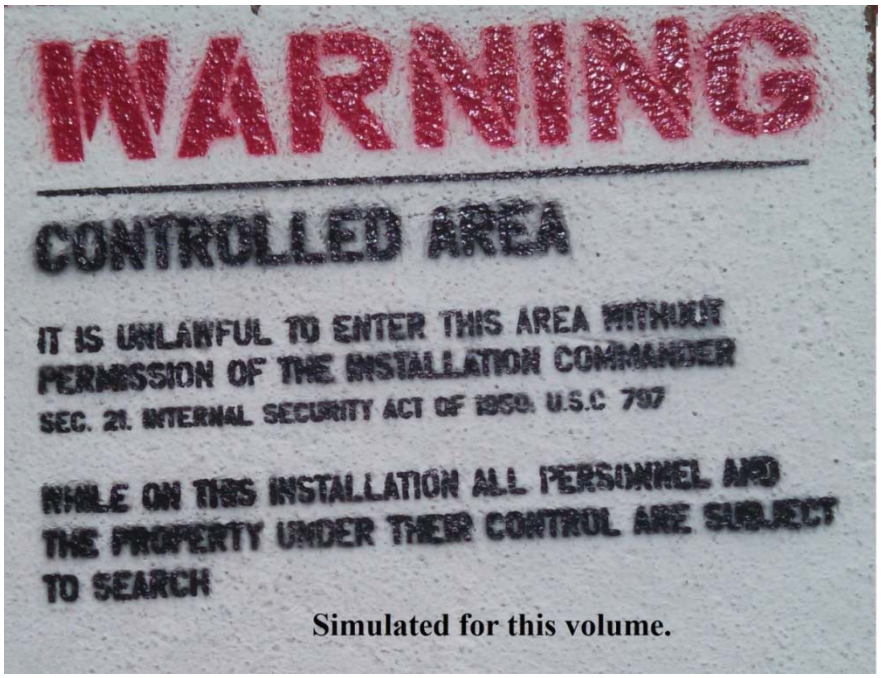
CDC 2W171

Aircraft Armament Systems Craftsman

Volume 1. Management



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THIS ONE VOLUME CDC, 2W171, is devoted to ensuring you have adequate knowledge of the functions and duties you will encounter as a 2W171. Unit 1 apprises you of the common 7–level duties and responsibilities. Unit 2 addresses commonly occurring Maintenance, Logistics, and Mobility concerns that are likely to apply to you as a 7–level. Unit 3 covers the basic elements of the supply system and the munitions management process.

A glossary is included for your use.

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This volume is valued at 9 hours and 3 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. Common 7-Level Duties

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YOU HAVE ENTERED upgrade training to be awarded the 7-skill level, so you need to expand your horizons. Not only will you form the backbone of the maintenance effort, you will be intimately involved in the critical task of creating the future armament technicians that will eventually replace you.

1–1. Weapons Expediter

At some point in your career, most of you will fill the shoes of the weapons expediter or a position commensurate to it if assigned to a back shop. Making the transition from your current position to the weapons expediter position can be one of the most challenging undertakings you will ever experience as an aircraft armament systems craftsman. In this new position, you will become responsible for the management of all on-equipment armament systems maintenance and loading/unloading operations. One of the first things you must come to accept with this added responsibility is the extra time and effort it takes to be effective at your new duties and responsibilities. The first duty and responsibility we cover in this section is planning and communication.

001. Plans and communication

Every expediter needs a plan. To form the plan, the weapons expediter needs to know what they are expected to accomplish and how to coordinate their load crew's efforts with those of other section expediters in the unit. This lesson discusses the areas that will make you successful in completing your responsibilities by covering configuration plans, standard conventional loads, and flightline communication.

Configuration plans

Most of you may have heard the words, “Aircraft is not in -1 loading configuration” as a rejection during weapons load training. Have you ever thought what those words actually meant or where they came from?

All aircraft in our inventory have a flight manual that lists the flight characteristics, parameter of flight, limits of operations, and general operations procedures of these airframes. These manuals are commonly referred to as the -1 flight manuals. Since you will not be flying these aircraft anytime soon, you may be surprised to find these manuals located in your flightline support sections for your reference. As an aircraft armament technician, these manuals have some very valuable reference material of particular importance to you, specifically the section labeled “Operating Limitations.” Under this section there is a sub-section devoted to stores. Within the stores section of the -1 all approved and authorized air munitions to include stores configurations will be provided in illustrated easy to use tables. The reason this section is of such importance to us is that if a configuration is not listed in this section it cannot be loaded on that aircraft.

In figure 1–1, you see an example of one of the tables located in technical order (TO) 1A–10C–1. This table lists all of the approved configurations for the MK–82 and BDU–50 bombs. The triangles in line number 2 indicate that a triple ejector rack (TER) loaded with three bombs located on stations 3, 4, 8, or 9 is an authorized configuration. However, there is nothing mechanically or structurally preventing a TER from being loaded on stations 5 or 7 on the A–10, in fact, there are approved configurations for this action. Nevertheless configuring the A–10 with MK–82 Air Inflatable Retarders (AIR) loaded on TERs on stations 5 and 7 is not an approved-load configuration. This is an illegal configuration and is NOT authorized for flight.

		STATION LOADING											CARRIAGE				EMPLOYMENT				SELECTIVE JETTISON			
														MAX ACCEL (g)							STORE		RACK WITH OR WITHOUT EXT STORES	
STORE	LINE NO	1	2	3	4	5	6	7	8	9	10	11	MAX KIAS TMN	SYM	ROLL	MAX ROLL RATE STICK THROW (W/ SPEED BRAKES DFLCT)	MAX KIAS TMN	MAX ACCELSYM (g)	DELIVANGLE (deg) +climb -dive	REL MODES intevl msec	KIAS	AC-CEL (g)	KIAS	AC-CEL (g)
MK-82 LDGP MK-82 AIR BDU-50	1	▼	▼	▼	▼	▼		▼	▼	▼	▼	▼	450 0.75M	+7.3 -3.0	+5.8 -1.0	FULL	420	+3.0 +0.5 Low Drag	0 -60 Low Drag	S P RS RP Low Drag 70 min	420	+3.0 +0.5 Low Drag	N/A	N/A
	2			▽	▽				▽	▽				+5.0 -2.0	+4.0 -1.0	FULL (1/2)		+3.0 +0.8 High Drag	0 -35 High Drag	High Drag See RMKS		+3.0 +0.8 High Drag	250	1.0 Level Flight
	REMARKS: 1. The TAIL or N/T fuzing selection in the weapon profile should be used when employing high drag bombs for this configuration. Minimum weapon release interval may affect actual release spacing. Refer to TO 1A-10C-34-1-1.																							

Figure 1–1. Configuration matrix.

A configuration may not be authorized for several reasons, with safety of flight being the main reason. It might have adverse drag effects on the aircraft, or it might be due to structural concerns, but as far as the aircraft armament systems community is concerned the reasons are irrelevant. Your primary concern is to configure aircraft in only the approved configurations. If as an expediter or weapons load team chief, you are ever required to configure an aircraft in an unfamiliar configuration, you must refer to the stores limitations section of the -1 flight manual for your aircraft to verify the configuration of the aircraft is authorized.

Standard conventional load

A standard conventional load (SCL) is defined as a locally developed code that represents the number, type, and configuration of authorized munitions required for a specific mission. A SCL is constructed by the unit's weapons and tactics section to reflect real-world missions that are assigned to the unit by the operations plan (OPLAN) using munitions on the unit committed munitions list (UCML).

Since the SCL reflects the configurations that are unique to a unit's missions and resources, the approval process is handled in a locally prescribed method. Regardless of the particulars of the individual unit's approval process the SCL must still pass the following benchmarks for approval:

- The munitions used must be on the UCML.
- It must adhere to the -1 limitations of the aircraft in question.
- The SCL must support the unit's part in the OPLAN or training missions required to support the OPLAN.

Using this shorthand way to convey mission requirements offers many advantages to you as the maintainer. The following four statements are some of the advantages:

1. Simplified communications between operations and maintenance—Operations can communicate its exact requirements by using a small code instead of listing each munition separately by location or station for each aircraft. This greatly reduces the chances typing errors, which results in aircraft configuration errors.
2. Simplified communications between maintainers—Once established, the SCL code informs all maintenance personnel of the station locations, types, fuse settings, and amounts of all munitions and alternate mission equipment (AME) for an aircraft to meet the particular mission requirements. The expeditor can give their crews a short list of tail numbers and SCL codes instead of complicated instructions on aircraft configuration.
3. More rapid maintenance planning—By using an approved SCL, maintenance technicians are assured that configured aircraft are conformed to the applicable -1 flight manual limitations for loaded stores without having to research all required munitions individually.
4. Simplified documentation—Explosive loaded aircraft require entries into their Air Force Technical Order (AFTO) Form 781A, Maintenance Discrepancy and Work Document.

Flightline communication

The weapons expediter is directly responsible to the weapons section non-commissioned officer in charge (NCOIC), for all armament systems maintenance and munitions loading operations. The weapons expediter responds to maintenance priorities established by the production superintendent and informs them of all start and stop times, status changes, and/or delays.

As a weapons expediter, you use your radio as an essential tool to effectively communicate with other expediters, the maintenance operations center (MOC), and/or munitions control for the maintenance coordination of the delivery and pick-up of equipment and munitions items. Make all radio transmissions in a clear and professional manner. Being an effective communicator is a character trait every successful weapons expediter possesses and continually tries to improve upon.

It is critically important to coordinate the maintenance efforts of your crews and the other maintenance taking place on the flightline. You and your crews are too busy to have to repeat maintenance unnecessarily because of a lack of communication between you and other expediters. For example, installing impulse carts in an aircraft an hour before it gets towed into a hanger is just a waste of time and effort. Communicating with the other expediters saves you time and effort and enhances your ability to complete your mission.

002. Manage workloads

Learning how to prioritize workloads is the ultimate test of your decision making capabilities. You will be under the gun at times, but again it is important to emphasize that you must remain clear-headed when making your decisions. There are three main factors involved in prioritizing the workload, which are personnel, aircraft status, and outside forces. These three main factors are what your decisions should be based upon and will be discussed among other factors within this lesson.

Personnel management

Your decisions for a particular task could be greatly influenced by the number of workers available to you. Just because there are seven load crews assigned to your shift doesn't necessarily mean you'll have seven crews at your disposal. Everything from appointments, medical profiles, qualifications, and even your lunch will drain your workforce and need to be taken into consideration. Additionally, every crew does not have the same capabilities; some may be great loaders and others may be great troubleshooters. When assigning jobs its one sure way to cripple your efforts and that is to let your crews only do what they excel at. It may get the work done faster today, but your Airmen may have a permanent change of station (PCS), become ill, or take leave, as examples and hinders your production if not accounted for. If you have not allowed your crews to broaden and/or improve their skills, you'll eventually pay the price. Whenever the situation allows, you must try and match up experienced crews with inexperienced crews to broaden their knowledge base to learn the procedures of difficult or unfamiliar tasks. Each crew has a unique mix of capabilities and skills, and you must use them in the most efficient manner possible. You owe your crews as much effort in good planning as they owe you in good performance.

Aircraft status

To prioritize aircraft maintenance, you must effectively and logically take into consideration the aircraft's status. An aircraft's status is determined through the use of the following three status codes:

1. CODE 1—All systems are functioning properly.
2. CODE 2—One or more system/systems have *minor* discrepancies.
3. CODE 3—One or more essential systems are not operational.

Occasionally when prioritizing the workload, you will have to determine if a weapon system is CODE 2 or CODE 3. To help you make this determination, you need to become familiar with the minimum essential subsystem list (MESL). Each type of aircraft has a MESL and every MESL is contained in AFI 21–103, *Equipment Inventory, Status, and Utilization Reporting*, and applicable major command (MAJCOM) supplements. The MESL provides guidance on what aircraft systems are required for specific missions. Many times, this is where the CODE 2 and CODE 3 statuses comes from. Normally if any non-critical system does not operate in its entirety, the aircraft is considered CODE 2. If a particular system that is required for a specific mission fails to operate or operates below minimum requirements, the aircraft is considered CODE 3. For more specific information, refer to AFI 21–103 and your applicable MAJCOM supplement.

Keep in mind when making your decisions on aircraft status that when your aircraft is "broken out," the clock starts concerning the fix rate. Important statistics are taken and compiled according to the amount of time it takes to correct a problem. Eight hours is the benchmark time for standard aircraft repairs.

Outside forces

Outside forces are the most difficult factors to account for when trying to make informative decisions about prioritizing the workload. Flying schedules, maintenance schedules, load barn dates, and the weather are all subject to change at a moment's notice. It can become very frustrating to have your plan of action totally crushed by one of these outside factors if you are not prepared for it. Success at this point is now dependent on your willingness to be flexible. Do not hesitate to confer with your production superintendent or any other expediters to collaborate with you to choose an alternate

course of action. They are just as concerned with your unit's mission as you are and might have ideas or inputs that will allow you to form an alternate course of action. By remaining flexible, you keep yourself open to options that you may not have realized before.

Flexibility, however, does not mean your crews are allowed to deviate from your plan as they see fit. As the expediter, the ultimate responsibility is yours, and it's your job to direct your crews—not the other way around. Don't be so fixed in your way of thinking that you are not willing to take your crews input into consideration. Your decisions and opinions are not the only ones on the shift, but as the person who is held responsible for successes or failures, they are the most important.

Keeping the three factors we have discussed in mind can go a long way in helping you make sound decisions about the most proficient way to prioritize the workload. If any one of these factors is overlooked, it could be detrimental to your mission.

Aircraft status/configuration charts

A tool that you may consider using but is *not* mandatory for use is an aircraft status/configuration chart. A status/configuration chart can be a valuable source of information that is readily available if used properly. A status/configuration chart is nothing more than a visual source of information used as a quick reference of the status of aircraft and equipment. They may be large Plexiglas boards permanently mounted in your truck, small clip-boards, or even computer-based spreadsheets, but they should all be designed to meet the specific needs of each unit. As a minimum, you should include the following on your aircraft status charts:

- Location of each aircraft.
- Tail number of each aircraft.
- Flying schedule line number.
- Configuration of each aircraft.

For the status chart to be a useful tool, everyone involved must make sure it is kept updated. If the maintenance of this chart is done incorrectly, the chart will not serve its purpose and lead to more harm than good.

Weapons load training aircraft

Even though expediters generally are not load certified, they still have a critical role in the load crew certification process. As a weapons expediter, you are responsible for making sure the weapons load training (WLT) aircraft is properly configured for training and all necessary systems are functioning properly. Support equipment and aerospace ground equipment (AGE) must also be available and serviceable. Finally, because crews are unavailable due to load training, you are going to have to redistribute extra work assignments to your other crews.

003. Total Force Integration

The goal of Total Force Integration is the integration of our three Air Force components—active duty Air Force, Air Force Reserve (AFR), and Air National Guard (ANG) personnel. AFI 90–1001, Planning Total Force Associations (TFAS), describes the "Responsibilities for Total Force Integration." This instruction provides personnel at all levels a single document to help them to understand roles and responsibilities, to have the capability to craft an integration initiative integration plan document, and to understand the different command relationships that impact the mission accomplishment of integration initiatives. The desired end state of Total Force Integration is a more capable and a more resource efficient Air Force that leverages the unique strengths of each component and also increases Air Force combat capabilities. For the purpose of this instruction, the National Guard Bureau (NGB) functions as both a Headquarters Air Force (HAF) 2-letter and as a MAJCOM equivalent organization. To start this lesson we will begin covering Title 10, Armed Forces and Title 32, National Guard.

Title 10, Armed Forces/Title 32, National Guard

Title 10, United States Code governs the Armed Forces of the United States, to include the regular AF, the AFR, and the ANG of the United States when called to active duty. Let's look at some characteristics of both Title 10 and Title 32.

The president is the commander-in-chief of the Armed Forces of the United States. The ANG trains in-state status for its federal mission, under Title 32, United States Code, state constitutions, and state statutory law. Each governor is the commander-in-chief of each state National Guard members unless they are in federal active duty status. The ANG can also be mobilized in Title 32 status for certain Home Land Defense (HLD) missions, but continues to report through the governor of each respective state. This offers more flexibility for the ANG to respond to domestic contingencies. Because of constitutional and statutory limitations, a Title 10 member cannot be assigned or attached to a Guard unit (i.e., they may not be placed under the authority of the state's chain of command). Likewise, an ANG member in Title 32 status cannot be assigned or attached to a Title 10 unit. However, the secretary of the Air Force may detail officers and enlisted members of the regular AF to duty with the Guard, although they remain under their Title 10 chain of command. With presidential approval and gubernatorial consent, an ANG officer may continue to exercise his state commission while on active duty so that he may command both Title 10 and Title 32 personnel.

Operational direction

"Operational direction" is a concept used to convey the authority exercised by commanders and supervisors within an associated unit. "Operational direction" means the authority to designate objectives, assign tasks, and provide the direction necessary to accomplish the mission. Authority for operational direction of one component member over members of another component is obtained by agreements between Title 10 and Title 32 commanders. This occurs when these component commanders in an associate organization structure issue orders to their subordinates to follow the operational direction of senior members of the other component for the purpose of accomplishing their associated mission. For example, if the senior person in the weapons flight is a guard Title 32 person, the Title 10 active duty members assigned to that section would be given an direct order by their Title 10 active duty squadron commander to follow the operational direction of the senior Title 32 guard person. Likewise, if the senior person in the weapons flight is a regular Title 10 active duty member, the Title 32 guard members assigned to that section would be given an order by their Title 32 ANG squadron commander to follow the day-to-day direction of the senior Title 10 regular active duty member. Violations of these operational direction orders would be dealt with through the respective chains of command under Title 10 Uniform Code of Military Justice (UCMJ) authority or Title 32 state discipline codes.

Disciplinary actions, including letters of counseling, letters of admonishment, letters of reprimand, and UCMJ actions, must be accomplished by the member's own component chain-of-command (if a guardsman in Title 10 status, the Title 10 chain has authority). Short of full mobilization, all Air National Guard of the United States (ANGUS) members in Title 10 status will be assigned to the Air National Guard Readiness Center (ANGRC), and attached to the appropriate regular AF unit.

Supervisors or commanders from one chain of command cannot take disciplinary action against a member of the other component chain of command, but shall notify the member's chain-of-command of the disciplinary infraction or other matters requiring redress.

Personnel actions must be accomplished by the member's own component chain-of-command (with inputs from the member's functional supervisor if a member of another component). Designation of raters for performance reports must be in accordance with (IAW) the rules established by the member's component.

When an entire ANG unit is performing in a Title 10 status, it must be assigned to a Title 10 organizational structure. The ANG unit must also be attached to a gaining Air Force MAJCOM.

Master labor agreement

The master labor agreement (MLA) is the labor contract that applies to civilian "bargaining unit" employees; there are however, some exclusion. This document covers a variety of subjects that pertain to the civilian employee to include rights and obligations, discipline and counseling, arbitration, and both types of leave: annual and sick. There are a number of other subjects that are covered as well, which are all covered under the governing body of the American Federation of Government Employees (AFGE). Civilian supervisors should all have a current copy of this document in their possession and each operating location does have the authority to have an individual supplement to the MLA. You must be familiar with the contract because if you inadvertently do something in conflict with the MLA or local supplement, you as the supervisor can be held accountable. For example, a task that takes 20 minutes comes up, and it is 10 minutes until the end of the shift; you assign it to the civilian that falls under the MLA. The civilian completes the task without complaining then fills out their timecard with the additional 10 minutes of overtime. This can cause problems because typically you will not be the approval authority for overtime for civilians. Your supervision and your commander will be inquiring with you about the decision for the allowance of the overtime.

004. Aircraft impoundment

An aircraft or piece of equipment is impounded when intensified management is necessary because of system or component malfunction, failure of a serious or chronic nature, or lost tools or missing items. Within this lesson we will go over proper impoundment procedures, the guidance regulating the procedures, and how it affects your duties.

Impoundment procedures

Aircraft and equipment are placed in impoundment for ground or flight-related mishaps defined in AFI 91–204, *Safety Investigations and Reports.* Impoundment is also applicable when authorized procedures are not adequate or the unit is unable to identify or repair loaded nuclear weapons system malfunctions within the criteria of AFI 91–107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems.* The way you start the process to impound an aircraft is by entering a Red X symbol and stating the reason for impoundment in the AFTO Form 781A, Maintenance Discrepancy and Work Document, along with the impoundment official's name.

Impoundment official responsibilities

Group commanders appoint impoundment officials, who are officers or senior non-commissioned officers (SNCO). These officials are responsible for controlling and monitoring the investigation of impounded aircraft or equipment and are also designated as the single point of contact for the impounded aircraft or equipment.

Each MAJCOM is responsible for developing procedures for identifying impounded aircraft or equipment and the MAJCOM also maintains specify impoundment release authority of each aircraft or equipment. The impoundment official ensures only authorized personnel have access to the impounded aircraft or equipment and also determines if maintenance analysis support is required. If necessary, the impoundment official determines the need for a "one-time" flight according to TO 00–20–1, *Aerospace Equipment Maintenance General Policies and Practices*, and requests authorization from the applicable group commander.

005. Flightline loading operations

The best way to relay a safety-minded consciousness to your people is by showing a constant presence on the flightline. How many times have you been dropped off at a job site to perform a particular task, never to see the weapons expediter again? You cannot properly supervise and provide for the safety of your crews by monitoring a radio back at the shop. You must take an active role and be directly involved in the process.

Constantly monitor your crews to make sure they are following proper safety procedures and be willing to offer assistance when needed. Don't be afraid to get out of the truck and perform random supervisory postloads and maintenance inspections. By doing so, you create an atmosphere showing you are concerned about your people's well-being as well as the safety of the aircraft. Within this lesson we will cover sortie generation operation, concurrent servicing operation, and dual loading operation.

Sortie generation operation/concurrent servicing operation

A sortie generation operation (SGO) is a process by which aircraft are generated in a minimum amount of time, during peacetime or wartime, and through concurrent operations. It may also include refueling, munitions loading/unloading, aircraft reconfiguration, -6 inspection and other servicing requirements according to applicable mission design series (MDS) TO, 11A–1–33 series, and TO 00–25–172, *Ground Servicing of Aircraft and Static Grounding/Bonding*. In conjunction with applicable TOs, combat air forces (CAF) units will use the procedures in AFI 21–101, *Aircraft and Equipment Maintenance Management,* to accomplish a SGO. Munitions loading will be accomplished using complete MDS specific 1X-XXX–33–1–2/–2–1 TO procedures. Aircraft thru-flights are accomplished in their entirety in accordance with MDS-specific, 1X-XXX–6 TO work cards.

Of particular interest to the 2W1X1 community is the concurrent servicing operation (CSO), which is defined as the simultaneous loading/unloading of munitions, fueling, aircraft reconfiguration, and may include aircraft -6 inspections, or other aircraft servicing. Other servicing may include oil, nitrogen, and hydraulic fluid. Oxygen servicing will not be accomplished during fuel servicing. CSO provides units operational flexibility in managing resources and a rapid means of generating mission ready aircraft. A dual loading operation (DLO) will not be conducted during CSO. Any time fueling is being accomplished during a CSO a concurrent servicing supervisor (CSS) is required to be present. The CSS is the person responsible for onsite supervision of all aspects of fuel servicing, munitions loading/unloading, and aircraft reconfiguration while being performed concurrently. The key function requiring the CSS is aircraft fueling. When no fueling is taking place, a CSS is not required. The CSS must be at least a 7-level with a maintenance (2AXXX or 2WXXX) Air Force specialty code (AFSC) with at least one year of experience on the MDS, a safety supervisor who will supervise only one CSO at a time, and will perform no other functions. Detailed information on SGO and CSO can be found in AFI 21–101.

Dual loading operation

A DLO is the primary method for rapid munitions loading or unloading on bomber aircraft. A DLO is authorized provided the following conditions are met: load crews must conduct independent loading operations; and loading and fueling operations must not be performed simultaneously due to the hazard of the aircraft settling. Generally DLO is only applicable to bomber units, although fighter units may use DLO if the MAJCOM or equivalent grants approval. Initial DLO qualification consists of academic and practical training, recurring annual training consists of academic training only.

Self-Test Questions

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

001. Plans and communication

1. What is listed in the "Operating Limitations" section of the -1 flight manual that is of interest to aircraft armament systems technicians?

2. What is a standard conventional load?

3. Who is the weapons expediter responsible to for all armament systems maintenance and munitions loading operations?

4. As a weapons expediter, you use the radio to communicate with whom concerning delivery and pick up of equipment and munitions items?

002. Manage workloads

1. What are the three main factors in prioritizing your work?

2. What are the three aircraft status codes and describe each one of them?

3. What is the most difficult factor to account for when you, the weapons expediter, try to make workload decisions?

4. Who is responsible for making sure the WLT aircraft is configured and functioning properly?

003. Total Force Integration

1. What is the desired end state of Total Force Integration?

2. What does Title 10, United States Code govern?

3. The ANG mobilized in Title 32 status for certain HLD missions continue to report through whom?

4. Name some of the subjects covered in the MLA?

004. Aircraft impoundment

1. Who appoints impoundment officials?

2. Who develops procedures for identifying impounded aircraft or equipment release authority?

3. Who determines if maintenance analysis support is required?

005. Flightline loading operations

1. What maintenance operations can be included in a CSO?

2. What prerequisite qualification must someone have before being named a CSS?

3. What specific conditions must be met while performing a DLO?

1–2. Aircraft and Equipment Documentation

By now you may have realized the Air Force likes to have everything written down or documented in some manner. Although in this case, just writing things down is not enough for the process to be called documentation. Documentation is the organized collection of records that describe the structure, purpose, operation, or maintenance of a given system. Any aircraft and equipment documentation that is not structured in a way that the data is recoverable and referenceable is useless data for aircraft and equipment documentation. Accurate documentation is critical in everything from day-to-day processes that keep our aircraft in operation to maintaining accountability of billions of dollars of Air Force equipment.

006. Aircraft-related documentation

The paperwork portion of the job is never glamorous but to be successful, it is necessary. As a weapons expediter, there are several sources of documentation you must use to plan and record your actions. Flying schedules, AF IMT 2407, Weekly/Daily Flying Schedule Coordination, AF IMT 2430 Specialist Dispatch Control Log, AF IMT 2434 – Munitions Configuration and Expenditure Document, turnover logs, and equipment malfunction logs, are just a few of such sources of documentation we will cover here. Let’s start his lesson by covering flying schedules.

Flying schedule

The flying schedule is one of the most important documents you, as a weapons expediter will use. This document contains all the information necessary to properly prepare the aircraft for their mission. It will also inform you of the aircraft scheduled for maintenance as well as training. Flying schedules are forecasted and distributed on a monthly, weekly, and daily basis; however, they are always subject to change at a moment’s notice. Take the time to review the flying schedule at the soonest possible time, noting key information, such as aircraft configurations and take-off times, along with the aircraft you must prepare for weapons load training and major maintenance. On occasion some flying schedules may even list any installed AME that is due maintenance within that specific timeframe. Keep in mind you are the “expert” on your aircraft’s weapon systems and responsible for what it takes to get the aircraft mission ready. If you see any odd-ball information (i.e., turn times too short, etc.), your supervision depends on you to raise the flag so that problems can be solved at the earliest possible time. Once the flying schedule has been reviewed, it is up to you to put a plan into action.

AF IMT 2407

If it becomes necessary to deviate from the original flying schedule for any reason, you must submit an AF IMT 2407. The AF IMT 2407 informs all agencies involved of what changes have been made to the flying schedule. This could directly impact you, as an expediter, in a number of different ways. For example, if the change concerns the configuration of an aircraft, it may be necessary for you to coordinate with munitions control for the delivery or pickup of certain munitions. Additionally, if the changes affect training or maintenance, then contact the appropriate organization and inform them of the change and any possible delays.

AF IMT 2430

The AF IMT 2430 is the primary form used to list all jobs to be completed for the day and the technicians performing the work. A normal day's activity will involve several removal and installations of AME and line replaceable units (LRU) as well as aircraft configurations. Keeping this current throughout the day provides a snapshot on how your shift is progressing through the day's tasks. You must make it very clear to your crews how important it is to keep you updated on the status of jobs in work and of those completed so you can have an up-to-the-minute picture of the maintenance effort. You should use a separate AF IMT 2430 for each shift making sure to carry forward incomplete or required maintenance tasks to the next shift's AF IMT 2430. Locally modified AF IMT 2430s are authorized *only* with wing weapons managers (WWM) approval. As a minimum, a locally modified AF IMT 2430 will contain the following areas:

- AS OF—Start date of document.
- JOB CONTROL—Filled out for maintenance actions requiring job control numbers (JCN) or discrepancies, not required for weapons loading tasks.
- ACFT/TRAINER—The specific equipment MDS.
- SERIAL—Aircraft tail number or item serial number.
- TIME—Time required to complete the task.
- DISPATCHED—Time the job started.
- COMPLETED—Time the job was completed or status (C/W, C/F, CANX).
- SPECIALIST(S) DISPATCHED—Crew name(s) or number.
- DISCREPANCY and REMARKS—General comments on work performed.

Units may maintain one single AF IMT 2430 for weekly scheduled maintenance as desired in addition to the daily shift AF IMT 2430. Transcribe any actions not complied with or cancelled to the next week's scheduled maintenance AF IMT 2430.

AF IMT 2434

One of the most important jobs as a weapons expediter is tracking the configuration of aircraft, along with tracking all munitions expenditures. The use of the AF IMT 2434 or locally approved equivalent is required on all aircraft configured with AME and/or loaded with munitions. You must record, by serial number and location or position, all armament-related AME or support equipment. Additionally, you must record the number and locations of munitions installed and the number of munitions expended as well. Reconciliation of expenditures is completed with the munitions section at the end of the flying day to make sure the accountability of the munitions is accurate. After reconciliation, copies of the expenditure document are distributed to plans and scheduling, within the munitions flight, and when required, the armament systems flight. The AF IMT 2434 is used by these various agencies to reconcile their own records, track flying time for missiles, schedule inspections, and to keep track of total rounds fired in gun systems. In the unlikely event that an aircraft doesn't return, the AF IMT 2434 provides an accurate record of what type of munitions were loaded, how many were loaded, and part and serial numbers of installed AME. The information tracked on the AF IMT 2434 is essential and again, the accuracy of the information recorded in this form cannot be emphasized enough. Timely and accurate completion of the AF IMT 2434 is critical to munitions accountability as well as to ensuring timely delivery of munitions for subsequent operations.

Turnover and equipment logs

Turnover logs and equipment logs are two other sources of documentation that can be very useful. Again, these logs are not mandatory items, but they do come highly recommended. Turnover/equipment logs are helpful by giving your insight you may not be aware of as to the status of personnel, aircraft, equipment, and so forth. Any information that might be useful to the next weapons expediter coming on shift is worth documenting in these logs. If used properly, they can be

very useful at heading off what could become a potential problem later on. Equipment logs can be useful as a troubleshooting resource to identify recurring deficiencies on particular pieces of equipment.

Air Force Technical Order Form and IMT 781 series forms

By this point in your career, you should be intimately familiar with the AFTO Form and IMT 781 -series forms and their uses. What you may not understand is how your relationship to them can change once you become an expediter and/or 7-level craftsman.

As the supervisor of all weapons system maintenance actions being performed, you have a responsibility to ensure quality and accuracy of the forms entries that your crews produce is acceptable. One of your responsibilities is the review of the 781 series forms to ensure there are no write ups from the data integrity team (DIT). The DIT regularly inspects aircraft forms to ensure the accuracy of the information being compiled by the field during maintenance. An aircraft document review (ADR) is another way for a unit to detect problems in forms record keeping. ADRs are generally ordered every 30-60 days or after an aircraft is removed from cannibalization (CANN) status, major inspections, storage, and so forth to include: checking the forms for everything from overdue maintenance, inspections, down to minor clerical errors like missing man numbers. The massive amount of support functions that modern aircraft require provide ample opportunity for people to make mistakes in the records keeping process. As an experienced 7-level, you are expected to detect and correct discrepancies and not have them pointed out to you during an inspection. You will also be performing new maintenance actions requiring entries into the forms that you have not previously been performing. One of your duties is the performing and documenting of supervisory post loads of explosive loaded aircraft. These are normally documented as separate inspections and are expected to include a review of the aircraft forms for serviceability of the aircraft weapons system.

007. Equipment forms

Just as our aircraft need careful documentation, equipment also requires proper documentation to account for its status and maintenance needs. This lesson provides you the means in which this is done through the usage of the AFTO Form 244/245 and AFTO IMT Form 95/Automated 95.

Air Force Technical Order Form 244/245

The AFTO Form 244, Industrial/Support Equipment Record, provides a means to document equipment delayed discrepancies and corrective actions, services, periodic and special inspections, inspection status, and historical data. The AFTO Form 245, Industrial/Support Equipment Record (Continuation Sheet), is published as a continuation form for Part 5 of the AFTO Form 244. It provides users an extension of the AFTO Form 244 if the AFTO Form 244 becomes full; the use of the AFTO Form 245 is optional.

While you are aware that an AFTO Form 244 must be maintained on AGE, you need to be familiar with some of its other uses. The AFTO Form 244 must be maintained on items that require periodic serviceability testing such as jammer forks. You must maintain an AFTO Form 244 on each item of training and mobile training equipment as designated by the controlling MAJCOM.

An AFTO Form 244 must be maintained on test, measurement, and diagnostic equipment (TMDE) that requires scheduled inspections.

Air Force Technical Order IMT Form 95/Automated 95

A permanent history of significant maintenance actions on AME, LRUs, and serially controlled components are recorded on the AFTO IMT 95, Significant Historical Data, form or the automated AFTO 95. Significant data that is documented on the form would include severe corrosion, damage from accidents, TCTOs, inspections performed, and rounds fired (for guns). Equipment such as missile launchers, bomb racks, and suspension utility units can be transferred from unit to unit. When

this happens, the gaining unit needs to know the status of the equipment. The AFTO IMT Form 95 or a printout of the automated AFTO 95 is sent with the equipment.

Self-Test Questions

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

006. Aircraft-related documentation

1. What document informs you, the weapons expediter, of the aircraft scheduled for training?

2. What form do you use to submit changes to the flying schedule?

3. What form lists all jobs for the day and the technicians who completed them?

4. What form is used to track munitions expenditures?

007. Equipment forms

1. What information is recorded on the AFTO Form 244?

2. What form provides a permanent history of significant maintenance actions?

1–3. Training

Virtually everyone reading these career development courses (CDC) has performed training in one way or another. You may have been a load crew chief or have just been assigned as a trainer responsible to progress a newly arrived 3–level trainee through their 5-level upgrade training. Regardless of your capacity, you have had a hand in training. As a 7-level, you'll be responsible for conducting training in a more formal manner than you may be accustomed to. This section is not an all-encompassing guide to training, but it is a good starting point to help you in your training responsibilities.

008. Monitoring the effectiveness of training programs

Previous sections of this unit have dealt exhaustively with record keeping on equipment and aircraft. Your Airmen deserve the same level of attention in their training programs as given to any aircraft or piece of equipment. Within this lesson we will go over the tools available to you to maintain effective training records.

Maintaining training records

A critical part of training for maintainers who will follow in your footsteps revolves around the maintenance of training records. The most critical records of a career field's specific training is maintained in your Career Field Education and Training Plan (CFETP) located within the training business area (TBA).

Training business area

As with many programs in the Air Force today, your training records have become automated. Currently, most records of the 2W1 career field's specific training requirements are located on the AF portal within the TBA. The STS, the TBA journal entry, and the CFETP can all be located in TBA. The TBA is a Net-Centric, web-based application providing AF warfighters with global, real-time visibility into qualifications, certifications, and training status of 200,000+ logistics, communications and information professionals. The application supports base, wing and work center-level training management activities by automating training business processes and procedures traditionally performed using paper and legacy systems. The primary users of the TBA are any personnel directly involved in base-level training activities. The following table outlines the TBA capabilities.

Training Business Area Capability

• Global Combat Support System (GCSS-AF also known as AF Portal) enables two worldwide TBA production environments.
  • TBA Operational Environment.
  • TBA User Practice Environment (supports unit-level training).

• TBA Elements
  • Enterprise Training Warehouse–Product Management (Publishing and Posting).
  • Central repository for training products (CFETP and AF and command job qualification standards).
  • Provides ability for AF career field managers to centrally manage training products.
  • Master task list (MTL) and master training plan (MTP).
  • Work center training plan management, MTL, and MTP.
  • Summary of tasks associated with unit type codes (UTC).
  • Individual training plans (ITP).
  • Automated AF Forms.
  • Capability to transfer (gain and lose) employees, add, delete, and archive employee training data… true cradle to grave visibility.
  • Role-based capabilities for trainees, trainers, certifiers, supervisor, training managers and commanders to access and manage employee ITPs.
  • Reports—Seven standard reports with multiple options.

Training business area journal entry

The TBA journal entries are used to document an individual's training progression. These journals reflect the training status, counseling, and breaks in training. The supervisor and/or trainer, and the trainee must electronically sign all entries using their portal ID. Examples of TBA journal entries include initial CDC issue, CDC completion schedule, explanation of delays in CDC completion and/or training requirements, problems encountered with task certification (if any), and any training-related counseling statements.

Specialty training standard

The STS is the Air Force publication that describes an Air Force specialty in terms of tasks and knowledges that an Airman may be expected to perform or to know on the job. It further serves as a contract between the Air Education and Training Command (AETC) and the user to show the overall training requirements for an AFSC that the formal schools teach.

To document and certify completion of training, you must first identify duty position requirements by importing training requirements from the MTP. The steps required to complete these entries and update TBA are covered extensively in the TBA, located in the AF portal. To add the TBA training area to your "Personal Space", click on the "Applications A–Z" link on the right side of the AF portal home page. Once you are at the Applications page, scroll down until you find TBA and TBA user

practice environment (UPE). Look around this area for videos that provide demonstrations for users to assist them in the use of this application.

Evaluating the effectiveness of training programs

The purpose of evaluating training programs is to ensure the currency and effectiveness of each programs. As supervisors and trainers you will be responsible for properly evaluating your formal course graduates to ensure the training effectiveness of their training. It is essential that during the first 90 days following a trainee's assignment, you as the supervisor or trainer evaluate at a minimum the areas of military bearing and technical ability.

For the purpose of these CDCs we will focus more on the technical aspect. In order to evaluate the technical ability of a trainee, you must use the specialty training standards (STS) contained in your CFETP. The STS will help you evaluate the graduate's ability to perform tasks taught in the formal course at the specified training level. To properly evaluate the graduate's ability refer to the proficiency code key located in the CFETP and the specific training level for the task being evaluated.

During your initial evaluation, if you discover any training deficiencies it is your responsibility to document the deficiencies in the graduate's TBA and also use the Customer Service Information Line listed in the CFETP as needed. As a supervisor you may also be requested to use the evaluation results to complete an AETC Field Evaluation Questionnaire (FEQ). This FEQ is used to provide feedback on the quality of formal course graduates. FEQs are normally conducted every two years and are sent to supervisors of graduates four-to-six months following graduation.

Managing career development courses progression

By now you should be intimately familiar with the processes involved with CDCs in the role as the student. However, as a 7-level, you are now required to take the lead in the CDC process and guide your subordinates through the system. Guidance regarding CDC administration or its processes are contained in ~~AFI 36-2201, *Air Force Training Program*~~. When the trainees are assigned to their unit, the unit training manager (UTM) ensures trainees are enrolled in their required CDCs within 45 days of in-processing (within 60 days for overseas units). The UTM then checks the transaction register or the career development/student assistance/registrar (CDSAR) system within five days to verify enrollment request.

Upon receiving access to the CDC, the UTM goes over all CDC materials with the supervisor and trainee and briefs them on the proper use of the CDC. The trainee will then make pen and ink changes and posts any changes, if necessary. The supervisor then determines volume sequence of study, sets an overall course completion schedule, develops a tracking system to monitor progress, and issues the initial volume. Each volume must be completed within 30 days. (The UTM may grant an extension due to mission requirements; Air Reserve and individual mobility augmentees (IMA) 60 days). The supervisor will not issue more than one volume at a time to the trainee. If the trainee deviates from the established schedule, the supervisor will determines the reason for slow progress, counsels the trainee, documents the counseling in their TBA, and places the trainee in supervised study. The UTM will also monitor the trainee's CDC progression using an on-the-job training (OJT) roster. If the overall CDC program is managed properly it will minimize failures, extensions, non-completions, and reactivations.

Your trainees are required to answer the unit review exercises (URE) questions and self-test questions (STQ) located within each volume of their CDC. The URE and STQ are open book teaching devices and are managed graded by the use of a Field Scoring Sheet and an answer key at the end of each CDC volume. The supervisor scores the URE, conducts review training on the areas missed, fills in the bottom of the scoring sheet and files it properly. The supervisor will then annotate TBA with the trainee's scoring information. Once the trainee completes the last volume of the set, the supervisor must conduct a comprehensive review of the entire CDC with the trainee in preparation for the course examination (CE); document the review in their TBA. Once the review is complete, the supervisor notifies the UTM to order the CE. The supervisor will ensure the trainee is ready to test through supervised study, and upon completion of supervised study the supervisor then notifies the UTM to

schedule their trainee for their exam. The UTM will schedule the trainee for their examination within 30 days of the supervisor/trainee completing the review.

If the trainee gets a passing score, the base training manager sends the exam test summary to the unit and destroys the electronic test file after verification of the score. Upon receiving the score summary, the supervisor conducts and documents any review training, then annotates TBA with the review and passing CE information and maintains the data until trainee completes upgrade training (UGT) or qualification training.

If the trainee fails, the unit commander with help from the UTM or base training manager, interviews the supervisor and trainee to determine the reason for the failure and corrective action required. This interview has to be completed within 30 days from initial notification. The unit commander will evaluate the following areas during the interview:

- Trainee's course progression.
- Trainee's understanding of course content.
- Trainee's motivation, study habits, and preparation.
- Supervisor's involvement.
- Identifies need to assess trainee's reading abilities as required.

The commander will also counsel the trainee, document the counseling in TBA, place the trainee in supervised review training, and forward a copy of the evaluation to the base training office. The trainee *will* retest within 90 days of the original test date. If the trainee successfully passed the exam, the procedure is the same as if the trainee had passed the first exam. If, however, the trainee fails the exam for a second time, then the unit commander will have three options after conducting another interview with the trainee and the supervisor: (1) request the Airman to be retrained; (2) request the Airman be given a CDC waiver; or (3) pursue separation.

Self-Test Questions

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

008. Monitoring the effectiveness of training programs

1. What information is documented in the TBA journal entry?

2. What document shows the overall training requirement for an AFSC?

3. What does a Field Evaluation Questionnaire (FEQ) provide and how often are they conducted?

4. Within how many days must a trainee retest after a failed CE?

1–4. Safety

In a the normal range of work within the 2W1X1 career field, you'll encounter a number of health hazards at one time or the other not only to yourself and other but to equipment as well. Safety should be at the forefront of your mind everyday on and off duty. You must think safety to the point it becomes automatic whether it be electrical safety or lifting heavy objects. This is being "safety

conscious". Since the dangers are apparent, viewers take positive safety steps to keep away from the edges of the walkway. Flightline has its own apparent danger, so we must use various means to identify inherent dangers. To start this section we will begin with covering AFOSH standards.

009. Air Force Occupational Safety and Health Standards

The old adage "an ounce of prevention is worth a pound of cure" is never more appropriate than in the field of safety. Since we represent the largest cause of all accidents, the majority of these accidents can be prevented. Ultimately, it's your responsibility as a supervisor, to ensure personnel work safely and their work areas are safe, but when it comes down to it safety is everyone's business. This lesson covers AFI 91-202, *The US Air Force Mishap Prevention Program* and AFOSH responsibilities.

AFI 91–202, *The US Air Force Mishap Prevention Program*

The purpose of the AF mishap prevention program is to minimize the loss of Air Force resources and protect Air Force personnel from death, injuries, or illness by managing risks on- and off-duty. AFI 91–202 covers what used to be located in many different AFI's by consolidating them into one instruction. In all situations, especially those that are not covered by existing directives, refer to Air Force Policy Directive (AFPD) 90–8, *Environment, Safety & Occupational Health Management & Risk Management,* and apply Risk Management.

Air Force Occupational Safety and Health key roles

What can safety do for you? The benefits of maintaining a safe working environment are many, but first and foremost, safety is about what you can do to protect yourself and the workers around you. Supervisors should protect the lives of their fellow Airmen to ensure mission accomplishment. It is very important to the Air Force to put safety at the forefront of the individual's and supervisor's priority at all time. Responsibilities of key personnel are defined next to give you an idea of each person's responsibility.

Individual responsibilities

The individual is responsible to comply with all safety instructions, technical orders, job guides, and operating procedures. Each person must identify and report hazardous conditions that place Air Force personnel or property at risk.

No one knows yourself better than you do. Therefore, it is up to the individual to immediately report to their supervisor if they believe that they have a physical or mental condition they feel may impact a safe job performance. Furthermore, "I was just following orders" is not an excuse. So, the individual must decline to perform an assigned task if they reasonably believe the task poses an imminent risk of death or serious bodily harm to themselves or others.

It is also the responsibility of the individual to hand-carry the AF Form 55, *Employee Safety and Health Record*, or equivalent product to the new supervisor when deploying or transferring to another Air Force position or location. The bottom line is that the individual must take responsibility for their own safety and the safety of others.

Supervisor responsibilities

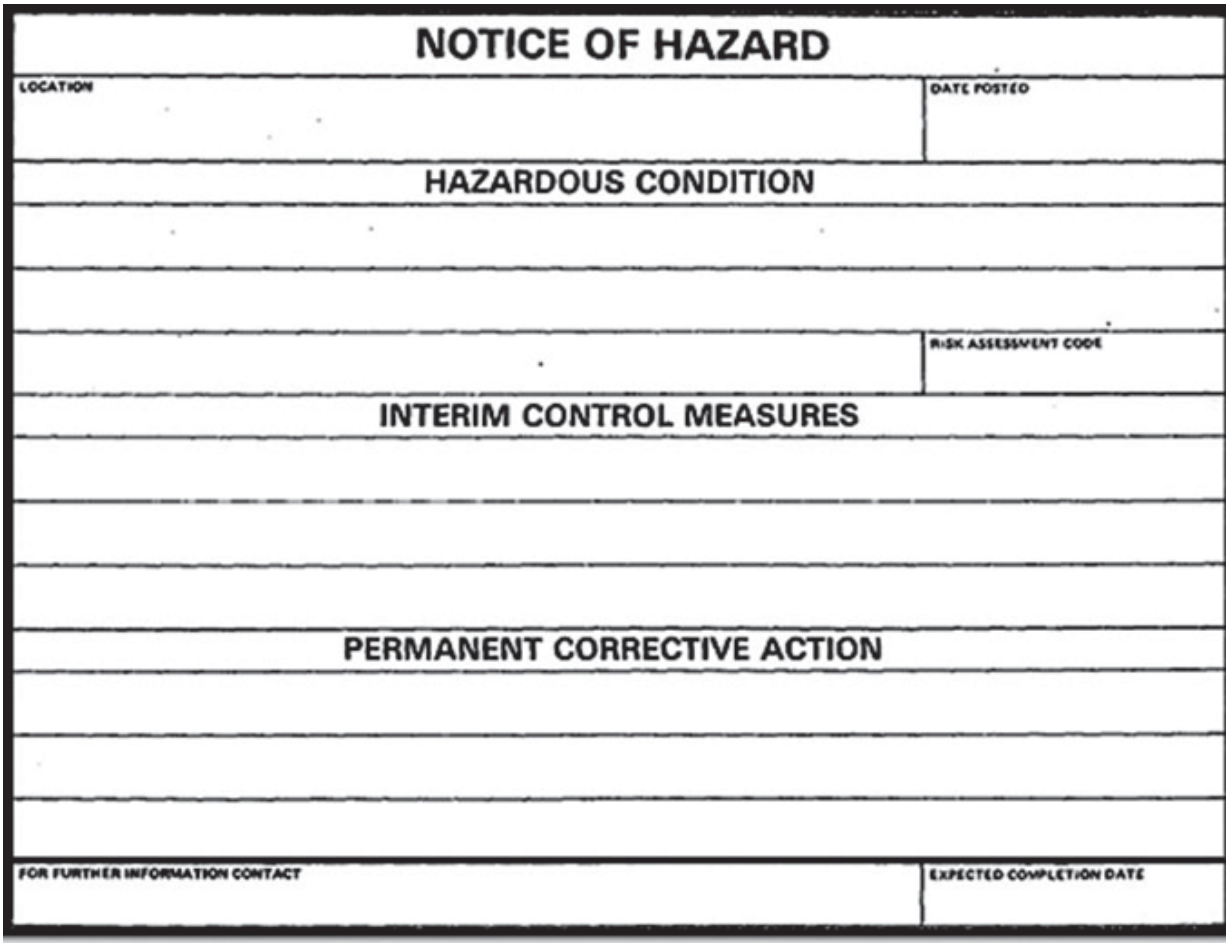
First and foremost, anyone filling a supervisor position must attend the Air Force Safety Training course. This is to aid new supervisors in their responsibility to understand and enforce the safety and health standards that apply to their area's operations, and operations that involve subordinates.

Since it is the supervisor's responsibility to enforce safety standards, they must train subordinates in what those standards are. This is accomplished by developing a work center specific Job Safety Training (JST) Guide, based on AFI 91–202, Attachment 4, *Job Safety Training Outline (JSTO)*. This training will be provided to all newly assigned personnel and must be documented on the electronic

AF Form 55. It is important to note that this training is also annual and you must document the refresher training on the AF Form 55 as well.

As the supervisor you must also exercise control over job tasks to ensure personnel follow all precautions and safety measures including the proper use of personal protective equipment (PPE). It is also your responsibility to report all mishaps that occur in the work area, as well as all off-duty mishaps involving assigned personnel. Procedures for reporting mishaps are locally designed, so find out what they are before a mishap occur.

Sometimes potential mishap situations cannot be immediately corrected. However, that does not alleviate our responsibility to notify the work center to avoid the danger until the problems can be corrected. When a situation cannot be corrected there are certain offices (Bioenvironmental Engineering, Public Health, Installation Safety, and Fire Department) that will investigate the situation. After the investigation, if necessary they'll issue an AF Form 1118, Notice of Hazard (fig. 1–2). It is the supervisor responsibility to post the AF Form 1118 and alert employees to the hazardous condition, interim controls, and take appropriate actions to promptly eliminate the hazard.


NOTICE OF HAZARD

LOCATION

DATE POSTED

HAZARDOUS CONDITION

RISK ASSESSMENT CODE

INTERIM CONTROL MEASURES

PERMANENT CORRECTIVE ACTION

FOR FURTHER INFORMATION CONTACT

EXPECTED COMPLETION DATE

Figure 1–2. AF Form 1118.

One commonly overlooked bit of information is that it's the supervisor's responsibility to ensure adherence to the safety program requirements are met and that this responsibility is part of the measurement of non-supervisory personnel's performance appraisal. That means your subordinates enlisted performance reports (EPR) should reflect safety in the work place**.**

We cannot cover all the safety requirements for a supervisor in this section, but a few more things to note are that as a supervisor, you must conduct and document monthly spot inspections of your work

area. Also, upon notification that a worker is pregnant, you must ensure that the worker reports to the Public Health office to receive some education to ensure a safe pregnancy and to receive a workplace evaluation.

Bioenvironmental engineering office

This office is responsible to conduct health evaluations of workplaces. They are required and will provide access to all documents at the request of any worker or supervisor when inquiring about their workcenters. They also performs health risk assessments and notifies the installation safety office of any assigned risk assessment codes (RACs). The different RACs and what they mean can be found in AFI 91–202. During their evaluation the bioenvironmental office will also determine the need for an adequacy of health-related PPE. Upon request, they may also provide safety data sheet (SDS) information for all hazardous materials used in industrial workplaces.

Public health office

The purpose of the public health office is to communicate occupational health and education requirement, and available resources to supervisors. They also investigate and report cases of occupational illness to the installation ground safety office. This office is involved as consultants on human factors involved in investigations of military aircraft mishaps.

Installation safety office

The installation safety office advises commanders, functional managers, supervisors, and workers on all safety matters. If you have any questions when it comes to safety related issues, this is a great place to start. This office conducts safety education programs and provides assistance to supervisions in developing JST guides.

Hazard reporting

Now that we have identified the specific roles of a mishap prevention program, let’s discuss how the hazard reporting process works. As previously stated, all individuals are responsible for reporting hazards. Everyone should immediately report hazards that cannot be eliminated to the installation safety office via the AF Form 457, USAF Hazard Report, (fig. 1–3 front/back), by phone, or in person.

A hazard may be reported on any event that includes hazards, unsafe procedures, practices or conditions that affect flight, ground weapons systems, or space safety. If the hazard presents imminent danger, the supervisor or individual responsible for the area will take immediate action to protect personnel and property. The installation safety office determines the appropriate office to investigate the report.

If the hazard report is found to be valid the investigator will assign a Hazard Report control number and the appropriate RAC. The investigating office will complete the AF 1118 and forward it to the work center supervisor for posting. The form should be only posted at or as near as possible to the hazard and be maintained in good condition. Only the issuing office will remove the form and only after the hazard has been corrected.

HAZARD REPORT
To be completed IAW AFI 91-202, Chapter 4

Control Number *(Assigned by safety professional)* | Date Submitted

To: Installation Safety Office *(Organization & Location)* | From: Contact Information *(Individual reporting hazard has right to remain anonymous)*

PART I **HAZARD** *(To be completed by individual reporting hazard)*

Description *(Date, Time, Summary - Who, What, When, Where, How)*

Type *(Unsafe procedures, practices or conditions affecting flight, occupational (ground), weapons, systems or space safety. Is health or fire hazard involved?)*

Recommendations *(Optional)*

PART II **INVESTIGATION OF HAZARD**

Investigator Summary | Valid Hazard ○ Yes ○ No | Risk Assessment Code *(RAC)*

Date Investigated | Investigator *(Name, Grade and Title/Position)* | Signature

AF Form 457, 20151117 — Previous editions currently in use as of date of this form are obsolete. — Adobe® LiveCycle® Designer ES4 — OPR: HQ AFSEC/SEGS

Investigator Recommendations:

Date Forward | Designated OPR *(Name, Grade and Title/Position)* | Suspense Date

Actions Taken to Mitigate or Abate Hazard *(OPR)*

Date | Typed or Printed Name and Grade of OPR | Signature

PART III **CLOSURE OF HAZARD REPORT** (To be completed by installation safety office)

Date Closed | Typed or Printed Name and Grade of Reviewer | Signature

AF Form 457, 20151117

Figure 1–3. AF Form 457 front/back.

010. Safety practices

Safety in any work area is enhanced by the way your equipment and accessories are arranged, but it goes well beyond how your equipment is set up. Safety is broad when it comes to discussing areas such as, lifting techniques, fire prevention, jewelry, and emergency eyewash stations. Within this lesson we will cover two Air Force Instructions that provide guidance on safety practices beginning with ~~AFI 91-203, *Air Force Consolidated Occupational Safety Instruction.*~~

~~AFI 91–203, *Air Force Consolidated Occupation Safety Instruction*~~

This instruction assigns responsibilities to individuals or functions to help commanders manage their safety and health programs, ensuring compliance with Occupational Safety and Health Administration (OSHA), and ~~Air Force instructions~~. This instruction also provides a uniform program, which MAJCOMs or wing commanders may supplement, as necessary, to ensure a safe and healthy work place. Next we will discuss many areas highlighted within AFI 91–203. This list is not a comprehensive list, but it will give you a brief run through on what you are expected to know, staring with human factors.

Human factors

There are three main human factors to consider when it comes to safety. The first is physiological, the second is physical, and third organizational.

All of these *physiological factors* broken down in the following list can contribute to unsafe attitudes and negatively impact one's performance:

- Healthy emotions.
- Job or domestic pressures.
- Distractions.
- Job knowledge.
- Shift-work.
- Hurrying or feeling rushed.

All of these *physical human factors* may contribute to behavior that leads to mishaps; always give consideration to the following factors:

- Fatigue.
- Strength limits.
- Lack of sleep.
- The influence of alcohol/drugs.

These *organizational factors* can also lead to mishaps:

- Inadequate staffing.
- Emphasis on production over safety.
- Lack of workplace supervision.

Lifting techniques

Many strains are the direct result of improper lifting techniques, lifting with no assistance, or failure to use required and available manual material handling equipment. Therefore, supervisors must train personnel who regularly perform manual lifting duties. Team lifting will be used when item are known to weigh more than 25 pounds or when items are lifted from awkward positions or locations.

Fire protection and prevention

All employees are responsible for the fire extinguishers in their work area. Therefore, workers will make sure access to fire extinguishers are not obstructed, and they are used only for the intended purpose.

Facility managers/supervisors shall established and maintain a training and certification system to ensure employees are trained and understand their fire prevention and protection responsibilities in their work areas. They must also perform monthly visual inspections of the fire extinguishers in their work areas and replace any defective extinguishers they find.

Jewelry

Because of the potential for serious injury, finger rings shall not be worn by personnel engaged in the following activities:

- Climbing, ascending or descending activities where personnel could fall or jump from elevated surfaces account for the majority of injuries caused by a ring finger catching on an object.
- Materials handling operations.
- Any type of work where individuals are exposed to moving machinery, rotating or revolving parts, or activities that could result in their hands being caught by a moving part and injured.

Furthermore, any jewelry that presents a potential for catching, snagging, pulling, and tearing, whenever possible, should be removed before entering the industrial areas.

Emergency shower and eyewash units

Each supervisor is responsible for ensuring emergency showers and eyewashes are provided, inspected, tested and maintained. Units shall be installed as required and maintained in an operable condition. They shall be in a conspicuous, identified, and accessible location that requires no more than 10 seconds to reach. Furthermore, they are to be free from obstruction that may inhibit their immediate use. All workers exposed to conditions that may use this emergency equipment shall be instructed in its use as a part of their job safety training.

AFPD 90–8, *Environmental, Safety & Occupational Health Management and Risk Management*

The Air Force Policy Directive establishes the Air Force Risk Management policy and responsibilities necessary to effectively execute RM by Air Force personnel, both on- and off-duty. There are four basic principles in RM, which are accept no unnecessary risk, make risk decisions at appropriate levels, integrate RM into operations, activities, and planning levels, and apply the process cyclically and continuously.

Accept no unnecessary risk

The most logical choices for accomplishing a mission are those that meet all mission requirements while exposing personnel and resources to the lowest acceptable risk.

Make risk decisions at appropriate levels

The appropriate level of risk decisions is the one that can allocate the resources to reduce the risk or eliminate the hazard and implement controls.

Integrate RM into operations, activities, and planning at all levels

To effectively apply risk management, commanders, leaders, and personnel must dedicate time and resources to integrate RM principles into planning, operational processes and day-to-day activities.

Apply the process cyclically and continuously

RM is a continuous process applied across the full spectrum of military training and operations, base operations functions, and day-to-day activities/events both on- and off-duty.

These are four basic principles and they are implemented by applying them through the Air Force RM process, which consists of the following five primary steps: identify the hazards, access the hazards, develop controls and make decisions, implement controls, and supervise and evaluate.

011. Electrical safety

Electrical safety is probably one of the most overlooked safety requirements in the 2W1 career field. Many times we become complacent in the things we do and forget the basic safety precautions when working around energized circuits. In this lesson we discuss the regulatory guidance and equipment required for you to operate safely.

~~AFI 91–203, *Air Force Consolidated Occupational Safety Instruction*~~

By now you should be familiar with this instruction. We will be primarily focusing on it because it covers the Air Force's occupational safety instructions for electrical safety. Within electrical safety we will cover hazards and extension cords.

Hazards

Electrical installations and equipment present a shock or electrocution hazard from contact with energized systems and can produce arc flash burns from electrical arcs. Excessive scraping, kinking, stretching and exposure to grease and oils damages power cables, leads to premature failure, and causes shock or burns

Fires can be caused by electrical circuits, over-heated equipment, failure of current limiters, thermal sensors, and other devices. Explosions may occur if flammable liquids, gases or dust are exposed to ignition sources generated from electrical equipment.

Extension cords

Extensions cords are items used almost every day in our maintenance shops; let's clear up a few misconceptions and explain potential hazards about these items. Electrical extensions cords are not to be used as substitute for fixed wiring. Also, do not run extensions cords where they'll be concealed behind walls, dropped ceilings, or floors. While it might sound silly, do not tape, or tack extension cords to building surfaces. Furthermore, extension cords shall not be spliced, coiled, or placed where they may damage or create a hazard. Extension cords shall not be walked on nor equipment allowed to run over them. If cords must be placed in travel lanes, they shall be properly protected by molded housing, bridges or other covers approved for such use. Lastly, cords will not be kinked, stretched or bent excessively. This practice can damage internal wire strands.

Extension cords are responsible for numerous fires and their use shall be kept to an absolute minimum. If used, they need to have a single connection and equipment connected by an extension cord will be disconnected when not in use and at the end of the work shift.

Emergency equipment

In addition to electrical PPE provided to workers, functional managers shall ensure emergency equipment is available at each operating location where maintenance is performed on energized circuits. The equipment may be displayed on a board, stored in an unlocked cabinet, made available in a portable kit, or placed in a prominent location at each site, well-marked and readily accessible. There is a minimum list of emergency equipment required for each operating location, the following list identifies a few of the equipment options you should have:

1. Safety operating instructions or procedures for the site.
2. Cardiopulmonary resuscitation (CPR) instruction.
3. CPR facemask with disposable mouthpiece.
4. Emergency phone number and building numbers.
5. First aid kit provided by the unit if the nearest medical facility is more than three to four minutes away from the work site.
6. Wool blanket(s), for extinguishing clothing fires and keeping injured person warm.

Equipment variations depend on local conditions, although the squadron commander or functional manager may add additional items to this equipment.

Work on energized equipment

When authorized by the commander, applicable technical data or manufacturer's instructions, work may be performed on energized circuits and equipment as necessary to support a critical mission, prevent injury to personnel, or to protect property. Depending on the task, one member of the two or three person team shall act as a safety observer.

All workers involved in a job on energized circuits shall be trained in CPR, equipment shutdown procedures, and be responsible for immediate assistance in an emergency.

It is also important to remember clothing shall be free of metal decorations and fasteners or completely and effectively covered to avoid being exposed to electrical arc or flames. Personnel should not hold meters in their hand while performing measurements on circuits or equipment and lastly, use the one-hand method to keep electricity from passing through the heart.

012. Electrostatic sensitive devices

Electrostatic sensitive devices (ESD) can be found just about everywhere in the weapons world. This is exactly why you must understand how to properly handle these devices. In this lesson we'll discuss what these devices are, how they are damaged, and how to protect them. Everything we discuss here can be found in TO 00–25–234, *General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment*, which covers electrostatic control measures and ESD devices.

Electrostatic sensitive devices defined

The first thing we must do is define ESD. An ESD is any component (primarily electrical) which can be damaged by common static charges which build up on people, tools, and other nonconductors or semiconductors. Some common examples are: microchips, computers, integrated circuits, resistors, diodes, transmitters, and receivers. You can identify an ESD by the symbols (fig. 1–4) found on the exterior surfaces of equipment that contain an ESD or on the packaging that ESDs are shipped in.

Figure 1–4. ESD symbols.

ESD items will be received and shipped in anti-static bags that are pink or smoke colored. If you receive an item that is improperly packaged, refuse to accept it from base supply, who will in turn submit the proper paperwork to correct the issue.

Electrostatic sensitive devices damage

ESDs can be damaged at any point from the manufacture to field service. Damages are results of handling the device in uncontrolled surroundings or when poor electrostatic control practices are used. There are three classification of damage, which are catastrophic failure, latent failure, and intermittent failure. Each classification depends upon the voltage and current levels involved. The following list describes the three classification levels:

1. Catastrophic failure–The device's circuitry is permanently damaged causing the device failure. This can be detected when the device is tested before shipment or during service on the flightline or in the back shop.
2. Latent failure–A device that may be partially degraded yet continues to perform its intended functions, but operating life of the device may be reduced dramatically.

3. Intermittent failure–A device can produce intermittent or erroneous signals.

For the device to be damaged there first must be an electrostatic charge. There are two causes of electrostatic charges, which are static electricity and electrostatic induction.

1. Static electricity–An abundance of electrons on the surface of a material. It is built up by the contact and separation of two materials.
2. Electrostatic induction–Occurs when an electrically charged object is placed near a conductive object isolated to the ground. The presence of the charged object creates an electrostatic field that causes electrical charges on the surface of the other object to redistribute

An electrostatic discharge is the sudden and momentary flow of electricity between two objects with different electrical voltages. The following are three basic discharges events and the action you should take if an electrostatic charge occur, they are: discharge of the device, discharge from the device, and field induced discharge.

1. Discharge of the device–Occurs when any discharge conductor (including the human body) discharges to an electrostatic sensitive device. The most common cause if the direct transfer of electrostatic charge from the human body, or a charged material, to the ESD.
2. Discharge from the device–The transfer of an electrostatic charge from an ESD to another material. The duration of the discharge is very short.
3. Field induced discharge–When an ESD is placed in an electrostatic field a charge may be induced on the device. Also, if the device is momentarily grounded while within the electrostatic field, a transfer from the device may occur.

Electrostatic discharge control

There are four basic principles of electrostatic discharge control, which are design in immunity, eliminate and reduce generation, dissipate and neutralize, and protect the products.

1. Design in Immunity–Design products and assemblies to be as immune as reasonable from the effects of electrostatic discharge.
2. Eliminate and reduce generation–Eliminate and reduce the generation and accumulation of electrostatic charge in the first place.
3. Dissipate and neutralize–Safely dissipate or neutralize any electrostatic charges that do occur.
4. Protect the products–Prevent discharges that do occur from reaching susceptible parts and assemblies.

These principles are achieved in the back shop by using the Electrostatic protective work area (EPA) (fig. 1–5). Using these work areas will help keep statically charged materials away from ESDs. The principles components of EPAs are: a static dissipative work surfaces, personnel wrist straps, and a common point ground system.

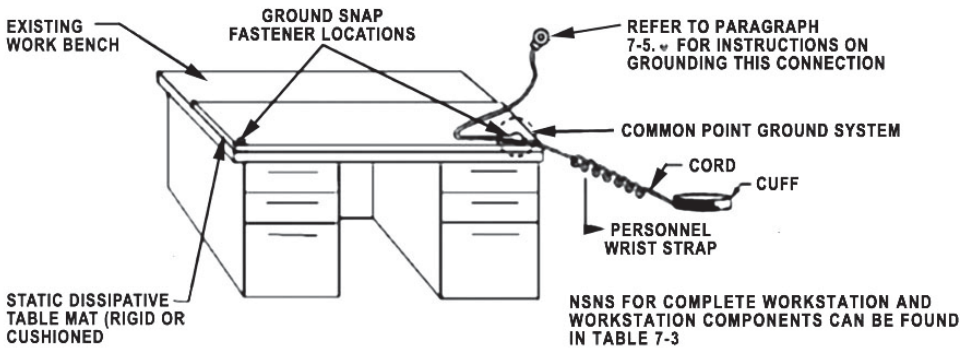


Figure 1–5. Electrostatic protective work area.

There are a few misconceptions when it comes to electrostatic discharge control. One misconception is that increasing humidity can solve electrostatic discharge problems. Another is that components mounted on PC boards are not in danger of electrostatic discharge damage. The “final test” is the misconception that since the item passed its final test means it was handled properly. Electrostatic discharge damage can cause failure one to two years after shipment. Remember that electrostatic discharge control hardware and equipment is useless without properly training personnel on how to use them.

Self-Test Questions

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

009. Air Force Occupational Safety and Health Standards

1. What are the individual’s safety program responsibilities?

2. Air Force Form 1118 should be posted where once it is received from the investigating office?

010. Safety practices

1. What are the six physiological factors that contribute to unsafe attitudes and negatively impact one’s performance?

2. What are supervisors responsible for when emergency showers and eyewash stations are provided?

3. What directive establishes the Air Force Risk Management policy and responsibilities necessary to effectively execute Risk Management by Air Force personnel?

011. Electrical safety

1. Where may you display electrical safety PPE?

2. All workers involved in a job on energized circuits require what training?

012. Electrostatic sensitive devices

1. Which technical order covers ESDs?

2. Define what an ESD is?

3. What is a device that may be partially degraded yet continues to perform its intended functions, but operating life of the device may be reduced dramatically?

1–5. Electronic Fundamentals

As an aircraft armament systems craftsman, you may encounter many types of troubleshooting scenarios and weapons system faults. Let's take a look at how troubleshooting different types of wires, cables, and connectors correctly the first time can eliminate needless man hours spent on redundant aircraft repairs.

013. Wire and cable characteristics

As with everything, we must first cover the basics. Since aircraft undergo serious tension during flight, each one of the cables that are covered in this lesson uses a stranded conductor (several small conductive wires twisted together) for flexibility to help support the cables in flight. The cables we will discuss in this lesson are common and radio frequency cables.

Common cables

The most common cables used in the weapons career field are multi-conductor and shielded cables, and twisted pair. Some cables may fit into one or more of these categories (fig. 1–6).

Multi-conductor cable

Two or more insulted conductors, contain in a common covering, or twisted together without a common covering and may be shielded or unshielded.

Shielded cable

One or more insulated conductors with an overall shield, or an overall shield and jacket over the shield.

Twisted pair

Any two wires twisted together.

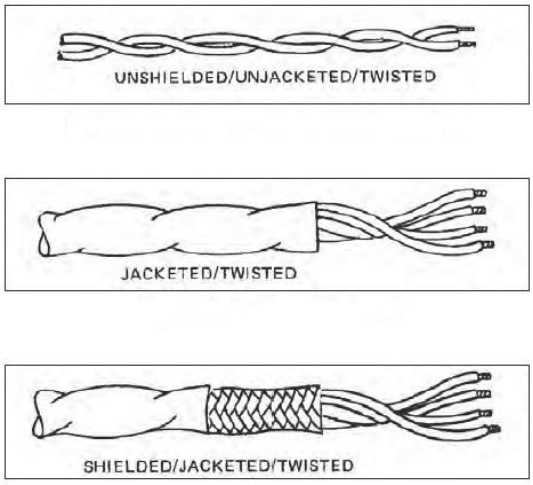


Figure 1–6. Common cables.

Radio frequency cables

Now we will identify some of the more complex special purpose cables you may see, which are coaxial and triaxial cables, and twin coaxial cables.

Coaxial cables

Consists of a single insulated center conductor separated from the metal braided outer conductor (usually called the shield), by an insulating dialectic and covered with a protective outer jacket (fig. 1–7).

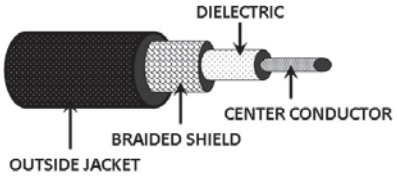


Figure 1–7. Coaxial cable.

Triaxial cables

Single insulated center conductor with a metallic inner and outer conductor (shields). Each conductor is protected/insulated by dielectric material or a jacket (fig. 1–8).

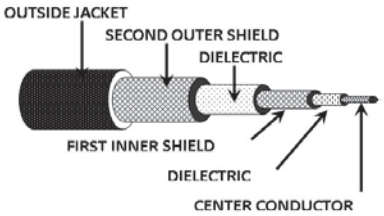


Figure 1–8. Triaxial cable.

Twin coaxial cable

Twin coaxial consists of a configuration containing two separate yet complete coaxial cables laid parallel or twisted around each other in one complete jacket (fig. 1–9).

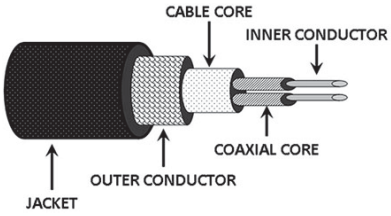


Figure 1–9. Twin coaxial cable.

014. Connector characteristics

Now that we have described some of the cables you will be dealing with in the repair process let's talk about a few connectors. A connector is an electromechanical device that permits circuit elements to be electrically and mechanically separated and reconnected without disturbing other elements. The connector system consists of two mating assemblies, the receptacle and the plug. Receptacle assembly

There are several different receptacles used in the Air Force equipment, the following are a few we use each day:

- Air Force flanged receptacle—Has a rectangular flange with screw mounting holes at each corner.
- Jam nut receptacle—Is mounted by means of a large nut, or jam nut, threaded onto the connector body.
- Cable receptacle—Is used when two cables are to be connected together.

Plug assembly

All of the receptacles mentioned are mated to a plug assembly. The plug assembly is the removable part of the connector system that mates with the receptacle, and is usually attached to a cable. There are many factors that decide what type of coupling system the plug and receptacle will use (i.e. quick disconnect, positive coupling for heavy vibration). The most common types of coupling and locking of a plug and receptacle assembly are the following:

- Threaded—Internally threaded coupling rings on the plug mate with the threads on the receptacle. This is the most common type of plug and receptacle you will see, such as what's on the military standard (MIL–STD)–1760 cable.
- Bayonet—Employs three pins spaced 120 degrees apart on the outside of the receptacle. The plug contains three corresponding ramped grooves and a spring loaded device that provides a positive lock.
- Push-Pull—Employs a coupling ring that slides along the axis of the connector.

015. Troubleshooting technical data

Today's modern aircraft are very dependent upon a complex electrical system. Typical Air Force aircraft contains miles of wire connecting hundreds of components. Aircraft require electrical power for the missiles, bombs, and nuclear systems. Let us not forget the associated system checks that are performed on a daily basis as well. It is essential for you, the Aircraft Armament Technician, to understand not only the theory of electricity, but also its ability to help you during troubleshooting. In this lesson we will discuss basic electrical concepts, schematics, fault isolation, and finally the three troubleshooting phases.

Basic electrical concepts

A simple electrical circuit consists of the basic components needed to use electrical energy. These components include the power source, conductor, and a load. Figure 1–10, shows a simple circuit containing these basic parts. The power source feeds the current into the circuit. The conductors carry current into the circuit. The conductors carry electrons to and from the load. The load, in turn, uses the electrical energy.

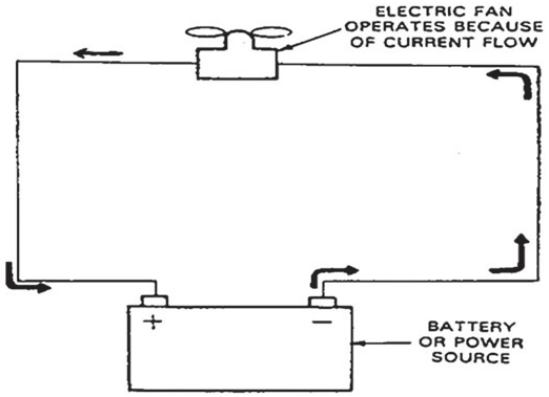


Figure 1–10. Simple electrical circuit.

There are four fundamental values that refer to the properties of electricity and a simple electrical circuit. The values are voltage (pressure in volts), current (electron flow, measured in amps), resistance (opposition to current flow, measured in ohms), and power (amount of energy used, measured in watts).

Schematics

Now that you've reviewed some basic principles of electricity it is time to jog your memory about schematics. A schematic diagram is a permanent record of how a system is configured (fig. 1–11). Schematics are helpful technical data troubleshooting guides when it comes to various weapons systems related problems. Schematics diagrams will do three very important things.

1. Support the theory of operation.
2. Assist in establishing troubleshooting procedures.
3. Aid in understanding the troubleshooting process.

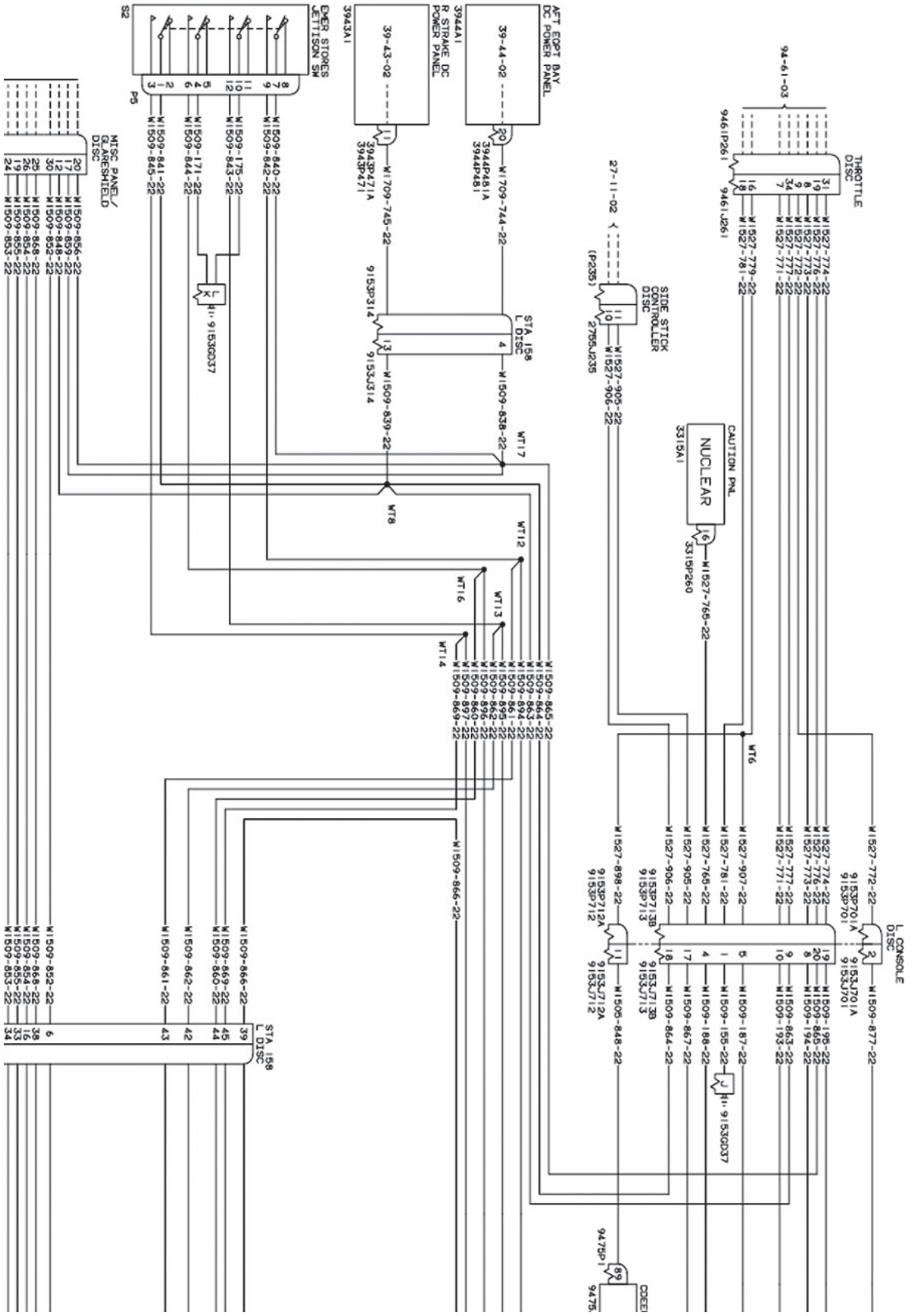


Figure 1–11. Schematic diagram.

To isolate a problem, start by locating the power source and then trace the flow of current through the circuit. Once you have determined what the circuit should do, then test the circuit to see if it is operating as the schematic indicates.

Some aircraft malfunctions require scanning of several pages in a schematic. Technical orders continuation references aid in locating the diagram that may be continued on another page. These references may appear in the form of page numbers or simply numerically listed. Continuation references are used to indicate the pages that precede and follow in a circuit. This allows circuits to be traced in either direction.

Fault isolation

Another useful tool designed to assist you in your troubleshooting is fault detection (FD) and fault isolation (FI) guide. While FD/FI is often seen as a diagnostic process of finding the failed component, it is far more than that. Our definition of the FD/FI system includes people, equipment, policy TOs, and training. Thus FD/FI of weapons systems is still a very broad area. Ideally, FD/FI's should detect only actual faults and isolate the cause so that corrective action can be taken. Actual faults are those caused by real failures of components (hard or intermittent), and fault indications are those caused by actual faults, transients, or false alarms initiated by built-in-tests (BIT), test equipment, or human error.

On the F-22 for example, the portable maintenance aid (PMA) allows you to run such tests at BIT and fault isolation with job control numbers created by faults during the flight. BIT checks are a way for the aircraft to diagnose itself and relay that information to the user. Also, during the debrief process the faults during the flight are recorded for maintenance personnel to give them a starting point of any system failure during flight.

Troubleshooting phases

When a malfunction occurs in a weapons system, you are required to locate the problem quickly and systematically. In order to do this, you must be thoroughly familiar with the weapons system. This undoubtedly comes with time and experience. A good troubleshooter is not born. He or she has to start with the basics. Somewhere along the line they learned the traditional and logical phases necessary to detect, isolate, and repair weapons malfunctions. Below we cover the three fundamentals phases that are common to all maintenance problems, which are recognizing the problem, analysis, and repair.

Recognize the problem

Phase one has to do with gathering information about the problem, such as checking aircraft forms, talking to aircrew, verifying the fault, and so forth. Looking for information that might be pertinent to the situation is the goal. Understanding the exact problem can save precious time and resources.

The most important step in recognizing a problem is a good visual inspection for broken wires, loose connections, or other obvious indications. A good visual inspection can sometimes make quick work of a troubleshooting task and can save time from diving into FI's and testers that are not really needed. If you don't uncover the problem with a visual inspection, then it's time to perform a system analysis.

Analysis

In this phase, we will focus our attention on electrical problems. We begin this by running the applicable operational checks of the system involved. The operational check out will run the entire aircraft system as if it were in an operational situation. The purpose of this is to try and duplicate the malfunction.

If the problem can be duplicated you will want to follow your technical guidance to the cause of the problem. In many fault isolation situations your guidance may require you to isolate a component or conductor with a multimeter. It is imperative to understand that the only time you will want to use the

multimeter to check the voltage is if your technical guidance specifically calls for it. Most of the time you'll use your multimeter to accomplish a resistance check.

The resistance check is the best way for locating "short circuit" malfunctions. One reason for this is because you perform resistance checks without power applied to the aircraft. In this, you'll prevent power from being applied to a faulty circuit and prevent many hazards we previously discussed. The resistance check is also used for finding "open circuit" malfunctions.

Repair

Once you've located your malfunction, the final phase in the troubleshooting process is to repair the fault. This may be done either by replacing a light bulb, repairing a faulty wire, replacing a broken component or even replacing a complete wire harness. Once the item or component has been fixed the system requires one final operational check out to ensure the problem has been resolved.

Self-Test Questions

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

013. Wire and cable characteristics

1. What is one or more insulated conductors with an overall shield, or an overall shield and jacket over the shield?

2. What is a triaxial cable?

014. Connector characteristics

1. What is a connector?

2. Connector system consists of what two mating assemblies?

3. What are the most common types of coupling and locking of a plug and receptacle?

015. Troubleshooting technical data

1. Describe how schematics diagrams help the maintainer during troubleshooting.

2. What are the three fundamental phases of troubleshooting in order of operation?

Answers to Self-Test Questions

001

1. All approved and authorized air munitions and stores configurations.
2. A locally developed code that represents the number, type, and configuration of authorized munitions required for a specific mission and aircraft load.
3. The weapons section NCOIC.
4. With other expediters, MOC, and munitions control.

002

1. (1) Aircraft status.
   (2) Personnel.
   (3) Outside forces.
2. (1) CODE 1—All systems are functioning properly.
   (2) CODE 2—One or more systems have minor discrepancies.
   (3) CODE 3—One or more essential systems are not operational.
3. Outside forces.
4. You, the weapons expediter.

003

1. A more capable and a more resource efficient Air Force that leverages the unique strengths of each component and increases Air Force combat capabilities.
2. The armed forces of the United States, including the regular AF, the AFR, and the ANGUS when called to active duty.
3. Report through the governor.
4. (1) Rights and obligations.
   (2) Discipline and counseling.
   (3) Arbitration.
   (4) Leave, both annual, and sick.

004

1. Group commanders.
2. MAJCOM.
3. Impoundment official.

005

1. Simultaneous loading/unloading of munitions, fueling, aircraft reconfiguration, and may include aircraft -6 inspections, and other aircraft servicing.
2. The CSS must be at least a 7-level with a maintenance (2AXXX or 2WXXX) AFSC with at least one year of experience on the MDS.
3. Load crews must conduct independent loading operations and; loading and fueling operations must not be performed simultaneously due to the hazard of the aircraft settling.

006

1. Flying schedule.
2. AF Form 2407.
3. AF Form 2430.
4. AF Form 2434.

007

1. Equipment delayed discrepancies and corrective actions, services, periodic and special inspections, inspection status, and historical data.
2. AFTO IMT 95/Automated 95.

008

1. An individual's training status, counseling, and breaks in training.
2. The STS.
3. This FEQ is used to provide feedback on the quality of formal course graduates. FEQs are normally conducted every 2 years and are sent to supervisors of graduates 4 to 6 months following graduation.
4. 90 days.

009

1. Comply with all safety instructions, technical orders, job guides, and operating procedures.
2. The form should be only posted at or near as possible to the hazard and be maintained in good condition.

010

1. (1) Healthy emotions.
   (2) Job or domestic pressures.
   (3) Distractions.
   (4) Job knowledge.
   (5) Shift work.
   (6) Hurrying or feeling rushed.
2. Inspect, test and maintain the emergency shower and eyewash stations.
3. Air Force Policy Directive.

011

1. On a board, stored in an unlocked cabinet or made available in a portable kit, and shall be in a prominent location at each site, well-marked and readily accessible.
2. Trained in CPR and equipment shutdown procedures and responsible for immediate assistance in an emergency.

012

1. TO 00–25–234.
2. Is any component (primarily electrical) which can be damaged by common static charges which build up on people, tools, and other nonconductors or semiconductors.
3. Latent failure.

013

1. Shielded cable.
2. Is a single insulated center conductor with a metallic inner and outer conductor (shields). Each conductor is protected/insulated by a dielectric material or a jacket.

014

1. A connector is an electromechanical device that permits circuit elements to be electrically and mechanically separated and reconnected without disturbing other elements.
2. Plug and receptacle.
3. (1) Threaded.
   (2) Bayonet.
   (3) Push-pull.

015

1. Support the theory of operation and will assist in establishing troubleshooting procedures, and aid in understanding the troubleshooting process.
2. (1) Recognize the problem.
   (2) Analysis.
   (3) Repair.

Complete 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 technical order (TO) series should you refer to when loading an unfamiliar munitions configuration?
   a. –1 Flight manual.
   b. –06 Work unit code manual.
   c. 33–1–2 Nonnuclear munitions loading procedures.
   d. –6 Inspection and maintenance requirements manual.

2. (001) Who is the weapons expediter *directly* responsible to for *all* armament systems maintenance and munitions loading operations?
   a. Squadron commander.
   b. Wing weapons manager.
   c. Production superintendent.
   d. Weapons section non-commissioned officer in charge.

3. (002) The benchmark time that is standard for aircraft repairs is
   a. 2 hours.
   b. 8 hours.
   c. 12 hours.
   d. 24 hours.

4. (003) Which Air Force Instruction (AFI) describes the responsibilities for Total Force Integration?
   a. 21–101.
   b. 91–201.
   c. 20–2001.
   d. 90–1001.

5. (003) The total force integration concept that gives *one* component commander the authority to designate objectives, assign tasks, and provide the direction to another component subordinate necessary to accomplish the mission is
   a. tactical direction.
   b. tactical command.
   c. operational direction.
   d. operational command.

6. (003) When an *entire* Air National Guard (ANG) unit is performing in a Title 10 status, it *must* be assigned to which type of organizational structure?
   a. Title 6.
   b. Title 10.
   c. Title 32.
   d. Title 540.

7. (003) The master labor agreement (MLA) applies to which type of civilian employees?
   a. Laborers.
   b. Supervisors.
   c. Administrators.
   d. Bargaining unit.

8. (004) Who has the authority to grant a "*one time*" flight of an impounded aircraft according to technical order (TO) 00–20–01?
   a. Group commander.
   b. Impoundment official.
   c. Quality assurance (QA).
   d. Squadron commander.

9. (005) Which type of aircraft servicing will *not* be accomplished during fuel servicing while performing a concurrent servicing operation (CSO)?
   a. Munitions loading/downloading.
   b. Oxygen.
   c. Nitrogen.
   d. Hydraulic.

10. (005) Which concurrent servicing operation (CSO) aircraft maintenance action requires a concurrent servicing supervisor (CSS)?
    a. Oxygen servicing.
    b. Aircraft towing.
    c. Aircraft fueling.
    d. Munitions loading/downloading.

11. (005) Which functional area can authorize a fighter unit to conduct dual loading operations (DLO)?
    a. Quality assurance (QA).
    b. Wing weapons safety flight.
    c. Maintenance group (MXG).
    d. Major command (MAJCOM).

12. (005) Which requirement constitutes the recurring annual training requirement for dual loading operations (DLO)?
    a. A proficiency load only.
    b. Academic training only.
    c. Academic training and a proficiency load.
    d. Academic training, written test, and a proficiency load.

13. (006) Who is the *approval* authority for *locally* modified versions of the AF IMT 2430, Specialist Dispatch Control Log?
    a. Squadron commander.
    b. Wing weapons manager.
    c. Maintenance group commander.
    d. Weapons section non-commissioned officer in charge (NCOIC).

14. (006) In the unlikely event that an aircraft does *not* return from a mission, which AF IMT provides an accurate record of what type and number of munitions were loaded, and the part/serial numbers of installed alternate mission equipment (AME)?
    a. 2434.
    b. 2430.
    c. 2407.
    d. 2403.

15. (007) The form published as a continuation form for Part 5 of the Air Force technical order (AFTO) Form 244, Industrial/Support Equipment Record is an
    a. AFTO Form 245.
    b. AFTO Form 244a.
    c. AFTO Form 244 continuation sheet.
    d. AFTO Form 244 part V continuation sheet.

16. (007) Which type of items require a periodic serviceability testing and the results of the testing documented on an Air Force technical order (AFTO) Form 244?
    a. Items coded XB3.
    b. Serially controlled items.
    c. Items appearing on the custody account.
    d. Items that require periodic serviceability testing.

17. (007) Which document type is sent to the gaining unit when transferring equipment such as missile launchers, bomb racks, and suspension utility units?
    a. Complete record of logbook entries.
    b. ~~Integrated maintenance data system (IMDS)~~ detailed item history (DIH) report.
    c. AFTO Form 95, Significant Historical Data Record or automated AFTO Form 95.
    d. AFTO Form 781A, Maintenance Discrepancy and Work Document or automated AFTO Form 781A.

18. (008) Who *must* electronically sign *all* training business area (TBA) journal entries?
    a. Supervisor or trainer only.
    b. Supervisor and/or trainer and trainee.
    c. Weapons section non-commissioned officer in charge (NCOIC) and supervisor only.
    d. Commander or supervisor and/or trainer only.

19. (008) Which document serves as a contract between the Air Education and Training Command (AETC) and the user to show the *overall* training requirements for an Air Force specialty code (AFSC) that the formal schools teach?
    a. Specialty training standard (STS).
    b. Air Force Job Qualification Standard (AFJQS).
    c. Airman Specialty Knowledge Skills (ASKS) system.
    d. Air Force Qualification Training Package (AFQTP).

20. (008) You *must* evaluate a recent formal school graduate's military bearing and technical ability within
    a. 90 days.
    b. 120 days.
    c. 6 months.
    d. one year.

21. (008) The individual that may grant an extension to a trainee's 30-day time limit per career development course (CDC) volume completion, due to mission requirements is the
    a. supervisor.
    b. unit training manager.
    c. squadron commander.
    d. wing weapons manager.

22. (008) When a trainee fails their course exam on the *first* attempt the *maximum* amount of days allowed for the trainee to retest is
    a. 30.
    b. 45.
    c. 60.
    d. 90.

23. (009) Which Air Force Instruction (AFI) covers the Air Force mishap prevention program to minimize the loss of resources and protect Air Force personnel from death, injury, or illness by managing risks?
    a. 21–101.
    b. 91–201.
    c. 91–202.
    d. 91–203.

24. (009) Who *ensures* adherence to your work center safety program requirements are part of the measurement of non-supervisory personnel's performance appraisal?
    a. Installation safety office.
    b. Public health.
    c. Supervisor.
    d. Individual.

25. (009) The organization that advises commanders, functional managers, supervisors, and workers on *all* safety matters is
    a. flight safety.
    b. public health.
    c. installation safety office.
    d. bioenvironmental engineering.

26. (010) Which ~~Air Force Instruction (AFI)~~ assigns responsibilities to individuals or functions to help commanders manage their safety and health programs?
    a. 91–101.
    b. 91–201.
    c. 91–202.
    d. 91–203.

27. (010) The three *main* human factors you should consider when it comes to safety in your work center are
    a. organizational, lack of sleep, and fatigue.
    b. physiological, physical, and organizational.
    c. distractions, strength limits, and shift work.
    d. physical, physiological, and inadequate staffing.

28. (011) The ~~Air Force Instruction (AFI)~~ that covers Air Force occupational safety instructions for electrical safety is
    a. 91–101.
    b. 91–202.
    c. 91–203.
    d. 91–205.

29. (012) Who *will* you contact if you receive an improperly packaged electrostatic sensitive device (ESD)?
    a. Base supply.
    b. Item manager.
    c. Squadron supply point.
    d. Defense Logistics Agency (DLA).

30. (012) The electrostatic sensitive device (ESD) level that is *not* a classification of damage is
    a. human error failure.
    b. catastrophic failure.
    c. intermittent failure.
    d. latent failure.

31. (013) Which type of cable is *not* classified as a radio frequency cable?
    a. Triaxial.
    b. Coaxial.
    c. Shielded.
    d. Twin Coaxial.

32. (014) Which component consists of two mating assemblies, the plug and receptacle?
    a. Locking rings.
    b. Coupling rings.
    c. Connector body.
    d. Connector system.

33. (015) Identify the *last* phase in the troubleshooting process of technical data once you have located your malfunction.
    a. Repair.
    b. Analysis.
    c. Fault isolation.
    d. Recognize the problem.

Please read the unit menu for unit 2 and continue ➔

Student Notes

Unit 2. Maintenance, Contingency Planning, and Explosive Safety

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LOGISTICS IS DEFINED as the area of military science dealing with the acquisition, maintenance, and transportation of military personnel, equipment, and facilities. Using this definition, it should be obvious that aircraft armament systems personnel fall into the logistical field. Whether you are performing inspections, fixing discrepancies, weapons safety, or building pallets, your actions fall under the broad umbrella of logistics.

2–1. Maintenance and Inspection

Maintenance policy is outlined in Air Force Instruction (AFI) 21–101, *Aircraft and Equipment Maintenance Management*. It is the primary Air Force directive for aircraft armament system maintenance, initial and recurring weapons load training requirements, and armament equipment maintenance and management. This AFI provides base-level policy, guidance, and procedures for safely and effectively maintaining, servicing, and repairing aircraft and support equipment. It also applies to all major command (MAJCOM) maintenance group (MXG) functions and their subordinates. For Air Force specialty code (AFSC) 2W1X1, AFI 21–101 identifies the roles and responsibilities of every career field function from the weapons loading, armament flight, and the wing weapons manager and weapons standardization. AFI 21–101 as well includes direction on documenting maintenance actions, supply management, work center reporting, and so much more.

This instruction additionally supports the Air Force core values and its application to the maintenance professionals core values which are: "*Integrity First*—Do the job right the first time; *Service Before Self*—Mission accomplishment over personal gain; *Excellence in All We Do*—Put forth the best possible effort at all times." To start this section off, let's discuss maintenance systems first.

016. Maintenance systems

The Air Force requires varying degrees of maintenance capability at different locations. Maintenance capability depends upon mission requirements, force protection, economics of repair, transportation limitations, component reliability, workload agreements, facility requirements, frequency of tasks, and special training required. This maintenance capability is described (in order of increasing capability) as either organizational, intermediate, or depot.

Organizational maintenance

The first level of maintenance is organizational maintenance. At this level, maintenance is performed *on-equipment* (directly on aircraft or support equipment) on the flightline. This level generally includes repair, munitions up/down loading, inspection, testing, servicing, and/or calibration. Simply put, if your job requires you to perform maintenance on the flightline on a daily basis, then you are working on the organizational level.

Intermediate maintenance

The second level of maintenance is intermediate maintenance. At this level, maintenance is performed *off-equipment* (on removed component parts or equipment) at backshop level. This level is primarily concerned with testing and repair or replacement of component parts, line replaceable units (LRU), and alternate mission equipment (AME). This level also includes centralized intermediate repair facilities (CIRF). In simple terms, all traditional backshop activities fall into this level.

Depot maintenance

The third level of maintenance is depot maintenance. At this level, maintenance is performed on- or off-equipment at a major repair facility. This is the highest level of maintenance for more complex repairs. If base-level maintenance requires depot level assistance for evaluation and/or repair beyond the unit's capability, the request must be made in accordance with (IAW) AFI 21–103, *Equipment Inventory, Status and Utilization Reporting,* Technical Order (TO) 00–25–107, *Maintenance Assistance*, TO 00–20–14, *AF Metrology and Calibration Program,* or an approved automated process by the mission design series (MDS) specific system manager. All requests for depot-level assistance must be coordinated through the quality assurance (QA) office and maintenance operations squadron/maintenance operations flight (MOS/MOF).

017. Inspection concepts

There are four authorized inspection concepts used for aircraft. The inspections are listed in TO 00–20–1, *Aerospace Equipment Maintenance Inspection, Documentation*, *Policies, and Procedures* and are called periodic, phased, isochronal, and programmed depot maintenance (PDM) inspections.

Each aircraft has a -6 TO that is used to identify all inspection requirements for an airframe. These requirements are listed by the type and the interval of inspection, such as hourly, calendar, or after so many flights. Each of these inspections are based on the time in use of items that are known to have some degree of wear or stress. The -6 also dictates the interval and the type of inspection by work unit code number. The weapons system is identified as 75,000. You must complete these inspections according to the applicable -6 scheduled inspection and maintenance requirements manual and/or inspection work card. This lesson defines and talks about the characteristics of each inspection concept, starting with periodic inspection.

Periodic inspection

The periodic inspection is due upon accrual of the number of flying hours, operating hours, or at the expiration of a calendar period specified in the applicable -6 scheduled inspections and maintenance requirements manual. The periodic inspection is more extensive in scope than the hourly postflight or basic postflight inspection. This inspection is a thorough searching inspection of the entire weapon or support system.

Phased inspection

The phased-inspection concept involves consolidation of the basic postflight, hourly postflight, and periodic inspection requirements into small packages, while having about the same work content and about the same number of clock hours for completion. The primary objective of the phased-inspection concept is to minimize the length of time an aircraft is out of commission for any given scheduled inspection. The phased-inspection concept does not apply to those aircraft types where the inspection requirements cannot be divided into reasonably equal packages. Phased inspections are scheduled at

equal intervals throughout the total inspection cycle, regardless of when the inspections are actually completed. For aircraft phased at depot, the interval is zeroed out and a new interval started. When aircraft under the phased concept are required for extended missions, you may complete the required number of phased packages in advance. This inspection covers the period of the extended mission. Upon completion of the extended mission, normal scheduling of the phase packages will be resumed.

Isochronal inspection

The isochronal concept is designed to translate flying hour utilization rates into calendar periods and is usually expressed in days. The system program manager is responsible for making sure the calendar period is properly established to meet maintenance and engineering requirements. The isochronal concept is constructed to allow for the time an aircraft is programmed to be in inspection status. For example, if an aircraft is programmed to be in inspection status for five days and the inspection period is based on the utilization rate of 145 days, then you would schedule the inspection every 150 days.

Programmed depot maintenance

PDM is an inspection requiring skills, equipment, or facilities not normally possessed by operating locations. Individual areas, components, and systems are inspected to a degree beyond -6 inspections.

018. Flightline inspections

We have looked at the inspection system. Now, now within this lesson let's look at the inspections that weapons personnel are more involved with and that you, as a 7-level, will be performing or supervising such as: end of runway, thruflight, basic postflight, postload, in-process, and one-time inspections.

End-of-runway inspection

The end-of-runway (EOR) inspection for armament personnel is the final check of munitions and AME loaded on the aircraft. During this inspection, personnel makes sure that the sway braces are secure, panels of pylons are securely fastened, and the arming of munitions loaded on the aircraft has been completed. When an aircraft returns from flight, you are responsible for de-arming or making sure that the de-arming process is completed. This also includes taking charge of situations when a munition is found prematurely armed, hung, or in any other abnormal state.

Thruflight inspection

The thruflight inspection is a between flights inspection that you must complete after each flight when a turnaround sortie or a continuation flight is scheduled and a basic postflight inspection is not required. The thruflight inspection consists of checking the aircraft for flight worthiness by doing a visual examination or operational checks of certain components, areas, or systems to make sure of no defects detrimental to further flight exist.

Basic postflight inspection

The basic postflight inspection is completed after the last flight of a specified flying period. This includes end-of-firing day inspections on aircraft weapons stations that have expended munitions and/or aircraft gun systems. The inspection of the system, cleaning, replacing seals, recovering expended carts, and lubrication are just some of the postflight inspections you may perform. The -6 spells out the requirements for the postflight inspection.

Postload inspection

The postload inspection is an integral part of any loading operation. It is the reliability check of a completed loading operation. Every loading task has a postload inspection. It verifies that the critical tasks are checked and in most cases, it reflects the reliability of the load. As a 7-level, you are responsible for completing this task and making the required documentation in the aircraft forms. The form entries vary with aircraft, but the objective of these inspections and documentation is to verify

that the tasks were properly completed. Your base may require a form entry for the postload inspection.

In-process inspections

The in process inspection (IPI) is an inspection requirement completed during the assembly or reassembly of systems, subsystems, or components. The IPI is used as a local management tool to ensure quality maintenance. The MAJCOMs establish the guidelines for the IPI program and all inspection criteria are listed by the TO step needing to be checked during the maintenance task. Many IPI requirements are a result of high failure rates of systems or components. In the armament shop, you will see numerous IPI requirements. The IPI list is normally listed by TO and in the order of tasks to be completed. This IPI list is published after approval by the maintenance activity responsible for the development of the inspection, although QA normally is the office of primary responsibility (OPR) for the IPI implementation. As a 7-level, you may be required to perform the IPI and document the completion of those tasks. When a high failure rate of an item occurs, a safety supplement or a one-time inspection may also be issued. Usually this inspection becomes a part of the IPI list once the one-time inspection is completed.

One-time inspection

A one-time inspection is done because of a defect or to inspect a particular item or system for a defect. This inspection can be as simple as checking for a lot number to remove for a nondestructive inspection (NDI). It can, and normally does, occur because of a time compliance technical order (TCTO).

019. Maintenance data tracking

Maintaining all of the maintenance data generated on a daily basis is a truly monumental task. The Air Force invested millions of dollars in developing the maintenance management program called the Integrated Maintenance Data System (IMDS). This next lesson defines and provides the characteristics of this tracking system.

Integrated Maintenance Data System

Integrated Maintenance Data System is a large, dynamic, online data system used at base level to manage aerospace vehicles, maintenance equipment, and personnel resources. It provides much of the maintenance data needed by MAJCOMs and other agencies, including Air Force Materiel Command (AFMC) and Headquarters United States Air Force (HAF), to manage and track maintenance resources worldwide. IMDS incorporated and replaced the older Core Automated Maintenance System (CAMS) and the Reliability and Maintainability Information System (REMIS).

IMDS is now the standard Air Force system for maintenance production support and the collection and processing of equipment maintenance information. All information supporting maintenance functions must be accessible to IMDS for collection, storage, and dissemination of critical data for repair and improvement of our weapon systems and equipment. IMDS functions as a “single” logical database to accommodate historical and legacy data that were currently stored in other databases. The IMDS design is flexible to support changes in logistics infrastructure size, quantity, and mission orientation whether at home base or deployed.

Self-Test Questions

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

016. Maintenance systems

1. What actions are generally covered under organizational maintenance?

2. Which individuals should all requests for depot-level assistance must be coordinated?

017. Inspection concepts

1. What are the four inspection concepts used in the Air Force?

2. What TO lists the types of inspections?

3. What are periodic inspections?

4. What does the phase-inspection concept involve?

5. What is the primary objective of the phased-inspection concept?

6. What is the isochronal inspection concept?

7. The isochronal concept is constructed to allow for what?

8. What is PDM?

018. Flightline inspections

1. As an armament personnel what are your responsibilities in an EOR inspection?

2. When would you complete a thruflight inspection?

3. When would you complete a basic postflight inspection?

4. What is a postload inspection?

5. Who establishes the guidelines for in process inspections?

6. What office is normally the OPR for IPI implementation?

7. What are one-time inspections?

019. Maintenance data tracking

1. What two systems did IMDS replace?

2. What is the function of the IMDS?

2–2. Contingency Planning and Mobility

The Air Force of today cannot function using the ideas of the past. In earlier decades, the Air Force relied on strategically placed bases, units, and equipment all over the globe. These established overseas units would make space for "stateside" units to augment their base capabilities in the event of a crisis. The Air Force developed the processes and means to project airpower on an "as needed" basis that required us to be a mobile and deployable force. This section will familiarize you with four basic practices and concepts that the Air Force uses to achieve its mobility goal beginning with the non-nuclear consumables annual analysis process.

020. Non-nuclear consumables annual analysis

The non-nuclear consumables annual analysis (NCAA) is an analytical process designed to quantitatively identify the most effective mix of conventional air munitions to be programmed for procurement and maintained in the war reserve materiel (WRM) stockpile. The NCAA addresses requirements for air-to-surface, air-to-air conventional munitions, aircraft fuel tanks, racks, adapters, and pylons (TRAP). This document also describes the contents of conventional standard air munitions packages (STAMP), standard tanks, racks, adaptors, pylon packages (STRAPP), and assets aboard pre-positioning ships. WRM is only one input to the determination of a procurement objective. Other requirements include training, testing, seek eagle, and weapons system evaluation program (WSEP). The three documents in this lesson: war consumable distribution objective, tactical air missile program, and the unit committed munitions list have a huge part in the WRM procurement maintenance as well.

War consumable distribution objective

The war consumable distribution objective (WCDO) is an authoritative document identifying wartime requirements for critical aircraft consumables to support the War and Mobilization Plan (WMP). Assets such as munitions, prepositioning and by day requirements are identified by their location and OPLAN.

Tactical air missile program

The tactical air missile program (TAMP) is an allocation document for air intercept missiles (AIM). As we have discussed, the NCAA determines the stockpile of munitions required to "fight and win" a war. Part of this determination is AIM. The TAMP allocates all AIMs to specific MAJCOMs who, in turn, distribute their allocations to subordinates. In other words, the TAMP acts as a WCDO for missiles.

Unit committed munitions list

You need to be familiar with the unit committed munitions list (UCML) or test and training munitions list (TTML). These documents are directed by MAJCOM and developed at unit level. They reflect the munitions required to meet unit operational and training needs. The wing weapons manager, in coordination with the operations group weapons and tactics office, establishes which munitions will be used to execute DOC statement capabilities in support of OPLAN tasking; the MAJCOM is the approval authority for the UCML/TTML.

The UCML contains a list of primary and support munitions, munitions family groups (MFG), and limited use munitions. The list is used as a tool to determine the munitions the load crews in your unit will be trained and certified. Load crews can be certified on no more than 15 munitions and/or MFGs combined (except for test units).

021. Time-phased force deployment data

The time-phased force deployment data (TPFDD) is a plan for deploying forces to any contingency operation. These deployments are developed in an OPLAN that are normally reviewed every two years. This lesson discusses five factors that go into planning and executing a successful deployment, beginning with warfighting and mobility flow.

Warfighting and mobility flow

The OPLAN is a plan to fight a war. Typically, it's a plan for all US military services (Air Force, Army, Navy, and Marines) to mobilize, beddown, and wage war in a specific theater of operation. For your part, the Air Force develops the air component portion of the plan and assigns responsibility to different organizations. This plan provides a unit its individual responsibilities to the air component commander for support of the overall plan. Once the unit determines its responsibilities, it can then formulate its plans for mobilizing the personnel and equipment for meeting those taskings.

The base support plan

The base support plan (BSP) supports the OPLAN. Each base assigned as a beddown location or assigned the responsibility to support forces for the OPLAN must develop a BSP. The BSP is intended to consolidate the base go-to-war plan in a single document which consist of two parts. Part 1 must be done prior to Part 2; once completed, Part 1 should only need updating when there are major changes to the base infrastructure. Part 2 generally follows the Joint Chiefs of Staff (JCS) planning cycle and the publication of MAJCOM supporting plans.

The BSP is intended to integrate all base wartime support requirements in a two-part document. Part 1 identifies the total base resources and capabilities without assessing the impact of wartime or contingency tasking. In plain language, it tells everyone what is available on your base. Part 2 assesses the ability of the installation to support contingency operations with the total resources identified in Part 1. It matches capabilities with requirements and indicates how the base intends to beddown/support an incoming operation. The BSP provides a detailed evaluation of all resources, requirements, and functions to determine procedures, capabilities, and limitations under various tasked scenarios. The BSP is reviewed and updated at least once a year or whenever major changes occur affecting a base's ability to support forces. The Part 2 of the BSP must be updated within 90 days of receipt of an OPLAN. The BSP must contain enough detail to make clear to all concerned what they must do and how they must do it. Such detail is particularly important for short tour areas and bases without a major AF presence during peacetime.

Limiting factors and shortfalls

A limiting factor (LIMFAC) is a factor or condition either temporarily or permanently impeding mission completion. A shortfall is defined as the lack of forces, equipment, personnel, ~~material,~~ or capability adversely affecting the command's ability to complete its mission. It is extremely important to identify all LIMFAC and shortfalls as well as planned workarounds.

Designed operational capability

A designed operational capability (DOC) statement contains unit identification, the mission tasking narrative, mission specifics, and resources required. It is prepared at MAJCOM level for each subordinate unit and provides unit commanders a clear definition of their respective unit's wartime capability, based upon the authorized manpower and materiel strength of the unit. Its primary purpose is to serve as the baseline for statement and Status of Resources and Training System (SORTS) reporting. It defines the total capability of the unit and documents the resources required to provide this capability. It also provides the unit commander a reference for what the unit should be able to do if it is fully manned, equipped, and trained. It reflects OPLAN tasking but is not itself a tasking. For example, a DOC statement for an F–15C fighter squadron might reflect an air-to-air mission for 18 aircraft in support of a specific OPLAN. They must have at least 25 pilots fully qualified for offensive counter air and defensive counter air mission profiles.

Readiness reporting

Air Force readiness reporting contained in AFI 10-201, *Force Readiness Reporting*, and is comprised of three distinct, but closely aligned assessments: resource readiness, capability readiness, and unit type code (UTC) readiness.

Resource readiness is a commander's *objective assessment* of a unit's ability to execute the full spectrum mission for which the unit was organized. In addition, it measures the effectiveness in meeting Title 10, United States Code (USC) responsibilities to organize, train, and equip forces for combatant commands. Capability readiness is a commander's subjective assessment of the unit's ability to accomplish tasks based on the mission for which the unit was organized and designed. In addition, it provides an assessment of the unit's ability to perform assigned missions. Both resource and capability readiness are reported via the Defense Readiness Reporting System (DRRS).

The Unit Type Code is a Joint Chiefs of Staff developed and assigned code which individuals and units are assigned .UTC readiness is contained in the Air Expeditionary Force (AEF) Reporting Tool (ART). ART is the Air Force system used to employ the force to fulfill global requirements across the range of military operations which can be executed from individual to multiple units.

022. Initial tasking order and air tasking order

Initial tasking orders (ITO) provides information on the type and number of missions to be flown and what munitions are to be carried. The difference between the ITO and air tasking order (ATO) is the ITO provides initial tasking and the ATO provides the all-inclusive tasking. The ITO may have a partial list of taskings while the ATO is a complete listing. The aircraft and munitions requirements are usually preliminary and the times are not broken out in the ITO. Your main concern is the generation flow plan developed from the ITO and ATO.

Generation flow plan

There are many offices involved in the generation flow plan development. The operational squadron identifies the aircraft, by line number and munitions configuration, to be flown based on the capability of the aircraft. These aircraft are aligned based on mission. The expediter uses the generation flow plan to align the work force. The line numbers assigned to each aircraft align with the mission to be flown. You use this document to put load crews in line with the mission requirements. This document also identifies what aircraft are spares. When the primary aircraft is taken out of the flow, due to unexpected breakdown, then the spare aircraft moves into its spot. Here is where you need to have a working knowledge of the minimum essential subsystem listing (MESL).

023. Pallet buildup

Pallet buildup procedures are important to know in order to get all of your required equipment shipped for deployments and contingencies. You need to know the procedures for inspecting and also know the characteristics of the common 463L pallet (HCU–6E). Your proper inspection and the

discovery of any limitations of the pallet are essential for pallet buildup. This lesson discusses the unit responsibilities and the characteristic of the 463L pallet.

Unit responsibilities

Unit commanders are ultimately responsible for ensuring that all ~~material~~ is properly prepared for deployments. This is normally done by delegating these responsibilities to a competent mobility officer/NCO and equipment custodians. The mobility officer/NCO must ensure that all cargo is in proper condition and the proper documentation is correct so that the cargo can be transported by appropriate means. For further information on packaging documentation, accounting, and record keeping refer to AFI 24–203, *Preparation and Movement of Air Force Cargo.*

463L pallet characteristics

The 463L pallet consists of a balsa or redwood core sandwiched between two sheets of aluminum with an integral edge rail. The rails have 22 steel tie-down D-rings attached in such a manner that there are six rings on each long side and five rings on each short side that are used to attach the cargo nets to the pallet. Each tie down has a restraint capacity of 7,500 pounds. The empty pallet weight is 290 pounds. The pallet dimensions are 88” x 108” x 2.25.” with the usable dimensions being 84” x 104.”Now let’s go over two additional vital pieces of information regarding pallet build-up: inspection and cargo loading procedures.

Inspecting the 463L pallet

Before building cargo on a pallet, it must be checked for serviceability. The following inspection items should be checked prior to usage.

- Check the skin for separations from the wood core center.
- Check for damaged and/or missing D-rings.
- Check pallet skins to ensure no wooden core is visible or any skin is missing.

Do not use the pallet if any of these problems occur, turn the pallet into your readiness spares package monitor for disposition. Additionally once the pallet is returned from deployment, it must be rechecked for serviceability. Keeping serviceable pallets on hand can save time in a crunch situation.

General 463L pallet loading instructions

Palletize cargo from the heaviest to the lightest. Distribute large and heavy objects evenly from the center of the pallet outwards to prevent the pallet from becoming heavy on one end. This also helps to maintain the center of balance at or near the center. Place lighter and/or smaller items on top or along the side of the heavier cargo. Containers marked THIS SIDE UP must be placed upright and cargo with special labels facing outward whenever possible. Construct the load in a square or pyramid shape whenever possible. This makes the load stable, easy to handle, and easier to secure on the pallet. As you build the pallet load, use a pallet template or measuring stick to ensure the pallet does not exceed aircraft height limitations.

Self-Test Questions

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

020. Non-nuclear consumables annual analysis

1. What is the NCAA?

2. What requirements does the NCAA address?

3. What is the WCDO?

4. What is the TAMP?

021. Time-phased force deployment data

1. What is the use of the TPFDD?

2. Typically, what is an OPLAN?

3. What does the BSP do?

4. What information do you find in the two parts of the BSP?

5. What does the DOC contain?

022. Initial tasking order and air tasking order

1. What is an ITO?

2. What is an ATO?

3. What is contained in the generation flow plan?

023. Pallet buildup

1. Who bears the ultimate responsibility for ensuring that all ~~material~~ is properly prepared for deployments?

2. What two kinds of wood are appropriate core materials for a 463L pallet?

3. What three conditions disqualify a 463L pallet as being unserviceable?

2–3. Explosive Safety and Storage

We often have areas either on the flightline or near the loading area designated and licensed as authorized areas to conduct maintenance on explosive loaded aircraft and store explosives. As a responsible 7-level, you must always keep safety in mind and relay a safety-minded attitude to the people you lead. It is your duty and responsibility to monitor the safety of flightline weapons and explosive operations and maintenance actions.

024. Weapons safety

Every member of the Air Force is charged with maintaining a safe-working environment. There is however a need for a focal point of the safety effort. The office with the most direct impact in respect to flightline weapons operations is often the wing weapons safety office.

Wing weapons safety

Full-time weapons safety personnel must be qualified in their AFSC or civil service equivalent be qualified in the maintenance or operation of nuclear weapons, missiles, or non-nuclear munitions. They must also complete the Air Education and Training Command (AETC) Weapons Safety Course.

Weapons safety personnel monitor operations involving weapons to make sure that units understand and follow all safety standards. They review waivers, exemptions, and deviations from established explosive safety criteria and advise commanders of the increased damage potential these exceptions allow. They make sure units take compensatory measures to minimize mishap potential and advise each new commander of waivers, exemptions, and deviations. Weapons safety also performs annual reviews of explosives location maps maintained by civil engineering. They verify that the explosive location maps have the required information, such as the net explosive weight (NEW) per location, hazard class, division of explosives, and the required clear zone around the location.

They also authorize flightline locations for conducting explosives operations to include explosive aircraft cargo on- or off-loading and combat aircraft explosives loading. They identify the locations for handling hung ordnance and gun-clearing operations, including arm and de-arm areas. It is highly advisable that you establish a working relationship with the safety personnel to make your job easier and your efforts more productive.

Load crew chiefs safety responsibilities

The fact that there are trained professionals dedicated to weapons safety in no way minimizes your responsibilities as a 7-level when dealing with explosives and explosive loaded aircraft. AFI 21–101 is adamant about your responsibilities when it comes to explosives and explosive loaded aircraft. Load crew chiefs are “responsible for controlling *all* actions concerning the aircraft during loading and unloading.” You are additionally charged with *actively* monitoring loading/unloading operations in addition to monitoring the safety of flightline weapons operations as a whole. Your actions are expected to foster as safe an environment as possible.

025. Explosive storage sites

The requirements for storing explosives are based on the amount of explosives or the NEW allowed. AF Manual (AFMAN) 91–201, *Explosives Safety Standards,* sets the guidelines for safely storing explosives. This lesson provides you guidance from six explosive storage factors to assist you in completing your duties, beginning with the explosive site plan.

Explosive site plan guidance

The explosives site plan (ESP) contains all necessary information to properly site and construct either a potential explosion site (PES) or an exposed site (ES). An ESP usually originates at the wing or base and is in the form of a request. Once approved, the ESP becomes the source document for explosive capacities and controls for that facility.

Generally an ESP is required whenever new facilities or operations are added inside the installations clear zone. It is the approval to either increase explosives or increase the exposures hazarded by explosives. The wing weapons safety office prepares and submits ESPs for facilities or operations requiring explosive safety site approval, as well as the maintenance of approved ESPs. With the assistance of the base civil engineer (BCE) it is assured that the weapons safety office is appraised of all proposed actions planned within the clear zone before design and construction begin.

Net explosive weight

NEW represents the amount of explosive filler contained in a given munition. It is most often confused with munitions weight. For example, an MK–82 500-pound bomb has a NEW weight of 192 pounds; the weight of the explosive filler *only*. The amount of explosive that can be stored in an area is based on the type of explosive (mass detonation, mass fire, etc.). The two areas where you'll be mostly involved with these requirements are live ordnance loading areas (LOLA) and impulse cart lockers. You should have a basic knowledge of the categories or compatibility groups into which your munitions items are grouped. For further information, refer to AFMAN 91–201.

Quantity distance

The term "quantity-distance" (Q-D) refers to protection requirements from PESs to different kinds of ESs. Q-D is a measured distance that should minimize damage during an explosive accident. The Q-D standards were developed over many years and are based on explosives mishaps and tests. The kinds of things factored into Q-D are the bases boundary, vital base utilities or transmission lines, public traffic routs, mission essential facilities, and so forth.

Sighting a potential explosion site

An approved ESP authorizes locations on an Air Force installation containing explosives and ammunition. This includes aircraft parking locations where aircraft may be loaded with ammunition and explosives. You submit a new ESP if the quantity of explosives at a PES increases or a more hazardous explosive class/division is introduced. The installation must maintain Department of Defense explosive safety board (DDESB) approved ESPs. Licensed explosives facilities, hung ordnance areas, arm/de-arm areas, and aircraft loaded with installed explosives such as egress items, life support, defensive flares, or spares do not require an ESP. Shelters for arm/de-arm crews must require an ESP.

Explosive site plan development

The weapons safety office is instrumental in the ESP development process, beginning with the initiation of the concept development phase. The BCE or facility user notifies safety as soon as a need is identified to build, modify, expand, or change the use of any PES or ES. Weapons safety personnel determine the need for an ESP and solicit the information to prepare the request. The BCE assists safety by providing current maps or drawings and supplies facility design information, such as wall construction, grounding, technical facility design assistance, and lightning protection information. Both new and modified buildings sited within any explosives inhabited building Q-D arc, which have glass panels and routinely contain personnel, must have glass that minimizes personnel injury that is shatter-resistant tempered glass to reduce glass shards. New construction also must have windows equal to the strength of the walls in terms of withstanding (rated) per square inch (psi) pressure.

Preliminary versus final safety review

When submitting an ESP for new construction and design details are incomplete, request preliminary site approval for the project. Preliminary approval generally addresses Q-D relationships and authorizes civil engineering planning activities to continue. Final DDESB approval addresses safety features, such as facility designs, protective measures, and coordination of operations to be conducted, and is necessary before construction begins.

In preparing the ESP package, include all the information needed for the reviewer to determine whether DOD and Air Force explosives safety requirements are being met. The exact contents of the package may vary depending on the operation/facility to be sited. For some sites, a transmittal letter containing pertinent information and a map is all that is necessary for reviewers to understand the intent and grant approval. Other packages may require detailed drawings, engineering analysis, commander certifications, or additional documents needed to verify compliance with applicable explosives or other safety standards.

Provide the names of the users and the number of persons to use the facility (civilians and military as necessary). The last item that is very important is the maximum NEW to be placed in the facility in terms of maximum credible event (MCE). This includes the NEW for each class division of explosives.

026. Accidents, incidents, and deficiency reporting

When you are placed in a situation that requires you to report on an accident or incident that involves a nuclear weapon, your knowledge of the proper procedures will greatly help you to report on the situation. This lesson covers the responsibilities of the safety investigation board, safety investigation board formal reports, and briefing investigation reports. Refer to AFI 91–204, *Safety Investigations and Reports,* for additional information.

Safety investigation board

Safety investigations and reports are conducted and written solely to prevent future mishaps. Safety investigations take priority over any corresponding legal investigations. Safety and legal investigations are conducted separately to protect privileged safety information in the safety report. Privileged safety information will be used solely for mishap prevention.

Each Air Force base, wing, and higher-level commander must keep a current list of personnel qualified for a safety investigation board (SIB). The size and membership of the SIB depend on the kind of mishap being investigated.

The convening authority may organize a group SIB for more complex mishaps in any way that fits their investigative and reporting needs. One or more SIB members are selected that are equal to or senior in rank to the senior person directly involved in the mishap. Normally the SIB president is the senior SIB member. SIB members are selected who do not have a personal interest in the investigation and are able to act impartially. SIB members are qualified in safety investigation for each safety discipline involved in the mishap.

The SIB president is normally a colonel for all nuclear accidents. Ground, explosives, and aircraft involvement SIBs are presided over by a colonel or GM-15 (or higher) for Class A on-duty mishaps. For other mishaps, the president is a major or GS-12 (or higher).

Safety investigation board formal reports

Once the SIB compiles all pertinent information and evidence, it uses this information to generate conclusions and findings to generate a formal report. A formal report presents detailed factual and analytical information about mishaps. They are made up of AF IMT 711B, USAF Mishap Report checklist and index –series forms and the attached exhibits. All forms in the AF IMT 711–series are licensed as “Safety Investigation Reports.”

Briefing investigation results

Once the SIB completes the investigation and finalizes the formal report and the final message, the SIB provides briefings at the discretion of the convening authority. All briefings will be given with no prior screening of content. Board independence is critical to the integrity of the SIB process. Historically SIB independence is a Congressional-interest item, periodically reviewed by Government Accounting Office (GAO) and DOD/IG. The convening authority dictates briefing attendance.

027. Demilitarization

When you hear the word demilitarization (demil) you think of destroying or breaking equipment. You are correct in a sense that you are trying to render a piece of equipment incapable of military action. After a gun barrel had fired a given amount of rounds it is replaced before its expected failure point and demilitarized at that point. You'll then demilitarize the barrel to render it useless, because we don't want our equipment to fall into the wrong hands and be used against us. Let's discuss who can certify demilitarized items, demil procedures, and the methods and degree of demil we have as 2W1's.

Qualified personnel

Personnel performing a physical demil function must be technically qualified and trained appropriately for processes and equipment use. These qualifications vary depending on the techniques and equipment used and is the responsibility of the organization who which the demil personnel are employed. In addition, personnel verifying that the demil is adequate, must be sufficiently knowledgeable of the demil requirements for the ~~material~~ being processed and to be able to verify through visual inspection that the destructive action taken is sufficient to have met the demil requirement.

Demilitarization procedures

Procedures for accomplishing physical demil range from detailed, step-by-step procedures unique to specific items (e.g., demil code "F") to those that can be applied to more general range items (e.g., operation of industry shredder) to those that apply general techniques (e.g., torch cutting) using a standard operating procedure. The following are general principles to aid in procedure development:

- Technical data shall be demilitarized by burning, crosscut shredding, or pulping.
- Test equipment may contain demil required components.
- It is preferable to demil items to the level of scrap.

Methods and degrees of demilitarization

There are many items in the 2W1 career field that require to be demilitarized after the equipment has been removed from service. Some of those items we work with are guns, gun barrels, pylons, pylon racks etc. For additional information on demilitarization refer to DOD Manual 4160.28M, *Defense Demilitarization: Procedural Guidance*. Let's take a look at how to properly demilitarize 20mm guns, 30 mm guns, pylons, and bomb racks.

20mm guns

Demil code "D" items such as the 20mm and 30 mm guns shall be demilitarized by torch cutting using a cutting tip that displaces ½ inch of metal at a minimum. You'll want to cut through the body of the receiver to the rear of the cradle with the bolt assembly remaining in the weapon if furnished by the assembly. Also cut through the heavy portion of the barrel, as for single barrels you can cut them in small pieces or weld a metal plug into the breech.

30mm guns

30mm gun housing shall be cut into three sections by cutting through the barrel support section. Cutting or welding the barrels in the same way the 20mm barrels are demilitarized is sufficient for the 30mm barrels as well.

Pylons and bomb racks

Demil code "B" items such as pylons and bomb racks must be rendered to the point of scrap to ensure the items are unfit for their intended purpose by cutting, tearing, scratching, crushing, breaking, punching, shearing, burning, neutralizing, and so forth. There are several specific ways to destroy a pylon and bomb rack. One specific way is to cut across the breach opening. By doing so, you are taking away the main purpose of the pylon and bomb rack and that is to hold impulse carts.

Once those are cut, then no impulse carts can be installed. Secondly, you can crush the bomb rack flat breaking the linkage inside the bomb rack.

Self-Test Questions

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

024. Weapons safety

1. What qualifications should full-time weapons safety personnel have?

2. Why do weapons safety personnel monitor operations involving weapons?

025. Explosive storage sites

1. On what are the requirements for storing explosives based?

2. What sets the guidelines for safely storing explosives?

3. What plan contains all necessary information to properly site and construct either a PES or an ES?

4. Who prepares and submit ESPs for facilities or operations requiring explosives?

5. On what is the amount of explosive stored in an area based?

6. Do shelters for arm/de-arm crews need to be sited?

7. How does the civil engineer help weapons safety personnel during site planning?

8. What does preliminary site planning approval authorize CE to do?

026. Accidents, incidents, and deficiency reporting

1. Who keeps a list of all qualified personnel for a SIB?

2. On what does the size and membership of a SIB depend?

3. Normally what rank is the SIB president for all nuclear accidents?

027. Demilitarization

1. Personnel performing a physical demilitarization must be?

2. What DOD manual would you refer to if you wanted additional demilitarization information on weapons related equipment?

Answers to Self-Test Questions

016

1. This level generally includes repair, munitions up/down loading, inspection, testing, servicing and/or calibration.
2. The QA office and MOS/MOF.

017

1. (1) Periodic.
   (2) Phased.
   (3) Isochronal.
   (4) PDM.
2. TO 00–20–1.
3. Inspections due upon accrual of the number of flying hours, operating hours, or at the expiration of a calendar period.
4. A consolidation of the basic postflight and/or hourly postflight and periodic inspection requirements into small packages.
5. To minimize the length of time that an aircraft is out of commission for any given inspection.
6. A concept to translate flying hour utilization rates into calendar periods, usually expressed in days.
7. The time that an aircraft is programmed to be in inspection status.
8. An inspection requiring skills, equipment, or facilities not normally possessed by operating locations.

018

1. The arming and security of the items suspended or loaded on the aircraft.
2. When a turnaround sortie or a continuation flight is scheduled and a basic postflight inspection is not required.
3. After the last flight of a specified flying period.
4. The reliability check of a completed loading operation.
5. MAJCOM.
6. QA.
7. Inspections that come about due to a defect or are done to inspect an item for a defect.

019

1. CAMS and REMIS.
2. It functions as a "single" logical database to accommodate historical and legacy data currently stored in other databases.

020

1. An analytical process designed to quantitatively identify the most effective mix of conventional air munitions to be programmed for procurement and maintained in the WRM stockpile.
2. Air-to-surface and air-to-air conventional munitions and aircraft fuel TRAP.
3. The official MAJCOM document developed that shows the base-by-base munitions or TRAP requirements.
4. An allocation document for air-to-air missile.

021

1. To deploy forces to any contingency operation.
2. A plan for all US military services to mobilize, bed-down, and wage war in a specific theater of operation.
3. It supports the OPLAN.
4. Part 1 is identifies the total base resources and capabilities without assessing the impact of wartime or contingency tasking. Part 2 assesses the ability of the installation to support contingency operations with the total resources identified in Part 1.
5. It contains unit identification, mission tasking, narration, mission specifications, and personnel resources.

022

1. Information on the number and type of missions to be flown and what munitions will be carried.
2. The same information as the ITO, but it also provides all-inclusive tasking.
3. This plan identifies the aircraft, by line number and munitions configuration, to be flown based on the capability of the aircraft.

023

1. Unit commanders.
2. (1) Redwood.
   (2) Balsa wood.
3. (1) Separation of the skin form the wooden core center.
   (2) Damaged and/or missing D-rings.
   (3) Visible wooden core or missing skin material.

024

1. Be qualified in their AFSC or Civil Service equivalent in the maintenance or operation of nuclear weapons, missile, or nonnuclear munitions and have completed the AETC weapons safety course.
2. To make sure those units understand and follow all safety standards.

025

1. Amount of explosives or NEW.
2. AFMAN 91–201.
3. ESP.
4. Weapons safety office.
5. The type of explosive.
6. Yes.
7. By supplying current maps and facility design.
8. Continue with planning activities.

026

1. Wing/base commander (or higher).
2. The kind of mishap being investigated.
3. Colonel.

027

1. Technically qualified and trained appropriately for processes and equipment.
2. DOD Manual 4160.28.

Complete 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).

34. (016) The level of your maintenance system *primarily* concerned with testing and repair, replacement of component parts, line replaceable units, and alternate mission equipment (AME) is called
    a. organizational.
    b. intermediate.
    c. operational.
    d. functional.

35. (016) Which level of your maintenance system includes centralized intermediate repair facilities (CIRF)?
    a. Organizational.
    b. Intermediate.
    c. Operational.
    d. Functional.

36. (016) The level of maintenance performed on or off-equipment at a *major* repair facility is called
    a. major command (MAJCOM).
    b. intermediate.
    c. operational.
    d. depot.

37. (016) In addition to the maintenance operation squadron/maintenance operation flight (MOS/MOF) which other organization *must* you request depot-level assistance through?
    a. Logistics group.
    b. Quality assurance.
    c. Item functional manager.
    d. Interim design updates team.

38. (017) How many authorized inspection concepts are used for aircraft?
    a. Two.
    b. Three.
    c. Four.
    d. Six.

39. (017) Which *inspection* concept is based upon accrual of the number of flying hours, operating hours, or at the expiration of a calendar period specified in the applicable –6 scheduled inspection, and maintenance requirements manual?
    a. Phased.
    b. Periodic.
    c. Isochronal.
    d. Programmed depot maintenance.

40. (017) The *primary* objective of the phased inspection concept is to
    a. identify all inspection requirements for the airframe.
    b. allow for the time an aircraft is programmed to be in inspection status.
    c. minimize the length of time an aircraft is out of commission for any given scheduled inspection.
    d. consolidate the basic postflight and/or hourly postflight and periodic inspection requirements into small packages.

41. (017) Which *inspection* concept is designed to translate flying hour utilization rates into calendar periods expressed in days?
    a. Periodic.
    b. Phased.
    c. Isochronal.
    d. Programmed depot maintenance.

42. (017) Which *inspection* concept is used to inspect individual areas, components, and systems to a degree beyond the scheduled inspection and maintenance requirements listed in the –6?
    a. Periodic.
    b. Phased.
    c. Isochronal.
    d. Programmed depot maintenance.

43. (018) The flightline inspection that *must* be accomplished after each flight when a turnaround sortie is scheduled is the
    a. postload.
    b. thruflight.
    c. basic postflight.
    d. end-of-runway (EOR).

44. (018) Which flightline inspection is completed after the *last* flight of a specified flying period?
    a. Postload.
    b. Thruflight.
    c. Basic postflight.
    d. End-of-runway (EOR).

45. (018) The flightline inspection that is an integral part of any loading operation is
    a. postload.
    b. thruflight.
    c. basic postflight.
    d. end-of-runway (EOR).

46. (018) Who establishes the guidelines for the flightline in process inspection (IPI)?
    a. Wing commander.
    b. Wing safety personnel.
    c. Major command (MAJCOM).
    d. Quality assurance (QA) personnel.

47. (018) Which kind of flightline inspection is usually initiated after a *high* failure rate of an item occurs, which is followed by a safety supplement or a one-time inspection being issued?
    a. Postload inspection.
    b. In process inspection (IPI).
    c. Quality assurance (QA) item of interest (IOI).
    d. Product quality deficiency analysis (PQDA).

48. (018) The type of flightline inspection that is done because of a defect or to inspect a particular item or system for a defect is called a/an
    a. postload inspection.
    b. one-time inspection.
    c. in-process inspection.
    d. end-of-runway (EOR) inspection.

49. (019) The ~~integrated maintenance data system (IMDS)~~ replaced the Core Automated Maintenance System (CAMS) and the
    a. Reliability and Maintainability Information System (REMIS).
    b. Requisition Integrated Virtual Training System (RIVITS).
    c. nuclear ordinance commodity management (NOCUM).
    d. weapons system evaluation program (WSEP).

50. (020) Which document reflects the munitions required to meet unit operational and training needs?
    a. Tactical Air Missile Program (TAMP).
    b. Unit committed munitions list (UCML).
    c. Weapons system evaluation program (WSEP).
    d. War consumable distribution objective (WCDO).

51. (020) The document that is used to determine which munitions your load crews are required to be trained and hold a certification is the
    a. tactical munitions program (TMP).
    b. unit munitions training plan (UMTP).
    c. unit committed munitions list (UCML).
    d. war consumable distribution objective (WCDO).

52. (020) How many combined munitions and munitions family groups (MFG) can a non-test unit's load crew hold a certification?
    a. 6.
    b. 8.
    c. 10.
    d. 15.

53. (021) Each base assigned as a bed down location or assigned the responsibility to support forces for the operation plan (OPLAN) *must* develop a
    a. base support plan (BSP).
    b. war-fighting mobility plan (WFMP).
    c. designed operational capability (DOC).
    d. time-phased force deployment plan (TPFDP).

54. (021) Which type of information is contained in the designed operations capability (DOC) statement?
    a. Personnel requirements.
    b. Limitation factors (LIMFAC) and manning shortfalls.
    c. Mission tasking narrative, mission specifics, and resources required.
    d. Manning required for deployment, equipment shortfalls, and wartime capability.

55. (022) The document that provides an *all*-inclusive tasking for aircraft and munitions is the
    a. generation flow plan.
    b. air tasking order (ATO).
    c. initial tasking order (ITO).
    d. operations plan (OPLAN).

56. (023) How many D-rings are on the 463L pallet rail?
    a. 12.
    b. 16.
    c. 18.
    d. 22.

57. (023) The usable dimensions of the 436L pallet is
    a. 78” x 98”.
    b. 80” x 102”.
    c. 84” x 104”.
    d. 88” x 108”.

58. (023) Which feature would prevent a 436L pallet from being used?
    a. Skin separated from the wood core center.
    b. A dent exceeding four inches in diameter.
    c. A dent exceeding ¼ inch in depth.
    d. Any sign of galvanic corrosion.

59. (024) Who authorizes flightline locations for conducting explosive operations such as explosive cargo on- or off- loading and combat aircraft explosives loading?
    a. Wing weapons manager or equivalent.
    b. Base civil engineer (BCE).
    c. Wing weapons safety.
    d. Quality assurance (QA).

60. (025) Who is responsible for preparing and submitting *all* explosives site plans (ESP)?
    a. Item manager.
    b. Quality assurance (QA).
    c. Wing weapons safety office.
    d. Base civil engineer (BCE).

61. (025) The term “quantity-distance (Q-D)” refers to the
    a. distance required between loaded aircraft.
    b. required distance between explosive magazines.
    c. protection requirements from potential explosive sites (PES) to different kinds of exposed sites (ES).
    d. distance that personnel must be evacuated to during an incident involving a given quantity of explosives.

62. (025) Which situation would be a reason to submit a request for a *new* explosive site plan?
    a. One year has elapsed since the last one was submitted.
    b. Two years has elapsed since the approval of the current one.
    c. A munitions with increased or more hazardous class/division is introduced.
    d. Your flying has increased and you are going to store more carts in your locker temporarily.

63. (025) Which area requires an explosive site plan (ESP)?
    a. Shelters for arm/de-arm crews.
    b. Licensed explosives facilities.
    c. Hung ordnance areas.
    d. Arm/de-arm areas.

64. (025) Who determines the need for an explosive site plan (ESP)?
    a. You as the user.
    b. Your commander.
    c. Weapons safety personnel.
    d. Your major command (MAJCOM) functional manager.

65. (026) Who *must* keep a current list of personnel qualified for a safety investigation board (SIB)?
    a. Base and wing commander.
    b. Each squadron commander.
    c. Group commander.
    d. Wing safety.

66. (026) Identify the *minimum* rank of the president of a safety investigation board (SIB) involving ground, explosive, or aircraft safety in a Class-A on-duty mishap.
    a. Major or GS–12.
    b. Captain or GS–12.
    c. Colonel or GM–15.
    d. Lieutenant Colonel or GM–13.

67. (026) Historically, who *ensures* the independence and integrity of safety investigation boards (SIB)?
    a. Congress.
    b. Commanders.
    c. Joint Chiefs of Staff (JCS).
    d. Major commands (MAJCOM).

68. (027) Identify the qualifications you *must* have to perform a physical demilitarization function?
    a. Any 5-level.
    b. Any 7-level.
    c. Any back-shop personnel.
    d. Technically qualified personnel trained appropriately for processes and equipment use.

Please read the unit menu for unit 3 and continue ➔

Student Notes

Unit 3. Supply System

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SUPPLIES ARE SIMPLY the materials required to perform a task. Modern aircraft require an unending list of materials to function, to say nothing of what is required to perform a mission in a combat environment. As a maintainer, you have undoubtedly requisitioned the materials that you have needed to perform your duties. As you move to the level of craftsman, you need to have the knowledge of the process that brings those assets to you. You will be responsible for alerting the proper personnel in the supply system of problems with assets and their control. You may also be given the responsibility for planning of future munitions needs of your unit. Having an understanding of the way the supply system works will better prepare you for the challenges you will ubdoubtedly face as an aircraft armament systems craftsman.

3–1. Supply Fundamentals

It is easy for a maintainer to become numbed to the dollar value of the assets at their disposal. It is a common place for a maintainer to perform work on hundreds millions of dollars of equipment on a daily basis. It is vital for you to understand the procedures and processes in place to control these assets, as you will be required to manage these programs, not to just participate in them.

The Defense Logistics Agency (DLA) agency headquartered at Fort Belvoir, Va. provides nearly 100 percent of the consumables items our America's military forces need to operate. The DLA also supplies more than 80 percent of the military's spare parts. These items range from food, fuel and energy, to uniforms, medical supplies, construction, and barrier equipment. As a global enterprise, wherever the United States has a military presence, the DLA will be there as well (www.dla.gov.).

028. Base supply

As an armament systems journeyman, you have probably already had many dealings with base supply. Some of them good; others may have been terrible, but presently most of you should now be ordering all your parts and supplies through the Integrated Management Data System (IMDS). To learn more about the base supply operation let's cover some supply terms, readiness spares packages, cannibalization procedures, and the DLA.

Supply terms

There are several terms you must be familiar with as you work with supply. The few that we will discuss are stock fund, supply discipline, stock levels, and supply assets.

Stock fund

Stock fund is a system for financing the purchase of inventory and holding it until it is required for use by various customers. The fund is the cash and inventories of items; this is the capital of the fund. The stock fund sells items to its customers and in turn receives funds from that organization. The stock fund manager uses the cash to purchase additional inventory for future sales. This revolving aspect of a stock fund is designed to be self-sustaining once it is set in motion. As you order and receive parts and supplies, your organization pays the stock fund for these items. The money for these purchases comes from your squadron's operation and maintenance (O&M) funds. These funds are replenished every fiscal quarter. Proper planning and budgeting are critical to make sure you do not deplete the account before the quarter ends, leaving you with no funds for the rest of the quarter.

Excess funds at the end of the quarter carry forward to the next quarter until the end of the fiscal year. Prior to the end of the fiscal year, you will be asked for budget inputs for the next fiscal year's budget and for inputs or suggested uses for any remaining funds left over for that current fiscal year. You could refer to the remaining fiscal year funds as excess funds. Once you submit your suggested uses for these excess funds, the list is put into priority order. When the end of the fiscal year is getting close, you can order some of these items through supply with the remaining O&M funds, or these funds will become a part of the new fiscal year budget.

How, then, can you be sure you will have some funds left at the end of the fiscal year? The answer is easy, but it depends on team effort. It relies on planning and a concept known as *supply discipline*.

Supply discipline

Supply discipline is not very hard to understand. Supply discipline relies on the use of common sense. Supply of parts to a maintenance organization is vital to the upkeep of equipment and aircraft. For this reason, you need in-depth understanding of the working of the system as it applies to your organization. Technicians need to know how to get parts and how stock is to be maintained. They also must prevent the abuse of the supply system.

Supply discipline is vital to the completion of the mission, regardless of the area we discuss. 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? First, as a supervisor, you must integrate the maintenance activity with its components. Supply is one of those components. When you know it will take time to receive parts, you must use the appropriate priority for the situation when ordering parts or you will surely undermine the supply system. One way you can prevent abuse is to be aware of stock levels. Another way is to only order what you need to do the job. When the unit of issue is a box of 100 and you need only three screws or washers, return the remainder to the supply person for excess stock. Before you order parts such as washers, see if those washers are in excess stock. This will save money and man-hours. Next, consider the work needing the expenditure of supplies and the stock levels available. When your work area needs an excessive number of rivets for panels or bolts for suspension equipment, your stock level may not be sufficient to handle the maintenance requirement. As a technician, you have to be aware of stock levels and their impact on work completion. Submit requests to increase or decrease the stock levels to meet the maintenance effort.

Stock levels

Stock levels in your bench stock are based on consumption and stock levels over a period of time. For example, you excessively use a bolt for two months that you do not have on bench stock. Base supply personnel may identify that bolt as a candidate for your bench stock. Although, when its usage is low for a long period of time, supply personnel will identify it as a candidate for deletion. You must keep this in mind. When a bench stock item is too low to meet the demand due to a time compliance technical order (TCTO) or influx of one time inspections, you may be required to request an increase in quantity or a possible refill of your stock to meet your requirements. The following are a few guidelines to help you maintain stock levels and to be sure of the usage of good supply discipline:

- Promptly repair or turn-in unserviceable (reparable) items and unserviceable items that cannot be repaired locally (depot repair).
- Promptly request change of authorization of equipment when a function is reduced, eliminated, or possibly, if a mission change occurs.
- Eliminate hoarding of any supplies or equipment and make sure of the timely return of unneeded items.
- Order the quantity of items you need to complete the mission without adding extras to keep around just in case.
- Appropriately use priority designators.

Supply assets

The last guideline is the most abused of all. Our high priority issue requests inflate the overall costs of assets through the increase of their transporting and handling costs. To minimize these costs, make sure the urgency justification code (UJC) assigned to the request reflects your actual need. You, the customer, bear ultimate responsibility for properly assigning priority designators. Misuse of priority designators undermines the integrity of the entire supply system, wastes precious resources, and degrades the overall support you receive from supply.

Readiness spares packages

Readiness spares package (RSP) is another item in base supply with which you should be familiar. The RSP is an air transportable package of spares, repair parts, and related maintenance supplies. The quantities are based on sustainability requirements for a weapons system for a specified period of planned wartime or contingency operations. The packages may support aircraft, vehicles, or other equipment such as aerospace ground equipment (AGE). These packages are stored in base supply until required for actual situations or mobility exercises.

Knowing the contents of the RSP for your aircraft and mission can be an advantage. Suppose you have an aircraft with a fault in one of the computer components. You have ordered the item and supply is at a zero balance. It is now backordered from depot. You know there are two of these boxes in the RSP. Supply personnel could issue one of the items from the RSP and let the one you have ordered go into the RSP as replacement when it arrives. This is not an everyday practice but is an option when meeting a critical mission requirement. Your base supply personnel can provide you with assistance when this option is available. Next we will discuss two other assets you should be familiar with, which are the special purpose recoverable authorized maintenance (SPRAM) account and -21 equipment.

Special purpose recoverable authorized maintenance account

A SPRAM account is a special account set up to assist maintenance personnel in completing their mission. Assets within a SPRAM account are identified as expendability, recoverability, and reparability category (ERRC) depot recoverable (XD) items. These items are expendable depot funded assets. Maintenance personnel use them for a variety of reasons. Some are detecting and isolating faults, calibrating and aligning equipment, simulating an active system installed on an aircraft, and conducting AETC courses. The SPRAM assets with which you are concerned with are the items listed in your aircraft's -21 series technical order (TO). These assets are commonly referred to as -21 equipment or alternate mission equipment (AME). They include pylons, bomb racks, missile launchers, and so forth. As a 7-level, you may be tasked as a SPRAM monitor/custodian. AFI 23–101, *Air Force Materiel Management,* and AFMAN 23-122, ~~*Material*~~ *Management Procedures*, both contain sections that are dedicated to the management of these accounts and are invaluable references to these duties.

–21 equipment

The –21 series TO lists all assets authorized to an aircraft or missile mission design series (MDS). Items are defined and coded using ERRC as either equipment, reparable items, or expendable items.

The major commands (MAJCOM), Air Force Materiel Command (AFMC) Logistics Centers, product centers, or DLA have management responsibility for the item to determine its definition. The management and control method is different for each category of items. MAJCOMs and AFMC centers identify items managed and controlled as equipment by labeling them with ERRCs of nonexpendable intermediate/nonexpendable depot (NF/ND).

Cannibalization Procedures

Cannibalization (CANN) actions may be necessary when a condition prevents the accomplishment of a mission and the required assets are not immediately available from supply. Prior to performing a CANN action, verify that the required component cannot be sourced from the Logistic Readiness Squadron (LRS), tail number bin (TNB), or back shop assets prior to impacting aircraft mission accomplishment. When authorizing a CANN, the expenditure of man-hours and potential damage to equipment must be weighed against the expected benefit. *High* risk CANNs should not be performed unless priority aircraft are involved or lack of ready equipment impedes mission accomplishment.

The definition of a CANN is the authorized removal of a specific assembly, subassembly, or part from one weapons system, support system, or equipment end item for installation on another end item to satisfy an existing supply requisition. Additionally, its purpose is to meet priority mission requirements with an obligation to replace the removed item. Weapons systems, support systems, or equipment includes: aircraft, missiles, drones, remotely piloted aircraft, uninstalled engines, uninstalled engine modules, aircrew and/or launch crew training devices, and guns.

CANN authorities (CA) will be approved by the maintenance group commander (MXG/CC) or equivalent and tracked in maintenance information system (MIS). CA will be in the grades of SNCOs and officers (or civilian equivalents), these personnel are normally Production Superintendents. Keep personnel permitted to authorize a CANN action to a minimum. Do not further delegate their responsibilities to authorize approve CANNs will not further.

When a required part cannot be delivered and installed on time, the CA may approve a CANN request before the initiation of CANN documentation (e.g., Red Ball maintenance). The CA will give the approval only after confirming the part is not readily available in LRS, TNB launch trucks, forward supply points, or back shops. The CA will notify the appropriate supply activity to change the “mark-for” components in the documentation number and will ensure complete documentation is accomplished for each CANN action.

Prescribed specific documentation procedures for CANNs in 00-20 series TOs. Properly recorded all CANNs in the MIS and AFTO series or equivalent forms. Carefully screened aircraft recovering from CANN status and all maintenance documentation thoroughly must be reviewed before being scheduled for a sortie/mission. The review ensure all operational checks are completed and determine if an operational check flight or functional check flight is required.

Defense Logistics Agency

As America’s combat logistics agency, the DLA is an agency with more than 26,000 civilian and military personnel throughout the world. Located in 48 states and 28 countries, DLA provides the Army, Navy, Air Force, Marine Corps, combined and allied forces with the full range of logistic, acquisition, and technical services. Before the parts we order show up at Base supply, they have to be purchased first through the DLA.

DLA mission

DLA buys and provides nearly 100 percent of the consumables items America’s military forces need to operate, from food, fuel and energy, to uniforms, medical supplies, construction and barrier

equipment. The DLA aviation also supports 2,250 major weapons systems. It is also the U.S. military's integrated ~~material~~ manager for more than 1.1 million repair parts operating supply items in support of all fixed- and rotor-wing aircraft, to include spares for weapons related systems. As a global enterprise, wherever the United States has a military presence, the DLA will be there as well. Since its founding in 1961, the DLA has been an integral part of our nation's military defense. It has also provided crucial relief to victims of natural disasters and humanitarian aid to those in need.

In support of Operation Enduring Freedom, the DLA has processed more than $6.8 million requisitions with a total value of $6.9 billion; provided $21.2 million in humanitarian support (3.5 million pounds of wheat, 49,000 pounds of dates, 3.8 million humanitarian daily rations and 30,000 blankets) and supplied more than 2.3 billion US gallons of fuel.

029. Supply ordering

The Air Force move towards increased technology has brought the supply system into the computer arena. This has helped the logistics centers to streamline their management of the entire supply system. Within this lesson, let us look at the supply ordering system you are encounter at your level by discussing the equipment allowance standard and accountable and non-accountable equipment items.

Equipment allowance standard

Equipment allowance standards (AS) describes the items and quantities of equipment required to perform the missions and duties of Air Force organizations and individual specialists. Allowance standards provide information about Air Force equipment and ensure uniform equipment for similar functions. Equipment authorizations are allowances converted to quantities of items for a unit. Under the ~~Air Force equipment management system (AFEMS)~~ you should use authorized in-use detail records as the authority for what may be acquired and retained. ~~AFEMS~~ provides allowance information online to all users. The web address for online allowance information is ~~https://www.afems.wpafb.af.mil.~~ Allowances are established by end item and mission application, with the capability to compute maximum allowance quantities by organization.

Accountable and non-accountable equipment items

Equipment items can be of two types—accountable or non-accountable. Supply personnel identify these as equipment authorized inventory data (EAID) or NON-EAID. An EAID item is considered accountable equipment requiring some sort of control. These items appear on a custody authorization/custody receipt-listing (CA/CRL) document after their issue to an organization. The CA/CRL is the official document listing for accountable items issued to your organization and normally does not list NON-EAID items. The most common NON-EAID items are office chairs and tables.

Generally, only nonexpendable items are listed in the AS and expendable items may only be listed for the user's information. Personnel may request quantities of expendable items that exceed the basis of issue in an applicable AS, except in the case of specialized tools, personal retention and survival items, components of bench sets, and war reserve materiel (WRM).

If an item is required to complete a mission or tasking and AS coverage is inadequate or inappropriate, you can use a miscellaneous allowance source code (ASC). You must justify this type of request for equipment since higher headquarters must approve it. Submit this request on an AF IMT 601, *Equipment Action Request*, with your full justification. Also, use the AF IMT 601 to request equipment authorized by the AS. After finding the item on your AS or if you are requesting special authorization, submit this form to the equipment management section (EMS) of supply.

Our supply personnel will process the request and if the item is available through the appropriate item manager (IM), process the issue. There are times when you may receive a substitute item; these are listed on the AS 001 under the primary item you requested. The substitution many times is a result of

the phasing out of the primary item. There are also cases where you will request an item and, due to non-availability, supply personnel will refer to the interchangeable and substitution (INS) listing and procure an item in place of the primary. These differences are shown on the CA/CRL as substitutes to the primary. Supply personnel use codes on both equipment and parts you request to identify their accountability/reparability. All items appearing on the CA/CRL are accountable items within your organization.

030. Repair cycle

The items we work with every day are parts of aircraft and are either repairable or expendable. They are end-items or a part on an end-item. We have the responsibility to repair items we are authorized to repair and to turn-in items to the recycle process to get the repair. In this lesson, we will cover the repair cycle in detail by covering base level repair cycle, supply codes, key personnel responsibilities, repair cycle management, repair cycle documentation, management action taken code, replacement parts, and management products.

Base level repair cycle

The base-level repair cycle is a revolving process beginning when maintenance orders a repair cycle asset from supply. It continues with base-level maintenance repair actions and ends when a like asset is turned-in through supply. Before we can proceed further in our discussion of the repair cycle process, we need to define the types of assets we're dealing with. Repair cycle assets have an ERRC of depot recoverable (XD) or field repairable (XF). Typically these are supply items whose high procurement costs make them candidates for local or depot repair rather than allowing them to be thrown away and buying new ones. XF assets are repaired or condemned at the local level, while the XD assets may be repaired either locally or at depot. XD assets cannot be condemned locally and must be returned to the depot for condemnation. The repair cycle process establishes control over "XD" assets to make sure they are repaired or returned to depot as quickly as possible.

Supply codes

The supply system uses codes to denote the accountability and reparability of items. Items identified as accountable are normally high cost items or items manufactured in a limited quantity, such as test equipment. Items issued from supply have a supply code assigned to control the use of the item. The ERRC designator identifies the highest level of repair and whether if the item is expendable. As an example, in "XD2" the "X" denotes expendable and the "D" denotes the highest level of repair is depot. The last position is the cost category, which is located from stock lists. Items not procured, stocked, and issued by AFMC have one of the following ERRC designators: XB3, XF3, NF_, OR XD_.

Key personnel responsibilities

There are many people at each base involved in the repair cycle process, beginning with the maintenance technician who identifies the need for a replacement asset. The cycle continues with the supply person in the support section who orders the part and the repair shop personnel who schedules and repairs the asset. Then we have the parts mover responsible for moving the reparable asset between shops and then to supply (the shop service center, repair cycle support unit, or local repair-processing center). There are also supply personnel who process the paperwork to turn-in and warehouse the asset (either in a serviceable location or in awaiting disposition location). Finally, there are the transportation personnel who pack the asset and ship it to the end location. While each of these personnel may believe their part in the process is small, they are essentially charged with the responsibility of maintaining the integrity of the system. Therefore, their part in the cycle becomes very important. Consequently, it is essential for all personnel involved in the management of reparable assets to understand the basics of the repair cycle and know how it affects various procurement and stocking policies.

Repair cycle management

You now know what repair cycle assets are and who plays a part in the repair cycle process, so let's talk about the mechanism used to controls these assets as they flow through the system. When supply personnel issue or backorder a repair cycle asset, they establish a due in from maintenance (DIFM) detail in the base supply computer. This means a requester owes base supply an item in exchange for the item the requester was issued. The DIFM detail is used by both maintenance and supply personnel to keep track of repair cycle assets at base level.

One of the prime responsibilities of asset managers is to keep themselves informed of the status and location of the item being repaired at all times. They do these using DIFM asset management listings. Daily communication between maintenance and supply personnel is essential since supply personnel are responsible for tracking the status and location of each repairable item. Our maintenance personnel are responsible for providing supply personnel with updated information on items in the repair cycle. DIFM status codes tell the asset managers what is happening to an item undergoing repair, while location codes tell them where the asset is physically located. The following list provides you the three categories of repair cycle actions:

1. Items undergoing repair.
2. Items awaiting parts (AWP).
3. Items intentionally not being worked (delayed maintenance).

DIFM status codes in the computer tells you whether the time an item spent in the particular portion of the repair cycle should be counted as repair cycle time, AWP time, or delayed maintenance time. Only status codes reflecting repair cycle time update supply demand level information. Therefore, DIFM status codes accumulating repair cycle times become a very important part of base supply stocking computations. Supply stocking policies rely heavily on repair capabilities to determine how many assets need to be on supply's shelf, or in the pipeline, to sustain a base's operations. As a general rule, supply needs to stock a lesser quantity of those assets repaired in a short period of time, while those assets that take longer to repair require more stock on supply's shelf to keep up with the base's demands. Remember, time spent in delayed maintenance or AWPs does not update demand level information.

Typically, the "broken" asset flows to the repair shop, placed into a holding status, and put on the repair shop schedule. This time in "holding status" is referred to as delayed maintenance time. The repair technician then works on the asset; however, sometimes the repair technician needs to order component parts to repair the asset. The asset is then placed in AWP status; time spent in AWP status does *not* update repair cycle time either.

Once the parts are received, the repair technician can resume repair on the asset, then the asset is turned back into supply. If the asset is turned into supply in serviceable condition (repaired), it is placed back on supply's shelf awaiting the next demand. However, if the repair technician could not repair the asset, not repairable this station (NRTS), then the asset is returned to a repair facility (depot). Those actions are based upon the destination identified by the repairable item movement control system (RIMCS) code. Lastly, if by chance the asset was condemned (XF assets only) then the asset will be shipped to the servicing Defense Reutilization and Marketing Office (DRMO). The overall repair cycle process usually takes between three and six days.

Repair cycle documentation

As the saying goes, the job isn't over until the paperwork is done, such is true of the repair cycle. The documentation accompanying a repairable asset through the repair cycle is *crucial* to the success of the cycle. In fact, the documentation is so important it is considered the repair cycle. Issue procedures, asset flow, and repair shop processing are all part of the repair cycle documentation.

Issue procedures

The repair cycle begins when the maintenance technician discovers a broken part and, subsequently, places a demand on supply for a serviceable replacement. The maintenance technician can make the need for a replacement part known to supply personnel directly or via the unit's ~~material~~ control function. Then the supply or ~~material~~ control clerk will obtain the necessary information to fill out an AF Form 2005, Issue/Turn-In Request, from the technician. Each piece of information entered on the issue request is important to the Enterprise Solution-Supply (ES-S). However, certain entries are especially important when we are talking about the repair cycle because when this information is input into the supply computer, it establishes DIFM details and, therefore, DIFM control. Those key entries are national stock number (NSN), quantity, document number and "Mark For."

The "Mark For" field has two functions. It can be used to identify the piece of equipment the item ordered will be used to fix, or it can be used to tie component parts together when bits and pieces are needed to repair an end item. When the asset ordered is a shop replaceable unit (SRU) to repair a line replaceable unit (LRU), the "Mark For" field will contain the document number for the end-item LRU due-out established in the supply computer. This provides AWP monitors with the necessary information to monitor all assets on order for all end-items.

Asset flow

Once you attempt to request a replacement asset from supply, the base supply computer automatically enters the broken asset into the repair cycle process. In many ways, you can compare the asset flow of a reparable item to what would happen if your laptop was broken. Like the Air Force, if you did not have another laptop readily available, you would attempt to have the broken laptop fixed.

For example, you would find a repair shop to work on your equipment. Then the repair shop would fill out the paperwork identifying you as the owner of the laptop, list the type/serial number of the computer, and what is wrong with the laptop. This is a simplified but basic description of the repair cycle asset flow. The repair cycle asset flow has the following four steps:

1. The broken part is turned in to the support section/~~material~~ control where the appropriate paperwork is filled out.
2. The broken part is then routed to the repair shop to determine what is wrong and what to repair.
3. The repair shop either repairs or declares NRTS or condemns the asset and routes it to the repair cycle support unit/shop service center of supply for turn-in processing.
4. Once turn-in is processed, the asset is returned to supply where it is either put back on the supply shelf to satisfy a future demand, or it is prepared for shipment to an off-base repair activity.

Repair shop processing

Once the maintenance technician initiates action to obtain a replacement item, they normally turn the broken item into the ~~material~~ control function. The personnel in ~~material~~ control will match the unserviceable asset up with copies 3 and 4 of the Department of Defense (DD) Form 1348–1A or DD Form 1348–2, Issue Release/Receipt document. Supply's computer produces this document when the issue request was processed. Maintenance personnel using information on the output DD Form 1348–1A or DD Form 1348–2, fills out an AFTO Form 350, Reparable Item Processing Tag, to provide the repair shop with information concerning the broken item. You can find information on how to fill out an AFTO Form 350 in the 00–20 series TOs.

The AFTO Form 350 and the unserviceable item are then forwarded to the applicable repair shop for processing. RIMCS is assigned to reparable items to tell base supply personnel where the item is to be shipped for repair. RIMCS also designates the shipping priority of the DIFM item.

Maintenance action taken code

Maintenance action taken codes are used by maintenance personnel to record the repair action taken on an item. This information is then fed into the ES-S and IMDS computers to update various management systems. Within supply, the maintenance action taken codes are transcribed from the AFTO Form 350 to the AF Form 2005, Issue/Turn-In Request. It is very important for maintenance to use the correct action taken code because the maintenance action taken code tells the supply computer whether the asset is serviceable, NRTS, or condemned, and whether the demand should be updated.

Replacement parts (bits and pieces)

When maintenance personnel are troubleshooting a reparable item, they may discover that the item needs a few replacement parts; these replacement parts are called bits and pieces. Enter into AWP status the reparable item awaiting these bits and pieces.

When a reparable item needs bits and pieces not in bench stock, the shop places a request on supply using the appropriate UJC. Supply personnel tell the repair shops when items are not on hand and issue those available. The AWP monitor in the repair shop is responsible for making sure all necessary bits and pieces are on order, and they must monitor their supply status. The AWP monitor stores the AWP end item and all bits and pieces as they are received from supply, until all bits and pieces are received. Once all the items are received then, the end item can be scheduled for repair.

AWP monitors have a large responsibility because of the amount of reparable assets normally AWP. However, they receive lots of help in the form of management reports provided by base supply.

Management products

Some management products you have available to you are the daily document register, the priority monitor report, and the awaiting parts validation list. The first item that we will cover is the daily document register (D04).

Daily document register

This D04 provides a means for organizations to review all document numbers processed during the day by the ES-S. This listing is in organization and shop code sequence. The documents are then listed in document number sequence for each activity code and the monetary totals are given for each organization code. Once these actions are completed base supply personnel sends two copies to the organization or shop concerned. It is critical that this register is reviewed daily for all charges, credits, or other transactions affecting your account.

The priority monitor report

The priority monitor report (D18) is a listing that provides data for the current review of the priority and urgency of need designator (UND).

Awaiting parts validation list

The awaiting parts validation list (D19), shows all repair cycle items in AWP status and the status of the bits and pieces on order to fix the repair cycle end-item. The information is used by maintenance to plan and schedule the end-item into repair shops. It is also used by base supply to expedite receipt of bits and pieces needed to repair AWP end-items. We have looked at the repair cycle process, so let’s look at the following scenario and see how it works.

The scenario starts by you working on an aircraft finding a LRU not functioning properly. You remove the LRU and order a replacement from supply. In the order form, you use the “Mark For” block to indicate the aircraft the LRU supports. Next, the LRU arrives from supply and the broken item is turned into the repair cycle process. The broken LRU is then processed for repair. The repair shop takes the LRU and finds that it needs parts to fix it. The repair shop orders the parts against the LRU by placing the document number the flight line maintenance technician used to order the replacement LRU for the aircraft listed in the “Mark For” block of the AF Form 2005. Now, the item

is considered an AWP. The AWP monitor checks the D19 and D04 every day for the status of the parts on order. When the parts are received, the LRU is repaired and turned into supply. Supply then puts the item back in the supply system for the next time it is needed. This is a pretty simple process, but your responsibility is to make sure the items are worked as soon as possible. Delays with turning in items to be fixed, and after they are repaired, causes maintenance backlog. You must make every attempt to get items into the repair cycle as quickly as possible.

031. Supply forms and tags

While supply forms and tags may not be the most interesting topic, it is crucial for you to know. Nothing will ruin your day faster than installing a bad part in an attempt to fix an aircraft. Having an understanding of what tags mean to you will give you the information to avoid duplication of effort. This lesson covers six types of forms you will encounter, let's start by covering the AFTO Form 375.

AFTO Form 375

Submit an AFTO Form 375, Selected Support Equipment Repair Cost Estimate, on support equipment to identify obsolete equipment and the estimated age when it is considered not feasible to repair. Use these procedures to determine maximum one time repair expenditure limit based on age, service life expectancy, and percent of unit replacement cost for Warner Robins ALC Support Equipment. Service life expectancy is not to be misinterpreted as a “drop dead date” for an asset to become unserviceable, but as a management tool for item managers to budget for future equipment procurement. Specific guidance on submitting an AFTO Form 375 can be found in TO 00–25–240, *Uniform Repair/Replacement Criteria for Selected USAF Support Equipment*.

Department of Defense Form 1570-series condition forms

The DD Form 1570-series condition tags and labels provide a means of identifying equipment, as well as the condition and status for each item of equipment. This property can be stored, manufactured, repaired, procured, and accounted for by the USAF through the proper use of this series of forms.

This brings us to some of the general requirements for marking and tagging. You must complete all tags and labels attached to property or containers in detail. An inspector who is authorized to complete the inspection either signs or stamps the tags and labels. This establishes the date of inspection or re-inspection as required for meeting applicable TOs and/or directives affecting the specific item.

Prepare all authorized DD Forms 1574, Serviceable Tag – Materiel and DD Forms 1577, Unserviceable (Condemned) Tag – Materiel, series tags, and labels by imprinting or by mechanical equipment. You can prepare tags and labels manually by using lead pencil, rubber stamp, or non-smear ballpoint pen. Do not use ballpoint pens when tags or labels might be subjected to conditions that may cause the ink to run or become illegible.

Department of Defense Forms 1574 and 1574–1

Use DD Forms 1574 and 1574–1, Serviceable Label – Materiel, (yellow margins and letters) to indicate the identity and serviceable conditions of property received, stored, and issued by the Air Force.

Under military standard transaction reporting and accounting procedures (MILSTRAP), these forms apply to serviceable condition codes “A,” “B,” and “C,” which are used for the following reasons:

- **Code A**—For new, used, repaired, or reconditioned materiel in a serviceable and issuable condition.
- **Code B**—For new, used, repaired, or reconditioned materiel in a serviceable and issuable condition but restricted from issue to specific units, activities, or geographical areas.

Code C—For new, used, repaired, or reconditioned materiel in a serviceable and issuable condition, but it is a Priority Use. Code C is issued before Condition A and B materiel to avoid loss as usable assets.

When serviceable AF property is placed in use or service, remove and destroy the DD Form 1574 or other serviceable parts tag (when attached to the item), unless the applicable TOs or directives state otherwise.

Department of Defense Forms 1577 and 1577–1

DD Forms 1577 and 1577–1, Unserviceable (Condemned) Label–~~Material~~, (red margins and letters) is for material determined, through physical inspection, tear down, or engineering decision to be unserviceable and not reparable economically, although the item may contain serviceable components or assemblies to be reclaimed.

Department of Defense Forms 1577–2 and 1577–3

Use DD Forms 1577–2, Unserviceable (Reparable) Tag–Materiel, and 1577–3, Unserviceable (Reparable) Label–Materiel, (green margins and letters) to tag any unserviceable (repairable) subassembly, assembly unit, group, set, and /or accessory under MILSTRAP condition codes "E," "F," or "G." These condition codes descriptions are identified below:

- **Code E**—For material requiring limited expense or effort to restore to a serviceable condition.
- **Code F**—For material considered economically repairable.
- **Code G**—For material requiring additional parts or components to complete the end item prior to use.

Department of Defense Forms 1348–1A and DD Form 1348–2

The Issue Release/Receipt Document, DD Form 1348–1A (or DD Form 1348–2 with attached shipping label), are prepared by the supply/shipping activity. The DD Form 1348–2 contains all of the same information from the DD Form 1348–1A, but adds mailing information, such as postage, mailing address, return address, and other pertinent data. These documents are used for selecting, packing, shipping, and receiving materiel. They are also used as a receipt transaction and/or the data source for preparation of other documents. The DD Form 1348–1A (or DD Form 1348–2) is for all shipments to DOD customers, including financial management service (FMS) and contractors, from DOD and government services agency (GSA) shipping activities.

The DD Form 1348–1A (or DD Form 1348–2) may be prepared as a release document by the shipping activity (issues from supply system stock) or by the shipping DRMO (DRMS-directed issues from the DRMO). The requisitioner may also use this format when hand carrying requisitions for local issue from the DRMO.

The DD Form 1348–1A (or DD Form 1348–2) may be manually or mechanically prepared and will contain data elements described in DOD 4000.25–1–M. If an automated packing list (APL) is not produced, a copy of the DD Form 1348–1A (or DD Form 1348–2) will be used for this purpose and will be placed inside the packing list envelope and securely attached to the outside of the shipping container. On multiple container shipments, the DD Form 1348–1A (or DD Form 1348–2) will be placed inside a packing list envelope and securely attached to the outside of the No. 1 shipping container.

032. Munitions ~~material~~ handling equipment

Munitions/armament locally manufactured equipment (LME) is specialized equipment designed to interface with or support munitions or armament suspension equipment, such as tools, handling dollies, storage racks, maintenance stands, or transport adapters. LME as the name implies is a locally built type of equipment that either is manufactured by base facilities like the metals

technology/fabrication flight or is contracted to be built by local companies. In all instances, LME is built according to approved drawings using prescribed materials.

Production and approval of a locally manufactured equipment

As you can imagine, the Air Force has strict guidelines for producing and approving LME. You really do not want just anybody coming up with designs for equipment that is going to be used around munitions. This is where the munitions materiel handling equipment (MMHE) focal point comes in. The MMHE focal point located at Eglin AFB, Florida, is an organization comprised of aircraft armament and munitions personnel along with engineers and fabricators, who design, develop, test, approve, and standardize equipment for Air Force use around munitions.

Munitions ~~material~~ handling equipment website

The MMHE focal point maintains a SharePoint site that lists and stores approved designs for LME (https://cs.eis.af.mil/sites/10134/SitePages/Home.aspx). This website is critical to the mission of the MMHE focal point and is a valuable reference to you, the technician in the field. Through this site, you are able to obtain official USAF drawings that will enable you to obtain LME. It can also provide you with a way to obtain instructions to properly use, inspect, or repair existing MMHE focal point designed equipment. Additionally the site allows you to contact MMHE personnel. MMHE personnel can provide expert assistance in interpreting drawings and materials lists. Lastly, the site can also provide lists of off-base manufacturers that have successfully built MMHE focal point designed support equipment in the past.

All munitions/armament LME contained on the MMHE focal point website meets applicable Air Force Occupational Safety and Health (AFOSH), explosive safety, USAF standards, and is approved for local manufacture use at unit level AF-wide. Drawing packages for these items are available to the unit via the MMHE focal point website. Units must use MMHE focal point-designed munitions/armament LME for new equipment procurements if a design exists and fills the unit's requirement.

Munitions/armament LME, not designed to interface with or support munitions, which are not contained in technical data or on the MMHE focal point website, must be approved at the unit level. Units are encouraged to forward any such approved LME for possible inclusion on the MMHE focal point website by sending an approved drawing package to the MAJCOM functional manager for coordination and evaluation. If the MAJCOM functional manager determines the item has additional AF utility, the drawing package shall be forwarded to the MMHE focal point for evaluation and approval prior to formal development and placement onto the MMHE focal point website.

Instructions to properly use, inspect, or repair existing MMHE focal point designed equipment are typically located in TO 35D–1–2–CD–1, *Munitions ~~Material~~ Handling and Support Equipment* (Miscellaneous and Locally Manufactured), or the applicable item TO. The MMHE focal point posts instructions to properly use or inspect specific LME temporarily on their website for newer equipment until a TO change includes the new information.

Maintenance and inspection of locally manufactured equipment

All LME regardless of origin must be maintained and inspected for serviceability on a regular basis in accordance with the appropriate 00-20 series technical data. AFTO 244, Industrial/Support Equipment Record or equivalent, shall be maintained for all LME items (racks, stands, adapters, etc.). Equipment without technical data must as a minimum, be inspected every 180 days for corrosion, physical defect, and lubrication as required.

Self-Test Questions

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

028. Base supply

1. What system is used to finance the purchase of inventory supply holds until they are required for use?

2. When you order and receive a part, where does the money come from to pay supply for the part?

3. What happens to the excess funds at the end of each quarter?

4. What are your bench stock levels based?

5. What is an urgency justification code?

6. What is the expendability, recoverability, reparability category code for special purpose recoverable authorized maintenance assets?

7. What equipment is listed in the -21 TO?

8. When should high risk cannibalizations be performed?

9. Who approves cannibalization authorities?

10. The Defense Logistics Agency aviation supports how many major weapons systems?

11. Other than military and relief support, what other function does Defense Logistics Agency serve?

029. Supply ordering

1. What does an allowance standard authorize?

2. When do equipment items show up on a custody authorization/custody receipt listing?

3. What AF Form can be used to order equipment authorized by an allowance standard?

4. What do supply personnel refer to when an item in unavailable?

030. Repair cycle

1. What is considered the beginning and the end of the repair cycle?

2. What are the two codes used to denote repair cycle assets?

3. What assets cannot be condemned locally?

4. What do supply personnel establish in the base supply computer when a part is issued or on backorder?

5. Who uses the due in from maintenance detail to track repair cycle assets at base level?

6. What is one of the prime responsibilities of asset managers?

7. What are the three categories of repair cycle actions?

8. Does delayed maintenance time update repair cycle time?

9. What happens if the repair technician cannot repair the asset?

10. What control system is used to identify the asset repair destination?

11. What is the repair cycle?

12. What are the key entries on the AF Form 2005?

13. What are the two functions of the “Mark For” block on the AF Form 2005?

14. When are assets automatically entered into the repair cycle?

15. What do supply personnel do with serviceable assets that are turned in to supply?

16. What register provides a means for organizations to review all document numbers processed during the day by the Enterprise Solution-Supply?

17. What does the D18 provide?

18. What is a D19?

031. Supply forms and tags

1. What is the main function of the AFTO Form 375?

2. What does serviceable condition code “A” represent on a DD Form 1574 or 1574–1?

3. What is the main difference between the DD Form 1348–1 and the 1348–2?

032. Munitions ~~material~~ handling equipment

1. What is the primary function of the munitions ~~material~~ handling equipment focal point?

2. How does munitions ~~material~~ handling equipment focal point make drawings available to units requiring LME?

3. What must locally manufactured equipment without technical data be inspected for?

3–2. Deficiency Reporting System

The USAF Deficiency Reporting and Investigating System feeds deficiency data back to those activities responsible for the development and procurement of material for the Air Force and other logistical management functions.

033. Deficiency reporting

Deficiency reporting (DR) allows the responsible agency to initiate action to correct and prevent material design and quality deficiencies. These reports are crucial to the Air Force to identify and correct problems you face in the performance of your duties. This lesson covers the two types of reports, the tracking system, and the screening point responsibility in the DR process.

Type of deficiency reports

The regulation covering product quality DR is TO 00–35D–54, *USAF Deficiency Reporting, Investigation, and Resolution System*. There are two types of DR reports—Category (CAT) I and CAT II. Let's take a look at their definitions and what types of deficiencies they apply to.

CAT I deficiency reporting

A CAT I report of a deficiency includes situations that, if uncorrected, would cause death, severe injury, severe occupational illness to personnel or, if uncorrected, would cause major loss or damage to equipment or a weapons system. The system program director (SPD) or IM determines whether the deficiency is reportable for analysis and tracking.

CAT II deficiency reporting

A CAT II report is used when a "new" supposedly serviceable item fails functional or operational checks after installation. This type of deficiency is used in the following situations listed below:

- When a deficiency is found during installation, functional test, or visual inspection before test.
- When a deficiency is attributable to errors in workmanship, nonconformance to specifications, drawing standards or other technical requirements.
- When a report is required for tracking by agreement of the system manager (SM), IM, and the using command DR point of contact (POC).
- When a deficiency is found during the initial acceptance inspection (critical or major defects only).
- When there is an error in the statements of instruction compromising computer program software used for functional testing/calibration of equipment.

The originator of the DR discovers and identifies the defect, if possible. The originator also verifies whether the NSN is listed in the master nuclear certification list (MNCL). If it is, then a DULL SWORD report may be necessary. Check AFI 91–204, *Safety Investigations and Reports*, to be sure. The DR originator uses a local worksheet to record data prior to entering it in an approved automated reporting system, such as, IMDS or joint deficiency reporting system (JDRS), when drafting the report. Forward draft DRs with supporting data to the screening point. You must forward CAT I reports to the screening point within 24 hours; you must forward CAT II reports within three workdays. When submitting a single report conveying several occurrences of the same deficiency, make sure you include all the required information. If ten aircrafts have experienced the same deficiency, the report must contain information on each occurrence, that is, aircraft serial number, dates discovered, and operating time of unit before failure. Formally submit CAT I DRs within two workdays after discovery of the deficiency and submit CAT II DRs within 13 workdays after discovery of the deficiency.

Joint deficiency reporting system

JDRS provides a common process for DR and resolution management across the supply system. JDRS is a cross-service web-enabled automated tracking system designed to initiate, process, and track deficiency reports from the source through all of the steps of the investigation process. Using this system allows (in most instances) for a paperless reporting process where all documentation is processed and filed immediately. The following are JDRS deficiency reporting capabilities:

- Product quality deficiency reports (PQDR).
- Engineering investigations (EI).
- Material deficiency reports (MDR).
- Acceptance inspection deficiency reports (AIDR).
- Hazardous material reports (HMR).
- Technical publication deficiency reports (TPDR).

The system incorporates a full training regimen online through a computer-based training (CBT) style format. This allows anyone to take training anywhere that they have a common access card (CAC) enabled computer without having to schedule persons for classes locally or at another location.

Screening point responsibilities

The screening point for a DR is normally the quality assurance (QA) section. They certify the validity of the DR and provide details to the originator if the DR is not validated. QA personnel make sure the DR is accurate and DD Form 2332, Product Quality Deficiency Report Exhibit, and DD Form 1575, Suspended Tag-~~Material~~ are properly completed and attached to the exhibit.

Material deficiencies requiring further analysis to determine the cause of the defect need a material deficiency exhibit. These exhibits are items selected to illustrate an unsatisfactory condition. By applying technical and engineering analysis to the exhibit, experts can identify and isolate causes for material failure. Your QA section normally holds an exhibit, pending shipment. They hold the exhibit in a secure, minimum access (preferably locked) area to make sure the exhibit is not altered or lost. For further information, consult TO 00–35D–54 or visit your QA representative for assistance.

034. Report of discrepancy and report of survey

Air Force, Air Force Reserves (AFRES), and Air National Guard (ANG), personnel (including civilian employees, Air Force Reserve technicians, and ANG technicians) are responsible for the proper care and safekeeping of Air Force property regardless of whether or not it is on property records. If for any reason items are missing or damaged, generate the report of discrepancy (ROD) or the report of survey (ROS).

Report of discrepancy

ROD procedures are used for reporting item and packaging discrepancies. AFMAN 23–220, *Reports of Survey for Air Force Property*, provides the basic documents required to support adjustment of property and financial inventory accounting records. The following are examples of reporting items and packaging discrepancies:

- Information as a basis for claims against contractors.
- Notification to shippers.
- Visibility of preservation.
- Packing.
- Marking and unitization discrepancies.
- Required corrective actions.
- Disposition instructions.
- Information for management evaluations.

Shipping type (item) or packaging discrepancies are reported on SF 364, Report of Discrepancy. Normally, the respective section of base supply fills out the form and routes it as required, you are required to give all relevant information. For more information on the form itself and the entries required, consult AFMAN 23–220 or your base supply customer service section.

Shipping type (item) discrepancies

The following is a partial list of shipping discrepancies that are reportable.

1. Shortages or overages valued in excess of $100 per item.
2. Erroneous material, unacceptable substitutes, or duplicate shipments.
3. Condition of item in excess of $100 differs from what is shown on shipping document.
4. Packaging discrepancies.
5. Any unsatisfactory condition resulting from improper packaging.
6. Improper identification of items.
7. Any packaging discrepancy involving hazardous materials.
8. Excessive packaging by contractors resulting in additional costs to the government.

For clarification on the above examples and a complete list of reportable discrepancies, consult AFMAN 23–220 or see your base supply customer service section.

Report of survey

When assets that belong to the Air Force are missing, damaged, or destroyed, a ROS is generally initiated if the items are of monetarily valuable, sensitive, dangerous, the loss involves gross negligence, willful misconduct, or deliberate unauthorized use. The four main purposes ROS serves are provided in the following list:

1. Research and investigate the cause of loss, damage, or destruction of property and determine if it was attributable to an individual's negligence or abuse.
2. Assess monetary liability against individuals who have lost, damaged, or destroyed government property or relieve them from liability if there is no evidence of negligence, willful misconduct, or deliberate unauthorized use of the property.
3. Provide documentation that can be used to support the adjustment of accountable records.
4. Provide commanders with case histories that enable them to take corrective action to prevent recurrence of the incident.

Commanders must decide if a case warrants taking disciplinary action under the uniform code of military justice (UCMJ). This is a separate action and is not related to the assessment or non-assessment of financial liability. Commanders also are encouraged to use administrative actions when assessment of financial liability by ROS is not practical or desirable. These measures could include counseling, oral or written reprimands, appropriate remarks in performance evaluations, service to the installation or the community, or possibly non-judicial punishment under Article 15 of the UCMJ.

035. Technical orders changes

The sheer volume of information contained in TOs virtually guarantees that some information needs correction and/or updating. This lesson will familiarize you with the procedures and the usage of the AFTO Form 22 when making technical data correction. Let's start this lesson off by discussing the usage of an AFTO Form 22.

Air Force Technical Order Form 22 usage

The AFTO Form 22, Technical Manual Change Recommendation and Reply, is used for recommending improvements in formal TOs and those preliminary technical orders (PTO) authorized for operational use. You may submit an AFTO Form, 22 for a specific TO improvement, correction of an error, or correction of an omission of a technical nature. When you submit the report for an

omission, the omission must prevent performance of a function required for mission completion. If it merely points out a word omission or typographical error, the AFTO Form 22 will not be approved.

Each AFTO Form 22 is reviewed individually by the appropriate technical order management agency (TOMA). Since each one is reviewed separately, submit a separate AFTO Form 22 for each improvement request. ~~All weapons loading AFTO Form 22 submissions are routed through weapons standardization section.~~

Air Force Technical Order Form 22 report types

Any person discovering a condition requiring a change to a TO will submit an AFTO Form 22. The urgency of the change must be reviewed and appropriately assigned. The AFTO Form 22 degree of urgency falls into one of three categories—emergency, urgent, and routine.

Emergency action reports

Emergency action reports require immediate action on a TO deficiency. The deficiency, if not corrected, would result in death or serious injury to personnel, extensive damage or destruction of equipment or property or inability to achieve or maintain operational posture (mission essential). Emergency reports must be initiated and submitted immediately after the condition is discovered.

Urgent action reports

Urgent action type reports require action on a TO deficiency that could cause one or more of the following if it is not corrected (e.g., personnel injury, damage to equipment or property, reduced operational efficiency, or jeopardize the safety or success of mission completion). All TCTO deficiencies are submitted as urgent action reports. Urgent reports are submitted on an expedient basis.

Routine action reports

Routine action reports require action on TO deficiencies not falling into either emergency or urgent action category. Routine reports are submitted as soon as practicable.

Review of Air Force Technical Order Form 22

Your supervisor must review all AFTO Form 22s before you submit them to QA for review and transmittal. The main reason for supervisory review is to check for completeness and accuracy of the form. This ensures the affected TOs basic date is accurate, the change is essential, there is an adequate explanation, and specific references are cited, if required. Next, let's cover the form entry descriptions and follow-up process once submitted.

Form entries descriptions

Filling out the form is easy, because most of the blocks are self-explanatory. The main blocks that require entries on the form are the TO number, basic TO date, affected page change number and date, and your improvement suggestion. Your suggestion should be as concise as possible and identify your aerospace systems by MDS. You should identify equipment systems by type, model, and series (TMS) as well as your individual pieces of equipment or parts by NSN or part number (PN).

Furthermore, describe the deficiency fully, the reason for the change, and the improvement recommended. If you are writing a new step for a TO, then word it as close as possible to exactly what should appear in the corrected TO. If you do not know the wording or the deficiency requiring engineering research, state this on your improvement report. A simple statement of the type of correction required is fine. Fill out the rest of the form as required. If you have any problems or questions, contact your representative in QA or refer to TO 00–5–1.

Follow-up action

Do not attempt follow-up action right away, you should allow time for transmittal, evaluation, and the processing of the improvement report. You should also take follow-up action if you do not receive a

reply at the end of 60 hours for an emergency report, 60 days for an urgent action report, and 90 days for a routine action report. All of these time guides are measured from the date/time the improvement form was submitted.

Self-Test Questions

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

033. Deficiency reporting

1. What are the ~~three~~ types of deficiency reporting?

2. What form does the originator of the deficiency reporting use?

3. When should you forward CAT I reports to the screening point? CAT II reports?

4. How long do you have to formally submit CAT I reports? CAT II reports?

5. How is training on the joint deficiency reporting system conducted?

6. Who is normally the screening point for deficiency reportings?

034. Report of discrepancy and report of survey

1. What form is used to report packaging discrepancies?

2. A report of survey is generally initiated if what conditions are present?

3. What actions are commanders encouraged to use when assessing financial liability is not practical?

035. Technical orders changes

1. What are the three degrees of urgency for an AFTO Form 22?

2. What degree of urgency is used for all time compliance technical orders?

3. Who reviews your AFTO Form 22 before submittal?

4. How soon can you take follow-up action after submitting a routine AFTO Form 22?

3–3. Munitions Management

The munitions management process is a vast system used to track, account, forecast, and control all munitions items in the Air Force. Within this section we are not going to cover all the processes within this system, but we will cover the portions that you may encounter at your workcenters.

036. Munitions forecasting process

For budgeting purposes, the Air Force needs to have an estimate of how much it is going to be spending on munitions during a given year. This process is known as "munitions forecasting."

Munitions forecasting

To obtain munitions, units must submit a munitions forecast through the wing munitions accountability supply officer (MASO) to their MAJCOM. Each MAJCOM collects all munitions forecasts from their units, compiles and validates those requirements, and forwards a combined forecast to the USAF Ammunition Control Point. At this point an allocation derived from the forecast is returned to the MAJCOMs and each affected unit. The allocation is the authorization for the munitions or training munitions item(s). The annual munitions forecast is the primary means of requesting and allocating munitions required for training and operational needs. As this is one of the most important reports submitted, accuracy and validity are absolute musts. Forecasted requirements are based on governing Air Force directives indicated in ~~Air Force Catalog (AFCAT) 21–209 Volume 1, *Ground Munitions*, UCML.~~ Poor forecasting and overstating requirements are primary causes for munitions shortages. It is very necessary that you forecast accurate requirements because Headquarters Air Force (HAF) must justify requirements to support production, procurement, and budget submission to Congress. Proper submission of an organization's forecast cannot be overemphasized; the end result affects the entire Air Force.

Forecasting munitions requirements

Each year MAJCOMs must prepare the air munitions forecast with projections for the next five years. Each MAJCOM sends their consolidated requirements to the USAF Armament Control Point at Ogden Air Logistics ~~Center~~ (OO-ALC) not later than 1 February every year. OO-ALC provides procedures to the MAJCOMs who, in turn, provide specific procedures to base-level units during the forecasting cycle. Once they are received by the MASO, the procedures are submitted to the using organization for their forecasting inputs. Units possessing a unit committed munitions list (UCML) uses this list to forecast for inert or dummy non-nuclear munitions for load crew training, explosive ordnance disposal (EOD), and munitions maintenance training. All items are forecasted by the units using the NSN or the munitions complete round code (CRC). When asked for their input users within each unit are not required to forecast for the following munitions items:

- Nuclear weapons or nuclear material.
- Air intercept missiles or subcomponents.
- Major category "G" WRM non-nuclear consumables annual analysis (NCAA) munitions.
- Munitions items without a master subsidiary relationship code (MSRC).

Munitions forecasts are based on a fiscal year and the forecasted requirements are not carried over from year to year. Requirements for each year must stand alone, be justified, and be validated by the user.

As we stated earlier, requirements are not carried over; the munitions you have this fiscal year will not be authorized for use next year unless they are forecasted properly. For example, the inert munitions in the load barn used for training load crews today have to be included in next year's forecast. Otherwise they have to be turned in at the end of the year.

Poor munitions forecasting may result in insufficient types or quantities of munitions required for load or aircrew training. Units may submit an out-of-cycle request for munitions; however, there is no guarantee the required munitions will be available for distribution.

037. Munitions management

Because of the special hazards that munitions present, special care must be taken in their management. In this lesson, we'll cover the combat ammunition system (CAS), munitions accountability and reconciliation procedures, and items of special interest reporting.

Combat ammunition system

Everyone technician knows there is an obvious need for accurate accounting for munitions. If munitions accountability procedures within your unit are sloppy, there will be a breakdown in the system that will delay or prevent the timely delivery of munitions, which causes a breakdown in operations. The combat ammunition system is the standard accounting method used for tracking ammunition, air munitions, explosives, expendable countermeasures, decoys, and expenditures. This lesson is intended to give you the basic facts and principles of the CAS system to prepare you for further training, which will actually teach you how to interact with the CAS system.

Definition and objective

CAS is a computer database with which units maintain accountability of munitions assets and provides "real-time visibility" to higher headquarters. The objective of CAS is to improve Air Force combat capabilities and logistics by providing effective munitions management, accountability, and fiscal control at each level of combat execution from the unit through the Joint Chiefs of Staff. CAS provides rapid data communication between the base and higher headquarters. This ensures all levels of management are informed of stockpile; requirements and readiness capabilities.

Permissions and usability

CAS is remotely accessed by users using any CAC-enabled networked computer through the portal, similar to IMDS. Users will have to be granted access by an administrator after they have completed the proper training in order to use CAS. Once granted access users will be allowed to access only the parts of the system that they are required to perform their duties.

Your accuracy cannot be stressed enough when you use CAS. CAS is a highly visible real-time accounting system, which means any mistake you may make entering your data is real-time and can be viewed by everyone in the system. It is vital that only the options provided by CAS are used and not those provided by the browser. If browser tools like the back button are used, they can result in duplicate entries or other mistakes in accounting that can have far reaching effects. The following table identifies core terms each user should be familiar with within the CAS system.

CAS Core Terms	
Term	**Definition**
Container	A container is anything that holds or transports munitions or other containers that are holding or transporting munitions. For example a magazine for chaff or flare is a container. This container is then loaded in an aircraft, which is another container that the magazine container is loaded into. These chains of container-

CAS Core Terms	
Term	**Definition**
	in-container can get quite long when such things as pylons, alternate mission equipment, and dispensers get involved.
Structure	A structure is a facility or location that serves as a holding or staging area for munitions or containers. For example a trailer (a container) carrying 6 MK-82s is moved from a holding pad in the munitions storage area (a structure) to your aircraft maintenance unit (AMU) (a structure) for loading on one of your aircraft (a container).
Weapons stock number (WSN)	When dealing with the WSN it is best to think of it in the same manner as a NSN. It is a number made up of three smaller numbers; the CRC; the Julian date of the build, and the batch number.
Expenditure	During aircraft operations, either in training or real world environments munitions are expended to complete the mission. Once the aircraft returns, the expeditor needs to enter into CAS exactly what was used during that mission. This is done by creating an expenditure action. As the expenditure is completed the WSN will update CAS as to exactly what components were expended in the course of completing the mission. The timely and accurate completion of expenditure actions allows CAS to reflect current stock levels of munitions items at any given location in as close to real-time numbers as is possible.

Weapon stock number description

The *first* five numbers of the weapon stock number (WSN) is the CRC. The CRC designates a complete munitions item in the system. While as a weapons troop you may think of a MK–82 as a single piece of hardware, but it is actually a conglomeration of individual parts. CAS is constructed to account for all of the parts individually. To CAS a MK–82 is not a bomb; it is a warhead, fuse(s), arming wire, ferrules, adapter boosters, arming loops, beryllium clips, and tail kit all at the same time. Just as if a recipe provides a cook all of the ingredients and their specific amounts to make a cake, a CRC provides ammo with a list of the components and their amounts for a particular munitions item. Using the CRC allows you to tell the system that you loaded or expended all of the components simultaneously by using a single small number to cover all components instead of a long list of individual items.

The *next* five numbers are the Julian date that the build was entered into CAS. This signifies the date when these complete munitions items entered the inventory as completely assembled entities as opposed to piles of individual parts.

The *last* three numbers are the batch code. The batch is the CAS version of a lot number. During the bomb build where ammo personnel are actually assembling weapons, they construct the munitions according to the CRC. While they are constructing the weapon, some of the components will have individual lot numbers assigned to them that need to be entered into the system to account for them properly. All items in a particular build that contain identical lot numbers component are issued the same batch number. If any of the individual component lot numbers changes during a build, then a different batch number is assigned because the lot number of individual components has changed.

Once the weapon is completed, it is assigned a WSN by CAS that contains all of the accounting information required for issue of munitions items to the units that will actually use them. A few helpful operational features that CAS provides us are listed in the following table.

CAS Operational Features	
Feature	**Description**
Inquiries	CAS helps us to find and view information on your computer screen quickly. There are many different reasons to inquire about something in CAS. The most common reason to locate a specific item in CAS is to find out where the item is physically stored. You can inquire just about anything you want to, from complete round code, war reserve materiel, mobility, custody account, or even transportation information.

CAS Operational Features	
Feature	**Description**
Reports scheduler	There are a number of reports that must be run to effectively manage our stockpile. But before we can print or view a report, it must be scheduled first. This allows CAS to look into its database and compile the required information so that it can be viewed later on.
Reports print	Once you have scheduled a report through the reports scheduler option you can now view and print the information. After you select the reports print option, you can choose any number of reports to view, save to disk/file, or even print. You can choose to look at only the reports that you have scheduled or all reports scheduled by everyone.
Help screens	If you ever encounter a problem or even a task that you are not quite sure what to do, CAS has built in HELP SCREENS. There are help screens for every possible situation and CAS will even give you your input options and sometimes even definitions for specific codes. If you are curious about what a particular program in CAS can do, all you have to do is click the help button and you will receive a detailed explanation.

No matter what section you are working, there will someday come a time when you will have to access CAS. Whether you use it to update a movement, process expenditures, inquire about the location of a certain munitions item, or even just gathering information for those that are directly interfacing with the system. You can have the peace of mind to know that CAS is a user-friendly system. Your familiarity and ability to update and locate information in CAS will make you a valuable member of your organization.

Munitions accountability and reconciliation procedures

CAS is a powerful tool in the tracking and accounting of munitions; however, it does not replace the physical process of physically accounting munitions. Once a report is generated by CAS that lists the day's expenditures and munitions left on hand, an ammo representative will still perform a line inventory. This line inventory is done to assess the numbers and types of munitions left in the possession of the unit. As long as this physical verification is found to be accurate, the ordering and acquisition processes can take place to get you what you need from ammo for the next missions. If this step is not successfully completed, then research will have to be performed in conjunction with ammo personnel. This research is accomplished to determine which assets are not properly accounted for and what corrective actions need to be taken to reestablish proper accountability. Obviously, research and reconciliation of faulty accounts takes time that is why your part in the process is critical. You must make sure munitions expenditures are correctly recorded and reported in a timely manner. This is a very critical process because it affects your wartime and contingency planning. Improper or untimely reporting of expenditures will negatively impact your day-to-day and contingency mission.

Munitions accountability results

If at the end of the recon process you are in possession of excess munitions, they must be turned in. Generally, all munitions turn-ins must be accomplished prior to any deliveries, so it is critical that this be done in an expedient manner. The number one avoidable reason for delay in munitions being picked up is due to improperly configured munitions trailers. It is therefore imperative that munitions trailers be configured properly for transport. TO 11–1–38 provides the guidelines to proper munitions trailer configuration. Knowing and following the procedures in TO 11–1–38 will allow for the most expeditious pick-up of munitions.

Munitions requisition process

Any munitions required for continuing operations will be requested after successful completion of reconciliation of munitions expenditures. Orders are placed through munitions control. Munitions control de-conflicts the delivery request times of all supported units and establishes a delivery time

with the expediter. On occasions, the expediter and munitions control may have a different opinion on when an item is needed. Munitions control personnel are not experts on what it takes to get combat aircraft prepared for flight; they do however, have access to a much larger picture of munitions movements on the base level than the weapons expediter. Diplomacy and flexibility are the preferred methods of resolving these conflicts, but in the end munitions is a support agency for flightline operations. Expediters can make use of an enormous amount of leverage to achieve their goals. This is not to say that arm twisting to get your way is always appropriate, if used too often it will lead to reduced cooperation and substandard support in the future.

Items of special interest reporting

Items of special interest report provides each headquarters, command, supporting agency, and base a means to manually report inventory and consumption data on special interest logistics items when they cannot use automated systems. This report is for short-term contingencies, emergencies, or exercises. Use the combat supplies management system (CSMS) for long-term reporting. MAJCOMs and NAFs may implement this report to support a contingency or exercise. When used you should notify HQ USAF upon implementation. When you transmit your reports use the Automatic Digital Network (AUTODIN) or Defense Switched Network (DSN). The report format, with base and item designator and corresponding columns, permits non-secure telephone communications as a last resort. So if this type of communication is chosen ensure that you do not refer to bases or items by name.

Self-Test Questions

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

036. Munitions forecasting process

1. What is the primary means of requesting and allocating munitions?

2. Who must justify requirements to support production, procurement, and budget for munitions?

3. What two codes are used to forecast all munitions?

4. Users do not forecast what type of munitions?

5. Is it necessary to forecast munitions you already own? Why?

037. Munitions management

1. How is CAS accessed?

2. How is a container defined in CAS?

3. What is represented by the last three numbers of the WSN?

4. What action must you perform before you are able to print a report in CAS?

5. What is the #1 avoidable reason for delays in munitions pick-up?

6. Who is the focal point for the daily reconciliation of munitions expenditures?

7. What is used for long-term reporting on items of special interest?

Answers to Self-Test Questions

028

1. Stock fund.
2. Your squadron's O&M funds.
3. It is carried forward.
4. Consumption and stock levels over a period of time.
5. A priority designator that reflects the actual need for a supply item.
6. XD.
7. All items authorized to an aircraft or missile MDS.
8. Aircraft are involved or lack of ready equipment will impede mission accomplishment.
9. Approved by MXG/CC or equivalent.
10. 2,250.
11. Victims of natural disasters and humanitarian aid to those in need.

029

1. An Air Force organization's equipment.
2. After they are issued to the unit.
3. AF IMT 601.
4. The INS.

030

1. Begins when maintenance orders a part; ends when a like asset is turned into supply.
2. (1) XD.
   (2) XF.
3. XD.
4. DIFM detail.
5. Both maintenance and supply personnel.
6. To keep informed of the status and location of items being repaired.
7. (1) Items undergoing repair.

(2) Items awaiting parts.
(3) Items intentionally not being worked (delayed maintenance).

8. No.
9. The asset is turned into depot.
10. RIMCS.
11. Documentation.
12. (1) NSN.
(2) Quantity.
(3) Document Number.
(4) Mark For blocks.
13. (1) To identify the piece of equipment the part will be used to fix.
(2) To tie component parts together.
14. Once maintenance personnel request a replacement asset from supply.
15. Put back on the shelf for reissue.
16. DO4.
17. Data for current review of priority and UND.
18. Awaiting parts validation list.

031

1. To identify obsolete equipment and the estimated age when, because of wear and tear, it is considered not feasible to repair.
2. Code A is for new, used, repaired, or reconditioned materiel in a serviceable and issuable condition.
3. The DD Form 1348–2 has an attached shipping label.

032

1. They design, develop, test, approve, and standardize equipment for Air Force use around munitions.
2. Through the MMHE focal point website.
3. Corrosion, physical defect, and lubrication as required.

033

1. (1) CAT I.
~~(2) CAT I (Mishap).~~
~~(3)~~ CAT II.
2. A local worksheet to enter data prior to entering it in an approved automated reporting system.
3. Within 24 hours; within three workdays.
4. Within two workdays; within 13 workdays.
5. In a CBT style format on a CAC-enabled computer.
6. QA.

034

1. SF 364.
2. If the items are monetarily valuable, sensitive, dangerous, or the loss involves gross negligence, willful misconduct, or deliberate unauthorized use.
3. Administrative actions such as counseling, oral or written reprimands, appropriate remarks in performance evaluations, service to the installation or the community, or possibly non-judicial punishment under Article 15 of the UCMJ.

035

1. (1) Emergency.
(2) Urgent.

(3) Routine.

2. Urgent.
3. Your supervisor.
4. 90 days.

036

1. Munitions forecast.
2. HQ USAF.
3. (1) NSN.
   (2) CRC.
4. Nuclear weapons or nuclear material; AIM or subcomponents; major category G WRM NCAA munitions; and munitions items without a MSRC.
5. Yes. Because munitions on hand have to be turned in at the end of the year.

037

1. Remotely, using any CAC-enabled networked computer through the portal.
2. A container is anything that holds or transports munitions or other containers that are holding or transporting munitions.
3. The batch code.
4. The report must be scheduled first.
5. Misconfigured trailers.
6. Munitions control.
7. The CSMS.

Complete 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).

69. (028) When are stock funds in your unit's budget replenished?
    a. Weekly.
    b. Monthly.
    c. Quarterly.
    d. Annually.

70. (028) The one sure way you can undermine the supply system is by
    a. integrating supply into the maintenance activity.
    b. using the wrong priority when ordering parts.
    c. waiting for parts on order.
    d. creating an excess stock.

71. (028) Stock levels for bench stock are based on
    a. time compliance technical orders (TCTO).
    b. consumption level.
    c. base supply level.
    d. availability.

72. (028) Which action does supply accomplish when a bench stock part usage is *low* for a long period of time?
    a. Reclaim the part.
    b. Initiate a user justification letter.
    c. Initiate a customer usage survey.
    d. Identify the part as an candidate for deletion.

73. (028) Which organizational level is required to fund special purpose recoverable authorized maintenance (SPRAM) assets?
    a. Unit.
    b. Wing.
    c. Depot.
    d. Major command (MAJCOM).

74. (028) Which series technical order (TO) lists *all* assets authorized to an aircraft?
    a. –6.
    b. –06M.
    c. –21.
    d. –33.

75. (028) Who identifies items that are managed and controlled as equipment?
    a. The user.
    b. Defense Logistics Agency (DLA).
    c. Quality assurance (QA) personnel and wing commander.
    d. Major command (MAJCOM) and Air Force Materiel Command (AFMC).

76. (028) Who may approve a cannibalization of a part before the initiation of the cannibalization documentation?
    a. Production superintendent.
    b. Logistics readiness squadron.
    c. Maintenance group Commander.
    d. Cannibalization authority.

77. (028) The specific documentation procedures for cannibalization can be found in technical reference
    a. 21–101.
    b. 91–201.
    c. 00–5 series.
    d. 00–20 series.

78. (028) Which organization provides the Army, Navy, Air Force, Marines, combined and allied forces with the full range of logistic, acquisition and technical services?
    a. Defense Supply Center (DSC).
    b. Defense Logistics Agency (DLA).
    c. Defense Distribution Center (DDC).
    d. Defense Contract Management Command (DCMC).

79. (029) Identify what within the supply ordering system describes the items and quantities of equipment required to perform the missions and duties of our organizations and individual specialists.
    a. War reserves materials.
    b. Standardized work packages.
    c. Equipment custody accounts.
    d. Equipment allowance standards.

80. (029) Identify the official document within the supply ordering system that list accountable items used in an organization.
    a. Budget request.
    b. Allowance standard (AS).
    c. Custody Authorization/Custody Receipt Listing (CA/CRL).
    d. Department of Defense (DD) Form 1348–1.

81. (030) Which type of repair cycle item *must* you return to depot for condemnation?
    a. Field repairable (XF).
    b. Expendable user (XB).
    c. Depot recoverable (XD).
    d. Nonexpendable intermediate (NF).

82. (030) A broken asset is entered into the repair cycle process when you
    a. turn it in to the repair shop.
    b. receive a replacement part.
    c. fill out the paperwork.
    d. order a replacement.

83. (030) Which system is assigned to repairable items in the repair cycle in order to tell base supply where to ship a repairable item?
    a. Due-in from maintenance (DIFM).
    b. Not repairable this station (NRTS).
    c. Repair item movement control system (RIMCS).
    d. Expendability, recoverability, reparability category (ERRC).

84. (030) It is *important* to use the correct maintenance action taken code to
    a. account for your time properly.
    b. track all maintenance costs for each malfunction reported through supply.
    c. tell the supply computer if the part is serviceable, not repairable this station (NRTS), or condemned.
    d. tell Integrated Maintenance Data System (IMDS) what parts had to be replaced for the specific malfunction.

85. (030) Which document provides a means for organizations to review *all* document numbers processed during the day by the Enterprise Solution-Supply (ES-S)?
    a. Priority monitor report.
    b. Daily document register.
    c. Urgency of need designator.
    d. Awaiting parts validation list.

86. (031) Which form should you submit on support equipment to identify *obsolete* equipment and the estimated age when, because of wear and tear, it is considered not feasible to repair?
    a. AFTO Form 22.
    b. AFTO Form 95.
    c. AFTO Form 245.
    d. AFTO Form 375.

87. (031) The action you should take when preparing maintenance tags or labels that might be subjected to conditions that may cause the ink to run or become illegible is
    a. use the ruggedized version of the form.
    b. use something other than a ballpoint pen.
    c. protect tags with plastic bags or laminating paper.
    d. protect tags with self-adhesive plastic invoice protecting sleeve.

88. (031) Which type of information is added to the DD Form 1348–1A, Issue Release/Receipt Document to create the DD Form 1348–2?
    a. Mailing information.
    b. Fund allocation.
    c. Fund sourcing.
    d. Fund account.

89. (032) Who designs, develops, tests, approves, and standardizes equipment for Air Force use around munitions?
    a. Quality assurance (QA).
    b. Munitions materiel handling equipment (MMHE) focal point.
    c. Ogden Air Logistics ~~Center~~ (OO-ALC).
    d. USAF Armament Control Point.

90. (032) The form used to document serviceability inspections of locally manufactured equipment (LME) is
    a. DD Form 1577–2.
    b. AFTO Form 350.
    c. AFTO Form 244.
    d. DD Form 1574.

91. (033) The types of deficiency reports (DR) in the deficiency reporting system are
    a. Category (CAT) I and CAT II.
    b. major, intermediate, and minor.
    c. preliminary, interim, and final.
    d. Class A, Class B, and Class C.

92. (034) Which shipping condition would require a report of discrepancy (ROD)?
    a. Shipping shortages valued under $75.
    b. Suitable substitute items are received.
    c. Wrong parts were ordered to complete an urgent job.
    d. Condition of item in excess of $100 differs from what is shown on shipping document.

93. (035) Identify what will happen if you submit an Air Force Technical Order (AFTO) Form 22, Technical Manual Change Recommendation and Reply for a typographical error.
    a. It will be approved.
    b. It will not be approved.
    c. The change will be made in the next revision.
    d. The change will be made in the next change supplement.

94. (035) For an *emergency* report, how many *hours* should you wait before you complete a follow-up action for changes to a technical order (TO)?
    a. 6.
    b. 12.
    c. 30.
    d. 60.

95. (035) If your Air Force Technical Order (AFTO) Form 22, Technical Manual Change Recommendation and Reply requires engineering support and you do not know the wording or the deficiency requiring engineering research, what *must* you do?
    a. State it on your report.
    b. Report the requirement to quality assurance (QA).
    c. Submit a formal request through your contracting office.
    d. You cannot submit an AFTO Form 22 that requires engineering support.

96. (036) When forecasting munitions, who does the unit submit a munitions forecast through to get it to the major command (MAJCOM) level?
    a. Supply account custodian.
    b. Quality assurance (QA) personnel.
    c. Munitions' squadron commander.
    d. Munitions accountability supply officer.

97. (036) How are munition items on hand dealt with when forecasting for next year's munitions?
    a. Forecast for every munitions you have if you will need it next year.
    b. Ignore them because you already have possession of them.
    c. Only forecast for the munitions you have in storage.
    d. Forecast for expended

98. (037) The database that gives higher headquarters "*real-time*" visibility of munitions accountability is the
    a. Enterprise Solution-Supply (ES-S).
    b. Combat ammunition system (CAS).
    c. Integrated Maintenance Data System (IMDS).
    d. Core Automated Maintenance System (CAMS).

99. (037) The *number one* avoidable reason for delays in excess munitions being picked up is
    a. conflicting unit flying schedules.
    b. malfunctioning ammo equipment.
    c. improperly configured munitions trailers.
    d. poor turnover/communication between shift expediters.

100. (037) Which regulatory guidance is used to properly configure and secure munitions trailers for towing?
    a. Appropriate munitions loading checklist.
    b. Aircraft specific 33–1–2 series TO.
    c. TO 11–1–38.
    d. TO 13A–1–18.

Student Notes

Glossary of Abbreviations and Acronyms

ADR	aircraft document review
AETC	Air Education and Training Command
AEF	Air Expeditionary Force
~~**AFCAT**~~	~~Air Force catalog~~
AFCDA	Air Force Career Development Academy
AFEMS	Air Force equipment management system
AFGE	American Federation of Government Employees
AFI	Air Force instruction
AFMAN	Air Force manual
AFMC	Air Force ~~Material~~ Command
AFOSH	Air Force Occupational Safety and Health
AFPD	Air Force Policy Directive
AFR	Air Force Reserve
AFRES	Air Force Reserves
AFSC	Air Force specialty code
AFTO	Air Force technical order
AGE	aerospace ground equipment
AIDR	acceptance inspection deficiency report
AIM	air intercept missile
AIR	Air Inflatable Retarders
AME	alternate mission equipment
AMU	aircraft maintenance unit
ANG	Air National Guard
ANGRC	Air National Guard Readiness Center
ANGUS	Air National Guard of the United States
APL	automated packing list
ART	Air Expeditionary Force Reporting Tool
AS	allowance standard
ASC	allowance source code
ATO	air tasking order
AUTODIN	Automatic Digital Network
AWP	awaiting parts
BCE	base civil engineer
BIT	built-in-test
BSP	base support plan

CA	cannibalization authorities
CA/CRL	custody authorization/custody receipt listing
CAC	common access card
CAF	combat air force
CAMS	Core Automated Maintenance System
CANN	cannibalization
CAS	combat ammunition system
CAT	category
CBT	computer-based training
CDC	career development course
CE	course examination
CFETP	career field education and training plan
CIRF	certified intermediate repair facility
CPR	cardiopulmonary resuscitation
CRC	complete round code
CSMS	combat supply management system
CSO	concurrent servicing operation
CSS	concurrent servicing supervisor
DD	Department of Defense form
DDESB	Department of Defense explosive safety board
Demil	demilitarization
DIFM	due in from maintenance
DIT	data integrity team
DLA	Defense Logistics Agency
DLO	dual loading operation
DOC	designed operational capability
DoD	Department of Defense
DR	deficiency reporting
DRMO	Defense Reutilization and Marketing Office
DRRS	Defense Readiness Reporting System
DSN	Defense Switched Network
EAID	equipment authorized inventory data
EI	engineering investigation
EMS	equipment management section
EOD	explosive ordinance disposal
EOR	end-of-runway
EPA	Electrostatic protective work area
EPR	Enlisted Performance Report

ERRC	expendability, recoverability, reparability category
ES	exposed site
ESD	electrostatic sensitive device
ESP	explosive site plan
ES-S	Enterprise Solution-Supply
FEQ	Field Evaluation Questionnaire
FSC	Federal stock class
FMS	financial management system
FD	fault detection
FI	fault isolation
GAO	Government Accounting Office
GCSS-AF	Global Combat Support System
GSA	government services agency
HAF	Headquarters Air Force
HAP	high accident potential
HLD	Home Land Defense
HMR	hazardous material report
HQ USAF	Headquarters United States Air Force
IAW	in accordance with
IM	item manager
IMA	individual mobilization augmentee
IMDS	~~Integrated Data Management System~~
IMT	information management tool
INS	interchangeable and substitution
IPI	in-process inspection
ITO	initial tasking order
ITP	individual training plan
JCS	Joint ~~Chief~~ of Staff
JDRS	joint deficiency reporting system
JCN	job control number
JST	job safety training
JSTO	job safety training outline
LIMFAC	limiting factor
LME	locally manufactured equipment
LOLA	live ordinance loading areas
LRS	logistic readiness squadron
LRU	line replaceable unit
MAJCOM	major command

MASO	munitions accountability supply officer
MCE	maximum credible event
MCU	munition control unit
MDR	material deficiency report
MDS	mission design series
MESL	minimum essential subsystem listing
MFG	munitions family group
MILSTRAP	military standard transaction reporting and accounting procedures
MLA	master labor agreement
MIL-STD	military standard
MIS	maintenance information system
MMHE	munitions ~~material~~ handling equipment
MNCL	master nuclear certification list
MOC	maintenance operations center
MOF	Maintenance operations flight
MOS	maintenance operations squadron
MSRC	master subsidiary relationship code
MTL	master task list
MTP	master training plan
MXG	maintenance group
NATO	North Atlantic Treaty Organization
NCAA	non-nuclear consumables annual analysis
NCOIC	non-commissioned officer in charge
NDI	nondestructive inspection
NEW	net explosive weight
NF	nonexpendable intermediate
NF/ND	nonexpendable intermediate/nonexpendable depot
NGB	National Guard Bureau
NRTS	not repairable this station
NSN	national stock number
O&M	operation and maintenance
OJT	On-the-job training
OO-ALC	Ogden Air Logistics ~~Center~~
OPLAN	operation plan
OPR	office of primary responsibility
OSHA	Occupational Safety and Health Administration
PCS	permanent change of station
PDM	programmed depot maintenance

PES	potential explosion site
PMA	portable maintenance aid
PN	part number
POC	point of contact
PPE	personal protective equipment
PQDR	product quality deficiency report
psi	per square inch
PTO	preliminary technical orders
QA	quality assurance
Q-D	quantity distance
RAC	risk assessment codes
REMIS	reliability and maintainability information system
RIMCS	repairable item movement control system
RM	risk management
ROD	report of discrepancy
ROS	report of survey
RSP	readiness spares package
SCL	standard conventional load
SDS	saftey data sheet
SGO	sortie generation operation
SIB	safety investigation board
SM	system manager
SNCO	senior non-commissioned officer
SPD	system program director
SPM	system program manager
SPRAM	special purpose recoverable authorized maintenance
SRU	shop replaceable unit
STAMP	standard air munitions packages
STRAPP	standard tanks, racks, adaptors, and pylons package
STS	specialty training standard
TAMP	tactical air missile program
TBA	training business area
TCTO	time compliance technical order
TER	triple ejector rack
TMDE	test, measurement and diagnostic equipment
TMS	type, model, series
TNB	Tail number bin
TO	technical order

TOMA	technical order management agency
TPDR	technical publication deficiency report
TPFDD	time-phased force deployment data
TRAP	tanks, racks, adapters, and pylons
TTML	test and training munitions list
UCMJ	uniform code of military justice
UCML	unit committed munitions list
UGT	upgrade training
UJC	urgency justification code
UND	urgency of need designator
UPE	user practice environment
URE	Unit Review Exercise
USC	United States Code
UTC	unit type code
UTM	unit training manager
WCDO	war consumable distribution objective
WLT	weapons load training
WRM	war reserve materiel
WSEP	weapons system evaluation program
WSN	weapons stock number
WWM	wing weapons manager
XD	depot recoverable
XF	field repairable

Student Notes

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