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MAINTENANCE DATA TERMINAL

SECOND INVITATION FOR BID

INTEGRATION TEST

LETTER OF FINDINGS

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1. INTRODUCTION.

This Letter of Findings details the results of the Maintenance Data Terminal (MDT) integration testing which was performed at the Federal Aviation Administration (FAA) Technical Center, Atlantic City International Airport, N.J. Integration testing was performed in accordance with the procedures in the MDT Integration Test Plan and Procedures document, dated June 20, 1989. ACN-230 conducted the integration testing in three sessions: from August 7, 1989 through August 11, 1989; from February 26, 1990 through March 2, 1990; and from March 22, 1990 through March 30, 1990. The equipment was initially set up in the MDT Test Bed Laboratory of the FAA Technical Center by IDP on July 19, 1989. The initial testing session was suspended when a protest was filed against the contract award. The equipment was disassembled on August 11, 1989 by ACN-230 and stored in a secured location until resolution of the protest. It was reassembled by ACN-230 in the MDT Test Bed Laboratory on February 26, 1990. Integration testing was suspended a second time when some of the original equipment was replaced by newer units. The third and final session was begun anew on March 22, 1990.

The MDT equipment consisted of the following Fixed Maintenance Data Terminal (FMDT), Portable Maintenance Data Terminal (PMDT), and printer units:

a. FMDT - two each: Everex AGI 1800A System Unit, PB1422EG Monitor, AGI 101 Keyboard, and Power Control Unit.

b. PMDT - two each: Packard Bell PB286 Laptop.

c. PRINTER - one Panasonic model KX-P1695

2. PURPOSE.

The purpose of the MDT second procurement integration testing is to verify the following:

a. The MDT meets the requirements defined in NAS-SS-1000 and Master Test Plan documents for the Maintenance Data Terminals; and

b. the MDT performs as an integrated component of the Remote Maintenance Monitoring System (RMMS).

Each function is evaluated and checked for discrepancies and/or failures in order to identify potential problem areas for MDT users in an integrated environment.

3. TESTING.

3.1 DATE.

The MDT integration testing was conducted in three sessions: from August 7, 1989 through August 11, 1989; from February 26, 1990 through March 2, 1990; and from March 22, 1990 through March 30, 1990.

3.2 LOCATION.

The MDT integration testing was conducted in the ACN-230 MDT Test Bed Laboratory at the FAA Technical Center, Atlantic City International Airport, N.J.

3.3 PARTICIPANTS.

The participants in the MDT integration testing were as follows:

a.	Y. Chiu	ACN-230
b.	C. Palmer	ACN-230/CTA
c.	K. Wideman	ACN-230/CTA
d.	G. Williams	ACN-230/CTA

4. INTEGRATION TEST RESULTS.

4.1 IT1 - DELIVERED HARDWARE AND SOFTWARE INTEGRATION.

The IT1 test sequences integrate contractor-delivered MDT hardware and software components and validate their capability for interfacing with the Maintenance Processor Subsystem (MPS).

4.1.1 IT1 Results.

All IT1 test sequences passed with the following exceptions:

a. IT1.7 - Integration Test of FMDT, Tandem PC6530 Emulator Software, and MPS.

1. Requirement: FMDT can correctly host the Tandem PC6530 emulation software.

2. Integration Test Result: While executing the Tandem resident terminal evaluation software, the following discrepancy occurred:

(a) Pressing the FMDT equivalent of the Tandem SHIFT-RESET key (CTRL-Backspace) unlocked the keyboard as expected, but made the next command issued unintelligible. The discrepancy is directly attributable to a bug in the Tandem resident terminal evaluation software, not the FMDT or the PC6530 software. Following the unintelligible command, the remaining test sequences passed without exception.

While executing other Tandem applications, such as IMCS and MMS, the FMDT equivalent of the SHIFT-RESET key functioned as expected.

b. IT1.8 - Integration Test of PMDT, Tandem PC6530 Emulator Software, and MPS.

1. Requirement: PMDT can correctly host the Tandem PC6530 emulation software.

2. Integration Test Results: While executing the Tandem resident terminal evaluation software, the following discrepancies occurred:

(a) Pressing the PMDT equivalent of the Tandem ROLL-UP key (Alt-Up Arrow) did not produce the anticipated results. This discrepancy is not attributable to the PMDT or the PC6530 software.

While executing other Tandem applications, such as File Editing, the PMDT equivalent of the ROLL-UP key functioned as expected.

(b) Pressing the PMDT equivalent of the Tandem SHIFT-RESET key (CTRL-Backspace) unlocked the keyboard as expected, but made the next command issued unintelligible. The discrepancy is directly attributable to a bug in the Tandem resident terminal evaluation software, not the PMDT or the PC6530 software. Following the unintelligible command, the remaining test sequences passed without exception.

While executing other Tandem applications, such as IMCS and MMS, the PMDT equivalent of the SHIFT-RESET key functioned as expected.

4.2 IT2 - MDT RMMS SYSTEM LEVEL REQUIREMENTS.

The IT2 test sequences validate FMDT and PMDT capability to meet the requirements allocated from the RMMS to the MDT in accordance with NAS-SS-1000, Volume V. The test sequences demonstrate data entry, data retrieval, independent retention and execution of software, and support of peripheral equipment. Additionally, sequences are included to demonstrate FMDT and PMDT function key responses from Maintenance Management System (MMS) software on the MPS.

4.2.1 IT2 Results.

All IT2 test sequences passed without exception.

4.3 IT3 - NAS SYSTEM LEVEL REQUIREMENTS ALLOCATED TO THE MDT.

The IT3 test sequences verify the following:

a. The FMDT/PMDT function keys perform the same as the Tandem 6530 function keys with the Interim Monitoring and Control Software (IMCS) on the MPS;

b. the FMDT and PMDT can correctly display IMCS screens and message displays on the 24th and 25th lines; and

c. the capability of the MDT to initiate status monitoring and issue controlling commands in conjunction with a Remote Monitoring Subsystem (RMS) simulator.

4.3.1 IT3 Results.

All IT3 test sequences passed without exception.

4.4 IT4 - NAS SYSTEM LEVEL REQUIREMENTS FOR RMS INTERFACE.

The IT4 test sequences validate PMDT capability, as specified in the MDT Master Test Plan, to interface locally with an RMS and also to use this RMS to interact with the MPS.

4.4.1 IT4 Results.

a. Due to the unavailability of an MLS RMS, the test sequences defined in IT4.1 were substituted with those using an ASR-9 RMS as defined in Appendix E of the MDT Integration Test Plan and Procedures document. All IT4.1 test sequences passed without exception.

b. Current RMS configurations prevent PMDTs, connected via the local port, from communicating with the MPS. The IT4.2 test sequences defined in Appendix D of the MDT Integration Test Plan and Procedures document will be deferred until the capability is available.

5. OTHER RESULTS.

a. Result. During integration testing, the PMDTs could not communicate properly through the COM2 port. The PMDTs were able to transmit, but unable to receive data through COM2. Running CINSTALL utility revealed no interrupt was assigned to the COM2 port. COM1 is assigned interrupt IRQ4 and COM2 should be assigned IRQ3.

b. Recommendation. This problem only exists with the two PMDTs previously delivered to ACN-230 for testing. PMDTs recently delivered to ASM-400 communicated properly via COM1 and COM2. ACN-230 strongly recommends that the interrupt configuration of all MDTs be verified before field deployment. For precise multi-port communications, COM1 and COM3 should be assigned IRQ4, and COM2 and COM4 assigned IRQ3.