BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 11-403

30 NOVEMBER 2012

Incorporating Change 1, 25 MARCH 2015

Operations

AEROSPACE PHYSIOLOGICAL TRAINING PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available on the e-Publishing website at **www.e-Publishing.af.mil** for downloading or ordering.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: AETC/A3FM

Certified by: AF/A3O
(Brig Gen Giovanni K. Tuck)

Supersedes: AFI11-403, 20 February 2001

Pages: 69

This instruction implements AFPD 11-4, *Aviation Service* as well as NATO STANAG 3114, *Aeromedical Training of Flight Personnel*; and NATO STANAG 3474, *Temporary Flying Restrictions Due to Exogenous Factors Affecting Aircrew Efficiency*, Air Standard 61/101/3, *Aviation Medicine/Physiological Training of Aircrew*, and Air Standard 61/117/1, *Aviation Medicine/Physiological Training of Aircrew in Spatial Disorientation*. This publication applies to all units assigned to or gained by major commands (MAJCOM) and HQ USAF direct reporting units (DRU) and applies to commanders, operations supervisors, aircrew, high altitude parachutists, mission essential ground personnel, and passengers assigned or attached to all flying activities of these MAJCOMs and DRUs. It also applies to the Air Force Reserve Command (AFRC) and the Air National Guard (ANG). MAJCOMs, DRUs and field operating agencies (FOA) may supplement this instruction. MAJCOMs, DRUs and FOAs will coordinate their supplement to this instruction with AETC/A3FM before publication and forward one copy to AETC/A3FM after publication. Supplements will not lessen the requirements nor change the basic content or intent of this instruction. Process supplements in accordance with (IAW) AFI 33-360, *Publications and Forms Management*. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Form 847s from the field through the appropriate functional chain of command. This document requires the collection and or maintenance of information protected by the Privacy Act of 1974. The Privacy Act System of Records Notice F011 AF XO A, Aviation Resource Management Systems (ARMS) covers required information. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363,

Management of Records, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**.

SUMMARY OF CHANGES

This change incorporates Interim Change 1, which allows High Altitude Parachutists (HAP) to receive initial hypoxia exposure via Reduced Oxygen Breathing Device (ROBD) or altitude chamber, clarifies HAP and RPA aircrew academic training requirements, revises inspection and medical clearance requirements as a result of other publication changes, establishes crew currency and proficiency measures, improves chamber crew utilization, delegates altitude chamber crew complement waivers to AETC/A3F, incorporates minor administrative changes, standardizes form completion requirements and clarifies unit responsibilities for ROBD maintenance from updated SPO direction.

Chapter 1

GENERAL

1.1. General. This instruction governs the Air Force Aerospace Physiological (AP) Training Program, which teaches the physiological stresses and human factor implications of modern military aviation and prepares the trainee to meet these challenges. This training is provided by Aerospace and Operational Physiology (AOP) personnel.

1.2. AP Program Goal. Optimize aircrew performance and reduce human factors mishap risk through mission and aircraft-focused training.

1.3. Waiver Authority. Unless otherwise specified, AETC/A2/3/10 is the waiver authority for the provisions of this instruction. Policy and procedures are enacted to provide quality and consistency in training and evaluation whether at an undergraduate or graduate level. Occasionally, unique circumstances may warrant special consideration and possible waiver of policy provisions. Waivers that change the intent of the policy outlined in this instruction are not authorized without AETC/A2/3/10 approval (T-2).

1.3.1. MAJCOM/A3 is the waiver authority for individual aircrew training currency extensions for up to 180 days, but may not approve blanket or group (two or more aircrew) waivers. MAJCOM/A3s must consider applicability of any granted waivers on entry requirements of other MAJCOM-owned formal training courses. Provide an info copy of granted waivers to AETC/A3FM Workflow email at **aetc.a3fm.workflow@us.af.mil** within 5 duty days of waiver completion.

1.3.2. Request waivers through applicable channels to MAJCOM/A3 (or equivalent). As applicable, MAJCOM/A3s will forward requests to AETC/A2/3/10, with an info copy to HQ USAF/A3O-AI.

1.3.3. AETC/A2/3/10 has delegated instructor qualification and minimum altitude chamber crew complement waivers to AETC/A3F.

1.3.4. Tier requirements refer to waiver authority based on level of risk.

1.3.4.1. "Tier 0" (T-0) requirements are reserved for requirements that non-compliance is determined and waived by respective non-Air Force authority.

1.3.4.2. "Tier 1" (T-1) requirements are reserved for requirements that non-compliance may put airman, mission, or program strongly at risk, and may only be waived by the MAJCOM/CC or delegate with concurrence of publication approver. When multiple MAJCOMs are affected, then T-1 is appropriate.

1.3.4.3. "Tier 2" (T-2) requirements are reserved for requirements that potentially put the mission at risk or potentially degrade the mission or program and may only be waived by the MAJCOM/CC or delegate.

1.3.4.4. "Tier 3" (T-3) requirements are reserved for requirements that non-compliance has a remote risk of mission failure and may be waived by the Wing/CC but no lower than the OG/CC.

1.4. Responsibilities.

1.4.1. **AF/A3O.**

1.4.1.1. Provides guidance and policy for aircrew training IAW AFI 11-202 vol. 1, *Aircrew Training*.

1.4.1.2. Provides fiscal advocacy to AF Personnel and Training Panel for Planning, Programming and Budgeting requirements to support the AP training program.

1.4.1.3. Resolves conflicts in MAJCOM guidance.

1.4.1.4. Designates an AP Aircrew Training Program Manager (PM).

1.4.2. **AF/SG.**

1.4.2.1. Provides qualified personnel in specialty 43A and 4M0X1 AFSCs to conduct AP training and to operate AP training devices.

1.4.2.2. Ensures 43A and 4M0 recruitment and accessions meet AF/A3O and AETC AP Training manpower requirements. Consults with Air Force Reserve Command on reserve accession qualification and training.

1.4.2.3. Coordinates with AF/A3O on any 43A or 4M0 manpower changes that affect AP training program manning.

1.4.2.4. Provides aeromedical support for the AP training program and provides medical treatment for injuries incurred at locations where training occurs.

1.4.2.5. Provides human performance consultation to AF/A3O and AETC for the AP training program.

1.4.3. **AF/SE.** The Air Force Safety Center (AFSEC) will review mishaps sanitized by AETC/SE for integration into Mission Design Series (MDS)-specific courseware to ensure the absence of privileged material IAW AFI 91-204.

1.4.4. **AETC.**

1.4.4.1. AETC, as the Lead Command for the AP training program, sets policy and guidance IAW AFPD 10-9, *Lead Command Designation and Responsibilities for Weapons Systems*, and manages the AP training systems IAW AFI 36-2251, *Management of Air Force Training Systems*.

1.4.4.2. Programs and budgets for system-wide unique equipment, upgrades/modifications, and other logistics issues to support AP training device portfolio which includes altitude chambers, ROBDs, hypoxia familiarization trainers (HFTs), spatial disorientation trainers, Barany chairs, and swing landing/lateral drift parachute trainers. Coordinates with system program office per AFPD 10-9.

1.4.4.3. AETC/A3FM is designated as the OPR for AP training program management, courseware and training systems and incorporates 711th Human Performance Wing and AFSEC mishap investigation and prevention information into AP courseware IAW governing instructions.

1.4.4.4. AETC/A3FM will chair an annual Training Planning Team meeting with MAJCOMs and AP training System Program Office (SPO).

1.4.4.5. Through SAF/IA, Air Force Security Assistance Training (AFSAT), and in coordination with AF/A3O-AI, establishes criteria, conducts evaluations and formally recognizes foreign country aircrew AP training programs as meeting USAF requirements.

1.4.4.6. Coordinates with AF/A3O-AI to recognize and accept non-USAF AP Training for members of other US military services and DoD agencies who fly on USAF aircraft.

1.4.5. **MAJCOMs.**

1.4.5.1. **MAJCOM/A3.**

1.4.5.1.1. May supplement this instruction and delegate waiver authority not lower than MAJCOM/A3T or equivalent.

1.4.5.1.2. Executes the AP training program IAW this publication and any applicable MAJCOM supplements.

1.4.5.1.3. Coordinates within MAJCOM staff for an AOP Officer or rated officer to serve as an AP Training Program Manager (PM) for the duties in para 1.4.5.1.3.2 – 1.4.5.1.3.6. EXECPTION: Air Reserve Component (ARC) and Air Force Space Command (AFSPC) may appoint an A3 representative without AOP or rated restriction due to manpower availability.

1.4.5.1.3.1. Conduct an annual review of physiological training courseware to ensure relevancy to aircrew in the MDS. Forward recommendations for changes to AETC/A3FM Workflow email using the course change request form. AETC/A3FM will accomplish this on behalf of the Air Reserve Component (ARC) and Air Force Space Command (AFSPC).

1.4.5.1.3.2. Participates in annual AP Training Planning Team Meetings IAW AFI 36-2251, *Management of Air Force Training Systems*.

1.4.5.1.3.3. Provide updates to AETC/A3FM during Aircrew Protection Working Group meetings on any aircrew flight equipment/protective ensembles/night vision systems.

1.4.5.1.3.4. Participates in realistic training review boards (RTRBs) as required.

1.4.5.1.3.5. Ensure AP device utilization/maintenance and training report submitted to AETC/A3FM, except Air Reserve Component (ARC).

1.4.5.1.3.6. Assesses applicability/effectiveness of operational aspects of training and ensures compliance of aircrew AP training program with applicable AFIs no less than once every two years. Upon request, supports MAJCOM IG to perform inspections of Aerospace and Operational Physiology Units (AOPTUs) as directed in AFI 90-201, *The Air Force Inspection System*.

1.4.5.1.3.7. Coordinates supplements to this instruction with AETC/A3FM and provides notification of published MAJCOM supplements.

1.4.5.2. **MAJCOM/SE.**

1.4.5.2.1. Annually reviews and provides MAJCOM MDS-specific human factor, and physiological event statistics and trends for incorporation into AP courseware

updates. Will provide MAJCOM/A3 AP training PM sanitized mishap descriptions upon request for integration into MDS-specific courseware IAW AFI 91-204.

1.4.5.3. **MAJCOM/SG (with exception for the Air Reserve Component (ARC).**

1.4.5.3.1. Ensures appropriate 43A and 4M0 manning is available to execute AP training program requirements are executed IAW this publication or any applicable MAJCOM supplement.

1.4.5.3.2. Programs and provides resources for professional development of 43A and 4M0 personnel IAW AFMS career path vectors and Career Field Education and Training Plan (CFETP).

1.4.5.4. **MAJCOM Requirements Directorate (A5 or A8).**

1.4.5.4.1. Ensures all MDS or Aircrew Flight Equipment (AFE) new acquisitions, modifications or upgrades are coordinated with AETC/A3FM for review into physiological training courseware. This review includes, but should not be limited to, courseware and training systems to ensure concurrency in addressing MDS and AFE-specific physiological, human factors and emergency procedure training requirements.

1.4.5.4.2. Coordinates with training system SPO (ASC/WNS) for programming required to acquire or modify existing physiological training systems to meet unique requirements as a result of new MDS or AFE acquisitions/modifications/upgrades.

1.4.5.4.3. Programs for development of physiological training courseware specific to new, modified or upgraded MDS or AFE systems during acquisition process.

1.4.6. Wing or Equivalent. Provides facilities and resources for executing the AP training program. (T-2)

1.4.6.1. Operations Group (OG) or Equivalent.

1.4.6.1.1. Budgets and execute resources for the AP training program for non-AP training device unique equipment and consumables such as aircrew flight equipment and gases. Ensures metric funding established for AP training is properly distributed. (T-2)

1.4.6.1.2. Ensures documentation of aircrew AP training using existing MAJCOM-approved aircrew training and records management databases. (T-2)

1.4.6.1.3. Provides AOP training personnel with appropriate security clearance/access to aircraft flight simulators and training facilities IAW AFI 11-202 *Aircrew Training* and opportunities to fly in assigned aircraft on non-interference orders per AFI 11-401 *Aviation Management*. (T-3)

1.4.6.1.4. Ensures aircrew AP Training is MDS- and mission-specific and that the training equipment is concurrent with the MDS-specific oxygen equipment and emergency procedures. (T-3)

1.4.6.2. Medical Group (MDG) with Aerospace and Operational Physiology Training Units (AOPTUs).

1.4.6.2.1. Ensures WG/CC & OG/CC or designated representatives are notified of any personnel action or availability that might affect the execution of AP training requirements. Ensures appropriate 43A and 4M0 manning is available to ensure AP training program is executed IAW this publication or any applicable MAJCOM supplement. (T-2)

1.4.6.2.2. Ensures 43A and 4M0 personnel prioritize aircrew AP training over participation in medical training/support operations. (T-3)

1.4.6.2.3. Programs/provides resources for professional development of 43A and 4M0 personnel IAW AFMS career path vectors, CFETP, AFMS BSC Flight Path and AFI 41-117, Medical Service Officer Education. (T-3)

1.4.6.3. **AOPTU.**

1.4.6.3.1. AOPTUs are designated as regional training units and support aircrew and parachutists from multiple MAJCOMs and wings as well as ANG and AF Reserve units. Aerospace and Operational Physiology Training Teams are composed of personnel that support the wing MDS-specific aircrew and parachutist physiological training requirements. AOPT teams can provide regional training provided training is performed with the aircrew member's MDS-appropriate oxygen system configuration. This may include the aircrew of a tenant wing MDS. In this instruction, AOPTU refers to either an AOPT flight or AOPT team.

1.4.6.3.2. Executes the AP training program IAW this instruction and any applicable MAJCOM supplements. Establish and maintain current AP Read File IAW para. 6.6 of this instruction. (T-2)

1.4.6.3.3. Annually review, update, and publish training device emergency procedures. Conduct reactor training and emergency procedure drills on a quarterly basis. A minimum of two emergency drills each calendar year must involve base first responders. Documentation of these activities will be maintained in the unit file plan. (T-2)

1.4.6.3.4. Ensures assigned 43A and 4M0 personnel are trained IAW CFETP requirements and semi-annual instructor meetings are held. (T-2)

1.4.6.3.5. Will report all staff and/or student injuries incurred during training IAW AFI 91-202. Will maintain access to the Air Force Safety Automated System (AFSAS) and provide human performance and human factors analysis on identified hazards IAW AFI 91-202. Incorporates AF, MAJCOM, and MDS annual statistics, human factor trends, and physiological mishaps/events into AP training media. May request AFSEC/JA approval for safety animations and other mishap mitigation material via the AFSAS Tab Access function. Will protect safety privileged information IAW AFI 91-204, Chapter 3 *Safety Investigations and Reports*. (T-2)

1.4.6.3.6. Provides AP training schedule to appropriate Operational Support Squadrons (OSS). (T-3)

1.4.6.3.7. Ensure annual validation of Hazardous Duty Orders and monthly requirements are met. (T-3)

1.4.6.3.8. Report monthly AP device utilization and training rates to AETC/A3FM via Associate Corps Chief monthly report. (T-2)

Chapter 2

AEROSPACE PHYSIOLOGY TRAINING REQUIREMENTS

2.1. Personnel Who Require AP Training.

2.1.1. Aircrew (includes government civil service). All 11X, 12X, 13BX, 18X, 46F, 48A/G/R/V, career enlisted aviators (1AXXX, 1UXXX AFSC), and nonrated aircrew (K-, Q-, or X-prefixed AFSC) personnel responsible for the safe ground and flight operation of the MDS and onboard systems, or for airborne duties essential to accomplishment of the MDS-specific mission (ref AFPD 11-4) require AP training. Per AFI 11-202 vol. 1, personnel who are delinquent in physiological training will not be scheduled for flight duty. (T-2)

2.1.2. High Altitude Parachutists. All battlefield airmen: 1T2, 1C2, 1C4, 13D, 13C personnel participating in parachute operations above 10,000 feet MSL as required by MAJCOM, Air Force, US Army or US Navy directives. AP training should not be used as a screening tool for Free Fall Course selection.

2.1.3. AOP personnel in AFSC 43A and 4M0 must maintain physiological training currency IAW this instruction.

2.1.4. Aircrew Flight Equipment Personnel IAW AFI 11-301, *Aircrew Flight Equipment (AFE) Program*.

2.1.5. Officer Cadet Initial Training. USAFA and ROTC cadets participating in an AF flying program require training IAW program syllabus. Civil Air Patrol members are eligible to receive US Air Force physiological training when the AOPTU‘s operations group commander authorizes training. The minimum age for all non-military training trainees is 18; comply with the state‘s age requirement when more restrictive. (T-2)

2.1.6. Contractor aircrew, to include mission crew and flight test engineers, required by US Government contract to maintain AP training currency as government furnished training. Training must be scheduled by the contract government quality assurance evaluator (QAE) or government flight representative (GFR) after verifying the government‘s responsibility to provide physiological training to the contractor. Contractor aircrew who complete physiology training receive a five year currency. (T-3)

2.1.7. Civilian Distinguished Visitors (DVs). All requests for physiological training of DVs must be coordinated with appropriate OG, MAJCOM/A3 and AF/A3OI OPRs through the commensurate Public Affairs office in support of approved PA programs. The local wing commander may authorize training for civilians when required for military orientation flights. Physiological training of distinguished visitors should be associated with a pending aircraft flight or other mission-oriented purpose due to the high risk nature of exposure to reduced partial pressures and/or barometric pressure changes during the training course. (T-3)

2.1.8. Rated aircrew flying in their non-primary MDS must meet pre-flight training requirements in AFI 11-202 vol. 3. Flight surgeons and AOP officers, where available, will provide a briefing on MDS-specific human factor threats, use of oxygen equipment, and acceleration forces, if applicable. ROBD may be used to reinforce hypoxia symptoms but

will not refresh AP training currency unless accompanied by a complete academic course and completion of all ROBD training objectives. (T-3)

2.1.9. Orientation flyers per AFI 11-401 must meet pre-flight training requirements in AFI 11-202 vol. 3. Additionally, flight surgeons or AOP personnel, where available, will provide a briefing on hypoxia, use of oxygen equipment, trapped gas/valsalva maneuver, airsickness prevention, and acceleration forces, if applicable, within 72 hours of flight. If 72 hours are exceeded before flight, training will be re-accomplished. ROBD may be used to familiarize trainees with their hypoxia symptoms and provide training in oxygen system use as available if trainees are medically cleared. ROBD familiarization may not negatively impact aircrew and parachutist AP training schedules. AOP technicians qualified to teach physiological effects of altitude IAW **para 3.2.1** of this instruction may provide this training. (T-3)

2.1.10. All other personnel requesting AP training must coordinate approval through AETC/A3FM.

2.2. AP Training Requirements.

2.2.1. General. AOPTUs will schedule any aircrew member or parachutist requesting training, regardless of MAJCOM or location; however, schedulers should assist these individuals in scheduling training at a closer AOPTU. To ensure efficiency and encourage MDS specificity for the students, AP courses have been built to group aircrew and parachutists into common aircraft platforms. AP courseware will be posted on the AETC Undergraduate Flying Training (UFT) Bookstore for instructor use. Use Course Change Request form to request changes via AETC/A3FM Workflow email at **aetc.a3fm.workflow@us.af.mil.** Requests for access to the AETC Flying Training Special Publications site (e-BOOKSTORE) may be made on the site itself at **https://trss3.randolph.af.mil/bookstore/home/homePage.aspx**. Requests for courseware release must be requested via the AETC/A3FM Workflow email address. Courseware will not be released without approval from AETC/A3FM. (T-2)

2.2.2. Initial Physiological Training. Rated officer aircrew, career enlisted aircrew, non-rated aircrew, parachutists, and AOP personnel will accomplish initial physiological training as part of their undergraduate flying training, flying specialty, or AFSC-granting formal training program. Training components are outlined in those flying training and formal course syllabi and must as a minimum meet **Table 3.1** requirements of this instruction. (T-2)

2.2.2.1. Battlefield airmen (1T2, 1C2, 1C4, 13D, 13C) and High Altitude Parachutists will receive High Altitude Parachutist initial and refresher training. For High Altitude Parachutists, initial physiological training should be completed after selection for attendance to a Military Freefall Course and before formal course entry. (T-2)

2.2.2.2. Cadets may receive specialized initial physiology academics as long as time required and scheduling does not interfere with aircrew AP training. For USAFA cadets and ROTC cadets, ROBD may be used in conjunction with academics if available/to the maximum extent possible. Cadet training is current through duration of cadet status. EXCEPTION: For cadets flying in ejection seat aircraft, oxygen system and egress training will be provided IAW MAJCOM/local wing policy prior to flight. (T-2)

2.2.2.3. Written tests are required of all initial students. Students need a score of at least 80 percent to pass. The student should review all missed questions with an instructor and

verbally correct them to 100 percent. Scores below 80 percent require more instruction and retest. An AOP Officer certifies satisfactory training using AF Form 1274, *Physiological Training*, upon satisfactory test completion. Report personnel who demonstrate inadequate knowledge of the instructed subject to their unit commanders and arrange for them to repeat the course of instruction. (T-2)

2.2.2.4. RPA aircrew who have completed any type of initial AP training meet the RPA initial requirement. Additionally, trainees currently serving as RPA aircrew who did not receive initial or transition training prior to publishing of this instruction's interim change are not required to obtain retraining. This grandfathered aircrew should attend any first available AP training course for RPAs and attend refresher training 5 years from completion of their training.

2.2.3. Transition Physiological Training. Transition physiological training is required for all rated officer aircrew and career enlisted aviator personnel attending a formal weapon system qualification training course in transition to a new aircraft. The purpose of this training is to provide weapon system and mission-specific human factors and update oxygen system emergency procedures training, not necessarily to refresh hypoxia training currency (or provide a chamber "re-hack"). Helicopter aircrew and other aircrew completing requalification training IAW AFI 11-202 vol. 1 para. 2.2 are not required to re-complete transition physiological training. (T-2)

2.2.3.1. Lead MAJCOMs and weapon system Formal Training Units (FTU), to include remotely piloted aircraft (RPA) FTUs, will ensure physiological training addresses the MDS-specific physiological and human performance challenges. As a minimum, non-RPA FTU students will receive training in the following mission/MDS-applied topics: human factors of displays, automation and helmet-mounted cueing systems, cabin pressurization and oxygen system effects on human performance, attention management threats to situational awareness, and spatial disorientation (to include night vision systems), protection in high-G environments, and fatigue and circadian rhythm management. As a minimum, RPA FTU students will receive training in human factors of displays (to include visual effects in low light), automation and cueing systems, situational awareness, sensor management, spatial disorientation, and fatigue and circadian rhythm management. (T-2)

2.2.3.2. Oxygen system failure and hypoxia emergency procedures training must be conducted prior to first flight in the aircraft for MDSs whose oxygen system/equipment and emergency procedures differ from those taught in the altitude chamber during initial physiological training. For example, if a B-1 pilot transitions to become a T-6A or a T-38C Instructor Pilot, he/she must undergo oxygen system failure and hypoxia emergency procedures training as part of the appropriate Pilot Instructor Training (PIT) formal course due to significant differences in the oxygen equipment and hypoxia emergency procedures training. (T-2)

2.2.3.3. At FTU locations where ROBDs are used for aircrew hypoxia recognition and emergency procedures training as part of the formal training course, refresher training may be annotated if concurrently accompanied by refresher academics, shifting the refresher requirement to 5 years from the end of the month during which the ROBD training was accomplished.

2.2.4. Refresher Physiological Training. Refresher training will be conducted IAW this instruction and the appropriate syllabus as developed by AETC/A3FM. Training guidance will undergo annual review. (T-2)

2.2.4.1. For rated officer aircrew, career enlisted aviators, non-rated aircrew, AOP personnel and High Altitude Parachutists, refresher training must be completed no later than 5 years from the end of the month during which initial or transition level AP training was accomplished (IAW **para. 2.2.2.3** of this instruction). With the exception of some Track E refresher students (see **para 2.2.4.8** of this instruction), all refresher students must complete hypoxia exposure via altitude chamber or ROBD regardless of number of years of flying service. Personnel exempt under prior 20 years of aviation service exception in the 2001 version of this instruction are not required to retrain immediately upon publishing of the update but must receive hypoxia exposure during their next AP refresher training session. Refresher training currency must be maintained with the same 5 year frequency. For example, if an aircrew member completes their initial AP training on 21 Aug 2012, their refresher training is due 31 Aug 2017. The MAJCOM/A3 may establish more frequent MDS-specific training requirements as appropriate. Reference aircraft-specific 11-series publications and MAJCOM supplements for more information on these additional training requirements.(T-2)

2.2.4.2. Types of Refreshers. Refresher course categories are grouped based upon common aircraft characteristics. All refresher training will emphasize aircraft-specific oxygen equipment re-familiarization and emergency procedures. (T-2)

2.2.4.3. Track A (formerly Trainer, Attack, Reconnaissance, Fighter - TARF): For aircrew who fly in ejection seat-equipped aircraft such as trainer, bomber/attack, fighter or C4ISR, except for aircrew flying U-2 (see **para 2.2.5**).

2.2.4.4. Track T (formerly Tanker, Transport, Bomber - TTB): For aircrew who fly in tanker and transport aircraft and those manned C2ISR aircraft who do not fly with ejection seats.

2.2.4.5. Track H (formerly Helicopter - HELO): For aircrew who fly in helicopters.

2.2.4.6. Track C: For aircrew who fly CV-22 aircraft. If CV-22 academics are not available, USAF CV-22 aircrew may attend either a Track T or H course.

2.2.4.7. Track J (formerly High Altitude Parachutist - HAP): For parachutists who have previously completed initial physiological training and are MFF qualified.

2.2.4.8. Track E (formerly Executive - EXEC): For E-9 Command Chief (or higher) or O-6 Group Commander (or higher) rated aircrew members or parachutists. Academic training as a minimum must include the following topics: attention management threats to situational awareness, spatial disorientation, g-induced loss of consciousness (for fighter aircrew) and a review of altitude threats to performance tailored to the students‘ experience level. A chamber flight to demonstrate hypoxia is not required for members with more than three documented refreshers. ROBD should be used where available. Refer to MAJCOM supplements or MDS-series guidance for required hypoxia recognition/recovery training. EXEC training candidates deployed for 180 days or more may request a Video Teleconference class if an AOP is not able to ensure training. (T-2)

2.2.4.9. Track R. For Remotely Piloted Aircraft (RPA) aircrew. Consists only of refresher academics on human factors such as fatigue, attention management threats to situational awareness, including displays and automation challenges, and spatial disorientation. No altitude chamber or ROBD training is required.

2.2.5. Pressure Suit Training. Conduct pressure suit training and support for personnel who fly U-2 aircraft. (T-2)

2.2.5.1. Original Pressure Suit Training. A one-time requirement provided upon initial assembly and fitting of the pressure suit assembly. Reference ACCI 11-459, *High-Altitude Reconnaissance Mission Support Program*, for course entry criteria and specific training requirements.

2.2.5.2. Refresher Pressure Suit Training. Required every 5 years for those who have undergone original pressure suit training. Course content will meet the requirements of a Track A refresher course, and provide pressure suit and routine refresher training simultaneously with emphasis on both the high altitude and companion trainer aircraft.

2.3. Medical Requirements for AP Training. Individuals must have the appropriate medical clearance IAW AFI 48-123, *Medical Examinations and Standards* to be eligible for physiological training. See AFI 48-123 for medical clearance documentation requirements. In the absence of written medical clearance, telephone verification with the trainee's home medical facility is authorized. Print or type the name of the person who verified the clearance, clearing flight surgeon, and clearance expiration on the flight recorder sheet for that day‘s training. AP training is waived during pregnancy or until aircrew is returned to flight status. If member is not maintained on flight status, AOPTUs may accept medical clearance documents that approve member for altitude chamber or ROBD training only. In coordination with the flight surgeon, the AOPTU/CC may refuse training to any individual who does not appear to have the physical health or attitude commensurate with high-risk physiological training. (T-2)

2.3.1. Hypoxia Training Safety, including Exposures after Diving. To assure training safety, each student will undergo a pre-flight screening to ensure they are not suffering from any type of illness or issues that would prohibit participation in a chamber or ROBD training event. Trainees who have colds, sinusitis, headaches, abdominal pain, digestive upset, ear trouble, pregnancy, and/or injuries are typically excluded from hypobaric chamber training. Trainees who have colds, sinusitis, headaches, pregnancy, and/or physical injuries that interfere with operation of ROBD/HFT are typically excluded from ROBD training. A local flight surgeon will assess a trainee‘s medical ability to participate in training if questions arise. IAW AFI 48-123, trainees who have donated blood in the last 72 hours cannot participate in chamber flights. The local on-call flight surgeon will be the approval authority for chamber flight participation of trainees with operational requirements for beards or mustaches which interfere with a safe oxygen mask fit. Personnel must delay altitude chamber and aerial flight exposures for at least 24 hours following dive events. This includes compressed air or mixed gas diving, surface supplied diving, or hyperbaric chamber exposure. If the dive requires a decompression stop, then 48 hours must elapse prior to altitude chamber exposure. EXCEPTION: Special Operations personnel may follow guidelines per the US Navy Diving Manuals. (T-2)

2.3.2. **US and Foreign Military, Service Academy/ROTC Cadets or Midshipmen, or Government Service Civilians.** Copy of AF Form 1042, *Medical Recommendation for*

Flying or Special Operational Duty, DA (Army) Form 4186, *Medical Recommendation for Flying Duty*, or Naval Medical Form 6410/2, *Clearance Notice (Aeromedical),* indicating that a flying class I, II, or III physical has been completed using applicable regulatory guidance and containing an expiration date. Cadets may provide an AF Form 1042 or proof they are medically cleared for hypobaric chamber training within 12 months prior to AP training date. US Coast Guard, Department of the Navy, and US Army personnel may present any of the forms previously listed. North Atlantic Treaty Organization (NATO) and other foreign military personnel may use the local current base clearance or annual physical 1042 prepared by home station flight surgeons.

2.3.3. **Government Contractors, Non-DoD Government Civilians and Non-Government Civilians** (to include DVs). Government contractors and non-government civilian personnel to include DVs undergoing USAF physiological training may present a copy of current Federal Aviation Administration (FAA) Medical Certificate flying class I, II or III. The AOPTU/CC in cooperation with the flight surgeon is responsible for interpreting the relative health risks of civilians attending physiological training and may refuse to provide training IAW **para. 2.3** of this instruction.

2.4. Exceptions to AP Training.

2.4.1. Department of the Navy or US Coast Guard aircrew personnel, who have current AP training in their service, are not required to complete a full USAF AP training course before their first flight in USAF aircraft. US Army aircrew require additional training, specifically **para. 3.2.4, 3.2.12**, and **3.2.11** of this instruction, if flying in fighter or bomber aircraft, prior to their first flight in USAF aircraft. Prior to first flight, all rated aircrew from any other services must receive a briefing on the oxygen equipment and emergency procedures as part of requirements in AFI 11-202 vol. 1. For flight in fighter aircraft, refer to AFI 11-404, Centrifuge Training for High-G Aircrew, for additional acceleration training requirements. AOP Officers will sign an AF Form 1274 after verifying prior training documents and completion of additional training requirements. (T-2)

2.4.2. Prior to first flight, all rated aircrew from other countries must receive a briefing on the oxygen system procedures and ejection seat procedures if applicable as part of requirements in AFI 11-202 vol. 1. For flight in fighter aircraft, refer to AFI 11-404 for additional acceleration training requirements. Foreign flying personnel who have current AP training from their country are not required to take USAF training before their first flight in USAF aircraft if their country's AP training program has been approved for unconditional acceptance. Training documentation must be in English, legible, and certified by the correct training official from the foreign country. AOP personnel will generate an AF Form 1274 to document AP training currency upon receipt of complete training documentation. Requests for foreign AP training documentation clarification should be forwarded to the base International Military Student Officer (IMSO) or AFSAT/DO via AFSAT Workflow email if there is no base IMSO. (T-2)

2.4.2.1. Aircrew trained in countries with no or expired approval must complete USAF AP refresher training prior to their first flight in USAF aircraft. Use Invitational Travel Order (ITO) as primary document requiring an individual to obtain USAF AP training; contact AFSAT/DO with courtesy copy to AETC/A3FM to verify training is required and will be resourced for foreign personnel not on ITOs. Student identification number listed

on the ITO will be used in completion of AP training documentation (AF Form 1274 or MFR). Full refresher course must include the oxygen system and ejection seat procedures brief required by AFI 11-202 vol. 1. The list of approved foreign AP training programs can be found on the AETC/A3F page of the Air Force Portal. (T-2)

2.4.2.2. Requests for USAF approval of foreign country AP training should be initiated through the appropriate country manager at SAF/IA and/or AFSAT/DO, who will coordinate with AETC/A3FM to review the training program. Upon request from SAF/IA and/or AFSAT/DO, AETC/A3FM will identify the best qualified AOP personnel to review the requesting country's AP training program. Two person teams (consisting of field grade 43A3 and 4M071) will complete in-country approval visits after establishing courseware similarity; re-certifications may be accomplished via courseware review only. SAF/IA will prioritize and coordinate with AFSAT to fund for country approval requests. AETC/A3FM will provide guidance and standardized evaluation checklists to the reviewer(s) to support this process. The reviewer(s) will provide a written summary of their findings and recommendations to AETC/A3FM, who will then forward the recommendation and supporting documentation to AETC/A3F for approval of unconditional acceptance. **NOTE:** Foreign country AP training programs must be reviewed every 5 years via this same coordination process.

2.4.3. Aircrew who are within 4 months of approved separation or retirement, assigned to a non-flying position or are placed in an inactive status for administrative or medical reasons, are not required to maintain currency in physiological training.

2.4.4. All flying personnel assigned to an active flying assignment overseas with no ROBD refresher capability must complete refresher physiological training prior to departure from home station. (T-2)

2.4.5. Requalification. Any person who has completed original/initial physiology training may requalify in AP training by taking the appropriate refresher course for their current flying duties.

2.4.6. Aircrew required to wear pressure suits for high altitude operations complete refresher training every 5 years as described in **para 2.2.5.2** of this instruction. (T-2)

Chapter 3

AEROSPACE PHYSIOLOGY TRAINING CONTENT

3.1. General. The purpose of AP Training is to provide aircrew and parachutists the knowledge, skills and attitudes to optimize performance in physiologically and cognitively challenging air and space operations. AP training systems provide a training environment that replicates high altitude, high-G, egress, and orientation-compromised exposures in which personnel can apply preventive countermeasures and practice emergency procedures. By providing academic lessons followed by hands-on application in a controlled environment, student learning is maximized while minimizing risk exposure. Only AP instructors who are graduates of an approved USAF Academic Instructor Course are authorized to teach AP instructional blocks. Instructors will supplement their academic courseware with mishap lessons learned and trend information. Table 3.1 illustrates required lessons and training events required to complete AP training.

Table 3.1. AP Training:

	Initial	HAP Initial	RPA Initial	Cadet	Transition	RPA Trans
3.2.1. Physiological Effects of Altitude	X	X		X		
3.2.2. Performance Threats	X	X	X	X	X	X
3.2.3. Aircrew Flight Equipment	X	X		X	X	
3.2.4. Cabin Pressurization/decompression	X			X		
3.2.5. Pressure Breathing	X			X		
3.2.6. Vision	X	5		X	X	
3.2.7. Spatial Disorientation	X	5	X	X	X	X
3.2.8. Noise & Vibration	X	5		X	X	
3.2.9. Principles of CRM	1					
3.2.10. AMT-SA	X	5	X	X	X	X
3.2.11. Acceleration	X			X		
3.2.12. Aircraft Egress	X	X		X		
3.3.1. Altitude Chamber	X	4		3		
3.3.2. ROBD		4		3		
3.2.4. Barany Chair/SD Demo	X			X		
3.2.5. Unaided Night Vision Tnr	X	X		X		

Refresher Training Requirements by Course Tracks							
	A	T	H	C	J	R	E
3.2.1. Physiological Effects of Altitude	X	X	X	X	X		X
3.2.2. Performance Threats	X	X	X	X	X	X	
3.2.3. Aircrew Flight Equipment	6	6	X	X	X		
3.2.4. Cabin	6	6					

Pressurization/decompression							
3.2.5. Pressure Breathing	**6**	**6**					
3.2.6. Vision	**X**	**X**	**X**	**X**	**X**	**X**	
3.2.7. Spatial Disorientation	**X**	**X**	**X**	**X**		**X**	**X**
3.2.8. Noise & Vibration	**X**	**X**	**X**	**X**	**X**	**X**	
3.2.9. Principles of CRM							
3.2.10. AMT-SA	**X**	**X**	**X**	**X**	**X**	**X**	**X**
3.2.11. Acceleration	**X**						**X**
3.2.12. Aircraft Egress							
3.3.1. Altitude Chamber	**2**	**2**	**2**	**2**	**2**		
3.3.2. ROBD	**2**	**2**	**2,7**	**2**	**2**		
3.2.4. Barany Chair/SD Demo							
3.2.5. Unaided Night Vision Tnr							

Note 1: Principles of CRM provided to undergraduate flying training students IAW AETC syllabi.
Note 2: Refresher training may use altitude chamber or ROBD to meet hypoxia training requirements.
Note 3: For initial training of cadets only, chamber or ROBD may be used to meet hypoxia training requirement. Cadets who complete commissioning and selection to an aircrew training pipeline will re-accomplish initial training. During aircrew pipeline training, these trainees will experience a full initial and rapid decompression chamber flight as a portion of their required training.
Note 4: HAP Initial trainees may accomplish hypoxia exposure using ROBD or altitude chamber.
Note 5: Select topics emphasizing operational relevance from these courses are included in a single block of instruction for HAP Initial trainees.
Note 6: Selected topics emphasizing operational relevance from these courses are included in a single block of instruction for Track A, T refresher trainees. Contains hands-on practical training which may be accomplished as a chamber lab or classroom demonstration.
Note 7: Rotary wing aircrew may accomplish hypoxia refresher training in conjunction with simulator refresher at Kirtland AFB NM to reduce training non-concurrency

3.2. Academic Lessons. Qualified AOP personnel who meet the CFETP will conduct presentation of the standardized curriculum IAW syllabi standards. All AOP officers conducting the spatial disorientation block of instruction as part of refresher AP training must be graduates of the AETC Physiological Officer Flight Familiarization Training course or equivalent. NOTE: AOP officers with 20 or more hours of military non-interference flying experience or an FAA-issued private pilot's license are exempted from this requirement but must provide adequate documentation of this experience/training in their training folder. All AOP personnel are expected to maintain familiarity of the missions, relevant systems (e.g. oxygen equipment), and modifications (e.g. display upgrades) of USAF major weapon systems represented in initial and refresher AP training through guided discussion during instructor meetings, flight line visits, and active non-interference flying IAW AFI 11-401. Individuals who have attained a primary AFSC of 4M031, and are a graduate of an approved USAF academic instructor course, may be certified by the local AOPTU/CC to teach the subjects listed in **paragraphs 3.2.3, 3.2.4, 3.2.5**, and **3.2.12**. Additionally, these individuals may be certified by the local AOPTU/CC to conduct

Barany Chair/Spatial Disorientation demonstrations and chamber lectures. Individuals who have attained a primary AFSC of 4M071 or higher, and an Associate degree or higher, may be certified by the local AOPTU/CC to teach the subjects listed in paragraph 3.2.1. Individuals who have attained a primary AFSC of 4M071 or higher, hold as Associate degree or higher, and have experience in HAAMS or qualified as a parachutist, may also be qualified to teach Track J initial and/or refresher training. The local AOPTU/CC must provide these technicians additional, comprehensive training to teach the subjects listed in **paragraph 3.2.2, 3.2.5, 3.2.6, 3.2.8**, and **3.2.10**. Units must ensure all training certifications are documented in the individual's OJT record. (T-2)

3.2.1. Physiological Effects of Altitude. Physics of the atmosphere; anatomy and physiology and effects of the flight environment on circulation and respiration, to include smoke and fumes; the physiology, causes, prevention, recognition and recovery of hypoxia and hyperventilation, trapped and evolved gas.

3.2.2. Performance Threats. Self and mission-imposed threats applied to the flight environment: alcohol, temperature extremes, performance nutrition, dehydration, over-the-counter medications, dietary supplements, fatigue, circadian rhythms and physical fitness.

3.2.3. Aircrew Flight Equipment. Types of aircrew helmets, oxygen masks, regulators, anti-G suits, parachute harnesses, inspection and pre-flight of oxygen equipment, aircraft oxygen systems function and failure and emergency procedures. A practical oxygen equipment laboratory will also be accomplished. For HAP-specific oxygen equipment (Track J), emphasis is placed on HAP oxygen systems.

3.2.4. Cabin Pressurization and Decompression. Principles of cabin pressurization, physical and physiological consequences of decompression, as well as the procedures to be followed after cabin decompression.

3.2.5. Pressure Breathing. The need for pressure breathing, its limitations, proper techniques, precautions, and potential problems. This block will include F-22 ground pressure breathing initial or refresher academics, if applicable.

3.2.6. Vision. Basic anatomy of the visual system, physiology of day and night vision, factors affecting vision, dark adaptation, scanning methods and lasers. Instruction on lasers should include, at a minimum, hazards of lasers and reporting laser incidents or accidents to meet AFI 11-301 Volume 4, *Aircrew Laser Eye Protection*, requirements. Unaided night vision academics will be conducted in conjunction with an unaided night vision training system.

3.2.7. Spatial Disorientation. Human sensory systems used for orientation, illusions derived from vision, semicircular canals, otolith organs, and proprioceptive system, types and characteristics of spatial disorientation, motion sickness, the role that situational awareness and the instrument crosscheck play in prevention, recognition and recovery from spatial disorientation. For initial students, this academic session will be followed by disorientation demonstration using the Barany Chair or other AETC-approved disorientation trainer.

3.2.8. Noise and Vibration. Basic anatomy and physiology of hearing for initial trainees only. Sources and harmful effects of exposure to hazardous noise and vibration and methods used to reduce and/or control exposure.

3.2.9. Principles of Cockpit/Crew Resource Management (CRM). Concepts of CRM to include basic terminology and CRM tools for undergraduate flying training pipeline students as directed by AETC syllabi.

3.2.10. Attention Management Threats to Situational Awareness (AMT-SA). Attention management threats to cognitive performance, decision-making, motivation, concepts of SA, and techniques of maintaining/regaining SA applied to mishap prevention such as spatial disorientation, GLOC, and task management problems.

3.2.11. Acceleration. Aeromedical aspects of high speed flight, aircraft ejection, and visual problems, including physical and physiological effects of acceleration and techniques used to raise G-tolerance and endurance. The Anti-G Straining Maneuver will be discussed and demonstrated. This course is required for all personnel flying in high-g aircraft. (T-2)

3.2.12. Aircraft Egress. Physiological principles and problems of escape associated with different conditions of altitude and velocity. Initial trainees flying in ejection seat aircraft will receive seat training if available at the local AOPTU. Covers the principles of crash survival and the care/use of the parachute, parachute control, and parachute landing techniques if required by MAJCOM supplement or UFT syllabi. UFT and CSO egress covers ground egress and ejection seat procedures IAW applicable syllabus. (T-3)

3.3. Training Devices. Safety and training effectiveness are paramount. Operate all AP training devices IAW this instruction and local unit Operating Instructions. Local unit instructions will follow AFOSH and other applicable safety standards (T-1). Use of the physiology training devices for experimental, non-training activities is not approved, with the exception of AFRL-owned hypobaric chambers designated solely for research. Practical training using devices is optimally delivered immediately following academic instruction. Practical training using AP training devices will occur no later than 90 days following academic instruction. (T-2)

3.3.1. Altitude Chamber. Operating instructions for AP training are listed in **Attachment 2**. Medical evaluation flights require direct supervision of the attending flight surgeon to include designation of flight profile requirements needed to evaluate patients. Medical evaluation flights will not interfere with operational training or expose any person inside the chamber to altitudes at or above FL250 for more than 30 minutes or above FL180 for more than 1 hour due to the increased risk for decompression sickness. Minimum crew complement requirements and inside observer exposure limits apply to this non-training use of the chamber. (T-2)

3.3.1.1. The altitude (hypobaric) chamber provides a training system which replicates the effects of barometric pressure change on the human body. This includes the exposure to low barometric pressure environment for recognition of personal hypoxia symptoms as well as physical effects of pressure change at various training altitudes. The ability to simulate an aircraft rapid decompression is a valuable initial training experience of the altitude chamber for all aircrew and parachutists. Full pressure suit chamber training and profiles are discussed in ACCI 11-459, *High-Altitude Reconnaissance Mission Support Program*.

3.3.1.2. The altitude chamber provides the required hypoxia exposure and related training for all initial physiological courses, except HAP and RPA. HAP students may

train using chamber or ROBD for their initial and refresher hypoxia courses. RPA students have no hypoxia training requirement. Cadets are authorized to use ROBD for training (see note 3 of **Table 3.1**). For those personnel identified in **para. 2.1.1-2.1.4**. and **2.1.6**, it is an acceptable training system for refresher requirements. (T-2)

3.3.1.3. Trainees will receive chamber flight pre-brief and post-briefings prior to and following the training system event. Training units will regularly debrief training events with all available personnel. Lessons learned will be documented via instructor meeting minutes and used as applicable in future training for instructor/inside observer upgrades or quarterly emergency training sessions. Lessons learned may be submitted to AETC/A3FM for use as a training resource for other AOPTUs. (T-3)

3.3.1.3.1. Altitude Chamber Pre-flight Briefing. At minimum, all students will be briefed on the following topics prior to altitude chamber training. Ensure students are not suffering from any type of illness or issues that would prohibit participation in a chamber flight. (T-2)

3.3.1.3.2. Ensure students understand the following chamber flight objectives:

3.3.1.3.2.1. Accomplishing all steps for complete hypoxia recovery.

3.3.1.3.2.2. Exhibit proper techniques to combat mechanical effects of pressure change for ear, sinus and gas expansion.

3.3.1.3.2.3. Demonstrate proper oxygen equipment discipline and in-flight oxygen checks.

3.3.1.3.2.4. Identify and use emergency/portable oxygen equipment.

3.3.1.3.2.5. Recognize and correct night vision deficiencies resulting from decreased oxygen.

3.3.1.3.2.6. Determine physical indication and physiological effects of a rapid decompression, only required for initial trainees.

3.3.1.3.3. . Ensure trainees understand when, how, and why to use the "Level Off" hand signal.

3.3.1.3.4. Ensure trainees know the steps to perform an effective valsalva maneuver.

3.3.1.4. Personnel who have participated in an altitude chamber flight are restricted from physical exercise, strenuous or extended duty for a period of 12 hours. Additionally, personnel may fly as crew member or passenger after a chamber flight to 25,000 feet or below but should remain below a cabin altitude of 15,000 feet for 24 hours after exposure. (T-2)

3.3.1.5. Because not all chamber reactions meet safety reporting criteria, chamber reactions will be tracked using the grading scale in **Table 3.2**. and the anatomical location of the reaction (right ear, abdominal pain, etc). AOPTUs will review reaction data for trends as appropriate, but no less than once per quarter, and include this information in instructor training meetings monthly and annual reports as required. Units will not maintain any health or privacy act information on reactions, only information useful in identifying and documenting trends. All confirmed DCS cases must be reported to the local Wing Safety Office. (T-2)

Table 3.2. Chamber Reactor Grading Scale.

Grade	Description
1	Requires no level-off or change in flight profile. Treatment is limited to verbal inquiry or instruction only. An example of a grade 1 reaction would be instructing someone to valsalva on descent if they complain of fullness in their ear and valsalva results in alleviation of the problem.
2	Interrupts flight profile or levels chamber. An example of a grade 2 reaction would be a level of the chamber to resolve an ear problem or an increase of up to 2,000 feet (also known as a bounce) of the chamber to relieve ear pain.
3	Requires removal from the chamber and/or placed on 100% oxygen for observation without hospitalization. DCS symptoms are classified as at least a grade 3 reaction. Includes most reactions requiring flight surgeon consult. An example of grade 3 would be removal of a student from the chamber due to gas pains at altitude or administering surface level oxygen for suspected DCS.
4	Requires admission to the hospital or treatment in the hyperbaric chamber. All Grade 4 reactions require flight surgeon consult and must be reported to the local Wing Safety Office.

3.3.1.6. Altitude Chamber Post-flight Briefing. At minimum, all students will be briefed on the following topics following altitude chamber training (T-2)

3.3.1.6.1. Students will not participate in physical exercise, strenuous activity or extended duty for a period of 12 hours.

3.3.1.6.2. Students may fly as crewmembers or passengers after a chamber flight to 25,000 feet or below but should remain below a cabin altitude of 15,000 feet.

3.3.1.6.3. Students should perform periodic valsalva maneuvers throughout the day/evening to prevent delayed ear blocks.

3.3.1.6.4. Students should avoid alcohol consumption for 12 hours after a hypobaric exposure. Alcohol can mask DCS symptoms, and dehydration can increase DCS risk.

3.3.1.6.5. Students should monitor their fatigue level and avoid driving great distances without proper rest after a hypobaric exposure.

3.3.1.6.6. Provide students contact information and procedures to report suspected DCS while in the local area, outside the local area, and after hours.

3.3.2. **ROBD.** Operating instructions for AP training are listed in **Attachment 3**.

3.3.2.1. The ROBD is a training system that provides hypoxia recognition and emergency procedures training using normobaric reduced oxygen gas mixtures. ROBD training requires the student to wear their primary oxygen equipment in order to deliver the reduced oxygen gas mixture to the trainee and is often referred to as 'Mask-On' hypoxia training. It is designed to be used in conjunction with aircraft flight simulators or Hypoxia Familiarization Trainers (HFT-C or HFT-M) so that the MDS-specific oxygen systems emergency procedures are concurrent to that of the aircraft. ROBD training will be accomplished using an approved training plan. Trainees will receive ROBD pre-brief and post-briefings prior to and following the training system event. (T-2)

3.3.2.2. The ROBD may be used in transition physiological training when oxygen system emergency procedural differences training is required as part of the FTU syllabus. If used, every attempt should be made to use the ROBD in conjunction with the aircraft flight simulation/training system. When the flight simulator is not available, use of an appropriately configured HFT is authorized. Part task trainers or flight task simulations may be used if an HFT is not appropriate for the crew member's flight duties and flight simulators cannot be used; refer to the approved training plan. MAJCOM AP training PMs will develop and maintain a list of MDS/crew position/approved alternative training simulations reviewed by AETC/A3FM and approved by the MAJCOM/A3. Updated copies of approved device listings must be maintained in the MAJCOM supplement to this publication or in an MFR documenting approved devices maintained in the AP Read File, Tab 3 (see **para 6.6**).

3.3.2.3. The ROBD should be used for all refresher aircrew whose aircraft oxygen systems and emergency procedures are not adequately represented in the altitude chamber. Examples include: CV-22, B-2, B-1, F-22A, and the F-35.

3.3.2.4. For all other aircrew, a ROBD is an approved replacement for the altitude chamber during refresher training as long as the appropriate oxygen system configuration is available and the training scenarios are appropriate for their MDS. Trainees will receive ROBD flight pre-brief and post-briefings prior to and following the training system event. (T-2)

3.3.2.5. ROBD Pre-flight Briefing. At minimum, all trainees will be briefed on the following topics before completing ROBD training.(T-2)

3.3.2.5.1. Provide students with an ROBD orientation.

3.3.2.5.2. Describe the following training objectives:

3.3.2.5.2.1. Experience hypoxia while in a simulated flight/mission environment.

3.3.2.5.2.2. Perform the appropriate hypoxia emergency procedures without assistance.

3.3.2.5.2.3. Demonstrate correct positive pressure breathing technique during emergency oxygen activation, if supplemental pressure is used.

3.3.2.5.2.4. Demonstrate proper pre-flight, in-flight, emergency, and post flight equipment configuration checks.

3.3.2.5.2.5. Recognize and correct night vision deficiencies resulting from decreased oxygen.

3.3.2.5.2.6. Recognize the negative effect of hypoxia on effectively completing mission-related duties.

3.3.2.5.3. Review the ROBD profile and simulator, HFT or part task trainer scenario as appropriate.

3.3.2.6. ROBD Post-flight Briefing. At minimum, all students will be briefed on the following topics following ROBD training. (T-2)

3.3.2.6.1. Advise students to contact a flight surgeon or emergency treatment facility in the event unusual symptoms occur after the completion of ROBD training.

3.3.2.6.2. Advise students that there are no aircrew, jump, or passenger flight restrictions placed on personnel following ROBD training.

3.3.2.6.3. Students should monitor their fatigue level and avoid driving great distances without proper rest after ROBD training.

3.3.3. **Hypoxia Familiarization Trainer (HFT).** The HFT provides a flight task simulation for use in conjunction with an ROBD during which the aircrew can undergo hypoxia recognition and oxygen system emergency procedures training. Two configurations are available, the HFT-C or cockpit trainer and the HFT-M for mission crew. Training scenarios must enable the aircrew to practice use of the primary and any emergency or alternate oxygen systems. This can include the 'Quick-Don' mask, the MA-1 portable oxygen assembly, the emergency oxygen system associated with fighter aircraft and passenger oxygen kits. Operating instructions for aircrew training are listed in **Attachment 4**.

3.3.4. **Barany Chair.** The Barany Chair is used as introductory spatial disorientation demonstrator and for rotational training as part of the airsickness management program. Operating instructions for aircrew training are listed in **Attachment 5**.

3.3.5. **Unaided Night Vision Trainer.** The unaided night vision trainer is used during initial physiological training to demonstrate unaided night vision limitations. It is also used to provide visual acuity demonstration to Track J refresher students during ROBD training. Operating instructions for AP training are listed in **Attachment 6**.

3.3.6. **Other Training Devices.** Some AP training devices are used solely within a specific MAJCOM. Guidance for these devices will be provided via MAJCOM supplement to this publication. Configuration control will be maintained by AETC/A3FM even for devices used by only one MAJCOM. If devices are purchased for use by other MAJCOMs, then device guidance will be issued via a change to this publication.

Chapter 4

OTHER AIRCREW TRAINING SUPPORTED BY AOP PERSONNEL

4.1. General. The purpose of AP training is to provide aircrew the knowledge, skills and abilities to optimize performance in physiologically and cognitively challenging aerospace operations. AOP personnel maintain a unique skill set that can be beneficial to many programs. This chapter will detail some widely supported aircrew training programs and quantify AOP personnel support to those programs. This chapter is not intended to be an all inclusive list of AOP capabilities, nor is it intended as an exclusive list of AP training activities. Rather, this chapter is intended to provide standardization among AOP personnel regarding their support of requirements driven by other instructions. The originating AFIs and their MAJCOM supplements describe programs independent of AP training as well as critical program execution details. These AFIs will be referenced fully before AOP personnel support these other training programs as they supersede any clarifying guidance provided in this instruction.

4.2. Night Vision Goggle (NVG) Training. Per AFI 11-202 vol. 1, NVG training will be conducted by certified instructors. AOP personnel may support initial and refresher training as allowed by MAJCOM instruction. AOP personnel must meet any qualification requirements established by AFI 11-202 and 11-2-MDS series guidance.

4.3. Cockpit/Crew Resource Management (CRM). AOP personnel will have familiarity with CRM concepts and review CRM courseware at their wing for redundancies with AP training materials IAW AFI 11-290, *Cockpit/Crew Resource Management Training Program*. Per MAJCOM supplement to AFI 11-290, AOP personnel may complete CRM Facilitator training and serve as CRM Instructors/Facilitators.

4.4. Anti-G Strain Maneuver (AGSM) Reviews. AOP officers will conduct HUD video reviews or provide AGSM academic refresher required for fighter aircrew as directed by the specific 11-2-MDS series publications. Increased security clearance requirements may be required and should be facilitated per **para 1.4.6.2.3** of this instruction.

4.5. Instrument Refresher Course (IRC). AOP officers should provide spatial disorientation and attention management threats to situational awareness briefings relevant to wing operations during required IRC training IAW AFMAN 11-210, *Instrument Refresher Program*.

4.6. Squadron and Wing Safety Briefings. AOP personnel should provide briefings on performance threats or other AP training topics to support quarterly flight safety and other recurrent safety meetings IAW AFI 91-202, *The Mishap Prevention Program*. AP refresher curriculum may provide the foundation for these briefings but will not be used as briefing content.

4.7. Undergraduate Flying Training (UFT) Egress Training. AOP personnel will teach initial egress training to non-rated personnel IAW AETC UFT syllabi.

Chapter 5

DEVICE MANAGEMENT

5.1. General. AETC/A2/3/10 serves as Lead Command for all AP training program devices. AETC/A3FM coordinates with the AP Training Devices SPO to ensure configuration management for all AP training devices per AFPD 10-9. AOPTU personnel are responsible for local management of AP training devices and will ensure all technical manuals/orders, associated checklists, and procedures are properly followed for storage, operation and maintenance. AETC/A3FM will develop a strategic plan for training devices. AOPTUs requesting new devices in addition to the strategic plan may request them via AF Form 1067 approved by the MAJCOM AP Program Manager. Requests will document maintenance and consumables funding, manning support to the device, and if requestor is asking AETC/A3FM to provide contracting liaison.(T-2)

5.2. Device Status Reporting. Per AFI 36-2251, *Management of Air Force Training Systems*, AETC/A3FM is responsible for managing training device utilization. AOPTUs, to include AOPT teams with ROBD capability, will report local device utilization and maintenance information for the preceding month to AETC/A3FM no later than the 10th day of each month. Submit reports after review, if requested, by the respective MDG, OG, MAJCOM/A3, and MAJCOM/SG AP POCs. AETC/A3FM will compile and provide usage data annually to HQ USAF/A3OI and the SPO IAW para 6.3 of this instruction. Use an AF Form 4026 to report monthly and annual use of altitude chambers, SD trainers, Barany chairs, ROBD/HFT, and SLT/LDTs. AOPTUs may submit one completed AF Form 4026 to report all devices they operate. Use AFTO Form 244 to report altitude chamber and subsystem maintenance. Use AFTO Form 95 to maintain historical record of all device maintenance and site visits. Use the AFTO Form 334 to document maintenance actions on appropriate aircrew flight equipment. Complete these forms using the guidance in **Attachment 7**. Submit completed forms to AETC/A3FM. Device forms remain with the device in the event of relocation or are turned in when a device is removed from service.(T-2)

5.2.1. Units providing AP training will notify AETC/A3FM and their respective wing and MAJCOM SG and A3 AP POCs when AP training devices are non-operational due to maintenance or otherwise not an available training option for wing trainees within 24 hours of non-operational status. (T-3)

5.3. Device Maintenance. Maintenance not detailed within the appropriate technical manuals will not be accomplished unless authorized by the SPO via AETC/A3FM. NOTE: All personnel will comply with technical orders and manuals in accomplishing maintenance. (T-1)

5.3.1. Altitude chamber discrepancies are to be handled by AP personnel to the maximum extent possible using proper Technical Orders (TOs) and procedures. (T-2)

5.3.1.1. If a problem is encountered that is not addressed by a TO or is beyond the scope of local expertise, contact AETC/A3FM for information on contacting altitude chamber contract maintenance or obtaining SPO direction on maintenance of other AP devices. (T-2)

5.3.1.2. Contractors may request photographs or additional information on local issue to provide help desk support. This information should be provided as quickly as possible to

ensure rapid help desk support. Chamber units are not expected to furnish computer support to contractors during site visits but are requested to support base access on behalf of the contract team. Repair parts will be purchased by the chamber unit as available via stock list. If there are no stock-listed parts or quantity available is zero, then units will notify the contractor who will provide repair parts. Contract repair team's response time will be based on parts delivery. (T-2)

5.3.1.3. If the contractor is required to accomplish maintenance procedures, the team will not depart the site until a government acceptance check is complete. The government acceptance check is required to verify that the chamber is fully operational after all corrective actions are complete. As a minimum, use the daily inspection checklist provided by the SPO to verify chamber functionality. Additional functional checks may be accomplished at the user's discretion. Direct any questions on altitude chambers' contract maintenance to AETC/A3FM. (T-2)

5.3.2. ROBD user/unit-level periodic and emergency maintenance will be limited to fan filter cleaning and oxygen sensor replacement. These procedures will be performed strictly IAW ROBD technical manuals and associated checklists. All other maintenance requirements will be the responsibility of AETC/A3FM and/or appropriate sustainment organization to ensure contractor support/repair. (T-2)

5.4. Device Transfer and Configuration Control. Maintain device configurations according AETC/A3FM guidance. Devices should be transferred upon coordination with AETC/A3FM IAW AFI 36-2251 *Management of Air Force Training Systems*. (T-1)

5.5. Training Device Configuration Change Requests. Complete an AF Form 1067 to request configuration changes to any AP training device and submit to AETC/A3FM, who will coordinate and forward to the SPO. (T-1)

5.6. The Air Force will provide aircrew AP training support to US Navy, US Coast Guard, and US Army organizations according to existing support agreements. Military installations and DoD activities may directly communicate with the AOPTUs to schedule AP training on a space-available basis. USAF AP training will take priority. (T-2)

Chapter 6

TRAINING ADMINISTRATION AND REPORTS

6.1. Documentation of AP Training

6.1.1. Upon completion of training, AOP personnel will certify and document the training via the AF Form 1274, using the appropriate event description and formal course ID and provide to the trainee. The trainee will present the AF Form 1274 to their local ARMS office for update to the database, which will be maintained as physiological training status currency as well as history in the formal training section. The original shall be kept electronically by the AOPTUs for 7 years to support requests for training verification. An AOP Officer must sign any AF Form 1274s documenting completed AP training. See **Table 6.1** for Formal Course ID codes for AP training. (T-2)

Table 6.1. AP Training Task ID codes.

Formal Course ID	Training Course
S-O-B/A-APH-I	Initial Physiological Hypoxia Training
AP RPA-I	Initial RPA AP Training (no hypoxia exposure)
AP RPA-R	Refresher RPA AP Training (no hypoxia exposure)
S-O-B/A-APH-T	Transition Physiological Hypoxia Training
S-O-B/A-APH-R	Refresher Physiological Hypoxia Training – all Tracks
S-O-B/A-APC-P	Initial Centrifuge (Primary Acceleration Training) *Note 1*
S-O-B/A-APC-A	Qualification Centrifuge (Advanced Acceleration Training) *Note 1*
S-O-B/A-APC-R	Refresher Centrifuge (Refresher Acceleration Training) *Note 1*
S-O-B/A-APC-C	Commander Directed Acceleration Training *Note 1*
S-O-B/A-APC-O	Other Centrifuge (Foreign exchange, inter-service, non-pipeline) *Note 1*
Note 1: Centrifuge training is governed by AFI 11-404, *Centrifuge Training for Aircrew*. The AF Form 702 has been eliminated; guidance on documenting centrifuge training is included to ensure clarity.	

6.1.2. For foreign personnel meeting requirements in **para. 2.4.2** of this instruction, AOP personnel will document the training currency and expiration date via AF Form 1274. Use ITO information to establish need for training and to complete AP training documentation. A copy may be provided to AFSAT or the local IMSO upon request. (T-2)

6.2. Documentation of AOP Personnel Qualifications.

6.2.1. Instructor folders must be maintained on all AOP personnel and include as a minimum: (T-2)

6.2.1.1. AF Form 1256, *Certificate of Training*, documenting completion of Air Force Aerospace Physiology Officer Course or the Aerospace Physiology Apprentice Course. AOP personnel giving formal classroom presentations must be graduates of an Air Force academic instructor course.

6.2.1.2. An instructor evaluation stating "instructor met all training objectives and is fully qualified" is required for each lesson of each course taught by the individual. To be considered a valid evaluation, evaluator comments on instructor's performance are required. All instructors must be evaluated annually by the flight commander or designated representative, who must be a fully qualified instructor in that instructional block. All new instructors must complete instructor training and be evaluated on the instructional block prior to being assigned regular instructor duty teaching that block. Annual evaluations may be conducted on any single AP instructional block. Instructors assigned to AOPTs and other geographically separated instructors where no other AOP personnel are available to conduct the annual evaluation may be evaluated by their wing's standardization and evaluation section using the required forms, instructional guidance, and direction from the MAJCOM AP Program Manager.

6.2.1.3. AF Form 1042, *Medical Recommendation for Flying or Special Operational Duty*. All personnel must meet the flying physical requirements of AFI 48-123, *Medical Examinations and Standards*. Individuals placed in a "duty not involving flying (DNIF)" status will be evaluated by the local flight surgeon to determine their fitness to perform outside chamber duties.

6.2.1.4. Hazardous Duty Orders or Commander-signed authorization for altitude chamber duty. Per AFMAN 65-112 Volume 2, a commander on G series orders with command responsibility must annually validate a hazardous duty pay list provided by Finance and ensure monthly requirements are met.

6.2.1.5. DD Form 114, *Military Pay Order*. Hazardous duty pay is authorized for personnel assigned to inside observer duty in a hypobaric chamber. Members on competent orders who do not participate in a hypobaric flight during a month must be reported to their appropriate finance office for collect-pay action for that month. Completion of chamber flights or equipment checks strictly to obtain monthly hazardous duty pay is not authorized. To start hazardous duty pay, provide the local finance office a copy of aeronautical orders assigning the individual to inside observer duty, a signed letter from the local commander indicating the member participates in chamber exposures, and a signed DD Form 114 with certifying officer's signature for the effective date. Separate Hazardous Duty orders are not required.

6.2.1.6. Instructor Flight Record.

6.2.1.7. Copies of current Basic Life Support, Self-Aid Buddy Care, and AED Operations training certificates. Higher medical certifications, if completed, may be included.

6.2.1.8. Documentation of physiological training. All aerospace and operational physiologists and aerospace and operational physiology technicians will maintain refresher AP training currency as described in this instruction.

6.3. Reports. Reports of physiological training are necessary to ensure adequate training staff and training system support is provided for units to meet the requirements in this instruction.

6.3.1. MAJCOM/A3-designated AP training PM will generate an annual physiological training report from the applicable aircrew training database and send to AETC/A3FM by no later than January 10th for the preceding year.

6.3.2. AETC/A3FM will collate all MAJCOM physiological training reports into a single AF-wide report for AF/A3O-AI to be submitted no later than January 31st for the preceding year's training.

6.3.3. **DELETED**

6.4. Reactor Training Plan and Trend Documentation. Units must train all personnel on potential reactions resulting from AP training. Units will develop a reactor training plan, ensure annual approval from senior flight surgeon or SGP, and exercise reactor response at least twice per year. Joint exercises with emergency responders such as emergency medical response or fire department must occur annually at minimum and can be scheduled concurrently with wing/medical group (MDG) exercises or inspections. Each of the categories below must be exercised at least once per year. These exercises should be conducted where AP training is located, to include simulator facilities. The senior AOP staff member will ensure all training events are documented and routed through appropriate agencies to ensure the opportunity for exercise feedback from all responders. AOP personnel must review any missed exercises or reactor training and documentation of review or make-up training will be maintained in the unit's file plan. (T-2)

6.4.1. Unconscious/Unresponsive Reactor. Activate the base emergency response system. All appropriate agencies, including flight surgeon, must respond. (T-3)

6.4.2. Mechanical/Physical Emergency. This may be fire, electrical or equipment failure, or weather. Fire exercises must include Fire Department response. (T-3)

6.4.3. Hyperventilation, Anxiety/Claustrophobia. These actions should be exercised to include removal of student from the training system. (T-3)

6.5. I nstructor Meeting. AOPTUs will hold Instructor meetings regularly but no less than semi-annually. All AP training instructors must attend; minutes will be maintained in the AP Read File for five years. Required discussion items are High-Miss Test Questions, Local Issues/Trends, CCR submission and tracking, Standards and Evaluation review, and USAF Weapon Systems -Missions, Systems, and Modifications. (T-3)

6.6. AP Read File. All units that provide AP training will establish and maintain a library consisting of a current read file and publications. The library will contain items listed in **Table 6.2** in either hardcopy or electronic format. (T-2)

6.6.1. Required Tabs. Tab 1 contains current AP read file notifications published by AETC as Lead Command for AP Training Devices or by AETC/A3FM on behalf of the Chief, Aerospace and Operational Physiology Branch or Program Management Office (SPO). Tab 2 and 3 contain publications that apply to AP training programs.

Table 6.2. AP Read File Required Items.

Tab	Title
Tab 1	Current Read File
Tab 2	Publications: AP AFIs, MAJCOM supplements
Tab 3	Publications: Local Instructions, Meeting/Training Minutes, Other Local Items
Tab 4	Flight Read File Items: Instructor Meeting Minutes

6.6.2. AP Read File notifications may be issued to alert AOP personnel to policy changes for TOs or AFIs that affect AP training device use or training program implementation. In many cases, notifications may be used to provide clarification to program management guidance from this or other AFIs. Actual publication changes must still be accomplished IAW procedural guidance, to include AFI 33-360, *Publications and Forms Management*.

6.6.3. AP Publications at minimum will include: AFI 11-403, *Aerospace Physiological Training Program*; AFI 11-404, *Centrifuge Training for High-G Aircrew*, and AFI 11-202 vol. 1, *Aircrew Training*. AOP personnel are encouraged to be familiar with all three volumes of AFI 11-202 and the 11-2MDS series publications for any MDS or aircraft they support. MAJCOM supplements to these instructions will also be included at Tab 2. At minimum, any local instructions addressing AP training or decompression sickness management and minutes from quarterly reactor training or instructor meeting minutes will comprise Tab 3. The flight commander may include additional local instructions regarding local emergency management, flight or ground safety, administrative/budgetary, wing/medical/ops group guidance or other items relevant to the unit‘s training mission. (T-3)

6.6.4. All AOP personnel must read and be current in AP read file notification as well as AFI/MAJCOM/local guidance review prior to providing training using any AP training device. Flight commanders are responsible for ensuring members are in compliance prior to providing AP training. (T-2)

TOD D. WOLTERS, Lt Gen, USAF
DCS, Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 11-4, *Aviation Service,* 1 Sep 2004

AFI 11-202 Volume 1, *Aircrew Training,* 22 Nov 2010

AFPD 10-9, *Lead Command Designation and Responsibilities for Weapons Systems,* 8 Mar 2007

AFI 36-2251, *Management of Air Force Training Systems,* 5 Jun 09

AFI 41-117, *Medical Service Officer Education,* 19 Oct 11

AFI 91-204, *Safety Investigations and Reports,* 24 Sep 08

AFI 11-301, *Aircrew Flight Equipment (AFE) Program,* 25 Feb 09

AFI 11-202 Volume 3, *General Flight Rules,* 22 Oct 10

AFI 11-401, *Aviation Management,* 10 Dec 10

AFI 11-404, *Centrifuge Training for High-G Aircrew,* 28 Oct 05

AFI 11-301 Volume 4, *Aircrew Laser Eye Protection,* 25 Feb 09

ACCI 11-459, *High-Altitude Reconnaissance Mission Support Program,* 26 Aug 04

AFI 11-290, *Cockpit/Crew Resource Management Training Program,* 11 Apr 01

AFMAN 11-210, *Instrument Refresher Program,* 3 Feb 05

AFI 91-202, *The Mishap Prevention Program,* 5 Aug 11

AFI 48-123, *Medical Examinations and Standards,* 24 Sep 09

AFI 33-360, *Publications and Forms Management,* 18 May 06

Prescribed Forms

AF Form 1274, *Physiological Training*

AF Form 712*, Instructor's Flight/Dive Record*

Adopted Forms

AF Form 1042, *Medical Recommendation for Flying or Special Operational Duty*

DA (Army) Form 4186, *Medical Recommendation for Flying Duty*

Naval Medical Form 6410/2, *Clearance Notice (Aeromedical)*

AF Form 1256, *Certificate of Training*

DD Form 114, *Military Pay Order*

AF Form 1067, *Modification Proposal*

AF Form 847, *Recommendation for Change of Publication*

AF Form 1522, *ARMS Additional Training Accomplishment Report*

AF Form 4026, *Aircrew Training Devices Utilization*

AFTO Form 244, *Industrial/Support Equipment Record*

AFTO Form 334, *Helmet and Oxygen Mask/Connector Inspection Data*

AFTO Form 95, *Significant Historical Data*

AETC Form 620, *Academic Instructor Monitoring Checklist*

AETC Form 281, *Instructor Evaluation Checklist*

Abbreviations and Acronyms

AP—Aerospace Physiology

APO—Aerospace Physiology Officer

AETC—Air Education and Training Command

AFI—Air Force Instruction

AFMS—Air Force Medical Service

AFPD—Air Force Policy Directive

AFRL—Air Force Research Laboratory

AFSAT—Air Force Security Assistance Training

AGSM—Anti-G Straining Maneuver

ANG—Air National Guard

AOP—Aerospace and Operational Physiology

AOPTU—Aerospace and Operational Physiology Training Unit

ARC—Air Reserve Component

ARMS—Aviation Resource Management System

ATP—Aircrew Training Program

CC—Commander

CFETP—Career Field Education and Training Plan

CONOPS—Concept of Operations

CRM—Cockpit/Crew Resource Management

DCS—Decompression Sickness

DNIF—Duty Not Involving Flying

DoD—Department of Defense

DV—Distinguished Visitor

ETCA—Education and Training Course Announcement

EXEC—Executive Refresher Course

FTU—Formal Training Unit

FYDP—Future Years Defense Program

GFR—Government Flight Representative

HELO—Helicopter

HFT—Hypoxia Familiarization Trainer

HAP—High Altitude Parachutist

HQ—Headquarters

IFF—Introduction to Fighter Fundamentals

IRC—Instrument Refresher Course

MAJCOM—Major Command

MDG—Medical Group

MDS—Mission Design Series

NVG—Night Vision Goggles

OG—Operations Group

OPR—Office of Primary Responsibility

PCS—Permanent Change of Station

PGL—Program Guidance Letter

PRICE check—Pressure, Regulator, Indicator, Connections, Emergency Check

QAE—Quality Assurance Evaluator

ROBD—Reduced Oxygen Breathing Device

ROTC—Reserve Officer Training Corps

RPA—Remotely Piloted Aircraft

RTRB—Realistic Training Review Board

SA—Situational Awareness

SD—Spatial Disorientation

SPO—System Program Office

TARF—Trainer, Attack, Reconnaissance, Fighter

TTB—Tanker, Transport, Bomber

TDY—Temporary Duty

TO—Technical Order

UFT—Undergraduate Flying Training

USA—United States Army

USAF—United States Air Force

USAFA—United States Air Force Academy

USN—United States Navy

WIC—Weapons Instructor Course

WG—Wing

Attachment 2

HYPOBARIC CHAMBER OPERATING INSTRUCTIONS

A2.1. General.

A2.1.1. **Overview and Description.** The altitude (hypobaric) chamber uses a vacuum pump based system to replicate the effects of barometric pressure change on the human body. The maximum number of students on a chamber flight is the maximum number designed to be held by the main chamber for initial or refresher profiles and the lock compartment for rapid decompressions.

A2.1.2. **Objectives**. Except HAP Initial students, initial trainees complete initial & rapid decompression flights. HAP Initial students using altitude chamber to provide hypoxia training must complete the initial flight; the rapid decompression flight is optional for HAP Initial course. Refresher students complete only the refresher chamber flight. To successfully complete the physiological training requirement, students must complete recovery procedures without Inside Observer's assistance to physical switch activation. Additional objectives relevant to each chamber flight type are listed in **A2.2**-**A2.4**. (T-2)

A2.1.3. **Personnel Requirements and Qualifications.** AOP personnel who have completed CFETP requirements and have been evaluated in their ability to complete the duties of the position and aid chamber reactors and emergencies appropriate for their designated chamber position are considered qualified to serve as chamber crew on those positions. Document all training via CFETP and final qualifying evaluation on the instructor evaluation form. (T-3)

A2.1.3.1. The minimum required crew positions are lecturer, chamber operator, crew chief, recorder, lock operator, APO, and the appropriate number of inside observers (IO) for number of trainees. Initial classes require one IO for one student, two IOs for 2-10 students, and three IOs for 11 or more students. Rapid decompressions require one IO per flight. Refresher classes require one IO for five or fewer students. Two IOs are required for chamber flights with six or more students. (T-2)

A2.1.3.1.1. The local on-call flight surgeon will be notified of altitude chamber start and completion. During all scheduled training events, a designated flight surgeon must continuously be able to be able to respond by telephone and physically to the training facility in the timeliest manner possible in the event of a medical incident and/or emergency response. (T-2)

A2.1.3.1.2. Waivers to provide training using smaller crews (i.e. dual tasking a member to two crew positions) must be requested from AETC/A3FM. Recorder position duties have been integrated into the APO duties. Lock operator position is automatically waived for a chamber flight with a single student. Waiver authority and requests are discussed in para 1.3. (T-2)

A2.1.3.2. Maximum chamber exposure limits for Inside Observers are four flights in a 7-day period to 25,000 feet or two rapid decompressions in a 7-day period. These flights may be taken in combination. At least 23 hours will be allowed between exposures to rapid decompressions and at least 12 hours between exposures to 25,000 feet. The chamber exposure levels listed in this chapter are considered the maximum exposures permitted. (T-2)

A2.1.4. **Responsibilities**. AOP personnel will provide a pre- and post-flight briefing to all students in addition to required physiological training. During the pre-flight briefing, the instructor describes the purpose and procedures of the flight and verifies that no trainees have medical complaints rendering them a flight risk during training. Post-flight briefings will describe restrictions for personnel who take part in chamber flights, such as no physical exercise, strenuous or extended duty for a period of 12 hours; personnel may fly as crew member or passenger after a chamber flight to 25,000 feet or below but should remain below a cabin altitude of 15,000 feet IAW AFI 11-202 vol. 3.; common post-flight issues such as ear blocks and fatigue; and procedures for reporting suspected DCS, to include emergency contact numbers. Specific requirements for each profile pre- and post-flight are listed in A2.2-A2.4. NOTE: Local AOP leadership is responsible for ensuring all chamber time should be used for training activities only; research or equipment check flights for pay are not authorized IAW para. 6.2.1.5 of this instruction.

A2.2. Initial Hypobaric Chamber Flight.

A2.2.1. **Initial Hypobaric Chamber Flight Goals.** Designed to acquaint initial trainees with the overall effects of barometric pressure change and permit them to practice the principles and techniques learned in the classroom in the low-pressure flight environment. Specific training objectives include trainee experience in:

A2.2.1.1. The mechanical effects of pressure change (ear, sinus and gas expansion).

A2.2.1.2. Positive pressure breathing resulting from the loss of cabin pressure in a low-pressure environment.

A2.2.1.3. Applying the techniques and principles learned in the classroom to an accidental loss of cabin pressure.

A2.2.1.4. Hypoxia recognition and treatment in self and others.

A2.2.1.5. Proper oxygen equipment discipline in a low-pressure environment.

A2.2.1.6. Use of the emergency oxygen system and portable oxygen equipment.

A2.2.1.7. Prevention, recognition, and treatment of hyperventilation during various flight conditions.

A2.2.1.8. Visual degradation resulting from decreased oxygen and night flying conditions.

A2.2.1.9. Instilling proper habit patterns, to include proper wear of aircrew flight equipment. ***NOTE:*** Instructors will ensure that students wear their aircrew flight equipment and flight clothing properly (to the greatest extent possible).

A2.2.1.10. Instilling and enhancing confidence in aircrew flight equipment. ***NOTE:*** Additional objectives may be added based on MAJCOM, mission, or aircraft type requirements, but training objectives may not be removed without an approved waiver.

A2.2.2. **Pre-flight Briefing**. Instructor will explain the purpose and procedures of the flight as well as the need to perform an ear and sinus check before performing the main flight to all trainees. The instructor must also explain why, in pressurized aircraft, the oxygen is regulated with the setting on "Normal" unless conditions of the flight dictate the use of 100% oxygen. Use chamber time for training activities only.

A2.2.3. **Simulated Flight in Low-Pressure Chamber Procedures.** Inside personnel or trainees will not exceed altitudes at or above FL250 for more than 30 minutes or above FL180 for more than 1 hour.

A2.2.3.1. During mask fitting, preflight check of oxygen equipment, and intercommunication check, have trainees don oxygen masks with regulator set at "100-percent oxygen."

A2.2.3.2. During ear and sinus check, ascend to 5,000 feet and descend to ground level at a rate not to exceed 5,000 feet per minute.

A2.2.3.3. Ensure that 30 minutes of denitrogenation have been completed before beginning ascent to peak altitude.

A2.2.3.4. Ascend to FL250 at 5,000 feet per minute, discuss decompression phenomena using training aids to demonstrate mechanisms. Demonstrate and practice using oxygen regulators. Practice pressure breathing by selecting emergency pressure.

A2.2.3.5. At FL250, pair off trainees and have them alternately experience symptoms of hypoxia within limits of useful consciousness. Resume oxygen and check all trainees.

A2.2.3.6. Descend to FL180 at 5,000 feet per minute, have trainees remove masks at FL220 and experience mild hypoxia.

A2.2.3.7. At FL180, use visual test cards to demonstrate effect of hypoxia on night visual acuity. Once demonstration is complete, resume oxygen and check all trainees.

A2.2.3.8. Descend to ground level at 2,500 feet per minute, demonstrate low pressure and high pressure emergency oxygen systems.

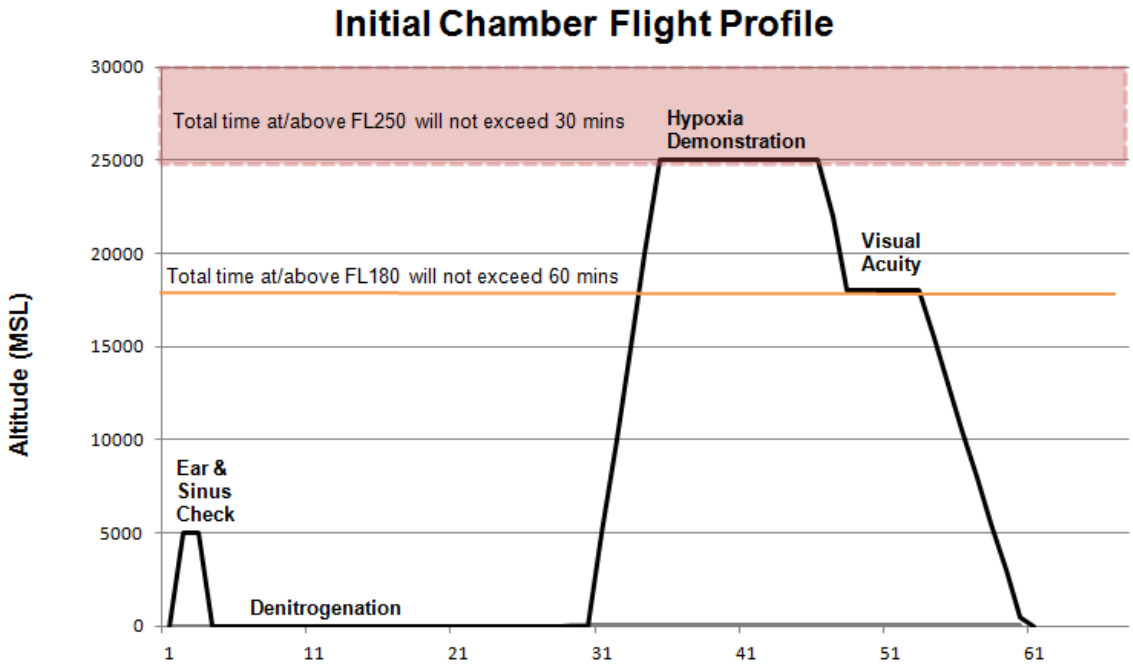
A2.2.3.9. Discuss the need for ventilating middle ears after flights using oxygen. Review problems of rapid decompression.

A2.2.3.10. At ground level, demonstrate the use/recharging of the portable oxygen bottle and potential hazards associated with its use and recharging to aircrew that fly with portable oxygen equipment.

A2.2.3.11. Review flight and quiz trainees.

A2.2.4. **Post-flight Briefing.** Review the chamber flight to emphasize learning outcomes. Give the trainees instructions to follow in case they experience a delayed reaction. Brief them on restrictions following chamber flights.

Figure A2.1. Initial Hypobaric Chamber Flight.



A2.3. Rapid Decompression Hypobaric Chamber Flight.

A2.3.1. **Rapid Decompression Hypobaric Chamber Flight Goals.** Designed to give Initial trainees practical experience in applying the techniques and principles learned in the classroom to an accidental loss of cabin pressure. Additional objectives include:

A2.3.1.1. Understanding pressurization schedules.

A2.3.1.2. Selecting the advantages and disadvantages of pressurization systems.

A2.3.1.3. Identifying factors that control the rate of decompression.

A2.3.1.4. Determining the physical indications and physiological effects of a rapid decompression.

A2.3.1.5. Enhancing trainees' confidence in their ability to effectively function in the event of aircraft decompression.

A2.3.1.6. Identify the oxygen equipment emergency procedures following a rapid decompression. ***NOTE:*** Additional objectives may be included based on MAJCOM requirements.

A2.3.2. **Pre-flight Briefing.** Trainees instructed on the purpose and the procedures of the flight. The chamber flight should not exceed 15 minutes. All chamber time should be used for training activities. The instructor explains why, in pressurized aircraft, the oxygen is regulated with the setting on “Normal” unless conditions of the flight dictate the use of 100-percent oxygen.

A2.3.3. **Simulated Flight in Low-Pressure Chamber Procedures:**

A2.3.3.1. During mask fitting, preflight check of oxygen equipment, and intercommunication check, trainees will don oxygen masks with regulator set at "100 percent oxygen."

A2.3.3.2. During the ear and sinus check, ascend to 5,000 feet and descend to ground level at a rate not to exceed 5,000 feet per minute. Ear and sinus check is normally completed as a large group in the main chamber and is only accomplished when the initial chamber flight does not immediately precede this flight for all trainees and observers. Students and inside observers exit chamber following ear and sinus check. Divide students into appropriate groups in preparation for the rapid decompression flights.

A2.3.3.3. Set the main chamber at the altitude determined to achieve a 4.5 psi rapid decompression for the field elevation while the inside observer seats the students in the lock compartment.

A2.3.3.4. Direct the students to preflight their oxygen equipment and complete a communication check: student's name and seat number. If possible, the students should wear the same type of mask they will use during aircraft flight and should wear the masks as they do during routine flight. Masks will be worn in the down position, unconnected, before the rapid decompression. Connecting the mask will be demonstrated as part of rapid decompression recovery.

A2.3.3.5. Ascend to 500 feet above field elevation or until a good door seal is achieved. Discuss indications of a rapid decompression and proper rapid decompression recovery procedures.

A2.3.3.6. Inside observer signals the lock operator to fire the rapid decompression.

A2.3.3.7. Lock observer monitors student recovery procedures and corrects if necessary, then directs lock operator to descend to ground level.

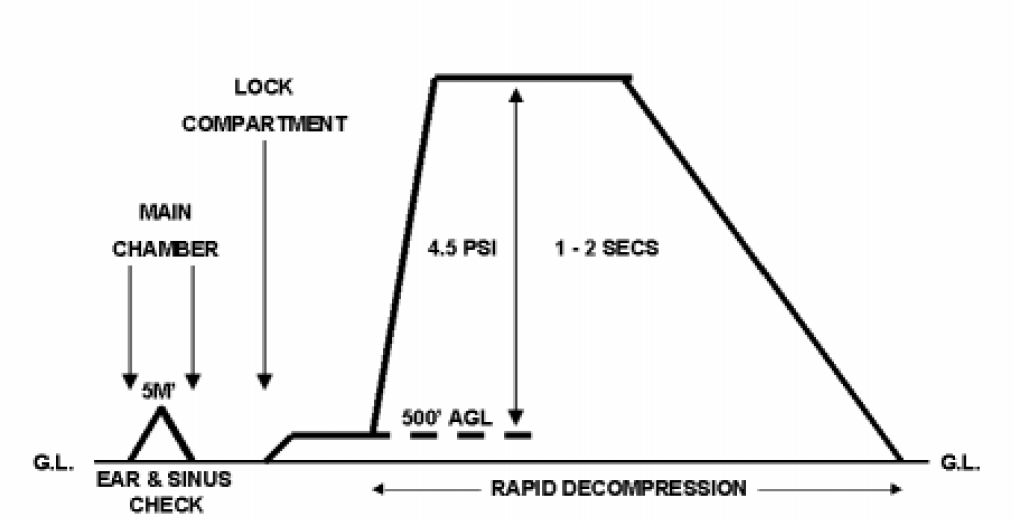
A2.3.3.8. Inside observer reviews procedures for preventing/treating ear and sinus blocks and reviews effects of decompression.

A2.3.3.9. At 10,000 feet, inside observer directs students to remove masks.

A2.3.3.10. Review flight with trainees.

A2.3.4. **Post-flight Briefing.** Review the chamber flight to emphasize learning outcomes. Give the trainees instructions to follow in case they experience any type of delayed reactions. Brief them on restrictions following chamber flights. Figure A2.2. Rapid Decompression Hypobaric Chamber Flight. The ear and sinus check may be eliminated if initial Chamber Flight is accomplished for all trainees immediately prior to this flight.

Figure A2.2. Rapid Decompression Hypobaric Chamber Flight.



A2.4. Refresher Hypobaric Chamber Flight.

A2.4.1. **Refresher Hypobaric Chamber Flight Goals.** Designed to reacquaint refresher trainees with the overall effects of barometric pressure change and permit them to practice the principles and techniques learned in the classroom in the low-pressure flight environment. Specific training objectives include trainee experience in:

A2.4.1.1. The mechanical effects of pressure change (ear, sinus and gas expansion problems).

A2.4.1.2. Positive pressure breathing resulting from the loss of cabin pressure in a low-pressure environment.

A2.4.1.3. Applying the techniques and principles learned in the classroom to an accidental loss of cabin pressure.

A2.4.1.4. Recognition of 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.

A2.4.1.5. Hypoxia recognition and treatment using appropriate emergency procedures.

A2.4.1.6. Proper oxygen equipment discipline in a low-pressure environment.

A2.4.1.7. In-flight checks of oxygen equipment in a low-pressure environment.

A2.4.1.8. Use of the emergency oxygen system and portable oxygen equipment.

A2.4.1.9. Instilling proper habit patterns, to include proper wear of aircrew flight equipment. ***NOTE:*** Instructors will ensure that students wear their aircrew flight equipment and flight clothing properly (to the greatest extent possible).

A2.4.1.10. Instilling and enhancing confidence in aircrew flight equipment. ***NOTE:*** Additional objectives may be added based on MAJCOM, mission, or aircraft type requirements, but training objectives may not be removed without an approved waiver.

A2.4.2. **Pre-flight Briefing**. Instructor will explain the purpose and procedures of the flight as well as the need to perform an ear and sinus check before performing the main flight to all trainees. The instructor must also explain why, in pressurized aircraft, the oxygen is regulated with the setting on "Normal" unless conditions of the flight dictate the use of 100 percent oxygen. Use chamber time for training activities only. Use 100 percent oxygen up to 8,000 feet where the masks are removed for the rapid ascent to FL250 and the hypoxia demonstration.

A2.4.3. **Simulated Flight in Low-Pressure Chamber Procedures.** Inside personnel or trainees will not exceed altitudes at or above FL250 for more than 30 minutes or above FL180 for more than 1 hour.

A2.4.3.1. During mask fitting, preflight check of oxygen equipment, and intercommunication check, trainees will don oxygen masks with regulator set at "100-percent oxygen."

A2.4.3.2. Ascent and descent rates are as follows: ear and sinus check at 2,500 feet per minute; ascent to 8,000 feet at 5,000 feet per minute; 8,000 feet to FL250 at maximum vacuum; descent from FL250 to FL180 at 5,000 feet per minute; descent from FL180 feet to ground level at 2,500 feet per minute.

A2.4.3.3. During ear and sinus check, ascend to 5,000 feet above ground level and return.

A2.4.3.4. Ensure that 30 minutes of denitrogenation have been completed before reaching 8,000 feet in preparation for the hypoxia demonstration. During pre-breathing period, have trainees experience pressure breathing by using the narrow panel regulator in the EMERGENCY and the TEST MASK positions or the A-14 oxygen regulators when available.

A2.4.3.5. During ascent to 8,000 feet and on to FL250, discuss decompression phenomena using training aids to demonstrate mechanisms. Demonstrate and practice using the oxygen regulators.

A2.4.3.6. At 8,000 feet, the track T trainees desiring to use a quick don oxygen mask system will make the transition to this system if available.

A2.4.3.7. After the oxygen systems have been switched and the communication with the trainees is rechecked, all trainees will drop their masks as the chamber is taken at maximum vacuum to FL250 feet. During ascent and subsequent time at FL250, trainees experience hypoxia within the limits of useful consciousness. Trainees resume breathing oxygen and are confirmed to be fully recovered before starting descent.

A2.4.3.8. During descent to FL180, have trainees remove masks at FL220 and experience mild hypoxia.

A2.4.3.9. At 18,000 feet, use visual aids to demonstrate effects of hypoxia on night visual acuity.

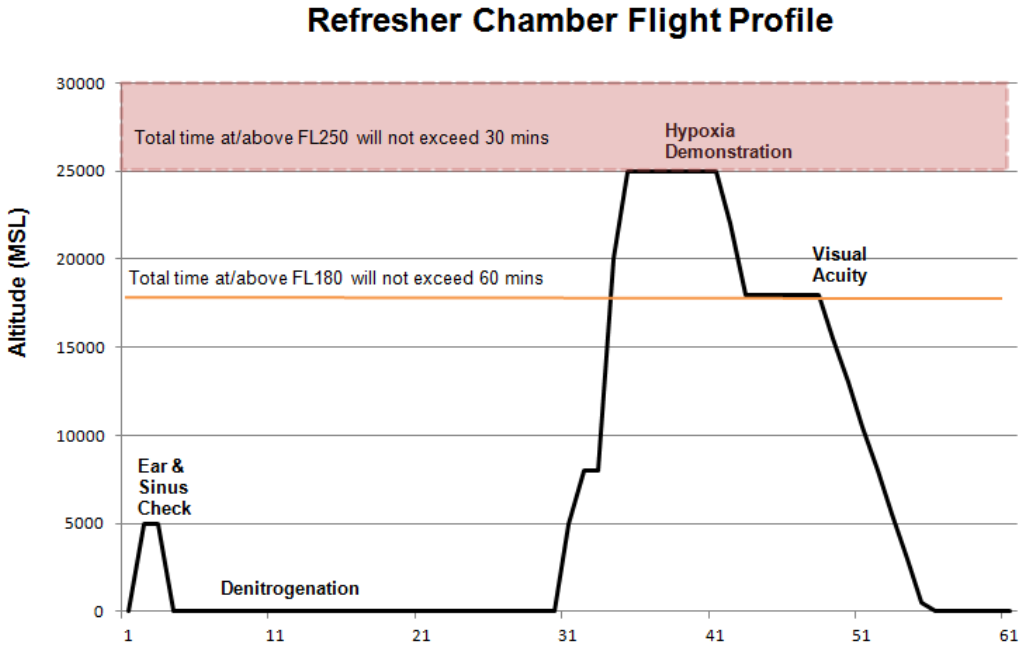
A2.4.3.10. Descend to 10,000 feet while breathing normal oxygen. After descent below 10,000 feet, oxygen masks may be disconnected and descent continued to ground level breathing air.

A2.4.3.11. Practice using emergency and/or portable oxygen equipment as appropriate during the chamber flight. If pressure breathing was not demonstrated earlier, use portable oxygen equipment to practice breathing techniques using higher breathing pressures and review walk-around cylinder recharging. Discuss the need for ventilating middle ears after flights using oxygen. Discuss problems of rapid decompression.

A2.4.3.12. Review flight and answer student questions.

A2.4.4. **Post-flight Briefing.** Same as initial flight (see paragraph **A2.1.6**).

Figure A2.3. Refresher Hypobaric Chamber Flight.



A2.5. Altitude Chamber Reactions and Emergency Procedures.

A2.5.1. **Altitude Chamber Reactions.**

A2.5.1.1. **Apprehension and Claustrophobia.** Feelings of apprehension and claustrophobia may extend from a student's unfamiliarity with altitude chamber flights. Professionalism and sensitivity by AOP personnel can help alleviate problems and limit/minimize hyperventilation reactions. The best approach is to work with the student prior to the chamber flight, allowing them to practice breathing with an oxygen mask while sitting in the chamber with the doors open. The student should not be rushed or crowded. If a student insists on leaving the chamber during the flight, the student should be transferred to the lock, removed from the chamber, and referred to the flight surgeon.

A2.5.1.2. **Hyperventilation.** Ensure reactor's regulator is gang-loaded and perform a PRICE check. IO monitors reactor's rate and depth of breathing. Once hypoxia has been ruled out, take their regulator out of the positive pressure setting. If the reactor cannot control rate and depth of breathing adequately, notify the APO and remove the reactor from the chamber. The APO will refer the student to the flight surgeon. If the reactor

becomes unconscious or unresponsive for more than 30 seconds, follow procedures listed in **para A2.5.3.1** of this instruction.

A2.5.1.3. **Suffocation**. When a reactor reports feelings of suffocation, perform a PRICE check. If a PRICE check doesn't reveal the problem, replace the mask and/or change the regulator. Student may drop the mask as needed, but pre-breathe must be restarted if broken.

A2.5.1.4. **Hypoxia.** Hypoxia (other than demonstration) may develop during the chamber flight for various reasons. Ensure reactor's regulator is gang-loaded and perform a PRICE check. IO monitors reactor's rate and depth of breathing. If the reactor becomes unconscious or unresponsive for more than 30 seconds, follow procedures **in para A2.5.3.1** of this instruction.

A2.5.1.5. **Ear block.** For pain on ascent, level off, descend and remove student. Crew Chief will notify the APO, who refers student to the flight surgeon. For pain on descent, level off. If the student is in pain, immediately bounce 2,000 feet and reassess. Ordinarily, an altitude bounce, valsalva, coughing against positive pressure (test mask setting on regulator) and/or nasal vasoconstrictive spray will be sufficient to equalize ears. The IO determines the need to alter flight profile (bounce again, slow descent rate) as needed to relieve symptoms and prevent reoccurrence with APO approval. The IO also may determine the need to use a Politzer bag, with APO approval.

A2.5.1.6. **Tooth pain.** Tooth pain normally occurs on ascent. Tooth pain can be determined by singling out a specific tooth that hurts. If more than one tooth hurts or pain occurs on descent, suspect sinus problem and treat as such. Level chamber immediately and remove reactor from chamber and refer to flight surgeon for possible dental referral.

A2.5.1.7. **Abdominal pain.** Mild gas discomfort during a chamber flight is normal. However, strong abdominal pain may occur if expanding gas pressure is not relieved at lower altitudes. When a reactor reports abdominal or GI pain, level off. Have the reactor change body position and massage the abdomen from upper right to lower left to assist in passing gas. If pain is extreme and can't be relieved, descend the chamber until the pain is relieved. The reactor should be escorted to the lock, brought to ground level, and referred to the flight surgeon. NOTE: In the event any of the above physiological symptoms can't be resolved, the APO will determine if the reactor should be removed from the chamber and referred to the flight surgeon.

A2.5.2. **Mechanical/Electrical Emergencies.**

A2.5.2.1. **Power Outage**. If electrical power is lost, the chamber and lock operators should ensure that vacuum and air valves are closed to maintain altitude. Further movement of the chamber should be directed by the APO. The crew chief will activate the battery powered lights and intercom system, and open all outside doors in the chamber room for additional light. The flight may be aborted or continued at the discretion of the APO.

A2.5.2.2. **Pump Failure.** If vacuum is lost because of pump failure, chamber and lock operators will ensure that vacuum and air valves are closed to maintain altitude. The crew chief will attempt to analyze and correct the problem. The crew chief will restart

the malfunctioned pump or start another pump (if available) and valve it to the proper chamber. The flight may be aborted or continued at the discretion of the APO.

A2.5.2.3. **Fire.**

A2.5.2.3.1. **Inside chamber (other than electrical fire).** IOs will combat the fire with the fire extinguisher located in the chamber and lock compartments. The chamber operator will begin an immediate descent to ground level under guidance of the APO. The crew chief will initiate the alarm to the base fire station and then stand by the chamber door armed with an extinguisher, ready to assist inside personnel when ground level is reached. Students will transfer from the chamber oxygen supply to portable walk around assemblies and the crew chief will turn off the oxygen supply to the chamber. After students have been evacuated from the chamber, the crew chief will turn off all power to the chamber.

A2.5.2.3.2. **Electrical fire inside chamber.** Water fire extinguishers should NOT be used to combat an electrical fire. The chamber operator should begin an immediate descent to ground level under the guidance of the APO. The crew chief should initiate the alarm to the base fire station and then stand by the chamber door ready to assist inside personnel when ground level is reached. Students will transfer from the chamber oxygen supply to portable walk around assemblies and the crew chief will turn off the oxygen supply to the chamber. After students have been evacuated from the chamber, the crew chief will turn off all power to the chamber.

A2.5.2.3.3. **Fire outside chamber.** If a fire occurs in the chamber room or building, the chamber operator should start an immediate descent to ground level under the guidance of the APO. The crew chief should initiate the alarm to the base fire station. Other crew members will assist in evacuating students from the chamber.

A2.5.2.4. **Loss of Oxygen.** If the oxygen supply to the chamber is lost, IOs should immediately transition to portable walk around oxygen assemblies and then assist students in connecting to their portable walk around oxygen assemblies. The APO should be notified immediately and the crew chief should activate the back-up oxygen manifold and assess the situation. If the oxygen supply can't be restored to the chamber within 2 minutes, the chamber operator will descend the chamber to 10,000 feet or below at a rate determined by the APO.

A2.5.2.5. **Physical disasters.** These should be covered by unit-specific operating instructions.

A2.5.3. **Altitude Chamber Emergencies.** Syncope (loss of consciousness or fainting), breathing cessation, loss of blood, extreme pain or decompression sickness constitute in-flight emergencies and must be treated seriously and with urgency. Report illnesses or injuries requiring medical care greater than first aid or lost duty days to local Safety office IAW appropriate 91 series AFIs.

A2.5.3.1. **Syncope.**

A2.5.3.1.1. Anytime a trainee becomes unconscious or unresponsive, the IO immediately gang-loads the trainee's regulator and ensures the trainee's mask is on.

A2.5.3.1.2. If the trainee doesn't regain consciousness within 30 seconds after corrective action, the IO declares a medical emergency. The crew chief immediately calls 911 and communicates "UNCONSCIOUS, UNRESPONSIVE INDIVIDUAL," and other necessary information, then contacts the APO. IOs place the reactor in a supine position on the floor and monitor respiration and pulse. Abort the training profile and initiate a rapid descent at 10-12,000 feet per minute. Implement basic resuscitation procedures as required. During descent, other AOP personnel (not on the flight) will make preparations to assist with transport/treatment of the reactor, as well as evacuation of other students.

A2.5.3.1.3. If the student regains consciousness during the descent, the chamber should be leveled and the APO will determine whether to continue to descend the entire chamber or to remove the reactor via the lock and continue the flight for the remaining trainees. If time at altitude is not excessive, the APO may determine to re-ascend and complete hypoxia demonstration training for the remainder of the students.

A2.5.3.1.4. The chamber lecturer continues to monitor other students and remind them to continually ventilate their ears and sinuses. IOs observe and assist other students for potential reactions.

A2.5.3.1.5. Record blood pressure, pulse, respiration, signs, symptoms and time upon entry into the recovery room and every 15 minutes thereafter, until the flight surgeon authorizes discontinuation. Record vitals on the "Reactor Data Record" form located in the recovery room.

A2.5.3.1.6. If the patient is hospitalized, or oxygen therapy for DCS is administered, notify respective Squadron Commander as appropriate and AETC/A3FM within 1 duty day of the incident, who will notify AFMSA/SG3PT and HQ USAF/A3O-AT per their requirements and complete appropriate Safety Investigation paperwork. The APO in charge of the flight is responsible for accuracy, completeness, and timely submission of the report.

A2.5.3.2. **Decompression sickness.**

A2.5.3.2.1. If this reaction occurs at altitude, place the reactor on 100% oxygen and ensure a good mask seal. Notify the APO and follow his/her directions. Monitor/record vital signs until the reactor is transported or a provider arrives and takes charge.

A2.5.3.2.2. In the event of a delayed reaction, place the reactor on 100% oxygen with a tight fitting mask and notify the APO for instructions. Monitor/record vital signs until the reactor is transported or a provider arrives and takes charge.

A2.5.3.2.3. APOs will direct the care and treatment of suspected acute and delayed DCS reactors until the flight surgeon arrives. Manage the reactor IAW local MDG DCS operating instructions.

A2.5.3.2.4. Students will be instructed that, if they suspect DCS after duty hours, they should follow the specific local procedures provided to them by AOP personnel (contact emergency room or command post for flight surgeon on call).

A2.5.3.2.5. Notify Squadron Commander as soon as appropriate. Notify AETC/A3FM within 1 duty day of the incident, who will in turn notify AFMSA/SG3PT and HQ USAF/A3O-AI per their requirements. Complete local equipment inspection checklist and provide to safety office as required. The APO in charge of the flight is responsible for accuracy, completeness, and timely submission of the report.

Attachment 3

REDUCED OXYGEN BREATHING DEVICE (ROBD) OPERATING INSTRUCTIONS

A3.1. General.

A3.1.1. **Overview.** The ROBD training system provides hypoxia recognition and emergency procedures training for flight conditions that result in the need for supplemental or emergency oxygen. The ROBD shall be used IAW approved training plans detailing devices used to provide simulation of the member's flight tasks. The preferred task simulation devices are a flight simulator or HFT to train aircraft-specific hypoxia emergency procedures. MDS Lead Commands will develop training plans for ROBD after obtaining using commands' coordination and AETC/A3FM approval of part task trainers or flight task simulation. AETC/A3FM will maintain the master list of approved training plans and devices. The ROBD is an approved training system alternative to the low-pressure chamber for aircrew and parachutist refresher training requirements. Following guidance for other AP training devices, ROBD will not be used for research, unless purchased and sustained by the Air Force Research Laboratory or the 711 HPW for research purposes.

A3.1.2. **Description.** The ROBD produces normobaric hypoxia by delivering a precise mixture of nitrogen and reduced oxygen from attached pressurized cylinders or from an oxygen/nitrogen extraction system. The reduced oxygen gas mixture is delivered to an aviator's oxygen mask to accurately simulate the equivalent oxygen concentration at altitudes from sea level to 34,000 feet. The instructor controls the altitude and concentration of oxygen in the gas mixture via the ROBD control interface by selecting the appropriate training profile. The training profile is an operator-programmed menu that consists of desired altitudes and simulated ascent rates. The instructor may start, change, or stop the training profile from the ROBD control interface. Following trainee-initiated hypoxia emergency procedures, the instructor initiates 100% oxygen with appropriate positive pressure from the control panel.

A3.2. Objectives and Demonstrations. IAW Chapter 3 and the appropriate syllabi, all training requirements must be fulfilled for refresher students. At locations where the ROBD is available, the refresher chamber flight should be replaced with this training system. ROBD training operations will be accomplished IAW this Instruction and referenced ROBD and HFT checklists.

A3.2.1. The following training objectives are required for ROBD hypoxia recognition and recovery training:

A3.2.1.1. Experience the symptoms of hypoxia while in a simulated flight/mission environment.

A3.2.1.2. Without assistance, perform the appropriate aircraft-specific hypoxia emergency procedures.

A3.2.1.3. Demonstrate the correct positive pressure breathing technique during emergency oxygen activation when appropriate based on aircraft system characteristics.

A3.2.1.4. Demonstrate proper pre-flight, in-flight, emergency and post-flight checks and configuration of oxygen equipment.

A3.2.1.5. Recognize and correct night vision deficiencies resulting from decreased oxygen.

A3.2.2. ROBD training profiles should be programmed for a 25,000 foot hypoxia demonstration and an 18,000 foot night vision demonstration. MAJCOM/A3 may deviate from these altitudes based on MDS-specific training requirements but must accomplish both demonstrations.

A3.2.3. All ROBD training will use approved aircrew flight equipment. Oxygen panel will be configured per the aircraft technical order. If required, a list of part-task trainers and other flight task simulations will be approved by the MDS Lead Command A3 and AETC/A3FM. Upon approval, this list will be maintained by the MAJCOM's AP Training PM and AETC/A3FM.

A3.3. Personnel Requirements and Qualifications.

A3.3.1. Minimum Personnel Requirements for ROBD: Only designated AOP personnel, AFSC 43A and 4M0X (7-level or above), may instruct and operate the ROBD for aircrew training. As a minimum, an AP Officer (APO) must be present for all ROBD training and may concurrently be an Instructor/Operator (I/O). If several ROBDs (two or more devices) are being used in the same location, each device will have a qualified and dedicated I/O.

A3.3.2. Qualifications: All personnel will be graduates of the ROBD Operator Course, ROBD2OQT, and have documented upgrade training tasks on the correct AETC-standardized 797 prior to operating the ROBD or supervising ROBD operations. AETC/A3FM will manage and conduct the ROBD Operator Course and coordinate course training requests. All personnel operating and/or supervising ROBD operations must have current basic life support and automated external defibrillator (AED) certifications and must be current in AP training IAW this instruction.

A3.4. Responsibilities: This section covers the duties and responsibilities of the ROBD APO and ROBD I/O.

A3.4.1. APO. The APO is responsible for all phases of ROBD training, student safety and shall be present during ROBD operations. The APO will review the pre-flight student screening and refer any students with a suspected condition that might adversely affect the student during training to the flight surgeon. The APO will ensure that the flight surgeon has been notified of training start and finish. The APO is the go/no-go decision authority for remedial ROBD training following any unsuccessful completion of the training objectives outlined in paragraph A3.2. If unsuccessful completion of training objectives is due to an adverse reaction, APO will consult with flight surgeon prior to resuming training. APO will develop an ROBD emergency action plan to cover procedures in the event of mechanical failures and adverse/unusual student reactions. In the event of an emergency or adverse/unusual reaction during ROBD training, the APO will ensure all appropriate emergency procedures are executed and that the injury/adverse reaction is documented and reported IAW AFI 91-204.

A3.4.2. I/O. The I/O is responsible for guiding and conducting student ROBD training. The I/O will contact the flight surgeon for notification of training session start and finish. The I/O ensures the correct ROBD configuration for training, operates the ROBD during the system self-test, selects and controls the training profiles, activates the ROBD emergency

oxygen for student recovery and directly supervises the student's training session and completion of training objectives. The I/O as the first responder to any unusual student reactions will execute appropriate emergency procedures and will assist the APO with reactor management. The I/O will report the student injury/adverse reaction as a ground event IAW AFI 91-204.

A3.5. ROBD Training and Operating Procedures.

A3.5.1. ROBD Flight Profiles. Aircraft flight simulator scenarios and HFT profiles used with the ROBD shall meet the training objectives outlined in paragraph A3.2 of this publication and shall be relevant to the wing flying mission and aircraft characteristics. Aircraft flight simulator and ROBD HFT scenarios and ROBD profiles must meet all training objectives in this instruction or appropriate syllabus. MDS Lead Command's AP Training Manager will establish basic mission profile, coordinate through using commands, and review owning OG/CC approved local scenarios. Upon approval, forward profile information to AETC/A3FM.

A3.5.2. Hypoxia Recognition and Recovery Training. ROBD training profile altitude shall not exceed 25,000 feet for longer than 10 minutes nor shall blood oxygen saturation drop below 65% (whichever comes first).

A3.5.3. Unaided Night Vision Hypoxia Demonstration. Night vision demonstration altitude shall not exceed 18,000 feet for longer than 10 minutes nor shall blood oxygen saturation below 65% (whichever comes first). Night vision demonstration will be accomplished as a separate training objective from A3.5.2 but should be provided during the same training event.

A3.5.4. APO should consider the effect of repeated hypoxia exposure on training benefit and fatigue effects before allowing a third attempt at any hypoxia training objective during a training day.

A3.5.5. The ROBD training session shall be terminated if the student loses consciousness or becomes incoherent and incapable of performing his emergency procedures. Subsequent flights may be performed, but only after the student has recovered fully (i.e., absence of symptoms and blood oxygen saturation greater than 95%) and flight surgeon has been consulted.

A3.5.6. Any time a training session needs to be terminated while a low-oxygen gas mixture is being delivered to the student, use 100% Oxygen via the Oxygen Dump switch to terminate the training profile. For example, if the student's blood oxygen saturation drops below 65% or the student loses consciousness or becomes incapable of performing hypoxia recovery emergency procedures, then the training session should be terminated via activation of the Oxygen Dump switch by the I/O.

A3.6. ROBD Reactions and Emergencies.

A3.6.1. **Apprehension and Claustrophobia**. Apprehension and claustrophobia should be minimal as training occurs in a familiar environment with experienced aircrew and parachutists. However, training is normally not accomplished while in a reduced oxygen environment, so apprehension and claustrophobia are still possible. Professionalism and sensitivity by AOP personnel can help alleviate problems and limit/minimize

hyperventilation reactions. If the student appears to be apprehensive, work with them prior to accomplishing ROBD training by practice breathing off of the device before the training event is to begin. The student should not be rushed or crowded. If the student insists on leaving the ROBD training site/simulator, the student should be allowed to leave and shall be referred to his/her commander or flight surgeon as required. If ROBD is determined not appropriate for training, then all efforts will be made to schedule the student at a chamber location where the training requirement can be achieved.

A3.6.2. **Hyperventilation.** Hyperventilation can result from apprehension, positive pressure breathing and/or hypoxia. If student exhibits signs of hyperventilation, the I/O will activate the oxygen dump switch, monitor the student, and encourage the student to slow their breathing rate and depth. Having the student read a checklist or talk is one recommended way to slow breathing rate. If the student cannot control rate and depth of breathing adequately and/or blood oxygen saturation levels begin to drop after activation of 100% oxygen, the I/O will remove the student from the ROBD training system and will notify the APO. The APO will refer the student to the flight surgeon for further evaluation. If the student becomes unconscious or unresponsive for more than 30 seconds, place the student on the floor in a horizontal position (if practical) and follow procedures listed under loss of consciousness IAW **paragraph A3.6.3.5**.

A3.6.3. **Suffocation.** When a student reports the feeling of suffocation, have the student immediately lower his/her mask and check connections. If connections-check is good, check ROBD system state for correct mode of operation and remedy if required IAW ROBD Operations Checklist. If the ROBD passes ops test then inspect reactor's mask and have him/her exchange aircrew flight equipment or provide student with a properly fitted training mask if available.

A3.6.4. **Hypoxia.** If during the non-hypoxia stage of the training the student becomes hypoxic, immediately activate the oxygen dump switch on the ROBD. Monitor oxygen sensor and heart rate to ensure appropriate recovery. If hypoxia symptoms do not subside, instruct the student to disconnect the mask from the right side of his/her helmet and allow them to recover breathing ambient air; however, recovery from hypoxia may be delayed without 100% oxygen under pressure. Continue to monitor for recovery and ensure no further degradation of consciousness occurs. If student becomes unresponsive or unconscious, follow procedures under loss of consciousness IAW **paragraph A3.6.5**.

A3.6.5. **Loss of Consciousness.** Loss of consciousness is considered a medical emergency. If student loses consciousness for 30 seconds or more, activate the EMS system immediately then call the on-call flight surgeon. Ensure the student is on 100% oxygen (ROBD Oxygen Dump Switch activated) and place the student in a supine position on the floor and monitor respiration, pulse, and oxygen levels via the student's pulse oximeter until directed otherwise by emergency response personnel. Vital signs must be taken initially and at least every two minutes thereafter unless otherwise directed by emergency response personnel. Continue to provide basic emergency life saving skills and AED if available until relieved by emergency response personnel.

A3.6.6. **Mechanical/Electrical Emergencies.**

A3.6.6.1. **Power Loss.** If electrical power is lost during hypoxia portion of ROBD training, I/O will instruct the student to disconnect the mask from the right side of his/her

helmet and allow them to recover breathing ambient air. If electrical power is lost during non-hypoxia portion of ROBD training, student will disconnect mask and wait for instructions from I/O. Training can be restarted once electrical power is restored and the IO has performed an ROBD self-test IAW ROBD operations checklist. Training will commence from the beginning of the profile following an equipment check/retest.

A3.6.6.2. **Electrical Fire.** If an electrical fire is detected, cease all training activities and follow local emergency fire procedures. If not the source of the electrical fire, turn off the ROBD power switch and close all cylinder valves but do not disconnect any hoses.

A3.6.6.3. **Loss of Oxygen, Nitrogen, or Air.** If oxygen source is inadequate during hypoxia recovery portion of ROBD training, the ROBD oxygen alarm will sound. Disconnect student from ROBD by instructing the student to disconnect the mask from the right side of his/her helmet and allow them to recover breathing ambient air; however, recovery from hypoxia will be delayed without 100% oxygen under pressure. If air and nitrogen sources are inadequate, the ROBD will disable hypoxia training and automatically activate 100% oxygen. Discontinue training until bottles are professionally serviced or replaced.

A3.7. Required Recurring Emergency Procedure Training. Emergency procedures must be exercised no less than quarterly and can be scheduled concurrently with wing/MDG exercises or inspections. These exercises should be conducted where ROBD training is located to include simulator facilities at least annually. AT least two of these exercises must include local first responder teams in an annual period. The senior AP staff member will ensure all training events are documented and routed through appropriate agencies to ensure the opportunity for exercise feedback from all responders.

A3.8. ROBD Training System Management. This section describes the roles and responsibilities for ROBD training system management and sustainment.

A3.8.1. AETC as Lead Command for the AP training program and AETC/A2/3/10 as the OPR will manage the ROBD training systems IAW AFPD 10-9 and AFI 36-2251 guidance.

A3.8.1.1. AETC/A2/3/10 will ensure ROBD and HFT training system configuration control via acquisition and sustainment contract vehicles and Training Planning Teams (TPT). ROBD training system configuration changes must be coordinated through the MAJCOM/A3 POC for training systems and approved by AETC/A3FM.

A3.8.1.2. AETC/A3FM will forward an annual ROBD Training System Utilization and Maintenance Report IAW **para 4.3.2** of this instruction.

A3.8.2. **Wing.**

A3.8.2.1. All ROBD training system components will be accounted for on a base-level equipment account such as an Custodian Authorization Custody Receipt Listing (CA-CRL) or listed as Ready Value items and placed in Tab B of the R-14 supply binder.

A3.8.2.2. All materials required for the operation of the ROBD that are considered HAZMAT must have authorization, approval and control IAW AFI 32-7086, Hazardous Materials Management.

A3.8.2.3. Coordinate movement and disposition of any ROBD training system components with MAJCOM AP training PM and AETC/A3FM. Allow enough lead time to enable proper planning, programming and funding.

A3.8.3. **Operations Group.**

A3.8.3.1. Provides location and space for ROBD training system and AP personnel to conduct aircrew physiological training requirements IAW AFI 11-202 vol. 1 and this instruction.

A3.8.3.2. Facilitates approval for AOP personnel security clearance requirements required for simulator facility access.

A3.8.3.3. Approves all simulator profiles used with ROBD training. Enables close coordination between simulator instructors/operators and AOP personnel to ensure ROBD training objectives are met with the most efficient use of personnel and simulator systems.

A3.8.3.4. Plans, programs and budgets requirements for ROBD training system re-supply of consumables; e.g., resupply of compressed gases, leak test fluid, and training supplies used in the execution of physiological training.

A3.8.3.5. Provides AOP personnel access to aircrew training schedules to include flight simulator training to enable advance planning for aircrew physiological training sessions.

A3.8.4. **Medical Group.**

A3.8.4.1. Provides qualified AOP personnel to conduct ROBD training for wing aircrew and parachutists. Provides qualified aerospace medicine personnel and equipment for emergency response during ROBD aircrew training.

A3.8.4.2. Executes quarterly emergency response reviews for ROBD reactors. At least two of these emergency response reviews must be fully exercised with local EMS and Aeromedical response teams in an annual period.

A3.8.4.3. Ensures AP personnel manpower billets have appropriate security clearance requirements for access to flight simulators and training facilities.

A3.8.5. **Aerospace and Operational Physiology Training Units (AOPTUs).**

A3.8.5.1. Coordinates closely with flying squadrons and OSS units to ensure aircrew are offered adequate opportunity to complete refresher physiological training IAW this instruction. Due to the use of ROBD in flight simulators at some locations, close coordination with aircrew flight simulator training schedules is required to use training systems with utmost efficiency and within contractual utilization limits.

A3.8.5.2. Conducts and documents physiological training IAW this instruction. Due to the MDS-specialized capability of wing-based physiological training, refresher physiological training academic topics shall be adapted to meet wing aircrew MDS requirements, however all refresher requirements must be met.

A3.8.5.3. AOPTF/APT personnel are responsible for local management of ROBD training systems and HFTs, and will ensure all technical manuals, associated checklists, and procedures are properly followed for storage, operation and maintenance.

A3.8.5.4. Prepares/submits annual budget to OG through their owning squadron commander for ROBD aircrew training consumables requirements.

A3.8.5.5. Updates ROBD and HFT training system utilization and maintenance database IAW para. 5.2. of this instruction.

A3.8.5.6. Notifies AETC/A3FM and their respective wing and MAJCOM SG and A3 AP POCs any time the ROBD or HFT is non-operational due to maintenance or otherwise not an available training option for wing aircrew IAW paragraph A3.9.1. Updates AETC/A3FM Sharepoint with any changes to ROBD and HFT operational status.

A3.9. ROBD and HFT Maintenance. ROBD user/unit-level periodic and emergency maintenance will be limited to fan filter cleaning and oxygen sensor replacement. These procedures will be performed strictly IAW ROBD technical manuals and associated checklists. All other maintenance requirements will be the responsibility of HQ AETC/A3FM and/or appropriate sustainment organization.

A3.9.1. Whenever the ROBD or HFT training system is non-operational due to maintenance, user must notify HQ AETC/A3FM and their respective wing and MAJCOM/A3 and MAJCOM/SG AP POCs to report lost/reduced training capacity. This notification must take place within 24 hrs after ROBD or HFT unit non-operational status so that any students awaiting training can be redirected to an alternate training facility. (T-2)

A3.9.2. User/unit will be required to prepare and ship ROBD unit and any associated equipment to the repair facility IAW HQ AETC/A3FM instructions and sustainment funding guidelines. At no time shall user/unit perform maintenance or otherwise make alterations to ROBD or HFT without express approval and guidance from HQ AETC/A3FM. (T-2)

A3.9.3. User will update utilization and maintenance via the forms and guidance listed IAW **para 5.2** of this instruction. (T-2)

Attachment 4

HYPOXIA FAMILIARIZATION TRAINER (HFT) OPERATING INSTRUCTIONS

A4.1. General.

A4.1.1. **Overview.** The HFT shall be used in conjunction with the ROBD to train aircraft-specific hypoxia emergency procedures. The HFT in conjunction with the ROBD is an approved aircrew training system alternative to the altitude chamber for refresher physiological training requirements. Two configurations are available, the HFT-C for cockpit crew, and the HFT-M for mission crew. For simplicity, this attachment refers to both using the term HFT. Each configuration's specifics for operation are detailed in the appropriate training plan.

A4.1.2. **Description.** The HFT components are the main chassis and Instructor/Operator (I/O) Station. The Main Chassis emulates a generic aircraft cockpit with simulated flight controls and other panels a student uses to perform simulated flight duties, and mask-on hypoxia recognition and recovery procedures from induced hypoxic events. The I/O station is a commercial frame/enclosure that interfaces with the main chassis and contains the ROBD and other equipment/components for conducting and controlling training scenarios. The HFT is used to train aircrew to recognize and properly respond to the effects of hypoxia while performing simulated flight duties. The training replicates environmental conditions similar to those experienced by aircrew during high altitude missions, where an I/O has the ability to induce hypoxia without changes in barometric pressure.

A4.1.3. **Objectives and Demonstrations.** At locations where the HFT is available, the altitude chamber refresher training flight may be replaced with this training system in conjunction with the ROBD. Hypoxia objectives and demonstrations are listed in **A2.2** of this document.

A4.1.4. **Personnel Requirements and Qualifications.** Personnel who have completed upgrade training per 43A or 4M0 CFETP and local upgrade requirements may operate the HFT as part of refresher physiological training. Because the HFT is operated in tandem with ROBD, personnel must also be qualified IAW **para A3.3**.

A4.1.5. **Responsibilities.** This section covers the duties and responsibilities of the HFT APO and HFT I/O.

A4.1.5.1. APO. The APO is responsible for all HFT procedures, and must ensure student safety at all times. The APO shall be present and follow guidance in **A2.4** of this document during all HFT operations. (T-2)

A4.1.5.2. I/O. The I/O is responsible for guiding and conducting student HFT scenarios. The I/O directly supervises the student's training session and ensures completion of training objectives. The I/O will conduct the preflight briefing and post training review. The I/O will ensure compliance with all guidance in **A2.4** of this instruction. (T-2)

A4.2. Refresher training description. The HFT will be configured to replicate the trainee's aircraft/crew position to the maximum extent IAW the most current HFT User Configuration Guide provided by Detachment 1 ACC Training Support Squadron Luke AFB, AZ. All hypoxia training conducted in the HFT will be accomplished IAW **A2.2** of this document. (T-2)

A4.2.1. **Goals.** The HFT allows aircrew and parachutists to experience symptoms of hypoxia while performing duty related tasks and respond using proper emergency procedures in a controlled setting. Upon completion of training events, the student will have a heightened awareness of the potential compounding hazards that can result in the flight realm as a result of hypoxia.

A4.2.2. Preflight Briefing Details. All students must complete the appropriate refresher academics prior to receiving training in an HFT. Additional briefing items will include training device limitations, actions that will be simulated and any safety items unique to individual training locations. (T-2)

A4.2.3. Training Description. AOPTUs will coordinate with the local OG to develop HFT scenarios to ensure aircraft specific training objectives are met IAW ROBD Training Plan syllabus. HFT profiles will mimic local flight operations to the maximum extent possible. (T-3)

A4.2.4. Post Training Review. Each student will receive a thorough post training briefing that is tailored to emphasize positive and negative aspects of how the individual accomplished hypoxia recovery procedures. Any flight task deviations that were caused by the hypoxia event will be explained in detail. (T-2)

Attachment 5

BARANY CHAIR OPERATING INSTRUCTIONS

A5.1. General. The Barany chair is a rotational seating device used to generate a response to motion within a trainee's vestibular system. Training applications for this device include spatial disorientation familiarization training and airsickness physiological adaptation training. Training goals, objectives and demonstrations for each use of the device are detailed within the respective section below.

A5.2. Disorientation Familiarization Training. Spatial disorientation presents a serious threat to aircrew safety. Disorientation Familiarization Training can be accomplished using several trainers and demonstrations. The Barany chair is used during initial AP training to provide trainees with an understanding of the visual and vestibular system's susceptibility to error.

A5.2.1. **Objectives and Demonstrations.** Vestibulocular reflexes and somatogyral/oculogyral illusions can be demonstrated via the Barany chair by limiting additional orientation information from the visual, auditory, or somatosensory system. Instructors may direct various positioning causing an increased reaction in trainees, and providing a notable effect on the trainee's ability to interpret their orientation in two dimensional space. This disorientation is easily apparent to both the trainee and observers. The three primary demonstrations are listed in **para A5.2.6**.

A5.2.2. Personnel Requirements and Qualifications. Personnel who have completed upgrade training per 43A or 4M0 CFETP and local upgrade requirements may demonstrate spatial disorientation to trainees as a part of initial physiology training. Initial trainees should observe all three demonstrations and experience one. (T-2)

A5.2.3. Preflight Briefing. Trainees will receive academic instruction on spatial disorientation prior to training. Each trainee will be briefed on safety prior to Barany chair demonstration. This requirement may be met with a general brief to the class when the training session begins. Specific instructions for executing each maneuver will be briefed to trainees as each maneuver begins; there is no requirement for this information to be reviewed in a pre-brief. (T-2)

A5.2.4. **Spatial Disorientation Familiarization Training Description**

A5.2.4.1. Graveyard Spin/Spiral. Ensure trainee is sitting upright, arms resting on the arm rests with thumbs straight up to the ceiling. Fasten outer arm of the chair and seat belt, if applicable. Brief the trainee to point in the direction of the turn perceived before the trainee dons goggles and hearing protection. Brief any observers to stay quiet. Begin rotating the chair clockwise to simulate spinning to the right. Continue spinning until achieving a constant rate of rotation. Minimize abrupt inputs to the chair so the student cannot perceive the added acceleration. Continue at a constant rate for approximately 30 seconds. If the trainee still perceives the clockwise rotation, stop making inputs into the chair. When the trainee shows no perceived rotation (via thumbs up hand signal), show observers the trainee's non-perception, and slow or stop the chair's rotation. Ideally, the student will sense rotation in the opposite direction when the rotation stops. Allow the student to recover for a short period of time before sending them back to their seat. When they feel no rotation, they may return to their seats. Briefly explain the physiology

of semicircular canals and cause of disorientation in this example after the demonstration. If desired effect not achieved; wait a minute and try again opposite direction, or simply explain what should happen. (T-2)

A5.2.4.2. Nystagmus. Ensure trainee is sitting upright, arms resting on the arm rests. Fasten outer arm of the chair and seat belt, if applicable. Direct the trainee to pick a focal point and rotate his head/eyes to maintain the focal point within his line of sight. Begin rotating the chair and continue spinning until achieving a constant rate of rotation. The trainee should focus on the approximate location of the focal point as continued spinning reduces visual acuity. Continue spinning for approximately 20-30 seconds. Stop the rotation so the spinning student is facing the focal point. Instruct the student to open their eyes as wide as possible, focus on the focal point, and ask the student to explain how difficult it is to focus. Point out the involuntary eye movement to the class. Allow the student to recover for a short period of time before sending them back to their seat. When they feel no rotation, they may return to their seat. Briefly explain what is happening physiologically with muscles in the eyes. (T-2)

A5.2.4.3. Coriolis. Have trainee sit with weight back in the chair, arms crossed over the outer bar with pillow underneath, head resting on their crossed arms as if sleeping on a desk, with one ear pointing towards the ground. Table A5.1. describes demonstration orientation and resulting feeling of disorientation in the trainee. Direct the trainee to close his eyes and to quickly sit upright with arms in the air when the spinning stops. Rotate the chair in a clockwise direction for approximately 30 seconds. Ensure the student does not get "top heavy" with their weight distributed towards the outside of the spinning. If chair starts to rock, have the student sit back in the chair, or terminate the demonstration. Stop the chair with the trainee facing the class and have him describe what motion he perceives. (T-2)

Table A5.1. Coriolis Demonstration Orientation and Trainee Effects.

Demo Orientation	Effect
Head Right, Spun Right (clockwise)	Front Right Tumble
Head Right, Spun Left (counterclockwise)	Front Left Tumble
Head Left, Spun Right (clockwise)	Back Left Tumble
Head Left, Spun Left (counterclockwise)	Back Right Tumble

A5.2.4.3.1. Allow the student to recover for a short period of time before sending them back to their seat. When they feel no rotation, they may return to their seats. Briefly explain what is happening physiologically with more than one semicircular canal stimulated at one time. (T-2)

A5.2.5. Post Flight Brief/Post Training Review. Ensure trainees understand the physiological cause for the illusion demonstrated and illusion's relevance to aviation operations. (T-2)

A5.3. Aircrew Rotational Training (ART). Airsickness desensitization or adaptation training using a Barany chair occurs via ART. ART is a consecutive three day program with each day lasting one to two hours. ART saves valuable training dollars and time by educating and building confidence in airsickness control techniques in trainees. For maximum efficacy, the program should occur during three days of flying followed by spinning in the Barany chair.

Each day of the program focuses on a different aspect of controlling airsickness. ***WARNING:*** *All flying for the trainee must be completed **prior** to that day's Barany spins. Trainees **are not** allowed to fly after spinning in the chair until they have had at least 12 hours un-interrupted crew rest.*

A5.3.1. **Objectives and Demonstrations.** Day one teaches the student to determine different factors influencing their susceptibility to airsickness. It also gives them the chance to practice mechanical methods of reducing airsickness. Day two teaches techniques used to relax the body and lower student's airsickness arousal level. Day three builds confidence in the student's ability to control their susceptibility to airsickness. Maneuvers that can be used in spin sessions include a climb simulated by having the trainee focus eyes on focal point on the ceiling and hold for three revolutions or a bank simulated by holding their right or left ear, respectively to the shoulder.

A5.3.2. Personnel Requirements and Qualifications. Students and aircrew with airsickness problems may be referred to the local AOPTU for ART as a part of an overall Airsickness Management protocol administered under flight surgeon guidance. Flight surgeons may refer airsick students to psychologists, where available, for relaxation techniques training or additional training/resources. Physiology personnel may accomplish introductory counseling, teach relaxation techniques if needed, and perform desensitization training using the Barany chair but are not responsible for overall case management. Physiology personnel will document training via database or MFR and provide copies to trainee's squadron commander if required. Deviations in spin protocols as described in **para A5.3.6.1-A5.3.6.4** may be directed by flight surgeon as needed for individual patients. (T-2)

A5.3.3. **Responsibilities**

A5.3.3.1. Trainee Responsibilities. Practice the relaxation/diaphragmatic breathing techniques while both flying and chair flying. Attend all scheduled training sessions at AOPTF each of the three days. If there is a break in flying while still in the three day program (due to weather, scheduling, etc.) the trainee will still complete that day of ART. Students who begin a 3 day ART program will complete all three days, even if there are no airsickness episodes during Day 2 or Day 3 flying. (T-2)

A5.3.3.2. Instructor Responsibilities. Counsel trainees on relaxation techniques using both preventive education and the Barany chair. Instructors may be required to be available for training whenever the student's flying schedule dictates per local policy. (T-2)

A5.3.4. **Goals.** The program is designed to speed adaptation to the flight environment via a joint approach between the flying squadrons, Flight Medicine, AOP personnel, and Mental Health. This guidance simply governs AOP support to a comprehensive Airsickness Management protocol. The entire airsickness management program and associated protocols should be determined by appropriate SG leadership.

A5.3.5. Preflight Briefing . Instruction will be tailored to the individual based on the student's initial interview. Discuss their emotional, mental and physical state of being throughout the entire day of flying. Focus on high stress activities such as emergency procedures, mission planning, crew briefing, and if applicable, stand up, SP/IP relationships and progress in flying training. (T-2)

A5.3.6. **ART Description.** Trainees receive three days of consecutive spins using the Barany chair and may receive refresher spins if needed. Table A5.2. illustrates the subjective airsickness rating chart, which is used to measure the trainee's response to duration and stimulus. Trainee ratings should be recorded and may be used as a measure of progression in their training.

Table A5.2. Subjective Airsickness Rating Chart.

Airsick Rating	Indication
1-3	Indicates low level of nausea or discomfort. Would not affect duties during flight.
4-6	Indicates a medium nausea level. Would cause the student to deviate from planned flight, i.e. straight and level flight
7-9	Indicates a high nausea level. Would cause the a trainee to modify or stop performing flight duties, i.e. transfer flight control to the IP
10	student becomes actively sick

A5.3.6.1. Day One Spin Training. Trainee receives two ten minute spins with a ten minute break between each spin session. The primary objective for day one is to get to know the trainee, the history of their problem, and observe the trainee's reaction to extensive rotation. This initial phase enables the student and instructor to identify personal behavioral patterns and physiological/psychological symptoms in relation to airsickness. During this spin, the intent is to assess the trainee's susceptibility to motion. Let the trainee know his/her signs of airsickness, such as paleness, sweating, sudden flushing of the face after performing a head-movement, etc. so they have a more intimate knowledge of what is happening to their body prior to becoming actively airsick. (T-2)

A5.3.6.1.1. Spin rate is 20-25 RPMs. (T-2)

A5.3.6.1.2. Trainee spins with eyes open and fixated on the focal point. (T-2)

A5.3.6.1.3. Make a note of any outward (objective) symptoms observed. Examples include gripping the arm rests hard, sweating, paleness, hyperventilating, etc. (T-2)

A5.3.6.1.4. Periodically (e.g. each minute) ask the student his or her level of airsickness and record these readings. (T-2)

A5.3.6.1.5. The student might perform a few maneuvers or head movements during this ride, if needed to raise nausea levels. They can practice any techniques they currently use for motion sickness. Do not go into "drop-off" maneuvers at this time. (T-2)

A5.3.6.1.6. After the spin is finished, discuss subjective and any outward (objective) symptoms with the student. Give the student a 10-minute break before the second spin. (T-2)

A5.3.6.1.7. If student becomes actively sick, stop the spin. (T-2)

A5.3.6.2. Day Two Spin Training. Trainee receives three ten minute spins with a ten minute break between each spin session. The primary objective of day two is to reinforce the student's understanding of their symptoms that precede airsickness. Practice deep diaphragmatic breathing, rhythmic breathing, "drop-off" (a continuing cycle of tensing

muscles, then relaxing them) maneuver techniques, and progressive muscle relaxation. Simulate realistic aircraft scenarios in the Barany chair and require the student to control their nausea level. The goal for each spin would be to have the student's nausea peak at least once per spin in the 7-8 range on the nausea scale. Nausea at the higher end of at least once per spin forces the student to control it. When they accomplish this effectively, they gain confidence in their abilities and they can incorporate the technique in flight. (T-2)

A5.3.6.2.1. Spin rate is 20-25 RPMs. (T-2)

A5.3.6.2.2. Trainee spins with eyes open and fixated on the focal point. (T-2)

A5.3.6.2.3. Make a note of any outward (objective) symptoms observed. Examples include gripping the arm rests hard, sweating, paleness, hyperventilating, etc. (T-2)

A5.3.6.2.4. Periodically ask the student his or her level of airsickness and record these readings. (T-2)

A5.3.6.2.5. Talk the student through the progressive muscle relaxation as needed to lower subjective airsickness rating. (T-2)

A5.3.6.2.6. If student becomes actively sick, stop the spin. (T-2)

A5.3.6.2.7. Encourage the student to practice diaphragmatic breathing and muscle relaxation techniques on their own time to enhance success. (T-2)

A5.3.6.3. Day Three Spin Training. Trainee receives three ten minute spins with a ten minute break between each spin session. The primary objective of day three is to build that final amount of confidence and adaption in the student. Review progress and relaxation techniques with students. (T-2)

A5.3.6.3.1. Spin rate is 20-25 RPMs. (T-2)

A5.3.6.3.2. Trainee spins with eyes open and fixated on the focal point. (T-2)

A5.3.6.3.3. Make a note of any outward (objective) symptoms observed. Examples include gripping the arm rests hard, sweating, paleness, hyperventilating, etc. (T-2)

A5.3.6.3.4. Periodically ask the student his or her level of airsickness and record these readings. (T-2)

A5.3.6.3.5. When final spin is complete, get feedback from student on their confidence level and discuss follow-up actions and ability to self-refer for refresher spin training as needed. (T-2)

A5.3.6.4. Refresher Spin Training. Trainee receives one ten minute spin and one two minute spin with a ten minute break between each spin session as needed after completion of the three day program. These spins are warranted if the student experiences an airsickness episode after completing the three day program. Physiology personnel must ensure that flight surgeon/flying squadron commanders receive training documentation for each refresher spins for self-referred trainees. (T-2)

A5.3.7. Post Training Follow-up Actions. Instructors will follow up with students after their first sortie upon ART and again one month post ART completion. Discuss any recurrent airsickness symptoms and what measures were used to compensate. Follow-up is not

required to occur via in-person interview; a telephone interview is an acceptable means of completing this requirement. Follow-up after refresher spin training is not required. (T-2)

Attachment 6

UNAIDED NIGHT VISION TRAINER OPERATING INSTRUCTIONS

A6.1. General.

A6.1.1. **Overview.** The unaided night vision trainer is a modified projector that is used in a classroom to simulate the low-light environment encountered in night flying operations.

A6.1.2. **Description.** The unaided night vision trainer presents a visual representation of the night-time flying environment. The trainer can replicate a range of scenarios including totally darkened, lights-out environment to that of a dark adapted individual.

A6.1.3. Objectives and Demonstrations. The following will be conducted during initial physiological training. (T-2)

A6.1.3.1. Reduced visual acuity

A6.1.3.2. Shift in color perception

A6.1.3.3. Loss of color perception

A6.1.3.4. Focal and peripheral vision degradation

A6.1.3.5. Methods to improve unaided night vision

A6.1.4. Personnel Requirements and Qualifications. Personnel who have completed upgrade training per 43A or 4M0 CFETP and local upgrade requirements may operate the unaided night vision trainer as part of initial physiological training. (T-2)

A6.2. Goals. The unaided night vision trainer enhances the student's ability to understand night vision threats and emphasizes measures to enhance situational awareness at night.

A6.2.1. Training Description. The unaided night vision trainer will demonstrate how dark adaptation and various cockpit lighting can enhance unaided night vision. Anomalies, to include Auto kinesis, Purkinje shift and glide slope illusion will be demonstrated with this device. (T-2)

Attachment 7

AOPTU FORMS AND COMPLETION STANDARDS

A7.1. General. This attachment provides standardized guidance for the completion of forms required to document AP training. Complete all forms electronically to ensure legibility; handwritten forms will not be accepted by AETC/A3FM without prior coordination and should not be maintained as a part of an AOPTU's final records. Request changes to required forms from AETC/A3FM using the AF Form 847. Upon receipt, AETC/A3FM will request and coordinate changes for forms not prescribed by AP training guidance or AETC/A3FM is not OPR. Maintain forms IAW AFMAN 33-363, *Management of Records*, guidance using Air Force Records Information Management System (AFRIMS) database for disposition schedule. For convenience, forms disposition per AFRIMS is incorporated in this instruction. Changes to disposition via AFRIMS supersede any disposition schedule for AP records described in this instruction. Previous forms no longer used by AOPTUs include the 699, 702 and 700. These forms should be destroyed because they are no longer in use.

A7.2. AF Form 1274. Use AF Form 1274 to document training directed by AFI 11-403 or AFI 11-404. A complete listing of course codes can be found in AFI 11-403 **Table 6.1**. There is no requirement to specify which refresher track is completed. Cadet initial classes will simply be documented with "cadet" in both training completed and task id blocks of the AF Form 1274. Do not use AF Form 1274 to document training required by other AFIs or local requirements. To document local training, use AF Form 1522 and the appropriate training codes obtained from aircrew records management personnel. Examples include but are not limited to: AGSM refresher, NVG refresher, CRM refresher, or other training referenced in **Chapter 4** of this instruction. AOPTUs are not required to maintain copies of completed AF Form 1274s but are required to maintain a list of names and pertinent information on students who received training. This list may be maintained using Aerospace Physiology Information Management System (APIMS) database or locally developed database or spreadsheet. See **Figure A7.1** for a representation of AF Form 1274 completion.

Figure A7.1. Completed 1274.

PHYSIOLOGICAL TRAINING	
This is to certify that the following person has met the requirements for the USAF Physiological Training Program.	
NAME/LAST 4 Smith, John A/1234	
TRAINING COMPLETED Refresher	
GRADE O-3	TASK ID S-O-B/A-APH-R
ISSUE DATE 20131001	EXPIRATION DATE 20181031
PHYSIOLOGICAL TRAINING UNIT Your Unit	
SIGNATURE OF APO HANCOCK.MIRANDA.LEIGH.1	

AF Form 1274, 20131010
Previous Edition Will Not Be Used.

A7.3. Instructor Evaluation Forms. Instructor evaluations must be documented on AETC Form 620 or AETC Form 281. AETC Form 620 is the preferred form for platform academic instructor evaluations. AETC Form 281 is the preferred form to document chamber lecturer, oxygen labs, ROBD I/O, and other performance demonstration/hands-on training instruction. Instructor evaluations must state: "instructor met all training objectives and is fully qualified" and contain evaluator comments on instructor's performance. USAFSAM may use the USAFSAM Form 18 to document evaluations IAW USAFSAM guidance.

A7.3.1. Required Comments. All evaluations dated 1 Dec 2012 or later must have comments on instructor's performance during the evaluated instructional block to be valid. Previously, comments may have only been provided if the form required comments based on rating; evaluations prior to 1 Dec 2012 are not required to be re-accomplished. For example, if the form required that an "outstanding" or "needs improvement" rating include comments, then evaluations may only have comments related to those ratings and are otherwise left blank. Signed evaluations with the comments section left blank is no longer an acceptable means of evaluation because it provides no historical record for use through the instructor's career. Comments documenting follow-up actions are required for an evaluation which is marked "needs improvement" for any reason.

A7.3.2. Other Evaluation Completion Requirements. A course qualification evaluation is required for each block of instruction an instructor teaches; for example, no single evaluation for all "Track T" instructional blocks is allowable. Additionally, "needs improvement" cannot comprise more than 25% of total ratings; instructor is not qualified until follow-up actions are documented. If an instructor has more than 25% of items marked "needs improvement," then a new evaluation should be completed rather than attempting to use the small follow-up space; simply complete the original form by referencing the new evaluation form. Maintain ALL evaluations in the member's instructor folder. MFRs stating evaluations were lost are not acceptable; simply re-accomplish the evaluation at the earliest opportunity.

A7.3.3. To use AETC Form 620, complete all blocks. Check "course qualification" if this is the initial qualification for an instructor in that block of instruction or if the instructor is being recertified after decertification. Check "evaluation" if documenting the instructor's required annual evaluation. Add Item 15 "mishap examples" to provide feedback on AFI 11-403 **para 1.4.6.3.5** requirement to integrate mishaps into AP instruction.

A7.3.4. To use AETC Form 281, mark items 10, 13 and 18 as N/A as these items are not applicable to AP academic instruction. Check "qualification" if this is the initial qualification for an instructor in that block of instruction or if the instructor is being recertified after de-certification. Check "scheduled" if documenting the instructor's required annual evaluation. Do not use the "master instructor," "follow-up," or "No-notice" blocks listed under evaluation type. Add Item 29 "mishap examples" to provide feedback on AFI 11-403 **para 1.4.6.3.5** requirement to integrate mishaps into AP instruction.

A7.4. AF Form 1522. The AF Form 1522 is used to document an AOPTU's daily training. This form will be used in place of a locally developed academics sign-in sheet and is primary documentation if APIMS is unusable or inaccurate. Use one form for each day's training. Maintain document for 1 year if used only as a sign-in sheet and the AOPTU's monthly/annual training documentation is maintained in APIMS. Maintain document for 2 years with 1 year active and 1 year inactive if the AF Form 1522 will be the primary record of the AOPTU's training documentation.

A7.4.1. Complete Last Name block with member's full name in Rank Last, First MI format. Use the Aircrew signature block to list aircrew's MDS and crew position. Complete SSN block, unit, and date columns as appropriate. Complete event description using Table 3.1 titles and task IDs. If local procedures require each trainee to review/sign approving their information as correct, have each trainee initial on the left-hand column beside their name.

A7.4.2. The AOP officer providing/certifying the daily training events will sign the instructor/certification block. The officer certification will only be accomplished by an officer qualified to instruct the courses listed on the form. See **Figure A7.2** for a representation of a correctly completed AF Form 1522.

Figure A7.2. AF Form 1522 documenting AP Training Completion.

ARMS ADDITIONAL TRAINING ACCOMPLISHMENT REPORT
(See Reverse for Completion Instructions)

AUTHORITY: 10 U.S.C. 8013 AND EO 9397
PRINCIPAL PURPOSE: Source document for recording individual training events for input into the Aviation Resource Management System (ARMS). To validate accomplishment of mandatory training requirements.
ROUTINE USES(S): None.
DISCLOSURE IS VOLUNTARY: Failure to provide the information and SSN for individuals who must meet training currency standards could result in loss of currency, grounding and loss of professional qualification. SSN is used for identification and records.

LAST NAME	AIRCREW SIGNATURE	SSN	UNIT	EVENT DESCRIPTION	TASK ID	DATE (YYYYMMDD) ACCOMPLISHED
SrA Johnson, Alan R	C-130 Loadmaster	xxx-xx-xxxx		Physiology Training S-O-B/A	APH-I	20130327
Capt Williams, Amy	F-22 Pilot	xxx-xx-xxxx		Physiology Training S-O-B/A	APH-T	20130327
SSgt Lee, Geddy	KC-135 Boom Operator	xxx-xx-xxxx		Physiology Training S-O-B/A	APH-R	20130327
2Lt Keller, Tom C	T-38 Student Pilot	xxx-xx-xxxx		Centrifuge Training S-O-B/A	APC-P	20130327
1Lt Harris, Louis F	F-16 Pilot	xxx-xx-xxxx		Centrifuge Training S-O-B/A	APC-A	20130327
Lt Col Cooper, Vincent P	F-35 Pilot	xxx-xx-xxxx		Centrifuge Training S-O-B/A	APC-R	20130327
1Lt Montgomery, Kara	T-6 Student Pilot	xxx-xx-xxxx		Centrifuge Training S-O-B/A	APC-C	20130327
Maj Ogut, Tugba B	Su-27 FSO	xxx-xx-xxxx		Centrifuge Training S-O-B/A	APC-O	20130327

INSTRUCTOR/ CERTIFICATION *(Signature and Grade)*	ARMS PROCESSING COMPLETED			
	INPUT		AUDIT	
	DATE	INITIALS	DATE	INITIALS

AF IMT 1522, 20030801, V1 PREVIOUS EDITIONS ARE OBSOLETE

A7.5. AF Form 712. Utilize this form to document Inside Observer (IO) flight hours if APIMS is unavailable. Units will complete a one-time conversion of IO time using the USPS Decimal time chart; request a copy of the USPS decimal time chart from AETC/A3FM if required. Decimal time calculates time in hundredths of an hour, i.e. 24 minutes is 0.40 hr. IO time tracked in APIMS will be manually converted using data documented on the chamber recorder sheet. After completion of one-time correction, IO time will be tracked in hhh:mm format using the chamber recorder sheet (example: APIMS instructor flight record shows 212.45; the converted IO time would be 212:27).

A7.6. Chamber Recorder Sheet. The chamber recorder sheet is used to document chamber flight activity. AOPTUs should maintain the chamber recorder sheet with that day's AF Form 1522. At minimum, chamber recorder sheets should document the names of AOP personnel filling crew positions, students and their seat and equipment numbers, training profile times, and all reactions that occur during the training event. Locally approved forms are allowed. Maintain document on same disposition schedule as the AF Form 1522.

A7.7. AFTO 244. Use the AFTO Form 244 to document altitude chamber and subsystem maintenance. Report as required in para 5.3 of this instruction. Maintain a separate record for

each chamber, pump, and compressor. Complete the form as required per TO 00-20-1. Additionally, complete section II Time block with that day's running time and accumulative training device time in the same block. Submit completed/closed-out form to AETC/A3FM; destroy local copies when no longer needed.

A7.8. AFTO 334. Use the AFTO Form 334 to document maintenance actions on appropriate aircrew flight equipment. Complete the form as required per TO 00-20-1. Maintain local copies until form is filled in and next periodic inspection is annotated on a new form, on turn-in of equipment, or when superseded/obsolete and new replacement form is available.

A7.9. AFTO 95. Use the AFTO Form 95 to maintain a permanent history of significant maintenance actions on training devices. Report as required in **para 5.3** of this instruction. Maintain a separate record for each training device. Complete the form as required per TO 00-20-1. Destroy local copies when no longer needed, i.e. when device is no longer accountable to the training unit. Use AFRIMS' table and rule T21-01 R02.00 as the disposition guidance for AP training devices' AFTO 95s.

A7.10. AF Form 4026. Use the AF Form 4026 to report device use to HHQ. Report monthly for all AOPTU training devices as required in **para 5.3** of this instruction. Document report month and year, the reporting AOPTU in the FROM block, and AETC/A3FM in the TO block. Leave RCS and INFO TO blocks blank. Number and list each device used for training in column A. Include number of hours pumps were run, number of flights per pump and number of oxygen bottles used for each chamber in the remarks section for each chamber assigned. Units that cannot annotate oxygen usage may annotate N/A. Leave column B blank. Update columns C-J with appropriate hours. Ops hours available are calculated for column C as number of training days X number of training hours in the reported month. Document training hours scheduled and used in columns D and E. To calculate utilization rate, divide number of hours used by number of hours available for use, then round up to next whole number (column E/C). Training hours lost are interpreted by AETC/A3FM as available operations hours the device is not used for training. If actual scheduled training hours are lost, contact AETC/A3FM IAW **para 5.2.1**. Document time required for maintenance (column G), spent waiting for supply items (column H), major wing operations that impact training availability (column I), and other impacts, such as environmental issues like power loss (column J). Use column K to detail discrepancies noted in that month's operations (i.e. redline for chamber pump or 2 seats unavailable due to broken regulator). Annotate inspections, calibrations, other major maintenance, and preparer's name in column K. Use preparing official block to document flight commander review. Maintain document for 2 years with 1 year active and 1 year inactive. See **Figure A7.3** for a representation of a correctly completed AF Form 4026.

Figure A7.3. AF Form 4026.

AIRCREW TRAINING DEVICES UTILIZATION

REPORT MONTH AND YEAR: Month YEAR

Report Control Symbol RCS:

FROM (Mailing Address): ORG, Street Address, Training Location, Base DSN 123-4567

TO (Mailing Address): AETC/A3FM, 1 F Street Suite 2, Randolph AFB, TX DSN 487-9921

INFO TO (Mailing Address):

TYPE AND SERIAL NUMBER A	CONTRACTED HOURS AVAILABLE B	OPERATIONS HOURS AVAILABLE C	HOURS SCHED D	HOURS UTIL E	UTIL RATE (%) F	TRAINING HOURS LOST MAINT G	SUPPLY H	OPS I	OTHER J	REMARKS K
1. Altitude chamber (identification #) a. pump #1 (last 6 ID #) b. pump #2 (last 6 ID #)	--	160	23	23	14	5	--	--	--	5 hours maintenance time for daily, periodic inspections. 12 oxygen bottles used. a. pump ran 6 hours for 4 flights b. pump ran 0 hours for 0 flights
2. ROBD/HFT (serial #)	--	160	35	35	22	25	--	--	--	5 hours maintenance time for daily start-up bit checks. 20 hours for ROBD calibration.
3. Barany Chair #1	--	160	20	20	13	--	--	--	--	No training time lost for Barany chair. Discrepancy noted for safety bar limited operation (bar does not open/close correctly).
4. Lateral Drift Trainer	--	160	4	4	3	1	--	--	--	1 hour maintenance time for pre-training inspection. 180 day CE inspection required next month.
5. Barany Chair #2	--	160	--	--	0	--	--	--	160	Barany chair #2 not used; red X for not spinning.
Page 1 of 1										Prepared by TSgt Last Name, First MI. NCOIC, Maintenance Element

PREPARING OFFICIAL AND EXTENSION: Flight Commander signature block

SIGNATURE: Flight commander signs document

SURGE/OVERTIME (HRS):

CREDITED AVAILABILITY (%):

AF IMT 4026, 19971101, V3

REPLACES (ACC, PACAF, & USAFE) MC FORMS 80, APR 93, WHICH IS OBSOLETE.