

CDC 4M051N

Aerospace Physiology Journeyman

Volume 1. Aerospace Physiology Career Field Principles



**Extension Course Program (A4L)
Air University
Air Education and Training Command**

**4M051N 01 0908, Edit Code 03
AFSC 4M051**

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This is the first of five volumes of career development course 4M051, *Aerospace Physiology Journeyman*.

In unit 1 of this volume we explain the mission and organization of the Air Force Medical Service. We describe the general duties of aerospace physiology personnel and briefly discuss career ladder progression and educational opportunities available to you.

In unit 2 we cover the importance of the Air Force Occupational Safety and Health program and how to maintain a safe working environment and avoid physical and safety hazards. We describe ways to prevent accidents and mishaps when working with equipment associated with the career field such as high-pressure oxygen cylinders. In addition, we discuss Operations Security and your role in safeguarding sensitive information that adversaries may use to their advantage and the detriment of our mission effectiveness.

In unit 3 we ensure that you know the requirements and guidelines for scheduling and training students for initial or refresher aerospace physiology (AP) classes. We also provide overall administrative guidance on hypobaric chamber flight profiles.

Unit 4 explains the records management program. We also cover how to prepare the many forms and maintain the publications and technical orders that apply to the AP career field.

Unit 5 discusses the principles and practices you need to follow to be an effective instructor. We describe instructor responsibilities in the classroom environment and how to take advantage of the instructor role to enhance your knowledge and understanding of the career field and the Air Force mission.

A glossary of abbreviations and acronyms used in this course is included at the end of this volume.

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This volume is valued at 12 hours and 4 points.

NOTE:

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

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Unit 1. Career Ladder Progression

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AS AN AEROSPACE PHYSIOLOGY (AP) technician, you are a member of the Air Force Medical Service (AFMS). As a member of the AFMS, you need to know its overall mission and your role in accomplishing this mission. Your primary responsibility involves duties within an Aerospace Physiological training facility. This unit explains the AFMS’s mission in order to help you better understand your career field. It describes the United States Air Force (USAF) Aerospace Physiological Training Program and the general duties of Aerospace Physiology personnel. The unit also provides a brief look at career and educational opportunities available to you.

Increased technology and the growing demand for highly trained aircrew make the twenty-first century an exciting and challenging time for the Aerospace Physiology career field. Your opportunities are many as a member of the 4M0X1 career field and “Team Aerospace.”

001. Air Force Medical Service mission

Air Force Policy Directive (AFPD) 44-1, *Medical Operations*, establishes the policies the AFMS uses to ensure the highest standards of practice are applied to all aspects of health care rendered to eligible beneficiaries. AFPD 44-1 also states, “The AFMS will continually strive to ensure that its members are mentally and physically fit, so they can be persuasive in peace, and decisive in war” (p. 1). Therefore, the AFMS mission is to provide the medical support to *increase performance and mission readiness* of the USAF.

Consider the phrase “increase performance and mission readiness” for a moment. The phrase takes on much greater significance when taken in the context of world situations and our changing roles as service members. What does this phrase mean in your day-to-day routine? As an AP technician, you have a personal and moral responsibility to help increase the performance and mission readiness of the USAF. Mission accomplishment depends on your ability to complete your assigned tasks. This lesson discusses how to meet these responsibilities.

The career development course (CDC) is part of a well-planned Aerospace Physiological Training Program designed to increase the Air Force’s performance and mission readiness. This training program teaches the flyer the physiological stresses and human performance factors of modern military flight. It prepares the flyer to meet these challenges successfully. Successful preparation applies to active duty Air Force, Air Force Reserve, and Air National Guard flying personnel. Passengers on certain types of aircraft and personnel who manage physiological training and research chamber activities also are covered under the program.

Purpose and organization

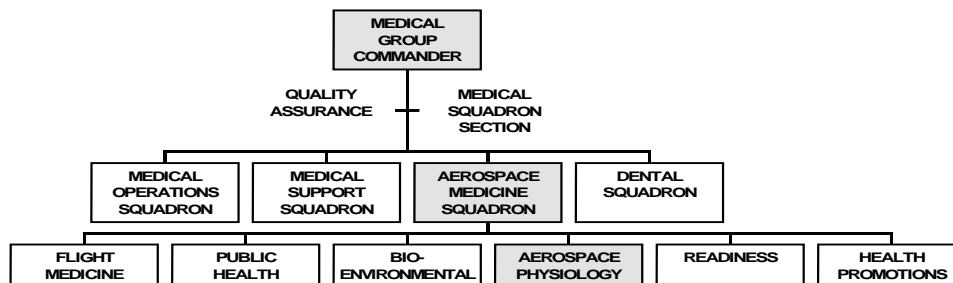
The AFMS operates and manages a worldwide health-care system capable of responding to a full spectrum of anticipated health requirements and provides an integrated health-care system for those in forward-deployed locations through definitive care with an emphasis on prevention of illness and injury. The AFMS has an annual budget of approximately \$6.9 billion and runs 75 military treatment facilities (MTF) worldwide, including 24 hospitals and medical centers. To help you better understand how your work as an AP technician fits into the AFMS, let’s take a brief look at the major players within the AFMS along with their main responsibilities.

| | |
|----------------------------------|--|
| HQ USAF Surgeon General | <ul style="list-style-type: none"> - Procures and allocates resources. - Establish Aerospace Medicine policy and guidance. - Liaison with other DOD. |
| MAJCOM Surgeon General | <ul style="list-style-type: none"> - Interpret and enforce HQ USAF Surgeon General Policy. - Provide guidance to MTFs. |
| MTF Commander | <ul style="list-style-type: none"> - Direct daily operations of the MTF. - Responsible for execution of the medical elements of the Aerospace Medicine Program (AMP). |
| Chief, Aerospace Medicine | <ul style="list-style-type: none"> - Coordinate Team Aerospace activities. - Direct aircrew personnel health activities. - Coordinate health surveillance activities. - Provide professional medical oversight for the installation AMP. |

Medical units are organized as wings, groups, or squadrons, depending on the scope of the base's mission and the size of the organization. The vast majority of MTFs in the Air Force are specified as Medical Groups (MDG). These groups normally consist of the following four squadrons:

1. Medical Support Squadron (MDSS).
2. Dental Squadron (DS).
3. Aerospace Medicine Squadron (AMDS).
4. Medical Operations Squadron (MDOS).

Again, the size of the organization and the mission will determine whether a unit is labeled a wing, group, squadron, or flight. The organizational chart below shows the "typical" structure of a larger Medical Group (more than 100,000 outpatient visits annually) and where Aerospace Physiology fits in.



MTF commanders are accountable for all aspects of the Medical Group's mission and serve as the chief executive officer (CEO) of the medical facility. The MTF commander is also the primary medical advisor to the wing commander. Medical groups that have less than 100,000 outpatient visits annually may contain only two subordinate squadrons:

1. Medical Operations Squadron (MOS).
2. Medical Support Squadron (MSS).

Their functions are essentially the same as in the core structure for a larger medical group; only the scope of operations is limited due to the size of the organization. The MDOS provides or arranges for the full scope of preventive and clinical health-care services for the population. The MDSS provides diagnostic and therapeutic services, resource management (financial and manpower), TRICARE (managed care), medical logistics, medical information systems management, and personnel and administration in support of the medical group.

These smaller medical units (squadrons) are further divided into flights. Flight-level functions and responsibilities in these organizations are equivalent to those in the four-core squadron structure. A flight is a part of a squadron and composed of elements performing specific missions. Elements are the smallest cohesive collection of personnel in the performance of a specific role or mission, such as in family practice or primary care clinics.

The objective of the organizational structure is to reduce confusion during transition from peacetime to wartime. It provides a system that operates effectively with the least expenditure of resources and helps reduce orientation time as you transfer from one duty location to another. Additionally, it promotes organizational stability and helps supervisors establish standards for evaluating performance. It also aids in improving management techniques and communications throughout the AFMS. How does this apply to you? It means orderly transitions into assigned duties at different locations, a clear chain of command, easily understood performance standards, and a fair comparison between all AP personnel.

Mission areas of the Aerospace Medicine Program

The AMP strives to ensure a healthy and fit force, to prevent casualties, restore health, and to enhance human performance. The ability of the Air Force to conduct effective and sustained combat operations depends largely on the physical and mental health of its personnel. The AMP varies from base to base; depending on such factors as population, geographic location, and mission. The list below details some of the primary mission areas of AMP:

- Provide operational health care that will include, but is not limited to, Casualty Care and Management, routine health care and clinical services.
- Provide specialty care to ensure the success and safety of specific operators including, but not limited to, aviators, astronauts, missileers, air traffic controllers, and certain weapons systems operators
- Provide activities and expertise to prevent casualties and optimize the safety and health of USAF personnel.
- Employ principles of preventive medicine and health promotion to improve the overall physical, psychological, and social health and performance of individuals to enhance quality of life and increase effectiveness.
- Ensure compliance with outside regulations and laws.
- Monitor emissions to the environment to include the environment's overall quality.

All aerospace medicine activities are conducted with an integrated team approach that includes officers, enlisted, and civilian personnel. Your duties as an AP technician will have a direct impact on the quality and fulfillment of the AMP mission.

As you can see, there are many areas of professional concern within this program, too many to discuss adequately within the scope of this volume. Activities and concerns covered by the program are directed by the Aerospace Medicine Council, which is comprised of representatives from all functional areas within the AMP. This unique working group allows for continued review of the activities within Aerospace Medicine and provides a system to identify and correct potential problem areas. The council is responsible for setting objectives or requirements for the base AMP, determining methods for improving the program, and periodically reviewing requirements for functional areas within the program.

What does all this mean to you? The Aerospace Medicine Council provides the link for all the functions of "Team Aerospace." This council coordinates and standardizes our activities, together with the activities of all the other personnel within the program, so no effort is wasted, misdirected, or ignored.

Aerospace Physiology Flight

Our role in Team Aerospace is accomplished by providing Aerospace Physiology and human performance training and support functions to optimize force health and war-fighting performance. Aerospace Physiology uses a proactive approach to successfully counter physiological and human performance threats, to enhance health and safety, and to maximize war-fighter readiness and combat effectiveness. Through effective training you will demonstrate how to recognize, treat, and overcome physiological stresses and human performance errors. For example, an aircrew member may suffer the effects of spatial disorientation, explosive decompression, or ejection from a disabled aircraft. You instruct aircrews in the proper response to these problems and to use any and all resources available to prevent further problems. You may work as a member of a Human Performance Training Team (HPTT) whose primary mission is to provide human performance training and consultant services for flying safety activities, work with flight safety, assist in aircraft and ground mishap investigations, and participate in high-altitude air-drop missions. The HPTT is composed of one Aerospace Physiology officer (43A3) and one AP technician (4M051) who provide training and advice on human factor issues that may impact unit and individual capabilities and mission effectiveness.

Additional team members

There are several other flights within Team Aerospace. Next we provide a brief description of each one.

Bioenvironmental Engineering Flight

The bioenvironmental flight anticipates, recognizes, evaluates, and controls chemical, physical, radiological, and biological threats to human health. It also ensures regulatory compliance in occupational and community environments.

Public Health Flight

This flight prevents disease, disability, morbidity, and death through effective use of population-based public health programs. They conduct epidemiological surveillance and analysis of communicable, environmental, or occupational morbidity/mortality rates. They use this epidemiological data to establish and prioritize strategies for prevention and intervention. The key elements in the public health flight are epidemiological services, disease and injury prevention, food safety, immunizations, patient decontamination, and medical intelligence.

Flight/Missile Medicine Flight

This flight provides clinical and preventive medicine input to all key elements in the squadron along with primary care to flying and special operational duty personnel. The flight performs periodic and occupational health evaluations, fitness for duty assessments, and optometry services to medical group beneficiaries. The key elements in flight/missile medicine are occupational medicine, physical examinations, application of physical assessment criterion, operational hyperbaric medicine, and optometry services.

Readiness Flight

This flight is responsible for the readiness posture of the medical treatment facility. They ensure medical elements are organized, trained, and equipped to respond to any operational contingency. The key element in the readiness flight is to maintain all contingency plans for the medical facility.

Health Promotion Flight

The Health Promotion Flight is responsible for primary and secondary prevention efforts associated with lifestyle-related morbidity. They manage health and wellness centers (HAWC), provide assessments and evaluations, develop strategies to reduce mortality rates of active duty or civil servant populations, and support cost-effective health delivery. The key elements related to this flight are health promotion, prevention, awareness, education, motivation, and intervention.

USAF medical service and Aerospace Physiology

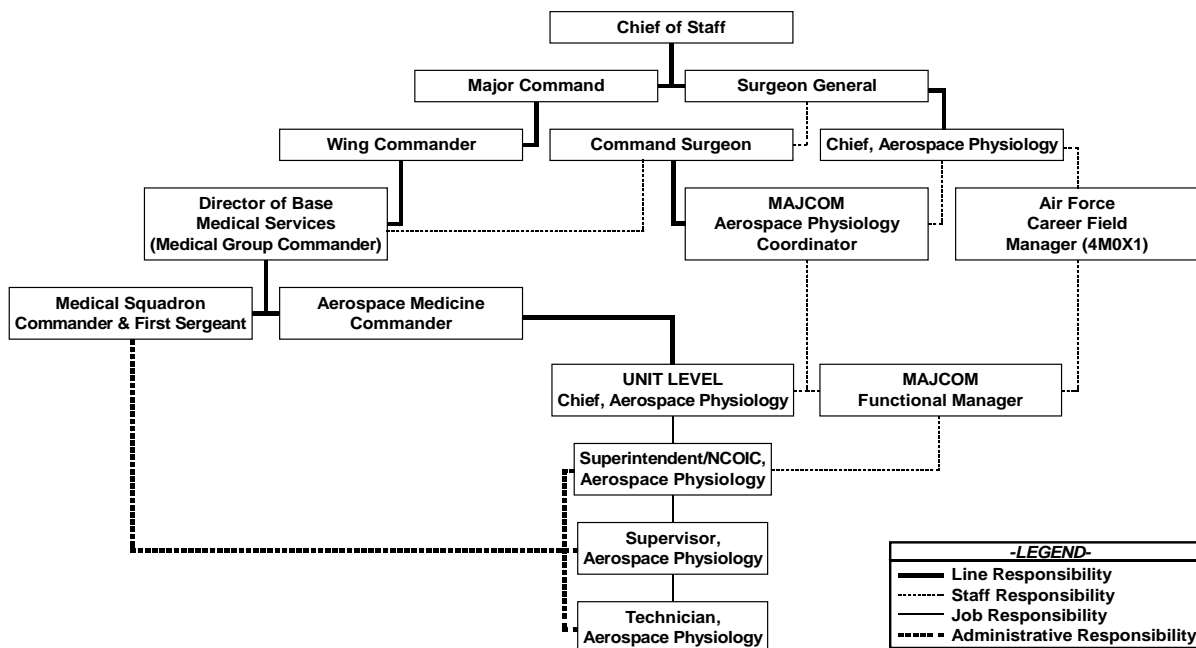
Knowing how your job aligns with and supports your organization's total mission is important. The goal is to provide and maintain a health-care system for the USAF. This goal includes providing the medical support necessary to increase performance and mission readiness. The primary goal of a medical group organization plan is to maintain a structure in peacetime to decrease organizational confusion during transition to war. Using a dedicated plan helps to maintain a structure that operates effectively without loss of resources. It also helps to standardize organizations throughout the Air Force.

Standardization reduces orientation time when you transfer from one duty location to another, promotes organizational stability, helps supervisors set performance evaluation standards, and helps improve management techniques throughout the AFMS. Standardization also improves communications, enabling USAF personnel to attach the same meanings to the same terms. What does this mean to you? Standardization is the reason you made an orderly transition into the Air Force, and it is the reason you will make an orderly transition when you are assigned new duties and duty locations. For example, when you begin your job, you are briefed on performance standards in a way that is easy to understand. Your chain of command is clear. Most importantly, you and all AP technicians receive a fair comparison. Easy-to-understand performance standards ensure you of fair and consistent treatment throughout your Air Force career.

Aerospace Physiological Training Program

Thus far, we have discussed the mission and organization of the AFMS in general. Now, let's look at the function and mission of the USAF Aerospace Physiological Training Program. Our program aids and advises nonmedical activities in support of their flying mission. These nonmedical activities include commanders of units that have flying missions, life support, and flying safety functions.

Aerospace physiological training is a function within the Medical Group and reports to the Aerospace Medicine Squadron commander. In the chart below you can appreciate the chain of command from the USAF chief of staff to the Aerospace Physiology functional level.



Aerospace Physiology mission

Our mission is to familiarize the flyer with the physiological stresses and human performance factors of modern military aviation and space flight and prepare the flyer to successfully meet these

challenges. Our goal is to enhance flight safety by reducing human performance errors. Your job is to explain these physiological stresses and human performance errors and demonstrate how to recognize, treat, and overcome these challenges. An aircrew member may suffer the effects of spatial disorientation, explosive decompression, or ejection from a disabled aircraft. It is your responsibility to ensure aircrew members understand the cause and nature of the problems. You instruct aircrews in the proper response to these problems and to use any and all resources available to prevent further problems.

Aerospace Physiology training activities

Everyone involved in AP supports the program's mission and goal. You also may become involved in a wide variety of specific activities. These activities range from the actual training mission to research, from flight-line support to hyperbaric chamber operations.

Training function

Most AP personnel participate in the training phases described in Air Force Instruction (AFI) 11-403, *Aerospace Physiological Training Program*. Original instruction, completed during your 3-level apprentice course, is a requirement for all new aircrew members. Refresher instruction is required every five years for flying personnel to remain current. Other phases of training include passenger instruction and Initial High-altitude Parachutist (HAP). Civilian personnel are trained in accordance with the USAF-Federal Aviation Administration (FAA) agreement.

Several facilities conduct undergraduate flying training (UFT) for pilot and navigator trainees. We provide original instruction, in the initial portion of an extensive training program, to individuals preparing to become pilots and navigators.

We assign personnel to limited status or satellite units when military bases do not have a training load large enough to justify a full-time training unit. Quarterly, a team is sent from a nearby full-time facility to train students. One or two Airmen remain at these limited-status units when no training is being done.

High-altitude airdrop mission support (HAAMS)

At many of our training facilities, we operate high-altitude airdrop mission support (HAAMS) teams. These teams involve Aerospace Physiology personnel supporting *unpressurized aircraft* missions in safety and life support monitoring roles. You must attain the 5-level in order to participate on a HAAMS team.

Human Performance Training Team (HPTT)

As mentioned earlier, select 4M0X1 personnel perform HPTT duties. Many of these are two-person teams (one officer, one enlisted) located at bases that do not have chamber-based Aerospace Physiology training facilities. HPTT operations cover a vast range of human performance issues. Each training facility serves as a training bed for those geographically separated teams throughout the Air Force.

High-altitude reconnaissance mission support (HARMS)

A large percentage of Aerospace Physiology personnel provide worldwide high-altitude reconnaissance mission support to the U-2 aircraft while assigned to the 9th Physiological Support Squadron at Beale AFB, California. Personnel receive specialized training to function as physiological support technicians, qualifying them to fit and maintain pressure suit assemblies, assemble and maintain the aircraft's emergency equipment, and perform launch and recovery actions both at home and in deployed locations.

Hyperbaric operations

The San Antonio Military Medical Center (SAMMC), Hyperbaric Medicine Branch at Lackland AFB, Texas, and the Hyperbaric Medicine Flight at Travis AFB, California, provide selected 4M051

technicians the knowledge and training to function as hyperbaric technicians. This training includes qualification as hyperbaric chamber operator, crew chief, and inside attendant. Other training involves equipment maintenance, administration, and management of a clinical hyperbaric treatment facility.

The SAMMC hyperbaric branch conducts the clinical hyperbaric training course. After completion of this course and 480 hours of clinical hyperbaric medicine work experience, the technician is qualified to take the nationally certified Clinical Hyperbaric Technologist (CHT) exam.

Duty at either of the clinical hyperbaric facilities requires personnel meet specific criteria. You must be at least a staff sergeant, and upgraded to 4M051. When open positions exist, you may apply through the Air Force Personnel Center (AFPC) Website.

Aerospace Physiology technician

As we saw earlier, we can track the AP technician's duty responsibility to the chief of Aerospace Physiology (chain of command). However, each training facility will have a senior noncommissioned officer (NCO) assigned as superintendent or NCO in charge (NCOIC). Normally, several Aerospace Physiology craftsmen work directly for the NCOIC. As a technician, one of these craftsmen is your immediate supervisor. Your chain of command begins here, continues with the NCOIC or superintendent, and progresses to the chief of Aerospace Physiology and typically the Aerospace Medicine Squadron commander.

002. 4M0X1 duties and skill-level progression

Career progression is like climbing a ladder. You will progress first as an Apprentice (4M031/3-skill level), then as a Journeyman (4M051/5-skill level), Craftsman (7-skill level), Superintendent (4M091/9-skill level), and finally, the Chief Enlisted Manager (4M000).

The first rung for the USAF enlisted force is basic military training. 4M0X1s continue up the ladder to the 3-skill level by completing formal technical training at Brooks City-Base, Texas. Upon graduation, you will enter into another step on the career progression ladder, your 4M051/5- level upgrade training (UGT).

The Air Force continues to make strong demands of today's Airmen. You have a responsibility to remain physically and mentally trained. *Only* the best Airmen will progress up the career ladder. Your duties and responsibilities will change as you progress from one skill level to the next.

Skill levels

The 4M0X1 Career Field and Education Plan (CFETP) lists the duties and responsibilities of each skill level. The job descriptions that appear in the CFETP are as accurate and complete as possible. This lesson describes duties at various skill levels of the 4M0X1 Air Force specialty code (AFSC).

Apprentice (semiskilled)

The training you received during the Aerospace Physiology apprentice course does not make you a polished AP apprentice. This is why you enter 5-skill level on-the-job training (OJT) upon arrival at your unit. Your duties will increase as you progress from 5- to 7-skill level technician. For instance, you may watch journeymen perform training equipment maintenance. Your new tasks may include helping fit students with oxygen equipment. You may perform chamber operations under your supervisor's close observation. Depending on how quickly you learn, you will advance to operating training equipment and performing equipment inspections. Your supervisor closely monitors your performance. Yet, you know you are gaining the knowledge to progress up your career field ladder. Becoming a journeyman (5-skill level) is the next step up that ladder.

Journeyman (skilled)

The 5-skill level journeyman performs a wide range of duties within an AP training facility. Many of these duties are common to all units; other tasks are unique to training facilities with a special or

specific mission. It is nearly impossible to perform all the tasks listed at any one duty assignment. However, you may be required to perform tasks that now seem remote when assigned to another unit.

The journeyman job description is full of words like operates, conducts, instructs, and maintains. You are the one who operates hypobaric chambers, audiovisual equipment, night-vision equipment, ejection seats, and spatial disorientation trainers. You may conduct training or testing with Aerospace Physiology devices and give briefings before and during training sessions. As a hypobaric chamber inside observer, you have the extremely important task of watching students for signs of hypoxia, decompression sickness, or other effects of altitude pressure change.

You participate in classroom training activities after completing instructor school. You begin by aiding and watching other qualified instructors in the classroom. Eventually, confidence, subject knowledge, and talent increase. Finally, you are ready to conduct training on your own, instructing in areas of oxygen equipment, cabin pressurization, aircraft escape, night vision, and so forth.

Your job may include administrative functions. Preparing and maintaining Aerospace Physiology records and reports provide important functional and historical documentation.

Working in the maintenance section is a pivotal role within any organization. Here you prepare and test equipment before student training. It is your job to locate potential problems and correct them. Some journeymen work in research or with pressure suits, hyperbaric chambers, and parasail equipment.

As a journeyman, you also will be called on to supervise. At the 5-skill level you supervise only the Airmen assigned to you. Although you may perform supervisory functions, a 5-skill-level Airman is primarily a worker. As you carry out limited supervisory responsibilities, you will develop a background of experience and gain a reputation as a potential supervisor. Still, you must work hard to become as technically proficient as possible. By doing so, you prepare yourself to climb the next step on the career ladder, the 7-level craftsman.

Craftsman

Supervising and troubleshooting become your primary task at the 7-skill level. These responsibilities automatically put a craftsman in a leadership position. As a leader, your responsibilities include close supervision of journeymen and apprentices.

You will find such action verbs in the craftsman's job description as plans, schedules, establishes, inspects, and evaluates. You plan and schedule training facility activities and help AP officers and flight surgeons set up local flying activities' procedures. In addition, you schedule chamber flights, night-vision training, and ejection-seat training. You also may interpret policies and regulations for subordinates. Your tasks may include analyzing requirements for supplies, equipment, and personnel based on scheduled workload.

Furthermore, you may conduct special training sessions to inform personnel of changes associated with AP training programs or equipment. You inspect and evaluate AP activities, refer findings, and make recommendations. Your knowledge in these areas is the basis of your recommendations to the superintendent or officer in charge (OIC).

Another responsibility of a 7-skill level craftsman is OJT. Although you may not perform all of the actual training, you must plan an adequate training program. You ensure all of your trainees have every opportunity to become proficient in all phases of their jobs. You must also either secure or train competent instructors.

You gain both technical knowledge and supervisory skill on the way up the career ladder. Keep in mind that supervision becomes a full-time responsibility. However, do not forget you continue to perform routine duties (e.g., operating training devices, instructing, and serving as a chamber crewmember). Therefore, a craftsman must maintain job knowledge by keeping abreast of technical advances throughout the career field.

Superintendent

The superintendent is at the top level of management, reporting directly to the training facility flight chief. The size of the unit and the diversity of the mission are considerations when assigning a superintendent to a unit. Therefore, a superintendent is not authorized at all training units.

The primary duties of a superintendent are to plan, coordinate, and organize section activities. Conducting several types of training at separate base locations is very costly to the Air Force. The superintendent is responsible for keeping the cost of the operation to a minimum. Ideally, all training is done under one roof, but this may not always be possible. However, a good superintendent plans and organizes the use of available space and equipment. It is easy to see that the superintendent is the focal point for the enlisted force within the AP training unit.

Career advancement and progression

Career advancement includes promotion. Promotion is directly impacted by your efforts to improve performance and maintain skills in your Air Force specialty. Skill-level progression involves knowledge of your job and general background knowledge of the military. You gain this knowledge through self-study, using this career development course, and by performing duties in your unit. Below we show the typical rank versus skill-level progression within the 4M0X1 career field. Skill-level progression advances from the 3- to 5- to 7-skill level and finally to the 9-skill level. You must satisfactorily complete this CDC to be eligible for upgrade to the 5-skill level. You cannot go directly from a 3-skill level to a 7-skill level in the 4M0X1 career field.

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|----------------------|--|
| CMSgt | AEROSPACE PHYSIOLOGY MANAGER AFSC 4M000 |
| CMSgt SMSgt | AEROSPACE PHYSIOLOGY SUPERINTENDENT AFSC 4M091 |
| MSgt TSgt SSgt | AEROSPACE PHYSIOLOGY CRAFTSMAN AFSC 4M071 |
| SSgt SrA | AEROSPACE PHYSIOLOGY JOURNEYMAN AFSC 4M051 |
| A1C Amn AB | AEROSPACE PHYSIOLOGY APPRENTICE AFSC 4M031 |
| A1C Amn AB | AEROSPACE PHYSIOLOGY APPRENTICE COURSE |
| AB | BASIC AIRMAN AFSC 9T000 |

The 4M0X1 CFETP lists the requirements for upgrade in your career field. Progression in your AFSC to the 5-skill level requires two methods of training:

1. Formal training requires you complete this CDC with a passing grade.
2. OJT involves working and training with your supervisor and other qualified OJT trainers and performing at least six months in the 3-skill level.

The requirements for both methods of training must be met, and your supervisor must recommend you for upgrade to the 5-skill level in order for you to advance. Your supervisor confirms

performance and knowledge of your duties and certifies you as proficient. Therefore, completion of the CDC, fulfillment of mandatory OJT requirements, and your supervisor's certification award you the 5-skill level AFSC.

As you continue to advance in rank, you will receive additional training to help you advance to the 7-skill level and the 9-skill level AFSC. One of the requirements for awarding the 7-skill level is the rank of staff sergeant (E-5) or above. A requirement for awarding the 9-skill level is the rank of master sergeant (E-7) and above.

The paperwork accompanying upgrade training is very important. Your unit OJT section initiates an AF Form 623, Individual Training Record Folder, and your supervisor assigns you a trainer. The squadron or unit enlisted training manager (UETM) orders the CDC, and you begin your training program. Once your upgrade training is complete, the UETM processes an AF Form 2096, Classification/On-the-Job Training Action, to award your new AFSC.

003. 4M0X1 career ladder and educational opportunities

Promotion in the Air Force is based on how well you perform your job. You need a broad knowledge of your specialty and the appropriate skill level. This incentive to be knowledgeable about your specialty, in order to get promoted, was designed in response to the Air Force's increasing needs for highly trained personnel.

The Air Force integrated training program

As one of the world's largest business enterprises, the United States Air Force has a continuous need for highly trained and skilled professionals. The USAF's requirements are based upon changing technical systems and a need to replace individuals lost through retirement or separation. For these reasons, we must maintain a continuous and effective training program. You can expect to engage in many types of training throughout your Air Force career.

Upgrade training is needed when assigning relatively unskilled personnel to replace skilled personnel who have been reassigned, separated, or retired. The purpose of training is to develop and improve skills. The Air Force uses two methods of upgrade or skill training: formal or technical training and the more informal method of on-the-job training. The Air Force OJT program provides training for Air Force enlisted personnel, and all Air Force organizations conduct OJT for their personnel. Through OJT, you will acquire the knowledge and job proficiency necessary to perform duties in an Air Force specialty (AFS).

The Air Force uses an integrated program to help Airmen meet technical training requirements. This program involves all Air Force commands, selected schools of the Army and Navy, and other government agencies. A continuous and aggressive OJT program is an important part of this integrated training program. The Air Force recognizes three specific requirements you must satisfy to qualify for skill-level upgrading. These requirements are career knowledge, job proficiency, and job experience. A dual-channel OJT program satisfies the career knowledge training and job proficiency training requirements. Satisfactory performance of duties in your AFS fulfills the job experience requirement.

Formal training

The formal training includes official courses conducted with appropriate course charts, training standards, and objectives. These courses may be either resident or correspondence courses. The USAF School of Aerospace Medicine, Brooks City-Base, Texas, in coordination with Air Education and Training Command (AETC), determine the requirements and prepare, evaluate, and revise specialty training standards (STS) for the Aerospace Physiology AFS. The STS specifies the knowledge, tasks, and skills expected to be performed in the career field. An STS is the primary control document for formal resident courses, CDCs, formal OJT, job proficiency guides (JPG), and specialty knowledge tests (SKT). Most AFSs have a basic technical training course. The Aerospace

Physiology apprentice course at Brooks City-Base is an example of such a course. This course teaches Airmen the basic skills required to perform duties as a 3-skill level apprentice. Your job-skill development occurs after completing a resident course through experience and through OJT.

On-the-job-training

OJT is the other and most used method of training. It is an all-inclusive term that describes any training you receive while performing your job. It is a program composed of self-study, supervised instruction, training, and coaching. OJT is designed to qualify you to perform duties within your given assignment and AFS. UGT is any training you receive for the specific purpose of upgrading your AFSC skill level. This CDC is part of UGT. Qualification training is training given to increase your knowledge and skill yet does not result in award of an AFSC.

Dual-channel OJT and benefits

Each major command (MAJCOM) must plan, conduct, and evaluate OJT in accordance with AFI 36-2201, *Training Development, Delivery and Evaluation*. This is achieved through practical application of the dual-channel OJT program.

The dual-channel OJT program assumes that in career development you must gain knowledge to progress in your career field. This knowledge allows you to move from one kind of equipment or system to another or from one position to another. Although this knowledge relates to basic principles and theories, it also develops job proficiency. Job proficiency is applying career knowledge while performing the tasks associated with your job. As you can see, there are two distinct parts of the dual-channel OJT program—career knowledge training and job proficiency training.

Dual-channel OJT is a systematic, reportable application of self-study and the craftsman-apprentice principle. The first channel is of career knowledge training. Self-study courses are carefully planned and prepared. These courses enable you to attain the required AFS knowledge with little direction from your trainer or supervisor. Your supervisor will then decide when you are ready to use this newly gained knowledge in actual job situations. The second channel is job proficiency training—applying career knowledge while performing specific tasks. This combination enables you to perform, after a period of qualification training, your assigned duties in another job or unit.

Career knowledge training

The use of a CDC for career knowledge training is mandatory when it is available. If a CDC is not available, career knowledge is gained by studying various publications listed as technical references in your STS.

An STS describes your specialty by the task or knowledge you are required to have in order to perform the job. It correlates with and expands on the specialty description contained in the Air Force Enlisted Classification Directory. Studying the appropriate CDC and STS study references satisfies the career knowledge requirements of the dual-channel OJT program.

Job proficiency training

Since OJT hinges on learn-by-doing and self-study concepts, job proficiency training is normally conducted at your assigned unit. The responsibility for conducting the job proficiency phase of OJT rests with all persons, including civilians, who supervise the work of Airmen. The responsibility for the career knowledge phase of OJT rests with the individual concerned. However, your immediate supervisor and the squadron OJT administrator monitor all training.

Job proficiency training is the part of formal OJT that imparts skill. Skill is gained by performing on the job under supervision. Keep in mind that during this time, you continue to gain career knowledge through self-study. You are assigned specific tasks that are part of your duty assignment. As you become skilled in the simpler tasks, your next assigned tasks become progressively more complex until your knowledge and skills are broadened to include all elements of your job.

Job proficiency guides

The primary purpose of a JPG is to provide a reference for each task you must perform. It outlines the training tasks, shows the degree of training (proficiency level), and provides the necessary references.

Learning in a job proficiency situation normally occurs as a result of the close relationship and understanding between the trainee and the trainer. However, this coach-pupil method of training does not preclude short periods of group instruction. Such instruction is sometimes the most practical way for presenting essential theory, background material, information on safety, and other material of general interest.

Benefits of training

It is easy to see the definite need for training. In the following paragraphs we show how a training program is of specific value to all personnel.

Value to the supervisor

As a supervisor, there are many benefits to be gained from training your workers. Well-trained workers are easier to supervise and direct. There are fewer mistakes, increased worker satisfaction, and less wasted time.

With increased involvement as a supervisor, you will see many other ways training benefits you and the USAF. The inner feeling of satisfaction knowing that you have a part in the development of another person is by no means the least of these. The development of subordinates is the greatest contribution a supervisor can make. If you have a skill or knowledge of value to the Air Force and you teach that skill or knowledge to 10 others, you have multiplied your effectiveness 10 times.

Value to the worker

Training helps you, as a worker in your assignment, in many ways. It increases job satisfaction because you are able to do your assignments. It also increases your skill in performing work, giving you a better chance to advance. It helps you better understand coworkers' and superiors' expectations. Training also reduces uncertainty and confusion in your work.

Value to the organization

From the viewpoint of accomplishing your organization's mission effectively, some of the benefits of a good training program are as follows:

- Creating productive new workers in a shorter time.
- Understanding the work better.
- Developing more systematic work habits.
- Performing the same amount of work with fewer personnel.
- Achieving and exceeding production quotas.
- Providing for a flexible work force.
- Improving morale.

Training then is one means for you, the supervisor, to do a better job and improve work performance. It is not the only answer to your problems. However, it can make your work easier when used along with other important management techniques.

Education and training opportunities

Education has become a very important factor to USAF personnel. Your ability to perform your job and advance in rank depends, to a great extent, on your participation in both on- and off-duty education programs. The educational potential for today's Airman is almost limitless. Our discussion only scratches the surface of opportunities. It is up to you to set your educational goals.

You are exposed to what may seem like an endless barrage of courses and educational programs during your career with the USAF. Many of these programs are mandatory. One program of extreme importance to a career Airman is Professional Military Education (PME). Enlisted PME attempts to broaden enlisted members' perspectives and increases their knowledge of military studies. It also enriches their communicative, leadership, and supervisory skills, while preparing them to assume more responsibilities. Supervisors should encourage subordinates, who have the potential to assume more responsibility, to attend PME courses as soon as they are eligible. The PME program consists of four phases, each designed for personnel of particular grades and experience levels: Airman Leadership School (ALS), NCO Academy (NCOA), Senior NCO Academy (SNCOA), and Chief Master Sergeant (CMSgt) Leadership Course (CLC).

ALS

This four-week course offers instruction and practice in military citizenship, quality leadership, and communicative skills. Students learn to appreciate their role as military supervisors and how they contribute to the overall goals and mission of the Air Force. To attend this course, you must be a senior Airman with a minimum of 48 months in service and one year retention upon graduation. ALS is a prerequisite for appointment to NCO status. As a participant, you receive college credit from the Community College of the Air Force. You are authorized to wear the NCO PME ribbon after completing the course.

NCOA

The NCOA broadens the leadership and management skills of SSgts and TSgts. It provides more in-depth instruction than ALS. The NCOA is a 5-week course/2-day covering USAF history, USAF organization and mission, the military justice system, professional skills, customs and courtesies, leadership and management, the substance abuse program, counseling techniques, human behavior, and orientation of newly assigned personnel. The course also includes formal and informal group leadership, management theory, personnel management, problem-solving techniques, the supervisor's role in effective communication, and effective writing. Like ALS, major commands establish selection procedures to ensure NCOs with potential for growth as leaders and supervisors attend this course. NCOA graduates are prepared for increased responsibilities on the job and in base and unit activities. Completion of this course authorizes you a second NCO PME ribbon.

SNCOA

Air University conducts this 6-week/2-day resident course at Maxwell AFB-Gunter Annex, Alabama. Master and senior master sergeants attend this course. It provides education in communicative skills, international relations, employment of military force in achieving Air Force objectives, effective use of human resources, and other subjects necessary for senior NCOs to become more effective leaders and managers. Completion of this course authorizes you a third NCO PME ribbon.

CLC

This is the highest level of PME available to NCOs and is mandatory upon selection to the rank of CMSgt. This eight-day course provides new CMSgts with strategic-level leadership information to provide a foundation to better manage our Airmen and the Air Force mission. Completion of this course authorizes you a fourth NCO PME ribbon.

Commissioning programs

Several commissioning programs are available to active duty Airmen. Check with your base education office for complete information on available programs.

Personal education opportunities

Regardless of whether you make the military a career or intermediate-type employment, personal formal education is a valuable achievement. Your local base education office has detailed information concerning all off-duty education programs.

Self-Test Questions

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

001. Air Force Medical Service mission

1. What is the mission of the AFMS?
2. What are the personal and moral responsibilities of an Aerospace Physiology technician?
3. What are the main responsibilities of the USAF Surgeon General?
4. What are the primary mission areas of the Aerospace Medicine Program (AMP)?
5. Name the members of Team Aerospace in addition to Aerospace Physiology Flight.
6. What is the function of the Aerospace Physiological Training Program?
7. What is the mission of the USAF Aerospace Physiology Program?
8. What is the purpose of a limited status or satellite unit?
9. Match each lettered Aerospace Physiology activity in column B with its corresponding numbered responsibilities in column A.

| <i>Column A</i> | <i>Column B</i> |
|--|-----------------------|
| ___ (1) Supports UFT. | a. Training function. |
| ___ (2) Fits and maintains pressure suit assemblies. | b. HAAMS. |
| ___ (3) Provides support to unpressurized aircraft missions. | c. HPTT. |
| ___ (4) Operates in teams that cover a vast range of human performance issues. | d. HARMS. |
10. As an Aerospace Physiology technician, with who does your chain of command begin?

002. 4M0X1 duties and skill-level progression

1. List the general types of tasks the apprentice performs.
2. List the four general job descriptions of the 5-skill level (journeyman) Airman.
3. What is the primary function of a 5-skill level Airman?
4. Personnel at what skill level are responsible for planning an adequate OJT program?
5. What are two considerations in authorizing a superintendent position?
6. What are the primary duties of the superintendent?
7. What document lists the requirements for UGT in the career field?
8. What are the two methods of training used for progression to the 5-skill level?
9. Who must recommend you for upgrade to the 5-skill level?
10. Along with fulfillment of the mandatory OJT training requirements, what two additional requirements are needed to qualify you for award of the 5-skill level?
11. What is the lowest rank you must hold to receive the 7-skill level?
12. What form is prepared for awarding your new AFSC?

003. 4M0X1 career ladder and educational opportunities

1. What are the two methods of upgrade or skill training?

2. What are the three specific requirements you must satisfy to qualify for skill-level upgrading?
3. What requirements does the dual-channel OJT program satisfy?
4. What is the primary control document for CDCs, formal OJT, and SKTs?
5. What is the most used method of training?
6. What type of training serves the specific purpose of upgrading your AFSC skill level?
7. What are the two distinct parts of the dual-channel OJT program?
8. Which part of the dual-channel OJT program enables you to attain the required AF specialty knowledge with little direction from your trainer or supervisor?
9. Who is responsible for the career knowledge training phase of OJT?
10. Which part of the dual-channel OJT program imparts skill?
11. What is the primary purpose of a JPG?
12. What is the most practical way for presenting essential theory, background material, information on safety, and other material of general interest?
13. List three ways that well-trained workers benefit the supervisor.
14. How will a training program help you as a worker?

15. List the benefits of a good training program to an organization.
16. What are the four phases of PME?
17. Which course is a prerequisite for appointment to NCO status?
18. What office possesses detailed information concerning all off-duty education programs?

Answers to Self-Test Questions

001

1. To provide the medical support necessary to increase performance and mission readiness of the Air Force.
2. To help increase performance and mission readiness of the USAF.
3. Procures and allocates resources, establishes Aerospace Medicine policy and guidance, liaisons with other DOD agencies.
4. Provides operational health care and specialty care, provides expertise to prevent casualties and promote health, employs principles of preventive medicine and health promotion, ensures regulatory compliance, and monitors environmental emissions.
5. Bioenvironmental Engineering, Public Health, Flight/Missile Medicine, Readiness, and Health Promotion.
6. Aids and advises nonmedical activities in support of their flying mission.
7. Familiarize the flyer with the physiological stresses and human performance factors of modern military aviation and space flight.
8. To be used when the training load is not large enough to justify a full-time training unit.
9. (1) a.
(2) d.
(3) b.
(4) c.
10. Your immediate supervisor.

002

1. Watches journeymen perform maintenance on training equipment, helps fit students with oxygen equipment, performs chamber operations under supervisor's close observation, operates training equipment, and performs equipment inspections depending on how quick the apprentice learns.
2. Operates, conducts, instructs, maintains.
3. A worker.
4. 7-level.
5. Size of the unit and diversity of the mission.
6. To plan, coordinate, and organize section activities.
7. CFETP.
8. Formal training and OJT.
9. Your supervisor.

10. Supervisor's certification and completion of the CDC.
11. Staff sergeant.
12. AF Form 2096, Classification and OJT action.

003

1. Technical or formal training and OJT.
2. Career knowledge, job proficiency, and job experience.
3. Career knowledge and job proficiency.
4. STS.
5. OJT.
6. UGT.
7. Career knowledge training and job proficiency training.
8. Career knowledge training.
9. The individual concerned.
10. Job proficiency training.
11. To provide a reference for each task you must perform.
12. Group instruction.
13. They make fewer mistakes, there is increased worker satisfaction, and less time is wasted.
14. It increases your job satisfaction and skill, helps you to better understand what your coworkers and superiors expect of you, and reduces uncertainty and confusion in your work.
15. Creating productive new workers in a shorter, understanding the work better, developing more systematic work habits, performing the same amount of work with fewer personnel, achieving and exceeding production quotas, providing for a flexible work force, and improving morale.
16. ALS, NCOA, and SNCOA, and CLC.
17. ALS.
18. Local base education office.

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

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to ECI Form 34, Field Scoring Answer Sheet.

Do not return your answer sheet to ECI.

1. (001) The mission of the Air Force Medical Service is to provide medical support to do which of the following for the United States Air Force?
 - a. Provide flight line support.
 - b. Increase performance and mission readiness.
 - c. Enhance mission safety and overall wellness.
 - d. Reduce individual and group performance errors

2. (001) Which statement *best* describes how the Aerospace Physiological training program increases Air Force performance and mission readiness?
 - a. Indoctrinates flying personnel with equipment descriptions and aircraft types.
 - b. Acquaints the flying population with altitude chambers and ear and sinus blocks.
 - c. Trains flying personnel to escape from a disabled aircraft in the air or on the ground.
 - d. Teaches the flyer about the physiological stresses and human performance factors of modern flight and how to meet these challenges successfully.

3. (001) The military treatment facility commander is also the primary medical advisor to whom?
 - a. Wing commander.
 - b. Squadron commander.
 - c. Flight Operations commander.
 - d. Aerospace Medicine commander.

4. (001) Aerospace Physiology training is a function within the Medical Group and reports to which of the following individuals?
 - a. Hospital commander.
 - b. Base surgeon general.
 - c. Aerospace Medicine Squadron commander.
 - d. Aeromedical Services commander.

5. (001) The *primary* mission of the Aerospace Physiology is to familiarize the flyer with the physiological stresses and human performance factors of modern military aviation and
 - a. teach aircrew members about ear and sinus blocks.
 - b. prepare the flyer to successfully meet those challenges.
 - c. enhance flight safety by reducing human performance errors.
 - d. explain those physiological stresses and human performance errors.

6. (001) Which publication describes the training phases of Aerospace Physiology?
- a. Air Force Instruction (AFI) 11-401.
 - b. AFI 11-403.
 - c. AFI 36-2101.
 - d. AFI 36-2903.
7. (001) How often are aircrew members required to complete refresher training?
- a. Annually.
 - b. Every 3 years.
 - c. Every 5 years.
 - d. Every 7 years.
8. (001) What is the mission of the High-Altitude Airdrop Mission Support (HAAMS) Program?
- a. Support of high-altitude flying missions.
 - b. Treatment of non-life-threatening wounds.
 - c. Support of unpressurized aircraft missions.
 - d. Support to human performance optimization programs.
9. (002) As an Aerospace Physiology apprentice, you will work with
- a. no supervision.
 - b. supervision part of the time.
 - c. supervision of a 4M091 only.
 - d. your supervisor's close observation.
10. (002) A 5-skill level journeyman's *primary* job is that of a
- a. worker.
 - b. supervisor.
 - c. troubleshooter.
 - d. inside observer.
11. (002) What are the two types of training used for progression to the 5-skill level?
- a. Formal and on-the-job training (OJT).
 - b. Annual and OJT.
 - c. Annual and refresher.
 - d. Formal and annual.
12. (002) If you want to achieve career advancement and promotion, you must improve your performance and skills in your AF specialty by skill-level progression involving which of the following?
- a. Career field technical knowledge
 - b. Leadership and supervisory skills.
 - c. Job proficiency skills and knowledge.
 - d. Job knowledge and general military knowledge.

13. (002) Which form is used to award a new Air Force specialty code (AFSC)?
- a. AF Form 623.
 - b. AF Form 1274.
 - c. AF Form 2095.
 - d. AF Form 2096.
14. (003) Which type of Air Force training is needed when assigning unskilled personnel to replace skilled workers?
- a. Skills.
 - b. Formal.
 - c. Upgrade.
 - d. Job proficiency.
15. (003) What all-inclusive term does the Air Force use to describe any training you receive while performing your job?
- a. Formal training.
 - b. Job experience.
 - c. On-the-job training.
 - d. Career proficiency training.
16. (003) Which type of training increases your knowledge and skill but does *not* result in the award of an Air Force specialty code (AFSC)?
- a. Upgrade training.
 - b. Ancillary training.
 - c. Qualification training.
 - d. Career knowledge training.
17. (003) Each major command must plan, conduct, and evaluate on-the-job training in accordance with
- a. Air Force Instruction (AFI) 11-206.
 - b. AFI 11-403.
 - c. AFI 36-2108.
 - d. AFI 36-2201.
18. (003) If a career development course is *not* available, career knowledge training may be acquired by studying various publications listed as technical references in
- a. Air Force Instruction 36-2201.
 - b. your current job description.
 - c. your specialty training standard.
 - d. your specialty description in Air Force Manual 36-2108.

19. (003) Which part of formal training imparts skill gained by performing the job under supervision?
- a. Job proficiency.
 - b. Specialty training.
 - c. Career knowledge.
 - d. Career development.
20. (003) Which professional military education course is required before appointment to noncommissioned officer (NCO) status?
- a. Command Noncommissioned Officer (NCO) Academy (NCOA).
 - b. Airman Leadership School (ALS).
 - c. USAF Supervisor's Course.
 - d. USAF Senior NCO Academy (SNCOA).

Please read the unit menu for unit 2 and continue. ➔

Unit 2. Air Force Occupational Safety and Health (AFOSH) Program

| | |
|--|-----|
| 004. Safety in the workplace | 2-1 |
| 005. The hazards and standards of the career field | 2-4 |
| 006. Operations security in the career field | 2-7 |

YOUR SAFETY AND HEALTH are vitally important to the Air Force. Hazardous conditions identified and left uncorrected can cause accidents and mishaps. Accidents, mishaps, and avoidable illnesses cost the Air Force millions of dollars in lost time, productivity, and medical expenses each year. It is important for you to be aware of safety at all times and look for ways to prevent unsafe acts and situations in the workplace.

004. Safety in the workplace

As a technician, you should be careful to follow checklists and carry out even the so-called small details of any assignment or job. If you skip even one small detail, you may be setting yourself or someone else for injury or worse. After all, most accidents do not just happen—they are caused. For this reason, you must consider the safety factors of each job and task. True, safety personnel and supervisors hammer away on safety issues and try to prevent accidents; yet accidents and mishaps continue to happen. Accordingly, safety-minded personnel consider the safety factors related to the tools they use and the equipment they operate. Remember that safety is everyone's responsibility and it is a 24-hours-a-day, 365-days-a-year job. So don't just repeat the phrases "work safe," "play safe," and "be safe"—*practice them*. This lesson explores ways to make your work area a safe and healthful work environment for all concerned.

Maintaining a safe work area by controlling accidents

Accidents do not happen without cause. Accepting this statement allows you to realize that identification, isolation, and control of the real causes behind accidents—or situations that might lead to accidents—are the foundation for preventing accidents. Although we are unable to prevent natural phenomena, we can to some extent reduce the effects of and the accidents caused by lightning, storms, floods, and so forth. For example, we can secure aircraft before and during a storm or strong winds. We use the term *natural phenomena* when describing accidents due to natural causes. Only about two percent of all accidents are caused by such phenomena. Theoretically, it is possible to trace all preventable accidents to either an individual's make up to include inherited characteristics or the environment surrounding an individual. Thus, personal characteristics may cause an individual to perform an unsafe act, or overlook an unsafe condition that may result in an accident, or tolerate such a condition. The injuries, property damage, and loss of combat capability that follow an accident complete the costly sequence.

On one hand, we know that the detection and elimination of such characteristics as inattentiveness, impatience, and stubbornness, which cause an individual to tolerate an unsafe condition, are extremely difficult. On the other hand, elimination of environmental factors leading to unsafe acts and conditions is a relatively simple and effective means of accident prevention.

However, to be completely effective, we cannot apply accident prevention controls hit or miss. Instead, we must base accident prevention education, training, supervision, and enforcement measures on factual evidence. Once you gather the facts with regard to a specific problem, the result is then an adequate safety action plan.

Accident prevention through education and training

A ground safety program is no better than its educational efforts. When you teach people the correct way to do something, you teach them the safe way. Because of this, safety often loses its identity

when it is part of other instruction. The supervisor, Airman, or employee may fail to grasp the important fact that most accidents are man-made and controllable. To be most effective, be sure to integrate safety training, as a separate entity, into your job-training program.

Education goals

Adequate safety education is the most effective way to prevent man-made accidents. Its application is extremely important in preventing accidents we cannot offset with engineering, supervision, or enforcement measures. Not only must we concentrate on work-related accidents but also those occurring off duty and off base because they have a direct impact on individual and collective mission performance. Therefore, the most important effect of safety education is to develop a total safety consciousness in a person. This total view of safety, when properly ingrained, functions without mechanical safeguards or enforcement pressures. Because of the large number of off-duty accidents, safety education is not merely desirable but also mandatory. An after-actions safety report program that stresses corrective action after an accident is not effective. Each accident results from some deficiency in the safety program. Most often, the deficiency is in the person and easily eliminated through education.

Safety training

In the Air Force, we divide safety training into four phases.

1. Orientation.
2. Supervisor's training.
3. Job training.
4. General training.

To ensure maximum safety, each Airman should receive specific instruction about each job. The Airman is then fully aware of the dangers involved and the safety practices used to offset them.

Safety orientation of new Airmen and employees is an effective accident-prevention tool. This orientation creates a lasting impression during the Airman's initial contact with a new job, organization, or activity. It is also an excellent time to acquaint the Airman with local accident-prevention policy and explain what is expected of them as a member of the team.

Supervisors receive formal safety training for two basic reasons. First, these key individuals must have a working knowledge of accident-prevention fundamentals if they are to carry out their assigned responsibilities of determining and eliminating hazards. Second, supervisors must have accident-prevention know-how if they are to train their personnel successfully in on-the-job safety.

The orientation training phase should develop safe, efficient personnel. Initial and recurring training should be provided to meet operational changes and to maintain a high degree of safety consciousness. The following table discusses the important steps involved in this training.

| <i>Step</i> | <i>Description</i> |
|--------------------------|---|
| Analyze the job | When assigning a new job, break it down and analyze it in detail. Then list the specific dangers of the task. |
| Establish safe practices | Where possible, eliminate obvious hazards. Establish safe practices to protect your workers from any remaining hazards. |
| Analyze the individual | Study the qualifications and characteristics of your personnel. Provide additional or special training as necessary. |
| Plan the training | Plan your instruction to maintain the worker's interest. Leave your trainees thinking of the importance of safe habits and practices. |

Supervisors and trainers must inform their personnel of all existing safety hazards. Posters, newspapers, radio, films, and tours can be used to accomplish this task. The training program is one of the most widely used programs in the area of safety.

Job safety training will entail the specific hazards of your work area. If you work in an office setting, it would not make sense to train you on the hazards of high-pressure oxygen cylinders. We will go into this in more detail later in this unit. General training encompasses generic safety issues that may be encountered by every person regardless of their work location.

Safety in a clean work area

The old saying “A place for everything and everything in its place” is a good rule to follow where safety and a clean work area are concerned. A clean work area means a safer work area. Here are some specific guidelines to follow:

- Keep aisles and stairways clean and free of obstructions.
- Store brooms, mops, buckets, and other housekeeping equipment properly in racks or closets.
- Provide adequate ventilation in all storage areas.
- Remove any possible debris or discarded materials. Thousands of fatal accidents are caused by people tripping or slipping on debris and discarded materials.
- Immediately return any item to its proper storage place when you are finished using it.

Safety and a clean work area also require that every shop have a place for storing tools and tool boxes when they are not being used. Keep them in their places with lids closed and locked. It does not require much time and effort to open the boxes when you need a tool.

Good housekeeping embraces safety, and orderliness has many rewarding effects on workers. This is especially true in the life-support section where tools such as screwdrivers and wrenches are used extensively. Keeping the work area clean raises morale because tools no longer get misplaced or damaged thus creating frustration. Consequently, the quantity and quality of your work increases, confidence in your work increases, and the accident rate decreases.

Safety precautions—put prevention into practice

While it's hard to prevent all mishaps, we must prevent those that lead to loss of limb or life. The following paragraphs outline some common principles designed to alert you to safety consciousness.

Tool and equipment safety

Naturally, you must know the right way to operate equipment if you are to do it safely.

Preoperational training is the training you get before operating equipment like the hypobaric chamber, vacuum pumps, or the ejection seat mock-up trainer. You receive this type of training during the Aerospace Physiology apprentice course and during on-the-job training. Preoperational training is very important whenever you use a new piece of equipment. Being a skilled operator of certain equipment does not automatically qualify you to operate the new updated version of that equipment safely. Things like operating speeds, operating controls, and guards differ. Review the operating instructions very carefully for all new equipment.

You must know your equipment and know how to operate it safely. Ask your supervisor for safety training, and read the operating instructions before you operate any new or unfamiliar equipment.

Electrical safety

Electric-powered portable equipment such as drills and lights should be checked for frayed wiring, loose connections, and proper grounding. As the user, you have the primary responsibility for checking the equipment used in your section.

On occasion you may have to perform minor maintenance and repairs on electrical equipment in your unit. If possible, get the help of a qualified electrician. Do not try to repair electrical equipment that you do not fully understand. If you do the repair yourself, follow all safety rules carefully. Here are some guidelines:

- Remove metallic objects, such as rings, watches, and glasses with metallic rims. These items conduct electricity and could result in serious burns.
- Do *not* work on electrical equipment if you must stand in water or a wet area.
- Be sure *all* electrical power to the equipment is turned off. Most equipment powered by electricity has circuit breaker boxes and a master switch. *Turn off the power at both locations* and ensure that no one will turn the power on while you are conducting maintenance. Either use a Lock-out/Tag-out system or have another individual watch this for you. A Lock-out/Tag-out system consists of a physical locking mechanism (lock-out) on the power switch to prevent another person from accidentally repowering the equipment. Tag-out refers to hanging warning signs on the switches to inform others not to turn on the power.
- Use properly insulated tools that have rubber or plastic handles rated to protect you from the amount of electricity wired to the equipment. Ensure the tools you use will not conduct electricity.
- Make sure you use the proper wire size. Get the advice of a qualified electrician if you are rewiring a piece of equipment. Improper wire size may burn through.

Worker safety

According to the National Safety Council, faulty equipment and material handling are the major sources of on-the-job injuries. Further examination suggests lack of training, and unconcerned attitudes are causal factors related to on-the-job accidents. In addition, violation of known safety regulations contributes to the on-the-job accident rate.

Be sure to report any accident or injury to your immediate supervisor, because they have the primary responsibility for formally reporting accidents to the ground safety office. They will need all the details involved in the mishap for their report. These reports are not meant to be punitive, only to document what happened. Local directives provide instructions for making such reports. The Safety Office then compiles all the submitted reports and analyzes them for trends. If a trend presents itself, the Safety Office might put out a notice to the base populace to be aware.

005. The hazards and standards of the career field

Another safety principle is recognizing physical hazards in the work section and taking steps to reduce or avoid them. Some obvious physical hazards are the dangers caused by moving parts of equipment or instruments and hazards associated with laboratory procedures. Proper handling and precautions on your part can eliminate or reduce such hazards. You can avoid most obvious equipment hazards by always following proper operating procedures and checklists.

Fire hazards

Three elements are necessary for fire (the chemical reaction of combustion) to occur: fuel, oxygen, and heat. Fuel must be present before a fire can occur. Combustion cannot take place unless there is enough oxygen. But the simultaneous presence of fuel and oxygen is still not enough to produce fire; heat is also required. Then, if the fuel is hot enough and if there is enough oxygen for combustion, fire will occur. To prevent a fire in the work area, strictly control all sources of flame such as torches and burners. Remember, do not use flammable materials around fire or heat sources.

Although oxygen itself does not burn, it will increase the burn rate of material already on fire. Because of this, be sure all of the oxygen hoses, valves, and connections in the area do not leak and are in good working order. To extinguish a fire, remove any one of the three elements (fuel, oxygen, and heat) necessary for combustion to occur. Better still; keep all three of these elements at a safe distance from each other. If you do this, you can keep an accidental fire from starting.

Safety-oriented environment

Another safety principle in the working environment should be conducive to safety. Your immediate surroundings can help or hinder safety efforts. First, good housekeeping in the workplace is very

important. For example, floors and countertops cluttered with instruments and debris increase the chances of an accident. Keep all surfaces (including the floor) clean of oil, grease, paints, and chemicals. Second, keep all hand instruments and other equipment clean. These items may slip from your hands if they are greasy and result in an injury or accident. Again, good housekeeping means keeping instruments, materials, and other equipment stored properly and in good working condition. Finally, position equipment so there is enough space to handle it and other materials without creating a hazard.

Proper planning

Proper planning must precede any operation. Make it a habit to check all pertinent safety instructions before you start any job. These instructions may concern the materials you work with, protective clothing, or the type of equipment you use. If any protective safety equipment is required, it must be available to you. It is your supervisory responsibility to ensure all safety equipment is readily available. Likewise, be sure to study applicable safety instructions carefully, especially if the job or equipment is new to you.

Control of compressed gases

The government has painted and marked all compressed gas cylinders for rapid identification of cylinder contents. Compressed air cylinders are always painted black. Water-pumped (oil-free) compressed air cylinders have a wide, single green band painted around and toward the top of the cylinder. A double green band indicates oil-pumped air.

When you receive compressed air cylinders, be sure they contain the type of compressed air you need to satisfy your mission requirements. For example, some procedures, such as hyperbaric air dives, may require oil-free air because the use of oil-pumped air during a dive creates a hazardous situation.

Handle cylinders properly

Handling precautions are also important. Let us consider one in particular, the use of compressed air. Many training facilities use compressed air in service cylinders for various operations. These cylinders do not present a hazard when used with care. Yet, the misuse of compressed air can result in serious injury and equipment damage. Therefore, be careful to handle cylinders properly.

Secure service cylinders

A basic rule is to never let a cylinder drop or fall over. If dropped, the cylinder may break a valve, causing the cylinder to become a torpedo-like projectile. Ensure all cylinders are securely installed to keep them from falling, and be sure to secure them to handcarts during transport.

Use the protective caps provided on each cylinder

Be sure that all cylinders received from base supply have protective caps before you accept them. These protective caps must be tight and secure before cylinder transport, even when traveling short distances. Secure all service cylinder caps when the cylinders are not in use. Properly installed protective caps help prevent valves from breaking when a cylinder falls or is dropped.

Remove any leaking cylinders to a secure area

Tag cylinders, using the attached DD Form 1574, Serviceable Tag-Materiel, as defective and return them to base supply if they leak gas/oxygen. Whatever precautions you take, never leave a defective cylinder attached to a piece of equipment. This can cause the equipment to charge continuously and result in inadvertent actuation. In any event, do not try to recharge a defective cylinder. The valve must be replaced and tested by qualified personnel before use.

Don't misuse compressed air

Do not use compressed air to clean floors, equipment, tools, and so forth. Whether a stream of air is delivered from a 70-pounds-per-square-inch (psi) line or from a full-service cylinder, the pressure is enough to force debris through clothing and into human flesh.

Control of oxygen storage cylinders

Oxygen can exist as a solid, liquid, or gas, depending on the temperature and pressure surrounding it. Most training facilities use a series of six high-pressure oxygen cylinders connected to an oxygen distribution manifold. This system can supply oxygen to the altitude chamber for long periods. These high-pressure cylinders range from 250 to 370 cubic feet of oxygen with maximum pressure ranges from 2,000 to 2,400 psi. Another type of oxygen cylinder is the low-pressure gaseous portable assembly used within the hypobaric chamber. These cylinders are considered full at 400 to 450 psi.

High-pressure commercial oxygen cylinders are painted green, with a three-inch white band around the cylinder close to the shoulder (top). The word *oxygen* should be stenciled in white letters lengthwise and on opposite sides of the cylinders. High-pressure oxygen cylinders for aircraft and chamber use must have *aviators' breathing* stenciled in front of the word *oxygen*. This differentiates aviators' breathing oxygen from medical breathing and industrial oxygen. Low-pressure oxygen cylinders for aircraft and chamber use are yellow. Stenciled on the side of these cylinders are the words *breathing oxygen*.

Inspect oxygen cylinders

When you receive full, commercial-type, high-pressure oxygen cylinders at your training facility, inspect them thoroughly before placing them into service.

- Ensure all cylinders are painted and marked properly. All high-pressure cylinders used in chamber operations are green with *aviators' breathing oxygen* stenciled on their sides.
- Ensure the protective cap covering the valve is in place and secure. *Never* try to move a cylinder without the cap in place.
- Check to be sure the valve is closed tightly and not leaking.
- Ensure there is no grease or oil on the cylinders. Notify the base transportation officer immediately if you find oil or grease on any newly received cylinders. The presence of oil or grease creates a potentially hazardous condition.

Handle oxygen cylinders with care

The use of oxygen during chamber flights requires that you move oxygen cylinders almost daily. Remember; handle these cylinders with extreme care. Oxygen will not burn, but it will support combustion. Oxygen's contribution to combustion becomes even more important when you use oxygen under high pressure. As you move and install oxygen cylinders, follow these simple safety procedures:

- Never remove the protective cap until you secure the cylinder.
- Never roll a cylinder on its side.
- Keep your hands and clothing free of grease and oil when handling these cylinders.
- Never use oxygen as a substitute for compressed air.
- Check the cylinder pressure before you put a cylinder into use. Low cylinder pressure may be a sign of a defective or leaking valve. Tag cylinders that are low as defective and return them to base supply.
- Open the cylinder valve by hand only. If you cannot open the valve, tag it and return it to base supply.

Control of miscellaneous oxygen equipment

You will be working with various oxygen regulators, tubing, and related equipment. The safety precautions and handling procedures discussed next apply to *all* oxygen equipment.

Keep equipment clean

Do not handle any oxygen equipment if your hands or clothing are oily or greasy. Use only those tools marked for use with oxygen equipment. An explosion or flash fire may result when oxygen under pressure makes contact with grease or oil.

Keep fire and oxygen apart

Keep fire and oxygen separated. Remember, oxygen supports combustion. A small fire in an oxygen-saturated area will quickly become a large one. Follow these safety precautions:

- Never refill a low-pressure oxygen cylinder from a high-pressure oxygen cylinder without using an approved pressure-reduction valve.
- Never mix breathing oxygen with any other gas.
- Fill oxygen cylinders slowly.
- Never use compressed air in oxygen equipment. Compressed air may contain oil particles that could remain in the equipment. An explosion and fire could result when readmitting oxygen into oxygen equipment.

006. Operations security in the career field

All members of the military and their civilian counterparts have access to different types of classified information. Protecting it from our enemies is our goal. But that does not mean that our enemies are not trying to obtain information about our activities. Possessing intelligence information that can be used against an adversary gives an advantage to the side that has it. The purpose of Operation Security or OPSEC is to prevent the collection of information by our enemies. It is a common mistake to think that only highly classified information is usable to an adversary or considered “critical” information. This is not the case and we need to be vigilant to ensure OPSEC measures are maintained at all times. In this lesson, you will learn that even seemingly small bits of trivial information, when collected and added together with other bits of trivial information, can lead to conclusions made about mission capability, strengths, weakness, time frames, and so forth.

OPSEC definition

OPSEC is a process of identifying, analyzing, and controlling critical information. There are several ways this information is stored. It can either be printed paper copies, electronically stored, or just knowledge of an event. OPSEC applies to all the activities involved in the preparation, execution, and sustainment of missions and operations.

OPSEC purpose

The purpose of OPSEC is to reduce the vulnerability of Air Force missions and operations from the successful collection and exploitation of critical information by our adversaries. It is accomplished using a five-step process:

1. Identify critical information.
2. Analyze threats.
3. Analyze vulnerabilities.
4. Assess risk.
5. Apply OPSEC measures.

Although these steps are normally applied in a sequential manner during deliberate or crisis-action planning, dynamic situations may require any step to be revisited at any time.

Identify critical information

Let us explore how OPSEC material is identified. Generally speaking, when we define OPSEC material, it is critical information that can be used against us. Critical information is specific facts

about friendly intentions, capabilities, and activities. Put simply, it is information we possess, in some form or another, about our mission. This information is used by adversaries for them to plan and act effectively so as to disrupt our mission, cause its failure, or to have unacceptable consequences for our mission accomplishment. Each wing, as directed by Air Force Instruction (AFI) 10-701, *Operations Security*, will establish an OPSEC working group (OWG). This working group establishes a Critical Information List, which details all the information that has a direct correlation to the mission, its objectives, and activities. Items included on this list are things most of us work with on a daily basis such as organizational charts, schedules, and recall rosters. More specifically, information that involves flight status; for example, type of aircraft, aircraft takeoff times, payloads, and destinations is particularly sensitive. Critical information may also include charts, data, and statistics on our capabilities and shortfalls in executing mission requirements or documentation related to training and supply issues that may impact our mission. The OWG identifies any type of information an adversary may use against us. However, the OWG concentrates on the big picture—not the minor details—that an adversary may want to collect. It is our job to concentrate on the minor details and how to keep them protected.

To gain critical information, an adversary may try to collect OPSEC indicators or minor bits of information. These indicators are detectable actions or open-source information that can be interpreted or pieced together by an adversary to derive critical information. An example of critical information would be a classified reconnaissance mission planned and launched after normal sortie time frames and late at night. A detectable action of an OPSEC indicator of the planning and launch of this mission might be several cars in the parking lot and a later-than-normal pizza delivery to the squadron headquarters. Open-sourced information in the above scenario would be any research readily available either online or through publications concerning the aircraft's capability. Although this information is available to the public, information coming from official channels can confirm its validity.

Analyze threats

A threat is when an adversary has the capability and intent to undertake any actions detrimental to the success of our activities, operations, or missions. Our intelligence organizations analyze the threat through research of intelligence, counterintelligence, and open-source information to identify who is likely to disrupt, deny, degrade, or destroy any planned operations.

Analyze vulnerabilities

A vulnerability is a condition in which friendly actions provide OPSEC indicators that may be obtained and accurately evaluated by an adversary in time to form a basis for effective adversary decision making. In other words, if an adversary is able to monitor our actions and deduce our operational plan, they could then plan to disrupt our operations.

We must identify those actions an adversary's intelligence systems can observe. We must be vigilant because they watch for any actions we take, however innocently, that they can use against us. For instance, high-altitude airdrop mission support (HAAMS) personnel that are deployed to a forward location may not have irregular duty hours, and their duty schedule may fluctuate according to mission requirements. An adversary may key in on when the HAAMS technicians report for duty and equate that with a time frame for a mission launch.

Also, if a HAMMS physiology technician has a conversation within earshot of local civilians about parachutists or aircrew physiological reactions or even makes statements about an upcoming jump mission, it may be a source of information used to assess unit strength or vulnerabilities. In order to properly plan for a HAAMS mission, the technicians are given some information such as personnel or equipment to be air-dropped, schedules, and other operational details. This information obviously must be guarded from inadvertent release.

Assess risk

An OPSEC risk is a measure of the potential degree to which critical information and indicators are subject to loss through adversary exploitation. Compare vulnerabilities identified with the probability of an adversary being able to exploit it in time to be useful to determine a risk level. Determine potential OPSEC measures to reduce vulnerabilities with the highest risk. The most desirable OPSEC measures are those that combine the highest possible protection with the least adverse effect on operational effectiveness.

Apply OPSEC measures

An OPSEC measure is anything that effectively negates or mitigates an adversary's ability to exploit our vulnerabilities. It is also any method or means used to gain and maintain essential protection of critical information. OPSEC measures may be both offensive and defensive in nature.

Potential OPSEC measures, among other actions, are cover, concealment, camouflage, deception (examples of defensive measures), intentional deviations from normal patterns, and direct strikes against adversary collection (examples of offensive measures). Most of the OPSEC measures listed may sound complicated and take much planning to incorporate. This is not true. Very effective OPSEC includes ensuring you do not leave any documentation unattended on shared printers, faxes, or copiers. Cover and concealment may be as simple as attaching (or covering) a classified cover sheet over the document. These cover sheets are required for Classified information, as well as For Official Use Only (FOUO) documents, and are labeled as such.

Recently, personnel have opened Facebook accounts on the internet. These pages have the potential to become a great source of information to our adversaries. For example, when updating the Web page, personnel might mention that they are deploying and may mention the location of the deployment. This, added to other Facebook pages, or blogs, could lead an adversary to calculate troops strengths, capabilities, rotations, and even mission specifics.

As you can see, protecting our information from adversaries is everyone's responsibility. We usually spend our time concentrating on protecting the obviously highly classified information but forget how easily an enemy can piece together seemingly trivial information to learn our true intentions. It is everyone's responsibility to carry out OPSEC procedures and to protect classified and critical information from getting into the hands of our adversaries and used against us.

Self-Test Questions

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

004. Safety in the workplace

1. What term is used to describe accidents that happen because of natural causes?
2. How can the cause of preventable accidents be traced?
3. What are the four phases of safety training?
4. Why must supervisors receive formal safety training?

5. What are the four steps involved with accomplishing safety training for assigned personnel?
6. What are the effects of good housekeeping on workers?
7. What is the type of training you receive before operating new equipment?
8. What two things should you do before operating any new or unfamiliar equipment?
9. Who has the primary responsibility for checking the equipment you use in the workplace?
10. When working on electrical equipment, what items should you remove before beginning?
11. According to the National Safety Council, what is the major cause of on-the-job injuries?

005. The hazards and standards of the career field

1. How can you prevent fires from occurring in your work areas?
2. What must you do to extinguish a fire?
3. With regard to the work environment, what must precede any operation in order to avoid hazards?
4. What color are compressed air cylinders?
5. How do water-pumped and oil-pumped air cylinders differ?
6. What procedures do you follow if you have a leaking cylinder?
7. What are the size and pressure ranges of the high-pressure cylinders used for chamber operations?

8. What words must be stenciled on the oxygen cylinders used for chamber operations?
9. What happens when oxygen under pressure makes contact with grease or oil?

006. Operations security in the career field

1. How does an adversary use critical information against us?
2. What term is used to describe what an adversary collects in order to gain critical information?
3. What term describes a friendly action that may provide an OPSEC indicator?
4. Why are Facebook and/or internet pages potential sources of information for adversaries?

Answers to Self-Test Questions**004**

1. Natural phenomena.
2. Through heredity and the environment of an individual.
3. Orientation, supervisor, job, and general.
4. They need to have a working knowledge of accident-prevention fundamentals and accident-prevention know-how in order to train personnel.
5. Analyze the job, establish safe practices, analyze the individual, and plan training.
6. Helps raise morale, tools no longer get misplaced or damaged, quantity and quality of work increases, confidence in your work increases, and the accident rate decreases.
7. Preoperational training.
8. Ask your supervisor for safety training and read operating instructions.
9. You do.
10. Metallic objects such as rings, watches, and glasses with metal rims.
11. Faulty handling of equipment and materials.

005

1. Strictly control all sources of flame. Be sure all gas hoses, valves, and connections don't leak and are in good working order.
2. Remove one of the three elements (fuel, oxygen, or heat).
3. Proper planning.
4. Black.
5. Water-pumped cylinders have a wide, single green band; oil-pumped cylinders have a double green band.
6. After allowing the gas to escape, tag the cylinder "defective" and return it to Supply.

7. 250 to 307 cubic feet; 2,000 to 2,400 psi.
8. Aviators' breathing oxygen.
9. An explosion or flash fire will result.

006

1. To disrupt our mission, cause its failure, or to have unacceptable consequences for our mission accomplishment.
2. OPSEC indicators or minor bits of information.
3. An OPSEC vulnerability.
4. They have the potential to become great sources of information to our adversaries.

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

Unit Review Exercises

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

21. (004) What is the *best* way to prevent man-made accidents?
- a. Constant supervision.
 - b. Good work environment.
 - c. Adequate safety education.
 - d. Staying mentally and physically fit.
22. (004) Which one of these programs is *not* a phase of Air Force safety training?
- a. Orientation.
 - b. Job training.
 - c. Unit training.
 - d. General training.
23. (004) Which one of these is *not* an important step in accomplishing on-the-job safety training?
- a. Analyze the job.
 - b. Analyze the audience.
 - c. Analyze the individual.
 - d. Establish safe practices.
24. (004) When do you receive preoperational training?
- a. Only when using new equipment.
 - b. During technical courses and on-the-job training (OJT).
 - c. During technical courses only.
 - d. During OJT only.
25. (004) Who has the *primary* responsibility for checking equipment used in your office?
- a. You.
 - b. Your supervisor.
 - c. Ranking person in the office.
 - d. Someone from base Civil Engineering.
26. (005) Before beginning a job, regardless of its size, first check to make sure the
- a. personnel are proficient.
 - b. work space is large enough.
 - c. safety instructions are pertinent.
 - d. time is sufficient to complete the job.

27. (005) Low-pressure oxygen cylinders used within the hypobaric chamber are painted what color?
- a. White.
 - b. Black.
 - c. Green.
 - d. Yellow.
28. (006) What is the purpose of Operations Security (OPSEC)?
- a. Reduce the vulnerability of Air Force missions and operations.
 - b. Enable only a few Air Force personnel to have access to classified information.
 - c. Ensure a systematic process is used to get classified information to the field quickly.
 - d. Provide a reasonable basis for the need to obtain information from potential adversaries.
29. (006) What is the condition in which friendly actions provide Operations Security (OPSEC) indicators that may form a basis for effective adversary decision making?
- a. Cover.
 - b. Deception.
 - c. Vulnerability.
 - d. Critical information.

Unit 3. Aerospace Physiology Training Program

| | |
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RUNNING A TRAINING program smoothly requires a lot of effort on everyone's part. To make the job easier, guidelines are available in the form of publications and technical orders (TO). In addition, you maintain a library and file system for those publications, technical orders, records, and reports that you use on a regular basis. This unit discusses the Aerospace Physiology training program and the pertinent records and reports necessary to get the job done. These are also brief overviews of the TO system, publication system, and file system you use in association with your job.

3-1. Course Scheduling Requirements

At the heart of Aerospace Physiology operations is the scheduling office. Mistakes made in this office could easily create a series of negative events. Scheduling a student for the wrong class or on the wrong day may cost the government time and money. This is also true of overscheduling. Never schedule 18 people for a chamber that seats only 16 students. In addition to wasting temporary duty (TDY) funds for unavailable training, TDY personnel are also unavailable for duty. Unavailability jeopardizes the mission. Therefore, paying attention to detail is important in the scheduling office.

007. Types of courses

Although AP courses are very similar in content, we do tailor the instruction to meet the specific needs of various aircrew members. In this lesson we discuss the original (initial) training as well as high-altitude parachutist, passenger, and refresher courses.

Original instruction

Most flying personnel and crewmembers receive this phase of training early in their career. It lasts 16 hours (2 days) and includes Type 1 (rapid decompression) and Type 4A chamber flights. Academic instruction for this course is outlined in the table on the next page.

High-altitude parachutist (HAP) initial

This course is only for individuals who have not completed original physiological training. It is available for qualified jump-rated personnel when required by specific Air Force or MAJCOM directives for such personnel when they are flying in Air Force aircraft. It lasts at least eight hours and includes the following subjects: physiological effects of altitude, human factors, oxygen equipment, noise and vibration, escape, and a Type 4 chamber flight.

Special emphasis is placed on the high-altitude aspects of these subjects as they affect HAP operations. These personnel may receive training with passenger-original students, in isolated circumstances, when group training is not possible. Each trainee must get a waiver from MAJCOM and meet all other provisions of AFI 11-403, *Aerospace Physiological Training Program*.

| Original Instruction | | |
|--|--|--|
| <i>Subject</i> | <i>Content</i> | |
| Physiological effects of altitude | <ul style="list-style-type: none"> • Characteristics of the atmosphere. • Anatomy and physiology of circulation and respiration. • Circulatory and respiratory responses to environmental stresses. • Hypoxia and hyperventilation and their causes, prevention, recognition, and treatment. • Introduction to the physiology of trapped and evolved gas problems including the cause, prevention, recognition, and treatment of such problems. | |
| Human performance | <ul style="list-style-type: none"> • Self-imposed stresses. • Oxygen discipline. • Alcohol. • Diet. • Dehydration. • Effects of drugs. | <ul style="list-style-type: none"> • Fatigue. • Circadian rhythms. • Physical fitness. • Principles of cockpit/crew resource management. • Situational awareness. |
| Oxygen equipment | <ul style="list-style-type: none"> • Types of oxygen masks and regulators. • Aircraft oxygen systems such as gas, liquid, on-board oxygen generation systems (OBOGS), and chemical oxygen. • Emergency use and inspection of oxygen equipment. | |
| Cabin pressurization and decompression | <ul style="list-style-type: none"> • Principles of cabin pressurization. • Hazards of rapid and slow decompressions. • Precautions to take. • Cabin depressurization. • Physical and physiological consequences of depressurization. • Procedures to follow in the event of a decompression. | |
| Pressure breathing | <ul style="list-style-type: none"> • The need for pressure breathing. • Its limitations. • Proper pressure breathing techniques. | |
| Principles and problems of vision | <ul style="list-style-type: none"> • Basic anatomy of the eye. • Physiology of day and night vision. • Factors affecting vision. • Dark adaptation. • Scanning methods. • Flash blindness. • Demonstration with the night-vision trainer. • Practice in methods of improving night vision. | |
| Spatial disorientation and other sensory phenomena | <ul style="list-style-type: none"> • How the body orients itself on the ground and compares this with the effects of flight. • Central and peripheral visual modes and their effects on orientation. • Problems associated with the distortion of Plexiglas. • Size and distance illusions. • Motion sickness. | |
| Noise and vibration | <ul style="list-style-type: none"> • Basic anatomy of hearing. • Harmful effects of exposure to hazardous noise and vibration. • The means to avoid overexposure. | |

| Original Instruction | |
|---|--|
| <i>Subject</i> | <i>Content</i> |
| Speed | <ul style="list-style-type: none"> • Aeromedical aspects of high-speed flight. • Aircraft ejection. • Flight instruments. • Cockpit temperatures. • Closure rate. • Visual problems, etc. |
| Acceleration | <ul style="list-style-type: none"> • Physical and physiological effect forces (G-forces). • Human tolerance and the means used to raise G tolerance and endurance. |
| Escape from aircraft | <ul style="list-style-type: none"> • Physiological principles and problems of escape under different conditions of altitude and speed. • Use of personal protective equipment. • Emergency ground egress. • Crash survival. |
| Physiological aspects of ejection seat and parachute training | <ul style="list-style-type: none"> • A mandatory ride in the air-charged ejection seat trainer for all undergraduate flight training (UFT) students • All additional students undergoing original or passenger instruction training and selected to fly in ejection seat aircraft receive this instruction and a ride in the trainer. (This applies only to those units that have an ejection seat trainer.) |
| Prechamber flight indoctrination | <ul style="list-style-type: none"> • Chamber flight purpose. • Chamber flight profiles. |

Passenger instruction

This course includes the following subjects: physiological effects of altitude, human factors, oxygen equipment, cabin pressurization, vision, spatial disorientation, noise and vibration, acceleration, and escape. It consists of five hours of classroom instruction only.

Refresher instruction

Refresher training is a review of the subjects presented in the original course, with emphasis on specific weapon system problems, human performance enhancement, situational awareness, spatial disorientation, and physiological problems. This course includes at least three hours of formal classroom instruction and a Type 4 chamber flight. In order to address the pertinent topics peculiar to specific weapon systems, we classify the refresher students into *trainer, attack, reconnaissance, and fighter* (TARF) or *transport, tanker, and bomber* (TTB) aircrews.

General officers and colonels serving as wing or group commanders may receive a 2.5 hour executive refresher course tailored to the needs of their current assignments. This course includes a Type 4 chamber flight, depending on the trainee's weapon system and time in service. HAPs returning for refresher training and helicopter operations (HELO) aircrew members also receive a TTB course.

008. Scheduling requirements and guidelines

The scheduling base ensures personnel scheduled for training meet the medical standards outlined in AFI 48-123, *Medical Examinations and Standards*. A means of verification between the chiefs of Aeromedical Services and AP must be established. If the AP unit is not on the trainee's base, the trainee should bring his or her medical clearance. Telephone clearance from his or her home medical facility is acceptable if a trainee arrives without written medical clearance. Note the telephone clearance information on the back of the trainee's AF Form 699, Physiological Training Record, or comparable local form. Print or type the name of the person who confirmed the clearance. The medical clearance forms discussed next are *required* for training.

Medical requirements

All military personnel must bring the applicable medical clearance form. The following are forms you will come across:

- Air Force personnel: AF Form 1042, Medical Recommendation for Flying or Special Operational Duty.
- Army personnel: Director of Administration (DA) Form 4186, Medical Recommendation for Flying Duty.
- Navy personnel: Naval Medical Form 6410/2, Clearance Notice (Aeromedical).
- Reserve Officers Training Corps (ROTC) Cadets: Standard Form (SF) 88, Report of Medical Examination, or DD Form 2351, Medical Examination Review Board (DODMERB) Report of Medical Examination. These forms must reflect a medical clearance within the last six months.
- Civilians: Federal Aviation Administration (FAA) Form 8402-2, Airman Medical and Student Pilot Certificate, or current FAA Flying Class I, II, or III Medical Certificate.

Scheduling guidelines

Aircrew members and personnel placed on active flying status must complete training requirements as discussed below.

Original training

This training is designed for all personnel who will be placed on flying status such as pilots, navigators, flight surgeons, flight nurses, flight engineers, boom operators, aerospace physiologists, aerospace physiology technicians, aeromedical evacuation technicians, test engineers, and certain maintenance personnel.

Passenger instruction

This course is designed for personnel who are scheduled to fly and who have not completed original or Officer Cadet training.

Refresher training

Most aircrew members must receive refresher training every five years. The expiration date is the last day of the month trained. For example, if previous training was on 22 September 2008, refresher training is due not later than 30 September 2013. Those who are delinquent in training cannot fly and could be subject to disqualification for aviation service.

There are few exceptions: all aircrew with over 20 years of active flying service receive refresher academics every five years; however, the altitude chamber flight is optional.

Rated personnel, transferred in student status or on exchange duty from the US Navy, US Coast Guard, US Marine Corps, or US Army, who have current Aerospace Physiology training from their service, are not required to take US Air Force refresher training before their first flight in US Air Force aircraft. The only exceptions are those assigned to fighter-type aircraft. They receive a one to two hour briefing by an Air Force aerospace physiologist.

Civilians authorized training

Civilians must complete original instruction, passenger instruction, or refresher training if they are US government or government contractor employees. The organizational commander must justify the training request. The local wing commander may authorize training for civilians when required for military orientation flights.

ROTC and Civil Air Patrol (CAP) members may receive US Air Force physiological training when their organizational commanders authorize training. This authorization may be by a letter of approval or by placing them on flying orders.

All other civilians receive training according to the USAF and FAA agreement. CAP members receive FAA training at no cost.

The minimum age for training is generally 18; however, some states may require an age greater than 18. In that case, follow the age requirement set by the state.

Refresher training in conjunction with permanent change of station departure

Training requirements for specific personnel are outlined in paragraph 2.4 of AFI 11-403, "All flying personnel being assigned to an active flying assignment overseas must complete refresher physiological training so that currency will not expire during their overseas tour" (p.14).

If personnel returning from overseas are unable to obtain currency during the three months prior to their permanent change of station (PCS) month, then the member's training currency is extended by three months past the return to the continental US (CONUS). This allows aircrew members to continue their flying schedule without interruption.

Nonrated personnel

Any person may be requalified in Aerospace Physiology training by taking a refresher course if he or she previously had original or HAP initial training.

Self-Test Questions

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

007. Types of courses

1. What is the length of time devoted to original training?
2. Who may take the initial HAP course? How long is the course?
3. Who may receive a 2.5 hour refresher course?

008. Scheduling requirements and guidelines

1. What form is required from Air Force personnel as confirmation of their flying physical? For Navy personnel? For Army personnel?
2. Who may be authorized training at five-year intervals, and what is the criterion for eligibility?
3. What is the minimum training age for civilian personnel?

3-2. Administration of Chamber Flights

The AP career field exists because students need training. AP training facilities cannot operate effectively to provide necessary training without guidance. The following section provides some general guidelines on chamber flight and student training administrative functions. In addition, we look at chamber flight profiles common to most training units.

009. Administration and supervision of training

Journeyman play a key role in the administration and supervision of the AP training program. You must be thoroughly familiar with academic as well as hands-on training requirements in order to fulfill student training needs. The following information highlights key aspects in the administration and supervision of this program.

Administration

Administration includes the requirements for training. Let's discuss these requirements.

Training classes

Classes should be small to encourage trainee participation. If possible, limit refresher classes to no more than what your altitude chamber can accommodate. Schedule each class to provide the most homogeneous group possible. When necessary, split refresher classes into groups with similar flight capabilities and experiences.

Chamber flights

Low-pressure (hypobaric) chamber flights demonstrate hazards associated with barometric pressure changes and the proper use of protective equipment. Hazards include hypoxia, hyperventilation, pressure breathing, and the mechanical effects of barometric pressure change (trapped and evolved gas problems). Many of these hazards can be eliminated or resolved with the proper use of oxygen equipment.

Written tests

All original training students are required to take a written test. The minimum passing score is 80 percent. Students should review all test items and correct them to 100 percent.

Students who score below 80 percent will receive additional instruction prior to retaking the test. Enter both scores, the nonpassing score followed by the passing score (example 75/100) on AF Form 699, Physiological Training Record, or comparable local form.

Course completion requirements

If a student is unable to complete any portion of the course, he or she has up to 90 calendar days after the scheduled training to complete the course. Students who do not complete within this time must reaccomplish the academic training prior to their chamber flight(s).

Limitations on inside observers

Within a seven-day period, AP personnel may participate as inside observers in four flights to 25,000 feet. Two rapid decompressions flights (Type 1) are permitted in a seven-day period (these may be taken in combination with the previous exposures). There must be at least:

- 23 hours between exposures to rapid decompressions.
- 12 hours between exposures to 25,000 feet.

These exposure levels are considered *maximum* exposure limits and should be avoided except in extraordinary cases.

Medical examination and medical standards

All personnel must meet medical standards for flying found in accordance with (IAW) AFI 48-123v3, *Medical Examinations and Standards*, volume 3, *Flying and Special Operational Duty*. Personnel placed in a duty-not-involving-flying (DNIF) status, also referred as *grounded*, by the flight surgeon are medically disqualified. The flight surgeon will also specify on AF Form 1042, Medical Recommendations for Flying or Special Operational Duty, their fitness to perform outside chamber duties. Medical diagnosis and prescribed medications are the determining factors. All 4M0X1s must participate in regular and frequent chamber flights as directed by training load. When in a DNIF status, each person accepts the responsibility for taking any prescribed medications and following medical advice to speed recovery. It is the individual's responsibility to report to the flight surgeon in order to be returned to flight status when recovered. Failing to return to flight status when healthy places a workload and exposure imbalance on other 4Ms and may require disciplinary action.

Supervision

A qualified Aerospace Physiology officer (APO) must supervise each chamber flight. The APO remains in direct communication with a flight surgeon to ensure immediate medical aid is available in case of serious reactions. The overall responsibility and safety of the chamber flight operations lie with the APO. However, it is most often the enlisted lecturer's responsibility to communicate the following information to the students.

Pre- and postflight briefings

The APO has the responsibility to ensure the following:

- Make certain that all briefings include necessary flight profile information and objectives.
- Make last minute determinations on the medical qualifications of a student.
- Ensure the postflight briefings include necessary information for maintaining the students' good health.

Verification of training

The APO reviews training documents on every trainee, ensuring trainees meet the course completion requirements. Remember that if trainees complete only academic training, they have up to 90 calendar days to complete the chamber flight(s). Once all requirements are met, trainees receive their course completion documents.

Rate of ascent/descent

Each flight profile identifies normal ascent and descent rates. However, the APO or flight surgeon may choose to increase or decrease these rates if a severe reaction warrants it.

Instructor/student ratio

Each altitude chamber accommodates a maximum number of students (usually 16) in the main chamber compartment. In addition, the lock portion of the chamber has a specific number of oxygen regulators (usually eight). You may seat only as many students in either portion of the chamber as there are regulators. Do not assign additional students to the lock portion of the chamber during chamber flights. During original training chamber flights with only one student, only one inside observer is required. A minimum of two inside observers are required when there are two to 10 students. Use an additional inside observer when training more than 10 students. When conducting refresher chamber flights with five or fewer students, only one inside observer is required. For refresher flights with more than five students, schedule two inside observers.

Chamber reactor plan

In accordance with AFI 11-403, each hypobaric chamber facility must have a chamber reactor treatment plan readily available. Treatment plans for severe chamber reactors include the nearest hyperbaric treatment facility's location, operating hours, telephone numbers, and capabilities. A good

plan also includes all available means of transporting reactors to the designated medical treatment facility.

Rapid decompression flights

An inside observer conducts the briefing, and an APO must be immediately available (maximum response time of 30 seconds) during a rapid decompression flight. All personnel must have had an ear and sinus check to 5,000 feet above ground level (GL) prior to the rapid decompression.

Special flights

MAJCOMs may develop special chamber flight profiles to meet specific training requirements. However, Air Force Medical Operations Agency/Surgeon General Operations Administration (AFMOA/SGOA) must approve these profiles before use. Equipment-check and medical evaluation flights do *not* need headquarters (HQ) approval. A flight surgeon is an outside observer during medical evaluation flights. Although rarely necessary, a flight surgeon may participate as an inside observer during the chamber flight. A flight surgeon does not qualify for hazardous duty incentive pay when participating as an inside observer.

Equipment-check flights evaluate chamber, oxygen equipment, and other life-support equipment performance. However, do not use these flights to test life-support equipment involved in physiological incidents or aircraft mishaps.

010. Types and profiles of hypobaric chamber flights

Specific types of hypobaric chamber flights and their profiles are identified in AFI 11-403. These chamber flights are conducted at various USAF AP training facilities to satisfy particular USAF and MAJCOM training requirements. We limit our discussion to the types of flights conducted at most AP training facilities. These flights include Type 1, Type 4A, Type 4, medical evaluation, FAA (including rapid decompression), and equipment-check flights.

Each of us must be thoroughly familiar with these flight profiles and objectives to ensure we conduct them uniformly throughout the career field. The following information applies to all chamber flights unless otherwise noted in the chamber flight profile.

Pre- and postflight briefing

All chamber flights, no matter how routine, include both a preflight and a postflight briefing. The preflight briefing provides students with the flight profile, objectives, and training activities information. In addition, the lecturer makes a final inquiry concerning student medical status. The lecturer reviews the flight objectives and postflight medical considerations during the postflight briefing.

Rate of ascent and descent

The normal maximum ascent and descent rates on most Air Force chamber flights are 5,000 feet per minute (fpm). Rapid ascent rates during rapid decompression, Type 4 flights, and emergency operations are exceptions to the 5,000 fpm rule. Check each flight profile carefully for the correct ascent and descent rates.

Denitrogenation

For flights to flight level (FL) 250, inside observers and trainees must breathe 100 percent oxygen, uninterrupted, for at least 30 minutes (denitrogenation time). This helps reduce the chances of personnel experiencing decompression sickness.

Ear and sinus check

Each student must receive a 5,000-foot ear and sinus check before the ascent to peak altitude. This makes sure that all personnel inside the altitude chamber can clear their ears and sinuses. It is done by ascending to 5,000 feet above ground level and returning to GL. This requirement does not apply to

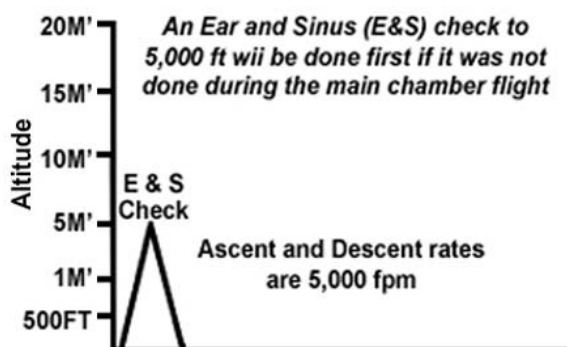
students undergoing a rapid decompression immediately after a Type 4A or FAA flight. However, an ear and sinus check must be done if someone participates in a rapid decompression flight without having first completed a main chamber flight.

Type 1 chamber flight goals and profile

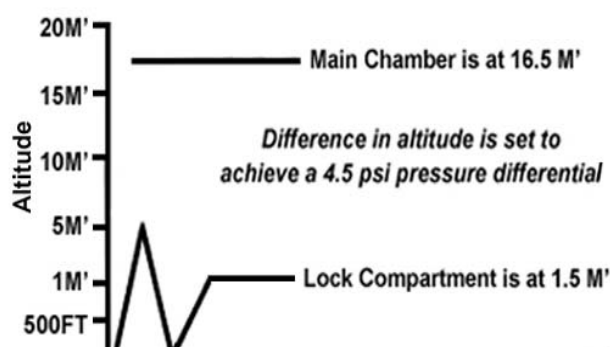
This flight, also called rapid decompression (RD) flight (fig. 3-1), is designed to give the trainee practical experience in applying the principles and techniques learned in the classroom used for an accidental loss of cabin pressurization. In figure 3-1 you will see the RD as it is conducted at Brooks City-Base, Texas. RD flights should not exceed 15 minutes. Additional objectives include the following:

- Understanding pressurization schedules.
- Selecting the advantages and disadvantages of pressurization systems.
- Identifying factors that control the rate of decompression.
- Determining the physical indications and physiological effects of a RD.
- Enhancing trainees' confidence in their ability to effectively function in the event of a decompression.
- Demonstrating the oxygen equipment emergency procedures following a decompression.

Type 1: Rapid Decompression (a)



Type 1: Rapid Decompression (b)



Type 1: Rapid Decompression (c)

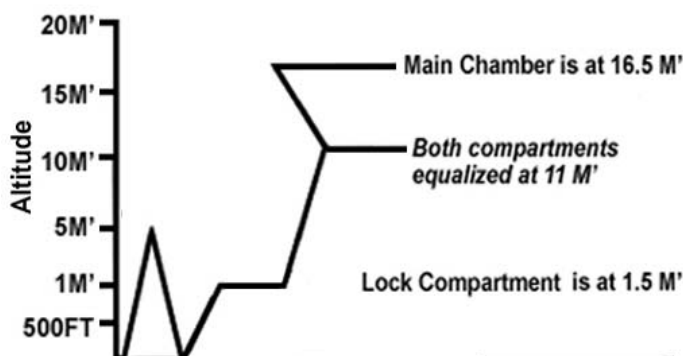


Figure 3-1. Type 1 chamber flight, rapid decompression.

The instructor briefs the trainees on the purpose and procedures of the flight. The chamber flight should not exceed 15 minutes. All of this time should be used for training activities. The instructor for the RD explains the need for conducting an ear and sinus check. This can be done while all personnel (students and inside observers) are in the main chamber. After this is completed, all personnel exit the chamber and are divided into groups for the RD.

The main chamber is put at an altitude determined to achieve a 4.5 psi RD for your field elevation. During this time, the instructor seats students in the lock compartment. The instructor ensures students do a preflight check of their oxygen equipment and intercom to ensure correct function capability. If available, students should wear the same equipment they would use in the aircraft they fly.

The instructor informs the lock operator that they are ready for ascent. The lock operator ascends the lock compartment to 500 feet above field elevation or until a good door seal is attained. During this time and prior to RD, the instructor makes sure students know the corrective procedures for decompression.

The instructor then signals the lock operator to activate the decompression. Each student is monitored to ensure he or she applied the correct procedures and to correct anyone who did not.

A descent to ground level is done once all students have properly recovered. During the descent to GL, the instructor discusses what each student noticed and relates it to actual aircraft decompression. Remind students to ventilate their middle ears and sinuses during the descent.

Type 4A chamber flight goals and profile

This flight (fig. 3-2) is designed to acquaint original trainees with the overall effects of barometric change and to practice principles and techniques learned in the classroom. Other objectives include experience in the following:

- Mechanical effects of pressure change (ear, sinus, and gas expansion).
- Positive-pressure breathing resulting from the loss of cabin pressure.
- Recognition and treatment of hypoxia symptoms.
- Proper use of oxygen equipment in a low-pressure environment.
- In-flight checks of oxygen equipment in a low-pressure environment.
- Use of emergency oxygen and portable oxygen systems.
- Prevention, recognition, and treatment of hyperventilation during flight.
- Visual problems caused by a lack of oxygen during night-flying conditions.
- Instilling and enhancing confidence in life-support oxygen equipment.

The instructor explains the purpose and procedures to be used during this flight. The chamber time should not exceed one hour. All of the chamber time should be used for training activities. The need for the ear and sinus check prior to the flight and normal and emergency settings of the regulator are briefed prior to the flight. A mask and communications check is done once all personnel are present in the chamber.

The flight begins with an ear and sinus check. The chamber ascends to 5,000 feet and descends to GL at a rate not to exceed 5,000 fpm. Once GL is reached, all personnel inside the altitude chamber remain on 100 percent oxygen for a total of 30 minutes from the time they were first connected. Once this is complete, the chamber ascends to FL 250. Upon reaching FL 250, students are then paired off and are allowed to alternately experience their symptoms of hypoxia, within limits of useful consciousness. After all students have corrected for hypoxia, a descent to FL 180 is started.

Upon passing FL 220, the students are instructed to remove their masks. This is done in preparation for the visual acuity demonstration at FL 180. At this altitude, students are shown the effects of

hypoxia on their vision during night-flying conditions. A descent to GL is made after the demonstration.

During the descent, students experience the use of high- and low-pressure emergency oxygen systems. Remind students to clear their ears and sinuses during the descent.

Type 4A: Original

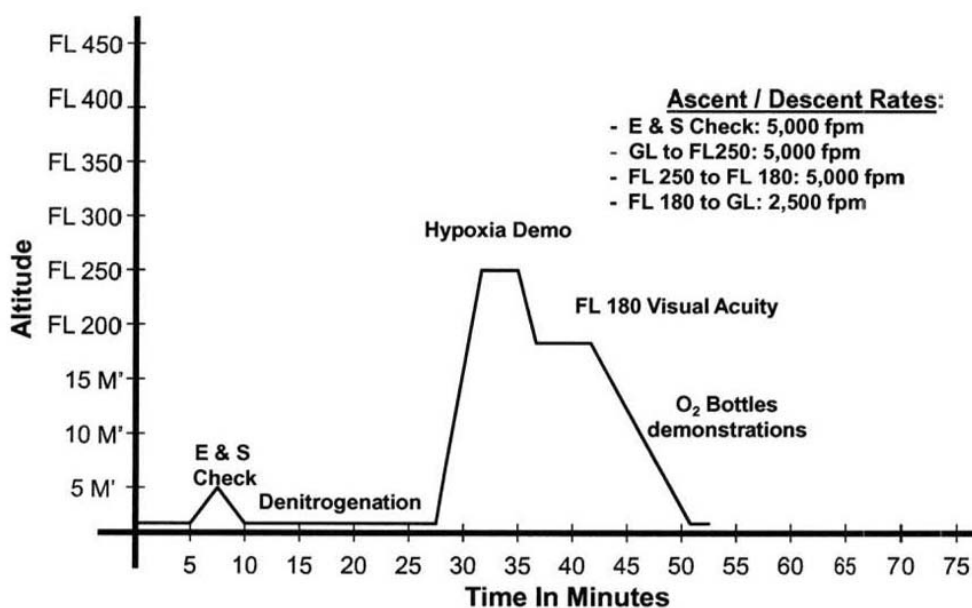


Figure 3-2. Type 4A hypobaric chamber flight.

Type 4 hypobaric chamber flight goals and profile

This flight (fig. 3-3) is designed to acquaint HAP and passenger trainees and reacquaint TARF, TTB, and HELO refresher trainees with the overall effects of barometric pressure change and permit them to practice principles and techniques learned in the classroom in a low-pressure flight environment. The ascent and descent rate during the ear check and during the final descent from FL 180 to GL is 2,500 fpm.

Specific goals for the students include the following:

- Recognize the mechanical effects of pressure change.
- Practice positive-pressure breathing resulting from the loss of cabin pressure.
- Apply the techniques and principles learned in the classroom for an accidental loss of cabin pressure.
- Recognize the loss of cabin pressurization, factors affecting the severity of the decompression, the physical and physiological responses present, and the proper response to these occurrences.
- Recognize hypoxia and treatment in themselves and others during RD.
- Review proper oxygen equipment discipline.
- Practice in-flight checks of oxygen equipment.
- Practice the use of the emergency oxygen system and portable oxygen equipment.
- Prevent, recognize, and treat hyperventilation during various flight conditions.

- Recognize visual problems resulting from decreased oxygen during night-flying conditions.
- Instill, sustain, and enhance confidence in using life-support oxygen equipment.

Type 4: Refresher

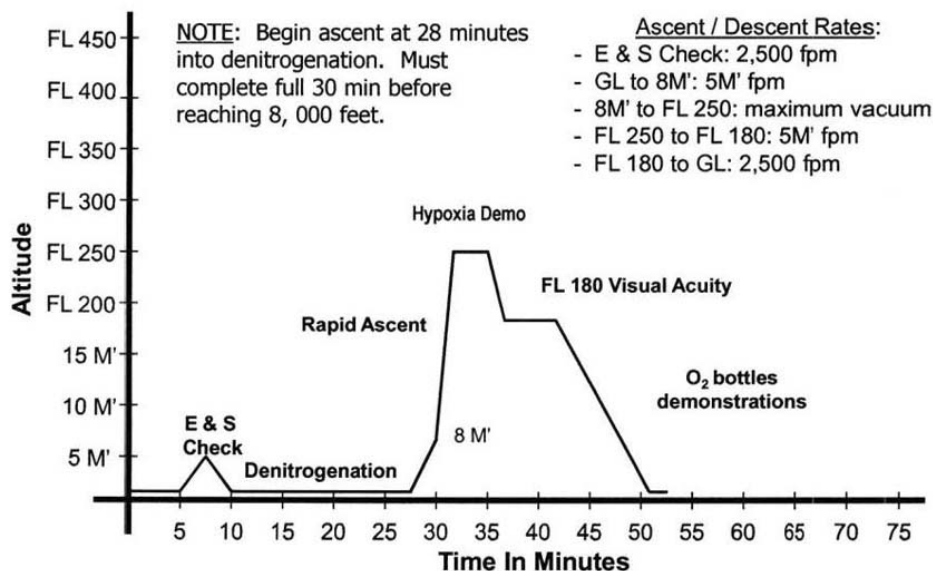


Figure 3-3. Type 4 hypobaric chamber flight.

This chamber flight, including denitrogenation, should not exceed one hour. All the chamber time should be used for training activities. Denitrogenation time begins when students and inside observers don their oxygen masks and are on 100 percent oxygen. The flight profile includes an ear and sinus check to 5,000 feet above GL at 2,500 fpm. TARF and TTB trainees experience pressure breathing by using the narrow panel regulator during the prebreathing period. Prepare for the decompression and hypoxia demonstration by ensuring 30 minutes of denitrogenation is complete before reaching 8,000 feet.

At 8,000 feet and before the rapid ascent, TTB trainees who have quick-don masks in their aircraft, may transition to this system if available. Once the oxygen system is switched and communications with the trainees are rechecked, all trainees drop their masks as the chamber is taken to FL 250 at maximum vacuum. Trainees should experience hypoxia, within the limits of useful consciousness, during ascent to and time at FL 250. Ensure all trainees are fully recovered from hypoxia symptoms before descending to the next phase of training (visual acuity demonstration).

Trainees should remove their masks at FL 220 to experience mild hypoxia during descent to FL 180. Use visual aids to demonstrate the effects of hypoxia on vision at FL 180. Begin a descent to 10,000 feet while breathing normal oxygen when the visual acuity demonstration is complete. Practice using emergency and/or portable oxygen equipment while descending from 10,000 feet to GL.

Medical evaluation flights

Medical evaluation flights are used to help flight surgeons evaluate patients. Medical evaluation flights do not have standard profiles. However, denitrogenation is required for flights above FL 250. The flight surgeon and the APO determine the chamber flight profile and brief the chamber crew and patients on applicable equipment and procedures. The flight surgeon may act as observer on medical evaluation flights as described in AFI 11-403. The aerospace physiologist supervises the flight.

FAA chamber flights

Under the terms of a USAF-FAA training agreement, we provide physiological training to non-government-employed civilian personnel engaged in civil aviation. The agreement permits training on a space-available basis at a USAF Aerospace Physiology training facility. The agreement expands the FAA's limited geographical capability to provide this very important training.

If and when you are involved in FAA training, remember that this is generally the only exposure the civilian aviator has to aerospace physiological training. As a result, the aviator's appreciation of the physiological hazards of flight and all subjects instructed depends heavily on your performance during this training. Chamber flights are an important part of training. The agreement calls for a FAA chamber flight to FL 250 (fig. 3-4) followed by an optional FAA rapid decompression flight. Current requirements allow for the rapid decompression to be included in the main chamber flight profile as a rapid ascent from 8,000 feet to FL 180.

FAA: Federal Aviation Administration

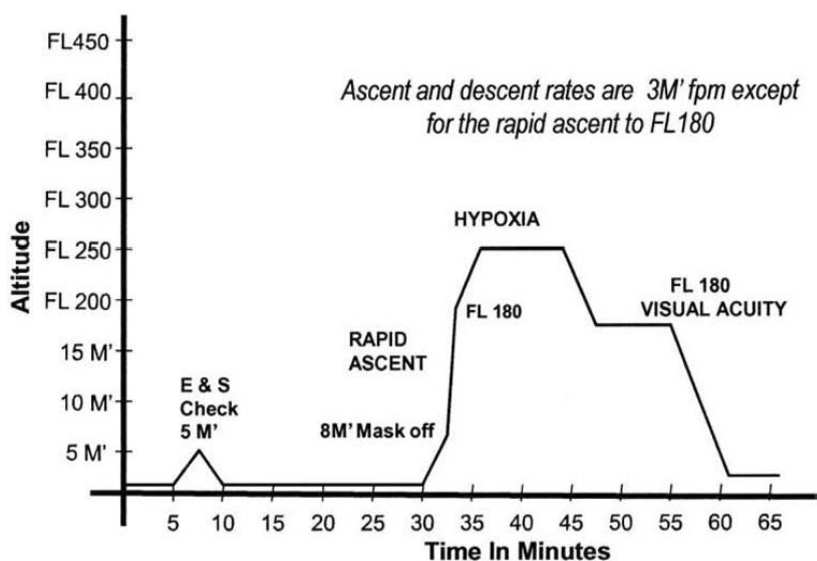


Figure 3-4. FAA hypobaric chamber flight.

Self-Test Questions

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

009. Administration and supervision of training

1. What are some of the hazards associated with hypobaric chamber flights?
2. What is the minimum passing score for the written test each original and passenger instruction course student completes at the end of the course?
3. How many exposures to FL 250 may an observer have in a seven-day period?

4. Which team member is responsible for supervision of the chamber flight?
5. How many days does a student have to complete his or her flight after completing academic training?
6. Who must approve special (new) flight profiles prior to using the new profile?

010. Types and profiles of hypobaric chamber flights

1. Why must we be thoroughly familiar with each chamber flight profile?
2. What is the purpose of the preflight briefing?
3. What is the purpose for the ear and sinus check on chamber flights?
4. What type flight is used to give trainees practical experience in applying techniques used for an accidental loss of cabin pressurization?
5. What is the purpose of a Type 4A chamber flight?
6. Which students receive the Type 4 chamber flight?
7. What is the purpose for the medical evaluation chamber flight?
8. Who receives the FAA chamber flight?

Answers to Self-Test Questions

007

1. 16 hours or 2 days.
2. Qualified jump-rated personnel when required by specific AF or MAJCOM directives; 8 hours.
3. General officers, colonel wing or group commanders.

008

1. AF Form 1042, Naval Medical Form 6410/2, and DA Form 4186.
2. All aircrew with over 20 years of active flying service.
3. 18 years.

009

1. Hypoxia, hyperventilation, pressure breathing, mechanical effects of pressure change, and proper use of oxygen equipment.
2. 80 percent.
3. No more than four.
4. APO.
5. 90 calendar days.
6. AFMOA/SGOA.

010

1. To ensure we conduct them uniformly throughout the career field.
2. Provides the student with flight profile, objectives, and training activities information.
3. Makes sure that all personnel inside the altitude chamber can clear their ears and sinuses.
4. Type 1.
5. Acquaint original trainees with the overall effects of barometric change and practice principles and techniques learned in the classroom.
6. TARF, TTB, HAP, and HELO.
7. To help the flight surgeon evaluate a patient.
8. Non-government-employed civilian personnel engaged in civil aviation.

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

Unit Review Exercises

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

30. (007) How long (in days) is the Aerospace Physiology (AP) original instruction course?
- a. 2.
 - b. 3.
 - c. 4.
 - d. 5.
31. (007) The Aerospace Physiology (AP) initial high-altitude parachutist (HAP) course lasts a *minimum* of how many hours?
- a. 4.
 - b. 8.
 - c. 12.
 - d. 16.
32. (008) Who may authorize Aerospace Physiology (AP) training for civilians when needed for military orientation flights?
- a. Individual's supervisor.
 - b. Local wing commander.
 - c. NCOIC, Aerospace Physiology.
 - d. Commander, Aerospace Physiology.
33. (008) Generally, what is the *minimum* age a person must be in order to receive Aerospace Physiology (AP) training?
- a. 18.
 - b. 19.
 - c. 20.
 - d. 21.
34. (008) Aircrew members being assigned overseas, to a station not co-located with an Aerospace Physiology (AP) training unit, should complete refresher training within how many months before departure?
- a. 3.
 - b. 4.
 - c. 5.
 - d. 6.

35. (009) What percent is the *minimum* passing score for Aerospace Physiology (AP) exams?
- a. 65.
 - b. 70.
 - c. 75.
 - d. 80.
36. (009) How many chamber flights to flight level (FL) 250 may an individual have in a seven-day period?
- a. 1.
 - b. 2.
 - c. 3.
 - d. 4.
37. (009) Which regulation lists physical requirements for flying personnel?
- a. Air Force Instruction (AFI) 11-401.
 - b. AFI 11-403.
 - c. AFI 36-3902.
 - d. AFI 48-123.
38. (009) What instruction requires all Aerospace Physiology (AP) units to have a hypobaric chamber reactor plan readily available?
- a. Air Force Instruction (AFI) 11-401.
 - b. AFI 11-403.
 - c. AFI 48-112.
 - d. AFI 48-113.
39. (009) During a rapid decompression (RD) flight, what is the *maximum* response time for the Aerospace Physiology officer (APO)?
- a. 20 seconds.
 - b. 30 seconds.
 - c. 1 minute.
 - d. 5 minutes.
40. (009) Who is the approval authority for any special chamber flight profiles?
- a. AETC/SGPT.
 - b. AFMOA/SGOA.
 - c. USAFSAM/FP/CC.
 - d. USAFSAM/HM/CC.
41. (010) What is the *maximum* amount of time a Type 1 chamber flight should last?
- a. 10 minutes.
 - b. 15 minutes.
 - c. 1 hour.
 - d. 1 ½ hours.

42. (010) At what chamber altitude is visual acuity demonstrated?
- a. Flight level (FL) 180.
 - b. FL 250.
 - c. FL 300.
 - d. FL 350.
43. (010) During a Type 4 chamber flight, what is the ascent and descent rate for the ear and sinus check?
- a. 2,500 feet per second (fps).
 - b. 2,500 feet per minute (fpm).
 - c. 5,000 fps.
 - d. 5,000 fpm.

Unit 4. Aerospace Physiology Administrative Function

| | |
|---|-------------|
| 4-1. Preparing, Maintaining, and Distributing Forms | 4-1 |
| 011. How to prepare, maintain, and distribute AF Form 361, Chamber Reactor/Treatment Report | 4-1 |
| 012. How to prepare, maintain, and distribute AF Form 699, Physiological Training Record | 4-3 |
| 013. How to prepare, maintain, and distribute the Aerospace Physiology Monthly Report | 4-5 |
| 014. How to prepare, maintain, and distribute AF Form 702, Individual Physiological Training Record | 4-7 |
| 015. How to prepare, maintain, and distribute AF Form 712, Instructor's Flight/Dive Record | 4-8 |
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PROPERLY PREPARED RECORDS and reports are essential. Each AP training unit should keep a record of accomplishments and administrative procedures to help ensure smooth operations. Individual records provide students the necessary proof that they have completed required training. Units prepare monthly and other reports to help headquarters manage the AP program. We inform HQ of each unit's activities and occurrences. Standardized preparation of these records and reports increases their value and decreases confusion. There is little benefit in preparing records and reports if others cannot understand them. Individual style and originality are fine attributes, but they are not appropriate when preparing official records and reports.

The goal of this unit is to help you understand the purpose for each record and report pertinent to the AP Training Program. Basic information is provided to help you prepare, distribute, and file these documents according to reliable procedures. Air Force Instruction (AFI) 11-403, *Aerospace Physiological Training Program*, provides the necessary updates, changes, and command supplement material. Be sure to check this document when preparing any of the records or reports discussed here.

4-1. Preparing, Maintaining, and Distributing Forms

Every record and report used in the Air Force has a purpose. The purpose of any one document may not always be immediately clear. However, understanding its overall function enhances the effectiveness of each record and report. You also must know what to do with the record or report after it is completed.

011. How to prepare, maintain, and distribute AF Form 361, Chamber Reactor/Treatment Report

This form is completed on all actual or suspected cases of decompression sickness (DCS). The accuracy, completeness, and timely submission of AF Form 361, Chamber Reactor/Treatment Report, are the responsibilities of the Aerospace Physiology officer (APO) assigned to the unit where the reaction occurred. However, gathering all pertinent information and completing the report may be your responsibility. Always be sure to have as much information as possible, perhaps including the physician's narrative, when submitting the report to the officer in charge (OIC).

Fill out AF Form 361 on each reactor suspected of, or diagnosed with DCS, whether admitted to a hospital or not. Complete the form for delayed cases as well. Forward the prepared report, along with

the required narrative summary, within 10 work days of initial notification. Coordinate the report with the attending physician to be sure of medical accuracy.

Preparation

The front of AF Form 361 contains brief instructions for completing the report. However, the following table provides detailed instructions to assist in accurate and complete recording of information. Local policy may require you to deviate from these instructions.

| Preparing AF Form 361 | | |
|--|---|--|
| <i>Block No. and Title</i> | <i>Section</i> | <i>Directions</i> |
| I. Reactor Identification Information: The reactor AF Form 699, Physiological Training Record, contains much of the information required here. | Last Name, First Name, MI | Self-explanatory. |
| | DOB (YYMMDD) | Enter the reactor's date of birth: year/month/day. For example, for 22 November 1982, enter it as 821122. |
| | SSN | Enter the reactor's Social Security Number (SSN) or service identification number. Precede the number with 9s if it is less than 9 digits. |
| | Pay Grade | Enter the pay grade: E-5, O-4, etc. Leave this blank if the reactor is a civilian. Specify the patient's affiliation if it is other than those mentioned above; for example, US Coast Guard, Civilian, or Foreign. |
| | Branch of Service | Self-explanatory. |
| | Status | Self-explanatory. |
| | Category | Enter the reason the reactor was originally in your chamber; for example, inside observer, student training, patient treatment (includes medical evaluation). |
| | Aero Rating | Specify if the patient is other than those mentioned above; for example, enlisted, civilian, nurse, etc. |
| | Stats & Sex | Self-explanatory. |
| II. Aerial/Chamber Flight and Dive History | Date of Last Aerial Flight | Include any commercial flights as a passenger within the last 7 days. |
| | Duration | Self-explanatory. |
| | Max Cabin Alt | Self-explanatory. |
| | Exercise Before Chamber Exp | Indicate whether or not the patient was involved in any physical activity before the chamber flight. |
| | Date of Prev Chamber | Provide the date of previous chamber flight/dive if within 7 days of the reaction. |
| | Flt/Dive: Duration | Obtain the time from the recorder sheet or AF Form 699. |
| | Type & Chamber Alt/depth | Reference recorder sheet or AF Form 699. |
| | Exercise After Chamber Exp | Determine if the reactor performed any type of exercise within 12 hours following the chamber exposure. |
| | The remaining information, on the last row, can be obtained by referencing the flight recorder sheet for the chamber flight in question. Specify if it is other than a normal Type 1, 4A, or 4 (e.g., Research flight, Medical evaluation, etc.). | |
| III. Reactor Data | Cause of Reaction | Enter the type of chamber causing the reaction, either altitude or dive chamber. If other, specify. |
| | Type of Facility | Enter the type of facility and facility code, for both the referring and treatment facilities. |
| | Code | Enter the reaction code. |
| | Symptoms | Assign symptoms a numerical designation to show their order of appearance. |

| Preparing AF Form 361 | | |
|-------------------------------|-----------------------------|---|
| <i>Block No. and Title</i> | <i>Section</i> | <i>Directions</i> |
| | | The reverse side of AF Form 361 starts off as a continuation of block III. This section is used to give a chronological explanation of the reactor's events during his or her reaction. Note any deviations or unusual events occurring during the flight/dive that may pertain to the reaction. If the events of the flight/dive were normal, enter the statement "No unusual events or deviations." The APO's signature block, signature, and date go at the bottom of the block. |
| IV. Reactor's Medical History | | Follow the instructions provided on the form. |
| V. Summary of Treatment | Blood Pressure Cuff Results | Self-explanatory. |
| | Type of Treatment | Specify if this is "other." Check "other" if you are performing repetitive treatments. |
| | If HBO Treatment | The time the treatment dive began (using the 24-hour clock), treatment table used, the depth the patient states total relief, and time (in minutes) at depth total relief noted. |
| VI. Final Diagnosis | | From Flight Surgeon. |

Distribution

Send one copy of the AF Form 361 and attach a Standard Form (SF) 502, Medical Record - Narrative Summary (Clinical Resume) (if applicable) to HQ AFMOA/SGOA, Bolling AFB DC and one copy to USAFSAM Hyperbaric Medicine, Brooks City-Base TX. An additional copy is filed in the patient's health record: AF Form 2100A, Health Record - Outpatient (Orange) or AF Form 2100B, Health Record - Dental (Orange). The MAJCOM may direct additional copies. If death occurs, send a message immediately to HQ USAF/SGPA (follow instructions on AF Form 361). Should your unit generate a computer form in place of the SF 502, attach a SF 502 to the computer-generated form. Type or print the following statement on the front of the SF 502: "See attached computer-generated form."

Maintenance

Maintain all files, forms, and reports in accordance with (IAW) the Air Force Records Disposition Schedule. This schedule is located on the Air Force Records Information Management Systems (AFRIMS) Web site and is accessed through the AF Portal. Copies sent to HQ USAF and United States Air Force School of Aerospace Medicine (USAFSAM) remain on file until no longer needed. Copies maintained elsewhere can be destroyed after three years.

012. How to prepare, maintain, and distribute AF Form 699, Physiological Training Record

This preprinted 5 x 8-inch card is used to document the attendance and training of every student who attends our courses. Most units have locally developed similar forms or sign-up sheets to collect all the required student data; therefore, the student record information is kept electronically. In either case, student attendance of tour groups or orientation briefings is not recorded in the AF Form 699, Physiological Training Record, or equivalent form.

Preparation

Administration or training section personnel at most training facilities brief incoming students on how to complete the form. An accurate and complete form provides necessary information to complete other AP training records and reports. The form is especially valuable for providing training data should a student need a duplicate training certificate. For example, duplicate certificates are requested when individuals lose their records.

Normally the student completes most of the form, leaving the section after block 18 and block 19 (Chamber Flights section) blank. Administration personnel record the training information in these sections. The following table explains the information required in each block on the form:

| Preparing AF Form 699 | | |
|------------------------------|----------------------------------|--|
| Block No. | Title | Directions |
| 1 | Date | Enter the date the course started. |
| 2 | Name | Self-explanatory. |
| 3 | Pay Grade | Enter the trainee's military or civil service pay grade; for example, E-5, O-4, GS-6, etc. Foreign students print their rank in this block. Civilians attending FAA courses write CIV in this block. |
| 4 | SSAN | Enter the trainee's SSN. Foreign students enter their serial number in this block. |
| 5 | Aero Rating or Designation | The following is a list of accepted abbreviations used in this block: PIL: Pilot. NUR: Flight nurse. DOC: Flight surgeon. RAT: Rated officer other than those listed above [e.g., navigator (NAV), electronic warfare officer (EWO), etc.]. X-RAT: Nonrated officers; this includes student pilots and student navigators. CIV: Civilians. FOR: Foreign military personnel. ENL: Enlisted personnel. |
| 6 | | Self-explanatory. |
| 7 | | Self-explanatory. |
| 8 | | Self-explanatory. |
| 9 | Sex | Explain to the class that we use this information only in statistical analysis of personnel participating in hypobaric chamber flights. |
| 10 | Race | This is needed only for statistical analysis. |
| 11, 12, and 13 | First Type I, II, or III Flights | Check only the block(s) that apply to the current training session. When completing the "first type flight" blocks, have the student think of it as a "Yes" or "No" type question. NOTE: The flight types have changed; until the form gets updated, you may make a pen and ink change over Type II and write Type 4A instead. Type III flight is no longer a valid profile. Type I is named Type 1 and its profile remains the same. |
| 14 | Organization or Class Flight | The entry should show the current organization of the student for military personnel. However, if military personnel receive training during a permanent change of station (PCS) assignment, the entry should reflect the gaining organization. For civilian government employees, the entry is their place of employment. If a civilian is attending the course in support of a government contract, the entry should identify the office responsible for the contract. For civilians not connected with the federal government, list their home addresses in blocks 14 through 16. |
| 15 | Base Assigned | The entry should be the current base of assignment for military personnel and civilian US government employees. Students should enter their gaining base if they are attending training during a PCS. |
| 16 | Command | Military personnel enter their present MAJCOM. Civilians leave the space blank. Students in PCS status enter the gaining MAJCOM. |
| 17 | Aircraft You Fly In | Students enter the aircraft they now fly or expect to fly while in performance of official duties. This entry determines the type of oxygen and escape equipment discussed in the classroom. |
| 18 | Crew Position | Enter the crew position of the student. Examples are Instructor pilot, pilot, navigator, weapons system officer, loadmaster, etc. |

| Preparing AF Form 699 | | |
|-----------------------|-------------------------|---|
| <i>Block No.</i> | <i>Title</i> | <i>Directions</i> |
| | | The blocks between boxes 18 and 19 are used to record the type of training the student completed, the exam score if it involved a written examination, and the date the training was completed. |
| 19 | Chamber Flights | This section is used to record each chamber flight the student was on. We will take a look at each block and what entry is required. |
| | Flight No. | The flight number is calculated by counting the number of chamber flights conducted since 1 January of the current year. In other words if there were 172 flights since 1 January, the number for this flight would be 173. |
| | Date | Enter the date that the flight was conducted. |
| | Type | Enter type of flight (Type 1, 4A, or 4). |
| | Total Time | Enter the total time the student was at altitude during the chamber flight. This includes the ear and sinus check plus the main flight times. |
| | Peak Altitude | Enter the highest altitude the student was exposed to. |
| | Physiological Incidents | Enter any problems the student had during the chamber flight. As a minimum, it should have what altitude the reaction occurred, what direction the altitude chamber was moving (ascent, descent, level), what the reaction was, and how it was treated. |

Maintenance and distribution

Each AF Form 699 remains on file for six years at the unit conducting the training. Destroy the form IAW the Air Force Records Disposition Schedule.

Maintaining this form at unit level enables the unit to create a duplicate AF Form 702, Individual Physiological Training Record, if the original AF Form 702 is lost. Thus, the Air Force keeps the crewmember in the aircraft to continue the mission.

013. How to prepare, maintain, and distribute the Aerospace Physiology Monthly Report

This report documents training unit workloads. It is prepared monthly and submitted no later than the 10th of each month to AFMOA/SG3PT and to the unit's respective MAJCOM AP consultant.

HQ uses these reports to determine the following:

- Future Air Force training requirements.
- Specialized equipment needs.
- The availability of trained officers and enlisted personnel to conduct the AP program.
- The future workload at the training units.

Preparation

The Aerospace Physiology Monthly Report is an internal USAF report with a report control symbol (RCS). A RCS indicates that the report is a valid requirement, and AP units have the responsibility of providing the requested information. This lesson presents an overview of the information documented on the report. Due to the different missions and training loads of each unit, it would be too time consuming to cover all aspects of the report. However, the following table provides a good summary of the important information reported. Before studying this section, ask your trainer or supervisor for a copy of your unit's monthly report. Use it as we cover the different sections of the report.

| Preparing the Aerospace Physiology Monthly Report | | |
|---|---|---|
| Page No. | Column Title | Directions |
| 1 | NAME | Enter the name of each person (listed alphabetically by rank) assigned to the unit. |
| | GRADE | Enter the current grade of each person listed. |
| | AFSC | Enter each person's current duty Air Force specialty code. |
| | LEC | Enter total time, in whole hours, each person spent performing formal platform instructor duties. |
| | FLY | Enter total time, hours and tenths of hours, each person spent in aircraft flight. |
| | CHAM FLT | Enter total number of hypobaric chamber flights each person participated in during the reporting period. |
| | ALT CHAM | Enter total amount of time, hours and minutes, each person spent at altitude during the reporting period. |
| | TOTAL CT | Enter total time, hours and minutes, each person has spent at altitude for his/her entire career. |
| | DIVES | Enter total number of dives each person participated in during the reporting period. |
| | DIVE TIME | Enter total time, hours and minutes, each person spent at depth. |
| | TOTAL CT | Enter total time, hours and minutes, each person has spent at depth during his/her career. |
| 2 | Base Name | Enter the base that the trainees are officially assigned to. |
| | Command | Enter the command the individuals are assigned to. |
| | Type Course | Enter the type course or training the individuals received. |
| | # of Trainees | Enter the total number of students assigned to that base and command that participated in that same course or training during the reporting period. NOTE: Other bases may have an additional column labeled # Complete. This allows units to track students or classes that have not completed training. |
| 3 | | List the total number of courses taught and the total number of students (number in parenthesis) trained in that particular course. |
| 4 | | List all reactions that occurred in the hypobaric chamber during the reporting period. Inside observer reactions are shown in parentheses. For units with hyperbaric chambers, use an additional page to record hyperbaric reactions. |
| 5 | | List the total number of chamber flights, students, and inside observers for the reporting period. Each chamber flight conducted is represented individually. The first number under the flight is the total number accomplished. The next number (in parenthesis) is the total number of students participating. The second number (also in parenthesis) is the total number of inside observers on this profile. If assigned to a unit with a hypobaric chamber, list all dives the same way. |
| 6 | | List the number of students participating in specialized training, such as centrifuge, disorientation, ejection seat, parasail, and other. This training is usually conducted at specialized units that support a pilot/navigator training wing. Centrifuge training itself is conducted at Brooks City-Base, TX, and Holloman AFB, NM. |
| 7 | This page is used to report the status of unit personnel and any additional training completed. As you can see, an abundance of information can be presented on this page. A brief explanation of each section follows. | |
| | TDYs (Temporary Duty) | This section should contain, but is not limited to, the following information: personnel involved, the reason for the TDY, and the dates they were absent from their duty section. |
| | Awards and Decorations | List personnel who received any awards (NCO/airman/officer of the quarter/year), and any decorations that were presented to unit personnel during the reporting period. It should, as a minimum, include the person receiving the award/decoration, the name of the particular award/decoration, and the date the person received it. |

| Preparing the Aerospace Physiology Monthly Report | | |
|---|---------------------|--|
| Page No. | Column Title | Directions |
| | Promotions | List personnel who were promoted during the reporting period. |
| | Personnel Gains | Show personnel who are projected for a PCS into your unit. List the name of the person being assigned and the projected date of arrival. |
| | Personnel Losses | Show any personnel who are projected to separate from the Air Force, cross-train into another AFSC, or personnel projected to PCS. Along with the name of the person, list a projected date of departure. |
| | Other Training | List any training completed that is not covered on previous entries. |
| | Tours | Show the total amount of tours completed and how many people attended. |
| | Unit Personnel DNIF | List individuals who were duty-not-including-flying (DNIF) during the reporting period. Do <i>not</i> use individual names in this section, only how many days they were DNIF, and possibly the reason for it. |

Your particular unit's report will vary as the mission varies. The end result of each report is the same. You are providing HQ and your MAJCOM consultant information that will determine future training loads and unit manning requirements. Because of the potential impact of the report, it is vital that the information be presented properly and in a timely manner.

Maintenance and distribution

Each unit keeps a printed and electronic copy of the report in its files. Remember to submit a separate report to AFMOA/SG3PT and distribute a printed copy and an electronic copy to your unit's MAJCOM consultant. Letters of transmittal are *not* required.

HQ maintains the reports until they are no longer needed and then destroys them. Unit-level copies stay on file for three years and then are destroyed.

014. How to prepare, maintain, and distribute AF Form 702, Individual Physiological Training Record

All personnel completing original aerospace physiological training receive an AF Form 702, Individual Physiological Training Record. This form constitutes a permanent record of all physiological training. The form can document up to 30 years of training.

Preparation

The AP administration section is mainly responsible for creating or updating each student's AF Form 702. When personnel return for additional training, such as refresher training, they bring the original AF Form 702 so the new training can be annotated. An APO signs each entry on the form. If a student loses his or her AF Form 702, verify previous training from the AF Form 1274, Physiological Training, or previous training facilities so a new form can be generated. Follow these instructions when preparing an AF Form 702.

| Preparing AF Form 702 | |
|-----------------------|---|
| Column Title | Directions |
| Name, Grade, and SSN | These are self-explanatory. Enter student pay grades in pencil so it can be changed later as the individual is promoted. |
| Type of Training | You may find several common training phases already preprinted in this section. Enter subsequent training in one of the blank spaces when students return for training. |
| Air Force Base | Enter the base conducting the training. |
| Training Date | Enter the date the student satisfied all training requirements. |

| Preparing AF Form 702 | |
|---|--|
| <i>Column Title</i> | <i>Directions</i> |
| Expiration Date | Original and refresher training have an expiration date of the last day of the month, 5 years from the training date. For example, if a student completes original training on 8 May 2002, refresher training is due no later than 31 May 2007. Pressure suit training, often conducted during original and refresher training, expires after 3 years. |
| Signature of the Aerospace Physiologist | Type the APO's signature element in this section. The APO must sign above the element, certifying training. Do not use a signature stamp. |
| Remarks | Use this section to record data pertinent to a student's training, for example, significant difficulties during a chamber flight or other training requirements met. |

Maintenance and distribution

Aircrew personnel keep AF Form 702 in their field training records or as a permanent part of their individual flight records. All other personnel keep the form in their field medical records until departure from active or Reserve duty. You may destroy the form upon departure from military service.

015. How to prepare, maintain, and distribute AF Form 712, Instructor's Flight/Dive Record

The AF Form 712, Instructor's Flight/Dive Record, is a record or history of all the time you have spent as an inside observer or instructor in either the hypobaric or hyperbaric chambers.

Preparation

This form is typically kept electronically. If you participate as an inside observer for both chamber flights and chamber dives, use separate forms for each. For instance, your hypobaric flight time is entered on one AF 712 and your hyperbaric dive time on a separate AF 712. As a result of previous or current hypobaric and hyperbaric chamber operations and experience, each person in your unit could have two AF Form 712s. AF Form 1354, Hyperbaric Chamber Operation Record, or your unit hypobaric chamber recorder sheets contain information recorded on AF Form 712 (except accumulated chamber time). Follow these instructions to complete AF Form 712.

| Preparing AF Form 712 | |
|-----------------------|---|
| <i>Column Title</i> | <i>Directions</i> |
| Grade and Name | Enter the grade (E-4, O-3, etc.) and the individual's name. |
| Base and Location | Enter the current base assigned and the location (e.g., Randolph AFB, Texas). Individuals transferring from another base should hand carry their current AF Form 712s, submitting the form to their new administrative section upon arrival. The gaining unit initiates a new AF Form 712, using the cumulative information contained on the old AF Form 712. |
| Type | Enter the type of flight or dive the individual participated in as an inside observer (e.g., 1, 4, 4A, Pro, etc.). |
| Date | Enter the date of exposure. |
| Position | Enter the inside chamber observer position occupied during the flight (e.g., IO1, IO3, O-1, etc.). |
| Time | Enter the total time of the exposure, including the time spent during the ear and sinus check. |
| Accumulated Time | This is a cumulative time of all exposures to either altitude or depth. Simply add the time of each exposure to the previous total. Carry this time forward from previous cards. |
| Flt/Dive Level | Enter the maximum altitude or depth reached during the exposure. |
| Monthly Exposure | This section shows the total number of flights for each month. Draw a horizontal red line on the card as a visual reference for the end of each month. The line keeps the current month separate from the previous month. |

| Preparing AF Form 712 | |
|--|---|
| <i>Column Title</i> | <i>Directions</i> |
| Remarks | Enter any pertinent information about the individual's participation in the flight. For example, explain inside observer reactions during the flight. |
| Continue all information on the reverse side of the card. Transfer accumulated time to a new card, along with the information contained in blocks a and b when the card is full. | |

Maintenance and distribution

The Air Force Records Disposition Schedule provides disposition for this form. Give the form to the individual when the card is full and applicable data is transcribed to the monthly report. Some units may choose to maintain this form in the individual's instructor records. Individuals transferring from one field unit to another must hand-carry their AF Form 712 to the gaining unit.

016. How to prepare, maintain, and distribute physiological training forms

In addition to the AF Form 702, we provide a wallet-sized version to show completion of training. There are two of these forms: AF Form 1274, Physiological Training, for military trainees and the Federal Aviation Administration (FAA) Form 3150-1, Physiological Training, for FAA pilots.

Preparation

The AF Form 1274 is given to every individual completing Original, High-Altitude Parachutist (HAP) Initial, and Trainer, Attack, Reconnaissance, Fighter (TARF), Trainer, Tanker, Bomber (TTB), Helicopter Operations (HELO) or HAP refresher training. The FAA Form 3150-1 is very similar with the only difference that the form does not require the expiration date to be annotated. In either case, the card is not valid without an APO signature. Refer to AF Form 1274 as we review the information required.

| Preparing AF Form 1274 | |
|--|---|
| <i>Block</i> | <i>Directions</i> |
| Name | Self-explanatory. |
| Grade | You should use pencil to allow for changes. |
| Phase of Training | Enter Original, Refresher, Passenger, etc. |
| Issue Date | Enter the date the student completed training. |
| Expiration Date | Enter the date training expires. |
| Physiological Training Unit | Enter the location of the unit conducting the training (e.g., Brooks City-Base TX). |
| Signature of Physiology Training Officer (PTO) | Self-explanatory |

Maintenance and distribution

The responsibility for maintaining AF Form 1274 remains with the individual. Individuals may request a new card if their original is lost, worn, or destroyed. A worn and expired AF Form 1274 should be destroyed or surrendered to an AP training facility. Reference the student's AF Form 699 and/or their AF Form 702 to verify current training information and completion dates when issuing a new AF Form 1274.

017. How to prepare, maintain, and distribute hazardous duty forms

In order to process your hazardous duty incentive pay, two forms must be completed. One is the DD Form 114, Military Pay Order, and the second is the AF Form 1373, MPO Document Control Log – Transmittal.

Preparation

You probably won't come into contact with this form unless you work in your unit's administration section. However, you should be familiar with DD Form 114 because it starts/stops hazardous duty

incentive pay (HDIP). Most entries are self-explanatory, and some of you will fill it out according to local directives. You may enter information for more than one individual on the same form. The finance office prorates the first month of HDIP. You usually fly more than once a month, but you only need one exposure per month to the hyperbaric/hypobaric chamber to receive HDIP. Each month that you function as an inside observer, following initial qualification, you receive full HDIP. Here are some guidelines for filling out DD Form 114.

| Preparing DD Form 114 | |
|---------------------------------|---|
| <i>Column Title</i> | <i>Directions</i> |
| Military Pay Order Number | Leave this blank. |
| Organization and Station | Enter your base and office symbol. |
| Date | Enter the date you prepared the form. |
| Service Number and SSN | Enter the member's Social Security number. |
| Last, First, and Middle Initial | Self-explanatory. |
| Reason for Change | Follow local directives for the exact wording required by your AFO. |
| Year | Self-explanatory. |
| From and To | Enter the inclusive dates for receiving or stopping HDIP. (e.g., 8 Oct - F.O. means pay begins on 8 Oct and continues until further orders (F.O.) |
| Symbol Number | Leave this blank for military pay. |
| Certifying Officer | This is normally the chief, Aerospace Physiology, or any authorized APO. |
| Signature of Certifying Officer | Self-explanatory. |

Maintenance and distribution

Be sure to submit this form with a copy of AF Form 1373 as required by the finance office. Maintain this form in accordance with local policy.

Self-Test Questions

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

011. How to prepare, maintain, and distribute AF Form 361, Chamber Reactor/Treatment Report

1. Who is responsible for the accuracy, completeness, and timely submission of AF Form 361?
2. What types of reactors require an AF Form 361 to be filled out?

012. How to prepare, maintain, and distribute AF Form 699, Physiological Training Record

1. What is the main purpose of AF Form 699?
2. How long is the AF Form 699 kept on file?

013. How to prepare, maintain, and distribute the Aerospace Physiology Monthly Report

1. List the uses of the report.

2. What constitutes lecture time on the report?
3. How is flying time entered on the monthly report? Chamber time?

014. How to prepare, maintain, and distribute AF Form 702, Individual Physiological Training Record

1. Where do nonaircrew personnel keep their AF Form 702?
2. What entry is made in pencil? Why?
3. What date is entered in the “training date” block?
4. What is the expiration date for original and refresher training?

015. How to prepare, maintain, and distribute AF Form 712, Instructor’s Flight/Dive Record

1. What is the purpose of an AF Form 712?
2. What entries do you make in the “grade and name” block?
3. What is entered in the “remarks” block?

016. How to prepare, maintain, and distribute physiological training forms

1. What entry is needed on the card to make it valid?
2. Who is responsible for maintaining AF Form 1274?

017. How to prepare, maintain, and distribute hazardous duty-related forms

1. What is the purpose of DD Form 114?

2. How is your first month of HDIP different than other months?

4-2. Publications and Technical Orders

Information passed down from higher headquarters, in the form of publications and technical orders (TO), must be current and immediately available to all personnel in your organization. Air Force units at all levels must ensure publications and TOs are complete, accurate, current, and accessible to Air Force users. You must know how to locate and access this information for yourself and when it is requested by others. This section deals specifically with the proper procedures for separating, posting, and filing publications and TOs. In this section, we compare master and functional publication libraries and explain how to establish, maintain, and discontinue publication and TO libraries. We tell you about library contents and the policy on the availability of publications and TOs. We also introduce a smaller collection of reference publications known as a *publication set*. Later in the unit, we discuss filing and posting publications and TOs, as well as managing publication and TO libraries.

Official Air Force publications are the only approved vehicles for issuing official Air Force policy and/or guidance. Air Force publications are either directive or nondirective in nature. Official Air Force publications communicate policy, issue guidance and procedures, or simply serve to inform. Publications are accessible through the Air Force Portal and the *e*-Publishing Web site. Ultimately, publishing operations are designed to provide customers Air Force-wide access to electronic and physical products via the *e*-Publishing Web site (direct download or direct order). The Web site serves as the official repository for departmental and field publications at the wing/base level and above.

The Functional Publications Library (FPL) custodian maintains a library of printed departmental- and field-level publications. The FPL custodian also coordinates with the Functional Area Records Manager (FARM) to maintain an appropriate supply of commonly used forms. The FPL custodian and FARM will continue to maintain a library of publications and supply of forms as long as they are available. However, offices of primary responsibility (OPR) are placing an ever-increasing number of publications and forms in electronic formats and not printing hard copies. If a publication or form is no longer printed by the originator, the FPL custodian will, upon request, access the Document Automation Production Service (DAPS) Web site to request bulk printing service of the document. Single copies of a publication or form can simply be downloaded and printed from the *e*-Publishing Web site.

The Air Force TO system provides clear and concise instructions for the safe and effective operation and maintenance of centrally-acquired and managed Air Force military systems and end items. TO 00-5-1, AF Technical Order System, describes the Air Force TO System and provides guidance and general management procedures. This TO also identifies and explains the various TO types, management tools, account procedures, ordering, and how to recommend updates. Additional information about the TO system may be accessed through the TO System Information Page at the AF Portal Web site.

018. How to establish, administer, and maintain publication libraries

The two types of publication libraries are master and functional. A *master* publications library provides a readily available source of reference for *all* activities on an Air Force installation. A *functional* publications library, on the other hand, is a unit or staff office file containing *only* those publications needed to perform the mission of that particular unit or staff office.

Establishing and maintaining libraries

There is at least one master library established and maintained at each active Air Force base or comparable major installation. This requirement may be waived by your MAJCOM/DA (director of

administration) when a master library is neither practical nor necessary to accomplish the mission on certain remote or isolated installations. A master library that services a base or installation must also be available to any tenant organization. Normally, the DA of the host unit establishes and maintains the master library.

Functional libraries are not limited to the one-per-base criterion. Multiple FPLs may be authorized on any given installation, but there are some limitations and exceptions. For example, a FPL does not require DA approval like the master publications library does. Within each headquarters (staff offices or in any of its branches) at division level and above, the chief of a staff office may authorize the establishment of a FPL when there is an operational necessity for one. In addition, commanders of organizations involved in flight operations are specifically authorized to establish and maintain FPLs containing departmental- and field-level publications. Commander or senior official approval is required in a squadron or detachment. A lower level FPL should not be authorized when small publication sets would suffice or when a master or large FPL is located nearby.

Library contents

The contents of master/functional libraries are divided into publication groups, which are the maintaining organization's responsibility. These publications are discussed below.

Unclassified publications

A master publications library contains a copy of each unclassified publication issued by each higher headquarters of the maintaining activity down through the chain of command. For example, at Keesler AFB the master publications library should include all unclassified publications—Air Force, AETC, 81st Training Wing, 81st Training Group. The library also may contain copies of subordinate, attached, or tenant unit publications when the DA decides copies are necessary.

A FPL is usually smaller and contains *only* those publications that specifically apply to the technical responsibility of the maintaining organization. This library should include a copy of AFI 33-360, *Publications and Forms Management*, the Product Index listing of included publications, and the product announcements.

Classified publications

Regardless of the issuing headquarters, classified publications should be maintained only in a master publications library when the material is required for general reference and access to the material can be effectively controlled. The same rules generally apply to FPLs. The basic difference is that classified publications, in some cases, must be maintained for a particular job. Use the guidelines in AFI 31-401, *Information Security Program Management*, for safeguarding and protecting all classified information.

X-distribution publications

A master/functional publications library is not required to maintain X-distribution publications unless the OPR includes that library on the X-distribution list. Since each X distribution is already identified in the publications' index, it is not necessary to prepare a cross-reference showing the location. The publications should be located and made available in the FPL of the local OPR. FPLs must link to electronic publications and forms available on the *e-Publishing* Web site.

Availability of publications

Master and FPL custodians will do the following:

- Make Air Force and other publications available to personnel that are consistent with their assigned duties and need to know. Custodians ensure all individuals who require knowledge of new/revised publications are notified of their availability.
- Review product announcements and the Product Index on the *e-Publishing* Web site to ensure publications in the library are available, current, and essential, whether issued by HQ USAF,

parent MAJCOM, field operating agency (FOA), or other organizations in their chain of command.

- Ensure the libraries are conveniently located to serve the maximum number of personnel. One primary FPL can serve several organizations within the same or different echelons of command.
- Be open to personnel of other staff offices in the headquarters accessing their libraries even though, as in the case of a FPL, the publications are maintained primarily for the use and convenience of personnel of the authorizing staff office. This sharing arrangement should enable some staff offices to reduce the size of their FPLs or even eliminate them.

NOTE: Publications maintained in a master or FPL may be loaned temporarily to authorized persons for official use.

A master publications library is the only activity that makes unclassified publications available to the general public for viewing. When more than one master library is located on an installation, the base or installation commander will designate one to serve the general public. A FPL is not made available to the general public for viewing and copying. Refer the public to the master publications library that is designated for general public use.

Publication set

A publication set is a single publication or group of publications relating directly to the duties of the holding individual. These publications are sometimes called *desk sets*.

Establishing or discontinuing a publication set

Anyone may maintain a publications set when authorized by his or her immediate supervisor. Supervisors may discontinue publication sets as situations require. The organizational account representative (OAR) must be notified promptly whenever a publications set is established or discontinued.

Contents

The publication set contains only the publications that pertain specifically to the daily operations of one or several users. Since it involves only a limited number of publications, a publication set will *not* contain indexes of publications or forms unless they are needed to perform work.

Authorized users

A publication set is a work file and is not generally available to persons outside the work area.

How to file publications

A system must be developed for getting publications in proper order or sequence before beginning to post or file publications. Follow these steps:

1. Separate all publications by their issuing organization (Air Force, MAJCOM, numbered air force, wing, group, etc.).
2. Separate all changes, including formal (change 1, change 2, etc.) and informal (message changes: IMC 88-1, IMC 88-2, etc.).
3. Separate all supplements.
4. File the publications that do not require any action (new publications), and then file those that require very little action (revisions).

Usually publications are filed in three-ring, loose-leaf binders. Publications that are not three-hole punched are filed separately with their location annotated on DD Form 2861, Cross-Reference, if desired. Identify each binder's contents and place sequence numbers on the binders to help identify the publications.

Use standard guides, folders, and labels if it is more convenient to file publications in filing cabinets versus binders. Requests for filing equipment must be approved by the records manager.

Filing publications in binders

Each publication has its own number. For filing purposes it is important to know the difference between two distinct numbers. The first number is known as the series number. The second number after the dash (-) is the control number. Always file publications in numerical sequence, first by basic series number and second by the control number. (For example: 11-201, 11-403, 36-2101, 36-2903, 48-112, etc.)

Keep each HQ's publications (except supplements) in a separate set of binders; for example, Air Force, AETC, 80th FTW, and 82nd MDG. Although, you may file different HQ's publications together if they fit into fewer binders or the DA limits the number of binders used. After posting an Air Force supplement to a DOD instruction, manual, or handbook, file the supplement with the basic DOD publication. Use DD Form 2861 to show where the Air Force publication is filed.

Within a given set of binders, file all Air Force instructions, manuals, and pamphlets in numerical order, without regard to the type of publication. If two or more types of publications have the same series and control number, file them by instruction, manual, and pamphlet. Begin a new binder for the next organizational level after filing all Air Force publications (e.g., MAJCOM). Continue until all publications in your chain of command are filed.

Do *not* file by publication type when establishing new libraries. If possible, convert libraries that file instructions in separate binders, and manuals in separate binders, and so forth, to the method described above. File the following types of publications as indicated.

| Filing Publications | |
|---|--|
| <i>Type</i> | <i>Directions</i> |
| Indexes | You may keep indexes for ready reference on a desk or other convenient location in your library. Indexes may be filed in the same binder. Place DD Form 2861, Cross-Reference, in the regular 0-series binder of the issuing headquarters to show the location of the indexes. |
| Classified publications | File classified publications separately from unclassified publications. However, classified and unclassified publications may be filed together in the same binders in a secure area. |
| For Official Use Only (FOUO) publications | If the master library is open to the public, keep FOUO publications in separate binders, and file the binders in an area that is off limits to the public. Use DD Form 2861 to cross-reference these publications in files. |
| Visual aids | Visual aids are not usually filed in a publication library. Do not interfile visual aids with other standard publications if you maintain them. |
| Periodicals | Treat periodicals as transitory material. File them in a separate binder when they are maintained for a longer period. |
| Specialized publications | File specialized publications in separate binders. |
| Bulletins and staff digests | These publications are generally regarded as transitory material. File them in separate binders. |
| Odd-size publications | You may attach smaller-than-standard-size publications to an 8.5 × 11 inch piece of paper or card stock and file it just as you would a regular-size publication. You may also punch new holes in the publication and file it in the binder. |
| L-distribution publications | File these publications in separate binders if the library is open to non-DOD personnel. |

Filing a basic or revised publication

Look for a supersession line at the bottom of the first page when you receive or access a publication. It is a new publication if there is no line; simply file it in the proper binder. Revisions have supersession lines. Remove the superseded publication or publications from the binder. Be sure to

check whether the new publication supersedes more than one publication or supersedes portions of publications. If a portion of another publication is superseded, post it to show deleted material and the authority for deletion. Do not remove the old publication if the revision has a future effective date. Establish an informal suspense and remove the superseded publications on the effective date. All posting to standard publications must be made in black pencil.

Filing a publication that has a future effective date

There are certain things you must do when a publication is received with a future effective date and it supersedes an existing publication. Write a note and the new publication/revision at the top of the page of the superseded publication; for example, "To be superseded by AFI 11-403, effective 19 Jul 09." Keep the superseded publication in the file until its replacement becomes effective. Establish an informal suspense system to make sure the superseded publication is removed on the effective date.

Write a warning in pencil at the top of the title page of the new publication/revision that it is not yet effective. Add a reference to the publication that will be replaced; for example, "Do not implement until 19 Jul 09. See AFI 11-403, 20 Feb 08."

File the new revision directly behind the publication being replaced if the number is the same. File the new revision in the proper numerical sequence if the number is different.

Remove the superseded publication from the binder and dispose of it on the new publication/revision effective date. Erase the warning notice from the new publication.

File the complete change in front of the affected basic publication if it contains page changes with a future effective date. Do not make any notations on either the current or future replacement pages. Keep an informal suspense as a reminder to remove the current pages and insert the new pages on their effective date. File the transmittal page of the change behind the affected basic publication when this action is completed.

File the complete change in front of the basic publication when a change with a future date, affecting specific paragraphs of the basic publication, is received. Make no notations on the current or future replacement paragraphs. Maintain an informal suspense as a reminder to annotate the affected paragraphs on the effective date of the change. Post the required changes on that date. File the transmittal sheet of the change behind the affected basic publication.

Obsolete publications

A publication becomes obsolete on the date that it is no longer effective. It is considered obsolete when any of the following occurs:

- It is superseded by another publication.
- An entry in the obsolete section of an index, or notice in a publishing or base bulletin, announces its rescission.
- It expires. For example, if a publication states, "Expires 22 Nov 04 unless sooner superseded or rescinded," it is automatically obsolete as of that date, unless the issuing authority notifies all recipients of an earlier date.

When and how to maintain obsolete publications

Occasionally a functional element (personnel, judge advocate, inspector general, accounting and finance, etc.) must refer to an obsolete publication. However, the DA is not the custodian of obsolete directives that are the primary concern of other functional managers. The DA decides whether to keep obsolete publications in a master library.

Do *not* keep copies of obsolete departmental standard and specialized publications except when required by other directives for special purposes.

How to post and file a change

The change transmittal page shows whether to insert new pages or to make write-in entries. Only the page-insert method should be used for formal changes issued for departmental publications. A formal change for field publications may show page, write-in, and paragraph changes. An emergency message change (EMC) or interim message change (IMC) may show write-in and paragraph changes. Post field EMCs and IMCs in pencil. Post and file changes in the order in which they are issued; that is, by date. A formal change should supersede existing EMCs and IMCs. However, in some cases, it may not. Then file the formal change, by date, behind the message changes. File IMCs or EMCs to departmental publications—AFIs, AF manuals (AFMAN), and AF pamphlets (AFPAM)—with the basic publication and post them if desired. Formal page changes to departmental publications replace IMCs and EMCs within 30 days of IMC/EMC issuance. Retain message changes until formal page changes are received. Follow these procedures if the change tells you to make write-in changes:

1. Draw a Z (or line) through changed lines, sentences, paragraphs, or sections and write in the word *Deleted* or *Replaced*. Write the words over the lines or in the margin. Identify the authorizing change by writing in the change number in the adjoining margin. For example, C1 for formal changes, IMC 88-1 or C88-1 for IMCs, and EMC 88-1 for EMCs. *Do not* show the date of the change.
2. Write in the change number and the word *Added* if a paragraph is added. Identify the change in the adjoining margin. *Do not* show the date of the change.
3. File the change in back of the basic publication. File the change in back of the changed volume if the publication has more than one volume.
4. Ensure you have received and posted any previously issued page-insert changes. Insert or remove pages as shown on the transmittal page:
 - Replace old pages in the publication with new pages.
 - File decimal-numbered pages in sequence, after the basic publication page.
 - Check to see if there is a supplement affecting pages being removed when inserting a page change to a basic publication. If so, write *See Supplement* in pencil at the top of the new page. If desired, post the references to the new page in pencil if the new paragraph numbers still correspond to those in the supplement.
 - File change transmittal page and message changes in the back of the basic publication in the order in which they are issued. File the change transmittal page and message changes in back of that volume if the change pertains to a specific volume. File amendment sheets to all volumes or parts of a volume according to the filing instructions shown on them.
5. Take the following actions when you receive a field publication EMC or IMC:
 - Post the change. Pencil in the EMC or IMC control number in the margin next to the changed portion of the publication (e.g., IMC 88-3 or C88-3 and EMC 88-4). File the EMC or IMC in back of the basic publication.
 - Correct the entries in the publication if the EMC or IMC is replaced by a formal change or is canceled.
6. Do not file or post interim letter changes, unnumbered letter changes, or unnumbered messages.

How to post and file a supplement

A supplement adds information to a basic publication and is posted to corresponding paragraphs, tables, figures, and so forth, in the basic publication. For example, Air Education and Training Command (AETC) currently supplements AFI 11-218, *Aircraft Operations and Movement on the Ground*, with AETC SUP1. This supplement implements and extends the guidance of AFI 11-218 for AETC. File supplements behind the basic publication. A supplement issued in page-insert format

contains only the supplement text pertaining to specific paragraphs. File it directly across from the page being supplemented. When a new supplement applies to the same edition of the basic publication as the superseded supplement, compare the two. Delete or change the posting in a basic publication to conform to the new supplement.

Follow these guidelines when you receive a page-insert supplement:

1. File each page insert according to the instructions on the transmittal sheet.
2. Write in the affected paragraph's number and the word *Added*. Identify the supplement in the adjoining margin.
3. Circle a supplemented paragraph's number or letter. Record the supplement number and issuing headquarters in the adjoining margin.
4. File the supplement transmittal page behind the basic publication after posting. File the transmittal page in back of a volume if the supplement pertains to a specific volume.

The most common format for a supplement is one in which all supplementary material is listed, paragraph by paragraph, on one or more consecutive pages. There are no pages to insert. Therefore, this type of supplement must be posted in pencil as follows:

1. If it supplements a paragraph in the basic publication, circle the number or letter of that paragraph. Record the supplement number and its issuing headquarters in the adjoining margin.
2. Write in the paragraph number (or letter), followed by the word *Added*, if it adds a paragraph. Identify the supplement in the adjoining margin.
3. File the supplement behind the basic publication after it is posted and behind the specific publication volume to which it pertains. Posting any part of a supplement that does not apply to your activity, or to users of your publication files, is optional (e.g., posting a paragraph that is for *HQs only*).

You may need to use both supplementing methods if your library maintains different command supplements. You may standardize the library files by treating all of the page-insert supplements as if they were compiled in the format described above. In this case, instead of separating each single-page insert and filing it across from the supplemented paragraphs, keep the supplement together and file it in back of the publication (or volume). However, post each paragraph of the supplement that applies to your activity.

Supplements of superseded basic publications stay in effect automatically. File these supplements behind the new basic publication, even if the new basic publication has a different number. These holdover supplements provide interim guidance until they are revised or rescinded. MAJCOMs and SOAs may establish time limits for keeping them. Maintain holdover supplements as follows:

- Do not post holdover supplements to the new basic publication.
- Gather all page-insert supplements together and file them behind the new basic publication.
- *See Supplements* may be written (in pencil) on the front page of the new basic publication.

A basic publication's supplements are rescinded automatically when the basic publication is rescinded. The publication's manager announces rescissions in the activity's publishing or base bulletin and index. Check new indices' obsolete sections for rescinded supplements and remove them.

Annotating and lending publications and inspecting FPLs

Whoever maintains the unit FPL is also responsible for keeping it up to date. We now discuss index maintenance and responsibility.

Using the Air Force e-Publishing Web site

You must have some way of knowing whether or not a FPL is complete and up to date if you are required to maintain your unit's library. The e-Publishing Web site provides this information.

The e-Publishing Web site provides links to *Product Announcements* and *Obsolete Publications* (.pdf). Many changes, revisions, rescissions, and so forth occur with standard publications. Keeping your FPL up to date by posting changes, revisions, and so forth, is important and beneficial. The e-Publishing Web site and these two documents are ready references to anyone who uses them.

Checking for currency and completeness

Thoroughly check your FPL for currency and completeness at least once each calendar year. This check normally takes place when you receive the first Product Announcement in each calendar year. The check verifies the following:

- The current edition of the publication is on file.
- All changes have been received and posted.
- All obsolete publications have been removed.
- All new publications printed since the last announcement, required for the library, are on hand or have been placed on a requirements list.

Loaning publications

A publication maintained in your library may be removed from its binder and loaned temporarily to authorized individuals for official use. You may lend the entire binder if the publication is bulky.

NOTE: Loaning publications is optional and depends on the custodian's decision, after considering local needs and conditions.

When you lend a publication, you must do the following:

1. Require the borrower to complete an AF Form 614, Charge Out Record, to record the temporary loan.
2. File the completed AF Form 614 in the binder in place of the loaned publication. If an entire binder is loaned, replace the binder with the AF Form 614.
3. Require the borrower to return the publications within three work days and establish a formal suspense to follow up on all loaned publications, if local conditions warrant. This should not be necessary in most situations.

Inspecting a publications library

The DA in each organization is responsible for making an annual spot check of each library and set maintained in the DA office. However, the DA is not accountable for FPLs and sets maintained in other staff offices and unit activities.

People who use publication sets are responsible for their proper maintenance and disposition. Supervisors should discontinue sets when individuals fail to maintain them properly.

019. How to use and maintain various types of technical orders

The TO is not addressed in-depth in this CDC. However, here are just a few facts about the TO system.

Technical orders are among the most important documents you will use. They contain important information about the operation, maintenance, and handling of Air Force equipment. Their use is mandatory. Paragraph 1 of Air Force Policy Directive (AFPD) 21-3, *Technical Orders*, states, "The Air Force must produce, configure, install, maintain, modify, and operate systems and equipment safely and effectively" (p.1). The comprehensive technical instructions and information in TOs help to achieve this purpose.

There is a TO written for most of the equipment you use on the job and you must know how to use these TOs. You also may be responsible for maintaining your unit's TO Library.

AFPD 21-3 establishes the Air Force TO System and provides overarching policy for TO acquisition and use. AFI 21-303, *Technical Orders*, implements AFPD 21-3 and establishes policies and responsibilities for managing TOs. TO 00-5-1, AF Technical Order System, and the 00-5 TO series provide guidance and management procedures. Additional information can be accessed through the TO System Information Web page (<http://www.ide.wpafb.af.mil/toprac/to-syste.htm>). These publications and references are essential to setting up and using a TO account and library.

In this lesson we discuss basic information about the TO system, such as establishing, using, and maintaining TOs. We divide the TO system into five groups of publications: (1) operations and maintenance TOs, (2) time compliance TOs (TCTO), (3) methods and procedures TOs (MPTO), (4) index type TOs, and (5) abbreviated TOs. These five groups, along with preliminary TOs, are *only* the initial division of TOs.

Preliminary technical orders

These TOs are in the same general format and style as formal TOs. They are used to test and evaluate operational and maintenance procedures against test and production models of equipment. You can use these TOs for training purposes. They are identified as TOs but are not formally part of the Air Force TO system until the completion of validation and verification processes.

Operations and Maintenance TOs

Operations and Maintenance TOs include Aircraft, Missiles, Civil Engineering, Special Weapons, Other Equipment, Work Package, and General publications. They also include Job Guide, Supplemental, Commercial Off-the-Shelf (COTS), and Flight manuals. These TOs contain instructions and information for personnel engaged in operating, maintaining, servicing, overhauling, installing, and inspecting specific types of equipment. In addition, they provide information about safety precautions and parts identification. 4M0X1s most often reference Aircraft and Other Equipment publications and COTS and Flight manuals.

Aircraft TOs and flight manuals

The Air Force requires a complete set of aircraft-specific technical manuals on each new aircraft received. For example, a flight or maintenance manual written for a C-17 couldn't provide information on an F-16. Although each aircraft has its own set of manuals, how we divide each manual is consistent, and each set carries the same subtitles. For example, there is an F-16 flight manual and a C-17 flight manual.

Flight manuals

The essential information needed to operate a particular type of aircraft and its accessories under varying flight conditions are found in the aircraft flight manual. This manual *does not* deal with the basic techniques of flying, target tracking, or navigation. However, it *does* show the crewmember the location of all the switches and controls required for operating the aircraft and its accessories.

As an instructor, you need to become familiar with portions of various aircraft flight manuals. For example, instructors who teach oxygen equipment or emergency escape must be familiar with the oxygen and escape equipment provided for the aircrews on the aircraft they fly. The procedures that are safe to follow on one aircraft may cause injury to the flyer on another type of aircraft. The best source available for this information is the flight manual.

Organization maintenance instructional manuals

These manuals explain the operation, servicing, maintenance, and troubleshooting of the aircraft and its systems. Each publication has several volumes grouped according to the assigned tasks of the

career fields. You may find some general information on aircraft-installed protective equipment that will be helpful in your classroom presentations.

Other equipment manuals

The equipment in these manuals may or may not be airborne equipment. Aircraft technical manuals do not explain operating, maintenance, and repair procedures for each of the thousands of airborne items used. Other equipment technical manuals explain these procedures. These manuals also provide the necessary technical information for the upkeep of most AP training devices and life-support equipment. You will be using technical manuals in a variety of areas—from the care and maintenance of the MBU-20/P oxygen mask to the operation and maintenance of the hypobaric chamber.

Operating, service, and repair instruction

We use these TOs most often. They cover and explain oxygen mask, helmet, and life-support equipment operation, inspection, and maintenance. Consult these publications to be sure you are meeting required specifications.

Illustrated parts breakdown

A complete breakdown of a piece of equipment is illustrated in the parts breakdown manual. This manual shows the position of each nut, bolt, washer, and so forth. Next to each illustration is a by-name list identifying all the parts. This parts breakdown will help you select the proper replacement.

Overhaul instructions

You can do a complete overhaul of a piece of equipment or a training device with the help of an overhaul manual. These manuals provide information on disassembly, reconditioning, reassembly, and testing of the units. The overhaul may be done at a depot or a field unit, depending upon the facilities required.

Titles of equipment manuals

The titles used above are not a complete listing of titles used for equipment TOs. You may find three separate publications instead of a single publication titled *Operating, Service, and Repair Instructions*. One may cover operation, another servicing, and a third repair. You also may find a *Use, Inspection, Fitting, and Maintenance* title.

Commercial publications and COTS manuals

Some items of equipment have wide application for civilians, as well as military personnel. Commercial publications and manuals provide coverage of this kind of equipment, allowing the user to operate and service it properly. We use these publications as TOs if they meet Air Force needs. The Air Force must approve all commercial publications before they become part of the TO system. To understand how commercial publications affect AP personnel, look at when we use them. We used a commercial publication for the operation and maintenance of the hyperbaric chamber compressor until we developed a technical manual. Another example is the Vertigon trainer. When first delivered, the *only* available operation and maintenance instructions were the manufacturer's operating instructions.

Time compliance technical orders

TCTOs modify and clarify a military system or end item TO by directing and explaining a particular job that must be done within a time limit. For example, assume a manufacturer accidentally installs defective test parts on 1,000 automatic pressure-demand (narrow panel) regulators. In addition, the manufacturer issues the regulators before discovering the defect. When the Air Force discovers the defect, it issues a TCTO in accordance with TO 00-5-15-WA-1, Air Force Time Compliance Technical Order Process. This TCTO explains the inspection required to identify the defective test parts and gives replacement or repair instructions.

TCTOs are categorized as Immediate Action, Urgent Action, Routine Action, Routine Safety Action, and Record. Units may also receive an *Interim TCTO* via electronic advance notification of a TCTO.

Interim TCTOs

All concerned units receive a radiogram, telegram, teletype, or message form to correct a hazardous situation. These messages usually add, change, or replace instructions contained in existing TOs. Thus, they require a change of maintenance, inspection, or operating procedures. A formal printed TCTO normally replaces this type of order within 10 days. Since time is important, perform the actions directed by the interim TCTO as soon as you receive the initial message.

Immediate action TCTOs

A border of Xs (XXX) and the words *Immediate Action* are printed in red to identify immediate action TCTOs. These orders apply only to aircraft and aircraft components. They contain emergency orders requiring immediate compliance. If you receive this type of TCTO, place the affected equipment in a *Red X* or grounded status until the required work is done.

Immediate action TCTO instructions are vitally important. Give precedence to this item over all other work. These TCTOs carry a rescission date effective six months after the TCTO issue date or one month after the last scheduled kit delivery, whichever occurs *last*.

Urgent action TCTOs

A border of alternating diagonal lines and Xs (/X/X/X) and the words *Urgent Action* are printed in red to identify urgent action TCTOs. These TCTOs may apply to ground equipment as well as to aircraft. An urgent action TCTO also corrects hazardous conditions. The work specified must be done within the time limit given in the TO. This time limit may be from one to 10 days. If given two days, and the work is not done by the end of the second day, place the equipment in a *Red X* status. The affected unit cannot be operated until corrective action is complete. The rescission date is 12 months after the TCTO issue date or the designated compliance period. You may have an additional 60 days after the last scheduled kit delivery to complete the task, whichever occurs last.

Routine action TCTOs

Not all TCTOs correct hazardous conditions; some correct discrepancies that impair unit or system efficiency. In this case, the TCTO is a *Routine Action* TCTO; however, a time limit may be specified for its completion. This time limit may be specific, such as 30 days, the next periodic or 120-day inspection, the next overhaul, or when the equipment fails. In any event, the work must be done when directed. This TCTO has no special markings. Routine action TCTOs may also be released as more specific routine safety action TCTOs.

Record TCTOs

These TCTOs do not contain step-by-step instructions in the “how the work is accomplished” paragraph. Instead, they tabulate the equipment affected and contain necessary installation drawings and instructions. In addition, they list required parts that are in the kits. There are no distinguishing red markings required for record TCTOs. In all other aspects, these TCTOs contain the same information and support as other TCTOs.

Methods and procedures technical orders

TOs of this type establish policies. They specify methods and procedures on such subjects as the TO system, preventive maintenance, scheduled inspections of equipment, maintenance management administration, inspection of Air Force equipment, control and use of repairable assets, configuration management, and so forth. Make every effort to return items to service as soon as possible when listed items require repair, inspection, or replacement. MPTOs also provide information and instruction on the safe methods and procedures for preventive maintenance and periodic inspections. Technical manuals address specific equipment; MPTOs do not. MPTOs are divided into two classes:

1. MPTOs involving policies, methods, and procedures concerning maintenance management or administration (00-category).
2. MPTOs involving policies, methods, and procedures of equipment in general.

Index-type technical orders

The Air Force must catalog TOs systematically due to the many publications in use. You will often refer to two publications: the numerical index and the alphabetical index. The numerical index lists TOs in numerical sequence. The alphabetical index lists each item of equipment by name in alphabetical order, providing the TO category dealing with each equipment type.

Abbreviated technical orders

Bulky technical manuals come in condensed or abbreviated form for the convenience of operating and maintenance personnel. Abbreviated TOs include inspection work cards and work sheets, inspection sequence charts, checklists, lubrication charts, and job guide manuals. The usefulness of checklist-type publications is clear when conducting periodic chamber inspections. A checklist lists those inspections that relate to the particular equipment of each chamber subsystem. Dividing equipment into subsystems enables several technicians to perform individual subsystem inspections at the same time. Requiring each person to research the inspection requirements manual would require many bulky manuals to do the task. As a result, time would be lost, and many inspections would not take place because of careless or incomplete research. Job guide manuals are pocket-sized manuals containing information on operational checkout and repair of equipment.

020. How to use the technical orders numbering system

TOs are military orders, and like any order, you must obey them. Interpret and follow instructions once you obtain the proper TO. TO 00-5-1 contains the rare conditions allowing temporarily waiver compliance of TOs.

To use TOs efficiently, you must know how to identify the appropriate TO and how to obtain it. The TO numbering system consists of groups of numbers and letters in a definite sequence with the groups separated by dashes, such as 1F-4C-2-3. It is a logical, consistent system used to number both aircraft and equipment TOs. Reference TO 00-5-18, USAF Technical Order Numbering System, for additional information.

The first digits appearing in the TO number designate the *topic*. The following is a list of numbers and their respective topics:

| No. | Topic |
|-----|--|
| 01 | Indexing of TOs. |
| 02 | General TOs (methods and procedures). |
| 1 | Aircraft. |
| 14 | Deceleration devices, personal and survival equipment. |
| 43 | Simulator training devices and associated equipment. |

Following the initial digits in the TO number is a letter that represents the *type* of aircraft or equipment. For instance, 1F refers to fighter aircraft and 1B refers to bombers. In the 43 category, 43D refers to training devices and 43E to training equipment.

The aircraft model number follows the initial letter of an aircraft TO or manual (1F-4). A letter that indicates the series of the aircraft (-1F-4E) further identifies the aircraft. In the case of equipment, the number after the first letter gives a further equipment breakdown of the preceding letter. For instance, a TO numbered "43D8" gives information on indoctrination trainers and chambers.

TOs may have additional numbers to provide further classification into subgroups. However, the last number that appears on a technical manual gives the function of the manual. We refer to this number as the *dash number* of the publication. If your supervisor asked you to get the *dash two* (-2) for the

aircraft, you would get TO 1F-4C-2-2. The -2 contains maintenance instructions. You should also know -1 contains operating instructions, -3 contains overhaul instructions, -4 contains illustrated parts breakdown, and -6 contains inspection requirements.

There are two common exceptions to the meaning of the last digit of the last number. TCTOs are numbered the same as other TOs except the last number is 501 or higher. In addition, the last digit has no special significance. The other exception is a section aircraft maintenance manual.

How do we apply the rules of numbering to a complete technical manual number? The technical manual number becomes more specific with each additional number or letter. An understanding of the numbering system helps you find many TOs without referring to an index. However, you must use the proper numerical index each time you need a TO so the information you extract is from a current TO. No one expects you to remember the TO numbers of all equipment. Use a TO index to find the correct TO and current dates.

How to use a numerical index

The Air Force publishes a numerical index for each category of equipment. The initial two numbers of an index are 0-1. The third number is the category number. For example, look in category 15 if you need an oxygen regulator TO. The index for aircraft climatic control equipment and oxygen equipment is TO 0-1-15. Training devices and equipment are in category 43. Therefore, all publications on training equipment are in TO 0-1-43.

When you know only an item's name and you need to find the proper TO, here's how. First, use the alphabetical index TO 0-2-1, Alphabetical Equipment List Cross-reference with TO Number Groups. This index, arranged like a dictionary, lists the category of the item. Second, go to the numerical index for the specific TO and date needed, after finding the category number from the alphabetical index.

Filing TOs

Keep TOs in binders in numerical order. Store TOs that are nonstandard size (e.g., work cards) or classified where appropriate. Each TO publication binder contains a place for AFTO Form 32, Technical Order Binder Label. The AFTO Form 32 has sufficient space to record publication numbers and the book or binder number. TOs must be filed within a maximum of five work days from the date received. However, interim TOs must be filed within 24 hours after receipt. Consult TO 00-5-2 whenever you need additional information about filing TOs or for the other exceptions to the five-day-filing time limit.

Filing TO changes

Insert changed pages in the order shown when they are received. The change's cover page replaces the previous cover page. A list of affected pages on the *A-Page* shows the affected change pages.

Routine supplements are identified with the word *Supplement* and an alphabetical suffix to the basic publication number. File these to the rear of the basic publication in alphabetical order. The supplement's number is shown on the title page, for example, 0-1-15C. Next, reference the supplement on the title page of the affected basic TO (e.g., *See Supplement-15C*). Routine supplements are issued only to Numerical Index and Requirement Tables (NI&RT), TCTOs, and permanently bound manuals, such as commercial manuals, Army training manuals, and so forth. We are concerned with safety and operational supplements, TO page supplements (TOPS), the procurement of TOs, and the interpretation of TOs.

Filing safety and operations supplements

Maintain these supplements in the file with the basic TO. The basic TO may have interim or formal safety supplements (SS) or operational supplements (OS). Normally, formal supplements replace interim supplements. Therefore, you should not have an identical (same number) interim or formal SS or OS.

Interim supplements usually arrive by electrical transmission (e.g., messages). The importance of this information makes rapid worldwide issue a consideration.

The first (title) page printed with a border of red S's and other important information in red make formal safety supplements identifiable. *SAFETY SUPPLEMENT* appears at the top and bottom of the title page. The TO number contains two S's (e.g., 14D1-2-81SS-1).

The same format applies to operational supplements, except the first page has a border of black OS's and *OPERATIONAL SUPPLEMENT* at the top and bottom. All additional information is also in black. The TO number contains a single S (e.g., 43D8-3-2-22S-1).

File SSs and OSs in reverse numerical sequence in front of the basic TO. Place safety supplements in front of operational supplements, and write a reference to both types of supplements on the basic TO's title page.

Filing TOPS

A TOPS is mainly issued if time and circumstances prevent the issuance of a standard change and if the change doesn't meet the criteria for issuing an SS or OS. A TOPS is usually printed on green paper with holes on both long edges of each sheet, so it can be filed facing the affected page(s). A TOPS includes a standard title and A-page numbered the same as regular changes. Pages include *only* the changed paragraph or sentence rather than an entire page. Place the changed data next to the page containing the outdated instructions.

Understanding TO designators

Suppose you go through an available TO file but can't find the TO you need. What do you do? TO 00-5-2 guides you through the procedure for establishing a requirement for the needed TO. You will need the Technical Order Distribution Office (TODO)/Technical Order Publications Requirement Table in AFTO Form 187, Technical Order Publications Request, and the NI&RT in TO 0-1-01. Additional information is required before making entries on AFTO Form 187.

There may or may not be a symbol assigned to column 1. Each TO is numerically listed in column 2. Knowing the purpose and meaning of the various symbols in column 1 is important. Therefore, the symbols are explained in the following table (further explanation is in the preface of numerical indexes and TO 00-5-2):

| TO 0-1-01 | | |
|------------------------------------|-----------------------|--|
| <i>Column No. and Title</i> | <i>Symbols</i> | <i>Description</i> |
| 1. Symbol | Single asterisk (*) | Review the listing to determine whether to submit initial distribution (ID) requirements. The * identifies a new basic TO (other than a TCTO), a new TCTO series, a basic TO renumbered from another TO category (except a TCTO), or the addition of a requirements indicator. |
| | Double asterisk (**) | There has been some change in the listing. A double asterisk identifies one of the following items: <ul style="list-style-type: none"> • A TO title change. • The addition or deletion of a TO application. • The addition or change of a special note. • An Air Logistics Center (ALC) symbol change. • The addition of another symbol. • The change of an automatic rescission date. |

| TO 0-1-01 | | |
|------------------------------|--|--|
| Column No. and Title | Symbols | Description |
| | Triple asterisk (***) | <p>A triple asterisk identifies one of the following items:</p> <ul style="list-style-type: none"> • A previously unpublished TO is now published • A new TO change, revision, supplement, or TCTO has been issued. • The basic TO date or change date and this listing of a new TO supplement or new TCTO are changed. <p>NOTE: Review the TO title to see whether there is a change.</p> |
| | D symbol | Identifies a depot level TO or TCTO normally not required for work performed by organizational- and field-level maintenance activities. You should not normally submit ID requirement activities or requisitions for these TOs. |
| | E symbol | Identifies TOs not initially distributed through the NI&RT system, since they usually support a very limited inventory. You must justify your need for these TOs when requested to do so by the TO distribution control activity (TODCA). |
| | H symbol | Identifies TOs subject to special controls and not intended for distribution to many activities. These TOs normally apply to special repair activities, limited testing procedures, and organizations where the equipment is located. Although you may have authorization to use them, these TOs are only received if you order them through the NI&RT system. Checkout tapes, cards, and some commercial manuals are several types of TOs meeting special control criteria. Activities submitting requirements or requisitions must justify their <i>need to know</i> when requested to do so by the TODCA. |
| | K symbol | Identifies TOs issued for one-time, short-term use at overhaul facilities and contract modification centers. They are not applicable to other activities. Distribution is made only to activities determined applicable by the approving technical service activity at the responsible ALC and not through the NI&RT system. You will not usually submit requisitions for those TOs. Supplements identified by the K symbol do not remain in the basic TO. |
| | S symbol | Identifies a series listing use for TCTOs. |
| | Black dot (.) symbol | The TO will be automatically rescinded in 120 days or less. Immediately advise the responsible TODCA if you know any reason not to rescind the TO as scheduled. |
| | M symbol | Identifies TOs applicable only to the Military Assistance Program (MAP), similar programs, and to USAF activities supporting those programs. |
| | The above-mentioned symbols must be entered as part of the initial preparation of the NI&RT. Pencil in a black plus (+) or minus (–) on AFTO Form 110, Technical Order/ CPIN Distribution Record, to show the status of the TO file as it applies to each required listing. These final two symbols are explained below. | |
| | Black plus (+) | The publication is on file and complete. The basic publication is the current issue and contains all effective changes, supplements, and appendixes. |
| | Black minus (–) | <p>The publication is needed for the file, meaning one of three things:</p> <ol style="list-style-type: none"> 1. It does not contain all effective changes, supplements, and appendixes. 2. The copy in the file is not the current issue. 3. It may not have been received from distribution channels and may not be in the file. However, it is on order. |
| 2. Number and Classification | | |

| TO 0-1-01 | | |
|----------------------|---------|---|
| Column No. and Title | Symbols | Description |
| 3. Title | | Lists the title of the TO and, when applicable, the type, model, and series of equipment to which it pertains. Annotate this fact for classified publications but do not list classified information. |
| 4. Dates | | Shows the date the basic TO was printed. You also may find in this column a TO change date immediately below the basic TO date. |
| 5. Storage and Issue | | Shows which Air Logistics Center stores and issues the TOs. The overall management responsibility for TOs remains in the Oklahoma City ALC (OCALC). Always requisition TOs from OCALC. |

Requesting TOs

You would use the NI&RT content and symbol meanings to complete an AFTO Form 187. When available, use the Defense Information Services Network (DISN) to submit the TO initial distribution (ID) and requisition order number (RON) requirements to OCALC.

Complete the top portion of AFTO Form 187 in accordance with TO 00-5-2 when transmitting requirements by DISN. Leave everything above the *Remarks* block blank when submitting by mail. Complete the rest of AFTO Form 187 when using either DISN or the mail.

Use the blocks between the *Remarks* block and Part I if you mail the AFTO Form 187. Contact your TODO for a request number, and enter it on each AFTO Form 187 and each DISN or other type message.

Your main concern is with the Part I section of an AFTO Form 187. Apply your knowledge of the NI&RT and its symbols. In Part I, columns 16–40, Technical Order Number, you would enter the complete TO number exactly as it appears in the applicable NI&RT. Symbols are covered in TO 0-1-01. Do *not* enter any symbols preceding the TO number, such as the *K*, *M*, or *black dot* (.). Do not enter any security classification symbols (U, C, or S) found below the TO number in the NI&RT in this column. Always keep in mind that the TO you desire may be a restricted TO, not available, or not authorized for your organization or shop. The symbols in the NI&RT tell you this.

In column 41 you enter the security classification indicator symbol. Examples of the symbols are U (Unclassified), C (Confidential), and S (Secret). These are not the *only* means of identifying classified TOs; however, they are the most common. When two alpha digits are shown in an NI&RT and you require both, enter the second digit in column 42. A classified TO seldom applies to Aerospace Physiology facilities, and you generally do not need to order classified TOs. However, a word of caution applies. If there is a *U* under the TO number 0-1-4 in columns 41 and 42, you will be requesting both the *U* and the *C* NI&RT.

Columns 43 to 46, and 47 to 50 are the columns where most needless errors occur. Keep two basic rules in mind for these columns:

1. Precede any quantity less than four digits long by zeros to make a four-digit number.
2. Enter four Xs (XXXX) in the ID column (43 to 46) to cancel an established ID requirement.

021. How to maintain technical order files

Someone must maintain TO records requirements to ensure currency and accountability. You also must maintain the file records if you maintain the TO file. Maintenance of AFTO Form 110 files is not mandatory unless you distribute TOs to other accounts. It is, however, probably the best way to maintain records of your file requirements.

AFTO Form 110

The AFTO Form 110, Technical Order/CPIN Distribution Record, is 8.5 x 10 inches, printed on both sides, and hole-punched for storage in a three-ring notebook. It has four parts as listed in the table below.

| AFTO Form 110 | | |
|---------------------|---|---|
| Part No. | Title | Directions |
| I-On front of form | ID Requirements & TO Sets On Hand | <p>Prepare a separate form on each TO and each listing that you submit for distribution or requisition. Block 1 identifies the TO and block 3 indicates the total initial distribution requirements established against it. If you do not distribute TOs to subaccounts—and you probably won't—block 3 reflects the number of copies of the TO in your file.</p> <p>Enter the requirement indicator from the NI&RT in block 2. A requirement indicator is a single-letter designator used to show the potential classification or restriction of a TO. Use it instead of the actual classification on the AFTO Form 110. You can find the requirement indicator for TO in parenthesis under the TO number in the NI&RT.</p> <p>Use the small block numbered 01 through 100 to show the initial distribution requirements and copies on hand. Account number 12 is on distribution for two copies of TO 34Y7-1-101. The account has one complete copy on hand. This minus (–) in line D shows that the basic TO, a revision, a change, or a supplement, or some combination of these is missing. A legend explaining entries in lines A, B, C, and D is in the upper-right corner of Part I. Entries in lines B, C, and D must be made in pen on Part I. Make all entries in lines B, C, and D in pencil, so you can change them as the file status changes.</p> <p>Prepare an AFTO Form 110 for each TCTO series required. Record individual TCTOs as <i>Required</i> or <i>Not Required</i> on an attachment affixed to the backside of the form. A separate AFTO Form 110 may be prepared for each required TCTO as a MAJCOM option. Prepare all separate forms for each required TCTO in the same way.</p> |
| II-On front of form | Initial Distribution Quantities Submitted | Document to reflect both establishing initial distribution requirements and changed requirements. Entries are not necessary in block 4 unless you distribute TOs to other accounts. |
| III-On back of form | Initial Distribution Record | Record the receipt of initial distribution and requirements, including supplements, changes, and revisions. In Part III you will see entry instructions. When a revision replaces the basic TO, line out the basic date in the top line but leave the TO number. The revision entry will show the new basic TO date. Line out the complete entry in column 1 for the issue you replaced when you replace a change or supplement by a later change, supplement, or revision. Make entries in columns 2, 7, and 8 <i>only</i> when shortages in distribution occur. |
| IV-On back of form | Requisition Distribution Record | Record one-time requisitions submitted and received. Make entries in columns 1 through 5 when you requisition a TO. Leave column 1 blank when you requisition basic TOs. Enter the TO number only when you order a supplement. Enter <i>CHG</i> , the change number, and the change date in block 1 when you order changes. Part IV, shows one copy of the basic TO 34Y7-1-101 was ordered on 1 Aug 77, request number 00054, and received on 21 Aug 77. |

Currency checks

TO 00-5 requires currency checks and their documentation to ensure that TO files are current. These checks include the supplement and annual checks documented on AFTO Form 131, Technical Order Index Routine and Annual Check. Also included are the Technical Order NI&RT Supplements and Annual Check, and the 180-day check documented on AF Form 2411, Inspection Document.

Annual check

Check the contents of your TO file annually against the current issue of the NI&RT, supplements, and the AFTO Form 110 file. This check uncovers deficiencies or excesses in the file you may have overlooked during supplement checks.

The first step in the annual check involves a check between the current TO 0-1-01 and the NI&RT for the category you plan to check. This ensures that the NI&RT for the category is current and available. The second step involves using the NI&RTs, their supplements, and AFTO Form 110 for each TO in the category. In this step you ensure that the Part III entries are current as in the supplement check. In the third and final step you check each TO from the file against its AFTO Form 110, Part III. Note and correct any discrepancies.

180-day check

Check all your in-use and reference work card deck, work unit code manuals, and checklists for currency at least every 180 days. The hypobaric and hyperbaric chamber inspection work cards fall into this category. Make this check by comparing the dates on the TOs with the dates listed in the NI&RT. Check each page against the list of affected pages in the front of the TO after you determine that the TO is current. This is an A-page check. Each publication requiring a 180-day check contains an AF Form 2411, Inspection Document.

We cannot over emphasize proper maintenance of a file. Current directives are required to do your job in a state-of-the-art fashion. A good file, like anything else, becomes worthless without proper care.

TO deficiency reports and AFTO Form 22

Much time, effort, and research go into every TO published. Nevertheless, despite all the precautions taken, a TO containing technical misinformation is occasionally published. The deficiency must be reported when it occurs. A single erroneous word in a TO can change the meaning of a sentence, causing the sentence to give incorrect instructions. It is your duty to report mistakes in a TO. However, minor errors having no adverse effects on materiel or personnel need not be reported. When it is necessary to submit a report, you and your supervisor must determine the proper priority of the report.

Types of reports

Along with the TO improvement reporting system, you must understand the uses of emergency and critical hazard reports, urgent reports, and routine reports.

Emergency and critical hazard reports

These reports require immediate correction of a TO deficiency involving safety and unit mission. A fatal or serious injury to personnel, extensive damage, or destruction of equipment or property could result if the correction is not made. It also could create an inability to achieve or maintain operational posture (MISSION ESSENTIAL posture). Action, disapproval, or priority downgrading is required within 48 hours. The Air Force Logistics Command activity usually issues an interim TCTO, safety, or operational supplement when a valid report requiring corrective actions is submitted.

Urgent reports

These reports suggest nonemergency improvements involving a hazardous condition in a TO. Personnel injury, damage to equipment or property, and reduced operational efficiency may occur if the improvement is not made. Action, disapproval, or priority downgrading within 30 calendar days is required. This type of report is perhaps the most common to AP technicians, since your duties involve working with some type of lifesaving equipment.

Routine reports

These reports describe improvements in TOs that, if not made, may result in a potentially hazardous condition through prolonged usage. They may have a negative effect on operation and maintenance efficiency or reduce the operational life or general service utility of equipment. These reports also describe TO improvements relating to work simplification, manpower, and man-hour savings. They may clarify procedures or correct editorial errors. Take corrective action as soon as practical but not later than 60 calendar days after approval.

Completion of AFTO Form 22

The AFTO Form 22, Technical Manual (TM) Change Recommendation and Reply, and the AF Form 847, Recommendation for Change of Publication, are both used in the TO improvement system. You use the AF Form 847 to request changes to flight, aircrew weapons delivery, and standardization manuals. However, since the TOs you deal with are equipment-type manuals, use the AFTO Form 22. Consult TO 00-5-1 when preparing an AF Form 847. Enter the responsible ALC in block 2 when completing the AFTO Form 22. Block 2 of AFTO Form 22 is the title of your organization. Personnel in the quality control section of maintenance should make the entries in blocks 3, 4, and numbered blocks 31 through 45. Block 4 contains the date the form goes off base. The control number in blocks 31 through 45 represents the command designator, reporting unit, the calendar year, the local control number assigned, and a single letter for the type of report. Blocks 5 through 9 and numbered blocks 6 through 30 pinpoint the TO paragraph or figure that needs changes. Block 10 is a brief summary of the improvement and recommended change that should contain the following information.

- Include the word *URGENT*, if the report warrants this priority, and a summation of the discrepancy. This should include the type, model, series, part number, and national stock numbers of the equipment, if available.
- Be specific and concise in noting the deficiency and recommended change. Clearly state the reason for the change.

Blocks 11, 12, and 13 are signature blocks for the originator, the responsible supervisor, and the quality control officer, in that order.

Self-Test Questions

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

018. How to establish, administer, and maintain publication libraries

1. What is the difference between a master library and a functional library?
2. How many master publications libraries are normally located on each active Air Force base?
3. Normally, who may authorize the establishment of a master library?
4. The master publications library should contain a copy of what type of publication? What other publication could the library contain?

5. What is the policy on maintaining classified publications in a master publications library?
6. Where should copies of X-distribution publications be located and made available?
7. What may be placed on binders to help identify the publications?
8. What is the rule for filing publications?
9. How would you file two or more types of publications with the same series and control number?
10. What is the rule for filing classified publications?
11. Where would you file FOUO publications in a master library that is open to the public?
12. What is the first area you should check when you receive a publication?
13. Where should you file a change that affects specific paragraphs of the basic publication at a future date?
14. Why would an organization be required to maintain obsolete publications?
15. What action should you take when a line, sentence, paragraph, or section has been replaced by a change?
16. Once you have completely posted a change, what should you do with the change transmittal page?
17. If you receive an EMC or IMC, what do you put in the adjoining margin?

18. What is the purpose of issuing a supplement?
19. What action should you take if a supplement adds a new paragraph?
20. What action should you take when a supplement supplements a paragraph in a basic publication?
21. When a basic publication is superseded, what happens to the supplement that went with the old publication?
22. When a basic publication is rescinded, what happens to its supplement?
23. How often should you check your library for currency and completeness?
24. When you check your library for currency and completeness, what should you be looking for?
25. Must you loan out your publications to personnel? Explain briefly.
26. What is the title of AF Form 614?
27. Explain briefly what is required of the borrower in order to check out a publication from a library.

019. How to use and maintain various types of technical orders

1. Name the five groups of aircraft technical orders.
2. What four items do the overhaul instructions cover?
3. Why are some commercial publications used by the Air Force?

4. What is a TCTO?
5. When an interim TCTO is sent, what four forms may that order take?
6. Why aren't preliminary TOs formally part of the Air Force TO system?

020. How to use the technical orders numbering system

1. The technical order numbering system consists of what?
2. If a letter follows an aircraft designation number, what does it indicate?
3. Where are you likely to find the numbers and dates of all the equipment TOs that you require?
4. Which technical order would you use if you only knew the name of a piece of equipment?
5. What initial two numbers designate an Air Force numerical index for each category of equipment?
6. In which index will you find all publications on training equipment?
7. In what order are the TO binders kept?
8. What is contained on the "A" page of a TO change?
9. When should a TOPS be issued?
10. What is the title of TO 0-1-01?

11. When using the number and classification column, what would a “D” symbol indicate?
12. What is the meaning of a black minus (–) symbol annotated on the TO-0-1-01?

021. How to maintain technical orders files

1. What are the parts of the AFTO Form 110?
2. Which blocks on the AFTO Form 110 are used to show initial distribution requirements?
3. Which documents are used during an annual check?
4. Which reports require immediate correction of a TO deficiency?
5. When are you required to take action on a routine report?
6. Where will you indicate the responsible ALC on the AFTO Form 22?

Answers to Self-Test Questions**011**

1. The APO from the unit where the reaction occurred.
2. Those reactors admitted to the hospital or not.

012

1. To document attendance.
2. 6 years.

013

1. It determines the future training requirements, need for specialized equipment, and availability of trained officers and enlisted to conduct training, and future workload of units.
2. Total time, in whole hours each person spent performing formal platform instructor duties.
3. Hours and tenths of hours; hours and minutes.

014

1. In their field medical records.
2. Pay grade, so that it can be changed as the individual is promoted.

3. The date that the student satisfied all training requirements.
4. The last day of the month, 5 years from the training date.

015

1. It is a record or history of all inside observer/instructor time, hyperbaric or hypobaric chamber.
2. Grade and name.
3. Any pertinent information about the individual's participation in the flight.

016

1. The signature of the APO.
2. It is up to the individual to maintain his or her own AF Form 1274.

017

1. It starts/stops your hazardous duty pay.
2. The first month is prorated from the date of your first exposure to the hyperbaric/hypobaric chamber.

018

1. It provides a readily available reference service to all activities on an Air Force base or other separate installation, while the functional library is set up specifically for each individual unit only.
2. At least one.
3. Normally, the DA of the host unit.
4. A copy of each unclassified publication issued by each higher headquarters of the maintaining activity down through the chain of command. Also, it could contain copies of documents from subordinate, attached, or tenant units, but only when the DA decides that copies are necessary.
5. They will be maintained only when the material is required for general reference and access to the material can be effectively controlled.
6. These publications should be located and made available in the FPL of the local OPR.
7. Sequence numbers may be placed on the binders to help identify the publications.
8. Always file publications in numerical sequence; first, by basic series number; then by the control number.
9. File them in this order: instructions, manuals, and pamphlets.
10. File classified publications separately from unclassified publications.
11. Keep them in separate binders, and file the binders in an area that is not accessible to the public.
12. A supersession line at the bottom of the first page.
13. File the complete change in front of the basic publication.
14. Because, occasionally, a functional element (such as personnel, judge advocate, inspector general, accounting and finance, etc.) must refer to an obsolete publication.
15. If a line, sentence, paragraph, or section is changed, draw a "Z" (or line) through it and write in the word "Deleted" or "Replaced." Write the words over the lines or in the margin. In the adjoining margin, identify the authorizing change by writing the change number. Do not show the date of the change.
16. File the change transmittal page in the order in which these pages are issued, in the back of the basic publication.
17. Pencil in the EMC or IMC control number in the margin next to the changed portion of the publication.
18. To add information to a basic publication.
19. Write in the affected paragraph's number and the word *Added*. Identify the supplement in the adjoining margin.
20. Circle the number or letter of that paragraph. Record the supplement number and its issuing headquarters in the adjoining margin.
21. Supplements of a superseded basic publication stay in effect automatically.
22. A basic publication's supplements are rescinded automatically when the basic publication is rescinded.
23. At least once every calendar year.
24. (1) The current edition of the publication is on file.

- (2) All changes have been received and posted.
- (3) All obsolete publications have been removed.
- (4) All new publications *printed since the last index* and required for the library are on hand or have been placed on requirement from the PDO.
- 25. The loan of publications is optional and depends on the custodian's decision after considering local needs and conditions.
- 26. Charge Out Record.
- 27. Require the borrower to return the publications within three work days. If local conditions warrant, establish a formal suspense to follow up on all loaned publications.

019

- 1. Operations and maintenance; TCTO; MPTO; Index type; and Abbreviated.
- 2. Disassembly, reconditioning, reassembly, and testing.
- 3. They are used on equipment that has a wide civilian, as well as military, application and if they meet AF needs.
- 4. They modify and clarify a military system or end item TO by directing and explaining a particular job that must be done within a time limit.
- 5. Radiogram, telegram, teletype, or message form.
- 6. Because they will not become part of the Air Force TO system until validation and verification processes are completed.

020

- 1. Groups of numbers and letters in a definite sequence, with groups separated by dashes.
- 2. The series of the aircraft.
- 3. In a technical order index.
- 4. Alphabetical index (TO 0-2-1).
- 5. 0-1.
- 6. In TO 0-1-43.
- 7. Numerical order.
- 8. A list of the pages affected by the change.
- 9. If time and circumstances prevent the issuance of a standard change or if the changes don't meet the criteria for issuing a safety or operational supplement.
- 10. The NI&RT.
- 11. It identifies a depot level TO or TCTO.
- 12. It shows that you need this publication for the file.

021

- 1. Part I, ID Requirements & TO Sets On Hand; Part II, Initial Distribution Quantities Submitted; Part III, Initial Distribution Record; and Part IV, Requisition Distribution Record.
- 2. The small blocks numbered 01 through 100.
- 3. NI&RT, TO 0-1-01, AFTO Form 110, supplements, and the TOs themselves.
- 4. Emergency and critical hazard reports.
- 5. As soon as practical, but not later than 60 days after approval.
- 6. In block 2.

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

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to ECI Form 34, Field Scoring Answer Sheet.

44. (011) What is the time frame for forwarding a completed AF Form 361, Chamber Reactor/Treatment Report?
- a. 7 work days.
 - b. 10 work days.
 - c. 7 calendar days.
 - d. 10 calendar days.
45. (011) When filling out the AF Form 361, Chamber Reactor/Treatment Report, on a suspected reactor, what action should you complete and forward with the report within 10 calendar days?
- a. Root cause analysis.
 - b. Narrative summary.
 - c. Clinical summary sheet.
 - d. Decompression sickness report.
46. (011) A completed copy of AF Form 361 is forwarded to
- a. HQ USAF/SGOA.
 - b. HQ USAF/SGHM.
 - c. USAFSAM/TSD.
 - d. USAFSAM/FP.
47. (012) When you are completing an AF Form 699, Physiological Training Record, an acceptable abbreviation for *nonrated* officers is
- a. NR.
 - b. NAV.
 - c. X-RAT.
 - d. NON-RAT.
48. (013) What Air Force specialty code (AFSC), if any, would you enter on the Physiological Training Monthly Report?
- a. Duty.
 - b. Career.
 - c. Primary.
 - d. None.
49. (014) On AF Form 702, physiological training is certified for each training entry by whose signature?
- a. Noncommissioned officer in charge (NCOIC).
 - b. Superintendent.
 - c. Aerospace Physiology officer (APO).
 - d. Administrative section's NCOIC.

50. (014) When personnel complete Original (physiological) training, the Aerospace Physiology (AP) administrative section must ensure which of the following actions are carried out for each student?

- a. Issue AF Form 702.
- b. Issue AF Form 712.
- c. Create/update AF Form 702.
- d. Create/update AF Form 712.

51. (015) How do you record chamber times on AF Form 712, Instructor's Flight/Dive Record?

- a. Flight times first with dive times underneath.
- b. Dive times first with flight times underneath.
- c. Flight times and dive times are recorded on separate forms.
- d. Flight times and dive times are recorded on the same form in chronological order.

52. (016) Who signs AF Form 1274, Physiological Training, to validate training?

- a. Noncommissioned officer in charge (NCOIC) of training.
- b. NCOIC of administration.
- c. Chief, Aerospace Physiology (AP).
- d. Any AP officer (APO).

53. (016) During the preparation of AF Form 1274 versus the Federal Aviation Administration (FAA) Form 3150-1, what must you do differently regarding the expiration date?

- a. Record the expiration dates on both FAA Form 3150-1 and AF Form 1274.
- b. Record the expiration date on AF Form 1274 but indicate indefinite on the FAA Form 3150
- c. Record an expiration date on AF Form 1274 but record no expiration date on FAA Form 3150-1
- d. Make sure the expiration date is recorded of FAA Form 3150-1 but left blank on AF Form 274.

54. (016) What information is *not* entered on AF Form 1274?

- a. Issue date.
- b. Phase of training.
- c. Student chamber position.
- d. Physiological training unit.

55. (017) What is the purpose of a DD Form 114, Military Pay Order?

- a. Starts hazardous duty incentive pay (HDIP) only.
- b. Stops HDIP only.
- c. Starts and stops HDIP.
- d. Prorates the first month of HDIP only.

56. (017) Who can sign a DD Form 114, Military Pay Order?

- a. Noncommissioned officer in charge (NCOIC) of administration or designated alternate.
- b. Commander, Aerospace Physiology (AP) only.
- c. Commander, AP or NCOIC of administration.
- d. Chief, AP or any authorized aerospace physiologist.

57. (017) When you complete Department of Defense (DD) Form 114, Military Pay Order, it is permissible to fill out the form by entering
- a. only one individual.
 - b. more than one individual.
 - c. only the group flight data as necessary.
 - d. consecutive month exposure times based on local directives.
58. (018) What type of publications library is a centralized set of standard and specialized publications that is readily available as reference for *all* activities at an Air Force base or installation?
- a. Master.
 - b. General.
 - c. Technical.
 - d. Functional.
59. (018) Which change method would you use for formal changes issued for departmental publications?
- a. Write-in.
 - b. Page insert.
 - c. Interim message change.
 - d. Emergency message change.
60. (018) Which form is the borrower required to complete when a publication is borrowed from your publications library?
- a. AF Form 416.
 - b. AF Form 614.
 - c. AF Form 623.
 - d. DD Form 884.
61. (018) What should you do with the *charge out record* of an individual publication that is part of a master or functional publications library?
- a. Put it in the binder in place of the loaned publication.
 - b. Place it in a numerical file that contains only AF Forms 614.
 - c. Keep it in your desk drawer until the publication is returned.
 - d. Give it to the individual and have him/her return it with the charged-out publication.
62. (019) Immediate action, urgent action, and routine action are three types of time compliance technical orders (TCTO). Two other types are
- a. record and interim.
 - b. record and critical.
 - c. emergency and interim.
 - d. record and emergency.

63. (019) Which action-type time compliance technical orders (TCTO) requires that the aircraft be placed in “red X” or “grounded” status until the work is completed?
- a. Urgent.
 - b. Routine.
 - c. Immediate.
 - d. Emergency.
64. (019) What is the *maximum* time limit (in days) of an extension to an urgent action time compliance technical orders (TCTO) after the last scheduled kit delivery?
- a. 60.
 - b. 40.
 - c. 20.
 - d. 10.
65. (020) The last digit in a technical order (TO) number designates the
- a. function.
 - b. category.
 - c. aircraft series.
 - d. specific equipment.
66. (020) Technical order page supplements (TOPS) are usually issued on what color paper?
- a. Blue.
 - b. Green.
 - c. White.
 - d. Yellow.
67. (020) Which symbol means that you should review the TO 0-1-01 listing to determine whether to submit initial distribution (ID) requirements?
- a. M symbol.
 - b. D symbol.
 - c. Single asterisk (*).
 - d. Double asterisk (**).
68. (020) What method is preferred in submitting technical order (TO) initial distribution (ID) and requisition (RON) requirements?
- a. Air Force Technical Order (AFTO).
 - b. Technical Order Distribution Office (TODO).
 - c. Defense Information Services Network (DISN).
 - d. Numerical Index and Requirement Tables (NI&RT).

69. (021) Which part of the Air Force Technical Order (AFTO) Form 110, Technical Order/CPN Distribution Record, indicates the establishment of initial distribution requirements and changed requirements?

- a. I.
- b. II.
- c. III.
- d. IV.

70. (021) When following the steps in doing the annual technical order (TO) file check, when do you check each TO from the file against the AFTO Form 110, Part III and note and correct any discrepancies?

- a. First step.
- b. Second step.
- c. Third step.
- d. Fourth step

71. (021) You are required to check the technical order (TO) reference work card deck, unit code manuals, and checklists for currency in a cycle of *at least* how many days?

- a. 30.
- b. 60.
- c. 90.
- d. 180.

Student Notes

Unit 5. The Aerospace Physiology Instructor

| | |
|---------------------------------------|-----|
| 022. Instructor responsibilities..... | 5-1 |
| 023. Training environments..... | 5-3 |

IN YOUR CAREER FIELD you have the chance to teach, train, and help mold future aviators and crew members for the most powerful Air Force in the world. With that job come responsibilities. During this unit we will discuss a number of aspects of being an Aerospace Physiology instructor and your responsibilities.

This unit is designed to give you an idea of what it takes to be an effective instructor in the AP career field. It is not only important that you know the information but also that you are able to present it in a clear, concise manner that is educational and informative. The following sections will focus on your duties and responsibilities as an instructor with regards to preparation, planning, and understanding of material. The second section will focus on the different environments you teach in.

022. Instructor responsibilities

Let's suppose you've just been assigned to teach Oxygen Equipment to an original course. This may bring fear to those of you who have never taught before or only had very limited experience speaking in public. Public speaking is often a difficult undertaking, but anyone who has a positive attitude and initiative can overcome this fear and become an effective instructor. This section examines a number of things you can do to prepare and become the outstanding AP instructor the career field needs.

Know your subject

Nothing is more embarrassing for an instructor than to walk in a classroom with little knowledge of the subject he/she is teaching. It is vital that you know the subject you are teaching. Your students expect nothing less, and you should prepare and be ready to give them nothing less. You will find that most, if not all, of the classes that are taught already have slides and an instructor/student guide to accompany the lesson. But if you will look at the instructor guide you are given, you will find it is just as the name implies, a guide. You will need to fill in the pertinent information yourself. There are certain ways you can do this such as consulting your career development course, an experienced instructor qualified in the class, or researching technical orders, instructions, or regulations regarding your subject. In addition, textbooks and periodicals are another vital source of information when preparing instructional materials. We will discuss each of these information resources in the following paragraphs.

Career development course

This CDC provides an abundance of information about your career field. All aspects of the career field are discussed within the five volumes of this course. The CDC is easy to understand with enough details to give you a great start for researching your class.

Why just a start? Why can't I just open the book, get the information, and teach the class? For some courses that may be acceptable, but for the most part, you have to use additional resources to develop training materials. The reason is the CDC rarely mentions any specific aircraft when discussing systems or emergency procedures. That may be good for a class of enlisted or nonrated students, but it is not enough for a student pilot or pilot flying a specific type aircraft.

Since you have a starting point, the next resource you can rely on are those instructors who are currently teaching the material.

Qualified instructors

Don't feel that you have to reinvent the wheel when it comes to preparing for a class. Some of the best pointers or sources of information come from other qualified/experienced instructors. These are

the people who can give you not only information but also techniques for making your presentation the best it can be.

The best instructor to give you advice is the subject matter expert (SME). This person is considered the most knowledgeable instructor for that subject, and is usually the person responsible for keeping slides, video presentations, and articles relating to the subject up-to-date. If you are unable to go over the material with the SME, then a qualified instructor will be alright. But, if you want to really fulfill your responsibilities to your class, you have to research a little farther.

Technical orders instruction/regulations

The review of TOs and instructions/regulations relating to your subject cannot be overstated. While talking with an instructor gives you the flow of a class and the training content, you need to back up the information with facts and become fully knowledgeable about the subject. There is nothing more embarrassing than to teach a class with outdated procedures or information.

Some instructors fall into the syndrome of “that’s the way we have always taught it” and find themselves with outdated information, which may ultimately lead to a student correcting him/her in the middle of their presentation. Neither is a good position to be in. No matter if it is your first time or your 1,000th time teaching; make sure both your procedures and information are up-to-date.

Textbooks and periodicals

While TOs and instruction/regulations relate procedures and information, most students learn best when hearing of other peoples’ mistakes or experiences with the systems you are teaching about. Textbooks provide additional information along with the previously mentioned sources and may assist you with details and examples to keep your instruction professional and informative.

USAF periodicals also provide information whether it pertains to aircrew members or personnel who have used the equipment you may be teaching about. These periodicals are found in magazines published by each MAJCOM in the Air Force or by reading the safety reports provided to each unit.

Know your audience

With the abundance of information at your disposal, it is important that you know what information needs to be presented and what your audience already knows.

For example, you do not mention ejection seat procedures if you are teaching a class that is flying in a C-130 or any other aircraft that does not have an ejection seat on board. The information is useless to them, and you will tend to lose your audience by doing so.

Know the knowledge level of your audience. If they are pilots who have been flying for a number of years, you probably would not want to go into great detail on aircraft systems they are real familiar with.

This should not be a problem when teaching courses within your unit since they are already developed for you. But there are times when you may be asked to talk to or brief a group on a certain subject. This is when it is important to know the group’s background, their knowledge base, what in particular they want to know about the subject, and how much time you have to present the information.

Look sharp

Imagine yourself sitting in a classroom, anxiously awaiting the start of the first class of a three-day course. You have heard nothing but good things about the course and the personnel that teach it. As the door to the classroom opens, in walk the instructors. Their uniforms look like they slept in them during the night, their boots look like they have not been polished in several weeks, and their hair makes you wonder if a tornado had just passed through the area. So what is your impression of the course so far? Probably not very good, and the instructor has not even spoken yet

When you face a class, each and every time, you represent three things: yourself as an instructor, the unit, and the USAF. It may seem picky or harsh to be compared to all three of these areas, but that is the way things work. Each unit is a team of instructors. All of them team up to determine the success or failure of a course. Make sure you teach to the same high level and standards set by your unit at all times. Always walk in looking as sharp as possible. The effort you take to look and be your best will pay off every time.

Keep informed

Never be satisfied with what you have. Constantly look for better stories, examples, or information you can add to your classes. This ensures your classes are always up-to-date and informative.

Always be prepared

As an instructor you must always be prepared to teach those subjects you are qualified in. Class schedules can change at a moment's notice. Changes occur due to weather, problems with the assigned instructor, or schedule conflicts. Whatever the reason, it is always important to have your information (articles, lesson plans, etc.) up-to-date. Your number one priority in AP is to educate aircrew members, so take care of the students training needs *first* and then look for ways to alleviate future problems. Keep these things in mind and make them part of your responsibilities so your students always get the best instruction possible.

It is also important to be respectful to other instructors. Remove any classroom materials you use after teaching such as audio-visual equipment that they will not use and erase the chalk/marker board of any material written for previous classes. These actions demonstrate professionalism and also foster teamwork.

023. Training environments

Your career field is spread out across the United States. Each assignment to a different base presents new challenges, responsibilities, and experiences. This section briefly discusses the different training/briefing environments you need to be familiar with as an instructor. We will discuss the pilot training environment, other classroom environments, and the tours/briefing arena.

Pilot training environment

Being an instructor at a pilot training unit is both challenging and rewarding. You are teaching lieutenants and captains how to use their ejection systems, oxygen systems, the parachute, and the survival equipment and how to build shelters and get rescued. In other words, you teach them what to do from the time there is an emergency that requires them to depart the aircraft to the time they are rescued. It is a challenging process due to the fact that you are presenting an abundance of information during each class you teach, and the audience has to understand the information you are teaching. Any slip up, such as teaching the wrong procedures or operations of a piece of emergency equipment, could mean the difference between someone's life and death.

The reward from this environment comes when the procedures you teach may be used by a student you taught, and because of those procedures, he/she is able to walk up to you afterwards and thank you for your efforts. You may already realize this; however, not everyone is teachable; but you, as an instructor, can help most students learn something new.

Other classroom environments

This area encompasses two specific areas of instruction; original training and refresher training. Each has its own challenges and areas of concern and is discussed separately in the following paragraphs.

Original training

This class will usually be comprised of personnel who never or rarely have flown in an aircraft. The rank structure of an original class may be anywhere from Airman basic to general officer. But no matter what the rank, you cannot assume that everyone has a common knowledge of the

system/subject you are teaching about. At the same time, you have to ensure your students understand the material being taught. Strategically placed questions will help to ensure the material is being retained. The best way to ensure none of your students are lost in the information is to teach to the lowest level of knowledge there in the class.

Refresher training

At the present time, officers within each unit teach all of the classroom academics. Your role during refresher training is to lecture the chamber flight. You have to find a mixture of instruction and review for personnel in this class. All attending completed original training before, which is implied by the name “refresher training.” Because of this you do not lecture the chamber flight like you would for original training. You provide a good overview of procedures for inspecting their equipment and the demonstrations to be performed during the flight.

However, you do not just assume all students are doing a proper inspection in the aircraft. Some aircrew members may become complacent when it comes to performing this responsibility in the aircraft. Because of this complacency, aircrew members, as well as passengers, have been injured or killed, or at the very least placed in danger.

So, never mistake numerous years of flying as evidence of knowledge of procedures or responsibilities. Teach to the lowest level. This is the best way to ensure that your students are not lost in the information.

Tours/briefings

Some of the most skill broadening and enjoyable things you will do as an AP instructor are conducting tours and briefings for people both on and off base. The following paragraphs give some pointers on how to make tours effective and educational for the audience.

Tours

Conducting a tour is an experience within itself. Your job is of great interest to the civilian public. It is of great interest because your duties and responsibilities are much different than the jobs of the civilian community. Let us face it; you have some really cool toys in your job! These tours can be tailored for people whose age ranges from young school-aged children to senior citizens.

With this wide range of ages, just as you do in other courses you must adjust your tour presentation to meet their knowledge level. In other words you would not want to talk about the intricate processes of the respiratory or central nervous system to a group of first graders.

Sometimes groups will have a specific interest in a certain aspect of your job while during another tour, they are simply there to see and touch things. The most popular training equipment in the Air Force includes the altitude chamber and the Barany chair. Both are usually new to the tour group and provide a number of areas to talk about. In particular, the Barany chair has a big impact and always draws a group’s attention and interest in the field of aerospace physiology.

No matter what type group it may be, you should adjust your presentation to meet their interests. A slide show covering the mission at your base and the equipment used will give you a good idea of their interests. Sometimes the tour may be at a local school and does not allow for the use of audio-visual equipment. In this case find out what they would like the presentation to cover and plan accordingly.

Last, but not least, meet your tour as they enter into your facility. This shows the group a sincere interest in them and a professional attitude to set a positive environment for the tour.

Briefings

Although they may occur infrequently, instructors may be asked to provide briefings to different groups on or off base. Why you might ask? The answer is because you are considered an expert for the areas that you teach. When you want to know something, you should always go to the expert.

You should take advantage of any opportunity to speak off base. Find out who you are talking to and exactly what they want the briefing to be about. Your audience could be on or off base, civilian or military. Either way make sure you have all the up-to-date information on the subject and that your briefing fits the group's guidelines.

Self-Test Questions

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

022. Instructor responsibilities

1. Why is the CDC considered only a starting point for researching a class?
2. Where can you find some of the best pointers or sources of information for teaching a class for the first time?
3. What are the usual responsibilities of an SME?
4. Where can you find periodicals to use for subject research?
5. When briefing a group on a certain subject, what four things are important to know?
6. What are the three things you represent when teaching a class?

023. Training environments

1. What types of students comprise an original course?
2. What is the best way to ensure your students are not lost in the information?
3. What should you never assume when training refresher students?
4. What instructor action expresses a sense of interest and professional attitude and sets a positive environment for a tour?

Answers to Self-Test Questions

022

1. Rarely mentions any specific aircraft when discussing systems or emergency procedures.
2. Other qualified/experienced instructors.
3. Keeping slides, video presentations, and articles relating to the subject up-to-date.
4. Magazines published by each MAJCOM in the Air Force, or by reading the safety reports provided to each unit.
5. Know the group's background, their knowledge base, what in particular they want to know about the subject, and how much time you have to present the information.
6. Yourself as an instructor, the unit, and the USAF.

023

1. Personnel who never or rarely have flown in an aircraft.
2. Teach to the lowest level of knowledge in the class.
3. That years of flying is evidence of knowledge of procedures or responsibilities.
4. Meeting your tour as they enter your facility.

Complete the unit review exercises.

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 ECI Form 34, Field Scoring Answer Sheet.

Do not return your answer sheet to ECI.

72. (022) The *best* way to show respect to other instructors after you have completed a class is to
- a. inform the class who the next instructor will be.
 - b. remind instructors of what events are scheduled for the rest of the day.
 - c. put back any equipment you brought into the classroom.
 - d. ask the next instructor when he or she wants the class back in off the break.
73. (022) Who is the best instructor to provide advice on making your presentation the best it can be and is usually responsible for keeping slides, videos, and articles on a subject up-to-date?
- a. Noncommissioned officer in charge (NCOIC) of unit training.
 - b. Subject matter expert (SME).
 - c. Any experienced instructor.
 - d. Instructional systems coordinator.
74. (023) Students undergoing original course training will be in a class comprised mostly of personnel who are in which category?
- a. Aircrew training cadets.
 - b. Never or rarely flown in an aircraft.
 - c. Just achieved nonrated aircrew member status.
 - d. Recent graduates of high-altitude parachute training.

When you complete this course, please complete the student survey on the Internet at this URL: <http://www.maxwell.af.mil/au/afiadl/>. Click on Student Info and choose 9502 Survey.

Student Notes

Glossary of Abbreviations and Acronyms

| | |
|---------------|---|
| AETC | Air Education and Training Command |
| AF | Air Force |
| AFB | Air Force base |
| AFI | Air Force Instruction |
| AFMAN | Air Force Manual |
| AFMOA | Air Force Medical Operations Agency |
| AFMS | Air Force Medical Service |
| AFOSH | Air Force Occupational Safety and Health |
| AFPAM | Air Force Pamphlet |
| AFPC | Air Force Personnel Center |
| AFPD | Air Force Policy Directive |
| AFRIMS | Air Force Records Information Management System |
| AFS | Air Force specialty |
| AFSC | Air Force specialty code |
| AFTO | Air Force Technical Order |
| AGL | above ground level |
| ALC | Air Logistics |
| ALS | Airmen Leadership School |
| AMDS | Aerospace Medicine Squadron |
| AMP | Aerospace Medicine Program |
| AP | Aerospace Physiology |
| APO | Aerospace Physiology officer |
| CAP | Civil Air Patrol |
| CDC | career development course |
| CEO | chief executive officer |
| CFETP | Career Field Education and Training Plan |
| CHT | clinical hyperbaric technologist |
| CLC | Chief Master Sergeant Leadership Course |
| CONUS | continental United States |
| COTS | commercial off-the-shelf |
| DA | director of administration |
| DAPS | Document Automation Production Service |
| DCS | decompression sickness |

| | |
|---------------|--|
| DD | Department of Defense |
| DISN | Defense Information Services Network |
| DNIF | duty-not-including-flying |
| DOD | Department of Defense |
| DS | Dental Squadron |
| EMC | emergency message change |
| FAA | Federal Aviation Administration |
| FARM | Functional Area Records Management |
| FL | flight level |
| FOA | field operating agency |
| FOUO | For Official Use Only |
| FPL | Functional Publications Library |
| fpm | feet per minute |
| GL | ground level |
| HAAMS | high-altitude airdrop mission support |
| HAP | high-altitude parachutist |
| HARMS | high-altitude reconnaissance mission support |
| HAWC | Health and Wellness Center |
| HELO | helicopter operations |
| HDIP | hazardous duty incentive pay |
| HQ | headquarters |
| HPTT | Human Performance Training Team |
| IAW | in accordance with |
| ID | initial distribution |
| IMC | interim message change |
| JPG | job proficiency guide |
| MAJCOM | major command |
| MAP | Military Assistance Program |
| MDG | Medical Group |
| MDOS | Medical Operations Squadron |
| MDSS | Medical Support Squadron |
| MOS | Medical Operations Squadron |
| MPO | Military Pay Order |
| MPTO | Methods and Procedures Technical Orders |
| MSS | Medical Support Squadron |
| MTF | Medical Treatment Facility |

| | |
|------------------|---|
| NCO | noncommissioned officer |
| NCOA | Noncommissioned Officer Academy |
| NCOIC | noncommissioned officer in charge |
| NI&RT | Numerical Index and Request Tables |
| OAR | organizational account representative |
| OBOGS | on-board oxygen generation system |
| OIC | officer in charge |
| OF | optional form |
| OJT | on-the-job training |
| OPSEC | operations security |
| OPR | office of primary responsibility |
| OS | operational supplement |
| OWG | OPSEC Working Group |
| PCS | permanent change of station |
| PME | professional military education |
| psi | pounds per square inch |
| RCS | report control symbol |
| RD | rapid decompression |
| ROTC | Reserve Officers Training Corps |
| SAMMC | San Antonio Military Medical Center |
| SF | Standard Form |
| SGOA | Surgeon General Operations Administration |
| SKT | Specialty Knowledge Test |
| SME | subject matter expert |
| SNCOA | Senior NCO Academy |
| SS | safety supplement |
| STS | specialty training standards |
| SUP | supplement |
| TARF | trainer, attack, reconnaissance, fighter |
| TCTO | time compliance technical orders |
| TDY | temporary duty |
| TOPS | technical order page supplement |
| TM | technical manual |
| TO | technical order |
| TODCA | technical order distribution control activity |
| TODO | TO Distribution Office |

| | |
|----------------|--|
| TTB | tanker, transport, bomber |
| UETM | unit enlisted training manager |
| UFT | undergraduate flying training |
| UGT | upgrade training |
| USAF | United States Air Force |
| USAFSAM | United States Air Force School of Aerospace Medicine |

Student Notes

AFSC 4M051
4M051N 01 0908
Edit Code 03