

CDC 2A674

Aircraft Fuel Systems Craftsman

Volume 1. Maintenance Management



**Air Force Career Development Academy
Air University
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WELCOME to the Aircraft Fuel Systems Craftsman Career Development Course (CDC). This two-volume course is designed to provide you with the career knowledge necessary for upgrade to the 7-skill level. Volume 1 covers various maintenance management and administrative responsibilities maintenance personnel are required to know. Volume 2 focuses on fuel subsystems and components. The volume includes aircraft fuel systems such as engine feed systems, transfer and jettison systems.

This first volume of CDC 2A674, *Aircraft Fuel Systems Craftsman*, pertains to maintenance management and administrative responsibilities of an aircraft fuel systems craftsman.

Unit 1 covers time compliance technical orders (TCTO) and technical order waivers.

Unit 2 covers the standard base supply system (SBSS), equipment account management and the importance of deficiency reporting.

Unit 3 outlines maintenance training. The unit describes the processes of evaluating personnel, conducting training and maintaining training records.

Unit 4 deals with maintenance operations and programs such as tool accountability, maintenance recovery team (MRT), the Dropped Object Prevention Program (DOPP), and the Maintenance Standardization and Evaluation Program (MSEP).

A glossary is included for your use.

Code numbers on figures are for preparing agency identification only.

The use of a name of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

To get a response to your questions concerning subject matter in this course, or to point out technical errors in the text, unit review exercises, or course examination, call or write the author using the contact information provided in this volume.

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For Guard and Reserve personnel, this volume is valued at 8 hours and 2 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. Technical Publications

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JUST ABOUT EVERYTHING you do in aircraft maintenance follows a technical order (TO). TOs are one of the most important tools you will use on the job because, *almost always*, they tell us the safest and most efficient way to do our job. Maintaining TOs requires close attention. Although the Air Force (AF) has begun transitioning to electronic technical orders (eTO) used on rugged laptop computers, many bases across the AF still use paper technical orders. Regardless of whether paper or eTOs are used, many people are involved in their upkeep and updating. Consequently, before you decide to use a technical order as a kneepad while working on a fuel leak, consider the people that may have to repair the resulting damage to that technical order after you turn it back in to support.

These lessons will be short and to the point. We will not attempt to teach you how to decipher the different parts of a technical order number or go through all the different types of technical guidance. You have likely received that type of training from the time you were in 3-skill level (or apprentice) technical school. Instead, this unit's lessons focus on a few areas you will deal with as a 7-skill level (or craftsman) maintenance manager. We'll begin by discussing the technical order distribution process, including the different levels of technical order management. Afterwards, we'll discuss some general information on time compliance technical orders (TCTO) as well as technical order waivers.

001. Technical order distribution process

Technical order management at one level or another is likely to be a part of your future in maintenance. For this reason, this lesson will give you an overview of each level's general responsibilities and how they work together to ensure the technical orders are up-to-date and accurate to facilitate their effective use by the maintainers. Even if you never work in any of these positions, it will be very helpful to know their responsibilities. The use of prescribed technical data to maintain aerospace equipment is mandatory and is detailed in the 00-5-1 series technical orders.

The AF is currently in the process of modernizing its technical order system with a goal to provide user friendly, technically accurate, and up-to-date digital technical data at the point of use. However, whether or not your unit uses these digital technical orders currently does not change the fact that technical orders must be diligently maintained and religiously used. All levels of supervision have a duty to ensure that their personnel have updated technical orders and are using them properly to perform all maintenance. Much of this responsibility falls squarely on the shoulders of immediate supervisors. As it relates to technical order use, supervisors must strictly enforce adherence to and compliance with technical orders, supplements, and any other applicable mandatory publications such as Air Force Instruction (AFI) 21-101, *Aircraft and Equipment Maintenance Management*. Organizations are allowed to tailor procedures in nontechnical order publications by creating operating instructions (OI) and supplements. However, units are *not* allowed to locally tailor or change technical orders or supplements to suit their own needs. To properly update technical orders, units must submit an official change request.

The following paragraphs focus on some specific duties of those charged with managing TO accounts to ensure that the technicians performing maintenance have the proper guidance to perform their job.

Maintenance group commander responsibilities

The maintenance group commander (MXG/CC) must appoint a custodian to administer technical order requirements in support of assigned maintenance group (MXG) missions and activities. This group-level custodian is normally assigned through the quality assurance (QA) office and referred to as a technical order distribution office (TODO) custodian, or just simply a TODO. In addition to the TODO, each squadron usually appoints several technical order distribution account (TODA) custodians (commonly called TODAs) to manage technical order administration for each specially separated section in the squadron. Collectively, the TODOs and TODAs ensure that all AF guidance on maintaining and using the technical orders in their respective accounts is followed. For more information on technical order policy and procedures, refer to TO 00-5-1, *AF Technical Order System*, and AFI 63-101/20-101, *Integrated Life Cycle Management*.

Group technical order distribution process

There are three primary levels of technical order management activities that provide administrative technical order support for organizations:

1. Group-level TODO.
2. Squadron-level TODA.
3. Library custodian.

Each level of technical order distribution activities has specific functions and responsibilities. The following table provides more information about these areas.

Technical Order Distribution Activities	
Level	Responsibilities
MXG TODOs (Normally assigned to QA)	<p>Oversee technical order administrative services being provided by lower-level TODOs within the MXG and advise the MXG/CC when the organization's technical order/eTO requirements are not being satisfied. Advising the MXG/CC on matters concerning availability of technical orders.</p> <p>Assist organization TODOs with resolution of physical distribution media technical order/eTO availability and distribution problems, including Enhanced Technical Information Management System (ETIMS) technical order ordering problems.</p> <p>Assist lower-level organizations within the MXG to establish additional TODO accounts when the need arises.</p>
TODA	<p>Oversee physical distribution media technical order/eTO requirements and distribution activities within the assigned mission area, shop or office.</p> <p>Establish and maintain the ETIMS sub account assigned by the TODO required to support the unit mission.</p> <p>Notifying the TODO promptly of any personnel changes or deactivation of the unit's account.</p> <p>ETIMS is the AF System of Record, a secure web, Global Combat Support System-Air Force (GCSS-AF) application accessible via the AF Portal with the technical order catalog, ordering and the TODO account management functions. ETIMS system functions to acquire, improve, publish, catalog, manage, stores, distributes and displays the official technical orders needed for the safe and effective operation of AF weapon systems and equipment. ETIMS connects technical order users and technical order managers in the operational environment. ETIMS users are assigned "roles" that include a set of system privileges using a specific role to provide capability to perform various functions. ETIMS is the wholesale and retail user components of the AF Standard Technical Order Management System.</p>

Technical Order Distribution Activities	
Level	Responsibilities
Library Custodian	<p>Maintain physical media, to include technical order libraries/eTOs/electronic tools (eTools) consisting of one or more current technical orders required for use on a continuing basis.</p> <p>Notify TODO/TODA of all required addition, change, replacement or deletion of physical media technical order/eTO requirements.</p> <p>Control and protect physical media, including technical orders/eTOs stored on eTools.</p> <p>Conduct annual technical order library inventories.</p> <p>Address all technical order system policy and procedure questions and issues or direct them to the TODO/TODA for resolution.</p>

For more information on TODO and TODA duties refer to TO 00-5-1 and AFI 63-101/20-101.

Establishing TODO account

To establish a TODO account, units must process an Air Force Technical Order (AFTO) Form 43, USAF Technical Order Distribution Office (TODO) Assignment or Change Request, with instructions. This Adobe® Portable Document Format (PDF) can also be used to record internal TODA personnel assignments.

Now that we have covered some of the responsibilities and procedures for technical order management, let's talk about the checklists you will deal with.

Checklists

Checklists are developed to provide abbreviated step-by-step procedures in the sequence deemed most practical for operation and maintenance of systems and equipment. They can also be developed to determine operational readiness of equipment and a minimum serviceable condition. Not every task or common maintenance practice can or even should be covered by a checklist. A checklist may be published when one or more of the following criteria exist:

- When sequential steps must be followed to prevent damage to equipment, injury to personnel, or to avoid a catastrophic failure.
- When interaction or communication between two or more maintenance specialties is involved in accomplishing a function.

An important note about checklists is that they should *not* circumvent or replace technical data. For these publications, all parent technical order procedures must be followed. No new requirements for tools or test equipment will be introduced. Refer to TO 00-5-1 for specific information on developing checklists.

002. Time compliance technical orders

If your car is to retain its original design and performance characteristics, it requires continuous maintenance. At times, the manufacturer of your car may issue a recall to fix problems that have been identified since the original manufacture. The same is true of Air Force aircraft and equipment. Besides the normal wear and tear of parts, sometimes aircraft and equipment have problems that are serious enough to cause injury to personnel or destruction of the affected equipment if not corrected. When a problem like this arises, the Air Force issues a TCTO, which is like a recall, to have the equipment inspected or modified.

TCTOs

TCTOs are used to provide instructions for modifying military systems and commodities within specified time limits. They're also used to initiate special "one-time" inspections or impose temporary

restrictions on systems and commodities. Modifications may be permanent or temporary. The orders may be first sent by electronic message and then issued as printed technical orders. TCTOs are the media through which modernization programs and extensive modifications are directed. Only permanent modifications are documented through TCTOs. Like a technical order, TCTOs are issued by order of the Secretary of the Air Force and will be complied in the same manner as a technical order.

As the name implies, TCTOs have a specified time within which you must accomplish the required task. The time depends on the degree of danger caused by the unsafe condition. If an unsafe condition could cause a fatal accident, the TCTO may order the use of the item halted until that condition is corrected.

TO 00-5-15, *Air Force Time Compliance Technical Order Process*, contains specific information on TCTOs. In the following paragraphs we'll discuss the three priorities of TCTOs you'll encounter on the job:

1. Immediate action.
2. Urgent action.
3. Routine action.

Immediate action

Immediate action TCTOs are issued when unsafe conditions, if not corrected, could result in the following:

- Serious or fatal personal injury.
- Extensive equipment damage.
- Destruction of valuable property.

Issue of an immediate action TCTO is done through interim TCTO (ITCTO) messages. Because of their urgency, immediate action TCTO distribution is given a high priority, and commanders must ensure distribution to all affected personnel within four hours of receipt.

If a formal publication of this TCTO is issued, the words "IMMEDIATE ACTION" are printed in red at the top center of the first page and a series of red Xs (XXXX) are printed around the border of the first page. As the name implies, immediate action TCTOs require immediate action to remove the concerned aircraft or equipment from service. Immediate compliance is required when directed.

The methods for correcting the unsafe condition are usually specified in the TCTO. Upon receipt of an immediate action TCTO, a red X is placed in the aircraft or equipment maintenance forms.

Urgent action

Urgent action TCTOs are identified by the words "URGENT ACTION" printed in red at the top center of the first technical order page, with alternately spaced red diagonals and red Xs bordering the first page. Urgent action TCTOs are issued when any of the following could result from the deficiency:

- Injury to personnel.
- Damage to property.
- Unacceptable reductions in combat efficiency.

Commanders shall ensure distribution is made to all affected personnel within 24 hours of receipt. Urgent action TCTOs specify that the work must be done within a specified time limit of one to ten days after receipt of the TCTO. If the deficiencies specified in the TCTO have not been corrected and the time limit expires, actions must be taken to remove the aircraft or equipment from service.

Routine action

Routine action TCTOs are issued when material, mechanical, operational, or tactical deficiencies occur which could result in the following conditions:

- Constitute a hazard through prolonged continued use.
- Have a negative effect on operational efficiency.
- Reduce tactical or support utility.
- Reduce the operational life of equipment.

Routine action TCTOs are issued to authorize, accomplish, and record one-time AF requirements (e.g., inspections, restrictions, etc.) and permanent modifications. This type of TCTO is also given a time limit in which the action must be accomplished. This compliance period will vary based on the maintenance-level (organizational, depot) to which the aircraft are assigned, but is normally from 30 to 270 days.

We've talked about the categories in which TCTOs can be issued—immediate, urgent, and routine action. These categories are divided further into types and levels, dependent upon what action is taken, by whom the action is taken, and the consequences if no action is taken. A TCTO can direct the inspection or modification of equipment. It can also be accomplished at base level or at the depot. Another distinction is whether or not the TCTO is directed for safety purposes. All of them are issued by the responsible TCTO/modification manager under the authority of the responsible single manager (SM).

Eventually, the instructions in a TCTO are either included in another technical order, such as an operations & maintenance (O&M) technical order, or just deemed no longer necessary. Either way, the TCTO is rescinded. Rescission is what happens when the TCTO is made inactive and is taken out of publication.

TCTOs are the authorized method of directing and providing instructions for modifying military systems and end items (other than temporary modifications), and performing or initially establishing one-time inspections. TCTOs are grouped as immediate action, urgent action, and routine action according to the urgency of the instructions. The urgency determines how quickly TCTO compliance is to be completed. Detailed instructions on TCTOs are provided in TO 00-5-19, *Security Assistance Technical Order Program (SATOP)*.

NOTE: TCTOs are accomplished by the coordination of many different offices. The following are just a few responsibilities of each office involved in TCTO compliance. You can review a complete list of responsibilities for each of the following offices in TO 00-5-19 and AFI 21-101, *Aircraft and Equipment Maintenance Management*.

Specific TCTO responsibilities

Maintenance operations (MO) plans, scheduling, and documentation (PS&D) section is responsible for periodically reviewing maintenance information system (MIS) products to ensure proper documentation and management of TCTOs by owning and managing agencies. When errors are detected, MO's PS&D notifies affected scheduling functions and provides needed assistance to correct the errors. They also coordinate with the MO's maintenance management analysis (MMA) section to ensure MIS TCTO synchronization programs are run monthly as required. MO's PS&D also chairs a monthly TCTO review meeting attended by all TCTO owning and managing agencies after the monthly supply TCTO reconciliation meeting. The meeting discusses the supply reconciliation, supply status, scheduling factors, current TCTO status, and anticipated problems for all active TCTOs.

QA performs an initial evaluation of the TCTO and determines applicability. If applicable, QA distributes copies of the TCTO to the affected agencies. Any deficiencies in the technical instructions and kit are reported to the appropriate TCTO manager as directed by TOs 00-5-1 and 00-5-19. QA

chairs a TCTO planning meeting with attendees from QA, owning and performing work centers, and supply.

Owning scheduling agencies (i.e., MO's PS&D, MO's engine management [EM] section, etc.) are responsible for completing the following:

- Scheduling, tracking, and monitoring TCTO accomplishment.
- Preparing a work order in the MIS for each affected end-item, including spares.
- Reviewing suspense validation inputs before processing TCTO suspense and updating automated historical records.
- Updating equipment/aircraft TCTO status as changes occur.

The flight or section performing the TCTO is responsible for attending TCTO planning meetings and should thoroughly review the TCTO before the meeting so clarification requests can be made. It is also responsible for reporting all deficiencies in technical instructions to the TCTO managing agency and QA. The section or flight performs the inspection or modification procedures outlined in the TCTO and documents results or findings in the MIS. Finally, the section or flight supervisor is responsible for ensuring accurate documentation of TCTOs is made.

003. Technical order waivers

As stated at the beginning of this unit, technical orders almost always tell us the safest and most efficient manner in which to do our job. However, what happens when they don't? If you discover something wrong with a technical order, you can submit a change for that publication to help ensure the almost always becomes always. Sometimes using a technical order can actually hinder production or even put people or equipment in danger. When these types of situations arise, the technical order use can be waived. Although few and far between, there are some circumstances where it is appropriate to waive technical order guidance. A few of them are discussed in the following paragraphs.

Emergency waivers

On-scene commanders have broad discretionary powers to waive compliance with technical order procedures in emergency situations. However, extreme caution is paramount because the safety of personnel and equipment could be jeopardized. If commanders choose to waive technical order guidance, then it must be properly documented and sent to Headquarters United States Air Force (HAF) after the emergency is resolved. An example of where technical order guidance may be waived is when evacuation/rescue flights must be made during wartime or natural disaster situations. In this case, the responsible group commander or designated official can temporarily waive compliance with any type of technical order when the aircraft is the only vehicle to make a rescue in order to prevent loss of life or the capture of friendly forces.

Combat zone and emergency war order tasked systems and equipment

For forces engaged in actual combat operations or supporting emergency war order (EWO) alert taskings, and for systems or components engaged in contingency operations, the area of responsibility (AOR) commander may temporarily waive specific technical order compliance until operational capability permits or safety of personnel is assured.

Technical order updates issued to correct safety deficiencies (i.e., supplements and changes) are mandatory for compliance, but they may be accomplished on a phased basis to minimize the impact on EWO posture. Additionally, using commands may authorize waivers of "remove from service" actions for weapon systems or equipment affected by TCTOs or master change logs that have been issued for immediate action when high priority, unscheduled special missions preclude accomplishment within the specified time limit.

In addition to the waiver situations covered here, there are many other scenarios that may call for temporarily waiving compliance with some technical orders. For detailed information about technical order waiver policy, refer to AFI 21-101 and TO 00-25-107, *Maintenance Assistance*.

Technical order system policy and procedures waivers

Headquarters (HQ) Air Force Materiel Command (AFMC)/A4F has overall responsibility for AF policy governing the technical order system. AFMC/A4F issues AF policy for managing the technical order system and provides the final authority for waivers to that policy, ensures compatibility between the flight manuals program (FMP) and the technical order system; and approves all service tests and studies of new techniques for use in all facets of the technical order system. AFMC/A4F is also responsible for developing, coordinating and implementing AFMC technical order system policies. In addition, AFMC/A4F accomplishes the following:

- Acts as the point of contact for the AF and AFMC technical order systems for receipt, interpretation, and dissemination of AF policy, business practices, and procedures on the technical order system. Reviews and approves or disapproves requests for waivers to Air Force technical order policy, and assists users with problem resolution.
- Ensures compatibility between the AF FMP and the technical order system, and approves all service tests and studies of new techniques for use in all facets of the technical order system.
- Performs duties of technical content manager (TCM) for 00-5-series technical orders and AF/AFMC 20-x series publications on the technical order system. Performs duties of TCM for 00-20-series technical orders on maintenance data documentation.
- Develops and maintains Standard technical order Management System training requirements, training courses and functional user guides. Training courses are to be developed in accordance with the Air Force Handbook (AFH) 36-2235V1, *Information for Designers of Instructional Systems - ISD Executive Summary for Commanders and Managers*.

Air Force personnel should first refer technical order system policy and procedure questions to their lead TODO and then the focal point identified in their major command (MAJCOM) supplement to TO 00-5-1. Otherwise, refer technical order policy and procedure questions to the AF Technical Order Policy and Procedures (AF TOPP) team at the following address:

AF TOPP HQ AFMC/A4FI
4375 Chidlaw Rd, Ste 6,
Wright-Patterson Air Force Base (AFB), Ohio 45433-5006.

You may also e-mail their office at the following address: afmc.a4.af.topp@us.af.mil.

Refer questions on specific technical order system tools to the office of primary responsibility (OPR) listed in Chapter 3 of TO 00-5-1.

Regardless of the waiver situation, the waiving authority must ensure that waivers to, deviations from, or additional technical data procedures are issued using an approved official communication method (i.e., signed letter, organizational e-mail, automated message handling system message or authorized automated technical assistance request system, per TO 00-25-107 or applicable guidance from the air logistics complex [ALC]). In other words, notification *cannot* be accomplished using personal e-mail or telephone. Additionally, all authorized technical data variances must be kept with the affected aircraft/equipment historical records until they are no longer applicable.

Requesting a waiver

When complying with a higher headquarters publication adversely affects your mission due to a unique situation, you may request a waiver from the OPR. Send the request via e-mail or memorandum and explain the need for the waiver. If the OPR deems it necessary, the waiver request may be elevated within the organization for review and approval. If the waiver is granted, the OPR of the publication must file it with the record set and provide a copy of the waiver to the

publications/forms manager (AF Departmental Publishing Office [AFDPO] is the manager for HAF OPRs) when submitting the draft for publication. Field publications/forms managers must include a copy of each related waiver when submitting products to AFDPO. A waiver remains in effect until the OPR cancels it in writing, the publication is completely rewritten, or the waiver expires (the expiration date must be specified in the documentation granting the waiver). Include a statement in the opening paragraph if no waivers are authorized for that particular publication or if no waivers are authorized for certain portions of the publication.

In some cases, the waiver may last the life of the basic publication. If so, the organization requesting a waiver may need to create a supplement to implement the waiver. The OPR of the basic publication will work with the organization requesting a waiver to design appropriate guidance if a supplement is necessary. In the opening paragraph state if the supplement has been created to implement a waiver. For additional information, see AFI 33-360, *Publication and Forms Management*.

Self-Test Questions

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

001. Technical order distribution process

1. What is the goal of the current AF technical order modernization effort?
2. What are the three levels of technical order distribution activities that provide basic technical order system support to base-level AF organizations?
3. What section are MXG TODOs normally assigned to?
4. What form should be used to establish a TODO account?
5. For what purpose are checklists developed?

002. Time compliance technical orders

1. What is the purpose of TCTOs?
2. What are the three TCTO priorities?
3. Under what conditions are immediate action TCTOs issued?

4. How is an immediate action TCTO issued?
5. Why are urgent action TCTOs issued?
6. What's the time limit for accomplishment of an urgent action TCTO?
7. What happens to the affected aircraft or equipment if an urgent action TCTO isn't accomplished by expiration of the time limit?
8. Which type of TCTO is issued when material, mechanical, operational, or tactical deficiencies occur which could result in conditions which may create a hazard through prolonged usage of the affected system?
9. Normally, what is the compliance period for routine action TCTOs?
10. What MXG agency is responsible for performing an initial evaluation of a TCTO to determine its applicability?
11. Who is responsible for attending TCTO planning meetings and should thoroughly review the TCTO before the meeting so clarification requests can be made?

003. Technical order waivers

1. Why should on-scene commanders use extreme caution when waiving compliance with technical order guidance during an emergency situation?
2. Who may temporarily waive specific technical order compliance until operational capability permits or safety of personnel is assured for forces engaged in actual combat operations or supporting EWO alert taskings, and for systems or components engaged in contingency operations?
3. How long does a technical order waiver remain in effect?

Answers to Self-Test Questions

001

1. To provide user friendly, technically accurate, and up-to-date digital technical data at the point of use.
2. Group TODO, squadron TODA, library custodian.
3. QA.
4. AFTO Form 43.
5. To provide abbreviated step-by-step procedures in the sequence deemed most practical for operation and maintenance of systems and equipment.

002

1. They are used to provide instructions for modifying military systems and commodities within specified time limits. They're also used to initiate special "one-time" inspections or impose temporary restrictions on systems and commodities.
2. (1) Immediate.
(2) Urgent.
(3) Routine action.
3. When unsafe conditions, if not corrected, could result in serious or fatal personal injury, extensive equipment damage, or destruction of valuable property.
4. As ITCTO messages.
5. If any of the following could result from the deficiency: injury to personnel, damage to property, and unacceptable reductions in combat efficiency.
6. One to 10 days.
7. The aircraft or equipment must be removed from service.
8. Routine action.
9. Thirty to 270 days.
10. QA.
11. The flight or section performing the TCTO.

003

1. Because they could be jeopardizing the safety of personnel and equipment.
2. AOR commanders.
3. Until the OPR cancels it in writing, the publication is completely rewritten, or the waiver expires (the expiration date must be specified in the documentation granting the waiver).

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) Who is responsible for appointing a maintenance group (MXG) technical order custodian to administer technical order requirements in support of assigned MXG missions and activities?
 - a. Maintenance squadron (MXS) commander.
 - b. MXG deputy commander.
 - c. MXG superintendent.
 - d. MXG commander.
2. (001) Which is *not* normally a maintenance group (MXG) technical order distribution office (TODO) duty?
 - a. Supervising technical order administrative services being provided by lower-level TODOs in the MXG.
 - b. Maintaining physical media technical order libraries/electronic technical orders (eTO)/electronic Tools (eTools).
 - c. Assisting organizations within the MXG to establish additional TODO accounts.
 - d. Advising the MXG commander on technical order availability.
3. (002) What type of time change technical order (TCTO) is issued when *unsafe conditions*, if not corrected, could result in serious or fatal personal injury?
 - a. Urgent action.
 - b. Routine action.
 - c. Immediate action.
 - d. Emergency action.
4. (002) What type of time change technical order (TCTO) is issued when a deficiency could result in injury to personnel, damage to property, or unacceptable reductions in combat efficiency?
 - a. Urgent action.
 - b. Routine action.
 - c. Immediate action.
 - d. Emergency action.
5. (002) If the deficiencies in an urgent action time change technical order (TCTO) are *not* corrected within the specified time limit, what action(s) must be taken?
 - a. Remove the aircraft or equipment from service.
 - b. Have a qualified 7-skill level clear the deficiency in the forms.
 - c. Make a NOTE in the equipment forms and delay the discrepancy.
 - d. Delay the discrepancy and downgrade the TCTO to routine action.
6. (002) Which type of time change technical order (TCTO) is issued when material, mechanical, operational or tactical deficiencies occur which could result in conditions that reduce the operational life of equipment?
 - a. Emergency action.
 - b. Immediate action.
 - c. Routine action.
 - d. Urgent action.

7. (002) Who is responsible for ensuring that accurate documentation of time compliance technical orders (TCTO) is made upon completion of the inspection or modification procedures outlined in the TCTO?
 - a. Flight or section supervisor.
 - b. Maintenance group superintendent.
 - c. Plans, scheduling, and documentation.
 - d. Technical order distribution office custodian.
8. (003) Who is given broad discretionary powers to waive compliance with technical order procedures in *emergency* situations?
 - a. Major command (MAJCOM) commander.
 - b. Air force safety center commander.
 - c. Quality assurance chief.
 - d. On-scene commander.
9. (003) Within Air Force Materiel Command (AFMC), who has the overall responsibility for Air Force policy governing the technical order system?
 - a. A4BM.
 - b. A4MT.
 - c. A4F.
 - d. A4YE.
10. (003) Which of the following is *not* an approved communication method for issuing approved technical order waivers or deviations?
 - a. Telephone.
 - b. Signed letter.
 - c. Organizational e-mail.
 - d. Defense Message System.

Please read the unit menu for unit 2 and continue ➔

Unit 2. Maintenance Supply

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THE AF PURCHASES literally millions and millions of items. These include such things as aircraft, vehicles, spare parts, maintenance tools, job control consoles, desks, calculators—the list goes on and on. The cost each year is billions and billions of dollars. To manage and control all of these assets, AF personnel use a well-planned and implemented supply system. While you not work in base supply, your job requires that you have a good working knowledge to help you interact with the personnel that operate and manage this system.

As a fuel systems craftsman, you'll find that one of your most important responsibilities is the care and management of AF materiel. Your shop cannot achieve its mission without supplies. Webster defines the word *materiel* as, "The equipment and supplies, as guns and ammunition, of a military force" or "An organization's equipment and supplies." The term *materiel* can be applied to a complete weapon system or a simple O-ring seal. At this stage in your career, how you requisition, utilize, safeguard, transfer, or dispose of materiel items can make or break your shop. As a consumer of supplies, you're a key player in the supply system.

In this unit, we'll first take a look at characteristics of the supply system. Then, we'll describe the standard base supply system (SBSS). You'll also learn about the repair cycle, how to use supply products, and report the status of materiel deficiencies. Afterwards, we will turn our attention to the methods used to manage equipment items.

2-1. The Supply System

Earlier, we stated that the AF spends billions of dollars to purchase millions of items each year; this includes supplies and equipment to perform the mission. The AF uses the SBSS to monitor and control all of these items. The SBSS is a part of a computerized system that supply personnel use to account for all the supplies and equipment used by activities throughout the AF. By using the SBSS, supply personnel can process issues, receipts, turn-ins, and shipments of supplies.

To obtain the most service for the money, the AF uses a repair cycle program for many of the items needed to "keep-em flying." Under this program, some items that are removed from weapon systems are sent to depots for maintenance. The items are often repaired, and reissued back to the user. This cycle may be repeated several times before an item is no longer repairable and is sold for scrap.

As you go about your aircraft maintenance duties, you'll find yourself working with the personnel in base supply in some way. There's no getting away from the fact that supplies of all sorts are necessary to keep your aircraft and equipment in serviceable condition.

In this section, we'll discuss the following primary supply areas you need to be familiar with to successfully perform your duties as an aircraft maintainer:

- Characteristics of the supply system.
- The supply system.

- Maintenance repair and delivery priorities.
- Repair cycle tracking and supply management products.
- The deficiency report.

004. Characteristics of the supply system

The management of the AF supply system is much more complicated than any civilian system. This is true because the system is tailored to effectively support different management requirements of various commodities and command missions. To support the total mission, AF supply managers must procure, stock, and issue millions of different items for thousands of customers worldwide. Furthermore, the need for rapid delivery and economy of operation—along with the need for immediate response to the diversified and changing needs of its customers—requires more insight and flexibility than any civilian system.

Critical factors of the Air Force supply system

Thus, you can see that the AF supply system cannot logically be compared in either size or complexity with any distribution system anywhere in the civilian industrial world. The two critical factors that make this so include the complexity of the AF supply system, and its delivery speed and economy of operation.

Complexity

First of all, management of the AF supply system is infinitely more complicated than civilian systems since it must procure, stock, and issue several million different items to thousands of customers worldwide.

Delivery speed and economy of operation

Second, the need for speed of delivery and economy of operation is paramount. The system must immediately respond to the constantly changing needs of its customers and requires more flexibility than that of any civilian supply system.

Characteristics of the Air Force supply system

As a review you should remember that the AF supply structure is rather complex because the system's characteristics must be segmented geographically, functionally, and by classification in order for it to be effectively managed. These three supply system characteristics are of prime importance.

Geographically segmented

First, since the supply system is worldwide, it is segmented on a geographical basis in order to be manageable.

Functionally segmented

Second, accomplishment of the supply system mission depends on the performance of specialized functions, such as storage, distribution, and disposal. As a result, it is critical for the supply system to be segmented functionally in order to be manageable.

Classification system

Third, the system contains millions of items, which vary in size, use, complexity, and value. Consequently, the supply system is segmented by use of a classification system, taking into account all of its items, in order to be managed successfully.

Classification concept

The supply system is based on a *classification concept* in which all three preceding characteristics are considered. In the remaining lessons within this section, we'll provide an overview of the parts of the supply system you'll see often on the job. Our discussions will be general in nature. For specific guidance on supply procedures, refer to AFI 23-101, *Air Force Materiel Management*, and AFI 21-101, *Aircraft and Equipment Maintenance Management*.

005. The supply system

The SBSS is the oldest and most mature of the AF's automation systems. It's also one of the largest. The SBSS is used at bases all over the world with hundreds of main accounts and satellite accounts. The SBSS was first automated in 1965. The system has evolved into a high tech global computer system that can be accessed worldwide.

In essence, the SBSS is an accounting system consisting of standardized computer equipment, programs, procedures, and supply policy. This system provides base activities with their supply needs and employs a standard base-level computer (SBLC) to account for supplies; equipment; petroleum, oil, and lubricants (POL); munitions; and clothing. With the SBSS, logistics personnel, customers, and commanders can track every item in the supply system through standardized programs and procedures. All AF activities use the SBSS for accounting on both line-item and dollar basis.

To serve customers quickly and efficiently, the SBSS and base supply personnel are organized according to the standardized organizational structure. This means that no matter what AF base you're assigned to, the supply organization should be basically the same. As a supply customer, you have the following three primary base supply points of contact (POC):

1. Customer service element.
2. Demand processing element.
3. Equipment accountability element (EAE).

Customer service element

The customer service element is normally the primary POC for supply-related questions and queries. This office was established to provide customer assistance; the personnel assigned have the responsibility of receiving and resolving customer problems and complaints. If you have any type of supply problem, including ordering parts, it's easier to contact the personnel in customer service and let them deal with any other supply elements involved. In all cases, customer service personnel document your request for assistance and notify you of actions taken.

Demand processing element

Needed supplies other than bench stock and office supplies are ordered from this element. Most MAJCOMs and installations have decentralized demand and issue processing and parts-into-aircraft maintenance such as Air Combat Command's (ACC) and Pacific Air Forces' (PACAF) combat oriented supply organization, and United States Air Forces Europe's (USAFE) dedicated aircraft supply support. The demand processing element is the first point in the process of obtaining materiel from supply.

Equipment accountability element

Normally, equipment management-related matters are resolved at a regional and base-level EAE; as a result, it is the POC for all matters related to equipment management. For your organization, the EAE is the source of supply and the addressee for all equipment requests for nonexpendable items authorized by allowance standards. Examples of these items include ground support equipment, test equipment, and some special tools (such as go/no-go gages). If you are an equipment custodian for your shop, you have probably dealt with personnel from the EAE. Although these are the primary POCs, you may have to deal with other elements of the logistics readiness squadron or other personnel within the supply system, such as war readiness, mobility, and retail sales.

Principles of supply discipline

The supply system is important; if you do not understand and use it properly, you may be wasting money that could be used to support another part of the mission. To avoid that, we must learn and use the principles of supply discipline.

Conservation

One type of supply discipline is the conservation of supplies and equipment, and can take several forms. Ordinarily, you would think of conservation as simply not ordering or using more than you need to do a job, but there's more to it than that. Supplies and equipment must be protected from hazards such as abuse, fire, corrosion, or anything else that might render them unusable.

Many items that become unserviceable can be repaired. Sometimes, this can be done at base or unit level. At other times, they must be sent to a depot. In the interests of conservation, any item that's economically reparable should be sent to the proper facility as soon as practicable. In this way, time and money are conserved.

Economical use

A major concept of economical use of available supplies and equipment is their application only for their intended purposes. You would not, for instance, use a wood chisel as a screwdriver—it would be easy to dull or chip the edge. Another concept of economical use is not to use a large, expensive piece of equipment when a smaller unit will do. For example, a motor vehicle dispatcher should not send a 2-ton truck to move a few hundred pounds of material from one place to another; rather, the dispatcher should send a small pickup, since it's more economical to operate.

Excess property

It is very important for all personnel involved in issuing or consuming AF property to screen items on hand and determine if they are excessive. Let's distinguish between "excess" and "surplus." An item may be excess to the immediate needs of a unit, but it doesn't become excess to the AF until it is clear there is no present or future requirement for it. After it has been declared excess to the AF, further efforts may be made to determine whether it may be wanted by another military service or federal agency. If it is not needed by any of these, it is then declared to be surplus, and the Department of Defense (DOD) activity that holds it may dispose of it in accordance with established procedures, such as sale, salvage, or destruction.

Property may become excess to an activity for a number of reasons, but technological development is one of the main ones. AF weapons systems and equipment are constantly being modified and improved, making items on hand obsolete. Certain aircraft types are phased out and new ones introduced. Military requirements vary with the world situation—a time of peace after war renders many items excess. Accordingly, both supply personnel and those using particular items must frequently screen the stocks on hand to determine if they're excessive to the needs of the base or unit. Perhaps some other AF activity or federal agency can use the items; if so, arrangements are made to transfer them. They are declared surplus only if no agency can use them.

006. Maintenance repair and delivery priorities

In this lesson, we cover some of the maintenance supply requests and how they supply manages them. We'll also cover two related topics—supply points and tail number bins. Each of these areas includes supply assets that are sitting idle and ready to be used.

Supply delivery priorities define how quickly a part is delivered once it becomes available. Supply points are a kind of on-location parts store, while tail number bins are holding bins for parts that need to be installed. Each of these can provide support in helping you accomplish the mission; however, there are some important points to note about each. Supply priorities are very important. Even excellent maintenance personnel can't accomplish the mission without the necessary resources. In our environment of finite resources, we must prioritize. By doing this, we face the reality that we cannot treat every need as a high priority; otherwise, it would simply reduce critically important needs to the level of slightly important needs.

The supply system supports many different types of requests including bench stock, supply point, equipment, special purpose recoverable authorized maintenance (SPRAM), and special/unique items.

We'll cover a few of these request types as well as the supply priority system that should be used to request these supplies.

Types of customer requests

AF policy requires that base customer requests for supplies and equipment items be submitted to the retail supply system. Customers that need supplies from the retail supply system must submit either a routine issue request or an expedite issue request.

Routine issue request

Routine requests are used for items that do not normally cause any type of work stoppage or mission degradation.

Expedite issue requests

Expedite issue requests represent urgent needs for assets from the supply system in order to prevent work stoppages or other mission degradation situations.

Regardless of the type of request, supply system customers must identify specific data elements associated with a request, urgency of need designator (UND), force activity designator (FAD), and urgency justification code (UJC) among others.

NOTE: The FAD is a one-position number, 1 thru 5, that signifies the relative order of importance of supported organizations requesting supplies and equipment.

Expedite customer issue requests are used when supplies and parts are needed to satisfy mission requirements in a short period of time. Expedite customer issue requests have UJC codes of "A" or "B" and are normally assigned supply response delivery priorities of 01 thru 04. An important note about high priority requests is that they increase the overall costs of supply support by increasing transportation and handling costs. To minimize the cost, maintenance units should make sure the UND assigned is consistent with the actual need. Misuse of priority designators adversely affects the integrity of the retail supply system, wastes resources, and degrades the overall supply support you receive.

Supply delivery priorities

A supply delivery priority is used to indicate the *maximum* time that may elapse from the time the supply element in the logistics readiness squadron (LRS) receives the customer request until the customer physically receives the material or item—provided the order issues and does not have to be placed on backorder. The customer is responsible for determining the appropriate supply delivery priority. Supply delivery priorities (01 and 02) denote the *maximum* time that may elapse before assets are delivered to the customer. Priorities 03–07 are handled in order after priority 01 and 02 deliveries are completed. Each installation/base may set up local procedures to outline specific delivery routes and scheduled delivery times to meet customer supply response priorities. Refer to the following table for more detailed explanations of the supply delivery priorities.

NOTE: This is an abbreviated list. Refer to AFI 21–101 for a complete listing.

Maintenance Repair Supply Delivery Priorities	
Priority level and description	Application
1 (Supply delivery within 30 minutes)	Primary mission aircraft within 12 hours of a scheduled launch on the following missions: <ul style="list-style-type: none"> • Presidential directed missions supporting United States forces in combat or national emergency. • Aircraft on alert. • Related aerospace ground equipment (AGE), munitions, and munitions equipment assigned to these missions.

Maintenance Repair Supply Delivery Priorities	
Priority level and description	Application
2 (Supply delivery within 30 minutes)	<ul style="list-style-type: none"> Primary mission aircraft and related AGE, munitions, and munitions equipment for the first eight hours after landing or start of recovery or within six hours of a scheduled launch or alert. Simulated generation during operational readiness inspections (ORI). Aircraft and equipment or related AGE requiring repair which is impacting the mission by preventing or delaying student training.
3	<ul style="list-style-type: none"> Primary mission aircraft, engines and related AGE, munitions and munitions equipment, undergoing scheduled or unscheduled maintenance. (Used when <i>more than</i> eight hours has elapsed since the aircraft landed.) Transient aircraft not otherwise listed. TMDE requiring emergency repair or calibration, the lack of which will prevent or delay mission accomplish. Repair cycle assets to satisfy a mission capable (MICAP) condition.
4	<ul style="list-style-type: none"> Routine or extensive repair of primary mission aircraft, related AGE, and repair cycle assets. Routine maintenance of AGE not otherwise listed. Inspection, maintenance, and TCTO compliance of readiness spares package (RSP) or mission support kit (MSK). Scheduled calibration and unscheduled repairs on test, measurement, and diagnostic equipment (TMDE) not otherwise listed.
5	<ul style="list-style-type: none"> Bench stock requirements. Non-tactical or non-primary mission aircraft undergoing extensive repair. Time change requirements on non-nuclear items.
6	Fabrication and repair of non-aeronautical items, equipment, and other aeronautical requirements.
7	Spares excess to base requirements.

MICAP customer request

A MICAP request is the highest priority type of expedite request and is used to order parts required for the repair of mission essential equipment. The first position of the UJC is a slash (/), one (1), or J, which denotes the order as a MICAP customer request in the retail supply system. If the requested item(s) are available in stock, they are issued to customer and no further action is required. However, if assets are not available, the supply customer must provide specific information about the order that alerts supply that a MICAP condition exists. When a MICAP condition exists, the supply customer provides the appropriate MICAP UJC as part of the customer order verification process.

Awaiting parts customer requests

Awaiting parts (AWP) customer requests identify orders for bits and pieces needed to repair spares such as line replaceable units (LRU) and shop replaceable units (SRU). UJCs 'AR' and 'BR' denote these AWP requests in the retail supply system. When items required to satisfy AWP customer requirements are not available from retail supply system stocks, the requests are normally backordered.

Routine customer issue request

Routine customer issue requests are assigned a UND code of "C" and normally have a supply delivery priority 05 or higher. Routine customer issue requests do not normally cause work stoppages or mission degradation. Bench stock issue requests are normally considered routine requests.

Customer backorders

Customer backorders (due-outs) are created in the retail supply system as necessary when customer requirements cannot be immediately satisfied from available stock. Just like the preceding customer requests above, when a request is backordered it is assigned a UJC based on mission requirements. There may be times when you need to change data on an existing backorder in the retail supply system. To request modification of a backorder, including changing the UJC or required delivery date (RDD), customers should contact customer service at LRS or their local supply support section). The guidance on supply priorities is intended to be a guide. It does not prevent the production superintendent, in coordination with the maintenance operations center (MOC), from changing the priority when it is warranted. Additionally, the maintenance repair priority does not necessarily have to match the LRS/supply delivery priority. Ultimately, the production superintendent can authorize the use of a less or more responsive delivery priority if it is appropriate.

007. Repair cycle tracking and supply management products

In this lesson, we cover some important supply management documents you will deal with as you move up the ranks. There is a lot of good information in this lesson—albeit not very interesting. As you go through these supply documents, take the time to study the codes and learn what they mean. This knowledge will prove to be very important one day when you get that shop chief or production supervisor job and start making important decisions. The more you learn now, the less you will have to learn when you're under pressure.

Repair cycle assets

We'll begin by discussing the assets that allow us to keep our maintenance activities going—repair cycle assets. They're items that can be repaired and placed back into service. In a nut shell, the repair cycle is as follows: A serviceable item is ordered from base supply to replace a defective one. Then the defective part is repaired and placed back in base supply's warehouse for future use.

Repair cycle assets can be repaired on base (if the capability exists). These include intermediate-level maintenance performed in the back shop, or maintenance performed at the depot-level. It can even include using a centralized repair facility (CRF) or a regional repair center if they are available.

If an asset is repaired on base at the intermediate-level, it is called a due-in from maintenance (DIFM) asset because the supply system is waiting for the item's repair and return from maintenance. Once the item is returned, the supply system stores it as a serviceable asset that can be reissued.

DIFM can also be used to refer to assets that are being repaired off base (i.e., depot-level). In this case, base supply is waiting for depot to perform the maintenance and return the item to the supply system as serviceable. The biggest issue that intermediate-level maintenance managers need to be concerned with is DIFM assets being repaired by the back shop.

The operations officer/maintenance superintendent (MX SUPT) must report a daily status of DIFM items that are being repaired by the MXS. The main reason that this is such an important issue is because the longer the back shop takes to repair the item, the longer maintenance units will have to wait to repair a broken aircraft.

This problem is multiplied when other defective components for the same aircraft are not turned-in to the supply system, or not turned-in within a timely manner. If a defective component remains in an expediter truck or sits around the block house, instead of being turned-in to the supply system, it can't very well be repaired. The best way to prevent this is to turn-in the defective part as soon as possible after getting the new part.

All DIFM assets are a one-for-one swap. The AF supply system purposely keeps only a certain number of DIFM items on hand to reduce waste and aid in sufficiency. This means someone, somewhere, may be waiting on a part you've removed to be repaired. When the repaired part becomes available, the waiting person can install it on their aircraft or equipment.

To make the system work, we have the flight service center (FSC). Its objective is to make sure DIFM parts are repaired at base-level or sent to a repair facility as fast as possible. In essence, the FSC establishes control of all unserviceable repair cycle assets from the time they are issued to you until you turn them back in to the supply system. Repair cycle assets are parts with an expendability, recoverability, and reparability code (ERRC) code starting with XD or XF (i.e., XD2 and XF1 parts).

DIFM issue procedures

Usually, you only order one DIFM item at a time, which isn't a problem. But what if you need 12 items? Do you have to order each one separately? No, you can order a quantity greater than one of a particular DIFM item under one document number; however, you'll have to explain why you're doing this to personnel in the supply system.

The SBSS computer system is programmed to reject DIFM issues for more than one item. The reason behind this is the possibility of having different maintenance actions taken on these parts with only one document number. When this happens, supply personnel will not be able to track the different parts. If you do need more than one of a particular part, call the FSC personnel so they can assign a multiple DIFM indicator to allow multiple quantities. When you turn-in these DIFM items to the supply system, you can turn them in together. However, if the DIFM items have different action taken codes, you'll have to process separate turn-ins.

Maintenance turnarounds

At some point, you've probably removed a repair cycle item from an aircraft, had it repaired, and then reinstalled it—all without ever putting a demand on the supply system. What you did was one of the most abused processes in the maintenance field. You're thinking how much easier it is to just remove the damaged part, take it to your friends at the backshop, and have them accomplish a quick repair job for you.

Yes, this method is easier, and at the maintenance level, it seems like everything should be done this way. But, let's think about this for a moment. If we were a small AF, with just a couple of bases, this would probably work, but we aren't. Instead, we are an AF with a massive supply system. If this massive supply system does not know that certain bases or sections are having a problem with certain parts, then we all will end up with fewer parts in the supply system. Then comes the day when your friends in the backshop cannot fix your part. You order the part, it goes on backorder, and you wait an eternity for one to come in. Furthermore, your friends' shop will not be documenting its work; perhaps, someone, somewhere will decide your friends' career field is overmanned which could result in a reduction in career field manning.

Bottom line—you must do the right thing and use the supply system as it is intended. Order the part you need, install it, and then process the defective part to be repaired. This puts a demand on the supply system; as long as they show a demand, they'll try to keep these parts on hand. This also allows the unserviceable item to be scheduled for repair.

Proper forms and documentation

Earlier we said DIFM parts are turned-in to the supply system through the FSC. To do this properly, you have to ensure all the proper paper work is with the part. This includes an AFTO Form 350, Repairable Item Processing Tag, and a condition tag.

The condition tags include the following Department of Defense (DD) Form 1500 series tags:

- The yellow tag is DD Form 1574, Serviceable Tag – Materiel.
- The green tag is a DD Form 1577-2, Unserviceable (Reparable) Tag – Materiel.
- And, finally, the red tag is a DD Form 1577, Unserviceable (Condemned) Tag - Materiel.

You also need copy three of the original issue form (DD Form 1348-1A), Issue Release/Receipt Document. All this paperwork is important; however, the main thing to remember when you are processing a part through FSC is to ensure your AFTO Form 350 is filled out fully and correctly. The FSC personnel get the bottom part of the 350 tag—if it has the wrong information on it, it will be

rejected. In addition to correct information, make sure the top portion of the 350 tag is firmly secured to the part so it will remain with it. (If the tag gets lost with all its documentation, you may never see that part again.)

Proper care of parts turned-in

In addition to paperwork, you are responsible for ensuring all parts you are turning in are reasonably clean—this includes being drained and purged, as appropriate. Refer to AFI 24-602, Volume 2, *Preparation and Movement of Air Force Cargo*, and Air Force Manual (AFMAN) 24-204, *Preparing Hazardous Materials for Military Air Shipments*, for additional information.

You will usually have a DIFM pick-up location where, once a day, someone from FSC picks up your parts. This is not always the case; at some bases you may be required to take the part to the FSC and have it processed. The FSC folks will then deliver the part to the repair shop. At other bases, you may only be required to process the AFTO Form 350 through FSC; afterward, you take the part you need repaired to the proper shop. At some bases, the FSC personnel may come and pick up the part from you and deliver it to the proper repair shop.

Again, the overall objective of the FSC is getting DIFM parts turned around as fast as possible. To achieve this, the repair cycle prioritizes repair of assets based on actual mission needs. This helps move assets through the repair cycle as quickly as possible to accomplish quality repair actions and maximize the repair capability. Your repair cycle time starts as soon as you remove a DIFM part from an aircraft, or piece of equipment.

Supply management products

Now that you have a basic idea of how the repair cycle works, let's look at some of the supply management products that allow you to monitor assets undergoing the repair cycle.

Daily document register

The daily document register (D04) is designed to help you keep track of a large part of your supply transactions. It provides information on all supply document numbers processed during the day. The report is in organization and shop code sequence. Under your organization on the list, your document numbers are also listed in sequence. Review your D04 daily for due-out releases (DOR) and cancellations. If you are not sure what you are looking at, sit down with a fellow maintenance manager or with your supply support personnel to have them walk you through what to look for.

The D04 is a complex report produced and sent out by LRS personnel in cryptic supply language. While explaining how to read everything on it is beyond the scope of this career development course (CDC), we will go over a couple of the more common items. For more detailed information, you can refer to AFI 23-101. Follow along in figure 2-1 as we explain the ERRC (item 2) and issue priority (item 4).

ERRC

The ERRC indicates what must be done with an aircraft part or piece of equipment when it is no longer serviceable. On the D04 (fig. 2-1), it is indicated by reference number 2 as the ERC. You will often hear both XD1 and XD2 assets referred to as LRUs and SRUs.

Some of the codes you may come across are listed in the following table.

Designator	Explanation
XD1	Depot Repairable Serialized Control and Reporting System (SCARS) Asset.
XD2	Depot Repairable AF Recoverable Assembly Management System (AFRAMS) asset.
XB3	Consumable.
XF3	Field (base) repairable or consumable.

Issue priority

The issue priority signifies the customer assigned UJC. In other words, it shows how quickly you need the part based on legitimate justification. The issue priority is reference number 4 on figure 2-1. The first character of the UJC is the UND. The second character of the UJC identifies the type of requirement. The following table presents UND and UJC descriptions and codes. In the lower part of the table notice that AF standard UJCs are used for non- MICAP requirements. When a verified MICAP condition exists, the first position of the AF UJC is replaced by the MICAP UND indicator 1, J, or / (slash). These MICAP UND indicators are used by the retail supply system to generate a MICAP condition code and report. For example: As a fuels specialists working on the flight line, you may use 1A or JA for a verified MICAP condition.

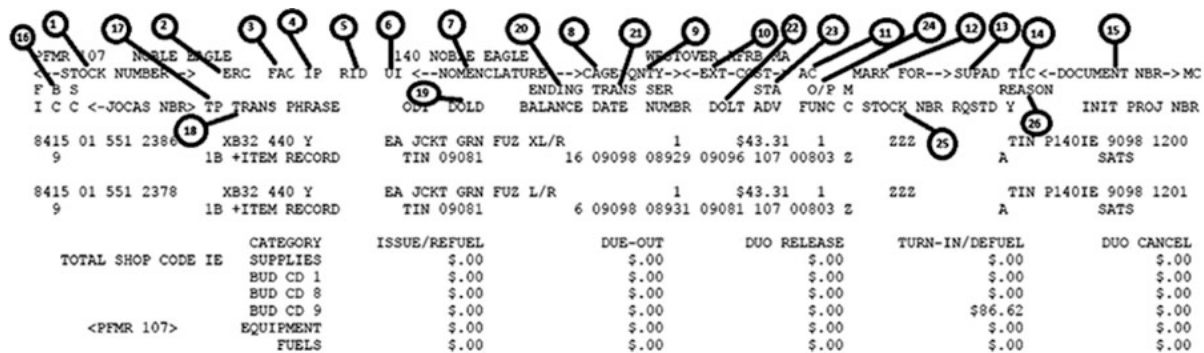


Figure 2-1. Daily Document Register (D04).

UND – First Character of the UJC	
Description	UND Code
Prevents mission accomplishment. May result in off-base requisition if not available in supply. Use for non-MICAP conditions.	A
Lack of item impairs mission accomplishment by decreasing effectiveness and efficiency. May result in off-base requisition if not available in supply. Used for non-MICAP conditions.	B
Used for stock replenishment, initial stockage (supplies and equipment) of parts for new end-items, or other routine requirements that do not qualify for a higher code. Used for non-MICAP conditions.	C
Lack of requested item impairs mission accomplishment because end-item is not fully equipped or operating at full capacity. Assigned when item is needed to repair a MICAP reportable end item.	J
Lack of requested item creates a reportable battle damage condition. Assigned when item is needed to repair a MICAP condition that was caused by hostile action.	/ (slash)
Prevents mission accomplishment because end-item is not operationally ready, out-of-commission, or inoperative. Assigned when item is needed to repair a MICAP reportable end item.	1

UJC				
Description	MICAP UJC	Standard UJC		
Aircraft, non-MICAP.	1A	AA	—	—
Aircraft, partial MICAP.	JA	AA	—	—
Aircraft critical engine, non-MICAP.	1M	AM	BM	CM
Battle damage.	/A	AA	—	—
Delayed discrepancy.	—	—	BQ	CQ
Material needed for AWP item.	—	AR	BR	—
Material needed for a TCTO.	—	AU	BU	CU
Requirements not otherwise coded.	—	AZ	BZ	CZ

Priority monitor report

The priority monitor report (D18) is produced daily and lists all your UND code of A parts that are backordered. As mentioned earlier, these are parts that prevent mission accomplishment. The D18 is a very useful product because it provides you with the current status of all your priority backordered parts. The D18 tells you what and how many of a particular item you ordered, where it's coming from, how it will be shipped, and an approximate delivery date. The D18 is only useful if you can properly interpret the meaning of each column.

To give you some practice, we'll go over the D18 columns. Keep in mind the D18 can be printed with different heading sequences. This means your D18 may not be in the same order as the one we are using; however, it should have the same information.

Refer to figure 2-2 as you read the explanations from the following table. Note that each column is associated with a reference number to make it easier to understand.

1	2	3	4	5	6	7	8	9	10	11	12	13
15 OCT 99 SHEPPARD AFB	/S 3020 01	PRIORITY MONITOR REPORT (D18)										
ORG/SHOP: 474AA	TITLE: 362TRS FIGHTER FLT 100	SUPP/EQUIP PART 3										
D/O MARK FOR..	DOCUMENT NBR..	ERRC.NOUN..	SUPADD	EXTENDED COST STOCK NUMBER								
SUP/ADD	REQN NBR.	APC D/I MARKED FOR	PURCHASE ORDER									
JOCAS NBR	PCD											
CLARK 64410	E474AA71920018 NF4 JACK HY	\$6,130.56	1730005162019	3	O	AZ	EA	S2250608	FPZ 0			N 3
YAZ474	92250508	E474AA71920018	1730005162019	3	I	O3			FPZ			
YAZ474				3	S			00224 BB	FPZ		99228	
AYALA5333	E474AA30400020 ND4 TRAILER YAZ474	\$46,407.19	1740010665068	1	O	AZ	EA	S2250638	FPZ 0	451		N 3
YAZ474	92250538	E474AA30400020	1740010665068	1	I	C3			FPZ			
YAZ474				1	S			00224 BB	FPZ		99228	
15 OCT 99 SHEPPARD AFB	/S 3020 01	PRIORITY MONITOR REPORT (D18)										
ORG/SHOP: 474AB	TITLE: 362TRS FIGHTER FLT 100	SUPP/EQUIP PART 3										
D/O MARK FOR..	DOCUMENT NBR..	ERRC.NOUN..	SUPADD	EXTENDED COST STOCK NUMBER								
SUP/ADD	REQN NBR.	APC D/I MARKED FOR	PURCHASE ORDER									
JOCAS NBR	PCD											
WENNER 65322	E474AB82380007 NF4 TRUCK H	\$4,429.00	3655005340564	4	O	AZ	EA	92110053	FPZ 0	M	231	N 3
YAZ474	92110053	E474AB82380007	3655005340564	4	I	O3			FPZ		226	
YAZ474				4	S			00226 BB	FPZ		99221	
WENNER 5322	E474AB82670022 NF4 TRAILER	\$67,611.00	173001355841C	3	O	AZ	EA	82870172	FPZ 0	7		N 3
YAZ474	82870172	E474AB82670022	173001355841C	3	I	O3			FPZ		320	
YAZ474				3	S			99365 BB	FPZ		99019	
WENNER 5322	E474AB91450040 NF4 LADER A	\$14,067.06	1730013904570	6	O	AZ	EA	91450074	FPZ 0	231		N 3
YAZ474	91450074	E474AB91450040	1730013904570	6	I	O3			FPZ			
YAZ474				6	S			00147 BB	FPZ		99151	
15 OCT 99 SHEPPARD AFB	/S 3020 01	PRIORITY MONITOR REPORT (D18)										
ORG/SHOP: 474AR	TITLE: 362TRS FIGHTER FLT 100	SUPP/EQUIP PART 3										
D/O MARK FOR..	DOCUMENT NBR..	ERRC.NOUN..	SUPADD	EXTENDED COST STOCK NUMBER								
SUP/ADD	REQN NBR.	APC D/I MARKED FOR	PURCHASE ORDER									
JOCAS NBR	PCD											
FLIPPEN 64410	E474AB82380007 NF4 TRUCK H	\$4,429.00	3655005340564	4	O	AZ	EA	92110053	FPZ 0	M	231	N 3
YAZ474	92110053	E474AB82380007	3655005340564	4	I	O3			FPZ		226	
YAZ474				4	S			00226 BB	FPZ		99221	
FLIPPEN 3470	E474AB82670022 NF4 TRAILER	\$67,611.00	173001355841C	3	O	AZ	EA	82870172	FPZ 0	7		N 3
YAZ474	82870172	E474AB82670022	173001355841C	3	I	O3			FPZ		320	
YAZ474				3	S			99365 BB	FPZ		99019	
FLIPPEN 3470	E474AB91450040 NF4 LADER A	\$14,067.06	1730013904570	6	O	AZ	EA	91450074	FPZ 0	231		N 3
YAZ474	91450074	E474AB91450040	1730013904570	6	I	O3			FPZ			
YAZ474				6	S			00147 BB	FPZ		99151	
15 OCT 99 SHEPPARD AFB	/S 3020 01	PRIORITY MONITOR REPORT (D18)										
ORG/SHOP: 474AR	TITLE: 362TRS FIGHTER FLT 100	SUPP/EQUIP PART 3										
D/O MARK FOR..	DOCUMENT NBR..	ERRC.NOUN..	SUPADD	EXTENDED COST STOCK NUMBER								
SUP/ADD	REQN NBR.	APC D/I MARKED FOR	PURCHASE ORDER									
JOCAS NBR	PCD											
FLIPPEN 64410	E474AB82380007 NF4 TRUCK H	\$4,429.00	3655005340564	4	O	AZ	EA	92110053	FPZ 0	M	231	N 3
YAZ474	92110053	E474AB82380007	3655005340564	4	I	O3			FPZ		226	
YAZ474				4	S			00226 BB	FPZ		99221	
FLIPPEN 3470	E474AB91450040 NF4 LADER A	\$14,067.06	1730013904570	6	O	AZ	EA	91450074	FPZ 0	231		N 3
YAZ474	91450074	E474AB91450040	1730013904570	6	I	O3			FPZ			
YAZ474				6	S			00147 BB	FPZ		99151	
15 OCT 99 SHEPPARD AFB	/S 3020 01	PRIORITY MONITOR REPORT (D18)										
ORG/SHOP: 474AR	TITLE: 362TRS FIGHTER FLT 100	SUPP/EQUIP PART 3										
D/O MARK FOR..	DOCUMENT NBR..	ERRC.NOUN..	SUPADD	EXTENDED COST STOCK NUMBER								
SUP/ADD	REQN NBR.	APC D/I MARKED FOR	PURCHASE ORDER									
JOCAS NBR	PCD											
FLIPPEN 64410	E474AB82380007 NF4 TRUCK H	\$4,429.00	3655005340564	4	O	AZ	EA	92110053	FPZ 0	M	231	N 3
YAZ474	92110053	E474AB82380007	3655005340564	4	I	O3			FPZ		226	
YAZ474				4	S			00226 BB	FPZ		99221	
FLIPPEN 3470	E474AB91450040 NF4 LADER A	\$14,067.06	1730013904570	6	O	AZ	EA	91450074	FPZ 0	231		N 3
YAZ474	91450074	E474AB91450040	1730013904570	6	I	O3			FPZ			
YAZ474				6	S			00147 BB	FPZ		99151	

Figure 2-2. Priority Monitor Report (D18).

NOTE: Use the reference number for each item to locate the item in the figure.

Column Heading	Reference Number	Explanation	
D/O MARK FOR DOCUMENT NBR	1	Due-out document number.	
ERRC	2	ERRC—used to categorize AF inventory into various management groupings (i.e.; XD1, XB3, XF3, etc.). These categories are used to determine how an asset is managed throughout the logistics cycle.	
NOUN	3	The first seven characters are used to identify the item.	
SUPADD	4	Supplemental address that identifies a delivery location that is different from the servicing base supply.	
EXTENDED COST	5	Cost of the item times the quantity ordered.	
STOCK NUMBER	6	Identifies the stock number of the item that's due out. Your D18 may have the document number, system requirements document, or even an aircraft tail number in this column.	
QTY	7	Quantity.	
UJC	8	Unit justification code.	
UI	9	Unit of issue.	
MD	10	Memo/firm due-out indicator. This information is important; if an asterisk is shown, then the due-out part has funds obligated. This means you've already paid for it. If there is a zero, a firm due-out (item has been ordered) has been established. If there is a 1, a memo due-out (item hasn't been ordered) is indicated.	
TX	11	Transaction exception code.	
RX	12	Requisition code that suppresses automatic requisitioning action.	
DES	13	Delivery destination code.	
AFC	14	Identifies a follow-up indicator. In some cases it may have letters AFC (action flag C). This tells you supply personnel have been working to get you your part; that is, they've sent a follow-up action to the place that has your part.	
D/I MARKED FOR	15	Be careful, it isn't what it sounds like. It's just a due-in document number base supply establishes with the depot providing the item.	
PRI	16	Indicates the requisition priority—a two-digit numeric priority code that every organization or shop is assigned. It ties into the FAD code indicating the level of combat readiness that must be maintained. A FAD code of I is the highest priority, and to get this code requires approval by the President. If you're stationed overseas, you'll use either FAD code II or III. If you're in the United States, you might use III or IV.	
EDD	17	Estimated delivery date.	
CS	18	Current status/mode of shipment code. This can be either the current status (two-digit code) or the mode of shipment (one-digit code). The two tables that follow have some of the more common status and mode of shipment codes.	
		Code	Explanation
		BA	Item being processed for release and shipment.
		BB	Item backordered against a due-in to stock. Can also be used for local manufactured items.

Column Heading	Reference Number	Explanation	
		BD	Requisition is under review.
		BQ	Canceled.
		BV	Item procured and on contract for direct shipment.
		CK	Rejected. Item not available. Requisition next higher assembly.
		99	Follow-up action. This code will decrease by one each time a subsequent follow-up action is taken.
		Mode of Shipment Codes	
		Code	Mode
		A or B	Truck.
		E	Bus.
		G	Surface parcel post.
		J	Air, small package carrier.
		K or L	Rail.
		N	Log/Air Contract.
PS	19	Previous status; the status it was before the current status shown in reference number 18.	
RID	20	Routing identifier name, a three-character code tells you the agency your order went to.	
RDD	21	Requested due date. It's a date supply personnel provide to indicate when you are supposed to get the part.	
STD	22	Source transaction code. It's the date of most recent change affecting the process of procuring the item. Remember, the report prints all UND due-outs coded as A for a work center each day. The STD lets you know the last time there was any different information on the item.	

Repair cycle asset management list

The repair cycle asset management list (D23), sometimes referred to as the DIFM list, columns provide all the necessary information you'll need to track reparable parts throughout the repair process. In essence, the purpose of this listing is to provide the necessary information to manage your repair cycle assets.

The following list provides some of the uses:

- Displays a current inventory of parts in your possession that need to be turned-in to supply.
- Contains summary totals and statistics to aid supply and maintenance managers in determining the status of the DIFM program.
- Presents current status and location of DIFM assets for information managers, or equivalent, to more accurately maintain the listing.
- Allows personnel to view DIFM suspenses and monitor delinquent items.
- Facilitates an orderly and continuous flow of reparable items through the various maintenance activities and aids in keeping the DIFM delinquency rate to a minimum.

There are fewer columns on this document than the other documents we've covered. As with the D18, your D23 may be printed in a different order than the one we present. If you have any questions about your local D23, ask your local maintenance supply support representative. Refer to figure 2-3 as we discuss the column headings of the D23.

16 1
 CIRCUIT CARD ASSEMB 4 D
 18 OCT 99 SHEPPARD AFB
 NGV905/980925 99291 99291
 /S 3020 01
 PAGE 2
 LC
 2 3
 4 5
 REPAIR CYCLE ASSET MGT LIST (D23)
 DIFM LISTING (DOC NBR SEQ)
 6 7 8 9 10 11 12 13 14 15
 STA AWP DEL A STA ISU
 M S
 *****PHRASE*****
 NOMENCLATURE P F
 CICMI STOCK NUMBER*** QTY DOCUMENT NBR** ERC CUR PRE DAY DAY DAY D IND LOC DAY PBR
 U 1560006862018XE 1 J158SM92440122 XF3 OAM 47 DUO TNB 57
 FIRWAL3-12331-51B L D
 U 1560008634491XE 1 J158SM92710100 XF3 20 ISU 822 20 05
 CANOPY, FIXED, 2-13 4 D
 U 1560009079290XE 1 J158SM92710102 XF3 AWM 20 ISU SM 20 08
 TRAILING EDGE25101-1 4 D
 18 OCT 99 SHEPPARD AFB
 NGV905/980925 99291 99291
 /S 3020 01
 PAGE 3
 LC
 REPAIR CYCLE ASSET MGT LIST (D23)
 DIFM LISTING (DOC NBR SEQ)
 STA AWP DEL A STA ISU
 M S
 *****PHRASE*****
 NOMENCLATURE P F
 CICMI STOCK NUMBER*** QTY DOCUMENT NBR** ERC CUR PRE DAY DAY DAY D IND LOC DAY PBR
 U 8120002683355 1 C160CM90220100 NF1 CTE 269 001 ISU 062 269
 BREATH OXYGEN CYL E D
 U 8120002826618 3 C160CM91970101 NF1 CTE 91 001 ISU 238 94
 CYLINDR NITRO 200CF 4 D
 U 8120002826618 44 C160CM92730100 NF1 CTE 18 ISU 308 18
 CYLINDR NITRO 200CF 4 D
 U 8120002683355 200 C160CM92730101 NF1 CTE 18 ISU 308 18
 BREATH OXYGEN CYL E D
 7 8120002828077 43 C160CM92910100 NF1 ISU CMI
 CYLINDER COMPRESSED E D
 18 OCT 99 SHEPPARD AFB
 NGV905/980925 99291 99291
 /S 3020 01
 PAGE 4
 LC
 REPAIR CYCLE ASSET MGT LIST (D23)
 DIFM LISTING (DOC NBR SEQ)
 STA AWP DEL A STA ISU
 M S
 *****PHRASE*****
 NOMENCLATURE P F
 CICMI STOCK NUMBER*** QTY DOCUMENT NBR** ERC CUR PRE DAY DAY DAY D IND LOC DAY PBR
 U A* 4140014138961 1 J167KR72800049 XD2 OAM 743 DUO 454 00
 FAN,CENTRIFUGAL C A
 U A* 4140014138961 1 J167KR73390049 XD2 OAM 684 DUO 454 00
 FAN,CENTRIFUGAL C A
 U A* 4140014138961 1 J167KR73560044 XD2 OAM 667 DUO 454 00
 FAN,CENTRIFUGAL C A
 U A* 4140014138961 1 J167KR80890092 XD2 OAM 568 DUO 454 00
 FAN,CENTRIFUGAL C A

Figure 2-3. Repair Cycle Asset Management List (D23).

Repair Cycle Asset Management List (D23) Columns	
Column	Description
PHRASE	The phrase is indicated by reference number 1. It's a locally determined phrase such as: SHOP CHIEF ATTN REQ, MAINT OFF ATTN REQ, or IMMEDIATE ATTN REQ.
CI (Ref # 2)	If there is a double asterisk in the CI column, it means that the item is considered a critical item. This means there aren't enough of these parts to go around—so don't "sit on" this one.
STOCK NUMBER	The stock number is indicated by reference number 3.
QTY	Reference number 4 shows the quantity.
DOCUMENT NUMBER	The document number is shown by reference number 5.
ERC	Reference number 6 indicates the ERRC code. They are the XB3, XF3, and XD2 codes we covered in reference number 2 on the D04.

Repair Cycle Asset Management List (D23) Columns																													
Column	Description																												
CUR	<p>Reference number 7 indicates the current status. In other words, this column reflects the status of the DIFM part you have in your shop. Don't get it confused with the status of parts you have backordered. Some of the more commonly used codes are in the following table insert. You've probably heard of a few of them.</p> <table> <tr> <th colspan="2">Current Status Codes (for DIFM parts)</th></tr> <tr> <th>Code</th><th>Status</th></tr> <tr> <td>AWI</td><td>Awaiting Installation.</td></tr> <tr> <td>AWM</td><td>Awaiting maintenance.</td></tr> <tr> <td>AWP</td><td>Awaiting parts (one item is backordered against the DIFM asset).</td></tr> <tr> <td>02P</td><td>Awaiting parts (two items are backordered against the DIFM asset. Three parts would be O3P and so on).</td></tr> <tr> <td>AXC</td><td>Aircraft cross country.</td></tr> <tr> <td>EWI</td><td>Engine components awaiting installation.</td></tr> <tr> <td>FEM</td><td>Forecasted engine maintenance.</td></tr> <tr> <td>FTL</td><td>Flightline.</td></tr> <tr> <td>INW</td><td>In work.</td></tr> <tr> <td>TCG</td><td>Time change.</td></tr> <tr> <td>TNB</td><td>Tail number bin.</td></tr> <tr> <td>TIN</td><td>Turn-in to supply.</td></tr> </table>	Current Status Codes (for DIFM parts)		Code	Status	AWI	Awaiting Installation.	AWM	Awaiting maintenance.	AWP	Awaiting parts (one item is backordered against the DIFM asset).	02P	Awaiting parts (two items are backordered against the DIFM asset. Three parts would be O3P and so on).	AXC	Aircraft cross country.	EWI	Engine components awaiting installation.	FEM	Forecasted engine maintenance.	FTL	Flightline.	INW	In work.	TCG	Time change.	TNB	Tail number bin.	TIN	Turn-in to supply.
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TCG	Time change.																												
TNB	Tail number bin.																												
TIN	Turn-in to supply.																												
PRE	The previous status is shown in reference number 8. It reflects the previous status of the DIFM asset to help prevent you from having to look at yesterday's D23.																												
STA DAS	Reference number 9 shows the status days or days in that status. This indicates the number of days that have passed since the current status of the DIFM asset was changed.																												
AWP DAS (Ref # 10)	Awaiting parts days indicates the number of days the DIFM asset has been awaiting parts.																												
ADV	<p>Reference number 11 is the awaiting parts advice code. Some of these codes are in the following table insert.</p> <table> <tr> <th colspan="2">Awaiting Parts Advice Codes</th></tr> <tr> <th>Code</th><th>Advice</th></tr> <tr> <td>1</td><td>Evacuate end item.</td></tr> <tr> <td>2</td><td>Hold. Repair part being supplied within 30 days for continental United States (CONUS) or 45 days for overseas.</td></tr> <tr> <td>3</td><td>Hold. Requisition stock replacement.</td></tr> <tr> <td>4</td><td>Hold. Message to follow.</td></tr> <tr> <td>5</td><td>Hold. Submit new report if problem not resolved within 60 days.</td></tr> <tr> <td>6</td><td>Hold. Submit new report if end item remains AWP beyond 90 days.</td></tr> </table>	Awaiting Parts Advice Codes		Code	Advice	1	Evacuate end item.	2	Hold. Repair part being supplied within 30 days for continental United States (CONUS) or 45 days for overseas.	3	Hold. Requisition stock replacement.	4	Hold. Message to follow.	5	Hold. Submit new report if problem not resolved within 60 days.	6	Hold. Submit new report if end item remains AWP beyond 90 days.												
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Repair Cycle Asset Management List (D23) Columns											
Column	Description										
STA IND	<p>The status indicator shown in reference number 12 is important. The status in this column can be one of those shown in the following table insert.</p> <table> <tr> <th colspan="2">Status Indicators</th></tr> <tr> <th>Status</th><th>Explanation</th></tr> <tr> <td>ISU (Issued)</td><td>Supply personnel have issued this DIFM part, but maintenance hasn't turned the reparable DIFM part back into supply. Somebody up the chain of command will be watching for this and the number of days in column 14. If you aren't going to repair the part, get it turned-in as soon as possible; preferably within one day.</td></tr> <tr> <td>DUO (Due-out)</td><td>Supply personnel haven't issued the DIFM asset and maintenance hasn't turned an asset in against the due-out document number</td></tr> <tr> <td>CRD (credit)</td><td>Supply personnel haven't issued the DIFM asset; however, maintenance has turned-in an asset against the due-out document number.</td></tr> </table>	Status Indicators		Status	Explanation	ISU (Issued)	Supply personnel have issued this DIFM part, but maintenance hasn't turned the reparable DIFM part back into supply. Somebody up the chain of command will be watching for this and the number of days in column 14. If you aren't going to repair the part, get it turned-in as soon as possible; preferably within one day.	DUO (Due-out)	Supply personnel haven't issued the DIFM asset and maintenance hasn't turned an asset in against the due-out document number	CRD (credit)	Supply personnel haven't issued the DIFM asset; however, maintenance has turned-in an asset against the due-out document number.
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CRD (credit)	Supply personnel haven't issued the DIFM asset; however, maintenance has turned-in an asset against the due-out document number.										
LOC (Ref # 13)	The location is a locally determined address of the location of the DIFM asset. Normally, this will be your delivery destination code.										
ISU DAS (Ref # 14)	The issue days indicate the number of days since the DIFM asset has been issued.										
PBR (Ref # 15)	<p>The percent of base repair (PBR) is the number of specific serviceable items you turned-in to supply versus how many of these same parts have been issued. This could be a true percentage of repairs you have performed on the same type of DIFM assets in the past to return it to a serviceable status. In other words, if you have fixed five of the last five of these parts and turned them in serviceable, you'll have a 100 percent repair rate. At times this number can be skewed.</p> <p>For example, let's say the propulsion section ordered a relay box to fix a problem on an engine. After making the order, the shop personnel found out the problem was something different than what they had suspected. All they have to do is turn the relay box in as serviceable, right? Even though you can't fix these relay boxes, the D23 will now show that you have a repair percentage. No matter your AF specialty code (AFSC), there may come a day when your commander asks "...why are you turning in these parts not repairable this station (NRTS) when you obviously repaired them in the past?" You answer might be, "After we replaced the part, it didn't fix the problem. So we turned the part back in serviceable, hence giving the false indication that we repaired one."</p>										
NOMENCLATURE	This is simply the name of the part (reference number 16).										

Other supply management products

In addition to the D04, D18, and D23, there are several other supply management documents you may see. We won't get into any detail with these but more information can be obtained by getting with your maintenance supply support section or referring to AFI 23-101.

Supply Management Products	
Product	Description
Due-Out Validation List (M30)	This monthly listing provides a means to monitor and verify that each due-out is still a valid requirement; with the exception of UND C equipment items, as they are provided quarterly.
Organization Effectiveness Report (M-24)	This report provides a management product to monitor the issue and bench stock support effectiveness for each organization supported by supply.

AWP Validation List (D19)	This listing shows all repair cycle items in AWP status and the status of bits and pieces that are on order to fix the repair cycle end-item. This information is used by maintenance organizations to plan and schedule the end-item into repair shops. It is also used by supply to expedite receipt of bits and pieces needed to repair AWP end-items.
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As you can see, there is a lot to know when it comes to managing supply assets. Fortunately, you do not need to know everything about all of them to perform your job. As you begin to deal with these reports on a regular basis, it will become fairly easy to know what to look for.

008. The deficiency report

Deficiency reporting, investigation and resolution (DRI&R) process provides the AF with a means of identifying deficiencies, resolving those deficiencies within the bounds of program resources and the appropriate acceptance of risk for those deficiencies that cannot be resolved in a timely manner. An equally important purpose of the DRI&R process is to provide feedback to the warfighters and other users in the field on the resolution of deficiency reports (DR) originated by their organization.

DRI&R drives the continuous improvement of system quality. Through process standardization, it seeks to reduce waste. It allows investigative findings to be applied to reappearances (e.g. in the occurrence of the same common item deficiency on different systems). DRI&R reduces total ownership costs by identifying a system's deficiencies early in its life cycle. Deficiency reporting provides support during the test and evaluation (T&E) activity; as a result, it promotes the early discovery of defects.

The deficiency reporting process is covered in great length within TO 00-35D-54, *USAF Deficiency Reporting, Investigation, and Resolution*. Though the use of Joint Deficiency Reporting System (JDRS), DRI&R improves system safety, particularly on service-common critical safety items. JDRS is used commonly between the AF and the aviation communities of the Navy and Coast Guard, providing a platform for robust information sharing, and facilitates process standardization between services.

Joint deficiency reporting system

The JDRS is a secure and common access card (CAC) enabled Website. By definition, access to the site is restricted to protect "For Official Use Only" (FOUO) information. However, JDRS is *not* certified to handle classified information. Anyone can submit a "No Login" DR by accessing JDRS at <https://jdrs.mil/> or through the AF Portal. Only registered users can "Login" to the site and there is a registration handbook available to assist with the registration process. For our purposes, we are going to focus on "No Login."

You will need to find out who is your "screening point," which is typically the TODO or QA function at most installations. Screening points can assist with determining the type of DR to use, provide the report control number (RCN) and help with some of the other necessary details needed for submittal. Before you begin the process of submitting your information, collect all of the applicable data and details (as shown in the following list).

The following are details you need for submitting:

- Your e-mail address.
- Unit mailing address.
- Department of Defense activity address code (DoDAAC).
- Part number (P/N).
- Serial number (S/N).
- National stock number (NSN).
- Work unit code (WUC).

- How malfunctioned code (HMC).
- Manufacturer commercial and government entity (CAGE) code.
- P/N & NSN of next higher assembly and end item.
- Quantity received.
- How many items affected.

On the JDRS Website, select the Initiate DR link, which is one of three links to appear when you place your mouse cursor over the TOOLKIT tab. The DR selection page allows users to generate a specific DR form. You will now need to select a community and report type. There are submission handbooks available under the HELP tab for further instructions on submitting each report type.

Next, you will have to select your unit from the drop down box on the DR Request form and enter the necessary fields of entry (as previously listed). Contact your screening point for assistance with “Description of Deficiency” details.

Once that section is completed, select the Action/Exhibit Disposition Code. For most DRs, this will be “Holding Exhibit.” You will then have to select the unit that may ship the exhibit and fill in all other boxes with pertinent information.

You will have to select a requested action; whether that is to request a replacement, request credit, information only, or other. Then complete all related fields and attach supporting documentation and/or pictures. Once all fields are completed, you have the option to save without sending, continue, validate DR, or cancel and return. For submitting, select Continue and review the details in the DR e-mail preview, select the Print Version and then select Submit.

You will receive several e-mails from different offices, such as the screening point, data review, action point, and interim report. The action point will inform you when to turn-in the exhibit to your holding point (usually base supply). The final disposition will let them know what to do with the items; if approved, you will receive a credit turn-in on your cost or the exhibit will be returned to the manufacturer, repaired and returned to you.

Always keep printed copies of any DRs along with final disposition for future reference. Once you have accomplished a few DRs, they will take very little time to complete in the future. With funding the way it is in today’s AF, completing DRs are a good way to get your money refunded or equipment repaired. It may also help prevent future deficiencies.

Self-Test Questions

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

004. Characteristics of the supply system

1. In what two ways is the AF supply system different than civilian distribution systems?
2. What three characteristics depict the concept of the supply system?

005. The supply system

1. Describe the SBSS.

2. Which office is normally your primary POC for supply related questions and queries?
3. Who is the first point in the process for obtaining materiel from supply?
4. Which element would you call for equipment issues?
5. In what way must supplies and equipment be protected?

006. Maintenance repair and delivery priorities

1. What do expedite supply requests represent?
2. Expedite issue requests have UJC codes of “A” or “B.” What supply priority responses are normally assigned to these requests?
3. Within how many minutes should the supply system deliver a part that has issued with a delivery priority of “1?”
4. What is the highest priority of an expedite request that is used to order parts required for the repair of mission essential equipment?
5. Who should you contact if you need to request modification of a backorder, including changing the UJC or RDD?

007. Repair cycle tracking and supply management products

1. Repair cycle assets are parts with an ERRC code starting with what letters?
2. What is the first character of the UJC?
3. Which supply management document can tell what and how many of a particular item you ordered, where it’s coming from, how it will be shipped, and an approximate delivery date for all your priority backordered parts?

4. Which supply management document facilitates an orderly and continuous flow of reparable items through the various maintenance activities and aids in keeping the DIFM delinquency rate to a minimum?
5. Which supply management documents provides a means to monitor and verify that each due-out is still a valid requirement?

008. The deficiency report

1. What DRI&R system is used commonly between the AF and the aviation communities of the Navy and Coast Guard?
2. Who is *typically* the “screening point” when submitting a DR at most installations?
3. What details are needed to submit a DR?
4. Once a DR has been submitted, who will inform you when to turn-in the exhibit?

2-2. Equipment Management

In this section, we briefly cover the topic of equipment account management. You have access to AFI 23-101, supply personnel, as well as field training detachment (FTD) courses that may help make you more of an expert. As a result, our objective is to give you a few pointers to steer you in the right direction just in case you find yourself managing an equipment account one day. More importantly, we hope to give you enough knowledge on these issues so that you can properly guide your personnel if they ever ask supply related questions. With that, let’s talk about equipment.

009. Equipment items

We begin our lesson with a question. What does the term equipment mean? The AF defines equipment as all items of a durable nature capable of continuous or repetitive use by an individual or organization. Equipment can be individual, organizational, or special. Equipment authorization inventory data (EAID) items are equipment items requiring formal supply accountability and must be reflected on the organization’s custodian authorization/custody receipt listing (CA/CRL). You may have equipment items that are non-EAID items. If so, they do not require formal supply property accountability unless they are showing on the CA/CRL.

The equipment items possessed by a unit can cost a great deal of money and must be taken care of meticulously. A broken piece of equipment can not only hinder mission accomplishment, it can prevent it altogether. In addition to caring for the equipment that you have, you must ensure that you have every piece of equipment that you need and that you turn-in excess equipment that you don’t need. Just like aircraft parts, there are only so many equipment items available in the AF. If you have excess, then another unit may not be able to fulfill its mission. A unit should continually review

equipment items needed for mission accomplishment. LRS supply personnel are available to assist. However, the primary person that accounts for equipment within a unit is the equipment account custodian.

Assigned responsibilities

If you're assigned duties as the primary or alternate equipment custodian, your squadron commander must appoint you by letter to perform these duties. Once you've been appointed, you must be scheduled for training. This training will cover your responsibilities, current equipment policies, and procedures. You can call supply personnel in the LRS customer service section and they'll help you get set up for training. Depending on the account you have you will need certain blocks of equipment account training. The following table shows the breakdown of the supply training you will need depending on your account type.

Course	Description
Block I training	Covers general supply indoctrination subjects. The subjects covered include: <ul style="list-style-type: none"> • Setting up accounts. • Fraud, waste, and abuse program. • Individual responsibilities and supply discipline. • Financial liability. • Management documents. • Special programs.
Block IIA training	Covers everything you need for bench stock management.
Block IIB training	Covers repair cycle management for DIFM monitors.
Block III training	Covers equipment management training. This course must be completed for individuals to perform duties as a primary or alternate equipment custodian.
Retraining or follow-on supply training	The requirements for these training types can be different from one base to another. In addition, other factors can influence the determination of retraining. Normally, if you're immediately reappointed to the same duty, it won't be necessary to attend another class. However, if there's a period of time where you haven't performed duties as a custodian, you'll probably have to go through the training again.

As a new equipment custodian, you'll be required to perform an initial inventory. During this inventory, you must ensure that all items are on-hand and serviceable. Remember, once you sign for the account, you are responsible for everything on that account. After your initial inventory, you'll be required to do a follow-up inventory at least annually or when requested by LRS supply personnel. Again, ensure that all items are on hand and serviceable. When you are going to permanently leave the section, you must start the transfer process to a new custodian as soon as possible. If you fail to start early, it may delay your departure. One week before you leave is not a good time to find out you're missing an item that is on your account. In all probability, if the item is not found, you will not leave on time. The reason for this is because if a commander allows a primary custodian to permanently depart a duty station without an account having been properly transferred, the commander must sign for all equipment within 45 days—that is not a likely event!

In addition to inventories, there are other duties you'll be required to perform as a custodian. A few of your duties are included in the following list:

- Prepare and forward requests for equipment authorization and allowance changes, and other property transactions subject to EAID to the EAE in LRS. This will require your commander's or a designated representative's signature.

- Request equipment and tools using an AF Form 601, Equipment Action Request, or an AF Form 2005, Issue/Turn-In Request. LRS will provide an updated CA/CRL if changes are made.
- Verify the CA/CRL you receive from the EAE section to ensure that it is complete and accurate. After you verify all information is correct, sign and return the CA/CRL to the EAE within 15 workdays.
- Perform spot checks and periodic inventories on all assigned property.
- Make sure all equipment that is turned-in is clean and complete.
- Prepare and maintain an AF Form 1297, Temporary Issue Receipt, for items loaned outside the custodian's span of control.
- Affix labels provided by the personnel in the EAE section for the equipment on your account.

Changing custodians

When there's a need to change equipment custodians, your commander must appoint the new custodian. To transfer the account to the new custodian, the departing custodian must forward a request (through the commander) to the personnel in the EAE section. When the request for transfer is received, the EAE personnel return two copies of the CA/CRL. They will also ensure that the new custodian receives equipment account training before signing for the account.

Again, it must be stressed that if you're selected as a new custodian, ensure that you do an inventory and are fully satisfied that all items and quantities included on the CA/CRL are accurate. Don't take formal custody until you complete this very important inventory. After you accomplish the inventory, send a legible copy of the CA/CRL, with a legible signature, to the personnel in the EAE. Keep in mind, this can't be a copy produced on a duplicating machine unless it has an original signature. Retain a copy of the new CA/CRL for your records.

Transferring equipment pieces

As custodian, you must notify the EAE personnel before you move or transfer items listed on the CA/CRL out of your span of control. An example is a deployment. If this isn't possible, notify the EAE folks the next workday. EAE approval is not required when you loan items out on an AF Form 1297.

For transfer of equipment between custodians, the gaining custodian coordinates with the losing custodian, and the gaining custodian submits a request for transfer. Upon receipt of the request, EAE processes the transfer so that it is reflected on the gaining custodian's CA/CRL.

For transfers of equipment for rotation, exercises, deployments or inter- or intra-command loans, immediately notify the personnel in the EAE before you physically move the item. Additionally, notify the EAE personnel when the item is returned or when you receive the item from other activities. EAE personnel will prepare the inputs to transfer the items.

Relief from responsibility

To be relieved from account responsibility, make sure that all property charged to your account is on hand or action has been taken to clear the account of missing or damaged items. If you find that a piece of equipment is missing during the inventory, notify the personnel in the EAE immediately. They'll advise you (and your commander) on what action must be taken. In addition, they'll help you complete the needed documents. They will also make any equipment identity changes needed to correct errors.

Liability for equipment

If equipment has been lost or destroyed, the item needs to be removed from your account. However, that does not relieve you, or the person that was responsible for the damage, from liability. To deal with this situation, a report of survey (ROS) and voluntary payments are two avenues commanders may use, as explained in the following table:

Liability for Equipment Remedies	
Remedy	Description
Report of survey	<p>There are various rules about when an ROS may be appropriate. However, there are certain circumstances when it is mandatory. One such instance is when there is evidence of gross negligence or willful misconduct. Another instance is when controlled or sensitive items, weapons, or classified items have been damaged, destroyed, or lost. In these cases an ROS is mandatory, regardless of the cost.</p> <p>The DD Form 200, Financial Liability Investigation of Property Loss, is always used to document an ROS. All AF members are subject to mandatory collection for loss, damage, or destruction of government property that was determined to be caused by their negligence, willful misconduct, or deliberate unauthorized use.</p> <p>In addition to assessing financial liability, an ROS can also be used to relieve personnel from financial responsibility when there is no evidence of negligence, willful misconduct, or deliberate unauthorized use of the property being investigated. In other words, if the investigation clears an individual from liability, then he or she will bear no financial responsibility.</p>
Voluntary payments	<p>If AF members or civilian employees do not wish to endure the ROS process, they may voluntarily pay the government for the lost, damaged, or destroyed government property—provided the loss or damage was not due to their gross negligence or willful misconduct.</p> <p>Voluntary payment may be made any time before or during the ROS process. In some cases, voluntary payments are made as a result of an investigating official's recommendation or approving authority's assessment.</p> <p>To process a voluntary payment in lieu of an ROS, a DD Form 1131, Cash Collection Voucher, or DD Form 362, Statement of Charges/Cash Collection Voucher, should be used. For more information on the ROS and voluntary payments, refer to DoD 7000.14-R, <i>Financial Management Regulation</i>.</p>

If you are assigned as an equipment custodian, refer to AFI 23-101 for a detailed explanation of your responsibilities and duties.

010. Special purpose recoverable authorized maintenance assets

As previously stated, SPRAM assets are basically aircraft parts used for a variety of purposes and generally termed spares. They include fault isolation spares, shop standard spares, training spares, the spare -21 series technical orders, test station spares, and stand-alone spares. These assets have an ERRC code of XD or XF and are controlled and managed as in-use supply assets. Maintenance personnel use them to perform such functions as detecting or isolating faults, calibrating or aligning equipment, and duplicating an active system installed in an aircraft or on active equipment. In addition, SPRAM includes items in the -21 series technical orders and are used to conduct approved AETC training courses.

SPRAM assets are managed on in-use detail records accounted for by LRS/materiel management activity. These in-use details provide the item manager with AF-wide visibility of XD assets for requirements and buy computations. This ensures additional SPRAM assets are procured if requirements exceed assets available.

SPRAM responsibilities

Let's discuss SPRAM responsibilities before we get into SPRAM codes. The following table describes the various levels of responsibility associated with SPRAM assets.

SPRAM Responsibilities	
Responsibility Level	Description
MAJCOMs	All SPRAM authorization requirement requests must be forwarded to the applicable MAJCOM headquarters for consideration. Data should include the stock number, quantity, end item supported, justification, and a statement of funding availability (funded or unfunded) which decides who will pay the bill. MAJCOMs forward funded requests with a statement of unit/MAJCOM funding availability for the requested items to the system program director (SPD) for final approval. For deployments, the lead MAJCOM that owns the AOR for the deployment location is responsible for budgeting and funding for steady state common use requirements. Examples of common use requirements shared by all deployed units are SPRAM test stations and sampling analyzers. Once the MAJCOM receives SPD approval with supporting documentation, the MAJCOM forwards a copy of approval documentation and notifies the supported activity to requisition the asset.
Primary and alternate SPRAM custodians	<p>Upon assignment, the primary and alternate SPRAM custodians must attend training on responsibilities, current policies, and procedures for SPRAM account management with the equipment liaison office (ELO) within the LRS. Once trained, custodians must perform inventories of SPRAM assets as identified on the R25, SPRAM Report List, which is furnished by the supply personnel in the ELO upon change of primary custodian. A new list can also be obtained when you or your organization's commander requests an inventory, or when the applicable MAJCOM determines an inventory needs to be accomplished.</p> <p>Custodians must:</p> <ul style="list-style-type: none"> • Review justification for SPRAM authorizations concurrent with the annual inventory. • Determine whether original justifications are still valid and validate annually. • Delete invalid SPRAM authorizations, turn-in excesses, and cancel unneeded requisitions. • Maintain justification documentation for all SPRAM authorizations until the authorizations are deleted. • Verify that the R25 list received from the ELO is complete and accurate; afterwards, sign, date and return the list to the ELO within 15 workdays.
Mission support group commander (MSG/CC)	Unless delegated to the MXS/CC, the MSG/CC is responsible for reviewing and certifying all requests for SPRAM authorizations submitted by SPRAM custodians. MSG/CC must also ensure that all SPRAM assets are properly maintained and safeguarded.
Organization commanders	Organizational commanders must ensure all mission-essential SPRAM assets are on-hand or on-order to support the assigned or programmed functions for which they were authorized. They are also responsible for appointing capable individuals as SPRAM custodians and alternates, including the establishment, change, or cancellation of SPRAM accounts. Custodians may be commissioned officers, noncommissioned officers, or civilians and must be mutually agreed upon by the organization commander and the MSG/CC.

Self-Test Questions

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

009. Equipment items

1. What block of supply training covers general supply indoctrination subjects?

2. What block of supply training must an individual complete to perform duties as a primary or alternate equipment custodian?
3. What form must be used when items on an equipment account are loaned outside the custodian's span of control?
4. What two forms could be used to process a voluntary payment in lieu of an ROS?

010. Special purpose recoverable authorized maintenance assets

1. SPRAM assets are coded with what ERRC codes?
2. Custodians must verify the R25 list is complete and accurate. Afterwards, they must sign, date and return to the ELO within how many workdays.

Answers to Self-Test Questions

004

1. The complexity of the AF supply system, and its delivery speed and economy of operation. For example, the AF supply system procures, stocks, and issues several million different items to thousands of customers worldwide. Additionally, the system must immediately respond to the constantly changing needs of its customers.
2. The characteristics must be segmented geographically, functionally, and by classification. For example, the system is worldwide; secondly, accomplishment of the supply system mission depends on the performance of specialized functions such as storage, distribution, and disposal; thirdly, the system contains a few million items which vary in size, use, complexity, and value.

005

1. The SBSS is an accounting system consisting of standardized computer equipment, programs, procedures, and supply policy. It provides base activities with their supply needs, using an SBLC to account for supplies; equipment; POL; munitions; and clothing.
2. Customer service element.
3. Demand processing element.
4. The EAE.
5. Protected from hazards such as abuse, fire, corrosion, or anything else that might render them unusable.

006

1. Urgent needs for assets from the supply system in order to prevent a work stoppages or other mission degradation situations.
2. Delivery priorities 01 thru 04.
3. Thirty minutes.
4. MICAP request.
5. Customer service at LRS or your local supply support section.

007

1. XD or XF.
2. UND.
3. D18.
4. D23.
5. M30.

008

1. JDRS.
2. The TODO or QA.
3. Your e-mail address, unit mailing address, DoDAAC, P/N, S/N, NSN, work unit code, how mal code, manufacturer CAGE code, P/N & NSN of next higher assembly and end item, quantity received, and how many items affected.
4. The action point.

009

1. Block I.
2. Block III.
3. AF Form 1297.
4. DD Form 1131 or DD Form 362.

010

1. XD or XF.
2. Fifteen.

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 AFCDA.

11. (004) The Air Force supply system is different from civilian supply systems because it
 - a. is not as concerned with economy of operation.
 - b. receives its supplies from many different vendors.
 - c. is not as concerned with constant changing needs of its customers.
 - d. deals with thousands of customers worldwide and requires more flexibility.
12. (005) Which system allows logistics personnel, customers, and commanders to track every item in the supply system through standardized procedures?
 - a. Standard base supply system (SBSS).
 - b. Bench stock management system (BSMS).
 - c. Maintenance supply interface system (MSIS).
 - d. Core Automated Maintenance System (CAMS).
13. (005) Which supply element is the first point in the process of obtaining materiel from supply?
 - a. Retail sales.
 - b. Customer service.
 - c. Demand processing.
 - d. Equipment management.
14. (006) Who is responsible for determining the *appropriate supply delivery priority* for a parts request?
 - a. Customer.
 - b. Customer supply liaison.
 - c. Maintenance supply support.
 - d. Logistics readiness squadron (LRS) customer service.
15. (006) Which supply delivery priority is appropriate for primary mission aircraft 13 hours *after* landing?
 - a. 1.
 - b. 2.
 - c. 3.
 - d. 4.
16. (006) Which urgency justification codes (UJC) are used to show a supply request for bits and pieces to repair a line replaceable unit (LRU) or shop replaceable unit (SRU) spare?
 - a. 1A or JA.
 - b. AR or BR.
 - c. AA or AM.
 - d. BM or CM.
17. (007) Which type of asset has an expendability, recoverability, reparability code (ERRC) of XF3?
 - a. Consumable.
 - b. Field (base) repairable or consumable.
 - c. Depot repairable Serialized Control and Reporting System (SCARS) asset.
 - d. Depot repairable Air Force Recoverable Assembly Management System (AFRAMS) asset.

18. (007) Which supply tracking document provides a management product for monitoring issue and bench stock supply support?
 - a. D18, Priority Monitor Report.
 - b. D04, Daily Document Register.
 - c. M-24, Organization Effectiveness Report.
 - d. D23, Repair Cycle Asset Management List.
19. (008) Which technical order details the deficiency reporting process?
 - a. 00-5-1.
 - b. 00-5-15.
 - c. 00-20-9.
 - d. 00-35D-54.
20. (008) Using the Joint Deficiency Reporting System (JDRS), submissions of deficiency reports may be accomplished by
 - a. major command and staff members only.
 - b. flight chiefs or superintendents only.
 - c. quality assurance personnel only.
 - d. anyone.
21. (008) At most bases, who performs the function of screening point?
 - a. Base supply.
 - b. Item manager.
 - c. Originating unit.
 - d. Technical order distribution office or quality assurance.
22. (009) Who must appoint an individual to be an equipment account custodian?
 - a. Section supervisor.
 - b. Squadron commander.
 - c. Flight commander/chief.
 - d. Operations officer/maintenance superintendent.
23. (009) Which specific block of supply training is provided for due-in from maintenance (DIFM) monitors?
 - a. I.
 - b. III.
 - c. IIB.
 - d. IIA.
24. (009) After the initial inventory, how often must an equipment account be inventoried?
 - a. Monthly.
 - b. Quarterly.
 - c. Annually.
 - d. Biennially.
25. (010) Which Logistics Readiness Squadron (LRS) office accounts for special purpose recoverable authorized maintenance (SPRAM) assets managed on in-use detail records?
 - a. Equipment accountability element (EAE).
 - b. Materiel management activity.
 - c. Equipment liaison office (ELO).
 - d. System program director (SPD).

26. (010) Unless delegated, who is responsible for reviewing all requests for special purpose recoverable authorized maintenance (SPRAM) authorizations submitted by SPRAM custodians?
- a. Logistics readiness squadron (LRS) commander.
 - b. Mission support group (MSG) commander.
 - c. Maintenance group (MXG) commander.
 - d. MXG deputy commander.

Please read the unit menu for unit 3 and continue ➔

Student Notes

Unit 3. Maintenance Training and Management

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YOU ARE AT A POINT IN YOUR CAREER where a major part of your job is to ensure your subordinates are properly trained. This is an ongoing and never-ending process. While others individuals may have filled this responsibility in the past, it is part of your responsibility now that you are a supervisor. In other words, along with all the other supervisory tasks you're required to do, training is your job.

What kind of trainer are you? Are you serious about training? Think back to when you were an apprentice. What type of training did you receive? Was it beneficial or just superficial? Perhaps some of your trainers were trained well themselves, while others may not have been. This unit will help you put each training topic into perspective and allow you to build on your knowledge. For these areas, you bear most of the day-to-day responsibility in managing your subordinates—but you are not alone. For every one of these areas, there is an organization in the MXG or within the wing to help you when you need guidance.

3-1. Training and Documentation

One of your biggest training challenges is staying abreast of training requirements as well as maintaining a fully trained workforce is a continuous process—you cannot just fix it and forget it! If you put it on the backburner, even for a month or two, you will quickly fall behind.

This section will cover some of the training resources you have at your disposal. Knowing the types of training resources available, will allow you to make more effective use them. This not only means that your subordinates will be able to remain well-trained, but it also means that you have to spend less time worrying about it. In addition to the types of training available, we will also cover training documentation. After all, it does not do you much good to provide training if you do not document it properly.

011. Types of training

One of your primary duties as a maintenance manager is to ensure that your personnel are properly trained to do their jobs. While much is conducted in the form of on-the-job training (OJT), there are several other options available to help you maintain a trained workforce. Collectively, all types of maintenance training work together to provide a complete life cycle: initial, upgrade, proficiency, qualification, recurring, and certification training.

Training detachment

Though training detachments (TD) are administratively assigned to the Air Education and Training Command (AETC), they teach classes at selected bases throughout the AF. They provide on-site training that would otherwise be locally developed at many bases or would require large numbers of temporary duty (TDY) assignments to provide the training at a central location. AETC strives to cut the cost of development and administration by developing the courses and then teach them using permanently assigned instructors at TDs or instructors temporarily assigned to a mobile training team (MTT). TDs provide hands-on maintenance training on AGE, communications-electronics (C-E)

equipment, and certification training (i.e., engine run, as well as other training on various aircraft and engine systems). An example of a TD class is the follow-on training 3-skill level technicians receive following their apprentice technical schools.

TDs conduct field training for aircraft weapon systems assigned to the base on which they are located. TDs use base supplied facilities such as the flight line, maintenance shops, hangars, and classrooms specifically prepared for conducting their classes. If a TD is assigned, it is the primary aircraft maintenance training agency on base. However, there is a major exception—TDs normally *do not* conduct ancillary training. The TDs operate under a support agreement with the host wing. The host-tenant support agreement addresses issues such as facility use, funding, administrative support, vehicle support, aircraft support, and maintenance support beyond the TD's capability.

Formal training

Formal training is defined as any training conducted by HQ AETC or through the maintenance qualification training (MQT) program. A list of AF-wide courses available for a specific maintenance career field is normally included in Part 2 of the AFSC specific career field education and training plan (CFETP). Information about a specific course and instructions on how to enroll is provided on the AF's Education and Training Course Announcements (ETCA) Website at <https://etca.randolph.af.mil/>. The ETCA site is a great source of information on formal training that includes courses conducted or administered by the AF and reserve forces. However, ETCA *does not* provide information on courses that are unique to a few organizations and it *does not* list short term (one-time) training.

To find a specific course, navigate to the ETCA website. Afterwards, select the parent organization that teaches the course and then enter the course code as listed in Part 2 of your CFETP. You can also search for classes by aircraft type as well as other criteria. For instance, you can get all available courses taught by a MAJCOM or other major organization. To do this, just leave all search criteria blank except for the MAJCOM or agency.

ETCA HOME PROCEDURES GLOSSARY PUBLICATIONS GENERAL INFO FUNCTIONAL SEARCH

SEARCH BY (a single field or any combo of fields and click GO):

Organization: Air Education and Training Command

Aircraft ID:

Course ID: J6ANW2AXXX0W1A

Keyword:

MASL Code:

PDS Code:

Category:

Location:

☐ Click box and then GO if you want to search for NEW courses only?

☐ Click box and then GO if you want to search for ANCILLARY courses only?

☐ Click box and then GO if you want to search for ILO/IA courses only?

GO

SI075571007

INSTRUCTIONS FOR THE ETCA SEARCH SCREEN!

General

Figure 3-1. ETCA search page.

Formal training courses can range from in-resident training at AETC bases to computer-based training (CBT) given through distance learning (DL). Formal training falls into two broad categories that differ significantly in funding, management, and relationship to overall AF requirements.

Category 1

These are courses that have general application throughout the AF and are primarily taught and administered by those with the primary mission of training and education such as those taught by AETC organizations. This type of training includes a career field's official 7-skill level class, if one is available.

Category 2

This category of training is conducted by the various MAJCOMs and their operational units. This type of training is designed to support a specific MAJCOM's unique combat or combat support training needs.

For much more information on formal training, refer to the PROCEDURES tab of the ETCA Website.

Distance learning

DL is exportable training that is centrally produced and delivered to students to be accomplished at their convenience. It includes paper, computer based, interactive, and satellite-delivered training, and so forth. The aircraft maintenance DL program provides instruction using CBT, interactive courseware, video teletraining, videodisk, and other distance learning media. The courseware is specifically tailored and has varied course content. DL programs are normally developed by AETC. Information about many of the DL classes can be found at the ETCA site mentioned previously. Some of the DL courses your personnel will take include the *technical order account custodian* and several Integrated Maintenance Data System (IMDS) courses.

Block training

Block training is a term that describes several different training modules that are taught together. The purpose of block training is to group as many training requirements as possible into a single training session. Initially, the training session should provide information that everyone requires and then taper to a point where only certain categories of personnel remain. Courses taught in the block training format include fire extinguisher, forms documentation, hazard communication, corrosion control, foreign object damage (FOD), security awareness, egress, resource protection, etc. Many of these courses are conducted by the maintenance training section. Maintenance training uses the block training method to teach initial/refresher maintenance orientation training.

Continuation training

Continuation training includes advanced and qualification training to develop in-depth expertise within a specialty, broaden knowledge of new specialties, introduce new technologies and systems, develop analytical skills, or increase understanding of the relationship between maintenance specialties. This training uses various methods and includes such courses as dedicated crew chief (DCC) and AGE operator training.

Ancillary training

Ancillary training contributes to mission accomplishment, but is separate from an individual's primary AF specialty (AFS) or occupational series requirements. Ancillary training is required and taught according to specific program governing directives. It is usually presented in block training format to reduce the impact on mission accomplishment. Ancillary training is used to address numerous training requirements (i.e., M-16 weapons training and chemical warfare defense training).

Cross utilization training

Cross utilization training (CUT) is used to provide units a certain degree of flexibility by training individuals to perform tasks not normally performed in their primary AFS. This training is used to offset periods of low-level manning and to enhance combat capability by developing a pool of qualified personnel to draw upon during surges. Using CUT trained personnel comes with a caveat: try not to reach the point where you rely on them as a long-term solution. They should simply be utilized as a short-term fix until a more permanent solution can be found. Also, ensure your personnel's training records are properly documented to reflect training received and qualifications/certifications obtained. CUT can be accomplished through OJT or formal training courses.

Specialized courses

Specialized courses are designed to meet a unique training need. In maintenance, they allow maintenance technicians to achieve a level of competency beyond their fellow maintainers that is not available through normal upgrade training. Specialized courses are normally taught in a CDC type format such as the aircraft communication/navigation systems course.

Professional certifications

Certifications assist the professional development of our Airmen by broadening their knowledge and skills. Additionally, specific certifications may be awarded collegiate credit by the Community College of the Air Force (CCAF) and civilian colleges, saving time and AF tuition assistance funds. It also helps Airmen to be better prepared for transition to civilian life. To learn more about professional certifications and certification programs offered by CCAF, visit the following Website:

<https://www.airuniversity.af.edu/Barnes/CCAF/>, and select Professional Certifications. In addition to its associate degree program, CCAF offers the following certification programs and resources:

- CCAF instructor certification (CIC) program.
- CCAF instructional systems development (ISD) certification program.
- CCAF professional manager certification (PMC).
- Federal Aviation Administration (FAA) airframe and powerplant (A&P) certification.
- SpaceTEC® aerospace technician certification.
- National Center for Aerospace & Transportation Technologies (NCATT) certifications.
- Air Force credentialing opportunities on-line (AF COOL).
- Other certification programs.

012. Training documentation

This lesson is not intended to teach you how to document training; there are other courses for that. Instead, it covers some areas that will help you manage training for maintenance personnel. It will also clarify a few areas that you may not be sure about.

Training records

Training records must be maintained on all TSgts and below, as well as any other personnel in upgrade training or retraining. For maintenance personnel, you must maintain documentation for all master sergeants (MSgt) and above that perform maintenance on aircraft, missiles, or associated equipment. For these individuals, you only document "hands-on" tasks that they are expected to perform. This does not include career field core tasks or local upgrade requirements unless they pertain to their current jobs. Some of these requirements may not apply to Air National Guard (ANG) and/or Air Force Reserve (AFR) personnel.

If used in place of electronic records, an AF Form 623, Individual Training Record Folder, AF Form 623A, On-The-Job Training Record-Continuation Sheet, Job Qualification Standard (JQS), and

CFETP provide documented records of qualification. Electronic records may be used to document individual training if they are available in an approved MIS.

Special certification roster

The special certification roster (SCR) is a concise listing of assigned personnel authorized to perform maintenance tasks or work that is considered to be of a critical nature. It is used to ensure that only properly qualified and authorized personnel are performing these jobs. Normally, only maintenance tasks that have a high potential for personnel injury or damage to equipment are included on the SCR.

The SCR must be reviewed and signed semi-annually by the squadron operations officer/MX SUPT; the wing weapons manager (WWM) will review and sign weapons standardization (WS) SCR's. MXG will review and sign SCR actions for those individuals administratively assigned to the maintenance operations (MO) and FTD personnel. The purpose of reviewing the SCR is to verify all entries for currency and accuracy. When someone is added to the SCR, a thorough review is conducted to ensure that the individual is properly certified on the particular task for which he or she is being added. Except for properly CUT trained individuals, personnel are normally put on the SCR only to perform critical tasks within their primary AFSC. Also, if someone is being added for a task normally performed by a higher-skill level technician, the MXG/CC must approve a waiver to authorize them to be added to the SCR. *Waivers should be kept to the minimum level necessary to accomplish mission generation.*

SCR documentation

There are very specific procedures you must follow to submit someone for addition to the SCR. Refer to AFI 21-101 to ensure that you are following current guidance. Some of the main items you need to be concerned with include the following:

- Reviewing the individual's qualifications before recommending approval.
- Generating an AF Form 2426, Training Request and Completion, or other approved form.
- Making a copy for your records until the individual is officially approved or denied.
- Submitting the nomination through proper channels.
- Coordinating with the unit training manager (UTM) to ensure that the individual is updated in the applicable MIS.
- Keeping a current copy of the combined SCR for all section personnel.

It is important to note that your duties do not stop once you have someone added to the SCR. You must regularly monitor the individual's proficiency and verify the qualification to remain on the SCR for that task or duty. If you determine someone is no longer qualified, as the workcenter supervisor you should decertify the individual and have the person removed from the SCR for that task. It is also very important to take a current copy of the SCR on all deployments.

There are quite a few duties that may be tracked on the SCR. The following table lists a few of the mandatory items. Please note that this is an abbreviated list; for a complete list, refer to AFI 21-101.

Mandatory SCR and Prerequisites		
Item	Mandatory SCR Item Titles	Prerequisites
1	All systems "Red-X." (No egress, welding, munitions, fuel cell [in-tank work].)	MSgt or higher (or civilian equivalent). (See NOTE 1.)
2	Exceptional release.	
3	"Red-X" down grade.	

Mandatory SCR and Prerequisites		
Item	Mandatory SCR Item Titles	Prerequisites
4	All systems in-process inspection (IPI) (no egress, welding, munitions, fuel cell [in tank work]).	
5	"Red-X" by primary AFSC and mission design series (MDS). (For multiple MDSs, list separately.)	Staff sergeant (SSgt) or higher, minimum 7-skill level (or civilian equivalent); If used for egress personnel, additional requirements must be satisfied.
6	IPI by primary AFSC and MDS. (For multiple MDSs, list separately.)	
7	"Red-X" and/or IPI - CUT (for multiple MDSs, list separately), for tasks outside the primary AFSC.	SSgt or higher; minimum 7-skill level (or civilian equivalent); use for personnel certified on tasks in other AFSCs through CUT training. (See NOTE 2.)
8	Auxiliary power unit (APU) operation.	3-skill level or higher maintenance AFSC.(See NOTE 2.)
9	Clear Red-X when a lost tool/item cannot be located.	Operations officer/maintenance superintendent (MX SUPT) or above. (See NOTE 1.)
NOTES: 1. Approved by MXG/CC. 2. Approved by operations officer/MX SUPT. 3. Operations officer/MX SUPT may delegate approval authority to the aircraft maintenance unit officer in charge/superintendent (SUPT) or flight commander/chief.		

013. Training Business Area

Training Business Area (TBA) is an AF Portal, Web-based application providing AF personnel with global, real-time visibility of the technical qualifications, certifications and training status of weapons systems. TBA supports base, wing, and workcenter level training management activities by automating training management business process previously performed using paper records and legacy systems providing more accessibility to trainers, supervisors, and higher levels of management. This system allows all officers, enlisted and civilian personnel to access their own training records and the training records of personnel they supervise anywhere that has network access. Supervisors can get real-time access to revised CFETPs from their career field managers. The TBA system is exclusively *paperless*; there are no provisions for creating, accessing, or maintaining paper copies of records. Additional information can be found in AFI 36-2650, *Maintenance Training*.

After selecting the TBA application on the AF Portal, the first screen you will view is the System Messages board and DOD warning (fig. 3-2). The System Messages board provides notifications of application problems, software releases (problem corrections), projected downtimes, and training update information. *It is very important that you review the messages before proceeding.*

TBA user roles

TBA utilizes organizational roles such as trainee, trainer, certifier, supervisor, and training manager. The actions TBA allows you to perform are based on the role, or roles, you have been assigned by a role manager. Some roles have more capabilities than others. For example, an individual assigned to a supervisor role is able to perform more functions than someone assigned to a trainee role. Some roles allow individuals to sign off the completion of a task. Others allow the individual to add or remove tasks in an individual training plan (ITP). Figure 3-3 contains a list of all the TBA user roles and Figure 3-4 is the TBA Opening Menu Screen. Most users will have more than one role and the roles assigned will depend on the training management functions the user needs. Remember, TBA only allows the user access to the roles that have been previously assigned by a role manager.

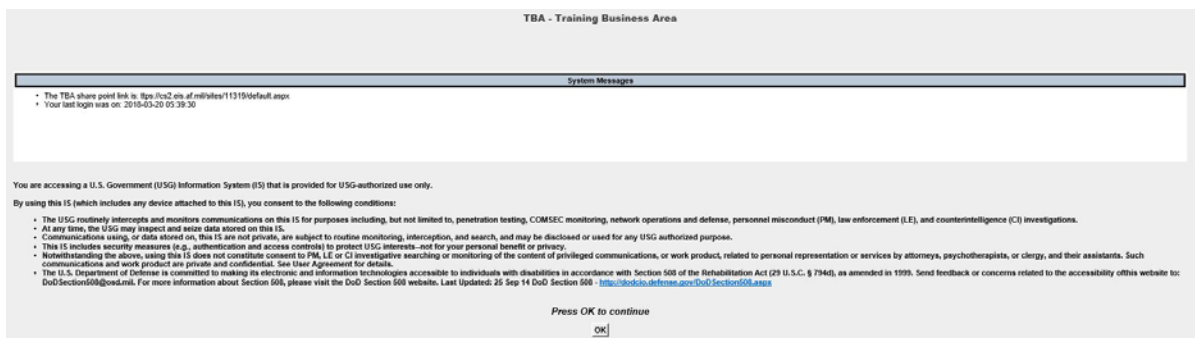


Figure 3-2. TBA system messages and DOD warning screen.



Figure 3-3. TBA change role screen.

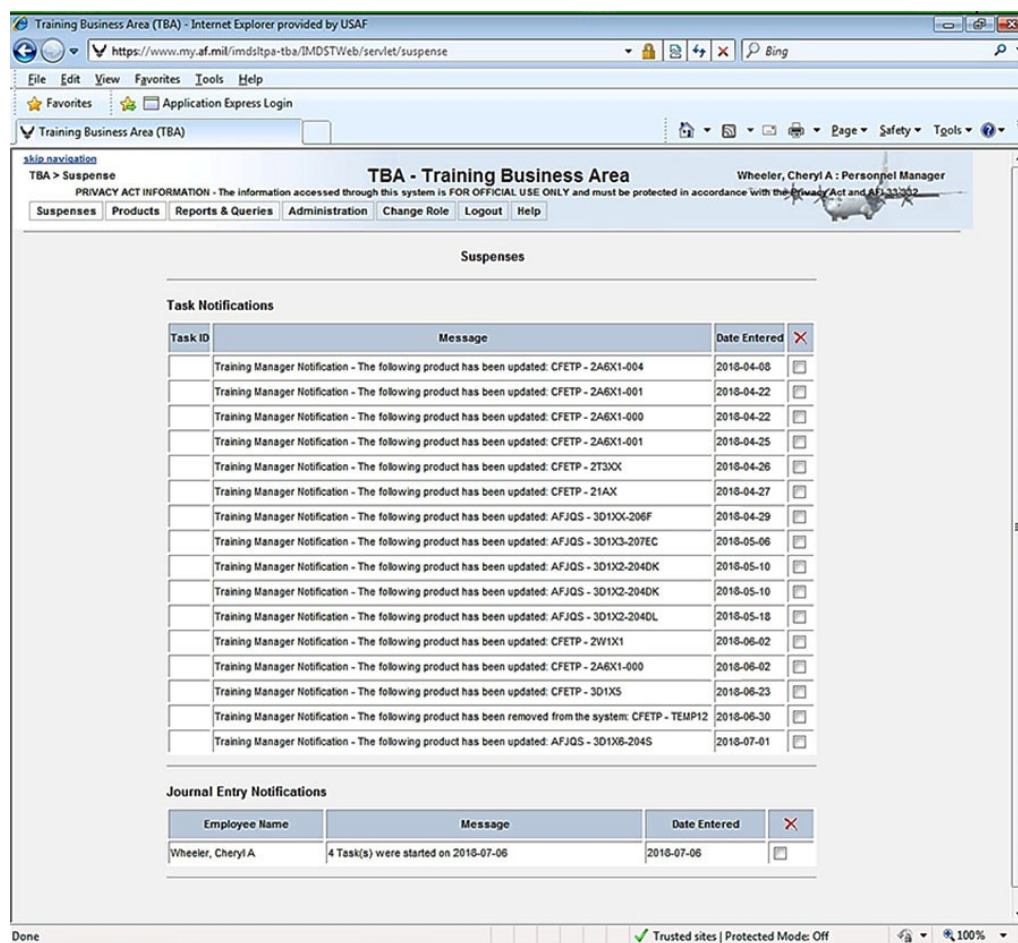


Figure 3-4. TBA opening menu screen.

Sign ITP task (trainee and certifier)

This function provides the capability for the trainee and certifier to select tasks to sign (initial) as completed within an assigned trainee's ITP.

NOTE: The trainer's initials are entered when the Enter ITP Task Completed Date function is executed.

Step	User Action	Results
1	a. Select ITP. b. Select Open ITP for which I'm a Certifier or Open My ITP for the trainee.	Application displays the employee or employees for which the user is the certifier on the Select Employee screen. NOTE 1: Trainee has access to their training information (ITP) only, skip to step 3.
2	a. Select the radio button next to the employee whose ITP task is to be completed. b. Select Get ITP.	Application displays the Sub Menu drop-down list box on the ITP screen.
3	a. Select Tasks from Sub Menu drop-down list box. b. Select Active Entries from the Status drop-down list box. c. Select Sign Trainee or Sign Certifier from Action drop-down list box. d. Select GO.	Application displays tasks for the selected employee, Sign Trainee or Sign Certifier and Task Journal Entry buttons (grayed-out) on the List ITP Tasks screen.
4	Select the check box next to the task you want to complete (multiple task selection is allowed).	Application enables the Sign Trainee or Sign Certifier and Task Journal Entry (not grayed out) buttons. NOTE: For single task sign off, select the RED background Trainee or Certifier box and the Electronic Signature pop-up window will be displayed.
5	Select Sign Trainee or Sign Certifier.	Application displays the Electronic Signature pop-up window on the List ITP Tasks screen. NOTE 1: To view tasks just completed select Show Only Completed Tasks or Show All Tasks from the Action drop-down list box and select GO. NOTE 2: If not signed, the application will create suspenses for the applicable users that can be accessed, viewed and signed on the Suspense screen. Reference Manage Suspenses and Notifications.

Add training journal entry

This function provides the capability to add a journal entry to the employee's ITP.

Step	User Action	Results
1	a. Select ITP. b. Select Open ITP for which I'm a Certifier / Supervisor / Trainer / Workcenter Supervisor.	Application displays the employee or employees for which the user is the certifier, supervisor, trainer, or workcenter supervisor on the Select Employee screen.
2	a. Select the radio button next to the employee whose ITP task is to be completed. b. Select Get ITP.	Application display the Sub Menu drop-down list box on the ITP screen.
Steps 3–6 are executed to enter task related Journal Entries.		
3	a. Select Tasks from the Sub Menu drop-down list box. b. Select Active Entries from the Status drop-down list box. c. Select Show All Tasks from the Action drop-down list box. d. Select GO.	Application displays ITP tasks for the selected employee and options to Task Journal Entry (grayed-out), Add/Remove Tasks and Add Task Groups on the List ITP Tasks screen.
4	Select the check box of the task necessitating a journal entry.	Application activates the Task Journal Entry button (not grayed-out) on the List ITP Tasks screen.
5	Select Task Journal Entry.	Application displays Task Journal Entry information on the Add Training Journal screen.
6	a. Enter Subject and Remarks in the text boxes. b. Select SAVE.	Application displays the signature options below the updated Task Journal Entry on the Add Training Journal screen.
Steps 7–9 are executed to enter non-task related General Journal Entries		
7	a. Select Journal Entries from the Sub Menu drop-down list box. b. Select Active Entries from the Status drop-down list box. c. Select GO.	Application displays an additional drop-down list box with options to Query, Add, and Archive and a GO button on the Journal Entries screen.
8	a. Select Add from the drop-down list box. b. Select GO.	Application displays the General Journal Entry information on the Journal Entries screen.
9	a. Enter Subject and Remarks in the text boxes. b. Select SAVE.	Application displays the signature options below the updated General Journal Entry on the Journal Entries screen. NOTE 1: Certifier / supervisor / trainer / workcenter supervisor and the trainee will have to sign off entry.

NOTE: A supervisor must be loaded before a trainee can add a manual journal entry.

TBA user practice environment

TBA-user practice environment (UPE) is a copy of the TBA production application intended for user practice and orientation on the TBA application. It is *not* for operational unit training management activities. TBA-UPE is also accessed through the AF Portal. Each screen in TBA-UPE has a different background color, **USER PRACTICE ENVIRONMENT** in red bold lettering and a watermark labeled “Practice Use Only” running down the right side.

Self-Test Questions

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

011. Types of training

1. Where is a list of formal AF-wide training courses for a specific career field normally found?
2. What type of aircraft maintenance training is centrally produced but delivered to students to be accomplished at their convenience?
3. What type of training includes advanced and qualification training to develop in-depth expertise within a specialty, broaden knowledge of new specialties, introduce new technologies and systems, develop analytical skills, or increase understanding of the relationship between maintenance specialties?
4. How can Airmen better prepare themselves for transition to civilian life?

012. Training documentation

1. For maintenance personnel, when must training documentation be maintained for MSgts and above?
2. What type of maintenance tasks are normally included on the SCR?
3. What form is normally used to add someone to the special certification roster?
4. What should supervisors do when they determine that a person is no longer qualified to perform a task he or she was added to the special certification roster to perform?

013. Training Business Area

1. What information does TBA provide AF personnel both globally and in real time?
2. In order for TBA to allow all officers, enlisted and civilian personnel anywhere access to their own training records and the records of personnel they supervise anywhere, what else do these individuals need?

3. What provides notifications on TBA application problems, software release (problem corrections), projected downtimes, and training update information?
4. What determines the actions TBA allows you to perform?
5. What is a copy of the TBA production application labeled “TBA UBE,” intended for?

3-2. Training Programs

In this section, we provide you with some valuable tips on requesting and tracking training. First we go through the different phases of maintenance training that work together to ensure maintainers get the training they need. Then, we provide some valuable tips to help you fulfill your training related supervisory duties. Lastly, we cover the very important but often misunderstood topic of building a master training plan. If you master and use the information in these lessons, you will have a much better understanding of how to build a quality training program.

014. Maintenance qualification program

Qualification training is ongoing, providing the necessary skills to accomplish all required maintenance tasks. In addition to a general maintenance qualification program (MQP) framework, each MAJCOM is charged with developing and implementing an MQP tailored for its specific training requirements. MQP training is conducted in a controlled environment so that it does not compete with sortie production. This allows the focus to be on training as opposed to direct flying mission support. The MQP uses a variety of training methods and is structured into three phases.

NOTE: The information in this lesson *does not apply* to ANG and AF Special Operations Command (AFSOC) units.

Phase I, in-processing, maintenance orientation and maintenance refresher

Phase I training is used to ensure that personnel arrive at a new work center with the necessary skills to be immediately productive. It includes training conducted during in-processing. It is conducted by base-wide agencies as well as the maintenance training sections (MTS). Phase I includes the maintenance orientation class conducted for newly assigned personnel within 60 days of their arrival on station. It also includes the maintenance refresher class conducted as a follow-up to maintenance orientation.

Phase II, continuation training

Phase II, continuation training, provides standardized/specific AFSC training designed to meet specific requirements. It consists of four sub-phases: multiphase, MAJCOM mandatory, freeflow, and MQT. Phase II training enhances and complements initial skills training by providing hands-on weapon system training and experience. It is designed to help prepare personnel to perform maintenance tasks unsupervised and unassisted. Continuation training courses provide a logical building block approach for job qualification. Phase II training can also be used to supplement OJT and provide skill-level upgrade, qualification, CUT, or familiarization training. While undergoing Phase II training, students are attached to the MTS or TD, but they officially remain a part of their assigned or gaining organizations.

Continuation Training Descriptions	
Type	Description
Multiphase students	Multiphase students are those that are undergoing multiple stages of training with the ultimate goal of being awarded an AFSC. It includes those maintenance personnel undergoing initial skills training at a resident AETC training base (i.e. Sheppard AF Base [AFB]) and then subsequently given follow-on training (i.e. F-16 crew chief training at Luke AFB). Since the training takes place over many months, the skills gained will naturally need to be reinforced by the trainee's gaining unit. Supervisors should provide plenty of guidance and support to make the difficult transition from civilian, to trainee, to productive maintenance technician easier. Supervisors are charged with closely monitoring these individuals to ensure they are sufficiently prepared to perform their jobs and are completely aware of any associated hazards with the job they will be performing.
MAJCOM Mandatory Course Listing (MMCL)	MAJCOM mandatory courses are used to form a list for each sortie producing and backshop AFSC. This list shows what mandatory courses must be completed and applies to E-1s through E-7s. Lead commands for each specific MDS are charged with creating a master list of all mandatory TD, MTS, and advanced distributed learning (ADL) courses. For instance, ACC is the lead command for the A-10, F-15, and F-16, while AETC is the lead command for the T-1, T-6, and T-37, aircraft among other aircraft. Personnel are required to begin mandatory TD/MTS courses within 180 days of assignment to the work center.
Freeflow students	Freeflow training is for personnel who are changing MDSs or who have not performed maintenance on the assigned MDS within the preceding three years. These students must attend the appropriate MMCL and MQT courses. Freeflow status also applies to MSgts and above with less than one year experience on the assigned MDS, who supervise maintenance personnel. These senior leadership personnel are required to attend the appropriate TD aircraft familiarization course, if one is available. The MXG/CC is the waiver authority for required TD freeflow courses that cannot be completed.
MQT	MQT consists of academic and practical hands-on training courses that complement initial skills training received through AETC courses—both mission-ready Airman and TD. The purpose of MQT courses is to produce trained and certified Airmen capable of performing most workcenter and AFSC core tasks. MQT courses are taught by the MXG maintenance (MX) training section. The MTS will not duplicate training taught by AETC courses offered through a local TD. Further, they will not duplicate training that is certified and signed-off by an AETC training facility in a trainee's training records. MQT students are attached to the MTS for training, but are still officially a part of their assigned or gaining organization. MTSs are required to assess the need for MQT courses for technical school graduates. If needed, a formal training program is developed and implemented that teaches differences between assigned aircraft and training aircraft.

Phase III, special qualification training

Special qualification training (SQT) consists of any training program not included under any *other MQP phase*. The training is normally given by the MTS, but again MTS training will not duplicate TD courses. SQT programs may apply to all personnel in a work center or only to those personnel assigned to a special duty. Some examples of SQT courses you may encounter include the following:

- Engine run training program.
- Test cell operation.
- Forms documentation.
- Dedicated crew chief program.
- Crash recovery.
- Hot pit refuel.
- Borescope.

- Chafing awareness.
- MIS training.
- MAJCOM mandatory courses.
- Cardiopulmonary resuscitation (CPR) and self-aid buddy care, if taught by MTS.

015. Training management

As a supervisor, you will quickly learn that training management is a large part of your job. The reason for this is because the overall capability of a unit depends on the state of training for maintenance personnel. Training is essential to improving and sustaining unit capability and it is one of the most important responsibilities of commanders and supervisors. When you are balancing requirements and resources, maintenance training should carry as high a priority as the operational mission.

Workcenter supervisor duties

As a supervisor, you have many training specific duties. One of these is to identify all TD and MTS courses required for duty position qualification. You must also keep close tabs on training scheduling. This includes ensuring the needed classes are loaded in the appropriate MIS against your work center. When someone is loaded in IMDS against a certain work center, the training loaded as mandatory for personnel in that work center immediately shows as awaiting action (AWACT) without a due date. AWACT without a due date means that the initial training has not been performed or loaded for the individual in question. AWACT will continue to show until an initial training completion date or a scheduled date is loaded in IMDS. The course codes that are loaded against the work center should include all classes/training required by personnel in that work center. Once you have a good list of courses required for those in your work center, you must re-verify the list every six months.

Training forecast

To properly coordinate training, you must work closely with your UTM to identify and schedule needed training. Utilization of training classes is a high visibility topic within the maintenance group and are, therefore, very important to commanders. Unused allocations of training classes are reported at a monthly status of training briefing given by the MTS. This briefing is given to the MXG/CC on a monthly basis and to the wing commander (WG/CC) on a quarterly basis. If your section gets into a bind due to training, it is going to be hard to explain it away if the training classes your personnel need have been consistently under-utilized.

Tracking training

As a supervisor, you should know the health of your training program. In other words, you should always know the number of people fully trained and, more importantly, the number of people who *need* training. As you track the training, you should formulate a plan for scheduling the required training. After personnel are scheduled, you need to closely monitor your MIS to track the training to completion. This includes ensuring that scheduled training is indeed showing as being scheduled and completed training is showing as completed. It is imperative that the training is promptly updated. For example, even though a class is complete, if it is still showing as due or overdue at the time of the monthly status of training briefing, then your training requirement is reported as *not accomplished*.

Further, while we are on the topic of overdue training, consider the situation when an individual qualification becomes officially overdue on the last day of the month in which recertification is due. When an individual is TDY, on leave, or incapacitated, that person need not be decertified provided the required training/evaluations are completed within 30 days of the member's return to duty—not to exceed 60 days from the original due date—unless specified by another authoritative reference.

Figure 3–5. Training request and completion.

CDC administration

As you probably know, you have many responsibilities when it comes to monitoring CDC progression for your subordinates. If there is one thing that can cast you and your subordinates in a negative light, it is haphazard control of CDC completion. Considering that CDCs are mandatory, even the most solidly performing subordinates who do not successfully complete them within the required timeframe may find themselves discharged from the AF. The following list provides some of your CDC responsibilities for your subordinates:

- Coordinate with the UTM when subordinates are in trainee status and currently enrolled in CDCs but will be leaving the unit or have just arrived to the unit. There are specific items to be addressed.
- Attend an interview with the trainee conducted by the UTM before the trainee begins the CDCs.
- Prior to the trainee beginning a CDC volume, inventory and review CDC material and ensure the most current version is issued.
- Determine a course completion plan and tracking system to ensure timely completion.
- Make appropriate entries in the trainee's TBA or, if TBA is not used or unavailable, on the AF Form 623A, to show milestones such as the date a volume is issued, when it is completed, any delays, reviews of training progress, the date the course exam is ordered, whether the trainee passes or fails the course exam, and any other significant CDC training issues.

Other important training responsibilities

Another important aspect of your training responsibilities includes reviewing and responding to all AETC/TD/MTS graduate assessment surveys or field evaluation questionnaires that you receive. These questionnaires serve a vital purpose in improving the quality of not only 3-skill level technical school graduates, but other training as well. In addition to the issues talked about in this lesson, there are numerous other training responsibilities. Refer to AFI 36-2650 and AFI 36-2201, *Air Force Training Program*, on a regular basis to ensure that you are current and aware of any significant changes.

Master training plan

In a workcenter environment the training development process encompasses many different issues. One of these is how you plan to meet OJT requirements *not being met* by other training means. As a supervisor, you have an integral role in the training development process for your work center. If you are tasked with developing training from the ground up, then make sure you follow the principles of ISD. The following are the five basic steps:

1. Develop a master task list (MTL).
2. Determine training needs.
3. Determine training capability.
4. Select training strategies.
5. Schedule training.

If you require more information on the ISD process, Volumes 1-12 of Air Force Handbook (AFH) 36-2235, *Information for Designers of Instructional Systems*, each contain an ISD application for specific needs. In the following discussion we provide some pointers on how to develop your master training plan (MTP) using the ISD process.

You need to make several important decisions as you develop your MTP. First, you need to develop an MTL. Once you have an MTL, you can determine what, how, where, and when training will be conducted based on the established training requirements. The MTL is an integral part of your training plan. It is mainly built using the CFETP and is a list of all required tasks in a work center; it is a source from which you select tasks requiring training. On the MTL you must identify all

requirements within your duty section or work center to ensure 100 percent task coverage. This means identifying all tasks including contingency/wartime tasks, additional duties identified by the supervisor as a certifiable task, and any mandatory core tasks required by the AF career field manager (AFCFM). Documents used to develop the MTL include, but are not limited to, the CFETP for all AFSCs within the work center; AF Form 797, Job Qualification Standard Continuation/Command JQS, AF Form 1098, Special Task Certification and Recurring Training (if applicable); automated forms; and/or forms required/approved by your MAJCOM.

Master Training Plan Development	
Elements	Description
Develop the MTL	<p>In building your MTL, identify all normal day-to-day mission requirements. These tasks are used to form a list of workcenter requirements. A workcenter requirement is a task that is performed by 51 percent or more of personnel assigned to a work center. In addition to local workcenter requirements, you must also include core tasks as defined by the AFCFM if the training can be done locally to certify individuals on them. You should also identify any special work requirements not necessarily performed on a regular basis but still required for the duty position. Then determine mandatory qualifications as listed in the CFETP and other applicable guidance. Finally, determine recurring training requirements including tasks requiring regular certification/recertification.</p> <p>Once you have all the requirements to build the MTL, you just have to put it all together in an easy to refer to listing. On the MTL you may use color-coding, symbols, or other means to identify individual duty position requirements, core tasks, qualification tasks, additional duties, and so forth. It is also very helpful to develop a legend to aid understanding when outside agencies, newly assigned personnel, or other supervisors in the work center are using or are initially exposed to the MTL. Unless otherwise directed by the AFCFM, any number of computer programs (i.e. word processing, spreadsheet, etc.) may be used to develop your MTL. However, the CFETP must be used as the core document; other forms used to expand or list tasks not found in the CFETP are considered supplemental.</p>
Determine training needs	<p>Once the MTL has been developed, your next step is to determine the training needs for your work center. To do this you must determine training objectives by identifying the sub-paragraph in the CFETP or other training documents for each skill level in the work center. Then you must establish timeframes to show when requirements should be completed (e.g. 12–18 months). Based on interviews with the trainees and a comparison of the training records with the MTL, you will be able to determine a list of training requirements from which you will set training priorities to get the trainees fully qualified.</p>
Determine training capabilities and resources	<p>If there are personnel in the work center that can train the task, are certified in the applicable CFETP, and have attended the AF Training Course, you can most certainly utilize that capability. However, if there is no immediate training capability, then you will need to find out what outside resources are available to provide the training. Contact your UTM for assistance in determining this.</p>
Select training strategies	<p>The next step in the process is to decide how and where to provide the training. What is the training objective? What is the best method for providing the training? Is there a distance learning tool that can better meet the training need? The following are some additional questions you should consider:</p> <ul style="list-style-type: none"> • Does your CDC meet the training requirements? • Can the training be accomplished through distance learning or web-based training? • Can the training be conducted as OJT? • Can the training be conducted in a one-time training session? • Can training be conducted without equipment downtime? • Can regularly schedule work be conducted at the same time as the training? • Can the trainer train more than one trainee at a time? • Will classroom time be needed? • Is there a local class to satisfy the requirement?

Master Training Plan Development	
Elements	Description
	If OJT is going to be used, develop a standard lesson guide to make it easier to provide training on a particular task in the future. To do this you must define the objective and develop a task breakdown. While it may seem like a lot of work, all you are really doing is writing down a clear statement of what you want the trainee to know or to be able to do as a result of the training. Afterwards, you will break the task down into logical parts to make it easier to train.
Schedule training	As stated previously, training should be a top priority. If your people aren't trained to do their jobs, then the mission will not get done very efficiently—if at all. It is basically an investment. You sacrifice a little today for a larger payoff tomorrow. That payoff will be a well-trained worker who performs more efficiently without sacrificing safety. Once the decision has been made that training is needed, develop a plan to schedule that training.
Evaluate training	If training has been accomplished through OJT, the trainee should be given time to practice what has been learned. The trainer will determine when the trainee is ready to be certified on the task. If no third-party certification is required, training is certified complete by the trainer. If the task requires third-party certification, the training is certified complete after the task certifier conducts the task evaluation.

Core tasks

When you are building your MTP for a particular duty position, you must consider core tasks which are identified in the specialty training standard (STS) portion of the CFETP. With some exceptions, core tasks identify the *minimum* task certification that must be achieved by a technician to be upgraded to either 5- or 7-skill level. An exception to this is that core tasks *not applicable* to base assigned aircraft, missiles, or equipment are *not required* for upgrade. In other words, units are *not* required to send personnel TDY for core task training for those *items that are not locally applicable*. Additionally, some core task items are specifically not required for ANG/AFR technicians. Refer to your CFETP for further guidance or consult your UTM. You can also find specific guidance in AFI 36-2650.

According to current guidance, third-party certification of CFETP core tasks is *not required* unless they are designated critical tasks by MAJCOM functional managers, commanders, or workcenter supervisors. The AFCFM can also designate tasks that require third-party certification. It is important to note that *critical tasks*—both core and non-core—still require third-party certification. However, documentation guidance changes over time; as a result, it is very important that you consult the references mentioned previously on a regular basis. And while the UTM should check monthly for CFETP changes, make sure you check regularly for updated CFETPs and any applicable change supplements.

Self-Test Questions

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

014. Maintenance qualification program

1. Maintenance orientation class given to newly assigned personnel is considered what phase of training under the maintenance qualification program?
2. What agencies are required to develop a list of all mandatory TD, MTS, and ADL courses that maintenance personnel must attend in order to work on a specific MDS?

3. What course must MSgts or above attend, if available, when they will be supervising personnel on an MDS for which they have less than one year of experience?
4. What training consists of academic and practical hands-on training courses that complement initial skills training received through AETC apprentice-level courses?
5. What phase of training includes specialty training such as engine run, hot pit refuel, and borescope training?

015. Training management

1. What does it mean when someone is showing in IMDS as AWACT without a due date for a particular training requirement?
2. When accomplishing an inventory of CDC materials, what should you verify prior a trainee beginning a CDC volume?
3. If TBA is not used or available, which AF form should be used to show milestones such as the date a volume is issued, when it is completed, any delays, reviews of training progress, the date the course exam is ordered, whether the trainee passes or fails the course exam, and any other significant CDC training issues?
4. When you are building an MTP for your flight/section, what should you do first?
5. What cutoff should be used to determine if a task should be a workcenter requirement?
6. With some exceptions, what do core tasks identify?
7. What type of training tasks—both core and non-core—require third-party certification?

Answers to Self-Test Questions

011

1. In part 2 of the career field's CFETP.
2. DL.
3. Continuation training.
4. Professional certifications.

012

1. When they perform maintenance on aircraft, missiles or associated equipment.
2. Only those that have a high potential for personnel injury or damage to equipment.
3. AF Form 2426.
4. Decertify the individual and have the person removed from the SCR for that task.

013

1. The technical qualifications, certifications and training status of weapons systems and support professionals AF wide.
2. Network access.
3. The "System Messages" board.
4. The role, or roles, you have been assigned by a Role Manager.
5. User practice and orientation on the TBA application. It is *not* for operational unit training management activities.

014

1. Phase I.
2. Lead commands.
3. Appropriate TD aircraft familiarization course.
4. MQT.
5. Phase III, SQT.

015

1. That the initial training has not been performed or loaded for the individual in question.
2. The most current version is issued.
3. AF Form 623A.
4. Develop an MTL.
5. If it is performed by 51 percent or more of personnel in the work center.
6. The minimum task certification that must be achieved by a technician to be upgraded to either 5- or 7-skill level.
7. Critical tasks.

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 AFCDA.

27. (011) To which major command (MAJCOM) are training detachments (TD) administratively assigned?
 - a. Air Combat Command (ACC).
 - b. Air Training Command (ATC).
 - c. Air Force Reserve Command (AFRC).
 - d. Air Education and Training Command (AETC).
28. (011) Which maintenance training course normally makes use of the block training method?
 - a. Weight and balance.
 - b. Any 7-skill level course.
 - c. Maintenance orientation.
 - d. General Technical Order System.
29. (012) Who must approve a waiver before an individual can be added to the special certification roster (SCR) for a task normally performed by a person of a higher grade?
 - a. Squadron operations officer.
 - b. Squadron commander (SQ/CC).
 - c. Maintenance group commander (MXG/CC).
 - d. Major command (MAJCOM) functional manager.
30. (012) In order to be given authority to downgrade a “Red-X,” an individual must be approved by the maintenance group commander (MXG/CC) and hold the *minimum* grade of
 - a. technical sergeant (TSgt).
 - b. master sergeant (MSgt).
 - c. senior master sergeant (SMSgt).
 - d. chief master sergeant (CMSgt).
31. (013) Training Business Area (TBA) provides Air Force personnel with global, real-time
 - a. access to distance learning courseware.
 - b. access to special certification roster criteria listings.
 - c. visibility of available formal training courses Air Force-wide.
 - d. visibility of technical qualifications, certifications, and training status.
32. (013) In the Training Business Area (TBA), what type of notification does the “System Messages” board provide in addition to software releases, projected downtimes, and training update information?
 - a. Open suspenses.
 - b. System upgrades.
 - c. Application problems.
 - d. Changes to your user roles.
33. (013) The actions that the Training Business Area (TBA) allows you to perform are based on
 - a. whether or not you have attended the Air Force Trainer Course.
 - b. roles you have been assigned.
 - c. network capabilities.
 - d. your rank.

34. (014) All newly assigned maintenance personnel must receive maintenance orientation training within how many days of *arrival* on station?
- a. 15.
 - b. 30.
 - c. 45.
 - d. 60.
35. (014) Which training phase is made up of the four sub-phases multiphase: major command (MAJCOM) mandatory, freeflow, and maintenance qualification training (MQT)?
- a. I.
 - b. II.
 - c. III.
 - d. IV.
36. (015) How often does the maintenance training section (MTS) provide a status of training (SOT) briefing to the maintenance group commander (MXG/CC)?
- a. Monthly.
 - b. Quarterly.
 - c. Semiannually.
 - d. Annually.
37. (015) An individual comes due for a training recertification while on temporary duty (TDY), on leave, or incapacitated. Provided it has not been *more than 60 days* since the original due date, how many days are allowed after returning to duty before decertification is required?
- a. 15.
 - b. 30.
 - c. 45.
 - d. 60.
38. (015) Who is responsible for conducting an interview with both the trainee and his/her supervisor before a trainee starts a career development course (CDC)?
- a. Operations officer.
 - b. Group commander.
 - c. Unit training manager.
 - d. Maintenance training section commander (MTS/CC) or chief.
39. (015) Once you have completed the master task list (MTL) for your master training plan (MTP), your *next step* is to
- a. evaluate training.
 - b. select training strategies.
 - c. determine training needs.
 - d. determine training capabilities.
40. (015) Which kinds of tasks require third-party certification?
- a. Core tasks.
 - b. Critical tasks.
 - c. Non-core tasks.
 - d. Workcenter tasks.

Student Notes

Unit 4. Maintenance Operations and Programs

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ASIDE FROM EVERYTHING that you have to do on a daily basis to meet the maintenance and flying schedules, several programs have been put in place throughout the aircraft maintenance complex to help you meet those schedules. We will discuss some of the maintenance metrics that you as a current or future maintenance manager will begin to use. These metrics will help you determine maintenance priorities. The Dropped Object Prevention Program (DOPP) and the Maintenance Standardization and Evaluation Program (MSEP) are safety and quality focused to help ensure that aircraft maintenance is performed in a safe and professional manner, as well as develops procedures to prevent future mishap occurrences.

The first lesson of maintenance operations and programs provides you with valuable information about the metrics used within maintenance, and which you are sure to be involved with on a fairly regular basis. The tool management and accountability lesson stresses the importance of tool accountability and also gives you a little bit of knowledge about how to manage the program. The final three lessons cover a range of topics on special maintenance programs—they will prove to be very important in your maintenance career.

4-1. Maintenance Operations

Aircraft and equipment readiness is the primary maintenance mission and, as a maintenance manager, it should be one of your top priorities. To make it happen, you must ensure that your assigned aircraft and equipment are safe, serviceable, and properly configured to meet mission needs. Maintenance actions include, but are not limited to the following:

- Analyzing condition and performance.
- Inspection.
- Modification.
- Overhaul.
- Preservation.
- Refurbishment.
- Repair.
- Testing.
- Troubleshooting.

All levels of supervision must place emphasis on safety, quality, and timeliness in the performance of maintenance. Up to this point in your career, you have become very skilled at maintaining aircraft and equipment; now you must learn what goes on behind the scenes.

Never forget that you and all the experienced personnel in your organization are the keys to mission success. The most superior technology is essentially worthless unless it is skillfully used and properly maintained. In addition to skilled aircrews and maintenance personnel, safe, efficient, and cost-effective management of all AF assets are critical to successfully accomplishing the AF mission.

016. Maintenance metrics

In this lesson, we discuss maintenance indicator metrics. Calculating the health of an aircraft fleet is directly related to your particular MIS. The data you collect and input into your MIS is the same data used to calculate the health of the fleet. This is just another reason why MIS data must be accurate. If we don't properly collect data, then no amount of crunching the numbers will lead to a useful result.

Performance and capability measurements

Metrics provide a measurement of performance and capability. Leaders, supervisors, and technicians must have accurate and reliable information in order to make decisions. Primary concerns of maintenance managers include the following:

- How well the unit is meeting mission requirements.
- How to improve equipment performance.
- Identifying emerging support problems.
- Projecting future trends.

Maintenance management metrics—sometimes called quality performance indicators—are a crucial form of information used by maintenance leaders to improve the performance of maintenance organizations, equipment, and people, when compared with established goals and standards. Metrics often take the form of a “mission capable (MC) rate graph” or a “status of personnel training slide,” presenting a gauge of an organization's effectiveness and efficiency. Properly used, metrics are roadmaps that help determine where your organization has been, where you are going, and how (or if) you are going to get there.

Our main objective in maintenance is to maintain aircraft and equipment in a safe, serviceable, and ready condition to meet mission needs. Maintenance management metrics can help us accomplish this objective—if they are used properly. To be effective, metrics must be the following:

- Accurate and useful for decision making.
- Consistent and clearly linked to goals/standards.
- Clearly understood and communicated.
- Based on a measureable, well-defined process.

Analysis is crucial to improving an organization's performance and is the key component of the metrics management process. Commanders and maintenance managers must properly evaluate maintenance metrics and rely upon the MMA section for unbiased information. Analysis sections draw upon information from various MISs for data. A good maintenance manager does not “chase numbers” for the sake of looking good; instead, lets the numbers show an accurate picture of the organization's production effort so the proper measures can be taken to improve organizational performance. Your focus should be on resources and personnel to improve maintenance processes.

Managers must also clearly understand and communicate the crucial linkage between goals, standards, and metrics. The AF sets goals and standards for organizations, personnel, and weapons systems that facilitate evaluation, comparisons, and improvements. Leaders at every level must also support analysis and review metrics to properly drive improved performance. Maintenance analysts manage and track this process, but maintenance metrics, and the resulting improvements they drive, are inherently a leadership responsibility. So once again, the responsibility falls squarely on your shoulders to ensure the metrics are being built upon correct and accurate reporting. Do not manipulate data so your section can look better than it really is—if the baby is ugly, call it ugly. If you do this, eventually you will back yourself into a corner and will not be able to properly perform the mission. If supervision does not see a problem in the metrics, they are going to think that you have everything you need to perform the mission. However, if your manning is very low and this is reflected in the metrics, such as a poor MC rate, then it may give you the evidence you need to get more manning.

Primary maintenance metrics

Maintenance leaders must review sortie production and maintenance health constantly and be knowledgeable about maintenance performance indicators that highlight trends before they become problems. The following paragraphs discuss a few of the primary maintenance metrics along with a description as prescribed in AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*, attachment 2 (for maintenance status codes); and TO 00-20-2, *Maintenance Data Collection*, appendix L (for flying codes). For a more detailed description and a presentation of additional metrics, see those publications.

Metrics are often grouped into various categories. Two of the most common types are leading and lagging indicators. Leading indicators show a problem first, as it directly impacts maintenance's capability to provide resources to execute the mission. Lagging indicators follow and show firmly established trends.

Leading indicators

The leading indicators you are likely to use at various times in your management responsibilities include cannibalization rate (CR), deferred (or delayed) discrepancy rate (DDR), fix rate (FR), maintenance scheduling effectiveness (MSE), repeat/recur (R/R) discrepancy rate, and the utilization (UTE).

Cannibalization rate

The CR is a leading indicator that reflects the number of cannibalization (CANN) actions (removal of a serviceable part from an aircraft or engine to replace an unserviceable part on another aircraft or engine or to fill an RSP). In most cases, a CANN action takes place when the LRS cannot deliver the part when needed and mission requirements demand the aircraft be returned to an MC status. The CR is the number of CANN actions per total sorties flown. This rate includes all aircraft-to-aircraft, engine-to-aircraft, and aircraft/engine to RSP CANN actions. This indicator can also be used, in part, to indicate backshop and depot support.

Deferred (or delayed) discrepancy rate

The DDR is a leading indicator that should be closely evaluated in comparison to other metrics. This rate represents the average deferred discrepancies across the unit's average possessed aircraft fleet. Discrepancies are considered deferred when they are:

1. discovered and the decision is made to defer them,
2. scheduled with a start date greater than five calendar days after the discovery date, or
3. AWP with a valid off-base requisition.

Deferred discrepancies may be awaiting maintenance (AWM) or awaiting parts (AWP). Although minor maintenance actions must sometimes be deferred or delayed to a more opportune time, maintenance should try to keep this rate as low as possible. If deferred discrepancies cannot be scheduled or combined with a more extensive maintenance action, maintenance schedulers should routinely schedule their aircraft down for a day when required to work deferred discrepancies. The DDR metric measures fleet AWM + AWP rates, though individual AWM and AWP rates can and should also be monitored.

Fix rate

The FR is a leading indicator showing how well the repair process is being managed. It is a percentage of aircraft with a landing status code of 3 (includes system capability codes 3 and 4) returned to a flyable status in a certain amount of time (clock hours). Refer to AFI 21-103 and MAJCOM directives for maintenance start time (e.g., engine shutdown, "first" chock).

Problems found by maintenance after the aircraft lands (ground found) are not considered in the fix time. The fix time stops when all landing status code 3 pilot reported discrepancies are fixed even if

the aircraft remains *not mission capable* (NMC). This metric is an excellent tool to track “dead time” in aircraft repair processes because it measures the speed of repair and equipment maintainability. The common, standard interval used for calculating this metric is 12-hours on non-fighter-type aircraft. However, fighter units typically measure this metric using either a 4- or 8-hour standard.

Maintenance scheduling effectiveness rate

A low MSE rate may indicate that a unit is experiencing turbulence on the flight line or in the backshops. This indicator is primarily used as feedback to maintenance managers on the success and adherence to scheduled maintenance plans and actions. To compute the MSE, you must know the number of maintenance actions scheduled, and accomplished as scheduled, along with each action’s weighted value (based on the importance of the event as established by MAJCOM directives). This is a leading indicator that measures success in the unit’s ability to plan and complete inspections and periodic maintenance on-time per the maintenance plan. Deviations to the plan are recorded.

Repeat/recur discrepancy rate

The R/R discrepancy rate metric is a leading indicator and is perhaps the most important and accurate measure of a unit’s maintenance quality. It is the average number of repeating and recurring system malfunctions compared to the total number of aircrew discrepancies.

Discrepancy	Description
REPEAT	Same malfunction occurs on the next actual or attempted sortie after corrective action has occurred and the system or subsystem is used.
RECUR	Same malfunction occurs during the 2nd through the 4th sortie or attempted sortie after corrective action has occurred and the system or subsystem is used.
CND	Cannot duplicate (CND) occurs when no further maintenance action is taken and the discrepancy cannot be duplicated using standard testing or troubleshooting procedures.

A high R/R rate may indicate lack of thorough troubleshooting; inordinate pressure to commit aircraft to the flying schedule for subsequent sorties; or a lack of experienced, qualified, or trained technicians. The more complex the weapon system and the greater the operations tempo, the more susceptible a unit is for repeating or recurring discrepancies.

You are probably already aware that CND malfunctions are a common part of everyday flightline maintenance. But now that you are moving into being a maintenance manager, you’ll be required to review what other technicians consider a CND. There are legitimate reasons why CNDs exist. Errors in operation and one-time anomalies could cause a system to appear to have a problem. You should ask the following question when working or reviewing these types of problems: Is the discrepancy truly a CND and has everything been done to ensure the system is functional? If a discrepancy sounds like a possible CND, check system histories, perform related operational checkouts, try to duplicate the conditions that surround the discrepancy, and debrief the aircrew in-depth.

To CND a discrepancy, you must have a thorough knowledge of how the system works. This allows you to examine all possible aspects of the problem, including wiring and related components and/or systems. By taking every measure possible to duplicate the discrepancy, you increase the chances of finding a fault in the system. Obviously, not all conditions of flight can be simulated on the ground, but make sure you are using all the resources available to you. By looking deeper into the problem and taking the time to fix it right the first time, you can have a big impact on improving this indicator. If you are going to write it off as a CND, be ready to brief senior leadership on every single step you took to come to that conclusion. Bottom line, examine each discrepancy and seek root causes and fixes—make sure you are fixing the cause, not just treating a symptom.

Utilization rate

The UTE rate is a leading indicator but serves as a yardstick for how well the maintenance organization supports the unit's mission. The UTE rate is the average number of sorties or hours flown per primary aerospace vehicle authorized per month as determined by HAF. This measurement is primarily used by operations in planning the unit's flying hour program. Maintenance uses this measurement to show usage of assigned aircraft. Since UTE rates are used for planning, actual UTE rates (computed at the end of the month) are used to evaluate the unit's monthly accomplishment against the annual plan. Typically, Combat Air Force (CAF) units measure the sortie UTE rate, while Mobility Air Force (MAF) units measure the hourly UTE rate to more accurately measure the combined performance of operations and maintenance.

Lagging indicators

The lagging indicators you are likely to use at various times in your management responsibilities include the MC rate, the total not mission capable maintenance (TNMCM) rate, and the total not mission capable supply (TNMCS) rate.

Mission capable rate

The MC rate is perhaps the best-known yardstick for measuring a unit's performance. It is the percentage of possessed hours (excluding aircraft in "B-type" possession purpose code/purpose identifier code status) for aircraft that are fully mission capable (FMC) or partially mission capable (PMC) for specific measurement periods (e.g., monthly or annually). A low MC rate may indicate a unit is experiencing many hard breaks, parts supportability shortfalls, or workforce management issues. Maintenance managers should look for workers deferring repairs to other shifts, inexperienced workers, lack of parts from LRS, poor in-shop scheduling, high CANN rates, or training deficiencies. High commitment rates may also contribute to a lower MC rate. The key is to focus on negative trends and identify systemic, underlying causes.

Total not mission capable maintenance rate

Though a lagging indicator, the TNMCM rate is perhaps the most common and useful metric for determining if maintenance is being performed quickly and accurately. It is the average percentage of possessed aircraft (calculated monthly/annually) that are unable to meet primary assigned missions for maintenance reasons (excluding aircraft in "B-type" possession identifier code status). Any aircraft that is unable to meet any of its wartime missions is considered NMC. The TNMCM rate is the amount of time aircraft are in not mission capable maintenance (NMCM) status, plus not mission capable both (NMCB) status. Maintenance managers should look for a relationship between other metrics such as R/R, break rate (BR), and FR with the TNMCM rate. A strong correlation could indicate heavy workloads (e.g., people are over-tasked), poor management, training problems, or poor maintenance practices. The TNMCM is also called "out for maintenance."

Total not mission capable supply rate

Though this lagging metric may seem like an "LRS responsibility" because it is principally driven by availability of spare parts, it is often directly indicative of maintenance practices. For instance, maintenance can keep the rate lower by consolidating feasible CANN actions to as few aircraft as practical. This monthly/annual metric is the average percentage of possessed aircraft that are unable to meet primary mission needs for supply reasons. The TNMCS rate is the time aircraft are in not mission capable supply (NMCS) plus NMCB status. TNMCS is based on the number of airframes out for MICAP parts that prevent the airframes from performing their mission.

NOTE: NMCS is not the number of parts that are MICAP.

Maintenance managers must closely monitor the relationship between the CR and TNMCS. TNMCS is also called "out for supply."

Possession

A key factor in metrics involves aircraft “possession.” The AF mandates each aircraft will always be owned or “possessed” by a designated organization. Possession is an indicator of an organization or aircraft fleet’s health. Aircraft that are under the control of their owning base are possessed by that organization. An aircraft that flies to depot for maintenance or inspection, or is repaired by a depot team at the aircraft’s home base, is temporarily possessed by depot. In calculating the various aircraft maintenance metrics, possession is calculated in units of hours normally for specific periods of time (e.g., monthly, annually, etc.).

Regardless of whether you are dealing with leading or lagging indicators, you need to study the AFIs and learn not only how they are calculated, but also what you can do to correct them. Metrics will be key indicators of your maintenance management abilities; as a result, you must approach them with a positive attitude and make your best effort to manage effectively. If you are given the proper resources and are managing effectively, then your metrics should be great. Ultimately, good metrics means that your unit is ready to perform the mission at any given time.

017. Tool management and accountability

Tool management and accountability are key ingredients to successful mission accomplishment. Without them we would be constantly repeating the same mistakes. To prevent this, we should follow some basic principles of tool management:

- Assign high quality, detail-oriented personnel to support sections.
- Aggressively monitor compliance with tool control processes.
- Set an aggressive tone by following-up on lost tools to ensure that your personnel get the point.
- Ensure that all locally manufactured tools are properly designed and manufactured.

If you follow these four basic rules you will be well on your way to having a top notch tool management program. Now that you have a basic idea of tool management, let’s look at some specific details to better help you.

Providing the right type and amount of tools/equipment and controlling and accounting for them is absolutely essential for safe and effective maintenance operation. You do not need to be in maintenance very long before you see or hear of an event where a lost tool caused a serious accident. The importance of tool accountability cannot be stressed enough. Tool accountability not only comes into play while maintenance is occurring on aircraft or elsewhere; it also applies when tool programs are being developed and tool boxes are being stocked. A box that has improperly or imprecisely cut shadow foam could result in a technician missing a tool that should be located in the cutout made for it. You wouldn’t believe how many times a box has had a missing socket or apex that went three or four inventories before someone noticed it was not present. If proper procedures were followed in developing tools kits, this probably would never occur.

One of the main objectives of the tool and equipment management program is to minimize or eliminate FOD to aircraft, engines, missiles, and equipment. To ensure standardization among maintenance units, commanders and key leaders are responsible for executing an effective tool program.

Program management guidelines

The MXG/CC is the OPR for developing wing procedures for control and management of tools/equipment used on the flight line and in aerospace maintenance industrial areas. Refer to AFI 21-101 for a complete list of the items the MXG/CC is required to standardize across the group.

Some of the items the MXG/CC must provide procedures for include the following:

- The standardization of security, control, and accountability of tools and equipment.
- Strict control of consumable items in composite tool kits (CTK).
- Transfer of tools/CTKs at the job site (on-site transfers).
- Lost or missing tools.
- Issue/control of personal protective equipment (PPE), such as ear protectors and reflective belts, among other things.
- Positive control of rags.
- Control of locally manufactured or developed tools and equipment.
- Limiting the number of personnel authorized to procure tools.
- Controlling access to tool rooms.
- Occasions when a single person must sign in/out a tool kit.

It is extremely important to design CTKs to provide a quick inventory and accountability of tools. Develop a simple inventory method, a “show” (e.g. a shadow of the tool) and “know” (knowledge of tool or kit location) concept. Clearly mark all CTKs and tools with the owning organization’s equipment identification designators (EID). Develop local procedures to determine which tools are checked-out and who has them. Inspect all hand tools periodically for serviceability IAW TO 32-1-101, *Use and Care of Hand Tools and Measuring Tools*.

The applicable flight commander/chief is required to designate and document CTK custodians to manage and control the tool and equipment support section for their work center. CTK custodians are responsible for tool, hazardous material (HAZMAT), and equipment accountability and control. To facilitate this accountability, flight and section chiefs are required to determine the type, size, contents and number of CTKs required for their work centers. Once this determination is made, they must ensure that all CTK contents are listed on an approved master inventory list (MIL).

An MIL is the listing of all contents in a particular CTK. MILs are required for each tool kit or series of identical kits and the CTK custodian files them in the MIL file. Contents are identified by drawer/section indicating the total number and type of items in each drawer/section of the CTK. If identification tags or dust caps are attached to tools/ equipment, they must be secured in a manner that precludes any possibility of FOD, and they must be listed on the MIL. The MIL remains valid until contents change.

NOTE: Tools that are in sets should indicate the number in the set (e.g., Allen wrench set—9 each Allen wrenches + container).

NOTE: MILs do *not* require replacement solely to update signatures.

Once approved, a copy of the MIL must be kept in the tool and equipment storage room. Additionally, if the CTK is dispatchable, a copy of the MIL is required to be kept with the CTK at all times.

Tool accountability, control, and inventory

We have all heard the term tool accountability. It simply means knowing where tools are and who is responsible for them. Flight commanders/chiefs and section chiefs, through CTK custodians, are responsible for tool and equipment accountability and control. An individual who signs for a tool or piece of equipment is accountable for the item until it is returned to the tool room and accountability transfers back to the CTK custodian (through a representative or tool room employee.)

Tool accountability system (TAS) is the generic term used to describe a computer program/software that provides inventory control over CTK/tool room content and equipment used for performing maintenance. All units must use a MAJCOM-approved TAS for accountability and control of tools

and equipment. When TAS is used, the master copy of each MIL resides in TAS, but a hard copy of each MIL must reside with each dispatchable CTK or series of identical kits. If the TAS is not available (such as at a deployed location), units will use the AF Form 1297, *Temporary Issue Receipt*, a MAJCOM, or locally approved form for accountability and control of CTKs, equipment, and tools.

TAS tracks issuing and receipt of all assigned tools, equipment, tool kits, HAZMAT items, and technical orders. It is also used to track authorizations/restrictions for special tools/equipment (by individual). Finally, it is used to track inspections, lost or damaged tools, and inventories.

An integral part of the tool accountability process is the daily inspections performed while signing out a CTK or piece of equipment. Another important part includes the inspections maintainers should accomplish throughout their shift. As a minimum, maintainers should inventory their tools before and after every maintenance job. In addition to daily accountability checks, support personnel must also conduct and document an MXG/CC standardized annual inventory of all support section tools and equipment.

Locally manufactured or developed tools and equipment

All locally manufactured, developed, or modified tools and equipment must be approved by the MXG/CC or a designated representative. This procedure does *not* apply to local manufacture, modification, or design of tools authorized in specific technical data. QA must coordinate all requests for approval and use of locally designed tools or equipment. Users are required to review locally manufactured items and requirements biennially (every two years) for serviceability and current configuration. The WWM must coordinate on all weapons related tools and equipment designed locally.

Tool room operations and security

Tool room security is very important. To help ensure that security is maintained, there should never be more than one tool room per work center. Additionally, the room should be set up to allow for easy determination of accountability. When the tool room is not manned, it should be locked to prevent entry by unauthorized personnel.

NOTE: An important note about tool room security—when all CTKs are not capable of being secured in the tool room, the section noncommissioned officer in charge (NCOIC)/chief will design a process to prevent the unauthorized use or access to tools and equipment.

Tool marking/identification and lost tool procedures

Tool marking and identification goes hand-in-hand with tool management and tool accountability. It provides for positive linking of all tools not only to an individual CTK but also to the unit that issued the CTK and to the person who signed it out. This identification is crucial when it comes to lost tools. If the tool is found by someone, the markings will indicate to whom it should be returned. Further, if a tool ends up causing an aircraft accident, markings allow the investigators to link it to a particular person based on the chain of custody. Let's hope that you aren't the one who caused the accident and experience the legal consequences. Fear not; if you diligently control your tools and ensure 100 percent accountability after every job, it is highly unlikely that you will ever end up in this situation. However, if you do not maintain 100 percent accountability, it may happen sooner than you think.

Marking and tool identification

All units must identify their tools and equipment by marking them with a standard EID. The EID consists of nine characters (numbers/letters) with the first four characters being a unique worldwide identification (WWID) code.

NOTE: The intent is for the four characters of the WWID to identify the base (first and second character), unit (third character), and shop (fourth character) in order to leave the remaining five characters available for tool/CTK/equipment numbering.

Units must place the nine-character EID on all CTKs, tools not assigned to a box, and dispatchable equipment that is of sufficient size. The nine-character EID must be placed on the outside of dispatchable CTKs. Tools located inside a tool box may be marked with less than nine character but must contain the four-character WWID and at least one identifying character that ties the tool back to the CTK. For example, tools inside an assigned dispatchable CTK “U6JG00001” may be marked “U6JG1.”

NOTE: Dispatchable equipment is defined as items that can be checked-out from a support section, tool room, or work center to perform on-/off-equipment maintenance within or outside the work center.

Units may affix non-metallic bar code labels on tools to prevent re-etching as long as tool use and its work environment does not normally result in excessive damage or render the label unreadable. Tools are marked with the most current EID. Except for precision measurement equipment laboratory (PMEL) markings, all previous CTK identifiers are either removed or marked out. Small tools or items that cannot be marked as described above (i.e., drill bits, apex bits, etc.) are maintained in a container marked with the WWID and an identifying character(s) that ties the tool back to the CTK with the number of tools contained. The container should also be counted as one of the items.

NOTE: One consideration when etching is the importance of not damaging a tool in the process of etching. Make sure you are not marking a fracture, critical, or other sensitive area. If marking is in question, consult TO 00-20-14, *Air Force Metrology and Calibration Program*, and/or PMEL to validate applicable marking criteria.

Lost item/tool procedures

Supervisors must ensure that all assigned personnel are familiar with lost tool procedures. If an item/tool or a portion of a broken tool is discovered missing, the following procedures apply:

1. The person identifying the missing item/tool conducts a search of the immediate area.
2. If item is *not* found, the individual notifies the expediter or production superintendent.
3. Red X and description of the tool are placed in the forms of all affected aircraft or equipment.
4. Expediter/production superintendent immediately notifies the flight CC/chief, support section, MOC, and QA.
5. After notifications are made, initiate a thorough search for the tool.
6. If the tool is *not* found after a thorough search is completed, initiate a lost tool report.
7. If the tool is found and retrieved, notify the flight CC/chief, support section, MOC, QA, expediter, production superintendent, and the owning work center.
8. If the item is *not* found, the MOC notifies the MXG/CC of the missing items/tool.
9. If the item is *not* located, the operations officer/MX SUPT determines when the search may be discontinued.
10. Without a waiver, an individual must at minimum hold the position of operations officer/MX SUPT to clear a Red X if the item is not found.
11. If an item is found, but cannot be retrieved, notify the flight CC/chief, support section, MOC, QA, expediter, production superintendent, and the owning work center.
12. If an inaccessible item that poses no FOD threat is left in place, all information concerning the tool is maintained in the aircraft historical file until the item/tool is recovered.

Procedures in this section and throughout this CDC are given as information and should not be used to perform maintenance or, in this case, lost tool searches. This information is provided for your general information about the topics so that you have some background knowledge about the subject and, more importantly, where to find the proper guidance. For updated lost tool procedures consult your local checklists or AFI 21-101.

Self-Test Questions

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

016. Maintenance metrics

1. What can maintenance management metrics provide when used properly?
2. What are two major categories that metrics are often divided into?
3. What type of performance indicator shows a problem first, as it directly impacts maintenance's capability to provide resources to execute the mission?
4. What type of indicator follows and shows firmly established trends?
5. Match the maintenance metric in column B with the description of that metric provided in column A by filling in the appropriate letters in the space provided. *Items in column B can only be used once.*

Column A	Column B
____ (1) Average number of deferred discrepancies across the unit's fleet of possessed aircraft.	a. MC rate.
____ (2) Percentage of "Code 3" aircraft repaired to flyable status is set time, i.e. 4, 8 or 12 hours.	b. DDR.
____ (3) Most important and accurate measure of the unit's maintenance quality.	c. FR.
____ (4) Average number of sorties or hours flown per primary aerospace vehicle authorized per month.	d. R/R rate.
____ (5) The best-known yardstick for measuring a unit's performance.	e. TNMCM rate.
____ (6) Average percentage of aircraft that are unable to meet primary assigned missions (calculated monthly/annually) for maintenance reasons.	f. UTE rate.

017. Tool management and accountability

1. What is a main objective of the tool and equipment management program?
2. Which technical order provides guidance for the periodic inspection of hand tools?
3. What does an MIL list?
4. What is TAS with reference to a CTK?

5. Who is required to coordinate on all locally manufactured weapons related tools and equipment?
6. The EID used to mark tools has nine characters. What are the first four characters collectively called?
7. What is the definition of dispatchable equipment?
8. What should be done if a lost tool or item is deemed an inaccessible item that poses no FOD threat and is left in place?

4-2. Maintenance Programs

This section introduces a few management tools that will be very important in your development as a maintenance manager. We begin the section with a lesson discussing the importance of the DOP program, and continue with the MSEP and finish with the maintenance recovery team (MRT).

018. Dropped Object Prevention Program

The DOPP is a safety centered program to help ensure that aircraft maintenance is performed in a safe manner, as well as develop procedures to prevent future mishap occurrences.

Dropped Object Prevention Program

A dropped object is any aircraft part, component, surface, or other item lost from the aircraft during aircrew operations, unless it is intentionally jettisoned. It includes the time from engine start to engine shutdown. Inadvertently released explosive munitions, munitions released in excess of the quantity selected by the aircrew, or multiple releases are not considered dropped objects and will be reported in accordance with AFI 91-204, *Safety Investigations and Reports*.

The DOPP is very important to aircraft operation. In addition to the loss of AF property, objects dropped during flight could cause considerable damage to property or even death to those on the ground. There have been many incidents where the AF has paid large sums of money because of objects falling from aircraft. Think about how you would feel if you got hit by a bolt dropping from 20,000 feet!

To ensure a high level exposure for the DOPP program, the wing vice commander serves as the DOPP manager. Much like the FOD program, the wing vice commander also appoints a wing DOPP monitor. The wing DOPP monitor is usually assigned to QA. All wings, groups, squadrons, and any other units that operate aircraft are responsible for developing an effective DOPP.

Training

The wing DOPP monitor identifies and develops training standards for educating personnel on the program. Commanders are responsible for ensuring that all maintenance personnel involved in on-equipment maintenance receive adequate DOPP training. This training is partly provided in the form of briefings following incidents; however, it is mainly provided by the MTS during initial and refresher maintenance orientation training.

Prevention

Effective prevention of dropped objects starts when an aircraft door, panel, or cowl is opened for maintenance and during munitions build-up, loading, and arming. Maintenance personnel must ensure that only serviceable fasteners are used to close/install doors and panels. Pay special attention to the correct length of fasteners and condition of nut plates and other securing devices. Supervisors should place special emphasis on these areas during the inspection of completed maintenance actions. In addition to panels, another high interest item is safety pins. End of runway crews and other maintenance personnel should ensure that all safety pins are properly installed during use and properly stowed while not in use.

Reporting

If you identify a dropped object incident, immediately notify the expeditor or production superintendent who, in-turn, notifies MOC, which is then responsible for notifying QA. The wing DOPP monitor is responsible for notifying the base/wing safety office of all dropped objects. Units will follow MAJCOM DOPP reporting procedures. The initial dropped object report is made to the applicable MAJCOM via telephone, e-mail, or message. A follow-up report is made to the MAJCOM within three duty days after the occurrence. If the incident involves casualties or property damage, or if adverse publicity is likely, the incident should be reported in accordance with AFMAN 10-206, *Operational Reporting (OPREP)*. Units must maintain reports on file for a minimum of 24 months.

Investigation

The DOPP monitor is required to investigate all dropped object incidents. Every effort should be made to determine the precise cause to ensure positive corrective action is accomplished. Anytime a materiel or design deficiency is the cause, a DR should be submitted *even if an exhibit is not available*. Investigation results are distributed to each appropriate work center for inclusion in personnel training and education programs.

Transient aircraft

The local wing DOPP monitor is also responsible for investigating dropped objects involving transient aircraft. Once the investigation is complete they provide the aircraft's home station DOPP monitor with sufficient data to generate a report for trending and tracking purposes.

019. Maintenance Standardization and Evaluation Program

The QA staff evaluates the quality of maintenance accomplished and performs necessary functions to manage the wing/group's MSEP. The MSEP provides an objective sampling of the quality of equipment, the proficiency of maintenance personnel, and the compliance of lead command and unit MSEP focus areas, programs, and processes. QA personnel are *not* an extension of the work force and will *not* be tasked to perform production inspections. QA serves as the primary technical advisory agency in the maintenance organization, assisting maintenance supervision at all levels to resolve quality problems. The evaluation and analysis of deficiencies and problem areas are key QA functions that highlight and identify underlying causes of poor quality in the maintenance production effort. Aircraft and equipment condition and personnel proficiency are validated through the MSEP and must be recorded using a lead command-approved QA database.

QA is responsible to the MXG/CC as the primary technical advisory agency for maintenance and assists workcenter supervisors in managing the maintenance effort. QA is responsible for implementing and administering the MSEP for the maintenance group. Specifically, the QA officer in charge (OIC)/superintendent (SUPT) is responsible for developing and monitoring the MSEP using a lead command-approved QA database that provides supervisors access to MSEP data. The QA OIC/SUPT usually delegates administration of the MSEP to the QA chief inspector.

The QA chief inspector is directly responsible to the QA OIC/SUPT for ensuring that necessary functions are performed with the MSEP. Much of the day-to-day management responsibility is often

delegated to different QA areas as appropriate. The QA chief inspector is personally responsible for assigning inspectors to provide on-the-spot assistance to correct problems, and for performing spot-checks of inspection tools used during evaluations and inspections for currency and serviceability. The QA chief inspector is also responsible for reviewing the QA database and MSEP inspection summary inputs for accuracy and content. Finally, the QA chief inspector must initiate actions when additional attention is necessary to resolve adverse maintenance trends or training problems.

QA evaluators are responsible for performing the actual MSEP evaluations and inspections for flightline and backshop maintenance tasks and inspections. Because the MSEP evaluations and inspections are the primary means that maintenance leaders have to evaluate the quality of maintenance, QA evaluators must be thoroughly familiar with the requirements/procedures for all tasks they evaluate and inspect. Their evaluations through the MSEP provide an objective sampling of both the quality of equipment and the proficiency of maintenance personnel. Once an inspection or evaluation has been performed, they enter the information into a MAJCOM-approved QA database where it is then used by maintenance managers to draw conclusions and make decisions.

When you look in AFI 21-101, under Additional Maintenance Requirements and Programs, you will notice that the areas are divided into more focused sections, each covering a different maintenance program. Many of the programs listed there are not covered in this CDC. We encourage you to become acquainted with AFI 21-101 and read through all of the different programs not covered here. Just because they were not covered, does not mean they are not important. In fact, *all of them apply* to maintenance and all of them can help you to become a better maintenance manager.

The MSEP is one of the primary ways in which leaders at the MAJCOM- and wing/unit-level ensure that maintenance personnel are complying with AF, MAJCOM, and unit directives. MSEP evaluations have some similarities to what you might see during a MAJCOM Inspector General unit compliance inspection (UCI). However, MSEP evaluations are designed so that duplication is minimized.

Unit MSEP

The unit-level MSEP allows the MXG/CC to focus the unit program on problem areas where improvements are needed. Overall, the program must be designed to provide maintenance managers with a method to evaluate the unit's compliance with AF, MAJCOM, and local maintenance directives and policies. Units will grade their MSEP evaluations using objective ratings based on the following five-tier rating system:

MSEP Ratings	
Rating	Numerical Range
Outstanding	95 - 100%
Excellent	90 - 94.99%
Satisfactory	80 - 89.99%
Marginal	70 - 79.99%
Unsatisfactory	0 - 69.99%

Units are responsible for developing their MSEP and conducting local inspections to ensure their programs, maintenance technician proficiency, equipment condition, and other focus areas are in compliance with AF, MAJCOM, and local directives. The local unit MSEP includes as applicable personnel evaluations (PE), quality verification inspections (QVI), special inspections (SI), management inspections (MI), detected safety violation (DSV), technical data violations (TDV), unsatisfactory condition reports (UCR), and other inspections when directed.

QA uses the unit MSEP to assess how well units are meeting compliance goals. They also look for areas needing improvement. The results of the evaluations and inspections are organized into a summary. The following areas are addressed:

- Compliance with and currency of technical orders and directives.
- Aircraft and equipment forms documentation.
- Aircraft and equipment inspections.
- Compliance and management of safety.
- Training.
- Key task list (KTL). (**NOTE:** KTLs are complex tasks or those affecting safety of flight.)
- Routine inspection list (RIL). (**NOTE:** RILs are additional MAJCOM defined requirements.)
- High-missed carded items from PEs and QVIs in the unit's monthly MSEP summary.

When QA inspectors perform an evaluation or inspection, they are required to report the results to the applicable work center. QA must provide a reference for identified discrepancies with the report. This includes reviewing available documents and forms to determine accuracy, currency, and compliance with applicable technical orders.

Discrepancy categories

Category (CAT) I is a finding where a required inspection/technical order procedural item is missed or improperly completed. This category is a specific work card item or technical order step, note, caution or warning for a specific condition or action. CAT I discrepancies can be major or minor depending on the relative severity.

CAT II is a finding where an obvious defect, which could have been readily detected by a technician or supervisor, is missed. CAT II is different from CAT I in that it is *not* a specific AFI requirement, work card item, technical order step, note, caution, or warning for that specific evaluated task. CAT II discrepancies are also sub-classified as major or minor.

- A *major finding* is defined as a condition that would endanger personnel, jeopardize equipment or system reliability, affect safety of flight or warrant discontinuing the process or equipment in operation.
- A *minor finding* is defined as an unsatisfactory condition that requires repair or correction, but does not endanger personnel, affect safety of flight, jeopardize equipment reliability or warrant discontinuing a process or equipment operation.

Personnel evaluations

A PE is an over-the-shoulder evaluation of a maintenance action or inspection by an individual or team. PEs are used to evaluate job proficiency, degree of training, and compliance with technical data. Individuals performing, supervising, or evaluating maintenance tasks are subject to a PE, which is rated as either "Pass" or "Fail." Further, PEs can be accomplished on individuals working alone or while working as part of a team. Evaluations should accurately measure the proficiency of each individual under evaluation. Additionally, the evaluator may start or stop the task evaluation at any step. In other words, it does *not* have to go from start to finish.

Personnel Evaluations	
Category	Description
Individual PE	QA defines an individual PE as an over-the-shoulder evaluation of one maintenance technician or supervisor while he or she is actually performing a task.
Team evaluation	QA defines a team evaluation as an over-the-shoulder evaluation of maintenance supervisors and technicians completing a team task.

Personnel Evaluations	
Category	Description
	A team task is one requiring more than one person to complete the task (e.g., refueling, towing, etc.).

QA rates each PE based on acceptable quality levels (AQL). An AQL denotes the *maximum* allowable number of *minor findings* a task may be charged in order for it to be rated “Pass.” A Pass means the number of discrepancies does *not* exceed AQL standards. A failed PE rating means the specific task was *not* performed within the established AQL standards. The rating applies only to the specific task evaluated and *not* to other tasks that a technician or supervisor is qualified to perform. A Fail rating can result from any of the following actions:

- The number of discrepancies exceeds the established AQL standards.
- A technician fails to detect a major discrepancy while following an inspection or work card requirement.
- A technician fails to follow a step of prescribed technical data that could affect the performance of the equipment involved or cause injury to personnel.
- A technician demonstrates a lack of technical proficiency or system knowledge, or training is not documented.
- A technician commits a safety violation.
- A technician fails to document maintenance actions in appropriate equipment records.

Upon completion of a failed evaluation, the evaluator provides on-the-spot feedback. If the workcenter supervisor determines that an individual is no longer qualified to perform the task alone, the supervisor should annotate this in the technician’s training records.

Other inspections

The following table briefly describes the other inspections that can be performed as part of the MSEP.

Other MSEP Inspections	
Inspection	Description
QVI	A QVI is an after the fact inspection. It is done to inspect equipment condition after a technician performs an inspection or completes a task. QVIs should <i>not</i> be conducted after equipment operation when such operation could invalidate indications of proper job accomplishment.
MI	MIIs cover a broad category. These inspections are performed to follow-up on trends, conduct investigations, or conduct research to get to the root of problems. MXG/CC, SQ/CC, or workcenter supervisors request MIIs. MIIs may encompass PE/QVI trends and other inspection data; NMC causes; aborts and trends; in-flight emergency trends; high component or system failure rates; suspected training deficiencies, and tasks outlined in aircraft “Dash-6” technical orders.
SI	SIs include inspections that are <i>not</i> covered by QVIs, PEs, or MIIs. SIs may include, but are not limited to, aircraft and equipment forms inspections, CTKs, TO files, vehicle inspections, housekeeping, safety practices, FOD program compliance, and so forth. SIs may be condition, procedural, or compliance oriented.

Observations

QA does not have to be conducting an official inspection or evaluation to document observations. As mentioned earlier, there are three types of observations that QA can document, all of which can have an adverse effect on MSEP ratings or a unit’s QA pass rate. More importantly, these observations can

be a tell-tale sign as to the quality of maintenance and leadership effectiveness of a unit. The three types of observations are the DSV, TDV, and UCR.

Observation Types	
Type	Description
DSV	<p>A DSV is given for an unsafe act by an individual. The inspector must stop the unsafe act immediately.</p> <p>If a DSV is noted during a PE, then a separate DSV is not necessary.</p> <p>The DSV will result in a “Fail” for the PE.</p>
TDV	<p>A TDV occurs when an individual is observed performing maintenance without the proper technical data available or in use.</p> <p>The technician must have knowledge of all general directives associated with the job prior to performing the task. However, those directives need not be present at the job site.</p> <p>A TDV should <i>not</i> be documented separate from an ongoing PE, since failure to use technical data automatically results in a “Fail” rating.</p>
UCR	<p>A UCR indicates an unsafe or unsatisfactory condition, other than a DSV, chargeable to the workcenter supervisor.</p> <p>UCRs may be documented even when it is not possible to determine who created the condition.</p>

Trend analysis

Production personnel, as well as maintenance supervision, have unlimited read-only access to the QA database. You should review previous reports to determine if inspected areas have improved or declined. Additionally, cross-talk between the MMA section, maintenance supervision, and QA personnel is essential.

MSEP inspections, evaluations, and observations can provide you valuable data. When you get to the point that you can accurately interpret MSEP trends, you will be well on your way to being an outstanding maintenance manager. The following table provides some pointers on what can be done to reverse negative trends.

Negative Trend	Suggested Action
Low PE pass rate (over the shoulder)	<ul style="list-style-type: none"> • Emphasize quality over quantity. • Do a thorough root cause analysis—<i>fix the problem, not the symptom!</i> • Consider OJT or other training to eliminate causes.
Low QVI rate (after the fact inspections)	<ul style="list-style-type: none"> • Emphasize quality over quantity/speed. • Do a thorough root cause analysis—<i>fix the problem, not the symptom!</i> • Could indicate a quality of training issue—consider additional OJT to eliminate causal factors.
DSV/UCR/TDV	<ul style="list-style-type: none"> • Ensure workcenter atmosphere emphasizes quality over quantity/speed. • Do a thorough root cause analysis—<i>fix the problem, not the symptom!</i> • Show concern for your people by walking around the work area—find out why they feel there is a need to sacrifice safety.

020. Maintenance recovery teams

How many times have you heard of an aircraft (or perhaps your own aircraft) that diverted to a different location, while flying a local sortie, due to some type of system malfunction that would not allow it to make it back to home station? Or, how often have you sent a handful of aircraft on a TDY or contingency operation only to send a maintenance team to repair one of those aircraft because it had to make an unexpected landing somewhere else while on the way to its final location? It is situations like these that require the assembly and movement of an MRT.

Maintenance recovery team

Maintenance recovery is defined as the repair and successful launch of an aircraft that has been unexpectedly grounded at a location other than the aircraft's home station. With all recovery operations, an MRT is formed and an MRT chief is appointed to lead the operation. To ensure an effective maintenance recovery operation, the MRT chief must follow specific local instructions as well as the general guidance outlined in AFI 21-101. Some of the immediate details that must be worked out include deciding what people, parts, and tools are needed. The MRT chief also needs to arrange for official travel (i.e., road or air), advance per diem, rental cars, etc., and ensure that TDY orders are generated for everyone going on the recovery. Finally, the MRT chief needs to know the phone number and name of the MRT POC at both the home station and recovery location. These are just a few of the items that must be considered. Now that the preliminary items are taken care of, the following table describes the MRT chief's responsibilities immediately prior to, during, and upon returning from a recovery operation.

MRT Chief Responsibilities	
Stage	Responsibilities
Prior to departure	<ul style="list-style-type: none"> • Receive complete MRT briefing. • Read and understand MRT chief responsibilities. • Ensure all personnel on the MRT are prepared and aware of their part in the operation. • Ensure all equipment/parts/tool kits/technical orders are properly prepared for shipment.
Upon arrival	<ul style="list-style-type: none"> • Contact the home station MRT POC. • At deployed location, report to the mission commander and/or MOC. • If possible, debrief aircrew and make initial determination of discrepancy. • Emphasize safety to team personnel. • Set duty days—work starts immediately unless travel time has exceeded duty time. <ul style="list-style-type: none"> ◦ If travel time exceeds duty time, allow eight hours of uninterrupted sleep. <p>NOTE: Initial duty time is considered to be a <i>maximum</i> of 16 hours that an MRT member is required to work before being given eight hours of uninterrupted rest, including time from home station duty, travel, and recovery site duty upon arrival.</p> <ul style="list-style-type: none"> ◦ Normal duty time during the recovery operation is 12 hours of work and 12 hours of rest. ◦ Do not overwork team and compromise safety. • Report to home station MRT POC with the following. <ul style="list-style-type: none"> ◦ Specific discrepancies. ◦ Estimated time in-commission. ◦ Billeting room/phone (if applicable). ◦ Expiration time of MRT duty day.
During recovery	<p>Report to the MRT POC by the following schedule:</p> <ul style="list-style-type: none"> • Upon initial assessment of actual discrepancy. • If maintenance/supply status changes. • As additional requirements become known (i.e., parts, equipment, expertise, etc.). • At the end of each shift or upon job completion.
Upon completion of recovery	<ul style="list-style-type: none"> • Assemble all parts/equipment/tools and prepare them for return shipment. • Notify MRT POC upon return to home station. • Properly secure all parts/equipment/tools. • Thank your personnel for a job well done.

The preceding items were developed from AFI 21-101. Your MAJCOM and weapons system team will provide valuable detailed guidance on executing a successful maintenance recovery operation. Additionally, your local procedures are sure to be more thorough and specific—make sure you find out what those procedures are. You have probably been on an MRT as some point; if so, now you know a little bit about what the MRT chief is responsible for. Take note because some day you may be leading a maintenance recovery operation.

Self-Test Questions

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

018. Dropped Object Prevention Program

1. As it pertains to the DOPP, what is the definition of a dropped object?
2. What units are required to develop an effective DOPP?
3. Who is required to investigate dropped objects involving transient aircraft?

019. Maintenance Standardization and Evaluation Program

1. What does the MSEP provide an objective sampling of?
2. Who serves as the primary technical advisory agency in the maintenance organization, assisting maintenance supervision at all levels to resolve quality problems?
3. Who is responsible for developing and monitoring the MSEP using a lead command-approved QA database that provides supervisors access to MSEP data?
4. When units develop their MSEP and conduct local inspections, what directives are used to ensure their programs, maintenance technician proficiency, equipment condition, and other focus areas are in compliance?
5. QA rates PEs based on what type of standard?
6. A UCR indicates an unsafe or unsatisfactory condition, other than a DSV, and is chargeable to whom?

020. Maintenance recovery teams

1. What is the definition of a maintenance recovery as it pertains to MRTs?
2. What is considered normal duty time for an MRT during a maintenance recovery operation?
3. What provides valuable guidance on executing a successful maintenance recovery operation?

Answers to Self-Test Questions**016**

1. Roadmaps to show where your organization has been, where you're going, and how (or if) you're going to get there.
2. Leading and lagging indicators.
3. Leading.
4. Lagging.
5. (1) b.
(2) c.
(3) d.
(4) f.
(5) a.
(6) e.

017

1. To minimize or eliminate FOD to aircraft, engines, missiles, and equipment.
2. TO 32-1-101.
3. All contents in a particular CTK.
4. It stands for TAS, and is the generic term used to describe a computer program/software that provides inventory control over CTK/tool room content and equipment used for performing maintenance.
5. WWM.
6. WWID code.
7. Items that can be checked-out from a support section, tool room, or work center to perform on-/off-equipment maintenance within or outside the work center.
8. All information concerning the tool will be maintained in the aircraft historical file until the item/tool is recovered.

018

1. Any aircraft part, component, surface, or other item lost from an aircraft during aircrew operations, unless intentionally jettisoned.
2. All wings, groups, squadrons and any other units which operate aircraft.
3. Local wing DOPP monitor.

019

1. The quality of equipment, the proficiency of maintenance personnel, and the compliance of lead command and unit MSEP focus areas, programs, and processes.

2. QA.
3. QA OIC/SUPT.
4. AF, MAJCOM, and local directives.
5. AQL.
6. Workcenter supervisor.

020

1. The repair and successful launch of an aircraft that has been unexpectedly grounded at a location other than the aircraft's home station.
2. 12 hours of work and 12 hours of rest.
3. Your MAJCOM, weapons system team, local procedures.

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 AFCDA.

41. (016) What are the two *most common* types of *primary maintenance* metric indicators?
 - a. Performance and health.
 - b. Trending and impacting.
 - c. Positive and negative.
 - d. Leading and lagging.
42. (016) Which primary maintenance metric indicator shows problems first, as they directly impact maintenance's capability to provide resources to execute the mission?
 - a. Leading.
 - b. Lagging.
 - c. Trending.
 - d. Impacting.
43. (016) Which primary maintenance metric indicator shows and follows firmly established trends?
 - a. Leading.
 - b. Lagging.
 - c. Trending.
 - d. Impacting.
44. (016) Mission capable (MC) rate, total not mission capable maintenance (TNMCM) rate, and total not mission capable supply (TNMCS) rate are all examples of which primary maintenance metric indicator?
 - a. Leading.
 - b. Lagging.
 - c. Trending.
 - d. Impacting.
45. (017) Who is the office of primary responsibility (OPR) for development of wing procedures for control and management of tools/equipment used on the flight line and in aerospace maintenance industrial areas?
 - a. Wing commander (WG/CC).
 - b. Wing vice commander (WG/CV).
 - c. Maintenance group commander (MXG/CC).
 - d. Maintenance group deputy commander (MXG/CD).
46. (017) In addition to daily accountability checks, how often must support personnel conduct and document a maintenance group commander (MXG/CC) standardized inspection of all support section tools and equipment?
 - a. Monthly.
 - b. Quarterly.
 - c. Semiannually.
 - d. Annually.

47. (017) How many characters (numbers/letters) make up an equipment identification designator (EID) code used to identify tools and equipment?
- 8.
 - 9.
 - 10.
 - 11.
48. (017) Without a waiver, what is the *minimum* position an individual must hold before clearing a red X for a lost tool that has *not* been found?
- Maintenance (MX) operations officer or MX superintendent (SUPT).
 - Flight or aircraft maintenance unit (AMU) commander (CC).
 - Squadron commander (SQ/CC).
 - Flight or AMU chief.
49. (018) What time frame is used for determining if an item that falls off an aircraft is considered a dropped object?
- Take-off to landing.
 - Taxi-out to taxi-in for final park.
 - Engine start to engine shutdown.
 - Aircrew arrival until aircraft released to maintenance.
50. (018) A dropped object that has resulted in casualties or property damage must be reported in accordance with Air Force Manual (AFMAN)
- 10-2502, *Air Force Incident Management System (AFIMS) Standards and Procedures*.
 - 10-206, *Operational Reporting (OPREP)*.
 - 91-224, *Ground Safety Investigations and Reports*.
 - 91-221, *Weapons Safety Investigations and Reports*.
51. (019) Which Maintenance Standardization and Evaluation Program (MSEP) individual assessment is an over-the-shoulder evaluation while the technician performs a task?
- Quality verification inspection (QVI).
 - Management inspection (MI).
 - Personnel evaluation (PE).
 - Special inspection (SI).
52. (019) Which Maintenance Standardization and Evaluation Program (MSEP) individual assessment is performed *after* a technician completes a task?
- Special inspection (SI).
 - Personnel evaluation (PE).
 - Management inspection (MI).
 - Quality verification inspection (QVI).
53. (020) Which Air Force publication provides *general guidance* for executing an effective maintenance recovery operation?
- AFI 10-403, *Deployment Planning and Execution*.
 - AFI 10-404, *Base Support and Expeditionary (BAS&E) Site Planning*.
 - AFI 21-101, *Aircraft and Equipment Maintenance Management*.
 - AFI 25-101, *Air Force War Reserve Materiel (WRM) Guidance and Procedures*.

54. (020) The *maximum* total initial duty time (including home station duty, travel time, and recovery site duty upon arrival) that a maintenance recovery team (MRT) member may be worked before being given 8 hours of uninterrupted rest is
- a. 14 hours.
 - b. 16 hours.
 - c. 18 hours.
 - d. 20 hours.

Student Notes

Glossary of Abbreviations and Acronyms

A&P	airframe and powerplant
ACC	Air Combat Command
ADL	advanced distributed learning
AETC	Air Education and Training Command
AF	Air Force
AFB	Air Force base
AFCFM	Air Force career field manager
AF COOL	Air Force credentialing opportunities on-line
AFDPO	Air Force Departmental Publishing Office
AFH	Air Force handbook
AFI	Air Force instruction
AFMAN	Air Force manual
AFMC	Air Force Materiel Command
AFRAMS	Air Force Recoverable Assembly Management System
AFR	Air Force Reserve
AFS	Air Force specialty
AFSC	Air Force specialty code
AFSOC	Air Force Special Operations Command
AFTO	Air Force technical order
AF TOPP	Air Force Technical Order Policies and Procedures
AGE	aerospace ground equipment
ALC	air logistics complex
ANG	Air National Guard
AOR	area of responsibility
APU	auxiliary power unit
AQL	acceptable quality level
AWACT	awaiting action
AWM	awaiting maintenance
AWP	awaiting parts
BR	break rate
CAC	common access card
CA/CRL	custodian authorization/custody receipt listing
CAF	Combat Air Force
CAGE	commercial and government entity
CANN	cannibalization
CAT	category
CBT	computer-based training
CC	commander

CCAF	Community College of the Air Force
CDC	career development course
C-E	communications-electronics
CFETP	career field education and training plan
CIC	Community College of the Air Force instructor certification
CND	cannot duplicate
CONUS	continental United States
CPR	cardiopulmonary resuscitation
CR	cannibalization rate
CRD	credit
CRF	centralized repair facility
CTK	composite tool kit
CUT	cross utilization training
DCC	dedicated crew chief
DD	Department of Defense (in association with forms)
DDR	deferred (or delayed) discrepancy rate
DIFM	due-in from maintenance
DL	distance learning
DOD	Department of Defense
DoDAAC	Department of Defense activity address code
DOPP	Dropped Object Prevention Program
DOR	due-out release
DR	deficiency report
DRI&R	deficiency reporting, investigation and resolution
DSV	detected safety violation
DUO	due-out
EAE	equipment accountability element
EAID	equipment authorization inventory data
EID	equipment identification designator
ELO	equipment liaison office
EM	engine management
ERRC	expendability, recoverability, and reparability code
ETCA	Education and Training Course Announcements
ETIMS	Enhanced Technical Information Management System
eTO	electronic technical order
eTool	electronic tool
EWO	emergency war order
FAA	Federal Aviation Administration
FAD	force activity designator
FMC	fully mission capable

FMP	flight manuals program
FOD	foreign object damage
FOUO	For Official Use Only
FR	fix rate
FSC	flight service center
FTD	field training detachment
GCSS-AF	Global Combat Support System-Air Force
HAF	Headquarters United States Air Force
HAZMAT	hazardous material
HMC	how malfunctioned code
HQ	headquarters
IMDS	Integrated Maintenance Data System
IPI	in-process inspection
ISD	instructional systems development
ISU	issued
ITP	individual training plan
ITCTO	interim time compliance technical order
JDRS	Joint Deficiency Reporting System
JQS	job qualification standard
KTL	key task list
LRS	logistics readiness squadron
LRU	line replaceable unit
MAF	Mobility Air Force
MAJCOM	major command
MC	mission capable
MDS	mission design series
MI	management inspection
MICAP	mission capable
MIL	master inventory list
MIS	maintenance information system
MMA	maintenance management analysis
MMCL	major command mandatory course listing
MO	maintenance operations
MOC	maintenance operations center
MQP	maintenance qualification program
MQT	maintenance qualification training
MRT	maintenance recovery team
MSE	maintenance scheduling effectiveness
MSEP	Maintenance Standardization and Evaluation Program
MSG/CC	mission support group commander

MSgt	master sergeant
MSK	mission support kit
MTL	master task listing
MTP	master training plan
MTS	maintenance training section
MTT	mobile training team
MX	maintenance
MXG	maintenance group
MXG/CC	maintenance group commander
MXS	maintenance squadron
MX SUPT	maintenance superintendent
NCATT	National Center for Aerospace & Transportation Technologies
NCOIC	noncommissioned officer in charge
NMC	not mission capable
NMCB	not mission capable both
NMCM	not mission capable maintenance
NMCS	not mission capable supply
NRTS	not repairable this station
NSN	national stock number
O&M	operations & maintenance
OI	operating instruction
OIC	officer in charge
OJT	on-the-job training
OPR	office of primary responsibility
ORI	operational readiness inspection
PACAF	Pacific Air Forces
PBR	percent of base repair
PDF	portable document format
PE	personnel evaluation
PMC	Professional Manager Certification; partially mission capable
PMEL	precision measurement equipment laboratory
P/N	part number
POC	point of contact
POL	petroleum, oil, and lubricants
PPE	personal protective equipment
PS&D	plans, scheduling, and documentation
QA	quality assurance
QVI	quality verification inspection
RCN	report control number
RDD	required delivery date

RIL	routine inspection list
ROS	report of survey
R/R	repeat/recur
RSP	readiness spares package
SATOP	Security Assistance Technical Order Program
SBLC	standard base-level computer
SBSS	standard base supply system
SCARS	Serialized Control and Reporting System
SCR	special certification roster
SI	special inspection
SM	single manager
S/N	serial number
SPD	system program director
SQT	special qualification training
SPRAM	special purpose recoverable authorized maintenance
SRU	shop replaceable unit
SSgt	staff sergeant
STS	specialty training standard
SUPT	superintendent
T&E	test and evaluation
TAS	tool accountability system
TBA	Training Business Area
TCM	technical content manager
TCTO	time compliance technical order
TD	training detachment
TDV	technical data violation
TDY	temporary duty
TMDE	test, measurement, and diagnostic equipment
TNMCM	total not mission capable maintenance
TNMCS	total not mission capable supply
TO	technical order
TODA	technical order distribution account
TODO	technical order distribution office
UCI	unit compliance inspection
UCR	unsatisfactory condition report
UJC	urgency justification code
UND	urgency of need designator
UPE	user practice environment
USAFE	United States Air Forces Europe
UTE	utilization

UTM	unit training manager
WG/CC	wing commander
WS	weapons standardization
WUC	work unit code
WWID	worldwide identification
WWM	wing weapons manager

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