FM 4-30.13 (FM 9-13)

AMMUNITION HANDBOOK: TACTICS, TECHNIQUES, AND PROCEDURES FOR MUNITIONS HANDLERS

HEADQUARTERS
DEPARTMENT OF THE ARMY

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Ammunition Handbook: Tactics, Techniques, and Procedures for Munitions Handlers

Contents

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PREFACE

This field manual provides ready reference and guidance for units and soldiers that handle munitions items. It is not a comprehensive manual, but it does provide useful data on important points of munitions service support. Also, it is a training tool for munitions units and soldiers.

Focus is on tactics, techniques, and procedures used by soldiers handling munitions. The information and guidance contained herein will help them to safely receive, ship, store, handle, maintain, and issue munitions. The manual provides information on processing unit turn-ins, destroying unserviceable munitions, and transporting munitions in new, maturing, or mature theaters of operations in support of the force projection Army. The information in this manual conforms to the procedures of MOADS, MOADS-PLS, and modularty, and will take munitions units well into the twenty-first century.

The proponent for this publication is United States Army Combined Arms Support Command & Ft Lee (USACASCOM&FL). Send comments and recommendations on DA Form 2028 (or in 2028 format) directly to Commander, USACASCOM&FL, Directorate of Combat Developments, ATTN: ATCL O, 3901 A Avenue, Suite 250, Fort Lee, VA 23801-1809.

Chapter 1

Tactical Unit Operations

This chapter discusses munitions support and tactical unit operations within the theater structure. Munitions directly impact the success of tactical operations. It is the function of ammunition companies and modular ammunition platoons in the theater of operations to best support the operational plans of tactical commanders. Ammunition unit tactical-level operations include activities necessary to support and win in combat as well as activities that precede and follow them.

STRATEGIC, OPERATIONAL, AND TACTICAL FUNCTIONS

1-1. *Power projection* is the ability of a military force to deploy air, land, and sea forces to any region of the world and to sustain them for any type of mission. Power projection is a central strategic concept of US military strategy. *Force projection*, the Army's contribution to this joint effort, is the demonstrated ability to rapidly alert, mobilize, and field a force that is deployable, lethal, versatile, expandable, and sustainable.

1-2. Army CSS operates in a seamless continuum throughout the strategic, operational, and tactical environments. *Strategic* CSS maintains the national sustainment base and supports force projection. *Operational* CSS accomplishes operational plans by linking tactical requirements to strategic capabilities. Operational level support personnel are aware of the combat commander's theater strategic perspective and requirements at the tactical level. *Tactical* CSS focuses on coordinated, tailored warfighter support by manning, arming, fueling, fixing, moving, and sustaining the soldier and his equipment. The following section briefly describes theater structure to provide context for the discussion of tactical unit operations.

THEATER STRUCTURE

1-3. A theater is a geographical area located OCONUS for which a commander is assigned military responsibility. International military cooperation and the degree of dedicated US forces influence how the Army conducts operations in each theater.

THEATER OF WAR

1-4. When combat operations are authorized, a strategic theater of war is delineated. It may include part or all of the original peacetime theater. Part of the theater may be in a state of war while other areas remain at peace.

THEATER OF OPERATIONS

1-5. To contend with more than one threat, the theater of war may be subdivided into subordinate theaters or areas of operation. Theaters of operation are those portions of an area of war required for military operations and for administering those operations.

COMMUNICATIONS ZONE

1-6. The COMMZ extends from the rear of the combat zone in the theater of operations to the CONUS base. Its size depends on the size of the theater of operations and the size of the force required for operation and sustainment. Within the COMMZ is the theater logistics base. It contains logistic facilities needed to support the theater; these include APOD/SPOD, storage areas, logistics headquarters, and units essential to munitions support.

CORPS/DIVISION OPERATIONS

1-7. A corps and/or division(s) operates in a defined theater as a forward presence to deter or combat threats. A corps normally fights as an element of a joint/combined or multinational force in cooperation with the Air Force, Navy, Marine Corps, and allied forces. It is tailored for the theater and mission operations and can fight only as long as the COSCOM provides munitions and logistical support.

MUNITIONS SUPPORT

1-8. Munitions units are required to provide support for SASO and offensive, defensive, and contingency operations. Also, they support other missions as assigned in both theater and corps areas of operation.

OFFENSIVE OPERATIONS

1-9. Logistic assets, including ammunition companies/platoons, are essential to maintaining the momentum of offensive operations. The corps goal is to support maneuver and CS units engaged in the main battle. Units that handle, store, and supply munitions must be mobile and prepared to move as often as the combat force requires. Types of offensive operations include movement to attack, hasty attack, deliberate attack, exploitation, and pursuit.

DEFENSIVE OPERATIONS

1-10. At any time, combat units defend, delay, move out of contact, or execute withdrawals. The object of defensive operations is failure of an enemy attack. Defensive operations also allow US forces to gain time, to concentrate elsewhere, to hold key objectives, or to wear down the enemy before going on the offensive. Types of defensive operations include support of a covering force, main battle force, or a mixture of heavy, light, and reserve forces.

CONTINGENCY OPERATIONS

1-11. US forces may be required to serve as a contingency force in an undeveloped area where a US military infrastructure does not exist. Such an operation typically might be one in which an undeveloped, friendly HN requests military assistance. A contingency force would conduct combat operations short of war but necessary to defeat threat forces or expel them from occupied territory. The size of this force would be tailored to the threat and the environment. Initially, it could be smaller than a division but could be expanded rapidly. The munitions support structure would also be tailored

and, depending on METT-TC, may include only elements of DS companies or modular ammunition platoons to operate ASPs or ATPs.

STABILITY AND SUPPORT OPERATIONS

1-12. SASO may be necessary to maintain a negotiated truce or to achieve, restore, or maintain a diplomatic resolution or peace in a hostile area or an area of potential conflict. Forces involved in such operations are traditionally multinational. The munitions force structure may be tailored to support both US and multinational forces for short or extended periods in a bare-base environment in conjunction with HNS. Most likely, the munitions force would consist of DS companies, modular ammunition platoons, or ammunition transfer point sections.

ORGANIZATION FOR AMMUNITION SUPPORT

1-13. The munitions force structure is evolving. This should be remembered, regardless of the type of operation ammunition units are required to support. In the near term, and well into the twenty-first century, ammunition units will continue to become smaller in size. At the same time, they will become more flexible and capable of deploying more rapidly, operating more efficiently at higher levels of productivity. This process will be in cooperation with elements from other services, multinational forces, other governmental and nongovernmental organizations, DOD civilians, and contract personnel.

MODULARITY

1-14. The structure of ammunition units and the munitions support concept is revised as combat doctrine evolves. MOADS doctrine and force structure were designed to support a forward-deployed force. In the near future, MOADS will transition to a more flexible distribution system based on the concept of modularity. A munitions structure based on modularity will more effectively meet the needs of a force projection Army. Under this concept, only the number of soldiers, DOD civilians, and the equipment needed to support the force are deployed.

1-15. The advent of modular munitions units has drastically increased the flexibility of the ASCC and joint commanders during combat and SASO. Unlike MOADS-PLS units, modular companies and platoons are 100 percent mobile (less munitions stocks). This mobility is particularly important for split-based and contingency operations. The ability of a modular platoon to deploy independent of its company headquarters allows the ASCC to right-size his forces for combat and SASO. Although modular platoons and companies are 100 percent mobile, they *are not* 100 percent sustainable. These units must be attached to a higher headquarters (i.e., company or battalion) for administrative and logistical support and C2.

1-16. The following sections provide a general overview of the typical ordnance company/battalion structure. The C2 structure in a tactical environment may not follow a functional “stovepipe” alignment. Modular ammunition platoons may be required to operate independent of their companies and within a C2 structure that is multifunctional, particularly at battalion and higher.

COMPANY STAFF AND RESPONSIBILITIES

1-17. The company typically has a rudimentary structure and relies on its parent battalion for CSS assets. Key personnel within the structure have major responsibilities that impact unit operations. These personnel, along with their duties and responsibilities are discussed below. Ammunition TOE must be consulted for specific type units.

Company Commander

1-18. The company commander is responsible for unit training, safety, and discipline and directs and supervises all phases of operations and employment. The CO is advised and assisted by his officers and NCOs. Among the most important duties and responsibilities of the company commander are the following:

- Leads, plans, directs, and supervises company operations; guides the unit in carrying out its mission.
- Establishes unit policies and procedures.
- Establishes and maintains operations security consistent with guidance from higher headquarters.
- Initiates and ensures adherence to the unit safety program.
- Ensures that unit readiness is maintained.

1-19. The company commander must be personally involved in planning and carrying out unit training IAW FM 25-100 and FM 25-101. Other related duties include the following:

- Performs periodic inspections to determine unit readiness.
- Stresses principles of accountability and maintenance.
- Instructs and cross-trains subordinates.

Executive Officer

1-20. The XO coordinates administrative and logistical support for the company. In the absence of the commander, the XO is in command. During modular or split-based operations, the XO takes command of the portion of the company in the rear location. Supervision of internal security and coordination with the battalion staff are among the XO's responsibilities.

First Sergeant

1-21. The first sergeant is the senior NCO in the company and assists the company commander in carrying out his responsibilities. The first sergeant must fully understand the company's mission and be able to adjust administrative requirements to accomplish that mission. First sergeant duties include the following:

- Calls formations.
- Manages the company headquarters.
- Coordinates company headquarters.
- Serves as intermediary between the commander and unit enlisted personnel.

- Assumes duties of the commander in the absence of all other officers.
- Plans and posts company details in cooperation with operational personnel.
- Maintains duty rosters.
- Exercises supervisory responsibility over housekeeping, work details, police, maintenance, and construction projects in the company areas.
- Assists the commander in advising enlisted personnel on personal matters.
- Advises the company commander on personnel and morale problems.

Ammunition Warrant Officer

1-22. The ammunition warrant officer at the company level is responsible for all technical aspects of munitions operations. His primary focus is the safe receipt, storage, and issue of munitions stocks in support of the operation designated by the ASCC or joint commander. He instructs unit personnel in all aspects of munitions operations. He normally serves as the accountable officer or storage officer for all munitions stocks stored by the company. He will also act as the accountable officer for stocks held by a platoon during split-based operations. During split-based operations he may assume more administrative duties while serving as second in command to the platoon leader. Also, he may be called on to provide technical and munitions doctrinal advise to the ASCC as one of the senior munitions logisticians in the AO. Other specific duties of the ammunition warrant officer include–

- Directs and coordinates destruction and demilitarization of conventional ammunition, missile explosive components, and other explosive items.
- Directs and coordinates surveillance tests, modifications, and maintenance of conventional ammunition, missile explosive components, and other explosive items in coordination with QASAS/qualified military ammunition inspectors.
- Supervises and manages SAAS-MOD (ASP) and its associated ADP equipment.
- Prepares and/or reviews ammunition storage waivers.
- Prepares, reviews, and/or implements firefighting procedures.
- Plans, reviews, and/or implements emergency destruction of ammunition, missiles, and other explosive items.
- Manages, examines, interprets, disseminates, and verifies requirements for ammunition technical publications in the unit.
- Plans for and schedules work requirements, observes work practices, detects and corrects unsafe or improper procedures and techniques.
- Ensures ammunition QA/QC procedures are followed.

Automotive Maintenance Warrant Officer

1-23. The automotive maintenance warrant officer is responsible for maintaining unit automotive equipment and training and supervising maintenance personnel. The maintenance tech coordinates with maintenance support units and performs the following duties:

- Manages the unit maintenance program.
- Assists and advises the company commander in assigning maintenance personnel.
- Advises the commander on maintenance matters and problems.
- Prepares the maintenance portion of the unit SOP.
- Ensures that replacement parts are available or are on request.
- Conducts maintenance inspections, supervises maintenance inspections, and ensures that records are maintained.

Motor Sergeant

1-24. The motor sergeant is chief assistant to the maintenance officer and responsible for the proper maintenance of unit vehicles. The motor sergeant is supervised by the automotive maintenance warrant officer. He assists in organizing the maintenance program and operates it IAW sound maintenance procedure, as follows:

- Assigns tasks.
- Implements work schedules established by the maintenance officer.
- Inspects work performed by unit mechanics.
- Enforces safety practices.

Platoon Leader

1-25. Much like platoon leaders in any military unit, the munitions unit platoon leader is responsible for training and discipline. Also, the platoon leader of a munitions unit supervises personnel in munitions storage, receipt, issue, and maintenance operations.

1-26. The platoon leader ensures that the platoon carries out the company commander's instructions. He trains the platoon with a dual purpose. First, the platoon must be developed and trained as part of the company team. Second, the platoon must be trained to be self-reliant since it may be detached from the company and operated as a separate unit. In the latter case, the platoon leader functions as commander of an independent detachment and is responsible for the administration, operation, supply, and security.

1-27. The platoon leader must be encouraged to develop and exercise the command and leadership qualities required of the position. When the company operates as a unit, the platoon leader has added duties assigned by the company commander. These duties may include the following:

- Supervising the training of soldiers in all phases of their duties, including maintenance services.
- Inspecting platoon members' individual clothing and equipment for serviceability and availability.
- Inspecting platoon billets and areas to ensure that standards of cleanliness and sanitation are kept.
- Preparing a daily availability report of platoon personnel.
- Enforcing discipline and internal control during convoy operations.

- Conducting preliminary investigations and preparing reports related to accidents.
- Enforcing environmental laws and regulations.
- Instructing the platoon or company as prescribed by the unit training schedule.
- Organizing, in coordination with other platoons, defense of the platoon AO, preparing and submitting sketches of the defense plan to the unit commander.
- Undertaking additional duties (such as security officer, investigating officer) as may be assigned by the appointing authority.
- Informing the unit commander of all phases of platoon training and operations; discussing with and advising the company commander on matters regarding training and operations.

Platoon Sergeant

1-28. The platoon sergeant is the assistant to the platoon leader. He assists with the training of the platoon and supervises both tactical and technical operations. Through section sergeants, the platoon sergeant directs and supervises munitions operations, unit maintenance, and tactical operations; trains soldiers in the operation and care of motor vehicles and MHE; and assumes the duties of the platoon leader in the absence of the platoon leader and warrant officer. The platoon sergeant also—

- Coordinates the duties of his section sergeants.
- Inspects storage locations to ensure compliance with regulatory requirements.
- Supervises, through his section sergeants, the performance of unit level maintenance of assigned equipment.
- Inspects vehicles and BIIs for accountability and serviceability.
- Coordinates with the motor sergeant for the repair of vehicles and equipment that need service beyond the drivers' capability.
- Coordinates section training and operational activities.
- Coordinates platoon operations.
- Inspects the platoon defensive perimeter and bivouac site and takes corrective action.
- Enforces safety rules and techniques.
- Enforces environmental laws and regulations.

Section Sergeant

1-29. The section sergeant is directly responsible to the platoon sergeant for the training, discipline, appearance, and performance of assigned soldiers. He directs section personnel in storage operations, safe driving and MHE operating practices, and maintenance of equipment records. Among other duties, the section sergeant—

- Maintains a record of availability of personnel and equipment under his control.

- Ensures that each soldier is familiar with his part in storage operations.
- Supervises the performance of vehicle and equipment maintenance.
- Reports to the platoon sergeant the mechanical defects beyond the soldiers' ability to repair.
- Ensures that living areas meet proper standards of cleanliness.
- Enforces environmental laws and regulations.

BATTALION STAFF AND RESPONSIBILITIES

1-30. Battalions are authorized a headquarters staff organized to meet unit requirements. Staff activities must focus on assisting the commander and will contribute to mission accomplishment. Munitions units may not always be subordinate to an ordnance battalion. Battalion and higher CSS organizations are largely multifunctional and capable of delivering nearly total support. This allows units to deal with a single point of contact for support. Munitions units may be assigned to either a corps support battalion or ordnance battalion. Battalions without organic ammunition surveillance support may be augmented with QASAS personnel upon or after deployment.

Battalion Commander

1-31. The battalion commander commands the battalion and all attached units. He administers, supervises trains, directs, controls, and coordinates activities of the battalion and attached units. Other responsibilities of the battalion commander include:

- Planning for, making decisions concerning, and publishing orders and directives governing personnel, discipline, operations, training, supply, and maintenance matters.
- Evaluating and estimating the needs of the organization.
- Supervising the execution of orders and inspecting completed assignments.
- Upholding environmental protection standards by conducting all training and operations IAW relevant environmental regulations, SOFAs, and SOPs.
- Ensuring that risk management and safety procedures are incorporated in all operations.

Executive Officer

1-32. The XO is second in command. He assists the commander in all phases of work and takes command in the commander's absence. The XO assists in interpreting, formulating, and disseminating policy. He takes the commander's decisions to the appropriate staff officers to prepare necessary staff directives. Also, the XO—

- Exercises staff supervision and direction over all operations and training.
- Formulates and announces policies for general operation of the staff.
- Ensures that the commander's orders and instructions are carried out through personal observation and inspection.

- Studies continually the overall operation of the battalion headquarters and subordinate units.
- Functions as the principal staff-coordinating agent of the battalion.

Operations Officer

1-33. The S3 handles staff matters pertaining to operations, training, security, and intelligence. He prepares and coordinates operational plans for the battalion and subordinate units and coordinates planning activities of subordinate units. To accomplish his mission, the S3 performs the following duties:

- Prepares operational SOPs and coordinates them with higher and subordinate units.
- Maintains operational records and statistical reports.
- Conducts liaison with supported agencies and activities.
- Maintains centralized operational control over subordinate units.
- Studies plans and operations on a regular basis and prepares estimates, plans, and directives.
- Assigns workloads and specific operational tasks to subordinate units.
- Plans and supervises training for the battalion and subordinate units.
- Conducts training inspections.
- Maintains contact and exchanges information with security and intelligence personnel of higher, adjacent, and subordinate units.
- Receives and distributes intelligence information.
- Directs and supervises OPSEC and advises the commander on operational, security, and training matters.
- Prepares and publishes security directives.
- Make security inspections of battalion and subordinate units.
- Prepares and distributes security and intelligence SOPs.
- Coordinates and supervises security and defense measures for the battalion and subordinate units (with the executive officer).
- Requests road clearance for convoys and movement of oversize loads.
- Coordinates and monitors subordinate unit environmental risk assessments and advises the commander on their status and outcome.

S3 Operations Sergeant

1-34. The battalion S3 operations sergeant is the senior NCO in the operations section. He supervises the duty performance of the section's enlisted personnel. Other duties of the operations sergeant are as follows:

- Assists the operations officer and ensures that administrative policies and procedures are properly carried out.
- Coordinates the functions of the operations section.
- Maintains statistics on operational capabilities and performance of subordinate units.
- Establishes and maintains liaison with supported units and activities.

- Supervises documentation and report procedures and performs such other duties as directed by the operations officer.

Supply Officer

1-35. The S4 maintains accountability for operation and maintenance funds. He also coordinates supply activities with higher headquarters and supporting services and prepares and coordinates supply SOPs and directives. Other duties of the S4 are as follows:

- Monitors priorities assigned to requisitions by battalion units as well as submission of requests to supporting supply activities.
- Consolidates requisitions submitted by subordinate units.
- Receives supplies, establishes schedules for issue, and issues supplies.
- Designates POL points and makes distribution of POL.
- Supervises and inspects subordinate unit supply procedures and records.
- Establishes, supervises, and directs the food service program.
- Establishes and maintains liaison with supporting services and activities.
- Prepares and supervises maintenance of battalion property records and accounts.
- Procures, allocates, and releases billet areas, buildings, and other facilities used by all battalion elements.

The S4 advises the commander concerning supply, mess, and real estate matters; property accountability within the battalion; contracting; and matters pertaining to munitions and hazardous materials.

Materiel Officer

1-36. An ordnance battalion TOE typically includes a materiel section supervised by a materiel officer. This section monitors munitions support requirements and the operational ability of subordinate ordnance units but does not manage munitions stocks. The MATO advises the commander on munitions support planning and equipment and the personnel status of subordinate units. He monitors the equipment and personnel status of subordinate units and recommends actions to maintain support capability. He recommends actions to maintain mission support capability. In a CSB, the support operations officer may assume this function with assistance of a COSCOM materiel management team.

MATO Ammunition Warrant Officer

1-37. The ammunition technician (ammunition warrant officer) at the battalion level is assigned to the materiel section. He is normally the senior ammunition warrant officer in the battalion and is the principal technical advisor to the battalion commander and the materiel officer on requirements for munitions support planning. He monitors equipment and personnel status of subordinate units and recommends actions to maintain support capability. He also monitors the stock status of SSAs, ensures that subordinate units are conducting safe and efficient operations IAW SOPs, and ensures compliance

with theater reporting requirements and munitions policy. As a senior munitions logistician, he may be called on to provide technical and doctrinal advice to the ASCC or joint commander in a contingency or SASO environment.

MATO Operations Sergeant

1-38. The MATO operations sergeant is the senior NCO assigned to the MATO. He supervises the duty performance of the assigned enlisted personnel. He assists the materiel officer and the ammunition warrant officer and ensures those administrative policies and procedures are properly conducted. The MATO operations sergeant maintains statistics on ammunition support performance and the capabilities of assigned ammunition companies and/or platoons. He manages subordinate unit through higher headquarters reporting procedures. Also, he performs other duties as directed by the materiel officer and ammunition warrant officer. Under certain TOE, the MATO operations sergeant's duties may be combined with those of the battalion S3 operations sergeant.

TACTICAL MOVEMENT OPERATIONS

1-39. Units are required to plan and execute tactical operations when moving to a new location. When a move is to be made, site selection, area preparation and layout, defense, security, and area damage control are important considerations. The warning order for displacement normally includes the general area in which the unit will conduct future operations, the movement date, and a list of any special requirements or instructions deemed necessary. Upon receipt of notification of impending move, the company commander alerts unit personnel and begins planning for the move.

SOP PREPARATION

1-40. A detailed field SOP must be prepared to cover movement operations. To ensure a successful move under stressful conditions, units must train on movement operations until they become proficient. The following items must be addressed in the field SOP:

- Organization of march units.
- Organization and duties of the advance party, the rear party, and reconnaissance element.
- Densities and speeds for different types of moves.
- Control measures.
- Actions in event of enemy attack.
- Refueling procedures.
- Mess procedures.
- Communications methods.
- Vehicle loading plans for personnel and equipment.

TRANSPORTATION

1-41. Units organized under the MOADS-PLS TOE have limited mobility. Since organic transportation is not sufficient to permit movement of the unit

in one lift, additional transportation must be requested. Transportation requests are normally made to the battalion headquarters operations section. The operations section places the requirement with the supporting MCT. The request will contain the following relevant information:

- Date of move.
- Routes.
- Destination.
- Time and place transportation is required.
- Number of personnel to be moved.
- Quantity, type, weight, and volume of materiel to be moved (see FM 55-30).

Modular units are fully capable of moving all TOE equipment and personnel, less munitions stocks. Both MOADS-PLS and modular units require augmentation to move munitions stocks stored in their locations.

AREA SELECTION

1-42. The area selected for unit operations must be capable of being defended, yet suitable for technical operations. Often these considerations are not compatible, and defense risks must be weighed against the operational mission. An alternate area is selected in case the unit position becomes unsustainable due to enemy action or effects of weather on the terrain.

AREA LAYOUT

1-43. Area layout requirements for each unit vary according to the tactical situation, the proximity to forward areas, and the type and amount of munitions handled. A good layout is one that achieves the following:

- Facilitates the workflow.
- Minimizes the movement of munitions, tools, and equipment.
- Permits easy entry and exit for heavy traffic.
- Provides for effective control of unit operations.
- Permits defense of the area.
- Provides for easy access to a communications node.

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

1-44. An overlay is prepared to include the defense plan and operational layout for new area. If appropriate, route overlays or schematic diagrams are also prepared. The overlays are used by the advanced, main, and rear parties. A copy is submitted to higher headquarters.

RECONNAISSANCE

1-45. After the new area is selected, the commander or platoon leader makes a personal reconnaissance of the route to the new area. If this is not possible, a map reconnaissance is made. The route, the surrounding terrain, and road network in the new area must be evaluated for suitability. The following route characteristics must be noted:

- Strength and clearance of underpasses.
- Durability, capacity, and width of roads and bridges.
- Terrain characteristics that would favor an ambush of the convoy.

A thorough reconnaissance is extremely important, as the results determine planning for the unit move, and may dictate the use of alternate routes.

ADVANCE PARTY

1-46. Once reconnaissance of the route and new area is complete, an advance party is dispatched to prepare the area for occupancy and to mark the route. The advance party usually consists of personnel representing all sections of the unit. The number of personnel included must be sufficient to carry out the following tasks:

- Clear the route of obstacles and warn the main body of known or suspected enemy activity along the route.
- Check the area for chemical contamination by conducting monitoring operations, if required.
- Place route markers.
- Provide platoon and section guides from the release point to guide vehicles to their assigned areas.
- Secure the area.
- Check area for mines, booby traps, and enemy activity.
- Set up and man temporary outposts.
- Lay communication wire from the CPs to the defense positions and work areas.
- Prepare positions for crew-served weapons.
- Prepare hasty fortifications to cover likely avenues of approach.

PRIORITY OF ACTIONS

1-47. After moving into the new area, the commander of the battalion headquarters is informed of the new location. The commander is briefed on the situation in the area, the units supported, and any problems or specific requirements relating to the support mission. Other tasks to be performed upon arrival in the area include the following:

- Complete perimeter defense and coordinate with base defense operations center or base cluster operations center.
- Prepare for operations and concurrently establish liaison with supported units.
- Complete billeting for unit personnel.
- Coordinate defenses with adjacent units.

REAR PARTY

1-48. The rear party closes out operations in the old area. Composition of the party depends upon the work required to complete these operations. Communication is maintained between the rear party and higher headquarters until the CP in the new area becomes operational.

UNIT DEFENSE AND SECURITY

1-49. Detailed planning and training in conducting defense operations is required. Rapidly moving tactical operations, pockets of enemy resistance, and enemy infiltration that result from widely spread tactical formations are the rule rather than the exception. Units in rear areas are targets of enemy actions.

1-50. Defense planning must take into account all technical mission requirements so that operations will run as smoothly as possible in adverse conditions. Plans to meet any type of enemy attack will be incorporated in the unit security SOP. These plans are revised as necessary and are rehearsed regularly to ensure that all individuals know their duties and responsibilities.

1-51. At times, defense of a conventional ammunition unit will be at the expense of mission activities. The commander must continually evaluate mission requirements in light of the enemy situation. Security must provide early warning to allow unit personnel sufficient time to move to prepare defensive positions and reserve assembly areas.

Defense Plan

1-52. A defense plan is published as an integral part of the unit security SOP. The RAOC reviews and coordinates defense plans and area damage control plans. The defense plan includes all routine security and defense activities/procedures to include:

- Designation of specific responsibilities.
- Primary and alternate means of communications.
- Emergency destruction procedures.
- Coordination and identification of mutually defensive procedures with local unit higher headquarters.
- Active and passive individual and unit security and defense measures, such as communications security, operations security, and noise and light discipline.
- NBC defenses.

1-53. The defense plan must incorporate the fundamentals of defense. However, these fundamentals will be adapted to the peculiarities of the ammunition unit. At minimum, the plan must detail procedures and responsibilities, including the following:

- Surveillance and security.
- Organic and supporting weapons.
- Preparation of positions.
- Communications.

- Reserve forces such as QRF or TCF.
- Rear area protection.
- NBC defense plan.

1-54. The ASCC and others commanding joint operations must understand that the requirements and size of munitions operations will demand some type of augmentation for physical security of an ASA. This does not absolve the ammunition unit commander of the responsibility to plan and coordinate the ASA defense. Often, due to the scale of the operation, the ammunition unit commander is the base or base cluster commander responsible for security of the entire base.

AREA DAMAGE CONTROL

1-55. The unit commander develops an area damage control plan as part of the defense plan. The plan lists those measures to be taken by the unit before, during, and after an attack or natural disaster. The area damage control plan addresses actions required in the event of an NBC attack, including composition of the NBC monitoring and decontamination teams. The object of this plan is to minimize casualties and destruction, speed recovery, and reestablish support.

1-56. Planning, training, and practice alerts must be conducted before an attack or natural disaster occurs. Dispersion, camouflage, construction of fortifications and emplacements, and other actions common to defensive operations must be covered if training is to be effective. During the attack or disaster, emphasis is on survival and assistance to the injured. After the attack the emphasis is on resuming operations, which includes the following:

- Regaining control.
- Assessing damage.
- Treating and evaluating casualties.
- Clearing isolated and danger areas.
- Conducting chemical agent detection and radiological monitoring and surveys and reporting results.
- Conducting salvage and emergency resupply operations.
- Reestablishing communications.

1-57. Furthermore, the unit must remain alert to the possibility of a follow-up attack by enemy forces. The unit must be prepared to defend itself and to provide personnel to area damage control forces. Regular enemy forces may try to surprise or capitalize on the surprise and confusion caused by an attack or disaster. The unit must be capable of quick and proper action. Company plans for area damage control must be a part of the battalion plan. The area security controller coordinates these plans with other units and is responsible for preparing and implementing plans for a specific area. The battalion or the RAOC may direct that unit plans be modified. Battalion headquarters provides instructions on submitting unit plans and necessary modifications to the submitted plans.

SUMMARY

1-58. Offensive, defensive, and contingency operations and SASO discussed earlier in this chapter require that munitions units be capable of conducting efficient tactical moves. This efficiency ensures that personnel and equipment are in the right place at the right time to support mission requirements. Other chapters in this manual discuss specific technical support requirements that must be completed to provide safe, efficient, and timely supply of munitions to the user. The command must emphasize training and leadership at all levels to ensure that munitions units are thoroughly familiar with munitions support in a tactical environment.

Chapter 2

Planning Combat and Stability and Support Operations

This chapter describes general ammunition planning considerations necessary to support combat operations and/or SASO. It includes development of contingency plans and SOPs, prepacking of unit material, transportation for unit movement, retrograde of ammunition, and transitions to and from combat operations or SASO.

DEFINING COMBAT AND SASO MISSIONS

2-1. The term, *combat operations*, is generally used to describe both war and contingency operations. War is a major conflict between nations employing total resources and may be of a limited or general nature. Generally, war involves large-scale combat operations for an indefinite period until a favorable conclusion is reached.

2-2. The term, *contingency*, is generally used to describe a crisis, often with complex political implications, that may happen anywhere in the world where US interests are threatened. Such a crisis may lead to hostilities where the military mission and threat may not be specifically defined but where strategic objectives are identified. Although contingencies may evolve slowly, the decision to use a military option may be made with short notice. Contingency operations are expected to be of short duration with a quick, clear victory. They almost always take place in a new or a maturing theater where there are either no or few established US forces. In combat operations, US services may be fighting as part of joint or combined forces with allied participation.

2-3. The term, *stability and support operations*, is generally used to describe the use of armed forces to help keep tensions between nations below the level of conflict. Typical operations include disaster relief, nation assistance, security and advisory assistance, counter-drug operations, arms control, treaty verification, support to civil authorities, and peacekeeping. In this manual, combat operations and SASO are synonymous for Class V support operations. The main differences are the nature of the activity, the size and structure of the combat force, the support structure on the ground, and METT-TC.

2-4. Future military operations will require that ammunition units be effective and efficient, highly mobile organizations. Battles may be nonlinear and require rapid movement, multiple relocations, and the ability to support and sustain maneuver forces in a variety of mission profiles. Thus, ammunition support units must be capable of adapting to many scenarios and configurations. Depending on the size of the supported force, an ammunition unit may conduct support operations in either a company or modular configuration. Modular configurations will be used based on operational needs. This may mean that a single modular platoon could be deployed to support a brigade contingency, or a number of platoons and/or companies could be deployed to support a mature theater. These units must be self-

sustaining for a period of time, able to operate as part of a multifunctional organization, and 100 percent mobile using organic assets. Training for combat operations and SASO is an essential element of readiness, effectiveness, and success.

2-5. The mission of ammunition support units is to provide the required type and amount of ammunition to the combat user at the needed time and location. Therefore, ammunition units are organized and deployed to meet mission support requirements. In peacetime, they operate out of fixed sites with all associated support and facilities in place. When deployed, they operate in an unfriendly or hostile environment to support a combat force. The condition of facilities may be uncertain, and operational support may be unstable for an undetermined period.

2-6. Since there is no one scenario for combat operations/SASO, ammunition units must be prepared to support operations ranging from peacekeeping to regional conflicts to major war. Like other logistical support, ammunition support requires that the unit have the appropriate mix of personnel, MOS skills, and tools and equipment to accomplish the mission.

CLASS V SUPPORT OPERATIONS

2-7. A review of US Army involvement in recent operations clearly indicates the need to improve logistical planning. Plans must be developed to support all levels of combat operations/SASO. It is critical that Class V support planning be detailed and threat-based. See FM 100-5 for discussions covering the following:

- Five tenets of Army operations doctrine.
- Five logistics characteristics essential to supporting combined arms operations.
- Four support considerations for incorporating sustainment imperatives into support planning.

Ammunition units will apply this guidance when developing plans to support ASCC or CINC plans and priorities.

2-8. Ammunition support planners must stay ahead of the situation as operational campaigns unfold by reinforcing successes with priority of support, planning for forward logistics bases, and extending lines of support. As tactical developments render earlier support plans obsolete, ammunition support planners formulate new ones. For more information on CSS, see FM 100-10.

2-9. Because units must deploy quickly, they do not have time for detailed, last minute planning. For example, when a unit deploys to a maturing theater, a support infrastructure may not be available to provide the logistical information needed to perform the mission. The unit commander must identify the logistical support structure that will sustain the unit. This type of contingency planning must be done in peacetime so that the unit can develop detailed SOPs and plans. At a minimum, the following factors must be considered during planning:

- Local POCs for unit support (i.e., computer, engineer, signal, security, defense, transportation, and POL).
- Status charts for unit personnel, equipment, and ammunition, including organic basic load (see Appendix A).
- Replacements for equipment, personnel, ASL, and PLL.
- Factors affecting the mission (i.e., stock objectives; chain of command; site locations/grid coordinates of supported units; identifying supporting MMC and MCCs, and QASAS; and HAZMAT certified personnel).
- Equipment staging location and procedures.
- Organization of march units.
- Organization of duties for advance and rear parties and reconnaissance element.
- Densities and speeds for different types of moves.
- Maintenance of records, including ammunition accountability and serviceability.
- C2 procedures.
- Actions to take in the event of attack.
- Accident and maintenance procedures.
- Messing and refueling procedures.
- Communications methods.
- Load plans for personnel, equipment, and ammunition-related materiel.
- Night operations.
- Continuity of operations plan.
- Directional signs, fire symbols, and FSU stack signs sufficient for three storage locations.
- Retrograde operations.
- Identification of QASAS source organization and method of acquiring support.

Less complex local and field SOPs will be developed as necessary. For more information, refer to FM 100-5.

STANDING OPERATING PROCEDURES

2-10. Field SOPs of ammunition units are based on logistical field SOPs of the command organizational element. They provide guidance in developing SOPs for supported units to facilitate the ammunition support process. SOPs must be adapted to actual operational conditions. Regardless of the SOP being written, considering worst-case situations is the key to useful, effective planning. At a minimum, external SOPs must cover the following:

- Unit and Class V WHNS.
- Communications, engineer, and transportation support.
- Safety.
- Ammunition issue and turn-in procedures.
- Protecting ammunition from the elements.

- Emergency resupply procedures.

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 C2 element.
- Routine and emergency destruction plans.
- Fire-protection plans and other safety concerns.
- Air resupply procedures.
- Logistical plans for required augmentation elements (e.g., QASAS personnel).

During actual combat operations or SASO, there is no time to develop plans and procedures. Development of simple, realistic SOPs are essential for fulfillment of the unit Class V mission.

PREPACKING

2-11. To make any plan work in the changing combat/SASO environment, everything possible must be done in advance. Prepacking is one of the most useful actions a deploying unit can take. While expendable supplies are generally available through normal supply channels, a period is likely when these items may not be obtainable. Units must prepack as many expendable supplies as possible (e.g., blank forms, directional signs, ammunition placards, banding, paint, and stencils) that can be packaged and/or palletized for transport. Consideration must be given to developing packing lists that cover a variety of METT-TC environments.

2-12. Another critical asset to prepack is a complete, up-to-date Class V reference library that also includes applicable transportation publications. Commanders must ensure that manuals required to complete support tasks and maintain organic equipment are included in packing preparations.

TRANSPORTATION

2-13. MOADS-PLS ammunition companies are only 50 percent mobile, less ammunition stocks. Because they do not have sufficient organic transportation to move an entire unit at one time, additional transportation must be requested. Transportation requests are normally coordinated through the unit C2 element to the nearest MCT and/or local transportation activity. For information on motor transportation request procedures, see FM 55-10. Transportation requests will include the following information:

- Move date.
- Routes.
- Destination.
- Time and place transportation required.
- Number of personnel to be moved.

- Quantity, type, weight, and cube of cargo.

Although modular ammunition platoons are 100 percent mobile minus ammunition stocks, they must still coordinate unit movements through their supporting higher headquarters.

RETROGRADE

2-14. Upon completion of combat operations or SASO, the ammunition retrograde process begins. This process includes the following steps:

- Collecting.
- Identifying.
- Inspecting.
- Requesting disposition instructions.
- Repackaging.
- Load planning.
- Shipping.

Retrograde of ammunition generally includes the return of unserviceable ammunition, CEA, and serviceable ammunition to rear supply or depot facilities.

2-15. In recent operations, excessive amounts of munitions were requisitioned and issued to deploying forces, placing a tremendous burden on the ammunition support system. The high cost and low density of current and emerging technology munitions mandate the planning and development of a system for retrograde operations that begins at the onset of combat operations or SASO. The functions of estimating and monitoring the amount of repackaging materials needed for the retrograde of munitions are critical. Requisitioning these materials at the last minute may be difficult, particularly during redeployment when competition for movement of all types of materials is intense. Retrograde operations must be covered in field SOPs, and strong emphasis given to return of packaging materials by using units.

TRANSITION TO COMBAT/SASO

2-16. The transition from a peacetime mission and the move from an installation, post, camp, or activity are major steps for ammunition units. Commanders must ensure that officers and NCOs understand the transition process, and that unit training is given priority. This understanding and training prepare the unit to deploy to its assigned area and perform its mission effectively and efficiently.

2-17. During movement, units must continue to execute contingency plans and tactical operations. When a move is to be made, the following must be considered:

- Planning.
- Equipment and personnel.
- Transportation.
- Reconnaissance and site selection.
- Area preparation and layout.

- Defense, security, and area damage control.

2-18. Command elements analyze many factors when making decisions concerning unit deployment. These factors include the following:

- Location or theater of deployment.
- Operational situation (i.e., forced or permissive entry).
- Date and time of deployment.
- Support structure in theater.

2-19. Many deployment decisions are made based on answers to critical questions. Questions that must be addressed prior to deployment include the following:

- Will the deployment be as a unit, and will advance, main, and rear parties be required?
- Will the deployment be in phases?
- What organization will act as the POC in the theater?
- What is the deployment mission (i.e., forward in support of a brigade-, corps-, or division-size force)?
- What is the theater situation?

2-20. The warning order for deployment normally includes the general location of the area in which the unit will conduct its operations, the movement date, and a list of special requirements or instructions. When notified of an impending move, the unit commander alerts unit personnel and initiates planning. The move is coordinated with the supporting C2 element and transportation activity. The commander determines the type of move to be made (unless specified), requests additional transportation as necessary, takes steps to phase out current operations, and schedules a reconnaissance of the area.

2-21. Rapid, efficient deployments are subject to the detailed contingency planning and preparation of simplified field SOPs discussed earlier. To ensure a successful move under stressful conditions, unit training must employ these contingency plans and SOPs, making adjustments as necessary, until procedures are understood thoroughly by all unit personnel. See Appendix B for guidance that commanders can use in preparing for deployment. There likely will be a continuing need to forecast and manage training ammunition effectively. See Appendix C for information and guidance.

POST-COMBAT/SASO TRANSITION

2-22. One of the major missions of all ammunition support units, following completion of combat operations/SASO, is the retrograde of Class V materiel and components. Retrograde operations often signal the beginning of the redeployment process (see earlier discussion on retrograde operations). The same amount of detail given to transitioning to combat operations/SASO should be given to redeployment operations. Post-combat/SASO transitions may constantly change. Unit commanders must maintain close coordination and contact with their C2 element to ensure that their unit's deployment is carried out as smoothly as possible. Briefings should be conducted frequently

to control rumors and prevent erroneous information from having a negative effect on morale and operations.

2-23. Command emphasis must be given to training for transition to and from combat operations/SASO. Scenario-based training is often the most effective method since preplanning and transitions can be emphasized separately. A unit's ability to develop situational SOPs may be somewhat dependent on logistical guidance from their C2 element and higher logistical headquarters. However, it is always appropriate to maintain a standard SOP package that can be tailored to meet operational requirements. Preplanning and training can ease the strain and stress characteristic of deployment, unit movement, and redeployment.

SUMMARY

2-24. Combat operations and stability and support operations require detailed munitions support planning consistent with the Army's doctrine, logistic characteristics, and support considerations. Support planners must adapt quickly to changing requirements as a result of tactical successes. Combat/SASO and post-combat/SASO transitions are major missions of munitions units.

Chapter 3

Munitions Supply Procedures

This chapter describes combat/SASO ammunition supply operations. These operations include receipt, turn-in, issue, shipment, and retrograde.

RECEIPT

3-1. The term, *receipt*, refers to a shipment of ammunition received from an ASP, a CSA, 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. Stocks received by an ammunition supply unit are recorded on stock records, reported to the appropriate MMC, and stored for subsequent shipment or issue.

3-2. The supporting MMC normally notifies an ammunition unit in advance of a scheduled incoming shipment. However, unscheduled emergency resupply shipments may arrive at any time. To ensure that notification is received, the unit should maintain close coordination and communication with the MMC. Once the unit receives a 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 rewarehouse 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.

3-3. Receipts at TSAs and CSAs are normally in large quantities. TSAs receive 100 percent of stocks directly from the POD, and CSAs receive 50 percent from the POD and 50 percent from the TSA. 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 or maturing theater, an LSE or AST coordinates off-loading and distribution of stocks to storage areas. See FM 9-6 for more information.

3-4. When the shipment arrives at the storage location, the convoy commander or supervisor provides the control section with a copy of the shipping/receipt documentation. Vehicles are inspected in the vehicle holding area before entering the ammunition storage area.

GUIDELINES

3-5. 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. Use advanced notices of receipts for planning storage location operations.
- Inspect ammunition thoroughly for damage and safety hazards.
- Check unit SOP for guidance if ammunition is arriving by a particular mode of transportation.
- Check planographs, magazine drawings, or FSU sizes to determine if rewarehousing is needed to accommodate the receipt. Complete rewarehousing before shipment arrives.
- Consider the amount of labor, MHE/CHE, and time required for off-loading.

DOCUMENTATION

3-6. The forms listed below are generally required when receiving ammunition. An "R" following the form number indicates that the unit may reproduce the form.

- DA Form 3020-R. Prepared for each lot and stack of ammunition stored during receiving operations.
- DA Form 3151-R. Used to record storage locations of all items in the shipment.
- DD Form 626. 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. Prepared by the shipper, an accountable document used to complete the shipment. Contains detailed information about the shipment.
- DD Form 1384. Prepared by shipper, provides vital data concerning the shipment. Stays with ammunition during shipment.

PROCEDURES

3-7. The flowchart in Figure 3-1 is a guide for planning and conducting receiving operations at the ASA based upon a receipt of notification from the MMC. It can also be used for writing SOPs for ammunition receipts.

TRANSPORT INSPECTION

3-8. Military ammunition inspectors, QASAS, or other qualified personnel inspect all incoming, loaded transports before they enter the storage area, regardless of the transportation mode. Since ammunition is especially sensitive to fire, the transports (e.g., tractors, trailers, railcars) and their cargo must be inspected for safety and fire hazards. Also, inspectors must check the transports for evidence of tampering or sabotage. Inspectors will inform the driver or convoy commander of any deficiencies. If the deficiencies cannot be corrected, the driver or convoy commander will coordinate with his unit to ensure that serviceable transports are provided.

MMC
Shipper
Convoy CMDR Driver
ASA Office
Checker
Inspector

No	Activity	Document
1	Initiate Shipment	DD 1348-1A
2	Provide Advanced Notice to Receiver	DD 1348-1A
3	Conduct Advanced Planning for Receipt	
4	Ship Ammunition	DD 1384 DD 1348-1A
5	Arrive at ASA	
6	Inspect Vehicles Prior to Entry	DD 626
7	Correct Deficiencies - if Noted	DD 626
8	Park Loaded Vehicles in Holding Area	
9	Present Documentation to ASA Office	DD 1384 DD 1348-1A
10	Review Documentation	DD 1348-1A DD 1384
11	Select Storage Locations	PLANOGRAPH
12	Prepare Stores Slip for each Vehicle	DA 3151-R
13	Prepare Magazine Data Card for Each Lot/Location	DA 3020-R
14	Assign Checkers, Unloading Crews, MHE	
15	Give Stores Slips and Mag Data Cards to Checkers	
16	Escort Vehicles to Storage Locations	
17	Verify Type, Lot, Condition, Quantity Received	DA 3151-R
18	Sign Stores Slip	DA 3151-R
19	Annotate Magazine Data Card	
20	Conduct Receipt Inspection	
21	Drive Empty Vehicles to Assembly Area	
22	Return Stores Slip to ASA Office	DA 3151-R
23	Verify Stores Slips for Accuracy and Completeness	DA 3151-R
24	Total Stores Slips by Lot and Location	DA 3151-R
25	Review Suspension File for Lots Received	
26	Cross Check Stores Slip With Receipt Documents	DA 3151-R DD 1348-1A, 1384

Figure 3-1. Receipt Procedures

27	Recheck Actual Receipts - if Discrepancy Noted		
28	Record Actual Receipts on Receipt Documents	DD 1348-1A DD 1384	
29	Sign Receipt Documents	DD 1348-1A DD 1384	
30	Depart ASA With Signed TCMD	DD 1384	
31	Post Lot Locator Records	SAAS	
32	Forward Materiel Receipt Transaction to Supporting MMC	SAAS	
33	Record and File Documentation	ALL	

Figure 3-1. Receipt Procedures (Continued)

Motor Vehicles

3-9. Motor vehicles are inspected as they arrive at the storage facility using DD Form 626, which is carried with each shipment. The driver must have a valid vehicle operating permit and HAZMAT qualification unless exempted by an HN agreement. Also, the following items on the vehicle will be inspected:

- Cargo area for excessive debris and POL products.
- Steering for safe operation.
- Windshield and wipers for adequate operation.
- Fire extinguishers for serviceability.
- Brakes and lights (especially for night operations) for proper operation.
- Exhaust system for accumulation of grease, oil, or gasoline and carbon monoxide fumes leaking into the cab.
- Fuel tanks and lines for leaks.
- Trailer coupling device for serviceability.
- Tires for any dangerous condition.
- Ammunition load to ensure it is securely blocked and braced or secured with cargo straps.

Under no circumstances will a vehicle be allowed into an ASA with a defect that endangers the load or the ASA.

Railcars

3-10. In most cases, a QASAS is available when the railcar is spotted and opened. Inspections are conducted at a designated inspection area. If sabotage or other unsafe condition is suspected, the railcar will be moved to another area so that authorized security and/or EOD personnel can inspect it. Off-loading can begin as soon as the car passes inspection.

Aircraft and Vessels

3-11. The assistance of other services is necessary to ensure that aircraft and vessels are inspected properly. Also, a QASAS/qualified military inspector must be available at the storage area since transporting with aircraft and vessels requires motor vehicles or railcars to move munitions to and from the actual storage site.

3-12. Transport inspections ensure that the mission can be completed with minimal danger to personnel and that there will be no loss of munitions due to unsafe conditions. Peacetime inspection criteria are stringent. While criteria or standards may be relaxed to speed the flow of ammunition during combat/SASO, it must not be enough to cause unwarranted safety hazards. Unit commanders must ensure that any relaxation of the inspection policy is fully understood by ammunition unit personnel and that safety standards are clarified to using units. See DA Pam 385-64 for added guidance.

STORAGE PROCESS

3-13. The 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 group 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.

3-14. After each motor vehicle is off-loaded, it is driven to the vehicle assembly area and returned to the control of the convoy commander. The checker returns the DA Form 3151-R to the 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 posts 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.

3-15. 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.

3-16. Depending on the storage facility, some modification of the process in Figure 3-1 may be necessary. However, any modification will be based on maintaining flexibility, simplicity, and adequate control during receipt operations. See Chapter 9 for more information on the storage process.

TURN-INS

3-17. The term, *turn-in*, refers to the return of unexpended ammunition and salvage items to a storage facility by the using unit. Turn-ins must not be

confused with receipts. During combat/SASO, 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 CEA. 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.

3-18. 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 MMC for disposition instructions. The accountable officer must ensure that required documents are maintained.

GUIDELINES

3-19. 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.

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

DOCUMENTATION

3-20. The forms listed below are used for processing turn-ins. An *"R"* following the form number indicates that the unit may reproduce the form.

- 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. 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.

PROCEDURES

3-21. The flowchart in Figure 3-2 helps in planning for and efficiently conducting receipt of using unit turn-ins. Also, it may be helpful for writing SOPs. 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 D).

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

ISSUES

3-22. 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.

3-23. Issues are based on S3 identified munitions requirements processed from the using unit's battalion S4 up to the brigade S4. The brigade S4 consolidates munitions requests and forwards them to the supporting FSB and to the DAO. The DAO coordinates with the corps MMC to meet unit ammunition requirements. Also, the brigade S4 and the DAO monitor the CSR, critical item shortages, and unit priority for munitions resupply. The CMMC supports these requirements by sending an MRO to the appropriate ammunition storage or supply activity.

○ Using Unit
● DAO
■ Convoy CMDR/Driver
▲ ASA Office
⊗ Checker
⊕ Inspector
□ INV Control

No	Activity	Document
1	Prepare Turn-In Request	DA 581
2	Approve Turn-In	DA 581
3	Transport Ammunition to ASA	DA 581
4	Arrive at ASA	
5	Inspect Vehicles Prior to Entry	DD 626
6	Park Loaded Vehicles Prior to Entry	
7	Present Turn-In Documentation to ASA Office	DA 581
8	Review Documentation	DA 581
9	Coordinate Checkers, MHE, and Inspectors	
10	Escort Vehicles to Segregation Area	
11	Unload, Segregate by DODIC and Lot	
12	Prepare Temporary Receipt	DA 3151-R
13	Drive Empty Vehicles to Assembly Area	
14	Return Temporary Receipt to ASA Office	DA 3151-R
15	Total All Stores Slips	DA 3151-R
16	Fill In Turn-In Document With Quantity	DA 581
17	Receipt Signature	DA 581
18	Return to Unit	DA 581
19	Conduct Detailed Inspection of Items Received	
20	Assign Condition Codes	
21	Review Suspension File for Lots Received	
22	Notify ASA Office of Inspection Results	DA 3151-R

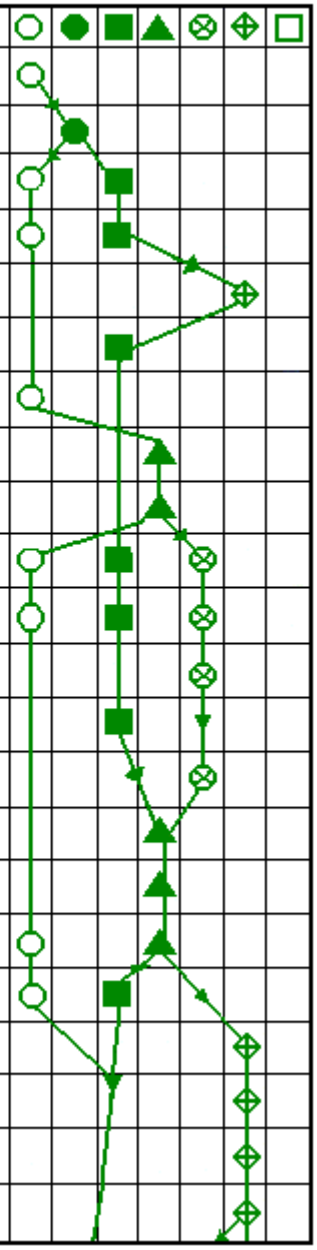


Figure 3-2. Turn-In Procedures

23	Select Storage Locations	
24	Prepare Stores Slips and Magazine Data Cards	DA 3151-R
25	Assign Checkers, MHE, and Crews	
26	Relocate Turn-Ins to Storage Locations	DA 3151-R
27	Fill Out Stores Slips, Magazine Data Card	DA 3151-R DA 3020-R
28	Return Stores Slips to ASA Office	DA 3151-R
29	Verify Stores Slips for Accuracy	DA 3151-R
30	Post Lot Locator Records	SAAS
31	Report Unserviceable Munitions to the MMC	DA 2415
32	Report Turn-In on Daily Transaction Report	
33	Record and File Documentation	All

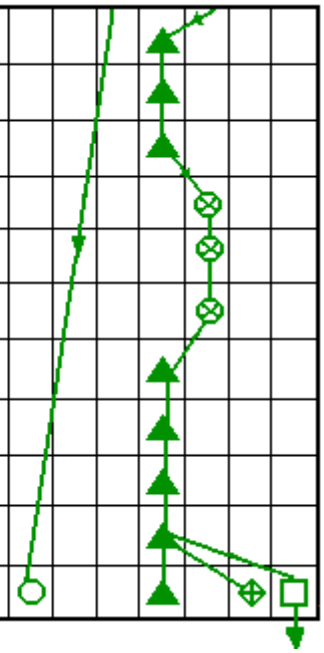


Figure 3-2. Turn-In Procedures (Continued)

GUIDELINES

3-24. The following guidelines will assist ammunition units in providing efficient support:

- Issue only serviceable munitions. See Appendix E for Ammunition Condition Codes.
- 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 MMC 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.

3-25. 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.

DOCUMENTATION

3-26. The forms listed below are needed to issue munitions. An "R" following the form number indicates that the unit may reproduce the form.

- DA Form 581. Prepared by the requesting unit and presented to the storage facility for issue.
- DA Form 1687. 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. 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.

PROCEDURES

3-27. As stated above, the DA Form 1687 is used to ensure that DA Form 581 has the proper signatures. In a division, the DAO 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.

3-28. Combat operations/SASO and mission requirements are subject to constant change. Based on a last-minute change, for example, the using unit may arrive at the issue facility with a verbal request to change the quantity or type of items to be issued. The ASA, in coordination with the DAO or other command representative and the MMC, 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.

3-29. Each storage facility maintains a list of the units it supports. While a basic list should be available from the supporting MMC or DAO, operational considerations may cause the list to evolve constantly. The storage facility must coordinate closely with the MMC to maintain mission continuity and to identify theater-specific policies that differ from the policies used by ammunition units in ordinary circumstances. The flowchart in Figure 3-3 is a guide for planning and conducting efficient issue operations. It may also be used for writing SOPs for munitions issues.

○ Using Unit
● DAO
■ Convoy CMDR Driver
▲ ASA Office
⊗ Checker
⊕ Inspector
□ MMC

No	Activity	Document
1	Prepare Request	DA 581
2	Authenticate Request	DA 581
3	Travel to ASA--Park in Vehicle Holding Area	
4	Present Request to ASA Office	DA 581
5	Review Request for Accuracy, Completeness, and Proper Authentication	DA 1687
6	Inspect Empty Vehicles	DD626
7	Select Lots and Storage Locations	DA 5203
8	Prepare Issue Stores Slip	DA 3151-R
9	Review Suspension File With Lot Selected	DA 3151-R
10	Review DSR Cards for Inspection/Condition	DA 3022-R
11	Verify Condition of Lots Selected for Issue	DA 3151-R
12	Assign Checkers, Loading Crews, MHE	
13	Distribute Stores Slip	DA 3151-R
	a. Original to Checker	DA 3151-R
	b. Copy With Suspense Request	DA 3151-R
14	Escort Vehicles to Storage Locations	
15	Load, Block, Brace, and Inventory Vehicle	DA 3151-R
16	Sign Stores Slip Jointly	DA 3151-R
17	Fill Out Magazine Data Card	DA 3020-R
18	Drive Loaded Vehicles to Assembly Area	
19	Inspect Loaded Vehicles	DD 626 DD 836
20	Return Stores Slip to ASA Office	DA 3151-R
21	Verify Original Stores Slip With Suspense Copy	DA 3151-R
22	Total All Stores Slips	DA 3151-R
23	Enter Total Quantity Issued	DA 581
24	Get Receipt Signature	DA 581
25	Distribute Documentation	DA 581 DA 3151-R
26	Return to Unit	DA 581 DD 626, 836
27	Post Records	SAAS
28	Report Issue on Transaction Report	SAAS
29	Process Transaction and Initiate Any Necessary Resupply	

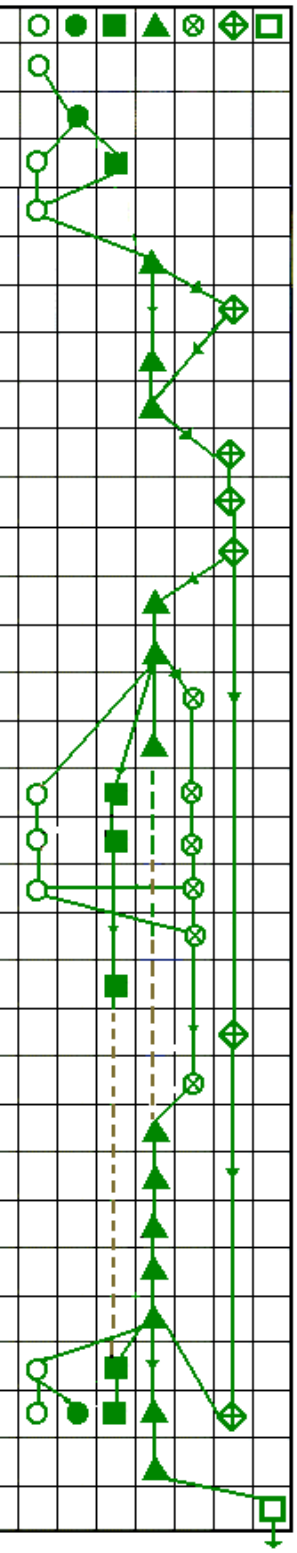


Figure 3-3. Issue Procedures

SHIPMENTS

3-30. 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 ATP 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.

3-31. In routine operations, ammunition shipments between storage facilities are directed by MRO only from the supporting theater or corps MMC. These shipments are made up from operating stocks arriving in the theater or from those stored in the TSAs or CSAs. Shipments over and above established CSR constraints may be made provided the theater Class V stock level exceeds theater demand and if approved through higher command channels. Shipments out of the theater to support other contingencies may also be made when directed. The DAO determines the munitions status of the division ATPs and decides if munitions in the division can be cross-leveled to meet division requirements.

3-32. In most situations, shipments in the combat/SASO zone are limited to highway transport. The MCA 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.

3-33. Munitions shipments to TSAs and CSAs 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/CSA 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.

3-34. Munitions shipped from CSAs to ASPs are either in MCLs or break-bulk/single DODIC loads on PLS flatracks. ATP shipments from the CSA and the ASP are either in MCLs, break-bulk, or single DODIC loads. See FM 9-6 for more information on munitions flow in the theater of operations.

GUIDELINES

3-35. 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 MMC 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.

3-36. The responsible MCC maintains liaison with local transportation agencies and designates an 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 MCC and processes the requests. The MCT coordinates the activities of transportation operators and expedites movements of incoming and outgoing carriers.

3-37. 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.

3-38. 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 REGULATIONS

3-39. 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 55-38, 710-2, 735-5 and 735-11-2 contain information on using required transportation documents.

TRANSPORT INSPECTION

3-40. Military ammunition inspectors, QASAS, or other qualified personnel will inspect vehicles as discussed in the Receipts section of this chapter.

TRAILER/TERMINAL TRANSFER POINTS

3-41. A TTP 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). Normally, TTPs are the responsibility of transporters. However, when Class V items are involved, transportation personnel may require technical advice and assistance from ammunition unit personnel. TTPs should not be confused with ATPs.

RAIL SHIPMENTS

3-42. 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/SASO are based on theater policy, METT-TC, and criticality of mission.

WATERBORNE VESSEL SHIPMENTS

3-43. While ammunition supply units may be required to provide technical assistance, MTMC 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

3-44. 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

3-45. 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.

3-46. 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.

3-47. 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.

3-48. 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.

DOCUMENTATION

3-49. The forms listed below are needed to ship ammunition. An “R” following the form number indicates that the unit may reproduce the form.

- 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/SASO, 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.

PROCEDURES

3-50. The flowchart in Figure 3-4 below may assist in planning and conducting shipping operations and in writing SOPs. This chart can be modified to meet special requirements and conditions.

ASA
MMC
Transportation Office
Convoy CMDR/Driver
ASA Office
Checker
Inspector

No	Activity	Document
1	Decide to Ship	
2	Initiate Materiel Release Order (MRO)	DD 1348-1A
3	Receive MRO	DD 1348-1A
4	Verify Quantity on Hand, Condition	
5	Select Lots, Storage Locations, and Quantity by Lot Suspension Status	
6	Request Transportation with TCMD	DD 1384
7	Plan Movement, Nominate Carrier	DD 1384
8	Prepare Stores Slips and MILSTRIP Documents	DD 1348-1A DA 3151-R
9	Review Lots on Suspension File	DA 3151-R
10	Review ASA Surveillance Record for Inspection Results	DA 3022-R
11	Perform Preissue Inspection, if Required	
12	Verify Condition of Lots Selected	DA 3151-R
13	Return Stores Slip to ASA Office	DA 3151-R
14	Direct Any Required Preservation and Packaging	
15	Alert Loading Crew, Checkers, Inspectors, MHE Operators	
16	Direct Convoy to ASA	DA 1384
17	Arrive at ASA--Park in Vehicle Holding Area	DD 1384
18	Present TCMD to ASA Office	DD 1384
19	Inspect Empty Vehicles	DD 626
20	Complete Preparation of Stores Slips	DA 3151-R

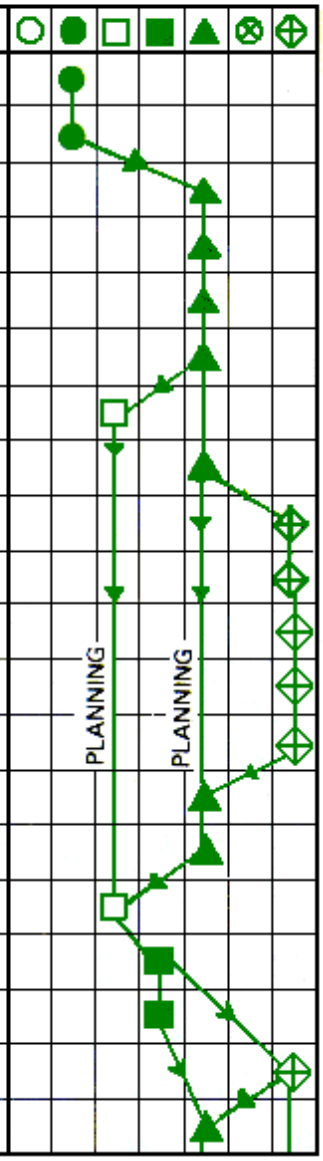


Figure 3-4. Shipping Procedures

21	Distribute Stores Slips	DA 3151-R
	a. Original and Copy to Checker	DA 3151-R
	b. Copy With Suspense Shipping Documents	DA 3151-R
22	Escort Vehicles to Storage Locations	DA 3151-R
23	Load, Block, Brace, and Inventory Vehicles	DA 3151-R
24	Sign Stores Slip Jointly	DA 3151-R
25	Fill Out Magazine Data Card	DA 3020-R
26	Drive Loaded Vehicles to Assembly Area	DA 3151-R
27	Inspect Loaded Vehicles	DD 626 DD 836
28	Return Stores Slips to ASA Office	DA 3151-R
29	Verify Stores Slip Against Suspense Copy	DA 3151-R
30	Complete Shipping Document for Each Vehicle	DD 1348-1A
31	Total All Stores Slips--by Quantity and DODIC	DA 3151-R
32	Prepare and Sign Final TCMD	DD 1384
33	Release Convoy - Jointly	
34	Convoy Departs	
35	Post Records	SAAS
36	Provide Notice of Departure to Receiver	DD 1348-1A
37	Provide Materiel Release Confirmation to the MMC	SAAS
38	Record and File Documentation	ALL

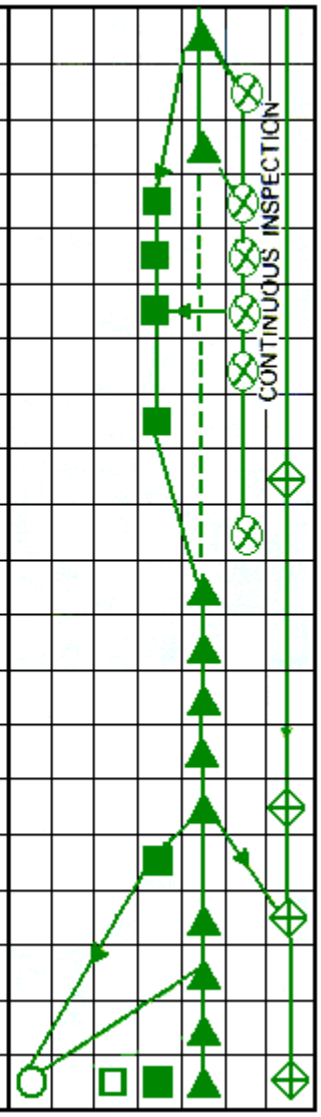


Figure 3-4. Shipping Procedures (Continued)

SUMMARY

3-51. Ammunition supply operations such as receipt, turn-in, issue, shipment, and retrograde are likely to be requested to support both combat operations and SASO. The theater or CMMC is a key organizational element in the shipment and retrograde process in terms of authorizing movement of munitions and packaging material. The MCA and its MCTs play a critical role in the transportation process.

Chapter 4

Division Ammunition Office and Ammunition Transfer Point

This chapter discusses the responsibilities, functions, and operations of the DAO and ATP sections within the division. It also covers the activities within division and corps structures that have staff and management responsibilities for munitions operations and planning during peacetime and contingency operations.

DIVISION AMMUNITION OFFICE

4-1. The Class V supply section of the DMMC is commonly referred to as the DAO. This section manages munitions for the division, provides staff supervision to division/brigade ATPs, and provides technical assistance and advice on munitions management to divisional units. Also, this section maintains records of munitions allocations, receipts, and expenditures for divisional units.

4-2. The DAO has administrative, operations, inspection, and ATP elements. Routine munitions duties and responsibilities may differ from one division to the next.

OFFICE ELEMENT

4-3. Within the Class V section, the DAO is the principal munitions staff officer for the division. The DAO assists the DISCOM commander in all matters pertaining to division munitions support and represents the DISCOM commander on matters concerning munitions requirements and availability. The DAO also maintains direct liaison with the division G3/G4 within limits defined by the DISCOM commander or DMMC chief. Other DAO responsibilities are as follows:

- Coordinates and controls use of Class V supplies.
- Monitors RSRs from tactical commanders for the G3.
- Monitors CSRs for the G4.
- Maintains munitions allocations for the division and approves munitions requests for users.
- Provides staff supervision for ATP operations.
- Maintains liaison with supporting CSAs and ASPs and the COSCOM MMC and MCC.

4-4. The senior munitions NCO is the principal enlisted assistant to the DAO and supervises all enlisted personnel assigned to the Class V section. Other responsibilities of the senior munitions NCO are as follows:

- Conducts on-the-job training to ensure proficiency and cross-training of enlisted personnel.
- Supervises preparation of all correspondence, plans, and reports and edits these documents prior to dispatch.

- Supervises maintenance of forms, files, and records.
- Serves as custodian for all classified documents.
- Ensures proper maintenance of all Class V section authorized equipment and vehicles.

OPERATIONS ELEMENT

4-5. The operations element provides technical advice and assistance on munitions supply, transportation, handling, and storage. The section supervisor is an ammunition warrant officer who provides the DAO with the current division munitions supply status. Ammunition supply sergeants perform stock visibility and clerical duties. Other responsibilities are as follows:

- Maintains stock visibility and supporting documentation and ensures availability of current information.
- Assists units in preparing munitions forecasts.
- Assists units on the storage, maintenance, and handling of ABLs.
- Reviews and updates basic load authorizations.
- Processes DA Forms 581, verifies unit forecasts, and monitors using unit submissions of DA Form 1687.

INSPECTION ELEMENT

4-6. Munitions inspection NCOs make up the DAO inspection element. This element advises on the safety, serviceability, maintenance, and security of all munitions assets in the division. It also evaluates division use of munitions storage and safety procedures in garrison and in the field and recommends improvements to these procedures. Other responsibilities of the inspection element are as follows:

- Inspects unit ABL and ammunition holding areas and ensures that units follow regulations and safety procedures.
- Observes and assists in investigations on munitions malfunctions.
- Coordinates with EOD teams.
- Maintains records and reports of munitions inspections.
- Monitors munitions suspension notices.
- Maintains specifications on packaging and storing of munitions.
- Uses applicable munitions load drawings to monitor and ensure proper and safe loading relative to munitions movement.

ATP ELEMENT

4-7. NCOs assigned to the ATP element of the DAO provide staff supervision of the forward ATPs. The DAO may also have representatives at the supporting CSAs and ASPs if enough personnel are assigned. Responsibilities of the ATP element include the following:

- Provide technical assistance, coordination, and advice to ensure munitions transfer operations at the ATP are conducted properly and efficiently.
- Monitor munitions flow into and out of the ATP.

- Authenticate DA Form 581 and ensure each request is within the CSR.
- Ensure only authorized personnel receive munitions based on the unit DA Form 1687.
- Keep the DAO informed through daily reports and ensure ATP operations comply with division SOPs.
- Assist the ATP NCOIC with selection of adequate ATP sites.
- Verify contents of corps resupply vehicles.
- Establish primary and backup communications with the DAO, the supporting ASA, and other agencies (i.e., FSB support operations offices and the brigade S4).
- Coordinate with the brigade S4 and FSB support operations office to schedule using unit resupply.
- Coordinate with operations element for backhaul of corps transportation assets.

AMMUNITION TRANSFER POINT

4-8. The ATP section of the FSB/CSB supply company operates the forward ATPs. The supporting DS ordnance company or modular platoon ATP section operates the rear ATP. Since the munitions support mission is such a critical one, the ATP section performs *only* munitions transfer operations. It is neither equipped nor staffed to perform other supply-related functions. The ATP section is primarily responsible for conducting munitions operations and maintaining stock status records of munitions.

4-9. Munitions operations include the transloading of munitions from corps trailers to user resupply vehicles under all environmental and threat conditions, receiving unit turn-ins, performing emergency destruction of munitions, and conducting relocations. This section is also responsible for the following:

- Controlling the flow of vehicles within the ATP to avoid congestion and to ease munitions handling operations.
- Consolidating trailers with less-than-trailer loads to economize resupply.
- Releasing transportation assets for backhaul.
- Defending the ATP from enemy threats.

4-10. To maintain visibility of munitions, the ATP section keeps type and quantity records of the balances of the munitions within the ATP. Paperwork and reports relative to munitions received from corps or users is passed along to the DAO representative as well as reports on damaged munitions.

ORGANIZATION

4-11. The ATP section is comprised of the section chief (an NCO) and section members. The section chief supervises operations under the staff supervision of the DAO. The number of personnel assigned to the ATP depends on the unit TOE authorization.

ATP Section Chief

4-12. Section chief/NCOIC responsibilities include planning and organizing ATP operations, supervising ATP section members, and developing the operations SOP. Other responsibilities of the section chief are as follows:

- Ensures all operations are conducted safely with consideration for operational hazards (i.e., fire protection).
- Disperses vehicles and conducts vehicle inspections.
- Signs and processes shipping documents, including DD Form 1348-1A.
- Ensures safe munitions handling.
- Manages ATP cover, concealment, and security.
- Maintains stock status records of munitions at the ATP.
- Ensures proper and continuous operator maintenance is performed on all section equipment, such as MHE, trucks, and radios.
- Establishes work schedules.

Because the ATP section operates independently in a support area, the NCOIC must keep the DAO representative informed of problems or added support requirements, such as personnel, MHE, security, or transportation assets.

Section Members

4-13. Section members have both munitions-specific duties and field operations responsibilities. Their responsibilities are as follows:

- Ensure safe handling of munitions within the ATP.
- Operate rough terrain forklifts used to transfer munitions from corps to user resupply vehicles.
- Perform preventive maintenance on assigned equipment.
- Reposition trailers to enhance operations.
- Maintain cover and concealment of the operations area.
- Assist with ATP security.

MUNITIONS-RELATED FUNCTIONS

4-14. Within the division, there are other organizations with functions critical to the division's ammunition support. Discussed below are the munitions-related functions of the maneuver battalion and brigade operations and training staffs and logistical staffs, the DISCOM, support battalions, and the general staff.

MANEUVER BATTALIONS/BRIGADES (S3)

4-15. Based on anticipated tactical operations, the S3 of each maneuver battalion determines munitions requirements and submits them to the brigade S3. The brigade S3 determines the consolidated munitions requirements for the brigade from the battalions' input and from knowledge of planned tactical operations. (The exception is artillery units whose requirements are determined through the DIVARTY.) The brigade's consolidated requirements are added to the requirements of divisions and

nondivisional elements that are supporting the brigade. The total requirement is submitted to the division G3. The other important task of the maneuver brigade S3 is to select the location of the BSA.

MANEUVER BATTALIONS/BRIGADES (S4)

4-16. The S4 of each maneuver battalion requisitions munitions based on consolidated company requirements needed to support brigade operations. Munitions requests are submitted to the brigade S4 along with on-hand quantities, critical shortages, and forecasted changes in requirements. The brigade S4 consolidates the requests, coordinates with the FSB support operations officer to establish unit issue schedules, and provides the DAO with a unit issue priority list and consolidated unit requirements. Finally, the brigade S4 provides the battalion S4s with their allocations of the brigade CSR and advises the DAO to ensure that units do not exceed authorizations.

DIVISION SUPPORT COMMAND

4-17. The DISCOM provides logistical support to the division through organic support battalions and supports the maneuver brigades through the FSB. The MSB provides support to the division rear elements. More detailed information on DISCOM functions can be found in FMs 63-2 and 63-2-1.

4-18. Key staffs in the DISCOM are the S2/3 and the DMMC. With input from the DAO, the S2/3 prepares OPORDs and annexes for CSS and coordinates DISCOM assets needed to support the ATPs (i.e., MHE, personnel, DISCOM and corps transportation). The S2/3 also coordinates with the DAO on chemical munitions operations, distribution, and accountability control. When the division operates a series of base camps, consideration will be given to augmenting the DISCOM staff with a cell of QASAS/qualified military inspectors to provide explosives safety and ammunition technical services to the division.

4-19. The S2/3 exercises division-level movement control through the MCO, an agent of the DISCOM commander who controls the use of motor transport assets for division CSS operations. Users forward their transportation requirements to the MCO. The MCO tasks the TMT company of the MSB and/or equivalent organizations, coordinates with the DMMC to ensure that supply movement priorities are met, and passes transportation requirements that exceed division capability to the DTO for further coordination and action.

4-20. Through the support operations branch, the S2/3 ensures that division support operations are conducted efficiently. This branch directs CSS elements of the division, ensures that SOPs governing CSS operations are prepared and followed, and prepares appropriate CSS directives and OPORDs for DISCOM internal operating elements (i.e., the FSB, MSB, and DMMC).

4-21. The DMMC manages supplies for the DISCOM. It determines division requirements and maintains supply records. It also directs the receipt, temporary storage, issue, and distribution of supplies and equipment, and provides command and control over the Class V supply section.

SUPPORT BATTALIONS

4-22. The ATPs are organic assets of the supply company in the FSB. Each FSB is in direct support of a maneuver brigade. The TMT company of the MSB distributes supplies to the FSB. Also, the TMT company can provide emergency munitions line-haul to augment corps transportation.

DIVISION GENERAL STAFF (G3 AND G4)

4-23. The G3 establishes the division RSR (based on consolidated RSR information from the brigades and anticipated combat requirements) after consulting with the DAO, DISCOM commander, G4, and other staff members. The division RSR is then submitted to the corps or equivalent organization for further planning and action.

4-24. It is important that the G3 keep the DAO informed of tactical situations that may impact on munitions operations. Such information may include the current and projected divisional tactical situation, weather, terrain, potential problem areas, MOPP levels, and munitions requirements other than those provided by the brigades.

4-25. The G3 manages emergency munitions resupply and determines priorities, needs, and (with the DAO) methods for performing emergency resupply operations. The G3 also coordinates with the DISCOM commander and G4 to determine the location of the DSA.

4-26. Based on the CSR received from higher headquarters (i.e., corps or theater), the G3 sub-allocates the division CSR. The CSR is published either in OPORDs, fire support annexes, or similar documents for the combat units.

4-27. The G4 also provides planning for division movement support through staff supervision of the DTO. The DTO serves as the communications link for transportation between the division and the corps and requests corps transportation support from the MCA. Further, the DTO provides DISCOM MCO guidance and assistance on division movement priorities, unit movements, movement requests, and MSR use and validates airlift requests for CSS operations.

ECHELONS ABOVE DIVISION

4-28. As directed by the COSCOM, the CSA and ASP support the ATP. These storage areas are corps assets assigned to COSCOM ordnance battalions/corps support battalions, companies, or platoons. They support the ATPs by preparing and shipping munitions in MCLs or single DODIC loads. When workload allows, and the DAO has provided the required information, the CSAs and ASPs may prepare preloaded ATP trailers and hold them until needed for resupply. These prepared trailers can be used either for emergency resupply or as part of the normal push to the ATP. CSAs and ASPs also issue munitions to units operating in their areas.

4-29. Higher level MMCs provide commodity management and inventory visibility control of munitions. The CMMC manages munitions at the corps level only and interfaces with the operational level MMC. The operational level MMC manages assets for the entire theater and is the primary interface between the theater and the NICP, DLA, and USAMC.

DAO AND ATP OPERATIONS

4-30. Munitions support to the division involves two basic functions. The first is planning and the second is execution. Both are accomplished by the DAO's Class V supply section and the supply company's ATP section.

4-31. The Class V supply section's planning function focuses on how to logistically support the commander's tactical plan so that the right munitions are available at the right place and time. The section's execution function is to monitor the distribution and flow of munitions during battle.

4-32. The ATP planning function is to coordinate resupply of combat units with the arrival of incoming munitions shipments. Its primary execution function is the transloading of munitions to combat units.

4-33. How well these sections perform their functions directly affects the quality of munitions support to the division. All operations involve close coordination between the two sections.

DAO OPERATIONS

4-34. The Class V supply section supervises the ATP staff and manages munitions. The DAO determines the amount of munitions needed to support the division based on the tactical plan and established CSR. Also, the DAO decides how to distribute munitions available in the ATPs to best support users. The DAO coordinates with the supporting CMMC and CSAs and ASPs for resupply and continually monitors tactical requirements to modify resupply requirements. Planning will address the types and quantities of munitions required and identify the ATPs to which the munitions will be delivered. Some of the more important responsibilities of the DAO are discussed below.

SOPs and OPLANs

4-35. The DAO publishes SOPs and develops portions of OPLANs to ensure plans and procedures that adequately support the tactical forces are established within the division. Before implementing SOPs and OPLANs, they must be carefully coordinated with the support battalion.

4-36. The DAO determines and publishes the support plan for each ATP so that all supported units know the identity and location of their supporting ATPs. The DAO provides the G3 with ATP information to be covered in OPLANs and OPORDs, including DAO, storage area, ATP, and CSA locations.

Division Resupply Requirements

4-37. Anticipated tactical operations drive division resupply requirements. The DAO estimates these requirements using information from the automated OPLOG Planner, input from the brigades, and knowledge of the force to be supported. Either the brigade S3 provides weapon status information, or it is obtained from the weapon systems status report submitted through logistics channels (S4/G4). This report gives the current status of on-hand weapon systems in the maneuver battalion.

4-38. SIDPERS reports provide current personnel data when troop strength is the basis for munitions allocations (as is the case with hand grenades, flares, simulators, and so forth). The DAO uses historical data for the particular force/scenario or planning rates in the OPLOG Planner when anticipating combat losses.

4-39. Added planning and coordination are required to support nondivisional and corps slice elements (i.e., an artillery battalion supporting a maneuver brigade). The overall division munitions planning process must include organizations, or portions of organizations, that normally support the division. The DAO will maintain close coordination with the operational and logistical staff elements of these nondivisional elements. Such coordination enables the munitions planner to anticipate requirements.

4-40. In coordination with the G4 and the CMMC and based on proposed MCL configurations submitted by the maneuver brigade S4, the DAO computes the numbers and types of MCLs required to support the division. MCLs are preplanned packages of munitions that consist of items needed to support a particular type unit or weapon system. The MCL concept differs from previous resupply concepts. With this concept, the ATP supplies a fully functional package loaded on flatrack(s), instead of multiple single DODIC platforms located throughout the ATP.

4-41. The CMMC consolidates data from all assigned divisions and nondivisional elements as appropriate (such as corps artillery) and completes composition of the MCLs. The DAO translates the user munitions allocation, which is based on CSRs, into MCL packages and submits these requirements to the CMMC. With knowledge of how much of what MCL is required at each ATP, the CMMC can continue to push munitions if communications systems fail.

Division Munitions Status

4-42. The DAO monitors the division ATPs to determine the availability of all types of munitions. Also, the DAO checks on the ETA of incoming shipments and notifies DAO representatives and support operations sections of the support battalions. The DAO locates representatives at the ATPs or on MSRs to coordinate and control munitions flow and to direct redistribution of munitions in the ATPs to support combat units more effectively. In peacetime, the DAO monitors all ABL and operational or contingency stocks to ensure availability and serviceability.

EMERGENCY REQUESTS

4-43. Under the push system, munitions are specifically requested only in emergencies. Preplanned munitions continue to flow until the MCLs are changed either in type or quantity to be delivered. A munitions shipment is said to be “throughput” when it bypasses one or more nodes; it is used to improve efficiency in the distribution process when emergency requirements dictate.

4-44. Emergency throughput involves corps transportation assets historically not employed near the front lines. For this reason, the corps G3 makes the

decision to conduct the operation, based on the requirement and the recommendation of the DAO.

4-45. Several methods may be used for throughput of emergency requirements. Whichever the method, it is essential that close coordination and communications be maintained among the users, the DAO, the G4, and transportation units. The division SOP is the appropriate medium for specifying requirements and procedures to be followed.

4-46. Combat units pass emergency requirements for munitions through G3/S3 channels to the DAO as quickly as possible. The DAO selects the fastest method of responding to the requirement, based on its priority as determined by the G3. Possible solutions include diverting inbound shipments from ATPs that are supporting units with less need, using aerial resupply, using throughput procedures previously described, or using a combination of these. The DAO implements emergency resupply solutions and monitors the action to ensure effective and efficient resupply.

Chemical Munitions

4-47. Chemical munitions do not remain in an ATP for long periods of time. Based on a materiel release order from the CMMC, they are pushed forward to the ATP and then issued directly to the using unit. Chemical munitions require chain of custody documentation using DD Form 1911. The ATP may receive chemical munitions from either the CSA or ASP. The ATP assumes custody and coordinates security until the munitions are issued. Also, the ATP may serve as a transfer point for retrograded chemical munitions. The DAO and ATP representative closely monitor receipt of chemical munitions and ensure that units are notified to expedite issue and limit ATP handling time. Specific controls for chemical munitions are covered in AR 50-6.

Records and Reports

4-48. Although the amount of detail may be reduced, combat operations or SASO do not eliminate the need for keeping records and preparing reports. The division must still be able to track its munitions status to be an effective combat force. The DAO must keep records for each ATP of the on-hand status, munitions issues, munitions requirements (to help establish usage data), requirements documents, and authorized expenditure rates (CSR/RSR).

Authorized Rates

4-49. No prescribed format exists for transmitting RSRs or CSRs, but it is imperative that they are transmitted through both operational and logistical channels (i.e., OPLANs, OPORDs). The DAO receives CSRs from the G4. The DAO representative at each ATP must ensure that units do not exceed their CSRs by maintaining authorization information for each supported unit, including divisional and supporting corps-slice elements. When the DAO representative authenticates a user's munitions requirement document, the unit authorization is reviewed. Any previous issues are subtracted to determine the quantity of munitions the unit is authorized. The S4 of the supported brigade will provide CSR data for each unit the ATP supports.

4-50. To monitor CSRs, the DAO can use either SAAS-DAO/SAAS-ATP or a manual system consisting of stock record decks. If a manual system is used, it will allow the user to maintain visibility of all assets, process documents quickly, and prepare status reports easily.

Document Flow

4-51. Even with emerging automated procedures, the Class V supply section and ATP should keep some manual forms and process some documents to maintain good munitions control. The following section discusses some of the important documents that the DAO and ATP NCOIC are likely to encounter. Detailed documentation processing is discussed elsewhere in this manual.

4-52. **Shipping documentation.** Corps storage areas ship munitions to the ATP using DD Form 1348-1A, DD Form 1384, and if necessary, a DD Form 1911 for chemical munitions. The transportation system uses DD Form 1384 to control the shipment throughout the shipping process. This form includes information basic to shipping and transportation activities (i.e., type of shipment, mode of shipment, special handling information, required delivery date, lot number, number of items, weight and volume of items and total shipment).

4-53. The ATP NCO verifies the actual shipment against these documents to ensure that the correct items and quantities have been shipped and makes corrections, if needed. The documents are then signed and returned to the Class V supply section for processing. Stock records at the ATP are posted using either SAAS-ATP or manual records.

4-54. The REPSHIP is another document used for shipping. The REPSHIP alerts the receiver (i.e., DAO or ATP) to a pending shipment and provides the ETA, a listing of items and quantities shipped, and special instructions for transportation agencies and receiver. The ATP either uses the REPSHIP to plan for receipt of the shipment or arranges to meet the convoy in case the ATP has to relocate while the convoy is en route. Although the DD Form 1348-1A may be used as a REPSHIP, no standard form or format is prescribed. The theater may direct the use of the most suitable format. Any available media may be used to transmit REPSHIP data.

4-55. **Issue and transload documentation.** The main document needed to perform munitions issue or transload operations is DA Form 581. The S4 of the using unit requests issue of munitions on the DA Form 581 within the authorized quantities (CSR) provided by the brigade S4. Before releasing the unit to transload, the DAO representative at the ATP verifies that the request is within the unit CSR and that the ATP has the required amount. If either the CSR or the ATP quantity will be exceeded, the DA Form 581 must be amended. The DAO representative also checks the DA Form 1687 to ensure that the unit representative is authorized to draw munitions.

4-56. Once munitions are transloaded, the ATP representative verifies the load with the unit representative to ensure the unit gets the right type and amount of munitions. This procedure also helps to maintain munitions visibility. When the unit departs, the DAO representative posts the issue to his control records and reports the transaction to the DAO through the DTR.

4-57. **Daily transaction reports.** The DAO updates and verifies records using DTRs submitted by the ATP representatives. The DTRs will be limited to pertinent munitions information and problems/anticipated operations that would affect the flow of munitions. A short SITREP should accompany the DTR. The report period depends on the situation, command procedures, and common sense. However, twice daily reports should be considered reasonable.

4-58. The DAO also uses the DTRs to compare balances with estimated requirements and submits a consolidated balance report to the CMMC IAW the SOP. Any serious or important information may be included with the balance report.

4-59. **Munitions status report.** The division will develop a simple and standardized AMSTAT to report its munitions status to higher headquarters. The DAO provides consolidated information from the ATPs via the DTRs and adds any pertinent information. Various formats may be used based on the report's intended purpose. The AMSTAT must be classified at a level high enough to keep from revealing important logistical and/or tactical information. It may be submitted electronically or by direct computer link. The corps determines the AMSTAT addressees, but at minimum it is sent to the corps and division G3s and G4s and division units with action. Information copies will be provided the CMMC.

Surveillance Operations

4-60. Surveillance operations ensure that munitions are safe for issue and use. These operations include the observation, inspection, and classification of munitions and components during storage and movement. Extensive inspections are not expected during combat but should be expected during SASO. They may be required, however, to conserve valuable or critical munitions assets and to ensure that serviceable munitions are issued to using units. The ATP-level inspector is mainly concerned with munitions suspension or restriction control, weapon malfunctions, and ABL inspections. Supporting DOD QASAS/qualified military inspectors will perform serviceability inspections of all ammunition transferred from one unit to another when the tactical situation permits. Such transfers will be the exception to normal operations but are warranted in such situations as unit rotations during SASO.

Munitions Suspensions

4-61. The ATP will issue only serviceable munitions to combat users. Some munitions may be determined to be unsuitable for combat use due to deterioration, age, storage conditions, or manufacturing defects. Such munitions may be classified as suspended or restricted and are unsafe to use or move for a variety of reasons. Use of suspended munitions can pose danger to the weapon crew. Restricted munitions are items safe to move, store, or use under the proper conditions. (For example, particular lots of faulty artillery shells that have been specially tested and approved as safe for use only in overhead fire operations.) TB 9-1300-385 contains the current worldwide list of suspended and restricted munitions.

4-62. When munitions are discovered to be dangerous, suspension or restriction notices are sent to all affected organizations as quickly as possible. The Class V supply section inspector monitors these notices.

4-63. The DAO requests disposition instructions from the CMMC for unsuitable munitions within the ATPs and coordinates with the CMMC to determine if the ATPs will be resupplied. The DAO directs the ATP NCOIC to mark and segregate (to the extent possible) the suspended/restricted munitions. The DAO then notifies all units that received suspension or restriction notices and coordinates through the battalion S3 to arrange for turn-in and reissue.

4-64. If the CMMC directs that the munitions be destroyed, they can be destroyed by ordnance personnel. The disposal site must meet disposal guidelines IAW DA Pam 385-64 and the MMR. If EOD personnel are required, the division G3 will coordinate with the supporting EOD unit for assistance.

Weapon/Munitions Malfunctions

4-65. Weapons and munitions do not always function as intended in combat. Occasionally malfunctions do occur. Combat units must notify the DAO of the malfunction as soon as possible. The DAO notifies the CMMC and the ordnance battalion/corps support battalion for inspection support. Besides DAO inspectors, investigation of munitions malfunctions may require the assistance of QASAS/qualified military inspectors for inspection and resolution. Based on this inspection, munitions may be suspended locally pending a more thorough investigation.

ABL Inspections

4-66. ABL must be periodically inspected to ensure proper and safe storage. During combat, some munitions storage standards may be relaxed. Both civilian and military munitions inspectors will inform commanders of the risks involved. Inspection requirements are discussed in SB 742-1. Command policies will contain provisions for the cyclic scheduling, supporting, and accomplishment of inspections of ammunition in the possession of units. This is an explosives safety force protection measure.

ATP OPERATIONS

4-67. The ATP section of the FSB supply company operates the brigade ATP in close coordination with the DAO, FSB, brigade, division staff, and supporting/supported organizations. Activities and responsibilities of the ATP section are described below.

Site Location and Selection

4-68. For the most part, the ATP section plans for and establishes the ATP, which must be properly sited in the support area (brigade/division) to support combat operations. The maneuver brigade S3 sites the BSA, and the division G3 determines the DSA location.

4-69. The DAO, ATP NCOIC, and brigade and division staffs will provide input to the ATP site selection. The DAO provides munitions-related technical information and suggestions on how best to lay out the ATP for support operations. Following site selection, the best layout for the ATP must be planned and executed.

4-70. As the division munitions expert, the DAO provides input on the proper positioning of ATPs on the battlefield. ATP section personnel do most of the planning and physical setup of the ATP. However, the DAO ensures that it is positioned to most effectively support combat users, given the munitions requirements of the supported force and the tactical factors of METT-TC. The DAO coordinates placement of the rear ATP with the division G3 and placement of forward ATPs with the supported brigade S3 and the support battalion. An ATP is normally part of the BSA. Depending on the tactical situation and METT-TC, it may also be located at a railhead, shipyard, port of debarkation, or at an ASP or CSA or adjacent to a road network.

Site Layout

4-71. No specific standard configuration exists for ATP layout. Layout will be based on the tactical situation and what is deemed to be the most functional way to provide support to using units. See DA Pam 385-64 for additional guidance. The MCL concept increases the capability of the ATP to support a specific type of unit with one-stop transloading rather than multiple stops to fill munitions requirements. However, it still may be necessary to maintain trailers with single DODIC loads to replenish other type units. The DAO and ATP section must analyze the support situation and determine how best to support users.

4-72. Some layout considerations are common to any configuration. One entrance/exit point, with consideration for an emergency exit, allows control of unit and corps vehicles and MHE. A good one-way roadnet should have room to allow unit vehicles and MHE to operate safely. A separate holding area should be available to hold incoming trailers temporarily that cannot be placed immediately.

4-73. The signature of the ATP should be reduced using terrain features such as vegetation, trees, slopes, and valleys for concealment. Special care must be taken not to disrupt the natural look of the area.

Receipt Of Munitions

4-74. The key function of the ATP is to receive munitions from CSAs/ASPs, on corps transportation assets, and transload them to user resupply vehicles. Current analysis estimates the receipt of shipments at every three to four hours, which realistically translates to continuous operations. Receipt is, therefore, the most important operation.

4-75. The DAO representative and the ATP section must be prepared to properly receive and place trailers, transload to users, and record and report the receipt. Munitions may also be received from other ATPs when the DAO directs redistribution in support of the division or as turn-ins of unused or unusable munitions. Within CSR constraints, the DAO must ensure the

availability of munitions stocks at ATPs to support user needs. During SASO, the ATP may be required to store limited amounts of munitions stocks.

4-76. **Receipt Planning.** The shipper will notify the ATP in advance of a scheduled shipment either by hard copy or electronic REPSHIP, or DD Form 1384. In combat, SAAS-DAO communication is the probable means of advance notification. The DAO also informs the receiving ATP representative of the ETA and types and quantities of munitions expected.

4-77. The planning process at an ATP is continuous. When an advance shipment notification is received, the ATP section must know where to place the trailers, consistent with different hazards and storage standards, to ensure safe operations.

4-78. **Receipt Documentation.** The ATP representative will verify shipment contents against the shipping documents (i.e., DD Form 1384 and DD Form 1911 for chemical munitions). The ATP section assists by helping with the count. The ATP representative must record any discrepancies and damaged munitions on the shipping documents and, time permitting, record the quantity of munitions by lot number for DAO records.

Vehicle Inspection

4-79. Munitions are especially sensitive to fire. Before entering the ATP, convoy tractors and trailers and using unit vehicles must be inspected for safety defects that could start or contribute to a vehicle or grass fire. Inspection criteria are stringent during peacetime operations. In combat or SASO and based on mission requirements, the criteria may be relaxed to speed munitions flow. However, this must be a documented command decision. The inspection criteria of DD Form 626 will be used as much as possible.

Trailer Placement

4-80. When placing trailers, the NCOIC has two considerations. The first is how to best support the units. If possible, place unit loads or MCLs in the same general area. If the munitions are issued by DODICs and not by MCLs, trailers of the same DODICs should be located together. The second consideration is the characteristics of the munitions. Munitions must be stored correctly to reduce hazards to the ATP. Consult DA Pam 385-64 for specific guidance. Chemical munitions will receive special attention because of added hazards and security needs.

Escort And Release

4-81. ATP section personnel should escort tractors to ensure that trailers are properly positioned and recorded on a planograph or locally prepared site log. After trailers are placed, the drivers pick up any trailers to be backhauled to the rear. Once the return convoy is established, the DAO representative provides a copy of all documents to the convoy commander and releases the convoy for the return to the CSA.

Munitions Returns

4-82. Using units return very few munitions since most will have been expended. However, munitions that are returned must be handled carefully. Users can return munitions that are suspended or restricted or because they are excess to basic load requirements. Combat units may also turn in CEA.

4-83. The DAO representative notifies the DAO of returns using the daily AMSTAT. If the munitions are unserviceable, the DAO requests disposition instructions from the CMMC. If the munitions are returned as serviceable excess, the DAO redistributes them to users.

4-84. Returned munitions can create problems. The most significant of these are the following:

- Arrival of unit returns with little or no warning. The ATP NCOIC should anticipate user returns and set aside areas of the ATP for returned munitions. Accepting returns should be regarded as part of a normal day's operations.
- The potentially hazardous condition of returned munitions. This problem is more dangerous since the munitions may pose serious safety hazards, depending on their characteristics and condition.

To help reduce storage hazards, ATP personnel will mark returned munitions and store them separately from serviceable munitions. As soon as mission permits, an ammunition inspector will assign an ammunition condition code and determine if any suspensions or restrictions are applicable. This practice prevents inadvertent issue to using units and the possibility of a safety hazard.

Unit Issues

4-85. Thorough preparation by all key players is essential to an efficient issue operation. The battalion S4 prepares the request for issue on a DA Form 581 and coordinates resupply schedules with the brigade S4, the support operations officers, and the DAO. The support operations office coordinates with the DISCOM S3 to schedule supported units. The FSB SPO, in conjunction with the DAO representative, will work with supported units to ensure that forecasted munitions are properly receipted.

4-86. When the S4 notifies the DAO of the requirement, the DAO decides how best to support it and determines if the required munitions are in the supporting ATP. The DAO also ensures that the requirement is within the CSR or that an increase has been granted. If the munitions are at the ATP, the using unit can go to the ATP and transload; if not, the DAO must determine how to support the unit. If required, the DAO arranges emergency resupply by coordinating with the unit, the division G3, and the CMMC.

4-87. Before entering the ATP, using unit vehicles must be inspected for safety defects that could be hazardous to the ATP or its personnel. Vehicle inspection procedures are covered in other chapters of this manual.

4-88. While the ATP section inspects the unit's resupply vehicles, the DAO representative authenticates the DA Form 581, verifies that the unit requirement is within CSR limits, and ensures that the ATP has the required

quantities. If the requirement exceeds the CSR or the munitions are not in the ATP, the DAO representative requests instructions from the DAO.

4-89. After transloading, the DAO representative verifies the issue and ensures that the correct types and quantities of munitions have been issued and loaded safely on unit vehicles. Once the unit is released, the DAO representative and ATP NCOIC update their munitions records. The updated records allow preparation of the AMSTAT and asset control within the ATP.

Operations Safety

4-90. ATP section personnel must operate the ATP safely and maintain its assigned equipment. The ATP NCOIC ensures that all operations are conducted as safely as possible. The most significant danger in an ATP is fire. MHE movement and transloading also present significant hazards. See Chapters 7 and 8 for operational and fire safety precautions and provisions applicable to munitions storage facilities and operations.

ATP Relocations

4-91. The purpose of the ATP is to provide dedicated munitions support to the user as far forward as possible. When the supported force maneuvers, the ATP moves accordingly. Routinely, the ATP should be prepared to move frequently, as METT-TC dictates. Detailed plans will be established to allow for quick, orderly movement under pressure. Evacuation priorities will be established beginning with the most important assets. Except for the emphasis on speed, the basic procedures for an emergency move are the same as for a routine move.

4-92. When planning for relocations, the following factors must be considered:

- First, the move must be thoroughly planned. Preparation and practice during peacetime (IAW a well developed SOP) increases the capability to move effectively and reduce confusion during wartime.
- Second, the ability to maintain communications is extremely important.
- Third, support to the brigade from the corps munitions structure and lines of communications between supported units and with the corps must be maintained. Disruption of munitions flow in support of the brigade should be minimized to the extent possible.

4-93. The ATP is moved in phases to maintain continuity of support to the combat users. A portion of the ATP may move to establish a new site, and the remainder may move later and establish full operations. The relocation can be divided into three phases: pre-movement, movement, and post-movement.

4-94. **Premovement.** Planning input and coordination by the DAO, G3, G4, and ATP section ensure that a coordinated, safe, and quick relocation is conducted. Relocation plans must be coordinated with all supported and supporting agencies. The DAO coordinates with the CMMC for the move. This includes arranging for corps transportation to move the munitions to the site and for the backhaul of empty trailers at the old site. Also, the DAO notifies the support operations office of the closure and arranges for users to draw as much as possible, which effectively reduces the amount of munitions

to be moved with corps assets. The DAO representative assists with reconnaissance of the new BSA site and provides munitions and trailer status to the DAO.

4-95. The ATP section conducts the actual move with coordinated divisional or corps transportation assets. It must consolidate munitions on as few trailers as possible, break down the area, and prepare the equipment and vehicles for movement.

4-96. The support operations office notifies the supported brigade of the intended move and provides information about closure of operations at the old ATP and the initiation of operations at the new site. The support battalion provides the necessary division assets and coordinates for corps assets to conduct the relocation. The S2/3 requests prime movers to move munitions and MHE. Also, the S2/3 prepares the overall FSB and MSB movement plans, including convoy operations.

4-97. **Movement.** During the movement phase, the BSA or DSA establishes the advanced element at the new site. The ATP NCOIC provides this element with MHE and personnel to support the brigade until normal resupply operations can be established. The support battalion organizes the convoy for movement to the new site. The CSA/ASP begins to ship to the new ATP site as soon as possible.

4-98. **Post-movement.** The DAO representative and the ATP NCOIC set up the new ATP site and prepare to conduct normal ATP operations. In doing so, they ensure that the old site is closed and all equipment, stocks, and personnel have been relocated to the new site. The old ATP site must remain open long enough to provide continuity for all users and resuppliers.

SUMMARY

4-99. This chapter has provided a general overview of the organizational structure and operational requirements of the DAO and the ATP. Also, it has established the functional link between the division and corps ammunition structure. Effective DAO and ATP operations are critical to the combat power and sustainability of the division and its brigades. Trained and prepared Ordnance soldiers are key to effectiveness.

BRIGADE COMBAT TEAM AMMUNITION OFFICE AND AMMUNITION TRANSFER POINT

The Interim Brigade Combat Team is scheduled to be operational in fourth quarter, fiscal year (FY) 2000. Its design gives the Army a rapidly deployable, highly mobile, survivable, and lethal force intended to fill the void between traditional heavy and light forces. Planners have incorporated the principles of velocity management, reach-back support, and regionally available commercial support to the maximum extent possible to reduce the brigade's combat support and logistics footprint. Organic noncombat equipment has been drastically reduced with the expectation that the brigade will operate in an extremely austere environment until the theater matures. The existing ammunition support structure has been adapted to provide efficient and effective support. Elements tailored to support the BCT include the ATP and the BAO, a brigade-level element similar in structure and function to the DAO. These adaptations may be changed or modified before activation of the initial brigade.

AMMUNITION TRANSFER POINT. The ATP section will be assigned to the supply support platoon of the headquarters and distribution company, which in turn is assigned to the brigade support battalion. The headquarters and distribution company provides the majority of organic transportation and supply support to the BCT.

The ATP section's ability and requirement to reconfigure ammunition loads is limited. Ammunition arriving at the ATP will be in mission or customer configured loads that have been configured outside the theater (i.e., usually at a depot, an ISB, or remote ASA).

The BCT ATP will conduct limited storage operations. Unlike the traditional ATP activity, which is considered an event and not a storage facility, the ATP will support the BCT in SASO or small-scale contingency operations with little or no ammunition consumption.

BRIGADE AMMUNITION OFFICE. The BAO consists of an ammunition warrant officer and a senior NCO assigned to support operations of the base support battalion. The BAO's primary duties and responsibilities are comparable to those of the DAO discussed earlier. However, the BAO will coordinate mainly with the next lower echelon of staff offices (i.e., the brigade S3/4 instead of the division G3/4).

The BAO warrant officer may be the senior or most experienced ammunition logistician in theater, while the DAO staff will most likely have an MMC team and/or ASA comprised of Ordnance personnel supporting the division-level deployment.

The BAO will operate SAAS-ASP in lieu of SAAS-DAO. Also, the BAO may be required to establish direct communications with and report to the supporting MMC. This may occur in situations where no other levels of SAAS are deployed to the theater.

Chapter 5

Munitions Support in an NBC Environment

This chapter discusses munitions support in a theater of operations for combat or SASO, where NBC weapons have been used or are available for use. This information also applies to WMD situations. The information contained herein supports current Army doctrine and should be used with emerging NBC defense doctrine.

OVERVIEW

5-1. All combat operations or SASO have the potential to occur in an NBC environment. US policy neither condones nor authorizes first use of biological and chemical weapons. US policy concerning nuclear warfare is to deter and, if deterrence fails, to terminate the conflict at the lowest possible level of violence consistent with national and allied policy objectives. This policy does not preclude US first use of nuclear munitions.

5-2. Commanders and planners must assess an enemy's willingness to employ these weapons and the conditions that would prompt them to do so. For example, a virtually defeated enemy may resort to unrestricted warfare by any means to turn the tide of battle.

5-3. Use of WMD can result in extensive destruction and mass casualties. Only cohesive, disciplined, physically fit, and well-trained munitions units are able to function in an NBC environment. Long-term operations in this environment degrade even the best-trained soldiers. The wearing of NBC equipment for long periods decreases the ability of a munitions unit to provide support. Munitions leaders must train and equip all personnel to endure these conditions. By being prepared, munitions units can continue the support needed for combat forces to maintain the advantage over the enemy.

5-4. Command is more difficult in an NBC environment. Command, control, and support operations areas are likely targets. Control is difficult even within the smallest operation. The employment of WMD greatly alters the tempo of combat support, which in turn affects the combat mission. Munitions leaders must never assume they are immune to attack and need to consider ways of decreasing risk.

NUCLEAR WEAPONS

5-5. The immediate effects of a nuclear detonation are blast, thermal radiation, initial nuclear radiation, and EMP. These effects can cause significant personnel and materiel losses. Secondary effects include urban devastation, fires, and radiological contamination. EMP can affect unshielded electronic equipment and degrade C3I systems. Also, residual radiation can have long-term effects on personnel, equipment, facilities, terrain, and water sources. Munitions units and activities may be targeted for nuclear weapons attacks.

BIOLOGICAL WEAPONS

5-6. Although the US has renounced the use of biological weapons, many nations have not. Availability of biological weapons to potential enemies requires munitions leaders to prepare for operations in a biological environment. Defensive measures must be employed to reduce the effects of a biological attack. All munitions soldiers and civilians must receive adequate information, along with psychological and medical preparation.

CHEMICAL WEAPONS

5-7. Chemical weapons produce immediate and delayed effects that hamper operations by contaminating equipment, supplies, and critical terrain. Munitions leaders can reduce the effects of chemical use by applying the fundamentals of contamination avoidance, protection, and decontamination. Munitions leaders use chemical reconnaissance and decontamination as two planning imperatives for all missions. *Training is key.*

NBC DEFENSIVE FUNDAMENTALS

5-8. NBC defensive fundamentals include contamination avoidance, protection, and decontamination. Performing these fundamentals counters the effects created when WMD are used. Normal operations become more difficult, and overall efficiency is reduced. Munitions leaders must consider mission degradation and hazards when employing defensive fundamentals.

CONTAMINATION AVOIDANCE

5-9. Contamination avoidance is key to providing munitions logistical support in an NBC environment. It is also the key to survival. Contamination avoidance consists of a number of individual and unit preventive measures that can be both passive and active. Passive measures include the use of concealment, dispersion, deception, cover, and OPSEC. These measures reduce the probability of an enemy using WMD and limit damage if such weapons are used. Active measures include detection, identification, marking contaminated areas, warnings, and relocating or rerouting to uncontaminated areas.

5-10. To increase survivability and supportability, munitions units must act quickly to avoid contamination, improve mobility, and lessen initial and residual effects of WMD. The following must be used whenever possible:

- Alarm and detection equipment.
- Dispersion (consistent with operational requirements).
- Overhead shelters.
- Shielding materials.
- NBC-hardened materials.
- Protective covers.
- Chemical-agent-resistant coating paint.
- NBC reconnaissance assets.
- Intelligence assets and reports.
- NBC-hardened shelters and tents.

5-11. Munitions stocks should be stored at dispersed sites. This helps to reduce the effects of WMD and complicates the enemy's target acquisition efforts. Also, munitions must be kept separate from other supplies and as mobile as circumstances allow. Resupply operations should be accomplished at night. All these measures work to keep the munitions support system functional and capable of supporting tactical missions.

NBC Reconnaissance

5-12. Munitions units perform NBC reconnaissance within their AO. Specialized NBC reconnaissance units conduct reconnaissance outside the unit AO and the COMMZ. They provide contamination information to leaders, which assists in developing operational plans. NBC reconnaissance units report to NBC centers where information is analyzed and disseminated to units through periodic intelligence reports. Other units, other services, and allied units operating in the area provide added data. All this information combined gives leaders a more complete picture of the AO.

Detection and Identification

5-13. All units use organic detection and identification equipment to identify NBC items. With fielding of BIDS, munitions units will have an effective system for detecting and identifying biological agents. However, enemy forces may use biological and chemical items unknown to the US and beyond the capability of our identification equipment.

5-14. NBC reconnaissance and medical and intelligence personnel sample suspected CB items and forward the samples to supporting medical activities for identification. Once agents are identified, the information is transmitted to units through the NBC reporting center.

NBC Warning and Reporting System

5-15. The ASCC operates a network of NBC warning and reporting centers. These centers provide information about NBC hazards and are the focal point for NBC battlefield contamination information. The NBC centers collect, consolidate, evaluate, manage, and disseminate NBC data reported by units, and interface with adjacent friendly and allied organizations. Through operations channels, they provide the evaluated NBC information to units in their AO. The unit leader uses this information to plan and execute the mission.

Limiting Exposure

5-16. Detection and identification of WMD within the munitions unit AO limits exposure and adverse effects on munitions support operations. Units use organic detection and identification equipment to receive early notification of CB attacks. This early warning allows unit personnel to limit exposure by donning appropriate protective clothing. Also, BIDS helps limit the effects of large area attacks employing potentially catastrophic biological agents. Using data collected by BIDS, medical personnel can determine what preventive measures and treatment are required if exposure occurs.

PROTECTION

5-17. Protection is initially an individual responsibility. At minimum, personnel must have IPE; this allows them to operate freely in a contaminated environment, but not without some degradation. Collective NBC protection provides rest and relief from continuous wear of IPE and a contamination-free work area for critical missions. Type I functions (i.e., C3I and light maintenance) are best performed while using some form of collective protection. Type II functions (i.e., storage, receipt, issue, and load configuration) require IPE with periodic breaks for rest and relief. Movable collective protection can be provided to those areas on a site where its not feasible to permanently emplace collective protection. Moveable collective protection could be placed at storage, receipt, issue, and load and configuration areas. Temporary rest and relief shelters should be provided as break areas within the ASA or ATP.

5-18. Munitions leaders must provide proper training in protection skills. Before encountering an NBC hazard, munitions units use MOPP and other available protective means to balance unit effectiveness with personnel survival skills. *ASAs and ATPs are considered by the enemy to be prime targets for WMD.*

5-19. Munitions support systems must be structured with the capability and flexibility to continue support operations in an NBC environment. Protective measures and procedures to offset the effects of WMD must be integrated into daily operations. In an NBC environment, frequent testing for contamination of supplies and assets is required. NBC monitoring must be continuous.

NBC CONTAMINATION

5-20. The presence of contamination reduces the effectiveness of munitions unit support. Contamination forces soldiers into IPE that degrades their ability to provide support. Once leaders understand the behavior and characteristics of contamination, they can take measures to avoid and reduce the NBC hazard. Considering these factors enables soldiers, planners, and leaders to integrate NBC defense measures into support and operations plans.

FORMS OF CONTAMINATION

5-21. Different origins and forms of contamination create different types of hazards. To determine risk and method of decontamination, soldiers must understand contamination and what makes it dangerous. See FM 3-5 for more information on forms, types, and persistency of contamination hazards.

NEGLIGIBLE RISK

5-22. Leaders must understand negligible risk levels when making operational decisions. Negligible risk levels for *CB contamination* are those that cause mild incapacitation among no more than 5 percent of unprotected soldiers who operate for 12 continuous hours within one meter of a contaminated surface. Negligible risk levels for *radiological contamination* are measurements of 0.33 cGy or less. This level of radiation causes no more than 2.3 percent mild incapacitation to unprotected soldiers.

DECONTAMINATION CONCEPTS

5-23. Decontamination, or decon, is the removal, destruction, or neutralization of contamination. Leaders must understand the reasons for decon and have a working knowledge of decon principles, types, and techniques. They must be prepared to make an assessment based on the following information:

- Operational situation.
- Available decon resources and METT-TC.
- Effects of decon on unit's ability to perform its mission.

5-24. IPE and collective protection shelters offer only a temporary solution. Decon is the more permanent solution.

5-25. Once a unit is contaminated, there are practical reasons for performing at least some decon as soon as possible. Leaders will follow the guidelines in this section when deciding which actions best support the mission.

DECISION TO DECON

5-26. When making the decision to decontaminate, consider resources available within the context of METT-TC. Before the decision is made, the following factors must be addressed:

- Lethality.
- Performance degradation.
- Equipment limitations.
- Spread of contamination.

Lethality

5-27. Some kinds of contamination are so toxic they can kill or incapacitate within seconds after contact with exposed skin. Should the skin become contaminated, do the following immediately:

1. Stop breathing.
2. Mask.
3. Give the alarm.
4. Decontaminate the skin.

Performance Degradation

5-28. MOPP gear provides protection but degrades performance the longer soldiers are in MOPP. Using tools and weapons or operating equipment while wearing IPE is awkward and dangerous. The protective mask reduces the soldier's field of vision, causing a loss of depth perception. Also, soldiers cannot eat while wearing a protective mask.

5-29. Normal body functions are potentially dangerous in contaminated areas. The simple process of removing IPE to urinate or defecate could expose the soldier to contaminates. The seal on the protective mask or IPE garments may be broken while the soldier is sleeping. Also, wearing of IPE may increase the threat of heat injury. See FM 3-4 for more information.

5-30. Soldier performance decreases over time in MOPP. Leaders must conduct a risk assessment before soldiers in MOPP perform missions. The following tasks are degraded when soldiers are wearing MOPP gear:

- Navigating.
- Terrain orientation.
- Decision-making processes (leader fatigue).
- Communications.
- Maneuver formations.
- Convoy operations.
- Operating MHE.

Limitations of Individual Protective Equipment

5-31. MOPP gear provides protection from CB attacks. Agents can gradually penetrate the protective mask hood. However, the hood's protective qualities can be extended by decontamination. FM 3-4 provides information on filter and MOPP gear exchange and wear limits.

5-32. Leaders must consider time and resources needed to conduct decon versus the degradation caused by operating in MOPP. They must also understand that soldiers must move to a clean area to conduct unmasking procedures. Completion of hasty decon (MOPP gear exchange and vehicle washdown) reduces soldiers' risk based on the following:

- Decreases time soldiers are exposed.
- Provides temporary relief from MOPP.
- Decreases the risk of spreading contamination.

5-33. MOPP gear provides little direct protection from the hazards of radiological (rad) contamination, (i.e., radiation from fallout). However, wearing MOPP gear has indirect advantages. These include preventing inhalation of radioactive particles, keeping contamination off the skin, and greatly simplifying decon. Radiation contamination must be removed as soon as possible, and MOPP gear must be replaced.

Spread of Contamination

5-34. All soldiers must avoid contamination as much as possible. Once a soldier and unit become contaminated, a quick and rapid decon is critical to prevent spreading to a clean surface or area.

PRINCIPLES OF DECON

5-35. The resources of manpower, time, and materiel are critical to the leader's decision on how to sustain operations. Leaders must apply two concepts in the decision-making process:

- Resource usage.
- Ability to sustain operations.

Leaders must know when, where, what, and how to perform decon by following the four principles discussed below.

5-36. ***First, decontaminate as soon as possible.*** This is the most important of the four principles. Contamination hazards force leaders to put the unit into MOPP; this immediately begins to degrade the unit's ability to do its mission. The sooner the contamination is removed, the sooner the unit can reduce MOPP levels and begin restoring the unit's level of support.

5-37. ***Second, decontaminate only what is necessary.*** Decontaminate only what is necessary to continue the mission. This helps sustain combat power. Consider the following factors when deciding whether decontaminating will interfere or help with the mission:

- Mission, "tempo of the battle," and unit munitions support requirements.
- Time available.
- Degree of contamination.
- Length of time unit has been in MOPP.
- Assets available to perform decon procedures.

5-38. ***Third, decontaminate as far forward as possible (limit spread).*** Contaminated soldiers and equipment should not be moved from the operational area if decon assets can be brought forward. This keeps the equipment on location where it is needed, allows decon to begin earlier, and limits the spread of contamination.

5-39. ***Fourth, decontaminate by priority.*** Clean important items of equipment first. Leaders must decide which equipment and supplies are most important to the mission at the time and prioritize them for decon. Since ASAs perform various operations, priorities may be organized by functional area.

LEVELS OF DECONTAMINATION

5-40. The three levels of decontamination are immediate, operational, and thorough (fixed site). Below is a brief description of each level.

5-41. *Immediate decontamination* minimizes casualties, saves lives, and limits the spread of contamination. Immediate decon includes skin decontamination, personal wipedown, and operator spraydown.

5-42. O*perational decontamination* sustains operations and reduces the contact hazard. It also limits the spread of contamination, which may eliminate the need for MOPP gear or reduce the time it must be worn. This process includes vehicle washdown and MOPP gear exchange operations.

5-43. *Thorough decontamination* reduces or eliminates the need for individual protective clothing. Units carry out thorough decon with assistance from chemical units. It includes DTD and DED. See FM 3-5 for information on planning and executing the above levels of decon.

MUNITIONS RESUPPLY

5-44. Munitions units must make every effort to provide uncontaminated munitions to units. Contamination avoidance measures must be emphasized.

If uncontaminated munitions are not available, the available munitions must be decontaminated before they are issued or sent into a clean environment. Munitions support personnel must thoroughly understand decontamination roles and procedures. Because of their units' limited decon capability, available assets must be used effectively. When possible, weathering can reduce contamination to acceptable levels.

5-45. Protective overwraps on munitions containers protect the round in storage, reduce the effects of chemical agents, and make decontamination easier. If munitions are not packaged with protective overwrap, makeshift coverings (i.e., tarpaulins or plastic sheets) provide some protection and speed up decontamination. Protected munitions must be stored on a pallet that can be decontaminated.

5-46. Contaminated stocks are normally not issued, but are kept separate from clean stocks until decontaminated. In emergency situations, certain contaminated items may be issued. Contaminated items are issued only if they provide a decisive tactical advantage. Also, they are issued first to units that are contaminated. *Only under the most extreme conditions are contaminated munitions issued to an uncontaminated unit.* The decision to issue contaminated items is made by the authorized controlling commander. The decision to issue contaminated stocks is based on the following considerations:

- METT-TC.
- Criticality of items.
- Type of contamination.
- Extent of contamination.
- Resources available for decontamination.

5-47. Dealing with contamination means that leaders at all levels must take the initiative and be more innovative than ever before. Essential to the munitions unit's success is its leader's ability to "*read the threat*" and respond accordingly. Munitions leaders must do the following:

- Identify threat locations on the battlefield.
- Identify threat weapons and capabilities.
- Disperse and cover exposed munitions stocks to reduce vulnerability to contamination.
- Update the threat continually using intelligence assets.

5-48. Contaminated munitions must be transported with great care. Coordination must allow for flexibility in routing, marshalling, serializing, and communicating. Vehicles carrying contaminated munitions stocks produce vapor clouds. Vapor clouds are hazardous to the terrain, local population, and follow-on vehicles. The following measures can reduce the hazards of transporting contaminated munitions:

- Limit contamination as much as possible.
- Cover all loads with NBC-protective covers.
- Coordinate movement of contaminated munitions stocks with responsible MCC.

- Designate specific routes as MSRs for contaminated munitions stocks when possible.
- Designate units with collective protection vehicles as the primary contaminated munitions haulers.

UNIT SOPs

5-49. Unit SOPs should be written IAW guidance contained in this chapter and in the following publications:

- AR 190 series (military police).
- AR 380 series (security).
- AR 385 series (safety).
- DA Pam 385 series.
- DO49 Technical Report DPG/TA-88/030. Decontamination of Selected Military Equipment: US Army Ammunition Stocks, September 1988.
- FMs 3-3, 3-3-1, 3-4, 3-4-1, 3-5, 3-7, 3-100.
- TC 3-4-1.

5-50. Command SOPs may be used as format and organization guidelines. At minimum, and in keeping with the mission of munitions support operations, SOPs will address the following areas:

- Dispersal of munitions within the storage area to prevent all of one type munitions from becoming contaminated.
- Contamination avoidance by using ISO containers, military-owned demountable containers, shrink-wrap, CARC paint, NBC-protective covers, pallets, and agent-resistant packaging materials.
- Priorities for protective covers.
- Collective protection for facilities.
- Procedures for identifying and marking contaminated stocks.
- Decontamination of personnel, equipment, MHE, facilities, and munitions.
- Priorities for decontaminating personnel, equipment, MHE, facilities, and munitions.
- Weathering of contaminated stocks.
- Transportation of contaminated munitions.
- Priorities for issuing munitions, including contaminated munitions.

SUMMARY

5-51. This chapter provides only an overview of key considerations for munitions support in an NBC environment. It is not meant to replace current, relative FMs or other guidance provided by the references in paragraph 5-50. An understanding of the NBC threat and establishment of an effective learning program are essential to sustaining munitions support.

Chapter 6

Standard Army Ammunition System-Modernized

This chapter provides information on SAAS-MOD and the environment in which it is used. More detailed information about how to use the system effectively may be found in the Standard Army Ammunition System End User Manual. This on-line manual may be viewed and downloaded at http://www.gcss-army.lee.army.mil/saashdbk/default.htm. Users include commanders, staff personnel, managers/supervisors, and operators.

OVERVIEW

6-1. In the early 1970s, SAAS was developed to provide automated status of ammunition assets for the theater or MACOM (i.e., SAAS level 1). In 1982, SAAS level 3 added Class V management capability and other stock control activities to the corps support command. The two baselines were merged as SAAS 1/3 in 1986. As this system evolved, the requirement to maintain visibility and accountability became more demanding. During Operation Desert Storm, the system was not able to meet wartime requirements. In 1994, SAAS was placed in limited moratorium, and resources were redirected toward developing a modernized system, SAAS-MOD.

6-2. SAAS-MOD replaces and combines SAAS-1/3, SAAS-4, and SAAS-DAO in a modular design concept. It is the approved STAMIS for all Class V conventional retail ammunition inventory control or management. SAAS-MOD automates and integrates ammunition management functions among users, storage sites, and theater managers. It operates on deployable NDI hardware in both tactical and nontactical environments at the theater, corps, ASP, division, and installation levels.

6-3. SAAS-MOD provides total functional integration of existing and future retail level Class V information management systems. SAAS-MOD operates on IBM-compatible PCs using COTS software whenever possible. SAAS-MOD application software handles the unique requirements involved in maintaining ammunition data.

OPERATING ENVIRONMENT

6-4. SAAS-MOD gives commanders and ammunition managers the capability for producing accurate, timely, and near real-time Class V information during peacetime and contingency operations, as well as wartime operations on a highly mobile battlefield. It provides management and stock control for conventional ammunition, GMLR, and C&P materials. SAAS-MOD operates at all of the following functional levels in the theater of operations:

- Corps and theater MMCs or MACOM-equivalent.
- DAO and ATP.
- ASA (TSA, CSA or ASP).
- Installation ASA.

SAAS AREA FUNCTIONS

6-5. SAAS-MOD supports ammunition managers at three functional levels in a theater of operations (MMC, ASP, and DAO) by providing the capability to pass and receive near real-time data. System functions are divided into the following ammunition management areas:

- General core operations.
- Materiel management.
- Requirements management.
- Primary operations.
- Ammunition surveillance management.
- SAAS interface.

These SAAS software areas incorporate distinct functions and processes. Below is an overview of the types of products that can be produced and the types of information that can be processed.

GENERAL CORE OPERATIONS

6-6. General core operations are performed at the three functional levels of SAAS for the system to produce accurate and timely information. They cover establishment and maintenance of the military organizational structure; facility resources; reference data; and ammunition requirements, authorizations, and assets for all functional levels within a theater or corps. These operations are discussed below.

Organization Management

6-7. Organization management incorporates the processes used to identify all activities receiving or providing ammunition support by name, UIC, organization address, DODAAC, and RIC (where applicable). Command and ammunition logistic support structures are also shown.

Security Management

6-8. Security management functions identify valid user(s) by maintaining profiles for each user. These functions are accessed through the Maintain User menu and the User Manager for Domains menu.

Information Support

6-9. Information support procedures provide access to facilities to establish and maintain complete, accurate, and current logistics records. These records facilitate requisition, inventory control, and shipping.

System Administration

6-10. System administrative functions include archiving and restoring data, other file maintenance as needed, maintaining site defaults for MILSTRIP documents, and domain administration.

Maintenance Resources

6-11. Maintenance resource functions include identifying resources needed in the theater to manage ammunition assets. Resource functions also include

maintaining the location of all assets, the movement of assets, inventory statistics, and mass transfers.

Accounting Functions

6-12. Accounting functions enable SAAS-MMC managers to establish and maintain the management account structure in the theater. The structure contains recording account codes (detailed accounts), summary account codes, and WARS purpose codes.

6-13. The recording account identifies stockage requirements by DODIC at the ASP for a specific purpose (for instance, a unit, project, or operation). The summary account codes, which are roll-ups of the applicable recording accounts, identify requirements at both the corps and theater levels and relate to a more general purpose. The WARS purpose codes (i.e., war reserve, training, operational projects, and ammunition basic load) identify the total requirements for the theater. The accounting function is used to report requirements for training and ammunition.

MATERIEL MANAGEMENT

6-14. Ammunition materiel management functions are performed only at theater and corps MMCs. These functions relate to the overall management of authorizations, requirements, and redistribution of ammunition assets within the theater. They may be performed at a lower level only when authorized. Material management functions are outlined below.

Identifying Excesses and Shortages

6-15. The processes available for identifying excesses and shortages compare specified theater and corps requirements to available assets (on-hand/in-transit) and display excess and shortage conditions. This function allows direct access requisition or directives processes to order, redistribute, or report excess.

Requisitions

6-16. The available selections allow managers to establish a requisition, create a follow-up transaction, and generate a request for cancellation and/or request modification of a requisition. When a requisition is initiated or modified, the system updates due-in and due-out status.

Directives

6-17. The directives process maintains current due-in and due-out status in the background and contains selections for the following functions:

- Procedures to prepare, view, and update MROs.
- Procedures to prepare, view, and update local shipment directives.
- Procedures to maintain shipment notifications for shipments within or coming into the theater or corps.
- Procedures to initiate and maintain MILSTRIP excess reports and generate shipment directives for the ASP when shipping instructions are received from the CCSS.

Background Processes

6-18. This batch process handles all transactions coming in through the communications process from DAAS, SPBS-R, and any SAAS activity. It routes and processes all MILSTRIP, SAAS, and SPBS-R transactions. Besides updating the SAAS tables, the process creates output for WARS and other SAAS activities.

REQUIREMENTS MANAGEMENT

6-19. The functions of managing ammunition requirements are performed at the DAO and ATP. They include maintaining ammunition requirements and visibility and distribution within the division. The DAO is responsible for distributing ammunition, verifying unit requirements, and tracking ammunition coming into the division. Requirements management functions are described below.

Task Force Support

6-20. Task force support processes allow the manager to create and update task force data for a military organization. These processes also identify ATPs providing support.

Requirements in Wartime Operations

6-21. Management processes in wartime allow the manager to update, submit, and monitor ammunition requirements and to facilitate distribution within the division.

Requirements in Peacetime Operation

6-22. Management processes in peacetime allow the DAO to manage requirements and basic load, operational load, and training ammunition for the division.

PRIMARY OPERATIONS

6-23. Primary operations functions, also called ammunition asset management, are normally performed at the ASP. They are used to receive, store, issue, and account for ammunition in a retail ammunition stock record account. The account may be located at an ammunition DS/GS company or the responsible installation organization. Functions are described below.

Stock Control

6-24. Stock control processes cover all transactions used to maintain and update the stock records and supporting documents of a formal stock record account. The processes available are as follows:

- Stock control monitoring (supply studies, due-in/due-out analysis, and excess).
- Stock control operations (receipts, issues, turn-ins, shipments, inventories, and ammunition maintenance transactions).

Storage Management

6-25. Storage management processes include maintenance of storage site (warehouse) profiles, explosive safety profiles, and compatibility information.

AMMUNITION SURVEILLANCE MANAGEMENT

6-26. The on-site ammunition inspectors perform ammunition surveillance management functions. These tasks are associated with acquiring and maintaining the records of ammunition quality and safety at ATPs or ASPs.

SAAS COMMUNICATIONS

6-27. SAAS-MOD receives and transmits data from/to several systems at each functional level. SAAS-MOD uses magnetic media, mail, and communications networks to accomplish all interfaces.

SYSTEM PERFORMANCE

6-28. SAAS-MOD provides a standard ammunition management tool that is capable of the following:

- Maintaining current status of all ammunition within the command ASAs and ATPs.
- Computing complete rounds, days of supply, configured loads, and authorized stockage levels.
- Providing data used by the manager to determine redistribution of assets.
- Supporting Class V logistic estimates based on weapon systems.
- Maintaining data on US and foreign munitions for use in determining Q-D and NEW computations and weapon systems interoperability.
- Supporting surveillance stockpile management.
- Supporting ad hoc query, including data imported and exported to other systems.
- Evaluating and providing distribution history and distribution plan.
- Requisitioning from the NICP if acting as a TAMMC or from a higher node if acting as a CMMC.
- Maintaining and calculating the status of CSR.
- Planning, determining, and forecasting future requirements.
- Maintaining and evaluating consumption of ammunition historical data.
- Computing and determining transportation requirements for movement by type and number of carriers.
- Maintaining asset visibility aboard transport vehicles passing through the system including due-ins and due-outs.

INTERFACES

6-29. SAAS-MOD receives and sends data to several systems. When the communications link is down, operators can input data manually if it is received off-line. All data received by communications is normally batch-processed after the communications portion of the interface is complete. All

SAAS activities within a theater provide data for each other. SAAS-MOD contains the following interfaces:

- WARS receives daily SAAS transactions that affect assets.
- MILSTRIP data received and sent to the CCSS.
- MILSTRIP and MILSTAMP data sent and received through the DAAS.
- FEDLOG provides up-to-date catalog information.
- TAMIS-R provides allocation and authorization data for training ammunition.
- CSSCS interface keeps tactical commanders informed on status of selected ammunition.
- DAMMS-R (TC-AIMS-II) allows the MMCs and ASPs to receive information on in-transit shipments.
- SPBS-R provides on-hand quantities at the unit.
- Corps SAAS interfaces with corps DAMMS-R (TC-AIMS-II) and CSSCS activities.
- ASPs, TSAs, and CSAs providing training ammunition support send training expenditure information to TAMIS-R.
- SAAS-DAO uses SPBS-R and ULLS-S4 to track weapon densities, basic load requirements, and training ammunition support.

REQUIRED HARDWARE

6-30. The NDI hardware required to operate SAAS is purchased through a DOD computer contract that provides complete systems. The user gets the most modern equipment available on the contract at the time of purchase and installation. The equipment is tailored for each of the three functional levels and to the site that operates it. Quantities of hardware at each location are based on unit missions and are outlined in the BOIP for SAAS. The equipment described in this paragraph is subject to change because of improvements in technology.

THEATER/CORPS

6-31. The computer hardware at the theater and corps MMC level consists of a network file server, 1 to 14 PCs for user terminals, 1 to 8 laser printers, a UPS, surge suppressor, LAN equipment, and modems.

DIVISION AMMUNITION OFFICE/AMMUNITION TRANSFER POINT

6-32. The computer hardware at the DAO and ATP levels consists of a network file server, a printer, surge suppressor, laptop for each ATP, LAN equipment, modems, and AIT equipment. AIT equipment includes the following:

- RF interrogator/laser scanner and docking stations.
- Portable printer.
- Thermal printer.

AMMUNITION SUPPLY POINT

6-33. The hardware for the ASP consists of a network file server, a printer, surge suppressor, 3terminals (PCs or laptops with monitor), LAN equipment, modems, and AIT equipment. AIT equipment is the same as listed above.

REQUIRED SOFTWARE

6-34. The SAAS System Administrator Manual can be viewed and downloaded at http://www.gcss-army.lee.army.mil/saashdbk/default.htm. This manual identifies all software required to operate or continue operations in an emergency. See Appendix B of the End User Manual for more information.

CONTINGENCIES

6-35. Several circumstances can disrupt the normal operations of an automated system. The SAAS End User Manual provides courses of action to be considered and/or included in the development of contingency plans. Table 6-1 lists those SAAS-MOD critical functions that must continue to be performed manually in the event of system failure.

Table 6-1. SAAS-MOD Critical Functions

SAAS-MOD CRITICAL FUNCTIONS			
Action	**DAO**	**ASA**	**MMC**
Maintain current status of all ammunition	X	X	X
ID all excess and shortages of ammunition	X	X	X
Maintain reference and catalog information	X	X	X
Maintain communications with interfacing systems	X	X	X
Request ammunition, obtain status/follow-up	X		
Maintain backup of system and data files	X	X	X
Prepare essential ammunition reports	X	X	X
Process/calculate RSR and CSR requirements	X		
Process ammunition issue, turn-in, and receipt transactions	X	X	X
Process ammunition shipment transactions		X	X
Requisition ammunition, obtain status/follow-up		X*	X
Conduct inventories of ammunition, process discrepancies, make adjustments		X	
Report excess and shortages			X
Maintain copies of all documents processed off-line and post them when the system is back on line	X	X	X
Report ammunition requirements to WARS			X
* This action conducted by an independent ASA only.			

PROBLEM REPORTS

6-36. All SAAS-MOD users are responsible for identifying and reporting problems and submitting recommended changes on an ECP-S for software enhancements. Control logs (automated or manual) are maintained by all

units submitting problem reports and ECP-S. Submit problem reports using DA Form 5005-R.

SUMMARY

6-37. SAAS-MOD corrected shortcomings of the legacy system and incorporated lessons learned from Operation Desert Storm. The system was developed in incremental blocks: Block 1-A (MMC) and Block 1-B (ASP and DAO). Full system fielding has resulted in the removal of the DAS-3 and TACCS from the SAAS inventory. It is anticipated that all functional applications currently in SAAS-MOD will evolve into the Global Combat Support System-Army.

Chapter 7

Munitions Safety

Historical Perspective

Following the cease-fire in Operation Desert Storm, the US lost more vehicles in one munitions-related accident than it lost to enemy forces during the conflict. This accident occurred when the munitions in one vehicle ignited, and the resulting fire spread to adjacent vehicles that were parked too close together. Many people were injured in the incident, and two soldiers were killed in the cleanup of the site.

Safety is always critical, whether an ammunition unit or platoon is operating in a peacetime, combat, or SASO environment. This chapter focuses on munitions safety. It covers the three levels where safety awareness is most effective. It discusses the Army Safety Program and explores areas of special concern, including the handling, loading, and unloading of munitions; the safe handling of explosives; unexploded ordnance procedures; proper use of tools and MHE; and reports of malfunctions.

SAFETY LEVELS

7-1. 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.

COMMAND

7-2. 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 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 385-64 and DA Pam 385-64.

7-3. 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.

LEADER

7-4. Leaders 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.

INDIVIDUAL

7-5. The key to a good safety program, and the focus of the unit safety effort, is to prevent individual soldiers from having accidents. Individual soldiers are responsible for their personal safety. 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 385-64 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. The safety equation below is important for soldiers to remember.

Training + Equipment + Motivation + Execution with Caution = Safety

RISK ASSESSMENT AND MANAGEMENT

7-6. *Risk assessment* is the identification of hazards and their possible effects. In peacetime, leaders learn to assess risks during training exercises. Techniques learned in peacetime training can be used successfully in combat and SASO. However, after careful evaluation of the mission, a certain amount

of risk can be taken in combat and SASO that would be unacceptable in peacetime operations. See DA Pam 385-64.

7-7. During the planning phase of any operation, safety personnel must conduct a task hazard analysis and safety evaluation before writing unit SOPs. This allows sufficient time for safety input to ensure that operational changes can be made efficiently. The basic concerns during hazard analysis are METT-TC, physical layout, and the personnel involved in the operation. Experience has shown that preplanning significantly reduces accident potential and increases efficiency.

7-8. *Risk management* is the decision-making process that balances operational demands against identified risks. Risk assessment and risk management must be fully integrated into operational planning and execution. Risk management is a closed-loop, five-step process that can be used for any type of mission. The five steps are as follows:

- Identify all hazards, including those to soldiers, equipment, and stocks.
- Assess hazards to determine the risks involved and their impact in terms of potential loss and cost. To a degree, assessments are based on probability and severity.
- Develop control measures that eliminate or reduce hazards and risks; continually reevaluate risks until they are reduced to a level where the benefits outweigh costs.
- Implement controls that are effective in eliminating hazards and reducing risks.
- Enforce control measures through supervision and continually evaluate them for effectiveness.

7-9. The proper use of risk assessment and risk management procedures is a primary force protection method. Protecting personnel, equipment, and stocks from damage or loss is the bottom line.

STANDING OPERATING PROCEDURES

7-10. A written SOP must be developed and used for all munitions operations. Procedures must describe the operation so an inexperienced soldier can perform the operation safely. Failure to follow an SOP is a major cause of munitions-related accidents.

7-11. Many publications contain procedures and standards that may be used in developing reliable and useful SOPs for munitions operations. The following publications are among the most applicable:

- US Army Materiel Command regulations, pamphlets, and drawings.
- Army regulations and DA pamphlets.
- Bureau of Explosives publications.
- Code of Federal Regulations.
- Department of Defense Standards.
- Department of Transportation publications.
- Depot maintenance work requirements.

- International Air Transportation Association publications.
- International Atomic Energy Agency publications.
- International Civil Aviation Organization publications.
- International Maritime Dangerous Goods publications.
- Joint and other service regulations.
- Military standards and handbooks.
- Standardization agreements.
- Supply bulletins.
- Technical bulletins and manuals.
- Command guidance and SOPs from higher headquarters.

7-12. Soldiers must have the information necessary to perform their tasks safely. Supervisors are responsible for ensuring that all soldiers involved in an operation or task read the applicable SOP before the operation begins. The SOP must be available at the operations site and will identify potentially hazardous items or conditions that could arise. The unit safety SOP must include the following:

- Safety personnel activities and responsibilities.
- Safety training requirements and training schedule.
- Inspection procedures to detect safety violations, and recommend and enforce corrections.
- First aid training requirements and training schedule.
- Provisions for briefings on new ammunition items and technical intelligence updates.
- Procedures for accident investigations.

MUNITIONS AND EXPLOSIVES STANDARDS

7-13. AR 385-64 establishes munitions and explosives safety standards to protect military personnel, Army civilian employees, the public, and the environment. It is supplemented by DA Pam 385-64. These publications prescribe the Army's general safety policies and standards for munitions, explosives, liquid propellants, and related facilities and activities. They cover the following topics:

- Responsibilities.
- Q-D standards.
- Waiver authority and requests for waivers.
- Exemptions.
- Effects of explosions.
- Permissible exposures.
- Hazard classification.
- Compatibility groups.
- Personnel protection.
- Facilities construction and siting.
- Electrical standards.
- Lightning protection.

- Firefighting.
- Chemical agents and munitions standards.
- Accident reporting relating to the storage, packing, shipping, maintenance, and destruction of munitions.

7-14. Beyond unit SOPs, commanders must ensure that safety regulations and directives or other policies established by higher headquarters are followed during munitions operations.

7-15. Due to the destructive nature of munitions, all responsible personnel, including the user, must be constantly aware of safety procedures. Carelessness, faulty equipment, hazardous working conditions, and unsafe practices may result in injury, loss of life, and property damage. In wartime, these factors may seriously disrupt munitions support and thus have a negative impact on the outcome of operations.

7-16. Concern for the safety of personnel and property is paramount in DOD and DA safety regulations. These regulations prescribe universally applicable standards and practices. They require the preparation and implementation of safety programs, including fire plans (i.e., prevention, protection, and fighting), destruction plans, accident and incident control, and reporting plans.

7-17. Whenever and wherever munitions are handled, stored, or moved, rigid enforcement of safety regulations and strict observance of safety practices is mandatory. The ASCC announces policies and, through the TSC and COSCOM, prescribes safety procedures for munitions in the theater.

MUNITIONS AND EXPLOSIVES HAZARDS

7-18. Many potential hazards are associated with munitions and explosives. These hazards exist in various areas as discussed in the following paragraphs.

OPERATIONS HAZARDS

7-19. All operations involving munitions will be limited to the minimum number of soldiers needed to accomplish the mission safely and efficiently. Tasks not necessary to an operation must be prohibited. Also, personnel not required for an operation will be denied entry to the area. Official visits by safety inspectors and higher headquarters staff must be coordinated through command channels to ensure that personnel limits are not increased during critical operational periods.

7-20. Although some operations can be performed by one individual, at least one additional person must be nearby to watch and assist in an emergency. All operations must be supervised properly to ensure that safety precautions are observed and enforced.

STORAGE HAZARDS

7-21. 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.

7-22. Storing incompatible munitions together presents another hazard. Appropriate Q-D and compatibility tables in AR 385-64 and DA Pam 385-64, or HN or specific Army theater requirements, will be used to determine which munitions may be stored together. Conforming to these requirements ensures that safe distances are maintained between all munitions. In combat and SASO, peacetime Q-D and compatibility requirements must be followed to the maximum extent possible. Deviation from these requirements must have command approval. Ammunition and explosives under US title, even when stored in or by a host country, are the responsibility of the US commander. Storage must conform to DOD and Army standards unless the use of other criteria is mandated or has been agreed to in an HN agreement.

7-23. Explosive licenses are an important element in safe storage. They are permanent documents developed by authorized safety personnel that may be reissued when storage objectives, METT-TC factors, or Q-D standards change. The responsible safety manager reviews each license annually for compliance and encroachment. The license and maps of the site and surrounding area will be available at both the site and servicing safety office. See Chapter 9 for more information on storage.

HANDLING HAZARDS

7-24. Identification systems assist in identifying specific hazards associated with different types of munitions. Appendix F explains in detail methods for identifying munitions using NSN, DODIC lot numbering, and the color coding system.

7-25. Munitions and explosives must be handled carefully. Any improper, rough, or careless handling may cause them to detonate. 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 AR 385-64, DOD Std 6055.9, 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. Containers designed with skids may be pushed or pulled for positioning, unless otherwise marked on the container.
- Don't tamper, disassemble, or alter any munitions item unless authorized.

- 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.
- Ensure that each soldier involved in handling munitions can perform first aid.
- 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.
- Handle treated packing material carefully IAW Surgeon General directives and USAEHA Technical Guide 146.

Palletized Munitions

7-26. Before moving palletized/containerized munitions, pallets and containers must be visually inspected for broken banding or for damage to container or pallet. Repair or replace damaged items. Use USAMC unitization drawings to palletize properly. Select the appropriate drawing using AMC DWG 19-48-75-5. Manual handling of munitions, along with banding and strapping, are often necessary during palletizing operations. At minimum, handlers will wear proper protective gloves, safety shoes, and eye protection. If there is not enough space to work safely, the operation will be moved just outside the magazine or storage structure, but no closer than 30 meters to any magazine containing explosives.

WARNING

Banding is extremely sharp and may cause injuries. Such injuries are among the most frequent to occur during palletizing operations.

Electroexplosive Devices

7-27. Electroexplosive devices (i.e., electric blasting caps, squibs, switches, and igniters) are designed to be initiated by electric current. It is possible that such devices may be energized to dangerous levels by outside sources (i.e., static electricity, induced electric currents, radio communications equipment (including commercial cellular phones), high-tension wires, radar, and TV transmitters). It is also possible that induced RF current may

cause premature detonation of blasting caps. Therefore, safety precautions must be taken to prevent the premature initiation of all devices.

LIGHTNING HAZARDS

7-28. 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.

STATIC ELECTRICITY HAZARDS

7-29. 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.

TRANSPORTATION HAZARDS

7-30. Transportation hazards include traffic accidents or saboteur incidents. The commander of the shipping unit is responsible for coordinating safe transit. Use DA Pam 385-64 and local policy to develop unit field SOPs. Safety precautions for night operations must receive special emphasis. Several publications dictate procedures for transporting hazardous materials. These include DOD 4500.9-R, 49CFR, TM 38-250, and HN regulations. Additionally, TB 9-1300-385 must be checked for suspensions or restrictions before offering ammunition and explosives for shipment. Only school-trained and certified personnel can release shipments of ammunition. Regulations and publications for specific types of shipments are discussed below. See Appendix G for transportation overview, including dimensions and cargo capacities of movement assets.

Rail

7-31. Railcar inspections are a critical part of shipping by rail. Shippers ensure that railcars receive a valid inspection. DOD 4500.9-R, DA Pam 385-64, and 49CFR cover safety inspection criteria, precautions, loading, blocking and bracing, certification of railcars, and spotting of loaded railcars. USAMC load drawings will be followed when loading large items (e.g., MLRS). Refer to AMC DWG 19-48-75-5 for a list of USAMC drawings and ordering instructions.

Motor Vehicles

7-32. Before loading vehicles, ensure that the following actions have been accomplished: all motor vehicles have been inspected, 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. FMs 55-60 and 55-70 cover shipper and carrier responsibilities and placard requirements. See Appendix H for DOT hazardous materials information.

Air

7-33. Aircraft commanders, loadmasters, or crew chiefs supervise the loading and unloading of their aircraft using TM 38-250. A Hazardous Materials Declaration accompanies containers or pallets of munitions on aircraft. AR 95-27, TM 38-250, and DOT regulations cover safety precautions, aircraft specifications, operating standards, loading and unloading procedures, and special handling certification.

Water

7-34. The USCG regulates transportation of explosives and/or ammunition on water under US jurisdiction and in vessels engaged in commercial service.

UNEXPLODED ORDNANCE HAZARDS

7-35. All soldiers must remember that munitions are designed to kill, maim, injure, and destroy. 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. Inexperienced soldiers must be trained to react properly to UXOs.

7-36. If the UXO cannot be avoided, protective measures may be necessary to reduce risk to personnel and to minimize damage to equipment and facilities. All soldiers must be trained on appropriate tasks to ensure that they are not exposed to unacceptable risk.

7-37. Reporting UXOs on the battlefield requires timely and accurate information. The UXO spot report (Figure 7-1, page 7-10) starts with the soldier on the battlefield and moves through command channels so EOD assets can be tasked to respond. 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. For more information on UXOs, see GTA 9-12-1 and FM 21-16.

EQUIPMENT HAZARDS

7-38. 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

7-39. Safety hazards are inherent in electrical equipment. 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.

UXO SPOT REPORT

LINE 1	DATE/TIME GROUP DISCOVERED
LINE 2	REPORTING ACTIVITY (UIC) LOCATION (GRID)
LINE 3	CONTACT METHOD: RADIO FREQ/CALL SIGN TELEPHONE NUMBER
LINE 4	TYPE OF MUNITION (DROPPED, PROJECTED, PLACED, OR THROWN)
LINE 5	NBC 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)

Figure 7-1. UXO Spot Report Format

Tools and Equipment

7-40. Munitions tools and equipment are designed to be safe when properly maintained and operated. Problems are usually the result of operator misuse or error. Training programs must stress proper use, care, and maintenance of tools and equipment. Supervisors must continually inspect condition and ensure that on-the-spot corrections are made.

7-41. A wide variety of hand tools and equipment is used in munitions maintenance, care, preservation, and storage operations. They range from simple hand tools (i.e., hammers and screwdrivers), to specialized tools (i.e., banding equipment), to tools specifically manufactured to maintain munitions. See TM 43-0001-47 for a listing of this type equipment.

7-42. Hand tools are widely used by munitions soldiers. Only tools made from nonsparking materials (i.e., bronze, lead, beryllium, alloys, K-monel, or polymers) may be used. Specialized materials, such as copper wool and nonflammable solvents, are often used with nonsparking tools. Only properly maintained tools will be used around hazardous concentrations of flammable dust, gases, vapors, or exposed explosives.

7-43. Tools used in the vicinity of hazardous materials must be handled carefully and kept clean. Tools must be checked for damage before and after operations. Tools of lead or beryllium alloys that require sharpening or reshaping may be sharpened only if the area has adequate exhaust ventilation.

NOTE

When ferrous metal tools are used, the immediate area must be free of exposed explosives and combustible materials.

MHE and Lifting Devices

7-44. Lifting devices are used to raise, lower, hold, position, or pull a load from one location to another. Examples are forklifts, cranes, and pallet jacks. MHE is used to store, handle, and move munitions. Examples are forklifts, towing tractors, cranes, pallet jacks, PLS trucks, and conveyors. Forklifts and cranes are the most common MHE used by ammunition units. Operators, supervisors, maintenance, and safety personnel are key to ensuring a safe MHE operating environment. See DA Pam 385-64 for more information.

7-45. **Operators.** MHE and lifting device operators have a limited field of vision when moving a load. For this reason, ground guides are needed when forklifts, cranes, and PLS are in use. Personnel must assume that operators cannot see them and stay clear of the areas where MHE is in operation.

7-46. Size and load limits for MHE must be established and enforced. Operators must understand the danger of exceeding fixed load limits. The following rules will be observed:

- Keep hazardous material moving uniformly through the process steps.
- Minimize rehandling.
- Eliminate heavy manual lifting.
- Reduce transportation distances whenever possible.
- Provide special handling equipment where practicable.

7-47. **Supervisors.** Supervisors must ensure that operators and other personnel comply with the following:

- Inspect forklifts and cranes prior to use.
- Don't use unsafe equipment until needed repairs are made.
- Become thoroughly familiar with the hand and arm signals used to direct MHE and lifting devices (both ground guides and operators).
- Don't move loads that exceed the rated capacity of the forklift or crane.
- Don't strike munitions with the MHE.
- Follow proper lifting procedures. Deviations from lifting procedures must be approved in writing.
- Avoid/stop careless operating procedures.
- When munitions are moved with forklifts, forks must be tilted back and no more than a foot off the ground, except when moving containers with the 50K RTCH. In this case, forks must be raised to a height that offers the operator maximum visibility.
- Don't disconnect safety devices (i.e., dead-man switches).

7-48. **Maintenance personnel.** Maintenance officers are responsible for ensuring that MHE is properly inspected, tested, and maintained, and that only qualified personnel operate this equipment. Other responsibilities include scheduling and documenting equipment tests and initiating and maintaining historical records for each item. Historical records include the following information:

- Nomenclature.
- Identifying markings.
- Acceptance certification (test operator and test director signatures on forms).
- Location.
- Schedule and record periodic inspections.
- Schedule tests and record results.
- Maintenance services schedule.
- Parts replacement record.
- Added identification or safe operation data.

7-49. Upon receipt of new equipment, maintenance personnel inspect the item for a load rating. Every lifting device has a load rating established through testing. The load rating is the maximum authorized load that the device is allowed to lift. The *manufacturer's* rating must never be extended. The manufacturer's rated load can be found on the equipment capacity data plate or in the operating instructions. See TB 43-0142 for more information.

7-50. Maintenance personnel mark all equipment with the load rating. The only circumstances where markings or tags may be painted over or removed are maintenance, testing, or to change the equipment's rated load.

7-51. Maintenance personnel must conduct maintenance inspections or tests when the equipment is received and at prescribed intervals thereafter. Preventive maintenance is scheduled and performed according to pertinent technical publications.

7-52. Designated personnel perform load tests for all types of cranes and hoists. Weights used can be built locally, or a calibrated load indicator, a dynamometer, or any item of the proper weight may be used. All load-testing devices must have a valid calibration label displayed in a conspicuous place. Attachments, such as slings, chains, and spreader bars, may be tested together. Test loads for forklifts are made using pallet loads that correspond to the manufacturer rated load data and supplemented by factors stated in the vehicle operator's manual.

7-53. **Safety personnel.** The safety officer must ensure that maintenance inspection or testing programs are in place for all lifting devices, and that the devices are inspected before use. Also, the safety officer must ensure the following:

- Lifting devices that fail inspections and tests are removed from service immediately.
- Operator selection and training programs are effective.
- Load tests are performed after disassembly, overhaul, or replacement of part of the load-bearing system. Perform tests before returning the system to service.

7-54. **Pallet jacks and conveyors.** Pallet jacks and conveyors present special hazards to all personnel and must be handled with care. Personnel will observe the following rules:

- Use conveyors and pallet jacks in areas where they will not create hazards.
- Ensure sectionalized conveyors are supported and sections are interlocked or secure.
- Use conveyor stands to support conveyors so that they remain stable. Don't use boxes or crates of munitions.

ACCIDENT AND INCIDENT CONTROL PLAN

7-55. 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.

7-56. 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 AR 385-40.

REPORTING MUNITIONS MALFUNCTIONS

7-57. 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.

7-58. 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.

SUMMARY

7-59. Safety awareness must be a primary concern of all soldiers regardless of rank. While the unit commander and the safety officer/NCO bear the primary responsibility for ensuring that appropriate procedures are in place, supervisors and individual soldiers are responsible for ensuring that these procedures are followed. References cited in this chapter contain more detailed information and must be used to develop SOPs and support an active safety training program.

Chapter 8

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.

FIRE PROTECTION PROGRAM

8-1. 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 peacetime, combat, and SASO.

8-2. 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

8-3. Each Army installation 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.

8-4. 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

8-5. 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 overhead transmission and power lines no closer to the storage location than the height of the pole or 50 feet, whichever is greater. If the cable is buried for at least 50 feet from the storage location, existing storage facilities may be modified with underground electrical service.
- Use dry cleaning solvent, not gasoline or other flammable liquids, for cleaning purposes. Ensure that adequate ventilation is available when using solvent. See TB MED-502 for guidance.
- 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.
- Use nonheat-producing equipment that will not exceed temperatures of 228 degrees.
- Control vegetation or undergrowth with weed killers or by mowing or plowing. Livestock grazing may be used under special, controlled conditions. Remove all cut vegetation and undergrowth. Ensure that weed killers do not contain substances that might spontaneously ignite in hot, dry conditions.
- Carefully consider controlled burning to eliminate vegetation and undergrowth. Allow no burns within 200 feet of any explosive location. Firefighting equipment and personnel will be standing by during these operations.

FIRE PLAN

8-6. Any activity that stores or handles munitions must have an effective safety program and prefire plan to help prevent and fight fires.

8-7. 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.

8-8. Details of the plan may vary to suit the individual installation or field activity. 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).

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 420-90 for additional guidance.

TRAINING

8-9. 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.

8-10. Fire drills encourage and increase safety awareness and must be conducted at least once every six months. Although fighting munitions fires is the primary responsibility of fire department personnel, munitions personnel must be trained to act quickly and to extinguish and/or control a fire. Every attempt must be made to control or contain a fire to prevent loss of life and reduce injuries, minimize property damage and loss of munitions, and protect mission-essential functions.

8-11. Instructions to supervisors and personnel will include steps that increase fire safety. All supervisors must be thoroughly familiar with fire hazards. They are responsible for ensuring that personnel are trained in alarm procedures and firefighting equipment, and that they know the locations of emergency exits other than the usual doors, gates, or roadways. Emergency exits must be clearly marked with visible exit signs. Personnel will be trained to use these exits automatically in case of fire or other emergency. An unannounced fire drill that involves the response of a fire department must never be conducted without coordinating with the fire chief.

SAFETY VIOLATIONS

8-12. 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 pyrotechnics.

COMMON HAZARDS

8-13. 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.
- Failure to provide lightning protection systems.

EQUIPMENT AND FIREBREAKS

8-14. 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

8-15. 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 Figure 8-1 for the appropriate extinguishing agent to use for fighting each class of fire.

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.

Figure 8-1. Fire Extinguishing Agents

Water Barrels and Sand

8-16. 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 is located on an installation that 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

8-17. 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

8-18. 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 to cut firebreaks during tactical operations due to METT-TC factors. General guidelines for firebreaks can be found in DA Pam 385-64.

FIRE HAZARDS AND SYMBOLS

8-19. 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 solid or liquid propellants, explode while burning or develop heat so intense that firefighting efforts are nearly futile.

8-20. 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 HAZARD CLASSES

8-21. Ammunition and explosives are separated into fire divisions based on the relative danger they present to firefighters (see Figure 8-2).

Fire Division 1 indicates the greatest hazard, with the hazard decreasing with each ascending number. Fire Divisions 1 through 4 correspond with Hazard Classes 1.1 through 1.4. See DA Pam 385-64 for further discussion of the Hazard Classification System.

8-22. Fire Divisions 1 and 2 include the ammunition and explosives in Hazard Classes 1.1 and 1.2 (excluding nuclear weapons). 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.

8-23. 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.

8-24. 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	HAZARD
1	Mass detonation
2	Explosion with fragments
3	Mass fire
4	Moderate fire

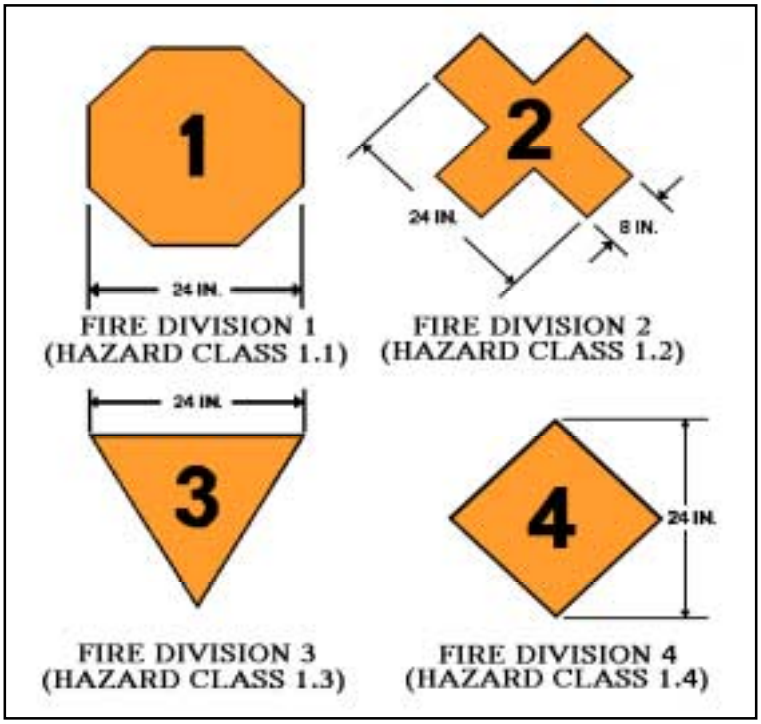
Figure 8-2. Fire Divisions and Hazards

FIRE DIVISION SYMBOLS

8-25. Each fire division is represented by a distinctive fire symbol. The shapes and dimensions for each symbol are identified in Figure 8-3 and Figure 8-4. 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.

FIRE SYMBOL	SHAPE	NSN
1	Octagon	7690-01-082-0290 7690-01-081-9581
2	Cross	7690-01-082-0289 7690-01 087-7340
3	Inverted triangle	7690-01-081-9583 7690-01-081-9582
4	Diamond	7690-01-081-9584 7690-01-082-6709

Figure 8-3. Fire Symbol Shapes and NSNs



Background: Orange No. 12246 (Fed Std 595A or GSA Catalog).
Numbers: Black No. 170338 (Fed Std 595A or GSA Catalog 10 inches high and 2 inches thick.
NOTE: Small symbols may be used where appropriate. See DA Pam 385-64.

Figure 8-4. Fire Symbols

POSTING SYMBOLS

8-26. The fire symbol that applies to the most hazardous material present will be posted at or near all non-nuclear 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.

8-27. When different HC/D of munitions are stored in individual multicubicle bays or module cells, appropriate fire symbols will be posted on each bay or cell. Only one fire symbol is be displayed at the entrance of a row where facilities containing munitions and requiring the same fire symbol are located in a row or on one service road.

8-28. 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

8-29. 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). Unless HN symbols differ and, by agreement, HN symbols are required, fire symbols must be used. 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.

8-30. 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.

8-31. Fire symbols are not required on individual structures used to store, maintain, or handle nuclear weapons or components or on aircraft and/or vehicles loaded with nuclear weapons. See DA Pam 385-64 for more information.

CHEMICAL HAZARDS AND SYMBOLS

8-32. Chemical agent or agent-filled munitions storage and operational facilities must be identified with appropriate hazard symbols as shown in Figure 8-5. 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.

8-33. Appropriate clothing and equipment are essential when fighting fires involving chemical agents. The protective clothing and apparatus in Figure 8-6 are for firefighting purposes and do not necessarily apply to normal operations. The symbols presented in this figure are described as follows:

- ***Symbol I, Wear Full Protective Clothing.***
  - 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 the M9 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.

- Set 2. Yellow rim and figure. Indicates the presence of harassing agents (riot control agents and smokes). Includes M9 series 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 M9 series protective gas mask or self-contained breathing apparatus, flame-resistant coveralls, and flame-resistant gloves.

- ***Symbol 2, 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.*** 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.

See DA Pam 385-64 for information on the types of chemical hazards associated with the symbols in this figure. Refer to Table 8-1 to determine clothing and equipment required when dealing with specific chemicals and fillers.

NOTE:
All symbols are 12-inch black letters on 24-inch yellow circle.
Colors Per Federal Standard 595A:
Black No. 17038
Yellow No. 13538

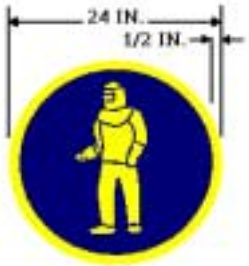
Figure 8-5. Supplemental Chemical Hazard Symbols

1. WEAR FULL PROTECTIVE CLOTHING—

Background in blue.

Figure & rim are:

- **Red for Set 1 protective clothing.**
- **Yellow for Set 2 protective clothing.**
- **White for Set 3 protective clothing.**



SYMBOL 1
WEAR FULL PROTECTIVE CLOTHING

2. WEAR BREATHING APPARATUS—

Background in blue.

Figure and rim are white.

SYMBOL 2.
WEAR BREATHING
APPRATUS

3. APPLY NO WATER—

Background in white.

Circle and diagonal line are red.

Figures are black.

SYMBOL 3.
APPLY NO WATER

Note: Colors per Federal Standard
595A or GSA Catalog
Red No.11105
Blue No. 15102
Yellow No. 13538
White No. 17875
Black No. 17038

Figure 8-6. Protective Clothing and Apparatus

Table 8-1. Chemical Agents/Fillers and Hazard Symbols

Chemical Agents & Fillers in Munitions	Full Protective Clothing			Breathing Apparatus	Apply No Water	G	VX	BZ	H	L
	Set 1	Set 2	Set 3							
GB	X					X				
VX	X						X			
H, HD, HT	X								X	
L	X									X
CL, CG, CK, CN, CNS, CS, BBC, DA, DC, DM, FS, FM		X								
HC				X	X					
BZ		X						X		
WP, PWP			X							
TH, PT				X	X					
IM, NP				X						
TEA, TPA			X		X					
COLORED SMOKES				X						

POSTING SYMBOLS

8-34. 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.

8-35. 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.

RESPONDING TO MUNITIONS FIRES

8-36. Personnel must take immediate action when fires occur in a munitions area. If fire is discovered in grass or other combustible material surrounding a magazine, structure, or FSU, the following steps must be taken as quickly as possible:

- Sound the alarm.
- Do everything possible, using available firefighting tools, to extinguish or control the fire until firefighters arrive.
- Evacuate nonessential personnel to a well-protected area.

EMERGENCY WITHDRAWAL DISTANCES

8-37. All nonessential personnel must be evacuated to the appropriate emergency withdrawal distance as shown in Table 8-2. The commander is responsible for alerting civilian authorities of any imminent explosive accident that may affect the local community and for providing those authorities with the correct emergency withdrawal distances. See DA Pam 385-64 for more information.

Table 8-2. Minimum Withdrawal Distances

HAZARD CLASS/DIVISION	UNKNOWN QUANTITY NEW	KNOWN QUANTITY NEW
Unknown truck, tractor-trailer and/or facility	4,000 ft (approx .75 mi)	4,000 ft (approx .75 mi)
Unknown railcar	5,000 ft (approx 1 mi)	5,000 ft (approx 1 mi)
HC/D 1.1 (see Note 1)	Same as unknown HC/D above	For transportation use: • 2,500-ft min distance for 500 lb NEW and below. • 5,000-ft min distance for railcars above 500 lb NEW. • 4,000-ft min distance otherwise. • 4,000-ft min distance for bombs and projectiles with caliber 5-in (127mm) or greater. For facilities use: • 2,500-ft min distance for 15,000 lb and below. • 4,000-ft min distance for more than 15,000 and less than 50,000 lb. • Above 50,000 lb, D=105W to the 1/3 power.
HC/D 1.2 (see Note 1)	2,500 ft	2,500 ft
HC/D 1.3 (see Note 2)	600 ft	Twice the IBD with a 600-ft min distance.
HC/D 1.4	300 ft	300 ft

Notes:

1. For HC/D 1.1 and 1.2 items, if known, the maximum range fragments and debris will be thrown (including interaction effects of stacks of items, but excluding lugs, strongbacks, and/or nose and tail plates) may be used instead of minimum range given here.

2. For accidents involving propulsion units, it is not required to specify emergency withdrawal distances based on potential flight ranges of items.

PROCEDURES FOR MUNITIONS-LADEN VEHICLES

8-38. 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. Also, ask someone to notify the fire department or engineer firefighting force. Fight the fire until the flames reach the cargo. At that point, evacuate all personnel and equipment to the safe distances listed on DD Form 836. Give firefighters complete information about the cargo as provided on DD Form 836.

SUMMARY

8-39. 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 9

Munitions Storage Procedures

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

OVERVIEW

9-1. Peacetime explosive standards in DA Pam 385-64 must be followed if possible. However, peacetime standards may not be fully met or maintained because threat level, mission, mobility requirements, and physical condition of facilities vary greatly among theaters of operation. Even with variability in conditions, munitions can be satisfactorily and safely stored in the theater. 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.*

AMMUNITION STORAGE ACTIVITIES

9-2. 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; NEQ; or total gross tonnage per individual storage unit, depending on the storage system selected. Munitions are likely to be stored in one of four types of field storage areas: TSA, CSA, ASP, or ATP. 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

9-3. The TSA is located within the COMMZ in the theater's rear AO. The modular ammunition company's HLPs generally operate the TSA. These platoons may receive added support from MLPs. The TSA is usually the largest ASA in the TO. 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 TSA also provides area ammunition support to units operating in the COMMZ.

9-4. 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 line-haul distance of such facilities. The TSA can be either a fixed, semifixed, or open outdoor storage area, or a combination of these.

9-5. In peacetime, the TSA may be a permanent storage facility (e.g., igloo, magazine, bunker, or other fixed or semifixed explosives storage building). Unless the TO has existing fixed explosives storage facilities, the TSA is usually an open outdoor storage area in SASO/wartime.

9-6. 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 (i.e., transportation and terminal support) may be available to assist munitions units in conducting railhead and other transload operations.

9-7. A TSA may expand to about 40 square kilometers to meet its stockage objective (see Table 9-1). If the stockage objective exceeds 25,000 STs, a second TSA should be established. The ASCC and METT-TC determine the stockage objective of TSAs. The TSA receives 100 percent of its stockage objective from the POD.

Table 9-1. ASA Types

ASA	Days of Supply	Stockage Objective
TSA	30 Days	25,000 STs
CSA	7 Days	25,000 STs
ASP	3 Days	NA

9-8. 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 FM 9-6 for a discussion of the flow of munitions in the theater of operations.

CORPS STORAGE AREA

9-9. The CSA is located in the corps rear AO. The modular ammunition company's MLPs generally operate the CSA. If the CSA is receiving containerized munitions, HLPs may support the MLPs. The CSA mission is to receive, store, issue, inspect, configure, manage, and maintain the corps reserve munitions stocks.

9-10. The CSA supports the munitions requirements of all assigned or attached corps units. It is also the primary source for the division's munitions. It stocks 10 to 15 DOS to meet initial combat requirements; thereafter, it maintains about 7 DOS. At least one CSA is required to support ASP and ATP operations for each committed division. The CSA may be fixed, semi-fixed, or open storage depending on the tactical situation. It is more fixed than the forward storage areas it supports. Usually in SASO or wartime environments, it consists of open storage.

9-11. The CSA should be located near MSRs and railheads to allow easy access for theater and corps transportation assets. The site must have an improved road that can handle heavy vehicle traffic.

9-12. The CSA receives about 50 percent of its munitions from the POD and 50 percent from the TSA. These munitions may be in either break-bulk or containerized loads. Munitions shipped from the CSA to an ASP may be in single-DODIC, break-bulk, or configured loads. Munitions shipped from the CSA to the ATPs are in MCLs.

9-13. The CSA can expand to about 40 square kilometers. When the stockage objective reaches 25,000 STs, a second CSA should be established. The COSCOM establishes the CSA stockage objective, which is based on projected theater combat rates and METT-TC.

9-14. The COSCOM ordnance/corps support battalion analyzes workload requirements and synchronizes operations with corps transportation assets. See FM 9-6 for a discussion of the flow of munitions in the theater of operations.

AMMUNITION SUPPLY POINT

9-15. The ASP is another source of munitions for the division. It is located in the division's rear AO. The modular ammunition company's MLPs operate the ASP. The ASP provides munitions support to corps and nondivisional units in the division's AO.

9-16. The ASP normally stores 3 DOS to meet routine, surge, and emergency requirements of supported units. Tactical plans, availability of munitions, and the threat to resupply operations are the basis for stockage levels.

9-17. 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. Thus, commanders will focus on locations that minimize the need for engineer support. The ASP receives 100 percent of its munitions shipments from the CSA on flatracks in single, mixed DODIC, or configured loads.

AMMUNITION TRANSFER POINT

9-18. The ATP is a temporary site from which munitions are transferred from corps transportation assets to the organic vehicles of the big six combat units (i.e., armor, aviation, infantry, artillery, air defense artillery, and combat engineers.) The DAO controls all division ATPs.

9-19. Each maneuver brigade has an FSB that operates an ATP in the BSA. The ammunition sections of the following units operate the ATPs:

- Supply company, FSB in a heavy or light division.
- S&T company, support battalion in a separate brigade.

They support all units in the brigade support sector and receive mission guidance from the DAO. Their mission is critical since they logistically support the maneuver commander's tactical plan to ensure that munitions are available for combat.

9-20. The MLP (ATP section) of the modular ammunition company operates an ATP located in the DSA of the division AO. It supports corps, divisional, and nondivisional units operating within the division support AO. The DAO provides mission guidance to the ATP and establishes its priorities.

9-21. Using either unit vehicles with MHE (e.g., HEMTT), PLS, or organic ATP MHE, munitions are transferred from corps trailers or PLS flatracks to vehicles organic to the using unit. Departing empty tractors/PLS vehicles backhaul the empty trailers and flatracks. Corps transportation should always drop a trailer or flatrack and take one in return. This practice is called *one-for-one exchange* and also applies to using units, tactical situation permitting. Without this exchange, a shortage of trailers and flatracks occurs that may critically impact resupply of munitions. S&P trailers or flatracks are also used for retrograde of unserviceable munitions and CEA. Also, these vehicles may transport fatalities and POWs, if necessary. See FM 55-10 for more information.

9-22. Shipments from the CSA and ASP together make up 100 percent of the ATP stockage level. About 75 percent of the ATP munitions requirements are throughput from the CSA in MCLs. The other 25 percent are received from the supporting ASP in single, mixed DODIC, or configured loads.

9-23. The ATP is located near an MSR or adequate road network to provide access for corps transportation assets and combat user vehicles. The ATP must be on firm ground with good drainage and offer easy access for vehicles. Also, it must allow for easy recovery of pallets, S&P trailers, and PLS flatracks.

9-24. 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. See Chapter 4 of this manual for a complete description of ATP organizational structure and munitions operations and procedures.

STORAGE SAFETY PRINCIPLES

9-25. 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, environmental, and other factors when storing a mix of munitions. Certain munitions must not be stored together.
- Do not store munitions and explosives with dissimilar materiel or items that present positive hazards to the munitions. Examples include flammable or combustible materiel, acids, or corrosives.
- If compatible, different types of munitions and explosives may be mixed in storage.
- Mix compatible munitions and explosives in storage when such mixing facilitates safe operations and promotes overall storage efficiency.

- 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 fuzed items are configured/packaged to prevent arming of the item.
  - 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 or FSC and separate by minimum Q-D as determined by DA Pam 385-64.

COMPATIBILITY

9-26. All munitions and explosives are assigned to an appropriate SCG for storage at Army activities. See Appendix I for more on SCGs.

9-27. During wartime and contingencies, logistical considerations and combat situations may warrant more risk-taking. When warranted, the MACOM commander may authorize relaxation of storage compatibility requirements. The FSCs listed below simplify field storage compatibility while maintaining an appreciable safety level. Compatibility requirements do not apply when storing configured loads in the theater of operation. Another safety element, Q-D classification, further separates munitions and explosives into hazard classes.

FIELD STORAGE CATEGORIES

9-28. For storage in the field, munitions are segregated into primary groups referred to as storage categories. Groupings are based on the desirability to store components of complete rounds in adjacent stacks and consideration of the hazards of propagation of explosion, range of fragments, spread of fires, and chemical contamination.

9-29. Listed below are the FSCs of conventional ammunition. (See DA Pam 385-64 for more information on field storage.)

- *Category A.* Fixed and semifixed artillery munitions, except incendiary and chemical.
- *Category B.* Propelling charges, fuzes, primers, flash reducers, and separate loading artillery projectiles, including HE and AP but not incendiary and chemical projectiles.
- *Category C.* Mortar ammunition and hand grenades, except incendiary and chemical.
- *Category D.* All pyrotechnics and chemical ammunition, including chemical-filled rockets; gas, smoke, and incendiary bombs; gas and smoke artillery ammunition; incendiary and chemical grenades; smoke pots; VX-filled mines; bulk-packed incendiary and small arms tracer cartridges.

- *Category E*. All demolition explosives, antitank and antipersonnel mines (except VX-loaded), and components (i.e., blasting caps, firing devices, detonating cord, and safety fuses).
- *Category F*. Rockets, rocket motors, and rifle grenades, except chemical.
- *Category G*. The following items of USAF Class V supply: all unfuzed HE bombs, aircraft mines, aircraft torpedoes, and fragmentation bombs; fuzes and/or primer-detonators for the above items; fragmentation bomb clusters, fuzed and unfuzed. The remainder of USAF Class V items must be stored in other applicable categories.

QUANTITY-DISTANCE

9-30. Q-D hazard classifications 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.

9-31. 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 Chapter 5 of 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.

9-32. During SASO, contingency, and 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.

9-33. To meet readiness requirements, certain units may have their ABL uploaded on organic vehicles or stored near the unit in a BLAHA. DA Pam 385-64 defines Q-D requirements. BLAHAs outside and inside the US have different standards, which must meet the Q-D standards of this publication.

9-34. Applicable Q-D terms for field storage safety purposes include the following:

- *Storage subdivisions*. Field storage areas are divided into storage sections and further subdivided into FSUs and stacks to ensure adequate dispersion for operational safety purposes.
- *Dispersion*. If assets are adequately dispersed, the ASP is not an inviting target from the air. When possible, quantities of each type of ammunition should be stored in two or three widely separated sections. If the contents of one section are destroyed, the entire supply of any one item will not be lost. When space is not sufficient to disperse the ammunition, construct earthen barricades to help reduce the hazard.
- *Barricades*. The effect of sympathetic detonation can be reduced using man-made barricades constructed IAW DA Pam 385-64.

- *Interstack distance.* Interstack distance is the minimum distance between the near edge of adjacent stacks. Stacks are required to be separated by minimum distance of 50 feet to inhibit the spread of fire. However, be aware that interstack distances do not always provide protection from propagation of detonation by blast overpressure or missile fragments. Aggressive fire fighting usually helps to prevent the spread of fire from one stack to another at this distance. The greater the distance between stacks, the less likely fire will spread from stack to stack. When possible, separate stacks by a distance greater than that prescribed.
- *Inter-FSU distance.* The inter-FSU distance, which is the distance between the nearest edge of the nearest stacks in adjacent FSUs, can also help prevent the spread of fire (see Table 15-2 of DA Pam 385-64). When these distances cannot be met, use extra care in setting up and maintaining fire protection, fire guards, and firefighting measures.
- *Optimum safety distance.* The optimum safety distance is the limit inside which structural damage from a blast or missile fragments will be serious. Consider this distance if ASAs, ATPs, or BLAHAs have to be located near gasoline or other storage facilities, hospitals, permanent radio transmitters, railroads, and highways.

9-35. Special storage requirements must be met for certain categories of munitions. Safety and environmental considerations make it essential to comply with the following guidelines:

- *Nontoxic Chemical Ammunition.* Store chemical-filled ammunition so that each container, item, or bomb can be inspected and easily removed. Keep projectiles containing phosphorus out of the direct sun and store them bases down. Locate water-filled barrels for immersing leakers within the toxic ammunition site.
- *Toxic Chemical Ammunition.* Store toxic chemical ammunition in the part of the ASP with the lowest elevation and at least 1 mile downwind from inhabited ASP buildings or other storage areas. Make sure no inhabited buildings or storage areas are within 2 miles downwind of the storage site. Also, ensure maximum security for this type area.
- *Rockets.* Safety requirements for storing rockets are stricter than for most other types of conventional munitions. Store small- and large-caliber rockets and large-caliber, free-flight rockets on the outer edge of any storage area. Point the noses away from all other stored munitions and away from all inhabited areas. Locate the rockets so that only their own containers are between the rockets and the barrier. Do not make stacks more than one row deep.
- *Bombs.* Category G ammunition (bombs) is usually stored and issued by the USAF. In emergencies, however, depot and ASP commanders may store bombs. For this reason, it is important to be aware of the following restrictions:
  - The FSU is the smallest storage unit authorized.

- Fuzed fragmentation bombs in the same FSU may not be stored with other bombs.
- Components of bombs (i.e., fins, fuzes, primer-detonators) can be stored between FSUs. If that is done, remember to protect fuzes and primer-detonators from heat and moisture.

SITE SELECTION

9-36. Safety and efficiency must be top priorities when selecting a field storage site. Site selection and layout of an ATP are discussed in Chapter 4 of this manual. It is essential that explosives experts be involved early in this process to preclude possible future disruptive, safety-driven relocations of established Class V facilities.

9-37. A primary and an alternate site should be selected. Alternate sites provide relocation options in case the primary site is unavailable for operational reasons, or if enemy action or the effects of weather on the terrain make evacuation necessary.

9-38. 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.

9-39. 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. See Appendix J for information on FARPs.

ASSESSING TACTICAL REQUIREMENTS

9-40. 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.

9-41. The tactical situation may require that procedures be modified or supplemented. Other tactical considerations are found in FM 71-100 and FM 100-15. 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.
- *Facilities.* Sites should have ready access to (but be located as far as possible from) hospitals, important military installations, airfields, docks, factories, fuel storage and/or distribution activities, and similar facilities. This is especially true for sites subject to enemy attacks. If chemical munitions are stored, downwind distances to populated areas must be considered.

- *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.
- *Railhead.* Sites with potential for expansion into larger, more permanent sites should have a railhead nearby.
- *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.
- *Fire safety.* The site must be inspected for fire hazards. A low level of flammable vegetation and an adequate water supply are favorable considerations.

STORAGE SYSTEMS

9-42. Once the site has been selected and approved, the selection of a munitions storage system must be made. Four storage systems may be used for field storage of munitions and explosives:

- Area storage.
- Roadside storage.
- Combination area/roadside storage.
- Modular storage.

9-43. Consider the following factors when choosing a storage system:

- Physical characteristics of the site.
- Location of hostile forces.
- Weather expectations for area.
- Time and resources available.
- Expected life of the site.
- Available space and type of operation that most readily comply with Q-D requirements.
- Freedom of vehicle movement throughout the storage site. Vehicles must be able to pass other vehicles being loaded/unloaded. There should be no dead-end roads that require backing up or turning around.
- Roads should be improved, if possible, to withstand traffic up to fully loaded trailers and PLS trucks.

Area Storage System

9-44. The area storage system is divided into three sections and subdivided into FSUs and stacks. Stacks of munitions are arranged in a checkerboard pattern and spaced according to the Q-D requirements in DA Pam 385-64. This system provides efficient use of the total area, but may require significant road and pad construction and stabilization of earth.

Roadside Storage

9-45. Roadside storage allows munitions to be stored in stacks along the edges of existing roadways. FSUs and sections are spaced according to Q-D requirements in AR 385-64. Effective use of this method requires a larger road network and more total area than the area storage system. However, little construction is necessary.

9-46. A variation of roadside storage, known as *"storage in depth,"* is very useful if the existing road network is limited. With this method, one or more additional stacks of ammunition is stored behind the roadside stack, away from the road. The use of this system is restricted in wet climates or in areas with poor soil conditions or heavy forests. Under those conditions, the stacks of ammunition would be difficult to reach.

Area and Roadside Storage

9-47. A combination of area and roadside storage is often used to lessen the bad aspects of both systems. It allows the most effective use of the existing road network in a limited area. While this combination does not require as much land as roadside storage, it does involve some road and pad construction.

Modular Storage System

9-48. The modular storage system is used for storage of high-explosive bombs and other conventional ammunition. Munitions are stored on pads within earth-barricaded areas called cells. The cells are joined to form modules, which may, in turn, be arranged to form module blocks. See DA Pam 385-64 for modular storage system requirements.

9-49. The modular storage system is used in a combat zone where limited security and inadequate real estate/operational limitations make it impossible to store munitions IAW Q-D and compatibility regulations for area, roadside, or area/roadside storage. It may be the only solution for storing large quantities in rear areas where there is insufficient real estate.

9-50. This system does not provide the same degree of protection for personnel or munitions stocks afforded by regular Q-D dispersion. Before deciding to use the modular system, compare its advantages and disadvantages to those of the other field storage systems as defined in DA Pam 385-64.

9-51. DA Pam 385-64 contains information on where, when, and how to use the modular storage system. Also, it discusses physical and construction characteristics, explosives limitations, barricade requirements, and site selection criteria.

9-52. **Special Guidelines for Modular Storage.** In peacetime, modular storage is limited to HE bombs (fuzed or unfuzed, with or without fins), similarly cased HD 1.1 ammunition (e.g., HE projectiles), and the following contained in nonflammable or metal shipping containers: 30mm and smaller ammunition, cluster bomb units, inert munitions components, and HD 1.4 munitions. By design, modular storage can redirect some of the blast overpressure from an explosion but provides little to no protection against fragment debris or the spread of fire. In a combat zone, there are no restrictions on the type of ammunition authorized for modular storage. In this case, mixing ammunition in modular storage is authorized.

9-53. Certain munitions require special storage consideration when stored in a modular system. Ensure safe storage by complying with the following guidelines:

- All storage and safety considerations will be followed for CS and CN (riot control agents) chemical munitions and WP/PWP ammunition. Cells containing these items must be in a separate module, away from other types of ammunition.
- Chemical munitions (except WP/PWP and CS/CN) and rockets will be stored in end cells of modules. Store rockets and missiles pointing into barricades.
- Blasting caps can be stored in a separate bunker built inside the cell containing all other compatible munitions. Ensure the bunker has adequate side/overhead cover to protect other explosives in the cell.
- Propellant charges must be stored in a separate module. The module may have one or more cells, depending on the required stockage.
- ICM must be stored alone in a separate module. The module may have one or more cells, based on the required stock objective.
- Munitions and CEA awaiting destruction must be stored in a separate module. The module may have one or more cells, based on requirements.

Urban/Built-up Areas

9-54. Structures in urban or built-up areas may also be used to temporarily store or protect munitions. The possibility of setting up an ASA in a village or other built-up area may be realistic and requires consideration when planning wartime operations. With this system, the real estate could be in an existing small city, a village, or a structure in the outlying countryside. The physical configuration layout is based on the safety requirements for munitions storage found in DA Pam 385-64.

STORAGE AREA PLANNING

9-55. 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 expected maximum tonnage of each SCG?
- 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?
- Which storage system will be used?
- 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 is the total stockage objective for the site?
- 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.
- What section, FSU, and stack numbering system are needed to ensure that location and retrieval of stocks are fast and accurate?

GENERAL LAYOUT

9-56. 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. Munitions survivability software is being developed by the Army and should be available in the near future. This software is designed to assist the user in preparing the safest storage plan possible for the designated terrain.

9-57. Key differences between CSA/TSA field sites and ASP/ATP sites are that the CSA and TSA generally have larger, more stable storage areas and better road networks.

9-58. 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/rewarehousing/configuration as easy as possible.

9-59. 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.

9-60. 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.

TACTICAL LAYOUT

9-61. 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.

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

9-62. 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. When HNS is available, the layout will incorporate coordination of services between US and HNS activities. See Figure 9-1 for a typical ASP layout.

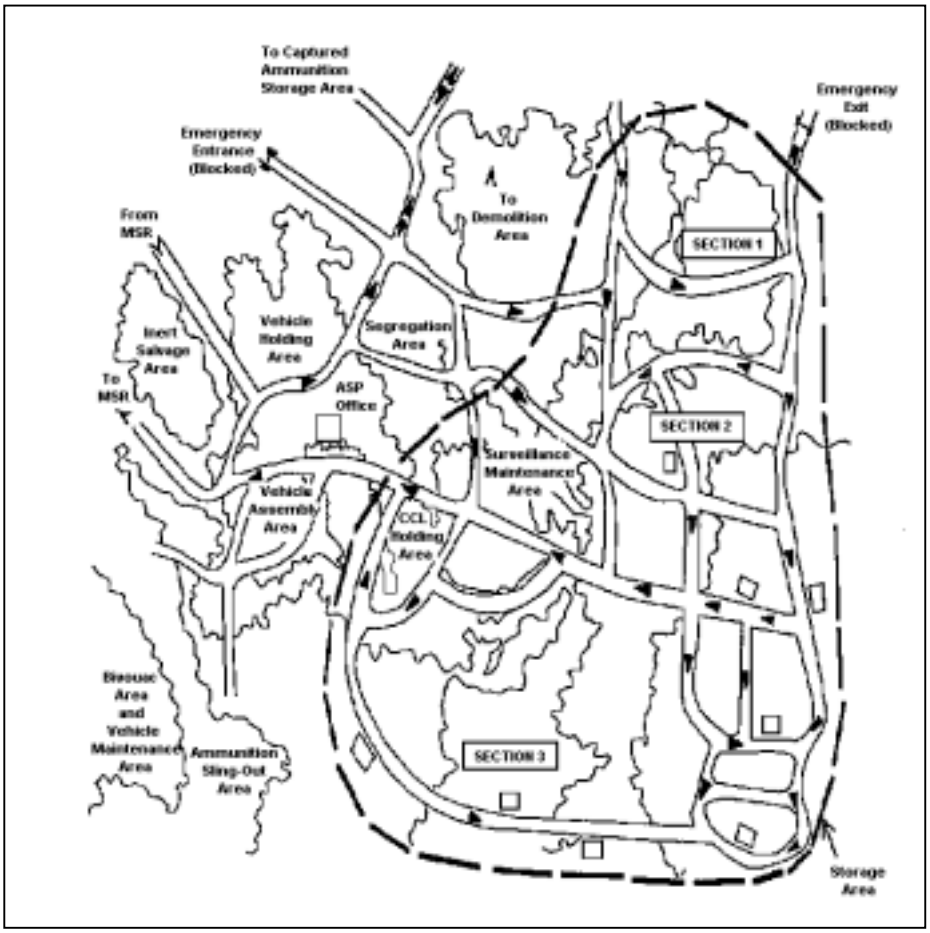


Figure 9-1. Typical ASP Layout Plan

AREA LAYOUT

9-63. 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.

9-64. 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.

9-65. 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.

9-66. Nonexplosive munitions, such as munitions residue and salvage materiel, are stored in the *inert salvage area*. It should be located near the segregation area and the surveillance and maintenance area.

9-67. 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.

9-68. 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.

9-69. 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. See FM 10-450-3, and TM 38-250, for more information on sling load operations.

9-70. 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.

9-71. Unit vehicles and MHE are maintained in the *maintenance area*. A separate section within this area may be designated for refueling vehicles.

9-72. 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.

9-73. Live munitions are stored in the a*mmunition storage area*.

9-74. 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.

SPECIAL LAYOUT

9-75. *Munitions stacks* 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 stacked on an inadequate or unstable foundation may topple or sag. Inspectors should look for settling or shifting stacks so that corrections can be made before damage results. See DA Pam 385-64 for more information.

9-76. 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. For example: Sub-depots are designated by letter; storage sections by number; FSUs by letter; and stacks by number (i.e., munitions may be stored in sub-depot A, section 1, FSU-A, stack 1 [A1A1]).

9-77. 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.

9-78. *Lot number separation* divides and stores all munitions by lot number. The manufacturer numbers and 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.

9-79. *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 stacks from the effects of rain and intense sunlight. Tarps must never be placed directly on ammunition; doing this raises the temperature underneath the tarp. Ensure a minimum 18-inch clearance between the tarp and the munitions. Tarps can be used as improvised shelters for VT fuzes and pyrotechnics. Cotton tarpaulins, 16 feet by 16 feet, NSN 8340-00-817-2126, provide both shade and cover.

9-80. 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:

1. Guided missiles and rockets.
2. Propelling charges.
3. Fuzes.
4. Pyrotechnics.
5. Projectiles.

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.

9-81. 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. Empty munitions boxes or ration boxes filled with sand or dirt may be used to elevate the stacks if lumber is not available. Dunnage must be checked frequently for rotting and deterioration. See DA Pam 385-64 for more information.

9-82. If *drainage* threatens to be 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.

9-83. *Storage of guided missiles and rockets* requires special care. Guided missile assemblies should be stored in permanent structures 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 must be stored on the perimeter of any storage location, with all nose ends pointing in the safest direction, normally outward.

9-84. Security is a major concern when handling classified or sensitive missile and rocket components. Classified or sensitive components must not be stored with unclassified components. Guards and access control must be employed if these components are stored in the open. An accurate check must be kept on personnel who enter classified or sensitive storage areas or structures. See AR 190-11 for more detailed security information.

9-85. Natural cover and 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 FM 20-3 for general information on the use of camouflage.

9-86. MHE is essential to the receipt, storage, issue, and maintenance of munitions. The type of MHE available must be considered when planning operations. Certain MHE may not be suited to the terrain. See FM 9-6 for information on MHE assigned to ordnance units.

UNSERVICEABLE MUNITIONS STORAGE

9-87. Unserviceable munitions are those either manufactured with defects or made unserviceable by improper storage, handling, packaging, or

transportation. 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. Refer to Figure 3-2 of this manual for information on turn-in procedures.

9-88. 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.

9-89. 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.

9-90. 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.

9-91. The unit performs the packaging and preservation functions if that is all that is required (see Chapter 10). Time permitting, reparable unserviceable munitions are retrograded for repair.

9-92. 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

9-93. Specific lots of munitions and components are withdrawn from issue when they are determined 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.

9-94. The authority to suspend any lot of conventional munitions is vested in the commander, OSC. However, the installation or area 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 MMC 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. Suspended lots of conventional munitions and

components are listed in TB 9-1300-385. Additional notices of suspensions or restrictions are by QANET updates to ASIS or by other electronic message formats as supplemental changes to TB 9-1300-385.)

9-95. 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 and DA Form 3782, 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 AMMUNITION STORAGE

9-96. Enemy ammunition is considered excess. IAW AR 381-26, one of three options must be taken when munitions are determined to be excess on the battlefield. These options are use, destroy, or secure and retrograde.

9-97. 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/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. Hazardous enemy munitions must be segregated and disposed of.

9-98. If the cache is retrograded, corps 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 or foreign munitions can be obtained from military intelligence elements. See Chapter 12 of this manual for more information on CEA.

SALVAGE AND PACKAGING STORAGE

9-99. Salvage material includes such items as boxes, crates, and steel containers. Packaging material includes nose plugs, grommets, metal links, clips, cartridge cases, and brass.

9-100. 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 ATP, the ATP 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 MMC as directed by higher headquarters. The MMC receives disposition and shipping instructions, and gives the instructions to the storage facility based on these reports.

9-101. When inert salvage material is shipped from any munitions facility, the senior inspector must certify the shipment to be free of explosives. Empty chemical containers, boxes, and packaging material must be certified to be free of chemicals or chemical residue.

BINARY CHEMICAL MUNITIONS

9-102. When BCMs are deployed to a theater of operations, the theater commander directs their primary storage location. In wartime, effective measures must be implemented to maintain strict control and safe handling of BCMs. When in-transit, the nonlethal-component canisters are stored separately until higher headquarters gives the release order. Separate storage is imperative for the safety of personnel and facilities. Also, it prevents the possibility of a lethal accident or incident that the enemy could consider as first use.

9-103. BCMs must not be assembled until higher headquarters gives a properly authenticated release order. From the CSA, BCM components are *normally* shipped forward for assembly at the ASP. Depending on the tactical situation, the assembled BCMs are uploaded for issue at the ASP or transported to the ATP for issue. The tactical situation may dictate that the munitions be assembled at the CSA and shipped directly to the ATP. Also, under emergency conditions, unassembled BCMs may be issued directly to the firing unit. Ideally, assembly of BCMs should occur as far forward as possible. This minimizes handling and exposure to possible leaks and contamination. Procedures for storing, shipping, handling, and securing BCMs are discussed below.

Storing and Shipping

9-104. Storage considerations for BCMs apply to both CSA and ASP operations. Commanders of conventional ammunition companies must be prepared to assume custody of BCMs. Normally, the CSA receives BCMs directly from the port and ships these components forward for assembly at the ASP. The commander must ensure that the nonlethal-component canisters are stored in separate structures within the same storage area or in separate locations at different storage areas. Storage of BCMs must be IAW Q-D requirements in DA Pam 385-64. During convoy operations from the port to the CSA, and from the CSA to the ASP, the components are shipped on separate vehicles within the same convoy.

9-105. Upon receipt of an authenticated release order, units generally pick up their allocated BCMs at the same time they replenish their conventional munitions. If the tactical situation changes and uploaded or issued BCMs are no longer required, the units must return the BCMs to the supporting ASA. Munitions specialists disassemble the BCMs and place the component parts in their original packages. The components are then returned to a secure storage location. If there is any uncertainty about the disposition of BCMs, instructions must be requested from higher headquarters.

Handling

9-106. The fewest number of personnel possible must handle BCMs. Commanders must ensure that their units establish SOPs that provide

special handling procedures for BCMs. These procedures must emphasize safety and, at a minimum, must include the following:

- Chain of custody.
- Required MOPP gear.
- Required chemical detector kits and alarms.
- Emergency procedures and assistance for accidents and incidents.
- Monitoring and surveillance requirements.
- Inspection requirements for BCMs and related chemical operations.
- Disassembly procedures for assembled BCMs.
- Specific area for assembly and disassembly operations.

9-107. When handling unitary munitions (e.g., CEA), the conventional ammunition unit takes all necessary NBC precautions, especially if there has been an accident. These precautions include dressing in MOPP-4 gear and requesting EOD and chemical unit support from corps headquarters. See FM 9-20 for more information.

Securing

9-108. Generally, physical security principles that apply during peacetime apply during wartime. However, in emergency situations or intense combat conditions some peacetime requirements may have to be waived. Regardless of the degree of combat, commanders must ensure that qualified personnel provide physical security whenever and wherever chemical munitions are handled. From the time BCMs enter the theater, commanders are responsible for their security during handling, moving, and storage operations. Security personnel may include a combination of escort personnel, MPs, conventional ammunition personnel, and designated personnel from the combat user. Security personnel have the primary mission of preventing unauthorized or uncontrolled access to chemical munitions. Unit commanders must develop a detailed unit SOP that deals with the security of these munitions while in their custody. At a minimum, the SOP will include the following:

- Personnel qualifications for those guarding and having access to chemical munitions.
- Identification of authorized personnel.
- Security during transport of munitions. Details for security planning for chemical munitions are given in AR 50-6, AR 190-11, AR 190-14, AR 190-59, AR 380-67, and FM 19-30.

REWAREHOUSING MUNITIONS

9-109. Rewarehousing is the art of using available space efficiently to support receipt, storage, and issue of munitions with a minimum amount of handling. Space layout planning is one of the most important elements of rewarehousing. Consolidation, location, control, and conservation of storage space are key to good rewarehousing.

NIGHT OPERATIONS

9-110. During combat, ammunition units must be able to perform night operations. With the added disadvantage of darkness, safety must be

paramount in the completion of all issues, turn-ins, receipts, retrograde operations, and shipments. Factors and considerations that affect night operations include the following:

- Soldiers work slower in darkness. Allow more time than usual during night operations.
- A larger work force is necessary for night operations.
- Emphasis on accountability increases. Ensure that soldiers serving as checkers are familiar with the area layout and the locations of the stocks.
- Safety must be stressed to all individuals involved, especially MHE operators. Additional ground guides are needed for night operations.
- Based on the tactical situation, commanders must decide how much light discipline must be maintained. Ensure that proper batteries and blackout filters are available for lights.
- Use night-vision goggles as much as possible. Ensure that proper maintenance is performed to keep them operational.

SUMMARY

9-111. This chapter focuses on storage of munitions in combat/SASO environments. In the future, it is likely that munitions units will be deployed consistently for SASO where field storage conditions are prevalent. 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.

Chapter 10

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

10-1. 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

10-2. 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.

10-3. DS, GS, and modular ammunition units assume a more active role in conducting maintenance operations when operating in the corps and theater areas during combat or SASO. The primary focus in hostile, forward locations is issue and receipt activities; therefore, maintenance may be limited to packaging and preservation.

CATEGORIES

10-4. Munitions maintenance is divided into four categories: organizational, direct support, general support, and depot. Generally, Army munitions personnel only perform the first three categories of maintenance.

Organizational

10-5. All activities that have munitions on hand perform organizational maintenance (generally packaging and preservation) to prevent deterioration from rough handling and exposure. Organizational maintenance in the using unit is usually performed with the technical assistance of ammunition units.

Direct Support

10-6. DS conventional ammunition companies in the theater of operations perform limited DS maintenance and surveillance of stocks under their control. Limits are defined by the capability of the unit and METT-TC. Besides packaging and preservation, DS maintenance may include replacing readily removable external parts and components; these include fuzes of artillery and mortar munitions, propelling charges and primed cartridge cases for semifixed and mortar munitions, grommets, and nose plugs. Maintenance at the DS level is largely due to turned-in munitions.

General Support

10-7. Conventional ammunition companies in the theater of operations that have GS capabilities perform maintenance above the DS level. Modular companies are designed with the capability to perform both DS and GS maintenance. GS maintenance 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.

10-8. All DS and GS companies with storage and issue missions are equipped to perform maintenance functions. The tools, equipment, and supplies needed to support maintenance at that particular level are included in each unit's supply and equipment list.

Depot

10-9. Depots perform more complicated maintenance (such as modification, explosive component replacement, or complete renovation) of munitions that are packaged and/or evacuated.

CARE AND PRESERVATION

10-10. Care and preservation are terms often used to describe munitions maintenance at the organizational or DS level. Care stresses protection, and preservation stresses maintenance but includes protection. Care and preservation of munitions are essential for ensuring that stocks are available for combat missions.

10-11. Munitions returned by units can be held in the segregation area for up to 180 days. There, they are identified and segregated by type and lot number, checked for hazardous and nonstandard conditions, and repacked or

palletized. Q-D, explosive, and personnel limits must comply with DA PAM 385-64.

10-12. 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, incompatibility, and hazardous conditions. Precautions must be taken when handling depleted uranium items (see TB 9-1300-278). 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.

10-13. 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.

10-14. Munitions must be palletized IAW proper USAMC drawings and appendices. Some drawings may be designated as DARCOM drawings. No more than one lot is permitted on any one pallet in storage. Once inspected, pallets are transferred to a storage or shipping area.

10-15. 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, DA Pam 738-750, and TM 9-1375-213-12 for more information.

STANDING OPERATING PROCEDURES

10-16. All maintenance operations are performed IAW an approved maintenance SOP. TM 9-1300-250 contains guidelines for preparing maintenance SOPs and organizing maintenance activities. When local nationals are involved in maintenance operations, the SOP is written in their language as well as in English.

SURVEILLANCE OPERATIONS

10-17. Munitions surveillance is the observation, inspection, and classification of munitions and their components for movement, storage, and maintenance. It includes the inspection of all equipment, facilities, and operations. 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.

10-18. The TSC is normally responsible for general supervision of munitions surveillance in the theater. The COSCOM is responsible for supervision within the corps. The ordnance battalion and CSB or CSG supervise this function in their commands. In established theaters, surveillance activities are under the control of DAC QASAS who are assigned to the appropriate

Army headquarters IAW AR 702-6 and AR 740-1. In theater ammunition units, surveillance is performed by attached civilians and assigned military inspectors.

10-19. Battalion commanders must administer a quality assurance ammunition surveillance program that covers all munitions operations in their command. The QASAS in charge is responsible for this program and reports directly to the commander. Since the training required for the QASAS is more extensive than that of the military inspector, QASAS personnel perform most functional tests and the more complicated inspections. They certify the results of inspections and tests performed by the military inspectors. Some inspection results and functional test reports are signed only by a QASAS. Surveillance in an immature or developing theater is performed by 55Bs in a DS, GS, or modular ammunition company. Early deployment of QASAS personnel will ensure full surveillance capabilities.

SURVEILLANCE FUNCTIONS

10-20. Munitions inspectors are responsible for ensuring the reliability and serviceability of munitions. They perform their mission in plants, depots, storage areas, and on the battlefield. 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.
- Recommending controls needed to maintain standards.
- 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 files.
- 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.

10-21. 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 basic load inspections.
- Preparing waivers for storage facilities.
- Planning construction of storage facilities.
- Planning field storage areas.
- Monitoring uploading/downloading of ammunition to/from combat vehicles.

10-22. Ammunition inspectors also help to plan, administer, and enforce the explosives safety program. This program includes the review, evaluation, and inspection of operations, procedures, equipment, and facilities used with munitions and explosives operations.

SURVEILLANCE INSPECTIONS

10-23. An active surveillance inspection program is vital to ensuring munitions reliability. IAW SB 742-1, the following surveillance inspections are performed by QASAS and military inspectors:

- Receipt, including depot transfers, field returns, and CEA.
- Periodic (cyclic).
- Storage monitoring.
- Special.
- Pre-issue.
- Verification.
- Munitions condition code.
- Ammunition in the custody of units.

Serviceability Standards

10-24. The purpose of an inspection is to find deterioration and determine the serviceability of items. The inspector must be familiar with all information on the items, including components and packaging, as well as the characteristics of the weapons in which they are used. Serviceability standards are contained in SB 742-1.

10-25. Inspection procedures include observation, tests (such as gauging or strength tests), and functional tests. 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 determine if defects can be corrected and at what maintenance level it must be done. Serviceability is not assumed from the fact that the item can be fired in the weapon for which it was designed. It must function correctly when fired.

10-26. The prime enemies of munitions are heat, moisture, and rough handling. Deterioration is faster when moisture is combined with a rise in temperature. Inspectors must look for indications of moisture, rust, or

corrosion on projectiles and fuzes; corrosion and cracks on cartridge cases; deterioration of propellants; loose closing caps; and moisture or dampness inside containers.

Physical Defect Standards

10-27. Evaluating materiel that shows deterioration or damage is a decision based on the training, experience, and judgment of the inspector. Deterioration of materiel in storage is natural and varies depending on protective coating, packaging, and storage conditions. Deterioration is progressive. If maintenance is not performed, it progresses from an incidental stage, to minor, to major, and possibly to a critical stage. These four categories of deterioration are used to establish a uniform system of examination for deterioration or damage.

10-28. Further guidance on classifying metal, plastic, and rubber component deterioration; mixed ammunition; damaged packaging; and placing defects into one of the four defect categories can be found in SB 742-1 and other applicable SBs and TMs.

Guided Missile and Large Rocket Inspection

10-29. GMLR munitions, components, propellants (liquid and solid), protective clothing, packaging, and packing materials are inspected and tested using applicable SBs, TMs, drawings, and specifications.

10-30. Most mid-sized guided missiles are now certified as rounds and are maintained by the contractor at contractor facilities. Unit maintenance on guided missiles is limited to spot painting and replacement of items such as wings and elevons. Missile items identified by lot or serial number are inspected for serviceability. Materiel is sampled and inspected by individual lots. Missiles are inspected using the inspection table in the appropriate TM or SB.

10-31. Defects found in the sample are classified using the applicable SB, TM, or other specification. Where defects are not classified in these publications, the inspector classifies them according to SB 742-1. The results of the sample inspection are used to make serviceability decisions about the lot or group.

SURVEILLANCE RECORDS AND REPORTS

10-32. A technical history of each lot, serial number, or group of munitions is kept by surveillance personnel. 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. Therefore, it is important that all information gathered be accurate and concise. The historical information needed for maintenance is usually more detailed as to the extent of the defect and the work required returning the item to service. The following information is needed to evaluate the reliability of the stockpile:

- Condition of the materiel.
- Quantity.
- Date of manufacture.

- Type of storage.
- Type of defects.
- Cause of defects.
- Results of tests.

10-33. Surveillance personnel are required to submit and maintain reports on materiel received or in storage. SB 742-1 provides guidance for preparing the following records and reports:

- DA Form 984, *Munition Surveillance Report—Descriptive Data of Ammunition Represented by Sample.*
- DA Form 2415, *Ammunition Condition Report.*
- DA Form 3022-R, *Army Depot Surveillance Record.*
- DA Form 3023, *Gage Record.*
- DA Form 3782, *Suspended Notice.*
- DA Form 4508, *Ammunition Transfer Record.*
- DD Form 250, *Materiel Inspection and Receiving Report.*
- DD Form 1575, *Suspended Tag-Materiel.*
- DD Form 1575-1, *Suspended Label-Materiel.*
- DD Form 1650, *Ammunition Data Card.*
- SF 361, *Transportation Discrepancy Report.*
- SF 364, *Report of Discrepancy.*
- Munitions inspection and lot number reports.
- Munitions suspension records, to include AMCCOM and MICOM suspension.
- Equipment logbooks and maintenance logs.
- Reports of explosions, chemical agent releases, serious accidents, and nuclear incidents.
- Small arms tracer reports.
- Storage monitoring records (local format).
- Others required by local/higher headquarters.

SAFETY

10-34. Safety in munitions maintenance is covered in AR 385-10, 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 7 of this manual.

SUMMARY

10-35. 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.

Chapter 11

Emergency Destruct Operations

When faced with the possibility of capture by the enemy, an ASA or ATP may be called upon to conduct ED operations on part or all of its stocks. This chapter discusses the reasons for emergency munitions destruction and provides guidance in aspects of planning and conducting safe operations. Also, it describes methods of destruction and elements of required training.

OPERATIONS OBJECTIVES

11-1. Emergency destruction of munitions is conducted for one of two reasons. The first is to prevent enemy use. The second is 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. By reducing the stockpile as much as possible, units ensure that the least amount of munitions is destroyed. Quantities can be reduced in several ways. One is to move as much of the munitions as possible to a safe location. Another is to issue excess amounts to using units.

AUTHORIZATION TO DESTROY

11-2. 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 ATP stocks. Only divisional or higher level commanders have the authority to order destruction of munitions. 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 ATP ED, including the types of items authorized for destruction and the destruction methods.

11-3. 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.
- Location of the ASA or ATP.
- Amount of ammunition and the time required to destroy the ASA or ATP.
- Security classification of the munitions.
- Available materiel and trained personnel.
- Safety considerations.

These factors are discussed in the paragraphs that follow. Also, added precautions must be taken when depleted uranium munitions or armor must be destroyed (see TB 9-1300-278).

TACTICAL SITUATION

11-4. The current tactical situation provides input to the decision-making process. The various ED methods require different setup and execution times. Also, the different methods provide different possibilities for complete destruction. With more time available, more complete destruction methods can be used. If time allows, the decision to authorize ED must be made at a higher command level. However, the senior person at the ASA or ATP may be required to authorize ED to prevent enemy capture and use.

ASA OR ATP LOCATION

11-5. Where the ASA or ATP is located has a bearing on which method of destruction is used. If an ASA or ATP is near a populated area, demolition may not be practical. On the other hand, if the destroyed ASA or ATP would create an obstacle to oncoming enemy forces, demolition would be useful.

AMOUNT OF AMMUNITION/TIME REQUIRED

11-6. 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. The quickest ED method is by fire support. An ASA or ATP can be destroyed with an artillery or air attack. ED by burning or demolition requires a lot of preparation time. Burning is faster because demolition requires setting up and priming explosive charges and setting up an initiation system.

11-7. 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 ATP is much greater.

MUNITIONS SECURITY CLASSIFICATION

11-8. 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

11-9. If the ASA or ATP has no demolition or flammable materiel, destruction methods are limited. Also, demolition materiel may be more critical for offensive purposes than for ASA or ATP 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

11-10. Planning for ED must start immediately. It is difficult to establish SOPs because tactical and logistical situations in each combat zone vary. However, the methods of destruction are basic and flexible enough to serve as SOPs in combat emergencies. The ED plan must be either an annex to the unit SOP or a separate SOP. 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).

11-11. The division, corps, and theater staff agencies must thoroughly prepare for ED. Plans must address destruction priorities and procedures.

11-12. When establishing an ASA or ATP, the DAO and MMCs must plan to push ED materiel to the site. ED materiel requirements can be based on the expected daily push to the ATP (RSR for supported elements) or on the stockage objective for the ASA. To support any increased munitions flow, the MMCs or DAO must ensure that additional ED materiel is pushed to the ASA or ATP. ED materiel should be kept on hand at all times during normal operations, relocations, or evacuations. ASA and ATP 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

11-13. Priorities for ED are based on the tactical situation and the types of munitions stored at the ASA or ATP. 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. See Table 11-1 below for a suggested priority list for munitions ED.

Table 11-1. Suggested Priority List for ED of Munitions

PRIORITY	ITEM
1	Classified and special (chemical) munitions; associated manuals, records, reports, test sets, and equipment.
2	Munitions that can be used in immediate retaliation and deployed without a weapons system (e.g., grenades, land mines, small rockets [AT4]); munitions for which the enemy has weapons system capability.
3	Casualty-producing munitions (e.g., HE, antipersonnel) not included in priorities 1 and 2.
4	Noncasualty-producing and pyrotechnic munitions (e.g., signal, illuminating projectiles).

SAFETY

11-14. 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 ATP. A minimum of two personnel must be present during all operations.

11-15. Tactical situation permitting, coordination with and warning of those units endangered by the ED operation must be accomplished to prevent casualties.

11-16. 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 submunitions 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.

11-17. When using electrical or remote firing devices during ED operations, a minimum distance of 400 meters must be maintained from radio transmitters.

BURNING

11-18. The type and quantity of munitions being burned determines the radius of the danger area around the burning site. A minimum 1,000-meter (0.6-mile) safe area must be established when surrounding units and personnel are warned and under protective cover.

DEMOLITION

11-19. The type and quantity of munitions being destroyed, the fragmentation hazard, and the protective cover provided to personnel in the area determine the radius of the danger area surrounding the destruction of munitions by demolition. The information in Table 11-2 is based on ballistic data and field experience and should be used as a guide. If there is any doubt about an item, the distance will be increased for reasons of safety. Distance may be adjusted based on the tactical situation, terrain, and available protective cover for exposed personnel.

METHODS OF DESTRUCTION

11-20. 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.

11-21. The methods for destroying munitions listed below may be used either singly or in combination. The actual method or methods used in a given tactical situation depend on time, personnel, type of munitions, and available means of ED. These methods include firing, concealment, burning, and demolition, and are discussed below.

FIRING/FIRE SUPPORT

11-22. At the using unit, firing the munitions into enemy-held territory is the simplest and most effective way of preventing enemy capture. Another ED method is using fire support. An ASA or ATP can be effectively destroyed if it is shelled or bombed. This method is particularly useful to ensure complete destruction after burning or demolition. Also, it is quite useful as a primary means of ED when there is no time to evacuate or set up any other ED method. An advantage of ED by fire support is that it can be used even after the ATP has been occupied by enemy forces.

CONCEALMENT

11-23. Concealment is the least desirable ED method. It is viable when the lack of time precludes using other methods. If the terrain provides adequate

covering, or if bodies of water are available for dumping munitions, concealment may be an excellent ED method. Puncture hermetically sealed metal cans before throwing them into water if time permits. Concealment of components such as fuzes can prevent or at least delay use by the enemy.

BURNING

11-24. Burning is less time-consuming than demolition. However, it is not recommended for all types of munitions because it rarely accomplishes total destruction. When time is a major consideration, burning may be used to destroy boxed munitions. When burning, munitions must be surrounded with combustible/flammable materiel. To guarantee an extremely brisk fire, diesel fuel, gasoline, paint thinner, or other suitable combustible or flammable liquid should be used

Table 11-2. Minimum Safe Evacuation Distance (in Meters) for Demolition Operations

Explosive Weight (pounds)	Evacuation Distance (meters)
27 and less	300
30	310
35	330
40	350
45	360
50	375
100	475
150	550
200	600
250	625
300	675
400	725
500	800

NOTES:

1—When using this table, Pounds of Explosive equals the total NEW of the munitions being destroyed plus the demolition materiel being used.

Example: 3 each Projectile 155mm HE, ADAM, D501 (NEW=1.8885x3=5.6655 NEW), 2 each demolition charge blocks, M112 (NEW=1.3x2=2.6 NEW), totaled 5.6655+2.6=8.2655 Total NEW, minimum safe evacuation distance is 300 meters.

2–-When the munitions NEW is unknown, a general rule for estimating the amount of explosives is as follows: Assume that 50 percent of the total munitions weight equals the NEW.

3–-When the NEW exceeds 500 lbs, use the formula below:

$100 \times 3\sqrt{\text{pounds of explosives}}$.

11-25. For maximum destruction, munitions-laden trailers should be pulled close together. Fuel, wood, paper, scrap boxes, propellant charges, or any

combustible materiel can be used for burning. Fuel is especially useful. Fuel-soaked munitions boxes are excellent for ensuring a fire strong enough to destroy munitions.

11-26. Combustible materiel will be placed under and over the munitions to be destroyed. An initiation train of combustible materiel can be used to ignite the fire; it must be 8 meters (26 feet) in length, long enough to allow soldiers to evacuate to a safe area. If time fuse is used as the initiation train, enough fuse must be used based on the burn rate to permit evacuation to a safe area. See FM 5-250 for more information. An alternate initiation method is to shoot a full fuel can with an incendiary bullet. If it becomes necessary to use gasoline or other highly volatile, flammable liquid, extreme caution must be taken to prevent premature ignition. For greater safety, ignition should be made by electrical means or by a remote-firing device.

DEMOLITION

11-27. The way in which a demolition charge is placed can make the difference between minor damage and complete destruction. For this reason, ED demolition teams must be trained on basic demolition procedures and on all available firing systems (see FM 5-250). Demolition materiel can be saved when planning ED operations by using HE-filled munitions in conjunction with demolition charges.

11-28. ED demolition 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. Demolition teams must be familiar with the preferred procedures for destruction of munitions in applicable TM 43-0002-series manuals.

11-29. Placements of demolition charges vary for different types of munitions. Also, placement of the charge may be different for items while in shipping and storage configurations versus when they are removed from the containers.

TRAINING

11-30. Rehearsal of responsible personnel in all phases of destruction is mandatory with special emphasis on training in demolition techniques. The training program should also include instruction in selecting sites, blocking communication routes, and impeding enemy movement.

11-31. Demolition explosives afford an effective means of destroying munitions to prevent enemy use. Demolition personnel must be familiar with pertinent provisions of DA Pam 385-64, FM 5-250, TMs 9-1375-200/2 and 9-1375-213-12, and TM 43-0002-series manuals.

11-32. Local EOD units can be contacted to provide technical assistance during hands-on training sessions and to assist in developing ED SOPs. The munitions unit commander must provide training munitions for all hands-on sessions. The STRAC manual provides the munitions allocations for demolitions training.

SUMMARY

11-33. The authority for ED, whether direct or delegated, must be identified in the appropriate OPLAN and SOP. The decision to destroy munitions is based on safety, logistical, and tactical considerations that may have implications beyond what appears to be an imminent enemy threat. ED operations should be considered as an option of last resort and should always receive planning and safety emphasis.

Chapter 12

Captured Enemy Ammunition

This chapter discusses organizations that have an interest in CEA reporting procedures and unit responsibilities. The management of CEA is an integral part of the TECHINT mission. It supports the tactical commander's effort to fight and win the battle. Evaluation of CEA provides valuable data to the commander that helps in countering the enemy's technological advantage. Exploitation of CEA and TECHINT reporting is a major part of the all-source intelligence effort. It involves everyone from the individual soldier to policy makers and all levels of command. Often, the TECHINT process begins when one soldier finds something new on the battlefield and takes steps to report it. The information or CEA is evaluated and frequently exploited at progressively higher levels until a countermeasure is produced to neutralize the enemy advantage.

HISTORICAL PERSPECTIVE

12-1. In the 1920s, Germany developed weapons and weapon systems that would be used against the allies in the 1940s. The allied nations did not include TECHINT in intelligence collection efforts. As a result, German scientific and technical advances went largely unnoticed. By the time information did come to light and was made available to Washington and London, it was ignored. These weapons were used during World War II with devastating results.

WORLD WAR II

12-2. During the air battle for Europe, the British used TECHINT to counter the German antiaircraft and night fighter defenses. They did this by exploiting captured aircraft radios and a captured radar station. This collection led to the publishing of new technical material, to include the following:

- Technical manuals and handbooks on enemy weapons.
- Training aids.
- Updates to handbooks on the German and Italian armies.

The US started a successful TECHINT program in the fall of 1943, but abandoned the program immediately after the war.

KOREAN WAR

12-3. At the beginning of the Korean War, the US finally discovered it had little hard data on enemy weapon systems. The DOD realized that TECHINT had to be ongoing if effective countermeasures were to be developed. Once again, TECHINT was established.

VIETNAM WAR

12-4. During the Vietnam War, the Captured Materiel Exploitation Center was established. Its mission was to manage and coordinate analysis of CEE and technical documents. The CMEC dispatched teams of experts and analysts into the tactical zone of each corps to evaluate and exploit captured items.

GULF WAR

12-5. During the Gulf War, coalition forces and the US Army captured a tremendous amount of enemy munitions. The US was faced with the dilemma of how to handle and dispose of these munitions. While CEA doctrine and procedures were briefly mentioned in several documents, thorough, concise procedures were not available.

TECHINT MISSION

12-6. The TECHINT mission is the end product of a complex process that involves collecting, analyzing, and processing information on foreign technology and CEM. It is also the result of studying the performance of foreign materiel, including munitions and their operational capabilities. Foreign materiel encompasses the following:

- Weapon systems.
- Equipment.
- Apparatus.
- Documents.
- Technology.
- Munitions.
- Supplies of a foreign military force or nonmilitary organization.

12-7. Like other intelligence disciplines, TECHINT guards against surprise in war or SASO. It provides several distinct types of input to the all-source intelligence product, as follows:

- Assessment of capabilities and vulnerabilities of enemy weapon systems.
- Warnings of changes in enemy tactics due to new or changing technology.
- Countermeasures.

12-8. The TECHINT system has two parts within DOD. The first is the S&TI community, which concentrates on decision-making and the TECHINT requirements of strategic policy. The second is made up of the US Army's battlefield TECHINT elements. These elements support commanders in preparing for and waging war or conducting SASO. The two parts are described below.

TECHINT ORGANIZATIONS

12-9. The scientific and intelligence activities discussed in this section are primarily concerned with peacetime exploitation of foreign materiel, including CEA.

US Army Intelligence Agency

12-10. The USAIA is a field-operating agency of the DCS that produces and disseminates intelligence information on foreign ground forces and their weapon systems. Also, it provides threat analysis and related projections to the Army's combat development community.

National Ground Intelligence Center:

12-11. NGIC produces and maintains intelligence on foreign scientific developments, ground force weapons systems, and associated technologies.

US Army Materiel Command

12-12. The USAMC shares responsibility for managing the overt acquisition of foreign materiel for TECHINT purposes. The USAMC buys foreign materiel for exploitation purposes in the US, as well as through its centers in Europe and the Far East.

US Army Intelligence and Security Command

12-13. The INSCOM has the major responsibility for SASO TECHINT operations. It fulfills this responsibility through its TECHINT oversight function and by exercising operational control over the FMIG during SASO.

Foreign Materiel Intelligence Group

12-14. At EAC, the FMIG is a battalion-sized organization located at Aberdeen Proving Ground, MD. This group is the Army's only active duty TECHINT unit. Responsibilities of the FMIG include the following:

- Conducting TECHINT operations.
- Preparing TECHINT reports in support of Army, joint, and combined operations.
- Acting as the HQDA executive agent for foreign materiel used for training purposes.

US Army Armament Research Development and Engineering Center

12-15. The primary responsibility of ARDEC during SASO is to perform detailed evaluations of foreign munitions. ARDEC is located at Picatinny Arsenal, NJ.

BATTLEFIELD ACTIVITIES

12-16. TECHINT activities on the battlefield are usually initiated at the unit level with subsequent involvement of other specialized support teams, command level staffs, and higher echelon organizations with direct responsibility for planning, operations, and logistics.

Response Units

12-17. Response units start the TECHINT process. They are responsible for initial identification, reporting, and safe handling of CEA. Types of response units are discussed briefly below.

12-18. ***Capturing unit.*** The capturing unit is the first unit that discovers or captures enemy munitions. Recovery and evacuation of CEA is a command responsibility at all echelons. After reporting the CEA, the capturing unit's biggest responsibility is to provide security of the CEA until the unit receives disposition instructions. The immediate headquarters of the capturing unit is responsible for the following:

- Obtaining and providing prompt disposition instructions.
- Assisting the capturing unit with safeguarding, recovering, and evacuating the CEA.

The capturing unit may be required to help destroy or coordinate the movement of CEA. Once the CEA is turned over to another unit or collection point, the capturing unit is relieved of further responsibilities.

12-19. ***Explosive ordnance disposal.*** EOD units identify and request disposition of first-seen ordnance and CEA of intelligence value and, if required, attempt render-safe procedures. The EOD unit submits required reports through TECHINT channels, if requested.

12-20. ***US Army Technical Escort Unit.*** The TEU has a worldwide mission to secure, transport, and dispose of nuclear, chemical, or biological CEA after EOD personnel have classified it as safe to handle. The TEU has EOD resources.

12-21. ***TECHINT teams***. TECHINT teams initially identify and exploit CEA. They assist corps and divisional tactical operations centers. TECHINT teams rarely perform detailed analysis because there are so few teams and few laboratory facilities. These teams normally consist of a team leader and ten specialists, one from each of the following specialties:

- Tracked vehicles.
- Wheeled vehicles.
- Weapon systems.
- NBC equipment.
- Fire control systems.
- Aviation fire control systems.
- Intercept and jamming equipment.
- Communications equipment.
- Medical equipment.
- Antitank guided missiles.
- Munitions.

Staffs

12-22. Staffs at all levels use TECHINT information to update and develop plans to support the commander's intent. Based on this information, staffs advise the commander of capabilities and technological advances of opposing forces during war and SASO.

12-23. ***Intelligence staff.*** The J2, G2, or S2 serves as the commander's principal staff office for all MI matters. This staff has primary responsibility for the commander's battlefield TECHINT effort.

12-24. ***Operations staff.*** The J3, G3, or S3 serves as the commander's principal advisor for operations, plans, organization, and training. This staff incorporates TECHINT into all parts of unit plans and operations.

12-25. ***Logistics staff.*** The J4, G4, or S4 serves as the commander's principal staff office for supply, maintenance, transportation, and services. As the logistics planner, this staff coordinates accountability, movement, and resupply and is essential to the TECHINT system.

Intelligence Units/Activities

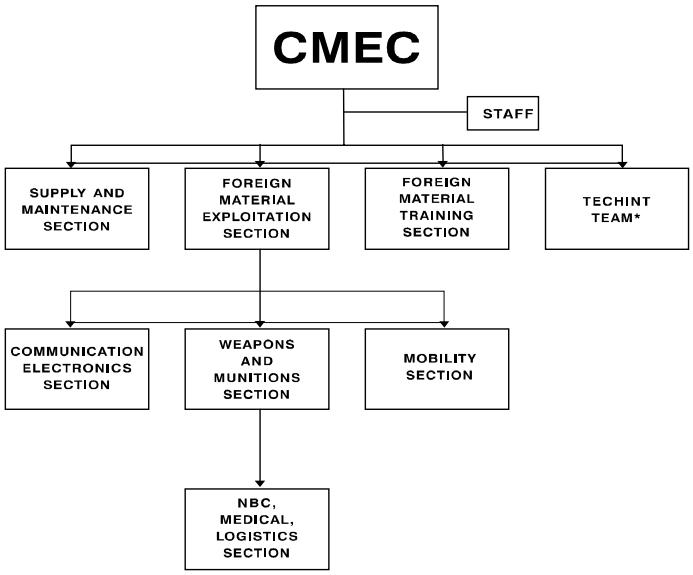
12-26. Intelligence units and activities receive, evaluate, process and disseminate information from response units and staffs. They ensure the TECHINT information is channeled to the appropriate intelligence agency.

12-27. ***Military intelligence units.*** During routine operations, MI units may accidentally discover incidental items of battlefield TECHINT. All MI units are responsible for establishing procedures for handling, screening, and reporting TECHINT-related items. Also, these units coordinate with operations and logistics staffs on intelligence matters. MI unit missions include the following:

- Interrogation.
- Document exploitation.
- Imagery interpretation.
- Electronic warfare.
- Unmanned aerial vehicle operations.

12-28. ***Captured materiel exploitation center.*** The CMEC is formed from the assets of organic and attached TECHINT elements augmented by other SMEs. (See Figure 12-1, page 12-6.) It manages the command battlefield TECHINT system through the MI brigade and the G2. When possible, other armed services should combine assets for the acquisition and exploitation of CEM, to include CEA. When this occurs, the CMEC becomes the JCMEC.

12-29. ***Joint captured materiel exploitation center.*** The JCMEC consists of TECHINT personnel from each participating service. As in the CMEC, the JCMEC commander is the TECHINT advisor to the J2.



*One or more TECHINT teams are deployed for each corps-equivalent command assigned within the theater command. The teams are staffed by one each TECHINT specialty found within the CMEC or task-organized to fit specific local situations. Based on need and assets available, other teams can be organized and deployed.

Figure 12-1. CMEC Organization

Other Units/Activities

12-30. Many other units may be involved in TECHINT operations involving CEA. The depth of involvement depends on the specific CEA found. These units may include the following:

- Combat arms.
- Special operations.
- Military police.
- Chemical.
- Medical.
- Engineer.
- Civil affairs.
- CSS units.

UNIT RESPONSIBILITIES

12-31. Each unit involved with CEA has specific responsibilities related to recovery, evacuation, safety, transportation, storage, and management. These units and their responsibilities are discussed below.

TRANSPORTATION UNITS

12-32. The transportation of CEA is typically part of logistical support requirements. Because it is critical that CEA be transported safely, it is being given special emphasis here.

12-33. The theater commander through the CMEC directs final disposition of CEA. Before moving CEA, an EOD or TEU team must certify that it is safe to handle and transport. An ammunition inspector should be consulted about safe loading, tie-down, and transportation procedures. The capturing unit should coordinate this support early in the planning process. Both the CMCC and CMMC must be involved in planning any movement of CEA.

12-34. The shipping activity must properly load and tie down all munitions, including CEA. The shipper must provide guidance to drivers on all aspects of safety and instruct them on proper firefighting procedures.

12-35. Accountability procedures for CEA are identical to procedures used for US munitions. Motor vehicle drivers sign for the shipment on a DD Form 1384 and are responsible only for the total number of pallets or boxes on their vehicles. Drivers do not sign the shipping documents, which are in the shipping envelope attached to the munitions pallets or boxes.

COLLECTION POINTS

12-36. The collection point commander or NCOIC is responsible for the receipt, storage, issue, shipment, and accountability of the CEA. Once the CEA is received at an ASA, an ammunition inspector inspects the CEA and determines its serviceability.

12-37. CEA is always stored separately from US stocks. It is stored and accounted for in the same manner as like US munitions. All Army activities holding CEA are required to account for the materiel IAW the basic accounting principles of ARs 710-2 and 735-5 and DA Pams 710-2-1 and 710-2-2. Serviceable CEA must be separated from unserviceable CEA within the CEA storage location. Based on the commander's assessment of the threat and risks involved, CEA will be stored at the ASA under one of the following systems:

- ***Peacetime.*** Storage by NEW and SCG.
- ***SASO and Wartime.*** Storage by gross tons and SCG (when approved by MACOM commander.

12-38. The site commander or NCOIC reports and requests disposition instructions through logistic channels as directed by the servicing MMC. If the CEA is retrograded, the procedure is the same as for like US munitions.

OTHER SUPPORT UNITS

12-39. Ordnance, aviation, medical, transportation, and quartermaster units may be called upon to perform the following tasks:

- Recover and retrograde CEA.
- Establish collection points.
- Operate collection points.

- Maintain storage location records.
- Submit reports on CEA in logistic channels.

CAPTURE AND REPORTING PROCEDURES

12-40. When a soldier or unit finds munitions, the finding must be reported immediately through command channels to the battalion S2. The report will follow the SALUTE report format (see Figure 12-2). FM 21-16, *Unexploded Ordnance (UXO) Procedures*, may be used to make a tentative identification of the munitions (i.e., projectile, grenade, or bomb). The report may be submitted orally or in writing by any means available. The soldier or unit then safeguards the found munitions or continues the mission as directed.

DANGER

All munitions found on the battlefield must be considered booby-trapped and extremely hazardous. Report all munitions as UXO regardless of country of origin.

12-41. Intermediate echelons of command forward the SALUTE report to the supporting battlefield TECHINT element. The TECHINT element sends disposition instructions back to the capturing unit. Usually, the instructions direct the unit to continue safeguarding the CEA until an EOD team or a TECHINT element arrives. Once on site, the EOD team, TECHINT element, or higher element determines if the items found have intelligence value. The higher headquarters may direct the capturing unit to initiate evacuation or simply abandon the CEA. When abandoning CEA, the responsible unit must mark the site. CEE tags, placed on stakes near the item, will be used to describe the CEA (see Figure 12-3, page 12-10). There are no special tags for CEA. *Do not attach tags directly to hazardous munitions.*

12-42. Proper marking of the site makes it easy to find the CEA once the capturing unit leaves. Also, it alerts others crossing the area that CEA has been found and reported. Marking includes any of the following methods:

- Use engineer tape or other materials and post signs to mark the area.
- Build a small berm around the stack or CEA area.
- Surround the area with CEE-tagged stakes.

TECHINT REPORTING PROCEDURES

12-43. EOD, TEU, and TECHINT teams are qualified to identify captured munitions. An EOD response team may be dispatched to a site to investigate and render safe the munitions. If an EOD team cannot be sent immediately, the CEA will be marked and left for later evaluation. TEUs have EOD resources available and may be able to render safe the CEA.

12-44. TECHINT teams are sent to CEA sites to complete technical intelligence reporting. If a TECHINT team is not available, an EOD team may be asked to identify and evaluate the CEA and activate the TECHINT reporting process. EOD may be directed to segregate and/or dispose of the CEA if it is hazardous or armed. If the CEA has chemical fillers, a TEU may be requested to evaluate, process, and evacuate the CEA.

EXAMPLE

SALUTE REPORT

TO: G2, V CORPS DTG: 230900Z AUG 98

FROM: 1-96 FA, 23 AD REPORT NO: 07-035

1. SIZE: N/A

2. ACTIVITY: Captured Ammunition

3. LOCATION: West bank of Fulda River, south of Bebra, six-digit grid NB 553476

4. UNIT: 1-96 FA, 23 AD (capturing unit)

5. TIME: Ammunition captured at 230230Z Aug 98

6. EQUIPMENT: N/A

7. REMARKS/OTHER INFORMATION: Response to priority intelligence requirement (IPR) 23-0016-93. Ammo site secured, awaiting disposition instructions.

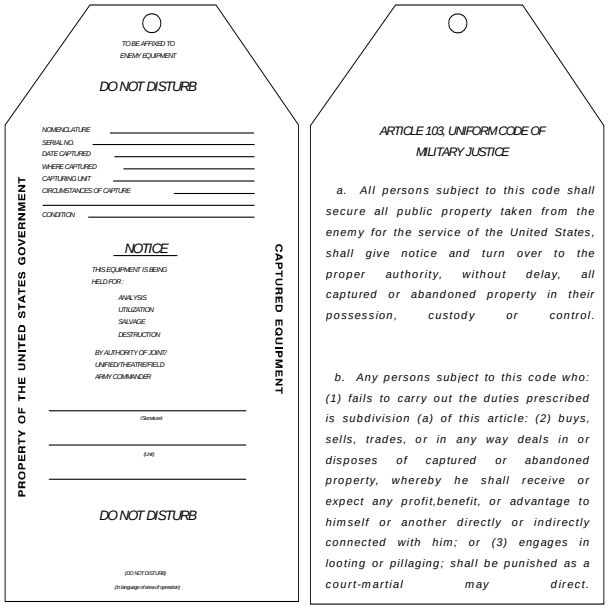
Figure 12-2. Sample Format for SALUTE Spot Report

12-45. If the item is identified as a first-seen CEA, the TECHINT team, EOD team, or TEU forwards a PRETECHREP through command channels to the CMEC (see Figure 12-4, page 12-11). The PRETECHREP gives a general description of the CEA and alerts tactical units to technical information of immediate tactical importance.

12-46. Based on the PRETECHREP, EOD teams may be asked to prepare the Type B COMTECHREP (see Figure 12-5, pages 12-11 and 12-12), which is specifically for EOD. It includes the CEA itself or summaries, diagrams, photos, and samples. Type A COMTECHREP is for USAF TECHINT items. The Type C COMTECHREP is for items not reported on the Type A or B report. If the CMEC directs destruction of the CEA, the EOD team completes the disposal. Once the CEA is destroyed or moved to a collection point, the capturing unit is no longer responsible for the munitions. For more information, see FM 34-54.

PROCEDURES FOR MOVING CEA

12-47. CEA can be evacuated to the nearest collection point once the TECHINT element determines it has no intelligence value. Corps or division establishes CEA collection sites, usually at primary Class V ASAs. These collection points may be at any one of the ASAs or ATPs.


TO BE AFFIXED TO
ENEMY EQUIPMENT

DO NOT DISTURB

NOMENCLATURE
SERIAL NO.
DATE CAPTURED
WHERE CAPTURED
CAPTURING UNIT
CIRCUMSTANCES OF CAPTURE
CONDITION

NOTICE

THIS EQUIPMENT IS BEING
HELD FOR:
ANALYSIS
UTILIZATION
SALVAGE
DESTRUCTION

BY AUTHORITY OF JOINT/
UNIFIED/THEATRE/FIELD
ARMY COMMANDER

(Signature)

(Unit)

DO NOT DISTURB

(DO NOT DISTURB)
(In language of area of operation)

PROPERTY OF THE UNITED STATES GOVERNMENT

CAPTURED EQUIPMENT

ARTICLE 103, UNIFORM CODE OF
MILITARY JUSTICE

a. All persons subject to this code shall secure all public property taken from the enemy for the service of the United States, shall give notice and turn over to the proper authority, without delay, all captured or abandoned property in their possession, custody or control.

b. Any persons subject to this code who: (1) fails to carry out the duties prescribed is subdivision (a) of this article: (2) buys, sells, trades, or in any way deals in or disposes of captured or abandoned property, whereby he shall receive or expect any profit,benefit, or advantage to himself or another directly or indirectly connected with him; or (3) engages in looting or pillaging; shall be punished as a court-martial may direct.

Figure 12-3. Sample CEE Tag

WARNING

All CEA must be certified safe by EOD and/or QASAS prior to any movement.

12-48. Capturing unit transportation assets may be used to evacuate CEA to the nearest collection point. The mission of the capturing unit must be considered when deciding whether the unit will evacuate the CEA. Transportation units may transport CEA from the site of discovery to the collection point or to the rear.

12-49. The capturing unit's higher headquarters, along with the DISCOM and COSCOM, coordinates required transportation. The local MCT notifies the collection point commander of an inbound shipment. EOD, QASAS, or other munitions personnel provides guidance on safe handling and evacuation of CEA. Trained munitions personnel supervise handling and shipment of CEA. CEA is transported in the same manner as similar types of US munitions.

12-50. In certain situations, if a threat exists, the CEA may be evacuated before evaluations or reports are completed. The theater commander determines disposition of CEA through the TECHINT element and the CMEC. See Figure 12-6, page 12-13, for a diagram of CEA movement in a mature theater.

12-51. In an immature theater, movement to a collection point may be left out to return CEA to the rear. The intelligence element or EOD team notifies the local commander of the CEA. The movement is coordinated within the division or corps by the DISCOM or COSCOM. A TEU team should escort chemical or biological material to the nearest collection point or rear.

EXAMPLE

(Classification)

PRETECHREP

A. Type of equipment and quantity.

B. Date and time of capture.

C. Location (map reference).

D. Capturing unit and circumstances of capture.

E. Enemy formation from which captured and origin.

F. Brief description with serial numbers and, if possible, manufacturer.

G. Technical characteristics with an immediate value, including information or any photographs available.

H. Time and origin of message.

I. Present location of CEE.

(Classification)

Figure 12-4. PRETECHREP Format

EXAMPLE

Confidential when filled in)

COMTECHREP–TYPE B (EOD Report)

Section I. (U) DESCRIPTIVE INFORMATION

1. (U) IDENTIFICATION. See Figure for physical appearance and dimensions. NOTE: This will be an external view (when possible) and not show internal components.

a. (U) Designation. Ordnance designation (if known) with transliteration of foreign alphabet. Example: M45

b. (U) Type. Used to summarize the key functional aspects of the items. Example: This is a High Explosive Rocket Assist (HERA) projectile.

c. (U) Painting and Markings. Record all paintings, surface treatments, and markings.

d. (U) Features. Point out unique or distinguishing external features of the item that are not obvious in the drawings.

2. (U) DESCRIPTION.

a. (U) Material. Include information pertaining to the major external components; for example, "plastic," "aluminum."

b. (U) Weight. Give the approximate weight if known.

Figure 12-5. Type B COMTECHREP Format

EXAMPLE (Continued)

3. (U) HAZARDOUS COMPONENTS.

ITEM	QTY	LOCATION	EXPLOSIVE	HE WEIGHT

List Hazardous components (if known).

4. (U) FUNCTIONING. Explain the operation of the ordnance, particularly the components of the ordnance involved with initiating the explosive train.

5. (U) APPEARANCE. It must be known for certain that the item is unarmed if the item is to be treated as such.

a. (U) Unarmed Condition. Example: The item is unarmed if not fired.

b. (U) Armed Condition. Example: Consider the item armed if it has been fired.

Section II. (C) EOD PROCEDURES. (EOD USE ONLY)

6. (U) RENDER SAFE PROCEDURE FOR THE UNARMED CONDITION.

a. (C) PROPOSED: (Develop and record prior to completing RSP).

b. (U) Proceed to disposal.

7. (U) RENDER SAFE PROCEDURE FOR THE ARMED CONDITION WARNINGS.

a. (C) PROPOSED: (Develop and record prior to completing RSP).

b. (U) Proceed to Disposal.
Continued:

8. (U) DISPOSAL PROCEDURE.

a. (U) Unarmed. Transport hazardous components to safe disposal area and dispose of by detonation.

b. (C) Armed.

(1) (Include quantity of explosives used to dispose of item).

(2) Detonate remotely.

(Confidential when filled in)

Figure 12-5. Type B COMTECHREP Format (Continued)

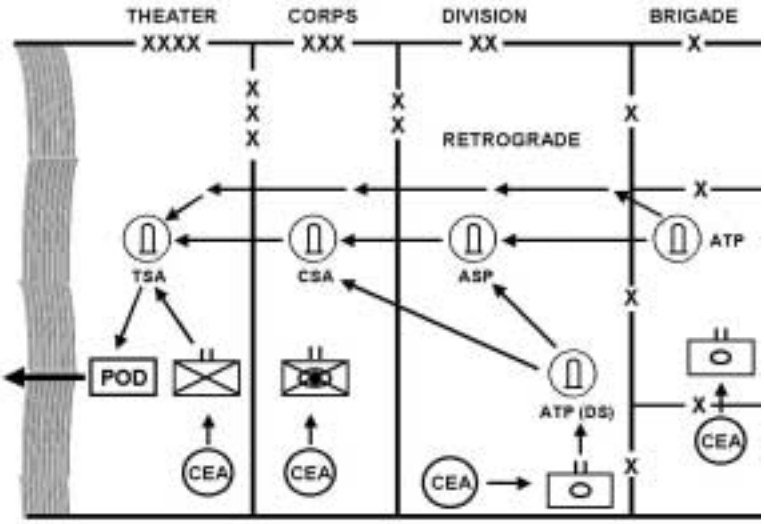


Figure 12-6. CEA Movement in a Mature Theater

CMEC PROCESSING OF CEA

12-52. The CMEC is the first real processor of CEA. When it receives CEA, the CMEC determines its level of TECHINT value. If the item is on the TECHINT requirement list, or it is of TECHINT interest, the CMEC concentrates on exploiting the CEA for immediate tactical or operational use.

12-53. CMEC specialists conduct rapid, initial scientific and technological analyses of CEA in their battlefield laboratory. Any immediate countermeasure, information, or intelligence they develop is quickly distributed to appropriate combat, CS, and CSS units. At the same time, the CMEC quickly evacuates the CEA to CONUS for an in-depth exploitation of the item.

12-54. The CMEC coordinates evacuation of CEA of special TECHINT interest to and from the CMEC. For items that cannot be evacuated, CMEC organizes and deploys a quick reaction team to coordinate the evacuation of the item or to exploit it on site.

MANAGEMENT AND DISPOSAL OF CEA

12-55. CEA must be inventoried and accounted for just like US munitions. If CEA arrives at a collection point unidentified but clearly recognized as a projectile, propelling charge, fuze, and so forth, then a pseudo catalog data record may be designated and entered into SAAS to account for the item. The supporting MMC assigns and standardizes pseudo catalog data records within the theater.

ISSUING CEA

12-56. In unique circumstances, CEA may be issued to using units in the same manner as US munitions. All requests for serviceable CEA are approved and assigned a priority for issue to US units engaged in special

missions or training by higher headquarters. CEA is issued based on the following priorities:

- Intelligence.
- Special warfare.
- Special operations forces.
- Combat units.
- CS and CSS units.
- Substitutes or supplements to US munitions.

DISPOSAL OF SERVICEABLE CEA

12-57. Serviceable CEA is evacuated, collected, and stored wherever directed by higher headquarters. The CMEC, in coordination with the TAMMC or CMMC, usually makes this decision. Emergency or immediate destruction of serviceable CEA takes place under the following conditions:

- If recapture is imminent due to location of the CEA.
- If EOD or TECHINT declares the CEA hazardous to the safety of troops.

If the CEA is to be destroyed, all factory markings should be carefully recorded (and photographs taken, if possible) before destruction.

DISPOSAL OF UNSERVICEABLE CEA

12-58. ASAs routinely destroy unserviceable CEA. However, the following points must be considered before destruction takes place:

- ASAs must first support all demolition requirements of US units with on-hand demolition materials.
- If disposal of US munitions using serviceable demolition material has been authorized by higher headquarters, CEA should be included in that operation.
- Unserviceable CEA will be included only if added demolition materials are not required. Higher headquarters approval is not needed for the addition of unserviceable CEA when sufficient demolition materials are on hand.
- The ASA commander must select an appropriate disposal method for CEA that does not use serviceable demolition materials.

SUMMARY

12-59. Certain types of CEA have high potential for intelligence value. Capturing and support units should understand the importance of adhering to handling, reporting, and transportation requirements. Safety is implicit in the responsibilities of any type unit involved with CEA. Munitions units in particular must exercise caution and follow good management practices in storing, moving, and disposing of CEA. Loss of personnel due to detonation of munitions caused by improper handling, processing, and transportation reduces the significance of any intelligence value.

Appendix A

Ammunition Basic Load

Ammunition basic loads are MACOM designated quantities of Class V supplies that allow units to initiate combat operations. Basic loads are combat-deployable using organic transportation in a single lift. This appendix provides a list of references and general guidelines relevant to all Army units for determining personnel/command responsibilities, implementing requisition and storage procedures, and conducting inventory and quality assurance programs.

RESPONSIBILITIES

A-1. Responsibilities of key personnel/commands for ABL management are as follows:

- *Commanders* at all levels coordinate distribution of ABL data, review ABL computations, approve ABL authorizations, ensure ABL is on hand or on requisition, maintain the unit's ABL file, conduct annual internal reviews of the ABL file, and coordinate with supporting ammunition inspectors to ensure stockpile serviceability.
- *Ammunition Supply Points or Depots* manage stockpiles and coordinate with the supporting MMC 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 ABL in the possession of the owning unit at least annually. QASAS also notify owning units of any ammunition information notices that may affect their on-hand ABL.
- *Supporting MMCs* coordinate with supported units and the ASPs/depots to ensure adequate serviceable munitions stocks are on hand. This is accomplished by ensuring that ABL shortages are placed on requisition and providing disposition instructions for ammunition excess to ABL requirements. The installation commander/ammunition office may be required to accomplish the MMC related management.
- *The NGB Chief* prepares ABL data for ARNG units designated to mobilize. Also, he forwards the data to ARNG state headquarters for distribution to units.
- *ARNG state headquarters* distribute automated and manually prepared ABL data to ARNG units for review and update. The headquarters reviews and approves ARNG changes to ABL authorization lists, forwards approved lists and requests for issue to mobilization stations, conducts annual reviews of unit ABL files, and provides status to the chief of the NGB.

BASIC LOAD AMMUNITION

A-2. Basic load ammunition encompasses conventional ammunition and missiles that a unit must have on hand or on request at all times. Basic 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.
- *Ammunition combat loads*. HQDA designated quantities carried by each deployable weapon system to initiate combat as determined by TRADOC materiel developers.

PROCEDURES AND ACCOUNTABILITY

A-3. AR 710-2 and MACOM policies authorize basic load ammunition. Drawn basic load ammunition is maintained on property books IAW hand receipt procedures described in DA Pam 710-2; records of responsibility are required. MACOMs designate which units are required and able to stock ABL and which will have on hand a properly authenticated request for issue. Guidelines for determining ammunition responsibility and accountability are as follows:

- When a unit is approved to physically draw and store their ABL, they will prepare a properly authenticated DA Form 581 and submit it to the supporting ASP/depot. MACOMs establish procedures for submitting and obtaining required approval on the DA Form 581.
- All other units not designated to draw and store their ABL will submit a properly authenticated DA Form 581 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. MACOMs establish specific procedures for the units to follow.

A-4. Various methods apply to ABL accountability. How ABL is stored determines which of the following methods will be used:

- The storage location retains accountability for the ammunition when the basic load is not issued to the unit and is stored at the supporting ASP or depot. The ASP/depot assigns the ammunition to the MACOM designated account code and accounts for it using the approved ammunition STAMIS (usually SAAS-ASP). The unit should record on the property book page the document number from the DA Form 581 request. ABL managed in this manner need not be segregated from other on-hand stocks at the ASP/depot.
- The unit maintains accountability when the ASP/depot issues the basic load to the unit, posts it as a loss to the ammunition STAMIS, and the unit provides its own 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.

- The unit maintains accountability when the ASP/depot issues the basic load to the unit, posts it as a loss to the ammunition STAMIS, but provides a locked storage location for access because the unit lacks secure storage facilities. Responsibility is assigned to the individual having custody of the keys to the area using hand receipt procedures described in DA Pam 710-2-1.
- The unit maintains accountability when the ASP/depot issues the basic load to the unit, posts the issue as a loss to the ammunition STAMIS, and provides secure storage for the ammunition but does not limit access to the owning unit. Responsibility for the ammunition is assigned to the ASP/depot accountable officer using hand receipt procedures in DA Pam 710-2-1.

INVENTORY

A-5. Basic load ammunition will be inventoried IAW AR 710-2. MACOMs 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 ABL is issued to the owning unit and is stored in a secure location (IAW AR 190-11).
- Be accomplished daily when ABL is in the possession of the owning unit and not stored in a secure location (IAW AR 190-11).
- Be accomplished semiannually (CIIC 1, 5, and 6) and annually (other than CIIC 1, 5, and 6) when stored and accounted for by the ASP/depot.

QUALITY ASSURANCE

A-6. Only Condition Code A ammunition (serviceable, issuable without qualification) will be used to fill basic load requirements. 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 of suspensions or restrictions. If on-hand ammunition is determined to be unsuitable for continued use as basic load, the unit will coordinate with the supporting ASP/depot for turn-in and replenishment.

REFERENCES

A-7. The following references apply to this appendix:

- AR 190-11, *Physical Security of Arms, Ammunition, and Explosives.*
- AR 220-10, *Preparation for Overseas Movement of Units.*
- AR 710-2, *Supply Policy Below Wholesale Level.*
- DA Pam 710-2-1, *Using Unit Supply System.*
- DA Pam 710-2-2, *Supply Support Activity Supply System.*
- SB 38-26, *Ammunition Supply Rates (Classified).*

Appendix B

Guidance for Commanders

This appendix contains information for review by munitions company commanders and modular platoon leaders to assist in analysis and evaluation of unit operational readiness for combat or SASO. Checklists should be developed to generate SOP-level of detail. Also, theater and corps level OPORDs and OPLANs should be consulted.

DOCTRINAL CONSIDERATIONS

B-1. Army doctrine requires that munitions units be capable of successfully executing their mission without lengthy adjustments or train-up periods. An effective training program that emphasizes collective and individual training and builds leadership skills is critical to successful execution. Training management is the primary responsibility of the unit commander. METL development and training must focus on the unit's wartime mission.

LOGISTICS CHARACTERISTICS

B-2. Review the five logistics characteristics necessary for munitions support for combined arms operations:

- *Anticipation* of future events and needs of combat commanders.
- *Integration* of logistical support into tactical and operational plans of combat commanders.
- *Continuity* of munitions support for depth, momentum, and initiative.
- *Responsiveness* to changing needs of combat commanders.
- *Improvisation* to allow reaction to unexpected and unanticipated events.

TACTICAL SUSTAINMENT

B-3. Review the four support considerations to be used for tactical CSS sustainment:

- Support combat commander's intent.
- Support as far forward as possible.
- Maintain TAV to support combat forces.
- Rely upon the Army's system of effective leadership to adapt to needs of the battlefield.

B-4. Review the factors to be considered for tactical sustainment:

- Determine combat commander's priorities for support.
- Identify consumption factors for the type of operation being planned.
- Determine status of stockage levels and critical shortages.
- Determine threat to supply operations in the rear and forward.
- Determine tactical contingencies that may have to be supported.

- Identify locations of supporting and supported units.
- Identify locations of MSRs.
- Identify locations of higher headquarters and supporting MMC.
- Review plans for transportation and aviation resupply support.
- Review applicable Class V plans and annexes.
- Determine requirements for retrograde support.

OPERATIONAL SUSTAINMENT

B-5. Review the factors to be considered for maintaining supply operations:

- Establish effective physical security SOPs and plans.
- Determine method of munitions supply.
- Evaluate operational effectiveness of SAAS-MOD.
- Evaluate site location and layout.
- Establish liaison and communication with supporting and supported units, higher headquarters, MMCs, and transportation units.
- Plan for support of tactical movement of unit personnel, equipment, and stocks.
- Identify plans for technical assistance support of combat units.
- Determine requirements for added collective and individual training.

RECEIPT, ISSUE, AND STORAGE

B-6. Review the factors to be considered with receipt, issue, and storage operations:

- Determine availability and adequacy of MHE and personnel (military and civilian) to conduct effective supply point operations.
- Determine compliance with Q-D, explosive safety standards, and licensing requirements.
- Ensure that munitions are being stored safely IAW with DA Pam 385-64.
- Establish SOPs for receipt, issue, and storage operations.
- Establish SOPs for firefighting, physical security, routine and emergency destruction, and NBC and UXO procedures.
- Evaluate munitions management and stock control procedures.
- Ensure that inventory and accountability procedures are maintained with 100 percent accuracy.
- Ensure that munitions reporting requirements are met.
- Determine requirements for added collective and individual training.

MAINTENANCE OPERATIONS

B-7. Review the factors to be considered for maintenance operations:

- Evaluate unit maintenance resources, procedures and priorities.
- Forecast the impact of personnel and equipment shortfalls on unit capabilities.

- Identify plans for maintenance support.
- Identify and establish liaison with supporting maintenance units/activities.
- Identify plans for evacuation of battle-damaged equipment.
- Establish maintenance operations SOP and evaluate availability of supplies and equipment.
- Determine requirements for added collective and individual training.

REDEPLOYMENT OPERATIONS

B-8. Review factors to be considered for redeployment:

- Develop redeployment plans and procedures.
- Determine accurate status of personnel and equipment.
- Ensure that retrograde of stocks is conducted safely, and that all safety standards are enforced.
- Determine requirements for EOD support if applicable.
- Identify plans for transportation, maintenance, personnel, medical, financial, religious, POL, PLL, supply, and other life support.
- Ensure that physical security plans and procedures are followed.
- Coordinate redeployment plans with supporting and supported units to ensure understanding.
- Coordinate changes in redeployment plans with key NCOs to prevent false rumors from damaging unit morale.
- Ensure a safe, secure, and efficient redeployment.

Appendix C

Forecasting and Managing Training Ammunition

Units are authorized by AR 5-13 to use conventional ammunition during readiness training for combat. The Army training goal is a combat ready force prepared to mobilize and deploy on short notice and to fight and defeat the enemy. This appendix provides general guidance on forecasting and managing training ammunition. Specific references to appropriate DA pamphlets are included for calculating and forecasting ammunition requirements.

TRAINING STANDARDS AND STRATEGIES

C-1. The Standards in Training Commission was established in 1982. Its mission is to determine quantities and types of munitions required for soldiers, crews, and units to attain and sustain weapons proficiency relative to readiness levels. Weapons committees (i.e., Air Defense, Armor, Aviation, Engineer, Field Artillery and Infantry) develop weapons training standards and strategies, and the STRAC Steering Committee reviews and approves them. DA Pam 350-38 identifies weapons and weapon systems for which training programs have been written and approved. Commanders must examine each strategy as it applies to the unit's MTOE, METL, training level, time available, and unique training needs. Also, commanders must consider the unit's overall training program and objectives as specified by the applicable SM, CTT, and ARTEP, as well as the availability of simulators and devices.

C-2. Training strategies and ammunition requirements are not prescriptive. Commanders must determine and design strategies that allow their units to attain standards. The STRAC strategies are models for training and resourcing and represent *one way* to attain and sustain standards. Because they are generic and notional, they do not generate specific requirements. Commanders can select from a generic menu of training events that allows them to train towards a specific assigned mission or training goal. This flexibility is intended to accommodate unit requirements.

C-3. Training strategy tables reflect generic requirements. They do not automatically translate into resource authorizations or allocations of rounds on the ground to be fired. Factors affecting annual authorizations for training ammunition include:

- STRAC strategies.
- Budgetary constraints.
- Unit priority.
- Historical expenditures.
- War reserves.

C-4. DA Pams 350-38 and 350-39 contain requirement computation data for training ammunition. Figures are based on the number of weapons systems assigned, readiness levels, and quantities of ammunition needed to sustain

soldier and crew proficiency. They apply to the weapon and weapon systems used throughout the force for both the Active and Reserve Components. These pamphlets provide commanders and other unit trainers with a common set of standards for weapon and weapon system qualification. Also, they offer suggested weapons training strategies, a model for resource requirements, and measurable standards for evaluating overall training readiness.

FORECASTING

C-5. Forecasting ammunition requirements is a peacetime procedure. It is based on data in the pamphlets cited above and on projected training events such as individual weapons qualification, FTXs, and crew weapons qualification. Factors that impact requirements-determination forecasting include the following:

- Historical and actual ammunition consumption data from previous training exercises.
- Training objectives.
- Equipment/weapon system availability.
- Range time.

C-6. Training ammunition requirements are determined using DA Form 5514-R. This document summarizes the total quantity of each DODIC needed to support training during the coming 12 months. As prescribed by AR 5-13, MACOMs modify and provide requirements to HQDA before the beginning of each fiscal year. HQDA gives MACOMs the authorization for training ammunition based on stock availability, funding, ammunition production, transportation, and other considerations. Units prepare and use this forecast to maintain an up-to-date calculation of ammunition needs. MACOMs use it to determine requisition needs. This forecast also feeds the WARS.

C-7. To get ammunition for training, units must prepare training ammunition forecasts IAW DA Pam 710-2-1 and submit them as directed by the MACOMs. Time frames for submitting forecasts also are prescribed by the MACOMs. Generally, the procedure is as follows:

- Determine planned training requirements for each of the next 12 months.
- Determine the DODIC and quantity needed for each training requirement. Refer to the computation data in DA Pams 350-38 and 350-39.
- Do not exceed a quantity when that quantity remains on the authorized allocation for the current fiscal year.
- Coordinate with the S3/S4, G4, or DOL to ensure that quantities forecast are not excessive and that the correct historical data were used when computing requirements for months in the next fiscal year.
- Use DA Form 5514-R to record the total for each DODIC required for each month in which the unit will draw training ammunition from an ASA.
- Submit the completed forecast to the next higher headquarters.

Each level in the chain of command uses DA Form 5514-R to consolidate and forward the forecasts to the next higher headquarters IAW means prescribed by the MACOM.

MANAGING

C-8. Units that request and receive ammunition from an ASA must maintain training ammunition management and control documents. Use the documents listed below to manage training ammunition and missile authorizations, to control issue of ammunition and missiles, and to ensure that unexpended ammunition and ammunition residue are controlled until returned to the ASA:

- DA Form 5203.
- DA Form 5204.
- DA Form 581 or automated equivalent.
- DA Form 581-1.
- DA Form 3151-R.
- DA Forms 5515 and 5515-1.
- DA Form 2064.

The TAMIS Authorization Report is used to maintain a running balance of the annual training authorization by deducting, from the initial authorization, issues from the ASA. The G-3 or installation DOL usually manages this computer-based report.

PHYSICAL SECURITY AND AMNESTY PROGRAMS

C-9. Upon departure from the ASA, the receiving unit must provide physical security for ammunition IAW AR 190-11 and DA Pam 710-2-1. At the discretion of their MACOMs, AC and ARNG units located OCONUS are authorized home storage of training ammunition. The same storage and inventory procedures that apply to basic load ammunition apply to training ammunition. Also, AR 190-11 outlines construction requirements for ammunition storage rooms and magazines, and DA Pam 710-2-1 provides guidance on field storage and use of residue items for training.

C-10. Installation commanders will establish and implement an amnesty program that does not intimidate the individual or prevent the individual from freely turning in ammunition. The intent of amnesty programs is to ensure maximum recovery, not to circumvent normal turn-in procedures. Commanders will monitor amnesty programs as indicators of effectiveness of ammunition accountability and ensure that they are not used to circumvent accountability. See DA Pam 710-2-1 for more guidance on establishing an amnesty program.

Appendix D

Brass Conversion

The data and procedures contained in this appendix are used to compute the weight and/or quantity of expended cartridge cases. See Figure D-1 below.

Case Type	Weight (pounds)
.22 caliber, brass, short	.0008
.22 caliber, brass, long	.0014
.30 caliber, brass, carbine	.0101
.30 caliber, steel, carbine	.0081
.30 caliber, brass, all others	.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

Figure D-1. Brass Conversion Chart

TO FIND WEIGHT

D-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

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

COMPUTATION

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

TO FIND QUANTITY

D-4. Divide the weight of the expended cartridge cases by the weight. Using the example, brass, expended-cartridges weight of .38 caliber, work the formula as follows:

FORMULA

D-5. Total Weight ÷ Weight of the item = Quantity of expended cartridge cases.

COMPUTATION

D-6. 82.0 pounds ÷ .009 pounds = 9,111.1 rounds.
Work to one decimal place and round down: 9,111 rounds.

Appendix E

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, and P.

ACC A–SERVICEABLE (ISSUABLE WITHOUT QUALIFICATION)

E-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.

E-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)

E-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.

E-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)

E-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)

E-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)

E-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)

E-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)

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

ACC H–UNSERVICEABLE (CONDEMNED)

E-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)

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

E-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)

E-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)

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

ACC M–SUSPENDED (IN WORK)

E-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)

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

ACC P–UNSERVICEABLE (RECLAMATION)

E-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.

Appendix F

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

F-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

F-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 F-1 breaks down a typical ammunition lot number showing both the new and old systems.

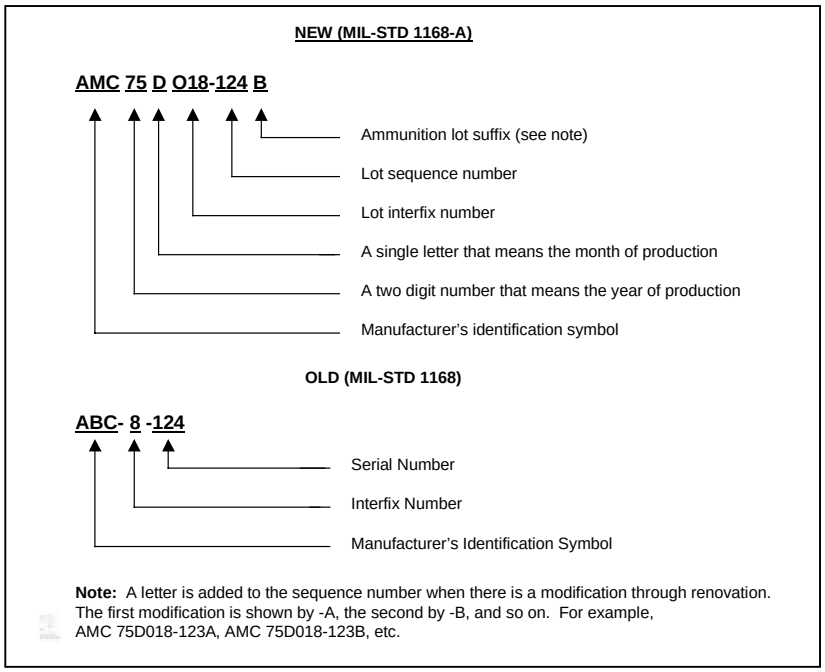


Figure F-1. Typical Lot Number System

CONVENTIONAL AMMUNITION FEDERAL SUPPLY CLASSES

F-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 F-1 lists the FSCs.

Table F-1. FSC Group 13 Classes

FSC Group 13 (classes)	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
1365	Military chemical agents
1370	Pyrotechnics
1375	Demolition materials
1376	Bulk explosives
1377	Cartridge and propellant actuated devices and components
1390	Fuzes 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

F-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-number item identification. See Figure F-2 below.

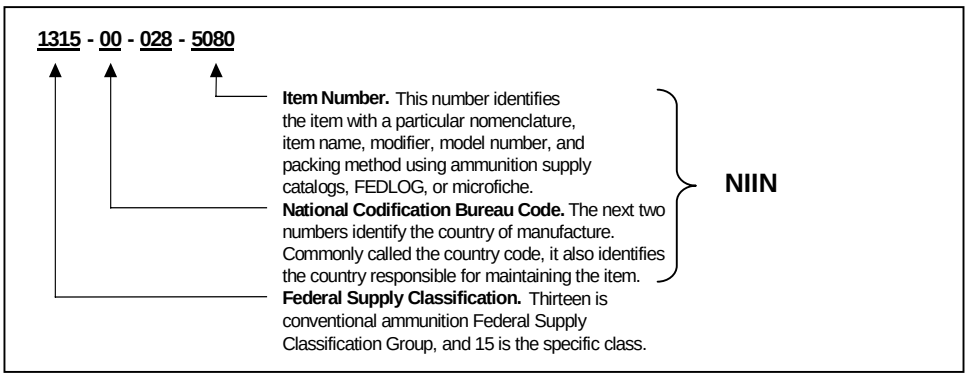


Figure F-2. Example of an NSN

DEPARTMENT OF DEFENSE IDENTIFICATION CODE

F-5. A DODIC is a single letter and three numbers or, in the case of small guided missiles, two letters and two numbers. 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 F-3 for a conventional NSN with DODIC added, demonstrating interchangeability between various model numbers and the designators of an ammunition item.

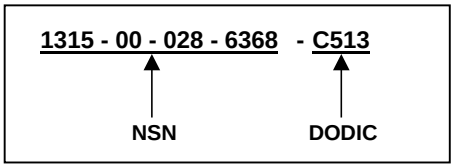


Figure F-3. Sample DODIC

DEPARTMENT OF DEFENSE AMMUNITION CODE

F-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 F-4.

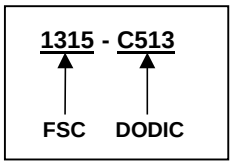


Figure F-4. Example of a DODAC

COLOR CODING

F-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 709C (see Tables F-2 and F-3). Figure F-5 shows typical markings for an artillery round of ammunition.

F-8. Small arms ammunition is not color-coded under MIL-STD 709C. Either the small arms projectiles or the bullet tips are painted a distinctive color so they can be identified quickly. Figures F-6 through F-8, pages F-7 through F-9, show 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.

- **Camouflage.** Ammunition containing toxic chemical, incapacitating, or riot control chemical agents must never be camouflaged by painting.
- **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-B and MIL-STD 709-A. If this is the case, see the appropriate MIL-STD or TM 9-1300-200.

Table F-2. Ammunition Color Code, MIL-STD 709C

Color[1,2]	Fed Std No 595	Interpretation
Yellow	33538	Identifies HE ammunition or indicates presence of HE.
Brown	30117 or 30140	Identifies low-explosive items of components or indicates low explosive. Normally brown band around the item.
Gray[3,4]	36231	Identifies chemical ammunition containing toxic chemical, incapacitating or riot control agent. Used as basic color.
Dark red	31136	Identifies riot control agent filler.
Dark green[3]	34108	Identifies toxic chemical agent filler. Used for markings and bands.
Violet	17100	Identifies incapacitating agent filler. Used for markings or bands.
Black[3,5]	37038	Identifies armor-defeating ammunition or indicates armor-defeating capability.
Silver/aluminum	17178	Identifies countermeasure ammunition (e.g., radar echo, leaflets).
Light green[3]	34558 or 34449	Identifies screening or marking smoke ammunition.
Light red	31158	Identifies incendiary ammunition or indicates highly flammable material (liquids, jellies, solids) that produce damage by fire.
White[3,5,6]	37875	Identifies illuminating ammunition or ammunition that produces a colored light.
Light Blue	35109	Identifies practice ammunition.
Orange	32246	May be used to identify ammunition used for tracking and recovery in tests or training operations (e.g., underwater mines and torpedoes).
Bronze, gold, brass	17043	Identifies completely inert ammunition for use in activities such as assembly, testing, handling, drills, etc., not to be delivered in a delivery system.

Footnote. The following have no color-coding significance:

1. Colors specifically applied to identify the color of smoke ammunition or pyrotechnics.
2. Unpainted or natural color ammunition.
3. Gray black, green, or white on underwater ammunition.
4. Gray on air-launched missiles.
5. Black or white when used for lettering or special marking.
6. White on guided missiles, dispensers, and rocket launchers.

Table F-3. Application of Color Codes for Particular Ammunition Items, MIL-STD 709C

Ammunition	Colors		
	Body	Markings [1]	Bands
HE, except 20mm	Olive drab	Yellow	Yellow [2,3,4,5]
HE, 20mm	Yellow	Black	None
Explosive binary munitions	Olive drab	Yellow	Broken yellow[6]
HEP	Olive drab	Yellow	Black
HEAT	Black	Yellow	None
Antipersonnel and antitank mines	Olive drab	Yellow	Yellow[3]
Incendiary	Light red	Black	None
HEI	Yellow	Black	Light red
API	Black	White	Light red
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 a toxic chemical binary nerve agent	Gray	Dark Green	One broken dark green[9,10,11]
Illuminating			
Separate loading	Olive drab	White	White
Fixed or semifixed	White	Black	None
Practice			
With low explosive to indicate functioning			Brown
With high explosive to indicate functioning			Yellow
Without 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] Light red[12]
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 incapacitating agent	Gray	Violet	One violet[9]
Filled with a toxic chemical agent other than binary agents	Gray	Dark Green	One dark green[9]
Filled with a toxic chemical binary nerve agent	Gray	Dark Green	One broken dark green [9,10]

Table F-3. Application of Color Codes for Particular Ammunition Items, MIL-STD 709C (Continued)

Footnotes:

1. Color of the letters and figures normally used for the main identification.
2. Circumferential band of yellow diamond-shaped figures on semifixed and separate-loading improved conventional munitions.
3. Circumferential band of yellow triangular-shaped figures on mass scatterable mine and loaded semifixed 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 1/2-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 a binary nerve agent filling shown by a broken dark green band (1/2-inch segments separated by 1/2-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 semifixed 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.

Figure F-5. Typical Artillery Markings

Type	Characteristics
Ball 	None
Ball heavy cartridge, for M16A2 and SAW 	Green
Rifle grenade 	Red rose petal crimp
Tracer 	Orange for M856 cartridge for M16A2 rifle; red for M196 cartridge for M16A1
High-pressure test (HPT) 	Plain tip/silver cartridge case
Dummy 	Copper colored cartridge with fluted case, no primer
Blank 	Rose petal crimped case with groove around cartridge case, no primer composition and no bullet
Dummy, Inert-loaded 	Total cartridge black

Notes:

1. Heavy ball cartridge for the M16A2 rifle is not designed to fire accurately in the M16A1 rifle.
2. Light ball cartridge is authorized only for rifle M16A1.
3. Rifle grenade cartridge may have various colors applied to the rose-petal crimp.
4. HPT cartridge has "HPI" embossed on head.
5. The only clear feature of the blank cartridge is the groove.

Figure F-6. 5.56mm Cartridges

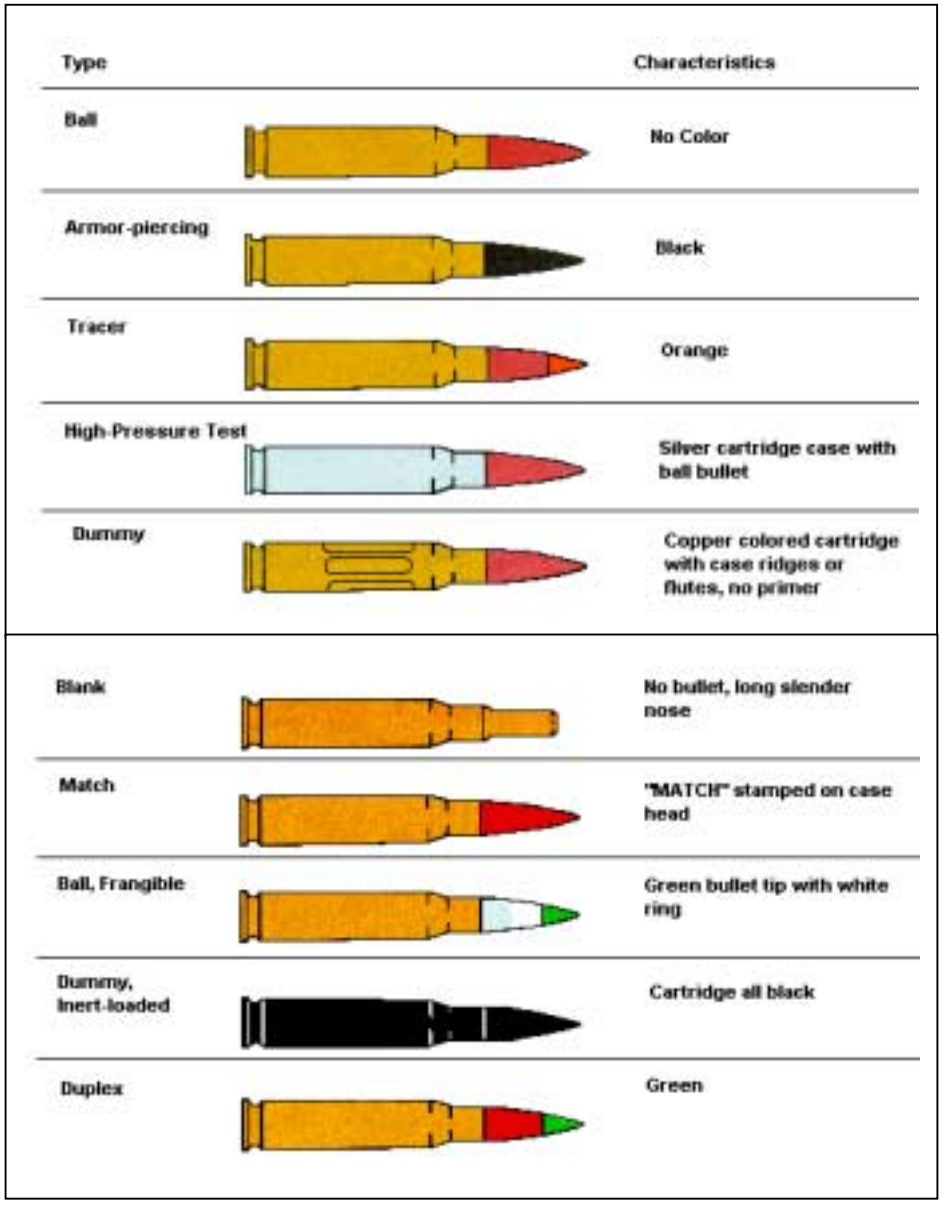


Figure F-7. 7.62mm Cartridges

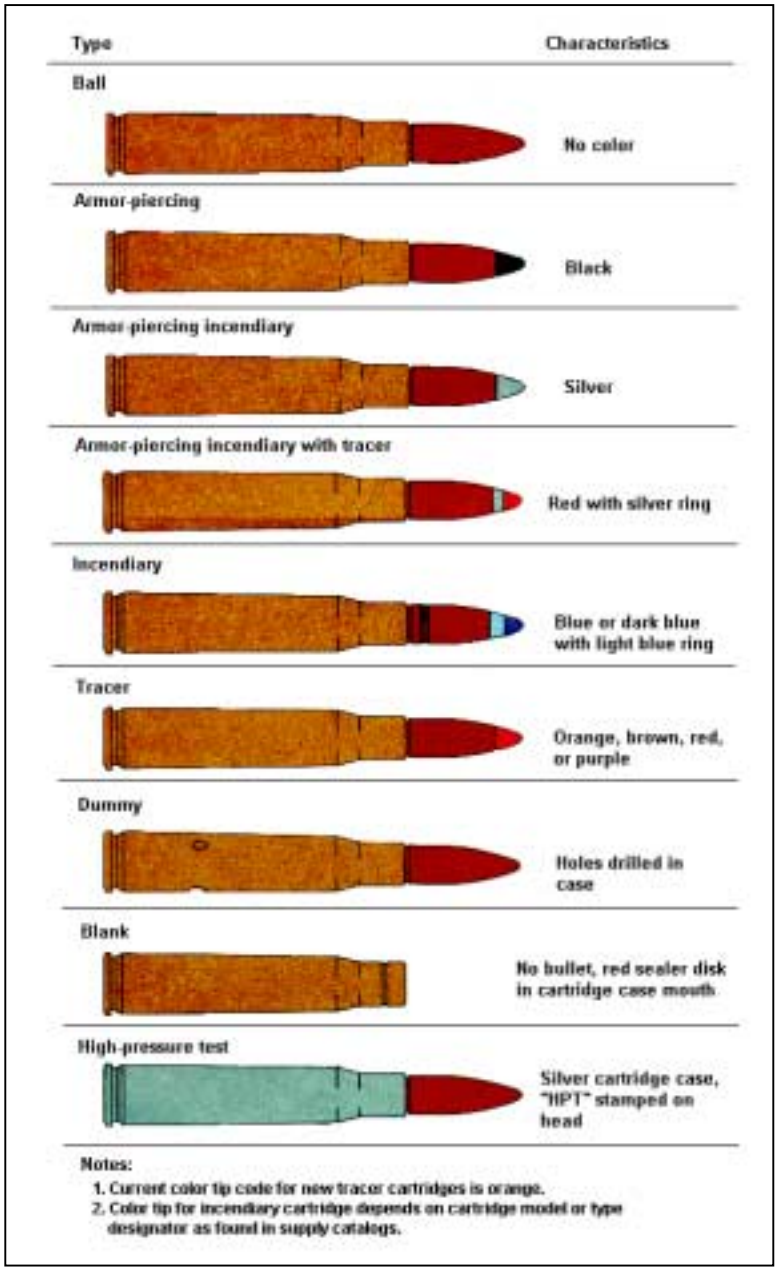


Figure F-8. Caliber .50 Cartridges

Appendix G

Movement Control and Types of Transport

This appendix provides an overview of the responsibilities of movement control organizations. It addresses the importance of these organizations in ensuring that munitions are efficiently moved at the right time and place. Although modular munitions platoons or companies may not always be directly involved in movement control, they depend on an effective transportation system for receipt and shipment of munitions. At times, unit personnel may work directly with movement control teams in coordinating munitions shipments.

OVERVIEW

G-1. In a force projection environment, the employment of military ground forces and combat power decides the outcome of campaigns and operations. The success of these forces often depends on sound, timely deployment and sustainment support. A well defined, integrated transportation system is fundamental to the success of these operations. Movement control is one of the most critical functions of the transportation system. It contributes significantly to the success or failure of any operation. Effective movement control of forces, units, and logistics (particularly munitions) enhances combat effectiveness. Inadequate control results in waste, reduced efficiency, and loss of potential combat power. Movement control incorporates the following actions:

- Planning.
- Validating.
- Allocating.
- Routing.
- Coordinating.
- Force tracking.
- Priority management.
- In-transit visibility.

Also, movement control is the commitment of apportioned transportation assets according to command directives.

THEATER DISTRIBUTION

G-2. Theater distribution involves a fully integrated distribution management system that uses technology, doctrine, and procedures to enhance distribution operations. Effective distribution management coordinates the various sub-elements of the following distribution equation:

- Transportation elements of movement control, mode operations, and terminal and cargo transfer operations.
- Materiel management.

- Supply support.

Movement control is key to developing the distribution plan. Movement programming, highway regulation, and the establishment of movement control interfaces throughout the distribution structure are all critical to the success of the theater distribution plan.

G-3. One of the major tasks of the TSC is development of the theater distribution plan to support the theater commander's intent and concept of operation. This plan fuses transportation and materiel into one system, incorporating RSO&I and sustainment operations. The distribution system is a complex of networks, facilities, procedures, arrangements, and units. The unit's responsibility is to receive, store, maintain, issue, and move materiel, personnel, and equipment.

G-4. The distribution system functions along LOCs that take into account transportation assets and geography of the theater and area of operations. Throughput is a function of the transfer capacity of key nodes along the LOC. Nodes are locations where a materiel or unit movement requirement is originated, processed for onward movement, and transferred to another transport node or terminated. Nodes and LOC security are essential to an effective distribution plan. Nodes for materiel and munitions movements include the SPOD, APOD, TSA, CSA, ASP, and ATP.

MOVEMENT CONTROL INTERFACE

G-5. An effective distribution system requires continuous coordination between materiel and movement control personnel and organizations at every level of command. During the movement program planning process, planners allocate available transportation resources to support requirements based on the commander's priorities. Logisticians at each level are responsible for implementing these priorities. The functions of the movement program are as follows:

- Establishes which requirements can be resourced given available transportation assets, units, and infrastructure.
- Serves as the authority for committing transportation assets.
- Authorizes MCTs to issue TMRs.
- Directs mode operators to furnish assets.
- Alerts receiving units to accept programmed shipments so they can unload transportation assets promptly.

G-6. Planners must be flexible because requirements often change to accommodate changes in priority, unit locations, asset availability, and conditions of the LOCs. Planners coordinate with the TSC and COSCOM regarding the positioning of transportation units and supply activities. Also, they coordinate with shippers and receivers to determine their capability to receive, handle, and load by various transportation nodes. This capability is based on the availability of MHE, CHE, ramps, labor, storage capacity, and other factors that effect transportation services.

MOVEMENT CONTROL ORGANIZATIONS

G-7. The organizations discussed in this section are representative of those involved in the movement of munitions. All units in the munitions support structure must have an understanding of the movement process in the theater of operations and of the responsibilities of these organizations.

MOVEMENT CONTROL AGENCY

G-8. The MCA provides movement management services for all common user transportation nodes, including allied/HN assets when they are committed to support the theater logistics or transportation plan. The MCA performs the following functions:

- Monitors daily transportation movement requirements and capabilities.
- Implements the task force commander's priorities.
- Supervises movement control battalions (EAC).
- Develops and enforces theater highway regulations.

The MCA is a modularly designed organization and is assigned to a TSC.

MOVEMENT CONTROL BATTALION (EAC)

G-9. The MCB (EAC) commands, controls, and supervises MCTs; controls the movement of all personnel, units, and materiel in the theater; and maximizes the use of available transportation assets. It is assigned to a TSC and is normally attached to the MCA. The battalion commands and controls MCTs *behind* the corps rear boundary. It provides asset visibility and maintains ITV of tactical and nontactical moves within the MCA defined geographical area.

MOVEMENT CONTROL BATTALION (CORPS)

G-10. The corps MCB commands and controls MCTs *forward* of the corps rear boundary. It is assigned to a corps and plans, coordinates, and manages movement programming, highway regulation, and transportation support for the corps. The corps MCB provides asset visibility and maintains ITV of tactical and nontactical moves within the corps defined geographical area.

PORT MCT

G-11. The port MCT expedites, coordinates, and supervises transportation support of units, cargo, and personnel into, through, and out of air, land, or water ports (with the exception of bulk POL using a pipeline). The port MCT is assigned to a corps, ASCC, or TSC and is normally attached to an MCB (EAC or corps). It expedites the throughput of cargo through the transportation system and provides ITV of units, cargo, and personnel transiting from/to PODs/POEs. This MCT deploys on an as-needed basis, supporting onward movement and sustainment operations.

AREA MCT

G-12. The area MCT expedites, coordinates, and supervises transportation support of units, cargo, and personnel into, through, and out of air, land, or

water ports. It supports inland transfer points and supply support activities. It expedites cargo throughput and provides ITV of units, cargo, and personnel moving through an assigned geographic area. The area MCT is assigned to a corps, ASCC, or TSC and is normally attached to an MCB (corps or EAC).

DIVISION SUPPORT MCT

G-13. The division support MCT augments the DTO. It assists the DTO with movement programming, highway regulation, and division transportation support. It assists in executing divisional highway regulation for nontactical movements and planning and coordinating division MSRs. Also, the division support MCT provides movement control for tactical and nontactical road marches. It is assigned to a corps and attached to a division.

MOVEMENT REGULATING CONTROL TEAM

G-14. The MRCT operates up to four separate movement regulating points. It is assigned to a corps, ASCC, or TSC and is attached to a MCT (corps or EAC). The MRCT operates on MSRs and other designated controlled routes to regulate convoys and serve as the eyes and ears of the MCB. Based on mission requirements, the unit deploys on an as-needed basis.

CARGO DOCUMENTATION TEAM

G-15. The CDT provides cargo documentation for the transshipment of cargo in water, air, motor, and rail terminals. It is assigned to a corps, ASCC, or TSC and is attached to an MCB (corps or EAC).

TYPES OF TRANSPORT

G-16. A major activity of most munitions units is loading trucks, railcars, and aircraft. The planning and execution of the loading process generally requires some knowledge of the types of transport and their capabilities.

MOTOR

G-17. Motor transport is the backbone of the Army's support and sustainment structure, providing mobility on and off the battlefield. Motor transport operations support a variety of missions depending on unit locations and situations. Motor transport units are usually employed for general support within a specified area or along specific routes. Most munitions units are actively engaged in shipping operations where the capacity of different types of vehicles must be known. Refer to Table G-1 for cargo cube and weight data. For more detailed information, see Chapter 3 of FM 55-15. This chapter contains current mechanical data on authorized motor transport vehicles, including axle weights; truck performance data; center of balance data for single-unit trucks; and dimensions and capacities for prime movers and towed vehicles.

AIR

G-18. Airlift is a flexible and essential element of the transportation system. Army aviation units support theater, corps, and division requirements. The aviation brigade is the Army's primary aviation unit and is found at EAC, corps, and division. Army airlift is not intended to compete with Air Force

airlift. Its purposes are rapid response for high-priority personnel, supplies, and equipment and to supplement the lift capability of other Army transportation systems. Army airlift is essential to the logistic support of Army operations. There are only three approved methods of external air transport: slings, cargo nets, and cargo bags. Data on load capacities and configurations of current Army aircraft are found in FM 55-15, Chapter 2.

RAIL

G-19. Different classification systems exist for locomotives in CONUS and most other countries throughout the world. Information to include characteristics of locomotives, capacities of different types of railcars, maximum load data, and track gauges of the world can be found in FM 55-15, Chapter 4.

Table G-1. Cargo Cube and Weight

Vehicle	Payload in Lbs Weight in Parentheses = Towed Payload	Note(s)	Length in Inches	Width in Inches	Height (1) in Inches	Cube in Feet
Truck, cargo, 1 ¼ T, 4X4, M998	2,500 (3,400)					
Truck, cargo, 1 ¼ T, 4X4, M1097	4,400 (4,200)					
Truck, utility, ¾ T, 4X4, M1009	1,200 (3,000)	1				
Truck, cargo, 1 ¼ T, 4X4, M1008	2,900 (3,000)					
Truck, cargo, 1 ¼ T, 4X4, M1028	3,600 (3,000)					
Truck, cargo, 2 ½ T, 6X6, M35A1, A2	5,000 (6,000)	4	146.8	88	60	441.9
Truck, cargo, 2 ½ T, 6X6, M35A2C	5,000 (6,000)	4	147	87.6	60	440.5
Truck, cargo, 2 ½ T, 6X6, M36A2	5,000 (6,000)	4	210	88	71.8	759.3
Truck, dump, 2 ½ T, 6X6, M342A2	5,000 (6,000)		130	70	24.5	273.8
Truck, tractor, 2 ½ T, 6X6, M275A2	(17,000)	2				
Truck, dump, 5 T, 6X6, M51, M51A2	10,000 (15,000)		123	82	25	297.6
Truck, dump, 5 T, 6X6, M817, M929	10,000 (15,000)		124.8	81.9	27.1	306.3
Truck, dump, 5 T, 6X6, M929A1, M930A1, M931	10,000 (15,000)					

Table G-1. Cargo Cube and Weight (Continued)

Vehicle	Payload in Lbs Weight in Parentheses = Towed Payload	Note(s)	Length in Inches	Width in Inches	Height (1) in Inches	Cube in Feet
Truck, tractor, 5 T, 6X6, M52, M52A1	(30,000)	2				
Truck, tractor, 5 T, 6X6, M52A2	(37,000)					
Truck, tractor, 5 T, 6X6, M818, M931A1, M931A2, M932A1	(37,500)	2, 3				
Truck, cargo, 5 T, 6X6, M54, M54A1	10,000 (15,000)	6, 7	168	88	60	480.2
Truck, cargo, 5 T, 6X6, M54A1C	10,000 (15,000)	6, 7	168	88	60	482.5
Truck, cargo, 5 T, 6X6, M54A2	10,000 (15,000)	6, 7	168	88	61	480.2
Truck, cargo, 5 T, 6X6, M54A2C	10,000 (15,000)	6, 7	168	88.4	60	482.5
Truck, cargo, 5 T, 6X6, M55, M55A2	10,000 (15,000)	8	244	88	61.3	751.5
Truck, cargo, 5 T, 6X6, M813	10,000 (15,000)	8, 9	168	88.3	57.2	468
Truck, cargo, 5 T, 6X6, M813A1	10,000 (15,000)	8, 9	168	88.3	57.4	468
Truck, cargo, 5 T, 6X6, M814	10,000 (15,000)	8	243.8	87.8	60	733
Truck, cargo, 5 T, 6X6, M923, M923A1, M923A2, M925, M925A1, M925A2, M927, M927A1, M927A2, M928, M928A1, M928A2	10,000 (15,000)	8, 9	168	88.3	57.4	468
Truck, cargo, 10 T, 8X8, M977	22,000 (20,000)	10, 11	216	90	48	540
Truck, cargo, 10 T, 8X8, M978	18,000 (20,000)					
Truck, cargo, 10 T, 8X8, M985	21,729 (20,000)	11	216	90	48	540
Truck, cargo, 10 T, 8X8, M984	31,000 (20,000)					
Truck, tractor, 10 T, 6X6, M916	(126,000)	2				
Truck, tractor, 10 T, 6X6, M916A1	(130,000)	2				

Table G-1. Cargo Cube and Weight (Continued)

Vehicle	Payload in Lbs Weight in Parentheses = Towed Payload	Note(s)	Length in Inches	Width in Inches	Height (1) in Inches	Cube in Feet
Truck, tractor, 10 T, 6X6, M920	(99,620)	2				
Truck, tractor, 10 T, 6X6, M123A1C	(80,000)	2				
Truck, tractor, 14 T, 6X6, M915, M915A1	(84,000)	2				
Truck, tractor, 14 T, 6X6, M915A2	(105,000)	2				
Truck, tractor, 16.5 T, 10X10, PLS, M1074	33,000 (50,000)					
Truck, tractor, 16.5 T, 10X10, PLS w/crane, M1075	33,000 (50,000)					
Truck, cargo, 2 ½ T, 4X4, FMTV (LMTV), M1078, LAPES M1081	5,000 (9,520)		144	95		
Truck, cargo, 5 T, 6X6, FMTV M1083, w/MHE M1084	10,000 (21,000)		168	95		
Truck, cargo, 5 T, 6X6, FMTV, M1085, w/MHE M1086	10,000 (21,000)		240	95		
Truck, tractor, 5 T, 6X6, FMTV, M1088	(25,000)					
Truck, dump, 5 T, 6X6, FMTV, M1090	10,000 (21,000)					135
Truck, cargo, 5 T, 6X6, FMTV, LAPES/AD, M1093	10,000 (21,000)		168	95		
Truck, dump, 5 T, 6X6, FMTV, LAPES, M1094	10,000 (21,000)					135

Notes:
1. Highway requirements only
2. Towed load is the total weight of the semitrailer and payload.
3. Vehicles approved for use with M871 semitrailer carrying loads up to 44, 800 pounds.
4. Cubic capacity reduced 6.6 cubic feet for curve of bows.
5. Cubic capacity reduced 8.8 cubic feet for curve of bows.
6. Cubic capacity reduced 26.1 cubic feet for spare tire and carrier in cargo body.
7. Cubic capacity reduced 7.0 cubic feet for curve of bows.
8. Cubic capacity reduced 10.2 cubic feet for curve of bows.
9. Cubic capacity reduced 14.5 cubic feet for spare tire and carrier in cargo body.
10. Cubic capacity reduced 27.0 cubic feet for spare tire and carrier in cargo body.
11. Cube measured to top of spare tire.

Appendix H

Hazardous Materials Information

This appendix consists primarily of charts that provide data required to prepare munitions shipments. As always, safety is a primary consideration when handling, processing, and transporting munitions. See DOD 4500.9-R and Title 49, Code of Federal Regulations, Part 172, for more information.

UNO AMMUNITION AND EXPLOSIVES SHIPMENTS

H-1. Tables H-1 through H-3 contain the elements of UNO information required to prepare munitions for shipment and to complete required forms. PSNs are limited to those shown in regular type (not italic type). PSNs may be used in the singular or plural and in either capital or lower-case letters. Although punctuation marks and words in italics are not part of the PSN, they may also be included. The word "or" in italics indicates that terms in the sequence may be used as the PSN, as appropriate. These elements are established by and defined in 49 CFR.

Table H-1. UNO HC 1 Requirements Data

UNO Number	Proper Shipping Name	HC/DIV with SCG
0004	Ammonium picrate, *dry or wetted with less than 10 percent water by mass*	1.1D
0005	Cartridges for weapons, *with bursting charge*	1.1F
0006	Cartridges for weapons, *with bursting charge*	1.1E
0007	Cartridges for weapons, *with bursting charge*	1.2F
0009	Ammunition, Incendiary *with or without burster, expelling charge, or propelling charge*	1.2G
0010	Ammunition, Incendiary *with or without burster, expelling charge, or propelling charge*	1.3G
0012	Cartridges for weapons, inert projectile *or* Cartridges, small arms	1.4S
0014	Cartridges for weapons, blank *or* Cartridges, small arms, blank	1.4S
0015	Ammunition, smoke *with or without burster, expelling charge or propelling charge*	1.2G
0016	Ammunition, smoke *with or without burster, expelling charge or propelling charge*	1.3G

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0018	Ammunition, tear-producing *with burster, expelling charge or propelling charge*	1.2G
0019	Ammunition, tear-producing *with burster, expelling charge or propelling charge*	1.3G
0020*	Ammunition, toxic *with burster, expelling charge, or propelling charge*	1.2K
0021*	Ammunition, toxic *with burster, expelling charge, or propelling charge*	1.3K
0027	Black powder *or* Gunpowder, *granular or as a meal*	1.1D
0028	Black powder, compressed *or* Gunpowder, compressed *or* Black powder, in pellets *or* Gunpowder, in pellets	1.1D
0029	Detonators, nonelectric, *for blasting*	1.1B
0030	Detonators, electric, *for blasting*	1.1B
0033	Bombs, *with bursting charge*	1.1F
0034	Bombs, *with bursting charge*	1.1D
0035	Bombs, *with bursting charge*	1.2D
0037	Bombs, photo-flash	1.1F
0038	Bombs, photo-flash	1.1D
0039	Bombs, photo-flash	1.2G
0042	Boosters, *without detonator*	1.1D
0043	Bursters, *explosive*	1.1D
0044	Primers, cap type	1.4S
0048	Charges, demolition	1.1D
0049	Cartridges, flash	1.1G
0050	Cartridges, flash	1.3G
0054	Cartridges, signal	1.3G
0055	Cases, cartridge, empty with primer	1.4S
0056	Charges, depth	1.1D
0059	Charges, shaped, commercial, *without detonator*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0060	Charges, supplementary explosive	1.1D
0065	Cord, detonating, *flexible*	1.1D
0066	Cord, igniter	1.4G
0070	Cutters, cable, explosive	1.4S
0072	Cyclotrimethylenetrinitramine, wetted *or* Cyclonite, wetted *or* Hexogen, wetted *or* RDX, wetted *with not less than 15 percent water by mass*	1.1D
0073	Detonators for ammunition	1.1B
0074	Diazodinitrophenol, wetted *with not less than 40 percent water or mixture of alcohol and water, by mass*	1.1A
0075	Diethyleneglycol dinitrate, desensitized *with not less than 25 percent nonvolatile water-insoluble phlegmatizer, by mass*	1.1D
0076	Dinitrophenol, *dry or wetted with less than 15 percent water, by mass*	1.1D
0077	Dinitrophenolates *alkali metals, dry or wetted with less than 15 percent water, by mass*	1.3C
0078	Dinitroresorcinol, *dry or wetted with less than 15 percent water, by mass*	1.1D
0079	Hexanitrodiphenylamine *or* Dipicrylamine *or* Hexyl	1.1D
0081	Explosive, blasting, type A	1.1D
0082	Explosive, blasting, type B	1.1D
0083	Explosive, blasting, type C	1.1D
0084	Explosive, blasting, type D	1.1D
0092	Flares, surface	1.3G
0093	Flares, aerial	1.3G
0094	Flash powder	1.1G
0099	Fracturing devices, explosive, *without detonators for oil wells*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0101	Fuse, instantaneous, nondetonating *or* Quickmatch	1.3G
0102	Cord detonating *or* Fuse detonating *metal clad*	1.2D
0103	Fuse, igniter *tubular metal clad*	1.4G
0104	Cord, detonating, mild effect *or* Fuse, detonating, mild effect *metal clad*	1.4D
0105	Fuse, safety	1.4S
0106	Fuzes, detonating	1.1B
0107	Fuzes, detonating	1.2B
0110	Grenades, practice, *hand or rifle*	1.4S
0113	Guanyl nitrosaminoguanylidene hydrazine, wetted *with not less than 30 percent water, by mass*	1.1A
0114	Guanyl nitrosaminoguanyltetrazene, wetted *or* Tetrazene, wetted *with not less than 30 percent water or mixture of alcohol and water, by mass*	1.1A
0118	Hexolite, *or* Hexotol *dry or wetted with less than 15 percent water, by mass*	1.1D
0121	Igniters	1.1G
0124	Jet perforating guns, charged *oil well, without detonator*	1.1D
0129	Lead azide, wetted *with not less than 20 percent water or mixture of alcohol and water, by mass*	1.1A
0130	Lead styphnate, wetted *or* Lead trinitroresorcinate, wetted *with not less than 20 percent water or mixture of alcohol and water, by mass*	1.1A
0131	Lighters, fuse	1.4S
0132*	Deflagrating metal salts of aromatic nitroderivatives, n.o.s.	1.3C
0135	Mercury fulminate, wetted *with not less than 20 percent water, or mixture of alcohol and water, by mass*	1.1A
0136	Mines *with bursting charge*	1.1F
0137	Mines *with bursting charge*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0138	Mines *with bursting charge*	1.2D
0143	Nitroglycerin, *desensitized with not less than 40 percent nonvolatile water insoluble phlegmatizer, by mass*	1.1D
0144	Nitroglycerin, solution in alcohol, *with more than 1 percent but not more than 10 percent nitroglycerin*	1.1D
0146	Nitrostarch, *dry or wetted with less than 20 percent water, by mass*	1.1D
0147	Nitro urea	1.1D
0150	Pentaerythrite tetranitrate, wetted *or* Pentaerythritol tetranitrate, wetted, *or* PETN, wetted *with not less than 25 percent water, by mass, or* Pentaerythrite tetranitrate, *or* Pentaerythritol tetranitrate, *or* PETN, desensitized *with not less than 15 percent phlegmatizer by mass*	1.1D
0151	Pentolite, *dry or wetted with less than 15 percent water, by mass*	1.1D
0153	Trinitroaniline *or* Picramide	1.1D
0154	Trinitrophenol *or* Picric acid, *dry or wetted with less than 30 percent water, by mass*	1.1D
0155	Trinitrochlorobenzene *or* Picryl chloride	1.1D
0158	Potassium salts of aromatic nitro-derivatives, *explosive*	1.3C
0159	Powder cake, wetted or Powder paste, wetted *with not less than 25 percent water, by mass*	1.3C
0160	Powder, smokeless	1.1C
0161	Powder, smokeless	1.3C
0167	Projectiles, *with bursting charge*	1.1F
0168	Projectiles, *with bursting charge*	1.1D
0169	Projectiles, *with bursting charge*	1.2D
0171	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*	1.2G

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0173	Release devices, explosive	1.4S
0174	Rivets, explosive	1.4S
0180	Rockets, *with bursting charge*	1.1F
0181	Rockets, *with bursting charge*	1.1E
0182	Rockets, *with bursting charge*	1.2E
0183	Rockets, *with inert head*	1.3C
0186	Rocket motors	1.3C
0190*	Samples, explosive, *other than initiating explosives*	None Listed
0191	Signal devices, hand	1.4G
0192	Signals, railway track, explosive	1.1G
0193	Signals, railway track, explosive	1.4S
0194	Signals, distress, *ship*	1.1G
0195	Signals, distress, *ship*	1.3G
0196	Signals, smoke	1.1G
0197	Signals, smoke	1.4G
0203*	Sodium salts of aromatic nitro-derivatives, n.o.s. *explosive*	1.3C
0204	Sounding devices, explosive	1.2F
0207	Tetranitroaniline	1.1D
0208	Trinitrophenylmethylnitramine *or* Tetryl	1.1D
0209	Trinitrotoluene *or* TNT, *dry or wetted with less than 30 percent water, by mass*	1.1D
0212	Tracers for ammunition	1.3G
0213	Trinitroanisole	1.1D
0214	Trinitrobenzene, *dry or wetted with less than 30 percent water, by mass*	1.1D
0215	Trinitrobenzoic acid, *dry or wetted with less than 30 percent water, by mass*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0216	Trinitro-meta-cresol	1.1D
0217	Trinitronaphthalene	1.1D
0218	Trinitrophenetole	1.1D
0219	Trinitroresorcinol *or* Styphnic acid, *dry or wetted with less than 20 percent water, or mixture of alcohol and water, by mass*	1.1D
0220	Urea nitrate, *dry or wetted with less than 20 percent water, by mass*	1.1D
0221	Warheads, torpedo *with bursting charge*	1.1D
0222	Ammonium nitrate, *with more than 0.2 percent combustible substances, including any organic substance calculated as carbon, to the exclusion of any other added substance*	1.1D
0224	Barium azide, *dry or wetted with less than 50 percent water, by mass*	1.1A
0225	Boosters with detonator	1.1B
0226	Cyclotetramethylenetetranitramine, wetted *or* HMX, wetted *or* Octogen, wetted *with not less than 15 percent water, by mass*	1.1D
0234	Sodium dinitro-o-cresolate, *dry or wetted with less than 15 percent water, by mass*	1.3C
0235	Sodium picramate, *dry or wetted with less than 20 percent water, by mass*	1.3C
0236	Zirconium picramate, *dry or wetted with less than 20 percent water, by mass*	1.3C
0237	Charges, shaped, flexible, linear	1.4D
0238	Rockets, line-throwing	1.2G
0240	Rockets, line-throwing	1.3G
0241	Explosive, blasting, type E	1.1D
0242	Charges, propelling, for cannon	1.3C
0243	Ammunition, incendiary, white phosphorus, *with burster, expelling charge or propelling charge*	1.2H
0244	Ammunition, incendiary, white phosphorus, *with burster, expelling charge or propelling charge*	1.3H

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0245	Ammunition, smoke, white phosphorus *with burster, expelling charge, or propelling charge*	1.2H
0246	Ammunition, smoke, white phosphorus *with burster, expelling charge, or propelling charge*	1.3H
0247	Ammunition, incendiary *liquid or gel, with burster, expelling charge or propelling charge*	1.3J
0248*	Contrivances, water-activated, *with burster, expelling charge or propelling charge*	1.2L
0249*	Contrivances, water-activated, *with burster, expelling charge or propelling charge*	1.3L
0250	Rocket motors with hypergolic liquids *with or without an expelling charge*	1.3L
0254	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*	1.3G
0255	Detonators, electric, *for blasting*	1.4B
0257	Fuzes, detonating	1.4B
0266	Octolite or Octol, *dry or wetted with less than 15 percent water, by mass*	1.1D
0267	Detonators, nonelectric, *for blasting*	1.4B
0268	Boosters with detonator	1.2B
0271*	Charges, propelling	1.1C
0272*	Charges, propelling	1.3C
0275	Cartridges, power device	1.3C
0276	Cartridges, power device	1.4C
0277	Cartridges, oil well	1.3C
0278	Cartridges, oil well	1.4C
0279	Charges, propelling, for cannon	1.1C
0280	Rocket motors	1.1C
0281	Rocket motors	1.2C
0282	Nitroguanidine or Picrite, *dry or wetted with less than 20 percent water, by mass*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0283	Boosters, *without detonator*	1.2D
0284	Grenades, *hand or rifle, with bursting charge*	1.1D
0285	Grenades, *hand or rifle, with bursting charge*	1.2D
0286	Warheads, rocket *with bursting charge*	1.1D
0287	Warheads, rocket *with bursting charge*	1.2D
0288	Charges, shaped, flexible, linear	1.1D
0289	Cord, detonating, *flexible*	1.4D
0290	Cord, detonating or Fuse, detonating *metal clad*	1.1D
0291	Bombs, *with bursting charge*	1.2F
0292	Grenades, *hand or rifle, with bursting charge*	1.1F
0293	Grenades, *hand or rifle, with bursting charge*	1.2F
0294	Mines *with bursting charge*	1.2F
0295	Rockets, *with bursting charge*	1.2F
0296	Sounding devices, explosive	1.1F
0297	Ammunition, illuminating *with or without burster, expelling charge or propelling charge*	1.4G
0299	Bombs, photo-flash	1.3G
0300	Ammunition, incendiary *with or without burster, expelling charge or propelling charge*	1.4G
0301	Ammunition, tear-producing *with burster, expelling charge or propelling charge*	1.4G
0303	Ammunition, smoke *with or without burster, expelling charge or propelling charge*	1.4G
0305	Flash powder	1.3G
0306	Tracers for ammunition	1.4G
0312	Cartridges, signal	1.4G
0313	Signals, smoke	1.2G
0314	Igniters	1.2G

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0315	Igniters	1.3G
0316	Fuzes, igniting	1.3G
0317	Fuzes, igniting	1.4G
0318	Grenades, practice, *hand or rifle*	1.3G
0319	Primers, tubular	1.3G
0320	Primers, tubular	1.4G
0321	Cartridges for weapons, *with bursting charge*	1.2E
0322	Rocket motors with hypergolic liquids *with or without an expelling charge*	1.2L
0323	Cartridges, power device	1.4S
0324	Projectiles, *with bursting charge*	1.2F
0325	Igniters	1.4G
0326	Cartridges for weapons, blank	1.1C
0327	Cartridges for weapons, blank *or* Cartridges, small arms, blank	1.3C
0328	Cartridges for weapons, inert projectile	1.2C
0329	Torpedoes *with bursting charge*	1.1E
0330	Torpedoes *with bursting charge*	1.1F
0331	Explosive, blasting, type B *or* Agent blasting, Type B	1.5D
0332	Explosive, blasting, type E *or* Agent blasting, Type E	1.5D
0333	Fireworks	1.1G
0334	Fireworks	1.2G
0335	Fireworks	1.3G
0336	Fireworks	1.4G
0337	Fireworks	1.4S
0338	Cartridges for weapons, blank *or* Cartridges, small arms, blank	1.4C

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0339	Cartridges for weapons, inert projectile *or* Cartridges, small arms	1.4C
0340	Nitrocellulose, *dry or wetted with less than 25 percent water (or alcohol), by mass*	1.1D
0341	Nitrocellulose, *unmodified or plasticized with less than 18 percent plasticizing substance, by mass*	1.1D
0342	Nitrocellulose, wetted *with not less than 25 percent alcohol, by mass*	1.3C
0343	Nitrocellulose, plasticized *with not less than 18 percent plasticizing substance, by mass*	1.3C
0344	Projectiles, *with bursting charge*	1.4D
0345	Projectiles, *inert with tracer*	1.4S
0346	Projectiles, *with burster or expelling charge*	1.2D
0347	Projectiles, *with burster or expelling charge*	1.4D
0348	Cartridges for weapons, *with bursting charge*	1.4F
0349*	Articles, explosive, n.o.s.	1.4S
0350*	Articles, explosive, n.o.s.	1.4B
0351*	Articles, explosive, n.o.s.	1.4C
0352*	Articles, explosive, n.o.s.	1.4D
0353*	Articles, explosive, n.o,s.	1.4G
0354*	Articles, explosive, n.o.s.	1.1L
0355*	Articles, explosive, n.o.s	1.2L
0356*	Articles, explosive, n.o.s.	1.3L
0357*	Substances, explosive, n.o.s.	1.1L
0358*	Substances, explosive, n.o.s.	1.2L
0359*	Substances, explosive, n.o.s.	1.3L
0360	Detonator assemblies, nonelectric, *for blasting*	1.1B
0361	Detonator assemblies, nonelectric, *for blasting*	1.4B
0362	Ammunition, practice	1.4G

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0363	Ammunition, proof	1.4G
0364	Detonators for ammunition	1.2B
0365	Detonators for ammunition	1.4B
0366	Detonators for ammunition	1.4S
0367	Fuzes, detonating	1.4S
0368	Fuzes, igniting	1.4S
0369	Warheads, rocket *with bursting charge*	1.1F
0370	Warheads, rocket *with burster or expelling charge*	1.4D
0371	Warheads, rocket *with burster or expelling charge*	1.4F
0372	Grenades, practice, *hand or rifle*	1.2G
0373	Signal devices, hand	1.4S
0374	Sounding devices, explosive	1.1D
0375	Sounding devices, explosive	1.2D
0376	Primers, tubular	1.4S
0377	Primers, cap type	1.1B
0378	Primers, cap type	1.4B
0379	Cases, cartridges, empty with primer	1.4C
0380	Articles, pyrophoric	1.2L
0381	Cartridges, power device	1.2C
0382*	Components, explosive train, n.o.s.	1.2B
0383*	Components, explosive train, n.o.s.	1.4B
0384*	Components, explosive train, n.o.s.	1.4S
0385	5-Nitrobenzotriazol	1.1D
0386	Trinitrobenzenesulforic acid	1.1D
0387	Trinitrofluorenone	1.1D
0388	Trinitrotoluene and Trinitrobenzene mixtures *or* TNT and trinitrobenzene mixtures *or* TNT and hexanitrostilbene mixtures *or* Trinitrotoluene and hexanitrostilbene mixtures	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0389	Trinitrotoluene mixtures containing Trinitrobenzene and Hexanitrostilbene *or* TNT mixtures containing trinitrobenzene and hexanitrostilbene	1.1D
0390	Tritonal	1.1D
0391	RDX and HMX mixtures, wetted *with not less than 15 percent water by mass or* RDX and HMX mixtures, desensitized *with not less than 10 percent phlegmatizer by mass*	1.1D
0392	Hexanitrostilbene	1.1D
0393	Hexotonal	1.1D
0394	Trinitroresorcinol, wetted or Styphnic acid, wetted *with not less than 20 percent water, or mixture of alcohol and water by mass*	1.1D
0395	Rocket motors, liquid fueled	1.2J
0396	Rocket motors, liquid fueled	1.3J
0397	Rockets, liquid fueled *with bursting charge*	1.1J
0398	Rockets, liquid fueled *with bursting charge*	1.2J
0399	Bombs with flammable liquid, *with bursting charge*	1.1J
0400	Bombs with flammable liquid, *with bursting charge*	1.2J
0401	Dipicryl sulfide, *dry or wetted with less than 10 percent water, by mass*	1.1D
0402	Ammonium perchlorate	1.1D
0403	Flares, aerial	1.4G
0404	Flares, aerial	1.4S
0405	Cartridges, signal	1.4S
0406	Dinitrosobenzene	1.3C
0407	Tetrazol-1-acetic acid	1.4C
0408	Fuzes, detonating, *with protective features*	1.1D
0409	Fuzes, detonating, *with protective features*	1.2D
0410	Fuzes, detonating, *with protective features*	1.4D
0411	Pentaerythrite tetranitrate *or* Pentaerythritol tetranitrate *or* PETN, *with not less than 7 percent wax by mass*	1.1D

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0412	Cartridges for weapons, *with bursting charge*	1.4E
0413	Cartridges for weapons, blank	1.2C
0414	Charges, propelling, for cannon	1.2C
0415*	Charges, propelling	1.2C
0417	Cartridges for weapons, inert projectile or Cartridges, small arms	1.3C
0418	Flares, surface	1.1G
0419	Flares, surface	1.2G
0420	Flares, aerial	1.1G
0421	Flares, aerial	1.2G
0424	Projectiles, *inert, with tracer*	1.3G
0425	Projectiles, *inert, with tracer*	1.4G
0426	Projectiles, *with burster or expelling charge*	1.2F
0427	Projectiles, *with burster or expelling charge*	1.4F
0428	Articles, pyrotechnic *for technical purposes*	1.1G
0429	Articles, pyrotechnic *for technical purposes*	1.2G
0430	Articles, pyrotechnic *for technical purposes*	1.3G
0431	Articles, pyrotechnic *for technical purposes*	1.4G
0432	Articles, pyrotechnic *for technical purposes*	1.4S
0433	Powder cake, wetted or Powder paste, wetted *with not less than 17 percent alcohol by mass*	1.1C
0434	Projectiles, *with burster or expelling charge*	1.2G
0435	Projectiles, *with burster or expelling charge*	1.4G
0436	Rockets, *with expelling charge*	1.2C
0437	Rockets, *with expelling charge*	1.3C
0438	Rockets, *with expelling charge*	1.4C
0439	Charges, shaped, commercial *without detonator*	1.2D
0440	Charges, shaped, commercial *without detonator*	1.4D
0441	Charges, shaped, commercial *without detonator*	1.4S

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0442	Charges, explosive, commercial *without detonator*	1.1D
0443	Charges, explosive, commercial *without detonator*	1.2D
0444	Charges, explosive, commercial *without detonator*	1.4D
0445	Charges, explosive, commercial *without detonator*	1.4S
0446	Cases, combustible, empty, without primer	1.4C
0447	Cases, combustible, empty, without primer	1.3C
0448	5-Mercaptotetrazol-1-acetic acid	1.4C
0449	Torpedoes, liquid fueled, with or without bursting charge	1.1J
0450	Torpedoes, liquid fueled, with inert head	1.3J
0451	Torpedoes with bursting charge	1.1D
0452	Grenades, practice, *hand or rifle*	1.4G
0453	Rockets, line-throwing	1.4G
0454	Igniters	1.4S
0455	Detonators, nonelectric *for blasting*	1.4S
0456	Detonators, electric *for blasting*	1.4S
0457	Charges, bursting, plastics bonded	1.1D
0458	Charges, bursting, plastics bonded	1.2D
0459	Charges, bursting, plastics bonded	1.4D
0460	Charges, bursting, plastics bonded	1.4S
0461*	Components, explosive train, n.o.s.	1.1B
0462*	Articles, explosive, n.o.s.	1.1C
0463*	Articles, explosive, n.o.s.	1.1D
0464*	Articles, explosive, n.o.s.	1.1E
0465*	Articles, explosive, n.o.s.	1.1F
0466*	Articles, explosive, n.o.s.	1.2C
0467*	Articles, explosive, n.o.s.	1.2D
0468*	Articles, explosive, n.o.s.	1.2E

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0469*	Articles, explosive, n.o.s.	1.2F
0470*	Articles, explosive, n.o.s.	1.3C
0471*	Articles, explosive, n.o.s.	1.4E
0472*	Articles, explosive, n.o.s.	1.4F
0473*	Substances, explosive, n.o.s.	1.1A
0474*	Substances, explosive, n.o.s.	1.1C
0475*	Substances, explosive, n.o.s.	1.1D
0476*	Substances, explosive, n.o.s.	1.1G
0477*	Substances, explosive, n.o.s.	1.3C
0478*	Substances, explosive, n.o.s.	1.3G
0479*	Substances, explosive, n.o.s.	1.4C
0480*	Substances, explosive, n.o.s.	1.4D
0481*	Substances, explosive, n.o.s.	1.4S
0482*	Substances, explosive, very insensitive, n.o.s., *or* Substances, EVI, n.o.s.	1.5D
0483	Cyclotrimethylenetrinitramine, desensitized *or* Cyclonite, desensitized *or* Hexogen, desensitized *or* RDX, desensitized	1.1D
0484	Cyclotetramethylenetetranitramine, desensitized *or* Octogen, desensitized *or* HMX, desensitized	1.1D
0485*	Substances, explosive, n.o.s.	1.4G
0486	Articles, explosive, extremely insensitive *or* Articles, EEI	1.6N
0487	Signals, smoke	1.3G
0488	Ammunition, practice	1.3G
0489	Dinitroglycoluril *or* Dingu	1.1D
0490	Nitrotriazolone *or* NTO	1.1D
0491*	Charges, propelling	1.4C
0492	Signals, railway track, explosive	1.3G

Table H-1. UNO HC 1 Requirements Data (Continued)

UNO Number	Proper Shipping Name	HC/DIV with SCG
0493	Signals, railway track, explosive	1.4G
0494	Jet perforating guns, charged, *oil well, without detonator*	1.4D
0495*	Propellant, liquid	1.3C
0496	Octonal	1.1D
0497*	Propellant, liquid	1.1C
0498*	Propellant, solid	1.1C
0499*	Propellant, solid	1.3C
* An asterisk appearing after the UN or NA Serial Number indicates that, unless otherwise excepted, the technical name of the hazardous material must be entered in parentheses on documentation and package marking in association with the basic description.		

H-2. Table H-2 below lists HC 1 NA identification numbers, PSNs, and HC/DIV with SCG. These PSNs are appropriate for describing materials for domestic transportation but may be inappropriate for international transportation under the provisions of international regulations (e.g., IMO, ICAO). An alternate PSN may be selected when either domestic or international transportation is involved. Table H-3 lists UN identification numbers, PSNs, and HC/DIV for Non-Hazard Class 1 entries.

Table H-2. NA HC 1 Requirements Data

NA ID Number	Proper Shipping Name	HC/DIV with SCG
0006	Explosive pest control devices	1.1E
0124	Jet perforating guns, charged oil well, with detonator	1.1D
0133	Mannitol hexanitrate, wetted or Nitromannite, wetted *with not less than 40 percent water, by mass or mixture of alcohol and water*	1.1A
0276	Model rocket motor	1.4C
0323	Model rocket motor	1.4S
0331	Ammonium nitrate-fuel oil mixture *containing only prilled ammonium nitrate and fuel oil*	1.5D
0337	Toy Caps	1.4S

Table H-2. NA HC 1 Requirements Data (Continued)

NA ID Number	Proper Shipping Name	HC/DIV with SCG
0349	Grenades, empty primed	1.4S
0350	Boosters with detonator	1.4B
0412	Explosive pest control devices	1.4E
0473	Barium styphnate *or* Lead mononitroresorcinate *or* Nitrosoguanidine	1.1A
0474*	Propellant explosive, liquid	1.1C
0477*	Propellant explosive, liquid	1.3C
0494	Jet perforating guns, charged oil well, with detonator	1.4D
* An asterisk appearing after the UN or NA Serial Number indicates that, unless otherwise excepted, the technical name of the hazardous material must be entered in parentheses on documentation and package marking in association with the basic description.		

Table H-3. UN Non-HC 1 Requirements Data

UN ID Number	Proper Shipping Name	HC/DIV
1325*	Flammable solids, organic, n.o.s.	4.1
1360	Calcium phosphide	4.3
1381	Phosphorus, white dry *or* Phosphorus, white, under water *or* Phosphorus, white, in solution *or* Phosphorus, yellow dry *or* Phosphorus, yellow, under water *or* Phosphorus, yellow, in solution	4.2
1693*	Tear gas substances, liquid, n.o.s. *or* Tear gas substances, solid, n.o.s.	6.1
1697	Chloroacetophenone (CN), *solid or liquid*	6.1
1993*	Flammable liquids, n.o.s.	3.
2016*	Ammunition, toxic, nonexplosive, *without burster or expelling charge, nonfuzed*	6.1

Table H-3. UN Non-HC 1 Requirements Data (Continued)

UN ID Number	Proper Shipping Name	HC/DIV
2017	Ammunition, tear-producing, nonexplosive, *without burster or expelling charge, nonfuzed*	6.1
2805	Lithium hydride, fused solid	4.3
* An asterisk appearing after the UN or NA Serial Number indicates that, unless otherwise excepted, the technical name of the hazardous material must be entered in parentheses on documentation and package marking in association with the basic description.		

Appendix I

Storage Compatibility 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

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

GROUP A

I-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

I-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

I-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

I-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 fuzes with two or more safing features are also part of this group.

GROUP E

I-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

I-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

I-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

I-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

I-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

I-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

I-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

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

GROUP S

I-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

I-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

I-16. Table I-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 MACOM for mixed storage of limited quantities. Approval constitutes a waiver and may be granted only when warranted by operational considerations or magazine nonavailability 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 I-1. Storage Compatibility Mixing Chart

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					X	X
C		Z	X	X	X	Z	Z					X	X
D		Z	X	X	X	Z	Z					X	X
E		Z	X	X	X	Z	Z					X	X
F		Z	Z	Z	Z	Z	X					X	X
G		Z	Z	Z	Z	Z	X					X	X
H								X					X
J									X				
K										Z			
L													
N		X	X	X	X	X	X					X	X
S		X	X	X	X	X	X	X	X			X	X

COMPATIBILITY CRITERIA

I-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 MACOM 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 nonpropagation, 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.

EXCEPTIONS TO COMPATIBILITY CRITERIA

I-18. Certain locations are authorized to store munitions without regard to compatibility. These include the following:

- Areas within the US, its territories and possessions designated by the Army and with site approval from the DDESB to store munitions in rapid response configurations.
- Basic load ammunition holding areas outside the US.

The maximum NEQ at any of these locations storing munitions in mixed compatibility must not exceed 4,000 kg (8,820 pounds NEW) calculated IAW DA Pam 385-64.

Appendix J

Forward Arming and Refueling Points

A FARP is the temporary arming and refueling facility that an aviation unit commander organizes, equips, and deploys to support combat tactical operations. This appendix provides information on operations, location, and safety procedures for FARPs.

PURPOSE

J-1. Aviation provides a degree of versatility not replicated by other members of the combined arms combat team. It maneuvers rapidly and brings decisive combat power to bear at crucial points and times in the area of operations. Synchronizing aviation and ground maneuver forces allows the task force commander to shape the battleground and set the conditions for the close fight. Also, aviation's ability to rapidly deploy and operate effectively in austere environments is invaluable in SASO. In general, the same principles and tenets that apply to aviation forces in combat operations also apply for SASO. However, aviation units with SASO missions may use terms other than FARP to identify arming and refueling facilities.

J-2. During combat operations, the FARP increases the time-on-station for the commander by reducing the turnaround time associated with refueling and rearming of aviation assets. The increase in time-on-station gives the commander more time to apply continuous pressure on the enemy. The FARP provides fuel and ammunition for aviation units in combat and is flexible enough to be self-deployed or inserted by air. However, it must be properly task-organized to meet the Class III/V needs of mission aircraft.

PERSONNEL

J-3. Personnel allocations for the FARP include the following MOSs:

- **55B Ammunition specialist**. Receives and transports Class V munitions from the supply point to the rearm pads. Has no aircraft-specific duties.
- **68J Aircraft armament/missile systems repairer.** Repairs aircraft fire control systems, loads and arms attack aircraft.
- **68X AH-64 Armament/electrical systems repairer.** Repairs fire control systems, loads and arms AH-64 aircraft.
- **77F Petroleum supply specialist.** Transports Class III and refuels aircraft.

In the heavy division/corps aviation attack battalions, 55B and 77F personnel are assigned to the Class III/V platoon of the battalion HHC. In light divisions, these personnel are assigned to the brigade HHC. Medical or maintenance personnel, battle damage assessment teams, Stinger teams, and others also may be positioned at the FARP.

COMMAND, CONTROL, AND COMMUNICATIONS

J-4. The aviation commander is responsible for the overall success of the FARP. Based on METT-TC, the commander decides how FARP assets will be used to support his operational intent. Other command and control elements are as follows:

- **S3.** The S3 formulates the commander's plan and consults with the S4 and the HHC commander to ensure that the plan can be supported logistically.
- **S4.** The S4 calculates fuel and ammunition needed to support the mission, plans distribution of supplies, and coordinates requirements with higher headquarters.
- **Platoon leader.** The Class III/V platoon leader is responsible for accomplishing the FARP mission and keeping the S4 informed about the amounts of fuel and ammunition on hand.

LOCATION

J-5. The FARP should be located as close to the area of operations as the tactical situation permits, usually as far forward as 18 to 25 kilometers (METT-TC dependent) behind the FLOT and within a committed brigade's area of operation. If possible, the FARP is kept outside the threat of medium-range artillery. Movement and resupply are by ground or air. A FARP is only expected to remain in one location for three to six hours, although the time may be influenced by METT-TC. Size depends on the number of aircraft to be serviced and the type of refueling equipment available. Four to eight refueling points are normally sufficient. The following METT-TC factors determine the location of a FARP:

- **Mission**. Deep, close, and rear are the three types of missions conducted on the battlefield. Unless the target is extremely large or the mission is lengthy, a deep attack normally does not require a FARP behind enemy lines. Most FARPs are located within the close area.
- **Enemy.** The S2 determines the type of threat likely to be encountered in a certain location, including enemy capabilities, posture, and weapon systems. The S2 determines the type of intelligence-gathering devices and sensors that the enemy has oriented on the proposed FARP position.
- **Terrain.** Terrain should be selected to allow for the tactical dispersion of aircraft and vehicles. Tree lines, vegetation, shadows, and built-up areas should be used to conceal FARP operations. Also, terrain folds and reverse slopes will mask the FARP and main ground and air routes from visual or electronic detection.
- **Troops.** The platoon leader determines if enough troops are available for FARP operations. The proper number and type of personnel must be present and trained on aircraft ammunition management, refueling, and weapons system loading. In most cases, FARP personnel are responsible for security.
- **Time available**. The duration of the mission is critical since more security and Class III/V products are required for longer missions.

Planners must include the length of time to drive or fly to the FARP. Setup and tear down, as well as distance from supply trains, are other critical factors to consider when selecting a site.

EMPLACEMENT

J-6. The most efficient means of siting a FARP is by combining ground and air assets. FARPs should be separated by at least IBD from all inhabited sites. FARP emplacement depends on the system's mobility, aircraft requirements, enemy situation, higher echelon support, and expected operational time. The FARP is normally established using ground vehicles that carry bulk quantities of Class III/V supplies. Also, ground vehicles are the primary means for displacing and resupplying the FARP. The use of ground vehicles limits rapid positioning, and there is always the possibility of adverse road and traffic conditions. If a resupply vehicle is lost, it may jeopardize the success of the mission. Air emplacement offers speed and uses open fields as potential sites. Disadvantages include unavailability of aircraft and support vehicles.

J-7. The refueling and munitions areas of the FARP are collocated but separated as much as operations allow. Because of the hazards associated with Class III/V stocks, safety is a key factor in site layout and operations. Figure J-1 shows typical FARP layouts.

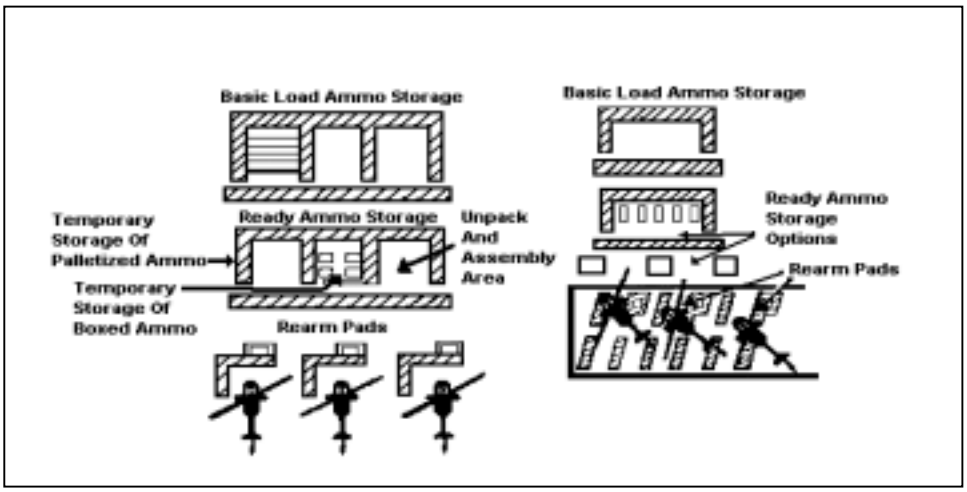


Figure J-1. Typical FARP layouts

FARP AMMUNITION OPERATIONS

J-8. FARP ammunition operations include procedures for storage, safety, arming, and training. Generally, these procedures are subject to the same stringent safety requirements as munitions operations in any other tactical or training environment.

STORAGE

J-9. The RASA contains the ammunition authorized to support initial arming of the aircraft and current missions. It is separated from the rearm pads by a

barricade and should have separate cubicles for assembling and disassembling of rockets, aircraft flares, and malfunctioned items.

J-10. The BLAHA, separate from the RASA, contains a specific quantity of munitions required and authorized to support at least three days of combat. The basic load may consist of small arms, grenades, mines, and aircraft-specific items. Store munitions by lot number to maintain lot integrity and accountability and to ensure the proper reporting of malfunctions.

J-11. The rearm pads are located near the aircraft with barricades between the aircraft, RASA, and rearm pads. Depending on surface type, movement from the rearm pads to the aircraft may be difficult. FARP personnel may need to improvise. Improvised trailers and carts may be used if the rated load of the trailer or cart is not exceeded, the load is secured and balanced, and the trailer or cart is covered to protect items from the weather.

SAFETY PROCEDURES

J-12. All personnel must observe the safety procedures that follow to prevent accidental firing, damage to munitions and aircraft, and injury to personnel.

Fin Protectors

J-13. Fin protector springs are designed to short-circuit the igniter leads, thus preventing accidental ignition. The shorting wire clips and fin protectors must be installed on rockets immediately after an aircraft launcher is unloaded and when the rockets are not in a launcher. A sufficient number of clips and protectors must be on hand at all times. Do not discard the clips and protectors once the aircraft is armed. They must be properly secured to prevent foreign object damage to aircraft.

Dropped Munitions

J-14. Dropped items, crated or not crated, must be turned in to the supporting ASP. Complete rounds, rocket motors, or fuzed-warhead combinations that have been dropped may cause premature functioning or may not function properly.

Unfired Rockets

J-15. After a mission, check the torque on all unfired rockets before loading for the next mission.

Barricades

J-16. Barricades must be built around the RASA, the BLAHA, and the rearm pads. Barricades should be at least three feet thick to effectively reduce hazards from fire and explosion. Rockets should face the back of the barricade. See DA Pam 385-64 for further guidance.

Weather Protection

J-17. Munitions must be protected from the weather. Missile systems are susceptible to heat damage. In a high-temperature environment, ensure that coverings do not create excessive heat. Dark covers, in particular, create excessive heat and should be avoided. Certain guided missiles, such as the

Hellfire, have explosively activated covers that protect them from the effects of weather.

Rocket Storage

J-18. Rockets should not be stored on top of each other to avoid damage to the bottom layers. If they need to be unpacked, they should be stored on racks built at the site. Wooden pallets may be placed under rockets as long as they are blocked to prevent rolling. Never store rockets directly on the ground.

EXPLOSIVE LIMITS

J-19. For maximum safety, the amount of munitions stored at the RASA and the rearm pads should always be kept to a minimum. The following limits should not be exceeded:

- Each rearm pad is limited to the amount of munitions required to fully arm one aircraft plus one reload. This facilitates switching the missile launcher for rocket launchers as the mission dictates.
- The ammunition for a second aircraft should be stored off the rearm pad, properly covered and barricaded.
- The RASA will meet requirements of DA Pam 385-64. See Table J-1 for the items typically used during rearm operations. Table J-2 shows the minimum distances permitted between rearm points, RASAs, and nonmunitions-related activities that require safety distance.

Table J-1. Munitions Used During Helicopter Rearm Operations

ITEM	NET EXPLOSIVE WEIGHT (Per Round)
Hellfire missile	34.4 pounds
TOW missile	12.18 pounds
Rocket, 2.75-in, HE (H489 or H490)	10 pounds
Rocket, 2.75-in, HE (H488 or H534)	11 pounds
Cartridge, 30mm, HE (B130 or B131)	.058 ounces
Cartridge, 20mm, HE (A653)	.028 ounces
Small arms ammunition	None

ARMING OPERATIONS

J-20. Pads must contain the minimum amount of munitions needed to conduct efficient operations. Proper setup of the armament pad increases aircraft turnaround time. During combat operations, unless otherwise directed, munitions for one aircraft arming sequence should be placed on the rearm pad before the aircraft arrives and laid out in the order in which it will be loaded.

J-21. Some munitions containers and Hellfire missiles require two people to lift during loading. When a full complement of munitions types is required, the safest approach is to load the turret weapon system first and follow with the inboard wing stores. Arming instructions are in the aircraft operator manual.

Table J-2. Distances Between Rearm Points and Ready Ammunition Storage Areas

REQUIRED DISTANCE (IN FEET)			
FROM	**TO**	**Barricaded**	**Unbarricaded**
Rearm point	Rearm point	100*	100*
Rearm point	Inhabited buildings and unarmed aircraft	400	800
Rearm point	Public highways	240	480
Rearm point	POL storage or refuel facilities	450	800
Ready ammunition storage area	Rearm point	75	140
Ready ammunition storage area	Inhabited buildings and unarmed aircraft	50	1,010
Ready ammunition storage area	Public highways	305	610
Ready ammunition storage area	POL storage or refuel facilities	505	1,010
*Distance based on rotor clearance.			

J-22. Simultaneously arming and refueling minimizes the time that the aircraft is on the ground and increases turnaround time. This is a risky operation. Therefore, the aviation commander must ensure that all personnel are thoroughly trained and the SOP is well rehearsed.

J-23. Arming the weapon system is accomplished in a specific sequence. Initially, the weapon system must be placed in the safe mode, beginning with the outboard systems and moving inboard. The system is left on, and a stray current check conducted on the rocket pod. The turret weapon system and the wing stores opposite refueling port are the only weapon systems that should be armed while the aircraft is being refueled. Once refueling is complete, the inboard systems are loaded, followed by the outboard weapon systems on the refueling port side of the aircraft. Required maintenance equipment must be brought to the FARP to maintain the weapon systems.

TRAINING

J-24. Mission success depends on the ability of FARP personnel to set up and provide rapid and responsive arming and refueling services. The different arming configurations of aircraft require armament personnel to be trained in the handling, loading, and arming of all armament systems. Armament technical manuals show the required training levels for aircraft armament/missile systems repairers. Because of the dangers of arming “hot aircraft,” the commander must ensure that ammunition specialists are thoroughly trained in handling ammunition around aircraft. The training guidelines discussed below should be followed.

Training Realism

J-25. Training must be as realistic as possible. All FARP operations must be practiced and conducted under combat-like conditions. Ensure that the program allows for 24-hour operations under varying levels of MOPP.

Operation Skills

J-26. A successful FARP is the final product of a program that builds on individual skills and cross-trains assigned and attached personnel. Integrating individual skills with team training results in safe and well-coordinated operations. The commander must continually evaluate the FARP team's ability to deploy and conduct operations.

Individual and Collective Training

J-27. FARP operations are successful when all personnel are trained to operate as a team. Individual and collective training for every team member should not be limited to just arming and refueling activities but should include the following:

- Firefighting and rescue procedures IAW FM 10-67-1.
- Class III/V helicopter sling load operations, to include hand and arm signals, IAW FM 10-450-3.
- Day and night land navigation proficiency.
- NBC detection and decontamination.
- Aircraft recognition.
- Self-aid and buddy-aid procedures.
- Night vision device training.
- Extensive driver training.

Appendix K

Sling Load Operations

The use of air assets continues to be an essential part of the munitions distribution system in both emergency and routine resupply operations. Helicopters play a major role in delivering munitions. Munitions units deliver munitions to the sling load area and ensure that operations are conducted safely and efficiently. Ground crew training and performance determine the success of the sling load mission. This appendix provides general guidance on sling load operations. Additional information can be found in FM 10-450-3.

PLANNING

K-1. Operations planning begins with site selection and setup of the sling load area. Sling load sites must be at least 550 meters from munitions storage locations, working areas, and inhabited areas. Other criteria include the following:

- Must be located where aircraft will never pass over munitions storage areas, inhabited areas, or public roads when approaching, landing, taking off, or leaving the site.
- Must be at least 25 meters square and constructed of the best material available. Perforated steel planking is a good field expedient material.
- Must use prevailing wind direction as the baseline for establishment to facilitate helicopter landing and takeoff and to limit downwind contamination in case of accidents involving chemical munitions.

Setup planning should provide for load and hookup positions, rigging area, emergency landing area, rendezvous points, control of equipment, vehicles and roads, and establishment of a firefighting equipment point.

SAFETY

K-2. Because compatibility and Q-D cannot be maintained, the sling load area must not be used to store munitions. All incoming shipments and field returns must be cleared immediately and properly stored in the storage facility. Only those munitions to be placed in cargo nets should be on the site. Cargo nets may be loaded at the storage facility and then transported to the sling load area. MHE must be kept clear of the area while helicopters are landing or taking off.

K-3. Ground crew personnel must be thoroughly trained and aware of the dangers of working under hovering helicopters. These dangers are not always apparent. Chances of injury are minimized by strictly observing the following guidelines:

- Avoid flying debris and foreign object damage. Pick up loose equipment and dispose of trash.

- Avoid cargo leg entanglement. Tape legs every three feet and carefully coil legs on top of load.
- Avoid sharp objects protruding from load or aircraft. Pad sharp edges and wear a helmet while under aircraft.
- Avoid top-heavy or unbalanced loads. Always load heavy items on bottom center of cargo net.
- Avoid being caught between the load and the aircraft. Never place yourself between moving and stationary objects.
- Watch aircraft carefully; be prepared to move quickly should the aircraft move suddenly.
- Avoid moving and protruding parts of the aircraft, such as the main and tail rotor blade, landing gear, and swinging cargo nets.
- Avoid tripping over static discharge wand grounding cables or grounding rods.
- Be alert for damaged lifting equipment. Stop operations if damage is discovered.
- Use special care on slippery or wet surfaces. Clear ice and snow from work areas.
- Wear all required safety equipment.
- Always use the static discharge wand regardless of type of aircraft in use. Maintain solid contact until load is connected to cargo hook. Static electricity is dangerous and may cause injury or death.
- Be aware of obstacles that may cause tripping or falling.
- Keep an eye on fellow soldiers to prevent them from getting into hazardous situations.
- Double-check all loads for proper rigging and sling attachment.
- Do not participate in or allow horseplay of any type. Anyone observing unsafe acts is obligated to make immediate corrections.
- Know individual positions in relation to aircraft at all times; this is especially critical during periods of limited visibility.
- Closely watch movement of aircraft and aircrew signals.
- Follow established SOPs and emergency procedures.
- Stay clear of the hookup area if not part of the hookup team.
- Ensure that everyone is familiar with the tasks that they are responsible for performing.

K-4. Ground crew teams are classified by their locations: the hookup team (at the landing site) and the receiving team (at the supported unit site). The hookup team consists of at least three soldiers to handle signaling, grounding, and hookup. Additional soldiers may be required for hookup for dual or multiple-hook aircraft. Because they control the helicopter, soldiers responsible for signaling play a major role in sling load operations.

K-5. All ground crew members working beneath a hovering helicopter must wear PPE for maximum personal safety. Eye goggles, earplugs, a securely fastened helmet, and leather or electrical worker gloves must be worn at all times. Clothing must be securely buttoned with sleeves down. Watches, rings,

and other jewelry (except for military identification tags) must be removed to prevent snags in cargo nets or loads.

K-6. Army helicopters commonly used during sling load operations are the UH-1N/P Iroquois (HUEY), the UH-60 Blackhawk, and the CH-47 Chinook (C and D models). Characteristics of these aircraft include the following:

- **UH-1N/P.** The HUEY is a single-engine, single main rotor, general-purpose helicopter used for transporting troops, cargo, and injured personnel. The UH-1N is the twin-engine version. The UH-1P and UH-1N have maximum cargo hook capacities of 4,000 and 5,000 pounds respectively.
- **UH-60.** The Blackhawk is a single-engine, single main rotor helicopter used to transport personnel, supplies, and equipment. It has a cargo hook capacity of 8,000 pounds. The Navy version (SH-60B) has a maximum cargo hook capacity of 4,000 pounds.
- **CH-47C/D Chinook.** The Chinook is a twin-engine, tandem rotor helicopter used to transport personnel, supplies, and equipment. The CH-47C has a maximum hook capacity of 20,000 pounds. The CH-47D has a maximum hook capacity of 26,000 pounds.

K-7. Regardless of the type aircraft used for sling load operations, the load weight must be accurately determined and reported to the aircrew. Inaccurate load weights could cause the pilot to lose control of the aircraft.

Glossary

ABL	ammunition basic load
ABLCS	Ammunition Basic Load Computation System
AC	Active Component
AC	hydrogencyanide (blood agent)
ACC	ammunition condition code
AD	air-droppable
ADACS	Automatic Data Collection System
ADAM	air defense antimissile
AGM	air-to-ground missile
AINS	ammunition information notices
AIT	automatic information technology
AJI	antijamming improvements
AMCOM	(US Army) Aviation and Missile Command
AMSTAT	ammunition status report
AO	area of operations
AP	armor piercing
APDS-T	armor-piercing, discarding sabot-tracer
APE	ammunition peculiar equipment
APERS	antipersonnel
APFSDS-T	armor-piercing, fin-stabilized, discarding sabot-tracer
API	armor-piercing incendiary
APOD	aerial port of debarkation
AR	Army regulation
ARDEC	Armament Research, Development and Engineering Center
ARNG	Army National Guard
ARTEP	Army Training and Evaluation Program
ASA	ammunition support activity
ASCC	Army service component commander
ASIS	Ammunition Surveillance Information System
ASL	authorized stockage list
ASP	ammunition supply point
AST	ammunition support team

AT	antitank
ATACMS	Army Tactical Missile System
atck	attack
ATP	ammunition transfer point
ATR	Ammunition Transfer Record (DA Form 4508)
BAO	brigade ammunition office
BCLST	bar code laser scanner terminal(s)
BCM	binary chemical munitions
BCT	brigade combat team
BGM	basic guided missile
BIDS	Biological Identification Detection System
BII	basic issue item(s)
BLAHA	basic load ammunition holding area
BLSA	basic load storage area
BLSTG	blasting
BOE	Bureau of Explosives
BOIP	basis of issue plan
BSA	brigade/battalion support area
C&P	component and packaging
C2	command and control
C3I	command, control, communications, and intelligence
cal	caliber
CARC	chemical agent-resistant coating
CB	chemical, biological
CBU	cluster bomb unit
CCSS	Commodity Command Standard System
CDT	cargo documentation team
CEA	captured enemy ammunition
CEE	captured enemy equipment
CEM	captured enemy materiel
centigray	A unit of absorbed dose of radiation (one centigray equals one rad).
CFR	Code of Federal Regulations

cGy	centigray
CHE	cargo/container handling equipment
chem	chemical
CIIC	controlled inventory item code
CINC	commander in chief
CLASS III	(supply) petroleum, oil, and lubricants
CLASS V	(supply) ammunition
CLGP	cannon-launched guided projectile (Copperhead)
CLSTR	cluster
CMCC	corps movement control center
CMEC	captured materiel exploitation center
CMMC	corps materiel management center
CN	A chemical agent (tear gas).
cntr	container
CO	commander/commanding officer
COMMZ	communications zone
COMP	composition
COMTECHREP	complementary technical report
CONUS	Continental United States
CONUSA	Continental United States Army
COSCOM	corps support command
COTS	commercial off-the-shelf
CP	command post
CS	combat service
CS	chlorobenzalmalononitrile (chemical agent, tear gas)
CSA	corps storage area
CSB	corps support battalion
CSG	corps support group
CSR	controlled supply rate
CSS	combat service support
CSSCS	Combat Service Support Control System
CTA	common table of allowances
ctg	cartridge
ctn	carton

CTT	common task test
DA	Department of the Army
DAAS	Defense Automated Address System
DAC	Defense Ammunition Center (formerly USADACS); also Department of the Army civilian
DAMMS-R	Department of the Army Movement Management System-Redesigned
DAO	division ammunition office(r)
DARCOM	(US Army) Development and Readiness Command
DAS-3	Decentralized Automated Service Support System-3
DCS	Defense Communications System
DDESB	Department of Defense Explosives Safety Board
DED	detailed equipment decontamination
demo	demolition
DETECHREP	detailed technical report
DISCOM	division support command
div	division
DIVARTY	division artillery
DLA	Defense Logistics Agency
DMMC	division materiel management center
DMWR	depot maintenance work requirement
DOD	Department of Defense
DODAAC	Department of Defense activity address code
DODAC	Department of Defense ammunition code
DODIC	Department of Defense identification code
DOD STD	Department of Defense standard
DOL	director of logistics
DOS	days of supply
DOT	Department of Transportation
DP	dual purpose
DS	direct support
DSA	division support area
DSR	depot surveillance record
DTD	detailed troop decontamination

DTO	division transportation office(r)
DTR	daily transaction report
DWG	drawing
EAC	echelon above corps
ECCM	electronic counter-countermeasures
ECM	electronic countermeasures
ECP-S	engineering change proposal-software
ED	emergency destruction
e.g.	for example
EID	explosive initiating device
EMP	electromagnetic pulse
EOD	explosive ordnance disposal
ETA	estimated time of arrival
FAE	fuel-air explosive
F/AP	fragmentary/armor-piercing
FARP	forward arming and refueling point
FEDLOG	Federal Logistics Record
FLOT	forward line of own troops
FM	field manual
FMIG	Foreign Materiel Intelligence Group
FMTV	Family of Medium Tactical Vehicles
FORSCOM	(US Army) Forces Command
frag	fragment/fragmentary
FSB	forward support battalion
FSC	field storage category
FSC	Federal Supply Classification
FSCG	Federal Supply Classification Group
FSTC	US Army Foreign Science and Technology Center
FSU	field storage unit
FTX	field training exercise
FY	fiscal year
G2	division security/intelligence staff
G3	division operations staff
G4	division logistics staff

GB	chemical nerve agent, Sarin
GCSS-Army	Global Combat Support System-Army
GM	guided missile
GMLR	guided missile and large rocket
GREN	grenade
grnd	ground
GS	general support
GSA	General Services Administration
GTA	graphic training aid
HC	aluminum zinc oxide hexachloroethane (chemical smoke)
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
IAEA	International Atomic Energy Agency
IATA	International Air Transportation Association
IAW	in accordance with
IBD	inhabited building distance
IBM	International Business Machines
ICAO	International Civil Aviation Organization
ICM	improved conventional munitions

ICS3	Integrated Combat Service Support System
i.e.	that is
Illum	illuminating
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Association
incd	incendiary
INSCOM	(US Army) Intelligence and Security Command
IPE	individual protective equipment
IR	infared
ISB	intermediate staging base
ISO	International Standardization Organization
ITV	in-transit visibility
J2	joint staff (intelligence)
J3	joint staff (operations)
J4	joint staff (logistics)
JATO	jet-assisted takeoff
JCMEC	Joint Captured Materiel Exploitation Center
JHCS	Joint Hazard Classification System
JIC	Joint Intelligence Center
LAN	local area network
LAP	link access procedure/process
LAPES	low altitude parachute extraction system
lb	pound
lkd	linked
LMTV	light medium tactical vehicle
lnchr	launcher
LOC	lines of communication
LOGPLAN	logistics plan
LOGSA	logistics support activity
LSE	logistics support element
MACOM	major command
MATO	materiel and transportation office(r)
MCA	movement control agency
MCB	movement control battalion

MCC	movement control center
MCL	mission configured load
MCO	movement control officer
MCT	movement control team
METL	mission essential task list
METT-TC	mission, enemy, terrain, troops, time available, and contractors on the battlefield
MHE	materials handling equipment
MI	military intelligence
MICLIC	mine clearing line charge
MILHBK	military handbook
MILSTAMP	Military Standard Transportation and Movement Procedures
MIL-STD	military standard
MILSTRIP	Military Standard Requisitioning and Issue Procedures
MLP	medium lift platoon
MLRS	Multiple Launch Rocket System
mm	millimeter
MMC	materiel management center
MMR	Military Munitions Rule
MOADS	Maneuver Oriented Ammunition Distribution System
MOADS-PLS	Maneuver Oriented Ammunition Distribution System Palletized Load System
mod	modified
MOPP	mission oriented protective posture
MOPP-4	mission oriented protective posture-4
MOS	military occupational specialty
MP	military police
MPSM	multipurpose submunition
MRCT	movement regulating control team
MRO	materiel release order
MSB	main support battalion

MSR	main supply route
MT	megaton
mtl	metal
MTMC	Military Traffic Management Command
MTOE	modified table(s) of organization and equipment
MTSQ	mechanical time, super quick (fuze)
NA	North America
NBC	nuclear, biological, chemical
NCO	noncommissioned officer
NCOIC	noncommissioned officer in charge
NDI	nondevelopmental item
NEQ	net explosive quantity
NEW	net explosive weight
NFPA	National Fire Protection Association
NGB	National Guard Bureau
NICP	National Inventory Control Point
NIIN	national item identification number
NSN	national stock number
OCONUS	outside continental United States
OD	olive drab
OPLAN	operations plan
OPLOG	operations logistics
OPORD	operations order
OPSEC	operations security
OSC	Operations Support Command (Comprised of former AMCCOM and IOC
OSHA	Occupational Safety and Health Agency
pam	pamphlet
para	parachute
PC	personal computer
PD	point detonating
pers	personnel
PETN	pentaerythrite tetranitrate (explosive)
pk	package

PLL	prescribed load list
PLS	palletized load system
POC	point of contact
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oil, and lubricants
POW	prisoner of war
PPE	personal protective equipment
prac	practice
PRETECHREP	preliminary technical report
proj	projectile
PSN	proper shipping name
PWP	plasticized white phosphorus
QA	quality assurance
QA/QC	quality assurance/quality control
QANET	quality assurance network
QASAS	quality assurance specialist(s) (ammunition surveillance)
Q-D	quantity-distance
QRF	quick reaction force
qty	quantity
RAAM	remote antiarmor mine (munition)
RAOC	rear area operations center
RAP	rear area protection
RASA	ready ammunition storage area
RB	rubidium
rd(s)	round(s)
RDX	rapid detonating explosive (cyclotrimethylenetrinitramine)
REPSHIP	report of shipment
RF	radio frequency
RIC	routing identifier code
rkt(s)	rocket(s)
RMP	reprogrammable microprocessor
ROD	report of discrepancy
RSO&I	reception, staging, onward movement, and integration

RSP	render safe procedure
RSR	required supply rate
RTCH	rough terrain container handler
S&P	stake and platform
S&T	supply and transportation
S&TI	scientific and technical intelligence
S2	battalion or brigade level security/intelligence staff
S3	battalion or brigade level operations staff
S4	battalion or brigade level logistics staff
SAAS	Standard Army Ammunition System
SAAS-DAO	Standard Army Ammunition System-Division Ammunition Office
SAAS-MOD	Standard Army Ammunition System-Modernization
SALUTE	size, activity, location, unit, time, and equipment
SAM	system administrator manual
SASO	stability and support operations
SB	supply bulletin
SCG	storage compatibility group
SCL	strategic configured load
scrng	screening
ser	series
SF	special form
SIDPERS	Standard Installation/Division Personnel System
simul	simulated/simulation
SITREP	situation report
SM	soldiers' manual
SME	subject matter expert
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
TAFR	Training Ammunition Forecast Report
TAMIS-R	Training Ammunition Management Information System-Redesigned
TAMMC	theater army materiel management center
TAT	to accompany troops
TAV	total asset visibility
TB	technical bulletin
TC	training circular
TC-AIMS-II	Transportation Coordinators Automated Information for Movement System-II
TCF	tactical combat force
TCMD	transportation control movement document
TCN	transportation control number
TEA	triethyl aluminum
TECHINT	technical intelligence
TEU	technical escort unit
T-LKD	tracer-linked
TM	technical manual
TMR	transportation movement release
TMT	transportation motor transport
TNT	trinitrotoluene (dynamite)
TO	theater of operations
TOE	table(s) of organization and equipment
TOW	tube-launched, optically-tracked wire-guided missile system
TP	target practice

TPCSDS-T	target practice cone-stabilized discarding sabot-tracer (ammunition)
TP-T	target practice-tracer (ammunition)
TRADOC	(United States Army) Training and Doctrine Command
TSA	theater storage area
TSC	theater support command
TTP	trailer transfer point
UIC	unit identification code
UK	United Kingdom
ULLS-S4	Unit Level Logistics System, S4 Module
UNO	United Nations Organization
UPS	uninterruptible power system/supply
US	United States
USA	United States Army
USAEHA	United States Army Environmental Hygiene Agency
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
VT	variable time
VTAADS	Vertical Army Authorization Document System
WARS	Worldwide Ammunition Reporting System
whd	warhead
WHNS	wartime host nation support
wht	white
WMD	weapons of mass destruction
wnd	wooden
WP	white phosphorus
wt	weight
XO	executive officer

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