CDC 2R051

Maintenance Management Analysis Journeyman

Volume 1. Functions of Maintenance and Data Management

Air Force Career Development Academy

Air University

Air Education and Training Command

2R051 01 1709, Edit Code 07

AFSC 2R051

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WELCOME to career development course (CDC) 2R051, *Maintenance Management Analysis Journeyman.* You are a maintenance management analyst and you have a very important job within your organization. You must provide managers with up-to-date, real-time analysis of maintenance data. This entails detailed studies and research on past trends as well as predictions and recommendations for the future. You will present routine briefings on current maintenance and mission performance as well as in-depth statistical studies on various items of importance.

To accomplish your duties, you must be extremely capable and versatile in several areas. First, you must be a qualified statistician. You are the point of contact for the entire maintenance complex for statistics and maintenance metrics. These duties require extensive knowledge of statistical tools and maintenance algorithms. You must be thoroughly familiar with the maintenance process and organizations. As a maintenance management analyst, you must retrieve, manipulate, analyze, and present data on a continual basis.

You are also the organization's expert for one or more automated information systems (AIS) your organization uses such as the Integrated Maintenance Data System (IMDS) and the Mobility Air Force Logistics Command & Control (MAF LOG C2) System. You are the manager, decision maker, trainer, and problem solver for these highly dynamic and complex maintenance data systems. Every area of maintenance relies on these AISs in one form or another. Your unit relies on you to manage these computer systems properly and efficiently.

Your ability to manage these AISs and effectively analyze maintenance data will have a direct impact on your unit. Whether you are producing a monthly maintenance summary, analyzing data for a special presentation, or fixing a complex problem within the AIS, this course will provide you with the knowledge to perform your duties effectively.

This four-volume course is mandatory for all personnel in upgrade training to the 5-level skill level.

Volume 1 covers the maintenance complex and the maintenance management analyst's responsibilities, general data processing knowledge, and fundamental computer system concepts for an analyst to begin gathering and analyzing maintenance data. Unit 1 of this volume explains the different facets of the maintenance complex. Unit 2 covers database management responsibilities and the job data documentation (JDD) process with the various agencies you will work with. Unit 3 discusses data processing, the executive control language, and for online computer users (FOCUS) reports. Unit 4 introduces you to IMDS and its subsystems, on-line inquiries, IMDS background reports, generated runstreams (GENRUN) and interactive processing facility (IPF). Unit 5 introduces you to MAF LOG C2, database layout and structure, and time-sharing option (TSO) utilities.

Volume 2 covers IMDS administration, management, and data retrieval. The first portion of volume 2 consists of IMDS administration and coordination, IMDS database structure and application, database troubleshooting and monitoring tools, and query language processor (QLP). To be an effective analyst, you must be able to manage IMDS properly to obtain accurate and reliable data.

Volume 3 teaches you the basic statistical tools and applications. You will learn about the fundamentals of descriptive statistics—how to identify and classify samples of data. Then we go to inferential statistics—how to make conclusions out of samples. You will also learn about predictive analysis and statistical process control.

Volume 4 begins with the maintenance process, inspection concepts, and technical orders. Computing maintenance and mission performance indicators are taught next. Analyzing key maintenance metrics are presented here. You will also learn about the 12-step process for analyzing data, producing special studies, and researching problem areas of maintenance.

A glossary is included for your use.

Code numbers on figures are for preparing agency identification only.

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This volume is valued at 18 hours and 6 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. The Maintenance Complex

THE AIR FORCE IS IN A CONTINUAL and rapid state of change. As the Air Force proceeds through the twenty-first century, its mission rapidly evolves to encompass a strategy of global reach and power. The design of this strategy allows the Air Force to bring speed, range, and precise lethality to any war-fighting scenario. The fundamental principles of maintenance management have remained the same; however, the Air Force has been continually changing certain organizations and responsibilities to allow for swift accomplishment of its combat mission. The introduction of air and space expeditionary forces (AEF) brought this about. The integration of the equipment maintenance organizations into the AEF as an essential element is an important part of becoming more efficient. Although you will learn about the basic maintenance organizations, you need to understand that our senior leaders with AEF in mind did the organizing of these organizations.

1–1. Aerospace and Communications/Cyber Equipment Maintenance

As the overall mission concept of the Air Force continually evolves, the mission of the maintenance organization to which you are assigned will remain constant; that is, to use its assigned resources to meet peacetime flying schedules and go to war at a moment's notice. Aerospace and communications/cyber equipment complement each other to achieve this end. Aerospace equipment refers to aircraft and spacecraft, and all supporting equipment. Whereas, communications/cyber equipment is all ground and space equipment that track movement and communication of aircraft and spacecraft. Each general type of equipment is equally important to the Air Force mission. Understanding the fundamental philosophy concerning the management and maintenance of this equipment is necessary for us to appreciate the role we perform in the world of maintenance.

001. Maintenance management

The Air Force prescribes basic maintenance policy and procedures that provide senior leadership and management direction for the accomplishment of the mission. These guiding principles apply throughout the Air Force where aerospace and communications/cyber equipment maintenance is concerned. The only maintenance operation excluded from these maintenance principles are depot

operations performed by Air Logistics Centers (ALC). The two levels of expectations that oversee Air Force maintenance management are the following:

- *Policies* are expectations by senior leadership at the Air Staff that govern the standards for maintaining equipment.
- *Instructions* provide detailed guidance that directs maintenance managers at all levels to conduct operations in a uniform manner that complies with Air Force policy.

We will cover the different maintenance management principles within these two expectations.

Air Force policy

The Air Force Policy Directive (AFPD) 21–1, *Air and Space Maintenance*, provides overall guidance for the maintenance of air and space equipment. This publication establishes policy and assigns responsibilities for the maintenance of air and space equipment to meet operational needs, including mobilization and surge requirements. This policy directive applies to all Air Force and Department of Defense (DOD) contractor activities, including the Air National Guard (ANG) and the Air Force Reserve (AFRES). The expression of this policy is in the following four main areas:

- Performance of maintenance will be at the *lowest* level to optimize readiness and resources.
- Standardize organizations, tools, equipment, and skills where possible.
- Maintain a depot maintenance capability to meet military contingency requirements.
- Establish inter- and intra-service and joint contracting maintenance support (MS) arrangements.

Objectives

The overall Air Force objective is to maintain air and space equipment in a safe, serviceable, and ready condition to meet mission needs. To meet that goal, the Air Force broke it down to three areas (shown in the following table) supported by their respective primary objectives:

Areas	Objectives
Readiness	Maintain equipment in optimum condition.
Skilled personnel	Assign skilled personnel to support expeditionary air forces.
Fleet health	Manage to ensure long-term capability of air and space equipment.

Roles and responsibilities

Assigning roles and responsibilities to different Air Force organizational levels ensures accountability of mission expectations. These organizational levels are Headquarters Air Force (HAF), major commands (MAJCOM), and wings (WG).

Headquarters Air Force

At the HAF level, the deputy chief of staff (DCS) for installations and logistics (AF/IL) is the chief agency responsible for air and space equipment in the three areas described in the following table:

HAF responsibility areas	Function
Policy	Prepares, publishes, and reviews Air Force-level policy.
Resource	Advocate for resources to sustain maintenance operations (MO).
Management	Arranges cost-effective MS between services; analyzes or summarizes maintenance trends.

MAJCOM

MAJCOMs provide manpower, resources, and training consistent with the assigned mission. It is at this leadership level where they provide detailed policy, funding, and analysis to optimize readiness. Two

specific commands, however, have a unique mission task not found in the other MAJCOMS. They are the Air Force Materiel Command (AFMC), and Air Education and Training Command (AETC).

AFMC

AFMC provides adequate support for logistics, engineering, and research, development, test, and evaluation (RDT&E) to support all MAJCOMs. AFMC also does the following:

- Oversees depot-level maintenance activities and manages ALCs.
- Improves efficiency and effectiveness of depot maintenance through inter-servicing and competition.
- Determines and quantifies core capability annually.
- Serves as the final determining authority for the content of technical orders (TO).
- Ensures operational safety, suitability, and effectiveness.

AETC

AETC provides formal training for technicians to maintain air and space equipment. Air Force *WG* are considered the *primary* maintenance level, with air and space equipment ultimately maintained at the unit level. Air Force WG oversee base-level maintenance activities. The wing leadership ensures maintenance activities have the capability to launch and recover aircraft, and sustains the preventive maintenance program. The WG also enforces compliance with technical manuals (TM) and issues supplements to all subordinate units.

Measurement and reporting

All Air Force organizations are directed to measure and report maintenance data to evaluate maintenance performance and compliance consistent with the Air Force policy. Note it is this very policy justifying the position of the maintenance management analyst.

The Air Staff, MAJCOMs, and wings (and their subordinate units) prepare and report metrics in the three areas of air and space maintenance as shown in the following table:

Area	Metrics used
Readiness	*Determine* using *mission capability rates* and other management indicators. The reporting of these rates is by mission design (MD) series (e.g., F–15E) and organization (e.g., 1st Fighter Wing [FW]). Sources for this measurement include the Air Force Portal and Maintenance Information Systems (MIS) (e.g., Integrated Maintenance Data System (IMDS) and Enterprise Data Warehouse (EDW)/Reliability and Maintainability Information System [REMIS]).
Skilled personnel	Determine by training and availability. As a minimum, manning data reporting is by specialty and skill level. Sources for this measurement include the Interactive Demographic Analysis System (IDEAS) and the Retrieval Applications Website.
Fleet health	Determine using management indicators (e.g., deferred discrepancies, break/fix rates, cannibalization (CANN) rates, and abort rates). Close monitoring and reporting of these indicators ensures the long-term capability and sustainability of equipment. Sources for these indicators include the Air Force Portal and MIS (e.g., Core Automated Maintenance System (CAMS)/IMDS, EDW/REMIS, and Mobility Air Force Logistics Command and Control [MAF LOG C2]).

Principles under Air Force instructions

The Air Force Instruction (AFI) 21–101, *Aircraft and Equipment Maintenance Management*, implements the policies of AFPD 21–1, *Maintenance of Military Materiel*. In fact, AFI 21–101 is regarded as the "bible" of maintenance management. The maintenance philosophy of this AFI is divided into several principles understood by maintenance leaders and managers as directions towards successful maintenance accomplishment. Let's take a closer look at some of these principles.

Primary mission of maintenance

Aircraft and equipment readiness is the primary mission of maintenance. The maintenance function ensures assigned aircraft and equipment are safe, serviceable, and properly configured to meet mission needs. Maintenance actions include, but are not limited to, inspection, repair, overhaul, modification, preservation, refurbishment, testing, and analyzing condition and performance. All levels of supervision must place emphasis on safety, quality, and timeliness in the performance of maintenance. Quality maintenance depends on the integrity and skills of the technician. Each supervisor and technician fosters this concept and does not permit degradation. Shortcuts or incomplete maintenance actions are prohibited.

Preventive versus corrective maintenance

To the greatest extent possible, accomplish maintenance on a preplanned scheduled basis. *Maintenance planning* provides the *most* effective and efficient use of people, facilities, and equipment. It reduces unscheduled maintenance and allows for progressive actions toward maintaining and returning aircraft to a safe operating condition. Bench checks of components and proper control of repair cycle assets throughout the maintenance cycle are also critical elements of an effective preventive maintenance program.

The purpose of the entire maintenance process is to sustain a capability to support the flying and training missions. To accomplish this objective, the *primary* focus of the maintenance effort should be on *preventive*—rather than corrective—*maintenance*. Preventive (or scheduled) maintenance ensures equipment is ready and available at the time of need. On the other hand, corrective (or unscheduled) maintenance is generated during the process of using equipment.

Preventive maintenance

Air Force aircraft require regular maintenance and repair to ensure their optimum availability for mission tasking. Each aircraft is designed with a maintenance concept tailored to its operational mission. Built into that concept are specific inspection and servicing requirements, which form the basis of a preventive maintenance program. All Air Force units must implement and manage the tasks specified in the scheduled program for their assigned aircraft and associated support equipment (SE). By following that program, aircraft systems and components operate with greater reliability over time, ensuring aircraft availability. A conscientious and disciplined approach to preventive maintenance is the method used to meet that goal safely and effectively. Preventive maintenance concepts are described in TO 00–20–1, *Aerospace Equipment Maintenance Inspection, Documentation, Policy and Procedures*.

Basic types of maintenance

There are two basic types of maintenance performed at unit level: on-equipment and off-equipment. On-equipment is work performed directly on aerospace vehicles (aircraft) or pieces of SE, including aerospace ground equipment (AGE) (e.g., power units).

Typically, performance of off-equipment work occurs in a repair shop on components, component parts, and equipment removed during on-equipment maintenance. Known as the back shop level, it primarily involves testing and repair or replacement of component parts. An example of off-equipment component is a radar unit removed from an aircraft for testing on a tester at a specialist shop.

On- or off-equipment maintenance can be scheduled or unscheduled. Components removed from equipment for in-shop repair are in the repair cycle. Like preventive maintenance, effective repair cycle management is critical to sustaining maintenance capability. The goal is to eliminate bottlenecks by ensuring adequate parts, equipment, and training are available, and minimizing repair cycle time.

Maintenance concept

The Air Force maintenance concept revolves around two factors: the complexity and nature of repair and the ability of the operating location to perform the necessary maintenance. These two factors determine the levels of maintenance and the maintenance approach of a maintenance location.

Levels of maintenance

The Air Force requires varying degrees of maintenance capability at different locations. A description of this capability in order of increasing capability in three levels as organizational, intermediate, or depot is in the following table:

Level	Description
Organizational	The first level of maintenance performed on-equipment (e.g., aircraft or SE at flightline level). It consists of those on-equipment tasks normally performed using the resources of an operating command at an operating location. These are generally minor repairs, inspection, testing, or calibration.
Intermediate	The second level of maintenance performed off-equipment. It consists of those off-equipment tasks normally performed using the resources of the operating command at an operating location or at a centralized intermediate repair facility.
Depot	The third and highest level of maintenance performed on- or off-equipment at a major repair facility for more complex repairs. It consists of those tasks performed using the highly specialized skills, sophisticated shop equipment, or special facilities of a supporting command, commercial activity, or inter-service agency at a technology repair center, centralized repair facility, or, in some cases, an operating location. Maintenance may also include organizational- or intermediate-level maintenance as negotiated between operating and supporting commands.

Levels of maintenance approach

The following table shows the two levels of maintenance approach:

Level of maintenance approach	Description
Two-level maintenance (2LM)	Uses two of the three levels of maintenance to support weapons systems. The 2LM approach modifies or eliminates the intermediate (off-equipment) function where possible, consolidating repair function at the depot or “regional” level.
Three-level maintenance (3LM)	Employs all three levels of maintenance. This is the historical USAF maintenance approach with accompanying procedures and organizational structure. Commonly practiced at continental US (CONUS) bases where there are more resources and personnel that are skilled. However, ALCs normally perform depot repair.

Degree of maintenance capability

The degree of maintenance capability depends upon mission requirements, economy of repair, transportation limitations, component reliability, workload agreements, facility requirements, frequency of tasks, and special training required.

Aircraft maintenance activities at base level must have the capability to launch and recover aircraft, and sustain the preventive maintenance program. Generally, this means most units must possess a full complement of equipment and supplies to perform on- and off-equipment maintenance. Aircraft repair sources may include the following:

- In-house (organic) from operational or support commands.
- Other military services.
- Commercial organizations under contract.

Maintenance discipline

Maintenance discipline involves integrity in all aspects of the maintenance process. It is the *responsibility* of *all* maintenance personnel to comply with *all* written guidance to ensure *all* required repairs, inspections, and documentation are completed in a safe, timely, and effective manner. Supervisors are responsible for establishing a climate that promotes maintenance discipline. Personnel who fail to maintain maintenance discipline standards are held accountable.

Maintenance training

Maintenance training provides initial, recurring, and advanced proficiency, qualification, or certification skills needed by a technician to perform duties in their primary Air Force specialty code (AFSC). The overall capability of a unit depends on the state of training for aircrew members and maintenance personnel. Training is essential to improve and sustain unit capability, and is one of the most important responsibilities of commanders (CC) and supervisors. Providing training in combat and maintenance generation skills not normally integrated into peacetime operations (e.g., munitions and external fuel tank build-up, maintenance generation operations procedures, hot refueling, etc.) is particularly critical and requires special management attention. CCs and supervisors must give priority support to training. When balancing resources, (e.g., aircraft, SE, facilities, tools, funding, personnel, etc.), maintenance training carries an equal priority with the operational training mission. Maintenance training is established according to AFI 36–2201, *Air Force Training Program*; AFI 36–2650, *Maintenance Training*; and MAJCOM training instructions.

002. Basic functions of aircraft maintenance

The ultimate goal of maintenance is to complete the mission. Maintenance objectives are developed before instructions governing policies and procedures for new personnel can be published. A MAJCOM may have more objectives listed to meet its particular mission. The following table shows the maintenance objectives and how they are to be accomplished according to Air Force directives:

Objective	Accomplished by
Use every available resource to support operational requirements in peacetime.	Effective scheduling of aircraft, SE, facilities, and personnel to meet maintenance requirements, flying schedules, and mission-capable intercontinental ballistic missile (ICBM) requirements.
Train constantly for wartime operations.	Includes organizing and equipping in the *most effective* manner possible, while ensuring an effective transition from peacetime operations at any time.
Pursue a timely resolution of any problems that might limit the capability of maintenance in peacetime and wartime operations.	Met through command-channel communications, documentation, reporting communications with support commands and agencies, and inputs to situation reports.
Be proficient in wartime skills.	Includes maintenance generation; ICBM reconstruction; munitions assembly; alert, mobility, and repair capability; servicing and configuration methods; battle damage repair; survivability measures; and sustained high-sortie (flight) rates.
Identify changing needs in the area of personnel, equipment, and subsystem technology.	Continuous evaluation of resources to meet mission changes and contingencies.
Encourage the development of automated information systems and procedures that enhance productivity.	Eliminate non-productive administrative tasks and improve efficiency.

You can find detailed guidance and information on these objectives in your particular command instructions and local operating instructions (OI).

Maintenance complex

To meet the objectives previously discussed, we must be organized. Maintenance activities are organized to support operational requirements by performing the quality and quantity of maintenance necessary within the capabilities of personnel, materials, utilities, equipment, facilities, and funds. Organized maintenance organizations permit maximum application of these resources. MAJCOMs organize maintenance activities, tailored to the command mission, under the WG concept. Organizational structures for maintenance vary between MAJCOMs. All these organizational units and the interrelated processes that tie them together make up the "maintenance complex." Generally, these maintenance organizations follow the Air Force maintenance organizational policy in the following manner:

- Maintenance organizations are organized within operations and maintenance groups as part of a WG. AFPD 21–1 establishes policy and assigns responsibilities for the maintenance of air and space equipment to meet operational needs.
- Each maintenance organization has a senior manager, who briefs and advises the squadron or group CC concerning maintenance matters. This is the maintenance superintendent or supervisor at the squadron or group level.
- Maintenance activities are organized and exercised in peacetime to meet wartime requirements. They also ensure maintenance functions required to accomplish the unit mission are authorized.
- Unit-level maintenance organizations are standardized throughout each MAJCOM, based upon size, similar wartime mission, and assigned weapon systems. Each MAJCOM instructions provide detailed information on maintenance standardization for its command.

Headquarters approval

Headquarters (HQ) USAF approves the implementation of MAJCOM maintenance organizational structures. The maintenance units then organize the activities into sections, branches, divisions, or squadrons based on overall organizational structure and size. Some maintenance functions are consolidated when assigned strength does not warrant separate organizational elements.

Maintenance organization structure under combat air forces

Maintenance structure under combat air forces (CAF) organizations is designed to produce appropriate sortie (flight) rates under combat conditions. The basic organizational structure presented here meets the operational needs of combat units by organizing, training, and equipping maintenance organizations in peacetime as they fight during war. It illustrates most base-level functions.

Maintenance group

Maintenance group (MXG) CCs are responsible for aerospace equipment maintenance required to ensure balance between sortie production and fleet management. This is accomplished through the subordinate squadrons, which perform different functions that meet this goal. They are the aircraft maintenance squadron (AMXS)/helicopter maintenance squadron (HMXS), maintenance squadron (MXS), and MO (fig. 1–1).

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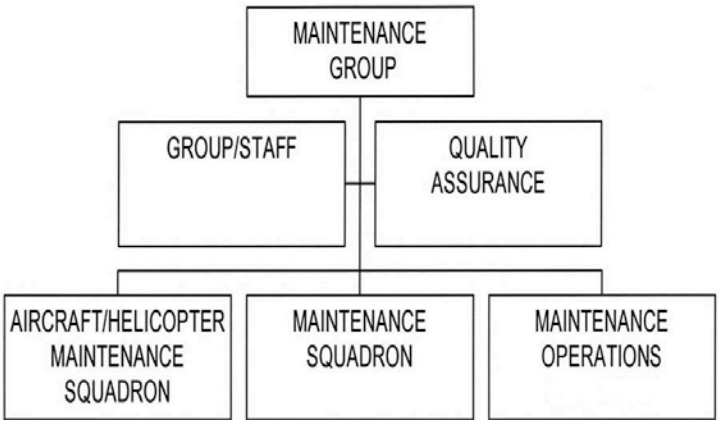

Figure 1–1. Typical maintenance group structure.

AMXS/HMXS

The AMXS/HMXS is responsible for servicing, inspecting, maintaining, launching, and recovering assigned and transient aircraft. The squadron must also ensure all applicable mobility requirements are met for all assigned equipment and personnel. There is one AMXS/HMXS per WG, and one aircraft maintenance unit (AMU) for each assigned operational squadron (OS). CAF units must establish a support section within each AMU.

MXS

The MXS is the sortie-supporting section of the organization, supporting the AMXS's sortie production effort. The MXS is primarily an off-equipment maintenance organization; however, it also performs on-equipment maintenance that is beyond the capability of the AMXS. The MXS is the follow-on building block that completes the organizational structure; it provides the depth to sustain maintenance effectiveness. The MXS consists of personnel from various AFSCs organized into flights: propulsion; avionics; test, measurement, and diagnostic equipment (TMDE); accessory maintenance; AGE; fabrication; armament systems; maintenance; and munitions. The MXS maintains AGE, munitions, and off-equipment aircraft and SE components; performs on-equipment maintenance of aircraft and fabrication of parts; and provides repair and calibration of TMDE.

If an MXS *exceeds* 700 personnel authorizations, the MAJCOM may establish an equipment maintenance squadron (EMS) and a component maintenance squadron (CMS) according to AFI 38–101, *Air Force Organization*.

Maintenance operations

MO is the center of maintenance management for the MXG. It is the *central* agency for monitoring and developing long-range strategies to sustain the health of the fleet. Long-range fleet health priorities include, but are not limited to, isochronal/phase management, AEF rotations, programmed depot maintenance (PDM), etc. Fleet management is defined as the effective utilization of available resources to accomplish the aircraft support cycle, from planned maintenance events to flying schedule execution. It is a disciplined and prioritized synchronized effort that optimizes support to aircraft requirements such as flying events, ground training events, scheduled maintenance inspections, aircraft configuration control, aircraft modification schedules and aircraft recovery maintenance. The result of effective fleet management is the consistent availability of quality aircraft for today and tomorrow's operations requirements. The planning, controlling, scheduling, and executing responsibilities of the MXG/CC are met through the actions of MO.

003. Cyber, space, communication complex

The cyber, space, communication complex is unique with respect to its systems, equipment, organizational functions and objectives, and mission. Regardless of size and type of organizational

structure or maintenance activity, the functions and duties in this lesson are a brief snapshot of the cyber, space, and communication community.

Communications/cyber equipment system

TO 00–33A–1001, *General Cyberspace Support Activities Management Procedures and Practices Requirements*, implements AFPD 21–1, *Air and Space Maintenance* that defines the communications/cyber equipment system as transmission, switching, processing, systems-control, electronic security systems, and information technology (IT) network management systems, as well as equipment, software, hardware devices, and facilities, fixed and deployable. This type of equipment/system is normally tracked in an Air Force approved formal accounting/tracking system such as the Air Force Equipment Management System (AFEMS) custodian authorization custody receipt listing (CA/CRL) or the AFEMS asset inventory management (AIM) system. This equipment generally has defined preventive maintenance inspections and other sustainment programs in place.

Definition of cyberspace

A global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the internet, telecommunications networks, computer systems, and embedded processors and controllers. Air Force considers cyberspace to be a physical domain and therefore subject to all physical laws of nature. In a physical sense, the Air Force considers cyberspace to include things such as the internet (global information grid [GIG]), telecommunications networks (combat communications, satellite communications), computer systems, network operations and C2 and embedded processors and controllers.

Objective

The primary objectives of cyberspace support activities are to ensure continuous security, operational availability, and reliability of systems and equipment supporting the Air Force mission. The role and responsibility will be to ensure communications systems/equipment are serviceable and properly configured to meet mission requirements.

HQ Air Force Space Command (AFSPC)

HQ AFSPC as the core function lead integrator (CFLI) for cyberspace superiority and lead command for cyberspace organizes trains, equips, and operates cyberspace forces, systems, and capabilities.

Air Force Network Integration Center (AFNIC)

The AFNIC is a *direct reporting unit* (DRU) to AFSPC. AFNIC is the designated executive agent to develop policy and guidance for cyberspace support activities and related areas to shape provision, integrate, and sustain the AF Cyber Network in all four domains: terrestrial, air, space, and cyberspace. Among other maintenance-management duties, AFNIC *does* the following:

- Manage assigned cyberspace support activities policy, procedures and TO 00–33A–1001, *General Cyberspace Support Activities Management Procedures and Practices Requirements.*
- Manage all waiver requests relating to cyberspace support activities
- Manages the Air Force Maintenance Quality Control Checklist (AFMQCC) program.
- Manages IT hardware assets accountability.

Major Commands

MAJCOMs implement the following guidance concerning their communications systems/equipment. Although the MAJCOM level is identified, this level also includes numbered air forces (NAF), field operating agencies (FOA) and DRUs.

The MAJCOM manages communication system/equipment activities based on the following considerations:

- Manage and provide support for command-unique programs and systems/equipment.
- Coordinate MAJCOM policy, procedures, and TO supplements for implementation consideration affecting cyberspace support activities.
- Ensure logistics support and life-cycle management plans are developed for MAJCOM communications systems and equipment.
- Designate appropriate system functional managers.
- Provide quality assurance (QA) guidance.
- Act as approval authority for MAJCOM-developed local. Standard reporting designators (SRD).
- Manage the Communications Quality Control Checklist (CQCC) for command-unique programs IAW TO 00–33A–1001.
- Manage the command consolidated repair activity (CRA) program.

Base/unit responsibilities

The base/unit must ensure logistic support is available for sustained operations.

- Use referenced publications, forms, and MAJCOM-approved procedures to procure base/unit level systems/equipment.
- Develop and use a life cycle management plan (LCMP) for communications systems/equipment.
- Take prompt action to resolve logistics support problems and request assistance through appropriate channels when necessary.

Production work center (PWC) supervisor responsibilities

Supervisors ensure work center logistics support management responsibilities and work center project coordinator duties are accomplished and appropriately documented.

- Supervisors ensure support requirements for new systems, programs, and plans are established.
- Supervisors must understand all aspects of work center logistics support programs.
- Review support agreements to identify special support requirements to plans and implementation when requested.

Key terms and concepts

To understand the unique mission of the communications/cyber equipment system, let’s look at a summary of the objectives, organizational and functional relationships, and responsibilities that form the foundation.

Cyberspace support activity

Cyberspace support activity is any actions taken to restore communications systems/equipment to operational status, to perform preventive maintenance inspections (PMI) on communications systems/equipment, and/or component, or to install or remove communications systems/equipment.

Client service center (CSC)

The CSC is the work center that will perform the following functions communications focal point (CFP), voice/video/data/personnel wireless communications system appliances, account management, and asset management. These functions are responsible for issuing and tracking communications systems/equipment.

Communications focal point (CFP)

CFP is the consolidation of help desk, telephone trouble tickets, and maintenance operations center (MOC). This function tracks all communications systems/equipment and/or component outages and resides with the CSC work center.

Global information grid (GIG)

The globally interconnected, end-to-end set of information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating and managing information on demand to warfighters, policy makers, and support personnel. The GIG includes all owned and leased communications and computing systems and services, software (including applications), data, security services, and other associated services necessary to achieve information superiority.

Time compliance network order (TCNO)

A TCNO is generated by AFCYBER/Air Force Combat Communications Center (AFCCC) and direct a change to systems/equipment. Air Force level TCNOs are converted to time compliance technical orders (TCTO) if required by the program management office.

Information technology (IT)

IT is any equipment, or interconnected system or subsystem of equipment that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by the executive agency.

Network operations (NetOps)

NetOps are activities conducted to operate and defend the GIG. NetOps includes, but is not limited to, enterprise management, net assurance, and content management. NetOps provides CCs with GIG situational awareness to make informed C2 decisions.

Cyberspace infrastructure planning system (CIPS)

CIPS is an Air Force enterprise toolset used to develop, analyze, update, justify, and disseminate command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) infrastructure plans. This system is used to effectively maintain and modernize the Air Force's C4ISR infrastructure.

Specialized communications team (SCT)

SCT provides a specialized maintenance and training capability above those normally found in the operations and maintenance (O&M) units. SCTs perform emergency restoral of failed or degraded facilities, systems, or equipment and provide follow-on training to prevent recurrence of the problem.

Self-Test Questions

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

001. Maintenance management

1. What two MAJCOMS have unique missions that meet the objectives of the air and space maintenance?

2. What organizational level is considered the *primary* maintenance level?

3. For what three areas of air and space maintenance does the Air Force use metrics to measure?

4. What should be the *primary* focus of the maintenance effort in support of the flying and training missions?

5. Briefly describe on- and off-equipment maintenance.

6. What is the responsibility of maintenance personnel under the principle of maintenance discipline?

002. Basic functions of aircraft maintenance

1. Name the two *basic* squadrons within the MXG.

2. Which squadron maintains AGE, munitions, off-equipment aircraft, and SE components?

3. When may the MAJCOM establish an EMS and a CMS?

003. Cyber, space, communication complex

1. What is the primary objective of cyberspace support activities?

2. Who manages the AFMQCC program?

3. Whose responsibility is it to develop the LCMP?

4. Define cyberspace support activity?

5. What is the communications focal point?

1–2. Maintenance Management Responsibilities

We will begin this section by emphasizing the senior managers' responsibilities and see how they relate within the maintenance complex. Even though you are assigned to the maintenance management analysis (MMA) section, you should be aware of the basic duties and responsibilities of the other sections within the maintenance complex. The maintenance complex and flightline arena consist of a multitude of operations being performed by different personnel. In a way, it is like a big puzzle in which all pieces must fit together.

We will lay out the duties and responsibilities of the individuals that make flightline MO function smoothly. More specifically, we will cover duties and responsibilities of a production supervisor (pro super), flightline expediter, crew chief and debrief. We will discuss duties and responsibilities directly tied to maintenance production. We will devote attention to two important agencies within the maintenance complex—maintenance production management and the MOC. Lastly, we will discuss the duties and responsibilities of the maintenance training flight and programs and resources section.

004. Maintenance group leadership responsibilities

Aircraft make up a large part of the Air Force inventory and their upkeep is vital to the Air Force mission. The Air Force is such a vast organization, it must have a way to manage and coordinate these important resources. Though this management and coordination can be complex, essentially it boils down to chain of command. The responsibility for the aircraft and their upkeep belongs to everyone—the WG CC, group CC, maintenance organizations and you. All maintenance personnel should be aware of the responsibilities of maintenance management. We will look at the responsibilities of maintenance group leadership; we will examine the organized maintenance structure.

Maintenance group commanders responsibilities

The maintenance group commanders (MXG/CC) or equivalents are responsible for aerospace equipment maintenance, and is *required* to ensure *balance* between sortie production and fleet management to ensure successful accomplishment of the mission. MXG/CC ensures the developing and conducting of an orientation program for all personnel newly assigned to all unit maintenance/activities. The orientations program covers subjects such as unit mission, air and space expeditionary forces (AEF) vulnerability, tasking plans, supply procedures, foreign object damage (FOD) program, general flightline and work center safety rules, and environmental issues.

The MXG/CCs is accountable for ensuring strict adherence to technical data and management procedures within maintenance. The MXG/CC ensures aircraft maintenance data is accurate by establishing and supporting a data integrity team (DIT). The Maintenance Management Analysis section, is the office of primary responsibility for the team, but not responsible for correcting errors. The members assigned to the DIT are qualified and provided sufficient time to assess the data accurately. They make certain each aircraft maintenance work center performs a review of all documentation entered into IMDS-CDB/G081 daily IAW TO 00–20–2, *Maintenance Data Documentation*.

MXG/CC is responsible for conducting a daily "MXG Standup" meeting separate from the daily production/scheduling meeting. In this meeting, topics of aircraft status, impounded and hanger queen aircraft, flying and maintenance schedule shortfalls and deviations is briefed. As an analyst, you will be required to attend meetings, some even on a daily basis. You will become familiar with your MXG/CC and his or her expectations, which will enable you to be responsive to mission needs. Maintenance analysts are key to providing data analysis and graphical presentation that show how well the mission requirements are being met.

Additional responsibilities of MXG/CC are outlined in AFI 21–101, *Aircraft and Equipment Maintenance Management*.

Maintenance group deputy commanders responsibilities

The *deputy* maintenance group commander is responsible for *chairing* the daily maintenance production/scheduling meeting. This meeting is designed to cover aircraft and equipment usage, scheduled maintenance for the next day, establish work priorities, and coordinate schedule changes. Other topics reviewed will include aircraft and system status, mission capabilities (MICAP), weekly and daily flying schedule coordination and previous day's flying and maintenance schedule deviations to the published schedule. Additionally, the Deputy MXG/CC will:

- Review the next week's flying and maintenance schedule.
- Review overdue special inspections (SIs) and time change item (TCIs).
- Review status of TCTOs that will ground within 30 days.
- Review Depot Field Team/Contract Field Team schedule requirements.

Maintenance group superintendent responsibilities

The MXG Chief/Superintendent has the responsibility to advise and assist the MXG/CC on their responsibilities. Specifically, the MXG Chief will advise on personnel, morale, and welfare issues. Additionally, the MXG Chief will serve as the focal point *within* the MXG for maintenance issues and enlisted manning. The MXG Superintendent will:

- Review MXG manning status and ensure manning resources are strategically distributed to provide the greatest possibility for mission success.
- Provide the MXG/CC coordinated manning recommendations that develop enlisted individual experience and knowledge.

005. Quality assurance

The QA staff ensures high quality maintenance production and equipment reliability. You may be asking yourself, who works in QA? Is that their primary duty AFSC? QA personnel are maintainers with various backgrounds and expertise whose *sole* purpose is to serve as the *primary* technical advisory agency in the maintenance organization, assisting maintenance supervision at all levels to resolve quality issues. QA personnel are directly responsible to the MXG/CC and shall not be tasked to perform production inspections, as they are not an extension of the workforce. This means that even if a need exists for maintenance to be performed and there is an issue with manning, QA personnel will not be tasked to perform maintenance. There are seven facets of QA that are of importance that you will interface with in the course of conducting duties as an analyst. The seven areas of QA that we will focus on include:

- Technical order distribution office (TODO).
- Product improvement program (PIP).
- One-time inspection (OTI) program.
- FCF/OCF program.
- Weight and balance program.
- Impoundment program.
- Maintenance assistance process.

We will discuss the various responsibilities found within these areas to help you become familiar with these areas.

Technical order distribution office

The Air Force Technical Order System is used to ensure effective operation and maintenance of Air Force systems and end items. TODO ensures all TOs are managed in accordance with AFPD 63–1/20–1, *Integrated Life Cycle Management*; AFI 63–101/20–101, *Integrated Life Cycle Management;*

and TO 00–5–1, *Air Force Technical Order System*. The TODO provides account administrative services for a unit or activity.

Some basic responsibilities of the TODO include:

- *Determining* TCTO applicability for each incoming TCTO.
- Managing the QA central TO file in the Enhanced Technical Information Management System (ETIMS).
- Establishing and managing TO accounts in ETIMS.
- Managing local work cards, job guides, page supplements, and checklists.
- TO change notifications.
- TO file inspections.

The TODO will *use* ETIMS to establish and maintain records for *all* TO accounts. TO 00–5–1 serves to guide and provide general management procedures for the Air Force Technical Order System. The TODO is responsible for assisting personnel in establishing TODO accounts as well as establishing technical order distribution accounts (TODA). A TODA is required in shops or offices where one or more TOs are required to accomplish assigned missions.

Product improvement management section

The MXG QA runs the PIP. Aside from daily maintenance data reporting, the PIP monitors and reviews maintenance data for improving reliability and maintainability of aircraft and equipment. The MXG/CC will assign a product improvement manager (PIM) and the MXG/CC will assign the PIM specific duties. The PIP includes the following programs:

- Deficiency reporting.
- TO improvement program (AFTO IMT 22).
- Source, maintenance, recoverability (SMR) change code request.
- Configuration management program.

Deficiency reporting (DR) is the process of reporting prescribed by TO 00–35D–54, *USAF Deficiency Reporting, Investigation, and Resolution*. The purpose of deficiency reporting is to identify and correct deficiencies *before* they impact mission capability. The PIM deficiency reporting responsibilities are as follows:

- Monitor the DR process to ensure items are properly loaded in the MIS database.
- Ensure compliance with acceptance inspection deficiency reporting requirements.
- Submit deficiency reports using the Joint Deficiency Reporting System.
- Review the deficiency report prior to releasing to the ALC.
- Verify each report against pertinent publications and assign precedence and category.
- Screen deficiencies for unit contributing factors, such as local procedures or lack of technical capability.
- Perform technical review of deficiency reports returned to the unit without adequate responses.
- Coordinate with ALC and logistics readiness squadron to ensure proper control and handling.

One-time inspection program

OTIs are used to verify the existence of suspected equipment conditions or malfunctions. When an unsafe condition is discovered, and there is potential the unsafe condition exists on other aircraft, it is necessary to immediately inspect a number of aircraft of the same MDS. QA will process and manage lead command or local OTIs with the same procedures of a TCTO. QA will track and issue local OTI numbers.

Functional check flight/operational check flight program

The purpose of a check flight is to determine if an aircraft is airworthy and/or capable of accomplishing its mission. The use of OCFs should be kept to a minimum and are not used to replace dash –6 functional check flight (FCF) requirements. Operational check flights (OCFs) are flown by experienced aircrews (not required to be an FCF qualified aircrew) and must be briefed by QA for aircraft condition and accomplished following the same maintenance criteria as FCFs.

The QA FCF program manager will coordinate with the appropriate squadron for an FCF pilot/aircrew. The QA FCF manager will ensure the FCF aircrew is briefed on the purpose and extent of the flight, previous maintenance issues, and discrepancies recorded on the aircraft or engines. FCF flight profiles are based on what is driving the FCF. The MXG/CC will decide whether a full profile FCF is required and the AMU will configure the aircraft accordingly. The aircraft will be released from FCF at the sole decision of the aircraft commander, after the successful completion of all FCF requirements. The QA FCF manager will maintain a copy of the AF IMT 2400, Functional Check Flight Log, or equivalent product for deficiency and trend analysis.

Weight and balance program

Safe and effective use of aircraft is directly dependent on aircraft weight and balance. If an aircraft is heavier than its maximum allowable weight the aircraft may become instable, required take off speed and distance may increase, and there may be a decrease in structural safety features. The weight and balance (W&B) program NCOIC will ensure:

- Sufficient personnel are qualified on assigned aircraft.
- All assigned aircraft are weighed in accordance with applicable directives.
- Procedures are written for routing completed TCTO and modification information for W&B changes.
- W&B documents are inspected prior to flight by a QA W&B qualified technician to ensure accuracy when a modification has changed the basic aircraft weight.

The W&B technician will verify scale readings and accomplish the actual computations.

Impoundment program

When an aircraft or equipment has a serious or chronic malfunction, impoundment is necessary. Impoundment is defined as the isolation or control of access to an aircraft or equipment item. The impoundment of an aircraft and equipment enables investigative efforts to proceed with minimal risk to actions that can cause loss of evidence. As a maintenance management analyst charged with database management responsibilities, you may be asked to isolate aircraft or equipment in the MIS to maintain the integrity of historical data.

Below are some reasons for aircraft or equipment impoundment:

- Extraordinary measures are required to ensure safe operating condition.
- Aircraft ground or flight mishap.
- Uncommanded flight control movement.
- Inadvertent ordinance release.
- Engine anomalies.
- In-flight fire.
- Evidence of intentional damage, tampering, or sabotage.
- Ill crew members due to aircraft systems or cargo.

QA is the office of primary responsibility (OPR) for impoundments. The MXG/CC will designate the impoundment authority, who is the individual authorized to impound aircraft. The impoundment authority will select an impoundment official.

The impoundment official must hold a minimum rank of Master Sergeant. The impoundment official is the single point of contact (POC) for the impounded aircraft or equipment, and they are responsible for controlling and monitoring the investigation of the impounded aircraft or equipment. They will ensure only authorized personnel have access to the impounded aircraft or equipment by setting up an isolation area with the use of cones, ropes, or placards that state the impoundment condition and specify the area requires permission to access.

The impoundment release authority is the MXG/CC and MXG/CD. If the MXG/CC and MXG/CD are unavailable, the MXG/CC or CD must appoint an individual in writing as the impoundment release authority.

Impoundment process and procedures

When an aircraft is impounded the following actions will take place:

- Impoundment authority directs impoundment.
- Red X is placed in AFTO Form 781A/electronic equivalent.
- MOC will be notified of impoundment.
- Impoundment official will use impoundment checklist to facilitate sequence of actions.
- Impoundment official will set up entry control point (ECP).
- Impoundment official will obtain and secure current aircraft forms and aircraft jacket file.
- Impoundment official will *notify* database management to *isolate* or “freeze” the aircraft in the MIS to *prevent* any changes and to maintain historical data integrity.
- Impoundment official will ensure maintenance performed on the impounded equipment is limited and only performed if required to make the aircraft safe.
- Impoundment official will select a team of qualified technicians.
- Impoundment official will brief the impoundment authority on findings, corrective actions, and requests release of aircraft or equipment from impoundment.
- If the cause of the impoundment cannot be determined, the impoundment release authority will determine if further actions are required, such as FCF/OCF, one time flight, requesting depot assistance or further troubleshooting.

Maintenance assistance process

There may come a time when a maintenance action requires assistance beyond the capability of a unit. If this occurs, a request for assistance (RFA) is required to be made in accordance with AFI 21–103, *Equipment Inventory, Status and Utilization Reporting*, and TO 00–25–107, *Maintenance Assistance*. An RFA may be made to depot field teams (DFT) or contract field teams (CFT), as they have technical expertise beyond the field unit’s capability.

An RFA, often called a “107 Request”, must be coordinated through QA and MO plans, scheduling, and documentation (PS&D). QA and PS&D are responsible for developing procedures for routing all maintenance assistance requests. The work center that discovers the discrepancy is responsible for initiating and drafting the TO 00–25–107 request. Once the request is drafted, the work center that discovered the discrepancy will forward the request to QA. It is the responsibility of QA to coordinate and then release the TO 00–25–107 request. PS&D will conduct an initial meeting upon the arrival of the DFT. The purpose of this meeting is to validate that MS requirements are in place.

006. Aircraft/helicopter maintenance squadron

AMXS/HMXS is *responsible* for servicing, inspecting, maintaining, launching, and recovering assigned and transient aircraft. They must also ensure all applicable mobility requirements are met for all assigned equipment and personnel. There is normally one AMXS per WG and one AMU for each

assigned OS. CAF units will establish a support section within each AMU. The primary sections typically found in CAF AMXS are contained in figure 1–2.

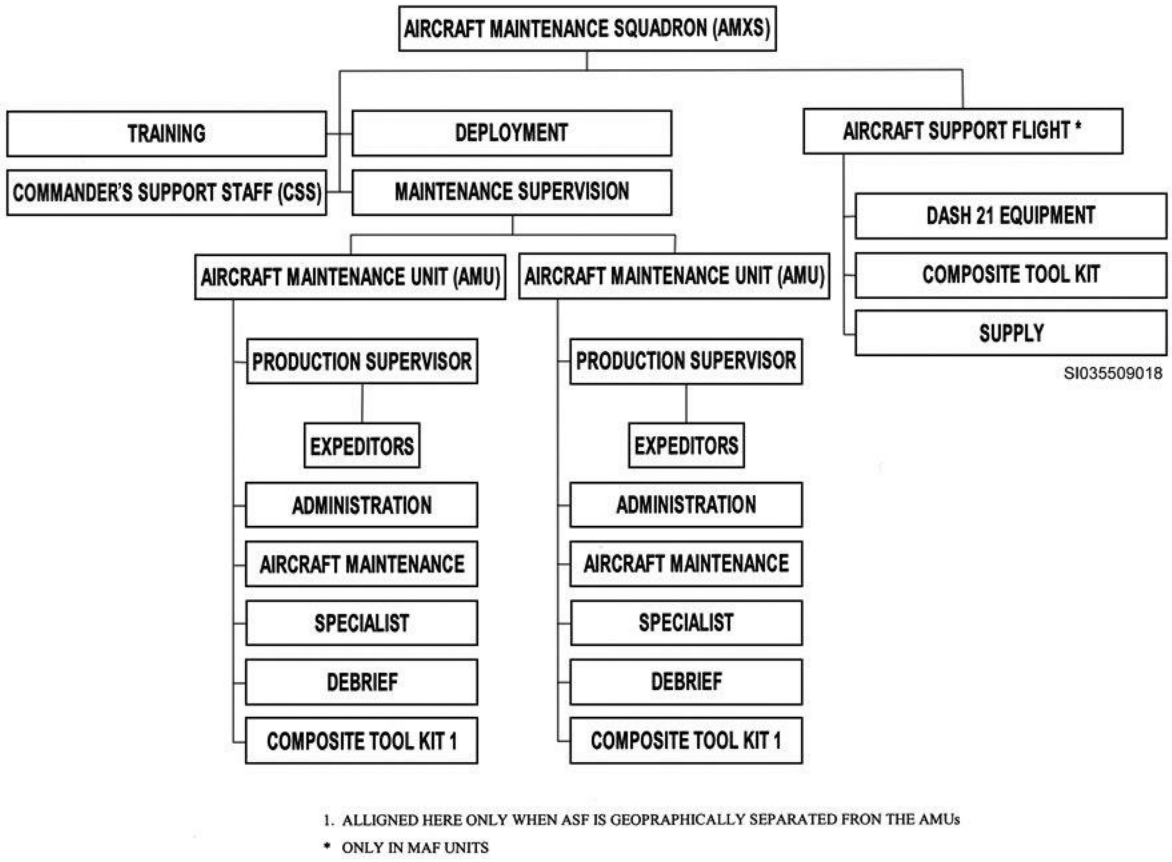

Figure 1–2. Typical CAF Aircraft maintenance squadron.

AMXS is *functionally* aligned under the MXG/CC. Maintenance personnel are assigned to an AMU and functionally aligned under the AMXS commander. The AMXS is the cumulative effort required to launch and recover aircraft to meet mission requirements. It includes activities that are responsible for generating sorties and training personnel to generate sorties. The organization of an AMXS may vary depending on the peculiarities of the theater (geographical location) and the type of aircraft assigned. The functions within AMXS accomplish on-equipment maintenance within the capability of assigned personnel, equipment, and facilities. They perform maintenance on assigned and transient aircraft and provide mobility support as required. The following table identifies some of the typical sections of an AMU with its basic responsibilities:

Maintenance Managers	Responsibilities
AMU officer in charge (OIC)/superintendent (SUPT)	The AMU OIC/SUPT is responsible to the operations officer/maintenance SUPT for sortie-generation, management, supervision, and training of assigned personnel. The AMU OIC/SUPT allocates personnel and resources to the production effort. Additional responsibilities are listed in AFI 21–101, *Aircraft and Equipment Maintenance Management*.

Maintenance Managers	Responsibilities
Production superintendent (Pro super)	The Pro super *directs* the *overall* maintenance effort of their unit. Participates in developing and executing the monthly and weekly flying and maintenance schedules/plans. Monitors flight line operations and coordinates support and priority with other production supervisors and the MOC. The Pro super makes the final determination on aircraft status.
Flightline expediter	Expediters work for the Pro super and manage, control, and direct resources to accomplish scheduled and unscheduled maintenance to generate aircraft.
Aircrew and maintenance debrief section	The debrief section works for the AMU *except* in the Mobility Air Force (MAF) and Air Force Special Operations Command units where it may be centrally located. Debriefing is conducted at the termination of each sortie/mission or when a sortie/mission is aborted. Debriefing is required regardless of landing status, after the last flight of the day for each aircrew. The debrief personnel will input discrepancy and deviation information, utilization, and applicable flight data (to include landing status, system capability, and other applicable cause code) into the MIS.
Aircraft section	Responsible for servicing, inspecting, maintaining, launching, and recovering assigned aircraft. The aircraft section consists of dedicated crew chiefs (DCCs), assistant dedicated crew chiefs (ADCCs), flying crew chiefs (FCCs), and aircraft technicians.
Specialist section	Responsible for aircraft systems troubleshooting, on-equipment repairs, component removal and replacement, aircraft avionics systems classified item management, and aircraft ground handling, servicing, and cleaning. This section may also include avionics, propulsion, hydraulics, and electro/environmental technicians.
Weapons section	Normally consists of the following two elements, loading and maintenance. The loading element does munitions loading and unloading during daily operations. The maintenance element handles all on-equipment weapons maintenance and troubleshooting. Weapons expediters are assigned to manage flightline operations.
Support section	Supports flightline maintenance and generation activities by maintaining and issuing support equipment to include: composite tool kits/special tools, E-tools, test equipment, TOs, bench stock, Dash–21 equipment, alternate mission equipment, vehicles, mobility equipment and dedicated supply support functions to support the production effort.
Supply support	Responsibilities include, requisitioning parts, using supply management products, and initiating follow-up actions when necessary. Supply support also monitors the cannibalization program and associated documentation.

007. Maintenance squadron

MXS consists of personnel from various AFSCs organized into flights. The MXS is functionally aligned under the MXG/CC. The MXS *maintains* AGE, munitions, and off-equipment aircraft and support equipment components. The MXS also performs on-equipment maintenance of aircraft and fabrication of parts, and provides repair and calibration of TMDE. If a MXS *exceeds* 700 authorizations, MAJCOM may establish an equipment maintenance squadron and a component maintenance squadron IAW AFI 38–101, *Air Force Organization*.

NOTE: The terms and responsibilities associated with the sections identified in this CDC may differ or may not be applicable to all units, based on unit size, mission, and MDS assigned.

Figure 1–3 contains the detailed organizational breakdown of a *typical* maintenance squadron.

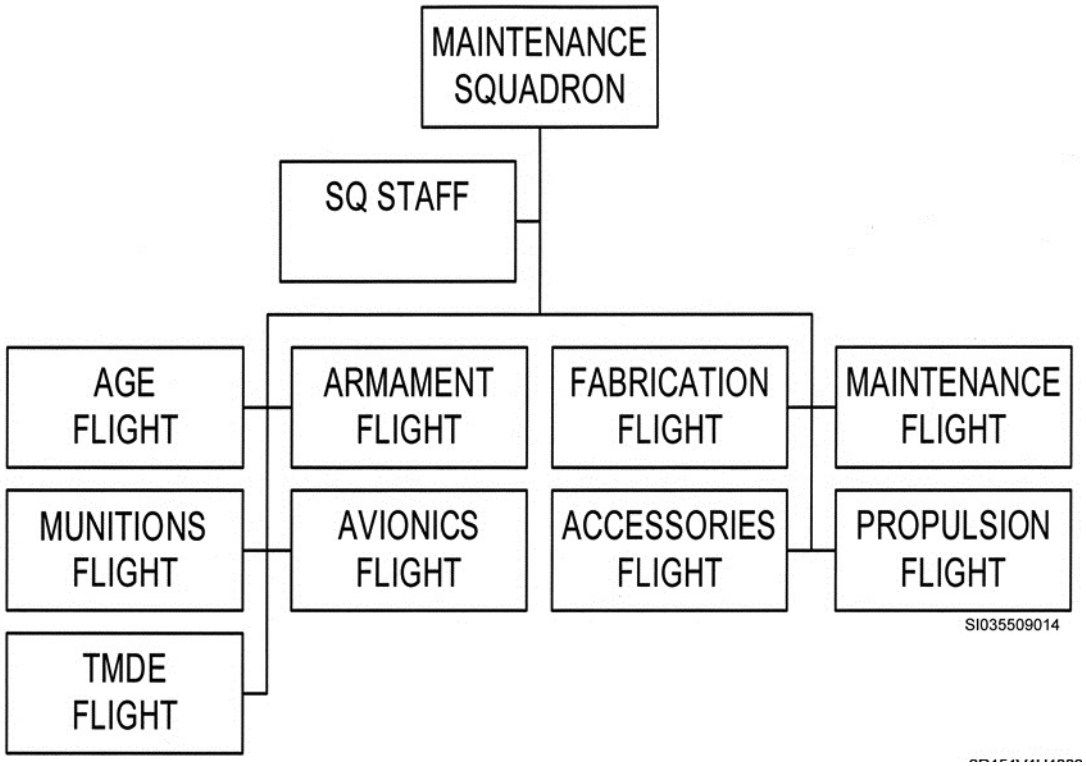

Figure 1–3. Maintenance squadron.

Maintenance squadron flights

The maintenance squadron contains *nine flights* with numerous sections as represented in the table below. For a complete listing of sections, refer to AFI 21–101, *Aircraft and Equipment Maintenance Management*.

Flights	Sections
Accessories	Electrical-Environmental, Egress, Fuel systems, and Hydraulics.
AGE	Repair, Inspection, and Servicing; Pickup, and Delivery; Production Support; Scheduling; and Supply Support.
Armament	Armament Maintenance, Alternate Mission Equipment, and Armament Support.
Avionics	Communication-Navigation; RF Multiplexing; Guidance and Control Systems; and Electronic Warfare System.
Fabrication	Aircraft Structural Repair, Metals Technology, Survival Equipment, and Non-Destructive inspection.
Maintenance	Repair and Reclamation (R&R), Wheel and Tire, Aircraft Inspection, Refurbishment, and Transient Alert Aircraft Maintenance.
Munitions	Production, Material, and Systems.
Propulsion	Test Cell and Noise Suppression System; Accessory Repair; Small Gas Turbine Engine; and Engine Equipment Maintenance.
Test, Measurement, and Diagnostic Equipment (TMDE)	Precision Measurement Equipment Laboratory (PMEL), Production Control, and Quality Program.

Responsibilities

The nine MXS flights from the above table can be further broken down into section responsibilities. However, for this CDC, we will only cover a brief description of the various MXS flight responsibilities. For detailed descriptions of the MXS flights and sections refer to AFI 21–101.

Accessories flight

The accessory flight performs maintenance of aircraft pneumatic and hydraulic systems, aircraft and support equipment, electrical systems and batteries, environmental, fuel and egress systems. This flight also repairs, functionally checks, and inspects aircraft fuel systems, fuel tanks, hydrazine systems, and related components.

Aerospace ground equipment flight

The AGE flight has the overall responsibility for pickup, delivery, troubleshooting, scheduled and unscheduled maintenance, modification, inspection, and service of powered and non-powered AGE, and for maintenance of all assigned shop equipment.

Armament flight

The armament flight performs off-equipment maintenance of weapons release systems, guns, and munitions racks, adapters, pylons, and launchers. The flight normally consists of three sections: maintenance, alternate mission equipment (AME), and support.

Avionics flight

The avionics flight primarily performs diagnostic analysis and off-equipment maintenance of communication-navigation, electronic warfare, guidance control, weapon control, and airborne photographic and sensor systems.

Fabrication flight

The fabrication flight is responsible for aircraft structural maintenance, low observable aircraft structural maintenance, metals technology, survival equipment, and non-destructive inspection (NDI). The flight provides sufficient local manufacture capability to meet mission requirements and monitors all local manufacture work order requests.

Maintenance flight

This flight's purpose is to maintain aircraft systems and associated equipment. The maintenance flight services transient aircraft, performs repair and reclamation (large component repair), and services wheels and tires and performs inspections. The aircraft inspection section performs aircraft (phase (PH), periodic, isochronal) inspections.

Munitions flight

The munitions flight is responsible for the control, accountability, storage, shipping and receiving, inspection, maintenance, assembly and delivery of conventional, precision guided, nuclear munitions and naval mines. Munitions flights are typically composed of three sections: production, material, and systems.

Propulsion flight

The propulsion flight maintains aircraft engine propulsion units, propulsion components, and propellers. This flight performs engine/module/accessory disassembly, assembly, test, and repair. The flight also has responsibility for jet engine intermediate maintenance (JEIM).

Test, measurement, and diagnostic equipment flight

The TMDE flight provides support, repair, calibration, and certification of designated SE. Use TMDE to calibrate, inspect, diagnose, or otherwise examine materials, supplies, and equipment.

008. Maintenance operations flight

A senior noncommissioned officer (SNCO) 2RXXX (scheduler or analyst) fills the MO SUPT position, if one is available; however, this does not apply to the ANG. The ranking 2R individual is considered the resident expert regarding MO matters.

The MO SUPT is responsible for the sections that comprise MO, to include MOC, engine management (EM), maintenance management production (MMP) (also referred to as plans, scheduling and documentation or PS&D), maintenance management analysis (MMA), maintenance training, and programs and resources.

The following are some MO OIC/SUPT responsibilities:

- Develop and publish the WG flying/maintenance schedule in coordination with other squadrons and submit to both the operations group commander (OG/CC) and maintenance group commander (MXG/CC) for approval.
- Determine long-range fleet health maintenance priorities.
- Ensure aircraft status is properly reported and maintained in accordance with governing instructions. Ensure PS&D aerospace vehicle distribution officer (AVDO) *accurately* reports all assignment/possession changes through the lead command AVDO.
- Initiate, review, and validate special analysis studies. Determine planning factors for the next year's flying hour program.
- Prioritize the use of shared maintenance resources/facilities (e.g., wash racks, engine run spots, low-observable barn, etc.).
- Develop procedures to update geographical location (GEOLOC) codes for all on and off-station possessed aircraft and ensure GEOLOC codes are updated/correct in the MIS.

NOTE: G081 units are exempt as long as a higher headquarters (HHQ) agency accomplishes this requirement.

- Host DFT/CFT, provide in-briefs on unit-specific maintenance requirements, review plans and coordinate/monitor status of aircraft and progress of repair work.
- Complete first look.

As you can see, the responsibilities of the MO SUPT are varied; as they span across the entire MO. From very early in an analyst's career, you are expected to be well rounded in our primary duties and familiar with the other sections aligned under MO. As you make rank and gain more responsibility, it is vital to become increasingly familiar with the various sections aligned under MO. This is why it is very important as a maintenance analyst to set your sights on not only your immediate responsibilities, but also those responsibilities awaiting you in the future. Now that you are more familiar with some of the general responsibilities of the MO SUPT, we will now turn our attention to the specific functions found within MO.

The responsibilities of MO are managed by the following sections:

- Maintenance Operations Center (MOC).
- Maintenance Management Analysis (MMA).
- Maintenance Management Production (MMP).
- Engine Management (EM).
- Maintenance Training Flight (MTF).
- Programs and resources.

009. Maintenance operations center

The MOC is the *hub of all* maintenance activities; it is a C2 center. This section is the central point for all aircraft maintenance and flight line operations. The MOC maintains the location and status of aircraft; coordinates on changes to the flying schedule with applicable agencies by use of AF 2407 Form, Weekly/Daily Flying Schedule Coordination; requests support services, furnishes the status, locations, and estimated maintenance completion times for assigned equipment. Coordination is the main function of the MOC. They coordinate with the operations units and within maintenance units to ensure efficient use of resources to keep aircraft flying to meet the unit's mission. We begin our discussion of the MOC with its general functions.

General functions

The MOC monitors and coordinates sortie production, maintenance production, execution of the flying and maintenance schedules, and maintains visibility of fleet health indicators. The MOC coordinates with maintenance units and establishes priorities for competing limited resources. This section also schedules maintenance activities based on the daily flying schedule and maintenance priorities set by the AMXS (e.g., fuel or calibration docks, wash racks, and dispatched specialists from the maintenance units). The information exchange between maintenance units and the MOC allows for compliance with reporting requirements and identification of potential problems. During periods of a contingency tasking (simulated or actual), the MOC assumes increased responsibility for the coordinating effort and works with the command post. C2, as exercised by the battle staff through the MOC, primarily concerns the MXS actions, which facilitate and expedite production in the operations squadrons.

The MOC's C2 is different for internal and external conditions, and states of readiness. *Internal* control is exercised when all resources are in a *single* squadron; *external control* is exercised when *more than one* squadron *must* share facilities or resources.

The MOC uses visual aids to provide ready access to critical data. Computer terminals may be used in place of visual aids. If this option is used, procedures are developed to retrieve printed products regularly, providing contingency working documents in case of system failure. A video projection system may be used to display MIS data to complement MIS terminals.

Visual aids will display the following information:

Visual Aid	Information
Aircraft status	Shows list of aircraft by serial number and will show location, priority, status, designed operational capability (DOC) limitations/remarks, estimated time in commission (ETIC), configuration, oil analysis program (OAP) status codes, munitions load, and fuel loads.
Flying schedule	Displays the individual aircraft scheduled for flight each day. As a minimum, it displays serial number, scheduled takeoff, actual takeoff, scheduled landing, actual landing, sortie configuration, call sign, and remarks.
Aircraft generation status	Shows maintenance actions required to generate aircraft in the time sequence to meet mission requirements. When required by unit mission, the generation display can show operational readiness inspection (ORI), immediate response readiness inspection (IRRI), and other special mission requirements.

NOTE: Each unit assigned a mobility commitment constructs portable mobility displays to meet deployed mission needs.

Some of the specific key responsibilities of the MOC are below.

- Ensures aircraft status and ETIC are properly reported by the production superintendent according to AFI 21–103, *Equipment Inventory, Status and Utilization Reporting*; AFCSM 21–564, *Status and Inventory Reporting*; and lead command supplements.
- Monitors the progress of aircraft FCF as established by QA and PS&D.

- Coordinates on changes to the flying schedule with applicable agencies by use of AF Form 2407.
- Ensures all deviations to the daily flying schedule are reviewed and accurately reported according to lead command directives. Forwards copies of the applicable AF Form 2407 and daily flying schedule with all deviations annotated to MMA.
- Maintains the status, ETIC, and location of each aircraft on and off station, which is maintained or supported.
- Monitors the hangar queen program according to AFI 21–101 and lead command directives.

Tracking maintenance

The Air Force *uses* the enhanced maintenance operations center (EMOC) software program to support the information superiority and response time objectives of the USAF flying WG. The EMOC system has several functions that provide flying units with the ability to track daily MO. It displays an accurate real-time picture of the flying unit's operational readiness status as it relates to the unit's aircraft maintenance status. It acts as a direct link between the two critical elements of aircraft maintenance and scheduling; thereby providing operations personnel with timely data needed to make mission-critical decisions. MOC personnel are the primary users of EMOC, however, personnel involved in management of aircraft, aircraft status, aircraft movement, sortie and maintenance production, and execution of the flying and maintenance schedule may also gain access to this system. As the USAF continues to deploy to different remote locations, systems like EMOC provide for on-line, real-time status of aircraft maintenance and flying schedules.

010. Maintenance management analysis

The MMA section tracks, analyzes, and presents information to help *senior* leadership access the health of the units' weapon systems and equipment. The MMA section is the MXG POC for MIS issues and they perform analyses to assess and improve unit performance. The MIS provides the main source of information used by analysts to assess unit performance and capability. IMDS-CDB/G081 and REMIS are the prime sources of data.

As an analyst, you should establish working relationships with the MXG and squadron leadership through constant communication and frequent visits to work centers. Analysts must be customer oriented and provide assistance to all unit personnel in the area of the MIS, data extraction, and interpretation. The two major responsibilities of analysis are analyzing and evaluating unit weapon system performance, and managing the MIS.

MMA has the following functions:

Function	Responsibilities
MMA Section NCOIC	Ensures each assigned analyst attends a local familiarization course within 3 months of assignment to the unit. Provides 2R0XX training and monitors quality of work.
Production analysis	Calculates maintenance metrics and compares unit performance against published Lead Command standards. Computes attrition and spare factors. Provides monthly airframe, facility and personnel capabilities for use in planning the annual flying program.
Dedicated AMU analysis	Provide dedicated analytical support for the AMU. Reviews maintenance debriefing data and aircraft status inputs for accuracy. Monitors fix times for code 3 breaks and report results to AMU supervision daily.
Deficiency analysis	Provides analytical support to the squadrons and maintenance managers, and provides technical expertise for the MMA section.
Database management	Manages the MIS for assigned WG at the local level. Ensures IMDS-CDB and G081 security is maintained. Coordinates MIS access permissions. Provides expertise on MIS. Publishes scheduled MIS downtime.
DIT	Ensures the unit has complete an accurate data in the MIS and aircraft forms. Identifies and quantifies problems within the unit in preventing complete and accurate documentation. Identifies and corrects the root causes for poor data integrity.

This entire CDC will cover the functions of MMA in detail in subsequent volumes.

011. Maintenance management production

MMP is the current career title for AFSC 2R1X1. We are not going to talk about this career field; instead, we are going to devote some attention to key duties and responsibilities of the MMP office. It is important at this point to be more familiar with the function, duties, and responsibilities of this office. You may be more familiar with its traditional name—Plans, Scheduling and Documentation (PS&D), which will be used throughout this CDC because its universality. When you reach the rank and status of a SNCO, good background knowledge of this essential function can enhance your appreciation of the role it does in maintenance planning. We will talk about the PS&D general functions and key responsibilities.

General functions

In the past, a PS&D section would be located within AMU. Currently, all schedulers are centrally located within the MO. Maintenance documentation is an integral part of all PS&D functions. PS&D sections maintain historical maintenance data within the MIS. The accuracy of maintenance document entries is a basic responsibility of the initiator and supervisors. PS&D sections develop WG maintenance plans using MIS aircraft historical data input by all maintenance personnel. The accuracy of MIS entries affects the development of plans and is a basic responsibility of all unit personnel.

Plans, scheduling and documentation section

The PS&D section has various functions. The PS&D section is responsible for coordinating aircraft maintenance requirements and utilization scheduling between maintenance, operations, and external agencies. PS&D oversees the entire maintenance scheduling effort throughout the WG and notifies applicable senior managers of scheduling process discrepancies and recommended courses of action. As you begin to work with PS&D, you will become familiar with each of the assigned functions. As your career progresses, you will have the opportunity to learn more about the various functions firsthand. PS&D has the following programs/activities:

Although ALL scheduling functions have been centralized under one roof in MO, functionally they still operate with a decentralized mindset. The practice is important to delineate responsibilities and efforts from being duplicated amongst assigned personnel. ***EXCEPTION:*** Engine management, nuclear munitions, AFSOC units will be centrally managed with decentralized execution. The following table contains the primary functional areas in PS&D and their responsibilities.

Function Areas	Responsibilities
PS&D Section NCOIC	Is the WG 2R1XX functional manager. Provides functional expertise on all maintenance scheduling issues and equipment historical document (AFTO IMT 95) management. Performs initial evaluations of all incoming 2R1XX personnel. Establish and maintain personnel rotation plan. Develops and reviews 2R1XX training plan.
Documentation	Maintains historical documents and maintenance data essential for the development of WG plans and schedules. Maintains historical maintenance data within the MIS.
Aerospace Vehicle Distribution Officer (AVDO)	Generates AFTO IMT 103, Aircraft/Missile Condition Data for PDM aircraft. Coordinates all assignment/possession changes through lead command AVDO IAW AFI 21–103 and AFI 16–402. Maintain PDM schedule. Manages aircraft transfer/depot program.
AMU dedicated scheduler	Actively participates in daily, weekly, monthly, quarterly, and yearly flying schedule programs and meetings. Coordinate with AMU supervision and operations schedulers when scheduling aircraft to meet flying requirements. Manages the use of shared resources. Assists in determining the cause of missed maintenance events for maintenance scheduling effectiveness. Manages TCTOs, time change items (TCIs), and special inspections (SIs) for their assigned aircraft.

Summary of key programs and activities

The PS&D office actively manages certain key programs. PS&D is an information super-highway, and one way or another; schedulers are involved in the information flowing throughout the maintenance complex. In the following table, we briefly mention their key programs, along with a description of the requirement.

Program	Requirement
Maintenance generation planning	The AF Form 2408, Generation Maintenance Plan, and AF Form 2409, Generation Sequence Action Schedule, is used to manage maintenance generation sequence actions for various unit taskings. The AF Form 2408 reflects the hour sequence of all actions necessary to launch aircraft. The AF Form 2409 shows the actions necessary to generate a specific line number.
Operational planning cycle	The objective of the operational planning cycle is to execute the WG flying hour program consistent with operational requirements and maintenance capabilities. It begins with the annual allocation of flying hours and utilization (UTE) rates.
First Look requirements	Every year, on or about 15 March, PS&D section tasks MMA to accomplish airframe, personnel, and facility capabilities assessments for each AMU no later than (NLT) the *last workday* of March.
Annual maintenance planning cycle	This is long-range planning to assess maintenance's ability to support quarterly flying-hour programs, PDM schedules, TCTO programs, scheduled inspections, and exercises.
Quarterly scheduling	Operational requirement for flying hours, UTE rate, airframe availability, alert, and other related scheduling data are planned for the upcoming quarter.
Monthly scheduling	This forecasts and monitors requirements for the current and next two months, to include predictable maintenance factors based on historical data, along with other inputs.
Weekly scheduling	Final refinement to the monthly plan results in the weekly flying and maintenance schedule.
Major maintenance work processing	This involves work center request for depot-level assistance or contractor support undertaken by PS&D.
TCTO management	Administers and manages the overall WG TCTO program for aircraft and commodity TCTOs.
Advanced Configuration Management (ACM)	The intent of ACM is to ensure selected serially controlled and TCIs are properly loaded to the MIS database.
Transfer inspections	Develop local checklist to meet requirements for aircraft and equipment transfer and acceptance inspection.
TCI program	Administers and manages the overall WG TCI program for selected items specifically identified in TO 00–20–9, *Forecasting Replacement Requirements for Selected Calendar and Hourly Time Change Items*.

012. Engine management

Engine management is another MO section where schedulers can be assigned within the maintenance group. The section functions similar to that of a PS&D section. EM employs the same concepts and principles used for aircraft maintenance scheduling, but for engines.

The EM section monitors engine removals and replacements, component tracking, engine TCTOs and TCIs, engine records in the MIS and Comprehensive Engine Management System (CEMS), and performs engine manager duties. The function *manages* unit efforts to maintain adequate engine support for mission requirements. The MXG/CC appoints a SRAN engine manager and is selected from AFSC 2R1X1 or 2A6X1, with a minimum 7–skill level (or civilian equivalent), and is physically co-located with the propulsion flight (not applicable to the ARC). The EM section is the WG focal point for the engine trending and diagnostics (ET&D), and engine health management (EHM) programs, when applicable.

The EM section manages the CEMS subsystem in IMDS, as well as, engine management programs in G081. The EM section also manages the CEMS MIS according to AFI 20–115, *Propulsion Management for Aerial Vehicles*, and other applicable AFIs, TOs, and computer system manuals. The EM section establishes a CEMS and MIS contingency plan for when either system is down for extended periods (more than 48 hours). Although this is by no means a complete listing of the EM function's duties and responsibilities, it should give you an idea of the many duties the section performs. Although a more complete list is in AFI 21–101, here are a few:

013. Maintenance training flight

The MTF is assigned to MO. MTF serves as the single point of contact for all training matters affecting maintenance, including outside agencies such as emergency management, environmental flight, and the training detachment. The primary duties of the MTF is providing initial, recurring and advanced proficiency, qualification, or certification training needed by a technician to perform duties in their primary AFSC. There are two elements within this section, the training management section and the development and instructor section. The MTF assists squadron CCs by *providing* unit training managers (UTM) to manage the enlisted specialty program. Maintenance training receives priority treatment by squadron CC and maintenance SUPTs because it is essential to improving and sustaining a unit's capability. When balancing resources such as aircraft, support equipment, tools, and personnel, maintenance training has equal priority with the operational training mission. Maintenance training policy and guidance can be found in AFI 36–2650, *Maintenance Training*.

014. Programs and resources

Programs and resources (P&R) is assigned to MO. The primary duties of P&R are to manage the manning, facilities, support agreements, and deployment functions of the MXG. P&R is responsible for developing, maintaining and coordinating all applicable AFI- directed programs and plans that affect maintenance. P&R will:

- Act as the resource advisor to the MXG/CC.
- Administratively evaluate a unit's ability to deploy.
- Serve as the focal point within the MXG for management of facilities.
- Serve as the focal point for MXG deployment planning and execution actions.
- *Coordinate* with the MXG/squadron SUPT to manage manpower authorizations for the MXG.

Self-Test Questions

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

004. Maintenance group leadership responsibilities

1. What is the MXG/CC responsibility concerning aerospace equipment maintenance?

2. How does the MXG/CC ensure maintenance data accuracy?

3. What are the topics briefed in the MXG standup meeting?

4. Who is responsible for chairing the daily maintenance production/scheduling meeting?

5. What specifically will the MXG Chief advise and assist the MXG/CC on?

005. Quality assurance

1. What is the sole purpose of QA personnel?

2. Who is QA directly responsible to?

3. What is the AFTO system used to ensure?

4. Who will determine TCTO applicability?

5. What is the purpose of deficiency reporting?

6. What does a one-time inspections verify?

7. What is the purpose of a FCF?

8. Who is the single POC for impounded aircraft or equipment and is responsible for controlling and monitoring the investigation?

9. Who is responsible for initiating and drafting a TO 00–25–107 Maintenance Assistance request?

006. Aircraft/helicopter maintenance squadron

1. The functions within AMXS accomplish on-equipment maintenance within what capabilities?

2. Who is responsible to the Operations Officer/Maintenance SUPT for sortie generation, management, supervision, and training of assigned personnel?

3. Which section in the AMU will service, inspect, maintain, launch, and recover aircraft?

4. Which section within the AMU is responsible for munitions loading/unloading and on-equipment weapons systems maintenance?

5. Which section in the AMU supports flightline maintenance and generation activities by maintaining and issuing support equipment?

6. Which section in the AMU is responsible for requisitioning parts, using supply management products, and initiating follow-up actions when necessary?

007. Maintenance squadron

1. Which flight in the maintenance squadron is responsible for performing maintenance of aircraft pneumatic and hydraulic systems, aircraft and support equipment, electrical systems and batteries, environmental, fuel and egress systems?

2. Which maintenance squadron flight has the overall responsibility for pickup, delivery, troubleshooting, scheduled and unscheduled maintenance, and service of powered and non-powered aerospace ground equipment?

3. Which flight under the maintenance squadron performs diagnostic analysis and off-equipment maintenance of communication-navigation, electronic warfare, guidance control, weapons control, and airborne photographic and sensor systems?

4. Which maintenance squadron flight is responsible for structural maintenance, metals technology, survival equipment, and NDI?

5. Which flight within the maintenance squadron services transient aircraft, performs repair and reclamation (large component repair), and services wheels and tires and performs inspections?

008. Maintenance operations flight

1. If available, which AFSC(s) will fill the MO SUPT position?

2. Who does the MO SUPT submit the WG flying/maintenance schedule to for approval?

3. What sections manage the responsibilities of the MO?

009. Maintenance operations center

1. What type of activities is the MOC a command and control center for?

2. When does the MOC exercise internal control?

3. Which MOC visual aid shows a list of aircraft by serial number, location, priority, status, and ETIC.

4. Which section receives copies of the AF Form 2407 and daily flying schedule with all annotated deviations?

5. What information does EMOC provide from deployed remote locations?

010. Maintenance management analysis

1. How does the MMA section help senior leadership access the health of the units' weapons systems and equipment?

2. What are the two major responsibilities of MMA?

3. Which MMA function calculates maintenance metrics and compares unit performance against published lead command standards?

4. Which MMA function is responsible for reviewing maintenance debriefing data and aircraft statuses?

011. Maintenance management production

1. List the functional areas in PS&D.

2. What affects the development of maintenance plans?

3. Which functional area in PS&D coordinates all aircraft possession changes?

4. What PS&D program starts with the annual allocation of flying hours and utilization rates to execute the WG flying hour program?

012. Engine management

1. List the areas that engine management section monitors.

2. Engine management is the WG focal point for which programs?

3. What IMDS subsystem is managed by engine management?

013. Maintenance training flight

1. How does the MTF ensure technicians can perform their duties within their primary AFSC?

2. What program is managed by UTMs?

014. Programs and resources

1. What are the primary duties of programs and resources?

2. Who coordinates with programs and resources to manage manpower authorizations for the MXG?

Answers to Self-Test Questions

001

1. (1) AFMC.
   (2) AETC.
2. WG.
3. (1) Readiness.

(2) Skilled personnel.

(3) Fleet health.

4. Preventive maintenance.
5. On-equipment is work performed directly on aerospace vehicles (aircraft) or piece of SE; off-equipment work is typically performed in a repair shop on components, component parts, and equipment removed during on-equipment maintenance.
6. To comply with all written guidance to ensure all required repairs, inspections, and documentation are completed in a safe, timely, and effective manner.

002

1. (1) AMXS/HMXS.

   (2) MXS.
2. MXS.
3. If an MXS exceeds 700 personnel authorizations.

003

1. To ensure continuous security, operational availability, and reliability of systems and equipment supporting the Air Force Mission.
2. Air Force Network Integration Center (AFNIC)
3. Base/unit
4. Any actions taken to restore communications systems/equipment to operational status, to perform preventive maintenance inspections (PMI) on communications systems/equipment, and/or component, or to install or remove communications systems/equipment.
5. The consolidation of help desk, telephone trouble tickets and MOC.

004

1. Ensure balance between sortie production and fleet management to ensure successful accomplishment of the mission.
2. By establishing and supporting a DIT.
3. Aircraft status, impounded and hanger queen aircraft, flying and maintenance schedule shortfalls and deviations.
4. Maintenance group deputy.
5. Personnel, morale and welfare issues.

005

1. To serve as the primary technical advisory agency in the maintenance organization, assisting maintenance supervision at all levels to resolve quality issues.
2. MXG/CC.
3. Effective operation and maintenance of Air Force systems and end items.
4. TODO.
5. To identify and correct deficiencies before they impact mission capability.
6. The existence of suspected equipment conditions or malfunctions.
7. To determine if an aircraft is airworthy and/or capable of accomplishing its mission.
8. Impoundment official.
9. The work center that discovered the discrepancy.

006

1. Assigned personnel, equipment, and facilities.
2. AMU OIC/SUPT.
3. Aircraft.
4. Weapons.

5. Support.
6. Supply Support.

007

1. Accessory.
2. Aerospace ground equipment.
3. Avionics.
4. Fabrication.
5. Maintenance.

008

1. A senior noncommissioned officer (SNCO) 2RXXX (scheduler or analyst).
2. To both the OG/CC and MXG/CC.
3. (1) Maintenance operations center (MOC).
   (2) Maintenance management analysis (MMA).
   (3) Plans, scheduling, and documentation (PS&D).
   (4) Engine management (EM).
   (5) Maintenance training.
   (6) Programs and resources.

009

1. Maintenance activities.
2. When all resources are in a single squadron.
3. Aircraft status
4. Maintenance management analysis (MMA).
5. On-line, real-time status of aircraft maintenance and flying schedules.

010

1. Track, analyze, and present information.
2. Analyzing and evaluating unit weapon system performance, and managing the MIS.
3. Production analysis.
4. Dedicated AMU analysis.

011

1. (1) PS&D Section NCOIC.
   (2) Documentation.
   (3) AVDO.
   (4) AMU dedicated scheduler.
2. Accuracy of MIS entries.
3. AVDO.
4. Operational planning cycle.

012

1. Engine removals and replacements, component tracking, engine TCTOs and TCIs, engine records in the MIS and the Comprehensive Engine Management System (CEMS).
2. Engine trending and diagnostics (ET&D), and engine health management (EHM) programs.
3. CEMS subsystem.

013

1. Providing initial, recurring and advanced proficiency, qualification, or certification training.
2. Enlisted specialty.

014

1. Manning, facilities, support agreements, and deployment functions.
2. MXG/Squadron Superintendents.

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

Unit Review Exercises

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

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

1. (001) Which organizational level is considered the *primary* maintenance level?
   a. Headquarters US Air Force.
   b. Major command.
   c. Wing.
   d. Group.

2. (001) What rate is used as a metric to measure *readiness* in air and space maintenance?
   a. Abort.
   b. Break.
   c. Cannibalization.
   d. Mission capability.

3. (001) What maintenance principle places the *responsibility* on all maintenance personnel to comply with all written guidance?
   a. Primary mission.
   b. Maintenance training.
   c. Maintenance discipline.
   d. Preventive maintenance.

4. (002) When a unit organizes and equips in the *most effective* manner possible to ensure an effective transition from peacetime operations at any time, what maintenance objective is it trying to accomplish?
   a. Be proficient in wartime skills.
   b. Train constantly for wartime operations.
   c. Use every available resource to support operational requirements in peacetime.
   d. Identify changing needs in the area of personnel, equipment, and subsystem technology.

5. (002) When a maintenance unit encourages the development of automated information systems and procedures that enhance productivity, it does it by
   a. eliminating nonproductive administrative tasks and improving efficiency.
   b. continuously evaluating resources to meet mission changes and contingencies.
   c. command channel communications, documentation, and reporting communications with support commands and agencies.
   d. effectively scheduling aircraft, support equipment, facilities, and personnel to meet maintenance requirements and flying schedules.

6. (002) How do maintenance activities prepare to meet wartime requirements?
   a. Employ and deploy with combat units.
   b. Train and perform in the battlefield.
   c. Organize and exercise in peacetime.
   d. Train during deployments only.

7. (002) Unit–level maintenance organizations are standardized throughout each major command based on size, similar wartime mission, and
   a. training.
   b. budgetary constraints.
   c. geographical location.
   d. assigned weapon systems.

8. (002) Which agency is *central* for monitoring and developing long-range strategies to sustain the health of the fleet?
   a. Maintenance.
   b. Aircraft maintenance.
   c. Maintenance operations.
   d. Helicopter maintenance.

9. (003) What direct reporting unit to Air Force Space Command (AFSPC) *manages* information technology (IT) hardware assets accountability?
   a. Network operations (NetOps).
   b. Air Combat Command (ACC).
   c. Field operating agencies (FOA).
   d. Air Force Network Integration Center (AFNIC).

10. (003) What function tracks all communications systems/equipment and or component outages and resides with the client service center (CSC) work center?
    a. Production work center (PWC).
    b. Communications focal point (CFP).
    c. Air Force Space Command (AFSPC).
    d. Specialized communications team (SCT).

11. (003) What Air Force enterprise toolset is used to effectively maintain and modernize the Air Force's command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) framework?
    a. Cyberspace infrastructure planning system (CIPS).
    b. Time compliance network order (TCNO).
    c. Communications focal point (CFP).
    d. Client service center (CSC).

12. (004) Who will serve as the focal point *within* maintenance group (MXG) for maintenance issues and enlisted manning?
    a. Maintenance group commander.
    b. Maintenance group superintendent.
    c. Maintenance group deputy commander.
    d. Aircraft maintenance squadron first sergeant.

13. (005) Which section has the *sole* purpose of serving as the *primary* technical advisory agency in the maintenance organization?
    a. Quality assurance.
    b. Maintenance training.
    c. Maintenance management analysis.
    d. Product improvement management section.

14. (005) Which section *determines* time compliance technical order (TCTO) applicability for each incoming TCTO?
    a. Product improvement management section.
    b. Plans, scheduling and documentation.
    c. Technical order distribution office.
    d. Maintenance group commander.

15. (005) What system will the technical order distribution office *use* to establish records for *all* technical order accounts?
    a. Maintenance information system.
    b. Joint deficiency reporting system.
    c. Joint computer-aided acquisition logistics support.
    d. Enhanced technical information management system.

16. (005) During the impoundment process, the impoundment official will *notify* which agency to isolate the aircraft in the maintenance information system (MIS)?
    a. Quality assurance.
    b. Database management.
    c. Maintenance operations center.
    d. Plans, scheduling and documentation.

17. (006) Which squadron is *responsible* for servicing, inspecting, maintaining, launching, recovering assigned and transient aircraft?
    a. Aircraft/helicopter maintenance.
    b. Component maintenance.
    c. Equipment maintenance.
    d. Maintenance.

18. (006) Who *directs* the *overall* maintenance effort and participates in executing the monthly or weekly flying schedule within an aircraft maintenance unit?
    a. Debriefing.
    b. Flight chief.
    c. Production superintendent.
    d. Plans, scheduling, and documentation.

19. (006) Which section within an aircraft maintenance unit *maintains* Dash 21 equipment?
    a. Aircraft.
    b. Support.
    c. Weapons.
    d. Dedicated supply support.

20. (007) Which squadron *maintains* aerospace ground equipment, munitions, and off-equipment aircraft and support equipment components?
    a. Operations squadron.
    b. Maintenance squadron.
    c. Operations support squadron.
    d. Logistics readiness squadron.

21. (007) If a maintenance squadron *exceeds* 700 authorizations, according to what instruction may the major command establish an equipment maintenance squadron and component maintenance squadron?
    a. AFI 38–101, Air Force Organization.
    b. AFI 38–5, Manpower and Organization.
    c. AFI 38–201, Determining Manpower Requirements.
    d. AFI 21–101, Aerospace and Equipment Maintenance Management.

22. (007) How many *flights* make up the maintenance squadron?
    a. 7.
    b. 8.
    c. 9.
    d. 10.

23. (007) Which *flight* contains the repair and reclamation, wheel and tire, transient alert, and aircraft inspection section?
    a. Aerospace ground equipment.
    b. Maintenance.
    c. Fabrication.
    d. Armament.

24. (007) Which maintenance squadron *flight* performs off-equipment maintenance of weapon release systems, guns, pylons, racks, launchers, and adapters?
    a. Armament.
    b. Propulsion.
    c. Fabrication.
    d. Aerospace ground equipment.

25. (008) Which position will be filled by senior non-commissioned officer 2RXXX personnel (scheduler or analysis)?
    a. Plans, scheduling and documentation section chief.
    b. Maintenance management analysis section chief.
    c. Maintenance operations center senior controller.
    d. Maintenance operations superintendent.

26. (008) The maintenance operations superintendent ensures all aircraft assignment and possession changes are *accurately* reported by the
    a. maintenance management analysis section chief.
    b. maintenance operations center senior controller.
    c. aerospace vehicle distribution officer.
    d. production superintendent.

27. (009) Which section within maintenance operations (MO) is considered the *hub of all* maintenance activities?
    a. Plans and programs.
    b. Maintenance operations center.
    c. Maintenance management analysis.
    d. Plans, scheduling & documentation.

28. (009) The maintenance operations center (MOC) exercises *external* control when
    a. required by the unit mission.
    b. limited resources need prioritizing.
    c. all resources are in a single squadron.
    d. more than one squadron must share resources.

29. (009) What program does the Air Force use to support the information superiority and response time objectives of the USAF flying wings?
    a. Global decision support system (GDSS).
    b. Expeditionary combat support system (ECSS).
    c. Enhanced maintenance operation center (EMOC).
    d. Maintenance scheduling application tool (MSAT).

30. (010) Which section tracks, analyzes, and presents information to help *senior* leadership assess the health of the unit's weapon systems and equipment?
    a. Plans and programs.
    b. Plans and scheduling.
    c. Maintenance operations center.
    d. Maintenance management analysis.

31. (010) What are the two major responsibilities of MMA?
    a. Completing the First Look and managing REMIS.
    b. Evaluating aircraft maintenance and managing CEMS.
    c. Analyzing weapon system performance, and managing the MIS.
    d. Ensuring aircraft status and estimated time in commission is correct.

32. (010) Which maintenance management analysis section provides monthly airframe, facility and personnel capabilities, attrition, and spare factors for use in planning the annual flying program?
    a. Data integrity team.
    b. Deficiency analysis.
    c. Production analysis.
    d. Dedicated aircraft maintenance unit analysis.

33. (011) What is used by the plans, scheduling and documentation section to develop wing maintenance plans?
    a. Wing requirements.
    b. Aircraft historical data.
    c. Air Staff requirements.
    d. Maintenance analysis special studies.

34. (011) In addition to coordinating aircraft maintenance requirements between maintenance, operations and external agencies, Plans, Scheduling and Documentation is responsible for
    a. Utilization scheduling.
    b. Maintaining aircraft statuses.
    c. Providing facility capabilities.
    d. Reporting flying schedule deviations.

35. (011) Who has the responsibility to assist in determining the cause of missed maintenance events for maintenance scheduling effectiveness?
    a. Dedicated analyst.
    b. Dedicated scheduler.
    c. Aerospace vehicle distribution officer.
    d. Maintenance operations center senior controller.

36. (011) The plans, scheduling, and documentation (PS&D) section tasks the maintenance management analysis (MMA) section with accomplishing airframe, personnel, and facility capabilities assessments for each aircraft maintenance unit no later than the *last workday* of March each year in an activity known as
    a. first look requirements.
    b. operational planning cycle.
    c. aircraft generation planning.
    d. major maintenance work processing.

37. (012) Which maintenance operations section *manages* the unit efforts to maintain adequate engine support for mission requirements?
    a. Maintenance operations center.
    b. Maintenance supply liaison.
    c. Aircraft configuration.
    d. Engine management.

38. (012) Engine management establishes a Comprehensive Engine Management System (CEMS) contingency plan when the system is down for periods of time *more* than
    a. 12 hours.
    b. 48 hours.
    c. 72 hours.
    d. 120 hours.

39. (013) Which types of training does the maintenance training flight provide to technicians for performing duties in their primary Air Force specialty code?
    a. Initial, monthly, and yearly.
    b. Recurring, qualification, and yearly.
    c. Initial, recurring, and qualification.
    d. Initial, recurring, and disqualification.

40. (014) Which section is responsible for maintaining and coordinating of all applicable AFI-directed plans that affect maintenance?
    a. Support section.
    b. Quality assurance.
    c. Programs and resources.
    d. Plans, scheduling and documentation.

Please read the unit menu for unit 2 and continue ➔

Student Notes

Unit 2. Data Systems Management

AS A MAINTENANCE MANAGEMENT ANALYST, you will have access to automated information systems (AIS) that process maintenance data. You will be the focal point for maintenance data and information. There are two major data systems for the maintenance analyst: the IMDS and MAF Logistics C2 system for mobility (MAF LOG C2). Since IMDS is the base-level automated information system widely used across several MAJCOMs, we refer to it as our standard for most of the lessons presented here. MAF LOG C2 is a mission-specific system used by mobility air forces.

Management of maintenance data is a very important responsibility that affects the primary Air Force mission—war fighting. We give special attention to this responsibility because of the critical importance of database management, starting with the role of the database manager (DBM). Then, we discuss several agencies outside of your organization that have important roles in the systems you process. Be aware of these agencies' responsibilities, how they relate to you and your overall responsibilities. Furthermore, as a maintenance analyst you review and analyze the actual data that is documented by maintenance personnel. We will walk through the process of job data documentation (JDD) and applying the multi-host internet access portal (MIAP) application.

2–1. Functional Responsibilities

One of the primary jobs of the maintenance management analyst is database management. This highly skilled job requires special attention to the MIS that maintenance personnel use. We will explain some of the responsibilities of the DBM and various agencies you will be working with as a DBM. As a maintenance management analyst, you need to be familiar with the unique responsibilities of the database manager and these agencies that keep these MISs running at optimum level.

015. Database management section

DBMs are the core of experience that the maintenance leaders (operations or maintenance group commanders) must rely on to coordinate all functional actions affecting IMDS. This is due to the in-depth and specialized training the DBM receives. The DBM *must resolve* problems concerning IMDS and MAF LOG C2 that are *beyond* the capability of the other functional users. All areas of maintenance rely heavily on the DBM to assist them with IMDS problems and keep the system operational. The host DBM serves as the focal point for coordination between units and base-wide problems related to IMDS and MAF LOG C2. Some more specific responsibilities are listed in this lesson.

Maintenance management analysis (MMA) is the name for our AFSC, 2R0X1. MMA work centers are where DBMs are normally assigned. These offices are the focal points of the MIS. They serve as the advisory agency for all MIS functional areas in maintenance and provide assistance to all maintenance agencies concerning the availability of data, information, and information retrieval. This

section manages the MIS database, assists users with MIS problems, supports MIS documentation of away-from-station maintenance, coordinates MIS recovery procedures, and schedules periodic reports and programs. DBMs also evaluate all proposed changes or suggestions for improvements to MIS submitted by users. Analysis sections maintain close coordination with all functional areas of maintenance within their units to ensure there are continuous transactions taking place in IMDS and MAF LOG C2. Within a base, there could be two levels of maintenance analysis functions possible—the host and unit level. The host is the base-level agency that oversees all unit-level operations. The host MMA is usually assigned to the wing or group level. The unit-level MMA section is usually assigned to the squadron or tenant unit supported by the host. Your assignment could be in either level of responsibility. The host MMA has the same responsibilities plus the added task of maintaining coordination between all unit MMA sections, Defense Enterprise Computing Center (DECC), Air Force Life Cycle Management Center (AFLCMC) for IMDS, and the system program manager (SPM) for MAF LOG C2 to ensure all users of IMDS and MAF LOG C2 have an accurate and usable database.

Advisory responsibilities

As an advisor, a DBM assists other maintenance agencies by providing information concerning the availability of data in IMDS and by assisting in retrieving data. A DBM also keeps the maintenance leadership and staff agencies advised of any change in the status of the MIS that could affect the maintenance capabilities of the organization. The most common of these areas include, but is not limited to the following:

- Any scheduled/unscheduled downtime of the standard base-level computer (SBLC).
- Any unscheduled interruption of IMDS or MAF LOG C2 operation.
- Operational status of all remote terminals and their alternates.
- Non-availability of any program or routine associated with the MIS.
- Status of system recovery.

Maintenance of MIS files

DBMs have the responsibility for ensuring the accuracy and timeliness of data within their MIS. This is done with the use of various IMDS or MAF LOG C2 utility programs. DBMs also act as clearing points for all MIS problems within units. In addition, DBMs perform the following duties:

- Locate database errors using various inquiry and troubleshooting programs.
- Correct database errors using various database maintenance programs.
- Coordinate IMDS and MAF LOG C2 database save/reload procedures.

Assistance to functional users

Personnel who use IMDS or MAF LOG C2 in the performance of their jobs are referred to as functional users. Users do not need to possess the specialized technical knowledge of a DBM to retrieve data from a database; however, they do need to know some of the basic computer concepts and functions related to the MIS, specifically IMDS and MAF LOG C2. This knowledge certainly helps when they are trying to communicate their problems and needs to you. Your job involves training and assisting users with real or perceived problems with their operation of the MIS.

Resolving problems or addressing concerns in IMDS or MAF LOG C2 are conducted at the *lowest* level possible. Functional users *contact* their unit DBM every time a problem occurs in their MIS. If the unit DBM cannot resolve the problem, the unit DBM *consults* with the host DBM. If the host DBM cannot solve the problem, host DBM *consults* with on- and off-base agencies that process the data or have access to the database in use to find a solution. There are several agencies that you, as the DBM, work with on a regular basis to maintain IMDS and MAF LOG C2 operation and resolve problems. These are the

DECC, SPO, the field assistance service (FAS), functional management procedures office for MAF LOG C2, the functional assistance office (FAO) for MAF LOG C2, REMIS, the system management center (SMC), and the base network control center (BNCC). Figure 2–1 shows how these agencies interact with you as a DBM and with each other concerning the AIS you operate. Specific functions are in the following lessons.

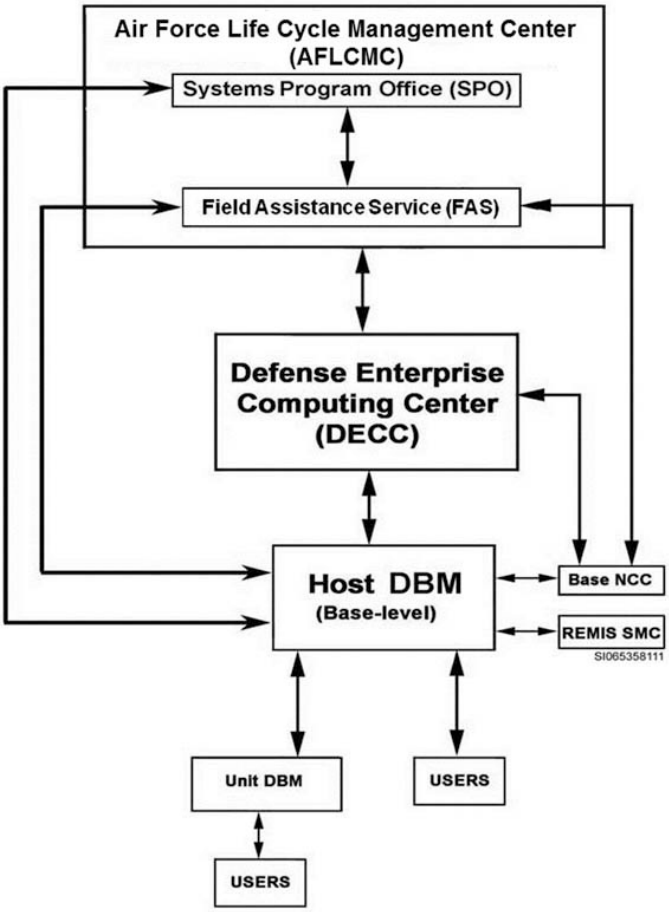

Figure 2–1. Host DBM and interrelated agencies.

016. Defense Enterprise Computing Center

As a DBM, you communicate regularly with the DECC; therefore, you must understand the functions and responsibilities the DECC has in providing services to you concerning your database.

DECCs are located all over the United States as part of the Defense Information Systems Agency (DISA) to *provide* information and communication services to the DOD and other United States federal and state organizations. Only five of the DECCs provide integrated informational processing services to *assigned* regions. Each DECC has one or more detachments within the organization. Several military bases and other government agencies are assigned to one DECC.

The DECC is where the Unisys SBLC system resides. The SBLC is the mainframe computer that runs IMDS along with several other base-level AISs. This computer stores the database. Our IMDS AIS shares the SBLC with finance, supply, personnel, and other base functions. Within the DECC are

various sections whose job is to assist you and others in your data processing needs. It has its own 24-hour operations center to repair computer system and processing problems.

The IMDS centralized database is located at DECC Oklahoma City, Tinker Air Force Base (AFB), Oklahoma. A mirror system used for backup purposes is located at DECC Ogden, Hill AFB, Utah.

System monitor

The system monitor (SM) is your *primary* POC with the DECC (fig. 2–1). This person is *responsible* for monitoring, recovering, loading releases, and maintaining your database. For example, if something goes wrong with your database that is beyond your repair capability, it is the responsibility of the SM to perform the necessary repairs or recoveries.

Functional assistance office

The FAO is DISA's MIS help desk at DECC Oklahoma City for MAF LOG C2 system trouble calls. This office has the same responsibilities and provides the same services listed above for database managers and users.

017. Air Force Life Cycle Management Center

Air Force Life Cycle Management Center (AFLCMC), located at Maxwell-Gunter Air Force Base, Alabama, manages information technology contracts and standard information system programs commonly used at all active and reserve Air Force bases and many DOD agencies. AFLCMC is a subordinate unit of the electronic systems center (ESC) at Hanscom AFB, Massachusetts, which belongs to AFMC, located at Wright-Patterson AFB, Ohio.

AFLCMC is responsible for the acquisition, development, and sustainment of standard systems, and provides and supports secure combat support information systems and networks for the Air Force and DOD components.

You deal with *two main* AFLCMC agencies while maintaining IMDS at your base—IMDS systems program office (SPO) and the FAS. Figure 2–1 shows where they fit in the communication process.

Systems program office

The SPO has two key functions that pertain to IMDS—database administration and subsystem functional analysis. Both the database administrator (DBA) and functional analysts work together in the analysis, design, implementation, and maintenance of the IMDS database; however, analysis and design belongs to the DBA, while implementation and maintenance belongs to the functional analysts.

Field assistance service

The FAS acts as a 24-hour POC at AFLCMC for all standard computer systems trouble calls originating from BNCC, DECCs, and functional users worldwide. The FAS evaluates problems and provides solutions for all trouble calls. The FAS maintains a current trouble call database using the Unisys 2200 computer and action request (AR) problem management system. It also prepares daily and weekly status reports for AFLCMC management on significant events affecting the operation of standard software systems at AFLCMC and at BNCCs, DECCs, and functional user sites worldwide. The branch initiates, coordinates, and acts as the primary POC for all system advisory notices (SAN) and heads-up messages (HUM) issued by AFLCMC organizations.

The FAS provides technical support through its customer support division. This section provides a 24-hour help desk for computer hardware and software support throughout the Air Force and DOD. The FAS processes all incoming calls from computer centers and functional users worldwide and supports over 145 different AISs. The FAS also provides remote systems and database administration services for AFLCMC supported sites.

When an IMDS database problem exists that you, as an IMDS functional user, or the host database manager cannot fix, then the FAS should be contacted for assistance. The FAS will be your *initial* point of contact with AFLCMC. Follow guidelines in Air Force Computer Systems Manual (AFCSM) 21–556, Volume 2, *Introduction to IMDS CDB (Software User Manual)*, if it becomes necessary to contact the AFLCMC. Problems referred to the FAS can be sent two ways: on-line through the FAS website or by phone. When using the website, you may view deficiency reports, SANs, HUMs, plus browse through for known solutions to previously addressed problems. The FAS will research the problem, determine if other bases have had this problem, and relay to you how to fix it. If it is *beyond* the capability of the FAS, they may *transfer* you to IMDS functional analysts *within* the SPO.

018. Network control centers

There are two NCCs that you will communicate with concerning your job as a DBM—the BNCC and REMIS system management center. Look at figure 2–1.

Base network control center

The BNCC is the single focal point on each base that provides computer and communication systems management and customer support for these critical services. It supports the wing/base mission by providing *three* major network management *functions*—help desk operation, network management, and specific area of support (SAS).

The help desk is the “first line” of problem resolution and the base user’s primary POC for network problems, software application, automated data processing support, and hardware support and repair. Network management monitors and controls the network, available communication resources, as well as distributed software resources. The SAS provides a “second line” of problem resolution. The SAS sends out specialists to assist computer or communications users.

Within the network control center (NCC) problem resolution functional structure, they assign and train computer system administrators (CSA) and workgroup managers (WM) at unit level to assist computer users with software, hardware, and network problems from the user’s computer to the network server. The IMDS DBM may call on these people for IMDS connectivity problems. If the problem is beyond the WM or CSA to resolve, then they call the help desk. From there on, the help desk determines the best means of resolving the problem after troubleshooting. BNCC also resolves on our behalf any concerns or problems with the DECC that are beyond the system monitor’s responsibility. Practically all our network connectivity, communication, and computer needs are handled by BNCC.

REMIS SMC

The REMIS SMC is the POC for REMIS hardware and software problem resolution. It is operated and staffed by a civilian contractor—Northrop Grumman Information Technology. The SMC is located in Beavercreek, Ohio. This is where the REMIS database resides. The SMC controls, monitors, and maintains system hardware, software, and performance. It provides 24 hour, 7 day technical support to all users. It functions very much like the DECC—operating mainframe computers to run the system. Just as IMDS and MAF LOG C2 receive their inputs from maintenance personnel, REMIS receives its inputs from IMDS and MAF LOG C2. Maintenance managers access REMIS through Air Force, MAJCOM, or base-level personnel to retrieve data on a much larger scale than IMDS maintains. IMDS and MAF LOG C2 are base-level systems that transfer into REMIS to form an Air Force–wide database of maintenance data. The SMC provides real-time technical support to all REMIS users via E-mail or telephone. It assists users with problems such as access, software, hardware, performance, reports, or general REMIS information.

Self-Test Questions

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

015. Database management section

1. Who resolves IMDS problems that are beyond the capability of the functional users?

2. Name the two levels of maintenance analysis functions.

3. What added responsibilities does a host analysis work center have?

4. An analyst/DBM keeps the maintenance leadership and staff agencies advised of what?

5. Who should functional users contact first when there is a real or perceived hardware or IMDS problem?

016. Defense Enterprise Computing Center

1. State the purpose of DECCs.

2. If there is a problem with your database that is beyond your repair capability, whose responsibility is it to use the database utilities to make repairs or perform recoveries?

3. What office within the DECC is responsible for system trouble calls of the MAF LOG C2 MIS?

017. Air Force Life Cycle Management Center

1. What are the two key functions of the systems program office?

2. When it becomes necessary to contact AFLCMC, who is your initial POC?

3. What are the two ways problems are referred to the FAS?

018. Network control centers

1. Name the two NCCs that you will communicate with concerning your job as a DBM.

2. What is the role of the base help desk?

3. Who do you contact for REMIS problems?

2–2. Job Data Documentation

As an MMA, you review and analyze the data documented by maintenance personnel. Knowing how data are initiated, collected, reported, and stored may enhance your under-standing of how the maintenance data process works. You are also responsible for verifying the accuracy and completeness of data documented into your automated information system (IMDS or MAF LOG C2).

NOTE: The process in IMDS may be different from MAF LOG C2, but the principles are the same.

019. Work order generation

As the OPR for IMDS, it is essential for you to know how work orders are generated in IMDS for maintenance discrepancies. Discrepancies discovered and entered into the database are generally accomplished in three ways (1) by aircrew debriefing, (2) by unscheduled discrepancy reporting, and (3) by scheduled maintenance activity. This lesson aids you in answering questions asked by maintenance personnel in the area of work order generation. The production process usually involves the use of these different subsystems at the same time as data are shared among the subsystem records (fig. 2–2).

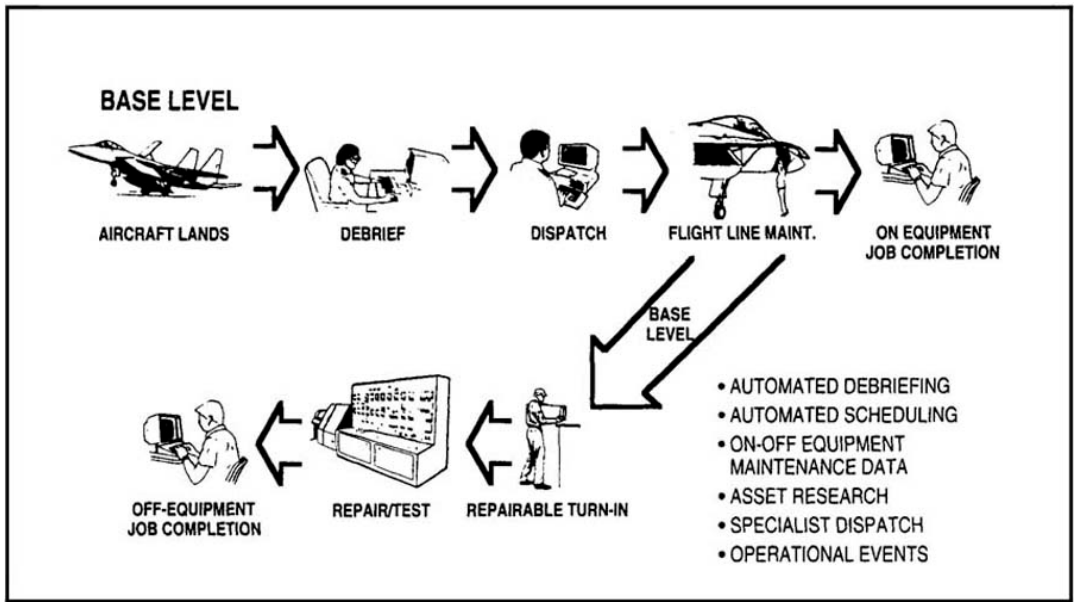

Figure 2–2. Maintenance production process.

Aircrew debriefing

Let's discuss the debrief section first before we talk about generating a work order. Each AMU has a separate debrief section that collects flying data to be entered into the MIS. Debriefing is conducted at the termination of each sortie/mission or when a sortie/mission is aborted. During debrief, the section ensures accuracy of aircraft sortie information and validates repeat/recur maintenance repair actions if applicable. In the case of IMDS-CDB, the debriefing section is responsible for the overall management of the automated debriefing subsystem. Debrief personnel input discrepancy and deviation information, utilization, and applicable flight data (including landing status, system capability, and other applicable cause codes) into the MIS. They are also the primary personnel tasked with using aircraft fault reporting manuals to help identify fault codes to aid maintainers in aircraft troubleshooting. To facilitate their job, 781−series IMTs/forms are provided during the actual debriefing session. The flight-line expediter or Pro super must ensure the applicable aircraft form sets are provided to the debrief section by the end of the flying day if debriefs have been suspended due to aircraft flying surge operations. Also during the debrief session, debrief personnel must ensure that the aircraft commander/pilot enters new discrepancies noted, aircraft condition codes, flying times, servicing data, and other required documentation on the applicable AFTO IMTs/forms. Debrief is tasked with entering landing status codes, specific system capability codes and aircraft utilization deviation cause codes, if applicable. These codes will be further discussed in volume four of your five level CDC upgrade training or you can refer to AFI 21–101.

Using a computer, the *debriefer generates* a work order for each in-flight debriefed discrepancy by entering the event data and narrative for the discrepancy into the IMDS database. As a *minimum*, the debriefer inputs the following information *from* the AFTO Form 781A, Maintenance Discrepancy and Work Document, into the IMDS screen (screen 161, Automated Debriefing Discrepancy):

- Unit.
- Equipment ID number.
- Sortie date.
- Work unit code (WUC).
- When discovered (WD).
- Discrepancy narrative and the applicable status symbol (e.g., Red X, Red Diagonal, Red Dash, etc.).

NOTE: Most of these inputs come prefilled if entered through the menu.

After each aircraft has been debriefed, an automatic work order management notice is sent to the controlling agency's computer IMDS screen. Controlling agencies—job control, MOCC, and AMU scheduler—vary throughout MAJCOMs.

The work order notice tells the controller that all discrepancies have been debriefed for a specific aircraft tail number. It also identifies the sortie number and sortie date. As inflight discrepancies are entered, the computer automatically assigns an event ID to each discrepancy and the debriefer enters it in the appropriate blocks of the AFTO Form 781A. After all debriefed discrepancies have been input, the crew chief returns to the aircraft with the AFTO Form 781. Upon receipt of the debriefed work orders, the controlling agency reviews the discrepancies. Those that are to be scheduled as part of the debriefing process are transmitted via IMDS to the appropriate PWCs computer screen. If the event is not scheduled for completion during the recovery process, the controlling agency schedules a later time.

Unscheduled discrepancy reporting

As discrepancies are discovered by the crew chief and/or specialists during normal scheduled or unscheduled maintenance, they are recorded on AFTO Form 781A. The discrepancies are then passed

to the flight-line expediter who relays them (via radio/computer) to the controlling agency. Unscheduled discrepancies discovered by specialists on communications-electronics (C-E) equipment are passed to the controller for that equipment (i.e., ground radio, radar, pagers, antennas, etc.) for appropriate scheduling. Upon receipt of an unscheduled discrepancy, the controlling agency determines the priority of the job and decides if specialist support is required. The controlling agency then coordinates available personnel and schedules start times with the applicable specialist controller. If the priority dictates immediate repair and personnel are available, the discrepancy is entered into the active work order file for the aircraft, and the computer automatically generates a work order at the appropriate PWC's computer terminal. The scheduled start time and computer assigned JCN are transmitted to the flight-line expediter for inclusion on the AFTO Form 781A. Then, the discrepancy is input to the open discrepancy file generated at the PWC and awaits scheduling by the controlling agency. It should be noted, however, that the workcenter supervisor has the capability to review all open discrepancies on file from their workcenter computer terminal.

Scheduled maintenance activity

Some jobs are scheduled as part of preventative maintenance at a specific time. Plans and scheduling (P&S) establish monthly and weekly maintenance requirements (scheduled inspections, servicing, parts due for replacement, etc.) in accordance with aircraft utilization. P&S uses these requirements to forecast the scheduled maintenance activities based on supportable workload. The scheduler reviews the computer resident file for TCTO, TCI, inspections, and other open work orders. Based on these known maintenance requirements and specialist availability, the scheduler creates the next day's maintenance plan.

After the maintenance plan is finalized, the scheduler requests, through the remote terminal, the work order generation program. The input format is displayed on the computer terminal and the scheduler enters the applicable data to schedule the discrepancies. The scheduler will make the necessary inputs to generate the scheduled work orders to the PWC's remote terminal. When the discrepancy entry is processed, the applicable IMDS program will return an assigned event ID number.

Job control number

A job control number (JCN) is a 12 position number consisting of the event ID number and the workcenter event (WCE) number (e.g., 171804321001). Once discrepancies are recorded, they are tracked by a JCN.

Event ID

A nine-position event number assigned when a maintenance event is created in IMDS. These are the first nine positions of a JCN (e.g., 171804321). The first two digits signify the year (17); the next three indicate the Julian date (180); the last four are a sequence of numbers issued automatically by IMDS, regardless of unit ID (4321).

Workcenter event ID

The WCE ID is the three-position number *added* to the event (e.g., 001) that identifies a performing workcenter assigned against an event. The WCE is assigned sequentially by IMDS, regardless of unit ID. Each workcenter scheduled to perform work has a WCE of its own. A workcenter may have multiple WCEs on a single event. The first participating workcenter scheduled on a given event receives WCE number 001; the second, 002; the third, 003; and so on.

Depending on the type of discrepancy and maintenance requirements, some units are given the flexibility to assign their own JCNs.

Changing and canceling events

The controlling agency and individual workcenters (when allowed by their unit) have the capability to change event/workcenter event data or an event/WCE narrative that requires editing. In addition, both entities can have the capability to cancel events or workcenter events whenever the need arises. If two specialists entered the same discrepancy, two event IDs would be created. In this case, one would have to be deleted. Another example, which is very common, is a maintenance technician documenting maintenance actions against a WCE that is different from the one assigned to them. The original job control number was 1700750015001 and the technician created a new one (1700750015002) when recording documentation. What would have to be done to the original JCN? Since documentation has been recorded against the latter, the original JCN would have to be deleted because it is no longer needed.

020. Maintenance documentation

The JDD subsystem is an online maintenance data collection (MDC) system of IMDS that provides maintenance personnel the capability to enter JDD by selecting one of several options from a JDD menu. Maintenance personnel document, inquire, and produce retrievals of maintenance actions.

JDD displays a screen to choose the specific format needed for the type of maintenance action. There are many ways to document JDD data. Fortunately, the JDD subsystem only displays the required data fields needed to complete the appropriate maintenance transaction.

When a work order is received, the *receiving* terminal *acknowledges* with a visual *or* audible signal and the performing workcenter prints the work order. After acknowledgment of the work order, a specialist works the assigned job. After completing the job, he or she records the necessary data on the accompanying form and later enters it into the computer. Annotating the printed work order form is very important, because the specialist can be dispatched to another job site before returning to the duty section. The annotated work order form ensures that the exact corrective action is entered into the computer.

JDD is designed to allow each specialist to enter the appropriate corrective action. It is not the intention of JDD for supervisors to assign a single specialist to enter all JDD transactions for a given workcenter.

JDD has become more user friendly with more edits (to ensure accurate input) and an online help function. Moreover, resident technical training in IMDS has equipped new maintenance personnel with the fundamental knowledge of JDD. In our example, we trace the reporting procedures for a typical on-equipment discrepancy. Reporting a corrective action is rather simple.

If the computer is not open, the specialist opens it using the appropriate log-on procedures. The specialist begins by going directly to the JDD menu. In this example, the specialist is documenting a corrective action and completing a work order; therefore, screen 907 is the first place for him to go (fig. 2–3). The data are enterable when the JDD menu screen appears.

At this point, the specialist enters the YR/EVENT ID, WORKCENTER EVENT ID, and presses the XMIT key. The response passes off to another screen, screen 914, On-Equipment Maintenance. There are numerous combinations of entries for JDD documentation but only the required fields are accessible, thus eliminating much of the confusion in deciding required entries. As each data field is annotated, the cursor automatically advances to the next data field until all required entries are made. The next step is to transmit. At this point, the response is either accepted or rejected. If the response is accepted, the corrective actions are stored in the IMDS database on disk/tape—unless it requires validation. Work orders such as TCIs, serially controlled items, and engine installations/removals are placed in a suspense file. *Most* suspense files are *verified and cleared* by engine management or the documentation section of *P&S*.

If, however, the response was rejected, the cursor positions itself at the beginning of the field in error. The specialist must then make the necessary corrections and retransmit. Depending on the error, the specialist may be required to check the documentation rules listed in the applicable TO 00–20–2 series and AFCSM 21–563, *Job Data Documentation (JDD) Software User Manual* volume 2, attachments 2 and 3. Alternatively, use online help if available for the screen. This step is repeated as often as necessary until the response is accepted.

Initially, you may conclude that IMDS is a tedious process, but as you become familiar with IMDS processing principles and the various screens, you will appreciate its capabilities.

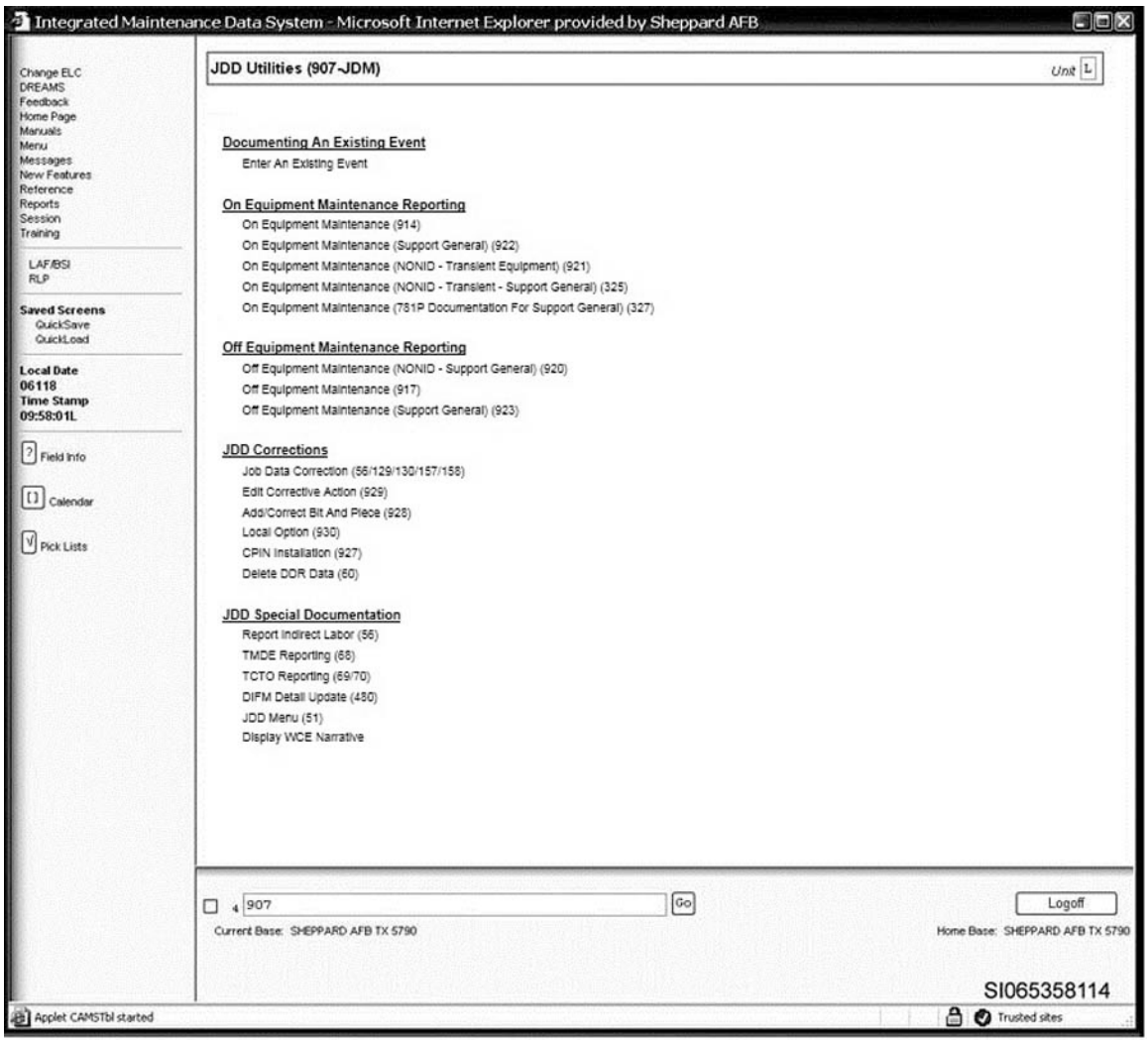

Figure 2–3. Job data documentation menu, screen 907.

021. Work order closeout

Work orders are completed at various locations throughout the maintenance complex. Remember, documenting a corrective action does not automatically close out all work orders. The closeout process depends on whether a job was designated for job following when it was created.

Work orders listed as job following

Job following is a JDD module used as a management tool by the *controlling* agency to monitor start and stop times of *on-equipment* maintenance WCEs. This is an option exercised by the unit. It could

be partial (for selected events) or full (automatic for all events). The controlling agency receives notification when a workcenter event does not start on time, is overdue, is designated to stop, or when each workcenter event is complete.

Job following work order closeout normally occurs as follows:

1. All discrepancies that are *not* entered into job following are closed out when the specialist enters the job completion data on the applicable documented discrepancy screen.
2. If *multiple* workcenters are required, each workcenter must report at *least* one unit of work completed before a job is closed.
3. Discrepancies designated for job following are closed out when the controller receives notification through IMDS that a work order has been completed. *Final* close out of a work order *under* job following is the *responsibility* of the controlling agency.

Normal work order completion (no job following)

Under this process the performing workcenter, and not the controlling agency, may close out the work order. We learned earlier that an event might have more than one WCE attached to it. When we talk about completing or closing out a work order, we refer to the job event itself. There are many ways a work order may be completed; but when we say that a job has been closed out, the event and all its workcenter events have been completed. A WCE may be completed but the event may not if there are multiple WCEs and some are still open.

The three most common instances a work order may be completed are as follows:

- If there is only one WCE (001) attached to the event, the event is completed when the performing workcenter closes out the WCE.
- In the case of multiple WCEs, if the performing workcenter completes the last open WCE, then the WCE is closed out and so is the event.
- The event of a scheduled activity (e.g., inspection) is completed only when all performing workcenters complete their respective WCEs. (The phase dock coordinator closes out the inspection event, in this case.)

Self-Test Questions

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

019. Work order generation

1. What are the three ways work orders are generally generated?

2. What are some of the information elements that debrief personnel enter into the applicable MIS?

3. What are some of the entries that debrief must ensure that the aircraft commander/pilot makes on the applicable AFTO 781 IMTs/Forms during the debriefing section?

4. What agency or office generates in-flight discovered discrepancies?

5. Describe the event ID of a JCN.

6. What is a WCE?

020. Maintenance documentation

1. Explain the JDD subsystem.

2. Which screen number is known as the JDD menu?

3. If there is a reject on the screen, how does the specialist know which field is incorrect?

021. Work order closeout

1. Explain job following.

2. When are discrepancies under job following closed out?

3. Describe the three most common ways a work order may be closed out with no job following.

Answers to Self-Test Questions

015

1. The DBM.
2. Host and unit level.
3. The same responsibilities plus the added tasking of maintaining coordination between all unit analysis sections on base and with the DECC and AFLCMC to ensure all users of IMDS have an accurate and usable database.
4. Any change in the status of MIS that might affect the maintenance capabilities of the organization.
5. Their unit DBM.

016

1. To provide information and communication services to the DOD and other US federal and state organizations.
2. The system monitor.
3. The functional assistance office (FAO).

017

1. Database administration and subsystem functional analysis.
2. The FAS.
3. Online through the FAS Web site or by phone.

018

1. The BNCC and REMIS system management center.
2. It is the "first line" of problem resolution and the base user's primary POC for network problems, software application, automated data processing support, and hardware support and repair.
3. REMIS SMC.

019

1. (1) Aircrew debriefing.
   (2) Unscheduled discrepancy reporting.
   (3) Scheduled maintenance activity.
2. Discrepancy and deviation information, utilization, and applicable flight data (including landing status, system capability, and other applicable cause codes).
3. New discrepancies noted, aircraft condition codes, flying time, servicing data, and any other required entries.
4. Debriefing.
5. A nine-position number assigned when a maintenance event is created. First two, year; next three, Julian date; next four, sequence of numbers issued automatically by IMDS.
6. A three-position number used to identify a workcenter assigned against an event.

020

1. It is an online MDC system that provides the user the capability to enter documentation data (MDC) by selecting one of several options from a JDD menu.
2. Screen 907.
3. The cursor automatically positions itself at the beginning of the data field in error.

021

1. It is a JDD module used as a management tool by the controlling agency to monitor start and stop times of on-equipment WCEs.
2. When the controller receives notification through IMDS that a work order has been completed.
3. (1) Performing workcenter closes out the WCE and event if there is only one WCE (001) attached to the event.
   (2) For multiple WCEs, if the performing workcenter completes the last open WCE, then the WCE will be closed out so is the event.
   (3) The event of a scheduled activity is completed only when all performing workcenters complete their respective WCE.

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).

41. (015) Who is responsible for *resolving* Integrated Maintenance Data System (IMDS) problems that are *beyond* the capability of the functional user?
    a. Systems monitor.
    b. Database manager.
    c. Database designer.
    d. Database administrator.

42. (015) If the unit database manager (DBM) *cannot resolve* a problem encountered by a *functional* user, he or she should contact
    a. the host database manager (DBM).
    b. Air Force Life Cycle Management Center (AFLCMC).
    c. Defense Enterprise Computing Center (DECC).
    d. the field assistance service (FAS).

43. (016) Which of the following provides information and communication services to military and government organizations in an assigned region of the United States?
    a. Database manager (DBM).
    b. Base network control center (BNCC).
    c. Defense Enterprise Computing Center (DECC).
    d. Reliability and Maintainability Information System (REMIS) Management Center.

44. (017) The two *main* agencies within the Air Force Life Cycle Management Center (AFLCMC) are the
    a. functional analysis and database administrator.
    b. database administrator and field assistance service (FAS).
    c. systems program office (SPO) and field assistance service (FAS).
    d. interactive customer service facility and database administrator.

45. (017) Who is the *initial* point of contact (POC) at Air Force Life Cycle Management Center (AFLCMC) when an Integrated Maintenance Data System (IMDS) database problem exists that *cannot* be fixed at base level?
    a. Host database manager (DBM).
    b. Systems program office (SPO).
    c. Database administrator (DBA).
    d. Field assistance service (FAS).

46. (017) If the field assistance service (FAS) *cannot* find a solution to an Integrated Maintenance Data System (IMDS) problem, what does the database manager (DBM) do next?
    a. Close the problem as “unsolved.”
    b. Initiate a memo to submit an advisory notice.
    c. Call other IMDS DBMs at other bases.
    d. Refer the problem to the IMDS systems programs office (SPO).

47. (018) Which activity is a function of the base network control center (BNCC)?
    a. Integrated Maintenance Data System (IMDS) database administration.
    b. IMDS database management.
    c. Help desk operation.
    d. Computer contracts.

48. (018) The Reliability and Maintainability Information System (REMIS) Management Center is operated by
    a. Air Force Life Cycle Management Center (AFLCMC).
    b. Field assistance service (FAS).
    c. Database manager (DBM).
    d. Northrop Grumman.

49. (019) During the debriefing of a sortie/mission, the debrief section *ensures* accuracy of aircraft sortie information and
    a. validates repeat/recur maintenance repair action.
    b. provides expediter mission effectiveness.
    c. provides pro supper aircraft form sets.
    d. validates time change items.

50. (019) Which job control number (JCN) indicates that a job was completed by the *third* participating work center on 1 January 2017?
    a. 201705555003.
    b. 201701555003.
    c. 170015555003.
    d. 170035555001.

51. (020) How does the *receiving* terminal *respond* when a work order is received?
    a. Sends E-mail to the workcenter supervisor automatically.
    b. Sends E-mail to the workcenter specialist automatically.
    c. Acknowledges with a visual or audible signal.
    d. Stores the work order in a suspense file.

52. (020) Concerning job data documentation (JDD), *most* suspense files regarding *serially* controlled items are cleared by whom?
    a. Controlling agency.
    b. Maintenance analysis.
    c. Plans and scheduling.
    d. Workcenter specialists.

53. (021) Who has the responsibility for *final* disposition of a discrepancy *identified* as job following?
    a. Analysis.
    b. Debriefing.
    c. Controlling agency.
    d. Plans and scheduling (P&S).

Please read the unit menu for unit 3 and continue ➔

Unit 3. Enterprise Computing

IN THE PREVIOUS UNIT, you learned about the various agencies and forms of communication that analysts use for data processing. This unit expands on your previously learned knowledge of mainframe data processing. You will examine SBLC more closely. As an analyst/DBM responsible for managing the IMDS for your unit, you must be familiar with the different methods of processing on the mainframe, the executive control language (ECL), how to monitor your system using the console mode, and transferring files to the mainframe through the network. As a final objective, you will become familiar with another language that is used with MAF LOG C2 database called FOCUS.

3–1. Data Processing

This section is concerned with the various methods available to process data on the Unisys 2200 series mainframe computer. Most IMDS users process in transaction interface package (TIP) mode only. As an analyst, however, you will use several methods of processing in various situations.

022. Methods of data processing

In this lesson, you will learn how TIP/DEMAND, on-line, and pseudo processing are used.

Transaction interface package/DEMAND processing

The Unisys 2200 series mainframe computer consists of two primary modes of operation. Anytime you log on to the mainframe, you must access either TIP or DEMAND to accomplish any tasks.

Transaction interface package

TIP is an integral part of the executive system of the mainframe that provides terminal users with a real-time transaction system. Basic responsibilities of TIP *include* scheduling transaction programs, loading transaction programs, and *providing* a fast-file control system. TIP is used primarily to process inputs and updates to data systems. Most users access TIP in their day-to-day data processing. Whenever a user logs on to IMDS, he or she is doing so through TIP.

DEMAND

DEMAND mode means the user is *not* restricted to a specific AIS. When signed onto the DEMAND mode, you are not limited to the programs and data that are expressly related to a specific system. As a DEMAND mode user, you are not actually accessing a specific data system, such as IMDS, finance, and so forth, but you are in the mainframe computer itself. For this reason, DEMAND mode is usually limited to specific users such as analysts and DBMs. With DEMAND capability, you may access application programs such as query language processor (QLP), conversational time sharing (CTS), generated runstream (GENRUN), database look (DBLOOK), and console (CONS) mode. Some of these applications are discussed later in this course.

On-line/batch processing

There are two methods of inputting data into a mainframe computer system. These methods are known as on-line (or real-time) and batch processing.

On-line

In the on-line method, computer equipment or devices are under the *direct* control of the mainframe computer (host processor). A user inputs data into the computer (usually via TIP mode), and the database is updated. This is often referred to as *real-time processing* because the database is updated as soon as the action takes place. A user performing inquiries or running reports on the database would see the updated information immediately.

Batch

In the traditional batch-processing mode, data preparation produces batches of data that are input as a batch, validated as a batch, processed as a batch, and output in an output batch run. Batch processing involves a large amount of data to be processed in a single run. For example, updating military pay raises at the beginning of the year is done through batch processing. Error outputs can also be accumulated and prepared periodically as a batch. Batch processing programs perform complex computations and produce reports to any degree desired. The basic *limitation* is that despite the efficiency, there is *always* a processing *delay*. Normally, a batch run is processed overnight. If a user inputs a database update, the update is not reflected until the following day, after the batch run. Many systems rely on batch processing for large amounts of data inputs or complex reports and inquiries.

Pseudo processing

Pseudo processing is a method of batch processing large amounts of input to update your database. When each individual input does *not* require direct monitoring, and the timeliness of the inputs is *not* critical, pseudo is a *very efficient* means of updating the database. A good example of a pseudo situation is when a unit gains a new engine. All the maintenance information from the losing unit must be transferred to the new unit. Pseudo batch files that contain all the information necessary are sent to the new unit to load the engine and update the database. Using pseudo saves time in that one person does not have to sit at a computer and keystroke every database update. You can verify whether a particular on-line transaction is capable of being run in pseudo by using the master instruction card program (NFSZ70, TRIC MIK) in IMDS.

Building a pseudo file

Once a decision is made to use pseudo, you must have a data file that contains the appropriate inputs. If the file is on a disk, it must be uploaded to a data file on the mainframe. There are different methods of creating this data file. The *easiest* way is to *run* NFS0A0, IMDS *pseudo* processing build/update mode. This provides you with screens, prompts for inputs, and builds the pseudo file for you. Once the file with the inputs is created and loaded onto the mainframe, pseudo must be started to actually load the inputs to IMDS. Your system monitor at DECC normally runs the pseudo.

Pseudo remote processing

Pseudo remote processing is used if a large volume of file update (FUD) transactions is required. When using pseudo remote processing, IMDS on-line transactions are suspended. That means users can't use any IMDS remote to process anything on-line. The host DBM controls pseudo remote processing by consolidating the input transaction. Pseudo files are organized in chronological order.

023. Pseudo processing for batch

Pseudo remote processing is an important capability that enables large TIP (on-line) transaction volumes to be processed in batch mode. IMDS has a newer batch program called pseudo remote processor for batch (PSUPRB). This lesson familiarizes you with this new program. The actual procedures in your work may vary.

The PSUPRB processor replaced the older pseudo remote terminal processor. It serves the same purpose of mass loading of on-line transactions in a batch mode. This method is much easier to use.

Running PSUPRB

PSUPRB is *run* in DEMAND mode. There is certain information you need to know when running PSUPRB. You need to know where your database resides. As a DBM, this information is integral when you process any program that concerns your database. IMDS has a system code called "FS." You must know your account code—this determines under where your database is located. PSURB will process automatically for the database you have signed in under using your account code. If you are a DBM that manages multiple databases at different locations, make sure you sign into DEMAND under the correct account code. We teach more about the IMDS database in volume 2. In processing PSUPRB, you must provide your database account code (e.g., FS1).

We will use a training transaction update as an example of a PSUPRB processing. Updating a training transaction in IMDS is a common pseudo update. Let's say you want to upload to the mainframe. You *must* build your pseudo file *using* the program NFS0A0 and give it a file name. Let's call that file IMDS*TRN.

The input in DEMAND will look like this:

```
@PSUPRB IMDS*TRN.
```

The screen response looks something like this:

```
PSUPRB_PSuedo PRocessor for Batch, Ver 3R1–004 (000322 1319:33) 1999 Jan 03 Fri 1740:47

>>>> LOG FILE NAME IS: PSU$LOG$0001
```

The log file name ("PSULOG0001") is your PSUPRB print file. This file is printed. The start of entry (SOE) character, >, will not appear *until* the PSUPRB has *completed* processing all the transactions in the file.

When the SOE appears, this is an *indication* that PSUPRB processing has completed. You may free the file at this point by giving the appropriate command. In DEMAND mode, we use the ECL commands. (We devote a section on ECL in our next section.) Therefore, in this case, we use @FREEALL to free the file.

Printing the PSUPRB print file

Printing the PSUPRB print file requires that you have a remote line printer (RLP) in your work area. You print the print file by entering the command line:

```
@SYM PSU$LOG$0001.,NTR??P
```

NTR??P represents your printer identification where the "??" is replaced by a valid ID assigned to you by the DECC.

NOTE: Details on building a pseudo file and running PSUPRB is found in AFCSM 21–571, Volume 2, *Database Management (Software User Manual).*

024. Standard base-level system file types

In this lesson, you will learn the two types of files used by DBMs. First, you will learn some IMDS application program files you will be accessing quite often. Absolute or omnibus type of application programs cannot be accessed directly by name because they are coded in machine language, but it is paramount these files reside on the mainframe for IMDS to operate. Then, you will learn about some important system support program files that help IMDS run efficiently and effectively.

Application program files

Application program files contain various elements that allow users to utilize TIP on-line or batch processing. They can also consist of runstreams for batch processing and utility programs used to troubleshoot and maintain the database. Here are some IMDS application programs for you to review.

Program	Explanation
0FS00000*PABSAG054-SF.	Holds the omnibus files for screens that IMDS uses for menu driven TIP processing.
0FS00000*PABSAG054-AP.	Holds the *absolute* elements for *batch* processing in TIP.
0FS00000*PABTAG054-AP.	Holds the absolute elements for on-line IMDS processing.
0FS00000*IMDSDBG–7R1.	Stores the various absolute schemas for the IMDS database. (**NOTE:** 7R1 is the schema name.) Without this file, you could not access the database using valuable utility programs such as DBLOOK, QLP, or database editor (DBE).
FS$$0000*00.	Contains prebuilt runstreams used for TIP generated batch processing.
0FS00000*DBRUN$.	Contains prebuilt runstreams for database utility programs such as the integrated recovery utility (IRU) processor, which is used to keep the system's data valid, safe, and available.
0FS00000*PECLAG054-EL.	Contains programs to help *troubleshoot* and maintain the database and retrieve data.

Support program files

Support program files consist of elements used to maintain on-line programs, update the database, interface with other existing databases worldwide, keep system records updated, and perform file queries and updating. Here are a few support programs.

Support Programs	Explanation
Validation table (VALTAB)	Controls *all* on-line programs for *each* AIS. The VALTAB setup's basic parameters for each program, which include: the number of program copies that can run concurrently, the program's maximum run time, and the output RLP device for any abnormal terminations.
SUPUR utility	Is a holding area for on-line transaction identification codes (TRIC) or programs. Modifications to the VALTAB or a new system release may cause you to receive an abnormal disk operation. The SUPUR contains an identical copy of the IMDS PABTAG054-AP. program file. If the SUPUR is not on line or a program's number or date do not match, you may need to use the SUPUR utility to correct these problems.
TIP File 611	Ensures that the functional system analyzer (FSA) is running *and* up to date for your IMDS database. It's updated every time you open or close a terminal for TIP. This file must remain in the system for DECC to bring your

Support Programs	Explanation
	database on line. If DECC cannot bring up your IMDS database, you or the DECC may have to re-catalog TIP File 611.

025. Console mode operation

The console mode, frequently referred to as CONS, is basically used for checking system device status such as run status, printer status, or why a run is stuck in wait. If you have used a remote terminal, I'm sure you have entered a transaction and sat idly by waiting for a response. With CONS, you can monitor the status of transaction processing. The mode of operation for use of console commands is DEMAND.

Console modes

The five levels of console (from lowest to highest) are basic key-in, limited key-in, full key-in, display and key-in, and response and key-in. Here we will only discuss basic, limited, and full key-ins. These are the modes normally available to DBMs. The scrolling levels, display and response, are primarily used by DECC. Occasionally, however, an analyst may have display and key-in. But, response and key-in is reserved for DECC.

Key-in	Explanation
Basic	Allows a user to manipulate or *request* status on the user's run, on any run started by that user, or on any run containing a user ID that matches the user ID at the terminal.
Limited	Allows a user to use all the key-ins specified in basic key-in mode plus the capability of using many of the status key-ins.
Full	Allows a user to use almost all *unsolicited* key-ins. Use *extreme* care when operating in the full screen mode because *no* processing of data occurs *until* you get *out* of full screen mode by sending an @@END. It is also *inadvisable* to stay in full screen mode for a prolonged period.

Input procedures

For all console modes, console capability at a terminal is requested by means of the @@CONS control statement. Two variations of this control statement can be used. When a series of unsolicited key-ins are to be typed in, use the following sequence:

@@CONS
Key-in 1
Key-in 2
Key-in *n*
@@END CONS

The second variation is @@CONS <keyin>. Use this single line format when inputting only one key-in request. When you are not currently in console mode and use this format, the console mode terminates *immediately after* the key-in has been accepted. If your input contains any key-in that results in a read and reply, the read and reply will not display at the terminal and, thus, you cannot respond to the read and reply.

Monitoring data processing with console commands

Console commands are actually a subset of remote symbiont interface (RSI). While in CONS, all RSI commands are executable. RSI commands are transparent commands—this means they are processed as soon as they are transmitted. They may be used within a program (other than within the console mode). RSI commands are denoted by the use of a master space (@) in both columns one and two. The following table lists some of the commonly used basic, limited, and full console commands.

Command	Function
BL	Lists the runs held in backlog.
BL D	Gives the date in which the RUN is to start.
D	Lists system time and date.
E RUN-ID	Causes an error-abort for the current task of the RUNID.
FS, all dev	Gives status of each hardware module configured in the system.
FS, CPU	Lists status of central processing units.
FS, IOU	Lists status of input/output units.
FS, MS	Lists status of mass storage.
FS,MEM	Lists status of memory modules.
RC RUNID	Displays information on specified RUNID.
SS	Displays system status.
SQ	Queues summary of all printer sites.
SX	Deletes queued symbiont files.
T,B	Displays active batch runs.
T D	Displays *active* runs in the system.
@SQ	Provides general status for output symbiont devices and groups.
@@CONT	Signals the computer to continue. (Used after message wait.)
@@NOPR	Stops printing to terminal.
@@PRNT	Sends data to the printer as it scrolls on the screen.
@@TOUT	Causes time out warning to be extended.
@@TM	*Sends* a message to a particular *remote* site or person.
@@X TIO	Terminates transaction in progress; cancels previous input; and cancels queuing to terminal.

026. File transfer process

File transfer is the transfer of data between two computers. In this lesson, you will learn about the transfer of files between a PC and a mainframe host processor. File transfer allows you to send to and receive from your IMDS database. There are several ways to accomplish this due to different networking systems and software available to you. With INFO connect you can use the OS2200 Editor FTP (file transfer protocol); you can use the Windows FTP through the Defense Data Network (DDN) line if the FTP programs are not available for INFO connect.

Understanding file transfer is important to making your job easier when transferring large data files. For example, IMDS training files are usually transferred to the IMDS database reflecting changes in training data. The size of these text files sometimes determines what file transfer medium is appropriate. They come in pseudo format to fit certain IMDS records. Using the wrong file transfer method can corrupt these files.

FTP file transfer

FTP Services is the file transfer software for the Unisys host processor called Clear Path OS 2200. FTP Services manages file transfers using TCP/IP in a client/server computer environment connected to the OS 2200 environment. An FTP server processes all requests for files that reside on the Unisys mainframe. In a client/server environment, your PC is considered the remote computer or the client.

To transfer IMDS files using FTP, you need access to DEMAND mode to verify the file you are transferring, whether downloading or uploading to the mainframe. Your host mainframe has an FTP address for file transfer purposes, and you obtain this by calling your system monitor at the DECC or entering the DEMAND mode.

Anytime you are in DEMAND mode, you can type the ECL command @WHOAMI (fig. 3–1). This gives you some basic information about the current run including USERID, RUNID, ALN, and so forth. Under the system heading, you will find the FTP address.

FTP ADDRESS XXX.XXX.XXX.XXX

The “X” characters represent numbers you will use when transferring files in FTP.

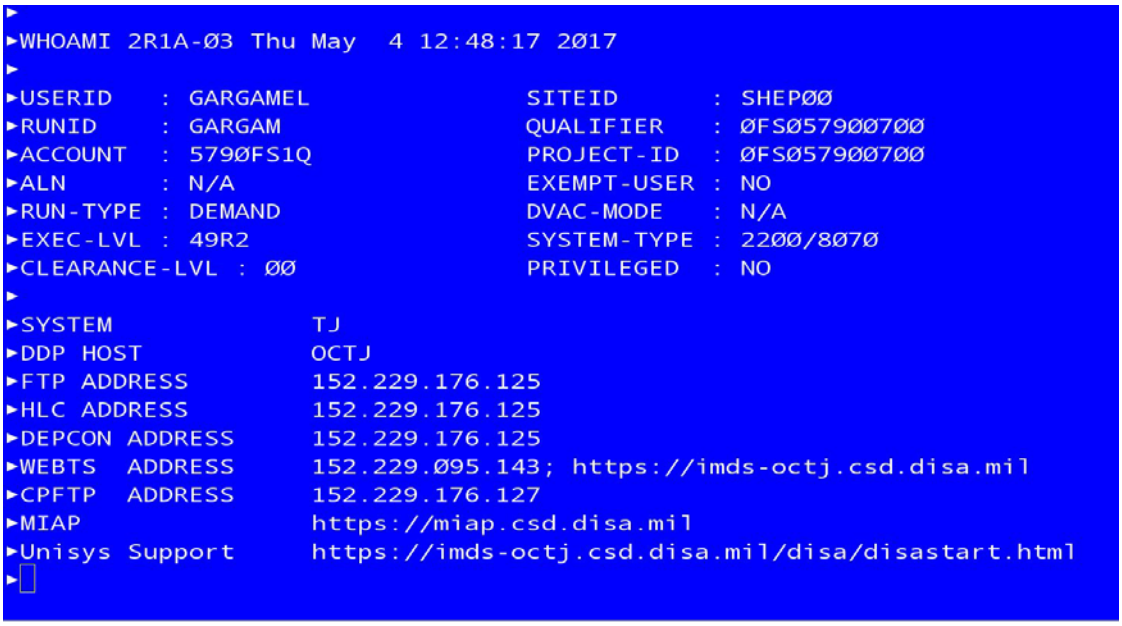

Figure 3–1. DEMAND mode run information.

The output gives you (as well as other information) the FTP address (fig. 3–1).

FTP ADDRESS 152.229.176.125

This is the host mainframe FTP address numbers you will need when transferring files. Each mainframe has its own FTP address assigned by their respective DECC. Another point to remember when doing a file transfer is to ensure that the sending filename *corresponds* to the receiving filename. You can compare FTP as the postal worker and the address on the mail (data) as the sending filename. The receiving file name is the house address that receives the mail. They *must* both match each other.

FTP process

The FTP process involves the following functions:

Function	Description
Opening a connection	Opens the connection upon the request of the remote computer.
Sending a file (uploading)	A file is sent from the remote computer to the host computer.
Receiving a file (downloading)	A file is sent from the host computer to the remote computer.
Closing a connection	Closes the connection between the host computer and the remote computer.

Downloading files

We are going to use FTP to download a file from the mainframe to your computer. Use the following steps to guide you in accomplishing the download:

1. Select the **Windows Logo/Start** on your desktop screen and then type **ftp** in the search bar.
2. Select the **ftp.exe** from the displayed search results.
3. Type in ftp **open** (fig. 3–2) followed by the address you retrieved from DEMAND. (open 152.229.176.125).

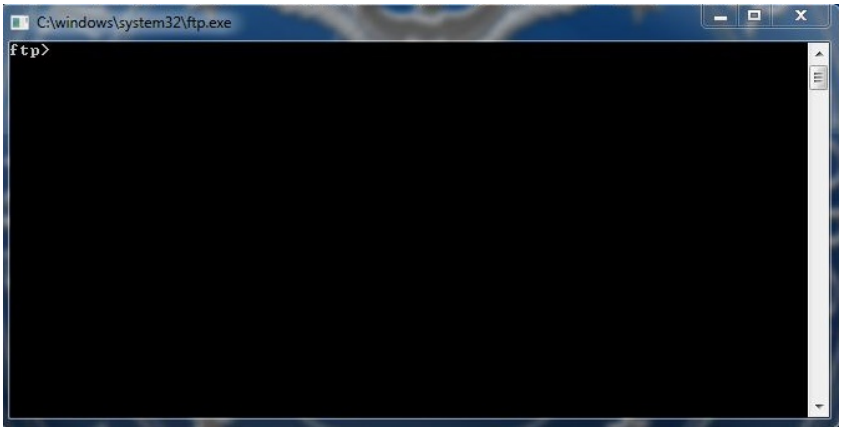

Figure 3–2. Using FTP in Windows.

This will take you to the FTP environment. If the connection is good, you will see the following:

Connected to 152.229.176.125.

220 1100JD1100 Service ready for new user.

4. The next steps prompt you to enter the user (IMDS *user-id*), password (IMDS *password*), and account number (press enter).

User (152.229.176.125:(none)): *user-id*

331 User name okay, need password.

Password: *password*

332 Need account for login.

Account: *(xmit)*

The FTP program checks the appropriate information entered and continues to the next prompt:

230 User logged in, proceed.

ftp>

5. At the prompt you will need to use the FTP command **recv**; this is the abbreviation for receive. Receive tells FTP to download or receive a file from the mainframe.

ftp> recv

6. Next, you will need to specify what element of the mainframe file you are transferring to Microsoft Word. This file is an existing file in the Master File directory. FTP prompts the following:

(remote-file) Qualifier*Filename.Elementname

ex. 0FS057900600*IMDS.Jobdata

7. After specifying the file you are transferring from the mainframe, FTP prompts you for the *local-file*. This is the filename *you create* on your PC. FTP looks for the PC filename you specified. The filename you specified in FTP must be exactly the same that resides in your PC.

(local-file) *Filename.ext*

ex. C:\job.doc

8. Once the steps have been completed correctly, you will receive messages that look like this:

200 Command okay.

150 File status okay; about to open data connection.

226 Closing data connection; requested file action successful.

246121 Bytes received in 7.9 seconds (30.88Kbytes/sec)

("File status okay" means that FTP has located the specified file on the mainframe and will continue ftp> the transferring process.)

("Closing data connection; requested file action successful" means that FTP has transferred the requested file to your PC.)

9. You have now transferred a file from the IMDS mainframe to your computer. You terminate the FTP session and exit. Type in "quit" at the prompt.

ftp> quit

Uploading files

Uploading a file means to transfer data from your PC to the mainframe. To upload files to the mainframe, go into FTP with the same address you acquired in DEMAND mode. You are ready to upload data from your PC to the mainframe. The following steps will guide you to accomplish the upload:

1. Select the **Windows Logo/Start** on your desktop screen and then type **ftp** in the search bar.
2. Select the **ftp.exe** from the displayed search results.
3. Type in ftp **open** (fig. 3–2) followed by the address you retrieved from DEMAND. (open 152.229.176.125).
4. This takes you to the FTP environment again. If the connection is good, you will see the following:

Connected to 152.229.176.125.

220 1100JD1100 Service ready for new user.

5. The next steps prompt you to enter the user (IMDS *user-id*), password (IMDS *password*), and account number (just hit enter).

User (152.229.176.125:(none): *user-id*

331 User name okay, need password.

Password: *password*

332 Need account for login.

Account: *(xmit)*

6. The FTP program checks the appropriate information entered and continues to the next prompt:

230 User logged in, proceed.

ftp>

7. To indicate that you want to upload a file from the mainframe to the PC, you will need to type in “send.” (Remember, the receive command from the previous lesson was to download or receive a file from the mainframe. Send is to upload or send a file to the mainframe.)

   ftp> send

8. Next, you will need to specify the filename from your PC to be uploaded into the IMDS mainframe. This is the file that contains the data you want to transfer to the mainframe. FTP prompts the following:

   (local-file) *Filename.ext*

   ex. C:\newjob.doc

9. After specifying the file you are transferring from your PC, FTP prompts you for the ``````````````-file. This is the mainframe filename and element. This could be an existing file or a file you just created. For this example, use the new file we just created (or catalogued). You can use text characters to create a unique filename.

   (remote-file) Qualifier*Filename.Elementname

   ex. IMDS*Jdd.Newjob

10. Once the steps have been completed correctly, you will receive a message that looks like this:

    200 Command okay.

    150 File status okay; about to open data connection.

    226 Closing data connection; requested file action successful.

    246121 Bytes sent in 7.9 seconds (30.88Kbytes/sec).

    ftp>

(“File status okay” means that FTP has located the specified file on the mainframe and continues the transferring process.)

(“Closing data connection; requested file action successful” means that FTP has transferred the requested file to the mainframe.)

You have now uploaded a file from your PC to the IMDS mainframe. To terminate the FTP session and exit, type in “quit” at the prompt.

ftp> quit

Now, you’ve just gone through the simple process of transferring files using FTP.

Self-Test Questions

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

022. Methods of data processing

1. State the primary use for TIP.

2. Which processing mode does not restrict a user to a specific AIS?

3. Why is DEMAND usually limited to analysts and DBMs?

4. How does on-line differ from batch?

5. What is considered a limitation when utilizing batch processing?

6. Why do the various systems rely on batch processing?

7. When would pseudo processing be considered a very efficient way of updating the database?

8. What is the easiest way to upload a data file to the mainframe?

023. Pseudo processing for batch

1. In what mode is PSUPRB processed?

2. What program do you use to build your pseudo file before running PSUPRB?

3. What character will appear on your screen indicating that PSUPRB processing has completed?

024. Standard base-level system file types

1. What is the purpose of the PABSAG054-AP application program file?

2. Which program file contains programs used to troubleshoot the database?

3. What is the function of the VALTAB file?

4. What program file is contained in the SUPUR file?

5. What should be done if the DECC cannot bring up your IMDS database?

025. Console mode operation

1. What three console modes are usually available to the DBM?

2. When should the @@CONS <keyin> be used?

3. Console commands are actually a subset of what type of commands?

4. Match the console functions in column A with the command listed in column B. The commands in column B may be used once, more than once, or not at all.

Column A	*Column B*
____ (1) Lists the runs held in backlog.	a. @@X TIO.
____ (2) Displays system status.	b. BL.
____ (3) Displays active batch files.	c. T,B.
____ (4) Extends the timeout warning.	d. @@TOUT.
____ (5) Sends messages to a particular remote site.	e. SS.
____ (6) Terminates transaction in progress; cancels previous input; and cancels queuing to terminal.	f. @@TM.

5. What command would you use to print data to your printer as it scrolls across the terminal?

026. File transfer process

1. How do you find the FTP address of your host mainframe?

2. What ECL command gives you the host mainframe FTP address?

3. What is a local file?

4. What is a remote file?

3–2. Executive Control Language

ECL is the language for the Unisys 2200 operating system. In this section, we cover selected terms used to effectively communicate with DECC and selected ECL statements.

027. Executive control language interface

ECL is a specially formatted range of statements used to direct the activity of the operating system within the executive (EXEC) environment. The EXEC manages the operating environment of the Unisys 2200. You gain access to the EXEC by opening your terminal for DEMAND processing. The command $$OPEN D13A specifies to the computer the path to use for DEMAND processing. When you sign on in DEMAND mode, a temporary default file (TPF$) is created. It becomes your default file when processing in DEMAND mode. Your user ID is also a default file, but only when using CTS. Signing on in DEMAND automatically places you in the EXEC. The following terms and definitions are used within the EXEC.

File

A file is an organized collection of related data that can be either data (data file) or instructions for manipulating data (program file). System-created files are classified as to the type of information contained within the file and their use within the system.

System data format file

A sequential system data format (SSDF) file can be maintained on either tape or mass storage and consists of only symbolic images. It can consist of control or symbolic statements used for submission to system processors. The most common purpose of this file is for maintaining historical data for load, change, inquiry, and deletion. This file is manipulated as an entire unit.

A program file

A program file is a specially structured file containing a group of elements.

Element

An element is the basic component of a file. A file can contain several elements that can be manipulated independently. There are four basic types of elements.

Element	Explanation
Symbolic (source language)	Contain text, source language, or system processors (or executive control statements), and data to be processed by other control statements.
Relocatable (machine language)	Dependent on another element or file to produce an executable program.
Absolute (machine language)	An executable element. Absolute elements cannot be edited by conventional means.
Omnibus	Arbitrary format elements used to store any kind of information.

Program

A program is a collection of instructions that, when executed, results in the performance of one or more logical functions. In the context of run processing, a program is an absolute element to be executed as a task; may be a processor or a user program.

File utility routines program utility routine

The file utility routines program utility routine (FURPUR) is a set of file utility routines provided by the operating system. These routines help the user manipulate program and data files. They provide a variety of functions for system and user data file maintenance. Some examples are: @PACK, @COPY, and @DELETE.

028. Executive control language command syntax and file structure

ECL commands *usually* involve the use of a file within the command. For this reason, you will study ECL command *syntax* along *with* the basic construction of a file.

Master space (@)

First, all ECL commands *start with* the master space (@). This symbol is positioned in *column one before any* ECL command and tells the exec system an ECL command is coming.

Example: @(command).

The command

The command is positioned immediately after the master space. In some circumstances, a selection of options may be used in conjunction with a command. When options are specified, a comma (,) follows the command. This prepares or *indicates* to the system that *options* will follow.

Example: @ (command), S. The S option *indicates* that the given command affects *only* symbolic-type elements.

Syntax for file/element names

The basic syntax of a name is QUALIFIER*FILENAME(CYCLE).ELEMENTNAME. You will now learn each basic element and the available options.

A qualifier

A qualifier is an *extension* to the basic name of a file, used to *resolve* conflicts among similar named files. It can be 1 to 12 alphanumeric characters long and is *always followed* by the splat/asterisk (*) symbol. The qualifier is normally the same as your project ID on the RUN statement, and specifies which files you can access.

Example: QUALIFIER* Ex: IMDS*

The FILENAME

The FILENAME can be 1 to 12 alphanumeric characters long *and* is followed by a period. This will be the actual name of your file. In addition, the computer *may* assign a cycle to the filename. Cycles *indicate* how many times a file has changed. A zero *indicates* the original file, 1 indicates the first change (or second iteration), 2 indicates a second change (or third iteration), and so forth.

Example: QUALIFIER*FILENAME.

QUALIFIER*FILENAME(CYCLE).

The /READ-KEY

The /READ-KEY *restricts* read access to a file. When used, it follows the filename and will appear before the period (.). The read-key follows a slash (/) after the filename.

Example: QUALIFIER*FILENAME(CYCLE)/READ-KEY.

The /WRITE-KEY

The /WRITE-KEY *restricts* the writing privilege to a file. When used, it is presented *after* the filename and *before* the period (.).The write-key follows a slash (/) *after* the read-key. It is preceded by two slashes (//) when a read-key is *not* used.

Example: QUALIFIER*FILENAME(CYCLE)/READ-KEY/WRITE-KEY.

QUALIFIER*FILENAME(CYCLE)//WRITE-KEY.

An ELEMENTNAME

An ELEMENTNAME is a 1–12 alphanumeric character found in program files *only*. When specified with a filename, it is located immediately after the period.

Example: QUALIFIER*FILENAME(CYCLE)/READ-KEY/WRITE-KEY.ELEMENTNAME.

/VERSION

/VERSION is used when you have *two or more* elements with the *same* name. When used, it follows the element name with one slash (/) between the element name and version.

Example: QUALIFIER*FILENAME(CYCLE)/READ-KEY/WRITE-KEY.ELEMENTNAME /VERSION

Blanks and continuations

Some blanks are required and must be used. Blanks are *allowed after* the master space (@), after the field separator (,), and after the subfield separator (/). A blank in *any other* position is defined as the *end* of a command.

A semicolon (;) is used to *indicate* that a line continues on to the next line or card. It is logically treated as a space. The next line may begin in any column as long as it does *not* begin with a master space (@).

029. Executive control language information and assistance commands

There are numerous ECL commands within the EXEC. The following table explains some of the more commonly used ECL commands.

ECL Commands	Explanation	
@MSG	Used to display a message on the system console. You use this command to communicate with console operator. The message transmitted may be *up to* 48 characters. Do *not* use a semicolon. The format is: @MSG,OPTIONS <MESSAGE>.	
	Option	***Explanation***
	W	Displays the message on the console, puts the run in wait status, and requires operator response. Example: @MSG,W <MESSAGE>.
	N	Suppresses display to console and places the message in a print file only. Example: @MSG,N <MESSAGE>.
	BLANK	Displays the message at the console without a wait status and does not require operator response. Example: @MSG <MESSAGE>.
@HELP	Places the user in the conversational time sharing (CTS) environment. The purpose of this command is to assist you while in the CTS mode. The command EXIT returns you to the EXEC mode.	
@PRT	Lists the *basic* information about a specified file. The files can be a master file directory, temporary files assigned to a run, files residing on a removable disk, the table of contents of a program file, or the text of a source element. Format: @PRT,OPTIONS NAME–1,NAME–2, ...NAME–N	
	Option	***Explanation***
	F	Displays the information *from* the master file directory (MFD) for each file specified.
	P	Displays *all* files with the *same* project ID.
	N	Displays information of *all* files catalogued *under* each account number specified.
	T	Displays the table of contents for each program file specified.
	I	Displays all the files currently assigned to your current run.
	S	Lists the text of the specified element.
	The name field may be any of the following: catalogued files, program files, symbolic elements,	

ECL Commands	Explanation
	a temporary file, an account number, the project ID, or a removable disk pack ID. Notice the @PRT example above. Commas follow the filenames. On the contrary, no comma is required for element files.
@FAC	Is used to *analyze* a 12-digit *octal* number received when a facility *reject* occurs. Format is as follows: @FAC <############> (If less than 12 digits, prefix with zeros.) After all 12 positions of the octal number are input, the program responds with a translation of the octal code. Note the # is used as a representation of the octal number and is not input.

030. Manipulating files with executive control language

The ECL commands presented in this lesson are some of the more commonly used file manipulation commands. They can be very useful to you when manipulating information loaded in the database system.

ECL Commands	Explanation	
@CAT	Basic command used to catalogue a file. Files are either temporary or catalogued. A temporary file exists until it is freed, which should be daily. When a file is *catalogued*, the data are *retained after* the file has been freed. It can be retrieved later. One file is automatically assigned by the system for each DEMAND user, naming the file the same as the user ID. Format is as follows: @CAT,OPTIONS QUAL*FILENAME.,TYPE/MIN/GRANULE/MAXIMUM	
	Option	***Explanation***
	P	Public (access is at minimum limits).
	BLANK	Private (free use is denied). Private files can only be accessed by someone who signed on with the same user ID.
	TYPE	Used to specify the way data is formatted on disk or tape storage. An F/ represents FASTRAND formatted storage and a blank will assume FASTRAND formatted storage.
	MINIMUM—Specifies the minimum number of units required as the initial size for the file. It reserves a minimum number of units of space on mass storage or tape. If left blank, the system assumes 0 as the minimum.	
	GRANULE—Specifies the size of granular *tracks or positions*. If *left blank*, the system *assumes* tracks (TRK).	
	MAXIMUM—Specifies the maximum granules needed. If *left blank*, the system *assumes* 128 tracks. Maximum granules are *not* reserved, but are assigned on an as needed basic.	
@CHG	Modifies the read/write keys or the element name/version of program files. This command prevents you from damaging your own file. If read and write modes are set, they must be removed before modifying or deleting the file.	
	NOTE: (1) The basic filename cannot be changed. (2) Read/write keys may be changed or removed. Format is as follows: @CHG,OPTIONS NAME–1, NAME–2	
	Option	***Explanation***
	P	Sets public mode.
	Q	Sets private mode.
	V	Sets read-only mode, and clears write-only mode.
	W	Sets write-only mode, and clears read-only mode.
	Z	Clears the file of a read and write mode.
	NAME–1	Indicates the filename on which to effect the change.
	NAME–2	If different from NAME–1, determines what functions other than the options will

<table>
<tr><th>ECL Commands</th><th colspan="2">Explanation</th></tr>
<tr><td></td><td></td><td>be performed.</td></tr>
<tr><td>@DELETE</td><td colspan="2">Used to delete one or more entries from the MFD, to delete an SSDF or a program file, or to mark one or more elements from a program file for deletion. Format is as follows:
@DELETE,OPTIONS NAME–1,...NAME–N</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>S</td><td>Symbolic.</td></tr>
<tr><td></td><td>R</td><td>Relocatable binary.</td></tr>
<tr><td></td><td>A</td><td>Absolute binary.</td></tr>
<tr><td></td><td>O</td><td>Omnibus.</td></tr>
<tr><td></td><td colspan="2">NAME Can be a list of elements of the same type. When possible, a version of an element should be specified to further identify an element. The name may also be a list of file names.
NOTE: The @DELETE command only flags an element for deletion. The physical storage space on mass storage will still remain in use. However, the element flagged will be unobtainable. If a file is specified for deletion, it is discarded. A @PACK command is required to actually clear the space for future use.</td></tr>
<tr><td>@PACK</td><td colspan="2">Removes files and elements marked for deletion from mass storage. It also revises the master file directory for a program file. Format is as follows: @PACK FILE–1.,...,FILE–N
@PACK, 97BMW.,22BMW.MAPP
The second example will pack all elements assigned to 97BMW, but only the element MAPP assigned to 22BMW. There are no options for this command.
FILE–1 represents the name of the file to be packed. More than one file may be named. The @PACK command should be processed after any file maintenance.</td></tr>
<tr><td>@COPY</td><td colspan="2">Used to copy a file or an element to another file. NOTE: An overwrite occurs when copying to a data file. Example formats are as follows:
@COPY, OPTIONS NAME–1,NAME–2,NO-OF-FILES
@COPY, OPTION ROYSTER.,THOMAS. (Copies and renames the entire file)
@COPY, OPTION ROYSTER.SIR,PHILLIPS.DEAN (Copies and renames a specific file and element.)</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>BLANK</td><td>Input file overrides output file.</td></tr>
<tr><td></td><td>P</td><td>Copies non-deleted elements from the input file to the output file (elements are added to the file).</td></tr>
<tr><td></td><td>A, S, or R</td><td>Copies only absolute, symbolic, and relocatable binary.</td></tr>
<tr><td></td><td>F</td><td>Copies only SSDF files to another file.</td></tr>
<tr><td></td><td>I</td><td>Adds an SSDF file to a program file as an element.</td></tr>
<tr><td></td><td colspan="2">NAME–1—Specifies the input file/element name to be copied.</td></tr>
<tr><td></td><td colspan="2">NAME–2—Specifies the output file/element which is to be copied to.</td></tr>
<tr><td></td><td colspan="2">NO-OF-FILES—Specifies the number of files to be copied. If it is left blank, one is assumed. This number relates to tape to tape copying only.</td></tr>
<tr><td>@ELT</td><td colspan="2">Introduces an element into a particular program file or makes corrections to a source element. Format is as follows:
@ELT,OPTIONS ELEMENTNAME–1,ELEMENTNAME–2,....</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>I</td><td>Insert, initial insert of an element into a program file.</td></tr>
<tr><td></td><td>A</td><td>Absolute (must be used with the I option).</td></tr>
</table>

ECL Commands	Explanation	
	R	Relocatable (must be used with the I option).
	S	Symbolic (assumed if no A or R option is given).
	L	Produces a listing of the new symbolic element.
	U	Updates and produces a new cycle.
	D	Produces a symbolic element that may contain control statements as data.
	ELEMENTNAME–1—Defines the input element to be inserted or updated into a specified file.	
	ELEMENTNAME–2—Is the element name and program file the new symbolic element will be produced as. Elementnames only reside in program files. If not specified, it will default to the TPF$ file.	
@DATA	Introduces, updates, *and* corrects *SSDF* files. Format is as follows: @DATA, OPTIONS FILENAME–1,FILENAME–2	
	Option	***Explanation***
	I	Insert, initial insertion of data into a file.
	U	Update, produces a new F-cycle.
	L	List, produces a listing of the file.
	NAMES. FILENAME–1—Is the file to be effected with the changes FILENAME–2—Is the file to be updated.	
	To list a file only, FILENAME–1 must be specified. Updated data files actually establish a new file for the newly created F-cycle. This command is used with SSDF files only.	
@END	Marks the end of the data that follows the @DATA or @ELT,D statement. There are no options available to this command. Format is as follows: *COMMENT* may be used in most statements. The space . space format is used to specify where a comment is to begin. @END . COMMENT (Note the space.space).	
@HDG	Allows a user to print a heading automatically on each page of the print file. Format is as follows: @HDG,OPTIONS HEADING TEXT	
	Option	***Explanation***
	P	*Begin* at page 1.
	X	Do *not* print date or page count.
	N	*Terminate* printing of heading.
	HEADING TEXT	Can be a maximum of 96 characters. The date and page number will appear on the right side of the heading unless the X option is used. A semicolon (;) may be used, but the space.space may not be used with this statement.
@EOF	Is used as a file divider or file terminator for card files input to a user program. It also allows *normal termination* of data for input into a file.	

031. Executive control language control commands

The ECL file control commands covered in this lesson are *not* all inclusive. They are some of the more common ones you may encounter or need to use.

ECL Commands	Explanation
@ASG	There are several forms of this command but the two most common are fastrand format assigned and tape assigned. They are used to acquire a mass storage file and to assign a

<table>
<tr><th>ECL Commands</th><th colspan="2">Explanation</th></tr>
<tr><td></td><td colspan="2">file to a run. Format for fastrand is as follows:
@ASG,OPTION FILENAME, TYPE/RESERVE/GRANULE/MAXIMUM/PLACEMENT, PACK-ID/PACK-ID....
Cataloguing options are as follows:</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>C</td><td>Specifies the file to be catalogued if the run terminates normally.</td></tr>
<tr><td></td><td>U</td><td>Same as C, but the file is catalogued regardless of the manner of run termination.</td></tr>
<tr><td></td><td>R</td><td>Read-only catalogued.</td></tr>
<tr><td></td><td>W</td><td>Write-only catalogued.</td></tr>
<tr><td></td><td>P</td><td>Public file. Private is assumed if left blank.</td></tr>
<tr><td></td><td colspan="2">Previously catalogued file assignment:</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>A</td><td>Ensures the EXEC will terminate the run if the file is not found.</td></tr>
<tr><td></td><td>D</td><td>Deletes previously catalogued file if the run terminates normally.</td></tr>
<tr><td></td><td>K</td><td>Same as D, except deletion occurs at run termination regardless of the manner.</td></tr>
<tr><td></td><td>X</td><td>Specifies the run has exclusive use of a file until run termination or @FREE is processed.
FILENAME specifies the name of the required file.</td></tr>
<tr><td></td><td colspan="2">TYPE, RESERVE, GRANULE, MAXIMUM. These fields are generally not used on previously catalogued files. They represent the same fields used previously in the @CAT statement.</td></tr>
<tr><td></td><td colspan="2">PLACEMENT is used to specify the placement of a file on an absolute or topical subsystem or unit.</td></tr>
<tr><td></td><td colspan="2">PACK-ID specifies the removable disk pack required for the file. It does not need to be specified for mass storage. If it is omitted, fixed disk is assumed.</td></tr>
<tr><td>@FREE</td><td colspan="2">@FREE releases specific files, reels, and exclusive use of files from your run and releases its input/output facilities. Once files are released, they are no longer referenced without the reassigning it with another @ASG statement. Format is as follows:
@FREE,OPTIONS FILENAME,FILENAME,....</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>S</td><td>Frees the file, but retains the physical tape unit for further assignments in the run.</td></tr>
<tr><td></td><td>D</td><td>Deletes a catalogued file. The file is no longer catalogued.</td></tr>
<tr><td></td><td>I</td><td>Inhibits final cataloguing action if the file was @ASG using the U or C options.</td></tr>
<tr><td></td><td>X</td><td>Release exclusive use of the file but remains assigned to the run. Other users may inquire against the released file.</td></tr>
<tr><td></td><td>E</td><td>Sets the first file header in the tape label to skeleton format to set it to blank logically.</td></tr>
<tr><td></td><td colspan="2">FILENAME represents the file to be freed. It is constructed in the standard format.</td></tr>
<tr><td>@FREEALL</td><td colspan="2">Releases all files and facilities from the run. Option L will list those files freed.</td></tr>
<tr><td>@RUN</td><td colspan="2">Because it identifies a run (job) to the system, the @RUN command must be the first statement of a run. It supplies accounting information and optional parameters to be established for the run. Format is as follows:
@RUN,PRIORITY/OPTIONS RUNID,ACCT-NO,PROJ-ID,RUNTIME/DEADLINE, PAGES/CARDS,START-TIME.</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>Priority</td><td>Can be A-Z. If not specified, the system defaults to M.</td></tr>
<tr><td></td><td>T</td><td>Terminates the run if estimated run time is exceeded.</td></tr>
<tr><td></td><td>P</td><td>Terminates the run if estimated number of pages is exceeded.</td></tr>
<tr><td></td><td>C</td><td>Terminates the run if estimated number of output cards is exceeded.</td></tr>
</table>

<table>
<tr><th>ECL Commands</th><th colspan="2">Explanation</th></tr>
<tr><td></td><td>S</td><td>Processes the current in sequence with the preceding run on the same input device.</td></tr>
<tr><td></td><td>B</td><td>Identifies a batch run being submitted from a terminal, which is normally in the DEMAND mode.</td></tr>
<tr><td></td><td colspan="2">RUN-ID uniquely identifies the run to the system. It contains a maximum of six characters, consisting of A-Z or 0–9. The system default is RUN000.</td></tr>
<tr><td></td><td colspan="2">ACCOUNTING is used by the system accounting routines to specify computer usage. It contains 12 characters, A-Z, 0–9, period (.), or hyphen (-). The system default is 000000.</td></tr>
<tr><td></td><td colspan="2">Project-ID is an optional field. It may be used as an implied qualifier for filenames. The project ID can contain 1–12 characters comprised of A-Z, 0–9, hyphen (-), or dollar sign ($).</td></tr>
<tr><td></td><td colspan="2">RUNTIME/DEADLINE. The runtime contains an estimate, in minutes, of standard units of processing required for the run. An entry in this field is optional. The deadline specifies the time of day or the elapsed time from submission that the run must be completed. The maximum time is 24 hours. Time is submitted as HHMM (Example: 345 = within 3 hours and 45 minutes after submission). A “D” prefix specifies the time of day (i.e. D1500 = 3:00 PM.) It is important to note that when the deadline is exceeded, the run may abort, and the data may be lost.</td></tr>
<tr><td></td><td colspan="2">PAGES contains an estimate of the number of pages to be printed. If it is omitted, the system standard is the default (99,999).</td></tr>
<tr><td></td><td colspan="2">CARDS is the same as the pages, except an estimate of the number of output cards.</td></tr>
<tr><td></td><td colspan="2">START-TIME is specified the same as the deadline field and is used to delay the starting of the run. If a deadline is given, it is not interpreted until the start-time is reached.</td></tr>
<tr><td>@XQT</td><td colspan="2">Is used to initiate the execution of an absolute program. Format is as follows:
@XQT,OPTIONS FILENAME.ELTNAME/VERSION
The options (A-Z) are not required.
FILENAME.ELTNAME/VERSION names the specific program file and element to be executed. If left blank the operating system assumes TPF$ (TEMPFILE).</td></tr>
<tr><td>@START</td><td colspan="2">Is used to schedule independent batch runs where the runstreams already exist in the system. Format is as follows:
@START NAME,SET,RUNID,ACCT-ID,PROJ-ID,RUN-TIME/DEADLINE,PAGES/CARDS,START-TIME
NAME is the file/elementname of the run to be started.
SET allows transference of four octal numbers to preset the condition word for the new run. The remainder of the statement is the same as in the @RUN format.</td></tr>
<tr><td>@ADD</td><td colspan="2">Provides a means of inserting images into a runstream. The images may be created using @DATA or @ELT. The format is as follows:
@ADD,OPTIONS NAME</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>P</td><td>Prints the @ADD statement.</td></tr>
<tr><td></td><td>E</td><td>Returns control at the end-of-file (EOF) time.</td></tr>
<tr><td></td><td>D</td><td>Allows the insertion of files or elements when operating under @DATA or @ELT,D.</td></tr>
<tr><td>@SYM</td><td colspan="2">Directs the queuing of previously created print files to a specific device. Format is as follows:
@SYM,OPTIONS FILENAME,NO-OF-COPIES,DEVICE,PART-NAMEOptions are:</td></tr>
<tr><td></td><td>Option</td><td>Explanation</td></tr>
<tr><td></td><td>A</td><td>Specifies all files on tape are to be printed.</td></tr>
<tr><td></td><td>C</td><td>Directs the file to card punch at the remote unit, if omitted printing is assumed.</td></tr>
<tr><td></td><td>U</td><td>Inhibits catalogue removal of a file when the processing is complete.</td></tr>
</table>

<table>
<tr><th>ECL Commands</th><th>Explanation</th></tr>
<tr><td></td><td>FILENAME specifies the file to be printed.</td></tr>
<tr><td></td><td>NO-OF-COPIES specifies the number of copies to be printed. When blank, one copy is assumed.</td></tr>
<tr><td></td><td>DEVICE specifies the name of the device where the output will print. If blank, PR is assumed. PR indicates the line printer at data processing center (DPC).</td></tr>
<tr><td></td><td>PART-NAME specifies the labels of file parts of a multi-file tape. It does not apply to mass storage. This command can help in identifying similar products produced for different units.</td></tr>
<tr><td>@BRKPT & (@BK1/@BK2)</td><td>Allows the user to separate PRINT$ and PUNCH$ files into several parts. It also allows one part of the print file to be printing while the remainder of the run is processing. The @BRKPT can be used to build a separate file to be catalogued, printed, or punched later. Format is as follows:
@BRKPT,OPTION GENERIC-NAME/FILENAME
The L option allows labeling of a second file on magnetic tape, defined by the user.
The GENERIC-NAME field must be PRINT$ or PUNCH$. It will cause the closing of a current print or punch file and the opening of another.
The PART or FILENAME field defines the name of another print or punch file. It allows a user to reference the print or punch file by this FILENAME. The operating system treats this file as its own while processing. System defined files are queued for output. User defined files are not queued for output until the @SYM statement is used.
BK1 & BK2 are used the same as @BRKPT, except they are used in conjunction with each other.
<table>
<tr><th>Format</th><th>Explanation</th></tr>
<tr><td>@BK1</td><td>Establishes a point to begin the break from the run and the system responds with BREAKPOINTED.</td></tr>
<tr><td>@BK2</td><td>Ends the division of the run, and SYMs the division to an output device.</td></tr>
</table>
Device may be any legal output device name. The system default is PR (DPC’s line printer).</td></tr>
<tr><td>@FIN</td><td>When the system encounters this command, a number of things occur:
• All remaining facilities are released.
• Permanent files, if not catalogued, are catalogued and released from the run.
• Accounting routines are entered. This means that all accounts of past processing is assessed.
• The remaining core is released.
The format is @FIN. This command should be processed at the end of run.
NOTE: Each time a user enters the DEMAND mode, a run is started; upon exiting, the @FIN should be processed.</td></tr>
</table>

Self-Test Questions

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

027. Executive control language interface

1. Match each ECL function in column A with the correct command in column B. Each command in column B may be used once, more than once, or not at all.

Column A	*Column B*
____ (1) An element which is dependent on other elements or files to produce an executable program.	a. FURPUR.
____ (2) The basic component of a program file.	b. Element.
____ (3) A collection of instruction, when executed, results in the performance of a logical function.	c. Program file.
____ (4) Commonly used for maintaining historical data.	d. Absolute.
____ (5) An executable element.	e. File.
____ (6) Elements that contain text.	f. Relocatable element.
____ (7) Provided by the operating system to aid the user in manipulation of programs and data files.	g. Program.
____ (8) An organized collection of data stored in such a manner as to facilitate each individual type of data.	h. SSDF file.
	i. Symbolic element.

028. Executive control language command syntax and file structure

1. What symbol is positioned in column one before any ECL command?

2. What element of construction separates an ECL command from its options?

3. What symbol immediately follows a qualifier?

4. What is the length requirement for a filename?

5. What does the read-key and write-key perform when specified in a filename?

6. When specified, where is the ELEMENTNAME located in a filename?

7. When are blanks allowed?

8. How is a continuation specified?

029. Executive control language information and assistance commands

1. What ECL command does the user input when he communicates with the console operator?

2. Which option of the @MSG must you transmit when there is need to suppress the display to the console and place the message in a print file only?

3. State the purpose of the @HELP ECL command.

4. What format of the @PRT command must you use to display all files with the same project ID?

5. What is the purpose of the @FAC ECL command?

030. Manipulating files with executive control language

1. What ECL command is used to catalogue a file?

2. What does the @CHG command change?

3. What is the @DELETE command for?

4. What is the purpose of the @PACK command?

5. What is the purpose of the @COPY command?

6. What will @ELT (Option I) accomplish?

7. What ECL command introduces, updates, and corrects an SSDF file?

8. Which command is used as a file divider or file terminator?

031. Executive control language control commands

1. What are the two common forms of the @ASG command?

2. Which command makes provisions for the release of files and the input/output facilities?

3. What is the purpose of the @FREEALL command?

4. Why must the @RUN command be the first statement of a run?

5. What happens if the deadline of a run is exceeded?

6. What type of program is initiated by the command @XQT?

7. What types of runs are scheduled by the @START command?

8. When is the @FIN statement processed?

3–3. FOCUS Reports

FOCUS is a high-level language found on many mainframes that allows users to retrieve and manipulate data stored in their computer systems. Because of its efficiency, reliability, and portability, FOCUS is an excellent mainframe data management and report creation tool for MAF LOG C2. It is a complete information control system with comprehensive features for entering, maintaining, retrieving, and analyzing data. FOCUS is designed for use by users with little data processing training and by information technology professionals. It can create custom reports from virtually any database, legacy or relational. It is flexible enough to be used to create simple queries or used for in-depth analysis as well as special studies. It allows the MAF LOG C2 database manager the ability to create reports tailored to meet the mobility mission's needs. In this section, we will discuss executing, changing, moving, and updating FOCUS programs.

032. FOCUS programs overview

FOCUS programs are data retrievals and reports written by database managers to extract and report information in a custom-tailored format to meet the user's specific needs. *Only MAF LOG C2* database managers can *write new* FOCUS reports; however, any MAF LOG C2 user can execute a *previously* built report stored in their shop's files.

FOCUS terminology

Before we discuss managing FOCUS reports, you need to be familiar with some FOCUS specific terminology. Let's look line-by-line requirements for a FOCUS report in the following table:

Line	Command	Explanation
1	//FOCUS1 EXEC FOCUS	Processing environment (see below).
2	EX PGM	Include exactly as written.
3	//PGM DD *	Include exactly as written.
4	OFFLINE	Include exactly as written.
5	DEFINE FILE ???????	Must be used if a field is defined. Do not include if not defining a field.
6	>>FIELD DEFINITIONS GO HERE, END EACH DEFINITION WITH A SEMI-COLON	Field definition. Separate each definition with a semicolon. Do not include if not defining a field.
7	END	Ends field definition. Do not include if not defining a field.
8	TABLE FILE ???????	Defines the table queried data resides in. Must be included.
9	SUM/COUNT COMMAND IF USED	SUM or COUNT command. Must appear prior to Print or List command.
10	BY COMMAND FOR THE SUM/COUNT	Sort command BY. Used by the preceding SUM or COUNT command.
11	PRINT/LIST COMMAND IF USED	PRINT or LIST command. Prints or lists fields. Use any options as necessary.
12	BY COMMAND FOR THE PRINT/LIST	Sort command BY. Used by the preceding PRINT or LIST command. May contain additional sort fields, but must, as a minimum, contain the same sort fields as the preceding BY command for previous SUM or COUNT command.
13	WHERE COMMAND (ONLY 1 WHERE COMMAND PER TABLE FILE)	WHERE command. Statement used to select data. Only needed once per TABLE FILE request. Do not use IF statement to select records. Specify KEY field name ranges if possible.

Line	Command	Explanation
14	END	Ends previous TABLE FILE command. Must be included.
15	? STAT	Command allows user to see SYSPRINT statistics in SDSF. Should be used when creating/modifying program to ensure correct report operation.
16	FIN	FIN command. Tells FOCUS job is finished.
17	//	Command tells the JES2 batch operating system job is finished.

To ensure your FOCUS report runs efficiently, always use KEY fields in your queries. Inefficient programs run more slowly, waste CPU processing time, and may be deleted without prior notice by program monitors.

Environment

The first line of a FOCUS report tells the system to execute (run) FOCUS and specifies to the system which database environment your report will be working in. The syntax for the first line is as follows:

//FOCUS1 EXEC FOCUS

You can execute FOCUSP for any production IMS database. FOCUST is used for any test IMS database. FOCUSD is used for any development IMS database. System developers test system releases prior to worldwide release using this database. FOCUS (no suffix) is used for accessing “text – non IMS files.” These include the MDC previous month flat file (MA379FF), MDC tape file (MA379TF), or file such as old flying hour histories. If your report retrieves data from any database (name ends in DO) you must use FOCUSP, FOCUST, or FOCUSD.

Databases

MAF LOG C2 is not a single database, but rather it is made up of many smaller, interrelated databases structured and arranged by the type of data contained in each. You will take a close look at this in unit 5 of this volume. These databases are arranged by the type of data they contain. Some of these databases, such as the M379SR, MDC – WUC/Base Record database, have one or more subordinate databases, in this case the M379S11, MDC Detail Record that contains related information. Each of these databases contains 6 months’ worth of data.

Table file

TABLE FILE is the command used to tell FOCUS to read data from one of MAF LOG C2 databases. This command is used to specify which database to retrieve data from. Remember, the TABLE FILE and its accompanying END command must be included in the FOCUS program.

Field names

Field names are names assigned to specific pieces of data within the database. Field names are defined in each database schema. For a list of field names for any given MAF LOG C2 database, run program 67053. This program prints the schema for a given record.

Tape files

MAF LOG C2’s databases contain six months’ worth or data “online.” Data older than six months are saved to tape files. These tape files contain the last 10 years’ worth of data. Tapes are saved in six-month increments. For example, January through June is stored in one increment and July through December in another. If a user requires data older than what the live database contains, you must write your query to extract data from a tape file.

Common focus commands

Here we will discuss some of the more common FOCUS commands and their usage.

Join

A JOIN command is used to *create* a "logical link" *between* two databases. For example, a work unit code is unique to an MDS. When retrieving MDC data, the database contains the work unit code and the MDS. When using these two data elements, you can "JOIN TO" the work unit code database to get the description of the work unit code.

There can be up to 16 JOINS opened at one time. The most common usage is one at a time. A JOIN is only in effect for the duration of the job being run. No data is changed in the database. Below is an example of a JOIN statement:

JOIN DOC_NUMBER IN MA359DO TO KM391SR IN MA391DO

Remember, in order to use a JOIN command, like data must exist in both databases you are trying to join.

Define file

The DEFINE FILE command allows users to custom design data fields. Fields that appear in the schematic can be displayed however the user wishes. Users can create fields by combining existing or predefined fields. A semicolon is used at the end of the DEFINE FILE command to tell FOCUS that it is the end of the definition. An END command must be used to tell FOCUS the definition is complete.

Set xretrieval

The SET XRETRIEVAL command is used to stop the program from retrieving data. This command is especially useful when writing FOCUS programs. It tells FOCUS *not* to run the program but just *check* for syntax errors. Place the "SET XRETRIEVAL=OFF" command in a line *prior* to the DEFINE FILE command. This allows FOCUS to process the input and test it without actually reading any database records. To exit the command and allow FOCUS to run normally, simply delete this line from your FOCUS program.

By

The BY command is used to sort and group data. It automatically prints the field being sorted once per occurrence. If a particular field is not wanted in the report, use the command NOPRINT at the end of the field name to exclude that field.

Print

The PRINT command is used to specify what is to be printed on the report. The order in which a field name is input in the PRINT command determines the order of print.

Where

The WHERE command gives the user a means of *specifying* the selection criteria for the report. It is only used once per TABLE FILE statement. A WHERE statement can contain logical operators such as EQ, LIKE, FROM, GT, GE, LT, LE, and NE. Properly used WHERE statements can reduce the program's run time, allowing for a more efficient report.

Heading

The HEADING command defines the heading of each page of the report. It must be surrounded by double quotations (" ") when used. The text contained within the double quotations will appear at the top of every page of the output. Users can skip lines in the HEADING command by using "</?", where the "?" represents the number of lines to skip.

Footing

The FOOTING command works the same as the HEADING command, except that the text will appear at the bottom of every page. The "</?" statement to skip lines can also be used with the FOOTING command.

Recordlimit

The RECORDLIMIT command is another command to aid in the development of a FOCUS program. It allows the program to read a specific number of records. It can be useful to limit the amount of time it takes to test a new program. When used, it appears in the last WHERE statement, preceded by the WHERE command.

?Stat

The ?STAT command is an optional command. When used, it allows the user to view certain statistical results for the program through SDSF in TSO.

Dash asterisk

A dash (-) asterisk (*) is used to add comments to a FOCUS report. Anything *following* the comment character is *ignored* by the processor. This is useful in leaving notes or instructions in the report code for others to see.

Asterisk

An asterisk (*) in column 79 changes the line color to further highlight the comment or any line in the report. This is useful in distinguishing the lines in the report that require updating.

033. Manipulating FOCUS programs

In this lesson, using program 9029 (Batch Update and Execution) and program 9058 (Shop Batch Job Execution) to modify or change the job control language (JCL) for Batch jobs and FOCUS reports will be addressed. Then how to execute a FOCUS retrieval using programs 9029 and 9058 will also be broken down. For each screen in MAF LOG C2 you will find a *blue* question mark (?) by the program number heading. This is the help page for that program and will give you a detailed description of each field and possible inputs that can be used.

Using program 9029

As we discussed earlier, database managers use FOCUS to retrieve data and create reports tailored to the customer's needs. Only database managers can create new FOCUS retrieval also known as a FOCUS report. Once the report is written, however, the need usually arises to change, update, move, and execute the report. You will need to know how to place the report in the user's shop files so the user can execute the report. You will use program 9029 *to* access, move, update, *and* modify a FOCUS report.

Accessing program 9029

First, login to MAF LOG C2. Once logged in, on the Welcome Menu, select MAF LOG C2 Management and scroll down the list of screens to find *screen* F9029 or in the search field input F9029 then click on the magnifying glass (fig. 3–3).

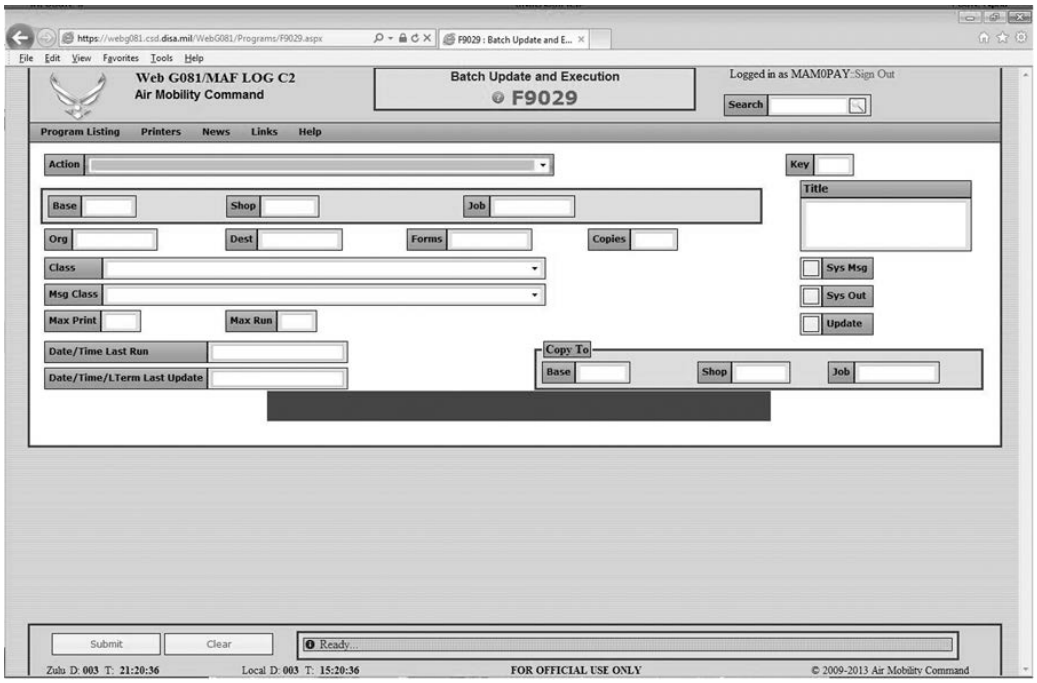

Figure 3–3. F9029 input screen.

Program 9029 navigation

As you are reviewing screen 9029, this view is referred to as the header. This will be where you are going to define your FOCUS report in its creation stage or request a specific report for updating or editing. Only analysts and database managers have access to make changes to this screen. While screen 9058 can *route* you to screen 9029 to *make* updates, you will *not* be able to *edit* the header *if* you *access* this screen *from* 9058.

The first field that you will need to be familiar with is the "Action" field. This field tells MAF LOG C2 what type of transaction to process. The following is a breakdown of these options:

- A – Add records to existing job *or* builds a new record if job does *not* exist.
- D – Delete jobs.
- E – Will submit a job for processing.
- F – Search one job.
- L – Search for string.
- M – Copies a job from 1 location to another.
- P – Prints a given job excluding 'lib' file (if any).
- Q – Prints a given job to include 'lib' file (if any).
- R – Reset to Program 9058.
- S – Scan to next job.
- U – Update the lower part of the screen.
- X – Append from one job to another.
- Z – Update the upper part of the screen.

The quickest way to pull up a FOCUS report is by having your base, shop, and job information available for input. Here is a breakdown of each of the field inputs:

- Base – When building a new FOCUS report this field will be your specific base code; however, you can input any base and search for reports being used by fellow DBMs. The input for this field is max of 4 characters
- Shop – This field will be your analysis shop name for example “MMA” or if you want to keep reports in your own folder can be anything you want to name it for example “Steve.” The input for this field is a max of five characters.
- Job – This field is used to create the actual name of the report. You can use the program number or a more descriptive name for example “67025” or “Status.”

Now that you have a report pulled up, let’s discuss further the fields on screen 9029. When building a FOCUS report, you will need to designate where and how you want the product to print out. You will need to provide inputs for Org, Dest, Forms, and Copies section of screen 9029. The following is a brief breakdown of these field sections:

- Org – The originating printer will be your primary printer. For example “VTAARA01.”
- Dest – The destination printer is where you want the product delivered. For example, “VTAARA01.”
- Form – This field will only be used if you want the hard copy to print out duplexed. The printer will need to have duplex capability for this to work. You will also use this field when updating printers when copying a focus report.
- Copies – The majority of the time this field is set at 001, but it can be adjusted if more than 1 copy is needed.

After you have designated where your product will print, you will need to give your report a title, set class, and set MSG class for these fields.

- Report title – The title field needs to be exactly what the resulting product will yield.
- Class – For most jobs this field will use the “I” option but for large data requests, use “J” for jobs that will take longer to process. These are the main 2 options.
- Message class – For some hard copies you may want option “C” to print the report out in landscaping; but option “A” is the most commonly used. If you are building, testing, or troubleshooting a FOCUS report, then options “X” or “Y” can be used in this field.

Next, you will need to review Sys Msg/Sys Out, Update, and Max Print/Max Run fields. These fields are occasionally used, but you may find FOCUS reports that have inputs in these fields. Review the FOCUS report and see if your analysis section requires the same input.

- Sys Msg / Sys Out – If Sys Msg is checked, it will provide system information such as job time or CPU time on your report. Sys Out can be used to list syntax errors when creating a report. The default for these fields is “N” and should be left unchecked.
- UPDATE – If you choose to *allow* other (non-analysis/database managers) users to *update* the FOCUS Report *through* program 9058, you will put a check mark (✓) in this field on F9029. If marked, it does *not prevent* program 9029 from making updates.
- Max Print/Max Run – Max Print looks at the number of print lines and Max Run looks at the run time of the report. These areas should be left blank for most jobs, but you may see FOCUS reports with 999 in both fields on large jobs.

The next two fields are beneficial if you are having difficulty running the report or want to see when the last time it was run. These are Date/Time Last Run and Date/Time/LTerm Last Update.

- Date/Time Last Run – This information will show you the last date and time the FOCUS report was processed and updated.
- Date/Time/LTerm Last Update – This information will show you who made the last update to the FOCUS report; so, if you have any problems with that report you will know who to contact.

The last set of fields on program 9029 is the Copy To area. This will help you from having to create a new FOCUS report. This will be discussed further in this lesson.

- Copy To – Copy To has three fields: base, hhop, and job. You will input your base, your shop, and the job name you want to call the report can be different than what it is currently named.

Any MAF LOG C2 user can execute an existing FOCUS retrieval. Only DBMs are allowed to create FOCUS retrievals. On a normal basis, only DBMs are allowed to make changes or update them as well; however, some FOCUS reports require an update by the user before execution. Users can make changes, such as, date ranges or mission design series (MDS) changes as needed.

Moving a FOCUS retrieval

As a DBM, at times you will be asked to move a retrieval that was written for one shop to another. Alternatively, you might be asked to make a copy for another shop, or copy from another base. As we discussed earlier, DBMs use program 9029 to create and manipulate FOCUS retrievals.

COPY TO field

To move or copy a FOCUS program, first use program 9029 to inquire on a particular retrieval. Populate the base, shop, and job fields, and press enter. Once the FOCUS program is retrieved, it will populate all other fields in the header section, and show the body of the FOCUS report. See figure 3–4.

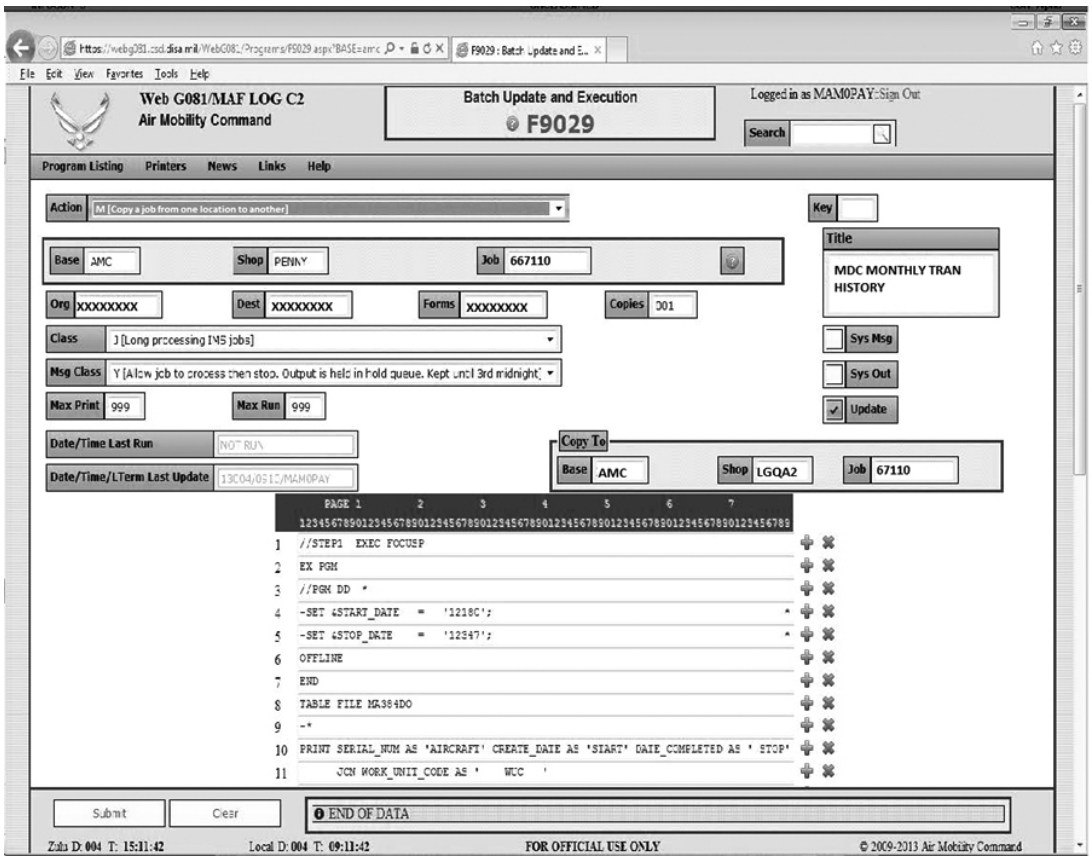

Figure 3–4. F9029 input screen Action M.

Once you have pulled up the report that you are about to copy, write down the Org and Dest printer IDs shown in the header of the FOCUS report. When you copy the FOCUS to your shop, this information will automatically clear. You will need these printer IDs to update the FOCUS report to go to your printers**.**

In order to move the report to another shop, place the "M" option for move in the Action field and populate the COPY TO field. As we stated earlier, these are three separate fields containing the base, shop, and job number you wish to move the retrieval to. For example, to move batch job number 667110 to the QA shop at HQ AMC, you would enter the following in the COPY TO field: AMC LGQA2 67110

Remember a base code field is four digits in length, and a shop code five digits in length. If your base code or shop name is shorter than the length of the field, press tab to move to the next field.

Once you've completed the entries, press enter to send the data to MAF LOG C2. Once the data is accepted, it will return a program 9029 screen with the message "COPY ACCEPTED" in the status line at the bottom of the screen. If MAF LOG C2 rejects your input, it will return a program 9029 screen with an error message indicating which fields must be corrected.

Now a copy of the FOCUS report should be in your shop. To pull the FOCUS report up, you will need to clear the screen and then input the base, shop, and job that you currently saved it under. Before you can make any changes and edit the FOCUS report, you will need to setup the report for your printers.

Updating org/dest printers

Now that you have moved the FOCUS report, you will need to change the Org and Dest printer:

- Org printer – Normally, you will set this to your primary printer ID. In the Action Field, Input "I (Change main origin for all jobs for a base/shop)" then input your local primary MAF LOG C2 printer ID in the Org field. In the Forms field you will input the Org printer ID that you wrote down before you copied the report to your shop as stated above. If the update was successful, you will see "MAIN ORIGIN CHANGED" in the status line at the bottom of the screen.
- Dest printer – This can be set to any printer ID, but generally will be where you want the report to print out. In the Action field input "H (Change the output destination for all jobs and deadline records)" to update the Dest field. Then input your desired report destination. This can be the same as the Org printer ID. In the Forms field you will input the Dest printer ID that was displayed on the original FOCUS report that you wrote down before you copied the report to your shop, as stated above. If the update was successful, you will see "DESTINATION CHANGED" in the status line at the bottom of the screen.

If you received an "ERROR MSG" in the status line at the bottom of the screen, it will tell you what input was incorrect. Some common errors that are made when updating printers are the following: not having the correct original Org/Dest printer IDs, forgetting to input the Org/Dest printer ID in the Forms block, and inaccurately typing the printer ID.

To finalize the FOCUS report that you just copied, you will need to clear the screen and then input the base, shop, and job. You will notice that the Org and Dest are still blank. To lock in your printers and update the Header information in the Action Field, select option "Z (Update the upper part of the screen)." Then re-enter your Org/Dest printer IDs and press enter. Once the update has processed, you will see "JOB NR MASTER ADDED/UPDATED" in the status line at the bottom of the screen. The job will now show that the FOCUS report is in your shop and your printers are loaded.

Modifying and executing a FOCUS retrieval

The number one error new analysts and database managers make is using screen 9058 in updating FOCUS reports. Screen 9058 is an access portal for everyone outside of the analysis and database managers' office who needs to run products for their shop. Accessing the reports through screen 9058 *only* allows *minimal* updating capabilities. A check mark (✓) in the UPDATE field of program 9029 allows the user the ability to update lines in the retrieval that only contain an asterisk (*) in column 79. Some users, such as plans and scheduling sections, run reports on a daily basis. This option gives them more control over their reports. The user can update and process their reports as needed without having to contact the DBM. When a FOCUS report is accessed directly through screen 9029, analysts and DBMs have full access and can modify any part of the report.

Program 9058 inquiry

Program 9058, Batch Job Execution, can be used to update the job control language or body of a FOCUS retrieval or batch job (fig. 3–5). To access program 9058 from the Welcome Menu, select MAF LOG C2 Management and scroll down the list of screens to find screen F9058, or in the search field, input F9058 then click on the magnifying glass.

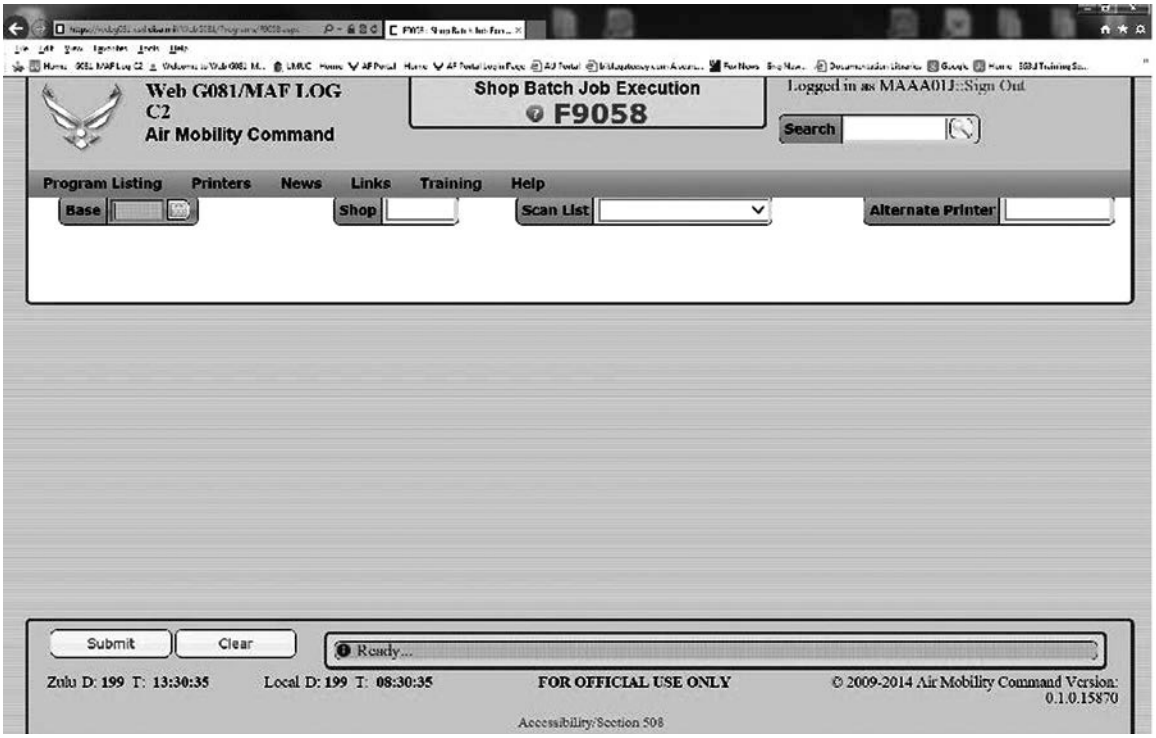

Figure 3–5. F9058 input screen.

Entering only a four position BASE code will return a list of FOCUS retrievals and batch jobs saved to that base code. For instance, entering AMC in the base code will return a list of retrievals and batch jobs saved to AMC's shop. If left blank, MAF LOG C2 will default to your base code. See figure 3–6 below. A list of base codes can be found by running program 8007. To inquire a list of jobs loaded to a particular shop, enter the shop mnemonic in the SHOP field. MAF LOG C2 will return a listing of jobs in that particular shop. Normally, the Scan List field is left blank. Selecting the "Y" in the field will display a menu of jobs, but no execution or update is allowed. Selecting a "P" in the Scan List field will print a list of the jobs loaded to the shop.

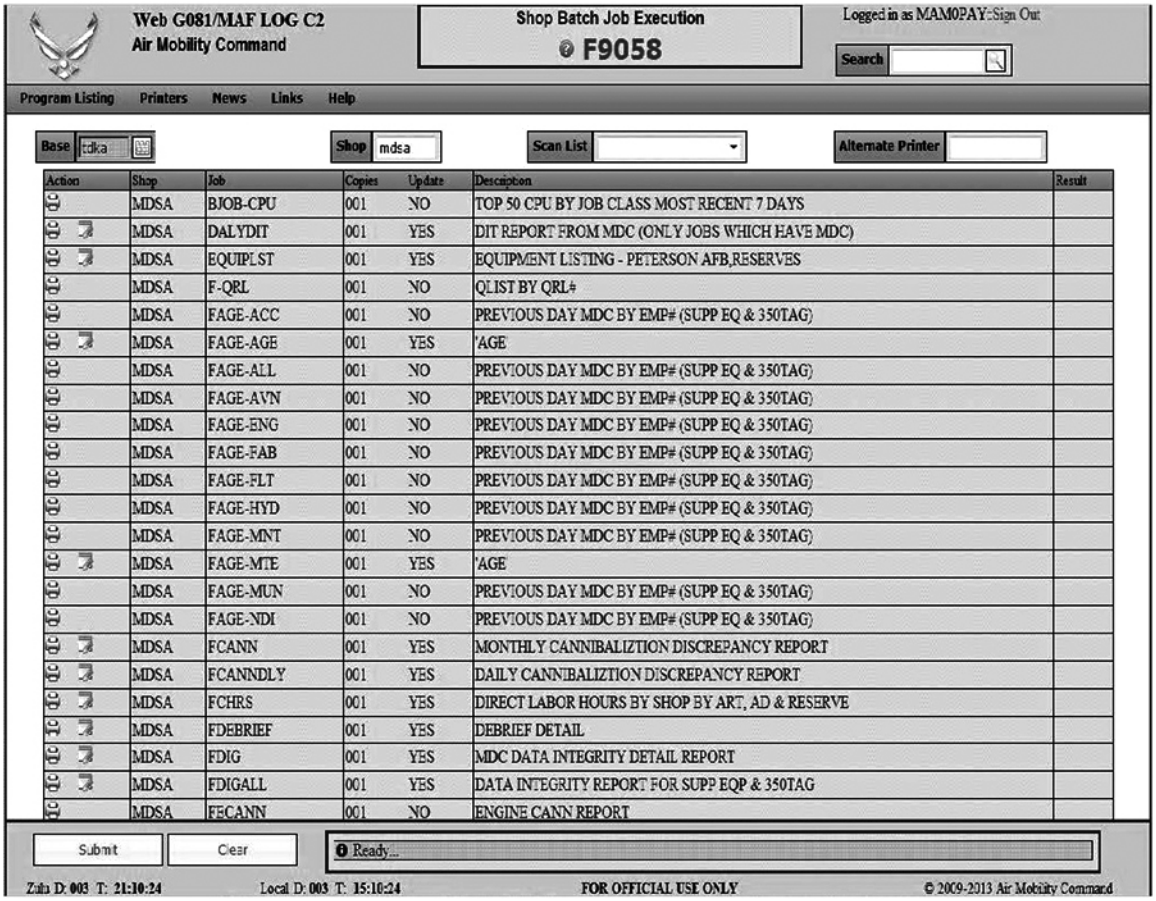

Figure 3–6. F9058 output screen.

Executing using program 9058

Once MAF LOG C2 returns the listing of jobs for your shop, tab down to the particular job you want to execute. To the far left of under the Action column you will see two icons. The first icon will be a printer, and the second icon will be a note pad. If you wish to update or modify a job before it is processed, click on the “note pad” icon. MAF LOG C2 will pass you to program 9029 where you can update the job. This will be discussed in detail below in modifying FOCUS retrievals. If the job requires no updating prior to executing the program, simply click on the “printer” icon to execute the job. To the far right under the results column you will see a green check mark (✓) if the job processed correctly. If you see a yellow exclamation point (!) the job did not process, and you will see a reason for the error in the status line at the bottom of the screen.

Program 9029 inquiry

Another way to access an existing retrieval to move/copy, delete, update, or execute it, is program 9029. If you were on screen 9058 and clicked on the “note pad” icon you will be passed automatically to screen 9029. You can also access the screen directly by clicking on MAF LOG C2 Management in the site map of the welcome screen, and scroll down to F9029 or in the search field input F9029. To pull up the job you will need to populate the base, shop, and job fields.

Modifying a FOCUS retrieval using program 9029

To *make* an update, click on the row to edit the field. Some common updates for users would be the start and stop dates. *Once* you have made the appropriate changes *select* the “U” option in the Action field and *press* enter/submit. This will *only* update the *lower* part of the screen but *not* the header

information. In the status line, you will see “UPDATE ACCEPTED” as shown in figure 3–7. Changing header information for a report can *only* be done with database manager access *through* program 9029. Header information is data pertaining to the retrieval, such as the destination printer, message class, or the update indicator. If updates were made you will click on option “Z” to update the upper part of the screen. If there are any errors, the message in the status line will tell you what the error is and what needs to be fixed. Next, you will want to clear the screen, and pull up the report to review it to make sure all your updates were processed.

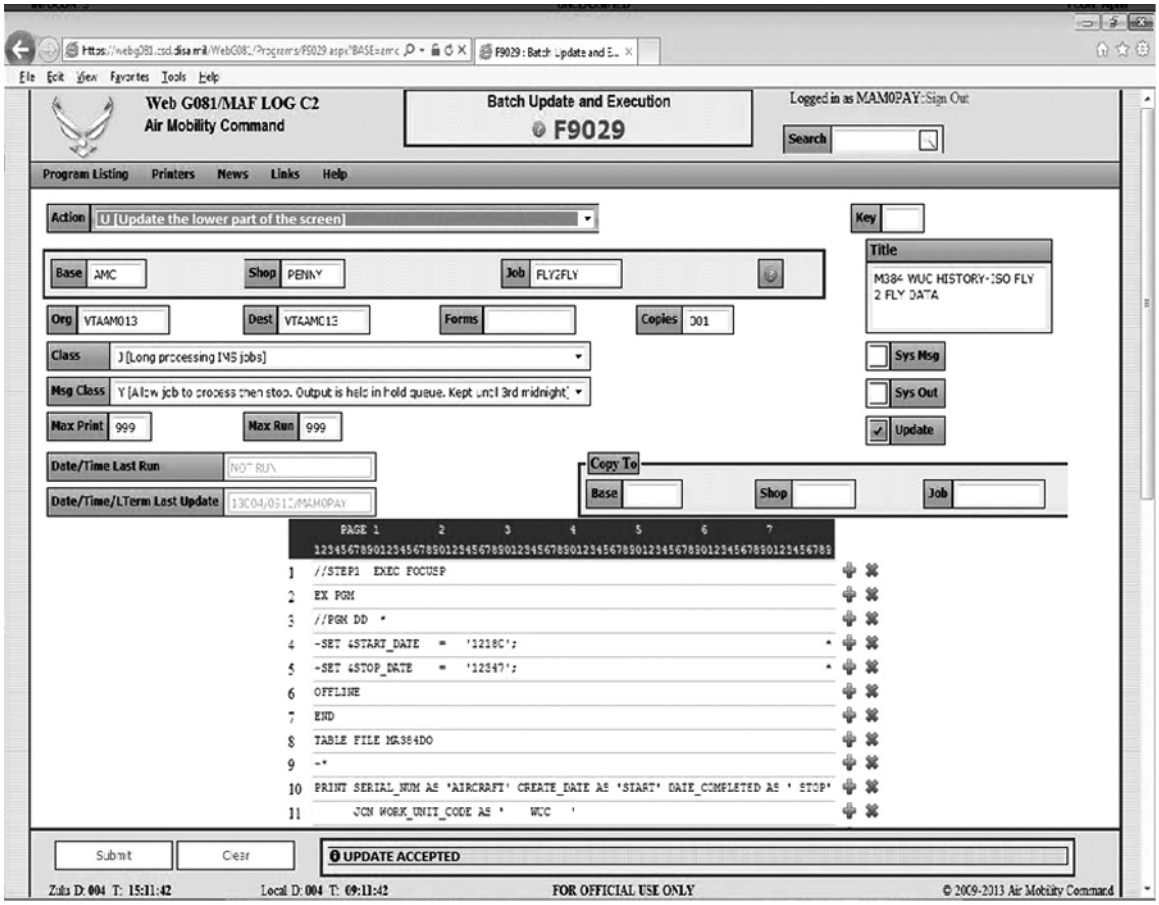

Figure 3–7. F9029 input screen ACTION U & Z.

Executing using program 9029

There are *two* ways to *execute* a FOCUS *retrieval*. Users can use program 9058 as mentioned above *or* use program 9029. After you have reviewed your report and verified that all necessary moves, updates, and changes have been saved, you are ready to execute the program. Simply insert an “E” in the Action field and press enter to process the data to MAF LOG C2. Once it accepts the executed transaction, the system will return a program 9029 output showing that it was accepted, and will update the DATE/TIME LAST RUN field.

Self-Test Questions

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

032. FOCUS programs overview

1. What does the first line of a FOCUS report specify?

2. What is the TABLE FILE command used for?

3. What MAF LOG C2 program prints the schema for a given record?

4. What does the JOIN command do?

5. Where do you place SET XRETRIEVAL command in a retrieval?

6. What capability does the WHERE command provide for the user?

7. What symbol is used to add comments to a FOCUS report, and what does the processor do with them?

033. Manipulating FOCUS programs

1. What is program 9029 used for?

2. Which field is used to create a name for a FOCUS report?

3. What will typically be contained in the ORG field?

4. Who can execute FOCUS retrievals?

5. Using program 9029, which field do you select an “M” to move a FOCUS report from one shop to another?

6. How do you designate a FOCUS retrieval requiring user updates before execution?

7. What do you enter on program 9058, Batch Job Execution, to receive a list of FOCUS retrievals and batch jobs saved to a particular base code?

8. How do you save an update to a FOCUS retrieval?

9. What option do you use to save changes to the header data of a FOCUS retrieval?

10. Name the two programs you can use to execute a FOCUS retrieval.

Answers to Self-Test Questions

022

1. To process inputs and updates to the data systems.
2. DEMAND.
3. Because a DEMAND mode is not accessing a specific data system, they are in the mainframe computer itself.
4. In the on-line method, equipment or devices are under the direct control of the mainframe computer. The user inputs data into the computer (usually via TIP mode) and the database is updated. Normally, a batch run is processed overnight. If a user inputs a database update, the update is not reflected until the following day after the batch run.
5. The basic limitation is that despite the efficiency, there is always a processing delay.
6. They rely on batch processing for large amounts of data inputs or complex reports and inquiries.
7. When each individual input does not require direct monitoring and the timeliness of the inputs is not critical.
8. To run NFS0A0, IMDS pseudo processing build/update mode.

023

1. DEMAND mode.
2. Program NFS0A0.
3. SOE.

024

1. It holds the absolute elements for batch processing in TIP.
2. PECLAG054-EL.
3. It sets up basic parameters for each program, which includes the number of program copies that can run concurrently, the program's maximum run time, and the output RLP device for any abnormal terminations.
4. It contains an identical copy of the IMDS PABTAG054-AP. program file.
5. You or DECC may have to recatalog TIP File 611.

025

1. Basic, limited, and full key-ins.
2. When inputting only one key-in request.
3. RSI commands.
4. (1) b.
   (2) e.
   (3) c.
   (4) d.
   (5) f.
   (6) a.
5. @@PRNT.

026

1. By calling your system monitor at the DECC or entering the DEMAND mode.
2. @WHOAMI.
3. The filename you create on your PC.
4. The mainframe filename and element.

027

1. (1) f.
   (2) b.
   (3) g.
   (4) h.
   (5) d.
   (6) i.
   (7) a.
   (8) e.

028

1. The Master Space (@).
2. A comma (,).
3. The splat symbol (*).
4. 1–12 alphanumeric characters.
5. The /read-key restricts read access to a file. The /write-key restricts the writing privilege to a file.
6. It is located immediately after the period.
7. Blanks are allowed after the master space (@), after the field separator (,), and after the subfield separator (/).
8. A semicolon (;) is used to indicate that a line will continue on to the next line or card.

029

1. @MSG.
2. N.
3. To assist the user while in CTS mode.
4. @PRT,P.
5. It is used to analyze a 12-digit octal number received when a facility reject occurs.

030

1. @CAT.
2. The read/write keys or the elementname/version of program files.
3. It is used to delete one or more entries from the MFD, to delete an SSDF or a program file, or to mark one or more elements from a program file for deletion.
4. Used to remove files and elements marked for deletion from mass storage.
5. It is used to copy a file or an element to another file.
6. The initial insert of an element into a program file.
7. @DATA.
8. @EOF.

031

1. Fastrand format assigned and tape assigned.
2. @FREE.
3. Frees all files and facilities from the run.
4. Because it identifies a run (job) to the system.
5. The run may abort which could cause a loss of data.
6. Absolute programs.
7. Independent batch runs.
8. Should be processed at the end of a run.

032

1. It tells the system to execute (run) FOCUS and specifies to the system which database environment your report will be working in.
2. It is used to specify which database to retrieve data from.
3. Program 67053.
4. Used to create a “logical link” between two databases.
5. In a line prior to the DEFINE FILE command.
6. A means of specifying the selection criteria for the report.
7. A dash (-) asterisk (*); the processor ignores anything following the character.

033

1. Retrieve data and create reports tailored to the customer’s needs, and to change, modify, move, and access a FOCUS report.
2. The JOB field is used to create the name of a report.
3. The primary printer.
4. Any MAF LOG C2 user.
5. Place an “M” in the Action field.
6. Place a “✓“ in the UPDATE field, and then place an asterisk (*) in column 79 of each line that the user is allowed to update.
7. Enter only a four position BASE code.
8. You must select “U” in the Action field and press submit.
9. Option Z.
10. Programs 9058 and 9029.

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).

54. (022) The transaction interface package (TIP) provides
    a. access to multiple mainframes.
    b. users with a fast-file control system.
    c. for background scheduling of transactions.
    d. users with the capability to access application programs.

55. (022) DEMAND processing is a
    a. mode that directs the activity of the operating system.
    b. mode in which several runs are grouped before processing.
    c. method for maintaining historical data for load, change, inquiry, and deletion.
    d. manner of processing in which a user is *not* restricted to a specific automated information system (AIS).

56. (022) Which *best* describes on-line processing?
    a. Programs are printed at Defense Enterprise Computing Center (DECC).
    b. Equipment is under the direct control of the mainframe.
    c. Programs are processed by the console operator.
    d. Equipment must remain on at all times.

57. (022) The basic *limitation* to batch processing is
    a. there is always a processing delay.
    b. error outputs slow down processing time.
    c. that they have to be processed from an automated data system (ADS) remote.
    d. each ADS has to be down to process programs.

58. (023) A pseudo file is created for pseudo remote processor for batch (PSURPB) by
    a. using program NFS0A0.
    b. creating the data file in a word document.
    c. creating the data file directly in demand mode.
    d. using the pseudo file builder within PSURPB.

59. (023) What indicator tells you that a pseudo remote processor for batch (PSURPB) program has completed processing?
    a. A line on the monitor screen says, “PSURPB COMPLETE.”
    b. The start of entry (SOE) character appears.
    c. The monitor gives a beep to notify you.
    d. You receive an E-mail notification.

60. (024) Which application program file holds the *absolute* elements for *batch* processing in transaction interface package (TIP)?
    a. FS$$0000*00.
    b. 0FS0*DBRUN$.
    c. 0FS0*DBALIB$.
    d. 0FS00000*PABSAG054–AP.

61. (024) Which application program file contains the element used to *troubleshoot* the database?
    a. FS$$0000*00.
    b. 0FS0*DBALIB$.
    c. 0FS00000*PECLAG054–EL.
    d. 0FS00000*PABTAG054–AP.

62. (024) Which support program file controls *all* online programs for *each* automated information system (AIS)?
    a. Integrated recovery utility (IRU) processor.
    b. SUPUR processor.
    c. TIP FILE 611.
    d. VALTAB.

63. (024) Which support program file ensures the functional system analyzer (FSA) is running *and* up to date for the Integrated Maintenance Data System (IMDS) database?
    a. TIP File 611.
    b. 0FS0*DBRUN$.
    c. VALTAB.
    d. SUPUR processor.

64. (025) The basic key-in console mode allows
    a. a user to use unsolicited keyins.
    b. a user to use all basic console keyins.
    c. a user to request the status on a user's run.
    d. database managers (DBM) to operate in full screen mode.

65. (025) What happens if you make a key-in request and your terminal is *not* in console mode?
    a. The system aborts.
    b. The keyin input is rejected.
    c. Console mode remains in affect until an @@END is input.
    d. Console mode terminates after the key-in has been accepted.

66. (025) What console mode command displays a list of *active* runs?
    a. T,B.
    b. T D.
    c. @@RUN,A.
    d. @@TM.

67. (025) The @@TM console command is used to
    a. terminal a previous input.
    b. stop printing to a terminal.
    c. send a message to a remote site.
    d. list the status of memory modules.

68. (026) What executive control language (ECL) command will *provide* you with the mainframe file transfer protocol (FTP) address?
    a. @CAT.
    b. @RUN.
    c. @DATA.
    d. @WHOAMI.

69. (026) What do you call the filename *you created* on your personal computer (PC) when you do a file transfer?
    a. PC file.
    b. User file.
    c. Local file.
    d. Remote file.

70. (027) Which element contains data to be processed by control statements?
    a. Absolute.
    b. Omnibus.
    c. Symbolic.
    d. Relocatable.

71. (027) A collection of instructions that when executed results in the performance of one or more logical functions is called
    a. an element.
    b. a program.
    c. a granule.
    d. a file.

72. (028) What executive control language (ECL) command syntax symbol *indicates* to the system an *option* is to follow?
    a. Splat (*).
    b. Comma (,).
    c. Semicolon (;).
    d. Master Space (@).

73. (028) The "S" *option* at the *end* of an executive control language (ECL) command syntax *indicates* that
    a. all elements following the command will be saved.
    b. only elements affected by the command will be saved.
    c. only symbolic type elements will be affected by the command.
    d. only sequential system data format (SSDF) files will be affected by the command.

74. (028) The /WRITE-KEY when used is presented
    a. after the filename and before the @.
    b. before the filename and after the period.
    c. after the filename and before the period.
    d. before the element name and after the comma.

75. (028) What should be used when constructing an executive control language (ECL) file to differentiate between two elements with identical names?
    a. Cycle.
    b. Qualifier.
    c. /VERSION.
    d. Master Space (@).

76. (029) What is the *maximum* size a message can be when created with the @MSG executive control language (ECL) command?
    a. 25 characters.
    b. 45 characters.
    c. 48 characters.
    d. 50 characters.

77. (029) The executive control language (ECL) information command @PRT,P FILENAME
    a. displays the information from the master file directory (MFD) for the file specified.
    b. displays the table of contents for each file specified.
    c. displays all files with the same project ID.
    d. lists the text of the specified file.

78. (029) What is the purpose of the executive control language (ECL) information command @FAC?
    a. Places the user in the conversational time sharing (CTS) environment.
    b. Analyzes a 12-digit octal number when a facility reject occurs.
    c. Lists basic information about a specified file.
    d. Suppresses the display to the console.

79. (030) If the executive control language (ECL) file manipulation command GRANULE requirement is *left blank* when a file is catalogued, the result is that the system *assumes*
    a. tracks (TRK).
    b. FASTRAND.
    c. a temporary file.
    d. it is a public file.

80. (030) Which executive control language (ECL) file manipulation command *removes* deleted files and elements *from* mass storage?
    a. @CHG.
    b. @COPY.
    c. @PACK.
    d. @DELETE.

81. (030) Which executive control language (ECL) file manipulation command introduces, updates, and corrects a sequential system data format (SSDF) file?
    a. @CAT.
    b. @CHG.
    c. @EOF.
    d. @DATA.

82. (030) What does the executive control language (ECL) file manipulation command @HDG,P indicate?
    a. Do not print data.
    b. Do not print page count.
    c. Terminate printing of heading.
    d. Print a heading beginning at page one.

83. (031) In the @ASG statement, the PACK-ID
    a. represents the file ID.
    b. represents exclusive use.
    c. specifies the placement of a file.
    d. specifies the removable disk pack required for the file.

84. (031) Which executive control language (ECL) control command makes provisions for the removal of files from a run and releases its input/output facilities?
    a. @DELETE.
    b. @PACK.
    c. @FREE.
    d. @EOF.

85. (031) When using the @RUN command, what is the *default* priority?
    a. B.
    b. M.
    c. S.
    d. T.

86. (031) When the *deadline* specified in the @RUN statement is *exceeded* the run
    a. may abort and the data may be lost.
    b. may abort but the data will be saved.
    c. will process but the data will be lost.
    d. will be moved up in the schedule to process as scheduled.

87. (031) Which executive control language (ECL) control command is used to queue a *previously* created print file to a specific device?
    a. @ADD.
    b. @PRT.
    c. @SYM.
    d. @XQT.

88. (031) Which executive control language (ECL) control command *allows* one part of the print file to print *while* the remainder of the run is still processing?
    a. @PRT.
    b. @SYM.
    c. @CONT.
    d. @BRKPT.

89. (032) Who is authorized to *write new* FOCUS reports?
    a. Integrated Maintenance Data System (IMDS) users.
    b. IMDS database managers (DBM).
    c. Mobility Air Force Logistics Command and Control (MAF LOG C2) DBMs.
    d. MAF LOG C2 users.

90. (032) Which of the following commands *must* be included in a FOCUS report to define where the queried data resides?
    a. WHERE.
    b. TABLE FILE.
    c. DEFINE FILE.
    d. SUM/COUNT.

91. (032) Which FOCUS command is used to *create* a “logical link” *between* two databases?
    a. BY command.
    b. JOIN command.
    c. TABLE FILE command.
    d. DEFINE LINK command.

92. (032) In order to tell FOCUS to check for syntax errors but *not* to retrieve data, the SET XRETRIEVAL command is placed *prior* to
    a. FOOTING.
    b. HEADING.
    c. TABLE FILE.
    d. DEFINE FILE.

93. (032) Which FOCUS command gives the user a means of *specifying* the selection criteria for a FOCUS report?
    a. DEFINE BY command.
    b. SELECT command.
    c. WHERE command.
    d. JOIN command.

94. (033) Which *program* is used *to* access, move, update, *and* modify FOCUS reports?
    a. 9058.
    b. 9050.
    c. 9038.
    d. 9029.

95. (033) What option is entered in the action field of program F9029 to create a new FOCUS report?
    a. A, ADD.
    b. S, SAVE.
    c. M, MOVE.
    d. U, UPDATE.

96. (033) In program screen F9029, which *field* would you place a "✓" in to allow other users to make changes to the FOCUS report *before* executing it?
    a. TITLE.
    b. COPIES.
    c. UPDATE.
    d. MAXRUN.

97. (033) In program screen F9029, to *avoid* losing updates to the body of a FOCUS report, you *must* save the update by
    a. selecting "M" in the ACT field at the top of the page and pressing enter.
    b. selecting "U" in the Action field at the top of the page and pressing enter.
    c. clicking on FILE in the top left corner and selecting SAVE.
    d. clicking on the SAVE icon in the top left corner.

98. (033) Which two programs can be used to *execute* FOCUS *retrievals*?
    a. F9029 and F9058.
    b. F9050 and F9051.
    c. F9025 and F9025B.
    d. F9029A and F9045.

Please read the unit menu for unit 4 and continue ➔

Student Notes

Unit 4. Introduction to Integrated Maintenance Data System

INTEGRATED MAINTENANCE DATA SYSTEMS (IMDS) is a large, dynamic, online data system used at base level to manage maintenance equipment and personnel resources. It provides much of the maintenance data needed by MAJCOM and other agencies, including AFMC and HQ USAF, to manage and track maintenance resources worldwide. In this unit, you will get an overview of the major aspects of IMDS, to include the different subsystems and their purpose as well as familiarizing yourself with its organized manuals, key reports, and inquiries.

4–1. Integrated Maintenance Data System and its Subsystems

IMDS is the standard Air Force base-level automated maintenance information management system. IMDS provides the capability to collect, edit, validate, and store reliability, maintainability, configuration, and inventory, status, utilization data. This capability supports aerospace vehicles, trainers, automatic test equipment, selected support equipment, and communications-electronics equipment, along with other reportable items, and to process and report the information on a uniform basis. IMDS supports the operational and maintenance (including communication-electronics) group CCs' functional areas.

034. Integrated Maintenance Data System subsystems

IMDS is vital for effective and efficient management of weapons systems worldwide. IMDS is organized into functional subsystems that are interrelated and interdependent on each other's data (fig. 4–1).

Subsystem manager

Each subsystem manager ensures all personnel are qualified to use the respective subsystem and are current with the IMDS manuals for their respective subsystems. The subsystem manager does the following:

- Reports hardware and software problems to the IMDS DBM.
- Assists training management in developing and conducting familiarization courses for IMDS users.
- Monitors and controls access to subsystem via transaction identification code (TRIC) security.

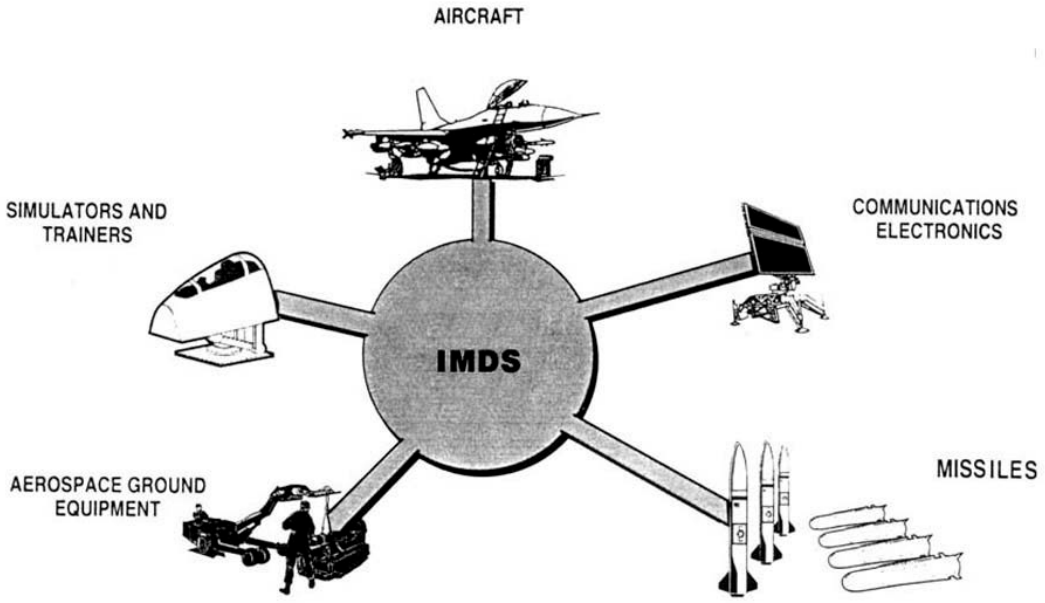

Figure 4–1. IMDS as the manager of weapon systems.

Due to functional duties, the *subsystem manager is* the OPR. *More* than one subsystem may be assigned to one OPR.

Take a brief look at the subsystems and their functions and the identity of their subsystem managers as the OPRs.

Comprehensive Engine Management System

The Comprehensive Engine Management System (CEMS) subsystem provides the user with the capability to track engines and their components for time changes and inspections in an array of tracking methods, automates the engine manager's D042 reporting, and establishes and maintains the installed-on relationship between the engine and components. CEMS provides management products displaying engine and component changes and inspection. CEMS is used to report time updates, removals, installations, shipments, and receipts to the central data bank. Integrated Logistics System-Supply (ILS-S) does this using an interface with the CEMS central data base (D042) at Oklahoma City Air Logistics Center (OC-ALC).

NOTE: The OPR is the engine management section.

Automatic Test Equipment Reporting System

The Automatic Test Equipment Reporting System (ATERS) subsystem provides online access to a database containing organization, equipment, status, and utilization data. This permits avionics intermediate shops (AIS) to update the appropriate data in the database in an online mode, as events affecting assigned test equipment occur. This subsystem *provides* the following features:

- A method for reporting inventory gains and losses.
- A method for reporting line replaceable unit (LRU) production time.
- The capability to have test equipment in multiple statuses open with an automatic calculation of capability.
- A method for tracking utilization time other than production time (e.g., calibration [inspections], training, and station maintenance).
- The capability to load engineering data used in computing station availability and capability.

NOTE: The OPR is the avionics section.

Communications-electronics (C-E) equipment status and inventory reporting

This subsystem is used in conjunction with the inspection and time change and C-E status and inventory reporting subsystems. This subsystem provides online access to a database containing organization, equipment, mission, and status data. This permits the user to update the appropriate database online as events occur. The capability is provided to report equipment and mission gains and losses; maintain and report multiple status conditions against equipment and missions; and record delays encountered in returning equipment and missions to operational status. Reporting of data required by HHQ is accomplished as a by-product of base-level system operation.

NOTE: The OPR is the C-E unit DBM.

Maintenance events

This subsystem allows the user to track maintenance actions and contains both maintenance and supply data. Any end-item equipment loaded in IMDS having discrepancies can be included in this file. It provides the user the capability to create, schedule, change, defer, reschedule, and cancel events and work center events, and inquire into supply data related to record delayed discrepancies. Work orders for delayed discrepancies are produced on demand by the computer. The subsystem provides management products to aid the user in forecasting and monitoring inspection and time change requirements.

NOTE: The OPR is the plans, scheduling, and documentation section

Location management

The location management subsystem of IMDS provides the user the capability to automate the location of aircraft, missiles, AGE, and any other equipment the MXG/CC feels is critical to the organization's operation. The user may establish locally defined location codes that are meaningful for use within the operations and maintenance complex. After the location codes are loaded to the IMDS database, they may be associated with equipment items that are also loaded in the database. Updates to the location table and the location of equipment items can be made as required.

NOTE: The OPR is the maintenance operations center section.

Job data documentation

The JDD subsystem provides an online capability for maintenance personnel to document, inquire, and produce retrievals of maintenance actions. Work activity and job completion can be reported for on-equipment, off-equipment, support general, indirect labor, TCTO, and precision measurement equipment laboratory (PMEL) using records created by the maintenance events subsystem.

NOTE: The OPR is the maintenance management analysis section.

Status and inventory reporting system

The status and inventory reporting subsystem (SIRS) is a data collector, report generator, and event monitor.

- Under recovered functionality, phase II, status, and inventory transactions are reported to REMIS on an hourly basis, thus providing real-time information to MAJCOMs.
- Incorporated in the status subsystem is the ETIC monitor. The event monitor is an internal clock that notifies the job control/maintenance aircraft coordination center (MACC) of an impending or overdue situation.
- SIRS provides the central monitoring, coordinating, controlling agency (MCCA) (normally identified as job control, maintenance operating control center (MOCC), or aircraft readiness

center) with a computer system using local area network (LAN) technology that gives continuous automated control room operation in the event of IMDS non-availability.

NOTE: The OPR is the maintenance operations center section.

Operational events

The operational events subsystem provides maintenance managers online management capabilities to plan, execute, evaluate, and report the unit mission efficiency. The system furnishes AFI 21–103, *Equipment Inventory, Status and Utilization Reporting,* data to HHQ. Programs in this subsystem allow the user to create schedules, record deviations, inquire about scheduled events, and record flight data. The operational events subsystem can be described in three phases.

Phase	Title	Explanation
1	Mission Recording	Scheduling phase. When maintenance has a firm contract with operations for the flying start and stop date/time, all data relating to fuel load, estimated flying time, and a scheduled/unscheduled indicator can be recorded. If a mission is entered for a specific equipment ID number, and it has been previously scheduled, the computer then produces an overlap notice. The scheduler must then reconcile the differences. Should an error be made (e.g., a mission assigned to a non-compatible aircraft) the scheduler can initiate a cancellation routine to cancel the event or replace the aircraft.
2	Mission Accomplishment	Is the period of time from start to stop of an operational event. Start and stop times are determined by the operations/maintenance contract and are entered in the computer in the first phase. Before and during the accomplishment event status, operations event lists, proposed schedules, and daily mission schedules are available to maintenance management. Cancellations due to weather and delayed events are recorded using abort, cancellation, and delay codes to provide job control/MOC with notification of impending start time for operations events. Job control/MOC must then initiate the operational event start program to record the start of the event. When the mission is completed, job control personnel initiate the operational event stop program to record completion of the event.
3	Analysis Phase	Provides the capability for periodic reports of mission accomplishment, summary of flying hours, and missions flown versus missions scheduled, and data related to aborts, cancellations, additions, late takeoffs, substitutions, and delays.

NOTE: The OPR is the plans, scheduling, and documentation section.

Inspection and time change

This subsystem *automates* the records keeping function for all end items of equipment as well as items installed on an item of equipment. The user can update inspection and time change records, forecast TCTOs and time change requirements, provide current operating time on an item of equipment, and produce a graphic display of the time remaining until inspection or time change. For C-E equipment, the capability is provided to produce a schedule of preventive maintenance inspections and to enter JDD when an inspection has been completed.

NOTE: The OPR is the plans, scheduling, and documentation section.

Equipment/personnel transfer and rehome procedures

These subsystems provide the user the capability to transfer personnel and equipment to other IMDS units. The user is provided the capability to identify personnel and/or equipment that are to be transferred in mass. IMDS produces tape files containing the necessary transactions to load the personnel and equipment records into IMDS at the receiving organization. The REHOME programs are to be used when rehoming a unit to another standard base-level computer (SBLC-between

databases) or between DECC. *Rehome* is defined as moving a unit's database to another SBLC or DECC while the unit itself remains at the same physical location. This process is only used when a unit's host site is changing permanently and is not designed with deployability in mind. This software moves an entire unit intact and deletes the unit from the IMDS database at the losing site.

NOTE: The OPR is the unit/host DBM.

Time compliance technical order

This subsystem maintains TCTO data pertaining to aircraft, engines, missiles, AGE, and C-E equipment owned by an organization. Once TCTO data has been entered into IMDS, the user is provided the capability to monitor and control TCTO progression, schedule and reschedule TCTO actions, produce work order data, and produce summary reports. The user can also inquire the database to determine the status of specific TCTOs by TCTO data code, equipment serial number, or equipment end item.

NOTE: The OPR is the plans, scheduling, and documentation section.

Maintenance personnel

This subsystem provides the user the capability to monitor manpower resources. Personnel data is maintained in the IMDS database and is accessible on line. The system provides rapid access to administrative and personnel data pertaining to an individual or a group of individuals. Supervisors are able to update data pertaining to their personnel as changes occur. A variety of management products are provided to assist the administration activity in their personnel management.

NOTE: The OPR is the programs section.

Training management

This subsystem allows the user to forecast and schedule personnel training requirements. The types of training that can be monitored are recurring courses, one-time courses, prerequisite courses, on-the-job training (OJT) courses, certification courses, and upgrade training required by the specialty training standards (STS), and/or job qualification standards (JQS). A variety of inquiries and reports are available on demand to assist supervisors in reviewing training requirements, scheduling training classes, and monitoring the progress of personnel in OJT and upgrade training.

NOTE: The OPR is the training management section.

IMDS/ILS–S interface

The maintenance-supply interface subsystem of IMDS provides the capability to order parts for unscheduled requirements, update time change requirements, make inquiries about TCTOs, and maintains maintenance event validation of supply requisitions. In addition, this subsystem allows for numerous types of inquiries into the supply system.

NOTE: The OPR is the maintenance-supply liaison.

Automated data system

The ADS allows the debriefing function to enter post flight data, including aircraft operating time updates, discrepancies discovered during flight, flight data, deviation data, discrepancies discovered off base, repeat and recurring discrepancies, and provides online inquiry access to debriefing data. In addition, this subsystem provides numerous background programs designed to provide automated reports required by analysis functions.

NOTE: The OPR is the debriefing section.

Generic configuration status accounting system

The generic configuration status accounting subsystem (GCSAS) updates and monitors the approved and actual configuration of an aircraft.

NOTE: The OPR is the plans, scheduling, and documentation section.

Product quality deficiency reporting system

The product quality deficiency reporting system (PQDR) reports known or suspected deficiencies for equipment, weapon systems, or related components and records exhibit disposition instructions and data. It provides the capability for allowing direct transmittal of approved PQDR data to an Air Force level database named INFOCEN. This subsystem is *not* to be used for classified data.

NOTE: The OPR is the QA section.

Egress configuration management

The egress configuration management (ECM) subsystem provides online and batch access to a database containing equipment and configuration records. The user can update appropriate data in the database in an online mode as events affecting assigned equipment and configuration records occur.

NOTE: The OPR is the egress section.

Aircraft automated forms 781 A, J, K

This is an automated subsystem that retrieves aircraft maintenance data from the IMDS database and uses it to prefill and print the following Air Force Technical Order (AFTO) Form 781–series forms:

- AFTO Form 781A, Maintenance Discrepancy and Work Document.
- AFTO Form 781J, Aerospace Vehicle – Engine Flight Document.
- AFTO Form 781K, Aerospace Vehicle Inspection, Engine Data, Calendar Inspection and Delayed Discrepancy Document.

NOTE: The OPR is the maintenance section.

035. Integrated Maintenance Data System manuals

The objective of the IMDS AFCSM 21–series manuals is to provide users with information necessary to use the IMDS effectively. These manuals are organized by volumes, and each volume addresses a different IMDS subsystem or function. If your unit only has a certain type of equipment, such as automatic test equipment, then IMDS has a specific manual tailored for your requirements. The separation of volumes by functionality not only makes it easier for you to find reference data but also reduces your functional library requirements. The manuals are available online through the internet at the IMDS website. The FAS can assist in the search for the appropriate manual for a subsystem.

AFCSM 21–556, Volume 2, *Introduction to IMDS CDB (Software User Manual)*, answers *most* questions about the IMDS operation. It *contains* general instructions, a summary, a glossary of terms and abbreviations, a list of all IMDS TRIC codes, and a screen file list by number. Currently there are six attachments to the volume, which are excellent reference sources for DBMs as well as IMDS functional users. These *six* attachments are described below.

Attachment	Name	Explanation
1	Glossary of Terms and Abbreviations	Attachment 1 provides definitions and explanation of terms, abbreviations, and data elements as used in IMDS. All terms and abbreviations are listed in alphabetical and numerical sequence as applicable.

Attachment	Name	Explanation
2	Highlights to IMDS Maintenance Events	Attachment 2 guides the user through the different maintenance events such as a work center event, explaining what each one is for and how to use them correctly.
3	Screen File List by TRIC Code	Attachments 3–5 contain a listing of the IMDS TRIC codes and program IDs sorted by TRIC, program ID, or screen number. These listings provide users a quick cross-reference to the various IMDS program input and output products. For example, if your supervisor tells you to run TRIC BCL, look up BCL in attachment 3. Online inquiries and background reports are referenced by volume number and page number. As indicated in the attachments, some of the IMDS input and output products are reflected in more than one volume and in more than one place within a single volume. Using attachment 3, you see that "BCL" represents "Base Code Listing." Attachments 3, 4, and 5 provide the following data: TRIC code. Program ID. Screen number. Program title. Volume number. Input page.
4	Screen File List by Program ID	
5	Screen File List by Screen Number	
6	IMDS CDB GUI Terms and Abbreviations	Attachment 6 provides definitions and explanation of terms, abbreviations, and data elements as used in IMDS CDB graphical user interface (GUI). All terms and abbreviations are listed in alphabetical and numerical sequence as applicable. Information contained therein supports all pop-ups, fields, or messages received within IMDS CDB GUI.

The key to the effective use of the IMDS manuals is a thorough understanding of the introduction to volume 2 of AFCSM 21–556. Volume 2 has been organized into 23 volumes with each volume addressing a different aspect of system operations. As you use the other volumes, read the applicable system summary contained in section 1 for an overview of content. The remaining sections within each volume are arranged by purpose, description, input procedure, explanation of the output product, and output illustrations.

Subsystem managers must have the introductory volume plus all applicable volumes pertaining to their subsystem function. The maintenance management analysis section is the OPR of the IMDS manuals and must have all manuals.

036. Utilization of maintenance data

IMDS data are intended for use by on-base agencies where the data is collected and by off-base agencies such as MAJCOM headquarters, ALC, and AFMC. Figure 4–2 shows IMDS and REMIS users. Other agencies also have a need for IMDS data, but to a lesser degree.

On base

On base, the intended use of the base-level maintenance production data is to provide information feedback to base managers and supervisors for controlling the maintenance operation. Once the data is stored in IMDS, it can be extracted via online inquiries, background reports, query language processor (QLP) retrievals, or interactive query utility (IQU) retrievals.

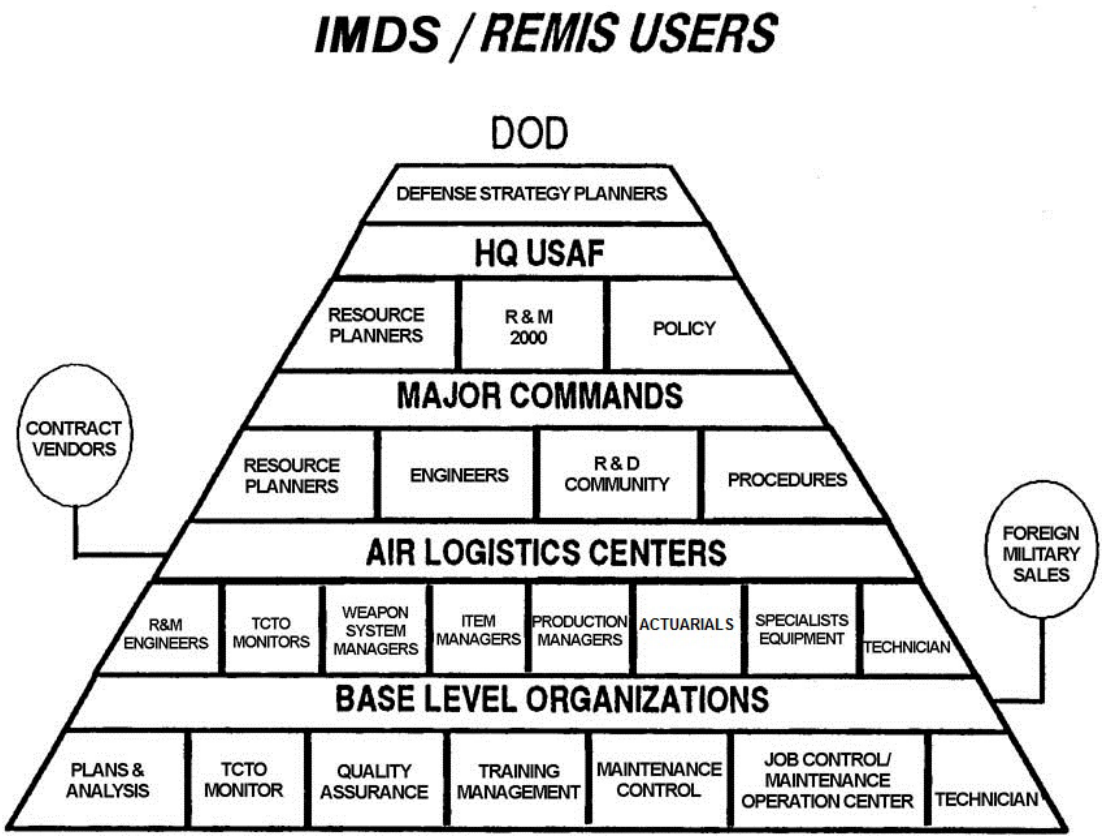

Figure 4–2. IMDS and REMIS users.

There are numerous uses of the data collected and reported. Examples of data usage are as follows:

- Identify production information about the type of work accomplished, the work center that accomplished the work, and the equipment on which the work was accomplished.
- Determine productive labor and indirect labor hour expenditures in either detailed or summary form. This includes labor expended to support other organizations or special projects.
- Verify equipment maintenance schedules and inventory information for maintenance actions that are required on a calendar basis.
- Provide equipment failures and discrepancy information. This information is available in composite form by type equipment and individual equipment items.
- Maintain configuration status accounting that includes information about modifications that have been completed and those that are partially complete.

The basic objective of data reporting is to provide a reliable database for people such as the senior maintenance manager, supervisors, maintenance management analysts, and other staff members to use as a source for making decisions to improve the maintenance operation.

Off base

Off base, the intended use of IMDS data is to provide information on various programs for HQ AF and MAJCOMs. AFMC uses IMDS data as an input to do the following:

- Measure equipment maintainability and reliability.
- Establish priorities for product improvement.
- Account for equipment modifications.

- Evaluate effectiveness of equipment modifications.
- Validate inspections and time change requirements.
- Identify safety deficiencies and monitor their corrective actions.
- Validate spares requirements.
- Identify programmed depot maintenance requirements.
- Compile maintenance man-hours per flying hour data.

In addition, AFMC collects *and* distributes data on performance and support requirements of current inventory equipment for contractors to use in developing new systems and equipment.

Benefits

Benefits are gained through data collection. The information provided through the JDD subsystem is used in the management decision-making process results in many tangible benefits to Air Force logistics, especially maintenance. These benefits are not always readily apparent to the individual involved in the documenting of data; however, a large portion of the cost of the JDD subsystem is *returned* through better logistics management decisions that can be made with accurate information.

Self-Test Questions

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

034. Integrated Maintenance Data System subsystems

1. Name three responsibilities of the subsystem manager.

2. Match each subsystem in column A with the corresponding subsystem manager in column B. Each OPR in column B may be used more than once.

Column A

____ (1) Comprehensive Engine Management.
____ (2) Automatic test equipment reporting.
____ (3) C-E equipment status and inventory reporting.
____ (4) Maintenance events.
____ (5) Location.
____ (6) Job data documentation.
____ (7) Status and inventory reporting.
____ (8) Operational events.
____ (9) Inspection and time change.
____ (10) Equipment/personnel transfer and rehome procedures.
____ (11) Time compliance technical order.
____ (12) Maintenance personnel.
____ (13) Training management.
____ (14) IMDS/ILS–S interface.
____ (15) Automated debriefing.
____ (16) Generic configuration status accounting system.

Column B

a. Maintenance section.
b. Egress section.
c. Quality assurance.
d. Plans, scheduling, and documentation.
e. Debriefing section.
f. Maintenance-supply liaison.
g. Training management section.
h. Programs section.
i. Unit/host DBM.
j. Maintenance operations center.
k. Avionics section.
l. C-E unit DBM.
m. Engine management.
n. Maintenance management analysis section.

____ (17) Product quality deficiency reporting system.
____ (18) Egress configuration management.
____ (19) Aircraft automated forms.

3. Briefly describe the following IMDS subsystems:
   a. ATERS.

   b. Maintenance events.

   c. Location.

   d. Job data documentation.

   e. Inspection and time change.

   f. Training management.

   g. IMDS/ILS–S interface.

   h. GCSAS.

035. Integrated Maintenance Data System manuals

1. What is contained in volume 2 of AFCSM 21–556?

2. What is contained in attachment 1, volume 2, AFCSM 21–556?

3. Besides the system summary at the beginning of an IMDS manual, how are the remaining sections within each volume arranged?

036. Utilization of maintenance data

1. What is the intended use of base-level maintenance production data?

2. What is the basic objective of data reporting?

3. How are the benefits of collecting JDD data returned?

4–2. Integrated Maintenance Data System Reports

Once maintenance, personnel, and equipment data has been input in the mainframe computer, you may extract it for management use, reports, briefings, and so forth. The two primary methods of extracting data from IMDS are online inquiries and background reports. The next two lessons address how to gather JDD from IMDS using some of the most common online inquiries and background reports. You will notice that often an online inquiry and a background report have similar titles. Although an inquiry may contain similar data as a background, the background can cover a much larger time period.

037. Online inquiries

Online inquiries are called such because virtually any IMDS user in an online mode can run them. They are run directly from an IMDS terminal with output directly back to an IMDS terminal. Refer to AFCSM 21–563, Volume 2, *Job Data Documentation (JDD) (Software User Manual)*, for a complete list of JDD inquiries and detailed procedures on how to process them.

Processing online inquiries

As an IMDS user, once you open your terminal in transaction interface package (TIP) mode and accesses IMDS, you are able to process online inquiries. To do this, call up either the online inquiry main menu or directly request the desired screen for a specific inquiry. Complete the inquiry screen by filling in the appropriate information (i.e., aircraft ID [identification], date range, etc.) and transmitting the request to IMDS. When IMDS responds with the requested information, you will often discover there is more data than can fit on one terminal screen. When this situation occurs, you will receive part of the message on your terminal screen and the message GAGX002 in the bottom right corner of the terminal screen. This signifies that IMDS has placed all data, as well as the screen being displayed, in the terminal page file (known as the GAG file) starting on page 2 of the file.

You can configure each terminal to hold a minimum of 40 pages of data up to a maximum of 120 pages of data. In addition, each page can hold approximately one to three screens of data. Page 1 of the file for each terminal page (1 and 2) does not display inquiry data.

To view more data, you must place the cursor immediately after the GAG indicator and transmit. This brings up the next screen of data, and if there is still more data, another GAG indicator will be in the bottom left corner of the screen. This continues until all data has been viewed, in which case you will be brought back to the first page of information. At this point you may print, delete, or view all this information again. When you no longer need GAG files, delete them. Various communication problems can result in IMDS if GAG files are allowed to accumulate. To delete a specific GAG file message (i.e., GAGX002), you simply type a D (delete command) after the GAG indicator. If you wish to delete the

entire GAG file, you would input the command REL after any GAG indicator. This command purges all messages from your GAG file for the terminal page (1 or 2) you are currently working on.

Online inquiry menu (screen 099)

The online inquiry menu (QQM) provides the capability to review the QQM and select the applicable screen required to make an inquiry request. This program displays a list of available online inquiries. The selection of one of the listed inquiries causes that inquiry screen to be displayed. Inputs to this program are made from any IMDS remote device and are processed in an online mode of operation. The majority of the inquiries are related to on-equipment maintenance. We describe only those inquiries because they are the ones that constitute most of the job data documentation we obtain for maintenance data analysis.

Suspense validation inquiry (screen 128)

The suspense validation inquiry (QVR) allows work centers, such as engine management and documentation, to *verify* JDD documentation pertaining to TCI, serially controlled items, and engine removal/installation. This verification occurs once JDD is reported against the maintenance events. The responsible work center places the data in suspense awaiting verification. Verification may include ensuring the correct engine number, serial number, and so forth, is reported. Each transaction meeting these requirements is assigned a transaction sequence number. Work centers can later review these transaction sequence numbers before processing them into the database. You may select the data by unit ID or work center. You view REMIS transactions pertaining to TCTO data by entering TCTO in the work center field.

Cannibalization history inquiry (screen 098)

The cannibalization history inquiry (QCH) program provides the capability to request maintenance data pertaining to open and closed cannibalization actions. This program provides maintenance cannibalization action data for a specific equipment ID in either a detailed or a summarized format, depending on the option selected for up to a maximum period of 31 days. The two available options are described below.

Option 1, summarized cannibalization data

Option 1 provides summarized cannibalization data for a specified equipment ID displaying totals of removals and or replacements and total man-hours produced. Pay close attention to the removed and installed; it can let you know which cannibalizations are opened.

Option 2, detailed cannibalization data

Option 2 provides a detailed format of cannibalization transactions for a specified equipment ID. Output data is displayed in ascending order by work unit code.

Unscheduled, deferred, scheduled, discrepancy inquiry (screen 137)

Unscheduled, deferred, scheduled discrepancy inquiry (QSM) program provides the capability to request unscheduled, deferred, or scheduled discrepancies for a work center, equipment ID or part number, and serial numbered item of equipment.

You make requests against an item of equipment (e.g., equipment ID or part number and serial number) and/or a performing work center. You may limit the output by specifying up to five WHEN DISCOVERED codes. When requesting unscheduled or deferred discrepancies, all events will be listed. Scheduled discrepancies may be requested for a specific date or for all discrepancies scheduled which remain open for a given year. Five format options are available for extracting scheduled discrepancies.

Format Option	Events
1	Inspection.
2	Time change.
3	TCTO.
4	Maintenance.
5	All scheduled.

Maintenance action review inquiry (screen 100)

The maintenance action review inquiry (QDR) provides the capability to review completed maintenance actions for a specific performing work center or equipment ID. QDR will also provide JCN for a specific work center where work has been completed, but *not* documented.

UNREPORTED JDD means JOB FOLLOWING has been completed but the job has *not* been closed out through IMDS. The controlling agency has been notified that the job has been stopped, but the job has to be closed out with a detailed data record (DDR). DDR represents a single-line entry that shows time and units for a particular job.

This program provides supervisory personnel with the capability to review completed maintenance actions in detail. Data selection may be obtained for the current date. You may add up to three additional days of data if desired (four days maximum for the report). Any one or all of the following categories will limit the output data: (1) equipment ID, (2) performing work center, and (3) AFSC. The AFSC category is restricted to use in conjunction with a performing work center.

In-flight discrepancy/Malfunction data inquiry (screen 119)

In-flight discrepancy/Malfunction data inquiry (QCD) program provides the capability to request in-flight discrepancy/malfunction data from the IMDS database.

The QCD program provides all maintenance discrepancy data related to in-flight discrepancies/ malfunction that occurred on a specific sortie or within a specified date range. The information provided includes all data processed for the equipment ID, sortie number, and dates specified.

Maintenance code listing inquiry (screen 127)

The maintenance code listing inquiry (QBC) provides an output of various codes and associated narrative descriptions used to support maintenance documentation. These codes are the ones accepted by IMDS whenever you input a job data entry.

QBC can be requested using any one of seven data options.

Data Option	Function
1	Action taken codes.
2	When discovered codes.
3	How malfunction code narrative.
4	Type maintenance codes.
5	Standard reporting designator (SRD)/equipment designator cross reference.
6	SRD, type maintenance, and when discovered compatibility.
7	Command codes.

You can also limit your request for a particular type of equipment (e.g., aircraft, drones, trainers, etc.). You must specify the equipment type if you request a “When discovered codes” list.

Maintenance repair history inquiry (screen 123)

The maintenance repair history inquiry (QMR) provides the capability to request a detailed repair history for a specific part/serial numbered item or equipment ID. This program provides the capability to select historical data for a specified equipment ID or part/serial numbered item. You can also narrow down the list for a specific performing work center only. History length can be selected for a period from 1–31 days, except for PMEL items. History data can be limited by the input of up to five WUCs. Each WUC can be selected by system, subsystem, or component. You may obtain on-equipment or off-equipment repair or both.

Maintenance Snapshot Inquiry (screen 122)

The maintenance snapshot inquiry (QMS) program provides the capability to request all maintenance data performed against a *particular* event ID. QMS provides all detailed maintenance information related to a specified event ID. The information provided will include the discrepancy, the corrective action, the performing work center(s), and all other related data. If in-shop work was performed against the original on-equipment discrepancy, it will also be provided. Three options are available.

Data Option	Function
1	Lists only open work center events for the event ID.
2	Lists only all shop status records for the event ID.
3	Lists open work center events and all shop status records for the event ID.

No option selected (blank) gives you all open and closed work center events for the event ID.

Repeat/Recurring discrepancy inquiry (screen 117)

The Repeat/Recurring discrepancy inquiry (QRR) provides the capability to request repeat and/or recurring discrepancies and their related maintenance actions for a specific equipment ID. A repeat is a discrepancy that occurred on the previous sortie (first and second), whereas a recurring is a discrepancy that occurred on the third successive sortie (first and third). This program extracts all repeat/recurring discrepancies for a specific equipment ID. You can select a time period for up to a maximum of 31 days. Selected data can be limited by the input of up to five WUCs. Each WUC can be selected by system, subsystem, or component. This inquiry has three available options.

Data Option	Function
1	Repeat discrepancies.
2	Recurring discrepancies.
3	Both repeat and recurring discrepancies.

Indirect labor, Transient, Non-ID equipment man-hour inquiry (screen 156)

The indirect labor, transient, non-ID equipment man-hour inquiry (QPE) provides the capability to request man-hour data for indirect labor, transient equipment, or non-ID equipment for a specific work center.

This program provides the capability to select for a specific work center, data related to equipment records for indirect labor, transient, or non-ID equipment. You may select a time period for up to a maximum of 31 days. Selected data may be limited by the input of up to five WUCs. Each WUC may be selected by system, subsystem, or component. This inquiry has two available options.

Data Option	Function
1	On-equipment.
2	Off-equipment.

In addition to the two previously mentioned options, QPE can be requested in detail or summary form.

781 documentation inquiry (screen 319)

781 documentation inquiry (QPI) provides the capability to request a summary or detail inquiry for 781P-type documentation by PWC, equipment ID, and or support general WUC. The information provided will be WUC, WUC noun, ID or PWC, UP, and man-hours expended. Inputs for this online program are made from any IMDS remote device. A detailed inquiry prints only at the remote line printer (RLP) for your unit.

038. Background reports

Unlike online inquiries, background reports cannot be run by any user, and they do not produce an output at the IMDS terminal. To request an IMDS background report, the requester user ID must be given privileges to run background reports. Background reports require a longer time to run than online inquiries. After they run, the output cannot be viewed on a terminal but must be printed at a RLP. Refer to AFCSM 21–563, volume 2, for a complete list of JDD background reports and detailed procedures on how to process them.

Processing background reports

A background report is requested in the same manner as an online inquiry; that is, you must open in TIP mode and access IMDS. As mentioned earlier, you must have access to run background reports. At that point, you can call up a specific screen directly, process through the background reports main menu, or input the data in straight-line format. Once all required fields on the background request screen or straight-line input have been completed, you transmit the information.

When you process a JDD background report by using the screen, the JDD online edit program notifies you of invalid or incorrect inputs before the background program gets processed. This is a double-check feature that saves times because it avoids an abort during execution of the program due to improper input. Unlike an online inquiry, IMDS responds with a message that the background request has been placed in the computer's job schedule. To check on the progress of a background report, you must use the background status inquiry (BSI) program. BSI tells you whether the report is scheduled, running, or completed. When completed, you will obtain a background number. This number is used to print the background report on the RLP. This function is done via TRIC RLP. This may seem like a lot of steps to go through to obtain a printout, but actually it is not that complicated. This is a task many of you do on a daily basis.

You can see that background reports are created much differently than online inquiries. They are called background reports because they run in the background of the mainframe computer. After inputting a request for a background product, press on with other duties on that terminal while the background report is running. With an online inquiry, the terminal is completely tied up until the inquiry is completed. Now, take look at some of the more common JDD background reports available.

Background reports menu (screen 112)

The background reports menu (QMM) provides the capability to review the QMM, and select the applicable screen required to make a background request. This program displays a list of available background reports. The selection of one of the listed reports will cause that report screen to be displayed. Inputs to this program are made from an IMDS terminal and are processed in an online mode of operation.

JDD man-hour report (screen 124)

The man-hour report (QMD) provides the capability to extract maintenance work hour data at all levels of organization. Data can also be extracted at various levels of consolidation by organization. Output data can be selected using one of six options.

Data Option	Function
1	Direct man-hours by PWC and SRD.
2	Indirect man-hours by PWC and WUC.
3	Direct man-hours by PWC and activity identifier.
4	Indirect man-hours by activity identifier and PWC.
5	Activity identifier by activity identifier and SRD.
6	Direct man-hours by end Item.

Scheduled discrepancy report (screen 121)

The scheduled discrepancy report (QSC) provides the capability to extract scheduled discrepancies by equipment or by owning or performing work center.

This program produces a listing of scheduled discrepancies based on user-defined parameters. You can limit the output listing by specifying the mission/design series, a specific owning or performing work center, and or up to five "when discovered" codes. Scheduled discrepancies can be selected by the following categories: scheduled inspections, scheduled time change actions, scheduled TCTO actions, or scheduled maintenance action.

Cannibalization history report (screen 104)

The cannibalization history report (QKB) provides the capability to extract historical maintenance data pertaining to open and closed cannibalization actions for the date range entered. This program provides historical maintenance cannibalization action data for different levels of equipment in either a detailed or summarized format, depending on the option selected.

Option 1. Summarized cannibalization data format

Option 1 provides cannibalization data for open and closed actions for different levels of equipment in summarized form. Summarized information consists of the work unit code, total number removed and units produced, total number replaced and units produced, and total man-hours for both removed and replaced.

Option 2. Detailed cannibalization data format

Option 2 provides cannibalization action data for different levels of equipment in detailed form. Detailed information consists of event ID, equipment ID, PWC, type maintenance, component position, when discovered code, action taken code, how malfunction code, units produced, start time, stop day, stop time, crew size, category of labor, activity identifier, event symbols, employee number, AFSC and man-hours.

Maintenance code listing report (screen 126)

The maintenance code report (QCC) program provides a listing of either "how malfunction" codes and the associated narrative for each code, or a listing of all valid SRD and their corresponding end item identities. This program provides the capability to sort the listing in alphabetical order by narrative, in numerical order by code, or in alphabetical order by code. A listing of all valid SRDs may also be selected in sequence by SRD code or by end item. A listing of SRD codes for specific type equipment may also be requested. This program can also be used to create a disk file of SRDs for the ILS–S for SRD reconciliation.

Bench check serviceable report (screen 107)

The bench check serviceable report (QBK) program provides the capability to list all *off*-equipment data that was coded bench check serviceable and had *no defect*. This program provides a complete listing of all off-equipment maintenance actions coded bench check serviceable with no defect based on the input parameters. Output data is limited by any of the following: owning work center,

performing work center, mission/design/series, work unit code, part number, serial number, or start and stop dates.

Maintenance history report (screen 105)

The maintenance history report (QMH) provides the capability to *retrieve* a history of completed maintenance actions (events) for equipment end items or components. Data can be extracted using one of the three types of report options.

Report Option	Type
1	On-equipment data only.
2	In-shop (off) equipment data only.
3	Both on-equipment and in-shop work.

Several selection capabilities are provided. The capability to include information for TCTOs and/or support general (work unit coded 01–09) work is provided for all report options. Additionally, the capability to print or suppress the event (discrepancy), work center event, and detailed data record (corrective action) narratives is provided for all options. The output data may be restricted by the use of any or all of the following input parameters: a start/stop date range, air expeditionary force code, mission/design/series, block number, type/model/series/modification, end item WUC, SRD, equipment ID number, part number, part number and serial number, Org-ID, PWC, owning work center (OWC), work unit code, action taken code, when discovered code, how malfunction code, maintenance classification code, and type maintenance.

Remember, events are incomplete until all work center events under it are closed. This program only retrieves completed maintenance events.

Performance monitoring report (screen 102)

The performance monitoring report (QPM) program provides you with the capability to request the high failing WUC items or the high man-hour consuming WUC items based on units produced and maintenance man-hours.

This program provides you with *four* options to select the *high failing or high man-hour* consuming WUC items based on units produced and maintenance man-hours. Depending on the option selected, the following reports may be requested.

Data Option	Explanation
1	The top 25 *failing* WUCs for a specific type equipment.
2	The top 25 *man-hour* consuming WUCs for a specific type equipment.
3	The top 10 *failing* WUCs by system and the associated man-hours expended.
4	The top 10 *man-hour* consuming WUCs by system and the associated number of failures.

You must identify the desired equipment level by entering either the mission/design/series, type/model/series/modification, SRD, or end item WUC. Enter the appropriate two-digit system WUCs to obtain information pertaining to specific equipment systems. Up to five system WUCs can be input per request. You must also enter the desired start month and year, and number of months (not to exceed 12 months) for the requested report.

Repeat/Recurring discrepancy report (screen 118)

Repeat/Recurring discrepancy report (QRE) program extracts all repeat and or recurring discrepancies and their related maintenance actions for mission/design or mission/design/series equipment. Output data may be restricted by the use of the following parameters: mission/design/series, owning work center, up to five WUCs, or time period of up to 24 months. This inquiry has three available options.

Data Option	Explanation
1	Repeat discrepancies only.
2	Recurring discrepancies only.
3	Both repeat and recurring discrepancies.

Output products include all maintenance actions related to each repeat and or recurring discrepancy extracted by the program within the parameters you set.

Maintenance actions review report (screen 131)

The maintenance actions review report (QBR) provides the capability to review completed maintenance actions for a specific performing work center or equipment-ID for a 1–31-day period. This program provides supervisory personnel with the capability to review completed maintenance events in detail for a period greater than the 4-day limitation of the online version of this program. Output data can be limited by equipment-ID, PWC, and AFSC. The AFSC category can *only* be used in conjunction with a PWC.

This program produces a listing of historical maintenance data for managerial review purposes. Four categories of data can be extracted: (1) on-equipment, (2) off-equipment, (3) engine bench check, and (4) indirect labor. Three of these categories (all except the indirect labor category) have four possible output sections. The four possible output sections are (1) the DDR, (2) the serially controlled/time section, (3) the engine removal/installation section, and (4) the parts replaced section. This report is sorted on category of data, then on PWC, event ID, stop day, and stop time.

Mean time between failure report (screen 197)

Mean time between failure (MTBF) reports (QMT) provides the capability to extract JDD information to compute MTBF rates. You can compute using flying hours or sorties. You can select your data by unit, mission/design/series, type/model/series/modification, SRD, or end item WUC. The output data can be restricted by up to seven system WUCs, the specific month's operations utilization data (current month and past three months only), or specify the date range for a maximum of 180 days. Detailed data records containing a maintenance data classification code of A are used to identify a failure.

Bad actors and mean time between failure by part/serial number report (screen 318)

Bad actors and mean time between failure report (QBM) provides the capability to extract JDD information to compute MTBF rates. This lists the specific part/serial numbers that failed ("bad actor"). You have the option of computing the MTBF. You can select your data by unit, mission/design/series, type/model/series/modification, SRD, or end item WUC. The output data may be restricted by up to five WUCs, or specify the date range for a maximum of 180 days. Detailed data records containing a maintenance data classification code of A are used to identify a failure.

Self-Test Questions

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

037. Online inquiries

1. Match each definition in column A with the appropriate online inquiry TRIC code in column B. Each online inquiry TRIC code in column B may be used only once.

Column A		*Column B*
____ (1)	Provides a list of all available online inquiries.	a. QQM.
____ (2)	Enables engine management and documentation to verify that the correct serial number was reported for a serially controlled item.	b. QMS. c. QSM.

____ (3)	Provides a listing of open and closed cannibalizations.	d. QVR.
____ (4)	Provides a list of unscheduled discrepancies by work center.	e. QPE.
____ (5)	Provides the capability to review completed maintenance actions.	f. QCD.
____ (6)	Provides maintenance data related to in-flight discrepancies.	g. QDR.
____ (7)	Provides a listing of all valid action taken codes.	h. QMR.
____ (8)	Provides the capability to select historical data for a specified part number.	i. QCH.
____ (9)	Provides data performed against a particular event ID.	j. QBC.
____ (10)	Provides repeat and or recurring discrepancies and their related maintenance actions for a specific equipment ID.	k. QRR.
		l. QPI.
____ (11)	Provides man-hour data for non-ID equipment.	
____ (12)	Provides a summary or detail inquiry of 781P-type documentation.	

2. Which program allows a controlling agency to review completed actions that have not been closed out?

038. Background reports

1. Match each definition in column A with the appropriate background TRIC code in column B. Each background TRIC code in column B may be used only once or not at all.

Column A	*Column B*
____ (1) Provides a background report menu.	a. QBR.
____ (2) Provides the direct man-hours by PWC and WUC.	b. QMH.
____ (3) Provides a list of scheduled discrepancies by equipment.	c. QRE.
____ (4) Provides historical maintenance cannibalization data.	d. QSC.
____ (5) Provides a listing of all valid SRD codes.	e. QMT.
____ (6) Provides a list of all data that has been bench checked serviceable.	f. QMD.
____ (7) Extracts JDD information to compute MTBF rates using flying hours or sorties.	g. QKB.
	h. QBM.
____ (8) Provides a list of specific part/serial numbers that failed; also extracts information to compute MTBF rates.	i. QPM.
	j. QCC.
____ (9) Provides a history of completed maintenance actions.	k. QBK.
____ (10) Provides a listing of the top 25 failing WUCs.	l. QMM.
____ (11) Provides a list of repeat or recurring discrepancies.	
____ (12) Provides a review of completed maintenance actions for a specific work center.	

4–3. Generated Runstream

As a DBM, you may be required to produce reports on a daily, weekly, biweekly, and monthly basis for managers and supervisors. Often times these reports may be needed as soon as possible. Runstreams provide us with the ability to run IMDS background programs in the demand mode. In the last lesson you learned about processing background programs in the TIP mode. In this lesson you will learn how processing background programs in the demand mode using a runstream is easier and faster.

039. Generated runstreams

When it is necessary to run the same background reports on a recurring basis (i.e., each morning, weekly, etc.), generated runstreams (GENRUN) provides a much easier method than running and printing each background through TIP.

GENRUN is a CTS subroutine program that creates an ECL runstream from TRIC images and input data supplied by you, the user. GENRUN simulates an off-line batch-processing mode and the TRIC images are processed independently from IMDS. The TRIC *images* are IMDS background programs *only*. Background programs can be found in applicable volumes of the IMDS manuals. Once a runstream is built for a certain TRIC, it does not have to be rebuilt each time it is run. GENRUN places the runstream in a particular file and element where it can be accessed and run as often as necessary.

Procedures

Since GENRUN is a subroutine of CTS, you must first access DEMAND mode, then CTS. To enter the CTS environment, you would type @CTS. Once you are in CTS, you would execute the following:

>CALL 0FS00000*PUTLAG054–FM.GENRUN.

This is the program file and element used to enter the GENRUN program. GENRUN then prompts you for the following inputs:

>Enter the RUN-ID (1 to 6 characters). Ex: MONDAY or NFS160.

Examples: MONDAY or NFS160.

This input is the name under which the run (job) processes. This is not the same as the element name where the runstream is maintained. Once a run is started, this RUN-ID is the identity of that run. This run name will be used in the @RUN command statement of the ECL runstream.

>Enter the name of the FILE.ELEMENT in which this runstream is to be saved.

Example: IMDS410.WKLRPT.

This is where you put the name of the file and element where you wish to save this runstream (i.e., 123FG*IMDS.).

>Enter gang Printer Start Time A = enter the transaction.

1thru 4 Unit or PR (local) B = use FILE.ELEMENT.

Enter the base number to process against, the unit ID to process against, the printer to send the output to, the desired start time (4 numeric digit), and A if you wish to enter the transaction or B if you wish to use an input file. Normally, you would answer A and input the TRIC codes now. Option B can be used if you already have the TRIC images created in another file.

>Enter the input TRIC.

Here you would input the TRIC image exactly as if you were inputting a straight-line input in IMDS. TRICs greater than 80 characters but less than 96 characters can be allowed to wrap. Some TRICs require two-card inputs. If so, GENRUN automatically prompts you for the second image. After you have entered the desired TRIC format, Xmit a blank to continue. Once the runstream is created, you will receive the message:

Runstream for run MONDAY is in IMDS.WKLRPT.

This would indicate that you told GENRUN to use MONDAY for the RUN-ID and you told it to place the completed runstream in IMDS.WKLRPT.

Executing

Once you have built your runstream using GENRUN, it is ready to be *started*. This is *done* via the ECL command @START. Using the same example that we used earlier, you would input: @START IMDS.WKLRPT. This command would start the runstream and automatically send the output to the

RLP. Once the runstream is started, you may wish to check on its progress via the various console commands for this purpose. You may use the console commands on monitoring a runstream's progress.

040. Generated runstreams maintenance

Once you have created several GENRUN runstreams, you begin to see that it requires some maintenance to stay on top of them. Usually, the *best* way to maintain runstreams is by *storing* them in *several* files. One file can be for the entire office use and named IMDS or 123FG, and so forth. In this file you might want to place the runstreams that everyone needs to access and that are run fairly often (i.e., daily and weekly runs). Other files can be for individual use throughout the work center. However, maintaining runstreams files will require modifications, deletions and moving of files and elements to ensure they are operable and valid. You will recall in unit 3, we discussed various ECL commands for file manipulation. This is a very realistic example of when you would use those ECL commands.

Temporary runstreams

Anyone who has ever tried to clean out a runstream file knows what it is like to track down the owner of runstreams to determine if they are still needed. On the other hand, most of us also know what it is like to have your runstreams deleted by someone who thought they were only temporary. One way to handle this problem is to place these types of runstreams in their own file (i.e., IMDS*TEMP). Another way would be to go ahead and place them in the usual runstream file; however, you would give them an element name that everyone would know means that this is a temporary element. The best name to give a runstream in this case would be the date it was built. For example, if you build a runstream on 6 December and you know that you do not need to keep that runstream, give it the element name of 6DEC. If someone is cleaning up the runstream file on 15 February and sees that element, they will know it is okay to delete it.

Deleting runstreams

This may seem like a very simple task and you are absolutely right—it is! But so often we see runstream files with hundreds of runstreams in them. With the use of three ECL commands, you can *maintain* orderly and efficient runstream files. These *three* ECL commands are @PRT, @DELETE, and @PACK.

ECL Command	Will
@PRT,T QUAL*FILE.	List a table of contents of every element in a file.
@PRT,T	Also tell you when you need to pack this file.
@PRT,S QUAL*FILE.ELT	List the contents of the specified element.
@DELETE,S QUAL*FILE.ELT	Delete the specified element from the file.
@PACK QUAL*FILE	Pack the file on the mainframe. When an element is deleted, the space it maintained on the mainframe is still allocated. @PACK actually frees up this space for future use.
NOTE: An element that was accidentally deleted can easily be recovered unless the file has already been packed.	

Self-Test Questions

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

039. Generated runstreams

1. What is GENRUN?

2. What is the *only* type of TRIC images used by GENRUN?

3. After entering the CTS environment, how does a user enter the GENRUN program?

4. What ECL command is used to execute a GENRUN runstream?

040. Generated runstreams maintenance

1. What is usually the best method of maintaining GENRUN runstreams?

2. State the best name to give a temporary runstream.

3. Name the ECL commands used to maintain an efficient runstream file.

4. What ECL command statement identifies when to pack a runstream file?

4–4. Interactive Processing Facility

Interactive processing facility (IPF) is a very useful program used to create and update files. In the last section, we learned how to create runstreams using GENRUN. IPF proves very useful to update variables such as dates, times, printers and any other text within a runstream or data file created by GENRUN. This section provides an overview of IPF commands and an example of how to use them.

041. Interactive processing facility commands

To perform your duties as an analyst, you will constantly update background runstreams that provide IMDS reports for you, your office, your organization, or outside agencies. To help you do this, IPF uses several separate components to create files or elements and provides the ability to modify each. Some of these components are listed:

- User assistance for errors messages and on-line tutorial
- Command language able to create, copy, delete files and execute programs
- A text editor that provides both line and full-screen editing

Entering and exiting IPF

To *enter* IPF, open a DEMAND session and *input*: @IPF. This *starts* IPF and assigns a default work directory that consists of your default qualifier (based on your ELC), followed by an asterisk (also known as “splat”), then your userid (userid used to log into DEMAND) and ends with a period. Here’s an example of a default work directory:

0FS057900700*YOURUSERID.

Quite often you will use a work directory other than the IPF assigned default. It is very common for your duty section to have a central file used to store and access commonly requested reports. To assign a different file as your work directory, input: @IPF qualifier*filename. Following, is an example of starting IPF with a work directory based on a file used to run recurring daily products:

@IPF 0FS057900700*DAILYRUNS.

Once you are done using IPF it is important to exit the application properly. To exit IPF, input: LOGOFF.

Command assistance and on-line tutorial

The IPF command set is vast and we are only able to scratch the surface in this lesson. Luckily, IPF provides on-line assistance and additional training by using two options: command assistance and tutorials.

Command assistance provides an explanation of a given command. Type the name of a command followed by a question mark (COPY?). For more details, enter successive question marks. When you reach the end of the help topic you can enter another question mark to repeat the messages or resume what you were doing in IPF. You can also get an explanation of the keywords that come after the command name. Enter the command name, the keyword and =? (COPY FROM=? or COPY TO=?). Initially, it is a good idea to look at all of the details of the command name before examining the keywords.

Additional training is available via an on-line interactive tutorial. After you start IPF, simply type HELP, then press the enter key. A menu with six different tutorials appears and you choose the one you wish to view. To stop a tutorial, type a slash followed by the command STOP (/STOP). The tutorial is the best way to learn all the advanced commands IPF has to offer.

Using IPF commands

Depending on what you need to accomplish in IPF, there is probably a command that will do it. To understand the *two* types of commands, they are *categorized* as either *file manipulation* or *edit commands.* This first table consists of the file manipulation commands used most often, an explanation of each, and the syntax:

Command	Description	Syntax
MODE	Sets full screen or line mode. Screen mode allows changes to multiple lines of text at one time. Line mode only allows changes to one line at a time.	MODE SCREEN or MODE LINE
$DISPLAY	Turns line number display on or off.	$DISPLAY:=NUMBER or $DIDSPLAY:=NONUMBER
SET	Establishes or reestablishes a value for a system or user variable.	[SET] *variable:=expression*
CREATE	Creates or catalogs a file name.	CREATE *file-name.*
COPY	Copies a whole file or part of a file to another file.	COPY *file-name–1.,file-name–2.*
LIST	Lists a directory of the specified file.	LIST *file-name.*
PURGE	Deletes a whole file or marks an element for deletion.	PURGE *file-name.*
PACK	Removes an element flagged for deletion.	PACK *directory-name-list.*
NEW	Creates a new element in your work directory. Must have at least one line of text before you can do a SAVE.	NEW *element-name*
SAVE	Saves a newly created element.	SAVE *file-name.*
OLD	Places a copy of an element into the workspace.	OLD *file-name.*

Command	Description	Syntax
REPLACE	Creates a *new* version of an element. Replaces the old version and marks it for deletion.	REPLACE *file-name.*

The next table lists the most common commands used to edit elements. These commands can be used in either line or full screen mode. Of note, many commands can be *truncated to* three or less characters. In the examples below, RENUMBER is truncated to R, INSERT to I and DELETE to D:

Command	Description
TOP (T)	Moves the current line (image) pointer to the first line in the workspace.
BOTTOM (B)	Moves the current line pointer to the last line in the workspace
ROLL	Moves the current line down one page at a time in the workspace. Similar to scrolling in Windows. Can also press the "Enter" key once with a blank command line and it does the same as a ROLL. INPUT: ROLL INPUT: ROLL 20 (Moves down 20 lines)
RENUMBER	Changes the numbers assigned to the lines of text in the workspace. INPUT: R (Renumbers all lines starting with line 10 and increments by 10)
GO	Positions the current line (image) pointer to the specified line number. INPUT: GO 50
INSERT	Used to insert lines into the workspace. INPUT: I (In front of the line you need a new line inserted after) INPUT: IB (In front of a line inserts a new line before the line) INPUT: I6 (To insert 6 lines after the line)
DELETE	Deletes lines from the workspace. INPUT: D (In front of line to be deleted) INPUT: D4 (Deletes the next 4 lines)

042. Interactive processing facility application

One of the best ways to introduce IPF is to present an example of what you will quite often be assigned to do. The following scenario is based on running a report used to track aircraft sorties at any given base. The data you extract from this report are the basis for producing slides, briefings, higher-headquarters reports, and possibly in-depth studies. As with most things you track, the report is based on a specific date.

The following is an example of a scenario. Let's assume each Monday you need to track all the sorties flown during the previous week, so you create a GENRUN runstream using TRIC AUR (Accomplishment Utilization Report). Additionally, the runstream requires a date range update for the previous week timeframe. When you create the element you save it in the 0FS057900700*DAILYRUNS qualifier*filename and name it MONDAY. The saved qualifier, filename and element looks like this:

0FS057900700*DAILYRUNS.MONDAY

To view the element and change the date range, type the following three command lines and press the enter key after each. The initial command line is entered after the start of entry (SOE) in DEMAND followed by the next two command lines when IPF starts as follows:

1. @IPF 0FS057900700*DAILYRUNS.
2. MODE SCREEN or SCR
3. OLD MONDAY

In the example above, IPF starts with 0FS057900700*DAILYRUNS set as the default work directory. Next, the default MODE is changed from LINE to SCREEN because SCREEN *provides* a full page view and has the capability to update anything on the page before changes are made permanent. Finally, a copy of the MONDAY element is placed in the workspace and displayed on the screen.

At this point, scroll through the element by typing ROLL then enter, or pressing the enter key multiple times until you find the AUR input image line. Locate the date range, change the dates by typing over the old dates and press enter at the end of the line you edited (very important) to update the element with the changes. Even though the element is changed, only the workspace copy is updated. To make the changes permanent, type REPLACE and press enter.

To execute the MONDAY run *type START* and press enter. This is an *alternate* method of *starting* a run *without exiting* IPF and executing the @START command taught in GENRUN. The completed report is directed to the printer or queue you entered when you created the job in GENRUN.

If you have an additional element to change, use the OLD command, make the changes and then use the REPLACE command to save the update. If not, and you are done, type LOGOFF and press the enter key.

This lesson provided an overview of IPF commands, available on-line help, and an example of what might be the most common use of IPF in your daily duties. As you learn more about your job, continue learning the many capabilities of IPF by using the on-line tutorial.

Self-Test Questions

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

041. Interactive processing facility commands

1. Which command is used to start IPF from a DEMAND session?

2. What is the purpose of the LOGOFF command?

3. What two options provide on-line assistance and additional training?

4. What are the two types of commands?

5. What is the purpose of the LIST command?

6. Which command places a copy of an element into the workspace?

042. Interactive processing facility application

1. To view an element and make changes, which three commands are used?

2. How do you scroll through an element?

Answers to Self-Test Questions

034

1. (1) Reports hardware and software problems to the IMDS database manager.
   (2) Assists training management in developing and conducting familiarization courses for IMDS users.
   (3) Monitors and controls access to subsystem via TRIC security.
2. (1) m.
   (2) k.
   (3) l.
   (4) d.
   (5) j.
   (6) n, a.
   (7) j.
   (8) d.
   (9) d.
   (10) i.
   (11) d.
   (12) h.
   (13) g.
   (14) f.
   (15) e.
   (16) d.
   (17) c.
   (18) b.
   (19) a.
3. a. Provides online access to a database containing organization, equipment, status, and utilization data.
   b. Allows the user to track maintenance actions and has both maintenance and supply data.
   c. Provides the user the capability to automate the location of aircraft, missiles, AGE, and any other equipment critical to the organization's operation.
   d. Provides an online capability for maintenance personnel to document, inquire, and produce retrievals of maintenance actions.
   e. Automates the records keeping function for all end items of equipment as well as items installed on an item of equipment.
   f. Allows the user to forecast and schedule personnel training requirements.
   g. Provides the capability to order parts for unscheduled requirements, time change requirements, TCTOs, and maintain maintenance event validation of supply requisitions.
   h. Updates and monitors the approved and actual configuration of an aircraft.

035

1. It contains general instructions, a summary, a glossary of terms and abbreviations, a listing of all IMDS TRIC codes, and a screen file list by number.
2. Definitions and explanations of terms, abbreviations, and data elements as used in IMDS.
3. Each volume is arranged by purpose, description, input procedure, explanation of the output product, and output illustrations.

036

1. To provide information feedback to base managers and supervisors for controlling the maintenance operation.
2. To maintain a reliable database to be used as a source for management decisions.
3. Through better logistics management decisions that can be made with accurate information.

037

1. (1) a.
   (2) d.
   (3) i.
   (4) c.
   (5) g.
   (6) f.
   (7) j.
   (8) h.
   (9) b.
   (10) k.
   (11) e.
   (12) l.
2. Maintenance Action Review Inquiry (QDR).

038

1. (1) l.
   (2) f.
   (3) d.
   (4) g.
   (5) j.
   (6) k.
   (7) e.
   (8) h.
   (9) b.
   (10) i.
   (11) c.
   (12) a.

039

1. CTS subroutine program that creates an ECL runstream from TRIC images and input data supplied the user.
2. IMDS background programs.
3. CALL 0FS00000*PUTLAG054–FM.GENRUN.
4. @START.

040

1. By having several files to store them in.
2. The date it was built.
3. @PRT, @DELETE, and @PACK.
4. @PRT,T.

041

1. @IPF.
2. It allows you to exit IPF.
3. Command assistance and tutorials.
4. File manipulation and edit commands.
5. Lists a directory of the specified file.
6. OLD.

042

1. @IPF, MODE SCREEN or SCR, OLD.
2. Type ROLL or press the enter key.

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).

99. (034) Which subsystem features a method of reporting line replaceable unit (LRU) production time?
    a. Operational events.
    b. Status and inventory reporting subsystem (SIRS).
    c. Automatic test equipment reporting subsystem (ATERS).
    d. Communications-electronics (C-E) status and inventory reporting.

100. (034) Which subsystem *automates* the records keeping function for all end items of equipment as well as items installed on an item of equipment?
    a. Maintenance events.
    b. Location management.
    c. Inspection and time change.
    d. Status and inventory reporting.

101. (035) Volume 2 of the Air Force Computer Systems Manual (AFCSM) 21–556 contains
    a. general Integrated Maintenance Data System (IMDS) instructions.
    b. intermediate IMDS instructions.
    c. specific IMDS instructions.
    d. detailed IMDS instructions.

102. (035) Which *attachment* in the Air Force Computer Systems Manual (AFCSM) 21–556, volume 2, provides a screen file list by transaction identification codes (TRIC)?
    a. 1.
    b. 2.
    c. 3.
    d. 4.

103. (036) The benefits of collecting Integrated Maintenance Data System (IMDS) job data documentation (JDD) data are *returned* through
    a. better logistics management decisions.
    b. lower mean time between failure.
    c. better buck stop programs.
    d. higher break rates.

104. (037) The Integrated Maintenance Data System (IMDS) on-line suspense validation inquiry is used to *verify* all of the following *except*
    a. flying hours.
    b. time change items.
    c. serial controlled items.
    d. engine removal/installation data.

105. (037) Which Integrated Maintenance Data System (IMDS) online inquiry provides the capability to review completed maintenance actions for a specific performing workcenter (PWC), equip-ID, or job control number (JCN) that have been completed but *not* documented?
    a. Maintenance history report (QMH).
    b. Maintenance snapshot inquiry (QMS).
    c. Maintenance actions review inquiry (QDR).
    d. Job data documentation man-hour report (QMD).

106. (038) Which Integrated Maintenance Data System (IMDS) background report program provides direct man-hours by performing workcenter (PWC) and standard reporting designator (SRD)?
    a. Maintenance history report (QMH).
    b. Performance monitoring report (QPM).
    c. Maintenance actions review report (QBR).
    d. Job data documentation man-hour report (QMD).

107. (038) Which Integrated Maintenance Data System (IMDS) background report provides the capability to review *off*-equipment maintenance actions that were found to have "no defect"?
    a. Bench check serviceable (QBK).
    b. Automated maintenance module (AMM).
    c. Maintenance action review report (QBR).
    d. Job data documentation man-hour report (QMD).

108. (038) What Integrated Maintenance Data System (IMDS) background report program *provides* a listing of completed maintenance actions (events) for equipment and end items?
    a. Maintenance history report (QMH).
    b. Maintenance history inquiry (QMI).
    c. Maintenance actions review report (QBR).
    d. Job data documentation man-hour report (QMD).

109. (038) Which Integrated Maintenance Data System (IMDS) background report program provides a listing of the *top* 25 *failing* work unit codes (WUC)?
    a. Maintenance history report (QMH).
    b. Performance monitoring report (QPM).
    c. Repeat/recurring discrepancy report (QRE).
    d. Job data documentation man-hour report (QMD).

110. (039) The type of transaction identification code (TRIC) *image* used by the GENRUN program is
    a. on-line.
    b. pseudo.
    c. background.
    d. straight-line.

111. (039) What executive control language (ECL) command is used to process a GENRUN created runstream?
    a. @RUN.
    b. @@XQT.
    c. @START.
    d. @EXECUTE.

112. (040) How is the *best* way to maintain runstreams?
   a. Store them in several files.
   b. Give each one a unique file and element name.
   c. Free up disk space when they are no longer needed.
   d. Place them in a file with a read/write key against them.

113. (040) What executive control language (ECL) commands are used to *maintain* an efficient runstream file?
   a. @PRT, @SAVE, @DELETE.
   b. @PRT, @PACK, @DELETE.
   c. @PRT, @PRT,L , @PACK.
   d. @DELETE, @FREE, @PACK.

114. (041) Which command is used to start interactive processing facility (IPF) from a DEMAND session?
   a. IPF.
   b. SET.
   c. NEW.
   d. @IPF.

115. (041) The interactive processing facility (IPF) command REPLACE
   a. creates a new version of an element.
   b. removes an element flagged for deletion.
   c. places a copy of an element into the workspace.
   d. copies a whole file or part of a file to another file.

116. (041) Interactive processing facility (IPF) commands can be truncated to how many characters?
   a. 1.
   b. 2.
   c. 3 or less.
   d. Cannot be truncated.

117. (042) The interactive processing facility (IPF) command MODE SCREEN
   a. provides a line view.
   b. provides a full page view.
   c. turns line number display on or off.
   d. moves the current line down one page at a time.

118. (042) What command will *start* a run *without exiting* the interactive processing facility (IPF)?
   a. GO.
   b. PACK.
   c. ROLL.
   d. START.

Please read the unit menu for unit 5 and continue ➔

Student Notes

Unit 5. Introduction to Mobility Air Force Logistics Command and Control System

TO MEET THE UNIQUE DEPLOYABLE mission of the nation's mobility fleet, Air Mobility Command (AMC) utilizes another major MIS to manage and document its maintenance activities and processes, MAF LOG C2; formerly known as Core Automated Maintenance System for Mobility (CAMS-FM) or G081. In this unit, you will learn the unique features of the MAF LOG C2 system. As a maintenance data systems analyst in today's expeditionary Air Force, you might be assigned to an airlift unit, or find yourself deployed to a unit with AMC assets, with a need to extract information to perform your duties. It's important then for you to know some basic information about MAF LOG C2.

5–1. Introduction to MAF LOG C2

MAF LOG C2 is a worldwide maintenance MIS that provides maintenance data for fleet-wide management of most AMC owned and gained aircraft, including its C–5, C–9, C–17, C–27, C–40, C–130, HH–60, KC–10, and KC–135 aircraft. It is an AMC owned and operated computer system used to collect, record, and present information for the efficient management of logistics functions. Similar in concept and design to the IMDS, also used to manage maintenance data, it is nevertheless unique in operation and meets the special needs of the Air Force airlift and mobility mission. Thus, MAF LOG C2 is associated largely with AMC as an exclusive MAJCOM-unique system whereas IMDS has a broader application across several MAJCOMS.

043. Administrative system overview

MAF LOG C2 supports the MAF of AMC, AETC, ANG, the Air Force Reserve Command (AFRC), Pacific Air Forces (PACAF), and United States Air Forces in Europe (USAFE). MAF LOG C2 also supports United States Transportation Command (USTRANSCOM) and AFMC. MAF LOG C2 MIS is the central common source of all unclassified maintenance data for mobility tankers and airlift aircrafts.

Background

MAF LOG C2 is used to manage and document maintenance processes and activities. It is a system that *developed* out of the C–5 aircraft program. During the development of the C–5, a malfunction, detection, analysis, and recording subsystem (MADARS) was built into the aircraft to provide a tape that is processed through a ground processing system (GPS) for analysis and feedback. MAF LOG C2 is the *key* to the reliability, sustainability, and deployability of the nation's mobility fleet.

Operation

HQ AMC runs the overall management of MAF LOG C2 through DISA at DECC Oklahoma City, located on Tinker AFB, Oklahoma, and DECC Ogden, at Hill AFB, Utah. MAF LOG C2, physically *located* on DECC Ogden, runs on a centrally located *mainframe* and is connected by the internet to HQ AMC, field units, and other users of the system. MAF LOG C2 provides access to input, retrieve, and analyze data. Although developed during the late 1970s and early 1980s to track aircraft status and store maintenance data documentation (MDD), MAF LOG C2 has since evolved to a universal system that provides real-time aircraft status, tracks component failure trends, and develops statistical records for analysis. It is also used as a tool to aid in supply, training, and personnel management. MAF LOG C2 accumulates, validates, processes, stores, and gives Air Force and AMC managers the maintenance data they need to keep airlift assets combat ready in peacetime and sustain them in wartime.

System interfaces

MAF LOG C2 *interfaces* with various MISs, *including* CEMS, Command and Control Information Processing System (C2IPS), and the Air Force ILS–S, where information is generated from MAF LOG C2 and shared with these systems through real-time transaction processing. Through this integration of maintenance data and its own stored information, MAF LOG C2 provides airlift weapons system managers with the following:

- Inventory availability and status of AMC and AMC-gained aircraft.
- Status of installed engines.
- Availability and status of critical support equipment.
- Utilization data for aircraft, engines, and support equipment.
- MDC history.
- Maintenance supply interface.
- Item warranty tracking.
- On- and off-equipment repair data.
- Bit and piece data.
- TCTO status.
- Time change and inspection data.
- Configuration data for all aircraft.
- Mission scheduling.

The following is a list of other MISs MAF LOG C2 interfaces with:

- Global Decision Support System (GDSS)—AMC's force level C2 system supporting the tanker airlift control center providing data for the deployment and employment of AMC resources.
- Global Transportation Network (GTN)—provides in-transit visibility information to decision makers, including national command authorities, commanders of joint force commands, USTRANSCOM, and DOD customers worldwide.
- C–17 Aircraft Diagnostics Integrated Test System (ADITS)—provides in-flight data from the C–17 for mission debriefing.

- C–5 Malfunction, detection, analysis, and recording (MADAR)—assists flight and ground crews in troubleshooting malfunctions.
- Logistics composite model (L-COM)—used to determine and develop manpower requirements.

MAF LOG C2 interfaces with C2IPS, GDSS, and GTN through the logistics information brokering system (BROKER). BROKER provides compatible physical and functional connectivity between C2 systems and logistics systems. When data is entered or updated in MAF LOG C2, BROKER reformats and translates the data and routes it to the appropriate system, permitting single entry of data by users and sharing of critical logistics and operational data between MAF LOG C2 and other C2 systems. The BROKER system was recently converted to the Oracle platform, allowing easier access to the data across the internet. BROKER is maintained by DISA DECC Oklahoma City.

Global reach logistics/A4 information page

In 2002, AMC converted the MAF LOG C2 auxiliary subsystem, the operational data store (ODS) to Oracle to increase its efficiency and make the data contained in the ODS more accessible over the internet. The ODS is a database used to store critical perishable logistics C2 information used by managers at all levels within AMC to effectively manage maintenance resources. The information contained in MAF LOG C2's ODS is accessed through the global reach logistics/A4 information page, which is available to all users via the HQ AMC Logistics website. The page is arranged so the information is more easily accessible by maintenance function. For example, the analysis link contains links to reports such as AMC's Situational Awareness report that are more pertinent to the maintenance analyst, whereas the MOC link contains reports on aircraft parking status and the tail number bin, information more vital to the MOC controller. Items of particular interest to you as a maintenance analyst reporting on airlift and tanker aircraft are contained on this web page (fig. 5–1).

Figure 5–1. Global Reach Logistics Information page.

044. Functional areas of mobility Air Force logistics command and control

Unlike IMDS, MAF LOG C2 programs are *not* arranged as actual subsystems; however, MAF LOG C2's databases are arranged according to the *type* of data they contain and their function. In addition to the arrangement of its databases, the MAF LOG C2 programs can be *grouped* by similar purpose

or common function, following the format of the MAF LOG C2 *user's manuals* for *each* of the functional areas, with the exception of the "paperless inspection" program, which automates the inspection work cards for the C–5 aircraft. These functional areas are interrelated and interdependent on data contained in other databases within MAF LOG C2. Because the programs are interrelated, a single MAF LOG C2 program may apply to more than one functional area. A complete listing can be found in the MAF LOG C2 user's manual that can be downloaded from the training link of MAF LOG C2's welcome page. We'll begin with some of the functional areas and a few of the programs in each one.

Flightline

The data produced by the flightline programs gives maintenance managers a complete overall picture of the mission capability status, the status of maintenance events for their assigned aircraft, and supply data, as well as aircraft utilization data. Programs such as F8038 Aircraft Flight Detail and Summary Report and F8070 Aircraft Discrepancy Report paint a summarized picture of the condition of their aircraft, while programs such as F9032C 67089 Batch Program Request (Repeat/Recur Report) give a more detailed account. Aircraft *forms* are also part of this group. Below is a partial listing of the flightline functional area.

- F8005 General Aircraft Data.
- F8028 Base Supply Conditions.
- F8035 Open Aircraft Event/Supply Workable Discrepancies.
- F8044 Open Aircraft Supply Document Numbers.
- F8047 Detail Aircraft Status Report.
- F8051 Aircraft Job Shop Completion.
- F8063 Closed Aircraft Jobs Without MDC.
- F8069 Open Aircraft Discrepancies Against a Workcenter.
- F8071 Supply Detail.
- F9006 Process Requests for Supply.
- F9010 Discrepancy Close-out.
- F9032 AFTO Form 781A and 781K Batch Request.
- F9032F Aircraft Flying Forms Batch Request.
- 9032G 781J Form Batch Job Request.

Analysis

As a maintenance analyst, there are several MAF LOG C2 programs you will use to perform your duties. Though this is not an all-encompassing list of the programs you will use, it gives you an idea of the programs available to the maintenance analyst. You will likely use many of these and programs from other functional areas on a day-to-day basis.

- F8011 In-flight Engine Shutdown.
- F8020 Operational Status of All Aircraft at a Given Base.
- F8021 WUC REFDES Removal History.
- F8031 Bench Check Analysis Summary for a WUC.
- F8035 Open Aircraft Event/Supply Workable Discrepancies.
- F8070 Discrepancy Report.
- F9022 Job Estimates.
- F9025 Monthly Aircraft Status Summary.
- F9025B Aircraft Flying Hours Data.

- F9041 Maintenance Summary by System.
- F9056 MDC Inquiry/Delete Utility.
- F9141 Deployed Aircraft Table Maintenance.

Backshop/Support equipment

Programs in the backshop/support equipment group allows the user to track backshop maintenance actions and accesses both maintenance and supply data. It provides the user the capability to create, schedule, change, defer, reschedule, cancel events, and inquire into supply data related to support equipment. This program group also allows users to create off equipment jobs, view nondestructive inspection record data, and view TMDE calibration data.

- F8019 Support Equipment / AGE Holding Bin Report.
- F8024 Support Equipment Discrepancy Status.
- F8036 Support Oil Analysis Program Analysis History.
- F8051 Aircraft Job Shop Completion.
- F8060 Support Equipment Status and Location Report.
- F8061 Support Equipment Inspection Report.
- F8064 Support Equipment Off-Base Parts Requisition Status.
- F8066 Support equipment Automated AFTO Form 244/245.
- F8067 AGE/Support Equipment Morning Report (AF Form 2431).
- F8071 Supply Detail.
- F8072 Open AGE/Support Equipment Cannibalization.

Debrief

The debrief program group allows post-flight debriefing functions including aircraft operating time update, entering discrepancies discovered during flight, flight data, deviation data, discrepancies discovered off base, tracking of report and recurring discrepancies, and has on-line inquiry access to debriefing data. In addition, this group provides numerous programs designed to provide automated reports required by analysis functions.

- F8011 In-Flight Engine Shutdown.
- F8070 Aircraft Discrepancies Report.
- F9001 Drop Aircraft Discrepancy Package.
- F9009 Multiple Aircraft Job Schedule.
- F9010 Aircraft Discrepancy Close-out.
- F9010C Aircraft Discrepancy Close-Out at Non MAF LOG C2 sties.
- F9019 Identify Aircraft Repeat/Recur Discrepancies.
- F9020 Detailed Aircraft Flying Hour Input.
- F9023 Engine Shutdown Update.
- F9026 Historical Aircraft Status Correction.
- F9040 Multiple Aircraft Discrepancy Input.
- F9050 Input Aircraft Discrepancies.
- F9055 Aircraft Mission Symbol Master.
- F9134 Aircraft Debrief Update.

Scheduling & engine management

The scheduling and engine management programs are combined as one functional area but will be broken out as individual functions for better clarification. Scheduling combines maintenance event tracking, operational event tracking, inspection and time change records, TCTO data tracking, automated scheduling programs, configuration management programs, and dash 6 inspection programs into one functional group. There are far too many programs in the P&S group to list here. Listed here are a few P&S programs to give you an idea of what programs are available to the maintenance scheduler:

- F8005 General Aircraft Data.
- F8010 ACMS Configuration Time Report.
- F8017 ACMS Configuration Index Data.
- F8023 Compliance Status of a given TCTO by Base or Force.
- F8026 Compliance Status of a given TCTO.
- F8027 TCTO Compliance History for an Aircraft, Engine or Support Equipment/AGE ID.
- F8040 Installed Component TCTO Report.
- F9020 Detailed Aircraft Flying Hour Input.
- F9025B Aircraft Flying Hours Data.
- F9088 Aircraft –6 Master.
- F9102 Serialized Component Update.

Programs in the engine management group allow the user to track engines, auxiliary power units (APU), their components for time changes and inspections, and establish and maintains the installed-on relationship between the engine and components. These programs generate engine and APU historical data, both on aircraft and in the test cell, as well as engine and APU installation and removal data.

- F8010 ACMS Configuration Time Report.
- F8011 In-Flight Engine Shutdown.
- F8017 ACMS Configuration Index Data.
- F8023 Compliance Status of a given TCTO by Base or Force.
- F8026 Compliance Status of a given TCTO.
- F8027 TCTO Compliance History for an Aircraft, Engine or Support Equipment/AGE ID.
- F8040 Installed Component TCTO Report.
- F8050 Engine Component Tracking.
- F8076 C17/C5M Component Warranty Report.
- F8109 General Engine/APU Removal History Data.
- F8110 Installed Component Report.
- F9004 Package Discrepancy Master.
- F9013 AFTO 44/95 Update.
- F9023 Engine Shutdown Update.
- F9024 Engine/APU Install/Removal Update.
- F9032G 781J Form Batch Request.
- F9102 Serialized Component Update.

MAF LOG C2 management

MAF LOG C2 management contains programs such as the base code table, database inquiry, work center update, batch update and execution, user printer change, and user management tools. Below is a list of some of the programs in this group.

- F8004 MDC Work Unit Cod Analysis.
- F8007 Base Code Table.
- F8300 Database Inquiry.
- F9007 Work Center Update.
- F9007B Program Management Notices.
- F9029 Batch Update and Execution.
- F9029A Batch Job Deadline Scheduling.
- F9038 Deficiency Reporting System.
- F9057 Userid/Lterm Management.
- F9057C Program Security Update.
- F9057D Batch Job Access.
- F9058 Shop Batch Job Execution.
- F9072 User Printer Change.
- F9073 GEO Loc and ICAO Base Update.
- F9075 Daylight Savings Time Update.
- F9082 Employee / 350 Tag Transfer.
- F9096 SBSS Organizational Account Table.
- F9113 Parking Location Status Update and Location Report.
- User Management.

Integrated logistics system–supply

MAF LOG C2 supply programs provide maintenance managers and personnel a link to the ILS–S system. They report on the status of parts ordered, location of parts, bench stock replenishment, as well as process requests for supply and ILS–S record inquiries. This group also contains programs to retrieve cannibalization data for aircraft and support equipment.

- F8035 Open Aircraft Event/Supply Workable Discrepancies.
- F8044 Open Aircraft Supply Document Numbers.
- F8045 Cannibalization Data for an Aircraft or Base.
- F8057 Tail Number Bin (TNB) List.
- F8064 Support Equipment Off Base Parts Requisition Status.
- F8071 Supply Detail.
- F8072 Open AGE/Support Equipment Off-Base Parts Requisition Status.
- F8077 SBSS Inquiry.
- F8079 Bench Stock Replenishment Request.
- F9006 Process Requests for Supply.

Training/Mobility

The training and mobility programs are combined as one functional area but will be broken out as individual functions for better clarification. The training programs allow the user to forecast and

schedule personnel training. Training requirements such as OJT, certification, and upgrade training are monitored using these programs. A variety of reports and inquiries are available to assist training managers and supervisors in reviewing, scheduling, and monitoring personnel data and training throughout the unit. The programs available in this group are listed:

- F8055 Personnel Status.
- F9030 Class Scheduling.
- F9045 Shop Master.
- F9046 Personnel Management.
- F9058 Shop Batch Job Execution.
- F9086 Class Employee Scheduling.
- F9092 Employee Course Update.
- F9118 Course Code Master.
- F9119 Personnel Training.

The mobility programs group provides personnel in the programs function the capability to monitor manpower resources. The mobility programs group provides rapid access to administrative and personnel data pertaining to an individual or a shop. Supervisors are able to update data pertaining to their personnel as changes occur. Management products are provided to assist the administration activity in their personnel management.

- F9045 Shop Master.
- F9046 Personnel Management.
- F9058 Shop Batch Job Execution.

Inspection

The inspection program group automates the record keeping function for end items, as well as items installed on that equipment. These programs access TCTO data and status, supply data, list open and closed discrepancies, and aircraft forms. The user can update inspection and time change records for aircraft and support equipment, forecast, check TCTO supply status, and produce aircraft and support equipment discrepancy and cannibalization reports. This group includes the following:

- F8005 General Aircraft Data.
- F8027 TCTO Compliance History for an Aircraft, Engine or Support Equipment AGE ID.
- F8035 Open Aircraft Event/Supply Workable Discrepancies.
- F8063 Closed Aircraft Jobs without MDC.
- F8070 Aircraft Discrepancy Report.
- F9001 Drop Aircraft Discrepancy Report.
- F9006 Process Requests for Supply.
- F9009 Multiple Job Scheduling.
- F9010 Aircraft Discrepancy Close-Out.

Maintenance operation center

The MOC is essentially the hub of the maintenance complex. The MOC is responsible for coordinating ramp movement, maintenance, launch and recovery, the flying schedule, and a host of other functions. The MOC programs give the user the capability to automate location, maintenance discrepancies, and aircraft arrival and departure information. Some of these programs are:

- F8005 General Data for a Given Aircraft.
- F8020 Operational Status of All Aircraft at a Given Base.

- F8035 Event/Workable Discrepancies.
- F8038 Aircraft Flight Detail and Summary Report.
- F8047 Detail Aircraft Status Report.
- F8068 Weapon System Aircraft Status.
- F8070 Aircraft Discrepancy Report.
- F9010 Aircraft Discrepancy Close-out.
- F9018 Aircraft Arrival/Departure/Status Update.
- F9032D MOC/Expediter Report.
- F9040 Input Short Aircraft Discrepancies.
- F9050 Input Aircraft Discrepancies.

Although MAF LOG C2 does not have designated subsystems, you can get an idea of a logical program arrangement from the listings in MAF LOG C2. Later, we will discuss another logical breakdown of MAF LOG C2, its database relationships.

045. Mobility Air Force logistics command and control system security management

The MAF LOG C2 system is physically located on a mainframe computer at the DECC Ogden, at Hill AFB, Utah. It is a centrally managed maintenance on-line transactional processing (OLTP) system that currently processes an average of 6–7 million monthly on-line transactions. To protect the information contained in the MAF LOG C2 databases, there are three different types of system security: connectivity, user identification security, and program access security.

Connectivity

To gain access to the MAF LOG C2 system, users must establish connectivity to the mainframe via a terminal. Worldwide users connect to MAF LOG C2 at the DECC via the nonsecure internet protocol router network (NIPRNET) or using wireless radio frequency communications, including satellite communications. Access to MAF LOG C2 can be gained through a dedicated and direct communication line, a desktop PC with a modem, or a base's LAN transmission control protocol/internet protocol (TCP/IP) in an internet environment.

Wireless portable computers can also connect to MAF LOG C2. Users with internet access and an account in MAF LOG C2 can access the system anywhere in the world via internet connection. Each user is set to print reports on a particular printer directed by the MAF LOG C2 system. The local MAF LOG C2 manager initially establishes which printer is linked to each user. Each user has the ability to change their printer as necessary.

User-identification security

Security of the MAF LOG C2 system is the responsibility of all users. The MAF LOG C2 system is not authorized to process or transmit any classified data. The first step in gaining access to MAF LOG C2 is completing a DD Form 2875, System Access Authorization Request (SAAR). Once the SAAR is completed and turned into the local MAF LOG C2 management section, a user ID, provided by the local DBM (base-level), and a password, selected by the individual, are required to logon to the system. Passwords are changed on a frequent basis to aid in protecting the security of the system. Individual users are responsible for ensuring their passwords are not compromised. Once a password has been established, users have the option to register their common access card (CAC) for future access to MAF LOG C2. Individuals coordinate through the local DBM when they are reassigned or change positions where access is not required or their requirements for access have changed. Each authorized MAF LOG C2 user is assigned a unique user ID, *and* each user ID is assigned to a *logical terminal*, referred to as an L-term. Program 9057 (user-ID/L-term update) is used to assign L-terms to user IDs. Usually all the people in one specific shop will have the same L-term because they most likely use the same programs and share the same printer.

Program access security

The 9057 program (program and access key authorization to a terminal) is used to *build* the program *access* to a designated L-term. It allows the local DBM to set privileges or access to certain MAF LOG C2 programs. Certain MAF LOG C2 programs are restricted to certain terminals and access keys. Some programs are controlled by MAF LOG C2 programmers at the Oklahoma DECC, and some programs can be given access through 9057 by the local DBM. Programs that need some type of password and/or built-in security restrictions are controlled by 9057. Each appropriate program has up to eight different control keys, and instructions for these keys can be found clicking on the 9057 blue help button (?). Figure 5–2 shows an example of a 9057 screen.

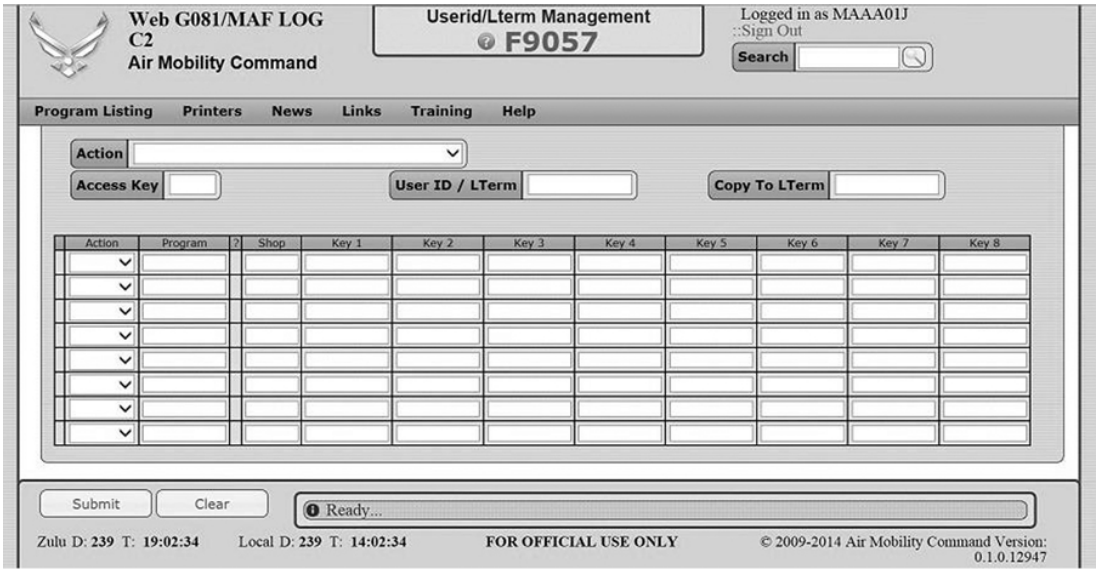

Figure 5–2. Sample MAF LOG C2 9057 screen.

To illustrate the difference between the two types of security access, look at one example:

The tire shop has seven people assigned; and uses about four programs in their day-to-day work. The command post has 35 people assigned and uses about 20 programs in MAF LOG C2. The tire shop does not need the same access that the command post has because the programs they use differ greatly; therefore, all the people in the tire shop are assigned to one L-term, while the command post is assigned another L-term.

Self-Test Questions

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

043. Administrative system overview

1. Name the major commands that use MAF LOG C2.

2. MAF LOG C2 was developed from what aircraft program?

3. Which agency runs the overall management of MAF LOG C2?

4. Where is the central database and host mainframe that runs MAF LOG C2?

5. Name five major MISs with which MAF LOG C2 interfaces.

6. Name two advantages the BROKER system permits for MAF LOG C2 users.

7. How is data contained in MAF LOG C2's ODS accessed?

044. Functional areas of mobility Air Force logistics command and control

1. Although *not* arranged as subsystems, MAF LOG C2 programs can be grouped together in what manner?

2. Match each capability in column A with the corresponding capability it provides in column B. Each functional group in column B may be used only once.

Column A	*Column B*
____ (1) Bench stock replenishment request.	a. Flightline.
____ (2) User management.	b. Analysis.
____ (3) Support equipment inspection report.	c. Backshop/Support equipment.
____ (4) Installed component TCTO report.	d. Debrief.
____ (5) Personnel management.	e. Scheduling & engine management.
____ (6) Maintenance Summary by System.	

____ (7) TCTO compliance history for an aircraft, engine or support equipment AGE ID.
____ (8) Identify Aircraft Repeat/Recur Discrepancies.
____ (9) Aircraft Arrival/Departure/Status Update.
____ (10) Open Aircraft Discrepancies against a work center.

f. MAF LOG C2 management.
g. Integrated logistics system–supply.
h. Training /Mobility.
i. Inspection.
j. MOC.

045. Mobility Air Force logistics command and control system security management

1. How do worldwide users connect to MAF LOG C2?

2. Who gives access to MAF LOG C2 at base level?

3. What else is assigned to a MAF LOG C2 user ID when issued?

4. What program is used to build the program access to a designated logical terminal?

5–2. MAF LOG C2 Database Structure and Layout

As discussed earlier in this unit, MAF LOG C2 is the automated worldwide MIS that provides maintenance data for maintenance management of AMC's airlift and tanker fleet. It is an AMC owned and operated system used to collect, record, and present information for the efficient management of its logistics functions. We discussed how MAF LOG C2's programs increase the ease of use of the MIS, providing for a more "user friendly" system. Next, we will discuss the basic database structure and layout of MAF LOG C2.

046. The database structure

The MAF LOG C2 MIS is *not* a *single huge* database, but rather it is made up of *many smaller*, interrelated databases structured and arranged by the type of data contained in each. These databases have a *hierarchical record structure*, a structure where the records exist on different levels, providing multiple ways users can access the data contained in the records.

Database relationships

MAF LOG C2's databases are arranged by the type of data they contain. Some of these databases have one or more subordinate databases. One example is the M379SR, MDC—WUC/Base record

database that has the M379S11, MDC detail record that contains related information. The different programs that make up the system are designed to enter through these primary or master databases and drill down into the subordinate database, if necessary, to the record that is being inquired or updated. The program then displays the data in the record to the user. Depending on the action code the user inputs, the program then makes the necessary updates, additions, or deletions, and creates or deletes the necessary physical links to records within the databases.

The arrangement of MAF LOG C2's databases is somewhat like the arrangement of some of the different subsystems in IMDS. For example, the M364SR, Component Serial Number Master database in MAF LOG C2, and its subordinate databases, contain data necessary for the engine management section of an AMC tanker unit to manage aircraft engines effectively, including engine inventory, status, installed components, maintenance history, and TCTO status. Similarly, the CEMS subsystem of IMDS contains all the programs and the same type of data for the engine management section in an ACC fighter unit.

Some databases, such as the M363SR(A), Action Taken Master File database, and the M363SR(B), How Malfunction Master File, are standalone databases that contain seldom, if ever, changed data. The data contained in these databases consists of maintenance codes, usually dictated by Air Force or MAJCOM instruction. These types of records are used to define different maintenance codes in MAF LOG C2. Still others, such as the M363SR(M), Possession Purpose Code Table, contain records that are *populated by other* MISs, in this case REMIS. The data contained in this database is updated in REMIS by system managers at Wright-Patterson AFB, Ohio, and pushed to MAF LOG C2. Figures 5–3 through 5–5 contains a list of the databases in MAF LOG C2, their description, and the primary program that updates the records in them.

DATABASE	DESCRIPTION OF RECORD	PRIMARILY UPDATED BY PROGRAM:	DATABASE	DESCRIPTION OF RECORD	PRIMARILY UPDATED BY PROGRAM:
			M362SR	PART NUMBER MASTER FILE	9132
M354SR	ASYNCHRONOUS WEB OUTPUT SEGMENT (WEB G081)		M362S12	WORK UNIT CODE FILE	9132
			M362S22	REPAIR BASE / SHOP RECORD	9132
M355SR	PARKING LOCATION HISTORY	9018	M362S13	WARRANTY FILE	9132
M357SR	BASE MASTER		**M363SR**	(A) REMIS FILE - ACTION TAKEN MASTER	
M357S11	MDS SYSTEM CAPABILITY MASTER	9137	M363SR	(B) REMIS FILE - HOW MALFUNCTION MASTER	9008
M357S12	MDS POSSESSED BY A BASE	9014	M363SR	(C) ID NUMBER MASTER FILE	9014
M357S13	PEC CODES	9139	M363SR	(D) MDC (9099) ERROR MESSAGE NOMENCLATURE	
			M363SR	(F) MISSION SYMBOL NOMENCLATURE (AMC 10-202 VOL 6)	9055
M354SR	WORK UNIT CODE MASTER RECORD	9059	M363SR	(G) BASE/LTERM TIME ZONE CROSS REFERENCE	9075
M358S11	MADARS MESSAGE / FAULT CODE VARIABLES	9003	M363SR	(H) SBSS LOOKUP TABLE	9078
M358S12	FAILURE DATA SUMMARY AT MODIFICATION		M363SR	(I) ICAO / BASE CODE / SRAN CODE CROSS REFERENCE	9073
M358S13	HOW MAL / ACTION TAKEN JOB STANDARD	9022	M363S11	(I)SECONDARY POSSESSING ORGANIZATIONS	
M358S14	SERIALLY CONTROLLED PART NUMBER X-REFERENCE	9132	M363SR	(J) MASTER WORKCENTER RECORD	9007
M358S15	MADARS / MESL REMARKS	9105	M363SR	(K) REMIS FILE - SRD / MDS CROSS REFERENCE	9061
			M363SR	(L) DOCUMENT SEQUENCE NUMBER MASTER	9096
M359SR	AIRCRAFT MASTER RECORD	9018 / 9005	M363SR	(M) REMIS FILE - POSSESSION PURPOSE CODE	
M359S11	MAINTENANCE DISCREPANCY (OPEN JOBS)	9050 / 9010 / 9017	M363SR	(N) REMIS FILE - TYPE MAINTENANCE	
M359S21	MAINTENANCE DISCREPANCY (WES/MOC DUE JOBS)	9050 / 9010 / 9017	M363SR	(O) REMIS FILE - WHEN DISCOVERED CODE TABLE	
M359S12	-6 INSPECTION / TIME CHANGE	ALL -6 PROGRAMS	M363SR	(P) REMIS FILE - COMMAND CODE TABLE	
M359S13	PAPERLESS INSPECTION INDICATOR	9001	M363SR	(Q) SBSS ENROUTE LOOKUP TABLE	9081
M359S23	PAPERLESS INSPECTION CROSS-REFERENCE	9001	M363SR	(Y) MANAGEMENT PRINTER CONTROL	9007B
M359S14	AIRCRAFT DETAILED STATUS DATA	9018/9026			
M359S15	AIRCRAFT DETAILED INVENTORY RECORDS	9005			
M359S16	AIRCRAFT SUMMARY FLYING TIME	9020	**M364SR**	COMPONENT SERIAL NUMBER MASTER	9021
M359S26	AIRCRAFT DETAILED FLYING TIME	9020	M364S11	ENGINE TEST CELL RESULTS	9065
M359S26A	AIRCRAFT ADJUSTMENT RECORD FOR FLYING TIME	9042	M364S12	SERIAL NUMBER NEXT LOWER COMPONENT	9102
M359S17	AIRCRAFT SUPPLY CROSS-REFENCE RECORD	9006	M364S13	COMPONENT TCTO STATUS RECORD	9126 / 9099
M359S18	ETIC CHANGES & EXTENDED 9018 REMARKS	9018	M364S14	COMPONENT HISTORY - AFTO FORM 44/95 (EVENT)	9102
M359S1A	DEPLOYED AIRCRAFT DATE & LOCATION	9142	M364S24	COMPONENT HISTORY - AFTO FORM 44/95 (DETAILS)	9037
M359S1B	AIRCRAFT BASE ASSIGMENT CHANGES	9042	M364S15	ENGINE OIL CONSUMPTION FILE	9053
			M364S16	IN FLIGHT ENGINE SHUTDOWNS	9023
M360SR	PROGRAM INSTRUCTION MASTER FILE/8033 GROUP NAMES	9051 / 9077	M364S17	ENGINE SOAP ANALYSIS	7030
M360S11	PROGRAM INSTRUCTION CONTENTS	9051	M364S18	TIME DISPATCH RECORDS (C005M ONLY)	9083
M360S12	8033 DESTINATIONS	9077	M364S19	ENGINE CYCLE RECORD	9020
M360S13	PROGRAM CHANGES (529# & DATE OF CHANGE)	9051A	M364S1A	ENGINE TAKE OFF TDAM	7259 / 7027 / 9097
M360S23	PROGRAM CHANGES (DETAILS)	9051A	M364S1B	ENGINE EVENTS (C005M ONLY)	9084
M361SR	CONSOLIDATED TOOL KIT (TOOL BOX) / RAMP INSPECTIONS	9052 / 9071	**M354SR**	DATA TAPE STATUS	9005
M361S11	CONSOLIDATED TOOL KIT (TOOL BOX CONTENTS)	9052	M366S11	USED BY 8063 TO DETERMINE CLOSED JOBS NO MDC LAST 7 DAYS	9010 / 9056
			M366S12	DEBRIEF MASTER RECORD	9020 / 9134

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Figure 5–3. MAF LOG C2 database listing, page 1.

DATABASE	DESCRIPTION OF RECORD	PRIMARILY UPDATED BY PROGRAM:	DATABASE	DESCRIPTION OF RECORD	PRIMARILY UPDATED BY PROGRAM:
M366S22	DEBRIEF SYSTEM CAPABILITY RECORD	9140	**M376SR**	BASE / SHOP MASTER RECORD	9045
M366S2A	DEBRIEF SORTIE/JCN CROSS-REF	9050	M376S14	OFF EQUIPMENT DISCREPANCY (AFTO FORM 350)	9128 / 9129
M366S2B	VOLCANIC INCURSIONS	9090	M376S24	AFTO FORM 350 TRANSFER RECORD	9128
			M376S15	MOCK-UP EQUIPMENT	9133
M367SR	(B) TOTAL AIRFLEET TIME CONSTANT SECTION	9028 / 9020	M376S17	OFF EQUIPMENT SUPPLY CROSS-REFENCE RECORD	9006
M367SR	(C) JOB CONTROL NUMBER CONSTANT SECTION	9036 / 7115	M376S18	SHOP MANPOWER AUTHORIZED BY AFSC	9045
M367SR	(D) FLYING HOU+R PROGRAM BY BASE (PROG/COMM)	9028 / 9020	M376S19	SHOP TRAINING REQUIRMENTS RECORD	9118T
M367SR	(J) BASE SOAP SAMPLE NUMBER	9203			
			M377SR	SE//VEHICLE/OFF WING ENGINE/APU MASTER RECORD	9112
			M377S11	SE//VEHICLE/OFF WING ENGINE/APU DISCREPANCY	9111
M368SR	AUTOMATED OC-ALC FORM 529 (HEADER)	9038	M377S21	SE/VEHICLE/OFF WING ENGINE/APU WES (WORK EVENT SEPARAT	9111
M368S11	AUTOMATED OC-ALC FORM 529 (BODY)	9038	M377S12	SE/ INSPECTIONS (ONLY FOR SE/AGE!)	9110
M368S12	COMPLETED 529 ESTIMATE/EXPENDED WORK HOURS	9038	M377S13	AGE TCTO RECORD	9143
			M377S14	SE AFTO FORM 95 DATA (ENG/APU DO NOT GO HERE)	9064
M369SR	MADARS MESSAGE NUMBER / FAULT CODE TO WUC CONSTANT	9003	M377S17	SE/VEHICLE/OFF WING ENGINE SUPPLY CROSS-REFENCE	9006
M370SR	TCTO STATUS MASTER	9131	**M378SR**	SPECIAL DISCREPANCY PACKAGES	9004
M370S11	APPLICABLE TCTO SERIAL NUMBERS	9104 / 9126 / 9143	M378S11	SHOPS ASSOCIATED WITH GLOBALPACKAGE TASK	9089
M370S12	MANHOUR VARIABLE	9126			
M370S13	MODIFICATION TRACKING WUC CROSS REFERENCE		**M379SR**	MDC - WUC / BASE RECORD	9099 / 9056
			M379S11	MDC DETAIL RECORD	9099 / 9056
M371SR	CCMS TCTO STATUS MASTER	9131	M379S21	WIRING IMPROVEMENT PROCESS (WIP) DATA	9031
M371S13	CCMS PART NUMBER VARIABLE	9104 9127			
M371S23	CCMS TCTO MANHOUR VARIABLE	9104 / 9127	**M380SR**	AIRCRAFT PARKING LOCATIONS	9113
			M380S11	SUPPORT EQUIPMENT MIN EQUIP AUTHORIZED	9117
M372SR	TERMINAL PF KEY/AUTO 8020 ASSIGNMENT	9057 / 9057D			
M372S11	PROGRAM ACCESS KEY	9057C	**M381SR**	Q-LIST RECORD (CROSS REFERENCE TO M362SR/S12)	9132
M372S12	EMAIL ADDRESS	9057			
M372S12N	USERID NAME	7305	**M382SR**	MASTER TRAINING COURSE CODE RECORD	9118
M372SRB	USERIDS FOR AUTO 8020 & 8041	9057B	M382S11	BASE TRAINING CLASS SCHEDULE	9030
			M382S21	EMPLOYEES LOADED TO A GIVEN CLASS	9030
M373SR	G081 SCREEN META-DATA	9069			
			M383SR	JCL MASTER RECORD	9029
M374SR	PERSONNEL/EMPLOYEE NUMBER RECORD	9046	M383S11	JCL RECORD	9029
M374S11	PERSONNEL DUTY STATUS	9048	M383S12	SCHEDULED DEADLINE RECORD	9029A
M374S12	SCHEDULED CLASSES	9030			
M374S13	TRAINING RECORDS	9119	**M384SR**	MAINTENANCE DISCREPANCIES (OPEN & CLOSED JOBS)	9010 / 9099
			M384S11	ADDITIONAL CORRECTIVE ACTIONS FOR M384SR	9099
M375SR	TCTO MDC DATA MASTER		M384S12	DISCREPANCY CONTINUATION	9050
M375S11	TCTO DATA VARIABLE				
M375S13	REMIS UPLOAD DATA	MANY	**M386SR**	AIRCRAFT MULTIPLE SEGMENT REVERSE INDEX (not for base use)	9018

Figure 5–4. MAF LOG C2 database listing, page 2.

DATABASE	DESCRIPTION OF RECORD	PRIMARILY UPDATED BY PROGRAM:
M387SR	AIRCRAFT DEPARTURE RECORDS (INCLUDING DELAYS)	9018 / 9070
M388SR	SBSS LOG FILE	9092 / 9093 / 9094 / 9095
M389SR	C017 FAULT CODE MASTER & ADITS	9120
M389S11	TAIL NUMBER WITH FAULTS	
M390SR	AIRCRAFT SCHEDULE	9074
M391SR	MASTER SUPPLY RECORD	9006
M391S11	SUPPLY TRIC HISTORY RECORDS	9006
M391S12	SUPPLY CANN DATA RECORDS	9006
M392SR	-21 MASTER EQUIPMENT RECORD	9002
M392S11	-21 BASE AUTHORIZATIONS	9015
M393SR	-6 MASTER RECORD (FOR ALL AIRCRAFT -6 RECORDS)	ALL -6 PROGRAMS
M394SR	G081 NOTEPAD	9027
M395SR	COMPONENT TRACKING/FOLLOWING	
M395S11	COMPONENT TRACKING/FOLLOWING DETAILS	
M396SR	SBSS LOG FILE	9092 / 9093 / 9094 / 9095
M397SR	CEI TABLE	9123
M398SR	SCHEMA FILE (GENERAL)	8300
M398S11	SCHEMA FILE (DETAILS)	8300
		8300
M399SR	BROKER LOG FILES	9018 / 9060

Figure 5–5. MAF LOG C2 database listing, page 3.

Record relationships

Unlike IMDS, which is basically made up of two different database structures; part network or hierarchical database, and part relational database, MAF LOG C2 is a purely hierarchical database. Its basic record structure is owner and member records, physically connected by links. MAF LOG C2's databases contain parent or owner records, such as an aircraft master record contained in the M359SR database, and records subordinate and physically linked to that record, such as status records in the M359S14 database and inspection records contained in the M359S12 database. Another example is the shop master record in the M376SR database and its authorized manpower by AFSC in the subordinate M376S18 database. In both cases, the subordinate record is physically linked to the master record. If the master record is deleted or removed, the subordinate records are *also* discarded.

Unlike the no hierarchical structure in IMDS, in which these links are controlled by the database management system (DMS 2200), MAF LOG C2's *physical links* are *controlled* programmatically, meaning the program used to update a record controls the physical linking of that record. To illustrate this process, we again look to the tire shop:

The tire shop has seven people assigned. When Amn Snuffy, who is fresh from tech school, is assigned to the tire shop, it will bring the number of people assigned to the shop to eight. During in-processing, the programs section will add Amn Snuffy to the tire shop using program 9046, Personnel Management. The program 9046 will create his AEF Band and position number in the M374S11, Personnel Duty Status database, and then create a physical link to link that record to the M374SR, Personnel Employee Number Record database, that will update the number of assigned personnel.

The physical links between records allow record updates made to one record to filter *through* to *other* related records linked to it. These physical links support many-to-many relationships. A member record can have no owner record, one owner record, or many owner records, and can act as an owner record to other member records. These record relationships allow users to access records at many different levels. MAF LOG C2's record structure also allows records of the same type to be strung together, which improves processing time while retrieving or updating data.

Nonetheless, there are some drawbacks to a hierarchical database design. Because of the physical pointer relationships, the data elements must be maintained while making upgrades and improvements to the system. They can be cumbersome to reorganize, requiring a high level of technical skill by the system managers and programmers who implement system upgrades. As a result, the evolution of this type of database is slow. Also, as with all hierarchical databases, MAF LOG C2 still uses record-at-a-time processing which can be slow and tedious; however, MAF LOG C2 processing is extremely fast. All online transactions process in less than 2 seconds and background or batch jobs are normally completed within 30 seconds.

047. The database layout

As we discussed earlier, MAF LOG C2 is *not* one big database, but rather many smaller databases arranged according to the type of data they contain. Program 67053 provides the DBM a record layout or schema to use as a roadmap to navigate through MAF LOG C2's records. In this lesson, we will discuss the MAF LOG C2's basic record layout and schema.

Basic record layout

The local DBM has limited access to the data contained in MAF LOG C2's databases, especially in the area of data corrections or changes; however, the database manager is allowed to maintain MDC records to ensure the integrity of maintenance data. Program 67053 *prints* the database layout or schema for given records. This printout gives DBM a *logical view* of the database. This is similar to the IMDS schema. See figure 5–6 for a sample printout of a user record from the M359S12 –6 Inspection/Time Change database.

The top of the record shows the M359S12 database to program cross-reference that lists all of the MAF LOG C2 programs that access this record, *and* the level of access each program has. For instance, notice program 9079, Dash 6 Special Inspections C–17 has only GR access (G = Read, R = Replace), whereas program 9080, Dash 6 Inspection Update KC–10 has all access (A = All). This means the MAF LOG C2 Dash 6 inspection update program for the KC–10 aircraft can read, replace, insert, and delete data in records in the M359S12 database, while the special inspections listing program for the C–17 aircraft is only allowed to read and replace data in existing records, but cannot create new records or delete records from the database. This concept of restricting program access helps protect the integrity of the data contained in each database. It also gives the DBM a "roadmap" of the record to assist in troubleshooting database errors.

Schema section

Below the program cross-reference on the program 67053, list database schemas, printout is information about the type of data contained in the record, the schema. The schema is not part of the database records, but rather describes the exact physical layout of the record, and its logical relationships to other types of records. It is used by the system as a roadmap to find and update the correct record. This schema section lists the data name, the length of the data, usage, the actual data contained in the field, and the starting and ending point of the data. It *defines* to the MAF LOG C2 programs the type and format of the data that can be used in that field. For example, referring again to Figure 5–6, the length of the record in the M359S12 database is 214 characters. Notice the line that begins with the data name HOURS_LAST_INSP. The length of this data is five characters, beginning in position nine and ending in position 13. The usage is P5, meaning the data is an integer, and the actual data contained will be a straight five characters (Z).

Maintenance data collection database

Program 9056 (MDC Inquiry/Update/Delete) allows the user to update or delete an MDC record entered in MAF LOG C2. It also *provides* DBM the *ability to read* the MDC database. The data integrity team, database management, and shop chiefs can use this program to correct mistakes and inaccurate information that was entered into the system. To understand fully the meaning of each field, refer to the blue help button (?) at the top of the screen. Within the help panel, you will find a full explanation and detailed instructions for each field of the 9056 program. Figure 5–7 is an example of the different field options for program 9056 for inquiring, updating, and deleting MDC data. Program 9056 is a useful tool to ensure the integrity of the data contained in the MAF LOG C2 MIS.

SEGMENT: M359S12 -6 INSPECTION / TIME CHANGE
CODES: G = GET OR READ GOP = READ ONLY O = READ ONLY R = REPLACE
I = INSERT D = DELETE A = ALL

6359 G	6999 GO	7002 GO	7002 GO	7061 GO	7062 GO	7110 G
7181 GO	7184 GO	7184 GO	7201 GO	7202 GO	7567 GOP	7567 GOP
7306 A	7308 A	7308 GR	7507 GPR	7514 AP	7514 AP	7520 A
7552 A`	7553 A	7553 A	7554 A	7554 GO	7555 A	7555 A
7566 A	7567 AP	7567 AP	7568 AP	7568 AP	7569 AP	7569 AP

DATA-NAME	LEN	USAGE	ACTUAL	FROM	TO
M359S12_M359S12	214	GROUP	GROUP	1	214
KM359S12	8	GROUP	GROUP	1	8
TYEE_M359S12	1	A	A	1	1
SEC_M359S12	2	A	A	2	3
PARAG_M359S12	2	A	A	4	5
SUB_PARAG_M359S12	1	A	A	6	6
LOC_M359S12	2	A	A	7	8
HOURS_LAST_INSP_M359S12	5	P5	Z	9	13
HOURS_1ST_INSP_DUE_M359S12	5	P5	Z	14	18
HOURS_INSP_INCR_M359S12	5	P5	Z	19	23
DATE_LAST_INSP_M359S12	5	P5	Z	24	28
MONTH_INCR_M359S12	2	P2	Z	29	30
FLIGHTS_INSP_INCR_M359S12	3	P3	Z	31	33
T_O_DATA_CODE_M359S12	7	A	A	34	40
LANDINGS_LAST_INSP_M359S12	5	P5	Z	41	45
LIFE_RAFT_CASE_M359S12	1	A	A	46	46
JCN1_M359S12	7	A	A	47	53
DATE_INSTALLED_M359S12	5	P5	Z	54	58
DATE_MFG_M359S12	5	P5	Z	59	63
LOGIC_M359S12	1	A	A	64	64
FORECAST_AMA_M359S12	5	A	A	65	69
FILLER1_M359S12	1	A	A	70	70
NEW_LOGIC_M359S12	2	A	A	71	72
ISOC_CHECK_M359S12	2	P2	Z	73	74
MAJ_LAST_INSP_M359S12	3	P3	Z	75	77
DAY_INCR_M359S12	4	P4	Z	78	81
ACCRUED_DAYS_M359S12	5	A	A	82	86
ACCRUED_HOURS_M359S12	5	P5	Z	87	91
PDM_DATE_M359S12	5	A	A	92	96
HSC_LAST_INSP_M359S12	3	P3	Z	97	99
ADD_CANCEL_JOB_M359S12	1	A	A	100	100
GEN_SN_M359S12	10	A	A	101	110
COMPONENT_SN_M359S12	10	A	A	111	120

Figure 5–6. M359S12 sample record layout.

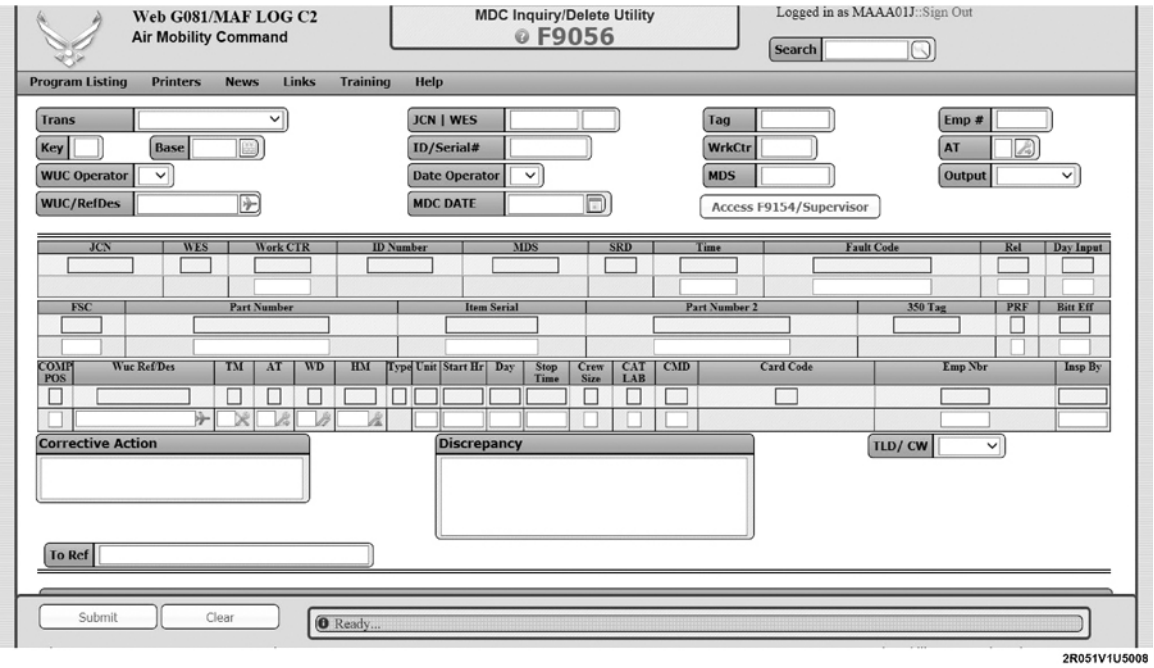

Figure 5–7. Program 9056 (MDC Inquiry/Delete utility).

Self-Test Questions

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

046. The database structure

1. Describe a hierarchical record structure.

2. What type of data does the M364SR, Component Serial Number Master Database contain?

3. Which other MIS populates the M363MSR, Possession Purpose Code Table database? How is the database populated?

4. Describe MAF LOG C2's basic record structure?

5. How are MAF LOG C2's physical links between its records controlled?

6. What are some of the advantages of MAF LOG C2's record link structure?

047. The database layout

1. What program prints MAF LOG C2 database schemas?

2. What document gives MAF LOG C2 managers a logical view of the database?

3. What record attributes does the schema list?

4. What does program 9056 allow the user to do?

5–3. Using the MAF LOG C2 System

In this section, we have discussed an overview of the MAF LOG C2 system. You are familiar with its background, features and programs, security features, and basic database structure and layout. Next, we will discuss login/logoff, MAF LOG C2's different environments, and the different program types contained in MAF LOG C2. You will learn about using MAF LOG C2's programs for creating and documenting aircraft and support equipment discrepancies and the program for system deficiency reporting.

048. Mobility Air Force logistics command and control database environments

Two separate database environments exist in MAF LOG C2. One is the production environment *and* the other is the test environment. MAF LOG C2 users use the production environment to load everything from aircraft discrepancies and MDC to training course codes and real-time aircraft status updates. Users and managers can also retrieve the data, either to the screen or to a printer, depending on the program being used. Most, if not all data in MAF LOG C2 can be sent to a printer in one format or another. The MAF LOG C2 *test* environment is used to test program and/or database updates *before* they are applied to the production environment. It also offers a good place to train new personnel without changing or modifying any records in the production environment.

Login

With the user-friendly features of MAF LOG C2, it only takes a few steps to log in to the system. When you open the login screen you will see MAF LOG C2 (fig. 5–8). You will input your User ID

and password that you received from your DBM. The process of receiving a User ID was previously discussed in this unit under user identification security. After initial user registration, login will be CAC enabled. When you select the icon that says “Log In”, the next screen gives you a selection of the database environment (fig. 5–9). Under the “Sitemap”, of the welcome screen, you would select the functional are you wish to review or input a screen number in the search field.

Figure 5–8. Login to MAF LOG C2.

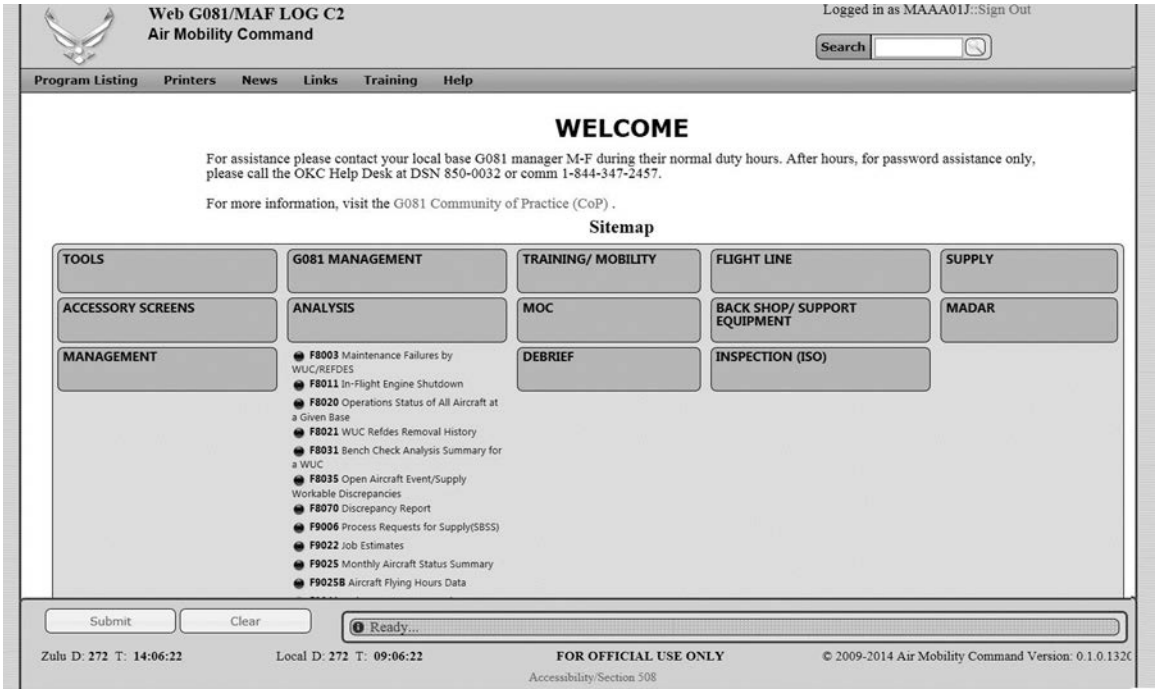

Figure 5–9. Sitemap functional areas.

Log off

Logging off from MAF LOG C2 is very simple. From any screen at the top right you will see your login ID and Sign Out. To log off of MAF LOG C2 you will click on “Sign Out.” This will take you back to the log in screen (fig. 5–8). You may then close out the internet browser window. This completely closes the connection to MAF LOG C2.

049. Types of mobility Air Force logistics command and control database programs

The MAF LOG C2 system consists of four program types: (1) batch (Common Business-Oriented Language (COBOL), (2) retrieval (for online computer users (FOCUS), (3) output, and (4) input. These four types of programs allow the input, output, retrieval, and manipulation of the data contained in MAF LOG C2’s databases. In this lesson, we will discuss each of these program types.

COBOL batch programs

COBOL batch programs are designated as 67XXX series *and* produce output products (paper or disk) that provide specific *inquiry*-based data. For example, if you are going to prepare a report of all repeat and recurring discrepancies against a particular aircraft, you could run program 67089, which processes the information. Using the MAF LOG C2 menu program (9058), a user can submit a request for a batch report to be output. Commanders, managers, and supervisors typically use batch reports to review status, manage assets, allocate resources, and assist in management decisions. DBMs run batch programs and can enable the functional user to do the same for certain 67XXX programs pertinent to their functional area.

FOCUS programs

FOCUS is a retrieval language program. FOCUS provides a valuable tool for managers at all levels. Local DBMs can write FOCUS to extract information tailored to meet specific needs.

Output programs

Output programs (8XXX) are similar to batch reports; however, information is entered *through* formatted screens *and* processed on line. Although these screens provide valuable information to managers and supervisors, they are also beneficial to all MAF LOG C2 users by allowing them to check previous input actions.

Input programs

Input programs (9XXX) are the heart of the system in that they update the database. Most input data is provided by maintenance personnel and is based on completed maintenance actions. It is critical that all organizations and individuals ensure the accuracy of the data being input. Management decisions at all levels rely on valid and timely data.

050. Use of maintenance data documentation programs

During your career as a maintenance management analyst, you will likely perform duties such as data integrity team monitor or AMU analyst that will require you to be familiar with MAF LOG C2’s MDD programs. It is every user’s responsibility to ensure the data being input is done so according to the appropriate directives and is accurate. As a maintenance analyst, you will be required to review aircraft discrepancy and corrective action data, as well as other data in MAF LOG C2. You may be required to report errors in maintenance documentation to the appropriate agency, such as job control or debrief. You may be asked to provide training in correct documentation to maintenance personnel. You may be called upon to correct inaccurate discrepancy or corrective action data. As a DBM, you will be tasked to provide support to customers who need help updating or closing maintenance actions. Remember, the credibility of your analysis section begins with the maintenance of accurate data. You should be familiar with how maintenance events are created, updated, and closed out once completed. In this lesson, we will discuss the two main MDD programs an analyst should be familiar with.

Program 9050 input discrepancy program

Program 9050 Input Discrepancies is used to create maintenance actions. The program is used by debrief, MACC, isochronal (ISO), and scheduling to create jobs for flight crew reported discrepancies, as well as discrepancies discovered by ground crews, whether at home station or deployed. The program adds *or* changes discrepancies in the 781A *or* 781K files. It is also used to change existing discrepancy data, scan discrepancy data, schedule aircraft discrepancies, produce an automated AFTO Form 349 format, and list potential repeat or recurring discrepancies. Figure 5–10 is an example program 9050 input screen. Notice there are certain fields, such as the action and job indicator field that have drop down boxes. These drop downs contain the data that may be entered in that field. Simply click on the down arrow and select the proper item or you can manually enter the data. To access program 9050, simply input F9050 in the search field and click on the magnify glass icon or at the welcome screen, look at the flight line section under site map and scroll down the list of screens and select F9050.

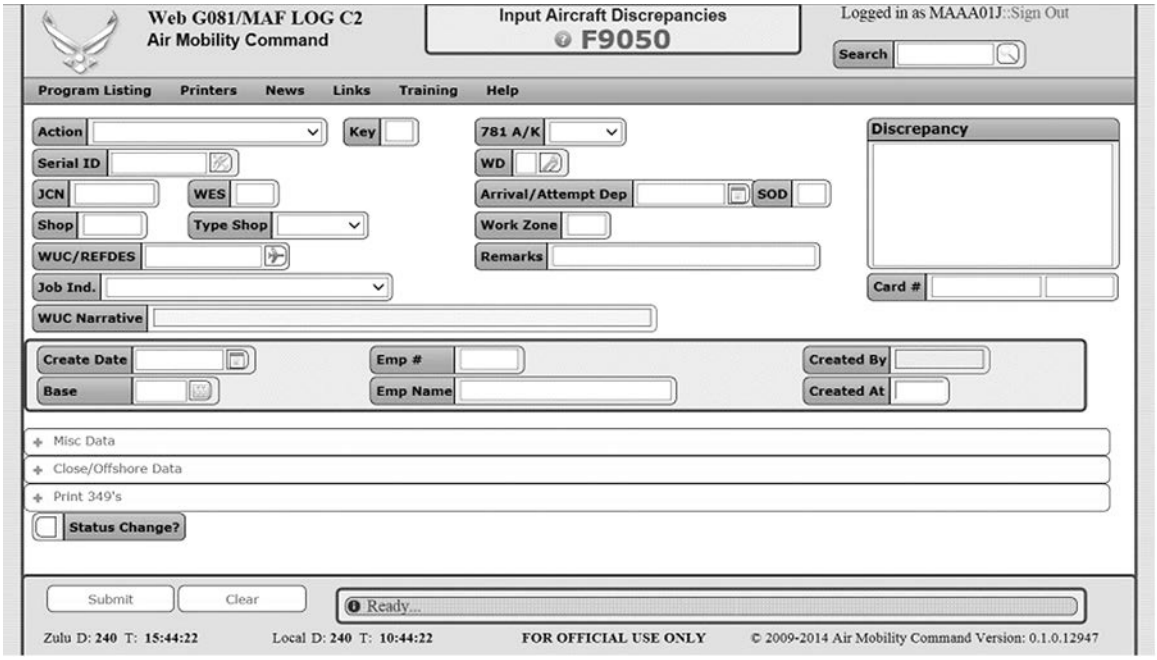

Figure 5–10. Program 9050 screen.

Though we can't go into detail on every data field here, we will discuss several key fields on the following table:

Field	Description
Action	The action code tells MAF LOG C2 what information to gather from the user to respond to the request. This is a required field. The choices are as follows: • 'A' to add a new discrepancy. • 'C' to change a discrepancy field. • 'S' to scan a discrepancy. • 'G' to change data on a job after it is closed as long as no MDC exist against job. • 'W' to change a WUC after the job is closed for correcting status. • 'N' to inquire on next work event separator (WES). • 'O' to remove a MOC due WES as long as MOC due WES is still open.
Key	2-position program access key, provided by the local DBM.
Serial ID	8-position aircraft serial number or 6-position identification number.

Field	Description
JCN	7-position JCN assigned to the discrepancy.
WUC/Ref Des	5-position WUC, or 10-position C–17 Reference Designator (REF DES). The REF DES for a C–17 indicates the system, subsystem, LRU, and the Shop Replaceable Unit (SRU) of a component.
Job Ind	2-character field that identifies the condition of the aircraft. To designate the discrepancy as a Red 'X', or not mission capable, for maintenance, enter 'NM'. For not mission capable due to parts on order, enter 'NS'.
Shop	Enter the mnemonic of the shop performing the work on the aircraft. For the fuels shop, enter FUEL. Refer to the list of shop mnemonics for your particular base.
WD	When Discovered (WD) code indicates when the discrepancy occurred or was discovered.
Rep/Rec JCN	Use this field to indicate whether the discrepancy is a repeat or a recur write-up. The JCN is entered when the discrepancy was first identified. You have the option to select either none, repeat or recurring.

For an explanation of each field in program 9050, refer to the help screen by clicking on the blue question mark icon underneath the title heading.

Program 9099 MDC Input program

The purpose of program 9099 is to *provide* an automated AFTO Form 349 format for input of MDC data. Simply put, it is used to close maintenance actions. Maintenance personnel use program 9099 to document maintenance codes, such as the type of maintenance, how malfunction (How Mal), action taken, and actual component or action WUC. The corrective actions for a JCN are also documented using this program. To access program 9099, first login to the system. Once logged in, input F9099 in the search field and click the magnifying glass icon. Figure 5–11 shows a program 9099 input screen

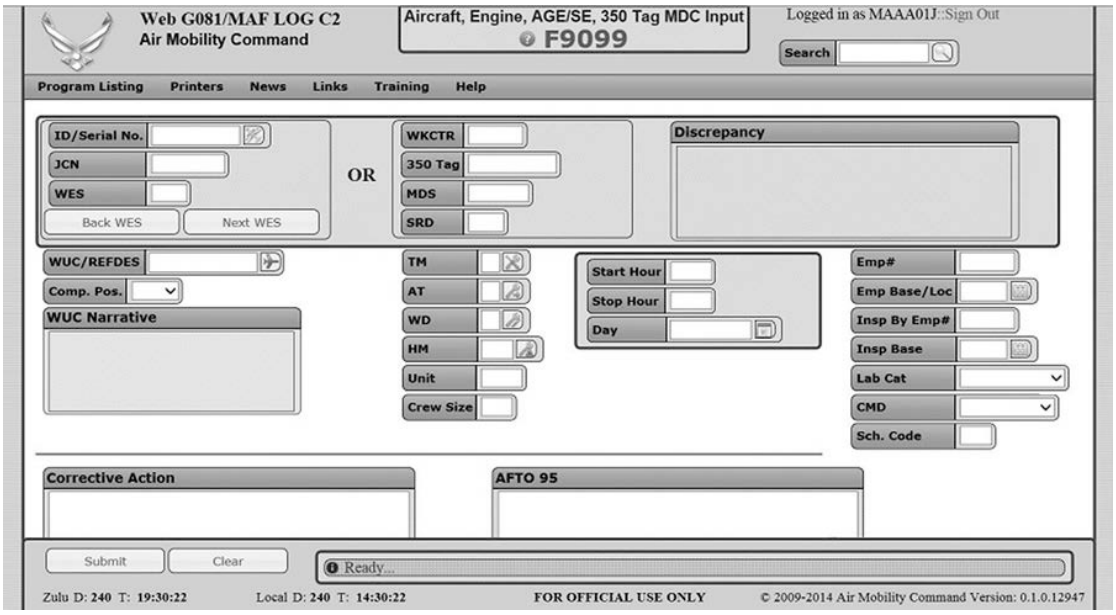

Figure 5–11. Program 9099 screen.

Normally, you process a SCAN transaction for the discrepancy to prefill the data fields with data loaded against the AFTO Form 350 Tag. To process a SCAN transaction for on-equipment jobs, enter the JCN and ID/SERIAL fields and press submit. To process a SCAN transaction for off-equipment jobs, enter the data into the work center and 350 TAG fields and press submit. Note that when the data is returned, only the first two positions of the WUC will be displayed. This allows the user to input the correct WUC.

Again, though we can't go into detail on every data field here, we will discuss several key fields below. Some of the fields in the following table will be prefilled for you after processing the SCAN transaction:

Field	Description
ID/Serial No.	Enter the 6–digit ID number or the 8-digit aircraft serial number the discrepancy is loaded against. Select the option from the code selection screen or enter it manually.
Job Control No.	Enter the 7–position JCN. After entering the ID number and JCN, pressing submit will process a SCAN transaction for on-equipment jobs.
Work Center	Enter the shop mnemonic of the work center that owns the AFTO Form 350 Tag requiring MDC. After processing a SCAN for on-equipment jobs, this field will be filled. When dealing with off-equipment maintenance, you will enter the appropriate shop mnemonic. Refer to the list of shop mnemonics for your particular base.
350 Tag	This field designates the AFTO Form 350 Tag number to process MDC against. When scanning for on-equipment jobs, this field may be filled in. For off-equipment jobs, enter the tag number to be processed against.
MDS	Enter either the 4-digit mission design (MD) or 5-digit MDS. This field tells MAF LOG C2 what type of aircraft you are documenting maintenance against C005 for example. If you entered a serial number for a transient aircraft in the ID/Serial No field, you must enter an MDS.
SRD	Enter the SRD from TO 00–20–2, *Maintenance Data Documentation.* This code is used in configuration management to further identify the type of aircraft.
WUC	Enter the WUC for the actual part causing the discrepancy. If accomplishing a TCTO or command directed modification, enter all seven positions of the data code instead of the WUC.
Type maintenance	Select the appropriate type maintenance code from the drop down list.
Action taken	Enter a valid action taken code. This is the action that was performed for this discrepancy. For example, if a part was removed, then replaced with a new part, enter action taken code R for remove/replace.
Unit	Enter the number of units produced, or the number of times an action was taken against the JCN.
Corrective action	Enter in as much detail as possible, the corrective action performed. This corrective action must match your action taken and how malfunction codes.
Discrepancy closed	When completing this job, or in other words taking a units produced of at least 01, in conjunction with a start time, stop time, and stop day, enter Yes in this field and it will automatically process F9010, Discrepancy Completion, F9015, Support Equipment AFTO Form 346 Print/Close/Delete, or F9128, Create Off-Equipment Jobs, to close out this job. If you do not have access to these programs, contact your local DBM for assistance. If the job requires a maintenance operational check, enter MOC in this field to create the requirement.
Sortie number	If the job is the discovered in-flight, enter the sortie number in this field. MAF LOG C2 will then physically link this discrepancy with the aircraft sortie records in the M359SR Aircraft Master Record database.

Other critical pieces of maintenance data, including start and stop times, crew size, category of labor, employee numbers, priority of the discrepancy, and equipment location are all entered in program 9099. When you have entered all the data, press submit. If all the data was entered correctly, the user will receive a message "BASIC EDITS PASSED—FINAL MDC ACCEPTED" at the bottom of the screen.

051. Deadline job scheduling

Quite often, it is necessary to schedule print jobs to run at specific times. A good example is reoccurring reports you might need when you first get to work. If you don't schedule the job to run before your arrival, you will waste valuable time waiting for the job to execute and then print. By using screen 9029A, Batch Job Deadline Scheduling, the job will be waiting for you when you arrive.

Function

Screen 9029A allows *deadline* records to be built, changed, deleted, or displayed (fig. 5–12). Deadline records are scanned *hourly* and if they meet the criteria to run *within* the next hour, they are *submitted* to the batch system and scheduled on the *whole* hour. For example, if a job is needed at 1330 hours, it is submitted at 1300 hours and processes shortly thereafter to meet the 1330 hours deadline.

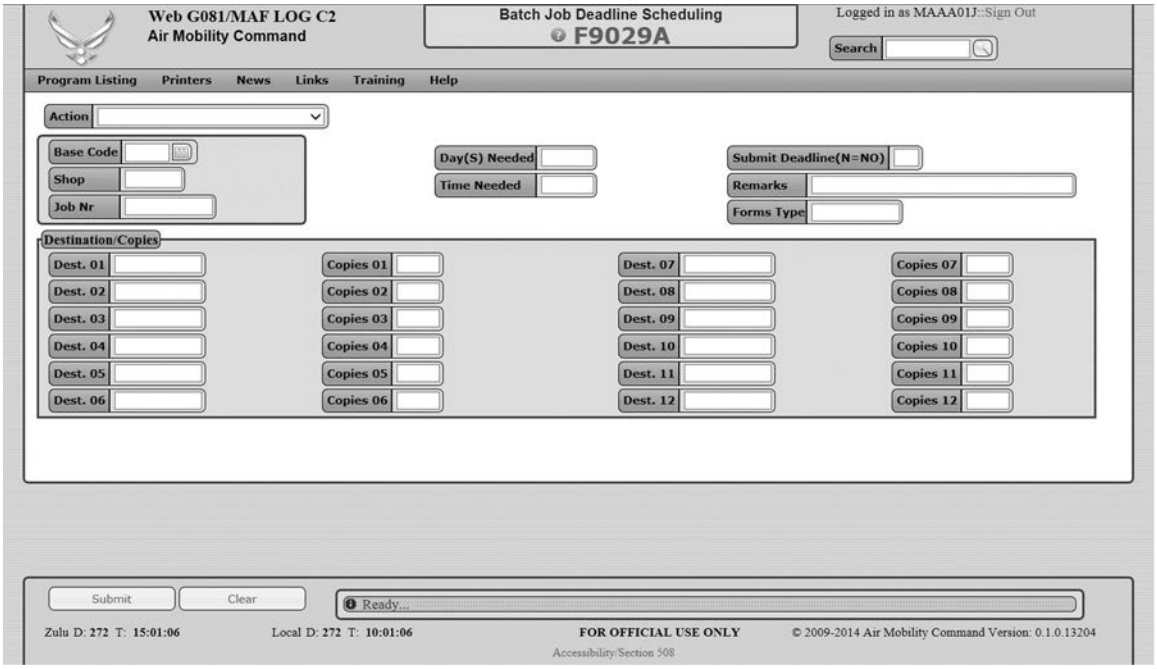

Figure 5–12. Program 9029A screen.

Input

To access the 9029A screen type F9029A in the search field and press submit. As with the other screens we have discussed, there are too many options to learn here. Adding a new job is one of the most important options, so the following table lists the entries for the fields needed to add a scheduled job:

Field	Entries
Action	Type “A” to add a deadline record to a job for a given day and time.
Base	Type the 4 position base code (each base has a unique code).
Shop	Type the shop code (this is where your jobs are stored).
Job Nr	Type the name of the job you want to schedule.
Time Needed	Type the 4 position time the request is to run (time is based on Central Time, adjust for your time zone).
Day(s) Needed	Type “DJ”=Daily, “MF”=Monday-Friday, “MO”=Monday, use the first 2 characters for a specific day, etc., Click the blue Help button (?) for more options.
Forms type	Type “Duplex” if you have a network printer, otherwise leave blank.
Printer	Type the printer number you want the output to print on.
Copies	Type the number of copies you want to print.

Once you have updated all the fields, *press* the “Enter” key.

Using screen 9029A is a very *efficient* way to schedule and manage your print work load. As you start to learn your job, you will realize how many uses this will have for you and your customers. Review the 9029A’s help screen panel for a list of all the options this program offers.

052. System deficiency reporting

There are two programs that enable users and programmers to communicate with each other through messages. The interterminal message allows an informal means to communicate, while a system deficiency report provides a formal way to address system problems that users share with each other. The intent is to solicit a solution and opinion from other users and have it be formally documented, and provide an official response. This section explains the system deficiency reporting process.

Program 9038 system change request

This program is an automated version of OC-ALC Form 529, System Deficiency/Change Report, and provides the capability for the user to submit a system change request or identify deficiencies in any MAF LOG C2 program. Through program 9038, the user can identify the detailed problem being experienced by other users, recommend a solution, and view the concurrence, non-concurrence, or abstinence of the base-level OPR or the DBM.

Any user can submit changes or suggestions for improvements to the system. Program 9038 allows *reporting* of any software or documentation deficiencies on the OC-ALC Form 529. These deficiencies are then logged, analyzed, and acted upon. Deficiency reports affect all users of the MAF LOG C2 system. Nonlocal deficiency reports automatically print to all analysis sections to allow on-line review and comments. HQ AMC is the OPR for the management of the deficiency-reporting program.

The local DBM is the focal point for OC-ALC Form 529. He or she ensures users are aware of software/hardware problems and corrective actions. He or she coordinates new programs, changes to existing programs, and when requested, tests changes identified by HQ AMC/A4MQA or A4PI. He or she also monitors and controls program 9038 (OC-ALC Form 529) by ensuring all affected agencies are aware of proposed changes and that agencies submit change requests through database management. Depending on the local manager option setting, deficiency reports automatically print to all MAF LOG C2 sections to allow on-line review and comments. After reviewing the deficiency report, the DBM concurs/non-concurs and provides comments or recommended changes *within five working days*.

Using the 9038 program (system change request)

To bring up the 9038 screen after you logged in to MAF LOG C2, type F9038 and press submit. A screen like the one shown in figure 5–13 appears. This is your entry point to OC-ALC 529, which is a deficiency report in the MAF LOG C2 system. It is used to identify problems, deficiencies, and limitations with programs, or to request new program functions within the MAF LOG C2 system.

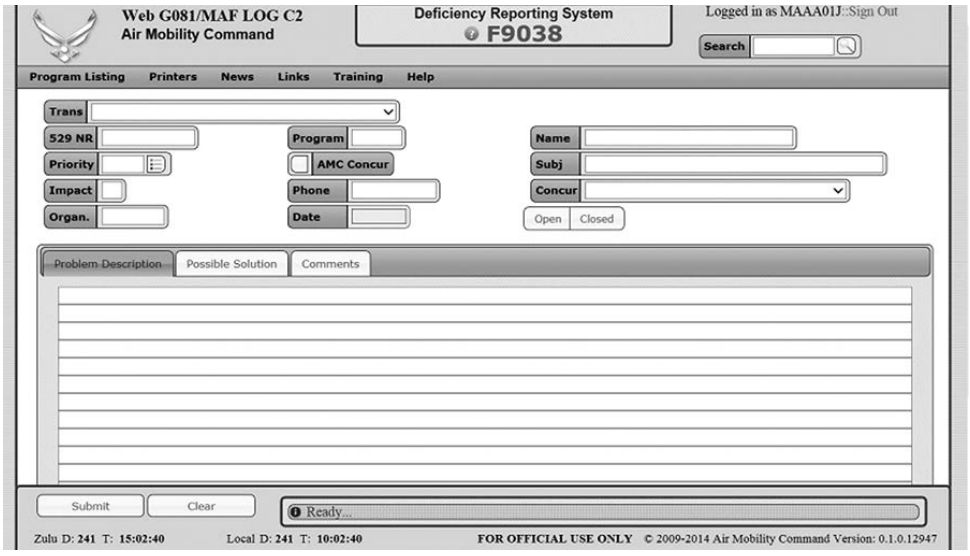

Figure 5–13. Program 9038 system change request.

In the following table are the different field entries for the program:

Field	Entries
Trans	Enter transaction codes in this field. The codes tell MAF LOG C2 what data it must gather to respond to the request. Listed are a few of the options for this field. • 'A' to insert or build a new system change request (SCR). • 'B' to report of SCRs not coordinated for a base. • 'C' to comment on an SCR. • 'D' to delete an SCR. • 'F' to search title field for specific text.
529 NR	The 529 number. If you are creating a report for the first time, leave this blank. MAF LOG C2 will supply a number for you. It is a 7–9 position number.
Priority	This is the priority the programmers will use when prioritizing when the concerned program should be fixed. Priority is set by HQ AMC.
Imp	This is for HQ AMC use only.
Organ	This is the 4 position base code of the person submitting the 529.
Program	This identifies the 4 position program number that you are submitting the 529 for or obtaining a report for.
AMC Concur	AMC will check this box if they concur.
Phone	The defense switch network (DSN) of the person submitting the SCR.
Date	The date the SCR was created.
Name	The name of the individual submitting the SCR.
Subj	Enter a brief description of the problem.
Concur	Choose one of the following: "Y" to approve, "N" to disapprove, or "A" to abstain.

Report status

If you are a MAF LOG C2 user, use this program regularly to view the status of other programs that may affect you. Using transaction "R" enables you to do this. This screen is for every other base so that they can review your 529 and add their inputs/comments. They can either concur (agree), non-concur (disagree), or abstain (neither). Sometimes the problem can be fixed simply by someone else's inputs or comments to your problem. Usually this takes a little while since it needs the acknowledgment of the majority of the DBM within the command.

Self-Test Questions

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

048. Mobility Air Force logistics command and control database environments

1. Name the two database environments in MAF LOG C2.

2. How do you log in to the production environment in MAF LOG C2?

3. Once you have logged in to MAF LOG C2, where are the functional areas located?

049. Types of Mobility Air Force Logistics Command and Control database programs

1. What are the four program types of MAF LOG C2?

2. Who typically uses batch reports?

3. What types of programs are considered the heart of MAF LOG C2?

050. Use of maintenance data documentation programs

1. What is program 9050 used for?

2. What data files does program 9050 add to or update?

3. The Job Ind. field in the input screen for program 9050 is used to indicate what?

4. What is the purpose of program 9099?

5. Why would you normally process a SCAN transaction before filling in the data fields in program 9099?

6. What code is used to indicate a job requires a maintenance operations check and where is it entered on program 9099?

7. What action does MAF LOG C2 take when a sortie number is entered in the Sortie Number field?

051. Deadline job scheduling

1. What does program 9029a allow?

2. How often are deadline records scanned?

3. Program 9029a is a very efficient way to do what?

052. System deficiency reporting

1. What kinds of deficiencies are reported through the 9038 program?

2. What form is used to document MAF LOG C2 system deficiencies?

3. Why do nonlocal deficiency reports automatically get sent to other MAF LOG C2 sections?

5–4. Time-Sharing Option Utilities

In this section, we'll discuss some of the tools the DBM will use most in their duties. Time-sharing option (TSO) option S, security administration functions, deals with management of MAF LOG C2 user IDs for DBMs and MMAs *only*. Option SD, Spool Display and Search Facility, allows DBMs to view the output of print jobs that are in the print queue waiting to be processed and printed.

053. Time-sharing option login

The TSO menu contains mainframe level utilities, including programs to specify terminal and user settings, examine and edit source data, and manage mainframe resources. It also contains printing system utilities and security administration functions. The TSO is an interface with the mainframe that allows users of all levels of experience to share computer time and resources. As a DBM, you will not use many of these programs in day-to-day management of your system, but there are a few key areas that you must become familiar with. Before we can discuss TSO's options, we need to discuss TSO login procedures. In order to access TSO, you must first obtain an account for the MIAP which will then take you to the TSO applications.

MIAP login

MIAP login is CAC enabled when you set up your account. Once you have logged into MIAP, you will have access to the two areas you will need: TSO ATATS for account management and FOCUS report troubleshooting and MIAP printing utilities for management of MAF LOG C2 text-to-file printers.

Login to time-sharing option

From this menu, select the OGD MTZ-CL/SS MODEL5 option in the applications block (fig. 5–14).

Once selected, the TSO login page will open. After entering your User ID and password, you will be directed to the session selection menu (fig. 5–15).

NOTE: MAF LOG C2 access is CAC enabled, so once connected you will *not* need to manually enter your User ID and password again. However, you will need to maintain/update your User ID and password for TSO access, as they *must* be manually input for access to this area.

To access the TSO menu, click on or tab down to the ATATS (TDSC – TSOA) option and press enter. A screen will come up showing your User ID, your last log in date and time, and your full name. Your cursor will be to the right of *three asterisks* (***). Any time you see this in the TSO environment, it basically means *press "enter" to continue*. You will see this on the next page as well. Hit enter again and this will bring up the ISPF/PDF Primary Option Menu for TSO transactions (fig. 5–16).

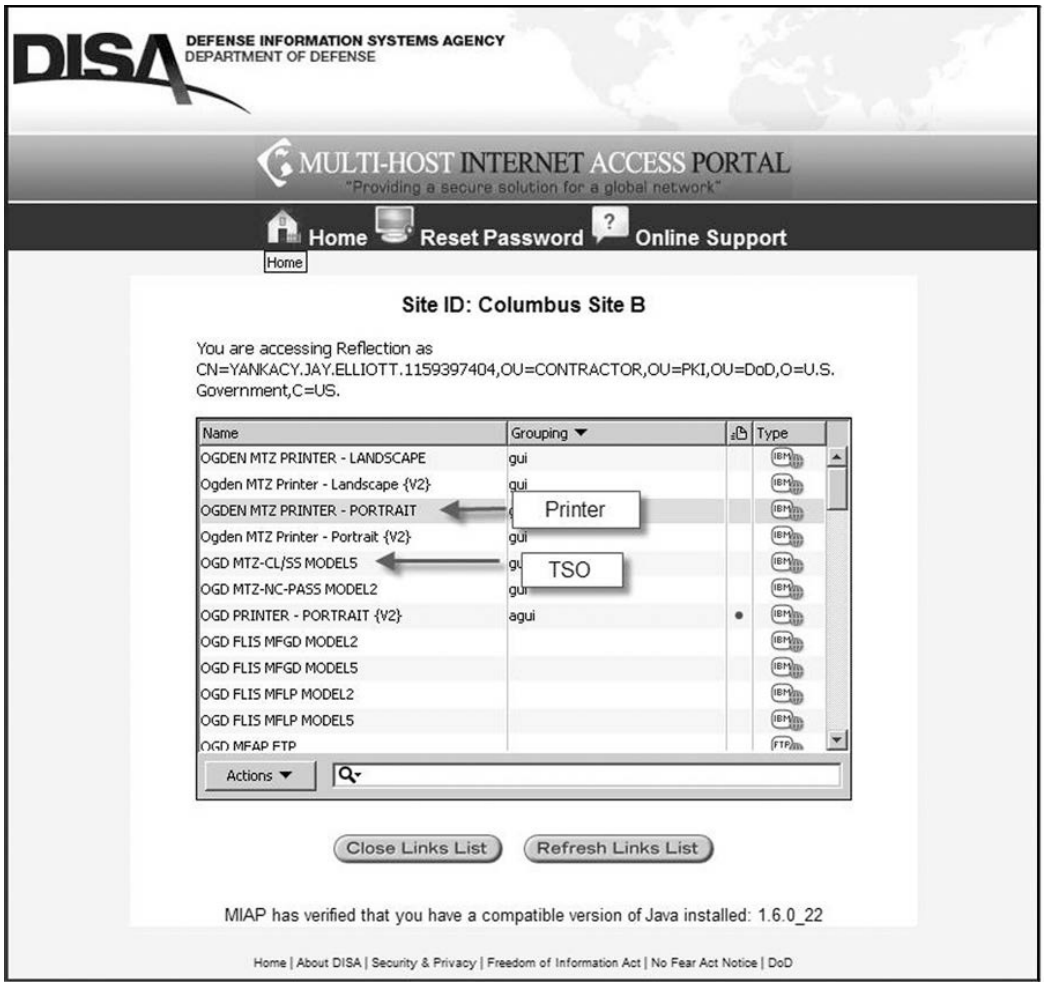

Figure 5–14. TSO access menu

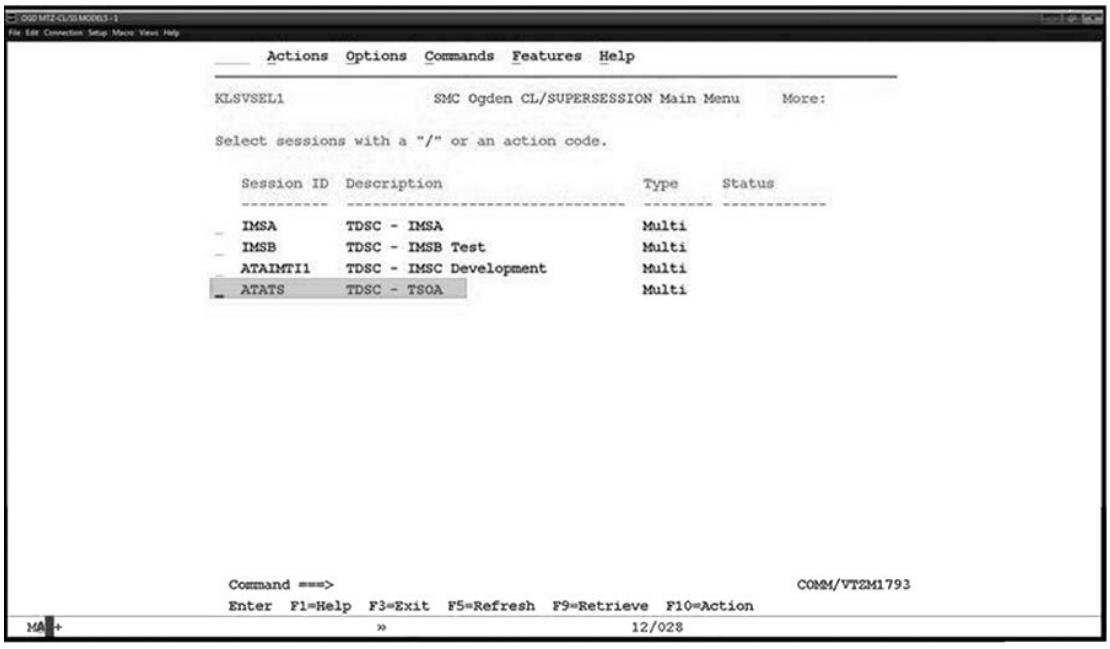

Figure 5–15. TSO session selection menu.

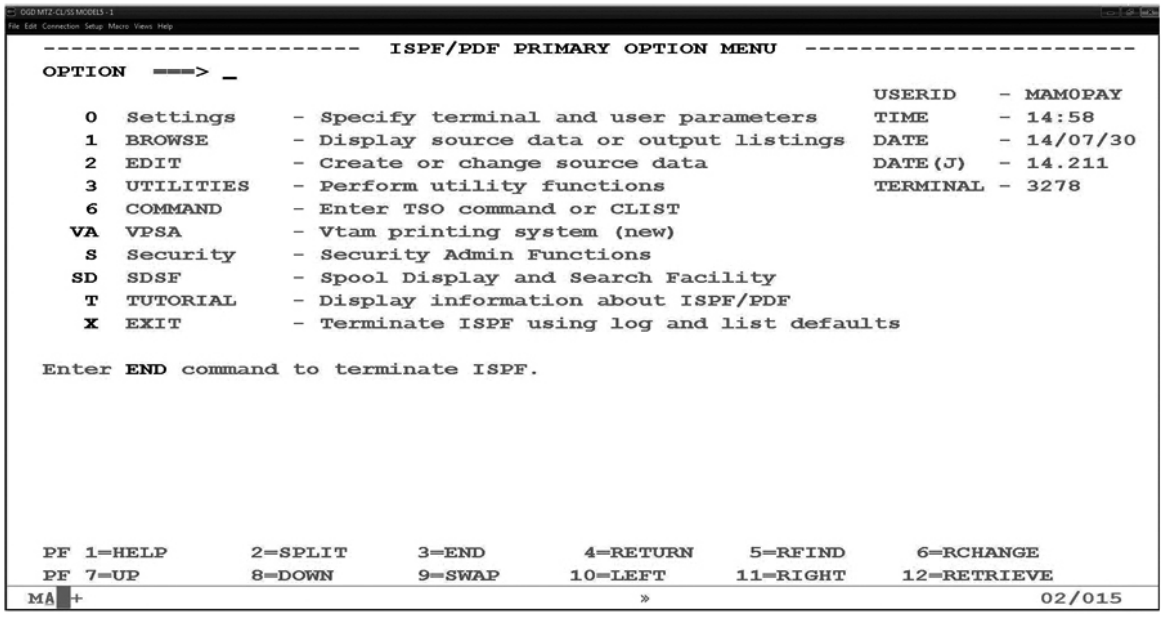

Figure 5–16. Time-sharing option primary option menu.

054. Security administration functions

Option S, security admin functions is the user ID maintenance facility for TSO access *only*. As a DBM, you will be responsible for maintaining MAF LOG C2 user IDs for members of your office who require access to this area. You will also be responsible for maintaining the necessary user ID documentation for your maintenance users, but that process is managed and maintained directly in the MMA section and will be covered in another area of this lesson.

User identification maintenance facility

Enter 'S' as your *option* at the top of the screen for *access* to "security admin functions." This takes you to the MAF LOG C2 user ID maintenance facility menu (fig. 5–17). From this menu, you can select options to add new user IDs, reset passwords, and display user ID properties, as well as modify and/or delete user IDs.

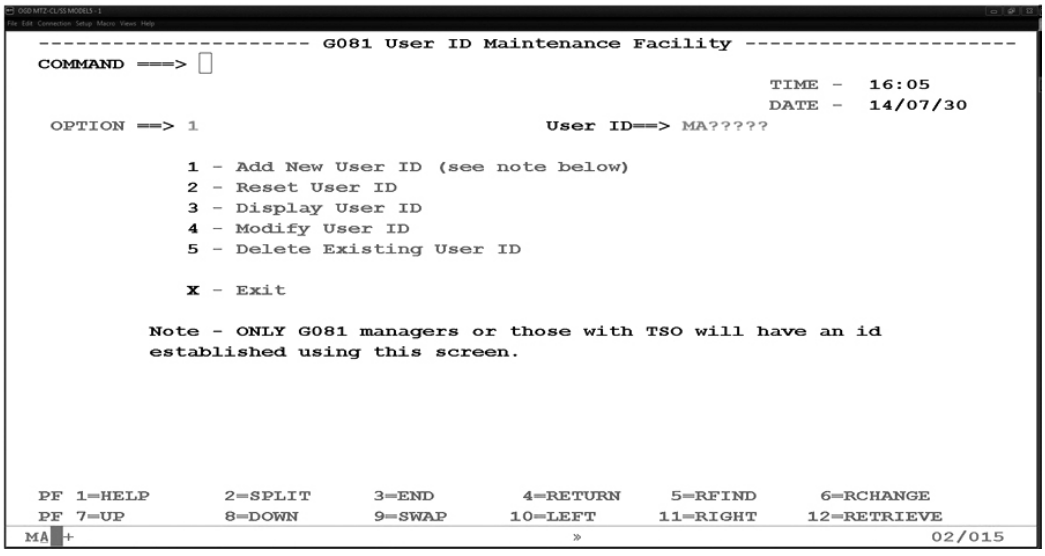

Figure 5–17. MAF LOG C2 user identification maintenance facility.

User identification policies

Before you start maintaining user IDs for MAF LOG C2 access, there are some user ID and password management policies set forth by system managers within HQ AMC and DISA Ogden you must be familiar with and to which you must adhere.

- Only one user ID will be provided to each customer. Customers requesting their user ID be recreated for a 3rd and/or subsequent times, when previous user IDs have been deleted for non-use, may be required (local base policy) by the DBM to obtain a letter from their commander explaining why the user allowed 2 or more previous user IDs to be deleted for non-use and to authorize the DBM to load the requested new user ID.
- DBMs will only be authorized to manage maintenance (MA) user IDs and those required for global reach (GR) access when not connected to a MAF LOG C2 User ID. No CE user IDs will be managed at base level. CEMS users will submit their DD2875 via email to the appropriate CEMS POC.
- Every user will have a valid and current Department of Defense (DD) Form 2875 System Authorization Access Request on file.
- Only the DBM or designated alternate will have the authority and/or access to perform user ID maintenance functions.
- All new user IDs will automatically have read only authorization to access information management system (IMS) production. The DBM will have to *build* a user record (Logical Terminal or LTERM) with *program F9057* in MAF LOG C2 for users to *access* programs applicable to their duties. New users will also have immediate access to IMS test/development for training, but the DBM must build a user record in this area as well.
- User IDs not used for 45 (65 for traditional ANG/AFR) days are subject to automatic deletion.
- Only "real" user IDs are allowed. This is a "production" panel. Updates made using these panels are "real-time." If a user ID is needed to practice or train in using programs, be sure to only build their access record (LTERM) in IMS test/development. Once fully trained, you can add the LTERM to their user ID in IMS production.
- When creating a new User ID or resetting a password, the DBM must verify the identity of the customer using the four digit personal identification number (PIN) entered on their DD Form 2875.

Forms management

The following are AMC's and DISA Ogden's DD Form 2875 management requirements for WebG081 access:

- All DD Form 2875s for MA, DOPP, LEAP, and GR will be maintained at base level by the DBM. All others will be managed by DISA. The Privacy Act of 1974 applies.

  The DBM must maintain and secure two separate MA/GR user DD Form 2875 files. Active files will contain all base users with active User IDs, sorted alphabetically or by User ID, and inactive files will contain all inactivated User IDs. These forms will have a date indicating when the form was placed in the file, and be sorted by this date. Inactive forms will be retained for one year. If a User ID is "reactivated", a new DD Form 2875 must be accomplished. All forms removed from the inactive file must be shredded or destroyed.
- When an MA user ID requires access to an application other than IMS production, test/development or GR, the DBM must first ensure that the user has received approval for access. Then, the DBM must ensure the original DD Form 2875 is updated and filed. Some of these programs are listed under available groups on the "USERMANAGEMENT" screen, in which case, the DBM can add them to the user's profile. If a CE user requires access to any application, fax the request to the point of contact (POC), and mail the original form to the address listed above. The DBM is *not* required to maintain forms for CE user IDs.

- Periodically, DISA Ogden will audit DD Form 2875 files. The DBM may be asked to fax a copy of a particular DD Form 2875 to DISA. Any discrepancies between system logs and access records will be reported to the local DBM. Recurring discrepancies will be reported to HQ AMC.
- All DD Form 2875 fields must be properly filled in.

User identification procedures

Now that you are familiar with MAF LOG C2 user ID policies and forms, we will take a look at some of the procedures you will use to manage them.

User identification naming

MAF LOG C2 allows a seven byte user ID. The first four bytes must match your base. For the last three bytes, first try the user's first, middle, and last initials. If that rejects because the user ID is already issued, enter the user's first and last initial, followed by the number '1'. If the system rejects it again, then enter the user's first and last initial, followed by number '2'. Keep attempting using the digits (3–9) until the system accepts the user ID.

Add new user identification

All new users will be added and user accounts maintained using MAF LOG C2 screen "USERMANAGEMENT" – user management tools. Before adding a new user, you must first check to see if they already have an existing user ID by using the first/last name look-up feature on the screen. We'll discuss more about searches later in this unit. If the user has a user ID, and the first four positions match those at your base, then the user ID is already established. If the user ID was issued at another base, the first four positions will not match those at your base. If that is the case, you must contact the POC at that base and have the old user ID deleted before issuing a new one. If the user does not have a user ID, then proceed with issuing a new user ID.

To add a new user ID, type the new user ID in the username box under 'create a new user' and click on create new user (fig. 5–18).

On the next screen, fill in all required fields (fig. 5–19). On the top portion enter the user's personal information and on the bottom portion of the screen, you will select the programs/websites that the user will have access to via their user ID. All users will be assigned the "users" group for their base (e.g., Boise ANG users) and the GRL website users group. Select the applicable groups then hit the green plus sign (+) to add the group to the users account. Once all areas are filled in, click the create account button at the top of the page to complete the process. The program will add the user Id with access to IMS production, test/development, and GR. It also displays the password. Provide the user with their user ID and password following the policies listed above, and ensure the DD Form 2875 is properly documented and filed.

Once the new user ID is built, you must process a program F9057 for access required access programs in IMS production. Then click on "Send to F9057" (fig. 5–20). If the user requires access to IMS TEST, you must also process a program F9057 for the IMS TEST environment using the "test" WebG081 link.

NOTE: Remember, there is no test/development program for "USERMANAGEMENT." If you create/modify a user on this screen in test/development, you have added them to production. The F9057 screen is available in test/development and will not affect production if updated.

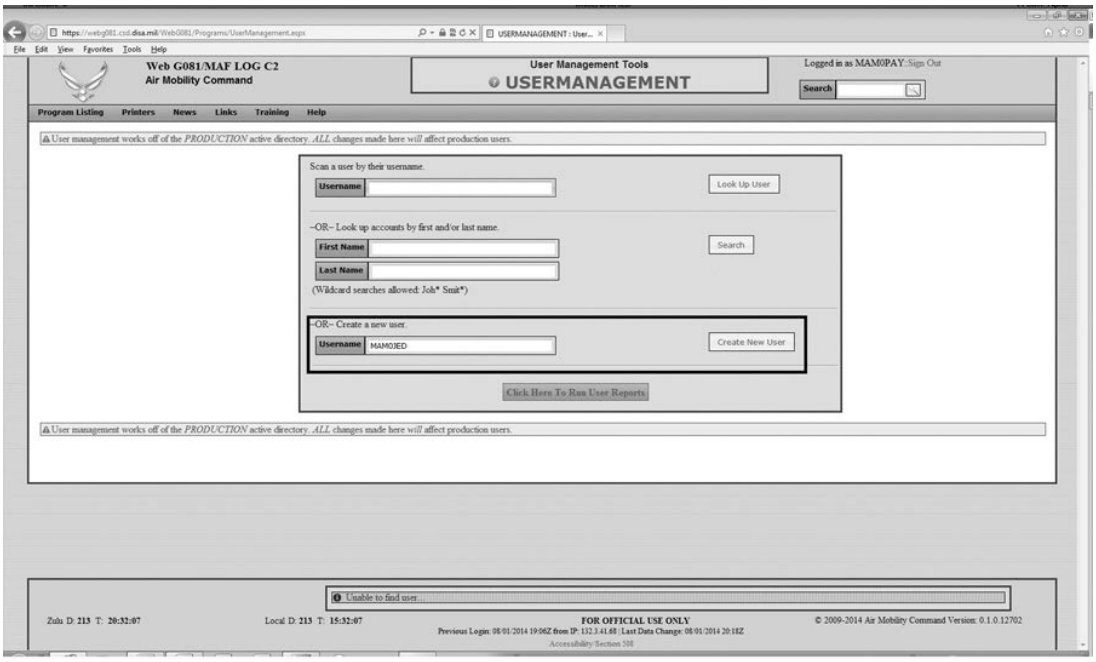

Figure 5–18. MAF LOG C2 New user identification addition "create."

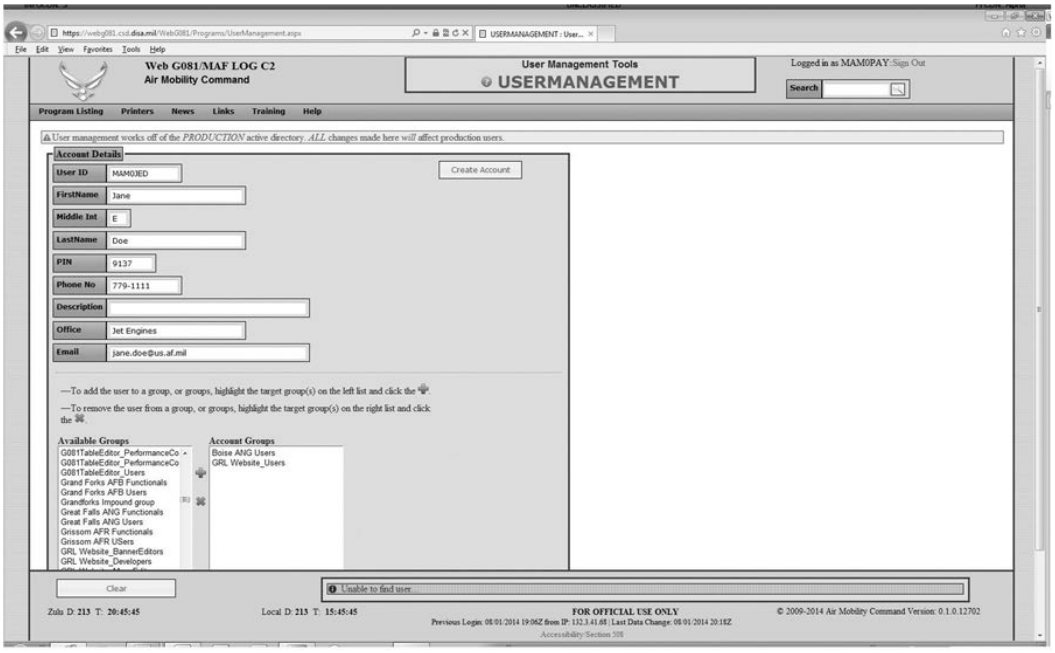

Figure 5–19. MAF LOG C2 New user identification addition "acct. details."

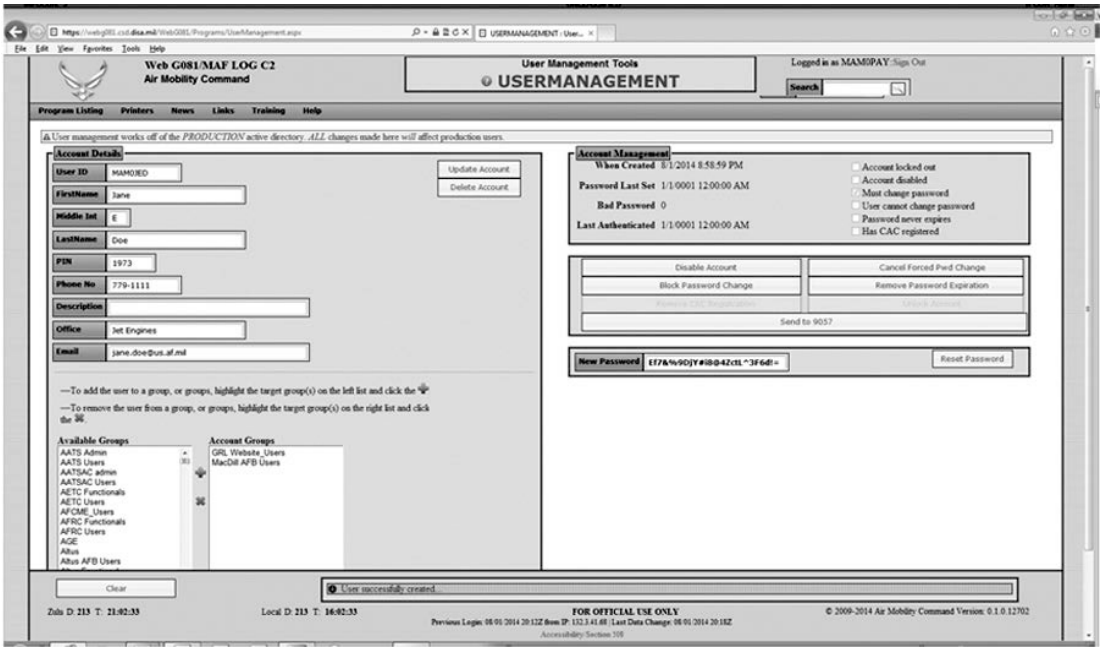

Figure 5–20. MAF LOG C2 New user identification addition "management."

Display user identification

To display a user ID, enter the user ID in the username field (fig. 5–18), and click "Look Up User." The system will return a screen listing information about the user ID, including the user's name, phone number, account access, and other pertinent data.

Reset user identification

To reset a user's password, enter the user ID in the username field and click "look up user" (fig. 5–18). On the right hand side of the screen click "reset" (fig. 5–21). The temporary password is in the new password field.

Modify user identification

To modify a User ID, enter the User ID in the Username field and click "Look Up User" (fig. 5–19). Make all of the necessary changes and click "Update Account" located in the middle of the screen.

Delete existing user identification

To delete a User ID, enter the User ID in the Username field and click "Look Up User" (fig. 5–19). In the middle of the screen, click "Delete Account" (fig. 5–23). Remember, as a WebG081 manager, you can only delete User IDs with IMS access. If the User ID has access to other applications, such as TSO, you must contact DISA Ogden with the delete request. Enter the User ID to delete and press enter. The system will respond with "Delete Account MAXXXXX?" Respond clicking OK to delete the User ID, or Cancel to abort the delete. Once the delete is accomplished, transfer the user's DD Form 2875 to the inactive folder.

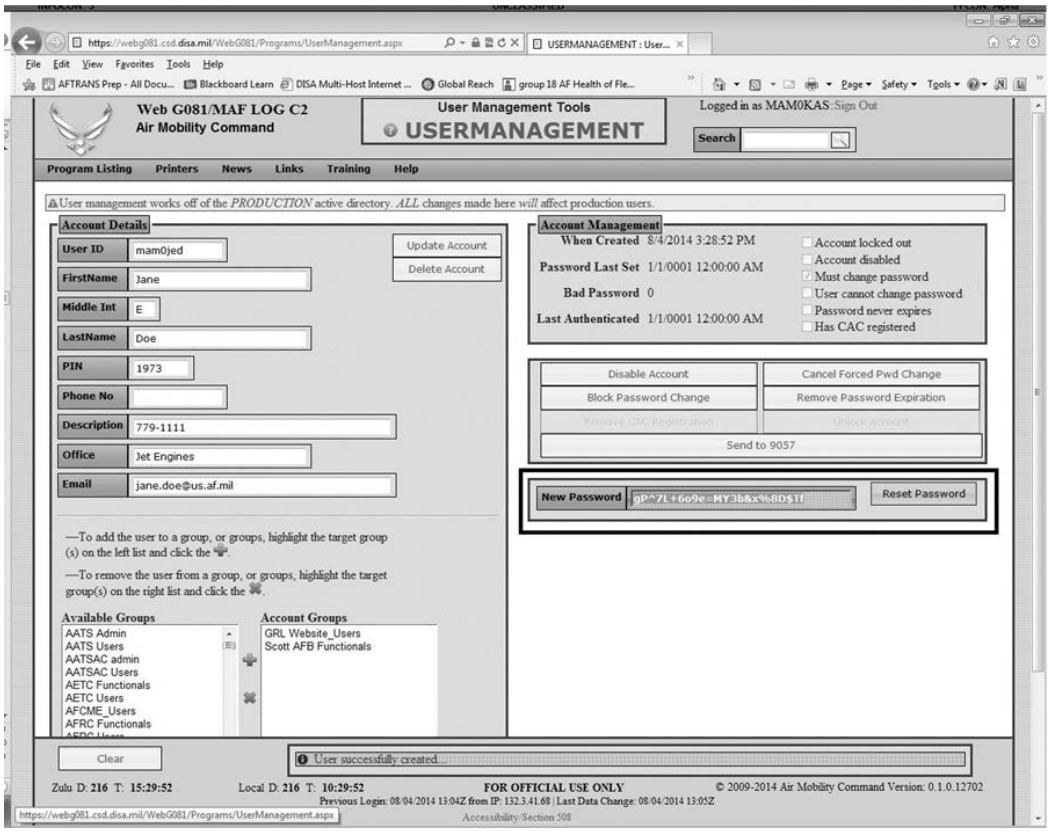

Figure 5–21. MAF LOG C2 reset user identification.

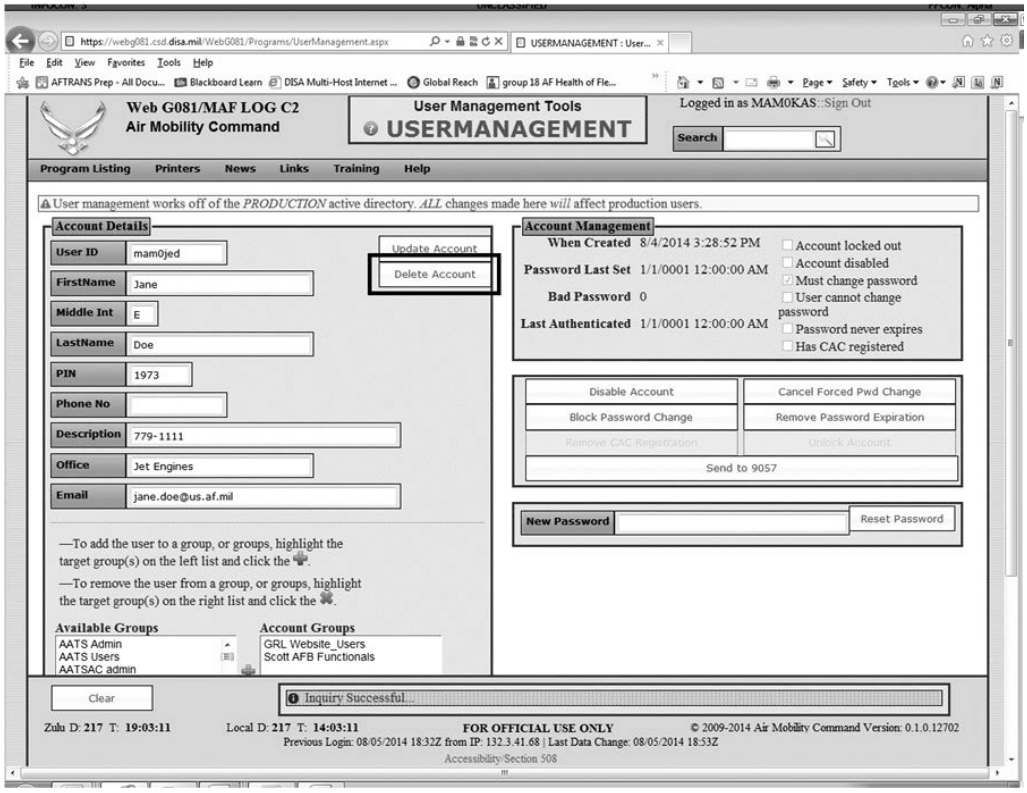

Figure 5–22. Delete existing user identification.

055. Virtual telecommunications access method printing system operation

The virtual telecommunications access method (VTAM) *printing* system is MAF LOG C2's *mainframe* printing system. It is an International Business Machines Corporation (IBM) application program designed for communicating with telecommunication devices and their users, in this case the MAF LOG C2 mainframe and its printing devices. It is used by many legacy data systems for communication between the system mainframe and its peripherals.

Virtual telecommunications access method printer system menu

To access the VTAM Printing System (VPS) menu, you must first login to TSO located in the MIAP program. Once logged in, select option VA, VPS, from the TSO primary option menu, and press enter. You will be taken to the VTAM printing system interactive system productivity facility (ISPF) primary options menu. Here you can select one of three options; option P, printer control, option O, output, and option X, exit.

Virtual telecommunications access method printer system options

Selecting option P, printer control, from the ISPF primary options menu (fig. 5–23) takes you to the virtual machine communications facility (VMCF) primary options menu. Here you have several options for print control and queue display.

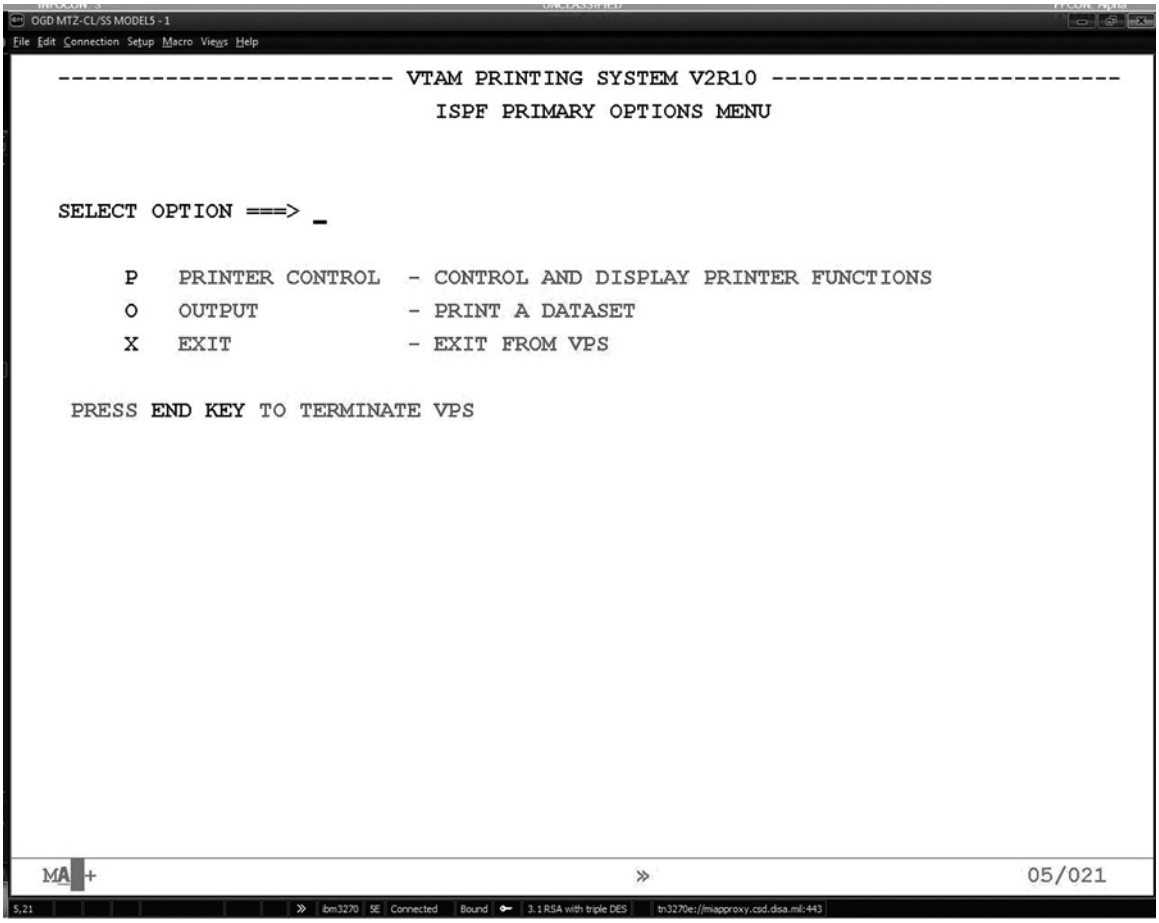

Figure 5–23. Time-sharing option primary options menu.

The following options are available from VMCF menu (fig. 5–24):

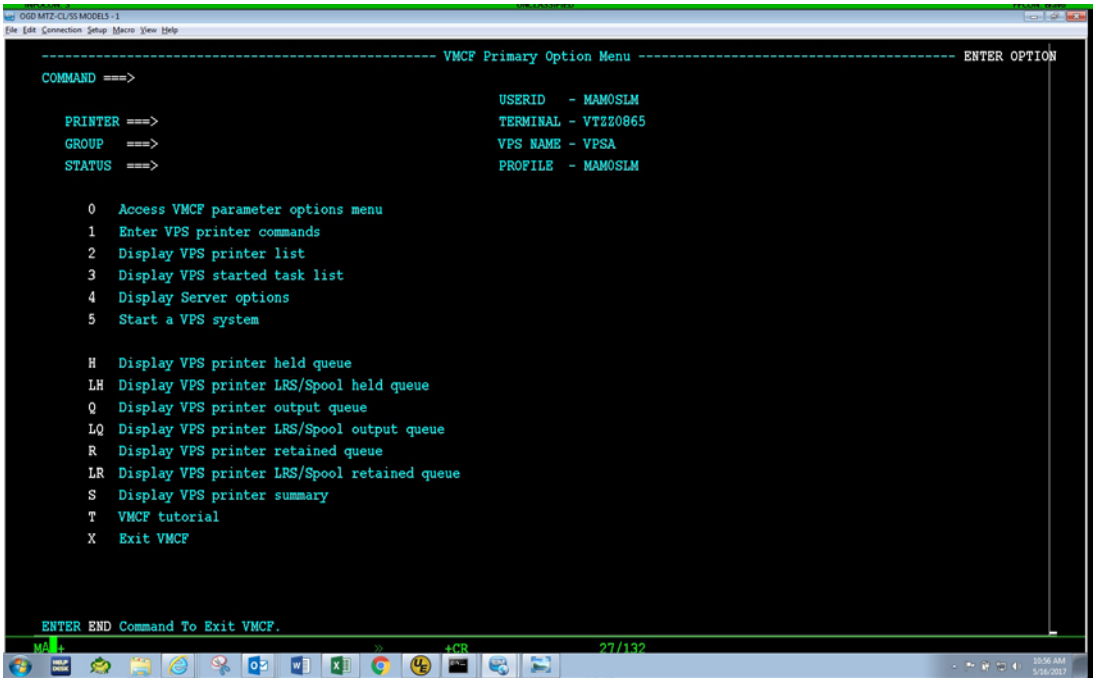

Figure 5–24. Virtual machine communications facility primary option menu.

When you select option 2, display VPS printer list, from the VCMF primary options menu, you will go to a screen where you can select a printer or group of printers on your system for further examination (fig. 5–25). You can specify printer selection criteria such as full or partial printer name, search for a group of printers by a full or partial group name, or search specific VPS names. You can enter your base code in the group field, and the system will list your active printers.

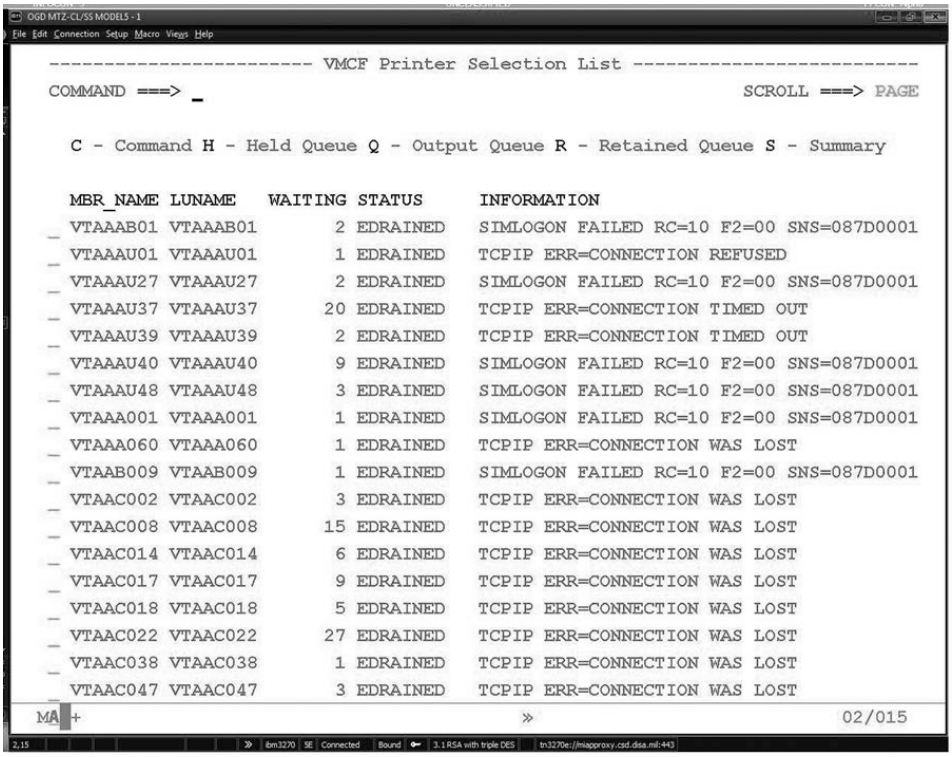

Figure 5–25. Virtual telecommunications access method printing system printer selection list.

From this list of printers, you have several more options. To enter the option you want, type over the underscore to the left of a particular printer. For instance, typing a “Q” over the underscore next to VTAAK066 will list all the jobs queued for that particular printer (fig. 5–26). If you wish to delete a job from the queue, simply overtype the underscore in the column to the left of the job with a “D.” The job will then be *deleted*. Typing an “S” will show a print *summary* (fig. 5–27), an “H” will show the jobs in the *hold* queue (fig. 5–28), and a “C” will *access* that printer’s *command* page (fig. 5–29).

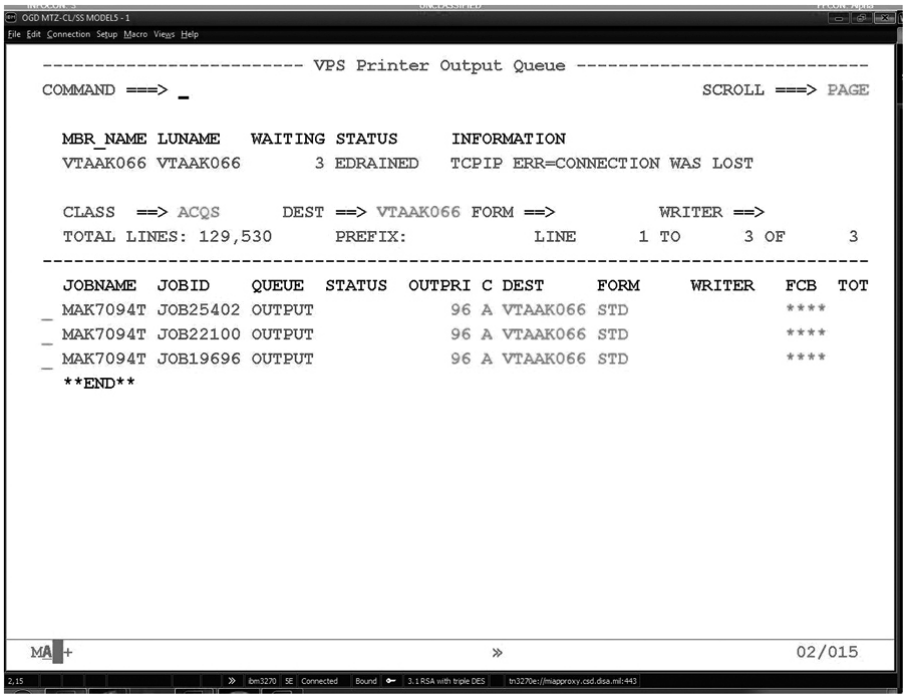

Figure 5–26. Virtual telecommunications access method printing system printer output queue.

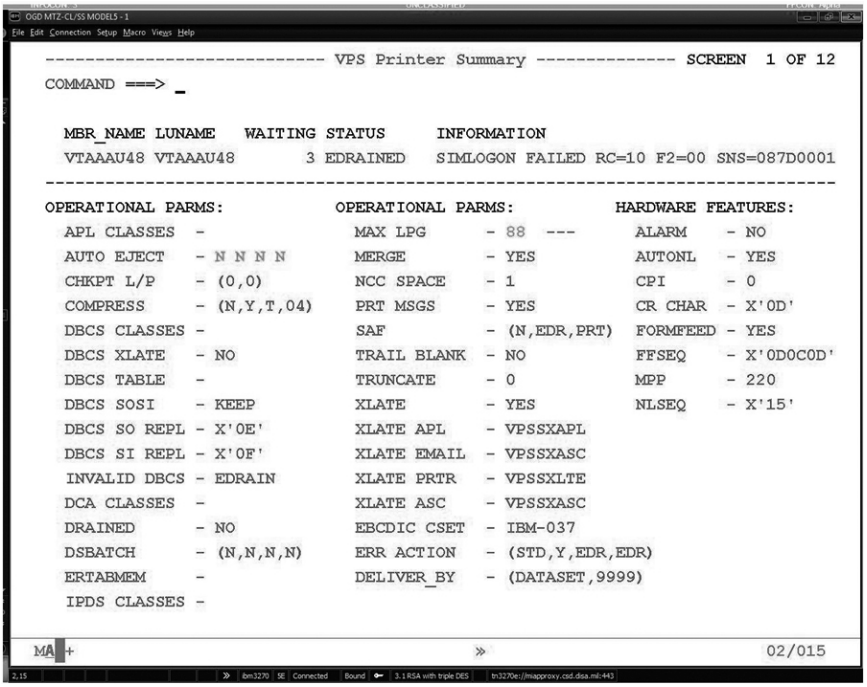

Figure 5–27. Virtual telecommunications access method printing system printer summary.

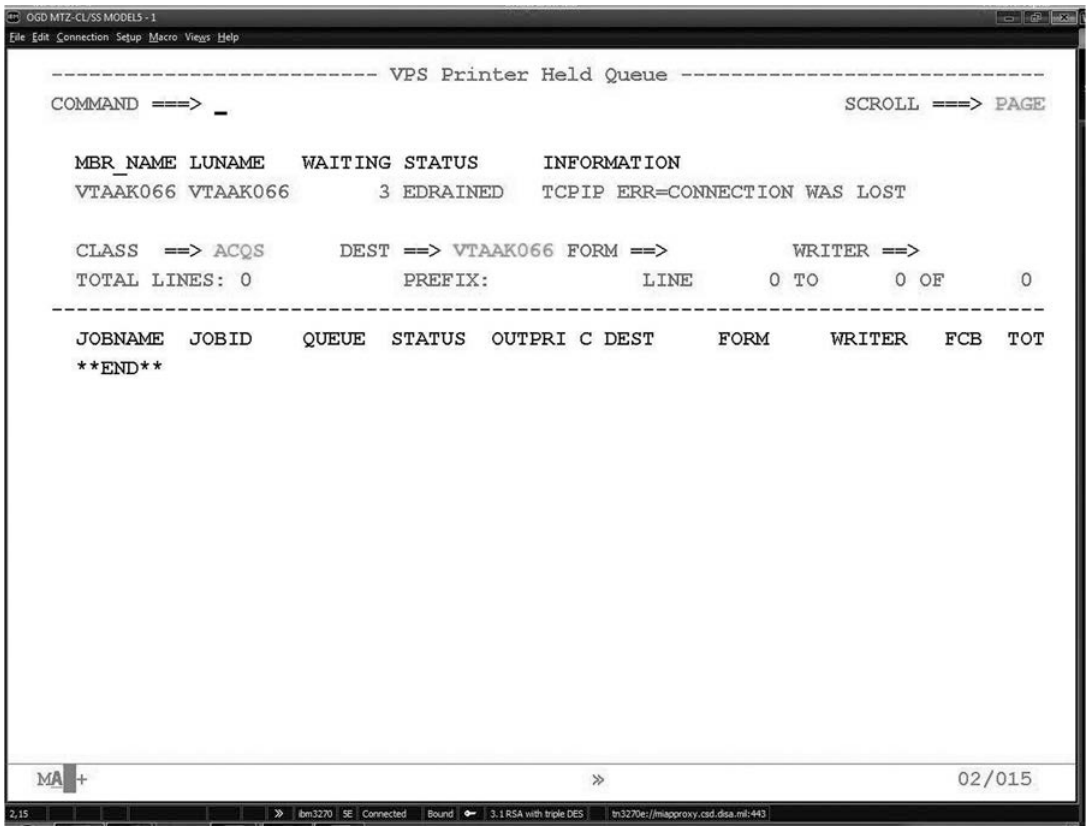

Figure 5–28. Virtual telecommunications access method printing system held for queue.

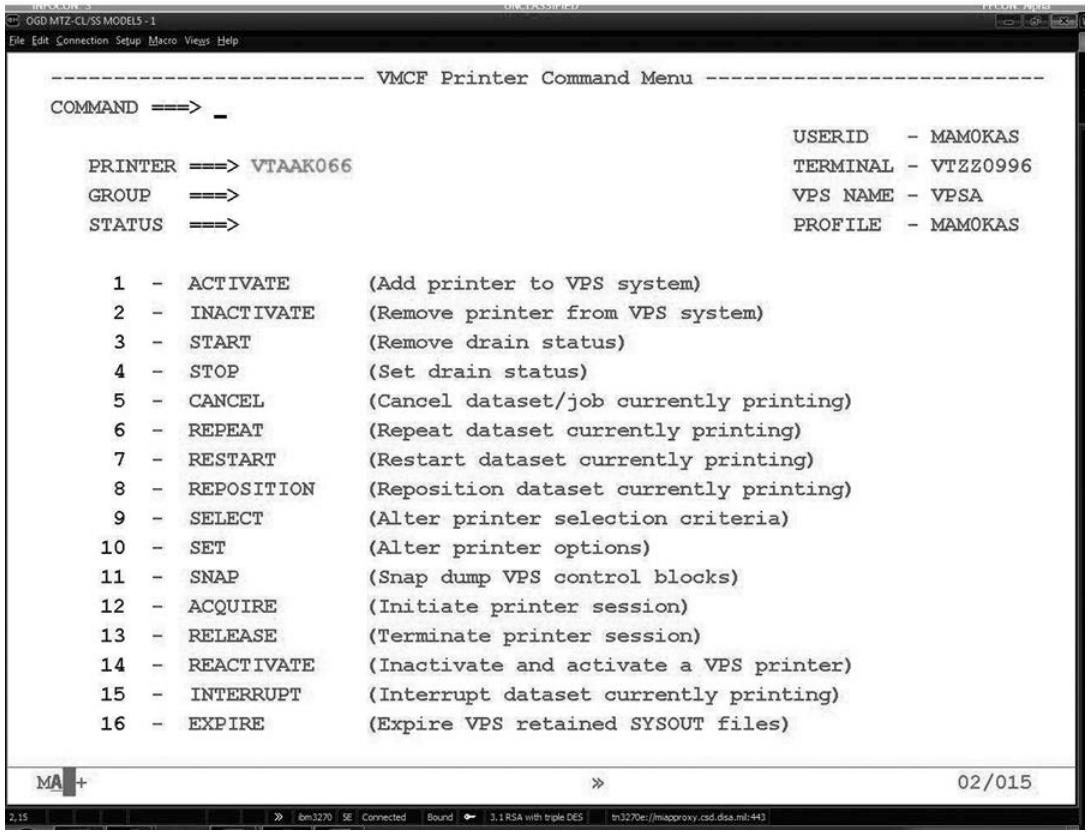

Figure 5–29. Virtual telecommunications access method printing system printer command menu.

Self-Test Questions

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

053. Time-sharing option login

1. After logging into MIAP, what option do you select in the applications menu to login into time-sharing option (TSO)?

2. What do three asterisks (*) generally mean when accessing TSO?

054. Security administration functions

1. Which TSO option takes you to the user ID maintenance facility?

2. What user ID functions are available through the user ID maintenance facility?

3. When resetting a password, what method must the DBM use to identify the user?

4. Who maintains all DD Form 2875s for MA user IDs? Where are they maintained?

055. Virtual telecommunications access method printing system operation

1. What are the three options on the ISPF primary options menu?

2. What does selecting option 2 from the VCMF primary options menu do?

Answers to Self-Test Questions

043

1. AMC, AETC, ANG, AFRC, PACAF, USAFE, USTRANSCOM, and AFMC.
2. The C–5 program.
3. HQ AMC.
4. DECC Ogden, Utah.
5. Any 5 of the following: CEMS, C2IPS, ILS–S, GDSS, GTIN, ADITS, MADAR, L-COM.
6. It permits single entry of data by users and sharing of critical logistics and operational data between MAF LOG C2 and other C2 systems.
7. It is accessed through the Global Reach Logistics/A4 Information page.

044

1. They can be grouped by similar purpose or common function, following the format of the MAF LOG C2 User's Manuals for each of the functional areas.
2. (1) g.
   (2) f.
   (3) c.
   (4) e.
   (5) h.
   (6) b.
   (7) i.
   (8) d.
   (9) j.
   (10) a.

045

1. At the DECC via the NIPRNET or using wireless radio frequency communications, including satellite communications.
2. Local DBM.
3. Logical terminal.
4. 9057 program.

046

1. A structure where the records exist on different levels, providing multiple ways users can access the data contained in the records.
2. Data necessary for the engine management section of an AMC tanker unit to effectively manage aircraft engines, including engine inventory, status, installed components, maintenance history, and TCTO status.
3. Reliability and Maintainability Information System (REMIS). Tables are updated in REMIS by system managers at Wright-Patterson AFB, Ohio, and pushed to MAF LOG C2.
4. Owner and member records, physically connected by links.
5. MAF LOG C2's physical links are controlled programmatically.
6. Updates made to one record to filter through to other related records linked to it, access records at many different levels, allow records of the same type to be strung together, which improves processing time while retrieving or updating data.

047

1. Program 67053.
2. Program 67053 printout.
3. It lists the data name, the length of the data, usage, the actual data contained in the field, and the starting and ending point of the data. It defines to the MAF LOG C2 programs the type and format of the data that can be used in that field.
4. Allows the user to update or delete an MDC record entered in MAF LOG C2. It also provides database managers the ability to read the MDC database.

048

1. Production and test.
2. You will input your User ID and password that you received from your database manager or after your initial user registration, login will be CAC enabled.
3. Under the Sitemap, of the welcome screen, you would select the functional are you wish to review.

049

1. (1) Batch.

(2) FOCUS.
(3) Output.
(4) Input.

2. Commanders, managers, and supervisors to review status, manage assets, allocate resources, and assist in management decisions.
3. Input programs (9XXX) are the heart of the system in that they update the database.

050

1. To create maintenance actions.
2. The program adds or changes discrepancies to the 781A or 781K files.
3. 2-character field that identifies the condition of the aircraft.
4. To provide an automated AFTO Form 349 format for input of MDC data. Simply put, it is used to close maintenance actions.
5. Normally, you process a SCAN transaction for the discrepancy to prefill the data fields with data loaded against the AFTO Form 350 Tag.
6. If the job requires a maintenance operational check, enter MOC in the Discrepancy Closed field to create the requirement.
7. If the job is the discovered in-flight, enter the sortie number in this field. MAF LOG C2 will then physically link this discrepancy with the aircraft sortie records in the M359SR Aircraft Master Record database.

051

1. Deadline records to be built, changed, deleted, or displayed.
2. Hourly.
3. Schedule and manage your print workload.

052

1. Software or documentation deficiencies.
2. OC-ALC Form 529, System Deficiency/Change Report.
3. To allow on-line review and comments.

053

1. OGD MTZ-CL/SS MODEL5.
2. Press enter to continue.

054

1. Option S, Security Admin Functions.
2. Add new User IDs, reset passwords, and display User ID properties, as well as modify and/or delete User IDs.
3. The four digit personal identification number (PIN) entered on their DD Form 2875.
4. Local database manager, at base level.

055

1. Option P, Printer Control, Option O, Output, and Option X, Exit.
2. It will take you to a screen to select a printer or group of printers on your system for further examination.

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).

119. (043) What Maintenance Information System (MIS) is the *key* to reliability, sustainability, and deployability of the nation's mobility fleet?
   a. Mobility Air Force Logistics Command & Control (MAF LOG C2) system.
   b. Reliability and Maintainability Information System (REMIS).
   c. Comprehensive Engine Management System (CEMS).
   d. Integrated Maintenance Data System (IMDS).

120. (043) Where is the Mobility Air Force Logistics Command & Control (MAF LOG C2) system central mainframe located?
   a. Maxwell-Gunter AFB, Alabama.
   b. Scott AFB, Illinois.
   c. Kelly AFB, Texas.
   d. Hill AFB, Utah.

121. (043) In addition to maintenance management, MAF LOG C2 is also used to aid in supply management, personnel management, and
   a. financial management.
   b. facilities management.
   c. training management.
   d. traffic management.

122. (043) Mobility Air Force Logistics Command & Control (MAF LOG C2) system interfaces with all of the following maintenance information systems (MIS) *except* the
   a. Command and Control Information Processing System (C2IPS).
   b. Comprehensive Engine Management System (CEMS).
   c. Integrated Maintenance Data System (IMDS).
   d. Integrated Logistics System-Supply (ILS–S).

123. (043) The Global Reach Logistics/A4 Information page is available to all users via the Air Force Portal, or the
   a. Reliability and Maintainability Information System (REMIS).
   b. Integrated Logistics System-Supply (ILS–S).
   c. Headquarters AMC Logistics website.
   d. Headquarters ACC Logistics website.

124. (044) Mobility Air Force Logistics Command & Control (MAF LOG C2) system programs can be grouped together according to common function or similar purpose following the format outlined in
   a. Defense Information Systems Agency (DISA) directives.
   b. AFCSM 21–556, volume 2.
   c. user's manuals.
   d. AFI 21–101.

125. (044) Air Force Technical Order (AFTO) Form 781's (Aircraft Forms) programs are part of what Mobility Air Force Logistics Command & Control (MAF LOG C2) system functional area?
    a. Backshop/Support equipment.
    b. Training management.
    c. Analysis programs.
    d. Flightline.

126. (045) A Mobility Air Force Logistics Command & Control (MAF LOG C2) system user-identification (ID) is *also* assigned to a *specific*
    a. local area network.
    b. logical terminal.
    c. aircraft ID.
    d. rank.

127. (045) Which Mobility Air Force Logistics Command & Control (MAF LOG C2) system program is used to build the program access to a designated terminal?
    a. 9157.
    b. 9057.
    c. 9075.
    d. 9175.

128. (046) A database structure where the records exist on different levels, providing multiple ways users can access data is called a
    a. relational database.
    b. hierarchical record.
    c. data model.
    d. data table.

129. (046) The M364SR, Component Serial Number Master Database, and its subordinate databases, contains what type of data?
    a. Aircraft status data.
    b. Aircraft flying hours.
    c. Engine management data.
    d. Supply cannibalization data.

130. (046) In Mobility Air Force Logistics Command & Control (MAF LOG C2)'s system record structure, when a master record is deleted or removed, what action is taken against its subordinate records?
    a. The subordinate record is relinked to a similar master record.
    b. The subordinate record becomes the master record.
    c. The subordinate record is also discarded.
    d. No action is taken.

131. (046) Mobility Air Force Logistics Command & Control (MAF LOG C2)'s system physical links between records are *controlled*
    a. programmatically by the program updating the record.
    b. by the database management system (DMS 2200).
    c. by the database manager.
    d. by the database schema.

132. (046) What Mobility Air Force Logistics Command & Control (MAF LOG C2) system record feature allows record updates made to one record to be filtered *through* to *other* related records, *requiring only* one input by the user?
a. The records exist on the same level.
b. The physical links between records.
c. The relational database structure.
d. One-record-at-a-time processing.

133. (047) What Mobility Air Force Logistics Command & Control (MAF LOG C2) system program gives the database manager a *logical view* of the database?
a. 67053, List Database Schemas.
b. 67031, Database Search.
c. 8016, General File Inquiry.
d. 9058, Batch Job Execution and Update.

134. (047) The top of a program 67053 printout for a particular record lists all the programs that access that record, and the
a. level of access each program has.
b. database the program is located in.
c. GUI functional group of the program.
d. time the program last updated the record.

135. (047) What does the schema section of the program 67053 printout define?
a. The type and format of the data contained in a field.
b. The level of access needed to update the record.
c. How the record can be linked to other records.
d. The level of access a program has to a record.

136. (047) The program 9056 (Maintenance Data Collection [MDC] Inquiry/Update/Delete) allows database managers to
a. read the MDC database.
b. delete the MDC database.
c. update the MDC database.
d. reprogram the MDC database.

137. (048) What are the two database environments in MAF LOG C2?
a. Production and nonproduction.
b. Production and test.
c. Active and inactive.
d. Active and test.

138. (048) When evaluating an MAF LOG C2 program and/or database updates, which database environment is used?
a. Test.
b. Virtual.
c. Demand.
d. Production.

139. (049) Which of the types of programs in MAF LOG C2 are designated as 67XXX series *and* produce output products (paper or disk) that provide *specific* inquiry-based data?
a. COBOL.
b. FOCUS.
c. Output.
d. Input.

140. (049) Which of the types of programs in MAF LOG C2 are designated as 8XXX series, where information is entered *through* formatted screens *and* processed on line?
    a. COBOL batch.
    b. FOCUS.
    c. Output.
    d. Input.

141. (050) Which MAF LOG C2 program is used to create *and* schedule maintenance actions, change existing discrepancy data, and adds *or* updates discrepancies in the Air Force Technical Order (AFTO) Form 781A *or* 781K files?
    a. Program 9099 MDS Input.
    b. Program 9050 Input Discrepancy.
    c. Program 9025B Aircraft Utilization Data.
    d. Program 9032A A/C Maintenance Pre-Plan Discrepancies.

142. (051) Which MAF LOG C2 screen allows deadline records to be built, changed, deleted, or displayed?
    a. 9029.
    b. 9029A.
    c. 9057.
    d. 9057C.

143. (051) If MAF LOG C2 deadline records meet the hourly scan criteria to run, when does the batch system schedule them?
    a. Immediately.
    b. On the quarter hour.
    c. On the half hour.
    d. On the whole hour.

144. (051) What screen allows you to *efficiently* schedule and manage your print workload?
    a. 9029A.
    b. 9038.
    c. 9057C.
    d. 9099.

145. (052) The MAF LOG C2 program 9038 is used to report what kind of problems for the System Deficiency/Change Report, form Oklahoma City Air Logistics Center (OC-ALC) 529?
    a. Aircraft discrepancies.
    b. MAF LOG C2 software problems.
    c. Technical order deficiencies.
    d. Aircraft equipment problems.

146. (053) As a database manager, what *mainframe utility* allows you to examine and edit source data and security administration functions?
    a. FOCUS.
    b. DEMAND.
    c. Time-sharing option (TSO).
    d. Multi-Host Internet Access Portal (MIAP).

147. (053) In time-sharing option (TSO) environment, when you see three asterisks (***) in a row, it means you need to press
    a. enter to logoff MAF LOG C2.
    b. escape to continue.
    c. enter to continue.
    d. F1 to continue.

148. (054) Which *option* would you select on the time-sharing option (TSO) Primary Option Menu in order to *start* the MAF LOG C2 User ID Maintenance Facility?
    a. Option 6, Command.
    b. Option S, Security.
    c. Option 3, Utilities.
    d. Option SD, SDSF.

149. (054) The database manager will have to *build* a user record with what program in MAF LOG C2 that gives users *access* to programs applicable to their duties?
    a. F9057.
    b. F9075.
    c. F9038.
    d. F9029.

150. (055) Which option of the virtual telecommunications access method (VTAM) Printing System Virtual Machine Communications Facility (VMCF) Printer Selection List is used to *access* a particular printer's *command* page?
    a. Option H.
    b. Option Q.
    c. Option C.
    d. Option D.

Student Notes

Glossary

Terms

ASCII—American Standard Code for Information Interchange—COBOL programming language.

assembly—A unit, which is normally removed and replaced as a single item, consisting of accessories and components that collectively perform a specific functional operation. Examples of assemblies are: engines, guidance and control packages, gearboxes, and mechanical actuators.

avionics—Acronym for aviation electronics. Avionics systems include, in part, aircraft navigation, communication, automatic flight control, and electronic warfare systems.

background program—IMDS programs where the output response is too large for a remote device to display. Three numerical digits in the program ID indicate that a program is a background (i.e., NFS400—TRIC FID is a background).

bench check—Includes any off-equipment action taken by maintenance in determining the condition status of an item and the determination of capability or lack of capability to return an item that has been removed for a malfunction or an alleged malfunction, to a serviceable status. It also includes repair actions when the repair is accomplished concurrently with the bench check

cannibalization—The authorized removal of a serviceable assembly, subassembly, or component from one end item for installation on another end item to meet mission requirements.

completed (closed) maintenance event—Work requirement that has been completed (i.e., all work and all related documentation has been done).

component—An item (assembly, subassembly, or part) that serves as one of the parts of the whole.

configuration—The functional and/or physical characteristics of equipment/software as set forth in technical documentation and achieved in a product.

contract maintenance—Maintenance performed under contract by commercial organizations on a one time or continuing basis without distinction as to the level of maintenance accomplished.

controlling agency—A maintenance staff activity responsible for monitoring and/or controlling maintenance actions (i.e., job control, plans and scheduling, engine management).

corrective action—Free text narrative that gives a word picture of the work that was done.

database—A collection of data that is fundamental to the operation of a system or organization.

debrief—A communication between maintenance and the air crew to identify and record any and all discrepancies that may have been encountered during flight.

DEMAND processing—A mode in which run processing is basically dependent on manual interaction (typically from a remote terminal) during processing; commonly known as “time sharing.”

discrepancy—A suspected problem with an end item or component. Also referred to as a *malfunction* or *write-up*.

display—The visual presentation of information either being prepared for entry into the processor or retrieved from processor storage.

equipment maintenance—The process of restoring material to a serviceable condition, keeping it available for use, or updating/upgrading it.

event—In IMDS, an overall job or requirement. See operational event, maintenance event, and

training event.

executive control language (ECL)—Sophisticated range of statements used to direct the CPU in performing its task. Runstreams are written in ECL.

functional system analyzer (FSA)—An on-line TIP program consisting of all programs within an individual FSP that provides logic to the computer to operate the functional system.

ground communications–electronics equipment—Ground-based wire and infrared radio; all radar and radiation aids for aircraft control and navigation; ground-based controls and guided missiles; radiating aids for fire control; electronic countermeasures and related radiation, reradiation, and electronic devices.

hardware—Physical equipment associated with a computer system.

hierarchical approach—Refers to the structure of the database where records exist at different levels.

input—Data being received, or to be received, by the mainframe. Usually inputs are generated from the CRT terminal, but may be entered from tape or disk as well.

job control—A generic term for a maintenance activity responsible for monitoring, directing, and controlling the use of maintenance resources. Actual name depends on the command to which assigned. Common names are Aircraft Readiness Center (ARC) and Maintenance Operating Control Center (MOCC).

job following—In IMDS, provides a means for controlling agencies to monitor and control on-equipment maintenance starts and stops for individual workcenter events and/or overall maintenance events. When selected, IMDS automatically notifies the controlling agency when an event start or stop is overdue.

job standard—A number assigned to a specific predefined maintenance event, such as an inspection, a time change, or a profile package.

line replaceable unit (LRU)—An item that is normally removed and replaced as a single unit to correct a deficiency or malfunction on an end item of equipment.

maintainability—The measure of the ability of an item to be retained in or restored to a specified condition when maintenance is performed by personnel having specified skills, using prescribed procedures and resources, at each prescribed level of maintenance and repair.

maintenance capability—The availability of resources, namely; facilities, tools, test equipment, drawings, technical publications, trained maintenance personnel, engineering support, and spare parts required to perform maintenance.

Maintenance Data Documentation (MDD)—A procedure for recording and collecting production credit information for all tasks accomplished by maintenance personnel requiring expenditure of direct labor. Includes information regarding equipment maintenance done by assigned personnel, equipment on which work was done, why work was required, and the action taken to complete the work.

maintenance event—A maintenance requirement in the form of a discrepancy or overall job to be performed.

maintenance resources—The personnel, material, tools, equipment, facilities, technical data, and dollars needed to carry out the equipment maintenance action.

maintenance tasks—The physical actions taken by maintenance personnel to keep equipment serviceable, safely operable, and available for use.

MAJCOM—Acronym for major command. A major subdivision of the Air Force that is assigned a

major part of the Air Force mission (e.g., Air Education and Training Command, Air Combat Command, Air Mobility Command, and Air Force Materiel Command).

Management Information System (MIS)—Automated (computerized) information system used to improve readiness, enhance production, increase the reliability and maintainability of equipment, and reduce maintenance costs and program resources. Examples include Integrated Maintenance Data System (IMDS), G081 (CAMS for Mobility), Reliability and Maintainability Information System (REMIS).

man-hour—Equal to one person working one hour (formula: *number of workers x time*).

mission, design, and series (MDS)—An alphanumeric code used to identify a specific type of aircraft. The *mission* symbol (alpha) is used to denote the primary function or capability of an aircraft (e.g., C in C–141, for cargo). The *design* number denotes different aircraft with the same primary function (e.g., 141 in C–141, as opposed to 130 in C–130). The *series* symbol (alpha) is used to denote that a significant difference exists between related aircraft because of follow-on production or major modification (e.g., B in C–141B, as opposed to A in C–141A). There are instances when a *modified mission* symbol is entered to the left of the basic mission symbol to indicate that the particular aircraft no longer has the same characteristics as the others of the same basic MDS (e.g., A in AT38B indicates that this trainer aircraft has been modified to perform attack missions).

mnemonic—A technique for improving the memory.

network—A communications complex consisting of two or more computer systems interfacing.

not repairable this station (NRTS)—A status condition determined during shop processing of an item. It indicates that the item is not repairable at base level.

off-equipment maintenance—Maintenance done on assemblies, subassemblies, or component removed from an end item of equipment.

off-line—Equipment or devices that are not under the direct control of the mainframe computer.

on-line—Equipment or devices under the direct control of the mainframe computer.

on-equipment maintenance—Maintenance done on end items of equipment.

open maintenance event—Any existing discrepancy or other work requirement in an unscheduled, scheduled, or deferred status.

operational check—A functional check of an accessory, component, or system accomplished in its installed environment to ensure proper installation and operation.

operational event—A requirement which directs the use of equipment for operational purposes and normally precludes the performance of maintenance on the equipment. For aircraft, operational events are flying requirements (sortie, mission), alert, static display, and so forth.

performance data (equipment)—The historical information relating to the maintainability, reliability, and supportability characteristics of systems, subsystems, and components of weapons and end-items of equipment during their operation.

performance data (maintenance)—Numerical facts or figures that relate to the use and application of the maintenance work force, equipment, facilities, and funding needed to sustain weapons and end-items of equipment in an operational status.

pseudo management commands—Available for management of pseudo remote processing.

real time—Transaction activity occurs as the event takes place based on the actual time and date of the event.

recurring discrepancy—An in-flight discrepancy that occurred again within a predetermined

length of time (after the discrepancy was fixed or could not be duplicated).

reliability—The probability that an item will perform it's intended function for a specified interval under stated conditions.

remote ID—A 3-character code used to identify a specific remote terminal. The first character is always the unit ID letter. The last two characters are locally assigned.

remote line printer (RLP)—Used to print IMDS background products.

repeat discrepancy—An in-flight discrepancy that occurred on consecutive sorties.

run—A group of tasks that comprise a unit of work for the system.

run-ID—Identifies a run to the Executive. Run-ID may consist of one to six alphanumeric characters and is specified on the @RUN control statement.

runstream—Sequenced batch program execution (card deck) used to run backgrounds.

scheduled event—An operational, maintenance, or training requirement with a scheduled start date and time and performing workcenter assigned.

scheduled maintenance—Known or predictable maintenance requirements that can be planned or programmed for accomplishment. This includes things such as inspections, servicing, TCTOs, time change items.

site-ID—Identification of a remote terminal. Site-ID is a unique identifier of six alphanumeric characters assigned by the installation to a terminal or group of terminals.

software—Programmed set of instructions, procedures, rules, and documentation which effect the operation of a data processing system.

sortie—For aircraft, a flying requirement (i.e., a mission). In IMDS, it is called an operational event.

sortie number—A number assigned to each flight event.

technical order (TO)—A military specification or commercial manual containing instructions for the operation, maintenance, service, overhaul, installation, and inspection of equipment and material.

test measurement and diagnostic equipment (TMDE)—Equipment used to troubleshoot, perform functional test and calibration of weapons systems, or the equipment used in support of these systems while on the ground. Examples are engine test cells, shop test stands, electrical test sets, and precision measurement equipment.

time change item (TCI)—An item that has been identified as having a fixed service life expectancy, and which must be replaced with a new overhauled item after accrual of a specified number of hours, operation, or at the expiration of a given calendar time period.

time compliance technical order (TCTO)—A one-time change, modification, inspection, update or installation of new equipment. TCTOs are grouped according to the importance and urgency of the contained instructions. The degree of urgency is indicated by specifying a time period when compliance is to be done.

training event—A training requirement to improve military or maintenance proficiency and/or supervisory capability.

transaction identification codes (TRIC)—IMDS routines used to load, change, and delete data or inquire using specific formats. It is a three-character code identifying a requested program.

transaction interface package (TIP)—An integral part of the executive which provides terminal users with a real-time transaction system. Basic responsibilities of TIP include scheduling

transaction programs, loading transaction programs, and providing a fast-file control system.

transaction processing—The on-line exchange between a terminal and another device which achieves a desired result. (Background products serve as a good example.)

troubleshooting—The logical, analytical, and where applicable, technical order prescribed procedure, followed in isolating equipment malfunctions.

unit—In IMDS, all equipment, personnel and facility resources under the control of a single Operations Group Commander or Logistics Group Commander. Most units are made up of two or more squadrons. Some small units may consist of a single squadron like a Consolidated Maintenance Squadron.

unit ID—In IMDS, an alpha character assigned to a unit loaded into the database. Unit *A* is considered the host unit. All other units (B, C, D, etc.) are considered tenant units.

unreported JDD—Maintenance which has been done but has not been documented in IMDS.

unscheduled event—Any operational, maintenance, or training requirement not assigned a performing workcenter and a start date and time.

unscheduled maintenance—Unpredictable maintenance requirements that had not been previously planned or programmed, but require prompt attention and must be added to, integrated with, or substituted for previously scheduled workloads. This includes correction of discrepancies discovered during flight or operation of equipment and performance of repairs because of accidents or incidents.

user's manual—A document describing how to use a hardware device, software product, or a system.

weapon system—A delivery vehicle and weapon combination including all related equipment, material, services, and personnel required so that the system becomes self-sufficient in its intended operational environment.

workcenter—A specific office or maintenance shop.

workcenter event—The various actions (tasks) required of a maintenance shop to complete a maintenance event.

workcenter event narrative—Free text narrative, input by a controlling agency, for a specific workcenter which usually provides basic guidance for corrective action (e.g., inspect and repair as necessary, or remove to FOM).

Abbreviations and Acronyms

2LM	two-level maintenance102570
3LM	three-level maintenance
ACM	aircraft configuration management
ACMS	aircraft configuration management system
ADCC	assistant dedicated crew chief
ADITS	Aircraft Diagnostics Integrated Test System
ADS	automated data system
AEF	air and space expeditionary forces
AETC	Air Education and Training Command
AF/IL	Headquarters Air Force, deputy chief of staff for installations and logistics
AFB	Air Force Base
AFCCC	Air Force Combat Communications Center
AFCSM	Air Force Computer Systems Manual
AFEMS	Air Force Equipment Management System
AFI	Air Force Instruction
AFLCMC	Air Force Life Cycle Management Center
AFMC	Air Force Materiel Command
AFMQCC	Air Force Maintenance Quality Control Checklist
AFNIC	Air Force Network Integration Center
AFPD	Air Force Policy Directive
AFRC	Air Force Reserve Command
AFRES	Air Force Reserve
AFSC	Air Force Specialty Code
AFSPC	Air Force Space Command
AFTO	Air Force Technical Order
AGE	aerospace ground equipment
AIM	asset inventory management
AIS	automated information system/avionics intermediate shops
ALC	Air Logistics Center
AMC	Air Mobility Command
AME	alternate mission equipment
AMU	aircraft maintenance unit
AMXS	aircraft maintenance squadron

ANG	Air National Guard
APU	auxiliary power unit
AR	action request
ATERS	automatic test equipment reporting system
AUR	accomplishment utilization report
AVDO	aerospace vehicle distribution officer
BNCC	base network control center
BROKER	logistics information brokering system
BSI	background status inquiry
C2	command and control
C2IPS	Command and Control Information Processing System
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CAC	common access card
CA/CRL	custodian authorization custody receipt listing
CAF	combat air forces
CAMS	Core Automated Maintenance System
CAMS-FM	Core Automated Maintenance System for Mobility
CANN	cannibalization
CC	commander
C-E	communications-electronics
CEMS	Comprehensive Engine Management System
CFLI	core function lead integrator
CFP	communications focal point
CFT	contract field team
CIPS	cyberspace infrastructure planning system
CMS	component maintenance squadron
COBOL	Common Business-Oriented Language
CONS	console
CONUS	continental United States
CQCC	communications quality control checklist
CRA	consolidated repair activity
CSA	computer system administrator
CSC	client service center
CTS	conversational time sharing
DBA	database administrator

DBE	database editor
DBLOOK	database look
DBM	database manager
DCC	dedicated crew chief
DCS	deputy chief of staff
DD	Department of Defense (when referring to forms)/deferred discrepancy
DDN	Defense Data Network
DDR	detailed data record
DECC	Defense Enterprise Computing Center
DFT	depot field team
DISA	Defense Information Systems Agency
DIT	data integrity team
DMS	database management system
DOC	designed operational capability
DOD	Department of Defense
DPC	data processing center
DR	deficiency reporting
DRU	direct reporting unit
DSN	defense switch network
ECL	executive control language
ECM	egress configuration management
ECP	entry control point
ECSS	expeditionary combat support system
EDW	Enterprise Data Warehouse
EHM	engine health management
EM	engine management
EMS	equipment maintenance squadron
EMOC	enhanced maintenance operations center
ESC	electronic systems center
ET&D	engine trending and diagnostic
ETIC	estimated time in commission
ETIMS	Enhanced Technical Information Management System
FAS	field assistance service
FAO	functional assistance office
FCC	flying crew chief

FCF	functional check flight
FOA	field operating agency
FOCUS	for online computer users
FOD	foreign object damage
FSA	functional system analyzer
FTP	file transfer protocol
FUD	file update
FURPUR	file utility routines program utility routine
FW	fighter wing
GCSAS	generic configuration status accounting subsystem
GDSS	global decision support system
GENRUN	generated runstream
GEOLOC	geographical location
GIG	global information grid
GPS	ground processing system
GR	global reach
GTN	global transportation network
GUI	graphical user interface
HAF	Headquarters Air Force
HHQ	higher headquarters
HMXS	helicopter maintenance squadron
How Mal	how malfunction
HQ	headquarters
HUM	heads-up message
IBM	International Business Machines Corporation
ICAO	international civil aviation organization
ICBM	intercontinental ballistic missile
ID	identification
IDEAS	Interactive Demographic Analysis System
ILS-S	integrated logistics system-supply
IMDS	Integrated Maintenance Data System
IMS	information management system
IPF	interactive processing facility
IRRI	immediate response readiness inspection
IRU	integrated recovery utility

IQU	interactive query utility
ISO	isochronal
ISPF	interactive system productivity facility
IT	information technology
JCL	job control language
JCN	job control number
JDD	job data documentation
JEIM	jet engine intermediate maintenance
JQS	job qualification standards
LAN	local area network
LCMP	life cycle management plan
L-COM	logistics composite model
LRU	line replaceable unit
LTERM	logical terminal
MA	maintenance
MACC	maintenance aircraft coordination center
MADAR	malfunction, detection, analysis, and recording
MADARS	malfunction, detection, analysis, and recording subsystem
MAF	Mobility Air Force
MAF LOG C2	Mobility Air Force Logistics Command and Control
MAJCOM	major command
MCCA	monitoring, coordinating, controlling agency
MD	mission design
MDC	maintenance data collection
MDD	maintenance data documentation
MDS	mission design series
MFD	master file directory
MIAP	multi-host internet access portal
MICAP	mission capability
MIS	Maintenance Information System
MMA	maintenance management analysis
MMP	maintenance management production
MOC	maintenance operations center
MOCC	maintenance operating control center
MO	maintenance operations

MS	maintenance support
MTF	maintenance training flight
MTFB	mean time between failure
MXG	maintenance group
MXG/CC	maintenance group commander
MXS	maintenance squadron
NAF	numbered air force
NCC	network control center
NDI	non-destructive inspection
NetOps	network operations
NIPRNET	nonsecure internet protocol router network
NLT	no later than
O&M	operations and maintenance
OAP	oil analysis program
OC-ALC	Oklahoma City Air Logistics Center
OCF	operational check flight
ODS	operational data store
OG/CC	operations group commander
OI	operating instruction
OIC	officer in charge
OJT	on-the-job training
OLTP	on-line transactional processing
OPR	office of primary responsibility
ORI	operational readiness inspection
OS	operational squadron
OTI	one-time inspections
OWC	owning work center
P&R	programs and resources
P&S	plans and scheduling
PACAF	Pacific Air Forces
PC	personal computer
PDM	program depot maintenance
PH	phase
PIM	product improvement manager
PIN	personal identification number

PIP	product improvement program
PMEL	precision measurement equipment laboratory
PMI	preventive maintenance inspection
POC	point of contact
PQDR	product quality deficiency reporting system
PR	pre-flight
Pro super	production supervisor
PS&D	plans, scheduling, and documentation
PSUPRB	pseudo remote processor for batch
PWC	performing work center
QA	quality assurance
QLP	query language processor
R&R	repair and reclamation
RDT&E	research, development, test, and evaluation
REF DES	reference designator
REMIS	Reliability and Maintainability Information System
RFA	request for assistance
RLP	remote line printer
RSI	remote symbiont interface
SAN	system advisory notice
SAAR	system access authorization request
SAS	specific area of support
SBLC	standard base-level computer
SBSS	standard base supply system
SCR	system change request
SCT	specialized communications team
SE	support equipment
SI	special inspections
SIRS	status and inventory reporting subsystem
SM	system monitor
SMC	system management center
SMR	source, maintenance, recoverability
SNCO	senior noncommissioned officer
SOE	start of entry
SPM	system program manager

SPO	systems program office
SRD	standard reporting designator
SRU	shop replaceable unit
SSDF	sequential system data format
STS	specialty training standards
SUPT	superintendent
TCI	time change item
TCP/IP	transmission control protocol/internet protocol
TCTO	time compliance technical order
TCNO	time compliance network order
TH	thru-flight
TIP	transaction interface package
TM	technical manual
TMDE	test, measurement, and diagnostic equipment
TNB	tail number bin
TO	technical order
TODA	technical order distribution account
TODO	technical order distribution office
TRIC	transaction identification codes
TRK	tracks
TSO	time-sharing option
USAFE	United States Air Forces in Europe
USTRASCOM	United States Transportation Command
UTE	utilization
UTM	unit training manager
VALTAB	validation table
VMCF	virtual machine communications facility
VPS	VTAM Printing System
VTAM	virtual telecommunications access method
W&B	weight and balance
WCE	workcenter event
WD	when discovered
WES	work event separator
WG	wing
WM	workgroup manager

WUC work unit code

IMDS Program Transaction Identifier Codes (TRIC)

TRIC	Program Title
GAG	message format
MIK	master instruction card
QBC	maintenance code listing inquiry
QBK	bench check serviceable report
QBM	bad actors and mean time between failure report
QBR	maintenance actions review report
QCC	maintenance code report
QCD	in-flight discrepancy/malfunction data inquiry
QCH	cannibalization history inquiry
QDR	maintenance action review inquiry
QKB	cannibalization history report
QMD	job data documentation man-hour report
QMH	maintenance history report
QMM	background reports menu
QMR	maintenance repair history inquiry
QMS	maintenance Snapshot Inquiry
QMT	mean time between failure report
QPE	indirect labor/transient/non-id equipment man-hour inquiry
QPI	781 documentation inquiry
QPM	performance monitoring report
QQM	online inquiry menu
QRR	repeat/recurring discrepancy inquiry
QRE	repeat/recurring discrepancy report
QSC	scheduled discrepancy report
QSM	unscheduled/deferred/scheduled discrepancy inquiry
QVR	suspense validation inquiry
WRQ	Walker Richer and Quinn

Student Notes

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AFSC 2R051
2R051 01
Edit Code 07