

CDC 2W051A

Munitions Systems Journeyman

**Volume 1. Career Progression,
Organizational Structures, Mobility,
Security, Safety, and General
Maintenance**



**Air Force Career Development Academy
The Air University
Air Education and Training Command**

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THIS COURSE is designed to provide you the necessary knowledge for upgrade to the 5-skill level as established in the 2W0X1 Career Field Education and Training Plan (CFETP). The total required course knowledge is provided through two career development courses (CDC): 2W051A and 2W051B. The 2W051A course provides knowledge in career field structure, duties, and progression; Air Force organizational structure; operational planning and mobility; munitions security and safety; general maintenance practices; peacetime and contingency accounting; munitions inspection and storage; and shipping and receiving munitions. The 2W051B course provides knowledge in general maintenance equipment; munitions material handling equipment (MMHE); handling and delivery of munitions; and conventional, chemical, nuclear, and precision guided munitions. You *must* successfully complete *both* courses before being eligible for upgrade.

Volume 1 of the 2W051A course focuses on the role of the 2W0X1 career field within the context of the Air Force career field structure, the day-to-day duties as well as those which meet the Air Force mission in planning for contingency operations. The Air Force organizational structure lets you know where the 2W0X1 falls in the big picture we call the United States Department of Defense. The organizational structure is laid out in a top-down approach. Volume 2 of CDC 2W051A, discusses planning, scheduling, controlling, and accounting of munitions. Volume 3 of CDC 2W051A discusses munitions inspection and the munitions storage area and warehousing.

Unit 1 of this volume explains the Air Force classification system, your duties and responsibilities, career progression in the munitions systems career field, and the Career Field Education and Training Plan (CFETP), which addresses the training needs of every command, direct reporting units, and field operating agencies, as well as the guard and reserve components. Unit 2 addresses the different types of munitions management levels and the functions of units within those levels. Unit 3 covers the concepts of mobility that affect your job as you progress as ammunitions (AMMO) Airman. Unit 4 discusses how you can prevent the invisible enemy from gaining classified and sensitive information and material as well as nuclear mishap reporting. Unit 5 builds the safety foundation you'll use throughout your career. Unit 6 provides the information you need to better understand your role in materiel control.

A glossary is included for your use.

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This volume is valued at 12 hours and 4 points.

NOTE:

In this volume, the subject matter is divided into self-contained units. A unit menu begins each unit, identifying the lesson headings and numbers. After reading the unit menu page and unit introduction, study the section, answer the self-test questions, and compare your answers with those given at the end of the unit. Then complete the unit review exercises.

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Unit 1. Munitions and Weapons Career Field

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EVEN BEFORE entering basic training, many Air Force members set professional goals for themselves. Among these goals are such things as opportunity for advancement in their chosen career, acceptance by their peers, recognition for a job well done, and security in their job. The Air Force, in line with good principles, provides its employees with a means for achieving these goals.

Two of the goals mentioned are linked together in the Air Force system. First, the opportunity for obtaining skills and knowledge through an on-the-job training program is afforded to all personnel. Then, once the skills and knowledge have progressed to meet certain qualifications, recognition is provided in the form of advancement to more responsible positions and promotion in rank.

This unit explains the career progression in the munitions systems career field and the career field education and training plan (CFETP). The CFETP addresses the training needs of every command, direct reporting unit, and field operating agency, as well as the guard and reserve components.

1–1. Munitions Systems Career Field

The Airman classification system uses specialty descriptions and codes to identify different types of jobs performed within the Air Force and the basic qualifications of Airmen to do these jobs. It ensures proper classification and assignment of Airmen to positions that develop and use their knowledge and skills to meet Air Force needs.

The classification system groups related tasks and responsibilities into a job that constitutes the work requirements of a position. Positions requiring similar skills and qualifications are grouped into an Air Force specialty (AFS). In other words, the AFS contains positions that require the same basic abilities to perform. Related AFSs are grouped into a career ladder that makes up the career field subdivision. Within each AFS, there are subdivisions that pertain to the same broad functional category which are then grouped into a single career field.

001. Description of the 2W career field

The munitions and weapons career field (2W) consists of three general functional areas or subdivisions. These areas are (2W0) munitions systems, (2W1) aircraft armament, and (2W2) nuclear weapons. You can find the description for each of the subdivisions of the 2W career field on the Air Force Personnel Center (AFPC) website under the Air Force enlisted classification directory (AFECD). This provides an overall description of the 2W career field. Upon graduation from technical training, you are authorized to wear the USAF maintenance badge (fig. 1–1).



Figure 1-1. USAF maintenance badge.

Job descriptions found in the AFECD are general in nature because they apply to a wide range of jobs within the career field. Therefore, unique base and major command (MAJCOM) requirements are not found in the AFECD. Below is the 2W career field description as it appears on the AFPC website under the AF enlisted classification directory (fig. 1-2).

MUNITIONS AND WEAPONS CAREER FIELD (2W)

Introduction

The Munitions and Weapons Career Field includes assembling, maintaining, storing, delivering, inventory management, and loading nonnuclear munitions and solid propellants; and handling and aircraft loading nuclear munitions and guided aircraft missiles and rockets. It includes installing, maintaining, and repairing aircraft munitions release and monitor systems, bomb racks, shackles, aircraft machine guns, and cannons; and assembling mechanical components of guided aircraft missiles and rockets. It also includes inspecting, assembling, maintaining, inventory managing, and modernizing mechanical, electrical, electronic, and high explosive components of nuclear weapons and warheads, air launched missiles, reentry vehicles, associated test equipment, and radiological survey instruments. Included in this field are functions of testing mechanical, electrical, and electronic components for acceptance; installing, operational checking, and repairing weapons, warheads, air launched missiles, missile turbojet engines, and reentry vehicle components; surveying and plotting radiation hazards; using and maintaining specialized radiac instruments; munitions disposal activities; ensure compliance with environmental directives; and technical escort functions associated with chemical munitions.

Figure 1-2. 2W career field description.

Let's examine the duties and responsibilities of the 2W1X1 and 2W2X1 specialties before discussing those of the 2W0X1 AFS. It is important to become familiar with these specialties because they interrelate with your own.

Aircraft armament (2W1X1)

Personnel in this career field are responsible for loading and unloading nuclear and nonnuclear munitions, explosives, and propellant devices on aircraft. Aircraft armament personnel manage, control, maintain, and install munitions handling, loading, and test equipment. Some examples of those types of munitions and equipment are aircraft bombs, rockets, missile releases, launches, suspensions, monitor systems, guns and gun mounts.

Nuclear weapons (2W2X1)

The 2W2 specialty performs and manages several functions such as maintenance, inspection, storage, handling, modification, accountability and repair of nuclear weapons, weapon components, associated equipment, and general or specialized test and handling equipment. The purpose of these descriptions is to point out the scope of each career field subdivision, so you will know who is responsible for handling, loading, and maintaining munitions and weapons of various types. Subdivision lines are clearly drawn; however, don't be surprised to find people crossing these lines to help one another because of emergencies, alerts, or maximum efforts to get aircraft loaded and airborne.

002. 2W0 specialty descriptions (non and semi-skilled)

Any unskilled munitions troop leaving basic training as an Air Force specialty code (AFSC) 2W011, Helper can potentially become a 2W000, chief enlisted manager (CEM). Of course, to do this, an

individual must first complete basic training (AFSC 9T000), be assigned to the career field, and complete the 3-skill level technical school. This lesson briefly summarizes the duties and responsibilities of each munitions systems skill level beginning from the bottom of the career ladder to the top. It also includes the normal requirements necessary for someone to be awarded each skill level.

Airmen chosen for the 2W0X1 career field must not have a record of emotional instability or domestic violence, must have normal color vision, have a high school or General Education Development (GED) diploma, possess a valid state driver's license, and be capable of receiving a secret security clearance. Airmen must also successfully complete the munitions systems apprentice course before being assigned to any munitions unit.

Apprentice (2W031)

An individual becomes a munitions apprentice upon award of the 3-skill level. As an apprentice, you generally work under the supervision of a qualified journeyman or craftsman. However, an apprentice may perform tasks unsupervised once trained and qualified, *except* where prohibited by safety or security requirements. The basic knowledge requirements that an apprentice is expected to learn is listed in the following table:

Apprentice Knowledge Requirements			
composition and characteristics of munitions	environmental requirements and procedures	Air Force property accounting; munitions policies and procedures	inventory and stock control;
storage,	fusing and arming systems	wiring diagrams	techniques of munitions materiel management and procurement
safety	technical drawings	handling, use, and disposition for nonhazardous materials	basic mathematics
security	precision measuring tools and equipment	munitions materiel accounting systems	policies and procedures for accountability and pecuniary liability;
preparing and maintaining munitions records and documents	procedures for hazardous and nonhazardous materials	procedures for assets turn in	

Journeyman (2W051)

A munitions journeyman is a person who handles tasks associated with the day-to-day munitions operations. Our diversified 5-skill levels may be assigned as a crewmember or to crew chief any of the nine functional areas in the munitions storage area. In addition to meeting the knowledge requirements of an apprentice, the journeyman must gain experience in performing functions such as: warehousing, accounting, mechanical assembly, basic electronics, transportation of munitions, proper use of associated tools, and maintaining documentation/records for inventory management.

Your career progression, including promotion in the Air Force, is directly related to the efforts expended toward qualification in your specialty. Ultimately, attaining and maintaining core tasks/job qualifications is the individual's responsibility. Everyone is encouraged to take every opportunity to increase his or her technical qualifications and enhance their professional knowledge.

003. 2W0 specialty descriptions (skilled)

A key element in progressing through the skill levels is becoming better prepared for supervision. Progression in any specialty requires an increase in technical knowledge and assuming additional supervisory responsibilities.

Munitions craftsman (2W071)

A journeyman becomes a craftsman upon award of the 7-skill level. Once an individual puts on the rank of staff sergeant (SSgt), attends Airman Leadership School, and is awarded as a 7-skill level craftsman he/she can expect to fill supervisory positions within an organization.

A munitions craftsman supervises assigned personnel/operations, inspects processes/munitions end items, and plan munitions activities. Experience is mandatory in supervising or performing several functions such as: receipting, identifying, inspecting, storing, reconditioning, issuing, delivering, maintaining, testing, assembling guided or unguided munitions, and maintaining documentation for munitions management actions.

Although 7-skill level supervisors must still have the ability to perform at a 5-skill level, they have certain tasks in their duty description that point to increased complexity of job duties and supervisory responsibilities (e.g., crew chief, NCOIC). The 7-skill level supervisor is a person who can anticipate the needs of the section and take the necessary steps to provide for them.

Munitions Superintendent (2W091)

Next on the munitions systems ladder is the munitions systems superintendent, who is at *least* a senior master sergeant (SMSgt). Years of experience in munitions activities qualifies this person as a superintendent. The duties are almost entirely supervisory, and completing the senior noncommissioned officer academy (SNCOA) course augments his/her training. The munitions superintendent will be responsible for the following:

- Lead and manage teams.
- Ensure safe, secure, and efficient use of resources.
- Ensure compliance with technical orders and applicable governing directives.
- Ensure the highest degree of munitions capability, reliability, and accountability.
- Translate leaders' directions into specific tasks their teams can understand and execute.

It is mandatory for a superintendent to also have experience in managing functions such as munitions operations; munitions storage, maintenance, and assembly functions; munitions inspection; munitions support equipment; line delivery and handling functions; computing levels; automated data processing; and maintaining munitions material management accounts.

Munitions systems chief enlisted manager (2W000)

The chief enlisted manager (CEM) is at the top of the career field ladder. The munitions systems manager carries a CEM code of 2W000 and is a chief master sergeant (CMSgt). Munitions systems managers perform most of the same functions as the superintendent, but usually do it at higher levels. They regularly fill positions of considerable authority and responsibility at HQ USAF, MAJCOM, wing, and group levels.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

001. Description of the 2W career field

1. Name the three general functional areas (subdivisions) of the 2W career field.
2. Due to the AFECDD being general in nature, what duties and responsibilities are not included in the AFECDD for a specific specialty?

3. Why is it important for you to be familiar with the duties of all the subdivisions of the 2W career field?
4. Identify the responsibilities of 2W1X1 and 2W2X1 subdivisions.

002. Non-skilled and semi-skilled 2W0 specialty descriptions

1. Before becoming an apprentice, what AFSC is assigned to Airmen in basic training?
2. There are several requirements that an individual must have prior to becoming a munitions systems specialist, but what are some things they should not have?
3. When can an apprentice munitions troop perform a task unsupervised?
4. Whose ultimate responsibility is it to attain/maintain core tasks and job qualifications in a given specialty for an individual?

003. Skilled 2W0 specialty descriptions

1. At what skill level can a munitions specialist expect to perform supervisory positions within the unit?
2. What are general duties and responsibilities of a 2W071, craftsman?
3. What is the minimum grade of a 2W091, superintendent?
4. What AFSC and title are assigned to a 2W0 who has reached the top of the career field ladder?

1-2. Career Field Education and Training Plan

The career field education and training plan (CFETP) is a comprehensive education and training document that identifies life-cycle education/training requirements, training support resources, and minimum core task requirements for the munitions systems specialty. The CFETP consist of two parts, which are used by trainers, supervisors, and managers to plan, manage, and control training within the AFS.

004. Career field education and training plan part I

According to Air Force Instruction 36-2201, *Air Force Training Program*, the Air Force career field manager (AFCFM), and the ammunitions (AMMO) CMSgt at HQ USAF, has the overall

responsibility for the CFETP. Together with the help of the Air Education and Training Command (AETC) Training Manager, and inputs from the other MAJCOMs, the AFCFM determines the need to revise or change the CFETP.

Utilization and Training Workshop function

When the AFCFM decides to revise or change the CFETP, a Utilization and Training Workshop (U&TW) is scheduled. The 2W0X1 U&TW is held at the AMMO schoolhouse located at Sheppard AFB, Texas. It is in this workshop (chaired by the AFCFM) that all MAJCOM functional managers and the ammo schoolhouse staff come together to determine the career field's education and training needs. They discuss trends across the career field, new munitions, new training requirements, and needed changes to the current CFETP. In the end, they ensure that the CFETP accurately addresses the career field's training needs.

Part I of the CFETP provides the following information necessary for overall management of the specialty. The following table provides the sections and their descriptions.

Part I Section	Description
A	General management and use of the CFETP.
B	Career field responsibilities and enlisted career path progression.
C	General 2W0X1 skill level training requirements.
D	Resource constraints (currently not used).
E	Transitional Training Guide (currently not used).

Skill/career progression

Adequate training and timely progression from the apprentice to the superintendent skill level play an important role in the Air Force's ability to carry out its mission. It is essential that everyone involved in training do their part to plan, manage, and conduct an effective training program. The guidance in the CFETP ensures individuals receive their level of training at the appropriate time in their career.

Apprentice (3 level)

Upon completion of the munitions systems apprentice course, 3-skill level trainees will work with a trainer to enhance their knowledge and skills. They strive to complete qualification training identified in the specialty training standard (STS), Air Force job qualification standard (AFJQS), MAJCOM training programs, and any other locally developed training needs identified in the unit's master task listing. Prior to being awarded a 5-skill level, trainees must complete their 5-skill level career development course (CDC), be signed-off on all tasks identified in the core task table of the CFETP, have a minimum of 12 months on-the-job training (OJT), and be recommended by their supervisor.

Journeyman (5-skill level)

Once upgraded to the 5-skill level, a journeyman will enter into experience-based career-broadening continuation training. They may be selected to attend Airman Leadership School (ALS) and/or the Air Force combat ammunition planning and production (CAPP) course after meeting time-in-service requirements. The CAPP is conducted at the Air Force Combat Ammunition Center (AFCOMAC) located at Beale AFB and is in fact commonly referred to as the AFCOMAC course. Additionally during this period of an Airman upgrade training they should continue to use their career development course in preparation for their Weighted Airman Promotion System (WAPS) test once eligible. Airmen should also consider enrolling and completing their education toward a Community College of the Air Force (CCAF) degree. Prior to being awarded their 7-skill level, a journeyman must be signed-off on all applicable tasks identified in the core task table of the CFETP, complete the Air Force Combat Ammunition Planning and Production course, have a minimum of 12 months OJT, be recommended by their supervisor, and hold a minimum rank of SSgt.

Craftsman (7-skill level)

At this level, craftsmen can expect to fill various supervisory positions within the squadron, or may be assigned to work in staff positions at the group or wing. Continued academic education through CCAF and higher degree programs is highly encouraged. In addition, when promoted to technical sergeant, individuals will attend the noncommissioned officer academy (NCOA) in residence after completing the prerequisite Course 15, computer-based training. Prior to being awarded their 9-skill level, a craftsmen must be signed-off on all tasks identified in the core task table of the CFETP, be recommended by their supervisor, hold a minimum rank of SMSgt, complete the senior noncommissioned officer academy (SNCOA), and attend the Air Force combat ammunition planning and production course as a SNCO.

Superintendent (9-skill level)

Munitions managers with the 9-skill level are expected to fill supervisory and management positions all the way up to the MAJCOM level. They should also strive to become familiar with all major functional divisions within the munitions organization (e.g., systems, materiel, production) and seek additional training in budget, manpower, resources, and personnel management.

Community College of the Air Force

The Community College of the Air Force (CCAF) provides the opportunity to obtain an associate in Applied Science Degree in Munitions Systems Technology. Enrollment in the CCAF occurs automatically upon completion of basic military training and assignment to an Air Force career field. Members must fulfill the degree requirements listed in the CFETP prior to separating from the Air Force in order to be awarded the applicable CCAF degree.

005. Career field education and training plan part II

The CFETP is a comprehensive listing of training courses and standards that support career field training requirements. The following table shows each section for part II and its descriptions.

Part II Section	Description
A	Specialty training standards (STS) - describes purpose and implementation of STS to include proficiency codes, core task table, and references. Includes STS to Identify all skill level core tasks, duty tasks, and other special training that requires documentation.
B	Course objective list (when applicable).
C	Support materials - provides information and links to sites for specific qualification requirements, computer based training, and correspondence courses.
D	Training course index - lists major career field related training courses available.
E	MAJCOM-unique requirements (when applicable).

Specialty training standard

The most used section of the CFETP is the specialty training standard (STS), which is prominently used to identify/document individual upgrade and qualification training. The STS describes the skills and knowledge an Airman needs on the job and tracks his/her progression. Contents of part II of the CFETP specifically from Section A, is also the primary source used by the element noncommissioned officer in charge to formulate their work center's master task listing (MTL). The MTL is a comprehensive list that identifies all shop training required to include deployment and unit type code (UTC) tasks.

Training business area

To this point we have discussed the CFETP and what it consists of. The CFETP in conjunction with the AF Form 623, was originally a paper-based (only) product which required the use of a pencil to document the training. Like most documents today, the CFETP can be accessed/downloaded from the Air Force e-Publishing site and printed if necessary. The new web-based training business area (TBA)

was established for documenting and tracking all individual training records for munitions systems specialists and many other Air Force specialties. This caused the CFETP to be used strictly for reference use.

The training business area (TBA) is an automated system that allows trainees, trainers, and supervisors to electronically document individual training records and manage workcenter specific requirements. TBA provides users with global, real-time visibility into the technical qualifications, certifications, and training status of personnel. TBA is a user friendly system that allows users to view and update training qualifications from virtually anywhere. TBA is a program better suited to track qualifications over an individual's career than its paper-based predecessor.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

004. Career field education and training plan part I

1. Who has overall responsibility for the management of the CFETP?
2. What topics are discussed during a U&T Workshop ?
3. What is the minimum length of time a trainee must spend in on-the-job training before being upgraded to the 5-skill level?
4. Why would a journeyman who has previously completed his/her CDCs continue to use them?
5. What type of degree can an ammo troop obtain through the CCAF?

005. Career field education and training plan part II

1. What is the most used section of the CFETP?
2. What web-based program is used by munitions units for tracking an individual's training records?

Answers to Self-Test Questions

001

1. Munitions systems, aircraft armament, and nuclear weapons.
2. Unique base or command responsibilities.
3. Because all the subdivisions of the 2W career field interrelate with each other to carry out the mission.

4. (1) Aircraft armament (2W1X1) - responsible for the loading of nuclear and nonnuclear air munitions, explosives, and propellant devices on aircraft.
(2) Nuclear weapons (2W2X1) - performs and manages maintenance, inspection, storage, handling, modification, accountability and repair of nuclear weapons, weapon components, associated equipment, and general or specialized test and handling equipment.

002

1. 9T000.
2. Should not have a record of emotional instability or domestic violence.
3. Once trained and qualified, *except* where prohibited by safety or security requirements.
4. The individual's.

003

1. The craftsman, 7-skill level.
2. Supervises assigned personnel/operations, inspect processes/munitions end items, and plan munitions activities. Experience is mandatory in supervising or performing functions of receipting, identifying, inspecting, storing, reconditioning, issuing, delivering, maintaining, testing, assembling guided or unguided munitions, and maintaining documentation for munitions management actions.
3. Senior master sergeant (E-8)
4. The 2W000, CEM.

004

1. AFCFM.
2. Career field trends, new munitions, new training requirements, and needed changes to the current CFETP.
3. 12 months.
4. To prepare for WAPS testing.
5. Associate in Applied Science Degree in Munitions Systems Technology.

005

1. The STS.
2. The TBA.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

1. (001) Which career field subdivision loads nuclear and nonnuclear air-to-air munitions, explosives, and propellant devices on aircraft?
 - a. Nuclear weapons.
 - b. Aircraft armament.
 - c. Munitions systems.
 - d. Missile maintenance.
2. (002) What are the *first* steps needed prior to starting 5-skill level upgrade training?
 - a. Be assigned to the career field and attain 6 months of time-on-station.
 - b. Complete basic training, be assigned to the career field, and complete technical school.
 - c. Attend basic training, attend technical school, and complete the career development course.
 - d. Complete basic training, be assigned to the career field, and be recommended by supervisor.
3. (002) Which level of security clearance *must* an Airman of the 2X0X1 specialty be capable of receiving?
 - a. Routine non-sensitive.
 - b. Confidential.
 - c. Top Secret.
 - d. Secret.
4. (002) At what skill level does an ammo troop perform tasks associated with day-to-day munitions operations as either a crewmember or as a crew chief?
 - a. Journeyman.
 - b. Apprentice.
 - c. Craftsman.
 - d. Helper.
5. (003) Reaching the 7-skill level signifies advancement from a journeyman to a
 - a. technician.
 - b. craftsman.
 - c. manager.
 - d. helper.
6. (003) Which *minimum* grade *must* be reached to be qualified as a munitions superintendent (2W091)?
 - a. Staff sergeant (E-5).
 - b. Technical sergeant (E-6).
 - c. Master sergeant (E-7).
 - d. Senior master sergeant (E-8).
7. (003) In the munitions systems career field, what is expected of a 9-skill level superintendent?
 - a. Crew chief a munitions restore operation.
 - b. Assemble, test, and transport nuclear weapons.
 - c. Take measures to ensure the highest degree of munitions capability and accountability.
 - d. Load and unload nonnuclear munitions, explosives, and propellant devices onto aircraft.

8. (004) Where can you find general skill level training requirements and career path progression information?
 - a. Part I of the Career Field Education and Training Plan (CFETP).
 - b. Part II of the Career Field Education and Training Plan (CFETP).
 - c. Part III of the Career Field Education and Training Plan (CFETP).
 - d. AFI 36-2803, *The Air Force Military Awards and Decorations Program*.
9. (004) Which course *must* be completed before a craftsman can be upgraded to a superintendent?
 - a. Air Force Senior Munitions Inspector course.
 - b. Munitions Accountable Systems Officer course.
 - c. Air Force Combat Ammunition Planning and Production course as an NCO.
 - d. Air Force Combat Ammunition Planning and Production course as a SNCO.
10. (005) What is the *most* used section of the Career Field Education and Training Plan for upgrade training?
 - a. The Course Objective List.
 - b. The Transition Training Guide.
 - c. The Specialty Training Standard.
 - d. Section B, Career Progression and Information.
11. (005) Which system allows ammo trainees and trainers to electronically document individual training records?
 - a. Training Business Area (TBA).
 - b. Integrated Maintenance Data System (IMDS).
 - c. Air Force Virtual Education Center (AFVEC).
 - d. Advanced Distributed Learning Service (ADLS).
12. (006) Which agency or organization develops command supplements or directives for implementation?
 - a. Office of the Secretary of the Air Force.
 - b. Major command (MAJCOM).
 - c. Department of the Air Force.
 - d. Air Staff.

Student Notes

Unit 2. Munitions Functions and Responsibilities

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SOMETIMES it's hard to imagine where you fit into the big picture. This unit helps explain the functions of the top Air Force organizations, down to the very elements you may work in. We will also discuss the different types of munitions management levels and break down typical munitions wing, group, and flight responsibilities.

2–1. Headquarters United States Air Force

The Headquarters United States Air Force (HQ USAF) consists of two major entities: the secretariat of the Air Force and the Air Staff, headed by the Air Force Chief of Staff. The Air Force Munitions Program rests with both the Air Staff and each subordinate major command. The following material covers functions and responsibilities; however, this material is *not* all inclusive. Our AFCFM for munitions systems serves as the HQ USAF point of contact for all matters relating to munitions and armament logistics. The AFCFM has several responsibilities, among which are to develop, articulate, and clarify Air Force munitions systems policies/oversight for the MAJCOM functional managers. Within HQ USAF, located at the Pentagon, each AFCFM conducts their business for their respective career field.

006. Major commands

The major commands (MAJCOMs) are organized on a *functional* basis in the United States and a *geographical* basis overseas. They accomplish designated phases of Air Force worldwide activities, as well as organize, administer, equip, and train their subordinate elements for the accomplishment of assigned missions. MAJCOMs are generally assigned specific responsibilities based on functions. A few of the MAJCOMs responsibilities include

- publishing detailed guidance for munitions organizations with specialized/unique missions,
- developing command supplements or directives for implementation,
- following and enforce AF guidance contracted munitions activities,
- coordinating requests for stock record account number (SRAN) Department of Defense (DoD) activity address code (DoDAAC) additions, deletions, and changes,
- budgeting for MAJCOM established and managed training courses, as applicable, and
- providing the combat ammunition system program management office with personnel, when requested to help develop and evaluate requirements and to test and validate software.

Numbered Air Force

The numbered Air Force (NAF) is a level of command directly under a MAJCOM. NAFs are tactical echelons that provide operational leadership and supervision. They are not management headquarters and do not have complete functional staffs. Many NAFs are responsible for MAJCOM operations in a specific geographic region or theater of operations. The number of personnel assigned varies but

should not exceed 99 manpower authorizations without an Air Staff waiver. A NAF is assigned subordinate units, such as wings, groups, and squadrons.

Supported commands

The day-to-day role of a supported command is to provide assistance to the applicable lead command on theater/mission specific activities. Since these specialized support commands have a reduced munitions staff, their responsibilities are limited. They must coordinate and maintain a liaison with the lead command on most matters. The following are a few supported command's responsibilities:

- Determine munitions training requirements and submit to lead command for quota allocation.
- Validate and advocate for personnel, facilities, equipment, and funding requirements.
- Prepare and develop program objective submissions for lead command.
- Ensure mission essential equipment levels and allowance standards are published.
- Develop munitions support plans and annexes to support combatant commanders.
- Appoint a munitions user functional manager (MUFM) to manage functional area munitions requirements, forecasting, and allocations.

Theater and regional ammunition control points

During contingency operations, MAJCOMs will establish lower echelon ammunition control points to provide direct support to the combatant commanders. Theater ammunition control points (TACP) operate at the MAJCOM level. Regional ammunition control points (RACP) support *smaller* geographic areas within the theater. Multiple RACPs may be established under the parent MAJCOM TACP. Here are a few TACP and RACP responsibilities provided in the following list:

- Provide senior leaders with current and future capabilities of munitions inventories.
- Identify and coordinate munitions requirements to ensure deployed forces are sustained.
- Monitor availability and use rates of resources to determine sustainment and resupply.
- Request redistribution of theater munitions; plan to maximize throughput, containerization, and in-transit visibility capabilities.

007. Munitions sustainment organizations

Sustainment of munitions and related equipment is the primary responsibility of Air Force Materiel Command (AFMC). Their mission is to equip the Air Force with the best weapons systems. AFMC has cradle-to-grave responsibilities, from inception of a weapons system on the drawing board to support through its operational life and final disposition. It operates major product centers, logistics centers, test centers, and laboratories. The biggest center AFMC operates is the global ammunition control point (GACP).

Global ammunition control point, munitions division

The GACP, munitions division is located at Hill AFB, Utah. Their primary mission is to execute product support management and supply management for Air Force munitions and related assets. The GACP also manages global war reserve materiel (WRM) munitions, product support for weapons suspension and release equipment, aircraft guns, munitions testers, and support equipment. Some key responsibilities of the GACP, munitions division include the following:

- Coordinate with HQ USAF to publish guidance for annual forecasting, allocation, and requisitioning procedures.
- Assess allocations, analyze worldwide stockpiles, and consolidates forecasts.
- Develop plans to support re-supply, allocate, and distribute munitions worldwide.
- Implements and executes the afloat pre-positioned fleet and standard air munitions package (STAMP) activities as needed.

Global ammunition control point, armament division

The global ammunition control point (GACP) armament division located at Robins AFB, Georgia operates the USAF Tactical Missile Control Point (TMCP) and has the following responsibilities:

- Overseeing all AIM-type and AGM-88 missiles and providing a maintenance tracking system for their life-cycle (i.e., tactical munitions records system).
- Publishing the annual tactical missile redistribution plan based on the HQ USAF approved tactical air missile program (TAMP) document.
- Distributing tactical missiles based on approved allocations and HQ USAF guidance.
- Providing missile technical data, supply support, test equipment, and training.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

006. Major commands

1. How are MAJCOMs located in the US organized differently than MAJCOMs overseas?
2. A supported command develops support plans and annexes for contingency operations specifically for whom?
3. During contingency operations, who establishes lower echelon ammunition control points?
4. What ammunition entity supports smaller geographic areas within the theater?

007. Munitions sustainment organizations

1. Which MAJCOM is responsible for munitions sustainment?
2. What is the biggest center that the AFMC operates?
3. What is the primary mission of the global ammunition control point, munitions division?
4. Which organization/agency operates the TMCP?

2-2. Wing Structure

In this section, you will look at some base-level organizations and the role and mission of the maintenance group. This is where the maintenance or munitions squadron is usually assigned.

008. Typical wing organizational structure

The Air Force holds wing commanders responsible and accountable for mission results. Therefore, the Air Force has adopted a “one base, one wing, one boss” principle designed to put responsibility, authority, and capability together in peacetime, very much like it would be in a wartime situation.

While this principle increases the wing commander's authority and ability to achieve desired results, it also brings the operators closer to the key decision maker.

Wing

The basic unit for generating and employing combat capability is the wing, which has always been the Air Force's prime warfighting instrument. Falling under the command of a numbered Air Force, a typical Air Force wing consists of groups, squadrons, flights, sections, and elements. A wing has a minimum population of 1,000 personnel and may have several squadrons in more than one dependent group. A wing may be an operational wing, an air base wing, or a specialized mission wing.

Operational wing

An operational wing is one that has an operations group and related operational mission activities assigned to it. When an operational wing performs the *primary* mission of the base, it *usually* maintains and operates the base. In addition, an operational wing is capable of self-support in functional areas such as maintenance, supply, and munitions. When an operational wing is a tenant organization, the host command provides it with varying degrees of base and logistics support.

Air base wing

An air base wing performs a support function rather than an operational mission. It maintains and operates a base. An air base wing often provides functional support to a MAJCOM headquarters.

Specialized mission wing

A specialized mission wing performs a specialized mission and usually does not have aircraft or missiles assigned to it. Examples include intelligence wings, training wings, and so on. This wing may be either a host or a tenant wing, depending on whether it maintains and operates the base.

Group

A group is a level of command below the wing. Similar to the NAF structure, a group is a tactical echelon with minimal staff support. A group usually has two or more subordinate units. A dependent group is a mission, logistics, support, medical, or large functional unit, such as a civil engineer group. Such groups may possess small supporting staff sections, such as standardization and evaluation or quality control. A group's population can range from approximately 400 to 1,000 personnel.

Squadron

The squadron is the *basic* organizational unit in the Air Force. A squadron may be either a mission unit, such as an operational flying squadron, or a functional unit, such as a civil engineer, security forces, or transportation squadron. Squadrons vary in size according to responsibility. A squadron has approximately 35 to 500 personnel.

Flight

If internal subdivision is required, a flight may consist of sections, then elements. A flight may be a numbered flight, named flight, an alpha flight, or a functional flight. In a typical munitions flight, there are three sections—production, systems, and materiel—and may consist of as many as nine elements. Proceeding sections of this unit will explain their functions.

009. Maintenance group role and mission

The United States Air Force would not be the most powerful Air F in the world if it weren't for the people, planes, and munitions. Of course, it takes much more than those three resources to make the mission of the Air Force so successful. It takes the teamwork of various organizations functioning together. Part of that team is the maintenance group (MXG). The purpose of Air Force logistics is to create and sustain force generation capabilities whenever and wherever needed to conduct military operations. On the broadest level, logistics is a key aspect of program management to acquire and sustain weapons systems. The maintenance group then supports the primary mission with materiel and resources. These resources include maintenance squadron and quality assurance personnel.

Maintenance squadron

All maintenance groups in the USAF consist of maintenance squadrons (MXS). A MXS consists of personnel from various AFSCs organized into flights: propulsion, avionics, test measurement diagnostics equipment (TMDE), accessories, aerospace ground equipment (AGE), fabrication, armament systems, maintenance, and munitions flights. The MXS maintains AGE, munitions, off-equipment aircraft and support equipment components; performs on-equipment maintenance of aircraft and fabrication of parts; and provides repair and calibration of TMDE. MAJCOMs may establish an equipment maintenance squadron and a component maintenance squadron if a MXS exceeds 700 authorizations. Munitions squadrons (MUNS) can also be established separate from a MXS when authorized. When Munitions squadrons are formed, armament systems will also be added as a flight within MUNS.

Quality assurance

The squadrons under the MXG augment personnel to man the quality assurance section. Maintenance quality and equipment reliability is the responsibility of all maintenance personnel. The combined efforts of quality assurance (QA) personnel, maintenance leaders, and technicians are necessary for high-quality maintenance production, safety, and equipment reliability. The QA staff evaluates the quality of maintenance accomplished throughout the maintenance group by ensuring all regulations, orders, instructions and official practices are adhered to. The QA section serves as the primary technical advisory agency; assisting maintenance supervision at all levels to resolve quality/duty related problems.

Munitions supervision selects highly qualified munitions technicians with vast experience to augment QA. Some of the responsibilities of QA personnel are provided in the following table.

Responsibilities
Establish a program to monitor and assess the quality of maintenance performed.
Provide assistance, advice, and authoritative references to maintenance supervisors.
Manage deficiency reporting and technical order (TO) improvement programs.
Verify technical data is current, applicable, and usable.
Maintain the central TO file.

QA also evaluates in-use TOs during inspections to make sure they are serviceable and up-to-date. QA personnel act as the primary point-of-contact (POC) for the TO improvement program; which includes processing all the Air Force Technical Order (AFTO) Form 22, *Technical Manual Change Recommendation and Reply* submissions. They must review and validate each report to make sure recommendations are accurate and have not already been submitted. Additionally, a suspense file of all approved AFTO Form 22 submissions must be maintained until incorporated into the TO. The QA section encourages maintenance personnel to use standard maintenance practices and to comply strictly with accurate technical data.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

008. Typical wing organizational structure

1. List the command structure of a typical wing in descending order.
2. Which type of wing is capable of self-support in functional areas like maintenance, supply, and munitions?

3. Which organization is a level just *below* the wing with approximately 400 to 1,000 people?
4. How is a typical munitions unit broken down?

009. Maintenance group role and mission

1. What is the purpose of the logistics system?
2. If a maintenance squadron exceeds 700 authorized positions, who may authorize it to be split up into an equipment maintenance squadron and a component maintenance squadron?
3. What organizational section/element monitors and assesses the quality of maintenance activities?
4. Who is responsible for maintaining the central TO file?

2-3. Munitions Squadron

At most bases in the Air Force, you work in a specific element within the munitions storage area. To see the big picture and help improve efficiency it helps to know the responsibilities of others within the squadron. In order to work better as a team, it is important to discuss the areas of responsibilities of squadron leadership, as well as have an understanding of each element within the munitions flight.

010. Munitions squadron responsibilities

One of our responsibilities as Air Force members is to follow the orders of those appointed over us. We'll now discuss a few of those authoritative positions and their responsibilities.

Squadron commander

Squadron commanders have the ultimate responsibility for all resources under their command. The commander of a squadron is usually the only member to hold g-series orders, which give command authority to direct actions, enforce compliance, and publish various administrative orders. The following are a few of a munitions squadron commander's responsibilities:

- Ensure munitions facilities sited for explosives storage, inspection, and maintenance are used for their intended purpose.
- Ensure personnel authorized to process, ship, and receive arms, ammunition, and explosives (AA&E) are properly trained and appointed in writing.
- Ensure that emergency action checklists are developed, maintained, and reported to the appropriate agencies.
- Make sure that munitions activities have sufficient Secure Internet Protocol Router Network (SIPRNET) and Nonsecure Internet Protocol Router Network (NIPRNET) capability. Internet connectivity for munitions support is critical to the war fighting effort.

- Encourage the use of approved wireless technologies/scanning devices to speed up data input and make sure computer equipment is compatible with the following software applications/capabilities:
 - Tactical munitions reporting system (TMRS).
 - Combat ammunition system (CAS).
 - Air Force Munitions Command and Control (AFMC2) SharePoint.
 - Automatic identification technology.
 - Digitized technical orders.
 - Integrated maintenance data system (IMDS).
- Ensure an intrusion detection system (IDS) is installed in permanent facilities when required to store munitions according to DoDM 5100.76, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*.
- Ensure munitions personnel maintain core combat skills training, specialty qualification, and readiness for contingency deployment in their primary specialty.

Munitions supervision

The munitions supervision consists of an operations officer/maintenance superintendent in a munitions squadron or a flight commander/flight chief in a munitions flight. Munitions supervision is responsible to the squadron commander for the leadership, supervision, resources, and training of all assigned personnel. They advise the commander on technical matters and local policy guidance for munitions activities. A few munitions supervision's specific responsibilities include

- ensuring munitions are properly stored, handled, inspected, and maintained.
- monitor status and report availability of munitions assets that could impair mission readiness.
- establishing an effective munitions inspection program and appoint munitions inspectors.
- to review and correct discrepancies found in the unit manning document.
- to develop/approve support and courtesy storage agreements for the munitions storage area.
- ensuring compliance with TOs and applicable directives.
- reviewing quality assurance reports and AFTO Form 22 submissions.
- ensuring key and lock procedures are followed and custodians are appointed.
- chairing the weekly scheduling/production meeting and approves munitions schedules.

Munitions accountable systems officer

The munitions accountable systems officer (MASO) is responsible for the accountability and effective management of the munitions stockpile. MASO mandatory qualifications are 18 months munitions management experience as an NCOIC in munitions operations, storage/handling, or inspection. However, the individual can become a MASO if they have at least six months aforementioned munitions management experience and have completed the AETC Munitions Accountability Course. The following list describes a few of the MASO's responsibilities:

- Manage the munitions portion of the War Consumable Distribution Objective (WCDO) for assigned SRAN/DoDAAC.
- Oversee the accountability and effective management of the munitions stockpile.
- Complete a 100-percent inventory of the munitions stock record account before transfer of MASO responsibilities.
- Resolve any inventory discrepancies by authorizing inventory adjustments or initiate a report of survey (ROS) prior to accomplishing a certificate of transfer.

- Review the base stock account using MAJCOM provided checklists and previous audit and inspection reports. Accomplish, document, and brief the results of this review to the appointing official and squadron commander.
- Appoint the CAS system administrators (SA).
- Provide the requesting unit commander and custodian a briefing on custody account responsibilities. Commanders and custodians sign the AF Form 68, *Munitions Authorization Record*, to acknowledge receipt of their briefing and to authorize CAS user access.
- Ensure customers outside of the munitions unit are notified (within 24 hrs) of suspended or restricted ammunition. Monitor status and keep notification records for affected items.
- Appointed as the base munitions WRM manager; develop a WRM program and ensure no one expends WRM munitions during peacetime without approval.

Munitions section/flight chiefs

The munitions section/flight chiefs are responsible to munitions supervision for overall management of their production, materiel, and systems flights/sections. Besides executing common maintenance responsibilities outlined in AFI 21-101, munitions section/flight chiefs also are responsible for the following:

- Confirm that capability exists to receive, store, inspect, assemble, test, repair, troubleshoot and deliver all munitions on the unit committed munitions list (UCML), mobility standard configuration load, or equivalent, and support munitions tasked for bed-down forces at main operating bases.
- Make sure trained technicians are available to maintain a working environment for the production and maintenance of safe, serviceable, and reliable munitions.
- Verify element master training plans cover peacetime and contingency tasks.
- Make sure sufficient serviceable training munitions are forecasted for training programs.
- Verify explosive operations in munitions areas are performed by a minimum of two munitions personnel. One must be a task-qualified 2W0X1 or civilian equivalent.
- Approve requirements for bench stocks and shop stocks and provide guidance as to the type, location, and use by one or more sections. Spot check bench stocks and shop stocks to evaluate adequacy, supply discipline, and housekeeping.
- Advise munitions supervision when equipment or vehicle status adversely impacts flight line support or deployment capabilities.

011. Typical munitions organizational structure

To become a well-rounded munitions specialist, you should move between each element in order to gain experience within each. This not only makes you a more valuable asset to your organization, but also helps prepare you for higher positions in the career field. This lesson describes a typical munitions organizational structure and also provides the responsibilities of the noncommissioned officer in charge (NCOIC) and the breakdown of the major sections within the AMMO community.

Element noncommissioned officer in charge

The element noncommissioned officer in charge (NCOIC) is responsible to the respective section/flight chief for the management, supervision, and training of assigned personnel. The element NCOIC is a supervisor and technical advisor for the workcenter. Unlike the munitions crew chief position, the element NCOIC is not relieved of responsibilities at the end of the operation, but is accountable to maintain them daily for all assigned personnel. In addition to requirements delegated by the section/flight chief, the element NCOIC will

- strictly enforce use of prescribed technical data and locally developed checklists
- maintain housekeeping, safety, security, and environmental control standards

- make sure current publications are available to meet work center needs
- enforce and supply discipline:
 - Verify availability/control of composite tool kits (CTK) and special tools.
 - Spot-check operating stocks to ensure compliance with all required directives.
 - Manage hazardous material and shelf-life items (lubricants, paint, etc).
- advise munitions control and/or munitions supervision of job status/delays, significant difficulties, and vehicle, equipment, or personnel shortfalls, and
- make sure spotters are used when handling munitions during forklift and bomblift operations.

Production section

The production section assembles, disassembles, delivers, inspects, and maintains conventional munitions, missiles, containers, dispensers, munitions materiel handling equipment (MMHE), special tools, and training bombs. Now let's discuss the duties of conventional maintenance, precision guided munitions (PGM), equipment maintenance, and line delivery elements.

Conventional maintenance

Personnel assigned to conventional maintenance assemble/disassemble, maintain, test, and repair munitions to support operational requirements and to maintain the assigned stockpile. They also maintain munitions-related equipment, containers, dispensers, assigned MMHE, and training items. In addition to general maintenance responsibilities in AFI 21-101, conventional maintenance personnel will accomplish the duties in the following table.

Responsibilities
Check munitions allocations to ensure levels remain supportable and are not exceeded.
Process, certify, and document munitions residue, flightline expenditures, empty containers and demilitarization of inert munitions for turn-in.
Mark loaded 20mm ammunition loading systems (ALS), linkless ammunition loading systems (LALS), and universal ammunition loading systems (UALS) with type, lot number, quantity, and date loaded.
Perform minor maintenance on chaff and flare magazines to include replacement of parts.

Precision guided munitions

Precision guided munitions (PGM) personnel inspect, maintain, assemble, disassemble, and test assigned missiles, guided bombs, and other associated components. The following are a few of the responsibilities of personnel assigned to the PGM element:

- Manage and maintain CAS and TMRS data for all assigned missiles and PGM components.
- Perform physical verification of the material, condition code, lot number, serial number, National Stock Number (NSN), and Department of Defense identification code (DoDIC) of assigned missiles. Initiate, verify, or update forms and historical records as appropriate.
- Schedule/perform periodic inspections and time compliance technical orders (TCTO) actions on assigned missiles and associated components.
- Perform maintenance capability for missile and components. Complete system repairs, alignments, modifications, and calibration requirements; remove and install components according to technical data.

Munitions support equipment

Munitions support equipment personnel inspect, maintain, and service assigned non-powered MMHE. This does not include owner-user items such as slings, munitions assembly conveyor (MAC), bomb lift booms, missile handling equipment, etc. The primary items they maintain are munitions handling

units or munitions trailers; which is why this element is often referred to as trailer maintenance. In addition to the maintenance responsibilities in AFI 21-101, munitions support equipment personnel will

- schedule/perform inspection and maintenance actions on all assigned equipment,
- document equipment records and update actions in appropriate data collection systems (e.g., AF MC2, CAS, IMDS),
- maintain the chassis portion of the ammunitions loading assembly (ALA), ammunition loading system (ALS), linkless ammunitions loading system (LALS), and/or universal ammunitions loading system (UALS), as applicable, and
- coordinate maintenance requirements beyond the capability of the unit with the appropriate repair function (e.g., hydraulic system repair, sheet metal repair, corrosion control).

Line delivery

Line delivery works closely with munitions control and weapons expeditors for flightline support activity. In addition to responsibilities in AFI 21-101, line delivery personnel will

- manage munitions holding areas to preclude explosive and compatibility violations,
- assist in munitions reconciliation throughout the flying day and between aircraft goes,
- notify munitions control of flight line deliveries, returns, and changes to fire/hazard symbol changes as they occur, and
- notify munitions control of all trailer location changes and equipment status changes.

Systems section

The systems section plans, schedules, controls, and directs munitions activities and includes processing of accountable transactions in CAS when relayed from other munitions activities. Systems section personnel provide broad control and support to all munitions activities through plans, schedules, coordinating, controlling, and directing activities. Systems manage unit mobility and training programs.

Munitions control

Munitions control personnel plan, coordinate, direct, and monitor *all* munitions activities. Besides munitions elements they also coordinate with maintenance, flight line, and emergency response agencies for effective flow of information, scheduling, and use of available resources to accomplish the mission. The munitions control facility must be located, equipped, and arranged to ease the collection, recording, and dissemination of information essential for command and control.

The personnel working in the munitions control element will

- process CAS transactions. All controllers shall have the capability to process movement and expenditure transactions in CAS,
- track all conventional munitions, missiles, TYPE trainers, and any equipment associated with munitions activities,
- maintain work order status for all explosives operations and any other mandatory fields identified in the Air Force munitions command and control (AF MC2) SharePoint, or as applicable the nuclear munitions command and control (NMC2) SharePoint,
- develop, maintain, and integrate emergency action checklists,
- collect information, make notifications, and direct/oversee actions taken in response to all emergencies, contingency actions, work stoppages, manning issues, and equipment shortfalls,
- provide munitions leadership timely information on the status of all explosives operations, contingency actions, emergencies, and weapon/safety mishap,

- notify security forces of any movements or facility content changes that would affect security classification or risk category,
- notify fire department of any hazard class division 1.1 explosives movements outside the munitions storage area or of changes affecting fire/hazard symbols,
- manage keys and locks to munitions facilities and structures, and
- be the focal point for the reconciling expenditures and tracking of missile flying hours.

Combat plans/training/mobility

These elements are established in all munitions organizations that administer combat/mobility and training programs. These elements are not required for deployed units, small/unique organizations, and munitions activities that do not support aircraft. In a MUNS that does include these elements, focus is directed on capability to support all tasked contingencies and operation plans (OPLAN). This includes having trained personnel and deployable resources ready for deployment. The following table lists what members of combat plans, training, and the mobility element will accomplish.

Responsibilities
Maintain and be knowledgeable of all applicable OPLAN, CONPLAN, and contingency plan annexes.
Develop deployment plans and functional requirements in coordination with munitions supervision.
Ensure deploying personnel are trained and provided with the necessary documents, individual equipment, and immunizations.
Maintain and account for all personnel mobility folders and mobility items.
Develop and coordinate training schedules and provide them to the plans and scheduling (P&S) element for publication into the munitions schedule.
Oversee and monitor munitions training programs (to include combat munitions training), maintain/requisition training munitions, develop and implement standardized training plans.

Plans and scheduling

Personnel in the munitions plans and scheduling (P&S) element serve as the single point of contact for developing, coordinating, publishing, and distributing maintenance and munitions schedules for the ammo community. P&S is responsible for creating plans, forecasts, and schedules for the maintenance of (live, inert, and dummy) munitions, powered and non-powered handling equipment, and facility inspections. Additionally, munitions plans and scheduling personnel will do the following:

- Prepare quarterly, monthly, and weekly maintenance and inspection schedules. Ensure all tasks are assigned a job control number (JCN) for authorization and tracking purposes.
- Manage the awaiting maintenance, awaiting parts, and TCTO programs. Review and update these programs for the weekly scheduling meeting.
- Plan, forecast, schedule, coordinate, and track munitions TCTO status and time change assets.
- Maintain inspections/testing results of lightning protection and static ground systems, or any other work order request that could adversely affect the function of a munitions facility.

Material section

The materiel section stores, handles, inspects, ships, receives, accomplishes local dispositions, coordinates transportation, and accounts for conventional munitions, containers, dispensers, and training items. The materiel section is composed of the munitions operations, munitions storage, and munitions inspection elements.

Munitions operations

The munitions operations element under direction of the MASO, implement management controls for munitions assets, record munitions transactions, and manage allocations, stock levels, inventories, requisitions, and disposition of munitions. As the central document control collection point, they maintain and validate all auditable munitions records. In addition, operations personnel will

- review stockpile for allocation supportability and requisition munitions as required,
- implement forecasting procedures and adjust allocations in accordance with (IAW) the peacetime conventional ammunition requirements (PCAR) memorandum,
- provide interpretation, guidance, and training on accountability standards to responsible officers, custodians, and other personnel as determined by the MASO and the AF Form 68,
- manage custody accounts and their day-to-day activity (e.g., allocations, stock levels, requisitioning, AF Form 68),
- advise the materiel section/flight chief and munitions supervision of the supply status and availability of accountable items to support the mission. To include monitoring munitions shipments, needed TCTO components and due-in from maintenance (DIFM) assets,
- schedule and conduct munitions inventories IAW AFI 21-201. Initiate inventory adjustment procedures when directed by the MASO,
- notify the MASO and munitions supervision anytime information or data suggest negligence, fraud, or theft involving munitions accountability. Initiate report of survey procedures as directed, and
- perform the proper quality control checks, validation, processing, and filing of all accountable documents. Maintain CAS backups and post-post procedures.

Munitions storage

Munitions storage personnel store/retrieve munitions stock and maintain the munitions storage area (e.g., facilities, vehicles, containers, equipment) in support of the mission. More specifically; storage personnel will do the following:

- Make sure items are not removed from storage without proper authorization and documentation. Act as official escorts within the munitions storage area (MSA).
- Manage munitions storage space, control authorized net explosive weight (NEW) and maintain compatibility of explosives in accordance with the master storage plan and applicable instructions.
- Store all munitions indoors unless outside storage is authorized. Munitions stored outdoors must be coordinated with the wing safety office, security forces, and approved by the maintenance group commander.
- Give security risk category (SRC) I, SRC II, and classified munitions priority for storage in facilities equipped with an intrusion detection system (IDS).
- Maintain storage structure vents, doors, locks, and lightning protection systems.
- Keep interiors of storage structures clean and free of prohibited articles and material.
- Segregate custody, courtesy stored, and unserviceable assets from the stock record account.

Munitions inspection

Munitions inspection personnel perform surveillance duties in accordance with TO 11A-1-10 on all stock or custody account munitions. Inspection personnel determine the serviceability and unforeseen hazards of munitions issued and/or turned-in. Additionally, inspection personnel will

- develop an inspection schedule and a shelf/service life monitoring program,
- monitor and report any notifications of restricted or suspended munitions,

- determine and assign appropriate condition codes to munitions assets per item TO,
- properly tag, mark, and pack munitions assets prior to issue, shipment, or storage,
- certify empty containers and that applicable items do not contain munitions residue, and
- establishes and manages the storage monitoring inspection (SMI) program.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

010. Munitions responsibilities of the higher echelon

1. Who appoints personnel authorized to process, ship, and receive AA&E?
2. Who must select and appoint munitions inspectors?
3. What is the title of the person who is responsible for the effective management of the munitions stockpile?
4. Who must appoint the CAS system administrators?
5. Who verifies that all the element master training plans cover peacetime and contingency tasks?

011. Typical munitions activity organizational structure

1. Who has overall responsibility to enforce supply discipline in a typical munitions element?
2. In a typical munitions activity, what *section* assembles, disassembles, delivers, inspects, and maintains conventional munitions, missiles, containers, and dispensers?
3. In a typical munitions activity, what *section* plans, schedules, controls, and directs munitions activities and in-processes accountable transactions in CAS when relayed from other munitions activities?
4. Munitions control personnel notify security forces of what non-emergency information?
5. In a typical munitions activity, what section stores, handles, inspects, ships, receives, accomplishes local dispositions, coordinates transportation, and accounts for conventional munitions, containers, dispensers, and training items?

6. In a typical munitions activity, what element performs quality control checks, validates, and files all accountable munitions documents?

Answers to Self-Test Questions

006

1. On a functional basis in the United States; on a geographical basis overseas.
2. Combatant commanders.
3. MAJCOMs.
4. RACP.

007

1. AFMC.
2. GACP.
3. To execute product support management and supply management for USAF munitions and related assets.
4. The GACP, Armament Division located at Robins AFB.

008

1. Wing, group, squadron, flight, section, and element.
2. Operational wing.
3. Group.
4. Into three sections—production, systems, and materiel; may also have a total of nine elements.

009

1. To create and sustain force generation capabilities whenever and wherever needed to conduct military operations. On the broadest level, logistics is a key aspect of program management to acquire and sustain weapons systems.
2. MAJCOM.
3. QA.
4. QA personnel.

010

1. Squadron commander.
2. Munitions supervision.
3. MASO.
4. MASO.
5. Munitions section/flight chief.

011

1. Element NCOIC.
2. Production section.
3. Systems section.
4. Movements or facility content changes that affect security classification or risk category.
5. Materiel section.
6. Munitions operations element.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

13. (006) Which agency is a tactical echelon that provides operational leadership and supervision directly under the MAJCOM level of command?
 - a. Air Staff.
 - b. Operational wing.
 - c. Numbered Air Force.
 - d. Specialized mission wing.
14. (007) Which command has cradle-to-grave responsibility of a weapon system?
 - a. Cyber Command.
 - b. Air Combat Command.
 - c. Air Force Materiel Command.
 - d. United States Central Command.
15. (007) Which organization has the mission to execute product support and supply management for Air Force *munitions* and related assets?
 - a. Air Combat Command.
 - b. Logistics Readiness Squadron.
 - c. Warner Robins Air Logistics Center.
 - d. Air Force Global Ammunition Control Point.
16. (008) Which Air Force entity consisting of at least 1,000 personnel, is composed of groups, squadrons, and flights?
 - a. Forward operating base.
 - b. Direct reporting unit.
 - c. MAJCOM.
 - d. Wing.
17. (008) Which *type* of wing performs a support function rather than an operational mission?
 - a. Air base.
 - b. Composite.
 - c. Operational.
 - d. Specialized mission.
18. (008) Which *type* of wing does a training wing represent?
 - a. Air base.
 - b. Composite.
 - c. Operational.
 - d. Specialized mission.
19. (009) When a munitions squadron is authorized, which additional AF specialty is often added as a flight within?
 - a. Aerospace ground equipment.
 - b. Armament systems.
 - c. Aircraft fabrication.
 - d. Metals tech.

20. (009) Which area in the maintenance group manages the technical order improvement program?
 - a. Quality assurance.
 - b. Maintenance.
 - c. Operations.
 - d. Supply.
21. (010) Who appoints in writing personnel authorized to process, ship, and receive arms, ammunition, and explosives (AA&E)?
 - a. Munitions accountable systems officer.
 - b. Mission support group commander.
 - c. Maintenance group commander.
 - d. Squadron commander.
22. (010) Who manages the munitions portion of the war consumable distribution objective for the assigned stock record account number?
 - a. Squadron commander.
 - b. Munitions section/flight chiefs.
 - c. Munitions supervision personnel.
 - d. Munitions accountable systems officer.
23. (010) Who *must* ensure customers outside the munitions unit are notified of suspended or restricted ammunition?
 - a. Squadron commander.
 - b. Inspection element NCOIC.
 - c. Munitions supervision personnel.
 - d. Munitions accountable systems officer.
24. (011) Who is responsible for the management, supervision, and training of *all* assigned shop personnel?
 - a. Element assistant non-commissioned officer in charge (ANCOIC).
 - b. Element noncommissioned officer in charge (NCOIC).
 - c. Shop safety representative.
 - d. Munitions crew chief.
25. (011) Which element within the production section usually have their own inspectors assigned to inspect for munitions residue and to verify expenditures from the flightline?
 - a. Line delivery.
 - b. Conventional maintenance.
 - c. Precision guided munitions.
 - d. Munitions support equipment.
26. (011) Which element within the production section monitors and maintains data for Tactical Munitions Reporting System (TMRS)?
 - a. Line delivery.
 - b. Conventional maintenance.
 - c. Precision guided munitions.
 - d. Munitions support equipment.
27. (011) Which element within the production section works closely with munitions control and weapons expeditors for flightline support activity?
 - a. Line delivery.
 - b. Conventional maintenance.
 - c. Precision guided munitions.
 - d. Munitions support equipment.

28. (011) Which section within the munitions flight plans, schedules, controls, and directs *all* munitions activities?
- a. Systems.
 - b. Materiel.
 - c. Production.
 - d. Supervision.
29. (011) Which munitions element is *not* required at deployed locations or for units that do *not* support aircraft?
- a. Munitions control.
 - b. Conventional maintenance.
 - c. Munitions plans and scheduling.
 - d. Combat plans/training/mobility.
30. (011) Which munitions element maintains inspection/test results of lightning protection and grounding systems?
- a. Munitions control.
 - b. Conventional maintenance.
 - c. Munitions plans and scheduling.
 - d. Combat plans/training/mobility.
31. (011) Which munitions element maintains and validates *all* auditable munitions records?
- a. Storage.
 - b. Control.
 - c. Inspection.
 - d. Operations.
32. (011) Which munitions element determines and assigns condition codes to munitions assets?
- a. Operations.
 - b. Inspection.
 - c. Control.
 - d. Storage.

Please read the unit menu for unit 3 and continue ➔

Unit 3. Operations Planning and Mobility

3–1. Operation Plans/Munitions Employment Planning	3–1
012. Plan conception.....	3–1
013. Plan development	3–3
014. Plan execution.....	3–4
3–2. Major Inspections.....	3–8
016. Commander’s inspection program.....	3–8
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COVETING KUWAIT for many years, Iraq had tried several times to seize its southern oil rich neighbor, but without success. However, on the morning of 2 August 1990, Iraq launched a major invasion of Kuwait. The fight ended quickly; Kuwait’s tiny air force and army could not stop Iraq’s military invasion. Experts believed Saudi Arabia was likely Saddam’s next target. On 6 August 1990, the king of Saudi Arabia invited friendly nations to participate in the defense of their country, marking the beginning of Operation DESERT SHIELD, the defensive deployment of United States military forces to protect the Gulf region from further Iraqi encroachment. Within days, five fighter squadrons arrived in the Gulf region, together with an airlifted brigade of the Army’s 82d Airborne Division. On 21 August 1990, secretary of Defense Dick Cheney declared that the threat of an Iraqi invasion to Saudi Arabia had ended. Air power had already achieved the first of its many successes in the Gulf—it had protected Saudi Arabia from Iraqi aggression. The success of all conflicts is based on having a flexible and responsive operational plan. This unit describes the planning and mobilization processes.

3–1. Operation Plans/Munitions Employment Planning

In 1992, the chief of staff, United States Air Force General McPeak, coined the phrase, “Global Reach, Global Power.” This phrase means we must maintain the capability to deploy anywhere on the globe, and employ the forces required to achieve the national and related military objectives of the United States. Many Air Force units are now tasked to train for single small-scale battles. To prepare for these vast contingencies, all levels of command must be committed to the planning process. In this section, you will learn about the planning process. This process will take you from the time the president determines the threat is real enough to warrant attention to the establishment of the equipment lists to support the plan.

012. Plan conception

The key to any successful military operation is a well thought out plan of operation. When a conflict breaks out somewhere in the world that merits Air Force involvement, you can be assured that a well-defined plan has been established for the situation. This lesson explains the purpose and general principles of military plans that munitions personnel can be tasked to support.

Operation plan

An operation plan (OPLAN) is any plan, except for the single integrated operational plan, for the conduct of military operations. Plans are prepared by combatant commanders in response to requirements established by the chairman of the Joint Chiefs of Staff (CJCS) and by commanders of subordinate commands in response to requirements tasked by the establishing unified commander. OPLANs are prepared either in the complete format or as a concept plan (CONPLAN).

A complete and detailed joint plan, which includes a full description of the concept of operations, identifies special forces, functional support, and resources required to execute the plan. It can be used as a basis for the development of an operation order (OPORD). OPLANs are divided into annexes. The following table describes annexes that are important to ammunition (AMMO) personnel.

Annex	Title	Explanation
A	Task Organization	Describes the situation or environment, enemy, assumptions on which the plan is based, mission of the plan, and its execution and employment of forces. All organizations tasked to implement and/or support the plan are listed in this annex.
B	Intelligence	OPLANs, by their very nature, require complete, well-developed intelligence annexes that reflect the total intelligence picture needed to support the specific OPLAN.
C	Operations	Describes the area of operations, concept of operations, conduct of operations, and establishes command, control, and communications countermeasures.
D	Logistics	Logistics planning is essential to support war and contingency operations. Logistics planners at every level must play an active role in operations planning at the earliest stage possible. You will always find the nonnuclear munitions identified under Annex D, Appendix 6. Appendices 1 through 5, under Annex D include resources such as fuels, transportation, supply, etc. Appendix 6 (nonnuclear munitions) of Annex D describes the concept of ammunition supply/resupply operations by designating the users to be supported.
K	Command, Control, and Communications (C3) Systems	Concerning logistics, this annex provides broad instructions about the support required for command and control (C2). Special measures for command, control, and communications (C3) protection and specific communications security (COMSEC) (Appendix 1) are addressed. For the munitions planner, radio and telephone requirements, including frequency allocations, are identified. All known enemy vulnerabilities of a C2 nature are also identified, along with options for their exploitation.
L	Operations Security (OPSEC)	Identifies and provides guidance regarding all areas of OPSEC related to the operation. This includes what information is thought to be known by the enemy about the operation as well as specific questions the enemy may try to gain answers to through intelligence sources. This annex also stresses the importance of the implementation of specific OPSEC measures to control the flow of possible useful information.
M	Mapping, Charting, and Geodesy (MC&G)	The mapping, charting, and geodesy (the geologic science of the size and shape of the earth) function falls under the realm of intelligence. MC&G supports mission navigation, target acquisition, and weapons delivery.
X	Execution Checklist Safety	Tells when the applicable portions of the OPLAN will be accomplished after the order is received to implement the OPLAN. The actions always take place at H-hour (or start time) plus the number of hours after implementation. This checklist provides a measurement tool for commanders and higher headquarters

In-garrison expeditionary site plan/expeditionary site plan

The in-garrison expeditionary site plan (IGESP) is primarily developed for locations *with* a permanent Air Force presence and is fully developed by the planning efforts of many functional experts. The IGESP translates major command operation planning concepts into base level capabilities to support contingency forces. The IGESP consists of the following two parts:

Part I – outlines base/installation capabilities and total resources.

Part II – assesses ability to support operation, allocates resources, and identifies limiting factors.

The expeditionary site plan (ESP) is associated with locations *without* a permanent Air Force presence and may contain only the minimum data necessary to make initial bed down decisions. These plans are often developed in short time frames to meet contingency needs.

Munitions employment plan

The only difference between the OPLAN and the munitions employment plan (MEP) is that the MEP is tailored specifically to munitions operations to support the OPLAN tasking. Munitions must be configured, reliable, and in place to meet the mission. Munitions supervision develops the MEP to provide detailed guidance for conducting munitions operations when the IGESP is not sufficient or does not exist.

013. Plan development

Because airpower does not win the war all by itself, our “sister services” (Army, Navy, and Marines) must be included in the planning process. This coordinated effort is orchestrated through the joint operational planning and execution system (JOPES). Ammo personnel also need a plan. When supervision creates the MEP, they must have sufficient facts/intelligence to ensure success. Plan development will be further discussed in this lesson.

Developing an operation plan

The joint planning process is a coordinated process within the planning community that provides commanders with the guidance necessary to carry out their assigned mission. Plans developed under these processes differ depending on the focus of the specific plan. OPLANs are developed from a process known as deliberate planning, which is conducted principally during peacetime. Plans developed during deliberate planning provide a foundation for ease of transition to crisis resolution. The five phases of deliberate planning (initiation, concept development, plan development, plan review, supporting plans) are described in the table below.

Phase	Name	Description
I	Initiation	Planning tasks are assigned, resources available for planning are identified, and the groundwork is in place for planning.
II	Concept development	All the factors that significantly affect mission accomplishment are collected and analyzed, mission statement is developed, subordinate tasks are derived, and courses of action are analyzed.
III	Plan development	The basic OPLAN annexes are prepared through a series of steps, and is normally the most time consuming portion of deliberate planning.
IV	Plan review	All elements of the OPLAN are assessed and validated.
V	Supporting plans	All required supporting plans are completed, documented, and validated.

Developing a munitions employment plan

A munitions employment plan is developed in cases where the IGESP does not contain sufficient detail, or is not available. To properly develop the MEP, data must be compiled about the deployed location. In such cases specific data will be retrieved from a site survey.

Resources

The most efficient way to gather information is to conduct a site survey by someone knowledgeable of operational requirements. Identify all the resources available by performing the site survey and comparing it to information available in the host unit’s IGESP/ESP. The table below identifies areas to consider.

Area	Identify
Facilities	Available facilities, including type, dimensions, explosive limits, and any other relevant characteristics.
Vehicles	Vehicles available by type and quantity.
Aerospace grade equipment (AGE)	AGE available by type and quantity.
MMHE	MMHE available by type and quantity.
Tools and equipment	Tools and equipment available for use.
Communications	Available communication capabilities to include radio frequencies, phones, and internet connectivity.

Munitions requirements

As part of the OPLAN, the War Consumable Distribution Objective (WCDO) contains information on munitions anticipated to be expended during conflicts. During MEP development, you will need to

determine if any munitions are pre-positioned at the location, and munitions that are anticipated to be received. Once analyzed, this information is extremely useful in determining workload requirements. The following formula is used to compute the daily consumption rate of each item addressed in OPLAN implementation: primary aircraft authorization \times sortie rate \times standard configuration load \times expenditure per sortie factor.

Security

Verify the security systems and unique procedures for the munitions storage area (MSA) and operating locations. Access and security for the MSA may be the responsibility of ammo personnel during day shift hours.

Munitions accountability

Written procedures must be developed. This is an integral part of munitions production. It facilitates consistent and accurate munitions stockpile management and enhances the unit's combat sortie generation capabilities.

014. Plan execution

As prepared by a supported commander and approved by the CJCS, neither an OPLAN nor a CONPLAN is executed without further coordinated planning and actions by the participants in operational planning. While execution planning assumes the plan will be executed at the time designated, the actual execution requires authorization from the National Command Authority.

Executing an operation plan

If circumstances indicate an imminent need to begin military operations, a series of orders are used to direct preparation, planning, deployment, and execution of plans in response to crises. These orders include the warning order, planning order, alert order, and executive order.

Warning order

The warning order (WARNORD) initiates developing a course of action and applies to the supporting and supported command. The WARNORD establishes command relationships and provides the mission, objectives, and known constraints. A WARNORD does not authorize movement of forces unless specifically stated.

Planning order

A planning order (PLANORD), instead of a warning order, may be issued if the urgency of the situation requires process acceleration. The planning order gives the combatant commander *all essential* execution planning information.

Alert order

If the situation continues to require execution planning after the warning order or planning order is issued, an alert order (ALERTORD) is issued. This order will describe the course of action sufficiently to allow the supporting commander to begin or continue the planning necessary to deploy forces. An ALERTORD may also be issued in lieu of a WARNORD or PLANORD and will provide the combatant commander an approved course of action, combat forces, and strategic lift for planning purposes.

Execute order

Finally, the execute order (EXORD) is issued by the authority and direction of the Secretary of Defense, to direct the deployment and/or employment of forces. If the EXORD is preceded by a detailed ALERTORD or PLANORD, then the EXORD simply directs the deployment and employment of forces.

Executing of a munitions employment plan

Once field units receive an order to deploy and employ, the MEP processes are implemented. Munitions supervision will use the MEP to assist in preparing the appropriate equipment and

personnel numbers for deployment. Once deployed, the MEP will detail how various munitions functional areas should be organized, including equipment, munitions, and personnel utilization.

015. Munitions mobility

Specific equipment and munitions will be required to support the mission at forward operating bases/deployment locations. Prior to forecasting for any further mobility category code B allocations or any unit deployment packages being built, the installation deployment officer (IDO) will coordinate with the MASO to ensure the supporting assets are not already pre-positioned and stocked in-place at the deployment location. Within this lesson we will go over steps to properly execute munitions mobility.

Unit requirements identified

If it is determined that your unit must prepare deployment packages, your assigned unit deployment manager (UDM) will coordinate with the IDO to identify the requirements and resources needed. Once identified, mobility assets will usually be transported using 463L Air Cargo Pallet (HCU-6/E.) for standard aircraft load planning. Under normal conditions, the traffic management office (TMO) is responsible for configuring aircraft pallets for shipments. However, under mobility and contingency conditions the deploying units will usually prepare deployment packages and secure the cargo to the pallets. In which case the deploying unit must acquire and maintain their own pallet couplers, plastic coverings, tie-down straps, and dunnage needed for building their deployment packages. Once the aircraft pallet and cargo net requirements are identified, the UDM will forward the request to the logistics readiness squadron (LRS) distribution and deployments flight. Unit commanders will ensure sufficient personnel are appointed to fill special deployment requirements to include: pallet build-up teams, hazardous cargo certifiers, deployed equipment custodians, weapons and ammo couriers, and so forth. The UDM will in turn ensure all personnel assigned to the deployment meet eligibility and identify any required training. The UDM will forward any needed deployment training requirements to the IDO.

Preparing deployment packages

If circumstances indicate an imminent need to begin military operations, a series of orders are used to direct preparation, planning, deployment, and execution of plans. At this point units will refer to the squadron or shop logistics plan materiel list to ensure they have the required assets. Once assets are identified and acquired, the trained pallet build-up teams will begin preparing the deployment packages. Initial and annual training for identified pallet build-up personnel will be provided through LRS. The following tables lists basic procedures for building up the 463L pallets in accordance with (IAW) T.O. 36M-1-141. Also, refer to figures 3-1 empty pallet, and 3-2 loaded pallet illustrations.

Inspect 463L Pallets and Nets
Make sure pallets are clean, corrosion and residue free, right side up, and placed on three point dunnage (4" x 4" x 88") to aid in forklift transport and to prevent surface damage.
Ensure outer skin is free of defects, outer skin is level (not warped), outer lips are damage free, and tie down rings are serviceable.
Ensure nets are serviceable, have all required hooks, and function properly.

Placement of Cargo on Pallet
Do not exceed a height of 96-inches for netted cargo or exceed pallet capacity of 10,000 lbs.
All pallets for C-130 loads are built with a 6-inch aisle way on one 88-inch side of the pallet.
Place heavier items on bottom center of pallet. Build cargo in a square configuration.
Use shoring if item exceeds 250 psi or has metal edges that could damage the pallet.
<ul style="list-style-type: none"> • Cargo should not overhang the surface of the pallet. • Place a plastic cover over all cargo not designed to be exposed to the elements.

Attach Nets as Follows	
1.	Lay the side net out and identify the long side (six hooks). Attach hooks to pallet beginning at the long side corner and moving right ensuring hooks face inward.
2.	Crisscross the hooks at each corner. Pull the nets up and attach them using the side hooks which face outward. Ensure no twists in net upon completion.
3.	Lay the top net out and identify the long side (five hooks). Place over cargo, ensuring net is centered before attaching to side nets. Upon completion, ensure all nets are tight.
4.	For short pallets (less than 45" and weighing less than 2,500 lbs.) requiring only a top net, four supplemental straps are required for side-to-side support. For pallets using only side nets, seven supplemental straps are required for vertical support.
5.	Place a second piece of plastic over the pallet and secure with tie-down straps during inclement weather. The load team will remove the plastic cover before loading on aircraft.
6.	Mark the center of balance (CB) with a 1-inch wide line, not less than 3-inches long on both sides of pallet. Since pallets are reused, avoid using permanent markings such as paint.
7.	Gross weight will be marked above the CB. Markings will be on both sides of the item.
8.	Attach two placards of durable material on adjacent sides of the pallet.
9.	Ensure placards have a completed logistics module (LOGMOD) label attached.

• 463L Pallet

- Large lightweight aircraft cargo pallet made of honeycomb or balsa wood core with aluminum outer skin
- Exterior dimensions: 108"W X 88"L X 2.25"H
- Weight: 300 lbs
- Maximum gross weight: 10,000 lbs

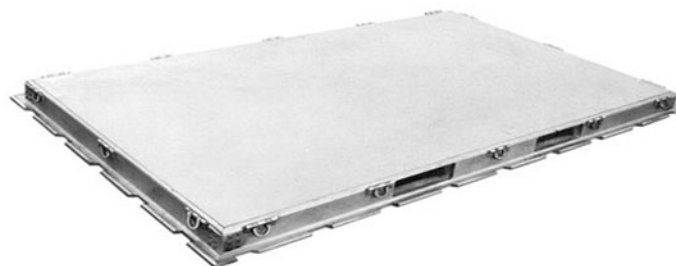


Figure 3-1. Empty 463L pallet.



Figure 3-2. Loaded 463L pallet.

Preparing documentation

Load and packing lists must be accurate and be attached in a weatherproof pouch with the pallet. Place one copy of the shipper's declaration into the outside waterproof envelope and provide three copies to the cargo deployment function. Provide seven copies of load lists, four copies of shipper's declaration, keys and combos to locked containers, and weapon serial number listings in a waterproof envelope on the back of the pallet placard. Ensure packing and load lists identify all hazardous material by hazard class. Each palletized load must have an authorized military shipment label (MSL) attached. Information found on the MSL includes: transportation control number (TCN), stock record account number (SRAN) for origin/destination, Department of Defense account activity code (DoDAAC) for origin/destination, dimensions, weight, and point of contact. Determine the actual weight (in pounds) and dimensions (in inches) by physically weighing and measuring all cargo. Place all hazardous labels and DD Form 1387-2 labels so they are visible from the 88-inch side of the pallet. Cargo that is sensitive and hazardous (such as small arms ammunition) requires a Shipper's Declaration for Dangerous Goods for certification IAW Air Force Manual (AFMAN) 24-204.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

012. Plan conception

1. What is an OPLAN?
2. Within which annex listed in the OPLAN would you find nonnuclear munitions requirements?
3. What does the IGESP translate?
4. Why does munitions supervision develop the MEP?

013. Plan development

1. What are the five phases of deliberate planning?
2. When developing a munitions employment plan, what is the most efficient way to identify resources available at a deployed location?
3. What is the formula used to compute the daily consumption rate of munitions for an OPLAN?

014. Plan execution

1. What four orders are used to direct preparation, planning, deployment, and execution of plans in response to crises?

2. What order initiates the supporting and supported command to develop a course of action?
3. When is an ALERTORD issued?
4. Who is authorized to issue the EXORD?

015. Munitions mobility

1. Who within your unit ensures personnel assigned to a deployment meet eligibility and training criteria?
2. What information can be found on an attached MSL for a palletized load?

3-2. Major Inspections

The main purpose of a major inspection is to maintain the readiness, discipline, efficiency, and economy of the Air Force. Inspection Programs will be established at the squadron, group, wing, field operating agencies, direct reporting units, MAJCOM, and Headquarters Air Force Levels IAW Title 10 United States Code 8583. To accomplish this, evaluation methods including surveys, interviews, assessments, evaluations, exercises, and audits are conducted throughout the year. The Air Force inspection system (AFIS) is the single coherent, integrated, and synchronized system of inspections conducted on behalf of the secretary of the Air Force, the chief of staff of the Air Force, and commanders at all levels. The AFIS gives confidence to commanders and Airmen at every level that mission readiness equals inspection readiness.

016. Commander's inspection program

All Air Force wings will have a commander's inspection program. Part of commanders' responsibilities IAW AFI 1-2, *Commander's Responsibilities*, are to enforce compliance within their units. The commander ensures internal inspections are being conducted and requests/supports any external inspections affecting their unit(s).

Internal inspections

Internal inspections are the foundation of AFIS, promoting responsibility and accountability within the unit and allowing commanders to control the depth, scope, and frequency of inspections. Commanders will ensure their unit's inspection program is set up to detect non-compliance with applicable directives and are effectively adhering to the four major graded areas which are

- executing the mission (primary mission execution, AEF readiness, mission-assurance C2),
- managing resources (manpower, funds, equipment, stewardship),
- improving the unit (strategic alignment, processes, inspections, data-driven decisions), and
- leading people (communication, discipline, training/development, quality of life).

Self-assessments of individual programs are reported within the unit to report compliance/findings in relation to the governing directives. An independent verification of these assessments is then made to provide further validity. If discrepancies are found, a root-cause analysis is conducted to identify any limiting factors or if any additional resources are required. If the determination is that the corrective action is beyond the unit commander's ability to resolve, the non-compliant items are forwarded higher up the chain of command.

External inspections

External inspections are conducted by outside agencies (e.g., MAJCOM IG teams) and are used infrequently to validate and verify the wing's internal inspection process. External inspections include the following types:

- IG inspections.
- Unit effectiveness inspections (UEI).
- Management inspections (MI).
- Nuclear surety inspections (NSI).
- Non-Air Force inspections.

While almost all programs/additional duties will have an assessment scheduled, inspection authorities will make an effort to consolidate inspections to avoid redundancy and eliminate on-site inspections that are not mission-relevant, do not outweigh their costs, or detract from mission readiness.

017. Management internal control toolset

The most visible internal inspection method used by unit members is the management internal control toolset (MICT). The management internal control toolset is a web based self-assessment commander's tool that is part of the Air Force Inspection System and the commander's inspection program.

System description

The MICT platform efficiently records and communicates a unit's current program status throughout the chain of command from supervisors all the way up to the secretary of the Air Force. It has become the preferred self-assessment tool replacing cumbersome paper inspection checklists and reports that previously required separate checklists for each AFI or governing publication. Now each assessment line item answered can include multiple references. The MICT program is a continual real-time evaluation tool that increases awareness to program requirements and identifies discrepancies or shortfalls. However, to ensure the successful operation of MICT requires truthful assessments. Deficiencies that cannot be corrected on-the-spot must be documented/recorded as soon as possible. However, as long as the discrepancy is beyond your control, this is an opportunity to communicate the shortfall directly to leadership without suffering any repercussions.

Navigation

Individuals with a government issued common access card (CAC) can access the management internal control toolset through the AF portal, or by going straight to <https://mict.us.af.mil/>. The home page has several active links to help navigate through the site. For instance, help guides and power point training slides can be found on the first screen upon log-in. Also, if an individual already have assessments assigned the links will be listed under "Active Assessments," or by choosing the assessment tab at the top. To view the assessment, click the checklist title. To make changes to the assessment, click the magnifying glass icon in the next column over.

Once an individual is appointed in writing as the new point of contact for a particular program, the member can select "Request Unit Permissions" to request being assigned as the assessor for that checklist. If further help is required the home page has a link to "Local Administrators" which provides names, email addresses, and phone numbers of unit administrators who can assist.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

016. Commander's inspection program

1. What *type* of inspection is the foundation of the AFIS?

2. Who typically performs *external* inspections for a unit within a wing?

017. Management internal control toolset

1. To whom can the MICT communicate discrepancies?
2. From what media or location can MICT be accessed?

Answers to Self-Test Questions**012**

1. Any plan, except for the single integrated operational plan, for the conduct of military operations.
2. Annex D, *Logistics*.
3. The IGESP translates major command operation planning concepts into base-level capabilities to support forces.
4. Munitions flight supervision develops the MEP to provide detailed guidance for conducting munitions operations when the IGESP is not sufficient or does not exist.

013

1. (1) Initiation.
(2) Concept development.
(3) Plan development.
(4) Plan review.
(5) Supporting plans.
2. By performing a site survey.
3. Primary aircraft authorization \times sortie rate \times standard configuration load \times expenditure per sortie factor.

014

1. (1) Warning order.
(2) Planning order.
(3) Alert order.
(4) Execute order.
2. The WARNORD.
3. When the situation requires continued execution planning after the warning or planning order is issued.
4. The secretary of defense.

015

1. UDM.
2. TCN, SRAN, DoDAAC, dimensions, weight, and point of contact.

016

1. Internal inspection.
2. Outside agencies, like MAJCOM IG teams.

017

1. Throughout the chain of command from supervisors to the secretary of the Air Force.
2. The AF Portal, or by going straight to the URL web address.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

33. (012) Which annex of an operations plan (OPLAN) identifies nonnuclear munitions requirements?
- a. A.
 - b. B.
 - c. C.
 - d. D.
34. (012) The plan that is *primarily* developed for locations with a *permanent* Air Force presence and translates MAJCOM operation planning concepts into base level capabilities to support contingency forces is
- a. expeditionary site.
 - b. concept of operations.
 - c. munitions employment.
 - d. in-garrison expeditionary site.
35. (012) Which plan is primarily developed for locations *without* a *permanent* Air Force presence and may contain only the minimum data necessary to make initial bed down decisions?
- a. Operation.
 - b. Expeditionary site.
 - c. Munitions employment.
 - d. In-garrison expeditionary site.
36. (012) Who at the base level develops the munitions employment plan?
- a. Base commander.
 - b. Squadron commander.
 - c. Munitions supervision.
 - d. Installation deployment officer.
37. (013) When developing a munitions employment plan, the action that is the *most* efficient way to gather information is to
- a. conduct a site survey.
 - b. review Air Force doctrine.
 - c. review the base support plan.
 - d. request supporting command complete an inventory of all available resources.
38. (013) The War Consumable Distribution Objective contains information on munitions anticipated to be expended during
- a. reorganization.
 - b. peacetime.
 - c. training.
 - d. conflict.
39. (014) In reference to implementing an operation or plan, which order gives the combatant commander *all* essential execution planning information when the situation requires process acceleration?
- a. Execution.
 - b. Planning.

- c. Warning.
 - d. Alert.
40. (014) In reference to implementing an operation or plan, the order that provides the combatant commander an *approved* course of action, combat forces, and strategic lift for planning purposes in lieu of other orders is
- a. execution.
 - b. planning.
 - c. warning.
 - d. alert.
41. (014) In reference to implementing an operation or plan, which order is issued by the Secretary of Defense and directs the deployment and/or employment of forces?
- a. Warning.
 - b. Planning.
 - c. Execute.
 - d. Alert.
42. (015) Who acquires and maintains the pallet couplers, plastic coverings, tiedown straps, and dunnage for building deployment packages?
- a. Traffic management office.
 - b. Installation commander.
 - c. Fleet management.
 - d. Deploying units.
43. (015) The frequency of training required for pallet build-up personnel is
- a. quarterly.
 - b. semi-annually.
 - c. initial and annually.
 - d. one time session only.
44. (016) Within which wing(s) is a Commander's Inspection Program (CIP) required for conducting internal inspections?
- a. Air base.
 - b. Operational.
 - c. All Air Force.
 - d. Specialized mission.
45. (016) A reason for an external inspection by an outside agency is
- a. to comply with Executive Order 10995.
 - b. for meeting with periodic scheduling timelines.
 - c. when the wing's IG is backlogged with overdue inspections.
 - d. to validate and verify the wing's internal inspection process.
46. (017) Management internal control toolset (MICT) program is a
- a. unit resiliency tool.
 - b. hardcopy self-inspection checklist.
 - c. continual real-time evaluation tool.
 - d. system designed solely to up channel fraud waste and abuse complaints.

Unit 4. Munitions Security

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THE WORLD we live in is made up of many nations that are politically, economically, and ideologically different. Among these are nations that would like to overthrow or destroy the United States through subversion, espionage, terrorism, and military intervention. Our adversaries or enemies have intelligence forces designed specifically to obtain as much information as possible about the capabilities of the United States armed forces. These intelligence forces will use any method to gain sensitive and classified information and material. Blackmail, wire tapping, kidnapping, murder, and theft are only a few of the methods used. We can better understand how to protect ourselves from our adversaries by studying physical security, operational and informational security, and the nuclear surety program, which are all covered in this unit.

4–1. Physical Security

You can prevent the invisible enemy from gaining classified and sensitive information and material if you alleviate vulnerabilities. All of us are required to prevent the compromise of sensitive and classified information and safeguard material resources. For additional information concerning nuclear and conventional security requirements consult AFI 31-101, *Integrated Defense (FOUO)*.

018. Protection levels

The protection level (PL) system identifies specific Air Force resources you must secure and the level of security dedicated to those resources. This system recognizes that the owners and users of these resources must accept varying degrees of risk. Let's review the protection levels.

Protection level 1

PL1 is assigned to resources for which the loss, theft, destruction, misuse or compromise would result in *great* harm to the strategic capability of the United States. Examples are nuclear weapons and aircraft designated to transport the president of the United States.

Protection level 2

PL2 is assigned to resources for which the loss, theft, destruction, misuse, or compromise would cause *significant* harm to the war-fighting capability of the United States. Examples are nonnuclear alert forces, designated space and launch systems, and intelligence-gathering systems.

Protection level 3

PL3 is assigned to resources for which the loss, theft, destruction, misuse, or compromise would *damage* United States' war-fighting capability. Examples are non-alert resources that can be generated to alert status, such as F-16 fighters and selected C3 facilities, systems, and equipment.

Protection level 4

PL4 is assigned to resources that do not meet the definitions of PL1, PL2, or PL3 resources, but for which the loss, theft, destruction, misuse, or compromise would *adversely* affect the operational

capability of the Air Force. Examples are facilities storing category I, II, or III sensitive conventional arms, ammunition, and explosives (AA&E) and Air Force accounting and finance vault areas.

019. Controlled/restricted areas

The location at which you perform your duties and the installation's mission requirements dictate whether you work in a weapons storage area (WSA) or a munitions storage area (MSA). The different types of storage areas require different degrees of security. In some instances you'll provide the security for the entry control point and become the first line of defense. The different security areas you'll likely be working in as an ammo troop are restricted areas and controlled areas. However, and on rare occasions you may have to use national defense areas.

Restricted area

A restricted area is an area on a military base or a site under the control of the military in which special security measures are employed to prevent unauthorized entry. Specific written permission under the authority of the commander and positive identification for entry control procedures (e.g., security badge/AF Form 1199, entry authority list) are required to enter a restricted area. Physical barriers are used to prevent unauthorized people from entering and gaining access to resources that the restricted area protects. Restricted areas are established to provide security for PL1, PL2, or PL3 resources. Now let's take a look at some general restricted area requirements listed in the following list:

- Restricted areas should be as small as possible to eliminate the need for securing and maintaining unnecessary terrain.
- Only *one* entry control point should be set up for each restricted area.
- Restricted areas containing PL1 and PL2 assets will have armed entry controllers.
- Periodic identification checks/challenges will be enforced for individuals not properly displaying their restricted area badges.
- All personnel that do not have authorized unescorted entry credentials must remain in the presence of an authorized escort official at all times.
- Resources with the same security priority should be consolidated to make the most of available security resources.
- The boundary of each restricted area should be clearly marked with warning signs (fig. 4-1).



Figure 4-1. Restricted area sign.

Controlled area

Controlled areas are defined as areas containing PL4 resources (e.g., category I, II, or III sensitive conventional arms, ammunition, and explosives). Only authorized personnel designated by a unit commander have access to these areas. Munitions storage areas (MSA) are generally designated as controlled areas. A badge system and/or a combination to a locked gate is normally used to gain entry to a munitions storage area. Security for controlled areas is usually the responsibility of the owners/users, with security forces providing response to actual threats. The security effectiveness depends greatly on the personnel working in it. It is important to challenge unknown individuals who are not displaying their security badges for identification/authorization purposes.

National defense area/transporting munitions

Moving and storing critical munitions does not always take place on military installations. There will be times that secure temporary storage/staging areas will have to be established to protect these resources. National defense areas contain and secure federal government PL1, PL2, or PL3 resources in the US and US-territorial areas that do not fall under the jurisdiction of the DoD. The establishment of a national defense area may be necessary by unplanned emergency dispersal of aircraft to civilian airports, emergency landings of aircraft carrying nuclear weapons, temporarily stopped nuclear weapon ground convoys, aircraft crashes, or other unplanned emergency. Only those commanders delegated the authority to establish restricted areas have authority to establish a national security area. This is typically authorized by the senior operational/installation commander through their on-site mission commander or incident commander.

Entry control

Secure areas for munitions *must* have physical barriers that prevent unauthorized entry. Security fences, perimeter lighting, and intrusion alarm systems assist security forces with protecting the resources contained in secure areas. Authorized individuals gain access into a secure area through an entry control point (ECP). To be authorized regular access to a secure area, you must first be identified as having a regular requirement for entry into the area. If you need to enter the area occasionally, only escorted entry is granted. In this latter situation, authorized individuals keep you under surveillance until you leave the area.

Specific entry control techniques for entry into a secure area range from personal recognition to the use of a restricted area badge or automated entry control system (e.g., cipher lock), and can include use of entry authority lists (EAL), the turning in of one badge to receive another, or a combination of these methods.

020. Munitions security

Although nonnuclear munitions do not require the degree of protection afforded to nuclear weapons, they do require a high degree of security. Munitions storage structures shall be secured with high-security padlocks and hasps to provide increased protection. In addition, some high-risk assets require an IDS.

Controlled inventory item code

All munitions items are assigned a controlled inventory item code (CIIC) by the respective item manager (IM) to identify the degree of security that must be applied to a munitions item while the item is in storage or in transit. CIICs are ranked in descending order (classified, sensitive, pilferable, and unclassified) according to the degree of control normally required for each item. Once assigned a CIIC, only the item manager (IM), who has worldwide management responsibility for the item, can change the code. To determine if the CIIC is correct, check in the Web-based Federal Logistics Information System (WebFlis) application through the Defense Logistics Information Service (DLIS) site. The restricted search will require a user ID/password for first time access.

Classified items

Classified items are identified in WebFlis and require protection in the interest of national security.

The following table provides a list of security codes and their explanations used to determine the level of classification assigned to munitions by the IM.

Level	Meaning
A	Confidential—formerly restricted data.
B	Confidential—restricted data.
C	Confidential.
D	Confidential—cryptologic.
E	Secret—cryptologic.
F	Top secret—cryptologic.
G	Secret—formerly restricted data.
H	Secret—restricted data.
K	Top secret—formerly restricted data
L	Top secret—restricted data.
O	Item contains naval nuclear propulsion information.
S	Secret.
T	Top secret.

Sensitive items

Sensitive items require a high degree of protection and control due to statutory requirements or regulations such as narcotics/controlled substances, precious metals, high value assets, and hazardous items (e.g., ammunition, explosives, demolition material). The following table contains codes and their explanations assigned to sensitive items.

Code	Sensitivity	Category	Explanation
1	Highest	I	Nonnuclear missiles and rockets in a ready-to-fire configuration. This also applies when the launcher and the explosive rounds (though not in a ready-to-fire configuration) are jointly stored or transported.
2	High	II	Arms, ammunition, and explosives.
3	Moderate	III	Arms, ammunition, and explosives.
4	Low	IV	Arms, ammunition, and explosives.
5	Highest	I	Arms, ammunition, and explosives with a physical security classification of secret.
6	Highest	I	Arms, ammunition, and explosives with a physical security classification of confidential.
8	Highest	II	Arms, ammunition, and explosives with a physical security classification of confidential.
9			A drug or other controlled substance designated as a schedule III, IV, or V item, in the Controlled Substance Act of 1970. Other sensitive items requiring limited access storage.
R			Precious metals, a drug, or other controlled substances designated as a schedule I or II item, in the Controlled Substance Act of 1970 or other selective sensitive items requiring storage in a vault or safe.
\$			This code identifies nuclear weapons ground equipment (use control) which is CIIC unclassified but may require special controls.

The next few paragraphs identify further subgroups used to determine the level or levels and type of security required for these items.

Pilferable items

The use of pilferable item codes indicates that a specific item has a ready resale value or civilian utility application and is especially subject to theft. The primary wholesale source of an item may increase its risk for theft, because of the large quantities on hand, and impose protective controls. The tables below list codes and their explanations used to identify pilferable items and a brief description.

Code	Explanation
J	Items requiring special control to prevent pilferage but which do not meet the definition of any other pilferage code.
I	Aircraft engines.
M	Hand tools and shop equipment.
N	Firearms.
P	Ammunition and explosives.
V	Individual clothing and equipment.
W	Office machines.
X	Photographic equipment and supplies.
Y	Communication/electronic equipment and parts.
Z	Vehicular equipment and parts.

Unclassified items

Unclassified items are items that do not fall into the other security categories but still require a certain degree of security when handling, storing, or destroying. The code and explanation for these items are shown in the table below.

Code	Explanation
U	Unclassified.
7	Item displays sensitive information. Prior to disposal, all name plates, tags, stickers, documents or markings that relate to weapons system and end item application must be removed and destroyed.
9	This code identifies an item as a controlled cryptographic item (CCI). CCI is described as a secure telecommunications or information handling equipment, associated cryptographic component, or other hardware items that perform a critical COMSEC function. Items so designated are unclassified but controlled, and will bear the designation "Controlled Cryptographic Item" or "CCI."

Risk categories

Standards and procedures for protecting arms and ammunition vary according to their assigned risk category. When more than one risk category of items are stored in a container, structure, or area, the command provides the protection required for the highest category involved. Classified items with operational characteristics that would otherwise qualify them for assignment to a risk category are secured according to criteria for that risk category found in Department of Defense (DoD) 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*.

Any single container or structure that contains a sufficient array of spare parts that, when assembled, will perform the basic function of the end item are protected in the same manner as the end item. Risk category identification codes or CIICs are identified in WebFlis. The four risk categories assigned to arms and munitions items are provided here in the following table for information purposes.

DoD Category	Risk	Consists of
I	Very high	Complete man-portable nonnuclear missiles and rockets when in a ready to fire configuration. When such complete systems are installed in aircraft, they remain very-high-risk items. This category assignment also applies in situations where the launcher and explosive rounds, though not in a ready-to-fire configuration, are jointly stored or transported. The very-high-risk category also includes complete explosive rounds for very-high-risk missiles and rockets.
II	High	Light, automatic weapons up to and including .50 caliber. Antitank or antipersonnel mines (unpacked weight of 100 pounds or less each). Explosives used in demolition operations (e.g., C-4, military dynamite, TNT, etc.). Explosive hand or rifle grenades.
III	Medium	Launch tube and gripstock for Stinger missiles. Mortar tubes. Grenade launchers. Flame throwers. Caliber .50 and larger ammunition with explosive-filled projectile. Incendiary grenades and grenade fuses. Blasting caps. Detonating cord.
IV	Low	Manually operated, shoulder-fired weapons other than grenade launchers. Handguns. Recoilless rifles up to and including 90mm. Ammunition with nonexplosive projectile (unpacked weight of 100 pounds or less). Fuses, other than for grenades. Illumination, smoke, and practice grenades. Riot control agents, 100-pound package or less.

Facilities storing Category I and II missiles, rockets, ammunition and/or explosives, will be equipped with two levels of IDS, unless areas where they are located are continuously manned or under constant surveillance. Structures containing Category III and IV AA&E, do not require IDS unless directed by MAJCOM. If these CAT III and IV structures are not equipped with IDS, daily security checks are required during non-duty hours.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

018. Protection levels

1. What do protection levels do for Air Force resources?
2. What protection level is assigned to resources for which the loss, theft, destruction, misuse, or compromise would cause significant harm to the war-fighting capability of the US?
3. What protection level is assigned to resources for which the loss, theft, destruction, misuse, or compromise would damage the US war-fighting capability?

019. Controlled/restricted areas

1. Name the two security areas where an ammo troop will likely perform his/her duties.

2. What is required for an individual to gain access into a restricted area?
3. What resources are generally stored within a controlled area?
4. Give an example of when a national defense area may be used.
5. Where do authorized individuals go to gain access to a secure area?

020. Munitions security

1. What munitions items are assigned a controlled inventory item code (CIIC), and what is the intended purpose of these codes?
2. What are the four categories of the CIICs?
3. Who has worldwide management responsibility for a specific munitions item and is the only one who can change the CIIC for the applicable item?
4. What type of items fall into the sensitive category, and what type of protection and control is required?
5. When an item is assigned a pilferable code, what does that indicate about the item?
6. What risk category includes explosive hand or rifle grenades?

4-2. Operational Security and Nuclear Surety

All information about an Air Force operation/mission needs protection because of its value to our enemies. Protection is provided under several Air Force security programs. It is necessary to further your knowledge of security due to our inherent responsibilities to protect the munitions assets, equipment, and information we are entrusted with. This section will provide such information.

021. Common and specific operational security vulnerabilities

The Air Force operations security (OPSEC) program is concerned with the information, actions, and activities that are sensitive because they can telegraph our capabilities to the enemy. Operation orders, plans, directives, standard operating procedures, and supporting plans must be developed with awareness that the enemy will try to exploit vulnerable activities. Almost all official duties you perform involve classified information or material of value to intelligence forces. Therefore, you must be able to identify the threats that result from performing such duties as a munitions systems specialist.

Common vulnerabilities

Vulnerabilities are weaknesses that make it relatively easy for an adversary to obtain and exploit critical information, either from the source of information itself or from an indicator of that source. The following two conditions must be present for an OPSEC vulnerability to exist:

1. A weakness that could reveal critical information.
2. An adversary with both the intent and the capability to exploit that weakness (i.e., a threat).

Once identified, these conditions can normally be controlled, thereby eliminating or reducing the OPSEC vulnerability.

Specific vulnerabilities

Within the routines of your day-to-day job, there are many times you have indicators that are almost always available for any terrorist to use against the US and its allies. You need to be aware of these indicators so you can safeguard them. These indicators fall into four categories: operations, communications, administrative, and logistics and maintenance support. The lists in the following table are not all inclusive.

Operations indicators	Communications indicators
Stereotyped activities such test preparations and range closures. Abrupt changes or cancellations of schedules. Increased telephone calls, conferences, and longer working hours (including weekends). Rehearsals of operations/Exercises. Unusual or increased trips and conferences by senior officials.	Use of specialized and unique communications equipment. Changes to power sources. Increases and decreases in communications traffic. Call signs. Transmitter locations.
Administrative indicators	Logistics and maintenance support indicators
Military orders. Distinctive emblems, logos, and other markings on personnel, equipment, and supplies. Transportation arrangements. Schedules, orders, flight plans, and duty rosters. Leave cancellations.	Unique sized and shaped boxes, tanks, and other containers. Prepositioned equipment. Technical representatives. Maintenance activity. Unique or special commercial services. Deviations of normal procedures.

Operational and information security are essential in ensuring that munitions make it to their targets. If munitions personnel do not take appropriate security measures, the mission will suffer. Every 2W0X1 is responsible for knowing and taking all security precautions.

022. Nuclear surety program

Nuclear weapons surety is the material, personnel, and procedures that contribute to the safety, security, reliability, and control of nuclear weapons, thus assuring no nuclear accidents, incidents, unauthorized use, or degradation in performance. As a member of the munitions and weapons career field (2W), you may be required to store, handle, or protect nuclear weapons. For this reason, you should become familiar with the nuclear weapons surety program and the personnel reliability program. Let's first discuss the nuclear weapons surety program.

Air Force nuclear weapons surety program

A major goal of the nuclear weapons surety program is to achieve maximum safety consistent with operational requirements. Another major goal is to maintain our record of *zero* accidental or unauthorized nuclear yields and to reduce the potential for, and the possible effects of nuclear mishaps.

As a minimum, nuclear weapon systems must be designed and operated in a manner that meets the Nuclear Weapon System Safety Standards in DoD Directive (DoDD) 3150.2, *DoD Nuclear Weapons Surety Program*. These standards state that there will be positive measures to

- prevent nuclear weapons from being involved in accidents or incidents, or jettisoned weapons from producing a nuclear yield,
- prevent *deliberate* pre-arming, arming, launching, firing, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority,
- prevent *inadvertent* pre-arming, arming, launching, firing, or releasing of nuclear weapons in all normal and credible abnormal environments and
- ensure adequate security of nuclear weapons.

Nuclear surety is a command responsibility. Commanders must give personal attention and direction to their nuclear surety programs and must emphasize that safety, security, control, and effectiveness of nuclear weapons are important to the United States. The following is not an all inclusive list of restrictions dealing with nuclear weapons:

- Do not use nuclear weapons to troubleshoot faults.
- During exercises, do not wear complete chemical ensembles when handling war reserve nuclear weapons. Remove the gas mask (to aid in identification) and cumbersome gloves (to ensure weapons are not inadvertently damaged).
- Storing nuclear weapons in one facility and conventional munitions in another facility within the same weapons storage area (WSA) is not considered simultaneous presence and does not require MAJCOM approval. Do not store nuclear weapons and conventional munitions together, except as outlined in AFI 91-101, *Air Force Nuclear Weapons Surety Program*.

Personnel reliability program

The personnel reliability program (PRP) is a management program. It carries out the requirements and responsibilities for screening, selecting, and continual evaluation of people who control, have access to, or control access to nuclear weapons, nuclear weapons systems, or critical components. DoDI 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP)*, provides the necessary direction to implement this program. It contains the procedures for the selection and retention of emotionally stable individuals who have demonstrated good judgment and professional competence. It also tells you how to remove someone of questionable reliability from the program.

The primary objective of PRP is to make sure that everyone who performs duties with nuclear weapons, weapons systems, or critical components meets the highest possible standards of individual reliability. Individuals who, because of emotional disorder, personality makeup, character deficit, or habit, are unable to perform consistently at a high level of efficiency have no business working with or around nuclear weapons. They must be screened out and reassigned to less sensitive duties or processed for discharge from the service. It is necessary to identify and remove from nuclear weapons all individuals who have given adequate indication, by their way of life, that they are not capable of dealing with the stresses involved in such an assignment.

Personnel reliability program positions

The program applies to all DoD military, civilian personnel, and contractor employees who are presently assigned or selected for assignment to duties involving the control, handling, or access to nuclear weapons, nuclear weapons systems, or critical nuclear components. The program divides personnel into two categories—those in critical positions and those in controlled positions.

Critical

A critical position is when an individual is assigned duties that require physical proximity to a critical component of a nuclear weapon system in such a manner as to allow the opportunity to activate or tamper with the critical component, which could cause, then or later, premature arming, detonation,

launching, firing, or releasing or permit a person to launch or to direct the launch of a nuclear weapon delivery vehicle. The nature of these duties normally requires detailed technical knowledge of nuclear weapon systems.

Controlled

A controlled position is when an individual performs or will be assigned regular and frequent duties in support of nuclear weapons. An individual in this position may have duties that require entry into a no-lone zone, but which do not require technical knowledge of the electrical or mechanical portions of the nuclear weapon or nuclear system affecting the launching, releasing, or detonating the weapon, weapon system, or critical components. This also includes an individual whose duties do *not* require entry into such an area, but whose duties *do* control entry. Most munitions systems journeymen working with special weapons fall into this category.

The number of positions identified must be the minimum number necessary to meet operational requirements. Positions in the PRP that do not meet the criteria dilute the impact of the program. It reduces total program effectiveness and increases the number of people and the cost required to administer the program. Each year the unit commander must review all positions identified as requiring PRP certification and delete any unnecessary positions. MAJCOMs also annually review the number of positions identified in each unit.

Determination of individual reliability

The certifying official (the commander) makes a judgment based on knowledge of past behavior and insight gained from a personal interview with the person. The commander must use this insight, together with specific facts, a detailed knowledge of performance, and consultative opinions from other agencies (such as the hospital), to arrive at the best judgment about an individual's reliability.

The commander's judgment must account for the capability and intent of the person to perform the assigned duties as well as the nature of these duties. To arrive at the best judgment of reliability, the commander requires input from supervisory, medical, and security forces personnel. The underlying concept is simply to make the best judgment about whether an individual can be depended on to perform the assigned duties when required.

Past performance

The *best* indication of reliability is past performance. The commander must review the person's job or duty history for evidence of the following desirable traits:

- Is dependable in accepting responsibility.
- Can carry out duties effectively and in the approved manner.
- Is flexible in adjusting to changes in working environment.
- Has the ability to use good judgment in meeting adverse or emergency situations.

Evidence of any of the following would give the commander a reason to question the reliability of an individual:

- Any court-martial or civil conviction of a serious nature.
- Negligence or delinquency in duty performance.
- Significant physical, mental, or character traits, or aberrant behavior, substantiated by medical authority, that might affect the reliable performance of duties.
- Behavior patterns that show or suggest a contemptuous attitude toward the law or regulations.

Mandatory selection requirements

A person selected for the personnel reliability program (PRP) must meet the following mandatory requirements:

- Meet the minimum standard of S-1 of the physical profile series (no psychiatric disorders).
- Have the required training and/or ability to gain technical competence needed for duties.

- Have the required security clearance or investigation.
- Have a positive attitude toward nuclear weapons duty and the objectives of the PRP.
- Must *not* be under consideration for separation for cause, under court-martial charges, or awaiting civilian trial for felony charges.
- Be a US citizen or legal US national.
- Must not have a history of drug abuse.

After all the historical data has been evaluated and the commander has personally interviewed the person, the commander makes a judgment about the reliability of the individual.

Security applies to all members of the Air Force at all times. Physical security and operational and information security are essential to the Air force mission and to the security of all its resources. All Air Force members must be versed in security and apply it to all aspects of their work.

023. Limited/exclusion areas

In an area where there are nuclear weapons, a minimum of two people must be present—never a lone individual. This means that, during any operation that may afford access to a nuclear weapon or system, or critical component, a two-person concept team must be present. These areas are designated as no-lone zones.

Two-person concept

The two-person concept is designed to ensure that a lone individual never has the opportunity to tamper with a nuclear weapon. AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs* provide requirements and restrictions concerning the two-person concept. Since you may be a member of a two-person concept team, you need to thoroughly understand this instruction. A two-person concept team consists of at least two individuals who

- are certified under the PRP,
- know the nuclear surety requirements of the task they perform,
- can promptly detect an incorrect act or unauthorized procedure,
- have successfully completed nuclear surety training according to AFI 91-101 and
- are designated to perform the required task.

Team members need to be positioned where they can promptly detect the use of incorrect or unauthorized procedures while performing a given task or operation. In performing certain tasks, team members may momentarily lose sight of each other or be far apart; this is *not* a violation if the individual did not have the opportunity to perform an incorrect act or unauthorized procedure. Since the team member or members must be able to promptly detect, careful judgment must be made in allowing a lone team member to go unobserved temporarily. Factors to be weighed include the nature of the task, availability of tools and equipment, and the time required to do the task. One team member may be briefly out of sight to perform a specific task if it is unsafe or physically impossible to maintain constant observation. As a responsible member of a two-person concept team, you must do the following:

- Enforce the two-person concept until authorized personnel relieve you or you have secured the nuclear weapon or system, or critical component.
- Take immediate positive steps to prevent or stop an incorrect procedure or unauthorized act.
- Report deviations immediately to the appropriate supervisor.

You must declare a two-person concept violation when a lone individual in a no-lone zone has the opportunity to tamper with or damage a nuclear weapon or system, or critical component. Report applicable violations according to AFMAN 91-221, *Weapons Safety Investigations and Reports*.

The two scenarios in which you are authorized to deviate from the two-person concept are

1. when the nuclear weapon system safety rules specifically authorize a deviation.
2. during an emergency presenting an immediate threat to safety of personnel or the security of a nuclear weapon, nuclear system, or critical component (Exercises are not considered emergencies).

Personnel restrictions

There are three additional restrictions you need to know and watch for while performing two-person duties. First, two interim-certified individuals may not form a two-person concept team. Second, a person who does not qualify as a member of a two-person concept team may enter a no-lone zone to perform a specific task only if escorted by a two-person concept team. Finally, entry controllers may not form a two-person concept team with people inside the no-lone zone. You must also know who can make up a two-person concept team and who is authorized in a no-lone zone. Each individual is responsible for the application of the two-person concept. This concept is enforced constantly by the persons making up the two-person team when doing the assigned tasks or operation, and also up to the time the team departs the no-lone zone. Each person is responsible for complying with the two-person concept.

No-lone zone

Two-person concept teams are chosen carefully and must perform assigned tasks in the proper manner. An equally important aspect of the two-person concept is the question of what areas or tasks require the use of such a team. Areas or tasks requiring the two-person team concept are designated as no-lone zones. No-lone zone is defined as an area where the two-person concept must be enforced because the area contains nuclear weapons, nuclear weapon systems, or critical components. Simply put, it is an area where no lone individual is authorized. Keeping this in mind, you will work in many areas qualifying as a no-lone zone. A standard igloo containing nuclear weapons is a no-lone zone. The aircraft alert area is a no-lone zone. The accident area where an aircraft that was carrying nuclear weapons has crashed is a no-lone zone. A truck convoy carrying nuclear weapons and the entire route along which the convoy travels is a no-lone zone.

The no-lone zone requires strict adherence to all requirements of the two-person concept. Only authorized persons are allowed to enter a no-lone zone. Entry of any lone person, even a person qualified as a two-person concept team member, is strictly prohibited. Only suitable two-person teams perform tasks in a no-lone zone. All persons in the no-lone zone must be familiar with the safety and security requirements of the task or tasks to be performed.

024. Dull Sword reporting

To say a nuclear related mishap is serious business is an understatement. Because of the seriousness of such a mishap, special investigating and reporting procedures are needed. AFMAN 91-221, *Weapons Safety Investigations and Reports* provide these procedures. For this lesson we will be concerned only with the most common of reports, the Dull Sword.

Dull Sword

Dull Sword is a reporting flag word identifying a nuclear weapon safety deficiency not falling into the accident or incident categories. Reporting Dull Swords brings nuclear surety related problems to the immediate attention of the agencies that can evaluate the problems and correct them before the deficiency causes a more serious nuclear mishap. The following are some examples of events or conditions classified as Dull Swords:

- Minor damage to a nuclear component resulting from errors committed during assembly, testing, loading, or transporting while in Air Force custody.
- Malfunction, failure, or anomaly that results in damage to nuclear weapons systems due to sources of electrical energy (lightning, over voltage, power fluctuations).

- Exposure of nuclear weapons or nuclear components to any abnormal environment (floods, earthquakes, tornados, etc.) that would question item's serviceability.
- Damage, malfunction, failure, or irregularity of items listed in the Master Nuclear Certification List (MNCL).

Dull Swords from the AMMO community are most often reported from our nuclear certified support equipment (e.g., vehicles, trailers, forklifts, etc.) Specific areas of concern include the following:

- Stability, steering or brake system problems that affect the safe steering, stopping, towing, or holding in park during lifting, loading, or transporting.
- Defects or failures in vehicle structural members (including pintle hooks and fifth wheels) that support the load or transmit the towing or braking force.
- Inadequate restraint of loads attributed to trailer tiedown points or tiedown patterns.
- Unsafe condition or improper operation resulting in unresponsive operation, over-speed operation, uncontrolled raising or lowering, or improper cargo restraint.
- Exceeding the load-capacity of any nuclear certified equipment/vehicle listed in the MNCL.

It is important to identify which of our vehicles and/or support equipment are listed in the MNCL for this reason. **NOTE:** Not all your vehicles/equipment will be nuclear certified.

Mishap reporting

The Air Force investigates nuclear mishaps to determine their cause and prevent recurrences. The Air Force objectives are to prevent nuclear weapon system accidents and incidents, to minimize their effects if they should occur, and to reduce the occurrence of other nuclear weapon system safety deficiencies. All Air Force organizations owning and/or using nuclear certified equipment shall use the Air Force Safety Automated System (AFSAS) located at <https://afsas.kirtland.af.mil> for reporting. With any mishap report, close coordination and clarification with the weapons safety office on base is vital. As an ammunitions troop, it is vital to report any mishaps to munitions control and your supervisor as soon as possible.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

021. Common and specific operational security vulnerabilities

1. What are the two conditions required for an OPSEC vulnerability?
2. What are three operations indicators of OPSEC vulnerability?
3. What are three communications indicators of OPSEC vulnerability?
4. What are three administrative indicators of OPSEC vulnerability?
5. What are three logistics and maintenance support indicators of OPSEC vulnerability?

022. Nuclear surety program

1. What are the major goals of the AF nuclear surety program?
2. What provides the necessary direction and procedures for implementing a personnel reliability program?
3. What are the two PRP positions?
4. Who is responsible for the certification of personnel into the PRP?
5. What are at least three mandatory selection requirements a person must meet prior to being placed in a PRP position.

023. Limited/exclusion areas

1. What are the requirements for individuals who make up a two-person concept team?
2. What are the team member's responsibilities in the two-person concept?
3. When are you authorized to deviate from the two-person concept?
4. What are three personnel restrictions to watch for while performing two-person duties?
5. What is a no-lone zone?

024. Dull Sword reporting

1. What reporting flag word is used to identify nuclear weapon safety deficiencies that do not fall into the accident or incident categories?
2. What events or conditions involving nuclear weapons should be reported as a Dull Sword?
3. Which items are most often reported as a Dull Sword from the AMMO community?

Answers to Self-Test Questions

018

1. Identifies specific items you must secure and the level of security dedicated to those resources.
2. PL2.
3. PL3.

019

1. Restricted areas and controlled areas.
2. Specific written permission under the authority of the commander and positive identification for entry control procedures (e.g., security badge/AF Form 1199, entry authority list).
3. PL4 resources (e.g., category I, II, or III sensitive conventional arms, ammunition, and explosives).
4. Any one of the following:
 - (1) Unplanned emergency dispersal of aircraft to civilian airports.
 - (2) Emergency landings of aircraft carrying nuclear weapons.
 - (3) Temporarily stopped nuclear weapon ground convoys.
 - (4) Aircraft crashes or other unplanned emergency events.
5. Through an ECP.

020

1. All munitions items are assigned a CIIC; to identify the degree of security that must be applied to an item while the item is in storage or in transit.
2. Classified, sensitive, pilferable, and unclassified.
3. The item manager.
4. Includes such items as narcotics/controlled substances, precious metals, high value assets, and hazardous items (e.g., ammunition, explosives, demolition material). This type of material requires a high degree of protection and control due to statutory requirements or regulations.
5. That the item has a ready resale value or civilian utility application and is especially subject to theft.
6. High risk category II.

021

1. (1) There is a weakness that could reveal critical information.
(2) There is an adversary with both the intent and the capability to exploit that weakness (i.e., a threat).
2. Any three of the following:
 - (1) Stereotyped activities such as test preparations and range closures.
 - (2) Abrupt changes or cancellations of schedules.
 - (3) Increased telephone calls, conferences, and longer working hours (including weekends).
 - (4) Rehearsals of operations/exercises.
 - (5) Unusual or increased trips and conferences by senior officials.
3. Any three of the following:
 - (1) Use of specialized and unique communications equipment.
 - (2) Changes to power sources.
 - (3) Increases and decreases in communications traffic.
 - (4) Call signs.
 - (5) Transmitter locations.
4. Any three of the following:
 - (1) Military orders.
 - (2) Distinctive emblems, logos, and other markings on personnel, equipment.
 - (3) Supplies.

- (4) Transportation arrangements.
- (5) Schedules.
- (6) Orders.
- (7) Flight plans.
- (8) Duty rosters.
- (9) Leave cancellations.
- 5. Any three of the following:
 - (1) Unique sized and shaped boxes, tanks, and other containers.
 - (2) Prepositioned equipment.
 - (3) Technical representatives.
 - (4) Maintenance activity.
 - (5) Unique or special commercial services.
 - (6) Deviations of normal procedures.
 - (7) Physical security arrangements.

022

- 1. To achieve maximum safety consistent with operational requirements; to maintain our record of *zero* accidental or unauthorized nuclear yields and to reduce the potential for, and the possible effects of, nuclear mishaps.
- 2. DoDI 5210.42, *Nuclear Weapons Personnel Reliability Program (PRP)*.
- 3. Critical and controlled.
- 4. The certifying official (commander).
- 5. Any three of the following:
 - (1) Meet the minimum standard of “S-1” of the physical profile series. The S stands for “psychiatric,” and the 1 indicates “no psychiatric disorder.”
 - (2) Have the technical competence needed to perform the duties assigned.
 - (3) Have the required security clearance or investigation.
 - (4) Have a positive attitude toward nuclear weapons duty and the objectives of the PRP.
 - (5) Must *not* be under consideration for separation for cause, under courts-martial charges, or awaiting civilian trial for felony charges.
 - (6) Be a US citizen or legal US national.
 - (7) Must *not* have a history of drug abuse.

023

- 1. Individuals are certified under PRP, know the nuclear surety requirements of the task they perform, can promptly detect an incorrect act or unauthorized procedure, have successfully completed nuclear surety training, and are designated to perform the required task.
- 2. To enforce the two-person concept until relieved by authorized personnel or until the nuclear weapon or critical component is secured, take immediate, positive steps to prevent or stop incorrect procedures or unauthorized acts, and report deviations immediately to the appropriate supervisor.
- 3.
 - (1) When the nuclear weapon system safety rules specifically authorize a deviation.
 - (2) During an emergency that presents an immediate threat to the safety of personnel.
- 4.
 - (1) Two interim-certified individuals may not form a two-person concept team.
 - (2) A person who does not qualify as a member of a two-person concept team may enter a no-lone zone to perform a task only if escorted by a two-person concept team.
 - (3) Entry controllers may not form a two-person concept team with people inside the no-lone zone.
- 5. An area where no lone individual is authorized and where the two-person concept must be enforced because it contains nuclear weapons, nuclear weapon systems, or critical components.

024

1. Dull Sword.
2.
 - (1) Minor damage to a nuclear component resulting from errors committed during assembly, testing, loading, or transporting while in Air Force custody.
 - (2) Malfunction, failure, or anomaly that results in damage to nuclear weapons systems due to sources of electrical energy (lightning, over voltage, power fluctuations).
 - (3) Exposure of nuclear weapons or nuclear components to any abnormal environment (earthquakes, floods, tornados, etc.) that would question item's serviceability.
 - (4) Damage, malfunction, failure, or irregularity to items listed in the Master Nuclear Certification List.
3. Nuclear certified support equipment such as: vehicles, trailers, and forklifts.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

47. (018) The physical security protection level nuclear weapons fall under is
 - a. 1.
 - b. 2.
 - c. 3.
 - d. 4.
48. (018) Under which physical security protection level do facilities storing conventional munitions and Air Force accounting and finance vault areas fall under?
 - a. 1.
 - b. 2.
 - c. 3.
 - d. 4.
49. (019) What are the *two* security areas a munitions systems specialist will normally encounter?
 - a. National defense areas and close-in security areas.
 - b. Unrestricted areas and close-in security areas.
 - c. Restricted areas and controlled areas.
 - d. Restricted areas and exclusion areas.
50. (019) The person that provides written permission for authorizing personnel entry into a restricted area is the
 - a. supervisor.
 - b. flight chief.
 - c. commander.
 - d. chief of security forces.
51. (019) How many entry control points should be set up for each restricted area?
 - a. One.
 - b. Two.
 - c. Three.
 - d. Four.
52. (019) Which system is *normally* used to gain entry to a munitions storage area?
 - a. Retinal authentication.
 - b. Sign-in, sign-out.
 - c. Face recognition.
 - d. Badge.
53. (020) Controlled inventory item codes are used to
 - a. ensure the protection to munitions items while in storage.
 - b. control the security needed while the munitions item is in transit.
 - c. control the issue of munitions items to authorized personnel only.
 - d. identify the degree of security while the munitions item is in storage or transit.

-
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54. (020) Which Department of Defense risk category consists of complete man-portable nonnuclear missiles and rockets that are in a ready-to-fire configuration?
- Category I.
 - Category II.
 - Category III.
 - Category IV.
55. (020) The protection given to very-high-risk and high-risk items (Categories I and II) is an alarmed facility unless what other condition exist?
- Secured with high security locks.
 - Facility is located within the munitions storage area.
 - Entire storage area is illuminated during hours of darkness.
 - Facility is continuously manned or under constant surveillance.
56. (021) Which information is an *operations* indicator and a potential operations security (OPSEC) vulnerability?
- Unusual or increased trips and conferences by senior officials.
 - Increase in permanent change of station (PCS) moves.
 - Purchase of specialized communications equipment.
 - Creation of duty rosters.
57. (021) What information is a logistics and maintenance support indicator and a potential operations security (OPSEC) vulnerability?
- Cancellation of military orders.
 - Increased energy consumption.
 - Prepositioned equipment.
 - Use of call signs.
58. (022) The two positions that the personnel reliability program (PRP) is divided into are
- critical and major.
 - sensitive and limited.
 - critical and controlled.
 - command and qualified.
59. (022) To aid the commander in determining personnel reliability, what is the *best* indicator of an individual?
- Past performance.
 - Religious beliefs.
 - Political views.
 - Life habits.
60. (023) The nuclear surety two-person concept is designed to
- ensure that a lone individual never has the opportunity to tamper with a nuclear weapon.
 - ensure that an individual has some assistance when working around or near a nuclear weapon.
 - prevent non-critical personnel from having access to nuclear weapons, or nuclear weapons systems.
 - prevent non-controlled personnel from having access to nuclear weapons, or nuclear weapons systems.
61. (023) The area that would *not* be considered a no-lone zone is
- an alert aircraft loaded with nuclear weapons.
 - a storage structure containing critical components.
 - the convoy route of a truck carrying nuclear weapons.
 - a storage structure with all-up-round conventional bombs.

62. (024) Which reporting flag word brings nuclear surety related deficiencies to the *immediate* attention of the agencies that can evaluate the problems and correct them before they cause a more serious mishap?
- a. Covered Wagon.
 - b. Broken Arrow.
 - c. Dull Sword.
 - d. Bent Spear.
63. (024) Mishaps involving Air Force owned nuclear certified equipment shall use which reporting platform?
- a. Air Force Equipment Management System.
 - b. Air Force Safety Automated System.
 - c. Combat Ammunition System.
 - d. Air Force Inspection System.

Unit 5. Safety

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SINCE your work involves handling, transporting, and maintaining nuclear and nonnuclear munitions and related equipment, learn to observe safe practices at all times. Accidents not only kill and injure people, but also destroy valuable property and hinder mission accomplishment. This unit builds the safety foundation you'll use throughout your career.

5-1. Safety Principles and Specific Hazards

Only a small percentage of all accidents are unpreventable. Other causes such as physical hazards and unsafe acts of people are the direct concern of all supervisors. Proper supervisory action can eliminate accidents caused by the unsafe acts of people and alleviate some of the accidents caused by physical hazards. First we discuss the Air Force Occupational Safety and Health (AFOSH) program and some particular responsibilities within the United States Air Force mishap prevention program. Then we will look at some specific hazards in the AFS and accident prevention.

025. Air Force Occupational Safety and Health (AFOSH) program

The AF conducts a comprehensive and aggressive program to protect all AF personnel from work-related deaths, injuries, and occupational illnesses. It includes all safety, fire prevention, and health activities that affect the safety of AF personnel at their workplaces. This program is based on the following conditions:

- Commanders provide all AF personnel a safe and healthy work environment in which recognized hazards have been eliminated or controlled.
- AF facilities, work areas, equipment, and work procedures comply with safety, fire prevention, and health guidance.
- Unsafe and unhealthy working conditions are eliminated or controlled through the use of engineering controls, substitution, isolation, administrative controls, revised procedures, or personal protective clothing and equipment.
- Qualified safety fire prevention and health personnel inspect and evaluate all workplaces for compliance with occupational safety, fire prevention, and health requirements.

A big part of an effective AF safety program is to report mishaps as they occur on or off duty. This report helps identify unsafe trends and potentially prevents future mishaps by educating base personnel (lessons learned). The authority for mishap prevention comes from federal law/Department of Defense (DoD) directives and AFI 91-202, *The US Air Force Mishap Prevention Program*. Inform your immediate supervisor and submit the mishap report (AF Form 978) to Wing Safety as soon as possible, but no later than five regular work days IAW AFI 91-204, *Safety Investigations and Reports*. Take note, that each squadron develops their own mishap program and the commander may set stricter reporting deadlines.

Wing safety is usually composed of a ground safety and a weapons safety office. Other sections such as bioenvironmental engineering (BE) and airfield management/flight safety—all work together to ensure a safe operating environment. It takes the cooperation and commitment of everyone on an installation to have an effective safety program.

Air Force Materiel Command

Air Force Materiel Command (AFMC) identifies and corrects product safety deficiencies, gives technical assistance to mishap investigation boards, and implements corrective action involving materiel safety aspects for mishap reports as required by AFI 91-204, *Safety Investigations and Reports*. This MAJCOM ensures that appropriate personnel review specifications, drawings, and plans to eliminate safety hazards as early as possible.

Weapons safety staff

Each AF installation has a safety office. The safety office provides the base commander and subordinate units a central point of expertise in all safety related matters, to include explosives safety. Usually selected from the 2W0 career field, the weapons safety representative monitors, controls, and evaluates the effectiveness of explosive and munitions safety programs for the installation. Weapons safety personnel are also responsible for the following:

- Siting of construction—Weapons safety personnel ensure site plans are submitted according to AFMAN 91-201, *Explosives Safety Standards*.
- Explosive facility licensing—Small quantities of explosives (ammunition, cartridge starters, egress items, and so forth) can be stored within operational buildings and locations outside the explosives storage area. Weapons safety personnel license these facilities and locations.
- Explosives location mapping—Host-base weapons safety personnel maintain a database containing maps of all explosive locations with quantity distance arcs, on the installation.

Commanders

Commanders implement safety and health program elements in their unit or area of responsibility. Other commander responsibilities include

- providing safe workplaces by ensuring all individuals receive necessary job safety training,
- implementing all appropriate hazard abatement actions needed to resolve identified hazards and to provide follow-up action until all abatement actions are complete and
- keeping safety staff updated on all abatement actions.

Supervisors

Supervisors are responsible for managing assigned personnel and enforcing applicable safety standards/requirements governing their activity. Supervisors also

- ensure all new personnel receive safety training and document on the AF Form 55,
- identify personnel involved in explosives operations as qualified or opened up on the designated tasks in their training records,
- enforce strict compliance with all safety guidance and local operating instructions,
- make sure personnel use required personnel protective equipment (PPE),
- conduct occupational and environmental safety, fire prevention, and health self-inspections of the workplace,
- enforce standards on handling, storing, and controlling of hazardous chemicals and makes all pertinent material safety data sheets (SDS) available to affected personnel and
- ensure emergency showers and eyewashes are provided, inspected, tested and maintained.

Operating personnel

Observe all safety standards, requirements, and cautions that apply to your work or duty. Do not start any work or individual task you do not understand. Also, report any unsafe condition, equipment, or materiel to your supervisor, and warn others who are endangered by known hazards or who fail to follow safety precautions. Use personal protective clothing and equipment when required, and report to your supervisor any injury or impaired health occurring in the course of duty.

Everyone is responsible for understanding and observing the safety standards that have been established to prevent personnel injury or damage to USAF equipment and property. The following publications are often referenced in Air Force maintenance work centers:

- AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*.
- AFOSH Standard 48-137, *Respiratory Protection Program*.

026. Hazards for AFSC 2W0X1

Explosive handlers need a deliberate attitude to the close observance of prescribed safety precautions. Being a member of the “maintenance” work force, you are exposed to many different hazards. Part of eliminating hazards is being aware they exist. This lesson explains a few of the hazards you may come into contact with on a daily basis.

Human factors

Human factors contributing to hazards in the work place fall into two major categories (mental and physical), which are described below:

- Mental factors such as attitude, emotion, job/domestic pressure, distraction, or lack of job knowledge.
- Physical factors such as fatigue, strength, and reactions to prescription medications or drugs.

Specific reasons attributed by human factors that often contribute to a mishap are the following:

- Ignoring directives, official procedures, or safety guidelines.
- Improperly operating equipment while angry or drowsy.
- Distracted from the job at hand because of personal issues.
- Taking shortcuts or speeding due to being behind schedule.
- Using unauthorized equipment or equipment not qualified on.

Manual devices

The most important, most often used, and most abused manual lifting device is you. The following paragraphs places special emphasis on the hazards and risks you may encounter when manually lifting.

Lifting/handling

Strains, sprains, fractures, and bruises are common materiel handling injuries. They are caused, primarily, by unsafe work practices such as: improper lifting, carrying too heavy a load, incorrect gripping, failing to observe proper foot or hand clearances, and failing to use or wear proper equipment. Correct methods of handling heavy objects are a vital issue. The best way to reduce back injuries caused from lifting is to reduce exposure. Cutting weight loads, using mechanical aids, and rearranging the workplace can help you achieve this; however, in spite of all your efforts, you can't eliminate manual lifting entirely. So, always follow these basic rules when lifting objects:

- Never overexert yourself when lifting. Get assistance for heavy and/or large bulky items.
- Keep the load *close* to your body.
- Lift gradually and avoid jerking/twisting motions.
- Lift with your legs, not your back; focus on keeping your back straight.

Handling methods

The largest numbers of injuries involve your fingers and hands. To help reduce those injuries, follow these safe-handling practices:

- Inspect materials for slivers, jagged edges, burrs, and rough or slippery surfaces.
- Wipe off greasy, wet, slippery, or dirty objects before trying to handle them.
- Firmly grip the object you are handling.
- Keep fingers away from pinch points, especially when setting down materials.

The use of gloves help to prevent hand injuries refer to your AFOSH standards and AF instructions for the proper use of gloves. Your feet also sustains their share of handling injuries. You are required to wear foot protection such as safety toed shoes to avoid those types of injuries.

Fire hazards

Fire and excessive heat are two of the greatest hazards to explosives. Knowing the procedures for dealing with these hazards is a very important aspect when storing, maintaining, inspecting, and transporting munitions. Each installation involved in explosive operations are required to develop fire plans IAW AFI 32-2001, *Fire Emergency Services Program*. You can eliminate potential fire hazards or reduce their effects by following standard rules. Let's examine a few of those rules now.

Paint and other flammable materials

Store only small stocks of flammable materials, such as paints and solvents required to support explosives maintenance operations. AFMAN 91-201 and AFI 91-203 provide guidance to prevent hazards from flammable materials such as

- do *not* store combustible items such as wood, paper, and rags with flammable materials,
- store in approved self-closing metal storage cabinets or lockers that are clearly marked,
- locate flammable storage at least 50 feet from explosives locations and
- make available at least one fire extinguisher suitable for the type of material involved.

Vegetation control

You must control vegetation (grass, undergrowth, bushes, weeds, etc.) in all explosives area to include the areas next to explosives-sited facilities. The main purpose is to limit the probability of combustible vegetation causing an unacceptable fire hazard to munitions in storage. Control of combustible materials is designed to slow the speed of fires and prevent them from spreading. Use the following guidelines to determine proper vegetation control:

- Balance vegetation control with other operational factors, such as control cost, security, erosion prevention, and passive defense (camouflage).
- Wherever feasible, use species of vegetation resistant to burning. Do not use herbicides or soil sterilants if complete removal of vegetation will tend to cause soil erosion. Keep earth-covered magazines free of shrubs and trees whose weight or root system could damage the structure. Do not let dead or cut vegetation accumulate.
- When animals are used for vegetation control, use measures to prevent excessive erosion of barricaded surfaces or the earth cover of igloo magazines.
- Where vegetation growth is ineffective in preventing erosion, use a layer of about two inches of pressure-applied (Gunitite) concrete or asphalt mixture.

Firebreaks

A firebreak is an area that limits the spread of a fire by restricting a fire's fuel source. Firebreaks should be free from combustible materials as much as possible, to include vegetation growth. Where environmental and security factors allow, maintain *at least* 50-foot firebreaks around each potential explosive site and five-foot firebreaks around igloo ventilators.

Firefighting plans

Determine general and specific courses of action before a fire occurs. Include all explosives areas and possible exposures of explosives to fire. As a minimum, take these actions if a fire starts in your maintenance bay or storage structure. Remember to **SPEED**:

Sound the alarm.

Phone the fire department.

Evacuate nonessential people.

Extinguish the fire if possible.

Direct firefighting personnel.

Because you rarely think clearly during a fire, it's important to establish step-by-step procedures and train each person thoroughly. To accomplish this conduct fire drills within the explosives storage area at least every six months. Each explosives class requires a fire fighting plan to meet its own peculiar situation. The type of weapons involved, the type of sprinkler or fire hose system installed (if installed), and the distance from the fire department are all factors that determine your firefighting procedures.

Fire extinguishers

Have at least two readily available fire extinguishers, suitably rated for the hazards involved when explosives are being handled. They need not be located permanently at the operation site, but they must be in an accessible location and serviceable. Make at least one fire extinguisher available for each item of powered material handling equipment used to transport explosives. Provide at least two portable 2A:10BC rated extinguishers for each explosive laden vehicle used for transport. One fire extinguisher will be mounted on the exterior driver's side of the vehicle and one will be mounted inside the vehicle cab.

Portable fire extinguishers are classified according to their intended use on the four classes of fire: A, B, C, and D (fig. 5-1). Besides the letter classification, Class A and Class B extinguishers get a numerical rating. Extinguishers for use on Class C fires get only the letter rating because Class C fires are essentially Class A or Class B fires involving energized electrical equipment. The Class C designation just confirms that the extinguishing agent is nonconductive. Likewise, Class D extinguishers do not contain a numerical rating. The effectiveness of the extinguisher on Class D metals is detailed on the faceplate of the extinguisher. Multiple letters or numeral-letter ratings are used on extinguishers effective on more than one class of fire.

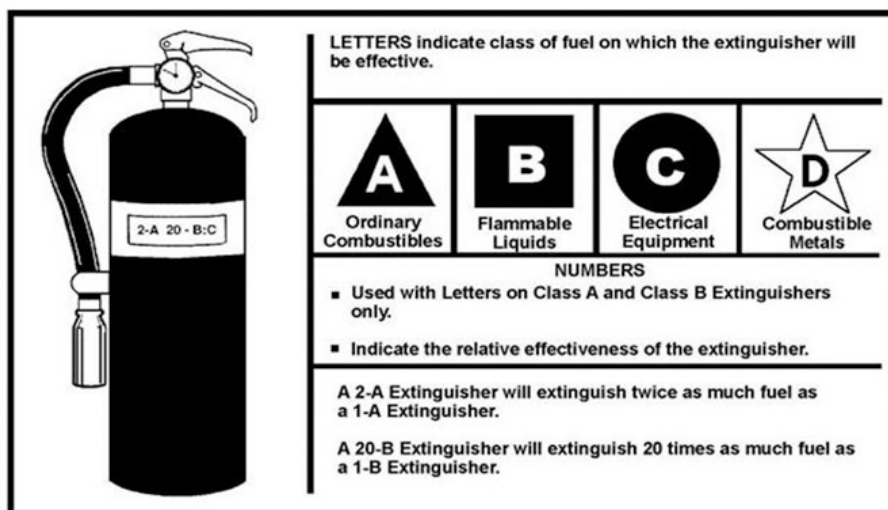


Figure 5-1. Portable fire extinguisher classification.

Electrical hazards

Electricity is a very powerful force. If used properly, it is also very safe. If safety guidelines are not followed, then electricity becomes a very deadly element. The following paragraphs provide a few examples of how not to become a victim of circumstance.

Static grounding and bonding

Static electricity is a hazard created when charges accumulate to the point where an uncontrolled discharge occurs through, or in the presence of, a hazardous substance susceptible to initiation. If you work in a location that requires handling electrically initiated explosive devices/munitions, avoid using dry rags and/or wearing clothing made of materials that have high static generating characteristics (e.g., polyester, microfiber). The method generally used to eliminate or reduce the hazard from static electricity is to provide an electrically continuous path to ground. A resistance of 25 ohms is common. These grounding systems should be one continuous ground wire/cable/strap to the grounding source. When making a grounding connection, you should attach the ground wire/cable/strap to the item requiring grounding first, then, connect the other end of the ground wire/cable/strap to the approved facility grounding system; this ensures that if a spark occurs, it will occur at the connection to the facility grounding system instead of at the item.

Lightning protection

Properly maintained lightning protection is required (with exceptions) for ammunition and explosives facilities (e.g., open pads, revetments, and modules used for manufacturing, processing, handling or storing explosives and ammunition). Evacuate personnel from locations containing explosives that could be initiated by lightning when an electrical storm (thunderstorm) approaches the vicinity. Minimum personnel can remain to carry out an urgent operational mission. An electrical storm is considered “in the near vicinity” when the time between the lightning flash and thunder report is 15 seconds or less (about five miles). All outdoor explosives operations will stop and indoor operations will stop when the indoor location does not have a lightning protection system (LPS). The continuation of explosives operations within an LPS protected facility is not prohibited. When continuing operations in LPS equipped facilities, assess the need and urgency for doing so. There are no guarantees that LPS protection will provide the same degree of safety as a lightning-free environment.

Harmful liquid hazards

You will find that there are several harmful liquids found and used while performing your duties in the munitions career field. Severe medical problems can result if your skin and/or eyes are exposed to such chemicals without treatment. Use of permanent or portable eyewash systems are no substitute for wearing proper PPE in the work area. However, eyewash units, deluge showers and other similar devices are emergency equipment that can drastically reduce exposure to chemicals or other harmful liquids if used right away. Emergency showers and eyewash units shall be installed as required and maintained in an operable condition. They shall be in identified and accessible locations that require no more than 10 seconds to reach and free of obstructions that may inhibit immediate use of the equipment. The unit shall be located as close to the hazard as possible without physically causing a hazard itself and shall not be located where the water may contact electrical circuits.

Permanently-installed shower and eyewash units shall be activated by the supervisor or worker weekly to verify proper operation and inspected monthly in accordance with Air Force Consolidated Occupational Safety Instruction FI 91-203. Since portable units and eyewash bottles do not have a constant source of water, they are not required to be tested weekly. However, where tap water is used, the fluid shall be replaced at least monthly. Less frequent intervals of fluid change, as recommended by the manufacturer, are acceptable where a solution or water additive is used. Sealed eyewash bottles are made for one-time use and will have instructions and expiration dates attached to them. The below image (fig. 5-2) depicts a permanent eyewash and shower unit that can be found in the work center.



Figure 5-2. Permanent eyewash/shower unit.

027. Hazard classification system

The DoD hazard classification system is based on the system recommended for international use by the United Nations. It consists of nine classes for dangerous goods. Ammunition and explosives are included in class 1, “explosives.”

The DoD hazard classification system is *applied* in the development, manufacture, testing, maintenance, storage, handling, transportation, and loading and unloading of vehicles and aircraft of ammunition and explosives. The classes and divisions identify hazards. They are used to determine the levels of protection for personnel and property from the effects of fires and explosions on and off military installations.

Hazard classes and divisions

Ammunition and explosives hazard classes are subdivided into divisions based on the nature of the hazard and its potential for injury or damage. The divisions are *not* based on compatibility groupings or the intended use of the item.

Munitions with like explosive characteristics are grouped together in hazard classes and divisions (HC/D). These divisions are used to determine quantity-distance criteria for storing munitions. Hazard class 1 has six divisions, four of which are actively used by the Air Force. The four divisions (1.1 through 1.4) are also used in assigning explosives to four fire symbol classes for firefighting purposes.

The separation of the hazard class into divisions does not always mean that the different items in a division may be stored together. Also, some items may appear in more than one division. This depends on the degree of confinement or separation, type of packaging, storage configuration, or state of assembly.

Class/division 1.1 (mass-detonating)

The principal hazard expected of class/division 1.1 is blast and mass-detonation when a small portion is initiated by any means. This type explosion will generally cause severe structural damage to adjacent objects. Propagation may occur so rapidly to explosives stored nearby, which are unprotected from the initially exploding stack, that the quantities must be considered as a single source for quantity-distance (Q-D) purposes. Items in class/division 1.1 include bulk explosives, some propellants, mines, bombs, demolition charges, rockets, palletized projectiles loaded with trinitrotoluene (TNT) or composition B, mass-detonating cluster bomb units (CBU), and ammunition components having mass-detonating characteristics.

Explosives and munitions in class/division 1.1 also present a secondary, but less lethal hazard of fragmentation. This is caused inadvertently by either from the body of the explosive device, its packaging/surrounding materials, or from the facility in which stored. Some munitions items have been tested and demonstrated to have a greater/lesser fragmentation hazard. In these instances, the fragment hazard distance is given in parentheses where the hazard classification is listed, such as (08) 1.1 for an 800-foot fragment hazard.

Class/division 1.2 (nonmass-detonating, fragment-producing)

Class/division 1.2 items will not mass detonate when properly configured for storage or transportation if a single item is initiated. The explosion will throw fragments, firebrands, and non-functioned items from the point of initiation. Blast effects are limited to the immediate vicinity and are not the primary hazard. The principle hazard for 1.2 munitions is fragmentation. The effects produced by the functioning of HC/D 1.2 items vary with the size and weight of the item. HC/D 1.2 is divided into three subdivisions (1.2.1, 1.2.2, and 1.2.3) to account for the difference in magnitude of these effects. The more hazardous items fall into the 1.2.1 subdivision and have a net explosive weight for quantity-distance (NEWQD) greater than 1.60 pounds. The less hazardous (1.2.2) contain less than 1.60 NEWQD. HC/D 1.2.3 is a special storage subdivision for munitions that satisfies either of the following sets of criteria:

- Munitions do not exhibit any sympathetic detonation response in the stack test or any reaction more severe than burning in the external fire test, bullet impact test, or slow cook-off test.
- Munitions that satisfy the criteria for HC/D 1.6 except the item contains an extremely insensitive detonating device.

Items in class/division 1.2 include certain 20mm and 30mm ammunition, CBUs, mines, and grenades. These items may explode or detonate progressively when initiated.

Class/division 1.3 (mass fire)

Items in class/division 1.3 burn vigorously, and the fires are difficult to put out. Explosions are usually pressure ruptures of containers, and this can produce fragments (especially missile motors). However, this will not produce propagating shock waves or damaging blast overpressure beyond intermagazine distance. A severe hazard of the spread of fire can result from tossing about of burning container materials, propellant, firebrands, or other debris. Toxic effects usually do not exist beyond inhabited building distances. Items in class/division 1.3 include gas pressure generators, rocket motors, and igniters.

Class/division 1.4 (moderate fire, no blast)

These items present a fire hazard but no blast hazard. There is very little fragmentation or toxic hazard beyond the fire hazard clearance required. Items in class/division 1.4 include small arms ammunition and bomb fuse elements.

Class/division 1.5 (very insensitive substances which have a mass explosive hazard)

This division comprises substances that have a mass explosive hazard but are so insensitive that there is very little probability of initiation or transition from burning to detonation under normal conditions of transport. The common terminology for this kind of military explosive is insensitive high explosive.

Class/division 1.6 (extremely insensitive articles that do not have a mass explosive hazard)

This division comprises articles containing only extremely insensitive detonating substances and demonstrates a negligible probability of accidental initiation or propagation. Therefore, the risk from articles of class/division 1.6 is limited to the explosion of a single item.

Class 6/division 1, chemical items

Another class of concern is class 6, “chemical items” to include toxic, poisonous, and infectious substances. Class 6, division 1 (6.1) items are toxic chemical agents, usually assembled without explosive components, or with components that have few blast or fragment hazards. Quantity-distance (Q-D) separations are not required for this class; however, you store them separate from explosives. Agent persistence, volatility, toxicity, or other features can create the need for safety criteria for an item.

Reporting hazards

It is vital to detect and promptly correct hazards at the lowest possible level. A hazard report can be submitted by anyone on any event or condition that affects flight, ground or weapons safety, or occupational health. Reportable hazards include, but are not limited to, unsafe procedures, practices, or conditions in the following areas:

- Maintenance activities.
- Storage or operational facilities.
- Equipment, electrical, or fire hazards.
- Environmental, vehicular, or road conditions.

Inform hazards to the responsible supervisor or agency. If the hazard is eliminated on the spot, no further action is required. If the hazard presents imminent danger or cannot be resolved immediately, report the hazard to the safety office using AF Form 457, USAF Hazard Report. Similar to an IG complaint, you can submit hazard reports anonymously and without getting your chain of command involved. These forms should be readily available on the safety board of your work center.

028. Technical orders

One of the most difficult problems a supervisor has in training crew members is getting them to follow all TO procedures. For instance, when chaff and flare need to be inspected, assembled, and stuffed into dispensers, a normal reaction is to start without getting a TO or checklist. You might

think you know the steps from memory, or you're eager to get to work. Whatever the reason, the odds are low that you will correctly perform any munitions operation without the appropriate TO or checklist. You can forget a step, perform steps out of sequence, miss a safety check, or miss a recent change in the TO.

Principles

Some basic principles to follow when using technical orders and technical manuals are

- know which technical orders are available for use at your work center,
- have the technical orders on hand and open when performing a task,
- know how to navigate through the TO for locating information and
- have a general understanding of all applicable cautions, warnings, and notes

These principles are obvious and overlapping. As simple as they are, not applying them in whole or in part is a basic cause of poor maintenance. Let's take each principle and discuss some practical applications.

Available technical orders

The available technical orders are usually the 11A or 11K series, although you may also use other series and Air Force manuals (such as AFMAN 91-201). A common mistake often made is to assume that all the information you need is located in one TO. This may be true for some tasks, but you occasionally may have to reference more than one technical order to complete a work order.

Your element, section, or support area should maintain an electronic TO library with all the TOs that prescribe the use or maintenance for each item that you have on hand. Besides munitions, this may include multimeters, trailers, munitions assembly conveyor (MAC), AGE, test sets, vehicles, and so forth. Some TOs (vehicles, for example) may be dropped if a group other than your organization (TMDE, motor pool, etc.) provides maintenance.

Besides TOs, your maintenance file should include applicable Air Force instructions and policy directives on maintenance management, accident prevention, explosives safety, and fire prevention. These are the more important instructions, although there are others you'll notice during your daily work. Copies of these publications should be in addition to the regular squadron or detachment publications library. There may also be other technical manuals that you need, such as manufacturers publications for equipment not yet having a TO.

Locating information

It is difficult to follow procedures or instructions when you do not know where to find them. You may not know the technical orders you need (by number) or what information is available in manuals other than the 11A series.

As an example, suppose you want to locate the TO covering torque wrenches. Using TO 00-5-18, *Method & Procedures Air Force Technical Order Numbering System*, find "Wrenches" located in category 32. From here you identify which tool you have (A-Special or B-Standard). Since a torque wrench is considered a special tool you select 32A. At this point, you should be able to see the different kinds of special wrenches listed. In this case TO series 32A5-2 is the one you want to check out. There is also an alphabetical listing in the back of TO 00-5-18 to help locate the TO you want.

When trying to locate copies of TOs, you may find that they are not in your unit's TO library. If you identify a technical order that you need but do not have, request it through your local technical order distribution office (TODO). Usually you will have a TO monitor in your section with an Enhanced Technical Information Management System (ETIMS) account who will assist.

Once the correct TO is acquired, you must know how to properly navigate through it to find the needed information. Technical orders you will likely use as an ammo troop are the 11A series.

A good working knowledge of the different sections within an 11A series technical order will help build a solid foundation for general TO use.

Typical 11A technical order

TOs are generally broken down into work packages, which are similar to chapters. The table below illustrates a typical work package format:

Work Package	Description
010 00	Foreword/system description.
020 00	Safety summary and accident prevention.
030 00	Master list of special tools, equipment and consumables.
040 00	Storage and handling requirements.
050 00	Inspection requirements and procedures.
060 00	Unpackaging and packaging.
070 00	Maintenance.
080 00	Testing/reprogramming.
090 00	Contingency.
100 00	Depot related data and special instructions.
998 00	Illustrated parts breakdown.

The work package (WP) numbering system may seem confusing, but it makes sense if you understand that the numbers may be further broken down. For instance, the fifth WP is numbered 050 00, but it may have subsections such as 050 01, 050 02, and so forth. Also, notice that the work packages jump from 10 to 998. This allows additional work packages to be inserted in the future, if necessary. Also understand that not all TOs have all the work packages. Some items do not have contingency requirements, so there is no need for work package 9 to be included in the item's TO.

Technical order improvements

We spend a lot of time looking through technical orders to accomplish our tasks. Submitting improvements and corrections to our technical orders will not only benefit you and your co-workers now, but also future ammo troops who will use them.

The three deficiency reports available for technical orders/manuals are: emergency, urgent, and routine. The title of each report indicates the seriousness of the needed improvement. You handle each report in a similar manner, giving priority to more important reports. Initiate and submit emergency reports immediately after discovering the condition. Expedite urgent reports, and initiate and submit routine reports as soon as possible. Any ammo troop regardless of rank can submit an improvement to a TO by filling out an AFTO Form 22, *Technical Manual (TM) Change Recommendation and Reply*. The initiator of the report should be reserved for the person who has first-hand knowledge of the problem, which is normally the same person who discovers the discrepancy.

In TO 00-5-1, you can find detailed instructions for preparing and submitting an AFTO Form 22. Read the entire section and follow the instructions step by step when you prepare a report, particularly your first one. Your supervisor and the quality assurance (QA) office can provide additional assistance.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

025. AF Occupational Safety and Health (AFOSH) program

1. Where does the authority originate for the AF to develop its mishap prevention program?

2. Wing Safety is usually composed of what two offices at a typical AF installation?
3. Who monitors, controls, and evaluates the effectiveness of explosive and munitions safety programs for the installation?
4. Who is responsible for enforcing safety requirements and standards within their specific area or activity?
5. Who is responsible for understanding and observing the safety standards that have been established to prevent injury or damage to equipment and property?

026. Hazards for AFSC 2W0X1

1. What are the two major categories of human factors contributing to hazards in the work place?
2. What is the best way to reduce back injuries caused from lifting?
3. Explain the main purpose of vegetation control.
4. What is the fire extinguisher requirement for an explosive laden vehicle?
5. What should you avoid when working in a location that requires handling electrically initiated explosive devices/munitions?
6. Preferably how many seconds away from a potential chemical hazard should an emergency eyewash unit be?

027. Hazard classification system

1. Ammunition and explosives fall under what class of the DoD hazard classification system?
2. What criteria is used to subdivide ammunition and explosives into hazard classes?
3. What are the principle hazards of hazard class/division 1.1?

4. What type of items fall into hazard class 6 of the DoD hazard classification system?
5. What form is used to report a hazard at your work center that you cannot resolve immediately?

028. Technical orders

1. Name four basic principles to follow when using technical orders.
2. Which TO will help you find another TO by using an alphabetical listing?
3. What are the three types of deficiency reports for a TO?
4. Which TO will you find detailed instructions for preparing an AFTO Form 22?

5-2. Weapons Safety

Missile, explosive, and radiation safety disciplines are combined under one management concept called *weapons safety*. Each organization must tailor its weapons safety program to meet its specific mission requirements. Personnel who handle, store, or work around conventional or nuclear weapons require annual training.

029. Explosives/missile safety

When it comes to explosives, safety takes priority. You have an inherent responsibility to perform your work as safely as possible and to identify all hazards. An explosive hazard is any hazard relating to an explosive or an explosive operation that creates a potential for personnel injury or death. To do your day-to-day work safely, you must understand the risks involved and be familiar with the whole process of an explosives operation. This lesson explains that concept.

Personnel qualifications

Personnel who work with explosives are trained and qualified in the tasks to be performed. Members must have an understanding of all safety standards, requirements, and precautions applicable to their operations. Supervisors/crew chiefs of explosive operations should have the following qualifications:

- Knowledge of all the hazards involved in the operation.
- Ability to convey emergency procedures to the workers and visitors.
- Know the steps to take when abnormal conditions arise.
- Qualified to perform and/or train associated tasks.

Basic explosives safety concept

The basic explosives safety concept is about preventing the premature, unintentional, or unauthorized initiation of explosives and devices containing explosives and minimizing the effects of explosions, combustion, toxicity, and any other harmful effects. AFMAN 91-201 identifies AF explosives safety standards. Technical publications and other standard publications, such as command and local directives, specify criteria for specific munitions and operations. Here are some basic explosives safety requirements to follow the rest of your military career:

- Comply with the *cardinal principle* for explosives safety, which is exposing the minimum number of people to the minimum amount of explosives for the minimum amount of time. Supervisors are responsible for enforcing personnel and explosives limits.
- Clearly, post personnel limits for the operations being conducted at each explosives operating location. Posted limits will distinguish between supervisors, workers, and casuals and be included in written procedures. Casuals are persons not normally part of an explosives operation but have duties that require their presence, such as quality assurance, safety, or inspection personnel. Visitors are nonessential personnel with limited access. Stop operations when visitors are present.
- Make sure only trained personnel, under the supervision of an individual who understands the hazards and risks involved in the operation, handle explosives.
- Do *not* tumble, drag, drop, throw, roll, or “walk” munitions. Walking a cylindrical shaped bomb would mean alternately moving each end forward by lifting in order to change the position of the entire bomb. Containers designed with skids may be pushed or pulled for positioning.
- Do *not* roll un-palletized conventional high-explosive bombs or other explosives authorized by the item TO unless lugs or other projections have been removed or if dunnage rails protect them.
- Do *not* use conveyors, chutes, hand trucks, or forklifts in environments and locations where they will create hazards. Interlock and support sections of roller conveyors used to move explosives.

As for any operation make sure that any situation that results in waste products with corrosive, toxic, or ignitable characteristics, including products which have exceeded their useful life, receive special handling as required.

Local written procedures

When explosives operations are *not* covered in sufficient detail by other standard publications, such as TOs or MAJCOM operating instructions (OI), the use of local written procedures is *required*. These local written procedures can be in the form of a regulation, checklist, work card, or a local operating instruction. All local written procedures are coordinated with the base safety office and all other involved base activities.

Locally developed checklists involving nuclear weapons are forwarded to the owning MAJCOM for final approval. The intent of this requirement is to ensure workers have the information necessary to perform their tasks in a safe manner without being buried in lengthy or numerous publications or having to carry numerous books that merely repeat other standard publications. Written procedures should be in the language workers can understand. When local written procedures are used, they should contain at *least* the following information:

- Explosives limits, including the hazard class/division and compatibility groups.
- Personnel limits, including workers, casuals, and visitors.
- Exact locations where operations will be done.
- Safety requirements, to include all special requirements for personal protective equipment.
- Step-by-step procedures in proper sequence for doing the task.
- Actions to be taken during an emergency.

However, do not be misled into thinking the above requirements are just required for locally written procedures. The start of any explosives operation will include this information. When this information is presented, it is called a *pre-task safety briefing*. The purpose of the briefing is to ensure all

operating personnel have the same degree of knowledge regarding the task. Also, providing this information before the start of an operation gives each person involved equal responsibility in case of a mishap.

Written standards, procedures, or instructions for each explosives operation will be readily available at the work site. Post applicable parts of local written procedures at all stations involved in the operation, such as bays within a building, unless posting is not practical.

Emergency withdrawal distances

The on-scene commander or senior ranking individual determines who are essential emergency personnel or non-essential personnel and what withdrawal distances they should maintain. When explosives are *not* involved in a fire, such as dropped munitions or partially armed munitions, clear the area *initially* to a distance of at least 300 feet. Nuclear weapons withdrawal distances are listed in TO 11N-20-11, *General Fire Fighting Guidance*. The table below represents emergency withdrawal distances (in feet) for non-essential personnel when non-nuclear munitions/explosives are involved in a mishap or fire.

HC/D	Hazard	Minimum Withdrawal Distance (In feet)
1.4	Moderate fire, no blast or fragment	300
1.3	Mass fire, no blast or fragment	600
1.2 & 1.6	Fragment producing, non-mass explosion	2,500
1.1 & 1.5	Mass explosion	4,000
Unknown	Railcar full of munitions/explosives	5,000
NOTE: For accidents with no fire, the on-scene incident commander or senior ranking member will assess the risk and determine if the withdrawal distance needs to be greater than 300 feet.		

Missile safety fundamentals

Missile systems range from ground-launched or air-launched systems to intercontinental ballistic missiles, to remotely piloted drones. The aerospace vehicle (missile) is only a part of the mishap potential. Ground support, operational equipment, personnel, and the operational environment are also likely sources of mishaps. Units must establish and follow a positive mishap prevention program to maintain safe missile operations.

Missile safety requirements

Missile safety personnel must be familiar with these areas and equipment

- missile receipt and delivery areas,
- missile storage, handling, and maintenance facilities,
- missile transportation routes,
- range safety requirements,
- propellant and hazardous material handling equipment and storage facilities and
- mission support and training facilities.

Missile systems hazards

Within the missile systems, you may encounter the following hazards:

- Highly toxic chemicals, corrosives, and flammables.
- High pressures, noise, and voltage.
- Electromagnetic and nuclear radiation.
- Environmental extremes in weather and terrain.
- Carcinogens.

Forward firing ordnance

Munitions, such as guns, rockets, missiles, and flare dispensers, pose an additional hazard because of their directional response and potential long-range if inadvertently activated on the ground. Aircraft carrying forward firing ordnance (FFO) should be positioned as to minimize any hazard to personnel and resources. Do not let personnel stand or park vehicles unnecessarily in front of or behind FFO, especially when loaded on an aircraft.

030. Radiation safety

It is difficult to envision how radiation that cannot be seen, heard, smelled, or felt can cause injury or death. The answer is not fully understood, but you can gain partial insight of the damage when you realize human beings are composed of millions of microscopic cells. Radiation damages the cells on the cellular and sub-cellular level. When a living cell absorbs radiation, ionization and excitation of the atoms and molecules of that cell cause the primary damage.

Cells of the body that are most radiosensitive are those that reproduce most rapidly or are in a state of high metabolic activity. Regions of the body, such as blood-forming organs, reproductive organs, and hair follicles, show injury at much lower dosages than such slow or non-reproducing tissues as nerves. It is important to understand the various methods to reduce radiation exposure because radiation can have negative effects on the cells and organs of the body. The process of reducing radiation hazards inherent with nuclear weapons begins at the engineering design stage of a weapon system and continues throughout the life of the system. Let's look at the policy of exposure to radiation and steps you can take to reduce your exposure.

Intrinsic radiation

Intrinsic radiation (INRAD) refers to the ionizing radiation emitted from the radioactive materials in the components of a nuclear weapon. Radiation is "intrinsic" to the design of the weapon and consists primarily of x-rays, gamma radiation, and neutron radiation emitted from fissionable material. Intrinsic radiation is the radiation inherent with nuclear weapons.

As Low As Reasonably Achievable concept

Implementation of AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation and 91(B) Radioactive Material Safety Program*, and the As Low As Reasonably Achievable (ALARA) concept must not compromise weapons safety, security, reliability, or operational mission considerations. Units with a nuclear contingency or limited nuclear mission must adhere to the ALARA concept. The ALARA concept means making every reasonable effort to maintain radiation exposures as low as practical, taking into account available technology and its cost in relation to the benefit gained.

Within the constraints imposed by logistics, weapons safety, and security requirements, you can achieve ALARA by

- minimizing the time individuals spend near weapon systems,
- increasing personnel distance from weapon systems,
- using shielding and
- taking a combination of these actions.

The intent of ALARA is *not* eliminating all exposure to radiation, but *reducing* unnecessary exposure. There is a level of INRAD exposure inherent in getting a job done. For example, a weapon transportation operation requires a certain amount of time, and INRAD exposure simply cannot be avoided. If, however, people complete the inspection and remain in the immediate area of the weapon to finish the paperwork, it would be considered an unnecessary exposure and one that could be easily avoided.

Reducing intrinsic radiation exposure

The INRAD safety program implements the ALARA concept by keeping exposure of personnel to ionizing radiation ALARA consistent with operational requirements and making sure individuals are not receiving the maximum permissible dose. It requires reducing or eliminating INRAD hazards at the engineering design stage of a weapon system (that is, before it becomes operational).

When exposure cannot be reduced to acceptable levels through engineering design, personal protective procedures and administrative controls (such as time restrictions) are used to keep exposures below the maximum permissible dose. It is important to be aware of the potential radiation hazards in the workplace and how to protect yourself from those hazards. Depending on your assignment, you will likely use publications and technical orders that will provide radiation safety instructions, but further information on radiation safety and information for measuring intrinsic radiation can be found in TO 11N-20-7, *Nuclear Safety Criteria*. This TO helps supervisors/crew chiefs calculate the amount of exposure technicians will receive for each type of operation performed.

The key to further reducing INRAD exposure is applying the principles of time and distance. INRAD exposure is directly related to the time spent near the weapons. Time is of particular value in reducing exposure, since this is the factor over which personnel have the *most* control. Careful review of work practices and procedures can identify actions that will reduce exposure by reducing the time spent near nuclear weapons and other radioactive munitions. Examples of time control to reduce exposure include the following:

- Planning the work to be performed before the start of the operation and before exposure.
- Gathering all necessary tools, tech data, and materials needed to work efficiently.
- Avoiding any unnecessary tasks or unproductive time near the radioactive weapons.
- Where practical, consolidate required tasks to minimize the total time spent in the nuclear weapons maintenance areas.

The ALARA principles and weapon monitoring procedures are a means for making a safe work environment for AF personnel. A positive effort must be made to make sure only essential personnel are allowed in weapons handling and storage areas, and that stay times are minimized.

031. Munitions crew chiefs

The munitions crew chief and supervisor are responsible to the element NCOIC. Knowledge of munitions safety and operational awareness, technical procedures and operational proficiency of munitions technicians (military, civilian service and contractors) is essential while performing crew chief duties. In addition to their responsibilities outlined in AFI 21-101, crew chiefs are also responsible for the following:

Supervise the operation and maintain strict housekeeping standards.

Ensure pre-task safety briefings are accomplished before the start of any munitions operation.

- Evaluate munitions operations, initiate action to correct deficiencies, terminate unsafe operations, report discrepancies, and conduct qualification training as required.
- Provide proper security, storage, and operator maintenance of assigned equipment.
- Review and complete applicable munitions documents for accuracy and completeness.
- Report progress of operation to munitions control and coordinate changes in scheduled work orders with supervision.
- Remove unsafe or inoperable equipment and/or vehicles from service; report status to applicable agency for corrective action.

Pre-task safety briefing

Conduct a complete and thorough pre-task safety briefing (see local operating instruction) stressing to crew members what you need them to do and how you expect them to behave.

Crew chiefs will ensure members of the operation understand their responsibilities before the start of any operation. Casuals are personnel not normally part of an explosives operation but have duties that require their presence, such as munitions supervision, quality assurance, safety or inspection personnel. The crew chief will assign tasks based on the member's experience level and urgency of the operation. For efficiency, an assembly line style operation is used. Switching members between various tasks is discouraged due to time restraints and potential loss of accountability. It is crucial everyone knows what he/she is responsible for so that everyone stays productive. Besides the crew chief—a few other positions are:

- operator (e.g., forklifts, bomb lift trucks, hoist, vehicles)
- spotter/guide,
- assemblers/crew member and
- inspector.

The crew chief will assign emergency action responsibilities and provide a safety briefing to all crew members and casuals prior to the start of each explosive operation (AFI 21-201, *Munitions Management*). Specific duties involved with explosive operation emergencies include the following:

- Crew chief will immediately notify Control by the most expedient method available
- Assigned member will activate alarm and evacuate all non-essential personnel to pre-determined evacuation point.
- Assigned member will proceed to the entry control point and direct emergency responders.
- Two assigned members will immediately attempt to extinguish the fire with pre-positioned firefighting devices (within team capabilities).
- Crew chief will get accountability of all personnel and relay further status to Control.

NOTE: If an abnormal condition or situation arises during an explosives operation, crew members are responsible for bringing it to the attention of the crew chief immediately. The crew chief will stop the operation and seek guidance from the appropriate technical experts as applicable.

Identify all hazards of the operation

Likewise, before any munitions operation begins, the crew chief must first identify all applicable hazards involved. The item TO will identify specific hazards for munitions components; these applicable TOs need to be readily available at the location. Another publication for identifying hazards and basic explosives safety information is AFMAN 91-201, *Explosives Safety Standards*. However, general safety knowledge of the crew chief is expected and relied upon throughout the operation. He/she must have common knowledge of using spotters for vehicles and handling equipment, proper use of personal protective equipment (PPE), ensuring properly installed lightning protection systems, and so forth.

The crew chief must analyze the operation to ensure personnel, equipment, and the working environment is adequate for task success. Naturally, the price of success involves accepting a small amount of risk to accomplish the mission. The crew chief must make appropriate decisions on whether to implement controls and proceed, or to elevate the decision to the appropriate level. Munitions personnel live by the “cardinal principle of explosives safety”, which is to expose the minimum number of people—to the minimum amount of explosives—for the minimum amount of time consistent with safe and efficient operations. The crew chief must consider many precautions so he/she can expect, but plan for the worst. A few items to consider are limited visibility,

terrain/traction, severe weather, electrical dangers, falling objects, heavy objects, fire hazards, etc. The more thought that goes into identifying the root causes of the hazards, the better the control measures will be.

There are certain circumstances that require an operation to stop. When an individual other than a crew member or one of the identified casualties of the operation enters the area, the operation must stop. Visitors are non-essential personnel with limited access. The crew chief will brief all visitors upon arrival and operations will stop until they depart. There are many reasons for stopping an explosive operation that include security, safety, damage to equipment/materials, rest/rehydration of personnel, loss of control/accountability, etc.

Direct all phases of the operation

From beginning (crew briefing) to end (clean up), a crew chief must safely execute and manage both explosive and non-explosive operations using attained knowledge, skill qualifications, and competencies. As a crew chief, exercise total control over the operation to ensure personnel comply with all technical orders, safety instructions, job guides, and operating procedures. The crew chief also holds responsibility for all the scheduling aspects of the job. The crew chief dictates when the operation will start, when to put the operation on hold, when to take lunch/breaks, and when to stop the operation for the day.

The crew chief is not only the noncommissioned officer in charge (NCOIC) of the explosives operation, but also takes the role of the crew members' supervisor and trainer during the operation. Besides giving direction and enforcing standards for the members of the operation, the crew chief will

- manage personnel appointments and schedule mandatory meetings,
- mentor and provide feedback for personal/professional growth,
- conduct qualification training and
- initiate action to correct deficiencies and unsafe conditions.

The primary agency that the crew chief reports to is munitions control. The munitions control element is the focal point for planning, coordinating, directing, and controlling munitions activities. The crew chief will provide personnel and support equipment status, job starts, delays, completions, shortfalls, progress, and any significant operational issues to Control as soon as possible. To include notifying control of any situation that may warrant submission of any nuclear flag word or safety mishap. At times, the crew chief will communicate directly with other agencies, as the crew chief will often have more details of the situation. The following list identifies other agencies that the crew chief may communicate with:

- Security forces.
- Maintenance operations center (MOC).
- Aerospace ground equipment (AGE).
- Base fuels.
- Vehicle maintenance.

Depending on the location of the explosives operation, there can be several methods of communication. The primary means of communication are either a landline telephone or a handheld two-way radio. Government issued cell phones or sending a runner are other means for communication purposes.

Before starting the operation—the crew chief should find out how much NEW is currently at the location and what maximum NEW the location can hold. There are several references for finding out the NEW of a particular item to include the item TO and/or using the Joint Hazard Classification System (JHCS). However, the crew chief will most often use the combat ammunition system CAS to look up item NEW, the current NEW at the location, the maximum NEW of the location, the fire symbol at the location and the compatibility codes at the location. In short, the crew chief must notify


munitions control of any changes of an explosives operation's NEW, but especially at the beginning and ending of the operation.

A good crew chief corrects individuals immediately when they deviate from set standards. Crew chiefs ensure that all production, repairs, and modifications made to the munitions or related support equipment are authorized by technical orders—or get approval through the appropriate channels. Constant monitoring of operations must be accomplished to ensure technical data and safety standards are being adhered to by the right people, at the right location, and at the right times. This is where the crew chief's knowledge and experience come into play. The crew chief should be an individual who has first-hand experience with the PPE and tools/equipment needed to perform the operation. Ultimately, the final product and everyone's safety is the crew chief's responsibility.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

029. Explosives/missile safety

1. What are the four qualifications a supervisor must have with regards to explosives safety?
2. What is the basic concept of explosives safety?
3. What is the purpose behind the development of local written explosive operations procedures?
4. To what distance should non-essential personnel evacuate to during an explosive operation mishap that does not involve a fire?
5. What is the minimum withdrawal distance of HC/D 1.2 items involved in a fire?
6. Besides the aerospace vehicle (missile) itself, what other sources of mishaps are involved with missile operations?
7. Why are  so hazardous?

030. Radiation safety

1. What does INRAD refer to?
2. Who must comply with the ALARA concept?

3. When engineering design cannot reduce radiation exposure to acceptable levels, what other methods are used?
4. What are four ways to reduce the time spent near weapons?

031. Munitions crew chiefs

1. When should the crew chief ensure that a pre-task safety briefing is given to assigned workers?
2. Name at least two positions held in a typical explosives operation?
3. Primarily who should the crew chief notify during an explosives operation emergency?
4. Which publication identifies specific item hazards for munitions and must be readily available?
5. What is the cardinal principle of explosives safety?
6. What information from the CAS should be collected before starting an explosives operation to help fill out the pre-task safety briefing, and used to inform munitions control?

Answers to Self-Test Questions**025**

1. Federal law and DoD directives and instructions.
2. Ground safety and weapons safety.
3. The weapons safety representative.
4. Supervisors.
5. Everyone.

026

1. Mental and physical.
2. Reduce exposure.
3. Limit the probability of combustible vegetation causing an unacceptable fire hazard to munitions in storage.
4. Provide each explosive laden vehicle used for transport at least two portable 2A:10BC rated extinguishers. One fire extinguisher will be mounted on the exterior driver's side of the vehicle and one will be mounted inside the vehicle cab.
5. Using dry rags and/or wearing clothing made of materials that have high static generating characteristics.
6. No more than 10 seconds.

027

1. Class 1.
2. Based on the nature of the hazard and its potential for injury or damage.
3. Blast and mass detonation.
4. Chemical items” to include toxic, poisonous, and infectious substances.
5. AF Form 457, USAF Hazard Report.

028

1. (1) Know which technical orders are available to you.
(2) Have the technical orders on hand and open when performing a task.
(3) Know how to navigate through the TO for locating information.
(4) Have a general understanding of all applicable cautions, warnings, and notes.
2. TO 00-5-18.
3. (1) Emergency.
(2) Urgent.
(3) Routine.
4. TO 00-5-1.

029

1. (1) Be knowledgeable of all the hazards involved in the operation.
(2) Ability to convey emergency procedures to the workers and visitors.
(3) Know what steps to take when abnormal conditions arise.
(4) Qualified to perform and/or train associated tasks.
2. Preventing the premature, unintentional, or unauthorized initiation of explosives and devices containing explosives and minimizing the effects of explosions, combustion, toxicity, and any other harmful effects.
3. To give detailed guidance when explosives operations are not covered in sufficient detail by other standard publications, such as technical orders or MAJCOM OIs.
4. At least 300 feet.
5. 2,500 feet.
6. Ground support, operational equipment, personnel, and the operational environment.
7. Because of their directional response and potential long-range if inadvertently activated on the ground.

030

1. Refers to the ionizing radiation emitted from the radioactive materials in the components of a nuclear weapon. It is the radiation inherent to the design of nuclear weapons.
2. Units with a nuclear contingency or limited nuclear mission.
3. Personal protective procedures and administrative controls (such as time restrictions).
4. (1) Plan the work to be performed before the start of the operation.
(2) Gather necessary tools, tech data, and materials needed for the work.
(3) Avoid any unnecessary work near the weapons.
(4) Consolidate work requirements to minimize the total time required in the nuclear weapons maintenance areas.

031

1. Before the start of any munitions operation.
2. Any two of the following:
 - (1) Crew chief.
 - (2) Operator.
 - (3) Spotter.

- (4) Inspector.
 - (5) Assembler/crew member.
- 3. Munitions control.
- 4. The item TO.
- 5. Expose the minimum number of people—to the minimum amount of explosives—for the minimum amount of time consistent with safe and efficient operations.
- 6. Item's net explosive weight (NEW); the current NEW at the location; the maximum NEW allowed at the location; the fire symbol at the location and the compatibility codes at the location.

Do the unit review exercises before going to the next unit.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

64. (025) The person(s) that provides *all* Air Force personnel a safe and healthy work environment in which recognized hazards have been eliminated or controlled is the
 - a. weapons safety staff.
 - b. chief of safety.
 - c. commanders.
 - d. supervisors.
65. (025) Which major command (MAJCOM) gives technical assistance to mishap investigation boards and implements corrective action involving product/equipment safety aspects for mishap reports?
 - a. Air Combat Command
 - b. Air Mobility Command.
 - c. Air Force Materiel Command.
 - d. United States Air Forces in Europe.
66. (025) Under the Air Force Occupational Safety program, which action is a responsibility of *both* workers and supervisors?
 - a. Posting hazard notices.
 - b. Analyzing tasks for hazards.
 - c. Briefing visitors on standards and hazards.
 - d. Understanding and observing safety standards.
67. (026) The method that is *not* one of the basic rules used for reducing back injuries is to
 - a. lift with your legs, not your back.
 - b. keep the load away from your body.
 - c. lift gradually and avoid jerking/twisting.
 - d. never overexert yourself when lifting heavy or bulky items.
68. (026) When handling items manually, which parts of the body are *most* likely to receive an injury?
 - a. Head and shoulders.
 - b. Hands and fingers.
 - c. Back and spine.
 - d. Legs and feet.
69. (026) Where should flammable materials be stored in accordance with AFMAN 91-201 and AFI 91-203?
 - a. In a flammable locker with other combustibles such as wood, paper, and rags.
 - b. In a well vented storage locker at least 15 feet of an explosive location.
 - c. Together with cleaning supplies in the janitor's closet.
 - d. In an approved self-closing metal storage locker.

70. (026) Fire drills should be conducted within an explosive storage area
- monthly.
 - quarterly.
 - semi-annually.
 - annually.
71. (026) An electrical storm is considered “in the near vicinity” when it is within *approximately* how many miles of the munitions storage area?
- Two.
 - Five.
 - Fifteen.
 - Twenty.
72. (026) The publication you can find inspection requirements for a permanent or portable eyewash system is
- AFI 91–203.
 - AFMAN 91–201.
 - AFOSHSTD 91–101.
 - AFOSHSTD 91–501.
73. (027) Munitions are grouped into the same hazard division when they have
- different explosive characteristics.
 - like explosive characteristics.
 - different explosive weights.
 - the same explosive weight.
74. (027) Which class/division explosions generally cause *severe* structural damage to adjacent objects?
- 1.1.
 - 1.2.
 - 1.3.
 - 1.4.
75. (027) Some items included in explosive class/division 1.2 are
- missiles.
 - guided bomb units.
 - 20mm and 30mm ammunition.
 - small arms and artillery ammunition.
76. (027) The munitions associated with explosive class/division 1.4 are
- missiles.
 - bomblets.
 - small arms ammunitions.
 - 20mm insensitive high explosives.
77. (028) One of the *most* difficult problems a supervisor has in training crewmembers is getting them to
- follow all technical order (TO) procedures.
 - performing the job from memory.
 - perform tasks by themselves.
 - verify their work.

78. (028) What is a *basic* principle to follow when using technical orders (TO)?
- Memorize which TO is needed to perform a job.
 - Know how to locate information.
 - Know who writes TOs.
 - Memorize warnings.
79. (028) A typical technical order is broken down into what kind of sections?
- Guides.
 - Volumes.
 - Chapters.
 - Work packages.
80. (029) Air Force explosive safety standards are identified in
- Air Force Manual (AFMAN) 91–201.
 - Air Force Instruction (AFI) 21–201.
 - AFMAN 91–108.
 - AFI 21–202.
81. (029) It is *essential* that missile safety personnel are familiar with missile
- issue and turn-in procedures.
 - funding requirements.
 - transportation routes.
 - shipment strategies.
82. (029) Which type of munitions poses a forward firing ordnance hazard?
- Static display/inert missiles.
 - Flare/flare dispensers.
 - Guided bomb units.
 - Fuzes.
83. (030) The Air Force instruction (AFI) that governs the intrinsic radiation safety program is
- AFI 91–115.
 - AFI 91–110.
 - AFI 91–109.
 - AFI 91–108.
84. (030) Which publication is used to obtain information to measure intrinsic radiation of weapons in the stockpile?
- AFI 91–107, *Design, Evaluation, Troubleshooting, and Maintenance for Nuclear Weapons Systems*.
 - AFI 21–200, *Munitions and Missile Maintenance Management*.
 - TO 11N–20–11, *General Firefighting Guidance*.
 - TO 11N–20–7, *Nuclear Safety Criteria*.
85. (031) Personnel who are *not* normally part of an explosives operation but have duties that require their presence are referred to as
- casuals.
 - visitors.
 - crewmembers.
 - people of interest.

86. (031) Under what circumstance would a crew chief stop an explosive operation?
- a. An unknown visitor enters the area.
 - b. Lightning is spotted within 15 miles.
 - c. A crewmember wants a smoke break.
 - d. The crew chief receives a personal phone call.
87. (031) When is it *acceptable* to make a modification to a munitions item without referencing the technical order or getting authorization from the item manager first?
- a. Only when the modification does not affect the functionality of the item.
 - b. When the urgency of the task does not allow sufficient time.
 - c. When a member's supervisor says it is okay.
 - d. Never.

Please read the unit menu for unit 6 and continue ➡

Student Notes

Unit 6. General Maintenance Subjects

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THROUGHOUT your military career you are given responsibility for maintaining USAF property. This unit provides the information you need to better understand your role in the materiel control process. The munitions workcenters require a tremendous amount of materials to function, to say nothing of what is required to perform a mission in a combat environment. As you move to the level of journeyman, you may likely become your workcenter's point of contact (POC) for coordinating with agencies such as base supply and/or the equipment management office to fulfill the needs of your unit.

6-1. Materiel Control

Within the Material Control area items you may be required to perform to complete your responsibilities are submitting issue requests or requisitioning needed assets, tracking inbound/outbound shipments, managing inventories of equipment/supplies, turning-in excess materiels, DIFM

Some Air Force systems applications to help you accomplish the above tasks are the Integrated Management Data System (IMDS), Enterprise Solution-Supply (ES-S), Air Force Equipment Management System (AFEMS), and the CAS.

032. Supply discipline

Supply discipline is a personal duty for all Air Force members. It requires everyone to conserve and protect government property for operational need. The importance of supply discipline should be given special emphasis by everyone, regardless of assignment.

Use of supply products

Government property must be kept operational and in the best possible condition. In addition, keep only the minimum stock levels your unit needs to complete its mission. Perform your duties according to conventional practices and procedures of government property management. There are many directives, instructions, manuals, and technical orders (TO) covering virtually every aspect of supply to include AFI 23-101, *Materiel Management*; AFI 23-122, *Materiel Management Procedures*; and DoDI 4140.01, *DoD Supply Chain Materiel Management Procedures*. Your supply action may be requisitioning, storage, issuance of supplies and equipment, or turn in of property no longer needed. Generally speaking, supply discipline refers to asset control and documentation.

Munitions personnel should frequently screen items in stock to determine if they are excess to the needs of their unit. These serviceable excess items must be identified as such and turned in to your base supply. If an item is excess to the needs of your base, it is identified to your MAJCOM. If there is no base within the MAJCOM that needs the items, then they are offered to the rest of the Air Force

or other departments within the US military. The goal of redistribution is to use all assets so that they don't become obsolete or unserviceable. If no one within the Department of Defense (DoD) needs the item, it's considered surplus, and the AF activity holding it per authorized disposition instructions, will turn items in to the Defense Reutilization Management Office (DRMO) for resale, or through demilitarization (demil) which renders the item unusable for any military applications.

Maintenance supply

Supply of parts to a maintenance organization is vital to the upkeep of equipment and munitions capabilities. For this reason, you need in-depth understanding of the working of the system as it applies to your organization. For instance, if you perform the same job periodically that requires the same parts, then you need to develop a bench stock account. If the part needed for a job is out of the ordinary or is to replace something that unexpectedly broke—then perhaps a workorder residue program is more appropriate.

Maintenance supply discipline is vital to the completion of the mission. Many man-hours are lost when there is a lack of parts to meet the mission. How can you prevent the loss of man-hours due to lack of supplies? You can accomplish this by integrating the maintenance activity with its components and maintain the proper stock levels on hand. You must also use the appropriate priority for the situation when ordering parts or you will surely undermine the supply system. Only order what you need to do the job. When the unit of issue is a box of 100 and you only need three screws or washers, then return the remainder serviceable items not needed back to base supply. Be aware of what you already have on hand, and if there are any suitable substitutes when ordering parts. This will save money and man-hours.

033. Reusable container program

Empty munitions and missile component containers identified as munitions managed items, including all-up-round (AUR) missile containers, must be maintained on accountable records in CAS. These containers are to be used, reclaimed, and reused as a complete system, with the possible exception of the wrap or barrier materials. The interior packaging materials and devices (i.e. wrap, barrier material, cushioning, blocking, bracing, fasteners, etc.), are as essential to the protective function of the pack as the exterior container. Damaged or missing components of the container system must be repaired or replaced before reuse. For a reusable container to be considered usable, it must meet the following requirements:

- Protect serviceable items against natural/induced environments and physical damage.
- Protect unserviceable items against further deterioration.
- Capable of being opened and closed without impairing the container's ability to provide its original level of protection.
- Have all its components and be in good repair.

Reusable containers fall into two categories, long-life and short-life, depending on the durability of the exterior shipping container and complexity of the design.

Long-life containers

A long-life container is a shipping container that can be used repeatedly and whose serviceability can be expected to equal the serviceability of the item it is designed to protect. These containers may be refurbished by appropriate maintenance practices to their original condition and re-used. Life-long containers should withstand *at least* 100 trips.

Short-life containers

A short-life container is a shipping container that can be re-used for a limited number of times. The container is usually made of wood, plywood, or fiberboard or similar material that has limited serviceability. Short-life containers should survive *at least* 10 trips.

Empty munitions containers

Munitions containers with budget code “H”, federal stock class (FSC) code 8140, and expendability repairability recoverability code (ERRC) XD2 are managed in CAS. All other containers, unless specifically directed, are *not* managed on accountable records in CAS. Examples are in the following list:

- Accountable containers are identified in the CAS indicative data record (IDR) file.
- Basic reparability data is loaded in the IDR.
- The reparable item movement control system (RIMCS) is updated to determine “ship to” address.

Empty munitions and missile component containers are identified by a specific container National Stock Number (NSN), model number, serial number, and specific item TO. The container loses its identity when it contains munitions or missile items and is considered an integral part of the asset stored therein.

The using organization or custody account should turn in empty containers within five duty days after assets are consumed or expended. Turn in is not required when assets are removed for temporary maintenance actions. The munitions accountable systems officer (MASO) will consumption issue the asset from accountable records when required for buildup. Base activities must maintain enough on-hand empty munitions containers to break down all built-up complete rounds.

All munitions containers must be inspected and certified empty, as specified in TO 11A-1-60, *Inspection of Reusable Munitions Containers and Scrap Material Generated from Items Exposed to, or Containing Explosives*, before complying with disposition instructions or sending the container to the Defense Reutilization Management Office (DRMO). Base-level disposition of containers is not authorized, unless otherwise reflected in the IDR. Report these assets as excess according to applicable MAJCOM guidance or ship to repair facility as dictated in the CAS IDR/RIMCS data for reconstitution.

The MASO ensures that empty accountable munitions containers are inventoried. The MASO directs turn-in of any empty containers found that are not on accountable records and resolves the condition for the unreported items.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

032. Supply discipline

1. Who has the responsibility to keep government property operational and in the best possible condition?
2. What should be done with excess serviceable items from your workcenter?

033. Reusable container program

1. What are two requirements a reusable container must meet before it is considered usable?
2. Long-life containers should withstand at least how many trips?

3. When does a reusable munitions container lose its identity?
4. How many spare munitions containers should a unit retain?

6-2. Maintenance Data

Maintenance data collected and integrated with other logistics management systems at base level supply MAJCOMs and other agencies information needed to manage and track maintenance resources worldwide. In this section, you'll examine the different types of maintenance, the systems that track/monitor maintenance, and how to document maintenance actions.

034. Maintenance data collection

In any maintenance organization, there must be a method of reporting maintenance data. The collection, storage, and use of maintenance data is an important function within the Air Force. Members of maintenance organizations use several data collection systems to accomplish this. The automated maintenance information systems we use, provide data used in support of the USAF equipment maintenance program, reliability and maintainability improvement program, and to improve maintenance management system procedures. The objectives of the maintenance data documentation (MDD) process are to provide a vehicle for collecting, storing, and retrieving base level, depot level, and contractor-type maintenance data.

Purpose

The MDD process provides maintenance managers at all levels with information on jobs performed by each organization or work center. The organization can plan, project, schedule, and control parts and equipment as required. The data is obtained for statistical studies and assists managers identify problem areas. Management actions can then be effectively exercised to meet and support established operation and maintenance requirements. Now, let's take a look at the importance of MDD and how the process works.

Process

The MDD process is described as a system with collection, storage, and retrieval processes. These processes provide the data collection and monitoring of maintenance discrepancies, allow short- and long-term (historical) storage of data, and provide a hard-copy retrieval of data through user inquiry. TO 00-20-2, *Maintenance Data Documentation*; the AFI 21 series; system user manuals; and MAJCOM implementing directives contain rules and procedures concerning data management. While there are several systems used for the automated input of MDD data, the IMDS is the system used at most bases to document daily maintenance actions.


The MDD process serves as the primary source of information for configuration status accounting and is used at all levels of management to

- identify equipment configuration,
- assure accomplishment of TCTO,
- project workload and scheduling requirements, and
- provide mechanized historical records for designated equipment.

Data accuracy

Because of the many uses of the MDD process, it must have accurate data. It is the overall responsibility of each performing work center supervisor to ensure the accuracy and completion of all maintenance actions at the lowest level.

035. Types of maintenance

There are four s of maintenance performed on munitions and munitions equipment: preventive, periodic, unscheduled, and in-process/end-item inspections.

Preventive

Preventive maintenance is the normal upkeep and preservation of equipment through systematic inspection, detection, and correction of discrepancies to prevent failures, verify serviceability, or restore complete serviceability of equipment that has been subjected to usage, wear and tear, or deterioration caused by environmental elements. Preventive maintenance is similar to performing an oil and filter change on your personally owned vehicle. This servicing is most often completed after a specified period of *miles* or *hours* of operation are compiled against a vehicle or piece of equipment.

Periodic

Periodic maintenance is also referred to as scheduled maintenance. Periodic maintenance is the known or predictable maintenance requirement that can be planned or programmed for accomplishment on either a short- or long-range schedule. It includes accomplishment of recurring scheduled maintenance inspection and servicing, compliance with TCTOs other than the immediate action category, accomplishment of scheduled time change item replacements, and correcting delayed or deferred discrepancies. It also includes modification and renovation projects programmed for depot accomplishment. This type of maintenance is often completed after a specified period of time (e.g., 30, 60, 180, 360, 720 days).

Unscheduled

Unscheduled maintenance includes unpredictable, unplanned, and unprogrammed maintenance requirements. Munitions and munitions equipment sometimes require prompt attention. Maintenance on this equipment must be added to, integrated with, or substituted for previously scheduled workloads. Unscheduled maintenance involves compliance with immediate action TCTOs, correction of discrepancies discovered during flight or operation, or for repairs resulting from mishaps. Work that necessitates special depot scheduling is also classed as unscheduled maintenance.

036. Maintenance documentation

All maintenance personnel must have a clear understanding of how to document maintenance data. When the automated Maintenance Data Collection System is available, the data should be input according to the procedures in the user manuals or directives. With IMDS, a work order is printed and used to document and update maintenance actions.

AFTO Form 349, Maintenance Data Collection Record

When the automated system is not available or is not operating for some reason, use the manual method by completing an AFTO Form 349, Maintenance Data Collection Record. In a maintenance organization, all technicians must record the amount of time spent completing their work on AFTO Forms 349 or automated work orders. When the manual method is used, the AFTO Form 349 is processed after completion and the data is input into the Maintenance Data Collection System.

AFTO Form 350, Repairable Item Processing Tag

The AFTO Form 350, Repairable Item Processing Tag, provides a link between on-equipment and off-equipment maintenance actions. It is a two-part form required on items removed for maintenance shop processing. Part I of AFTO Form 350 is the repair-cycle processing tag; part II serves as the production-scheduling document. A completed AFTO Form 350 serves to identify the origin of an item and contains key data elements needed to document shop actions. As soon as repair is done, this form provides information for completion of AFTO Form 349 and information for input of repair-cycle data into the supply system.

Managers must know the status of their equipment—whether it is in service, in need of repair, requires inspection, or if the equipment has known/re-occurring problems. Keeping adequate equipment records helps managers determine the best resources to use for the mission.

AFTO Form 95, Significant Historical Data

While performing your maintenance tasks, you may need to use AFTO Form 95, *Significant Historical Data*. This form provides a method of maintaining a permanent history of significant maintenance actions for support equipment, training equipment, and other components designated by higher authority (e.g., MAJCOM).

Initiate or document AFTO Form 95 on any conventional test and handling equipment upon the issuance of the first TCTO or the occurrence of the first significant maintenance condition or incident requiring a data entry. AFTO Form 95 contains blocks for this information such as the type of equipment, name of manufacturer, serial number of the equipment, date of acceptance, and remarks about the equipment. Precede each remark with the date of the inspection or maintenance action, and *suffix* the remark with the name of the organization making the entry. The remarks you make on AFTO Form 95 should provide a life profile of a piece of equipment. As a *minimum*, ensure these remarks include any conditions that could have a bearing on future maintenance of the equipment.

AFTO Form 244, Industrial/Support Equipment Record

You use the AFTO Form 244 to record maintenance, inspection, and historical data for support and training equipment. It documents discrepancies, corrective actions, serviceability, and inspection status. The technical order (TO) used to complete the AFTO Form 244 is TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies and Procedures*, which gives detailed instructions for most equipment items.

Standard documentations

The form is divided into five parts. Most of the “parts” and their respective entries are self-explanatory; therefore, we will concentrate on the entry requirements here. When you use the AFTO Form 244, some of the entries may vary slightly. Always refer to the TO when completing the form. Except for “symbol” entries, make all your entries on the form using a black pencil or ballpoint pen. The symbols are entered in red to make them stand out clearly. Enter all dates on the form using the YYYYMMDD format.

Name entries are required in three locations on the form: “DISCOVERED BY”, “CORRECTED BY”, and “INSPECTED BY” blocks. Make name entries using the first-name initial, last name, and rank. The following list identifies two name entries you’ll frequently sign:

1. If you make the initial entry in part V for a discrepancy, sign the “DISCOVERED BY” block.
2. If you complete the repair action for a discrepancy entry, sign the “CORRECTED BY” block.

The only time you must *print* a name is when you initiate a new form. This is when you transcribe any open discrepancies from part V of the old form. In this case, print the information (as stated above) of the person who originally entered the discrepancy in the “DISCOVERED BY” block of the new form. To alert users and maintenance technicians about the status of an item of equipment, use the appropriate symbol to enter discrepancies in part V. The symbols are entered in red to make them stand out clearly. To show the seriousness of the discrepancies, use one of three symbols shown in the table below.

Symbol	Represents	Indicates
Red X (X)	Most serious condition.	The item/equipment is considered unsafe or unserviceable and will not be flown or used until the unsatisfactory condition is corrected and/or the symbol is cleared. No one will authorize or direct an aerospace vehicle to be flown, a missile to be launched, or equipment to be used until the Red X has been properly cleared according to applicable technical data.

Symbol	Represents	Indicates
Red dash (-)	Next most serious condition.	A required maintenance action, periodic inspection, scheduled lubrication, special inspection, time change item replacement, operational check, or scheduled inspection is overdue. You use this symbol to indicate that the condition of the equipment is unknown and a more serious condition may exist. Correct this condition as soon as possible.
Red diagonal (/)	Least serious condition.	An unsatisfactory condition exists on equipment, but it is <i>not</i> urgent or dangerous enough to justify not using the equipment.

Erroneous symbols

When a Red dash (-) or Red diagonal (/) is entered in error on a discrepancy or work document, the individuals discovering incorrect entries enter in the “CORRECTIVE ACTION” block this statement: “Symbol/Initial entered in error, discrepancy and correct symbol/initial reentered on page ____, item ____” or “Symbol entered in error, no discrepancy exists,” and enter their signature in the “CORRECTED BY” block. When required reenter the discrepancy and correct symbol in the next open “DISCREPANCY” block on the form.

When a Red X (X) is entered in error, if the individuals are authorized to clear these symbols, they will complete the “INSPECTED BY” block and initial over the symbol. If they are not authorized to clear these symbols, they will enter their signature in the “CORRECTED BY” block. An individual authorized to clear these symbols initials over the symbol and completes the “INSPECTED BY” block. This procedure will not be used to circumvent downgrade procedures.

Clearing symbols

Any individual, who signs off a red symbol for a specific maintenance task, must be qualified/certified for the task and knowledgeable of the TOs required to complete the task. Individuals who sign off discrepancies in the “CORRECTED BY” OR “INSPECTED BY” block, as applicable, enter their last name initial in pencil or black ink over the symbol in the “SYMBOL” block of the applicable maintenance document indicating that they have completed the required maintenance or inspection and found the condition satisfactory.


Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

034. Maintenance data collection

1. What is the purpose of maintenance data documentation (MDD) collection?
2. Where would you look to find rules and procedures concerning data management?
3. Name the MDD system used at most bases to document daily maintenance actions.
4. Who is responsible for ensuring all maintenance documentation is complete and accurate?

035. Types of maintenance

1. What are the four  es of maintenance performed on munitions equipment?

2. What type of maintenance is performed after a specified period of *miles or hours* of operation are compiled against a vehicle or piece of equipment?
3. What type of maintenance is performed after a specified period of *time* (i.e., 30, 180, 360 days)?
4. What type of maintenance is performed when it is not predicted, planned, or programmed?

036. Maintenance documentation

1. What is the purpose of the AFTO Form 95?
2. What information is recorded on the AFTO Form 244?
3. What three locations on the AFTO Form 244 are name entries required?
4. What is the purpose of red symbols on the AFTO Form 244?
5. Who is authorized to sign-off/clear a red symbol on an AFTO Form 244 for a specific task?

6-3. Data Management

Over the years, the Air Force devised and put into effect various maintenance management and data collection systems. As time passed, weapon systems became more complex and the need for data collection systems increased. To meet the demand, the maintenance management and collection systems were modified on a “piecemeal” basis; that is, a little at a time, as needed. The final result was a complicated “batch” system that didn’t meet the requirements. Also during this period, computers were replacing punch card machines that the systems were originally designed to use. To convert to high-speed computer use, the entire maintenance system needed to be reevaluated and redesigned.

There are now several automated systems used throughout the munitions flight maintenance data collection. All provide for short- and long-term (historical) storage of data and provide a hard-copy retrieval of data when needed.

037. Reliability asset monitoring system

Reliability is defined as the ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system. Maintainability is defined as the measure of the ability of an item to be retained in (preventive) or restored to (corrective) a specified condition when maintenance is performed by personnel having specific skills, using prescribed procedures and resources, at each prescribed level of maintenance and repair. The Department of Defense (DoD) issued a directive in July 1980, mandating reliability and maintainability policies. This action evolved to an acquisition oriented reliability and maintainability policy—the reliability asset monitoring system (RAMS) was created to cover all phases of the life cycle of defense material. The objective of this directive is to increase operational readiness and mission success of field items, reduce ownership cost, and provide information essential to acquisition, operation, and support management.

Purpose

The Warner Robins-Air Logistics Center (WR-ALC) is responsible for monitoring the air-intercept missile (AIM) and air-to-ground missile (AGM) systems' reliability. The AIM and AGM specific RAMS have been developed primarily to provide an accurate means of assessing present performance levels, as well as predicting future reliability standards for Air Force AIM and AGM assets. The emphasis on reliability has evolved for the following three basic reasons:

1. The need to determine how well an equipment item meets its functioning requirement and how that piece will perform in the future.
2. The present policy of securing warranties on newly purchased weapons system requires reliability data be gathered and maintained to enforce the warranty, should the situation arise.
3. The DoD has seen the value of reliability studies and has issued a series of mandates and regulations that direct the implementation of these programs.

Concept

An effective RAM program must parallel the maintenance concept under which missiles are operated and maintained. The maintenance concepts under which the Air Force presently operates (as shown in the table below), are divided into three levels—organizational, intermediate, and depot.

Level	Code	Operation
Organizational	O	Perform the missile upload and download function as well as flight line testing.
Intermediate	I	Is mandated to perform a periodic functional testing, verification of flight line reported failures, section replacement (under certain conditions and in certain missile systems), and corrosion control.
Depot	D	Is authorized general missile repair and card, module, and tray repairs.

This concept varies with each missile system. Some missile systems authorize subsection repair at the intermediate level, while other missile systems authorize section replacement only at depot level.

WR-ALC logistics managers, engineers, technicians, and reliability personnel are involved in all phases of the missile life cycle to assure that logistics requirements are defined and met during validation and the full-scale development phase. However, when a weapon system enters production and deployment stage of its life cycle, management responsibility transfers to Air Logistics Center. It's WR-ALC's mission to maintain an operational AIM and AGM inventory.

The AIM and AGM RAMS program provides the basis for maintaining or improving reliability of the Air Force's current inventory and for determining reliability goals and requirements for new tactical missile systems. RAMS represents a "closed loop" reporting system whereby information is reported into a centralized database, compared with other parameters relative to this data, and analyzed, with the results reported back to origination level. Failure trends can be ascertained on this system and may affect engineering changes resulting in systems improvement. These failures can be depicted by any one of several parameter groups, such as type failure, environment, batch or manufacturing lot, or periods of time. Failures can be extracted individually for item failure analysis. It is beneficial to be familiar with the policies and procedures of RAMS in TO 21M-1-101, *Reliability Asset Monitoring System*, before working with the tactical missile reporting system (TMRS).

038. Tactical missile reporting system

In the past couple of decades, the Air Force has paid millions of dollars per year to keep up with the rapid evolution of computers systems. Not long ago, we were tracking missiles and their inspections using paper and pen. Since then, a more effective computer system was developed for that purpose. This system is called the tactical missile reporting system (TMRS).

Purpose

Tactical missile reporting system is a data base management program used at the base level for tracking and reporting important information about tactical missiles and missile components to RAMS. TMRS gives the missile maintenance or storage manager visibility of missile and component identification, inspection, TCTOs, time change, serviceability, and location data. The program allows you to input your all-up-around (AUR) missiles or unassembled component data. The program produces reports on key information. There is even a shipping function in TMRS which allows visibility by the shipper and receiver of assets in-transit.

Program applicability and capabilities

The TMRS allows users to track and maintain computer control groups, air-to-air and air-to-ground missile systems, as both AUR and unassembled components and their support equipment. The TMRS is specifically designed for AIM-7, AIM-9, AIM-120, AGM-65, AGM-88, and guided bombs units (GBU). TMRS provides a few specific capabilities as shown in the table below:

Program/Menu	Explanation
Missile build	Allows you to add missiles to the database from on-hand components.
Missile update	Permits you to update complete missile record, missile component data, missile periodic inspection (PE) data, missile in-process inspection (IPI) data, missile TCTO data, missile location data, missile flight hour data, and missile component failure information.
Missile view	Allows you to view complete missile records, component data, PE data, IPI data, TCTO data, or location of a specific missile.
TMRS report	Allows you to produce reports required for day-to-day operations: <ul style="list-style-type: none">• Missile asset – Choose from the entire database or by specific missile type.• TCTO – Build reports on completed or uncompleted TCTOs from your entire data base, a specific TCTO number, or by a single missile. These reports can give information on completion/publication/expiration dates.• Missile history – Select a history report by type of missile or by a single missile. This report contains specific information on discrepancies, corrective actions, and who did the maintenance on the missile.
Missile history	This menu permits you to enter, update, view, delete, or print a missiles complete history. You can also use this program to search for specific information you are looking for (i.e., all records inspected by a specific person on a specific day).
Unassembled components	From this menu you can enter, update, view, delete, query, obtain reports of, or print history of (serviceable or unserviceable) unassembled components within the database.
RAMS database	This menu handles the RAM reporting requirements outlined in TO 21M-1-101. However, the list of menus is not all-inclusive. At any time while using TMRS you need more information or specific guidance on procedures covered by the system, refer to the TMRS user's manual by pressing the F5 key while in the system.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

037. Reliability asset monitoring system

1. What's the definition of reliability as referred to in a maintenance organization?
2. What is the primary purpose of the AIM and AGM RAMS?

3. What are the three levels of maintenance concepts under which the USAF operates?
4. Whose mission is to maintain an operational AIM and AGM inventory?

038. Tactical missile reporting system

1. What is the TMRS used for?
2. Which specific munitions are tracked in TMRS?
3. What does the “Missile view” program/menu within TMRS allow you to do?
4. What can you refer to anytime you need more information or specific guidance on procedures while using TMRS?

Answers to Self-Test Questions**032**

1. All Air Force members.
2. Turn in to base supply; if no one within DoD needs item, turn it into DRMO and/or demil per authorized disposition instructions.

033

1. Any two of the following:
 - (1) Protect serviceable items against natural and induced environments and physical damage. Protect unserviceable items against further deterioration when returned to the depot or manufacturer.
 - (2) Be capable of being opened and closed without impairing the container’s ability to provide its original level of protection.
 - (3) Endure the shipping, handling, and storage environment for the number of trips required to yield the lowest total packaging, maintenance, storage, and transportation costs for the expected lifetime of the item it protects.
 - (4) Have all its components and be in good repair.
2. 100.
3. When it contains munitions or missile items and becomes an integral part of the asset stored within.
4. Enough to break down all built-up complete rounds.

034

1. To provide managers at all levels with information about jobs performed by each unit or work center.
2. TO 00-20-2, AFI 21 series, system user manuals, and MAJCOM implementing directives.
3. Integrated Maintenance Data System (IMDS).
4. The performing work center supervisor.

035

1. (1) Preventive.
(2) Periodic.
(3) Unscheduled maintenance.
(4) In-process/end-item inspections.
2. Preventive.
3. Periodic.
4. Unscheduled

**036**

1. To provide a method of maintaining a permanent history of significant maintenance actions for support and training equipment and other components designated by higher authority (e.g., MAJCOM and the LG).
2. Maintenance, inspection, and historical data for support and training equipment. It documents discrepancies, corrective actions, serviceability, and inspection status.
3. In the “DISCOVERED BY,” “CORRECTED BY,” and “INSPECTED BY” blocks.
4. To alert users and maintenance technicians as to the status of an item of equipment.
5. Any individual qualified/certified for the task and knowledgeable of the TOs required to complete the task.

037

1. The ability of a system and its parts to perform its mission without failure, degradation, or demand on the support system.
2. To provide an accurate means of assessing present performance levels, as well as predicting future reliability standards for Air Force AIM and AGM assets.
3. (1) Organizational.
(2) Intermediate.
(3) Depot.
4. Warner Robins Air Logistics Center (WR-ALC).

038

1. To track and report important information about tactical missiles and missile components. Also, to give the missile maintenance or storage manager visibility of missile and component identification, inspection, TCTOs, time change, serviceability, and location data.
2. AIM-7, AIM-9, AIM-120, AGM-65, AGM-88, and GBUs.
3. To view complete missile records, component data, PE data, IPI data, TCTO data, or locations of missiles.
4. The TMRS user’s manual by pressing the F5 key while in the system.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

88. (032) Who has responsibility to conserve and protect government property and supplies on your installation?
- a. All USAF members.
 - b. Supply personnel.
 - c. Security Forces.
 - d. Item managers.
89. (032) What are two supply references that cover practices and procedures for US government property?
- a. AFMAN 91-201 and T.O. 35D3-2-27-1.
 - b. AFI 23-101 and DoDI 4140.01.
 - c. AFI 24-301 and T.O. 11-1-38.
 - d. AFI 1-1 and DoDI 4000.25.
90. (033) For a reusable container to be considered usable, which requirements *must* it meet?
- a. Capable of protecting unserviceable items against further deterioration.
 - b. Manufactured from reusable steel and be in good repair.
 - c. Have all original markings and packaging materials.
 - d. Must not have any dents, scratches, or corrosion.
91. (034) In regards to maintenance data collection, whose *overall* responsibility is it to *ensure* the accuracy and completion of *all* maintenance actions performed at the lowest level?
- a. All members of the performing work center.
 - b. The maintenance squadron superintendent.
 - c. Each performing work center supervisor.
 - d. Plans and scheduling personnel.
92. (035) The type of maintenance similar to performing an oil and filter change on your personally owned vehicle is known as what kind of maintenance?
- a. Periodic.
 - b. Preventive.
 - c. Re-occurring.
 - d. Unscheduled.
93. (035) Which type of maintenance is scheduled after a specified amount of time (e.g., 30, 180, 360 days)?
- a. Periodic.
 - b. Preventive.
 - c. Re-occurring.
 - d. In-process inspection (IPI).
94. (036) When the automated system to document maintenance data (generated work order) is *not* available, use the manual method by completing an
- a. AFTO Form 350, Reparable Item Processing Tag.
 - b. AFTO Form 95, Significant Historical Data Record.
 - c. AFTO Form 349, Maintenance Data Collection Record.
 - d. AFTO Form 244, Industrial/Support Equipment Record.

95. (036) When using the “CORRECTIVE ACTION” block on an AFTO Form 244, how do you correct an erroneous red dash or red diagonal entry?
- Erase it and enter the correct symbol.
 - Line through it and initial the SYMBOL block.
 - Enter “Symbol/Initial entered in error, no discrepancy exists” and enter their signature in the “INPSECTED BY” block.
 - Enter “Symbol/Initial entered in error, no discrepancy exists” and enter their minimum signature in the “CORRECTED BY” block.
96. (037) What is a basic reason for creating emphasis on air intercept missile (AIM) and air-to-ground missile (AGM) reliability monitoring systems?
- The need to determine how well an equipment item meets its functioning requirement and how that item will perform in the future.
 - The need to determine the location of missile equipment items and to assess the risk involved with transporting them.
 - Lack of oversight in the past resulting in congressional mandates and regulations.
 - The fact that AIM and AGM assets are classified and need constant monitoring.
97. (037) Which agency maintains the Air Force’s operational air-intercept missile and air-to-ground missile inventory?
- Warner Robins Air Logistics Center (WR-ALC).
 - United States Air Forces in Europe (USAFE).
 - Ogden Air Logistics Center (OO-ALC).
 - Air Combat Command (ACC).
98. (038) Which Air Force computer system operated at the base level is used specifically for updating missile records?
- Core automated maintenance system.
 - Munitions missile reporting system.
 - Reliability asset monitoring system.
 - Tactical missile reporting system.
99. (038) Which of the following missiles is *not* tracked using the tactical missile reporting system?
- AGM-86.
 - AGM-65.
 - AIM-9.
 - AIM-7.
100. (038) Which program/menu in the tactical missile reporting system allows you to enter a missile’s flight hour data?
- Missile view.
 - Missile build.
 - Missile update.
 - Missile history.

Glossary of Abbreviations and Acronyms

AA&E	arms, ammunition, and explosives
ACC	Air Combat Command
AETC	Air Education and Training Command
AFCFM	Air Force career field manager
AFCOMAC	Air Force Combat Ammunitions Center
AFECD	Air Force enlisted classification directory
AFI	Air Force instructions
AFIS	Air Force inspection system
AFJQS	Air Force job qualification standard
AFMAN	Air Force manual
AFMC	Air Force Material Command
AF MC2	Air Force munitions command and control
AFOSH	Air Force occupational safety and health
AFPC	Air Force Personnel Center
AFS	Air Force specialty
AFSAS	Air Force safety automated system
AFSC	Air Force specialty code
AFTO	Air Force technical order
AGE	aerospace ground equipment
AIM	air-intercept missile
AMC	Air Mobility Command
ALA	ammunitions loading assembly
ALARA	as low as reasonably achievable
ALERTORD	alert order
ALS	ammunition loading system Airman Leadership School
AMMO	ammunitions
AUR	all-up-round
C3	command, control, and communications
CAPP	combat ammunition planning and production
CAS	combat ammunition system
CBU	cluster bomb unit
CCAF	Community College of the Air Force
CCI	controlled cryptographic item

CDC	career development course
CEM	chief enlisted manager
CFETP	career field education and training plan
CIIC	controlled inventory item code
COMSEC	communications security
CONPLAN	concept operation plan
CTK	composite tool kit
DIFM	due-in from maintenance
DoD	Department of Defense
DoDAAC	Department of Defense activity address code
DoDIC	Department of Defense identification code
DRMO	Defense Reutilization and Management Office
EAL	entry authority list
ERRC	expendability repairability recoverability codes
ESP	expeditionary site plan
EXORD	execute order
FFO	forward firing ordnance
FSC	federal stock class
GACP	global ammunition control point
GBU	guided bomb unit
HC/D	hazard classes and divisions
IAW	in accordance with
IDO	installation deployment officer
IDR	indicative data record
IDS	intrusion detection system
IGESP	in-garrison expeditionary site plan
IM	item manager
IMDS	integrated maintenance data system
INRAD	intrinsic radiation
IPI	in-process inspection
JOPES	Joint Operation Planning and Execution System
LALS	linkless ammunitions loading system
LOGMOD	logistics module
LPS	lightning protection system
LRS	logistics readiness squadron
MAC	munitions assembly conveyor

MAJCOM	major command
MASO	munitions accountable systems officer
MC&G	mapping, charting, and geodesy
MDD	maintenance data documentation
MEP	munitions employment plan
MICT	management internal control toolset
MMHE	munitions material handling equipment
MNCL	Master Nuclear Certification List
MSA	munitions storage area
MTL	master task listing
MUFM	Munitions User Functional Manager
MUNS	munitions squadron
MXS	maintenance squadron
NAF	numbered air force
NCOA	noncommissioned officer academy
NEW	net explosive weight
NEWQD	net explosive weight for quantity distance
NIPRNET	Non-Secure Internet Protocol Router Network
NMC2	nuclear munitions command and control
NSN	National Stock Number
OI	operating instruction
OJT	on-the-job training
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
PCAR	peacetime conventional ammunitions requirements
PGM	precision guided munitions
PL	protection level
PLANORD	planning order
PPE	personal protective equipment
PRP	personnel reliability program
P&S	plans and scheduling
QA	quality assurance
Q-D	quantity-distance
RACP	regional ammunition control point
RAMS	reliability asset monitoring system

RIMCS	repairable item movement control system
ROS	report of survey
SA	system administrator
SE	support equipment
SIPRNET	Secure Internet Protocol Network
SMI	storage monitoring inspection
SNCOA	senior noncommissioned officer academy
SRAN	stock record account number
STAMP	standard air munitions package
STS	specialty training standard
TACP	theater ammunition control point
TBA	training business area
TCN	transportation control number
TCTO	time compliance technical order
TM	technical manual
TMCP	tactical missile control point
TMDE	time, measurement, and diagnostics equipment
TMO	traffic management office
TMRS	tactical missile reporting system
TNT	trinitrotoluene
TO	technical order
TODO	technical order distribution office
U&TW	utilization and training workshop
UALS	universal ammunitions loading system
UCML	unit committed munitions listing
UDM	unit deployment manager
WAPS	weighted airman promotion system
WARNORD	warning order
WCDO	War Consumable Distribution Objective
WP	work package
WR-ALC	Warner Robins-Air Logistics Center
WRM	war reserve materiel
WSA	weapons storage area

Student Notes

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