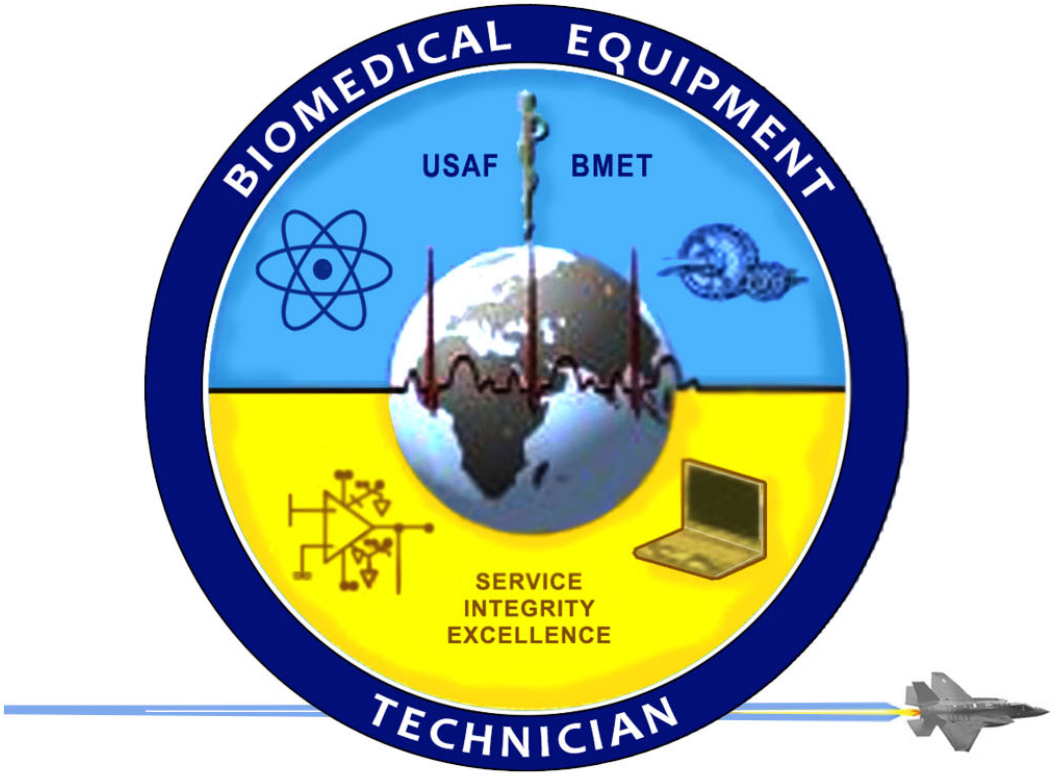
CDC 4A251A

Biomedical Equipment Journeyman

Volume 1. Introduction to Biomedical Equipment Technician



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

4A251A 01 1809, Edit Code 04

AFSC 4A251

Author: MSgt Jason E. Johnson, CBET, Sec+
MSgt Matthew J. Colica, CBET, Sec+
382nd Training Squadron
59th Training Group (AETC)
382 TRS/TRR
3068 William Hardee Rd, MIF 1-Bldg 899
JBSA Ft Sam Houston, TX 78234
DSN: 420-1644
E-mail address: jason.e.johnson1.mil@mail.mil

Instructional Systems Specialist: Evangeline K. Walmsley

Editor: Evangeline K. Walmsley

Air Force Career Development Academy (AFCDA)
Air University (AETC)
Maxwell AFB, Gunter Annex, Alabama 36114-3107

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BIOMEDICAL EQUIPMENT TECHNICIANS (BMET) are vital members of the Air Force Medical Service (AFMS) healthcare delivery system. As a BMET, you use your expertise to ensure the safety, efficacy, and availability of healthcare technologies for medical staff and patients. This career field is vast and challenging, and it is important that you perform your job accurately and efficiently. As you progress in your career, your skill and rank will increase, and so will your duties and responsibilities. The AFMS's mission depends on you, your knowledge, and your judgment.

You completed a major step in your Air Force career by attaining your 3-skill level. The initial skills course provided you with a great deal of information and tools, and now that you are on the job you are certain to have new questions. The four volumes of this career development course (CDC) are made to help answer many of those questions. Your advancement in this career field will depend on expanding your knowledge and skills. Main sources of that knowledge are your CDCs. After completing this course, you will move on to the second Journeyman CDC set, 4A251B. In this course, CDC 4A251A, *Biomedical Equipment Journeyman*, Volume 1 introduces you to the biomedical equipment technician career field, including general administration tasks and equipment life cycle management. Volume 2 covers important safety aspects of the BMET duties in regards to mitigating hazards, reviewing regulations, and performing processes. Volume 3 moves into a topic you are familiar with, electronic principles. Completing the CDC, Volume 4 provides information on medical device information systems, which includes computer systems, networking, and security.

This first volume, *Introduction to Biomedical Equipment Technician*, provides a good foundation for understanding the BMET career field. It details general aspects of the Air Force biomedical equipment support program. Unit 1 is an overview of the biomedical equipment support program to include career progression, typical organization structures, and the main BMET functions and activities. Unit 2 covers how to properly document maintenance actions manually and in the Defense Medical Logistics Standard Support (DMLSS) system also. In addition, unit 2 discusses common administrative tasks and basic management duties that will help you operate efficiently. Unit 3, the last unit, covers the medical materiel system and a general overview of the BMET's role in managing the life cycle of medical equipment.

A glossary is included for your use.

Code numbers on figures are for preparing agency identification only.

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

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

NOTE: Do not use Air Force Instruction (AFI) 38-402, *Airmen Powered by Innovation*, to submit corrections for printing or typographical errors. For Air National Guard (ANG) members, do not use Air National Guard Instruction (ANGI) 38-401, *Suggestion Program.*

If you have questions that your supervisor, training manager, or education/training office cannot answer regarding course enrollment, course material, or administrative issues, please contact Air University Educational Support Services at http://www.aueducationsupport.com. Be sure your request includes your name, the last four digits of your social security number, address, and course/volume number.

This volume is valued at 12 hours and 4 points.

NOTE:

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

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Unit 1. Air Force Biomedical Equipment Program

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THE BIOMEDICAL EQUIPMENT TECHNICIAN (BMET) career field, 4A2X1, demands a wide variety of skills, which you will acquire through practical experience and training. This career development course (CDC) is one source that provides knowledge, which accompanies these skills to solidify your training. This CDC set is comprised of four volumes. In this volume, you will receive an introduction to the BMET career field's responsibilities, organizational structure, proper documentation procedures, and some general management procedures. All these lessons help you to see where you fit into the overall Air Force (AF) mission, which will be important as you progress in your career as a BMET. We will begin with an overview of BMET career progression along with some educational opportunities.

1–1. 4A2X1 Training and Career Progression

As you progress through the skill levels, your duties vary and include more responsibility. Your supervisor will be the person in your chain of command that will explain the specific duties of your current assignment. Since an individual effort is related directly to career progression, it is incumbent on you to develop professionally and keep abreast of specialty knowledge and proficiency standards. Several programs blend specialty training with academic pursuits to enable or enhance career progression. These include CDCs, advanced specialty training, supplemental training, on-the-job training (OJT), and accredited education. The primary information for this section stems from the 4A2X1 career field education and training plan (CFETP) and Air Force Instruction (AFI) 36–2101, *Classifying Military Personnel (Officer and Enlisted)*, which can both be found through the AF E-Publishing Website, http://www.e-publishing.af.mil/. We will first cover the different skill levels and the requirements to progress to each one.

001. 4A2X1 career ladder

The guidance provided in the 4A2X1 CFETP ensures you receive viable training at the appropriate points in your career. Adequate training and timely progression from the apprentice to the superintendent skill level also play an important role in the AF's ability to accomplish its mission. The skill-level training requirements are driven by the specialty training standard (STS), which is developed using data found in occupational survey reports provided by AF BMETs.

4A2X1 skill level STS

Your skill level is the level of qualification you possess within the 4A2X1 career field. The fourth digit of your AF specialty code (AFSC) expresses it. When reading the following section, keep in mind that in accordance with AFI 36–2101, part of your individual responsibility is to gain and maintain specialty qualifications for your awarded AFSC. Let's take an individual look at the 4A231, 4A251, 4A271, and 4A291 skill levels.

4A231 (apprentice level)

The 3-skill level identifies enlisted personnel who have obtained basic knowledge within an AFSC through completion of an initial skills course. For award of AFSC 4A231, it is mandatory you complete the BMET 3-skill level resident course provided by the Medical Education & Training Campus (METC) located at Fort Sam Houston, Texas. The 3-skill level course is described on the Education and Training Course Announcements (ETCA) Website, https://etca.randolph.af.mil/. Apprentices enter into a structured upgrade training (UGT) program to gain the qualification and experience required for a 5-skill level (journeyman).

4A251 (journeyman level)

The 5-skill level identifies enlisted personnel who, through experience and training, have demonstrated skilled proficiency in their AFSC. The 4A251 specialty is awarded only after successful completion of both the A and B sets of the 5-skill level CDCs, a minimum 15 months of OJT (nine months for retrainees), and supervisor recommendation. You must also have qualification in and possession of AFSC 4A231 and experience in functions such as installing, inspecting, calibrating, modifying, and repairing biomedical equipment support systems. Journeymen continue to gain experience and qualification in their AFSC and, upon promotion to staff sergeant, enter UGT to gain experience and qualification required for a 7-skill level (craftsman).

4A271 (craftsman level)

The 7-skill level identifies enlisted personnel who have gained a high degree of technical knowledge in their AFSC and have additionally acquired supervisory capability through training and experience. Craftsmen continue to gain experience in technical, supervisory, and managerial functions. Craftsmen plan, coordinate, implement, and direct work activities. The 4A271 specialty is awarded upon successful completion of the 7-skill level CDC, a minimum 12 months of OJT (six months for retrainees), and supervisor recommendation. Knowledge of AF property, accountability, and resource protection is mandatory. In addition, you must have qualification in and possession of AFSC 4A251 along with experience supervising functions such as installing, calibrating, repairing, or modifying biomedical equipment systems. Knowledge of data automation systems and supplemental and commercial courses are desirable.

4A291 (superintendent level)

The 9-skill level identifies enlisted personnel who, through experience, training, and performance, have shown a high degree of managerial and supervisory ability to fill positions requiring broad general knowledge. Superintendents plan, coordinate, implement, and direct a wider scope of work activities and functions. To be awarded AFSC 4A291, an individual must be an E–8, have qualification in and possession of AFSC 4A271, and possess experience managing BMET function.

Career ladder progression

The 4A2X1 CFETP provides the primary information for career progression. Over the next few years, you will progress through the skill levels previously discussed. Completion of the resident 3–skill level course was only the first step in a continuous flow of training that will endure your entire career. BMETs typically follow the general enlisted career field path (fig. 1–1). In the graphic, the career path flows from the bottom to the top displaying roles and education opportunities commensurate with rank. The enlisted education and training path for AF Reserve Command (AFRC) and Air National Guard (ANG) members shadows the active duty requirements for the ranks of senior Airman (SrA) and below. However, the ranks staff sergeant (SSgt) to chief master sergeant (CMSgt) in the ANG and AFRC are achieved through the availability of authorized positions on their applicable unit manpower document (UMD) and members may have the opportunity to receive a promotion one grade above the authorized position designated on the UMD.

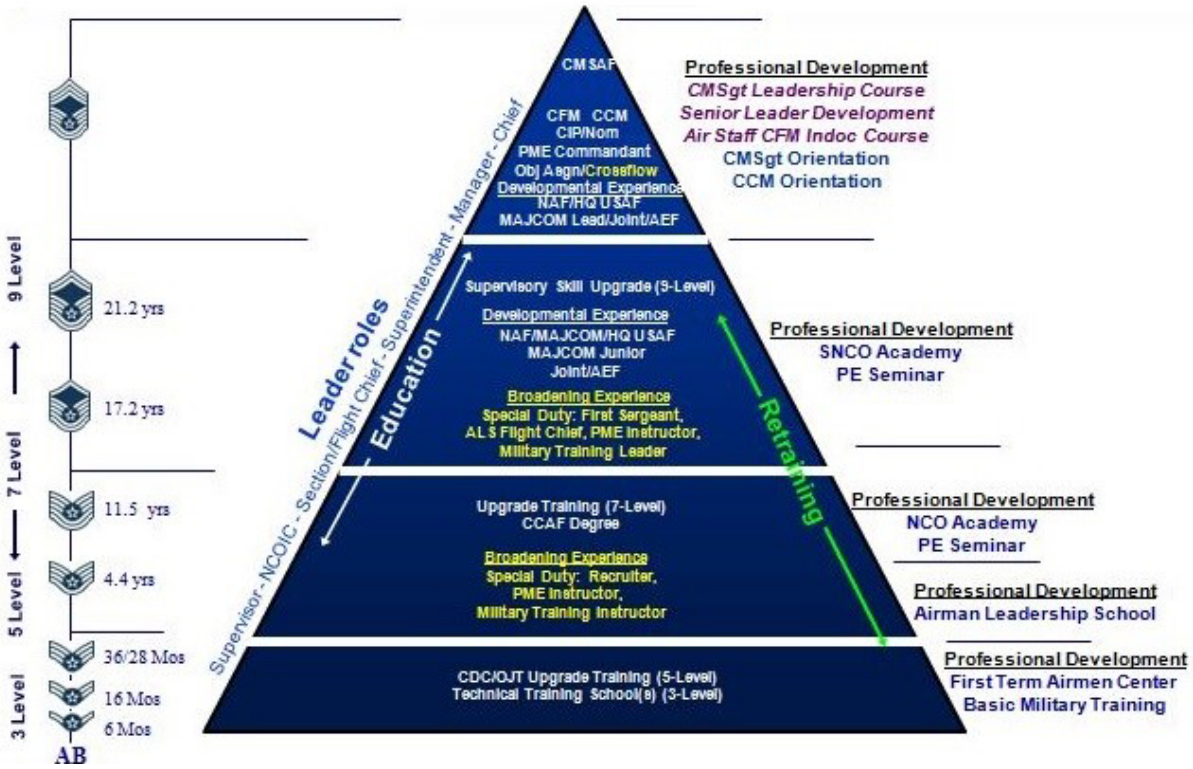

Figure 1–1. BMET career field path.

The BMET development pathway (fig 1–2) is similar to the BMET career path but outlines when training is required for each skill level and function within the 4A2X1 specialty.

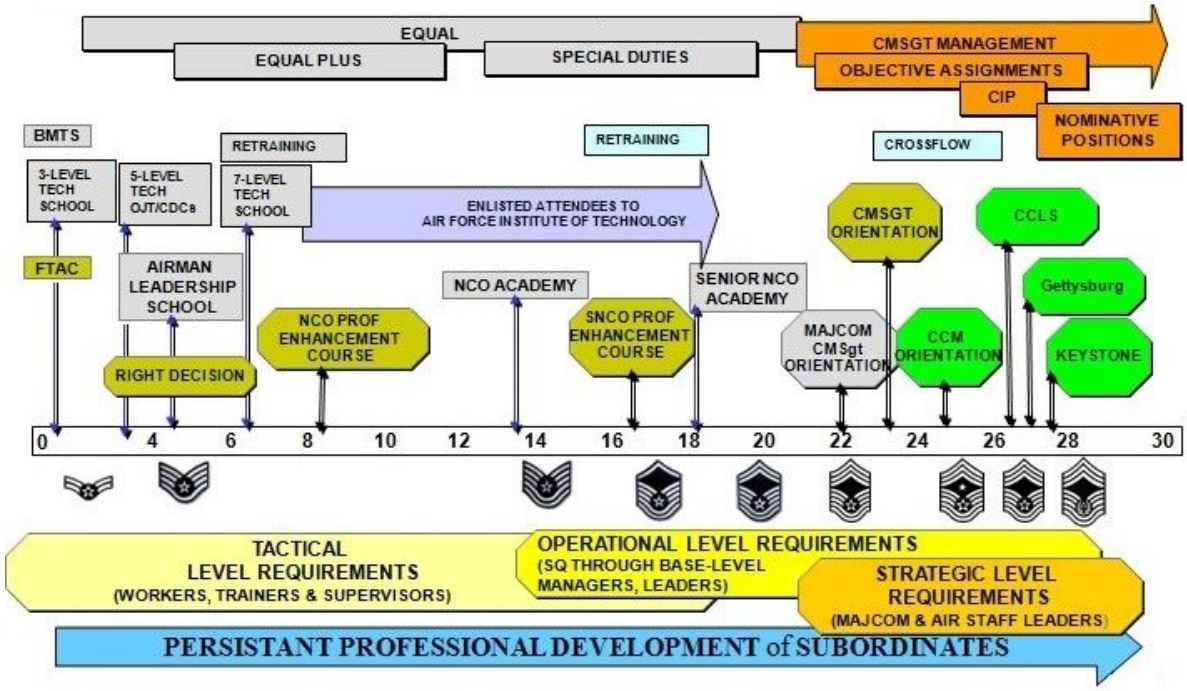

Figure 1–2. BMET development pathway.

The enlisted career path table displays education and training requirements, the average promotion time line, and a chart representing earliest date of rank and high year of tenure dates for ranks Airman (Amn) and above.

Enlisted Career Path				
Education and Training Requirements	**Grade Requirements**			
	Rank	**Average Sew-On**	**Earliest Sew-On**	**High Year Of Tenure**
Apprentice Technical School (3-skill level)	Amn	6 months		
Upgrade to Journeyman (5-skill level) - Minimum 15 months OJT. - Complete appropriate CDC.	A1C SrA	16 months 3 years	28 months	8 years
Airman Leadership School (ALS) - Must be a SrA with 48 months' time in service or be a SSgt selectee. - Resident graduation is a prerequisite for SSgt sew-on (active duty only).	<u>Trainer</u> - Qualified and certified to perform task to be trained. - Must attend AF Training Course and be appointed by commander. - Recommended by supervisor.			
Upgrade to Craftsman (7-skill level) - Minimum rank of SSgt. - Minimum 12 months OJT. - Complete appropriate CDC.	SSgt	4 years	3 years	15 years
	<u>Certifier</u> -Must be SSgt or higher with a 5-skill level (or civilian equivalent). -Attend formal AF Training Course. -Be a person other than the trainer. -Be certified on the task to be evaluated.			
Noncommissioned Officer Academy (NCOA) - Must be a technical sergeant (TSgt) or TSgt selectee. - Resident graduation is a prerequisite for master sergeant (MSgt) sew-on (active duty only).	TSgt MSgt	9 years 14 years	5 years 8 years	20 years 24 years
USAF Senior NCO Academy (SNCOA) - Must be a senior master sergeant (SMSgt), SMSgt selectee or MSgt who has been selected to attend based on promotion scores. - Resident graduation is a prerequisite for CMSgt sew-on (active duty only).	SMSgt	17 years	11 years	26 years
Upgrade to superintendent (9-skill level) - Minimum rank of SMSgt.	CMSgt	22 years	14 years	30 years

002. Educational opportunities

One of the most valuable incentives of the AF is the educational opportunities. As previously stated, the BMET career field requires a variety of skills and knowledge, and in order for you to excel, you must be a technician of remarkable versatility. Education plays a major role in your professional development and it is highly recommended that you take advantage of these opportunities. The base education office should be your starting point for any questions you may have in regards to any of the information presented in this lesson.

Community College of the Air Force

From the time you join the AF, you begin to accumulate credits from the Community College of the Air Force (CCAF), which is the only two-year institution exclusively serving military enlisted personnel. The Commission on Colleges of the Southern Association of Colleges and Schools to award Associate in Applied Science (AAS) degrees for specific AF occupational specialties regionally accredits the college through Air University. After your completion of basic military training and assignment to the BMET career field, you were registered in CCAF for an AAS degree in biomedical equipment technology automatically. In order to be awarded the degree, you must successfully complete all degree requirements before separating, retiring, or commissioning as an officer. The CCAF Website (http://www.au.af.mil/au/barnes/ccaf/catalog/2014cat/index.asp) has details regarding AAS degree programs. All degrees require general education that can be satisfied through traditional universities and colleges, or by taking college level examination program (CLEP) exams. CLEP exams are designed to grant you college credit for introductory subjects for which you already possess vast knowledge. The Defense Activity for Non-Traditional Education Support (DANTES) funds your first attempt at all CLEP exams.

The AF currently offers tuition assistance to active duty personnel to attend college courses from accredited schools. You may use tuition assistance to obtain one bachelor's and one master's degree. The benefit currently pays 100 percent of tuition, up to $250 per credit hour, at a maximum of $4,500 annually. These same benefits apply to activated AFRC and ANG personnel.

Certifications

The Air Force Credentialing Opportunities On-Line (AF COOL) program provides a research tool designed to help Airmen navigate national professional credentialing opportunities for their respective AFSC. AF COOL contains a variety of information about credentialing and licensing and can be used to do the following:

- Get general background information about civilian licensure and certification and specific information on individual credentials including eligibility requirements and resources to help prepare for an exam.
- Identify licenses and certifications relevant to the 4A2X1 AFSC.
- Learn how to fill gaps between AF training/experience and civilian credentialing requirements.
- Get information on funding opportunities for your credentialing exams and associated fees.
- Learn about resources available to you that can help you gain civilian job credentials.

Air Force Medical Service (AFMS) members also have an additional route for obtaining certifications that support their direct mission. AFI 41–104, *Professional Board and National Certification Examinations*, provides information for taking professional, board or national certification examinations in the AFMS. The certification must be listed on the authorized certification agency for your AFSC. After confirming eligibility, the military treatment facility (MTF) and unit commanders may approve funding for the initial certification based on if it is required to perform your duties and funds availability. Subsequent certifications may also be covered. The following table shows what is currently authorized for 4A2X1 to be covered by Medical Services:

Certifying Agency	Certifications
Association for the Advancement of Medical Instrumentation (AAMI)	--Certified Biomedical Equipment Technicians (CBET) --Certified Laboratory Equipment Specialists (CLES) --Certified Radiology Equipment Specialists (CRES)

Certifying Agency	Certifications
Computing Technology Industry Association (CompTIA)	--A+ Certification (required for special experience identifier [SEI] 260) --Security+ (Required for SEI 264) --Network+

To get information on becoming a CBET, CLES, CRES, or to specialize as a certified healthcare technology manager (CHTM), contact the AAMI Credentials Institute at (703) 525–4890, ext. 1207, or at the website www.aami.org.

As technology evolves, manufacturers continue to integrate computer systems into healthcare technology. It is critical for you to learn these concepts to stay relevant with these emerging technologies. To become certified in a computer systems contact CompTIA Global Corporate Headquarters for A+, Net+, or Security+ certification at (630) 678–8300, or visit their website http://certification.comptia.org/. You can research other credentialing organizations for computer systems as well; CompTIA is currently the one the Department of Defense (DOD) accepts for basic access requirements.

As you move into more senior technician roles, you may be assigned to perform the role of the facility manager. For information concerning the certified healthcare facility manager (CHFM) program, contact the American Hospital Association Certification Center at (312) 422–3000, (312) 422-3702, or at the website www.aha.org/certifcenter/CHFM/index.shtml.

Whether you are in a BMET shop or the facility management section, you will find yourself involved in projects. They can range from small local equipment standardization projects to more intricate projects, such as computed tomography (CT) system replacement. For information concerning the project management professional (PMP) certification, contact the Project Management Institute at (855) 746–4849, or visit the website http://www.pmi.org/Certification.aspx.

Advanced technical training

Another great opportunity for professional development is to attend advanced technical training. METC offers BMETs advanced training courses ranging from radiographic/fluoroscopic imaging systems to advanced field medical support systems. For information regarding courses offered by METC you can visit https://www.metc.mil/academics/ or https://etca.randolph.af.mil/.

Manufacturers of medical devices often offer specific training for their products. Training from the manufacturer can be purchased in conjunction with equipment procurement; this can be crucial to the ability of your shop to maintain the equipment properly. Some manufacturers may not even communicate with your BMET shop unless there is a technician available that received their training. It is highly encouraged to include manufacturer training in with the equipment procurement package when possible.

Self-Test Questions

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

001. 4A2X1 career ladder

1. What is used to develop the STS?

2. What is required to be awarded AFSC 4A231?

3. List the requirements to upgrade to AFSC 4A251.

4. How are the ranks of SSgt to CMSgt achieved in the ANG and AFRC?

002. Educational opportunities

1. How are you registered for the CCAF BMET AAS degree program?

2. What does the AF COOL program provide?

3. What certifications are covered for AF BMETs by AFI 41–104?

4. How might manufacturer training affect your shop operations?

1–2. 4A2X1 Organization and Functions

Understanding the organization of the BMET career field is important, because it paints the "broad picture" and lets you know exactly where you fit into the mission. It also informs you about the levels of responsibility and where to turn for assistance. Let's begin by looking at the overall AF BMET program organization.

003. 4A2X1 organizational structure

The organizational structure of the BMET career field has a clearly defined hierarchy. Our examination of this organizational structure will begin at the top and progress downwards to you, the local BMET.

Air Force Medical Service

"Trusted Care, Anywhere" is the mantra of the AFMS. The AFMS works in close coordination with the Assistant Secretary of Defense for Health Affairs, the Defense Health Agency (DHA), the Departments of the Army and Navy, major command (MAJCOM) surgeons and other government agencies to deliver health care to more than 2.56 million eligible beneficiaries worldwide. The care is delivered through a system of 76 MTFs consisting of 12 hospitals and 64 clinics. Beneficiaries include active duty, AFRC, ANG, dependents, and retirees, during both peacetime and wartime. The AFMS consists of approximately 41,700 officers, enlisted, and civilian personnel, plus an additional 15,250 members assigned to the AFRC and ANG. The mission of the AFMS is to ensure medically fit forces, provide expeditionary medics, and improve the health of all they serve to meet the nation's needs.

Air Force surgeon general

The Air Force surgeon general (AF/SG) is the highest-ranking medical service officer (usually a lieutenant general) who serves as functional manager of the AFMS. The AF/SG advises the secretary of the AF and AF chief of staff, as well as the assistant secretary of Defense for Health Affairs on

matters pertaining to the medical aspects of the air expeditionary force and the health of AF personnel. The surgeon general (SG) has authority to commit resources worldwide for the AFMS, to make decisions affecting the delivery of medical services, and to develop plans, programs, and procedures to support worldwide medical service missions. The AF/SG exercises direction, guidance, and technical management of the $6.1 billion AFMS health care delivery system.

Field operating agencies

The two field operating agencies (FOA) that affects the operations of the BMET career field directly are Air Force Medical Operations Agency (AFMOA) and Air Force Medical Support Agency (AFMSA). These agencies offer specific elements of support to medical maintenance shops and MTFs.

AFMOA

AFMOA is the AFMS operational and consultant lead for aerospace medicine, preventive medicine, clinical excellence, optimization of medical resources, bioenvironmental and occupational health, and radiation protection and population health support. AFMOA supports the AFMS with the management of the health of our population. In other words, they do not provide healthcare, but enable those who do.

AFMSA

AFMSA oversees the execution of AF/SG policies and programs to transform medical capabilities in support of the war fighter. It leverages science, technology, and information systems to integrate modernization efforts.

Figure 1–3 shows the organization of AFMOA and AFMSA as it pertains to BMETs. We first look at the AFMOA side of the chart. The AFMOA chain of command starts with the AF/SG and flows down through the AFMOA commander to AFMOA, Medical Support (AFMOA/SGA) to the AFMOA, Medical Logistics Division (AFMOA/SGAL). AFMOA/SGAL is located at Ft. Detrick, MD along with AFMOA, Medical Logistics Division, Clinical Engineering Branch (AFMOA/SGALE), which is the BMET side of the house

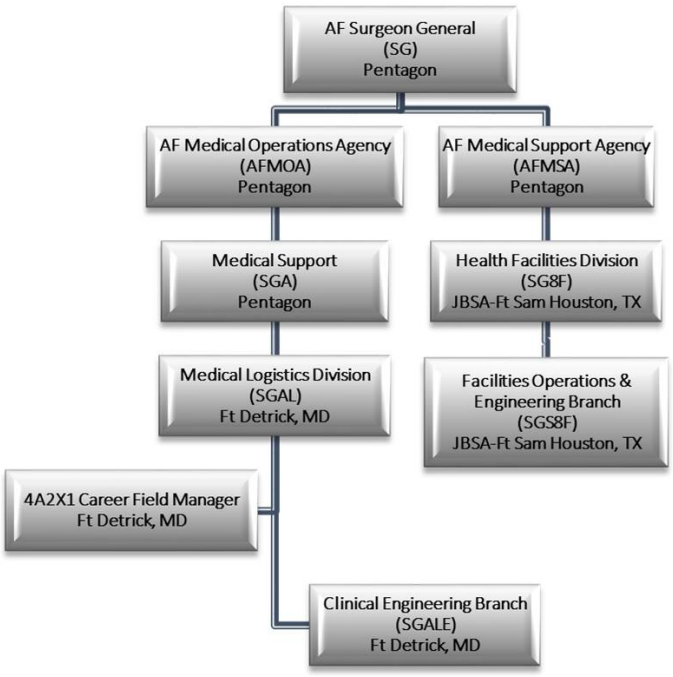

Figure 1–3. AFMOA and AFMSA organizational chart.

4A2X1 career field manager

The 4A2X1 career field manager (CFM) position is filled by a CMSgt who serves at AFMOA/SGALE in Fort Detrick, MD. The CFM is responsible for organizing and managing our career field. In figure 1–3, you can see where the CFM fits into the organization. The 4A2X1 CFM serves as the primary enlisted manager for the career field (about 500 enlisted members) on matters pertaining to enlisted accession and training requirements, overall force structure, and developing and managing career training plans' requirements and programs. This office also constructs viable career paths, evaluates training effectiveness, monitors health and manning of the career field, and provides input on personnel policies and programs. Additionally, the 4A2X1 CFM develops force management policies and programs, develops contingency planning policy, validates deployment requirements, and verifies workforce availability. As a functional expert, the CFM, ensures our career field is responsive to both current and future needs of the AF. The CFM communicates directly with other Headquarter AF offices on issues affecting our career field. He or she also communicates with the respective MAJCOM enlisted career field representatives, Air Education and Training Command (AETC) training managers to disseminate AF and career field policies and program requirements.

MAJCOM functional managers

Enlisted MAJCOM functional managers (MFM) are senior noncommissioned officers (SNCO) who manage our career field for their respective MAJCOMs and serve as MAJCOM liaisons for our CFM. MFMs monitor the health and manning within their command and elevate concerns to the 4A2X1 CFM. They manage command training for our career field and coordinate training and personnel issues with MAJCOM staff and the CFM. They disseminate AF and career field policies and program requirements affecting BMETs throughout their respective MAJCOM. They coordinate with the Air Force Personnel Center (AFPC) to distribute personnel throughout the MAJCOM to ensure proper command prioritization of allocated/assigned personnel resources. MFMs also provide functional and subject matter expertise to AETC training managers to develop new or modify/improve existing training programs. The senior BMET at your MTF should have close contact with your MFM to coordinate manning issues and attendance to METC advanced courses.

AFMOA/SGALE

AFMOA/SGALE is the primary office that BMETs interface with directly. AFMOA/SGALE provides guidance, policy, and consultative services to the AF/SG, Air Force medical logistics, and AF BMETs. In conjunction with the AFMSA/Health Facilities Division (AFMSA/SG8F), they provide guidance and technical assistance to MAJCOMs and MTFs. They monitor program operations including inter-service and inter-agency support agreements for regional maintenance services. AFMOA/SGALE supplies guidance to organizations purchasing medical equipment systems, reviews technical specifications, initiates contract actions, coordinates AF/SG clinical consultant reviews, and reviews installation and support plans. They identify and manage medical equipment and facility hazards that affect the AFMS and provide field guidance or modification instructions as necessary. Additionally, the branch participates in DOD panels to assist in the standardization and interoperability of medical equipment in-garrison and deployed locations. AFMOA/SGALE is the hub of the AF BMET program.

AFMOA/SGALE has four teams: (1) medical equipment maintenance, (2) facility management, (3) healthcare technology management, and (4) medical device cybersecurity. The following table provides a brief description of each team.

Team	Description
Medical Equipment Maintenance	Provides local services to include technical advising, planning, replacing, installation/de-installation, upgrading, modifying, and operator training for medical equipment.
Facility Management	Acquires and manages the services necessary for operating, maintaining, and modifying medical facilities and utility systems.

Team	Description
Healthcare Technology Management	Initiates, advises, reviews, and manages equipment replacement actions.
Medical Device Cybersecurity	Provides life cycle management of information assurance (IA) certification and the authority for a medical device to be connected to the DOD network.

Facility management support

The facility management support system varies from that of biomedical equipment support. Do not confuse this with the AFMOA/SGALE facility management team just discussed. AFMSA/SG8F formulates policies and guidance, and maintains overall control of the facility management program with the assistance of AFMOA/SGALE. The AFMSA, Health Facilities Division, Facilities, Operations and Engineering Branch (AFMSA/SGS8F) provides guidance such as technical support for facility managers, communication with other agencies for facility issues, resources, civil engineering, and logistics in support of performing facility management day-to-day functions.

Organization of the medical treatment facility

We have discussed the functional chain of command for the two major FOAs supporting BMET operations. In addition to these chains of command, it is important you understand your unit's organizational structure. Figure 1–4 shows the typical organizational structure of an MTF. Each division may be divided further, depending on the size of the MTF. BMET functions fall under the medical logistics flight.

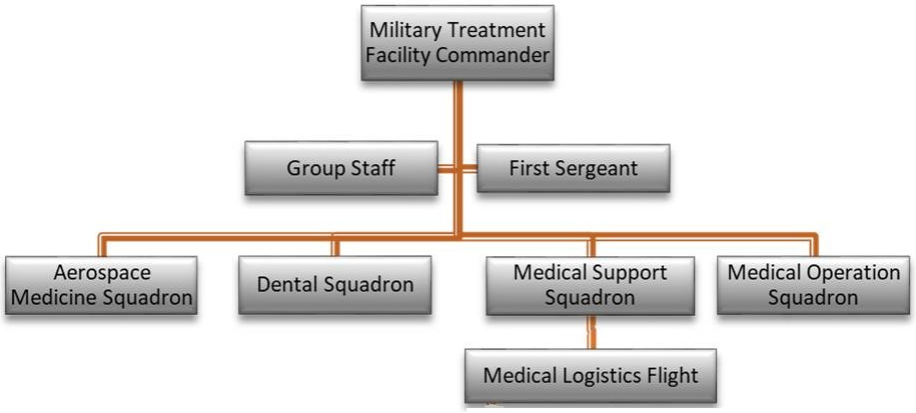

Figure 1–4. Typical MTF organizational structure.

The medical logistics chain of command and internal structure (fig. 1–5) varies to some degree throughout the AF. It includes the MTF commander, medical support squadron commander, and medical logistics flight commander (MLFC). Typically, the MLFC reports directly to the medical support squadron commander. The medical logistics flight is responsible for overall logistical support of the medical facility as well as providing medical supplies and equipment to other base agencies.

Your maintenance shop falls under the control of the MLFC. At larger MTFs, an individual trained to handle facility and equipment issues may be assigned as the director of clinical engineering, which oversees both facility management and medical equipment maintenance programs. It is important to realize that usually the MLFC is *not* trained in biomedical equipment technology, so they look to the clinical engineer and/or BMET(s) for technical advice on equipment maintenance, electrical safety, and other related areas.

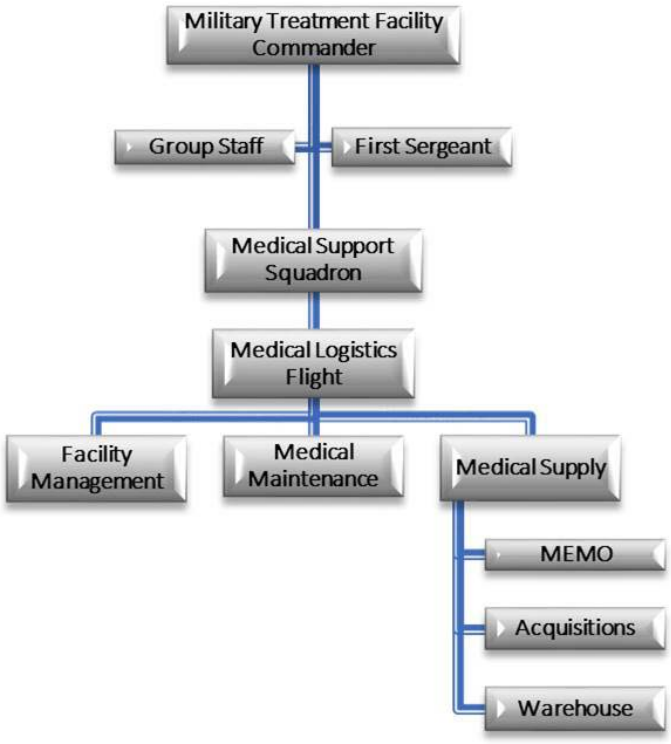

Figure 1–5. Typical medical logistics flight.

004. Organizational maintenance

The three levels of maintenance you will primarily interact with range from simple user tasks up to maintaining complex systems are user, organizational, and intermediate. Each level requires trained personnel and equipment equal to the work required. The training and equipment requirements increase as you move from one level to the next higher level. For example, the training and equipment required to rebuild an X-ray tube is certainly more than that required to make a minor repair to the same unit. For this reason, different groups or levels perform different tasks. Each level has the trained personnel, proper equipment, and budget to perform the required tasks. The following is a brief explanation of each of these levels.

User

The equipment operator performs user maintenance in accordance with the operator's manual. Typical user maintenance may include daily inspections, cleaning, simple lubrication, and operational adjustments. Users must also report equipment malfunctions to the property custodian, supervisor, or medical equipment maintenance activity. BMETs are responsible for ensuring that proper user maintenance is being performed and training is being provided to users when necessary.

Organizational

Organizational maintenance requires trained BMETs and the use of tools and test equipment not available to the equipment operator. A qualified BMET performs or supervises the maintenance. It includes all aspects of a BMET's duties (i.e., inspecting, servicing, lubricating, adjusting, repairing, calibrating, modifying, and replacing parts or assemblies).

Intermediate

Intermediate maintenance supports organizational maintenance by assisting with complex maintenance tasks that call for special skills, tools, training, or equipment not currently available at

the organizational level. Intermediate maintenance is performed by medical equipment repair centers (MERC). We will cover MERCs more in depth later.

Unless assigned to a MERC, you will perform organizational maintenance support for your MTF.

We will now look at the different components of organizational maintenance for BMETs.

Components of BMET organizational maintenance

It is your duty, as a BMET, to ensure medical equipment is serviceable, safe, and properly configured to meet the wartime and peacetime missions of the AFMS; this includes United States Army veterinary services located on AF installations. The three components of organizational maintenance is scheduled, unscheduled, and contract maintenance. Before we look at each of these, it is important to note that the primary regulation for AF BMETs is AFI 41–201, *Managing Clinical Engineering Programs.* It provides information on electrical safety, medical equipment maintenance, and facility management. You should take the time to thoroughly read and comprehend this AFI, since it regulates the majority of the tasks and processes you will perform as a BMET.

Scheduled maintenance

Scheduled maintenance is the most critical component of your biomedical equipment maintenance program. A properly executed scheduled maintenance program ensures patient and staff safety, allows the MTF to operate more efficiently by minimizing equipment downtime, and it saves money on potential costly repairs. BMETs are responsible for scheduling, performing, and documenting scheduled maintenance for the equipment in its facility. Scheduled maintenance consists of inspections, preventive maintenance (PM), calibrations/certifications, and scheduled parts replacements (SPR). Each type of equipment has scheduled maintenance that must be performed according to a set interval established by AFMOA/SGALE based on the manufacturer's recommended frequencies, area of use, and risk assessment. Your shop can increase this frequency based on local circumstances. However, your shop may not reduce the interval without written approval from AFMOA/SGALE.

The Defense Medical Logistics Standard Support (DMLSS) system plays a vital role in the overall success of the maintenance program and BMETs must use it to manage medical equipment. It allows users to, create, update, track, and complete work orders. It automatically tracks and produces scheduled work orders. The scheduled work orders are generated during end of month processing for all equipment items that have scheduled maintenance service due dates the next month. Using this information, each shop must prepare a plan for accomplishing the scheduled maintenance. This involves deciding the method and order of scheduled work order completion, which can vary from shop to another.

The next step is to coordinate with MTF sections. Communication with the equipment custodian or section noncommissioned officer in charge (NCOIC) is the key to this coordination. Set up a tentative time to conduct scheduled maintenance for each MTF duty section based on the coordination plan. Making these appointments ensures the equipment will be available for inspection and that the inspection does not interfere with the duty section's workload. Do not wait until the end of the month to make initial contact.

Some important items to consider when performing scheduled maintenance include the following:

- Ensure test, measurement, and diagnostic equipment (TMDE) used for calibration/certification of medical equipment is calibrated in accordance with the manufacturers' specifications, and Technical Order (TO) 33K–1–100–1, *Technical Manual Calibration Procedure for Maintenance Data Collection Codes and Calibration Measurement Summaries*.
- Equipment designated and permanently marked "for training use only" does not require scheduled maintenance.

- Take corrective measures and document detected malfunctions on the scheduled work order when found during scheduled maintenance or you can open an unscheduled work order to capture the corrective actions.
- Verify the accuracy of all DMLSS data entries (i.e., model, manufacturer, serial number, etc.) and update the condition code and maintenance assessment as applicable.
- Affix a DD Form 2163, Medical Equipment Verification/Certification, or locally developed form approved by AFMOA/SGALE to the equipment item after performing scheduled maintenance.
- Work with the property custodian to locate the equipment if you cannot locate accountable equipment. If this equipment is not found, change the work order status to "unable to locate." All validated losses initiate a report of survey (ROS), which consists of an investigation to account for the loss.

Unscheduled maintenance

No matter how robust your scheduled maintenance program, you cannot eliminate all equipment failures. It would be nice if we only had to be concerned with scheduled maintenance, unfortunately, we cannot predict when equipment will break; schedule it accordingly. These unexpected problems generate unscheduled maintenance. Each maintenance shop should have a system in place for handling unscheduled maintenance that allows MTF personnel to bring broken equipment in for repair or call in work requests for items that cannot be taken to the shop.

DMLSS keeps track of all unscheduled work. Once a request for work is received, BMETs enter the equipment data into DMLSS to generate an unscheduled work order, capture any action taken, and process the completion. In the event that DMLSS is not available, you will use AF Form 1763, Medical Maintenance Manual Work Order, to document the action taken. Once the work is completed, the maintenance information is recorded on AF Form 509, Medical Equipment Maintenance Record. If a manual work order was used because of a DMLSS outage, it must be entered into the system once the system returns to operation.

In facilities with critical equipment, you must establish a method for responding to after-duty-hour emergencies. The need for an on-call technician is a local issue based on the equipment and mission of each MTF. If you use an on-call system, the procedures for obtaining after-hours maintenance should be written formally in an MTF instruction or policy and the responsibilities of the on-call technicians should be addressed in a shop operating instruction or policy.

In addition to the items listed for scheduled maintenance, you also must consider the following for unscheduled maintenance:

If unscheduled maintenance affects any electrical components of an equipment item, you must complete an electrical safety check in accordance with AFI 41–201 and National Fire Protection Agency® (NFPA) 99, *Health Care Facilities Code.*

- When you perform unscheduled maintenance on fixed or hard-wired equipment, you must ensure you follow your shop’s lockout/tag-out (LOTO) policies and procedures as applicable. (LOTO is covered in Volume 2 of this CDC).
- When a fixed or hard-wired equipment item fails to meet the appropriate safety standards and you cannot physically remove it from the area of service, you must affix an AF Form 979, Danger Tag, to the equipment until you correct the problem. Ensure you notify the department chief about the danger tag.
- You are required to tag each item in your medical maintenance shop with a copy of the work order or a locally developed/procured form for accountability.

- After repairing an equipment item, it is important to have the individual accepting the repaired item from your shop to acknowledge receipt by signing the work order.
- Establish and maintain good communication with the affected work center. The status of the equipment could affect their patient and staff scheduling, patient referrals, or operations.

Contract maintenance

Contract maintenance is the use of outside agencies, such as equipment manufacturers or specialized maintenance services, to perform any level of maintenance on equipment. The maintenance may range from a one-time repair (unscheduled maintenance) or calibration, to an annual contract to perform all scheduled maintenance and repairs for an equipment item or system. Normally, contract maintenance is only required when your shop does not have the resources or skills to perform the job and/or it is not economically feasible to develop an in-house capability. Contracts can be locally-funded (installation contracting office) or centrally-funded (AFMOA). The major difference is the level from which the contract originates. Unless working at AFMOA, you will be involved with locally funded contracts mostly, so the following information covers locally funded contracts. The process is similar for centrally funded contracts, but more complex due to factors such as covering multiple bases and equipment modalities.

The BMET's primary role in the contracting process is to identify the work requirements of the contract. The terms of the work requirements, called a statement of work, must be very detailed, describing every aspect of what is expected of the contractor. The statement of work is the key to any contract maintenance agreement. Take great care to include everything required of a contractor. In general, the BMET shop is responsible for ensuring that annual contracts for preventive maintenance, calibration and repair, and one-time repair actions specify the following:

- The equipment involved.
- If parts are included.
- Hours of service.
- Response time.
- Performance standards.
- Frequency of service.
- Documentation of work performed including any calibration results.
- Reporting instructions.
- Distribution of service reports.
- Exact specifications and tolerances for calibration actions.

The contract should require the contractor to sign in and out of the BMET shop before and upon completion of all actions. The reporting instructions must include a means of control for contractors responding during other than normal duty hours. In addition to AFI 41–201, you can find additional guidance on maintenance contracts in AFI 41–209, *Medical Logistics Support*, Chapter 4.

Monitoring contract maintenance

Once a maintenance contract is in place, the medical support squadron commander assigns a functional requirements evaluator designee (FRED) to carry out inspection and surveillance duties. The FRED is required to report to the contract's contract officer representative (COR). Usually, a local medical materiel technician is assigned as the COR for all of the MTF's service contracts and local BMETs are assigned as FREDs for the MTF's locally- and centrally-funded maintenance contracts.

At a minimum, the FRED shall do the following:

- Monitor schedule compliance (days/hours worked).
- Inspect deliverables (work performance).
- Submit monthly surveillance documentation to the COR in accordance with contract terms.
- Forward reports of nonconformance to the COR within three business days of the incident or notification of the incident having occurred, whichever is earlier.

The FRED is responsible for monitoring the contractor's performance and ensuring that the contractor meets the terms of the contract. Reports of nonconformance activities should include the following:

- Dates.
- Personnel involved.
- Description of the problem.
- Follow-up actions.

This documentation may be the only record of the contractor's performance, and if that performance is substandard, may be the only means of having a contract discontinued if not meeting the mission requirements.

005. Patient movement item program

Patient movement items (PMI) are the equipment and supplies needed to support patient movement and aeromedical evacuation (AE). Air Mobility Command (AMC) is the responsible agency for AE, patient staging, aeromedical enroute care support personnel and equipment unit type codes (UTC) and PMI. AMC surgeon general's office (AMC/SG) is the program management, execution, and action office for PMI. AMC/SG provides funding for centralized procurement/life cycle management, direction and oversight in support of PMI centers, PMI operational support, and training platforms. The purpose of the PMI program is to support patient movement through pre-positioning, exchanging, and recycling of PMIs so that MTF capabilities are not degraded. The equipment is used on patients being transported on AE flights; therefore, the equipment can end up far away from the owning medical facility.

All PMI medical equipment is approved for patient movement and is certified for flight. The equipment is standardized (by the exact manufacturer and model) to ensure program standardization, which enables the ability to seamlessly support patient movement. PMI centers maintain the initial quantities of approved PMI equipment in their allowance standard. This is critical in allowing the PMI system to sustain mission capabilities and properly recycle/replace medical equipment without shortfalls. The Patient Movement Item Tracking System (PMITS) tracks all PMI equipment; this enables asset owners the ability to see where equipment is at any time.

Use of PMITS is mandatory for PMI assets. It provides real-time information on the location and operational status of medical equipment. PMITS provides clear visibility on the availability and status of the medical equipment needed to treat in-transit patients. It supports timely recycling of PMI through accurate tracking processes and ensures the right equipment is in place at the right time for aeromedical patient care. PMITS uses bar code technology to scan and share PMI data with other authorized users of the system. By using a bar coding system, PMITS links uniquely identified medical equipment with its location and operational status at the point it was scanned. You must ensure bar code labels are loaded into PMITS and attached to all PMI equipment before use and/or patient movement. It is a requirement that equipment inventories be accomplished annually. If equipment cannot be located, the host medical equipment management office (MEMO) contacts AMC/SG manpower and equipment force packaging (MEFPAK) management branch for tracking assistance before initiating a ROS.

Your responsibility is to ensure all PMI equipment at your base is maintained properly by providing scheduled PMs and calibrations, repair services, and accurate updates in PMITS. You must ensure AF Form 4033, PMI/AE Certification Label, is affixed to each equipment item certified for flight. A listing of model specific equipment items certified for flight can be found on the AF Medical Logistics Website, https://medlog.us.af.mil/. You may request repair-and- return maintenance support from your supporting MERC for any PMI/AE equipment items.

When you work on PMI equipment that does not belong to your unit, you must coordinate with the closest PMI center to verify the equipment owner, ensure the equipment location is current in PMITS, and provide the latest calibration date for update in the tracking system. Additionally, you are required to open a work order in DMLSS and forward a copy upon completion to the owning activity. In the event PMI equipment is involved in an enroute care incident, the users tag the equipment prior to turning it in to the medical maintenance activity (you). You then perform an incident investigation in accordance with AFI 10–2909, *Aeromedical Evacuation Equipment Standards,* and AFI 41–201.

006. Medical war reserve materiel

War reserve materiel (WRM) is packaged capability UTCs. These capability packages are composed of equipment, tactical military vehicles, consumables, munitions, and medical resources. It is the additional materiel needed to support the forces, missions, and activities reflected in Air Force operation plans and specified in DOD programs. As you can see, WRM is a very broad program, but as a BMET you will be concerned only with the medical resources (equipment and supplies), so that is where we will focus.

The objective of the medical WRM program is to identify, acquire, preposition, and maintain the materiel needed to support the forces and missions specified in applicable operations plans. In our dynamic Air Force one thing has not changed—our requirement to be equipped and trained for military operations. In this lesson, we look at some general WRM information and BMET responsibilities of the program.

Mission capability statement

The mission capability statement (MISCAP) is a short paragraph that describes significant deployment information and may or may not be classified. In short, it specifies what a UTC can do. The MISCAP contains the following:

- Brief explanation of mission capabilities.
- Statement concerning the types of bases to which the unit can be deployed (e.g., bare base, collocated operating base, and main operating base, etc.).
- List of the major functional areas included in the force element.
- Response capability.
- Other UTCs used in conjunction.

Concept of operations

The concept of operations (CONOPS) details, in broad outline form, the assumptions and the intent of an operation. CONOPS is designed to give an overall picture of an operation. It describes how your medical unit will be used in the event of a contingency. The CONOPS requires meeting the AFMS's mission and objectives through planning for operations and deployments.

Medical resource letter

The medical resource letter (MRL) is a simple document that identifies personnel and equipment UTC taskings and storage locations. Its purpose is to provide for strategic planning in the maintenance and movement of medical WRM assets. The MRL contains information on contingency support personnel and logistics readiness requirements. The AF/SG functional area manager publishes medical WRM and medical counter chemical-biological-radiological-nuclear (MC-CBRN)

contingency materiel requirements on an annual basis through the MRL. This does not include PMI requirements. The MRL is the basis for designed operational capabilities (DOC) statements, which actually tasks your unit for WRM assets.

UTC

The UTC is a 5-character alphanumeric code controlled by the Joint Chiefs of Staff. The assignment of a UTC categorizes each type of organization into a class or kind of unit having common distinguishing characteristics such as the following:

- Medical.
- Communications.
- Security police.
- Civil engineering.

In addition, UTCs are used as a statement of force capability that equates to specific manpower and logistics support requirements. It lets planners know what resources you have so they can guide the mission. UTCs can be equipment only, personnel only, or both.

BMETs are responsible for biomedical equipment maintenance and facility management on these teams, and assigned to the following UTCs typically:

- FFEP2 – Expeditionary medical support (EMEDS) command and control and administration team. Provides the *initial* medical logistics personnel for EMEDS.
- FFEP3 – EMEDS +10 (10-bed)/Air Force theater hospital (AFTH). Provides additional medical logistics personnel to augment an EMEDS +10 or AFTH.
- FFEP4 – EMEDS +25 (25-bed)/AFTH. Provides additional medical logistics personnel to augment an EMEDS +25 or AFTH.
- FFBMM – biomedical equipment maintenance team. Provides support personnel to augment biomedical equipment maintenance and facility management support to EMEDS, AFTHs, and other ground medical operations. This team also deploys to PMI centers and cells to support AE operations.
- FFHA4 – CT scan team. Provides support personnel to establish computed tomography scan capability in support of specialty surgical augmentation packages. BMETs assigned must possess AFSC 4A271 and complete formal equipment specific training.
- FFVCF – Contingency aeromedical staging facility (CASF) command function. Provides basic command function for CASF+25 through CASF+250 sizes. The primary purpose is to provide clinical and administrative expertise of patients moving in the AE system.

The EMEDS system is designed to build incrementally up to the AFTH+500. EMEDS is composed of UTC building blocks providing personnel and equipment to meet specific operational requirements.

WRM maintenance program

WRM equipment is important, but not used on a regular basis, so a thorough maintenance program is essential to ensure the equipment is ready to go at a moment’s notice. Therefore, WRM equipment at all continental United States (CONUS) active duty, ANG, and AFRC bases as well as the Republic of Korea is maintained by maintenance contracts to allow a workforce dedicated solely to WRM equipment. The contract allows BMETs to focus on their duties in their respective MTFs; unfortunately, you may not get adequate exposure to the WRM equipment that you will be solely responsible for when you deploy. As you can imagine, this is a big disadvantage. However, you can still coordinate with the contract BMET(s) to train on the WRM equipment, but it just takes a

dedicated effort. BMETs must take advantage of every opportunity to maintain familiarity with WRM medical equipment.

A second important reason to remain proficient with WRM maintenance is simple—WRM equipment is ultimately your responsibility! You will maintain oversight and responsibility for the equipment and validate that the contractor performs proper maintenance. In addition, BMETs must monitor contractor performance the same as any other maintenance contract.

WRM maintenance in peacetime should mirror that of organizational maintenance as outlined in AFI 41–201. The management tool for maintenance of this equipment is DMLSS.

Important aspects of the WRM program that must be addressed by the maintenance staff include the following:

- Technical literature.
- Equipment data files (EDF).
- Repair parts.
- Test equipment.

If you are responsible for WRM equipment, you must ensure all test equipment and manuals for the WRM assets are stored/packed in WRM assemblages. The technical literature can be either electronic or hardcopy format. Failure to ship these items with the rest of the WRM package could severely hinder the readiness mission once it is deployed. Additionally, local BMETs must ensure all test equipment calibrations are current and in accordance with manufacturer's specifications. If a unit is tasked to deploy and you know an item is coming due for calibration soon, you should arrange to have the unit calibrated before deployment or find a like item to ship in its place.

Each medical WRM item must have an individual EDF created and maintained. These files must be maintained in a deployable mode and accompany the associated equipment in the event of deployment. During deployment, maintenance actions are documented with the DMLSS stand-alone system or, if not available, on AF Form 1763, Medical Maintenance Manual Work Order. If AF Forms 1763 are used, transfer the information to DMLSS or AF Forms 509, when the deployment is completed.

Repair parts and kits, which are components of the WRM assemblage program, are carried on supply records. During activation, the stocks can be managed in DMLSS. During deactivation, they are considered part of the WRM stock fund asset and must be maintained manually. AFMOA/SGALE develops the parts inventories for the WRM assemblages. These consist mostly of replacement assemblies and boards rather than individual components. Individual shops notify AFMOA/SGAL of any additional items that should be added to the WRM inventory lists.

During your BMET career, you may be tasked to deploy with a medical mobility assemblage. You need to know with what you may be tasked and what to expect so that you will be prepared. If you are one of the BMETs who deploy with an EMEDS package, you should be ready to jump in and run an effective maintenance program.

If you are deployed, you must bring your own personal tool kit! It is important to note that AF medical UTCs do not include tools, so you will be without them unless you plan ahead. In addition, you must ensure your tool kit remains complete at all times. During exercises, your shop NCOIC should verify that personnel in your shop, who are assigned to UTCs, have complete tool kits.

As far as equipment maintenance is concerned, a maintenance program during deployment should run much like one at a fixed facility. An important concept to remember about maintenance during deployment is the Reach Back concept. This is the supply chain management concept for moving supplies and equipment to and from the area of operations.

The EMEDS CONOPS and expeditionary medical logistics (EML) CONOPS spell out the procedures and responsibilities for using the Reach Back concept. As it relates to maintenance, Reach Back is the method you use to acquire repair parts, maintenance, and equipment during contingency operations. Because your unit must travel light when deploying, you will not have all the supplies and parts you need to maintain your equipment in every situation. To help counter this fact, you will have a *sustaining base* to support you.

The sustaining base will act as your logistics link (the unit you will Reach Back to) through the duration of your deployment. They will also ensure that any equipment concerns receive special consideration because of your limited repair part inventory, lack of tools and test equipment, and/or limited amount of experienced technicians. If you deploy, you will know your sustaining base and they will be your first point of contact with any issues or needs that may arise. For more information on this subject, consult Air Force Tactics, Techniques, and Procedures (AFTTP) 3–42.8, *Expeditionary Medical Logistics (EML) System.*

As we have already discussed, there should be sufficient repair parts and test equipment to support the equipment in the assemblage, but not every item will have repair parts as part of the deployed package. If you need assistance with maintenance or repair of the equipment while deployed, and your sustaining base cannot help you, you may request telephone assistance with the nearest regional MERC or other facility that has experienced BMETs. Finally, if an equipment repair is well beyond your capability, you should request priority replacement. Sometimes it is easier and cheaper to buy a new unit.

A decision matrix (fig. 1–6) was developed to make your job easier. The matrix helps you make a logical choice for maintenance. These basic steps can apply in all situations. In some cases, single/low quantity items may require a more drastic approach, such as bringing the vendor on-site or cannibalizing other like assets in the inventory (i.e., a mobile CT system). Mission requirements may dictate that a complete unit should be procured because the turnaround time is much faster than the acquisition of parts or test equipment.

007. Medical equipment repair center functions

A MERC is a consolidated maintenance activity that, in addition to providing organizational maintenance support for the MTF to which it is assigned, provides regional maintenance, engineering support, training, and consulting services to active component AF, AFRC, and non-contracted ANG medical activities located in its geographical region. MERCs are the first line of help for technical assistance and maintenance management issues for local BMET activities.

Figure 1–7 shows the MERC locations throughout the world. You can find a complete list of responsibilities for MERCs and their supported bases in AFI 41–201. It is important to know all of the services that your regional MERC has to offer and to use these services to benefit your organization and your maintenance program. The following is a brief description of the MERC functions.

Support

MERCs provide two types of support: organizational maintenance support and intermediate maintenance support. When practical, MERCs provide organizational maintenance support to medical facilities that do not have a BMET assigned. For these organizations, the MERC provides scheduled maintenance support and emergency repair service upon request.

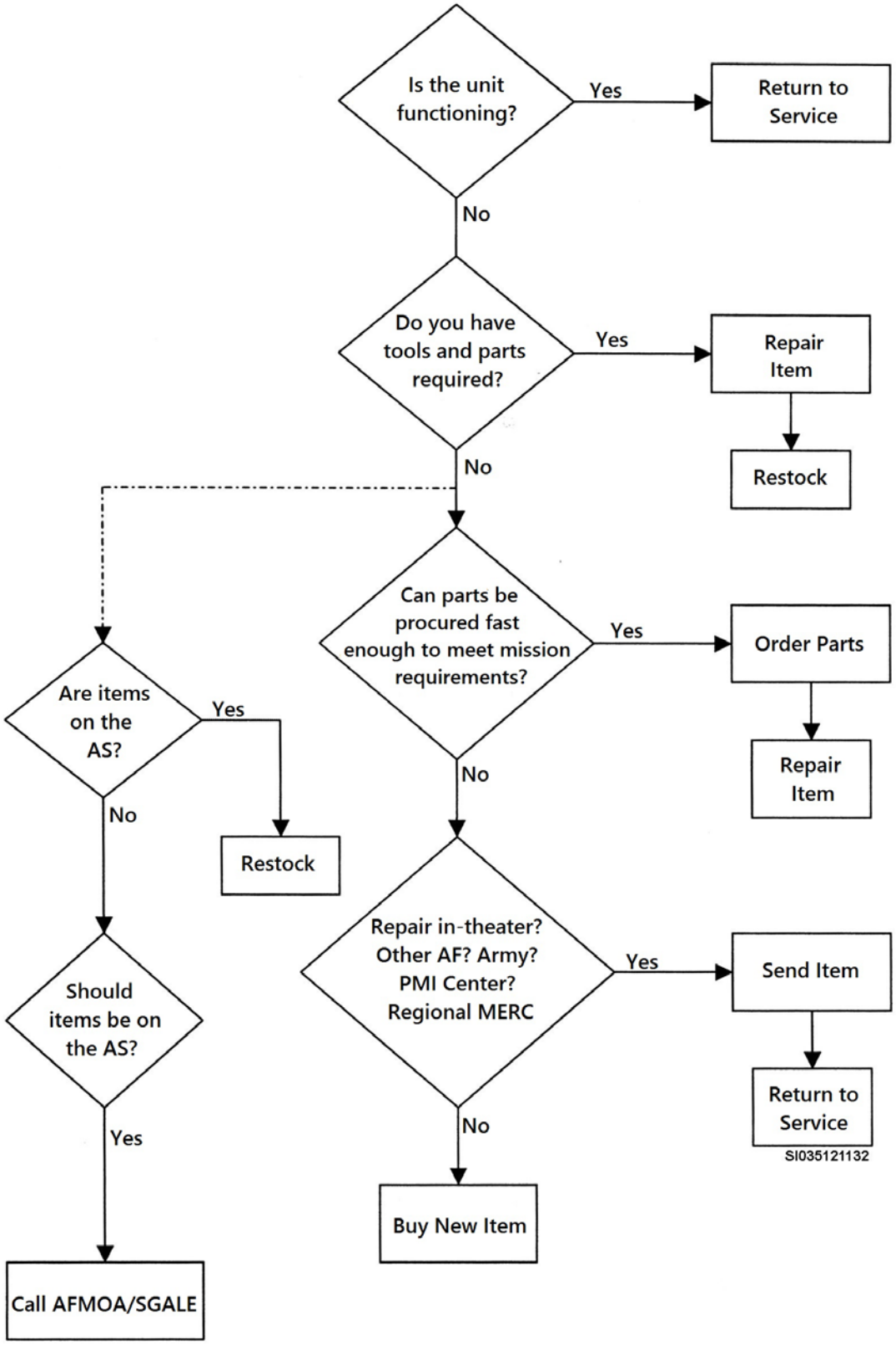

Figure 1–6. Maintenance decision matrix.

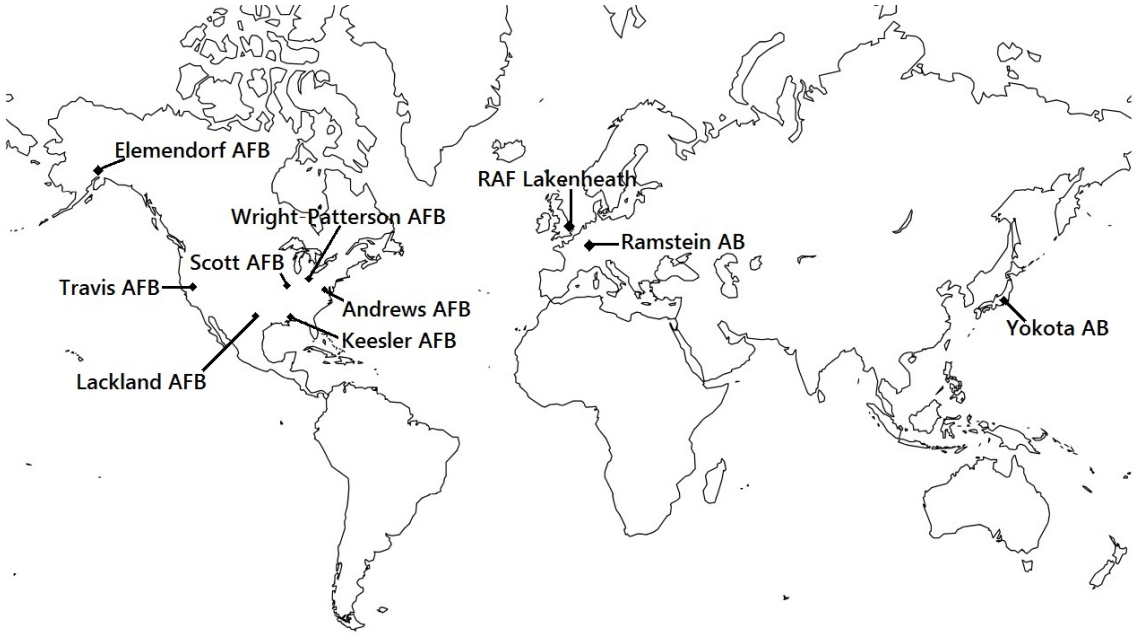

Figure 1–7. Medical equipment repair center locations.

Annual site visit

MERCs conduct annual site visits to all MTFs in their geographical region. The objective of this visit is determined by a needs assessment conducted at least 30 days in advance. The needs assessment surveys personnel skill levels, training gaps, local test equipment capabilities, and identifies equipment maintained by service contracts. During this visit, the MERC performs on-site calibrations and/or quality assurance inspections for equipment identified as requiring MERC support. The MERC provides intermediate maintenance and/or requested training to all of their supported MTFs and in accordance with AFI 41–201. At a minimum, the MERC provides the following:

- Annual calibration service for audiometers not covered by the Navy and Marine Corps Public Health Center (NMCPHC) (on site or via ship and return). The NMCPHC was identified by DHA as the lead agent for maintaining DOD audiometers.
- Oversight of X-ray systems and post calibration radiation inspections (PCRI) on systems not performed locally.
- Calibration service for any equipment at supported MTFs that the local maintenance activity lacks training, skill-set, or authorization to perform.

Quality assurance testing

The MERC is required to perform quality assurance testing on anesthesia equipment, picture archiving and communication systems (e.g., monitors and computed radiography devices), and ventilators, to include WRM, MC-CBRN, AE, and PMI assets. At the discretion of the MERC, additional quality assurance testing may be performed based on the experience and skill level at the supported MTF. The MERC will test 10 percent, but not less than two devices from each equipment category listed. One exception is for MERCs that support PMI centers; the MERC will test at least four devices from each equipment category, and these items are not to be included in the 10 percent calculation for the organization. If the MERC notes a deficiency in the selected PMI sample, the MERC will provide training and contact AFMOA/SGALE for further instruction. If the PMI items are on contract, the MERC notifies the COR of the deficiency.

Additional MERC services

In addition to the services already mentioned, MERCs provide technical assistance to resolve maintenance problems beyond the capability of the local BMET. They also provide consultation and technical services in critical areas of medical instrumentation and electrical safety. MERCs also can assist local BMETs with pre-procurement surveys for planned complex equipment purchases such as X-ray units, sterilizers, and central patient monitoring systems as required. If requested, the MERC will assist local BMETs with acceptance inspections for contractor-installed equipment items. As required, the MERC will host regional training workshops and seminars, and assist AFMOA/SGALE with the evaluation of centralized maintenance contracts.

Trip report documentation

The MERC prepares a trip report documenting any services performed (or pending actions) at the supported MTF (e.g., annual site visits, training conducted, manning assistance, and acceptance testing). Number trip reports consecutively beginning with the start of each fiscal year (e.g., 19001 would be the first report prepared in FY 19).

At a minimum, the MERC trip report will include the following:

- Purpose of visit.
- Key personnel contacted.
- Executive summary.
- Work-hour and dollar value summary of services performed.
- Complete description of services provided.
- Equipment discrepancies.
- Calibration documentation.
- Test equipment used.
- Summary of any training provided.

The MERC must provide a copy of the trip report to the supported MTF's MLFC, senior BMET, MFM, and AFMOA/SGALE within 45 days of completing the visit. If PCRIs were performed, the MERC will forward the copies to the appropriate regional medical physicist in accordance with AFI 48–148, *Ionizing Radiation Protection.* If the visit was to an ANG or AFRC facility, a copy of the report is sent to the respective headquarters. MERCs are required to maintain copies of completed trip reports and responses for two years.

The serviced medical facility must review the report and respond, in writing, to any items that require local action. The response letter must be sent to the MERC within 45 days of receiving the report. In addition, a copy of the letter must be sent to the appropriate MAJCOM and to AFMOA/SGALE. MERCs maintain a copy of the trip report and related information on file for two years.

Supported base responsibilities

Be prepared for a visit from the MERC. Their time is limited and their visit will be more productive if certain actions are done prior to their arrival. Keep the following things in mind to ensure your regional MERC can assist as efficiently as possible:

1. Notify the MERC and regional medical physicist at least 90 days prior to receipt of new equipment requiring support.
2. Inform the MTF commander, administrator, and MLFC of scheduled MERC visits.
3. Inform departments (especially radiology) that have equipment requiring MERC calibration of a scheduled MERC visit as soon as possible to minimize disruption to patient care.
4. Print work orders or have the AF Forms 509 available before the team's arrival.
5. Locate and complete PMs on equipment to be calibrated by MERC before the team's arrival.

6. Set up and ensure operational status of WRM equipment scheduled for calibration by the MERC before their arrival.
7. Ensure battery operated equipment is fully charged.
8. Assist MERC personnel during their visits. This may involve helping with billeting arrangements, coordinating with administrators, commanders, and equipment users in advance of a scheduled trip; helping MERC personnel find their way around your facility or base; or accompanying and assisting MERC personnel during equipment maintenance.

Local BMETs must process the work accomplished into DMLSS and update all work orders completed by the MERC. At bases without DMLSS, MERC personnel document all work on AF Form 509. Your familiarity with services provided by your supporting MERC improves your ability to serve your organization.

008. Assessments

We have covered the objectives of the biomedical equipment maintenance support program and seen some of the standards that guide it. Inspections are performed to determine if those objectives, responsibilities, and standards are being met at every facility. In this lesson you will learn about inspections that are significant to BMETs to include: self-inspections, staff assistance visits (SAV) and management assistance visits (MAV), College of American Pathologists (CAP) laboratory accreditation inspections, and The Joint Commission (TJC) healthcare accreditation inspections.

Self-inspection

A self-inspection is an organized method of internal review that allows a manager to view the entire maintenance program. The BMET supervisor performs periodic self-inspections to ensure the shop is well managed. A self-inspection assesses operations without influences from outside the organization. The key elements inspected during a self-inspection are the section's mission, resources, training, and personnel. The self-inspection identifies and initiates solutions to problems before a SAV, MAV, or TJC inspection.

You can find a self-inspection checklist on the AF Medical Logistics Website, or in the event the checklist is not updated or available, one can be developed locally. AFI 41–201 and AFMOA/SGALE should be your main sources. It is important to verify that checklists are updated so you are checking for the most current requirements. The self-inspection should be performed at the following times:

- Annually, at a minimum.
- When a new NCOIC is assigned.
- When there are any changes to the mission or procedures of the shop.

SAVs & MAVs

SAVs and MAVs are informal but very important inspections designed to assist functional areas with regulatory compliance and identify problem areas needing attention before a TJC inspection. Personnel from AFMOA/SGALE, or designated personnel, conduct the SAV every three years. References they use for the inspection include the same self-inspection checklist the shop uses, applicable AFIs, TJC *Comprehensive Accreditation Manual for Hospitals* (CAMH), and TJC *Comprehensive Accreditation Manual for Ambulatory Care* (CAMAC). You are responsible for taking corrective actions for any SAV findings. If you require quicker assistance, you can request a MAV be conducted by the supporting regional MERC. This can be performed as part of the annual MERC site visit or can be separate. You should maintain SAV and MAV reports on file for three years.

CAP accreditation

The CAP laboratory accreditation program inspects a variety of laboratory settings from complex medical centers to physician office laboratories. CAP accreditation ensures compliance through

guidance of the most comprehensive scientifically endorsed laboratory standards. It inspects laboratory processes such as safety, operations, and waste regulation. As part of the operations, the CAP inspection ensures that equipment used for testing, analyzing, and processing samples is maintained properly. During this time, you will need to support laboratory personnel by providing maintenance and calibration information for any requested equipment.

TJC accreditation

Most hospitals and clinics in the United States, including military, seek to obtain TJC accreditation. TJC is a private, non-profit organization and the leading accrediting body for health care organizations that certifies more than 21,000 health care organizations. TJC publish standards in the CAMH and CAMAC. You can find the current edition in your MTF's regulatory compliance office. TJC requirements for medical equipment maintenance are located in the environment of care (EOC) section of the TJC accreditation manuals.

TJC accreditation process

TJC accreditation involves an on-site survey by a team of physicians, nurses, and hospital administrators. The survey team uses the CAMH or CAMAC to evaluate the performance of a hospital or clinic. The survey is conducted unannounced in the window of 19 to 39 months from the last survey for continuing accreditation.

EOC

Our piece of the accreditation falls under the EOC. The "environment" is composed of three basic areas: buildings, equipment, and people (staff, patients, and visitors). TJC requires written management plans that cover six programs within the EOC.

1. Safety.
2. Security.
3. Hazardous materials and waste.
4. Fire safety.
5. Medical equipment.
6. Utilities.

Unless assigned to work in facility management or tasked to be the MTF safety officer, the only plan BMETs are concerned with is the medical equipment plan. The other plans are facility management's responsibility. However, if you were lucky enough to be in charge of your MTF's safety program, then the safety (and possibly fire safety) plans would be your responsibility too. Local leadership makes those decisions.

Self-Test Questions

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

003. 4A2X1 organizational structure

1. How many MTFs are there worldwide?

2. Who does the AF/SG advise on matters pertaining to the medical aspects of the air expeditionary force and the health of AF personnel?

3. What is the role of AFMSA?

4. What are some responsibilities of the CFM?

5. To whom does AFMOA/SGALE provide guidance, policy, and consultative services?

6. List the four teams that make up AFMOA/SGALE.

7. Which team would you contact if you were seeking help with equipment replacement?

8. Who maintains overall control of the facility management program?

9. In a typical MTF, under which flight does BMET functions fall?

10. What is the responsibility of the director of clinical engineering when used in larger MTFs?

004. Organizational maintenance

1. List the three levels of maintenance in which BMETs are primarily involved.

2. What are BMETs responsible for in user level maintenance?

3. What AFI regulates the majority of BMET tasks and processes?

4. Explain the benefits of a properly run scheduled maintenance program.

5. What system must BMETs use to manage medical equipment?

6. What can you do if you detect malfunctions during scheduled maintenance?

7. What happens after an equipment loss is validated?

8. What determines the need to have an on-call technician?

9. How is accountability established when equipment is located in your shop for maintenance?

10. When is contract maintenance normally required?

11. Where can you find guidance on maintenance contracts?

12. Who assigns the FRED for MTF contracts?

13. What typical roles are medical materiel technicians and BMETs assigned for monitoring contracts?

14. List the minimum responsibilities of FREDs.

005. Patient movement item program

1. What is the purpose of the PMI program?

2. Why is equipment standardization important for PMI?

3. What is used to track PMI assets?

4. If a PMI asset was involved in an enroute care incident, what must you do and where can you find guidance?

006. Medical war reserve materiel

1. Briefly discuss the objective of the medical WRM program.

2. What information is contained in a MISCAP?

3. Explain CONOPS.

4. What is the purpose of the MRL?

5. Who controls UTC codes?

6. What qualifications must BMETs possess prior to assignment to FFHA4?

7. What should you consider for test equipment that is deploying with WRM?

8. Describe the Reach Back concept.

007. Medical equipment repair center functions

1. Briefly describe the MERC mission.

2. What are the two types of maintenance support provided by a MERC?

3. What does the needs assessment determine? What does it survey?

4 MERC is required to perform quality assurance testing on what equipment?

5. How is the amount of equipment MERC will perform quality assurance testing on determined?

6. The MERC must provide copies of the trip report to whom? When is it required to be sent?

7. List five things your shop should do to ensure efficient support from your supporting MERC.

008. Assessments

1. What is the purpose of a self-inspection?

2. What checklists can you use to ensure your shop is performing satisfactorily?

3. How long should SAV reports be kept on file?

4. Briefly describe CAP accreditation inspection. How do BMETs typically support it?

5. Where does TJC publish standards?

6. In what section of TJC accreditation manuals is medical equipment maintenance located?

7. List the six programs required by TJC to have written management plans.

8. Who is responsible for the EOC written management plans?

Answers to Self-Test Questions

001

1. Data found in Occupational Survey Reports provided by AF BMETs.
2. Completion of the BMET 3-skill level resident course provided by METC.
3. Completion of both A and B sets of the 5-skill level CDCs, a minimum 15 months of OJT (nine months for retrainees), supervisor recommendation, and possession of AFSC 4A231.
4. Through the availability of authorized positions on their applicable UMD.

002

1. Automatically after completion of basic military training and assignment to the BMET career field.
2. Identifies licenses and certifications relevant to the 4A2X1 AFSC, civilian licensure background information, how to fill gaps between AF training/experience and civilian credentialing requirements, information on funding opportunities for credentialing exams, and resources available.
3. CBET, CLES, CRES, A+, Security+, and Network+.
4. It can be crucial to the ability of your shop to maintain the equipment properly; and some manufacturers may not communicate with any of your shop personnel unless they received training from the manufacturer.

003

1. 76 MTFs (12 hospitals and 64 clinics).
2. The Secretary of the AF, AF Chief of Staff, and the Assistant Secretary of Defense for Health Affairs.
3. Oversees the execution of AF/SG policies and programs to transform medical capabilities in support of the war fighter. They also leverage science, technology, and information systems to integrate modernization efforts.
4. Serves as the primary enlisted manager for the career field on matters pertaining to enlisted accession and training requirements, overall force structure, developing and managing career training plans' requirements and programs. Constructs viable career paths, evaluates training effectiveness, monitors health and manning of the career field, and provides input on personnel policies and programs. Develops force management policies and programs, develops contingency planning policy, validates deployment requirements, and verifies workforce availability. As a functional expert, they ensure the career field is responsive to both current and future needs of the AF.
5. AF/SG, AF medical logistics, and AF BMETs.
6. Medical Equipment Maintenance, Facility Management, Healthcare Technology Management, and Medical Device Cybersecurity.
7. Healthcare Technology Management team.
8. AFMSA, Health Facilities Division (AFMSA/SG8F).
9. Medical logistics flight.
10. To oversee both facility management and medical equipment maintenance programs.

004

1. User, organizational, intermediate.
2. Ensuring that proper user maintenance is being performed and training is provided to users when necessary.
3. AFI 41–201.
4. By ensuring that medical equipment is serviceable and safe on a constant basis it ensures the safety of patient and staff, allows the MTF to operate more efficiently by minimizing equipment downtime, and it saves money on potential costly repairs.
5. The DMLSS system.
6. You must take corrective measures; (1) you can document these actions on the scheduled work order *or* (2) you can open an unscheduled work order to capture the corrective actions.
7. Initiates a ROS, which consists of an investigation to account for the loss.
8. Your MTF's equipment and mission.
9. Tag each item with one either a copy of the work order, or a locally developed/procured form.
10. When your shop does not have the resources or skills to perform the job and/or it is not economically feasible to develop an in-house capability.
11. AFI 41–201 and AFI 41–209.
12. Medical support squadron commander.
13. A local medical materiel technician is assigned as the COR for all of the MTF's service contracts and local BMETs are assigned as FREDs for the MTF's locally- and centrally-funded maintenance contracts.
14. Monitor schedule compliance, inspect deliverables, submit monthly surveillance documentation to COR, and send reports of nonconformance to the COR.

005

1. Support patient movement through pre-positioning, exchanging, and recycling of PMIs so that MTF capabilities are not degraded.
2. So it has the ability to seamlessly support patient movement.
3. PMITS.
4. Tag the equipment then perform an incident investigation in accordance with AFI 10–2909 and AFI 41–201.

006

1. Identify, acquire, preposition, and maintain the materiel needed to support the forces and missions specified in applicable operations plans.
2. A brief explanation of mission capabilities, a statement concerning the types of bases to which the unit can be deployed (e.g., bare base, collocated operating base and main operating base etc.), list of the major functional areas included in the force element, the response capability, and other UTCs are used in conjunction.
3. In broad outline form, it details the assumptions and the intent of an operation. It is designed to give an overall picture of an operation and describe how your medical unit will be used in the event of a contingency.
4. To provide for strategic planning in the maintenance and movement of medical WRM assets.
5. JCS.
6. Must possess AFSC 4A271 and complete formal equipment specific training.
7. If a unit is tasked to deploy and you know an item is coming due for calibration soon, you should arrange to have the unit calibrated before deployment or find a like item to ship in its place
8. The supply chain management concept for moving supplies and equipment to and from the Area of Operations. A sustaining base will act as your logistics link or the unit to reach back to through the duration of the deployment

007

1. A consolidated maintenance activity that, in addition to providing organizational maintenance support for the MTF to which it is assigned, provides regional maintenance, engineering support, training, and consulting services to active component AF, AFRC, and non-contracted ANG medical activities located in its geographical region.
2. Organizational and intermediate.
3. To determine the objective of the MERC annual visit. It surveys personnel skill levels, training gaps, local test equipment capabilities, and identifies equipment maintained by service contracts.
4. Anesthesia equipment, picture archiving and communication systems, and ventilators.
5. The MERC will test 10 percent, but not less than two devices from each equipment category. For MERCs that support PMI centers; the MERC will test at least four devices from each equipment category, and these items are not to be included in the 10 percent calculation for the organization.
6. To the supported MTF's MLFC, senior BMET, MFM, and AFMOA/SGALE within 45 days of completing the visit. If for ANG or AFRC facility, copy must be sent to respective headquarters.
7. Any five of the following eight things:
    1. Notify the MERC and regional medical physicist at least 90 days prior to receipt of new equipment requiring support.
    2. Inform the MTF commander, administrator, and MLFC of scheduled MERC visits.
    3. Inform departments (especially radiology) that have equipment requiring MERC calibration of a scheduled MERC visit as soon as possible to minimize disruption to patient care.
    4. Print work orders or have the AF Forms 509 available before the team's arrival.
    5. Locate and complete PMs on equipment to be calibrated by MERC before the team's arrival.
    6. Set up and ensure operational status of WRM equipment that is scheduled for calibration by the MERC before their arrival.
    7. Ensure battery operated equipment is fully charged.
    8. Assist MERC personnel during their visits.

008

1. A self-inspection assesses operations without influences from outside the organization. It is used to identify and initiate solutions to problems before a SAV, MAV, or TJC inspection.
2. A self-inspection checklist can be found on the AF Medical Logistics Website, or in the event that the checklist is not updated or available, one can be locally developed.

3. Three years.
4. It is a laboratory accreditation program that inspects laboratory processes such as safety, operations, and waste regulation. BMETs support by providing maintenance and calibration information for any requested equipment.
5. CAMH and CAMAC.
6. EOC.
7. 1. Safety.
   2. Security.
   3. Hazardous materials and waste.
   4. Fire safety.
   5. Medical equipment.
   6. Utilities.
8. The only plan BMETs are concerned with is the medical equipment plan. The other plans are facility management's responsibility. However, if you are lucky enough to be in charge of your MTF's safety program, then the safety (and possibly fire safety) plans would be your responsibility too

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

Unit Review Exercises

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

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

1. (001) Skill-level training requirements are driven by
   a. the career ladder.
   b. Air Force Instruction (AFI) 41–201.
   c. the specialty training standard (STS).
   d. the shop noncommissioned officer in charge (NCOIC).

2. (001) At a minimum, how many months of on-the-job training (OJT) are required to upgrade from Air Force specialty code (AFSC) 4A251 to AFSC 4A271 (excluding retrainees)?
   a. 6.
   b. 9.
   c. 12.
   d. 15.

3. (002) Which Air Force instruction (AFI) provides Air Force Medical Service (AFMS) personnel information on obtaining professional, board, or national certification?
   a. 36–2101, *Classifying Military Personnel (Officer and Enlisted).*
   b. 36–2301, *Developmental Education.*
   c. 41–104, *Professional Board and National Certification Examinations.*
   d. 41–201, *Managing Clinical Engineering Programs*.

4. (002) Which Computing Technology Industry Association (CompTIA) certification is *not* covered for biomedical equipment technicians (BMET) in Air Force Instruction (AFI) 41–104, *Professional Board and National Certification Examinations*?
   a. A+.
   b. Network+.
   c. Security +.
   d. Cybersecurity Analyst+.

5. (003) Which office is the hub of the Air Force biomedical equipment technician (BMET) program?
   a. Health facilities division (SG8F).
   b. Clinical engineering branch (AFMOA/SGALE).
   c. Facilities operations & engineering branch (SGS8F).
   d. Air Force medical logistics division (AFMOA/SGAL).

6. (003) The clinical engineering branch (AFMOA/SGALE) consists of how many teams?
   a. Three.
   b. Four.
   c. Five.
   d. Six.

7. (003) Which clinical engineering branch (AFMOA/SGALE) team responsibilities include technical advising, planning, replacing, installation/de-installation, upgrading, modifying, and operator training for medical equipment?
   a. Healthcare technology management.
   b. Medical equipment maintenance.
   c. Medical device cybersecurity.
   d. Facility management.

8. (003) In a typical military treatment facility (MTF) organizational structure, the medical logistics flight commander (MLFC) reports directly to the
   a. MTF commander.
   b. director of clinical engineering.
   c. medical support squadron commander.
   d. aerospace medicine squadron commander.

9. (003) In the absence of a clinical engineer, to whom does the medical logistics flight commander (MLFC) look to for technical advice on equipment maintenance, electrical safety, and related areas?
   a. Base civil engineer.
   b. The Air Force medical logistics division.
   c. Local biomedical equipment technician(s) (BMET).
   d. The supporting medical equipment repair center (MERC).

10. (004) Who is responsible for ensuring that proper user maintenance is being performed on equipment?
    a. The supporting medical equipment repair center (MERC).
    b. Local biomedical equipment technician(s) (BMET).
    c. Medical logistics flight commander (MLFC).
    d. Clinical engineer.

11. (004) Performing a calibration verification on a defibrillator is an example of which level of maintenance?
    a. User.
    b. Depot.
    c. Intermediate.
    d. Organizational.

12. (004) What is the *most* critical component of the biomedical equipment maintenance program?
    a. Scheduled maintenance.
    b. Unscheduled maintenance.
    c. Contractor maintenance.
    d. Repair part inventory.

13. (004) What is the biomedical equipment technician's (BMET) *primary* role in establishing a locally negotiated contract maintenance agreement?
    a. Identifying contract work requirements.
    b. Inspecting the completed work.
    c. Determining contract cost.
    d. Selecting the contractor.

14. (004) Usually, who is assigned as the contract officer representative (COR) for all medical treatment facilities' (MTF) service contracts?
    a. The medical logistics flight commander (MLFC).
    b. A biomedical equipment maintenance (BMET) technician.
    c. The quality assurance/risk manager (QA/RM).
    d. A medical materiel technician.

15. (004) Who assigns a functional requirements evaluator designee (FRED) to carry out inspection and surveillance duties for service contracts?
    a. Medical logistics flight commander (MLFC).
    b. Medical support squadron commander.
    c. Quality assurance/risk manager (QA/RM).
    d. Military treatment facility (MTF) commander.

16. (005) Which system tracks patient movement items (PMI) equipment?
    a. Joint Medical Asset Repository (JMAR).
    b. Patient Movement Item Tracking System (PMITS).
    c. Medical Readiness Decision Support System (MRDSS).
    d. Defense Medical Logistics Standard Support (DMLSS) system.

17. (005) How often must patient movement items (PMI) equipment be inventoried?
    a. Quarterly.
    b. Semi-annually.
    c. Annually.
    d. Biennially.

18. (006) Which bases have maintenance contracts for war reserve materiel (WRM) medical equipment?
    a. Continental United States (CONUS) bases only.
    b. Overseas bases only.
    c. All bases worldwide.
    d. CONUS bases and Korea.

19. (006) Who develops parts inventories for war reserve materiel (WRM) assemblages?
    a. Medical logistics flight commander (MLFC).
    b. Clinical engineering branch (AFMOA/SGALE).
    c. Medical equipment repair center (MERC).
    d. Local biomedical equipment technician (BMET) activity.

20. (007) The medical equipment repair center (MERC) tests at *least* how many devices from each equipment category for patient movement item (PMI) assets?
    a. Two.
    b. Four.
    c. Six.
    d. Eight.

21. (007) Within how many days after receiving the medical equipment repair center (MERC) trip report must the serviced medical facility provide a response?
    a. 30.
    b. 45.
    c. 60.
    d. 90.

22. (008) Which key elements should be inspected during a self-inspection within your shop?
    a. Mission, resources, training, and personnel.
    b. Resources, security, personnel, and supervision.
    c. Mission, shop appearance, security, and training.
    d. Resources, shop appearance, training, and supervision.

23. (008) When should a self-inspection be performed?
    a. Anytime a new noncommissioned officer in charge (NCOIC) is assigned.
    b. Anytime new personnel are assigned.
    c. Semi-annually at a minimum.
    d. Quarterly at a minimum.

24. (008) How long should reports from a staff assistance visit (SAV) be maintained on file?
    a. Six months.
    b. One year.
    c. Two years.
    d. Three years.

25. (008) Where can you find current editions of The Joint Commission's *Comprehensive Accreditation Manual for Hospitals* (CAMH) and *Comprehensive Accreditation Manual for Ambulatory Care* (CAMAC)?
    a. Air Force Electronic Publishing Website.
    b. Clinical Engineering (AFMOA/SGALE) Website.
    c. Your military treatment facility's (MTF) education and training office.
    d. Your MTF's regulatory compliance office.

26. (008) How often are The Joint Commission surveys accomplished for continuing accreditation?
    a. Every 36 months.
    b. 19 to 39 months from the last survey.
    c. 24 to 36 months from the last survey.
    d. 30 to 36 months from the last survey.

Please read the unit menu for unit 2 and continue ➔

Student Notes

Unit 2. Maintenance Administration Procedures

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009. Introduction to the Defense Medical Logistics Standard Support System 2–1
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DOCUMENTING MAINTENANCE and repair actions are very important responsibilities for BMETs. The tasks of documentation, correspondence, and quality control of maintenance actions are a critical part of the biomedical equipment maintenance program. This documentation validates the type of maintenance performed on the medical device and captures actions performed in the case of malfunctions or issues affecting the equipment, MTF, or your shop. Documentation comes in many forms such as calibration forms, scheduled and unscheduled work orders, service reports, letters, and inspection results. The primary system AF BMETs use for maintenance documentation is the DMLSS computer system and will be throughout this entire volume.

2–1. Maintaining Equipment Documentation

Medical device maintenance documentation is a key component for passing TJC inspections and maintaining your MTF's accreditation. Your program's compliance plays a critical role in your MTF's overall rating. The records may help solve chronic equipment malfunctions or support equipment replacement planning. If a piece of medical equipment is involved in an incident, the records could be required as supporting evidence for an MTF in litigation. These examples illustrate why the details and accuracy of this documentation are so important. The following lessons cover forms of documentation and some general administrative procedures of the biomedical equipment maintenance program.

009. Introduction to the Defense Medical Logistics Standard Support System

This general overview of DMLSS provides basic information to clarify the specific maintenance documentation process lessons covered later in the section. DMLSS is an integrated system developed to accommodate the needs of the Army, Navy, and AF. DMLSS was designed and fielded with the intent of eliminating the need for each service to have separate medical logistics computer systems. DMLSS provides a very broad scope of capabilities for MTFs and includes modules designed for materiel management, facility management, and equipment and technology management. Materiel management encompasses receipt, storage, and distribution of virtually all items in MTFs to support peacetime as well as wartime and contingency operations. Facility management capabilities include tracking scheduled maintenance, special projects, regulatory compliance, and real-estate utilization and space management.

DMLSS is a Windows® based program that processes transactions in real-time. Therefore, each time you view information, it is the most current. DMLSS is organized by modules (fig. 2–1.) The most

common modules BMETs use are Assemblage Management (AM), Customer Area Inventory Management (CAIM), Equipment Management (EM), Facilities Management (FM), Maintenance Activity/Equipment Maintenance (MA), Service Contracts (SC), and System Services (SS). You will be authorized to enter specific modules as required by the duties and responsibilities for your current position. Each module has levels of access such as read, update, create, or delete various elements, which will be determined by your job responsibilities.

Figure 2–1. DMLSS modules.

DMLSS is a tri-service system, so you may notice a small number of data fields that do not apply to you as an AF member. It is important to remember that DMLSS is dynamic and constantly modified and upgraded. It is centrally managed; this means your site has the identical version as all other sites within the AF. Equipment records are unique for each end-item, but all screens and data fields work the same. Air Force Manual (AFMAN) 41–216, *Defense Medical Logistics Standard Support (DMLSS) Users Manual*, has procedural information for DMLSS processes and is located on the AF E-Publishing Website, http://www.e-publishing.af.mil/. Contact your shop NCOIC or regional DMLSS system administrator if you have any further questions about DMLSS or require further assistance.

DMLSS is the official system of record for all active duty AF MTFs, so it is important to be familiar with its capabilities. DMLSS helps you manage repair parts and produces work orders to help your shop manage the maintenance workload. It also produces a variety of listings used to assist managerial functions.

Equipment records

DMLSS stores equipment data, historical maintenance data, and maintenance management information within unique equipment data records. Once an equipment record is established, you use it to track all scheduled and unscheduled equipment maintenance actions. Each record identifies the maintenance activity responsible and data used for scheduling maintenance services. This scheduling creates a work order. A work order contains data related to the cost of maintenance services and becomes part of the equipment record. This information helps identify maintenance problems (trend analysis) and supports decisions made during the equipment replacement process. These records are vital for a solid maintenance program; therefore, keeping them up-to-date and accurate is very important.

MEMO uses equipment records to maintain custodial and fiscal accountability, and visibility of equipment assets in the MTF. Additionally, MEMO uses equipment records to record loan-outs, conduct inventories, and to support the budgeting process by creating replacement schedules. Equipment records are core components of the quality assurance and risk management (RM) programs in your MTF.

Repair parts inventory

DMLSS helps manage your repair parts inventory in the MA and CAIM modules. Also, DMLSS generates a parts requirement list when identified with certain equipment criteria and provides a printable repair part search summary list. Requests for required parts not available from on-hand stock are forwarded to your CAIM module for further processing. For the system to reflect accurate on-hand repair part quantities, you must ensure that you input correct information while processing your work orders.

Maintenance inbox

Each DMLSS module has an inbox, which provides users important information affecting that particular module. For privileged users, the inboxes automatically open upon accessing the module from the DMLSS System Navigation window. The MA inbox provides important information about actions requiring follow-up (pending actions). It also provides the ability to immediately view and resolve issues. This prevents potential problems from developing or expanding. You should access the inbox daily in order to address any issues in a timely manner.

When you launch the MA module, the inbox window appears. You can also access the MA inbox from within the MA by selecting the Utilities menu (horizontal tool bar). The MA inbox has three panels (fig. 2–2):

1. *The top panel* is the general MA inbox; it displays pending action messages that pertain to the organization ID of the maintenance activity.
2. *The middle panel* is an "individual" inbox, which displays pending action messages associated with the DMLSS user currently logged on.
3. *The lower panel* is the Details section and displays additional details about a selected pending action message in the MA or individual inbox.

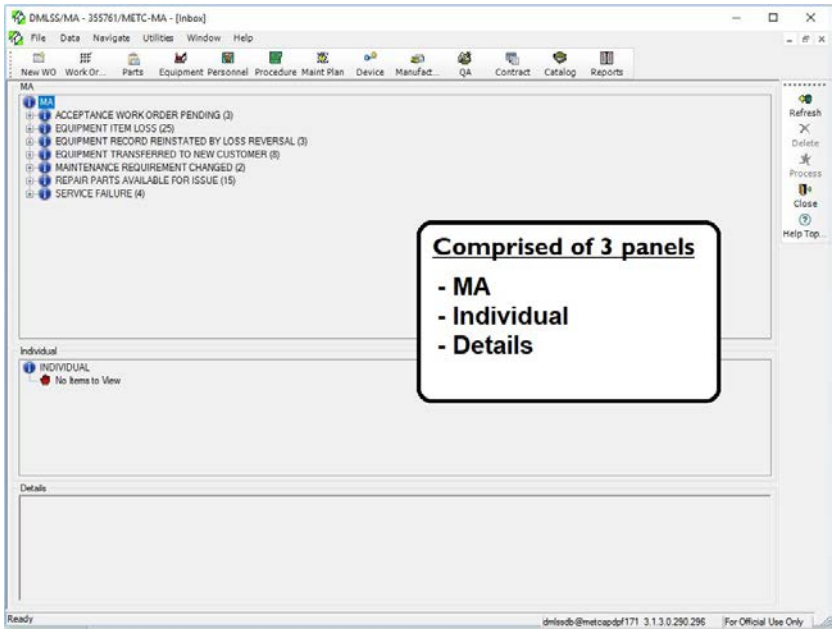


Figure 2–2. Maintenance inbox.

Both the maintenance activity and individual inbox sections work the same way. Some pending actions are only advisory messages and do not require any user action. These advisory messages are marked with "No" in the Action Required field. The user simply reads the message and then deletes it. All other messages require you to take action; they are marked "Yes" in the Action Required field. If you have the MA roles and privileges associated with the pending action, you can use the JUMP TO icon button to access the relevant records.

Some messages delete themselves once you perform the action; others are removed only after you delete them. Other times you may have to select the REFRESH icon to refresh the window display. Either way, you should try to keep your MA inbox as current as possible.

010. Documenting maintenance actions

BMETs must document all maintenance actions in accordance with AFMAN 41–216. The main purpose for documenting maintenance actions in DMLSS is to accurately capture data and track the maintenance performed on any medical equipment for which you bear responsibility. DMLSS keeps track of all work orders until completion, electronically files all completed work orders, provides a means of checking the status of all work orders, and produces management reports to help manage work assignments. It is very important to be accurate with your inputs to equipment records because it affects more than just your shop. The following information is to familiarize you with documentation actions in DMLSS.

Work order numbers

When DMLSS creates a scheduled or unscheduled work order, it assigns a unique sequential work order number in the format of YYYYMMDDxxxx, where YYYYMMDD is the creation date, and xxxx is a serial number that resets to 0001 each day.

For example, the first work order produced on 14 June 2018 would have a work order number of 201806140001. DMLSS work orders are not assigned specific serial numbers for a specific type of work (scheduled, unscheduled, or initial inspection). The work order type is specified on the work order.

Creating work orders

DMLSS automatically generates monthly scheduled work orders based on equipment record due dates. It generates scheduled work orders during the end of month processing for all equipment with scheduled maintenance service due dates falling within the next month. You can suspend scheduled maintenance on medical equipment that is in long-term storage (non-WRM equipment) or if primary parts of the system are out for repair and the unit is not functional. This action stops DMLSS from automatically generating scheduled work orders for that equipment item. Once the equipment is located or no longer unserviceable, the scheduled maintenance can be reactivated. Figure 2–3 shows a sample DMLSS work order.

BMETs create unscheduled work orders as needed. You can create unscheduled work orders using the equipment control number (ECN), or for non-ECN controlled items, you can use the nomenclature and customer name. On the MA navigate menu, perform the following steps to create an unscheduled work order:

1. Scroll over Work Orders.
2. Click New Work Order.
3. Type an ECN. If you do not know the ECN, click the JUMP TO button and conduct an equipment record search. If you are unsure of the correct ECN, you can type in a nomenclature, and then select an Organization and Customer from the dropdown list. You can always go back to an open work order and change the ECN number once you verify an ECN number exists.

4. Use the default in the required fields or select a work order from the dropdown list. **NOTE:** Be sure to select the appropriate priority according to your shop's policies.
5. Type the work order information in each required field.
6. Click SAVE. (The remaining tabs on the window are now available.)

MAINTENANCE WORK ORDER — **WORK ORDER NO: 200806010005**

ECN: 008589 — **NOMENCLATURE:** THERMOMETER, ELECTRONIC

ORGANIZATION: 882ND TRAINING SUPPORT SQUADI — **CUSTOMER:** 383 SURGERY

CATEGORY: SCHEDULED
PRIORITY: ROUTINE
TYPE: INSP, CAL
ITEM ID: 6515013136242
MANUFACTURER: WELCH ALLYN INC
COMMON MODEL:
NAMEPLATE MODEL: 679
SERIAL NO.: 2694337
SYSTEM ECN:
MEL: $22.62 **MRLC:** $197.80
SERVICE PROVIDER:
PHONE:
CONTRACT NUMBER:
CONTRACT END DATE:
SITE ID:
OGA:
TEAM:
TECHNICIAN:

CUSTOMER ID: 8159B4
POC:
POC PHONE:
REQUESTER: JAUREG
REQUESTOR PHONE: 736-7696
RISK LEVEL: LOW RISK
WORK LOCATION: ON SITE
LOCATION: SURGERY
TEMP LOCATION:
LITERATURE LOCATION:
DATE LAST INSP: 13 Jun 2007 **DATE DUE INSP:** 01 Jun 2009
DATE LAST PM: 01 May 2005 **DATE DUE PM:**
DATE LAST CAL: 13 Jun 2007 **DATE DUE CAL:** 01 Jun 2009
DATE LAST SPR: **DATE DUE SPR:**
DATE LAST SERVICED: 13 Jun 2007
ACQUISITION DATE: 01 May 1999
WARRANTY END DATE PARTS:
WARRANTY END DATE LABOR:

SERVICE REQUESTED:
INSPECTION, CALIBRATION

Serviced By	Cat	Type	Service Action	Service Item	Result	Date	Hrs
	S	INSP					
	S	CAL					

Other	Cat	Type	Service Action	Service Item	Result	Date	Hrs

RESPONSE TIME OTHER:
DOWN TIME: 0
COMP. DATE:
FAILURE REASON:
MAINT. ASSESSMENT:
CONDITION CODE:

Part Manufacturer	Manufacturer Part Number	Part Description	Exch Ind.	Qty. Req.	Qty. Used	Part Cost

Non-Catalog Part Description	Provided By	Qty. Used	Part Cost

WORK ORDER NOTES:

RETURNED TO: **DATE:**

Figure 2–3. Sample DMLSS work order (printed).

Finding a work order

You can find work orders by selecting Open Work Order Search from the Navigation menu, or if you are already in the Work Order module, you can use the FIND icon. Both options will bring you to the search screen. Here, you can limit the scope of your search to open, completed, or inactive work orders. Open work orders have not been completed yet; completed work orders have been completed

but not affected yet by two end of month DMLSS processes; and inactive work orders have been completed for more than two end of month processes. You can reopen a work order in completed status, but you cannot reopen an inactive work order.

You can search for work orders by: (1) ECN, work order number (or a range of work order numbers), (2) completion date (or a range of completion dates), (3) device class name, (4) equipment nomenclature, (5) equipment manufacturer, (6) organization name, (7) customer name, (8) technician name, (9) service type, (10) work order category, (11) work order priority, (12) work order status text, (13) team name, (14) contractor name, or (15) other government agency. Once the search criteria are set, select Search to find the matching work orders. You can also select RESET to change the search criteria, or CANCEL to cancel the search. DMLSS automatically displays the Work Order Detail Record when a search only has one work order match to the search criteria. If multiple records match the search criteria, DMLSS displays them in the Work Order Register (fig. 2–4). (**NOTE**: You can select and view more than one record by holding Ctrl key while selecting.)

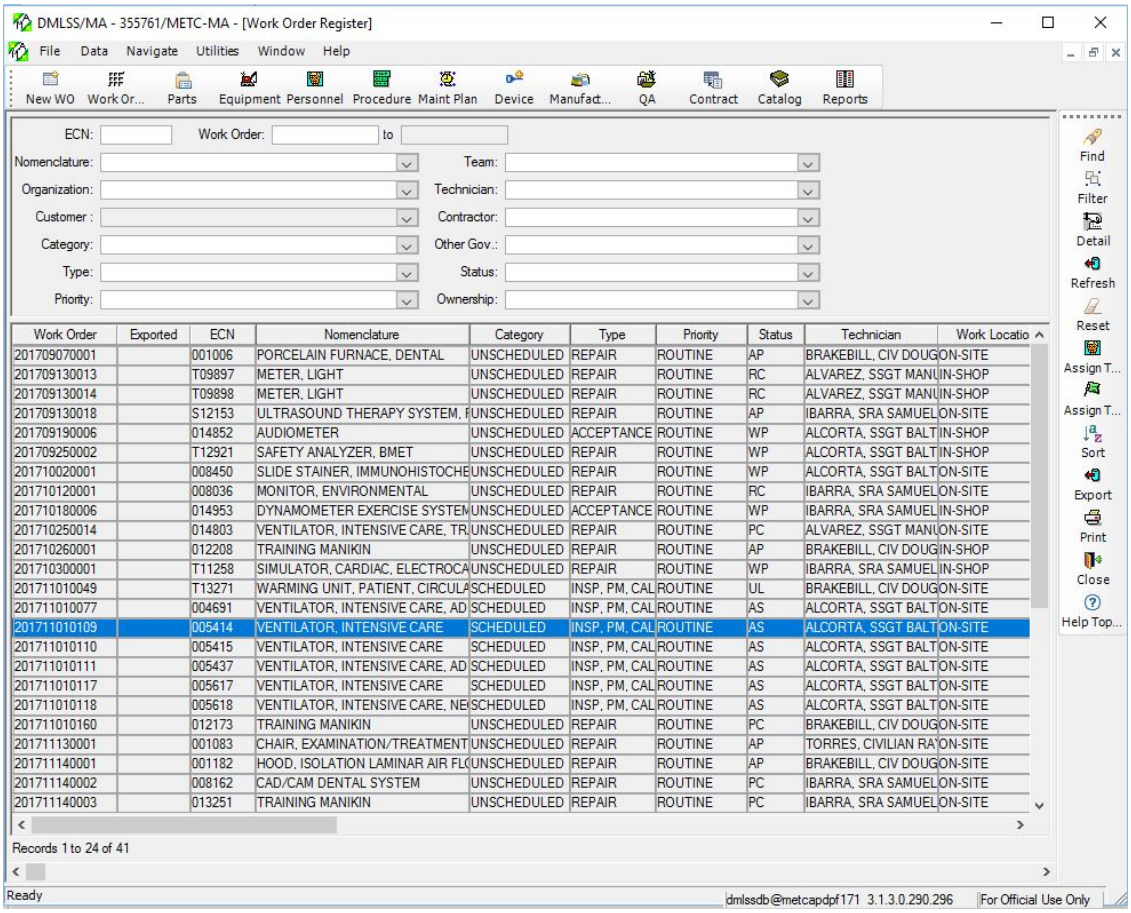


Figure 2–4. Work order register.

Open work orders are displayed in the Open Work Order Register format, and completed and inactive work orders are displayed in the Completed Work Order Register format. If the search criterion includes an ECN that is a system ECN, the search result set will include any open work orders for any associated components. To open a work order from the Work Order Register, simply select the desired work order and click DETAIL. Figure 2–5 shows the screenshot of a Work Order Detail record.

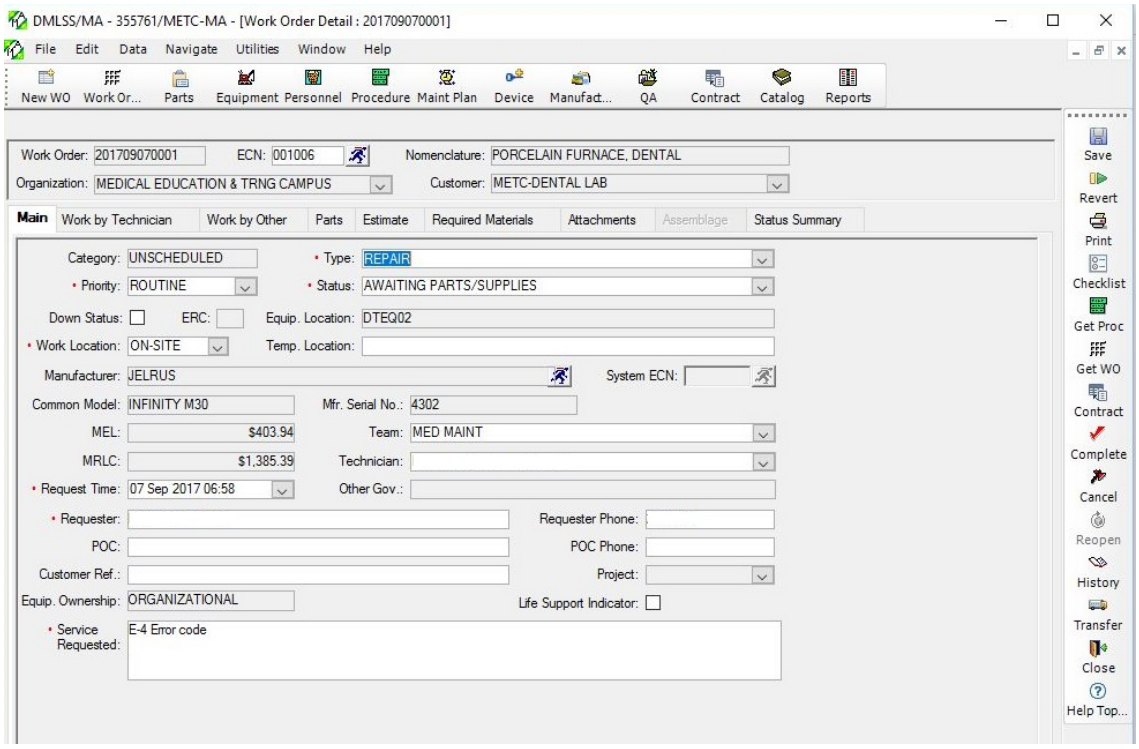


Figure 2–5. Sample work order detail record.

Printing work orders

You can print single or multiple copies of the entire listing of work orders or chose specific records to print from the Work Order Register, as desired. You can also print one or more copies of a work order detail record directly from the Work Order Detail view. It is also possible to print a work sheet for one or more work orders. The work sheet is intended for use with scheduled work orders, although it will include unscheduled work orders if they are selected. The work sheet eliminates most of the details of a regular work order and allows a BMET to complete multiple scheduled work orders on a single sheet and save paper by eliminating the need to print individual work orders. You may use the work sheet when performing your normally scheduled maintenance duties and record any important details about a specific piece of equipment. After completion of the maintenance, you can update the information in DMLSS, which saves an electronic copy of the work order.

Assigning work orders

Assigning work orders is the responsibility of your NCOIC or maintenance team leader. Work orders may be assigned to teams and/or to individual technicians. Assignment of work orders can be done from the open Work Order Register or within the Work Order Detail.

Updating, completing, and canceling work orders

Once a work order has been assigned to a technician, it may be updated or completed. Updating or completing a work order requires entering all applicable data. The difference is that updating the work order keeps it in an open status. The purpose of updating is to ensure that work in progress will not be lost. The work order provides a means for recording work accomplished by technicians in your shop, as well as work accomplished by contractors and other agencies.

Updating a work order with information

It is important to update the status of the work orders regularly. The following information provides a brief explanation on how to update a work order in DMLSS. On the MA horizontal toolbar, click Work Order (the Work Order Search window will now appear). Perform a search for the appropriate work order as described earlier in this lesson. Once you reach the Work Order Detail window for the work order you want to update, select the Work by Technician or Work by Other tab. These tabs contain the same information, but you use the Work by Other tab if an outside agency or contractor performed the work.

The Work by Technician screen provides a place for you to record your work and update information in the work order. The data in this screen is used for the MA's management and productivity reports too. The Work by Technician screen contains the following information for each technician who performs service on the work order: technician name, work order category, service type, service action, service item, service result, date serviced, service time, labor rate, and labor cost. DMLSS calculates labor cost using the service times entered on the work order and the labor rate entered in the MA Detail record. DMLSS also calculates and displays total hours, technician, and total labor cost from the data entered. This screen also contains the failure reason (if applicable), maintenance assessment, supply condition code, accumulated down time, actual response time, work order status, and work order notes. The technician name, service type, and service time are the mandatory entries, but you should input as much information as possible, particularly condition codes and maintenance assessments. Make sure you update or validate the maintenance assessment of equipment each time you perform maintenance. It is important for the maintenance assessment to reflect the status of the equipment accurately, because it plays a vital role in justifying the need to replace or keep the equipment. The maintenance assessment code requires changing more frequently than the condition code, but you need to ensure the condition code also has the most accurate applicable code. The following table shows the most commonly used codes that BMETs use for equipment:

Code	Title	Explanation
A	Serviceable (Issuable Without Qualification)	New, used, repaired, or reconditioned materiel, which is serviceable and issuable to all customers without limitation or restriction.
B	Serviceable (Issuable With Qualification)	New, used, repaired, or reconditioned materiel which is serviceable and issuable for its intended purpose but which is restricted from issue to specific units, activities, or geographical areas by reason of its limited usefulness or short service life expectancy.
C	Serviceable (Priority Issue)	Items which are serviceable and issuable to selected customers, but which must be issued before Supply Condition Codes A and B materiel to avoid loss as a usable asset.
F	Unserviceable (Reparable)	Economically reparable materiel, which requires repair, overhaul, or reconditioning.
H	Unserviceable (Condemned)	Materiel which has been determined to be unserviceable and does not meet repair criteria; includes condemned items which are radioactively contaminated; Type I shelf-life materiel that has passed the expiration date; and Type II shelf-life materiel that has passed expiration date and cannot be extended. (**NOTE:** Do not classify materiel in Supply Condition H unless it is truly unserviceable and does not meet repair criteria.)

The Work by Other screen provides a means for you to record work performed by contractors or other government agencies. It is important that you accurately document contract maintenance. This first step is to verify that the contract information is loaded into the SC module. The SC module provides a method for recording contract information, and contracts can be linked to a particular equipment item. In the MA module, the contract indicator is enabled when the equipment is under contract. When the work order contains a contractor name, the Work Order Main screen contains icons for the user to

access the SC module. If the contract has not already been loaded into the SC module, refer to AFMAN 41–216, Chapter 11, *Service Contracts (SC),* for steps on how to establish a new contractor record. The Work by Other screen contains the following information: service provider, contract number, vendor site ID, phone number, contract type, work order category, service type, service action, service item, service result, date serviced, service time, labor rate, labor cost, total hours, total labor cost, part cost contractor, cost total contractor, and contract response time actual. The service type, date serviced, and service time are mandatory entries. It is important to note that when you are documenting maintenance for contractor or other agencies, you should also account for any of your shop's supportive administrative time used on the Work by Technician tab. For the next step in the process, you will need to account for any parts used to complete the work order.

The Parts screen provides you a means to record parts used on a work order. The screen is divided into two sections: Cataloged Parts (parts that are included in the MA's catalog) and Non-Cataloged Parts (parts not included in the inventory). The Cataloged Parts section contains the following information for each part needed to complete the work order: manufacturer's name, manufacturer's catalog number, short item description, exchange item indicator, part quantity required, part quantity reserved, part quantity used, and price. The cataloged parts section uses data from the Repair Part Inventory records. The Parts screen also contains the following information for each non-cataloged part used to complete the work order: non-catalog part description, provided by, part quantity used, part cost, and part cost extended. The Non-Cataloged Parts section allows you to record information about parts used that are not on inventory records and parts provided by other maintenance activities. DMLSS calculates and displays the total parts cost for all cataloged and non-cataloged parts.

After updating these tabs, you simply click SAVE to record the update if you are not finished with performing maintenance on the equipment. If you are finished, you will complete the work order instead.

Completing a work order

To complete a work order, find the appropriate work order as described in the previous paragraph. Once you are in the Work Order Detail window, click COMPLETE. (**NOTE:** You can only mark a work order as complete if at least one line has been added in one of the Work tabs). After a work order complete, if there are any other open work orders for the item, DMLSS will ask you if you want to view them. If you want to view the open work orders, click YES, and the Work Order Register window will appear. Once you finish updating, you may select the Summary tab to view the status of the work order. You may also reopen the work order if necessary.

Canceling a work order

You may need to cancel a work order if it was created in error, or there are duplicate work orders open on the same equipment. (**NOTE:** You should only cancel work orders because of unusual circumstances that are fully documented.) Perform the following steps to cancel a work order:

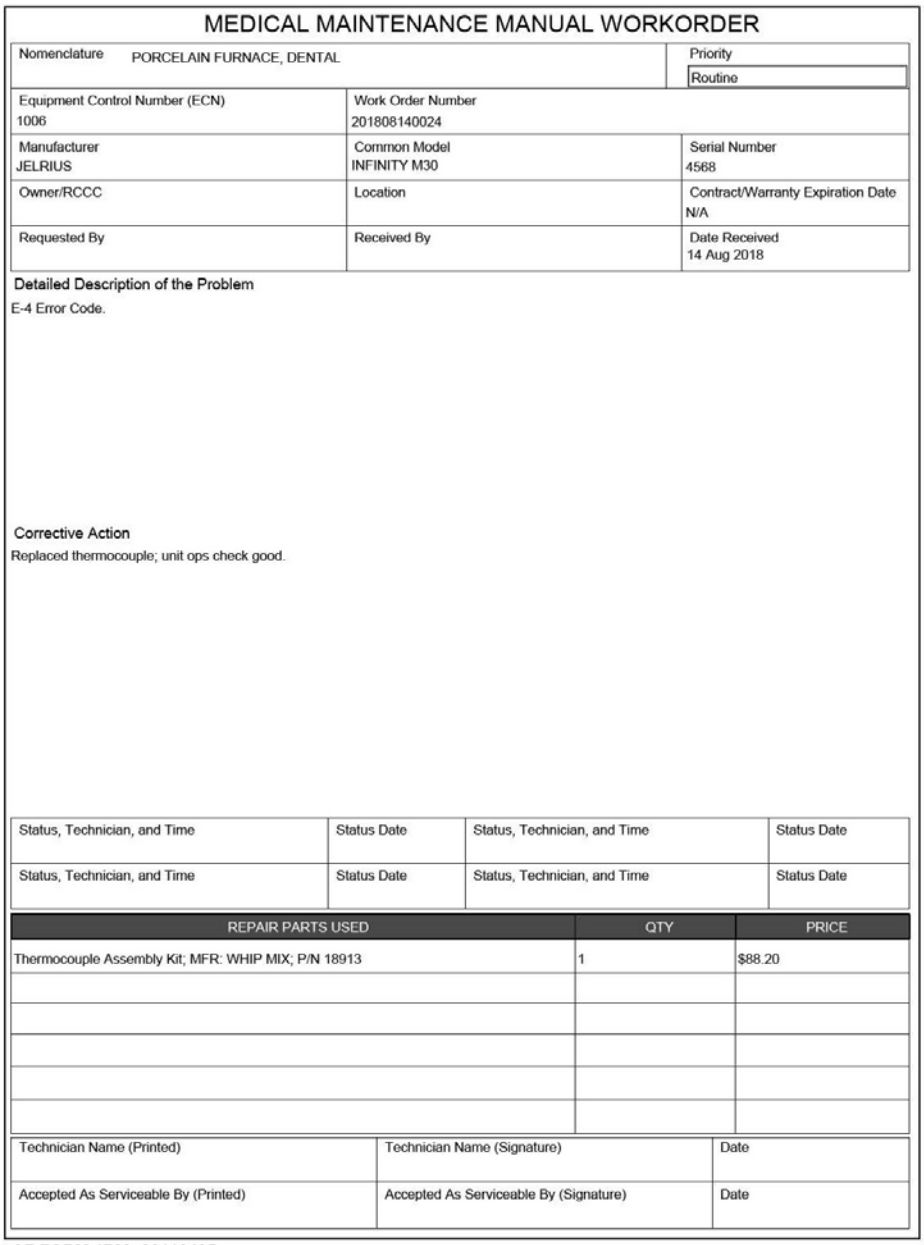
1. Find the appropriate work order as described in the previous paragraph.
2. When you reach the Work Order Detail window for the work order you want to cancel, click CANCEL on the vertical tool bar. The Cancel Work Order window will appear.
3. In the Cancel Work Order window, select the name of technician who is authorizing the cancellation.
4. If the reason you want to cancel the work order already appears in the Canceled Reason list, select the reason from the list.
5. If the reason you want to cancel the work order does not appear in the Canceled Reason list:
   (a) Click ADD.
   (b) In the Add Canceled Reason window, type the reason.
6. In the Cancel Work Order window, click OK.

You cannot cancel a work order that has had parts issued to it. Prior to canceling these types of work orders, go to the Parts tab and delete any row that refers to parts issued or required. Afterward, you should be able to cancel the work order.

Manual documentation

So far, we have covered DMLSS only, which is an automated maintenance documentation system. However, as with all computer systems, there may be times when the system is not operating or not available. In these circumstances, you are required to manually maintain historical data and work order documentation. Next, we will discuss the requirements for a manual system of work order documentation.

BMETs without DMLSS must use AF Form 1763 to record work requests and document actions taken (fig. 2–6).



MEDICAL MAINTENANCE MANUAL WORKORDER

Nomenclature	Priority
PORCELAIN FURNACE, DENTAL	Routine

Equipment Control Number (ECN)	Work Order Number	
1006	201808140024	
Manufacturer: JELRIUS	Common Model: INFINITY M30	Serial Number: 4568
Owner/RCCC	Location	Contract/Warranty Expiration Date: N/A
Requested By	Received By	Date Received: 14 Aug 2018

Detailed Description of the Problem

E-4 Error Code.

Corrective Action

Replaced thermocouple; unit ops check good.

Status, Technician, and Time	Status Date	Status, Technician, and Time	Status Date
Status, Technician, and Time	Status Date	Status, Technician, and Time	Status Date

REPAIR PARTS USED	QTY	PRICE
Thermocouple Assembly Kit; MFR: WHIP MIX; P/N 18913	1	$88.20

Technician Name (Printed)	Technician Name (Signature)	Date
Accepted As Serviceable By (Printed)	Accepted As Serviceable By (Signature)	Date

AF FORM 1763, 20110405

Figure 2–6. Sample AF Form 1763.

When a work request is received, initiate a work order by entering the appropriate data (nomenclature, priority, ECN, work order number, manufacturer, common model, serial number, owner, location, contract/warranty expiration date, requested by name, received by name, date received, and a detailed description of the problem) in the AF Form 1763. After the work is completed, fill in the remainder of the form (corrective action, repair part information, and technician information).

To establish accountability for the item, personnel picking up the repaired equipment sign and date the Accepted As Serviceable By blocks on the AF Form 1763. When the work order action is complete, transfer all maintenance information recorded on AF Form 1763 onto AF Form 509, Medical Equipment Maintenance Record, or to DMLSS (if it becomes available again).

When operating manually, you use a manual work order register (log) to assign work order numbers and manage the unscheduled workload. The work order register includes, but is not limited to, the following information for each work order entry:

- Work order number.
- Equipment/item description.
- Using activity.
- ECN.
- Status.
- Date completed.

When you create a manual work order number, use a twelve-digit format composed of the current eight-position date (YYYYMMDD) followed by a four-position serial number assigned from 0001 to 9999.

011. Maintaining data quality

As mentioned throughout this unit, the quality of historical and maintenance data is critical to many areas within the biomedical equipment maintenance program. When reliable, accurate data is entered into DMLSS, a true snapshot of the medical equipment inventory status can be reviewed and used by multiple levels, from your local MTF up to AFMOA, to make better-informed decisions on matters pertaining to technology management, standardization, and contracting.

As a BMET, you are responsible for ensuring the accuracy of the information in the equipment data records. A great way to ensure an equipment record’s accuracy is to perform a brief data review any time you perform maintenance tasks on it. During scheduled and unscheduled maintenance, you should verify the accuracy of all DMLSS data entries (model, manufacturer, serial number, etc.). A comparison of the information in DMLSS with the equipment’s data plate during any maintenance procedure will identify any incorrect equipment identification data. Annotate corrected information on the work order and then process it into DMLSS when the opportunity arises.

Your shop should also establish a data quality control plan. This will ensure continuous oversight of your shop’s data quality. The data quality control plan should include a standardized inspection process to ensure data is checked for accuracy the same way each time for all ECNs. The plan should include the frequency at which the equipment records will be inspected. A common plan includes inspecting 100 percent of all acceptance inspection items and 10 percent of the previous month’s scheduled and unscheduled work orders. If a large number of errors are detected or the same type of error is detected numerous times, the percentage of records inspected may need to increase and/or training may be needed for BMETs to prevent the errors.

The data quality control plan should address the following four elements:

1. Completeness—make sure all applicable equipment data is entered in the record. Leave blank only areas that do not apply.
2. Accuracy—the data in the records should correctly reflect the status of the equipment.
3. Consistency—data entries should have the same corresponding representation across all equipment records.
4. Validity—to be valid means data conforms to its accepted format. Ensure entries are in accordance with all governing standards (AFIs and AFMOA).

Figure 2–7 provides a visual on how the four areas build upon one another.

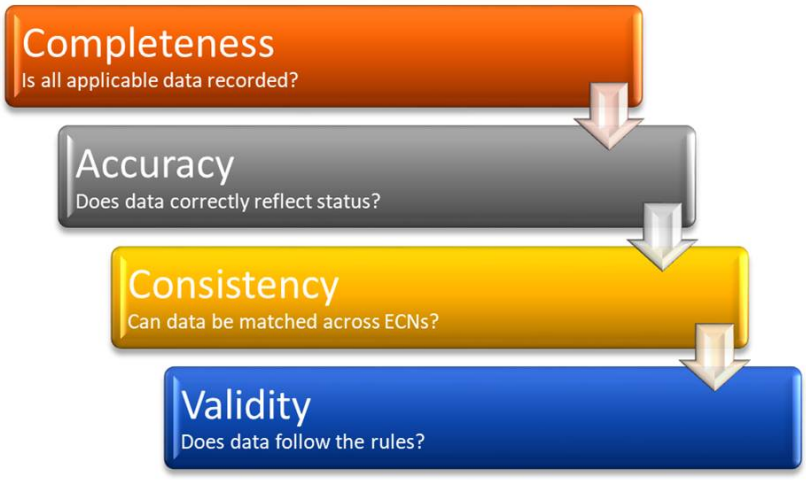


Figure 2–7. Data quality elements.

There are different ways to implement a data quality control plan. The most important thing is that you follow the established procedures to ensure any mistakes are identified and corrected.

We will now cover areas in DMLSS that allow you to edit important data along with their brief descriptions. We will start with the historical maintenance report (HMR) and the equipment detail record.

Historical maintenance report

HMR displays all the historical information about an equipment item on a single printed form. This provides a convenient method to review the record for accuracy. To produce an HMR, perform the following steps:

1. Go to Equipment Search and enter criteria. DMLSS defaults to searching for active records; however, you can change the scope of the search to inactive if desired. Inactive records are those that have been deactivated because of an equipment loss, turn-in, or out-shipment.
2. Select one or more records and click the PRINT icon on the vertical tool bar.
3. Select HMR from the print window.

If you are already in the equipment record, you can produce its HMR by clicking the PRINT icon on the vertical tool bar and selecting HMR from the print window. Figure 2–8 shows an example of an HMR produced in DMLSS.

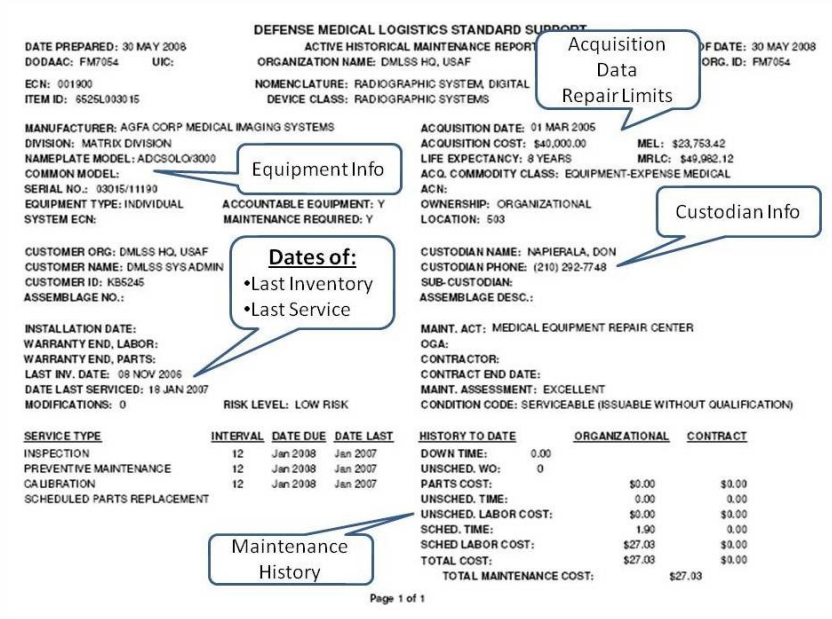


Figure 2–8. Historical maintenance report.

Equipment detail record

The equipment detail record contains more detailed historical information than the HMR (fig. 2–9). It provides current and complete life cycle information of an equipment item. You also have the ability to view active or inactive records. The easiest way to find the equipment detail record for an item is to perform a search using the ECN. Since the search will result in a single item, DMLSS will automatically open the equipment detail record for that item. Once you reach the Equipment Detail Record screen, there will be several tabs. Let's look at the individual tabs you will be using to view and update any information.

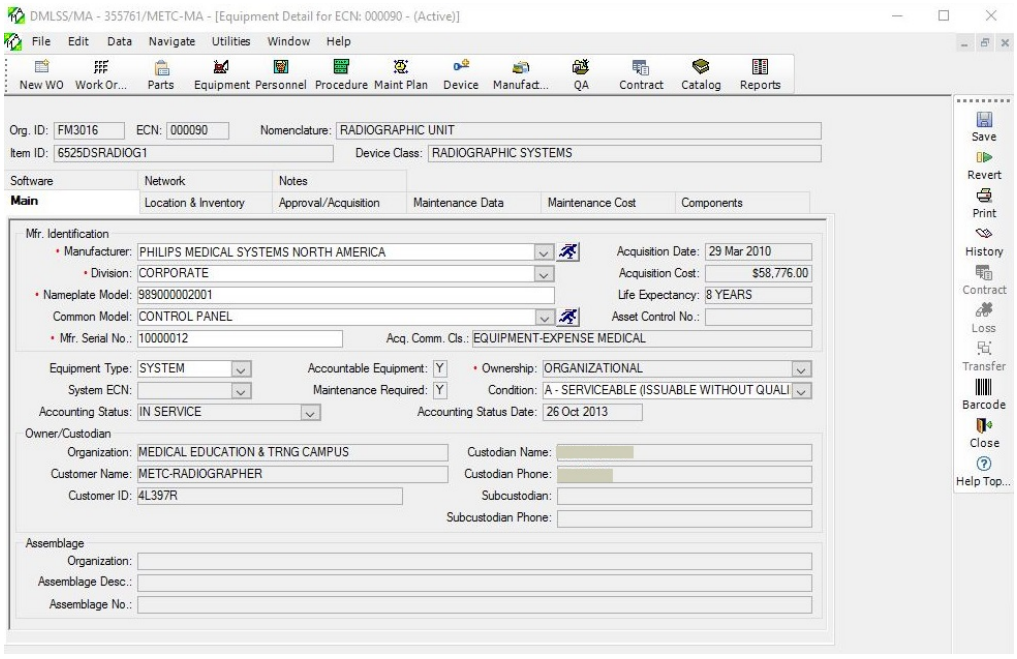


Figure 2–9. Equipment detail record.

Main tab

The Main tab displays general information about an item, to include equipment ownership, condition code, and equipment type. Some of the fields are populated from other equipment database records and cannot be updated in this window.

Location & Inventory tab

The Location & Inventory tab identifies the location of the selected equipment item down to the room location, temporary location if the item is borrowed, loan data, and last inventory date along with the reason.

Approval/Acquisition tab

The Approval/Acquisition tab allows you to view and update approval, purchase, warranty, and acquisition information. This tab provides some historical reference on the procurement process and installation of the item.

Maintenance Data tab

The Maintenance Data tab identifies who is responsible for providing maintenance for the item (e.g., the MA and team, other government agency, or contractor). It further breaks down required maintenance cycles based on the procedure number assigned, operational status, risk levels, readiness code, and maximum expenditure limit (MEL) and maximum repair limit cumulative (MRLC) totals for repair determination.

Maintenance Cost tab

The Maintenance Cost tab provides a historical look at resources expended for upkeep of a piece of equipment. The tab displays downtime and number of unscheduled work orders. The Maintenance Cost tab is divided into Organizational and Contract repairs. The tab provides values for parts costs, unscheduled time and labor, and scheduled time and labor. You can view a collective history to date cost and cost expenditures by fiscal year as well. Although the history to date column represents a cumulative value of resources expended throughout an equipment items life cycle, the fiscal year columns only display for the last ten years.

Components tab

When you are viewing an equipment record identified as a system type, and it has other associated equipment records components linked to it, the Components tab is enabled. The tab lists all components of the system by ECN and item identification (ID). In this window, you can select a component and double click to open the Equipment Detail Record for the component.

Software

The Software tab displays information for equipment related software that has been installed. You can add software from this window or load software from the Equipment Software sub-menu (MA Navigate drop down menu). You can also view information on existing software loaded in the window.

Notes tab

The Notes tab allows you to add, edit, or delete notes for a specific equipment item. Some notes, such as those resulting in suspension of scheduled work orders, will remain within this tab forever, others are may be deleted.

The MTF catalog record

Before any equipment record can be established, a logistics (LOG) Catalog record (known as the "master record") must be created. Once a LOG Catalog record has been created with all pertinent identification data entered, in-use equipment records can be gained. During the gain process, MEMO personnel associate the equipment record(s) to a property custodian. Equipment records are linked to

various fields located within the LOG Catalog record automatically. Although you normally do not create LOG Catalog records or process subsequent equipment gains, you may have the occasional requirement to edit the LOG Catalog record to reflect accurate data. Here is a brief description of certain fields contained within a LOG Cat record.

Commodity class

In DMLSS, there are numerous commodity classes available, including capital medical equipment, supply expendable medical items, and medical/nonmedical repair parts. Commodity class determines how an item is accounted for and how it is purchased. Commodity class will be covered in more detail in unit 3 of this CDC.

Assembly/Disassembly of equipment records

The Assembly function consolidates multiple ECNs into a single ECN and the Disassembly function separates a single ECN into multiple equipment records (ECNs). This may be necessary to ensure proper accountability or for scheduling purposes. If done improperly, there is a high potential that dollar values will be tracked inaccurately on the MTF's property book. For this reason, if you find equipment items that need to be assembled or disassembled, contact MEMO for assistance.

Loading equipment data

One of your responsibilities is to load equipment information into the MTF Catalog record during the acceptance inspection process. This information includes, at the very least, the manufacturer, nameplate model, and serial number. BMETs normally load this information, but MEMO sometimes loads this data. It is important to *load accurate information*. When selecting a manufacturer record, choose centrally managed records when possible. When entering nameplate model information, do not confuse common model with nameplate model. Use the model information provided on the equipment data plate for nameplate model entries. Enter the serial number exactly as it appears; if no serial number is available (this is rare for medical equipment), enter the following information: ECNXXXXXX; where XXXXXX represents the six character equipment control number (include lead off zeros). Annotate the work order with any other equipment information not already loaded and input that information into DMLSS during work order processing.

The easiest way to reach the equipment data fields from an open work order is to use the JUMP TO button next to the ECN field on the acceptance inspection work order. This takes you directly to the Main tab of the new equipment record where you can enter or edit the manufacturer, model number, and serial number.

DMLSS equipment classification

DMLSS incorporates risk-based management and standardized equipment maintenance guidance and intervals into the system. At this time, it is not necessary for you to know all the details of the process, but you do need to know what risk-based management is and the various parts of the equipment classification system.

Risk-based management

Over the years, medical equipment has become more reliable and less dependent on scheduled periodic intervention to assure proper function and safety. Due to this growing reliability, a criterion was developed that evaluates and prioritizes the types of equipment to be included in the scheduled maintenance inventory. The purpose is to minimize recurring scheduled maintenance on equipment that does not pose a safety or reliability risk. The basic design of the system incorporates a risk-based assessment scoring mechanism that evaluates equipment based on clinical and physical risk factors associated with use. Risk assessment factors are based on available data from historical maintenance data, reports of equipment incident history, maintenance requirements, and best professional judgment. For equipment to be grouped appropriately, the equipment classification system was developed. DMLSS has a centrally managed classification table to group equipment into particular

categories. You can edit these at your local MTF, but you may add classification records to meet local requirements. The equipment classification and nomenclature system includes the following information.

Equipment nomenclature

DMLSS includes an equipment nomenclature and device code for each specific type of device. The standard classification system is based on ECRI Institute's universal medical device code (UMDC) number and the Universal Medical Device Nomenclature System (UMDNS). DMLSS nomenclatures that start with a "C" are centrally managed by the DMLSS project management office (PMO); locally assigned nomenclature starts with a "L." The use of locally created nomenclatures should be kept to an absolute minimum. If a new nomenclature is required, contact the DMLSS PMO and request to add the new nomenclature to the centrally managed list.

Device class name and device class code

DMLSS also includes a device class name and device class code for each device. The device classes associate the individual devices into groups that perform similar functions. This allows easy retrieval of multiple like items during equipment record queries. This functionality enables you to answer command level requests and aids in recall or hazard alert management.

Manufacturer

Manufacturer information includes the name and contact information of the manufacturer of an equipment item. Use centrally managed manufacturer records when possible. You can create locally managed manufacturer records when required, but when creating these type records, verify the manufacturer's Data Universal Numbering System (DUNS) code and commercial and government entity (CAGE) codes if available. These codes are used when DMLSS establishes a unique item identifier (UII) for equipment records falling within the scope of UII criteria. Visit the CAGE Program Website at https://cage.dla.mil/ to search for these codes.

Manufacturer/common model

Another important piece of information is the manufacturer/common model detail record. Typically, the common model is what you see across the front case of an item. This is also how most people refer to the item. Often it is different from the nameplate model information contained on the equipment's data plate. This information is not centrally managed; you create it at the local MTF. This record is used to store technical literature location, track spare parts to end item relationships, and create average annual maintenance cost reporting.

Equipment management data

The next part of the equipment classification system in DMLSS is the equipment management data. This data includes the following for each item:

1. Risk level – centrally managed and used as the basis for establishing equipment management requirements and maintenance intervals. Risk levels are provided as information to the local equipment management and maintenance activities. The following table shows the normal risk level/inspection interval relationship.

Risk Level	Inspection Interval
1—High risk	6 months
2—Medium risk	6 months
3—Low risk	12 months
4—No risk	None

2. Federal supply class (FSC).

3. To which the item belongs – assists asset managers in assigning item identification numbers to locally purchased equipment. The FSC is the first four digits of an item's stock number.
4. Life expectancy – used to calculate equipment depreciation, replacement planning, and MELs.
5. Specialty –associates the type of device to a major medical specialty or section of the MTF where the equipment is used primarily.
6. Maintenance requirement indicator – identifies devices which require periodic maintenance and/or are considered to have significant risks that justify keeping an individual historical service record.
7. Accountable equipment code – indicates if the item is to be included in accountable records. This determines if a record is searchable in the EM module.

This brief look at the DMLSS equipment classification system will assist you with ensuring the information contained in the LOG Catalog and equipment records are correct. If you see information in the record that may be incorrect and you do not have the ability to correct it, contact your supervisor, NCOIC, MEMO, or DMLSS system administrator.

Reports

A report is a collection of data presented on a periodic or event-driven basis. Reports represent the status at that point in time and/or present data of a historical nature. The data is presented in a standardized format, and cannot be manipulated. The following reports help identify data quality problems: equipment without a maintenance activity report, equipment without a maintenance plan report, and maintenance interval without a date due report. At a minimum, you should generate these inquiries monthly.

Equipment without a maintenance activity report

The equipment without a maintenance activity report shows active equipment records that have a maintenance requirement, but have no associated maintenance activity. This report is critical for staff and patient safety. The maintenance activity in most, if not all cases, is the local BMET shop. Equipment that does not have a maintenance activity will not populate scheduled or unscheduled work orders in the MA inbox. If items appear on this inquiry, they need to be assigned to a maintenance activity in the Maintenance Data tab of the Equipment Detail. Figure 2–10 shows an example of the report.

DATE PREPARED: 28 NOV 2017

DEFENSE MEDICAL LOGISTICS STANDARD SUPPORT
EQUIPMENT WITHOUT A MAINTENANCE ACTIVITY REPORT

AS OF DATE: 28 NOV 2017

This List shows active equipment records that have a maintenance requirement, but have no associated Maintenance Activity. A Maintenance Activity and a Maintenance Plan must be associated with the equipment record for the system to generate scheduled maintenance work orders for the equipment.

ECN	NOMENCLATURE	MANUFACTURER	COMMON MODEL	ITEM ID	SUS.
014962	WARMING UNIT, BLOOD/INTRAVENOUS SOLUTION			6515015988290	N

Figure 2–10. Equipment without a maintenance activity report.

Equipment without a maintenance plan report

This report shows active equipment records that have a maintenance requirement, but have no maintenance plan associated with either the equipment nomenclature, manufacturer/common model or ECN. Identifying and correcting equipment missing a maintenance plan is key to maintaining equipment integrity and safety. If a maintenance plan is not set up during the acceptance phase, the equipment will not produce scheduled work orders. If items appear on this inquiry, they need to have a maintenance plan assigned and/or created in the Maintenance Plan screen. Figure 2–11 is an example of the report.

DATE PREPARED: 28 NOV 2017

DEFENSE MEDICAL LOGISTICS STANDARD SUPPORT
EQUIPMENT WITHOUT A MAINTENANCE PLAN REPORT

AS OF DATE: 28 NOV 2017

This List shows active equipment records that have a maintenance requirement, but have no Maintenance Plan associated with either the Equipment Nomenclature, Manufacturer/Common Model, or Equipment Control Number (ECN).

ECN	NOMENCLATURE	MANUFACTURER	COMMON MODEL	ITEM ID	SUS.
014950	OTOSCOPE VIDEO SYSTEM	OTOSIM INC	OTOSIM 2	11002	N
014949	OTOSCOPE VIDEO SYSTEM	OTOSIM INC	OTOSIM 2	11002	N
014951	OTOSCOPE VIDEO SYSTEM	OTOSIM INC	OTOSIM 2	11002	N
014952	OTOSCOPE VIDEO SYSTEM	OTOSIM INC	OTOSIM 2	11002	N
014641	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014646	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014647	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014643	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014648	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014642	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014977	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014640	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014639	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014986	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014983	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014644	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014984	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014982	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014981	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014980	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014979	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014978	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014704	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014712	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014711	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014710	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014709	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N
014708	SENSOR, RADIOGRAPHIC	CARESTREAM HEALTH, INC.	RVG 6200	6525LCSTMRVG62002	N

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Figure 2–11. Equipment without a maintenance plan report.

Maintenance interval without a date due report (inquiry)

This report shows equipment that has a maintenance plan but no due dates. This error would result in the equipment never coming due for regularly scheduled maintenance, which becomes a patient safety risk. It is important to note that occasionally device codes are changed or altered, which in-turn changes the maintenance intervals. This is a reason why the reports should be run monthly, at a minimum. If items appear on this inquiry, you need to enter the date due in the Maintenance Data tab of the Equipment Detail. Figure 2–12 is an example of the report.

DATE PREPARED: 28 NOV 2017

DEFENSE MEDICAL LOGISTICS STANDARD SUPPORT
MAINTENANCE INTERVAL WITHOUT A DATE DUE REPORT

AS OF DATE: 28 NOV 2017

This list shows active equipment records that have a scheduled maintenance Interval, but have no associated Date Due. In order for the System to generate a Scheduled Work Order for a Maintenance Type, a Date Due must be entered in the equipment record for each Maintenance Type that has an Interval.

Customer: METC BMET COURSE 105

Assemblage:

ECN	NOMENCLATURE	MANUFACTURER	COMMON MODEL	INSP	DATE DUE	PM	DATE DUE	CAL	DATE DUE	SPR	DATE DUE	SUS.
014845	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014846	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014847	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014848	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014849	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014850	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014851	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N
014852	AUDIOMETER	AMBCO ELECTRONICS	650AB	12		12		12				N

Figure 2–12. Maintenance interval without a date due report.

012. Maintaining files

Your shop should have important equipment information readily available. This information includes mission essential material such as technical references and EDFs for equipment within your facility. This lesson discusses the general use, content, and maintenance of these files.

Technical reference files

Every BMET should understand the importance of a good technical reference file. You depend on the availability of accurate maintenance data in your shop's technical reference file in order to perform proper maintenance on equipment. Each medical maintenance activity will maintain a technical reference file on each item of medical equipment including operating and service literature. If using web-based manuals, include the web address in the Literature Location field in DMLSS. In addition, the section that uses the equipment should maintain a copy of the equipment operator's instructions and procedures. Your MTF should get two copies of all manuals included with the equipment order for each medical device that requires maintenance. A copy of the operator/user's manual goes to the section that will be operating the equipment.

The method and sequence used for filing the literature is established locally (i.e., by manufacturer's name, locally assigned literature number, etc.), but must be traceable to the common model in DMLSS. If a locally assigned literature number is used, it can be loaded into the Technical Literature field of the equipment record. Some medical maintenance shops have an operating instruction (OI) to establish the local method of filing technical literature. Occasionally, your shop may have more literature than is required. Excess literature can be reported to AFMOA/SGALE for possible redistribution to other medical maintenance activities.

Equipment data files

To meet regulatory and accreditation requirements, you must maintain medical equipment history. BMETs must establish and maintain a separate EDF on each maintenance significant equipment item or system including equipment rentals and equipment provided as part of a reagent or supply contract.

NOTE: You will find a majority of the reagent and rental agreements in the medical laboratory.

System components do not require a separate EDF, but the system EDF contains all component-related information. You maintain the EDF in two parts: DMLSS maintains all work orders (scheduled and unscheduled) and all other documentation kept in a separate physical folder or electronically on a network drive with limited access. The limited access prevents unauthorized file alteration or deletion. It is required for BMETs to maintain these files in ECN sequence and retain them for the life of the equipment. Each EDF contain applicable historical information, which include the following:

- Pre-procurement information (surveys, room drawings, and power supply evaluations).
- Procurement documentation.
- Warranty registration.
- Any maintenance worksheets/checklists not in DMLSS, including acceptance, calibration, inspection, electrical safety, and those accomplished by the MERC during annual visits.
- All work orders not captured in DMLSS (manual, depot, or contract).
- Recalls and hazard alerts. Maintain a copy of the work order with results of applicable recalls.
- Modifications. A copy of the work order with information of the modification.
- Radiation survey letter (letter from qualified regional medical physicist that either evaluates the acceptability of existing shielding or calculates the required shielding for the proposed installation).
- Entrance skin exposure calculations for X-ray systems provided by the regional medical physicist.
- Copy of Food and Drug Administration (FDA) Form 2579, Report of Assembly of a Diagnostic X-Ray System.
- Copies (or location) of purchase, lease or rental agreement, one-time repair(s), and annual maintenance contract(s).

When an equipment item is turned in for salvage, its EDF can be discarded. If an equipment item is turned in, coded for reuse, and sent to another MTF through redistribution, then send the EDF with the equipment to the new owner. When sending the equipment, include both the EDF and a copy of the current equipment historical data from DMLSS. To maintain the integrity of the system, conduct periodic checks of EDFs to remove unneeded files that may have been missed during equipment turn-in procedures.

Self-Test Questions

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

009. Introduction to the Defense Medical Logistics Standard Support System

1. List six DMLSS modules you may deal with as a BMET.

2. How does the MEMO use DMLSS equipment records?

3. In DMLSS, what modules manage repair parts inventory assets?

4. Briefly describe the purpose of the inbox found in the MA module of DMLSS.

5. How can you tell if an inbox pending action is only an advisory message?

010. Documenting maintenance actions

1. What would the DMLSS work order number be for the fifteenth work order opened on 21 July 2019?

2. When could you suspend scheduled maintenance for an item?

3. Briefly describe the process for creating an unscheduled work order in DMLSS.

4. What is the difference between an inactive and a completed work order?

5. Name at least five ways to search for a work order in DMLSS.

6. What is the purpose of the work sheet option when printing work orders?

7. Which entries are mandatory on the Work by Technician tab?

8. What reference would you use if you needed to load a contract in DMLSS?

9. Why might you need to cancel a work order?

10. When canceling a work order, what do you do if the reason you are canceling the work order does not appear in the Canceled Reason list?

11. What form is used for manual documentation of work requests and actions taken?

12. In a manual work order documentation system, how do you establish accountability for items?

011. Maintaining data quality

1. For data quality, what should you do during scheduled and unscheduled maintenance?

2. What should be included in a data quality control plan?

3. List the four elements a data quality control plan should address.

4. Briefly list the steps you perform to print a HMR in DMLSS.

5. What information is found on the Approval/Acquisition tab?

6. When is the Components tab enabled?

7. What does MEMO do during the gain process in DMLSS?

8. For what are the Assembly and Disassembly functions used?

9. When loading equipment information in the MTF Catalog record during the acceptance inspection process, what information is required at the very least?

10. Briefly describe risk-based management.

11. On what is the equipment nomenclature standard classification based?

12. To what does common model refer?

13. How does the accountable equipment code affect equipment?

14. Which three reports help to identify data quality problems?

15. What happens if equipment does not have a maintenance activity?

16. What happens if a maintenance plan is not set up during the acceptance phase?

012. Maintaining files

1. Describe the requirements for technical reference files.

2. When must an EDF be established?

3. What information must be maintained in the EDF?

4. What happens with the EDF if equipment is turned in coded for reuse and sent to another MTF?

2–2. 4A2X1 Administration and Management Tasks

Increasing your knowledge about the 4A2X1 career field is one of your most important responsibilities. The more you know about your job, the more effective you and your shop will perform. Job knowledge includes items such as equipment maintenance responsibilities, regulatory instructions and standards, and procedural guidance. This section covers the management tasks of publication management, determining shop requirements, and assessments. It is not expected that you will memorize everything, but it is important that you know where to locate the information you need to do your job.

013. Publication management

Information can be found from numerous sources, such as supervisors, coworkers, your supporting MERC, or AFMOA. An important source of which you need to be aware is your shop's reference library. This is just the starting place on information about biomedical equipment maintenance. In this lesson, we introduce you to some of the written guidance you will use in the performance of your job, as well as your shop's publications file, and ways to obtain publications.

While it is convenient to get a quick answer from your co-worker, trainer, or supervisor, you should *always know the source of the information*. This is especially important when it comes to training. Do not accept someone's word for how to do a calibration, they should be showing you "by the book" on how procedures are done. The adage of "that is how we have always done it" will not hold up in a court of law.

The following topics cover some of the most commonly used BMET publications. This list is not all-inclusive, but should help you become familiar with some of the material you will need to reference during your duties. Take the time to locate and familiarize yourself with *all* these publications.

4A2X1 CFETP

The CFETP is our career field's master training document. It is the *contract* between the CFM, schoolhouse, and the AF Career Development Academy (AFCDA). In addition to having all the tasks required for upgrade training, this document shows what topics are required to be taught in 3-skill level technical school and CDCs. There is a great deal of information in this document covering all aspects of training. This document is available on the AF E-Publishing Website, http://www.e-publishing.af.mil/.

AFI 41–201, *Managing Clinical Engineering Programs*

This AFI is the BMET's main reference, so you must be intimately familiar with the contents of this instruction. It provides policy and guidance for all aspects of the biomedical equipment maintenance program and facility management. In addition to the general guidance, it contains a list of important references and forms for both medical equipment maintenance and facility management.

AFI 41–209, *Medical Logistics Support*

This instruction provides logistics policy, procedures, and guidance for AF medical activities. The primary objective is to provide policy and guidance for optimum logistics support to the missions assigned to AF medical activities. You should be familiar with Chapter 6, *Medical Equipment Management*, because you work hand in hand with MEMO on a regular basis and there is a possibility you could fill this role if needed.

AFMAN 41–216, *Defense Medical Logistics Standard Support (DMLSS) Users Manual*

The objective of the DMLSS Users Manual is to provide medical logistics personnel with the information necessary to use the system effectively, including operation of computer hardware used in support of the system. Chapter 10, *Equipment Maintenance*, is where you will spend a majority of your time. It gives step-by-step instructions for all pertinent screens and procedures you will use.

AF Medical Logistics Website

Every BMET should familiarize themselves with this website, which can be found at https://medlog.us.af.mil/. Make it a habit to visit this website at least once a month to check for new information. You will need to complete your profile the first time you log on the site. If it does not take you to the profile screen automatically, click Site Settings at the top of the page to update your profile (fig. 2–13).

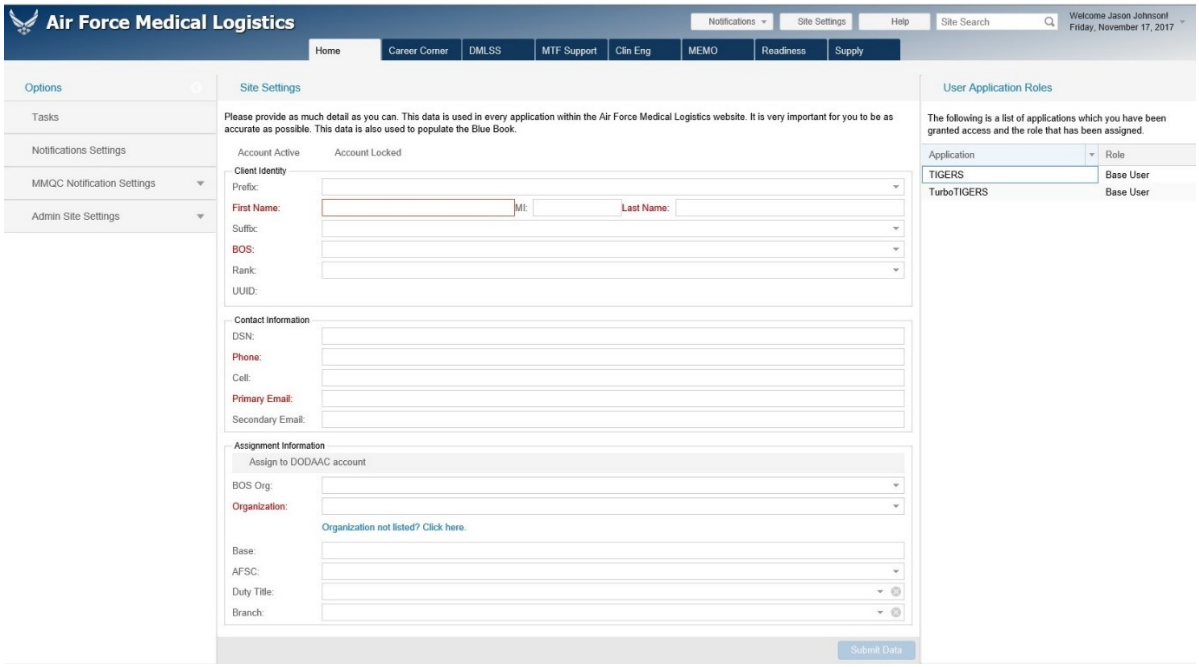

Figure 2–13. AF Medical Logistics Website profile.

It is important to keep your profile up to date to receive important information sent out by AFMOA/SGALE. There is also a worldwide BMET locator application called "Blue Book" that uses this information. After your profile is established, update your User Tasks to ensure access you need based on any unique roles. Select Tasks at the top of the column on the left side. A window will pop up allowing you to select your tasks (fig. 2–14).

Also, manage your notifications (fig. 2–15). Change your settings by selecting Notification Settings located in the column on the left side. At a minimum, you should choose to be notified for Clin Eng's News, Documents, and Forum notifications. This ensures you are notified of any updates for the BMET career field.

The main area you will be visiting as a BMET will be the Clinical Engineering Branch's page, which is accessed by selecting the Clin Eng tab on the home page. Take the time to access this page and snoop around in every part. This is a one-stop-shop for information pertaining to AF BMETs. Figure 2–16 shows the Clinical Engineering Branch page. On the right side of the page, you will find the apps for which you have access.

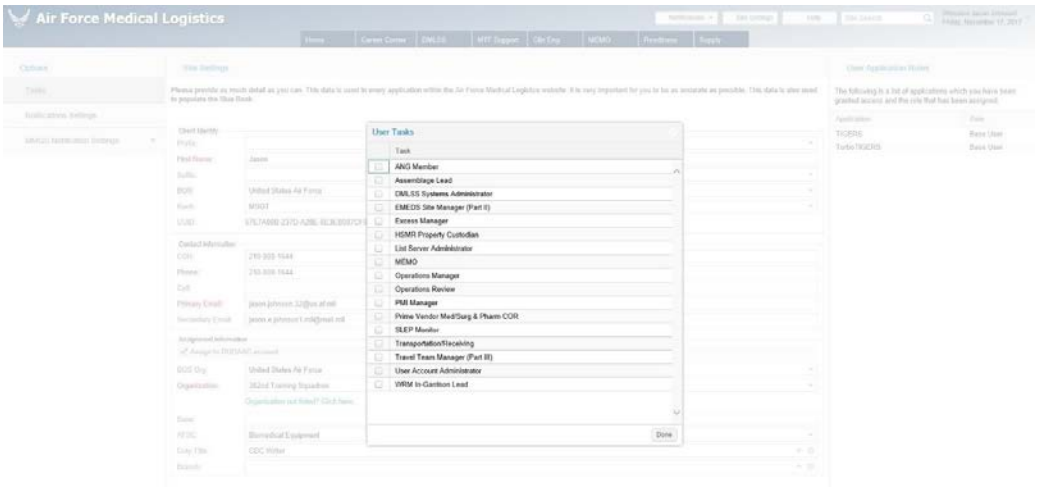

Figure 2–14. AF Medical Logistics Website user tasks.

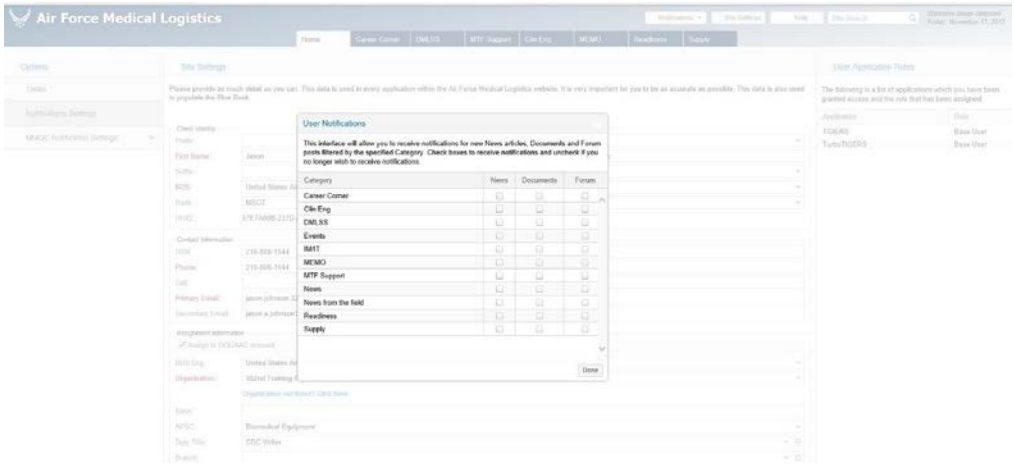

Figure 2–15. AF Medical Logistics Website user notifications.

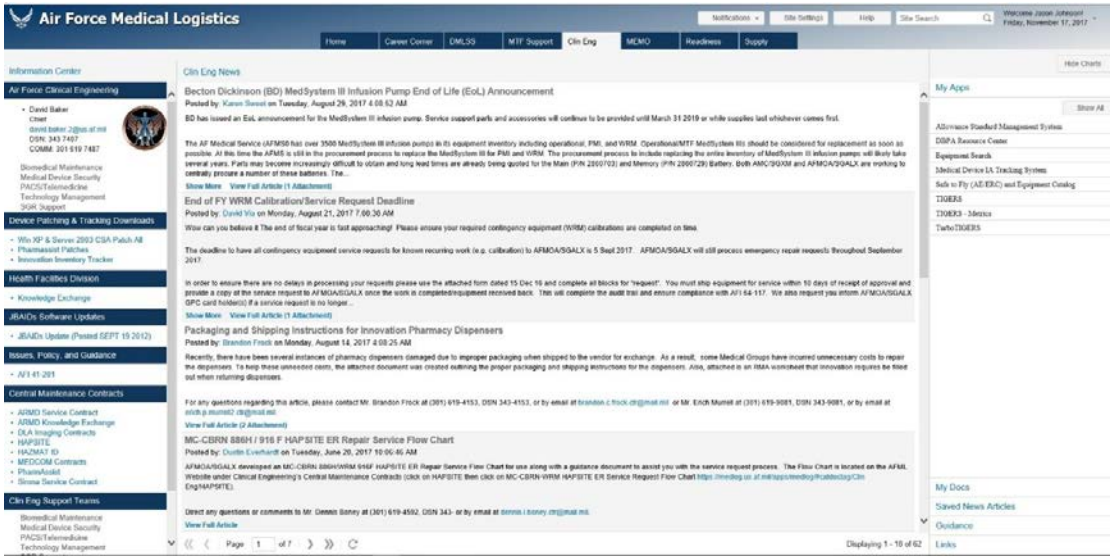

Figure 2–16. Clinical Engineering Branch webpage.

The Clin Eng's Forum will be located at the very bottom of the column on the left side of the page. This forum is a powerful tool that allows you to network with other BMETs throughout the AF. Keep your postings official, pertinent, and professional. There are many eyes on this forum. You can pose questions to nearly the entire career field. Likewise, you may see a question that you can provide and answer to help a fellow BMET.

Air Force safety guidance

AF publications cover safety concerns of the work place ranging from electrical safety issues to standards for fire prevention. Many of these standards pertain to subjects relating to the performance of your job. The most common ones that will interest you are as follow:

- AFI 91–202, *The US Air Force Mishap Prevention Program.*
- AFI 91–203, *Air Force Consolidated Occupational Safety Instruction.*
- AFI 48–139, *Laser and Optical Radiation Protection Program.*

Commercial safety publications

There are numerous commercial publications relating to safety of biomedical equipment maintenance. The NFPA® publishes standards for all aspects of fire safety. The ECRI Institute provides guides for preventive maintenance procedures and has a web-based, automated alerts management system called Alerts Tracker™, which you are required to use for medical device recalls and alerts. We will cover these safety related publications, such as NFPA and ECRI Institute, in more detail in Volume 2 of this CDC.

The US Food & Drug Administration

The FDA is responsible for a vast number of things. The scope of FDA's regulatory authority is very broad and their responsibilities closely relate to those of other government agencies. This can become frustrating and confusing when trying to determine the appropriate agency's standards to follow. However, BMETS are required to follow FDA guidelines since the agency has authority to regulate medical devices and all electronic products that emit radiation (e.g., lasers, X-rays, and ultrasound equipment). The FDA is responsible for Title 21 of the Code of Federal Regulations (CFR 21). The 800 series of CFR 21 covers medical devices and the 1000 series coves radiation-emitting devices (medical and non-medical).

Search the CFR 21 at https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm. Volume 2 of this CDC goes into detail about the FDA's medical device reporting and compliance standards.

AAMI

You were introduced to AAMI in the earlier lesson discussing certifications for CBET, CLES, CRES, and CHTM. AAMI is a nonprofit organization founded in 1967. It consists of approximately 7,000 professionals concerned with the development, management, and use of safe and effective health technology. They are a primary source for national and international standards for the medical device industry. AAMI also provides general information, technical support, and guidance for BMETs and sterilization professionals. Full access to some of their material requires a membership, which you can find information on their site at http://www.aami.org/.

While this list does not cover every publication required for the operation of a biomedical maintenance shop, it gives you an idea of the publications that are useful in your facility. Familiarizing yourself with these publications will help you improve your job skills.

Local operating instructions and MTF instructions

Some of the most important guidance documents you will use are produced right in your shop. Your shop NCOIC is responsible for developing MTF instructions and OIs to guide the equipment maintenance program and for ensuring they are current. MTF instructions identify MTF personnel

responsibilities in relation to the equipment maintenance mission. An MTF instruction informs medical personnel and directs the activities of the entire medical facility. Information included in a MTF instruction includes, but is not limited to the following:

- Defective equipment reporting procedures.
- Work order priority systems.
- After-hours defective equipment reporting (if appropriate).
- Incident investigations procedures and responsibilities

Each shop should also develop OIs. OIs differ from MTF instructions in that they generally are used within the BMET shop to illustrate how to accomplish tasks, or to describe internal procedures or policies. An example is an OI that identifies how technical literature is filed in the shop, and explains how to locate it. Such an OI is used for procedural guidance only by the shop BMETs. There is no limit to the number of OIs a shop can have. At a *minimum*, there should be an OI for every locally developed task or procedure.

Publications file

All of the guidance in the world is useless if you cannot access it, or it is not used. Do you use the publications in your facility to answer questions or solve problems, or do you ask your supervisor or a coworker for the answer? Most of us would answer that we ask the BMET sitting at the next bench. Sure, it is easier to ask someone than it is to look it up in a reference, but when you do that are you getting the correct information? Here are some questions to consider when your impulse is to ask your coworker:

- Is the information from the coworker the most current data or just what has been passed from BMET to BMET?
- Has a new instruction or publication changed the procedure since it was passed on to the coworker?
- Does the instruction or publication offer alternate methods of accomplishing the task that was unknown to the coworker?
- Have you become more familiar with the contents or use of the instruction or publication by asking a coworker how to do something?
- What happens when your coworker is not around?

For some things, asking a coworker is not a problem; however, there are times when the "book" is your only choice. For this reason, you should know which publications are relevant to your field and how to use them. This does *not* mean that every time you need information, you have to consult specific instructions. Coworkers are one of the best sources of information about your job, especially day-to-day functions or procedures. In short, the best procedure is to consider all sources of information, and then select the most appropriate source for the situation. Judiciously integrating information from coworkers, supervisors, the MERC, or Clinical Engineering Branch with a working knowledge of relevant publications ensures that you are ready to meet the challenge of biomedical equipment technology.

Obtaining publications

As we already mentioned, your shop should have many publications on file for your use. However, what happens if you need a publication that you do not already have? There are various ways your shop receives publications. Check AFI 41–201, the CFETP, or the Clinical Engineering Branch section of the AF Medical Logistics Website for lists of important publications. Most AF publications are available on-line at the AF E-Publishing Website, http://www.e-publishing.af.mil. The procedure

for obtaining other commercial publications varies from location to location; talk to your NCOIC or supervisor about how to obtain publications if they are needed.

014. Determining shop requirements

As you progress in rank and level of responsibility, one of the most challenging tasks you will face in your career will be ensuring that your shop has everything it needs to operate efficiently. In this section, we will briefly touch on determining requirements for manpower and equipment. We will also discuss the financial plan, in order that you may become familiar with it and identify basic facts.

Manpower

The BMET manpower allocation process (the number of BMETs assigned) is complex. A manpower requirement is the manpower needed to accomplish a job, mission, or program. It can be a funded manpower authorization or an unfunded requirement. A manpower authorization is a funded manpower position on the UMD. The UMD is a consolidated document detailing manpower authorizations by AFSC, skill level, grade, position number, and security requirement. Gaining additional manpower authorizations on your UMD or losing existing ones comes down to you being able to justify the need through workload data. The hours you document on work orders and timesheets can directly affect how your shop earns, retains, or loses its manning. Therefore, it is important to document your time on work orders and timesheets accurately.

Tools and test equipment

Each BMET must be provided with adequate hand tools and shop equipment to perform their assigned functions. In addition to each BMET's tool kit, each medical maintenance shop should have an assortment of tools to support its job requirements. These will vary from a simple tool board in a small clinic to larger machinery in a facility such as Wilford Hall Ambulatory Surgical Center.

Sometimes it may be difficult to determine what tools and equipment are necessary. In the past, BMET shops were authorized tools and equipment through a preset listing called a table of allowance (TA). Today, in the MTF, TAs are no longer used for peacetime equipment authorizations (TAs are now called allowance standards and are used for WRM authorizations). The MLFC is now the approval authority for the equipment and tools purchased by your shop. Do not abuse the system and order only what is needed to carry out the mission. The bottom line for this process is to be sure you can justify what you are ordering. Continually identify tools and test equipment, which need to be purchased for both operational enhancement and as a replacement to your inventory. Prioritize the list from the most urgent needs to the less important wants. The added benefit to developing a prioritized tool list is that if funds suddenly become available in the MTF, your shop will be ready to execute the purchase. Another consideration is safety equipment and personal protective equipment. Many types of safety equipment are available. AFIs describe safety equipment requirements for specific types of jobs and equipment. Use them to determine what equipment is required in each maintenance facility.

Budget

For the medical budget, the key is for you to be able to develop a foundation for the budgeting process and roles of essential personnel, and not to become an expert at this time. The first essential link in an MTF's fiscal management is the resource advisor, which works closely with cost center mangers (CCM) throughout the process.

Every section in the facility plays a role in the formulation of the budget. As you progress in your career, you may be appointed CCM for your section or tasked to assist with some of the functions. The MTF commander and the RA rely heavily on squadron commanders, flight commanders, superintendents, NCOICs, and others for accurate planning and projections.

Certain supplies and equipment must be available for your section to complete its mission. Your shop must follow its budget to meet its expenses and get the most from its dollars. If your shop continuously buys on a whim without proper planning, the budget will be spent too quickly,

negatively affecting mission effectiveness. For your section to make realistic budget requests, a long-range equipment program must be established and maintained. This program becomes a long-range plan for replacing existing equipment as it wears out through normal use, and programming the procurement of new equipment.

Unlike the equipment, medical materiel forecasts supplies for you. Your need for supplies is determined on what you were issued in the previous year. Of course, this does not mean that new items are unauthorized if needed.

The resource management office (RMO) is responsible for the preparation and submission of the annual budget for the entire MTF. When RMO requests a fund requirement for supplies from your shop, make sure to study your previous supply expenditures. Review the last fiscal year's supply records to see what you spent during the first quarter of the current year to determine how much you will need for supplies. Also, consider any upcoming workload or mission changes that might affect your requirements.

015. Establishing performance standards and metrics

Performance standards and metrics work hand-in-hand and have the same intent, which is to help your shop meet mission requirements and improve customer support.

Performance standards

Performance standards provide personnel with specific job performance expectations. They are observable behaviors and actions, which explain how the job is to be done. Additionally, it describes the level of proficiency expectation to which a task is to be performed. The primary purpose of performance standards is to communicate expectations. They are used as an evaluation tool to gauge how your shop is doing in completing its mission, and are goals for your shop to meet or exceed in a given time period.

General performance standard information

Performance standards should be objective, measurable, realistic, and stated clearly in writing (or otherwise recorded). The standards should be written in terms of specific measurements that will be used to appraise performance. To develop specific measurements, you first must determine the general measurements that are important for each element. General measurements used to measure personnel performance include the following:

- *Quality* addresses how well the work is performed and/or the accuracy or effectiveness of the final product. Quality refers to accuracy, appearance, usefulness, or effectiveness.
- *Quantity* addresses how much work is produced. A quantity measure can be expressed as an error rate, such as number or percentage of errors allowable per unit of work, or as a general result to be achieved. When a quality or quantity standard is set, it should be high enough to be challenging, but not so high that it is not achievable.
- *Timeliness* addresses how quickly, when or by what date the work is produced. The most common error made in setting timeliness standards is to allow no margin for error. As with other standards, timeliness standards should be set realistically in view of other performance requirements and needs of the organization.
- *Cost effectiveness* addresses dollar savings to the AF or working within a budget. Standards that address cost effectiveness should be based on specific resource levels (funds, personnel, or time) that generally can be documented and measured in your shop's annual fiscal year budgets. Cost effectiveness standards may include such aspects of performance as maintaining or reducing unit costs, reducing the time it takes to produce a product or service, or reducing waste.

For each element, decide which of these general measurements are important to overall performance by asking the following questions:

- Is quality important? Does the stakeholder or customer care how well the work is done?
- Is quantity important? Does the stakeholder or customer care how many are produced?
- Is it important the element be accomplished by a certain time or date?
- Is it important the element be done within certain cost limits?

Specific measurements

Once you have decided which general measurements are important, you can develop specific measurements. These specific measures will be included in the standard. To develop specific measures for each element, you must determine how you would measure the quantity, quality, timeliness, and/or cost effectiveness of the element. If it can be measured with numbers, clearly define those numbers. If performance is best measured through a description (observed and verified), clarify the member that is the best judge to appraise the work and what factors they will use to assess the performance. The first-line supervisor or customer is often the best person to judge performance.

The following questions may help you determine specific measurements. For each general measurement, ask these questions:

- How could quality, quantity, timeliness, and/or cost effectiveness be measured?
- Is there some number or percent that could be tracked?

If there is no number, and the element can only be judged, ask these questions:

- Who could judge that the element was done well?
- What factors would they look for to verify performance?

For example, your shop supervisor may determine that the scheduled work order completion rate for each month should be 95 percent. If the completion rate falls below the standard of 95 percent, and it is a one-time occurrence, it could be viewed as an anomaly and attributed to various factors. However, if it begins to happen on a regular basis, it indicates that there is a negative trend and requires further investigation.

Any number of scenarios could cause this type of negative trend to happen. There may be internal factors in your shop causing the poor work order completion rate, such as personnel not properly managing their time, a training gap that is causing too much time to complete work orders, or not enough BMETs assigned to the scheduled workload. There could also be external factors outside your shop causing the negative trend, such as a lack of cooperation from MTF sections or a delay in receiving required materiel (e.g., tools, parts, etc.). No matter what the cause, the performance standard revealed the negative trend, allowing for correction.

Another measurable performance standard is customer satisfaction. Your shop may send out random, periodic surveys to various supported sections throughout the MTF, with an established performance standard being that 90 percent of customers are satisfied with the service provided. If that standard begins to drop, this could indicate a negative trend in shop management and may warrant further investigation. Numerous factors could contribute to this trend. Although the negative trend does not reveal the exact problem, it alerts shop supervision that something is negatively affecting the section and deserves attention.

Metrics

Metrics are measurements taken for a time period that helps communicate information about the performance of processes within your shop. As you look around your shop, you may notice various charts or graphs posted on a bulletin board or a video monitor showing things such as work order completion percentages or equipment repair times. These graphs are metrics and they display how well your shop is performing. Figure 2–17 is an example of a work order metric.

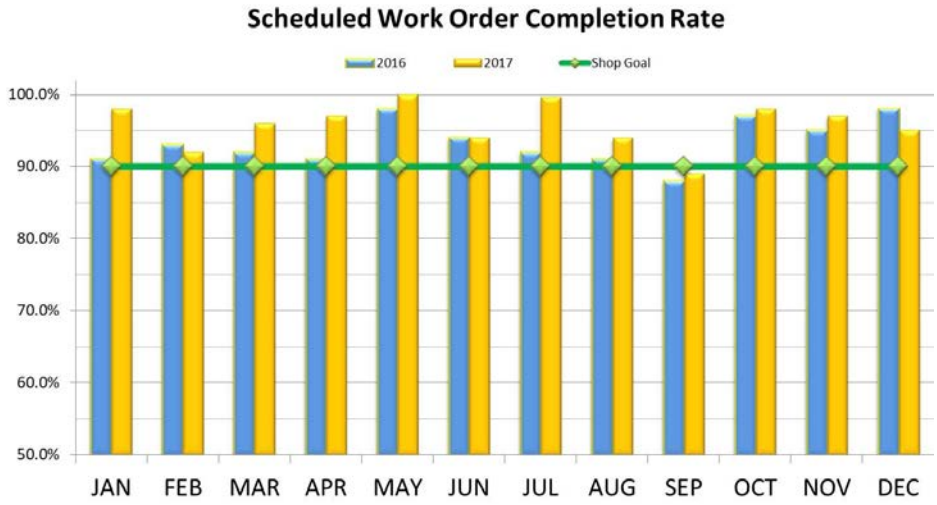

Figure 2–17. Sample work order metric.

Metrics offer meaningful measurements that help supervisors make managerial decisions for your shop. Metrics often show your shop's performance compared against a set performance standard. For example, figure 2–17 shows a shop's work order completion rate compared against a 90 percent completion performance standard and includes the prior year's completion rate to help identify any possible trends. A quick analysis of the metric reveals that on average, the shop is performing better than it did the previous calendar year, but shows that for both years the shop missed its goal for the month of September. This will alert shop supervision to investigate why the shop is coming up short for the month of September and make any necessary adjustments.

Let's say that a metric for scheduled work order completion rates is beginning to show a trend of more scheduled work orders open at the end of the month. In this case, your shop supervisors could use this data as justification to put more BMETs on scheduled work orders and less on unscheduled work orders. Of course, this is simplified, but the main thing to remember is that metrics should offer some meaningful information to help your shop perform better and show how well you are serving your customers (the rest of the MTF).

Lastly, we will discuss are some guidelines on developing a good metric. The following are some characteristics of a good metric:

- Meaningful to your shop and customer.
- Simple and easy to understand.
- Clearly defined.
- Timely.
- Shows a trend.
- Drives appropriate action.

You may be asked to develop metrics or performance standards in the future; you now have a good starting point to reference the requirements for establishing both.

016. Planning work priorities and assignments

Effectively planning your shop's work priorities and assignments requires proactive, deliberate actions. There are many factors affecting both. There is not a "one size fits all" solution for either of them. We will now cover some information to provide you with a foundation to help plan your shop's work priorities and assignments.

Work order priority system

Anytime there is more than one task to accomplish, you need a way to decide which task should be done first. BMETs often have many tasks that must be prioritized, and for this reason, it is important that each shop have a system for prioritizing maintenance actions. Once a system is selected, it should be documented in an OI for in-shop use. It should be briefed to all equipment custodians and members of the MTF staff that handle medical equipment. The priority system may also be included in medical group instructions.

Your shop's work order priority system must consider the following factors:

1. Criticality of the equipment.
2. Cost of downtime.
3. Scheduled maintenance.
4. Age of a work order.

Criticality of the equipment

Medical devices such as life support equipment (ventilators), emergency care equipment (defibrillators), or one-of-a-kind equipment items require a high priority.

Cost of downtime

It is important to consider the impact of patient referrals and rescheduling. Many sections within the MTF have redundant or backup systems. If a malfunction can be worked around by using a backup unit temporarily, the situation is not as critical, the priority is lower than when there is no backup, and the outage causes a total work stoppage in the section. Patient referrals are costly for the MTF and can get extremely expensive if a critical piece of equipment goes down for an extended time.

Scheduled maintenance

Scheduled maintenance requirements also factor into a priority system. Since scheduled maintenance uses risk-based management as previously discussed, you should consider the equipment and the frequency of the scheduled maintenance. Generally, the more critical the equipment, the more frequent the scheduled inspections and/or maintenance are. Thus, the more frequently scheduled inspections or maintenance (i.e., quarterly) will have a higher priority than the less frequently scheduled ones (i.e., annually).

The age of a work order

While this may be a less critical element, the age of the work order is still an important consideration in prioritizing decisions. For example, a work order with a low priority the day it was opened may have an increased urgency if it is still open several weeks later. When conditions warrant, place a higher priority on completing old work before new work is started.

Work assignments

Work orders may be assigned to teams and/or to individual technicians. The assignment process depends on the size of the maintenance staff and other locally determined requirements. There are several ways to organize a maintenance program, and it varies depending on the facility's mission, manning, workload, and the skills of the BMETs assigned. We will discuss three common methods used to plan work assignments: category of work, duty section, and equipment type. There is not one "perfect" way of doing it. You will need to reassess your shop's organization as your mission, equipment inventory, and personnel changes.

Category of work

The most popular way to organize a shop is by the category of work: scheduled and unscheduled. Personnel are assigned to teams and each team would be responsible for all work orders in their particular category throughout the MTF.

Duty section

A second method of shop organization is to arrange the workload by sections. Establish teams for areas of the MTF by function and/or physical location. Each one would be responsible for all scheduled and unscheduled work orders for those particular duty sections. A sample would be as follows:

- Team 1–clinics, X-ray, lab.
- Team 2–surgery, ICU, wards.
- Team 3–dental, bioenvironmental engineering (BE), outside activities.

Equipment type

In a large MTF, another possible shop organization technique is to group equipment types together. Each team would be responsible for all scheduled and unscheduled work orders for the particular equipment. An example of the teams would be the following:

- Radiology.
- Laboratory.
- Dental.
- Infusion pump, defibrillator.
- Patient monitor.

It is more efficient to complete multiple work orders on like equipment at the same time. For example, it is better to calibrate multiple defibrillators at the same time instead of only one or two every month. It can take a lot of time to locate the equipment, get the literature, test equipment, and test setups together for a calibration each time. This wastes a lot of time. In order to maintain skills, it is best to group like items together several times per year and not everything all at once. This maintains a balance between maintaining skills and working smart.

Before assigning work orders to a technician or team, the maintenance manager has the ability to review the technician's workload. The maintenance manager can then reassign work orders based upon the number of work orders already assigned and estimated hours to complete assigned work.

017. Workload management

Workload management is the process of strategically distributing work amongst personnel in order to maximize mission effectiveness. BMET supervisors must be able to manage work priorities with the technicians assigned to the maintenance activity. There are four areas to focus on for workload management: technician role ambiguity and conflict, redundant processes, scheduling, and adequate training for staff.

Focus Area	Description
Technician role ambiguity/conflict	Ensure all technicians clearly know their roles and responsibilities and how it relates to the established shop priorities. Management must ensure that their decisions for personnel or operations do not counter the established roles and shop priorities in order to avoid the conflict. This will ensure technicians focus on task completion from most to least importance.
Redundant processes	Eliminate any redundant processes from all operations. Redundancies take time away from personnel. Technicians directly involved with a process are the best sources to identify any redundancies.
Task scheduling	Tasks that can be controlled (scheduled maintenance) should be scheduled strategically to optimize the ability to complete. This should take in to account the amount of technicians available, the supported work section's schedule, and resource availability.

Focus Area	Description
Adequate staff training	It is imperative that BMETs are trained adequately for the equipment the maintenance activity is responsible to maintain. Shops must avoid having single-point-of-failure technicians. It would be difficult to manage workload if you only have one person in shop who can repair sterilizers or anesthesia.

You need information to determine and balance your workload. DMLSS makes it easy to view and align maintenance schedules. This can be done with an overall picture of the entire workload and narrowed down to individual equipment.

Summary scheduled workload

To get a snapshot of your shop's overall workload go to: Navigate > Schedules > Summary Workload Forecasting. From there, you can select a variety of search criteria. To get a view of the "big picture," just hit SEARCH. Once the report appears, select the Number of Work Orders tab to see how the work orders are distributed for each account over the entire year. Figure 2–18 shows how the number of work orders is distributed for each account over the entire year.

Customer	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Total
106TH SIG BDE	0	0	0	0	0	0	4	0	0	0	0	0	4
12 MSG/TF (RAFB)	4	0	0	0	0	0	0	0	0	0	0	0	4
12 SERVICES (RAFB)	0	6	0	0	0	0	0	0	0	0	0	0	6
12FTW/MXIAA (RAFB)	0	0	2	0	0	0	0	0	4	0	0	0	6
147TH USAF CL HOUSTON	0	0	0	0	0	0	0	0	0	0	0	1	1
149TH MED SQ. KELLY AF	0	3	0	0	0	0	0	5	0	0	2	0	10
24 AF/CC	0	0	0	0	0	0	0	2	0	0	0	0	2
300111-AIRMAN HERITAGE	0	0	0	1	0	0	0	0	4	0	0	0	5
341 TRS	0	0	0	0	0	0	0	0	0	1	0	0	1
342 TRS/CTFS	0	0	0	1	0	0	0	0	0	2	0	0	3
344 TRS/MTF	0	0	0	0	0	0	0	0	0	2	0	0	2
350TH BA TS	13	0	1	0	0	0	1	0	0	0	0	0	15
37 TRW CHAPEL PROGRA	3	0	0	0	0	0	0	0	0	0	0	0	3
37CES/CERF MIRIAM 3\29	0	0	1	0	0	0	0	0	0	0	0	0	1
37TRSS/DORP 37TRNG/M	0	3	0	0	0	0	0	0	0	0	0	0	3
3H5892 - ALRT/ECMO	7	1	1	0	13	0	3	0	5	0	8	0	38
433 AEROMED STAG SQ 5	0	0	0	0	0	0	0	4	0	0	0	0	4
433 AEROSPACE MEDICIN	0	4	1	0	0	0	0	38	0	0	0	0	43
433 AEROVAC SQ. 5-4267/	0	3	0	4	0	0	0	25	0	4	0	0	36
433 MEDICAL SQUADRON	0	0	1	1	0	0	0	3	0	0	0	0	5

Figure 2–18. Summary scheduled workload numbers.

The Graph tab will show you how many scheduled work orders you have each month after you select the NUMBER OF WORK ORDERS radio button, then Show Graph. Figure 2–19 shows a graph of the workload over the entire year. It is good to use this feature to lighten up the workload on the months that are popular for personnel downtime (leave, holidays, etc.). Another month you might want to consider is the month that your MERC team visits. That way you and your technicians can dedicate time to the visit. The training that you can receive from the MERC team can be invaluable.

Detailed scheduled workload

To view your shop's workload showing each piece of equipment, go to Navigate > Schedules > Detailed Workload Forecasting. From there, you can select a variety of search criteria. Select the ones that best fits your needs. The most useful would be by customer and device class and/or nomenclature. This is the most efficient way to view and align your shop's scheduled workload. Let's look at one particular example. Your facility has a large number of thermometers. Your technicians spend a lot of time searching for these thermometers every month. Figure 2–20 is an example of a report for thermometers. As you can see, the workload is scattered all over the report. You have decided as a labor savings, it would be more efficient to do them all in the same month. The calibration dates can be aligned easily by grabbing the letter (C), and dragging and dropping it on another month. One caution: DMLSS will allow you to drop it farther in the future than the

recommended maintenance schedule, but this is not recommended because you would exceed the standards established by AFI 41–201. Instead, it is better to move it to a closer month.

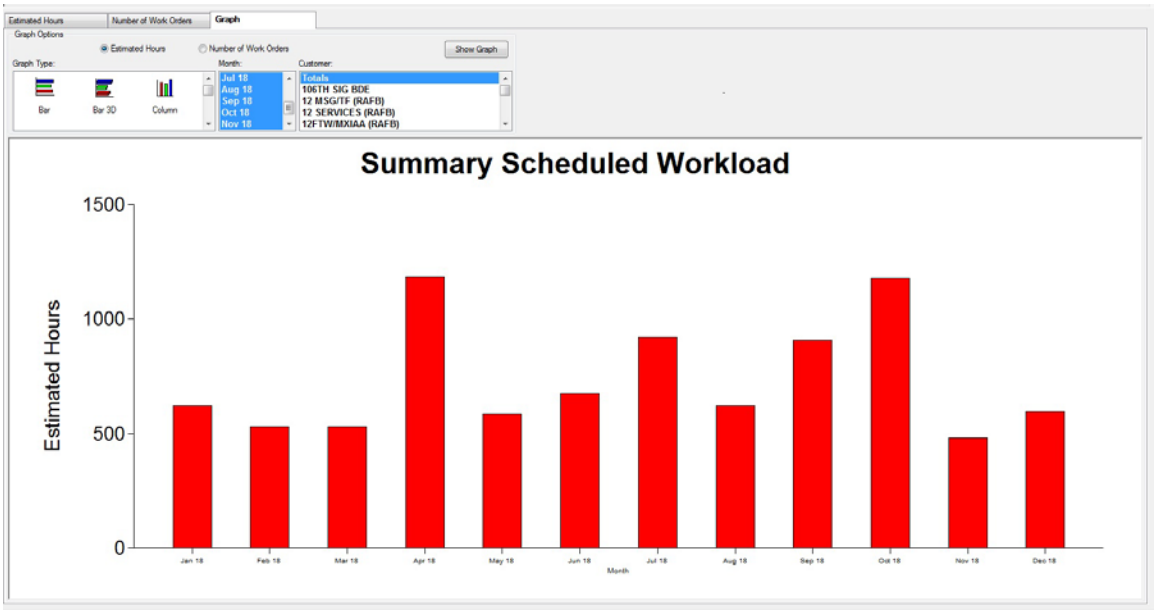

Figure 2–19. Summary schedule workload graph.

106TH SIG BDE

Nomenclature	SF	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Total
DEFIBRILLATOR, PUBL	C							I						0.5
DEFIBRILLATOR, PUBL	C							I						0.5
DEFIBRILLATOR, PUBL	C							I						0.5
DEFIBRILLATOR, PUBL	C							I						0.5
Est. Sched. Hours:		0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0

12 MSG/TF (RAFB)

Nomenclature	SF	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Total
DEFIBRILLATOR, PUBL	C	I												0.5
DEFIBRILLATOR, PUBL	C	I												0.5
DEFIBRILLATOR, PUBL	C	I												0.5
DEFIBRILLATOR, PUBL	C	I												0.5
Est. Sched. Hours:		2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0

12 SERVICES (RAFB)

Nomenclature	SF	Jan 18	Feb 18	Mar 18	Apr 18	May 18	Jun 18	Jul 18	Aug 18	Sep 18	Oct 18	Nov 18	Dec 18	Total
DEFIBRILLATOR, PUBL	C		I											0.5
DEFIBRILLATOR, PUBL	C		I											0.5
DEFIBRILLATOR, PUBL	C		I											0.5
DEFIBRILLATOR, PUBL	C		I											0.5
DEFIBRILLATOR, PUBL	C		I											0.5
DEFIBRILLATOR, PUBL	C		I											0.5
Est. Sched. Hours:		0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0

Figure 2–20. Detailed scheduled workload.

This report uses four letters (I, P, C, and S) that correspond as follows:

- I – Inspection.
- P – Preventive maintenance.
- C – Calibration.
- S – Scheduled parts replacement.

I and C only appear on this report because this particular equipment requires inspection and calibration according to the maintenance plan. The detailed scheduled workload report should be reviewed several times a year to catch items that have been knocked out of cycle for whatever reason. To keep your shop at peak efficiency, those items need to be identified and corrected.

Unscheduled maintenance

It is easy to organize and plan your scheduled workload to best suit your mission, however, when it comes to unscheduled maintenance, it is not so easy. It is understood that it is impossible to plan emergencies. One thing that you can do to help with unscheduled work orders is to have a priority system and active status review plan. This is especially important when it comes to equipment that is awaiting parts. It is very easy for awaiting parts work orders to fall between the cracks if you are not keeping an eye on them.

Reports

Two reports that assist you in managing your workload are the work order management summary and workload report.

Work order management summary

This is a standard report produced monthly in three formats: maintenance activity, team, and technician. The work order management summary provides summary data of all work orders that have been created, and displays the totals completed and the status of any work orders remaining open. The report provides a view of the work order production and performance of the maintenance activity, teams, and technicians to the maintenance manager. They each show a 12-month trend. They are archived in DMLSS for 24 months. Figure 2–21 is an example of the report.

Date Prepared: 28NOV2017 As Of: 31OCT2017

DEFENSE MEDICAL LOGISTICS STANDARD SUPPORT
WORK ORDER MANAGEMENT SUMMARY

12 Month Trend (October 2016 - October 2017)

	Oct 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	May 17	Jun 17	Jul 17	Aug 17	Sep 17	Oct 17	Avg.	Total
BEGINNING BALANCE	26	34	21	25	31	38	31	26	17	29	18	23	27	27	
UNSCHEDULED	25	31	21	25	31	28	31	26	17	29	18	23	27	26	
SCHEDULED	1	3	0	0	0	10	0	0	0	0	0	0	0	1	
EST. SCHEDULED HRS.	1.1	3.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	
NEW WORK ORDERS	368	256	231	512	361	277	215	393	229	264	387	302	364	320	4,159
UNSCHEDULED	104	93	117	86	61	99	51	109	84	36	49	120	105	86	1,114
SCHEDULED	264	163	114	426	300	178	164	284	145	228	338	182	259	234	3,045
EST. SCHEDULED HRS.	214.6	172.3	128.1	149.3	233.5	86.2	127.3	274.5	121.5	180.2	348.5	183.3	191.3	185.4	2,410.6
RE-OPENED WORK ORDERS	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
UNSCHEDULED	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
SCHEDULED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EST. SCHEDULED HRS.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL WORKLOAD	394	290	252	537	393	315	246	419	246	293	405	325	391	347	
UNSCHEDULED	129	124	138	111	93	127	82	135	101	65	67	143	132	111	
SCHEDULED	265	166	114	426	300	188	164	284	145	228	338	182	259	235	
EST. SCHEDULED HRS.	215.7	175.6	128.1	149.3	233.5	86.2	127.3	274.5	121.5	180.2	348.5	183.3	191.3	185.8	
COMPLETED	342	269	227	504	355	284	220	402	217	275	382	298	346	317	4,121
UNSCHEDULED	80	103	113	78	65	96	56	118	72	47	44	116	87	83	1,075
UNSCHEDULED HOURS	270.7	254.5	153.0	189.2	170.0	268.5	184.4	299.5	205.0	276.0	97.6	269.7	397.5	233.5	3,035.6
SCHEDULED	262	166	114	426	290	188	164	284	145	228	338	182	259	234	3,046
EST. SCHEDULED HOURS	212.4	175.6	128.1	149.3	233.5	86.2	127.3	274.5	121.5	180.2	348.5	183.3	191.3	185.5	2,411.7
ACTUAL SCHEDULED HOURS	380.0	274.2	205.0	536.5	352.1	309.5	310.0	378.2	228.5	356.5	442.4	233.1	441.2	342.1	4,447.2
CANCELED	18	0	0	2	0	0	0	0	0	0	0	0	4	2	24
OUTSTANDING	34	21	25	31	38	31	26	17	29	18	23	27	41	28	
UNSCHEDULED	31	21	25	31	28	31	26	17	29	18	23	27	41	27	
UNASSIGNED	0	0	0	0	0	2	0	0	0	0	1	0	0	0	
UNASSIGNED-DELAYED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ASSIGNED	0	0	0	4	0	0	0	0	1	0	8	0	1	1	
ASSIGNED-DELAY	5	0	0	1	0	1	2	2	10	0	2	0	1	2	
AWAITING DELIVERY	2	0	0	6	0	1	1	0	0	1	0	0	0	1	
AWAITING PARTS	15	7	7	9	15	12	9	7	4	10	4	5	14	9	
PARTS ISSUED	0	6	6	3	0	0	0	0	1	0	0	0	2	1	
WORK IN PROGRESS	4	0	0	0	0	2	3	1	1	4	3	14	15	4	
WORK ON HOLD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TRANSFERRED TO SUPPORT MA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
RETURN TO CONTRACTOR FOR SERVICE	4	3	8	6	9	7	8	4	10	2	5	7	6	6	
PENDING CONTRACTOR SERVICE ON SITE	1	5	4	2	4	6	3	3	2	1	0	1	2	3	
WAIVER REQUESTED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
UNABLE TO LOCATE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
EST. SCHEDULED HRS.	3.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.3	
UNASSIGNED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ASSIGNED	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
UNABLE TO LOCATE	2	0	0	0	10	0	0	0	0	0	0	0	0	1	

Figure 2–21. Work order management summary – maintenance activity.

Workload report

The workload report shows the number and status of open unscheduled work orders, the number of open scheduled work orders, and the estimated hours required to complete the scheduled work orders. In addition, this report shows the number of open unscheduled and scheduled work orders that fall within the following three ranges: 31–60 days, 61–90 days, and >90 days. The maintenance manager uses this report to administer the maintenance workload during the month. It is generated as a standard report after the scheduled maintenance work orders have been created at the beginning of each month. The report displays open work orders in rows by work order category and work order status. Scheduled work orders will be displayed by Unassigned, Assigned, and Unable to Locate. In addition, the program will show the periods of time the work orders have been open. It is archived in DMLSS for one month. Figure 2–22 is an example of the report.

Date Prepared: 28NOV2017 As Of: 28NOV2017

DEFENSE MEDICAL LOGISTICS STANDARD SUPPORT
WORKLOAD REPORT

(November 1, 2017 - November 28, 2017)

OPEN WORK ORDERS			
UNSCHEDULED		**SCHEDULED**	
Unassigned	0	Unassigned	0
Unassigned - Delay	0	Unassigned - Delay	0
Assigned	1	Assigned	6
Assigned - Delay	2	Assigned - Delay	0
Awaiting Delivery	0	Awaiting Delivery	0
Awaiting Parts	11	Awaiting Parts	0
Part(s) Issued	0	Part(s) Issued	0
Work in Progress	13	Work in Progress	0
Work On Hold	0	Work On Hold	0
Transferred to Support MA	0	Transferred to Support MA	0
Returned to Contractor for Service	3	Returned to Contractor for Service	0
Pending Contractor Service On Site	4	Pending Contractor Service On Site	0
Waiver Requested	0	Waiver Requested	0
Unable to Locate	0	Unable to Locate	1
TOTAL	**34**	**TOTAL**	**7**
Open 31-60 Days:	5	Open 31-60 Days:	0
Open 61-90 Days:	6	Open 61-90 Days:	0
Open >90 Days:	0	Open >90 Days:	0
		Est. Scheduled Hours:	7.7

Figure 2–22. Workload report.

Workload report (inquiry)

The workload report inquiry is identical to the workload report, except it can be requested anytime during the month to view the real-time data. Use this to ensure your shop is meeting its goals and milestones throughout the month.

Self-Test Questions

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

013. Publication management

1. What serves as the contract between the CFM, schoolhouse, and the AFCDA?

2. Which publication provides policy and guidance for all aspects of the AF biomedical equipment maintenance program and facility management?

3. How often should you check the AF Medical Logistics Website?

4. What is the difference between an OI and an MTF instruction?

5. Where can you locate most AFIs and AF publications?

014. Determining shop requirements

1. What is a manpower requirement?

2. What information can be found on the UMD?

3. Who is the approval authority for tools and equipment purchased by BMETs?

4. Why is it a good idea to maintain a prioritized list of tools and equipment needed?

5. What action should you take if RMO requests a fund requirement for your shop?

015. Establishing performance standards and metrics

1. What is the intent of performance standards and metrics?

2. How are performance standards used?

3. List the general measurements used to measure personnel performance.

4. Who is often the best to judge if performance is best measured by observation?

5. List some internal and external factors that could affect performance.

6. What information do metrics show?

7. List the characteristics of a good metric.

016. Planning work priorities and assignments

1. After selecting a work priority system what must be done?

2. List the four factors considered in a work priority system.

3. Why is cost of down time considered in a work priority system?

4. What is the most popular way to organize a shop? How does it work?

017. Workload management

1. Explain how adequate staff training can affect workload management.

2. What is the most efficient way to view and align your shop's scheduled workload?

3. When aligning the scheduled workload, why is it important to adjust to a closer month instead of a further one?

4. What two reports can use to assist you with managing workload?

Answers to Self-Test Questions

009

1. AM, CAIM, EM, FM, MA, and SS.
2. To maintain custodial and fiscal accountability, and visibility of equipment assets in the MTF.
3. MA and CAIM.

4. The MA inbox provides important information about actions requiring follow-up (pending actions). It also provides the ability to immediately view and resolve issues, which prevents potential problems from developing or expanding.
5. Advisory messages are marked with a "No" in the Action Required field; the user simply reads the message and then deletes it.

010

1. 201907210015.
2. When medical equipment is in long-term storage (non-WRM equipment) or if primary parts of the system are out for repair and the unit is not functional.
3. On the MA navigate menu, 1. Scroll over Work Orders; 2. Click New Work Order; 3.Type an ECN. If ECN is not known, click the JUMP TO button and conduct an equipment record search. If unsure of the correct ECN, type in a nomenclature, then select an organization and customer from the dropdown list; 4. Use the default in the required fields or select a work order from the dropdown list; 5. Type the work order information in each required field; 6. Click SAVE. Now the remaining tabs on the window will now be available.
4. Completed work orders have been completed but not affected yet by two end of month DMLSS processes; inactive work orders have been completed for more than two end of month processes. You can reopen a work order in completed status, but you cannot reopen an inactive work order.
5. Any five of the following: (1) ECN, work order number (or a range of work order numbers), (2) completion date (or a range of completion dates), (3) device class name, (4) equipment nomenclature, (5) equipment manufacturer, (6) organization name, (7) customer name, (8) technician name, (9) service type, (10) work order category, (11) work order priority, (12) work order status text, (13) team name, (14) contractor name, or (15) other government agency.
6. The work sheet is intended for use with scheduled work orders. It eliminates most of the details of a regular work order and allows BMETs to complete multiple scheduled work orders on a single sheet, saving paper by eliminating the need to print individual work orders.
7. Technician name, service type, and service time.
8. AFMAN 41–216, Chapter 11, *Service Contracts (SC).*
9. It was created in error or it is a duplicate.
10. Click ADD, and type the reason in the Add Canceled Reason window.
11. AF Form 1763.
12. Have personnel picking up the repaired equipment sign and date the Accepted As Serviceable By blocks on the AF Form 1763.

011

1. Verify the accuracy of all DMLSS data entries (model, manufacturer, serial number, etc.). A comparison of the information in DMLSS with the equipment’s data plate during any maintenance procedure will identify any incorrect equipment identification data.
2. A standardized inspection process and a set frequency.
3. Completeness, accuracy, consistency, and validity.
4. Go to Equipment Search and enter criteria, select one or more records and click PRINT icon, and select HMR from the print window.
5. Approval, purchase, warranty, and acquisition information. This tab provides some historical reference on the procurement process and installation of the item.
6. When viewing equipment records that has been identified as a system type.
7. Associate the equipment record(s) to a property custodian.
8. The Assembly function consolidates multiple ECNs into a single ECN and the Disassembly function separates a single ECN into multiple equipment records (ECNs).
9. Manufacturer, nameplate model, and serial number.

10. It evaluates and prioritizes the types of equipment to be included in the scheduled maintenance inventory. The purpose is to minimize recurring scheduled maintenance on equipment that does not pose a safety or reliability risk.
11. ECRI's UMDC number and UMDNS.
12. The name that is typically what you see across the front case of an item.
13. It indicates if the item is to be included in accountable records; and determines if a record is searchable in the EM module.
14. Equipment without a maintenance activity report, equipment without a maintenance plan report, and maintenance interval without a date due report.
15. It will not populate scheduled or unscheduled work orders in the MA inbox.
16. The equipment will not produce any scheduled work orders.

012

1. Each medical maintenance activity will maintain a technical reference file on each item of medical equipment including operating and service literature. If using web-based manuals, include the web address in the Literature Location field in DMLSS. The method and sequence used for filing the literature is established locally, but must be traceable to the common model in DMLSS.
2. BMETs must establish and maintain a separate EDF on each maintenance significant equipment item or system including equipment rentals and equipment provided as part of a reagent or supply contract.
3. Pre-procurement information (surveys, room drawings, and power supply evaluations); procurement documentation; warranty registration; any maintenance worksheets/checklists not in DMLSS, including acceptance, calibration, inspection, electrical safety, and those accomplished by the MERC during annual visits; all work orders not captured in DMLSS (manual, depot, or contract); recalls and hazard alerts; modifications, a copy of the work order with information of the modification; radiation survey letter (letter from qualified Regional Medical Physicist that either evaluates the acceptability of existing shielding or calculates the required shielding for the proposed installation); entrance skin exposure calculations for X-ray systems provided by the Regional Medical Physicist; copy of FDA Form 2579, Report of Assembly of a Diagnostic X-Ray System; copies (or location) of purchase, lease or rental agreement, one-time repair(s), and annual maintenance contract(s).
4. It is sent with the equipment to the new owner.

013

1. 4A2X1 CFETP.
2. AFI 41–201.
3. At least once per month.
4. OIs differ from MTF instructions in that they generally are used within the BMET shop to illustrate how to accomplish tasks, or to describe internal procedures or policies.
5. AF E-Publishing Website.

014

1. The manpower needed to accomplish a job, mission, or program.
2. A consolidated document detailing manpower authorizations by AFSC, skill level, grade, position number, and security requirement.
3. MLFC.
4. If funds become available in the MTF, your shop will be ready to execute the purchase.
5. Review the last fiscal year's supply records to see what you spent during the first quarter of the current year to determine how much you will need for supplies. Also, consider any upcoming workload or mission changes that might affect your requirements.

015

1. To help your shop meet mission requirements and improve customer support.
2. As an evaluation tool to gauge how your shop is doing in completing its mission, and are goals for your shop to meet or exceed in a given time period.

3. Quality, quantity, timeliness, and cost effectiveness.
4. First-line supervisor or customer.
5. Internal include as personnel not properly managing their time, a training gap that is causing too much time to complete work orders, or not enough BMETs assigned to the scheduled workload. External include a lack of cooperation from MTF sections or a delay in receiving required materiel (tools, parts, etc.).
6. Shop's performance compared against a set performance standard.
7. Meaningful to shop and customer, simple and easy to understand, clearly defined, timely, shows a trend, and drives appropriate action.

016

1. Once a system is selected, it should be documented in an OI for in-shop use, briefed to all equipment custodians and members of the MTF staff that handle medical equipment, and may need to be included in medical group instructions.
2. (1) Criticality of the equipment; (2) cost of downtime; (3) scheduled maintenance; and (4) age of a work order.
3. The availability of a backup unit can lower or raise the priority level. Patient referrals are expensive for an MTF.
4. Category of work. Personnel are assigned to teams and are divided by scheduled and unscheduled.

017

1. Shops must avoid having single-point-of-failure technicians because it would be difficult to manage workload and strategically place personnel if you only have one person in the shop who can repair a certain type of equipment.
2. Detailed Workload Forecasting. To view your shop's workload showing each piece of equipment, go to: Navigate > Schedules > Detailed Workload Forecasting. From there you can easily view and adjust workload.
3. DMLSS allows you to drop the icon farther in the future than the recommended maintenance schedule, but this is not recommended because it would exceed the standards established by AFI 41–201. This is why it is better to move it to a closer month.
4. Work order management summary and workload report.

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

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter.

Do not return your answer sheet to AFCDA.

27. (009) Which section uses the Defense Medical Logistics Standard Support (DMLSS) system equipment records to maintain custodial and fiscal accountability of all assets in the military treatment facility (MTF)?
    a. Command.
    b. Facility management.
    c. Medical maintenance.
    d. Medical equipment management office.

28. (009) Which Defense Medical Logistics Standard Support (DMLSS) modules are used to manage repair parts inventory?
    a. Assemblage Management (AM) and Equipment Management (EM).
    b. Maintenance Activity/Equipment Maintenance (MA) and EM.
    c. AM and Customer Area Inventory Management (CAIM).
    d. CAIM and MA.

29. (010) Which Defense Medical Logistics Standard Support (DMLSS) data entry plays a vital role in justifying the need to replace equipment?
    a. Labor cost.
    b. Service time.
    c. Maintenance assessment.
    d. Accumulated down time.

30. (010) After completing a work order in the Defense Medical Logistics Standard Support (DMLSS), which tab would you select to view the status of the work order?
    a. Summary.
    b. Work Order.
    c. Work by Other.
    d. Work by Technician.

31. (010) When completing manual work order documentation on AF Form 1763 and Defense Medical Logistics Standard Support (DMLSS) is not available, where are you required to transfer the maintenance information?
    a. AF Form 509.
    b. AF Form 601.
    c. AF Form 979.
    d. AF Form 1429.

32. (011) The easiest way to find the equipment detail record for an item is to perform a search using the equipment
    a. control number.
    b. nomenclature.
    c. manufacturer.
    d. common model.

33. (011) How often should you generate a maintenance interval without a date due report?
    a. Monthly.
    b. Quarterly.
    c. Semi-annually.
    d. Annually.

34. (012) Your shop's technical reference file must be traceable to the Defense Medical Logistics Standard Support (DMLSS) equipment
    a. nomenclature.
    b. common model.
    c. location.
    d. control number.

35. (013) Which agency has the authority to regulate medical devices and all electronic products that emit radiation?
    a. Association for the Advancement of Medical Instrumentation (AAMI).
    b. The US Food & Drug Administration (FDA).
    c. National Fire Protection Agency® (NFPA®).
    d. ECRI Institute.

36. (014) What directly affects how your shop earns, retains, or loses its manning?
    a. Work order hours documented.
    b. Amount of equipment on record.
    c. Size of the military treatment facility (MTF).
    d. Capabilities of the MTF.

37. (014) Who is your shop's approval authority for purchasing equipment and tools?
    a. Your noncommissioned officer in charge (NCOIC).
    b. Medical logistics flight commander (MLFC).
    c. Medical support squadron commander.
    d. Facility manager.

38. (015) What is the *primary* purpose of performance standards?
    a. Communicate expectations.
    b. Identify potential problems.
    c. Rate personnel.
    d. Motivate personnel.

39. (015) In regards to performance standards, which element addresses how quick the work is produced?
    a. Timeliness.
    b. Quantity.
    c. Quality.
    d. Cost effectiveness.

40. (015) Which consists of measurements taken for a time period that indicate task performance?
    a. Performance ratings.
    b. Performance standards.
    c. Performance targets.
    d. Metrics.

41. (016) All are considerations when prioritizing work orders for completion, *except*
    a. cost of downtime.
    b. equipment cost.
    c. age of the work order.
    d. criticality of equipment.

42. (016) Which work order prioritization factor would apply for a defibrillator broken in the emergency room?
    a. Cost of downtime.
    b. Equipment cost.
    c. Age of the work order.
    d. Criticality of equipment.

43. (016) All are considerations when organizing a maintenance program, *except*
    a. mission.
    b. manning.
    c. skills of personnel.
    d. size of the facility.

44. (017) In which Defense Medical Logistics Standard Support (DMLSS) tool can you realign scheduled maintenance schedules by dragging and dropping icons into designated months?
    a. Workload report.
    b. Detailed scheduled workload report.
    c. Customer scheduled services listing.
    d. Summary scheduled workload report.

Please read the unit menu for unit 3 and continue ➔

Student Notes

Unit 3. Air Force Equipment Management Program

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018. Equipment accountability and responsibilities 3–1
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023. Recommending equipment replacement 3–24
024. Performing equipment disposition 3–25

THE MEDICAL MATERIEL SYSTEM covers a wide range of functions from ordering a $2 o-ring seal to turning in a $1,000,000 X-ray system. You will be heavily involved with the medical materiel system as it pertains to medical equipment and parts, so it is important that you become proficient with these associated functions. In this unit, we will cover some medical materiel functions and medical equipment life cycle management.

3–1. Medical Materiel Functions

Medical logistics provides materiel (e.g., equipment, supplies and pharmaceuticals) and services support to using activities with an economical investment in inventory. They establish an effective medical equipment management program and advise customers, commanders, and administrators on all logistics matters that affect MTF operations. This unit provides information on equipment accountability and responsibilities of key personnel, and covers your duties associated with managing repair parts and the life cycle of equipment.

018. Equipment accountability and responsibilities

It is important to note that all personnel are responsible for safeguarding AF property and may have pecuniary liability for the negligent loss or destruction of such property in accordance with AFI 23–111, *Management of Government Property in Possession of the Air Force*. Management of property issued to ANG personnel must comply with 32 CFR, United States Code (USC), Sections 702, 703, 708, and 710, too.

Accountable equipment

To manage assets properly you must know which equipment requires accountable tracking. The following categories of medical equipment are accounted on MEMO records:

- All medical equipment that meets the DOD threshold for accountable equipment defined in DOD instruction (DODI) 5000.64, *Accountability and Management of DOD Equipment and Other Accountable Property*.
- Nonexpendable equipment, which is not consumed nor loses its identity during periods of use, and normally is capable of performing a function independently.
- All equipment with predefined scheduled maintenance intervals specified in the device code.
- All non-implantable equipment that is subject to tracking under the FDA Modernization Act.
- All major components of a system, which are defined as a part or element of a system that cannot operate independently and must work with all other intended components of that system. Components will be related to the end item (major component of the system) in DMLSS and have an acquisition cost of $0.01 entered in accordance with AFI 41–209.

- At the discretion of the MLFC or the MTF commander, any item may be maintained on accountable records.

Use AF Form 601, Equipment Action Request, to transfer accountability of equipment (fig. 3–1). Each duty section has a property custodian who is responsible for the section's equipment. The property custodian must fill out, sign the AF Form 601 for actions affecting equipment on their inventory, and turn it into MEMO for processing.

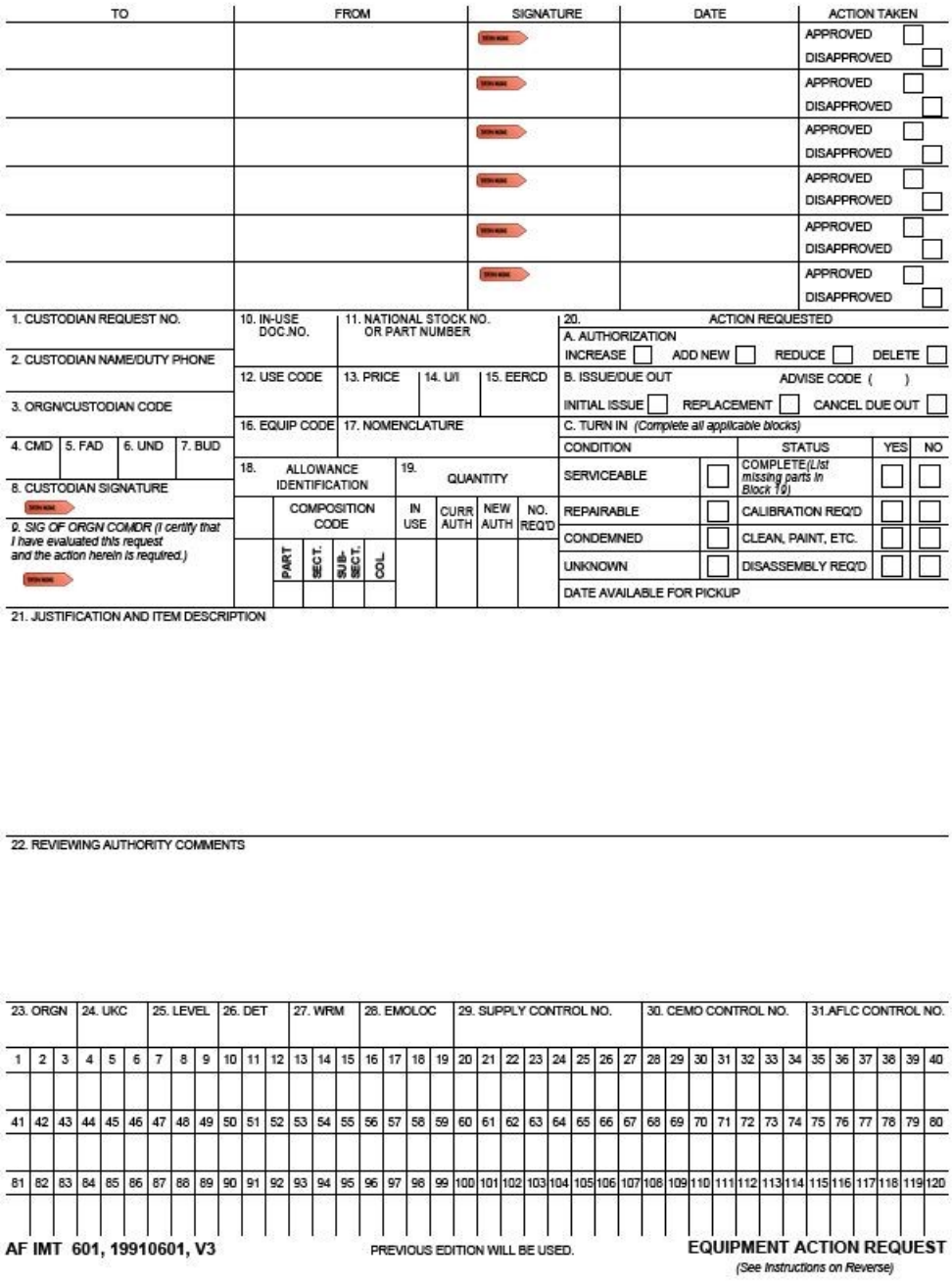


Figure 3–1. AF Form 601.

Responsibilities of key personnel

There are a number of personnel and offices involved with AF equipment accountability. However, for medical equipment we can significantly narrow this down. We will discuss the responsibilities of key personnel/offices from AFMOA down to the property custodian.

AFMOA/SGAL

AFMOA/SGAL centrally manages funding, execution, and budget requirements for medical investment equipment. They evaluate and manage the AF/SG level approval/disapproval process to include funding for expense, high cost medical expense equipment, and other procurement requirements. This includes maintaining records of all requests and procurement actions.

MTF commander

The MTF commander acts as the medical Equipment Review and Approval Authority (ERAA). This authority may be delegated to the deputy commander or MTF administrator. At the discretion of the MTF commander, the ERAA can be a single individual or a committee. The ERAA approves or disapproves equipment requests to meet budget call suspense dates, and prioritizes all approved/unfunded investment and expense equipment requirements.

MLFC

The MLFC manages the MTF medical equipment management program by maintaining in-use equipment records to include all supported detached facilities (as defined in support agreements), ordering equipment using sourcing and procurement guidance provided by AFMOA/SGAL, and ensuring that equipment inventories are performed and documented.

MEMO

The AFMS equipment management program provides a system for in-use equipment control and reporting based on a single organizational MEMO at each medical record account. MEMO is the section of medical logistics that is responsible for all medical equipment in your MTF. You will interact with MEMO on a regular basis, so it is important to be familiar with their function and to maintain a healthy working relationship with them. Some locations have MEMO working out of the BMET shop. AFI 41–209, Chapter 6, *Medical Equipment Management*, is MEMO's main reference. Specific responsibilities of MEMO include the following:

- Standardize the management of in-use equipment at medical facilities. This means there should be one basic system for managing the equipment assets.
- Ensure validated equipment authorizations are consistent with the various missions of medical units. Verify that the equipment on hand and due in are authorized.
- Keep medical managers at all levels informed through comprehensive and accurate reporting.
- Promote economy, supply discipline, and effective management of equipment in support of the overall medical mission. Educate staff members on effective management of their equipment resources. Ensure customers are aware of the role BMETs play in equipment recommendation, purchases, maintenance, and preventive maintenance.
- Ensure that medical equipment assets meet accepted standards for safety and technology. MEMO will often consult with personnel in your shop about problems concerning equipment safety specifications and technology matters.

Property custodians

It is important that you understand the role of property custodians. Each section in an AF MTF has an account. Each account is identified with a special number or code, called the expense center or customer ID. A person assigned to oversee each account is known as the property custodian. BMETs sometimes refer to this individual as equipment custodian because our contact with him or her usually

relates to equipment duties for the account. The MTF commander appoints the property custodian. The custodian's responsibilities include the following:

1. Maintain control and manage the property assigned to their accounts effectively. This responsibility includes pecuniary liability for negligent loss, damage, or destruction.
2. Prepare equipment requests for their using activity following locally developed procedures.
3. Complete equipment actions for purchase, transfer, and excess items.
4. Order and sign for supplies for the account (a supply representative may be assigned for these duties).
5. Maintain records for all account transactions.

Before a property custodian is relieved from duty, transferred, separated from service, or absent from the account for a period longer than 45 calendar days, the custodian must transfer the account through MEMO to an authorized successor. For equipment matters, you frequently work with your MTF's property custodians. Your shop also has a property custodian responsible for supplies and equipment.

019. Managing repair parts

Managing repair parts relates to the acquisition, receipt, storage, and issue of repair parts used in equipment maintenance. It also involves updating repair part inventory, equipment records, and work order records with parts used in the maintenance processes. Before we go into details about managing repair parts, we will cover some general definitions and descriptions pertaining to the medical materiel system. It is essential that you understand this material so you can see learn how the system works.

Commodity class

An item's commodity class identifies the commodity type and determines the ordering and approval process, the available sources of supply (SOS), and how the request is funded. So that we do not overcomplicate the information, we can say that materiel is separated into three categories: equipment, supplies, and parts.

Equipment

As you advance in your career, equipment will be a category you encounter quite often. Equipment is categorized based on cost. The following table describes the three equipment commodity classes:

Commodity Class	Description
Equipment–Investment (Capital)	Medical equipment with a unit cost of $250,000 or more.
Equipment–Expense	Medical equipment with a unit cost of less than $250,000. Expense equipment with a unit cost of $100,000 to $250,000 is called *high cost medical expense equipment*.
Equipment–Durable (Medical/Nonmedical)	An expendable item that is not consumed in use and has a life expectancy in excess of one year but does not qualify as an equipment item. Assign to medical/nonmedical supplies when medical maintenance, warranty management, or the accountability of highly pilferable items is required.

Supplies

Supplies are expendable items that lose their identity when used, cannot be reused for the same purpose, or are not durable enough to last one year. Minor hardware and tools are included in this category also. Supplies are classified into two different categories: consumable or durable. Examples of durable supply items are miscellaneous hardware, tools, and office supplies; consumables include lubricants, tape, and cleaning items. Supply items should never be ordered as parts and are not

maintained in the repair parts inventory. Supplies are issued to your section with no formal accountability, but they should be used judiciously and only for official purposes.

Parts

Parts do not fit in the supplies or equipment category. A part is a supply item with a slight distinction. In medical maintenance, the distinction between a supply item and a part is that if the item attaches to a specific piece of equipment and is required for the equipment to function, it is a part. You should identify the item as such when the order is placed, to ensure it is coded as a part. The use of parts is monitored and accounted for by DMLSS.

Sources of supply

There are many SOSs available to you. It is important to understand the benefits and drawbacks of each so that you can make a wise choice when you place an order.

Prime vendor

Prime vendor (PV) is a DOD program that provides the MTF with a prime supplier for a distinct commodity line, including a majority of its pharmaceutical (PVP) and medical/surgical (PVM) needs. Defense Logistics Agency (DLA) is responsible for the overall management and operation of the DOD medical PV program. Only medical logistics personnel are authorized to place orders against any PV contract (including credit account ordering). Equipment, supplies, and parts are covered under PVM. The overall purpose of the PV program is to shorten the logistics pipeline and make it more reliable. It provides a rapid and cost-effective method for acquisition of medical materiel that offers next day shipping. The PVM SOS is preferred, but not mandatory. PVM and PVP statistics are tracked and reported.

DLA Troop Support Electronic Catalog

DLA Troop Support's Electronic Catalog (ECAT) is an internet solution that uses the latest electronic commerce technology for ordering, receiving, and processing payments for medical devices and supplies. This system covers commodities normally not covered under PVP or PVM. The online catalog allows comparison-shopping between multiple catalogs to help the user locate the best value. ECAT is a web-based system accessed by navigating to https://www.medical.dla.mil or by selecting the ECAT icon in DMLSS.

ECAT is encouraged over the other non-PV methods of procurement since its pricing often undercuts other local purchase prices, even after factoring in the surcharge. Prices found in ECAT are reflected as the delivered cost, which already includes shipping, handling, and the DLA surcharge. Another benefit to ECAT is the approval process is quick, the product delivery is within 72 hours of submittal, and the status of any purchase order can be checked at any point in the procurement cycle.

Local purchase

The local purchase system augments the DLA (PV and ECAT) by allowing medical logistics to order an item from any commercial source up to $3,000. You need to identify the commercial supplier and the information for the item you need; medical logistics personnel can initiate the order. General supplies can be ordered through local purchase procedures as well.

Excess listings

Another SOS is excess equipment, supplies, and parts from other bases throughout the DOD. The AF Medical Logistics Website has a page called the Tri-Service Medical Excess Distribution System (TRIMEDS), which is a listing of items declared excess by other facilities. Through medical logistics, your unit may obtain these parts, supply items, and equipment at no cost. Each medical maintenance shop should review TRIMEDS for items that their units use. You can perform searches with a variety of criteria. If you find items you are interested in, contact your shop NCOIC or MEMO to ensure coordination prior to any acquisitions through the excess system.

NOTE: Unfortunately, items sometimes make it on the excess listing that are less than desirable, so you could just end up with someone else's junk. Always contact BMETs from the losing unit to ensure the serviceability of an equipment item prior to obtaining it.

Researching part information

You will spend much of your time during the ordering process researching information for the items you want to order. Knowing which sources of information are available is essential. The best source for researching parts you need to order is the manufacturer's literature. Recall that each medical maintenance shop is required to maintain a set of manufacturer's literature for each piece of equipment in the MTF. The manufacturer's literature should include a parts breakdown or parts manual, which is the most accurate source of part information for the equipment item. If the technical literature is not available, contact the manufacturer of the equipment item to obtain part information. You may be tempted to use the data stamped on the part you are removing and replacing, since it was already installed in the unit, but you should not rely on this information. The part that you are replacing may not be the correct specification the equipment requires, which could be the reason (or contributing factor) for the failure. Therefore, it is important to verify parts information in the technical literature before placing an order.

Repair parts request and issue

Each repair part in DMLSS uses a unique item ID number. Item ID numbers can be up to 32 characters in length and can be made-up from one of several possibilities: national stock number, manufacturer's part number, vendor control number, universal product number, or locally assigned. A repair part inventory record is actually a combination of the MTF catalog record, the customer catalog record, and the item location record. An SOS record and SOS catalog record must exist before a complete repair part inventory record can be created. These records are built within the CAIM module. Depending on your site's policies, you may or may not be involved in this process. Some locations authorize medical logistics personnel only to handle this process, while some sites allow BMETs to perform this duty.

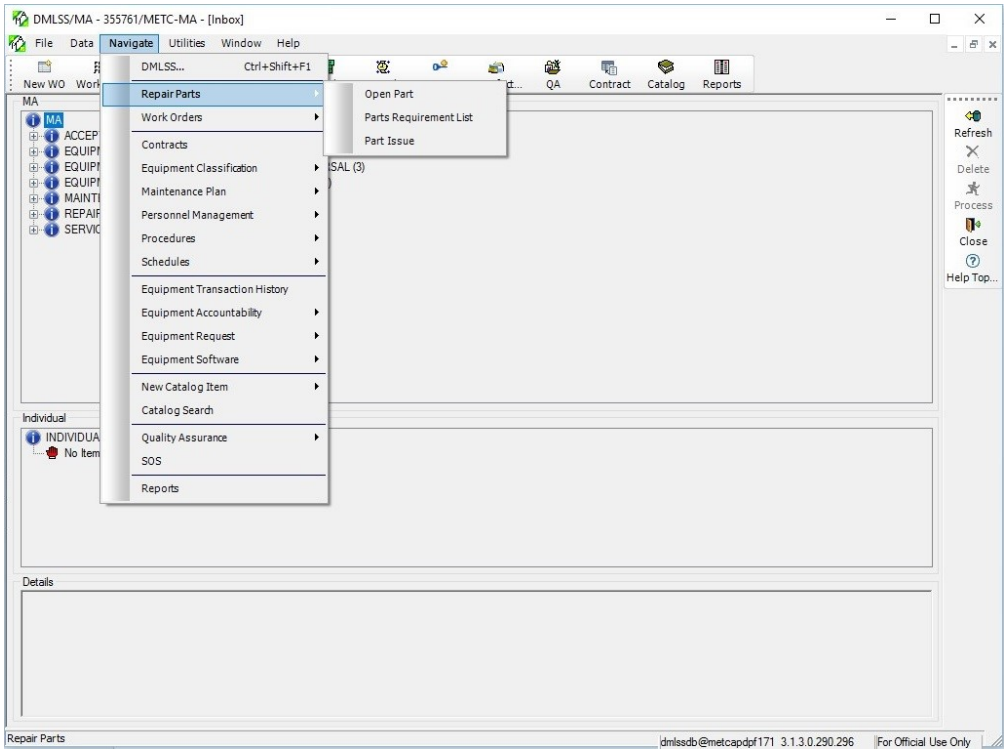


Figure 3–2. Repair Parts module.

Once the repair part inventory record has been established, the process for ordering repair parts is included in the CAIM process for build-process-submit replenishment orders. The replenishment inventory process triggers the requirement to build and process orders. In the repair parts inventory system, requirements are identified during the issue of parts to work orders and during the establishment of new inventory records. Use the offline replenishment process to generate an emergency order for repair parts. In this process, the user can manually input the requirement and initiate the order process.

The Repair Parts module (fig. 3–2) consists of three functions: Open Part, Part Requirement List, and Part Issue. You can access these three functions via Navigate > Repair Parts or by clicking the PARTS icon on the horizontal toolbar.

Open Part function

When you access the Open Part function, it opens the Search window (fig. 3–3).

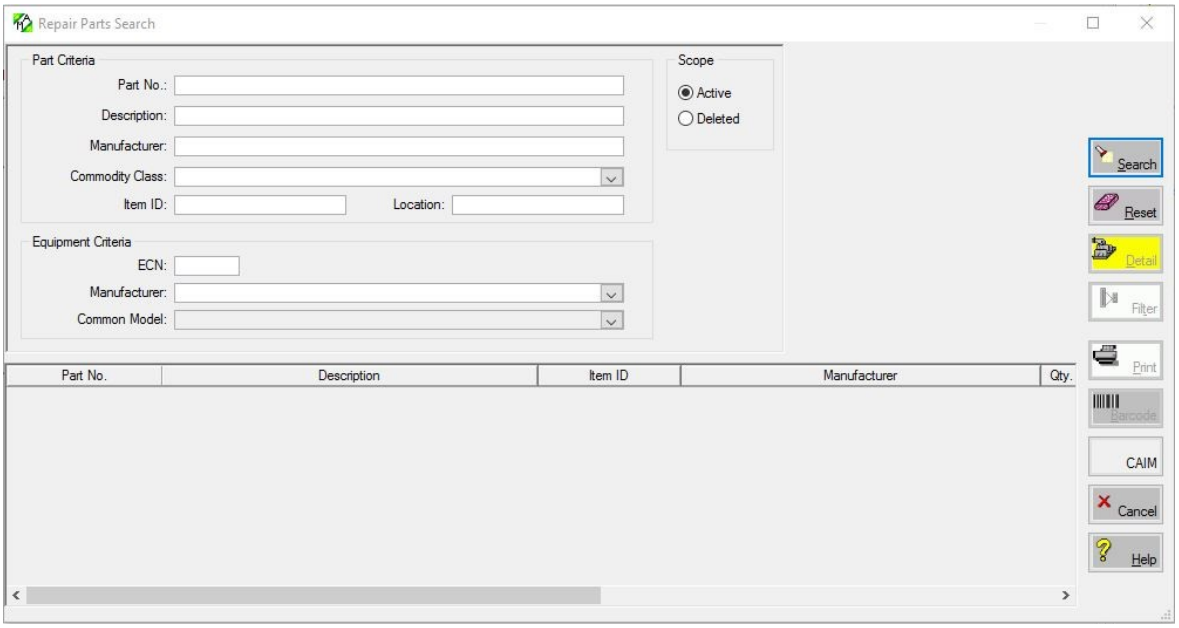


Figure 3–3. Open Parts window.

The scope default is set to search for active records. Change the scope to search for deleted items by clicking the DELETED button. The search options available to you are Parts Criteria (Part Number, Description, MFR, Item ID, and/or Location) and Equipment Criteria (ECN, MFR, and/or Common Model). The search results are displayed in the window; you must then highlight the record that you want to review and press the DETAIL button to review the Record Detail. The Record Detail is displayed automatically if only one record is found. The Repair Part Detail window (fig. 3–4) is divided into four tabs: Part Info, Pipeline Consumption, Equipment Info, and Note.

Part Information tab

The Part Information tab allows you to view repair part details and add or edit the record as required. Items that can be modified in this window include the customer item description, conversion information, issuing information, location, level, reorder point (ROP), expense center (if multiple expense centers are on file), SOS, and level type. Entering a quantity in the ROP field dictates when the system generates a new requirement for that item. You may want to consider having a ROP assigned to frequently used parts.

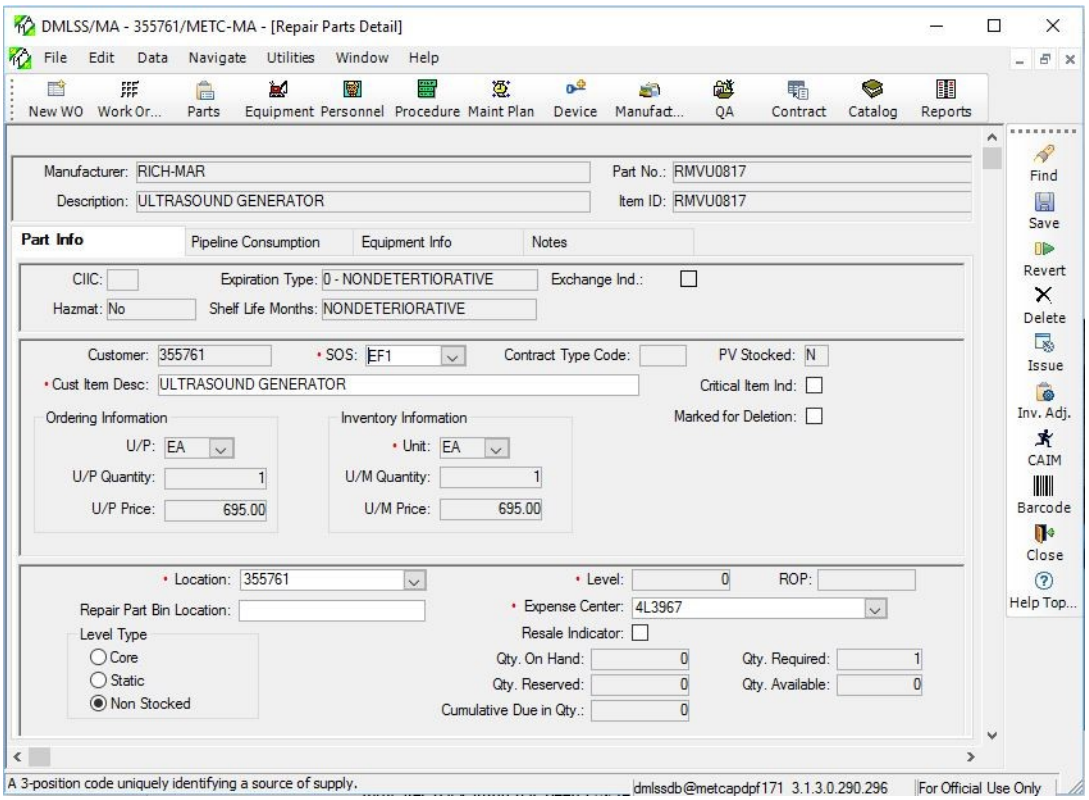


Figure 3–4. Repair parts detail.

Pipeline Consumption tab

The Pipeline Consumption tab provides historical consumption data for 24 months on a selected item. This tab also records pipeline times and dates. This data is useful when determining whether an item should be stocked, not stocked, or deleted.

Equipment Information tab

From the Equipment Information tab, you can add or delete an equipment association to a repair part. Click the ADD button and enter a manufacturer, common model, and the nomenclature to establish the association. Click the DELETE button to delete an association. It is highly recommended to establish these relationships during the parts ordering process. The link between parts and equipment helps you identify and manage on-hand inventory.

Notes tab

The Notes tab allows you to enter unique information about the part or any issue associated with the part. This information serves as historical background for future requirements. Use the DELETE button to remove outdated or obsolete notes.

Vertical toolbar

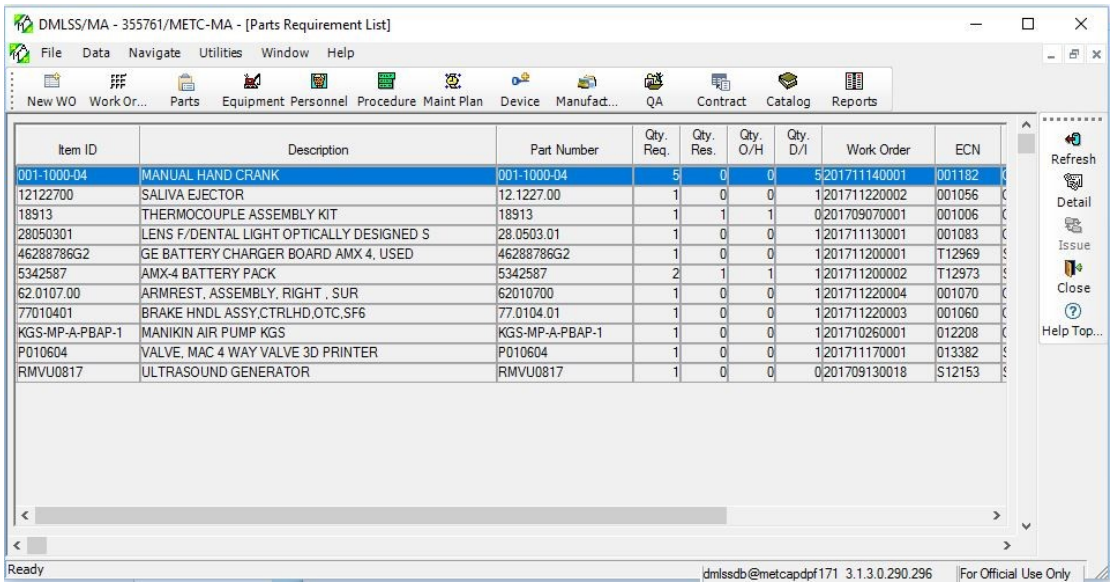
The vertical toolbar contains icons that allow you to perform multiple tasks within the Repair Parts Detail module. The main icons include Issue, Inventory Adjustment, and CAIM. The Issue icon is a shortcut to the Part Issue module and allows you to process an issue or reserve spare parts against an open work order. Parts information displays on-hand quantities and available quantities. Reserved quantities are deducted from the quantity available and are applied against the respective work order.

The Inventory Adjustment icon is a shortcut to the Inventory Adjustment module and allows you to process a gain or loss against the Repair Parts Detail record. The on-hand and available quantity is either increased or decreased depending on what type of inventory adjustment you process.

Processing an inventory adjustment generates a repair-part-gain (RPG) or repair-part-lost (RPL) transaction. Both transactions are written to Transaction History found in the Inventory Management module. The CAIM icon is a shortcut to the CAIM module and automatically opens the MA CAIM customer inbox. The shortcut is designed to allow you, the maintenance activity, access to ordering capabilities for spare part replacement without having to open and close other modules.

Parts Requirement List function

From the Navigate menu, select Repair Parts and click on Parts Requirement List. The Parts Requirements List window (fig 3–5) displays all parts requirements in item ID sequence.



Item ID	Description	Part Number	Qty. Req.	Qty. Res.	Qty. O/H	Qty. D/I	Work Order	ECN
001-1000-04	MANUAL HAND CRANK	001-1000-04	5	0	0	5	201711140001	001182
12122700	SALIVA EJECTOR	12.1227.00	1	0	0	1	201711220002	001056
18913	THERMOCOUPLE ASSEMBLY KIT	18913	1	1	1	0	201709070001	001006
28050301	LENS F/DENTAL LIGHT OPTICALLY DESIGNED S	28.0503.01	1	0	0	1	201711130001	001083
46288786G2	GE BATTERY CHARGER BOARD AMX 4, USED	46288786G2	1	0	0	1	201711200001	T12969
5342587	AMX-4 BATTERY PACK	5342587	2	1	1	1	201711200002	T12973
62.0107.00	ARMREST, ASSEMBLY, RIGHT , SUR	62010700	1	0	0	1	201711220004	001070
77010401	BRAKE HNDL ASSY,CTRLHD,OTC,SF6	77.0104.01	1	0	0	1	201711220003	001060
KGS-MP-A-PBAP-1	MANIKIN AIR PUMP KGS	KGS-MP-A-PBAP-1	1	0	0	1	201710260001	012208
P010604	VALVE, MAC 4 WAY VALVE 3D PRINTER	P010604	1	0	0	1	201711170001	013382
RMVU0817	ULTRASOUND GENERATOR	RMVU0817	1	0	0	0	201709130018	S12153

Figure 3–5. Parts Requirements List.

Parts may be issued when there is an on-hand quantity in bench stock and the required quantity does not exceed the on-hand balance. The Issue icon is not available when the on-hand quantity is zero. Details of the repair part may be accessed by selecting a part and clicking on the Detail icon. You can reserve a spare part and establish, increase, or decrease a requirement in this window.

Part Issue function

The Part Issue function provides the capability to issue repair parts to a work order or to a customer account and to record a part requirement against a work order. You can access it via Navigate > Repair Parts > Part Issue. First, enter the item ID of the required part. The Search results window displays work orders awaiting the part. Enter the reserve quantity and issue information if a part is needed to satisfy a work order requirement. Enter an issue quantity if the part is available for issue. Enter the required quantity in the Quantity Requirement field if the part is not available for issue. Also, a part can be issued to an open work order on the Parts tab (fig 3–6).

Your shop should have a repair parts storage area, which contains all on-hand repair parts. Due to potential inventory inaccuracy in DMLSS, first you should physically verify whether there is an adequate on-hand quantity available in your shop’s repair part inventory before you order a part.

The final two pieces of part procurement is monitoring your order and receiving the materiel. Although these two processes are relatively simple, they are important. If not done properly it can ruin an order.

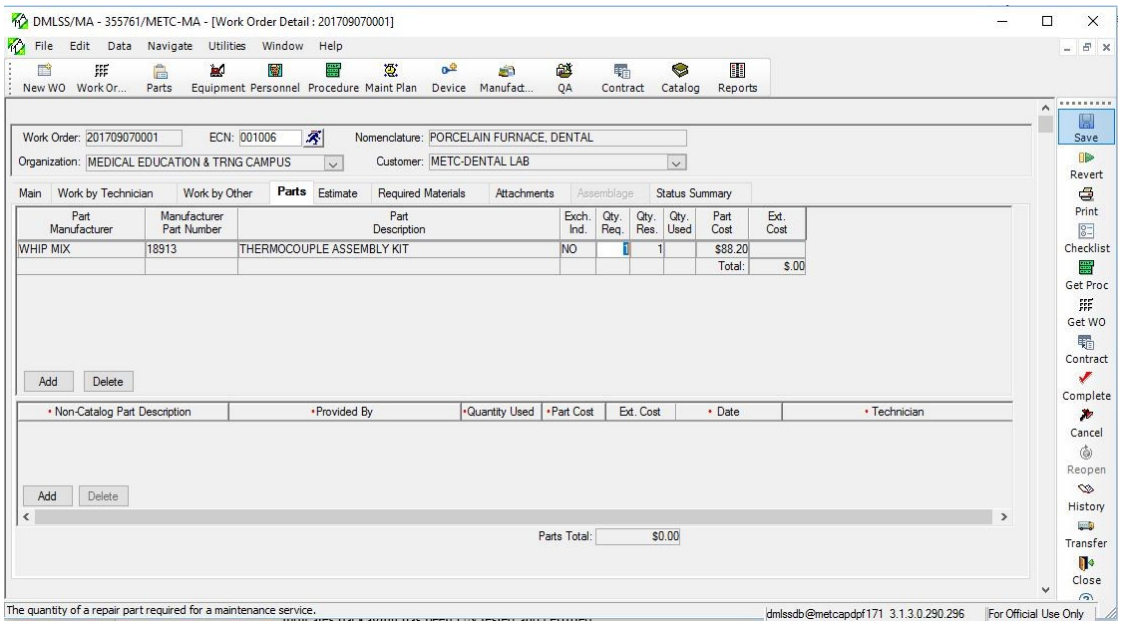


Figure 3–6. Parts tab screen.

Monitoring orders

Anytime you order a part, there should be a record of it in DMLSS. Medical logistics personnel will perform the action if you are at a location that does not allow BMETs to process the part request in DMLSS. Once an item is processed and is ordered by medical logistics, then it is entered into DMLSS and tracked until it arrives.

Anytime an order is processed through DMLSS against any account, there will be an associated CAIM due-in document number, which shows the item is due in to that particular CAIM. Once the order has been moved through DMLSS and placed against an external source of supply, there will also be an FM due-in document for that process as well.

EXAMPLE: Item A is ordered from the 761 CAIM to logistics. The CAIM document number would be 55576181330123 with a specified quantity, date ordered, user, and so forth. After logistics personnel process the order, there would be another document number such as FM304781350156. As you can see, one of these due-in document numbers identifies the CAIM requirement, while the other identifies the facilities requirement. Conducting a due-in search from CAIM (system defaults to customer due in) DMLSS will show the active CAIM due-ins (fig. 3–7). Changing the scope to MTF will show not only the CAIM due-in but also the associated FM due-in document number (search by item number).

DMLSS produces the LOG backorder report, which reflects every item that logistics ordered. If other items were ordered directly from the CAIM module, they would not show on the LOG backorder report. An item will not appear on this listing if (1) it was previously received, in which case it appears on an issue listing; or (2) a problem occurred and the order was deleted or canceled. In addition, a backorder report is produced for each account (fig. 3–8). The medical maintenance listing should include every part, supply item, and equipment item on order for your shop. By comparing the documents from each of the orders placed during the month to the backorder report, you can quickly determine if all of your requirements were processed and ordered. Any discrepancies between the items you ordered and the data reflected in the backorder report should be reported to medical logistics personnel for corrective actions. Usually, a review of the backorder report is conducted monthly between medical logistics personnel and the property custodian.

Active Due-Ins

Date Prepared: 30 May 2008

Customer Id: 815909
Expense Center: 3T5909 - 382 TRS BMET
Project Center: 727 - 382 BMET

Total Duein Dollar Value: $855.56

Document Number	Item Id	Item Description	DFAS Document Number	SOS	Quantity Due-In	Dollar Value Due-In
81590980940026	39379 F32TBX/SPX35	COMPACT FLOURESCENT LAMP,		EFP	3	$330.90
81590981070006	4701AMAXIMA	BAGLESS VACUUM CLEANER, 120V,		EFP	2	$174.16
81590981490006	DSD341	DISEPT-LL		EFP	5	$76.50
81590981490007	LGPAD196	MED DUTY PAD GREEN		EFP	60	$39.00
81590981490008	LGPAD174.	SPONGE/SCRUBBER		EFP	60	$90.00
81590981490009	0502	MULTI-FOLD PAPER TOWELS		EFP	5	$137.50
81590981490010	LGLAG24	24 OZ SPRAYER BOTTLE		EFP	5	$3.25
81590981490011	LGLAG24A	24 OZ SPRAYER NOZZLE		EFP	5	$4.25
					Sum:	$855.56

Figure 3–7. CAIM due-in.

LOG Back Order Report

Current Date:30-May-2008

Customer : 815909 Customer Name : 382 TRS BMET

Item ID	Short Item Description	Ref Code	B/O Qty	U/P	U/P Price ($)	Document Number	Status	B/O Value($)
0502	MULTI-FOLD PAPER TOWELS	R	5	CS	27.50	81590981490009		$137.50
39379 F32TBX/SPX35/A/4P	COMPACT FLOURESCENT LAMP, 4I	R	3	CS	110.30	81590980940026		$330.90
4701AMAXIMA	BAGLESS VACUUM CLEANER, 120V	R	2	EA	87.08	81590981070006		$174.16
DSD341	DISEPT-LL	R	5	GL	15.30	81590981490006		$76.50
LGLAG24	24 OZ SPRAYER BOTTLE	R	5	EA	0.65	81590981490010		$3.25
LGLAG24A	24 OZ SPRAYER NOZZLE	R	5	EA	0.85	81590981490011		$4.25
LGPAD174.	SPONGE/SCRUBBER	R	60	EA	1.50	81590981490008		$90.00
LGPAD196	MED DUTY PAD GREEN	R	60	EA	0.65	81590981490007		$39.00
						Total Dollars :		$855.56
						Total Line Items:		8

I CERTIFY THAT EACH BACK ORDER ON THIS REPORT HAS BEEN REVIEWED AND IS STILL A VALID REQUIREMENT UNLESS CANCELLATION ACTION IS INDICATED.

SIGNATURE : _____ GRADE: _____ TITLE: _____ DATE: _____

Figure 3–8. LOG backorder report.

It is your responsibility to monitor the status of your order; BMETs must monitor the status of repair parts ordered for equipment items. This is especially important concerning repair parts for an equipment item. Even if you expertly troubleshot a piece of equipment, and ordered the right part, you can quickly look incompetent if the repair part does not show up and you do not know what happened to it. It is your responsibility to know what is happening with your repair part orders at all times and you should be ready to answer questions concerning that order to all concerned parties.

Receiving supplies

After your hard work moving your order through the system, your monitoring effort has paid off and the day has finally come—your order has arrived. Anytime you receive an item from medical logistics, an issue is processed. When required, DMLSS produces an issue listing. The issue listing shows a daily listing of everything issued by medical logistics to each supply account. If you have a question about anything that was issued to your account, you can view the document register in CAIM, which shows this and allows you to select an "as of" date for your query. Contact medical logistics personnel with any anomalies you might see.

Receiving supplies requires a signature for medical logistics records. Once common use consumable supply items such as tape, lubricants, nuts, and bolts are issued to your shop, there is no formal accountability for their use. These items are stored in your shop and used as needed for your BMET mission. Safeguard durable supplies, such as tools, against theft, damage from misuse, or loss.

With the reduced supply chains and other technological advances that make receiving parts much quicker than in "the old days," the need for a large repair parts inventory is much less now than in the past. However, most shops still have some sort of repair parts inventory and you should know how to manage it properly.

Storage and physical inventory

Usually, a stock of repair parts is required to ensure availability of critical medical equipment assets within each MTF. As previously stated, most medical maintenance shops maintain at least a few repair parts, which are continually used and restocked. The automated repair parts inventory is the best way these parts are managed. Before we get into the automated system, let’s talk about the criteria used to determine what parts should be maintained in the repair parts inventory.

Criteria for selecting repair parts

Repair parts inventory can be as basic or robust as you want or as your mission will allow. It takes good management to prevent the excessive stockage or accumulation of slow moving or nonuseable repair parts. Storage space is usually at a premium and only those repair parts required on a continuous basis that have a determined realistic usage factor should be maintained. Most equipment parts will not require stocking if PM inspections are conducted properly, because the parts can be anticipated and procured on an as-required basis. The fast delivery times of the AF supply chain further reduce the need for maintaining repair parts in your inventory. Limited exceptions may be justified to ensure adequate maintenance support at locations with a long supply pipeline time, or to enable immediate repair of select items of equipment judged vital to life support or continuity of operations.

Repair parts kept in your section are part of the repair parts inventory. Exceptions are common bulk hardware items such as nuts, bolts, washers, pipefittings, or cotter pins. Repair parts are not carried on medical stock record account inventories (stored in the medical logistics warehouse); instead, they are issued to your maintenance activity upon receipt within the facility.

Consider these factors when determining what items and quantities to place in your peacetime repair parts inventory:

Factors	Explanations
Criticality of equipment	If the medical facility can function safely without the equipment for a short periods, levels for repair parts can be reduced or eliminated.
Cost of downtime	If the item is out of service, will patient appointments be canceled or will patients be referred to civilian facilities? The cost of lost hours and supplemental care may be more than the cost of maintaining repair parts in the inventory.
Number of units on hand	The more units your MTF has, the greater the probability that repair parts are required and should be in the inventory. However, in some cases, the urgency of repair may be lessened since there may be sufficient equipment available for exchange.

Factors	Explanations
Consumption rate	If a repair part is used on a recurring basis, it should be placed in the repair parts inventory.
Pipeline time	Pipeline time is the time from when you order the repair part until it is received. Delivery options (i.e., overnight, 2nd day air, etc.) can help reduce pipeline times, therefore, lowering or eliminating repair parts levels.
Cost of the repair part	There are two factors to consider when determining the overall cost of a repair part: the actual dollar value of the part and the minimum order amount (MOA) of the company. Many manufacturers have a MOA that must be reached before they will fill your order. For example, you may need a rubber washer that is $4.50, but the MOA for the company is $50.00. In cases such as these, you will have to purchase some extra parts (select ones you know you will use later) and place them in the repair parts inventory.
Shelf-life	Stock levels of items that deteriorate while in storage should be kept low enough to ensure they are used before degradation occurs.
Age of the equipment	As equipment gets older, breakdowns normally increase resulting in greater demands for repair parts.
Aeromedical Evacuation (AE) Certification	Original equipment manufacturer parts must be used for AE certified equipment because of the testing criteria and limitations imposed by AE certification.

Storage and location codes

Storing repair part assets is important; the area should be secure to prevent access by unauthorized individuals. Normally, a location within the medical maintenance shop is sufficient. However, if repair part assets are stored in an area other than the maintenance shop, take extra care to ensure its security. The storage area should be arranged neatly with each repair part having its own location and designation for ease of access. The numbering system is created locally, and you must assign a location code to each repair part item. The DMLSS repair parts listings should accurately reflect the location of all stocked parts.

Physical inventory of repair parts

BMETs must conduct an annual inventory of all repair parts by comparing actual physical inventory levels to the balances listed in DMLSS. Inventories are conducted from the CAIM application by selecting Physical Inventory from the Navigate menu. After completion of the inventory, you must submit a letter listing the results of the inventory along with the physical inventory printout to the MLFC for signature within 30 days of inventory closure. The letter should indicate the overall accuracy in line items and dollar amount, the value of all overages and shortages, and any corrective actions taken.

Disposition

Your shop should review all established repair parts levels periodically and determine if they are satisfactory for your mission. Any part record with on-hand quantities greater than their established levels are possibly unnecessary for your shop's needs. Consider low consumption rates or turn-in of equipment as possible factors in repair parts excesses, and take appropriate actions by readjusting levels and/or turning excess repair parts over to medical logistics. This allows these parts to be listed in the TRIMEDS for redistribution to other units. Medical logistics may have you prepare a DD Form 1348–1A, Issue Release/Receipt Document if you are transferring the parts for disposition.

You must physically turn these items over to medical logistics personnel and make sure you receive a *turn-in document*. Do not run an inventory adjustment on these items; medical logistics supply personnel will run a turn-in transaction from the Inventory Management module. This action will adjust your on-hand balances automatically and will provide a summary document, which provides proof of the transaction. This action relieves you/your shop of the responsibility of control of these items.

Do not take it upon yourself to give, throw away, or destroy these items. Legal issues can arise for these types of actions, so always turn excess items over to medical logistics personnel to process the

final disposition/destruction decisions properly. It is not your responsibility to determine final disposition for excess items, only to turn items over to medical logistics and ensure they provide you a summary document.

Self-Test Questions

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

018. Equipment accountability and responsibilities

1. Briefly describe general AF property accountability responsibility and liability.

2. What medical equipment is accountable on MEMO records?

3. How is accountability of equipment transferred?

4. Who can act as the ERAA?

5. What are MEMO responsibilities in the management of medical equipment?

6. How are property accounts in the MTF identified?

019. Managing repair parts

1. What is the impact of an item’s commodity class?

2. How is materiel categorized?

3. List and briefly define each commodity class.

4. What is the difference between a supply item and a part?

5. What is the preferred SOS for equipment, supplies, and parts? Why?

6. What are the benefits to using ECAT?

7. What should you do before requesting an item from the TRIMEDS listing?

8. Where should you look to find accurate parts information for an equipment item?

9. Explain why you should not use data printed on the part for ordering purposes.

10. How do you change the ROP?

11. When should you consider having a ROP assigned to a part?

12. Why should you physically verify the on-hand quantity available in your shop's repair part inventory before ordering parts?

13. When would an item not appear on the monthly DMLSS backorder report?

14. Who is responsible for monitoring the order status of repair parts ordered for equipment items?

15. When are issue listings produced in DMLSS?

16. Why has the need for large repair inventories decreased?

17. What should prevent the need for most expensive repair parts to be stocked in the repair parts inventory?

18. Define pipeline time.

19. Describe MOA.

20. How often must all repair parts assets be inventoried?

21. Who is required to sign the physical inventory printout and inventory results letter? When is the signature due?

22. What do you receive when you physically turn excess items over to medical logistics personnel?

23. Why is it important to turn excess items over to medical logistics personnel?

3–2. Medical Equipment Life Cycle Management

The goal of the medical equipment management program is to optimize the safety, effectiveness, efficiency, and economy of diagnostic, therapeutic, and support equipment used for patient care. Medical equipment maintenance has definite responsibilities in support of this goal throughout the life of each item of medical equipment, from acquiring to disposing of the equipment. In this section, we will outline your responsibilities and provide guidance on managing the life of an equipment item.

These are the overall program objectives:

- Standardize the management of equipment in use at AF MTFs.
- Maintain equipment in-use and authorization records.
- Keep the MLFC informed through comprehensive and accurate reporting.
- Promote economy, supply discipline, and effective equipment management in support of the overall medical mission.
- Ensure medical equipment meets accepted safety and professional standards.
- Ensure investment equipment reporting meets established accounting standards.

020. Evaluating equipment requests

The first step in the life of an equipment item is procurement. BMETs are often involved in this process; therefore, you should be familiar with it. Until recently, requesting equipment involved building up six-part folder packages and coordinating it through reviewers and approvers. Let's look at the request process, starting with how the property custodian submits a request.

Custodian submits request

All equipment requests are coordinated using DMLSS and the Turbo-The Integrated Global Equipment Request System (TIGERS) application. The official process starts when the property custodian requests equipment through the DMLSS Customer Support module. After selecting Equipment Request on the vertical tool bar, the property custodian is required to provide all pertinent data on the following tabs: Main, Training, Repl ECN (only available if a replacement option is selected as the Request Type on the Main tab), Suggested Source(s), and Supplies. In addition to this data, the requesting custodian must submit three quotes and if required by local guidance, may have

to provide justification in the format prescribed by the MLFC. The three quotes must be from different companies and the equipment must be from different manufacturers. The justification addresses information pertinent to the purchase, use, and maintenance of the equipment. Normally, the following information is included in the justification:

- A description of where the item will be used and what function it will accomplish.
- What the current workload is and what the projected workload will be.
- Who is or will be qualified to use the equipment.
- How the item will be maintained.
- What the savings or benefits are.

Once these document location links have been uploaded into DMLSS, the property custodian then clicks SUBMIT and the request is sent to MEMO. Upon receipt, MEMO enters the appropriate data on the Coordination tab and MEMO populates the Reviewer field with the offices that must review the package. At a minimum, it will include BMETs, the facility manager, and Systems.

BMET review

The review and evaluation process is where you get involved. The complexity and extent of each evaluation depends on the complexity and cost of the equipment under consideration. During the DMLSS review, BMETs are required to enter or verify all appropriate data on the following tabs: Installation, Training, Support, Coordination, Eq. Info, Options, Comp/Acc, and Supplies. Figure 3–9 shows the required tabs and an example of the Support tab.

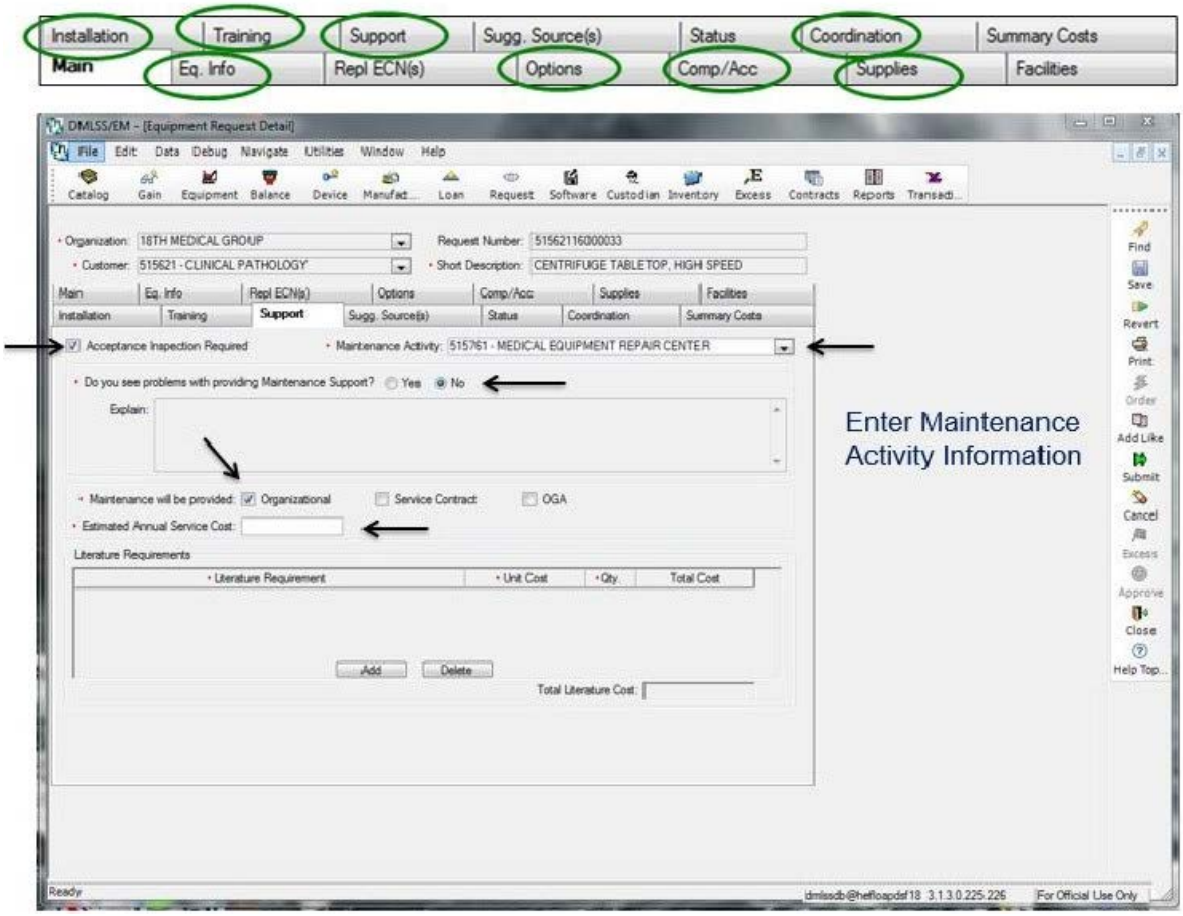


Figure 3–9. BMET review Support tab screen.

For the technical review, specific areas of concern must be addressed for each equipment request. For equipment requests equal to or more than $100,000, document the technical evaluation on the AF Medical Logistics Guide Attachment 16, *Technical Considerations for New Equipment Acquisition* and submit with the package. Even though this documentation is optional for requests less than $100,000, many organizations make it a mandatory requirement for all medical equipment items to ensure that BMETs, facility managers, and systems (at a minimum) perform a technical evaluation of equipment purchases. Any BMET at the facility can perform the review, but the senior BMET is required to give a final review and sign the evaluation. Use the following guidelines for evaluating equipment systems.

Performing technical evaluation

You should first review the clinical requirements of the requesting section to make sure the requested equipment meets their expectations. In short, you want to make sure that the equipment is capable of doing what the section needs. BMETs review the proposed equipment system for compliance with accepted safety and performance standards. The evaluation should ensure the equipment requested is safe, reliable, and maintainable. BMETs should review technical evaluations of similar equipment published in *ECRI Product Comparison*® and other nationally recognized sources that compare products. The following table shows what you should consider when conducting a technical evaluation.

Area	What to check
Facility	Identify the unique requirements of each equipment system under consideration. Factors such as required utilities (electrical, plumbing, ventilation, floor space, and unique structural demands) must be identified and referred to the responsible activity. If it is a large equipment item, answer these questions: (1) Is there a clear path for getting the item from the loading dock to the duty section when it is delivered? (2) Can the elevators carry the weight? (3) Are the doorways large enough? Checking first will save headaches and embarrassment later. Facility-related questions are best answered in coordination with BMETs and facility management. Building modifications may be required prior to equipment installation, and depending what type of modifications need to be made, it may turn into its own separate project - which is more time and money.
Communication Requirements	Does the system require a telephone line, modem, network, or internet connectivity? Lack of planning in this one area can cause a million dollar system to be useless. Without the proper communication approval, the system will not be allowed on the network. This approval process can take several months.
Interface	Review and identify problems that could arise when interfacing the requested equipment with existing systems.
Maintenance History	You should review the maintenance history of similar items contained in the HMRs and EDFs.
Maintenance Support	Determine if your maintenance shop can maintain the equipment in-house or if contract maintenance or precision measurement equipment laboratory is required. Note this information in the equipment review package, Attachment 16. If the maintenance activity does not have the necessary skills or resources in-house, the activity determines what specialized training, space, and test equipment is required. Tuition cost for maintenance training and required test equipment should be included in the acquisition of the equipment when appropriate. Training must be completed within 12 months of equipment acceptance. Ensure each equipment quote includes two hardcopy or reproducible softcopy maintenance/service and user manuals. For contract maintenance, analyze all factors when determining whether or not it is required.

After entering all appropriate data in the applicable tabs and completing the technical evaluation, you will *recommend* approval or disapproval of the equipment in DMLSS. BMETs can only recommend; we do not have the authority to approve or disapprove. The notification now goes back to MEMO and they continue the coordination process.

Preparing requests for diagnostic imaging systems

Procurement of a diagnostic imaging system is a long, complex process consisting of identification of need, pre-procurement evaluation, approval, contract award, delivery, installation, acceptance, and warranty. The MLFC designates a specific individual as the organization's project officer. The MLFC or MEMO notifies AFMOA/SGALE and/or the contracting office upon initial appointment or when a new project officer is designated.

The medical equipment maintenance activity, the radiology department, and other imaging departments (i.e., cardiology, orthopedics, etc.) work together to identify the requirements for new and replacement diagnostic imaging systems. Once the requirement is identified, representatives from medical materiel, medical equipment maintenance, radiology or other imaging departments, resource management, facility management, and the base radiation protection officer (if required) should be involved in the planning process. If additional help is needed, you can contact the regional physicist or MERC to assist. BMETs should get copies of the current HMR, any available previous pre-procurement survey of the existing X-ray system, radiation protection survey, EDF, most recent MERC trip report, and any contract maintenance data for input into the planning process.

A *pre-procurement survey* must be accomplished before the authorization or procurement of any stationary diagnostic imaging system. This requirement also applies to the relocation of any in-use stationary diagnostic imaging systems. Prospective vendors may conduct pre-procurement surveys by providing no cost electrical and room modification details and cost estimates. Ensure the vendors sign in and out with the BMET shop and understand this service is to be provided at no cost to the government. Instructions and a format guide on conducting the pre-procurement survey can be found on the AF Medical Logistics Website. If local BMETs are not capable of performing the survey, they should contact their regional MERC for assistance. If the local BMETs perform the survey, the completed survey is forwarded to the regional MERC for review and approval.

ERAA Board

After MEMO is finished coordinating the package reviews the equipment requests meet the ERAA Board. A BMET, normally the senior ranking, is on the board to provide consultation and answer any technical questions. The requesting custodian usually attends to answer any clinical questions about the requests and to provide clarity. The ERAA reviews all equipment requests and then approves or disapproves each one. It also determines the criticality code for the approved requests. MEMO then submits all ERAA approved packages to Turbo TIGERS for funding; equipment is ordered as funds become available. All disapproved requests are returned to the custodian with the stated reason for disapproval.

021. Planning and executing equipment installation

You need to begin planning the installation now that the equipment is on order. Of course, if the emergency room ordered a new defibrillator, there is not much that needs to be done in terms of installation. However, central sterile supply ordering a new sterilizer is a different story. No matter the level of installation an equipment item requires, your shop is tasked with installing the equipment or overseeing the installation if performed by another agency (e.g., MERC, contractor, civil engineering, etc.). When installing equipment, the MERC, AFMOA/SGALE, and BMETs from other bases are excellent sources of information, particularly if you find yourself involved in a complex installation project. A successful installation depends on several factors, but heavily relies on proper planning. Proper planning can be the difference between a seamless equipment installation and a $55,000 paperweight.

Planning for the equipment realistically started in the evaluation stage. At that time, BMETs identified the utility and structural requirements, while facility management verified these needed utilities or structural requirements were available or planned arrangements for obtaining those items. This was documented on the evaluation form previously discussed. In addition to the items

considered in the preceding process, you must also consider the following areas when planning for the installation of new equipment.

Activity	What to look for
Facility Modification	How long will it take to complete any required modifications? In some cases, the modification of the facility for a new piece of equipment must start long before the item arrives. Careful planning is required to ensure that the site is ready when the equipment arrives. Watch this area carefully because great emphasis is placed on *not* having new equipment sitting around waiting to be installed because the site is not ready. Work with your facility management office for any needed modifications.
Equipment Specifications	Most equipment requirements are general. A standard 110-volt outlet or a water source may be all that is required. However, many installations have been put on hold because of unforeseen equipment requirements that were discovered after the item arrived. MEMO usually knows the manufacturer and model number of new equipment in advance of its arrival. Most manufacturers will provide a manual or data sheet showing the exact requirements for their equipment installation free of charge. A visit to the company's website or a phone call is normally all that is required to obtain this data. Another source is your MERC or another medical maintenance shop that has previously installed the same equipment. Installations go much smoother when you know what is needed ahead of time.
Communication Requirements	Address any identified communication requirements not currently available at the installation site. The type of communication needed (phone, network, etc.) and the work required to accomplish the installation will determine whom you will need to contact. Any equipment ordered requiring a network connection should already have an approved authority to connect (ATC) and/or authority to operate (ATO). You still should get with your systems flight to confirm and verify there will not be any issues with network connections when the equipment arrives.
Equipment Changes	Due to government contracting regulations, which sometimes require open bidding by various manufacturers for an equipment order, your MTF may not receive the exact make and model of equipment that was requested originally. Installation specifications may vary from your original specifications. Maintaining close contact with MEMO ensures that you have the latest information on the equipment that will arrive. Considering this when making advance plans to prepare for new equipment, do not execute any advanced building modifications until the actual item is ordered and the exact requirements are known.
Duty Section	Always consider the effect an equipment installation will have on the department receiving the new item and any other possible areas in the MTF. For example, if you are replacing the only X-ray machine in the facility and the room will be out of use for a month during installation, it is very important to communicate this fact to the radiology department. Sections have to plan around the inconveniences of some equipment installations. Arrange meetings with all stakeholders early in the process to explain the impact of the installation and to hear any concerns. Keep the duty sections informed throughout the project, especially of any changes or problems.
Installer	Who will install the equipment? Local BMETs or BMETs from the MERC installs most equipment; however, the equipment manufacturer or contractor handles many installations. The amount of work performed by these organizations varies with each installation. Some projects require you to make all prior modifications, leaving the contractor to simply hook-up, make an operational check, and calibrate the equipment. In other installations, known as Turn Key Installations, the contractor is responsible for every phase of the project, including any modifications needed prior to the actual equipment installation and checkout. AFMOA/SGALE and your regional MERC are the best sources of information on which type of installation is appropriate.

In addition to facility modifications, it is critical that you get with facility management to determine if the project will require any interim life safety measures (ILSM) or infection control risk assessments (ICRA). ILSMs are measures put in place to protect the safety of patients, visitors, and staff during times of construction and maintenance. ILSMs compensate for any hazards presented. For example, if

the project is going to block any facility entrances or exits, or affect any safety utilities (fire alarms or suppression) then an ILSM will be required. ICRA precautions are concerned with the health of patients. It uses a matrix based on the location and type of work being performed to determine the risk level and the action required by the party performing work to mitigate the risk properly. For example, you may be required to block and seal air vents prior to drilling in certain areas.

Communication is key to a successful equipment install. During the installation, constantly update the project status to your shop NCOIC, MLFC, and the affected sections, and adhere to any applicable ILSMs and/or ICRAs. If a contractor or other government agency is installing the equipment, you (the local BMET) are the government's representative and must ensure the equipment is installed correctly and safely.

After contract award, the contracting office forwards a copy of the delivery order to the MEMO. Obtain a copy of this contract from MEMO to place in the EDF. If a contract is not available, you should be able to reference its location. Inform the project officer about the contractual provisions if necessary. The contract should require the contractor to perform an installation site visit, survey power and other utility requirements, and provide the project officer/lead BMET and MLFC with complete layout plans, room preparation drawings, and instructions. Facility management, base civil engineering (BCE), medical equipment maintenance, and affected section personnel (if needed) should review the contractor's drawing and plans to ensure the equipment layout will meet the clinical and technical requirements.

The project officer/lead BMET and the MLFC closely monitor the progress of commercial contractors and BCE in preparing rooms to receive the equipment. Each time the contractor visits the MTF, you should ensure he/she signs in and out of the BMET shop. Significant deviations from established deadlines and technical specifications must be documented and forwarded to AFMOA/SGALE and the contracting office. You are encouraged to participate in the system installation as long as participation does not void any of the provisions of the installation contract or equipment warranty. For X-ray equipment, do not schedule the physicist or MERC to perform their acceptance testing until notified by DLA that the notice of readiness to inspect (NRI) has been issued by the vendor performing the installation of the equipment system.

022. Performing acceptance inspection

It takes a coordinated effort between BMETs and MEMO to complete the acceptance process when the new piece of equipment arrives at your facility. Before MEMO can release the equipment to the user, you must perform a complete acceptance inspection using the *Equipment Acceptance and Initial Inspection Checklist* found in the Clinical Engineering Guide (**NOTE:** If you see any errors or chance for improvement, submit change requests to update or correct the document to AFMOA/SGALE for approval and implementation). Therefore, you should always do your best to ensure you perform the acceptance inspection in a timely manner. The section that requested the equipment did so due to a verified need; it can irritate the staff knowing that their new equipment has arrived, but they are not able to use it because it is awaiting inspection by BMETs. Using the *Equipment Acceptance and Initial Inspection Checklist* and AFI 41–201 you will perform the following actions:

- Ensure delivered item has no damage, operates according to the manufacturer's specifications, and complies with applicable safety and performance standards.
- Document identification data, your electrical safety inspection results, and measurements of your performance and calibration parameters, or the vendor's calibration documentation on the work order or appropriate calibration form.
- If applicable, verify that an ATO and an ATC have been granted for the medical device/system before use on AF or DHA networks.

- Review the relevant contracts and literature for warranty provisions, complete the warranty registration data (if applicable), and forward to the manufacturer.
- If equipment is subject to the device tracking requirements of the Food and Drug Administration Modernization Act of 1997, register the equipment with the manufacturer and follow their reporting process.
- Affix an ECN barcode tag to each item for identification and accountability and mark equipment according to AFI 41–209, Chapter 6.
- Verify accurate quality assurance data is loaded into all applicable tabs in DMLSS. Ensure you update software, network, and Protective Health Information (PHI) fields appropriately. For equipment that stores PHI, medical maintenance selects Contains Patient Data in the equipment detail for the ECN. A list of all equipment that stores PHI can be provided by running the equipment containing patient data report in the DMLSS Equipment Maintenance module.
- Verify that all newly purchased equipment meets your MTFs Health Insurance Portability and Accountability Act (HIPAA) compliance plan.
- Ensure DMLSS reflects the proper medical device code for the item.
- Establish an EDF in ECN sequence and place a copy of the warranty registration, the acceptance inspection work order, and acceptance checklist in it.
- File technical literature according to your shop's policy and set one copy of the operator's manual to the side for the user.
- Analyze maintenance requirements, and determine and acquire repair parts as appropriate.
- Report any discrepancies noted during the acceptance inspection to MEMO, so they can investigate and contact the vendor/supplier as necessary.
- Provide operator/user training to staff as required.

If the equipment passes the BMETs acceptance inspection, MEMO will release the equipment to the section by transferring accountability to the property custodian using an AF Form 601.

Conducting X-ray systems acceptance inspections

Acceptance inspections of X-ray systems require additional tasks. They must be conducted with approved DOD procedures in accordance with AFI 41–201 and AFI 48–148. Local BMETs are responsible for coordinating all acceptance testing for diagnostic imaging systems. A qualified physicist may be required to complete the acceptance inspection depending on the modality of the imaging equipment. See AFI 48–148 for specific modality responsibilities.

Regardless of who conducts the inspection, the local BMET is responsible for the documentation of testing and the proper distribution of the results. BMETs must ensure FDA Form 2579 is filed in accordance with AFI 41–201 and that all inspection reports with attachments are forwarded to the contracting office, the regional medical physics office, AFMOA/SGALE, and copies placed in the EDF.

Do not schedule the physicist or MERC (if not accomplished locally) to perform their acceptance testing until DLA notifies you and MEMO that the NRI has been issued by the vendor performing the installation of the equipment system. Once you receive the official notification from DLA that the NRI has been issued, the physicist and MERC have 30 days to complete acceptance testing and report any discrepancies that require corrections. If the acceptance inspection is not completed within 30 days of installation, the contracting office automatically accepts the equipment by default. You will not be able to address any issues with the equipment after a *default acceptance* is done. You must notify AFMOA/SGALE and the contracting office during these 30 days if you are experiencing

difficulty in accepting the equipment. During re-inspections, inspect areas that failed the initial inspection, were omitted because of equipment failure, and may have been affected by any corrective action performed.

The acceptance inspection report on any X-ray system requiring a re-inspection must include an itemized list of all costs (e.g., salary, per diem, travel, and other miscellaneous costs) incurred during the re-inspection. Do not schedule operator or clinical training until the physicist and MERC team completes all acceptance testing and verifies the equipment system safe for patients.

Medical equipment not owned by MTF

There are times when your MTF may use medical equipment that it does not own (e.g., equipment that is leased, loaned, consigned, or privately owned). When a medical equipment item not owned by the MTF is in the facility for 30 days or more, MEMO will gain the item in DMLSS with an acquisition cost of one cent for maintenance tracking only. BMETs will follow standard acceptance procedures for the equipment. Medical equipment of this type must meet the same safety and performance standards as equipment owned by the MTF *before* using it for patient care. Equipment that failed inspection must be repaired at the owner's expense, and then re-inspected by a BMET. The equipment owner is responsible for maintenance unless otherwise specified under a contract agreement.

Warranties and guarantees

Completing the warranty or guarantee registration starts the process; but BMET duties continue throughout the life of the warranty period. BMETs are responsible for administering the warranty/guarantee program for all items of medical equipment. During this time, take all efforts to enforce the warranty provisions to prevent actions that might void the warranty. Unauthorized repair, modification, or abuses are some examples of actions that could jeopardize an equipment's warranty agreement.

Operator training

You are responsible for providing training to equipment operators in your MTF as needed. In-service training is conducted upon request of initial issue of new equipment systems, when new personnel are assigned to the department, or when a problem is identified with user maintenance or operation of the equipment. If the training occurs during the acceptance inspection, document it on the acceptance checklist. The section receiving the in-service maintains documentation of user training. BMETs also document the training through work order action codes. Other medical staff members and/or the manufacturer can also provide in-service training. Contracts for new equipment should require the manufacturer to provide in-service training when available. Operator/in-service training should include instruction and information on the following:

- Proper operation and effective application.
- Features unique to the particular manufacturer or model of equipment.
- Safety precautions for operators and patients.
- User PM, cleanliness, and operational verification procedures
- Recognition and correction of common operational problems.
- Recognition of defective equipment and potential hazards.
- Proper reporting procedures for maintenance requests.

Indicators that in-service training is required include frequent requests for repair service attributed to operator error, frequent unscheduled calls with no defects found, or inadequate user maintenance. When you experience such problems, document the discrepancy, notify the section supervisor, and offer operator training assistance to the section supervisor and equipment operators.

023. Recommending equipment replacement

Property custodians and MEMO prepare the equipment requirements list annually before budget submission. MEMO then submits it to the MLFC, with your consultation. You should recommend that equipment users replace equipment under any of the following conditions:

- New technology is more economical to operate and maintain.
- Repair part/service is no longer available.
- The HMR indicates the cost to repair will exceed the MEL or MRLC.
- Current equipment record accurately reflects excessive downtime or repair hours.
- Manufacturer has stated they will no longer support the equipment within two years.
- Life expectancy considerations; when equipment no longer meets current standard of care.
- Changes in regulatory requirements; an equipment item may use a process or material that has been found to be hazardous. In this case, even though the equipment is fully functional it may need to be replaced.
- Adverse hospital incidents or recalls on equipment may require equipment to be removed for the safety of patients and staff.

You will use the MEL and MRLC as guidance to determine whether a repair is cost effective. DMLSS automatically calculates the MEL and MRLC for medical equipment devices or systems. The MEL is 65 percent of the acquisition cost until the item reaches 65 percent of its remaining life. At that point, the maximum repair allowance (MRA) equals the acquisition cost times the percentage of life remaining. Once the item has only 10 percent remaining life, the MRA is a straight 10 percent of the acquisition cost until it is replaced. Using this calculation method, the MRA gradually decreases as the item gets older. MRLC should not exceed 125 percent of the acquisition cost of the item for the life of the equipment. As labor and part costs occur, they are subtracted from the MRLC.

Exceptions to this standard include dental/surgical hand pieces, X-ray tubes, fiber optic equipment, and other items that can be rebuilt to essentially like-new items are exempt from the MRLC. The MEL for these exempted items is 75 percent of the current replacement cost of the item regardless of its age. MEL & MRLC may be exceeded when approved by the MLFC or MTF administrator.

As they occur, document in DMLSS all downtime, repair hours, and repair costs accurately. Properly prepared and maintained HMRs provide equipment identification data, location, condition, maintenance history, and maintenance actions and aids in supporting requests for equipment replacement.

As stated in unit 1, it is important to ensure the maintenance assessment code of equipment accurately reflects its condition. This code is used to determine the unit's serviceability and support the equipment replacement request. You are responsible for reviewing the DMLSS equipment replacement report for accuracy. The report provides a list of equipment that is eligible or becoming eligible for replacement based on equipment records.

Hospital staff may ask you for technical assistance in determining some suitable replacements. The following table describes some criteria you should keep in mind:

Criteria	Questions to ask
Appropriateness	Is the equipment appropriate for the type of services the MTF provides? (Avoid recommending something too technical for the purpose). Is special storage or operating conditions required?
Quality	How often will the item be used and how long is it expected to last? Do the supplies and equipment meet safety and performance standards?

Criteria	Questions to ask
Cost to operate and maintain	Is the item capable of being maintained locally? Will the supplies or equipment be compatible with your existing equipment?

024. Performing equipment disposition

Once it is determined and agreed upon that an equipment item must be turned in, the property custodian is responsible for preparing an AF Form 601 and turning it in to MEMO. You must use the turn-in checklist found in the *Clinical Engineering Guide* to process the equipment disposition (**NOTE:** If you see any errors or chance for improvement, submit change requests to update or correct the document to AFMOA/SGALE for approval and implementation). When possible, the property custodian should bring the equipment and AF Form 601 to the medical maintenance shop for inspection. If the item is too large or permanently installed, the custodian arranges with BMETs for the inspection. In order to tag the equipment properly, you must determine the serviceability of the equipment by inspection and review of its maintenance history. Then you complete and attach one of the following three forms to the equipment, depending on the condition of the unit:

1. DD Form 1574, Serviceable Tag—Materiel (fig. 3–10) (yellow tag).

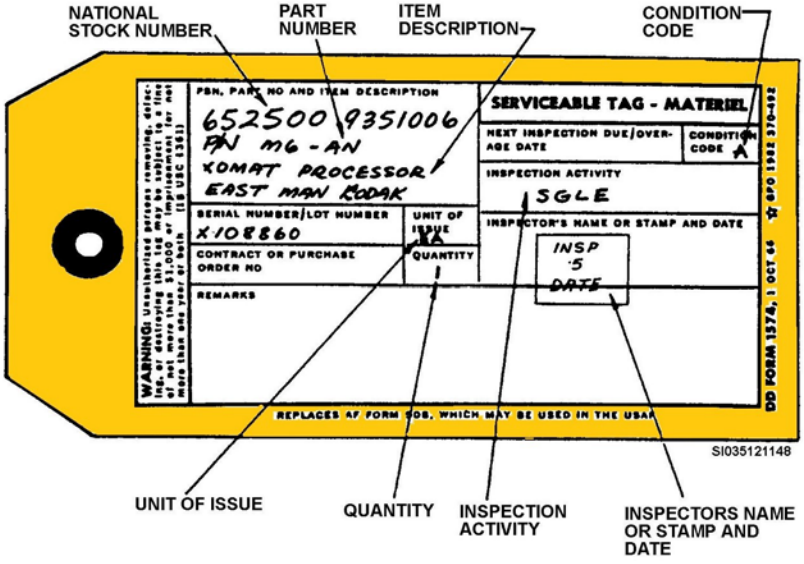


Figure 3–10. Sample DD Form 1574.

2. DD Form 1577, Unserviceable (Condemned) Tag—Materiel (red tag).
3. DD Form 1577–2, Unserviceable (Reparable) Tag—Materiel (green tag).

Recall from unit 2 that condition codes are as follows:

Code	Title	Explanation
A	Serviceable (Issuable Without Qualification)	New, used, repaired, or reconditioned materiel which is serviceable and issuable to all customers without limitation or restriction
B	Serviceable (Issuable With Qualification)	New, used, repaired, or reconditioned materiel which is serviceable and issuable for its intended purpose but which is restricted from issue to specific units, activities, or geographical areas by reason of its limited usefulness or short service life expectancy.

Code	Title	Explanation
C	Serviceable (Priority Issue)	Items, which are serviceable and issuable to selected customers, but must be issued *before* supply condition codes A and B materiel to avoid loss as a usable asset.
F	Unserviceable (Reparable)	Economically reparable materiel that requires repair, overhaul, or reconditioning.
H	Unserviceable (Condemned)	Materiel which has been determined to be unserviceable and does not meet repair criteria; includes condemned items which are radioactively contaminated; Type I shelf-life materiel that has passed the expiration date; and Type II shelf-life materiel that has passed expiration date and cannot be extended. **NOTE:** Do not classify materiel in supply condition H unless it is truly unserviceable and does not meet repair criteria.

Ensure you include excess service literature, bench stock parts, test equipment, and the EDF along with the equipment when advertised in TRIMEDS. You may cannibalize or disassemble, excess or unserviceable, medical equipment for serviceable parts or components and gain it to your bench stock as required. Turn in any excess parts. You must destroy the EDF and remove all PHI prior to sending any equipment to DLA-Disposition Services. If PHI cannot be removed, then clear and sanitize storage media in accordance with AFMAN 17-1301, *Computer Security (COMPUSEC).*

Once the MEMO receives the AF Form 601, signs it, and gives the custodian a copy, the property custodian is relieved of all responsibility for the item. Property custodians should keep AF Forms 601 for their files.

Self-Test Questions

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

020. Evaluating equipment requests

1. When does the official equipment request process start?

2. What information is normally included on equipment justification?

3. At a minimum, whom must MEMO include as reviewers on the Coordination tab?

4. What tabs must BMETs enter or verify data on during the DMLSS review?

5. What must you use to document a technical evaluation on an equipment requests worth $132,000?

6. What is the purpose of a technical evaluation?

7. List some considerations of evaluating maintenance support of a technical evaluation.

8. Whom can you contact if you require help doing a pre-procurement survey?

9. What does MEMO do with equipment requests after the ERAA approves it? If disapproved?

021. Planning and executing equipment installation

1. Who should verify all needed utilities and structural requirements are available for a new equipment item?

2. Briefly describe some items to consider for each area of equipment installation.

ITEM	CONSIDERATION
1. Facility modification	
2. Equipment specifications	
3. Communication requirements	
4. Equipment changes	
5. Duty section	
6. Installer	

3. Explain the difference between ILSMs and ICRAs.

4. When can you schedule MERC and physicist acceptance testing for X-ray equipment?

022. Performing acceptance inspection

1. What must you use to perform an equipment acceptance inspection?

2. Why is it important to perform acceptance inspections in a timely manner?

3. What are you required to include in the EDF during acceptance inspection?

4. If you discover any discrepancies during the acceptance inspection, what action should you take?

5. Describe a contracting default acceptance. Why is it important to avoid?

6. How would you address medical equipment not owned by your MTF that is going to be in the facility more than 30 days?

7. Who is responsible for administering the warranty/guarantee program for all medical equipment in the MTF?

8. What should be included in operator training?

9. List the indicators that show a need for operator training.

023. Recommending equipment replacement

1. List the conditions that you should recommend equipment replacement.

2. What equipment is exempt from the MRLC?

3. Who can approve a repair exceeding the MEL and/or MRLC?

4. How is the maintenance assessment code used?

5. What criteria should you consider if asked to assist with choosing equipment replacements?

024. Performing equipment disposition

1. Who is responsible for preparing the AF Form 601 for equipment turn-in?

2. List the three DD Forms used to identify an equipment item for turn-in along with their common names.

3. Match the federal condition code in column B with the appropriate meaning in column A. The codes in column B may be used only once.

Column A	*Column B*
___(1) Unserviceable (condemned).	a. A.
___(2) Serviceable (issuable with qualification).	b. B.
___(3) Unserviceable (reparable).	c. C.
___(4) Serviceable (issuable without qualification).	d. F.
___(5) Serviceable (priority issue).	e. H.

4. How do you handle PHI for equipment being disposed?

Answers to Self-Test Questions

018

1. All personnel are responsible for safeguarding AF property and may have pecuniary liability for the negligent loss or destruction of such property in accordance with AFI 23–111.
2. All medical equipment that meets the DOD threshold for accountable equipment defined in DODI 5000.64*;* nonexpendable equipment, which is neither consumed nor loses its identity during periods of use, and normally is capable of performing a function independently; all equipment with predefined scheduled maintenance intervals specified in the device code; all non-implantable equipment that is subject to tracking under the FDA Modernization Act, all major components of a system, which are defined as a part or element of a system that cannot operate independently and must work with all other intended components of that system; and any item may be maintained on accountable records at the discretion of the MLFC or the MTF commander.
3. AF Form 601 is used to transfer accountability of equipment. The property custodian must fill out and sign the document, and then turn it in to MEMO for processing.
4. The MTF commander usually acts as the ERAA, but may delegate to the deputy commander or MTF administrator. The ERAA can be an individual or committee at the discretion of the MTF commander.
5. Standardize the management of in-use equipment at medical facilities; ensure validated equipment authorizations are consistent with the various missions of medical units; keep medical managers at all levels informed through comprehensive and accurate reporting; promote economy, supply discipline, and effective management of equipment in support of the overall medical mission; and ensure that medical equipment assets meet accepted standards for safety and technology.
6. With a special number or code called the expense center or customer ID

019

1. It identifies the commodity type and determines the ordering and approval process, the available SOSs, and how the request is funded.
2. Equipment, supplies, and parts.

3. Equipment – Investment: medical equipment with a unit cost of $250,000 or more; Equipment – Expense: medical equipment with a unit cost of less than $250,000; and Equipment–Durable: an expendable item that is not consumed in use and has a life expectancy in excess of one year but does not qualify as an equipment item.
4. In medical maintenance the distinction between a supply item and a part is that if the item attaches to a specific piece of equipment and is required for the equipment to function, it is a part.
5. The PVM SOS is preferred. The PV program provides a rapid and cost-effective method for acquisition of medical materiel that offers next day shipping.
6. The pricing often undercuts other LP prices; the prices are reflected as the delivered cost (already includes shipping, handling, and the DLA surcharge); the approval process is quick; product delivery occurs within 72 hours of submittal; and you can check the status of the order at any point in the procurement cycle.
7. Contact BMETs from the losing unit to ensure the serviceability of the item.
8. Manufacturer's literature parts breakdown or manual.
9. The part that you are replacing may not be the correct specification the equipment requires, which could be the reason (or contributing factor) for the failure.
10. Enter a quantity in the ROP field in the Part Information tab.
11. For frequently used parts.
12. Due to potential inventory inaccuracy between DMLSS and physical inventories.
13. If items were ordered directly from the CAIM module; it was previously received (would show on issue listing); or if a problem occurred and the order was deleted or canceled.
14. BMETs.
15. As-required.
16. Reduced supply chains and other technological advances make receiving parts much quicker.
17. Proper PM inspections.
18. It is the time from when you order the repair part until it is received.
19. It is the smallest amount (dollar value) you may purchase from a company before they fill the order.
20. Annually.
21. MLFC, within 30 days of inventory closure.
22. Turn-in document.
23. To avoid any legal issues that can arise from incorrect disposal.

020

1. When the property custodian requests equipment through the DMLSS Customer Support module.
2. A description of where the item will be used and what function it will accomplish; what the current and projected workload is; who is or will be qualified to use the equipment; how the item will be maintained; what the savings benefits are.
3. BMETs, the facility manager, and Systems.
4. Installation, Training, Support, Coordination, Eq. Info, Options, Comp/Acc, and Supplies.
5. AF Medical Logistics Guide Attachment 16, *Technical Considerations for New Equipment Acquisition.*
6. To review equipment for compliance with accepted safety and performance standards, and to ensure the equipment requested is safe, reliable, and maintainable.
7. Determine what (if any) specialized training, space, and test equipment is required. Include tuition cost for maintenance training and required test equipment in the acquisition of the equipment when appropriate. Training must be completed within 12 months of equipment acceptance. Ensure each equipment quote includes two hardcopy or reproducible softcopy maintenance/service and user manuals. Analyze all factors when determining whether or not contract maintenance it is required.
8. Regional physicist or MERC.
9. MEMO submits approved packages to Turbo TIGERS for funding and the equipment is ordered as funds become available. All disapproved requests will be returned to the custodian with the stated reason for disapproval.

021

1. Facility management.
2. (1) How long will modifications take? Careful planning is required to ensure that the site is ready when the equipment arrives.

   (2) Do you have exact specifications for the equipment? Contact the equipment manufacturer for exact requirements.

   (3) What are the communication requirements? Telephone/modem line? If connecting to the network does it have approved ATC and/or ATO?

   (4) Will the model and manufacturer of the new equipment be exactly what was requested? Close contact with MEMO ensures that you have the latest information on the equipment that you will receive. Do not begin any advanced building modifications until the actual item is ordered and the exact requirements are known.

   (5) What effect will the installation have on the duty section? Always consider the effect an equipment installation will have on the MTF department receiving the new item.

   (6) Who will install the equipment? AFMOA/SGALE and your MERC are the best sources of information on which type of installation is appropriate.
3. ILSMs are measures put in place to protect the safety of patients, visitors, and staff during times of construction and maintenance, and ICRA precautions are concerned with the health of patients.
4. After notification from DLA that the NRI has been issued by the vendor performing the installation of the equipment system.

022

1. The *Equipment Acceptance and Initial Inspection Checklist* found in the Clinical Engineering Guide.
2. MEMO cannot release the equipment to the user until you perform the acceptance inspection. The section that requested the equipment did so due to a verified need; it can irritate the staff knowing that their new equipment has arrived, but they are not able to use it because it is awaiting inspection from BMETs.
3. A copy of the warranty registration, the acceptance inspection work order, and the acceptance checklist.
4. Report any discrepancies noted to MEMO, so they can investigate and contact the vendor/supplier as necessary.
5. When an acceptance inspection is not completed within 30 days of installation, the contracting office automatically accepts the equipment by default. You will not be able to address any issues with the equipment after a default acceptance is done.
6. MEMO will gain the item in DMLSS with an acquisition cost of one cent for maintenance tracking purposes and BMETs will follow standard acceptance procedures for the equipment.
7. BMETs.
8. Proper operation and effective application; features unique to the particular manufacturer or model; safety precautions for operators and patients; user PM, cleanliness, and operational verification procedures; recognition and correction of common operational problems; recognition of defective equipment and potential hazards; proper reporting procedures for maintenance requests.
9. Frequent requests for repair service attributed to operator error, frequent unscheduled calls with no defects found, or inadequate user maintenance.

023

1. New technology is more economical to operate and maintain; repair parts/service are no longer available; HMR indicates the cost to repair will exceed the MEL or MRLC; current equipment record accurately reflects excessive downtime or repair hours; manufacturer has stated they will no longer support the equipment within two years; life expectancy considerations; when equipment no longer meets current standard of care; changes in regulatory requirements; an equipment item may use a process or material that has been found to be hazardous; adverse hospital incidents or recalls on equipment may require equipment to be removed for the safety of patients and staff.
2. Dental/surgical hand pieces, X-ray tubes, fiber optic equipment, and other items that can be rebuilt to essentially like-new items.
3. MLFC and MTF administrator.

4. To determine the unit’s serviceability and support the equipment replacement request.
5. Appropriateness, quality, and cost to operate/maintain.

024

1. The property custodian.
2. DD Form 1574, Serviceable Tag-Materiel; yellow tag. DD Form 1577, Unserviceable (Condemned) Tag-Materiel; red tag. DD Form 1577–2 Unserviceable (Reparable) Tag-Materiel; green tag.
3. (1) e.
   (2) b.
   (3) d.
   (4) a.
   (5) c.
4. You must remove all PHI prior to sending any equipment out. If PHI cannot be removed, you must clear and sanitize storage media in accordance with AFMAN 17–1301.

Unit Review Exercises

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

Do not return your answer sheet to AFCDA.

45. (018) Which of the following is used to transfer accountability of medical equipment?
    a. AF Form 601.
    b. AF Form 1763.
    c. Defense Medical Logistics Standard Support (DMLSS) work order.
    d. Official memorandum of record.

46. (018) Who centrally manages funding, execution, and budget requirements for medical investment equipment?
    a. Military treatment facility (MTF) commander.
    b. Air Force medical logistics division (AFMOA/SGAL).
    c. Medical logistics flight commander (MLFC).
    d. Clinical engineer.

47. (018) Who *usually* acts as the medical equipment review and approval authority (ERAA)?
    a. Military treatment facility (MTF) commander.
    b. Air Force medical logistics division (AFMOA/SGAL).
    c. Medical logistics flight commander (MLFC).
    d. Clinical engineer.

48. (018) Who is responsible for standardizing the management of in-use equipment at military treatment facilities (MTF)?
    a. Acquisitions.
    b. Medical equipment management office (MEMO).
    c. Medical logistics flight commander (MLFC).
    d. Biomedical equipment technicians (BMET).

49. (018) Who is responsible for verifying equipment on-hand and due in is authorized?
    a. Biomedical equipment technician (BMET).
    b. Medical logistics flight commander (MLFC).
    c. Medical treatment facility (MTF) commander.
    d. Medical equipment management office (MEMO).

50. (018) Who assigns a property custodian to oversee each supply account in the military treatment facility (MTF)?
    a. Medical treatment facility (MTF) commander.
    b. Medical logistics flight commander (MLFC).
    c. Biomedical equipment technician (BMET).
    d. Noncommissioned officer in charge (NCOIC) of section.

51. (018) The property custodian must transfer their account through the medical equipment management office (MEMO) to an authorized successor if they are absent from the account longer than
    a. 30 calendar days.
    b. 30 duty days.
    c. 45 calendar days.
    d. 45 duty days.

52. (019) What is the preferred non-prime vendor method for equipment and supply procurement?
    a. Electronic catalog (ECAT).
    b. Local purchase (LP).
    c. Government purchasing card (GPC).
    d. Excess listings.

53. (019) Which source of supply (SOS) can you use to obtain supplies and parts at no cost to your unit?
    a. Local purchase.
    b. Defense Logistics Agency (DLA).
    c. Decentralized blanket purchase agreements (DBPA).
    d. Tri-Service Medical Excess Distribution System (TRIMEDS).

54. (019) What is the *best* source to gather repair part information for ordering purposes?
    a. Defense Medical Logistics Standard Support (DMLSS) Repair Part tab.
    b. The data stamped on the part being removed and replaced.
    c. Manufacturer's literature.
    d. Health devices source.

55. (019) Which Defense Medical Logistics Standard Support (DMLSS) Repair Part tab contains useful data to determine whether an item should be stocked, not stocked, or deleted?
    a. Note.
    b. Part Information.
    c. Pipeline Consumption.
    d. Equipment Information.

56. (019) Who is responsible for monitoring the status of repair parts ordered for equipment items?
    a. Equipment user.
    b. Property custodian.
    c. Biomedical equipment technician (BMET).
    d. Medical equipment management office (MEMO).

57. (019) How is the use of consumable supplies normally accounted for in a maintenance shop?
    a. There is no formal accounting process.
    b. By a monthly inventory.
    c. Each person that uses the supplies signs for them.
    d. The property custodian formally issue the supplies.

58. (019) Which of the following is *not* a consideration for determining what parts and quantities to place in a repair parts inventory?
    a. Cost of downtime.
    b. Equipment cost.
    c. Consumption rate.
    d. Criticality of equipment.

59. (019) How often must biomedical equipment technicians (BMET) inventory assets in the repair parts inventory?
    a. Monthly.
    b. Quarterly.
    c. Semi-annually.
    d. Annually.

60. (020) How do property custodians submit equipment requests to the medical equipment management office (MEMO)?
    a. Defense Medical Logistics Standard Support (DMLSS).
    b. Turbo-The Integrated Global Equipment Request System (TIGERS).
    c. In person.
    d. Email.

61. (020) Biomedical equipment technicians (BMET) do *not* consider this area during technical evaluation of an equipment purchase?
    a. Facility.
    b. Interface.
    c. Communications.
    d. Budget requirements.

62. (020) Who determines the criticality code for approved equipment requests?
    a. Property custodian.
    b. Medical logistics flight commander (MLFC).
    c. Medical equipment management office (MEMO).
    d. Equipment Review and Approval Authority (ERAA).

63. (021) What are measures put in place to protect the safety of patients, visitors, and staff during times of construction and maintenance?
    a. Interim life safety measures (ILSM).
    b. Infection control risk assessments (ICRA).
    c. Risk management (RM).
    d. Quality assurance (QA).

64. (021) Who acts as the government's representative for medical equipment installed by contractors and *must* ensure the equipment is installed correctly and safely?
    a. Base civil engineering (BCE).
    b. Medical equipment repair center (MERC).
    c. Local biomedical equipment technician (BMET).
    d. Medical equipment management office (MEMO).

65. (022) Who completes the warranty registration data and forwards it to the manufacturer for new medical equipment?
    a. Medical equipment management office (MEMO).
    b. Biomedical equipment technician (BMET).
    c. Equipment operator.
    d. Property custodian.

66. (022) Who is responsible for coordinating diagnostic imaging systems acceptance testing?
    a. Clinical engineer.
    b. Medical equipment repair center (MERC).
    c. Local biomedical equipment technician (BMET).
    d. Medical equipment management office (MEMO).

67. (022) The contracting office allows how many days to perform diagnostic imaging systems acceptance testing before it accepts the equipment by default?
    a. 15.
    b. 30.
    c. 60.
    d. 90.

68. (023) The maximum repair limit cumulative (MRLC) should *not* exceed what percentage of the item's acquisition cost for the life of the equipment?
    a. 95.
    b. 100.
    c. 125.
    d. 150.

69. (023) Maximum expenditure limit (MEL) and maximum repair limit cumulative (MRLC) for equipment may be exceeded when approved by the
    a. military treatment facility (MTF) commander.
    b. medical logistics flight commander (MLFC).
    c. medical equipment management office (MEMO).
    d. Equipment Review and Approval Authority (ERAA).

70. (024) Which form would you place on an equipment item to indicate its conditioned code as *serviceable*?
    a. DD Form 1574, Yellow Tag.
    b. DD Form 1577, Red Tag.
    c. DD Form 1577–2, Green Tag.
    d. AFTO Form 350.

71. (024) When an equipment item is turned in, the property custodian is relieved of his or her responsibility
    a. as soon as the item is taken to the medical equipment management office (MEMO).
    b. after the custodian receives a copy of the AF Form 601 signed by MEMO.
    c. as soon as the item is scheduled for pickup.
    d. after the custodian signs the AF Form 601.

Glossary of Abbreviations and Acronyms

AAMI	Association for the Advancement of Medical Instrumentation
AAS	Associate in Applied Science
AE	aeromedical evacuation
AETC	Air Education and Training Command
AF	Air Force
AF COOL	Air Force Credentialing Opportunities On-Line
AFCDA	Air Force Career Development Academy
AFI	Air Force instruction
AFMAN	Air Force manual
AFMOA	Air Force Medical Operations Agency
AFMOA/SGA	Air Force Medical Operations Agency, Medical Support
AFMOA/SGAL	Air Force Medical Operations Agency, Medical Logistics Division
AFMOA/SGALE	Air Force Medical Operations Agency, Medical Logistics Division, Clinical Engineering Branch
AFMS	Air Force Medical Service
AFMSA	Air Force Medical Support Agency
AFMSA/SG8F	Air Force Medical Support Agency, Health Facilities Division
AFMSA/SGS8F	Air Force Medical Support Agency, Health Facilities Division, Facilities, Operations and Engineering Branch
AFPC	Air Force Personnel Center
AFRC	Air Force Reserve Command
AFSC	Air Force specialty code
AF/SG	Air Force surgeon general
AFTH	Air Force theater hospital
AFTO	Air Force technical order
AFTTP	Air Force tactics, techniques, and procedures
ALS	Airman Leadership School
AM	Assemblage Management
AMC	Air Mobility Command
Amn	Airman
AMC/SG	Air Mobility Command/surgeon general
ANG	Air National Guard
ATC	authority to connect

ATO	authority to operate
BCE	base civil engineering
BE	bioenvironmental engineering
BMET	biomedical equipment technician
CAGE	commercial and government entity
CAIM	Customer Area Inventory Management
CAMAC	*Comprehensive Accreditation Manual for Ambulatory Care*
CAMH	*Comprehensive Accreditation Manual for Hospitals*
CAP	College of American Pathologists
CASF	contingency aeromedical staging facility
CBET	Certified Biomedical Equipment Technicians
CCAF	Community College of the Air Force
CCM	cost center manager
CDC	career development course
CFETP	career field education and training plan
CFM	career field manager
CFR 21	Title 21 of the Code of Federal Regulations
CHFM	certified healthcare facility manager
CHTM	certified healthcare technology manager
CLEP	college level examination program
CLES	Certified Laboratory Equipment Specialists
CMSgt	chief master sergeant
COMPUSEC	computer security
CompTIA	Computing Technology Industry Association
CONOPS	concept of operations
CONUS	continental United States
COR	contract officer representative
CRES	Certified Radiology Equipment Specialists
CT	computed tomography
DANTES	Defense Activity for Non-Traditional Education Support
DHA	Defense Health Agency
DLA	Defense Logistics Agency
DMLSS	Defense Medical Logistics Standard Support
DOC	designed operational capabilities

DOD	Department of Defense
DODI	Department of Defense instruction
DUNS	Data Universal Numbering System
ECAT	Electronic Catalog
ECN	equipment control number
EDF	equipment data file
EM	Equipment Management
EMEDS	expeditionary medical support
EML	expeditionary medical logistics
EOC	environment of care
ERAA	Equipment Review and Approval Authority
ETCA	Education and Training Course Announcements
FDA	Food and Drug Administration
FM	Facilities Management
FOA	field operating agency
FRED	functional requirements evaluator designee
FSC	federal supply class
HIPAA	Health Insurance Portability and Accountability Act
HMR	historical maintenance report
IA	information assurance
ICRA	infection control risk assessment
ID	identification
ILSM	interim life safety measure
LOG	logistics
LOTO	lockout/tag-out
MA	Maintenance Activity/Equipment Maintenance
MAJCOM	major command
MAV	management assistance visit
MC-CBRN	medical counter chemical-biological-radiological-nuclear
MEFPAK	manpower and equipment force packaging
MEL	maximum expenditure limit
MEMO	medical equipment management office
MERC	medical equipment repair center
METC	Medical Education & Training Campus

MFM	major command functional manager
MISCAP	mission capability statement
MLFC	medical logistics flight commander
MOA	minimum order amount
MRA	maximum repair allowance
MRL	medical resource letter
MRLC	maximum repair limit cumulative
MSgt	master sergeant
MTF	military treatment facility
NCOA	Noncommissioned Officer Academy
NCOIC	noncommissioned officer in charge
NFPA®	National Fire Protection Agency®
NMCPHC	Navy and Marine Corps Public Health Center
NRI	notice of readiness to inspect
OI	operating instruction
OJT	on-the-job training
PCRI	post calibration radiation inspection
PHI	protective health information
PM	preventive maintenance
PMI	patient movement item
PMITS	Patient Movement Item Tracking System
PMO	project management office
PMP	project management professional
PV	prime vendor
PVM	prime vendor medical/surgical
PVP	prime vendor pharmaceutical
RM	risk management
RMO	resource management office
ROP	reorder point
ROS	report of survey
RPG	repair-part-gain
RPL	repair-part-lost
SAV	staff assistance visit
SC	Service Contracts

SEI	special experience identifier
SG	surgeon general
SMSgt	senior master sergeant
SNCO	senior noncommissioned officer
SNCOA	Senior Noncommissioned Officer Academy
SOS	source of supply
SPR	scheduled parts replacement
SrA	senior Airman
SS	System Services
SSgt	staff sergeant
STS	specialty training standard
TA	table of allowance
TIGERS	The Integrated Global Equipment Request System
TJC	The Joint Commission
TMDE	test, measurement, and diagnostic equipment
TO	technical order
TRIMEDS	Tri-Service Medical Excess Distribution System
TSgt	technical sergeant
UGT	upgrade training
UII	unique item identifier
UMD	unit manpower document
UMDC	universal medical device code
UMDNS	Universal Medical Device Nomenclature System
USC	United States Code
UTC	unit type code
WRM	war reserve materiel

Student Notes

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AFSC 4A251A
4A251A 01 1809
Edit Code 04