AFHRL-TP-89-95

(2)

AIR FORCE HUMAN RESOURCES LABORATORY

ADVANCED ON-THE-JOB TRAINING SYSTEM: READINESS TEST PLAN

John J. O'Connor
James West

Ball Systems Engineering Division
2901 Juan Tabo NE
Suite 235
Albuquerque, NM 87112

TRAINING SYSTEMS DIVISION
Brooks Air Force Base, Texas 78235-5601

May 1990
Interim Technical Paper for Period August 1985 - December 1989

AIR FORCE SYSTEMS COMMAND
BROOKS AIR FORCE BASE, TEXAS 78235-5601

NOTICE

When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely Government-related procurement, the United States Government incurs no responsibility or any obligation whatsoever. The fact that the Government may have formulated or in any way supplied the said drawings, specifications, or other data, is not to be regarded by implication, or otherwise in any manner construed, as licensing the holder, or any other person or corporation; or as conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

The Public Affairs Office has reviewed this paper, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This paper has been reviewed and is approved for publication.

HENDRICK W. RUCK, Technical Advisor
Training Systems Division

RODGER D. BALLENTINE, Colonel, USAF
Chief, Training Systems Division

This technical paper is printed as received and has not been edited by the AFHRL Technical Editing staff. The opinions expressed herein represent those of the author and not necessarily those of the United States Air Force.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	May 1990	Interim - August 1985 to December 1989

4. TITLE AND SUBTITLE

Advanced On-the-job Training System:
Readiness Test Plan

5. FUNDING NUMBERS

C - F33615-84-C-0070
PE - 63227F
PR - 2557
TA - 00
WU - 03

6. AUTHOR(S)

John J. O'Connor
James West

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Ball Systems Engineering Division
2901 Juan Tabo NE
Suite 235
Albuquerque, NM 87112

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Training Systems Division
Air Force Human Resources Laboratory
Brooks Air Force Base, Texas 78235-5601

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

AFHRL-TP-89-95

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The Readiness Test provided critical information which was the basis for the determination that the Advanced On-the-job Training System (AOTS) was ready for installation in the AOTS work centers and initiation of the 1-year AOTS System Level Test and Evaluation (SLT&E). The test prescribes procedures to verify that the "critical" functions are operating before the software progresses to summative evaluations envisioned in the operational Active Duty, Air Force Reserve, and Air National Guard work centers. Readiness Testing was not an exhaustive test of the AOTS functionality. Instead, it tested the small subset of AOTS functions which were essential to the usability of the software in the AOTS work centers.

Keywords:

14. SUBJECT TERMS

advanced on-the-job training system
software readiness test plan

(SDW)

15. NUMBER OF PAGES
27

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

AFHRL Technical Paper 89-95 May 1990

ADVANCED ON-THE-JOB TRAINING SYSTEM: READINESS TEST PLAN

John J. O'Connor
James West

Ball Systems Engineering Division
2901 Juan Tabo NE
Suite 235
Albuquerque, NM 87112

TRAINING SYSTEMS DIVISION
Brooks Air Force Base, Texas 78235-5601

May 1990

Reviewed and submitted for publication by

Jack L. Blackhurst, Major, USAF
Chief, Advanced On-the-job Training System Program

SUMMARY

The Advanced On-the-job Training System (AOTS) was an Air Staff directed, AFHRL developed, prototype system which designed, developed, and tested a proof-of-concept prototype AOTS within the operational environment of selected work centers at Bergstrom AFB, Texas, and Ellington ANGB, Texas, from August 1985 through 31 July 1989. The AOTS Readiness Test Plan prescribes a series of tests used to verify that the AOTS software was ready for installation in the designated operational work centers prior to the initiation of the 1-year System Level Test and Evaluation (SLT&E), which began on 1 Aug 1988 and concluded on 31 July 1989. The test prescribes procedures to verify that the "critical" functions are operating before the software progresses to summative evaluations envisioned in the operational Active Duty, Air Force Reserve, and Air National Guard work centers. Readiness testing was not an exhaustive test of AOTS functionality. Instead, it tested the small subset of AOTS functions which were essential to the usability of the software in the AOTS SLT&E work centers. The AOTS Readiness Test provided critical information which was the basis for the determination that the system was ready for installation in the AOTS work centers and for initiation of the 1-year SLT&E.

PREFACE

This paper was developed by Ball Systems Engineering Division, the AJTS on-site integration and management contractor, under Government Contract Number F33615-C-84-0070. The AFHRL Work Unit Number for the project is 2557-00-03. The primary office of responsibility for management of the work unit is the Air Force Human Resources Laboratory, Training Systems Division, and the Air Force AOTS manager is Major Jack Blackhurst.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

AOTS READINESS TEST PLAN

The essence of this Readiness plan can be viewed in the form of the attached graphic, the AOTS Readiness Testing Functional Flow Diagram. This picture shows the functions of the prototype AOTS as described by the DAC Developers in the recently published Operational Guide to the Prototype AOTS. The superimposed boxes on the flow diagram portray the Readiness tests as they are currently envisioned.

Detailed preliminary test procedures accompany the Flow Diagram for the individual Readiness Tests. Note that these procedures describe subsets of the major functions that are to be tested. The precise layout of the menu structures anticipated in the Ada packages for the critical functions is required to develop the exact keystroke-by-keystroke test procedures.

1.0 Scope

1.1 Identification

The readiness test is a vehicle to determine if the software development is near its promised completion. The AOTS development contract is scheduled to enter Phase III, System Level Test and Evaluation (SLT&E), in August 1988. Over 800 Active Duty, Air National Guard, and AF Reserve personnel will perform job site training tasks and evaluations using the prototype AOTS during the one year SLT&E period.

The AOTS employs computer technology to develop and deliver instructional and test materials, manage trainee progress through full duty position qualification, and evaluate the effectiveness of the Air Force job site training system. This document describes a series of tests to verify that the AOTS software is ready for installation in the designated operational workcenters.

1.2 Introduction

1.2.1 Background

The AF Human Resources Laboratory issued a contract in 1985 to the Douglas Aircraft Company (DAC) to design and build a prototype On-the-Job Training (OJT) system using state of the art computer aided instructional system techniques. The Advanced On-The-Job Training System (AOTS) encompasses aspects of instructional systems development, principles of learning, computer aided courseware development, interactive training, automated scheduling, and testing.

Software was developed in two phases. Technical progress during the first phase, Preliminary Design, was reported to the Air Force by face-to-face meetings at preliminary design reviews. These design reviews were documented by Critical Item Specifications, Prime Item Specifications, and finally, by Air Force acceptance of the Systems Level Specification.

The second phase, Detailed Design, is scheduled to be completed by 31 July 1988 with the delivery to the Air Force of the completed Advanced On-the-job Training System. The completeness and functionality of the entire system cannot be measured until this time.

To perform the AOTS functions, the following data elements will be generated by the various AOTS components:

1.2.1.1 Automated Airman Training Records (ATRs): personnel data, status of ongoing training, and training completion (including retraining, cross training, upgrade training, etc.) histories.

1.2.1.2 Master Task Lists (MTLs): an all inclusive list of job related tasks assigned to each Air Force Speciality (AFS).

1.2.1.3 Behavioral Objectives: terminal and supporting behavioral objectives to support job site training and evaluation of tasks.

1.2.1.4 Evaluation Materials: knowledge and performance tests for use in determining attainment of behavioral objectives.

1.2.1.5 Other Training Requirements: ancillary training, additional duty training, contingency tasks, and career development courses.

1.2.1.6 Event Schedulers: training and evaluation event schedules, training resource requirements.

1.2.1.7 System Evaluation data: test results, training times, airmen qualifications, and other data used to indicate training efficiency and effectiveness.

1.2.2 Purpose

Determine if software is ready for SLT&E in an operational environment.

1.3 Relationship to Current Testing

The AOTS is undergoing the first of two general classifications of testing: Formative and Summative tests. Formative evaluation activities are conducted internally by the program developers to determine the degree of attainment of specific program goals and to pinpoint subcomponent performance goals not yet attained. Summative evaluation is directed to a more general assessment of the degree to which broader program outcomes have been attained.

The Formative test and evaluation of AOTS during Phase II has been primarily concerned with verifying accomplishment of technical performance specifications for subcomponents, components, interfaces, and subsystems. Formative evaluation results were used to revise or modify the system elements to achieve at or above acceptable levels. In the upcoming Summative evaluation, the entire system will be assessed against four critical issues: 1) Compliance with system specifications; 2) Performance at or above specified levels; 3) Suitability for correcting deficiencies in the existing operational job-site training arena; and 4) Acceptance by the users.

The transition from Formative to Summative evaluation will involve changes in both primary users and uses of the system. The development of the "tools" necessary to conduct OJT and OJT management were the focus in Formative testing. During Formative testing, members of the Instructional Systems Team (IST) were the key AOTS users and performed primary functions such as Master Task List development, Performance and Evaluation criteria establishment, and authoring of test items. In Summative evaluation, the primary users will be the airmen in the operational work centers and the key uses will transition to those functions related to conducting on-line job knowledge skills improvements and evaluations. The success of Summative evaluation is dependent on the AOTS software being fully operational when the system is installed in the workcenters. Hence, there is a need to determine the "readiness" of the AOTS to enter Summative evaluation, or Systems Level Test & Evaluation (SLT&E).

This Readiness Test Plan prescribes procedures to verify that the "critical" functions are operating before the software progresses to Summative evaluations envisioned in the operational Active Duty, Air Force Reserve, and Air National Guard Workcenters. Readiness testing will not be an exhaustive test of AOTS functionality. Instead, it will test the small subset of AOTS functions which are essential to the

usability of the software in the SLT&E workcenters.

2.0 References

The following references were used to generate the sections of this Readiness Test Plan:

1) **AOTS Statement of Work (SOW)**
   Section C - Description/Specifications
   Date: 16 April 1984

2) **AOTS System Specification**
   Spec No: 705647000
   Code Ident. No: 76301
   Date: 5 May 1986

3) **AOTS Management Prime Item Development Specification (B1)**
   Spec, No: 705647100
   Code Ident. No: 76301
   Date: 13 March 1987

4) **AOTS Management Computer Program Configuration Item Development Specification (B5)**
   Spec. No: 705647411
   Code Ident. No: 76301
   Date: 7 April 1986

5) **AOTS Evaluation Prime Item Development Specification (B1)**
   Spec. No: 705647300
   Code Ident. No: 76301
   Date: 28 March 1986

6) **AOTS Evaluation Computer Program Configuration Item Development Specification (B5)**
   Spec. No: 705647413
   Code Ident. No: 76301
   Date: 18 April 1986

7) **BSED/BDM AOTS Requirements Traceability Matrix**
   Date: 15 April 1988

8) **AFM 55-43 Volumes I and II, "Management of Operational Test and Evaluation"**
   Date: 13 June 1979

3.0 Test Planning Assumptions & Constraints

3.1 Assumptions Made In Test Planning

As discussed above, the AOTS Readiness Test will not be an exhaustive test of AOTS functionality. Instead, Readiness Testing will focus on a set of functions which were judged to be critical to the success of the AOTS SLT&E. The selection of critical functions was based on the following assumptions:

3.1.1 AOTS functions can be divided into two classes; user functions, such as managing Airman Training Records, and developer functions such as creating training modules and evaluation instruments. SLT&E will take place in the workcenter/user environment. Therefore, Readiness Testing should focus on user functions.

3.1.2 The Readiness Test is a software test. The Personnel and Support Subsystem does not include software and will therefore not be addressed by the Readiness Test.

3.1.3 AOTS includes four Computer Program Configuration Items (CPCIs); Management, Evaluation, Training Development and Delivery (TD&D), and System Support. The TD&D CPCI was a separate development effort. TD&D software is taken from ISS which is not directly maintained by the AOTS developers. Functons performed by the TD&D CPCI will therefore not be included in Readiness Testing.

3.1.4 The System Support CPCI consists of low level software which will not be directly visible to the AOTS workcenter users. Readiness Testing will address only the Access Control function of the System Support CPCI. Because access control safeguards the integrity of the personnel data in the AOTS database, it is judged to be critical to SLT&E success.

As a result of assumptions 1 through 4, the Readiness Test will focus on user functions of the Management and Evaluation CPCIs.

Some additional assumptions which are fundemental to the AOTS Readiness Test Planning are:

3.1.5 The purpose of Readiness Testing is to decide whether to proceed with AOTS SLT&E based on the usability of the AOTS software. This decision rests with AFHRL; therefore, AFHRL will approve the AOTS Readiness Test Plan and perform the Readiness Tests.

3.1.6 The AOTS software will be under formal Configuration Control prior to the start of Readiness Testing. Problems uncovered during the Readiness Test will be documented as Software Problem Reports (SPRs) and resolved through normal configuration management procedures for high priority SPRs.

3.2 Conditions Required During Testing

In order to implement an effective Readiness Test, the following conditions must be met:

1. A separate Readiness Test environment must be established on the VAX at Brooks.

2. A complete copy of the AOTS software must be installed in the Readiness Test environment. This software should be the same version which will be used for SLT&E, and must be under version control.

3. Sample AOTS databases must be established in the Readiness Test environment. The data should be representative of SLT&E data, but must be in a separate environment to prevent contamination or alteration of production/SLT&E data.

4.0 AOTS Readiness Test Plan

4.1 AOTS Functions To Be Tested

4.1.1 Critical Functions

Meetings between personnel from the AFHRL, DAC and BSED in March, 1988 led to the compilation of a list of functions critical to the implementation of the AOTS into the operational SLT&E environment. The AOTS functions determined to be critical included:

1) Access control
2) Interfacing with the ITR
3) Scheduling training and evaluation events
4) Accessing the MTL
5) Requesting evaluation instruments
6) Controlling off-line evaluation instruments
7) Updating ATRs

The AOTS critical functions are described in some detail in Paragraph 4.2.1

4.1.1.1 Rationale

Before the AOTS is installed in operational workcenters at Bergstrom AFB and Ellington ANGB, the critical functions listed above must operate correctly. If they do not, the AOTS will be unusable for test subjects in the workcenters. If the AOTS critical functions do not work properly, the requirement that the test workcenters use the AOTS may significantly interfere with performance of mission critical functions.

The Readiness test effort will focus largely upon the Management and Evaluation Subsystem functions. Within these subsystems are the functions which will be accessed most frequently by workcenter personnel early in the SLT&E. Two notable functions which will not be tested are:

1) QC evaluations
2) Generating reports

These functions are important to the operation of the overall AOTS, however, they are not critical to the use of the system during the early stages of SLT&E.

4.2 AOTS READINESS TEST DESIGN

The AOTS Readiness Test design was derived in general from the test planning guidance contained in Air Force Manual (AFM) 55-43, Management of Operational Test and Evaluation. AFM 55-43 suggests a test design which is set up according to the following logical flow.

CRITICAL QUESTION --> GENERAL TEST OBJECTIVE --> SPECIFIC TEST OBJECTIVE(S) --> MEASURE (S) OF EFFECTIVENESS --> EVALUATION CRITERIA

The first step is to postulate a general question. For example, the first Readiness Test critical question is:

- Can the AOTS generate an ATR?

Then a general test objective is formulated based on the critical question:

- Evaluate the AOTS in generating an ATR.

From the general test objective come one or more specific test objectives:

1. Determine whether the ATR is initialized with PDS data.
2. Determine whether the AOTS provides for manual entry of PDS data.
3. Determine whether the AOTS provides for manual entry of completions into an airman's ATR.

To determine if a specific test objective has been met, a "measure of effectiveness" (MOE) must be determined. In this series of Readiness Tests, all MOEs will be observations of whether or not the function being assessed worked. Continuing with the above example, the following MOEs are derived from the specific test objectives:

1. Observe an attempt to initialize ATR with PDS data.
2. Observe an attempt to manually enter PDS data into an ATR.
3. Observe an attempt to manually enter completions into an ATR.

Finally, each MOE will have a particular evaluation criteria:

1. Performed initialization/Did not perform initialization.
2. Allowed entry/Did not allow entry.
3. Allowed entry/Did not allow entry.

This test design logic has led to the development of fourteen specific "Readiness Tests". Each of these tests is specifically related to one or more of the seven AOTS critical functions. The AOTS Readiness Tests are listed below:

Test 1 Trainee access control
Test 2 Trainer access control
Test 3 Evaluator access control
Test 4 Supervisor access control
Test 5 Training Manager access control
Test 6 Generate ATR
Test 7 Generate OPTR
Test 8 Generate ITR
Test 9 ITR Training Requirement Rank Ordering
Test 10 Schedule Training -- 1 Airman
Test 11 Schedule Training -- Many Airmen
Test 12 Generate Evaluation Schedule
Test 13 Generate On-line Test
Test 14 Generate Off-line Test
Test 15 Generate Off-line PEC
Test 16 Score On-line Test
Test 17 Score Off-line Symbolic Test
Test 18 Score Off-line PEC
Test 19 Record Performance

READINESS TEST/CRITICAL FUNCTION MATRIX

AOTS CRITICAL FUNCTIONS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1) ACCESS CONTROL	●	●	●	●	●	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2) INTERFACE WITH ITR								●	●	●	●					●	●	●	●
3) SCHEDULE TRNG & EVAL EVENTS										●	●	●							
4) MTL ACCESS							●	●											
5) REQUEST EVAL INSTRUMENT													●	●	●	●	●	●	
6) CONTROL OFF-LINE EVAL INSTRUMENT										●				●	●		●	●	
7) UPDATE, ATR						●										●	●	●	●

Table 4-1

4.2.1 The rationale for the Readiness Test/AOTS critical function relationships are explained in the following paragraphs.

4.2.1.1 Access Control To perform any testing on the AOTS the tester must access specific AOTS packages. Access control will be specifically tested in the Access Control Test (Test 15). This test will involve validating proper access by each critical user type (Trainee, Trainer, Supervisor, Evaluator, Training Manager) into only properly authorized AOTS components. This critical function is therefore related to each of the AOTS Readiness Tests.

4.2.1.2 Interface With ITR The critical function of interface with the ITR involves a variety of interaction with the ITR editor and existing ITRs. The user must be first able to generate an initial ITR. If the requirements listed in the ITR are not in the desired order, the user must be able to modify the order. The user must be able to access a listing of ITR requirements to schedule an airmen for training. Finally, the ITR must be accessible for automatic update of training/evaluation/completion.

4.2.1.3 Schedule Training and Evaluation Events The critical function of scheduling training and evaluation events involves three types of scheduling functions: First the scheduling of training for individual airmen, Secondly the scheduling of training for multiple airmen, and thirdly the generation of evaluation schedules. As mentioned in the paragraph above, the user must have access to a listing of ITR requirements in order to schedule airmen for required training.

4.2.1.4 MTL Access The critical function of MTL access involves a limited MTL access. The MTL must be accessible when generating or modifying an OPTR so that desired MTL tasks can be copied into an OPTR. The MTL must also be accessible when generating or modifying an ITR so that tasks can be copied into an ITR.

4.2.1.5 Request Evaluation Instrument Evaluation instruments will be requested when users initially generate on or off-line evaluations. The request for instruments must also work acceptably for the scoring of evaluations.

4.2.1.6 Control Off-Line Evaluation Instrument The control of off-line evaluation instruments occurs from the time that an evaluation instrument is generated off-line through the time that it is scored and then destroyed. AOTS control functions occur at the point of generation and the point of scoring. As indicated in Table 4-1, there are three tests within the Readiness Testing for which this critical function will be tested.

4.2.1.7 Update ATR The critical function of ATR update includes both the initial creation of the ATR and the update of the ATR with trainee training and evaluation completions. The AOTS Readiness Test will test this critical function in both of these areas.

4.2.1 Test Objectives (Figure 4-1, p. 21)

Figure 4-1, entitled "AOTS Readiness Test Functional Flow Diagram", details the flow of functional processes that will occur during the initial operation of the AOTS in the workcenters. The fine line boxes on the diagram show specific AOTS functions which are included in each Readiness test. Each test is designed to address one or more specific test objective(s) as desribed below.

4.2.1.1 Test Objective 1 - Evaluate The AOTS in Providing Access Control To Trainees

In testing the critical function of access control, it is necessary to test the specific access provided to trainee users of the system. Trainees will need access to listings of personal training requirements, all AFS tasks which have been certified, other training accomplishments, and status of all training underway. Trainees also need access to materials that are available for knowledge training and testing.

4.2.1.1.1 Test Objective 1 Design (Figure 4-2)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS provide controlled access to trainees	Evaluate the AOTS in providing access controls to trainees	1) Determine whether trainee-users are able to access their own on-line training records.	1) Observe attempt by Trainee to access his own on-line training records.	1) Records were accessible/ Records were not accessible.
		2) Determine whether Trainee-users are able to access on-line knowledge training materials.	2) Observe attempt by Trainee to access on-line knowledge training materials.	2) Materials were accessible/ Materials were not accessible.
		3) Determine whether Trainee-users are able to access on-line knowledge testing materials.	3) Observe attempt by Trainee to access on-line knowledge testing material.	3) Materials were accessible/ Materials were not accessible.

4.2.1.2 Test Objective 2 - Evaluate The AOTS in Providing Access Controls To Trainers

The Testing of access control also involves examining the controls and priviliges provided to trainer users of the system. Trainers need to be able to a) review on-line records of trainees to determine training requirements and the status of progress; b) review the task records to determine the sub-tasks, activities, supporting knowledge and skills and other task elements, the sequences in which training must be accomplished, and the resources required for task performance; and c) schedule training events.

4.2.1.2.1 Test Objective 2 Design (Figure 4-3)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS provide controlled access to trainers?	Evaluate the AOTS in providing access controls to trainers.	1) Determine whether trainers are able to access their trainee's on-line training records. 2) Determine whether trainers are able to access AOTS task listings. 3) Determine whether trainers are able to access AOTS scheduling functions.	1) Observe attempt by trainer to access trainee's on-line records. 2) Observe attempt by trainer to access AOTS task listings. 3) Observe attempt by trainer to access AOTS scheduling functions.	1) Records accessed/ Records not accessed. 2) Listings accessed/ Listings not accessed. 3) Functions accessed/ Functions not accessed.

4.2.1.3 Test Objective 3 - Evaluate The AOTS in Providing Access Controls to Evaluators

Access control testing involves testing of access provided by the AOTS to Evaluators. Evaluators should have all of the accesses given to Trainers. Additionally, Evaluators need access to evaluation materials to be used off-line.

4.2.1.3.1 Test Objective 3 Design (Figure 4-4)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS provide controlled access to Evaluators?	Evaluate the AOTS in providing access controls to Evaluators.	1) Determine whether Trainer-users are able to access their trainees' on-line training records 2) Determine whether Trainer-users are able to access AOTS task listings. 3) Determine whether Trainer-users are able to access AOTS training scheduling functions.	1) Observe attempt by Evaluator to access on-line training records of his trainees. 2) Observe attempt by Evaluator to access AOTS tasks listings. 3) Observe attempt by Evaluator to access AOTS training schedule functions.	1) Records were accessible/ Records were not accessible. 2) Listings were accessible/ Listings were not accessible. 3) Functions were accessible/ Functions were not accessible.

4.2.1.4 Test Objective 4 - Evaluate The AOTS in Providing Access Controls to Supervisors

The testing of access control includes examination of accesses and privileges provided to workcenter supervisors. Supervisors need the capability to a)review the training records of all personnel they supervise; b) schedule training and evaluation events; c) prioritize training requirements; d) review task records; e) obtain test materials for off-line use; and f) certify trainee qualifications.

4.2.1.4.1 Test Objective 4 Design (Figure 4-5)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS provide controlled access to Supervisors?	Evaluate the AOTS in providing access controls to Supervisors.	1) Determine if Supervisor users are able to access their trainees' on-line training records.	1) Observe attempt by Supervisor to access on-line training records of his trainees.	1) Records were accessible/ Records were not accessible.
		2) Determine if Supervisors have access to training requirements.	2) Observe attempt by Supervisor to access training requirements.	2) Reqts were accessible/ Reqts were not accessible.
		3) Determine if Supervisors are able to access AOTS training scheduling functions.	3) Observe attempt by Supervisor to access AOTS training schedule functions.	3) Functions were accessible/ Functions were not accessible.
		4) Determine if Supervisors are able to access task records	4) Observe attempt by Supervisor to access task records.	4) Records were accessible/ Records were not accessible.
		5) Determine if Supervisors are able to access off-line test materials.	5) Observe attempt by Supervisor to access off-line test materials.	5) Materials were accessible/ Materials were not accessible.
		6) Determine if Supervisors are able to access trainee certification.	6) Observe attempt by Supervisor to access trainee certification.	6) Certification was accessible/ Certification was inaccessible.

4.2.1.5 Test Objective 5 - Evaluate The AOTS in Providing Access Controls to Training Managers

Access Control testing includes testing of accesses provided to training managers.

4.2.1.5.1 Test Objective 5 Design (Figure 4-6)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS provide controlled access to Training Managers?	Evaluate the AOTS in providing access controls to Training Managers.	1) Determine if Training Manager is able to access training records of all personnel supervised.	1) Observe attempt by Training Mgr to access training records.	1) Records were accessible/ Records were not accessible.
		2) Determine if Training Mgr is able to access training requirements.	2) Observe attempt by Training Manager to access training requirements.	2) Reqts were accessible/ Reqts were not accessible.
		3) Determine if Training Mgr is able to access scheduling functions.	3) Observe attempt by Training Manager to access scheduling functions.	3) Functions were accessible/ Functions were not accessible.
		4) Determine if Training Mgr is able to access off-line test materials.	4) Observe attempt by Training Mgr to access off-line test materials.	4) Materials were accessible/ Materials were not accessible.

4.2.1.1 Test Objective 6 - Evaluate The AOTS in Generating An ATR

In testing the critical function of ATR update, it is necessary to assess the capability to initially generate an ATR. The ATR is a historical account of all prior training received by an individual airmen. This data is required for workcenter management personnel to determine the specific training required for airmen in the workcenter (generation of Individual Training Requirements (ITRs)). This will be a fundamental step in the operation of the AOTS in the workcenters.

4.2.1.1.1 Test Objective 6 Design (Figure 4-7)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an ATR?	Evaluate the AOTS in generating an ATR.	1) Determine whether the ATR is initialized with PDS data.	1) Observe attempt to initialize ATR with PDS data.	1) Performed initialization/ Did not perform initialization.
		2) Determine if the AOTS provides for manual entry of training completions into an airman's ATR.	2) Observe attempt to manually enter PDS data into an ATR.	2) Allowed entry/ Did not allow entry.
		3) Determine whether the AOTS provides for manual entry of PDS data.	3) Observe attempt to manually enter completions into an ATR	3) Allowed entry/ Did not allow entry.

4.2.1.2 Test Objective 7 - Evaluate the AOTS in Generating An OPTR

In order to test the critical functions of MTL access, ITR interface, and scheduling training and evaluation events, AOTS must be capable of generating an OPTR. The first step in generating an OPTR is to select a Generic Position Task Requirements (GPTR) list for the type of duty position to which the airman has been assigned. GPTRs identify tasks performed by all persons assigned to equivalent duty positions throughout the Air Force. For the prototype AOTS, the GPTRs have been (or are being) input by the subject matter experts (SMEs) assigned to this R&D effort. The immediate supervisor uses the applicable GPTR as the baseline to define specific training requirements for that particular duty position - thus, the OPTR is generated. The supervisor can add tasks from the appropriate Master Task List (MTL), other training requirements (ie., ancilery training), or local task requirements.

4.2.1.2.1 Test Objective 7 Design (Figure 4-8)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an OPTR?	Evaluate the AOTS in generating an OPTR.	1) Determine whether an appropriate GPTR can be located and copied into a new OPTR.	1) Observe attempt to locate and copy a GPTR into a new OPTR.	1) Locate and copied/ Did not locate and copy.
		2) Determine whether an appropriate existing OPTR can be located and copied into a new OPTR.	2) Observe attempt to locate and copy an existing OPTR into a new OPTR.	2) Locate and copied/ Did not locate and copy.
		3) Determine whether the tasks can be copied from the MTL editor into a new OPTR	3) Observe attempt to copy tasks from MTL editor into new OPTR.	3) Copied/ Did not copy.
		4) Determine whether tasks can be copied from the OTR editor into a new OPTR	4) Observe attempt to copy tasks from OTR editor into new OPTR.	4) Copied/ Did not copy.
		5) Determine whether tasks in a new OPTR can be added	5) Observe attempt to add tasks to a new OPTR.	5) Allowed add/ Did not allow add.
		6) Determine whether tasks in a new OPTR can be deleted	6) Observe attempt to delete tasks in a new OPTR.	6) Allowed delete/ Did not allow delete.
		7) Determine whether tasks in a new OPTR can be modified.	7) Observe attempt to modify tasks in a new OPTR.	7) Allowed modification/ Did not allow modification.

4.2.1.3 Test Objective 8- Evaluate The AOTS in Generating an ITR

Before it is possible to examine the critical function of ITR interface, the capability of the AOTS to generate an initial ITR must be tested. The generation of an airman's ITR provides a list of training required for the attainment of position qualification. This list of training requirements is necessary to schedule the airman for required training and evaluation events.

4.2.1.3.1 Test Objective 8 Design (Figure 4-9)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an ITR?	Evaluate the AOTS in generating an ITR.	1) Determine whether a new ITR is created.	1) Observe attempt to create a new ITR.	1) Created ITR/ Did not create ITR.
		2) Determine if the new ITR is the result of an ATR/OPTR comparison.	2) Observe ITR and verify that it consists of a list of training requirements on the OPTR, but not on the ATR.	2) Accurate ITR/ Inaccurate ITR.
		3) Determine whether tasks can be added to an ITR.	3) Observe attempt to add tasks to an ITR.	3) Allowed add/ Did not allow add.
		4) Determine whether tasks can be deleted from an ITR.	4) Observe attempt to delete tasks from an ITR.	4) Allowed delete/ Did not allow delete.
		5) Determine whether tasks can be modified in an ITR.	5) Observe attempt to modify tasks in an ATR.	5) Allowed modification/ Did not allow modification.

4.2.1.4 Test Objective 9- Evaluate the AOTS in Automatically Rank Ordering ITR Training Requirements

An additional aspect of the critical function of ITR interface is the automatic rank ordering of ITR training requirements by the AOTS. This capability is required to assess the critical function of scheduling. For trainees and supervisors to understand the most efficient order in which to receive/deliver training, the AOTS must list the training requirements in order of priority. It is also important for workcenter management personnel to have the capability to override the automatic rank ordering function when mission requirements necessitate a different training order.

4.2.1.4.1 Test Objective 9 Design (Figure 4-10)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS automatically rank order ITR Training Requirements?	Evaluate the AOTS in automatically rank ordering ITR training requirements.	1) Determine whether Training Requirements are rank-ordered based on (a) Percent of members performing the tasks; and (b) Levels of difficulty for learning the tasks.	1) Examine rank ordering of training requirements.	1) Accurate ordering/ Inaccurate ordering.
		2) Determine whether the user is able to override and modify the automatic rank-ordering.	2) Observe attempt to override automatic rank ordering.	2) Allowed override/ Did not allow override.

4.2.1.5 Test Objective 10- Evaluate the AOTS Capabilities for Scheduling Training for an Individual Airman

The critical function of scheduling training and evaluation events involves the scheduling of training for either one or many airmen. The AOTS individual airman scheduling function provides workcenter management personnel with two fundamental capabilities. First the manager is able to identify specific training tasks, times and trainers for individual trainees. Secondly, the manager is able to identify whether the trainee has been scheduled for any conflicting training or evaluation events.

4.2.1.5.1 Test Objective 10 (Figure 4-11)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS schedule training for a single airman?	Evaluate the AOTS capability for scheduling training for an individual airman.	1) Determine whether the user can select an individual airman for scheduling of training.	1) Observe attempt to select individual airman.	1) Allowed selection/ Did not allow selection.
		2) Determine whether training requirements can be selected for scheduling purposes.	2) Observe attempt to select training requirements.	2) Allowed selection/ Did not allow selection.
		3) Determine whether a specific time/date/location/ trainer can be selected for scheduling purposes.	3) Observe selection of time/ date/location/trainer.	3) Allowed selection/ Did not allow selection.
		4) Determine whether AOTS checks for duplicate scheduling upon a single airman and presents a warning regarding the situation to the user.	4) Enter duplicate schedule for airman and observe AOTS reaction	4) Identified conflict/ Did not identify conflict.
		5) Determine whether AOTS allows the user to override an AOTS generated schedule.	5) Observe attempt to override schedule.	5) Allowed override/ Did not allow override.

4.2.1.6 Test Objective 11- Evaluate the AOTS Capabilities for Scheduling Many Airmen

In addition to the above objective regarding the AOTS capability to schedule an individual airman, an objective is required to test the capability of the AOTS to schedule many airmen. This function allows workcenter management personnel to specify particular training requirement(s), and to then receive a list of all airmen requiring training on that requirement. As with the individual airman scheduling function, the "many airmen" scheduling function provides for the specification of training date/time/location, etc., and for the identification of any schedule conflicts.

4.2.1.6.1 Test Objective 11 Design (Figure 4-12)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS schedule training for many airmen?	Evaluate the AOTS capability for scheduling training for many airmen.	1) Determine whether a training requirement can be selected for scheduling purposes.	1) Observe attempt to select Training Requirement.	1) Allowed selection/ Did not allow selection.
		2) Determine whether AOTS identifies a list of the most eligible airmen for receiving training on the chosen Training Requirement.	2) Observe attempt to generate list of airmen.	2) Generate list/ Did not generate list.
		3) Determine whether a specific time/date/location/ training agency can be selected for the training activity.	3) Observe attempt to specify time/date/location.	3) Allowed specification/ Did not allow specification.
		4) Determine whether AOTS checks for conflicts in scheduling and flags the situation to the user.	4) Enter duplicate schedule for airman and observe AOTS reaction.	4) Identified conflict/ Did not identify conflict.
		5) Determine whether AOTS allows the user to override an AOTS generated schedule.	5) Observe attempt to override schedule.	5) Allowed override/ Did not allow override.
		6) Determine whether AOTS will print training schedules.	6) Observe attempt to print training schedule	6) Printed schedule/ Did not print schedule.

4.2.1.7 Test Objective 12- Evaluate the AOTS in Generating An Evaluation Schedule

An additional test of the critical function of scheduling training and evaluation events involves examination of the AOTS capability in generating evaluation schedules. This function will provide capability for workcenter personnel to create time-ordered listings of evaluation events.

4.2.1.7.1 Test Objectives 12 Design (Figure 4-13)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an Evaluation Schedule?	Evaluate the AOTS in generating an Evaluation Schedule.	1) Determine whether AOTS automatically identifies airmen to receive team/ evaluation assignments.	1) Observe attempt to generate a list of airmen.	1) Generated list/ Did not generate list.
		2) Determine whether AOTS identifies task evaluation assignments upon which to generate a schedule.	2) Observe attempt to identify task evaluation assignments.	2) Identified assignments/ Did not identify assignments.
		3) Determine whether AOTS allows the user to assign schedule dates/times/ location/evaluator for specific evaluations.	3) Observe attempt to assign schedule date/time/location/ evaluators.	3) Allowed assignment/ Did not allow assignment.
		4) Determine whether AOTS will print evaluation schedules.	4) Observe attempt to print schedule.	4) Printed schedule/ Did not print schedule.

4.2.1.8 Test Objective 13- Evaluate the AOTS Capability To Generate An On-Line Test

The critical function regarding request of evaluation instruments includes generation of on-line evaluations. This objective provides for the testing of AOTS capability in this area. The on-line test generation capability allows workcenter personnel to view on-screen evaluations at the workcenter terminals. This provides access to computer-assisted evaluations in the workcenters.

4.2.1.8.1 Test Objective 13 Design (Figure 4-14)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an on-line test?	Evaluate the AOTS capability to generate an on-line te	1) Determine whether AOTS extracts on-line test items.	1) Observe attempt to extract test items.	1) Extract items/ Did not extract items.
		2) Determine whether AOTS can present an on-line test at the terminal.	2) Observe attempt to present test.	2) Test was presented/ Test was not presented.

4.2.1.9 Test Objective 14- Evaluate The AOTS Capability To Generate Off-Line Evaluations

Testing AOTS capability to generate off-line evaluations is an additional examination of the requesting evaluation instrument, and the control of off-line evaluation instruments critical functions. The off-line evaluation generation capability allows personnel to generate hard copies of evaluations at workcenter printers. Workcenter personnel can automatically generate "AOTS scorable" tests for trainee evaluation purposes. The capability brings with it, however, the problem of controlling the hard copies of evaluations that are generated. The AOTS generated control procedures will also be tested under this objective.

4.2.1.9.1 Test Objective 14 Design (Figure 4-15)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate off-line evaluations?	Evaluate the AOTS capability to generate off-line evaluations.	1) Determine whether AOTS extracts off-line symbolic test items. 2) Determine whether AOTS will generate an off-line symbolic test. 3) Determine whether AOTS logs the status of generated off-line symbolic tests.	1) Observe attempt to extract test items. 2) Observe attempt to generate test. 3) Observe AOTS accuracy of status log.	1) Extract items/ Did not extract items. 2) Generated test/ Did not generate test. 3) Accurate log/ Inaccurate log.

4.2.1.10 Test Objective 15- Evaluate The AOTS Capability To Generate An Off-Line Performance Evaluation Checklist (PEC)

In addition to off-line evaluations, the AOTS will generate hard copies of PECs at workcenter printers. Off-Line PEC generation is an additional aspect of the request evaluation instrument and control of off-line evaluation instruments critical functions.

4.2.1.10.1 Test Objective 15 Design (Figure 4-16)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS generate an off-line PEC?	Evaluate the AOTS capability to generate an off-line PEC.	1) Determine whether AOTS will generate a PEC. 2) Determine whether AOTS logs the status of generated PECs.	1) Observe attempt generate a PEC. 2) Observe attempt to log status of PEC.	1) Successful generation/ Unsuccessful generation. 2) Accurate log/ Inaccurate log.

4.2.1.11 Test Objective 16- Evaluate the AOTS In Scoring An On-Line Test

The scoring of on-line tests is related to several of the critical functions. For example the ITR could not be updated with on-line training completions if the on-line evaluations were not scored. It is related to the Update ATR critical function because, as with the ITR, the ATR cannot be updated with on-line training completions if the on-line evaluations are not graded.

4.2.1.11.1 Test Objective 16 Design (Figure 4-17)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS score an on-line test?	Evaluate the AOTS in scoring an on-line test.	1) Determine whether AOTS scores an on-line test against an appropriate answer key. 2) Determine whether AOTS fails a test with a score below 80%. 3) Determine whether AOTS passes a test with a score above 80%. 4) Determine whether the resultant test score can be accessed.	1) Observe attempt to score test. 2) Observe the results of a score of less than 80%. 3) Observe the results of a score of greater than 80%. 4) Observe attempt access score.	1) Test was scored correctly/ Test was scored incorrectly. 2) Test was failed/ Test was not failed. 3) Test was passed/ Test was not passed. 4) Test was accessible/ Test was inaccessible.

4.2.1.12 Test Objective 17- Evaluate the AOTS In Scoring An Off-Line Symbolic Test

The scoring of off-line symbolic tests is related to the same critical functions listed above for on-line tests. In addition, this test objective is related to the critical function of controlling off-line evaluation instruments. The process for scoring the off-line test involves procedures for controlling the instrument.

4.2.1.12.1 Test Objective 17 Design (Figure 4-18)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS score an off-line symbolic test?	Evaluate the AOTS in scoring an off-line symbolic test.	1) Determine whether the off-line symbolic test can be read by the OMR	1) Observe attempt to read test into OMR.	1) Test was read/ Test was not read.
		2) Determine whether AOTS encodes the Test ID Number and answers from the off-line symbolic test.	2) Observe attempt by AOTS to encode test.	2) Test was encoded/ Test was not encoded.
		3) Determine whether AOTS scores the off-line symbolic test against the appropriate test key.	3) Observe attempt to score test.	3) Test was scored/ Test was not scored.
		4) Determine whether the resultant symbolic test score can be accessed.	4) Observe attempt access score.	4) Test was accessible/ Test was inaccessible.

4.2.1.13 Test Objective 18- Evaluate the AOTS In Scoring An Off-Line Performance Evaluation Checklist

The test objective for scoring off-line PECs also includes all of the critical function relations listed for scoring on-line test and those listed above for scoring off-line symbolic tests.

4.2.1.13.1 Test Objective 18 Design (Figure 4-19)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS score an off-line PEC?	Evaluate the AOTS in scoring an off-line PEC.	1) Determine whether the PEC can be read by the OMR.	1) Observe attempt to read PEC into OMR.	1) PEC was read/ PEC was not read.
		2) Determine whether AOTS encodes the PEC.	2) Observe attempt by AOTS to encode PEC	2) PEC was encoded/ PEC was not encoded.
		3) Determine whether AOTS fails PECs which have incorrect critical items.	3) Observe scoring of PEC.	3) PEC was scored/ PEC was not scored.

4.2.1.14 Test Objective 19- Evaluate The AOTS In recording Trainee Performance

Evaluating the AOTS in recording trainee performance relates to the critical function of interfacing with the ITR and updating the ATR. This relationship is based on the fact that when trainee performance is recorded it is recorded in both the trainee's ITR and ATR.

4.2.1.14.1 Test Objective 19 Design (Figure 4-20)

CRITICAL QUESTION	GENERAL TEST OBJECTIVE	SPECIFIC TEST OBJECTIVES	MEASURES OF EFFECTIVENESS	EVALUATION CRITERIA
Can the AOTS record trainee progress?	Evaluate the AOTS in recording trainee progress.	1) Determine whether trainee progress is recorded.	1) Observe the trainee progress data recorded by AOTS.	1) Recorded trainee progress/ Did not record trainee progress.
		2) Determine whether trainee progress data can be accessed or altered.	2) Observe attempt to manually access/alter the trainee progress data.	2) Allowed access/alteration Did not allow access/alteration.

4.2.2 Pass/Fail Criteria

For each specific test objective described in Section 4.1, an MOE was defined that provided a straight forward "go/no go" result. It is not likely that every specific objective and the associated MOE must achieve a "go" observation for the AOTS to pass the Readiness Test. In instances where there are more than one specific test objective for a given general objective, a "go" determination for some subset of the MOEs will likely result in an overall "go" for that general objective. AFHRL SMEs are in the best position to determine which MOEs, or combinations of MOEs, are required to pass a given Readiness test. After studying the MOEs for each general objective, the SMEs should recommend the minimum set of MOEs that must be assessed a "go" condition. If those MOEs are not passed, then that particular Readiness test will have failed. The software that fails to perform the critical functions should be fixed before the AOTS is released to the workcenters for SLT&E.

4.3 Test Procedures

4.3.1 Description

Functionally related testing objectives will be assembled into procedures that are logically accomplished together.

Test data values are required for testing. Exhaustive testing of all possible data values is not feasible because of the time and resources involved. However, representative test cases will be carefully selected from the set of all possible values. For example, if a menu has choices a, b, c, and d. then the test cases may include a, b, c, d, e (undefined alpha), (blank), 2 (numeric), and ab (undefined alpha). Often a view of the code will offer other test case opportunities. Loop and decision constructs can be tested at their boundary conditions. Test case selection is hampered by a lack of a data dictionary that list allowable values, and synonyms.

4.3.2 Purpose of Deatiled Test Procedures

Test procedures will record and prescribe standard test conditions. Required hardware and software will be described. The procedures will contain step-by-step instructions and expected responses. Instructions will be written in the active voice and begin with an action verb. The goal of the procedures when accomplished is to result in a written historical record of the test to the detail necessary for future evaluators to reproduce the test and results.

4.4 Test Execution

4.4.1 Description

The testing will be accomplished by members of the Instructional Systems Development Team. These team members are AF specialty area experts, and are considered proficient in the operation of AOTS due to their extended association with the program as curriculum developers.

4.4.2 Responsibilities

4.4.2.1 BSED/BDM

As a follow-on from the AF-approved Readiness Test Plan, BSED/BDM will write test procedures to guide the AF test team. BSED/BDM will brief the AF test cadre on the purpose and use of the test procedures. During test performance, BSED/BDM will evaluate the AF test team performance to improve quality.

4.4.2.2 AFHRL

AFHRL will Provide overall management to the Readiness Test program. The AFHRL will assure that each participating organization is coordinated in action and integrate their respective efforts into a single group effort. AFHRL personnel will perform the test procedures.

4.4.2.3 DAC

DAC must make the AOTS prototype available in time to support the Readiness Test schedule. They will provide timely analysis of apparent testing failures. DAC will correct correct testing failures and document code corrections. DAC will perform their responsibilities in time to support the testing schedule.

4.5 Data Recording, Reduction, Reporting

4.5.1 Description

Measured test values will be integrated into the test procedure document. Data will be recorded on the test procedures in the area provided for that purpose. In addition to required data, expert testers and observers will record subjective comments and other pertinent information on the completed procedures. Apparent abnormalities in the test data will be documented on SPRs which will be used to track and suspense the areas of concern.

The original test procedures and recorded data sheets along with copies of the SPRs will be included with the final report.

4.5.2 Responsibilities

4.5.2.1 AFHRL

The greater part of the data recording and analysis tasks will be performed by the AF. The AF will ascertain the successful completion of each test procedure. At the end of each testing day, the AF may brief the responsible organizations on their findings. The AF will establish a schedule for the timely analysis of test abnormalities which are recorded on SPRs.

4.5.2.2 BSED/BDM

The role of the BSED/BDM team has been to design a Readiness Test around the restraints established by the AF. While the BSED/BDM team has no direct role in data recording, reduction, or analysis, the team will be available on an "on call" basis to advise AFHRL on technical matters.

4.5.2.3 DAC

DAC is responsible for the performance of the system. When test data shows apparent abnormalities, it is incumbent on the DAC to analyze these abnormalities. DAC will process in a timely manner the SPRs that are generated during testing.

5.0 Resources

5.1 Facilities

Facilities requirements are identified in the DAC AOTS Facility and Installation Plan.

5.2 Personnel

Three Air Force testers; BALL/BDM observers, as required; DAC software engineers, as required.

5.3 Test Environment

5.3.1 Hardware

The testers will use Z-248 microcomputer workstations, Alps model 2000 printers, and Scantron optical readers to perform the WORK STATION CHECK-OUT procedures. All other Readiness Test procedures will be accomplished using up to three sets of representative equipment.

5.3.2 Software

It is anticipated that AOTS Release 1.9 will contain most of the software required to assess the critical functions described in this Readiness Test Plan. Release 1.8 allows users to enter/edit a Master Task List (MTL), Generic Position Training Requirements (GPTRs), Operational Position Training Requirments (OPTRs), and Airmen Training Records (ATRs). However, the critical function of generating Individual Training Requirements (ITRs) is not expected until Release 1.9. In addition, the on-line test presentation and off-line test generation capabilities will not be available until Release 2.0. This incremental release of software to perform AOTS critical functions may dictate an "incremental" readiness test.

5.3.3 Data Bases

Data to conduct the 14 Readiness tests described in Section 4 is a critical resource. If real data is not available, "dummy" GPTRs will be required to assess the capability to generate an OPTR. Similarly, "dummy" ATRs will be required to evaluate the capability of the system to generate the ITR from the OPTR and several ATRs. Detailed descriptions of the required data for the Readiness Tests will be added to this Test Plan in the next few weeks as the final versions of the software emerge.

6.0 TEST SCHEDULE

The following schedule refers to the delivery ("D" day) of the completed AOTS software. The days after delivery of the software (e.g., D + 5) indicate work days. In reality, all of the software or required test data is not likely to be ready at the same time. This issue contributed to the overall design as several separate tests with stand alone test procedures. However, the recommended schedule depicted below includes the prefered arrangement of having all critical functions installed to allow a realistic assessment of the complete system. Hence, the schedule indicates the recommended sequence for execution of the entire set of readiness tests.

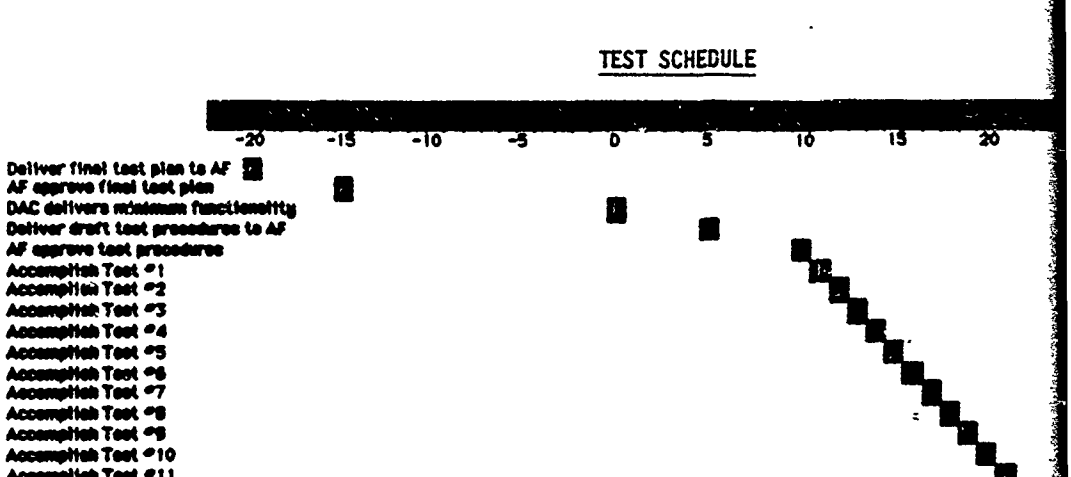


FIGURE 4-1. AOTS READINESS TESTING FUNCTIONAL FLOW DIAGRAM

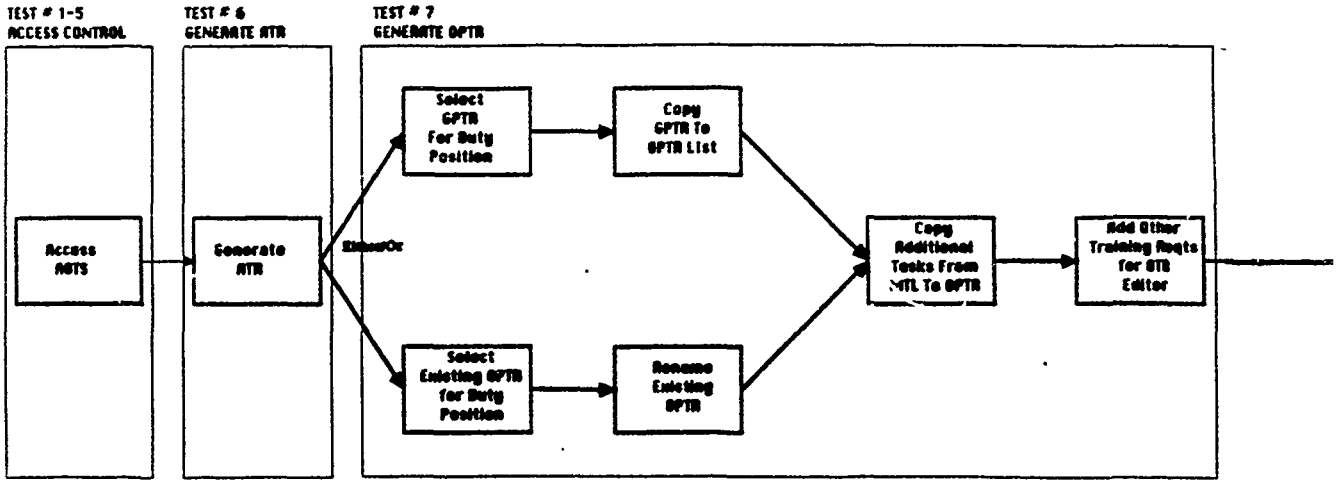
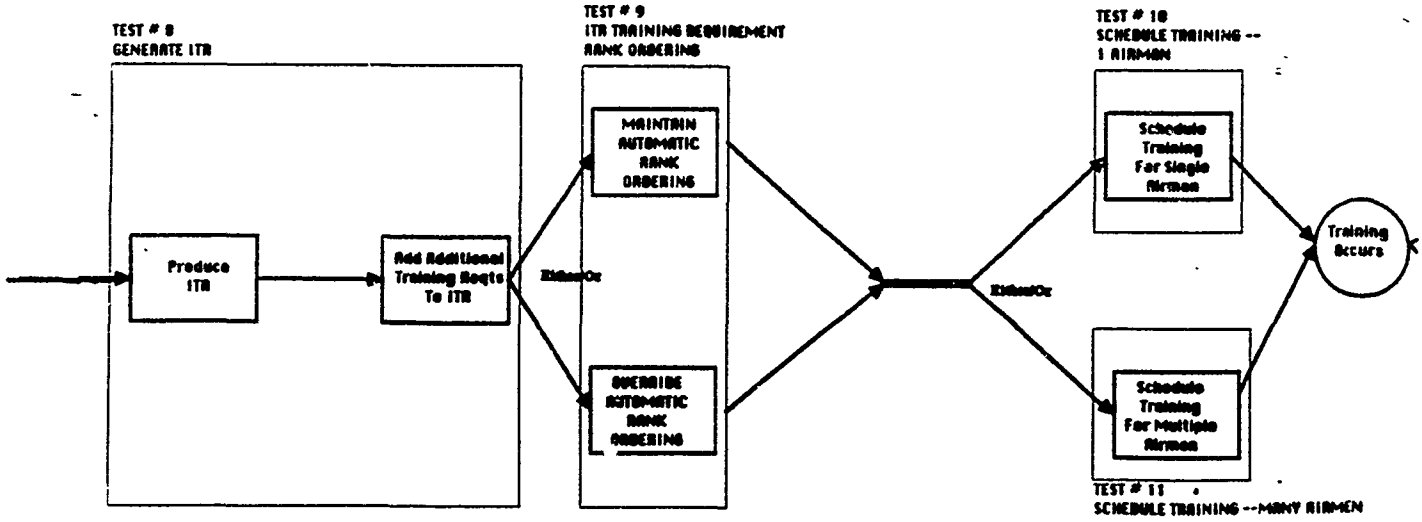


FIGURE 4-1 (Continued)



Flowchart is continued on pages 24 and 25.

FIGURE 4-1 (Continued)

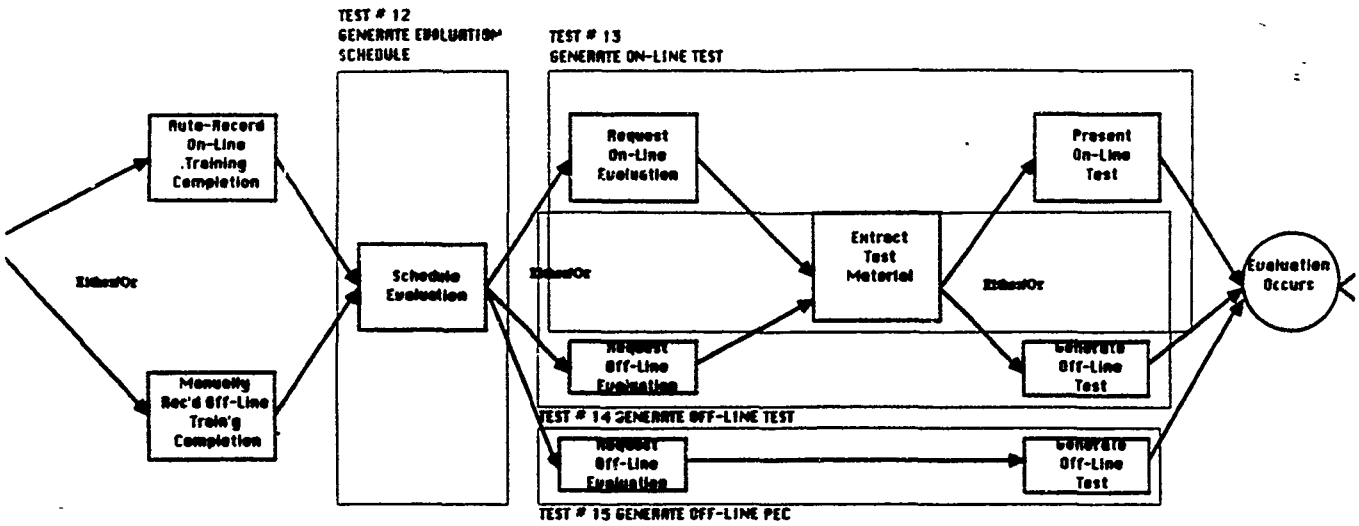


FIGURE 4-1 (Concluded)