BY ORDER OF THE COMMANDER
AIR EDUCATION AND TRAINING
COMMAND

AETC INSTRUCTION 21-109

13 OCTOBER 2004

Maintenance

MAINTENANCE MANAGEMENT TRAINER DEVELOPMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: HQ AETC/LGMMP (CMSgt Jack Cruz)
Supersedes AETCI 21-109, 23 October 2001

Certified by: HQ AETC/LGM (Mr Jack Logan)
Pages: 23
Distribution: F

This instruction establishes the maintenance management system for AETC trainer development activities and implements AFPD 21-1, *Managing Aerospace Equipment Maintenance.* It prescribes procedures and responsibilities necessary to operate and obtain support from trainer development activities at Keesler, Kirtland, Randolph, and Sheppard AFBs. Submit recommendations to change or improve this instruction or to obtain a waiver on AETC IMT 1236, **Request for Improving/Changing AETC Maintenance Publications.** Requests must have the approval of the appropriate group commander. Forward to 2 AF/LR, 721 Hangar Road, Suite 102, Keesler AFB MS 39534-2804 for coordination and approval. Approved 2 AF/LR requests will be forwarded to HQ AETC/LGM, 555 E Street East, Randolph AFB TX 78150-4440 for action by HQ AETC/LGMMP. A glossary of references and supporting information used in this instruction is at Attachment 1.

This publication does not apply to Air National Guard (ANG) and Air Force Reserve Command (AFRC) units. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123, *Management of Records,* and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) (available at https://webrims.amc.af.mil).

SUMMARY OF REVISIONS

This instruction is substantially revised and must be reviewed in its entirety. This revision changes all 2 AF/DO references to 2 AF/LR, changes all references of AETCI 21-101 to AFI 21-101 and AETC Sup 1, and also changes the term AETC Form to AETC IMT. This revision also changes the references of TO 00-5-2 to TO 00-5-1. Additionally, this revision changes the deadline for computing the annual shop rate.

PAGE

Section A—Managing AETC Trainer Development Activities

1. Function 2
2. Organization 3
3. HQ AETC/LG Responsibilities 3
4. HQ AETC/LGMM Responsibilities 3
5. 2 AF/LR Responsibilities 3
6. Group Commander Responsibilities 4
7. Trainer Development Chief Responsibilities 5

Section B—Trainer Development Function Responsibilities
8. Trainer Development 6
9. Workload and Materiel Control Function Responsibilities 6
10. Specific Work Center Function Responsibilities 8
11. Services 9
12. Storage 10
Section C—Fabrication Cycle Procedures
13. The Fabrication Cycle 10
14. Request Initiation 10
15. Review Phase 10
16. Design and Planning Phase 10
17. Production Approval Phase 10
18. Training Equipment Fabrication 10
19. Internal General Support Projects 11
20. Non-AETC Mission Support 11
21. Work Priorities 12
22. Supply Procedures 13
23. Production Standards 13
24. Assignment of an Expendability, Recoverability, and Reparability Code (ERRC) 14
25. Man-Hour Accounting 14
26. Establishing a Standard Shop Rate 14
27. Quality Control 15
28. Materiel Control 15
29. Screening Excess Property for Parts 15
30. Trainer Development Portfolio 15
31. Drawings and Photographs 16
32. Computer Products 16
Section D—Reporting
33. Quarterly Status Report for 2 AF/LR-Directed Projects 16
34. Quarterly Manpower Utilization Report 16
35. Quarterly Status Report for Internal (Local) Projects 16
36. IMTs Prescribed 17
37. IMTs Adopted 17
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION 18
Attachment 2—SAMPLE ANNUAL SHOP RATE COMPUTATION 20
Attachment 3—SAMPLE QUARTERLY STATUS REPORT FOR 2 AF/LR DIRECTED PROJECTS 21
Attachment 4—SAMPLE QUARTERLY MANPOWER UTILIZATION REPORT 22
Attachment 5—SAMPLE QUARTERLY STATUS REPORT FOR INTERNAL (LOCAL) PROJECTS 23

Section A—Managing AETC Trainer Development Activities

1. Function. AETC trainer development activities design, develop, fabricate, and assemble training equipment to meet the definition prescribed for federal stock class (FSC) group 69 according to Numeric Index of Classes H2-2. Additionally, trainer development activities 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. These activities support the AETC training mission at training wings (TRW), flying training wings (FTW), fighter wings (FW), special operations wings (SOW), and air mobility

wings (AMW). Additional responsibilities include quality control, modification, repair, refurbishment, and maintenance of manufactured training devices. Trainer development activities provide life-cycle support (depot) for all trainers they develop. AETC trainer development activities can accept project orders (PO) for funding according to DoD Financial Management Regulation 7000.14-R, Volume 11A, *Reimbursable Operations Policy and Procedures,* and are designated as government-owned, government-operated activities.

1.1. Requests for trainer development services from units normally supported by the wing owning the trainer development activity (wing to which the trainer development activity is assigned) will be referred to as internal requests for the purpose of this instruction (paragraph 2.).

1.2. Requests for trainer development services from units not normally supported by the owning wing will be referred to as external requests for the purpose of this instruction. Requests resulting in transfer of funds to a trainer development activity from an organization outside the wing are considered external even if the wing conducts the training. For example, a local training detachment (TD) conducts training, and the using command funds the project.

2. Organization. Air Force organizational structures are located in AFI 38-101, *Air Force Organization.* Trainer development activities will be located within the training/support squadron, maintenance squadron or group, as applicable. 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. Each trainer development activity is normally responsible for providing support to the following organizations or activities:

2.1. Keesler and Sheppard AFB trainer development activities support their respective TRWs. The Keesler trainer development activity also provides support to the training group at Vandenberg AFB in the event the local (30 OSS) trainer development activity is unable to support a development/fabrication requirement.

2.2. Randolph AFB trainer development activity supports all AETC FTWs, FWs, AMWs, San Antonio area AETC bases, and Goodfellow AFB.

2.3. Kirtland AFB trainer development activity supports the SOW, other AETC units at Kirtland, and the USAF Survival School at Fairchild AFB.

3. HQ AETC/LG Responsibilities. HQ AETC/LG approves all operating policies and procedures for AETC trainer development activities governed by this instruction.

4. HQ AETC/LGMM Responsibilities. HQ AETC/LGMM is the office of primary responsibility (OPR) for procedures prescribed by this instruction.

5. 2 AF/LR Responsibilities. The 2 AF/LR provides centralized staff management for AETC trainer development activities governed by this instruction. The 2 AF/LR executes maintenance and modification support policies for AETC-developed training equipment, and functions as the production approval official for all external trainer development requirements. Specifically, 2 AF/LR 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. Route the 2 AF/LR tasking through the tasked trainer development activity's group commander. Accomplish command approval of such projects on an AETC IMT 375, **Training Equipment Request.** Prioritization of these projects will normally follow the priorities prescribed in Table 1, but 2 AF/LR may grant exceptions.

6. Group Commander Responsibilities. The group commander responsible for the trainer development activity:

6.1. Ensures a training equipment review and production approval system for trainer cost and feasibility studies and fabrication requests originating within his or her area of authority is established. Designates the following duties and/or functions:

6.1.1. Training Equipment Reviewing Official. The training equipment reviewing official is designated by name or office symbol. More than one person may be designated due to the potential volume of requests.

6.1.1.1. The official reviews internally generated AETC IMTs 375, evaluates the mission need of the item, number of students in the class, number of classes per year, length of training, and whether the potential cost of the item justifies its need.

6.1.1.2. The official forwards approved requests to trainer development or returns disapproved requests with rationale to the requester, as applicable.

6.1.2. Trainer Development Function. The trainer development function provides a cost and feasibility study to determine capability, ability to meet need time, commercial availability, etc. This function forwards requests not rejected to the production approval official or requester, as applicable, and returns rejected requests, with rationale, to the reviewing official or requester, as applicable.

6.1.3. Internal Production Approval Official. Internal production approval officials are normally organizationally aligned above the trainer development activity responsible for forecasting training requirements.

6.1.3.1. These officials perform a comprehensive evaluation of the request. Officials must measure the true cost for estimated labor (even if not passed on to the requester) and materials, and determine if the request is mission essential. If provided, officials evaluate commercial availability or General Services Administration (GSA) equivalents that could fulfill the requester's needs. Officials then compare the request to the estimated labor, material, and life-cycle costs. If a commercially available equivalent is more cost effective, the requester procures it. If production approval officials approve the request, they assign a work priority to the project (Table 1) and forward it to the trainer development activity for fabrication. Officials return disapproved requests, with rationale, through the training equipment reviewing official to the requester.

6.1.3.2. Internal production approval officials advise trainer development of an order of need for each approved request. This allows trainer development to properly schedule the fabrication request.

6.2. Establishes local procedures to prevent the misuse of trainer development facilities, and ensures the most economical use of skills assigned.

6.3. Establishes a trainer development activity orientation program for appropriate personnel in normally supported units.

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

6.5. Ensures subordinate formal training course commanders annually forecast their training equipment development requirements. Ensures they report these requirements to the local organization responsible for the trainer development activity. Requirements will reflect organization, course number, equipment nomenclature, funding for training fabrication, and quantity desired. Make every effort to program for training equipment needs. This will reduce or eliminate financial reimbursement between different organizational elements operating from a common FTW or TRW operation and maintenance (O&M) fund.

For different funding plans, coordinate requests through the comptroller (HQ AETC/FM) and 2 AF/LR channels.

6.6. Ensures the trainer development activity provides design, planning, fabrication, technical writing, major maintenance, modification, overhaul, and refurbishment of training equipment. Portions of this support may be accomplished through the use of contract sources at the determination of the group commander.

6.7. Provides a management system to record disposition and modification of fabricated training equipment requiring configuration similarity to AETC life support, egress, and aircrew training equipment. AETC-fabricated equipment includes, but is not limited to, life support, egress, and other aircrew training devices possessing a combined labor and material value of more than $7,500.

7. Trainer Development Chief Responsibilities. The trainer development chief manages the activity and has overall supervision of its function. The chief is responsible to the support squadron, maintenance squadron, or logistics group commander for the management of the trainer development activity. The chief serves as the senior technical adviser within assigned areas of responsibility. In addition, the chief:

7.1. Annually estimates and programs for trainer design and fabrication, equipment, personnel, training, and facility requirements by reviewing workloads and mission assignments.

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

7.3. Monitors and controls those aspects of additional duties, leave, training, and details that take personnel away from the daily work force.

7.4. Reviews shift manning, skill levels, start times, distribution of supervision, and makes adjustments as necessary.

7.5. Maintains the master personnel roster.

7.6. Establishes an in-house review and production scheduling system.

7.7. Monitors work priorities to ensure project completion by the approved need date. Initiates action if a conflict of need occurs or an inability to meet the project completion date exists.

7.8. Develops and establishes a tool management operating instruction (OI) that meets the needs of the trainer development activity. The OI 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:

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

7.8.2. User’s responsibilities when assigned an ITK or special tool.

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

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

7.9. Establishes a technical order (TO) management system in accordance with AFI 21-101, *Maintenance Management of Aerospace Equipment,* and AETC Sup 1.

7.10. Establishes a precious metals recovery program in accordance with TO 00-25-113, *Conservation and Segregation of Critical Alloy and Precious Metal Bearing Parts and Scrap,* and AFMAN 23-110, Volume 6, Chapter 4, *Precious Metals Recovery Program (PMRP).*

7.11. Ensures strict compliance with supply requisition procedures, and that surplus supplies and equipment are properly turned in to base supply in accordance with AFI 21-101 and AETC Sup 1.

7.12. Establishes a hazardous material management program in accordance with AFI 32-7086.

7.13. Manages the work area safety program, including safety indoctrination of personnel, and ensures availability of industry and safety publications and programs.

7.14. Establishes a funds expenditures program to ensure projects can be completed within allotted funding. Appropriate action is taken when lack of funds affects the project.

7.15. Ensures all personnel complete the shop-level pollution prevention training in accordance with DoD 4715.4, Section 4.2.6, *Pollution Prevention.*

7.16. Ensures all personnel complete any environmental safety and occupational health training requirements as applicable.

7.17. Appoints a unit environmental coordinator (UEC).The UEC will coordinate development activities with the installation environmental flight for compliance requirements, for example, EIAP, air, hazardous materials, hazardous waste, waste water, etc.

Section B—Trainer Development Function Responsibilities

8. Trainer Development. Trainer development activities determine the organizational structure most efficient for their activity. The following functions may be assigned completely or in part to different units within the organization:

8.1. Fabrication Function Responsibilities. The fabrication function supervisor is responsible for managing, supervising, and training assigned personnel, and managing fabrication resources to achieve quality production. The fabrication function:

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

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

8.1.3. Maintains a record of inspection, lubrication, and maintenance on industrial type equipment (in accordance with TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment)*, and other support equipment.

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

8.1.5. 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.

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

8.2. Engineering Function Responsibilities. 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:

8.2.1. Processes work order requests received from workload control.

8.2.2. Prepares feasibility and design studies. ***NOTE:*** Consider the simulator interface management-ware (SIMWARE) concept when developing computer-based simulators or trainers. The SIMWARE concept does not make use of SIMWARE mandatory; however, it must be one of the alternatives considered when developing new and/or making major modifications to existing computer-based simulators or trainers. The

SIMWARE concept puts control of the operational software into the hands of the user. SIMWARE is a software shell, giving users the ability to create, select, add to, or modify computer-based simulator or trainer functions without the need of specialized computer programmers, or the purchase of nonstandard proprietary software or hardware.

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

8.2.4. Assigns a design, part, or serial number to each work order requiring design or development in accordance with AETCI 21-301, *Air Education and Training Command Technical Manuals.*

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

8.2.6. Performs acceptance of completed training equipment produced, using AETC IMT 376, **Trainer Development Acceptance Record.**

8.2.7. Develops technical manuals (TM) for training equipment in accordance with AETCI 21-301 and maintains master copies.

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

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

8.2.10. Prepares a trainer development portfolio as described in paragraph 31.

8.2.11. Maintains a comprehensive file of technical documents and literature required to maintain currency in applicable technical areas.

8.2.12. Ensures sufficient TOs are on hand to meet design needs, and TO files are maintained and requisitioned in accordance with TO 00-5-1, *Air Force Technical Order System.*

8.2.13. Determines training requirements necessary to gain and maintain currency in applicable technical areas.

8.2.14. Maintains engineering data for items produced in accordance with AF RDS (https://webrims.amc.af.mil). This data may be maintained in electronic media. If data is stored electronically, maintain a listing and/or cross-reference to indicate location of files, disks, or other means of storage. Mark storage media to identify project. Backup electronic files appropriately to prevent loss of data. Data should include (due to the varying complexity of projects, not all of the following data is included in each file):

8.2.14.1. AETC IMT 375 (with attachments) authorizing a feasibility study or production.

8.2.14.2. Completed feasibility or design study.

8.2.14.3. Project order or direct funds cite.

8.2.14.4. Memorandum of agreement (MOA).

8.2.14.5. Statement of work.

8.2.14.6. Design specification.

8.2.14.7. Photographs.

8.2.14.8. Engineering and technical information related to the item.

8.2.14.9. Engineering drawings, blueprints, or lists.

8.2.14.10. AETC IMT 715 or equivalent.

8.2.14.11. AETC IMT 380, **Trainer Development Man-Hour and Material Cost Record,** or equivalent.

8.2.14.12. Applicable TM or reference to TM location.

8.2.14.13. AETC IMT 376 or equivalent.

9. Workload and Materiel Control Function Responsibilities. 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:

9.1. Serves as the production focal point.

9.2. Recommends workload scheduling and leveling.

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

9.4. Schedules approved work order requests.

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

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

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

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

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

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

9.11. Maintains due-in records and document register.

10. Specific Work Center Function Responsibilities. 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:

10.1. The machine function provides fabrication 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.

10.2. 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.

10.3. 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.

10.4. 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.

10.5. 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.

10.6. 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.

10.7. 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.

11. Services. Trainer development activities provide the following services:

11.1. Trainer Development Support. Trainer development activities support AETC resident or formal training courses. Each organization plans, designs, develops, fabricates, maintains, modifies, repairs, and refurbishes locally fabricated AETC training equipment. As instructed by AETCI 21-301, the organization also develops and publishes TMs that provide part identification and information on the assembly, installation, operation, service, disassembly, overhaul, and reassembly of trainers.

11.2. Design Support. 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 overhires), and additional remarks. Trainer development activities provide a database for designated production-approval officials to evaluate training equipment requests. These activities reject requests when there is a readily available, cost-effective commercial or GSA substitute, the item is not within the function's capability to design and fabricate, or personnel are not available.

11.3. Fabrication Support. Typical shop skills usually available include machine, sheet metal, welding, metalworking, plastic, wood, corrosion, painting, electronics, electrical, fiberglass, fabric, leather, rubber, and production assembly.

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

11.5. Repair Services Support. 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. AETC IMT 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 IMT 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 maintenance operating instructions (MOI) for this activity. (***NOTE:*** Repair services support may be accomplished through unit maintenance contracts.) Procedures in the MOI will document approved man-hour usage from 2 AF/LR and account for man-hours expended.

12. 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:

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

12.2. 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.

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

Section C—Fabrication Cycle Procedures

13. The Fabrication Cycle. The training equipment fabrication cycle consists of request initiation, review, design and planning, production approval, and fabrication.

14. Request Initiation. Use AETC IMT 375 to request design, fabrication, feasibility studies, 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 only AETC IMT 375 for FSC 69 type trainers or those approved by 2 AF/LR. See paragraph 20 for other projects.

15. Review Phase. The training equipment reviewing official conducts a complete review of the information provided on the AETC IMT 375 and accompanying documents. The reviewing official determines if the request is worth continuing with design and planning. Send approved requests to design and planning. Return requests disapproved to the original requester with reasons for disapproval.

16. Design and Planning Phase. Design and planning 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.

16.1. 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/LR determines whether the trainer development supporting the requester will receive the planning package or the developing activity will support the request if another activity develops a planning package.

16.2. 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 IMT 375 request. Return the memorandum and AETC IMT 375 through the reviewing official.

17. Production Approval Phase. This involves a complete review of the planning package by the production approval official. The minimum elements of this review are the total estimated labor (including overtime and/or overhire), materials cost, the project priority (suggested by the reviewer), maintainability requirements, and use of requested training equipment. The approved package is sent to the trainer development activity. Return disapproved packages, through the reviewing official, to the original requester with the reasons for disapproval.

18. 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 IMT 714, or equivalent, to record and monitor training fabrication requests. In addition, use AETC IMT 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).

19. Internal General Support Projects. Process internal general support projects (projects that are not trainers and do not fit trainer development guidelines) produced by trainer development personnel as follows:

19.1. Submit requests by memorandum to the trainer development activity for approval or disapproval.

19.2. Examine each request to ensure fabrication will not conflict with commercial procurement and contract policies.

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

19.4. Approve requests (trainer development activities) if the total cost (including labor and materials) is $7,500 or less. The applicable group commander approves requests exceeding $7,500.

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

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

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

19.6. Internal general support projects will not be documented as trainer development, and will not be used as a basis for manpower authorization determination. Internal general support projects (to include local manufacture projects) must not exceed 5 percent of the unit's quarterly man-hour utilization.

20. 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.

20.1. Submit AETC IMT 375 (completed through block 18) to 2 AF/LR for non-AETC support approval (external requests should be submitted by the applicable MAJCOM). The tasked trainer development activity evaluates the work request and determines if it can meet the specified project requirements. A memorandum of agreement (MOA) will be accomplished between the tasked trainer development activity, the requesting activity, and 2 AF/LR. If the trainer development activity determines the request is beyond its capability, 2 AF/LR 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:

20.1.1. Send formal communications, except technical information exchanges, through 2 AF/LR.

20.1.2. Trainer development activity returns a copy of the AETC IMT 375 to 2 AF/LR with work order number entered in block 21.

20.2. The trainer development activity, with 2 AF/LR and MAJCOM coordination, initiates an MOA for the project. The MOA should 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.

20.3. Trainer development activities will develop procedures to dedicate equivalent man-hours to a non-AETC requester's project when overtime or overhires are authorized and funded. Overhire personnel may work on other projects, and direct personnel may work on non-AETC projects as deemed necessary by the trainer development chief to make the most efficient use of resources. Ensure overtime or overhire labor hours are charged for reimbursement from the requester only when those hours are expended in support of the requester's project.

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

20.4.1. PO and direct fund cite funding include cost for materials, shipping, special project equipment, temporary duty (TDY), AF IMT 9, **Request for Purchase,** contract services expenditures, personnel overtime, and overhires. The trainer development chief is authorized to certify funds available on AF IMT 9 contract expenditures for services and commodities.

20.4.2. Normally, the Department of Defense (DoD) organization making the request is not charged for civilian labor unless overtime or overhire is required to complete the project.

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

21. Work Priorities. The production approval official assigns a work priority to trainer development requests using a force activity designator (FAD) in accordance with AFMAN 23-110, Volume 2, Part 2, Chapter 11 and priority justification category (PJC) code listed in Table 1 of this instruction. The production approval official will further prioritize work requests of equal FAD-PJC priority by establishing a realistic date required in AETC IMT 375, block 3a. 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.

21.1. 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.

21.2. 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. The official will attach the waiver to the appropriate AETC IMT 375, and send the package back to the development activity. ***NOTE:*** Coordinate deviations to 2 AF/LR tasked fabrication projects with 2 AF/LR.

21.3. 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.

21.4. 2 AF/LR-Directed Priorities. The 2 AF/LR will use AETC IMT 375 to task development activities for external projects, after coordinating requirements, feasibility, etc. The 2 AF/LR, or designated official, signs the AETC IMT 375 production approval block and assigns a work priority. Deviation to these priorities requires 2 AF/LR approval.

21.5. 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.

Table 1. Trainer Development Priority System.

L I N E	A	B	C	D	E	F
	Force Activity Designator (FAD) (notes 1 and 3)	**Priority Justification Category (PJC) (note 2)**				
1	I	1	5	9	13	17
2	II	2	6	10	14	18
3	III	3	7	11	15	19
4	IV	4	8	12	16	20

NOTES:

1. Use the weapon system FAD if an open program management directive (PMD) exists; for example, B-1B, FAD I-1. If the weapon system FAD is not established, use the FAD of the gaining MAJCOM if that MAJCOM is the major user of course graduates. If course graduates are used by multiple commands (example, precision measurement equipment laboratory [PMEL]), use the AETC FAD. If the fabrication requester possesses an organic FAD below FAD III, use the requester's organic FAD, for example, Air National Guard, FAD IV.

2. PJCs in columns B, C, and D are the only categories authorized to support the UMD. PJCs in columns E and F, when authorized and approved by 2 AF/LR, may be used to earn manpower authorizations.

3. AFMAN 23-110, Volume 2, Part 2, Chapter 11, Attachment 11A-12, A12.2.1, *Issue Systems,* authorized use of higher FAD.

PJC LEGEND:

B—Training equipment required to directly support a career field and education training plan (CFETP) training item in an AETC resident course. A training deviation will result without the training equipment.

C—Same as 1 except a training deviation will not result without the training equipment.

D—Training equipment used in resident courses, not based on a CFETP requirement. Training equipment will enhance the instruction.

E—External non-AETC projects directed by 2 AF/LR.

F—Other projects directed by 2 AF/LR.

22. Supply Procedures. Process requests for locally fabricated training equipment in accordance with AFMAN 23-110, Volume 2, Part 2, Chapter 9, *Requisitioning,* and AFMAN 23-110, Volume 2, Part 2, Chapter 27, *Research and Records Maintenance,* and their respective supplements.

23. Production Standards. Training equipment fabricated by AETC development activities:

23.1. Must satisfy authorized requirements.

23.2. Must be technically suitable.

23.3. Must be in compliance with all DoD and Air Force policies and directives.

23.4. Is normally fabricated according to best commercial practices, as opposed to military specification (MILSPEC) standards.

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

24.1. Assign locally fabricated training equipment an ERRC of NF3 or XB3 as appropriate.

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

25. 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 IMT 428 or equivalent to document man-hours. Guidelines for computing labor costs are in paragraph 26 of this instruction. AETC IMT 380, or equivalent, may be used as a record for labor and material costs. If used, retain AETC IMT 380, or equivalent, with AETC IMT 375 upon completion of a trainer development request.

26. Establishing a Standard Shop Rate:

26.1. 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.

26.2. Count personnel assigned to the trainer development activity to develop a comprehensive shop rate. Include personnel assigned, for example, supervisors, clerical support, assigned work center supply support, planning and design personnel, technical writers, drafters, illustrators, direct labor, overhires, 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.

26.3. 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:

26.3.1. List each assigned grade and total personnel for that grade. See the sample format (Table A2.1) in Attachment 2 of this instruction.

26.3.2. 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.

26.3.3. 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.

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

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

26.4.1. Identify direct labor personnel as those who can document their man-hour expenditures in the man-hour accounting system (see paragraph 25).

26.4.2. 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.

26.4.3. Sum the computed available productive direct labor hours.

26.5. Compute the standard shop rate by dividing the total work-year cost (see paragraph 26.3.4) by the total available productive direct labor hours (see paragraph 26.4.3).

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

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

27.2. TO 1-1A-1, *General Manual for Structural Repair.*

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

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

27.5. TO 1-1A-14, *Aircraft Electrical and Electronic Wiring (Installation Practices).*

27.6. TO 1-1A-15, *General Maintenance Instructions for Support Equipment.*

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

29. 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.

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

29.2. 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.

29.3. 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. ***NOTE:*** 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.

30. 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. 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 periodically and update so the contents represent the current capability of the trainer development activity. Distribute copies to 2 AF/LR, customers, and others on request. Trainer development activities are encouraged to also provide this information on the Internet.

31. Drawings and Photographs. The 2 AF/LR is the OPR and official release authority for AETC trainer development technical drawings or photographs. The 2 AF/LR 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/LR concurrence. 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/LR 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/LR.

31.1. When foreign activities request drawings or photographs, 2 AF/LR forwards the request to the Air Force Security Assistance Center (AFSAC/COMV) at Wright Patterson AFB for coordination.

31.2. AFI 36-2251, *Management of Air Force Training Systems,* and AFI 21-402, *Engineering Drawing System,* paragraph 6, 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.

32. Computer Products. Approved computer-equivalent products or computer-generated data may be used in place of nonfillable IMTs.

Section D—Reporting

33. Quarterly Status Report for 2 AF/LR-Directed Projects. Trainer development activities tasked to do 2 AF/LR-directed projects will forward a quarterly status report on open projects to 2 AF/LR. The report will cover calendar quarters and is due by the 20th day of the month following the close of a quarter. See Attachment 3 of this instruction for the required format. The project is open until the trainer is delivered to the customer. ***NOTE:*** This report is exempt from the RCS requirement according to AFI 33-324, *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections,* paragraph 2.11.12.

34. Quarterly Manpower Utilization Report. Trainer development activities will forward a quarterly two-part manpower utilization report to 2 AF/LR. See Attachment 4 of this instruction for a sample format. The report will cover calendar quarters and is due by the 20th day of the month following the closeout of a quarter. ***NOTE:*** This report is exempt from the RCS requirement according to AFI 33-324, paragraph 2.11.12.

34.1. Part One. This part will show (by direct man-hours) the magnitude of categorized work performed during the quarter. Group the data in the following units:

34.1.1. Unit 1. Collate PJCs A, B, and C into a single data element (man-hours).

34.1.2. Unit 2. Report PJC D.

34.1.3. Unit 3. Report PJC E.

34.2. Part Two. This part will show (by direct man-hours) the utilization of individual function skills during the quarter. It will also contrast the direct productive man-hours available to the individual function against actual direct hours utilized. Use 128 direct productive man-hours available per month to contrast with actual direct hours utilized.

35. Quarterly Status Report for Internal (Local) Projects. Trainer development activities will forward to 2 AF/LR, a quarterly status report on open internal (local) projects. The report will cover calendar quarters and is due by the 20th day following the closeout of a quarter. See Attachment 5 of this instruction for the

format. Projects are open until the trainer is delivered to the customer. ***NOTE:*** This report is exempt from the RCS requirement according to AFI 33-324, paragraph 2.11.12.

36. IMTs Prescribed. AETC IMTs 375, 376, 380, 394, 428, 714, and 715.

37. IMTs Adopted. AF IMT 9 and AETC IMT 1236.

RUSSELL M. GIMMI, Colonel, USAF
Deputy Director of Logistics

Attachment 1
GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DoD 4715.4, *Pollution Prevention*

DoD 7000.14-R, Volume 11A, Chapter 2, *Reimbursable Operations Policy and Procedures*

AFI 21-101, *Aerospace Equipment Maintenance Management,* and its AETC supplement

AFI 21-402, *Engineering Drawing System*

AFI 23-111, *Management of Government Property in Possession of the Air Force*

AFI 32-7080, *Pollution Prevention Program*

AFI 32-7086, *Hazardous Material Management*

AFI 33-324, *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections*

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

AFI 38-101, *Air Force Organization*

AFI 38-201, *Determining Manpower Requirements*

AFMAN 23-110, Volume 2, Part 2, Chapter 9, *Requisitioning*

AFMAN 23-110, Volume 2, Part 2, Chapter 11, *Issue Systems*

AFMAN 23-110, Volume 2, Part 2, Chapter 27, *Research and Records Maintenance*

AFMAN 23-110, Volume 6, Chapter 4, *Precious Metals Recovery Program (PMRP)*

AETCI 21-301, *Air Education and Training Command Technical Manuals*

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

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

TO 1-1A-1, *General Manual for Structural Repair*

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

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

TO 1-1A-14, *Aircraft Electrical and Electronic Wiring (Installation Practices)*

TO 1-1A-15, *General Maintenance Instructions for Support Equipment*

32 CFR 989 and AETC Sup 1, *Environmental Impact Analysis Process (EIAP)*

Abbreviations and Acronyms

AMW—Air Mobility Wing

CFETP—career field education and training plan

CTK—composite tool kit

DoD—Department of Defense

DRMO—Defense Reutilization and Marketing Office

EIAP—environmental impact analysis process

ERRC—expendability, recoverability, and reparability code

FAD—force activity designator

FSC—federal stock class

FTW—flying training wing

FW—fighter wing

GS—general schedule

GSA—General Services Administration

ITK—individual tool kit

MAJCOM—major command

MOA—memorandum of agreement

OI—operating instruction

O&M—operation and maintenance

OPR—office of primary responsibility

PJC—priority justification category

PO—project order

SOW—special operations wing

STS—specialty training standards

SE—support equipment

TDY—temporary duty

TM—technical manual

TO—technical order

TRW—training wing

UEC—unit environmental coordinator

UMD—unit manning document

WG—wage grade

WL—wage leader

WS—wage supervisor

Attachment 2
SAMPLE ANNUAL SHOP RATE COMPUTATION

A2.1. Annual Shop Rate Computation. The total work year cost is determined first (see Table A2.1); then available direct labor hours is calculated; finally divide the total work year cost by the total available direct labor hours.

Table A2.1. Annual Shop Rate Computation.

LINE	A	B	C	D	E	F
	Grade	Number of Personnel Assigned	Total Work Year Hours	Hourly Base Rate	Accelerated Hourly Base Pay (1.318)(note 1)	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:
1. 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 the shop rate by dividing the 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).

Attachment 3

SAMPLE QUARTERLY STATUS REPORT FOR 2 AF/LR DIRECTED PROJECTS

MEMORANDUM FOR 2 AF/LR (current date)

FROM: (Organization submitting report)

SUBJECT: B-1B Armament Systems Trainer Status Report (Work Order #XXXXX)

1. The following report is submitted according to AETCI 21-109, as of (end date of reporting quarter).

2. Project Status:

2.1. Name of Project: B-1B Armament Systems Trainer

2.2. Date Current PO Expires: 30 Sep 04

2.3. Estimated Percent of Project Completion: 63%

2.4. Estimated Completion Date: Sep 04

3. Funds Status:

3.1. Percent Funds Spent: 58%

3.2. Balance: $11,319,069.37

3.3. Obligated (due out): $26,814.17

(Signature of Trainer Development Chief)

Attachment 4

SAMPLE QUARTERLY MANPOWER UTILIZATION REPORT

MEMORANDUM FOR 2 AF/LR (current date)

FROM: (organization submitting report)

SUBJECT: Quarterly Manpower Utilization Report for (indicate calendar quarter and year)

1. Part One. Magnitude of all work performed by category:

	Direct Categories	Man-Hours
UNIT 1	A, B, C	6157
UNIT 2	D	331
UNIT 3	E	8
TOTAL		6496

2. Part Two. Utilization of individual skills:

Function	**Personnel Assigned**	**Direct Production Man-Hours Worked (note 1)**	**Actual Direct Man-Hours Worked**	**Percent (note 2)**
Machine	2	768	655	85
Sheet Metal	2.5	960	970	101
Electronics	1.75	672	505	75
Wood	2	768	509	66
Paint	1	384	425	111
Welding	1	384	371	97
Assembly	3	1152	943	82
Subtotal	**13.25**	**5088**	**4378**	**86**
Design and Planning	5	1920	2118	110
Total	**18.2**	**7008**	**6496 (note 3)**	**93**

NOTES:

1. Personnel assigned multiplied by 128 man-hours (per month) multiplied by 3 months.
2. Actual direct man-hours worked divided by direct production man-hours.
3. Total for Part One, Man Hours, must equal total for Part Two, Actual Direct Man-Hours Worked (6496 in this example).

(Signature of Trainer Development Chief)

Attachment 5

SAMPLE QUARTERLY STATUS REPORT FOR INTERNAL (LOCAL) PROJECTS

MEMORANDUM FOR 2 AF/LR (current date)

FROM: (organization submitting report)

SUBJECT: Quarterly Status Report for Internal (local) Projects

Work Order Number	Title	Shop Priority	Start Date (actual or estimated)	Direct Labor Hours Expended	Completion Date (actual or estimated)	Remarks
1234	Modify 10 each rescue trainers	3	Oct 04	20%	Dec 05	SQ-Tech or Fly Tng-2 complete & shipped. Parts on hand, work in progress
6789	Design & fabricate 1 each bomb load trainer (B-1B)	8	Nov 04	0%	TBD	SQ-Tech or Fly Tng-Parts on order. Est del date: May 05 (last verified Nov 04)
5678	Design & fabricate 5 each electronics trainers	13	Sep 04	40%	Jul 05	SQ-Tech or Fly Tng-2 completed. Awaiting shipping instructions. Parts on hand, work in progress.
2345	Design & fabricate 1 each F-15 trainer.	7	TBD	0%	TBD	SQ-Tech or Fly Tng-Cost study in progress. ECD Jun 05
3456	Design 7 fabricate 2 each fire trainers.	3	Jan 05	75%	Nov 05	SQ-Tech or Fly Tng-Ready to ship.

(Signed by Trainer Development Chief)