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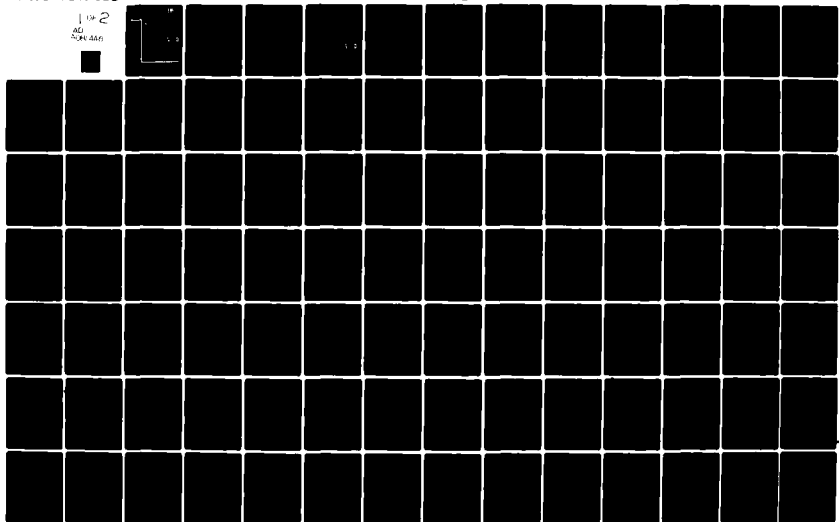
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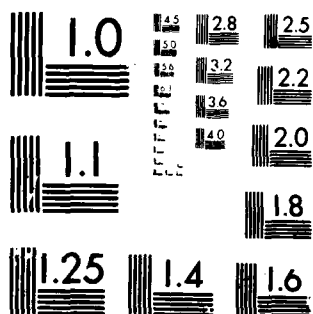
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**FEASIBILITY OF COMPUTER APPLICATIONS
TO MISSION-ORIENTED TRAINING IN THE AIRCRAFT
ARMAMENT SYSTEMS SPECIALIST CAREER FIELD**

By

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Lowry Air Force Base, Colorado 80230

January 1980

Final Report

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This final report was submitted by John Davis Associates, 3030 Covington Pike, Memphis, Tennessee 38128, under contract F33615-78-C-0052, project 1121, with Technical Training Division, Air Force Human Resources Laboratory (AFSC), Lowry Air Force Base, Colorado 80230. Mr. Steve Offutt was the Contract Monitor for the Laboratory.

This report has been reviewed by the Office of Public Affairs (PA) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

MARTY R. ROCKWAY, Technical Director
Technical Training Division

RONALD W. TERRY, Colonel, USAF
Commander

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A survey was conducted of base-level, mission-oriented training of Aircraft Armament Systems Specialists (AFSC 46230) upgrading to the 5-skill level at 3 Tactical Air Command bases. Functions performed by Air Force personnel in support of such training were analyzed, as was the training itself, to determine the feasibility of applying state-of-the-art computer technology to the problems of management and administration of the training. Five computer-supportable functions were identified and rank-ordered by the degree to which they could, if automated, provide increases in training effectiveness and efficiency. Several specific problems related to OJT and the upgrade training process in the aircraft maintenance production environment were also identified. Recommendations were made in the areas of computer support of base-level training, development of task-related instructional materials, and standardization of training and training requirements.		

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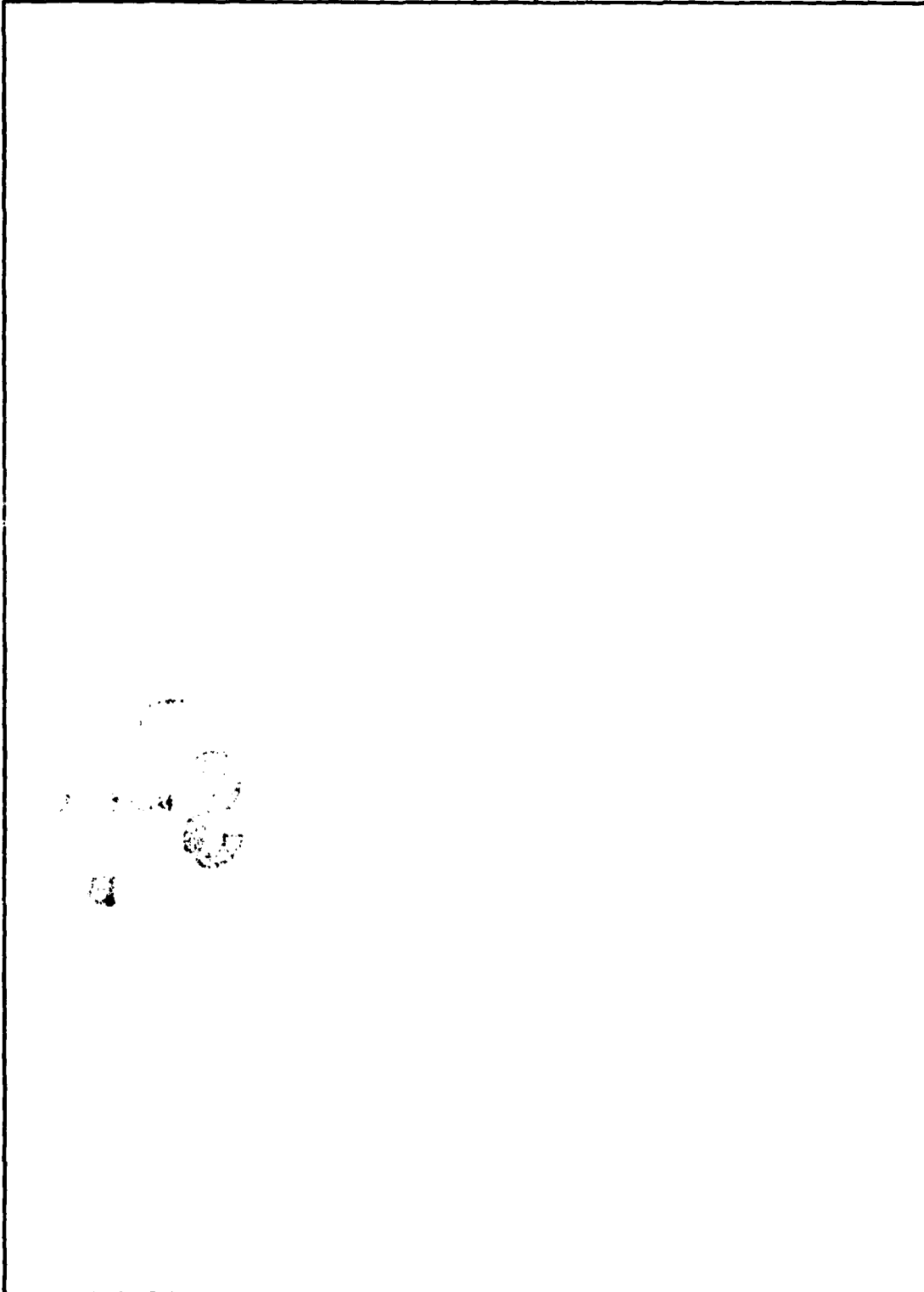
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I. INTRODUCTION

The Air Force On-The-Job Training (OJT) program is designed to prepare its personnel to perform tasks required to support the mission of the Air Force. AFR 39-1, Airman Classification Regulation, describes, in general, the skills required by each Air Force Specialty to provide this support. These specialty descriptions, in conjunction with occupational survey data, are analyzed by Major Command (MAJCOM) functional managers and Air Training Command (ATC) Technical Training Center personnel to determine the knowledge and task proficiency skills needed for mission accomplishment. ATC publishes a summary of this analysis as a Specialty Training Standard (STS) which is the primary training charter for all Air Force Specialty-related training, including formal OJT Programs. The Specialty Training Standard is subsequently used by each airman as a blueprint for job-site proficiency training. When modified or expanded for this purpose, it is called a Job Proficiency Guide (JPG).

Within the OJT program, there are two subdivisions. The first subdivision is called upgrade training (UGT) and is required for the initial certification at each skill level (i.e., 3-, 5-, and 7-skill levels) within an Air Force Specialty. The second subdivision is called qualification training (QT) which is designed for those personnel previously upgraded and provides for the development and expansion of job skills as an individual moves from one position to another or to weapons systems on which he is not JPG qualified.

This required skill training (UGT and QT), of necessity, must be accomplished as an integral part of the regular mission production. Training is accomplished by OJT Trainers who are also production workers. These trainers are assisted, advised, and inspected by unit OJT managers and Consolidated Base Personnel Office (CBPO) OJT managers. Within squadrons and units, Training Coordinators who are not Air Force Specialty Code 751X2 Training Technicians, are sometimes assigned this position as an additional duty.

Management and evaluation of the OJT program has historically been a recognized problem (Stephen & Burkett, 1975). The administrative problems associated with

scheduling students, instructors, instructional materials, and resources for OJT are sufficiently complex that inadequate training can result. Task proficiency evaluation in OJT involves a great number of judgments by the OJT supervisor/trainer regarding the adequacy of an individual's performance. Moreover, the requirement of observing trainee behavior in order to perform these task evaluations is time consuming. Ideally, these observations should be standardized across evaluators and trainees so that qualifications for advancement in skill level can be assessed fairly. Better identification of training requirements would also result in improved training. More accurate knowledge of OJT costs and unit OJT capability and capacity should lead to better management of the total technical training system. Advancements in computer technology, especially in the field of computer-managed training systems, have reached a level where it should be feasible to support a variety of OJT training and management requirements.

Initially, the objective of this project was limited to investigation of UGT of 46230 Aircraft Armament Systems Specialists to the 46250 skill level. Very early in the project it was decided that UGT should not be isolated for potential computer supported functions, since it is but a small portion of the total base-level training leading to job proficiency for 46230 airmen. Such isolation would serve only to further compound the problems already existing within OJT. Therefore, the project scope was expanded to include all base-level training. Since no term existed for such training, the term "Mission-Oriented Training" was coined and applied to all base-level training. The modified objectives of the project were:

1. Perform a survey of the mission-oriented training for the 46230 Aircraft Armament Systems Specialist career field within three Weapons Systems: (F-15, F-111, A-10) of the Tactical Air Command (TAC).
2. Based on the survey results, rank order promising areas for application of computer-based technology relevant to the management and/or training of OJT students.
3. Conduct a detailed training systems analysis for the weapon system most promising for

application of computer-based technology.

4. Define specific functions within the training system which could be accomplished/ supported by computer, and rank ordered by potential cost-effectiveness.
5. Provide specific recommendations considering trade-offs, including costs/benefits, for expansion of computer-based technology into the upgrade training and qualification training subdivisions of the OJT environment.

II BACKGROUND

This section provides an overview of the Aircraft Armament Systems Specialist's (AFSC 462X0) career progression, working organizations, and training programs. An earlier report (Stephenson & Burkett, 1975) contains a description of a systems analysis of the OJT program generalized across Air Force major commands (MAJCOMS) and across Air Force enlisted job specialties. The present report takes that generalized view as a starting point, concentrates on a systems analysis within the Tactical Air Command and focuses on AFSC 462X0 airmen and their total training requirements, including both elements of OJT, upgrade training and qualification training.

Aircraft Armament Systems Specialist Career Field

AFR 39-1, Airman Classification Regulation, contains job descriptions for all Air Force Specialties. Each Air Force Specialty (AFS) "career field" is subdivided into specific classifications of job descriptions and further subdivided into duties to be performed by skill level. This classification system provides the occupational standards for procurement, training, education, utilization and career development, and for structuring enlisted positions. A five-digit Air Force Specialty Code (AFSC) designates by category each career field and skill level of airmen in the specialty. Figure 1 shows the breakdown of an AFSC into its component parts and Figure 2 shows the 46 Airmen Munitions and Weapons Maintenance Career Field by AFSC.

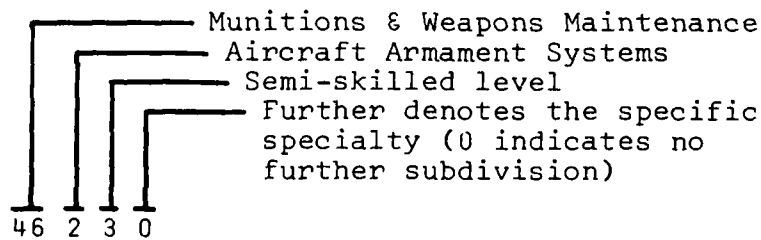


Figure 1. Breakdown of an AFSC

AFSC

461X0 - Munitions Maintenance
462X0 - Aircraft Armament Systems
463X0 - Nuclear Weapons
464X0 - Munitions Disposal

"X" designates a skill level
of:

1 - helper
3 - semi-skilled
5 - skilled
7 - advanced
9 - superintendent

Figure 2. 46 Airmen Munitions and Weapons
Maintenance Career Field.

Appendix A contains the Duties of AFSC 46230 and 46250 as described in AFR 39-1 (AFR 39-1 makes no distinction between the 3- and 5-skill levels).

AFSCs are assigned to individual airmen and to positions that airmen may occupy. The Control AFSC (CAFSC), a personnel identifier, is used as a management tool to effect airmen assignments and to assist in identification and control of training requirements for airmen in the AFSC. The Duty AFSC (DAFSC) identifies the authorized career ladder and skill level of a position on the unit manning document. Theoretically, an Air Force unit whose DAFSC positions are completely filled and matched with corresponding CAFSC airmen has a 100% capability and capacity to accomplish the mission of that unit. Towards assurance that airmen are capable of effectively meeting job requirements, specialty training is provided throughout career tours in diverse subject areas at almost every Air Force base. To standardize and specify knowledges and skill requirements for AFS training, Air Training Command (ATC) in coordination with the MAJCOMs determines training and prepares,

evaluates, and revises a Specialty Training Standard (STS) for each AFS. These Specialty Training Standards are primary control instruments for resident technical schools, Career Development Courses (CDC), formal OJT programs and Specialty Knowledge Tests (SKTs) for promotion throughout the Air Force. The STS for the 462X0 career field is provided in Appendix B.

Aircraft Armament Systems Specialists Skill Progression

The Air Force generalized plan for skill progression is shown in Figure 3, an excerpt from AFR 50-23, On-The-Job Training. The Air Force, like the other military services, has established three training priorities for Air Force Specialties:

- Category A - Highly technical skills that must be acquired in Resident Technical Schools.
- Category B - Technical skills that may be acquired in Resident Technical Schools or in OJT.
- Category C - Semitechnical skills that are acquired only in OJT.

The Aircraft Armament Systems Specialist is a Category B specialty. Airmen in this specialty may progress to the 3-skill level through the technical school route, or through Directed Duty Assignment (DDA). The Apprentice Knowledge Test (AKT) route is for AFSCs having no CDC for advancement to the 3-skill level, and for bypassed specialists, who because of prior education, training or experience qualify to take the AKT for award of the 3-skill level. No DDAs were discovered during this project's efforts. Virtually all of the airmen interviewed during this project had attended the resident technical school.

Resident Technical School

The resident technical school for Aircraft Armament Systems Specialists, located at Lowry AFB, Colorado, teaches fundamental job entry level skills and qualifies airmen, upon graduation, for award of AFSC 46230. The school is presently undergoing major curriculum changes toward separation and channelization of subjects and tasks peculiar to specific weapons systems (aircraft); the rationale is that

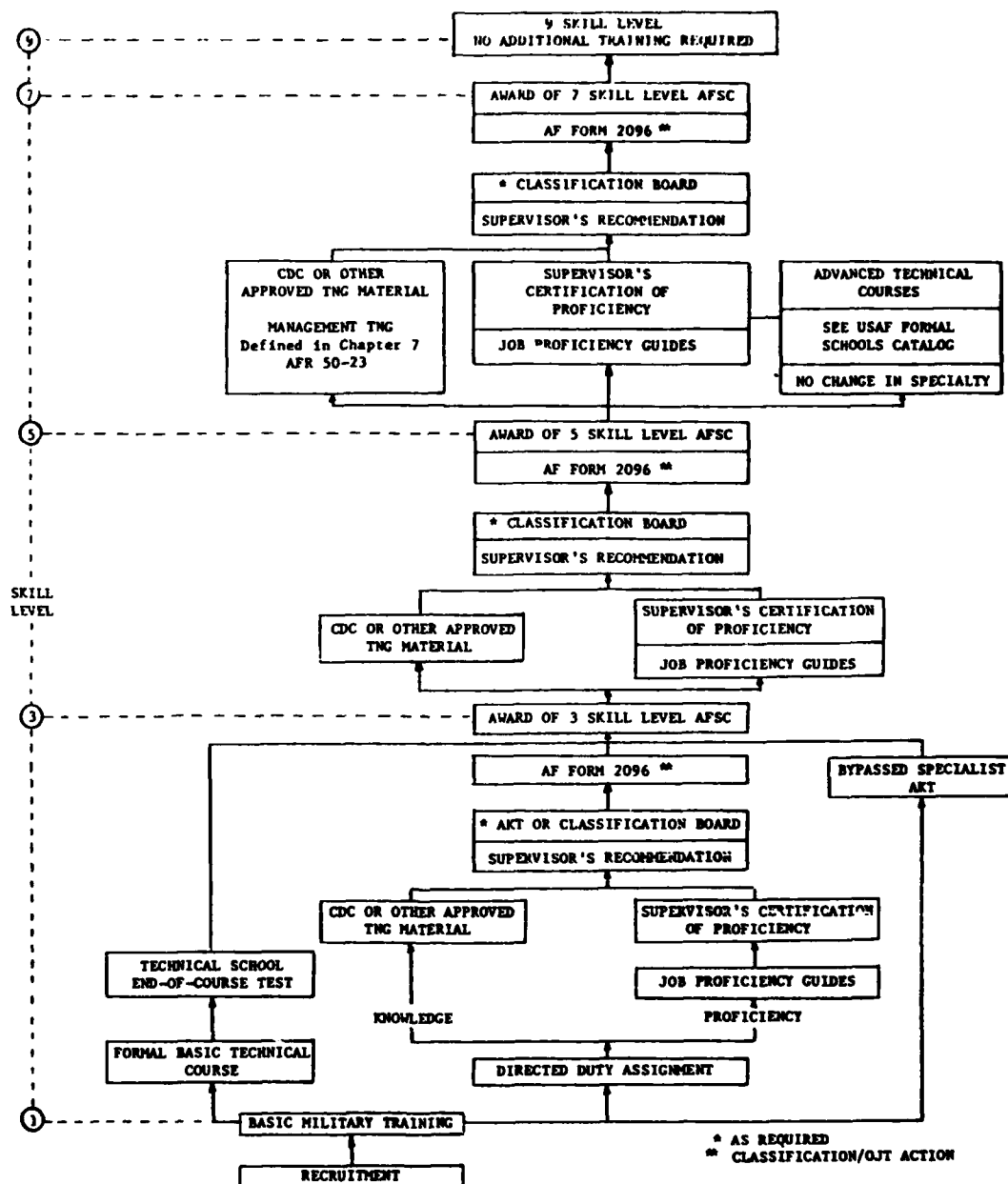


Figure 3. Skill progression

most airmen can be expected to remain assigned to one weapons system during their first service tour and that they should be given training in that system only. Students are identified upon entering school for subsequent assignment to an aircraft type. Course content is modularized into three types of lesson groupings. All students first receive instruction in topics such as basic electricity and electronics, hand tools, technical publications, maintenance management, safety, etc. Middle lesson groupings, presenting airmunitions, guns, aerospace ground equipment and weapons suspension devices, allow individual lesson assignment based on applicability to the students' assigned aircraft. As a last grouping, students branch to separate lesson channels of aircraft specific mission, system familiarization and system checkout, suspension equipment removal/installation, and munitions loading. To identify airmen as graduates of a specific aircraft channel, a suffix alpha code is appended to their AFSCs, e.g., F-15 channel graduate - AFSC 46230E, A-10 channel graduate - AFSC 46230C. The suffix is dropped when the 5-skill level is attained. The resident technical school channels are listed below:

<u>Channel</u>	<u>Aircraft</u>
A	B-52 (D/G/H)
B	A-7D
C	A-10
D	F-4
E	F-15
F	F-16
G	F-106
H	F-111
J	FB-111
Z	Other

Channelization and student tracking by lesson topic assignment were made more feasible by the Air Force Human Resources Laboratory (AFHRL) Advanced Instructional System (AIS), a computer-managed instruction (CMI) system supported by a CDC Cyber - 7316. Briefly, AIS employs a computer to make assignments, schedule resources, and track, test, evaluate and remediate student performance. The system allows learning to be individually paced based on ability, offers multi-media instructional materials including computer-assisted instruction (CAI), and provides for management information through the use of large data bases.

On-The Job Training

To alleviate some of the administrative burden, resident technical school, award of AFSC 46230 for graduates is accomplished during inprocessing at permanent duty assignments. The same personnel action, Classification/On-The-Job Training Action (AF Form 2096), enters airmen into formal OJT for the next skill level, AFSC 46250.

The opening paragraph in AFR 50-23, OJT Regulation, states: "The Air Force On-The-Job Training (OJT) program provides training for Air Force enlisted personnel to qualify them in the knowledges and job proficiencies required to perform duty in an Air Force Specialty." In fact, airmen may perform no AFSC duty/function unsupervised until training and qualification for the function has been documented in a formal, authorized record. Most of that documentation is contained in AF Form 623, On-The-Job Training Record, but may also exist in computer automated reports, and manually maintained forms and charts other than the "623." AF Form 623 is simply a folder into which the Specialty Training Standard (STS) converted to a Job Proficiency Guide (JPG) and JPG Continuation Sheet (AF Form 797) are placed. Together, these two instruments, STS/JPG and 797, are the official record of OJT certification and qualification for job performance.

OJT has two major subdivisions: Upgrade Training (UGT) for the purpose of providing knowledge and skills necessary for increasing levels of job performance and which results in award of more advanced skill level AFSCs, e.g., 46230 to 46250 and 46250 to 46270; and Qualification Training (QT) for the purpose of training airmen in parallel AFSC knowledge and skills, as when changing work assignments, e.g., training a weapons loading airman to also perform maintenance tasks. Qualification Training does not result in an AFSC change.

Upgrade Training. Upgrade Training is designed to satisfy three specific requirements which an airman must fulfill prior to award of the next higher skill level AFSC. These requirements are: (a) career knowledge, (b) job proficiency, and (c) job experience. Career knowledge is provided in Career Development Course (CDC) 46250 written by subject-matter specialists at the resident ATC technical school, and published and distributed by Air University Extension Course Institute (ECI). Figure 4 outlines the content of CDC 46250.

- Vol. I 462X0 Career Field
 Supervision
 Maintenance Management and Forms
 Air Force Publications
- Vol. II Ground & Electrical Safety
 Explosives Safety
 Nuclear Safety
 Security
 Corrosion Control, Tools and Gages
- Vol. III Fundamentals of Electricity
 Electronic Test Equipment and Special
 Tools
 Electronics
 Logic Principles and Devices
- Vol. IV Airmunitions Handling and Loading
 Equipment
 Aircraft Bombs, Fuses, Dispensers,
 Rockets, and Missiles
 Aircraft Weapons and Pods
- Vol. V F-4D/E Weapons Release Systems and
 Airmunition Loading
 Tactical Fighter Gunnery Systems
 F-111A Weapons Launch and Release Systems
 A-7 Weapons Launch and Release Systems
- Vol. VI Bomber Aircraft Nonnuclear Release
 Systems and Airmunition Loading
 Bomber Aircraft Nuclear Release Systems
 and Airmunition Loading
 F-106 Fighter Interceptor Rocket and
 Missile Launching Systems

Figure 4. Subject outline of CDC 46250

Designed to disseminate career knowledge, CDC 46250 is a correspondence course complete with in-volume exercises for objectives (essay items), open-book volume review exercises (VRE) (multiple-choice items), and a closed book end-of-course examination (CE), also composed of multiple-choice items. Answers to the exercises for objectives are provided in the back of each booklet volume for immediate feedback. Completed answer sheets for VREs and CEs are mailed to ECI for scoring and feedback which provides guidance for remediation of incorrectly answered questions. Sixty percent is the minimum passing score for all VREs and for the CE. Enrollees are normally expected to complete a minimum of one volume per month; ECI disenrolls trainees if they have not completed the course in 12 months. The feedback sheets from VREs are kept in the AF Form 623 until all volumes have been completed and the CE has been passed; the sheets are removed when a single-line entry is made on the 623 inside cover certifying CDC completion.

Job proficiency training for upgrading is planned, conducted, and documented through the use of a Job Proficiency Guide (JPG). The JPG, maintained in the AF Form 623, consists of an annotated STS and JPG continuation sheet (AF Form 797) indicating which tasks are to be trained, when training began, and when training was completed. The supervisor certifies completion by initialling each task, and the trainee initials to attest possession of the skill for that task. Figure 5 is a page from the current 462X0 STS, annotated here for illustrative purposes only. Note that entire tasks may be selected for training by circling the task's skill level proficiency code in column 3A, and that partial tasks may be selected by circling the verb or verbs in column 1.

Qualitative requirements for tasks are specified in terms of: task performance levels which are indicated by a numerical scale value from one to four; task knowledge levels indicated by a lower-case alpha value from "a" to "d"; and subject knowledge levels indicated by an upper case alpha value from "A" to "D." Figure 6 defines the scale values for qualitative requirements. Current policy requires training to a minimum of 3c for 5-skill level airmen (as an interim step in the development of the go/no-go concept). Subject knowledge is acquired through resident technical school, enrolling in and completing the Career Development Course (CDC), or where no CDC is available, through studying the study references (SRs) listed under

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
17c(4) Maintain	1b			3c			4c		
(5) Perform electrical checks	7b			3c			4c		
d. Internal gun system (feed and handling system)									
SP: T0s 1F-15A-2-13, 1F-15A-2-14, 1F-15A-33-1-2									
(1) Nomenclature, function of system assemblies and cycle of operation	"			"			"		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) <u>Identify</u> and inspect ammunition	2b			3c			4c		
(7) Load and unload ammunition	2b/b			3c			4c		
(8) Perform electrical system check	2b			3c			4c		
e. Airmunitions loading and handling equipment									
SP: T0s 1F-15A-1-1, 35D3-2-16-1, 35D5-3-R-1, 35D30-4-5-1									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
f. Perform operator inspections and <u>operate</u> ACF	2b/h			3c			4c		
SP: T0s 35D3-2-16-1, 35D5-3-R-1, 35D5-3-R-14									
g. Aircraft armament launch and release system									
SR: T0s 1F-15A-33-1-2, 11R79-3-25-2, 11LAR-7-3, 11L1-2-14-2, 11L1-3-15-22, 11L1-3-2R-2, 16W6-25-3, 16W6-25-4									
(1) Disassemble, <u>inspect</u> , assemble and <u>check</u> components of aircraft suspension systems	2b			3c			4c		
(2) Install and remove stores suspension components	2b			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		

Figure 5. Job Proficiency Guide (JPG).

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The Individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
* TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can explain why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, identify, and resolve problems about the task. (COMPLETE THEORY)
** SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can explain relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
EXPLANATIONS		
- A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b) - A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks. - This mark is used alone instead of a scale value to show that no proficiency training is provided in the course, or that no proficiency is required at this skill level. - X - This mark is used alone in course columns to show that training is not given due to limitations in resources.		

Figure 6. Qualitative definitions.

task categories on the STS. Task knowledge and task proficiency are acquired through self-study of study references, and through tutoring and job training delivered by OJT trainers. Study references for general classes of tasks relating to safety, management, and other general subjects, are Air Force Manuals (AFMs), and Air Force Regulations (AFRs). Study references for classes of specific tasks such as "loading weapons" are Technical Orders (TOs) which delineate step-by-step task procedures.

Job proficiency training is the responsibility of the supervisor, who also selects the tasks for UGT. Only those tasks deemed necessary for working in the position of assignment must be selected. However, in order to provide standardization in task selection, AFR 50-23 directs that Master JPGs be developed by supervisors to identify all tasks performed in their workcenters. Appendix C contains a sample Master JPG for the 462X0 OJT program in the 1st Equipment Maintenance Squadron (EMS) at Langley AFB. The trainee's JPG is annotated using the Master JPG as a guide for selection of tasks.

Job experience time minimums for upgrading are specified in AFR 35-1, Military Personnel Classification Policy. Normally, airmen must have a minimum of 6 months in UGT before they are eligible for award of the 5-skill level and a maximum of 18 months is allowed in UGT for achieving the 5-level AFSC. AFR 50-23 makes provision for four progress evaluations to be made while trainees are in upgrade training: (a) the supervisor's initial evaluation at the time the airman is entered into UGT, (b) an 8th month, supervisor's evaluation, (c) the unit commander's evaluation at the 12th month, and (d) a final evaluation by a classification board not later than the 18th month. Upgrading normally takes place much closer to the minimums than to the maximums (Stephenson & Burkett, 1975), and airmen whose training extends past the 12th-month commander's evaluation are considered to be in "overtime training."

All levels of supervisors and managers compile and monitor UGT statistics in areas such as numbers in UGT, numbers upgraded by month, pass/fail rate of CDC, and numbers in overtime training. At the squadron level, it is common practice to include in reports names of specific airmen who have problems meeting UGT time frames or who have failed the CDC Course Examination.

Upon meeting the three requirements of CDC completion, JPG task certification, and at least 6 months in UGT, upgrading to the next higher skill level is requested by means of an AF Form 2096.

Qualification Training. On the less formal side of OJT, qualification training, unlike UGT, has no minimum or maximum time requirements. There are no personnel actions (AF Form 2095/6) necessary for entering or exiting training, and, at the option of commanders, statistics are neither compiled nor reported. There is similarity between Qualification Training and UGT only in their documentation medium, the JPG. The general OJT philosophy is that one is either in UGT or in qualification training, because job training is an ongoing process. Qualification training, after upgrading, may be needed for individuals to expand their work assignments within a position, to qualify upon transfer to a new position assignment, or in a more global sense, to qualify an entire wing's maintenance force in a new weapons system during transition from a former system.

No determination can be made as to whether tasks were certified during upgrading or after upgrading unless the task certification dates are compared to the date of upgrading. As discussed earlier, Master JPGs specify all tasks performed in a workcenter, but all the tasks need not be certified for upgrading to occur, only a sufficient number (at the supervisor's option) to verify proficiency in a major duty area. There is no official minimum number of tasks to be certified for upgrading. After upgrading, the remaining tasks may, at the option of the supervisor, be trained through qualification training, and usually are.

Maintenance Organization

OJT is, as the name states, training received on the job for the job; its content must, of necessity, be determined by the job. The mission statements and regulations of operational units describe functions which must be performed by assigned personnel and, consequently, also describe training which must be provided to newly assigned airmen to successfully fill the positions in the organization. The training concept is quite simple in basic principle and is logically stated as follows: Receive resident technical school graduates possessing AFSC 46230 who are not permitted independent performance and who must be supervised, assign these airmen to 46250 duty positions which require independent performance without supervision, and enter them into

UGT to acquire the task proficiency and skill level as required by the position. The application of the concept to actual operational situations, however, is not so simple. Organizational management structures and functional delineations within TAC units under AFR 66-5, Production Oriented Maintenance Organization (POMO), specify entirely different sets of tasks for different positions all having the same DAFSC of 46250. Therefore, all 46230 airmen do not need, nor do they receive, the same task training for upgrading to 46250, but they receive training based on the functions of the organizational position to which they are assigned.

Figure 7 illustrates partial composition of the 1st TAC Fighter Wing (TFW) at Langley AFB, which is typical of the three sites surveyed during this project, all of which were operating under POMO. POMO organizes maintenance functions into subsets of on-equipment maintenance and off-equipment maintenance. The Aircraft Generation Squadron (AGS) "owns" the aircraft assigned to the wing, generates sorties, provides for the day-to-day upkeep of aircraft systems and is responsible for organizational (on-equipment) maintenance. Off-equipment maintenance on aircraft components and extensive aircraft system repair beyond the capability of the AGS are provided by the Equipment Maintenance and Component Repair Squadrons (EMS & CRS). Discussions in this report are limited to the AGS and EMS since the CRS has no 462X0 functions or positions.

Aircraft Generation Squadron. Within the AGS, there are as many Aircraft Maintenance Units (AMU) as there are Tactical Fighter Squadrons (TFS) assigned to the wing, and AMUs and TFSS carry corresponding designator numbers (see Figure 7). To the maximum extent possible an operational squadron's sortie requirements are satisfied by the corresponding AMU. All AMUs under the AGS are organized similarly. AMU Aircraft Armament System Specialists under the Weapons Flight Chief have three general categories of tasks to perform: (a) weapons loading including airmunitions and suspension devices, (b) maintenance of launch and release systems, and (c) maintenance of aircraft gun systems. A recent change in AFR 66-5/TAC Supplement 1, now permits the weapons flight to have separate maintenance and weapons loading sections. Two or three airmen per 8-hour shift are designated to perform only maintenance functions. These are usually 46270 or experienced 46250 specialists. All other weapons personnel occupy positions in weapons loading crews having two to four total members as determined by

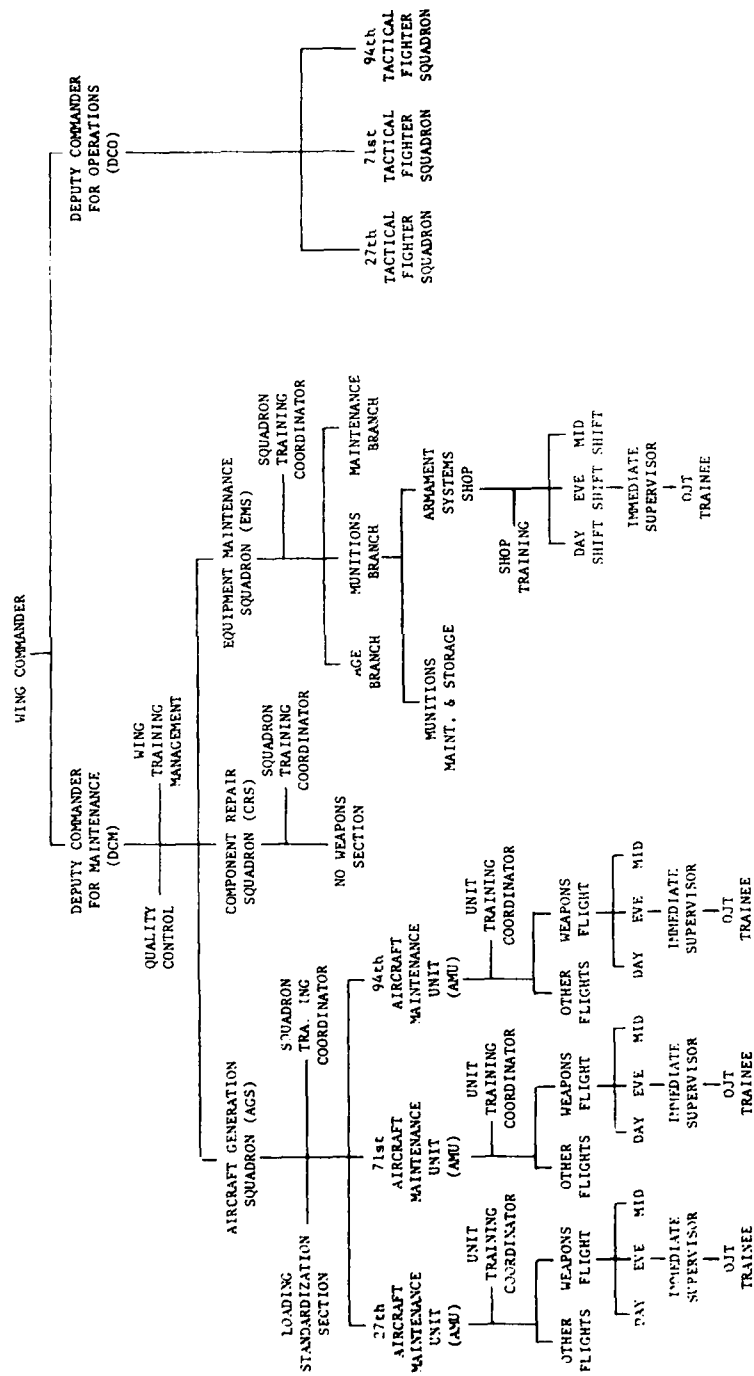


Figure 7. 1st Tactical Fighter Wing Organization under POMO.

aircraft system supported. Loading crews are distributed evenly across three, 8-hour shifts. Figure 8 from AFR 66-5/TAC Supplement 1, shows crew size by type of aircraft.

<u>Aircraft</u>	<u>Crew Size</u>
F-4, F-16, F-105, F-111 A-7, A-10, AC-130	4
F-15, F-5	3
OV-10, O-2, T-38, UH-1N, RF-4	2

Figure 8. Loading Crew size by aircraft.

An airman is trained and certified for one particular position within a loading crew and cannot act in another position unless trained and certified in that position, too. However, it is permissible for the #3 man, for example, to be utilized as the #3 man in another loading crew by virtue of the universal qualification concept of AFR 66-5.

While 462X0 specialists in the AMUs may be primarily assigned to loading crew positions, they are also employed as Weapons Flight pool assets for organizational maintenance purposes. The vast majority of maintenance which is performed on the flightline falls in the category of scheduled maintenance. Unscheduled maintenance is minimal because most sorties currently flown do not utilize the full capabilities of the launch and release systems.

In summary, 462X0 airmen assigned to the AGS are required to function in teams collectively as weapons loaders and individually as organizational level maintenance personnel.

Equipment Maintenance Squadron. The Equipment Maintenance Squadron (EMS) is structured to include an Aerospace Ground Equipment (AGE) Branch, a Maintenance Branch and a Munitions Branch (see Figure 7). The Armament Systems Shop within the Munitions Branch contains all of the 462X0 positions in the EMS and provides intermediate level maintenance of weapons release systems, guns, munitions, pylons, racks, launchers, and adapters. Specialists are distributed across three 8-hour shifts in all categories of work with the preponderance assigned to day shift. In contrast to the AGS's flightline environment, the EMS armament shop environment allows a highly visible organizational structure. Separate areas are identifiable as gun maintenance, launch and release system repair, and suspension device maintenance.

Maintenance is divided into scheduled and unscheduled functions within work areas. Most, if not all, 46250 airmen and above can and do perform most phases of scheduled maintenance to suspension components. Unscheduled maintenance is subdivided and delegated to airmen possessing qualification in the subdivisions. Qualifications usually are proportionate to the amount of maintenance required, with most 462X0s qualified in launch and release devices, and fewer qualified in aircraft systems and guns. Rarely does an airman have qualifications in only one work area, and in those cases upgrade training is in progress or qualification training is being administered to diversify skills.

Wing Training Structures. Training management within TAC wings are consolidated and aligned directly under the Deputy Commander for Maintenance (DCM). Broad responsibilities of Wing Training Management (MAT) include management of both subdivisions of OJT, UGT and qualification training; management and administration of the management training program; development and production of wing training miniature courses delivered by wing personnel; management and coordination of the Consolidated Aircraft Maintenance Training program; scheduling and documenting of all wing training (except loading crew training); and coordinating scheduling and documenting of other base-level orientation and training events attended by wing personnel. All of the wing's Education and Training Specialists (AFS 75XXX) are assigned within Training Management. Figure 9 depicts the organization of the 1st TFW Training Management. Wing Training Management functions are distributed across four sections: Instruction (MATI), Applications and Development (MATD),

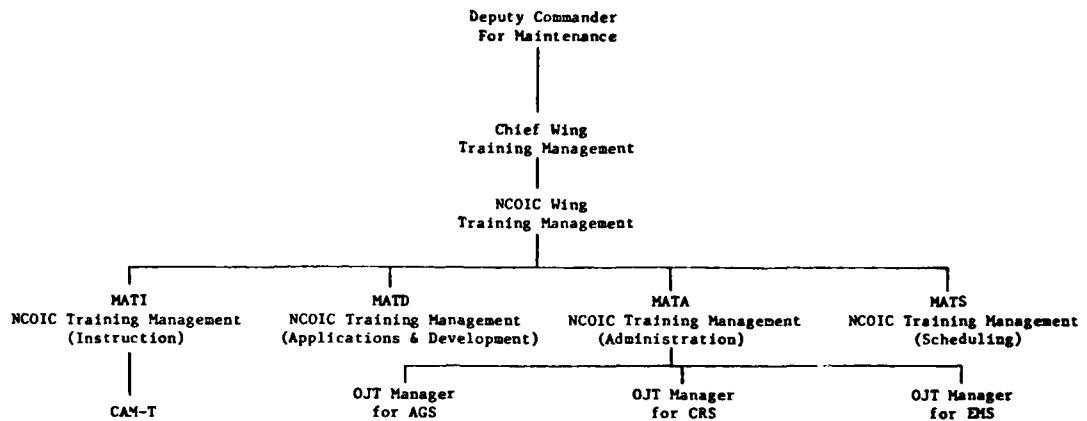


Figure 9. 1st Tactical Fighter Wing Training Management.

Administration (MATA), and Schedules (MATS). MATI provides the management for the Consolidated Aircraft Maintenance Training (CAM-T) program, delivers the instruction and is composed of instructors who are subject matter experts drawn from AMU personnel assets and who are supervised by a 75XXX specialist. MATD is the Instructional System Development (ISD) section whose primary function is development of instructional materials. This section also maintains libraries of audio/visual instructional materials and instructor guides for all training developed and/or delivered in the wing. MATS schedules all wing enlisted training and coordinates between wing and base training/orientation quotas for such scheduling. MATA is itself composed of three subsections, one for each squadron (AGS, EMS, CRS), for management and administration of the wing OJT.

Squadron Training Coordinators in each of the squadrons (AGS, CRS and EMS) provide the interface between Wing Training Management and the various AMUs and/or branches. Manning for training coordinator positions is accomplished with squadron resources (non-75XXX personnel) since there

are no provisions for increase in the personnel allowance. In like manner, Unit Training Coordinators are Unit assets. Squadron and Unit Coordinators perform essentially the same functions at their respective levels: receiving and distributing training quotas; amassing individual training requirements; compiling training data and scheduling elements; monitoring training documentation; providing assistance to flights/shops in resolving training problems; and reporting to Squadron Commanders and Unit officers-in-charge.

Training of 462X0s

On-The-Job Training is too restrictive a term to apply to the total training requirements of 462X0 airmen in operational units. Not only do airmen receive training in their working environments, but they receive additional training in formal settings at base training agencies and other tenant training organizations. Training events are not classified as upgrade training or qualification training, but as maintenance, weapons loading, military, supervisory/management and ancillary training. Any individual training event may be upgrade or qualification training, or both, depending upon the types of trainees in attendance and the reason for attending. Classes often include 46230 airmen in upgrade training to 46250, and 46250 airmen in qualification training for new assignments or expanded duties within assignments. Therefore, rather than categorizing training in terms of OJT elements, training is categorized by the delivering organization.

On-The-Job Maintenance Training. OJT maintenance training is accomplished in workcenters as a function of, or in association with, day-to-day maintenance activities. OJT trainees are assigned to OJT trainers, the working force of workcenters. As the trainer performs the assigned duties of maintaining and repairing systems and equipment, the trainee watches and assists in the performance. When the trainee has observed and assisted the same maintenance task sufficiently to attempt the repair, he/she does so under the trainer's supervision. Successful performance results in the documentation of the task qualification on the JPG. Unsuccessful performance apparently results in continued observation and assistance. The more often one type of maintenance activity occurs in the daily routine, the sooner trainees become qualified to perform that type of maintenance. The number of trainees qualified on a task and the time required for qualification on that task are functions

of the frequency of the need to perform the task in the production environment.

Field Training Detachments Training. The Field Training Detachments (FTD) consist of Air Training Command (ATC) representatives permanently assigned to Air Force Bases to provide on-site, formal technical training in the maintenance of assigned aircraft and the operation and maintenance of associated equipment. Although FTDs are primarily weapons system maintenance oriented, they also offer OJT Advisory Service courses, assist commanders with their OJT Training programs, and can provide assistance in analyzing system malfunctions on the flight line and in the shops. In addition to complete courses of instruction, training sessions and partial courses are available upon request. At Langley AFB, the following FTD courses are utilized by 462X0 airmen:

Weapons Maintenance Courses

4AMF46270-073	Weapons Maint Techn (F-106)	56 hours
4AMF46270-109	Weapons Maint Techn (F-15) O/M	90 hours
4AMF46270-116	Weapons Maint Techn (F-15) I/M	54 hours

OJT Advisory Service Courses

J4AJF75000-001	OJT Trainer Orientation	24 hours
J4AJF75000-002	OJT Manager/Supervisor Orientation	24 hours
J4AJF75000-003	OJT Trainee Orientation	6 hours
J4AJF75000-024	OJT Unit Manager Orientation	24 hours

Associate Courses

4AMF00066-038	Technical Publications	16 hours
4AMF00066-044	Maint. Management & Data Collection System	30 hours
4AMF30000-022	Hi-Value Soldering	60 hours
4AQF30050-003	Solid State & Integrated Circuit Devices	72 hours
4AQF30050-004	Digital Techniques (-003 must be taken first)	60 hours
4AMF40000-001	Basic Electronics	91 hours
4AMF40000-002	Permaswage Tube Repair	12 hours

Consolidated Aircraft Maintenance Training. The Consolidated Aircraft Maintenance Training Program (CAM-T) has been implemented in the 1st TAC Fighter Wing at Langley AFB for Tactical Aircraft Maintenance career field airmen (AFSC 431X1) and Aircraft Armament System Specialist (AFSC 462X0). CAM-T combines and expands procedures for orientation and training to help newly assigned personnel become productive sooner than could be expected through usual OJT upgrade and qualification procedures. This has been done by creating a single manager, Wing Training Management, to coordinate the orientation, training and centralized scheduling of training requirements. The broad objectives of CAM-T are as follows:

1. Separate training, insofar as possible, from sortie production.
2. Make maximum possible use of FTD instructor and equipment resources.
3. Fully qualify airmen on tasks to the 3c level prior to their reporting to their squadrons.
4. Standardize maintenance training syllabuses by AFSC and Weapons System.
5. Provide training manhour savings for squadron work-centers.

6. Provide a closer relationship between training, quality control, and production functions.

Significant characteristics of the CAM-T program include the following:

1. Dedication of operational equipment such as aircraft and AGE to training.
2. Centralization of training.
3. Use of TAC facilities by FTD instructors.
4. Rotation of specialists between CAM-T instructional duties and squadron production.
5. Transfer of 5-skill level upgrading responsibilities from immediate supervisors and trainers in squadrons to CAM-T program personnel.
6. Allocation of 2 hours per training day to structured, supervised CDC study.
7. Comprehensive task evaluation of representative tasks prior to graduation.
8. A move toward greater ISD involvement on the part of Wing Training Management (MAT) 75XXX personnel.

The 462X0 training is provided in two courses: a Fighter Weapons Course for orientation and upgrade training of 46230 airmen who are recent graduates of the resident technical school and an Eagle Weapons Course for orientation and qualification training of 46250 and higher-level airmen who have transferred in from bases maintaining other weapons systems. The Eagle Weapons and Fighter Weapons courses train airmen for either AGS or EMS assignments.

Fighter Weapons makes provisions for both task proficiency training and career knowledge training by allowing 6 hours per instructional day for maintenance training and 2 hours per instructional day for study of Career Development Course (CDC) 46250. Except for the 6 months experience requirement, Fighter Weapons Course graduates are expected to be qualified for award of AFSC 46250 upon course completion. Graduates of the Eagle Weapons Course are expected to be immediately qualified for

job performance in their respective positions.

Loading Training. Weapons loading training, loading personnel evaluation and certification, and spot checking maintenance in process for safe and reliable performance are functions assigned to the Loading Standardization Section in the Aircraft Generation Squadron. The Munitions Superintendent administers the loading crew standardization and evaluation program through the Loading Standardization Crew (LSC) and the flightline branch chiefs. One loading crew from the AGS is designated as the LSC, and the additional loading crews, one from each of the AMUs within the AGS, are designated as lead crews to augment and assist the LSC. The LSC and lead crews make up the Loading Standardization Section which is aligned directly under the AGS Commander. Training classroom and hangar space are set aside solely for the use of the standardization section, and the DCM dedicates the required number of aircraft and related support equipment to loading crew training. The scheduling, delivery, and documentation of weapons loading training are functions of the LSC. Wing Training Management provides only the function of verifying documentation of such loading tasks as may be required for upgrading.

Each MAJCOM must, in accordance with AFR 66-5, develop a list of primary and support munitions along with the numbers of loading crews required to be certified in each category of munition. Loading time standards are specified by aircraft for each munitions family group. It is the responsibility of the LSC to initially train, certify, and recertify quarterly each loading crew member of all crews on the weapons loading for which they have been assigned. These requirements are an enormously time-consuming effort because of the number of airmen to be trained, the number of weapons loads for which training must be provided, and the need for recertification which results from training and evaluation.

In addition to weapons loading training, practical classroom sessions in on-equipment loading and maintenance proficiency are administered annually by the Loading Standardization Section to all loading crew members, all munitions flight supervisors and, in some cases, to all flightline weapons airmen. The degree of practical training must be sufficient to assure adequate knowledge of subjects applicable to unit munitions, assigned aircraft, and equipment. In order to distribute the training and certifica-

tion workload, at least one lead crew is assigned per shift across the three 8-hour shifts to train and certify the loading crews on their respective shifts. The hierarchy of certification has the weapons superintendent certifying the LSC, the LSC certifying lead crews, and lead crews certifying AMU loading crews.

Cross Utilization Training. TAC's equipment maintenance is regulated by AFR 66-5, Production Oriented Maintenance Organization (POMO), and AFR 66-5/TAC Supplement 1.

Within POMO, provisions are made for using airmen outside of their AFSCs for flexibility of work force application, peak and valley workload leveling, and reduction of manning impacts. This management approach has had a direct effect on 462X0 airmen, and other AFSCs, in the form of additional tasks to be performed and, therefore, trained. Cross Utilization Training (CUT) is training provided for tasks outside an airman's primary AFSC. TAC's cautionary statement in the supplement to POMO explains, "Certain specialties (Munitions/ECM) are low manhour consumers during peacetime, but become high manhour consumers during production of combat sorties. Dependence on these specialties in peacetime will create a sortie production shortfall in support of combat operations when these manhours are not available for CUT."

Notwithstanding the precaution, CUT has a part in the training of maintenance organization personnel and also has a document of qualification in AF Form 623. An AF Form 797 (JPG continuation sheet) marked "For CUT Only" certifies that airmen are qualified to perform, unsupervised and unassisted, specified tasks outside their AFSC. These tasks are related to general aircraft servicing, fueling/defueling, washing, launch/recovering of aircraft, and similar flight-line duties. Although AFR 66-5 states that airmen must be at the 5-skill level or higher to receive CUT, TAC Supplement 1 states: "Supervisors must exercise caution with 3-level personnel: primary AFSC upgrade and qualification training take priority over CUT."

Ancillary Training. Ancillary training is that training not directly contributing to job skills in an airman's primary AFSC (PAFSC) or duty position (DAFSC). These training requirements may be one-time-only briefing sessions or may be recurring in nature. Most are 30-minute or less audio/visual, sound/slide presentations. The fol-

lowing is a partial list of ancillary items required of all 462X0 personnel in 1 TFW, Langley AFB at the time of the initial survey:

<u>Item</u>	<u>Frequency</u>	<u>Delivering Organization</u>
Maintenance Orientation	One time	MAT
Anti-Hijack	Annual	MAT
Chemical Warfare	Annual	BASE
Cardio-Pulmonary-Resuscitation Brief	One time	MAT
Fire Extinguisher	Annual	Fire Dept.
Corrosion Control	Annual	MAT
M-16 Qualification	Annual	Range
Foreign Object Damage Brief	Annual	MAT
Mobility Brief	One time	MAT
Standards of Conduct (AFR 30-30)	Semiannual	MAT

Since most of the recurring ancillary requirements have an annual frequency, they are scheduled during birth months, and where scheduling has been centralized in Training Management, the events are lumped together and referred to as "Block Training."

Professional Military Education. TAC provides three Professional Military Education (PME) courses of instruction at Langley AFB: NCO Orientation, Supervisor Training, and NCO Leadership School. The TAC MAJCOM NCO Academy is located at Bergstrom AFB, and the USAF Senior NCO Academy is at Maxwell AFB. These courses present purely military oriented subjects needed by airmen as they progress up the rank ladder. Usually the training is received prior, and in some cases is prerequisite, to rank/skill advancement. The completion of management training is a prerequisite to upgrading to the 7-level in any AFS (AFR 50-23). This requirement may be satisfied by completion of NCO Leadership School or either of the two NCO Academies.

III. PROJECT ACTIVITIES

Approach

The major portion of the work to be accomplished in the project was divided into two phases. In phase I, an initial survey was made of 462X0 UGT within the F-15, A-10, and F-111 Weapons Systems communities at Langley, Myrtle Beach, and Mountain Home Air Force Bases, respectively. Structured interviews were conducted to collect data in three general categories: (a) administration and management, (b) training execution, and (c) task proficiency evaluation. Rating forms were also used to collect attitudinal data on existing UGT materials and procedures, as well as proposed applications of computer technology to the skill-level upgrading process. Analysis of the initial survey data resulted in the selection of the F-15 Weapons System for a more comprehensive survey, conducted during phase II, of computer-supportable upgrade training functions. This selection was made on the basis of a ranking of the potential within the training continuum for each Weapons System for the application of computer support of UGT requirements. The phase II, in-depth survey of specific tasks performed by all personnel concerned with the OJT program for the 462X0 career field resulted in a prioritization of functions based on a systems effectiveness/efficiency analysis and recommendations to the Air Force concerning applications of the computer to support or provide those functions.

Initial Survey

AFR 50-23, which specifies those responsible for the OJT program and outlines their duties within the program, and the USAF Formal Schools Catalog (AFM 50-5) which specifies how ATC discharges its responsibilities with regard to OJT, provided a starting point for the identification of the personnel who would be interviewed during the initial survey:

1. OJT Trainers. Prepare and deliver task-oriented training.
2. Immediate Supervisors. Administer and manage OJT program for airmen supervised.
3. Squadron OJT Managers. Supervise and manage the unit's OJT program.

4. CBPO OJT Unit Managers. Supervise and administer the basewide OJT program.
5. Commanders. Implement OJT policies and procedures established by Air Force directives.
6. MAJCOM OJT Staff. Determine and manage command OJT requirements.
7. FTD OJT Advisory Service Course Managers. Provide training in planning, establishing, and conducting effective OJT programs.

The specific categories of information desired from the initial survey and the data each category included were as follows:

1. Workcenter personnel. This category included information on working hours/shifts, distribution of airmen across shifts by skill level, numbers in UGT, numbers and utilization of trainers and UGT administration and management in the workcenter.
2. Training Activity. This category subdivided 14 groups of direct, indirect, and administrative training functions into 40 more or less specific activities. The purpose of this category was to allow identification of those persons performing OJT-related activities and time spent performing them.
3. UGT procedures and resources. This category included data from trainers and immediate supervisors concerning job proficiency guides, recordkeeping, workcenter UGT policies and procedures, training materials, training device equipment, reporting procedures, UGT testing and remediation practices, scheduling of UGT, trainee counselling, and UGT program evaluation. The UGT program evaluation data sub-category was designed to identify attitudinal data related to the training of 462X0s in general, UGT in particular, and impacts of POMO on training.

4. AF Forms. Since review of Air Force directives suggested that a large variety of forms were used in connection with UGT and other training for the 462X0 career field, provisions were made to determine the extent of this workload.
5. Weapons System Stability. Derived from the 462X0 STS, this data category was developed to provide an indication of the degrees of stability of technical data relative to performance of STS tasks on each of three Weapons Systems.
6. Attitudes toward computer applications. The data in this category provided an indication of attitudes toward 21 specific applications of computers to upgrade training.
7. Background information. This category included data such as each respondent's AFSCs, job title, time in service, numbers of airmen supervised, and OJT advisory service courses completed.

Table 1 indicates the distribution of the data categories across personnel interviewed in Phase I of this project. Additionally, categories of items were devised specific to jobs and functions performed within the OJT system; these items were added to the appropriate interview forms.

TABLE 1

Distribution of Data Categories for Initial Survey

	OJT Trainer	Supervisor	Sqdn OJT Manager	Commander	CBPO OJT Unit Manager	FTD Manager	TAC Staff Manager
Workcenter Personnel		X					
Training Activity/Time	X	X	X		X		
UGT Procedures & Resources	X	X					
Forms Use	X	X	X	X	X	X	X
Weapons Systems TOs	X	X				X	
Stability							
Computer Applications	X	X	X	X	X	X	X
Background Data	X	X	X	X	X	X	X

Prior to beginning the initial survey, a technical review of the questions which would be asked at the various levels of the OJT system was undertaken. This review was provided by two NCOs in key positions at the Aircraft Armament Systems Specialist Resident Technical School at Lowry AFB, and their comments and suggestions were incorporated into the survey instruments.

The initial survey was begun at Langley AFB, where the First Tactical Fighter Wing, equipped with the F-15 Weapons System, is based. During briefings for personnel at the HQ TAC level and the 1TFW DCM level, there were indications that the soon-to-be-implemented CAM-T program might confound the survey results because it combined various other types of training with upgrade training for the 5-skill level and because it represented a variation in the way upgrade training traditionally had been conducted (on-the-job in a production environment). It became apparent early in the study

that upgrade training contributed minimally to the total proficiency requirement for 462X0 personnel and that the apparent overemphasis on its documentation was not proportional to that contribution. Because the centralization of Squadron OJT Managers under Wing Training Management added responsibilities for training in other than the OJT area, information specific to the upgrading in skill level of 46230 personnel could not be extracted from the total training management environment. Even at the workcenter level, where a trainer could have two OJT trainees assigned, one for 5-skill level job proficiency training and the other for qualification training on the same JPG tasks, trainers could not accurately estimate which portions of their time were devoted to UGT and which to qualification training. There was, then, a general feeling among personnel concerned with the project that determining the feasibility of computer applications to the 462X0 upgrade training process alone, at least within TAC, would be inappropriate for the following reasons:

1. Efficiency and effectiveness gains which would be achieved through the application of computer technology to UGT in the 462X0 career field would be lost within the present TAC OJT framework because upgrading in skill level alone has little impact on task proficiency.
2. Problems with delivering and managing maintenance training are more complex and have more impact on sortie generation, aircraft availability, and maintenance quality than UGT problems.
3. Computer applications to UGT alone would complicate present TAC scheduling and administrative practices for all other base-level training.
4. Cost/benefit data for UGT alone would be difficult to obtain because of the interactions between the other components of base-level, 462X0 training.
5. Efforts addressing the total training problem would receive greater support within the operational echelons of TAC than those directed solely at UGT.

Therefore, it was decided to shift the focus of the effort to what was termed "mission-oriented training," defined as the entire spectrum of base-level training activity which results in task proficiency and the capability to carry out the unit mission. This decision did not require a revision in the survey approach since the data collected to that point were of a preliminary nature to be used primarily for the purpose of selecting a Weapons System for the in-depth survey.

Findings of the Initial Survey

462X0 Skill-Level Considerations. One would conclude from a review of OJT and other Air Force documentation and directives that the upgrading in skill level for the Aircraft Armament Systems Specialist has great significance in terms of performance on the job itself. Interviews with workcenter personnel disclosed, however, that in many instances, newly-upgraded, 5-skill level airmen are supervised almost as closely as when they were in upgrade training. This may be recognition on the part of the supervisors that UGT might not be meeting the requirements of the job, and perhaps a response to the pressures to upgrade in close-to-minimum time. A fairly common practice of some supervisors is to remove tasks identified for upgrade training from the JPG if the trainee is otherwise qualified, and then reassign those tasks for qualification training after the trainee is upgraded in skill level. When a large number of tasks are circled on the JPG for upgrading and some of those tasks are seldom performed on the job, it may seem expedient to upgrade first, then qualify, as the operational environment generates the task requirements. Another factor which makes rapid upgrading attractive to the supervisor is the fact that, although most tasks can now be performed by the semi-skilled 3-level airman after certification on those tasks, certain tasks can be performed only by 5-level specialists. Some examples in this category of tasks are those involving duties of a loading crew chief, signing off aircraft grounding discrepancies (Red Xs), and certain subcrew tasks which are munitions related. The general impression of 5-skill level upgrading gained during the initial survey was that UGT had little relevance to proficiency on other than loading and routine, simple, on-equipment maintenance tasks. Complete 5-skill level task proficiency in this career field in TAC is achieved by means of qualification training.

Training Load. To assist in making comparisons between 46250 training loads at each site, the tasks identified by Supervisors for such training on the Specialty Training Standard (STS) and the JPG continuation sheets (AF Form 797), and the numbers of loads trained by the Loading Standardization Crews during initial loading crew training were summed. In some cases what appeared to be the same tasks were circled on both the STS and the 797, and appropriate adjustments to the numbers were made. It should be noted that because of large variations in the ways in which tasks are specified, judgments of task complexity were not made. The following table provides information relative to the numbers of individual AFSC 46250 tasks trained by Weapons System:

TABLE 2

Numbers of 46250 Tasks Trained by Weapons System

	F-15	A-10	F-111A
STS Tasks	27	23	29 ^a
AF Form 797 Tasks	19	21	43 ^b
Loads	17	10	5
TOTALS	63	54	77

^aIncludes 8 tasks for Load Crew Chief training only.

^bIncludes 24 tasks for weapons release personnel and 6 tasks for all loading crews.

Trained Personnel Requirements data for CY'79 obtained in October 1978 are as follows for the 462X0 Career Field;

<u>Weapons System</u>	<u>No. to be Trained</u>
A-10	87
F-15	239
F-111A	168

Time Expended in Training Activities. The initial survey provided data on the amount of time spent by Trainers, Supervisors, and Squadron OJT Managers on tasks pertaining both directly and indirectly to training, and on time spent in the administration of training. As one would expect, Squadron OJT Managers spend little time in direct training activities. The basic concern here is with the portion of the OJT Trainer's and Supervisor's time which must be devoted to administrative functions which do not contribute to task proficiency. The following is the way in which the various tasks were categorized:

Direct Training Activities

1. Preparing detailed task breakdowns.
2. Instructing classroom theory and background information not related to specific tasks on the JPG, but common to several tasks.
3. Instructing classroom subjects related to specific tasks on the JPGs.
4. Instructing in the performance of tasks on the JPGs.
5. Instructing review training sessions.
6. Tutoring individual trainees in academic subjects.
7. Developing knowledge tests.
8. Administering knowledge tests.
9. Developing performance tests.
10. Administering performance tests.

11. Counselling individual trainees on CDC progress and on JPG proficiency training progress.
12. Obtaining materials for classroom instruction and performance training.
13. Evaluating classroom instruction and performance training.
14. Indoctrinating newly assigned airmen in UGT procedures.

Indirect Training Activities

1. Reviewing JPGs for UGT progress.
2. Reviewing CDC exercises for objectives.
3. Reviewing CDC VRE results.
4. Reviewing CDC CE results.
5. Evaluating Unit OJT procedures.
6. Evaluating Unit OJT Program effectiveness.

Administrative Activities

1. Selecting tasks for upgrade training to 46250 by circling tasks on the STS.
2. Selecting tasks for upgrade training to 46250 by adding tasks on AF Form 797.
3. Counselling individual trainees on non-academic matters.
4. Keeping records on AF Form 623.
5. Keeping records on trainees' qualifications on other than AF Form 623.
6. Keeping records on personnel status boards.
7. Keeping records on reports submitted and received.

8. Filing reports and records.
9. Reporting UGT progress, branch/shop status (scheduled and unscheduled).
10. Scheduling classroom instruction, performance training and equipment for training.
11. Scheduling and coordinating training meetings.

At each site, approximately 10% of the Supervisors/Trainers with responsibility for upgrade training from the 3- to the 5-skill level in the 462X0 Career Field were interviewed. The following tables provide the ratios of administrative, and administrative and indirect training time to direct training time for Supervisors/and Trainers, and OJT Managers at each site:

TABLE 3

Administrative Time Required to Support One Hour of Direct Training Activity

	Supervisors/Trainers	OJT Managers
Langley AFB	0 hours, 42 minutes	2 hours, 12 minutes
Myrtle Beach AFB	1 hour, 36 minutes	2 hours, 0 minutes
Mountain Home AFB	0 hours, 30 minutes	1 hour, 36 minutes

TABLE 4

Administrative and Indirect Training Time Required to Support One Hour of Direct Training Activity

	Supervisors/Trainers	OJT Managers
Langley AFB	0 hours, 54 minutes	3 hours, 6 minutes
Myrtle Beach AFB	2 hours, 0 minutes	3 hours, 30 minutes
Mountain Home AFB	0 hours, 40 minutes	2 hours, 48 minutes

Task Statement Specificity, Task Selection and Task Proficiency Certification. It is generally difficult to determine precisely what a trainee is expected to be able to do relative to a task statement on the STS or the AF Form 797. This most certainly is a major contributing factor in the lack of standardization of task proficiency training and certification within the 462X0 career field. This is recognized at the Wing Training Management level, but not at the workcenter level where Trainers and Supervisors individually feel that they know what is required for task certification for the 5-skill level. The interviews conducted during the initial survey, however, provided ample evidence that there were as many approaches to task proficiency evaluation as there were trainers. In addition, the task performance qualitative requirements set forth on page 2 of each STS seem inappropriate for most of the tasks of the 462X0. For example, one STS task - Prepare, load and unload nonnuclear munitions - must be performed at the 3c proficiency level for upgrading to 46250. The 3c level is one in which the specialist "can do all parts of the task, needs only a spot check of completed work, meets minimum local demands for speed and accuracy, (COMPETENT)," and possesses enough task knowledge that he/she "can explain why and when the task must be done and why each step is

needed (OPERATING PRINCIPLES)." For upgrading to the 7-skill level, the same task must be performed at the 4c proficiency level, that is, "can do the complete task quickly and accurately, can tell or show others how to do the task (HIGHLY PROFICIENT)." It would appear to the most casual observer that this task, at least, should require the same level of proficiency in its performance regardless of the skill level of the individual performing the task, and that the STS itself, in its task performance qualitative requirements, should reflect the fact that the TOs provide the only standards for acceptable performance.

TAC's directive initiating locally developed Master JPGs recognizes the need for standardization of task proficiency certification. All Weapons Systems surveyed use master JPGs for upgrade training. Discussions with NCOICs in the AMU Weapons Flights indicated that a grueling process had been experienced in reaching agreement on which tasks should be circled on the STS and which tasks should be included on the JPG continuation sheet (AF Form 797). These processes appear to have established firm attitudes toward the resulting master JPG and possibly prejudiced consideration of further revision which could yield greater standardization in task proficiency and certification. Mountain Home and Myrtle Beach supervisors voiced the view that task statements identified for upgrading to the 5-skill level are now standardized and specific enough so that they need not be revised. Trainers at Myrtle Beach believe their training requirements to be mission-oriented and saw no need for revisions to standardize them. Conversely, OJT Managers at all three sites and the Trainers at Langley expressed a strong desire to revise the STS and JPG continuation sheet task statements to be Weapons System specific, job/task oriented and sufficiently detailed to allow standardization across AMUs, and within AMUs across Supervisors and Trainers. Supervisors at all sites felt that the present system of job proficiency certification is satisfactory, but OJT managers, on the other hand, expressed dissatisfaction. This difference of opinion probably stems from the perception of the administrators that they are too remotely located to be able to assess the certification of task proficiency by any means other than documentation verification and record inspection.

Attitudes Toward Computer Applications to Training.
Most persons interviewed (N=45) were asked to respond to 21 possible applications of computer technology to upgrade

training by identifying each as being desirable (would have a positive, beneficial effect), undesirable (would have a negative, harmful effect), or by indicating they had no opinion. Responses ranged from 100% favorable for "computer-supported, weapons-system specific data bases by means of which JPGs, documents, CDCs, and other materials could be rapidly updated as changes to Weapons Systems occur," to 53% favorable, 27% unfavorable, and 20% no opinion for the "use of computer-driven simulators and other simulation techniques to compliment or replace task performance in certain areas on actual equipment." Ten applications specific to respondents' responsibilities and functions were suggested at Langley AFB, nine, at Myrtle Beach AFB and three at Mountain Home AFB. Across all bases and all applications, responses were 82.86% desirable, 9.00% undesirable, and 8.14% no opinion.

No maintenance procedures or processes were observed at the initial survey sites within the Aircraft Generation Squadrons and Equipment Maintenance Squadrons which would be adversely affected by computer applications to mission-oriented training. On the contrary, the general conclusion reached at all sites was that any increase in training effectiveness and efficiency and in training management procedures would be well received by workcenter personnel.

Attitudes Toward the Upgrade Training System. Many items on the initial survey data gathering instruments were designed to allow data collection relative to felt needs for specific changes to the various aspects of upgrade training for 462X0 personnel. In addition, Immediate Supervisors/Trainers and Squadron OJT Managers were asked to express overall satisfaction or dissatisfaction with each aspect. In some cases, respondents had no opinion on an aspect. The following tables summarize the response to this item:

TABLE 5

Percent Generally Dissatisfied with Aspects of UGT

Aspect	Supervisors/Trainers N=19	Squadron OJT Managers N=17
Procedures and policies	37	12
Recordkeeping	47	59
Reporting	16	16
Management	26	47
Instructional materials	58	29
Facilities and equipment	42	24
Equipment availability	42	24
Scheduling	26	41
Task Proficiency evaluation	26	47

Combining the Supervisor/Trainer and Squadron OJT Manager responses by weapons system results in the following:

TABLE 6

Composite Dissatisfaction by Weapons System (%)

Aspect	F-15 N=11	A-10 N=11	F-111A N=14
Procedures and policies	45	18	21
Recordkeeping	55	45	57
Reporting	9	18	21
Management	45	45	21
Instructional Materials	36	64	36
Facilities and Equipment Quality	36	9	50
Equipment Availability	27	36	21
Scheduling	45	27	29
Task Proficiency Evaluation	36	45	29

Scheduling Procedures. There is a high degree of variability across Weapons Systems in the amount of time expended by OJT Managers in scheduling activities. These variations are due primarily to the degree of centralization of the scheduling processes. 1st TFW Training Management has the responsibility for scheduling all officer and enlisted maintenance, FTD, and ancillary training; loading crew training scheduling is accomplished in the squadrons. 354th TFW Training Management schedules the enlisted maintenance, FTD, and a small portion of the an-

cillary training; the squadrons schedule loading crew training and most ancillary events. 366th TFW Training Management schedules enlisted maintenance, FTD, and initial ancillary training; the squadrons schedule loading crew training and recurring ancillary training.

TABLE 7

OJT Managers % Time Spent in Scheduling

1st TFW	22.9
354th TFW	6.7
366th TFW	9.6

A perplexing problem at all sites is the possibility of scheduling one trainee for multiple training events on the same date at the same time. The Maintenance Management Information and Control System (MMICS) training subsystem cannot prevent this, nor can it prevent the scheduling of more than the maximum number of trainees for a course unless auxiliary manual accounting measures are taken. Consequently, where scheduling is most dispersed there is the highest probability that such a condition will exist. A parallel problem arises in the production of the Training Course Table, an index of training events. It is possible, where control of indexing is not centralized, to enter the same training requirement under different course titles and codes. This causes training requirements across squadrons to appear dissimilar when in reality the requirements may be the same but are named and reported differently. Generally, the greater the degree of centralized scheduling, the greater the control of indexing training requirements.

Recordkeeping. The numbers and types of forms initiated, distributed and filed varies somewhat across bases, but not significantly enough to allow any one base to be identified as having unique requirements. The volume of training documentation, as one would expect, increases as data flow from the worker level to the supervisor/manager level. The total volume is quite large and tends to be concentrated at the Squadron OJT Manager level where the data base for most MMICS products is maintained. One example of an unusual recordkeeping requirement is seen in the use of one automated data processing system, MMICS, to maintain another, the Personnel Data System (PDS). Both systems produce a Condensed OJT Report (OJR); the PDS OJR is used for MAJCOM/Wing reporting by the CBPO and the MMICS OJR is used for Deputy Commander for Maintenance/Squadron reporting by Training Management. The Squadron OJT Managers in Training Management receive both OJRs monthly, manually verify and update the PDS OJR using the MMICS OJR, and return the PDS OJR to the CBPO for revisions to the data base. The MMICS OJR is retained in Training Management and continues to be updated on a daily basis through the flow of documentation (AF Forms 2095 and 2096, and ECI forms) which report changes in individual OJT status. Additional products of MMICS are similarly maintained as records of one-time and recurring personnel qualifications, status, and schedules that affect qualifications. To a great extent, the MMICS training subsystem documents themselves represent the recordkeeping burden of Training Management.

OJT Managers, in responding to survey items concerning the hours per week expended in recordkeeping activities, including making training data inputs to MMICS, reported spending 24.6% of their total time in such activity in the 1st TFW, 23.1% in the 354th TFW, and 29.6% in the 366th TFW. As would be expected, the percent of total time devoted to recordkeeping activities roughly corresponds to the numbers of personnel supported by the recordkeeping systems.

Reporting. An initial review of OJT documentation, particularly AFR 50-23, led to expectations that individual progress data related to task proficiency within upgrade and qualification training would be available for the assessment of training effectiveness by higher levels of OJT administration and training management. Specifically, AFR 50-23 states that:

1. Supervisors evaluate trainee progress in terms of ability to complete assigned proficiency tasks.

2. Commanders establish controls to ensure that OJT is properly recorded and reported.
3. Commanders designate task evaluators.
4. Immediate Supervisors determine the number of trainees who can be effectively trained by each trainer.
5. Immediate Supervisors provide guidance in methods of testing and in good management principles.
6. Immediate Supervisors take action when recent graduates of resident technical schools do not meet proficiency levels specified in the STS.
7. Quality Training ensures that all assigned personnel can consistently perform all parts of their assigned duties.

The initial surveys, however, yielded no evidence that this is the case. There are no squadron requirements for tracking an individual Airman's progress toward UGT task proficiency at any of the sites visited, and no data are generated within the UGT program itself which can be used as measures to assess training effectiveness other than CDC volume completion records. Although most Supervisors/Trainers and Squadron OJT Managers expressed general satisfaction with UGT reporting, there were a few who acknowledged the need for additional and/or revised reporting procedures, but of these, some could not define the requirements. Time spent by Supervisors/Trainers reporting individual trainee progress in UGT is 1% or less of their total time at all sites, and most of this is in the form of verbal reports made on an exception basis. Scheduled reporting of shop training status consumes a reported 0.9%, 2.8% and 1.0% of Supervisor total time at Langley, Myrtle Beach, and Mountain Home Air Force Bases, respectively. Squadron OJT Managers, all of whom report spending less than 5% of their time reporting individual and branch/shop upgrade training progress, expressed requirements for additional reporting and/or reporting procedures as follows:

1. Consolidated status reports from MMICS for use by DCM.
2. More timely VRE and CE performance data from ECI.
3. Summary reports of VRE and CE performance.
4. Reports on skill levels within AFSCs and cross-utilization across AFSCs.
5. Summary reports of job proficiency.
6. Sortie prediction reports based on individual task qualification and personnel availability.
7. Class/course utilization reports.
8. Reports of individual qualification requirements and schedules of events to provide those qualifications.
9. Report consolidating the MMICS DOR and TMA reports. This would provide total training/qualification status for individual airmen.
10. Task-oriented training performance report.

Incentive Award Programs. Incentives are tied to Career Development Course performance as determined by time to complete and/or test scores. A positive incentive common to all sites is the awarding of a three-day pass which is taken on Tuesday, Wednesday, and Thursday during a week of the trainee's choice, approved by the workcenter supervisor. The criterion for rewards varies however from a score of 90% or better on the CDC end-of-course examination to merely completing the CDC within 6 months regardless of examination score. Additionally, at one site, a three-day weekend pass is awarded for any Volume Review Exercise score of 100%. A common negative incentive of 2-hour, off duty study sessions was found. However, the criteria for award varied from slow performance (less than one volume per month completed) or failing the end-of-course examination (CE), to a second failure of the CE. Only a very small percent (less than 1%) of the trainees fail the CE twice, however.

Use and Stability of Technical Orders. If an effort

were to be undertaken by the Air Force to apply computer technology to the management of the use of instructional materials within mission-oriented 462X0 training, it would be necessary to have information related to the stability and quality of technical orders and other technical data which support each Weapons System and from which effective materials could be developed if necessary. An attempt was made during the initial survey to collect some information in this area, but the results were disappointing. Across all three Weapons Systems surveyed, the study references most often cited by Supervisors and Squadron OJT Managers for upgrading to 46250 were the aircraft technical orders, as would be expected. Little evidence was found, however, of even moderate use of these technical orders by trainees as study references, although they can be readily obtained in squadron tool rooms. This was surprising in view of the fact that technical orders are listed on the JPG under each task to be certified for upgrading, and that the complexity of many of the tasks is great. One could speculate that the reason technical orders are not used more often is because their large size and format (it sometimes is necessary to refer to two or more volumes to complete one task) make them difficult to use in a production environment such as the flightline. No job performance aids (JPAs) were found to be available, although the new-style technical order provided for the F-15 approaches a JPA in ease of use. For a few tasks, Task Assignment Lists (loading crew training) and work cards and check lists (production tasks) were available. No locally developed materials such as Plans of Instruction (POIs) were in use for upgrade training on tasks other than those trained by loading standardization crews. There have been about 35 modifications to the A-10 technical orders thus far, according to Myrtle Beach FTD, and Mountain Home FTD reported that the F-111A technical orders are relatively stable now. Langley FTD personnel expressed the opinion that the F-15 technical orders were "very stable and of high quality."

Training Development Resources. There was little evidence of a shortage of personnel for performing the functions of planning, development, or evaluation at any of the sites visited during the initial survey.

Training Equipment Availability. The equipment used for task proficiency training and testing is, except for loading crew training (dummy loads), the same used in normal production. It should again be emphasized here that because 462X0 proficiency training on actual equipment is almost

universally unstructured, it is difficult to differentiate between maintenance alone and training conducted simultaneously with maintenance. 66% of the F-15, 60% of the A-10 and 55% of the F-111A Supervisors/Trainers and Squadron OJT Managers interviewed were satisfied with equipment availability for upgrade training.

Task Knowledge and Proficiency Testing. Since in the workcenters, upgrade training is accomplished as a function of the normal production effort, the sequence of job-task training and subsequent certification is determined by the sequence and frequency of maintenance activities. The most often performed maintenance tasks are signed-off first on the JPGs and those least often performed are signed-off last. Pressures are exerted to upgrade in minimum time, within 6 to 7 months, and as discussed previously, some of the tasks are performed so infrequently that they may not occur within this time period. When this situation exists, either the tasks are scheduled specifically for training and signed-off, or as happens more often, the tasks are erased from the JPG, the airman is upgraded and the tasks are reentered on the JPG as qualification training. Loading crew training, provided by the Loading Standardization Crew and Lead Crews, is the only structured instruction received in the squadron pertinent to the JPGs. Some knowledge tests relative to safety are interspersed among the qualification loads performed for initial loading crew training. Those JPG task skills outside of load crew training which must be acquired and certified within the workcenters receive little emphasis insofar as formal instruction is concerned. No records are kept relative to the number of attempts required for individuals to meet standards on task performance. No performance tests are administered. No knowledge tests are given to determine prerequisite knowledge of basic nomenclature, rules, or procedures. Instead, approximately once a month, the supervisor, trainer, and trainee meet, and based on the trainer's memory of maintenance actions accomplished during the period, tasks are certified on the JPG. FTDs at each location provide formal classroom training in weapons release, gun maintenance, and off-equipment maintenance which require achievement of skill objectives to graduate. However, performance tests are not separated from the instruction; if the trainee can perform during instruction with an acceptable number of instructor assists, then the criteria have been met. No written tests are administered in the FTD to determine task knowledge acquisition. The degree to which JPG tasks are certified as a result of FTD attendance varies across

weapons systems and within weapons systems, across AMUs and weapons flight supervisors.

Pressures to Upgrade in Minimum Time. An airman in normal upgrade training to the 5-skill level has, in accordance with AFR 50-23, up to 18 months to complete training. As pointed out previously, however, there are covert pressures applied throughout the base-level OJT management structure to upgrade in minimum time. These pressures appear to be attributable to three major factors: (a) AFR 50-23 requirements for evaluation of progress at specified milestones during upgrade training, (b) the close monitoring of several UGT-related statistics, and (c) supervisors' desires to upgrade 3-skill level airmen as rapidly as possible. With respect to factor a, above, the first UGT milestone for evaluation of trainee progress is the 8th-month supervisor's evaluation if the airman has not completed training by that time. The supervisor determines if training should be continued, and provides sufficient "help and training" to qualify the trainee for completion of training by the 12th month. If, by the 12th month, the airman still has not completed training, an evaluation must be made by the unit commander to determine whether the training should be continued until the 18th month or terminated by withdrawing the trainee from UGT. Past the 12th month, the trainee is considered to be in "overtime training." Concerning factor b, above, the numbers of airmen in overtime training each month is one of the UGT statistics (others are the numbers of airmen upgraded per month and the CDC pass/fail rate) which are monitored by the units, squadrons and staff offices of the wing maintenance organization, in addition to the CBPO and HQ TAC, and Airmen are reported, by name, to the DCM when in an overtime training status. Thus, upgrade training to the 5-skill level beyond the point (12 months) at which it becomes a potential problem statistic is to be avoided; during the month of February 1979, of 237 airmen in the 1st TFW in UGT to the 5-skill level, only one airman was reported to be in overtime training. During the surveys of mission-oriented training for Aircraft Armament Systems Specialists, there were indications that the pressure to avoid the overtime training statistic began 4-6 months before the 12-month milestone was reached.

From the supervisor's standpoint, a 5-skill level airman officially requires less supervision, and the upgrading event itself eliminates much of the tracking, reporting, and recordkeeping burden associated with the

supervision of airmen at the 3-skill level. Qualification training, on the other hand, can be provided in a more casual fashion, does not require reports, and perhaps most importantly, is not highlighted by tracking functions at higher levels.

Resident Technical School and 462X0 STS/JPG Task Relationships. An attempt was made to compare 462X0 tasks taught to airmen at the Resident Technical School to those tasks assigned for upgrade training when they reported to their bases for duty. An initial approach of trying to match STS task statements to the Resident Technical School POI failed because of the STS's lack of specificity in the area of individual equipments, components, and behaviors. A second procedure, matching UGT tasks specified on the Master JPG to Technical School lesson topics classified under STS paragraph headings by task category, was more successful, and although the JPG did not completely correspond to the POI, there were indications of redundancy of training in many of the tasks. Although it could be argued that the Resident Technical School teaches tasks to only the 2b level, it should be noted that, at the time of the initial survey, proficiency levels in workcenter UGT could not be verified with task performance data, nor could task knowledge be verified by means of written tests.

Besides the training redundancy, some interesting facets of 462X0 training development, and possibly the training for other aircraft maintenance career fields as well, emerged from the effort to compare STS/JPG tasks with Resident School training:

1. Although the STS, as the official Air Force specification for training, is expected to correlate with, and expand the AFS descriptions contained in AFR 39-1, it was found to be even less specific in the case of the 462X0 Career Field. For example, one of the four tasks related to aircraft guns maintenance on the F-15 Weapons System is described as "Inspect." The description of the same task in AFR 39-1 is "Examines guns for defects such as chamber obstructions, recoil systems leakage, pitting or deformation of bore, or excessive wear of bore, or other gun parts." The need for the use of the AF Form 797 is a direct result of the lack of specificity of the STS itself.

Although the AFR 50-23 states that tasks listed on the STS should not be duplicated on the AF Form 797, and since the STS provides at best only an inventory of duties, or categories of tasks, making a listing of tasks for upgrade training on the 797 is almost mandatory if a guide for training is to be provided.

2. As a primary control document for the development of formal resident courses, the STS seems equally ineffective since the justification for including any even remotely-related learning objective in a course could be claimed under one of the task categories.
3. The practice of supervisors in their initial evaluations of newly assigned airmen not to consider any previously attained skills or knowledge in determining training requirements for upgrade training and qualification training is due primarily to lack of specific information on the STS/JPG from which they can draw conclusions concerning such previous training and qualification.
4. None of the 462X0 Supervisors interviewed in the Aircraft Generation and Equipment Maintenance Squadrons had made inputs to the development of 462X0 STSs, nor had they ever had access to occupational survey data.

Weapons System Selection

Early in the project, it had been planned to define cost-effectiveness criteria which could be used to facilitate analysis of the initial survey data. Such criteria would address the benefits of higher ratios of productive time to training time for supervisors and trainers, lower upgrade training costs in terms of reductions in training time, and reductions in recordkeeping procedures and document handling on the part of OJT managers. Thus, the result of applying the cost-effectiveness criteria to the initial survey data was to have been a rank-ordering of the three Weapons Systems with respect to their potential for cost savings and avoidance if the computer had been applied in support of their training requirements. The

in-depth survey during Phase II of the project would focus on the specific functions within the first-ranked Weapons System's training environment that were to be supported by computer technology. In anticipation of the cost/benefits analyses to be performed, the Air Force was requested to provide the following cost and course data relative to the training of Aircraft Armament Systems Specialists:

1. Annual billet costs for E-1 through E-9, and O-1 through O-5.
2. Cost per trainee of Aircraft Armament Systems Specialist course, Lowry AFB.
3. FTD course costs for OJT Advisory Service training and 462X0 Career Field courses provided at Langley, Myrtle Beach, and Mountain Home AFBs.
4. PCS costs, E-1 and E-2, from
 - a. Lackland AFB to Lowry AFB
 - b. Lowry AFB to Langley AFB
 - c. Lowry AFB to Myrtle Beach AFB
 - d. Lowry AFB to Mountain Home AFB
5. MMICS training subsystem costs (hardware, personnel, communications, supplies) at Langley, Myrtle Beach, and Mountain Home AFBs.
6. Costs of providing PDS training reports to CBPOs at Langley, Myrtle Beach, and Mountain Home AFBs.
7. Career Development Course costs including:
 - a. Personnel costs for initial development, updating, and revision.
 - b. Printing and distribution costs
 - c. Course Examination and Volume Review Exercises development, printing, mailing, administration, scoring, and ADP support costs.
8. TAC Wing Training Management Applications and Development group production costs for audio/visual and other media at Langley, Myrtle Beach, and Mountain Home AFBs.

9. TACP 50-17 course development, delivery, and maintenance costs at the three sites.
10. Load crew training costs at Langley, Myrtle Beach, and Mountain Home AFBs.
11. Ancillary training media development costs.
12. Costs of operational equipment (aircraft, AGE, tools and special test equipment) dedicated to training at Langley, Myrtle Beach, and Mountain Home AFBs.
13. Costs for procurement and maintenance of audio/visual device equipment (slide/tape, educational television (ETV), etc.) in use in Wing Training Management, AGS and EMC at Langley, Myrtle Beach, and Mountain Home AFBs.
14. Average number of calendar days required for completion of course G3ABR46230.
15. Average number of calendar days required for completion of 100-series lessons in course G3ABR46230.
16. Number of calendar days projected for completion of course G3ABR46230 (F-15) when implemented.
17. Number of calendar days projected for completion of course G3ABR46230 (A-10) when implemented.
18. Number of calendar days projected for completion of course G3ABR46230 (F-111A) when implemented.

Although some of these data have been made available, none were received in time for the task of selecting a Weapons System for the in-depth survey, and an alternative procedure of weighting the Phase I factors was devised to select the most promising site for Phase II. Based on the results of this weighting process, the F-15 Weapons System community at Langley AFB was selected for the in-depth survey in Phase II of the study.

In-Depth Survey

The broad objective of the in-depth survey of the mission-oriented training of F-15 Aircraft Armament Systems Specialists was to enable identification of specific functions which were performed on a routine basis in the administration and management of such training. A total of 30 personnel in the following positions provided information during the structured interviews which were conducted during the survey:

Deputy Commander for Maintenance, 1st TFW

Chief, Training Management, 1st TFW

NCOIC, Training Management, 1st TFW

NCOIC, Training Management Administration, 1st TFW

Squadron OJT Manager, 1st AGS

Squadron OJT Manager, 1st EMS

NCOIC, Training Management, Development and Application, 1st TFW

NCOIC, Training Management, Scheduling, 1st TFW

Maintenance Training Instructors, Training Management, 1st TFW

Quality Control Staff, 1st TFW

Commander, 1st AGS

Training Coordinator, 1st AGS

Training Coordinator, 71st AMU

Weapons Flight Chief, 71st AMU

Training Coordinator, 27th AMU

Weapons Flight Chief, 27th AMU

NCOIC, Loading Standardization Crew, 1st AGS

Training Coordinator, 1st EMS

NCOIC, Armament Systems Shop, 1st EMS

Consolidated Base Personnel Office, OJT
Managers, 1st CSG

Commander, Field Training Detachment 201

Superintendent, Field Training Detachment 201

Aircraft Armament Systems Specialist Instructor,
Field Training Detachment 201

Instructional Supervisors, 3460th Technical
Training Group

Eight-part, data-gathering instruments were designed to allow flexibility during the interviews. The primary guide for the interviews was a Position Survey Form on which was noted general information on the following topics:

1. Position description
2. Records, reports and forms
3. Training provided to 462X0s
4. Functions of the position in the training system with respect to personnel management, scheduling and resource allocation, instructional delivery and management, course development, evaluation, recordkeeping and tracking, reporting, information needs, programs affecting training, meetings and ADP inputs/outputs.

Additional instruments were attached to the position surveys as required during the course of the interviews. If, for example, a recordkeeping function was disclosed, the record was listed on an Index of Records which later was itself used as a guide to collect detailed data on Record Summary Sheets. In addition to the Records attachments, there were indices and summary sheets for reports, forms, courses, and trainee considerations.

The survey confirmed that the functions performed by those responsible for the training of 462X0 personnel, are primarily recordkeeping and tracking, scheduling, and reporting functions. Over 100 recordkeeping and tracking functions alone were identified, and these were distributed across 1st TFW Training Management, CBPO, 1st AGS, 1st EMS, and the FTD. Some examples of the kinds of recordkeeping and tracking functions are "Records and maintains files of CDC results," "Reviews Detailed OJT Roster (DOR) daily," and "Enters AF Form 2426 data into MMICS for each trainee." Many of the same functions were performed at different levels within the Wing. For example, as shown in Figure 10, the function "Review AF Form 2096 (Request for Upgrading) for accuracy" is performed twice after the Immediate Supervisor initiates the form, three times after the AGS Commander signs the form, and three times after CBPO approves the request. The information contained in the form other than name, SSAN, AFSCs, and organization is limited to date entered training, date completed CDC, and a statement that the trainee is qualified and recommended. By way of contrast, only 32 functions related to instructional delivery and management were identified. Typical examples within this category of functions are "Present sound/slide and motion materials for Maintenance Orientation course," "Administer VREs," "Hold and issue CDC volumes," and "Conduct recertification training." The simple ratio of routine administrative and clerical functions to direct training functions may not seem paradoxical, but a closer look at the training events supported by such functions gives rise to questions concerning its validity. Informational briefings and audio/visual presentations are referred to as "training," and all personnel receive the information initially when reporting for duty and on a recurring basis. These requirements result in over 20,000 person events per year that do not contribute to primary AFSC job proficiency. There are no provisions for trainees to demonstrate adequate knowledge of the subject matter either prior to receiving the training (although most could be expected to be able to do so simply on the basis of their having attended many times) or after the training by means of tests of learning objectives. In fact, for other than FTD courses, no learning objectives exist. The testing shortfall is evident not only in the block training area, but in almost all categories of 462X0 mission-oriented training.

The relevance and efficiency of upgrade training could be questioned on a number of grounds: (a) the CDC includes a large quantity of material which is not relevant to F-15

Aircraft Armament Systems Specialists' job tasks and which in all probability, cannot be utilized during the first enlistment; (b) CDC end-of-course testing is a normative approach with emphasis placed equally on all knowledge elements regardless of criticality; (c) the mechanics of VRE administration, scoring, evaluation, and feedback of results are awkward; (d) the emphasis within upgrade training is placed on CDC completion, possibly at the expense of task proficiency training, and; (e) the UGT statistics which are monitored provide no indication of either the quality of training or of the performance of the trainee. At best, upgrade training for 46230 personnel provides what represents an introduction to the Career Field, more suited to a Direct Duty Assignment than a recent graduate of the Resident Technical School in which the objectives of the training are more clearly defined and comprehensively tested.

Computer-Supportable Training Function Prioritization

In the paragraphs which follow are described the mission-oriented training functions which should be provided support using computer technology. Because of the non-availability of the kinds of cost data which would allow detailed cost/benefits analysis, attention was focused upon other benefits of providing automated support to the base-level training environment. It should be noted that the benefits addressed apply primarily to the current training system but that consideration is also given to the potential for greater efficiency and effectiveness should a large-scale redesign of On-The-Job and other base-level, mission-oriented training be instituted. The functions are ordered from highest to lowest priority on this basis. Six measures were used in the rank-ordering process. Two measures relate to training effectiveness, and four to training efficiency. Each measure was, in turn, applied to each of the computer-supportable functions performed in the mission-oriented training of Aircraft Armament Systems Specialists, to enable rank-ordering of functions by measure and later, to provide an overall prioritization of functions for use in recommending further activity. The rank-ordering process for individual measures may be somewhat arbitrary for two major reasons: (a) there is a degree of interaction between the functions in the sense that, for example, records provide reports, scheduling involves both recordkeeping and reporting, and the instructional management function, by definition, includes nearly all, if not all, of the other functions to some degree; and (b) the difference between the measures

themselves may not be entirely clear. The ranking process, then, while defensible from a qualitative point of view, suffers quantitatively.

Measures Used in Rank-Ordering Functions. If automated using computer technology, the degree to which the function would:

Training Effectiveness Measures

- A. Increase the numbers of trainees who are proficient in performing the tasks/jobs/duties/functions required of them on the job at the time of upgrading to the 5-skill level.
- B. Increase the capability of mission-oriented training to provide for individual differences between trainees thereby allowing all trainees to achieve task proficiency.

Training Efficiency Measures

- C. Decrease the average training time for a training event, course or program.
- D. Reduce the cost per trainee for reasons other than decreases in training time.
- E. Allow the mission-oriented training program to accommodate fluctuating trainee loads.
- F. Increase the numbers of airmen satisfactorily completing a given training event, course or program.

Computer Supportable Functions.

Mission-oriented training functions which should be provided support by computer technology are:

- 1. Instructional management.
- 2. Scheduling and training resource allocation.
- 3. Reporting.
- 4. External evaluation.
- 5. Recordkeeping.

TABLE 8

Rank Order of Functions by Measure

Function	Measure					
	A	B	C	D	E	F
1	1	1	1	1	2	1
2	4	2	2	2	1	2
3	2	4	3	4	3	3
4	3	3	4	5	5	4
5	5	5	5	3	4	5

Instructional Management. For the most part, management of instruction associated with mission-oriented training is centered around the Career Development Course. As discussed previously, this is paradoxical when considered in light of its minimal relevance to 462X0 job tasks within the F-15 Weapons System community. Trainee progress toward CDC completion is tracked, however, and ECI provides some form of feedback which will allow self-remediation on specific VRE test items missed. An end-of-course examination (CE) failure generally results in mandatory, supervised remediation, but the retest will not necessarily include test items on those objectives which the trainee failed to attain on the first test. This latter consideration is of little importance, however, since fewer than 1% of the 46230 enrollees fail the initial test. This is attributable to the fact

that the minimum passing score is 60% and that trainees must pass a practice test (in some squadrons, two practice tests) before being allowed to take the CE. If the emphasis on the task proficiency aspects of upgrade and qualification training were as great, there should be a dramatic increase in the performance of 462X0 personnel by the time of upgrading to the 5-skill level.

Computer applications to the management of instruction involves the making of assignments based upon specific requirements and trainee abilities, testing and diagnostic strategies which will allow all trainees to achieve specified performance standards, and the collection of data which can be used to increase the effectiveness and efficiency of training. The application of computer technology to instructional management in an individualized, mission-oriented training environment would achieve the following benefits:

1. Implementation of task proficiency testing programs which would ensure a greater degree of quality control in performance evaluation.
2. An enhanced capability on the part of supervisors to schedule and conduct training around the constraints of maintenance production.
3. A capability to determine and fulfill training requirements for individuals as opposed to groups.
4. More equitable management of incentive awards based on trainee achievement.
5. Rapid identification of trainees with learning difficulties.
6. Automated testing, scoring, and evaluation of all knowledge testing associated with mission-oriented training.
7. Dramatic reductions in "no-shows" and airmen awaiting training.
8. Increased capability to simultaneously manage large numbers of trainees in centralized CAM-T-like programs.

9. The capability of creating data bases for reporting and evaluation which would be more closely related to achievement of specific knowledges and skills.
10. The capability of local CDC test scoring, evaluation and immediate feedback.

Scheduling and Resource Allocation. This function is a very large consumer of available productive time. The flow of forms and other documentation is steady and profuse, and the numbers of personnel involved with the scheduling process at all levels within the wing is high. Table 9 depicts scheduling function responsibilities by type of training. Note that Training Management's involvement is largely in distributing quotas, publishing schedules, and filling OJT advisory and ancillary training quotas. The level of effort required within Wing Training Management alone for scheduling block (ancillary) training every other week is 9 mandays for development of the schedules, and 3 mandays to input the schedule into MMICS using a remote terminal. Distribution of schedules and coordination in quota assignment and control consume additional manhours at all levels within the Wing. In the absence of other measures of training effectiveness, scheduling effectiveness (the percentage of available training event quotas attended) receives close scrutiny within the Wing, as does the number of available quotas which are not filled. This occasionally results in Supervisors filling quotas with personnel who do not require the training at that time. During peak birth months, large numbers await block and other training. Figure 11 depicts the sequence of the tasks involved in the scheduling process for recurring block training, and Figure 12, for other training events. Weapons loading training also requires time-consuming scheduling on the part of the Loading Standardization Crew, as can be seen in Figure 13. A fully automated, on-line scheduling and resource allocation capability could be expected to provide the following efficiencies:

1. A large reduction in the manhours presently required to schedule training events at the Wing Training Management, AGS and EMS levels.
2. The elimination of manual recordkeeping associated with the scheduling functions.

3. The capability for direct interactions between the Supervisors and the schedule, thereby eliminating intermediate processes and shortening the lines of communication.
4. Automated individual and group schedule generation based on trainee availability, training capacity and instructor availability, with a high degree of flexibility to meet contingencies such as TDY and leave.
5. The elimination of manual configuration specification and resource allocation for routinely scheduled training events.
6. Recurring block training course-load leveling.
7. A reduction in the numbers of trainees awaiting training.
8. The capability to assign priorities to training events and schedule accordingly.
9. In association with an efficient, automated recordkeeping capability, a means by which prerequisite verification can be achieved.
10. The elimination of scheduling conflicts.
11. Scheduling of instructors by qualification and availability.
12. Simplification of initial block and AGE training scheduling.
13. The elimination of manual processes in the scheduling of maintenance management and CDC end-of-course testing.
14. Rapid updating of schedules as changes occur.
15. The elimination of the requirement to input individual training schedules into MMICS.
16. Simplification or elimination of the training quota assignment procedure.
17. Automated generation of no-show rosters.

TABLE 9

Scheduling Function Responsibility
by Type of Training

FUNCTION	TYPE OF TRAINING						
	AEROSPACE GROUND EQUIPMENT TRAINING	FTD MAINTENANCE TRAINING	FTD OJT ADVISORY SERVICE COURSES	LOADING STANDARD- IZATION TRAINING	ANCILLARY TRAINING	PROFES- SIONAL MILITARY EDUCATION	SPECIAL CERTIFI- CATION TRAINING
DETERMINE NEED FOR TRAINING	WORKCENTER SUPERVISOR	WORK- CENTER SUPER.	AFR 50-23	AFR 66-5 TAC SUP-1 DCM	HIGHER AUTH. TAC, BASE, DCM	AFR 39-1 AFR 35-1	AFR 66-5 TAC SUP -1 DCM
DETERMINE TRAINING CAPABILITY/ CAPACITY	SQUADRON COMMANDER	FTD FIXED	AFR 50-23 FTD FIXED	DCM SQUADRON COMMANDER	FIXED	TAC, ATC FIXED	DCM SQUADRON COMMANDER
SPECIFY TRAINING DATES/ TIMES	COORDINATED WORKCENTER SQUADRON MAT	COORDI- NATED FTD, MAT	FTD/ CBPO FIXED	LSC	FIXED	TAC, ATC FIXED	MAINTENANCE SUPERVISOR
DISTRIBUTE QUOTAS	MAT	FTD, MAT	CBPO MAT	LSC FIXED	CBPO MAT	TAC, ATC FIXED	MAINTENANCE SUPERVISOR
PUBLISH TRAINING SCHEDULE	MAT	MAT	CBPO MAT	MAINTENANCE SUPERVISOR IN MAINTENANCE SCHEDULE	CBPO MAT	CBPO	MAT, MAINTENANCE SUPERVISOR
FILL TRAINING QUOTAS	WORKCENTER SUPERVISOR	WORK- CENTER SUPER	MAT WORKCENTER SUPERVISOR	WORKCENTER SUPERVISOR	MAT WORKCENTER SUPERVISOR	CBPO, SQUADRON TRAINING COORDINATOR	MAT, WORKCENTER SUPERVISOR
DETERMINE RESOURCES REQUIRED	FIXED BY TRAINING	FTD FIXED	FTD FIXED	LSC	FIXED	FIXED	FIXED
ALLOCATE RESOURCES	SQUADRON COMMANDER	DCM	FTD FIXED	MAINTENANCE SUPERVISOR	TAC, BASE, MAT	FIXED	FIXED

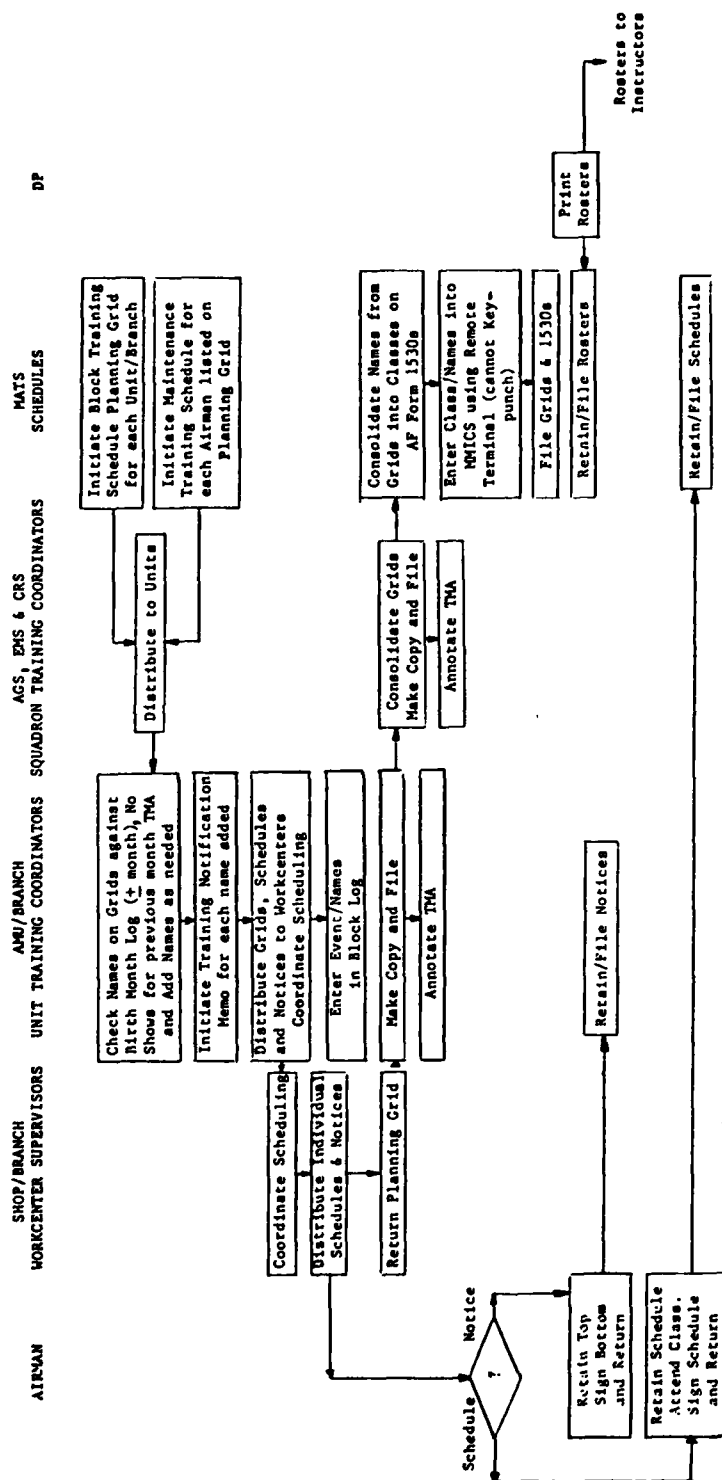


Figure 11. Bi-monthly scheduling of recurring block training.

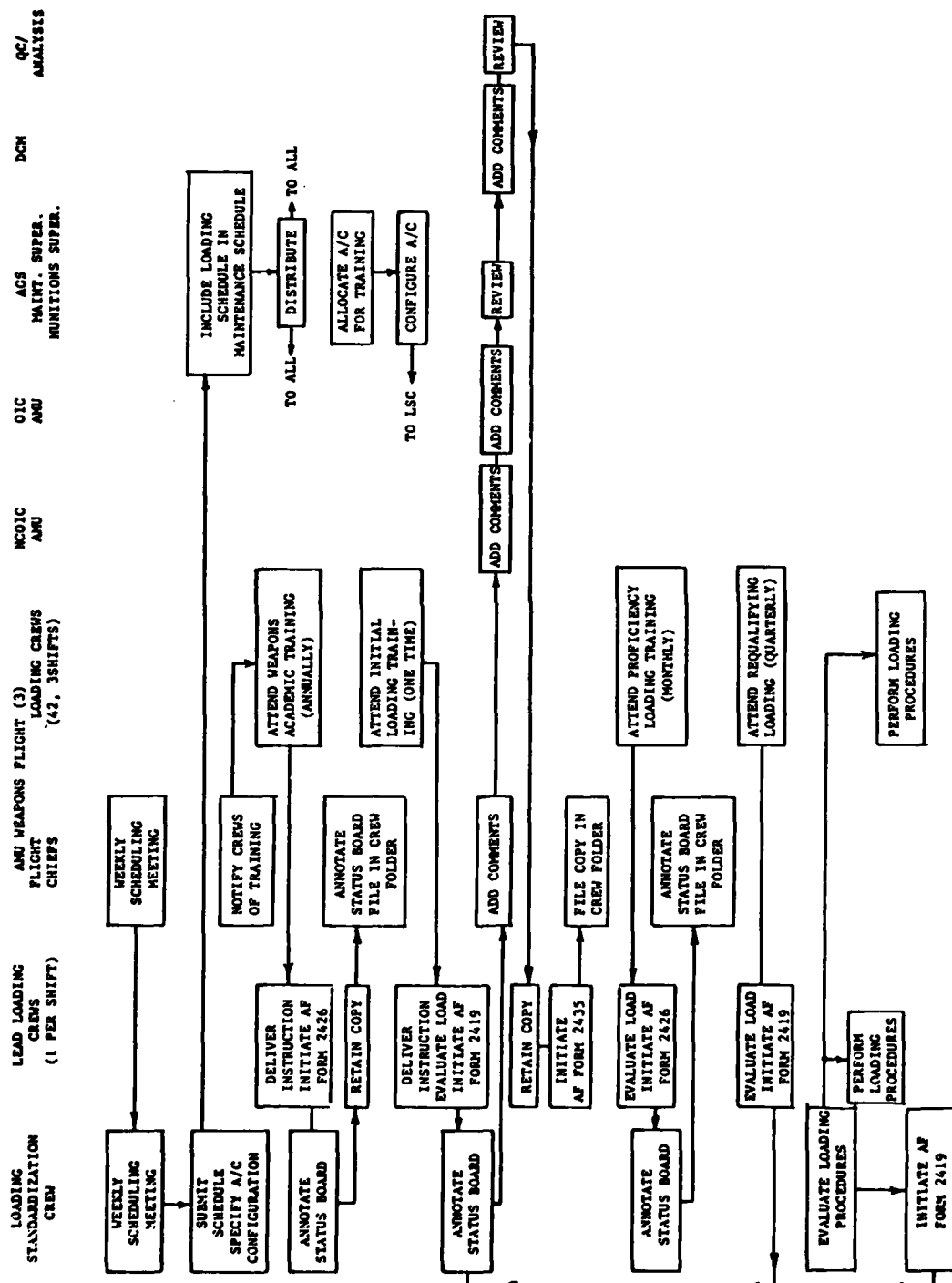


Figure 13. Weapons loading training and certification scheduling.

Reporting. AFR 50-23 requires CBPO OJT Unit to maintain, publish and distribute current upgrade training statistics. This it does, on a monthly basis, by collecting the statistics from base organizations, consolidating the statistics into one report and distributing the report to, among other organizations, the same organization which generated the data. The statistics themselves, however, do not readily lend themselves to interpretation with respect to any of the measures of training effectiveness and efficiency employed in the function rank ordering process, as can be seen in the following list of data elements which comprise the report:

1. The number of airmen in each organization in upgrade training for the 3-, 5-, and 7-skill levels and totals for the month.
2. The total number of airmen in overtime training in each organization during the month.
3. The numbers of airmen in each organization either removed from training during that month for failure to progress, or not recommended for entry into UGT.
4. The numbers of airmen who were administered either the CDC end-of-course examination or the Apprentice Knowledge Test, and the numbers who passed.
5. The totals of 4. above, for the preceding 6-month period.

Within the 1st TFW, at least seven individuals in five organizations provide these data in monthly reports. Weekly reports are made by Training Coordinators to the AMU OICs and by the NCOIC, Armament Systems Shop, to the OIC, Munitions Branch, concerning the progress of individual trainees with respect to CDC volume completion. This emphasis on the CDC aspect of UGT was observed at all levels of management within the wing. Reporting of progress of the task proficiency aspects of UGT was virtually non-existent.

The monthly status of training report, an oral brief given by Chief, Training Management, and supported by transparencies, is provided to the Deputy Commander for Maintenance. It provides the following information specific to the 1st TFW:

1. Scheduling effectiveness for all training.
2. Management testing/training statistics.
3. OJT and UGT statistics.
4. Engineering Technical Service Program training data.
5. FTD utilization.
6. Cross Utilization Training statistics.
7. CAM-T instructional material development status.
8. Special interest training statistics.

This report also provides a 3-month projection of the schedules for CAM-T and other maintenance training, block training, OJT Advisory Service Courses and ancillary training, and highlights existing and potential training problems, such as instructor and training equipment shortages, and the numbers of airmen who are overdue for training.

Weekly stand-up briefings are given by Squadron OJT Managers to the Commanders of the squadrons they monitor. These reports are primarily limited to block and maintenance training scheduling effectiveness. Copies of the transparencies used in the briefings are also provided to the DCM. The survey provided ample evidence of statistics reporting, however nonutilitarian, but no evidence in the form of feedback to the reporting officials that decisions were being made on the basis of such reporting. Computer technology applied to the mission-oriented training reporting process would, in addition to eliminating manual data compilation, allow for the generation and distribution of more meaningful statistics for use in evaluation and tracking of training status. Other matters of concern such as Munitions Capability by skill level and OJT status by AFSC require highlighting by efficient reporting procedures appropriate to levels

of management for decision-making purposes.

The benefits which would result from an automated reports generation capability would be:

1. Enhanced, less labor-intensive reporting for both routine and ad hoc requirements.
2. Elimination of manual data compilation.
3. Elimination of reports duplication.
4. Potential for restructuring of report formats and content to increase utility.
5. Potential for increasing appropriate management information flow.

External Evaluation. Evaluation of mission-oriented training is limited largely by the amount and type of available data. As discussed with respect to reporting functions, numbers in UGT, number taking EOCs and AKTs, pass/fail rates, number in overtime training and scheduling effectiveness comprise the entire range of data elements (statistics) reported. Since these data are not reported by AFSC, it is difficult to examine training by Air Force specialty. The scarcity of written tests for task knowledge components, absence of learning objectives outside of FTD and LSC training, training problem identification by exception reporting of maintenance malfunctions and procedural errors, and supervisors opting to upgrade trainees based on arbitrary task selection rather than on standardized, minimum task requirements are the factors which, in all probability, lead to unrealistic zero attrition rates in almost all training programs within mission-oriented training. Emphasis on time standards as an evaluative tool is applied universally: Completion of one volume per month for CDC regardless of difficulty or quantity of material, and upgrade from the 3- to the 5-skill level in the minimum time (as close to 6 months as possible) regardless of the AFS or position of assignment. Emphasis on scheduling effectiveness, also suggesting evaluation, is applied universally: Number of quotas filled regardless of the need for course attendance, number of "no shows" regardless of trainee substitution to ensure quota filling, and numbers attending reported by squadrons regardless of AFSC. Emphasis on task proficiency reporting and tracking (with the exception of loading crew training) is non-existent.

Emphasis on reporting quantity and quality of acquired skills through training is again (outside of LSC) non-existent. The emphasis or lack of emphasis are brought about as a function of the availability of data and are not conditions brought about by the desires of management. During the conduct of the surveys, management at all levels, upper management in particular, on numerous occasions voiced frustrations caused by the inadequacies of the present system to produce realistic, meaningful statistics that would allow evaluations to be made. Without appropriate evaluation, no management decisions can be made which would result in consistent program quality improvements, savings in terms of training manhours and dollars, and improved airman morale through a revitalized incentive awards program based on overall performance in training by ability.

Benefits to be achieved through application of computer technology to evaluation processes are:

1. Readily available information specific to AFSC, event, course, program and workcenter to provide bases for the improvement of training.
2. Statistical analyses, data compilation and ad hoc reports generation formatted as required.
3. Instantaneous updating of data bases permitting ad hoc and random evaluations vice evaluations tied to periodic reporting procedures.
4. Specification of more exacting standards.
5. Potential for greater flexibility in contingency planning, implementation and administration.
6. Potential for a more equitable incentive award program.
7. Potential for reduction of lines of communication and shortened time frames for management actions.
8. Elimination of redundant reporting and subsequent duplication of evaluation efforts.
9. Potential to improve delineation of responsibility and accountability.

Recordkeeping. Of primary importance within this function is the need for automation of the AF Form 623 and the JPG. The emphasis placed at all levels of supervision and management on the documentation contained in the record appears extreme in proportion to its utility. Contributing to the difficulties associated with the AF Form 623 are the manual procedures which are utilized in its initiation, maintenance, and review. The duties and jobs of the Aircraft Armament Systems Specialists were found to be sufficiently standardized to allow identification of tasks assigned for upgrade training based on squadron/workcenter assignment, although there is a critical need for improved specification of these tasks as a first step. Improved upgrade training progress tracking procedures should follow, accompanied by the establishment of valid measures of training effectiveness. Duplication of training records other than the AF Form 623 is widespread within the Wing organization probably because of a felt need to maintain such records close to the Commanders and Unit OICs as it was prior to centralization of OJT Managers. These and other functions, which should have moved to the Wing Training Management level with consolidation, remained behind and are now being performed by Squadron and Unit Training Coordinators. Despite the staggering record-keeping workload, there is little, if any, data available related to time required for task certification, manhours devoted to training, test performance, training requirements, and other measures of mission-oriented training effectiveness.

Automation of recordkeeping would provide the following benefits to the Wing training effort:

1. The availability of large data bases for access by all levels of management on an as-needed basis.
2. The elimination of manual file, logbook, and status board maintenance requirements.
3. The capability to make projections of training loads and requirements based on data not now available.
4. Single-point tracking of the CDC functions of ordering courses, testing, and performance evaluation.

5. Automatic update of PDS relative to OJT status.
6. Elimination of requirements for manual updating of DOR.
7. Automated generation of AF Form 2096 upon entering and completing upgrade training.
8. Enhanced tracking capability relative to the Graduate Evaluation Program.
9. Elimination of requirement to file Training Request/Training Completion Notification (AF Form 2426) and AF Form 2096.
10. Elimination of maintenance and manual updating of MMICS Training Subsystem.
11. Elimination of functions of Squadron/Unit Training Coordinators.
12. Shifting of responsibilities of Wing 75XXX personnel away from recordkeeping to the actual management and conduct of training.

Automation of the AF Form 623 would provide the following additional advantages:

1. Simplify the initiation of the record and its maintenance and monitoring.
2. Allow the establishment of Master JPG data bases which would standardize training requirements by duties within jobs for assigned positions.
3. Allow tracking of mission capability in a real-time mode.
4. Provide a readily available source of data relating to training capacity and capability.
5. Allow a high degree of automation of CDC progress, UGT task proficiency, and Qualification Training tracking.
6. Provide immediate access to OJT records for review purposes.
7. Provide immediate updating of OJT records as qualifications are attained by means of course/test/event completions.

IV. CONCLUSIONS AND RECOMMENDATIONS

The investigation of the functions performed within the mission-oriented training environment for the 462X0 Career Field disclosed apparent conflicts between policy and procedure. These conflicts do not appear to stem from the long-range training goals of the Air Force, but rather from (a) differing interpretations of and conflicts between the various directives providing guidance in the attainment of these goals, (b) misplaced emphasis with respect to the purpose and importance of each training and support function within the total training system, and (c) critical faults in the design and execution of the training itself. It could be stated categorically that the application of computer technology within the present mission-oriented training environment would not, of itself, result directly in dramatic increases in job task proficiency. Such application, however, should provide immediate efficiencies in some categories of support functions. The major benefits of computer applications to training must be achieved concurrently with any redesign of the training itself. The Air Force has, in the 75XXX Career Field, a large pool of talent with which it can design and develop efficient and effective training. Unfortunately, this resource is more often expended on routine, clerical tasks requiring little knowledge of, and few skills in, training methodology. It is suggested that this has resulted in skill-level upgrading based essentially upon time standards rather than performance standards. The scheduling of training and the burden of recordkeeping leaves little time in which the middle levels of training management can improve the materials used for training or evaluate the effectiveness of the training.

It is suggested that the training support now provided by the MMICS Training Subsystem thwarts the intended purpose of any management information system by requiring tedious, manual backup filing procedures and by its slow response to requests for information in formats useful to decision makers. Compared with flexible, state-of-the-art, computer-based training support systems, MMICS appears to fall far short of making a valuable contribution to mission-oriented training. Infinitely more appropriate to the current capabilities of computer technology would be the implementation of a system which is designed for, and dedicated to, the accommodation of problems and the performance of functions peculiar to task-oriented training.

Recommendation. Provide state-of-the-art computer support immediately for the scheduling and record-keeping functions of base-level, mission-oriented training.

Among the problems with present OJT procedures and policy which seemed quite evident during the project, upgrade training for 462X0s, as presently conducted, appeared to contribute essentially to a general knowledge of the Career Field. If one accepts the validity of the skill-level concept relative to maintenance specialties, the use of the Career Development Course as the primary source of information for skill-level upgrading should be questioned. The impression that the CDC for this AFSC is more appropriate to promotion than upgrading is prevalent at the maintenance production level. However, task proficiency training in the workcenter is accomplished essentially without benefit of task breakdowns or Plans of Instruction, and little use is made by trainees of the technical orders which are listed on the STS as study references. Because the Air Force requires that equipment maintenance be performed using appropriate technical data, it is suggested that the development of written tests of task and subject knowledge from the technical orders themselves would help form the desired work habits earlier in the airman's career and provide a base of data for evaluation of the workcenter upgrade training program.

Recommendation. Consideration should be given to greatly increasing the use of technical orders around which to develop training materials and tests relevant to task proficiency.

On the positive side, the establishment of the CAM-T approach to mission-oriented training, is a first step toward organizing vital resources and identifying procedures essential to increasing the sensitivity of training to mission requirements. There appear to be several reasons for the gradual shift of some aspects of maintenance training away from the OJT environment to the CAM-T setting. One reason is a perception on the part of aircraft maintenance managers that the flightline is a poor instructional setting, particularly during the generation of sorties since POMO is designed to produce more sorties in less time. Another, perhaps less obvious reason also related to increased sortie generation, is supervisor resistance to training which

removes assigned personnel from the production setting for moderately long periods of time, as is the case with FTD training. In addition, supervisors' initial evaluations often do not adequately identify training requirements. CAM-T's objective of centralization of initial maintenance and block training appears to be a reasonable approach to the solution of the problem of providing job-task qualification in an operational environment. As more AFSCs are brought into TAC's CAM-T program, however, requirements become more critical for adequate support of the functions of managing and coordinating the instruction, scheduling the equipment and other resources of a number of units responsible for various training requirements, and evaluating and reporting the training. In support of CAM-T alone, then, advanced computer technology could provide increased confidence that the program will achieve its goals.

Recommendation. Begin planning for the support of the CAM-T program, as it develops, with computer technology which could be applied with equal benefit to all other components of mission-oriented training.

Training requirement identification, or JPG task selection for upgrading, on the part of supervisors was found to be accomplished by circling more tasks than could be adequately trained within the minimum upgrade training time. It appears that insufficient consideration is given to the trainee's specific job assignment within the workcenter, or to individual capabilities. This condition is compensated for when the CDC is completed, upgrading is requested, and untrained UGT tasks are converted to tasks for qualification training.

One might also question the differences in minimum and maximum time limits for upgrade training and qualification training. If time limits are valid, they should apply equally to both elements of OJT. Since there are no time limits associated with qualification training, it follows that there must be some advantage in insisting on skill-level upgrading in minimum time. It has been suggested previously in this report that the advantage may be related to the elimination of the burden, in a maintenance production environment, of supervising airmen upgrading to the 5-skill level. It is further suggested that the result may be an upgrade training system which is keyed to the avoidance of potential problem statistics rather than one which is keyed to task proficiency/certification.

Recommendation. Define specific, minimum job requirements to standardize training (both upgrade and qualification) and task proficiency evaluation.

A related inconsistency concerns the fact that AFR 39-1, Airman Classification Regulation, does not differentiate between the tasks performed at the 3-skill level and those performed at the 5-skill level. It would seem to be appropriate, therefore, to either delete the 3-skill level itself, since a 46230 can perform unsupervised only those tasks in which he/she is certified at the 5-skill level on the JPG, or to recognize that there are tasks and subtasks which can and should be performed at the 3-skill level. AFR 50-23 specifies that all tasks be certified at a proficiency of 3c for the 5-skill level regardless of the STS code key requirement as an interim step in the "GO/NO GO" concept. It is suggested that the concept should be applied across all skill-levels thereby allowing each airman to perform unsupervised those tasks in which he or she is qualified. This could reduce much of the supervision of partially qualified airmen and free valuable supervisor/trainer manhours to be channeled into other, more productive functional areas.

Recommendation. Identify those tasks and parts of tasks which can be performed unsupervised by 3-skill level airmen.

The potential for increasing the effectiveness and efficiency of mission-oriented training by the application of computer technology to those functions identified in Section III is promising. Such support should be provided for those functions, however, accompanied by guidance and direction which reaffirms the Air Force's commitment to the principles of instructional systems development for all training including task-oriented training, and which clarifies the relationships between the components of the training system and the job. Tasks should be identified in more specific terms and keyed to jobs to allow more positive identification of training requirements for those jobs. Qualitative requirements for task performance should not be artificially contrived solely to conform to a hierarchy of skill levels, but should be keyed to the job and derived from the performance requirements prescribed in the technical orders. Training should be administered, managed, and delivered in modes which consider

individual differences in ability and, perhaps most importantly, task and mission-oriented training must be evaluated using appropriate measures. At the same time, computer-based technology can provide and enhance those management and administrative functions which are essential for a mission-oriented training program that will ensure each airman can perform those tasks for which he or she was trained.

Recommendation.

Provide more definitive guidelines for the design, development, implementation and evaluation of all components of mission-oriented training.

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APPENDIX A

DUTIES AND RESPONSIBILITIES OF

AFSC 46230 AND AFSC 46250

AIRCRAFT ARMAMENT SYSTEMS SPECIALISTS

AIRMAN AIR FORCE SPECIALTY
AIRCRAFT ARMAMENT SYSTEMS SPECIALIST

1. SPECIALTY SUMMARY

Loads nuclear and nonnuclear airmunitions and explosive and propellant devices on aircraft, and maintains, installs, modifies, and repairs aircraft bomb, rocket, and missile release, launch, suspension and monitor systems, guns and gun mounts, and related airmunitions handling, loading, and test equipment.

2. DUTIES AND RESPONSIBILITIES

a. Loads and positions airmunitions on aircraft.

Loads, positions, safeties, and downloads airmunitions using applicable handling, loading, and check-out procedures and equipment. Tests suspension, launch or release system for proper retentive locking position and manual/electrical release. Checks for proper positioning of circuit breakers and switches on aircraft before applying power. Analyzes malfunctions and performs functional checks of launch and suspension systems using special test and in-flight monitoring equipment. Performs required inspection of nuclear weapons. Operates handling and loading equipment and mates airmunitions with aircraft release, launch and suspension systems. Loads and services aircraft gun systems. Attaches and adjusts required airmunitions stabilizing, control, and safety devices. Tests electrical and electronic circuitry for continuity, voltage, and current for normal operation of systems equipment and tests for absence of unwanted electrical signal or power prior to connecting electrically actuated explosives and propellants. Adjusts, inserts, and removes airmunitions launch and release actuating devices. Inserts and removes cartridges associated with fuel tanks and pylons. Adjusts and installs fuses, boosters, and delay elements in conventional airmunitions. Installs ground safety devices on airmunition and aircraft gun systems components to prevent inadvertent detonation, launching, or firing. Removes airmunitions from aircraft.

b. Inspects and maintains aircraft release, launch, suspension and monitor system, nonturret mounted guns, and related airmunitions handling, loading, and test equipment.

Examines for visible defects and proper installation on aircraft of such systems components as; airmunitions ejector racks and doors, loading and suspension devices, shackles, launching rails and racks, rocket pods, pylons; and aircraft ammunition containers, boosters and feed chutes. Performs operational checkout of mechanical, electrical, electronic, and pneudraulic components of release and launch systems using applicable test equipment. Operates, inspects, and performs operator maintenance of related airmunitions handling, loading, and test equipment. Boresights, test fires, and performs after firing inspection of nonturret mounted aircraft guns. Examines aircraft guns for defects such as chamber obstructions, recoil systems leakage, pitting or deformation of bore or excessive wear of bore or other gun parts. Analyzes malfunctions of airmunitions launch, release, suspension, and monitor systems and associated handling and loading equipment and isolates cause by service testing, visual inspection or by using gauges, test equipment and applicable technical publications. Removes, disassembles, and inspects parts and subassemblies for damage, presence of rust or corrosion, cracks, burrs, or acceptable clearances and tolerances. Determines necessity for repair or replacement of parts and components. Removes dirt, rust, and corrosion from metal parts with compounds and solvents. Reassembles components, adjusts and synchronizes parts and mechanisms, and applies lubricants and preservatives. Maintains applicable inspection and maintenance records.

c. Repairs, modifies, and installs aircraft release, launch, suspension and monitor systems, nonturret mounted guns, and related airmunitions handling, loading, and test equipment. Analyzes and isolates system component malfunctions by visual observation, or use of mechanical, electrical, and pneudraulic test equipment. Utilizes technical publications to analyze malfunctions and perform installation, repair, or modification of systems components. Disassembles, repairs, or replaces mechanical, electrical, electronic, and pneudraulic mechanisms of launch and release systems, handling and loading equipment and nonturret mounted gun systems. Determines extent of component and parts repair required. Adjusts clearances and tolerances of parts and synchronizes mechanisms for proper operation using gauges and special tools and test equipment. Removes, repairs, and replaces electrical components associates with launch, release, monitor, suspension, and gun systems. Accomplishes configuration changes of launch, release, suspension and

monitor systems to accommodate changing airmunitions loads.

d. Supervises aircraft armament systems personnel. Instructs subordinates in techniques of performing functions such as airmunitions handling and loading; and maintenance, repair and modification of airmunitions launch, release, suspension and monitor systems and nonturret mounted aircraft guns. Assigns and examines work to insure compliance with directives, technical orders, and safety procedures. Indoctrinates newly assigned personnel. Conducts on-the-job training.

3. SPECIALTY QUALIFICATIONS

a. Knowledge. Knowledge of basic electricity and the principles of physics, mechanics, electronics, and pneudraulics as applied to airmunitions launch, release, suspension, fuzing, and arming systems and aircraft nonturret mounted gun systems; use of precision measuring tools and equipment; use and interpretation of blueprints, schematics, and wiring diagrams; and nuclear and nonnuclear airmunitions loading and safety procedures is mandatory. Possession of mandatory knowledge will be determined in accordance with AFR 35-1.

b. Education:

(1) Completion of high school or GED equivalency is mandatory.

(2) Completion of high school courses in mechanics or basic electronics is desirable.

c. Experience. Experience in loading airmunitions on aircraft or maintaining and repairing airmunitions launch and release or aircraft nonturret gun systems is mandatory.

d. Training. Completion of a basic aircraft armament systems course is desirable.

e. Other:

(1) Physical profile of S-1 with no record of emotional instability is mandatory.

(2) Normal color vision as defined in AFR 160-43 is mandatory.

(3) Normal depth perception as defined in AFR 160-43 is mandatory.

(4) A minimum aptitude level of Mechanical 60 or Electronic 60 is mandatory.

(5) A Secret security clearance according to AFR 205-32 is mandatory for award and retention of this AFSC unless the clearance is administratively downgraded, without prejudice.

4. SPECIALTY DATA

a. Grade Spread:

E-3 through E-5	46250
E-3	46230

b. Related D.O.T. Jobs:

Armorer	632.281
Armament Installer	801.381

c. Related DOD Occupational Subgroup: 646

5. *SPECIALTY SHREDOUTS

Suffix	Portion of AFS to Which Related
A	B-52 Aircraft
B	A-7 Aircraft
C	A-10 Aircraft
D	F-4 Aircraft
E	F-15 Aircraft
F	F-16 Aircraft
G	F-106 Aircraft
H	F-111 Aircraft
J	FB-111 Aircraft
Z	All other aircraft

* 46210 and 46230 only

APPENDIX B

SPECIALTY TRAINING STANDARD FOR 462X0

DEPARTMENT OF THE AIR FORCE
Headquarters, US Air Force
Washington DC 20330

STS 462X0
(For AFSCs 46230X/50/70)
December 1978

AIRCRAFT ARMAMENT SYSTEMS SPECIALIST
AND
AIRCRAFT ARMAMENT SYSTEMS TECHNICIAN

1. Purpose of this Specialty Training Standard (STS). As prescribed in AFR 8-13, this STS:

a. States in column 1 of attachment 1 the tasks, knowledge, and study references (SR) necessary for airmen to perform duties in the Weapons Maintenance ladder of the Airman Munitions and Aircraft Armament Systems career field. These are based on the Specialty Descriptions effective 30 April 1978 in Change 4, AFR 39-1.

b. Indicates in columns 2A, 3A, and 4A of attachment 1 the minimum proficiency recommended for each task or knowledge for qualification at the 3-, 5- and 7-skill level AFSCs. AFR 50-23 is the authority to change the proficiency level during JPC development when the local requirement is different from the level shown in this STS.

c. Shown in column 2A of attachment 1 the proficiency attained in Courses 3ARP46230 000 (PDS Code ZRJ), 3ARP46230A 000 (PDS Code Y4Y), 3ARP46230A 001 (PDS Code Y4W), 3ARP46230A 000 (PDS Code Y4V), 3ARP46230C 000 (PDS Code Y4U), 3ARP46230M 000 (PDS Code Y4T), 3ARP46230F 000 (PDS Code Y4S), 3ARP46230P 000 (PDS Code Y4P), 3ARP46230G 000 (PDS Code Y4N), 3ARP46230H 000 (PDS Code Y4P), 3ARP46230J 000 (PDS Code Y26), 3ARP46230Z 000 (PDS Code Y4H), described in AFM 50-5. Proficiency code for the minimum proficiency recommended for the 3-skill level AFSC and the proficiency attained in the course are the same except where dual codes are entered. When dual codes are entered, the second code shows the proficiency attained in the course.

d. Provides basis for supervisors to plan and conduct individual OJT programs

e. Provides a convenient record of on-the-job training completed when inserted in AF Form 623, "On-the-Job Training Record," and maintained in accordance with AFR 50-23.

f. Defines the knowledge requirements covered by Specialty Knowledge Tests in the Weighted Airman Promotion System.

2. Proficiency Code Key. Attachment 1 contains the Proficiency Code Key used to show proficiency level.

3. Career Development Channel of OJT. Satisfactory completion of CNC 46250 is mandatory for personnel training to AFSC 46250. Personnel training to AFSC 46270 will obtain knowledge training by using applicable references listed in this STS and fulfill management training requirements specified in AFR 50-23. (See FCI Catalog and Guide, chapter 6, for current CNC identification number for ordering purposes.)

4. Study Guidance for Weighted Airman Promotion System (WAPS). Specialty Knowledge Tests (SFTs) for promotion to E-5 are based on 5-skill level knowledge requirements. SFTs for promotion to E-6 and E-7 are based on 7-skill level requirements. SFT questions are based on study references listed in AFP 39-8. Individual responsibilities are outlined in AFP 39-8, chapter 14, paragraph 14-3h.

5. Recommendations. Report to ATC/TT unsatisfactory performance of individual graduates or inadequacies of this STS. Refer to specific paragraphs of this STS. See AFP 50-32.

BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

LEW ALLEN, JR., General, USAF
Chief of Staff

VAN L. CRAWFORD, JR., Colonel, USAF
Director of Administration

1 Attachment
Qualitative Requirements

Supersedes STS 462X0, August 1976; Change 1, December 1977; Change 2, May 78.

THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY		
TRAINEE		
NAME (Last, First, Middle Initial)	INITIALS (In writing)	SSAN
IMMEDIATE SUPERVISOR'S NAME AND INITIALS (In writing)		
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	

QUALITATIVE REQUIREMENTS

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The Individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can explain why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, identify, and resolve problems about the task. (COMPLETE THEORY)
SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can explain relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
EXPLANATIONS		
• A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b) • A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks. - This mark is used alone instead of a scale value to show that no proficiency training is provided in the course, or that no proficiency is required at this skill level. X - This mark is used alone in course columns to show that training is not given due to limitations in resources.		

AD-A081 446

DAVIS (JOHN) ASSOCIATES MEMPHIS TN

F/6 5/9

FEASIBILITY COMPUTER APPLICATIONS TO MISSION-ORIENTED TRAINING --ETC(U)

JAN 80 J D DAVIS, S B CARSON, W R REED

F33615-78-C-0052

UNCLASSIFIED

AFHRL-TR-79-61

NL

2 of 2

AD
N/R: 534



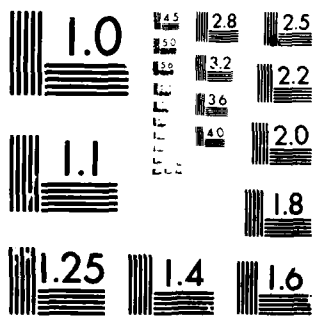
END

DATE

TIMES

4-80

DDK



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC Cite	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC Cite	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC Cite	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials
35(5) OPSEC significance of unclassified data and procedures	A			A			C		
(6) Specific OPSEC vulnerabilities of AFSC 462X0	A			R			C		
4. AIRCRAFT ARMAMENT SYSTEM SAFETY									
SP: AFMs 127-100 (chap 1-10), 127-201 (chap 1, 127-101 (chap 1-12)	2, 4, 5, 7, 8, 9, 10								
a. First aid procedures for electrical shock	C			C			C		
b. Practice safety precautions pertaining to									
(1) Personnel	2b			3c			4c		
(2) Electronic and electrical equipment	2b			3c			4c		
(3) Aerospace ground equipment	2b			3c			4c		
(4) Nonnuclear weapon system	2b			3c			4c		
(5) Explosive devices	2b			3c			4c		
(6) General aircraft	2b			3c			4c		
5. TECHNICAL ORDERS									
SP: AFM 66-171; AFP R-2, TOS 00-5-1, 00-5-2									
a. TO system	A			R			C		
b. Locate desired information	2b			3c			4c		
c. Use technical orders/job guide when performing maintenance and inspection	2b			3c			4c		
d. Maintain files	-			3c			3c		
6. SUPERVISION AND TRAINING									
a. Supervision									
(1) Obtain information for special requisitions, issue and turn-in slips	-			2b			3c		
SP: AFMs 66-1 (vol II, chap 1) (vol V, chap 3); 67-1 (vol IV, part I, chap 7); AFP 66-5 (chap 2)									
(2) Prepare equipment authorization list	-			-			2b		
SP: AFMs 66-1 (vol II, chap 2) (vol V, chap 3); 67-1 (vol IV, part I, chap 7); AFP 66-5 (chap 2)									
(3) Supply discipline	A/-			R			C		
SP: AFM 66-1 (vol VI, chap 1), AFPs 66-5 (chap 2), 67-10									

NO ADVANCED COURSE

TAKES, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 3 SKILL LEVEL			3 4 SKILL LEVEL			4 5 SKILL LEVEL		
	A AFSC C/C	B Date QJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC C/C	B Date QJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC C/C	B Date QJT Started	C Date Completed & Trainee's Supervisor's Initials
6a(4) Plan and schedule work assignments and priorities SR: AFMs 25-1 (chap 3), 66-1 (vol II, chap 2) (vol X, chap 3); APPs 39-6, 66-5 (chap 2)	-			2h			4c		
(5) Assign maintenance and repair work SR: AFMs 25-1 (chap 4), 66-1 (vol II, chap 2) (vol X, chap 3 & 5); APPs 39-6, 66-5 (chap 2)	-			2h			4c		
(6) Assign personnel to positions SR: AFMs 25-1 (chap 3), 66-1 (vol II, chap 3) (vol X, chap 3); APPs 39-6, 66-5 (chap 2)	-			2h			4c		
(7) Supervise repair personnel accomplishing maintenance and inspections SR: AFMs 25-1 (chap 4), 66-1: APPs 39-6, 66-5 (chaps 3 and 5); TO 00-20-1 (sec III thru V)	-			3h			4c		
(8) Analyze and prepare maintenance and inspection reports and charts SR: AFMs 25-1 (chap 4), 66-1 (vol II, chap 4) (vol X, chap 2 & 4); APP 66-5 (chap 2); TO 00-20-1	-			2h			4c		
(9) Establish work methods and controls SR: AFMs 25-1 (chap 5), 66-1 (vol II, chap 4) (vol X, chap 3 & 4); APPs 39-6, 66-5 (chap 2)	-			2h			4c		
(10) Evaluate work performance of subordinate personnel SR: APPs 39-6, 39-62	-			3c			4c		
(11) Justify personnel and equipment SR: AFMs 25-1 (chap 5 & 6), 66-1 (vol II, chap 4) (vol I, chap 1 & 2) (vol X, chap 3); APP 66-5 (chap 2)	-			b			3c		
(12) Resolve technical problems encountered by subordinates SR: AFM 66-1 (vol II, chap 3) (vol X, chap 4); APPs 39-6, 66-5 (chap 3 & 5)	-			3b			4c		
(13) Recommend policy changes on utilization of personnel and equipment SR: AFM 26-1, 26-3; APPs 26-2, 26-6	-			1a			3c		
(14) Counsel personnel and resolve individual problems SR: APPs 35-90, 211-3, 211-4	-			2b			4c		

NO ADVANCED COURSE

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
6a(15) Initiate action to correct substandard personnel performance SP: AFM 30-17; AFPs 35-32, 30-6, 30-30	-			2b			4c		
(16) Participate in USAF graduate evaluation program SP: AFP 50-12	-			2b			2b		
b. Training SP: AFMs 50-1, 50-42, 66-1 (vol II, chap 4) (vol II, chap 2); AFRs 39-1, 39-4, 39-9, 50-12, 50-37, 50-39, 50-54, 66-5									
(1) Evaluate personnel training requirements	-			2b			4c		
(2) Plan, conduct, and supervise OJT	-			3c			4c		
(3) Prepare job proficiency guides	-			3c			4c		
(4) Motivate trainers and trainees	-			2b			3c		
(5) Counsel trainees on training progress	-			2b			3c		
(6) Monitor effectiveness of OJT									
(a) Upgrade training									
1. Career knowledge training	N/-			2b			3c		
2. Job proficiency training	P/-			3c			3c		
(b) Qualification training	-			2b			3c		
(7) Maintain training records	-			2b			3c		
(8) Evaluate effectiveness of training programs	-			1a			3c		
(9) Recommend personnel for training	-			2b			4c		
SP: AFMs 50-5; AFRs 39-4, 50-9, 50-37, 50-39, 50-54, 66-5 (chap 2)									
7. MAINTENANCE MANAGEMENT									
a. Functions and responsibilities of the Deputy Commander for Maintenance SP: AFM 66-1 (chap 1, vol II); AFR 66-5 (chap 1)	A/-			R					
b. Basic functions of management units that make up the Deputy Commander for Maintenance's staff SP: AFM 66-1 (chaps 2, 3, and 4, vol II); AFR 66-5 (chap 2)	A/-			R			C		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C/s	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
7c. Equipment classification designators SR: AFM 300-4 (vol VI)	A			B			C		
d. Job control number SR: AFM 66-1 (chap 2, vol II); AFR 66-5 (chap 2); TO 00-20 series	A			P			C		
e. Maintenance data collection SR: AFMs 66-267, 66-278; TO 00-20 series	A			P			C		
f. Processing and controlling of material SR: AFM 66-1 (chap 2, vol II); AFR 66-5 (chap 2)	A/-			P			C		
g. Cross utilization training SR: AFR 66-5	A/-			P			C		
8. MAINTENANCE AND INSPECTION SYSTEM AND FORMS									
a. Maintenance systems SR: AFM 66-1 (vol III, chap 6); AFR 66-5 (chap 3)	A			R			C		
b. Inspection systems SR: AFM 66-1 (vol III, chap 6); AFR 66-5 (chap 3)	P			R			C		
c. Use maintenance data collection forms SR: AFMs 66-267, 278; TO 00-20 series	2h			3c			4c		
d. Material deficiency reporting system SR: TO 00-350-54	A			R			P		
e. Check reports to determine methods for improving procedures at local activity	-			2h			3c		
9. MUNITIONS MAINTENANCE MANAGEMENT									
a. Squadron commander and staff SR: AFM 66-1 (chap 1, vol VI, sec A & C); AFR 66-5 (chap 3 & 5)	A			P			C		
b. Maintenance supervision SR: AFM 66-1 (chap 2, vol VI, sec A, B, & C); AFR 66-5 (chap 3 & 5)	A			R			C		
c. Branch and shop chief responsibilities SR: AFM 66-1 (chap 3, vol VI); AFR 66-5 (chap 3 & 5)	A			R			C		
d. Munitions services, Aircraft Maintenance Unit/Weapons Flight, and Munitions Branch/Armament Systems SR: AFM 66-1 (chap 4, vol VI); AFR 66-5 (chap 3 & 5)	A			R			C		

NO ADVANCED COURSE

TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
10. PROCEDURES FOR CORROSION CONTROL. SR: TOS 1-1-2	A			R			C		
11. SELECT AND USE TEST EQUIPMENT AND SPECIAL TOOLS SR: TOS 0-1-12, 0-1-13, Applicable Munitions Equipment TOS									
a. Multimeters	2b			3b			4b		
b. Oscilloscopes	2b			3b			4b		
c. Frequency counter	2b/-			3b			4b		
d. Signal generator	2b/-			3b			4b		
e. Electrical repair kits	2b/-			3b			4c		
f. Soldering equipment	2b			3c			4c		
12. HAND TOOLS SR: AFR 127-101 (chaps 1 thru 3); TOS 0-1-32, 12-1-101, 12R14-3-1-01									
a. Select, use and maintain	2b			3c			4c		
b. Use and maintain CTV	2b/a			3c			4c		
13. PRACTICAL ELECTRICITY SR: TOS 00-25-212, 1-1A-8, 1-1A-14, 31-1-141-1, 31-1-141-2, 31-1-141-3, 33A1-12-2-1, 33A1-12-933-1									
a. Principles of DC	R			C			C		
b. Electrical components and their symbols	R			C			C		
c. Use multimeter to measure voltage and resistance	2b			3c			4c		
d. Principles of AC	R			C			C		
e. Troubleshoot electrical systems using schematics, wiring diagrams and troubleshooting guides	2b			3c			4c		
14. AIRCRAFT ARMAMENT SYSTEMS ELECTRONICS SR: TOS 00-25-234, 1-1A-8, 11A-14, 11-1-10									
a. Electronic principles	R			R			R		
b. Solid state devices	R			C			C		
c. Use data from diagrams to analyze circuits	2b			3c			4c		

NO ADVANCE COURSE

A

Attachment 1

T. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 3 SKILL LEVEL			3 5 SKILL LEVEL			4 7 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC Cn	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
14d. Troubleshooting	7h			7c			4c		
e. Apply circuit repair techniques	7h			7c			4c		
15. F-4 AIRCRAFT									
a. Aircraft armament systems									
SP: AFSCs 122-1, 122-4, 122-6, 122-44, 127-100, 127-101, TOS 1F-4C-14-1, 1F-4C-16-1, 1F-4C-33-1-1, 1F-4C-33-1-2, 1F-4C-33-1-3, 1F-4C-33-1-4, 1F-4C-33-1-5, 1F-4C-33-1-6, 1F-4C-33-1-7, 1F-4C-33-1-8									
(1) Practice safety precautions pertaining to nuclear weapons systems	7h			7c			4c		
(2) Test equipment and special tools	7h			7c			4c		
b. Ammunitions	7h			7c			4c		
SP: TOS 1F-4C-33-1-1, 1F-4C-33-1-2, 1F-4C-33-1-3, 1F-4C-33-1-4, 1F-4C-33-1-5, 1F-4C-33-1-6, 1F-4C-33-1-7, 1F-4C-33-1-8									
c. Aircraft guns									
SP: TOS 11W1-12-4-12, 11W1-12-7-2, 11W1-12-7-4, 11W1-12-7-5									
(1) Nomenclature, function of parts, cycle of operation	7h			7c			4c		
(2) Disassemble and assemble	7h			7c			4c		
(3) Inspect	7h			7c			4c		
(4) Maintain	7h			7c			4c		
(5) Perform electrical checks	7h			7c			4c		
d. Internal gun system (feed and handling system)									
SP: TOS 1F-4C-33-1-2, 11W1-7-11-2, 11W1-7-11-3, 11W1-7-11-4, 11W1-7-11-5, 11W1-7-12-4-14									
(1) Nomenclature, function of system assemblies and cycle of operation	7h			7c			4c		
(2) Disassemble and assemble	7h/-			7c			4c		
(3) Inspect	7h/-			7c			4c		
(4) Maintain	7h/-			7c			4c		
(5) Remove and install major assemblies	7h/-			7c			4c		
(6) Identify and inspect ammunition	7h			7c			4c		
(7) Load and unload ammunition	7h/h			7c			4c		
(8) Perform electrical system check	7h			7c			4c		

NO ADVANCED COURSE

Attachment 1

Dec 78

STS 462X0

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
e. Gun pods (feed and handling system)									
SP: TMs 1111-31-5-2, 1111-31-5-4									
(1) Nomenclature, function of system assemblies and cycle of operation	"			"			"		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2b			3c			4c		
(7) Load and unload ammunition	2b/b			3c			4c		
(8) Perform electrical system check	2b			3c			4c		
f. Airmunitions loading and handling equipment									
SP: TMs 3503-2-16-1, 3505-3-A-1, 3505-3-A-14									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
g. Perform operator inspections and operate AGF	2b/b			3c			4c		
SP: TMs 3503-2-16-1, 3505-3-A-1, 3505-3-A-14									
h. Aircraft armament launch and release system									
SP: TMs 1F-4()-2-8, 1F-4()-2-18, 1F-4()-2-23, 1F-4()-2-36, 1F-4C-8-3, 1F-4C-8-4, 1F-4C-16-2, 1F-4C-33-1-2, 1F-4C-8-1, 1F-4C-2-18, 1F-4C-33-1-2, 11R29-3-25-2, 11R29-3-28-1, 11R29-3-35-2, 11R29-3-37-2, 11R47-2-2, 11L1-2-7-2, 11L1-2-10-1, 11L1-2-12-1, 11L1-3-15-2, 11L1-3-18-1, 11L1-3-22									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2b			3c			4c		
(2) Install and remove stores suspension components	2b			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		

NO ADVANCED COURSE

Dec 78

STS 462X0

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials
15h(4) Perform system functional/ electrical checks using applicable test equipment	2b			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	2b/1b			3c			4c		
(8) Prepare, load and unload nuclear weapons	2b/1b			3c			4c		
(9) Remove and install internal gun systems	2b/-			3c			4c		
(10) Remove and install gun pods	2b/1b			3c			4c		
(11) Foresight internal guns	2b/-			3c			4c		
(12) Foresight gun pods	2b/1b			3c			4c		
16. A-7 AIRCRAFT							NO ADVANCED COURSE		
a. Aircraft armament system test equipment and special tools	2b			3c					
SP: T0s 1A-70-2-13, 33DS-3-45-1, 33DS-16-56-2									
b. Airmunitions	"			"					
SP: T0s 1A-70-33-1-1, 1A-70-33-1-2									
c. Aircraft guns									
SP: T0s 11U1-12-4-32, 11U1-12-7-2									
(1) Nomenclature, function of parts, and cycle of operation	"			"					
(2) Disassemble and assemble	2b			3c					
(3) Inspect	2b			3c					
(4) Maintain	1b			3c					
(5) Perform electrical checks	2b			3c					
d. Internal gun system (feed and handling system)									
SP: T0s 1A-70-33-1-2, 11U1-7-1-103									
(1) Nomenclature, function of system assemblies and cycle of operation	"			"					

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Attachment 1

Dec 77 STS 462Y0

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC C/o	B Date OJT Started	C Date Compid & Trainee's Supervisor's Initials	A AFSC C/o	B Date OJT Started	C Date Compid & Trainee's Supervisor's Initials	A AFSC C/o	B Date OJT Started	C Date Compid & Trainee's Supervisor's Initials
16d(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2h			3c			4c		
(7) Load and unload ammunition	2h/h			3c			4c		
(8) Perform electrical system check	2h			3c			4c		
e. Gun pods (feed and handling system)									
SP: TOS 11P1-31-5-2, 1A-7D-33-1-2									
(1) Nomenclature, function of system assemblies and cycle of operation	R			R			R		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2h/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2h			3c			4c		
(7) Load and unload ammunition	2b/-			3c			4c		
(8) Perform electrical system check	2h			3c			4c		
f. Airmunitions loading and handling equipment									
SP: TOS 35D3-2-16-1, 35D5-3-8-3									
(1) Operate controls	2h			3c			4c		
(2) Drive bomb lift trucks	2h			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2h			3c			4c		
g. Perform operator inspections and operate AGP	2h/h			3c			4c		
SP: TOS 35D3-2-16-1, 35D5-3-8-1, 35D30-4-2-1, 35D30-4-2-11									
h. Aircraft armament launch and release system									
SP: TOS 1A-7D-2-13, 1A-7D-33-1-2, 11R29-3-25-2, 11R29-3-35-1, 11R47-12-2-22, 11L1-2-10-1, 11L1-3-15-2, 11L1-3-27-1									

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials
16h(1) Disassemble, inspect, assemble and check components of aircraft suspension system	2h			3c			4c		
(2) Install and remove stores suspension components	2h			3c			4c		
(3) Remove and install release systems electrical components	2h/-			3c			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	2h			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	2h/1b			3c			4c		
(8) Remove and install internal gun systems	2h/-			3c			4c		
(9) Remove and install gun pods	2h/-			3c			4c		
(10) Bore-sight internal guns	2h/-			3c			4c		
(11) Bore-sight gun pods	2h/-			3c			4c		
17. F-15 AIRCRAFT									
SP: TOS 1F-15A-2-2-3, 1F-15A-6									
a. Weapon system test equipment and special tools	2h			3c			4c		
SP: TOS 1F-15A-33-1-1, 33D5-3-46-4, 33D5-12-20A-1, 33D5-12-20A-4, 33D5-45-13-1, 33D5-45-33-4, 33D5-45-34-1									
b. Airmunitions	N			C			C		
SP: TOS 11A-1-33, 11A-1-53, 11A1-5-7, 11A2-3-7, 11A1-2-7, 11L1-3-21-1, 11U1-11-7									
c. Aircraft guns									
SP: TOS 11U1-7-11-2, 11U1-7-15-2, 11U1-7-15-2-1, 11U1-7-15-4, 11U1-12-4-34, 33D30-4-5-1									
(1) Nomenclature, function of parts and cycle of operation	N			C			C		
(2) Disassemble and assemble	2h			3c			4c		
(3) Inspect	2h			3c			4c		

NO ADVANCED COURSE

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
17c(4) Maintain	1b			3c			4c		
(5) Perform electrical checks	7b			3c			4c		
d. Internal gun system (feed and handling system)									
SP: T0s 1F-15A-2-13, 1F-15A-2-14, 1F-15A-33-1-2									
(1) Nomenclature, function of system assemblies and cycle of operation	R			C			C		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2b			3c			4c		
(7) Load and unload ammunition	2b/b			3c			4c		
(8) Perform electrical system check	2b			3c			4c		
e. Airmunitions loading and handling equipment									
SP: T0s 1F-15A-1-1, 35N3-2-16-1, 35N5-3-R-1, 35N30-4-5-1									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
f. Perform operator inspections and operate ACP	2b/h			3c			4c		
SP: T0s 35N3-2-16-1, 35N5-3-R-1, 35N5-3-R-14									
g. Aircraft armament launch and release system									
SP: T0s 1F-15A-33-1-2, 11H79-3-25-2, 11LAR-7-3, 11L1-2-14-2, 11L1-3-15-22, 11L1-3-28-2, 16W6-25-3, 16W6-25-4									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2b			3c			4c		
(2) Install and remove stores suspension components	2b			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
17g(4) Perform system functional/ electrical checks using applicable test equipment	2b			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	2b/1b			3c			4c		
(8) Remove and install internal gun system	2b/-			3c			4c		
(9) Foresight internal guns	2b/-			3c			4c		
2. A-10 AIRCRAFT									
a. Aircraft armament system test equipment and special tools	2b			3c			4c		
SR: TOS 3305-3-48-12, 3305-12-210-1, 3305-12-211-1, 3305-12-212-1, 3305-12-213-1							NO ADVANCED COURSE		
b. Airmunitions	R			C					
SR: TOS 1A-10A-33-1-1, 1A-10A-33-1-2									
c. Aircraft guns									
SR: TOS 1A-10A-2-04JC-6, 1A-10A-2-04TS-2, 1A-10A-6, 11W1-12-7-2, 11W1-12-10-2									
(1) Nomenclature, function of parts, and cycle of operation	R			C					
(2) Disassemble and assemble	2b			3c					
(3) Inspect	2b			3c					
(4) Maintain	1b			3c					
(5) Perform electrical checks	2b			3c					
d. Internal gun system (feed and handling system)									
SR: TOS 1A-10A-2-04JC-6, 1A-10A-2-04TS-2, 11W1-7-14-2									
(1) Nomenclature, function of system assemblies and cycle of operation	R			C					
(2) Disassemble and assemble	2b/-			3c					
(3) Inspect	2b/-			3c					
(4) Maintain	1b/-			3c					

TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC /C/o	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC /C/o	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC /C/o	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials
1Rd(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2h			3c			4c		
(7) Load and unload ammunition	2b/h			3c			4c		
(8) Perform electrical system check	2h			3c			4c		
e. Airmunitions loading and handling equipment									
SP: TOS 35D3-2-16-1, 35D5-3-8-1, 35D5-3-8-14									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift truck	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2h			3c			4c		
f. Perform operator inspections and operate ACF	2b/h			3c			4c		
SP: TOS 35D3-2-16-1, 35D5-3-8-1, 35D5-3-8-14, 35D5-12-210-1									
g. Aircraft armament launch and release system									
SP: TOS 1A-10A-2-94JC-6, 1A-10A-2-94JC-7, 1A-10A-2-94JC-8, 1A-10A-2-94TC-2, 1A-10A-2-1-1, 1A-10A-6, 1A-10A-33-1-2, RCR-4-2, 11R29-3-3D-7, 11R29-3-40-2, 11F13-29-7-2, 11L1-2-10-1, 11L1-3-27-1, 11P1-27-7-2, 16V6-28-9, 16V6-28-12, 16V6-28-22, 16V6-28-32, 16V6-28-42, 16V6-28-52									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2h			3c			4c		
(2) Install and remove stores suspension components	2h			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	2b			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load and unload nonnuclear munitions	2h/1b			3c			4c		

NO ADVANCED COURSE

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials	A AFSC /C/s	B Date OJT Started	C Date Compd & Trainee's Supervisor's Initials
18g(R) Remove and install internal gun systems	2b/-			3c			4c		
10. F-111 AIRCRAFT									
a. Aircraft armament systems									
SR: AFPs 122-1, 122-4, 122-5, 122-37, 122-41, 122-42, 122-43, 122-100, 122-101; T0s 1F-111A-33-1-2, 1F-111A-33-1-1, 1F-111()-2-1, 1F-111()-16-1, 1F-111()-16-2, 3305-14-45-1, 3305-3-31-1, 3305-3-30-1, 3307-50-47-1									
(1) Practice safety precautions pertaining to nuclear weapons systems	2b			3c			4c		
(2) Test equipment and special tools	2b			3c			4c		
b. Airmunitions	a			c			c		
SR: T0s 1F-111A-33-1-1, 1F-111A-33-1-2, 1F-111()-16-1, 1F-111()-16-2									
c. Aircraft guns									
SR: T0s 11W1-12-4-32, 1F-111()-2-11-1									
(1) Nomenclature, function of parts, and cycle of operation	a			c			c		
(2) Disassemble and assemble	2b			3c			4c		
(3) Inspect	2b			3c			4c		
(4) Maintain	1b			3c			4c		
(5) Perform electrical checks	2b			3c			4c		
d. Internal gun system (feed and handling system)									
SR: T0s 1F-111A-33-1-2, 1F-111()-2-11-1, 11W1-29-3-2, 11W1-29-4-2, 11W1-29-5-2, 11W1-29-7-2, 11W1-29-8-2, 11W1-27-6-2, 11W1-20-6-2, 11W1-30-3-2, 11W1-35-2-2, 11W1-36-2-2, 11W1-37-2-2									
(1) Nomenclature, function of system assemblies and cycle of operation	a			c			c		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2b			3c			4c		
(7) Load and unload ammunition	2b/-			3c			4c		
(8) Perform electrical system check	2b			3c			4c		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C's	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /C's	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /C's	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
10e. Airmunitions loading and handling equipment									
SP: T0s 11W1-31-5-2, 11W1-31-5-4									
(1) Operate controls	2h			3c			4c		
(2) Drive bomb lift trucks	2h			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2h			3c			4c		
f. Perform operator inspections and operate AGF	2h/h			3c			4c		
SP: T0s 35D3-2-16-1, 35D5-3-8-1, 35D5-3-8-14									
g. Aircraft armament launch and release system									
SP: T0s 1F-111(-)-2-11-1, 1F-111(-)-16-2, 1F-111A-33-1-2, 9W13-72, 11B29-1-28-1, 11R29-3-41-12, 11F9-2-2, 11F13-31-2-2, 11F32-2-27-2, 11F32-2-27-3, 11F97-2-2, 11F97-3-2, 11G18-2-8-2, 11G22-7-2-2, 11G22-7-3-2, 11L1-3-15-3, 11L18-5-2, 11M-T5044-2, 11M-T5045-2, 11M-T5047-2, 11M-T5052-2, 11M-T5053-2, 11W1-29-3-2, 11W1-29-5-2, 11W1-29-7-2, 16G1-129-3, 16W6-21-2, 16W6-24-2									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2h			3c			4c		
(2) Install and remove stores suspension components	2h			3c			4c		
(3) Remove and install release systems electrical components	2h/-			3c			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	2h			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	3h/1h			3c			4c		
(8) Prepare, load and unload nuclear weapons	2h/1h			3c			4c		
(9) Remove and install internal gun systems	2h/-			3c			4c		
(10) Foresight internal guns	2h/-			3c			4c		

NO ADVANCED COURSE

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 5 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
20. F-16 AIRCRAFT									
a. Aircraft armament system									
SP: AFPS 122-1, 122-4, 122-5, 122-XY, 127-100, 127-101; TOS 1F-16A-33-1-1, 1F-16A-33-1-1, 1F-16A-16-1, 1F-16A-16-2, 1F-16A-2-94JC-00-1									
(1) Practice safety precautions pertaining to nuclear weapon system	2h			3c/-			4c		
(2) Test equipment and special tools	2h			3c/-			4c		
b. Airmunitions	R			3c/-			4c		
SR: TOS 1F-16A-33-1-1, 1F-16A-33-1-2, 1F-16A-16-2, 1F-16-1									
c. Aircraft guns									
SR: TOS 11W1-12-4-12, 1F-16A-2-94JC-50-1									
(1) Nomenclature, function of parts, and cycle of operation	R			3c/-			4c		
(2) Disassemble and assemble	2h			3c/-			4c		
(3) Inspect	2h			3c/-			4c		
(4) Maintain	1b			3c/-			4c		
(5) Perform electrical checks	2b			3c/-			4c		
d. Internal gun system (feed and handling system)									
SR: TOS 1F-16A-94JC-50-1									
(1) Nomenclature, function of system assemblies and cycle of operation	R			3c/-			4c		
(2) Disassemble and assemble	2b/-			3c/-			4c		
(3) Inspect	2b/-			3c/-			4c		
(4) Maintain	1b/-			3c/-			4c		
(5) Remove and install major assemblies	2b/-			3c/-			4c		
(6) Identify and inspect ammunition	2b			3c/-			4c		
(7) Load and unload munitions	2h			3c/-			4c		
(8) Perform electrical system check	2b			3c/-			4c		
e. Airmunitions loading and handling equipment									
SP: TOS 11W1-31-5-2, 11W1-31-5-4									
(1) Operate controls	2h			3c/-			4c		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. SKILL LEVEL			3. SKILL LEVEL			4. SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
20e(2) Drive bomb lift trucks	2b			3c/-			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c/-			4c		
f. Perform operator inspections and operate ACF	2h/h			3c/-			4c		
SP: 704 3503-2-16-1, 3505-3-R-1, 3505-3-R-14									
g. Aircraft armament launch and release system									
SP: 704 1F-16A-2-04JC-20-1, 1F-16A-2-04JC-10-1, 1F-16A-2-04JC-30-1, 1F-16A-2-04JC-30-2, 1F-16A-2-04JC-50-1									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2h			3c/-			4c		
(2) Install and remove stores suspension components	2h			3c/-			4c		
(3) Remove and install release systems electrical components	2b/-			3c/-			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	2h			3c/-			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c/-			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c/-			4c		
(7) Prepare, load, and unload nonnuclear munitions	2h/1h			3c/-			4c		
(8) Prepare, load and unload nuclear weapons	2h/1h			3c/-			4c		
(9) Remove and install internal gun systems	2h/-			3c/-			4c		
(10) Foresight internal guns	2h/-			3c/-			4c		
h. SPECIALIZED AIRCRAFT SYSTEMS									
i. Weapon system test equipment and special tools	2b/-			3c/-			4c		
SP: 704 11A1-3-204-1, 11A1-12-2-2, 11A-13-211-11, 3504-4-R1-2									
j. Munitions	F			G/-			G		

NO ADVANCED COURSE

TASK, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials
21bSP: T0a 1C-130(A)W-33-1-1, 1C-130(A)W-33-1-2, 1W-1(1)W-33-1-1, 1W-1(1)W-33-1-2, 1W-3(C)F-33-1-2, 1L-10A-33-1-1, 1L-10A-33-1-2, 1L-2A-33-1-1, 1L-2A-33-1-2, 11L1-3-27-1									
c. Aircraft guns									
SR: T0a 1C-130(A)W-2-13, 1C-130(A)W-2-15, 1W-1(1)W-2-1, 1W-1(1)W-1-1, 1W-3(C)F-2-1, 11F39-2-4-2, 11L2-2-2-2, 11W1-12-8-61, 11W1-13-5-2, 11W1-15-1-102, 11W1-15-12-2, 11W1-33-1-102, 11W1-33-1-122, 11W1-33-3-4, 11W2-5-2-62, 11W2-13-5-2, TM9-1270-205-34									
(1) Nomenclature, function of parts and cycle of operation	A/-			C/-			C		
(2) Disassemble and assemble	2b/-			3c/-			4c		
(3) Inspect	2b/-			3c/-			4c		
(4) Maintain	1b/-			3c/-			4c		
(5) Perform electrical checks	2b/-			3c/-			4c		
d. Internal gun system									
SP: T0a 1C-130(A)W-2-13, 1C-130(A)W-2-15, 1W-1(1)W-2-1, 1W-1(1)W-1-1, 1W-3(C)F-2-1, 11F39-2-4-2, 11L2-2-2-2, 11W1-12-8-61, 11W1-13-5-2, 11W1-15-1-102, 11W1-15-12-2, 11W1-33-1-102, 11W1-33-1-122, 11W1-33-3-4, 11W2-5-2-62, 11W2-13-5-2, TM9-1270-205-34									
(1) Nomenclature, function of system assemblies and cycle of operation	A/-			C/-			C		
(2) Disassemble and assemble	2b/-			3c/-			4c		
(3) Inspect	2b/-			3c/-			4c		
(4) Maintain	1b/-			3c/-			4c		
(5) Remove and install major assemblies	2b/-			3c/-			4c		
(6) Identify and inspect ammunition	2b/-			3c/-			4c		
(7) Load and unload ammunition	2b/-			3c/-			4c		
(8) Perform electrical system check	2b/-			3c/-			4c		
e. Ammunitions loading and handling equipment									
SR: T0a 3W5-3-R-1, 3W5-3-R-4, 3W5-3-1-1, 3W5-3-1-4-1									
(1) Operate controls	2b			3c/-			4c		
(2) Drive bomb lift trucks	2b			3c/-			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c/-			4c		

NO ADVANCED COURSE

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1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 5 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /C/o	B Date OJT Started	C Date Complete & Trainee's Supervisor's Initials	A AFSC /C/o	B Date OJT Started	C Date Complete & Trainee's Supervisor's Initials	A AFSC /C/o	B Date OJT Started	C Date Complete & Trainee's Supervisor's Initials
21f. Perform operator inspections and operate AGP	2h/b			3c/-			4c		
SR: TOs 35D5-3-A-1,, 35D5-3-A-4, 35D5-3-1-1 35D5-2-16-1									
g. Aircraft armament launch and release system									
SR: TOs 1C-130(A)R-2-13, 1C-130(A)R-2-15, 1R-3(C)P-2-1, 1L-2A-7, 1L-10A-2-6, 11R29-3-17-3, 11R29-3-25-2, 11R29-3-42-2, 11R29-A-A-3,									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2h/-			3c/-			4c		
(2) Install and remove stores suspension components	2h/-			3c/-			4c		
(3) Remove and install release systems electrical components	7h/-			3c/-			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	7h/-			3c/-			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c/-			3c/-			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c/-			3c/-			4c		
(7) Prepare, load, and unload nonnuclear munitions	7h/-			3c/-			4c		
(8) Remove and install internal gun system	2h/-			3c/-			4c		
(9) Foresight internal guns	2h/-			3c/-			4c		
22. F-111 AIRCRAFT									
a. Aircraft armament systems									
SR: AFPs 122-4, 122-5, 122-47; TOs 1P-111(B)A-2-1, 1P-111(B)A-16, 1P-111(B)A-33-2-1, 1P-111(P)A-2-11-1, 32A14-3-1-101									
(1) Practice safety precautions pertaining to nuclear weapons systems	2h			3c/-			4c		
(2) Test equipment and special tools	2h			3c/-			4c		
b. Airmunitions	h			C/-			C		
SR: TOs 1P-111(B)A-16, 1P-111(B)A-33-2-1									

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Cra	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cra	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cra	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
22c. Munition loading and handling equipment SR: T0s 3303-2-27-11, sections 5 & 6, 3303-3-59-1, section 1 thru 3, 3305-3-R-1, sections 1 thru 5, 3305-3-P-11, sections 1 thru 3 (1) Operate controls 2b (2) Drive bomb lift truck 2b (3) Perform pre-use inspection operator maintenance 2b (4) Maintain munitions handling trailers (a) WHI-141/M 2b/1b (b) FTH-77/F 2b/- d. Perform operator inspection and operate applicable AGF 2b/b SR: T0s 3503-2-27-11, section 4, 3505-3-R-16 MC-1, 3503-3-59-1 e. Aircraft armament release system SR: T0s 1F-111(R)A-16, 1F-111(R)A-16C1-1, 1F-111(R)A-2-21, 1F-111(R)A-2-11-1, 1F-111(R)A-33-2-1, 11R29-3-25-2, sections 3 & 4, 11R29-3-25-12, section 2, 11R29-3-46-12, sections 3, 4, 5, 11F9-2-2, sections 1 & 2, 11F97-2-2, sections 2 & 3, 11N-T5036-2, 11N-T5037-2, 11N-T5054-2, 11N-T5055-2, sections 2 & 3, 1606-23-2, sections 2 & 3, 3307-47-14-1, section 1, 3307-20-24-1, sections 2, 4, 5, 3307-50-47-1, section 5 (1) Disassemble, inspect, assemble and check components of aircraft suspension system 2b (2) Remove and install stores suspension components 2b (3) Perform system functional/electrical checks using applicable test equipment 2c (4) Coded switch system A (5) Troubleshoot aircraft weapons release and monitor circuits using applicable test equipment 2c (6) Prepare, load and unload nuclear weapons 3b/1b (7) Prepare, load and unload flares and chaff 3b/1b									

NO ADVANCED COURSE

TASKE, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Cra	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC /Cra	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC Cra	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials
22. Transporting nuclear weapons	3b/1b			3c/-			4c		
SP: AFM 127-100, section 7; TOS 11M-1169-00-2, 1503-2-27-610-2									
(1) Perform breakout procedures	2b/h			3c/-			4c		
(2) Convoy	2b/h			3c/-			4c		
23. B-52D AIRCRAFT									
SP: TOS 1R-52R-2-1, 1R-52R-2-2									
1. Aircraft armament systems									
SP: AFM 122-4; AFPS 122-5, 122-52; TOS 1R-52D-16, 1R-52D-2-31, 1R-52D-33-2-1, 12R14-3-1-101									
(1) Practice safety precautions pertaining to nuclear weapons systems	2b			3c			4c		
(2) Test equipment and special tools	2b			3c			4c		
2. Ammunitions	8			C			C		
SP: TOS 1R-52D-16, 1R-52D-33-2-1									
3. Ammunitions loading and handling equipment									
SP: TOS 11A-1-33, 11M-15015A-2, sections 1 thru 5, appendix A1 thru A4, 1501-2-20-1, sections 1 thru 3, 1501-2-21-1, sections 1 thru 5, 1503-3-8-1, 1503-11-17-1									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
(4) Maintain munitions handling trailers									
(a) MHU-141/M	2b/1b			3c			4c		
(b) BACT	2b/-			3c			4c		
(5) Maintain munitions trailers									
(a) MHU-7/M	2b/1b			3c			4c		
(b) MHU-33/M	2b/-			3c			4c		
(c) 6200 positioning trailer	2b/-			3c			4c		
4. Perform operator inspection and operate applicable ACP	2b/h			3c			4c		

NO ADVANCED COURSE

TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
23. SR: TMs 11B-H5015A-2, sections 4 & 5, 11B-7-20-1, section 2, sections 4 & 5, 3503-2-77-6MC-2, 3505-3-R-16MC-2 e. Aircraft armament release system SR: TMs 1B-520-2-31, 1B-520-16, 1B-520-35-2-1, 11B29-3-52-2 (1) Disassemble, inspect, assemble, and check components of aircraft suspension system (a) Bomb rack manual locking system rigging 2b/b 3c 4c (b) EFWR and EFWR rigging and switch adjustment 2b/b 3c 4c (c) Clip-in rack installation 2b 3c 4c (2) Remove and install stores suspension components 2b 3c 4c (3) Perform system functional/electrical checks using applicable test equipment 2c 3c 4c (4) Coded switch system A P R (5) Troubleshoot aircraft weapons release and monitor systems using applicable test equipment 2c 3c (6) Prepare, load and unload nuclear weapons 3b/1b 3c (7) Prepare, load and unload non-nuclear munitions 3b/1b 3c (8) Prepare, load and unload ammunition and flares 2b/b 3c f. Transporting nuclear weapons SR: AFM 127-100, section 7; TM 11B-H5015A-2 (1) Perform breakout procedures 2b/b 3c (2) Convoy 2b/b 3c									
24. B-52C AIRCRAFT SR: TMs 1B-520-2-1, 1B-520-2-2 a. Aircraft armament systems SR: APPs 122-4, 122-5, 122-52; TMs 1B-520-16CL-1, 1B-520-2-3 GA-1, 1B-520-2-31JC-1 thru 5, 1B520-2-31 M 1 thru 5, 1B-520-16 1B-520-17, 11B-H5020-2, sections 2, 3, 5, 7, 9, 10, 11, 12, 32B14-3-10									

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Crs	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /CDC	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Crs	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
24a(1) Practice safety precautions pertaining to nuclear weapons systems	2b			3c			4c		
(2) Test equipment and special tools	2b			3c			4c		
b. Airmunitions	A			C			C		
SR: T0a 1R-52D-16, 1R-52D-33-2-1									
c. Airmunitions loading and handling equipment									
SR: 11M-5015A-2, sections 1 thru 5, appendix A1 thru A4, 11M-5031-2, sections 1 thru 5, appendix A1 thru A4, 35D3-2-15-1, sections 1 thru 4, 35D3-2-27-11, sections 5 & 6, 35D3-3-3-59-1, sections 1 thru 1, 35D5-3-8-1, sections 2 & 3, 35D5-3-A-11, sections 2 & 3									
(1) Operate controls	2b			3c			4c		
(2) Drive boom lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
(4) Maintain munitions handling trailers									
(a) MMH-141/M	2b/1b			3c			4c		
(b) MMH-77/F	2b/-			3c			4c		
(5) Maintain munitions trailers									
(a) MMH-7/M	2b/1b			3c			4c		
(b) MMH-123/M	2b/-			3c			4c		
d. Perform operator inspection and operate applicable ACP	2b/b			3c			4c		
SR: T0a 35D3-2-16-6WC-2, 35D3-2-27-6WC-1, 35D3-3-59-6WC-2, 35D5-3-A-16-6C-1, 11M-5015A-2, section 5, 11M-5031A-2, section 5									
e. Aircraft armament release system									
SR: T0a 1R-52D-16, 1R-52D-16CL-1, 1R-52G-2-31GA-1, 1R-52G-2-31JG-1 thru 5, 1R-52G-2-31NS-1 thru 5, 11R20-3-52-2									
(1) Disassemble, inspect, assemble, and check components of aircraft suspension system									
(a) Bomb rack manual locking system rigging	2b/b			3c			4c		
(b) FRMP and FRUP rigging and switch adjustment	2b/b			3c			4c		
(c) Clip-in rack installation	2b			3c			4c		

NO ADVANCED COURSE

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. SKILL LEVEL			3. SKILL LEVEL			4. SKILL LEVEL		
	A AFSC Crs	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials	A AFSC Crs	B Date OJT Started	C Date Compld & Trainee's Supervisor's Initials
74c(2) Remove and install stores suspension components	2h			3c			4c		
(3) Perform system functional/ electrical checks using applicable test equipment	2c			3c			4c		
(4) Coded switch system	A			A			A		
(5) Troubleshoot aircraft weapons release and monitor systems using applicable test equipment	2c			3c			4c		
(6) Prepare, load and unload nuclear weapons	3h/1h			3c			4c		
(7) Prepare, load and unload non-nuclear munitions	3h/1h			3c			4c		
(8) Prepare, load and unload ammunition and flares	2h/h			3c			4c		
f. Transporting nuclear weapons									
CP: AFM 122-100, section 7; TOS 11N-H501A-2, 11N-H5031-2, 11N-H5031-2									
(1) Perform breakout procedures	2h/h			3c			4c		
(2) Convoy	2b/b			3c			4c		
25. B-52H AIRCRAFT									
a. Aircraft armament systems									
CP: AFPM 122-4, 122-5, 122-52; TOS 1R-524-2-11A-1, 1R-524-2-11C-1 thru 5, 1R-524-2-11MS-1 thru 5, 1R-52D-16, 1R-52D-13, 11N-H502R-2, sections 2, 3, 5, 7, 9, 10, 11, 12, 12R14-3-1-100									
(1) Practice safety precautions pertaining to nuclear weapons systems	2h			3c			4c		
(2) Test equipment and special tools	2h			3c			4c		
b. Airmunitions	A			C			A		
CP: TOS 1R-52D-16, 1R-52D-33-2-1									
c. Airmunitions loading and handling equipment									
CP: TOS 35D5-3-R-1, sections 2 & 3, 35D5-3-R-1, sections 2 & 3, 35D3-2-16-1, sections 1 thru 4, 35D3-2-27-11, sections 5 & 6, 11N-H501A-2, sections 1 thru 5 & appendix A1 thru A4, 11N-H5031-2, sections 1 thru 5, and appendix A1 thru A4, 35D3-3-59-1, sections 1 thru 3									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. SKILL LEVEL			3. SKILL LEVEL			4. SKILL LEVEL		
	A AFSC C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC C's	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
25-(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
(4) Maintain munitions handling trailers									
(a) MH-141/M	2b/1b			3c			4c		
(b) FH-77/F	2b/-			3c			4c		
(5) Maintain munitions trailers									
(a) MH-7H	2b/1b			3c			4c		
(b) MH-123/M	2b/-			3c			4c		
1. Perform operator inspection and operate applicable ACP	2b/h			3c			4c		
SP: TOS 3503-2-27-11, section 5, 3505-3-8-16M-1, 3503-2-16-61C-2, 3503-2-50-61C-1, 11M-H015A-2, section 5, 11M-H5031-2, section 5									
a. Aircraft armament release system									
SP: TOS 1R-52H-2-210A-1, 1R-52H-2-311C-1 thru 5, 1R-52H-2-31M-1 thru 5, 1R-52H-16, 1R-52H-16CL-1, 11R29-3-52-2									
(1) Disassemble, inspect, assemble, and check components of aircraft suspension system							NO ADVANCED COURSE		
(a) Bomb rack manual locking system rigging	2b/b			3c				4c	
(b) RMP and PRMP rigging and switch adjustment	2b/h			3c				4c	
(c) Clip-in rack installation	2b			3c				4c	
(2) Remove and install stores suspension components	2b			3c				4c	
(3) Perform system functional/ electrical checks using applicable test equipment	2c			3c				4c	
(4) Code switch system	A			3				4	
(5) Troubleshoot aircraft weapons release and monitor systems using applicable test equipment	2c			3c				4c	
(6) Prepare, load and unload nuclear weapons	3b/1b			3c				4c	
(7) Prepare, load and unload non-nuclear munitions	3b/1b			3c				4c	
(8) Prepare, load and unload ammunition and flares	2b/b			3c				4c	

2R

Attachment 1

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cm	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
26d(5) Remove and install major assemblies	2h/-			3c			4c		
(6) Remove and install gun and enclosure	2b/1h			3c			4c		
(7) Identify and inspect ammunition	2h			3c			4c		
(8) Load and unload ammunition	2h			3c			4c		
(9) Perform electrical system check	2h			3c			4c		
(10) Troubleshoot aircraft gun system using applicable test equipment	2h			3c			4c		
(11) Foresight internal gun system	2b/b			3c			4c		
e. Airmunitions loading and handling equipment									
SR: TOs 35D3-2-15-1, 35D5-3-8-1, 35D30-2	-102								
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2h			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2h			3c			4c		
f. Perform operator inspection and operate applicable AGP	2b/b			3c			4c		
SR: TOs 35D3-2-15-1, 35D5-3-8-1									
g. Aircraft armament launch and release system									
SR: TOs 1F-106A-2-5-1, 1F-106A-2-5-2-1, 1F-106A/R-2-1, 1F-106A/R-2-12-2-1, 1F-106A-6, 1F-106A-16-1, 1F-106A-16-2, 11B2B-3-14-2, 11B81-3-1, 11L1-3-14-2									
(1) Disassemble, inspect, assemble and check components of aircraft launch and release system	2b			3c			4c		
(2) Remove and install launch and release system components	2b			3c			4c		
(3) Troubleshoot aircraft launch and release system using applicable test equipment	2b			3c			4c		
(4) Prepare, load and unload nuclear weapons	3b/1h			3c			4c		
(5) Prepare, load and unload non-nuclear weapons	3b/1b			3c			4c		
(6) Remove/install, arm/dearm external fuel tank ejector racks	2b			3c			4c		

NO ADVANCED COURSE

SUMMARY OF REVISED, DELETED, OR ADDED MATERIAL

This STS revision resulted from the Training Scrubdown Conference, 29 November through 2 December 1977. The 462X0 Career Field position titles have been changed from Weapons Mechanic to Aircraft Armament Systems Specialist and are reflected throughout this STS. This revision changes paragraph 3a (COMSEC) and paragraph 6b (Training) to comply with ATC/TTS letter, Guidance for STS Preparation, dated 20 October 1977; changes paragraph 7 (Maintenance Management) and paragraph 8 (Maintenance and Inspection System and Forms) to comply with ATC/TT letter, POMO Impact on STSs/CDCs/SKTs, dated 9 June 1978; changes paragraph 1d from Human Reliability Program to Personnel Reliability Program; deletes paragraph 4b(4) Nuclear Weapon Systems, paragraph 11e Applicable Weapon System Testers and Special Tools, paragraph 13a Electronic Principles Applicable to Tasks Listed in this STS; adds paragraph 9e Munitions Activities, paragraph 12b CTK, paragraph 14a Electronic Principles. STS items 15 through 26 apply to specific aircraft to conform with shredouts for the 3-skill level as reflected in AFR 39-1(C2), Attachment 24, effective 30 April 1978. Previous STS items 15 through 23 applied to aircraft within Commands. Study References changes: deletes AFR 125-37 from item 2; adds DOD ISPR 5200.1-R to item 3a; deletes from item 6a(1) AFM 67-1 (vol II, part 1, chap 5 and 7) and TO 00-20-3 (sec II), adds AFR 66-5 (chap 2) and AFM 67-1 (vol IV, part 1, chap 7); adds AFR 66-5 (chap 2) to item 6a(2); adds AFR 66-5 (chap 2) to item 6a(3); deletes from item 6a(4) AFM 50-20 (part three), adds AFR 66-5 (chap 2); deletes from item 6a(5) AFM 50-20 (part three), adds AFR 66-5 (chap 2); deletes from item 6a(6) AFM 50-20 (part one), adds AFR 66-5 (chap 2); deletes from item 6a(7) AFM 50-20 (part three), adds AFR 66-5 (chap 3 and 5); deletes from item 6a(8) AFM 50-20 (part two and three), adds AFR 66-5 (chap 2); deletes from item 6a(9) AFM 50-20 (part two) and AFR 74-1, adds AFR 66-5 (chap 2); adds AFR 66-5 (chap 2) to item 6a(11); deletes from item 6a(12) AFM 50-20 (part five), adds AFR 66-5 (chap 3 and 5); deletes from item 6a(14) AFM 35-98 and AFP 50-2, adds AFRs 211-3, 211-4; adds AFM 50-5 and AFRs 39-4, 50-37, 50-39, 50-54, 66-5 to item 6b; deletes AFM 35-8 from item 6b(9); adds AFR 66-5 (chap 1) to item 7a; adds AFR 66-5 (chap 2) to item 7b; adds AFR 66-5 (chap 2) to item 7d; adds AFR 66-5 (chap 2) to item 7f; deletes from item 8 AFMs 66-262, 66-1 (chap 6, vol III); adds AFR 66-5 to item 9a; adds AFR 66-5 to item 9b; adds AFR 66-5 to item 9c; adds AFR 66-5 to item 9d; adds AFR 66-5 to item 9e; deletes AFM 52-8 from item 13, adds TO 33A1-12-2-1. STS items 15 through 26 have been revised to align proficiency levels for the 3-skill level cited shredouts for aircraft. There is no correlation between items formerly related to Commands and items now specified as aircraft designated.

APPENDIX C

MASTER JPG FOR 46230
IN UPGRADE TRAINING TO 46250
IN EQUIPMENT MAINTENANCE SQUADRON,
ARMAMENT SYSTEMS SHOP

STS 46240
(For AFSCs 462307/50/70)
December 1975

1. Purpose of this Specialty Training Standard (STS). As prescribed in AFR 8-13, this STS:

b. Indicates in columns 2A, 3A, and 4A of attachment 1 the minimum proficiency required for each task or knowledge for qualification at the 3-, 5- and 7-skill level AFSCs. Authority to change the proficiency level during JPC development when different from the level shown in this STS.

c. Shown in column 2A of attachment [redacted] 6720 is mandatory for per-
Code 2RJ), 3ARP4623QA NDD (PDS [redacted] 6720 will obtain knowledge training by
Y4V), 3ABP4623QC NDD [redacted] 6720 will fulfill management training requirements speci-
3ARP4623QR [redacted] 6720 guide, chapter 6, for current CPC identification number

5. Recommendations. Report to ATC/T* unsatisfactory performance of individual graduates or inadequacies of this STS. Refer to specific paragraphs of this STS. See AFP 50-38.

OFFICIAL

YAN L. CRAWFORD, JR., Colonel, USAF
Director of Administration

1 Attachment

Qualitative Requirements

Supersedes STS 462X0, August 1976; Change 1, December 1977; Change 2, May 78.

1

Legend : ○ - For ALL Trainees
 ▲ - For Supervisors Only
 ● - For Weapons Release Only
 □ - For Guns Only

THIS BLOCK IS FOR IDENTIFICATION PURPOSES ONLY		
TRAINEE		
NAME (Last, First, Middle Initial)	INITIALS (In writing)	SSAN
IMMEDIATE SUPERVISOR'S NAME AND INITIALS (In writing)		
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	
N/I	N/I	

QUALITATIVE REQUIREMENTS

PROFICIENCY CODE KEY		
	SCALE VALUE	DEFINITION: The individual
TASK PERFORMANCE LEVELS	1	Can do simple parts of the task. Needs to be told or shown how to do most of the task. (EXTREMELY LIMITED)
	2	Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy. (PARTIALLY PROFICIENT)
	3	Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy. (COMPETENT)
	4	Can do the complete task quickly and accurately. Can tell or show others how to do the task. (HIGHLY PROFICIENT)
TASK KNOWLEDGE LEVELS	a	Can name parts, tools, and simple facts about the task. (NOMENCLATURE)
	b	Can determine step by step procedures for doing the task. (PROCEDURES)
	c	Can explain why and when the task must be done and why each step is needed. (OPERATING PRINCIPLES)
	d	Can predict, identify, and resolve problems about the task. (COMPLETE THEORY)
SUBJECT KNOWLEDGE LEVELS	A	Can identify basic facts and terms about the subject. (FACTS)
	B	Can explain relationship of basic facts and state general principles about the subject. (PRINCIPLES)
	C	Can analyze facts and principles and draw conclusions about the subject. (ANALYSIS)
	D	Can evaluate conditions and make proper decisions about the subject. (EVALUATION)
EXPLANATIONS		
• A task knowledge scale value may be used alone or with a task performance scale value to define a level of knowledge for a specific task. (Examples: b and 1b) • A subject knowledge scale value is used alone to define a level of knowledge for a subject not directly related to any specific task, or for a subject common to several tasks. - This mark is used alone instead of a scale value to show that no proficiency training is provided in the course, or that no proficiency is required at this skill level. - X - This mark is used alone in course columns to show that training is not given due to limitations in resources.		

1. TASK, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
3b(5) OPSPC significance of unclassified data and procedures	A			A			C		
(6) Specific OPSPC vulnerabilities of AFSC 462X0	A			A			C		
4. AIRCRAFT APPARENT SYSTEM SAFETY									
SP: AFMs 127-100 (chap 1-10), 127-201 (chap 1, 127-101 (chap 1-12)	2, 4, 5, 7, 8, 9, 12			AFPs 127-12,					
a. First aid procedures for electrical shock	C			C			C		
b. Practice safety precautions pertaining to									
(1) Personnel	2b			3c			4c		
(2) Electronic and electrical equipment	2b			3c			4c		
(3) Aerospace ground equipment	2b			3c			4c		
(4) Nonnuclear weapon system	2b			3c			4c		
(5) Explosive devices	2b			3c			4c		
(6) General aircraft	2b			3c			4c		
5. TECHNICAL ORDERS									
SP: AFM 66-271; AFP 8-2, 70s 00-5-1, 00-5-2									
a. TO system	A			A			C		
b. Locate desired information	2b			3c			4c		
c. Use technical orders/job guide when performing maintenance and inspection	2b			3c			4c		
d. Maintain files	-			2c			3c		
6. SUPERVISION AND TRAINING									
a. Supervision									
(1) Obtain information for special requisitions, issue and turn-in slips	-			2b			3c		
SP: AFMs 66-1 (vol II, chap 2) (vol X, chap 1); 67-1 (vol IV, part 1, chap 7); AFP 66-5 (chap 2)									
(2) Prepare equipment authorization list	-			-			2b		
SP: AFMs 66-1 (vol II, chap 2) (vol X, chap 3), 67-1 (vol IV, part 1, chap 7); AFP 66-5 (chap 2)									
(3) Supply discipline	A/-			B			C		
SP: AFM 66-1 (vol VI, chap 1), AFPs 66-5 (chap 2), 67-10									

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 3 SKILL LEVEL			4. 3 SKILL LEVEL		
	A AFSC /Cco	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /CIV	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Cco	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
6a(4) Plan and schedule work assignments and priorities	-			7h			4c		
SR: AFMs 25-1 (chap 3), 66-1 (vol II, chap 2) (vol X, chap 3); AFPs 39-6, 66-5 (chap 2)									
(5) Assign maintenance and repair work	-			7h			4c		
SR: AFMs 25-1 (chap 4), 66-1 (vol II, chap 2) (vol X, chap 3 & 5); AFPs 39-6, 66-5 (chap 2)									
(6) Assign personnel to positions	-			7h			4c		
SR: AFMs 25-1 (chap 3), 66-1 (vol II, chap 3) (vol X, chap 3); AFPs 39-6, 66-5 (chap 2)									
(7) Supervise repair personnel accomplishing maintenance and inspections	-			7h			4c		
SR: AFMs 25-1 (chap 4), 66-1; AFPs 39-6, 66-5 (chaps 3 and 5); TO 00-20-1 (sec III thru V)									
(8) Analyze and prepare maintenance and inspection reports and charts	-			7h			4c		
SR: AFMs 25-1 (chap 6), 66-1 (vol II, chap 6) (vol X, chap 2 & 4); AFP 66-5 (chap 2); TO 00-20-1									
(9) Establish work methods and controls	-			7h			4c		
SP: AFMs 25-1 (chap 5), 66-1 (vol II, chap 5) (vol X, chap 3 & 4); AFPs 39-6, 66-5 (chap 2)									
(10) Evaluate work performance of subordinate personnel	-			7c			4c		
SR: AFPs 39-6, 39-62									
(11) Justify personnel and equipment	-			b			3c		
SP: AFMs 25-1 (chap 5 & 6), 66-1 (vol II, chap 4) (vol I, chap 6 & 2) (vol X, chap 3); AFP 66-5 (chap 2)									
(12) Resolve technical problems encountered by subordinates	-			7b			4c		
SR: AFM 66-1 (vol II, chap 3) (vol X, chap 4); AFPs 39-6, 66-5 (chap 3 & 5)									
(13) Recommend policy changes on utilization of personnel and equipment	-			1a			3c		
SP: AFM 26-1, 26-3; AFPs 26-2, 26-6									
(14) Counsel personnel and resolve individual problems	-			7b			4c		
SP: AFPs 35-90, 211-3, 211-4									

NO ADVANCED COURSE

1. TASK, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
6a(15) Initiate action to correct substandard personnel performance <u>SP:</u> AFM 39-17; APMs 34-32, 39-6, 39-30	-			2b			4c		
(16) Participate in USAF graduate evaluation program <u>SP:</u> AFR 50-38	-			2b			2b		
h. Training									
<u>SP:</u> AFMs 50-1, 50-67, 66-1 (vol II, chap 1) (vol II, chap 2); AFRs 39-1, 39-4, 50-9, 50-23, 50-37, 50-39, 50-54, 66-5									
(1) Evaluate personnel training requirements	-			2b			4c		
(2) Plan, conduct, and supervise OJT	-			3c			4c		
(3) Prepare job proficiency guides	-			3c			4c		
(4) Motivate trainers and trainees	-			2b			3c		
(5) Counsel trainees on training progress	-			2b			3c		
(6) Monitor effectiveness of OJT							NO ADVANCED COURSE		
(a) Upgrade training									
1. Career knowledge training	N/-			2b				3c	
2. Job proficiency training	N/-			3c				3c	
(b) Qualification training	-			2b				3c	
(7) Maintain training records	-			2b			3c		
(8) Evaluate effectiveness of training programs	-			1a			3c		
(9) Recommend personnel for training	-			2b			4c		
<u>SP:</u> AFMs 50-5; AFRs 39-4, 50-9, 50-37, 50-39, 50-54, 66-5 (chap 2)									
7. MAINTENANCE MANAGEMENT									
a. Functions and responsibilities of the Deputy Commander for Maintenance	A/-			A			A		
<u>SP:</u> AFM 66-1 (chap 1, vol II); AFR 66-5 (chap 1)									
b. Basic functions of management units that make up the Deputy Commander for Maintenance's staff	A/-			A			C		
<u>SP:</u> AFM 66-1 (chaps 2, 3, and 4, vol II); AFR 66-5 (chap 2)									

T	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	1 SKILL LEVEL			2 SKILL LEVEL			3 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
7c. Equipment classification designators <u>SR:</u> AFM 300-4 (vol XI)	A			B			C		
d. Job control number <u>SR:</u> AFM 66-1 (chap 2, vol II); AFR 66-5 (chap 2); TO 00-20 series	A			B			C		
e. Maintenance data collection <u>SR:</u> AFMs 66-267, 66-278; TO 00-20 series	A			B			C		
f. Processing and controlling of material <u>SP:</u> AFM 66-1 (chap 2, vol II); AFR 66-5 (chap 2)	A/-			B			C		
g. Cross utilization training <u>SR:</u> AFR 66-5	A/-			B			C		
A. MAINTENANCE AND INSPECTION SYSTEM AND FORMS									
a. Maintenance systems <u>SP:</u> AFM 66-1 (vol III, chap 6); AFR 66-5 (chap 3)	A			B			C		
b. Inspection systems <u>SR:</u> AFM 66-1 (vol III, chap 6); AFR 66-5 (chap 3)	B			B			C		
c. Use maintenance data collection forms <u>SR:</u> AFMs 66-267, 278; TO 00-20 series	2b			3c			4c		
d. Material deficiency reporting system <u>SR:</u> TO 00-350-54	A			B			B		
e. Check reports to determine methods for improving procedures at local activity	-			2b			3c		
9. MUNITIONS MAINTENANCE MANAGEMENT									
a. Squadron commander and staff <u>SR:</u> AFM 66-1 (chap 1, vol VI, sec A & C); AFR 66-5 (chap 3 & 5)	A			B			C		
b. Maintenance supervision <u>SP:</u> AFM 66-1 (chap 2, vol VI, sec A, B, & C); AFR 66-5 (chap 3 & 5)	A			B			C		
c. Branch and shop chief responsibilities <u>SP:</u> AFM 66-1 (chap 3, vol VI); AFR 66-5 (chap 3 & 5)	A			B			C		
d. Munitions services, Aircraft Maintenance Unit/Weapons Flight, and Munitions Branch/Armament Systems <u>SR:</u> AFM 66-1 (chap 4, vol VI); AFR 66-5 (chap 3 & 5)	A			B			C		

100 ADVANCED COURSE

TASK, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Compl'd & Trainee's Supervisor's Initials
10. PROCEDURES FOR CORROSION CONTROL	A			R			C		
SR: T0s 1-1-2									
11. SELECT AND USE TEST EQUIPMENT AND SPECIAL TOOLS									
SR: T0s 0-1-12, 0-1-13, Applicable Munitions Equipment T0s									
a. Multimeters	2b			3b			4b		
b. Oscilloscopes	2b			3b			4b		
c. Frequency counter	2b/-			3b			4b		
d. Signal generator	2b/-			3b			4b		
e. Electrical repair bits	2b/-			3b			4c		
f. Soldering equipment	2b			3c			4c		
12. HAND TOOLS									
SR: AFM 127-101 (chaps 1 thru 3); T0s 0-1-32, 32-1-101, 32B14-3-1-101									
a. Select, use and maintain	2b			3c			4c		
b. Use and maintain CTF	2b/a			3c			4c		
13. PRACTICAL ELECTRICITY									
SR: T0s 00-25-212, 1-1A-R, 1-1A-14, 31-1-141-1, 31-1-141-2, 31-1-141-3, 33A1-12-2-1, 33A1-12-933-1									
a. Principles of DC	R			C			C		
b. Electrical components and their symbols	R			C			C		
c. Use multimeter to measure voltage and resistance	2b			3c			4c		
d. Principles of AC	R			C			C		
e. Troubleshoot electrical systems using schematics, wiring diagrams and troubleshooting guides	2b			3c			4c		
14. AIRCRAFT ARMAMENT SYSTEMS ELECTRONICS									
SR: T0s 00-25-734, 1-1A-R, 11A-14, 11-1-10									
a. Electronic principles	R			R			R		
b. Solid state devices	R			C			C		
c. Use data from diagrams to analyze circuits	2b			3c			4c		

NO ADVANCED COURSE

A

Attachment 1

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. SKILL LEVEL			3. SKILL LEVEL			4. SKILL LEVEL		
	A	B	C	A	B	C	A	B	C
	AFSC /Cn	Date OJT Started	Date Complet & Trainee's Supervisor's Initials	AFSC /Cn	Date OJT Started	Date Complet & Trainee's Supervisor's Initials	AFSC /Cn	Date OJT Started	Date Complet & Trainee's Supervisor's Initials
16h(1) Disassemble, inspect, assemble and check components of aircraft suspension system	2b			3c			4c		
(2) Install and remove stores suspension components	2b			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		
(4) Perform system functional/ electrical checks using applicable test equipment	2b			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	2b/1b			3c			4c		
(8) Remove and install internal gun systems	2b/-			3c			4c		
(9) Remove and install gun pods	2b/-			3c			4c		
(10) Foresight internal guns	2b/-			3c			4c		
(11) Foresight gun pods	2b/-			3c			4c		
17. F-15 AIRCRAFT									
SP: TMs 1F-15A-2-2-3, 1F-15A-6									
a. Weapon system test equipment and special tools	2b			3c			4c		
SP: TMs 1F-15A-33-1-1, 33N5-3-46-4, 33N5-12-20R-1, 33N5-12-20R-4, 33N5-45-33-1, 33N5-45-33-4, 33N5-45-34-1									
b. Airmunitions	P			C			C		
SP: TMs 11A-1-33, 11A-1-53, 11A1-5-7, 11A2-3-7, 11A1-2-7, 11L3-3-21-1, 11U1-11-7									
c. Aircraft guns									
SP: TMs 11U1-7-11-2, 11U1-7-15-2, 11U1-7-15-2-1, 11U1-7-15-4, 11U1-12-4-34, 35N30-4-4-1									
(1) Nomenclature, function of parts and cycle of operation	n			C			C		
(2) Disassemble and assemble	2b			3c			4c		
(3) Inspect	2b			3c			4c		

1. TASKS, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2. 3 SKILL LEVEL			3. 5 SKILL LEVEL			4. 7 SKILL LEVEL		
	A AFSC /Cm	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials	A AFSC /Cm	B Date OJT Started	C Date Completed & Trainee's Supervisor's Initials
17c(4) Maintain	1b			3c			4c		
(5) Perform electrical checks	2b			3c			4c		
d. Internal gun system (feed and handling system)									
SP: T0s 1F-15A-2-13, 1F-15A-2-14, 1F-15A-33-1-2									
(1) Nomenclature, function of system assemblies and cycle of operation	2b/-			3c			4c		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		
(5) Remove and install major assemblies	2b/-			3c			4c		
(6) Identify and inspect ammunition	2b			3c			4c		
(7) Load and unload ammunition	2b/b			3c			4c		
(8) Perform electrical system check	2b			3c			4c		
e. Ammunitions loading and handling equipment									
SP: T0s 1F-15A-1-1, 35N3-2-16-1, 35N5-3-8-1, 35N3-4-5-1									
(1) Operate controls	2b			3c			4c		
(2) Drive bomb lift trucks	2b			3c			4c		
(3) Perform pre-use inspection and operator maintenance	2b			3c			4c		
f. Perform operator inspections and operate ACU	2b/b			3c			4c		
SP: T0s 35N3-2-16-1, 35N5-3-8-1, 35N5-3-8-14									
g. Aircraft armament launch and release system									
SR: T0s 1F-15A-33-1-2, 11L29-3-25-2, 11LAP-7-3, 11L1-2-14-2, 11L1-3-15-22, 11L1-3-28-2, 16W6-25-3, 16W6-25-4									
(1) Disassemble, inspect, assemble and check components of aircraft suspension systems	2b			3c			4c		
(2) Install and remove stores suspension components	2b			3c			4c		
(3) Remove and install release systems electrical components	2b/-			3c			4c		

NO ADVANCED COURSE

L TASK, KNOWLEDGE AND STUDY REFERENCES	PROFICIENCY LEVEL, PROGRESS RECORD AND CERTIFICATION								
	2 SKILL LEVEL			3 SKILL LEVEL			4 SKILL LEVEL		
	A AFSC /Cn	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials	A AFSC /Cn	B Date OJT Started	C Date Comp'd & Trainee's Supervisor's Initials
17g(4) Perform system functional/ electrical checks using applicable test equipment	2b			3c			4c		
(5) Troubleshoot aircraft launch, monitor and release circuits using applicable test equipment	2c			3c			4c		
(6) Troubleshoot aircraft gun electrical circuits using applicable test equipment	2c			3c			4c		
(7) Prepare, load, and unload nonnuclear munitions	2b/1b			3c			4c		
(8) Remove and install internal gun system	2b/-			3c			4c		
(9) Foresight internal guns	2b/-			3c			4c		
18. A-10 AIRCRAFT									
a. Aircraft armament system test equipment and special tools	2b			3c			4c		
SR: TOs 3305-3-48-12, 3305-12-210-1, 3305-12-211-1, 3305-12-212-1, 3305-12-213-1									
b. Airmunitions	n			c			c		
SP: TOs 1A-10A-33-1-1, 1A-10A-33-1-2									
c. Aircraft guns									
SR: TOs 1A-10A-2-94JC-6, 1A-10A-2-94TS-2, 1A-10A-6, 11W1-12-7-2, 11W1-12-10-2									
(1) Nomenclature, function of parts, and cycle of operation	n			c			c		
(2) Disassemble and assemble	2b			3c			4c		
(3) Inspect	2b			3c			4c		
(4) Maintain	1b			3c			4c		
(5) Perform electrical checks	2b			3c			4c		
d. Internal gun system (feed and handling system)									
SR: TOs 1A-10A-2-94JC-6, 1A-10A-2-94TS-2, 1A-10A-33-1-1, 1A-10A-33-1-2, 11W1-7-14-2									
(1) Nomenclature, function of system assemblies and cycle of operation	n			c			c		
(2) Disassemble and assemble	2b/-			3c			4c		
(3) Inspect	2b/-			3c			4c		
(4) Maintain	1b/-			3c			4c		

NO ADVANCED COURSE

JOB PROFICIENCY GUIDE CONTINUATION SHEET

PARA- GRAPH NO.	TASKS, KNOWLEDGES AND STUDY REFERENCES	SKILL LEVEL	PROFI- CIENCY LEVEL	DATE OJT STARTED	DATE OJT COMPLETED	TRAINEE INITIALS	TRAINER INITIALS
1	MAINTENANCE INSTRUCTIONS F-15A/B AMMUNITION HANDLING SYSTEM	X					
		X					
		X					
a.	AMMUNITION HANDLING DRUM UNIT ASSEMBLY (INCLUDING ENTRANCE AND EXIT COVER) S.R. T.O. 11W1-7-15-2, PARA. 5-42 thru 5-44, PARA. 5-87 thru 5-104.	3	2b				
		5	3c				
		7	4d				
b.	LOAD ADAPTER CHUTE ASSEMBLY S.R. T.O. 11W1-7-15-2, PARA. 5-63 thru 5-68.	3	2b				
		5	3c				
		7	4d				
c.	ENTRANCE UNIT ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-51 thru 5-56	3	2b				
		5	3c				
		7	4d				
d.	EXIT UNIT ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-57 thru 5-62	3	2b				
		5	3c				
		7	4d				
e.	HANDOFF UNIT ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-69 thru 5-74	3	2b				
		5	3c				
		7	4d				
f.	CONVEYOR ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-105 thru 5-125	3	2b				
		5	3c				
		7	4d				
g.	FEEDER ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-21 thru 5-28	3	2b				
		5	3c				
		7	4d				
h.	UNLOAD DRIVE ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-7 thru 5-14	3	2b				
		5	3c				
		7	4d				
i.	DRUM DRIVE ASSEMBLY S.R. T.O. 11W1-7-15-2 PARA. 5-45 thru 5-50	3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
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PARA- GRAPH NO.	TASKS, KNOWLEDGES AND STUDY REFERENCES	SKILL LEVEL	PROFI- CIENCY LEVEL	DATE OF STARTED	DATE OF COMPLETED	TRAINEE INITIALS	TRAINER INITIALS
2	F-15 A/B WEAPONS LAUNCH AND RELEASE SYSTEM	X					
		X					
		X					
a.	INSPECT, REPAIR, AND MAINTAIN MAU-12 BOMB RACKS S.R. T.O. 11B29-3-25-2 PARA. 4-1 thru 4-20	3	2b				
		5	3c				
		7	4d				
b.	INSPECT, REPAIR, AND MAINTAIN ADU-407/A MISSILE LAUNCHER ADAPTER S.R. T.O. 11LA8-7-3 SECTION I thru V	3	2b				
		5	3c				
		7	4d				
c.	PERFORM SYSTEM FUNCTIONAL CHECKS USING AN/AWM-74 TESTER S.R. T.O. 16W6-25-3 PARA. 7-12 thru 7-28, 11L1-3-28-2 PARA. 4-10 thru 4-18, 11LA8-7-3 PARA. 3-27	3	2b				
		5	3c				
		7	4d				
d.	PERFORM SYSTEM FUNCTIONAL CHECKS USING AN/ASM-11 TESTER AND SM-419 SIMULATOR S.R. T.O. 11L1-3-15-22 PARA 3-4 AND TABLE 3-1	3	2b				
		5	3c				
		7	4d				
e.	INSPECT, REPAIR, AND MAINTAIN LAU-106/A MISSILE LAUNCHER S.R. T.O. 11L1-3-28-2 SECTION I THRU VII	3	2b				
		5	3c				
		7	4d				
f.	INSPECT REPAIR, AND MAINTAIN SUU-59/A AND SUU-60/A PYLONS S.R. T.O. 16W6-25-3 SECTION I THRU VI AND VIII	3	2b				
		5	3c				
		7	4d				
g.	INSPECT, REPAIR, AND MAINTAIN ARO-3B MISSILE LAUNCHER S.R. T.O. 11L1-3-15-22 SECTION I THRU IV	3	2b				
		5	3c				
		7	4d				
h.	INSPECT, REPAIR, AND MAINTAIN LAU-114 MISSILE LAUNCHER S.R. T.O. 11L1-2-14-2 SECTION I THRU IX	3	2b				
		5	3c				
		7	4d				
i.	PERFORM SYSTEM FUNCTIONAL CHECKS USING A/E24T-140 TESTER AND SMU-96/E SIMULATOR S.R. T.O. 11L1-2-14-2 PARA 7-9	3	2b				
		5	3c				
		7	4d				
j.	INSTALLATION AND REMOVAL OF ARO-3B MISSILE LAUNCHERS FROM PYLONS S.R. T.O. 1F-15A-2-13 PARA. 2-101	3	2b				
		5	3c				
		7	4d				
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PARA- GRAPH NO.	TASKS, KNOWLEDGES AND STUDY REFERENCES	SKILL LEVEL	PROFI- CIENCY LEVEL	DATE QST STARTED	DATE QST COMPLETED	TRAINEE INITIALS	TRAINER INITIALS
k.	INSTALLATION AND REMOVAL OF ADU-407/A MISSILE LAUNCHER ADAPTERS FROM PYLONS S.R. T.O. 1F-15A-2-13 PARA. 2-101	3	2b				
		5	3c				
		7	4d				
l.	INSTALLATION AND REMOVAL OF MAU-12 BO'B RACKS FROM PYLONS S.R. T.O. 1F-15A-2-13 PARA 3-101 and 3-102	3	2b				
		5	3c				
		7	4d				
m.	INSTALLATION AND REMOVAL OF LAU-114 MISSILE LAUNCHERS FROM PYLONS S.R. T.O. 1F-15A-2-13 PARA. 2-101	3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				
		3	2b				
		5	3c				
		7	4d				

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