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WORLDWIDE AIRBORNE COMMAND POST OPERATOR COMPUTER-BASED  
TRAINING: PLATO LIFE CYCLE MANAGEMENT REPORT(U) AKNAN  
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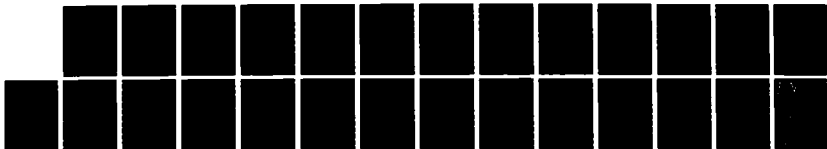
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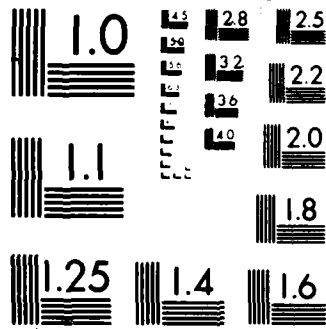
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PLATO LIFE CYCLE MANAGEMENT  
REPORT

(R)

WORLDWIDE AIRBORNE COMMAND POST  
OPERATOR COMPUTER-BASED TRAINING

AD-A177 822

1 MARCH 1986

PREPARED FOR:  
HQ USAF/DPPT  
DIRECTORATE OF PERSONNEL PROGRAMS  
TRAINING PROGRAMS DIVISION

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## PREFACE

The Directorate of Personnel Programs, Training Programs Division (HQ USAF/DPPT) contracted the development of an Implementation Plan for the Worldwide Airborne Command Post (WWABNCP) Operator Computer-based Training to Akman Associates, Inc. The project commenced 1 June 1985 under Contract No. F49642-84-D0039-0002.

This report is the last of three reports which together provide the Air Force with a comprehensive implementation plan for the PLATO/SPIRITUS Training System<sup>1</sup>. The first report, the Decision Paper, provided a training product analysis and a user requirements summary. The second report, the PLATO Implementation Plan, described the issues, potential problems, strategies and responsibilities affecting system transfer and Air Force integration.

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<sup>1</sup>Throughout this report, the PLATO/SPIRITUS Training System is referred to as the training system.

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## CHAPTER 1

### OVERVIEW

#### PURPOSE

The purpose of this report is to provide a plan for the life cycle management of the PLATO/SPIRITUS Training System. Life cycle management roles and responsibilities among Air Force organizations and funding responsibilities are discussed and a plan for ongoing future courseware development is presented. A discussion of standardized training system utilization is included in an appendix.

#### LIFE CYCLE OF THE TRAINING SYSTEM

The effective life of PLATO/SPIRITUS type computer-based WWABNCP operator training is expected to extend far into the future. The training system can potentially satisfy operational needs over the long-term by providing high quality, standardized, unit-level training.

The training system's components will evolve over its life cycle. Courseware will be routinely modified and redeveloped to maintain subject matter currency. Hardware will be upgraded or replaced as the need arises to expand capabilities to meet operational training requirements.

Courseware modifications are expected to be developed annually throughout the training system's life cycle. The first major redevelopment of courseware is expected in FY 1987-88 when courseware for the PACER LINK II aircraft modification program will be developed. This new library of courseware will be larger than the initial library developed for AFSATCOM, LF/VLF, HF and UHF/ARA-160 communications systems. The PACER LINK II library will not immediately and may never replace the older courseware library required for aircraft not reconfigured by PACER LINK II. For instance, E-4B aircraft are not presently funded for conversion under the PACER LINK II program.

It is assumed this pattern of new courses partially or fully replacing old courses will be repeated during the life cycle of the training system. Each year the existing courseware is expected to need some updating.

Hardware enhancements to the training system are expected to occur far less often than courseware changes. The first hardware expansion to the system is scheduled for FY 1989, five years after the initial procurement of Viking equipment. This procurement is expected to double the number of present terminals and is to provide classified training for the MILSTAR program. This next hardware procurement will require different, more technologically advanced equipment to be acquired, since Viking equipment

is going out of production. This addition of different terminals will necessitate some disk conversions to make old and new equipment courseware compatible. The Viking equipment will need to be replaced when spare parts are no longer available.

This scenario of hardware procurement and replacement will probably be repeated during the life cycle of the training system. The rapid evolution of computer technology and the diminishing cost of more capable hardware over time makes upgrades of this kind inevitable and advisable within funding constraints.

The training system's hardware manufacturer, Control Data Corporation (CDC), intends to continue producing and improving PLATO equipment in the future. Evidence of this is seen in CDC's PLATO Personal Training Station (PPTS), which is IBM and interactive video disk (IVD) compatible and has many other technological advancements. (See the Implementation Plan report for further details on PPTS.)

#### **ORGANIZATION OF REPORT**

This report consists of four chapters and one appendix. Chapter 2 presents a general plan for life cycle courseware development, including steps, responsibilities, and discussions of what actions need to be accomplished. Chapter 3 describes the proposed life cycle funding responsibilities of the training system. Chapter 4 lists a summary of all life cycle management responsibilities of major participating organizations. Finally, the appendix provides a discussion on standardized training system utilization. This appendix can be used as input in standard utilization plan development described in the Implementation Plan report.

## CHAPTER 2

### COURSEWARE DEVELOPMENT

#### INTRODUCTION

This chapter describes a general plan for courseware development during the life cycle of the PLATO/SPIRITUS Training System. The chapter begins with a general discussion of the significance and characteristics of courseware development. It is followed by a section on the proposed general plan of courseware development, including steps and organizational responsibilities. These steps are then discussed in more detail in the sections that follow.

This chapter is a companion to the hardware and software requirements chapter of the PLATO Implementation Plan report. No further discussion of hardware maintenance is given due to sufficient coverage in the earlier report.

#### GENERAL DISCUSSION

Courseware development is the primary life cycle management activity. Courseware development is driven by frequently changing training requirements and represents the major life-cycle cost of the training system. Without adequate, ongoing courseware development the training system will cease being a viable training tool.

Courseware development includes periodic modifications to existing courseware as well as new courseware development. Since some aspects of courseware development apply differently to courseware modifications and new developments, these distinctions are made when appropriate.

#### GENERAL PLAN FOR COURSEWARE DEVELOPMENT

Table 2-1 lists the major proposed steps involved in life cycle courseware modification and new courseware development. It also summarizes the organizations responsible for each action.

The general plan for life cycle courseware development is predicated on existing Air Force courseware development capabilities, training policies, organizational roles, and programs. If changes in any of these areas should occur during the life cycle of the training system, the plan should be revised accordingly.

#### IDENTIFICATION OF REQUIREMENTS FOR COURSEWARE DEVELOPMENT

##### Courseware Modifications

Communication systems on WWABNCP aircraft undergo periodic changes in hardware and operational procedures to advance strate-

TABLE 2-1

STEPS IN COURSEWARE DEVELOPMENT

<u>Courseware Modification</u>	<u>New Courseware Development</u>
1. Requirement for PLATO/SPIRITUS courseware modification is identified by lead ACCS/MAJCOM with coordination from other ACCSs. ATC reviews requirement.	1. Requirement for PLATO/SPIRITUS new courseware development is identified by Air Staff OPR or OCRs.
2. ISRD is prepared by lead ACCS/MAJCOM.	2. ISRD is prepared by Air Staff OPR or OCRs. Air Staff notifies ATC and ACCSs.
3. Relevant documentation is collected and reviewed by lead ACCS/MAJCOM in coordination with other ACCSs.	3. Relevant documentation is collected and reviewed by Air Staff OPR or OCRs.
4. Basic decisions are made about the mode of courseware development by the ACCSs in coordination with ATC. SMEs are assigned.	4. Basic decisions are made about the mode of courseware development by Air Staff in coordination with ATC. ACCSs' SMEs are assigned.
5. SME performs ISD process with assistance from ATC or base training office, if necessary.	5. SME(s) perform ISD process with assistance from ATC or base training support activity, if necessary.
6. SME prepares strawman lesson plan based on former courseware and new training requirements.	6. SME(s) prepare strawman lesson plan for each new course.
7. New lesson plan is reviewed by all ACCSs to ensure standardization.	7. New lesson plans are reviewed by all ACCSs to ensure standardization.
8. ATC improves, if necessary, the new lesson plan.	8. ATC improves, if necessary, the new lesson plans.
9. Lesson plan is scripted and programmed by courseware developer (ATC or contractor).	9. Lesson plan is scripted and programmed by courseware developer (contractor).
10. Contract and quality control of courseware is monitored by ATC in coordination with ACCSs.	10. Contract and quality control of courseware is monitored by ATC in coordination with ACCSs.

gic communications technology. Courseware developed under old requirements will therefore need to be periodically updated.

Communication system training experts will have to subjectively and routinely assess when existing courseware should be modified. They will have to weigh the magnitude of changes against the cost of developing modifications. They will have to decide when verbal and written supplements can suffice and when these supplements begin to confuse the students.

Changes to existing communications systems and procedures do not follow a set schedule, although notifications of changes are published regularly. Changes are contained in Technical Order (TO) changes. Not every TO change will require courseware modification but each needs to be assessed.

Since the Airborne Command and Control Squadrons (ACCSs) alone have Subject Matter Experts (SMEs) knowledgeable of fielded communications equipment and procedures, and since they are responsible for On-the-Job Training (OJT), they will monitor requirements for courseware modifications. AFM 50-2, Instructional System Development, 2-4, states that the best source of information for revision of existing instructional programs is the experienced person on the job. To prevent duplication of effort one ACCS or MAJCOM will assume a leadership position. An ACCS/MAJCOM based in the Continental United States (CONUS) should be selected for this leadership role due to the required liaison between the lead ACCS/MAJCOM, Air Training Command (ATC), Air Staff and the other ACCSs. Because of its unique training requirements the 1st ACCS should be disqualified from this lead role. The Air Staff Office of Primary Responsibility (OPR) (HQ USAF/SIMC) should designate the lead ACCS/MAJCOM. The lead ACCS/MAJCOM will also represent all the ACCSs on issues that need addressing in the future.

The lead ACCS/MAJCOM will coordinate with other ACCSs and have them review proposals for courseware modifications. The lead ACCS/MAJCOM will also refer to its own mission, training, and standardization/evaluation (STAN/EVAL) sections to assess courseware modification requirements. Mission personnel will identify deficiencies in communication system operator performance based on training. The STAN/EVAL branch will also identify mission performance problems and suggest changes when procedures and TOs will affect the training environment. Training personnel will observe training system effectiveness in teaching students, and identify deficiencies, faults or ambiguities in the courseware that require correction. HQ USAF/XOOTS may also identify deficiencies based on its evaluation of operational training programs. In cases where a Specialty Training Standard (STS) exists, it can also be used to identify training requirements. Other inputs may come from the MAJCOMs' OJT managers in accordance with AFR 50-23, On-the-Job Training.

In developing a complete assessment of courseware currency the lead ACCS/MAJCOM will draw on the experience of other ACCSs. An ideal forum for this function would be the WWABNCP conferences, now scheduled to meet annually.

1st ACCS unique training requirements should be taken into account in the courseware modification assessment process. As discussed in the Implementation Plan report, unique courseware may have to be prepared to meet these unique requirements. The 1st ACCS will have responsibility to identify and develop courses to cover these unique situations.

### **New Courseware Development**

The need for completely new courseware is driven by two occurrences. The first is introduction of new types of communication equipment. The second is extensive reconfiguration of existing equipment. In the case of new equipment, a new course(s) to teach operation will be required. Extensive reconfigurations may have significant impact on existing courseware or may require new courses.

Headquarters USAF functions will take a leading role in the identification of development requirements for new courseware. HQ USAF/RDSS when involved will identify new courseware development requirements and help to arrange for new courseware funding through the programs that make it necessary.

HQ USAF/SIMC will also identify new courseware development requirements, oversee the process of courseware development, and ensure that adequate SMEs are available to assist in the process. HQ USAF/DPPT will be informed of new courseware development requirements, and will ensure that ATC activities are scheduled and available.

### **PREPARATION OF INFORMATION SYSTEMS REQUIREMENT DOCUMENTS**

An Information Systems Requirement Document (ISRD) must be prepared for either new courseware development or modifications to existing courseware; ISRDs are to be prepared in accordance with AFR 700-3, Information Systems Requirement Processing.

For courseware modifications, an ISRD will be prepared by the lead ACCS/MAJCOM in accordance with AFR 700-3, Attachment 1, using the short format for completing an AF Form 3215. Use of this form is based on the expectation that requirements and justifications for courseware updates can be stated in the space provided, and that the course is required. The short format should be sufficient to justify development of the necessary courseware.

In the case of a major configuration change such as PACER LINK II or new courseware developments, more information and justification in the form of appendices may be required. Air Staff

OPR or Offices of Coordinating Responsibility (OCRs) will prepare ISRDS for new courseware developments and major redevelopments. Air Staff will also notify ATC and ACCSs of the requirement for new or major courseware developments.

After an ISRDS is written, the lead ACCS/MAJCOM will consult the ATC agency designated to monitor courseware development. ATC will monitor any contracts to develop courseware, and the lead ACCS/MAJCOM will provide technical oversight.

#### **COURSEWARE DEVELOPMENT DECISIONS**

HQ USAF/RDSS will also help in arranging for early development of operating and technical information (listed in AFP 50-58, Training Handbook for Designers of Instructional Systems, Volume II), and provision of this data for courseware development. Relevant documentation for courseware modifications would be TOs and procedure publications.

Relevant job requirements data appropriate for new courseware developments may not be available until considerable time after the requirement for new courseware has been identified. This delay may postpone the entire process of courseware development. Contractor training is not always available, though its availability will help expedite the new courseware development process by providing the knowledge necessary to develop the course(s).

Once relevant documentation is collected, decisions can be made on the general content of the modified or new courseware. For modifications especially, this process is important because it will indicate the magnitude of the courseware development effort and whether textual, graphics, audio, or visual changes are needed. A decision will be made on whether to contract courseware development work or accomplish it in-house. ATC will have to assess its capabilities for performing the work in-house.

Plans must also be made by the lead ACCS/MAJCOM concerning the anticipated schedule, plan of actions and milestones, level of effort, and the particular unit level SME(s) to be involved in the development effort. In early experiences with SME assignment for multiple course development, each ACCS developed one course and a single SME was assigned within an ACCS. To distribute the workload of courseware development evenly in the future, courseware development should be alternated among the ACCSs.

#### **ISD PROCESS AND LESSON DEVELOPMENT**

The SME(s) assigned to develop courseware will apply the Instructional System Development (ISD) method in accordance with AFM 50-2 and AFP 50-58, Volumes I through VI. Any assistance needed will be provided by ATC or the respective base training office(s).

ATC will also be responsible for providing training to SMEs regarding computer assisted instruction (CAI) development since the ACCSs have not yet received such training. Knowledge and skills in CAI will produce better instructional courseware and will also minimize the cost of courseware development. The training system's present courseware uses a form of linear programming with constructed response. SMEs should help ATC decide what method of programmed instruction is most applicable to communications systems equipment familiarization and procedural training.

All of the ACCSs must review the content of the strawman lesson plans to ensure procedural standardization and improve quality. Any localized procedures that may be present in the lesson plan must be deleted. A WWABNCP conference training workshop or a meeting attended by SMEs from every ACCS could accomplish this. Each ACCS would come prepared to respond to the strawman lesson plan. At the end of the conference a standardized, ACCS approved lesson plan would be produced. In lieu of a conference or meeting, formal review should be conducted by all of the concerned parties.

ATC would exercise its training oversight role by improving, if necessary, the lesson plan before course scripting and programming work begins.

#### **AUTHORING OF LESSON PLANS AND QUALITY REVIEWS**

ATC will monitor and perhaps accomplish the courseware development work of scripting, programming and production. ATC facilities and capabilities will be used when practicable to reduce courseware development expense. ACCSs will assist ATC in the review of courseware for subject matter errors and will assist in scripting if necessary. ATC will monitor the quality of courseware from a training and computer-based instruction perspective.

## CHAPTER 3

### FUNDING RESPONSIBILITIES

#### INTRODUCTION

The purpose of this chapter is to describe funding responsibilities for life cycle support of the PLATO/SPIRITUS Training System. The chapter summarizes Air Force policy governing the funding of information systems, and discusses why this training system presents an unusual funding situation. It then describes what types of funding are required to support the training system, and assigns responsibility for this funding to participating organizations.

Figure 3-1 summarizes the information presented in this chapter. The flow of funds, types of funding and organizational responsibility for funding training system elements are displayed.

#### INFORMATION SYSTEM FUNDS ALLOCATION POLICY

AFR 700-3 establishes policies and procedures for defining, programming, budgeting and funding information systems. The PLATO/SPIRITUS Training System is considered an information system and is subject to this regulation.

Allocation of funds begins at the Headquarters Air Force level for both procurement of new information systems and operation and maintenance (O&M) support of existing systems. The training system would be included in funds for large level objectives, and would not be specifically addressed in MAJCOM financial plans. O&M support funds are based on MAJCOM budget submissions. Budget amounts are requested based on estimates of costs to support the ongoing operation of the MAJCOMs' information systems.

AFR 700-3 also establishes responsibilities for funding actions to support information systems. In general, HQ USAF provides funds to MAJCOMs for procurement and O&M, and establishes guidance for how funds will be spent. MAJCOMs assemble and approve requirements for command-wide support of information systems, and receive and distribute funds received.

#### FACTORS THAT IMPACT FUNDING

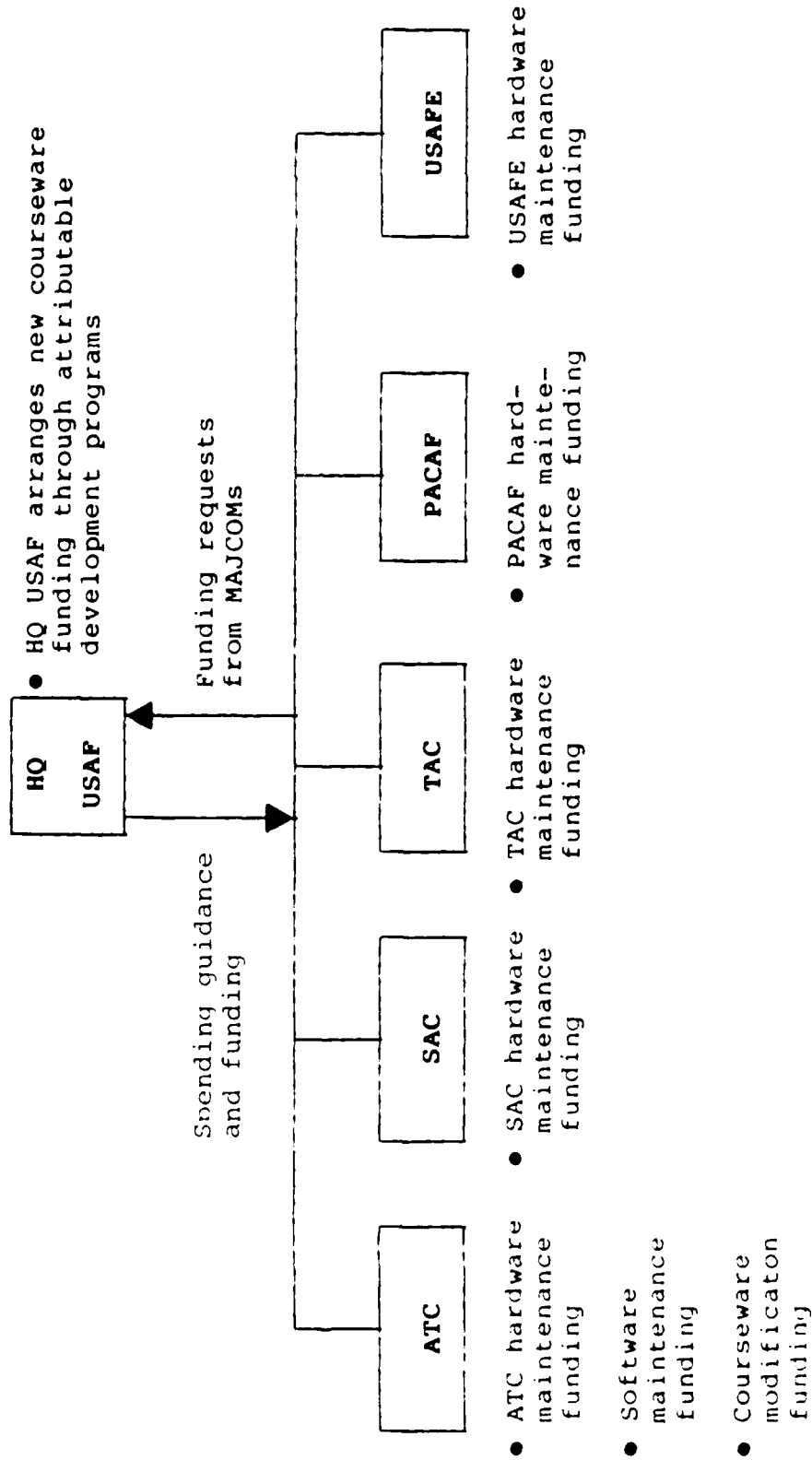
There are some important factors that make the training system an unusual funding situation. This section lists and describes these factors, and explains how they make the training system different from other information system funding efforts.

Since DCA developed and fielded the system, normal acquisition procedures were bypassed. There were no agreements for funding by the involved organizations and no provisions were made to support the system throughout its life cycle.

FIGURE 3-1

FUNDING ENVIRONMENT

FOR THE PLATO/SPIRITUS TRAINING SYSTEM



Another factor that makes this training system different from other automated systems is its small size considering its multiple MAJCOM use. The training system is currently composed of eight microcomputers (six student stations and two authoring stations) with related courseware. This relatively small system is currently being used by the following MAJCOMs:

- Strategic Air Command (SAC);
- Tactical Air Command (TAC);
- Pacific Air Forces (PACAF); and
- United States Air Forces in Europe (USAFE).

If ATC assumes control of the authoring stations from ElectroSpace Systems Inc., the initial courseware developer, a fifth MAJCOM will be added. This arrangement is unusual since generally either small systems belong to one MAJCOM or multiple MAJCOM systems are large. The relatively small size of the training system relegates it to a funding status far below that normally covered by formal MAJCOM agreements.

A final factor that makes the training system unusual is its direct link to strategic connectivity. The system helps to improve recognized problems in strategic communications training. Despite the fact that the training system is a microcomputer-based instructional device, its role in vital strategic communications may afford it a high funding priority.

#### **FUNDING REQUIREMENTS AND RESPONSIBILITIES**

There are several areas of funding support in the training system's life cycle. These were discussed in the second report in this study, the PLATO Implementation Plan, and are briefly restated here. Generally, there are five types of life cycle funding costs:

- Hardware maintenance;
- Software maintenance;
- Courseware modifications;
- New courseware; and
- Hardware expansion/replacement.

Hardware maintenance refers to the costs of contracts to maintain the PLATO/SPIRITUS equipment. These contracts include parts and labor, and are necessary to keep the hardware in working order. As described in the previous Information Systems Funds Allocation Policy section of this chapter, MAJCOMs are responsible for budgeting and funding O&M of information systems

under their control. Therefore, each MAJCOM that possesses a training system unit will be responsible for its hardware maintenance funding.

Software maintenance keeps the software properly operating on the training system equipment. It consists of duplication and distribution of computer disks, photograph slides and audio cassette tapes from USAF-owned master copies. Software maintenance entails replacement of worn out materials and requires subscriptions to a CYBER mainframe computer for each of the authoring terminals. ATC will be responsible for funding software maintenance. This is in accordance with delegation to ATC of the responsibility for maintaining all existing courseware, which includes keeping current software operating properly. In addition, if ATC acquires the existing authoring stations from DCA and develops the ability to operate the authoring stations, then courseware maintenance may be performed by ATC in-house.

Courseware modifications are changes to existing courses. These courseware changes are caused by changes in procedures and communication systems equipment. Courseware modifications are also to be funded by ATC. The modifications will apply to the courseware possessed by all the MAJCOMs. Modifications also include identification and correction of software flaws.

ATC may be able to perform courseware modifications rather than contract out, if an in-house capability is established. In-house development is expected to reduce courseware development costs substantially. This in-house capability may be fully in place in the next few years. There are current plans and obligated funds for ATC to acquire two CYBER mainframes for authoring and to create a cadre of trained SME courseware authors for other programs. If PPTS authoring units are acquired for the training system in FY 1989, they would allow SME authoring, provided SME authoring training is given.

To maintain standardization, each ACCS should not be given the capability to author its own courseware. Rather, a designated SME should author common courseware for all of the ACCSs, with the exception of the 1st ACCS when applicable.

New courseware involves the creation of computer assisted instruction. It is generally required by the introduction of new communications equipment. It can also be required when changes in configuration of existing equipment/procedures are so extensive that current courseware becomes unusable. Funding for new courseware is to be provided by the programs for the new equipment or reconfiguration. This is in accordance with acquisition procedures which require costs attributable to acquisition of new equipment or major reconfigurations to be assigned to the programs that cause them. Training systems are often cited as program-related funding requirements.

The final area that requires life cycle funding support is hardware expansion/replacement. Hardware expansion would entail acquiring additional units and training system equipment to allow classified training, improve training availability and capabilities, and replace worn out or obsolete equipment.

Funding for classified equipment for the MILSTAR program will be provided by the MILSTAR program.

## CHAPTER 4

### LIFE CYCLE MANAGEMENT RESPONSIBILITIES

#### INTRODUCTION

The purpose of this chapter is to provide a summary of major anticipated life cycle management responsibilities belonging to organizations involved in the operation and support of the PLATO/SPIRITUS Training System. Each of these responsibilities have been discussed in detail elsewhere in reports produced in this study. The rationale for organizational roles is briefly described. Then each of the organizations involved in training system support is listed with applicable responsibilities.

#### RATIONALE FOR ORGANIZATIONAL ROLES

The organizational roles and responsibilities described in this study are based on the position that the ACCSS should retain the responsibilities of the training system dealing with training requirements and technical content. The rationale for this approach is that ACCSS have the subject matter expertise to determine what the training system's future requirements and content should be in order to satisfy operational needs. In addition, the system is considered an enhancement of OJT ground training, which is the responsibility of the ACCSS and their MAJCOMS.

ATC was selected as the agency to assume all of the training system life cycle responsibilities not suitable for the ACCSS. ATC is the major educational training institution of the Air Force. It has the capabilities to fulfill all of these responsibilities. ATC is qualified to provide training quality oversight as part of its field evaluation role and to use its computer expertise in contract monitoring of courseware development. ATC can train ACCSS' SMEs in virtually every aspect of computer assisted instruction (CAI). ATC may also eventually use its own facilities and courseware production capabilities to produce courseware materials. ATC is in a better position than the ACCSS to acquire training system development funds and can act as a central funding authority.

It is very conceivable that ATC's role regarding unit level computer-based training in general will broaden and become more clearly defined through policy. Other Air Force policy and organizational changes occurring over the life cycle of the training system may also impact training system organizational responsibilities in ways unforeseen at the present time.

#### SUPPORT RESPONSIBILITIES

This section lists each of the organizations involved in training system support. Each organizational listing is followed by major assigned responsibilities with a brief description of

each. In addition, Air Force regulation series 50, 700, and 800 apply. In the case of MAJCOMs, there are two listings. One type involves the general duties of all MAJCOMs, and the other lists MAJCOMs that will have special duties.

### **Airborne Command and Control Squadrons**

ACCSS are functional users of the training system and have responsibilities based on close association and detailed knowledge of the training system. ACCSS have the life cycle responsibility to:

- Operate and utilize the training system to conduct instruction;
- Report on training system effectiveness and suggest improvements;
- Safeguard and properly maintain the training system;
- Identify requirements for courseware modification;
- Prepare lesson plans for new or modified courses;
- Assist in courseware authoring and monitoring of quality control; and
- Forward budget requests for training system hardware support to MAJCOMs.

### **Lead ACCS/MAJCOM**

The lead ACCS/MAJCOM is delegated responsibility for oversight of courseware currency and adequacy. In addition to the responsibilities all ACCSS/MAJCOMs have, the lead ACCS must also:

- Maintain information on the status of all courseware, including identified change requirements;
- Conduct studies to determine the need for courseware updates; and
- Prepare Information System Requirement Documents when courseware updates are required.

### **General MAJCOM Roles**

MAJCOMs have responsibilities stemming from the training system as a command-owned OJT training asset. These general roles apply to the headquarters of Pacific Air Forces (PACAF); United States Air Forces in Europe (USAFE); Tactical Air Command (TAC); and Strategic Air Command (SAC). These MAJCOMs are responsible to:

- Assess and oversee OJT MAJCOM programs;
- Process budget requests for support of the training system; and
- Provide funding for the hardware maintenance of the training system.

### **SAC Responsibilities**

In addition to general MAJCOM responsibilities, SAC is responsible for development of Information System Requirement Documents for acquisition of TEMPEST approved training stations.

### **ATC Responsibilities**

ATC is the lead MAJCOM providing training and computer expertise oversight of the training system; ATC is designated program office of primary responsibility. ATC is responsible for:

- Funding and monitoring or conducting software maintenance;
- Funding and monitoring or conducting courseware modification;
- Training ACCSs' SMEs in aspects of computer assisted instruction;
- Monitoring or conducting development of new courseware;
- Conducting evaluations of the training system as an effective and efficient training tool; and
- Providing technical guidance on computer-based training systems.

### **HQ USAF Responsibilities**

Staff agencies at HQ USAF have responsibility for the training system in the funding, policy and system management areas. HQ USAF/SIMC is the Air Staff OPR and functional manager

for the users. Air Staff OCRs are HQ USAF/DPPT, HQ USAF/EDSS and HQ USAF/XOOTS. HQ USAF will:

- Allocate funds to MAJCOMs for procurement, operation and maintenance;
- Provide funding and policy guidance in their respective functional areas;
- Identify pending requirements for new communication system related courseware;
- Participate in planning for new courseware and prepare Information Systems Requirement Documents for new courseware;
- Establish policy for training system use; and
- Provide overall training system program oversight in their respective functional areas.

**APPENDIX**  
**TRAINING SYSTEM UTILIZATION**

## APPENDIX

### TRAINING SYSTEM UTILIZATION

#### INTRODUCTION

This appendix discusses the issue of how the PLATO/SPIRITUS Training System will fit in the training environment of the Airborne Command and Control Squadrons (ACCSs). The appendix presents a brief background discussion which is followed by a recommended method for the training system to be used by the ACCSs. The sections of this appendix are:

- Prior training problems;
- Early training system use; and
- Recommended training system use.

#### PRIOR TRAINING PROBLEMS

Certain problems in ACCS training led to the development of the training system. These problems were discussed in Chapter 3 of the Decision Paper report and are briefly restated here:

- Limited instructor availability;
- Overcrowded training flights;
- Inadequate training facilities;
- Non-comprehensive continuation training; and
- Inadequate training standardization.

Many of these concerns have been at least partially alleviated by use of the training system, according to the ACCSs. A number of ACCSs have indicated future widespread use of computer-based training will go a long way toward solving these problems.

#### EARLY TRAINING SYSTEM USE

Based on survey responses by all of the ACCSs, their approach to training was fairly standard from squadron to squadron. The general approach involved starting each new student with classroom education and "book learning" of manuals, regulations and technical orders. This first phase acquainted the student with the equipment types to be used, operating instructions, and procedures.

Depending on the ACCS, sometime after the students began classroom training, ground instruction on alert aircraft or in-maintenance aircraft began. In this type of instruction, stu-

dents practiced with actual communications gear, some of it activated. This allowed students to practice procedures, check list items and accustom themselves with control device placement and use (knobology).

The final portion of initial training for the student was in-flight training. On operational or training flights students learned and practiced on active systems. Instructors stood by to teach and correct students as they operated the communications equipment during the flight.

Training at the ACCSSs has since been supplemented by the training system. Currently the training system is being used within the constraints of available courseware. ACCSSs indicate a full set of courseware for all communications equipment would be a significant addition to their training capabilities. ACCSSs have reported using the developed courseware to both train students for initial communication system qualification and for continuation training of qualified operators.

#### **RECOMMENDED TRAINING SYSTEM USE**

The favorable ACCSSs' response to the training system and its generic capability to effectively teach communication system operation recommends a full integration of the training system. If the training system is accepted by the Air Force it should be fully integrated into the training approach employed by the ACCSSs, and its use should be standardized and required. To foster standardization among the ACCSSs and to simplify management of the training system, the training system should be utilized the same way at each of the ACCSSs.

With implementation of the training system, some changes in the current ACCS training approach will be necessary. First, the training system will alleviate much of the requirement for instructor training. This change is based on the opinion of most ACCSSs that if courseware is kept complete and updated, ground instructor time will be minimal. Also, the requirement for learning in a classroom setting will be nearly eliminated. Each new communications student will begin upgrade training on the training system aided by an instructor. After the student gains confidence and proficiency, usually during the first few hours, computer-based training would be primarily unassisted unless help is requested or a student's scores indicate a problem.

Another area of change in the training approach used by the ACCSSs is a decreased requirement for ground training in actual aircraft. ACCSSs' opinions differed on the need for such training. Some squadrons believed use of the training system would eliminate the need for ground aircraft training. Other squadrons indicated the continuation of such training since the training system is "not the actual equipment".

In the interest of thorough training, a small segment of ground aircraft training should be maintained. The cost of such training is relatively low, and provides students with hands-on training with the actual equipment.

The training system is capable of teaching procedures for operation and equipment familiarization through the simulation of a touch sensitive screen. Actual use of knobs and dials in the aircraft will complete knobology training, and make students more at home with the communication stations before they proceed to in-flight training. Less correction should be necessary while on training flights.

In-flight training procedures will remain unchanged with full use of the training system. The impact of the training system on in-flight training will be increased readiness of students to perform on the equipment. The training system is expected to successfully teach a large percentage of the knowledge, skills and abilities students require before in-flight training. Therefore students will require fewer training flights.

The number of students on each training flight is expected to decrease due to the accelerated training provided by the training system. On each flight lack of crowding will mean more in-flight training time per student and more attention to individual training needs.

Training requirements also exist for qualified communication systems operators that can be met by the training system. To maintain proficiency, operators periodically receive training on their communication system. Qualified personnel may also train on other communication systems to improve ACCS readiness, or to make flight crew scheduling easier. Finally, new communications equipment is installed periodically and operators must learn how to use it. The training system will satisfy the bulk of all training associated with these requirements.

END

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