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JANUARY 1981

AMMUNITION HANDBOOK

HEADQUARTERS, DEPARTMENT OF THE ARMY

28 JANUARY 1981

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

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FIELD MANUAL
NO. 9-13

Headquarters
Department of the Army
Washington, DC, 28 January 1981

AMMUNITION HANDBOOK

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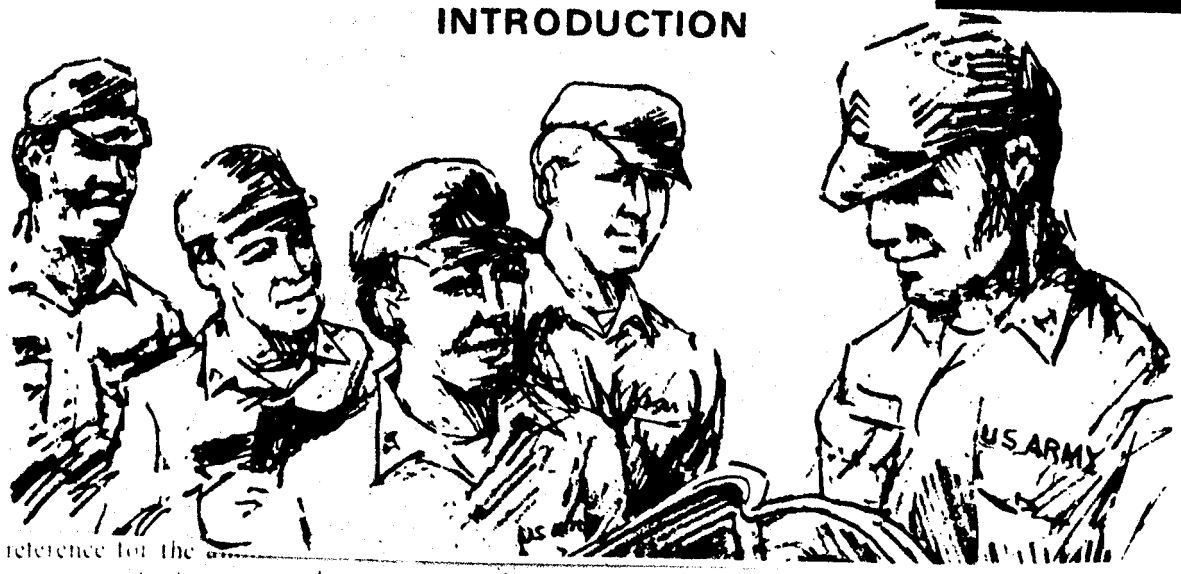
CHAPTER 1

INTRODUCTION



reference for the training and when assigned to an ammunition support unit or activity in the field. As a manual, it is not considered to be a complete text in the realm of ammunition; it is intended to provide useful data on the most important points of ammunition service in the field.

This manual has been designed in arrangement and style of presentation to make it easy to use in the classroom or on the job.

SCOPE

This manual covers the storage and inspection of ammunition, necessary maintenance, handling and transportation operations in the field, and

Users of this material are encouraged to submit recommended changes and comments to improve the manual. Comments should be keyed to the specific page, paragraph, and line of the text to which the change is recommended. Provide your reasons for each comment to insure understanding and complete evaluation. Comments should be prepared using DA Form 2028 (Recommended Changes to Publications) and forwarded direct to the Commandant, U.S. Army Missile and Munitions Center and School, Attn: AIAK-CD-CS, Redstone Arsenal, Alabama 35809.

SITE SELECTION AND STORAGE PLANNING

SITE SELECTION

Tactical conditions and other influencing factors may not permit you to select an ammunition supply point (ASP) having all of the features you need. Higher headquarters may even inform you to use one particular location. In any case, keep the criteria below in mind. Try to incorporate into your site as many of the following features, listed in order to importance, as you can:

- Easy to get to by the units you are supporting.
- Near the main supply route (MSR) with access roads into the ASP.
- A roadnet within the site that will allow vehicles to travel under all weather conditions and will require little or no maintenance.
- Ground as level as possible but with good drainage characteristics, and able to support the weight of ammunition.
- Natural barriers which can serve to separate field storage units (FSU) and categories.
- Isolation from hospitals and important military installations, such as, airfields, docks,

factories, and similar facilities subject to enemy attack.

- Unpopulated downwind, if storing any hazardous chemicals.
- An adequate water supply for fire fighting purposes.
- A minimum of flammable vegetation.
- Features making the site readily defensible against enemy ground attack.
- An area large enough to disperse ammunition stocks for protection against artillery or air attack and to meet future expansion requirements.
- Natural concealment.

SELECT ALTERNATE SITE

You should choose an alternate ASP site close to your primary one, because you may discover some other unit occupying your site by the time you start to move in. Then, too, the enemy may hit you with artillery or mortar fire as soon as you get set up, and you may have to evacuate fast. Some units have used their alternate site as a regular ASP when their stockage far exceeded what was originally intended.

STORAGE PLANNING

The first tasks that must be undertaken, after the site location and the type of storage has been determined, are preparation of the site layout and storage plans for the ASP. A well conceived plan will aid in assuring that a smooth flowing, safe operation results. The ASP is organized into specific areas to make it easier to do the mission of the ASP, and at the same time, isolate hazards. Figure 2-1 illustrates a typical layout and shows the areas which normally will be required. Table 2-1 provides a list of the ASP

areas with pertinent data to assist in developing your layout plan.

Several basic methods for storage of ammunition in the field area are available. Selection of the system to be used should be based on the physical characteristics of the site, location of hostile forces, either uniformed or clandestine, expected weather conditions, the time and resources available, and the expected life of the ASP. You must use a system where the space available and the type of operation will permit observation of quantity distance (QD) requirements. The basic systems are outlined as follows:

Area Storage. When this method of storage is used, the area is divided into three sections and subdivided into ESU's and stacks. The stacks of ammunition are arranged in checkerboard fashion, spaced in accordance with QD

AREA	MINIMUM SAFETY DISTANCES
ASP	
Vehicle Holding Area	Required Quantity Distances (Loaded vehicles are considered aboveground unbarricaded storage.)
Segregation Area	Required Quantity Distances for ammo storage
Ammo Storage Area	Required Quantity Distances.
Demolition Area	700 M from other areas.

Layout Areas (Continued)

PURPOSE	NOTES
onexplosive class V material.	An inert area for boxes, brass, etc
or loaded vehicles being convoy.	It may have to be consolidated into the vehicle holding area
ity of limited	Located so aircraft will not pass over storage or bivouac areas should be at least 25 M. square having a stabilized base of PSP matting, etc., which will support the weight of stocks and MHE.
for the ASP personnel	Should be located as far as possible from storage sites for increased safety and a minimum of noise.

requirements. This system provides efficient use of the total area available, but it may require a lot of road and pad construction and stabilization.

Roadside Storage. This method allows ammunition to be stored in stacks along the edges of existing roadways. FSU's and sections are spaced according to QD requirements. Effective use of this method requires a large road network and a total area much larger than is required for area storage. A variation of roadside storage, known as "storage in depth", is very useful whenever the existing road network is limited. In this method, one or more additional stacks of ammunition are stored inland from the roadside stacks. Wet climates, poor soil conditions, or heavy forests would restrict using this method of storage. The stacks of ammunition would not be easy to get to for most materials handling equipment (MHE).

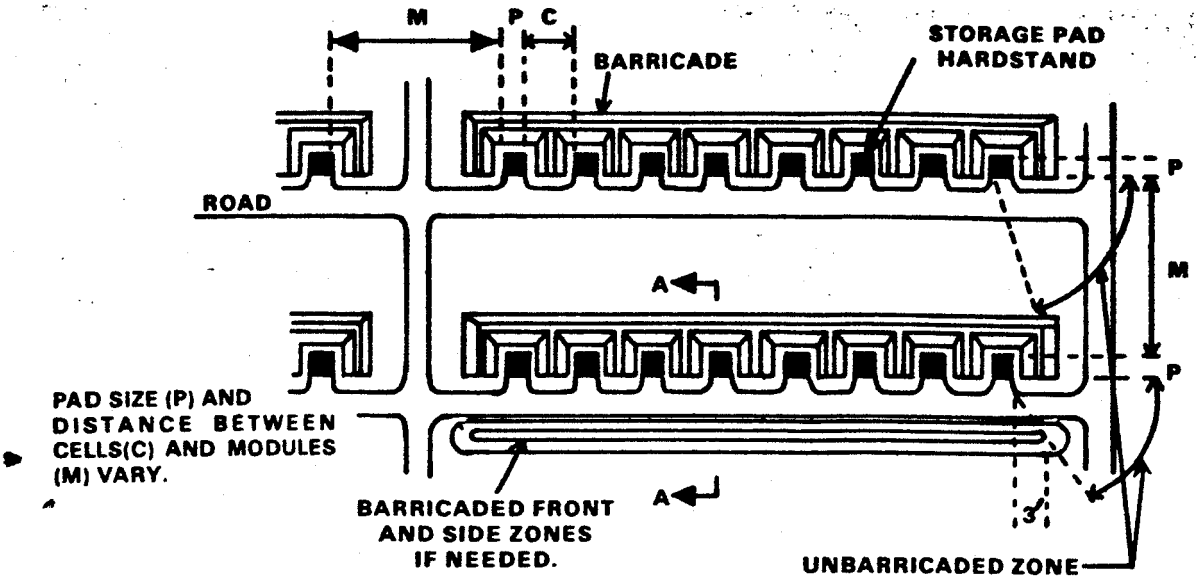
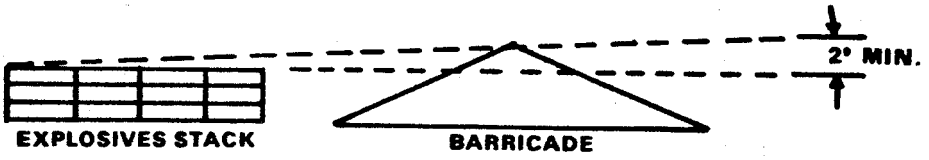


Figure 2-2. Typical 8-Cell Module

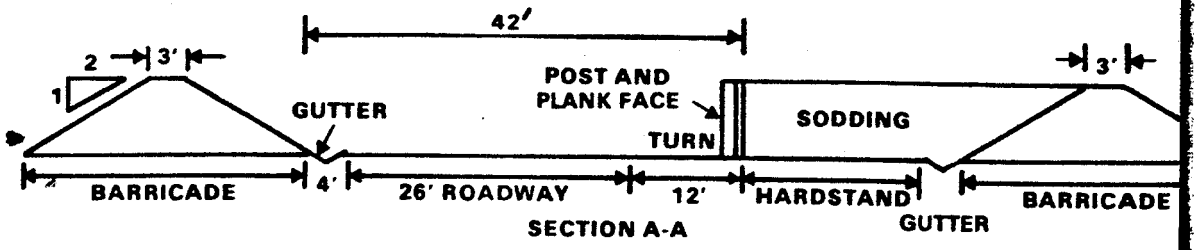
Table 2-1. ASP Layout Areas

PURPOSE	NOTES
The Operations Center For the ASP.	Located at main entrance to ASP for maximum control and service to supported units.
A Parking area for vehicles waiting to be served - - Reduces traffic congestion in your storage sites.	Located near the ASP office where vehicles will not interfere with the flow of traffic.
A temporary storage area for segregating hazardous ammo and ammo in mixed lots. Also used to inspect unit turn-in when not possible to inspect at time of receipt.	Unservicable ammo should be stored by item, lot, and category and a minimum of 700 M. from nearest stack of serviceable ammo.
For storing serviceable ammo with respect to its field storage category.	The storage area is divided into storage sections by No., FSUs by letter, and stacks by no. Example: 2D1 is Sect. 2, FSU-D, Stack 1
For destroying unserviceable ammo.	Choose an area unusable for other purposes and cleared of vegetation.

TABLE CONTINUED ON NEXT PAGE ▶



BARRICADE HEIGHT ABOVE EXPLOSIVES STACK



SECTION A-A

Figure 2-2. (continued)

heat or fragment dispersion; increased danger to stocks from indirect fire and aerial bombs; and more engineer support is required for initial construction. This method should be used only if the QD limitations in TM 9-1300-206 cannot be met, and a waiver has been requested and granted in accordance with AR 750-1.

THE MODULAR STORAGE SYSTEM

ADVANTAGES

- Reduced real estate requirements.
- Improved security with comparable forces.
- Reduced danger from direct fire on ammunition stocks in small barricaded areas.
- Reduced transportation needs in the ammunition area.
- Reduced internal roadnet needs.

DISADVANTAGES

- Possibility of fire or explosion spreading from cell-to-cell because of heat or fragment dispersion.
- Increased danger to stocks from indirect fire and aerial bombs.
- More engineer support required for initial construction.

• **Where to Use.** In a theater where limited real estate and/or security are guiding factors, it is often impossible to store ammunition as prescribed in QD and compatibility regulations for area, roadside, and area/roadside storage. Available resources may make the use of a modular system of storage necessary. In most cases, this system will only be used when storing less than 2,000 short tons (ST). It may also be the solution for storing larger quantities in rear areas where real estate is limited, and where several module blocks may be required.

• **When to Use.** The modular storage system is used only as an alternate solution when other field storage methods for class 1.1 ammunition cannot be used. This system does not provide the same degree of protection for personnel or ammunition stocks that can be had by regular QD dispersion. The modular system, with cells, will be used only when approved by the major command.

• **How to Use.** The use of the modular system will in no way eliminate the need to adhere to other principals of ammunition storage such as:

- Maximum feasible separation.
- Proper drainage.
- Dispersion of stocks within available cells to avoid complete loss of a single type munition from one explosion or fire.
- Safety and security.

Modular Storage System Configuration

• **Module.** A module is defined as a barricaded area containing not more than eight cells separated from each other by shared, intermediate barricades. The arrangement of modules and cells must be so that unbarricaded openings will not face each other. One-cell modules may be built if required. Try to

maintain the maximum flexibility for stockage and internal movement. When complete, the facility has tonnage and explosive weight limitations specified by the major command that authorized the use of the modular system. These limits cannot be exceeded.

- **Cell.** Each cell has interior dimensions no longer than 20 meters square, measured from the base of each barricade. Each cell contains a storage pad no larger than 18 meters square, located at least 3 meters from the cell opening and 1.5 meters from the base of each barricade. The minimum distance between the nearest bases of pads of ammunition in adjacent cells is 16 meters. The minimum distance between the nearest edges of storage pads in adjacent modules is 65 meters.

- **Barricades.** All barricades or berms are the standard earth mound type. They are constructed so that the top, or crest, is an absolute minimum of 11 feet in height measured from the center of the pad, or one foot higher than any stacks of stored ammunition. The slope of the barricade is to be at the normal angle of repose, and the crest is at least three feet wide (fig 2-3).

- **Barricaded Open Storage Module**

■ A barricaded open storage module is an area composed of not more than eight connected storage cells (with hard surface storage pads) separated from each other by a barricade. Light, shed-type, metal roofs may cover individual cells. Heavy structures or flammable materials are not to be used. When outdoor storage of ammunition is determined essential, it must be authorized by the Commanding General, DARCOM; Commanding General, US Army Forces Command, or commanders of major

overseas commands. Depending upon command jurisdiction of the installation concerned, barricaded open storage modules may be used for storage of high explosive (HE) bombs and other similar cased class 1.1 ammunition. The net weight of explosives in each cell of the module will not exceed 250,000 pounds. All items in a module must be compatible.

■ The barricade is the standard earth mound type (or equivalent natural barrier) with slope not steeper than 1.5 to 1 and a crest at least 3 feet wide. The barricade will be of such height that a straight line drawn from the far edge of the stack (away from the barricade) at an angle 2 degrees above a horizontal line drawn along the top of the stack will pass through the entire width of the barricade crest. The centerline of barricades between cells of the module will be located midway between adjacent storage pads. Back and end (outside) barricades will be located at the same distance from the pads as those between cells.

■ Distance between stacks of munitions in adjacent cells, and in adjacent modules will be as shown in table 4-12, AR 385-64. Where net explosives weights involved differ from those listed in table 4-12, AR 385-64, required separations may be determined as follows:

Distance between stacks in adjacent cells (in feet) = 1.1 times the cube root of the weight of explosives in the module requiring the greater separation.

Distance between adjacent modules (in feet) = 2.5 times the cube root of the net weight of explosives in the module requiring the greater separation.

■ The distance between a module and a standard concrete arch or steel arch igloo type

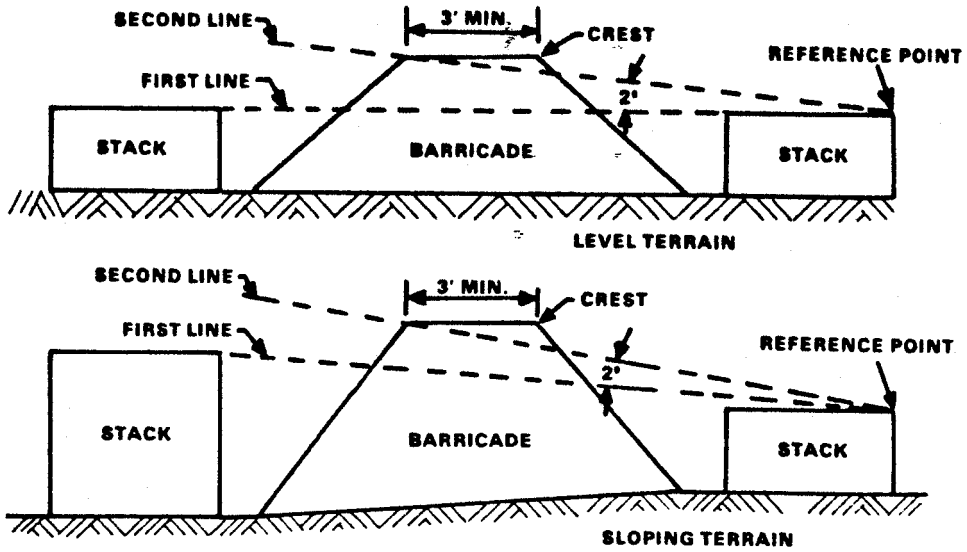


Figure 2-3A. Determination of Barricade Height

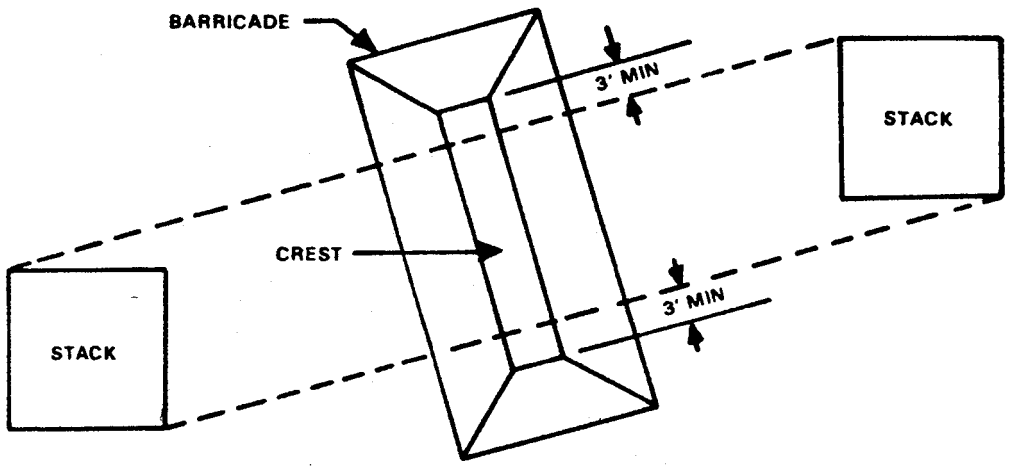


Figure 2-3B. Determination of Barricade Length

- All other provisions of TM 9-1300-206 regarding safety, storage, handling, etc., will apply to modular cell storage.

STORAGE PLAN

The storage plan developed must agree with the area layout plan. Some of the factors you must consider include these:

- Maximum tonnage expected to be stored in each storage category.
- Expected average daily receipts and issues.
- Time available prior to arrival of first shipments of ammunition.
- Expected lifetime of the ASP.
- Type of storage to be used.
- Physical characteristics of the terrain which can be used as natural barriers or which prohibit or restrict use of certain areas.
- Natural cover and concealment available.
- Availability of engineer construction assistance and other required support.
- Area security problems and requirements.
- Special security requirements for classified ammunition.
- Section, FSU, and stack numbering sequences to assure rapid and accurate placement and retrieval of stocks.

At the same time the storage plan is being prepared, all storage areas must be clearly marked, and signs must be put up indicating traffic direction, entrances, and exits. A map of the storage areas must be made and reproduced for use in directing traffic to the proper point.

STORAGE OPERATIONS

Experience is often the best teacher. Below are recommendations resulting from field experience which may be of value during the planning phases of an ammunition operation.

Pallets. Most ammunition received in the field comes on pallets. The ammunition should be left in this state until it reaches the user or is broken down for less than pallet issues. It should be shipped on pallets even if the artillery battery or infantry battalion has no means of unloading pallets from vehicles. Shipped pallets are easily handled at the ASP, and they stand up better to the rough handling of transportation. The ammunition can be easily removed from the pallets prior to off-loading at its destination. Some additional advantages provided by pallets are:

- Reduces manpower requirements.
- Speeds and eases handling.
- Helps to maintain lot item integrity.
- Eases stock inventory.
- Reduces dunnage requirements.
- Reduces space requirements for a field installation.
- Increases air transportability.

Traffic Control. Be sure that traffic flow is smooth. Have one-way traffic, few turn-arounds, and parking areas at entrances and exits to speed the issue of ammunition. After you're in operation, don't allow trucks to back up. Also have a parking area in case several trucks arrive at once.

Plan Ahead. In laying out your ASP, locate the office far enough from the entrance to allow a train to park before you direct the trucks to various stacks. Make a map of the area showing

stack. In most areas if stacks are not raised at least 4 to 6 inches off the ground, the ammunition gets wet, and there is no circulation of air. When this happens, rounds rust and generally become unserviceable and boxes rot and fall apart. If lumber or trees are not available for dunnage, try using empty ammunition boxes, or ration boxes filled with sand or dirt. Bricks, wood from crates, and materials from wrecked buildings will also work in a pinch. Tarps can also be used as improvised shelters for your VT fuzes and pyrotechnics.

Stack Location. Ammunition stacks should be far enough back from the road to allow trucks to load or unload without interfering with traffic.

Ventilation. Stack containers so the markings are plainly seen, and allow for circulation of air. Don't jam boxes against each other.

Drainage. Dig ditches around stacks of ammunition if drainage is expected to be a problem.

Propellant Charge Storage. In stacking propellant charges, it is a good practice to have lids turned down slightly to prevent water seepage.

Guided Missile Storage. Special care must be taken in the storage of certain guided missile components. The body of the missile contains delicate electronic components which makes storage in some type of permanent structure desirable. If open storage is absolutely necessary, the containers should be protected with tarps or other suitable cover. The storage areas should have hard and level surfaces.

Security. Security is a major concern where classified missile or rocket components are stored. Classified components must not be stored with unclassified components. An

accurate check must be kept on personnel who must enter classified storage areas or structures. Guards are necessary if open storage is used.

CAMOUFLAGE

The practice of hiding, blending, and deceiving must be observed in the establishment of any ASP. Wise use of camouflage and concealment techniques will aid in preventing discovery of the ASP. Natural cover and concealment should be used as much as possible. FM 5-20 outlines the general principles of camouflage. Available camouflage material is covered in TM 5-200. However, the requirements of cover and concealment may conflict with the requirement for firebreaks, and the erection of ammunition shelters. Commanders must carefully weigh their decisions in trying to use camouflage as much as possible without violating explosive safety and proper ammunition storage procedures.

SECTION II

STORAGE CATEGORIES AND QUANTITY DISTANCES

GENERAL

Storage in a theater of operation is intended to follow as nearly as possible the principles which apply to storage in the Continental United Status (CONUS). Because conditions in the theater of operations, such as, variable mobility requirements, scarce facilities, or enemy air power, the state of CONUS storage cannot be fully achieved nor maintained. However, explosives and ammunition may be satisfactorily and safely stored in the theater if CONUS regulations are adapted to field conditions. Detailed information on storage in the theater of operations is given in TM 9-1300-206.

FIELD STORAGE CATEGORIES

General. Storage categories are the primary groups into which ammunition is segregated for storage in the field. The groupings are based on consideration of how desirable it is to store components of complete rounds in adjacent stacks, the hazards of spreading explosions, range of fragments, spread of fires, and chemical contamination. Safety procedures covering ammunition storage are based on the following factors:

- Ammunition items having comparable storage risks are grouped together in the same storage category.

• Within each storage category, the maximum quantity of ammunition to be stored within each stack and within each FSU, and the minimum distance between FSUs and categories, are specified in QD tables for the storage of ammunition in the field.

• Normally, only one kind of ammunition is stored in a stack. If more than one kind is stored in a stack, compliance will be made with the storage compatibility table XX, TM 9-1300-206. Ammunition should be arranged in stacks so that inventory and inspection is easy. Where camouflage is necessary, stacks may be stepped in toward the top (terraced or pyramid stacking) to decrease shadows. Components of complete rounds may be stored within the same FSU when practical.

• Small arms ammunition, except bulk packed incendiary and tracer cartridges which must be stored in category D, may be stored with any category.

Categories for Storage of Conventional Ammunition. For storage purposes, conventional ammunition is divided into categories A through G. Table 2-2 contains a list of class V items by category with exceptions and remarks.

Categories for Storage of Special Ammunition. For storage purposes, special ammunition is divided in the following general categories:

• Inert material such as missile and large (heavy) rocket bodies (less rocket motors) and test and handling equipment for nuclear ordnance items.

• Missile and rocket fuels.

• Oxidizers.

• Solid propellants.

• High explosive (HE) material such as detonators, HE warheads and HE components of explosion type nuclear weapons.

• Nuclear material.

QUANTITY-DISTANCE (QD) TABLES FOR FIELD STORAGE CATEGORIES

Procedures set forth in paragraph 4-41, TM 9-1300-206, are to be used as a guide in the storage of ammunition in the field only. These procedures are based upon the necessities incident to the storage of ammunition in the field. It must be stressed that any reduction of distances or increase in tonnages to those prescribed, increases the probability of loss of life and ammunition.

QUANTITY-DISTANCE CLASSES AND STORAGE COMPATIBILITY GROUPS IN CONUS

Table 2-3, storage compatibility groups for explosives and ammunition, lists the explosives and ammunition which may be stored together. These groupings should not be confused with the hazard classification established for QD requirements. Where two or more classes of explosives and ammunition are stored together in a magazine, the QD requirements will apply for the most hazardous material stored in the magazine. Tables 2-4 and 2-5 give an alphabetical summary of items with their storage compatibility groups and hazard classes. Table 2-6 shows the mix of different compatibility groups in storage.

Table 2-2, Table 2-3 ▶

Table 2-2. Quantity-Distances for Field Storage Categories

CATEGORY	GROSS TONS PER STACK	MINIMUM DISTANCE BETWEEN		GROSS TONS PER FSU
		UNBARRICADED STACKS	BARRICADED STACKS	
A,B or D See Notes 1 and 2	Less than 10	40 FT	30 FT	400
	10- 20 Max.	50 FT	40 FT	
C See Note 3	Less than 10	75	60 FT	300
	10-30 Max.	105 FT	75 FT	
E	Less than 5	75	60 FT	50
	5-10 Max.	105 FT	75 FT	
F	20 Max.	See Note 4	See Note 5	20
G, Class V See Note 6	THE FSU IS THE SMALLEST UNIT FOR THE STORAGE OF BOMBS IN THE FIELD			30 40 50 60 80 100

Table 2-2. (Continued)

MINIMUM DISTANCE BETWEEN		
UNBARRICADED FSU	BARRICADED FSU	CATEGORIES
300 FT		750 FT
300 FT		900 FT
300 FT		900 FT
200FT	75FT	1500 FT.
230FT	90FT	
265FT	99FT	
299FT	101FT	
330FT	120FT	
390FT	135FT	
455FT	150FT	

NOTES

1. If desirable, fixed and semifixed smoke ammunition, except WP., may be stored in category A.
2. The minimum distance between a stack of propelling charges and any other stack must be 100 feet whether barricaded or unbarricaded.
3. Whenever storage space is limited, category C ammunition may be combined with category E.
4. The minimum distance between unbarricaded stacks will be 150 feet.
5. The minimum distance between barricaded stacks will be 75 feet.
6. Under normal conditions, the Department of the Air Force will store and issue all class V supplies; however, depot commanders should always be prepared to handle these supplies in emergencies.

Table 2-3. Storage Compatibility Groups for Explosives and Ammunition

GROUP A
Cyclonite (RDX), dry
HMX, dry
Lead azide, wet
Lead styphnate, wet
Mercury fulminate, wet
PETN, dry
RDX (cyclonite), dry
Tetracene, wet

GROUP B
Blasting caps
Detonators
Fuzes (except chemically-actuated fuzes containing ampoules which may initiate, direct or indirectly, explosives and explosives-loaded components which are assembled in the conventional manner to form the finished explosive fuze).
Mines, practice, AP, M17
Percussion elements
Primer detonators

GROUP C
Ammunition, blank and saluting, cannon
Ammunition, .50 caliber, except API and incendiary rounds
Ammunition, 20mm, practice and high pressure test
Ammunition, 25mm, with inert projectile
Ammunition, 27mm, caseless
Ammunition, 30mm, ball and high pressure test
Ammunition, 30mm, practice and training
Ammunition, 37mm and 40mm, TP and AP
Ammunition, 40mm, practice, M407A1, M382, and M385
Benite
Baron potassium nitrate
Cartridge, 90mm, canister, AP
Cartridges, practice, over 40mm
Catapults, aircraft ejection seat, M3A1, M4A1, M5
Charge, propelling, not assembled to projectiles EC powder
Detonating cord (primacord)
Nitrocellulose
Fuel (solid), emergency power unit
Propellant

Table 2-3. (Continued)

Rockets, practice, 3.5-inch
Rocket motors, M3,M5,M6,M10,M13,M26,M30, M37,M42,M53,M66;Pershing 1st and 2nd stages; Spartan 1st,2nd, and 3rd stages

GROUP D
Adapter booster
Ammonium nitrate, except in original shipping container or equivalent
Ammonium perchlorate, except when particle size is over 15 microns and in original shipping container or equivalent
Ammonium picrate (Explosive D)
Bangalore torpedoes
Baratol
Black powder, bulk
Bombs, demolition
Bombs, fragmentation
Bombs, general purpose
Boosters
Boosters, auxiliary
Bursters
Charge, demolition, snake
Charge, springing earth rod, blast driven
Charge, supplementary, HE
Compositions A,A-2,A-3,A-4,B,B-3,C,C-2,C-3, and C-4
Cutter, cable M1
Cyclonite (RDX), wet
Cyclotol
Demolition blocks
Destructor, HE, M10
Detonating cord (primacord) exposed to detonation hazard at less than intraline distance
Dynamite
Ednatol
Explosive D
Explosives, cratering
Grenades, rifle, AT (except pentolite loaded)
HMX, wet
Mine, APERS, MN,M14 (w/integral fuze)
Mines, antipersonnel (bounding type)
Mines, antipersonnel (cast iron block)
Mines, HEAT
Nitrocellulose wet 8-30% water exposed to detonation hazards at less than intraline distances.
Nitroguanidine

Table 2-3. (Continued)

Nitrostarch
Octol
PBX
Pentolite
PETN, wet
Picratol
Picric acid
Projectile, HE, fuzed or unfuzed
RDX (Cyclonite), wet
Rocket heads, HE and HEAT (except pentolite loaded) w/o motors
Shaped charges
Tetranitrocarbazole (TNC)
Tetryl
Tetrytol
TNT
Tritonal
Torpex

GROUP E

Ammunition, HEP
Ammunition, 20mm, HE, HEI and functional packs containing HE and HEI
Ammunition, 30mm, HEDP
Ammunition, 37mm, HE
Ammunition, 40mm, HE, RDX loaded
Ammunition, 40mm, HEDP
Ammunition, 40mm, HE,M406,M381,M386,M441, and M463
Ammunition, 57mm through 81mm, except WP smoke, HEP and blank
Ammunition, fixed and semifixed, 90mm through 106mm, loaded with ammonal, amatol, Explosive D, composition B or TNT.
Cartridge, heavy mortar, over 81mm (including 81mm M56), except chemical loaded.
Cartridge, light mortar, 81mm or less (excluding 81mm M56), except chemical loaded.
Redeye guided missiles, packaged 3 complete rounds w/launcher
Rockets, HEAT, 3.5-inch, complete round
Rockets, HE, 2.75-inch (in LAU-3/A rocket launcher)

GROUP F

Grenades, hand offensive
Grenades, fragmentation

GROUP G

Ammunition, .50 caliber API and incendiary
Ammunition, 20mm, API
Ammunition, 20mm, incendiary and functional packs containing incendiary, except those containing HE or HEI.

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Table 2-3. (Continued)

Ammunition, 40mm, riot control and pyrotechnic loaded, except WP smoke
Bombs, photoflash
Cartridge, igniter, M2
Cartridge, illuminating
Cartridge, photoflash
Cartridge cases, primer (w/o propellant)
Charge, igniter assembly, for practice hand grenades
Charge, spotting, API practice, M8
Chemical ammunition, group B, tear or smoke producing, w/explosive components, over 40mm.
Chemical ammunition, group B, tear or smoke producing, w/o explosive components.
Chemical ammunition, group D, containing flammable solids, except for TEA or TPA, w/o explosive components.
Chemical ammunition, group D, fixed or semifixed rounds, containing flammable solids, except for TEA or TPA.
Clusters, incendiary bomb, M31 and M32 (w/o fuzing components)
Destroyer, file, M4
Detonation simulator, explosive M80
Grenade, hand, smoke, HC, M8
Grenades, hand, CN, M7A1, w/fuze M201A1
Grenades, hand, CS, M7A3, w/fuze M210A1
Grenades, hand, CN1, ABC, M25A1, w/fuze C12
Grenades, hand, DM1, ABC,M25A2 w/fuze C12
Grenades, illuminating and incendiary
Grenades, practice, w/spotting charge
Grenades, rifle, smoke, XM48E1 and M22 and M23
Grenades, smoke (except WP and PWP)
Grenades, riot control, CS1, M25A2
Igniter, spotting charge
Igniters for rocket motors (e.g.,M12,M18,M20 and M29)
Ignition cartridge for trench mortar ammunition
Illuminating compositions (consolidated in final press operations)
Mines, practice, w/spotting charge and/or fuze
Nuclear fire marker device 11-F2
Photoflash powder
Primers, artillery and cannon, percussion and electric
Projectile, illuminating
Rocket, riot control agent, CS, 2.75-inch FFAR, MX99
Simulators, M110,M115,M116,M117,M118,M119 and XM142
Smoke pots
Spotting charges (cartridge for miniature practice bombs)

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Table 2-3. (Continued)

GROUP H

Chemical ammunition, group C
Grenades, WP
Grenade rifle, WP, M19

GROUP J

Chemical ammunition, group D, containing flammable liquids or gels, with or w/o explosive components.
Chemical ammunition, group D, fixed and semifixed rounds, containing flammable liquids or gels with or w/o explosive components

GROUP K

Chemical ammunition, group A, with or w/o explosive components
Chemical ammunition, group B, with or w/o explosive components, designed for toxic or incapacitating effects greater than lachrymation
Rockets, toxic chemical agents, complete rounds

GROUP L

Aluminum powder
Ammonium nitrate
Ammonium perchlorate
Ammunition, pentolite loaded
Chemical ammunition, group A, w/o explosive components
Chemical ammunition, group B, w/o explosive components, designed for toxic or incapacitating effects more severe than lachrymation
Chemical ammunition, group D, TEA or TPA components
Chlorates
DNT
Fuzes, chemically-actuated, containing ampoules which may initiate directly or indirectly, explosive and explosives-loaded components which are assembled in the conventional manner to form the finished explosive fuze.
Magnesium powder
Grenades, rifle, AT (pentolite loaded)
Nitrates (inorganic), except ammonium nitrate (in original shipping container or equivalent)
Perchlorates
Peroxides, solid
Rocket heads, pentolite loaded, w/o motors
Zirconium (types I and II, spec. FED 1665)

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Table 2-3. (Continued)

GROUP S

Ammunition, 40mm, canister and multiple projectile
Ammunition, small arms, less than .50 caliber
Batteries, thermal or squib activated, cutter, reefing line
Explosives bellows
Firing devices
Fuse lighters
Fuse, safety
Squibs, commercial
Thruster, cartridge activated, M25

Table 2-4.
Table 2-5.
Table 2-6.

assifications

Items	Store compatibility group	Quantity-distance class
Adapter booster	D	1.1
Aluminum powder (in original shipping container or equivalent).	L	1.4
Aluminum powder (not in original shipping container or equivalent).	L	1.3
Ammonium nitrate (in original shipping container or equivalent)	L'	1.4
Ammonium nitrate (not in original shipping containers or equivalent) exposed to fire hazards only or to detonation hazards at more than intraline distance.	L'	1.3
Ammonium nitrate (not in original shipping containers or equivalent) exposed to detonations hazards at less than intraline distance.	L'	1.1
Ammonium perchlorate (particle size 15 microns or less).	L'	1.1
Ammonium perchlorate (particle size over 15 microns) in original shipping containers or equivalent.	L'	1.4
Ammonium perchlorate (particle sizes over 15 microns) not in original shipping containers or equivalent, exposed to fire hazards only or exposed to detonation hazards at more than intraline distance.	L'	1.3
Ammonium perchlorate (particle sizes over 15 microns) not in original shipping containers or equivalent, exposed to detonation hazards at less than intraline distance.	D	1.1

See notes at end of table.

Table 2-4. Hazard Classifications/Compatibility Groups

Items	SCG	Q-D Class 1 Division
Initiating explosives	A	1
Detonators and similar initiating devices	B	1,2, or 4
Bulk propellants, propellant propelling charges, and devices containing propellant with or w/o means of ignition.	C	1,2,3, or 4
Black powder, high explosives, and HE ammunition w/o its own means of initiation, w/o a propelling charge.	D	1 or 2
HE ammunition with its own means of initiation, with a propelling charge.	E	1 or 2
HE ammunition with its own means of initiation, with or without a propelling charge.	F	1 or 2
Fireworks and illuminating, incendiary, smoke, or tear producing ammunition other than ammunition that is activated by exposure to water or the atmosphere.	G	1,2,3, or 4
Ammunition containing white phosphorus or other pyrophoric material with or w/o explosives.	H	2 or 3
Ammunition containing flammable liquid or gel filler with or w/o explosives.	J	3
Ammunition containing toxic chemical agents with or w/o explosives.	K	2 (See Note)
Ammunition, not included in other groups, requiring separate storage.	L	1,2,3, or 4
Ammunition which presents no significant hazards.	S	4 or None

NOTE: Without explosives these items are in Hazard Class 6.1

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Ammonium picrate (Explosive D)	D	1.1
Ammunition, blank and saluting, cannon	C	1.3
Ammunition, small arms, less than .50 caliber, except .30 caliber API	S	1.4
Ammunition .50 caliber, except API and incendiary rounds.	C	1.4
Ammunition .30 and .50 caliber API and incendiary	G	1.4
Ammunition, 20mm, HE, HEI and functional packs containing HE and HEI	E	(04) 1.2
Ammunition, 20mm, practice and high pressure test	C	1.4
Ammunition, 20mm, incendiary and functional packs containing incendiary, except those containing HE or HEI	G	(04) 1.2
Ammuinition, 20mm, API	G	1.4
Ammunition, 25mm, with inert projectile	C	1.4
Ammunition, 27mm, caseless	C	1.4
Ammunition, 30mm, ball and high pressure test	C	(04) 1.2
Ammuniton, 30mm, practice and training	C	1.4
Ammunition, 30mm, HEDP	E	(04) 1.2
Ammunition, 37mm, HE	E	(08) 1.2
Ammunition, 37mm, and 40mm, TP and AP	C	(08) 1.2
Ammunition, 40mm, HE RDX loaded	E	(12) 1.1
Ammunition, 40mm, pyrotechnic loaded, except WP smoke	G	1.3

See notes at end of table.

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Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Ammunition, 40mm, riot control and pyrotechnic loaded, except WP smoke	G	1.4
Ammunition, 40mm, canister and multiple projectile	S	1.4
Ammunition, 40mm, practice, M407A1, M382 and M385	C	(04) 1.2
Ammunition, 40mm, HE, M381, M386, M406, M441 and M463	E	(04) 1.2
Ammunition, 40mm, HEDP, except M430 and M433	E	1.1
Ammunition, 40mm, HEDP, M430 and M433	E	(04) 1.1
Ammunition, 57mm through 81mm, except WP smoke, 57mm HEAT, 75mm HEAT, HEP and blank	E	(08) 1.2
Ammunition, 57mm HEAT, 75mm HEAT, and 105mm HEAT, M341	E	1.1
Ammunition, fixed and semifixed, 90mm through 106mm, loaded with ammonal, amatol, explosive D, composition B or TNT, except 105mm HEAT, M341	E	(12) 1.2
Ammunition, HEP	E	1.1
Ammunition, pentolite loaded	L	1.1
Bangalore torpedoes	D	1.1
Baratol	D	1.1
Batteries, thermal or squib activated	S	1.4
Benite	C	1.1
Black powder, bulk	D	1.1
Blasting caps	B	1.1

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Bombs, demolition	D	1.1
Bombs, fragmentation	D	(12) 1.1
Bombs, general purpose	D	1.1
Bombs, photoflash (except M122, w/o burster)	G	1.1
Bombs, photoflash, M122, w/o burster	G	1.3
Boosters	D	1.1'
Boosters, auxiliary	D	1.1
Baron potassium nitrate	C	1.1
Bursters	D	1.1
Cartridge cases, primed (w/o propellant)	B	1.4
Cartridge, heavy mortar, over 81 mm (including 81 mm M56), escept chemical loaded	E	1.1
Cartridge, igniter, M2	G	1.4
Cartridge, illuminating	G	(08) 1.2
Cartridge, light mortar, 81 mm or less (excluding 81 mm M56) except chemical loaded	E	(08) 1.2
Cartridge, 90 mm, canister, AP	C	(08) 1.2
Cartridge, photoflash	G	1.1
Cartridges, practice, over 40 mm	C	(08) 1.2

See notes at end of table.

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Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Catapults, aircraft ejection seat, M3A1	C	(08) 1.2
Catapults, aircraft ejection seat, M4A1 and M5	C	1.4
Charge, demolition, snake	D	1.1
Charge, igniter assembly, for practice hand grenades	G	(04) 1.2
Charge, propelling, not asssembled to projectiles	C	1.3 or 1.1[6]
Charge, spotting, AP, practice, M8	G	1.4
Charge, springing earth rod, blast driven	D	1.1
Charge, supplementary, HE	D	1.1
Chemical ammunition, group A, w/o explosive components	K	6.1
Chemical ammunition, group A, w/explosive components	K	(12) 1.2[7]
Chemical ammunition, group B, w/o explosive components, designed for toxic or incapacitating effects more severe than lachrymation	K	6.1
Chemical ammunition, group B, with explosive components, designed for toxic or incapacitating effects greater than lachrymation	K	(12) 1.2[7]
Chemical ammunition, group B, tear or smoke producing, w/o explosive components	G	1.4
Chemical ammunition, group B, tear and smoke producing, with explosive components[3] over 40m	G	(12) 1.2
Chemical ammunition, group C, w/o explosive components	H	1.3
Chemical ammunition, group C, with explosive components[3]	H	(12) 1.2

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Cyclotol	D	1.1
Demolition blocks	D	1.1
Destroyer, file, M4	G	1.3
Destructor, HE, M10	D	1.1
Detonating cord (primacord), exposed to detonation hazard at less than intraline distance	C and D	1.1
Detonating cord (Primacord), exposed to fire hazard only or to detonation hazard at more than intraline distance	C	1.3
Detonation simulator, explosive M80	G	1.1
Detonator, concussion type, M1	B	(04) 1.2
Detonators (except concussion type, M1)	B	1.1
DNT - exposed to detonation hazard at less than intraline distance	L	1.1
Dynamite (commercial type)	D	1.1
Dynamite (military type)	D	1.1
Ec Powder	C	1.1
Ednatol	D	1.1
Explosive bellows	S	1.4
Explosives, cratering	D	1.1
Explosive D	D	1.1

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatiblity group	Quantity-distance class
Chemical ammunition, group D, containing flammable liquids or gels, w/o explosive components	J	1.3
Chemical ammunition, group D, fixed and semifixed rounds, containing flammable liquids or gels with explosive components	J	(12) 1.2
Chemical ammunition, group D, containing flammable solids, except for TEA or TPA w/o explosive components	G	1.3
Chemical ammunition, group D, fixed or semifixed rounds, containing flammable solids, TEA or TPA, with explosive components	G	(12) 1.2
Chemical ammunition, group D, TEA or TPA, with explosive components	L	1.3
Chlorates in (original shipping containers or equivalent)	L	1.4
Chlorates in (original shipping containers or equivalent)	L	1.3
Chlorates (not in original shipping container or equivalent)	D	1.1
Compositions A, A-2, A-3, A-4	G	1.3
Clusters, incendiary bomb, M31 and M32 (w/o fusing components)	D	1.1
Compositions, B and B-3	D	1.1
Compositions, C, C-2, C-3 and C-4	D	1.1
Cutter, cable, M1	S	1.4
Cutter, reefing line	A	1.1
Cyclonite (RDX), dry	D	1.1
Cyclonite (RDX), wet		

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Firing devices	S	1.4
Fuel (solid), emergency power unit	C	1.1
Fuse lighters	S	1.4
Fuse, safety	S	1.4
Fuzes (packed in accordance with approved drawings depicting issue package) w/o boosters, of the following series: PD M48, PD M51, PD M57, PD M78, PD M81, PD T177, PD M507, PD M508, PD M527, MTSQ M500, MTSQ M501, MTSQ M502, MTSQ M518, MT M43, MT M61, MT M67, MT T316E2, MT T342, MT M522, MT M523, and TSQ M55	B	1.4
Fuzes (packed in accordance with approved drawings depicting issue package, except box (crate), wirebound packing) - fuzes with boosters assembled thereto of the following series: PD M48, PD M51, PD M52, PD M57, PD M78, PD M81, PD T177, PD M507, PD M508, PD M525, MTSQ M500, MTSQ M501, MTSQ M502, MTSQ M518, MT M43, MT M61, MT M67, MT T316E2, MT T342, MT M522, MT M523, and TSQ M55; artillery-type proximity fuzes with boosters, and other fuzes w/o boosters, except fuzes chemically actuated containing ampules which may initiate, directly or indirectly, explosives and explosives loaded components, which are assembled in the conventional manner to form the finished explosive fuze.	B	(04) 1.2

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Fuzes, proximity, artillery type (not packed in accordance with approved drawings)	B	1.1[1]
Fuzes, Class (04) 1.2 when packed in box (crate), wirebound packing, and fuzes of series other than listed as Class (04) 1.2 with boosters (except chemical-actuated fuzes containing ampoules which may initiate, directly or indirectly, explosives and explosives loaded components which are assembled in the conventional manner to form the finished explosive fuze).	B	1.1[1]
Fuzes, chemically-actuated, containing ampoules which may initiate direct or indirectly explosive and explosives loaded components which are assembled in the conventional manner to form the finish explosive fuze	L	1.1[1]
Grenades, fragmentation	F	(04) 1.1
Grenades, hand offensive	F	1.1
Grenades, hand, CN, M7A1, w/Fuze M201A1	G	1.4
Grenades, hand, CS, M7A3, w/Fuze M201A1	G	1.4
Grenades, hand, CN1, ABC, M25A1, w/Fuze C12	G	1.4
Grenades, hand, DM1, ABC, M25A2, w/Fuze C12	G	1.4
Grenade, hand, smoke, HC, M8	G	1.3
Grenades, illuminating & incendiary, except WP	G	1.3
Grenades, practice, w/spotting charge	G	(04) 1.2

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Grenade, hand practice, M69	S	1.4
Grenades, WP, except grenades rifle,, WP, M19	H	(08) 1.2
Grenade, smoke, WP, hand and rifle	H	(04) 1.2
Grenades, rifle, AT (pentolite loaded)	L	1.1
Grenades, rifle, AT (except pentolite loaded) -	D	1.1
Grenades, rifle, smoke, XM48E1 & M22 & M23	G	1.4
Grenades, riot control, CS1, M25A2	G	1.4
Grenades, smoke (except HC, WP & PWP)	G	1.4
Grenades, smoke, HC	G	1.3
HMX, dry	D	1.1
HMX, wet	D	1.1
Igniters for rocket motors (e.g., M12, M18 and M20)	G	(04) 1.2
Igniters for rocket motors (e.g., M29)	G	1.1
Igniter, spotting charge	G	1.1
Ignition cartridge for trench mortar ammunition	G	1.4
Illuminating compositions (consolidated in final press operations)	G	1.3
Lead azide, wet	A	1.1
Lead styphnate, wet	A	1.1
Magnesium powder (in original shipping container or equivalent)	L	1.4

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Magnesium powder (not in original shipping container or equivalent)	L	1.3
Mercury fulminate, wet	A	1.1
Mine, APERS, NM, M14 (w/integral fuze)	D	1.1
Mines, antipersonnel (bounding type)	D	(08) 1.2
Mines, antipersonnel (cast iron block)	D	1.1
Mines, HEAT	D	1.1
Mines, practice, AP, M17	B	1.4
Mines, practice, w/spotting charge and/or fuze	G	(04) 1.2
Nitrates (inorganic), except ammonium nitrate (in original shipping container or equivalent)	L	1.4
Nitrocellulose, wet, containing 8-30 per cent water, that is exposed to detonation hazards at less than intraline distances	C and D	1.1
Nitrocellulose, wet, containing 8-30 per cent water, that is exposed only to such fire hazard materials as other class 1.3 items	C	1.3
Nitroguanidine	D	1.1
Nitrostarch	D	1.1
Nuclear fire marker device 11-F2	G	1.1
Octol	D	1.1
PBX	D	1.1

See notes at end of table.

Items	Store compatibility group	Quantity-distance class
Propellant, single base, containing 98 percent or more NC	C	1.1
Propellant, single base, single perforated, rifle	C	1.3[6]
Propellant, single base (FNH and NH compositions), single perforated, cannon, w/web thickness not greater than 0035 inch	C	1.3[6]
Propellant, single base, low pressure, for pistols and shotguns, etc.	C	1.3[6]
Propellant, double base, containing not more than 20 percent nitroglycerin, w/web thickness of 0.0075 inch or greater	C	1.3[6]
Propellant, double base (for artillery ammunition) containing over 20 per cent NG	C	1.1
Propellant, double base, w/web thickness less than 0.0075 inch, regardless of nitroglycerin content	C	1.1
Propellant, multiperforated, cannon and rifle, w/web thickness not greater than 0.019 inch	C	1.3[6]
Propellant, double base and composite grains that have been determined to be nonmass detonating in tests conducted in accordance with TB 700-2	C	1.3
Propellant, double base and composite grains that have been determined to be mass detonating in tests conducted in accordance with TB 700-2	C	1.1 1.3[6]
Propellant, triple base, M15 and M17	C	
Propellant grains, polysulfide-perchlorate, containing not more than 74 percent oxidizer	C	1.3

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Pentolite	D	1.1
Perchlorates[4] (in original shipping container or equivalent)	L	1.4
Perchlorates[4] (not in original shipping container or equivalent)	L	1.3
Percussion elements	B	1.4
Peroxides, solid (in original shipping container or equivalent)	L	1.4
Peroxides, solid (not in original shipping container or equivalent)	L	1.3
PETN, wet	D	1.1
PETN, dry	A	1.1
Photoflash powder	G	1.1
Picratol	D	1.1
Picric acid	D	1.1
Primers,, artillery and cannon, percussion and electric	B	(04) 1.2
Primer detonators	B	(04) 1.2
Projectiles, HE, fuzed or unfuzed, 155mm	D	(18) 1.1
Projectile, HE, fuzed or unfuzed, 175mm	D	1.1
Projectiles, HE, (explosive D loaded) fuzed or unfuzed	D	(12) 1.2
Projectiles, illuminating	G	1.3
Propellant, single base, multiperforated, w/web thickness greater than 0.019 inch (excluding single base propellant containing 98 percent or more nitrocellulose (NC).	C	1.3

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Simulator, M116	G	(04) 1.2
Smoke pots	G	1.3
Spotting charges (cartridge for miniature practice bombs)	G	1.3
Squibs, commercial	S	1.4
Tetracene (Wet)	A	1.1
Tetranitracarbazole (TNC)	D	1.1
Tetryl	D	1.1
Tetrytol	D	1.1
Thruster, cartridge activated, M25	S	1.4
Torpex	D	1.1
Tritonal	D	1.1
TNT	D	1.1
Zirconium (types I and II, spec. FED 1665), in original shipping container or equivalent	L	1.4
Zirconium (types I and II, spec FED 1665), not in original shipping container or equivalent	L	1.3

See notes at end of table.

Table 2-5. (Continued)

Items	Store compatibility group	Quantity-distance class
Propellant, type N5, in carpet rolls	C	1.3
Propellant, cast, PNJ	C	1.3
Propellant, M7, LAW	C	1.3
RDX (Cyclonite), dry	D	1.1
RDX (Cyclonite), wet	D	1.1
Redeye guide missiles, packaged three complete rounds w/launcher	E	1.1
Rockets, HEAT, 3.5-inch, complete round	E	1.1
Rockets, toxic chemical agents, complete rounds	K	(12) 1.2
Rockets, HE, 2.75-inch (in LAU-3/A rocket launcher)	E	(12) 1.2
Rockets, practice, 3.5-inch	C	(12) 1.2
Rocket heads, HE and HEAT (except pentolite loaded) w/o motors	D	1.1
Rocket heads, pentolite loaded, w/o motors	L	1.1
Rocket motors, M3,M5,M6,M10,M26,M30,M42,M53; Pershing 1st and 2nd stages, Spartan 1st, 2nd and 3rd stages	C	1.3
Rocket motors, M13, M26, M37, and M66	C	1.1
Rocket, Riot Control Agents, CS, 2.75-inch FFAR, XM99	G	1.3
Shaped charges	D	1.1
Simulators, M110, M117, M118 and M119	G	1.3
simulators, M115 and XM142	G	1.1

See notes at end of table.

Table 2-5. (Continued)

NOTES:

1. When stored in stacks containing not more than 5000 lb of HE that are separated from each other by at least 2 feet, safety distances may be based on the quantity of HE in the single stack requiring the greatest distances.
2. Minimum permissible quantity-distances. Specific groups A and B chemical agents may require greater agent distances as indicated in DARCOM series for specific agents (e.g., GB and VX).
3. See separate listings for smoke grenades and CS filled 2.75-in. Rocket.
4. Excluding ammonium perchlorate.
5. Class 1.1 quantity-distance requirements apply when storage requirements of AMC/DARCOM drawing 4002-IPE1000 are not met; however, in no instance shall safety distances be less than required.
6. Class 1.3 applies when stored in metal-lined wooden boxes; when stored in all metal containers not specifically designed for quick release of pressure, Class 1.1 applies.
7. Although SCG L indicates separate storage, any type of ammonium nitrate may be stored with any type ammonium perchlorate.

ompatibility Factors. Explosives and mmunition are grouped for compatibility with espect to the following factors:

- Effects of explosion of the item.
- Rate of deterioration.
- Sensitivity to initiation.
- Type of packing.
- Effects of fire involving the item.
- Quantity of explosives per unit.

Table 2-6 ▶

TABLE 2-6. Storage Compatibility

GROUPS	A	B	C	D	E	F	G	H	J	K	L	S
A	X	Z										Z
B	Z	X										X
C			X	Z	Z		Z					X
D			Z	X	X							X
E			Z	X	X							X
F						X						X
G			Z				X					X
H								X				X
J									X			X
K										X	U	
L										U		
S	Z	X	X	X	X	X	X	X	X			X

SECTION III

AMMUNITION SUPPLY, SAFETY, AND FIRE PREVENTION

STORAGE SAFETY PROGRAM

The destructive characteristics of ammunition requires observance of special safety regulations that are more stringent than those for other classes of supply. A highly qualified individual should be delegated authority for planning, coordinating, and supervising the ASP safety program. The individual must assure compliance with QD criteria and storage compatibility groups in order to minimize the possibility of sympathetic detonation or fire. Under certain conditions it may not be possible to observe all these requirements. However, you must be recognized that as tonnage is increased and distance reduced, the chance of loss is increased. The safety program must be concerned with all aspects of safety. Here are some guidelines you must consider when planning the safety program:

Smoking. Smoking must be prohibited in the ammunition storage area. A repository for matches and cigarette lighters must be maintained outside all areas containing explosives. A carelessly thrown cigarette or cigar butt may result in the loss of an entire site.

Repair Activities. Do not permit any ammunition repair within 30 meters of the

Table 2-6. (Continued)

NOTES:

1 The marking "X" at an intersection of the chart indicates that these groups may be combined in storage. Otherwise, mixing is either prohibited or restricted per Note 2 below.

2 The marking "Z" at an intersection of the chart indicates that, when warranted by operational considerations or magazine non-availability, and when safety is not sacrificed, these groups may be combined in storage. Combinations that violate the principles of paragraph 5-18 TM 9-1300-206, require justification by a waiver or exemption.

3 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.

4. Group K requires not only separate storage from other groups, but may also require separate storage within the group. The controlling DOD component shall determine which items under Group K may be stored together and those which must be stored separately.

5. The marking "U" on chart indicates that leaking toxic chemical munitions of one agent type, i.e., GB, with or without explosive components, may be stored together in one magazine specifically designated for storage of leakers of that agent type.

guards, and fire fighting measures.

Intercategory Distance. The intercategory distance is the distance from an FSU of one category to the nearest FSU of another category. It is based on the hazards associated with each category of ammunition. This separation must be maintained and may not be reduced by barricades.

Optimum Safety Distance. The optimum safety distance is the limit inside of which danger of structural damage due to blast or from fall of missile fragments will be serious. These distances must be considered when locating ASPs near gasoline or other storage facilities, airfields, hospitals, permanent radio transmitters, inhabited areas, headquarters, railroads, and highways.

Barricades. When sand or earth barricades at least 3 feet wide at the top and one foot higher than the stack are erected or natural barriers used, the effect of sympathetic detonation will be reduced. In some cases, the use of barriers can reduce the interstack distance up to 50 percent.

Chemical Ammunition. Chemical filled ammunition (category D) must be stored so that each container, item, or bomb can be inspected and easily removed. Keep projectiles containing phosphorus out of the direct rays of the sun and stored with base down.

Toxic Ammunition. Toxic chemical filled ammunition should be stored in the lowest portion of the ASP and at least 1 mile downwind from inhabited or storage areas. There should be no inhabited buildings or storage areas within 2 miles downwind of the storage site. Maximum security must be provided this storage area.

Rockets. The safety requirements for storage of rockets are more stringent than for most other types of conventional ammunition. Both small caliber rockets and large caliber, free flight rockets must be stored on the outer edge of the ASP. The noses must point away from all other stored ammunition and from all inhabited areas. Small caliber rockets must be stored so that they are pointed into an artificial or natural barrier of sand or earth at least 3 feet thick. The rockets will be located so that there is no obstruction, other than its own container between the rocket and the barrier. Stacks will be no more than one row deep.

Category G Ammunition (Bombs). Normally category G ammunition will be stored and issued by the Air Force; however, depot and ASP commanders should be prepared to handle them in emergencies. Several restrictions have been placed on the storage of bombs:

- The FSU is the smallest storage unit authorized.
- 100 tons is the maximum allowable weight per FSU.
- Fuzed fragmentation bombs will not be stored in the same FSU with other bombs.
- Components of bombs (fins, fuzes, primer-detonators, etc.) can be stored between the FSUs. Fuzes and primer-detonators must be protected from heat and moisture.
- Category G photoflash bombs can also be stored in category F. If stored in category F, they can not be stored in the same FSU with other category F ammunition.

Firebreaks. Firebreaks wide enough to prevent the spread of fire must be built by the best available method. The use of bulldozers with specially constructed ground clearing machinery is recommended. Another method often used is burning over the underbrush and grasses. This

ammunition stacks. Distance should be based on the quantity of explosives present at the operation.

Dispersion. Adequate dispersion will render your ASP an unprofitable target for enemy air attack. Where possible, store each type of ammunition in two or three widely separated areas. If the contents of one area is destroyed, it will not result in the loss of the entire supply of any one item. When a lack of area makes it impossible to give ideal dispersion, it is better to increase the quantity of ammunition in stacks and FSUs than to reduce the safety distances.

Interstack Distance. The interstack distance is the minimum distance between the near edge of adjacent stacks. The interstack distances set up by appropriate QD tables are adequate to prevent spreading of detonation from blast pressures, but interstack distances are not always safe distances for protection against the hazards of missile fragments resulting from explosion or fire. Aggressive fire fighting can prevent the spread of fire from one stack to another at these distances. The greater the distance between stacks the less the probability of fire being spread from stack to stack. Separation of stacks by greater distances than those prescribed in order to help prevent fires and to ease fire fighting may be done if practicable and if authorized by appropriate authority.

Inter-FSU Distance. The inter-FSU distance is the distance between the nearest edge of the nearest stacks in adjacent FSUs. Inter-FSU distances are designed to prevent the spread of fire. In cases where these distances cannot be attained, extra special care must be used in setting up and maintaining fire protection, fire

method must be used before you receive ammunition.

Magazine Instructions. Specific instructions for storage, handling, and safety of ammunition in magazines are provided on DA Label 85 (Magazine Placard). This label shall be posted on or near each door of a magazine so that it is visible when work is being done in the magazine. DA Label 85 must be bilingual in overseas locations.

FIRE PREVENTION

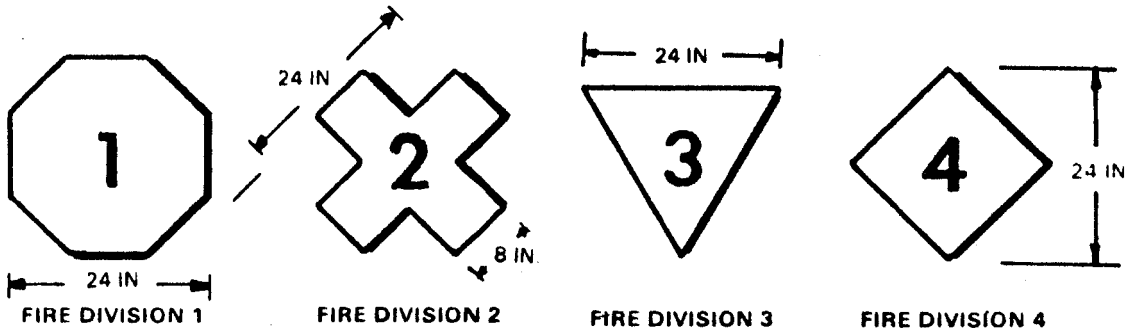
Development of a plan to prevent, detect, and control fires is of prime importance. If you had a good plan at the last location, you can probably modify it to meet the new situation. Many of the areas you must consider are in paragraph 13-7, TM 9-1300-206. When preparing an ASP for occupancy, fire symbols and chemical hazard symbols must be made and promptly installed.

Fire Symbols. Separate types of fire symbols (hazard markers) are provided for explosives and ammunition with or without chemical fillers. Buildings and storage sites containing hazardous or explosive materials will be plainly marked with the correct fire hazard symbol number. The symbol used will apply to the most hazardous material in storage. Symbols must be visible from each road or means of approach which may be used by fire fighters. The symbol board or plaque must be the size and colors specified in figure 2-4. A sign made with reflecting or luminous materials is preferred. For buildings with long dimensions, more than one symbol to a side may be needed. A distinctive shape for the background of the symbol and color scheme will improve visibility at long range.

Exceptions. Hazard markers (fire symbols) are not required on earth-covered magazines (igloos, corbettas, etc.), nor on outdoor revetted sites when restricted to symbol 1 material. When an entire storage area is restricted to symbol 1 material, the appropriate fire symbol may be posted at all entrances to the storage area rather than at the individual storage sites.

Without Chemical Filler. Explosive material and ammunition without chemical filler is divided into five categories with symbols as follows (fig 2-4):

- The flammable liquid marker symbol has a circular background. This group includes flammable liquids such as solvents, oils, and paints. Fires involving these materials are fought with portable and mobile fire extinguishing equipment until under control. Extinguishing agents that provide a smothering action are recommended.
- Fire symbols 1 and 2 include ammunition and explosives in hazard classes 1.1 and 1.2 (excluding nuclear weapons - see TB 385-2).
  - When involved in a fire, these materials can be expected to detonate with a moderate to severe fragmentation hazard. No attempt will be made to fight fires involving symbol 1 or 2 material except to manually activate installed fire extinguishing equipment. Personnel will leave the building immediately, using as much protective cover as possible, and activating deluge systems and fire alarm equipment while escaping. Personnel evacuating the building are not free from danger until they reach bombproof shelters. A reasonable degree of safety is afforded in the open at distances from the building shown in paragraph 3-7, TM 9-1300-206.
  - When fire drills are held, personnel will be shown the safest route to travel to shelter or to a destination which is at a safe distance.



FIRE DIVISION 1 (HAZARD CLASS 1.1) | FIRE DIVISION 2 (HAZARD CLASS 1.2) | FIRE DIVISION 3 (HAZARD CLASS 1.3) | FIRE DIVISION 4 (HAZARD CLASS 1.4)

BACKGROUND: ORANGE NO. 12246 (SEE FED STD. 595A OR GSA CATALOG)

NUMBERS: 10 IN. HIGH AND 3 IN. THICK BLACK NO. 17038 (SEE FED STD. 595A OR GSA CATALOG)

Figure 2-4.

■ If the fire is in a symbol 1 or 2 building and it involves nonexplosive material and is small or is in a separate container, an attempt may be made to extinguish the fire with an extinguisher or other means readily at hand. The placement of hand used fire extinguishing equipment next to symbol 1 or 2 material must be carefully examined.

■ The fire department must be notified. The supervisor and other personnel should travel, as far as possible, in the direction from which the fire fighting forces are expected. The fire fighting forces must be advised the nature of the fire and the kind of material involved or likely to be involved.

■ When symbol 1 or 2 materials of not over 50,000 pounds of explosives are directly involved, fire fighting forces will not get closer than 1,000 feet to the scene of the fire, or to a distance of 2,000 feet where 100,000 pounds involved. The mobile equipment will be kept at a protected location.

■ Fire fighting forces may approach to extinguish the fire or protect adjacent buildings under the following conditions:

When it is known that a safe distance or effective screening separates burning nonexplosive materials from symbol 1 or 2 materials.

When an explosion has already occurred with assurance that only the heat of burning wreckage exposes other buildings containing explosives or not.

When the fire chief and person in charge agree on the procedure.

■ No person will reenter a symbol 1 or 2 building in which there is a fire to determine the

conditions surrounding the fire. The safety of personnel in fighting a symbol 1 or 2 fire depends on the accuracy of the information made available to the fire fighting forces.

■ When the question of safety is in doubt, no effort will be made to fight the fire. Personnel and equipment will keep under cover and remain at safe distances from the building.

• Fire symbol 3 includes hazard class 1.3 explosives. Personnel in the immediate vicinity must do everything possible to activate the deluge system and give the alarm without incurring undue personal hazard. The fire fighting organization will confine its operation to preventing the spread of fire to other buildings unless the fire is of a minor nature and does not involve the explosive itself, and there appears to be a chance to control it. Fire in these materials produces intense radiant heat over a wide area, which is dangerous to personnel and equipment in the vicinity. Extreme caution must be taken by the fire fighting organization.

• Fire symbol 4 includes hazard class 1.4 ammunition and explosives. Fires in which they are involved must be fought with portable and mobile fire extinguishing equipment until the fire has been brought under control. Some hazard may be expected to fire fighting personnel from fires in these materials, and precautions must be taken to avoid them.

With Chemical Filler. The chemical hazard symbols are illustrated in figure 2-5. The chemical agents most used in ammunition and the combinations of chemical hazard symbols required in storage are nerve, blood, choking, blister, incapacitating and riot agents.

• Protective clothing and apparatus prescribed by symbols 1 and 2 in figure 2-5 are

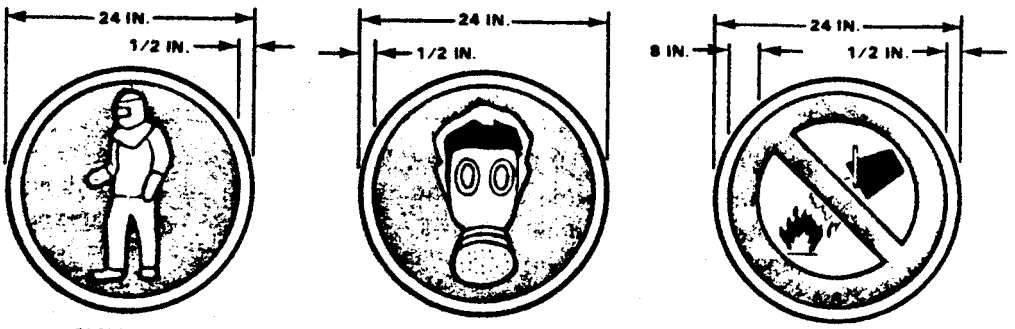
for fire fighting purposes only and do not apply to normal operations.

- When the chemical hazard symbol ordering the wearing of full protective clothing (symbol 1, fig 2-5) is colored with a red rim and figure, the symbol indicates the presence of highly toxic chemical agents which may cause death or serious damage to body functions. The following full protective clothing, identified as set 1, figure 2-5, must be used: M17 series protective gas mask or self-contained breathing apparatus, impermeable suit, hood, gloves and boots, and undergarments, coveralls, and protective footwear.

- When the chemical hazard symbol ordering the wearing of full protective clothing (symbol 1, fig 2-5) is colored with a yellow rim and figure, the symbol indicates the presence of harassing agents (riot control agents and smokes). The following protective clothing, identified as set 2, figure 2-5, must be used: M17 series protective gas mask or self-contained breathing apparatus, coveralls, and protective gloves.

- When the chemical hazard symbol ordering the wearing of full protective clothing (symbol 1, fig 2-5) is colored with a white rim and figure, the symbol indicates the presence of white phosphorus or other spontaneously combustible material. The following protective clothing, identified as set 3, figure 2-5, must be used: M9 series protective gas mask or self-contained breathing apparatus, flame-resistant coveralls, and flame-resistant gloves.

- The chemical hazard symbol ordering the wearing of breathing apparatus (symbol 2, fig 2-5) indicates the presence of incendiary and readily flammable chemical agents which present an intense radiant heat hazard and may



SYMBOL 1.
WEAR FULL PROTECTIVE CLOTHING

COLOR*:
BAKGROUND IS BLUE
FIGURE AND RIM IS
RED FOR SET 1 PROTECTIVE CLOTHING
YELLOW FOR SET 2 PROTECTIVE CLOTHING
WHITE FOR SET 3 PROTECTIVE CLOTHING

SYMBOL 2.
WEAR BREATHING APPARATUS

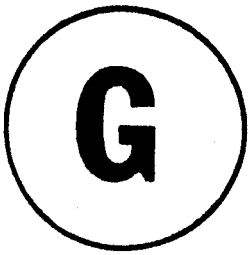
COLOR*:
BACKGROUND IS BLUE
FIGURE AND RIM ARE WHITE.

SYMBOL 3.
APPLY NO WATER

COLOR*.
BACKGROUND IS WHITE
CIRCLE AND DIAGONAL ARE RED
FIGURES ARE BLACK

*NOTE.
COLORS PER FED STD 595 A OR GSA CATALOG
RED NO 11105
BLUE NO 15102
YELLOW NO 13538
WHITE NO 17875
BLACK NO 17038

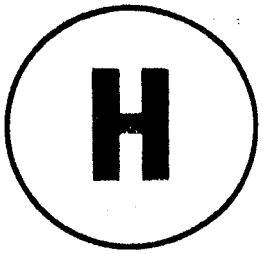
Figure 2-5. Chemical hazard symbols.



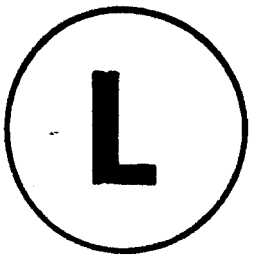
1. G-TYPE NERVE AGENTS

2. VX NERVE AGENT

3. INCAPACITATING AGENT BZ



4. H-TYPE MUSTARD AGENTS



5. LEWISITE

NOTE:

ALL SYMBOLS WITH 12 IN. BLACK LETTERS ON 24 IN. DIA YELLOW CIRCLE (COLORS PER FED STD 595A: BLACK NO. 17038, YELLOW NO. 13538).

Figure 2-5. (Continued)

be posted together with any of the other symbols if required. Protective masks to prevent inhalation of smoke from burning incendiary mixtures must be used.

- Fire fighting personnel equipped with normal heat resistant clothing (bunker suit) and gas mask or self-contained breathing apparatus do not require the protective clothing identified as sets 2 and 3.

- The chemical hazard symbol warning against applying water (symbol 3, fig 2-5) indicates a dangerous reaction will occur if water is used in an attempt to extinguish fire. This chemical hazard symbol may be posted together with any of the other symbols if required.

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CHAPTER 3

AMMUNITION SUPPLY

SECTION I

GENERAL SUPPLY INFORMATION

DEFINITION OF SUPPLY TERMS

Supply Point Distribution. That system by which using units load ammunition in their own vehicles from ASPs, depots. This is the normal method of providing ammunition supply support.

Direct Support (DS). The DS level provides ammunition to using units in a forward location along the division rear boundary.

General Support (GS). The GS level is normally involved with supporting DS ammunition units and DS service to units stationed in the supported area.

Rewarehousing. Any movement of ammunition within the boundaries of a storage activity, not directly associated with an issue or shipment, is classified as rewarehousing.

Basic Load. That quantity of conventional (nonnuclear) ammunition which is authorized and required to be on hand within a unit or formation at all times. It is expressed in rounds, units, or units of weight as appropriate.

Expenditure. The amount of ammunition used by an organization. During combat, for stock control purposes, ammunition is considered expended at the time it is issued to units by the ASP.

Controlled Supply Rate (CSR). The CSR is the rate of consumption of ammunition that can be allocated, considering the supplies and facilities available, for a given period. For ammunition items fired from weapons, this rate is expressed in rounds per weapon per day. For other items, such as antitank mines, hand grenades, demolition explosives, etc., the CSR is expressed in terms of units of measure for specified items, per day, per week. Each unit of measure kilos, pounds or tons, metric, short, or long is specified.

Required Supply Rate (RSR). The RSR is the amount of ammunition estimated to be required to sustain operations of a designated force without restriction for a specific time period. It is expressed in terms of rounds per weapon per day for ammunition items fired from weapons, and in terms of other units for other items. The RSR is used by the tactical commander to supply their requirements for ammunition to support tactical operations during specific time intervals.

NSN and DODIC. National stock number (NSN) and Department of Defense Identification Code (DODIC) are used to requisition ammunition. There is a different NSN for each item of supply. The first four digits of the NSN is the Federal Supply Classification (FSC) to which the item belongs. The next nine digits in the NSN are called the national item identification number (NIIN). There is a different NIIN for each item in the supply catalogs. In addition to the NSN, the DODIC provides for the interchange of ammunition and explosive supplies. The DODIC consists of a letter and three digits and is added in parentheses

as a suffix to the NSN. The whole identification would appear as 1315-00-028-5080(C181).

Example:

NSN

FSC NIIN DODIC

1315-00-028-5080 (C181)

Whenever the same DODIC is used as a suffix on two or more NSNs, the items are completely interchangeable as to function, issue, and use. Using units will requisition ammunition by Department of Defense Ammunition Code (DODAC), FSC and DODIC, for example, 1315(C181). Whenever a particular model, item, or pack is desired, the items will be requisitioned by the NSN and the DODIC, but justification for requisitioning a specific item and pack must be shown on the requisition.

Ammunition Lot Number. The lot number is a code identification number assigned to a quantity of ammunition which has been produced by the same manufacturer under uniform conditions. All items within each lot can be expected to function in a reasonably uniform manner. Lot integrity is necessary to insure functional uniformity relating to any one fire mission. Lot integrity also serves as an aid in malfunction investigations, identification of suspended ammunition, and it provides for progressive regrading of small arms ammunition.

Throughput. Throughput is the bypassing of one or more intermediate supply activities in the supply system to avoid multiple handling. This system is based on a "push-pull" type continuous refill procedure. Upon receipt of the daily transaction report from the ASP, the material management center (MMC) initiates action to replace those stocks which have been issued or lost through combat, suspensions, condition code changes, etc. The stocks are shipped from COMMZ depots direct to the DS ASP. This is usually done on a daily basis. A formal MILSTRIP requisition (DD Form 1348) need be submitted only when:

- Ammunition is needed to support an operation which would require stocks in excess of unit basic loads or ASP stockage objectives.
- A new RSR has been established and not enough ammunition is on hand to meet the new requirements.
- A new unit had come into the supported area and an additional amount of ammunition is required to support this unit. If the unit remains in the area long enough, it will cause changes in ASP stockage objectives.
- Resupply of an item is based on demand (as opposed to automatic resupply).

STOCKAGE OBJECTIVE

All ASPs will have a stockage objective established. It is the maximum quantity of ammunition to be maintained on hand to support current and anticipated operations. The stockage objective is based on the weapons and units supported and is established for each ammunition item.

The stockage objective normally consists of:

- Operating level = 2/3
- Safety level = 1/3
- Stockage objective = 3/3

When issues or shipments are made, it reduces the quantity on hand. Automatic replenishment of stocks will be directed by the appropriate MMC. Resupply is based on a report of issue or shipment by the ASP/depot.

OPERATIONS OFFICE

The operations office is the focal point for the control of all activities of any ASP/depot. The office may be called by different names (ASP office, control office, depot operations office) and will be organized to fit the operational conditions. The office may be centralized (all elements together) or decentralized.

No matter what it is called or how it is organized, all operations offices are responsible for:

- Maintaining lot-locator and stock accounting records for stocks on hand.
- Maintaining a suspense file for future shipments, issues, and receipts.
- Planning shipments and receipts.
- Processing required documentation for all supply transactions.
- Selection of storage location for storing receipts.
- Selection of lots and locations for issues and shipments.
- Coordinating the activities of inspection, maintenance, checker, and MHE requirements.
- Maintaining a suspension file.
- Controlling inventory activities.
- Planographs of each storage location.

SURVEILLANCE RESPONSIBILITIES IN SUPPLY OPERATIONS

Inspection of Vehicles. Inspection personnel are responsible for inspecting vehicles used for transporting ammunition.

Inspection of Operations. Continuous inspection of ammunition handling operations are conducted to detect and/or stop unsafe and hazardous handling methods.

Inspection of Ammunition. Inspectors are responsible for certifying the condition of stocks prior to issue or shipment. Inspectors will:

- Establish and conduct a program of "Inspection of Stocks in Storage" to insure that realistic and accurate serviceability information is available for stocks on hand.
- Insure that "Issue Prohibited" tags are placed on ammunition stacks when the lot has been suspended.
- Review Army Depot Surveillance Record Cards, DA Form 3022-R, (where maintained) for condition of lots selected for shipment or issue.

SECTION II

ISSUE PROCEDURES

GENERAL

Issue as used herein, refers to the transfer of ammunition stocks from an ASP or depot, to an authorized user, as opposed to another storage facility.

GUIDELINES

The following guidelines are presented to assist ammunition units in providing efficient support to using units:

- Only serviceable ammunition will be issued.
- Using units must always be advised of limitations on the use of "restricted" ammunition and ammunition "suspended from issue and use except for emergency combat" imposed by TB 9-1300-385-1 or TB 9-1300-385-2.
- Never issue ammunition classified by TB 9-1300-385-1 or TB 9-1300-385-2 as "suspended from issue, movement and use" or "suspended from issue and use."
- Closely monitor issues of miscellaneous small lots of artillery ammunition to insure the unit is not overburdened with small lots. This is important in combat to reduce registration due to change in lot numbers.

Vehicle Drivers. The shipping officer will prepare, and provide to each driver, a DD Form 836 for vehicles departing the ASP/depot loaded with ammunition. Instructions for preparing the DD Form 836 are contained on the form.

DA Form 3020-R, Magazine Data Card. Checkers, when issuing ammunition from a storage location, will post DA Form 3020-R in accordance with FM 9-38.

AUTHENTICATION ISSUE PROCEDURES

The requesting unit must have its transportation order, DA Form 581, authenticated command designated officer, prior to arriv the ASP/depot. In the division, the di ammunition officer (DAO) will auther requests; in the corps artillery, the S4 n designated. The purpose of the authentica to provide tactical commanders mea control ammunition issues.

• The flow chart, table 3-1, is intende used as a guide by ASP depots to plan f conduct issue operations efficiently. It m be used as a guide to prepare SOI ammunition issues.

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• Issue Priorities.

■ Priority 1 — Smallest lots of ammunition being issued.

■ Priority 2 — Ammunition designated as "priority issue."

■ Priority 3 - Acceptable substitute from excess stocks. (This requires coordination with the requisitioner.)

■ Priority 4 — Oldest ammunition of type being issued.

■ Priority 5 - All other stocks.

DOCUMENTATION

DA Form 581, Request for Issue and Turn-in of Ammunition. The requesting unit will prepare DA Form 581 and present it to the ASP for issue. DA Form 581 is prepared in accordance with FM 9-38.

DA Form 1687, Notification of Delegation of Authority — Receipt for Supplies. Using units are required to present a properly completed copy of a DA Form 1687 to the ASP providing support. DA Form 1687 will be used by the ASP to insure that DA Forms 581 have the proper signature.

DA Form 3151-R, Ammunition Stores Slip. A DA Form 3151-R will be prepared by the ASP operations office. DA Form 3151-R is prepared in accordance with FM 9-38.

DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Material). Using unit vehicles will be inspected by an ammunition inspector using DD Form 626, before and after loading but before leaving the ASP/depot. The report is prepared in accordance with FM 9-38 and AR 55-355.

DD Form 836, Special Instructions for Motor

Distribution of documentation, item 25, table 3-1.

(1) DA Form 581:
- **Original to convoy commander.**
- **2nd copy to post ASP records and file.**
- **3rd copy to MMC.**

(2) DA Form 3151-R:
- **Original to post ASP records and file.**
- **2nd copy to drivers.**
- **3rd copy to inspectors for posting.**

Table 3-1. Issue Procedures

No	Activity	Document	Using unit	DAO	CONVOY CMDR Drivers	ASP office	Checker	Inspector	Inv. control
	Symbols		○	●	■	▲	⊙	◇	□
1	Prepare request	DA581							
2	Authenticate request	DA581							
3	Travel to ASP-park in vehicle holding area								
4	Present request to ASP office-triplicate	DA581							
5	Review request-accuracy, completeness and proper								
	authenication	DA1687							
6	Inspect empty vehicles	DD626							
7	Select lots and storage locations	DA1296							
8	Prepare stores slips for each vehicle-triplicate	DA3151							
9	Review suspension file vs lots selected	DA3151							
10	Review DSR cards for inspection/condition	DA3022-R							
11	Verify condition of lots selected for issue	DA3151							
12	Assign checkers, loading crews, MHE								
13	Distribute stores slips A Original to checker	DA3151 DA3151							
	B 2nd copy to driver (when issue completed)	DA3151							
	C 3rd copy with request, suspense	DA3151							
14	Escort vehicles to storage locations	DA3151							
15	Load, block, brace and inventory vehicle	DA3151							
16	Sign stores slip jointly (copy to driver)								
17	Annotate magazine data card	DA3020 R							
18	Drive loaded vehicles to assembly areas								
19	Inspect loaded vehicles	DD626 DD836							
20	Return stores slip to ASP office	DA3151							
21	Verify stores slips-original vs 3rd copy	DA3151							
22	Total all stores slips	DA3151							
23	Enter total quantity issued in block 10E of request	DA581							
24	Receipt signature	DA581							
25	Distribute documentation	DA581 DA3151							
26	Return to unit	DA581 DD626 DA836							
27	Post records								
28	Report issue on transaction report								
29	Record and initiate resupply action								

SECTION III

RECEIPT PROCEDURES

GENERAL

ASPs will normally receive replenishment shipments from the corps storage area (CSA) on a regular basis, i.e., one convoy per day or a convoy every other day, etc.

Some receipts will be unscheduled and may arrive at the ASP at any time; i.e., emergency replenishments.

Procedures must be established in every ASP to provide for the orderly and efficient receipt of ammunition.

Vehicles arriving at an ASP/depot must be inspected prior to entering the storage area.

GUIDELINES

Mixed lots may be on a single vehicle and require detailed inventory after unloading.

Advance notices of receipts should be used to plan an efficient operation.

Ammunition receipts must be inspected for damage and safety hazards.

Using units should turn-in ammunition in its original pack.

DOCUMENTATION

DA Form 3151-R, Ammunition Stores Slip. A DA Form 3151-R will be prepared by the ASP

office for all ammunition items arriving at the ASP on a vehicle. DA Form 3151-R is prepared in accordance with FM 9-38.

DD Form 1348, Single Line Item Release/Receipt Document. DD Form 1348 is used as a receipt and as documentation going with the shipment. It is prepared by the shipper in accordance with AR 725-50. It also is used as advance notice to ASP/depots of an impending receipt.

DD Form 1486, DOD Material Receipt Document. The DD Form 1486 is prepared by the appropriate MMC for a specific type and quantity of ammunition that has been received.

DD Form 1384, Transportation Control and Movement Document (TCMD). The TCMD is prepared by the shipper and stays with the ammunition during the shipment. It provides prime transportation data for each level.

DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Material). DD Form 626 is used by the receiving activity to inspect vehicles arriving prior to unloading. The report is prepared in accordance with FM 9-38 and AR 55-355.

DA Form 3020-R, Magazine Data Card. DA Forms 3020-R will be prepared for each lot and stack of ammunition stored during receiving operations. The card will be prepared as outlined in FM 9-38.

RECEIPT PROCEDURES

The flow chart, table 3-2, is intended for use as a guide by ASP/depots to plan for and conduct receiving operations. It may also be used as a guide to prepare SOPs for ammunition receipts.

Table 3-2. Receipt Procedures

No	Activity	Document	Using unit	DAO	CONVOY CMDR Drivers	ASP office	Checker	Inspector	Inv. control
	Symbol		○	●	■	▲	⊙	◇	
1	Direct shipment	DD1348							
2	Provide advanced notice to receiver	DD-1348-1							
3	Conduct advanced planning for receipt	Lot locator paragraph							
4	Ship ammunition	DD1384 DD1348							
5	Arrive at ASP depot								
6	Inspect vehicles prior to entry	DD626							
7	Correct deficiencies-if noted	DD626							
8	Park loaded vehicles in holding area								
9	Present documentation to ASP office	DD1348 DD1384							
10	Review documentation	DD1348 DD1384							
11	Select storage locations	Plano-graph							
12	Prepare stores slip for each DODAC vehicle	DA3151							
13	Prepare magazine data card for each lot location if required	DA3020R							
14	Assign checkers, unloading crews MHE								
15	Stores slips and mag data cards to checkers	DA3151 DA3020R							
16	Escort vehicles to storage locations								
17	Verify type lot condition quantity received	DA3151							
18	Sign stores slip	DA3151							
19	Annotate magazine data card	DA3020R							
20	Conduct receipt inspection								
21	Drive empty vehicles to assembly areas								
22	Return stores slip to ASP office	DA3151							
23	Verify stores slips for accuracy completeness	DA3151							
24	Total stores slips by lot and location	DA3151							
25	Review suspension file for lots received								
26	Post lot-locator records	DA1296							
27	Cross-check stores slips vs receipt documents	DA3151 DD1348 DD1384							
28	Recheck actual receipts-if discrepancy noted								
29	Record actual receipts on receipt documents	DD1348 DD1384							
30	Sign receipt documents	DD1348 DD1384							
31	Depart ASP with signed TCMD								
32	Forward materiel receipt doc to inventory control	DD1486							
33	Record and file documentation	All							

Continuous Inspection

manual or an automatic data processing (ADP) supply operation. Some of the primary uses are:

- Materiel release order.
- Materiel release confirmation.
- Materiel release denial.
- Redistribution order.
- Advanced notice of shipment.

Shipping Labels

- The shipping activity is responsible for the proper marking and labeling of ammunition shipped.
- Address labels will be prepared in accordance with MIL-STD 129 using DD Form 1387 or DD Form 1387-1.
- Hazardous cargo marking, labeling, and placarding requirements are established in AR 55-355.

SHIPPING PROCEDURES

The flow chart, table 3-3, is intended for use as a guide by ASPs and depots to efficiently plan for and conduct shipping operations. It may also be used as a basis for preparing SOPs for ammunition shipments.

Every shipment and every shipping activity has special requirements which make their operations differ. Each shipping activity, when using table 3-3, must modify it to fit local organizations and regulations.

Table 3-3 is designed primarily to show a routine "throughput" replenishment shipment by motor convoy. However, with minor changes, it can apply to air or rail shipments, high priority shipments, cross-leveling shipments, and retrograde shipments.

checkers and is prepared and distributed in accordance with FM 9-38.

DD Form 1384, Transportation Control and Movement Document (TCMD). The TCMD is prepared by the ASP in accordance with AR 55-355 (MILSTAMP) and local regulations. It provides:

- Advance planning information for scheduling transportation assets.
- Means for control and identification of shipments throughout the movement cycle.
- Essential information needed to trace, locate, and divert shipments.

DD Form 626, Motor Vehicle Inspection (Transporting Hazardous Material). DD Form 626 is used by the shipping activity to inspect vehicles before and after loading but before leaving the ASP depot. The report is prepared in accordance with FM 9-38 and AR 55-355.

DD Form 836, Special Instructions for Motor Vehicle Drivers. The transportation officer will prepare, and provide to each driver, a DD Form 836, for vehicles departing the ASP depot loaded with ammunition. Instructions for preparing the DD Form 836 are contained in AR 55-355.

DA Form 3020-R, Magazine Data Card. Checkers will post DA Form 3020-R in accordance with FM 9-38 when ammunition is shipped from a storage location.

DD Form 1348-series. For shipping operations, the MILSTRIP documents in the DD Form 1348-series are used for numerous purposes. AR 725-50 is the basic reference for these documents and is essential for making shipments under the MILSTRIP system. The documents are designed to be used in either a

Table 3-3. Shipping Procedures

No.	Activity	Document	Receiving ASP	INV CONTROL	Trans. Office	CONVOY CMDR DRIVER	ASP OFFICE	CHECKER	INSPECTOR
	Symbols		○	●	■	▲	⊙	◇	□
1	Notification of issues or shipments		○						
2	Initiate materiel release order (MRO)	DD1348		●					
3	Receive MRO	DD1348					⊙		
4	Verify quantity on-hand, condition, suspension status						⊙		
5	Select lots, storage locations, quantity by lot						⊙		
6	Request transportation from TMO	DD1348					⊙		
7	Plan movement, nominate carrier	DD1384			■				
8	Prepare stores slips and MILSTRIP documents	DD13481 DA3151					⊙		
9	Review lots on suspension file	DA3151							□
10	Review depot surveillance record for inspection results	DA3022 R							□
11	Perform pre-issue inspection-if required				Planning		Planning		□
12	Verify condition of lots selected	DA3151							□
13	Return stores slips to ASP office	DA3151							□
14	Direct accomplishment of required maintenance	DA2407					⊙		
15	Alert loading crew, checkers, inspections, MHE						⊙		
16	Direct convoy to depot	DA1384			■				
17	Arrive at depot-park in vehicle holding area	DD1384							
18	Present TCMD to ASP office	DD1384				▲			
19	Inspect empty vehicles	DD626							□
20	Complete preparation of stores slips	DA3151					⊙		
21	Distribute stores slips	DA3151					⊙		
	A. Original and 2nd copy to checker	DA3151						◇	Continuous Inspection
	B. 3rd copy, with shipping	DA3151					⊙		
22	Escort vehicles to storage locations	DA3151				▲		◇	
23	Load, block, brace and inventory vehicles	DA3151				▲		◇	
24	Sign stores slips-jointly	DA3151				▲		◇	
25	Annotate magazine data card	DA3020-R						◇	
26	Drive loaded vehicles to assembly area	DA3151				▲			
27	Inspect loaded vehicles	DD626-DD836							□
28	Return stores slips to ASP office	DA3151						◇	
29	Verify stores slips-original vs 3rd copy	DA3151					⊙		
30	Complete shipping document for each vehicle	DD1348-1					⊙		
31	Total all stores slips-by quantity and DODIC	DA3151					⊙		
32	Enter totals on TCMD and sign	DD1384					⊙		
33	Release convoy-jointly						⊙		□
						▲			
35	Post records						⊙		□
36	Provide notice of departure to receiver	DD1348-1					⊙		
37	Provide materiel release confirmation to inventory control	DD1348-M					⊙		
38	Record and file documentation	All	○	●	■	▲	⊙		□

SECTION V

TURN-IN PROCEDURES

AMMUNITION

Ammunition is turned in by using units to the supporting ASP or depot upon completion of operations, mission changes, changes in basic loads, suspension of items on hand, and when ammunition items are of a questionable serviceability. ASPs and depots are required to receive salvage ammunition materiel, and residue from the using unit, such as expended cartridge cases, grenade pins and containers.

GUIDELINES

For safety reasons, using units must be encouraged to return ammunition items in the original pack if possible. Discourage using units from opening excess quantities of rounds and packages that they may turn-in later.

Turn-ins may be received in mixed lots and varying quantities.

Turn-ins may include some unserviceable ammunition.

Turn-ins may include items in a hazardous condition.

Turn-ins must be completely inspected.

Salvage material must be 100 percent inspected and certified to be free of explosives.

Inspectors must insure that all items are complete.

DOCUMENTATION

DA Form 581 (Turn-in). The using unit making a turn-in will prepare a DA Form 581 and present it to the ASP office. DA Form 581 is prepared in accordance with AR 710-2.

DA Form 3151, Ammunition Stores Slip. DA Form 3151 is used for turn-ins for the following:

- As a temporary receipt.
- As a storage document, prepared by the ASP office, directing relocation of specific items from the segregation area to specific storage locations.

DD Form 626, Inspection Report. The DD Form 626 is used by the receiving ASP/depot to inspect vehicles for hazardous conditions prior to unloading. The report is prepared as prescribed in FM 9-38 and AR 55-355.

DA Form 3020-R, Magazine Data Card. DA Form 3020-R will be prepared, in accordance with FM 9-38, for each lot and stack of ammunition turned in.

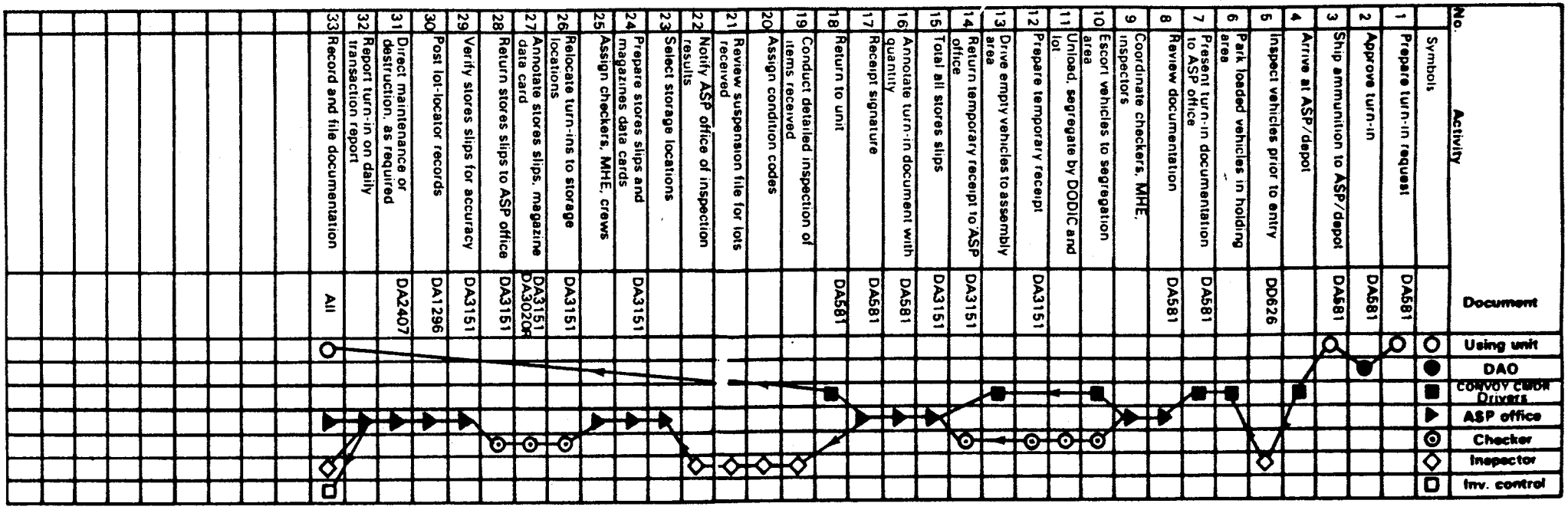
TURN-IN PROCEDURES

The flow chart, table 3-4, is intended to be used as a guide by ASPs and depots to efficiently plan for and conduct receipts of using unit turn-ins. It may also be used as a guide to prepare SOPs for turn-ins.

Salvage item turn-ins are handled in much the same manner as the ammunition turn-in procedures in table 3-4 with the following exceptions:

- Items are inspected and certified to be sure that all explosive components have been expended.
- Salvage items are stored in an area

Table 3-4. Turn-In Procedures



SECTION VI

AMMUNITION STOCK ACCOUNTING RECORDS

STOCK RECORD ACCOUNTING

AR 710-2 governs the policies for maintaining stock record accounts of accountable officers for supporting units and installations. The detailed procedures for posting stock accounting records are in FM 9-38.

MAINTENANCE OF STOCK RECORDS

General. Timely and accurate posting of ammunition stock records is vital if the records are to truly reflect the status of stocks on hand and intransit. The procedures for posting outlined herein are designed to achieve standardization and to minimize requirements at the ASP level. It does not relax the requirement for the maintenance and systematic recording of accurate and current data.

Instructions. The following instructions apply to all postings:

- **DA Form 1296, Stock Accounting Record.** This record is used to record gains and losses resulting from receipts, issues, shipments, transfers, and adjustments. Two types of stock accounting records maintained are the NSN/DODIC condition card and the lot-locator card.

- **DA Form 1296, NSN/DODIC ıditions Card (fig. 3-1).** This is the basic d that is used to record all transactions ecting the status and accountability of a single n of ammunition. It contains basic nsaction data and the ammunition condition les (ACC) for the items on hand.

- **DA Form 1296, Lot-Locator Card :. 3-2).** This card duplicates the basic nsaction data and shows the NSN and sical location of each lot number. Separate ds are prepared for each lot number of munition that is on hand and for each erent condition code on hand in each lot nber.

- **DA Form 1297, Title Insert (fig. 3-3).** is form is used with the DA Form 1296 to ord basic description data. When prepared, it itted to the bottom of the DA Form 1296.

- **DA Form 2064, Document Register for Supply Actions (fig. 3-4).** This form is used to record all supply transactions that impact on the account. It is also used as a suspense file to provide visibility for all open actions.

- **DA Form 2000-3, Inventory Count Card (fig. 3-5).** These cards are normally preprinted. If not, they must be prepared manually. It is used to record the amount of a particular item of ammunition that is on hand. The item is recorded by SN, DODIC, nomenclature, lot number, and location. One card is prepared for each lot number of any given item for each storage location.

- **Control Listings.** These are locally designed forms that are prepared to account for inventory count cards by serial number. They also serve as a master and a control record for

designated for all salvage items.

- A separate account is maintained by the stock records activity. This account reflects the type of item by quantity or tonnage rather than condition codes, lot numbers, and DODIC. A subaccount is maintained under each major account which reflects those quantities which are ready for shipment.

items being inventoried. Two types are normally used.

- **Accountable Officer Control Listing (fig. 3-6).** This form serves as the control listing for items being inventoried.
- **Inventory Supervision Control Listing (fig. 3-7).** This is the master record for all items being inventoried and is used to account for inventory count cards by serial number.

POSTING PROCEDURES

Figures 3-4 and 3-8 show examples for the various types of postings that are normally made to the stock record account.

CORRECTIONS

Corrections to postings on the stock record account will be made as outlined in AR 710-2. Examples of corrections are shown in figure 3-8.

Preparation Instructions for the DA Form 1296, Stock Accounting Record Used as a NSN/DODIC Conditions Card (Fig. 3-1)

Line, Column, or Block	Instructions
1 Stock Number (Top left corner)	Enter the NSN and DODIC.
2 Stock Number (Top right corner)	Enter the words NSN/DODIC CONDITION.
3 Service Stock (Left side)	Enter the designation of your activity.
4 Date Line (Right side)	Block out entire line. Enter the ACC for the NSN/DODIC on hand. One ACC per column. The total of all ACCs will equal the balance on hand.
5 Date	Enter last two numbers of the current year.
6 Demand	Leave blank unless required by local directive.
7 Balance on Hand	Enter the amount of the item transferred from the preceding NSN/DODIC conditions card that is completely filled.
8 Date Column	Enter calendar day and month of the transaction.
9 Voucher Number Column	The voucher number consists of the Julian date and the document serial number taken from the document register or, in the case of shipments received, the document number found in columns 36-43 of the DD Form 1348-1.

Preparation Instructions for the DA Form 1296, Stock Accounting Record Used as a NSN/DODIC Conditions Card, Figure 3-1

Line, Column, or Block	Instructions
10. Organization Column	Enter the designation of the organization or unit where the demand originated, to whom items were shipped, or from whom items were received.
11. Gain Column	If the transaction adds to the balance on hand, enter the quantity received. If not, leave blank.
12. Loss Column	If the transaction decreases the balance on hand, enter the quantity. If not, leave blank.
13. Balance on Hand Column	Enter the balance on hand after the adjustment for the gain or loss is posted.
14. Summary of Demands	Leave blank unless required by local directive.

Figure 3-1. DA Form 1296, Stock Accounting Record used as a NSN/DODIC Conditions Card

Preparation Instructions for the DA Form 1296, Stock Accounting Record uses as a Lot-Locator Record, Figure 3-2

Line, Column, or Block	Instructions
1. Stock Number Line (Top left corner)	Enter the NSN and DODIC of the item.
2. Stock Number Line (Top right corner)	Enter the words LOT-LOCATOR and ACC.
3. Service Stock Line (Left side of card)	Enter the designation of your activity.
4. Service Stock Line (Right side of card)	Enter the lot number of the ammunition, (one card per lot number).
5. Date (Left side of card)	Enter last two numbers of the current year.
6,7,8. Demand	Leave blank unless required by local directive.
9. Column Headings (Right side of card)	Cover all heading data. Enter locations of ammunition in each column, (one location per column).
10. Date Column	Enter the calendar day and month of the transaction.
11. Voucher Number Column	The voucher number consists of the Julian date and the document serial number taken from the document register or, in the case of shipments received, the document number found in columns 36-43 of of DD Form 1348-1.
12. Organization Column	Enter the designation of the organization or unit where the demand originated, to whom items were shipped, or from whom items were received.

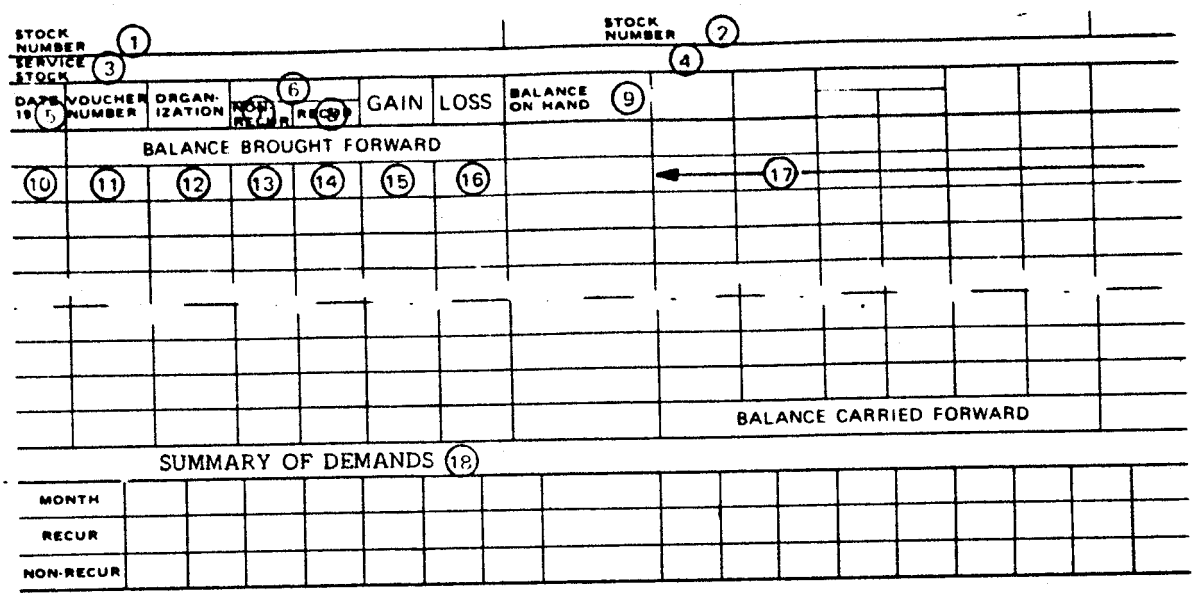


Figure 3-2. DA Form 1296, Stock Accounting Record used as a Lot-Locator Card

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Preparation Instructions for the DA Form 1296, Stock Accounting Record used as a Lot-Locator Record, Figure 3-2 (Continued)

13. Demand Column — Leave blank unless required by local policy.
14. Gain Column — If the transaction adds to the balance on hand, enter the quantity received. If not, leave blank.
15. Loss Column — If the transaction decreases the balance on hand, enter the quantity. If not, leave blank.
16. Balance on Hand Column — Enter the balance of stocks on hand after adjustment for the gain or loss is posted.
17. Location Columns — Enter the quantity of stocks stored at each location.
18. Summary of Demands — Leave blank unless required by local policy.

Preparation Instructions for the DA Form 1297, Title Insert, Figure 3-3

Block	Instructions
1. Bottom left side of card	Enter the NSN/DODIC for the item.
2. Bottom right side of card	Enter the nomenclature for the item.
3. Remainder	Leave blank unless covered by local policy.

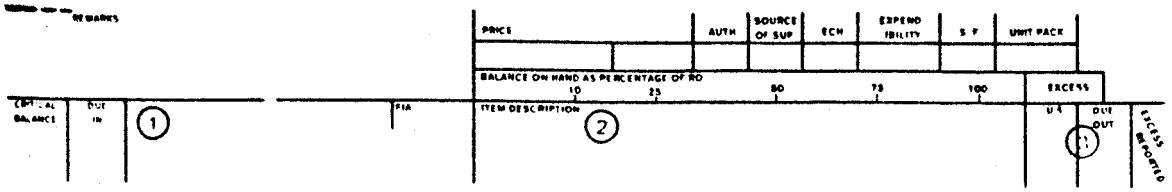


Figure 3-3. DA Form 1297, Title Insert

Preparation Instructions for DA Form 2064, Document Register for Supply Actions, Fig. 3-4

HEADING DATA

Line, Column, or Block	Instructions
1. Organization/Activity Block	Enter the designation of the organization that is preparing the form, and the activity designator obtained from DOD 4000.25D.
2. Unit Identification Code	Enter unit UIC.
3. Dates	
From:	Enter the Julian date when the first line entry is made.
To:	Enter the Julian date when the last line of the page of the documents register is used.
4. Page Number	Pages of the DA Form 2064 are numbered in sequence during the calendar year. (See 1st entry on fig 3-4.)

POSTING A REQUISITION

5. Priority and Date	Enter the priority from block 20, DD 1348, requisition, followed by a slash and the Julian date, e.g., 12/today's Julian date. Whenever a priority higher than 08 is used an officer must sign the document register in block D (Remarks).
6. Document Serial Number	Serial numbers are consecutive four digit numbers assigned by date; i.e., the first document posted to the document register on a given date is serial number 0001. The numbers run in sequence for the remainder of the day. For the next day, the serial number will again start with 0001.

DOCUMENT REGISTER FOR SUPPLY ACTIONS

ORGANIZATION ACTIVITY: 663d ORD Co. ASP#1 (1) VILSECK, GERMANY (WK4F8D)
UNIT IDENTIFICATION CODE: WT3NAA (2)
DATES (Day, Month, Year) FROM: 6107 (3) TO:
PAGE NO.: 3 (4)

(5)	(6)	(7)	(8) REMARKS	(9) SUP SPT ACTIVITY	(10) QTY REQ	(11) REC OR TURNED IN	(12) QTY DUE IN	(13) DATE COMPL	(14) MISC
12/6107	0001		REQUISITION 1320-D544 PROJ, 155 HE M107		1000				
6107	0002	6106-0010	ISSUE, F2ARTY 1315-C445 CTG, 105 HE, M1		90			6107	
6108	0001	6108-0004	TURN-IN 2-16 ARTY 1305-A071 CTG 5.56MM M193			8400		6108	
6108	0002		IDT MAG 18 TO MAG 45 1315-C445, CTG 105MM HE M1			90		6108	
6109	0001		SHIPMENT TO EOD 1320-D544 PROJ, 155 HE M107			24			

Figure 3-4, DA Form 2064, Document Register for Supply Actions

Preparation instructions for DA Form 2064, Document Register for Supply Actions, Figure 3-4 (Continued)

7. Control Number — This column is completed when notice of a passing order has been received. When received, enter the last 8 digits (date and serial number) of the supporting activity document (requisition) number
8. Remarks — Enter either the NSN or DODAC and nomenclature of the requested item. The DODAC is on the DD Form 1348. Also enter the word "Requisition." The nomenclature is found in the ammunition supply catalog.
9. Sup Spt Activity — Leave blank unless covered by local policy.
10. Quantity Required — Enter the quantity requested from block 8 of the requisition

NOTE: These actions complete the preparation of the document register and posting a requisition. The remaining actions consider posting actions taken that impact on that requisition.

Follow-up Action

14. Miscellaneous Column — Enter, in pencil, the Julian date that you prepared the follow-up and the code "AF1" (AR 725-50).

Full Receipt

11. Rec or Turned In Column — Enter quantity received.
13. Date Compl Column — Enter the Julian date of receipt of the ammunition.
14. Misc Column — Erase pencil entry.

Preparation Instructions for DA Form 2064, Document Register for Supply Actions, Figure 3-4 (Continued)

Partial Receipt

11. Rec or Turned In Column — Make a pencil entry of the actual quantity received. NOTE: When the remainder of the ammunition is received, erase the pencil entry, and make an ink entry showing the total quantity received.
12. Quantity Due-In Column — Make a pencil entry showing the quantity due-in as shown on the supple status card. When the final shipment is received, this entry is erased.

POSTING A DA FORM 581

Issue: (See 2d entry on fig 3-4.)

5. Priority and Date — Enter the Julian date.
6. Document Serial Number — Enter the sequence number for the day the entry is made. Numbers always start with 0001 for each new day.
7. Control Number — Enter the last 8 digits of the unit document number as shown in the "document number" block of the DA 581.
8. Remarks — Enter the word "Issue," unit designation of the unit receiving the issue, and the DODAC and nomenclature of the first item on the DA Form 581.
9. Sup Spt Activity — Leave blank.

Preparation Instructions for DA Form 2064, Document Register for Supply Actions, Figure 3-4 (Continued)

10. Quantity Req ——— Enter the amount of the first item listed on the DA Form 581 that was issued.

13. Date Compl ——— Enter the Julian date of the day the transaction was completed.

NOTE: All other columns are left blank.

Unit Turn-In: (See 3rd entry on fig 3-4.)

NOTE: Entries are the same as issue entries with the following exceptions:

8. Remarks ——— Entry the word "Turn-in," unit designation of the organization making the turn in, DODAC and nomenclature of the first item on the DA Form 581.

10. Quantity Req ——— Leave blank.

11. Rec or Turned In ——— Enter the amount of the first item on the DA Form 581.

POSTING AN INTER-DEPOT TRANSFER: (See 4th entry on fig 3-4.)

8. Remarks ——— Enter the letters "IDT," the change in location, from and to, and the DODAC and nomenclature of the first item on the DA Form 581.

Preparation Instructions for DA Form 2064, Document Register for Supply Actions, Figure 3-4 (Continued)

POSTING A SHIPMENT TO EOD. (See 5th entry on fig 3-4.)

5. Priority and Date ——— Enter only the Julian date.

6. Document Serial Number ——— Enter the four digit sequence number for the day of the transaction.

7 Control Number ——— Leave blank.

8. Remarks ——— Enter "Shipment to EOD," the DODAC and nomenclature of the item listed on the DD Form 1348-1.

11. Rec or Turned In ——— Enter the quantity reflected on DD Form 1348-1.

NOTE: All other columns are left blank.

12 Quantity Due-In Column ——— Make a pencil entry to show the quantity still due in (Column F minus Column G) NOTE When the final shipment is received, this entry will be erased

13 Date Compl Column ——— Make a pencil entry showing the Julian date that the partial shipment was received NOTE When the final shipment is received, this entry will be erased and an ink entry will be made showing the Julian date that the final shipment was received.

14. Misc Column ——— Erase pencil entry.

Preparation Instructions for DA Form 2064, Document Register for Supply Actions Figure 3-4, (Continued)

Cancellation by Requestor

NOTE: When you prepare your cancellation, the following entry is made:

14. Misc Column ——— Make a penciled entry showing code "AC1" (Appendix B, AR 725-50) and the Julian date that you prepared the cancellation

NOTE: Upon receipt of the cancellation verification, make the following entries:

13. Date Compl Column ——— Enter the status code "BQ" and the Julian date of the day you received the verification. (Appendix R, AR 725-50)

14. Misc Column ——— Erase the pencil entry.

Cancellation by Supplier

14. Misc Column ——— Enter the document identifier code from the cancellation received and the Julian date that the cancellation was received.

Supply Status Card

14. Misc Column ——— Make a pencil entry of the document identifier code taken from the status card and the Julian date you received the supply status. When the final shipment is received, erase this entry.

Preparation Instructions for DA Form 2000-3, Inventory Count Card, Figure 3-5

Line, Column, or Block	Instructions
1. Location	Enter the storage location (from the lot-locator card) of the ammunition. Separate cards are prepared for each location.
2. Stock Number	Enter the NSN and DODIC of the item.
3. Unit of Issue	Information is listed on DA Form 1297, Title Insert.
4. Noun	Enter the nomenclature derived from the lot-locator card.
5. Lot No.	Enter the lot number from the lot-locator card. Separate cards are prepared for each lot number.

NOTE: At this time, leave all other blocks blank and prepare two control listings. After the listings are prepared, post the serial numbers to the inventory count cards (one number per card).

6. Serial Number	Enter the serial number for the card, taken from the control listing.
Right Bottom of Card	Enter the control number taken from the document register.

NOTE: During the physical inventory, continue posting the inventory control cards.

7. Number of Pallets ——— Enter the number of full pallets of ammunition being counted. In the event that a light pallet is on hand, add the light pallet on the next line.

Preparation Instructions for DA Form 2000-3, Inventory Count Card, Figure 3-5 (Continued)

8. Packages per Pallet ——— Count the number of boxes per full pallet and enter the number of packages. Enter the number of boxes for a broken pallet on the next successive line.

9. Quantity per Package ——— Enter quantity per package shown on the packing data on the container.

10. Total Quantity ——— Enter total quantity (multiply col. 7 times, col. 8 times col. 9 (7x8x9 total quantity.))

11. Counter and Date ——— Signature of individual counting the ammunition and the date that the count was made.

12. Recorder and Date ——— Signature of individual who records the data on the card and the date that entries were made.

NOTE: At this point, the count cards are returned to the inventory supervisor who verifies that all cards are in. All cards are then given to the accountable officer to reconcile the differences and complete the count cards.

13. Count Quantity ——— Enter the total of items counted.

14. Accepted-Recount-Suspend ——— Place an X in the appropriate block.

15. Recorded Balance ——— Enter the balance shown on the lot-locator card.

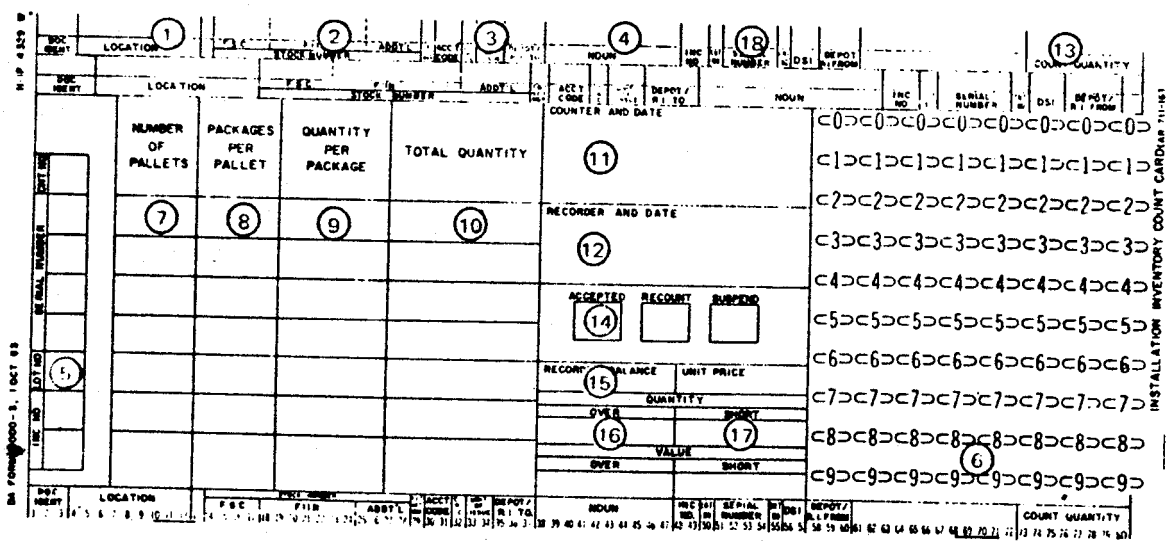


Figure 3-5. DA Form 2000-3, Inventory Count Card

Preparation Instructions for DA Form 2000-3, Inventory Count Card, Figure 3-5 (Continued)

16-17. Quantity ——— Only used when a discrepancy exists between the total count quantity and the recorded balance.

NOTE: The cards are now given to the stock records clerk for posting to the NSN/DODIC condition and lot-locator cards.

Preparation Instructions for the Accountable Officer Control Listing, Figure 3-6

Line, Column, or Block	Instructions
1. Document Number	Enter the document number derived from the document register.
2. Date	Enter the calendar day, month and year that the report is prepared.
3. Control Listing	Check "accountable officer" block.
4. Location	Enter the location of the ammunition being counted (from the inventory count card).
5. NSN/DODIC	Enter the complete NSN and DODIC (from the inventory count card).
6. ACC	Enter the ACC for the item being counted (from the lot-locator card).
7. Nomenclature	Enter the noun nomenclature (from the inventory count card).
8. Card Serial No.	Serial numbers are sequentiallly assigned (0001, 0002, etc.) by day, month, or fiscal year, depending on local policy.
9. Lot Number	Enter the lot number taken from the inventory count card.
10. Unit Price	Enter price from current KMDF.
11. Recorded Balance	Enter the balance on hand for the applicable lot number taken from the lot-locator card.

Preparation Instructions for the Accountable Officer Control Listing, Figure 3-6 (Continued)

12. Inventory Balance ——— Obtained from the "total quantity" column of the inventory count card. this is filled in when the inventory is complete.

13. Over ——— If the inventory balance is greater than the recorded balance, enter the difference here.

14. Short ——— If the inventory balance is less than the recorded balance, enter the difference here.

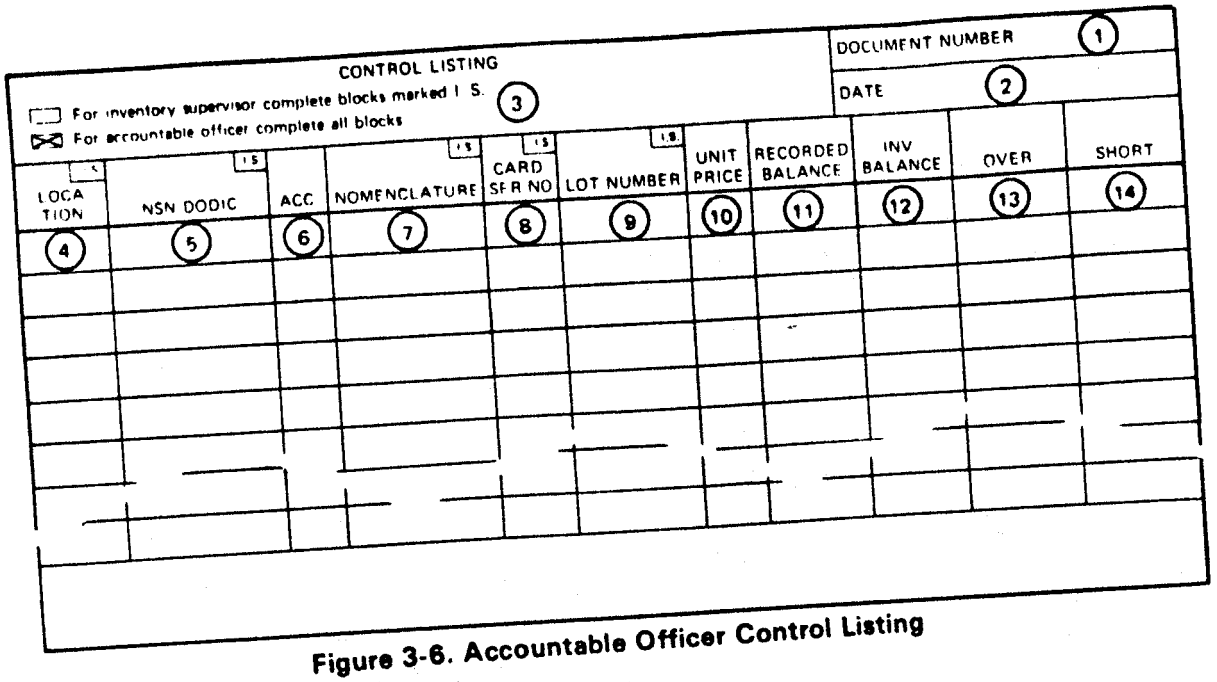


Figure 3-6. Accountable Officer Control Listing

Preparation Instructions for the Inventory Supervisor Control Listing, Figure 3-7

Line, Column, or Block	Instructions
1. Document Number	Enter the document number taken from the appropriate document register entry.
2. Date	Enter the calendar day, month and year that the report is prepared.
3. Control Listing	Check "inventory supervisor" block.
4. Location	Enter the location of the ammunition being counted (from the inventory count card).
5. NSN/DODIC	Enter the complete NSN/DODIC (from the inventory count card).
6. Nomenclature	Enter the noun nomenclature (from the inventory count card).
7. Card Serial Number	Serial numbers are sequentially assigned by day, month, or fiscal year, depending on local policy.
8. Lot Number	Enter the lot number (from the inventory count card).

CONTROL LISTING

DOCUMENT NUMBER (1)

DATE (2)

✂ For inventory supervisor complete blocks marked I. S. (3)

[ ] For accountable officer complete all blocks

LOCATION	NSN DODIC	ACC	NOMENCLATURE	CARD SER NO	LOT NUMBER	UNIT PRICE	RECORDED BALANCE	INV BALANCE	OVER	SHORT
(4)	(5)		(6)	(7)	(8)					

Figure 3-7. Inventory Supervisor Control Listing

STOCK NUMBER 1305-00-926-3930-A071 | STOCK NUMBER NSN-DODIC CONDITIONS

SERVICE STOCK

DATE 19	VOUCHER NUMBER	ORGANIZATION	DEMAND NON-RECUR	DEMAND RECUR	GAIN	LOSS	BALANCE ON HAND	ACC A	ACC B	ACC H
4 MAY		BALANCE BROUGHT FORWARD					936000	900000	34000	2000
5 MAY	9126 0025	1ST BN 13 INF			-0-	6720	929280	900000	27280	2000
5 MAY	9127 0002	2ND BN 14 FA			-0-	8400	9290880	900000	18880	2000
5 MAY	9128 0001	2ND BN 13 INF		CORR	-0-	10080	910800	900000	8800	2000
5 MAY	9128 0001	2ND BN 13 INF		CORR	1680	-0-	912480	901680	10800	2000
6 MAY	9129									
								BALANCE CARRIED FORWARD		

SUMMARY OF DEMANDS

MONTH																		
RECUR																		
NON-RECUR																		

STOCK ACCOUNTING RECORD STOCK ACCOUNTING RECORD

Figure 3-8. DA Form 1296, Stock Accounting Record used as NSN/DODIC Conditions Card

Preparation Instructions for DA Form 581 Request for Issue and Turn-In of Ammunition Certificate of Destruction for Conventional Ammunition (Fig. 3-9)

Block or Column	Instructions
1. Document Number	Enter document number from the ASP document register.
2. Control Number	Leave blank or add ASP control number.
3. From	Losing activity, including DODAC.
4.a.Initiated By	Name, grade, title, and signature of accountable officer.
4 b.Date	Julian date form was prepared.
5. Accounting and Funding Date	Blank.
6. To	Address to supporting EOD unit.
7.a.Approved By	Blank.
7.b.Date	Blank.
8. Authenticating Office Number	Blank.
9. Transportation Order	"X" in "Other."
10 a,b,c,d	List item to be destroyed by DODIC, nomenclature, lot number or CC-H, and quantity requested to be destroyed.

REQUEST FOR ISSUE AND TURN-IN OF AMMUNITION
For use of this form, see AR 710-2; the proponent agency is DARCOM

1. DOCUMENT NUMBER (1) | 2. CONTROL NUMBER (2)

3. FROM: (3) | 4. a. INITIATED BY (4a) | b. DATE (4b) | 5. ACCOUNTING & FUNDING DATA (5)

6. TO: (6) | 7. a. APPROVED BY (7a) | b. DATE (7b) | 8. AUTHENTICATING OFFICE NO. (8)

9. ☐ TRANSPORTATION ORDER (Request) (9) ☐ ALLOCATION ☐ TURN-IN ☐ OTHER (Specify)

10. ITEM NO. a	NATIONAL STOCK NUMBER b	LOT NUMBER c	QUANTITY REQUESTED d	QUANTITY ISSUED e	UNIT PRICE f	TOTAL COST g
(10)	1315 C445 Ctg 105MM HE w/o Fuze	MA 4-2	400			
			LAST ITEM			

11. REMARKS (Authority, Location of Ammunition, Instructions, etc.)
(11) "AMMUNITION CERITFIED UNSERVICEABLE BY QUALIFIED INSPECTOR AND AUTHORIZED FOR DESTRUCTION IN ACCORDANCE WITH THE PROVISIONS OF FM 9-38.

12. (12) ISSUE OR TURN IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED | (13) RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN

BY | DATE | BY | DATE

Figure 3-9. DA Form 581, Certificate of Destruction

Preparation Instructions for DA Form 581 Request for Issue and Turn-In of Ammunition Certificate of Destruction for Conventional Ammunition (Fig. 3-9) (Continued)

11 Remarks	Type statement, "Ammunition certified unserviceable by qualified inspector and authorized for destruction in accordance with the provisions of FM 9-38. Local destruction of materiel authorized by DA form 2415. Approved Ammunition Condition Report (ACR) number(s) is listed on the reverse side of this form".
12 Issue of Turn-In	Type name, grade, and signature of accountable officer.
13 Received Quantities	Type name, grade, and signature of EOD personnel supervising destruction of materiel.

In column 10e, quantity issued, EOD personnel indicate the quantity destroyed after an inventory of materiel is conducted.

DA Form 3151-R will be prepared and used as an issue slip outlined in this chapter.

Distribution will be as follows:

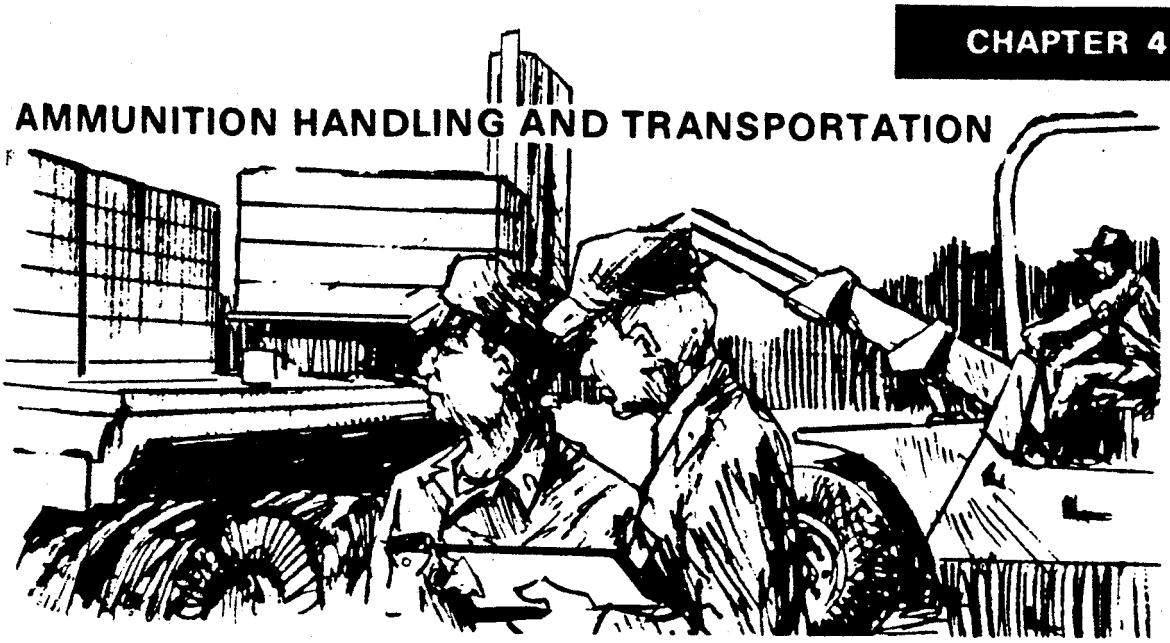
(1) Copy 1 to ASP stock records supporting files.

(2) Copy 2 to the supporting EOD unit.

(3) Copy 3 to headquarters authorizing destruction if dollor value of ACR exceeds $500.00.

CHAPTER 4

AMMUNITION HANDLING AND TRANSPORTATION



SECTION I

AMMUNITION HANDLING PROCEDURES

GENERAL

Loading and unloading railroad cars, trucks, aircraft, or vessels is the major activity of most ammunition companies. When loading ammunition, consideration should be given to compatibility; for example, blasting caps should not be shipped in the same truck with demolition material.

More efficiency will result if the time to complete these operations can be reduced and the physical handling made easier.

This section suggests methods and equipment which have been successfully used for loading and unloading operations in various theaters. If the standard equipment cannot be obtained, try the improvised items that others have used. It's a good idea, if safety permits, to experiment with crews of various sizes when loading and unloading, to determine the number of personnel needed for the most efficient operation.

PALLETIZED AMMUNITION

Ammunition loaded on pallets has become the primary mode of shipment from the factory to the ASPs. Palletized ammunition presents different handling requirements.

All units involved in the receipt of sizeable

result in boxes smashing against each other or causing injury to personnel catching them at the end of the line. Don't tilt the conveyor or the ammunition might slide off.

• The following are field expedients that may be used when conveyors are not available:

■ Use 2x4s to make a slide. The length will depend on the job you must do, but 3 meter lengths are usually about right. Make the slide only wide enough to handle the narrowest box. Nail at least two ties on the underside of the slide to prevent spreading. Set the slide on some empty boxes filled with sand or on sawhorses high enough to support it at various points. Securely band empty boxes together when more than one is to be used to prevent overturning.

■ With only boxed ammunition to handle, a trough may prove useful.

■ A U-shaped chute is good, but you need a great deal of lumber. If a new method of packing is developed, the chute may not be usable.

• Send boxed ammunition down a slide sideways. It will not roll over if the slide is not too high. The steel bands on the boxes will dig into the wood if they slide lengthwise.

RAILROAD CARS (LARGE ITEMS)

Unloading from a railroad car to the ground can be done in the same manner and with the same materials as already discussed in the preceding paragraphs. Load a railroad car by running a conveyor from the truck to the inside of the car.

NOTE: Foreign railroad equipment has limited load capacities. The rated capacities should be obtained from your local railroad operating personnel.

Loading of railroad cars with heavy and bulky items such as HAWK, MLRS, Nike Hercules, or quantities of ammunition must have available the necessary MHE (rough terrain forklifts, cranes, etc.) for handling heavy pallets. Along with the MHE, additional items of handling gear are often needed such as nylon cargo straps, steel rope slings, and conveyors.

RAILROAD CARS (SMALL ITEMS)

With unpalletized small items, it is best to use a crew of seven to unload the large American boxcar with four in the car and three in the truck. (Boxcars in overseas theaters are usually smaller.) One of the crew will act as a checker. The following suggestions will help increase production:

• Lower the tailgate (if required) and then back the truck as close to the car door as possible. Make firm contact between the boxcar and the truck, or construct a secure walk or treadway between them as wide as possible. Chock the truck wheels to prevent movement

• If ammunition is in the center of the car, use the human chain method to load it on the truck until the crew has enough room to work inside the car.

• Use a conveyor for unloading operations when you cannot get the back of the truck square against the boxcar door. One section of conveyor will do until you clear the center of the boxcar.

• When you have room to use two conveyor sections, set them up so that the angle between the two sections is more than 135 degrees but less than 225 degrees, or the ammunition won't make the curve. Use curved conveyor sections if authorized.

• The raised end of the conveyor must be under 1 meter high because momentum can

conveyor.

If the conveyor cannot be slanted downward, it is still easier to push a heavy box of ammunition along a level or slightly raised conveyor than it is to carry it.

When loading a truck from a stack, run a conveyor from the stack to the truck. Do not run it up on the back of the truck; pushing ammunition up an incline is harder work and less efficient than lifting the crates and boxes from the end of the conveyor to the truck.

AIRCRAFT SHIPMENTS

Air shipment operations may be conducted at any airfield operated by the Air Force or Army, at heliports, or at helicopter sling-out areas. Air terminal operations at Air Force airfields are controlled by the Air Force. Transfer points operated by the field Army are controlled by the Army transportation service, with technical assistance being supplied by ammunition supply units. Helicopter loading sites (sling-out areas) located at class V installations are operated by the installation concerned; technical assistance may be requested from the local TMO.

DD Form 1387-2, Special Handling Data/Certification, must be affixed to all containers of explosives or other dangerous articles with enough data to describe the material in the container (TM 38-250). All data on the form must be typed or printed. Legibly written packaging subparagraphs and signatures on shipper's certification in permanent, weatherproof ink are exceptions.

Shipments of ammunition by aircraft are preplanned by weight, cube, and compatibility for each separate aircraft. Documentation for the aircraft is usually made in advance.

Vehicles are taken to the air terminal and held in

Pershing missiles is done about the same way as standard ammunition loading. Use a few variations in equipment, and DARCOM loading drawings if available.

Special care must be taken to prevent injury to personnel and to guided missile bodies, which usually are packed in pressurized, dehumidified metal containers.

Jatos packed in wooden boxes should be painted with fire resistant paint if they are to be loaded in gondola cars. Portable or installed fire fighting equipment must be present with loaded articles, such as, liquid oxidizers or rocket engine fuels. They might be accidentally ignited during shipment.

The capacity of most foreign railroad cars varies from 20 to 80 tons and domestic railroad cars vary from 50 to 100 tons. These capacities depend and fluctuate as the gage and condition of the tracks vary (FM 55-15).

TRUCKS

When stacking ammunition parallel to the road, equipment is not necessary for quick unloading. Move the trucks along the road as the stack progresses. A crew of seven is effective when using this method.

If you cannot stack parallel to the road or drive a truck next to the stack, the fastest way to unload a truck is to use a conveyor. A crew of seven is enough when unloading with a conveyor or similar improvised equipment.

Do not set up a conveyor or slide on the tailgate of a truck. A slippery, steel tailgate is a hazard to personnel when they shove ammunition down the conveyor.

Place the ammunition boxes on the back of the truck where the crew can set them on the

assembly areas until arrival of the aircraft. After the aircraft arrives and has been moved to the loading area, vehicles are escorted by a guide and parked adjacent to the aircraft.

The pilot of the aircraft or crew chief will supervise the loading process, that is, placing, stacking, and lashing of the load within the aircraft.

Lifts made by helicopters using cargo nets require the placement of the net in a location within the landing area where the helicopters can pick up the load while hovering. Nets may be cargo loaded at the ASP and loaded and unloaded from the transporting vehicle by crane, or the load may be placed by hand into the cargo net after arrival at the landing area.

Safety precautions must be observed during the landing, loading, and take off of aircraft.

QD tables must be observed in parking aircraft loaded with ammunition and explosives, and the aircraft must be adequately guarded.

BRACING

Correct blocking and bracing of ammunition prior to shipment is very important because of the hazards of shipping ammunition. The primary purpose of blocking and bracing ammunition is to reduce unnecessary movement and avoid shock that could cause detonation.

BRACING RAILROAD CARS

The reason ammunition shipments must be braced carefully when shipped by rail is because extreme pressures are exerted when cars are moved suddenly or bumped. For example, when a car is coupled at a speed of 5 mph, 200 boxes, weighing 58 lbs each will place a force of 58,000 lbs against the bracing holding them in place. If adequate bracing is not used, these boxes might

plunge right through the end of the car. Since the foreign type railroad cars you find overseas may not be as sturdy as American type railroad cars, good bracing is essential overseas. The methods of bracing suggested here provide excellent protection for ammunition. Try to follow these methods when possible.

- **General Rules.** Freight car bracing for each type of ammunition packing (boxed, crated, and uncrated) is discussed below. However, before going into specific types, here are some general rules to keep in mind for good results:

  ■ Load boxed ammunition with the long dimension parallel to the length of the car.

  ■ Boxes of high or low explosives, black powder in storage cases, and solid explosives may be placed on their sides or ends.

  ■ Do not load live artillery shells, blasting caps, mines, fuzes, grenades, bulk high and low explosives, etc., higher than the permanent car lining. You must add more car lining if your load will be above the permanent lining.

  ■ Load boxes and crates so their ends meet each other compactly and fully.

  ■ If you cannot fit all the boxes across the width of the car snugly, you must fill up the extra space to obtain a stable load. Here are several ways to do it:

    If the space is around 10 cm, place 5 cm strips of wood (scabbing) on both sides of the car where the box ends meet. With more than 10 cm of space to fill, try laying the last box on end.

    If this doesn't take care of the space, start every other row flush with the side of the car. This method is approved as long as the end box will not tip over.

    As a last resort, space the boxes, being

sure that you keep them in line.

• **Center Gates.** Preventing lateral movement is second in importance to movement along the length of the car. Occasionally, you will be loading boxes or crates that fit perfectly. When the fit is not perfect, the excess center space can be handled in several ways depending on the amount. Sometimes you may be able to avoid making a center gate, or using wood filler, by turning boxes lengthwise and slipping them in the center gap. The DODIC conversion chart (app E) provides you with the weights and cubes of the most commonly used boxed and palletized ammunition.

■ If you have just a few inches to fill, plug up the gap with lumber (any scrap, sturdy lumber will do). When the space is about 30 cm, build a solid center gate to fit in front of both sides of the load. Make it as high as the load, and fasten the planks together with crossboards. Place a gate tightly in front of each load and drive wedges (boards) between them at the crossboards. Cleat these wedges so they won't move.

■ When the space between the gates is more than 1/3 meter make center gates and place several 2×4 crosspieces against each crossboard on the gates. A good rule to follow on the number of crosspieces to use per crossboard is to place one at the bottom, one at the top, and one for every two rows of boxes.

■ If there is too much space to fill with crosspieces, make center gates and secure them with diagonal braces. Use back-up cleats on the sides of the gates, and nail the cleats to the side of the car immediately in front of the gate. Use holddown cleats on the bottom of the gate, and nail the cleats to both floor and gate. Usually two

braces per gate will do, but be sure to keep the angle between the floor and brace under 45 degrees, and fasten the brace at the top and bottom with cleats.

• **Boxed Loads.** When loading boxes, do not exceed the car load limit. Boxes are usually small and compact, and there may be space left for a few more layers after the car has been loaded to maximum weight. An overload may break the flooring or derail the car as the train sways over the rails.

• **Crated Loads.** When handling crates, you should not have much trouble getting a solid load. They will fit together as compactly as boxes and are packed in much the same manner. With excess center space to fill and no lumber available, try to fill the center space by stacking the crates crosswise in the car.

• **Unpalletized Projectiles.** The separator method offers the greatest amount of protection when shipping unpalletized projectiles. Strengthen the ends of the car with 5 cm planking up to the height of the load. Prefabricate sections of separators, and it will speed up bracing.

• **Palletized Projectiles.** Palletized projectiles are rather easy to handle with forklift trucks, but they are hard to handle manually. Only small amounts of bracing are required when cars are loaded with pallets.

BRACING TRUCKS

Ammunition loaded in trucks does not require as much bracing as for railroad cars. Usually time will not permit making braces nor should nails be driven into the wooden sides of a truck. However, this does not mean the ammunition can be loaded carelessly. It is of prime

importance in truck loading to get an even, well distributed load.

• **Boxes and Crates.**

■ Build up a load of boxes or crates layer by layer, starting from the front (cab end) of the truck and working back. Be sure that most of the ammunition is not stacked at the front end of the truck with nothing in the rear. On the other hand, do not stack ammunition so high near the rear that a good bounce will throw it out of the truck. Remember, get an even well distributed load.

■ There will often be excess lateral space when loading a truck. Fill it as in railroad cars. The use of scabbing is not necessary.

■ Try to make the last row flush with the end of the truck. Perhaps by turning the last row of boxes on end, a compact, immobile load may be achieved.

• **Unpalletized Projectiles.** Unpalletized separate-loading projectiles will take quite a beating even when placed on a truck according to the approved method for combat operations described below. Anything less than this method is unsatisfactory. Do not overload the vehicle.

■ Insure that the grommets are in place on each projectile.

■ Load the projectiles in the truck, starting from the front with the base of each projectile against the front wall.

■ After one row has been placed across the width of the truck body, lay down the next row ogive-to-ogive.

■ Place succeeding rows base-to-base and ogive-to-ogive until the proper number has been loaded.

■ Jam a crossbrace behind the last row of projectiles.

INSPECTION OF VEHICLES

Government owned motor vehicles used for transportation of hazardous materials shall be inspected at frequent regular intervals by a competent inspector. The inspector must make sure that mechanical conditions and safety devices are in good working order and that oil and motor pans under engines are clean. Daily inspection using DD Form 626 and DA Form 2404 shall be made to assure the following:

- Fire extinguishers are of the required size, quantity, type, inspected and certified.
- Electric wiring is in good condition and properly attached.
- Fuel tank and piping are secure and not leaking.
- Brakes, steering, and other equipment are in good operating condition.

OPERATING REQUIREMENTS

The following requirements shall be observed in the operation of government owned vehicles transporting explosives and ammunition:

- During loading and unloading of motor vehicles, the brakes must be set and the wheels chocked.
- When a motor vehicle gets to within 7.5 meters of the doors of a structure through which a shipment is to be moved, the doors must be kept closed until the motor has been switched off. The only exception made will be if following requirements are met:
  - The exhaust system is not exposed to accumulations of grease, oils, gasoline, or other fuels. The exhaust system has ample clearance from fuel lines and combustible materials, and the system is equipped with an effective spark

and flame arresting device in the exhaust line. A standard muffler is not an effective flame or spark arresting device.

- Exposed explosive material is not being transported or handled.

135

- Explosive material is not located on the platform ramp or otherwise outside or the structure or trailer while the motor is running.

SECTION II

MATERIALS HANDLING EQUIPMENT

GENERAL

Materials handling equipment (MHE) represents a wide variety of items designed to assist ammunition personnel in the storage, handling, and shipment of ammunition. Included are forklift trucks, towing tractors, cranes, pallets, jacks, platform trucks, conveyor systems, etc.

FORKLIFT TRUCKS

Forklift trucks are the vehicles designed to pick up, carry, and stack unit loads of supplies and equipment. These vehicles may be gasoline, diesel, liquefied petroleum gas, or battery powered. Under each of these categories, forklift trucks are further broken down by lifting capabilities ranging from 2,000 to 15,000 pounds.

- **Rough Terrain Forklift.**
  - Performance characteristics. The rough terrain forklift (RTFL), generally classified as an "off the road" vehicle, is equipped with pneumatic tires for operation on prepared or unstabled surfaces, over beaches, deep sand, snow, ice, and mud. They are primarily used for loading and unloading flatbed trailers, landing craft, or other similar types of small cargo vessels. They can perform the functions of three types of MHE, a forklift truck, a towing tractor, and as a RT crane when the RT crane

arm, or a hoisting device supported on an overhead track. The crane and the forklift truck, equipped with a crane boom, carries its load in suspension. Generally, the crane cannot handle a load unless the load has been prepared by proper lashing, or a sling is used, such as, a pallet sling for pallets.

Cranes found in ammunition units are gasoline and or electric types. Cranes authorized ammunition units by TOE are the 5-ton rough terrain (RT) type, but these TOE items are scarce in ammunition units in the field. However, a substitute 20-ton RT crane is being provided. The 5-ton wrecker has proved to be a handy helper in ASPs even though it was not designed to handle ammunition.

Cranes in ASPs are primarily used to handle projectiles. They are more efficient than the RTFL, because more than one pallet of ammunition can be moved at one time. A forklift truck is generally limited to one pallet at a time.

PALLETS

Pallets are portable platforms of wood or other materials used to handle, store, and move ammunition. Pallets vary in size, but the one designated standard is the 4-way (partial), 4-stringer, 40×48-inch, wing-type hardwood pallet. All other types are considered nonstandard, even though needed to palletize many different sizes of items. The advantage of the standard pallet over the nonstandard is that it fits into railroad cars, trucks, and trailers. The 4-way fork entry feature of the standard pallet allows the load to be lifted from any side. This is not characteristic of most nonstandard pallets.

REFERENCES

References that provide more detailed information on MHE and on the safety procedures to be observed when using MHE are FM 9-6, FM 9-38, TM 9-1300-206 and TM 743-200.

attachment is installed in place on the work carriage. The RTFL may be used in fording operations where the depth of the surf does not exceed 5 feet to the crest of the waves. It is equipped with front and rear axle steering, which enables it to move sideways at 20 degree angles and gives it a short turning radius. It is also equipped with 2-wheel and 4-wheel drive enabling it to traverse sand, mud, snow, and steep grades with equal ease.

- Safety Features. The RTFL trucks have safety features such as an overhead protector for the operator. Some other types of forklifts that may be used do not have these safety features.
- Electric (battery-powered) Forklift Trucks. These items are designed with lifting capabilities ranging from 2,000 to 10,000 pounds and are generally restricted to use on hard surfaces. They are seldom found in the field, except at depots and ship off-loading facilities. They are important because they are the only type forklift trucks permitted to operate in the holds of ships transporting ammunition.

TOWING TRACTORS

These are vehicles designed to pull trailers. Towing vehicles (truck tractors, RTFLs, etc.) are very important in the efficient movement of ammunition. To get the most benefit, each tractor must be used with two or more trailers. This reduces the time tractors remain idle awaiting trailer loading or unloading. Additional information on types and characteristics of towing tractors and trailers can be found in TM 9-500. Observe the precautions in shipping ammunition by truck or tractor-trailer outlined in paragraph 71, TM 9-1300-206.

CRANES

Cranes are designed to raise, shift, and lower heavy weights by a projecting boom, swinging

SECTION III

AMMUNITION SLING-OUT AREA AND GENERAL AIRCRAFT/VEHICLE DATA

AMMUNITION SLING-OUT AREAS

Sling-out areas are constructed near ASPs to provide the capability of limited aerial resupply of ammunition by helicopters. There are factors a commander must consider in deciding to construct and use of a sling-out operation. The sling-out area must be located at least 700 meters from class V storage areas and the bivouac or other inhabited areas. Prevailing wind direction must be considered when selecting a location.

OPERATIONS AT A SLING-OUT PAD

The sling-out pad must be free of overhead wires and cables. Prior to use, the sling-out pad must be inspected for loose objects such as ponchos and tarpaulins that could be drawn up through the helicopter rotor blades.

Goggles must be worn by all personnel in helicopter sling-out operations to prevent eye damage from blowing sand and dust.

The pad should be located so the helicopter approach and departure will never pass over ammunition storage areas or inhabited areas.

The sling-out pad should be at least 25 meters square and be constructed on a stabilized base overlayed with PSP M8A1 matting, or a concrete or asphalt type surface to support the weight of ammunition and MHE.

Cargo nets must be loaded and placed to allow helicopters to pick up the load while hovering. The required rigging is specified in TM 55-450-11.

MHE must be kept clear of the area where helicopters descend or ascend.

Appropriate fire fighting equipment must be maintained on site at all times.

Static electricity discharge probes will be used as required by TM 55-450-11.

GENERAL AIRCRAFT/VEHICLE DATA

Transportation reference data needed in planning ammunition shipments is shown in tables 4-1, 4-2, 4-3, and 4-4.

When computing the weight and cube of ammunition to be shipped, refer to section IV, SC 1305-30-IL, and for storage and packaging data, refer to SC 1340-98-IL. (App E of this text contains weight and cube data on commonly used DODICs.)

Table 4-1
Table 4-2
Table 4-3
Table 4-4

Vehicle	Cargo deck (in.)			Cargo body loading height (in.)		
	Length	Width	Height above ground	Under bows	Top of side racks	Top of steering wheel
M135	147.0	80.0	44.5	60.0	36.5	35.3
M211	147.0	88.0	51.0	60.0	36.5	26.0
M602	147.0	88.0	53.0	60.5	36.5	27.9
5-TON CAPACITY:						
M41	165.0	88.0	49.2	60.0	36.5	38.8
M54	168.0	88.0	56.5	60.0	36.5	29.0
M54A1	168.0	88.0	56.5	60.0	36.5	29.0
M54A2	168.0	88.0	56.5	60.0	36.5	29.0
M54A1C	168.0	88.4	55.5	60.0	36.5	29.8
M55	244.0	88.0	55.8	61.3	36.5	29.0
M55A2	244.0	88.0	56.3	61.3	36.5	29.0
M328A1	219.3	97.8	64.8	50.5		
M656	181.0	89.9	47.5	60.0		34.0
M813	168.0	88.3	56.8	57.4	36.5	29.3

Table 4-1. Dimensional Data for Cargo Truck Bodies (Continued)

Vehicle	Cargo deck (in.)			Cargo body loading height (in.)		
	Length	Width	Height above ground	Under bows	Top of side racks	Top of steering wheel
M813A1	168.0	88.3	56.8	57.4	36.5	29.3
M814	243.8	87.8	57.2	60.0	36.3	31.3
M821	218.8	97.8	64.0	48.8		
BRG TRANS	213.0	97.8	64.8	50.5		
8-TON CAPACITY:						
M520	197.5	97.8	43.3	88.5		55.0
10-TON CAPACITY:						
M125	180.0	96.0	68.0	62.0	42.0	23.8
M125A1	180.0	96.0	68.0	62.0	42.0	23.8

Table 4-1. Dimensional Data for Cargo Trailer Bodies

Vehicle	Cargo deck (in.)			Cargo body loading height (in.)		
	Length	Width	Height above ground	Under bows	Top of side racks	Top of side panels
¼-TON CAPACITY:						
M100	71.5	37.8	24.5	NA	NA	18.0
M416	72.0	41.3	26.0	NA	NA	18.0
¾-TON CAPACITY:						
M101	94.8	65.3	31.7	49.0	33.3	18.3
M101A1	94.8	65.3	31.7	49.0	33.3	18.3
1½-TON CAPACITY:						
M104	110.0	74.0	38.3	59.3	45.3	18.0
M104A1	110.0	74.0	38.3	59.3	45.3	18.0
M105	109.8	74.0	37.0	60.0	45.0	18.0
M105A1	109.8	74.0	37.0	60.0	45.0	18.0
M105A2	109.8	74.0	37.0	60.0	45.0	18.0

Table 4-1. Dimensional Data for Stake Semitrailer Cargo Bodies

Vehicle	Cargo deck (in.)			Cargo body loading height (in.)
	Length	Width	Height above ground	
6-TON CAPACITY:				
M118	268.8	88.5	54.0	48.0
M118A1	268.8	88.5	54.0	48.0
12-TON CAPACITY:				
M127	335.8	88.8	60.5	47.8
M127A1	335.8	88.8	60.5	47.8
M127A1C	335.8	88.8	60.5	48.0
M127A2C	335.8	88.8	59.8	48.0
22½-TON CAPACITY:				
M871	358.0	96.0	55.0	48.0
34-TON CAPACITY:				
M872	489.0	96.0	59.0	48.0

Table 4-2. Data for Army Helicopter

	Cargo compartment loading capacity (cu ft)	Aircraft maximum cargo load (lb)	Cargo compartment (in.)			Cargo compartment loading height (in.)
			Length	Width	Height above ground	
CH-47A	1,486.9	10,500	366.0	90.0	34.0	78.0
CH-47B	1,486.9	15,136	366.0	90.0	34.0	78.0
CH-47C	1,486.9	17,136	366.0	90.0	34.0	78.0
CH-54A w/Pod	1,562.1	13,773	326.5	106.0	NA	78.0
CH-54B w/Pod	1,562.1	16,980	326.5	106.0	NA	78.0
UH-1A	118.5	850	80.5	53.0	14.5	48.0
UH-1B	118.5	2,939	80.5	53.0	12.0	48.0
UG-1C	118.5	3,320	80.5	53.0	14.0	48.0
UH-1M	118.5	3,820	80.5	53.0	14.0	48.0
UH-1D	191.3	3,344	92.0	84.0	15.0	49.0
UH-1H	191.3	3,344	92.0	84.0	15.0	49.0

Table 4-4. Transportation Priorities

MILSTRIP* Issue Priority Designator	UMMIPS** MILSTAMP Transportation Priority	UMMIPS Time Standards From Date of Requisition to Delivery of Material	
		DOMESTIC	OVERSEAS A B C
1 thru 3	1	7 days	11-11-12 days
4 thru 8	2	11 days	15-15-16 days
9 thru 15	3	29 days	67-72-82 days
(Delete 16 thru 20)			

A - Alaska, Hawaii, S. America, Caribbean and N. Atlantic
B - Europe, Mediterranean, and Africa
C - Pacific
* Military Standard Requisitioning and Issue Procedures
** Uniform Material Movement and Issue Priority System

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Table 4-3. Cargo Transportability Criteria

Load Ref	Length (in.)	Width (in.)	Height (in.)	Weight (lb)
C-130	470.0	109.0	106.0	25,000
C-141	810.0	123.0	106.0	55,000
C-5	1,453.0	228.0	114.0	180,000
		— or —		
C-5	1,453.0	156.0	156.0	180,000
MILVAN	228.0	84.0	81.0	30,000
40 FT STD	456.0	84.0	86.0	50,000
POM	72.0	72.0	67.0	5,000

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CONTAINERIZATION

CONTAINERS, HANDLING, AND TRANSPORTATION

The ammunition tonnage for an active theater will require a large amount of sea transport. The first ships to arrive in the theater will probably be container ships because of their speed and the reduced handling for containerized shipments. Standard containers are 8×8×20-feet and will gross up to 44,500 pounds depending on the type of ammunition loaded. The number of pallets per container will range from 8 to 48 with an average net tonnage of 12 STs. Containers will arrive at the port by railroad, commercial vehicles, or military transportation. The M871 transporter (22 1/2-ton) will carry one container and is the prime carrier for corps movements. The M872 transporter (34-ton) will carry two containers if the gross weight of both containers does not exceed 34 tons. The M872 is used between COMMZ and the corps storage area (CSA). The theater storage area can expect to have containers arriving by rail. The CSA will receive containers by rail only if there is a railroad nearby.

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CONTAINER HANDLING EQUIPMENT

Ammunition containers create peculiar unloading requirements. The container is an enclosed structure and can only be unloaded from one end. Unloading of containers is called unstuffing, and loading is called stuffing. Conventional ammunition companies will require additional equipment to do the stuffing. There are three additional pieces of MHE needed to meet the needs of container handling, stuffing, and unstuffing.

- **4000 lb Low Mast RTFL.** This forklift, has side-shift tines, and it can move into the container and remove pallets of ammunition.
- **Mobile Loading Ramp.** With this ramp the 4000 lb RTFL can move from ground level to the level of the container on its transport vehicle. The forklift can unstuff the container without putting the container on the ground.
- **50,000 lb Rough Terrain Container Handler (RTCH).** This RTCH can remove the container from the transporter and place it on the ground where it can be used for temporary storage. The container storage plan should allow easy access by the 4000 lb RTFL to unstuff it when required.

After unstuffing, units should return empty containers as quickly as possible and not allow them to accumulate at the storage site.

UNSTUFFING PROCEDURES

Ammunition Supply Points (ASPs). During the initial resupply of an ASP, as much as 50 percent of the ammunition will be in containers. These containers will be unstuffed using the equipment described in paragraphs above. When this equipment is not available, field expedients will

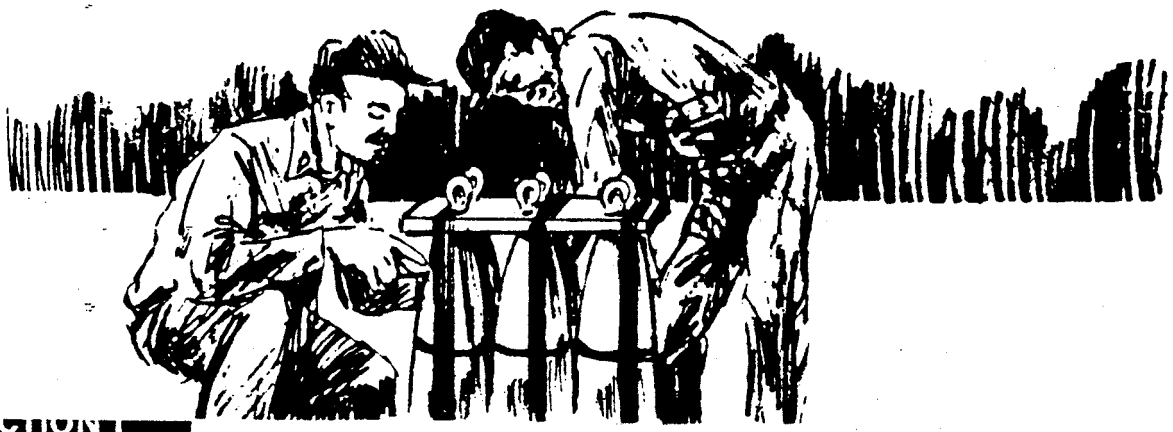
have to be used to move the pallets to the rear door of the container to allow unstuffing by available MHE. In a stable environment, selected containers may be retained for security of items, such as, pyrotechnics, blasting caps, etc. Issues will be made direct from the container to using units. Empty containers will be returned as quickly as possible.

Corps Storage Area (CSA). When the CONUS lines of communication are initially established, a large percentage of the ammunition received by the CSA will be in containers. These containers will arrive by line haul vehicle and by rail. These containers may require immediate unstuffing. The CSA may temporarily store ammunition in containers for eventual movement to ASPs. The MHE described in paragraphs above will be used to upload or unstuff the containers received by the CSA. Empty containers should be returned to the transportation system as quickly as possible.

Theater Storage Area (TSA). The TSA will not do unstuffing. Like the CSA, the TSA will provide a place for temporary storage of ammunition in containers.

CHAPTER 5

AMMUNITION MAINTENANCE AND DESTRUCTION



SECTION I

AMMUNITION MAINTENANCE

MAINTENANCE CONCEPT

Ammunition maintenance consists of those actions necessary to insure serviceable stocks or restore stocks to a serviceable condition. Maintenance responsibilities are assigned ammunition units based on the primary mission, availability of personnel, skills, time, tools, equipment, and supplies.

Maintenance of ammunition stocks is a necessary and vital task which must be done in both peace and war to maintain a high state of materiel readiness. Maintenance ranges from minor operations such as cleaning and rust removal to major operations like complete renovation.

Provisions must be made to do as much maintenance as possible at the storage location. In some cases, it will be necessary to evacuate ammunition for maintenance. However, movement of ammunition involves not only safety but tremendous tonnage which makes the adoption of a maintenance program totally geared to evacuation unacceptable.

MAINTENANCE ALLOCATION CHART (MAC)

General. The information contained in this paragraph is designed to serve as a guide for personnel directly or indirectly concerned with maintenance of conventional ammunition in the field. The guidelines presented herein are

temporary in nature and are provided as an interim measure until superseded by MAC charts that will appear in the new series of technical manuals for conventional ammunition.

Maintenance Functions. Columns in the MAC (table 5-1) reflect the lowest level of maintenance that may be authorized to perform the function indicated. The level of maintenance is indicated by letters; "C" User/Operator (performed by crew/operator); "O" Organizational (performed by using unit); "F" Direct Support (performed by ammunition company), "H" General Support (performed by ammunition maintenance detachment), and "D" Depot Maintenance (performed at depots with renovation capability). The columns are defined as follows:

- **Inspect.** The determination of serviceability of any item by comparing its physical and mechanical performance against known standards to determine whether the materiel conforms to the technical requirements.
- **Test.** The determination of serviceability of an item electrically, mechanically, or chemically through the use of test equipment, or by functioning.
- **Service.** Preservation and packaging, to include preserving, painting, stenciling, and packaging.
- **Replace.** The substitution of serviceable items for unserviceable items, assemblies, subassemblies, or components, as authorized.
- **Repair.** The restoration of an item to serviceable condition. This includes, but is not limited to, cleaning, adjusting, and limited operations usually less hazardous than renovation.

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
	01 GROUP. FIXED AMMUNITION (EXCEPT 152 MM)														
0101	a Cartridge (Complete Round)	C	D	C	C	C	O	F	C		F	D			
	b Cartridge (Complete Round)	C	D	C	C	D	F	O	C		F	D			
	c Packaging for Cartridge	O		F	F	O	O	O			O	O	O	1,2,3	
0102	Projectile Assembly														
	a Projectile	D	D	D	D		D	D			D	D			
	b Projectile Supplementary Charge	D	D	D	D		D	D			D	D			
	c Tracer	C	D	C	C	C	O	F	C		F	D			
	d Fin Assembly	D	D	D	D			F	C		D	D			
	e Burster w/ Nose Fuze	H	D	H	H			H	H		D	D	H		
	f Burster w/ Base Fuze	D	D	D	D						D	D	D		
	g Fuze Well Liner	D		D	D										
0103	Propulsion System														
	a Cartridge Case	D	D	D	D	D	C				D	D			
	b Cartridge Case	C	D	C	D	D									
	c Propelling Charge	D	D	D	D						D	D			
	d Propelling Charge	D	D	D	D										
	e Primer	D	D	D	D				C						
	f Primer	D	D	D	D										
	g Case Liner	D		D	D						D	D	D		

Table 5-1. Maintenance Allocation Chart

	c Handle Assembly	D			D	D								D	
0104	Fuze														
	b Nose Fuze	C	D		F	F	C		D		C		D	F	
	c Nose Fuze, Mk27	C	D		D	D	C	D				D		D	
	d Base Fuze	D	D		D	D	D							D	
	e Base Fuze														
	f PIBD Fuze	D					D						D		
	g Nose Fuze	C	D		D	D	C		D		C			D	
	Links													F	
	02 GROUP. FIXED AMMUNITION (152 MM)														
0201	a Cartridge (Complete Round) Packaging for Cartridge	C	D		C	C	C	O	O	C		F	D		
		O			F	F	O	O	O			O	O	O	1,2,3
0202	Projectile Assembly														
	a Projectile	D	D		D	D		D	D			D	D		
	b Tracer	D	D		D	D								D	
	c Fuze Well Liner	D			D	D								D	
0203	Propelling System														
	a Cartridge Case	D	D		D	D			D		D			D	
	b Propelling Charge	D	D		D	D			D		D		D	D	
	c Barrier Bag (Neoprene or Elasto-meric)	C	D		D	D	C			C	C			D	
0204	Fuze														
	a Nose Fuze	C	D		D	D	C		D					D	
	b PIBD Fuze	D											D		
	c Nose Fuze														
	03 GROUP. SEMIFIXED AMMUNITION (EXCEPT MORTAR)														
0301	a Cartridge (Complete Round)	C	D		C	C	C	O	O	C		F	D	O	
	b Packaging	O			F	F	O	O	O			O	O	O	1,2,3

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0302	Projectile Assembly														
	a Projectile	C	D	C	C	C	O	O	C	-	F	D	-		
	b Supplementary Charge	C	D	F	F	C	-	O	C	-	-	D	F		
	c Tracer	D	D	D	D	-	-	-	-	-	-	-	D		
	d Closing Plug	C	-	D	O	C	-	-	C	-	-	-	O*		
	e Base Plug (except leaflet)	D	-	D	D	D	-	-	-	-	D	D	D		
	f Base Plug *	-	-	-	-	-	-	-	-	-	-	-	-		
	g Base Plug (leaflet)	C	-	-	-	C	O	-	C	-	-	-	D		
	h Canister	D	D	D	D	D	D	D	-	-	D	D	D		
	i Canister(s)	-	-	-	-	-	-	-	-	-	-	-	-		
	j Parachute Assembly	D	D	-	-	-	-	D	-	-	-	D	D		
	k Expelling Charge	D	D	D	D	D	-	D	-	-	-	-	D		
	l Fuze Adapter Assembly	-	D	D	D	-	D	-	-	-	D	-	D		
	m Base Charge	D	D	D	D	-	-	-	-	-	-	-	D		
	n Burster	H	D	H	H	H	-	H	-	-	-	D	H		
	o Fuze Well Liner	D		D	D	-	-	-	-	-	-	-	D		
	p Rocket Motor	D	D	D	D			D		-	D	D	D		
	q Rocket Grain	D	D	D	D								D		
0303	Propelling System														
	a Cartridge Case	C	D	C	C	C	O	O	C	-	D	D	D		
	b Propelling Charge	C	D	F	F		-	-	-	C	-	D	F		
	c Propelling Charge	C	D	C	C			D		-	-	D	F		
	d Primer	C	D	D	D					-			D		

Table 5-1. Maintenance Allocation Chart

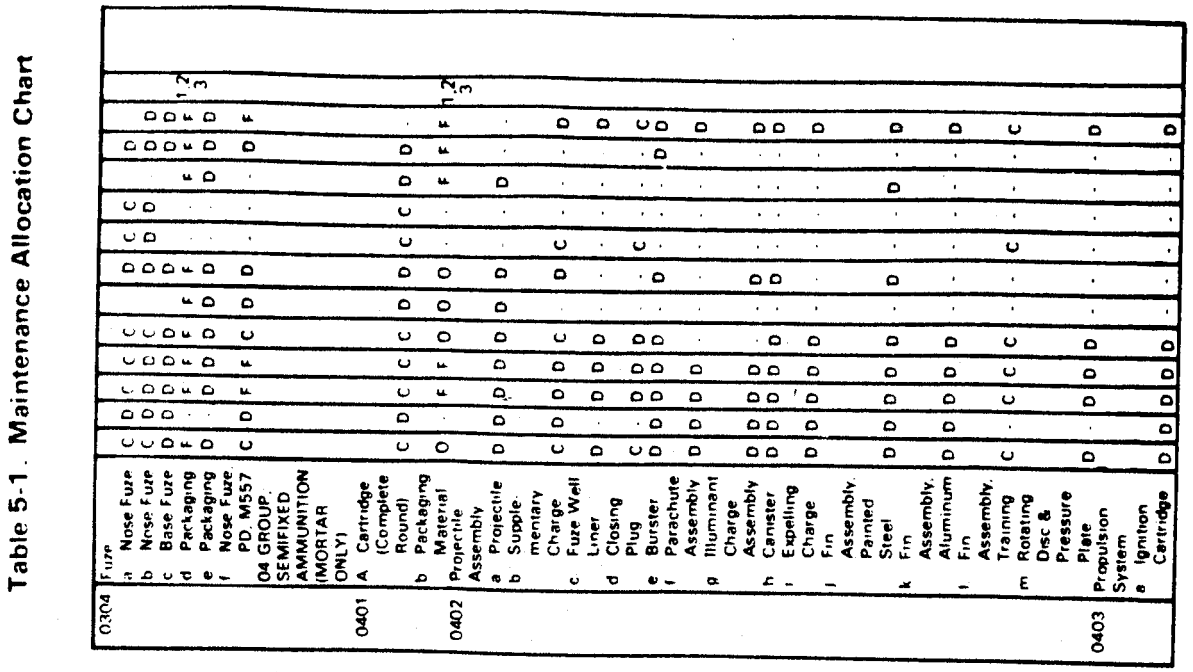


Table 5-1. Maintenance Allocation Chart

(1)	(2)	(3)												(4)	(5)
		Maintenance function													
				Service							Renovate				
Group No	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
	b Ignition Cartridge, Training	C	-	C	C	C	-	-	C	-	-	-	C		
	c Propelling Charge	C	D	D	D	-	-	-	-	C	-	-	D		
	d Primer	D	D	D	D	D	-	-	-	-	-	-	D		
	e Primer (For Training Rounds)	C	-	C	C	C	-	C	-	-	-	-	C		
	f. Striker Nut & Extension	C	-	D	D	-	-	-	-	C	-	-	D		
0404	Fuze														
	a. Fuze	C	D	C	C	C	-	D	C	C	-	D	C		
	b. Fuze	C	D	D	D	C	-	D	-	C	-	D	D		
	05 GROUP, SEPARATE-LOADING AMMUNITION														
0501	a Projectile Assembly	C	D	C	O	C	O	O	C	-	F	D	-		
	b Projectile	D	D	-	-	D	D	D	-	-	D	-	-		
	c. Supplementary Charge	C	-	F	F	C	-	-	C	-	-	-	F		
	d. Lifting Plug	C	-	F	O	C	O	-	C	-	F	F	F		
	e Lifting Plug (Fusible)	C	D	F	O	C	O	-	C	-	F	F	F		
	f. Base Plug	D	-	D	D	D	-	-	-	-	D	D	D		
	g Base Plug	-	-	-	-	-	-	-	-	-	-	-	-		
	h Expelling Charge	C	D	D	D	D	-	-	-	-	-	-	D		
	i Expelling Charge (For Late Model Base Eject Smoke Proj)	D	D	D	D	D	-	D	-	-	-	-	D		
	j Burster	H	D	H	H	H	-	H	-	-	-	D	H		

Table 5-1. Maintenance Allocation Chart

	k. Fuze Well Liner	D	-	D	D	-	-	-	-	-	-	-	D				
	l Pallet	C	-	F	F	O	-	O	-	-	F	F	O				
	m Lifting Plug Gasket	F	-	F	F	F	-	-	-	-	-	-	F				
	n. Projectile Grommet	C	-	F	F	C	F•	-	-	-	F•	-	C▲				
	o Obturating Band	D	-	D	D	C	-	-	-	-	-	-	D				
	p. Rocket Off/Cap	C	-	C	C	C	-	-	C	C	-	-	C				
0502	Propelling System																
	a. Propelling Charge	C	D	C	C	-	-	D	C	C	-	F	D				
	b. Flash Reducer	C	-	C	C	-	-	-	C	-	-	-	-				
	c Additive Jacket	C	-	C	C	-	-	-	C	-	-	-	-				
	d Primer	C	D	C	C	C	-	-	C	-	-	-	C				
	e Packaging	C	D	F	F	C	O	O	-	-	F	F	F				
	f Igniter Tube(s)	D	-	D	D	-	-	-	-	-	-	-	D				
	g. Igniter Core	D	-	D	D	-	-	-	-	-	-	-	D				
	h. Lacing Jacket	D	-	D	D	-	-	-	-	-	-	-	D				
	i Spacer, M124 Charge	C	-	C	C	-	-	-	C	-	-	-	-				
0503	Fuze																
	a Nose Fuze	C	D	C	C	C	-	D	C	C	-	D	F	H	1,2,3		
	b Packaging	F	-	F	F	O	O	O	-	-	F	F	H				

Table 5-1. Maintenance Allocation Chart

Grenades, Hand: Fragmentation, M67, M33, M68, M59, (M33 w/Fuze, M217), M57, M26A2 (Impact Fuzed)

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
1	Grenade, Hand Fragmentation, w/ Fuze	C	D	O	O	C	O	C	-	C	F	D	-	1,2,3	a,b,c
2	Packing Material	O	-	O	O	O	O	O	-	-	-	O	O	1,2,3	a,b,c
3	Fuze M213	C	D	C	C	C	-	-	C	C	-	-	-		h
4	Fuze M217	F	D	F	F	F	-	-	F	F	-	-	-		i
5	Safety Pin w/Pull Ring	C	-	-	-	-	-	-	-	C	-	-	-		
6	Safety Clip	C	-	C	C	-	-	-	C	C	-	-	-		h
		F	-	F	F	-	-	-	F	F	-	-	-		i

Table 5-1. Maintenance Allocation Chart

Grenade, Hand Offensive, Mk3A2

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
1	Grenade, Hand Offensive w/Fuze	C	D	O	O	C	-	O	-	B	-	-	-	1,2,3	a,b,c
2	Packing Material	O	-	O	O	O	O	O	-	-	-	O	O	1,2,3	a,b,c
3	Fuze, M206A2	C	D	C	C	C	-	-	C	C	-	-	-		h
		F	D	F	F	F	-	-	F	F	-	-	-		i
4	Safety Pin w/Pull Ring	C	-	-	-	-	-	-	-	C	-	-	-		
5	Safety Clip	C	-	C	C	-	-	-	C	C	-	-	-		h
		F	-	F	F	-	-	-	F	F	-	-	-		i
6	Grenade, Hand Offensive, w/o Fuze	O	-	O	O	O	-	O	-	-	-	-	-	1,2,3	a,b,c

Table 5-1. Maintenance Allocation Chart

Grenades, Hand: Practice, M20, M62 and M69

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
1	Grenades, Hand Practice, M30,M62 M69 w/ Fuzes	C	-	C	O	C	O	O	-	-	F	-	-	1,2,3	a,b,c
2	Packing Material	O	-	O	O	O	O	O	-	-	-	O	O	1,2,3	a,b,c
3	Fuze, M205A1 and M205A2	C	D	C	O	C	-	-	C	-	-	-	O	1,2,3	
4	Body, M30,M62, M69	C	-	C	O	C	O	O	-	-	F	-	-	1,2,3	a,b,c
5	Plastic Stopper	C	-	C	O	O	-	-	C	-	-	-	C	1,2,3	a,j,k
6	Charge, Practice	C	-	C	O	-	-	-	C	-	-	-	C	1,2,3	a,j,k
7	Safety Clip	C	-	C	O	-	-	-	C	-	-	-	C	1,2,3	a,l
8	Safety Pin w/Pull Clip	C	-	-	-	-	-	-	-	C	-	-	-		
9	Fuze, M228	C	D	C	O	C	-	-	C	-	-	-	C	1,2,3	a,m

Table 5-1. Maintenance Allocation Chart

Grenades, Hand: M7, M7A1, ABC-M7A2, ABC-M7A3, M18, M15, AN-M8, M54

(1) Group No	(2) Functional group	(3) Maintenance function																		(4) Tools and equipment	(5) Remarks
		Inspect		Service					Install	Adjust	Renovate										
			Test	Unpack	Repack	Clean	Touch-up	Mark			Paint	Repair	Replace								
1	Grenade, Hand w/Fuze	C	D	O	O	C	O	O	-	H	F	-	-	1,2,3	a,b,c,p
		-	-	C	-	-	-	-	-	-	-	-	-		
2	Packing Material	O	-	C	O	O	O	O	-	-	F	O	O	1,2,3	a,b,c,p
3	Fuze, M206 Series, M226, M201A1	-	-	-	-	-	-	-	-	H	-	-	-		p
4	Safety Pin and Pull Ring	C	-	-	-	-	-	-	-	C	-	-	-		p
5	Safety Pin	-	-	-	-	-	-	-	-	F	-	-	-		p

Table 5-1. Maintenance Allocation Chart

Grenades, Hand: ABC-M25A1, ABC-M25A2, M34, AN-M14, XM58

(1) Group No	(2) Functional group	(3) Maintenance function												(4) Tools and equipment	(5) Remarks
		Inspect	Test	Service					Install	Adjust	Renovate				
				Unpack	Repack	Clean	Touch-up	Mark			Paint	Repair	Replace		
1	Grenade, Hand: w/Fuze	C	D	O	O	C	O	O	-	H	F	-	-	1,2,3	a,b,c
		-	-	C	-	-	-	-	-	-	-	-	-		
2	Packing Material	O	-	C	O	O	O	O	-	-	F	O	O		
3	Safety Pin and Pull Ring	C	-	-	-	-	-	-	-	C	-	-	-		

Table 5-1. Maintenance Allocation Chart

Grenades, Rifle, HE, AT, M31; Smoke, WP, M19A1 Green, Red, or Yellow Smoke, M22, M22A2, AT, Practice M29 (T42), Smoke, Green, Red or Yellow Streamer, M23, M23A1

(1) Group No	(2) Functional group	(3) Maintenance function												(4) Tools and equipment	(5) Remarks
		Inspect	Test	Service					Install	Adjust	Renovate				
				Unpack	Repack	Clean	Touch Up	Mark			Paint	Repair	Replace		
1	Grenades Rifle														
	M31, M19A1, M22, M22A2, M23, M23A1	C	D	C	O	C	O	O	-	-	F	-	-	1,2,3	a,b,c,n,q
		C	-	C	-	C	-	-	-	-	-	-	-		r
2	Packing Material	O	-	O	O	O	O	O	-	-	-	O	O	1,2,3	a,b,c,q
		O	-	C	-	O	O	O	-	-	F	O	O		r
3	Grenade, Rifle, Practice M29 (T42)	C	-	C	O	C	O	O	-	-	F	-	-	1,2,3	a,b,c
4	Stabilizer, Tube-Fin Assembly	O	-	C	O	O	O	-	O	-	-	-	O	1,2,3	a
5	Safety Wire Rifle Grenade M19A1	C	-	-	-	-	-	-	C	-	-	-	-		o
6	Safety Clip Rifle Grenades M22 and M22A2	C	-	-	-	-	-	-	C	-	-	-	-		o
7	Nose Vent Tape Rifle Grenades M23 and M23A1	C	-	-	-	-	-	-	C	-	-	-	-		l

Table 5-1. Maintenance Allocation Chart

Legends:
C-User operator
O-Organizational maintenance
F-Direct support maintenance
H-General support maintenance
D-Depot maintenance

Remarks:
a Explanation of numbers refer to Special Tools and Equipment List
b For strapping grenade boxes, use 3/8-inch wide strapping If not available, 5/8-inch wide strapping may be used
c For palletizing, use 1¼-inch wide strapping.
d For use on Hand Grenade, M61
e For use on Hand Grenades, M67 and M33
f For use on Hand Grenades, M68, M59 (33A1 w/Fuze, M217), M57 and M26A2
g Not applicable to Grenade, Mk2
h Applicable to Navy
i Applicable to Army
j For Practice Grenades, M30 and M62, the use of practice charges and stoppers is optional
k Do not use practice charges or stoppers with Grenade, M69
l For Practice Grenades, M62 and M69
m For use on Practice Grenades, M69
n No test Rifle Grenade HEAT, M31 is authorized at any maintenance level
o Installation of these devices is only authorized in event of aborted firing mission
p If the inner pack for the grenade is a metal case, these operations do not apply
q Packed in fiberboard container
r Packed in metal container
s Parts salvaged from expended ammunition.
* Applicable only to Cartridges 105-mm: HE, M413 & M444.
• Metal type ONLY.
▲ Parts salvaged from expended projectiles
NR - None Required

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
	0100 Mines Antipersonnel (Service)														
0101	a Mine APERS M14	C	D	C	C	C	–	–	–	–	–	–	–		
	b Detonator M46	C	D	C	C	C	–	–	–	–	–	–	–		
	c Wrench M22	C	–	C	C	C	–	–	C	–	–	–	–		
	d Packing Material	O	–	–	–	O	–	O	–	–	–	O	O		
0102	a Mine APERS M16 Series	C	D	C	C	C	O	F	–	–	F	–	–		
	b Fuze Mine Comb M605	C	F	C	C	C	O	F	C	–	F	–	–		
	c Spool Wire	C	F	C	C	C	O	F	C	–	F	–	–		
	d Wrench M25	–	–	C	C	–	–	–	–	–	–	–	–		
	e Packing Material	O	–	–	–	O	–	O	–	–	–	F	F		
0103	a Mine APERS M18A1	C	D	C	C	C	–	–	–	–	–	–	–		
	b Bandolier M7	C	–	C	C	C	–	–	–	–	–	–	–		
	c Test Set M40	C	C	C	C	C	–	–	–	–	–	–	–		
	d Firing Device M57	C	C	C	C	C	–	–	C	–	–	–	–		
	e Adapter	C	–	C	C	C	–	–	C	–	–	–	–		
	f Blasting Cap Assy M4	C	C	C	C	C	–	–	C	–	–	–	–		
	g Packing Material	O	–	–	–	O	–	O	–	–	–	O	O		
0104	a Mine APERS M26	C	D	C	C	C	–	–	–	–	–	–	–		

Table 5-1. Maintenance Allocation Chart

	b Packing Material	O	–	–	–	O	–	O	–	–	–	O	O		
	0200 Mines, Antipersonnel, Practice														
0201	a Mine, APERS, Prac M8 Series	C	D	C	C	C	O	F	–	–	F	O	–		
	b Mine Cap	C	–	C	C	C	–	–	C	–	–	–	C		
	c Simulator (Projectile)	C	D	C	C	C	–	–	C	–	–	–	C		
	d Spotting Charge	C	D	C	C	C	–	–	C	–	–	–	C		
	e Fuze, Mine, Comb, Prac M10A1	C	D	C	C	C	O	F	C	–	F	O	C		
	f Ignitor Assy	C	D	C	C	C	–	–	C	–	–	–	C		
	g Spool Assy	C	–	C	C	C	–	–	C	–	–	–	–		
	h Packing Material	O	–	–	–	O	–	O	–	–	–	O	O		
0202	a Mine, APERS, Prac M35	C	C	C	C	C	O	O	C	–	F	–	–		
	b Dye Capsule	C	C	C	C	C	–	–	C	–	–	–	C		
	c Simulator & Barrel Assy	C	–	C	C	C	–	–	C	–	–	–	C		
	d Cartridge Case and Sleeve Assy	C	D	C	C	C	–	–	C	–	–	–	C		
	e Spring Housing Retainer	C	–	C	C	C	–	–	C	–	–	–	C		
	f Spring Housing Assy	C	C	C	C	C	–	–	C	–	–	–	C		
	g Packing Material	O	–	–	–	O	–	O	–	–	–	O	O		

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0203	a Mine, APERS, prac M68	C	C	C	C	C	-	-	-	-	-	-	-	-	
	b Bandolier M7	C	C	C	C	C	-	-	-	-	-	-	-	-	
	c Test Set M40	C	C	C	C	C	-	-	-	-	-	-	-	-	
	d Firing Device M57	C	C	C	C	C	-	-	C	C	-	-	-	-	
	e Adapter	C	C	C	C	C	-	-	C	C	-	-	-	-	
	f Blasting Cap Assy M10	C	C	C	C	C	-	-	C	C	-	-	-	-	
	g Packing Material	O	-	-	-	O	-	O	-	-	-	O	O	-	
	0300-Mines, Antitank (Service)														
0301	a Mine, AT M15	C	D	C	C	C	O	F	-	-	F	-	-	-	
	b Fuze, M603	C	D	C	C	C	-	-	C	-	-	-	-	-	
	c Activator M2	C	D	C	C	C	-	-	C	-	-	-	-	-	
	d Wrench M20	-	-	-	-	C	-	-	-	-	-	-	-	-	
	e Packing Material	O	-	-	-	-	O	-	O	-	-	-	O	O	
0302	a Mine, AT M19	C	D	C	C	C	O	F	-	-	F	-	-	-	
	b Fuze, M606	C	D	C	C	C	-	-	C	-	-	-	-	-	
	c Detonator M50	C	D	C	C	C	-	-	C	-	-	-	-	-	
	d Activator M2	C	D	C	C	C	-	-	C	-	-	-	-	-	
	e Wrench, M22	-	-	C	C	C	-	-	-	-	-	-	-	-	
	f Packing Material	O	-	-	-	O	-	O	-	-	-	O	O	-	

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0303	a Mine, AT M21	C	D	C	C	C	O	F	-	-	F	-	-		
	b Fuze, M607	C	D	C	C	C	-	-	C	-	-	-	-		
	c Booster M120	C	D	C	C	C	-	-	C	-	-	-	C		
	d Wrench M26	-	-	C	C	-	-	-	-	-	-	-	-		
	e Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0304	a Mine, OFF Route, AT M24	C	D	C	C	C	O	F	-	-	F	-	-		
	b Rocket 3.5 w/Fuze M404	C	D	C	C	C	-	-	-	-	-	-	-		
	c M2 Discriminator Wire	C	D	C	C	C	-	-	-	-	-	-	-		
	d Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	e M61 Firing Device	C	C	C	C	C	-	-	-	-	-	-	-		
	0400 Mines, Antitank, Practice														
0401	a Mine, AT, prac. M12A1	C	D	C	C	C	O	F	-	-	F	-	-		
	b Fuze, Mine, AT Prac. M604	C	D	C	C	C	-	-	C	-	F	-	C		
	c Activator, Prac M1	C	D	C	C	C	-	-	C	-	-	-	C		
	d Firing Device M2	C	D	C	C	C	-	-	C	-	-	-	C		
	e Wrench M20	-	-	C	C	-	-	-	-	-	-	-	-		
	f Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0402	a Mine, AT, Prac M20	C	D	C	C	C	O	F	-	-	-	-	-		
	b Fuze, Mine, AT Prac M604	C	D	C	C	C	-	F	C	-	F	-	C		
	c Activator, Prac M1	C	D	C	C	C	-	-	C	-	-	-	C		
	d Firing Device M3	C	D	C	C	C	-	-	C	-	-	-	C		
	e Wrench M20	-	-	C	C	-	-	-	-	-	-	-	-		
	f Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
	0500 Fuzes Mine														
0501	a Fuze, Mine, Comb, Prac M10A1	C	D	C	C	C	O	F	C	-	F	O	C		
	b Primer, Igniter	C	D	C	C	C	O	F	C	-	F	D	C		
	c Packing	O	-	-	-	O	-	O	-	-	-	O	O		
0502	a Fuze, Mine, AT M603	C	D	C	C	C	O	F	C	-	F	O	C		
	b Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0503	a Fuze, Mine, AT, Prac M604	C	D	C	C	C	O	-	C	-	F	-	C		
	b Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0504	a Fuze, Mine -Comb M605	C	D	C	C	C	O	-	C	-	F	-	C		
	b Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	0600-MISCellaneous Components														
0601	a Activator, AT Mine Prac M1	C	D	C	C	C	-	-	C	-	-	-	C		
	b Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0602	a Activator, AT Mine M2	C	D	C	C	C	-	-	C	-	-	-	C		
	b Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0603	a Arming Plug, AT Mine M4 Series	C	D	C	C	C	-	-	C	-	-	-	C		

Table 5-1. Maintenance Allocation Chart

	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0604	a.	Body, AP, Mine, M8A1	C	D	C	C	C	-	-	C	-	-	-	C		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	-	O		
0605	a.	Booster, AT, Mine, M120	C	D	C	C	C	-	-	C	-	-	-	C		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0606	a.	Cap, AP, Mine	C	D	C	C	C	-	-	C	-	-	-	C		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0607	a.	Charge, Spotting, Mine	C	D	C	C	C	-	-	C	-	-	-	O		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0608	a.	Primer, Igniter, Mine Fuze	C	D	C	C	C	-	-	C	-	-	-	O		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0609	a.	Retainer, AT Booster	C	D	C	C	C	-	-	C	-	-	-	O		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0610	a.	Simulator, AP Projectile, Mine M8	C	D	C	C	C	-	-	C	-	-	-	O		
	b.	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		

Table 5-1. Maintenance Allocation Chart Pyrotechnics

(1)	(2)	(3)												(4)	(5)
		Maintenance function													
				Service							Renovate				
Group No.	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
	GROUP 01. CARTRIDGES														
0101	Cartridge, PHOTOFLASH M112A1, M123A1, PRACTICE, M121, M124														
	Cartridge	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	Primer shunting clip	C	-	-	-	-	-	-	C	-	-	-	-		
	GROUP 02. FLARES														
0201	FLARE, SURFACE: AIRPORT, M76														
	Flare	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0202	FLARE, SURFAC TRIP, M49A1														
	Flare	C	D	C	O	C	-	-	C	-	-	-	-		
	Mounting bracket assembly	C	-	C	O	C	-	-	C	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	GROUP 03. SIGNALS														
0301	SIGNAL ILLUMINATION, AIRCRAFT, ALL														
	Signal	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O				O		O				O	O		

Table 5-1. Maintenance Allocation Chart

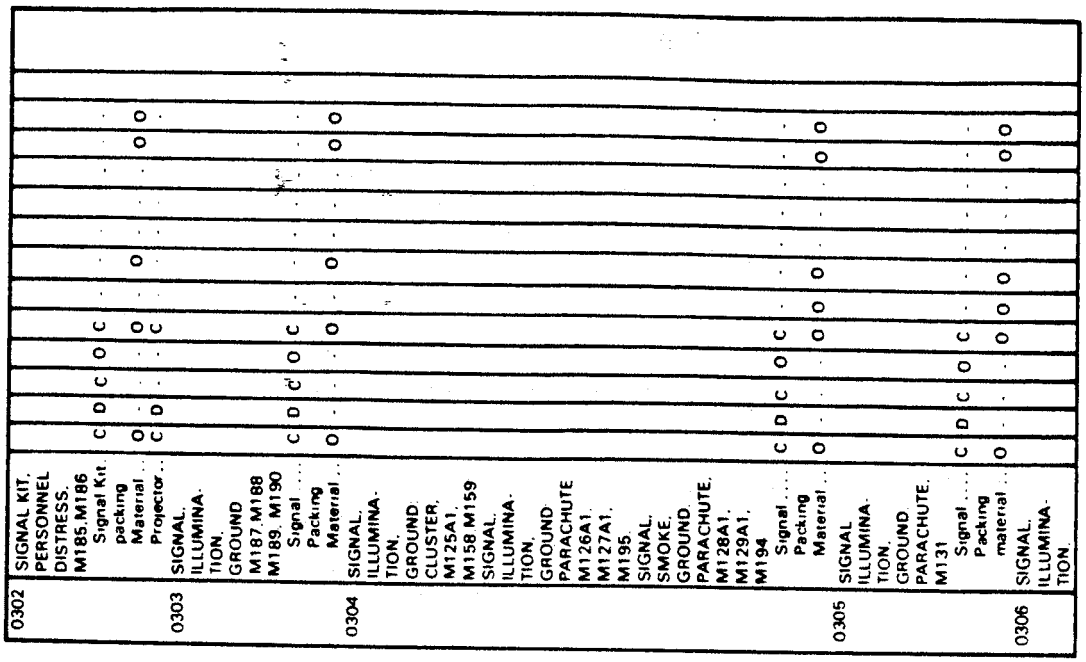


Table 5-1. Maintenance Allocation Chart

(1)	(2)	(3)												(4)	(5)
		Maintenance function													
				Service							Renovate				
Group No	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
0306 (Cont'd)	GROUND GREEN STAR, PARACHUTE M19A2														
	SIGNAL, SMOKE, GROUND M62, M64 M65, M66														
	Signal	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	GROUP 03, SIGNALS														
0307	SIGNAL, ILLUMINATION, MARINE TWO STAR, RED, AN M75														
	Signal	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0308	SIGNAL, SMOKE AND ILLUMINATION MARINE MK 13 MOD 0														
	Signal	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0309	SIGNAL, SMOKE, GROUND M166, M167, M168, M169														
	Signal	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
	GROUP 04 SIMULATORS														

Table 5-1. Maintenance Allocation Chart

0401	SIMULATOR, ATOMIC EXPLOSION M142														
	Simulator	C	D	C	C	C	-	-	C	-	-	-	-		
	Packing Material	O	-	-	-	O	O	O	-	-	-	-	O		
0402	DETONATION SIMULATOR, EXPLOSIVE M80														
	Detonation simulator	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0403	SIMULATORS, EXPLOSIVE BOOBY-TRAP: FLASH, M117 ILLUMINATING, M118; WHISTLING, M119														
	Simulator	C	D	C	O	C	-	-	C	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0404	SIMULATOR, FLASH, ARTILLERY, M110														
	Simulator	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	C	-	-	-	O	-	O	-	-	-	O	O		
0405	SIMULATOR, HAND GRENADE, M116A1														
	Simulator	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0406	SIMULATOR, PROJECTILE AIRBURST, M27A1B1														
	Simulator	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		
0407	SIMULATOR, PROJECTILE, AIRBURST M74A1														
	Simulator	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		

Table 5-1. Maintenance Allocation Chart

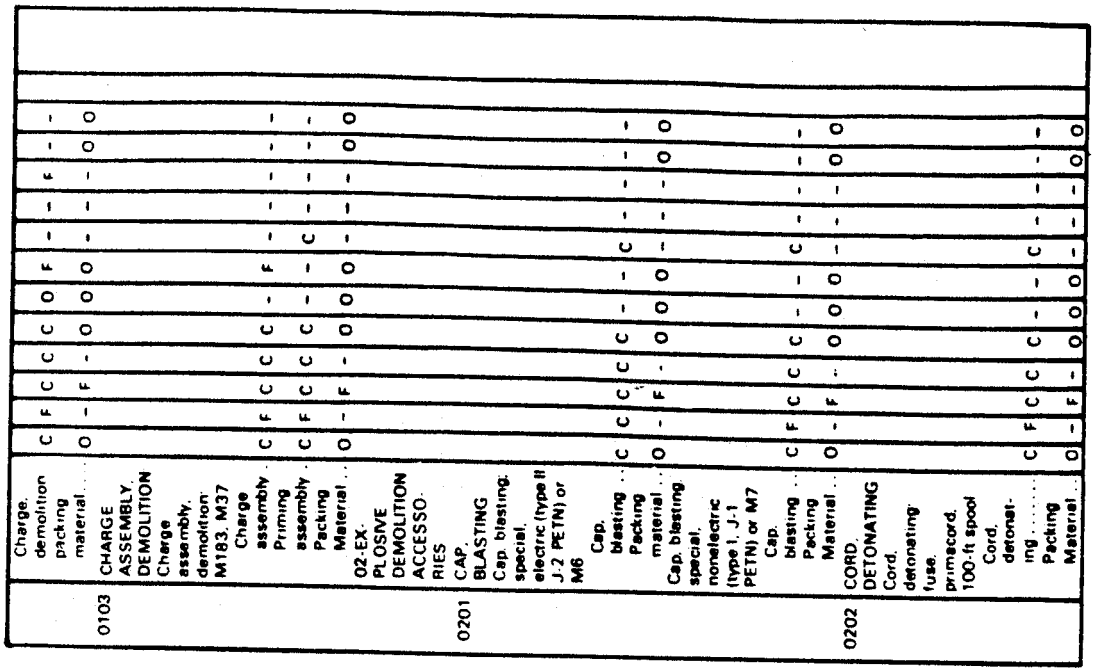
(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0408	SIMULATOR, PROJECTILE AIRBURST, CHARGE, SMOKE PUFF, WHITE														
	Simulator	C	D	C	C										
	Packing Material							O				O	O		
	Percussion cap primer	C	D	C	C										
0409	SIMULATOR, PROJECTILE GROUND BURST, M115A2														
	Simulator	C	D	C	C										
	Packing Material							O				O	O		
	GROUP 5 MISCELLANEOUS PYROTECHNICS														
0501	FUSES, WARNING, RAILROAD RED, M72, 10 15 AND 20 MINUTES														
	Fusee	C	D	C	C										
	Packing Material					O									
0502	MARKER LOCATION MARINE DYE AN M59														
	Marker	C	D	C	C										
	Packing Material							O							

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0101	01 DEMOLITION CHARGES CHARGE, DEMOLITION BLOCK, ROLL, AND CARTRIDGE														
	Charge, demolition block TNT ½-pound, block M3 block M5, block M112, block M118, roll M186, and dynamite military, M1														
	Charge, demolition	C	F	C	C	C	-	-	-	-	-	-	-	-	
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0102	CHARGE, DEMOLITION SHAPED AND CRATERING														
	Charge, Demolition shaped, M2A3 M2A4 M3 M3A1 and charge demolition 40 pound cratering														

Table 5-1. Maintenance Allocation Chart

(1) Group No	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0503	STARTER, FIRE M2														
	Starter	C	D	C	O	C	-	-	-	-	-	-	-		
	Packing Material	O	-	-	-	O	-	O	-	-	-	O	O		



Group No.	Functional group	Inspect	Test	Service: Unpack	Service: Repack	Service: Clean	Service: Touch-up	Service: Mark	Install	Adjust	Renovate: Paint	Renovate: Repair	Renovate: Replace	Tools and equipment	Remarks
0103	CHARGE ASSEMBLY, DEMOLITION														
	Charge assembly, demolition: M183, M37	C	F	C	C	C	-	-	C	-	-	-	-		
	Charge assembly	C	F	C	C	C	-	F	-	-	-	-	-		
	Priming assembly	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0201	02-EX-PLOSIVE DEMOLITION ACCESSORIES														
	CAP, BLASTING														
	Cap, blasting: special, electric (type II J-2 PETN) or M6	C	F	C	C	C	-	-	C	-	-	-	-		
	Cap, blasting	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing material	O	-	F	-	O	O	O	-	-	-	O	O		
	Cap, blasting special, nonelectric (type I, J-1 PETN) or M7	C	F	C	C	C	-	-	C	-	-	-	-		
	Cap, blasting	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0202	CORD, DETONATING														
	Cord, detonating: fuse, primacord, 100-ft spool	C	F	C	C	C	-	-	C	-	-	-	-		
	Cord, detonating	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		

(1) Group No.	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0203	DESTRUCTOR														
	Destructor, explosive: universal, M10														
	Destructor explosive	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
	Destructor, explosive, M19														
	Destructor explosive	C	F	C	C	C	O	F	-	-	F	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0204	DETONATOR														
	Detonator, percussion, M1A2, 15-second delay, and M2A1, 8-second delay														
	Detonator, percussion	C	F	C	C	C	-	F	C	C	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0205	FIRING DEVICE														
	Firing device, demolition delay-type, M1														
	Firing device	C	F	C	C	C	-	-	C	-	-	-	-		
	Packing material	O	-	F	-	O	O	O	-	-	-	O	O		
	Firing device, demolition pressure-type, M1, M1A1														

Group No.	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
0205 (Cont'd)	Firing device	C	F	C	C	C	O	F	C	C	-	-	-		
	Tri-pronged pressure head and extension	C	-	C	C	C	O	-	C	-	-	-	-		
	Coupling base	C	F	C	C	C	-	-	C	-	-	O	C		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
	Firing device, demolition: pressure-type, M5														
	Firing device	C	F	C	C	C	-	-	C	C	-	-	-		
	Coupling base	C	F	C	C	C	-	-	C	-	-	O	C		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
	Firing device, demolition M1, pull-type and M3, pull release-type														
	Firing device	C	F	C	C	C	-	F	C	C	-	-	-		
	Coupling base	C	F	-	-	-	-	-	C	-	-	O	C		
	Anchor cord	C	-	-	-	-	-	-	C	C	-	-	O		
	Tripwire	C	-	C	C	-	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
	Firing device, demolition: M1 release-type														
	Firing device	C	F	C	C	C	-	-	C	C	-	-	-		
	Coupling base	C	F	-	-	-	-	-	C	-	-	O	C		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0206	FUSE														
	Fuse, blasting, time safety or M700, 50-ft coil														
	Fuse, blasting	C	C	C	C	-	-	-	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	O	O	O		

Table 5-1. Maintenance Allocation Chart

(1) Group No.	(2) Functional group	(3) Maintenance function: Inspect	Test	Service: Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Renovate: Paint	Repair	Replace	(4) Tools and equipment	(5) Remarks
0207	IGNITER, TIME BLASTING FUSE														
	Igniter, time blasting fuse, M1, friction, M2 weatherproof, M60 weatherproof	C	F	C	C	C	-	-	C	-	-	-	O		
	Igniter	C	-	C	C	C	-	-	C	-	-	-	O		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0208	PRIMER, PERCUSSION CAP, M2 AND IMPROVED NO 3														
	Primer, percussion	C	F	C	C	C	-	-	C	-	-	-	O		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
	03 MISCELLANEOUS DEMOLITION ACCESSORIES (NON EXPLOSIVE)														
0301	ADAPTER, PRIMING M1A4														
	Adapter priming	C	-	C	C	C	-	-	C	-	-	-	O		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0302	ADHESIVE PASTE M1 AND ADHESIVE SUPPLEMENTARY (TUBE)														
	Adhesive paste	C	-	C	C	C	-	C	C	-	-	-	-		
	Packing Material	O	-	F	-	O	O	O	-	-	-	O	O		
0303	10-CAP GENERATOR-TYPE BLASTING MACHINES														
	Blasting Machine	C	F	C	O	C	O	-	-	-	O	F	-		
	Case	C	-	-	-	C	O	-	-	-	O	F	F		
	Strap, leather	-	-	-	-	C	-	-	-	-	-	-	F		
	Gasket, waterproof	-	-	-	-	F	-	-	-	-	-	-	F		
	Packing, preformed, O-ring	-	-	-	-	F	-	-	-	-	-	-	F		
	Brush and spring	-	-	-	-	F	-	-	-	-	-	F	F		
	Armature	-	-	-	-	F	-	-	-	-	-	F	F		
	Gear group (including gear sector)	-	-	-	-	F	-	-	-	-	-	-	F		
	Gear sector and stud	-	-	-	-	F	-	-	-	-	-	-	F		
	Stator	-	-	-	-	F	-	-	-	-	-	-	F		
	Small parts (headless straight pin, screws, & splice connector)	-	-	-	-	-	-	-	-	-	-	-	F		
0304	BLASTING MACHINE M32														
	Blasting machine	C	F	C	O	C	-	-	-	-	-	-	-		
0305	PLUNGER-TYPE BLASTING MACHINES (30-50-, and 100-CAP)														
	Blasting machine	C	F	C	O	C	O	-	-	-	O	F	F		
0305 (Cont'd)	Case	-	-	-	-	C	O	-	-	-	O	F	F		
	Panel	-	-	-	-	F	-	-	-	-	-	-	F		
	Strap, leather	-	-	-	-	C	-	-	-	-	-	-	F		
	Armature	-	-	-	-	F	-	-	-	-	-	-	F		
	Gear Group	-	-	-	-	F	-	-	-	-	-	-	F		
	Brush (and spring)	-	-	-	-	F	-	-	-	-	-	-	F		
0306	CABLE, POWER, ELECTRICAL														
	Cable, power, electrical No 18 AWG STRANDED 500-ft	C	C	C	C	C	-	-	C	-	-	C	-		
0307	CLIP, DETONATING CORD M1														
	Clip, detonating cord	C	-	C	C	C	-	-	C	C	-	-	-		
	Packing material	O	-	F	-	O	O	O	-	-	-	O	O		
0308	GALVANOMETER BLASTING														
	Blasting galvanometer	C	C	C	O	C	-	-	-	-	-	O	-		
	Galvanometer battery	C	-	C	O	C	-	-	-	-	-	-	C		
0309	HOLDER, BLASTING CAP M8														
	Holder blasting cap	C	-	C	C	C	-	-	C	C	-	-	-		

Table 5-1. Maintenance Allocation Chart

Table 5-1. Maintenance Allocation Chart

Table 5-1. Maintenance Allocation Chart

Group No	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
0309 (Cont'd)	Packing material ..	O	-	F	-	O	O	O	-	-	-	O	O	-		
0310	TAPE, INSULATION														
	Tape, insulation, electrical, 3/4-inch wide	C	-	C	C	-	-	-	C	-	-	-	-	-	
0311	TEST SET, BLASTING CAP, M51														
	Blasting cap test set	C	C	C	O	C	-	-	-	-	-	-	-	-	
0312	TWINE														
	Twine, hemp, No 18, 8 oz ball ..	C	-	C	C	-	-	-	C	-	-	-	-	-	
0313	SEALING COMPOUND														
	Sealing compound, blasting cap, waterproof, 1/2-pt can	C	-	C	C	-	-	-	C	-	-	-	-	-	
0314	WIRE, ELECTRICAL														
	Wire, electrical: annunciator, No 20, AWC 200-ft coil	C	C	C	C	C	-	-	C	-	-	C	-	-	
	04-DEMOLITION KITS AND SETS														
0401	DEMOLITION KIT, BANGALORE TORPEDO M1A1,M1A2														
	Loading assemblies	C	F	C	C	C	O	F	-	-	F	-	-	-	
	Nose sleeve	C	-	C	C	C	O	-	C	-	F	-	-	-	
	Connecting sleeve	C	-	C	C	C	O	-	C	-	F	-	-	-	
	Packing Material ..	O	-	F	-	O	O	O	-	-	-	O	O	-	

Table 5-1. Maintenance Allocation Chart

(1)	(2)	(3)												(4)	(5)
		Maintenance function													
				Service							Renovate				
Group No	Functional group	Inspect	Test	Unpack	Repack	Clean	Touch-up	Mark	Install	Adjust	Paint	Repair	Replace	Tools and equipment	Remarks
0402	DETONATOR KIT, CONCUSSION M1														
	Detonator concussion ...	C	C	C	C	C	O	F	C	C	F	-	-		
	Coupling base	C	F	C	C	C	-	-	C	-	-	O	C		
	Salt tablets	C	-	C	C	-	-	-	C	-	-	-	C		
	Packing Material ..	O	-	F	-	O	O	O	-	-	-	O	O		
0403	DEMOLITION EQUIPMENT SET, EXPLOSIVE INITIATING, ELECTRIC AND NON-ELECTRIC														
	Chest, demolition engineer platoon, M1931 ...	C	-	C	C	C	O	O	-	-	O	-	-		
	Crimper, cap M2 ..	C	-	C	C	C	-	-	-	-	-	-	-		
	Bag, canvas, carrying	C	-	C	C	C	-	-	-	-	-	-	-		
	Box, cap 10-cap capacity, infantry ...	C	-	C	C	C	-	-	-	-	-	-	-		
	Knife, pocket	C	-	C	C	C	-	-	-	-	-	-	-		
	Pliers, lineman's .	C	-	C	C	C	-	-	-	-	-	-	-		
	Reel, wire firing, 500-ft RL 39A .	C	-	C	C	C	O	-	-	C	O	F	-		

Table 5-1. Maintenance Allocation Chart

0403 (Cont'd)	Tape, computing demolition charge ...	C	-	C	C	C	-	-	-	-	-	-	-		
	Cable, power, electrical No 18 AWG stranded 500-ft	C	C	C	C	C	-	-	C	-	-	C	-		

■ Declipping, cleaning, and reclipping small arms ammunition.

■ Removing light rust and corrosion from projectiles and cartridge cases.

■ Limited spot painting and restenciling of containers as authorized by the appropriate TM.

■ Replacement of unserviceable packing materiel to meet safety standards, prevent deterioration, and maintain proper identification.

• **Direct Support (DS) Maintenance.** DS maintenance includes inspection, test, care and preservation service, and authorized repair of stocks stored by the ammunition companies. Ammunition companies do more DS maintenance when operating in a rear, permanent, or semipermanent installation where time, equipment, personnel and facilities are usually more available. The companies also provide DS technical assistance to using units or their organizational maintenance problems. DS maintenance consists of, but is not limited to:

■ Repairing, restenciling, or replacing packing materiels on all types of conventional ammunition. Operations will include repainting, restenciling, or replacing fiber containers, metal or wooden packing boxes, pallets, wooden crates, metal containers and fiberboard cartons. Also included is the minor repair of packing boxes and wooden pallets, replacing heat-sealed barrier materiel, and wax dipping of containers from ammunition peculiar equipment (APE) centers.

■ Declipping and reclipping, delinking and relinking.

■ Replacing readily movable parts and components such as closing plugs, grommets,

• **Renovation.** The restoration of conventional ammunition items to a serviceable condition by operations more extensive or more hazardous then repair. It is normally the replacement of explosive components requiring use of barricades, special equipment, and safety tools.

• **Remarks.** Keyed to table 5-1.

CATEGORIES OF MAINTENANCE

Ammunition Maintenance. The word maintenance has various meanings in the Army, but the meaning in this chapter is limited to those actions and activities necessary to retain or restore ammunition to a serviceable condition. There are three categories or levels of ammunition maintenance done in the field: Organizational, direct support (DS), and general support (GS). These categories will cover all of the ammunition maintenance operations expected to be done in the theater of operations. Conventional ammunition DS companies have a large maintenance capability for operations that are not complex. The basic principles, outlined below, show the best approach to get maximum use of personnel and equipment.

Maintenance categories are as follows:

• **Organizational Maintenance.** Organizational maintenance is performed by all activities having conventional ammunition on-hand including using unit. Maintenance is performed to prevent deterioration of ammunition. Using units may call on DS units to furnish technical advice and assistance on ammunition maintenance procedures. Organizational maintenance consists of the following:

■ Delinking, cleaning, and relinking of small arms ammunition.

wrenches assembled to or packed with various conventional ammunition items.

■ Removing rust and/or corrosion, repainting, and restenciling of all items when required.

■ Removing exudation from artillery projectiles.

■ Performing electrical circuit continuity testing on rocket ammunition.

■ Perform, or assist guided missile maintenance contact teams in performing DS maintenance functions on small missiles.

• **General Support (GS).** Conventional ammunition companies provide GS maintenance on conventional ammunition in large ASPs or depots located in the COMMZ. GS maintenance units are responsible for missions beyond the capability and capacity of occasion, be deployed forward to the field Army to perform GS maintenance rather than evacuate unserviceable ammunition to the maintenance facility in COMMZ. GS maintenance consists of, the following:

■ Removal of extensive rust and/or corrosion.

■ Painting and stenciling of class V materiel.

■ Major repairs or fabrication of boxes, containers, and crates.

■ Repair and renovation of ammunition items by replacing selected unserviceable internal and external components with serviceable components of like design.

■ Testing of rocket and small missile electrical circuits, as authorized.

■ Perform, or assist guided missile contact

teams in performing GS maintenance functions on small missiles.

- Modifying existing stocks of ammunition items to a later design criteria by replacing components with components of a newer design which provides for greater reliability or safety.

NOTE: Operational shields or barricades are generally required for protection of personnel in doing the following operations:

- Replacing unserviceable cartridge cases, primers, propellants, base detonating fuzes, or tracer units on artillery ammunition.
- Replacing unserviceable boosters, delay plunger assemblies, or point detonation elements on artillery fuzes.
- Replacing electric igniters on rocket ammunition.
- Replacing smoke canisters and expelling charges on smoke type artillery ammunition.
- Replacing ignition cartridges, primers, propellant increments, or fin assemblies on mortar ammunition.
- Replacing fuzes on hand grenades.
- Removing and replacing stuck supplementary charges on artillery projectiles.

Depot Maintenance. Depot maintenance is normally not performed in an active theater. This involves those maintenance operations applied to serviceable or unserviceable conventional ammunition for restoring, reconditioning, rebuilding or modifying to meet serviceable standards. Depot maintenance is usually associated with CONUS or overseas theaters of long standing. Designated overseas installations under supervision of ARMCOM perform depot maintenance which augments the

procurement program by rebuilding economically repairable materiel using permanent type facilities.

MAINTENANCE OPERATIONS

The need for maintenance is determined by surveillance. Surveillance is defined as the observation, inspection, investigation, testing, study, and classification of ammunition components. It includes explosives in movement, storage, and use, with respect to their serviceability, hazard, and rate of deterioration.

Successful operations for conventional ammunition maintenance is primarily based on two functions. These are, an effective surveillance program, and the ability to maintain ammunition stocks in forward storage locations. This not only reduces costly destruction of ammunition, but it maintains stocks of ammunition by returning that which would normally be unserviceable to a ready for issue condition.

QUALITY ASSURANCE QUALITY CONTROL (QA/QC) PROGRAM

Quality Assurance (QA) program is a management plan. It is a planned and systematic program covering all functions and actions necessary to provide confidence that the end item or service will perform as intended in actual operation. A good QA program will help assure user satisfaction.

Quality Control (QC) is the management of methods, techniques, and physical acts employed to assure that the quality of workmanship, material, or maintenance operations conform to standards, criteria, or specifications set up by the QA program.

Maintenance operations are often necessary in the life cycle of ammunition. To be sure ammunition of required quality is provided the user, a QA/QC program must be fully integrated in maintenance operations and production control. Production control directs maintenance toward a maximum output of quality work.

The unit commander is responsible for the development, administration, and maintenance of the QA/QC program. The unit commander has the final responsibility for the entire maintenance mission.

The QA/QC program must be based on the specific mission of the unit. As in any such program, it must include stated objectives, the means of achieving the objectives, and the methods for measuring the success of the program.

The entire system of QA/QC focuses on the actual maintenance operations. The success of failure of the program hinges on skilled technicians and first line supervisors of maintenance elements. The responsibilities of the technicians and first line supervisors are:

- To attain and maintain a high level of skill and professional competence in their MOS and assigned duties.

- To sincerely apply the principles of QC in every phase of the job.

- To follow, in good faith, the guidance established by the QA/QC program established by the unit commander.

SECTION II

PROCESSING AND PACKAGING OPERATIONS AT THE ASP LEVEL

TEMPORARY STORAGE

Receives ammunition from using units, ASPs, CSAs, or base depot storage.

Only items of the same DODIC and lot number should be placed in temporary storage to comply with compatibility requirements of TM 9-1300-206, and prevent unnecessary segregation.

A typical layout, figure 5-1, should be designed to operate under the most austere and adverse conditions. Intraline distances, explosives and personnel limits, and equipment specifications must conform to the requirements of TM 9-1300-206.

INSPECTIONS

Inspect each unit of pack to determine if the packaging is able to protect contents during movement and storage.

- Contents of all containers which have been opened in the field will be 100 percent inspected to assure proper identity and to dispose of incomplete assemblies or obviously unserviceable items. A 10 percent inspection will be conducted on unopened ammunition in depot packs.

- Acceptable units will be transferred for repack and palletization (see para on palletizing).

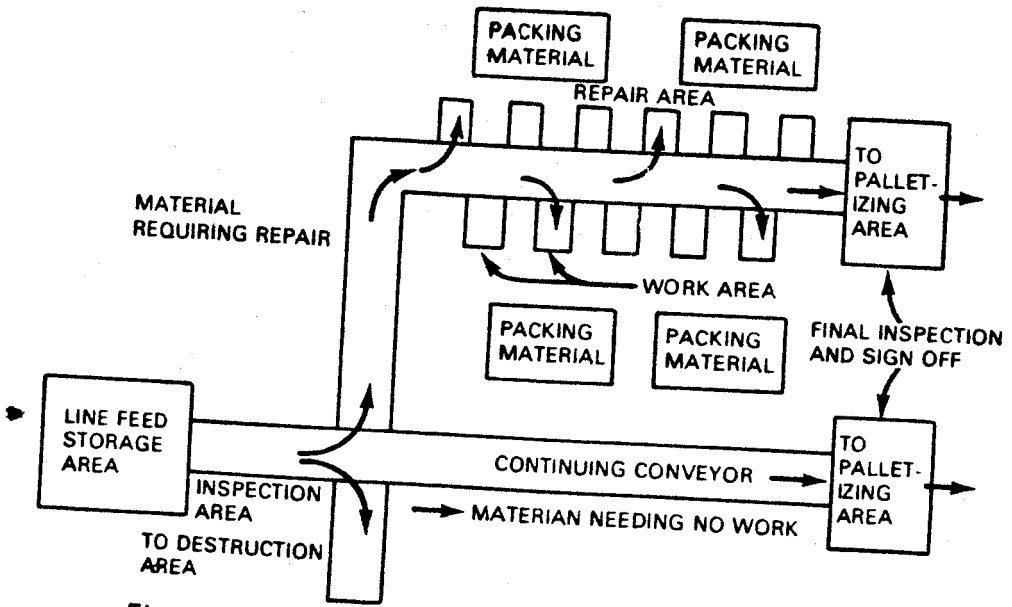


Figure 5-1. Typical Preservation and Packaging Line Layout

• Unserviceable repairable units will be transferred for needed processing as outlined in the following paragraph. Containers will be marked or tagged to indicate required repair. Contents of defective containers will be inspected to determine serviceability.

• Unserviceable, irreparable ammunition and packaging will be transferred to a disposal area. EOD personnel may be required to remove all items suspected of being hazardous.

Ammunition lots listed in TB 9-1300-385 with Fix listed as "demil indicated," will be considered as unserviceable/irreparable and will be held until receipt of disposition instructions.

Safety precautions and handling requirements contained in TM 9-1300-series will be observed while engaged in processing and packaging conventional ammunition.

REPAIR OR REPLACE PACKAGING

Replace Packing

• Remove seals and metal or wire bands from container.

• Remove items and filler material.

• Transfer irreparable containers to disposal area.

• Repack item in serviceable container. Use sufficient filler material to assure a tight pack. Rockets, WP, and PWP loaded items must be packaged with nose end of rounds pointed in the same direction. For proper storage and palletization, all the boxes will be marked "NOSE END" to indicate forward end of round.

• Apply Markings. Markings on the packing box identify the contents. Replaced boxes will be stencilled with markings which duplicate markings on original box. Assure that all

artillery improved conventional munitions (ICM) is marked with yellow diamonds as appropriate.

• Replace seals and apply 5/8-inch metal bands, using one double crimped seal per band.

• Have item palletized.

Repair Packaging

• Prior to repair of a container, the contents will be removed, except for those containers that only require replacement of seal, banding, or correction of markings.

• Repair bad containers as tagged or marked. Transfer scrap to disposal area.

• Repack item in repaired container. Use sufficient filler material to assure a tight pack. Rockets, WP, and PWP loaded items must be packaged with nose end of rounds pointed in the same direction. Proper storge and palletization, require all the boxes to be marked "NOSE END," to indicate forward end of round.

• Apply Markings. Markings on the packing box serve to identify the contents. Repaired boxes will be stenciled, as required, with markings identical to the original.

• Replace seals, and apply 5/8-inch metal bands, using one double crimped seal per band.

• Inspect to assure compliance with repair requirements.

• Have item palletized.

Scrap material will be inspected and certified to be free of explosive material prior to transfer to the disposal area.

PROCESSING AND DESTRUCTION OF AMMUNITION AND SCRAP MATERIAL

Processing of conventional ammunition at the

DS level is a very limited operation. Generally, the only capability the unit has will be that of cleaning, painting, and remarking. Operations beyond the capability of the DS unit will be reported on DA Form 2415 (Ammunition Condition Report), and sent to the support command of the DS unit.

Destruction of serviceable/irreparable ammunition and packaging that constitute an explosive hazard to operating personnel will be accomplished by or under the supervision of surveillance personnel. When the requirement exceeds the capability of ammunition personnel, the assistance of EOD personnel should be requested. General criteria for disposal operations are contained in TM 9-1300-206 and applicable EOD manuals.

All ammunition items requiring disposal will be transferred to a collection point as generated.

Removal to a disposal area must be done as soon as possible to avoid a large concentration.

Irreparable, combustible scrap material will be disposed of daily as directed by the officer in charge.

Irreparable metal containers will be turned in for salvage. Prior to turn in, items will be inspected and certified to be free of explosives.

PALLETIZING

Receive serviceable units.

- Boxed ammunition, other than WP and PWP, will be palletized with methods shown in figure 5-2.
- WP and PWP ammunition will be palletized with methods shown in figure 5-3.
- Propelling charges will be palletized with methods shown in figure 5-4.

- Separate loading projectiles will be palletized with methods shown in figure 5-5.

No more than one ammunition lot will be contained on any one pallet.

Inspect palletized units to assure pack meets the required standards.

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Transfer pallets to storage or shipping site.

Where palletizing is not required, ammunition will be transferred to storage or shipping site after packaging.

Figure 5-2
Figure 5-3
Figure 5-4
Figure 5-5

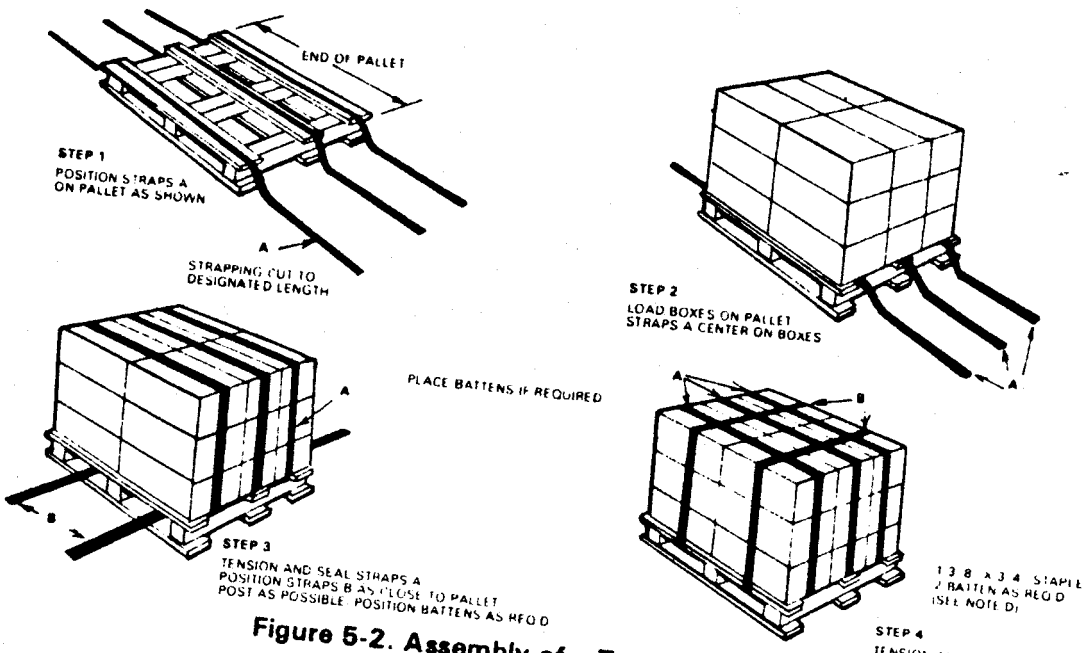


Figure 5-2. Assembly of a Typical Unit

General Notes
Figure 5-2.

1. Unit shown hereon is prepared to meet the following requirements:
   A. Gross weight approx 2000 lbs, not to exceed 4000 lbs.
   B. Height of pallet and load not to exceed 54".
   C. Overhang avoided where possible, but should not exceed approx 1" in any direction. One inch two inch, or four inch battens may be used as required.
   D. Boxes secured to the pallet by steel strapping 1 1/4" x .835, type 1, class A or B, Fed Spec QQ-S-781A.
   E. Strapping secured by one 1 1/4" seal secured with a double crimp, Fed Spec QQ-S-766.
2. A minimum of 2 staples will be used to fasten each strap to its batten. Staples will not be used without battens. Staples authorized are 1 3/8" x 3/4".
3. Additional banding may be used in any direction on the pallet load, at the discretion of the shipper.
4. Fillers, constructed of two inch lumber, may be used complete partial layers on pallet. Fillers should be placed on interior of top layer, whenever practical.

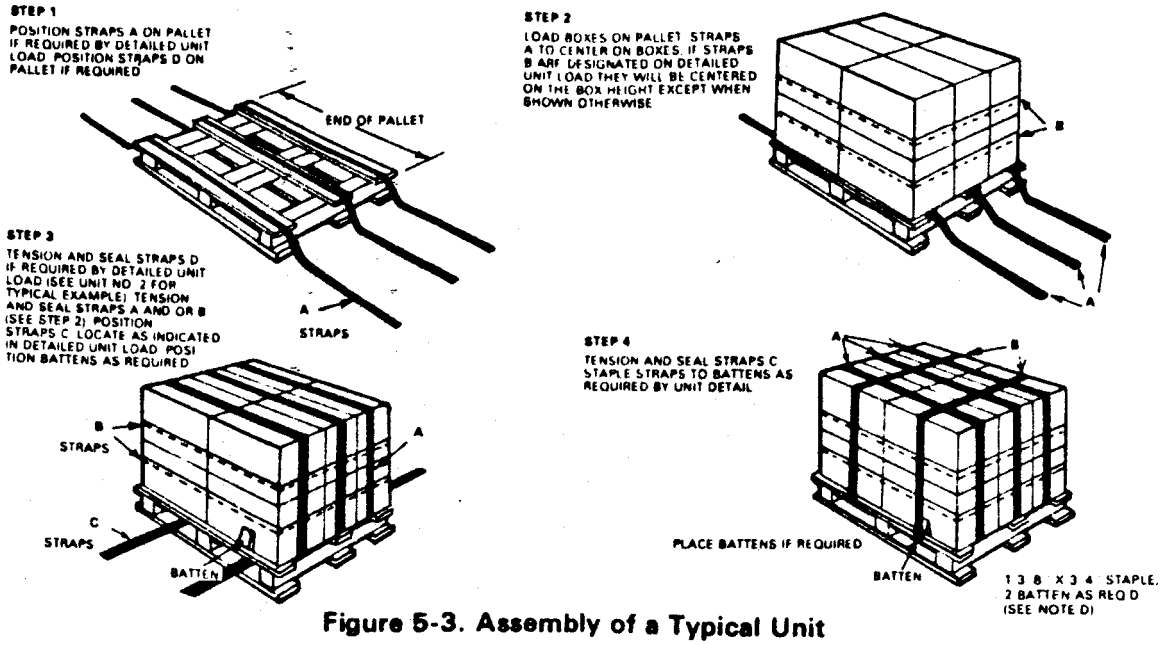


Figure 5-3. Assembly of a Typical Unit

General Notes
Figure 5-3.

1. Unit shown here is prepared to meet the following requirements:

   A. Gross weight approx 2000 lbs, not to exceed 4000 lbs.

   B. Height of pallet and load not to exceed 54".

   C. Overhang avoided where possible, but should not exceed approx 1" in any direction. One inch, two inch, or four inch battens may be used as required.

   D. Boxes secured to the pallet by steel strapping 1 1/4" x .035, type 1, class A or B, Fed Spec QQ-S-781A.

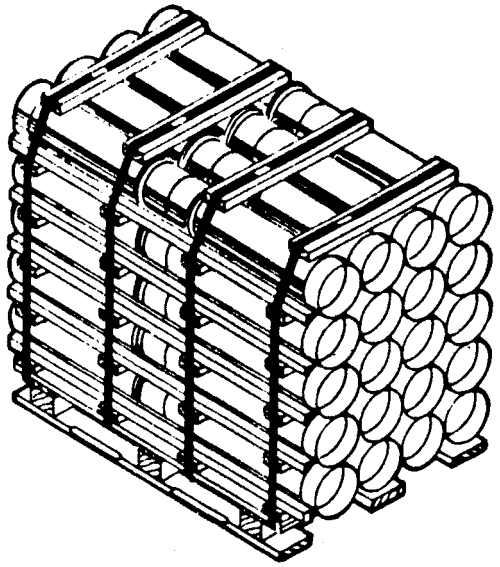
   E. Strapping secured by one 1 1/4" seal secured with a double crimp, Fed Spec QQ-S-766.

2. A minimum of 2 staples will be used to fasten each strap to its batten. Stapes will not be used without battens. Staples authorized are 1 3/8" x 3/4".

3. Additional banding or girth banding may be used on the pallet load, at the discretion of the shipper.

4. Fillers, constructed of two inch lumber, may be used to complete partial layers on pallet. Fillers should be placed on interior of top layer, whenever practical.

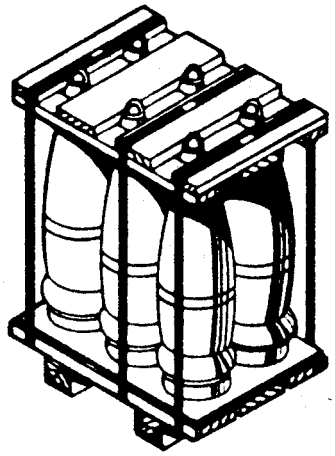
5. All WP and PWP filled ammunition will be placed nose end up except rockets and rifle grenades which will be positioned nose end down.



General Notes

1. Unit shown hereon is prepared to meet the following requirements:
   A. Gross weight 2000 lbs, not to exceed 2200 lbs.
   B. Height of pallet and load not to exceed 52 "
   C. Containers secured to the pallet by steel strapping 1 1/4" X .035". Type 1, Class A or B, Fed Spec QQ-S-781A.
   D. Strapping secured by one 1 1/4" seal secured with a double crimp, Fed Spec QQ-S-766.

Figure 5-4. Assembly of a Typical Unit



General Notes

1. Insert lot number.
2. Insert month and year loaded.
3. Insert gross weight.
4. Insert cubic displacement.p
5. Insert descriptive nomenclature.
6. Insert ICC designation.
7. Insert FSN and DODIC.
8. Pack 6 projectiles in pallet for 8" and 175mm. 8 projectiles in pallet for 155mm. Arrangement of strapping and markings are the same.
9. Pull strapping tight and double crimp seal.

Figure 5-5. Assembly of a Typical Unit

SECTION III

AMMUNITION DESTRUCTION

INTRODUCTION

Purpose. The purpose of this section is to provide a ready reference for personnel who may become engaged in ammunition destruction operations. Prior to any ammunition destruction operation, personnel must consult all applicable regulations to insure a safe and complete operation.

Procedures. Prior to destruction, a DA Form 2415 (Ammunition Condition Report) will be submitted by the responsible ammunition supply officer. This report will be prepared as provided in TM 38-750. An exception is deteriorated explosives or ammunition which is considered to be immediately dangerous to life and property. In such instances, disposition may be made by order of the local commanding officer and the appropriate report submitted as follow up. Local theater regulations must also be checked. Responsibility for disposition rests with the ammunition inspector; the responsibility for destruction rests with the ammunition officer. EOD personnel may be called on for advice and/or technical assistance.

Emergency Destruct Plan. Immediately after an ASP is established a plan for emergency destruction of the site must be established. The plan is then staffed through technically qualified

EOD personnel to insure feasibility. Demolition training by qualified personnel will be obtained for the personnel who will be responsible for performing the destruct mission. The plan must be rehearsed as often as necessary to insure successful completion of the mission.

SOP for Destruction. Unit commanders must be familiar with the current SOP for the emergency destruction of ammunition and material on hand in ASP, CSA, and depot. Particular attention must be given to the following:

- Priorities for destruction:
  - Priority 1 is all classified ammunition and associated classified manuals, test sets, and equipment.
  - Priority 2 is all ammunition capable of being used in enemy weapons, and other specifically designated items.
  - Priority 3 is all other ammunition.
- Secure the area during destruction preparations to prevent capture by enemy forces or unauthorized entry. Possible injury to friendly forces must also be considered.
- There are enough demolition materials available to do the destruction.
- Coordination is done with troop units in the general area.
- Combat Destruction. The decision to destroy or evacuate an ASP is a command decision. It is usually based on several factors; the most important is the tactical situation. Other factors are security classification of the ammunition, quantity, type, location of ASP, and time. In the event destruct orders are received, destroy classified items first based on their priority. It is emphasized that advance formulation of plans (SOP), training of

personnel, and having required materials on hand are of prime importance if any demolition plan is to be effective.

MATERIALS USED

Detonation. Demolition blocks of TNT, tetrytol, or composition C-4 are set off by fuze igniter time, blasting fuze and a nonelectric blasting cap, or by a blasting machine, firing wire, and an electric blasting cap. Never use an improvised firing device for this purpose. The universal HE destructor M10 may also be used for destruction of ammunition or explosives.

Burning. Fires used in destroying small ammunition components may be made from scrap lumber, wood, or material like excelsior. When components to be destroyed are placed on a bed of flammable material for burning, the fire will be ignited from a safe distance by one of the following methods:

- Train of flammable material to the bed.
- Quantity of class 2 propellant placed in the bed and ignited by an electric squib.
- Time blasting fuse of sufficient length to permit personnel to reach protective shelter.

NOTE: Use only propellants having class 2 hazard classification for this purpose. Class 2A and 7 propellants are not to be used because of their instantaneous or explosive like burning characteristics.

Dumping ammunition at sea is prohibited.

GENERAL SAFETY PRECAUTIONS

In all destruction operations, applicable TMs, approved SOPs and local regulations must be followed. Safety is the first consideration when undertaking any destruction operation. The following will serve as a reminder of some

important safety precautions:

- Fire fighting equipment must be readily available.
- Test safety fuse to determine rate of burning. Do this at a minimum distance of 25 feet from exposed blasting caps or other explosives.
- Cut time fuze squarely across and discard 6 inches from the end of the coil.
- Cut off and test a 3 foot length from each roll of time blasting fuse to determine the burning time. The rate of burning may vary from 30 seconds or less per foot to 45 seconds or more per foot.
- Do not tap the blasting cap against a hard object to remove dirt or other foreign matter. Hold open end down and shake gently.
- Crimp blasting cap to fuse using only the approved method.
- Handle blasting caps with extreme care. Do not expose blasting caps to heat or direct rays of the sun.
- Remove propellants from containers before burning because confinement may cause an explosion.
- After each mission, search the area for possible unexploded ammunition that may have been thrown out by the blast. Do not attempt to move unexploded rounds thrown out of the demolition pit. Mark the location for destruction by trained demolition personnel.
- Do not stack explosives awaiting destruction within 60 meters of the destruction site.
- In case of a misfire, do not approach the point of detonation for 30 minutes. This holds

true whether you are using a nonelectric hookup above or below ground, or electric hookup below ground. When using an electric hookup above ground, investigate immediately after last attempt to fire.

- Use only trained personnel for demolition work.
- Spot guards around the danger area to keep out unauthorized persons.
- When using an electrical hookup, do not locate your destruction site within a 400-meter radius of a shortwave radio transmitter or within a 1600-meter radius of a high frequency transmitter.
- Warn nearby air facilities of proposed demolition sites and dates of operations.
- When burning, always place the train so it will burn into the wind when lit.

SELECTION OF SITE FOR DESTRUCTION OF EXPLOSIVES AND AMMUNITION

By Burning. The selection of a site for destruction of explosives by burning must be based on the principle of obtaining the minimum safe distance from all magazines, inhabited or operating buildings, public highways, and railways. Consider the direction of prevailing winds, and the possibility of mass detonation during burning operations. When possible, use natural barricades between the burning site and operating buildings and magazines. The burning site should be not less than inhabited building distance (as prescribed by QD tables applicable to the material being destroyed) from all structures and public highways. For chemical munitions, consider the direction of the prevailing winds and the downwind vapor

hazard distance. Sparks, flames, toxic gases, and smokes must not be blown toward populated areas and facilities.

By Detonation. The selection of a site for destruction of ammunition by detonation is based on the same principles as by burning. The site should not be less than 750 meters from public highways, public railways, inhabited buildings, magazines, and operating buildings. When it is not possible to meet this distance, materials to be destroyed should be laid in a pit or trench at least 4 feet deep and covered with at least 2 feet of earth. The limitation does not apply to specially constructed destruction chambers used for the destruction of small quantities of fuzes, primers, small arms ammunition, etc. Pits are not required when the destruction of serviceable or obsolete ammunition takes place on an artillery range or similar site. An earth cover 2 feet thick may be used to limit the range of fragments. When demolition charges are earth covered or tamped with an earth cover, the charges should have detonating cord leads long enough to stick out of the earth cover into the open. Blasting caps are attached to the open ends and are thus not subjected to the weight, pressure, or friction of the earth cover.

Maintenance of Grounds. All dry grass, leaves, and other flammable materials within a radius specified in TM 9-1300-206 will be removed. Fire fighting equipment for grass fires must be kept readily available. Burning will not be repeated on previously burned plots within 24 hours, unless the burning area has been completely soaked with water. An inspection by a qualified inspector must be made to assure the safety of personnel during later burning operations. The use of concrete mats for burning or detonation is not permitted.

Protection for Personnel. Personnel engaged in demolition work must always have plenty of time to reach shelter. The shelter must provide overhead cover, fragment, and splinter-proof protection. A minimum distance of 300 feet is required between the personnel shelter and the destruction site or pit.

DESTRUCTION PROCEDURES FOR EXPLOSIVES AND AMMUNITION ITEMS

BULK EXPLOSIVES

- Black powder. The safest method of destroying black powder is by burning. Only wood or nonsparking metal tools will be used to open the containers. Burn the contents of only one container at one time; do not exceed 50 pounds. The powder must be removed from the container and spread out on the ground in a train approximately 2 inches wide. Be careful that no part of the train gets closer than 10 feet to another part of the train. Use a train, about 25 feet long, of flammable material, like excelsior, to ignite the powder. Place the train and the bed of powder so it will burn into the direction from which the wind is blowing.

- TNT, Comp A, B, and C series, explosive D, tetryl, tetrytol, pentoliate, and RDX. These explosives (except RDX) may be destroyed by burning while dry. They must not be dumped into water because they will poison the water. Explosives to be burned will be removed from containers and spread in a thin layer, not more than 3 inches thick, on top of a layer of flammable material such as excelsior. A train of flammable material about 25 feet long will then be used to ignite the explosive. Do not burn HE in lump or block form. RDX must be burned while wet to prevent detonation.

• Solid propellant. Quantities of solid propellant may be destroyed safely if the propellant is removed from the containers and spread out on bare ground in a train 1 to 2 feet wide and not more than 3 inches thick. A train of flammable material approximately 25 feet long should be used to ignite the propellant.

• Initiating explosives. To destroy highly sensitive explosives, such as mercury fulminate or lead azide, detonation is considered to be the best method. The bags containing the explosives must be kept wet while being transported to the demolition area. Remove a number of bags from the container, carry them to the destruction pit, and place the bags in close contact with each other. Use blasting caps to initiate the explosives. The remaining explosives must be kept behind a barricade with overhead protection during the operations and located at a distance that will assure safety.

ARTILLERY AMMUNITION

• General instructions for destroying artillery ammunition by detonation also apply to bombs, mortar ammunition, rockets heads, heavy and medium antitanks mines, and other large components containing HE.

• Propelling charges with igniters may be burned without slitting, but in all cases, igniter protector caps must be removed from the charges to be burned. Protection must also be provided against possible projection of the charges and explosion of burning charges. Propelling charges must not be piled one on the other, but they will be burned in a single layer laid side-by-side. Core igniter type charges in a single layer should be separated from each other by a distance equal to one caliber. Propelling charges and igniter pads may be slit open with a nonsparking knife.

Table 5-2. Destruction of Projectiles by Detonation

Items To Be Destroyed	Pounds of Explosive (Approx) Per Round of Ammo		
	TNT	Comp C	TETRYTOL
Hand and rifle grenades; small rockets	1/2	1/2	1/2
75mm, 76mm, 90mm and mortar ammunition	1 1/2	1	1 1/4
105mm, 152mm, 155mm	2 1/2	2	2
175mm, 8 in	3	2 1/2	2 1/2

• The projectiles to be destroyed will be placed on their sides. If the 700-meter safety distance cannot be obtained, place them in a trench or pit about 4 feet deep. The number of pounds of explosive specified in table 5-2 will be placed in contact with the side of the projectile and held in position by earth packed around the projectile. If using one demolition block, place it on its side. If two blocks are used, one is placed on top of the other. If three blocks are used, two are placed close together on the shell and the third on top of these. If five blocks are used, there will be two layers of two blocks each, with the fifth block on top. The demolition blocks are detonated by means of an electric blasting cap wired to a blasting machine, or by safety fuse attached to a nonelectric blasting cap. Bombs are destroyed by packing the fuze well with plastic explosive, primed electrically or nonelectrically, and detonated.

Small Arms Ammunition. Small arms cartridges should be destroyed in a burning pit approximately 5 feet square and 4 feet deep. A chute, such as a piece of 2 inch pipe, must be provided. The chute must be at an angle that will permit the ammunition to slide down, and it must be placed so that one end is over the center of the pit. The other end must be behind a barricade. Baffle the end behind the barricade so that the operator cannot look through the chute. A hot fire is built in the pit, and the pit is covered with sheet iron to confine flying fragments.

Small Components Except Primers. Components such as fuzes, boosters, detonators, firing devices, and similar materiel may be destroyed either by burning or by detonation. The small arms method is acceptable for burning, but wait for each component to explode before sending another down the chute.

When destroying these components by detonation, a small number of components, depending upon the type and kind, are placed in contact with one another in an open container. If the 700-meter safety distance cannot be obtained, place the container in a trench or pit 4 feet deep.

Primers.

• Large primers (100 grain or larger) may be destroyed by burning according to the instruction for destruction of small arms ammunition. Primers, other than small rim cartridge primers, are put into the fire one at a time. Large primers will be destroyed only in this manner because they are subject to explosion as a group if destroyed by burning in large quantities.

• Primers, smaller than 100-grain, may be burned in a trench approximately 2 feet wide, and long enough to accommodate the number of primers to be burned at one time. The trench should be prepared with enough excelsior or similar combustible material to insure a hot fire the entire length of the trench. The primers must be removed from boxes and placed on the excelsior before the fire is lighted. Pasteboard cartons need not be opened before they are placed in the trench. To confine fragments as much as possible, a sheet metal cover must be placed over the trench. After the primers and cover are in place, a train of combustible material leading into the trench must be prepared and ignited. Personnel must then take cover or withdraw to a safe distance.

Grenades. Grenades may be destroyed by burning or detonation. Destruction by detonation is generally used for HE grenades, and destruction by burning is used with other

types of grenades, including chemical.

• Destruction by detonation. No more than 20 HE grenades will be destroyed in one detonation. They must be placed in close contact with one another. Three or more 1/2-pound demolition blocks taped together are placed on top of the pile. If the 700-meter safety distance cannot be obtained, place them in a trench or pit about 4 feet deep.

• Destruction by burning. A pit approximately 2 feet square by 3 feet deep fitted loosely with a metal plate or small mesh screen cover is used. Grenades, other than HE loaded or bursting chemical (bursting chemical includes WP and the bursting riot control grenades) may be burned but they must be put into the fire one at a time. Another grenade must not be put in until the previous grenade has burned or exploded. Care must be used when putting explosives into the fire. Normal destruction behavior cannot always be expected under intense heat. The only time that an unusual delay in the burning or explosion of a grenade will be investigated is when the fire has burned out and the pit is cold. Instead of dropping grenades singly and covering the pit with the metal plate or small mesh screen cover each time, an inclined chute baffled at the open end may be arranged.

Pyrotechnics. Pyrotechnics, except photoflash bombs and parachute flares, will be destroyed in accordance with the instructions for burning primers. Loose pyrotechnic materials must be burned under the same conditions as black powder, and the same precautions are to be observed.

• Parachute flares. Parachute flares will be destroyed by burning in the open. The individual flares must be located at least 4 feet apart and placed on top of a layer of combustible material.

WARNING: Personnel must take cover at a safe distance and face away from the fire to avoid injury to the eyes caused by the extreme brilliance of the burning flare.

• Photoflash bombs. Photoflash bombs are explosive and must be handled with care. They are destroyed by the use of demolition blocks, similar to the procedure for artillery projectiles. Dud photoflash bombs must not be handled or moved but destroyed in place. Because the case is thin a 1/2-pound demolition block is enough to accomplish destruction.

WARNING: Personnel must take cover at a safe distance and face away from the explosion to avoid injury to the eyes caused by the extreme brilliance of the exploding photoflash bomb.

NONTOXIC CHEMICAL AMMUNITION

This paragraph deals only with the destruction of nontoxic chemical agents and munitions. Table 5-3 provides information on the time and weather conditions for the destruction of nontoxic chemical agents and munitions.

WARNING: Destruction of toxic chemical munitions poses serious problems, and special instructions for destruction must be obtained from the US Army Armament Command or US Army Missile Command (for large caliber warheads).

General. Many nontoxic chemical agents, munitions, or their components disposed of by burning, detonation, or other means will produce hazards. Precautions must be taken to insure safe operations. Personnel must be well aware of the dangers of chemical munitions. Carelessness on the part of any individual may result in injury or death, not only to the careless individual, but to others working in the area.

Nontoxic Chemical Agents and Munitions*

Factor	Excellent	Fair	Fair	Unsatisfactory
Temperature	75° and above	55° - 75°F	Under 55°F	Under 55°F
Sky	Clear	Clear to Partly Cloudy	Clear	Cloudy
Wind	4-15 mph	5-20 mph	7-15 mph	Under 3 mph or over 20 mph
Time (hours)	1000 to 1600	1000 to 1600	1000 to 1600	

***NOTE:** Read the table down and meet all conditions in each column.

The dangers of short cuts and deviations from established procedures must be thoroughly explained to all personnel engaged in disposal operations.

Disposal by burning.

- Destruction of many nontoxic agents and munitions may be accomplished by burning on the surface of the ground. Burning must be done on a bed of combustible materials.

- Destruction can also be done by burning in a pit or trench. This method is normally better than surface burning because the burning mass is more confined, and the pit may be covered with earth after the burning operation is complete. Keep in mind, pit burning leaves the destruction area contaminated.

Detonation. In general, grenades, bombs, and projectiles loaded with chemical filler are destroyed in a manner similar to that used for destroying artillery projectiles. When destroying by detonation, chemical agents, including WP, will clear away in the air if proper winds prevail and downwind distances have been observed. Detonation of chemical munitions is restricted to the smoke and incendiary classes. Illumination and CS rounds contain ejection charges to expel candles and burning cartridges. The base-plates and payloads for these rounds will be ejected at a high velocity and are hazardous to personnel in the area.

WARNING: When destroying munitions loaded with WP or PWP, use a larger than normal explosive charge to rupture the case completely and disperse the WP. It can burn out more completely. Do not destroy WP or PWP munitions in the same shot hole or area used for other types of munitions. WP or PWP particles may be driven into the ground, and the WP or PWP particles may later be uncovered and ignite.

Liquid Propellants. Dispose of small quantities of liquid propellant fuels by burning in a shallow metal pan. Use extreme care in assuring minimum separation distances. Use complete protective clothing and adequate respiratory equipment.

First Aid.

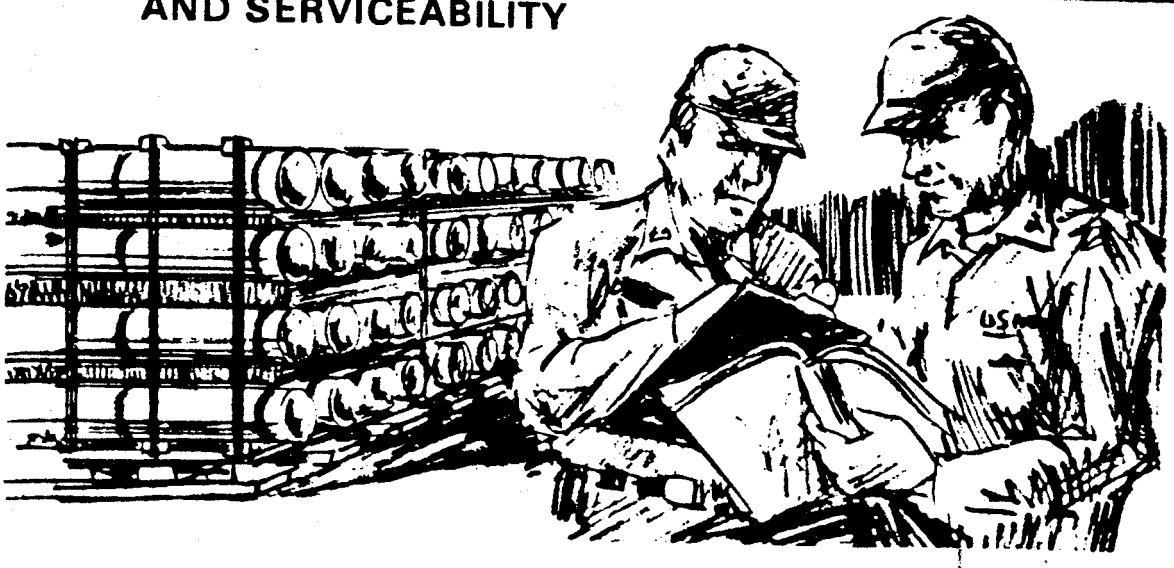
- WP kits will be available prior to disposing of any WP or PWP item. WP or PWP wounds must be denied oxygen to stop a reaction. The casualty must be evacuated immediately to the nearest medical facility for treatment.

- Smoke (FM, FS). Titanium tetrachloride and sulfur trioxide chlorosulfonic acid solution will not, as a rule, produce a reaction requiring treatment. If a person has been subjected to a very strong concentration of smoke without wearing a protective mask, move the person to fresh air until recovered. The liquid form of these agents, particularly FS, is corrosive in nature, and any quantity spilled on the body should be immediately washed away with large amounts of water followed by washing with soap and water.

- Incendiaries. No unusual first aid treatment is required for accidents occurring in handling this type of materiel. Burns will be treated in the same manner as those caused by flame.

CHAPTER 6

AMMUNITION INSPECTION AND SERVICEABILITY



INSPECTION

DEFINITION AND PURPOSE

Ammunition inspection is the periodic and/or special examination of selected samples (random sampling). It may include gaging, weighing, measuring, or investigation of components to determine if the stocks are serviceable, or to detect evidence of damage, and/or deterioration. Sample sizes may vary in different storage locations and with the age of items. Time may not permit complete periodic inspections of ammunition in the combat zone. If you use the inspection techniques described, it can be assumed that all ammunition issued to using units is serviceable, and it can be used for the purpose intended. The techniques of ammunition inspection must become second nature in all ammunition personnel starting with grade E1 up. Once personnel get the message, the chance of bad ammunition reaching using units is greatly reduced.

AMMUNITION INSPECTION PROCEDURES

Normally, the inspection of ammunition at ASPs and depots is done by a separate inspection section. There may be times when inspection cannot keep pace with the operation, such as, a receipt inspection during unloading

operations. In such cases, questionable ammunition should be marked "issue prohibited" until it can be examined by an inspector. Ammunition in broken containers must receive 100 percent inspection for serviceability. When ammunition is turned in by units, it will be inspected and action taken as follows:

- Inspect for loose and dangerous materials, such as loose explosives, detonators, hand grenades, etc.
- Packages with unbroken seals will receive a 10 percent inspection if the contents are undamaged. When the ammunition inspection is done, it will be repacked and palletized, condition coded, and returned to storage.

INSPECTION OF AMMUNITION IN THE HANDS OF TROOPS

Inspection of ammunition in the hands of troops is normally limited to a visual inspection of the ammunition and completeness of the basic loads. If there is evidence of damage and/or deterioration, a more detailed inspection is indicated. It may be wise to replace that portion of the unit basic load that shows signs of damage and/or deterioration. A more detailed inspection may then be conducted at the ASP where additional qualified personnel and adequate equipment are available.

INSPECTION OF AMMUNITION IN STORAGE

Ammunition in storage should be inspected periodically. Give special attention to the following:

- Corrosion.
- Absorption of moisture.
- Missing, loose, or rusted nose plugs,

grommets, damaged rotating bands, and base plates on separate-loading projectiles.

- Signs of exudation on projectiles, bombs, and pyrotechnics.

WARNING: Operations involving the disassembly of ammunition for inspection must be done only in an area designated for renovation and maintenance work.

VISUAL INSPECTION BEFORE ISSUE OR STORAGE

Prior to issuing or storing boxed or palletized ammunition, be sure the following essential information is clearly marked on the container:

- Nomenclature of round and fuze.
- Weapon in which round is to be used.
- Number of rounds in container.
- Lot number.
- National stock number (NSN) and Department of Defense Ammunition Code (DODAC).
- Separate-loading ammunition must be marked with the model number, weapon identificaiton, NSN, and weight.

SPOT CHECK INSPECTIONS

In addition to the general inspection procedures discussed above, there are several specific items to check when making a spot inspection or when making a 100-percent ordered inspection by lot number of a type to determine serviceability of ammunition. Since small arms and artillery ammunition can come up with different possible defects, each is discussed separately.

INSPECTION OF SMALL ARMS AMMUNITION

When making a round-by-round inspection of

small arms ammunition, check for the following deficiencies:

- **Dirty, Greasy or Wet.** Grease and oil create dangerous pressure on the chamber, and it will pick up abrasive sand and dirt. Wet ammunition will speed the corrosion process.

- **Corrosion.** Oxidation or corrosion may be harmful, depending on the degree. A light brown stain is natural oxidation, and the round may be used. A black, green, yellow, blue, or white color indicates more serious corrosion, and the round may be unserviceable. However, if there is no flaking or deposit on the case, clean the case and use it.

- **Cracks.** Some rounds are damaged in manufacture, but the damage is not noticed until the ammunition gets to the field. If you find a cartridge case with a crack in the neck, or along the body, or with the mouth sawed off, it is unserviceable and should be disposed of IAW TM 9-1300-206. Tracer bullets with longitudinal cracks are unserviceable because the neck of the base may rupture during firing.

- **Bulges or Dents.** These bad areas appear on the shoulder, neck, or body of a cartridge case and may dangerously weaken it.

- **Uneven Rounds and Loose Bullets.** Long or short rounds in clips or belts may jam the weapon when they are fired. Do not issue rounds with loose bullets.

INSPECTION OF ARTILLERY AMMUNITION

Unserviceable artillery ammunition can prove dangerous if issued and fired. For example, imperfect rounds may result in premature bursts, short rounds, or duds. Here are the things for you to check when looking over ammunition.

Open the container first, if there is one. Work in a systematic way from the fuze down.

- **Fuze.** The ogive should not be rusty or dented. Selective type fuzes must be set at superquick, and time or combination type fuzes must be set at safe. Make sure that the fuze is securely seated in the projectile.

- **Cartridge Case.** Check for corrosion, dirt, grease, dents, and bulges. If a dented round will chamber, it may be issued. There should be no longitudinal play between the cartridge case and projectile in fixed rounds. Slight circular play is not serious.

- **Propelling Charge.** When opening a propellant container, notice the odor. A good propellant smells like ethyl alcohol; while a bad (deteriorated) propellant has an acrid, harsh odor. Check the bags of semifixed and separate loading ammunition propellants for rips, tears, mildew, loss of tensil strength, sequential arrangement, and spots (brown spots in white silk bags; orange spots in green silk bags; blue spots in white cotton or rayon blend bags). Be sure that bags are tied. The propellant in the bags is acceptable for priority issue if the bags are not stained or bags show only light discoloration and no loss of tensile strength. A dark stain shows advanced deterioration. The black powder in the igniter pad must be smooth and fine. Caked or lumpy black powder indicates that is has gone bad.

- **Exudation.** Exudation in artillery ammunition and bombs is an oily brown liquid that oozes out. It appears around the threads in the nose of a projectile, the nose and tail of bombs, and the fuze cavity of separate loading ammunition. Exudation is flammable and may carry small particles of TNT. It must be wiped off with a rag and hot water. If there is not much

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placed in ammunition condition code (ACC) K (suspended) pending further inspection to determine the correct condition code.

Chemical Ammunition and Pyrotechnics. After inspecting chemical rounds for the deficiencies that have been mentioned, check for leaking chemical ammunition. Check for instructions on the round or container requiring the ammunition to be used or destroyed by a certain date (shelf life).

Bombs. When inspecting bombs for rust and exudation, make sure the threads of the fuze cavities and fin locknut are clean and not stripped. The suspension lugs must be straight and sound. Keeping the shipping bands on securely is the best way to protect the lugs.

exudation, issue the round after cleaning it. Rounds that have exuded excessively will not be issued, for they may result in low order detonations when fired.

INSPECTION OF GUIDED MISSILES AND LARGE ROCKETS

Formal inspections should be made monthly. The following are several points to look for in the formal inspection of rockets and guided missiles in storage:

- Proper storage methods.
- Compatible storage procedures.
- Proper ventilation and lightning arrestor terminals.
- Evidence of improper handling methods.
- Serviceable humidity indicators.
- Legible and correct container markings.

Periodic inspections must also be made to determine the following:

- Adequate internal air pressure of missile containers.
- Loose or missing bolts or hardware.
- Condition of protective paint coat.
- Visual condition.

INSPECTION OF OTHER AMMUNITION

Mortar Rounds and Rockets. Inspect this ammunition for the same deficiencies that apply to artillery ammunition. In addition, check the propelling charge increments of mortar rounds. Check rockets for damaged fins and electrical connections. Unserviceable items must be turned in to the supporting ASP or depot.

NOTE: Unserviceable rounds are returned and

AMMUNITION CONDITION CODES (ACC)

PURPOSE OF CODES

Ammunition codes are one-position, alphabetic characters used to classify ammunition materiel. It will identify the degree of serviceability, condition, and completeness in terms of readiness for issue and use, or it will identify actions underway to change the status of materiel.

• **CODE A — Serviceable (Issue Without Qualification).** New, used, repaired, or reconditioned materiel which is serviceable and issuable without limitation or restriction to all customers. Normal requirements, at time of issue, for additional packaging or packing do not constitute a restriction.

• **CODE B — Serviceable (Issue With Qualification).** New, used, repaired, or reconditioned materiel which is serviceable and issuable for its intended purpose, but it is restricted from issue to specific units, activities, or geographic areas because of its limited use or short shelf life. The item manager, ARMCOM, will prescribe the limits of use or criteria to determine the shelf life of a specific commodity or specific item for inclusion within this code.

• **CODE C — Serviceable (Priority Issue).**

Items which are serviceable and issuable to selected customers but which must be issued before condition code A and B materiel to avoid loss as a usable asset. This includes, but is not limited to, items with 1 year or less shelf life and items indicating deterioration but are suitable for issue as directed by the item manager.

• **CODE D — Serviceable (Test/Modification).** Materiel is in the serviceable inventory but is directed by the item manager to be tested, altered, modified, converted, or disassembled. This does not include items which can be inspected or tested within normal outloading time immediately prior to use. Code D may include:

■ Materiel of nonstandard design or condition, or depot stocks requiring surveillance, laboratory or functional testing, and/or technical evaluation by higher authority as a condition to classification.

■ Renovated lots awaiting ballistic test results, overage lots (lots that exceed shelf life), and lots overdue for trace or function tests.

• **CODE E — Unserviceable (Limited Restoration).** Materiel needing only limited expense or effort to restore it to a serviceable condition by the reporting ASP/depot, such as cleaning, painting, packaging, restenciling, etc. It normally does not include items that require replacement of components, modification, or alteration.

• **CODE F — Unserviceable (Reparable).** Code F covers economically reparable materiel which requires repair, overhaul, or reconditioning. It also includes items which are radioactively contaminated and require special handling, or items which require operations more hazardous or complex than care and

preservation. It normally involves replacement of components.

• **CODE G — Unserviceable (Incomplete).** Materiel requiring additional parts or components to complete the end item prior to issue.

• **CODE H — Unserviceable (Condemned).** Materiel which has been determined to be unserviceable and is uneconomical to repair. It includes condemned items which are radioactively contaminated.

• **CODE I** — (Not To Be Assigned).

• **CODE J — Suspended (In Stock).** Material in stock which has been suspended from issue pending condition classification analysis where the true condition is not known.

• **CODE K — Suspended (Returns).** Materiel returned from customers or users and awaiting condition classification.

• **CODE L — Suspended (Litigation).** Stocks held pending litigation or negotiation with contractors or common carriers.

• **CODE M — Suspended (In Work).** Materiel identified on inventory control record but which has been turned over to a maintenance facility or contractor for processing.

• **CODE N — Suspended (Ammunition Suitable for Emergency Combat Use Only).** Ammunition stocks suspended from issue except for emergency combat use.

GUIDELINES FOR AMMUNITION INSPECTION TEAMS

SECTION III

AMMUNITION TEAMS

Ammunition inspection teams are organized and sent out by the ammunition battalions and COSCOM to make critical and searching investigations into all elements of ammunition service and procedures. Inspection is a means of insuring standard procedures to detect and eliminate bottlenecks in doing preventive maintenance. A list of questions is provided for you to use as a guide to prepare an SOP for ammunition inspection teams, staff officers in checking ammunition activities, and depot commanders in analyzing and evaluating their operations. Answers to the questions in the remainder of this chapter will reveal most of the difficulties encountered in the operations of depots and ASPs.

ADMINISTRATION

- What is the mission of the depot or ASP?
- Are technical directives and technical data current?
- Does full cooperation exist between the ASP/depot, the COSCOM, and the MCC transportation officer?
- Is liaison being maintained between units and the issuing depot, ASP?

- Are ASPs within easy reach of using units?
- Is there an up-to-date map showing the layout of the supply installation?
- Is motor transportation adequate for operations within the depot?
- Are protective clothing and equipment required by TM 9-1300-206 available and used for handling chemical ammunition?
- Are there shortages of equipment or supplies?

OPERATIONS

- What is the status of training of the individual? Of the unit? How much time is devoted to each?
- Are key personnel being cross trained?
- Does the supply installation have a storage plan? Is the plan adequate?
- Is a periodic check made to insure compliance with prescribed safety procedures?
- Does the supply installation receive notice of incoming shipments far enough in advance of shipment to plan for the receipt?
- Is down time (elapsed time between arrival and departure) of trucks within the installation excessive?
- Are inventories made at regular intervals?
- Is any attempt made to segregate ammunition by lot number at the transportation head?
- Is ammunition segregated by type? Where, at the transportation head or ASP depot?
- Do personnel understand ammunition lots and lot numbers at the ASP depot?
- Are records kept of accident rates, man-hours lost from injury, and are the general causes

determined?

- Does the supply installation have SOPs covering the following:
  - Installation operations?
  - Routine security?
  - Minor disturbances?
  - Major disturbances?
  - Uprising?
  - Fire?
  - Enemy action?
  - Nuclear, biological, and chemical (NBC) defense?
  - Report of accidents?
  - Displacement, evacuation, or emergency destruction of ASP/depot?
  - Maintenance operations?
  - Storage plans?

RECORDS AND REPORTS

- Have requisitions or letter requests been submitted to higher headquarters to ease bottlenecks? Is any follow up action needed and taken?
- Do personnel know the system of ammunition reporting?
- Are any problems met with periodic reports? Do some reports repeat requirements and could they be combined? Are reports forwarded on time?
- How much "time lag" is there between actual ammunition receipt, pickup of stock record, and entry of stock status report?
- Do personnel understand and follow the system of processing shipment documents?
- Are prompt notices of shipment made to

consignee covering partial shipment against a shipping document?

- Are other means of communication made to notify consignee of shipment if the letter-of-notice-of-shipment may be late?
- Are the condition classifications on stock records accurate and show the actual serviceability of the ammunition? Make a spot check of this on at least one lot selected at random from several types.
- When the ASP/depot is unable to supply the item requested, is a substitute item furnished when possible?
- Are discrepancies uncovered by physical inventories? How are these accounted for?
- Do discrepancies exist in the use of voucher register and files, locator and lot records, stores slips, stock status reports, and shipping documents? What are the discrepancies?

STORAGE, ISSUE, AND RECEIPT

- Are ammunition areas and roads clearly marked and easily identified?
- Are new areas, roads, hard stands, dunnage, and shelters being prepared before incoming shipments arrive in line with a logical storage plan (SOP)?
- Is there evidence of unnecessary handling?
- Are prescribed QD tables being observed? If not, are approved or requested waivers on file?
- Is rewarehousing used to consolidate in one area items with the same lot number?
- What is the general condition of shelters, buildings, roads, and grounds?
- Are available facilities used to improve unsatisfactory conditions? What conditions are given priority for correction?

- Do using units turn-in brass shell cases and metal containers?
- Is dunnage adequate? If not, why?
- Are items subject to rapid deterioration under adequate shelter?
- How much tonnage, by type, is not under cover or on dunnage?
- Are stacks stable and properly segregated by type and lot to make accurate inventory easy?
- Are strips placed between layers of boxed ammunition not provided with cleats, especially small arms ammunition?
- Does water run under stacks of ammunition? Are drains provided and maintained?
- Are classified items of ammunition properly safeguarded?
- Are small lots of ammunition issued in line with previous instructions, such as, issue for training?
- Is new storage an improvement?

INSPECTION AND CLASSIFICATION

- How is the condition code of ammunition shown on the various records and reports determined?
- What is the percent, by condition code, in tons of total ammunition stockage?
- Is serviceable, unserviceable, and enemy ammunition physically segregated in storage?
- Does any storage location contain types which are forbidden to be stored together?
- Are broken packages inspected and repaired before being placed in final storage?

- What action is being taken to minimize pilferage?
- Is suspended ammunition physically marked?
- Are proper steps taken to locate, placard, and restrict unserviceable and dangerous lots from being issued? Are these stocks reported for disposition?
- What is the principal source or cause of deterioration of ammunition?
- Are ammunition checkers proficient in the identification and recognition of all items stored by the ASP?

MAINTENANCE

- Is a comprehensive maintenance program in operation with correct priorities on items in short supply?
- Are man-hours and materials being expended on the reclamation of salvage while good ammunition is being allowed to deteriorate for want of preventive maintenance?
- Is training of maintenance personnel adequate?
- Are maintenance operations properly organized?
- Is there an excessive amount of explosives at the site of maintenance operations?
- Are maintenance operations buildings or tents overloaded with explosives or personnel?
- Is the person supervising maintenance operations familiar with the applicable provisions of TM 9-1300-206?
- Is a qualified maintenance inspector on the job?
- Are records of maintenance being furnished

the records section for appropriate change of condition code?

SAFETY AND SECURITY

- Upon what authority is unserviceable live ammunition destroyed?
- Who supervises the destruction or disposition of unserviceable or dangerous ammunition?
- Is dangerous ammunition disposed of in a safe manner?
- Are requirements of TM 9-1300-206 being met in the destruction and disposal of ammunition? Can deficiencies be explained in a satisfactory manner?

CAUTIONS: As of 23 February 1971, the disposal of ammunition by dumping at sea was prohibited.

- What fire alarm system is used?
- Are fire drills held periodically, scheduled and unscheduled?
- With what frequency are unscheduled fire drills held?
- How are personnel trained in their duties in case of fire?
- Is the fire marshal familiar with the general behavior of various explosives and ammunition when involved in a fire, what fires to fight, and when to evacuate an area?
- Is the fire marshal acquainted with the location of the most hazardous types of storage? Can the fire marshal identify them?
- Is available fire fighting equipment tested at intervals? Is the test adequate?
- Are fire extinguishers regularly inspected,

and by whom? Is the inspection adequate?

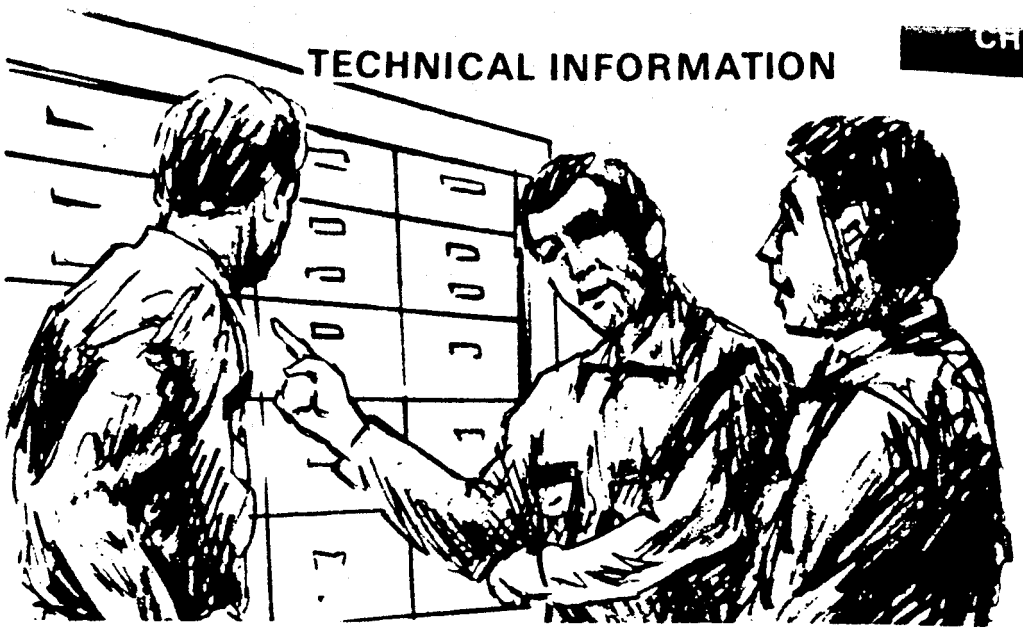
- Are rules prohibiting matches, smoking, lanterns, etc., in restricted areas being enforced?
- Are "No Smoking" signs posted?
- Is rubbish allowed to accumulate in the area and around FSUs or stacks?
- Are inspections made in the depot with a view to fire prevention and elimination of fire hazards?
- Are fire symbol signs placed in accordance with TM 9-1300-206?
- Are designated smoking areas approved by the appropriate echelon of command?

SUMMARY

- Summarize the shortages of equipment, facilities, personnel.
- Where are the principal bottlenecks: receipts, issues, handling, paperwork?
- How does the efficiency of the installation compare with other ammunition supply installations under similar conditions?

CHAPTER 7

TECHNICAL INFORMATION



SECTION I

AMMUNITION IDENTIFICATION - COLOR AND MARKING

GENERAL

Ammunition is identified by painting and marking on items, containers and packing boxes. For purposes of record, the standard nomenclature of the item, together with its lot number, national stock number (NSN) and Department of Defense Identification Code (DODIC), completely identifies the ammunition. Communications between ammunition elements frequently refer to an ammunition item by its DODIC; e.g. C444, (reference SB 708-3). To provide a ready means of visual identification, ammunition is color coded. TM 9-1300-200 and MIL-STD-709 series pertain to markings on explosives and ammunition. For more detail on this subject, refer to these cited references. This section is primarily devoted to color markings because this system provides a more ready means of identification.

COLOR CODING

The main reason ammunition is painted is to protect it from rust, but the color of the protective coating and markings also provide for easy identification and some degree of

camouflage. Small arms ammunition is not color coded under MIL-STD-709C; however, projectiles and bullet tips are painted a distinctive color to aid in ready identification. Table 7-1 gives the color code for types of small arms ammunition up to and including .50 caliber.

- **40mm Cartridges.** The 40mm cartridges are for the shoulder fired launchers M79 and M203, and automatic launchers M75, XM129 and XM173. The ogive is either anodized or painted to indicate training or HE usage. The primary coding is gold or yellow to signify HE.

- **Artillery Ammunition.** Typical artillery ammunition markings are shown on figure 7-1.

- **Old and New Colors.** Figure 7-2 presents a chart of both the old and the new color coding systems for all types of service ammunition including chemical filled munitions. The old system is included because many class V items with the old color coding are still in the supply system. When this ammunition undergoes a reconditioning or renovation operation the color coding will be updated; however, items bearing the old color code will be around for years to come. The following significant features of the new color coding standard should be noted:

  - Olive Drab (OD) with yellow markings still indicates a HE round; however, OD is also being used as a basic color for certain new rounds such as improved conventional munitions (ICM), the flechette antipersonnel round, and some new illumination rounds for specific field artillery weapons.

  - Ammunition overpacked in color coded bombs, in unit dispensers, or in warheads will not be color coded.

  - Camouflage paint shall never be used for

Table 7-1. Color Table, Small Arms Ammunition Through Caliber .50

Type	Tip Color
Ball and High Pressure Test (HPT)	None
Armor-piercing	Black
Armor-piercing-incendiary	Aluminum (Silver)
Armor-piercing-incendiary-tracer	Red, with aluminum annulus to the rear
Incendiary	Various shades of blue
Tracer	Brown or various shades of red (such as orange and maroon)
Spotter, Tracer	Red, with yellow annulus
Frangible	Green tip, with white annulus to the rear
Duplex (Two ball bullets within one cartridge case)	Green

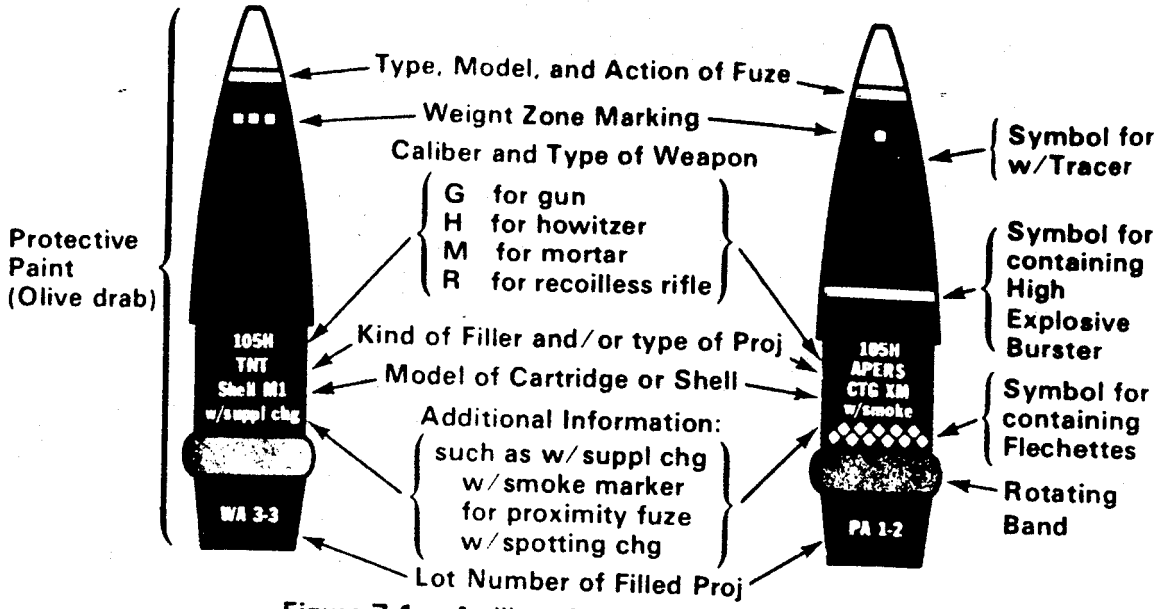


Figure 7-1. Artillery Ammunition Markings.

ammunition containing toxic chemical, incapacitating, or riot control chemical agents.

- The presence of HE components shall be indicated by a yellow band or markings.
- The presence of low explosive components shall be indicated by a brown band or markings.

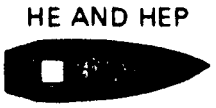
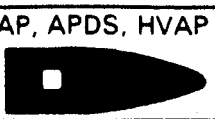
TYPE OF PROJECTILE	OLD SYSTEM
HIGH EXPLOSIVE	OLIVE DRAB W/YELLOW MARKINGS 
ARMOR DEFEATING	W/O HE: BLACK W/WHITE MARKINGS 
	W/HE: YELLOW MARKINGS -OD BODY  -BLACK BODY 
ANTI PERSONNEL	BLACK W/WHITE MARKINGS 

Figure 7-2. Ammunition Color Coding System

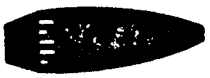
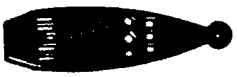
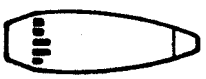
NEW SYSTEM		
W/O EXPLOSIVE: WHITE MARKINGS	PRACTICE  -BLUE BODY	DUMMY  -BRONZE BODY
W/EXPLOSIVE: BLUE W/WHITE MARKINGS	LOW EXPLOSIVE  -BROWN BAND	HIGH EXPLOSIVE  -YELLOW BAND
OLIVE DRAB W/YELLOW MARKINGS	 YELLOW DIAMOND	

Figure 7-2. Ammunition Color Coding System (Continued)

TYPE OF PROJECTILE	OLD SYSTEM		
TOXIC CHEMICAL AGENTS (CASUALTY AGENTS)	GRAY W/GREEN MARKINGS	 NONPERSISTENT INCL G-SERIES -1 GREEN BAND	 PERSISTENT INCL V-SERIES -2 GREEN BANDS
IRRITANT-AGENTS (RIOT CONTROL AGENTS)	GRAY W/RED MARKINGS	-1 RED BAND	NONPERSISTENT 
ILLUMINATING	GRAY W/WHITE MARKINGS AND BAND		

Figure 7-2. Ammunition Color Coding System (Continued)

NEW SYSTEM		
GRAY W/GREEN MARKINGS, YELLOW BAND IF W/EXPLOSIVE BURSTER	 - 1 GREEN BAND	
GRAY W/RED MARKINGS, YELLOW BAND IF W/EXPLOSIVE BURSTER	 -1 RED BAND	
WHITE W/BLACK MARKINGS, OD W/ WHITE MARKINGS AND BAND FOR SEPARATE LOADING PROJECTILES		

TYPE OF PROJECTILE	OLD SYSTEM
PRACTICE AND DUMMY	BLUE OR BLACK W/WHITE MARKINGS 
IMPROVED CONVENTIONAL MUNITIONS	NONE

NEW SYSTEM	
OLIVE DRAB W/ YELLOW MARKINGS	HE  HEP (OVER 40mm) -BLACK BAND 
W/O HE: BLACK W/WHITE MARKINGS	AP, APDS, HVAP 
W/HE: BLACK W/ YELLOW MARKINGS	HEAT  AP W/HE FILLER 
CANISTER: OD W/WHITE MARKINGS	W/ SLUGS  -WHITE DIAMONDS W/FLECHETTES 
CARTRIDGE APERS W/FLECHETTES: OD W/WHITE MARKINGS AND DIAMONDS, YELLOW BAND	

SECTION

FUZE INTERCHANGEABILITY TABLES

FUZE INTERCHANGEABILITY TABLES

Authorized fuze interchangeability is reflected in tables 7-2 through 7-5. Data is current as of the date of this publication.

Table 7-2
Table 7-3
Table 7-4
Table 7-5

NEW SYSTEM

LIGHT GREEN BODY -LIGHT RED MARKINGS, YELLOW BAND	WP, PWP 	OTHER SMOKE  -BLACK MARKINGS
LIGHT RED W/BLACK MARKINGS		
ALUMINUM W/BLACK MARKINGS BROWN BAND IF W/LOW EXPLOSIVE BURSTER		
ORANGE W/BLACK MARKINGS		

Figure 7-2. Ammunition Color Coding System (Continued)

TYPE OF PROJECTILE	OLD SYSTEM	
SMOKE	GRAY W/YELLOW MARKINGS AND BAND	
INCENDIARY	GRAY W/PURPLE MARKINGS AND BAND	
COUNTER-MEASURE (LEAFLET)	OLIVE DRAB W/BLACK MARKINGS	
TRACK AND RECOVERY	NONE	

Table 7-2. Cartridge/Projectile-Fuze Combinations for Guns

WEAPON	CARTRIDGE PROJECTILE	FUZE: PD M48A2	PD M48A3	PD M51A4	PD M51A5	PD M57 (MOD)	PD M64A1	PD M78 SERIES (CP)	PD M521	PD M557	PD M572	PD MK27	PD M720 SERIES	PIBD M509 SERIES	PIBD M539	MT M571	MT M711	MTSQ M501 SERIES	MTSQ M520 SERIES	MTSQ M564	BD M62 SERIES	BD M68 SERIES	BD M91 SERIES	BD M534 SERIES	BD M578	PROX M513 SERIES	PROX M514 SERIES	PROX M728
40 MM	HE T, HEI T, MK2 SD, MK11, M3A1											■																
	HE T, MK2 SD, M3						■																					
76 MM	HE, HE T, M352 SERIES				■			■											■	■								
	HEAT T, M496													■														
	WP, M361 SERIES								■																			
90 MM	APC T, M82																					■						
	APERS, M580																■											
	HE, M71 (NORMAL CAVITY)			■	■			■		■									■	■								
	HE, M71 (DEEP CAVITY)			■	■			■		■									■	■						P		

Table 7-2. Cartridge/Projectile-Fuze Combinations for Guns (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE: PD M48A2	PD M48A3	PD M51A4	PD M51A5	PD M57 (MOD)	PD M64A1	PD M78 SERIES (CP)	PD M521	PD M557	PD M572	PD MK27	PD M720 SERIES	PIBD M509 SERIES	PIBD M539	MT M571	MT M711	MTSQ M501 SERIES	MTSQ M520 SERIES	MTSQ M564	BD M62 SERIES	BD M68 SERIES	BD M91 SERIES	BD M534 SERIES	BD M578	PROX M513 SERIES	PROX M514 SERIES
	HE T M71A1				■					■				■													
	HEAT M348 SERIES													■													
	HEAT T M431													■									■				
	HEP T T142 SERIES																		■								
	SMOKE WP M313 SERIES	■	■			■											■										
105 MM	APERS T M494													■													
	HEAT T M456 SERIES																							■	■		
	HEP T M393 SERIES																							■			
	SMOKE WP T M416																										

Table 7-2. Cartridge/Projectile-Fuze Combinations for Guns (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE: PD M48A2	PD M48A3	PD M51A4	PD M51A5	PD M57 (MOD)	PD M64A1	PD M78 SERIES (CP)	PD M521	PD M557	PD M572	PD MK27	PD M720 SERIES	PIBD M509 SERIES	PIBD M539	MT M571	MT M711	MTSQ M501 SERIES	MTSQ M520 SERIES	MTSQ M564	BD M62 SERIES	BD M68 SERIES	BD M91 SERIES	BD M534 SERIES	BD M578	PROX M513 SERIES	PROX M514 SERIES	PROX M728
120 MM	HE-T, M356										■			■														
	HEAT-T, M469		■							■									■	■								
	SMOKE WP M357												■															
152 MM	HE-T, M657														■													
	HEAT-T-MP, M409 SERIES									■																		
	TP T, M411 (XM411E3)									■																		
155 MM	GB, M122							■		■																		
	HE, M101 (NORMAL CAVITY)							■		■																P		
	HE, M101 (DEEP CAVITY)							■		■																		

Table 7-2. Cartridge/Projectile-Fuze Combinations for Guns (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE: PD M48A2	PD M48A3	PD M51A4	PD M51A5	PD M57 (MOD)	PD M64A1	PD M78 SERIES (CP)	PD M521	PD M557	PD M572	PD MK27	PD M720 SERIES	PIBD M509 SERIES	PIBD M539	MT M571	MT M711	MTSQ M501 SERIES	MTSQ M520 SERIES	MTSQ M564	BD M62 SERIES	BD M68 SERIES	BD M91 SERIES	BD M534 SERIES	BD M578	PROX M513 SERIES	PROX M514 SERIES	PROX M728
	SMOKE, WP OR GAS, HD, M104									■											■							
165 MM M135	HEP M123A1																									P	P	
175 MM	HE M437 SERIES (DEEP CAVITY)										■																	
	HE M437 (SHALLOW CAVITY)										■																	

LEGEND ■ - AS ISSUED OR COMPATIBLE
P - REQUIRES REMOVAL OF SUPPLEMENTAL CHARGE IF PRESENT

Table 7-3. Cartridge/Projectile-Fuze Combinations for Howitzers

WEAPON	CARTRIDGE PROJECTILE	FUZE																		
		P D				M T			M TSQ							B D	PROX			
		M57 (MOD)	M78 SERIES (CP)	M508 SERIES	M557	XM563 SERIES	M565	M565 (MOD)	M501 SERIES	M520 SERIES	M548	M548 (MOD)	M554	M564	M577	M91 SERIES	M513 SERIES	M514 SERIES	M728
75 MILLIMETER M1A1, M3	HE, M48 (NORMAL CAVITY)				■														
	HE, M48 (DEEP CAVITY)				■												P		
105 MILLIMETER M2A1, M2A2, M49	APERS-T, XM546					■													
	BE, M84, M84B1								■										
	105 MM - M84A1 SMOKE						■				■								
	GB, M360			■	■														
	HE, M1 (NORMAL CAVITY)		■		■					■				■					
	HE, M1 (DEEP CAVITY)		■		■					■				■			P	P	P
	HE, M413											■							

Table 7-3. Cartridge/Projectile-Fuze Combinations for Howitzers (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE																		
		P D				M T			M TSQ							B D	PROX			
		M57 (MOD)	M78 SERIES (CP)	M508 SERIES	M557	XM563 SERIES	M565	M565 (MOD)	M501 SERIES	M520 SERIES	M548	M548 (MOD)	M554	M564	M577	M91 SERIES	M513 SERIES	M514 SERIES	M728
	HE, M444							■				■							
	TACTICAL, CS, M629						■				■								
	HEP T, M327															■			
	HE, RA, M548				■									■					
	ILLUM, M314A2, M314A2B1								■										
	ILLUM, M314A3						■												
	GAS, H, HD, M60	■			■														
	SMOKE, WP, M60 SERIES				■					■				■					

Table 7-3. Cartridge/Projectile-Fuze Combinations for Howitzers (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE																		
		PD				MT			MTSQ							BD	PROX			
		M57 (MOD)	M78 SERIES (CP)	M508 SERIES	M557	XM563 SERIES	M565	M565 (MOD)	M501 SERIES	M520 SERIES	M548	M548 (MOD)	M554	M564	M577	M91 SERIES	M513 SERIES	M514 SERIES	M728	
155 MILLIMETER F CANNONS, M1, M1A1, M45, M126	AGENT H, HD, M110				■					■				■				P	P	
	AGENT, GB, M121, M121A1				■									■				P	P	
	HE RAP M549		■		■					■				■						
	HE M107 (SHALLOW CAVITY)		■		■									■				P	P	
	HE M107 (DEEP CAVITY)						■				■				■					
	HE M449 SERIES								■						■					
	HE M483																			
	ILLUM M118						■													
	ILLUM M485 SERIES																			

Table 7-3. Cartridge/Projectile-Fuze Combinations for Howitzers (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE																		
		PD				MT			MTSQ							BD	PROX			
		M57 (MOD)	M78 SERIES (CP)	M508 SERIES	M557	XM563 SERIES	M565	M565 (MOD)	M501 SERIES	M520 SERIES	M548	M548 (MOD)	M554	M564	M577	M91 SERIES	M513 SERIES	M514 SERIES	M728	
	SMOKE, HC, BE, M116A1 (M116E1)						■													
	SMOKE, HC, COLORED, BE, M116, M116B1								■											
	SMOKE WP M110 SERIES				■					■				■						
155 MILLIMETER F CANNON M185	AGENT H, HD, M110				■					■				■						
	AGENT, GB, M121, M121A1				■													P	P	
	HE, M107 (SHALLOW CAVITY)		■		■					■				■						
	HE, M107 (DEEP CAVITY)		■		■					■					■			P	P	
	HE, M449 SERIES						■				■				■					
	ILLUM M485						■													

Table 7-3. Cartridge/Projectile-Fuze Combinations for Howitzers (Continued)

WEAPON	CARTRIDGE PROJECTILE	FUZE																
		PD				MT		MTSQ							BD	PROX		
		M57 (MOD)	M78 SERIES (CP)	M508 SERIES	M557	XM563 SERIES	M565	M565 (MOD)	M501 SERIES	M520 SERIES	M548	M548 (MOD)	M554	M564	M577	M91 SERIES	M513 SERIES	M514 SERIES	M728
(Cont'd)	SMOKE, HC, BE, M116A1 (M116E1)						■												
	SMOKE, HC, COLORED, BE, M116B1								■										
	SMOKE, WP, M110 SERIES				■					■				■					
8 INCH M2, M2A1, M47	GB OR VX M426				■									■				P	P
	HE, M106 (NORMAL CAVITY)		■		■					■				■					
	HE, M106 (DEEP CAVITY)		■		■					■				■				P	P
	HE, M404						■				■				■				

LEGEND ■ AS ISSUED OR COMPATIBLE
P REQUIRES REMOVAL OF SUPPLEMENTAL CHARGE IF PRESENT

Table 7-4. Cartridge-Fuze Combinations for Recoilless Rifles

WEAPON	CARTRIDGE	FUZE										
		PD				PI			MT	MTSQ	BD	
		M48A3	M57 (MOD)	M503 SERIES	M557	M90 SERIES	M509 SERIES (BD)	M530 SERIES (BD)	M592 SERIES	M520 SERIES	M62 SERIES	M91 SERIES
57 MILLIMETER RIFLE M18, M18A1	HE, M306			■								
	HE, M306A1			■								
	HEAT, M307 SERIES					■						
	SMOKE, WP, M308			■								
	SMOKE, WP, M308A1			■								
	TP, M306A1			■								
75 MILLIMETER RIFLE M20	HE, M309 SERIES				■					■		
	HEAT, M310										■	
	HEAT-T, M310A1											■

Table 7-4. Cartridge-Fuze Combinations for Recoiless Rifles (Continued)

WEAPON	CARTRIDGE	FUZE										
		PD				PI			MT	MTSQ	BD	
		M48A3	M57 (MOD)	M503 SERIES	M557	M90 SERIES	M509 SERIES (BD)	M530 SERIES (BD)	M592 SERIES	M520 SERIES	M62 SERIES	M91 SERIES
(Cont d)	HEP T, M349											■
	SMOKE, WP, M311	■	■									
	SMOKE, WP, M311A1	■	■									
	TP, M309A1				■							
90 MILLLIMETER RIFLE M67	HEAT, M371 SERIES							■				
	PRACTICE, M371							■				

Table 7-4. Cartridge-Fuze Combinations for Recoilless Rifles (Continued)

WEAPON	CARTRIDGE	FUZE										
		PD				PI			MT	MTSQ	BD	
		M48A3	M57 (MOD)	M503 SERIES	M557	M90 SERIES	M509 SERIES (BD)	M530 SERIES (BD)	M592 SERIES	M520 SERIES	M62 SERIES	M91 SERIES
105 MILLIMETER RIFLE M27, M27A1	HEP, M326										■	
	HEP-T, M326											■
106 MILLIMETER RIFLE M40A6, M40A4	APERS T, M581								■			
	HEAT, M344 SERIES						■					
	HEP-T, M346 SERIES											■

LEGEND ■ AS ISSUED OR COMPATIBLE
P - REQUIRES REMOVAL OF SUPPLEMENTAL CHARGE IF PRESENT

Table 7-5. Cartridge-Fuze Combinations for Mortars

WEAPON	CARTRIDGE	FUZE																						
		PD												MT	MTSQ		T		PROX					
		M8	M9	M48A3	M521	M524 SERIES	M525 SERIES	M526 SERIES	M527 SERIES	M557	M567	M716	M717	M562	M565	M520 SERIES	M548	M564	M65	M84	M513 SERIES	M517	M532	M728
60 MILLIMETER M2, M19	HE, M49 SERIES						■						■											
	ILLUM, M83 SERIES																		■					
	SMOKE, WP, M302 SERIES							■																
	TP, M50A2E1						■																	
81 MILLIMETER M1, M29, M29A1	HE, M43 SERIES						■						■											
	HE, M362 SERIES					■		■				■										■		
	HE, M374 SERIES					■		■			■	■										■		
	ILLUM, M301 SERIES																		■					

Table 7-5. Cartridge-Fuze Combinations for Mortars

WEAPON	CARTRIDGE	FUZE																						
		PD												MT	MTSQ		T		PROX					
		M8	M9	M48A3	M521	M524 SERIES	M525 SERIES	M526 SERIES	M527 SERIES	M557	M567	M716	M717	M562	M565	M520 SERIES	M548	M564	M65	M84	M513 SERIES	M517	M532	M728
60 MILLIMETER M2 M19	HE M49 SERIES						■						■											
	ILLUM, M83 SERIES																		■					
	SMOKE, WP, M302 SERIES							■																
	TP, M50A2E1						■																	
81 MILLIMETER M1 M29 M29A1	HE, M43 SERIES						■						■											
	HE, M362 SERIES					■		■				■										■		
	HE, M374 SERIES					■		■			■	■										■		
	ILLUM, M301 SERIES																		■					

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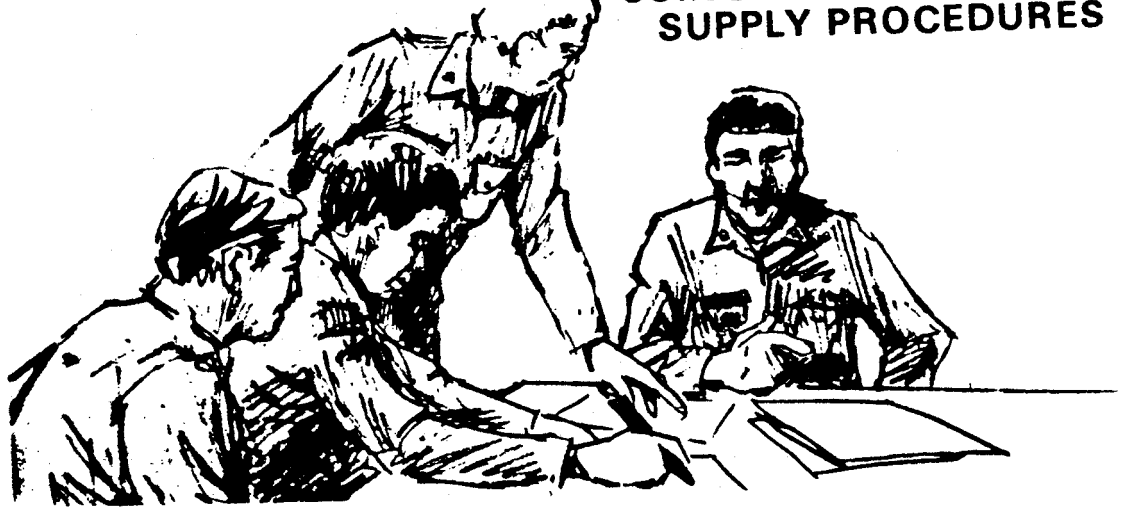
Table 7-5. Cartridge-Fuze Combinations for Mortars (Continued)

WEAPON	CARTRIDGE	FUZE																								
		PD													MT		MTSQ			T		PROX				
		M8	M9	M48A3	M521	M524 SERIES	M525 SERIES	M526 SERIES	M527 SERIES	M557	M567	M716	M717	M562	M565	M520 SERIES	M548	M564	M65	M84	M513 SERIES	M517	M532	M728
(Cont'd)	ILLUM, M335A1													■												
	ILLUM, M335A2														■											
	SMOKE, WP, M328 SERIES			■	■																					

LEGEND ■ AS ISSUED OR COMPATIBLE
P - REQUIRES REMOVAL OF SUPPLEMENTAL CHARGE IF PRESENT

CHAPTER 8

USING UNIT AMMUNITION SUPPLY PROCEDURES



SECTION I

BASIC LOADS

GENERAL

This chapter is designed for using unit personnel concerned with the receipt, turn-in (to include salvageable material), storage, care, and handling of ammunition.

STORAGE OF UNIT BASIC LOADS

General. Tactical units are required to maintain their basic load of ammunition in a serviceable, ready-to-fire condition. Ammunition units must be prepared to render technical assistance and advice to tactical units on storage, safety, and security of their ammunition.

Storage on Vehicles. The following conditions will be met when storage of basic loads is on vehicles:

- If the ammunition is unpalletized, wooden flooring with a minimun height of 2 inches must be provided on the bed of all vehicles and trailers.
- Drain plugs on all trailers must be opened.
- Weight must be distributed over the entire bed of the vehicle.
- Load must be properly braced to prevent shifting during movement.
- Ridge poles must be placed along the center of the bows and underneath the tarp of all motor vehicles and trailers to prevent water pockets from forming.
- Tarpaulin front and end curtains must be used on all cargo-type motor vehicles.
- Adequate ventilation must be provided in loaded vehicles. Loaded motor vehicles will be aired periodically by removing tarps.
- All ammunition will be removed from vehicles scheduled for maintenance involving the disassembly of the engine, fuel system, and electrical system, or body work involving welding. Driver and minor organizational maintenance may be done without unloading the vehicle; however, care must be taken to insure that ammunition loaded on the truck does not

274 violate QD regulations for any reason. Vehicles loaded with ammunition which are undergoing minor maintenance, other than operator maintenance, will be parked at least 50 meters from other loaded ammunition vehicles.

Off-Vehicle Storage. In some cases, it may be an advantage to store part of the basic load on the ground or in buildings. When this is done, the ammunition must be stacked on dunnage and marked for a specific vehicle. Operational plans must also provide for the time, personnel, and vehicles required to issue or move this ammunition.

- Inside storage.
  - Dunnage must be thick enough to allow a minimum airspace of two inches between ammunition and the floor of the building.
  - Stripping is desirable if boxes are not cleated on the top. Stripping must be at least one

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inch thick and two inches wide. This provides better air circulation and makes stacks more stable.

- Items must be stacked by lot number with the nomenclature facing outward and all boxes alined. This makes it easy to inventory and inspect.
- Stacks must be at least 6 inches from the wall and at least 18 inches from the ceiling.
- All items will be properly packaged and marked.

- Outside storage.
  - Dunnage must be high enough to provide a minimum of three inches between the stack and the ground.
  - Procedures listed for inside storage that apply must also be followed for outside storage.
  - Ammunition in outside storage will be covered by canvas tarps, wooden shed, or an A-frame. A minimum airspace of 18 inches must be maintained between the covering and ammunition.

- Storage of basic load of small arms ammunition in arms rooms.
  - Small arms ammunition may be stored in unit arms rooms for easy access and control.
  - Small arms ammunition stored in arms rooms must be located as far from inhabited sections of the billet area as possible.
  - Small arms ammunition stored in arms rooms must be secured as provided in AR 190-11.

- Security. Local command policies and security requirements (SOP) must be followed in securing basic load storage areas. Classified items must be secured and handled in

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compliance with AR 380-5. Units that maintain ammunition in a basic load or receive it for use in training must provide adequate physical security to preclude loss or unauthorized use. AR 190-11 provides physical security requirements for conventional ammunition.

REQUEST FOR ISSUE AND TURN-IN OF AMMUNITION For use of this form, see AR 710-2; the proponent agency is DARCOM		DOCUMENT NUMBER (1)		CONTROL NUMBER (2)	
FROM: (3)		INITIATED BY (4a)	DATE (4b)	ACCOUNTING & FUNDING DATA (5)	
TO: (6)		APPROVED BY (7a)	DATE (7b)	AUTHENTICATING OFFICE NO. (8)	
☐ TRANSPORTATION ORDER *(Request)*	☐ ALLOCATION	☐ TURN-IN	☐ OTHER *(Specify)*		
ITEM (10a)	NATIONAL STOCK NUMBER (b)	LOT NUMBER (c)	QUANTITY REQUESTED (d)	QUANTITY ISSUED (e)	UNIT PRICE (f)	TOTAL COST (g)
REMARKS *(Authority, Location of Ammunition, Instructions, etc.)* (11)						
(12) ISSUE OR TURN-IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED			(13) RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN		
BY:	DATE		BY:	DATE	

Figure 8-1. DA Form 581, Request for Issue and Turn-In of Ammunition (Issue).

SECTION II

PREPARATION OF DA FORM 581

GENERAL

This section describes the procedure used for the preparation of DA Form 581 for requesting and returning ammunition. This section is not all inclusive and each unit must contact their local ASP to obtain a copy of the local requirements.

PREPARATION OF DA FORM 581 USED AS A REQUEST FOR AMMUNITION

The number of copies to prepare will be covered in local SOPs. To prepare the DA Form 581 as a request for training ammunition, use the information shown in figure 8-1 and instructions.

NOTE: DA, for the development of the data base used under TAMMS, requires each DA Form 581 used as a request for training ammunition to have an appropriate training event code for each item. See appendix G for training event codes. Training event codes describe the purpose for which the training ammunition will be expended.

When one or more training events are associated for the items listed, the appropriate code will be entered in parentheses beside each individual line (figs 8-1 and 8-2), as far to the right of the block as possible.

Preparation Instructions for DA Form 581 Request for Issue and Turn-in of Ammuniti (Issue, Fig. 8-1)

Block Instructions

1. The unit document number consisting of the Julian date and the document serial number. For example, if today is 9 June 80 and this is document number 4, the document number will be 0161-0004.
2. Leave blank.
3. Unit UIC, DODAAC, and unit designation.
4. Leave blank.
5. Follow requirements as listed in unit SOP.
6. Your ammunition supply activity designator, UIC, DODAAC and address.
7. Leave blank unless otherwise directed
8. Leave blank.
9. Mark the box next to "Transportation Order."
10a. Sequential number starting with 1

Block Instructions

b. DODAC, item description and training event code for each item required
c. Leave blank.
d. Enter quantity required for each line item.

e,f,g. Leave blank.

11. Since this is a request for training ammunition, enter the following statements as required.
    a. "Required for immediate expenditure within approved authorization."
    b. "Ammunition not required will be returned."
    c. "Expenditures are within authorized available supply rate."
12. Make sure the ammunition officer or supply officer dates and signs this block.
13. Leave blank

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Process DA Form 581 used as a request for issue of ammunition through channels to supporting ASP.

- Review the DA Form 581 for accuracy and completeness. Make sure all items are listed and that they have the right training event code.
- To avoid delays at the ASP, check the following blocks for completeness because these can only be completed by the requesting unit:
  - **BLOCK 1:** If the document number has been omitted, have the supply clerk post the DA Form 581 to the document register and enter the document number in this block, figure 8-3.
  - **BLOCK 12:** Make sure that the ammunition or supply officer has signed the request.
  - Verify with DA Form 1687, Notice of Delegation of Authority — Receipt for Supplies, see figure 8-4.
- Hand carry the DA Form 581 to the approving authority. The approving authority for divisional units is the division ammunition officer (DAO) assigned to the division material management center (MMC). For nondivisional units, follow the procedures listed in unit SOP.
- The final step will be to hand carry DA Form 581 to your supporting ASP.

PREPARATION OF DA FORM 581 FOR TURN-IN OF AMMUNITION AND SALVAGEABLE MATERIAL

When ammunition is used for required training, you must do the following:

- Use only the amount needed for the training event.
- Keep ammunition in its original packing.
- If issued more than one lot number of a

The approving authority will:

1 Sign and date block 7.

2 Enter a sequential control number in block 8. This control number is a two digit month indicator (for example, 02 = Feb, 11 = Nov) and a three digit sequence number.

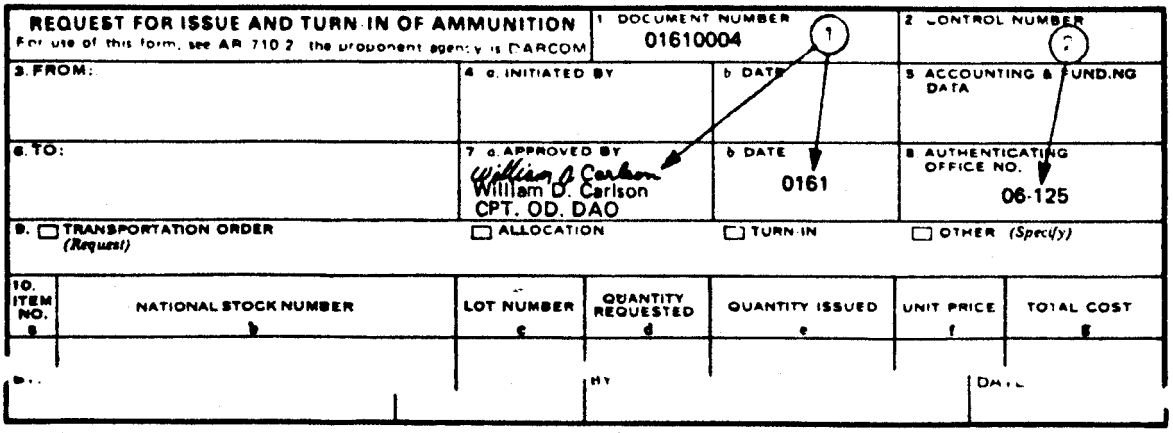
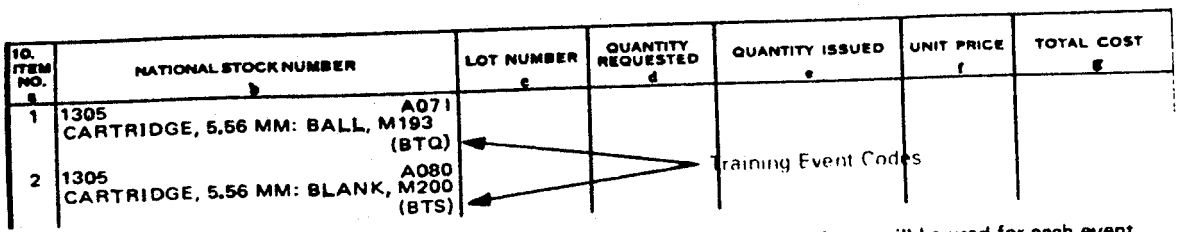
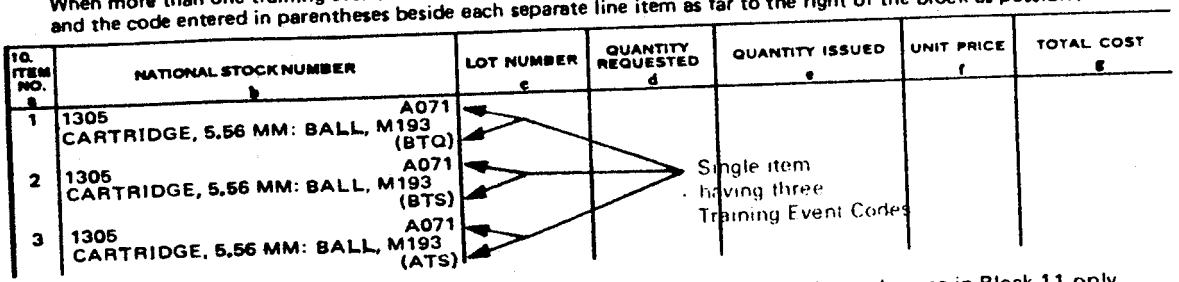


Figure 8-3. DA Form 581, Request for Issue and Turn-In of Ammunition (Issue).



When more than one training event is associated with a single item, separate line items will be used for each event and the code entered in parentheses beside each separate line item as far to the right of the block as possible.



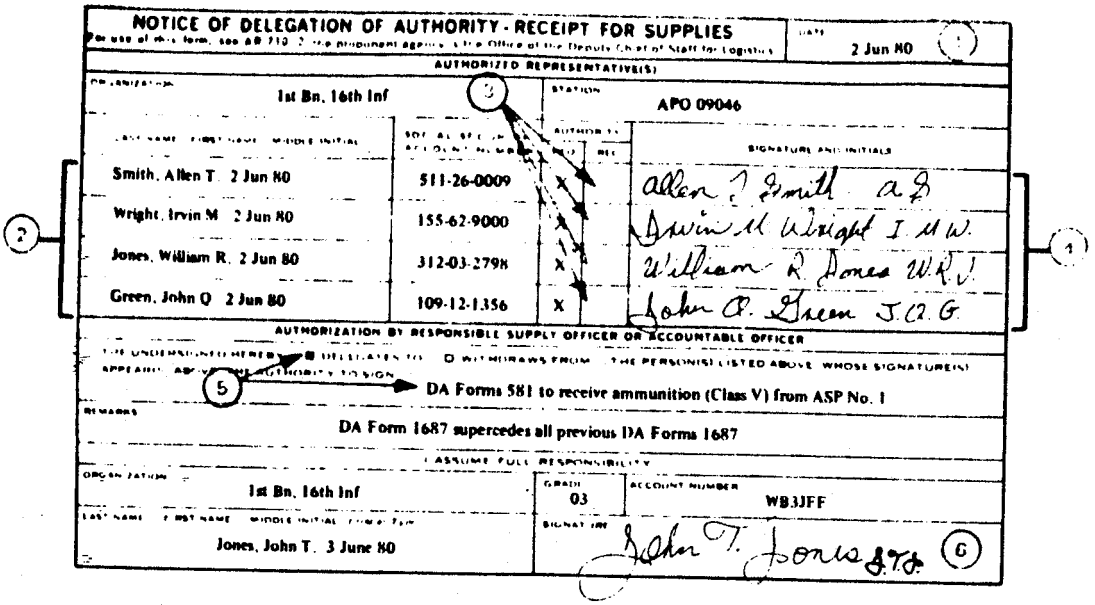
NOTE: But remember when all items have the same training event code the code goes in Block 11 only.

Figure 8-2. DA Form 581, Request for Issue and Turn-In of Ammunition (Issue).

Preparation Instructions for DA Form 1687, Notice of Delegation of Authority, Receipt for Supplies (Fig. 8-4)

Block or Column	Instructions
1. Date	The date shown is valid for a period of one year.
2. Last Name-First Name-Middle Initial	Typed names of individuals authorized to sign and current PCA date.
3. Authority	"Rec" column should be checked indicating individual is authorized to receipt for supplies.
4. Signature and Initial	Payroll signature and initials for all individuals listed.
5. Authorization	"Delegates to" block should be checked. All of the forms and type of supplies that the individuals listed are authorized to sign for should be listed.
6. Responsibility	Should depict the payroll signature and initials of your supply officer.

As a reminder, failure to have a valid and current DA Form 1687 at your supporting ASP will result in your not being able to draw or turn-in ammunition. Be sure to double check the "date" block. Remember, the form is only good for one year.


NOTICE OF DELEGATION OF AUTHORITY - RECEIPT FOR SUPPLIES

2 Jun 80

AUTHORIZED REPRESENTATIVE(S)

1st Bn, 16th Inf — APO 09046

Smith, Allen T. 2 Jun 80	511-26-0009	X	Allen T. Smith A.T.
Wright, Irvin M 2 Jun 80	155-62-9000	X	Irvin M. Wright I.M.W.
Jones, William R. 2 Jun 80	312-03-2798	X	William R. Jones W.R.J.
Green, John O 2 Jun 80	109-12-1356	X	John O. Green J.O.G.

AUTHORIZATION BY RESPONSIBLE SUPPLY OFFICER OR ACCOUNTABLE OFFICER

DA Forms 581 to receive ammunition (Class V) from ASP No. 1

REMARKS: DA Form 1687 supercedes all previous DA Forms 1687

1st Bn, 16th Inf — GRADE: 03 — ACCOUNT NUMBER: WB3JFF

Jones, John T. 3 June 80 — John T. Jones 2LT

Figure 8-4. Preparation Instructions for DA Form 1687, Notice of Delegation of Authority, Receipt for Supplies.

lot first before breaking open a new lot.

- Return all excess ammunition in its original container to the ASP.
- Return all salvageable material such as brass, steel clips, boxes, cans, and containers to the ASP.

The using unit must return unused ammunition (serviceable and unserviceable) and salvageable material to the ASP. Check the SOP of your supporting ASP for a complete list of items that are to be returned.

Ammunition is issued to units for immediate training requirements. For example: Ammunition will be issued from the ASP for weapons qualification. The ASP issues the ammunition for the required number of personnel projected for training. But the unit arrives at the training site with only 90 percent of the projected [illegible] details and sick call. Return to the ASP the ammunition issued for the 10 percent that did not make it to the training area. Do not store it or fire it. If the ammunition is fired, there will be 10 percent of the unit that cannot qualify because the ammunition was expended.

Ammunition sent back to the ASP in the original unopened container is classified as serviceable and can be reissued. If returned ammunition is in a serviceable condition, the ASP will credit the unit's account, and it can be used at a later date.

The number of DA Form 581s to prepare depends on what the unit is turning in. Use a separate DA Form 581 for each of the following turn-ins:

- Serviceable ammunition.
- Unserviceable ammunition.

- Salvageable material.

For the number of copies of DA Form 581 prepared for each turn-in, refer to the SOP of your local ASP. Prior to preparing the DA Form 581 for turn-in of serviceable ammunition review the following:

- The list prepared at the firing range showing the remaining ammunition and residue will be returned to the supporting ASP.
- The DA Form 581 on which the using unit originally requested the ammunition should be located in the voucher files maintained at the unit supply room. See figure 8-5.

Figure 8-5 is a copy of the DA Form 581 returned to the unit by the ASP when ammunition was issued for a live fire exercise. The written information shown in block 2, and blocks 10b, 10c and 10e was done by the ASP.

- **Block 2, [illegible]** will be used in the state[illegible] Form 581 when preparing the [illegible] number identifies the voucher used for [illegible] ammunition issue and allows ASP personnel to verify that the using unit has turned in the correct items.
- **Block 10b, NSN.** This written entry provides the complete NSN. When preparing a turn-in document, it is necessary to use the complete NSN. This number is used by the ASP personnel for stock control purposes.
- **Block 10c, Lot Number.** The lot numbers of the ammunition issued must be listed on the turn-in document. If any ammunition cannot be identified by lot number, the word "unknown" will be used in its place.
- **Block 10e, Quantity Issued.** The quantities of ammunition actually issued by the ASP.

REQUEST FOR ISSUE AND TURN-IN OF AMMUNITION
For use of this form, see AR 710-2; the proponent agency is DARCOM

1. DOCUMENT NUMBER: 0161-0004			2. CONTROL NUMBER: 0162-0146
3. FROM: WB3JFF/WK4FD4 1st Bn, 16th INF. APO 09046	4. a. INITIATED BY: John T. Jones JOHN T. JONES CPT. S-4	b. DATE: 0162	5. ACCOUNTING & FUND. NO. DATA
6. TO: ASP #1 WN7BAA/AK4007 APO 09114	7. a. APPROVED BY: William Carlson WILLIAM CARLSON CPT. OD DAO	b. DATE: 0162	8. AUTHENTICATING OFFICE NO.: 02004
9. ☐ TRANSPORTATION ORDER (Request)	☐ ALLOCATION	☐ TURN-IN	☐ OTHER (Specify)

10. ITEM NO. a	NATIONAL STOCK NUMBER b	LOT NUMBER c	QUANTITY REQUESTED d	QUANTITY ISSUED e	UNIT PRICE f	TOTAL COST g
1	1305-00-926-3930 Cartridge [illegible] M193 -A071	LC12205	13,440	13,440		

11. REMARKS (Authority, Location of Ammunition, Instructions, etc.)
Required for immediate expenditure within approved authorization. Ammunition not required will be returned. Expenditures are within authorized available supply rate.

12. ISSUE OR TURN-IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED		13. RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN	
BY: John T. Jones John T. Jones, CPT, S-4	DATE: 0161	BY: John Smith JOHN SMITH LT OD	DATE: 0162

Figure 8-5. DA Form 581, Request for Issue and Turn-In of Ammunition (Issue).

These figures are used to compute brass weights and residue.

Ammunition that has lost its lot number identity is unserviceable. One of the largest contributors to this problem is the opening of more than one lot number of a particular type of ammunition at one time. This allows the ammunition to get mixed. Whenever possible, open only one lot at a time beginning with the smallest lot. Failure to keep lots separated and in original containers will increase the time necessary to turn-in ammunition at the ASP.

Ammunition that has been removed from its original packing may be turned in as unserviceable. If after inspection at the ASP it is found serviceable, the ASP will give the unit credit. When preparing a turn-in document for unserviceable ammunition, the entries on the DA Form 581 are the same as those for turning in serviceable ammunition with the following exceptions:

- **Block 10c.** If the lot number of an item is not known, enter the word "unknown."
- **Block 10d.** Enter the word "Unserviceable" instead of "Serviceable."

To prepare the DA Form 581 for turn-in of salvageable material, follow the steps for serviceable turn-in with the following exceptions (fig 8-7):

- **Block 10b.** Enter the type of material, such as, wirebound box, metal can, brass, and so forth.
- **Block 10d.** Number of boxes, pounds of brass, or other amounts of material (check the ASP SOP for requirements).
- **Block 11.** Enter the following:

"This material has been inspected and

Preparation Instructions for Da Form 581 Request for Issue and Turn-in of Ammunition (Turn-In, Serviceable, Fig. 8-6)

Block	Instructions
1. Block 9	Mark the box next to turn-in.
2. Block 10a	Enter the item numbers sequentially.
3. Block 10b	Enter the complete NSN and nomenclature exactly as it appears on the document it was issued on. **NOTE:** The training events codes shown at the right of each item (BFX) and (DEM) are entered this way if they are different. If all the items were issued under the same training event code, it is entered in the lower right hand corner of block 11 (AE1).
4. Block 10c	Enter the lot number of the ammunition to be turned in.
5. Block 10d	Enter the quantities to be turned in.
6. Block 10e f, and g	Leave blank.
	NOTE: When turning in serviceable ammunition, the word "Serviceable" is entered under column "d," two spaces below the last quantity figure. Immediately below that are entered slash marks with the words "Last Item" in the center.
7. Block 11	Enter the statement that indicates the reason for the turn-in, usually the statement shown on the document. The document number on which the ammunition was issued must also be entered.
8. Block 12	Signature and signature block of your unit supply or ammunition officer and the Julian date.

REQUEST FOR ISSUE AND TURN IN OF AMMUNITION
For use of this form, see AR 710 2 the proponent agency is DARCOM

1. DOCUMENT NUMBER 0168-0004			2. CONTROL NUMBER
3. FROM: WB3JFF/WK4FD4 1ST, BN, 16TH INF APO 09046	4. a. INITIATED BY John T. Jones JOHN T. JONES CPT, S-4	b. DATE 0168	5. ACCOUNTING & FUNDING DATA
6. TO: ACCOUNTABLE OFFICER ASP #1 WN7BAA/AK4007 APO 09114	7. a. APPROVED BY	b. DATE	8. AUTHENTICATING OFFICE NO.
9. ☐ TRANSPORTATION ORDER (Request)	☐ ALLOCATION	☒ TURN-IN	☐ OTHER (Specify)

10. ITEM NO. a	NATIONAL STOCK NUMBER b	LOT NUMBER c	QUANTITY REQUESTED d	QUANTITY ISSUED e	UNIT PRICE f	TOTAL COST g
1	1305-00-926-5930-A071 CARTRIDGE, 5.56MM: BALL, M193 (BFX)	LC12205	840			

11. REMARKS (Authority, Location of Ammunition, Instructions, etc.)
ITEMS LISTED ABOVE ARE ON HAND IN THIS ORGANIZATION IN EXCESS OF TRAINING REQUIREMENTS. ISSUED ON CONTROL NUMBER 0162-0146. (AE1)

12. ISSUE OR TURN IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED		13. RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN	
BY: John T. Jones JOHN T. JONES, CPT, INF, S-4	DATE 0168	BY	DATE

Figure 8-6. DA Form 581, Request for Issue and Turn-In of Ammunition (Turn-In, Serviceable).

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REQUEST FOR ISSUE AND TURN-IN OF AMMUNITION
For use of this form, see AR 710 2 the proponent agency is DARCOM

1. DOCUMENT NUMBER 0168-0006			2. CONTROL NUMBER
3. FROM: WB3JFF/AK4FD4 1ST BN, 16TH INF APO 09046	4. a. INITIATED BY John T. Jones JOHN T. JONES CPT, S-4	b. DATE 0168	5. ACCOUNTING & FUND.NG DATA
6. TO: ACCOUNTABLE OFFICER ASP #1 WN7BAA/AK4007 APO 09114	7. a. APPROVED BY	b. DATE	8. AUTHENTICATING OFFICE NO.
9. ☐ TRANSPORTATION ORDER (Request)	☐ ALLOCATION	☒ TURN-IN	☐ OTHER (Specify)

10. ITEM NO. a	NATIONAL STOCK NUMBER b	LOT NUMBER c	QUANTITY REQUESTED d	QUANTITY ISSUED e	UNIT PRICE f	TOTAL COST g
1	WIREBOUND BOXES FOR 5.56 MM		33			

11. REMARKS (Authority, Location of Ammunition, Instructions, etc.)
THIS MATERIAL HAS BEEN INSPECTED AND DOES NOT CONTAIN ANY LIVE ROUNDS. UNFIRED PRIMERS, EXPLOSIVES, OR OTHER DANGEROUS MATERIAL. ISSUED ON CONTROL NUMBER 0162-0146.

12. ISSUE OR TURN-IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED		13. RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN	
BY: John T. Jones JOHN T. JONES, CPT, INF, S-4	DATE 0168	BY	DATE

Figure 8-7. DA Form 581, Request for Issue and Turn-In of Ammunition (Turn-In, Salvageable Material).

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does not contain any live rounds, unfired primers, explosives, or any other dangerous material. Issued on control number xxxx-xxxx."

To avoid any delays in processing the DA Form 581, double check the following blocks for completeness, because the entries can only be corrected at the unit:

- **Block 1.** If the document number has been omitted, have unit supply clerk post the DA Form 581 to the document register and enter the document number in this block.
- **Block 4.** Have the responsible individual sign in this block if signature is missing.
- **Block 12.** Make sure that the unit ammunition or supply officer has signed.

Once all corrections are made on the DA Form 581, it should be hand carried to the approving authority. The DAO is the approving authority for divisional units. Nondivisional units must follow the procedures listed in their SOP (fig 8-8).

The final step will be to send the DA Form 581 to the supporting ASP. The editing clerk at the ASP will check the paper work for errors or omissions, and coordinate the turn-in time and date.

The purpose of the system is to make available enough ammunition of the right type, when the unit requires it. This section has provided the guidance for preparing the DA Form 581 for requests and turn-in of ammunition. It does not try to cover every case. When in doubt, contact the ASP.

BASIC LOAD REQUIREMENTS

Depending on the status or location of your unit,

The approving authority will:

1 Sign and date block 7

2 Enter a sequential control number in block 8. This control number is a two digit month indicator (for example, 02 Feb, 11 Nov) and a three digit sequence number.

REQUEST FOR ISSUE AND TURN IN OF AMMUNITION For use of this form, see AR 710-2; the proponent agency is DARCOM	1. DOCUMENT NUMBER		2. CONTROL NUMBER
3. FROM: WB3JFF/WK4FD4 1ST BN, 16TH INF APO 09046	4. a. INITIATED BY JOHN T. JONES CPT, S-4	b. DATE 0168	5. ACCOUNTING & FUND.NG DATA
6. TO: ACCOUNTABLE OFFICER ASP #1 WN7BAA/AK4007 APO 09114	7. a. APPROVED BY WILLIAM CARLSON CPT, OD, DAO	b. DATE 0168	8. AUTHENTICATING OFFICE NO. 05198
9. ☐ TRANSPORTATION ORDER (Request)	☐ ALLOCATION	☒ TURN-IN	☐ OTHER (Specify)

10. ITEM NO.	LOT NUMBER	QUANTITY REQUESTED	TOTAL COST

12. ISSUE OR TURN-IN OF QUANTITIES IN "QUANTITY REQUESTED" COLUMN IS REQUESTED		13. RECEIVED QUANTITIES IN "QUANTITY ISSUED" COLUMN	
BY: JOHN T. JONES, CPT, INF, S-4	DATE 0168	BY:	DATE

Figure 8-8. DA Form 581, Request for Issue and Turn-In of Ammunition (Turn-In, Serviceable).

you may be required to maintain a unit basic load of ammunition. If your unit is new, reorganized, or just has to rotate its basic load, prepare DA Form 581 used as a request for ammunition as you would for training ammunition with these exceptions:

- Do not enter training event codes since this is not a training event.
- Block 11. Enter the following statement, "Required to replenish basic load."

Priority designator for replenishment of initial issue of basic load must adhere to AR 710-2 for current priority code.

APPENDIX A

REFERENCES

ARMY REGULATIONS (AR)

55-38	Reporting of Transportation Discrepancies in Shipments
55-228	Transportation by Water of Explosives and Hazardous Cargo
55-355	Military Traffic Management Regulation
70-38	Research, Development, Test, and Evaluation of Materiel for Extreme Climatic Conditions
70-61	Type Classification of Army Materiel
75-1	Malfunctions Involving Ammunition and Explosives
75-15	Responsibilities and Procedures for Explosive Ordnance Disposal
95-50	Airspace and Terminal Instrument Procedures
190-11	Physical Security of Weapons, Ammunition, and Explosives
310-1	Publications, Blank Forms, and Printing Management
310-25	Dictionary of United States Army Terms
310-50	Authorized Abbreviations and Brevity Codes
380-5	Department of the Army Information Security Program Regulation

AR (Continued)

385-10	Army Safety Program
385-15	Water Safety
385-30	Safety Color Code Markings and Signs
385-40	Accident Reporting and Records
385-60	Coordination with Armed Services Explosives Safety Board
385-62	Regulation for Firing Guided Missiles and Heavy Rockets for Training, Target Practice, and Combat
385-63	Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat
385-64	Ammunition and Explosives Safety Standards
385-65	Identification of Inert Ammunition and Ammunition Components
700-22	Worldwide Ammunition Reporting System (WARS)
700-47	Defense Standardization Program
710-2	Material Management for Using Units, Support Units and Installations
710-9	Guided Missile and Large Rocket Ammunitions; Issues, Receipts and Expenditure Reports
725-50	Requisitioning, Receipt, and Issue System
735-11-2	Report of Item Discrepancies Attributable to Shippers

740-1	Storage and Supply Activity Operation
740-32	Responsibilities for Technical Escorts of Chemical, Biological, and Etiological Agents (OPNAVINST 8070.1/AFR 136-4/MCO 4030.25)
755-2	Disposal of Excess, Surplus, Foreign Excess, Captured, and Unwanted Materiel

DA PAMPHLETS (DA Pam)

108-1	Index of Army Motion Pictures and Related Audio-Visual Aids
310-1	Index of Administrative Publications
310-2	Index of Blank Forms
310-3	Index of Doctrinal, Training, and Organizational Publications
310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders
310-6	Index of Supply Catalogs and Supply Manuals (excluding types 7, 8, and 9)
310-24	Index of Storage and Outloading Drawings for Ammunition Commodities

DD FORMS

1348-1	DOD Single Line Item Release/Receipt Document
1384	Transportation Control and Movement Document

DA FORMS

285	Accident Report
581	Request for Issue and Turn-in of Ammunition
984	Munition Surveillance Report
1296	Stock Accounting Record
1297	Title Insert (Formal Accountability)
2028	Recommended Changes to Publications and Blank Forms
2415	Ammunition Condition Report
3151-R	Ammunition Stores Slip

STANDARD FORMS

364	Report of Item Discrepancy

DA LABEL

85	Storage and Care of Explosives (Magazine Placard)

FIELD MANUALS (FM)

3-9	Military Chemistry and Chemical Compounds
5-20	Camouflage
5-25	Explosives and Demolitions
9-6	Ammunition Service in the Theater of Operations
9-14	Explosive Ordnance Disposal Services
9-15	Explosive Ordnance Disposal Unit Operations
9-16	Explosive Ordnance Reconaissance
9-38	Conventional Ammunition Unit Operations
19-30	Physical Security
21-11	First Aid for Soldiers
21-30	Military Symbols
21-40	NBC (Nuclear, Biological, and Chemical) Defense

FM (Continued)

23-30	Grenades and Pyrotechnic Signals
55-40	Army Combat Service Support Air Transport Operations

TECHNICAL MANUALS (TM)

3-220	Chemical, Biological, and Radiological (CBR) Decontamination
3-240	Field Behavior of Chemical, Biological, and Radiological Agents
3-250	Storage, Shipment, Handling, and Disposal of Chemical Agents and Hazardous Chemicals
3-366	Flame Fuels
5-200	Camouflage Materials
5-280	Foreign Mine Warfare Equipment
5-315	Firefighting and Rescue Procedures in Theaters of Operation
9-500	Data Sheets for Ordnance Type Materiel
9-1300-200	Ammunition, General
9-1300-206	Ammunition and Explosives Standards
9-1300-214	Military Explosives

9-1300-250	Ammunition Maintenance
9-1325-200	Bombs and Bomb Components
9-1345-203-12&P	Land Mines
9-1370-203-20&P	Military Pyrotechnics
9-1375-213-12	Demolition Materials
9-1385-50	Techniques for Explosive Ordnance Disposal
9-1901-1	Ammunition for Aircraft Guns
38-230-1	Packing of Material: Preservation (Vol I)
38-230-2	Preservation, Packaging, and Packing of Military Supplies and Equipment: Packing (Vol II)
38-250	Packaging and Materials Handling: Preparation of Hazardous Materials for Military Air Shipment
38-750	The Army Maintenance Management System (TAMMS)
43-0001-28	Army Ammunition Data Sheets for Artillery Ammunition; Guns, Howitzers, Mortars, Recoilless Rifles, and Grenade Launchers

TM (Continued)

743-200	Storage and Materials Handling

TECHNICAL BULLETINS (TB)

9-1300-256	Ammunition: National Stock Numbers and Department of Defense Codes
9-1300-385-1	Munitions: Suspended or Restricted
34-9-114	Marking of Ammunition and Its Packaging of Caliber Below 20MM
700-2	Explosive Hazard Classification Procedures
700-8010-1	Military Handbook: Protective Finishes
ORD 1022	Liquid Propellants for Guided Missiles: Sampling and Analysis for Surveillance Purposes

SUPPLY BULLETINS (SB)

3-30-series	Serviceability Standard for CB Materiel
38-26	Nonnuclear Ammunition Supply Rates (U)
38-100	Preservation, Packaging, Packing, and Marking - Materials, Supplies, and Equipment Used by the Army
700-20	Army Adopted and Other Items Selected for Authorization/List of Reportable Items

SB (Continued)

708-21	Federal Supply Classification: Part I, Groups and Classes
708-3	Department of Defense Ammunition Code
742-1	Ammunition Surveillance Procedures
742-1300-94-2	Charge, Propelling, Various and Propellant, Bulk; Ammunition Surveillance Procedures
755-140-1	Ammunition Disposition of Used Packing Material and Certain Specified Ammunition Components

SUPPLY CATALOGS (SC)

1304/30-IL	Ammunition and Explosives: Classes 1305 thru 1330
1336/38-IL	Ammunition and Explosives: Classes 1336 thru 1338
1340/98-IL	Ammunition and Explosives: Classes 1340 thru 1398
4925-95-CL-A03	Shop Equipment, Ammunition Renovation: Field Maintenance Detachment, Less Power (4925-754-0710) (Line Item W59719)

OTHER PUBLICATIONS

MIL-STD-129	Military Standard - Marking for Shipment and Storage

APPENDIX B
HELICOPTER REARM POINTS AND READY AMMUNITION AREAS

GENERAL

Included in this section are general guidelines for the layout, construction, and operation of helicopter rearm points. Further details are covered in TM 9-1300-206 and TM 9-1340-201.

Figures B-1 and B-2 contain typical layouts for helicopter rearm points.

Improvised trailers or carts may be used to move ready rockets from the ready ammunition storage site to the rearm points (pads and/or revetments) where combat aircraft are to be armed and rearmed.

- The rated load weight of the trailer or cart must not be exceeded.
- The load of rockets must be secured and balanced to prevent tumbling off or tipping over.
- The trailers or carts must be covered to protect the rockets from adverse weather conditions.

TERMS

Combat Aircraft Parking Area and Rearm Points. It is an area specifically designated for loading or unloading combat type aircraft with ammunition and explosives to include the parking of such aircraft when loaded with ammunition and explosives. Rearm points contain pads and/or revetments.

Ready Ammunition Storage Site. The facility contains ammunition, in a ready condition,

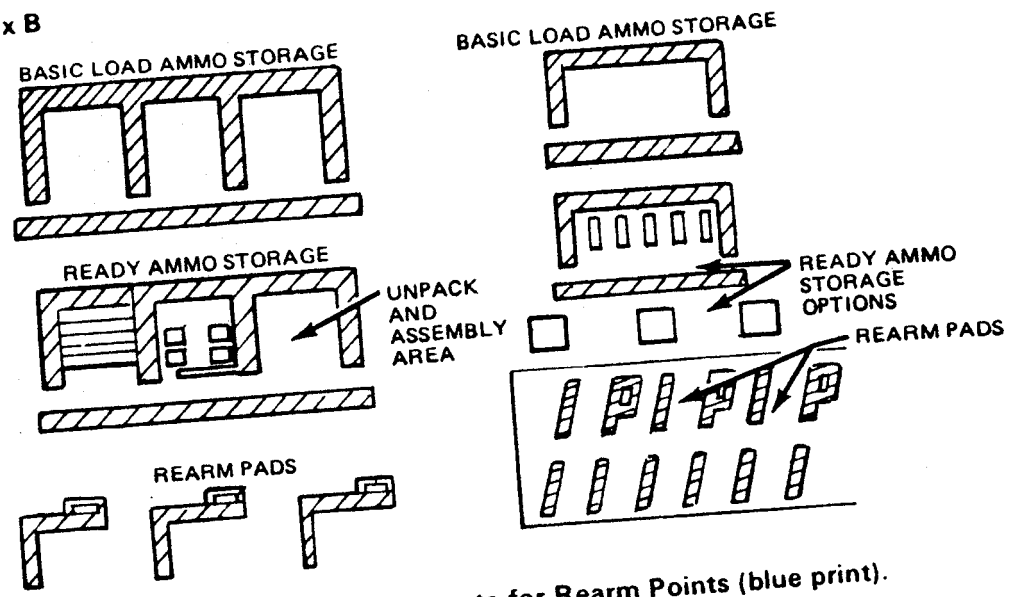

Figure B-1. Typical Layouts for Rearm Points (blue print).

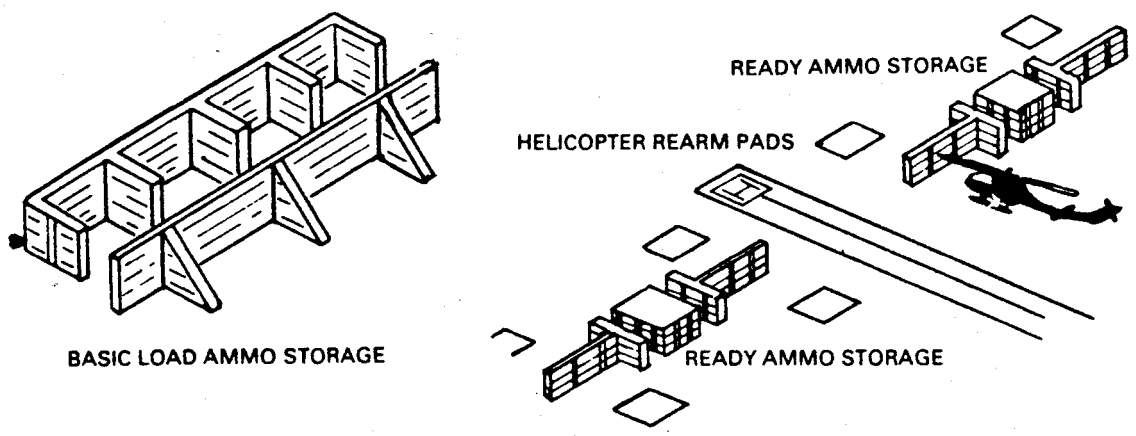

Figure B-2. Typical Layouts for Rearm Points (three dimensional).

required to support the arming and rearming of aircraft. The site has separate cubicles or barricaded areas for the assembly and disassembly of rockets and arming or disarming of aircraft flares.

Aircraft Parking Area. It is an area set aside for parking of aircraft not containing explosives.

Basic Load Ammunition. It is the specific quantity of ammunition authorized and required to be on hand within the unit. The basic load may include 2.75-inch rockets, 40mm ammunition, small arms ammunition, flares, and smoke grenades.

LOT NUMBER CONTROL

Ammunition will be stored maintaining lot integrity to insure proper accounting for all lots on hand.

Proper lot records must be maintained to enable proper reporting in the event of ammunition malfunctions.

Lots must not be mixed at ready ammunition storage sites, basic load storage sites, or rearm points.

Lots must not be mixed within the same launcher.

OPERATIONS AND SAFETY

Grounding.

- Aircraft will be electrically grounded during arming and disarming operations, and when armed and parked in revetments.
- Grounding will prevent accidental initiation of rockets from stray electrical energy.
- The equipment required to accomplish the grounding of aircraft is as follows:
- Ground rod, GP-8, NSN 5975-00-187-5304.

- 1/4-inch Braid (25 feet), NSN 6145-00-164-0154.

Shorting Rockets.

- The shorting wire clip or metal fin protector must be properly installed on all rocket motors and complete rockets whenever the rockets are not installed in the launcher.
- Immediately after unloading an aircraft launcher, shorting wire clips and fin protectors must be installed on all rockets.
- Fin protector springs will short circuit the igniter leads, thus preventing accidental ignition.

Handling of Rockets.

- If a 2.75-inch rocket motor or component crated or uncrated, is dropped a distance exceeding two feet, the rocket or rocket motor will be rejected.
- If a fuze-warhead combination, crated or uncrated, is dropped a distance exceeding five feet, the fuze-warhead combination will be rejected.
- Those items that have been rejected as a result of (1) and (2) above will be turned in to the supporting ASP or depot. The DA Form 581, Turn-in, must reflect the reason for unserviceability and turn-in.

WARNING: Firing of complete rounds, rocket motors or fuze-warhead combinations, that have been dropped may cause premature functioning of the fuze and warhead and detonation of the rocket motor. This could result in loss of life and aircraft.

Assembly of Rockets.

- Rocket motors, warheads, and fuzes will be

assembled in accordance with the instructions in TB 9-1340-201 or the instructions packed in the box with the rockets.

- Returned unfired rockets and rockets that remain on aircraft after a mission must have their warheads retorqued prior to use on the next mission.

Barricades.

- [illegible] load storage areas, ready ammunition storage areas, and ammunition stored at rearm points. Barricade specifications are contained in chapter 2 of this handbook and TM 9-1300-206.
- Intermediate barricades, at least three feet thick, will be erected between cubicles in the ready ammunition storage area and the basic load storage area. The barricades will lessen hazards by decreasing the amount of ammunition that would be involved in the event of an explosion or fire.
- Rockets, 40mm ammunition, and small arms ammunition stored at rearm pads will be covered for protection against the elements.

Rocket Storage.

- Ready rockets at the rearm points and in the ready ammunition storage areas will not be stacked directly on top of one another. This [illegible]
- Locally fabricated storage racks will be used for stacking rockets when removed from their packing boxes.
- Rockets must be placed so that the nose end is pointed towards the back of the cubicle in case of accidental initiation of the rocket motor.

Explosive Limits.

- The quantity of ready rockets stored at the

rearm points and in the ready ammunition storage areas must be kept to a minimum at all times. The following limits are a guide established to meet operational needs and should not be exceeded:

- Rearm pads. Each rearm pad is limited to one fully armed aircraft plus the number of rockets required to rearm one additional aircraft. The ammunition for the second aircraft must be stored outside the pad, properly barricaded, and covered.
- Ready ammunition storage areas. Each cubicle is limited to 2,000 lb net explosive weight (NEW) per cubicle. The following example illustrates this limitation:

1340-H490 (10 lb NEW) = 200 rounds per cubicle (2000 divided by 10 = 200 rounds)

- The NEW is computed based on the weight of explosive filler in item of ammunition. For rocket ammunition, the NEW is the combined explosive weight; that is, the propellant in the motor and the filler in the warhead. The list of items that can be expected in helicopter rearm operations are found in table B-1.

SEPARATION DISTANCES - REARM POINTS AND READY AMMUNITION STORAGE AREAS

The minimum distances permitted between rearm points, ready ammunition storage areas and other activities requiring safety distance separations are listed in table B-2.

BASIC LOAD QUANTITY-DISTANCE SEPARATIONS

Quantity-distance separations for basic load storage areas at helicopter rearm points, and requirements for compatibility and explosive weight units per storage pad, are detailed in TM 9-1300-206 and must be followed.

Table B-1. Helicopter Rearm Operations

Tow Missile	12.18 lb per round
Rocket, 2.75-inch, HE, H489 or H490	10 lb per round
Rocket, 2.75-inch, HE, H488 or H534	11 lb per round
Cartridge, 40mm HE, B468	2 oz per round
Small arms ammunition	None

Table B-2. Separation Distances

From	To	Required Distance In Feet	
		Barricaded	Unbarricaded
Rearm point	Rearm point	*120	*120
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	505	1010
Ready ammunition storage area	Public highways	305	610
Ready ammunition storage area	POL storage or refuel facilities	505	1010

*This distance is based on requirements for rotor clearance.

APPENDIX C

BRIGADE AMMUNITION TRANSFER POINT

GENERAL

An ammunition transfer point (ATP) is an operation designed to transload ammunition from stake and platform (S&P) trailers onto using unit vehicles in the brigade field trains area. The ATP operates under the control of the division ammunition officer (DAO) and provides high usage, high tonnage items to the division units. The ATP can handle 500 short tons (ST) of ammunition per day. It reduces the travel time required to resupply requesting units. Personnel to staff the ATP operation come from the division.

- Included in this appendix are general guidelines for the layout and operation of an ATP. Technical details governing quantity distance (QD) are covered in TM 9-1300-206.
- Figure C-1 shows a typical site layout for an ATP, but it is not the only way to set up an ATP.
- Many factors must be considered when locating a site for an ATP, but the most important are cover and concealment and ready access of the ATP road network to the MSR. Once the location for the ATP has been selected, existing roads or usable trails must be reconnoitered. A roadnet must be planned into and within the site that will make it easy to move and maneuver vehicles, S&P trailers, and MHE.

STORAGE PLANNING AND ISSUE OPERATIONS

In preparing to receive S&P trailers,

Figure C-1. Typical ATP Site Layout.

consideration must be given to the type of MHE to be used at each trailer. Trailer arrangement must be in a logical progression when being spotted to make it easy to load all items required for complete round configuration.

Storage will be on a roadside basis. S&P trailers will be spaced according to QD criteria outlined in TM 9-1300-206. Table C-1 is a list of line items issued by the ATP, the load of each S&P trailer, and storage data.

Upon arrival at the ATP and prior to being spotted, incoming trailers will be inspected in accordance with surveillance procedures.

When the load is accepted, the driver will give the paperwork on the shipment to the ATP NCOIC or the designated representative. The paperwork, DD Form 1348-1 and DD Form 1384, will be used to confirm shipment receipt and verify quantities received at the ATP.

Ammunition received at the ATP on S&P trailers will be on pallets. Every effort will be made to issue ammunition to customer units on its pallet. Of course, this cannot be the rule when items such as fuzes for artillery ammunition are being issued. Trailers with fuzes and like items will not be resupplied with the same frequency as trailers with other items. This is because of the quantity of small items on one trailer.

Traffic control in the ATP is important to assure the orderly and speedy issue of ammunition and to reduce the chance of enemy observation and attack.

Table C-1. ATP Storage Data For S&P Trailers

ITEM	CAPACITY PER S&P TRAILER	STORAGE		NEW PER ROUND	TOTAL NEW PER S&P TRAILER
		QD CLASS	COMP GROUP		
105mm ADPS	360	(08) 1.2	C	12.5	4500
105mm HEAT	360	(12) 1.2	E	2.2	792
155mm HE	288	(18) 1.2	D	14.9	4291.2
155mm ICM	288	(18) 1.2	D	2.8	806.4
155 Prop Chg GB	280	1.3	C	14.5	4060
155 Prop Chg WB	400	1.3	C	13.6	5440

Table C-1. ATP Storage Data for S&P Trailers (Continued)

ITEM	CAPACITY PER S&P TRAILER	STORAGE QD CLASS	STORAGE COMP GROUP	NEW PER ROUND	TOTAL NEW PER S&P TRAILER
8-inch HE	120	1.1	D	36.6	4392
8-inch ICM	120	(18) 1.1	D	4.9	588
8-inch Prop Chg GB	240	1.3	C	13.7	3289
8-inch Prop Chg WB	240	1.3	C	28.6	6864
TOW Missile	144	1.1	E	14.3	2059.2
MLRS	4 pods	1.1	F	280/pod	832
Fuze	24,628	1.1	B	.5	12314

QD requirements for S&P trailers can be found in table 4-4, TM 9-1300-206. The rule for planning is 12 ST per S&P loaded with projectiles and 10 ST per S&P loaded with other than projectiles. Each S&P will be considered as a stack within an FSU.

It is hoped that ammunition on pallets will never have to be grounded. Instead the ammunition will be transloaded from the resupply trailer to the using unit vehicles with MHE in the ATP. Vehicle loading safety requirements will be as provided in AR 55-355. This includes load configuration, height, rated load limits of the vehicle, and the blocking and bracing required.

Stock accounting for ATP stocks will be in accordance with AR 710-2; FM 9-38 and section VI, chapter 3 of this manual provide guidance. Receipts from using units classified as field returns will not be made at the ATP, but they will be made to the supporting ASP, which is equipped and staffed to handle such transactions.

Files will be maintained as prescribed in AR 340-2, AR 340-18-14, and AR 710-2.

APPENDIX D
ABBREVIATIONS

ammunition condition code	ACC
ammunition condition report	ACR
ammunition supply point	ASP
ammunition transfer point	ATP
Army Training and Evaluation Program	ARTEP
automatic data processing	ADP
chemical, biological, radiological	CBR
communications zone	COMMZ
Continental United States	CONUS
controlled supply rate	CSR
corps storage area	CSA
corps support command	COSCOM
Department of the Army	DA
Department of Defense	DOD
DOD activity address code	DODAAC

DOD Ammunition Code	DODAC
DOD explosive safety board	DODESB
DOD Identification Code	DODIC
depot surveillance record	DSR
direct support	DS
division ammunition officer	DAO
division support command	DISCOM
explosive ordnance disposal	EOD
field manual	FM
general support	GS
guided missile/large rocket	GMLR
high explosive	HE
high explosive antitank	HEAT
in accordance with	IAW
improved conventional munitions	ICM
inventory adjustment report	IAR
main supply route	MSR

materials handling equipment	MHE
material management center	MMC
movement control center	MCC
national stock number	NSN
net explosive weight	NEW
nuclear, biological, chemical	NBC
plasticized white phosphorus	PWP
quality assurance/quality control	QA/QC
quantity distance	QD
rear area protection	RAP
required supply rate	RSR
short ton	ST
special inspections	SPI
stake and platform	S&P
standing operating procedure	SOP
Standardization Agreement	STANAG

APPENDIX E
DODIC CONVERSION CHART

The chart below lists information on some commonly used DODICs. It may be helpful in planning for, loading, storing, packing, and shipping these items.

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
A068	Ctg 5.56mm Tracer	1640	64	1.4S	C	DC	4
A071	Ctg 5.56mm Ball	1680	72	1.4S	C	DC	4
A127	Ctg 7.62mm Ball & Tr LKD M60 mg	800	79	1.4S	C	DC	4
A131	Ctg 7.62mm Ball & Tr LKD	800	77	1.4S	C	DC	4
A400	Ctg 38 Cal Ball	2400	92	1.4S	C	DC	4
A475	Ctg 45 Cal Ball	2000	95	1.4S	C	DC	4
A557	Ctg 50 Cal Ball & Tracer	200	75	1.4C	C	DC	4
A588	Ctg 50 Cal Ball & Tracer	180	74	1.4C	C	DC	4
A589	Ctg 50 Cal APT & API-T	170	70	1.4G	C	DC	4
A652	Ctg 20mm TP-T	100	92	1.4C	C	DC	4
A653	Ctg 20mm HEI & TP-T	100	92	(04)1.2E	A	AK	1
A655	Ctg 20mm HEI-TP-T	100	93	(04)1.2E	A	AK	1

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
C236	Ctg 81mm HE W/O Fuze M374	3	53	(08)1.2E	A	AB	1
C256	Ctg 81mm HE W/Fuze	3	51	(08)1.2E	A	AB	1
C276	Ctg 81mm SMK WP	3	51	(12)1.2H	A	AG	1
C445	Ctg 105mm HE W/O Fuze	2	120	(12)1.2E	A	AB	1
C449	Ctg 105mm Illum (How)	2	120	(08)1.2G	A	AD	1
C454	Ctg 105mm WP (How)	2	121	(12)1.2H	A	AG	1
C462	Ctg 105mm HOW HE M444	2	120	(12)1.2E	A	AB	1
C463	Ctg 105mm HOW HE XM548	2	122	(12)1.2E	A	AB	1
C506	Ctg 105mm APDS-T L36A1	2	126	(08)1.2C	B	AA	1
C508	Ctg 105mm HEAT-T	2	132	(12)1.2E	A	AB	1
C512	Ctg 105mm SMK WP	2	137	(12)1.2H	A	AG	1
C513	Ctg 105mm HOW APERS	2	122	(12)1.2E	A	AB	1
C518	Ctg 105mm HEP-T	2	137	1.1E	A	AB	1
C521	Ctg 105mm APPSDS-T	2	122	(08)1.2C	B	AH	1
C705	Ctg 4.2 inch HE W/O Fuze	2	82	1.1E	A	AB	1
C706	Ctg 4.2 inch Illum	2	76	(08)1.2G	A	AD	1

Appendix E

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
C708	Ctg 4.2 inch SMK WP	2	76	(12)1.2H	A	AG	1
D381	Ctg 152mm HEAT-T	1	97	1.1E	A	AB	1
D390	Ctg 152mm Cannister	1	97	1.3C	B	AH	2
D505	Proj 155mm Illum	8	862	1.3G	B	DH	2
D533	Chg Prop 155mm WB M119	1	50	1.3C	B	CK	2
D540	Chg Prop 155mm B	2	54	1.3C	B	CK	2
D541	Chg Prop 155mm WB	1	30	1.3C	B	CK	2
D544	Proj 155mm HE	8	797	(18)1 1	A	BI	1
D550	Proj 155mm SMK WP	8	830	(12)1.2H	A	BI	1
D562	Proj 155mm ICM M449E2	8	831	(18)1.2D	A	BI	1
D563	Proj 155mm ICM M483A1	8	831	(18)1.1	A	BI	1
D579	Proj 155mm HE RA M549	8	830	(18)1 1	A	BI	1
D592	Ctg 152mm HE-T	1	97	(12)1.2E	A	AB	1
D675	Chg Prop 8-inch GB	1	31	1.3C	B	CK	2
D676	Chg Prop 8-inch WB	1	51	1.3C	B	CK	2
D680	Proj 8-inch HE	6	1253	1.1D	A	BI	1

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
D684	8 inch ICM M404	6	1253	(18)1 2D	A	BI	1
G881	Gren Hnd Frag M67	16	47	1 1F	B	DH	2
G935	Gren Hnd SMK WP	16	46	(08)1 2H	A	BS	1
G940	Gren Hnd SMK Green	16	42	1 4G	C	DV	4
G945	Gren Hnd SMK Yellow	16	42	1 4G	C	DV	4
G950	Gren Hnd SMK Red	16	42	1 4G	C	DV	4
G955	Gren Hnd SMK Violet	16	42	1 4G	C	DV	4
H050	Lau & Gren SMK & HE & WP	8	80	(04)1 2H	B	DH	2
H110	RKT INCD 66mm TPA	16	--	(12)1 2L	A	CU	1
H459	RKT 2 75 APERS	8	85	(12)1 2C	A	CR	1
H490	RKT 2 75 HE	25	776	1 1E	A	CR	1
H519	RKT 2 75 SMK WP	4	127	(12)1 2H	A	CW	1
H534	RKT 2 75 HE	25	996	1 1E	A	CR	1
H557	RKT 66mm LAW	15	128	1 1E	A	CR	1
K143	MINE APERS M18	6	53	1 1D	A	BH	1
K146	MINE AP M26	18	60	(08)1 2D	A	BH	1

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
K181	MINE AT M21	4	56	1 1D	A	BH	1
K182	MINE AT M24	4	55	1 1E	A	CR	1
L116	Sig Kit Pers Distress	200	116	1 4G	C	EQ	4
L305	Sig Illum Green Star	36	55	1 3G	B	DH	2
L306	Sig Illum Red Star Clus	36	55	1 3G	B	DH	2
L307	Sig Illum White Star Clus	36	55	1 3G	B	DH	2
L311	Sig Illum Red Star Para	36	55	1 3G	B	DH	2
L312	Sig Illum White Star Para	36	55	1 3G	B	DH	2
L314	Sig Illum Green Star Clus	36	55	1 3G	B	DH	2
L323	Sig SMK Red Para	36	55	1 3G	B	DH	2
L324	Sig SMK Green Para	36	55	1 3G	B	DH	2
L495	Flare Surface Trip M49	16	51	1 3G	B	DH	2
M023	Chg Demo C4	30	47	1 1D	A	BT	1
M024	Chg Demo PETN	20	52	1 1D	A	BT	1
M028	Demo Kit Bangalore	1	198	1 1D	A	BT	1
M030	Chg Demo TNT ¼ LB	192	71	1 1D	A	BT	1

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DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
M031	Chg Demo TNT ½ LB	100	69	1 1D	A	BT	1
M032	Chg Demo TNT 1 LB	50	71	1 1D	A	BT	1
M039	Chg Demo Cratering 40 LB	1	52	1 1D	A	BT	1
M060	Chg Demo Roll	3	115	1 1D	A	BT	1
M130	Cap Blasting Elec	500	47	1 1B	A	BD	1
M131	Chg Shape 15 LB	5000	82	1 1B	A	BD	1
M420	Chg Shape 15 LB	4	66	1 1D	A	BT	1
M421	Chg Demo Shape 40 LB	1	76	1 1D	A	BT	1
M456	CORD Detonating	4000	82	1 3D	C	AW	1
M591	Dynamite Military MI	100	117	1 1D	A	BT	1
M626	Firing Device Demo	150	78	1 4S	C	CF	4
M629	Firing Device Demo	150	50	1 4S	C	CF	4
M630	Firing Device Demo	250	71	1 4S	C	CF	4
M631	Firing Device Demo	80	44	1 4S	C	CF	4
M670	Fuse Blasting Time	8	62	1 4S	C	CF	4
M757	Chg Demo M183	2	57	1 1D	A	BT	1

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
M766	Igniter, Time Blasting	250	47	1.4S	C	BQ	4
N248	Fuze MT M565	16	54	1.4B	C	DK	3
N276	Fuze MTSQ M501	16	53	1.4B	C	AU	43
N278	Fuze MTSQ M564	16	55	1.1B	A	AZ	1
N285	Fuze MTSQ M577	16	56	1.4B	C	AU	4
N308	Fuze PD M524 Series	16	42	1.1B	A	AZ	1
N331	Fuze CP M57	20	77	(04)1.2B	C	BB	4
N335	Fuze PD M55F	16	55	1.1B	A	AZ	1
N402	Fuze Proximity M532	16	42	1.1B	A	AZ	1
N411	Fuze Proximity M514	25	97	1.1B	A	AZ	1
N412	Fuze Proximity M513	25	96	1.1B	A	AZ	1
N463	Fuze Proximity M728	16	63	1.1B	A	AZ	1

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DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
N477	Fuze Proximity M514A1	25	98	(04)1.2B	C	BB	4
N523	Primer Percussion M82	500	62	(04)1.2G	C	AR	3
N525	Primer Percussion MK2A4	500	37	(04)1.2G	C	AR	3
	Missile Guided Surface Attach-TOW BGM-71A	1		1.1E	A	CR	1
	Missile Guided, Prac. BTM 71-A (TOW)	1		1.1C	A	EL	1
	ATGM MGM 51C (Shillelagh)	1		1.1E	A	CR	1
	Missile, Guided, Intercept-Aerial REDEYE	1		1.1E	A	CR	1
	ATGM M222 DRAGON	1		(04)1.2E	A	CR	1
	ATGM M223 Prac DRAGON	1		1.3C	B	C4	2

APPENDIX F
GLOSSARY

Aboveground Magazines - Any type of magazine above grade other than standard or nonstandard earth-covered types of magazines.

Administration Areas - The areas in which administrative offices for the entire ASP/depot are located. These areas differ from those directly associated with a part of the explosives area, such as the ammunition operations office.

Ammunition and Explosives - Includes, but is not necessarily limited to all items of ammunition; chemical propellants, liquid and solid; high and low explosives; guided missiles; warheads; devices; signals; components thereof, including chemical agent fillers; and substances associated therewith presenting real or potential hazards to life and property.

Ammunition and Explosives Aircraft Cargo Area - Any area specifically designated for aircraft loading or unloading of transportation configured ammunition and explosives.

Ammunition and Explosives Area - An area specifically designated and set aside from other portions of an installation for the development, manufacture, testing, maintenance, storage, or handling of ammunition and explosives.

Ammunition Maintenance Shop - A special building equipped to permit servicing, repair, and care of explosive items.

Ammunition and Explosives Operating Area - An area specifically designed and set aside from other portions of an installation for manufacturing, processing, storing, and handling of explosives and ammunition.

DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
M766	Igniter, Time Blasting	250	47	1.4S	C	BQ	4
N248	Fuze MT M565	16	54	1.4B	C	DK	3
N276	Fuze MTSQ M501	16	53	1.4B	C	AU	43
N278	Fuze MTSQ M564	16	55	1.1B	A	AZ	1
N285	Fuze MTSQ M577	16	56	1.4B	C	AU	4
N308	Fuze PD M524 Series	16	42	1.1B	A	AZ	1
N331	Fuze CP M57	20	77	(04)1.2B	C	BB	4
N335	Fuze PD M55F	16	55	1.1B	A	AZ	1
N402	Fuze Proximity M532	16	42	1.1B	A	AZ	1
N411	Fuze Proximity M514	25	97	1.1B	A	AZ	1
N412	Fuze Proximity M513	25	96	1.1B	A	AZ	1
N463	Fuze Proximity M728	16	63	1.1B	A	AZ	1

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DODIC	Nomenclature	Rds Per Box	Wt Per Box (lb)	Storage Class/ SC	DOT Class	DOT Shipping Name	Fire Symbol
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N523	Primer Percussion M82	500	62	(04)1.2G	C	AR	3
N525	Primer Percussion MK2A4	500	37	(04)1.2G	C	AR	3
	Missile Guided Surface Attach-TOW BGM-71A	1		1.1E	A	CR	1
	Missile Guided, Prac. BTM 71-A (TOW)	1		1.1C	A	EL	1
	ATGM MGM 51C (Shillelagh)	1		1.1E	A	CR	1
	Missile, Guided, Intercept-Aerial REDEYE	1		1.1E	A	CR	1
	ATGM M222 DRAGON	1		(04)1.2E	A	CR	1
	ATGM M223 Prac DRAGON	1		1.3C	B	C4	2

APPENDIX F
GLOSSARY

Aboveground Magazines - Any type of magazine above grade other than standard or nonstandard earth-covered types of magazines.

Administration Areas - The areas in which administrative offices for the entire ASP/depot are located. These areas differ from those directly associated with a part of the explosives area, such as the ammunition operations office.

Ammunition and Explosives - Includes, but is not necessarily limited to all items of ammunition; chemical propellants, liquid and solid; high and low explosives; guided missiles; warheads; devices; signals; components thereof, including chemical agent fillers; and substances associated therewith presenting real or potential hazards to life and property.

Ammunition and Explosives Aircraft Cargo Area - Any area specifically designated for aircraft loading or unloading of transportation configured ammunition and explosives.

Ammunition and Explosives Area - An area specifically designated and set aside from other portions of an installation for the development, manufacture, testing, maintenance, storage, or handling of ammunition and explosives.

Ammunition Maintenance Shop - A special building equipped to permit servicing, repair, and care of explosive items.

Ammunition and Explosives Operating Area - An area specifically designed and set aside from other portions of an installation for manufacturing, processing, storing, and handling of explosives and ammunition.

Ammunition Operations Office - Any office, exclusive of the main administrative area, adjacent to, or within an explosives area, in which operational administrative functions pertaining to explosives are performed.

Auxiliary Building - Any building that supplements an operational building, line, or area but which is not directly used for the productive activity. Examples of such auxiliary buildings are fan houses, valve houses, and similar units.

Barricade - An intervening approved barrier, natural or artificial, of such type, size, and construction as to limit in a prescribed manner, the effect of an explosion on nearby buildings or exposures.

Barricaded - Barricaded will mean that an effective barricade exists between magazines, operating buildings, stacks, or other buildings opposed one to another.

Blast - Brief and rapid movement of air or fluid away from a center of outward pressure, as in an explosion; the pressure accompanying this movement.

Change House - A building provided with facilities for employees to change to and from work clothes. Such buildings may be provided with sanitary facilities, drinking fountains, lockers, and eating facilities.

Chemical Agent - A solid, liquid, or gas which, through its chemical properties, produces lethal or toxic effects on man, animal, or plant life, or produces an incendiary action or screening or signaling smoke.

Chemical Ammunition - Ammunition, the filler of which is primarily a chemical agent.

Classification Yard - A railroad yard or network of railroad tracks used for receiving, shipping, and switching railroad cars.

Clearance - An authorization to conduct a test, to enter or exit from a danger area, or to conduct work in a danger area. Clearance may be granted only by the safety observer having jurisdiction over the danger area in which the operation is to be conducted.

Combat Aircraft Parking Area - Any area specifically designated for aircraft loading or unloading of combat configured munitions, and/or parking aircraft loaded with combat configured munitions.

Compatibility - Ammunition or explosives are consi[illegible] if they may be stored or transported together without significantly increasing either the probability of an accident or, for a given quantity, the magnitude of the effects of such an accident.

Compatible Storage - Applies to those items which may be stored together without increasing the hazard.

Component - Any part of a complete item.

Controlling Authority - The term controlling authority as used in these standards refers to the headquarters of the DOD component concerned.

Cook-Off - See malfunction.

Deflagration - A rapid chemical reaction in which the output of heat is sufficient to enable

the reaction to proceed and be accelerated without input of heat from another source. Deflagration is a surface phenomenon with the reaction products flowing away from the unreacted material along the surface at subsonic velocity. The effect of a true deflagration under confinement is an explosion. Confinement of the reaction increases pressure, rate of reaction, and temperature, and may cause transition into a detonation.

Demilitarization - The act of destroying the offensive or defensive characteristics inherent in ammunition and explosives. The term comprehends mutilation, scrapping, burring, or alteration designed to prevent further use for military or lethal purpose.

Detonation - A violent chemical reaction within a chemical compound or mechanical mixture evolving heat and pressure. A detonation is a reaction which proceeds through the reacted material toward the unreacted material at a supersonic velocity. The result of the chemical reaction is exertion of extremely high pressure on the surrounding medium forming a propagating shock wave which is originally of supersonic velocity. A detonation, when the material is located on or near the surface of the ground, is normally characterized by a crater.

Dividing Wall - A wall designed to prevent, control, or delay propagation of an explosion between quantities of explosives on opposite sides of the wall.

Dud - Munition which has not been armed as intended or which has failed to function after being armed.

Equipment - A general term including apparatus, appliances, devices, wiring, fixtures, fittings, material, and the like.

Establishment - Any plant, works, arsenal, depot, proving ground, or any other activity under control of the Army.

Exemption - A relatively long term exception to an otherwise mandatory requirement of these standards. Exemptions may be granted by law, by Congressional resolution, or by a finding and determination by the Secretary or Deputy Secretary of Defense or by a Secretary or Under Secretary of a Military Department. Exemptions (except those established by Congressional action) shall be granted only when immediate corrective measures are wholly impractical, (such as where Congressional authorization to purchase real estate for adequate safety clearances has not been granted or where significant impairment of the overall defense posture of the United States would otherwise result) and only if positive programs for the eventual correction of the deficiency are being carried out. Exemptions will not be granted for a period in excess of that estimated to be required for correction of the deficiency.

Explosion - A chemical reaction of any chemical compound or mechanical mixture which, when initiated, undergoes a very rapid combustion or decomposition releasing large volumes of highly heated gases which exert pressure on the surrounding medium. Also, a mechanical reaction in which failure of the container causes the sudden release of pressure from within a pressure vessel; for example, pressure rupture of

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a steam boiler. Depending on the rate of energy release, an explosion can be categorized as a deflagration, a detonation, or a pressure rupture.

Explosive(s) - Materials that either detonate or deflagrate. Any chemical compound or mechanical mixture which, when subjected to heat, impact, friction, shock, or other suitable initiation, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases which exert pressures in the surrounding medium.

Explosives Anchorage - An area of water specifically designated for loading and unloading vessels, and for anchoring vessels carrying a cargo of explosives and/or ammunition.

Explosives Area - An area specifically designated and set aside from other portions of an installation for manufacturing, processing, storing, and handling explosives and ammunition.

Explosives Hazard - Any condition which may result in or contribute to the severity of an explosives accident or incident.

Explosives Facility - Any structure or location containing ammunition and explosives excluding combat aircraft parking areas or ammunition and explosives aircraft cargo areas.

Explosives Safety Distance (Quantity-Distance) - The prescribed minimum distance between various classes and quantities (net weight) of explosives and between such explosives and specified exposures (inhabited buildings, public highways, public railways, petroleum, aircraft, etc.) affording an acceptable degree of

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protection and safety.

Exposed Explosives - Those actually visible (unpackaged bulk explosives, disassembled or open components, etc.) and that also are susceptible to initiation directly by static or mechanical spark. Explosives that create, accidentally or otherwise, explosives dust or give off vapors, fumes, or gases in explosive concentrations.

Field Office - An office required by operational supervision (e.g., foremen and line supervisors) in direct support of ammunition and explosives operations.

Fire Hazard Area - A location in which the primary, but not necessarily the only hazard is that of fire, including explosions of gas or vapor and air mixtures.

Fire-Resistive - Structures, materials, etc., designed [illegible] weakened to the point of failure.

Fire-Retardant - Generally combustible structures, materials, etc., so treated or covered as to retard ignition or spread of fire.

Fire Wall/Fire Division Wall - A wall of fire-resistive construction designed to prevent spread of fire from one side to the other.

Fixed Ammunition - Includes all but small arms and rocket ammunition. Consists of cartridge case, loaded with propellant, firmly attached to the projectile. Such ammunition is loaded in one operation into the weapon.

Flameproof - Combustible materials (e.g., clothing) so treated or coated as to decrease their burning characteristics.

Flammable - Combustible material easily ignited and which burns readily.

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Flammable Liquid - Any liquid, the vapor of which will burn.

Fragment Distance - The limiting range of a considerable number of fragments from the quantity and types of explosives involved in certain explosives safety distance (quantity-distance) tables. (Formerly referred to as missile distance.) The fragment distance, identified as inhabited building distance for ammunition in class 1.2-1.3 based on the limiting range of a considerable number of fragments for the type of ammunition involved. The distances do not take into account occasional fragments which may be projected farther. For class 1.1, the inhabited building distance is based upon blast damage and does not represent the distance to which some fragments can be projected.

Fragmentation - The breaking up of the confining material of a chemical compound or mechanical mixture when an explosion takes place. Fragments may be complete items, subassemblies, or pieces thereof, as well as pieces of equipment of buildings containing the items.

Hangfire - See malfunction.

Hazard - Any condition which may result in, or contribute to, the severity of an accident.

Hazard Classification - Identifies the hazardous characteristics of explosive items by assignment to established hazard categories governing storage and transportation. These categories are: Quantity-Distance Class, Storage Compatibility Group, Department of Transportation (DOT) Class, and DOT Marking.

Hazardous Fragment - A hazardous fragment is one having an impact energy of 58 ft-lbs or greater.

Hazardous Material - Any compound, mixture, element of assemblage of material which, because of inherent characteristics, is dangerous to manufacture, process, store, or handle.

High Explosive Equivalent or Explosive Equivalent - The amount of a standard explosive which, when detonated, will produce a blast effect comparable to that which results at the same distance from the detonation or explosion of a given amount of the material for which performance is being evaluated. It is usually expressed as a percentage of the total net weight of all reactive materials contained in the item or system. For the purpose of these standards, TNT is used for comparison.

High Explosives Equivalent or TNT Explosives Equivalent - The amount of explosives material which, if detonated, will produce damage comparable to that which is expected upon the detonation or explosion of a given amount of mass detonating explosives. It is usually expressed as a percentage of the total net weight of all propellants and other explosives contained in the item or system. For the purpose of these standards, TNT is used for comparison. The common parameter for comparison is peak overpressure.

Holding Yard - Location for railcars, trucks, or trailers used to hold ammunition, explosives, and dangerous materials for interim periods

prior to storage or shipment.

Hygroscopic - A tendency of material to absorb moisture from its surroundings.

Hypergolic - A property of various combinations of chemicals to self-ignite upon contact with each other without a spark or other external initiation.

ICM - Munitions that embody a unique design to control the number, size, and distribution of fragments produced when the item functions.

Inert - Ammunition containing no explosives or chemical agents.

Inert Area - Any area other than an explosives or ammunition area within an establishment.

Inert Components - Ammunition parts which contain no explosives or chemical agents.

Inhabited Building - Any building or structure, other than an operating building, magazine, or auxiliary building, occupied in whole or part as a habitation for human beings; or a building, structure, or area where people are accustomed to assembly, such as a church, schoolhouse, railroad station, and similar transportation facilities, store, theater, or factory, both within and outside Government establishments. Land outside boundaries of establishments will be considered possible sites of inhabited buildings.

Inhabited Building Distance - Inhabited building distances are the minimum distances which may be expected to protect buildings or structures from substantial structural damage (not readily repairable) from blast effect. The distances do not provide protection against glass breakage but do provide a high degree of protection from fragments.

Inspection Station - A designated location at which trucks and railcars containing ammunition and/or explosives are inspected.

Interchange Yard - A location set aside for exchange of railcars or trailers between a common carrier and the Government.

Intermagazine Distance - The minimum distance permitted between explosives locations, as prescribed for various types and quantities of explosives. This distance is expected to prevent propagation by blast (shock wave) and to provide a reasonable degree of protection against propagation due to fragments.

Intraline Distance - This distance is the minimum permitted (except as indicated below) between any two buildings within any one operating line. All ammunition and explosives except classes 1.3 and 1.4 in such a line are considered class 1.1. Intraline distances are also used for separating certain specified areas and locations within explosives establishments even though actual operations are not involved. Intraline distance is expected to protect buildings from propagation of explosion due to blast effects but not against possibility of propagation due to fragments. Buildings separated by intraline distances will probably suffer substantial structural damage. Service-type magazines will be separated from each other by intraline distances. Facilities (excluding service magazines) servicing a single operating building which is not a part of an operation line may be located at less than intraline distance, but not less than 100 feet from the operating building. Such facilities include low pressure

heating boilers and paint storage buildings. Gas or oil-fired boilers are recommended in lieu of coal-fired equipment. If coal-fired boilers must be used, effective spark arrestors must be provided.

Intraline Operations - Processes accomplished within one operating line.

Intraline Separations - The distance to be maintained between any two operating buildings and/or sites within an operating line, at least one of which contains or is designed to contain explosives.

Launch Pads - The load bearing base, apron, or platform upon which a rocket, missile, or space vehicle and its launcher rest during launching.

Liquid Propellants - Substances used for propulsion or operation of missiles, rockets, or related devices.

Loading Docks - Facilities at ground level or elevated structures designed and installed for transferring ammunition, explosives, and component parts thereof, to or from automotive vehicles, railway cars, and/or cargo-type aircraft.

Magazine - Any building or structure, except an operating building, used for storage of ammunition, explosives, or loaded ammunition components. Includes such facilities as an aboveground magazine, an igloo-type magazine, a railroad car, a motor truck, a temporary shelter, or an open storage site.

Magazine Area - A specifically designated area set aside for the primary purpose of ammunition and explosives storage.

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Magazine Distance - This distance is the minimum permitted between any two storage magazines. Distance required is determined by the type or types of magazines and also the type and the quantity of ammunition or explosives stored therein. It is expected to prevent propagation of explosion from one magazine to another from blast, and it provides a reasonable degree of protection against propagation of explosion due to fragments. It does not, except perhaps for earth-covered magazines, protect the magazines from severe structure damage.

Magazine, Earth-Covered, Nonstandard - Includes all earth-covered magazines except Army igloo; Navy arch-type; earth-covered, corrugated steel, arch-type, and module, open storage, barricaded with earth covering equal to or greater than that required by standard igloo magazines.

Malfunction - Failure of item to function in accordance with its expected performance, or functioning of the explosive components during a nonfunctional test. A critical malfunction in one which may cause a hazard under the circumstances described above. For purposes of clarity, malfunctions do not include accidents and incidents, fires, etc. However, malfunctions do include abnormal or premature function of explosive ammunition items during normal handling, maintenance, storage, transportation, and tactical deployment. It includes cook-off, hangfire, misfire, etc.

Mass Detonating Explosives - High explosives, black powder, certain propellants, certain

pyrotechnics, and other similar explosives, alone or in combination, or loaded into various types of ammunition or containers, most of the entire quantity of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, to severe concussion or impact, to the impulse of an initiating agent, or to the effect of a considerable discharge of energy from without. Such an explosion normally will cause severe structural damage to adjacent objects. Explosion propagation may occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time inerval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

Mass Detonation - Virtually instantaneous explosion of a mass of explosives when only a small portion is subjected to fire, severe concussion or impact, impulse of initiating agent, or to effect of considerable discharge of energy from without. Such an explosion normally will cause severe structural damage to adjacent objects, or the simultaneous explosion of other separated ammunition and explosives stored sufficiently close to the initially exploding pile. A mass detonation, when the explosives are located on or near the surface of the ground, is normally characterized by a crater.

Measurement of Distance - Measurement of distance for determining the maximum allowable quantity of explosives shall be made from the nearest outside point or wall of the room, cubicle, or building proper involved which contains the explosives to the nearest

outside point or wall of the other location under consideration.

Military Pyrotechnics - Ammunition manufactured specifically for use as signals, illuminants, and the like.

Misfire - A misfire is a failure of a round to fire after initiating action is taken. The failure may be due to a faulty firing mechanism or a faulty element in the propelling charge explosive train.

Modules - A barricaded area composed of not more than eight connected cells (revetments) with hard surface storage pads separated from one another by the prescribed barricade. A light shed-type metal roof may be used to cover individual cells. Heavy structures or flammable material will not be used.

Mound - An elevation of earth having a crest at least 3 feet wide, with the earth at the natural slope of each side and with such elevation that any straight line drawn from the top of the sidewall of a magazine or operating building, or the top of a stack containing explosives to any part of a magazine, operating building, or stack to be protected will pass through the mound. The toe of the mound will be located as near the magazine, operating building, or stack as practicable.

Munitions - Supplies and equipment of all kinds needed by the military services for direct military purposes.

Navigable streams - Those parts of streams, channels, or canals capable of being used in their ordinary or maintained condition as highways of commerce over which trade and travel are or

may be conducted in the customary modes, not including streams which are not capable of navigation by barges, tugboats, and other large vessels unless they are extensively and regularly used for the operation of pleasure boats.

NEG - Net explosive quantity as expressed in kilograms.

Net Explosives Weight (NEW) - The total quantity of explosives material or high explosive equivalency, in each item or round, to be used when applying quantity-distance criteria or other standards.

Nitrogen Padding (or Blanket) - To fill the void or ullage of a closed container with nitrogen gas to prevent oxidation of the chemical contained therein and to avoid formation of a flammable mixture, or to maintain a nitrogen atmosphere in or around an operation, piece of equipment, etc.

Noncombustible - Not combustible, nor burnable in the ordinary sense of the word.

Non-DOD Components - Any entity (Government, private, or corporate) which is not a part of the Department of Defense.

Operating Building - Any structure, except a magazine, in which operations pertaining to manufacturing, processing, handling, loading, or assembling of ammunition and explosives are performed.

Operating Line - A group of buildings, facilities, or related work stations so arranged as to permit performance of the consecutive steps in the manufacture of an explosive; or in the loading, assembly, modification, and maintenance of

ammunition.

Operational Shield - A barrier constructed at a particular location or around a particular machine or operating station to protect personnel, material, or equipment from the effects of localized fire or explosion.

Outdoor Storage Sites - Sites within the magazine area selected for outdoor storage of ammunition, and in exceptional cases, inert items. Outdoor storage sites may be of the following types:

- Earth revetted, four sides (except entrance), located between earth-covered magazines.
- Earth revetted, four sides (except entrance), not located between earth-covered magazines.
- Nonrevetted, with roof cover only, not located between earth-covered magazines.
- Nonrevetted, without cover, not located between earth-covered magazines.

Passenger Railroad - Any steam, diesel, electric, or other railroad which carries passengers for hire.

Photoflash Devices - Photographic aids, such as magnesium flashlights, photoflash bulbs, and electronic flash attachments. Only lighting equipment bearing the label of approval of the Underwriters' Laboratories of the hazard involved will be used in photographing locations involving exposed explosives, explosive dusts, flammable gases, or vapors.

Piece - A gun, howitzer, mortar, launcher, projector of any type, or aircraft used for propelling projectiles, rockets, or guided missiles, or releasing bombs in connection with

materiel tests.

Preservation and Packaging - Work performed on ammunition to prevent deterioration and to correct minor defects not requiring renovation or major modification operations.

Prohibited Area - A specifically designated area of airfields, seadromes, or heliports in which all ammunition and explosives facilities are prohibited.

Propagating Explosion - Communication of an explosion (detonation or deflagration) from one explosives source to another by fire, fragment, or blast (shock wave), where the time interval between explosions is sufficient to limit the total overpressure at any given time to that which each explosion produces independently. (This condition, where detonation occurs, would be evidenced by a distinct shock wave from each detonation with a discernible pressure drop between each explosion.)

Protected - Terrain or an effective artificial barrier interposed between a propellant facility and inhabited building or other exposure to prevent fragments from endangering the building or other exposure.

Public Highway - Any street, alley, road, or navigable water open to use of the general public. Navigable water is that part of a body of water capable of navigation by barges, tugboats, or larger vessels. Public highway distance is the minimum permitted between a public highway and an explosives hazard. Public highway distances are identical to passenger railroad distances. Persons in the open are considered safe from the blast effects (not fragments) of explosions when separated from the explosion

site by distances equal to one-half the public highway distance.

Public Railway - Any steam, electric, or other railroad which carries passengers for hire. Public railway distance is the minimum permitted between a public railway (as so defined) and an explosives hazard. The distance at which cars are considered safe from the blast effects of explosions has been fixed at 60 percent of the inhabited building distance. These decreased distances are used in tables for class 1.1 materials. The use of the lesser distances is based on the smaller height and area of railroad cars exposed to blast; the greater resistance of cars to blast as compared with buildings; and the fact that, while a building is stationary and subject to risk constantly, the presence of a train is only temporary. For other than class 1.1 materials, inhabited building distances are required to public railways. The minimum separation between privately owned railways over which passengers are not carried, and magazines and storage sites will be not less than 400 feet unless the public railway distance specified in the appropriate quantity-distance table is less. However, the railways must be separated by public railway distances from operating buildings.

Public Traffic Route - Any public street, road, highway, navigable stream, or passenger railroad.

Pyrotechnic Material - Explosive or chemical ingredients, including powdered metals, used in manufacture of military pyrotechnics.

Quantity-Distance - The quantity of explosives material and the distance separation

Safety Distances Safety distances are empirical distances in relation to quantity of explosives, and are the minimum permitted for separation of facilities within a hazard area, of possible explosions of the explosive hazard from inhabited buildings, public railway, and public highways, in order to control the magnitude of damage, loss of life, and serious injuries. Separation distances are not absolute safe distances but are relative protective or safe distances. Greater distances than those shown in tables in chapter 5 should be used wherever practicable.

Safety Shoes - Specifically designed footwear of three general types:

- Industrial . . . . . with hard toes
- Sparkproof . . . with no exposed metal.
- Conductive sole . . . used in conjunction with conductive floors, or static grounded mats involving static electricity hazards.

Semifixed Ammunition - Ammunition loaded into the weapon as a unit. The cartridge case is loose-fitted over the base of the projectile, so that the propelling charge may be adjusted for zone firing.

Separate-Loading Ammunition - Ammunition whose major component, projectile, propelling charge, and primer are issued unassembled and are loaded into the weapon separately.

Separated-Loading Ammunition - Ammunition consisting of a projectile and a primed cartridge case containing propellant. The propelling charge is not adjustable for zone firing.

Service Magazine - Auxiliary building used for

intermediate storage of explosives materials not exceeding the minimum amount necessary for safe, efficient production.

Simultaneous Detonation - Detonation of separated quantities of explosives or ammunition occurring so nearly at the same time that the effect on the surroundings is the same as though the several quantities were not separated and were detonated en masse.

Single Revetted Barricade - A mound which has been modified on one side by a retaining wall, preferably of concrete, of such slope and thickness as to hold firmly in place the 3-foot width of earth required at the top, with the earth at the natural angle on one side. All other requirements of a mound will be applicable to the single revetted barricade.

Small Arms Ammunition - Ammunition for small arms, i.e., all ammunition up to and including caliber .60, and all gauges of shotgun shells.

Solid Propellants - Low explosives used to propel projectiles, rockets, etc., and to generate gases for powering auxiliary devices.

Standard Igloo Magazine - An earth-covered, arch-type magazine, with or without a separate door barricade, constructed according to an approved standard drawing.

Static Test Stand - Locations whereon liquid propellant engines or solid propellant motors are tested in place.

Storage Compatibility - A relationship between different items of ammunition, explosives, and

other dangerous materials whose characteristics are such that a quantity of two or more of the items stored or transported together is no more hazardous than a comparable quantity of any one of the items stored alone.

Substantial Dividing Wall - An interior wall designed to prevent simultaneous detonation of quantities of explosives on opposite sides of the wall.

Support Facilities - Ammunition and explosives storage or operations which solely support the function of tactical or using units as distinguished from storage depots or manufacturing facilities.

Suspect Car Track - A railway spur track for shunting cars suspected of being in a hazardous condition, there to be examined prior to unloading explosives contents.

Suspect Truck and Car Site - A designated location for placing trucks and railcars containing ammunition or explosives that are suspected of being in hazardous condition. These sites also are used for trucks and railcars that may be in a condition that is hazardous to their contents.

Surveillance/Quality Assurance - Observation, inspection, investigation, test, study, and classification of ammunition, ammunition components, explosives, etc.

Tactical Facilities - Tactical facilities are prepared locations with an assigned combat mission, such as missile launching facilities, alert aircraft parking areas, or fixed gun positions.

Taxiway/Taxilane - Any surface, designated as

such in the basic airfield clearance criteria specified by a DOD component publication or Federal Aviation Regulation (14 CFR 77).

Toxic Area - A defined area in which storage compatibility group K ammunition or class 6 chemical agents are handled or stored.

Unbarricaded - Without effective barricade between magazines, operating buildings, stacks, etc., opposed one to another.

Utilities - Such services as air, electricity, sewage, steam, and water for operating an establishment.

Waiver - Written authority from a theater commander, permitting deviation from a mandatory rule for a limited time, pending correction of the condition, or written authority from an installation commander, permitting deviation from an advisory provision. The latter type, local waivers, are also granted for specific periods of time.

Warhead or Warhead Section - That portion of a rocket or guided missile containing the high-explosives charge or other destructive agents.

Wharf Yard - A railroad yard which is close to the piers or wharves, in which cars are held for short periods of time, prior to delivery to the piers or wharves.

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TRAINING EVENT CODES

PURPOSE. Training event codes will be entered on the DA Form 581 to describe the purpose for which training ammunition will be expended. Likewise training event codes will be entered on the DA Form 581 for turn-ins. The codes used on such turn-in documents will be the same code used when that ammunition was issued.

DESCRIPTION. Training event codes will be either two or three character codes. Two character codes will be expanded to three character codes, where appropriate, by the addition of a suffix to more fully describe the training event. For example the code "BT" describes the training event of basic training (BT). However, if as a part of BT, ammunition were being expended for rifle qualification, the training event code would be "BTQ".

Definitions ▶

DEFINITIONS. The following training event codes will be used to describe all expenditures of training ammunition:

Institutional Training. Training conducted as a part of a course of instruction and a training center, service school, USMA or as a part of the ROTC program.

BT	**Basic Training**
AT	**Advanced Individual Training**
OS	**One Station Unit Training**
BN	**Basic NCO Combined Arms Training**
NC	**NCO Advanced Course**
OC	**Officer Candidate School**
OB	**Officer Basic Course**
OA	**Officer Advanced Course**
JR	**Junior ROTC Program**
SC	**Senior ROTC Summer Camp Training**
SR	**Other Senior ROTC Training**
MA	**US Military Academy Training**
IO	**Other Institutional Training**

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Unit Training. Training conducted by a unit to prepare it to accomplish its TOE/TD mission. It may be either collective or individual training.

TP	Training conducted IAW an approved Army Training Plan (ATP)
TT	Army Training Test (ATT)
OR	Operational Readiness Training (ORT)
RT	Operational Readiness Training Test (ORTT)
R1	Level 1 training IAW an approved Army Training and Evaluation Program (ARTEP)
E1	Level 1 external ARTEP evaluation

Field Training Exercises (FTX). Field exercises conducted by units which are not within the context of ATP, ORT, or ARTEP and are conducted above battalion/squadron level.

JFX	Joint/Combined FTC
CFX	Corps FTX
DFX	Division FTX
BFX	Brigade FTX

Appendix G

Competitive Marksmanship. Training for and participation in competitive marksmanship activities as governed by AR 350-6.

IMK	Participation in international competition
NMK	Participation in national competition
SMK	Participation in interservice competition
AMK	Participation in all-Army competition
RMK	Participation in regional/theater competition
DMK	Participation in division/installation competition
UMN	Participation in unit competition
IMP	Practice preparation for international competition
NMP	Practice in preparation for national competition
SMP	Practice in preparation for interservice competition
AMP	Practice in preparation for all-Army competition
RMP	Practice in preparation for regional/theater competition
DMP	Practice in preparation for division/installation competition
UMP	Practice in preparation for unit competition

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Miscellaneous. DEM-Demonstrations of unit training, weapons capabilities, or tactics for which the primary purpose of the demonstration is not to provide training for the participants or observers, even though some incidental training of participants may occur.

SQT-Skill Qualification Test. Training conducted to prepare soldiers to take an SQT will not be recorded under this event. Such training will be recorded under some other unit or institutional training event code.

Suffixes. The following suffixes will be used with two character training event codes whenever their use would more fully describe the training event taking place:

S	Engagement simulation training, SCOPES, REALTRAIN, or MILES.
Q	Qualification and/or familiarization with weapons and weapon systems (less tank gunnery and aerial gunnery training) as prescribed in AR 350-4.
T	Tank gunnery, includes annual qualification, preparation training for annual qualification, and "off season" gunnery if applicable.
A	Aerial gunnery training, includes qualification, preparatory training for qualification, and sustaining gunnery training conducted between formal qualification firings.

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