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SECOND YEAR STATUS REPORT. COMPUTERIZED TRAINING SYSTEMS PROJECT. PROJECT ABACUS

OFFICE OF THE PRODUCT MANAGER
COMPUTERIZED TRAINING SYSTEMS PROJECT
FORT MONMOUTH, NEW JERSEY

1 AUGUST 1974

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TRADOC

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PROJECT ABACUS

Report CTS-TR-74-4

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SECOND YEAR STATUS REPORT
COMPUTERIZED TRAINING SYSTEMS PROJECT
PROJECT ABACUS

Captain Benjamin Whitehouse

Evaluation Division
Office of the Product Manager
Computerized Training Systems Project
Fort Monmouth, New Jersey 07703

1 August 1974

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13. ABSTRACT

This report covers the actions which have transpired during the second year of Project ABACUS, the Army's program for the development of a Computerized Training Systems. It includes a narrative summary, key documents, and amplifying annexes.

As a historical document it will be utilized in preparation of the final project report. It is also meant to provide the current reader with an understanding of how the project has moved to its present position, and what actions are anticipated to be completed in the near future.

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NOTICES

This report has been reviewed and is approved.

Frank E. Giunti
Technical Director

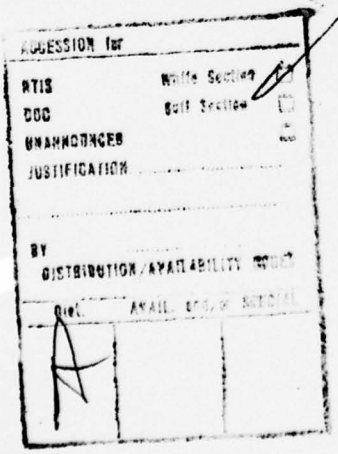
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Disclaimer

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Disposition

Destroy this report when it is no longer needed. Do not return it to the originator.



FOREWORD

This report covers the actions which have transpired during the second year of Project ABACUS, the Army's program for the development of a prototype Computerized Training System.

It includes a narrative summary, key documents, and amplifying annexes.

As a historical document it will be utilized in preparation of the final project report. It is also meant to provide the current reader with an understanding of how the project has moved to its present position, and what actions are anticipated to be completed in the near future.

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Computerized Training System

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I. INTRODUCTION

The mission of Project ABACUS is to design, develop, test and evaluate a 128-terminal computerized training system utilizing the multiminicomputer concept. At the conclusion of two years, the project is on schedule and the target completion date of 1 August 1976, remains unchanged.

II. BACKGROUND

The events leading to the implementation of the CTS Project and the project progress through the first year are documented in CTS Report TR-73-4 "One Year Status Report, Computerized Training System Project, Project ABACUS" dated 1 August 1973.

The Product Manager Charter (Annex A) and DA Management Plan (Annex B) were revised as required on the Project's anniversary date of 1 August 1973. Significant modifications to these documents are as follows:

Charter

a. Redesignation of CONARC to TRADOC.

b. Specific reference to US Army Southeastern Signal School and consultants as participating organizations.

c. Authority to establish field offices upon approval of the CDR, TRADOC.

DA Management

a. Redesignation of Product Manager (PM) CTS, USASCS to Product Manager (PM) CTS, TRADOC.

b. Redesignation of CONARC to TRADOC.

c. Specific reference to Chief of Research and Development (CRD), Deputy Chief of Staff for Personnel (DCSPER), and consultants.

d. Specific reference to HumRRO was eliminated.

e. Designation of the US Army Southeastern Signal School as the CTS prototype site for the purpose of a valid test and evaluation.

Of significant impact to the CTS project is the designation of the US Army Southeastern Signal School redesignated US Army Signal School (USASIGS) as the prototype operational test site. This major redirection resulted primarily from the consolidation of the Signal School at Fort Gordon, Georgia and the USASIGS experience in self-paced instruction. The operational support to be provided the PM (CTS) by the Commandant, USASIGS in the conduct of the prototype test and evaluation is as mutually agreed in a Memorandum of Understanding (Annex C) dated 15 March 1974. Generally, the Memorandum of Understanding provides for the PM (CTS) to provide an operational 128-terminal multiminicomputer system, advice in computer applications in training, and overall program management to include evaluation. The Commandant, USASIGS will in turn provide appropriate facilities, development and operation of three MOS producing courses utilizing the CTS, and operation and maintenance of the CTS system. To accomplish the above, USASIGS has established a CTS Task Group and the PM (CTS) has established a CTS Field Office at Fort Gordon. The revised Time Phase Plan is provided at Annex D.

III. PERSONNEL

Colonel G. B. Howard continues as the Product Manager (CTS) Project. The CTS TDA indicates 39 required spaces and is presently authorized 36 military and civilian spaces as shown in Annex E. At the present time 23 personnel are assigned to the project.

As indicated on Annex E, 14 military and civilian personnel are authorized to the CTS project with duty station at Fort Gordon, Georgia. These personnel comprise the CTS Field Office, presently headed by LTC Robert G. Foster (formerly headed by LTC William C. Robbins), with missions and functions as indicated in Annex C. In addition to providing monitorship, liaison, and service as advisor in CAI, the CTS Field Office will provide personnel augmentation to USASIGS in the development of the three courses. Due to the change in duty station, there are 4 civilian and 4 military positions as yet unfilled in the CTS Field Office. Recruitment action has been initiated to fill these vacant authorized slots with qualified personnel. A roster of personnel is provided at Annex F indicating some personnel turbulence, primarily in course development.

The PM (CTS) has further supplemented USASIGS by transfer of personnel spaces directly to USASIGS TDA consisting of 4 ADP systems operators and 1 clerk typist to support the CTS prototype.

IV. PROCUREMENT

During the January 1973 SAG meeting, after evaluating the alternatives for providing an operational CTS for the Army, it was agreed that it would be in the

best interest of the Army to write performance specifications and issue a Request for Proposals (RFP) to industry. The Product Manager, in conjunction with the Computer Systems Support and Evaluation Command (CSSEC), issued a RFP to industry on 18 April 1973.

On 16 July 1973, three separate proposals were received from industry. Evaluation of these proposals by personnel from the PM's Office, CSSEC, Army Research Institute, TRADOC, and the Naval Training Equipment Center was completed on 15 October 1973. After the negotiation period, a contract was awarded on 26 December 1973 by CSSEC to GTE Sylvania Inc. for a 128-terminal Multiminicomputer System.

Major aspects of the CTS include six Digital Equipment Corp. PDP-11/35 minicomputers configured in the following subsystems:

a. System Controller subsystem which contains one PDP-11/35 with 128 K memory and its peripheral equipment.

b. Data Base Controller subsystem configured to include one PDP-11/35 with 32 K core and four high-speed disks.

c. Display Controller subsystem containing one PDP-11/35 per 32-terminal cluster including peripheral equipment.

The primary display (terminal) is the GTE Sylvania Challenger 4000 modifed to meet the CTS on-line graphics requirements. Another significant aspect is the development of the complete software to operate and control the system. Specifically, GTE will develop the software for an initial computer subsystem, the 32-terminal display controller subsystem, and the complete operative system including the CLASS I Language. Maintenance of this software will be provided by GTE for the duration of the contract period.

The initial computer subsystem was delivered to the Office of the Product Manager on 23 April 1974. This equipment is currently being used for Application Software Design in support of the CTS evaluation requirements. The 32-terminal display controller subsystem was delivered to USASIGS on 29 July 1974. Upon completion of the subsystem test and Acceptance in mid-August, course material will be placed on line utilizing available commands. The operational 128-terminal multiminicomputer system is scheduled for delivery by February 1975.

System programmers from the PM's Office and USASIGS attended a two week course in DEC Disk System software at the DEC plant in Maynard, Mass. This is the first of several orientations and familiarizations with the prototype CTS system hardware and software.

V. COURSE DEVELOPMENT

Participation by the USASIGS in the CTS project consists, primarily, of the development and administration of three courses on the CTS provided by the Product Manager. The three courses to be implemented by August 1975 on the CTS as recommended by the Commandant, USASIGS and approved by the Commander, TRADOC (Annex G) are: MOS 31E20, Field Radio Repair; MOS 35L20, Avionics Communications Equipment Repair; and MOS 31J20, Teletypewriter Equipment Repair. To accomplish this task, the USASIGS Task Group was formed 14 January 1974 and is proceeding in course development with the advice and guidance of the Product Manager and his staff. Progress in course development by the USASIGS to date has been significant in spite of the turbulence due to consolidation and relocation of the Signal School.

In addition to a course development seminar held at Fort Monmouth for course leaders from USASIGS, several course development workshops have been conducted at Fort Gordon for course personnel and consisted of an introduction to the CLASS I language and lesson development techniques. Augmentation to the course development effort is being provided by the PM through the CTS Field Office at Fort Gordon.

In accordance with the relocation of the CTS test site, COBET is no longer being considered for immediate implementation on CTS. Limited course development has continued using the PLATO IV terminals primarily to improve techniques. The PM, however, continues to monitor COBET, provides assistance where applicable, and will recommend computer application to the program if and when appropriate.

VI. PROJECT EVALUATION

The CTS Evaluation Division completed the Preliminary Evaluation Plan for the US Army Computerized Training Systems (CTS Report TR-74-1 dated January 1974). In keeping with the multidisciplinary effort by CTS to combine the latest advances in minicomputer hardware and software, learning theory and instructional strategies, the evaluation plan emphasizes the multidimensional aspects of CTS. In this respect, three major evolutionary stages of CTS are addressed: developmental, operational and projectional. Within each of these stages, three major dimensions of effectiveness are considered: technical, cost and training. Again, by the same token, each of these dimensions will subsume their own hierarchy of perspectives. The end product of the evaluation, however, will not be merely an expanding diffuse analysis of the multiplex aspects of CTS, but a synthesis of the findings toward meaningful operational decisions concerning its overall feasibility and effectiveness.

An official invitation has been extended to 18 distinguished individuals in the field of Educational Technology to participate as consultants to CTS. Others will be added to this group as the project progresses. Although the evaluation will be conducted using in-house resources, it is anticipated that consultant assistance will be utilized as events require throughout the project. The consultants will serve in an advisory capacity to the Product Manager in the areas of cost, technology and training effectiveness. These activities will include site visits, review of periodic reports and special conferences. The US Army Research Institute will chair consultant participation in the prototype CTS and make necessary contractual arrangements.

At this point data items are being finalized and programming for data collection planned. In addition, questionnaires and other instruments for data collection are being finalized.

VII. LIAISON

The Product Manager continues with close liaison to other DOD agencies, TRADOC schools, civilian institutions, and industry involved in innovative training methods. During the past year, the Office of the Product Manager has given several presentations and demonstrations in computerized training, and published various technical reports concerning this project (Annex H). Summaries of CTS activities provided through periodic Progress Reports (Annex I).

VIII. CONCURRENT ACTIONS

a. PLATO IV

In addition to on-going instructional programmer training through authored "mini-lessons" and several demonstrations, student trials of developed "mini-lessons" were conducted March 1974 to May 1974. Ninety-five students were involved in the evaluation, 35 individually and 30 peer student groups (pairs).

Objectives of this study are student evaluation of lesson material, peer learning and the PLATO IV system. This data and analysis of student opinions in these areas will be documented and provided as part of the ARPA sponsored PLATO IV evaluation.

Additional PLATO IV terminals have been received and planning is in progress for their allocation and utilization.

b. Survey for Computer Applications in Training

As the focal point for TRADOC efforts in Computer Applications to Training, the Product Manager has taken action to update information on the current

status of existing and anticipated capability in this area throughout US Army schools. Questionnaires have been sent to 33 organizations/activities throughout DA. Computer applications in training include the integration of the computer into the classroom as a teaching medium, surrogate instructor, or classroom management tool. In addition the questionnaire inquires into interests and desired participation in an orientation and/or course of instruction in concepts and principles of computerized training as developed by the Product Manager, CTS.

The results of this survey were presented to the TRADOC SAG in summary form and will be documented in a CTS Technical Report currently being assembled.

c. CATTS

On 5 December 1973, the PM was tasked by the CDR, TRADOC to provide a status of the Combined Arms Tactical Training Simulator (CATTS) project and to make recommendations as to actions required to insure its success. The results of this study are documented in a Status Report, CATTS, dated 10 January 1974 prepared for the CDR, TRADOC. The cover letter to the study including conclusions and recommendations is provided at Annex J. On 1 July 1974 PM assumed responsibility for supervisory management of CATTS.

d. TRADOC Steering Advisory Group (SAG)

On 16 May 1974, a general officer SAG was convened to discuss the future utilization of the computer in training. The PM (CTS) provided the background and current status of computers in training. A significant result of this meeting was the establishment of three subgroups to address the following areas: Policy and Procedures, Tactical Computers, and USAR and NG. It was agreed that the President, Army Logistics Training Board would chair the USAR and NG subgroup with the PM, CTS providing chairmanship for the remaining two.

The initial meeting of the subgroups was held on 16-17 July 1974, at Fort Monmouth, NJ and was hosted by the PM (CTS).

e. Additional responsibilities.

Effective 1 July 1974, the PM (CTS) has been tasked with the following additional responsibilities (Annex K):

(1) Supervisory management of the CATTS development program through the CATTS Program Director.

(2) Proponency for TRADOC SAG Subwork Groups on Policy and Procedures and Tactical Computers.

(3) Accomplishment of ODCST Special Analysis - ADP Support Plan for TRADOC Schools and Training.

(4) Proponency for ODCST actions/responsibilities in the application of computers in training.

The CTS charter is currently being revised to reflect these additional responsibilities.

f. CAI Color Film

The CAI color film documentary SBF 73-42 entitled Computer Assisted Instruction, Developing a Base For Future Army Training, has been cleared for general public release and sale on 28 March 1974.

This film was prepared by the Computerized Training Systems Project to show how the computer is used in training and highlights unique instructional applications, course development techniques, and effective hardware utilization. Running time is approximately 22 minutes.

Interested military and civilian activities will be able to obtain loan film copies by contacting their military area Audio-Visual Support Centers as the film becomes available through these channels. In the interim, loan film copies are available through this office.

IX. CONCLUSION

All milestones on Project ABACUS have been met to date and no extension to the original 4-year time schedule has been requested.

Potential problems lie in the related areas of personnel and applications software. Whereas the magnitude of the problem cannot be fully assessed at this time, it appears that emergency measures may be required if the momentum is to be maintained.

As the project progresses,it becomes evident that future applications will require greater attention if there is to be a smooth transition from research and development to an expanded operational capability.

PRODUCT MANAGER CHARTER

(REVISED)

PROTOTYPE COMPUTERIZED TRAINING SYSTEM

US ARMY TRAINING AND DOCTRINE COMMAND

1. DESIGNATION OF PRODUCT MANAGER

Colonel G. B. Howard is designated US Army Training and Doctrine Command (TRADOC) Product Manager for the Prototype Computerized Training System effective 1 July 1973. The Product Manager reports to the Commander, US Army Training and Doctrine Command. This charter will be reviewed annually on its anniversary date by the Product Manager to insure currency and adequacy.

II. MISSION

Colonel G. B. Howard is responsible for the program management of the Prototype Computerized Training System in accordance with DOD Directive 5000.1, AR 70-17, AMCR 11-16, and other pertinent regulations.

III. AUTHORITY

The Product Manager is delegated full line authority by the Commander, US Army Training and Doctrine Command and is responsible for the planning, direction, and control of the allocation and utilization of all resources authorized for the execution of the approved program. This includes, as applicable, definition, development, testing, procurement, production, distribution and logistical support. Further, he is responsible for assuring that planning is accomplished and implemented by the organizations responsible for the complementary functions of evaluation, logistic and maintenance support, personnel training, operational testing activation and deployment of the system. The Product Manager is supported by the offices and organizations within the US Army Training and Doctrine Command and participating organizations identified in paragraph VI.b for execution of specifically assigned tasks.

IV. ASSIGNED RDTE PROJECTS AND TASKS

The Army RDTE funding will be provided directly to the Product Manager through an Intra-Army order for reimbursable services (DA Form 2544).

V. OTHER ASSIGNED PROGRAM TASKS OR ITEMS

The Product Manager is responsible for overall management of:

a. PEMA program for his assigned system.

b. OMA as assigned.

c. Other tasks when assigned by the Commander, US Army Training and Doctrine Command.

VI. INTERFACES AND PARTICIPATING ORGANIZATIONS

a. Interfaces:

(1) Office of the Secretary of Defense

(2) Department of the Army

(3) US Army Training and Doctrine Command

(4) Human Resources Research Organization

(5) Department of the Navy

(6) Department of the Air Force

(7) US Marine Corps

b. Participating Organizations

(1) US Army Training and Doctrine Command

(2) US Army Signal Center and School

(3) US Army Southeastern Signal School

(4) Office of Chief of Research and Development

(5) Other schools and activities within TRADOC as applicable

(6) Contractors

(7) Consultants

VII. COMMUNICATIONS CHANNELS

The Product Manager is authorized direct communications between his office, participating organizations and organizations with which he has interface.

VIII. RESOURCE CONTROL

Army resources approved to accomplish the mission will be provided to the Product Manager through Headquarters, US Army Training and Doctrine Command and the host US Army activity/installation. (See exception in para IV.)

IX. LOCATION AND ADMINISTRATIVE SUPPORT

a. The Product Manager's office is presently located at the US Army Signal Center and School, Fort Monmouth, New Jersey. Necessary facilities and administrative support will be provided by that organization, while the Product Manager is a tenant at that activity.

b. Upon approval of the Commander, US Army Training and Doctrine Command, field offices may be established by the Product Manager, as required, without change of Charter. Necessary facilities and administrative support will be provided by the respective supporting organizations. Operational support will be provided as mutually agreed.

X. SPECIAL EXEMPTIONS

None

XI. SPECIAL DELEGATIONS

None

APPROVED _____ DATE 2 NOV 73

Prototype Computerized Training System

Management Plan (Revised)

1. Purpose

The purpose of this plan is to delineate the Army command and control channels and procedures to be followed for the design, hardware/software development, course development, operation and evaluation of a prototype Computerized Training System (CTS) to be accomplished by the Office of the Product Manager. The responsibilities and interrelationships of the organizations and agencies participating in the Prototype CTS project are illustrated for guidance of all concerned.

2. Background

As a result of CAI Task Group Report recommendations, CONARC directed the implementation of a CAI Prototype System (CONARC letter, ATIT-STM, 29 June 1972, Subject: Computer Assisted Instruction Prototype Program Implementation). The recommendations initiating the prototype included the use of an integrated CAI-CMI system, use of minicomputers for the central system, and the use of the system for a variety of course types.

3. Management Concept

a. Organizations and Agencies. The following are the primary organizations and agencies which will contribute to the CTS Project.

(1) Product Manager (PM), Computerized Training Systems, US Army Training and Doctrine Command (TRADOC).

(2) US Army Training and Doctrine Command (TRADOC) (to include TRADOC schools).

(3) US Army Signal Center and School (USASCS).

(4) US Army Southeastern Signal School (USASESS).

(5) Chief of Research and Development (CRD).

(6) Steering Advisory Group (SAG).

(7) DA, Management Information Systems Directorate (DA, MISD).

(8) Deputy Chief of Staff for Personnel (DCSPER).

(9) DA, Computer Systems Support & Evaluation Command (DA, CSSEC).

(10) Contractors: Multiminicomputer System (MMS); Acceptance Testing; Evaluation; and others, as required.

(11) Consultants.

b. Responsibilities.

(1) The Product Manager (PM) has the overall responsibility for the accomplishment of the mission as set forth in the Charter; to design, develop, implement, and evaluate a CTS. The PM shall recommend the type of system and courses, produce or coordinate production of the required instructional programs and management procedures, and supervise the implementation of the selected courses on a scale which will provide a valid evaluation. All coordination with other concerned agencies and organizations will ensue from the PM.

(2) TRADOC will provide guidance in the form of approval of the plans and progress of the project as submitted thru direct channels and the SAG. TRADOC will provide the courses required by the CTS based upon the recommendation of the PM. Funding of the administrative and personnel requirements of the project will be provided by TRADOC through HQ, USASCS with OMA funds. Funding for the procurement of the hardware/software system will be provided for by Army RDTE and OMA funding as specified in paragraph IV and VIII of the Product Manager Charter.

(3) The host activity/installation, presently HQ, USASCS, will provide administrative and logistics support to the PM. Funds will be provided to the host activity/installation for the management and expenditure by the PM. TRADOC will authorize the personnel required by the PM through the commander of the host activity/installation, presently CDR., USASCS. The Comdt., USASESS will monitor and support all courses involved in the operational phase of the CTS for the PM. The Office of the Product Manager will be initially located at USASCS. The CTS prototype site will be located at USASESS for the purpose of a valid test and evaluation.

(4) The SAG will monitor the CTS Project for the Department of the Army.

(5) HQ, DA, MISD will review areas of interest within the CTS project and furnish membership on the SAG. DA, CSSEC will provide support to the PM in contracting, as required.

(6) HQ, DA, DCSPER will ensure that personnel procedures are established to adequately support the CTS Project.

(7) Future contractors involved with the CTS will provide:

(a) Hardware/software system.

(b) Secondary display device.

(c) Other services as required.

(8) Consultants will be utilized as required in the CTS preparation of the final evaluation plan for the project.

c. Procedures:

The basic relationships are illustrated at Inclosure 1. The PM has total responsibility and control of the CTS Project based upon directives from DA and TRADOC. The SAG is the reviewing and coordination group which monitors the project for DA.

4. DA Steering Advisory Group

a. The Group will meet at a time and place designated by the Chairman. The Product Manager as Executive Secretary of the Group is responsible for preparing a draft agenda, notifying members of meetings, preparing and distributing minutes of meetings, and insuring that actions required as a result of meetings are taken.

b. The functions of the SAG are:

(1) Monitoring the progress of the Prototype CTS Project for the Department of the Army.

(2) Providing a mechanism for coordination, exchange of information and review of the Prototype CTS Project by all interested parties.

(3) Exercising control over functional requirements and technical characteristics of the prototype CTS.

c. Membership on the Steering Advisory Group is as follows:

(1) Director of Army Research - Chairman

(2) Prototype CTS Product Manager- Executive Secretary

(3) DA, MISD

(4) DA, DCSPER

(5) DA, CRD

(6) TRADOC

(7) USASCS

(8) USASESS

5. General Development Plan

a. This project is divided into five functional phases as outlined below:

Phase I - System Specification. This phase has been accomplished by the PM. This phase ran through 18 April 1973 when the Request for Proposals (RFP) was released.

Phase II - System Development. This is to be accomplished by a future contractor and will end eighteen months after contract award. Delivery will be phased as specified in the RFP.

Phase III - Course Development. This phase will run concurrently with Phase I and II and will be accomplished by the PM.

Phase IV - CTS Operation. This phase is concerned with the preliminary testing and evaluation of the prototype CTS to include student trials. The operation of the one-year prototype test and evaluation of the CTS and student performance will follow. This phase commences in the thirty-third month and runs through the forty-fifth.

Phase V - CTS Evaluation. This phase will be conducted by the PM concurrently with Phase IV and is concerned with the feasibility and effectiveness of the entire system. This phase will start in month thirty-three and conclude in month forty-eight. A final report will be prepared at the conclusion of the evaluation phase to include recommendations for future actions. Consultants/contractors will be utilized in evaluation as appropriate.

b. The time frames presented in this plan are required for project completion to meet a 1 August 1976 deadline.

MEMORANDUM OF UNDERSTANDING

BETWEEN

Product Manager
Computerized Training Systems

Commandant
US Army Southeastern Signal School
Fort Gordon, Georgia

1. INTRODUCTION:

a. References:

(1) USASESS Reg 10-2, subject: Organization, Mission and Functions, dated July 1973.

(2) Prototype Computerized Training System Management Plan (as revised 13 Nov 1973).

(3) Product Manager Charter, Prototype Computerized Training System (as revised 5 Nov 1973).

(4) Letter, ATSN-CTS, USASCS, 29 Nov 73, subject: Designation of Courses for Prototype Computerized Training System (CTS), with 1st Ind, ATTS-ITR, TRADOC, 11 Dec 73.

b. In accordance with cited references, this Memorandum of Understanding delineates responsibilities, command and control channels, and procedures to be followed in the operational test and evaluation of a Prototype Computerized Training System (CTS) by the Office of the Product Manager, Fort Monmouth, to be conducted at United States Army Southeastern Signal School (USASESS), Fort Gordon, Georgia.

2. GENERAL RESPONSIBILITIES:

a. The Commandant, USASESS, reference 1a (1), is responsible for preparing, conducting and administering course of instruction/programs of instruction (POI).

b. The Commandant, USASESS, reference 1a (2), is responsible for monitoring and supporting the three courses reference 1a (4) involved in the operational phases of the CTS for the Product Manager.

c. The Product Manager, CTS, reference 1a (3), is responsible for the design, hardware/software development, course development, operation, and

evaluation of a Prototype Computerized Training System (CTS). In this capacity the Product Manager, CTS, will advise the Commandant, USASESS, during the operational test period in those areas of responsibility as they apply to the CTS operational test and evaluation.

3. DETAILED RESPONSIBILITIES:

a. The Product Manager, CTS, will:

(1) Procure, deliver, install and conduct the acceptance test of a CTS hardware/software system for operation at USASESS, Fort Gordon.

(2) Provide necessary interfacing between USASESS and other activities, elements, and contractors in matters pertaining to the CTS prototype operational test and evaluation.

(3) Develop the CTS evaluation plan; designate data to be recorded and required format; collect and analyze test data and prepare the formative, interim, and final evaluation reports.

(4) Prepare appropriate program and planning documents as required by and for submission to higher headquarters. Documents applicable to the CTS operational test and evaluation will be coordinated with the Commandant, USASESS. The final document shall include Commandant, USASESS, concurrence/comments.

(5) Establish and provide to the Commandant, USASESS, operational test facilities requirements.

(6) Provide a training program for USASESS system and course personnel in the CTS, the instructional model, and course development.

(7) Establish and maintain a field office at USASESS, Fort Gordon, with the missions and functions and phased personnel augmentation as set forth at Inclosure 1. The organizational relationships between the field office and the USASESS task group are as indicated at Inclosure 3.

b. The Commandant, USASESS, will:

(1) Provide appropriate facilities for the operational test of the CTS in accordance with requirements established by the Product Manager.

(2) Coordinate with appropriate Fort Gordon activities to support the installation of the CTS hardware/software system at Fort Gordon, as required by the Product Manager.

(3) Provide administrative support for the CTS acceptance testing at Fort Gordon, as required by the Product Manager.

(4) Operate and maintain the CTS hardware/software system after the final contract acceptance of the system by the Product Manager until the conclusion of the CTS operational test and evaluation with the monitorship and advice of the Product Manager.

(5) Plan, program and budget additional system capacity not required by the CTS operational test and evaluation. Any additional use of the system in this manner will be limited to CTS applications to be jointly concurred in. The Product Manager CTS will retain approval authority for recommended system use that is in addition to the CTS test and evaluation.

(6) Accept full responsibility for the Prototype CTS established at Fort Gordon at the conclusion of the operational test and evaluation for use in accordance with TRADOC regulations in effect at that time.

(7) Provide the CTS Task Group leader and implementation staff as indicated at Inclosure 2 to conduct the course development and operational test of the CTS prototype.

(8) Prepare, conduct and administer the POI for the CTS operational test and evaluation with the advice and monitorship of the Product Manager.

(9) Record evaluation data under specified training/testing conditions in the required format as designated by the Product Manager.

(10) Provide administrative working space for the PMO field liaison office and coordinate normal post support.

4. OTHER:

a. Responsibilities for items not specifically covered in this Memorandum of Understanding will be resolved by mutual coordination.

b. This Memorandum of Understanding is subject to review and revision on the anniversary date of the Product Manager Charter or when major program changes are made by higher headquarters.

c. The Memorandum of Understanding does not supersede the referenced charter, management plan and mission and functions, or any agreements reached

between Commandant, US Army Signal Center and School, and Commander, US Army School/Training Center and Fort Gordon.

d. This Memorandum of Understanding is effective on date of signing by the Product Manager, CTS and Commandant, USASESS.

G. B. HOWARD, COL
PRODUCT MANAGER, CTS

Date_____

EMMETT R. ARNOLD, COL
COMMANDANT, USASESS

Date_____

3 Incl
as

DETAILED TABLE OF DISTRIBUTION AND ALLOWANCES
SECTION II - ORGANIZATION

TDA NO. TCW1E6AA10-
DATE TCO-274
TDA X MTDA

DESIGNATION

BASE FOR COMPUTATION OF CHANGES

INDEX PAR a	INDEX LINE b	DESCRIPTION c	GRADE d	MOS e	BR f	ID g	ARMY MGT STRUCTURE CODE h	REQ i	AUTH j	RMK k
		PROPOSED TDA								
02D		CTS FLD OFC/Ft GORDON, GA								
	01	CHIEF	05	04300	SC	0	81111225000	1	1	
	02	CRS WRITER	E7	31E40	SC	I	81111225000	2	2	
	03	CRS WRITER	E6	31E40	SC	I	81111225000	1	1	
	04	CRS WRITER	E6	35L40	SC	I	81111225000	2	2	
	05	CRS WRITER	E6	31J40	SC	I	81111225000	2	2	
	06	TECH ADVISOR	13	01710	GS	C	81111225000	1	1	
	07	ED SPEC	12	01710	GS	C	81111225000	1	0	
	08	ED SPEC	11	01710	GS	C	81111225000	1	1	
	09	TRNG SPEC	11	01712	GS	C	81111225000	2	2	
	10	CLERK TYPIST	03	00322	GS	C	81111225000	2	1	
							TOTALS	15	13	

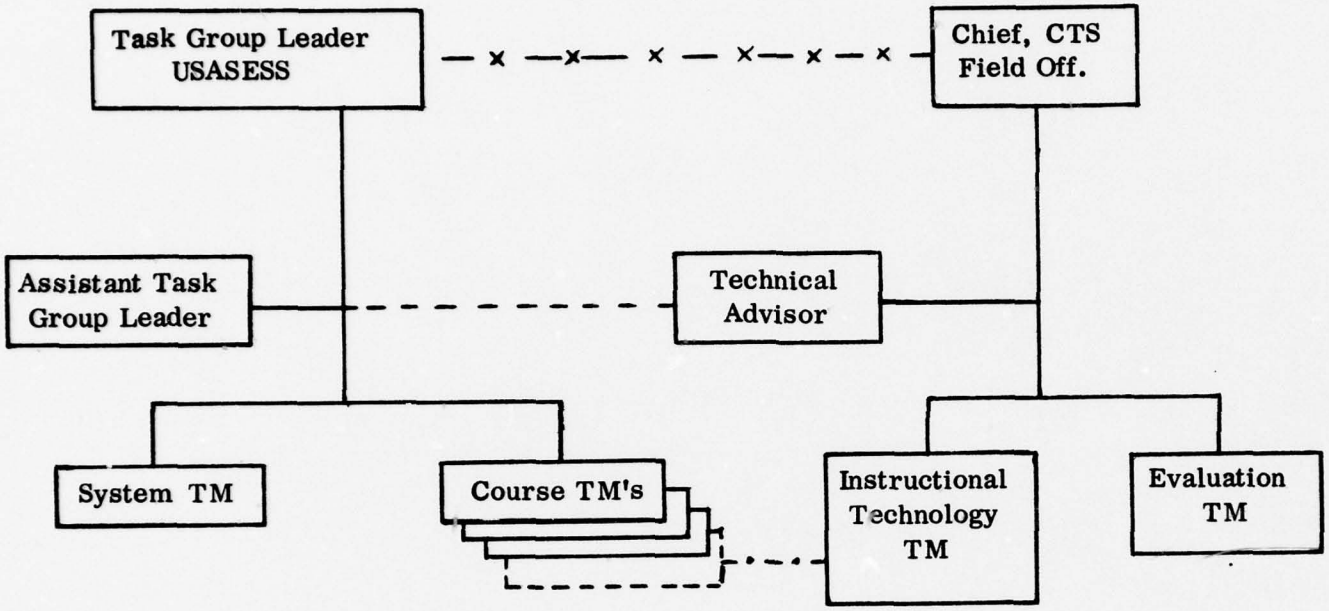
DA Form 2952, 1 Jan 70 REPLACES PREVIOUS EDITION WHICH IS OBSOLETE. PAGE ___ OF ___ PAGES
For use of this form, see AR 310-49; the proponent agency is ACSFOR.

USASESS

CTS Task Group Composition/Representation

1. Task Group Leader	1
2. 31J Course	5
3. 31E Course	5
4. 35L Course	5
5. Data Systems	
a. Computer programmers	5
b. Computer operators	as required
c. Educational specialists	2
6. Staff Support	
a. Curricula Br	1
b. Evaluation Br	1
c. Operations Br	1
d. ETV Br	1
e. Fac Dev Br	1
f. Lib/Learning Center	1
7. Academic Department Representatives	1

Operational Test and Evaluation
Organizational Relationships
SESS/CTS



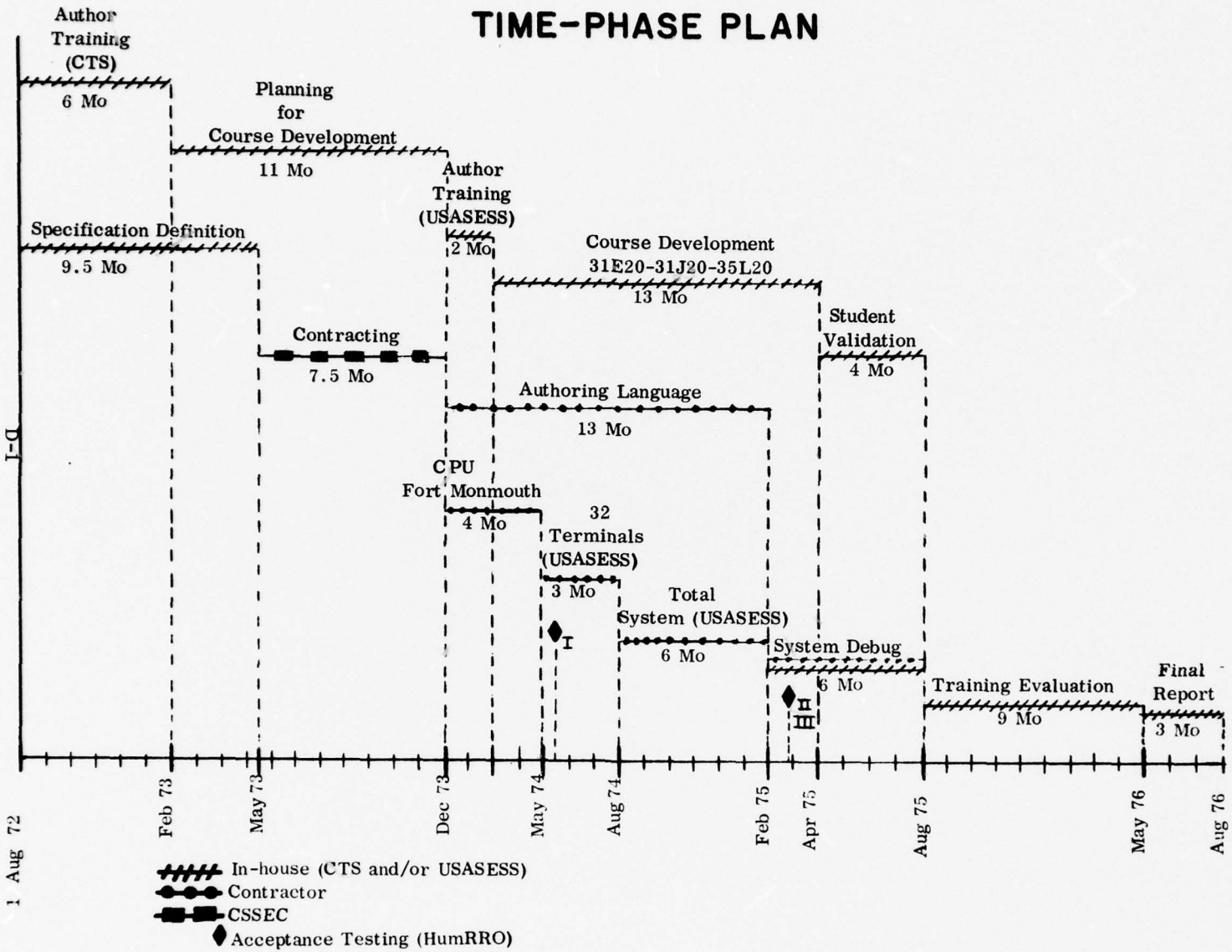
———— Command and Control

— x — Monitor and Coordinate

— — — Provide Technical Advice in all Aspects of CTS

— • — Augment course TM's under the Operational Control of the TASK Group Leader USASESS except as mutually agreed.

TIME-PHASE PLAN



Annex E: TDA 1AW1E6AA-10 (Computerized Training Systems)

Par 02 Office Prod Mgr Cmpt Trng Sys

LINE	DESCRIPTION	GRD	MOS	BR	REQ	AUT
01	Product Mgr	06	04300	SC	1	1
02	ADPS Plans & Op Off	04	02402	SC	1	1
03	ADPS Plans & Op Off	03	02402	SC	1	1*
04	Admin NCO	E9	26W50	NC	1	1
05	Tech Dir	13	01710	GS	1	1
06	Educ Sp	12	01710	GS	1	1
07	Secy	06	00318	GS	1	1
08	Secy	05	00318	GS	1	1
	Totals				8	8

*With duty station at Fort Gordon, GA.

Par 02A Office Crse Devel & Op Div

LINE	DESCRIPTION	GRD	MOS	BR	REQ	AUT
01	Chief	13	01712	GS	1	1*
02	Crse Writer	E7	31G40	NC	1	1*
03	Crse Writer	E7	32E40	NC	1	1*
04	Crse Writer	E7	31E40	NC	1	1
05	Crse Writer	E6	32E40	NC	1	1*
05	Crse Writer	E6	35L40	NC	1	1*
06	Crse Writer	E6	31E40	NC	1	1*
06	Crse Writer	E6	31J40	NC	1	1*
07	Crse Writer	E6	32D40	NC	1	1
08	Crse Writer	E6	32E40	NC	1	1*
09	Educ Sp	12	01710	GS	1	1*
10	Tng Sp	12	01710	GS	1	1
10	Tng Sp	12	01712	GS	1	1
11	Educ Sp	11	01712	GS	1	1*
11	Educ Sp	11	01712	GS	1	1*
12	Educ Sp	11	01710	GS	1	1
13	Clerk Typist	03	00322	GS	1	1*
13	Clerk Typist	03	00322	GS	1	0
	Totals				18	17

*With duty station at Fort Gordon, GA.

Par 02A Office Crse Devel & Op Div

LINE	DESCRIPTION	GRD	MOS	BR	REQ	AUT
99	Illustrator	09	01020	GS	0	0

Par 02B Office Sys Op & Prog Div

LINE	DESCRIPTION	GRD	MOS	BR	REQ	AUT
01	Chief	13	00334	GS	1	1
02	ADPS Op Off	03	02402	SC	1	1
03	Sr Prog Sp	E7	74F20	NC	1	1*
04	Prog Sp	E6	74F20	NC	1	1*
05	Cmpt Sys Anal	12	00334	GS	1	1
06	Card Punch Op	03	00356	GS	1	1
07	Clerk Typist	02	00322	GS	1	0
	Totals				7	6

*With duty station at Fort Gordon, GA.

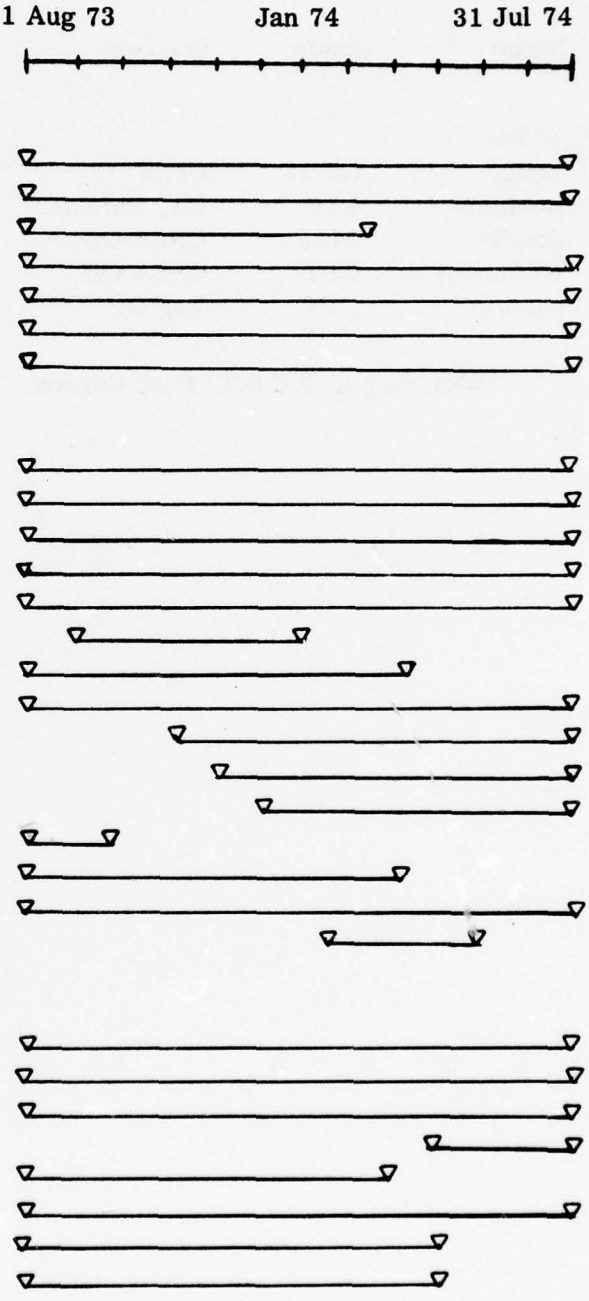
Par 02C Office Eval Div

LINE	DESCRIPTION	GRD	MOS	BR	REQ	AUT
01	Chief	13	00180	GS	1	1
02	OR/SA Off	05	08700	SC	1	1*
03	Planning Off	04	06101	SC	1	1
04	Tng Off	03	02520	SC	1	1
05	Cmpt Sys Anal	11	00334	GS	1	1
06	Clerk Typist	03	00322	GS	1	0
	Totals				6	5

*With duty station at Fort Gordon, GA.

Annex F: Personnel Roster CTS 1 Aug 1973 to 31 July 1974

Name	Grade	Position
PMO		
Howard	COL	PM
Giunti	GS-13	Tech Dir
Mizenko	GS-13	ED Spec
Kitchell**	1LT	ADP Off
Mitchell	SGM	Admin NCO
Brown	GS-6	Secy
Sampson	GS-5	Secy
Crse Dev Div		
Kimberlin	GS-12	Chief
Van Pelt	GS-12	Tng Spec
Rich	GS-12	Tng Spec
Lamb*	GS-11	Ed Spec
Button	GS-11	Ed Spec
Lohr	CPT	Crse Writer
Sherping	SFC	Crse Writer
Brown*	SFC	Crse Writer
Burns*	SSG	Crse Writer
Vopalensky	SSG	Crse Writer
Stotts*	SSG	Crse Writer
Plunk	SP4	Crse Writer
Samuelson	SP4	Crse Writer
Lyons	GS-9	Illustrator
Atkinson	GS-3	Clk Typist
Systems Op & Prog Div		
Evans**	GS-13	Chief
Sintic**	GS-12	Sys Anal
Hinkle	CPT	ADP Off
Hartman	1LT	ADP Off
Byrd	SSG	Prog Sp
McClintock	SP4	Prog Sp
Roskum	SP4	Prog Sp
Greene	GS-3	Card Punch Op

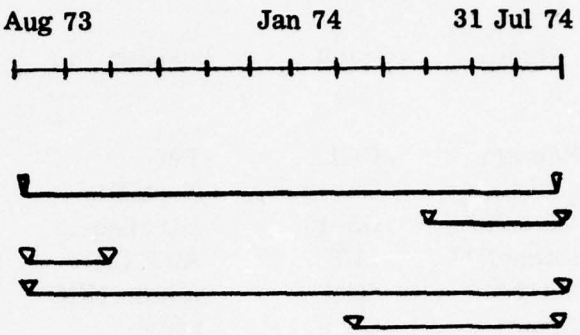


*With duty at Fld Off, Fort Gordon.

**30 day loss.

Annex F: Personnel Roster CTS 1 Aug 1973 to 31 July 1974 (Cont)

Name	Grade	Position	1 Aug 73 — Jan 74 — 31 Jul 74
Eval Div			
Longo	GS-13	Chief	
Robbins*	LTC	Ch, Fld Off	
Gaddis	MAJ	ORSA Off	
Whitehouse	CPT	ORSA Off	
Jaissle	CPT	Tng Off	



*With duty at Fld Off, Fort Gordon.

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY SIGNAL CENTER AND SCHOOL
FORT MONMOUTH, NEW JERSEY 07703

ATSN-CTS 29 November 1973

SUBJECT: Designation of Courses for Prototype Computerized Training System

Commander
US Army Training and Doctrine Command
ATTN: ATTS-ITR
Fort Monroe, Virginia 23651

1. References:

a. Product Manager Charter, Prototype Computerized Training System (revised), forwarded to HQ, TRADOC, ATTN: ATIT-STM, 24 September 1973, indorsed to Product Manager, Computerized Training System, ATTN: ATSN-CTS, 5 November 1973.

b. Management Plan, Prototype Computerized Training System (revised), forwarded to HQ, TRADOC, ATTN: ATIT-STM, 24 September 1973, indorsed to HQDA (DARD-ARZ-A), 29 October 1973, and indorsed to HQ, TRADOC, ATTN: ATTS-ITR, 13 November 1973.

2. The revised Management Plan, reference para 1b above, specifies that the operational test of the Prototype Computerized Training System will be performed at the US Army Southeastern Signal School (USASESS), Fort Gordon, Georgia. One of the first actions to be taken to assure prompt and effective compliance with the direction to relocate the site for the operational test is the redesignation of three courses of instruction.

3. The Commandant, USASESS, has proposed the following three courses:

ATSN-CTS 29 November 1973

SUBJECT: Designation of Courses for Prototype Computerized Training System

a. MOS 31E20, Field Radio Repair

b. MOS 35L20, Avionics Communications Equipment Repair

c. MOS 31J20, Teletypewriter Equipment Repair

A detailed investigation of the above courses of instruction by this office indicates that they meet all criteria for valid and reliable conduct of the CTS operational test.

4. The selection of the above courses of instruction impacts on utilization of COBET Solid State Modules #1, #2, and #3 in the operational test. Since there are no courses presented at USASESS which require only the first three solid state modules, it is recommended that COBET not be included in the initial test, but be considered for possible later implementation.

5. Request approval of the three courses identified in para 3 above for the conduct of the CTS operational test and evaluation.

G. B. HOWARD
COL, SigC
Product Manager, CTS

ATSN-CTS 29 November 1973

SUBJECT: Designation of Courses for Prototype Computerized Training System

COPIES FURNISHED:
MG Charles D. Daniel, Jr., OCRD, DA
COL Kenneth G. Ring, Comdt, USASCS, Ft Monmouth, NJ
COL Emmet Arnold, Comdt, USASESS, Ft Gordon, Ga.
Dr. Vincent P. Cieri, SP-EA, USASCS, Ft Monmouth, NJ
Mr. M. B. Zimmerman, HQDA (DACS-CM)
LTC R. W. Otto, HQDA (DACS-CM)
Mr. J. L. Barber, HQDA (DARD-ARS-B)
LTC Charles M. Priem, HQDA (DAPE-PDT)
Dr. Joseph H. Kanner, TRADOC (ATTS-EA)
Mr. Walter E. McDowell, TRADOC (ATTS-IT)
LTC Austin W. Kibler, ARPA, Arlington, Va.
COL James G. Schoebel, CSSEC, Wash, DC

ATTS-ITR (29 Nov 73) 1st Ind
SUBJECT: Designation of Courses for Prototype Computerized Training System

HQ TRADOC, Fort Monroe, VA 23651 11 DEC 1973

TO: Commander, US Army Signal Center and School, ATTN: ATSN-CTS, Fort Monmouth, New Jersey 07703

Approved.

FOR THE COMMANDER:

MICHAEL A. RANDALL
MAJ, AGC
Asst AG

Copies furnished: (w/o b/ltr)
MG Charles D. Daniel, Jr., OCRD, DA
COL Kenneth G. Ring, Comdt, USASCS, Ft Monmouth, NJ
COL Emmet Arnold, Comdt, USASESS, Ft Gordon, Ga.
Dr. Vincent P. Cieri, SP-EA, USASCS, Ft Monmouth, NJ
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Mr. J. L. Barber, HQDA (DARD-ARS-B)
LTC Charles M. Priem, HQDA (DAPE-PDT)
Dr. Joseph H. Kanner, TRADOC (ATTS-EA)
Mr. Walter E. McDowell, TRADOC (ATTS-IT)
LTC Austin W. Kibler, ARPA, Arlington, Va.
COL James G. Schoebel, CSSEC, Wash, DC

ANNEX H: Presentations and Publications

I. PRESENTATION

a. "CAI Terminals and CTS Concept" demonstrated at the Communications Systems Program Review IV (CSPR IV), Fort Gordon, Georgia, 19-20 Sep 1973.

b. "PLATO IV" demonstrated for the US Army Wired Garrison Study Group held at US Military Academy, West Point, NY, 29 Jan 1974.

c. "PLATO IV Evaluation" presented to ARPA/PLATO IV Users Group, San Diego, CA, 29-30 Jan 1974.

d. "CTS Status" presented to ADCIS Winter Meeting, Washington, DC, 29 Jan 1974.

e. "Computer Applications to Training" presented to TRADOC Steering Advisory Group, Fort Benning, GA, 16 May 1974.

II. PUBLICATIONS

a. "One Year Status Report, Project ABACUS," by Joseph T. Gaddis, Report CTS-TR-73-4, 1 Aug 1974.

b. "Preliminary Evaluation Plan for US Army Computerized Training System," by Alexander Longo, Joseph T. Gaddis, and Benjamin Whitehouse, Report CTS-TR-74-1, Jan 1974.

c. "CATTS: A Status Report" by G. B. Howard, 10 Jan 1974.

d. "PLATO IV First Year Report, Project ABACUS" by Lawrence R. Hinkle, Report CTS-TR-74-2, 1 Apr 1974.

e. "Minutes to TRADOC SAG" held 16 May 1974 at Fort Benning, GA, dated 6 Jun 1974.

TRADOC



PROJECT ABACUS

Computerized Training System

GENERAL INFORMATION

SEPTEMBER 1973

MISSION

The primary mission of Project ABACUS is to procure, test and evaluate a computerized training system tailored to the needs of the Army. In addition, the Product Manager advises the Commander, TRADOC on matters related to computers in training, acts as consultant to the DA Staff, participates in the ARPA-sponsored PLATO IV project, serves on the ARPA Educational Technology Advisory Panel, and maintains liaison with other DOD agencies and civilian institutions.

OBJECTIVE

Employing three Army training courses, the project aims to achieve the following:

a. Cost effectiveness– through reduction in training time, decrease in failure rates, streamlining of training management, use of small-scale computers, and provision of a base for rapid expansion.

b. Training effectiveness– by individualizing instruction, incorporating the best of existing media and relieving the instructor of routine administration.

c. Technical efficiency– through utilization of off-the-shelf equipment.

BACKGROUND

In June 1972 the Vice Chief of Staff of the Army, based on recommendations of a CONARC Task Group, approved Project ABACUS. This approval included the following stipulations: use of small-scale computers; concentration of expertise at a single location; use of three training courses; and a maximum of four years duration.

Selection of Fort Monmouth as the site for the management office was based on the existence of expertise developed there during an earlier successful project. In that experiment, utilizing 102 hours of basic electronics, over 1300 students received instruction by means of the computer. A summative evaluation comparing results gained from students in the project with those of conventional classroom students showed a 35% reduction in training time, a 21% decrease in attrition, an equivalent academic achievement and a highly favorable attitude toward computerized training.

TIME SCHEDULE

Based on the 4-year time constraint, the following milestones have been established:

1st Qtr, CY 74– delivery of initial increment of equipment for course development purposes.

April 1975– first course becomes operational.

July 1976– submission of final report.

ORGANIZATION

The Product Manager is chartered by the Commander, TRADOC and operates in accordance with DOD Directive 5000.1, AR 70-71, AMCR 11-16 and other pertinent regulations.

A Steering Advisory Group (SAG) monitors the project for the Department of the Army and exercises control over the technical characteristics. The group is chaired by the Director of Army Research and includes representation from DA, DMIS; DA, DCSPER; OCRD; TRADOC; and USASCS.

There is a total of 26 military and civilian personnel currently assigned to the project. The core of the organization consists of training specialists who collectively represent approximately 50 man years of experience in the computerized training field. Technical expertise is limited to that required to prepare specifications, monitor contractor activities, supervise operations, and perform evaluation.

SYSTEM CHARACTERISTICS

When fully developed the computerized training system will consist of the following components:

a. Computer subsystem– a modular network of minicomputers, necessary peripheral devices and the software required for authoring, presenting and managing instruction.

b. Media subsystem– computer terminals for textual and simple graphic presentations; Bessler devices (adopted by CATB) for sound, complex graphics and photographs; and existing media as appropriate.

c. Courseware subsystem– beginning with performance objectives and culminating in materials for presentation, this is the most critical element of the system.

d. Management subsystem– techniques and procedures essential to the integration of all subsystems into a single system.

e. Support subsystem– administrative and logistical elements required for operations.

CONDUCT OF TRAINING

Under the CTS concept, instruction will be individualized from beginning to end. Each student will progress through a course at his own pace.

To accomplish this the instructional personnel and the computer must function as a team. The instructional personnel will prepare lesson materials, monitor performance, supervise laboratory work and provide direct assistance. The computer will maintain records, guide student activities and present portions of the instructional material. In this manner a reduction in overhead personnel is considered feasible.

The need for group activity is not overlooked. Lectures, demonstrations, conferences and team exercises will be included, as appropriate.

PROCUREMENT STATUS

In February 1973 the Steering Advisory Group decided in favor of competitive negotiated procurement for the computer subsystem. The Assistant Secretary of the Army (I&L) approved this procedure in March 1973 and the Request for Proposals (RFP) was released to industry by the Computer Systems Support and Evaluation Command on 18 April. Sufficient proposals have been received to insure a competitive environment. These are now in the final stage of evaluation and the contract should be awarded in early November 1973.

EVALUATION

Evaluation of Project ABACUS will consist of two major elements. The first will be designed to provide quality assurance of course materials while the second will form the basis for recommendations for the future.

Although both elements of the evaluation will be accomplished by in-house personnel, consultants will be called upon from time to time to advise in specific areas and thus insure validity of the findings. The final report will include an anlaysis of the results weighed against objectives of the project i.e., cost effectiveness, training effectiveness and technical efficiency.

TRADOC

CTS

PROJECT ABACUS

Computerized Training System

PROGRESS REPORT

VOL. 2 NO. 1 DATE February 1974

CTS PROCUREMENT STATUS

A major milestone of the Prototype CTS Project was recently achieved. On 26 December 1973 a contract was awarded by the US Army Computer Systems Support and Evaluation Command to GTE Sylvania Inc. for a 128 terminal Multi-Minicomputer System (MMS).

Major aspects of the CTS MMS include six Digital Equipment Corp. PDP-11/35 minicomputers configured in the following subsystems: a) System Controller subsystem which contains one PDP-11/35 with 128K memory and its peripheral equipment; b) Data Base Controller subsystem configured to include one PDP-11/35 with 32K core and four high-speed disks, and c) Display Controller subsystem containing one PDP-11/35 per 32-terminal cluster including peripheral equipment. The primary display (terminal) is the GTE Sylvania Challanger 4000 modified to meet the CTS on-line graphics requirements. Another significant aspect is the development of the complete software to operate and control the MMS. Specifically, GTE will develop the software for an initial computer subsystem, the 32-terminal display controller subsystem, and the complete operating system including the CLASS I language. Maintenance of this software will be provided by GTE for the duration of the contract period.

The initial computer subsystem is scheduled for delivery by March 74; the 32-terminal display controller subsystem by August 74, and the operational 128 terminal MMS by February 75.

CTS OPERATIONAL TEST AT FORT GORDON, GEORGIA

Work is progressing with the US Army Southeastern Signal School (USASESS), Fort Gordon, Georgia, preparing for the Prototype CTS operational test. Participation by the USASESS in the CTS Project will consist of the development and administration of three courses on the CTS and the operation of the CTS hardware/software system provided by the Product Manager. The three courses scheduled by August 1975 are: MOS 31E20, Field Radio Repair; MOS 35L20, Avionics Communications Equipment Repair; and MOS 31J20, Teletypewriter Equipment Repair. The USASESS Task Group formed on 14 January 1974, is proceeding in course development with the advice and guidance of the Product Manager and his staff.

A CTS Field Office is being organized at Fort Gordon to provide liaison and coordination, to augment the USASESS Task Group, and to monitor the Operational Test for the Product Manager. It is anticipated that the Field Office will open in March 1974 and be fully operational by July 1974.

NEW LESSONS ON PLATO

Five interactive CAI minilessons on Direct Current (DC) Fundamentals are on line. These include DC Power, Series Circuits, Parallel Circuits, Series-Parallel Circuits, and Ohm's Law.

Three CMI lessons include SAEDA, Safety and First Aid, and Troubleshooting Procedures.

Demo lessons on line include Drivers, Magic Squares Game, Introduction to CTS, Electron Flow, Symbols, and Recruiting.

COURSE DEVELOPMENT

A preliminary report "Effective Writing for a Computerized Training System" has been completed.

Progress in the development of the COBET Solid State Module has progressed as follows:

(1) The terminal performance objectives (TPO's) and the associated skills and knowledges have been approved;

(2) The organization of the skills and knowledges into functional teaching sequences and the initial draft of lesson preparation guides have been completed;

(3) The initial version of Equipment Manual EM-8 for Solid State Power Supply has been reviewed and is currently undergoing revision.

(4) Course development personnel are also involved in a functional analysis of COBET Modules which include an AM/FM Transceiver and a Logic Trainer.

EVALUATION

The CTS Evaluation Division has completed the Preliminary Evaluation Plan for the US Army Computerized Training System. In keeping with the multidisciplinary effort by CTS to combine the latest advances in minicomputer hardware and software, learning theory and instructional strategies, the evaluation plan emphasizes the multidimensional aspects of CTS. In this respect, three major evolutionary stages of CTS are addressed: developmental, operational and projectional. Within each of these stages, three major dimensions of effectiveness are considered: technical, cost and training. Again, by the same token, each of these dimensions will subsume their own hierarchy of perspectives. The end product of the evaluation, however, will not be merely an expanding diffuse analysis of the multiplex aspects of CTS, but a synthesis of the findings toward meaningful operational decisions concerning its overall feasibility and effectiveness. Copies of the Preliminary Evaluation Plan should be available approximately 1 February 1974.

SURVEY FOR COMPUTER APPLICATIONS IN TRAINING

As the focal point for TRADOC efforts in Computer Applications to Training, the Product Manager has taken action to update information on the current status of existing and anticipated capability in this area throughout US Army schools. Questionnaires have been sent to 33 organizations/activities throughout DA. Computer applications in training include the integration of the computer into the classroom as a teaching medium, surrogate instructor, or classroom management tool. In addition the questionnaire inquires into interests and desired participation in an orientation and/or course of instruction in concepts and principles of computerized training as developed by the Product Manager, CTS.

DEMONSTRATIONS

Members of this office participated in the Fourth Communications Systems Programs Review at Fort Gordon, Georgia on 19-20 September 1973. During the two days of the conference three terminals - a PLATO IV, a CRT and a teletypewriter were on display. The PLATO IV was provided by the University of Illinois while the other two terminals came from the US Army Southeastern Signal School. The terminals were used to demonstrate the three functions envisioned for the Army's Computerized Training System, i.e., administration/management, presentation of instruction and integration of multimedia.

On 29 January 1974 the PLATO IV was demonstrated during a meeting of the US Army Wired Garrison Study Advisory Group held at US Military Academy, West Point, NY.

CONFERENCES

On January 29 and 30, 1974, Mr. Albert Mizenko, Chief, Course Development & Operations Division attended a meeting of the ARPA/PLATO Users Group in San Diego, CA. The agenda included activity reports from the participants. Additionally, topics and issues of common interests concerning the program were discussed and problem areas resolved in some cases. The purpose of the ARPA sponsored program is to demonstrate and evaluate the PLATO IV computer-based education system for a Volunteer Armed Services Personnel Program.

During the week of 28 January 1974, Mr. Frank E. Giunti, Technical Director, and CPT Benjamin Whitehouse, Operations Research Officer, attended the 1974 ADCIS Winter meeting in Washington, DC since CTS is an institutional member. The agenda included an activity summary of many participants which included a CTS briefing by Mr. Giunti. In addition, many timely presentations related to the justification of CAI/CMI, minicomputers, simulation and gaming, the Air Force AIS and others were made. Another highlight was the two CAI on-site demonstrations and tours conducted at Montgomery County School and George Washington Medical Center.

ARRIVALS AND DEPARTURES

MAJ Joseph T. Gaddis, ORSA Officer, Evaluation Division, has been permanently reassigned to the Safeguard Communications Agency, Fort Huachuca, AZ. During the past year he not only contributed a major input to the Preliminary Evaluation Plan in the Technical and Cost portions of the plan, but was also instrumental in producing the Determination and Findings documentation for submission to the Assistant Secretary of the Army. Other significant tasks he accomplished dealt with a contract let to HumRRO which assisted the PMO in the evaluation of contract proposals and future acceptance testing of deliverables and the research, development and listing of Data Items to insure proper reporting and monitoring in the attainment of project objectives. His final contribution was the development of the project's first Annual Report which will be released shortly.

Mr. Albert Mizenko, Chief, Course Development & Operation Division is scheduled to retire on 15 March 1974 after 33 years of Federal Service, much of which was spent at the Signal School. Mr. Mizenko was one of the original members of the CAI Project and was a member of the Task Group Study team. His vast knowledge and expertise in instructional technology and course development will make him difficult to replace.

New faces at CTS since our last report include SFC Donald Brown, SSG William Burns, and SSG Clifford Vopalensky as instructional programmers and Mrs. Leona Atkinson as a clerk-typist.

TRADOC

CTS

PROJECT ABACUS

Computerized Training System

PROGRESS REPORT

VOL. 2 NO.2 DATE May 1974

CTS PROCUREMENT STATUS

Work is progressing on schedule with GTE Sylvania in the development of the Prototype CTS. The initial delivery of hardware was made by GTE at Fort Monmouth on 26 April 1974. The PDP 11/35 with I/O devices is operational in the Systems Operation and Programming Division Office, CTS. Close contact between GTE and the PM and his staff has resulted in approximately 90% finalization of the CLASS I commands. Discussion with GTE continues to include required records and system accessibility.

System programmers from the CTS office and Data Systems Branch, USASESS, attended a two week course in DEC Disk System software at the DEC Plant in Maynard, Mass. This is the first of several orientations and familiarizations with the prototype CTS system hardware and software.

USASESS is proceeding with the procurement of cable required for the installation of the initial 32 terminal system in August of 1974. Site preparation is being coordinated by USASESS for the installation of the central processing system in Moran Hall with terminals in surrounding academic buildings. The initial site survey was conducted by the contractor and COTR at Fort Gordon on 14 March 1974.

CTS OPERATIONAL TEST AT FORT GORDON, GEORGIA

The initial set of instructional strategies for use in development of three courses at USASESS has been drafted and coordinated with Fort Gordon. Further coordination with USASESS has resulted in the initial design of the character set. In addition to a course development seminar held at Fort Monmouth for course leaders from USASESS, the first of several course development workshops was conducted for two groups of USASCS course personnel and consisted of an introduction to the CLASS I language and lesson development techniques.

The CTS Field Office at Fort Gordon will begin continuous operation on 10 May 1974 with the permanent assignment of SGT James Stotts to Fort Gordon. The Field Office will be headed by LTC Robbins due to arrive on 17 May 1974. Staffing of the Field Office continues, and it will be fully operational by July 1974. On an interim basis, the CTS Field Office will be co-located with the Data Systems Branch, USASESS on the seventh floor of Signal Towers.

PLATO IV

Student trials of CTS lesson material developed for the PLATO IV System began on 18 March 1974 with an expected completion date of 17 May 1974. Approximately 6 hours of material including Introduction to PLATO, Ohms Law, Series Circuits, Parallel Circuits, Troubleshooting Procedures, and First Aid and Safety are being presented. Ninety-five students are involved in the evaluation, 35 individually and 30 peer student groups (pairs).

Objectives of the study are student evaluation of: 1) lesson material, 2) peer learning and 3) PLATO IV System. This data and analysis of student opinions in these areas will be documented and provided as part of the ARPA sponsored PLATO IV evaluation.

SSG Vopalensky, of this office, attended the PLATO terminal maintenance course at the University of Illinois from 22 April 1974 to 26 April 1974. This experience will be utilized in the replacement of the microfiche slide selector on the PLATO terminal and possibly retrofitting the CTS mobile van.

MOBILE CTS

CTS has acquired a ten-ton semitrailer van for experimental use as a mobile learning center. A typical internal configuration would include eleven student carrels, sufficient to accommodate as an example: two PLATO IV student terminals, a COBET module, four Beseler Cue/See devices, three videocassettes and a sound/slide projector. Potentially, the mobile CTS provides one means of modernization of on-site training for Reserve and National Guard units.

EVALUATION

An official invitation has been extended to 18 distinguished individuals in the field of Educational Technology to participate as consultants to CTS. Others will be added to this group as the project progresses. Although the evaluation will be conducted using in-house resources, it is anticipated that consultant assistance will be utilized as events require throughout the project. The consultants will serve in an advisory capacity to the Product Manager in the areas of cost, technology and training effectiveness. These activities will include site visits, review of periodic reports and special conferences. To date, twelve respondents have accepted this invitation.

Contact was made with the USASESS CTS Task Group and coordination established as to their participation in the CTS evaluation. Overall Evaluation Plan requirements were discussed in meetings conducted at Fort Gordon 7–9 May 1974.

CAI COLOR FILM

The CAI color film documentary SBF 73-42 entitled *Computer Assisted Instruction, Developing A Base For Future Army Training,* has been cleared for general public release and sale on 28 March 1974.

This film was prepared by the Computerized Training System Project to show how the computer is used in training and highlights unique instructional applications, course development techniques, and effective hardware utilization. Running time is approximately 22 minutes.

Interested military and civilian activities will be able to obtain loan film copies by contacting their military area Audio-Visual Support Centers. The Film Initial Release Letters and Monthly Information Bulletins at these installations will indicate when the film becomes available through these channels.

In the interim, loan film copies are available through this office. Requests for information on purchase are to be directed to National Archives and Records Service, National Audio-Visual Center, Washington, DC 20409.

ARRIVALS AND DEPARTURES

LTC William Robbins reports as Chief, CTS Field Office at the Southeastern Signal School on 17 May 1974. In this capacity, LTC Robbins will serve as the personal representatives of the PM for the operational test of the Prototype Computerized Training System at Fort Gordon, Georgia.

1LT William Jaissle, reporting from Germany, joined the CTS staff as Training Officer, Evaluation Division in April 1974.

Departing this month are SFC Jimmie Byrd – PCS to Alaska; SFC Leo Scherping – PCS to White House Communications Agency at Camp David; SP4 James Samuelson – PCS to Germany; and SP4 Ron Roskam – ETS.

CORRESPONDENCE

Indicated below are mailing addresses and telephone numbers for PMO and CTS Field Office, respectively.

Office of the Product Manager	Chief, Field Office
Computerized Training System Project	Computerized Training System Project
ATSN-CTS	ATSN-CTS-A
US Army Signal Center and School	US Army Southeastern Signal School
Fort Monmouth, New Jersey 07703	Fort Gordon, Georgia 30905
Autovon 992-3380/4408	780-7297
Commercial 201-532-3380/4408	404-791-7297

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY TRAINING AND DOCTRINE COMMAND
COMPUTERIZED TRAINING SYSTEMS PROJECT
FORT MONMOUTH, NEW JERSEY 07703

ATSN-CTS

10 January 1974

SUBJECT: Status Report on CATTS

Brigadier General Paul F. Gorman
Deputy Chief of Staff for Training and Schools
US Army Training and Doctrine Command
Fort Monroe, Virginia 23651

1. PURPOSE: The purpose of this report is to provide the status of the CATTS project and to make recommendations as to actions required to insure its success.

2. SCOPE: This paper deals primarily with current procurement actions. However, comments are also included relative to continuation, follow-on, and relationships of this project to other programs.

3. BACKGROUND: This study was initiated on 5 December 1973 based on verbal instructions from the Commander, US Army Training and Doctrine Command. The primary bases for the study are as follows:

a. A CATB report presented to the Commander, US Army Training and Doctrine Command on 5 December, covering the entire spectrum of computer simulation in training (Inclosure 1). All potential problems identified in that study are addressed herein.

b. Training Device Requirement (TDR) - The latest revision of the TDR for the CATTS program was released by TRADOC on 16 November 1973 (Inclosure 2). That document is the basis for the current procurement and planned continuation.

c. Time phase plan - The time phase plan prepared by ATDA (Inclosure 3) is the basis for all comments relative to critical decision

dates. It will be noted that the only portion of the program for which TRADOC has full responsibility is the operational test.

d. Preliminary design - The preliminary design published on 18 December 1973 (Inclosure 4) by the contractor indicates how TRW plans to meet the training device requirement. This document will be reviewed in a meeting of all interested parties to be held at TRW beginning 21 January 1974.

4. DISCUSSION: For the purpose of analysis, potential problems have been divided into three primary areas: management, technology and procurement.

a. Management - Problems in the areas of management include lack of guidance, slow reaction, parochialism and the lack of resources to provide input to the contractor, to prepare the operational test and to monitor the overall program. In seeking solutions to these problems the move to Fort Leavenworth and management by the Product Manager, Computerized Training Systems (CTS) were considered. With respect to a potential move to Fort Leavenworth several problems arose: there is doubt that available facilities are adequate, a delay of 4 to 6 months could be expected, at a contractual cost of approximately $25,000 per month, and the same personnel requirements exist as those stated for the US Army Infantry School. There are certain advantages to having the Product Manager, CTS, take over the project. These include taking advantage of the existing technical base, elimination of parochialism, coordination with other programs, perhaps integration of CTS and CATTS (i.e., utilizing the CTS system to run the CATTS program), and existing ties between CTS and industry. However, it should be pointed out that CTS is currently technically and not tactically oriented, is at a critical phase of prototype procurement, does not have channels to such potential users as FORSCOM and Reserve and National Guard forces and is thus currently best suited for supporting rather than managing the CATTS project. Organizational changes considered essential to the success of CATTS are as follows: assumption of proponency at the TRADOC level in order to ensure proper guidance, eliminate parochialism and provide quicker reaction to the processing of necessary documents. In conjunction with this the high level steering group is essential to ensure the requirements of all potential users are being considered. Working groups would be ADHOC organizations to be called for specific purposes such as resolution of technical or training problems. Their makeup would depend on the purpose of the work. Establishment of a program director and proper manning of that office would ensure intensive management, from a TRADOC standpoint, of the overall project. Effecting these changes would establish relationships as shown at Inclosure 5.

It will be noted that CTS is included for coordination purposes and certainly it is anticipated that support would be provided within the capabilities of the Office of the Product Manager. DOD activities to be coordinated with include the Marine Corps with TWAES and TESE, the Defense Mapping Agency, and other DA activities. Recommended membership in the steering group includes TRADOC, AMC, FORSCOM, USACGSC, USAIS, USAFAS, and USAARMS. The proposed makeup of the Office of the Program Director is shown at Inclosure 6. It includes a Lieutenant Colonel, Program Director, a Captain as Operations Officer, two ORSA officers for preparation of the operational test, a Model/ POI Section of three officers to provide input to the contractor on the math model and to prepare the tactical scenarios for conduct of classroom exercises, and a GS-12, 0334, to monitor the technical aspects of the program. An enlisted administrative assistant and two clerk typists are considered minimum essential. It should be pointed out that even with these resources it will be extremely difficult to meet the time schedule as set forth without considerable assistance from the US Army Infantry School. Immediate tasks include: input to the math model, preparation of a second scenario, planning and coordination of the operational test, site preparation, and preparation of the tactical exercises. Personnel for the conduct of the OT and continued operation of the system are not included in the proposed developmental office. The operational test plan in outline form is currently in preparation by the US Army Infantry School. It is designed to meet the four objectives as stated in the TDR. These are: to train future commanders, to exercise current commanders, to conduct doctrinal research and to conduct research on command and control procedures. An adequate test of all of these objectives could involve the temporary commitment of as many as 40 additional officers and funds in excess of $200,000. Funds for the coming period through June 1974 will be required for facilities, salaries and travel. These are estimated at $80,000 for facilities, $15,000 for additional salaries, and $15,000 for travel, or a total of $110,000.

b. Technology - Potential technical problems identified by the CATB report were: inadequate core capacity, machine dependence, state-of-the-art in the display system, secondary storage capability and response time. It is true that core capacity may become a problem since the math model occupies approximately 80% of the available core. However, additional core could be made available and this does not appear to be an insurmountable problem. The current design is machine dependent, i.e., the SIGMA 9 only, primarily because the display system software is being written in machine language. Follow-up procurements could be competitive if the display systems were transferred to the control of a minicomputer. The remainder of the software is

written almost entirely in FORTRAN and could be transferred to other machines with minimum effort. The display system is indeed sophisticated; however, all components have been purchased for this system and results to date appear promising. There is no advantage to abandoning the current approach in favor of a different solution at this time. For follow-on procurements different techniques might be considered. While secondary storage cannot be ignored, it is not a critical problem at this stage. The contractor is aiming for a response time of one minute and might well achieve this, however, there is nothing magic about the one minute and even if this is extended to two or three minutes the overall system effectiveness will not be degraded greatly. All of these technical problems and others will be addressed in detail at the preliminary design review. It should be emphasized that during the review requirements will not be addressed, only the manner in which the requirements are being met. In this regard comments have been invited from a number of agencies to include TRADOC, USAECOM, ARTADS, USACSSEC, USARI, USAIS, USMC and Product Manager, CTS. The final authority on approval or disapproval of the preliminary design rests with the contracting officer at ATDA. He will, of course, take into consideration comments provided by the user and other interested parties. Any changes made at this design review, however, will not overcome the primary user objections which are the instructor to student ratio, the lack of student/computer interface and the sizable requirement for facilities.

c. Procurement - Under procurement the applicability of AR 18-1, the funding requirements, the procedures for continuation of the project and follow-on procurements were addressed. All parties contacted agreed that there was a basis for exemption of AR 18-1 and no corrective action is required. The bases for exemption include that it is being procured as a training device, it is an R&D type contract, the CPU is contractor leased and the project involves developmental prototype software. Total program funding for the CATTS project is 3.7 million dollars incrementally funded through FY 1976. Current contract is 1.05 million committed, with actual allotment as of 31 December of approximately $590,000. Critical dates in the continuation of the program involve decision on whether the visual study should be permitted to proceed, such decision is required no later than March 1974 if milestones are to be met. The next critical date is the decision on how to proceed with subsequent phases. Another decision must be made at a special in-process review in March 1975 in the middle of the operational test. Follow-on procurements will require careful study and a decision as to whether to prepare a basis of issue plan and to type classify CATTS. There are strong feelings on both sides as to whether the program should or

should not be type classified. Regardless of this decision, DMIS and CSSEC are insistent that AR 18-1 will have to apply. The decision on type classification also has a direct bearing on the method of funding. If the project is type classified and a basis of issue plan is developed the funds will be programmed at DA level. Separate procurement under AR 18-1 will require the programming of funds by TRADOC. This matter should be addressed by the Steering Advisory Group.

5. Long range actions - CATTS should not be considered in isolation but rather within the framework of the total training problem and all utilization of computers in training. This involves solution to individual and team training problems both in institutions and in units and coordination with the Computerized Training Systems and Tactical Data Systems. It is felt that the steering group should monitor all three of these training programs, and provide guidance. Responsibility needs to be fixed with relationship to training programs for the Tactical Data Systems. Long range objectives for CATTS, CTS and the Tactical Data Systems training programs must be established.

6. CONCLUSIONS: Based on the above discussion it is concluded that:

a. High level attention on the problem of use of computers in training is required.

b. Additional personnel and funds are necessary if the CATTS program is to be successful.

c. Technical problems with relationship to the CATTS program are not insurmountable. The current procurement for the CATTS is legal and requires no corrective action. However, follow-on procurements must be studied carefully.

7. RECOMMENDATIONS: It is recommended that in order to insure success of the CATTS program and other programs involving the use of computers in training the following actions be taken:

a. A high level steering group be established to monitor all utilization of computers in training.

b. A program director for CATTS be appointed and his office provided with personnel and funds as indicated in paragraph 4.a. above.

c. That guidance be provided to the program director on preparation and conduct of the operational test.

d. That DA be advised that TRADOC desires the requirement for visual system be held in abeyance pending further study.

e. That TECOM be requested to provide assistance in the planning and conduct of the operational test.

f. That the mission of the TRADOC/ARTADS liaison office be expanded to include the Tactical Data Systems training program.

g. That CTS be established as a TRADOC field element and long range goals for the program be set.

6 Incl
as

G. B. HOWARD
COL, SigC
Product Manager, CTS

JOINT MESSAGEFORM							SECURITY CLASSIFICATION: UNCLASSIFIED			
PAGE	DRAFTER OR RELEASER TIME	PRECEDENCE ACT	PRECEDENCE INFO	LMF	CLASS	CIC	FOR MESSAGE CENTER/COMMUNICATIONS CENTER ONLY	DATE - TIME	MONTH	YR
01 OF 02	282000	RR	RR		UUUU			290247Z	Jun	74

BOOK

MESSAGE HANDLING INSTRUCTIONS

FROM: CDRTRADOC FT MONROE VA //ATTS-CA//

TO: PRODUCT MANAGER CTS FT MONMOUTH NJ //ATSN-CTS//

INFO: DA WASH DC //DAPE-MT//DACS-CM//

CDRUSAMC WASH DC //AMCRD-X//

CDR USA LOG CTR FT LEE VA //ATCL-TB//

PROJ MGR ARTADS FT MONMOUTH NJ//AMCPM-TD-D

PROJ MGR TRADE FT BENNING GA // AMCPM-TRD//

PROGRAM DIRECTOR CATTS FT BENNING GA //ATSN-(CATTS)//

PRES USACATB FT BENNING GA //ATTS-TB//

UNCLAS

Subj: Product Manager Charter, Prototype Computerized Training System (S-1 Aug 74)

A. Ltr, ATSM-CTS, PM CTS, 24 Sep 73, subj as abv w/1st Ind, ATTS- ITB, TRADOC, 5 Nov 73.

1. Req Product Manager Charter, ref A, be revised to include the fol additional responsibilities effective 1 Jul 74.

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DISTR:

DCSTS Cmbk 4

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DRAFTER TYPED NAME, TITLE, OFFICE SYMBOL, PHONE & DATE	SPECIAL INSTRUCTIONS
FRANCIS B. COOMBS, GS-13, ATTS-CS, 4326 28 Jun 74	Coordination: None rqr
RELEASER: TYPED NAME, TITLE, OFFICE SYMBOL AND PHONE: PAUL F. GORMAN, BG, GS, DCSTS, 4261	
SIGNATURE: SIGNED	SECURITY CLASSIFICATION: UNCLASSIFIED / DATE TIME GROUP

DD FORM 1 DEC 70 173

REPLACES DD FORM 173, 1 JUL 68, WHICH WILL BE USED.

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BOOK	MESSAGE HANDLING INSTRUCTIONS									

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[redacted]

a. Supervisory management of the Combined Arms Tactical Training Simulator (CATTS) development program thru CATTS Program Director.

b. Proponency for TRADOC SAG Subwork Groups on 1) Policies and Procedures and 2) Tactical Computers to include provision of respective Subgroup Chairmen and initiation of required actions.

c. Accomplishment of ODCST Special Analysis - ADP Support Plan for TRADOC Schools and Training. (Suspense for this action 30 Nov 74).

d. Proponency for ODCST actions/responsibilities in the application of computers to training.

2. Revised Charter should be fwd to this headquarters, ATTN: ATTS-CA, for approval, NLT 1 Aug 74.

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