BY ORDER OF THE COMMANDER
AIR EDUCATION AND TRAINING COMMAND

AIR EDUCATION AND TRAINING COMMAND INSTRUCTION 21-109

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Maintenance

MAINTENANCE MANAGEMENT TRAINER DEVELOPMENT

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This instruction implements Air Force Policy Directive 21-1, *Maintenance of Military Materiel*. It establishes the maintenance management system for Air Education and Training Command (AETC) trainer development activities. This instruction prescribes procedures and responsibilities necessary to operate and obtain support from trainer development activities at Joint Base San Antonio (JBSA) Randolph, TX; Keesler Air Force Base (AFB), MS; Kirtland AFB, NM; and Sheppard AFB, TX. It applies to AETC Regular Air Force. This instruction does not apply to Air National Guard, Air Force Reserve Command, or United States Space Force. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with (IAW) the Air Force Records Disposition Schedule (RDS), which is located in the Air Force Records Information Management System. The authorities to waive wing, unit, delta or garrison level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the tier numbers. Submit requests for waivers on Department of the Air Force (DAF) Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*, through the chain of command to the appropriate tier waiver authority, or alternately, to the publication Office of Primary Responsibility (OPR) for non-tiered compliance items. Refer recommended changes and questions about this publication to the OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. All recommendations and requests must have the approval of the appropriate group

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SUMMARY OF CHANGES

This document has been revised and must be completely reviewed. This instruction updates office symbols, references, trainer development support responsibilities for 532d Training Squadron (TRS), training equipment request routing, distribution of portfolios, and allows use of a 2 AF-approved equivalent to AETC Form 375, *Training Equipment Request*.

Chapter 1

MANAGING AETC TRAINER DEVELOPMENT ACTIVITIES

1.1. Function. AETC trainer development activities support resident or formal training courses supporting the AETC training mission at training wings (TRW), flying training wings (FTW), fighter wings (FW), special operations wings (SOW), and air mobility wings (AMW). Trainer development organizations:

1.1.1. Plan, design, develop, fabricate, and assemble locally fabricated AETC training equipment to meet the definition prescribed for federal stock class (FSC) group 69.

1.1.2. Produce training equipment not meeting the criteria of FSC 69, when the training equipment's sole purpose directly supports an Air Force career field education and training plan item.

1.1.3. Develop and publish Technical Manuals (TM) that provide part identification and information on the assembly, installation, operation, service, disassembly, overhaul, and reassembly of trainers as instructed by Air Education and Training Command Instruction (AETCI) 63-102, *Air Education and Training Command Technical Manuals*.

1.1.4. Perform modification, repair, refurbishment, and maintenance of manufactured training devices and provide life-cycle support (depot) for all internal request trainers they develop.

1.1.5. Can accept project orders for funding according to Department of Defense (DoD) 7000.14-R, *DoD Financial Management Regulation*, Volume 11A, *Reimbursable Operations Policy, Chapter 2, Project Orders.*

1.2. Internal Requests. Requests for trainer development services from units within AETC will be referred to as internal requests for the purpose of this instruction; however, the normal operating areas associated with individual trainer development units are further specified as follows:

1.2.1. Keesler and Sheppard AFB Trainer Development Activities support their respective TRWs. The 532 TRS at Vandenberg AFB, CA is primarily supported by the Trainer Development Activity at Sheppard AFB, but receives field maintenance support from Keesler AFB for the Keesler-fabricated trainers and local development and fabrication support from the 30th Operational Support Squadron.

1.2.2. JBSA-Randolph Trainer Development Squadron (TDS) supports all AETC FTWs, FWs, AMWs, Joint Base San Antonio, Goodfellow AFB, TX and includes any AETC unit not within the purview of another AETC trainer development activity.

1.2.3. Kirtland AFB, NM Trainer Development Activity supports 58 SOW, other AETC units at Kirtland AFB and the USAF Survival School at Fairchild AFB, WA.

1.2.4. For wing-specific internal requests, use the AETC Form 375, or a locally developed equivalent approved by 2 AF.

1.3. External Requests. Requests for trainer development services from units outside of AETC will be referred to as external requests for the purposes of this instruction.

1.4. Organization. Trainer development activities at Keesler, Kirtland, and Sheppard AFBs are assigned within the training support squadron, maintenance squadron or group, as applicable. The

502 TDS is assigned to a group within the 502d Air Base Wing (ABW) as a part of the joint basing construct for the San Antonio area. Refer to AFI 38-101, *Manpower and Organization* for information on standard organizational structures. Trainer development activities determine the internal organization most efficient for their activity, ensuring all responsibilities in this instruction are assigned within the activity. Trainer development activities vary in personnel authorizations, design capabilities, and craft skill availability. These differences are due to the variety of missions and unique nature of these activities. Trainer development activities are encouraged to participate in lateral support due to the unique design capabilities of each activity.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Air Education and Training Command Directorate of Logistics, Engineering and Force Protection (AETC/A4). AETC/A4 approves all operating policies and procedures for AETC trainer development activities governed by this instruction.

2.2. 19th Air Force Maintenance Policy and Procedures (19 AF/A4PP). 19AF/A4PP is the OPR for procedures prescribed by this instruction.

2.3. 2d Air Force Policy and Operational Strategy (2 AF/A3OS). 2 AF/A3OS serves as functional manager for AETC trainer development activities governed by this instruction. 2 AF/A3OS:

2.3.1. Executes development, maintenance and modification support policies for AETC-developed training equipment and functions as the approval official for all external development requirements.

2.3.2. Can task one trainer development activity to provide lateral support to another trainer development activity or task a trainer development activity with trainer fabrication requirements in support of other Air Force organizations or government agencies if the capability exists.

2.3.3. Routes AETC Form 375 to the tasked trainer development activity's Chief/Director.

2.4. Group Commander Responsibilities. The group commander responsible for trainer development activities will:

2.4.1. Ensure the servicing manpower office determines the manpower requirements IAW AFI 38-101.

2.4.2. Ensure a training equipment review and production approval system is established for trainer cost and feasibility studies and fabrication requests originating within the group's area of authority.

2.4.3. Designate Training Equipment Reviewing Officials by name or office symbol for requests originating within the group's area of authority (**Exception:** at JBSA-Randolph, the requesting organization will accomplish the reviewing official function). More than one person may be designated due to the potential volume of requests.

2.4.4. Designate the Internal Production Approval Official.

2.4.5. Designate the Trainer Development Chief/Director and specific Trainer Development Activity functions.

2.4.6. Accomplish command approval of AETC Form 375 or equivalent requests, Memorandums of Agreement, and Memorandums of Understanding tasked to the group's trainer development activity by 2 AF/A3OS.

2.5. Training Equipment Reviewing Official. Training Equipment Reviewing Officials are normally members of the requesting organization identified to review, validate, approve and route completed AETC Form 375 requests. See **paragraph 4.3.1** The official forwards approved requests to trainer development and returns disapproved requests to the requester with rationale.

2.6. Internal Production Approval Official. Internal Production Approval officials are normally aligned organizationally above the trainer development activity responsible for forecasting training requirements, including comprehensive evaluation of AETC Form 375 requests (see **paragraph 4.5.**). **Exception:** for 502 TDS, evaluations are accomplished by the squadron with production approval accomplished at the group level. The Internal Production Approval Official will:

2.6.1. Advise trainer development of an order of need for each approved request to allow them to properly schedule the fabrication request. **Exception:** 502 TDS prioritizes its own efforts in consultation with its multiple customers.

2.6.2. Establish local procedures to prevent the misuse of trainer development activities and ensure the most economical use of assigned skills.

2.6.3. Establish a trainer development activity orientation program for appropriate personnel in normally supported units.

2.6.4. Ensure a maintenance and supply requirement review is completed for equipment fabrication requests. As a minimum, the requirement review will address life-cycle support in critical design reviews and in design and planning function evaluations.

2.6.5. Ensure subordinate formal training course commanders annually forecast training equipment development requirements.

2.6.5.1. Ensure requirements are reported to the local organization responsible for the trainer development activity and reflect:

2.6.5.1.1. Organization.

2.6.5.1.2. Course number.

2.6.5.1.3. Equipment nomenclature.

2.6.5.1.4. Funding for training fabrication.

2.6.5.1.5. Quantity desired.

2.6.5.2. Make every effort to program for training equipment needs to reduce or eliminate financial reimbursement between different organizational elements operating from a common wing operation and maintenance fund. Coordinate requests for support from JBSA-Randolph and Kirtland AFB trainer development activities through 19th Air Force Directorate of Financial management (19 AF/FM) and coordinate requests for support from Keesler AFB and Sheppard AFB trainer development activities through 2 AF/A3OS for applicable funding plans.

2.6.6. Ensure lifecycle planning for trainer design, fabrication, maintenance, modification/upgrade, and technical documentation of training equipment. Lifecycle planning includes determination of whether some or all of these functions and/or follow-on logistics support will be accomplished by trainer development or through contractual arrangement.

2.7. Trainer Development Chief/Director. The Trainer Development Chief/Director manages the activity and has overall supervision of its function. They are responsible to the support squadron, maintenance squadron, or group commander for the management of the trainer

development activity. They serve as the senior technical advisor within assigned areas of responsibility. In addition, the Chief/Director will:

2.7.1. Annually estimate and program for trainer design and fabrication, equipment, personnel, training, and facility requirements by reviewing workloads and mission assignments.

2.7.2. Establish procedures in coordination with unit and technical administration to ensure documents and reports are accurate, complete, and distributed to meet the suspense.

2.7.3. Monitor and control those aspects of additional duties, leave, training, and details that take personnel away from the daily work force.

2.7.4. Review shift manning, skill levels, start times, distribution of supervision and make adjustments as necessary.

2.7.5. Maintain the master personnel roster.

2.7.6. Establish an in-house review and production scheduling system.

2.7.7. Monitor work priorities to ensure project completions by the approved need date. Initiate action if a conflict of need occurs or an inability to meet the project completion date exists.

2.7.8. Develop and establish a tool management instruction that meets the needs of the trainer development activity. The instruction must provide for accountability, responsibility, and control of composite tool kits (CTK), individual tool kits (ITK), special tools, and storage and facility requirements. The program must include procedures for:

2.7.8.1. Tool accountability, to include periodic and systematic inspections and inventories of CTKs, ITKs, and tool storage.

2.7.8.2. User's responsibilities when assigned an ITK or special tool.

2.7.8.3. Guidance on tool storage, special tools, tool kits, and security.

2.7.8.4. Guidance for management of shop and operating stock that provides for control of use and materials.

2.7.9. Participate in the Air Force Technical Order (TO) Management System for required TOs according to Department of the Air Force Instruction (DAFI) 21-101, *Aircraft and Equipment Maintenance Management*; AFI 21-101 AETC Supplement, *Aircraft and Equipment Maintenance Management*; TO 00-5-1, *AF Technical Order System* and TO 00-5-1 AETC Supplement, *AF Technical Order System*.

2.7.10. If applicable establish a Precious Metals Recovery Program in accordance with Department of Defense Manual (DODM) 4160.21-V1, *Defense Materiel Disposition: Disposal Guidance and Procedures,* TO 00-25-113, *Conservation and Segregation of Critical Alloy and Precious Metal Bearing Parts and Scrap,* and AFI 23-101, *Material Management Policy,* Paragraph 6.3., *Disposal, Demilitarization and PMRP.*

2.7.11. Ensure strict compliance with supply requisition procedures and ensure surplus supplies and equipment are properly turned in to base supply IAW AFI 23-101, Paragraph 6.2., *Returns*.

2.7.12. Establish a Hazardous Material Management Program IAW Air Force Manual (AFMAN) 32-7002, *Environmental Compliance and Pollution Prevention.*

2.7.13. Implement a Mishap Prevention Program IAW AFI 91-202, *The US Air Force Mishap Prevention Program*, and implement a Hazard Communication Program IAW AFI 90-821, *Hazard Communication (HAZCOM) Program*. The programs will include safety indoctrination of personnel and the availability of industry and safety publications and programs.

2.7.14. Establish a Funds Expenditures Program to ensure projects can be completed within allotted funding. Take appropriate action when lack of funds affects the project.

2.7.15. Ensures all personnel know the environmental requirements that apply to their daily duties and receive commensurate level of environmental education and training for those duties according to AFI 32-7001, *Environmental Management.*

2.7.16. Appoint a unit environmental coordinator (UEC) IAW AFI 32-7001.

2.7.17. Ensure the UEC coordinates development activities with the installation environmental flight to meet compliance requirements including, but not limited to, environmental impact analysis process (32 Code of Federal Regulations (CFR) 989 1, Title 32-*National Defense, Subtitle A—Department of Defense,* Title 32 *National Defense,* Chapter VII*—Department of the Air Force, Subchapter T—Environmental Protection,* Part 989*, Environmental Impact Analysis Process (EIAP))*, air, hazardous materials, hazardous waste, waste water, etc.

2.7.18. Determine the organizational structure most efficient for their activity and may assign the Fabrication, Engineering, Workload and Material Control Functions and specific work center functions completely or in part to different units within the organization.

2.8. Fabrication Function. The fabrication function supervisor is responsible for managing, supervising, and training assigned personnel and ensuring resources are used to achieve quality production. The Fabrication function:

2.8.1. Monitors daily workloads with special emphasis on work center backlogs and coordinates with workload control to resolve discrepancies.

2.8.2. Ensures coordination between the project leader and applicable shop units to ensure fabricated items meet requirements established by the engineering function.

2.8.3. Maintains a record of inspection, lubrication, and maintenance on industrial type equipment IAW TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment*.

2.8.4. Reviews tool and special equipment requirements upon receipt of new, changed, or revised publications, and takes appropriate action.

2.8.5. Inspects hazardous waste accumulation and storage areas daily to ensure adequate containers are available, properly segregated, labeled, secured, cleaned, undamaged, and free of leaks. Ensures waste accumulation is not excessive.

2.8.6. Serves as the point of contact for hazardous waste spill or storage problems and notifies applicable agencies of problems.

2.9. Engineering Function. The engineering function supervisor is responsible for managing, supervising, and training assigned personnel, and managing resources for the design and development effort needed to fabricate training devices. The engineering function:

2.9.1. Processes work order requests received from workload control.

2.9.2. Prepares feasibility and design studies.

2.9.3. Ensures the simulator interface management-ware concept is considered when developing new and/or making major modifications to existing computer-based simulators or trainers. Contact 81st Training Support Squadron Trainer Development (81 TRSS/TSUS) at Keesler AFB, MS for more information.

2.9.4. Determines the most cost-effective method of procuring and fabricating training equipment or other approved items.

2.9.5. Assigns a design, part, or serial number to each work order requiring design or development according to AETCI 63-102.

2.9.6. Prepares engineering drawings, AETC Form 715, *Bill of Materials,* and logistic data necessary for the design, fabrication, maintenance, and supply support of training equipment.

2.9.7. Verifies delivery readiness of training devices produced and obtains customer acceptance using AETC Form 376, *Trainer Development Acceptance Record.*

2.9.8. Develops TMs for training equipment according to AETCI 63-102 and maintains master copies.

2.9.9. Maintains configuration of current TMs and sends changes or revisions to users.

2.9.10. Maintains configuration of current training equipment drawings and stores them as long as needed.

2.9.11. Prepares a trainer development portfolio as described in **paragraph 7.8**.

2.9.12. When applicable, maintains a comprehensive file of technical documents and literature required to maintain currency in applicable technical areas.

2.9.13. Determines and documents requirements using the Civilian Automated Training Input Program system to gain access to technical, managerial, and other training necessary to develop and maintain designer/project manager performance levels and expectations.

2.9.14. Maintains engineering data for items produced according to AF RDS located at **https://www.my.af.mil/gcss-af61a/afrims/afrims/**. If data is stored electronically, backs up files to prevent loss of data. Maintains a listing and/or cross-reference to indicate location of files, disks, or other means of storage. Marks storage media to identify project. Engineering data should include (depending on the complexity of project):

2.9.14.1. AETC Form 375 authorizing a feasibility study or production.

2.9.14.2. Completed feasibility or design study.

2.9.14.3. Project order or direct funds cite.

2.9.14.4. Memorandum of agreement (MOA).

2.9.14.5. Statement of work.

2.9.14.6. Design specification.

2.9.14.7. Photographs.

2.9.14.8. Engineering and technical information related to the item.

2.9.14.9. Engineering drawings, blueprints, or lists.

2.9.14.10. AETC Form 715 or equivalent.

2.9.14.11. AETC Form 380, *Trainer Fabrication Man-Hour and Material Cost Record,* or equivalent.

2.9.14.12. Applicable TM or reference to TM location.

2.9.14.13. AETC Form 376 or equivalent.

2.10. Workload and Materiel Control Function. The workload and materiel control function exercises central control for scheduling work order requests, keeping records, analyzing manpower, computing trainer costs, submitting reports, and acting as the supply requesting and issuing agency. This function:

2.10.1. Serves as the production focal point.

2.10.2. Recommends workload scheduling and leveling.

2.10.3. Works in conjunction with the trainer development engineering, fabrication, and supply personnel to ensure the efficient and timely processing of work orders.

2.10.4. Schedules approved work order requests.

2.10.5. Maintains status of production work orders. Annually revalidates work orders not started.

2.10.6. Maintains AETC Form 380, AETC Form 428, *Training Services Time Card,* and AETC Form 714, *Trainer Development Work Order Register.* Alternate electronic or computer-generated data and time cards may be used if more appropriate.

2.10.7. Conducts production and personnel utilization studies, and prepares analysis reports required by higher headquarters or other agencies.

2.10.8. Works with the engineering and fabrication functions to determine the cost of materials.

2.10.9. Computes the final trainer labor and material cost on AETC Form 380, or equivalent, upon project completion.

2.10.10. Requests, receives, stores, inspects, distributes supplies and equipment, and advises engineering and fabrication functions of availability of parts and materials.

2.10.11. If applicable, maintains due-in records and document register.

2.11. Specific Work Center Functions. Work center functions fabricate parts, subassemblies, assemblies, and complete trainers. Work centers use TOs, TMs, blueprints, and sketches as guides for work and as quality checks for each item. Work centers install training equipment and perform on-site maintenance and modification. Work centers generally consist of machine, electrical, welding, paint, woodwork, sheet metal, and assembly functions. Some functions may be combined to accomplish the unique mission of the work center as follows:

2.11.1. The machine function provides fabrication, three dimensional when needed, and repair of trainer parts, assemblies, and tools according to engineering prints, sketches, and oral instructions. It ensures machine tool setup procedures, machine cutting operations, hand operations, and general machine function operations adhere to approved procedures. It also ensures proper selection of specified material before fabrication.

2.11.2. The electrical function fabricates and repairs electronic and electro-mechanical training equipment and components according to engineering prints, sketches, and oral instructions by using conventional electrical, solid state electronics, and printed circuit construction.

2.11.3. The welding function fabricates repairs, modifies, and welds metal components according to engineering prints, sketches, and oral instructions. It ensures proper selection of specified materials and equipment for welding.

2.11.4. The paint function prepares and masks components, and assembles them in preparation for the painting process. The function follows engineering prints, sketches, and oral instructions to paint components with the correct equipment and paint specified. It removes old paint coatings, cleans components, and assembles components as directed.

2.11.5. The woodworking function fabricates, repairs, modifies, and assembles training equipment and components out of wood and plastics according to engineering prints, sketches, and oral instructions. It prepares resin castings and moldings.

2.11.6. The sheet metal function provides for the fabrication of sheet metal, fiberglass and plastic components, related hardware, jigs and fixtures, and master production templates according to engineering prints, sketches, and oral instructions. It ensures required testing is completed on fabricated metal tubing, conduits, and cables.

2.11.7. The assembly function assembles and repairs training equipment and components according to engineering prints, sketches, and oral instructions. It prepares trainers for final inspection and shipment.

Chapter 3

TRAINER DEVELOPMENT SERVICES AND SUPPORT

3.1. Overview. Each trainer development activity plans, designs, develops, fabricates, maintains, modifies, repairs, and refurbishes locally fabricated training equipment to support the AETC training mission. Activities also develop and publish TMs that provide part identification and information on the assembly, installation, operation, service, disassembly, overhaul, and reassembly of trainers.

3.2. Design. Trainer development activities possess a trainer design and planning function that designs and develops training equipment fabrication packages according to requester's needs. These planning packages contain design drawings, material and labor cost estimates (including overtime and/or over hires), and additional remarks. Trainer development activities provide a database for designated production-approval officials to evaluate training equipment requests. **(T-3)** These activities reject requests when there is a readily available, cost-effective commercial or General Services Administration (GSA) substitute, the item is not within the function's capability to design and fabricate, or personnel are not available.

3.3. Fabrication. Typical shop skills usually available include machine, sheet metal, welding, metalworking, plastic, wood, corrosion, painting, electronics, electrical, fiberglass, fabric, leather, rubber, and production assembly. Training equipment fabricated by AETC development activities must: **(T-3)**

3.3.1. Satisfy authorized requirements.

3.3.2. Technically be suitable.

3.3.3. Be in compliance with all DoD and Air Force policies and directives.

3.3.4. Fabricate according to best commercial practices, as opposed to military specification standards.

3.4. Modification. Trainer development activities provide modification support services for AETC fabricated training equipment within their capability.

3.5. Repair Services. Trainer development activities provide maintenance and repair support for locally fabricated training equipment when such maintenance and repair is beyond the capability of other maintenance activities. **(T-3)** AETC Form 394, *Trainer Development Instruction Slip*, or equivalent, is used for in-house repairs and maintenance dispatch. Organizations outside the trainer development activities request trainer repair or maintenance support using AETC Form 375. Trainer development activities support scheduled and unscheduled maintenance for equipment fabricated in their activities. Scheduled and unscheduled maintenance support applies only to training equipment fabricated by AETC trainer development facilities that support AETC resident training courses. Trainer developments using Unit Manning Document (UMD) assigned personnel to perform field maintenance on other than fabricated trainers will develop local instructions for this activity. **(T-3) Note:** Repair services support may be accomplished through unit maintenance contracts. Procedures in the instruction will document approved man-hour usage from 2 AF/A3OS and account for man-hours expended.

3.6. Storage. Trainer development activities will provide an area for storing and screening excess training equipment if such equipment is for the trainer development activity's use, reuse, or disposal, and if: **(T-3)**

3.6.1. A strong potential exists for future need based on historical demands for similar equipment.

3.6.2. Excess equipment is of sufficient quantity or possesses recoverable high-cost components that are useful to future projects. **Note:** Storage, screening, or control costs could be prohibitive or not cost-effective when compared to actual procurement costs. Use good judgment to prevent excessive accumulation of reclaimed equipment.

3.6.3. Excess equipment contains components whose value makes them cost-effective to store for support of like fabricated equipment remaining in service.

Chapter 4

FABRICATION CYCLE PROCEDURES

4.1. Overview. The training equipment fabrication cycle consists of request initiation, review, design and planning, production approval and training equipment fabrication.

4.2. Request Initiation. Use AETC Form 375 or 2 AF approved equivalent to request design, fabrication, feasibility studies, and modification or repair services of fabricated training equipment from AETC trainer development facilities. Identify specific training equipment needs and requirements. This request package serves as a statement of training equipment requirements. Use AETC Form 375 or 2 AF approved equivalent for FSC 69 type trainers or those approved by 2 AF/A3OS. See **Chapter 5** for other projects.

4.3. Review.

4.3.1. The requesting organization's training equipment reviewing official conducts a complete review of the information provided on the AETC Form 375 and accompanying documents. The reviewing official determines if the request is worth continuing with design and planning. The official sends approved requests to trainer development for a cost and feasibility study and design and planning. Return disapproved requests to the original requester with reasons for disapproval.

4.3.2. The Trainer Development Activity provides a cost and feasibility study to determine capability, ability to meet need time, commercial availability, etc. The Trainer Development Function forwards approved requests to the Production Approval Official or requester, as applicable. Rejected requests are returned with rationale to the Training Equipment Reviewing Official or requester, as applicable.

4.4. Design and Planning. The trainer development design and planning process produces a unique planning package. The process includes a review of available AETC training equipment, commercial training equipment or GSA publications (catalogs, pamphlets, portfolios, etc.) to determine if equipment portrayed in these publications satisfies the requirements. This equipment may be available locally or at other AETC bases.

4.4.1. Determine if previously completed local or other AETC base planning packages can fulfill a part of the requester's needs, saving duplication of the entire planning process. 2 AF/A3OS determines whether the trainer development activity normally supporting the requester will receive the planning package or if a development activity will support a request if the planning package was developed by another activity.

4.4.2. Determine if commercial training equipment or GSA-listed property has the potential to fulfill the requester's needs and is available. If cost-effective equipment items are available (estimated labor plus materials), trainer development prepares a memorandum of explanation. Trainer development references sources in the memorandum and attaches the memorandum to the AETC Form 375 request. Return the memorandum and AETC Form 375 through the reviewing official.

4.5. Production Approval. Production approval involves a complete review of the planning package by the production approval official.

4.5.1. The minimum elements of planning package review are:

4.5.1.1. Maintainability requirements and use of requested training equipment.

4.5.1.2. Total estimated cost to produce and maintain requested item. This includes true cost of labor (including overtime and/or over hire) (even if cost is not passed on to the requester), cost of materials, and life-cycle costs.

4.5.1.3. Evaluation of commercial availability or GSA equivalents that could fulfill the requester's need, if provided. These alternatives are compared with the estimated cost to produce and maintain the item.

4.5.1.4. Project priority (suggested by the reviewer).

4.5.2. If the review determines commercially available equipment is the most cost-effective solution, the requester is informed so they can procure the equipment.

4.5.3. Approved requests are assigned a work priority per **Chapter 6** of this instruction and the planning package is sent to the trainer development activity for fabrication. Return disapproved packages, through the reviewing official, to the original requester with rationale for disapproval.

4.6. Training Equipment Fabrication. Upon workload control receipt of an approved planning package, schedule it for production according to work scheduling priorities, materials to be ordered, requester's need date, and established labor skill cycle (for example, metal shop, electronic shop, wood shop, paint shop). Trainer development activities use AETC Form 714, or equivalent, to record and monitor training fabrication requests. In addition, use AETC Form 715, or equivalent, (by quantity, part number, stock number, nomenclature, costs, etc.) for all materials and parts required for a specific work order (development project).

Chapter 5

INTERNAL GENERAL SUPPORT PROJECTS AND NON-AETC MISSION SUPPORT

5.1. Internal General Support Projects. Internal general support projects are projects that are not trainers and do not fit trainer development guidelines. Submit requests by memorandum to the trainer development activity for approval or disapproval. Activities process internal general support project requests as follows: **(T-3)**

5.1.1. Trainer development examines each request to ensure fabrication will not conflict with commercial procurement and contract policies.

5.1.2. Analyze the cost to build, buy or contract.

5.1.3. Approve requests when resources allow.

5.1.3.1. The internal production approval authority determines which local activity is most capable of accomplishing the approved request.

5.1.3.2. Approved internal general support projects are accomplished on a noninterference basis and will not impair the activity's ability to perform primary requirements.

5.1.4. Maintain documentation for each request, to include the cost decision (worksheets, cost comparisons, etc.), and the original letter requesting the project.

5.2. Non-AETC Mission Support. Under certain conditions, AETC provides limited trainer development support to external requesters outside of AETC. Generally, activities can support these external requests with available work hours, providing these requests do not adversely affect AETC resident course support. AETC course support has priority.

5.2.1. Major Commands (MAJCOM) submit external requests using AETC Form 375 (completed through block 18) to 2 AF/A3OS. 2 AF/A3OS tasks a trainer development activity to evaluate the work request and determines if it can meet the specified project requirements. If it can meet the requirement, a MOA is accomplished between the tasked trainer development activity, the requesting activity and 2 AF/A3OS. If the trainer development activity determines the request is beyond its capability, 2 AF/A3OS will route the request to another trainer development activity for evaluation. Both trainer development activities and requesting organizations will participate fully in the coordination process as follows: **(T-2)**

5.2.1.1. Send formal communications, except technical information exchanges, through 2 AF/A3OS.

5.2.1.2. Trainer development activity returns a copy of the AETC Form 375 to 2 AF/A3OS with work order number entered in block 21.

5.2.2. The trainer development activity, with 2 AF/A3OS and MAJCOM coordination, initiates a MOA for approved projects. The MOA will address funding, officials authorized to represent the requester's design limits, office symbols, life-cycle logistics support, standards used during design and production, operating and TO requirements and anticipated production completion dates. Local development activities can submit additional items as required.

5.2.3. Trainer development activities will develop procedures to dedicate equivalent man-hours to a non-AETC requester’s project when overtime or over hires are authorized and

funded. Over hire personnel may work other projects and direct personnel may work non-AETC projects as deemed necessary by the trainer development chief to make the most efficient use of resources. Ensure overtime or over hire labor hours are charged for reimbursement from the requester only when those hours are expended in support of the requester's project.

5.2.4. For external non-AETC projects, the requestor provides funding directly to the trainer development activity once 2 AF/A3OS has approved the project. Coordinate project order funding changes directly between the trainer development activity and the requester.

5.2.4.1. Project order and direct fund cite funding include cost for materials, shipping, special project equipment, temporary duty, AF Form 9, *Request for Purchase***,** contract services expenditures, personnel overtime, and over hires. The trainer development chief is authorized to certify funds available on AF Form 9 contract expenditures for services and commodities.

5.2.4.2. Normally, the DoD organization making the request is not charged for civilian labor unless overtime or over hire is required to complete the project.

5.2.5. A trainer development activity tasked with an external project will have overall engineering responsibility and final decision authority for the external project.

Chapter 6

WORK PRIORITIES

6.1. Overview. The production approval official assigns a work priority to trainer development requests using a Force Activity Designator according to AFI 23-101, Paragraph 8.3. The production approval official will further prioritize work requests of equal priority by establishing a realistic date required in AETC Form 375, block 3a. **(T-3)** The earliest date required will normally determine the work scheduling order. **Note:** Trainer development activities may, in coordination with the local school activities, establish and utilize a local prioritization system for internal projects.

6.2. Scheduling Priorities. The production approval official forwards prioritized work requests to the workload control function for production scheduling. Work requests in the fabrication process will not be interrupted for a higher priority work request without the approval of the trainer development chief.

6.3. Priority Waivers. When a production deviation becomes necessary, the production approval official initiates, in writing, a waiver (priority change) describing the circumstances and/or reasons for the deviation from the approved production order of merit. **(T-3)** The official will attach the waiver to the appropriate AETC Form 375, and send the package back to the development activity. **(T-3)** Coordinate deviations to 2 AF/A3OS tasked fabrication projects with 2 AF/A3OS. **(T-2)**

6.4. Deferred Priorities. The production approval official, through coordination with the requester, reaffirms the need for approved and prioritized work requests that have not been placed into production within 1 year.

6.5. 2 AF/A3OS-Directed Priorities. The 2 AF/A3OS will use AETC Form 375 to task development activities for external projects, after coordinating requirements, feasibility, etc. The 2 AF/A3OS, or designated official, signs the AETC Form 375 production approval block and assigns a work priority. Deviation to these priorities requires 2 AF/A3OS approval.

6.6. Work Backlog. Prioritize work backlogs into the design and fabrication process. Monitor work backlog locally for planning purposes. Do not use backlogged work to report manpower utilization or support additional UMD manning.

Chapter 7

GENERAL INFORMATION

7.1. Supply Procedures. Process requests for locally fabricated training equipment according to AFI 23-101, Paragraph 5.2. and Air Force Handbook (AFH) 23-123, *Integrated Logistics System-Supply (ILS-S), ILS-S, Standard Base Supply System Operations,* Vol 2 Part 2 Chapter 8 and their respective supplements.

7.2. Assignment of an Expendability, Recoverability, and Reparability Code (ERRC):

7.2.1. Assign locally fabricated training equipment an ERRC of NF3 or XB3 as appropriate IAW TO 00-25-195, *AF Technical Order System Source, Maintenance, and Recoverability Coding of Air Force Weapons, Systems, and Equipment*.

7.2.2. Locally fabricated training equipment with repairable components that have an Air Force Materiel Command assigned ERRC are assigned an ERRC no lower than the highest ERRC assigned to any integral component.

7.3. Man-Hour Accounting. Document man-hours expended in the design study, development and fabrication process against a specific work order. Use total man-hours expended for the cost computation of trainer value. Use AETC Form 428 or equivalent to document man-hours. Guidelines for computing labor costs are in **paragraph 7.4** of this instruction. AETC Form 380 or equivalent may be used as a record for labor and material costs. If used, retain AETC Form 380 or equivalent with AETC Form 375 upon completion of a trainer development request.

7.4. Establishing a Standard Shop Rate:

7.4.1. Apply the trainer development shop rate to determine the cost of estimated labor required for a project. This rate will apply whether a project involves planning and design only, planning, design and limited craft skills support, or all capabilities. The shop rate is a management tool that allows the development manager and training manager to make cost-effective build or buy decisions for training equipment acquisition.

7.4.2. Count personnel assigned to the trainer development activity to develop a comprehensive shop rate. Include all personnel assigned, for example, supervisors, clerical support, assigned work center supply support, planning and design personnel, technical writers, drafters, illustrators, direct labor, over hires, etc. Compute the shop rate on an annual basis by 1 October. Include scheduled civilian government service pay raises. Additionally, compute the shop rate for assigned personnel changes of 10 percent or more.

7.4.3. Determine the total work-year trainer activity cost for civilians (general schedule [GS], wage grade [WG], wage leader [WL] and wage supervisor [WS]) as follows:

7.4.3.1. List each assigned grade and total personnel for that grade. See **Attachment 2, Table A2.1** for a sample format in this instruction.

7.4.3.2. Contact the base financial management office to identify the applicable pay grade table for GS civilians. Select the corresponding annual pay from the column titled accelerated annual pay. For each grade, compute and list the total accelerated annual pay by multiplying the number of personnel listed in that grade by the accelerated annual pay value.

7.4.3.3. For WG, WL, and WS civilian, compute and list each grade's total work-year hours by multiplying the number of personnel listed in each grade by 2,087 hours per year. Using the applicable base pay rates, select and list the applicable employee hourly base pay rate at step 3 (contact the base financial management office for the current rate). Use the acceleration factor (contact the base financial management office for the current factor) to accelerate and list the hourly base pay rate including summed factors for civilian retirement and benefits. Apply summed factors directly to the base rate; they are not compounded. For each grade, compute and list the total accelerated annual pay by multiplying the accelerated hourly base rate by that grade's total work-year hours.

7.4.3.4. Determine the total work-year cost for assigned personnel by summing the total accelerated annual pay of each listed pay grade.

7.4.4. Determine the total available productive direct labor hours as follows:

7.4.4.1. Identify direct labor personnel as those who can document their man-hour expenditures in the man-hour accounting system, **paragraph 7.3**.

7.4.4.2. Multiply the number of direct labor personnel by the total work-year hour factor (2,087 hours). Take into account part-time direct labor personnel by estimating what percentage of their time is devoted to direct labor in trainer development.

7.4.4.3. Sum the computed available productive direct labor hours.

7.4.5. Compute the standard shop rate by dividing the total work-year cost, **paragraph 7.4.3.4**, by the total available productive direct labor hours, **paragraph 7.4.4.3**.

7.5. Quality Control. Each trainer development activity will develop a comprehensive and thorough quality control program and implement the program by publishing a local instruction. Assign personnel from within the trainer development activity to perform quality verification inspections on fabricated training equipment. **(T-3)** Use craft shop procedures and workmanship guidelines prescribed in the following TOs to develop the quality control program:

7.5.1. TO 00-25-234, *General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment.*

7.5.2. TO 1-1A-1, *Engineering Handbook Series for Aircraft Repair General Manual for Structural Repair.*

7.5.3. TO 1-1A-8, *Structural Hardware.*

7.5.4. TO 1-1A-9, *Aerospace Metals - General Data and Usage Factors.*

7.5.5. TO 1-1A-14, *Installation and Repair Practice, Volume 1 Aircraft Electric and Electronic Wiring.*

7.5.6. TO 1-1A-15, *General Maintenance Instructions for Support Equipment (SE).*

7.6. Materiel Control. Manage bench operating stock and shop stocks IAW AFI 23-101. Before initiating turn-in actions, coordinate with other trainer development activities for possible use of excess assets.

7.7. Screening Excess Property for Parts. AETC trainer development activities are encouraged to screen excess property located at the local Defense Reutilization and Marketing Office. Property

items may be issued when they are used for training purposes. Take care to prevent the misuse of excess property.

7.7.1. Ensure selected property items have strong potential for use in future fabrication projects or for the repair of existing AETC-fabricated training equipment.

7.7.2. Caution should be used when selecting "nice-to-have" excess property. It could exceed reasonable storage and property control capabilities available to trainer development activities.

7.7.3. Identify and store excess property to provide reasonable retrieval and environmental protection. The minimum information required for identification is the FSC, part number (if available), and noun. Each trainer development activity must work with base supply to develop a procedure to notify the development activity when there is a turn-in of any 6910L (locally fabricated) stock numbered items. The fabrication activity may then screen the items for recoverable components, assemblies, etc.

7.8. Trainer Development Portfolio. Trainer development activities will prepare a portfolio (paper or electronic), which includes information specific to each activity, highlights its capabilities, describes and shows a representative sampling of training equipment fabricated by the activity, and provides information needed by a potential customer. **(T-3)** Descriptions in the portfolio should be in sufficient detail for the customer to easily determine the purpose and capability of each trainer. Review the portfolio annually and update so the contents represent the current capability of the trainer development activity. **(T-3)** Distribute digital copies to 2 AF/A3OS for use on MilWiki Trainer Development Page, customers and others on request.

7.9. Drawings and Photographs. 2 AF/A3OS is the OPR and official release authority for AETC trainer development technical drawings or photographs. 2 AF/A3OS reviews each request on a case-by-case basis, and provides rationale for disapproval. Any drawings or photographs released for use by DoD activities will not be passed on to non-DoD activities without 2 AF/A3OS concurrence. **(T-3)** Any drawings or photographs approved for release will clearly display the following statement: “This drawing or photograph is the property of the United States Air Force. It may contain proprietary data and is not releasable in whole or in part to any non-DoD activity or agency.” Additionally, if 2 AF/A3OS authorizes the release to a non-DoD activity or agency, the responsible trainer development activity will include instructions emphasizing to the non-DoD activity or agency that they cannot release the drawings or photographs in part or whole without prior approval of 2 AF/A3OS.

7.9.1. When foreign activities request drawings or photographs, 2 AF/A3OS forwards the request to Air Force Life Cycle Management Center International Division (AFLCMC/WFI) and Central Division (AFLCMC/WFM) for passing to the applicable Command Country Manager for processing.

7.9.2. AFI 16-1007, *Management of Air Force Operational Training Systems,* and AFI 63-101/20-101, *Integrated Life Cycle Management*, exclude AETC trainer developments from Air Force engineering drawing and associated list requirements when preparing engineering data for one-of-a-kind training aids in direct support of AETC resident course.

Chapter 8

REPORTING

8.1. Quarterly Status Report for Trainer Development Projects. Trainer development activities tasked with external and internal projects will forward a quarterly status report to 2 AF/A3OS. **(T-2)** The report will be in the form of an electronic spreadsheet with the following tabs: Projects Pending, Projects in Work, and Projects Completed. The report will cover calendar quarters and is due by the 20th day of the month following the close of a quarter. The project is open until the trainer is delivered to the customer. **Note:** This report is exempt from the report control symbol requirement according to AFI 33-324, *The Air Force Information Collections and Reports Management Program,* Chapter 2.

8.1.1. The Projects Pending tab will show: Work Order Number, Project Title, Special Training System (STS)/Course Training System (CTS) Item Supported, Benefit (eliminate training deficiency reduced training time, improved training quality, cost avoidance, etc.), Estimated Project Labor Cost, Estimated Project Material Cost, Estimated total cost, Estimated completion date, Shop priority, Internal or external tasking.

8.1.2. The Projects in work tab will show: Work Order Number, Project Title, STS/CTS Item Supported, Benefit (eliminate training deficiency reduced training time, improved training quality, cost avoidance, etc.), Estimated project labor cost, Estimated project material cost, Estimated total cost, Estimated completion date, Shop priority, Internal or external, Percentage completed.

8.1.3. The Projects Completed tab will show: Work Order Number, Project Title, STS/CTS Item Supported, Benefit (eliminate training deficiency reduced training time, improved training quality, cost avoidance, etc.), Project labor cost, Project material cost, Total cost, Completion date.

AMY L. GRAVELEY, GS-15, DAF
Director of Logistics, Engineering and Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoD 7000.14-R, *DoD Financial Management Regulation, Volume 11A, Reimbursable Operations Policy*, Chapter 2, Project Orders, May 2021

DoDM 4160.21-V1, *Defense Materiel Disposition: Disposal Guidance and Procedures,* 22 October 2015

AFH 23-123, *Integrated Logistics System-Supply (ILS-S), ILS-S, Standard Base Supply System Operations*, Vol 2 Part 2, 8 Aug 2013

DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 16 January 2020

AFI 21-101_AETCSUP, *Aircraft and Equipment Maintenance Management*, 10 August 2020

AFI 23-101, *Material Management Policy* 22 October 2020

AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, 4 February 2020

AFI 32-7001, *Environmental Management*, 23 August 2019

AFI 33-322, *Records Management and Information Governance*, 23 March 2020

AFI 33-324, *The Air Force Information Collections and Reports Management Program*, 22 July 2019

AFI 16-1007, *Management of Air Force Operational Training Systems*, 1 October 2019

AFI 38-101, *Manpower and Organization*, 29 August 2019

AFI 63-101/20-101, *Integrated Life Cycle Management*, 30 June 2020

AFI 90-821, *Hazard Communication (HAZCOM) Program*, 13 May 2019

AFI 91-202, *The US Air Force Mishap Prevention Program*, 12 March 2020

AFPD 21-1, *Maintenance of Military Materiel*, 1 August 2018

DAFMAN 90-161, *Publishing Processes and Procedures*, 15 April 2022

AETCI 63-102, *Air Education and Training Command Technical Manuals*, 15 September 2022

TO 00-5-1, *AF Technical Order System*, 30 August 2022

TO 00-5-1, AETC Supplement, *AF Technical Order System*, 21 October 2022

TO 00-25-113, *Conservation and Segregation of Critical Alloy and Precious Metal Bearing Parts and Scrap*, 15 September 2013

TO 00-25-195, *AF Technical Order System Source, Maintenance, and Recoverability Coding of Air Force Weapons, Systems, and Equipments,* 1 March 2021

TO 00-25-234, *General Shop Practice Requirements for the Repair, Maintenance, and Test of Electrical Equipment*, 27 October 2021

TO 1-1A-1, *Engineering Handbook Series for Aircraft Repair General Manual for Structural Repair*, 15 January 2016

TO 1-1A-8, *Structural Hardware*, 15 August 2022

TO 1-1A-9, *Aerospace Metals - General Data and Usage Factors,* 15 September 2022

TO 1-1A-14, *Installation and Repair Practice, Volume 1 Aircraft Electric and Electronic Wiring* 3 February 2021

TO 1-1A-15, *General Maintenance Instructions for Support Equipment (SE),* 10 November 2022

TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment*, 23 August 2019

32 CFR 989 1, *Title 32-National Defense, Subtitle A—Department of Defense, Title 32 National Defense, Chapter VII—Department of the Air Force, Subchapter T—Environmental Protection, Part 989, Environmental Impact Analysis Process (EIAP),* 1 July 2007

Prescribed Forms:

AETC Form 375, *Training Equipment Request*

AETC Form 376, *Trainer Development Acceptance Record*

AETC Form 380, *Trainer Fabrication Man-Hour and Material Cost Record*

AETC Form 394, *Trainer Development Instruction Slip*

AETC Form 428, *Training Services Time Card*

AETC Form 714, *Trainer Development Work Order Register*

AETC Form 715, *Bill of Materials*

Adopted Forms:

AF Form 9, *Request for Purchase*

DAF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

2 AF/A3OS—2d Air Force Policy and Operational Strategy

19 AF/A4PP—19th Air Force Maintenance Policy and Procedures Branch

19 AF/FM—19th Air Force Directorate of Financial Management

81 TRSS/TSUS—81st Training Support Squadron Trainer Development

ABW—Air Base Wing

AETC—Air Education and Training Command

AETC/A4—Air Education and Training Command Directorate of Logistics, Engineering and Force Protection

AETCI—Air Education and Training Command Instruction

AFB—Air Force Base

AFH—Air Force Handbook

AFLCMC/WFI—Air Force Life Cycle Management Center International Division

AFLCMC/WFM—Air Force Life Cycle Management Center Central Division

AFMAN—Air Force Manual

AMW—Air Mobility Wing

CFR—Code of Federal Regulations

CTK—Composite Tool Kit

CTS—Course Training System

DAF—Department of the Air Force

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DoD—Department of Defense

DoDM—Department of Defense Manual

ERRC—Expendability, Recoverability, and Reparability Code

FSC—Federal Stock Class

FTW—Flying Training Wing

FW—Fighter Wing

GS—General Schedule

GSA—General Services Administration

IAW—In Accordance With

ITK—Individual Tool Kit

JBSA—Joint Base San Antonio

MAJCOM—Major Command

MOA—Memorandum of Agreement

OPR—Office of Primary Responsibility

RDS—Records Disposition Schedule

SOW—Special Operations Wing

STS—Special Training System

TDS—Trainer Development Squadron

TM—Technical Manual

TO—Technical Order

TRS—Training Squadron

TRW—Training Wing

UEC—Unit Environmental Coordinator

UMD—Unit Manning Document

WG—Wage Grade

WL—Wage Leader

WS—Wage Supervisor

Attachment 2

ANNUAL SHOP RATE COMPUTATION

A2.1. Annual Shop Rate Computation. To compute the annual shop rate, you must first determine the total work year cost; then calculate available direct labor hours and divide the total work year cost by the total available direct labor hours.

Table A2.1. Annual Shop Rate Computation.

LINE	A Grade	B Number of Personnel Assigned	C Total Work Year Hours	D Hourly Base Rate	E Accelerated Hourly Base Pay (1.318) (note 1)	F Total Accelerated Annual Pay
1	GS-12	1				$57,012
2	GS-11	1				$47,014
3	GS-9	3				$116,580
4	GS-7	2				$64,284
5	GS-4	1				$22,986
6	WS-11	1	2,087	$14.65	$19.31	$40,300
7	WS-10	1	2,087	$13.92	$18.35	$38,296
8	WG-12	1	2,087	$14.58	$19.22	$40,112
9	WG-11	3	6,261	$12.97	$17.09	$107,000
10	WG-10	4	8,348	$12.50	$16.48	$137,575
11	WG-9	2	4,174	$12.06	$15.90	$66,367
12	Total	20			Total Work Year Cost	$737,526

Note: Acceleration factor (1.318) may change each year. Contact base financial management office for current figure.

Example:

Column B x 2,087 = Column C

Column D x acceleration factor (or military hourly base rate) = Column E

Column B x Column E = Column F

	Total Personnel Assigned	Number that are Direct Labor	Total Work Year Hour Factor	Total (note)
CIVILIAN	20	16	2,087	33,392

Note: Multiply the total number of personnel assigned to the activity who are categorized as direct labor by 2,087 (total work year hour factor).	
SHOP RATE (note 1)	$\frac{\$737,526}{33,392 \text{ (note 2)}} = \$22.09$
Notes: 1. Compute shop rate by dividing total work year cost by the total available direct labor hours. 2. Multiply the total number of personnel assigned to the activity who are categorized as direct labor by 2,087 (total work year hour factor).	