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FINAL

VERIFICATION TEST OF THE INTERIM MONITOR AND CONTROL SOFTWARE (IMCS) VERSION R07.32

LETTER OF FINDINGS

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FEDERAL AVIATION ADMINISTRATION

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1. INTRODUCTION.

This Letter of Findings details the ACN-100D Verification Test results of the Interim Monitor and Control Software (IMCS), version R07.32. Paragraph 2 consists of four subparagraphs which provide the following: (a) results of verifying the software modifications identified in the Version Description Document (VDD), (b) new potential problems, (c) unexpected problems, and (d) recommendations for improvements. ACN-100D recommends that the problem identified in 2.1.1.d (Airport Remote Monitoring System subaddressing) be corrected prior to deployment. Other identified problems are not critical and may be corrected or resolved, to the extent possible, prior to deployment or incorporated into a subsequent release.

1.1 PURPOSE.

The purpose of the Verification Test was to verify the following:

a. The software and its supporting documentation are consistent; and

b. Software modifications have been implemented as described in the Version Description Document for the Interim Monitor and Control Software (Version R07.32) of RMMS Maintenance Processor Subsystem, March 24, 1992, Unisys/VNTSC.

1.2 DATE.

The Verification Test was conducted from March 30 through April 8, 1992.

1.3 LOCATION.

ACN-100D conducted the Verification Test on the ACN-100D Maintenance Processor Subsystem (MPS), at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, New Jersey.

1.4 PARTICIPANTS.

Tom Miller (CTA) installed R07.32, following the installation instructions. Doug Ruth (CTA) conducted the Verification Test.

2. VERSION R07.32 VERIFICATION TEST RESULTS AND RECOMMENDATIONS.

2.1 RESULTS OF VERIFYING THE SOFTWARE MODIFICATIONS IDENTIFIED IN THE VDD.

Repeated below are the VDD paragraph numbers and the statements contained therein, which describe modifications to the software. The VDD statements are followed by the ACN-100D Verification Test results.

2.1.1 VDD Paragraph 3.4.

a. VDD Statement: SITE-TYPE and LOCATION now checked when called from SITE-STATUS or COMMANDS.

   This statement does not identify the circumstances under which the SITE-TYPE and LOCATION are checked. The cover letter accompanying the VDD states that the "SITE-TYPE and LOCATION now checked for calls to "EXIT-IMCS-SYSTEM."" ACN-100D assumes that these statements mean that when a new user logs on to the IMCS from the Exit IMCS screen, security checks are performed to determine if the user has access to the Site Status or Command screen being returned to. Testing confirms that the IMCS now prevents access to the Site Status and Command screens by an unauthorized user.

b. VDD Statement: PASSWORD screen now skipped on return from COMMANDS screen.

   ACN-100D found this to work as stated.

c. VDD Statement: COMMAND screens now display correct subtype.

   ACN-100D interpreted this statement to mean that the TYPE field on the second line of the Command screen now displays the proper site type (identified in DATALOAD as SUBTYPE). ACN-100D found that the TYPE field on the second line of the Command screen now displays the correct subtype.

d. VDD Statement: Commands sent to Airport Remote Monitoring System (ARMS) will have correct subaddressing.

ACN-100D used an LM1 Protocol Analyzer to capture commands sent from the IMCS to an RMSC (LCU). Inspection of the captured commands indicated that the proper subaddress was inserted in commands destined for the DME, GS, IM, LOC, MM, OM, and REIL. Commands destined for the LCU did not contain a subaddress. However, an unsuccessful attempt was made to configure two ILS systems through one RMSC. Two ARMS sites (ACY and ALO) were fully configured. After all IMCS files were properly loaded, each site was individually tested to ensure commands from the IMCS were sent to the proper RMSC. Then the DBADAP record for ALO was deleted and the DBSITETB entries for ALO were adjusted so their Site/Concen/Id indicated ACY (the RMSC entry for ALO was deleted). IMCS was restarted and commands were sent to the Localizers for ACY and ALO. While the commands for the Localizer at ACY were sent to the RMSC, those for ALO were not. The message "166 NO DATA FOUND FOR DBADAP FILE FROM SRV240 - CONTACT MPS SUPERVISOR" was displayed on the screen.

2.1.2 VDD Paragraph 3.8.1.2.

a. VDD Statement: The requester REQ910PS has been modified to check SITE-TYPE, PASSWORD, and LOCATION when called from the SITE-STATUS or COMMANDS screens and the logon is changed.

ACN-100D verified that the IMCS will prevent an unauthorized user from accessing the Site Status and Command screens from the Exit IMCS screen.

b. VDD Statement: The "EXIT-IMCS-SYSTEM" screen now times out.

ACN-100D found that when the SF16 (Exit IMCS) key is pressed and no action is taken at the IMCS Exit screen, the Exit IMCS screen will timeout and the Constant Monitor screen is displayed. The Constant Monitor screen will show the user's Sector Code and Initials.

c. VDD Statement: If the logon parameters are not legally entered, return upon timeout will be to the "CONSTANT MONITOR" screen.

ACN-100D found that when an unauthorized user's Sector Code, Initials, and Password are entered on the Exit IMCS screen and the F1 (Return) key is pressed, IMCS responds with the message: "188 NO

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DATA FOUND IN AFA FILE FROM SRV925 - CONTACT MMS MANAGER" and blanks out the Sector Code, Initials, and Password. If the Exit screen is then allowed to timeout, or the F1 (Return to IMCS) key is pressed while the Sector Code and Initials are blank, the Constant Monitor screen is displayed. In this case the Sector Code and Initials are not displayed on any of the IMCS screens. Any IMCS function which does not require a password can be performed.

d. VDD Statement: File SRV925 will be used if called from these screens, else file SRV405 will be used.

   Since ACN-100D is not provided with source listings, ACN-100D cannot evaluate this.

e. VDD Statement: The password screen (REQ250MS) is now skipped on return from the COMMANDS screen.

   ACN-100D found this to work as stated.

2.1.3 VDD Paragraph 4.2.2.

a. VDD Statements: COMMAND SCREENS for the Remote Monitoring Subsystem Concentrator (RMSC) subtypes erroneously displayed the RMSC commands. The COMMAND SCREENS now display the commands for the appropriate RMSC subtype.

   ACN-100D found that the REIL commands are not incorporated into the ARMS command file (EC7ARMS).

b. VDD Statements: The TPSITETB template file has been changed to insert the appropriate equipment type (which is now the subtype) rather than RMSC. This change involves both ARTCDTLD and GNASDTLD subvolumes.

   For the ARMS (RMSC), Dataload still assigns the DME as the default device if no subtypes are entered.

c. VDD Statements: Commands could not be sent to ARMS RMSs with the command processor because incorrect sub-addressing was being performed. A different command processor, CMD790, is now used to overcome this problem for RMSCs. This processor name has been changed in the RMSC record in TPADAP. This change involves both ARTCDTLD and GNASDTLD subvolumes. The sample for RMSC in the IMCS Operator's Manual will be modified.

ACN-100D verified that the new command processor, CMD790, was entered in the CMND-PROGRAM field of the DBADAP file for the RMSC by DATALOAD.

2.2 NEW POTENTIAL PROBLEMS.

The following are new potential problems identified during the Verification Test:

a. The ASR9 System Control Panel Site Status screen (ACY ASR) was being displayed. A valid Site ID (BEN) was entered along with an invalid RMS Type (ATCBI) and the F1 (Status) key was pressed. IMCS re-displayed the ASR9 System Control Panel Site Status screen without any data being displayed (Site now ACY, Type now ASRBI). Two 24th line messages were displayed: "287 NO STATUS FOUND FOR THIS SCREEN FROM SRV210 - CONTACT MPS SUPERVISOR," and "161 NO DATA FOUND FOR DBCS FILE FROM SRV205 - CONTACT MPS SUPERVISOR."

b. The Full Site Directory screen was being displayed. A site was marked with an "A" to indicate alarm monitoring was desired, and the F9 (Update Partition) key was pressed. A valid password was entered, but the F1 key, which is undefined on the Full Site Directory screen, was pressed instead of the F9 key. The Full Site Directory screen flashed for an instant. The F9 key was pressed again without entering a password. The partition was updated and the Partitioned Directory was displayed.

c. An unauthorized user may gain access to the IMCS by way of the Exit IMCS screen even though the user's MCS access level is zero in the ACC file in MMS.

2.3 UNEXPECTED PROBLEMS.

The following are unexpected problems which occurred during the Verification Test:

a. After installing R07.32, the ATCBI-5 commands were not available. When the command screens were accessed, IMCS displayed the following message: "290 NO COMMANDS FOUND FOR THIS SITE." The commands were present in DBCMD79 and DBCMD79P. After finding this problem, all IMCS files were rebuilt.

b. From the ATCBI-5 commands screen, the SF13 (Constant Monitor) screen was accessed. Next, the F3 (Site Status) screen was requested but the monitor was frozen--the time was no longer updated and the keyboard

was locked. This sequence was repeated at another terminal which did not freeze.

c. From time-to-time, only part of an IMCS screen will be displayed. In the case of the Constant Monitor screen, it is eventually refreshed without user intervention. The SF15 (Recover) key will correct this when it occurs.

2.4 RECOMMENDATIONS FOR IMPROVEMENTS.

The following are the ACN-100D recommendations for improvements:

a. It takes an excessive amount of time to display the Site Directories, Full or Partitioned. A faster method of providing this information should be developed.

b. Restrict access to the Utility subsystem to those who need it.