicle off-loading at the planned storage location. Planning also includes assigning enough people and equipment to complete the operation safely and efficiently.

2-3. Receipts at TSAs are normally in large quantities. TSAs receive 100 percent of stocks directly from the POD. Receipts may arrive on trailers or PLS flatracks in palletized break-bulk configuration or in containers. It is also possible that some will arrive as configured loads. In a mature theater, representatives of ammunition units may be tasked to assist with the off-loading and distribution of stocks at the POD. In an immature theater, an LSE or AST coordinates off-loading and distribution of stocks to storage areas. Receiving organization should utilize AIT/RFID to maximum extent possible.

RECEIPT GUIDELINES

2-4. Attention to the following guidelines makes the receipt of ammunition safer and easier to control:

- Be aware that a single shipment may contain mixed DODICs, NSNs, and lot numbers. Conduct a detailed inventory during or after the unloading process.
- Inspect ammunition thoroughly for damage and safety hazards.
- Consider the amount of labor, MHE, and time required for off-loading.

RECEIPT DOCUMENTATION

2-5. The forms listed below are generally required when receiving ammunition.

- DA Form 3020-R (Magazine Data Card). Prepared for each lot and stack of ammunition stored during receiving operations.
- DA Form 3151-R (Ammunition Stores Slip). Used to record storage locations of all items in the shipment.
- DD Form 626 (Motor Vehicle Inspection (Transporting Hazardous Materials)). Used by storage facility personnel to inspect arriving vehicles before unloading. Prepared IAW 49 CFR and DOD Regulation 4500.9-R.

- DD Form 1348-1A (Issue Release/Receipt Document). Prepared by the shipper, is an accountable document used to complete the shipment. Contains detailed information about the shipment.
- DD Form 1384 (Transportation Control and Movement Document). Prepared by shipper, provides vital data concerning the shipment. Stays with ammunition during shipment.

ASA AND ATHP RECEIPT PROCEDURES

2-6. Table 2-1 is a general guide for planning and conducting receiving operations at the ASA based upon a receipt of notification from the DMC. These procedures should be followed as closely as possible within the constraints of the current tactical situation. It can also be used for writing SOPs for ammunition receipts.

Table 2-1. Receipt procedures

No.	*Activity and Responsibilities*	*Document*
1	Initiate Shipment (MCC)	DD Form 1348-1A
2	Provide Advanced Notice to Receiver (shipper)	DD Form 1348-1A
3	Conduct Advanced Planning for Receipt (ASA office)	
4	Ship Ammunition (shipper)	DD Form 1348-1A, DD Form 1348-1A
5	Arrive at ASA (convoy commander)	
6	Inspect Vehicles Prior to Entry (inspector)	DD Form 626
7	Correct Deficiencies—if Noted (convoy commander)	DD Form 626
8	Park Loaded Vehicles in Holding Area (convoy commander)	
9	Present Documentation to ASA Office (convoy commander)	DD Form 1348-1A, DD Form 1348-1A
10	Review Documentation (ASA office)	DD Form 1348-1A, DD Form 1348-1A
11	Select Storage Locations (ASA office)	PLANOGRAPH
12	Prepare Stores Slip for Each Vehicle (ASA office)	DA Form 3151-R
13	Prepare Magazine Data Card for Each Lot/Location (checker)	DA Form 3020-R
14	Assign Checkers, Unloading Crews, MHE (ASA office)	
15	Give Stores Slips and Magazine Data Cards to Checkers (ASA office)	
16	Escort Vehicles to Storage Locations (convoy commander, checker)	
17	Verify Type, Lot, Condition, Quantity Received (convoy commander, inspector, checker)	DA Form 3151-R
18	Sign Stores Slip (convoy commander, checker)	DA Form 3151-R
19	Annotate Magazine Data Card (checker)	
20	Conduct Receipt Inspection (inspector)	
21	Drive Empty Vehicles to Assembly Area (convoy commander)	

Table 2-1. Receipt procedures

No.	*Activity and Responsibilities*	*Document*
22	Return Stores Slip to ASA Office (checker)	DA Form 3151-R
23	Verify Stores Slips for Accuracy and Completeness (ASA office)	DA Form 3151-R
24	Total Stores Slips by Lot and Location (ASA office)	DA Form 3151-R
25	Review Suspension File for Lots Received (ASA office, inspector)	
26	Cross Check Stores Slip with Receipt Documents (ASA office)	DA Form 3151-R, DD Form 1348-1A, DD Form 1348-1A

SECTION II – STORAGE

2-7. The stock control section initiates the storage process when it reviews receipt documentation, selects storage locations, and prepares a DA Form 3151-R. Checkers and other personnel and equipment are assigned to off-load the vehicles. Checkers escort vehicles or groups of vehicles to the storage locations where type, lot, condition, and quantity of load are verified and inspections are conducted. As ammunition is stored, the checker/storage personnel will either prepare a DA Form 3020-R for each lot number by condition code and location or update the existing form.

2-8. After each motor vehicle is off loaded, it is driven to the vehicle assembly area and returned to the stock control of the convoy commander. The checker returns the DA Form 3151-R to the stock control section where it is reviewed for accuracy and completeness. The total quantity of each item as shown on the DA Form 3151-R is cross-checked against the total quantity shown on the shipping/receipt document. The accountable officer signs the shipping/receipt document, and directs the stock control personnel to post accountable stock records. A signed copy of this document is given to the convoy commander or supervisor. All transaction documents are filed for use as backup for posting accountable records.

2-9. If a discrepancy is noted between the two transaction documents, a recount is made. The actual quantity verified as received by the control section is entered on the shipping/receipt document. Discrepancies in quantity or condition of ammunition are reported to the shipper using an SF 364, Report of Discrepancy.

2-10. Depending on the storage facility, some modification of the process may be necessary. However, any modification will be based on maintaining flexibility, simplicity, and adequate control during receipt operations. See Chapter 7 for more information on the storage process.

SECTION III – ISSUE

2-11. The term, issue, refers to the transfer of ammunition stocks from a munitions storage facility to an authorized user, but not to another storage facility. Issues should not be confused with shipments. Units use the supply point distribution method to issue ammunition to using units. Responsible activity managers must support mission requirements. However, they must do so IAW guidance provided by higher headquarters relative to munitions support of using units in the AO. This process must be established as early as possible and understood by ammunition support units and using units. The OPORD logistical support annex and SOPs are developed to define issue operations and procedures.

2-12. Issues are based on S3 and/or G3 identified munitions requirements and are processed from the using unit's battalion S4 up to the brigade S4. The brigade S4 consolidates munitions requests and forwards them to the BAO. The BAO coordinates with the ASA or ATHP to meet unit ammunition requirements. Also, the brigade S4 and the BAO monitor the CSR, critical item shortages, and unit priority for munitions

resupply. The DMC supports these requirements by sending a materiel release order to the appropriate ammunition storage or support activity.

ISSUE GUIDELINES

2-13. The following guidelines will assist ammunition units in providing efficient support:

- Ammunition units advise using units about limitations on the use of restricted munitions and munitions suspended from issue and use except for emergency combat. Depending on the type of operation, some munitions may not be authorized for issue, even if they are available at the storage facility. Ammunition units must ensure that any policy regarding such specific items is clearly understood. The supporting DMC is a good source of information.
- Never issue munitions classified as “suspended from issue and use.”
- Closely monitor issues of miscellaneous small lots of artillery munitions so that using units do not constantly have to adjust registration.

2-14. Munitions must be issued as follows:

- Priority 1. Smallest lots of munitions issued first.
- Priority 2. Munitions designated as "priority issue."
- Priority 3. Acceptable substitutes from excess stocks. Coordinate approval of substitution with requesting officer.
- Priority 4. Oldest munitions of type being issued.
- Priority 5. All other stocks.

ISSUE DOCUMENTATION

2-15. The forms listed below are needed to issue munitions.

- DA Form 581 (Request For Issue and Turn-in of Ammunition). Prepared by the requesting unit and presented to the storage facility for issue.
- DA Form 1687 (Notice of Delegation of Authority–Receipt for Supplies). Properly completed form presented to storage facility by using unit. Used to ensure that DA Form 581s have the proper signatures.
- DA Form 3020-R. Prepared by storage facility for all munitions in storage. Checkers post transactions affecting the on-hand balance to the existing DA Form 3020-R and ensure that forms are accurately completed.
- DA Form 3151-R. Prepared by storage facility as a temporary receipt or storage document. Directs the relocation of specific items to specific storage locations. Used to track movement of munitions within the storage facility.
- DD Form 626. Used by storage facility to inspect vehicles for hazardous conditions before they enter storage area.
- DD Form 836 (Dangerous Goods Shipping Paper/Declaration and Emergency Response Information for Hazardous Materials Transported by Government Vehicles). Prepared by storage facility for each driver of a vehicle that leaves the facility loaded with munitions. Drivers must keep this form in their possession at all times while transporting munitions.
- Units should refer to DA Pam 710-2-1 and AR 5-13 for procedures outlining TAMIS E581s.

ISSUE PROCEDURES

2-16. As stated above, the DA Form 1687 is used to ensure that DA Form 581 has the proper signatures. In a brigade, the BAO or designated representative authenticates the DA Form 581 or facsimile-formatted document before the requesting unit arrives at the storage facility. In corps artillery, the S4 officer may be designated to authenticate the request. Authentication gives tactical commanders control of ammunition issues. With proper controls, ammunition managers at all levels can comply with sudden changes in priorities and allocations of munitions assets.

2-17. The ASA, in coordination with the BAO or other command representative and the DMC, must then determine whether stocks are sufficient to support the requirement. All responsible parties will verify the issue. The ammunition unit SOP must contain guidelines to cover such situations.

2-18. Each storage facility maintains a list of the units it supports. While a basic list should be available from the supporting DMC or BAO, operational considerations may cause the list to evolve constantly. The storage facility must coordinate closely with the DMC to maintain mission continuity and to identify theater-specific policies that differ from the policies used by ammunition units in ordinary circumstances.

2-19. Table 2-2 is a guide for planning and conducting issuing operations at the ASA based upon a receipt of notification from the DMC. These procedures should be followed as closely as possible within the constraints of the current tactical situation. It can also be used for writing SOPs for ammunition receipts.

Table 2-2. Issue procedures

No.	*Activity and Responsibilities*	*Document*
1	Prepare Request (using unit)	DA Form 581
2	Authenticate Request (DAO)	DA Form 581
3	Travel to ASA—Park in Vehicle Holding Area (convoy commander)	
4	Present Request to ASA Office (using unit)	DA Form 581
5	Review Request for Accuracy, Completeness, and Proper Authentication (ASA office)	DA Form 1687
6	Inspect Empty Vehicles (inspector)	DD Form 626
7	Select Lots and Storage Locations (ASA office)	DA Form 5203 (DODIC Master/Lot Locater Record)
8	Prepare Issue Stores Slip (ASA office)	DA Form 3151-R
9	Review Suspension File with Lot Selected (inspector)	DA Form 3151-R
10	Review DSR Cards for Inspection/Condition (inspector)	DA Form 3022-R
11	Verify Condition of Lots Selected for Issue (inspector)	DA Form 3151-R
12	Assign Checkers, Loading Crews, MHE (ASA office)	
13	Distribute Stores Slip (ASA office)	DA Form 3151-R
	a. Original to Checker (checker)	DA Form 3151-R
	b. Copy with Suspense Request (ASA office)	DA Form 3151-R
14	Escort Vehicles to Store Locations (using unit, company commander, checker)	
15	Load, Block, Brace, and Inventory Vehicle (using unit, company commander, checker)	DA Form 3151-R
16	Sign Stores Slip Jointly (using unit, checker)	DA Form 3151-R
17	Fill Out Magazine Data Card (checker)	DA Form 3022-R
18	Drive Loaded Vehicles to Assembly Area (company commander)	
19	Inspect Loaded Vehicles (inspector)	DD Form 626,

Table 2-2. Issue procedures

No.	*Activity and Responsibilities*	*Document*
		DD Form 836
20	Return Stores Slip to ASA Office (checker)	DA Form 3151-R
21	Verify Original Stores Slip with Suspense Copy (ASA office)	DA Form 3151-R
22	Total All Stores Slips (ASA office)	DA Form 3151-R
23	Enter Total Quantity Issued (ASA office)	DA Form 581
24	Get Receipt Signature (ASA office)	DA Form 581
25	Distribute Documentation (ASA office)	DA Form 581,
		DA Form 3151-R
26	Return to Unit (DD 626 convoy commander and using unit)	DA Form 581,
		DD Form 626,
		DD Form 836
27	Post Receipts (using unit, DAO, convoy commander, ASA office, inspector)	SAAS
28	Report Issue on Transaction Report (ASA office)	SAAS
29	Process Transaction and Initiate Any Necessary Resupply (MMC)	

SECTION IV – TURN-IN

2-20. The term turn-in refers to a unit returning unexpended ammunition and salvage items to a storage facility by the using unit. Turn-ins must not be confused with receipts. During combat/ FSO, the quantity of turn-ins is difficult to predict and depends on mission requirements, redeployment schedules, and a variety of other factors. Turn-ins may include unserviceable items, unused ammunition, and captured enemy ammunition. Regardless of the quantity or rate, all items must be thoroughly inspected and reported to the control section. For safety and economy, commands must encourage units to return munitions in original packaging. Ammunition support units must develop an SOP that outlines operations and procedures for returning ammunition and residue. See AR 710-2 and DA Pam 710-2-1 for more information.

2-21. Using units may be required to turn in salvage and residue materiel, including expended cartridge cases, containers, wooden boxes, and metal cans. To ensure that explosive items are not mixed in, all such materiel must be thoroughly inspected. Salvage materiel is stored in the inert salvage area. It is inventoried, recorded, and reported to the appropriate Class V Section of the Support Operations Section in the Sustainment Brigade for disposition instructions. The accountable officer must ensure that required documents are maintained.

TURN-IN GUIDELINES

2-22. For safer and easier control of the munitions turn-in process, the following guidelines must be observed:

- Encourage units to return munitions in original packaging.
- Discourage units from opening more rounds and packages than they need for their operations.

- Inspect all turn-ins thoroughly to identify unserviceable and hazardous munitions and mixed lots.
- Inspect all salvage and residue items thoroughly to ensure that they do not contain any explosive or hazardous materials.

2-23. The above points must be emphasized throughout the logistic and combat chains. Emphasis is more stringent in stability operations where using units must exercise greater control. Also, the potential exists for operations to be concluded without expenditure of munitions. Greater control makes the retrograde/redeployment process smoother and more economical. Munitions managers at the unit, brigade, division, corps, and DMC levels must be consistent in the guidance they provide.

TURN-IN DOCUMENTATION

2-24. The forms listed below are used for processing turn-ins.

- DA Form 581. Prepared by using unit for turn-in of munitions and munitions-related items. Presented to storage facility at arrival.
- DA Form 581-1 (Request for Issue and Turn-in of Ammunition (Continuation Sheet). Used by unit when number of DODICs requested is more than can fit on the DA Form 581.
- DA Form 3020-R. Prepared by storage facility for each lot and stack of munitions turned in. Checkers post transactions to existing form and ensure it is completed accurately.
- DA Form 3151-R. Prepared by storage facility as temporary receipt or storage document. Directs relocation of specific items to specific storage locations. Used to track the movement of munitions within the storage facility.
- DD Form 626. Used by storage facility to inspect vehicles for hazardous conditions before they enter the storage area.

TURN-IN PROCEDURES

2-25. Table 2-3 helps in planning for and efficiently conducting turn-ins by using units. These procedures should be followed as closely as possible within the constraints of the current tactical situation. Also, it may be helpful for writing SOPs.

Table 2-3. Turn-in procedures

No.	*Activity and Responsibilities*	*Document*
1	Prepare Turn-In Request (using unit)	DA Form 581
2	Approve Turn-In (DAO)	DA Form 581
3	Transport Ammunition to ASA (using unit, convoy commander)	DA Form 581
4	Arrive at ASA (using unit, convoy commander)	
5	Inspect Vehicles Prior to Entry (inspector)	DD Form 626
6	Park Loaded Vehicles Prior to Entry (convoy commander)	
7	Present Turn-in Documentation to ASA Office(using unit)	DA Form 581
8	Review Documentation (ASA office)	DA Form 581
9	Coordinate Checkers, MHE, and Inspectors (ASA office)	
10	Escort Vehicles to Segregation Area (using unit, convoy commander, checker)	
11	Unload, Segregate by DODIC and Lot (using unit, convoy commander, checker)	
12	Prepare Temporary Receipt (checker)	DA Form 3151-R
13	Drive Empty Vehicles to Assembly Area (convoy commander)	

Table 2-3. Turn-in procedures

No.	*Activity and Responsibilities*	*Document*
14	Return Temporary Receipt to ASA Office (checker)	DA Form 3151-R
15	Total All Stores Slips (ASA office)	DA Form 3151-R
16	Fill In Turn-In Document with Quantity (ASA office)	DA Form 581
17	Receipt Signature (using unit, ASA office)	DA Form 581
18	Return to Unit (using unit, convoy commander)	DA Form 581
19	Conduct Detailed Inspection of Items Received (inspector)	
20	Assign Condition Codes (inspector)	
21	Review Suspension File for Lots Received (inspector)	
22	Notify ASA Office of Inspection Results (inspector)	DA Form 3151-R
23	Select Storage Locations (ASA office)	
24	Prepare Stores Slips and Magazine Data Cards (ASA office)	DA Form 3151-R
25	Assign, Checkers, MHE, and Crews (ASA office)	
26	Relocate Turn-Ins to Storage Locations (checker)	DA Form 3151-R
27	Fill Out Stores Slips, Magazine Data Card (checker)	DA Form 3151-R, DA Form 3020-R
28	Return Stores Slips to ASA Office (checker)	DA Form 3151-R
29	Verify Stores Slips for Accuracy (ASA office)	DA Form 3151-R
30	Post Lot Locator Records(ASA office)	SAAS
31	Report Unserviceable Munitions to the MMC (ASA Office)	DA Form 2415
32	Report Turn-in on Daily Transaction Report (ASA office)	
33	Record and File Documentation (using unit, ASA office, inspector, inventory control)	All

2-26. Depending on the storage facility, some modification of this process may be necessary. Salvage and munitions turn-ins are handled in much the same way with the following exceptions:

- Salvage materiel must be inspected for hazardous materials and certified that none are present.
- Salvage materiel is stored in an area separate from munitions.
- Salvage turn-ins must also be accounted for on stock records.
- Small arms residue is not individually counted; its weight is converted to rounds using brass conversion factors (see Appendix B).

2-27. Salvage and recoverable items are listed in DA Pam 710-2-1, Appendix J. Within the theater, the DMC may direct the recovery of additional salvage materiel.

SECTION V – SHIPMENT

2-28. The term, shipment, indicates the movement and transfer of ammunition stocks from one storage facility to another: either into, within, or out of the theater. It includes movement to an ATHP using transportation assets not organic to ammunition units. Also, it includes retrograde of serviceable and unserviceable munitions and CEA to the theater rear or out of the theater. Normally, theater, corps, or HN transportation assets are used for transportation. Shipments are not to be confused with issues.

2-29. In routine operations, ammunition shipments between storage facilities are directed by MRO only from the supporting theater or corps DMC. These shipments are made up from operating stocks arriving in the theater or from those stored in the TSAs. Shipments out of the theater to support other contingencies may also be made when directed.

2-30. In most situations, shipments in the combat/SASO zone are limited to highway transport. The Movement Control Battalion (MCB) schedules transportation according to theater or corps priorities. Rail and water facilities may be used when available and if feasible. Aircraft are used only when absolutely necessary, usually for emergency resupply or special operations.

2-31. Munitions shipments to TSAs are mostly containerized or palletized in break-bulk and uploaded on trailers or PLS flatracks. In most cases, only containerized munitions arrive at the TSA where they are unstuffed, configured into MCLs, and shipped forward to ASPs. If the mission requires, and if transportation is available, munitions are throughput as close to the using units as possible.

2-32. ATHP shipments from the ASP are either in MCLs, break-bulk, or single DODIC loads. See ATTP 4-35 for more information on munitions flow in the theater of operations.

SHIPMENT GUIDELINES

2-33. The supply facility begins planning the mechanics of the specific shipment upon receipt of an MRO, shipping instructions, or other shipment authority. The thoroughness of advance planning largely determines the efficiency of any shipping operation. Plans vary depending on the tactical situation, operational environment (i.e., METT-TC), type of shipment, and existing workload. Most accidents involving Class V items occur during transportation, movement, and handling. A detailed, step-by-step SOP will make shipment activities safer and more effective. The following actions must be considered when planning a shipment:

- Verify availability of ammunition for shipment against on-hand assets.
- Select adequate loading points for the operation.
- Verify the condition code and any restrictions or suspension of the ammunition planned for shipment.
- Determine total gross weight, cube, and security risk classification of the ammunition.
- Determine ammunition compatibility for transportation IAW applicable motor vehicle/rail compatibility tables.
- Coordinate with supporting DMC to ensure advance notice of munitions shipments.
- Determine personnel necessary to complete the mission.
- Determine MHE required.
- Determine safety equipment, tools, packaging, and blocking and bracing materials required.
- Establish timeline for entire operation.
- Determine vehicle load plans and placarding requirements prior to start of operation.
- Ensure security of munitions throughout entire operation.

2-34. The responsible Movement Control Battalion (MCB) maintains liaison with local transportation agencies and designates a Movement Control Team (MCT) to be the single point of contact for each shipping or receiving activity. The MCT is the link between the shipping activity and the transportation service organization. It receives transportation service requirements from the MCB and processes the requests. The MCT coordinates the activities of transportation operators and expedites movements of incoming and outgoing carriers.

2-35. The ammunition unit must coordinate with the MCT to ensure efficient transportation and ammunition service support. The unit must provide timely, accurate data on pending shipments. This way, the MCT can supply advance information on the mode of transportation, the time of arrival, and the positioning (spotting) of carriers.

2-36. The MCT notifies the receiving activity of the departure time, estimated time of arrival, transportation mode and number of transportation units involved, and other information needed to plan for receipt. Supporting transportation agencies should provide an SOP based on the policies and directives of the higher headquarters.

SHIPPING

2-37. Ammunition shipments within a theater of operations must comply with theater and DA directives, safety regulations, and HN requirements (METT-TC-dependent). These directives may or may not be compatible with those used in CONUS. See DOD 4500.9-R for more information on shipments of ammunition. ARs 710-2 and 735-5 contain information on using required transportation documents.

TRANSPORT INSPECTION

2-38. Military 89B30/40 QA/QC ammunition inspectors, QASAS, or other qualified personnel will inspect vehicles as discussed in the Receipts section of this chapter.

TERMINAL TRANSFER POINTS

2-39. A terminal transfer point is a point on the route between the origin of supplies and the destination where supplies are transferred from one means of transport to another (e.g., transfer of Class V supplies from railcar to cargo truck or from cargo truck to aircraft). A transfer point can also be part of a distribution hub or a centralized receiving and shipping point (CRSP). However, when Class V items are involved, transportation personnel may require technical advice and assistance from ammunition unit personnel. A transfer point should not be confused with ATHPs.

RAIL SHIPMENTS

2-40. Railhead operations, US/WHNS, may be part of ammunition supply operations. A railhead is a transfer point where ammunition is moved from truck to railcar, or vice versa. Specific guidance for shipping by rail— including safety precautions, loading, blocking and bracing, positioning (spotting) of loaded cars, certifying cars, and inspecting loads—are found in DA Pam 385-64; CFR, Title 49; and if available, AMC drawings. Inspection standards during combat operations/ FSO are based on theater policy, METT-TC, and criticality of mission.

WATERCRAFT SHIPMENTS

2-41. While ammunition supply units may be required to provide technical assistance, SDDC and transportation units are responsible for loading and off-loading waterborne vessels in the theater of operations. See DA Pam 385¬64 and CFR, Title 49 for more information. Also, USCG regulations govern the classification, compatibility, and stowage of ammunition aboard all waterborne vessels in waters under US jurisdiction. The Coast Guard is usually responsible for the security and supervision of waterborne vessels, including barges.

MOTOR VEHICLE SHIPMENTS

2-42. All ammunition supply facilities use motor vehicle procedures for shipping operations. DD Form 1384 or a facsimile formatted document may be used to request transportation for a shipment. Requirements may be coordinated via computer, telephone, or radio links. See DA Pam 385-64 for motor vehicle shipment regulations, precautions and safe handling procedures, inspection criteria, and technical escort procedures. Shipper and carrier responsibilities are contained in DOD 4500.9-R and theater-specific transportation regulations.

AIR SHIPMENTS

2-43. Air shipments of ammunition may be made at USA and USAF airfields, at heliports, and at ammunition sling-load areas. The Air Force controls air terminal operations at USAF airfields. Munitions shipments into and out of USAF facilities require careful coordination to prevent disruption of service. Airfields must have staging areas where documents may be prepared and bulk shipments can be received and prepared for shipment.

2-44. Air shipments are preplanned for each aircraft by weight, cube, and compatibility. When possible, the arrival of loaded vehicles will coincide with aircraft availability. Normally, Army/Air Force personnel escort vehicles to the aircraft. The aircraft commander, loadmaster, or crew chief is responsible for supervising the stacking and lashing of the cargo.

2-45. The Class V storage facility is usually responsible for sling-load areas. Loaded cargo nets must be placed in the landing area so that helicopters can hover to pick them up. Cargo nets may be loaded at the airfield or at the ammunition supply facility and transported to the airfield.

2-46. A Hazardous Materials Declaration, or facsimile-formatted document, must be attached to each pallet of ammunition to be shipped by military or commercial aircraft. This document certifies that the shipment complies with the provisions of TM 38-250 or 49 CFR. An individual who has successfully completed the Special Handling Data/Certification Course must sign all copies of the form. For information on aircraft specifications, operating regulations, loading and unloading procedures, and special handling certification, see AR 95-27, DA Pam 385-64, TM 38-250, and 49 CFR.

SHIPMENT DOCUMENTATION

2-47. The forms listed below are needed to ship ammunition.

- DD Form 1384. Prime transportation information document prepared for each shipment by the supply activity making the shipment; carries transportation data throughout the movement cycle. Basis for advance planning; speeds movement of cargo at terminals and other transshipment and transfer points. Provides information needed to trace, locate, and divert shipments. During combat/ FSO, a facsimile-formatted document prepared manually, by computer, or in message format may be used.
- DD Form 626. Used by storage facility to inspect vehicles for hazardous conditions before entering the storage area and, once loaded, before leaving the storage facility.
- DD Form 836. Prepared by storage facility for each driver of a vehicle that leaves the facility loaded with munitions. Drivers must keep the form in their possession at all times while transporting munitions.
- DD Form 1348-1A. Accountable document prepared by the shipper for each NSN/TCN combination. Includes ammunition management data required to process the transaction in SAAS. Also serves as MRO, confirmation or denial, and advance notice of shipment.
- DA Form 3151-R. Used to record storage locations of all items in the shipment. Tracks the movement of munitions within the storage facility.
- Placards and labels. Ensure that appropriate placards and labels are properly affixed to vehicles before loading.

SHIPMENT PROCEDURES

2-48. Table 2-4 below may assist in planning and conducting shipping operations and in writing SOPs. This chart can be modified to meet tactical requirements and conditions.

Table 2-4. Shipping procedures

No.	*Activity*	*Document*
1	Decide to Ship (MMC)	
2	Initiate Materiel Release Order (MRO) (MMC)	DD Form 1348-1A
3	Receive MRO (ASA office)	DD Form 1348-1A
4	Verify Quantity on Hand, Condition (ASA office)	
5	Select Lots, Storage Locations, and Quantity by Lot Suspension Status (ASA office)	
6	Request Transportation with TCMD (ASA office)	DD Form 1384
7	Plan Movement, Nominate Carrier (transportation office)	DD Form 1384

8	Prepare Stores Slips and MILSTRIP Documents (ASA office)	DD Form 1348-1A, DA Form 3151-R
9	Review Lots on Suspension File (inspector)	DA Form 3151-R
10	Review ASA Surveillance Record for Inspection Results (inspector)	DA Form 3022-R
11	Perform Pre-issue Inspection, if Required (inspector)	
12	Verify Condition of Lots Selected (inspector)	DA Form 3151-R
13	Return Stores Slip to ASA Office (inspector)	DA Form 3151-R
14	Direct Any Required Preservation and Packaging (ASA office)	
15	Alert Loading Crew, Checkers, Inspectors, MHE Operators (ASA office)	
16	Direct Convoy to ASA (transportation office)	DD Form 1384
17	Arrive at ASA—Park in Vehicle Holding Area (convoy commander)	DD Form 1384
18	Present TCMD to ASA Office (convoy commander)	DD Form 1384
19	Inspect Empty Vehicles (inspector)	DD Form 626
20	Complete Preparation of Stores Slips (ASA office)	DA Form 3151-R

SUMMARY

2-49. Ammunition supply operations such as receipt, issue, turn-in, shipment, and retrograde are likely to be requested to support all operations. The theater sustainment command is a key organizational element in the shipment and retrograde process in terms of authorizing movement of munitions and packaging material. The MCB and its MCTs play a critical role in the transportation process.

Chapter 3

Automated Information and Mission Command Systems

The tactical component of the Single Army Logistics Enterprise (SALE) is Global Combat Support System – Army (GCSS-Army). GCSS-Army allows staffs and commanders to support military operations by providing essential operational capabilities that include materiel management, maintenance management, property accountability operations, and information from non-logistics automated systems. GCSS-Army establishes a web-based capability so that users can gain access to information and exchange operational data in personnel, legal, religious, medical, finance, transportation, training, unit administration, and other sustainment functional areas. It will integrate enterprise information and provide all echelons access to critical sustainment information

SECTION I – AUTOMATED INFORMATION SYSTEMS

STANDARD ARMY MANAGEMENT INFORMATION SYSTEMS

3-1. Standard Army Management Information Systems (STAMIS) provide modern automated logistics support for the functions of maintenance, supply (inventory and materiel management), property accountability, ammunition, and readiness management. Through the use of new wireless data communications and portable satellite terminals, the STAMIS can communicate supply and maintenance transactions faster and over a greater distance to other STAMIS and to national providers. In addition, the introduction of Automatic Identification Technology (AIT) has brought increased asset visibility and source data automation capability that results in more accurate data input and faster response times from the tactical STAMIS.

3-2. The Property Book Unit Supply Enhanced (PBUSE) is a web-based property accountability system that replaced the Standard Property Book System-Redesign (SPBS-R) and Unit Level Logistics Systems-S4 (ULLS-S4). The system performs the functions of property accountability and unit supply required by Army Regulations 710-2 and 735-5 and DA Pamphlet 710-2-1. In tactical organizations PBUSE capabilities include management of combat loads and sustainment loads, requests, receipts, and ammunition turn-in. It is also used for maintaining supported unit information, asset adjustments and lateral transfers, updating property book authorizations, and the production and management of unit hand receipts. It will generate and submit requests for classes II, IV and VII equipment, follow-up and cancel supply transactions, post supply status and receipt information to the activity register.

3-3. Unit Level Logistics System- Aviation (Enhanced) (ULLS-A (E) permits aviation maintenance personnel to manage field level maintenance, class IX supply, aircraft historical records and readiness reporting functions found in DA PAM 738-751, The Army Maintenance Management System-Aviation (TAMMS-A). The ULLS-A (E) system provides an enhanced aviation maintenance management capability through the automated tracking of work performed on aviation systems and sub-systems. The system also provides decision support, ad hoc query tools and an automated Phase Maintenance process. It serves as an enhancement to supply chain management capabilities and maintenance through the automation of TAMMS-A forms. ULLS-A(E) provides aviation unit personnel the capability to track the installation and projected expiration of Cartridge Actuated Devices/Propellant Actuated Devices (CADS/PADS) through standard TAMMS-A electronic possesses.

MUNITIONS HISTORY PROGRAM

3-4. Munitions History Program is a web-based information system used to track the conditions and limitations of all munitions used by the Army worldwide. The Munitions History Program can be accessed by the use of the CAC at https://mhp.redstone.army.mil. The application is used by QASAS, Ammunition Managers, Ammunition Warrant Officers, Ammunition Specialist, Engineers, and contractors to record munitions inspection results in a centralized database. The MHP application also provides all munitions handler's access to essential munitions serviceability information, to include, Ammunition Information Notices (AIN), Missile Information Notices (MIN), and Notice of Ammunition Reclassification (NAR). MHP includes a repository for Explosive Safety information, Ammunition Data Cards, Storage and Out loading Drawings, Packaging Information, and other related ammunition information. The Ammunition Multimedia Encyclopedia provides detailed munitions information on hundreds of current munitions in the inventory.

WORLDWIDE AMMUNITION REPORTING SYSTEM NEW TECHNOLOGY (WARS-NT)

3-5. WARS-NT provides Class V Conventional and Missile Asset Visibility at the wholesale, retail and intransit levels, is the Army Unique Item Tracking (UIT) Category I Missile Registry, receives worldwide input from Property Book Unit Supply Enhanced (PBUSE), Standard Army Ammunition System Modernized (ASP) (SAAS-MOD), Logistics Modernization Program (LMP), Munitions Transportation Management System (MTMS) and multiple individual systems from multiple contractors and wholesale Army ammunition plants. WARS provides data to the Army, Navy, Air Force and Marine Corp and feeds data to National Level Ammunition Capability (NLAC) / Joint Total Asset Visibility (JTAV), Army Total Asset Visibility, Centralized Ammunition Management (CAM), Munitions Readiness Review (MRR), and numerous other systems.

TOTAL AMMUNITION MANAGEMENT INFORMATION SYSTEM (TAMIS)

3-6. TAMIS is the munitions requirements generator, prioritization tool and reporting application for DA and subordinate organizations. Army organizations use TAMIS to build, prioritize and sub-authorize (distribute) munitions authorizations IAW AR 350-38 (Standards In Weapons Training) and to build requirements for combat and sustainment loads. All levels of the Army and Marine Corps use TAMIS to develop and approve munitions requirements, and process and validate requests, report expenditure rates and munitions status.

3-7. TAMIS is available at https://tamis.army.mil/ and requires system assignment of the user within the hierarchical organizational structure by local command systems managers. There is a comprehensive on-line instruction manual within the TAMIS application.

NATIONAL LEVEL AMMUNITION CAPABILITY (NLAC)

3-8. NLAC is an application that takes feeds from other authoritative information for all services and presents that information in a single view to the user. NLAC provides the capability to query and display ammunition stock status at any level from national down to the ASA level and rolled up to the DODIC or broken out to any level down to lot number and condition code. The application is continuously evolving and adding capabilities as required by commands and users.

3-9. NLAC is accessible on the NIPRNET at https://antares.dla.pentagon.mil. An on-line training guide is available on the NLAC homepage.

LOGISTICS INTEGRATED DATA BASE (LIBD)

3-10. The LIDB, managed by LOGSA, is the Army's logistic data warehouse. It has transitioned from a set of sixty-six disparate individual databases to an integrated environment and enabler for Army Logistics Transformation. The LIDB does this by providing logistics intelligence, life cycle support, and technical advice and assistance to the current and future force. It integrates force, readiness, authorization, and asset logistics information for worldwide equipment readiness, performs distribution pipeline performance analysis, and asset visibility for timely and predictive decision-making.

LOGISTICS INFORMATION WAREHOUSE (LIW)

3-11. LIW is the official Army database that provides accurate, timely, and auditable worldwide (down to property book level) visibility of major end items of equipment. LIW furnishes Army management with inventory numbers for equipment procurement and distribution decisions.

3-12. LIW is accessed through the NIPRNET at https://liw.logsa.army.mil/ and requires special access permissions granted by completing an on-line Systems Access Request.

3-13. LIW provides access to several different types of data that are essential to operation of any ammunition account from using unit level through theater management. This includes access to most technical manuals required by munitions handlers, force structure information including UIC and DODAAC, ammunition catalog data for user in FEDLOG format and ASAs in spreadsheet format.

JOINT HAZARD CLASSIFICATION SYSTEM (JHCS)

3-14. The JHCS is a DOD system, designed to document and maintain all final hazard classification data for all DOD ammunition and explosives. All DOD services, DOD contractors, and NATO countries all around the world need this data to properly and legally store and ship DOD ammunition and explosives. This information is necessary for the users to comply with Federal and DOD regulations. The JHCS is governed by TB 700-2, *Department of Defense Ammunition and Explosives Hazard Classification Procedures.*

3-15. The JHCS is accessed through the NIPRNET at https://www3.dac.army.mil/esidb/login/ and requires a separate User ID. There is no CAC single sign-on available.

3-16. The on-line database allows user to query any record by DODIC, NSN, or nomenclature. The entire database can be downloaded for off-line use.

CONVENTIONAL AMMUNITION PACKAGING & UNIT LOAD DATA INDEX (CAPULDI)

3-17. The CAPULDI is a database that allows users to gather data regarding the packaging and unitization of ammunition. The data in the CAPULDI is a compilation of data from AMC 19-48 series drawings, which are produced by the Defense Ammunition Center (DAC) as mandated in AR 740-1.

3-18. The CAPULDI is accessible at https://www3.dac.army.mil/DET/capuldi/capuldi.html and requires no special login credentials.

3-19. The database can be queried DODIC or NSN. The query results are linked to packaging and palletization information with links to any related AMC 19-48 drawings for unitization, storage, or vehicle loading.

ARMY TOTAL ASSET VISIBILITY (ATAV)

3-20. ATAV is an information process that integrates data from automated systems and provides commanders and logisticians with information on location, quantity, condition, and movement of assets. It is the responsibility of AMC to ensure ATAV fits in as part of a larger Defense and Joint TAV (DTAV/ JTAV) system (under constant and continuous development). The TAV system is a fully automated, near-

real time, and has "open architecture" capability that is migrating to be Defense Information Infrastructure and Common Operating Environment compliant under the Logistics Integrated Database (LIDB). TAV has visibility of over 1.4 million Army NSNs (and 6 million DOD NSNs) and provides related logistics data to users throughout the Army and DOD. The Army has identified ATAV as the authoritative source for obtaining Army logistics data in support of joint programs.

SECTION II – MISSION COMMAND SYSTEMS

SUSTAINMENTS SYSTEM MISSION COMMAND (SSMC)

3-21. SSMC is the logistics component of the Army Mission Command Systems. SSMC is the Army's logistics fusion center (unclassified and classified) employed at multiple echelons for maneuver sustainment support. The system is for Army CSSBs, Stryker Brigades (BDE), and other BDEs/Groups/Regiments and distributed to headquarters sections through brigade to theater.

3-22. The current Logistics Reporting Tool (LRT) provides SSMC the "bottoms-up" feed of unit information to compliment the "top-down" flow of Automated Information Systems (AIS) and National Server level data. It operates within the Army Mission Command Systems and as a stand-alone system on SIPR as well as NIPR as dictated by the using organization.

3-23. The Logistics Reporting Tool is not intended to be or replace the business system or processes. It is intended to provide unit level logistics command & control information that is based on the needs/guidance of the commander.

3-24. Munitions managers at tactical and operational levels monitor command designated munitions status in the using unit and supply point(s) in support of the logistics common operating picture and initiate corrective action as the command environment dictates.

MOVEMENT TRACKING SYSTEM (MTS)

3-25. The MTS provides communication and tracking capabilities necessary to maximize common user logistics transport (CULT) vehicles. MTS interfaces with joint and Army tactical information systems permitting force mobilization, deployment, sustainment and redeployment while providing tactical to national level situational awareness (SA) of warfighter requirements. MTS incorporates digital maps in vehicles and allows two-way satellite messaging thereby allowing the transportation coordinator the ability to talk to the driver of any truck, regardless of location, without having to put up antennas or involve more soldiers. The MTS supports missions through the full spectrum of military operations from peacetime to war and provides commanders with near real time data on the location and status of limited distribution platforms. It reroutes supplies to users with higher priority needs, directs platforms to avoid identified hazards, displays to operator's unit location changes, and is our conduit for near real time traffic regulation and control. MTS provides vehicles and watercraft limited situational visibility wherever they may be deployed throughout the world.

SECTION III – ENABLERS

AUTOMATIC IDENTIFICATION TECHNOLOGIES (AIT).

3-26. AIT is a family of devices that facilitates the accurate capture, storage, retrieval, transfer and transmission of source data information to reduce processing times, improve accuracy, and enhance asset visibility. AIT is being integrated into Army logistics processes including the deployment of troops and equipment, logistics supply and re-supply, and maintenance. The purpose of AIT applications is to provide an accurate and efficient automated means to capture, store, and retrieve source data, with a minimum of human intervention. Since no single AIT device can satisfy the Army's logistics source data automation, identification and tracking requirement, the Army embraces a family of AIT devices. These devices include linear and two-dimensional bar codes, radio frequency identification (RFID) technology, contact memory

buttons, optical memory cards and smart cards. AIT initiatives include: Ammunition-AIT integration, implementation of RFID Army-wide, and maintenance-AIT integration.

SUSTAINMENT AUTOMATION SUPPORT MANAGEMENT OFFICE (SASMO)

3-27. The mission of the SASMO is to provide the organic (MTO&E) Army Logistics Information Technology (IT) support capability and provide the Army and combatant commander a ready response team to manage, sustain, troubleshoot, and resolve hardware, software, networking, and functional task operations. The SASMO provides customer support for logistics IT systems. This includes supporting all software, hardware, network and communication devices as well as fielding new equipment. SASMO responsibility also includes managing tactical networks comprising of combat service support Very Small Aperture Terminal (VSAT) and Combat Service Support Automated Information Systems Interface (CAISI) equipment.

3-28. Wireless CAISI and VSAT enhance the logistician's ability to communicate on the battlefield. The wireless CAISI establishes a wireless local area network capability within the support area and the VSAT provide satellite communications capability down to the brigade area.

SECTION IV – KNOWLEDGE MANAGEMENT

3-29. Today's global information environment provides for the sharing of knowledge across wide areas and the capability for users anywhere to reach back to subject matter experts for assistance in locally unique issues. The knowledge management sites discussed below are the main enduring sites for ammunition personnel to reach back for munitions support.

3-30. SustainNet is a component of the Army Battle Command Knowledge System focused on the sustainment community. You can access SustainNet with CAC or AKO User ID credentials. There are two areas of particular interest to munitions handler on SustainNet. The first is the Munitions folder under the Ordnance community at https://forums.army.mil/secure/communitybrowser.aspx?id=418034. The second is the SAAS-Mod folder under the Logistics Information System folder at https://forums.army.mil/secure/communitybrowser.aspx?id=388171 .

3-31. The Ammunition Community of Practice (Ammo CoP) is hosted at https://acc.dau.mil/ammo and operated by the Defense Ammunition Center. It is a community very focused to ammunition personnel across the Department of Defense. The content covers the entire spectrum of munitions operations. The CoP provides an area for users to pose questions for ammunition experts to answer.

SUMMARY

3-32. The Army logistics information technology domain offers specific automated information systems, battle command systems and enablers that are essential in performing the munitions handler role and functions. Individual information systems were discussed and the basics of the Battle command systems were identified. These tools, as well as the enablers identified, make munitions handling safe and efficient. These systems play an important role during military operations by providing essential operational capabilities that include materiel management, maintenance management, and property accountability operations, and information from non-logistics sustainment systems.

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Chapter 4

Explosives Safety

This chapter is intended to provide munitions handlers the information necessary to safely perform munitions operations. The primary focus of explosives safety is to reduce the probability and limit the damage caused by unintended initiation of munitions. Application of explosives safety techniques is based on effective Composite Risk Management (CRM) and the standards found in DA Pam 385-64. Even with varied conditions, munitions can be satisfactorily and safely stored. Regardless of conditions in the theater of operations, a single, basic tenet must be followed; that is, take all measures possible to minimize risk to personnel, materiel, facilities, and stocks.

SECTION I – PRIMARY RULES OF SAFETY

THE CARDINAL RULE

4-1. Expose the MINIMUM number of people, to the MINIMUM amount of explosives, for the MINIMUM amount of time consistent with safe and efficient operations.

TOP TEN EXPLOSVIES SAFETY TIPS

- Know your explosives safety responsibilities.
- Know your explosives safety points of contact and how to contact them.
- Train your personnel to properly perform their munitions missions. Have policies/procedures/SOPs in place that cover your munitions missions.
- Make sure all munitions locations are properly sited and have current licenses; prepare certificate of risk acceptance (CoRA) to authorize any explosives storage safety deviations.
- Know where you can find maps depicting munitions locations with associated quantity distance arcs, exclusion and/or clear zones.
- Know the outcome of the most recent internal and/or higher headquarters explosives safety assessment. Institute corrective measures.
- Be aware of any new construction or modification plans that impact your explosives safety clear zones.
- Know your local policies/procedures for munitions amnesty program (location of collection points, responsibilities for collection, frequency of collection).
- Know proper response procedures in the event of a munitions mishap (notification, evacuation procedures, personnel accountability, UXO/EOD support, accident reporting, malfunction reporting).
- Learn what munitions risks exist that could adversely affect your mission capability and mitigate those risks. Communicate those risks up the chain-of-command. Figure 4-1 below identifies the effects of a munitions explosion involving 4000 kilograms.

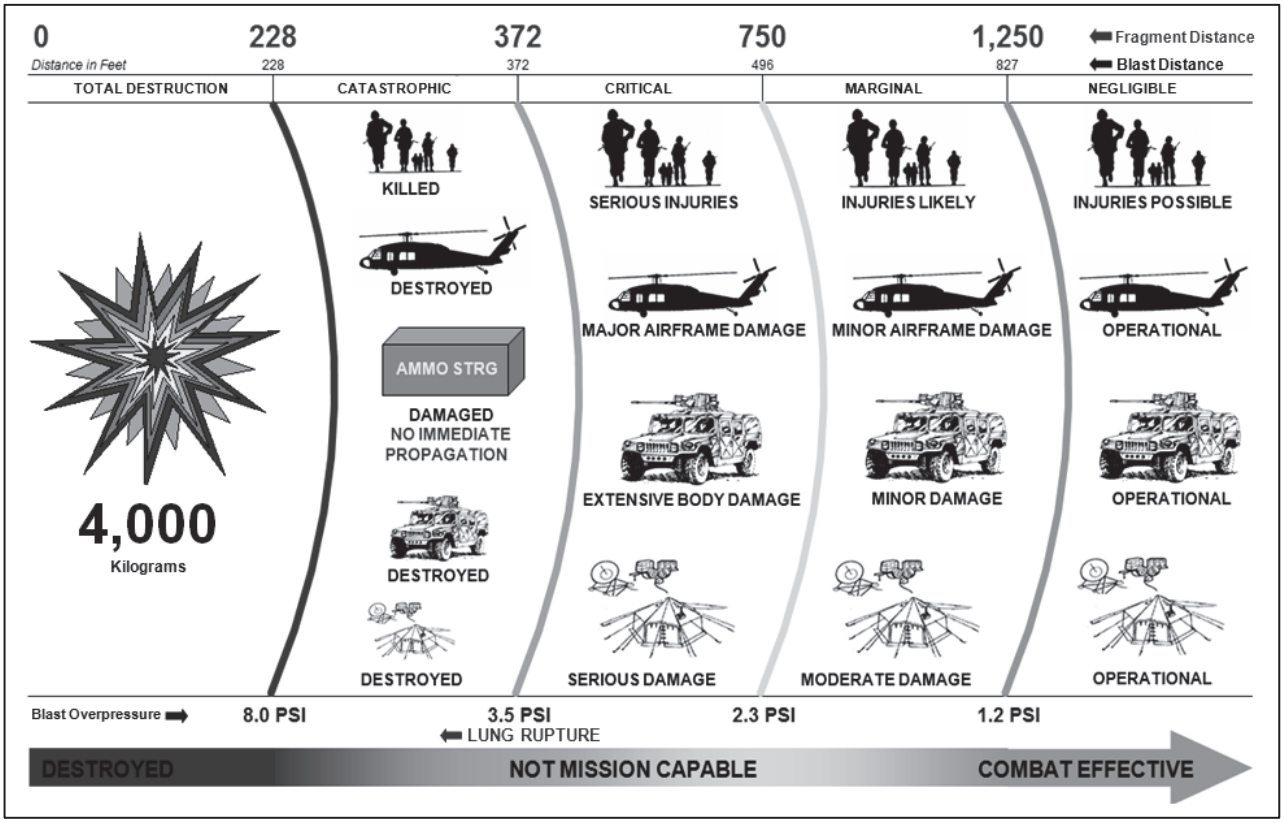

Figure 4-1. Blast effects based on quantity and distance

SAFETY RESPONSIBILITIES

4-2. All soldiers and leaders must maintain a proactive posture towards safety in day-to-day operations. The need for total commitment to safety should be evident to commanders, senior soldiers, and their subordinates. The importance of safety is intensified for units and personnel engaged in munitions-related activities. Safety awareness is most effective at three levels: command, leader, and individual. These levels and the specific responsibilities of key personnel and individuals are discussed below.

LEVELS OF RESPONSIBILITY

4-3. Commanders are responsible for protecting personnel and equipment under their command. Safety, to include risk assessment and accident reporting, is an inherent responsibility of commanders at all echelons. They are responsible for the safety program and must take an active and aggressive leadership role in safety planning and programs. Responsibilities include appointing a safety officer/NCO IAW AR 385-10 and DA Pam 385-1, determining the cause of accidents, and taking necessary preventive and corrective measures. Also, commanders must establish an explosive safety program IAW AR 385-10 and DA Pam 385-64.

4-4. Safety Managers/ Safety Directors are assigned at division and higher levels of command. They report directly to the commander and monitor and execute the commander's safety program. They are also responsible for the following duties:

- Execution of overall OSHA and explosives safety program.
- Prepare, staff and submit site plans.
- Prepare, staff and submit CoRAs.
- Perform annual review of the storage license.

- Conduct site surveys.
- Review of SOPs and procedures

4-5. Unit safety officers are appointed on written orders and must complete a safety officer course. They report directly to the commander on safety-related matters and administer the unit safety program. The unit safety officer or NCO accomplishes the following duties:

- Prepares a unit safety program and a field safety SOP focused on awareness rather than on reactive safety reporting.
- Reviews regulations and TMs and recommends procedures for increasing safety in unit operations, as well as in operations involving receipt, handling, storage, transport, and issue of munitions.
- Recommends procedural changes to the commander that will reduce accident risk, injury, and property loss.
- Organizes a safety committee, if needed, to assist with inspections and the formulation and recommendation of safety procedures. See AR 385-10 and DA Pam 385-1 for guidance on appointing and functions of unit safety personnel.

4-6. Leaders at all levels must ensure that soldiers perform their duties safely by taking the following proactive steps:

- Make soldiers aware of hazards through continuous training.
- Stress safety in operations.
- Halt unsafe operations.
- Prevent accidents through planning and preparation.

4-7. Individual soldiers are responsible for their personal safety. The key to a good safety program, and the focus of the unit safety effort, is to prevent individual soldiers from having accidents. Part of this responsibility includes taking the following actions:

- Becoming familiar with the Army's general safety policies for ammunition and explosives and related operations. See AR 385-10 and DA Pam 385-64.
- Learning the principles of how munitions function, how to handle, store, and transport munitions safely, and how to safely operate MHE.
- Becoming familiar with the hazards and safety precautions that apply to specific munitions. A relaxed attitude regarding any one of these elements can lead to an accident. A problem with more than one of these elements often leads to disaster. The one who normally knows whether or not all elements are in proper balance is the individual.

SECTION II – COMPOSIT RISK MANAGEMENT (CRM)

4-8. CRM is the means whereby the Army makes decisions to identify and mitigate risks associated with all hazards that have the potential to injure or kill personnel, damage or destroy equipment, or otherwise impact mission accomplishment. It is a 5 step process: identify the hazards, assess the hazards to determine risk, develop controls and make risk decisions, implement the controls, and supervise and evaluate.

CRM ROLES AND RESPONSIBILITIES

4-9. The commander, S-3, staff, leaders, and individuals all have specific CRM responsibilities. These are presented in FM 5-19, Composite Risk Management (CRM). Preserving soldiers and equipment in order to ensure efficient and effective mission completion is a leader responsibility. Leaders, at all levels, must "think" safety as they devise courses of action and steps to accomplish the mission. CRM is used in conjunction with troop leading procedures and the military decision process to identify hazards and control risks across the full spectrum of missions, functions, operations, and activities. Risk decisions must be made by the appropriate level of leadership.

STANDING OPERATING PROCEDURES

4-10. All SOPs for munitions operations will identify potentially hazardous items or conditions. The SOP will then outline procedures to be taken to identify risk, eliminate or mitigate to the greatest extent possible. Additional information on SOP requirements, content and preparation are in Chapter 1, paragraph 1-21.

PERSONNEL AND EXPLOSIVES LIMITS

4-11. Conduct operations which expose the minimum number of people to the smallest quantity of explosives for the shortest period of time consistent with conducting the operation.

4-12. Personnel and explosives limits must be clearly posted for each operation and must not be exceeded during the operation. Prohibit tasks not associated with the munitions operation. Subdivide explosive limits into the appropriate hazard division and clearly post. These shall be strictly maintained.

EXPLOSIVES SITE LICENSES AND DEVIATIONS

4-13. Locations with munitions and/or explosives will be site licensed. DA Pam 385-64 provides guidance for the standards, preparation and authentication. While compliance with the explosives safety requirements in DA Pam 385-64 is desired, there may be circumstances where that is not feasible. Use a CoRA to maintain the highest degree of safety while deviating from the established standards. The CoRA documents the evaluation of all pertinent hazards, establishment of compensatory safety measures, and acceptance of the residual risk the appropriate level of command. DA Pam 385-30 gives information for obtaining a Certificate of Risk Acceptance (CoRA). See Table 4-1

4-14. A CoRA may cover multiple risks if supported by accompanying documentation describing each hazard and associated risk. Provide copies of CoRAs that are in effect for greater than sixty calendar days to the organization's ACOM, ASCC, DRU safety office, and to the U.S. Army Technical Center for Explosives Safety (USATCES) at Director, USATCES, Bldg 35, 1 C Tree Road, McAlester, OK 74501.

Table 4-1. Risk acceptance authority

Risk acceptance matrix [3,4]					
	Duration of risk				
Category of risk	***1 month or less***	***Greater than 1 month, less than 1year***	***Greater than 1 year, less than 5 years***	***Permanent or greater than 5 years***	***Chartered system development programs***
Extremely high risk	General officer	MSC CG – General officer	Army Headquarters CG	ASA (I&E)	Component Acquisition Executive (CAE)
High risk	Brigade CO or responsible O-6	General officer[1]	MSC CG – General officer	Army Headquarters CG	Program Executive Officer (PEO)
Moderate risk	Battalion CO[1] or responsible O-5	Brigade CO[1] or responsible O-6	General officer[1]	General officer[1]	Program manager
Low risk	Company CO[2] or responsible O-3	Battalion CO[2] or responsible O-5	Brigade CO[1] or responsible O-6	Brigade CO[1] or responsible O-6	Program manager
Tolerable risk	Not required	Not required	Not required	Not required	Not required
Legend for Table 4-1:					
In organizations led by civilian leaders, equivalent civilian grades may be substituted for military ranks.					

Table 4-1. Risk acceptance authority

The term "Army Headquarters" includes ACOMs, ASCCs. DRUs, and the Army National Guard.
Notes:
[1] May delegate in writing authority to accept at the next lower level.
[2] May delegate in writing authority to accept risk at lower levels.
[3] When the risk acceptance authority resides in a combatant command, refer to para C1.5 of DOD 6055.09-STD.
[4] Table 4-1 cannot be used for risk acceptance of new construction involving explosives and chemical agent violations.

ACCIDENT AND INCIDENT CONTROL PLAN

4-15. Every unit that handles or stores munitions must develop plans for controlling accidents and incidents. These plans are part of the command accident/incident control plan, which includes procedures for the following:

- Reporting accidents or incidents.
- Getting assistance from supporting emergency forces.
- Supporting area military and civilian agencies.
- Establishing unit emergency technical escort teams.
- Radiation control.
- Munitions safety control.
- Disarmament.
- Munitions evacuation.
- Unit firefighting teams.
- Unit decontamination teams.

4-16. Training plans, including emergency exercises designed to maintain team efficiency and readiness, are part of the command accident/incident control plan. Such plans encourage personnel assigned to emergency response teams to remain proficient in individual and team duties. Report and investigate accidents or incidents involving munitions IAW DA Pam 385-40.

SAFE HANDLING PRINCIPLES

4-17. Whenever and wherever possible, follow the explosives safety standards enumerated in this ATP and DA Pam 385-64. Only after assessing the risks of relaxation against the mission-imposed parameters should less restrictive guidance be implemented (Refer to DA Pam 385-64 for additional guidance.) When handling ammunition in the field, follow these general principles:

- Soldiers controlling or supervising the handling of ammunition must observe safety precautions. Place skilled and knowledgeable personnel in charge of ammunition operations.
- In field storage, distribute ammunition in such a way that an incident will not cause the total stock of any one type of ammunition to be lost.
- Disperse ammunition to minimize loss in the event of fire, accidental explosion, or enemy action.
- Take fire fighting precautions and firefighting equipment must be serviceable.
- Have qualified personnel examine, evaluate, and classify ammunition of unknown origin and captured ammunition. Store in a designated collection point.
- Use the existing infrastructure and terrain features (for example, buildings, barns, forests, barriers, and so forth) to prevent propagation and to protect personnel and material from the effects of an explosion.
- Store and transport ammunition containing white phosphorus in an upright position if ammunition surface temperatures are expected to exceed 111 degrees F.

- In any given field situation, take all measures to minimize the risk to personnel, material, and ammunition.
- Segregate damaged ammunition.
- Save and segregate packing material to be reused to turn in and transport unused munitions safely.

MALFUNCTION SAFETY

4-18. A munitions malfunction is the failure of an item to function as designed when fired, launched, employed, or subjected to functional tests. Malfunctions include abnormal or premature functioning of an item when properly handled, maintained, stored, transported, or deployed. Malfunctions don't include accidents or incidents resulting from negligence, vehicular system accidents, fires, misuse, misfires or duds.

4-19. A munitions malfunction may have been caused by operator error, equipment failure, environmental conditions, or defect in the munitions item. The following steps must be taken to determine the cause of the malfunction IAW AR 75-1:

- User immediately secures the site, equipment, and munitions.
- Commander of the using unit reports all facts through command channels.
- Higher headquarters may assemble a team to investigate the incident.
- The operational command may suspend from use the munitions or equipment involved, based on METT-TC.

4-20. Investigating team determines the cause of the malfunction and provides disposition instructions for the items involved. The team provides reports required by higher headquarters IAW AR 75-1.

AMMUNITION HANDLING

4-21. Using units must keep ammunition and explosives properly packed to the maximum extent possible. This practice is critical to safety and quality.

4-22. Keep ammunition and explosives packed until immediately prior to use. Unpack only the quantity expected to be immediately fired. Save all packing material until operation is complete for possible use in repack.

4-23. Properly repack ammunition before transporting on motor vehicles, aircraft, or watercraft.

4-24. Replace safety devices before repacking; for example, shorting clips on 2.75–inch rockets, electrical shunts on electrically initiated devices, and pads protecting primers on gun and mortar ammunition.

4-25. Indelibly mark and segregate from serviceable ammunition misfired, damaged, suspended by a NAR, or otherwise classified as unserviceable ammunition.

4-26. Specific munitions and explosive hazards are discussed in chapter 1. (Transportation, Static Electricity, MHE, Pallet Jacks, Lightning Hazards)

4-27. Handle munitions to prevent damage or unintentional initiation. Things to consider include:

- Protect the primer – ammunition and explosives (AE) with exposed primers or similar imitating devices will be handled in such a way as to protect the primer or initiating device from being accidentally initiated.
- Provide protection to rockets/missiles
- Do not toss, drag or drop munitions
- Only lift munitions at the proper lift points
- During blocking and bracing operations, do not drive nails or metal objects into munitions containers
- In situations where sparks may constitute a hazard, such as unpackaged propelling charges, all hand tools will be made of non-sparking material.

- AE and its containers will be handled in such a way as to avoid defacing, removing or obliterating its identification markings, i.e. NSN, lot number, etc.
- In most cases, AE with unidentifiable NSN or lot number will be considered unserviceable.
- Ammunition storage, handling, and operating facilities and areas will be maintained free of debris and rubbish or other material subject to ignition

SUMMARY

4-28. The intent of explosives safety programs and awareness is to provide the maximum protection to personnel and property from the damaging effects of accidents involving munitions, limit the exposure of personnel to the minimum amount of munitions consistent with safe and efficient operations and to comply with munitions safety standards wherever US Army ammunition and explosives are stored. Your primary guide to explosive safety is DA Pam 385-64.

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Chapter 5

Fire Protection, Prevention, and Safety Awareness

This chapter discusses fire protection and prevention programs and procedures. Topics covered include fire divisions, hazard classifications and fire symbols, common safety violations and hazards, and characteristics of munitions fires.

SECTION I – FIRE PROTECTION PROGRAM

5-1. Every Army activity must have a fire protection program that includes fire protection training, fire suppression, and fire prevention. The program's objective is to eliminate the causes of fire and reduce the potential for loss of life, injury, and property damage. This objective is consistent with all operational environments.

5-2. The commander's awareness and involvement are the most critical components of an effective fire protection program. Preserving life and property is a fundamental duty of all levels of command and supervision.

FIRE PREVENTION COMPONENTS

5-3. Each ASA must establish a well-planned fire prevention program that includes SOPs, fire prevention training, identification and elimination of hazards, enforcement of fire regulations, and adequate fire protection for facilities. This program requires strong command emphasis and support.

5-4. Frequent surveys and inspections help to establish the best standards and practices for preventing fires. Munitions fires are among the most feared because of the potential for casualties, destruction, and loss of property and equipment. Most fires involving munitions are preventable. Thus, fire safety awareness and training in prevention practices are especially important.

STANDING OPERATING PROCEDURES

5-5. The fire prevention procedures presented here are basic. They should be supplemented by whatever other standards the commander feels are needed to protect the ASA. At minimum, the unit SOP will contain the following rules and procedures to be enforced by everyone working around munitions:

- Strictly regulate and control smoking in areas where ammunition, explosives, highly combustible materials, or flammable items are kept. If smoking can be regulated safely, designate specific locations approved by the commander or safety officer and equip these areas with proper receptacles for butts or smoking residue. Do not allow smoking in vehicles passing through these areas.
- Locate the smoking area at least 50 feet from the area containing munitions and explosives if noncombustible walls do not separate these two areas. Also ensure that at least one serviceable fire extinguisher is placed in the area. Do not permit anyone whose clothing is contaminated with explosive or hazardous material to use the smoking area.
- Do not permit use of matches or other flame-, heat-, or spark-producing devices in any magazine area or field storage activity. The only exceptions will be by written authority of the commander or safety officer.
- Use only flashlights or storage battery lamps approved by the US Bureau of Mines and listed by the UL or other recognized authority in structures that contain ammunition or explosives.

- Locate parking areas no closer than 100 feet outside storage areas. Control these areas to reduce fire hazards and provide easy access to firefighters.
- Police areas on a daily basis for combustible materials left over from operations. Stack and/or properly dispose of these materials. See DA Pam 385-64 for stacking guidelines and distance requirements.
- Control vegetation or undergrowth according to tactical situation.

FIRE PLAN

5-6. Any activity that stores or handles munitions must have an effective safety program and plan to help prevent and fight fires.

5-7. The fire plan serves as a tool for training and for implementing prevention and firefighting rules and procedures. It must cover all munitions areas and possible exposures of munitions to fire. The plan will describe the following:

- Emergency functions of responsible personnel.
- Organization of firefighting teams and alternates.
- Communications and alarm signal activity.
- Responsibilities and emergency functions of outside agencies.

5-8. Details of the plan may vary to suit the tactical situation. It must include training requirements for all personnel and establish the following procedures:

- Reporting the fire.
- Evacuating nonessential personnel.
- Notifying nearby commands and locations of impending dangers.
- Extinguishing or controlling the fire.
- Using communications and alarm signals.
- Controlling the fire until firefighters arrive, and meeting and instructing firefighters on circumstances of the fire (i.e., types of munitions involved and hazards).

5-9. The fire plan includes a map that identifies storage locations, the road network, and munitions hazard/hazards at each location (including fire and chemical symbols). See AR 420-1 for additional guidance.

TRAINING

5-10. Training is a vital part of the fire protection and prevention program. All personnel and firefighters involved with munitions must be trained in the precautions and proper methods of fighting fires. Training will include an understanding of individual responsibilities as identified in the fire plan. It must also include instruction in the following:

- A system for reporting fires.
- Procedures for sounding alarms.
- Evacuation procedures.
- Application and meaning of each type of fire and hazard symbol.
- Type and use of appropriate firefighting equipment.

5-11. Fire drills encourage and increase safety awareness. Instructions to supervisors and personnel will include steps that increase fire safety. All supervisors must be thoroughly familiar with fire hazards.

SAFETY VIOLATIONS

5-12. Serious consequences often result from the lack of training or failure to follow instructions and written safety regulations and procedures. The most common safety violations are as follows:

- Smoking.

- Carrying and using matches and other flame- or heat-producing items in forbidden areas.
- Tampering or playing with munitions, particularly grenades, demolition materials, and protechnics.

COMMON HAZARDS

5-13. A fire in the ASA can start in any number of ways. Most often, fires begin in vegetation and accumulated waste materials, wastepaper, scrap lumber, dunnage, broken pallets, and boxes. Causes include the following:

- Unauthorized use of spark-producing tools.
- Use of defective MHE and vehicles.
- Use of faulty or unapproved electrical equipment.
- Failure to provide proper barricades.
- Failure to provide firebreaks/proper firebreaks.
- Use of improper grounding techniques.

PROCEDURES FOR MUNITIONS-LADEN VEHICLES

5-14. When any part of a vehicle, other than its cargo, catches fire, try to get the vehicle to a clear, isolated area and use a handheld fire extinguisher to fight the fire. Fight the fire until the flames reach the cargo. At that point, evacuate all personnel and equipment to safe distances IAW METT-TC.

EQUIPMENT AND FIREBREAKS

5-15. A small fire involving ammunition or explosives may rapidly become intense and lead to an explosion. While personnel must not be exposed to the hazards of an imminent explosion, it is vital to attack a small fire at once using authorized equipment and firebreaks.

Fire Extinguishers

5-16. Hand-held portable fire extinguishers can be used to fight small fires. All fire extinguishers must be easily accessible and maintained in good operating condition. See Table 5-1 for the appropriate extinguishing agent to use for fighting each class of fire.

Table 5-1. Fire extinguishing agents

Type of Fire	*Extinguishing Agent*
Class A - Combustible (materials such as wood, paper, rubbish, or grass)	Water
Class B – Volatile flammables (materials such as oil, gasoline, grease, or paint)	Carbon dioxide, halon, foam or dry chemical
Class C – Electrical (electrical equipment)	Carbon dioxide, halon, or dry chemical
Class D – Combustible metals (magnesium potassium and so forth)	Dry powder

Water Barrels and Sand

5-17. Water barrels and pails, sand boxes, and shovels provide a recognized means of combating Class A fires in ASAs where the combustible material consists primarily of grass, wood, dunnage, boxes, and empty containers. Barrels must be covered to prevent insect breeding and evaporation and will be winterized as necessary. At least two metal pails must be available for each barrel. Water barrels may not be needed if the ASA meets the following conditions:

- Vegetation control measures are adequate, and the area is monitored regularly.

- A fire plan and an organized firefighting force with the equipment capable of combating grass and brush fires are in place.
- Updated fire maps are maintained at fire stations and storage areas. These maps indicate the location of each storage area and the hazard at each site.
- Storage area work crews are equipped with serviceable extinguishers.
- Hand Tools and Other Larger Equipment

5-18. Rakes, shovels, picks, and other equipment needed to fight grass or vegetation fires must be in adequate supply. Also, plows, graders, and bulldozers should be available.

Firebreaks

5-19. Firebreaks may be both artificial and specific. Artificial firebreaks include roads, highways, cleared manmade areas, survey lines, and transmission lines. Specific firebreaks are cut in advance and maintained to prevent the progress of any fire. It may not be possible or desirable to cut firebreaks during tactical operations due to METT-TC factors. General guidelines for firebreaks can be found in DA Pam 385-64.

SECTION II – FIRE HAZARDS AND SYMBOLS

5-20. Depending on the materials involved, fires that occur in buildings and magazines containing ammunition and explosives vary in intensity and outcome. Certain explosives ignite on contact with a spark or flame or when subjected to frictional heat or concussion. Some substances burn freely. Others, such as propellants, explode while burning or develop heat so intense that firefighting efforts are nearly futile.

5-21. Firefighters must be well acquainted with the hazards in each fire hazard group. They must know which methods of fighting fires are most effective for the materials under their protection. Also, they must be proficient in using the personnel protective devices needed for fighting various types of fires.

FIRE DIVISIONS AND CLASSES

5-22. Ammunition and explosives are separated into fire divisions based on the relative danger they present to firefighters (see table 5-2).

Table 5-2. Fire divisions and hazard classes

Fire Division	*Predominant Hazard*	*HD*
1	Mass explosion	1.1 and1.5
2	Non-mass explosion, fragment producing	1.2 and 1.6
3	Mass fire, minor blast or fragment	1.3
4	Moderate fire, no blast or fragment	1.4

5-23. Fire Division 1 indicates the greatest hazard, with the hazard decreasing with each ascending number. Fire Divisions 1 through 4 correspond with Hazard Class / Division (HC/D) 1.1, 1.2, 1.5 and 1.6. See DA Pam 385-64 for further discussion of the Hazard Classification System.

5-24. Fire Divisions 1 and 2 include the ammunition and explosives in Hazard Classes 1.1 and 1.2. In a fire, these materials can be expected to detonate with moderate to severe fragmentation hazards. Make no attempt to fight fires involving Division 1 unless a rescue attempt is being made. Attempts to extinguish a Division 2 fire may be made if it is in an early stage, or to fight the fire until the risk becomes too great.

5-25. Fire Division 3 is comparable to Hazard Class 1.3 and presents a mass fire hazard. Personnel in the area will give the alarm and fight the fire if explosives are not directly involved.

5-26. Fire Division 4 consists of ammunition that presents a moderate fire hazard. Fires that involve this type of ammunition will be fought by firefighters with portable and mobile fire-extinguishing equipment until the fire is brought under control. See DA Pam 385-64 for more information on fighting fires.

FIRE DIVISION SYMBOLS

5-27. Each fire division is represented by a distinctive fire symbol. The shapes for each symbol are identified in figure 5-1 with corresponding dimensions shown in table 5-3. These symbols enable firefighters to recognize possible hazards as they approach the fire scene. The applicable fire division number is shown on the symbol. To facilitate long-range identification, these symbols have different shapes

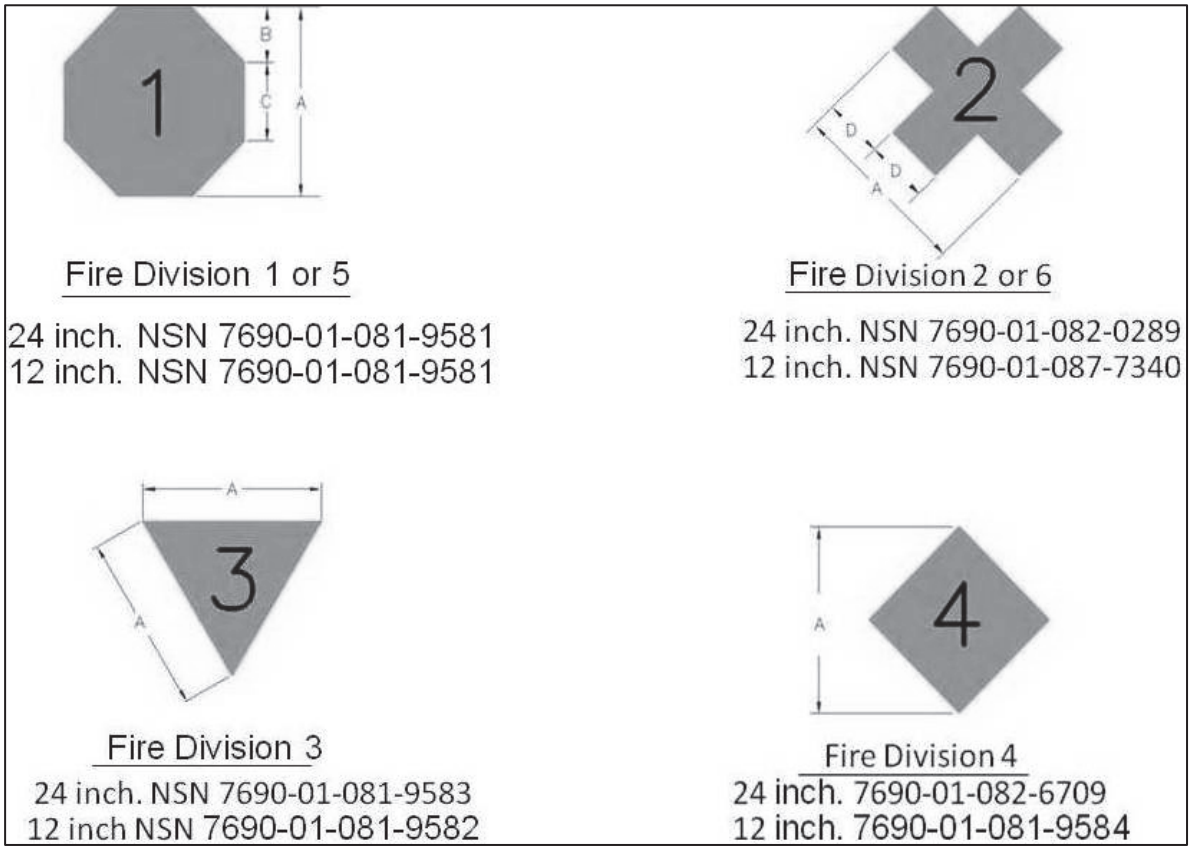


Figure 5-1. Fire division symbols

Table 5-3. Fire division symbols legend

Dimensions	***Large symbol***		***Small symbol***	
	inches	***Metric (mm)***	***inches***	***Metric (mm)***
A	24	610	12	305
B	7	178	3.5	89
C	10	254	5	127
D	8	203	4	102
Letters (height)	10	254	5	127
Letters (Thickness)	2	51	1	25

POSTING FIRE SYMBOLS

5-28. The fire symbol that applies to the most hazardous material present will be posted at or near explosive locations. Backing material for the symbols will be made from a noncombustible material of the

same shape. Symbols must be visible from all approach roads. When all munitions within the ASA are covered by one fire symbol, it may be posted at the entry control point.

5-29. When different HC/D of munitions are stored in individual multi-cubicle bays or module cells, appropriate fire symbols will be posted on each bay or cell. Only one fire symbol should be displayed at the entrance of a row where containing munitions and requiring the same fire symbol are located in a row or on one service road.

5-30. Fire symbols must be placed on entrances to arms rooms that are licensed for holding and storing quantities of explosives. Also, the appropriate fire symbol must be displayed on a locker or similar type container where licensed explosive munitions are stored. However, symbols are not required on the exterior of a building if the building is exempt from Q-D requirements contained in DA Pam 385-64.

Exceptions When Posting Fire Symbols

5-31. It is not required to post fire symbols on locations having 1,000 rounds or less of HC/D 1.4 small arms ammunition (.50 caliber or less). Host Nations symbols will be used if required by agreement. The ASA commander may remove fire symbols for security purposes. In this case, the commander must emphasize giving prompt and exact information to the firefighters regarding any changes in the status of explosives.

5-32. If vehicles and aircraft are parked in a designated explosives parking area, fire symbols need not be posted providing the area is described in a local SOP or vehicle and/or aircraft parking plan.

SECTION III – CHEMICAL HAZARDS AND SYMBOLS

5-33. Chemically-filled munitions storage and operational facilities must be identified with appropriate hazard symbols as shown in Figure 5-2. The type of hazard symbol selected for this purpose depends not only on the type of chemical agent in the item of ammunition but also on the absence or presence of explosive components in the item.

5-34. Appropriate clothing and equipment are essential when fighting fires involving chemical agents. The protective clothing and apparatus in Figure 5-3 are for firefighting purposes and do not necessarily apply to normal operations. The symbols presented in this figure are described as follows:

SYMBOL 1, WEAR FULL PROTECTIVE CLOTHING

5-35. The following indicates protective clothing as identified.

- Set 1. Red rim and figure. Indicates the presence of highly toxic chemical agents that may cause death or serious damage to body functions. Includes authorized self-contained protective gas mask with applicable hood, or approved equivalent (i.e., M40 series mask); impermeable suit; hood; gloves; explosives handler's coveralls; and protective footwear, as applicable. A fire blanket should also be available in case of a fire. (Typically for captured enemy ammunition).
- Set 2. Yellow rim and figure. Indicates the presence of harassing agents (riot control agents and smokes). Includes authorized protective gas mask or self-contained breathing apparatus, explosive handler's coveralls, and protective gloves.
- Set 3. White rim and figure. Indicates the presence of white phosphorus and other spontaneously combustible material. Includes authorized protective gas mask or self-contained breathing apparatus, flame-resistant coveralls, and flame-resistant gloves.

SYMBOL 2, WEAR BREATHING APPARATUS

5-36. The statement "Wear breathing apparatus" indicates the presence of incendiary and readily flammable chemical agents that present an intense heat hazard. This hazard and sign may be present with any of the other fire or chemical hazards/symbols. Protective masks that prevent the inhalation of smoke from burning incendiary mixture will be used.

SYMBOL 3, APPLY NO WATER

5-37. Indicates a dangerous reaction will occur if water is used in an attempt to extinguish the fire. This symbol may be posted together with any of the other hazard symbols.

5-38. See DA Pam 385-64 for information on the types of chemical hazards associated with the symbols in figure 5-2.

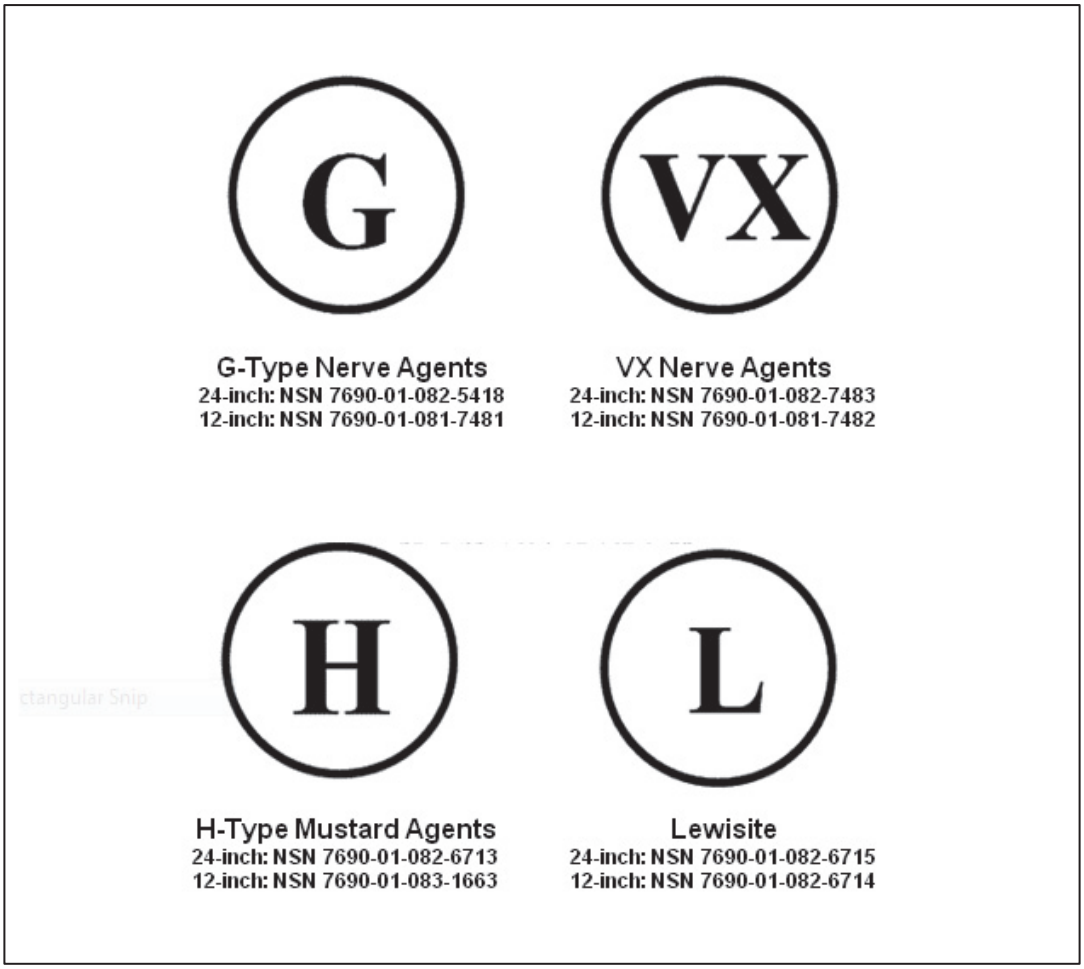
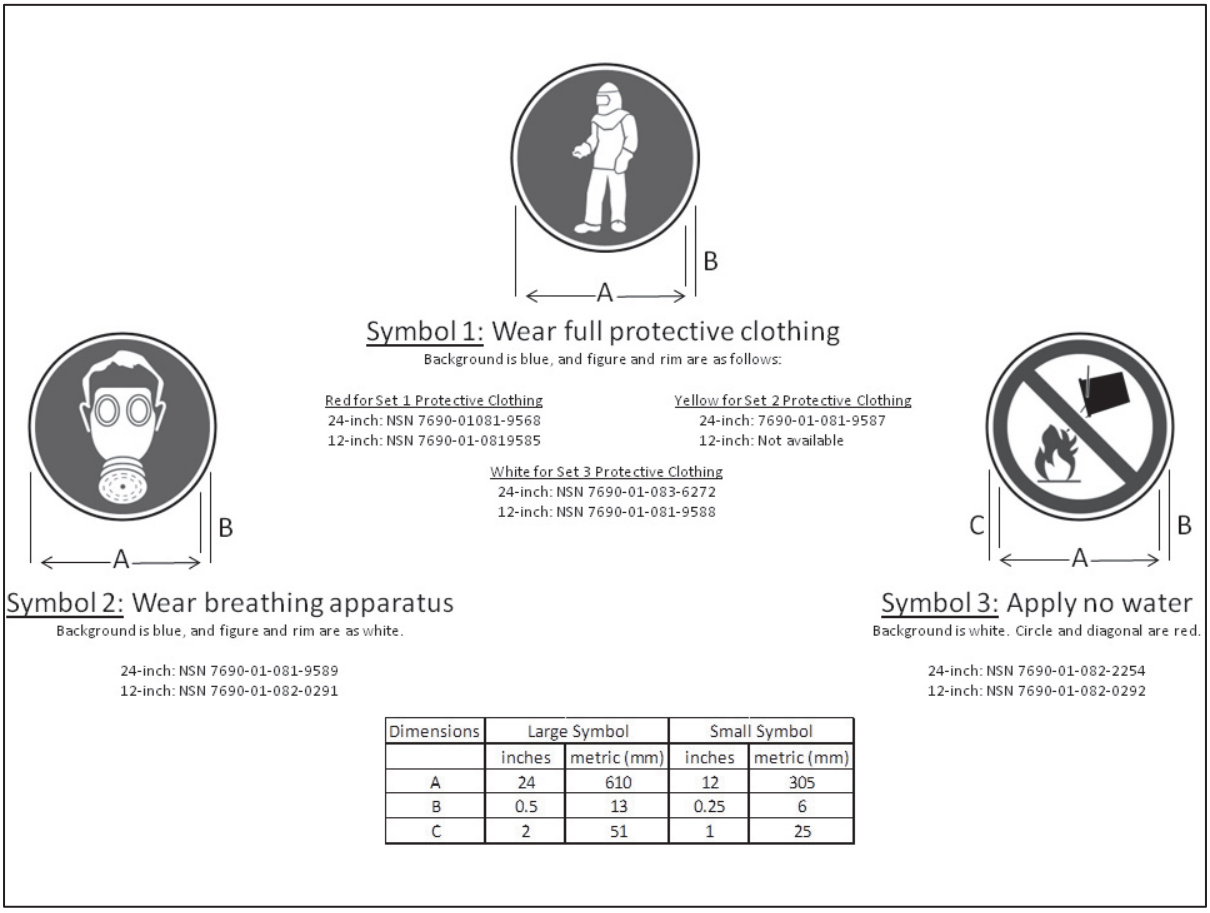


Figure 5-2. Supplemental chemical hazard symbols

5-39. Colors (per Federal Standard 595A or GSA Catalog) are:

- Background: Yellow #13538
- Letters: Black # 17038, as follows:
  - 12 inches [305 mm] high and 2 inches [51 mm] thick on a 24-inch [610 mm] diameter circle.
  - 6 inches [152 mm] high and 1-inch [25 mm] thick on a 12-inch [305 mm] diameter circle.

5-40. Refer to Figure 5-3 below to determine clothing and equipment required when dealing with specific chemicals and fillers.



Dimensions	Large Symbol		Small Symbol	
	inches	metric (mm)	inches	metric (mm)
A	24	610	12	305
B	0.5	13	0.25	6
C	2	51	1	25

Figure 5-3. Protective clothing and apparatus

POSTING CHEMICAL SYMBOLS

5-41. When chemical or pyrotechnic munitions are assembled with explosive components, chemical hazard and fire hazard symbols are used together. Chemical munitions without explosive components are identified by chemical hazard symbols only.

5-42. Requirements for posting chemical symbols are similar to those for posting fire symbols. Chemical symbols must be removed, covered, or reversed as soon as chemical agents are removed from a location.

SUMMARY

5-43. Fire protection, prevention, and safety awareness during munitions operations is every soldier's responsibility. Commanders are responsible for command and technical supervision of a well-planned, effective fire protection and prevention program at facilities under their command. Supervisors must emphasize quality, routinely schedule training, and ensure that the commander's policies are implemented. Demonstrated performance is the quality control element of an effective fire protection and prevention training program.

Chapter 6
Munitions Storage Procedures

The purpose of field storage is to provide safe munitions storage in all operational environments. This chapter contains information on types of munitions storage areas. Also, it discusses planning for and storing of munitions, with emphasis on meeting safety and storage criteria to the maximum extent possible.

SECTION I – AMMUNITION STORAGE ACTIVITIES

6-1. Unlike permanent ammunition storage areas, munitions assets in a tactical ASA are most often stored on the ground and on unimproved surfaces. Munitions are placed in storage compatibility categories separated from each other by the minimum Q-D. This is based on NEW, or total gross tonnage per individual storage unit, depending on the storage system selected. Munitions are likely to be stored in one of three types of field storage areas: TSA, ASP, or ATHP. The different types of tactical ASA compatibility categories, Q-D standards, storage systems, and storage planning procedures are discussed later in this chapter.

THEATER STORAGE AREA

6-2. The TSA is normally the theater's central ammunition storage activity. Its mission is to receive, store, and ship containerized and break-bulk munitions. It also issues, inspects, configures, manages and maintains theater reserve munitions. The modular ammunition platoons generally operate the TSA. Area support to operating units will be provided by a separate ASP which may be co located with a TSA.

6-3. To facilitate shipment, TSAs are located where there is direct access to airfields, railheads, ports, road networks, and facilities. If this is not feasible, the TSA should be located within a short local-haul distance of such facilities.

6-4. The TSA may be a permanent storage facility (e.g., igloo, magazine, bunker, or other fixed or semi-fixed explosives storage building), however it may also be an open outdoor storage area.

6-5. The area selected for the TSA should have as much hard surface as possible. Also, it must have adequate drainage and a road network capable of supporting heavy vehicle traffic. It should be designed to move break-bulk and containerized munitions onto and off of railcars, line-haul vehicles, and PLS. Other logistical units and engineering support may be available to assist munitions units in conducting railhead and other transload operations.

6-6. The ASCC and METT-TC determine the stockage objective of TSAs. The TSA primarily receives its stockage objective from the POD.

6-7. Munitions arrive at the TSA on theater transportation assets. They are usually containerized but may include break-bulk or a combination of both. Because a high percentage of TSA receipts are containerized, munitions and transportation personnel must manage containers to guarantee accountability and to retrograde them for reuse. See ATTP 4-35 for a discussion of the flow of munitions in the area of operations.

AMMUNITION SUPPLY POINT

6-8. The ASP is run by a modular ordnance company or platoon assigned to a sustainment brigade and provides support to the BCT ATHPs and units not supported by an ATHP. ASPs receive, store, issue, and

maintain a stockage objective of ammunition to meet a routine surge and emergency requirements for supported units. ASP stockage levels are based on tactical plans, availability of ammunition, threat to the resupply operations and is METT-TC dependent. During the ASP site selection process, commanders should focus on locations that minimize the need for engineer support. It should be located near an improved road network to ensure access by transportation assets.

6-9. The ASP location is METT-TC dependent and operated by an ammunition platoon from a modular ammunition company generally assigned to the Sustainment Brigade. The ASP provides Class V support units and ATHPs. The actual stock level of an ASP is METT-TC dependent. The ASP can expand to five- or six square kilometers, or larger, depending on the METT-TC factors. Unlike the TSA, ASP stocks are most often stored on the ground on unimproved surfaces. ASPs can receive 100 percent of its requirements from a supporting TSA.

6-10. ASPs should be considered as temporary, open storage sites. ASPs are located near MSRs and rails (if feasible) to allow easy access for theater and corps transportation assets. It is essential that ASPs have good road networks that can support heavy vehicle traffic.

SECTION II –AMMUNITION TRANSFER HOLDING POINT

6-11. The ATHP is located within the brigade support area (BSA) and is manned and operated by the ATHP section of the BSB distribution company. The ATHP receives mission guidance and responds to the priorities established by the BAO who is responsible for all Class V requirements for units organic to the brigade. It provides ammunition support to brigade units and other units operating in the brigade's AO. As conditions warrant the ATHP must be prepared to assist the FSC CL V section with ammunition management tasks beyond its organic capability.

6-12. Using either unit vehicles with MHE (e.g., HEMTT), flatracks or crops, or organic ATHP MHE, munitions are transferred from EAB trailers or PLS flatracks to vehicles organic to the using unit. Departing empty vehicles backhaul the empty trailers and flatracks.

6-13. The ATHP should be located near an MSR or adequate road network to provide access for corps transportation assets and combat user vehicles. The ATHP must be on firm ground with good drainage and offer easy access for vehicles. Also, it must allow for easy recovery of pallets, trailers, and flatracks. The site must be large enough to allow MHE to maneuver. Flatracks and trailers must be placed so the MHE has adequate space to transfer munitions. As with any other tactical site, good cover and concealment are extremely important.

SECTION III – STORAGE SAFETY PRINCIPLES

6-14. The highest degree of safety in munitions storage will be achieved if each item is stored separately. However, this is not feasible. Observing the following principles will ensure safety of munitions storage regardless of the type of facility:

- Balance safety, mission, and other factors when storing a mix of munitions.
- Do not store munitions and explosives with flammable or combustible material, acids, or corrosives.
- If compatible, different types of munitions and explosives may be mixed in storage.
- Do not store munitions with an assembled initiating device as they present a significant storage risk. Exceptions include–
  - If the device is packaged in a manner that eliminates risk of accidental detonation.
  - If safety features prevent accidental initiation or detonation of the item.
- Protect munitions from the elements by providing appropriate dunnage and adequate shelter and ventilation. This practice reduces maintenance and ensures maximum serviceability and shelf life of stocks.
- Place munitions in appropriate SCG and separate by minimum Q-D as determined by DA Pam 385-64.

STORAGE COMPATIBILITY GROUPS (SCG)

6-15. All munitions and explosives are assigned to an appropriate SCG for storage at Army activities. See Appendix E for more on SCGs.

6-16. Logistical considerations and combat situations may warrant more risk-taking. When warranted, the ACOM commander may authorize relaxation of storage compatibility requirements. Compatibility requirements do not apply when storing configured loads in the theater of operation. Another safety element, Hazard Classification, further separates munitions and explosives into hazard classes and divisions based on their hazards, physical properties, and chemical characteristics.

QUANTITY DISTANCE (QD)

6-17. Q-D criteria are designed to protect personnel and property in areas adjacent to storage facilities, to limit the quantity of stocks that may be lost in an explosion, and to reduce the possibility of any explosion involving large quantities of explosives and munitions.

6-18. Q-D relationships for specific classes of munitions and explosives are based on levels of risk considered acceptable for that item. During peacetime, the Q-D tables set forth in DA Pam 385-64 must be strictly followed unless a waiver is obtained. The tables apply generally to exposures involving nonmilitary personnel, family housing, and health and morale facilities.

6-19. During wartime operations, military requirements may make full compliance with safety regulations difficult. Compliance with Q-D regulations is of great importance to commanders since their purpose is to minimize losses of personnel and stocks and to maintain the full operational capability of facilities. Normal explosives safety criteria, procedures, Q-D separations, and methods of application in DA Pam 385-64 apply except where waivers are granted.

6-20. To meet readiness requirements, certain units may have their Class V uploaded on organic vehicles or stored near the unit. Q-D requirements are defined in DA Pam 385-64.

SECTION IV – STORAGE AREA PLANNING

6-21. After the site has been selected and the system of storage is known, a storage plan and SOPs must be written for the operation. Good planning helps ensure that operations are safe and efficient. The following checklist will be used when developing the storage plan/concept of operations:

- What is the total stockage objective for the site?
- What are the expected average daily receipts and issues?
- How much time is available before the first munitions shipment arrives?
- What is the expected lifetime of the storage area?
- What physical characteristics of the terrain can be used as natural barricades? What characteristics deny or restrict use of certain areas?
- What natural cover and concealment are available?
- What engineer construction and support are available or necessary?
- What special security requirements are needed for classified and sensitive items based on the CIIC? See the FEDLOG or JHCS for a detailed explanation of CIICs and the CIIC for any munitions item.

SITE SELECTION

6-22. Safety and efficiency must be top priorities when selecting a storage site. It is essential that explosives experts (89B30/40 QA/QC, ammunition warrant officer, QASAS , explosives safety specialists) be involved early in this process to preclude possible future disruptive, safety-driven relocations of established Class V facilities.

6-23. A map and ground reconnaissance of the proposed sites should be made. Reconnaissance ensures that the sites are suitable for performing safe operations and providing efficient support to using units. A map recon provides information on the terrain and the possibility of natural cover and concealment. A ground recon supports the information gathered from the map recon and further reveals terrain features. Also, it reveals other conditions that may have changed or may not be identifiable on a map.

6-24. Based on reconnaissance information, site recommendations are submitted to higher headquarters for approval. The sites selected may not be approved for operational and/or tactical reasons. The selection process may have to be repeated, or higher headquarters may identify an area for the location of the storage area.

ASSESSING TACTICAL REQUIREMENTS

6-25. Tactical conditions and METT-TC factors must be reviewed to reduce conflict between the tactical and safety requirements of an ideal site. Often, these requirements are not compatible, and defense risks must be weighed against the operational mission.

6-26. The tactical situation may require that procedures be modified or supplemented. The following considerations apply to all storage and supply sites:

- Transportation. Sites should be located near the MSR and supported units to allow easy access. The distance to supported units must be reduced in keeping with security constraints.
- Defense Sites should be easy to defend against ground attack using the fewest personnel and materials possible. The site must be large enough to allow for dispersion of stocks to protect against heavy loss by fire or explosion. As with any other tactical site, good cover and concealment are critical.
- Road network. In addition to access and exit roads, sites must contain a good internal road network. Roads must easily allow large vehicle passage under all weather conditions and should require as little maintenance as possible. A one-way traffic pattern is preferred to minimize confusion and congestion.
- Terrain. Sites will be established on firm, level ground. Drainage patterns and soil conditions must be studied carefully. A level site that does not drain adequately during wet weather may result in unsafe and inefficient operations. The site must provide easy access for using unit vehicles and for recovery of PLS flatracks, pallets, and trailers. Natural barriers at proper intervals are desirable to segregate field FSUs and categories of munitions. If captured enemy chemical munitions are stored, downwind distances to populated areas must be considered.
- Fire safety. The site must be inspected for fire hazards. A low level of flammable vegetation and an adequate water supply are favorable considerations.

GENERAL LAYOUT

6-27. Fundamental rules apply to the layout of all types of munitions supply and storage facilities. General safety procedures must be considered first in any site layout. Basic operating procedures are also very similar Key differences between TSA field sites and ASP/ATHP sites are that the TSA generally has larger, more stable storage areas and better road networks.

6-28. All storage areas should be arranged into separate sections to enhance safety. The arrangement of stocks in each section should make receipt, issue, and inventory/re-warehousing/configuration as easy as possible.

6-29. Each section consists of a number of storage locations or modules, depending on the type of storage system used. Storage locations within each section are separated according to the Q-D requirements in DA Pam 385-64, METT-TC permitting.

6-30. The following guidelines should be observed to maintain efficient operations and prevent units from unnecessary waiting:

- Ensure signs are posted showing traffic direction, entrances, and exits.

- Draw maps of storage areas and provide copies to using units.
- Ensure there is enough dunnage near storage locations.
- Arrange for one-way traffic whenever possible; when not possible, provide turn-around points. Also ensure adequate space for vehicle holding and assembly areas.
- Ensure the use of ground guides is strictly enforced.

6-31. Layout requirements for each site vary according to the tactical situation, the terrain, the proximity to forward areas, and the type and amount of materiel handled. A good layout is one that achieves the following:

- Provides for easy, efficient work flow.
- Minimizes movement of munitions, tools, and equipment.
- Permits easy entry and exit for heavy traffic.
- Provides effective control of unit operations.
- Permits defense of the area.

6-32. Proper positioning of weapons, construction of defensive works and obstacles, and organization of unit defense and security are other prime considerations.

6-33. A map overlay will be prepared to include the defense plan and operational layout for the new area. If needed, a route overlay will also be prepared. The advance, main, and rear parties use overlays, and copies must be submitted to higher headquarters.

6-34. The operations office is the nerve center of a storage activity. It is normally the control section of an ordnance company or modular platoon. It should be located inside the main entrance where all incoming customers can reach it easily. Also, it should be located near the administrative section but a safe distance from the main ASA. Vehicle holding areas for inbound munitions shipments and vehicle assembly areas for outbound munitions vehicles will be within walking distance. The operations office must have adequate parking for customer and ordnance company vehicles.

6-35. Parking for inbound, ammunition-laden vehicles or unit vehicles scheduled for loading is provided in the vehicle holding area. It must have enough maneuver room for large vehicles, and its size must be sufficient to accommodate the largest convoy of vehicles that the site may expect to receive. It is a transit area, and vehicles remain only long enough to be processed for storage or issue.

6-36. The segregation area is a temporary storage area for segregating ammunition turn-ins and mixed munitions shipments. It must be located near the salvage area to allow convenient storage or usage of packing materials.

6-37. Non-explosive material, such as munitions residue and salvage materiel, is stored in the inert salvage area. It should be located near the segregation area and the surveillance and maintenance area.

6-38. The demolition area is set aside for the destruction of unserviceable munitions. A good access road is necessary to facilitate the delivery and unloading of munitions. Because S&P trailers and rough-terrain forklifts may be needed to conduct demolition operations, both the road network and the area must be able to support these vehicles. Land selected for the demolition area will not be used for other purposes. Also, it will have scarce vegetation to minimize the fire hazard. Demolition operations are to be conducted only after munitions disposition instructions have been received from higher headquarters.

6-39. The vehicle assembly area provides parking for all outbound vehicles, including empty/loaded ammunition vehicles being assembled into a convoy. The assembly area must be within walking distance of the operations office and meet all requirements of the vehicle holding area.

6-40. Emergency aerial resupply operations are conducted at the sling-load operations area. It will be located at least 1,800 feet or 550 meters from munitions storage locations, working areas, and inhabited areas. When planning sling-load operations, the allowable gross weight for cargo aircraft must be considered.

6-41. The bivouac area is the living area for personnel operating the site. It must be located nearby but outside the fragmentation and blast areas. When locating this site, personnel safety distances from the ASA and the physical security of the bivouac area will be the primary considerations.

6-42. Unit vehicles and MHE are maintained in the maintenance area. A separate section within this area may be designated for refueling vehicles.

6-43. The surveillance and maintenance area is used for performing munitions inspection, repack, and maintenance. For efficiency, it should be located between the operations office and the storage areas.

6-44. Live munitions are stored in the ammunition storage area.

6-45. The captured enemy ammunition area is used to store all CEA turned into the storage facility. CEA is always stored separately; once identified and classified, it is stored using the same principles required for storing US munitions.

LAYOUT CONSIDERATIONS

6-46. Munitions should be positioned far enough off the road to allow trucks to be loaded or unloaded without interfering with traffic. Containers must be stacked so that munitions markings are visible and all containers can be accessed easily. Munitions positioned on an inadequate or unstable foundation may topple or sag. Inspectors should look for settling or shifting so that corrections can be made before damage results. See DA Pam 385-64 for more information.

6-47. Some units use a standard identification system to identify and locate munitions. Such systems use lettered or numbered locations that always contain certain types of munitions.

6-48. Whenever a site is established and similar stocks are required, they are placed in the same relative locations; however, ground features may preclude this. When a standard identification system is used, a major road or prominent landmark may be referenced. If a road or landmark is not available, the system should follow a logical alphabetical or numerical progression as personnel enter and move through a specific section of the site.

6-49. The manufacturer identifies munitions by lot. The lot number is vital for accountability, issue, and storage. Ensure individual lots are segregated in each storage location, clearly separated from other lots.

6-50. Climatic considerations such as adequate shelter, dunnage, good drainage, and good ventilation are necessary to protect stored munitions. Tarpaulins can be used to protect munitions from the effects of rain and intense sunlight. See DA Pam 385-64 for additional guidance.

6-51. In desert and tropical climates, munitions must be shielded from the direct rays of the sun. To minimize exposure to sunlight, position containers with long axes pointed in an east-west direction. Priority for shade is as follows:

- Guided missiles and rockets.
- Propelling charges.
- Fuses.
- Pyrotechnics.
- Projectiles.

6-52. When containers are used for storage, doors may be left open or opened periodically so that air can circulate. Blowing sand should not accumulate around containers or pallets.

6-53. The proper use of dunnage increases stack stability. Generally, stacks must be at least 4 to 6 inches off the ground to prevent munitions from getting wet and to ensure adequate circulation. See DA Pam 385-64 for more information.

6-54. If drainage is a problem, ditches must be dug around stacks of munitions. If propellant charges are stacked, lids will be turned down slightly so water does not seep in or accumulate.

6-55. Storage of guided missiles and rockets requires special care. Guided missile assemblies should be stored in permanent structures if possible because the missile bodies have delicate electronic components

that must be protected. If stored in the open, protect the containers with tarps or other suitable cover. In either case, storage areas should have hard, level surfaces, and all humidity indicators must be accessible. Guided missiles and rockets should be stored with all nose ends pointing in the safest direction, normally outward.

6-56. Guards and access control must be employed if classified or sensitive components are stored in the open. See AR 190-11 for more detailed security information.

6-57. Natural concealment must be used whenever possible to camouflage munitions storage areas. Camouflage requirements may conflict with requirements for firebreaks and munitions shelter. The use of camouflage must be consistent with explosive safety and munitions storage procedures. See ATTP 3-34.39 for general information on the use of camouflage.

UNSERVICEABLE MUNITIONS STORAGE

6-58. Unserviceable munitions are those not safe for use; either manufactured with defects or rendered unserviceable during operations. Shipments of munitions received from other supply facilities will be inspected for serviceability. Unit turn-ins not inspected at the time of receipt must be stored in a segregated area for later inspection. Ammunition specialists must be trained to recognize indications of unserviceability and report them.

6-59. Inspectors segregate unserviceable munitions from serviceable munitions for safety reasons and to reduce rehandling. The munitions must be segregated by DODIC and lot number, followed by serviceability classification. Munitions that cannot be positively identified by lot number are automatically classified as unserviceable. Exceptions may be made based on the type, quantity, and condition of the munitions and METT-TC.

6-60. Safety precautions and principles that apply to storage of serviceable munitions also apply to storage of unserviceable munitions. Proper records must be kept on all unserviceable items stored at a supply facility.

6-61. Munitions that require maintenance must be segregated and marked to prevent issue. While minor preservation and packaging are performed at field locations, extensive maintenance is usually performed at a depot storage facility. The unit performs the packaging and preservation functions if that is all that is required (see Chapter 7). Time permitting, reparable unserviceable munitions are retrograded for repair.

6-62. Munitions abandoned by using units are treated as unserviceable until inspected. The procedures that apply to unit turn-ins also apply to abandoned munitions. Unserviceable munitions are reported through proper channels for disposition instructions. Unserviceable munitions must be disposed of as quickly as possible to preclude further deterioration and potentially unsafe conditions. DA Pam 738-750 provides guidance in requesting disposition of unserviceable munitions. Hazardous unserviceable munitions are reported immediately through proper channels to EOD detachments for destruction. A demolition area is designated and cleared for the safe destruction of munitions.

SUSPENDED AMMUNITION STORAGE

6-63. Specific lots of munitions and components are suspended from issue and use when they are suspected to be unsafe or otherwise defective. The problem may be the result of a manufacturing defect, a firing malfunction, or the deterioration of components. Storing munitions by lot number enables the rapid withdrawal from issue of those items that are unsafe, defective, or suspected of being defective.

6-64. The authority to suspend any lot of conventional munitions is vested in the commander, JMC. The authority for missile item is the commander, AMCOM. However, the local commander may place a local suspension on a suspect lot of munitions. A preliminary report and a later detailed report are forwarded through the supporting sustainment headquarters to theater army headquarters. The munitions remain in local suspension unless higher headquarters changes its status. (See AR 75-1 for instructions for preparing suspension reports. Additional notices of suspensions or restrictions are by updates to MHP. Unless the suspension notice orders it, munitions lots that are stored and later placed under suspension need not be moved to a segregated area. However, stacks of suspended munitions must be clearly marked on all sides

using DD Form 1575 (Suspended Tag Materiel) or facsimile-formatted documents (taped to the materiel), to show that the items have been suspended or restricted from issue. When foreign nationals are employed, bilingual tags should be produced locally. Suspended or restricted-issue items returned by the firing units, or items received from other supply facilities, must be segregated upon receipt.

CAPTURED ENEMY AMUNITION STORAGE

6-65. Captured enemy ammunition (CEA) is defined as any or all ammunition products and components produced for or used by a foreign force that is hostile to the United States [that is or was engaged in combat against the United States] in the custody of a U.S. military force or under the control of a DOD component. The term includes confined gaseous, liquid, and solid propellants, explosives, pyrotechnics, chemical and riot control agents, smokes, and incendiaries. It includes bulk explosives, chemical warfare agents, chemical munitions, rockets, guided and ballistic missiles, bombs, warheads, mortar rounds, artillery ammunition, small arms ammunition, grenades, mines, torpedoes, depth charges, cluster munitions and dispensers, demolition charges, and devices and components of the above. CEA can also include NATO or U.S. manufactured munitions that may not have been under U.S. custody or control. When an enemy munitions cache is secured for storage, it is first inspected to determine condition, type, and caliber. It is then analyzed and identified by EOD, QASAS, 89B30/40 QA/QC ammunition qualified military inspector, and technical intelligence specialists to ensure that it is safe to transport or retrograde to a rear storage area. Items of special interest are noted and quickly reported through intelligence channels. Enemy munitions must be segregated and disposed of.

6-66. U.S. Army policy for the handling of CEA is outlined in DA PAM 385-64, Ammunition and Explosives Safety Standards, chapter 10, paragraph 10-8.

6-67. All CEA must be considered extremely hazardous and a significant threat to Soldiers and military equipment. Safety is of utmost importance in handling any type of CEA. No CEA will be handled or moved until inspected by EOD to ensure the ammunition is safe for handling and/or movement.

6-68. Units that capture or discover enemy ammunition must immediately report the event to the next higher headquarters and request EOD support and disposition instructions for the ammunition. All Soldiers should understand the importance of adhering to CEA handling, reporting, and transportation requirements. Captured ammunition, regardless of nation of origin, will be segregated in a designated collection point until disposition instructions are received.

6-69. The disposition of CEA varies with the tactical situation. It can be destroyed, stored, issued to coalition partners, or retrograded to other ammunition storage activities. Units required to store CEA must clearly mark and segregate the CEA from other types of munitions. The storage of CEA will adhere to all standard storage, quantity distance, and safety procedures that pertain to U.S. munitions as outlined in this manual.

6-70. Certain types of CEA have high potential for intelligence value. When an enemy munitions cache is secured for storage, it is first inspected to determine condition, type, and caliber. It is then analyzed and identified by EOD, QASAS, 89B30/40 QA/QC ammunition qualified military inspector, and technical intelligence specialists to ensure that it is safe to transport or retrograde to a rear storage area. Items of special interest are noted and quickly reported through intelligence channels. Enemy munitions must be segregated and disposed of.

6-71. If the cache is retrograded, supporting munitions managers are notified to provide QA/QC personnel and transportation assets to support the retrograde operation. These personnel go to the cache to load and transport it to the designated ASA. QA/QC personnel assist in segregating and loading the munitions. The designated ASA places the cache into a designated secure area. CEA must not be stored with US munitions. If possible, it will be stored IBD from all other munitions. Information on the NEW for foreign munitions can be obtained from military intelligence elements.

SALVAGE AND PACKAGING STORAGE

6-72. Salvage material includes such items as boxes, crates, and steel containers. Packaging material includes nose plugs, grommets, metal links, clips, cartridge cases, and brass.

6-73. Based on METT-TC, salvage material is normally collected at ASAs and shipped to designated points within the theater of operations for reuse or retrograde. However, if salvage material is turned in at the ATHP, the ATHP NCO arranges to have it backhauled to an ASA via available transportation. Some salvage material may be used at field facilities to repack serviceable munitions and components. Salvage material is inspected for explosives, recorded on stock records, and reported to the sustainment headquarters as directed by higher headquarters. The sustainment headquarters receives disposition and shipping instructions, and gives the instructions to the storage facility based on these reports.

6-74. When inert salvage material is shipped from any munitions facility, the senior inspector must certify the shipment to be free of explosives.

SUMMARY

6-75. This chapter focuses on storage of munitions. If deployed into a combat environment, a unit's storage requirements and considerations will be consistent with those identified in this chapter. Units that support either SASO or combat operations from a CONUS installation should consult DA Pam 385-64 for peacetime and wartime requirements.

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Chapter 7

Munitions Maintenance and Surveillance Operations

Munitions maintenance encompasses all actions necessary to ensure that stocks are either serviceable, or that unserviceable stocks are restored to serviceable condition or disposed of properly. Maintenance responsibilities are assigned to ammunition units based on the unit's primary mission and the availability of skilled personnel, time, tools, equipment, and supplies. This chapter discusses maintenance and surveillance operations, procedures, and functions.

MAINTENANCE PLANNING

7-1. Munitions maintenance planning must be aligned closely with the operational needs of supported units. Maintenance planners must be realistic when considering the availability of supplies and maintenance resources. A reduction in munitions maintenance increases the amount of ammunition taken from the supply system. Conversely, the inability of the supply system to replace unserviceable munitions requires a greater maintenance effort. Proper maintenance, storage, and handling of munitions enhance readiness, reduce replacement requirements, and conserve resources. The maintenance planner must recognize the interdependence of maintenance and munitions support.

MAINTENANCE OPERATIONS

7-2. Units need a constant supply of serviceable munitions. Munitions maintenance is a vital task that must be performed to sustain readiness. Maintenance includes everything from minor packaging and preservation operations (i.e., cleaning, removing rust and corrosion, repairing boxes and crates) to major operations (i.e., complete renovation). Provisions must be made to conduct as much maintenance as possible at the storage location. In some cases, munitions must be retrograded for maintenance. Since the movement of munitions requires transportation and personnel assets, it is inefficient to adopt a maintenance program geared totally to evacuation. QA/QC for maintenance operations is performed by QASAS at echelons above Bde. Munitions maintenance is divided into field and sustainment categories.

FIELD MAINTENANCE

7-3. All activities that have munitions on hand perform maintenance (generally packaging and preservation) to prevent deterioration from rough handling and exposure. Maintenance in the using unit is usually performed with the technical assistance of ammunition units. Ammunition companies perform limited maintenance and surveillance of stocks under their control. Limits are defined by the capability of the unit and METT-TC. Besides packaging and preservation, maintenance may include replacing readily removable external parts and components; these include fuses of artillery and mortar munitions, propelling charges and primed cartridge cases for semi fixed and mortar munitions, grommets, and nose plugs. Field maintenance is largely due to turned-in munitions.

Preservation and Packaging

7-4. Care and preservation lines may be established, if METT-TC and capability permit, where loose or opened munitions are visually inspected and properly identified. Containers are inspected to ensure that the contents match the information on the outside. Contents are inspected for serviceability, compatibility, and hazardous conditions. Serviceable items are palletized. Unserviceable but salvageable items are sent for

repair. Disposition instructions must be requested for suspended and nonrepairable items. Scrap material is placed in suitable containers and sent to a salvage area.

7-5. If inspection results in the need to repair or replace a container, the contents must be removed unless a new stencil or marking is all that is necessary. Munitions are returned to the container with enough filler material to allow a tight fit. Stencils or markings identical to the originals are placed on the new container. Seals and bands are replaced, and the container is ready for the palletizing area.

7-6. Munitions must be palletized IAW proper USAMC drawings and appendices. Generally, no more than one lot is permitted on any one pallet in storage. Once inspected, pallets are transferred to a storage or shipping area.

7-7. If an explosive hazard exists, the destruction of unserviceable munitions and packaging is carried out only by, or under the supervision of, EOD personnel. Disposition instructions must be requested from higher headquarters prior to destruction. See DA PAM 385-64 for more information.

SUSTAINMENT MAINTENANCE

7-8. Sustainment maintenance will generally be performed by an AMC munitions activity. Under certain circumstances sustainment maintenance may be performed by an ammunition company with proper approval or authority. Sustainment maintenance includes all field maintenance tasks and includes, but is not limited to, the following:

- Removal of extensive rust/corrosion; painting and stenciling of Class V materiel; and fabrication of or major repairs to boxes, containers, and crates.
- Replacement of internal/external components that requires the use of operational shields or barricades.
- Demilitarization of ammunition, when directed.

7-9. Modular ammunition units with storage and issue missions are equipped to perform maintenance functions in accordance with METT-TC. The tools, equipment, and supplies needed to support maintenance at that particular level are included in each unit's supply and equipment list. Generally maintenance is not performed where ammunition is stored. Exceptions may include such operations as opening and repacking boxes and metal containers of ammunition including, repacking of ammunition into serviceable boxes and fiber containers, spot painting projectiles. Explosives and ammunition will not be renovated, modified, or demilitarized within a magazine.

MAINTENANCE STANDING OPERATING PROCEDURES

7-10. Before starting any maintenance operation involving ammunition or explosives, an adequate SOP will be developed and approved by the commander or his/her designated representative authorized to approve the SOP. Refer to chapter 1 for additional SOP development guidance.

SURVEILLANCE OPERATIONS

7-11. The Commander is responsible for the surveillance program and it is executed under the guidance of and advisement of the QASAS. Munitions surveillance is the observation, inspection, serviceability determination, and classification of munitions and their components for movement, storage, and maintenance. Surveillance activities are conducted by all theater activities that store, maintain, dispose of, or ship ammunition and its components. Surveillance ends only when munitions are expended or destroyed. Classification is performed by the QASAS or under the direct supervision of the QASAS.

SURVEILLANCE FUNCTIONS

7-12. Munitions inspectors are responsible for ensuring the reliability and serviceability of munitions. The surveillance mission encompasses the following duties:

- Inspecting storage facilities, field storage, and all types of storage sites to ensure compliance with storage standards.

- Inspecting surrounding areas for fire hazards and other nonstandard conditions.
- Checking for conditions that could speed up deterioration of items in storage.
- Teaching surveillance and munitions safety.
- Preparing and maintaining records and reports to cover all surveillance activities. (Surveillance records and reports are contained in SB 742-1.)
- Observing, inspecting, and investigating munitions and components for serviceability.
- Monitoring storage, handling, and maintenance operations and recommending changes to enhance safety and operational effectiveness.
- Advising the commander on munitions surveillance matters.
- Inspecting munitions to determine quality, safety, and deterioration.
- Maintaining munitions drawings and specifications files and indexes.
- Maintaining munitions suspension, notifications and safety of use messages.
- Inspecting incoming and outgoing munitions shipments for compliance with existing instructions and regulations.
- Furnishing technical advice to the commander and supported units on munitions safety and compliance with munitions regulations.
- Ensuring that surveillance functions are performed according to SB 742-1 and applicable TMs and SBs.
- Assist in planning, administering, and enforcing the explosives safety program.

7-13. Munitions inspectors provide an invaluable service to the commander and supported units. Inspectors assist in many activities including the following:

- Investigating ammunition malfunctions and accidents.
- Inspecting and testing lightning protection systems.
- Conducting unit ammunition inspections.
- Preparing licenses, site plans, waivers, exemptions and CoRAs for storage facilities.
- Planning construction of storage facilities.
- Planning field storage areas.
- Monitoring uploading/downloading of ammunition to/from combat vehicles.

7-14. QASAS will provide technical assistance to Safety Directors and Managers in the following areas:

- Development of explosives licenses and explosives safety site plans/submissions and explosives licenses.
- Explosives CoRA requests and certificates of compelling reasons.
- Reviewing designs for explosive production, manufacture, testing, storage, surveillance, maintenance demilitarization, and disposal facilities for compliance with explosive safety standards.
- Conducting safety inspections of ammunition and explosives handling, storage, use, maintenance, and disposal areas at least annually.
- Monitoring ammunition uploads and other activities that involve the transportation and storage of ammunition in other than authorized and licensed storage areas to ensure that pertinent requirements are met.
- Reviewing SOPs and directives for compliance with explosive safety requirements.
- Assisting in the master planning process and reviewing, annually, the master plan to ensure construction is not planned inside explosive safety arcs.
- Monitoring operations involving ammunition and explosives to ensure that Army units understand and comply with explosive safety standards.

Surveillance Inspections

7-15. The following inspections are performed by QASAS and/or military inspectors IAW SB 742-1:

- Receipt, including transfers, field returns, and CEA.
- Periodic (cyclic) (performed by or under the direct supervision of QASAS).
- Storage monitoring.
- Special.
- Pre-issue.
- Verification.

Serviceability Standards

7-16. The purpose of an inspection is to find deterioration and determine the serviceability of items. As a rule, munitions must not have defects that alter their characteristics, make them unsafe, or prevent them from performing as designed. The inspector must be familiar with all information on the items, including components and packaging. The prime causes of unserviceable ammunition include heat, moisture, and rough handling. Deterioration is faster when moisture is combined with a rise in temperature. Serviceability standards are contained in SB 742-1 or item specific references such as TMs, SBs and drawings.

Surveillance Records and Reports

7-17. A technical history of each lot, serial number, or group of munitions is kept by surveillance personnel in MHP. This history includes results of all inspections, tests, investigations, and any unusual or changing conditions affecting the items. These records are used to evaluate the serviceability and reliability of munitions. MHP contains the following information:

- Condition of the materiel.
- Quantity.
- Date of manufacture.
- Type of storage.
- Type of defects.
- Cause of defects.
- Results of tests.

7-18. SB 742-1 provides guidance for preparing the following records and reports:

- DA Form 984-R, Munitions Surveillance Report.
- DA Form 2415, Ammunition Condition Report.
- DA Form 3022-R, Army Depot Surveillance Record.
- DA Form 3023, Gage Record.
- DA Form 4508, Ammunition Transfer Record.
- DD Form 250, Materiel Inspection and Receiving Report.
- DD Form 1575.
- DD Form 1575-1, Suspended Label-Materiel.
- DD Form 1650, Ammunition Data Card.
- Standard Form (SF) 364, Transportation Discrepancy Report.

MAINTENANCE SAFETY

7-19. Safety in munitions maintenance is covered in DA PAM 385-64, and maintenance manuals for specific munitions items. Explosives safety standards, the handling and storing of munitions, operational precautions, Q-D requirements, barricades, operational shields, personnel and explosives limits, and safety tools and equipment are discussed in chapter 5 of this manual.

SUMMARY

7-20. This chapter has provided only general information and guidance for personnel responsible for the maintenance of munitions. Detailed maintenance and surveillance procedures for specific munitions items are in TM 9-1300 series publications. Surveillance procedures are covered in SB 742-1.

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Appendix A

Combat Load and Sustainment Loads for Ammunition

This appendix provides a list of references and general guidelines relevant to all Army units for determining personnel/command responsibilities, implementing requisition, accounting and storage procedures, conducting inventory and quality assurance programs.

A-1. Combat loads for ammunition are Army level standard quantity and type of munitions an individual weapon, crew-served weapon or a weapons platform and its modified table of organization and equipment (MTOE)-designated munitions carriers are designed to hold. Combat loads for bulk munitions (grenades, signals, and so forth) are not associated with a weapon or weapons platform. Bulk munition CLs are assigned by SRC and reflect the quantity of munitions required to give units capability and flexibility. Combat loads support the initiation of combat operations and are the basic building blocks of Army war reserve requirements.

A-2. Sustainment loads (SLs) are the munitions needed to initiate and support a force's operations until resupply can be provided. SLs are calculated prior to the commencement of operations by using a CL or multiples thereof and includes the initial CL. Calculate SL requirements only for units that actually will be in the theater of operations prior to establishment of a sea line of communications (SLOC), according to time lines in an ASCC's most demanding OSD/Joint staff-directed theater OPLAN or CONPLAN. SL resupply is based on the munitions required to support forces until the next scheduled resupply ship arrives. Taking into account that expenditures will vary from DODIC to DODIC during operations, SL resupply quantities likely will be tailored to reflect variables such as planned missions and forces, previous and planned expenditures, and on-hand supply.

RESPONSIBILITIES

A-3. Responsibilities of key personnel/commands for Combat load management are as follows:

- Commanders at all level, to include the NGB, will use Total Ammunition Management Information System (TAMIS) to review and validate ammunition combat load requirements on an annual basis or upon Change of Command. Commanders will also ensure that combat loads for ammunition are on hand or on requisition at all times and will coordinate distribution of combat load requirements data, review combat load requirements, ensure combat load ammunition is on hand or on requisition, maintain the unit's combat load requirements, conduct annual internal reviews of the combat load requirements, and coordinate with supporting 89B30/40 QA/QC ammunition inspectors ammunition inspectors to ensure stockpile serviceability.
- Ammunition Supply Points or Depots manage stockpiles and coordinate with the supporting Expeditionary Sustainment Command (ESC) or Theater Sustainment Command (TSC) to ensure enough ammunition is on hand and serviceable to provide for all supported units. Also,
- They maintain a suspense file of all prepositioned requests and coordinate requirement updates with supporting units at least annually.
- QASAS perform inspections of combat loads that are in the possession of the unit at least annually. QASAS also notify owning units of any ammunition information notices that may affect their on-hand ABL.
- Supporting DMCs coordinate with supported units and the ASPs/depots to ensure adequate serviceable munitions stocks are on hand for those combat loads that are approved by HQDA G-3/G-4 for local storage. This is accomplished by ensuring that combat load shortages are

- requisitioned and disposition instructions are provided for ammunition excess to the unit's ammunition combat load requirements.

AMMUNITION COMBAT LOAD

A-4. Ammunition combat load encompasses conventional ammunition and missiles that support a unit's combat load requirements. The unit commander must have ammunition combat load on hand or on request at all times. Units will validate their Combat Load in TAMIS on an annual basis or upon Change of Command. Ammunition combat load can be further broken down and defined as:

- TAT ABL. Ammunition that either can be carried by or accompanies the soldier, uploaded on a combat vehicle or on organic transportation, during deployment.
- Non-TAT ABL. Ammunition that cannot accompany the soldier or be loaded in or on unit combat or transport vehicles during deployment.

PROCEDURES AND ACCOUNTABILITY

A-5. AR 5-13 establishes how a unit's ammunition combat load requirements are established and managed. AR 710-2 establishes the procedures of accounting for ammunition combat loads that have been issued to a unit.

A-6. Guidelines for determining ammunition responsibility and accountability are as follows:

- Units will validate their Combat Load in TAMIS on an annual basis or upon Change of Command. When a unit is approved to physically draw and store their ammunition combat load, they will prepare a properly authenticated E581 using TAMIS or a DA Form 581 when internet connectivity is not available and submit it to the supporting ASP/depot.
- All other units not designated to draw and store their ammunition combat loads will submit a properly authenticated or E581 using TAMIS, when internet connectivity is not available, to the supporting ASP/depot for planning purposes. Both the ASP/depot and the unit will maintain a copy of the request. The request is used to ensure that adequate serviceable stocks are on hand and to speed the issue process in event of deployment. ACOMs establish specific procedures for the units to follow.

A-7. Various methods apply to a unit's combat load for accountability. How ammunition combat load is stored determines which of the following methods will be used:

- The storage location retains accountability for the ammunition when the combat load is not issued to the unit and is stored at the supporting ASP or depot. The ASP/depot assigns the ammunition to the ACOM designated account code and accounts for it using the approved system of record for accountability of ammunition at the retail (ATHP/ASP) or wholesale (Depot) level. The unit should record on the property book page the document number from the E581 request that was generated in TAMIS. Ammunition combat loads managed in this manner need not be segregated from other on-hand stocks at the ASP/depot.
- The unit maintains accountability on the system of record for accountability at the unit level when the ASP/depot issues the ammunition combat load to the unit. The ASP/Depot will post it as an issue against the accountability system. The unit is then responsible for accounting for the ammunition and providing for secure storage area. Responsibility is assigned to the individual having custody of the keys to the storage area using hand receipt procedures described in DA Pam 710-2-1.

INVENTORY

A-8. Ammunition combat loads will be inventoried IAW AR 710-2. Army Commands will establish procedures and guidance for maintaining physical security and conducting basic load inventories IAW DA Pam 710-2-1. At a minimum the inventories must–

- Be accomplished monthly when combat loads are issued to the unit and stored in a secure location (IAW AR 190-11).

- Be accomplished daily when combat loads are issued to the unit and not stored in a secure location (IAW AR 190-11).
- Be accomplished quarterly when combat loads (all munitions including CIIC 1, 5 AND 6) are stored at retail Ammunition Storage Activities/Ammunition Supply Points and secured IAW AR 190-11
- Be accomplished semiannually (CIIC 1, 5, and 6) and annually (other than CIIC 1, 5, and 6) when combat loads are stored and accounted for by the Theater Storage Areas/Depot.

QUALITY ASSURANCE

A-9. Units will coordinate with the supporting QASAS to have any on-hand basic load inspected at least annually by an ammunition inspector. Units having on-hand ammunition stocks must also coordinate with the supporting QASAS or ASP/depot to ensure that they obtain relevant ammunition information notices (AINs) and missile information notices (MIN's) of suspensions or restrictions. If on-hand ammunition is determined to be unsuitable for continued use as combat load, the unit will coordinate with the supporting ASP/depot for turn-in and replenishment.

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Appendix B

Brass Conversion

The data and procedures contained in this appendix are used to compute the weight and/or quantity of expended cartridge cases. Refer to DA Pam 710-2-1 for items not listed.

Table B-1. Brass conversion chart

Case Type	*Weight (pounds)*
.22 caliber, brass, short	.0008
.22 caliber, brass, long	.0014
.30 caliber, brass, all	.0286
.38 caliber, brass, all	.009
.45 caliber, brass, all	.0124
.45 caliber, steel, all	.012
.50 caliber, brass, all	.121
.50 caliber, steel all	.111
5.56 millimeter, brass, all	.0135
7.62 millimeter, brass, large	.026
9 millimeter parabellum	.009
20.0 millimeter, brass, small	.2
20.0 millimeter, brass, large	.25
25 millimeter, all	.48
Shotgun, brass, all	.036

TO FIND WEIGHT

B-1. Multiply the quantity of expended cartridge cases by the weight. Using the example, brass, short, expended-rounds, .22 caliber, work the formula as shown below.

FORMULA

B-2. Quantity of the item x Weight = Weight of expended cartridge cases.

COMPUTATION

B-3. 39,875 rounds x .0008 lbs = 31.9 lbs. Work to one decimal place and round down: 31 pounds expended.

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Appendix C
Ammunition Condition Codes

Ammunition condition codes are single letters that classify munitions materiel. Each ACC identifies degree of serviceability, condition, and completeness (readiness for issue and use), as well as actions under way to change the status of materiel. This appendix defines ACCs A-H, J-N, P-S and V.

ACC A–SERVICEABLE (ISSUABLE WITHOUT QUALIFICATION)

C-1. New, used, repaired, or reconditioned materiel that is serviceable and issuable to all units without limitations or restrictions. This includes materiel with more than six months shelf life remaining.

C-2. Normal incidental requirements for additional packaging, packing, marking, and so forth that can be accomplished at the time of issue (without requiring added resources, manpower, or delays) do not constitute a restriction.

ACC B–SERVICEABLE (ISSUABLE WITH QUALIFICATION)

C-3. New, used, repaired, or reconditioned materiel that is serviceable and issuable for its intended purpose; however it is restricted from issue to specific units, activities, or geographical areas by reasons of its limited usefulness or short-service life expectancy. This includes materiel with three through six months shelf life remaining.

C-4. Normal incidental requirements for additional packaging, packing, or marking, and so forth that can be accomplished at the time of issue (without requiring any added resources, manpower, or delays) do not constitute a restriction. This includes items restricted to or from a specific mission.

ACC C–SERVICEABLE (PRIORITY OF ISSUE)

C-5. Items that are serviceable and issuable to selected customers, but that must be issued before conditions A and B materiel to avoid loss as usable assets. Includes materiel with less than three months shelf life remaining.

ACC D–SERVICEABLE (TEST/MODIFICATION)

C-6. Serviceable materiel requiring test, alteration, modification, conversion, or disassembly. This does not include items that must be inspected or tested immediately before issue.

ACC E–UNSERVICEABLE (LIMITED RESTORATION)

C-7. Materiel that involves only limited expense or effort to restore to serviceable condition and is accomplished in the ASA where the stock is located. Minor maintenance is exterior to the round or munitions. Includes all repair of external surfaces and repair/replacement of packaging, packing, palletizing, and marking.

ACC F–UNSERVICEABLE (REPARABLE)

C-8. Economically reparable materiel that requires repair, overhaul, or reconditioning. Includes reparable items that are radioactively contaminated. Major maintenance usually requires replacement of end item components or modification.

ACC G–UNSERVICEABLE (INCOMPLETE)

C-9. Materiel requiring additional parts or components to complete the end item prior to issue.

ACC H–UNSERVICEABLE (CONDEMNED)

C-10. Material that has been determined to be unserviceable and does not meet repair criteria (includes condemned items that are radioactively contaminated). This includes materiel determined to be uneconomically repairable.

ACC J–SUSPENDED (IN STOCK)

C-11. Materiel in stock that has been suspended from issue and use pending condition classification or analysis, where the true condition is not known.

C-12. Includes temporarily suspended materiel pending serviceability determination. Includes USAF materiel identified and held for future test or surveillance requirements, either destructive or nondestructive in nature. May contain formerly serviceable assets that became unserviceable by reason of being reserved for test or that the shelf/service life has expired. Army ammunition that has missed two scheduled periodic inspections is included.

ACC K–SUSPENDED (RETURNS)

C-13. Materiel returned from users and awaiting condition classification. Includes items identified by stock number and item name, but not examined for condition. Stocks in this ACC will be inspected and properly classified as to condition IAW appropriate regulations. When more time is required, an extension may be granted by the applicable supply distribution activity.

ACC L–SUSPENDED (LITIGATION)

C-14. Materiel held pending litigation or negotiation with contractors or common carriers.

ACC M–SUSPENDED (IN WORK)

C-15. Materiel identified on inventory control records, but which has been turned over to a maintenance facility or contractor for processing.

ACC N–(SUITABLE FOR EMERGENCY COMBAT USE)

C-16. Munitions stocks suspended from issue except for emergency combat use.

ACC P–UNSERVICEABLE (RECLAMATION)

C-17. Materiel determined to be unserviceable, uneconomically reparable due to a physical inspection, tear-down, or engineering decision. Items contain serviceable components or assemblies to be reclaimed.

ACC Q SUSPENDED (QUALITY DEFICIENT EXHIBITS)

C-18. This code is for intra-Air Force use only. Quality Deficient exhibits returned by customer/user as directed by the inventory manager due to technical deficiencies reported by Quality Deficiency Report. Exhibit requires technical or engineering analysis to determine cause of failure to perform IAW specifications.

ACC R SUSPENDED (RECLAIMED ITEMS, AWAITING CONDITION DETERMINATION)

C-19. ACC R Suspended are assets turned in by reclamation activities, which do not have the capability (e.g., skills, manpower, or test equipment) to determine the materiel condition. Actual condition shall be determined prior to induction into maintenance activities for repair/modification.

ACC S UNSERVICEABLE (SCRAP)

C-20. Unserviceable material is material that has no value except for its basic materiel content. No stock shall be recorded as on hand in Supply Condition Code S. This code is used only on transaction involving shipments to DRMOs. Materiel shall not be transferred to Supply Condition Code S prior to turn-in to DRMOs if materiel is recorded in Supply Condition Code A thru H at the time materiel is determined excess. Materiel identified by NSN shall not be identified by this supply condition code.

ACC V WASTE MILITARY MUNITIONS

C-21. This is material identified as Waste, Military Munitions. Assignment will only occur under the coordinated authority of a designated DOD or Service Designated Disposition Authority (DDA). Prior to the custodial CCV request, the WMM must meet criteria of WMM under the DOD Military Munitions Rule Implementation Policy and must have a current inspection.

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Appendix D

Ammunition Identification

Ammunition is identified by markings and color-coding on the items themselves, the containers, and the packing boxes. The markings and standard nomenclature of each item, together with the lot number, FSC, NSN, DODIC, and DODAC, completely identify each item and are used to maintain accountable records. This appendix gives a basic explanation of markings and color-coding. Because color-coding is a more ready means of identification, it is given greater emphasis here.

MARKINGS

D-1. Markings stenciled or stamped on munitions items include all information needed for complete identification. Components in which all explosive, incendiary, or toxic materials have been simulated by substitution of inert material are identified by impressed INERT markings. Components in which all explosive, incendiary, or toxic materials have been omitted are identified by stamped EMPTY markings.

AMMUNITION LOT NUMBER

D-2. Each item of ammunition is assigned a complete round or item lot number when it is manufactured or is at the LAP plant. See MIL-STD 1168¬A for a description of the current system. See MIL-STD 1168 for a discussion of the old lot numbering system. Figure D-1 breaks down a typical ammunition lot number showing both the new and old systems.

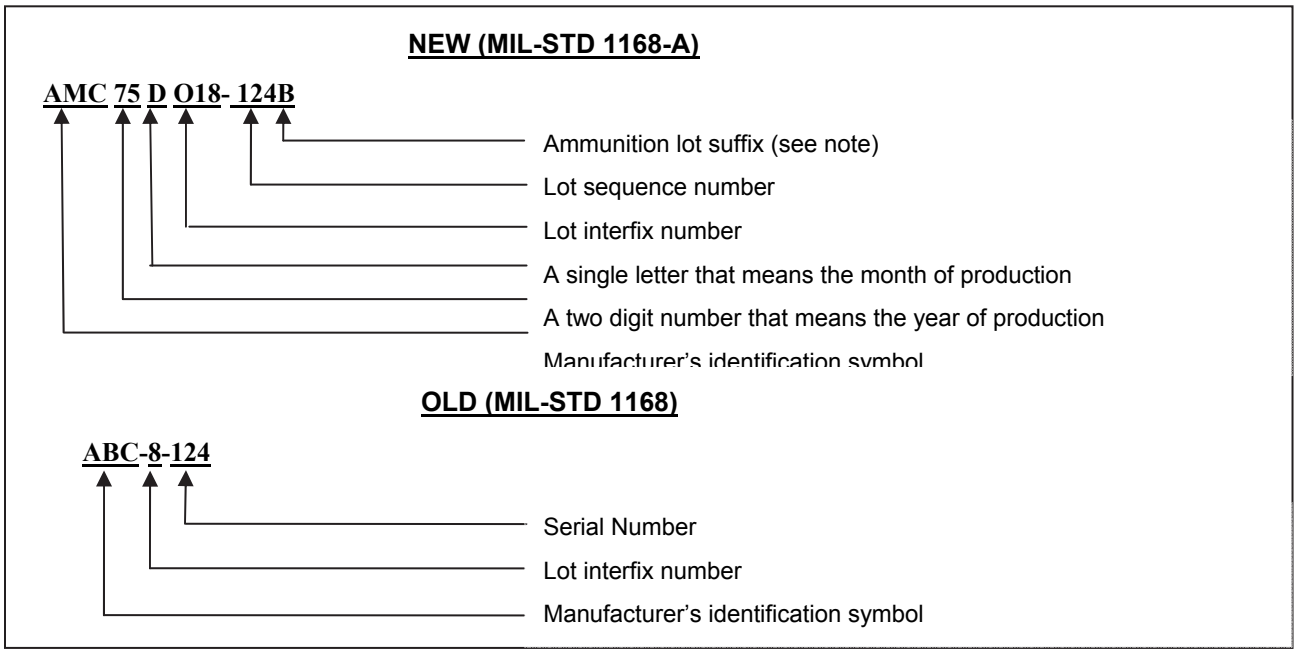

Figure D-1. Typical lot number system

Note: A letter is added to the sequence number when there is a modification through renovation. The first modification is shown by -A, the second by -B, and so on. For example, AMC 75D018-123A, AMC 75D018-123B, etc.

CONVENTIONAL AMMUNITION FEDERAL SUPPLY CLASSES

D-3. Conventional ammunition is FSG 13. Within this group, ammunition is further broken down by two more numbers that identify the general type or family in which the item falls. Table D-1 lists the FSCs.

Table D-1. FSC group 13 classes

FSC Group 13	*Ammunition and Explosive Type or Family*
1305	Ammunition, through 30mm
1310	Ammunition, over 30mm up to 75mm
1315	Ammunition, 75mm through 125mm
1320	Ammunition, over 125mm
1330	Grenades
1340	Rockets and Rocket Ammunition
1345	Land Mines
1346	Remote Munitions
1365	Military Chemical Agents
1370	Pyrotechnics
1375	Demolition Materials
1376	Bulk Explosives
1377	Cartridge and Propellant actuated devices and components
1390	Fuses and Primers
1395	Miscellaneous ammunition
1398	Specialized ammunition handling and servicing equipment
1410/20/25/27	Guided Missiles

Note: There are other FSC groups, but they are for Class V materiel outside the US Army ammunition inventory. (Look in any current copy of the DOD ammunition listing, volumes 1 through 3, for more information.)

CONVENTIONAL AMMUNITION NATIONAL STOCK NUMBERING SYSTEM

D-4. Each complete round or item of conventional ammunition or associated explosive component is identified by its own NSN. The first four numbers of the NSN is the FSC. It is followed by the National Item Identification Number, or NIIN, which consists of a two-number code identifying the country of manufacture and a seven digit-number item identification. See Figure D-2 below.

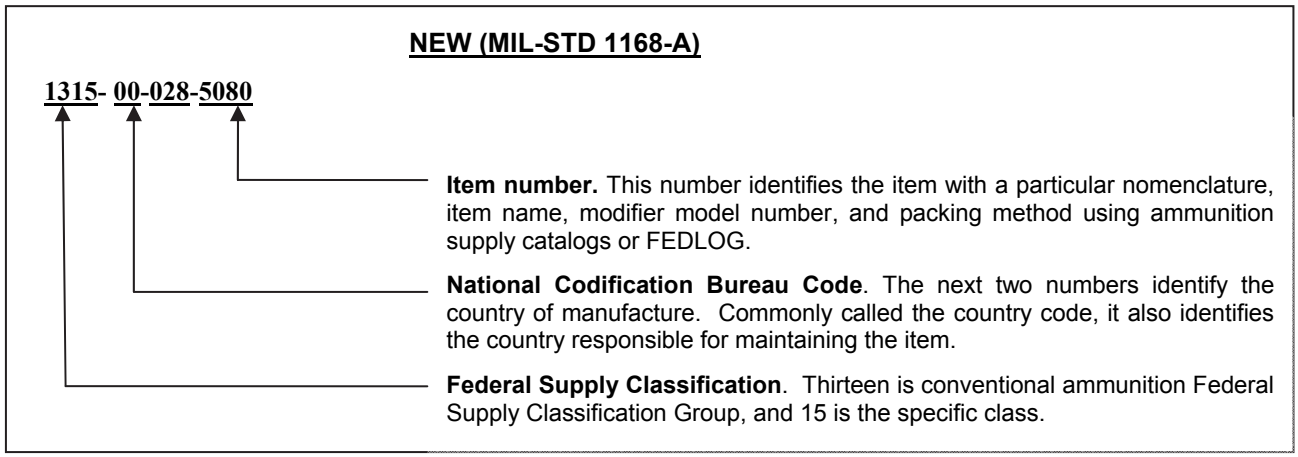

Figure D-2. Example of an NSN

DEPARTMENT OF DEFENSE IDENTIFICATION CODE

D-5. A DODIC is a four character alpha numeric code It is attached at the end of all NSNs to denote interchangeability of the item. Communications between ammunition units often use an ammunition item DODIC. See Figure D-3 for a conventional NSN with DODIC added, demonstrating interchangeability between various model numbers and the designators of an ammunition item.

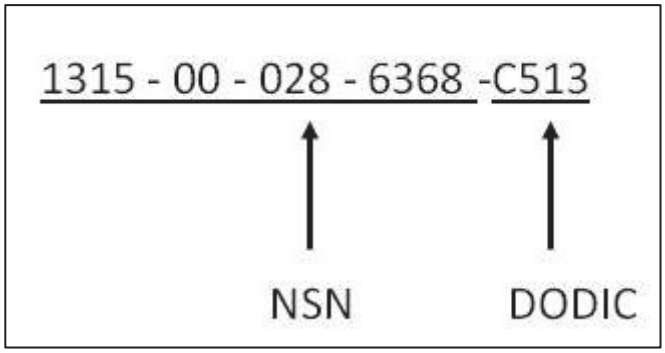

Figure D-3. Sample DODIC

DEPARTMENT OF DEFENSE AMMUNITION CODE

D-6. The DODAC includes the FSC of the ammunition and the DODIC. The code is used on all using unit DD Form 581s, DA Form 3151-Rs, and most ammunition reports. The DODAC is used instead of the DODIC to reduce errors with ammunition transactions. See Figure D-4.

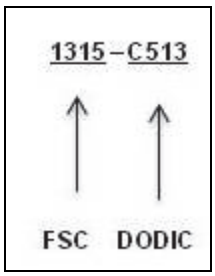

Figure D-4. Example of a DODAC

COLOR CODING

D-7. The main reason ammunition is painted is to protect it from rust. However, the color of the protective coating and markings also makes ammunition easy to identify and provides some camouflage. Ammunition 20mm and larger is color-coded IAW MIL-STD 709D (see Tables D-2 and D-3).

D-8. Small arms ammunition is not color-coded under MIL-STD 709D. Either the small arms projectiles or the bullet tips are painted a distinctive color so they can be identified quickly. Table D4 shows the color codes for types of small arms ammunition up to and including.50 caliber. For more information, see TM 9-1300-200. Significant features of the current color-coding standard are as follows:

- Olive drab. With yellow markings, OD indicates an HE round. However, OD is also being used as a basic color for certain new rounds such as ICMs, the flechette antipersonnel round, and some new illumination rounds for specific field artillery weapons.
- Overpacking. Ammunition overpacked in color-coded bombs, in unit dispensers, or in warheads, must not be color-coded.
- Standard DOD Ammunition Color Code. MIL-STD 709C contains the standard ammunition color code for 20mm and larger ammunition. Be aware, though, that there is still ammunition coded as specified by MIL-STD 709-C, MIL-STD 709-B and MIL-STD 709-A. If this is the case, see the appropriate MIL-STD or TM 9-1300-200.

Table D-2. Ammunition color code, MIL-STD 709D

Color (1,2)	*FED STD NO 595*	*Interpretation*
Yellow	33538, 30117 or 30140	Indicates the presence of high explosives
Brown		Identifies low explosive items or components or indicates the presence of a low explosive
Gray (3,4)	36231	Identifies ammunition that contain irritant, incapacitating or toxic agents when used as an overall body color except underwater ordnance
Gray with dark red band	31136	Indicates the ammunition contains an irritant (riot control) agent
Gray with dark green band	34108	Indicates the ammunition contains a toxic agent other than binary agents
Gray with broken dark green band		Indicates the ammunition contains a binary nerve agent
Gray with violet band	17100	Identifies ammunition with an incapacitating agent
Black (3,5)	37038	Identifies armor defeating ammunition, except on underwater ordnance, dummy hand grenades and when used for lettering or marking
Silver/aluminum	17178	Identifies countermeasures ammunition
Light green	34558 or 34449	Identifies screening or marking smoke ammunition
Light red	31158	Identifies incendiary ammunition or indicates the presence of highly flammable material for producing damage by fire
White (3,5,6)	37875	Identifies illuminating ammunition or

Table D-2. Ammunition color code, MIL-STD 709D

Color (1,2)	*FED STD NO 595*	*Interpretation*
		ammunition producing a colored light; exceptions are underwater ordnance, guided missiles, dispensers and rocket launchers and when used for lettering or marking
Light blue	35109	Identifies ammunition used for practice
Orange	32246	
Bronze, gold and brass	17043	Identifies dummy/drill/inert ammunition not for firing but only used for handling, loading, assembly and testing, training and display. Some dummy hand grenades may be painted black
Footnote: The following have no color coding significance. Colors specifically applied to identity the color of smoke ammunition or pyrotechnics Unpainted or natural color ammunition Gray black, green or white on underwater ammunition. Gray on air launched missiles. Black or white when used for lettering or special marking. White on guided missiles, dispensers and rocket launchers.		

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition	*Colors*		
	Body	*Markings*[1]	*Bands*
High explosive (HE), except 20mm	Olive drab	Yellow	Yellow[2,3,4,5]
High explosive (HE), 20mm	Yellow	Black	None
Explosive binary plastic (HEP)	Olive drab	Yellow	Black
High explosive antitank (HEAT)	Black	Yellow	None
Antipersonnel and antitank mines	Olive drab	Yellow	Yellow[3]
Incendiary	Light red	Black	None
High explosive incendiary (API)			
AP			
With bursting charge	Black	Yellow	None
Without bursting charge	Black	White	None
Canister	Olive drab	White	None
Flechette –loaded	Olive drab	White	White[7]
			Yellow[8]
Chemical			
Filled with toxic chemical binary nerve agent	Gray	Dark Green	One broken dark green[9,10,11]

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition	*Colors*		
	Body	*Markings*[1]	*Bands*
Illuminating			
Separate loading	Olive drab	White	White
Fixed or semi fixed	White	Black	None
Practice			
With low explosive to indicate functioning			Brown
With low explosive to indicate functioning			Yellow
With low explosive to indicate functioning			None
Screening or marking			
Smoke ammunition			
Filled with other than WP	Light green	Black	None
Filled with WP	Light green	Light red	Yellow[9]
Inert ammunition not designed to be delivered in a delivery system	Bronze	Black	None
Chemical			
Filled with a riot control agent	Gray	Red	One red[9]
Filled with an incapacity agent	Gray	Violet	One violet[9]
Filled with a toxic chemical binary nerve agent	Gray	Dark Green	One broken dark green[9,10]

Footnotes:

1. Color of the letters and figures normally used for the main identification.
2. Circumferential band of yellow diamond shaped figures on semi-fixed and separate loading improved conventional munitions.
3. Circumferential band of yellow triangular shaped figures on mass scatterable mine and loaded semi-fixed and separate loading ammunition.
4. Separate loading ammunition for shipboard use has a circumferential yellow band besides yellow markings.
5. Bombs have one yellow band except thermally protected bombs, which have two yellow bands besides yellow markings
6. Circumferential broken yellow band (1/2 inch segments with ½ inch gaps) on explosive binary munitions.
7. Circumferential band of white diamond shaped figures on ammunition containing flechettes.
8. Yellow band put on when the ammunition contains explosives used to fracture the projectile.
9. Yellow band put on to indicate HE burster.
10. Toxic chemical agent ammunition containing binary nerve agent filling shown by a broken dark green band (1/2 inch segments separated by ½ inch spaces).
11. Both color applications are standard. However, for land ammunition use, separate loading ammunition is olive drab for overall body color with a white band and main identification details marked white. Fixed and semi-fixed ammunition is white for overall body color with main identification details in black.
12. Separate loading ammunition for shipboard use has black markings and a light red band.

Table D-4. Small arms ammunition color codes

Tier	*Caliber*	*Color*	*Standard*	*Interpretation*	*Type*	*Color Application*	
						Body	*Projectile*
I	5.56mm	Silver	FED-STD-595-17178	Identifies completely inert smaller caliber ammunition designed for use in activities such as assembly, testing, handling, training, etc.	Dummy	Silver	Silver
I	5.56mm	Green	FED-STD-595-34138	Identifies ball ammunition for combat use and training	Ball	None	Green Tip
I	5.56mm	Red	FED-STD-595-11136	Identifies tracer ammunition for combat use and training with “trace to target: capability	Tracer	None	Red Tip
I	5.56mm	Orange	FED-STD-595-12246	Identifies tracer ammunition for combat use and training with “trace to target: capability	Tracer	None	Orange Tip
I	5.56mm	Black	FED-STD-595-37038	Identifies an armor piercing ammunition or indicates an armor piercing capability	Armor Piercing	None	Black Tip
I	5.56mm	Blue	FED-STD-595-15000’s/25000’s/35000’s	Identifies short range training ammunition	Short Range Training	None	Light Blue

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition			*Colors*				
			Body	*Markings*[1]		*Bands*	
I	5.56mm	Silver and Blue	natural zinc/aluminum FED-STD-595-15000's/25000's/35000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Translucent Dome with Blue Marking Compound
I	5.56mm	Silver and Red	natural zinc/aluminum FED-STD-595-11000's/21000's/31000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Translucent Dome with Red Marking Compound
I	5.56mm	Silver and Yellow	natural zinc/aluminum FED-STD-595-13000's/23000's/33000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Translucent Dome with Yellow Marking Compound
I	5.56mm	Silver and Blue	FED-STD-595-15000's/25000's/35000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Blue Dome with Blue Marking Compound
I	5.56mm	Silver and Red	natural zinc/aluminum FED-STD-595-11000's/21000's/31000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Blue Dome with Red Marking Compound
I	5.56mm	Silver and Yellow	natural zinc/aluminum FED-STD-595-13000's/23000's/33000's	Identifies close combat mission capability kit dye marking ammunition for rifles	Dye Marking	Silver	Blue Dome with Yellow Marking Compound

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition				*Colors*			
				Body	*Markings*[1]	*Bands*	
I	7.62mm	Silver	FED-STD-595-17178	Identifies completely inert small caliber ammunition designed for use in activities such as assembly, testing, handling, training, etc.	Dummy	Silver	Silver
I	7.62mm	Orange	FED-STD-595-12246	Identifies tracer ammunition for combat use and training with “trace to target: capability	Tracer	None	Orange Tip
I	7.62mm	Black	FED-STD-595-37038	Identifies an armor piercing ammunition or indicates an armor piercing capability	Armor Piercing	None	Black Tip
I	7.62mm	Blue	FED-STD-595-15000’s/25000’s/35000’s	Identifies short range training ammunition	Short Range Training	None	Light Blue
I	7.62mm	Blue & Red	FED-STD-595/15000’s/25000’s/ 35000’s/11000’s/21000‘s/ 31000’s	Identifies short range training tracer ammunition	Short Range Tracer Training	None	Light Blue projectile & Red Tip
I	7.62mm	Red	FED-STD-595/11136	Identifies overhead fire tracer ammunition for training	Tracer Overhead	None	Red Tip

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition			*Colors*				
			Body	*Markings*[1]		*Bands*	
I	7.62mm	Purple	FED-STD-595/37142	Identifies dim tracer ammunition for combat use and training with 'trace to target' capability when night vision is used	Dim Tracer	None	Purple Tip
I	9mm	Silver	FED-STD-595/17178	Identifies completely inert small caliber ammunition designed for use in activities such as assembly, testing, handling, training, etc.	Dummy	Silver	Silver
I	9mm	Blue & Red	FED-STD-595/35240	Identifies practice tracer ammunition used for training of shoulder fired rocket launcher	Practice Tracer	None	Blue projectile & Red Tip
I	9mm	Silver & Blue	natural zinc/aluminum FED-STD-595/15000's/ 25000's/35000's	Identifies close combat mission capability kit dye marking ammunition	Dye Marking	Silver	Translucent Dome with Blue Marking Compound
I	9mm	Silver & Red	natural zinc/aluminum FED-STD-595/11000's/ 21000's/31000's	Identifies close combat mission capability kit dye marking ammunition	Dye Marking	Silver	Translucent Dome with Red Marking Compound
I	9mm	Silver & Yellow	natural zinc/aluminum FED-STD-595/13000's/ 23000's/33000's	Identifies close combat mission capability kit dye marking ammunition	Dye Marking	Silver	Translucent Dome with Yellow Marking Compound

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition				*Colors*			
				Body	*Markings*[1]	*Bands*	
I	.50 cal	Silver	FED-STD-595/17178	Identifies completely inert small caliber ammunition designed for use in activities such as assembly, testing, handling, training, etc.	Dummy	Silver	Silver
I	.50 cal	Gray & Red	FED-STD-595/26493 FED-STD-595/11136	Identifies an armor piercing incendiary tracer ammunition or indicates an armor piercing incendiary tracer capability	Armor Piercing Incendiary Tracer	None	Gray & Red Tip
I	.50 cal	Gray & Green	FED-STD-595/26493 FED-STD-595/14187	Identifies an armor piercing incendiary ammunition or indicates an armor piercing incendiary capability	Armor Piercing Incendiary	None	Gray & Green Tip
I	.50 cal	Gray & Purple	FED-STD-595/26493 FED-STD-595/37142	Identifies an armor piercing incendiary dim tracer ammunition or indicates an armor piercing incendiary dim tracer capability	Armor Piercing Incendiary Dim Tracer	None	Gray & Purple Tip
I	.50 cal	Blue	FED-STD-595/35109	Identifies short range training ammunition	Identifies short range training ammunition	Blue	Light Blue

Table D-3. Application of color codes for particular ammunition items, MIL-STD 709D

Ammunition			***Colors***				
			Body	***Markings[1]***		***Bands***	
I	.50 cal	Blue & Red	FED-STD-595/35109 FED-STD-595/31158	Identifies short range training tracer ammunition	Short Range Tracer Training	Blue	Light Blue projectile & Red Tip
I	.50 cal	Amber Sabot & Silver Penetrator	ULTEM1000 sabot plastic & natural tungsten alloy	Identifies saboted light armor penetrator ammunition	Saboted Light Armor Piercing	None	Amber Sabot & Silver Penetrator
I	.50 cal	Red Sabot & Silver Penetrator	ULTEM1000-6015 sabot plastic & natural tungsten alloy	Identifies tracer saboted light armor penetrator ammunition	Saboted Light Armor Piercing Tracer	None	Red Sabot & Silver Penetrator

Appendix E

Compatibility Storage Groups

Munitions are assigned to one of thirteen SCGs based on ammunition and explosives storage principles and mixed storage considerations. The SCGs are discussed in detail in this appendix.

COMPATIBILITY GROUP CRITERIA

E-1. Criteria used to assign munitions to the appropriate SCG (i.e., A-H, J-L, N, or S) are given below. Descriptions include examples of the types of munitions within each group.

GROUP A

E-2. Group A consists of bulk initiating explosives with sufficient sensitivity to heat, friction, or percussion to qualify them for use as initiating elements in an explosive train. Examples of initiating explosives are wet lead azide, wet lead styphnate, wet mercury fulminate, wet tetacene, and dry RDX and PETN.

GROUP B

E-3. Group B consists of detonators and similar initiating devices not containing two or more independent safety features. Examples include detonators, blasting caps, small arms primers, and fuzes.

GROUP C

E-4. Group C consists of bulk propellants, propelling charges, and devices containing propellant with or without means of ignition. Upon initiation, these items will deflagrate, explode, or detonate. They include single-, double-, and triple-base and composite propellants; rocket motors (solid propellants); and ammunition with inert projectiles.

GROUP D

E-5. Group D includes black powder, HE, and ammunition containing HE without its own means of initiation and without propelling charge, or a device containing an initiating explosive and containing two or more independent safety features. Munitions in this category can be expected to explode or detonate when any item or component is initiated except for devices containing initiating explosives with independent safety features. Examples include bulk TNT, Comp B, black powder, and wet RDX or PETN, bombs, projectiles, CBUs, depth charges, and torpedo warheads. Black powder saluting charges, torpedo warheads, and fuses with two or more safeing features are also part of this group.

GROUP E

E-6. Group E consists of ammunition containing HE without its own means of initiating and with propelling charge. Examples include artillery ammunition, rockets, or guided missiles.

GROUP F

E-7. Group F consists of ammunition containing HE with its own means of initiation and with or without propelling charge. Examples are grenades, sounding devices, and similar items having an inline explosive train in the initiator.

GROUP G

E-8. Group G consists of fireworks; illuminating, incendiary, or smoke munitions (including HC); or tear-producing, incendiary smoke (including JIC), or sound effects. This category does not include munitions that are water-actuated or that contain white phosphorus or flammable liquid or gel. Examples of Group G munitions are flares, signals, incendiary or illuminating ammunition, and other smoke- or tear-producing devices.

GROUP H

E-9. Group H munitions contain fillers that are spontaneously flammable when exposed to the atmosphere. These include white phosphorus, plasticized white phosphorus, or other pyrophoric material.

GROUP J

E-10. Group J munitions contain both explosives and flammable liquids or gels other than those that are spontaneously flammable when exposed to water or the atmosphere. Examples include liquid-or gel-filled incendiary ammunition, FAE devices, flammable liquid-fueled missiles, and torpedoes.

GROUP K

E-11. Group K munitions contain both explosives and toxic chemical agents. Items in this category contain chemicals specifically designed for incapacitating effects more severe than lachrymation (i.e., excessive secretion of tears). They include artillery or mortar ammunition, fuzed or unfuzed; and grenades, rockets, or bombs filled with lethal or incapacitating chemical agents.

GROUP L

E-12. Group L is comprised of munitions not included in other compatibility groups. Types presenting similar hazards may be stored together but not mixed with other groups. Examples include water-activated devices, prepackaged liquid-fueled rocket engines, FAE, TEA, and damaged or suspect munitions of any group.

GROUP N

E-13. Group N consists of munitions containing only EIDs. Examples are bombs and warheads.

GROUP S

E-14. Group S contains munitions that present no specific hazards. Included in this category is ammunition designed or packed to confine or contain any explosive effect to the item or package. If the package has been degraded by fire, all blasts will be limited to the extent that they do not significantly hinder firefighting. An incident may destroy all items in a single pack but must not be communicated to other packs so that all are destroyed. Examples of Group S munitions are thermal batteries, explosive switches or valves, and other items packaged to meet group criteria.

MEANS OF INITIATION

E-15. A munitions item with its “own means of initiation” is one that has a normal initiating device assembled to it. This configuration presents a significant risk during storage because detonation can occur during accidental functioning of the device. However, the term does not apply when the initiating device is packaged in such a way as to eliminate the risk of detonation or when fuzed end items are configured and packaged to prevent arming. If safety features are in place to prevent initiation or detonation of the explosive filler, the initiating device may be assembled to munitions.

MIXING COMPATIBILITY GROUPS

E-16. Table E-1 demonstrates how different SCGs can be mixed in storage. Groups that are intersected by an "X" (e.g., A-A, B-B, B-S, C-S, etc.) may be combined in storage. Groups intersected by a "Z" may be approved by the senior Army sustainment commander in Theater for mixed storage of limited quantities. Approval constitutes a waiver and may be granted only when warranted by operational considerations or magazine non-availability and when safety is not sacrificed. DA determines which items within Group K may be stored together and which must be stored separately. Group K requires not only separate storage from other groups but may also require separate storage within the group. Exceptions to the table are discussed in this section.

Table E-1. Mixing compatibility groups

Group	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*J*	*K*	*L*	*N*	*S*
A	X	Z											
B	Z	X	Z	Z	Z	Z	Z	Z				X	X
C		Z	X	X	X	Z	Z	Z				X	X
D		Z	X	X	X	Z	Z	Z				X	X
E		Z	X	X	X	Z	Z	Z				X	X
F		Z	Z	Z	Z	X	Z	Z				Z	X
G		Z	Z	Z	Z	Z	X	X				Z	X
H								X					X
J									X				X
K										Z			
L													
N		X	X	X	X	Z	Z					X	X
S		X	X	X	X	X	X	X	X			X	X

E-17. When evaluating storage compatibility criteria, consider the following points, if relevant:

- Compliance with compatibility criteria is not required for mission essential or operationally necessary quantities of explosives in HC/D 1.4 or 6.1 (excluding toxic chemical munitions); up to 100 pounds NEW HC/D 1.3; and up to 50 pounds NEW HC/D (04)1.2. See DA Pam 385-64 for Q-D requirements.
- Equal numbers of separately packaged components of complete rounds of any single type of ammunition may be stored together. When so stored, compatibility is that of the assembled round (i.e., WP filler in Group H, HE filler in Groups D, E, or F as appropriate.
- Munitions that do not contain explosives but do contain substances properly belonging to another U.N.HC/D may be assigned to the same compatibility group as items containing explosives and the same substances. They may also be stored with them.
- DA may authorize munitions items designated "Practice" by NSN and nomenclature to be stored with the fully loaded munitions they simulate.
- The ACOM may authorize the mixing of compatibility groups (except items in Groups A, K, and L) in quantities not exceeding 1,000 pounds NEW per storage site.
- For purposes of mixing, all items must be packaged in approved storage containers. Items must not be unpackaged at the storage location.
- Groups B and F munitions will be segregated in storage from articles of other groups by means that effectively prevent propagation.
- If dissimilar HC/D 1.6, SCG N munitions (such as MK 82 and MK 84 bombs) are mixed together and have not been tested to assure non-propagation, the mixed munitions are considered to be HC/D 1.2, SCG D for purposes of transportation and storage. See DA Pam 385-64 about changing Q-D class/divisions when mixing SCG N munitions with SCG B through G.

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Appendix F

Ammunition Equipment/Tools Listing

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
1,1,1-TRICHLOROETHYLENE, TECHNICAL	6810005511487	0-T-620	DR	GL	55
ACETONE, TECHNICAL	6810001844796	0-A-51	CN	GL	5
ACETONE, TECHNICAL	6810002232739	0-A-51	PT		
ACETONE, TECHNICAL	6810002811864	0-A-51	DR	GL	54
ADAPTER, FUZE, HAND GRENADE	4925010334451	9214161	EA		
ADHESIVE	8040002629011	MIL-A5092	PT		
ADHESIVE	8040005437170	MMM-A-189	PT		
ADHESIVE	8040008779872	MIL-A-46106	KT		
ADHESIVE	8040008430802	MIL-A-46106	KT		
ALCOHOL, DENATURED	6810005437415	0-E-760	GL		
ALCOHOL, DENATURED, GRADE IV	6810007822686	0-E-760	BX	GL	6
ALCOHOL, DENATURED, TYPE 4	6810002056786	0-E-760	QT		
ALCOHOL, ISOPROPYL, TECHNICAL	6645005437915	TT-I-735	DR	GL	55
APRON, FOOD HANDLERS, COTTON, WHITE	8415010450587	A-A-3105	EA		
APRON, FOOD HANDLERS, MEDIUM	8415006340205	A-A-3105	PG	EA	10
APRON, IMPERMEABLE, RUBBER	8415000826108	MIL-A-41829	EA		
APRON, TOXICOLOGICAL AGENTS PROTEC, LARGE	8415002817815	MIL-A-2334	EA		
APRON, TOXICOLOGICAL AGENTS PROTEC, MED	8415002817814	MIL-A-2334	EA		
APRON, TOXICOLOGICAL AGENTS PROTEC, SMALL	8415002817813	MIL-A-2334	EA		
APRON, UTILITY, FULL LENGTH, RUBBER	8415006345023	ZZ-A-605	EA		
BAG, PLASTIC, WATERPROOF, ANTISTATIC	8105011203380	MIL-B-117	HD		
BAND, MARKER	9905000274577	MS-3367-2	PG	EA	50
BAR WRECKING, NONSPARKING, 36" L	5120001800872	GGG-B-101	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
BAR, SPANNER WRENCH, 18"	5120000497979	2847278	EA		
BARRIER MATERIAL, GREASEPROOFED, 36"W	8135002333871	MIL-B-121	RO	YD	200
BARRIER MATERIAL, GREASEPROOFED, 36"W	8135002224027	MIL-B-121	RO	YD	100
BARRIER MATERIAL, GREASEPROOFED, 36"W	8135002248885	MIL-B-121	RO	YD	200
BARRIER MATERIAL, GREASEPROOFED, 36"W	8135002929728	MIL-B-121	RO	YD	100
BARRIER MATERIAL, GREASEPROOFED, 36"W	8135002929719	MIL-B-121	RO	YD	100
BARRIER MATERIAL, HEAT SEALABLE, 12"W	8135005436573	MIL-B-121	RO	YD	200
BARRIER MATERIAL, HEAT SEALABLE, 48"W	8135005436574	MIL-B-121	RO	YD	100
BARRIER MATERIAL, HEAT SEALABLE, 7"W	8135008104075	MIL-B-121	RO	YD	940
BARRIER MATERIAL, WATER-VAP, 36" WIDE	8135010152810	MIL-B-131	RO	YD	200
BARRIER MATERIAL, WATER-VAPERPROOF, 12"W	8135010194165	MIL-B-131	RO	YD	200
BARRIER MATERIAL, WATER-VAPERPROOF, 36"W	8135002820565	MIL-B-131	RO	YD	200
BARRIER MATERIAL, WATER-VAPERPROOF, 4"W	8135010561938	MIL-B-131	RO	YD	200
BATTERY, NONRECHARGEABLE, BA-245/U	6135001281632	MIL-B-13136	EA		
BLADE, HAND, HACKSAW, 10", STEEL	5110002774587	GGG-B-451	BD		
BLADE, HAND, HACKSAW, 12" STEEL	5110002774590	GGG-B-451	BD		
BLASTING MACHINE, CD450-4J (REPLACES M34)	1375014177104		EA		
BLASTING MACHINE, M34 (until exhausted)	1375005670223	MIL-E-63094B	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 28	8470007536110	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 30	8470007536111	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 32	8470007536112	MIL-B-43366	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
BODY ARMOR FRAGMENTATION (GROIN) SZ 34	8470007536113	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 38	8470007536115	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 40	8470007536116	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (GROIN) SZ 42	8470007536117	MIL-B-43366	EA		
BODY ARMOR FRAGMENTATION (VEST) LG LONG	8470001410938		EA		
BODY ARMOR FRAGMENTATION (VEST) LG REG	8470001410936		EA		
BODY ARMOR FRAGMENTATION (VEST) MED LONG	8470001410937		EA		
BODY ARMOR FRAGMENTATION (VEST) MED REG	8470001410935		EA		
BODY ARMOR, FRAGMENTATION (GROIN) SZ 36	8470007536114	MIL-B-43366	EA		
BRUSH, ARTIST	8020002440153	H-B-241	EA		
BRUSH, ARTIST	8020002468504	H-B-118	EA		
BRUSH, ARTIST	8020002406362	H-B-118	EA		
BRUSH, ARTIST'S	8020002248028	H-B-371	EA		
BRUSH, ARTIST'S	8020002406361	H-B-118	EA		
BRUSH, PAINT	8020002427266	H-B-420	EA		
BRUSH, PAINT, 1 1/2"L X 2"W	8020007219657	H-B-451	EA		
BRUSH, PAINT, 1 1/4"L X 1"W	8020007219646	H-B-451	EA		
BRUSH, PAINT, 1 3/8"L X 1 1/2"W	8020007219650	H-B-451	EA		
BRUSH, PAINT, 1 5/8"L X 2"W	8020008500084	H-B-491	EA		
BRUSH, PAINT, 2 1/2"L X 2"W	8020005590389	H-B-491	EA		
BRUSH, PAINT, 2 1/8"L X 1 1/2"W	8020008897919	H-B-695	EA		
BRUSH, STAINLESS STEEL	7920009003577	1 5SS	EA		
BRUSH, STENCIL	7520002238000	H-B-621	EA		
BRUSH, STENCIL	7520002489285	H-B-621	EA		
BRUSH, VARNISH	8020002629084	MS16865	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
BRUSH, VARNISH AND ENAMEL	8020002601302	H-B-695	EA		
BRUSH, WIRE, SCRATCH, BERYLLIUM COPPER	7920002555135	H-B178	BX	EA	12
BRUSH, WIRE, SCRATCH, BERYLLIUM COPPER	7920002690933	H-B178	EA		
BRUSH, WIRE, SCRATCH, STEEL	7920002628602	H-B178	EA		
BRUSH, WIRE, SCRATCH, STEEL	7920002829246	H-B178	EA		
BRUSH, WIRE, SCRATCH, STEEL	7920002915815	H-B178	EA		
BRUSH. ARTIST	8020002440154	H-B-241	EA		
BRUSH. ARTIST	8020002440156	H-B-241	EA		
CABLE, POWER, ELECTRICAL, 18 AWG	6145002996172	MIL-C-442	CL	FT	500
CABLE, TELEPHONE WDIA.5KILOMETER	6145011554258		RL	FT	1640
CAN, FLAMMABLE WASTE, 6 GAL, RED	7240002828411	A-A-1674	EA		
CAN, PLUNGER, FLAMMABLE LIQUID .25 GAL	4940006339670	808306	EA		
CAN, PLUNGER, FLAMMABLE LIQUID, .5 GAL	4940000308161	120-4355	EA		
CHALK, MARKING, WHITE	7510002236706	SC-C-266	GR		144
CHEMICAL HAZARD SYMBOL 1, SET 1, 12"	7690010819585	MIL-M-43994	PG	EA	
CHEMICAL HAZARD SYMBOL 1, SET 1, 24"	7690010819586	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 1, SET 2, 12"	7690010820291	MIL-M-43994	PG	EA	
CHEMICAL HAZARD SYMBOL 1, SET 2, 24"	7690010819587	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 1, SET 3, 12"	7690010819588	MIL-M-43994	PG	EA	
CHEMICAL HAZARD SYMBOL 1, SET 3, 24"	7690010836272	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 2, 12"	7690010826710	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 2, 24"	7690010819589	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 3, 12"	7690010820292	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL 3, 24"	7690010822254	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT BZ, 12"	7690010826711	MIL-M-43994	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
CHEMICAL HAZARD SYMBOL, AGENT BZ, 24"	7690010826712	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT G, 12"	7690010817481	MIL-M-43944	EA		
CHEMICAL HAZARD SYMBOL, AGENT G, 24"	7690010825418	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT H, 12"	7690010831663	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT H, 24"	7690010826713	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT L, 12"	7690010826714	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT VX, 12"	7690010817482	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL, AGENT VX, 24"	7690010817483	MIL-M-43994	EA		
CHEMICAL HAZARD SYMBOL. AGENT L, 24"	7690010826715	MIL-M-43994	EA		
CHISEL, COLD, 7 3/4"L X 7/8"W, NONSPRKG	5110002211372	MIL-C-21262	EA		
CHISEL, COLD, 9"L X 1"W, NONSPARKING	5110002222127	MIL-C-21262	EA		
CLEANING, LUBRICANT, AND PRESERVATIVE	9150010796124	MIL-L-63460	EA	GA	1
CLEANING, LUBRICANT, AND PRESERVATIVE	9150011021473	MIL-L-63460	BT	OZ	0.5
CLOTH, ABRASIVE, ALUM OXIDE, 320 GRIT	5350002460330	A-A-1048	PG	EA	50
CLOTH, ABRASIVE, ALUM OXIDE, EXTRA FINE	5350001925049	0P-C-451	PG	EA	
CLOTH, ABRASIVE, CROCUS CLOTH	5350002210872	P-C-458	PG	SH	50
CLOTH, ABRASIVE, EMERY, MED GRIT	5350005844653	A-A-1049	PG	EA	50
CLOTH, CLEANING	7920004018034	A-A162	HD	EA	100
COATING COMPOUND, BITUMINOUS SOLVENT	8030002905140	MIL-C-450	CN	GL	5
COATING COMPOUND, BITUMINOUS SOLVENT	8030002905141	MIL-C-450	GL		
COATING COMPOUND, BITUMINOUS SOLVENT	8030006647105	MIL-C-450	GL		
COATING COMPOUND, METAL PRETREATMENT	8030001658577	DOD-P-15328	KT		
COATING COMPOUND, METAL PRETREATMENT	8030002812726	DOD-P-15328	KT		
COATING COMPOUND, METAL PRETREATMENT	8030002812726	MIL-P-15328	KT		
COMPOUND, CLEANING SOLVENT	6850009845853	MIL-C-81302	CN	GL	5
COMPOUND, SILICONE	6850006644959	MIL-C-21567	GL		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
CONTAINER, PLASTIC, MOULDED	8115001450038	PPP-C-569	EA		
CORROSION PREVENTIVE COMPOUND	8030002312345	MIL-C-16173	GL		
CORROSION REMOVING COMPOUND	6850001749672	MIL-C-10578	GL		
COVERALLS, EXPLOSIVES HANDLERS, LARGE	8415002798721	MIL-C-14610	EA		
COVERALLS, EXPLOSIVES HANDLERS, MEDIUM	8415002798720	MIL-C-14610	EA		
COVERALLS, EXPLOSIVES HANDLERS, SMALL	8415002798719	MIL-C-14610	EA		
COVERALLS, EXPLOSIVES HANDLERS, X-LARGE	8415002798722	MIL-C-14610	EA		
COVERALLS, EXPLOSIVES HANDLERS, X-SMALL	8415002802455	MIL-C-14610	EA		
CRIMPER, BLASTING CAP	5120013136937	5762416	EA		
CRIMPER, BLASTING CAP, W/FUZE CUTTER	5120000290683	MIL-C-43438	EA		
CRIMPING TOOL, TERMINAL, .0159-.0320 AWG	5120006840818	59275	EA		
CUTTER, BOLT, 5/16" MAX. BOLT SIZE	5110005969162	GG-C-740	EA		
CUTTER, STEEL STRAPPING	5110002236281	GGG-C-835	EA		
CUTTER, STEEL STRAPPING, .035 MAX THICK	5110007713732	GGG-C -835	EA		
DESICCANT, ACTIVATED, 1200 EA	6850002646564	MIL-D-3464	CN		
DESICCANT, ACTIVATED, 130 EA	6850002646573	MIL-D-3464	CN		
DESICCANT, ACTIVATED, 150 EA	6850002646572	MIL-D-3464	DR		
DESICCANT, ACTIVATED, 250 EA	6850002646562	MIL-D-3464	CN		
DESICCANT, ACTIVATED, 300 EA	6850002646571	MIL-D-3464	DR		
DESICCANT, ACTIVATED, 450 EA	6850002646568	MIL-D-3464	CN	EA	450
DESICCANT, ACTIVATED, 500 EA	6850002646574	MIL-D-3464	DR		
DETERGENT, GEN PURPOSE, FLAKE OR POWDER	7930002498036	P-D-220	CO	LB	5

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
DRILL, BREAST, DUAL SPEED, 0-1/2" CHUCK	5110005969323	GGG-D-651	EA		
DRILL, ELEC PORTABLE, AC OR DC, 115 VOLT	5130002933456	W-D-661	EA		
DRILL, HAND, NON RATCHETING, W/8PC DRILL	5110002933411	GGG-D-671	EA		
EMAMEL, GOLD, #17043, SPRAY	8010007219752	A-A-665	PT		
ENAMEL, ALUMINUM #17178	8010007219751	A-A-665	PT		
ENAMEL, BLACK #27038	8010008444792	TT-E-529	QT		
ENAMEL, BLACK #37038	8010002970800	TT-E-515	GL		
ENAMEL, BLACK #37038, SPRAY	8010009108154	TT-E-516	PT		
ENAMEL, BLACK #37038, SPRAY	8010013316108	A-A-2787	PT		
ENAMEL, BLUE #35109	8010002972119	TT-E-516	GL		
ENAMEL, BLUE #35109, SPRAY	8010009357156	TT-E-516	PT		
ENAMEL, BROWN #30117	8010005985465	TT-E-527	GL		
ENAMEL, CLEAR	8010005152487	A-A-665	PT		
ENAMEL, CLEAR, SPRAY	8010013316122	A-A-2787	PT		
ENAMEL, CLEAR, SPRAY	8010000675436	TT -E-488	PT		
ENAMEL, FOREST GREEN	8010011208382	MIL-E-52798	GL		
ENAMEL, GOLD # 17043, SPRAY	8010014811141	A-A-2787	PT		
ENAMEL, GOLD #17043, SPRAY	8010007219752	TT-E-488	PT		
ENAMEL, GRAY #36231	8010002972120	TT-E-516	GL		
ENAMEL, GRAY #36231, SPRAY	8010006169144	TT-E-527	PT		
ENAMEL, GREEN #34108	8010002972118	TT-E-516	GL		
ENAMEL, GREEN #34558	8010008283193	TT-E-516	GL		
ENAMEL, OLIVE DRAB #14064, SPRAY	8010013316111	A-A-2787	PT		
ENAMEL, OLIVE DRAB #34088	8010002972113	TT-E-516	CN	GL	5
ENAMEL, OLIVE DRAB #34088	8010002972116	TT-E-516	GL		
ENAMEL, OLIVE DRAB #34088, SPRAY	8010008489272	TT-E-516	PT		
ENAMEL, ORANGE #12197, SPRAY	8010005843148	A-A-665	PT		
ENAMEL, ORANGE #12197, SPRAY	8010013363981	A-A-2787	PT		
ENAMEL, ORANGE #12215, SPRAY	8010007219479	TT-L-50	PT		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
ENAMEL, ORANGE #32246	8010002970563	TT-E-527	GL		
ENAMEL, RED #11136	8010005273198	TT-E-489	GL		
ENAMEL, RED #31136	8010002970809	TT-E-515	GL		
ENAMEL, SAND #30277	8010002910889	TT-E-515	CN	GL	5
ENAMEL, SAND #30277	8010005985460	TT-E-527	GL		
ENAMEL, WHITE #17875	8010006644761	TT-E-489	GL		
ENAMEL, WHITE #37875	8010002970568	TT-E-527	GL		
ENAMEL, WHITE #37875	8010002972111	TT-E-516	GL		
ENAMEL, WHITE #37875, SPRAY	8010007829356	TT-E-527	PT		
ENAMEL, WHITE #37875, SPRAY	8010008785761	TT-E-516	PT		
ENAMEL, WHITE #37875, SPRAY	8010013316106	A-A-665	PT		
ENAMEL, YELLOW #13538	8010005272045	TT-E-489	GL		
ENAMEL, YELLOW #13538, SPRAY	8010007219744	A-A-665	PT		
ENAMEL, YELLOW #23538, SPRAY	8010008515525	SW1O1-43	BX	EA	12
ENAMEL, YELLOW #33538	8010002972112	TT-E-516	GL		
ENAMEL, YELLOW #33538	8010008486424	TT-E-516	QT		
ENVELOPE, PACKING LIST	8105003344120	0141-308-9800MOD	HD		
EPOXY COATING KIT	8010013138702	MIL-C-22750	KT		
EPOXY COATING KIT, CLEAR	8010013138703	MIL-C-22750	KT		
EPOXY PRIMER COATING KIT, YELLOW	8010000822450	MIL-P-23377	KT		
FACESHIELD, INDUSTRIAL, CLEAR	4240002029473	L-F-36	EA		
FACESHIELD, INDUSTRIAL, CLEAR, PLASTIC	4240005422048	L-F-36	EA		
FELT SHEET, 1/2" THICK, 60"-72" WIDE	8305001911101	C-F-202	SF		
FIRE SYMBOL 1, 12"	7690010819581	MIL-M-43994	PG	EA	
FIRE SYMBOL 1, 24"	7690010820290	MIL-M-43994	EA		
FIRE SYMBOL 2, 12"	7690010877340	MIL-M-43994	PG	EA	
FIRE SYMBOL 2, 24"	7690010820289	MIL-M-43994	EA		
FIRE SYMBOL 3, 12"	7690010819582	MIL-M-43994	PG	EA	
FIRE SYMBOL 3, 24"	7690010819583	MIL-M-43Q94	EA		
FIRE SYMBOL 4, 12'	7690010819584	MIL-M-43994	EA		
FIRE SYMBOL 4, 24"	7690010826709	MIL-M-43994	EA		
FIRST AID KIT, GP, 20-25 PERSONNEL	6545006561094	GG-K-391	EA		
FLAG, SIGNAL, RED, TARGET RANGE, 3X2'	8345005559733	MIL-F-2692	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
FLASHLIGHT, EXPLOSIVE PROOF, TAPERED	6230002993035	MIL-F-3747	EA		
FLASHLIGHT, RT ANGLE	6230002648261	MIL-F-3747	EA		
FRAME, HAND, HACKSAW 1O"-12" BLADES	5110002899657	GGG-F-671	EA		
FUNGICIDE, COPPER NAPTHENATE MIX	6840002820971	MIL-W-18142	CO	GL	5
FUNGICIDE, COPPER NAPTHENATE, WOOD PRESE	8030012096298	TT-W-572	CO	GL	5
FUSEHOLDER, EXTRACTOR POST	7540010285726		EA		
GLASSES, SAFETY	VARIOUS	ANSI Z87.1	PR		
GLOVE INSERTS, CHEMICAL PROTECTIVE, MED	8415002688353	MIL-DTL-3866	PR		
GLOVE INSERTS, RADIOACTIVE CONTAMINATION	8415007822809	MIL-G-82241	PR		
GLOVE, INSERTS, CHEMICAL PROTECTIVE, MED	8415011382495	PD92-02	PR		
GLOVES, CHEMICAL AND OIL PROTEC, SZ 11	8415010137384	MIL-G-87066	PR		
GLOVES, CHEMICAL AND OIL PROTEC, SZ 9	8415010129294	MIL-G-87066	PR		
GLOVES, CHEMICAL AND OIL PROTECTION SZ 7	8415011476263	MIL-G-87066	PR		
GLOVES, DISPOSABLE	8415006826786		PR		
GLOVES, MEN'S AND WOMEN'S, LEATHER, SZ 3	8415002687869	MIL-G-2366	PR		
GLOVES, MEN'S AND WOMEN'S, LEATHER, SZ 4	8415002687870	MIL-G-2366	PR		
GLOVES, MEN'S MED, CLOTH, LEATHER PALM	8415006344660	JJ-G-451	PR		
GLOVES, MEN'S, MED, CLOTH, LEATHER PALM	8415006344658	JJ-G-451	PR		
GLOVES, RUBBER, INDUSTRIAL, SIZE 10	8415008237459	ZZ-G-381	PR		
GLOVES, RUBBER, INDUSTRIAL, SIZE 11	8415006414601	ZZ-G-381	PR		
GLOVES, RUBBER, INDUSTRIAL, SIZE 9	8415008237458	ZZ-G-381	PR		
GLOVES, RUBBER, INDUSTRIAL, SZ 11	8415008237460	ZZ-G-381	PR		
GLOVES, RUBBER, SIZE 10, GAUNTLET	8415002668677	ZZ-G-381	PR		
GLOVES, RUBBER, SIZE 11, GAUNTLET	8415002668675	ZZ-G-381	PR		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
GLOVES, RUBBER, SIZE 12, GAUNTLET	8415002668673	ZZ-G-381	PR		
GLOVES, RUBBER, SIZE 9, GAUNTLET	8415002668679	ZZ-G-381	PR		
GOGGLES, INDUSTRIAL	4240001906432	GGG-G-521	PR		
GOGGLES, INDUSTRIAL, CLEAR	4240002697912	A-A-1814	PR		
GOGGLES, INDUSTRIAL, D6, CLEAR PLASTIC	4240000523776	GG-G-531	PR		
GRAIN, ABRASIVE, ALUM, OXIDE, 120 GRIT	5350002303251	A-A-1045	CO	LB	50
GRAIN, ABRASIVE, GLASS BEADS	5350009357698	MIL-G-9954	CO	LB	50
HAMMER, HAND, 16 OZ, CURVED CLAW	5120008925485	GGG-H-86	EA		
HAMMER, HAND, 16 OZ, STRAIGHT CLAW	5120009006113	GGG-H-86	EA		
HAMMER, HAND, 2 1/2 LBS, NON-SPARKING	5120009039303	A-A-2476	EA		
HAMMER, HAND, 20 OZ, CURVED CLAW	5120009006109	GGG-H-86	EA		
HAMMER, HAND, BALL-PEEN, 8 OZ.	5120000618541	GGG-H- 86	EA		
HAMMER, HAND, NONSPRKG, BALL-PEEN 32 OZ	5120001871034	MIL-H-18745	EA		
HAMMER, HAND, NONSPRKG, BALL-PEEN, 24 OZ	5120001871033	MIL-H-18745	EA		
HOLDER AND CUTTER, WRAPPING PAPER	7290002986913	FF-H-571	EA		
HOLDER AND CUTTER, WRAPPING PAPER	7290002987040	FF-H-571	EA		
HOSE ASSY, NON-METALLIC, FIRE, 1" IN DIA	4210007771591	5100-186	LG	FT	100
HYDROCHLORIC, ACID, TECHNICAL	6810008238010	0-H-765	DR	GL	15
INDICATOR, HUMIDITY, CARD, 50,40,30	6685007528240	MS-20003-2	CN	EA	125
INK, MARKING, STENCIL, BLACK	7510002246734	A-A-208	PT		
INK, MARKING, STENCIL, BLACK #37038	7510001489817	A-A-208	QT		
INK, MARKING, STENCIL, BLACK #37038	7510001610811	A-A-208	GL		
INK, MARKING, STENCIL, BLACK #37038	7510001610813	A-A-208	QT		
INK, MARKING, STENCIL, GRAY #36231	7510001610812	A-A-208	GL		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
INK, MARKING, STENCIL, GREEN #34108	7510001610810	A-A-208	GL		
INK, MARKING, STENCIL, GREEN #34108	7510002246738	A-A-208	PT		
INK, MARKING, STENCIL, ORANGE #32246	7510002246740	A-A-208	PT		
INK, MARKING, STENCIL, PASTE, WHITE	7510004557280	A-A-208	TU	OZ	2
INK, MARKING, STENCIL, RED #31136 SPRAY	7510001837697	A-A-208	PT		
INK, MARKING, STENCIL, SAND	7510002263906	A-A-208	GL		
INK, MARKING, STENCIL, WHITE #37875	7510001610815	A-A-208	GL		
INK, MARKING, STENCIL, WHITE #37875	7510002246732	A-A-208	PT		
INK, MARKING, STENCIL, WHITE #37875 SPRY	7510004199564	A-A-208	PT		
INK, MARKING, STENCIL, YELLOW #33538	7510002246733	A-A-208	PT		
INK, MARKING, STENCIL, YELLOW #33538 SPR	7510001837698	A-A-208	PT		
INK, MARKING, STENCIL. YELLOW #33538	7510001610816	A-A-208	GL		
INK, MARKNG, STENCIL, BLACK 37038 SPRAY	7510004697910	A-A-208	PT		
INK, MARKNG, STENCIL, PASTE, YELLOW	7510004557303	A-A-208	TU	OZ	2
ISOPROPYL, ALCOHOL, TECHNICAL	6810002865435	TT-1-735	GL		
KNIFE, CRAFTSMAN'S	5110002237782	GGG-K-481	EA		
KNIFE, CRAFTSMEN'S, HAWKBILL	5110003449900	GGG-K-481	EA		
KNIFE, POCKET, 1 BLADE, ELECTRICIANS	5110002405943	GGG-K-484	EA		
KNIFE, POCKET, GENERAL PURPOSE	5110001622205	MIL-K-818C	EA		
LABELS, 3" X 5" (ADHESIVE BACK)	7530007816216	TJTJ-L-1644	BX		40
LACQUER, GRAY #36231	8010000430692	TT-L- 20	QT		
LACQUER, GRAY #36231, SPRAY	8010006641914	TT-L-20	PT		
LACQUER, GREEN #34079	8010000688779	MIL-L-81352	GL		
LACQUER, OLIVE DRAB, #34088	8010001903360	TT-L-20	CN	GL	5
LAMP, INCANDESCENT (#47 RADIO PILOT)	6240001558706	W-L-111/40	EA		
LEGGINGS PROTECTIVE ANTISTATIC, LEG STAT	8415010860814		PR		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
LINK, FUSIBLE, 160 DEG, COPPER ALLOY	4210000336032	7326255	EA		
LINK, FUSIBLE, FIRE, 165 DEG, 25 LB MAX	4210007413614		EA		
LINKER/DELINKER, HAND, 50 CAL.	4925012379327	12631030	EA		
LINKER-DELINKER, HAND, .50 CAL, M7	4925002991268	7160003	EA		
LINKER-DELINKER, HAND, 40MM	4925008671123	7791850	EA		
LINKER-DELINKER, HAND, M25, 20MM	4925007879803	7790853	EA		
LUBRICATING OIL, SEMI-FLUID	9150008893522	MIL-L-46000	BT	OZ	1
MALLET, WOOD, 6" FACE DIAMETER, ROUND	5120009267116	LLL-M-71	EA		
MARKER, TUBE TYPE, BLACK	7520009731059	GG-M-114	DZ		
MARKER, TUBE TYPE, PERMANENT, YELLOW	7520000790288	GG-M-114	DZ		
MARKER, TUBE TYPE, RED	7520009731062	GG-M- 114	DZ		
MARKING OUTFIT, STEEL, STAMP	7520000497993	53M34750	OT		
MASK, CHEMICAL, BIOLOGICAL, MEDIUM	4240003686095	MIL-M-12296	EA		
MASK, CHEMICAL, BIOLOGICAL, MEDIUM	4240003686096	MIL-M-12296	EA		
MASK, CHEMICAL-BIOLOGICAL, M40 LARGE	4240012580063	5-1-1000-10	EA		
MASK, CHEMICAL-BIOLOGICAL, M40 MEDIUM	4240012580062	5-1-1000-10	EA		
MASK, CHEMICAL-BIOLOGICAL, M40 SMALL	4240012580061	5-1-1000-10	EA		
MASK, CHEMICAL-BIOLOGICAL, M40A1, LARGE	4240013703823	5-1-2740-30	EA		
MASK, CHEMICAL-BIOLOGICAL, M40A1, MEDIUM	4240013703822	5-1-2740-20	EA		
MASK, CHEMICAL-BIOLOGICAL, M40A1, SMALL	4240013703821	5-1-2740-10	EA		
MASK, GAS, ACID/ORGANIC VAPORS	4240002689735	GGG-M-131	EA		
MATTING, FLOOR, RUBBER/COTTON, BLUE	7220002674630	MIL-M-15562	RO	YD	25
NAIL, 1-1/2" L X .080 DIA	5315008892743	FF-N-105	BX	LB	5
NAIL, 2" L X .099 DIA	5315008892744	FF-N-105	PG	LB	5

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
NAILS, 2.5"L X .120 DIA	5315000511852	FF-N-105	BX	LB	5
OHMMETER, BIDDLE MEGGAR TESTER	6625011135993		EA		
PAD, SCOURING	7920007535242	L-P50	PG	EA	10
PAINT, LATEX, #31136, RED	8010014185428	TT-E-2784	GL		
PAINT, RUBBER, SPRAY, BROWN # 30277	8010005824743	A-A-1801	PT		
PAINT, STENCIL, BLACK #37038	8010002854917	A-A-1558	QT		
PAINT, STENCIL, ORANGE #32246	8010002854929	TT-P-98	GL		
PAINT, STENCIL, YELLOW #33538	8010002854936	TT-P-98	GL		
PAPER, ABRASIVE, METAL WORKING, EMERY	5350001868856	A-A-1049	PG	EA	100
PAPER, ABRASIVE, WOOD WORKING, 150 GRIT	5350001868821	P-P-121	PG	EA	100
PAPER, ABRASIVE, WOODWORKING, 150 GRIT	5350002210881	P-P-121	PG	EA	100
PAPER, KRAFT, UNTREATED, 24" WIDE	8135001607757	UU-P-268	RO	FT	1228
PAPER, KRAFT, UNTREATED, 36" WIDE	8135001607759	UU-P-268	RO	FT	1228
PAPER, KRAFT, UNTREATED, 36" WIDE	8135001607768	UU-P-268	RO	FT	820
PAPER, KRAFT, UNTREATED, 3O" WIDE	8135001607758	UU-P-268	RO	FT	1228
PAPER, KRAFT, UNTREATED, 48" WIDE	8135001607762	UU-P-288	RO	FT	1228
PENCIL, LEAD	7510002865757	SS-P-166	DZ		12
PLACARD, POISON GAS SF 437	7540010285108	4188466	EA	50	
PLASTIC SHEET, 20"W X 50"L, .005" THICK	8135000813180	L-P-378	BX	EA	100
PLASTIC SHEET, POLYETHELENE, 96" WIDE	8135005840610	L-P-378	RO	FT	100
PLIERS, 6 3/4"L, NONSPKG, LONG RND NOSE	5120005416732	MIL-P-19290	EA		
PLIERS, DIAGONAL CUTTING, 4 1/2"	5110006182700	GGG-P-468	EA		
PLIERS, DIAGONAL CUTTING, 4 1/2" L	5110002406209	ANSI B107.11	EA		
PLIERS, DIAGONAL CUTTING, 4"	5110009350890	ANSI B107.11	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
PLIERS, DIAGONAL CUTTING, 6"	5110002398253	GGG-P-468	EA		
PLIERS, DIAGONAL CUTTING, 6", NONSPRKG	5110005959490	MIL-P- 19290	EA		
PLIERS, NEEDLE NOSE, 6 1/2" L	5120001849403	GGG-P-471	EA		
PLIERS, RETAINING, RING, BENT TIPS	5120005959532	GGG-P-480	EA		
PLIERS, SLIP JOINT, 10"L, NONSPRKG	5120005416731	MIL-P-19290	EA		
PLIERS, SLIP JOINT, STRAIGHT JAW, 12"	5110007810819		EA		
PLUG, EAR, PLASTIC, POLY CHLORIDE FOAM	6515001390483		PG	PR	10
PLUG, EAR, VINYL FOAM	6515001376345		BX		400
POLYURETHANE COATING, BLACK #37030	8010011316254	MIL-C-46168	KT		
POLYURETHANE COATING, BROWN #30051	8010011606745	MIL-C-46168	KT		
POLYURETHANE COATING, GREEN #34094	8010011625578	MIL-C-46168	KT		
POLYURETHANE COATING, RED #31136	8010011449884	MIL-C-46168	KT		
PRIMER COATING, GREEN #34151, SPRAY	8010008998825	TT-P-1757	PT		
PRIMER COATING, RED	8010002921127	TT-P-664	GL		
PRIMER COATING, RUST INHIBITIVE, RED	8030000569522	TT-C-530	CN	GL	5
PRIMER, COATING, YELLOW	8010005152208	TT-P-1757	GL		
PRIMER, COATING, YELLOW	8010005152211	TT-P-1757	CN	GL	5
PROTECTOR, HEARING	4240000222946	MIL-P-38268	EA		
RAG, COTTON AND FIBER COMBINATION	7920002053570	DDD-R-30	BE	LB	50
RAG, WIPING, COTTON	7920002051711	DDD-R-30	BE	LB	50
RAG, WIPING, COTTON AND COTTON SYNTHETIC	7920001489666	DDD-R-30	BE	LB	50
REEL, CABLE, DR-8	8130004077859	MIL-R-3241	EA		
REELING MACHINE, CABLE, HAND	3895004988343	MIL-R-3206	EA		
RESPIRATOR, AIR FILTERING, METAL FUMES	4240000996939	GGG-M-125/5	KT		
RESPIRATOR, AIR FILTERING, PAINT MIST	4240000222524	GGG-M-125/6	EA		
SAW, HAND, RIP, METAL CUTTING	5110002210235	GGG-S-65	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
SCRAPER, BEARING, AK4 HALF-ROUND	5110005969370	GGG-S-113	EA		
SCREWDRIVER, FLAT TIP, 6"L, 1/4" TIP	5120005968653	GGG-S-121	EA		
SEAL, ANTI-PILF, CABLE LOCK	5340000841570	15015-3	EA		
SEAL, ANTI-PILF, SELFLOCK, BALL, S/N	5340000813381	MIL-S-23769	HD		
SEAL, ANTI-PILF, SLEEVE TYPE	5340009018105	A-A-1038	HD		
SEAL, ANTI-PILFERABLE ALUM	5340005222514	QQ-A-225/1	EA		
SEAL, STEEL, STRAPPING, 3/4" GALV, CLIP	8135002369843	ASTM-D-3953	BX	EA	5000
SEAL, STRAPPING, 1 1/4", ZINC COATED	8135002901077	ASTM-D-3953	BX	EA	1000
SEAL, STRAPPING, 1 1/4", ZINC COATED	8135002395294	ASTM-D-3953	BX	EA	1000
SEAL, STRAPPING, 3/4", ORGANIC TREATED	8135002395293	ASTM-D-3953	BX	EA	2000
SEAL, STRAPPING, 3/4", ZINC TREATED	8135002395288	ASTM-D-3953	BX	EA	5000
SEAL, STRAPPING, 3/4", ZINC TREATED	8135002901090	ASTM-D-3953	BX	EA	5000
SEAL, STRAPPING, 5/8" FOR SIGNODE MACH	8135002974742	ASTM-D-3953	BX	EA	5000
SEAL, STRAPPING, 5/8", ZINC TREATED	8135002395291	ASTM-D-3953	BX	EA	5000
SEAL, STRAPPING, 5/8", ZINC TREATED	8135002901086	ASTM-D-3953	BX	EA	5000
SEALER, STEEL STRAPPING, 1 1/4"W, .035	3540002238591	MIL-S-43180	EA		
SEALER, STEEL STRAPPING, 1 1/4"W, .050	3540002238592	MIL-S-43180	EA		
SEALER, STEEL STRAPPING, 3/4", .025-.035	3540002238589	MIL-S-43180	EA		
SEALER, STEEL STRAPPING, 5/8"W, .010-.023	3540002346742	MIL-S-43180	EA		
SEALING COMPOUND, FORM-A-GASKET	8030002523391	MIL-S-45180	TU	OZ	11
SEALING COMPOUND, PETTMAN CEMENT	8030002457032	JAN-C-99	GL		
SEALING IRON, ELECT, JAW TYPE, 75-225 DEG	3540009564511		EA		
SEALING IRON, ELECTRIC, 125-150W, 500 DEG	3540002224336	MIL-S-43336	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
SEELER, STEEL STRAPPING, 3/4", .015-.023	3540002346743	MIL-S-43180	EA		
SHEARS, STRAIGHT TRIMMERS, 12" SHARP PTS	5110001622207	GGG-S-278	EA		
SHEARS, STRAIGHT TRIMMERS, 9" L	5110001616909	GGG-S-278	EA		
SHEARS, STRAIGHT TRIMMERS, 9" SHARP PTS	5110001616912	GGG-S-278	EA		
SHEET, PLASTIC, CAMO (105MM & MORTARS)	8135013161201	9317920-3	SH		
SHOES, SAFETY, CONDUCTIVE SOLED	VARIOUS	MIL-S-3794	PR		
SHOES, SAFETY, SPARK-PROOF, HARD TOE	VARIOUS	MIL-S-41821	PR		
SHOES, SAFETY, SPARK-PROOF, HARD TOE	VARIOUS	MIL-S-41821	PR		
SHOVEL, HAND, 41.75" HANDLE, ROUND POINT	5120009650609	5100-326	EA		
SHOVEL, HAND, LONG HANDLE , ROUND POINT	5120001888450	GGG-S-326	EA		
SILICONE COMPOUND	6850002940860	BG-222	TU	OZ	5.3
SOCKET WRENCH, 1 1/4", 1/2" SQUARE DRIVE	5120001897917	A-A-1399	EA		
SOLDERING IRON, ELECTRIC, 1 1/8" TIP	3439009529094	A-A-59284	EA		
SPECTACLES, INDUSTRIAL, W/SIDE SHIELDS	4240005164527	GGG-S-620	PR		
STENCIL BOARD, 18.5"W X 18.5"L	9310002404737	A-A-1733	SH		
STENCIL BOARD, 24"W X 36"L	9310001607858	A-A-1733	HD		
STENCIL BOARD, 8"W X 24"L	9310001607853	A-A-1733	HD		
STENCIL CUTTING MACH, HAND OPE, .25"	7490002813959	GG-S-747	EA		
STENCIL CUTTING MACH, HAND OPE, .75"	7490001640542	GG-S-747	EA		
STENCIL CUTTING MACH, HAND OPERATED, .5"	7490001640541	OG-S-747	EA		
STENCIL CUTTING MACH, HAND OPERATED, 1"	7490001640537	GG-S-747	EA		
STENCIL SET, MARKING, 1/2" LETTERS	7520002051760	A-A-130	SE		
STOP WATCH	6645001260286	A-A-55811	EA		
STRAIGHT EDGE, 36"L X 3"W,	5210002646400	MIL-S-15769	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
STRAPPING AND SEALING KIT, 1 1/4"	3540005656244	MIL-S-43104	EA		
STRAPPING AND SEALING KIT, 3/4"	3540005656243	MIL-S-43104	EA		
STRAPPING AND SEALING KIT, 5/8"	3540005656242	MIL-S-43104	EA		
STRAPPING, 1 1/4", ZINC TREATED	8135002830671	ASTM-D-3953	CL	LB	100
STRAPPING, 3/4", ORGANIC COATED	8135002854748	ASTM-D-3953	CL	LB	100
STRAPPING, 3/4", ZINC TREATED	8135002830670	ASTM-D-3953	CL	LB	60
STRAPPING, 3/8", ZINC TREATED	8135002868561	ASTM-D-3953	CL	LB	100
STRAPPING, 5/8", ZINC COATED	8135002830667	ASTM-D-3953	CL	LB	100
STRAPPING, 5/8", ZINC COATED	8135002868565	ASTM-D-3953	CL	LB	100
STRAPPING, STEEL, 3/4", ORGANIC TREATED	8135002814069	ASTM-D-3953	CL	LB	100
STRAPPING, STEEL, 5/8", ORGANIC TREATED	8135002814071	ASTM-D-3953	CL	LB	100
STRETCHER, STRAPPING, 3/4-1 1/4", .028-.05	3540002781251	MIL-S-17743	EA		
STRETCHER, STRAPPING, 3/8-3/4", .010-.023	3540002781250	MIL-S-17743	EA		
STRETCHER, STRAPPING, 5/8-3/4", .010-.023	3540008578512	MIL-S-17743	EA		
STRETCHING & SEALING MACH, 3/4", .015-.025	3540002525215	MIL-S-43361	EA		
TAG, SHIPPING, 2 3/8" X 4 3/4"	8135001789146	UU-T-81	HD		
TALCUM POWDER	8510008170295	A-A-42	CN	OZ	9
TAPE, DUCT, 2" W	5640001032254	PPP-T-60	RO	YD	60
TAPE, INSULATION, ELECTRICAL, 3/4" W	5970006443167	HH-I-510	RO	FT	108
TAPE, MEASURING, .5"W X 8'L, BELT CLIP	5210000814719	GGG-T-106	EA		
TAPE, MEASURING, 3/4"W X 12'L, BELT CLIP	5210001824797	W7312	EA		
TAPE, PRESSURE SENS ADH, BLACK 1 1/2"	7510008238073	MIL-T-43036	RO	YD	60
TAPE, PRESSURE SENS ADHESIVE, BLACK 1"	7510008238071	MIL-T-43036	RO	YD	60
TAPE, PRESSURE SENS ADHESIVE, BLACK 2"	7510008238072	MIL-T-43036	RO	YD	60

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
TAPE, PRESSURE SENS ADHESIVE, BLUE, 1"	7510008360810	PPP-T-60	RO	YD	60
TAPE, PRESSURE SENSITIVE ADHESIVE 3/4"	7510002666711	PPP-T-42	RO	YD	60
TAPE, PRESSURE SENSITIVE ADHESIVE 1"	7510002666712	PPP-T-42	RO	YD	60
TAPE, PRESSURE SENSITIVE ADHESIVE, 1/2"	7510005824771	PPP-T-0097	RO	YD	60
TAPE, PRESSURE SENSITIVE ADHESIVE, 2"W	7510000745124	A-A-1586	RO	YD	60
TAPE, PRESSURE SENSITIVE ADHESIVE, 3/4"	7510001325109	Y-9122	RO	YD	72
TAPE, PRESSURE SENSITIVE, ADHESIVE 2"	7510002665016	A-A-1586	RO	YD	60
TAPE, PRESSURE SENSITIVE, ADHESIVE 2"	7510002666710	PPP-T-42	RO	YD	60
TAPE, PRESSURE SENSITVE ADHESIVE, 1"	7510002830612	A-A-883	RO	YD	60
TAPE, PSA, CLEAR 2"	7510002666715	PPP-T-60	RO	YD	60
TEST SET, BLASTING CAP	4925009993454	9227694	EA		
TEST SET, CONTINUITY, IGNITER CIRCUIT	4925009072894	10055154-2	EA		
THINNER, PAINT PRODUCTS	8010001605787	TT-T-266	GL		
THINNER, PAINT PRODUCTS	8010001605788	A-A-857	CN	GL	5
THINNER, PAINT PRODUCTS	8010001655540	TT-T-266	QT		
THINNER, PAINT PRODUCTS	8010002422089	TT-T-291	GL		
THINNER, PAINT PRODUCTS	8010005587027	TT-T-306	CN	GL	5
THINNER, PAINT PRODUCTS	8010014415940	A-A-3007	GL		1
THINNER, PAINT PRODUCTS, POLYURETHANE	8010001818079	MIL-T-81772	CN	GL	5
TIE DOWN, CARGO A/C, 20' X 1.7", CGU-1/B	1670007251437	MIL-T-27260	EA		
TIE DOWN, CARGO, VEHICLE, 2"W X 20'L	3990012043009	MIL-PRF-71224	EA		
TIP, FOUNTAIN TYPE STENCIL BRUSH	7520003694714	H- B-621	EA		
TOLUENE, TECHNICAL	6810002900046	TT-T-548	DR	GL	55
TOLUENE, TECHNICAL	6810002900048	TT-T-548	CN	GL	5

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
TOOL KIT, ELECTRICAL CONTACT	5180009215771	MIL-T-83507	KT		
TORQUE FIXTURE, 2.75" ROCKET	4925007816511	APE2075M1	EA		
TRICHLOROETHYLENE, TECHNICAL	6810001844794	0-T-634	CN	GL	5
TRUCK, HAND, STRAPPING COIL, 3/4 - 2"	3540002738821	MIL-R-43448	EA		
TYVEK COVERALLS, LARGE	8415014368854	MAR42120L	EA		
TYVEK COVERALLS, SMALL, SPECIAL	4210014368879	WPL230	EA		
VISE, PIPE, 1/8"-2 1/2" PIPE SIZE	5120001800649	GGG-V-415	EA		
WASTE RECEPTACLE, SIZE 10 GAL 10" DIA.	7240009654427	A-A-235	EA		
WASTE RECEPTACLE, SIZE 32 GAL 18" DIA.	7240001516629	A-A-295	EA		
WASTE RECEPTACLE, SIZE 32 GAL, 16" DIA.	7240008197735	A-A-235	EA		
WIRE, ELEC, SOLID, SGL CONDUCTOR, 20 GA	6145005423968	9139656-1	FT		
WIRE, NONELEC	9905002489851	QQ-W-461	LB		
WIRE, NONELECTRICAL, 875 FEET	9505002447550	ASTM-A853	CL	LB	100
WIRE, STEEL, CARBON	9505002489850	ASTM A641	LB		
WOOL, METALLIC, ROLL, COPPER, FINE	5350002557736	A-A-1044	LB		
WOOL, METALLIC, ROLL, MEDIUM GRADE	5350002424404	FF-W-1825	LB		
WOOL, METALLIC, ROLL, STEEL, COARSE	5350002424403	FF-W-1825	LB		
WOOL, METALLIC, ROLL, STEEL, COARSE	5350002424406	FF-W-1825	LB		
WOOL, METALLIC, ROLL, STEEL, MEDIUM	5350002424405	FF-S-740	LB		
WRENCH SET, SOCKET, 1/2" DRIVE	5120000812307	GGG-W-641	SE		
WRENCH, FUZE-SETTER, COMBINATION M18	4933007231161	7231151	EA		
WRENCH, OPEN END, 3/4"-13/16"	5120001877129	A-A- 1356	EA		
WRENCH, OPEN END/SPANNER COMBINATION	5120007295860	7295860	EA		
WRENCH, PIPE, 18"L, 1-6" PIPE SIZE	5120007761840	GGG-W-651	EA		
WRENCH, SPANNER,18"	5120000250701	2847277	EA		

Table F-1. Ammunition equipment/tool listing

NOMENCLATURE	*NSN*	*SPEC*	*UI*	*UM*	*QTY*
WRENCH, SPANNER, 4"	5120005610855	8284045	EA		
WRENCH, TORQUE, 0- 50 IN LB, 3/8" DRIVE	5120006840404	A-A-1274	EA		
WRENCH, TORQUE, 0- 75 IN LB. 1/4" DRIVE	5120005858434	A-A-2411	EA		
WRENCH, TORQUE, 0-120 IN LB, 1/4" DRIVE	5120009001283	A-A-1274	EA		
WRENCH, TORQUE, 0-120 IN LB, 3/8" DRIVE	5120005857706	A-A-1274	EA		
WRENCH, TORQUE, 0-175 FT LB, 1/2" DRIVE	5120006406364	A-A-2411	EA		
WRENCH, TORQUE, 0-200 IN LB, 3/8" DRIVE	5120008534538	A-A-1274	EA		
WRENCH, TORQUE, 0-250 FT LB, 1/2' DRIVE	5120006406365	A-A-2411	EA		
WRENCH, TORQUE, 0-30 IN LB, 1/4" DRIVE	5120008398139	A-A-2411	EA		
WRENCH, TORQUE, 0-300 IN LB, 3/8" DRIVE	5120007761841	A-A-2411	EA		
WRENCH, TORQUE, 0-300 IN LB, 3/8" DRIVE	5120009586906	A-A-1274	EA		
WRENCH, TORQUE, 0-50 FT LB 3/8" DRIVE	5120005413001	A-A-1274	EA		
WRENCH, TORQUE, 0-600 IN LB, 3/8" DRIVE	5120005425681	A-A-1274	EA		
WRENCH, TORQUE, 0-600 IN LB, 3/8" DRIVE	5120007200714	A-A-1274	EA		
WRENCH, TORQUE, 100-750 IN LB. 3/8" DR	5120009041022	GGG-W-686	EA		

Appendix G

Stock Replenishment

Table G-1. Stock replenishment (receipt from ASP/TSA/Depot)

Processing & scheduling of request: DD1348-1A	
Stock Ctrl	Determine requirement, process ammunition request via TAMIS/SAAS-MOD.
	Coordinates ammunition delivery.
	Prepares Storage Plan for arriving Stocks.
	Receives/verifies DD Form 1348-1A.
	Updates stock control records
	Prepare DA Form 3151-R & provide information to QA
QASAS or Ammunition Inspector	Perform suspension, restriction check
Stock Ctrl	Provides checker with DA Form 3151-R.
Physical receipt & storage of replenishment:	
Veh Insp/Ammo Checker	Vehicle Inspection
QASAS or Ammunition Inspector	Sign vehicle inspection & Damage in transit form
Ammo Handler	Remove blocking, bracing
	Verification of DA Form 3151-R & Counts
	Un-Loads & store ammunition.
	Update DA Form 3020-R.
Replenishment completion:	
Acct. Off	Review & validated DA Form 3151-R, DD Form 1348-1A
Stock Ctrl	Receives validated DA Form 3151-R & post in SAAS-MOD.

Table G-2. Inventory

Conduct Location Survey:	
Stock Ctrl	Create location survey in SAAS-MOD
Acct. Off	Briefs location survey teams.
Ammo Handler	Attend location survey briefing
	Check DODIC, Lot #, C/C, NSN
Acct. Off	Receives/Reviews completed location survey sheets.
Stock Ctrl	Receives location survey sheets & post to SAAS-MOD.

Table G-3. Conduct inventory

Conduct Inventories:	
Acct. Off	Schedules regulatory inventories: (prep timeline, inform HHQs & customers)

Stock Ctrl	Create inventory control sheet/count sheets in SAAS-MOD
Acct. Off	Briefs inventory teams.
Stock Ctrl	Attend inventory briefing
Ammo Handler	Attend inventory briefing
QASAS or Ammunition Inspector	Attend inventory briefing
Ammo Handler	Perform inventory: (physical counts)
QASAS or Ammunition Inspector	Spot check inventory actions
Acct. Off	Spot check inventory actions
	Receives/Reviews completed inventory count sheets.
	Compare count sheet to control sheet
Stock Ctrl	Input inventory count to SAAS-MOD
Ammo Handler	Perform 2nd count inventory: (physical counts)
Acct. Off	Receives/Reviews completed 2nd count sheets.
	Compare 2nd count sheet to control sheet
Stock Ctrl	Receives 2nd count inventory sheets & post to SAAS-MOD.
Acct. Off	Performs causative research.
Stock Ctrl	Receives inventory sheets & post to SAAS-MOD (in case no 2nd count required)
Ammo Handler	Update DA Form 3020-R.

Table G-4. Intra-depot transfers IDT

Acct. Off	Accountable Officer directs move
Stock Ctrl	Process IDT request via SAAS-MOD, prepare DA Form 3151-R & provide to Ammo Hdl
Ammo Handler	Travel to/from count location (incl. bunker security, key ctrl.)
	Pull Ammo, annotate DA Form 3151-R and update DA Form 3020-R.
Stock Ctrl	Receives validated DA Form 3151-R post data in SAAS-MOD.
Acct. Off	Verifies posting of IDT.

Table G-5. Issues to unit

Processes request for training ammunition:	
Admin	Receipt & processing of unit request (DA Form 581) (Receives and validates DA Form 581, schedule unit, process req., notify sections)
Issues ammunition to unit:	
Stock Ctrl	Stock Selection DA Form 3151-R & Provides checker with DA Form 3151-R.
QASAS or Ammunition Inspector	Perform suspension, restriction check
Admin	Process unit for service (Get call from guards, review DA Form 581, safety briefing, process unit)
Veh Insp/Ammo Checker	Vehicle Inspection
Issues ammunition to unit:	
QASAS or Ammunition Inspector	QA notifies unit and issue section/inspection reject.
Ammo Handler	Verifies ammunition inventory (& updates DA Form 3020-R)

Table G-5. Issues to unit

	Assists unit in loading.
	Prepare Light boxes (Pull ammo to repacking facility, Create Light Boxes (incl. marking), Store remaining ammo/light box)
QASAS or Ammunition Inspector	Performs Haz 12 Vehicle Inspection (Ammo LADEN)
Admin	Verification Count (loaded ammo)
Completes issue paperwork/documentation:	
Stock Ctrl	Receives validated DA Form 581, DA FORM 3151-R post data in SAAS-MOD.
	Produces residue returnable item list.
QASAS or Ammunition Inspector	Perform suspension, restriction check
Stock Ctrl	Verifies issue documentation DA Form 581, DA Form 3151-R. (verify signature auth., residue/life turn-in paperwork etc.)
QASAS or Ammunition Inspector	Completes Inspection Forms DD Form 626, DD Form 836.

Table G-6. Processes turn-in request (live)

Admin	Receipt & processing of unit request (DA Form 581) (Receives and validates DA Form 581, schedule unit, notify sections)
	Process unit for service (Get call from guards, review DA Form 581, safety briefing, process unit)
Veh Insp/Ammo Checker	Vehicle Inspection
Ammo Handler	Support unloading & prep inspection of ammo
Ammunition Inspector	Inspection of ammo **(serv. & unserv.)**
QASAS	**Classifies** the ammunition, provides proper **condition code to be assigned.**
Ammo Handler	Repackaging of ammo (serv. & unserv.)
Storage of turned in ammo:	
Ammo Handler/Stock Ctrl	Create DA Form 3151-R.
Ammo Handler	Store ammo
	Update DA Form 3020-R .
Stock Ctrl	Receives validated DA Form 581, DA Form 3151-R post data in SAAS-MOD, provide unit completed forms.

Table G-7. Performs QA function on live ammo turn-in

QASAS or Ammunition Inspector	Clarifies ammo discrepancies
	Conducts bunker reconciliation/ammo compatibility
Ammo Handler	Cleans and maintains work areas.
QASAS or Ammunition Inspector	Verifies results of inspection sheet and verifies data input to Munition History Program & maintains DSR

Table G-8. Residue turn-ins

Admin	Receives and validates DA Form 581, schedule unit, notify sections
	Process unit for service (Get call from guards, review DA Form 581, safety briefing, process unit)
Veh Insp/Ammo Checker	Vehicle Inspection
Ammo Handler	Support unloading & prep inspection
	Screens residue, Inspection of residue (Certifying explosive free)
QASAS	Verification of residue (explosive free)
Ammo Handler	Weighs/count and disposes residue, labels & stores empty canisters
Stock Ctrl	Prepare Paperwork (DA Form 3151–R & DA Form 581) and document in SAAS-MOD

Table G-9. Shipments to TSA (retrograde stocks)

Receipt & processing of retrograde stocks:	
Acct. Off	Develops stock Retrograde/Shipment Plan/load plan.
Stock Ctrl	Process ammunition shipment request via SAAS-MOD.
Admin	Internal coordination of shipment
	Transportation Coordination w/external transporters
Stock Ctrl	Selects stocks/verifies DA Form 3151-R.
	Updates stock control records & prepare DD Form 1348-1A.
QASAS or Ammunition Inspector	Perform suspension, restriction check
Stock Ctrl	Prints box and shipping labels.
Ammo Handler	Travel to/from count location (incl. bunker security, key ctrl.)
	Verification of DA Form 3151-R & Counts
	Loads ammunition.
	Add blocking, bracing
	Update DA Form 3020-R.
	Prepare Light boxes (Pull ammo to repacking facility, Create Light Boxes (incl. marking), Store remaining ammo/light box)
QASAS or Ammunition Inspector	Performs Haz 12 Vehicle Inspection (Ammo LADEN)
Admin	Verification Count (loaded ammo)
Acct. Off	Verifies posting of shipment.
Stock Ctrl	Prepare Paperwork (DA Form 3151-R & DD Form 1348-1A) and document in SAAS-MOD
	Burn RIF Tag

Table G-10. QASAS/ammunition inspector functions

Shipping Desk Operations:	
QASAS or Ammunition Inspector	Checks NAR, OHF, AIN, MIN, MSN and ESN, EAIN, SOUM for suspensions and restrictions to ammunition. Compares affected lots against Stock Records, posts Info to locally developed Suspension Restriction program.
	Prepares DA Form 4508 to change condition codes as directed by the messages or QASAS in charge.

Receipt & processing of retrograde stocks:	
	Posts Suspensions or restrictions to Munitions History Program (MHP). Defines and assigns Defect Codes. Fills out and distributes Suspension Tags to the area inspector for application on ammunition boxes. Lists action in Suspense Tag log.
	Attaches warnings, restrictions or “Safety Advisory” to Issue documents.
Performs Inspections:	
QASAS or Ammunition Inspector	Performs Periodic Inspections (PI)
	Performs Special Inspections (SPI)
Generic Quality Oversight	
QASAS or Ammunition Inspector	Inspects storage locations that ammunition is stored within explosive limits, proper posting of chemical hazard symbols, secure ammunition stacks, fire breaks etc.
	Monitors customer units and ASP personnel when picking up or returning ammunition for safe operations.
	Monitors “Light Box Operation.”
	Observe ammo residue and salvage yard operations (includes spot checks for live ammo).
	Observe occupational health procedures (PCP protection etc.), observe environmental requirements and ammo residue recycling procedures.
	Notifies operations officials when storage problems are present and recommends solutions. Notes storage deviations and reports to operations supervisor.

Table G-11. Security functions

Acct. Off	Maintain Key Control (to incl. inventory)
Admin	Maintain Key Control (to incl. inventory)
Acct. Off	Maintain Access Rosters.
Admin	Maintain Signature Cards.
Conduct Seal Inventories	
Acct. Off	Security Inspections/Reviews/Fire Safety Insp

Table G-12. Maintain office automation and STAMIS

Stock Ctrl	Backs up SAAS-MOD files.
	Transmit reports to higher level
	Reconciles data submission with TSC (SAASMOD)
Admin	Maintain AHCC Files.
Acct. Off	Maintain Catalog Data & Residue Files SAAS MOD
Admin	Perform IT Functions (e.g. system administration, update sec patches, trouble shooting etc.)
Acct. Off	STAMIS/SAAS-MOD system administration

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

ACC	ammunition condition code
AINS	ammunition information notices
AO	area of operations
AP	armor piercing
API	armor-piercing incendiary
AR	Army regulation
ASA	ammunition support activity
ASCC	Army service component command
ASP	ammunition supply point
AT	antitank
Atck	attack
BAO	brigade ammunition office
BCT	brigade combat team
BLSTG	blasting
CAISI	combat service support automated information systems interface
Cal	caliber
CB	chemical, biological
CEA	captured enemy ammunition
CFR	Code of Federal Regulations
Chem	chemical
CLASS V	(supply) ammunition
Cntr	container
CO	commander/commanding officer
Ctg	cartridge
Ctn	carton
DA	Department of the Army
DAAS	Defense Automated Address System
DAC	Defense Ammunition Center
DAMMS-R	Department of the Army Movement Management System- Redesigned
Demo	demolition
Div	division
DOD	Department of Defense
DODAAC	Department of Defense activity address code
DODAC	Department of Defense ammunition code
DODIC	Department of Defense identification code
DS	direct support

DSR	depot surveillance record
DTO	division transportation office(r)
DTR	daily transaction report
DWG	drawing
ECCM	electronic counter-countermeasures
ECM	electronic countermeasures
EOD	explosive ordnance disposal
ETA	estimated time of arrival
FAE	fuel-air explosive
F/AP	fragmentary/armor-piercing
FARP	forward arming and refueling point
FM	field manual
FMTV	Family of Medium Tactical Vehicles
FORSCOM	US Army) Forces Command
Frag	fragment/fragmentary
FSB	forward support battalion
FSCG	Federal Supply Classification Group
FSTC	US Army Foreign Science and Technology Center
FY	fiscal year
GCSS-Army	Global Combat Support System-Army
GM	guided missile
GREN	grenade
Grnd	ground
HC	hazard class
HC/D	hazard class/division
HE	high explosive(s)
HEAT	high explosive antitank
HEDP	high explosive, dual purpose
HEI	high explosive incendiary
HEI-T	high explosive incendiary-tracer
HEMTT	heavy expanded mobility tactical truck
HEP	high explosive plastic
HEP-T	high explosive plastic-tracer
HHC	headquarters and headquarters company
HHD	headquarters and headquarters detachment
HLP	heavy lift platoon
HN	host nation
HNS	host nation support
HQDA	Headquarters, Department of the Army
Hzd	Hazard
IAW	in accordance with

IBD	inhabited building distance
ICM	improved conventional munitions
Illum	illuminating
Incd	incendiary
IPE	individual protective equipment
IR	infared
ISO	International Standardization Organization
ITV	in-transit visibility
JHCS	Joint Hazard Classification System
JIC	Joint Intelligence Center
Lb	pound
Lkd	linked
LMTV	light medium tactical vehicle
Lnchr	launcher
LOC	lines of communication
LOGSA	logistics support activity
LSE	logistics support element
MCA	movement control agency
MCB	movement control battalion
MCC	movement control center
MCT	movement control team
METT-TC	mission, enemy, terrain, troops, time available, and contractors on the battlefield
MHE	materials handling equipment
MICLIC	mine clearing line charge
MIL-STD	military standard
MLP	medium lift platoon
MLRS	Multiple Launch Rocket System
Mm	millimeter
MMC	materiel management center
MMR	Military Munitions Rule
Mod	modified
MOPP	mission oriented protective posture
MOPP-4	mission oriented protective posture-4
MOS	military occupational specialty
MP	military police
MPSM	multipurpose submunition
MSR	main supply route
MT	megaton
mtl	metal
NA	North America

NBC	nuclear, biological, chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NEQ	net explosive quantity
NEW	net explosive weight
NFPA	National Fire Protection Association
NGB	National Guard Bureau
NIIN	national item identification number
NSN	national stock number
OCONUS	outside continental United States
OD	olive drab
OPORD	operations order
OPSEC	operations security
OSHA	Occupational Safety and Health Agency
pam	pamphlet
para	parachute
Pd	point detonating
pers	personnel
Pk	package
PLL	prescribed load list
PLS	palletized load system
POC	point of contact
POD	port of debarkation
POE	port of embarkation
proj	projectile
PWP	plasticized white phosphorus
QA	quality assurance
QA/QC	quality assurance/quality control
QANET	quality assurance network
QASAS	quality assurance specialist(s) (ammunition surveillance)
qty	quantity
RAAM	remote antiarmor mine (munition)
RB	rubidium
rd(s)	round(s)
RF	radio frequency
RIC	routing identifier code
rkt(s)	rocket(s)
RSR	required supply rate
RTCH	rough terrain container handler
S&T	supply and transportation
SAAS	Standard Army Ammunition System

SAAS-DAO	Standard Army Ammunition System-Division Ammunition Office
SAAS-MOD	Standard Army Ammunition System-Modernization
SCG	storage compatibility group
SM	soldiers' manual
smk	smoke
SOFA	status of forces agreement(s)
SOP	standing operating procedure
SOUMS	safety of use messages
SPBS-R	Standard Property Book System-Redesign
SPOD	sea port of debarkation
SSA	supply support activity
ST	short ton(s)
STAMIS	Standard Army Management Information System
STANAG	standardization agreement
STRAC	Standards in Training Commission
STRAP	system training plan
surf	surface
TAACOM	theater army area command
tac	tactical
TACCS	Tactical Army Combat Service Support Computer System
TAT	to accompany troops
TAV	total asset visibility
TB	technical bulletin
TC	training circular
TECHINT	technical intelligence
TM	technical manual
TO	theater of operations
TP-T	TP-T target practice-tracer (ammunition)
TSC	theater support command
tac	tactical
UIC	unit identification code
UNO	United Nations Organization
UPS	uninterruptible power system/supply
US	United States
USA	United States Army
USAF	United States Air Force
USAIA	United States Army Intelligence Agency
USAMC	United States Army Materiel Command
USAR	United States Army Reserve
USCG	United States Coast Guard
UXO	unexploded ordnance

VSAT	Very Small Aperture Terminal
WARS	Worldwide Ammunition Reporting System
whd	warhead
WHNS	wartime host nation support
wht	white
wnd	wooden
WP	white phosphorus
wt	weight
XO	executive officer

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