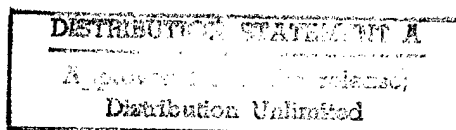


te technical note techn

Final Report for Automated Surface Observing System (ASOS) Controller Equipment (ACE) Operational Test and Evaluation

Colleen Horan
Michael R. Melillo



May 1998

DOT/FAA/CT-TN97/4

Document is on file at the William J. Hughes Technical Center Library, Atlantic City International Airport, NJ 08405



U.S. Department of Transportation
Federal Aviation Administration
William J. Hughes Technical Center
Atlantic City International Airport, NJ 08405

DTIC QUALITY INSPECTED 1

19980807 080

NOTICE

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for the contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the objective of this report.

1. Report No. DOT/FAA/CT-TN97/4	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report for Automated Surface Observing System (ASOS) Controller Equipment (ACE) Operational Test and Evaluation		5. Report Date May 1998	
7. Author(s) Colleen Horan and Michael R. Melillo, ACT-320; Karen J. Peio, Edward F. Nuzman, and James P. Vicente, Raytheon Service Company		6. Performing Organization Code 8. Performing Organization Report No. DOT/FAA/CT-TN97/4	
9. Performing Organization Name and Address U.S. Department of Transportation Federal Aviation Administration William J. Hughes Technical Center Atlantic City International Airport, NJ 08405		10. Work Unit No (TRAILS)	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Federal Aviation Administration William J. Hughes Technical Center Atlantic City International Airport, NJ 08405		11. Contract or Grant No. 13. Type of Report and Period Covered Technical Note	
15. Supplementary Notes		14. Sponsoring Agency Code	
16. Abstract The Automated Surface Observing System (ASOS) Controller Equipment (ACE) system is a display system that provides weather products from the ASOS and other weather product systems to the Federal Aviation Administration (FAA) Air Traffic Control Towers (ATCTs), Terminal Radar Approach Control (TRACON), and other selected locations. Operational Test and Evaluation (OT&E) of the ACE was conducted in four phases, commencing at the FAA William J. Hughes Technical Center in July 1995, and concluding at the Will Rogers World Airport, Oklahoma City, Oklahoma (OKC) and Dallas/Ft Worth International Airport, Irving, Texas (DFW), in April 1997. The purpose of the OT&E was to evaluate the performance of the ACE display system. This final report describes the results of OT&E testing conducted on the ACE.			
17. Key Words Automated Surface Observing System Automated Surface Observing System Controller Equipment Weather Display ASOS ACE		18. Distribution Statement Document is on file at the William J. Hughes Technical Center Library, Atlantic City International Airport, NJ 08405	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No of pages 72	22. Price

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	v
1. INTRODUCTION	1
1.1 Purpose	1
1.2 Scope	1
2. REFERENCE DOCUMENTS	1
2.1 FAA Documents	2
2.2 Military and Federal Publications	2
3. SYSTEM DESCRIPTION	3
3.1 Mission Review	3
3.2 Test System Configuration	4
3.3 Interfaces	5
4. TEST AND EVALUATION DESCRIPTION	7
4.1 Test Schedule and Location	7
4.2 Participants	7
4.3 Test and Specialized Equipment	8
4.4 Test Objectives/Criteria	8
4.5 Testing Descriptions	9
4.6 Data Collection and Analysis Methods	12
5. RESULTS AND DISCUSSION	15
5.1 Results Summary	15
5.2 ACE Final Configuration OT&E Test Results	15
5.3 Regression Test (10/29 - 11/5/96)	18
5.4 PTR Regression Test (1/28/97)	19
5.5 Power Quality Verification Tests	19
6. CONCLUSIONS	21
6.1 Significant Conclusions	21
7. RECOMMENDATIONS	21
8. ACRONYMS	22

APPENDIX

A PTR Data Base

LIST OF ILLUSTRATIONS

Figure		Page
3.2-1	ACE Full Load System Configuration	5
3.3-1	ACE Interfaces	6

LIST OF TABLES

Table		Page
3.2-1	ACE OT&E Final Test Configuration	4
4.1-1	Overall ACE OT&E Schedule	7
4.3-1	Power Quality Verification Test Equipment	8
5.1-1	ACE OT&E Test Results Summary	15
5.2-1	ACE OT&E PTR Results Summary	15
5.2.4-1	ACE Full Load Response Time Test Results	17
5.3-1	ACE OT&E PTR Results Summary - Regression Test	18
5.3.4-1	Computer Memory Comparison Test	18
5.4-1	ACE OT&E PTR Results Summary - Regression Test	19
5.5-1	Test Data Without Filter	20
5.5-2	Test Data With Filter	20

EXECUTIVE SUMMARY

The Automated Surface Observing System (ASOS) Controller Equipment (ACE) is a display system procured by the Federal Aviation Administration (FAA) through the National Weather Service (NWS) to be used jointly by FAA Air Traffic Control Specialists (ATCSs) and NWS meteorologists. The ACE is the FAA interface that provides the ASOS observations and other pertinent weather information to FAA Air Traffic Control Towers (ATCTs), Terminal Radar Approach Control (TRACON), and other selected locations.

The ACE system includes display devices for controller positions, and primary and backup (redundant) computers that are all linked together via an Ethernet Local Area Network (LAN).

Operational Test and Evaluation (OT&E) at Will Rogers World Airport, Oklahoma City, Oklahoma (OKC) tested the operational functionality of the ACE hardware and software final configuration, included regression testing of Problem/Trouble Reports (PTRs) written during previous testing, and tested the power quality of the ACE system.

Test results showed that the ACE system successfully displays ASOS weather data (e.g., Meteorologist Aviation Report [METAR], 1-Minute Observation [OMO]) to ATCSs in the tower and TRACON. The ACE receives external data (e.g., Automated Family of Services [AFOS], Flight Data Input/Output [FDIO]) and successfully displays it in the tower and TRACON environments.

Additionally, test results indicated that the ACE system, in the tested configuration, will be suitable for deployment into the National Airspace System (NAS) once the recommended power filters are installed.

1. INTRODUCTION.

The Automated Surface Observing System (ASOS) is a computer-based weather collection and display system procured by the National Weather Service (NWS) to be used jointly by Federal Aviation Administration (FAA) Air Traffic Control Specialists (ATCSs) and NWS meteorologists. The ASOS Controller Equipment (ACE) is the interface that provides the ASOS and other weather information to FAA Air Traffic Control Towers (ATCTs), Terminal Radar Approach Control (TRACON), and other selected locations.

ACT-320 conducted a four-phase Operational Test and Evaluation (OT&E) of the ACE to determine its operational suitability and technical useability in the operational environment. Subsequent to phase 2 testing, the hardware and software configurations underwent revisions.

Phase 3 testing was conducted at Will Rogers World Airport, Oklahoma City, Oklahoma (OKC), and addressed the adequacy of the Windows NT platform, as well as Problem/Trouble Reports (PTRs) written during previous phases. The Windows NT platform proved adequate to the ACE tasks of presenting weather products to controller positions.

ACE OT&E phase 4 testing (hereinafter called ACE Final Configuration OT&E Testing), conducted at OKC and Dallas/Fort Worth International Airport, Irving, Texas (DFW), consisted of verifying previously opened PTRs, verifying ACE software using a new hardware configuration, and conducting full load tests.

1.1 PURPOSE OF REPORT.

The purpose of this report is to present the results of the ACE Final Configuration OT&E Test and subsequent Regression and Power Quality Verification Tests.

1.2 SCOPE OF REPORT.

This report consists of the test results from the ACE Final Configuration OT&E Test and regression testing in the form of summary tables, checklists, and PTRs. It includes, but is not limited to, system description, system mission, test configuration, and interfaces. It provides the test and evaluation description, schedules, location, and test participants; their roles and responsibilities, test objectives, and evaluation criteria. Also included are the conclusions and recommendations for deployment of the ACE based on the results of OT&E.

2. REFERENCE DOCUMENTS.

The following specifications, standards, and other documents form a part of this Final Test Report.

2.1 FAA DOCUMENTS.

2.1.1 FAA Specifications.

FAA-G-2100F	Electronic Equipment, General Requirements, November 15, 1993
RSMI005-00115, REV G	ACE Specification for the Automated Surface Observing System (ASOS) Final April 1997
S100-SP001	ASOS Specification, June 16, 1993
NAS-SS-1000	NAS System Specification, September 1990

2.1.2 FAA Standards.

FAA-STD-024B	Content and Format Requirements for the Preparation of Test and Evaluation Documentation, August 22, 1994
--------------	---

2.1.3 Other FAA Publications.

FAA ORDER 1810.4B	FAA NAS Test and Evaluation Policy, October 22, 1992
FAA ORDER 6950.2c	Electrical Power Policy Implementation at National Airspace Facilities
NAS-MD-110	Test and Evaluation (T&E) Terms and Definitions for the National Airspace System, March 27, 1987
DOT/FAA/CT-TN93/26	Final Report of the Air Traffic Evaluation of the Automated Surface Observing System (ASOS) Displays, September 1993

2.2 MILITARY AND FEDERAL PUBLICATIONS.

2.2.1 Military Handbook.

MIL-H-46855B	Human Engineering Requirements for Military Systems, Equipment and Facilities, 31 January 1979
--------------	--

2.2.2 Military Standards.

MIL-STD-1472D	Human Engineering Design Criteria for Military Systems, Equipment and Facilities, 14 March 1989
---------------	---

3. SYSTEM DESCRIPTION.

3.1 MISSION REVIEW.

ATCSs in the Air Traffic (AT) operational environment require continuously updated knowledge of surface weather conditions. The ACE will be used by ATCSs in the tower and TRACON to display ASOS weather data, including the following:

- a. Meteorological Aviation Reports (METARs) (e.g., visibility, weather and obstructions to vision, temperature, dew point, wind direction and speed, wind character, and altimeter setting);
- b. 1-Minute Observations (OMOs);
- c. auxiliary data (e.g., magnetic wind, relative humidity, pressure altitude, and density altitude).

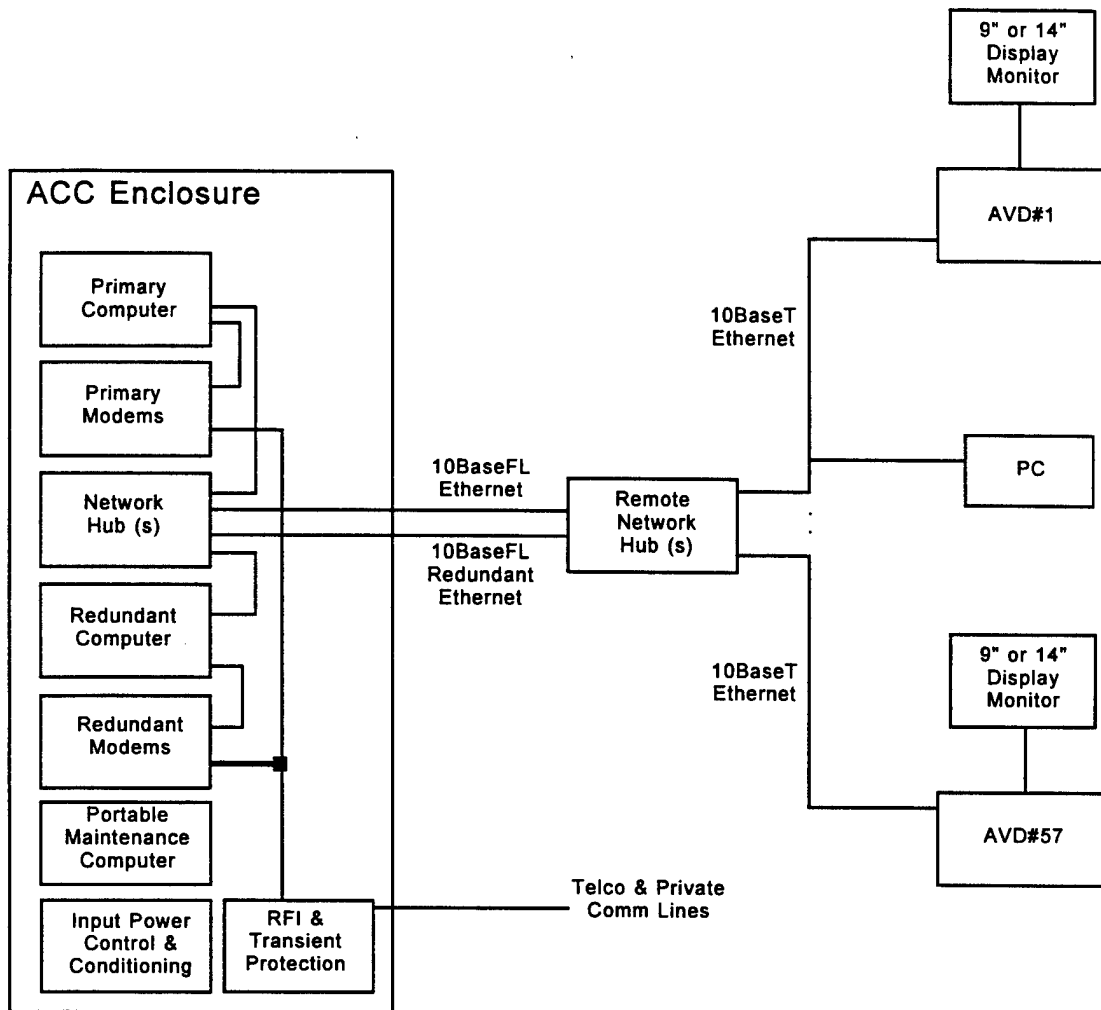
The ACE also receives external data such as Flight Data Input/Output (FDIO) weather data, Automated Family of Services (AFOS), and data from other ACEs for display on user defined screens. Examples of FDIO data include Airman's Meteorological Information (AIRMET), Significant Meteorological Information (SIGMET), Convective SIGMETs, Center Weather Advisories (CWAs), Pilot Weather Reports (PIREPs), Traffic Management Unit (TMU) messages, and General Information (GI) messages.

3.2 TEST SYSTEM CONFIGURATION.

The ACE OT&E Final Test Configuration is listed in table 3.2-1. Figure 3.2-1 depicts the ACE Full Load System Configuration.

TABLE 3.2-1. ACE OT&E FINAL TEST CONFIGURATION

OKC	DFW
ACE Software Version 3.3:	ACE Software Version 3.3:
Windows NT Version 3.5.1	Windows NT Version 3.5.1
32 megabytes (MB) Random Access Memory (RAM)	32 MB RAM
ACE Controller Cabinet (ACC) containing:	ACC containing:
Primary ACE Computer	Primary ACE Computer
Redundant ACE Computer	Redundant ACE Computer
Automatic Redundant Computer Switch Box	Automatic Redundant Computer Switch Box
Modems (8 ea. Codex V.3225)	Modems (7 ea. Codex V.3225, 1 ea. Codex 3340A)
Maintenance Laptop Computer	Maintenance Laptop Computer
Uninterruptible Power Supply (UPS)	UPS
Four 9" ACE Video Displays (AVDs)	Five 14" AVDs in each of three tower subjunction levels
Nine 14" AVDs	43 14" AVDs in TRACON staging area
Tape Backup Drive	Tape Backup Drive
Ethernet Personal Computer (PC)	Ethernet PC
Ethernet Hub	Four Ethernet Hubs
300 ft fiber optic and twisted pair cable	Several thousand feet of fiber optic and twisted pair cable
ACE Operator Interface Device (OID)	



NOTE: Remote network hubs are associated with each location (i.e., ATCTs (3) and TRACON (1))

FIGURE 3.2-1. ACE FULL LOAD SYSTEM CONFIGURATION

3.3 INTERFACES.

ACE interfaces are illustrated in figure 3.3-1.

ACE to ASOS - This interface transfers ASOS data to the ACE database. ACE failures will be reported to the ACC. Should this interface malfunction, an error message will be sent to every AVD.

ACE to AFOS - This interface is capable of receiving predefined AFOS textual weather products from any specified site on the AFOS network. There is only one connection of this type.

ACE to ACE - This interface allows ASOS sites that have ACE systems to share weather information. The software allows up to five ACEs to communicate. However, ACEs may not share databases.

ACE to FDIO - This interface permits the ACE to receive FDIO data, e.g., AIRMETs, SIGMETs, and Convective SIGMETs.

ACE to PC (Serial) - Allows a PC to communicate with the ACE system. This interface shall be capable of accessing the ACE database from a remote PC.

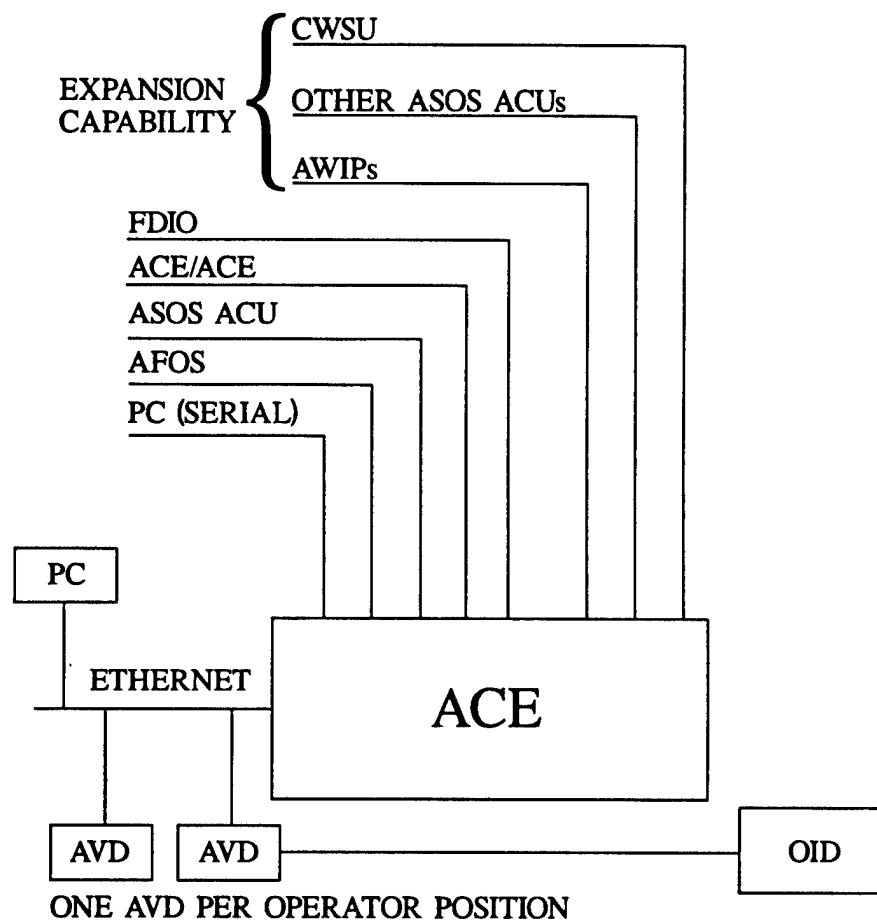


FIGURE 3.3-1. ACE INTERFACES

4. TEST AND EVALUATION DESCRIPTION.

4.1 TEST SCHEDULE AND LOCATION.

Table 4.1-1 is the Overall ACE OT&E Schedule. It depicts the phases, dates, and locations of the Final ACE OT&E testing.

TABLE 4.1-1. OVERALL ACE OT&E SCHEDULE

PHASE	DATES	LOCATION
ACE Final Configuration	August 27 - 30, 1996	OKC/DFW
Regression Test	October 29 - November 5, 1996	OKC/DFW
Regression Test	January 28, 1997	OKC
Power Quality Verification Tests	April 1-3, 1997	AAI/SMI Factory
	April 7 - 10, 1997	OKC

4.2 PARTICIPANTS.

Below is a list of participants.

<u>ROLE</u>	<u>RESPONSIBILITY</u>
ACE Test Lead	Overall OT&E Management
Test Director (TD)	Focal Point for test coordination, PTR control, test conduct, and debriefing evaluation participants.
Test Engineers	Coordinate test events, generate and coordinate PTRs, verify engineering requirements, and analyze data.
ATCS Test Operators	Interact with the ACE, and record anomalies with the TD.
Test Observers	Record observations, generate and record PTRs.

4.3 TEST AND SPECIALIZED EQUIPMENT.

Test equipment used in power quality tests are listed in table 4.3-1. No other special test equipment was required for testing the ACE.

TABLE 4.3-1. POWER QUALITY VERIFICATION TEST EQUIPMENT

TEST EQUIPMENT	MODEL	SER. NO.
Elgar AC Power Source	EW801-1-115	963810008
LeCroy Oscilloscope	9450A	94502846
Amprobe Harmonic Power Analyzer	HA2000	422110
AEMC Current Probe:	SL261	N/A
Dranetz Power Quality Analyzer	658-400	6580LA 075 172
Resistive Load	N/A	N/A

4.4 TEST OBJECTIVES/CRITERIA.

4.4.1 ACE Final Configuration OT&E Test.

4.4.1.1 Objectives.

- a. regression testing of open PTRs,
- b. operational functionality of the ACE Final Configuration,
- c. automatic redundant computer switch operation,
- d. ACE OID functionality,
- e. functionality of fully loaded configuration,
- f. additional external interface (FDIO), and
- g. expansion of ACE/ACE interface capability.

4.4.1.2 Criteria.

- a. ACE is operationally suitable and functionally usable;
- b. resolution of open PTRs;
- c. all ACE applications and capabilities perform in accordance with the ACE Specification, RSMI005-00115 (Series), in the final configuration;
- d. the redundant computer takes over ACE functionality within 3 minutes;
- e. the ACE OID communicates successfully with the ACE computer and functions according to specifications;
- f. the ACE functions successfully in the fully loaded configuration;
- g. successful communications with the new external interface (FDIO) and expanded ACE/ACE interface; and

- h. successful communications with the expanded ACE/ACE interface.

4.4.2 Regression Tests.

4.4.2.1 Objectives.

- a. regression testing of open PTRs,
- b. operational functionality of the ACE with updated software, and
- c. functionality of the ACE in a fully loaded configuration.

4.4.2.2 Criteria.

- a. resolution of open PTRs;
- b. all ACE applications and capabilities perform in accordance with the ACE Specification, RSMI005-00115 (Series), in the final configuration; and
- c. the ACE functions successfully in the fully loaded configuration.

4.4.3 Power Quality Verification Testing.

4.4.3.1 Objectives.

The objective of the Power Quality Verification Testing was to determine ACE system compliance with the Power Quality Specification, FAA-G-2100F.

4.4.3.2 Criteria.

The criteria for the Power Quality Verification Testing was each of the ACE parameters fell within tolerances outlined in specification FAA-G-2100F:

- a. Total Harmonic Distortion (THD),
- b. harmonic distortion,
- c. inrush current, and
- d. power factor.

4.5 TESTING DESCRIPTIONS.

4.5.1 ACE Final Configuration OT&E Test.

In addition to testing descriptions, this section describes regression testing of open PTRs.

4.5.1.1 Regression Testing.

Regression testing consisted of verifying open PTR W-011 (Audible Alarm) by observing ATCSs use the OID in the ATCT.

4.5.1.2 System Functionality.

The ACT-320 test team observed the OKC ATCSs interacting with the ACE during duty hours. The critical test issue was to verify the functionality of the ACE operations, maintenance, and communications functions using checklists. Problems encountered were recorded and tracked in a PTR database.

4.5.1.3 Automatic Redundant Computer Switch.

The ACE automatic redundant computer switch operation was tested by disabling the primary computer and allowing the redundant computer to take over ACE operation. This test was repeated seven times. Test engineers measured and recorded the time lapse from the primary ACE computer failure to full accessibility of ASOS data and AVD user screens.

4.5.1.4 ACE OID Test.

The ACT-320 test team observed the OKC ATCSs interacting with the OID during duty hours. The critical test issue was the functionality of the OID in the tower environment. The team verified its functionality and observed ATCSs change tower visibility.

4.5.1.5 External Interfaces Test.

The ACT-320 test team observed weather information being shared among three ACE systems. Additionally, AIRMET and SIGMET weather data were observed on the System Administrator's PC utilizing the ACE to FDIO interface. The critical test issue was the capability of the ACE to receive weather data from external interfaces.

4.5.1.6 ACE Full Load Test.

Six full load tests were accomplished on the ACE Final Configuration.

- a. Cold Boot: System response was timed from a cold start until all AVDs in the TRACON staging area were available.
- b. Broadcast alarm (graphic screen): A high priority graphic screen was broadcast to all AVDs on the system. System response was timed from the moment the alarm was sent until the graphic display screen appeared on all 43 AVDs in the TRACON staging area.
- c. Broadcast alarm (text screen): A high priority text screen was broadcast to all AVDs on the system. System response was timed from the moment the alarm was sent until the text screen appeared on all 43 AVDs in the TRACON staging area.
- d. Simultaneous AVD requests (text screen): ATCS participants simultaneously requested a text screen from 43 AVDs, and in addition, 15 AVDs in the three tower subjunction levels were randomly accessed during this time. AVD response was timed and recorded from the moment of screen request until the screen appeared on each AVD.

e. Random graphic screen requests: Test participants randomly accessed AVDs in the tower subjunction levels while ATCSs were simultaneously accessing AVDs in the TRACON staging area. Response times from request for the screen until screen appeared were recorded for each AVD.

f. Combination text and graphic screen requests: One half of the ATCS participants in the TRACON staging area requested a graphic screen and the other half of the participants requested a text screen. Both requests were done simultaneously. Response time from request for the screen until screen appeared were recorded for each of the AVDs.

The critical test issues for the full load test were:

- a. all AVDs operational within 3 minutes of a cold bootup,
- b. no more than 1 second to receive a positive indication of a download request,
- c. no more than 3 seconds to download a text screen to the AVD, and
- d. no more than 5 seconds to download a graphic screen to the AVD.

4.5.2 Regression Tests Description.

The test description for Regression Tests, conducted at OKC/DFW, is discussed in the following sections.

4.5.2.1 Outstanding PTRs.

Outstanding PTRs were tested according to procedures developed for Factory Acceptance Testing (FAT) and additional regression test procedures developed to specifically test system functionality.

4.5.2.2 System Functionality.

The ACT-320 test team verified the functionality of the ACE by observing OKC ATCSs interacting with the ACE during duty hours. System Administrator applications, remote dial-in capabilities, tape backup, AVD response time for bootup, screen access were tested using FAT procedures. The redundant computer switchover test consisted of disconnecting the primary ACE and recording the time required for the redundant ACE to take over operation.

4.5.2.3 Full Load Regression Test.

The full load test consisted of observing DFW ATCSs using the AVDs in operational positions in the TRACON and East and West Towers. The test team also observed ACE user activity at the TMU positions and the Flight Data (FD) position and interviewed operators at those positions. During full load operation, 57 AVDs were operating; FDIO weather reports were updated; ACE/ACE communications were ongoing; and the TMU and FD operators were using ACE data augmentation capabilities. In addition, the system administrator accessed the ACE using the ethernet PC.

4.5.2.4 Computer Memory Test.

The computer memory test consisted of a comparison of mean time to access screens using 16 MB RAM versus 32 MB RAM. AVD screen response was tested by five test participants. Each participant sequentially accessed 30 data screens at the same time as the other participants were accessing the same 30 data screens. This test was accomplished five times each when the ACE was fitted with 16 MB of RAM and again when the ACE was fitted with 32 MB of RAM.

4.5.3 Power Quality Verification Test.

Power Quality Verification Tests were conducted at the AAI/SMI factory and OKC ATCT. Power quality measurements were taken on each component of the ACE system. An AC power filter was then added between the ACE component and the primary power bus, and the measurements were retaken on each side of the AC power filter. The following parameters were collected:

- a. THD,
- b. Harmonic Distortion,
- c. Peak Inrush Current,
- d. Power Factor,
- e. Apparent Power (Watts), and
- f. True Power (VA).

Units tested were:

- a. a resistive load (to provide baseline measurements),
- b. Modgraph 14" Monitor with AVD keypad,
- c. Modgraph 9" Monitor with AVD keypad,
- d. Electrohome 14" Monitor with AVD keypad,
- e. Electrohome 9" Monitor with AVD keypad,
- f. Ethernet Hub device, and
- g. ACC.

4.6 DATA COLLECTION AND ANALYSIS METHODS.

Data collection and analysis methods for the ACE OT&E are discussed in the following sections.

4.6.1 Problem/Trouble Reports.

The system failures/problems were classified by criticality and entered into a PTR data base. The data base includes a discrepancy description, recommendation, action taken, the designated criticality classification, and the status of the PTR (i.e., closed/open). The data base is in appendix A.

4.6.2 Checklists.

Checklists were developed for the ACE OT&E data collection. These checklists addressed the PTRs and the issues being tested. Test steps and success criteria are also included on these checklists. Test engineers used the checklists to record pass/fail notations for each test issue.

4.6.3 Test Data Sheets.

Test data sheets are checklists that list the ACE Specification requirements and the OT&E test criteria. Data on the test data sheets are used to verify and record results of the ACE OT&E configuration.

4.6.4 Power Quality Analysis Methodology.

Power quality tests were conducted with the AC power filter installed in the test article circuit.

4.6.4.1 Total Harmonic Distortion.

THD was recorded as a percentage compared with the AC power fundamental. THD is not addressed directly in FAA-G-2100F, and was not reported as an individual parameter. The THD measurements were recorded in the raw data Test Data Sheets (TDSs) and are available at the FAA William J. Hughes Technical Center, ACT-320, on request.

4.6.4.2 Harmonic Distortion.

The True Power (Volt/Ampere (VA)) reading for each test article was used to establish the absolute limits for each harmonic component, 2 through 20. Measurements taken on the primary power source side of the AC power filter were compared to the limits, and each harmonic was analyzed to determine whether it passed or failed.

4.6.4.3 Peak Inrush Current.

Peak inrush currents were recorded on the LeCroy Oscilloscope. Limits established in FAA-G-2100F were computed and inscribed on the LeCroy output plots, thereby providing a graphic display of pass/fail results.

4.6.4.4 Power Factor.

Power factor (PF) was recorded by the HA-2000 Amprobe Harmonic Power Analyzer, and reported in the TDSs for each test article. The power factor was marked as pass/fail according to the level recorded. FAA-G-2100F provides that 0.7 lead to 0.7 lag is acceptable. Values beyond those limits were marked as FAIL.

4.6.4.5 Apparent Power.

Apparent power was recorded by the HA-2000 Amprobe Harmonic Power Analyzer, and reported in the TDSs as Watts consumed for each test article.

4.6.4.6 True Power.

True power was recorded by the HA-2000 Amprobe Harmonic Power Analyzer, and reported in the TDS's as volt/amps consumed for each test article.

4.6.5 ACE Full Load Response Time Data.

ACE full load response times were recorded for each test. Full load test data for tests that required simultaneous access of all AVDs by ATCS participants resulted in multiple response times. These data were summarized and central tendency measures (e.g., median, mean, and standard deviation) were tabulated for each of the tests. Text and graphic screen results were analyzed separately.

4.6.6 Computer Memory Test.

Test participants recorded screen access time for each test trial of the Computer Memory Test. Data were summarized for each memory condition (16 MB RAM and 32 MB RAM). Means and standard deviations for each condition were tabulated and a parametric statistic (F Test) was used to evaluate the statistical significance of the differences in response time of the ACE computer using 16 MB and 32 MB of RAM.

5. RESULTS AND DISCUSSION.

This section documents data collected during the tests and the analyses that were performed to yield the final results.

5.1 RESULTS SUMMARY.

The final results of ACE OT&E, including ACE Final Configuration, Regression, and Power Quality Verification Testing, are summarized in table 5.1-1.

TABLE 5.1-1. ACE OT&E TEST RESULTS SUMMARY

ACE SPEC PARA #	TEST CATEGORY	STATUS
3.2.2	ACE Functionality using Windows NT	Pass
3.3.1	Operational Functionality of the ACE Final Configuration (ACC)	Pass
3.2.5.1, 4.2.3	Automatic Redundant Computer Switch	Pass
3.2.6	Full Load	Pass
3.2.1	S/W Version 3.4	Pass
FAA-G-2100F	Power Quality	* Pass

* Peak Inrush Current on the Ethernet Hub failed. However, it should be noted that the Peak Inrush Current on the Ethernet Hub is lower than the steady state current on the other hardware items in the system. As a consequence, the Ethernet Hub Peak Inrush Current is considered insignificant.

5.2 ACE FINAL CONFIGURATION OT&E TEST RESULTS.

The results of the ACE Final Configuration OT&E Test are summarized in table 5.2-1, ACE OT&E PTR Results Summary.

TABLE 5.2-1. ACE OT&E PTR RESULTS SUMMARY

TEST CATEGORY	PTRs WRITTEN	PTRs OUTSTANDING
FINAL CONFIGURATION TEST		
A - Hardware/Software	8	4
B - Subsystem (External) Interfaces	1	0
C - User Interface	0	0
TOTALS	9	4 (8/30/96)

5.2.1 Open PTR Test Results.

Previous ACE testing resulted in 10 PTRs remaining open against the system. As a result of OT&E testing and FAT testing, all previously opened PTRs were closed.

5.2.2 ACE Functionality.

Analysis of ACE OT&E Final Configuration data showed the ACE communications, maintenance, automatic redundant computer switch, and operations functions operate satisfactorily.

5.2.3 Automatic Redundant Computer Switch Test.

The test of the automatic redundant computer switch was executed without problems. This test was conducted seven times and performed as expected in each instance.

5.2.4 Full Load Test.

The full load test results are summarized in table 5.2.4-1, ACE Full Load Response Time Test Results.

5.2.5 New PTRs.

There were a total of nine PTRs written during the ACE Final Configuration OT&E. Five were closed during OT&E (description and disposition are located in appendix A). Four PTRs, listed in appendix A, remained open at the close of testing. They were closed during subsequent testing.

TABLE 5.2.4-1. ACE FULL LOAD RESPONSE TIME TEST RESULTS

TEST	TIME		
a. Cold Boot	All AVDs were on-line within <u>2</u> minutes <u>20</u> seconds		
b. Broadcast Alarm Text Screen Response: High Priority Simultaneous Broadcast Screen to all AVDs on network.	All AVDs displayed broadcast text screen within <u>3</u> seconds of request.		
c. Broadcast Alarm Graphic Screen Response: High Priority Simultaneous Broadcast Screen to all AVDs on network.	All AVDs displayed broadcast graphic screen within <u>5</u> seconds of request.		
	MEDIAN (seconds)	MEAN (seconds)	STANDARD DEVIATION (seconds)
d. Text Screen Simultaneous Request of a Text Screen to 43 AVDs and random access of 15 AVDs in the three towers.	9	15.3	15.7
e. Graphic Screen Request of a Complex Graphic Screen to 15 tower AVDs (5 in each of 3 towers) during Full-load (43 AVDs) Test in Staging Area.	5	8.1	8.9
f.1 Text/Graphic Screen (Text) Simultaneous request of text and graphic screens to Staging Area AVDs and random access of 15 AVDs in the three ATCTs.	12	15.1	11.7
f.2 Text/Graphic Screen (Graphic) Simultaneous request of text and graphic screens to Staging Area AVDs and random access of 15 AVDs in the three towers.	12.5	15.6	10.9

5.3 REGRESSION TEST (10/29 - 11/5/96).

Results of the Regression Test for ACE OT&E are summarized in table 5.3-1, ACE OT&E PTR Results Summary - Regression Test.

TABLE 5.3-1. ACE OT&E PTR RESULTS SUMMARY - REGRESSION TEST

TEST CATEGORY	PTRs WRITTEN	PTRs OUTSTANDING
REGRESSION TEST (October 29 - November 5, 1996)		
A - Hardware/Software	16	16
B - Subsystem (External) Interfaces	1	1
C - User Interface	0	0
TOTALS	17	17 (11/5/96)

5.3.1 New PTRs.

There were 17 new PTRs written during the Regression Test. The description and disposition of each PTR (W-029 - W-045) are listed in appendix A.

5.3.2 System Functionality.

With the exception of the above PTRs, regression test checklists and observation notes showed that the system functioned according to specification requirements.

5.3.3 Full Load Functionality.

The outstanding PTRs addressing ACE full load functionality were closed during regression testing. No full load functionality PTRs were opened during regression testing.

5.3.4 Computer Memory Comparison.

Table 5.3.4-1 shows the mean and standard deviation of the scores achieved by test participants downloading 30 screens during the computer memory comparison test conducted at OKC. An F Test indicated statistical significance $p < .0001$ for the difference between 16 MB RAM and 32 MB RAM on the ACE computer. In other words, the difference between the two conditions did not occur by chance. The 32 MB RAM change to the ACE caused a significant decrease in screen access time.

TABLE 5.3.4-1. COMPUTER MEMORY COMPARISON TEST

	16 Mbytes	32 Mbytes
Mean	59 seconds/30 screens	57.5 seconds/30 screens
Standard Deviation	4.24 seconds	0.71 seconds

5.4 PTR REGRESSION TEST (1/28/97).

Results of the Regression Test for ACE OT&E are summarized in table 5.4-1, ACE OT&E PTR Results Summary - Regression Test.

TABLE 5.4-1. ACE OT&E PTR RESULTS SUMMARY - REGRESSION TEST

TEST CATEGORY	PTRs WRITTEN	PTRs OUTSTANDING
REGRESSION TEST (January 28, 1997)		
A - Hardware/Software	2	4
B - Subsystem (External) Interfaces	0	0
C - User Interface	0	0
TOTALS	2	4 (1/28/97)

5.4.1 Test Results.

Previous ACE testing resulted in 17 PTRs remaining open against the system. As a result of the Regression Test, 15 open PTRs were closed. The description and disposition of each PTR are listed in appendix A.

5.4.2 New PTRs.

Two new PTRs were written during the Regression Test. The description and disposition of each PTR (W-046 and W-047) are listed in appendix A.

5.4.3 System Functionality.

With the exception of the above PTRs, regression test checklists and observation notes showed that the system functioned according to specification requirements.

5.5 POWER QUALITY VERIFICATION TESTS.

The results of the Power Quality Verification Tests are listed in tables 5.5-1 and 5.5-2. For PF requirements, FAA-G-2100F requires that the PF for each individual equipment or subsystem having an input range of 0 to 2000 watts be within the range of -0.75 (lag) to 0.75 (lead) PF. Those equipments/subsystems having an input in the range of 2000 to 5000 watts are required to have a PF in the range of -0.8 (lag) to 0.9 (lead).

For THD, FAA-G-2100F, paragraph 3.1.2.4.3 requires that the individual current harmonic distortion produced by each test article not exceed the limits set forth in table I, page 9 of FAA-G-2100F.

All ACE equipments fall into the above two categories (0 to 2000 watts input, and 2000 to 5000 watts input) for PF. All ACE equipments failed the above requirements for PF and THD. The

combined effects of the THD result in the out of tolerance PFs. As shown in table 5.5-2, all power quality test articles passed except the Ethernet Hub. The only parameter to fail on the Ethernet Hub was the Peak Inrush Current.

TABLE 5.5-1. TEST DATA WITHOUT FILTER

Equipment	Power Factor	Peak Inrush Current	Harmonic Distortion (HD)
Baseline*	Pass	Not Measured	Pass
Modgraph 14"/Keypad	FAIL	Not Measured	FAIL
Modgraph 9"/Keypad	FAIL	Not Measured	FAIL
Electrohome 14"/Keypad	FAIL	Not Measured	FAIL
Electrohome 9"/Keypad	FAIL	Not Measured	FAIL
Ethernet Hub	FAIL	Not Measured	FAIL
ACC	Pass	Not Measured	FAIL

* Resistive load connected to the AC power source. This measurement established a baseline and ensured that there was no distortion on the power source during testing.

TABLE 5.5-2. TEST DATA WITH FILTER

Equipment	Power Factor	Peak Inrush Current	Harmonic Distortion (HD)
Modgraph 14"/Keypad	Pass	Pass	Pass
Modgraph 9"/Keypad	Pass	Pass	Pass
Electrohome 14"/Keypad	Pass	Pass	Pass
Electrohome 9"/Keypad	Pass	Pass	Pass
Ethernet Hub	Pass	FAIL	Pass
ACC	Pass	Pass	Pass

5.5.1 Test Results.

Previous ACE testing resulted in four PTRs remaining open against the system. As a result of additional testing, three open PTRs were closed. The description and disposition of each PTR are listed in appendix A.

5.5.2 New PTRs.

Final testing resulted in three new PTRs (W-0046 - W-0048); PTR W-0047 was subsequently closed. Three PTRs (W-0024, W-0046, W-0048) remain open. Their description and disposition are listed in appendix A.

6. CONCLUSIONS.

6.1 SIGNIFICANT CONCLUSIONS.

The Automated Surface Observing System (ASOS) Controller Equipment (ACE) system successfully displays ASOS weather data (e.g., Meteorological Aviation Reports [METARs], 1-Minute Observations [OMOs]) to Air Traffic Control Specialists (ATCSs) in the tower and Terminal Radar Approach Control (TRACON). The ACE receives external data (e.g., Automated Family of Services [AFOS], Flight Data Input/Output [FDIO]) and successfully displays it in the tower and TRACON environments.

The hardware configuration as shown in table 3.2-1 was satisfactorily tested. The software configuration, version 3.3 with Windows NT version 3.5.1, utilizing 32 megabytes (MB) of Random Access Memory (RAM) was also satisfactorily tested.

Additionally, test results determined that the ACE system, in the tested configuration, with alternating current (AC) power filters installed, would meet the requirements for power quality, with the exception of peak inrush current for the Ethernet Hub. However, it should be noted that the Peak Inrush Current on the Ethernet Hub is lower than the steady state current on each of the other hardware items in the system. As a consequence, the Ethernet Hub Peak Inrush Current is considered insignificant.

7. RECOMMENDATIONS.

ACT-320 recommends deployment of the The Automated Surface Observing System (ASOS) Controller Equipment (ACE) with the following qualifications:

- a. the ACE system be equipped with alternating current (AC) power filters for each individual monitor/keypad position, the ACE Controller Cabinet (ACC), and each Ethernet Hub in the system;
- b. a National Airspace System (NAS) Change Proposal (NCP) be generated to provide for the addition of AC power filters to the ACE system; and
- c. the ACE system be deployed with 32 megabytes (MB) of Random Access Memory (RAM).

8. ACRONYMS.

AC	alternating current
ACC	ACE Controller Cabinet
ACE	ASOS Controller Equipment
ACU	Acquisition Control Unit
AFOS	Automation of Field Operations and Services (NWS)
AIRMET	Airman's Meteorological Information
ASOS	Automated Surface Observing System
AT	Air Traffic
ATCS	Air Traffic Control Specialist
ATCT	Air Traffic Control Tower
AVD	ACE Video Display
AWIPS	Advanced Weather Information Processing System
CWA	Center Weather Advisory
CWSU	Center Weather Service Unit
DFW	Dallas/Fort Worth International Airport, Irving, TX
EMI	Electromagnetic Interference
FAA	Federal Aviation Administration
FAT	Factory Acceptance Test
FD	Flight Data
FDIO	Flight Data Input/Output
GI	General Information
H/W	Hardware
LAN	Local Area Network
METAR	Meteorological Aviation Report
N/A	Not Applicable
NAS	National Airspace System
NCP	NAS Change Proposal
NOTAM	Notice To Airmen
NWS	National Weather Service
OID	Operator Interface Device
OKC	Will Rogers World Airport, Oklahoma City, OK
OMO	One-Minute Observation
OT&E	Operational Test and Evaluation
PC	Personal Computer
PF	Power Factor
PIREP	Pilot Weather Report
PTR	Problem/Trouble Report
RAM	Random Access Memory

RFI	Radio Frequency Interference
S/W	Software
SIGMET	Significant Meteorological Information
TD	Test Director
TDS	Test Data Sheet
TELCO	Telephone Company
THD	Total Harmonic Distortion
TMU	Traffic Management Unit
TRACON	Terminal Radar Approach Control
UPS	Uninterruptible Power Supply
VA	Volt/Amperes

APPENDIX A
PTR DATA BASE

ACT-320 PTRs

The following terms are used in the PTR Criticality definitions:

DEPLOY: To deliver and install a system at all contracted sites.

Criticality definitions:

MINOR: These problems result in undesirable performance that is unsatisfactory but does not preclude a deployment recommendation or affect life cycle cost.

MODERATE: These problems result in undesirable performance that is unsatisfactory but does not preclude a deployment recommendation. These problems may, however, affect life cycle costs.

MAJOR DEPLOYMENT: These problems will preclude a positive deployment recommendation.

Since a positive recommendation by ACT-320 may result in the system being shipped from the prime development contractor's facility (i.e., the factory) to a contractual site, MAJOR DEPLOYMENT critical PTRs will typically require a non-trivial resolution (i.e., a resolution requiring intensive system development, test and evaluation). ACT-320 will not provide a positive deployment recommendation until the ASOS team is certain that the system is fulfilling all its hardware and software critical operational and performance test requirements.

ACT-320 PTRs

PTR. No:T-0001	Originator: John A. Taylor	Submit Date: 11/07/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

When completing the setup, there was no way to get back to the AVD Main Menu. Pressing the menu key toggled between the setup menu and the 1-minute screen.

Recommendations:

Action Taken:

This problem has been corrected by the new software load.

Requirements Affected:

ACE Specification paragraph 4.3.3.2. In Screen Mode, pressing the Menu key shall toggle the AVD into Menu Mode.

PTR. No:T-0002	Originator: John A. Taylor	Submit Date: 11/07/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

When a new menu structure was down-loaded, the observation and augmented data on the 1-minute screen at the AVD disappeared. Operator had to request the screen again to restore the data.

Recommendations:

Validate requirements and determine if system responded per specification.

Action Taken:

Default Screen. Data Augmentation. This problem was corrected by the new software load.

Requirements Affected:

ACE Specification paragraph: 3.2.1, 4.3.2.1.

PTR. No:T-0003	Originator: John A. Taylor	Submit Date: 11/07/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

With White or Gray backgrounds, a waving line (vertical) appears approximately 2 inches from the left side of the monitor.

ACT-320 PTRs

Recommendations:

Action Taken:

This problem has been corrected through hardware modification.

Requirements Affected:

ACE Specification paragraph: 3.3.2

PTR. No:T-0004	Originator: Liz Kelly	Submit Date: 11/07/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

General protection fault error.

Locked out - needed to restart machine.

Recommendations:

Validate failure.

Action Taken:

This problem could not be reproduced at the Technical Center nor by the prime contractor. 99% certainty that lock-out was caused by ACE/ACU link failures.

Requirements Affected:

ACE Specification paragraph: 3.2.2

PTR. No:T-0005	Originator: Ed Nuzman	Submit Date: 11/08/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

ACU link not automatically restored after system restart. Required a second restart.

Recommendations:

Update software so that system is automatically restored after a system restart.

Action Taken:

This problem could not be reproduced in further attempts at the Tech Center or SMI. 99% certainty that error was due to link problems or operator error.

Requirements Affected:

ACE Specification paragraph: 3.2.1

ACT-320 PTRs

PTR. No:T-0006	Originator: Ed Nuzman	Submit Date: 11/08/94
Status: CLOSED	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:
Hourglass/ arrow flutters when AVDs are being updated.

Recommendations:
Update software so that mouse marker hourglass/arrow does not flutter during CPU busy periods.

Action Taken:
This problem is no longer apparent with the new software load.

Requirements Affected:
ACE Specification paragraph: 3.3.2

PTR. No:T-0007	Originator: Mike Greco	Submit Date: 11/08/94
Status: CLOSED	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:
When ACT goes down, can no longer access pages from the AVD.

Recommendations:

Action Taken:
This problem has been corrected in the new software load tested.

Requirements Affected:
ACE Specification paragraph: 3.2.1

PTR. No:T-0008	Originator: Jim Vicente	Submit Date: 11/08/94
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:
When pressing ENT on AVD keypad, there is excessive time before screen comes up.

Recommendations:

Action Taken:
This problem was corrected by the new software load.

ACT-320 PTRs

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0009	Originator: Liz Kelly	Submit Date: 11/08/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

Should not be able to set foreground and background colors the same.

Recommendations:

Action Taken:

This is a Windows function, and is therefore acceptable. There is a screen in the Setup menu that shows the user what the screen will look like. This should be sufficient.

Requirements Affected:

ACE Specification paragraph: 3.2.2

PTR. No:T-0010	Originator: Jim Vicente	Submit Date: 11/08/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

LED intensity should continuously decrease/increase by holding in up arrow/down arrow vice separate depresses.

Recommendations:

Action Taken:

This problem was noted again in formal OT&E and rewritten as PTR T-0040. PTR T-0010 was closed.

Requirements Affected:

ACE Specification paragraph: 3.3.2

PTR. No:T-0011	Originator: Jim Vicente	Submit Date: 11/08/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

No wrap around on screens, i.e. 000-001 not 000-9999.

ACT-320 PTRs

Recommendations:

As this is not a system requirement, it might be considered for future enhancement/modifications if Air Traffic deems it beneficial to the controllers.

Action Taken:

This is not a requirement of the system. PTR T-0011 closed 12/12/94.

Requirements Affected:

ACE Specification paragraph: 3.3.2

PTR. No:T-0012	Originator: Jim Vicente	Submit Date: 11/08/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

*When "ENTER" key hit, we did not return to 1-min screen. At this point, ACT was down, but there was no indication of that on the AVD screen. RE-RUN/Validate Scenario.

** Could not divide AVD screen into 3 areas.

Recommendations:

Action Taken:

This test was rerun with the ACE/ACU link firmly established. The failure could not be reproduced. PTR closed with 99% certainty that this failure was caused by an ACE/ACU link failure.

Requirements Affected:

ACE Specification paragraph: 4.3.2.2

PTR. No:T-0013	Originator: Ed Nuzman	Submit Date: 11/08/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

Audible alarm at system power on self test is too long.

Recommendations:

Shorten power on alarm to 5 seconds.

Action Taken:

Audible alarm shortened in duration by the prime contractor. In OT&E 7/10-7/12, no further mention or complaint was made.

ACT-320 PTRs

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0014	Originator: John A. Taylor	Submit Date: 11/07/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 12/12/94	Current Build:
		Build Closed:

Discrepancy Description:

Arrow keys will not select different menu selections. (I'm not sure we want this anyway.)

Recommendations:

While not a current requirement, it might be considered for future enhancement/modification.

Action Taken:

Arrows keys are not required to select different menu selections. Deemed non-critical to operation and PTR was closed.

Requirements Affected:

ACE Specification paragraph: 4.3.3.2

PTR. No:T-0015	Originator: Karen Peio	Submit Date: 11/11/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 12/12/94	Current Build:
		Build Closed:

Discrepancy Description:

ASOS SPEC. requires the capability to "Enter Parenthetical Remark in SAO." "Transmit SAO without Remark" could not do.

Recommendations:

Review SPEC and/or Procedure.

Action Taken:

NWS confirmed that they no longer use parenthetical remarks, and that the requirement should have been removed from the original ASOS Specification. It is not a requirement of the ACE.

Requirements Affected:

No requirement reference.

PTR. No:T-0016	Originator: Ed Nuzman	Submit Date: 11/11/94
Status: Closed	Criticality: MAJOR DEPLOYMENT	
Open: N	Close Date: 12/12/94	Current Build:
		Build Closed:

Discrepancy Description:

ACT-320 PTRs

Not all database were backed up on the redundant computer. As a result, the configuration on the redundant computer was no current.

Recommendations:

Repeat the test and try to reproduce the failure.

Action Taken:

Further attempts to reproduce this failure were unsuccessful. 99% certainty that problems were caused by repeated failures to maintain an ACE/ACU link.

Requirements Affected:

ACE Specification paragraph: 4.2.4.1

PTR. No:T-0017	Originator: Karen Peio	Submit Date: 11/11/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

Incongruent menu reaction. When go from main menu - TOC - Screen (specific screen) menu key does not toggle to previous TOC also when in TOC hit menu key does not take you into screen mode.

Recommendations:

Action Taken:

This problem did not reoccur with new software load.

Requirements Affected:

ACE Specification para: 4.3.3.2

PTR. No:T-0018	Originator: Ed Nuzman	Submit Date: 11/08/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 12/12/94	Current Build: Build Closed:

Discrepancy Description:

"so far today" not contained in header

Recommendations:

1. validate requirement.
2. if valid, add comment to header.

Action Taken:

It was determined that a more recent version of the specification did not require "so far today" be in the header. PTR closed.

ACT-320 PTRs

Requirements Affected:

This was an old ASOS Specification requirement that is no longer valid.

PTR. No:T-0019	Originator: Ed Nuzman	Submit Date: 11/10/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 08/16/95	Current Build: Build Closed:

Discrepancy Description:

5.e - note that on audible alarm of variable intensity under control of the ACU notifies the operator.

Audible alarm is not of variable intensity.

Recommendations:

This requirement is a carry-over from the original ASOS Specification.

Recommend that the validity of this requirement on the ACE be reviewed.

Action Taken:

This PTR is superseded by PTR W-0011.

Requirements Affected:

ACE Specification Requirement: 3.2.1

PTR. No:T-0020	Originator: Ed Nuzman	Submit Date: 11/09/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

ACE/ASOS link locks up periodically for short time periods of 12 to 15 seconds.

Recommendations:

Action Taken:

Problem did not reoccur during formal OT&E at the FAA Technical Center.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0021	Originator: Ed Nuzman	Submit Date: 11/10/94
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 07/12/95	Current Build:

ACT-320 PTRs

Build Closed:

Discrepancy Description:
EMI Test results pending.

Recommendations:
Review results when report is issued.

Action Taken:
Results of the EMI testing performed by the prime contractor were received and reviewed. All requirements were met with one exception which generated PTR T-0048. SEE PTR T-0048. See also W-047.

Requirements Affected:
ACE Specification paragraph: 3.2.3.1

PTR. No:T-0022	Originator: Ed Nuzman	Submit Date: 11/11/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:
When working with screen builder, got an application error. Screen builder was terminated without save opportunity.

Recommendations:

Action Taken:
Screen Builder functioned as required on the ACT. Function on the remote PC did not perform correctly. SEE PTR T-0029.

Requirements Affected:
ACE Specification paragraph: 3.2.2, 4.2.2.3

PTR. No:T-0023	Originator: Colleen Horan	Submit Date: 11/18/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:
When a broadcast alarm is sent, if all previous alarms are not cleared from all AVDs, the 1-minute observation screens will go blank on a variable number of AVDs. The screen must be re-requested to restore the data.

Recommendations:

Action Taken:

ACT-320 PTRs

This did not occur with the new software load tested in OT&E.

Requirements Affected:

ACE Specification paragraph: 4.2.2.5

PTR. No:T-0024	Originator: E F Nuzman	Submit Date: 11/18/94
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 07/12/95	Current Build:

Build Closed:

Discrepancy Description:

Screen Builder operation on the ACT and remote PC encountered Application Error and the application was terminated. This happened at irregular intervals, no pattern to the failures noted.

Recommendations:

Fix software to avoid application errors.

Action Taken:

During SAT at SMI and the ACE Training Course at the Tech Center, several new error messages and general protection faults were noted. This PTR was closed and rewritten to reflect the changes.

SEE PTRs:

T-0029
T-0030
T-0031

Requirements Affected:

ACE Specification paragraph: 3.2.2, 4.3.4.4

PTR. No:T-0025	Originator: Karen Peio	Submit Date: 11/21/94
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 07/12/95	Current Build:

Build Closed:

Discrepancy Description:

During logoff procedures, AVD002, AVD003, AVD004 and AVD005 experienced a screen lockup at the login screen. Had to power off the AVDs to leave the login screen. These instances happened separately at different times and by different operators.

Recommendations:

Action Taken:

This problem could not be reproduced with the new software load.

Requirements Affected:

ACT-320 PTRs

ACE Specification paragraph: 3.2.1

PTR. No:T-0026	Originator: E F Nuzman	Submit Date: 11/21/94
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 07/12/95	Current Build: Build Closed:

Discrepancy Description:

When screen was saved as 1412, the name assigned was overwritten in the database as "You should not see this!".

Recommendations:

Action Taken:

This could not be reproduced during formal OT&E.

Requirements Affected:

ACE Specification paragraph: 4.2.2.3.

PTR. No:T-0027	Originator: John A. Taylor	Submit Date: 07/07/95
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m Build Closed:

Discrepancy Description:

In Screen Builder mode, the screen as displayed on the ACT does not appear exactly the same on the AVD. The alignment of text characters was affected. For example, if several lines of text were aligned on a "left margin" on the ACT, they would NOT be aligned on the AVD.

Recommendations:

Action Taken:

Software load V. 1.1 at OKC and PWA has corrected this problem.

Requirements Affected:

ACE Specification paragraph: 4.2.2.3

PTR. No:T-0028	Originator: John A. Taylor	Submit Date: 07/06/95
Status: Closed	Criticality: DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m Build Closed:

Discrepancy Description:

When the user attempted to delete a screen at the lowest level, a system error occurred and shut down the network server and the AVDs. The error did NOT occur at any other level, NOR did it occur when deleting the entire menu structure from top to bottom.

ACT-320 PTRs

Recommendations:

Action Taken:

Build V1.1 at OKC and PWA corrected this problem.

Requirements Affected:

ACE Specification paragraph: 4.2.2.3

PTR. No:T-0029	Originator: John A. Taylor	Submit Date: 07/06/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

While a user was screen building, the following message appeared, "SB caused a General Protection Fault in module SB.EXE@004A.0263."

Recommendations:

Modify software so that it does not cause general protection faults.

Action Taken:

This was regression tested at PWA and performed successfully.

Requirements Affected:

ACE Specification paragraph: 3.2.2

PTR. No:T-0030	Originator: John A. Taylor	Submit Date: 07/07/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

When the user was in Screen Builder, the keyboard locked up. Mouse functionality was nominal. An "AV.EXE" error message appeared. This occurred on two different ACT computers in three instances.

Recommendations:

Fix software.

Action Taken:

This problem did not occur with the software load at OKC and PWA.

Requirements Affected:

ACE Specification paragraph: 3.3.1, 3.2.2

PTR. No:T-0031	Originator: John A. Taylor	Submit Date: 07/10/95
----------------	----------------------------	-----------------------

ACT-320 PTRs

Status: Closed
Open: N

Criticality: OKC CRITICAL
Close Date: 08/18/95

Current Build: 2.1m
Build Closed:

Discrepancy Description:

Three Software Trouble Reports (STRs) from SAT remain open. (STR 83, STR 95 and STR 96)
The remote PC dial-up capability for Screen Builder is unsatisfactory and could cause a system shut down.

Recommendations:

Fix software.

Action Taken:

The three STRs have been corrected and the remote PC Dial-In performed satisfactorily at OKC.

Requirements Affected:

ACE Specification paragraph: 4.3.4.4

PTR. No:T-0032

Originator: Calvin Smith

Submit Date: 07/10/95

Status: Closed

Criticality: OKC CRITICAL

Open: N

Close Date: 08/18/95

Current Build: 2.1m
Build Closed:

Discrepancy Description:

During the Virtual OID operation, the keyboard failed to respond when keyboard entries were made during a sign-on attempt. Keyboard started to function and the ATCS operator initials were not displayed during sign-on. ATCS noted that the Virtual OID was operating VERY slowly. ATCS also noted that the ATCS initials were displayed during sign-off.

Recommendations:

Recommend that this PTR be linked with PTR T-0042 and T-0043. It appears that this may have been due to the generally slow response time of the Virtual OID.

Action Taken:

Virtual OID functionality speed has been increased to approximately a 2 second response time.

ATCS's initials were displayed during sign-on and sign-off.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0033

Originator: Karen Peio

Submit Date: 07/10/95

Status: Closed

Criticality: PROD.DEPLOYMENT CRITICAL

Open: N

Close Date: 08/18/95

Current Build: 2.1m
Build Closed:

Discrepancy Description:

ACT-320 PTRs

While on the remote PC, the user changed a field associated alarm. All AVDs EXCEPT AVD004 responded with the alarm.

Recommendations:

Action Taken:

This phenomenon did not occur during contractor SAT, SAT regression, or at OT&E in OKC and PWA.

Requirements Affected:

ACE Specification paragraph: 4.3.4.4, 3.2.1

PTR. No:T-0034	Originator: Vince Polk	Submit Date: 07/10/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

During F9 functionality, when updating alarm broadcast, other AVDs "blanked out" then came back to the same page then showed the alarm.

Recommendations:

Fix software

Action Taken:

THIS PHENOMENON DID NOT OCCUR DURING CONTRACTOR SAT, SAT REGRESSION, OR AT OT&E IN OKC AND PWA.

Requirements Affected:

ACE Specification paragraph: 4.2.2.5

PTR. No:T-0035	Originator: Calvin Smith	Submit Date: 07/10/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

The first time the F1 key was pressed on the data augmentation device, an error message was displayed stating: "The screen does not exist." F1, when pressed again, produced the desired screen.

Recommendations:

Action Taken:

The F1 Function key performed normally during contractor SAT, contractor SAT regression AND OT&E at both OKC and PWA.

ACT-320 PTRs

Requirements Affected:

ACE Specification paragraph: 4.2.2.5

PTR. No:T-0036	Originator: Kelly Stubbs	Submit Date: 07/10/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

In the F9 function, after broadcasting the alarm, the AVD screen changed from screen 0001 to the user's screen 4021.

Recommendations:

Action Taken:

This situation was recreated at the FAA Technical Center and at the contractor's lab. It was an isolated event linked to the set-up and the problem has been corrected.

Requirements Affected:

ACE Specification paragraph: 4.2.2.5

PTR. No:T-0037	Originator: Vince Polk	Submit Date: 07/11/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

In Screen Builder, it was necessary to double-click three times on "Vinnies Menu" before getting to the next level.

Recommendations:

Action Taken:

This occurrence could not be duplicated at SMI lab or during OT&E unless the mouse pointer was not placed on the item to be selected.

Requirements Affected:

ACE Specification paragraph: 4.2.2.3

PTR. No:T-0038	Originator: Jeff Most	Submit Date: 07/11/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

ACT-320 PTRs

In the Virtual OID mode, when a processing delay occurs, there is no indication that the last request/command entered was received and/or processed.

Recommendations:

Possibly related to PTRs T-0032, T-0041 and T-0042 relating to the OID response time.

Action Taken:

PTR closed. Action transferred to T-0042.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0039	Originator: Kelley Stubbs	Submit Date: 07/11/95
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

When an alarm is sent to the AVD, the operator has no idea of what data was changed. If new data was highlighted or flashing, it could decrease time of trying to decide if entire page needed to be read.

Recommendations:

Action Taken:

No action taken - not a requirement.

Requirements Affected:

ACE Specification paragraph: No requirement.

PTR. No:T-0040	Originator: Vince Polk	Submit Date: 07/11/95
Status: Closed	Criticality: NON CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

The AVD keypad intensity should be scrollable.

Recommendations:

Action Taken:

AVD keypad intensity is adjustable by use of the arrow keys, in accordance with the ACE specification.

Requirements Affected:

ACE Specification paragraph: 4.3.3.4

ACT-320 PTRs

PTR. No:T-0041	Originator: Jeff Most	Submit Date: 07/11/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

When transmitting/changing tower visibility, all the AVDs returned to the Main Menu except AVD000.

Recommendations:

Action Taken:

All AVD'S functioned normally during testing of tower visibility input at PWA.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0042	Originator: OT&E Test Team	Submit Date: 07/11/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

Overall Virtual OID functionality was unacceptably slow.

Recommendations:

Action Taken:

Virtual OID functionality response time was reduced to approximately 2 seconds.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0043	Originator: Vince Polk	Submit Date: 07/11/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

User experienced a ten second delay before the ATCS initials appeared when login on as ATC.

Recommendations:

Action Taken:

ACT-320 PTRs

The delay between entering ATC initials and the appearance of said initials on-screen was approximately 2 seconds.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0044	Originator: Vince Polk	Submit Date: 07/11/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

When pressing the arrow keys on the AVD keypad (AVD001 - 9" monitor) to adjust the keypad intensity, there was no response.

Recommendations:

Action Taken:

All AVD keypads functioned normally when keypad intensity was changed.

Requirements Affected:

ACE Specification paragraph: 4.3.3

PTR. No:T-0045	Originator: Ed Nuzman	Submit Date: 07/14/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

ACE/ACU data link was lost twice. The first outage lasted approximately 9 minutes, the second for 17. In both instances, the link restored automatically.

Recommendations:

Action Taken:

The ACE-ACU link was established at OKC and PWA. Both systems showed a stable link throughout OT&E testing. The failure at the FAA Technical Center may have been due to communications problems such as noise on the lines.

Requirements Affected:

ACE Specification paragraph: 3.2.1

PTR. No:T-0046	Originator: E F Nuzman	Submit Date: 07/14/95
Status: Closed	Criticality: PROD.DEPLOYMENT CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m

ACT-320 PTRs

Build Closed:

Discrepancy Description:

System failed to correctly report the status of an AVD when the AVD failed. There was no initial report of failure, and no status update on the MAINT/ACE/AVD Status page.

Recommendations:

Action Taken:

An AVD was deliberately shut down to simulate a failure; the failed status was reported and there was an update on the MAINT/ACE/AVD status page.

Requirements Affected:

ACE Specification paragraph: 3.2.1, 3.5

PTR. No:T-0047	Originator: E F Nuzman	Submit Date: 07/14/95
Status: Closed	Criticality: OKC CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

In a switch from primary to redundant computer, the redundant computer would not establish the ACE/ACU link after being configured to primary. The primary had already been configured to redundant at the time.

Recommendations:

Action Taken:

During testing of the redundant switch, the redundant computer established an ACE-ACU link when configured as the primary.

Requirements Affected:

ACE Specification paragraph: 4.2.3, 3.2.1

PTR. No:T-0048	Originator: E F Nuzman	Submit Date: 07/13/95
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 08/18/95	Current Build: 2.1m
		Build Closed:

Discrepancy Description:

EMI test on DB25 (RS-232) point-to-point failed. Test report held by SMI, Don Barrons. The pocket modems failed this test during environmental testing.

Recommendations:

Action Taken:

Waived.

ACT-320 PTRs

Requirements Affected:
ACE Specification 3.2.3.1

PTR. No:W-0001	Originator: J. A. Taylor	Submit Date: 08/10/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/07/96	Current Build: 2.1m
		Build Closed:

Discrepancy Description:
Audible alarm will not disable after 1 minute.

Recommendations:
Fix software to control audible alarm per specification requirements.

Action Taken:
Software fixed in next build.

Requirements Affected:
ASOS Spec 3.3.15.2.1
ACE Spec 3.2.1

PTR. No:W-0002	Originator: Dave Schrader	Submit Date: 08/14/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/07/96	Current Build: 1.1D
		Build Closed:

Discrepancy Description:
Data Augmentation Mode: Have problems editing modifiable data fields. The screen overwrites itself and deleted data is sent into a buffer. When this buffer is full, the screen starts toggling between fonts and extraneous data appears.

Recommendations:

Action Taken:

Requirements Affected:
ACE Spec requirement number 4.2.2.5

PTR. No:W-0003	Originator: John A. Taylor	Submit Date: 08/14/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
Build Closed:		

Discrepancy Description:
The data augmentation keyboard plug slips out of its receptacle under normal usage. This appears to be a design problem.

ACT-320 PTRs

Recommendations:

Redesign the keyboard receptacle so that the keyboard plug fits it properly.

Action Taken:

Receptacle redesigned.

Requirements Affected:

ACE Specification requirement number 4.2.2.5

PTR. No:W-0004	Originator: Colleen Horan	Submit Date: 08/15/95
Status: Closed	Criticality: PROD. DEPLOYMENT CRITICAL	
Open: N	Close Date: 03/08/96	Current Build: 1.1D Build Closed:

Discrepancy Description:

An NWS technician placed a call from OID#1 to OID#2. Despite disabled alarms, an alarm sounded. The alarm continued throughout the duration of the call and only ceased when the technician terminated the call from his end.

Recommendations:

Action Taken:

Requirements Affected:

3.3.15.2.1 ASOS Specification requirement

PTR. No:W-0005	Originator: Jay delCano	Submit Date: 08/15/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D Build Closed:

Discrepancy Description:

A General Protection Fault occurred while running Screen Builder.V1.1D was in use. Hot keys, however, were mapped to screens that were deleted.

Recommendations:

Fix software so that hot keys cannot be mapped to non-existing screens.

Action Taken:

Software was modified in next upgrade to eliminate ghost mapping.

Requirements Affected:

4.3.3.3 ACE Specification requirement

PTR. No:W-0006	Originator: Vince Polk	Submit Date: 08/15/95
----------------	------------------------	-----------------------

ACT-320 PTRs

Status: Closed
Open: N

Criticality: PROD. DEPLOYMENT CRITICAL
Close Date: 03/08/96

Current Build: 1.1D
Build Closed:

Discrepancy Description:

When the primary ACT is down and a switch-over is made to the redundant computer, the AVDs reverted to the Main Menu page. This is of no use to the controller.

Recommendations:

This stems from a difference in interpretation of the specification.

Need the specification requirement clarified.

Action Taken:

Software was revised to bring the AVDs back up on the default screen (screen 0).

Requirements Affected:

There was no requirement for this in the earlier versions of the specification.

PTR. No:W-0007

Originator: Melanie Carender

Submit Date: 08/15/95

Status: Closed

Criticality: IMMEDIATE

Open: N

Close Date: 03/08/96

Current Build: 1.1D

Build Closed:

Discrepancy Description:

The ACE suffered a lock-up. An alarm on the AVD stated "ACE Network Server Not Responding". The controller pressed <CTRL> <ALT> on the ACT.

At confirmation, the controller DID NOT reboot the system.

The system showed two flags relating to the network server, and the ACE continued normal operations.

Recommendations:

Action Taken:

Requirements Affected:

ACE Specification requirement number 4.3.1

PTR. No:W-0008

Originator: Dennis M. Worden

Submit Date: 08/15/95

Status: Closed

Criticality: DFW CRITICAL

Open: N

Close Date: 03/08/96

Current Build: 1.1D

Build Closed:

Discrepancy Description:

ACT-320 PTRs

Data Augmentation keyboard at AVD002 would not function. Moved the keyboard to AVD003 and it functioned properly.

Recommendations:

Action Taken:

Requirements Affected:

4.2.2.5 ACE Specification requirement

PTR. No:W-0009	Originator: Kelley Stubbs	Submit Date: 08/16/95
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
		Build Closed:

Discrepancy Description:

The system should not allow a user to manually shut down (close) an application without a password.

Recommendations:

ACE Techs:

Second problem ACT shutdown.

I was trying to get into the virtual AVD on the ACT.

I was trying to minimize the screen to get the virtual AVD prompt up but instead I closed the virtual OID. Then I clicked on the virtual AVD and the screen went blank with a flashing cursor at the top left, and keyboard would not respond to input. (ACE network down). I called Andy Taylor (OKC SYS ADM) and he told me to reset the system via CTRL ALT DEL. The system reset and came back up normally. Either I shouldn't have been able to close the virtual OID, or closing it should not shut down the network.

/s/

Kelley Stubbs

Action Taken:

No action taken - not a requirement.

Requirements Affected:

No associated requirement number.

PTR. No:W-0010	Originator: Kelley Stubbs	Submit Date: 08/16/95
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
		Build Closed:

ACT-320 PTRs

Discrepancy Description:

Controller entered the following sequence:

CLR/ESC to the AVD Main Menu

Pushed 2 for Master Index

Pushed 1 for Approach charts

Pushed 3 for PWA and OUN

Pushed 2 for OUN approaches;

This caused all but one AVD in the tower to lock up. When the Controller pushed CLR/ESC again corrupted data appeared on the AVD screen.

Recommendations:

Action Taken:

Requirements Affected:

4.3.1 ACE Specification requirement

PTR. No:W-0011	Originator: Rebecca Martinez	Submit Date: 08/16/95
Status: Closed	Criticality: PROD. DEPLOYMENT CRITICAL	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
		Build Closed:

Discrepancy Description:

The Virtual OID needs a volume control for the audible alarm.

Recommendations:

Action Taken:

Requirements Affected:

3.2.1 ACE Specification requirement

3.3.15.2 ASOS Specification requirement

PTR. No:W-0012	Originator: Scott McEwen	Submit Date: 08/16/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
		Build Closed:

Discrepancy Description:

AT 1830 local time, the system experienced an ACE/ACE link failure. System was brought back on line by SMI.

At 1838 local, a flag stating "ACE to ACE#2 is not responding. Reboot ACT." The system was rebooted and returned.

ACT-320 PTRs

AVD009 in the tower cab and approximately half the AVDs in the TRACON locked. Recycling power on the AVDs brought them all back on-line.

Recommendations:

Action Taken:

Requirements Affected:

ACE Specification requirement number 4.3.43

PTR. No:W-0013	Originator: Steve LeGrand	Submit Date: 08/17/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D Build Closed:

Discrepancy Description:

When scrolling through pages in the data augmentation mode, entries flash and are unreadable. It is impossible to tell where the cursor is [cursor should be highlighted].

Recommendations:

Action Taken:

Requirements Affected:

ACE Specification requirement number 4.2.2.5

PTR. No:W-0014	Originator: Karen Peio	Submit Date: 08/18/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D Build Closed:

Discrepancy Description:

System experienced an AFOS link failure. The system failed to update AFOS information after a scheduled shutdown of the ACE. Information was missing from 2300, 8/18 to 0800 8/19.

Recommendations:

Action Taken:

Requirements Affected:

4.3.4.2 ACE Specification requirement

PTR. No:W-0015	Originator: Scott McEwen	Submit Date: 08/18/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D Build Closed:

ACT-320 PTRs

Discrepancy Description:

In the data augmentation mode, the page-up and page-down keys need to be remapped to allow access to the middle of the page.

Would be preferable to use the arrow keys to vector around the page.

Recommendations:

Action Taken:

Requirements Affected:

4.2.2.5 ACE Specification requirement

PTR. No: W-0016	Originator: Scott McEwen	Submit Date: 08/18/95
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 03/08/96	Current Build: 1.1D
		Build Closed:

Discrepancy Description:

When editing in "insert" mode, after the new character has been typed, it disappears. (overwritten by the cursor)

Recommendations:

Action Taken:

Requirements Affected:

4.2.2.5 ACE Specification

PTR. No: W-0017	Originator: Ralph Rains	Submit Date: 03/04/96
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 08/28/96	Current Build: 2.0
		Build Closed:

Discrepancy Description:

On the AVDs - at the Main Menu, when the controller calls for the Master Index, the screen comes back to the Main Menu. This is intermittent.

Recommendations:

Correct ACE software so the Master Index is displayed when called.

Action Taken:

Requirements Affected:

4.3.3.2.2 ACE Specification

ACT-320 PTRs

PTR. No:W-0018	Originator: Karen Peio	Submit Date: 03/06/96
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 08/28/96	Current Build: 2.0
		Build Closed:

Discrepancy Description:

The visual alarm on the AVDs flashes on and off with 5 second delays. Interval is too long, the controller might glance over and miss the alarm.

Recommendations:

Action Taken:

Requirements Affected:

4.3.3.5 ACE Specification

PTR. No:W-0019	Originator: Colleen Horan	Submit Date: 03/06/96
Status: Closed	Criticality: DFW CRITICAL	
Open: N	Close Date: 08/28/96	Current Build: 2.0
		Build Closed:

Discrepancy Description:

System Administrator PC - upon exiting screen builder, the system administrator received "Create Fail for Window 1" then a General Protection Fault.

Recommendations:

Correct ACE software to eliminate the GPF.

Action Taken:

The software was corrected.

Requirements Affected:

4.2.2.3 ACE Specification

PTR. No:W-0020	Originator: Colleen Horan	Submit Date: 08/28/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:

Maintenance GUI experienced a DR. Watson application error when reviewing redundant modem status. Problem is repeatable.

mtgui.exe

Access Violation 0xc0000005,address 151D69.

Recommendations:

ACT-320 PTRs

Replace Maintenance GUI software on laptop with upgraded version of the MT GUI.

Action Taken:

File on the Maintenance Laptop was corrupted. Upgraded and installed CM version of maintenance software. Laptop ran without error.

Requirements Affected:
3.5.1 ACE Specification

PTR. No:W-0021	Originator: E. F. Nuzman	Submit Date: 08/28/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:

When the computer initialized, AFOS started out with a failure count of 1.

Recommendations:

Modify the software so the failure count starts at 0.

Action Taken:

Software modified to failure count of 0 on initialization.

Requirements Affected:
3.2.5.1 ACE Specification

PTR. No:W-0022	Originator: E. F. Nuzman	Submit Date: 08/28/96
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:

When switching computers, the tower OID reportedly took 15 minutes to come back up. We were unable to rerun the test due to inclement weather.

Recommendations:

Rerun test sequence and fix if necessary.

Action Taken:

ATCS's were attempting to augment data on the AVD controlling the OID, which caused the delay. Repeated attempts showed OID restoration within 5 minutes. Unable to repeat the 15 minute delay.

Requirements Affected:
3.2.5.1 ACE Specification

ACT-320 PTRs

PTR. No:W-0023	Originator: Karen Peio	Submit Date: 08/30/96
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 01/28/97	Current Build: 3.1
		Build Closed:

Discrepancy Description:

During full load test, various AVDs would not access required screen - (timed out after 48 seconds) - AVD reverted back to Main Menu.

Recommendations:

Isolate the problem and correct.

Action Taken:

Problem isolated, software modified.

Requirements Affected:

3.2.6 ACE Specification

PTR. No:W-0024	Originator: Karen Peio	Submit Date: 08/30/96
Status: Open	Criticality: IMMEDIATE	
Open: Y	Close Date: / /	Current Build: 3.1
		Build Closed:

Discrepancy Description:

Power quality of ACE does not meet requirements stated in FAA-G-2100F.

Recommendations:

Install THD filters.

Action Taken:

Requirement to install harmonic isolation filters was included in the LRIP NCP.

Requirements Affected:

FAA-G-2100F

PTR. No:W-0025	Originator: Colleen Horan	Submit Date: 08/28/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:

Maintenance task reported UPS not responding, when it was functioning.

Recommendations:

Fail count toggled, continuously sending fail counts into hundreds.

ACT-320 PTRs

Action Taken:

Software modified to correct problem.

Requirements Affected:

3.5.1 ACE Specification

PTR. No:W-0026	Originator: Andy Taylor	Submit Date: 08/27/96
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 08/28/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:

ACE/ACE Communications task did not reconnect (modem) after redundant switchover to primary. Failed to make connection for 8 hours when switched back to primary.

Recommendations:

Modify software and/or modem initialization string to make ACE/ACE connections.

Action Taken:

Software fixed to correct problem.

Requirements Affected:

ACE Specification: 3.2.5.1, 3.2.5.2, 4.3.4.3.

PTR. No:W-0027	Originator: Andy Taylor	Submit Date: 08/27/96
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

Discrepancy Description:
Spurious AVD rebooting.

Recommendations:

Software fix.

Action Taken:

Problem not repeatable. AVDs switched out.

Requirements Affected:

ACE Specification 3.3.2

PTR. No:W-0028	Originator: Andy Taylor	Submit Date: 08/28/96
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 08/29/96	Current Build: 3.1
		Build Closed:

ACT-320 PTRs

Discrepancy Description:

ACD at NE position reboots to black screen with request line at bottom.

Recommendations:

Software fix.

Action Taken:

AVD switched out.

Requirements Affected:

ACE Specification 3.3.2

PTR. No:W-0029	Originator: Karen Peio	Submit Date: 10/29/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 10/30/96	Current Build: 3.22
		Build Closed:

Discrepancy Description:

No user index. Default user did not log into AVD when system administrator logged off.

Recommendations:

Install ACE software version 3.23

Action Taken:

Installed software version 3.23

Requirements Affected:

ACE Specification 4.3.3.2.4

PTR. No:W-0030	Originator: Karen Peio	Submit Date: 10/29/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 10/30/96	Current Build: 3.22
		Build Closed:

Discrepancy Description:

User TOC lists incorrect number of pages in upper right corner.

Recommendations:

Install s/w version 3.23

Action Taken:

S/W version 3.23 installed.

Requirements Affected:

PTR. No:W-0031	Originator: Karen Peio	Submit Date: 10/29/96
----------------	------------------------	-----------------------

ACT-320 PTRs

Status: Closed
Open: N

Criticality: NON-CRITICAL
Close Date: 10/30/96

Current Build: 3.22
Build Closed:

Discrepancy Description:
AVD location should be removed from setup menu.

Recommendations:
Install ACE s/w version 3.23

Action Taken:
S/W version 3.23 installed.

Requirements Affected:
ACE Specification 4.4.2

PTR. No: W-0032
Status: Closed
Open: N

Originator: Karen Peio
Criticality: IMMEDIATE
Close Date: 10/30/96

Submit Date: 10/29/96
Current Build: 3.22
Build Closed:

Discrepancy Description:
When a blank page occurs while scrolling through the screens, the scroll does not skip over the blank page to get to the next screen in the sequence.

Recommendations:
Install ACE s/w version 3.23

Action Taken:
ACE s/w version 3.23 installed.

Requirements Affected:
ACE Specification 4.3

PTR. No: W-0033
Status: Closed
Open: N

Originator: Mike Melillo
Criticality: IMMEDIATE
Close Date: 10/30/96

Submit Date: 10/29/96
Current Build: .0
Build Closed:

Discrepancy Description:
Failure of FDIO and AFOS modems does not cause a switch from primary to redundant computer.

Recommendations:
Install ACE s/w version 3.23

Action Taken:

ACT-320 PTRs

ACE s/w version 3.23 installed.

Requirements Affected:
ACE Specification 3.2.5.1

PTR. No:W-0034	Originator: Mike Melillo	Submit Date: 10/29/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 10/30/96	Current Build: 3.22
		Build Closed:

Discrepancy Description:
AVD failures do not call remote maintenance. Maintenance task failure.

Recommendations:
Install ACE s/w version 3.23

Action Taken:
ACE s/w version 3.23 installed.

Requirements Affected:
ACE Spec 4.2.2

PTR. No:W-0035	Originator: Mike Melillo	Submit Date: 10/29/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 10/30/96	Current Build: 3.22
		Build Closed:

Discrepancy Description:
FDIO data updating at bottom of page.

Recommendations:
Install ACE s/w version 3.23

Action Taken:
ACE s/w version 3.23 installed.

Requirements Affected:
ACE Spec 4.3.4.5

PTR. No:W-0036	Originator: Karen Peio	Submit Date: 11/05/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 11/06/96	Current Build: 3.22
		Build Closed:

Discrepancy Description:
Keypad: Dallas N. High - #3 key-light out; West Satellite position down-arrow light out.

ACT-320 PTRs

Recommendations:

Replace bulbs or keypads.

Action Taken:

Replaced keypads.

Requirements Affected:

N/A

PTR. No:W-0037

Originator: Karen Peio

Submit Date: 11/01/96

Status: Closed

Criticality: NON-CRITICAL

Open: N

Close Date: 01/28/97

Current Build: 3.22

Build Closed:

Discrepancy Description:

AVDs do not always soft boot per requirement.

Recommendations:

Determine if this is a software or hardware problem.

Action Taken:

Problem corrected in s/w version 3.23

Requirements Affected:

ACE Spec 4.3.1

PTR. No:W-0038

Originator: Mike Melillo

Submit Date: 11/01/96

Status: Closed

Criticality: NON-CRITICAL

Open: N

Close Date: 01/28/97

Current Build: 3.22

Build Closed:

Discrepancy Description:

Menu Mode: Not sufficient indication of user action (need downloading indication). Took ten seconds to go from MTOC to User TOC.

Recommendations:

S/W version 3.23 - "Requesting, or downloading" message required - as in screen mode.

Action Taken:

Installed in s/w version 3.23

Requirements Affected:

ACE Spec 4.3.3.2

PTR. No:W-0039

Originator: Mike Melillo

Submit Date: 11/04/96

Status: Closed

Criticality: NON-CRITICAL

ACT-320 PTRs

Open: N

Close Date: 01/28/97

Current Build: 3.22
Build Closed:

Discrepancy Description:

Screen mode to Menu mode: Not sufficient indication of user action (need downloading indication).

Recommendations:

Install fix in ACE s/w v3.23

Action Taken:

Installed in s/w version 3.23

Requirements Affected:

ACE Spec 4.3.3.1

PTR. No:W-0040

Originator: Karen Peio

Submit Date: 11/01/96

Status: Closed

Criticality: NON-CRITICAL

Open: N

Close Date: 01/28/97

Current Build: 3.22
Build Closed:

Discrepancy Description:

Data Augmentation: Top of letters disappear (screens 002, 003)

Recommendations:

Verify if operator error or software error.

Action Taken:

Operator error - overwriting data block and filling buffer.

Requirements Affected:

ACE Spec 4.4.5

PTR. No:W-0041

Originator: Mike Melillo

Submit Date: 11/01/96

Status: Closed

Criticality: NON-CRITICAL

Open: N

Close Date: 01/28/97

Current Build: 3.22
Build Closed:

Discrepancy Description:

Menu Mode: Page numbers should be the same size as text.

Recommendations:

Action Taken:

Fixed in s/w version 3.23

Requirements Affected:

ACT-320 PTRs

ACE Spec 4.3.3.2

PTR. No:W-0042	Originator: Mike Melillo	Submit Date: 11/05/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 01/28/97	Current Build: 3.22
		Build Closed:

Discrepancy Description:
Event Viewer time is inaccurate - events (PM) are logged in before events (AM).

Recommendations:
Fix in software version 3.23.

Action Taken:
S/W version 3.23 fixed the problem.

Requirements Affected:
ACE Spec N/A

PTR. No:W-0043	Originator: Mike Melillo	Submit Date: 11/05/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 01/28/97	Current Build: 3.22
		Build Closed:

Discrepancy Description:
West Tower Hub down 61 seconds from 11/3 -11/4.

Recommendations:

Action Taken:
Unable to duplicate problem. Closed without action.

Requirements Affected:

PTR. No:W-0044	Originator: Karen Peio	Submit Date: 11/05/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 01/28/97	Current Build: 3.22
		Build Closed:

Discrepancy Description:
Data Augmentation: Insert mode does not delete characters but buries them in buffer.

Recommendations:

Action Taken:
Problem fixed in ACE s/w version 3.23.

ACT-320 PTRs

Requirements Affected:
ACE Spec 4.4.5

PTR. No: W-0045	Originator: Mike Melillo	Submit Date: 11/05/96
Status: Closed	Criticality: NON-CRITICAL	
Open: N	Close Date: 01/28/97	Current Build: 3.22
		Build Closed:

Discrepancy Description:
An AVD locked up (DFW North High position). The lock up resulted in a confusing error message as a result of the screen request.

Recommendations:

Action Taken:
Fix accomplished in s/w version 3.23

Requirements Affected:
ACE Spec 4.3

PTR. No: W-0046	Originator: Mike Melillo	Submit Date: 01/28/97
Status: Open	Criticality: NON-CRITICAL	
Open: Y	Close Date: / /	Current Build: 3.3
		Build Closed:

Discrepancy Description:
FDIO initialized with a Failcount of 1.

Recommendations:
Software fix, the same as for the AFOS interface.

Action Taken:

Requirements Affected:

PTR. No: W-0047	Originator: Mike Melillo	Submit Date: 01/28/97
Status: Closed	Criticality: IMMEDIATE	
Open: N	Close Date: 09/04/97	Current Build: 3.3
		Build Closed:

Discrepancy Description:
AVDs with their associated keypads failed FCC Class B compliance for RF radiated emissions produced by the units at 6 frequencies between 43 MHz and 336 MHz (EMI failure).

Recommendations:
Redesign the keypad power supply to reduce RF emissions.

ACT-320 PTRs

Action Taken:

Keypads redesigned. Retests completed satisfactorily.

Requirements Affected:

CFR Title 47, Part 15 (FCC Class B Compliance for RFI)

PTR. No: W-0048

Originator: Mike Melillo

Submit Date: 04/11/97

Status: Open

Criticality: MAJOR

Open: Y

Close Date: / /

Current Build: 3.3

Build Closed:

Discrepancy Description:

The DFW ACE fails to diagnose an AFOS modem failure and cause a switch from primary to redundant computer.

Recommendations:

Redesign the ACE software to recognize AFOS modem failures.

Action Taken:

Requirements Affected:

ACE Specification 3.2.5.1