ORDER

6110.7E

MAINTENANCE OF THE OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS)

September 17, 2003

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

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RECORD OF CHANGES

DIRECTIVE NO. **6110.7E**

CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL	CHANGE TO BASIC	SUPPLEMENTS			OPTIONAL

FAA FORM 1320-5 (6-80) USE PREVIOUS EDITION

FOREWORD

1. PURPOSE.

This handbook provides guidance and prescribes technical standards and tolerances, and procedures applicable to the maintenance and inspection of the Oceanic Display And Planning System (ODAPS) automation. It also provides information on special methods and techniques which will enable maintenance personnel to achieve optimum performance from the equipment. This information augments information available in instruction books and other handbooks, and complements the latest edition of Order 6000.15, General Maintenance Handbook for Airway Facilities.

2. DISTRIBUTION.

This directive is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: ODAPS.

3. CANCELLATION.

This order cancels Order 6110.7D, Maintenance of the Oceanic Display and Planning System (ODAPS) dated 1/22/02.

4. EXPLANATION OF CHANGES.

a. Configuration Control Decision (CCD) N22771 authorizes the addition of the ODAPS equipment and channel interface cables for the Host and Oceanic Computer System Replacement (HOCSR) Phase 3 program. The Symmetrix 5630 and Service Processor (SP), and the Monitor and Control (M&C) subsystem will be added to the ODAPS. Additional Enterprise Systems Connection (ESCON) channel interface cables will be connected to Channel Path Identifiers (CHPID) 82, 83, DA, and DB.

b. CCD N23617 uses the IBM 6400 - 050 printer as a coaxial-attached replacement for the existing 3268 Keyboard Video Display Terminal (KVDT) Printer Replacements (KPR). This is part of the HOCSR Phase 4 program.

c. CCD N23980 uses the IBM 6400 - 015 printer as a coaxial-attached replacement for the existing IBM 4245 - 012 High Speed Printer (HSP). This is part of the HOCSR Phase 4 program.

5. MAINTENANCE AND MODIFICATION PROCEDURE.

a. The Order 6000.15, this handbook, the applicable equipment instruction book and other applicable handbooks shall be consulted and used together by the maintenance technician in all duties and activities for the maintenance of the ODAPS automation. These documents shall be considered collectively as the single official source of maintenance policy and direction authorized by the Operational Support (AOS) Program. References located in the appropriate paragraphs of this handbook entitled Chapter 3, Standards and Tolerances, Chapter 4, Periodic Maintenance, and Chapter 5, Maintenance Procedures shall indicate to the user whether this handbook and/or the equipment instruction book shall be consulted for a particular standard, key inspection element or performance parameter, performance check, maintenance task, or maintenance procedure.

b. The latest edition of Order 6032.1, Modification to Ground Facilities, Systems, and Equipment in the National Airspace System, contains comprehensive direction concerning the development, authorization, implementation, and recording of modifications to facilities, systems, and equipment in commissioned status. It supersedes all instructions published in earlier editions of maintenance technical handbooks and related directives.

c. Modifications to equipment that are listed in NAS - MD - 001, National Airspace System (NAS) Configuration Management Document, as baselined under configuration management shall be in accordance with the latest edition of Order 1800.66, Configuration Management Policy.

6. FORMS LISTING.

In addition to the forms required by Order 6000.15, FAA Forms 6110 - 6 and 6110 - 7, Technical Performance Records, will be maintained for each ODAPS facility. These forms are available from the FAA Logistics Center (FAALC) under National Stock Numbers

(NSN) 0052-00-905-8002 and 0052-00-905-9000 respectively in units of pads, 50 sheets per pad.

7. RECOMMENDATIONS FOR IMPROVEMENT.

This handbook is under configuration management control as defined in Order 1800.66 and NAS-MD-001. Any changes to the baseline document or requests for deviation from national standards shall be processed through the NAS Change Proposal (NCP) process. Copies of FAA Form 1800-2, NCP, are provided in the back of this handbook for the convenience of handbook users.

Richard A. Thoma
Program Director for Operational Support, AOS-1

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CHAPTER 1. GENERAL INFORMATION AND REQUIREMENTS

100. OBJECTIVE.

This handbook provides the necessary guidance, to be used in conjunction with information available in instruction books and other handbooks, for the proper maintenance of the Oceanic Display And Planning System (ODAPS) automation. It does not cover associated plant, communications, or alternating current (ac) power equipment maintenance.

101. SAFETY.

Personnel shall observe all pertinent safety precautions when performing duties on the equipment. Refer to Order 6000.15, General Maintenance Handbook for Airway Facilities, for guidance.

102. COORDINATION.

a. Maximum availability is of prime importance to the users of Airway Facilities (AF) systems, services, and equipment. Maintenance should therefore be accomplished, to the extent practicable, on the offline operating equipment. When it is necessary to perform maintenance on the online operating equipment, it shall be coordinated with the appropriate personnel to preclude unanticipated shutdowns.

b. AF personnel shall be familiar with the role of the ODAPS in the National Airspace System (NAS) so that facility shutdowns can be coordinated with the proper agency and non-agency personnel. Particularly, AF personnel shall thoroughly coordinate with Air Traffic Operations (ATO) personnel, in advance, any maintenance activity that may adversely effect the use of a commissioned facility. Furthermore, AF personnel must be familiar enough with ATO procedures to ensure that notification is made sufficiently early to allow ATO personnel to take appropriate action. It is expected that ATO personnel will recognize the need for releasing equipment at the time scheduled for maintenance and will cooperate in the furtherance of practices that assure continuous and reliable operation. See Order 6000.15 for additional guidance.

c. AF personnel are also responsible for keeping ATO personnel advised of the operational status of all system, subsystem, facilities and equipment. When unscheduled interruptions occur, prompt notification shall be made to cognizant ATO personnel. They shall be advised immediately when equipment fails, service is restored, the established tolerances are exceeded, or the established tolerances are expected to be exceeded so that ATO can issue the NOtice To AirMen (NOTAM), re-route air traffic, and/or take other necessary action. This is especially important where standby or spare equipment is not immediately available.

103. CERTIFICATION.

Refer to Order 6000.15 for general guidance on the certification of systems, subsystems, and equipment. Refer to appendix 1 of this handbook for the specific certification requirements of the ODAPS. The NAS Operations Manager/NAS Area Specialist (NOM/NAS) shall initiate daily certification of En route Surveillance Automated Flight plan (ESAFP) Service and weekly certification of Surveillance Flight plan System (SFS). The Airway Transportation System Specialist (ATSS) shall initiate quarterly certification of Surveillance Processing System (SPS).

104. AIRCRAFT ACCIDENT.

After receiving information that an aircraft accident has occurred within the service area of the facility for which they are responsible, the following minimum actions are required of cognizant AF personnel. See the latest edition of Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting.

a. Check the Facility Maintenance Log (FAA Form 6030 - 1 and/or applicable Maintenance Management System (MMS) entries) to determine the status of the system at the time of the accident.

b. Record all Technical Performance Record (TPR) data as found and any other system parameters considered necessary to establish the operational capability of the system.

c. Review the Facility Maintenance Log and the TPR and compile all data pertinent to the accident.

d. Certify entries of FAA Form 6030 - 1 or MMS and the TPR. In all cases have another electronics

technician or the supervisor certify the entry, including the date and time of the entry.

e. AF Accident Investigation. Once ATO releases the accident notification message, the AF sector manager will initiate a technical facility evaluation. In addition, the Regional AF Division will designate a Regional AF Accident Representative as a coordinator of the AF contribution to the accident investigation and as a liaison with the FAA investigator-in-charge. See Order 8020.11, for the details of and the procedures for the investigation and reporting of an ODAPS related aircraft accident or incident.

f. Records. All station records such as logs, meter reading forms, etc., are official documents and, as such, may be required in case of an investigation regarding a local aircraft accident and should be safeguarded.

g. It is imperative that all records be kept current, concise, and accurate. These checks shall be made carefully and completed rapidly. All station records, such as facility logs, meter readings forms, etc., are official documents. They will be needed during an investigation of a local aircraft accident. Additionally, these records will be used for investigating other situations when the operation of the facility is questioned.

105. FLIGHT INSPECTION.

Since ODAPS receives no sensor inputs directly, no ODAPS flight inspection is required. All ODAPS sensor inputs undergo required flight inspection under other system procedures.

106. TECHNICAL INSPECTION.

Facility inspections are among the more effective management controls for ensuring the required quality level of maintenance work and equipment and system performance. See Order 6000.15 for general guidance on inspections and the latest edition of Order 6040.6, Airway Facilities NAS Technical Evaluation Program (RIS:AF 6040 - 8) for details on the intervals and requirements for formal inspections.

107. PERIODIC MAINTENANCE.

Chapter 4 of this order establishes the tasks and schedules that are required for the periodic maintenance of the ODAPS automation. These tasks, as scheduled, are the minimum required for the ODAPS automation to meet minimum performance standards.

108. TEST EQUIPMENT AND TOOLS FOR PERIODIC MAINTENANCE.

The test equipment required for performing routine maintenance of the ODAPS automation are managed by the latest edition of Order 6200.4, Test Equipment Management Handbook. Tools and supplies are specified and managed by the latest edition of Order 4630.2, Standard Allowance of Supplies and Working Equipment for National Airspace System Facilities.

109. REFERENCES.

a. The instruction books and orders which apply to the ODAPS equipment are listed below.

(1) NASP - 5462, Interim Situation Display (ISD), Computer System Operator's Manual

(2) NASP - 5263, Interim Situation Display (ISD), Software User's Manual

(3) NASP - 5162, Interim Situation Display, Hardware Design Document

(4) IBM 3268 Printer Models 1, 2 and 2c Maintenance Information, SY27 - 0201 - 4

(5) IBM Maintenance Diagnostic Program Local 3274 Model 1B/1D Display System On-Line Tests, D99 - 3274A - 01

(6) IBM 3380 Online Test (OLT) User's Guide, D99 - 3380A - 02

(7) IBM 3480 Online Tests (OLTs), D99 - 3480A - 00

(8) IBM Maintenance Diagnostic Program 3880 Storage Director Online Test, DCL - 3880A - 02 (D99 - 3880A - 01)

(9) IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1

(10) IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 2

(11) TI 6110.11, Diagnostic User's Guide for the Series/1 Replacement (S1R) and Series/1 Replacement Peripheral Adapter Module (S1RPAM) Volume II

(12) TI 6110.10, Hardware Installation and Maintenance Manual for the Series/1 Replacement (S1R) and Series/1 Replacement Peripheral Adapter Module (S1RPAM) Volume I

(13) TI 6110.9, Series/1 Replacement (S1R) and Series/1 Replacement Peripheral Adapter Module (S1RPAM) Handbook

(14) IBM RS/6000 Enterprise Server Model H50 User's Guide SA38 - 0546 - 00

(15) IBM RS/6000 Diagnostic Information for Multiple Bus Systems SA38 - 0509 - 06

(16) Order 6000.15, General Maintenance Handbook for Airway Facilities

(17) Order 6032.1, Modification to Ground Facilities, Systems, and Equipment in the National Airspace System

(18) NAS - MD - 001, National Airspace System (NAS) Configuration Management Document

(19) Order 1800.66, Configuration Management Policy

(20) Order 8020.11, Aircraft Accident and Incident-Notification, Investigation, and Reporting

(21) Order 6040.6, Airway Facilities NAS Technical Evaluation Program

(22) Order 6200.4, Test Equipment Management Handbook

(23) Order 4630.2, Standard Allowance of Supplies and Working Equipment for National Airspace System Facilities

(24) AIX Version 3.2 System Management Guide: Operating System and Devices, IBM, Order Number GC - 2486 - 00

(25) AIX Version 4.3 System Management Guide: Operating System and Devices, IBM, Order Number SC23 - 4126 - 00

(26) AIX Version 3.2 Problem Solving Guide and Reference, IBM, Order Number SC23 - 2204 - 04

(27) Maintenance Information for the IBM 6091 Color Display (Model 19i), IBM, Order Number SY66 - 0117 - 00

(28) Setup and Operation for the 6091 Color Displays, IBM, Order Number GA23 - 2114 - 03

(29) IBM 4226 Printer User's Reference, IBM, Order Number GA18 - 7182 - 00

(30) 4226 Printer Operator Reference, IBM, Order Number GA18 - 7183 - 00

(31) 7018 POWER Server Models 770 and 771 Operator Guide, IBM, Order Number SA23 - 2698 - 00

(32) Certainty ARRAY/6000 Model 505/510 Deskside Series, Installation Guide, Cambex Corporation, Order Number 081 - 448 - 003 Rev. C

(33) IBM 3151 ASCII Display Station Models 11, 31, and 41 Guide to Operations, IBM, Order Number GA18 - 2633 - 02

(34) User's Manual Power Line Filter & Distribution Unit Model 2 - 1000/6FA1, CYBEREX Inc., UM - 2 - 1000/6FA1:1, September 1991

(35) User's Manual Power Line Filter & Distribution Unit Model 600/6FA1, CYBEREX Inc., UM - 600/6FA1

(36) RS232 Fallback Switch User's Manual, Black Box Corporation

(37) TI 6130.6 Hardware Design Data (HDD) Instruction Book Flight Data Input/Output (FDIO) System, Volume 1, Sections 1 - 10 (FDIO - 51B)

(38) POWERstation and POWERserver Common Diagnostic and Service Guide, IBM, Order Number SA23 - 2687

(39) NASP - 9102, Equipment Instruction Book, Oceanic Display and Planning System (ODAPS), Hardware Design Document for the Telecommunications Processor

(40) NASP - 9557, Instruction Book, Oceanic Display and Planning System (ODAPS), Operator's Manual for the Telecommunications Processor

(41) NASP - 9257, Software Instruction Book, Oceanic Display and Planning System (ODAPS), User's Manual for the Telecommunications Processor

(42) TI 6110.2, Equipment Instruction Book, Oceanic Display and Planning System (ODAPS) Operations and Maintenance Manual for the Telecommunications Processor

(43) 4232 Printer User's Guide, IBM, SA24 - 4386 - 01

(44) 4232 Printer Operator Panel Instructions, IBM, SA24 - 4387 - 01

(45) IBM Info Window II 3153 ASCII Display User's Guide, IBM, Order Number GA27 - 4083 - 01

(46) TI 6110.4, Interim Situation Display Instruction Book

(47) TI 6110.5, Interim Situation Display (ISD) NDI/COTS Equipment Documentation

(48) IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03

(49) IBM S/390 Installation Manual, SY24 - 6156 - 04

(50) IBM S/390 Service Guide, SY24 - 6158 - 04

(51) IBM S/390 Hardware Management Console Operations Guide, GC38 - 0459 - 00

(52) IBM S/390 Parts Catalog, S123 - 1151 - 04

(53) NASP - 7211, Computer System Operators Manual (CSOM) for the Air Traffic Services (ATS) Interfacility Data Communications System (AIDCS)

(54) NASP - 7201, Software User Manual (SUM) for the Air Traffic Services (ATS) Interfacility Data Communications System (AIDCS)

(55) TI 6110.6, Operation and Maintenance Technical Instruction Manual (OMTIM) for the Air Traffic Services (ATS) Interfacility Data Communications System (AIDCS)

(56) HP NetServer LC II User Guide, HP Part Number 5965 - 2497

(57) ViewSonic E655 User's Guide

(58) Epson Printer User's Guide LQ - 570+/1070+

(59) Motorola Codex 3600 Series User's Manual

(60) Channel-to-Channel Adapter or 3088 MCCU Exerciser On-Line Test User Guide, D99 - 3150A - 05

(61) NASP - 7214, Oceanic Data Link (ODL), Computer System Operation Manual (CSOM)

(62) TI 6110.15, Technical Instruction Manual for the Oceanic Data Link

(63) Order 6110.9, Electronic Equipment Modification Handbook Oceanic Display and Planning System

(64) RS/6000 Enterprise Server Model H80 Series Service Guide

(65) CDRL D038, System Problem Determination and Maintenance Manual

(66) RS/6000 Enterprise Server Model H80 Series User's Guide

(67) Catalyst 2900 Series XL Installation Guide, Cisco Systems

(68) CDRL D038, Storage Subsystem Certification Manual

(69) NCD NCBridge Software Reference Manual

(70) Ethercom Model EFTT1003 User's Manual

(71) Symmetrix Model 3630/5630 Product Manual

(72) Device Support Facilities User's Guide

(73) IBM 6400 Line Matrix Printers Maintenance Information Manual Cabinet and Pedestal Models, S246 - 0117 - 06

(74) IBM 6400 Line Matrix Printers Setup Guide, S246 - 0116 - 02

b. System specifications are available in the following document:

(1) FAA - E - 2713, ODAPS Specifications

(2) FAA - ER - 2889, Telecommunication Processor Specification

(3) FAA - ER - 2896, Interim Situation Display Specification

(4) CDRL D0027, Host and Oceanic Computer Replacement System, Oceanic Computer Subsystem Functional Specification Baseline

c. The ODAPS utilizes equipment whose maintenance is not covered in this handbook. See the latest edition of Order 6170.9, Maintenance of Communication Multiplex (MUX) Equipment, and the latest edition of Order 6170.10, Maintenance of Data Multiplexing Network Equipment, for the maintenance of the Bell Dataphone 1600 modem, the Nippon Electronics Co. (NEC) 2400 MR Data Modem, the General Datacomm 201C and 202 modems, and the Codex 6250 Statistical Multiplexers.

110.-199. RESERVED.

CHAPTER 2. TECHNICAL CHARACTERISTICS

200. SYSTEM INTRODUCTION.

The ODAPS improves Air Traffic Control (ATC) for oceanic areas serviced by the FAA. Seven existing oceanic control centers have been consolidated into two, located in the New York and Oakland Air Route Traffic Control Centers (ARTCC). ODAPS will provide each site with automated functions and capabilities which are almost identical to those existing in ARTCCs. It will also support controllers by providing the data needed to grant safe and efficient clearances to aircraft passing through oceanic airspaces.

201. SYSTEM FUNCTIONAL OVERVIEW.

a. The ODAPS exchanges flight plan data and general flight information with the NAS host computer. The ISD is responsible for displaying data from ODAPS and relaying controller inputs back to ODAPS. National Airspace Data Interchange Network (NADIN) 1A supports the ODAPS interface with Service A, the Aeronautical Fixed Telecommunications Network (AFTN), and Aeronautical Radio, Inc. This interface supports the exchange of weather-related data, flight movements, and various other support data. The AIDCS transfers operational flight information between ODAPS and non-US Flight Information Regions (FIR) for flights that are expected to cross the boundary between US airspace and foreign airspace. The AIDCS translates the flight information between the NAS format required by ODAPS and the International Civil Aviation Organization (ICAO) format required by the FIRs.

b. The ODAPS transmits to North American Air Defense Command Regional Operations Control Centers the flight plans of aircraft heading toward the United States and penetrating the outer Air Defense Identification Zone, the Canadian Air Defense Identification Zone, or the Distant Early Warning Identification Zone. The Telecommunications Processor (TP) Servers support the ODAPS interface with TP workstations and Thermal Flight Strip Printers (TFSP) using an Institute of Electrical and Electronic Engineers (IEEE) 802.5 token ring fiber optic Local Area Network (LAN). The TP workstation monitor provides an operator with a visual display of flight strips, general information, and weather messages. TP workstation monitors also provide a visual display for editing messages and for scrolling through a historical recording of messages received. The TP System Console provides an interface to TP for identification of problems and for providing corrective action. TFSPs are used to print flight progress and coordination strips. The ODAPS also exchanges flight data with the Enhanced Traffic Management System (ETMS).

c. The ODL servers support the ODAPS interface with ODL workstations and TFSP using an IEEE 802.5 token ring fiber optic LAN. The ODL workstation monitor provides an operator with all the TP functionality. The ODL workstation also provides a visual display for Controller/Pilot Data Link Communications (CPDLC) message processing, outgoing data communications with Radio Operators (RO) for message processing with High Frequency (HF) equipped aircraft, and NADIN II interface for CPDLC position reports to ODAPS. The ODL System Console provides an interface for identification of problems and for providing corrective action. TFSPs are used to print flight progress and coordination strips.

202. SYSTEM DESCRIPTION.

a. The ODAPS is composed of eight subsystems, each of which is discussed in the paragraphs that follow. These subsystems are shown in Figure 2 - 1, ODAPS Subsystem Diagram.

(1) Flight Data Processing Subsystem (FDPS).

(a) Processor 9672 - RA4 - G3.

1 S/390 Parallel Enterprise Server. Each S/390 Parallel Enterprise Server 9672 Model RA4, Generation 3 (G3), can be divided into four functional subsystems: processor, storage, channel, and power.

2 Processor Subsystem. The 9672 - RA4 is a Complimentary Metal Oxide Semiconductor (CMOS) processor running at approximately 32 Million Instructions Per Second (MIPS), expandable to 45 MIPS within the same processor family. Each processor subsystem consists of four Processing Units (PU). A PU is the hardware computing element of the computer.

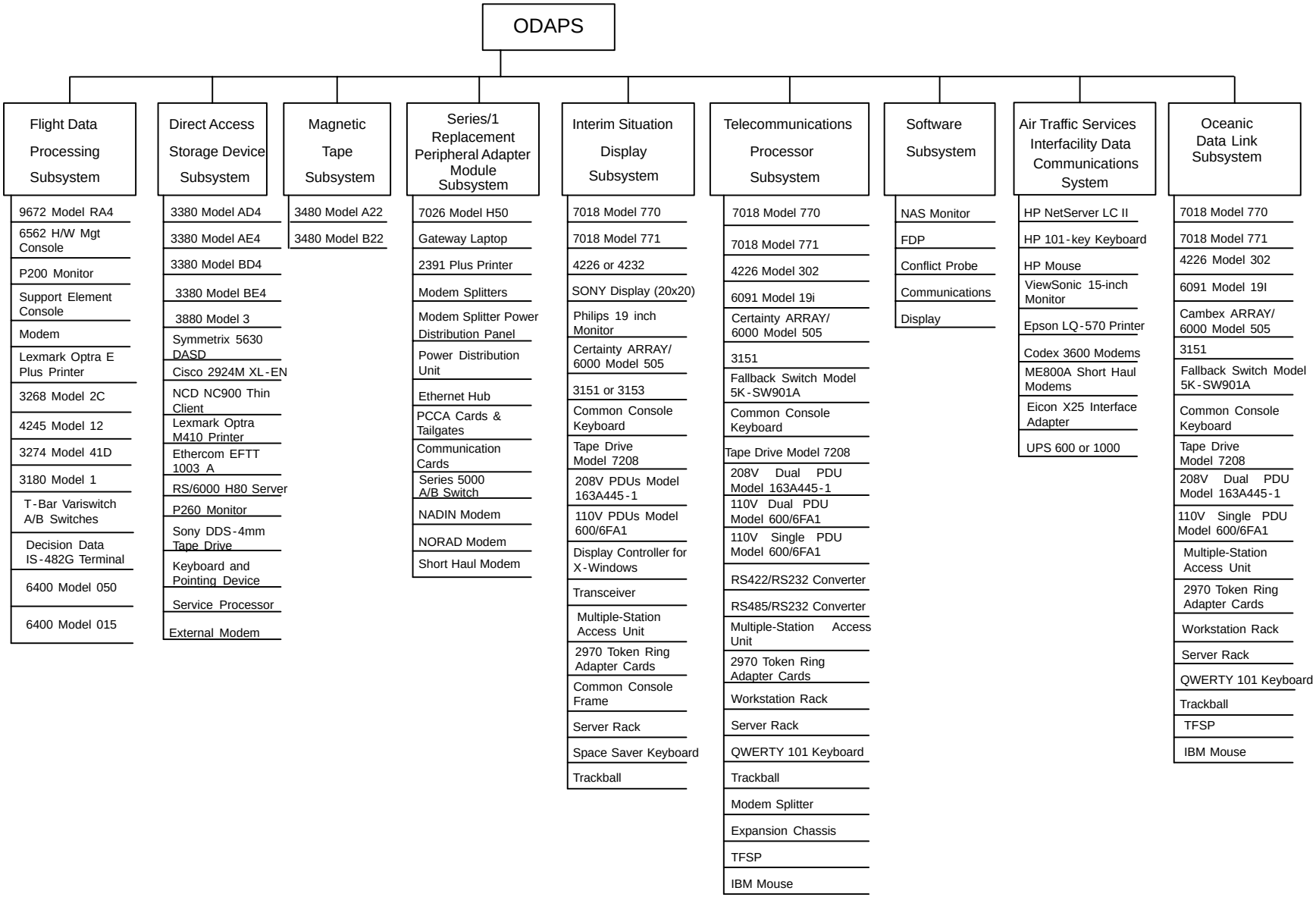


FIGURE 2-1. ODAPS SUBSYSTEM DIAGRAM

The three possible functions of the PU are determined by the Licensed Internal Code (LIC) which are loaded on it.

a Central Processor (CP) LIC, which gives the PU the S/390 functionality.

b System Assist Processor (SAP) LIC, which gives the PU internal system and Input/Output (I/O) control functions.

c Spare, in this state, the PU performs an idle loop program LIC. The 9672 - RA4 uses the CP and SAP functions and maintains one spare for each. The SAP spare if needed will be switched in automatically, where the CP spare requires a Power On Reset (POR) to activate.

3 Storage Subsystem. The storage subsystem is distributed across the Multiple Chip Module (MCM) and four memory cards of 128 Megabytes (MB) each. The 9672 - RA4 can be configured from a minimum of 512 MB up to 8 Gigabytes (GB).

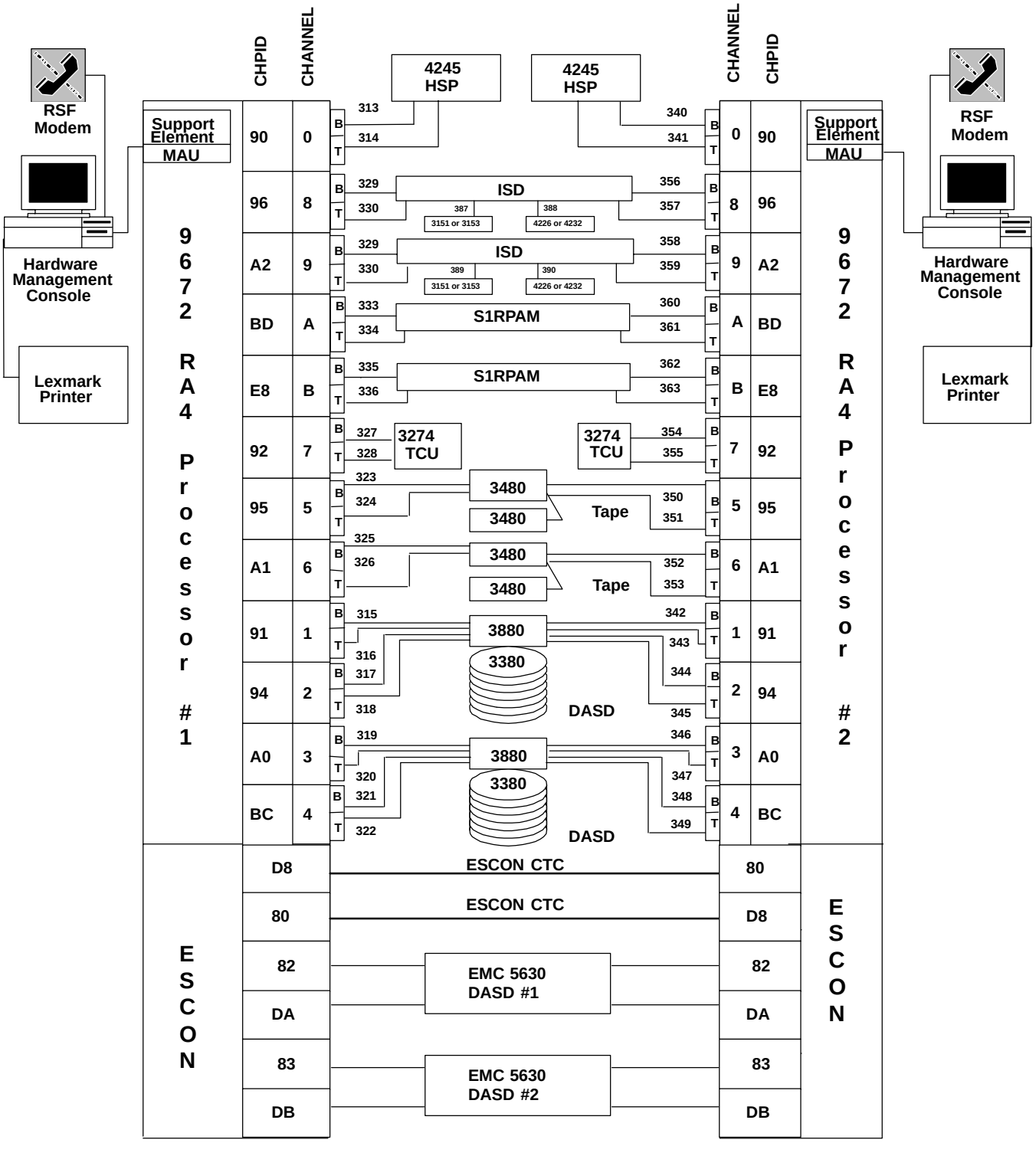
4 Channel Subsystem. The channel subsystem consists of six parallel channel cards, each controlling three channels (12 currently used); and two Enterprise System CONnection (ESCON) fiber optic channel cards, each controlling four channels (two currently used). The parallel channels connect to the existing I/O interfaces. The ESCON channel is used as a Channel-To-Channel (CTC) device allowing the two 9672 processors to perform health checking operations. The 9672 - RA4 is expandable to 96 parallel channels (in increments of three), and 256 ESCON channels (in increments of four).

5 Power Subsystem. The power subsystem is designed with the use of redundant hardware, whereby a single power failure will not result in an outage. This also allows for replacement of a failed part without affecting system operation. The 9672 - RA4 frame accepts dual power feeds, allowing separate critical bus input voltage sources.

6 9672 - RA4 Frame. The 9672 - RA4 frame also contains an IBM Thinkpad Personal Computer (PC) which is the Support Element (SE). Its purpose during normal operations is to maintain the Central Processing Complex (CPC), collecting and sending CPC status, hardware messages and operating system messages to the Hardware Management Console (HMC). The SE will be used during periods of 9672 - RA4 problem determination, service or repair maintenance, and also for running diagnostic tests for certification. The SE connects via the Thinkpad parallel port to the CPC's Universal Processor Controller (UPC) card.

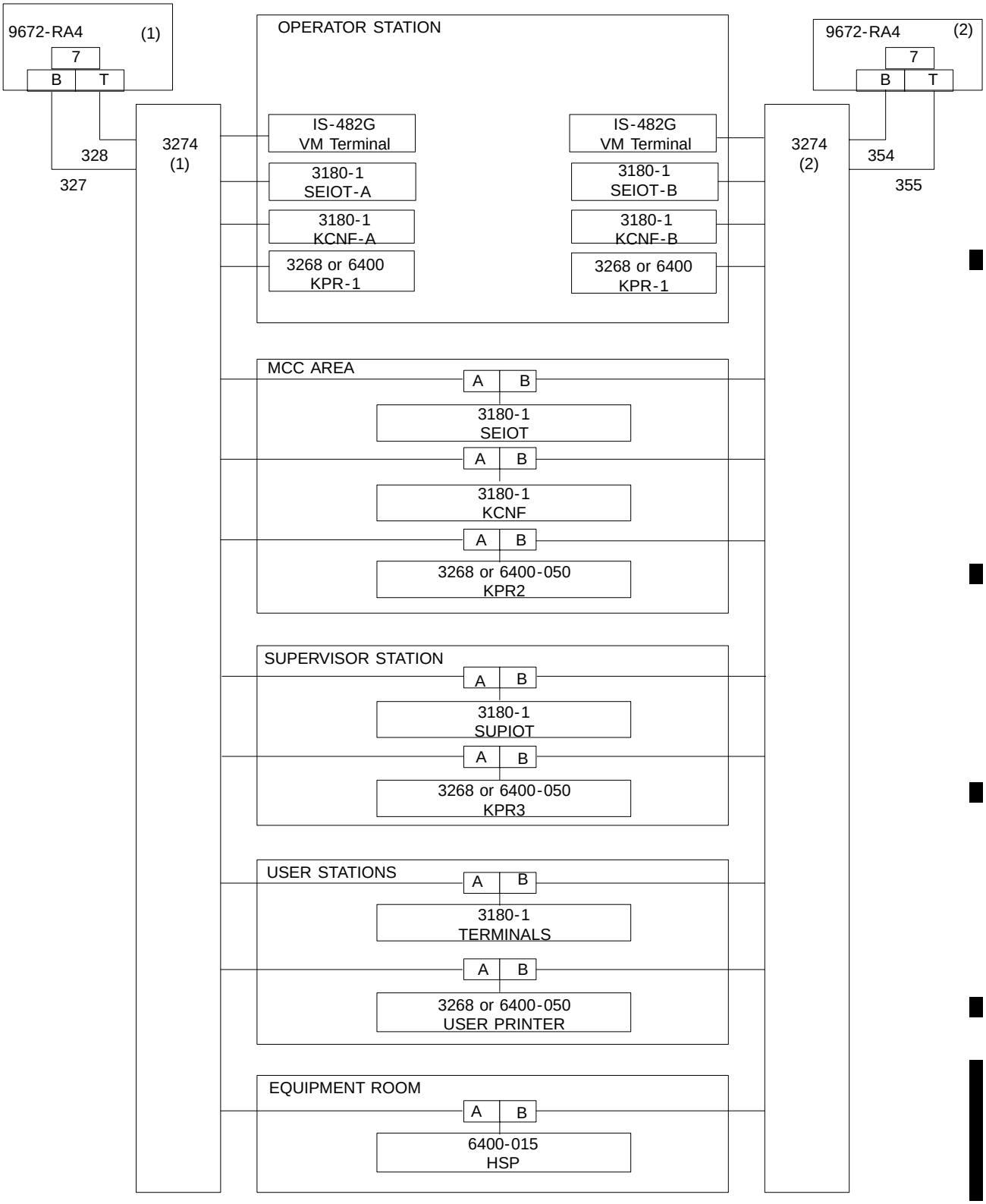
7 HMC Workstation. The HMC workstation is an IBM PC using Operating System/2 (OS/2) LIC, and is designed to be the main operator console, in order to activate, operate, monitor, and perform recovery tasks of the 9672 - RA4. The application software is an object oriented design, using a Graphical User's Interface (GUI) platform. The HMC contains a 21-inch color display monitor; a 3.5-inch Read/Write Optical Cartridge (ROC) drive for backups and microcode patch updates; a Compact Disc-Read Only Memory (CD - ROM) drive for system software and microcode driver loading; and a modem for the reporting of service calls if necessary. The HMC and SE communicate via a Token-Ring LAN. The HMC modem features allow for either a manual or automatic callout to the IBM service center from the HMC, and an optional call in from the IBM service center to the HMC for downloading new patches to the microcode. The use of these features will be strictly controlled. Only the manual call out function will be utilized to report a service call. This leaves control of the system to local ODAPS operational personnel. Refer to Chapter 5, Maintenance Procedures, paragraph 501 of this document for further information and FAA policy concerning this feature.

(b) Other FDPS Components. The other components of the FDPS consists of the following; IBM 3268 Model 2C and IBM 6400 Model 050 console printers, IBM 6400 Model 015 and IBM 4245 Model 12 high speed printers, IBM 3274 Model 41D terminal control units (System Network Architecture version), IBM 3180 Model 1 display stations, commonly called Keyboard Video Display Terminal (KVDT), Decision Data IS - 482G terminals, and T - Bar Variswitch A/B switches. See Figure 2 - 2, IBM 9672 Channel Interconnects and Figure 2 - 3, IBM 3274 Terminal Interconnects. The FDPS processes flight-plan and stored adaption data to prepare flight progress strips and other data that will be output to controller positions. It also processes flight data messages, updates the flight-plan data base, and monitors the health and status of the ODAPS. When critical flight-plan data changes or is requested by the controller, the FDPS starts the conflict probe function at predetermined intervals.



NOTE: Three digit numbers indicate cable identification numbers

FIGURE 2 - 2. ODAPS IBM 9672 CHANNEL INTERCONNECTS



NOTE: Three digit numbers indicate cable identification numbers

FIGURE 2 - 3. ODAPS IBM 3274 TERMINAL INTERCONNECTS

(2) Direct Access Storage Device (DASD).

(a) 3880/3380 Subsystem. The DASD subsystem consists of IBM 3380 Models AD4, AE4, BD4, and BE4 DASDs and IBM 3880 Model 3 Storage Control Units (SCU). The IBM 3380 is a large capacity, high-performance disk storage unit. The IBM 3380 Models AE4 and BE4 have a capacity of 5 GB, an average seek time of 17 milliseconds (ms), and a data transfer rate of 3 MB per second. The IBM 3380 Models AD4 and BD4 have a capacity of 2.5 GB, an average seek time of 15 ms, and a data transfer rate of 3 MB per second. This subsystem satisfies the ODAPS disk storage requirements.

(b) Symmetrix 5630 DASD Subsystem.

1 The EMC Symmetrix 5630 DASD subsystem is the replacement for the IBM 3880 Disk Storage Director/3380 DASD elements. It is comprised of two identical units: Disk Subsystem 1 and Disk Subsystem 2, each containing the functions of the Director and DASD in one cabinet.

2 The 5630 DASD configurations for ARTCCs contain two ESCON channel cards to connect to the ODAPS 9672 central processors with data transfer rates up to 17 MB per second; two Fibre channel cards to connect to the DASD Monitor and Control (M&C) subsystem, which provides equipment and software for monitoring the DASD as well as other devices within its own subsystem; four disk directors on two board assemblies control the eight 36 GB disk device arrays. The physical disk device arrays are partitioned by defining logical 3380 Count Key Data (CKD) type disk volumes, or Fixed-Block Architecture (FBA) open systems format volumes. Some open systems FBA volumes will be defined on each Symmetrix, but such volumes are reserved for future use. Two 512 MB Cache memory boards provide the hardware necessary to interface between the Host processor, disk directors, and disk arrays. This feature of the Symmetrix is known as Integrated Cached Disk Array (ICDA) technology, and allows for faster data transfer. Each Symmetrix implements Redundant Array of Independent Disks (RAID) technology. As a result, all data stored in Symmetrix will be mirrored using RAID - 1 (mirroring).

3 Each Symmetrix 5630 presents the appearance of an IBM 3990 Storage Director and multiple 3380 - D/E-disk devices to the channel/Host processor. It provides the necessary low-level transformation of the requested functions from Channel Command Word (CCW) program directives to the actual directives known by Symmetrix. The emulation process within each Symmetrix insulates the channel/Host processor from the actual physical implementation semantics of the DASD.

4 The 5630 battery subsystem maintains power for approximately 3 minutes to the entire subsystem if ac power fails. The main power subsystem operates on 208 Volt (V) ac single-phase input power at frequencies of 50 or 60 Hertz (Hz). Two power supplies provide +5 V, +12 V, and +24 V power to the Symmetrix components.

5 The Service Processor is a laptop computer in each Symmetrix 5630, which provides the ability to manage various aspects, including the downloading of configuration data to the directors and providing diagnostic and maintenance utilities for the Symmetrix. The Service Processor will primarily be used by EMC customer engineers. It is located on the inside of the front door of each Symmetrix 5630. The Service Processor interfaces with Symmetrix components via an RS - 232 interface and/or an Ethernet Hub and has an attached 33.6 Kilobytes per second (Kbps) external modem for communicating with the EMC Customer Support Center when Symmetrix detects an error condition. The external modem is generally placed in the space on the lower left inside the front of the cabinet and uses a separate 110 Vac single-phase power feed. This modem will be used with a dial out only configuration, and only when required by EMC to render a repair to the 5630.

(c) 5630 DASD M&C. The 5630 DASD M&C provides an external interface to monitor and control the storage device's functionality without interfering with the operational mission of the storage device and/or degrading its performance. The M&C is responsible for acquiring storage device configuration parameters, monitoring all state and status changes, and reporting all monitored data. The M&C also provides monitor and control for the M&C server workstations and other M&C devices on the network. For a more detailed description of the M&C, refer to paragraph 204.

(3) Magnetic Tape Subsystem (MTS). The MTS consists of IBM 3480 Model A22 Magnetic Tape Control Units (MTCU) and IBM 3480 Model B22 Magnetic Tape Units (MTU). This subsystem satisfies the online data storage requirements of ODAPS.

(4) S1RPAM Subsystem. The S1RPAM subsystem consists of two sets of the following equipment: IBM 7026 Model H50 processor, Gateway 5100 or 5150 notebook system console, Bay Networks Ether-

net Hub, eight powered B&B Electronics modem splitters, modem splitter power distribution panel, Cyberex Power Distribution Unit (PDU), an Automatic Switching System Series 5000 A/B Switch and a Lexmark matrix printer. All components except the printer are housed in a Crenlo rack. In addition, the S1RPAM subsystem also contains NEC 2400M modem (Oakland), General DataComm 201C modem (New York), ME801A/ME801B Sync Short Haul modems, Bell 1600 modem (Oakland), Codex 6250 multiplexor, and ME800A Asynch-Short Haul modems. See Figure 2 - 4, S1RPAM Configuration Diagram. This subsystem interfaces the FDPS to a variety of communication lines from other facilities. These lines support the exchange of flight data and related support information. The S1RPAM subsystem also interfaces the FDPS to local devices.

(5) TP Subsystem. The TP subsystem consists of IBM 7018 Model 770 or Model 771 RISC/6000 processor, IBM 4226 Model 302 printer, IBM 6091 Model 19-inch color display, Certainty ARRAY/6000 disk, IBM 3151 ASCII display, IBM 7208 tape drive, Cyberex Model 163A445 - 1 208 V power distribution unit, Cyberex Model 600/6FA1 110 V power distribution unit, Black Box powered Multi-station Access Unit (MAU) with Ring In/Ring Out (RIRO) fiber interface, Black Box Model SK - SW901A RS232 fallback switches, Loral Initial Sector Suite Rack, Black Box 3-port modem splitter, a RM060 converter rack (expansion chassis) which holds a power supply, a Black Box RS232/RS485 converter to interface with the CCK, an TFSP, an IBM QWERTY 101 keyboard, Measurement Systems Trackball or IBM mouse, and 19-inch (width) Rack. An example of the ARTCC TP in Oakland is shown in Figure 2 - 5, Oakland ODAPS Cable Configuration Diagram (TP), and New York ARTCC is shown in Figure 2 - 6, New York ODAPS Cable Configuration Diagram (TP). This subsystem provides a visual display of update, general information, weather, and flight strip messages. It also provides an input interface for controller entered messages.

(6) ISD Subsystem. The ISD subsystem consist of IBM 7018 Model 770 or Model 771 Reduced Instruction Set Computer (RISC)/6000 processors (site dependent), IBM 4226 or 4232 line printer, SONY 20x20 color display, a 19-inch Philips auxiliary display, ARRAY/6000 disk, IBM 3151 or 3153 American Standard Code for Information Interchange (ASCII) display, IBM 7208 tape drive, Cyberex Model 163A445 - 1 208 V PDU, Cyberex Model 600/6FA1 110 V PDU, a Display Controller for X - Windows (DCX), a transceiver, a Black Box powered MAU with RIRO fiber interface, Server Rack, a Common Console Keyboard (CCK), a Space Saver Keyboard, Measurement Systems Trackball, and a Common Console Frame. See Figure 2 - 7, ISD System Architecture Diagram. The subsystem interfaces the Flight Data Processing Subsystem (FDPS) to ISD Servers, which are connected to ISD Oceanic Consoles (OC).

(7) ODAPS Software Subsystem. The ODAPS software subsystem consists of the following software modules: the NAS monitor, the FDPS program, the conflict probe subsystem program, the S1RPAM program, and the ISD program.

(8) AIDCS Subsystem. The AIDCS consists of one Hewlett Packard (HP) NetServer LC II system computer, one HP D4950B ABA 101-key enhanced keyboard, one HP mouse, one ViewSonic E655 15-inch Super Video Graphics Adapter (SVGA) monitor, one Epson LQ-570 Plus printer, two Motorola Codex 3600 modems, two Black Box ME800A asynchronous short haul modems, one Eicon X.25 interface adapter, and one American Power Conversion (APC) Smart Universal Power Supply (UPS) 600 or 1000. The HP NetServer LC II system computer consists of an Intel Pentium II 266 - MHz processor, 32 - MB of Random Access Memory (RAM), a 2 - GB removable hard drive, a 1.44 - MB floppy disk drive, a 24X CD - ROM, two serial communication port adapters, a parallel printer port, and an Eicon High Speed Interface (HSI/PC) 1 - MB X.25 interface card. The ODAPS AIDCS Cable Configuration Diagram is shown in figure 2 - 8. This subsystem interfaces to the S1RPAM via a pair of Black Box ME800A asynchronous short haul modems and to NADIN II via a pair of Codex modems. These interfaces are used by this subsystem to exchange flight information messages with ODAPS via the S1RPAM and with non-US FIRs via NADIN. This subsystem provides a visual display of flight information, the status of the connections to ODAPS and the FIRs, and error information. It also provides an interface for controller input.

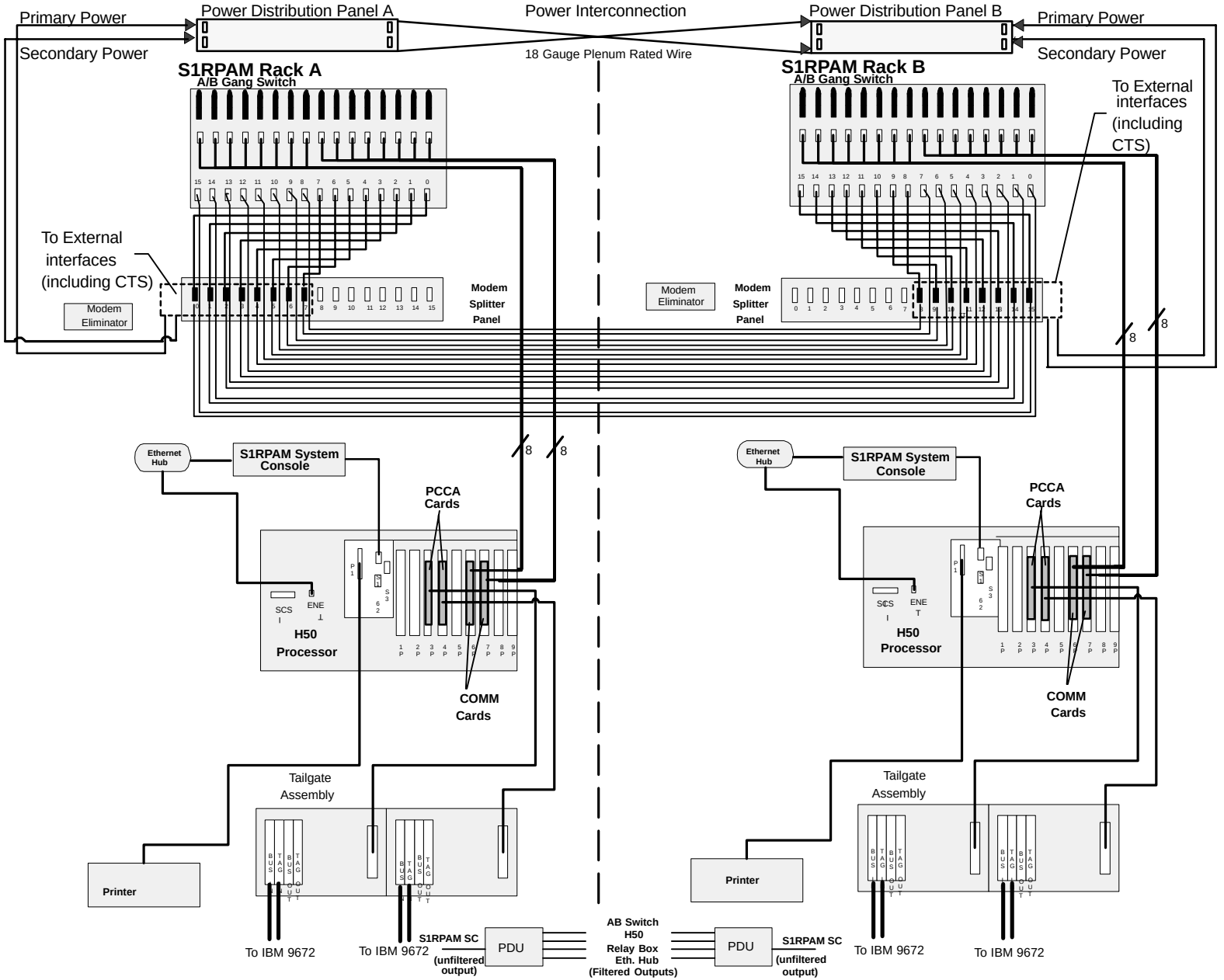
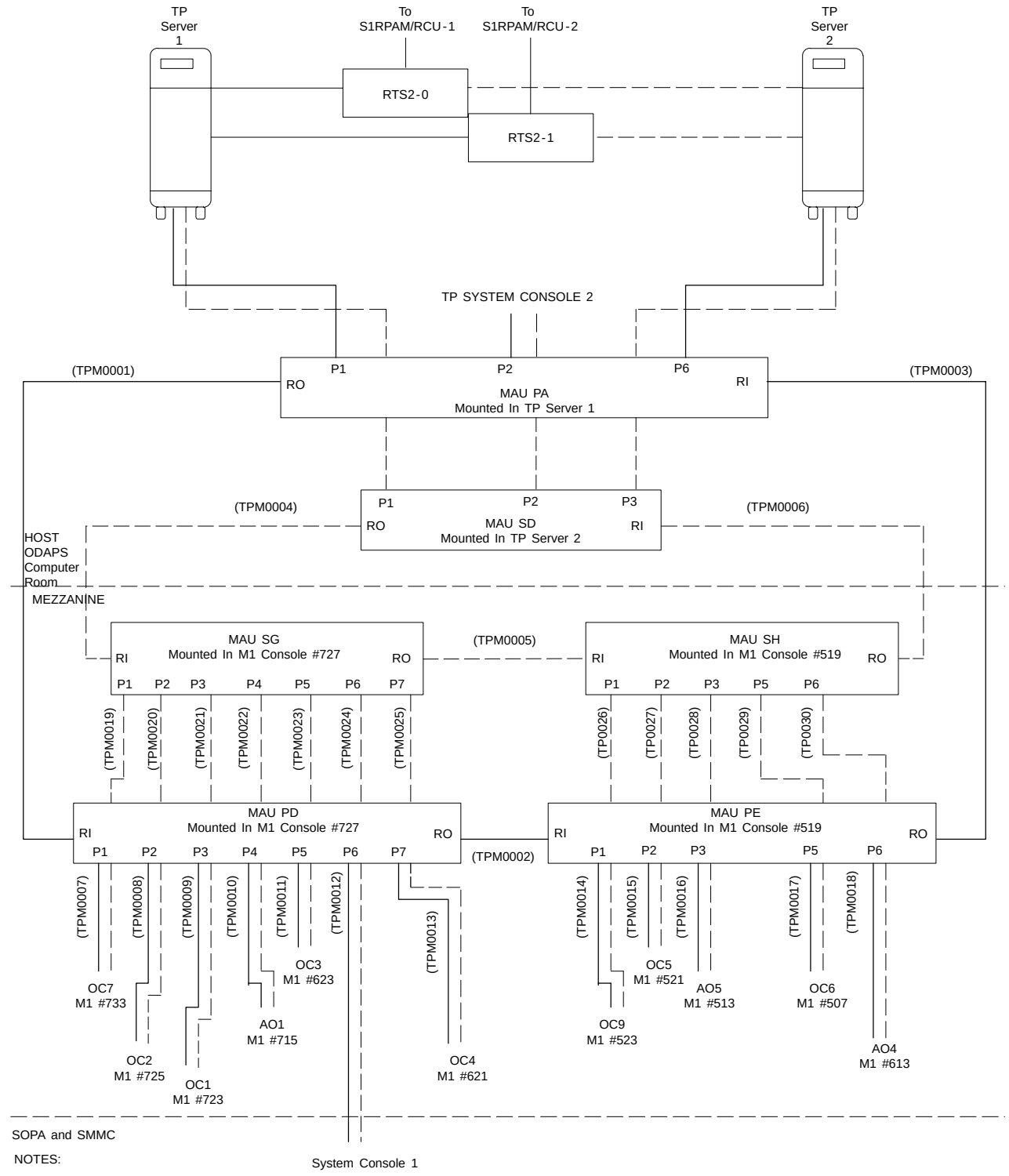
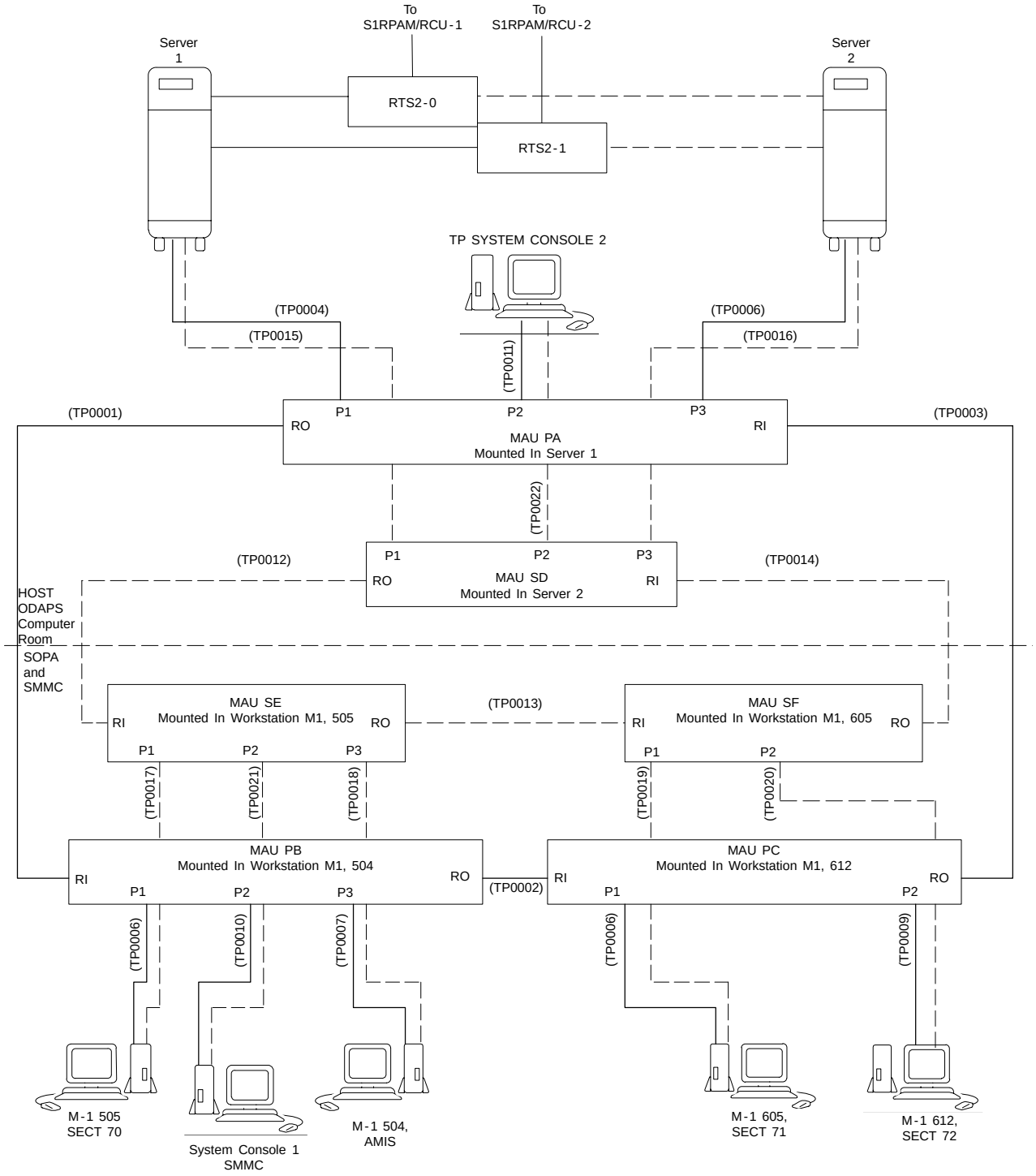


FIGURE 2 - 4. ODAPS S1RPAM CONFIGURATION DIAGRAM



1) ———— PRIMARY CABLE
2) - - - - - - - SECONDARY CABLE
3) FIBER OPTIC, TYPE 1, PLENUM CABLES CONNECTED TO MAU RO AND RI
4) COPPER, TYPE 1, PLENUM RATED CABLES CONNECTED TO MAU PORTS
5) (TPMXXXX) IS THE CABLE NUMBER CONFIGURED

FIGURE 2 - 5. OAKLAND ODAPS CABLE CONFIGURATION DIAGRAM (TP)



NOTES:

1) ———— PRIMARY CABLE
2) - - - - - - - SECONDARY CABLE
3) FIBER OPTIC, TYPE 1, PLENUM CABLES CONNECTED TO MAU RO AND RI
4) COPPER, TYPE 1, PLENUM RATED CABLES CONNECTED TO MAU PORTS
5) (TPXXXX) IS THE CABLE NUMBER CONFIGURED

FIGURE 2 - 6. NEW YORK ODAPS CABLE CONFIGURATION DIAGRAM (TP)

ISD SYSTEM ARCHITECTURE

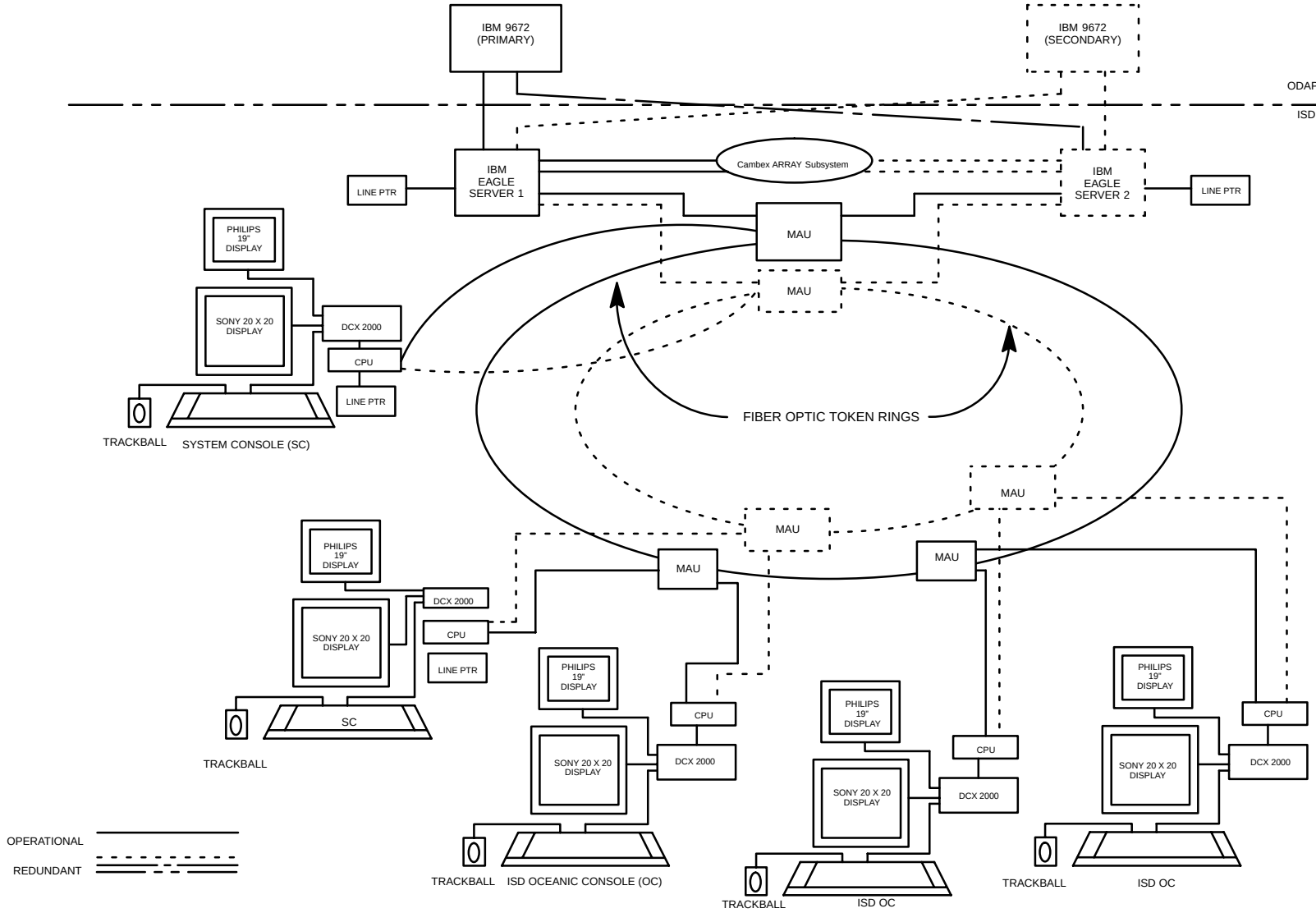
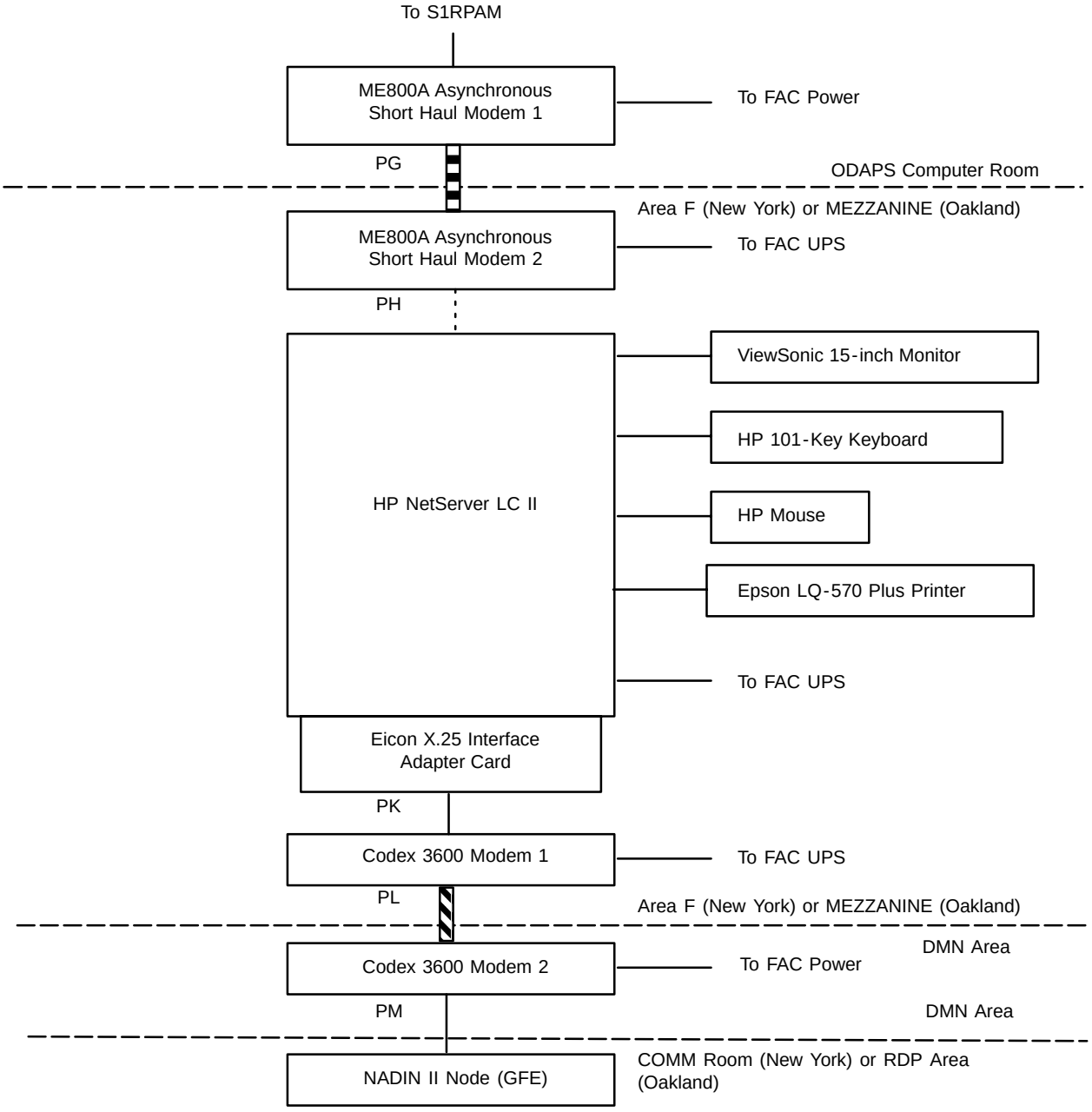


FIGURE 2 - 7. ISD SYSTEM ARCHITECTURE DIAGRAM



1) ———— 25 Wire Shielded
2) - - - - - - - DB9 to DB25 Cable
3) 2 Pair Twisted Wire
4) 8 Wire Low Loss
5) Cable number is specified by the letter P followed by another letter
The cable numbers match those in the AIDCS OMTIM, CDRL No. A053-002D

FIGURE 2 - 8. ODAPS AIDCS CABLE CONFIGURATION DIAGRAM

(9) ODL Subsystem. The ODL subsystem consists of IBM 7018 Model 770 or Model 771 RISC/6000 processor, IBM 4226 Model 302 printer, IBM 6091 Model 19-inch color display, Certainty ARRAY/6000 disk, IBM 3151 ASCII display, IBM 7208 tape drive, Cyberex Model 163A445 - 1 208 V power distribution unit, Cyberex Model 600/6FA1 110 V power distribution unit, Black Box powered MAU with RIRO fiber interface, Black Box Model SK - SW901A RS232 fallback switches, Loral Initial Sector Suite Rack, RS422 interface for a TFSP and CCK, an IBM QWERTY 101 keyboard, Measurement Systems Trackball or IBM mouse, and 19-inch (width) rack. An example of the ARTCC ODL in Oakland is shown in Figure 2 - 9, Oakland ODAPS Cable Configuration Diagram (ODL), and New York ARTCC is shown in Figure 2 - 10, New York ODAPS Cable Configuration (ODL). This subsystem provides a visual display of update, general information, weather, and flight strip messages. It also provides an input interface for controller entered messages.

b. A full set of this equipment is located in each of the Ronkonkoma, New York and Oakland, California ARTCCs.

203. SYSTEM THEORY OF OPERATION.

a. FDPS Functions. The FDPS has the following functions:

(1) System supervision,

(2) Flight data message processing,

(3) Route conversion,

(4) Posting determination,

(5) Upper winds message processing,

(6) Health/status monitoring,

(7) Flight data and conflict probe display order formatting,

(8) Level flight and altitude transition conflict detection,

(9) Message acceptance, and

(10) Response processing.

b. IBM 3380 Disk Drive. The IBM 3380 disk drive in the DASD Subsystem provides the logical capabilities to operate and control the DASDs. The IBM 3880 SCU contains two storage directors that operate independently and provide basic functions for disk storage control.

c. IBM 3480 Model A22. The IBM 3480 Model A22 is a microprocessor-driven control unit that controls the IBM 3480 Model B22 MTUs.

d. S1RPAM Subsystem Functions. The S1RPAM subsystem has the following functions:

(1) External message receipt,

(2) External message transmission,

(3) Protocol conversion,

(4) Link-level data checking,

(5) Message size checking, and

(6) S1RPAM subsystem processor health/status reporting to FDPS.

e. ISD Subsystem Functions. The ISD subsystem performs the following functions:

(1) Provides health/status reporting to FDPS;

(a) Displays aircraft traffic situations,

(b) Routes,

(c) Map data,

(d) Aircraft information lists,

(e) Messages, and

(f) Status indicators.

(2) Processes input from the controller via keyboard, trackball, and function keys.

f. TP Subsystem Functions. The TP subsystem performs the following functions:

(1) Display update,

(2) General information and weather messages,

(3) Prints flight strip information,

(4) Processes controller entered messages, and

(5) Stores received messages for historical review.

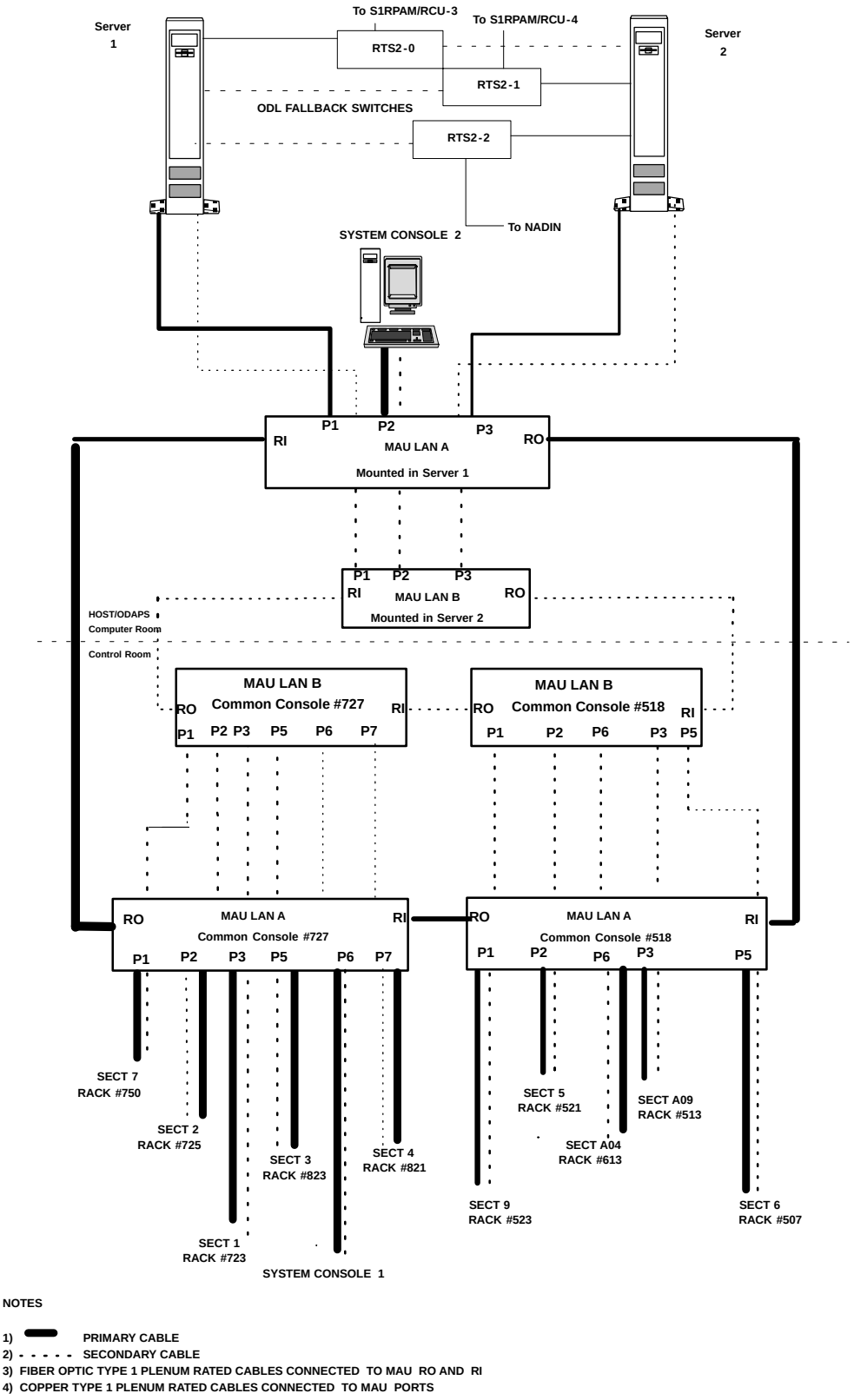


FIGURE 2 - 9. OAKLAND ODAPS CABLE CONFIGURATION DIAGRAM (ODL)

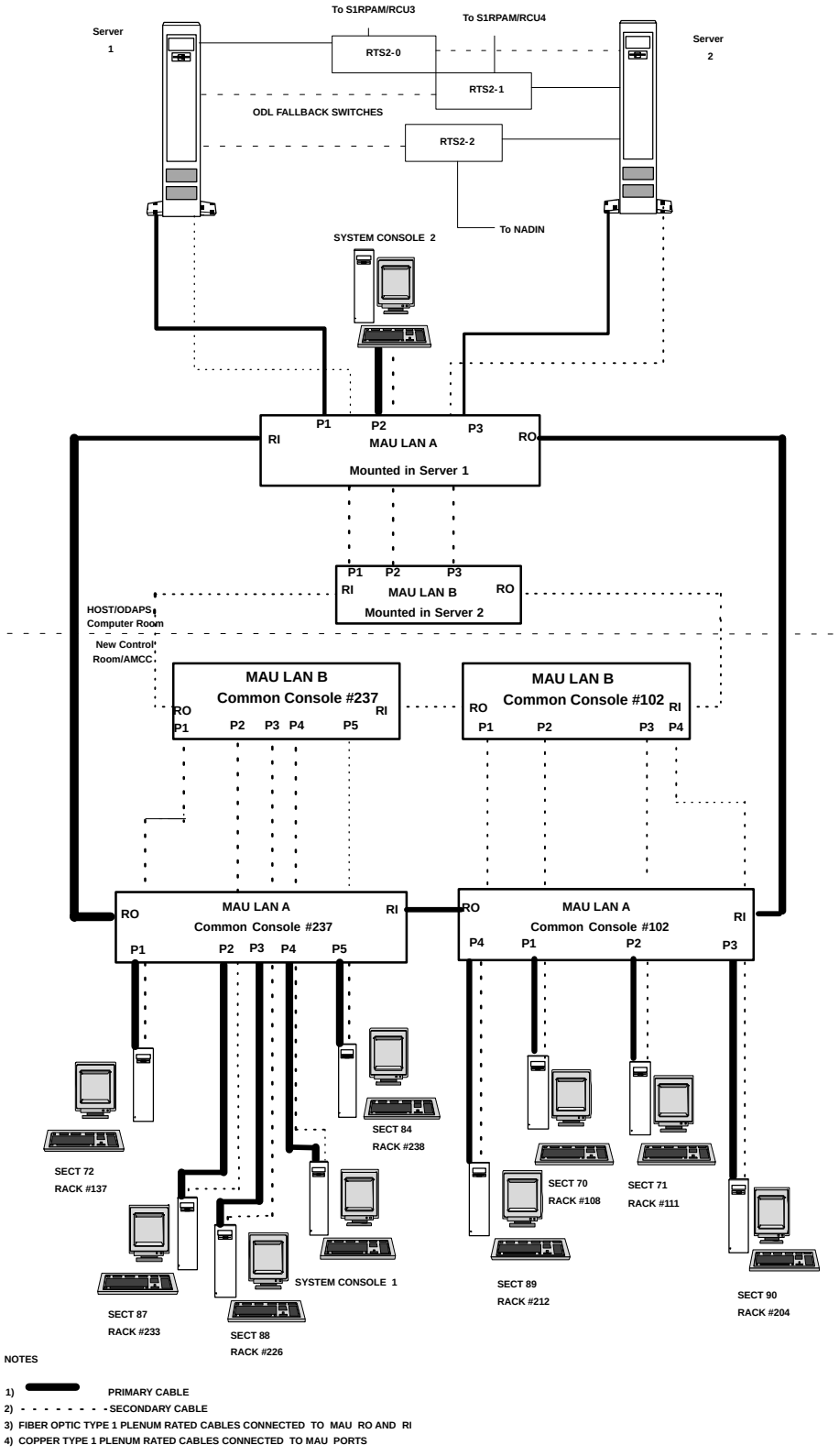


FIGURE 2 - 10. NEW YORK ODAPS CABLE CONFIGURATION DIAGRAM (ODL)

g. ODAPS Software Subsystem Functions. The ODAPS software subsystem performs the following functions:

(1) Receives plan messages,

(2) Departure messages,

(3) Amendment messages,

(4) Creates a data base for all aircraft that are operating within a oceanic sector, and

(5) Gives the controller early notification of potential conflicts between aircraft in oceanic airspace.

h. AIDCS Subsystem Functions. The AIDCS Subsystem performs the following functions:

(1) External message receipt,

(2) External message transmission,

(3) Message field validation,

(4) Message format conversion,

(5) Message delivery assurance,

(6) Response message processing,

(7) Flight data base creation and maintenance,

(8) External interface status monitoring,

(9) Controller input processing,

(10) Message logging,

(11) Message printing, and

(12) Display updating.

i. ODL Subsystem Functions. The ODL Subsystem performs the following functions:

(1) Existing TP functionality,

(2) CPDLC message processing (air/ground communications processing),

(3) Outgoing data communications with ROs for message processing with HF-equipped aircraft,

(4) NADIN II interface for CPDLC Position Report transmittal to the ODAPS,

(5) Message composition automation at operational positions,

(6) Message archival for historical and legal purposes,

(7) Multi-sector processing support,

(8) Controller-to-Controller communications (E - Mail capability),

(9) Data Reduction and Analysis (DR&A) functionality,

(10) Controller-to-RO messages, and

(11) CPDLC message processing redundancy.

204. SYMMETRIX 5630 DASD M&C SUBSYSTEM.

a. The Symmetrix 5630 DASD M&C subsystem provides an external interface to monitor and control the DASD's functionality without interference to NAS. The M&C acquires DASD configuration parameters, monitors all state and status changes, and reports all monitored data. The M&C also provides monitor and control of the M&C server workstations and other M&C devices on the network.

The Symmetrix 5630 M&C subsystem, as shown in figure 2 - 11, consists of the following major components:

(1) M&C Server — Quantity 2

(2) Ethernet Switch — Quantity 2

(3) Transceiver — Quantity 8, 4 at M&C user positions (2 wired but not used); 2 at the printers; 2 at the M&C control positions

(4) M&C User Position — Quantity 2

(5) M&C Printer — Quantity 2

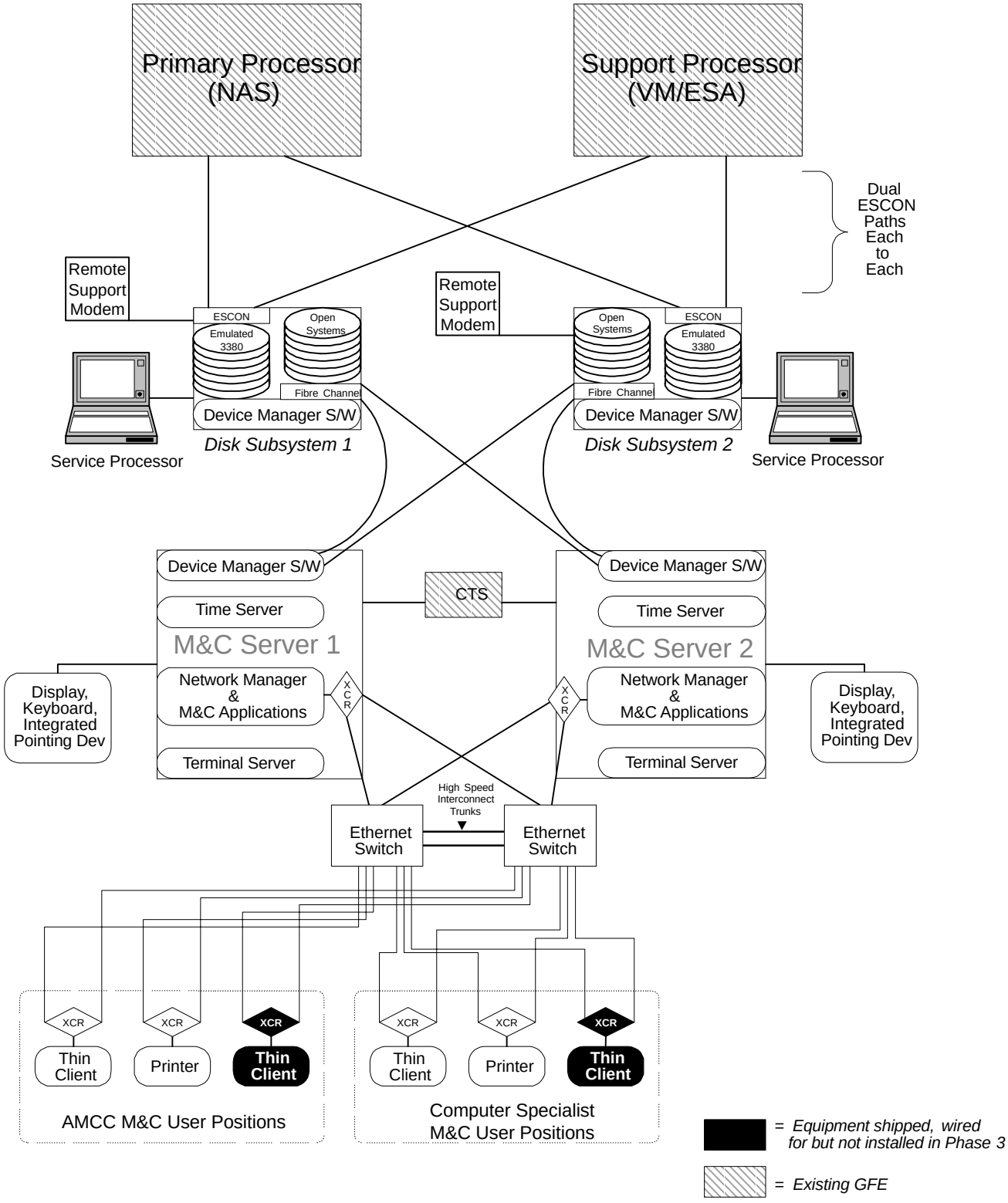


FIGURE 2 - 11. SYMMETRIX DASD MONITOR AND CONTROL

b. Two redundant M&C servers, which are connected via direct fibre channels to the various components of the 5630 DASD subsystem, continuously display and report the status of the subsystem. Each server is rack-mounted and includes a local keyboard with integrated pointing device and LCD display. The workstations are used to command and control the M&C servers. The M&C servers are IBM RS/6000 Model H80 processors running the AIX Operating System. The M&C servers run a copy of the Tivoli NetView network manager application. The servers also run the EMC Control Center application, which is used to monitor, configure, control, and tune the EMC Symmetrix. The Symmetrix is connected to the M&C server via Fibre Channel. The Control Center is accessible from both the M&C user and control positions. The Control Center forwards Symmetrix status data to the M&C application programs, which allows Symmetrix events and system information to be displayed on the M&C views. The M&C servers also run Coded Time Source (CTS) software, and Network Computing Device (NCD) Thin Client server software. The M&C servers receives date and time synchronization information from the Central Computer Complex Host (CCCH) CTS interface that is connected to a serial port on each M&C server. After being read, the synchronization information is used to update the date and time of each M&C server.

c. Two fast Ethernet switches and eight transceivers provide the network infrastructure for the M&C and are used as the interface media between the two M&C servers and the M&C User Positions. The transceivers provide paths to the redundant switches for fault tolerance. The Transceiver acts as a simple A/B switch to arbitrate connectivity of the M&C to one of the two Ethernet switches at a time (depending on which of the two is designated primary at the time).The Ethernet switches are Cisco Catalyst 2900 Series XL Enterprise Edition.

d. Two M&C user positions will be installed at the ARTCC Maintenance Control Center (AMCC) and Computer Operation areas. The user positions consist of a monitor, keyboard, and pointing device. They attach to the Ethernet network via transceivers which provide paths to the redundant switches. The M&C user positions provide a remote user interface to the M&C servers. They also offer centralized configuration management and administration to applications and resources on the M&C server. The M&C user positions are NCD NC900 series Thin Client workstations. Four Thin Client workstation position are wired but only two are populated. Four Thin Client units are shipped and two installed, the other two are not installed at the ARTCC. They are used to provide operator interfaces to the M&C Server application. The Thin Clients can boot from either of the M&C servers. They support X11 for access to X - Windows applications. The X - Window system is a graphics system used on UNIX, MS - Windows systems, etc., and provides an inherently client/server oriented base for displaying windowed graphics. From the Thin Clients, users can run the Tivoli NetView. Tivoli NetView is a network manager application that displays network topologies, correlates and manages events and Simple Network Management Protocol (SNMP) traps, monitors network health, and gathers performance data. Tivoli NetView provides the scalability and flexibility to manage mission-critical environments. Tivoli NetView allows network administrators to centralize the management of network hardware devices and services. The majority of the M&C functions are available at the M&C user positions, each of which has the same set of capabilities. Authority levels are used to determine the capabilities permitted for each individual user. Authority levels are login identifiers that allow users to access a defined set of capabilities, based on job responsibilities. The authority levels are defined as Operations Manager (for NOMs), HOST Operations (for Computer Operators (CO)), Maintenance (for ATSSs), and Administrator (for System Specialists (SS)). When a user logs on with an authorized User ID and password, only the authorized monitor and control capabilities will be available for active use.

e. Two printers will be installed at the AMCC and Computer Operation areas. The printers are provided to print event logs and configuration reports. The M&C printers are Lexmark Optra Model 410 printers that provide print access to all M&C applications on the server. The printers are attached via Ethernet.

205. - 299. RESERVED.

CHAPTER 3. STANDARD AND TOLERANCES

300. GENERAL.

a. This chapter prescribes the standards and tolerances for the ODAPS automation, as described in Order 6000.15. All key performance parameters and/or key inspection elements are identified by an arrow (→) placed to the left of the applicable item.

b. The equipment is grouped by subsystem, rather than by facility, since all subsystems are duplicated at each facility.

STANDARDS AND TOLERANCES

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
301. ODAPS.				
a. Flight Data Processing ... and Display.	506	Satisfactory overall flight data processing and system display as verified using the OnLine Certification (OLC) programs or manual entry checking techniques	Same as standard	Same as initial
b. KVDT Terminal ..... Message Input and Display.	506	Satisfactory message input and display as verified using the OLC programs or General Information (GI) and Test Device (TD) manual messages	Same as standard	Same as initial
c. TP Workstation ..... Message Input and Display.	506	Satisfactory message input, scrolling, and display as verified using the OLC programs or TD manual messages	Same as standard	Same as initial
d. TFSP Flight Strip ..... Printing.	506	Satisfactory printout of flight strips with correct device response registration and print quality as verified using the OLC programs or TD manual message	Same as standard	Same as initial
e. Interfacility Data ..... Transfer.	506	Satisfactory transfer of data as verified using the OLC programs or Test Message (TR) manual message	Same as standard	Same as initial
f. Switchover Operation	508	Successful switchovers as verified using manual requests	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
302. FDPS.				
a. IBM 9672 Model RA4 Processor.				
→ **(1)** 9672 Frame.	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04. IBM S/390 Service Guide, SY24 - 6158 - 04	Successful completion of Power On Self Test (POST) and the Checkout Tests	Same as standard	Same as initial
→ **(2)** 9672 SE.	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04	Successful completion of POST	Same as standard	Same as initial
→ **(3)** HMC.	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04	Successful completion of POST	Same as standard	Same as initial
(4) Multi-System . . . . . Channel Communications Unit (MCCU).	IBM Channel-to-Channel Adapter or 3088 MCCU Exerciser On-Line Test User Guide, D99 - 3150A - 05	Error free completion	Same as standard	Same as initial
b. IBM 3268 Model 2C Console Printer.				
(1) Operation.	IBM 3268 Printer Models 1, 2, and 2c Maintenance Information, SY27 - 0201 - 4, sections 716, 725, 743, 746, and 749	Error free completion and no excess accumulation of errors	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
(2) Print Quality.	IBM 3268 Printer Models 1, 2, and 2c Maintenance Information, SY27 - 0201 - 4, sections 731, 736, and 737	Satisfactory print	Same as standard	Same as initial
c. IBM 4245 Model 12 Line Printer.				
Operation.	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1, pages DIA - 040, DIA - 050, and DIA - 200	Error free completion	Same as standard	Same as initial
→ **d. IBM 3274 Model 41D Terminal Control Unit.**				
OLTs.	IBM Maintenance Diagnostic Program Local 3274 Model 1B/1D Display System Online Tests, D99 - 3274A - 01, pages 1 through 19	Error free completion	Same as standard	Same as initial
303. DASD SUBSYSTEM.				
→ **a. IBM 3380 Models AD4, AE4, BD4 and BE4 DASDs.**				
OLTs.	IBM 3380 Online Test (OLT) User's Guide, D99 - 3380A - 02, pages 1 through 4, 7 through 13, 18, 19, 21, and 22, and 32 through 44	Error free completion	Same as standard	Same as initial
→ **b. IBM 3880 Model 3 SCU.**				
OLTs.	IBM Maintenance Diagnostic Program 3880 Storage Director Online Test, DCL - 3880A - 02 (D99 - 3880A - 01), pages 1 through 8	Error free completion	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
c. Symmetrix 5630 DASD Subsystem.				
→ **(1)** Entire unit or any component except disk device or power supply.	CDRL D038, System Problem Determination and Maintenance Manual Section 3, or Symmetrix Model 3630/5630 Product Manual Appendix C	Successful completion of IML POST	None	None
		AND:		
	Device Support Facilities User's Guide, GC35 - 0033, Chapter 11	Error free completion running ICKDSF using Analyze command with SCAN and DRIVE TEST options on any logical volume	None	None
(2) Disk Device	529	Successful completion of replacement drive diagnostics, and resynchronization of logical volumes	None	None
(3) Power Supply	529	No environmental power faults or alarms	None	Temporary change state alarm
304. MTS.				
→ **a. IBM 3480 Model A22 MTCU.**				
OLTs.	IBM 3480 Online Test (OLT), D99 - 3480A - 00, pages 1 through 33	Error free completion	Same as standard	Same as initial
→ **b. IBM 3480 Model B22 MTU.**				
OLTs.	IBM 3480 Online Test (OLT), D99 - 3480A - 00, pages 1 through 19 and 48 through 56	Error free completion	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
305. S1RPAM SUBSYSTEM.				
→ **a. IBM 7026 Model H50 RISC/6000 Processor.**				
(1) H50 Diagnostics.	517; IBM RISC/6000 Enterprise Server Model H50 User's Guide, SA38 - 0546 - 00, Chapter 8, Steps 1 - 5	Error free completion	Same as standard	Same as initial
(2) S1RPAM . . . . . Diagnostics.	507; TI 6110.11	Error free completion	Same as standard	Same as initial
(3) S1RPAM Wrap . . . . . Diagnostics.	516; TI 6110.11	Error free completion	Same as standard	Same as initial
b. Lexmark 2391 Plus . . . . . Matrix Printer.	TI 6110.10	Error free completion	Same as standard	Same as initial
c. S1RPAM Replacement . . . . Operation.	515	Successful replacement as verified using manual requests	Same as standard	Same as initial
306. ISD SUBSYSTEM.				
→ **a. IBM RISC/6000 Model . . . . 770 or 771.**		Error free completion	Same as standard	Same as initial
b. IBM 4226 or 4232 . . . . . Line Printer Operation.	514; IBM 4226 Printer User's Reference, GA18 - 7182 - 0, pages 5 - 3 through 5 - 4. IBM 4232 Printer User's Guide, SA24 - 43506 - 01, Chapter 4	Error free completion	Same as standard	Same as initial
→ **c. Sony 20x20 Color . . . . . Display.**	TI 6110.4	Error free completion	Same as standard	Same as initial
d. Server Switchover.	509	Successful switchovers as verified using manual requests	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	Reference Paragraph	Standard	Tolerance/Limit	
			Initial	*Operating*
e. LAN Switchover.	510	Successful switchovers as verified using manual requests	Same as standard	Same as initial
f. Disk ARRAY/6000.	513	The disk ARRAY is functioning properly under normal conditions	Same as standard	Same as initial
307. TP SUBSYSTEM.				
→ **a. IBM RISC/6000 Model 770 or 771.**	512; POWERstation and POWERserver Common Diagnostics and Service Guide, Chapter 5, pages 5 - 1 through 5 - 3	Error free completion	Same as standard	Same as initial
b. IBM 4226 Model 302 Line Printer Operation.	514; IBM 4226 Printer User's Reference, GA18 - 7182 - 0, pages 5 - 3 through 5 - 4.	Error free completion	Same as standard	Same as initial
c. Server Switchover.	509	Successful switchover as verified using manual requests	Same as standard	Same as initial
d. LAN Switchover.	510	Successful switchover as verified using manual requests	Same as standard	Same as initial
e. System Console Switchover.	511	Successful switchover as verified using manual requests	Same as standard	Same as initial
f. Disk ARRAY/6000.	513	The disk ARRAY is functioning properly under normal conditions	Same as standard	Same as initial
308. AIDCS SUBSYSTEM.				
→ **a. HP NetServer LC II System Computer.**	TI 6110.6, Section 6.1.1	Error free completion	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
b. Epson LQ - 570 Printer. . .	TI 6110.6, Section 6.1.2	Ink level is adequate and printing operation causes paper advance and displays correct character height and width	Same as standard	Same as initial
c. ME800A Short Haul . . . . . Modems.	518	Green front panel Transmit Data (TD) or Receive Data (RD) light flashes approximately twice per second	Same as standard	Same as initial
d. Eicon X.25 Interface . . . . . Adapter.	TI 6110.6, Section 6.1.4	Color of all FIR names in AIDCS address list are yellow or green	Same as standard	Same as initial
e. UPS 600 or 1000.	520	The LED labeled "On Line" is lit	Same as standard	Same as initial
f. ODAPS - AIDCS - FIR . . . . . Interfaces (New York ARTCC).	521	A TR message is sent from ODAPS through AIDCS to a FIR. ODAPS receives a DT response within 30 seconds.	Same as standard	Same as initial
g. ODAPS - AIDCS - FIR . . . . . Interfaces (Oakland ARTCC).	522	A TR message is sent from ODAPS to AIDCS. ODAPS receives a DT response within 5 to 10 seconds. A MIS message is sent from AIDCS to a FIR (if necessary). AIDCS receives a LAM response within 30 seconds.	Same as standard	Same as initial
309. ODL SUBSYSTEM.				
a. IBM RISC/6000 Model . . . . 770 or 771.	512	Error free completion	Same as standard	Same as initial
b. IBM 4226 or 4232 . . . . . Line Printer.	514	Error free completion	Same as standard	Same as initial

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
c. ODL Service Level ..... Certification.	525	Error free completion	Same as standard	Same as initial
d. ODL Server ..... Switchover.	526	Successful switchover as verified using manual requests	Same as standard	Same as initial
e. ODL LAN Switchover.	527	Successful switchover as verified using manual requests	Same as standard	Same as initial
f. ODL Disk ARRAY/6000. ...	513	The disk ARRAY is functioning properly under normal conditions	Same as standard	Same as initial
→ **g. ODL System Level ..... Certification.**	524	Error free completion	Same as standard	Same as initial
h. ODL Unit Level ..... Certification.	523	Error free completion	Same as standard	Same as initial
310. SYMMETRIX 5630 DASD M&C SUBSYSTEM.				
a. M&C Server, IBM RS/6000 Model H80.				
(1) POST.	RS/6000 Enterprise Server Model H80 Series Service Guide, Chapter 1, or CDRL D038, System Problem Determination and Maintenance Manual, Section 6.1.2.2.4	Error free completion	Same as standard	Same as initial
(2) Online ..... Diagnostics.	RS/6000 Enterprise Server Model H80 Series User's Guide, Chapter 5	Error free completion	Same as standard	Same as initial
(a) Service Mode.				
(b) Maintenance Mode.				
(c) Concurrent Mode.				

STANDARDS AND TOLERANCES (Continued)

Parameter	*Reference Paragraph*	*Standard*	*Tolerance/Limit*	
			Initial	*Operating*
(3) Standalone . . . . . Diagnostics.	RS/6000 Enterprise Server Model H80 Series User's Guide, Chapter 5	Error free completion	Same as standard	Same as initial
b. Ethernet Switch, Cisco 2924M XL - EN.				
POST.	Catalyst 2900 Series XL Installation Guide, Cisco Systems, Chapter 3, or CDRL D038, Storage Subsystem Certification Manual, Section 3.4.1.2	Error free completion	Same as standard	Same as initial
c. M&C User Position, ... NCD NC900 Thin Client.	CDRL D038, System Problem Determination and Maintenance Manual			
POST.	Section 6.1.2.5, and the NCD NCBridge Software Reference Manual, Chapter 5	Error free completion	Same as standard	Same as initial
d. Printer, Lexmark . . . . . Optra M410..	CDRL D038, System Problem Determination and Maintenance Manual			
POST.	Section 6.1.2.6	Error free completion	Same as standard	Same as initial
e. Transceiver LAN . . . . . Data Paths, Ethercom EFTT1003 - A.	CDRL D038, System Problem Determination and Maintenance Manual			
Observe Light Emitting . . . . . Diodes (LED) ON switch.	Sections 6.1.2.7 and 3.1.4, and Ethercom Model EFTT1003 User's Manual, page 6	Error free completion	None	None
f. Fibre Channel Connectivity.				
Execute "inq" . . . . . command from AIX command line.	528b	"inq" command responds with list of SCSI devices	None	None
311. - 399. RESERVED.				

CHAPTER 4. PERIODIC MAINTENANCE

400. GENERAL.

a. This chapter establishes all the maintenance activities which are required for the ODAPS automation on a periodic, recurring basis, and the schedules for their accomplishment. The chapter is divided into two sections. The first section identifies the performance checks (i.e., test, measurements, and observations) of normal operating controls and functions, which are necessary to determine whether operation is within established tolerances/limits. The second section identifies other tasks which are necessary to prevent deterioration and ensure reliable operation. Refer to Order 6000.15 for additional general guidance.

b. In addition to the periodic, recurring activities specified in this chapter, Order 6000.15 establishes requirements for routine maintenance and other specific maintenance activities which are to be performed for all AF equipment

c. All reference paragraphs pertaining to standards and tolerance/limits are found in chapter 3 of this order, unless otherwise stated.

d. The performance checks and maintenance tasks are not to be taken as the minimum work required for proper maintenance, rather as the maximum interval permitted between tasks. This chapter will reference specific paragraphs for the maintenance activities listed in the individual equipment instruction books and their frequency of accomplishment.

e. Additional maintenance activities, not listed in the instruction books, will refer the user to chapter 5 of this handbook for the appropriate maintenance procedures.

Section 1. PERFORMANCE CHECKS

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
401. DAILY.		
a. ODAPS.		
(1) Input at least five flight plans to demonstrate ..... that the Full Data Blocks (FDB) thereby generated are correctly displayed upon the ISD OCs. One FDB shall be generated at the point of tangency, and the next four FDBs at the four points farthest from the point of tangency. The flight plans should be input from KVDTs or TP Workstations and their combined routes shall penetrate all adapted sectors that have airspace. The flight shall represent overflights or traffic originating or landing within a sectors airspace. The simulated flight plans shall be such that strip printing is initiated.	301a	506
(2) Test all KVDTs using the GI and TD messages ..... addressed to each KVDT. The GI messages shall include the position identification (C1, E1, etc.), Logical Device Number (LDN) (200, 204, etc.), and device address (8D, 3F, etc.).	301b	506
(3) Use TD messages to cause display of the ..... workstation monitor test pattern at all sector positions. Invalid messages shall be included that cause the sector number, LDN, and FDIO address to be written on the workstation monitor.	301c	506
(4) Exercise all ODAPS TFSPs using the TD message	301d	506
(5) Use TR or MIS messages to elicit response ..... from all adjacent NAS facilities or FIRs.	301e, 308f, 308g	506, 521, 522
b. AIDCS.		
Check for satisfactory operation of ..... interface to FIRs.	308d	TI 6110.6, Section 6.1.4
c. ODL.		
Execute the “linktest” script.	309c	525
402. WEEKLY.		
a. ODAPS.		
Check for satisfactory system operation following a ..... manually initiated switchover.	301f	508

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
b. TP.		
(1) Servers.		
Check for satisfactory system operation following a manually initiated switchover.	307c	509
(2) LAN.		
Check for satisfactory system operation following a manually initiated switchover.	307d	510
(3) SCs.		
Check for satisfactory system operation following a manually initiated switchover.	307e	511
(4) Disk ARRAY/6000.		
Check that the disk ARRAY is operating correctly.	307f	513
c. ISD.		
(1) Servers.		
Check for satisfactory system operation following a manually initiated switchover.	306d	509
(2) LAN.		
Check for satisfactory system operation following a manually initiated switchover.	306e	510
(3) Disk ARRAY/6000.		
Check that the disk ARRAY is operating correctly.	306f	513
d. S1RPAM.		
Check for satisfactory system operation following a manually initiated replacement.	305c	515
e. AIDCS.		
UPS 600 or 1000.		
Check for satisfactory operation of UPS.	308e	520

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
f. ODL.		
(1) Servers.		
Check for satisfactory system operation following .... a manually initiated switchover.	309d	526
(2) LAN.		
Check for satisfactory system operation following a .... manually initiated switchover.	309e	527
(3) Disk ARRAY/6000.		
(a) Check that the disk ARRAY is operating ..... correctly.	309f	513
(b) Run Checkarray diagnostic command	TI 6110.15, paragraph 7.7.1.12.5	TI 6110.15, paragraph 7.3.2.5.8
g. Symmetrix 5630 M&C Subsystem.		
M&C Server, IBM RS/6000 Model H80.		
Archive Event Log file on CD, and ..... swap active and standby servers.	Successful archive/ backup and successful swap to other server	528a
403. MONTHLY.		
a. FDPS.		
(1) IBM 3268 Model 2C Console Printer.		
(a) Print quality tests, run print all characters ..... test (test number 01) and print ripple pattern test (test number 76).	302b(2)	IBM 3268 Printer Models 1, 2, and 2C Maintenance Information, SY27 - 0201 - 4, sections 731 and 736.
(b) Run Basic Acceptance Test (BAT), internal ..... wrap test (test number 62), and print error log.	302b(1)	BM 3268 Printer Models 1, 2, and 2C Maintenance Information, SY27 - 0201 - 4, sections 716, 725, 743, 746, and 749
(2) HMC Alarm Box.		
Check lamp illumination and audible tone.	Successful completion	519

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
b. S1RPAM.		
(1) Modem Splitter Power Distribution Panel.		
Verify the green and yellow LEDs are lit.	TI 6110.10	TI 6110.10
(2) Gateway 5100 or 5150 Notebook System Console.		
Verify the green LED on the LAN cable . . . . . connector is lit.	TI 6110.10	TI 6110.10
c. AICDS.		
ME800A Short Haul Modems.		
Check for satisfactory operation of interface to . . . . . ODAPS Communications Subsystem (OCS).	308c	518
404. QUARTERLY.		
a. FDPS.		
(1) IBM 3274 Model 301D Terminal Control Unit.		
Run OLTs T3274A. . . . . (FAA Form 6110 - 6 entry).	302d	IBM Maintenance Diagnostic Program Local 3274 Model 1B/1D Display System On-Line Tests, D99 - 3274A - 01, pages 1 through 19
(2) IBM 4245 Model 12 Line Printer.		
Run BAT (Routine group C0).	302c	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1, pages DIA - 040, DIA - 050, and DIA - 200

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) IBM 9672 Model RA4 Processor.		
(a) 9672 Frame.		
Run POST and the Checkout Tests. . . . . (FAA Form 6110 - 6 entry.)	302a(1)	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04. IBM S/390 Service Guide, SY24 - 6158 - 04
(b) 9672 SE.		
Run POST Test. . . . . (FAA Form 6110 - 6 entry.)	302a(2)	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04
(c) HMC.		
Run POST Test. . . . . (FAA Form 6110 - 6 entry.)	302a(3)	IBM S/390 Support Element Operations Guide, GC38 - 3108 - 03. IBM S/390 Installation Manual, SY24 - 6156 - 04
b. DASD.		
(1) IBM 3380 Models AD4, AE4, BD4, and BE4 DASDs.		
(a) Run OLT's T3380PSA (Pack Scan-A). . . . . (FAA Form 6110 - 6 entry.)	303a	IBM 3380 Online Test (OLT) User's Guide, D99 - 3380A - 02, pages 1 through 4, 7 through 12, 18, 19, and 32 through 34
(b) Run OLT's T3380PSB (Pack Scan-B). . . . . (FAA Form 6110 - 6 entry.)	303a	IBM 3380 Online Test (OLT) User's Guide, D99 - 3380A - 02, pages 1 through 4, 7 through 11, 13, 21, 22, and 32 through 44

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(2) IBM 3880 Model 3 SCU.		
Run OLT's T3880A (Routines 1, 2, and 3 only). . . . . (FAA Form 6110 - 6 entry.)	303b	IBM Maintenance Diagnostic Program 3880 Storage Director Online Test, DCL - 3880A - 02 (D99 - 3880A - 01), pages 1 through 8
(3) Symmetrix 5630 DASD Subsystem.		
(a) Run POST diagnostic.	303c(1)	CDRL D038, System Problem Determination and Maintenance Manual Section 6.1.2.11, or Symmetrix Model 3630/5630 Product Manual Appendix C
(b) Run ICKDSF diagnostic using Analyze . . . . . command with SCAN and DRIVE TEST options on any logical volume.	303c(1)	Device Support Facilities User's Guide, GC35 - 0033, Chapter 11
c. MTS.		
(1) IBM 33080 Model A22 MTCU.		
Run OLT's T33080A. . . . . (FAA Form 6110 - 6 entry.)	304a	IBM 3480 Online Tests (OLT's), D99 - 3480A - 00, pages 1 through 33
(2) IBM 3480 Model B22 MTU.		
Run OLT's T33080C. . . . . (FAA Form 6110 - 6 entry.)	304b	IBM 3480 Online Tests (OLT's), D99 - 3480A - 00, pages 1 through 19, and 48 through 56
d. S1RPAM.		
(1) Lexmark 2391 Plus Matrix Printer.		
Print internal demonstration page.	305b	TI 6110.10

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(2) IBM 7026 Model H50 RISC/6000 Processor.		
Run Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	305a(1)	517; IBM RISC/6000 Enterprise Server Model H50 User's Guide, SA38 - 0546 - 00, Chapter 8, Steps 1 - 5
(3) System.		
(a) Run S1RPAM Diagnostics except selected Offline . . . Diagnostics. (FAA Form 6110 - 6 entry.)	305a(2)	507; TI 6110.11
(b) Run S1RPAM Wrap Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	305a(3)	516; TI 6110.11
e. ISD.		
(1) Server.		
Run Central Processing Unit (CPU) Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	306a	512
(2) OC.		
Run CPU Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	306a	512
(3) SC.		
Run CPU Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	306a	512
(4) IBM 4226 or 4232 Line Printer.		
Run Printer Self Test.	306b	514
f. TP.		
IBM RISC 6000/770 or 771 CPU.		
(1) Server.		
Run CPU Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	307a	512
(2) Workstation.		
Run CPU Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	307a	512

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) SC.		
Run CPU Diagnostics. . . . . (FAA Form 6110 - 6 entry.)	307a	512
(4) IBM 4226 Model 302 Line Printer.		
Run Printer Self Test	307b	514
g. AIDCS.		
(1) HP NetServer LC II System Computer.		
Verify AIDCS system computer is operating . . . . . normally. (FAA Form 6110 - 6 entry.)	308a	TI 6110.6, Section 6.1.1
(2) Epson LQ - 570 Printer.		
Check for satisfactory operation of printer.	308b	TI 6110.6, Section 6.1.2
h. ODL.		
(1) Total System.		
Run ODL System Level Certification. . . . . (FAA Form 6110 - 6 entry.)	309g	524
(2) IBM 4226 or 4232 Line Printer.		
Run Printer Self-Test.	309b	514
i. Symmetrix 5630 M&C Subsystem.		
(1) M&C Server, IBM RS/6000 Model H80.		
Run “Service Mode” diagnostic suite.	310a	RS/6000 Enterprise Server Model H80 Series Service and User’s Guide
(2) Ethernet Switch, Cisco 2924M XL - EN.		
Run POST.	310b	Catalyst 2900 Series XL Installation Guide, Cisco Systems, Chapter 3, or CDRL D038, System Problem Determination and Maintenance Manual, Section 6.1.2.3.1

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) M&C User Position, NCD NC900 Thin Client.		
Run POST.	310c	CDRL D038, System Problem Determination and Maintenance Manual, Section 6.1.2.5, and the NCD NCBridge Software Reference Manual, Chapter 5
(4) Printer, Lexmark Optra M410.		
Run POST.	310d	CDRL D038, System Problem Determination and Maintenance Manual, Section 6.1.2.6
(5) Transceiver LAN Data Paths, Ethercom EFTT1003 - A.		
Observe LED's ON switch	310e	CDRL D038, System Problem Determination and Maintenance Manual, Sections 6.1.2.7 and 3.1.4, and Ethercom Model EFTT1003 User's Manual, page 6
(6) Fibre Channel Connectivity.		
Execute "inq" command from AIX command line.	310f	528b
405. SEMIANNUALLY.		
ISD.		
Sony 20x20 Color Display.		
a. OC.		
Run Touch-up Alignment Procedure. . . . . (FAA Form 6110 - 7 entry.)	306c	TI 6110.4
b. SC.		
Run Touch-up Alignment Procedure. . . . . (FAA Form 6110 - 7 entry.)	306c	TI 6110.4

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
406. ANNUALLY.		
a. S1RPAM.		
(1) Automatic Switching System Series 5000 A/B Switch.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(2) Modem Splitters.		
Check all I/O cables and connectors	Connectors secure and cables undamaged	505
(3) Modem Splitter Power Distribution Panels.		
Check all power cords and cables.	Connectors secure and cables undamaged	505
(4) Gateway 5100 or 5150 Notebook System Console.		
Check all cables and connectors.	Connectors secure and cables undamaged	505
(5) IBM 7026 Model H50 RISC/6000 Processor.		
Check all cables and connectors	Connectors secure and cables undamaged	505
(6) Lexmark 2391 plus Matrix Printer.		
Check all cables and connectors	Connectors secure and cables undamaged	505
b. ISD.		
(1) Servers.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(2) LAN.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(3) OCs.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(4) SCs.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
c. TP.		
(1) Servers.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(2) LAN.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(3) Workstations.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(4) SCs.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
d. FDPS.		
T - Bar Variswitch A/B Switches.		
(1) Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(2) Check operation and battery backup.	Successful completion	504
e. AIDCS.		
(1) HP NetServer LC II System Computer.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	TI 6110.6, Section 6.2.4
(2) Epson LQ - 570 Printer.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	TI 6110.6, Section 6.2.4

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) ME800A Short Haul Modems.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	TI 6110.6, Section 6.2.4
(4) Eicon X.25 Interface Adapter.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	TI 6110.6, Section 6.2.4
(5) UPS 600 or 1000.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	TI 6110.6, Section 6.2.4
f. ODL.		
(1) Servers.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(2) LAN.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(3) Workstations.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
(4) System Consoles.		
Check all power cords, cables, and connectors.	Connectors secure and cables undamaged	505
g. Symmetrix 5630 M&C Subsystem.		
M&C Server, IBM RS/6000 Model H80.		
Check tape drive operation.	Error free operation	CDRL D038, System Problem Determination and Maintenance Manual, Section 6.1.2.4, and the SONY SDT - 10000 Digital Data Storage (DDS) Drive Unit Operator's Guide

Section 1. PERFORMANCE CHECKS (Continued)

Performance Checks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
407. AS REQUIRED.		
a. FDPS.		
MCCU.		
Run OLTs T3150A and T3150STS.	302a(4)	IBM Channel-to-Channel Adapter or 3088 MCCU Exerciser On-Line Test User Guide, D99 - 3150A - 05
b. ODL.		
(1) Servers, System Consoles, and Sector Workstations.		
This test is intended to be run after repair to either of the mentioned units.		
Run "unit cert" script	309h	523
(2) IBM RISC 6000 770/771.		
Run CPU Diagnostics to assist in diagnosis of . . . . . problems on Servers, System Consoles, and Sector Workstations.	309a	512
c. Symmetrix 5630 M&C Subsystem.		
(1) Disk Drive.		
Validate disk drive replacement action.	303c(2)	529
(2) Power Supply.		
Validate power supply replacement action.	303c(3)	529
408. - 449. RESERVED.		

Section 2. OTHER MAINTENANCE TASKS

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
450. RESERVED.		
451. WEEKLY.		
a. FDPS.		
(1) IBM 4245 Model 12 Line Printer.		
(a) Clean and vacuum print chain, clean gate, ... and front area of the printer.	Visibly clean	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1, page TTE - 050
(b) Check for correct ribbon skew.	Correctly skewed	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 2, pages FRO - 140 through FRO - 200
(c) Run test pattern routine (routine 61), ... print/skip/space exerciser (routine 63), character set arrangement test (routine 66), and print quality pattern (routine number 67).	Characters easily discernible	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1, pages DIA - 040, DIA - 050, DIA - 110, DIA - 130, DIA - 210 through DIA - 270, and DIA - 290
(d) Print error low	No excessive accumulation of errors	IBM 4245 Printer Models 12 and 20 Maintenance Information Manual, Volume 1, pages LSE - 020 and LSE - 030
(2) Reserved.		
b. ISD.		
(1) OCs.		
(a) Inspect console for cleanliness.	Visibly clean	555
(b) Inspect console for damage.	Console undamaged	TI 6110.4
(c) Inspect console for proper display presentation. . . .	Clear and precise display images	TI 6110.4

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(2) System Consoles.		
(a) Inspect console for cleanliness.	Visibly clean	555
(b) Inspect console for damage.	Console undamaged	TI 6110.4
(c) Inspect console for proper display presentation.	Clear and precise display images	TI 6110.4
c. AIDCS.		
HP NetServer LC II System Computer.		
(1) Inspect monitor for cleanliness.	Visibly clean	555
(2) Extract log files from system.	Log files are extracted from the computer system	NASP - 7211, Section 3.2.3.1
d. ODL.		
IBM 7208 Tape Drive.		
Clean and inspect tape drive.	Error free completion	551
452. RESERVED.		
453. MONTHLY.		
a. ISD.		
(1) Server.		
(a) Clean Cathode Ray Tube (CRT) and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(2) OC.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(d) Check display driver cooling fans for proper operation.	Visibly operating	554

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) System Console.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(d) Check display driver cooling fans for proper operation.	Visibly operating	554
b. TP.		
(1) Server.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(2) Workstation.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(3) System Console.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(4) TFSP.		
Clean and inspect exterior and vacuum interior.	Visibly clean	TI 6130.6, par. 6.4.7
c. FDPS.		
(1) 9672 HMC and SE.		
Backup critical console data HMC and backup critical data SE.	N/A	IBM S/390 Hardware Management Console Operations Guide, GC38 - 3108 - 03

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(2) IS - 482G VM Terminals.		
Clean CRT and keyboard.	Visibly clean	555
d. AIDCS.		
HP NetServer LC II System Computer.		
(1) Clean CRT and keyboard.	Visibly clean	555
(2) Vacuum interiors and check for obstructions.	Visibly clean	552
(3) Check CPU cooling fans for proper operation.	Visibly operating	554
(4) Remove automatically generated e-mail messages.	Automatically generated e-mail messages are removed from the system	TI 6110.6, Section 5.5
e. ODL.		
(1) Server.		
(a) Clean CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(2) Workstation.		
(a) Clean and inspect CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(3) System Console.		
(a) Clean and inspect CRT and keyboard.	Visibly clean	555
(b) Vacuum interiors and check for obstructions.	Visibly clean	552
(c) Check CPU cooling fans for proper operation.	Visibly operating	554
(4) TFSP.		
Clean and inspect exterior and vacuum interior.	Visibly clean	TI 6130.6, par. 6.4.7

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
454. QUARTERLY.		
a. ISD.		
(1) Server.		
Clean CPU cooling fan guard.	Visibly clean	555
(2) OC.		
Clean CPU cooling fan guard.	Visibly clean	555
Clean display driver cooling fan guard.	Visibly clean	555
(3) System Console.		
Clean CPU cooling fan guard.	Visibly clean	555
Clean display driver cooling fan guard.	Visibly clean	555
b. TP.		
(1) Server.		
Clean CPU cooling fan guard.	Visibly clean	555
(2) Workstation.		
Clean CPU cooling fan guard.	Visibly clean	555
(3) System Console.		
Clean CPU cooling fan guard.	Visibly clean	555
c. AIDCS.		
HP NetServer LC II System Computer.		
Clean CPU cooling fan guard.	Visibly clean	555
d. ODL.		
(1) Server.		
Clean CPU cooling fan guard.	Visibly clean	555

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(2) Workstation.		
Clean CPU cooling fan guard.	Visibly clean	555
(3) System Console.		
Clean CPU cooling fan guard.	Visibly clean	555
e. Symmetrix 5630 M&C Subsystem.		
P260 M&C Monitor.		
Trackball maintenance.	Visual	CDRL D038, Operators User's Manual, Section 5.2.4, and the MicroSpeed S - TRAC Quick Reference Guide
455. SEMIANNUALLY.		
a. S1RPAM.		
(1) Automatic Switching System Series 5000 A/B Switch.		
Clean and inspect.	Visibly clean	555
(2) Modem Splitters.		
Clean and inspect.	Visibly clean	555
(3) Modem Splitter Power Distribution Panels.		
Clean and inspect.	Visibly clean	555
(4) S1RPAM Rack.		
Clean and inspect cabinet.	Visibly clean	552
(5) Lexmark 2391 Plus Matrix Printer.		
Clean and inspect printer.	Visibly clean	550
b. ISD.		
(1) Server.		
(a) Clean and inspect cabinet.	Visibly clean	552

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
(2) OC.		
(a) Clean and inspect frame.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(3) System Console.		
(a) Clean and inspect frame.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
c. TP.		
(1) Server.		
(a) Clean and inspect cabinet.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
(2) Workstation.		
(a) Clean and inspect rack.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(3) System Console.		
(a) Clean and inspect rack.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
d. FDPS.		
(1) T - Bar Variswitch A/B Switches.		
Clean and inspect cabinet.	Visibly clean	552
(2) IBM 3268 Model 2C Console Printer.		
Clean and inspect printer.	Visibly clean	550

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) IBM 6400 Model 050 Console Printer.		
Clean and inspect printer.	Visibly clean	IBM 6400 Line Matrix Printers Maintenance Information Manual Cabinet and Pedestal Models, S246 - 0117 - 00
(4) IBM 6400 Model 015 High Speed Printer.		
Clean and inspect printer.	Visibly clean	IBM 6400 Line Matrix Printers Maintenance Information Manual Cabinet and Pedestal Models, S246 - 0117 - 00
e. MTS.		
IBM 3480 Model B22 MTU.		
Clean and inspect tape drive.	Successful completion	551
f. AIDCS.		
(1) HP NetServer LC II System Computer.		
(a) Clean and inspect case.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(2) ME800A Short Haul Modems.		
Clean and inspect.	Visibly clean	555
(3) Eicon X.25 Interface Adapter.		
Clean and inspect.	Visibly clean	555
(4) UPS 600 or 1000.		
Clean and inspect.	Visibly clean	555
(5) Epson LQ - 570 Printer.		
Clean and inspect printer.	Visibly clean	550

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
g. ODL.		
(1) Server.		
(a) Clean and inspect cabinet.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
(2) Workstation.		
(a) Clean and inspect rack.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(3) System Console.		
(a) Clean and inspect rack.	Visibly clean	552
(b) Clean and inspect monitor and keyboard.	Visibly clean	555
(c) Clean and inspect printer.	Visibly clean	550
456. ANNUALLY.		
a. FDPS.		
IBM 9672 Model RA4 Processor.		
Clean or exchange filters (3) as required in the 9672 Frame.	IBM S/390 Service Guide, SY24 - 6158 - 04	IBM S/390 Parts Catalog, S123 - 1151 - 04
b. Symmetrix 5630 M&C Subsystem.		
(1) M&C Server, IBM RS/6000 H80.		
(a) Check fans, power cords, cables, and connectors.	Connectors secure and cables undamaged	N/A
(b) Clean and inspect cabinet interiors.	Visibly clean	N/A
(2) SONY DDS - 4 4MM Tape Drive.		
Clean drive using cleaning cartridge.	Visual	SONY SDT - 10000 Series Tape Drive User's Manual

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
(3) Lexmark OPTRA 410N Printers.		
(a) Clean printer	Visual	Section 5.2.1, and the Lexmark User's Guide for the OPTRA M410 Laser Printer
(b) Check power cords, cables, and connectors.	Connectors secure and cables undamaged	N/A
(4) Ethernet Switch.		
Check power cords, cables, and connectors.	Connectors secure and cables undamaged	N/A
(5) Thin Client.		
(a) Check power cords, cables, and connectors.	Connectors secure and cables undamaged	N/A
(b) Clean and inspect cabinet interiors.	Visibly clean	N/A
c. DASD.		
Symmetrix 5630 DASD.		
Symmetrix 5630 Noise Baffle Cleaning	N/A	CDRL D038, System Problem Determination Manual, Section 6.2.2
457. EVERY 3 YEARS.		
Symmetrix 5630 M&C Subsystem.		
M&C Server, IBM RS/6000 Model H80.		
Processor battery replacement.	N/A	RS/6000 Enterprise Server Model H80 Series Service Guide, Chapter 8

Section 2. OTHER MAINTENANCE TASKS (Continued)

Maintenance Tasks	*Reference Paragraph*	
	Standards & Tolerances	*Maintenance Procedures*
458. EVERY 4 YEARS.		
DASD.		
Symmetrix 5630 DASD.		
Symmetrix 5630 Battery Replacement	N/A	CDRL D038, System Problem Determination Manual, Section 6.2.1
459. AS REQUIRED.		
a. MTU.		
IBM 3480 Model B22 MTU.		
Clean and inspect tape drive	Successful completion	551
b. Symmetrix 5630 M&C Subsystem.		
P260 M&C Monitor.		
(1) Clean monitor exterior surface.	Visual	Section 5.2.2, and P260 User Guide
(2) Keyboard maintenance.	Visual	Section 5.2.3, and the IBM Spacesaver Keyboard User's Manual
460. - 499. RESERVED.		

CHAPTER 5. MAINTENANCE PROCEDURES

500. GENERAL.

a. This chapter establishes the procedures for accomplishing the various essential maintenance activities required for the ODAPS automation, on either a periodic or incidental basis. This chapter is divided into three sections. The first describes the procedures to be used in making the performance checks listed in chapter 4, section 1. The second section describes the procedures for doing the tasks listed in chapter 4, section 2. The third section describes the procedures for doing special tasks, usually non-scheduled and not listed in chapter 4. Refer to Order 6000.15 for additional general guidance.

b. The procedure contained herein supplements those found in the equipment instruction books.

501. REMOTE SUPPORT FACILITY OPERATIONS FOR THE 9672 - RA4 PROCESSOR.

a. Background.

(1) As delivered by the manufacturer, the IBM 9672 - RA4 HMC is configured with a modem and Remote Support Facility (RSF) software. If the RSF function is enabled and a telephone line is provided, the HMC can automatically dial out to the IBM RSF to report hardware malfunctions as they occur and an IBM service engineer may dial into observe system operation or download software to the HMC.

(2) There are operational concerns with this remote support function. One is that, it is difficult to determine if the system connects and disconnects properly with IBM. In addition, the ability to remotely push new software to the HMC has the potential to impair the government's configuration management of the system. However, the most driving concern with this approach is that it may be possible for a technically skilled outsider to exploit this connection for unauthorized purposes, potentially putting the entire system at risk.

b. Policy. HMC communications shall be strictly regulated by both software and hardware controls.

(1) Software Controls.

(a) Inbound Calls. The call in feature of the HMC's RSF shall be disabled and the modem shall be configured to not answer incoming calls.

(b) Outbound Calls. The **call home** feature shall only be initiated via ODAPS operator or technician intervention, as opposed to automatic dialing.

(2) Hardware Controls. The modem shall be physically disconnected from the telephone line at all times with one exception: the modem shall only be connected to the telephone line to permit an authorized **call home** and disconnected immediately after completion of the call.

(3) Verification. The operator shall respond to either an audible or visual alert mechanism informing the operator that the system needs to **call home**. The operator or technician shall notify the NOM, in accordance with local site procedures, prior to connecting the telephone line and configuring the appropriate HMC screens to permit the call. Once the call has been completed, the operator or technician shall physically disconnect the telephone line from the modem and reset the appropriate HMC screens to their original configuration.

(4) Conditions. The call home shall not be permitted from an HMC which is connected to a 9672 running operational NAS. The call home shall only occur from a standby or offline system. When a non-severe hardware error occurs, a switchover will not automatically occur and the system will remain online and operational. In this case, the site shall follow local procedures to either place a voice service call in the usual fashion or perform a manual switchover at an appropriate time to permit a call home from the standby or offline system.

c. Responsibilities.

(1) The ARTCC Security Administrator shall periodically check to ensure that the telephone line to the 9672 HMC is physically disconnected unless the system is using the line in response to a service **call home** situation.

(2) The ARTCC ODAPS computer operator or technician shall contact the NOM upon notification

by the system that it has detected a hardware anomaly and must **call home**.

(3) The ARTCC ODAPS computer operator or technician shall connect the HMC's modem to the phone line and configure the appropriate HMC software screens to permit the call after voice coordination with an authorized IBM service representative. Once the transfer of data is complete, the computer operator shall disconnect the telephone line from the modem and reset the appropriate HMC software screens to their original configuration.

502. REMOTE SUPPORT OPERATIONS FOR THE ODAPS 5630 DASD SUBSYSTEM.

a. Background.

(1) The EMC 5630 DASD subsystem came from the manufacturer with an external modem used in the commercial environment to constantly report any errors back to the EMC central engineering support facility. The **call home** feature can be either enabled or disabled via the service processor laptop computer. These modems also allows the EMC engineering staff to **dial-in** and observe error conditions in order to isolate the problem, determine severity, order replacement parts, etc.

(2) Although **dial-out** or **call home** software has been disabled, there are continuing operational concerns with this external interface's **dial-in** capability. Changes could be made without the local site's knowledge, possibly changing the baseline configuration of the 5630 subsystem.

b. Policy. The EMC external modem interface shall be strictly regulated by both software and hardware controls.

(1) Software Controls.

(a) Inbound Calls. The software application on the 5630 service processor, which controls the **dial-in** feature of the 5630, is always active and can only be prevented by physical hardware disconnection.

(b) Outbound Calls. The local EMC customer engineer disables the **call home** feature at installation time, per the System Support Modification (SSM). This prevents error messages to the system operators each time a problem is detected, and the service processor attempts, and then fails, to report the error to the EMC support center.

(2) Hardware Controls. The modem shall be physically disconnected from the telephone line at all times with one exception: the modem shall only be connected to the telephone line to permit an authorized **dial-in** by the EMC support center in order to repair the unit, or the sending out of error data to the EMC support center by the customer engineer, and disconnected immediately after use.

(3) Procedure. After a service call is made to EMC to respond to an error received concerning the 5630, the customer engineer may determine a connection of the modem is necessary in order to isolate the problem. This usually involves microcode type problems instead of simple board, power supplies, or disk device replacements. Once the troubleshooting, error reporting, or problem determination is completed, and the customer engineer does not need the EMC support center connection any longer, the operator or technician shall physically disconnect the telephone line from the modem.

(4) Conditions. The phone line for the EMC support center modem shall not be connected to a 5630 running operational NAS. This would require repair during low activity time, such as the midshift. Logical Disk Device Address (LDDA) must be set to **Unavailable** before connecting the modem telephone line. Depending on which set of drives is being used in the system (5630 - 1 contains 820, 822, 826; 5630 - 2 contains 920, 922, 926), two LDDAs may need to be placed **Unavailable**, necessitating a HOST system shutdown, if the site would rather not run on one mirrored LDDA during repairs.

c. Responsibilities.

(1) The ARTCC Security Administrator shall periodically check to ensure that the telephone line(s) to the 5630 DASD subsystems are physically disconnected.

(2) The ARTCC ODAPS computer operator or technician shall contact the NOM upon notification by the customer engineer, that a connection to the EMC support center, via the 5630 modem is necessary. The NOM will ensure the affected LDDAs are configured out of the operational system prior to the modem connection. Once the modem is no longer required for problem determination, or restoration, the modem is to be disconnected from the telephone line.

Section 1. PERFORMANCE CHECK PROCEDURES

503. FAA FORM ENTRIES.

Order 6000.15 contains policy, guidance, and detailed instructions for field use of FAA Forms 6110 - 6 and 6110 - 7, Technical Performance Records, as applicable to the ODAPS. These forms are available from the FAA Logistics Center (FAALC) under National Stock Numbers (NSN) 0052 - 00 - 905 - 8002 and 0052 - 00 - 905 - 9000 respectively in units of pads, 50 sheets per pad. Entries shall be made in accordance with the instructions published in Order 6000.15. Figure 5 - 1, Technical Performance Record in this handbook contains a sample of FAA Forms 6110 - 6 and 6110 - 7, that show typical entries for normal and unsatisfactory conditions that may be encountered.

504. CHECK T - BAR VARISWITCH OPERATION AND BATTERY BACKUP.

a. Object. This test verifies that the T - Bar Variswitch A/B switch is operating properly and that the battery backup on the Master Control Module is operational.

b. Discussion. The battery backup saves the switch settings that are programmed into the Master Control Module in case of a power failure. The manufacturer indicated that the backup battery has a 10-year life. If this test is unsuccessful, and the Master Control Module needs to be replaced, the new Master Control Module will need to be programmed. Refer to Order 6110.9, Electronic Equipment Modification Handbook Oceanic Display and Planning System, Chapter 9, Installation of the T - Bar Variswitch A/B Switches, Change 11. Re-run this test after the new Master Control Module is programmed. Do not discard the old Master Control Module as it is possible to replace the backup battery.

c. Test Equipment Required. None.

d. Conditions. None.

e. Detailed Procedure.

(1) Switch the T - Bar Variswitch Master Control Module to A. Verify that all of the A/B switches indicate A or indicate A or B as programmed in the Do-List. Switch the T - Bar Variswitch Master Control Module to B. Verify that all of the A/B switches indicate B or indicate A or B as programmed in the Do-List. Switch the T - Bar Variswitch Master Control Module to A. Verify that all of the A/B switches indicate A or indicate A or B as programmed in the Do-List.

(2) Verify that all of the A/B switches indicate A. Switch the individual A/B switches to A if necessary. Switch each individual A/B switch one at a time to B. Verify that each individual A/B switch indicates B. Switch each individual A/B switch one at a time to A. Verify that each individual A/B switch indicates A.

(3) Power OFF the T - Bar Variswitch by unplugging the power supply cords. Wait 15 seconds. Power the T - Bar Variswitch back ON.

(4) Repeat paragraphs 504e(1) and 504e(2).

505. CHECK POWER CORDS, CABLES, AND CONNECTORS.

a. Object. This check is performed in order to verify that all connections are tight and cables are undamaged.

b. Discussion. None.

c. Test Equipment Required. None.

d. Conditions. This procedure should be done with the associated equipment powered down.

e. Detailed Procedure. Check that all cords, cables, and connectors are securely plugged into the proper outlets and the cables are undamaged.

TECHNICAL PERFORMANCE RECORD

OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS)

FACILITY: New York ARTCC (ATCT, FSS, ARTCC, VOR, LOC, ETC.)

DATES: FROM 03/01/97 TO

SUPERVISOR'S SIGNATURE:

LOCATION: Ronkomkoma, NY (CITY, STATE, AIRPORT, OTHER)

EQUIPMENT: FDPS, DASD, MTS, S1RPAM, TP, ISD, ODL, AIDCS, 5630 M&C (A/G, DF, COMPONENTS, ETC.)

EQUIPMENT IDENTIFIER:

QUARTERLY

DATE	TIME	FDPS: IBM 9672 POST & CHECKOUT	FDPS: 9672 SE POST	FDPS: HMC POST	DASD: IBM 3274 OLTS	DASD: IBM 3880 OLTS	DASD: IBM 3380 OLTS PSA	DASD: IBM 3380 OLTS PSB	MTS: IBM 3480 B22 OLTS	MTS: IBM 3480 A22 OLTS	S1RPAM: H50 DIAGNOSTICS	S1RPAM: S1RPAM DIAGNOSTICS	S1RPAM: S1RPAM WRAP DIAGNOSTICS	TP: IBM RISC DIAGNOSTICS SERVER	TP: IBM RISC DIAGNOSTICS WORKSTATION	TP: IBM RISC DIAGNOSTICS SYSTEM CONS.	ISD: IBM RISC DIAGNOSTICS SERVER	ISD: IBM RISC DIAGNOSTICS OCEANIC CONS	ISD: IBM RISC DIAGNOSTICS SYSTEM CONS.	ODL: SYSTEM LEVEL CERTIFICATION	AIDCS: AIDCS SYSTEM COMPUTER	DASD: 5630 POST	DASD: 5630 ICKDSF	5630 M&C: POST	5630 M&C: ONLINE DIAGNOSTICS	5630 M&C: STANDALONE DIAGNOSTICS	REMARKS	INITIALS
NOMINAL		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
3/1	1015	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672A	CR
3/2	1000	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672B	CR
6/1	1015	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672A	CR
		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672B	CR
9/1	1030	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	Bad 3880, 9672A	KK
						√																						
9/2	1045	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672B	KK
12/1	1010	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672A	KK
		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672B	KK
3/1	1000	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	9672A	SM
3/2	1005	√	√	√	√	√	√	√	√	√	√	√	√	√	X	√	√	√	√	√	√	√	√	√	√	√	OC3 Bad, Replace RISC,	SM
															√												9672B	

NSN: 0052-00-905-8003

FAA Form 6110-6 (11/02) SUPERSEDES PREVIOUS EDITION

FIGURE 5 - 1. TECHNICAL PERFORMANCE RECORD (SHEET 1)

TECHNICAL PERFORMANCE RECORD

OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS)

FACILITY	DATES	SUPERVISOR'S SIGNATURE
New York ARTCC (ATCT, FSS, ARTCC, VOR, LOC, ETC.)	FROM 03/01/97 TO	

LOCATION	EQUIPMENT	EQUIPMENT IDENTIFIER
Ronkomkoma, NY (CITY, STATE, AIRPORT, OTHER)	ISD (A/G, DF, COMPONENTS, ETC.)	

DATE	TIME	SEMIANNUALLY																		REMARKS	INITIALS
		TOUCH-UP ALIGNMENT PROCEDURE OCEANIC CONSOLE	TOUCH-UP ALIGNMENT PROCEDURE SYSTEM CONSOLE																		
NOMINAL		√	√																		
3/1	1100	√	√																		KK
9/1	1115	√	√																		CR
3/1	1145	X	√																	Bad Display, Replace	KK
		√																			
9/1	1000	√	√																		CR

US GOVERNMENT PRINTING OFFICE: 1977-771-068/739

FAA Form 6110-7

FIGURE 5-1. TECHNICAL PERFORMANCE RECORD (SHEET 2 — END)

506. SERVICE LEVEL CERTIFICATION.

a. Object. These certification procedures are used to verify that the ODAPS is capable of performing its intended function.

b. Discussion.

(1) Certification Techniques Available. OLC actions can be performed with minimal interference to the on-going ATC operations. This service level certification should be performed during periods of low traffic activity, and with the approval of the ATC staff on duty. This procedural guidance is general in nature, yet specific enough to support certification of this service.

(2) Certification Requirements. The service certification requirements are listed in Appendix 1, Certification Requirements.

c. Test Equipment Required. None.

d. Conditions. None.

e. Detailed Procedure.

(1) Ascertain that the most current OLC program is loaded and available for call-up. Refer to paragraph 575 for the minimum data requirements.

(2) Coordinate proposed certification actions with ATC.

(3) Run the ODAPS OLC module or the manual procedures necessary to verify the certification parameters listed in appendix 1.

(4) Evaluate the results and enter the certification status in the MMS.

(5) Restore the system to normal, purging the simulation data, as necessary.

507. CHECK S1RPAM PROCESSOR INTERFACE CARDS.

a. Object. The object of this task is to run the S1RPAM diagnostics for:

(1) Lexmark Matrix Printer.

(2) PCI Bus to Channel Adapter (PCCA) Cards.

(3) Emulex Communication Cards.

(4) CTS (note: assumes redundant CTS signals).

b. Discussion.

(1) All of the steps of this test should be followed when testing on the S1RPAM.

(2) For further information on this test, refer to TI 6110.11.

c. Test Equipment Required. None.

d. Conditions. The test should be run on the redundant S1RPAM processor, with the printer operational.

e. Detailed Procedure.

(1) Ensure that the redundant subsystem (S1RPAM) is made inactive.

(2) Terminate the S1RPAM operational software by entering **2** at the S1RPAM Main Menu on the S1RPAM console and press <enter>.

(3) Enter **Y** when prompted "Are you sure? Y/N" and press <enter>.

(4) Select menu option **4** (Diagnostic Menu) at the S1RPAM Operational Software Main Menu and press <enter>.

NOTE: It is easiest to maximize the operator menu prior to starting diagnostics.

(5) Select menu option **1** for Printer Diagnostics on the S1RPAM Diagnostic Menu and press <enter>.

(6) Enter **y** if sequence printed correctly or **n** if sequence printed incorrectly.

(7) Select menu option **2** for PCCA card diagnostics on the S1RPAM Diagnostic Menu and press <enter>.

(8) Select which PCCA card to test (pbca0 or pbca1) by entering either **1** or **2** and pressing <enter>.

(9) Ensure "Diagnostic Passed" message is received.

(10) Repeat for other PCCA card by entering either **2** or **1** after test completes (15 - 20 seconds) and press <enter>.

(11) Ensure "Diagnostic Passed" message is received.

(12) Enter **q** to quit the PCCA card test after test completes (15 - 20 seconds).

(13) Press <enter> to return to the main menu.

(14) Select menu option **3** for communication card diagnostics on the S1RPAM Diagnostic Menu and press <enter>.

(15) Select which Emulex card to test (mlx0 or mlx1) by entering either **1** or **2** and pressing <enter>.

(16) Repeat for other Emulex card by entering either **2** or **1** after test completes (5 - 10 seconds) and press <enter>.

(17) Enter **q** to quit the communication card test after test completes (5 - 10 seconds) and press <enter>.

(18) Select menu option **4** for Offline Diagnostics Tests (ODT) S1RPAM on the S1RPAM Diagnostic Menu and press <enter>.

(19) Enter **n** when prompted "Do you want to enable any devices? <Y/N>" and press <enter>.

(20) Enter **1** (for the CTS diagnostic) at the menu selection and press <enter>.

(21) Select which clock to test (CLOCK1 or CLOCK2) by entering either **1** or **2** and pressing <enter>.

(22) Enter an integer value, **0** for continuous, or **s** for stop on error when prompted "How many times do you want to run the diagnostic?" and press <enter>.

(23) Enter 2, for verbose option, and press <enter>.

(24) Enter Ctrl-C to stop the test if **0** or **s** were selected.

(25) Press <enter> after completion.

(26) Enter **q** and <enter> to return to the S1RPAM Diagnostics Menu.

(27) Enter **y** or **n** when prompted "Need to print diagnostics results?" and press <enter>.

(28) Enter **q** and <enter> to return to the S1RPAM Main Menu.

(29) Restart the S1RPAM Operational Software by selecting menu option **1** and <enter>.

(30) Give system back to the system operator after receiving message that S1RPAM Initialization has completed.

508. CHECK G3 SWITCHOVER OPERATION.

a. Object. This task is to verify that the ODAPS can perform a successful switchover.

b. Discussion. None.

c. Test Equipment Required. None.

d. Conditions. Standby Central Processing Unit (CPU) is available for switchover.

e. Detailed Procedure.

(1) Perform ESAFP Service certification to check CPU operations.

(2) Check KCNF Monitor status. Ensure that the NAS Standby/VM CPU is Redundant and available.

(3) On the KVDT type SWVR and press <enter>.

(4) Check KCNF Monitor status. The CPU that indicates "O" and the CPU that indicates "R" will be just the opposite after a successful switchover.

(5) Perform ESAFP Service certification after completion of a successful switchover to check CPU operations.

(6) After successful completion of ESAFP service certification, have the computer operator restore VM on the NAS standby CPU.

509. CHECK TP OR ISD SERVER SWITCHOVER OPERATION.

a. Object. This task is to verify that the TP or ISD server can perform a successful switchover operation.

b. Discussion. These procedures are found in NASP - 9257 or NASP - 5263.

c. Test Equipment Required. None.

d. Conditions. Redundant TP or ISD Server available in standby.

e. Detailed Procedure.

(1) TP.

(a) At the TP SC enter the command:

REPL <Enter>

(b) To set the server available as the redundant unit after a switchover, enter this command at the TP SC:

SETA <Enter>

(2) ISD.

At the KVDT enter the command:

REPL <ODC1,ODC2> <Enter>

510. CHECK TP OR ISD LAN SWITCHOVER OPERATION.

a. Object. This task is to verify that the TP or ISD LAN can perform a successful switchover operation.

b. Discussion. To perform a switchover of the LAN, the STOP command is issued. The redundant LAN will become operational and the former operational LAN becomes redundant. These procedures are found in NASP - 9257 or NASP - 5263. The name given to the LAN is an adaptable parameter and will be shown in this procedure as **parameter name**.

c. Test Equipment Required. None.

d. Conditions. Redundant LAN available in standby.

e. Detailed Procedure. At the TP or ISD SC enter the command:

STOP **parameter name** <Enter>

511. CHECK TP SC SWITCHOVER OPERATION.

a. Object. This task is to verify that the TP SC can perform a successful switchover operation.

b. Discussion. These procedures are found in the TP SUM.

The **STOP** command allows the user to stop a specified TP subsystem component or the TP system. The **START** command allows the user to start a specified TP subsystem component or the TP system, The name given to the SC is an adaptable parameter and will be used in this procedure.

c. Test Equipment Required. None.

d. Conditions. Redundant TP SC available in standby.

e. Detailed Procedure.

(1) At the TP SC enter the command:

STOP **parameter name** <Enter> if SC 1 is on line and SC 2 is in standby, or

STOP **parameter name** <Enter> if SC 2 is online and SC 1 is in standby

(2) Then at the TP SC enter the command:

START **parameter name** <Enter> if SC 1 was switched offline, or

START **parameter name** <Enter> if SC 2 was switched offline

512. CHECK IBM RISC/6000 770 OR 771 PROCESSOR.

a. Object. This task is to run the IBM RISC/6000 770 or 771 Processor Diagnostics.

b. Discussion. For further information on these tests, refer to chapter 5 of POWERstation and POWERserver Common Diagnostics and Service Guide.

c. Test Equipment Required. On ISD, IBM 3151 or 3153 Maintenance Terminal.

d. Conditions. Redundant Server, TP Workstation, ODL Workstation, ISD OC or SC available offline and CPU keys available. These tests can be performed on the redundant server or SC and any ISD OC, TP Workstation or ODL Workstaton. On ISD, the IBM 3151 or 3153 monitor, keyboard, and cable must be used to perform this check.

e. Detailed Procedure.

(1) At the TP, ODL or ISD SC enter the command: STOP **parameter name** <Enter> to stop the RISC/6000 that the diagnostics are going to be run on.

(2) Set the mode switch to the Service position.

(3) Set the power switch on the RISC/6000 to OFF.

(4) ISD ONLY. Attach the IBM 3151 or 3153 Maintenance Terminal to the S1 serial port of the CPU. The CPU must be reset in order for the CPU to recognize the Maintenance Terminal. The Maintenance Terminal only needs to be configured one time.

(5) Set the power switches on all of the attached devices to ON.

(6) Set the power switch on the RISC/6000 to ON.

(7) When the diagnostic program has loaded correctly, the Diagnostic Operating Instruction Version 2.4.3.1 screen will be displayed with verbiage explaining what the diagnostics are.

(8) To continue running the diagnostics, press <Enter>.

(9) A FUNCTION SELECTION screen appears. Use the arrow keys to move the cursor to the Diagnostic Routines selection and press <Enter>.

(10) If required, identify the terminal being used and press <Enter>.

(11) A DIAGNOSTIC MODE SELECTION screen appears. Move the cursor to the System Verification selection and press <Enter>.

(12) A DIAGNOSTIC SELECTION screen is displayed. This screen shows all the possible hardware resources that can be tested. Move the cursor to the System Checkout selection and press <Enter>. This selection will test all the hardware that does not require manual intervention. The hardware that will be tested is the same for each RISC/6000 with the following additional equipment: server — tape drive, channel attach, SC — line printer. This test takes approximately 15 minutes to complete.

(13) Press <Enter> to return to the DIAGNOSTIC SELECTION screen.

(14) The diagnostics are now complete. Press the **F10** key to return to the first screen.

(15) Press the **F3** key to exit the diagnostics. A window will be displayed stating that a system shutdown is about to occur. Press the **F3** key to continue the shutdown.

(16) A screen full of messages will be displayed. The last message will be **Halt completed** and the screen will go black. This shutdown takes approximately 4 minutes to complete.

(17) ISD ONLY. Disconnect the Maintenance Terminal cable from the S1 serial port of the CPU.

(18) Set the mode switch to Normal and press the power ON button. Once the RISC/6000 has performed all its powerup procedures, it is ready to be put back into service.

(19) To return the RISC/6000 to service, enter the following at the SC:

START **parameter name** <Enter>

513. CHECK DISK ARRAY/6000.

a. Object. This task is to check that the disk ARRAY is functioning normally

b. Discussion. For further information on this procedure, refer to chapter 4 of the Certainty ARRAY/6000 Installation Guide.

c. Test Equipment Required. None.

d. Conditions. The TP, ODL or ISD system is running operationally.

e. Detailed Procedure.

(1) Open the front door of Server1 and locate the disk ARRAY unit.

(2) Locate the storage Line Replaceable Units (LRU) of the disk drives.

(3) There are two LEDs on the front of each of the LRUs. These two LEDs can be lit in two different combinations and be operating normally. The two statuses are as follows:

LEDs	Status	Indication
LRU green LRU amber	On Off	LRU is operating normally
LRU green LRU amber	Off Off	LRU is operating normally. The LRU is inactive and there is no fault.

Any other combination of LEDs being lit is an error condition. Refer to TI 6110.2, TI 6110.4, or TI 6110.15 for a diagram of the disk array.

(4) When complete, close the front door.

514. CHECK IBM 4226 OR 4232 LINE PRINTER.

a. Object. This task is to check that the line printer is functioning properly.

b. Discussion. For further information on this procedure, refer to chapter 5 of the IBM 4226 Printer User's Reference Manual for the 4226, or chapter 4 of the IBM 4232 Printer User's Guide for the 4232.

c. Test Equipment Required. None.

d. Conditions. The line printer is powered ON.

e. Detailed Procedure.

(1) Press the Menu/Quit button to enter the function menu on the 4226 or press test when the 4232 is not ready.

(2) Press the Item ↓ or Item ↑ until the Print Demo message or Printer Demonstration appears on the display.

(3) Press the Start/Stop button on the 4226, or the Enter or Start button on the 4232 to start the print demo. A description of the printer and its characteristics are printed.

(4) To stop the printer test, press the start/stop button on the 4226, or the Stop button on the 4232.

(5) Press the Menu/Quit button to exit the function menu on the 4226, or the Cancel Print button on the 4232 to exit the test mode.

515. CHECK S1RPAM PROCESSOR REPLACEMENT OPERATION.

a. Object. The object of this task is to verify that the S1RPAM can perform a successful replacement operation.

b. Discussion. All of the following steps should be performed on the operational S1RPAM. Note: Steps are written assuming PAM1 is operational and PAM2 is redundant. Ensure this configuration is correct before continuing.

c. Test Equipment Required. None.

d. Conditions. The test should be run on the operational S1RPAM processor, with the printer operational and the second S1RPAM showing redundant status.

e. Detailed Procedure.

(1) Perform ESAFP Service Certification in Appendix 1, Table 1 to check S1RPAM operation.

(2) Replace the operational S1RPAM processor by typing at KVDT:

REPL PAM1 <Enter>
S1RPAM responds with the message (at KVDT):
REPL PAM1 ...REPLACED WITH PAM2

(3) Inspect the status of PAM1 and PAM2 on the KCNF: PAM2 is shown to be Operational (O), and PAM1 is shown to be Redundant (R).

(4) Perform ESAFP Service Certification in Appendix 1, Table 1 after completion of a successful Replace to check S1RPAM operation.

516. CHECK S1RPAM PROCESSOR EXTERNAL INTERFACES.

a. Object. The object of this task is to run the S1RPAM Wrap diagnostics. This test does not use the live interfaces. The Automatic Switching System Series 5000 A/B switch is placed in the wrap position, so that the signal is driven from the communication card out to the Automatic Switching System Series 5000 A/B Switch and back.

b. Discussion. Read the Detailed Procedure thoroughly and coordinate with the ATC staff on duty before performing this test. It is critical that the Automatic Switching System Series 5000 A/B Switch is set to the Up or Wrap position during this test. For further information on this test, refer to TI 6110.11.

c. Test Equipment Required. None.

d. Conditions. This test can only be run on the redundant S1RPAM processor and does not require taking any operational interfaces offline.

e. Detailed Procedure.

(1) Ensure that the redundant subsystem (S1RPAM) is made inactive.

(2) Terminate the S1RPAM operational software by entering **2** and <enter> at the S1RPAM Main Menu on the S1RPAM console.

(3) Enter **Y** and <enter> when prompted "Are you sure? Y/N".

(4) Select menu option **4** (Diagnostic Menu) at the S1RPAM Operational Software Main Menu and press <enter>.

NOTE: It is easiest to maximize the operator menu prior to starting diagnostics.

(5) Enable the gang switch key on the Automatic Switching System Series 5000 A/B Switch and switch all ports from the Down or Device position to the Up or Wrap position to test all ports.

(6) Select menu option **5** for Run Wrap Test Diagnostics On the S1RPAM Diagnostic Menu and press <enter>.

(7) Enter **y** When prompted "Do you want to enable any devices? <Y/N>" and press <enter>.

(8) Select ALL DEVICES by entering **1** and press <enter>.

(9) Select ALL ENABLED DEVICES by entering **1** and press <enter>.

(10) Enter an integer value, **0** for continuous, or **s** for stop on error when prompted "How many times do you want to run the diagnostic?" and press <enter>.

(11) Enter **2**, for verbose option, and press <enter>.

(12) Enter a message and press <enter> or press <enter> to use the default message when prompted to 'Enter the message to be sent'.

(13) If **0** or **s** were selected enter Ctrl-C and hold for a few seconds to stop the test.

(14) Press <enter> after completion.

(15) Enter **q** and <enter> to return to the S1RPAM Diagnostics Menu.

(16) Enter **y** or **n** when prompted "Need to print diagnostics results?" and press <enter>.

(17) Enter **q** and <enter> to return to the S1RPAM Main Menu.

(18) Enable the gang switch key on the Automatic Switching System Series 5000 A/B Switch and switch all ports from the Up or Wrap position to the Down or Device position.

(19) Restart the S1RPAM Operational Software by selecting menu option **1** and <enter>.

(20) Give system back to the system operator after receiving message that S1RPAM Initialization has completed.

517. CHECK IBM 7026 - H50 PROCESSOR.

a. Object. The object of this task is to run the IBM supplied H50 Diagnostic tests. This test does not use the S1RPAM operational software or the live interfaces. The H - 50 POST will also be run.

b. Discussion. For further information on this test, refer to document IBM RS/6000 Enterprise Server Model H50 User's Guide SA38 - 0546 - 00, pages 8 - 1 through 8 - 4.

c. Test Equipment Required. None.

d. Conditions. This test can only be run on the redundant S1RPAM processor and does not require taking any operational interfaces offline. The S1RPAM operational software will not be running. The laptop must be attached as an ASCII terminal attached to the S1 port.

e. Detailed Procedure.

(1) Ensure that the redundant subsystem (S1RPAM) is made inactive.

(2) Terminate the S1RPAM operational software by entering **2** and <enter> at the S1RPAM Main Menu on the S1RPAM console.

(3) Enter **Y** and <enter> when prompted "Are you sure? Y/N".

(4) Open HyperTerminal window.

(5) Login at Console login prompt as root user by typing **root** and press <enter>.

(6) Enter root's password and press <enter>.

(7) Load the Diagnostics CD - ROM Version 4.3.2.1 in the H50 CD drive.

(8) Shutdown the H50 processor in the HyperTerminal window. Type **shutdown - F** at the AIX prompt and press <enter>.

(9) Wait for **Halt Completed** to be displayed on the HyperTerminal screen.

(10) Press <enter> in the HyperTerminal window. The H50 Processor Server Main Menu will be displayed.

(11) Select the System Power Control Menu. Type **2** and press <enter>.

(12) Select Power-On System. Type **4** and press <enter>.

(13) Enter **Y** and <enter> when prompted "Press Y to continue any other key to abort"...

(14) Observe the H50 POST Indicator

H50 Processor POST Indicator

RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
RS/6000	RS/6000	RS/6000	RS/6000	RS/6000
memory	keyboard	network	scsi	

(15) Press **5** several times when **keyboard** appears to ensure H50 loads from CD - ROM. **Do not wait**, if the user waits too long H50 will boot from hard drive.

(16) To continue, press <enter>.

(17) Press <enter> for Function Selection Menu.

(18) Type 1 and press <enter> for Diagnostic Routines.

(19) Type **vt100** and press <enter> for the Diagnostic Mode Selection Menu.

(20) Select **System verification** using the arrow key and press <enter>. The Diagnostics Selection Menu will be displayed.

(21) Select **All Resources** using the arrow key and press <enter>. All selected devices show "+" indications.

(22) Press **Esc+7** to confirm selection of resources (not F7).

(23) H - 50 Diagnostics is running.

(24) Ensure the printer is powered ON and paper is loaded at the **Testing Standard Parallel Port** screen and press <enter>.

(25) Wait for Test Completed Menu Screen.

(26) Press **Esc+0(Zero)** for Diagnostics Selection Menu.

(27) Press **Esc+0(Zero**) for Diagnostics Shutdown Menu.

(28) Press <enter> to continue shutdown.

(29) Remove CD - ROM.

(30) Restart H50 and S1RPAM Operational Software.

(31) Give system back to the system operator after receiving message that S1RPAM Initialization has completed.

518. CHECK ME800A SHORT HAUL MODEMS.

a. Object. This task is to check that the ME800A short haul modems are functioning normally.

b. Discussion. For further information on this procedure, refer to TI 6110.6, section 7.1.2.6.1.2.

c. Test Equipment Required. None.

d. Conditions. The AIDCS is running operationally.

e. Detailed Procedure.

(1) Locate the short haul modem by the ODAPS Patch Panel.

(2) Check that the green transmit LED labeled "TD" flashes red approximately twice every second.

(3) Locate the short haul modem next to the AIDCS system computer.

(4) Check that the green receive LED labeled "RD" flashes red approximately twice every second.

519. CHECK LAMPS AND AUDIBLE TONE OF THE HMC ALARM BOX.

a. Object. This task is to check the lamp illumination and the audible tone of the switch HMC alarm box.

b. Discussion. None.

c. Test Equipment Required. None.

d. Conditions. Minimize the FAASYSX operational window. The OS2 operational window will be

displayed, containing the HOST ALARM TEST and HOST ALARM ACKNOWLEDGE icons. Check to see that only the NO ALARM lamp is illuminated. This test can be performed on both the operational and redundant HMC without impact system operation.

e. Detailed Procedure.

(1) At the HMC, click on the HOST ALARM TEST icon. The CRITICAL lamp and audible tone should come on.

(2) At the HMC, click on the HOST ALARM ACKNOWLEDGE icon. The CRITICAL lamp and audible tone should disperse. The NO ALARM lamp should be the only indicator illuminated.

520. CHECK UNIVERSAL POWER SUPPLY 600 OR 1000.

a. Object. This task is to check that the APC Smart UPS 600 or 1000 is functioning normally.

b. Discussion. For further information on this procedure, refer to TI 6110.6, section 3.1.5.

c. Test Equipment Required. None.

d. Conditions. The AIDCS is running operationally.

e. Detailed Procedure.

(1) Locate the UPS 600 or 1000 below the AIDCS system computer.

(2) Check that the LED on the front panel of the UPS labeled **On Line** is lit.

521. CHECK ODAPS - AIDCS - FIR INTERFACES (NEW YORK ARTCC).

a. Object. This task is to check that the ODAPS - AIDCS - FIR interfaces are functioning normally.

b. Discussion. For further information on this procedure, refer to TI 6110.6, section 6.1.4.

c. Test Equipment Required. None.

d. Conditions. The AIDCS is running operationally.

e. Detailed Procedure.

NOTE: In the following procedures, ***XXX*** refers to the three letter AIDCS interfacility address name of a particular FIR, such as ZCP for Piarco and ZCG for Gander.

(1) If the outbound interface for ***XXX*** is not operational, then set the outbound interface for ***XXX*** operational by entering the following at an ODAPS KVDT:

OPIO *XXX*O

(2) If the inbound interface for ***XXX*** is not operational, then set the inbound interface for ***XXX*** operational by entering the following at an ODAPS KVDT:

OPIO *XXX*I

(3) To test the communication path between ODAPS and the FIR ***XXX*** via the AIDCS, enter the following at an ODAPS KVDT:

TR *XXX* |PING

When the AIDCS receives this message, it transmits an Application Status Message (ASM) to the FIR ***XXX***. The FIR should respond with a Logical Acknowledgement Message (LAM). Upon receiving the LAM, the AIDCS sends a DT response back to ODAPS to be displayed at the ODAPS KVDT used to enter the TR message.

(4) Within 30 seconds a DT message should be displayed at the ODAPS KVDT used to enter the TR message with the following format:

DT *ZNNN* PING *hhmmss tim*

(a) where ***NNN*** is the ODAPS message number of the initial TR message, ***hhmmss*** is the system clock time of the FIR's AIDCS at the time the FIR transmitted the LAM, and the ***tim*** is the total elapsed time in seconds between the time the ASM was transmitted by the ARTCC AIDCS and the time the LAM was received by the ARTCC AIDCS. A sample DT message is shown below:

DT Z342 PING 172248 016

(b) In this case, the ODAPS message number for the TR message was 342, the system clock time of the FIR's AIDCS at the time the FIR transmitted the LAM response was 172248, and the total

elapsed time between the transmission of the ASM and the receipt of the LAM by the ARTCC AIDCS was 16 seconds.

(5) If the outbound interface for ***XXX*** is to be stopped following the test, then set the outbound interface non-operational by entering the following at an ODAPS KVDT:

NPIO *XXX*O

(6) If the inbound interface for ***XXX*** is to be stopped following the test, then set the inbound interface non-operational by entering the following at an ODAPS KVDT:

NPIO *XXX*I

(7) Repeat paragraph 521e(1) through 521e(6) for all FIRs that are adapted.

522. CHECK ODAPS - AIDCS - FIR INTERFACES (OAKLAND ARTCC).

a. Object. This task is to check that the ODAPS - AIDCS - FIR interfaces are functioning normally.

b. Discussion. For further information on this procedure, refer to TI 6110.6, section 6.1.5.

c. Test Equipment Required. None.

d. Conditions. The AIDCS is running operationally.

e. Detailed Procedure.

NOTE: In the following procedures, ***XXX*** refers to the three letter AIDCS interfacility address name of a particular FIR, such as TYO for Tokyo and TTT for Tahiti.

(1) ODAPS - AIDCS Interface

(a) If the outbound interface for ***XXX*** is not operational, then set the outbound interface for ***XXX*** operational by entering the following at an ODAPS KVDT:

OPIO *XXX*O

(b) If the inbound interface for ***XXX*** is not operational, then set the inbound interface for ***XXX*** operational by entering the following at an ODAPS KVDT:

OPIO *XXX*I

(c) To test the communication path between ODAPS and the AIDCS, enter the following at an ODAPS KVDT:

TR *XXX* |TEST

When the AIDCS receives this message, it sends a DT response back to ODAPS to be displayed at the ODAPS KVDT used to enter the TR message.

(d) Within 5 - 10 seconds a DT response should be displayed at the ODAPS KVDT used to enter the TR message with the following format:

DT O*NNN* TEST

1 where NNN is the ODAPS message number of the initial TR message. A sample DT message is shown below:

DT O342 TEST

2 In this case, the ODAPS message number for the TR message was 342.

(e) If the outbound interface for ***XXX*** is to be stopped following the test, then set the outbound interface non-operational by entering the following at an ODAPS KVDT:

NPIO *XXX*O

(f) If the inbound interface for ***XXX*** is to be stopped following the test, then set the inbound interface non-operational by entering the following at and ODAPS KVDT:

NPIO *XXX*I

(g) Repeat paragraph 522e(1)(a) through 522e(1)(f) for all FIRs that are adapted.

(2) AIDCS - FIR Interface

(a) If the FIR name to be tested (e.g., Tokyo) in the ADDRESS list at the AIDCS is **red** in color, then the AIDCS communication link to NADIN is down. Proceed no further.

(b) In the ADDRESS list at the AIDCS, click on the FIR name (e.g., Tokyo) for which the End-To-End Certification is to be performed. The diamond preceding the FIR name should turn **green**.

(c) Click the button labeled **- - TEST LINE - -**. The FIR name that was selected in step (b) should turn **yellow** (if it is not already yellow).

(d) In the menu bar of the AIDC INTERFACE TO ADJACENT FIRs window at the AIDCS,

click on the **Messages** menu item. A pull-down menu is displayed.

(e) In the pull-down menu, click on the **MIS** menu item. A Miscellaneous Free Text Message window is displayed.

(f) In the FLID/Functional Address box of the Miscellaneous Free Text Message window, type: **/ASUP**

(g) Move the cursor to the Message Text box of the Miscellaneous Free Text Message window by pressing **<Tab>**.

(h) In the Message Tex box of the Miscellaneous Free Text Message window, type: **COMM TEST**.

(i) In the Miscellaneous Free Text Message window, click **SEND**. The Miscellaneous Free Text Message window closes and the Miscellaneous (MIS) message is sent to the FIR.

(j) Within 30 seconds the FIR name selected in step b should turn **green** indicating that a LAM response has been received from the FIR for the MIS message.

(k) Repeat paragraph 522e(2)(a) through 522e(2)(j) for all FIRs that are adapted.

523. ODL UNIT LEVEL CERTIFICATION.

a. Object. These certification procedures are used to verify that an ODL CPU is capable of performing its intended function. Reference TI 6110.15, section 7 for detailed information.

b. Discussion. Unit level certification should be performed on spare system consoles, workstations or servers before placing them into a restored system or after maintenance has been performed. This procedural guidance is general in nature, yet specific enough to support certification of this unit.

c. Test Equipment Required. None.

d. Conditions. Maintenance has been completed on a Server, System Console, or Sector Workstation.

e. Detailed Procedure. The detailed procedures and certification requirements are documented in TI 6110.15, section 7.3.2.6.

524. ODL SYSTEM LEVEL CERTIFICATION.

a. Object. These certification procedures are used to verify that the ODL system is capable of performing its intended function.

b. Discussion. System level certification should be performed during periods of low traffic activity, and with the approval of the ATC staff on duty. This procedural guidance is general in nature, yet specific enough to support certification of this system. The recommended timeframe to execute is quarterly.

c. Test Equipment Required. None.

d. Conditions. The total ODL System must be in a completely stopped status before performing System level certification.

e. Detailed Procedure.

(1) Observe the System Console display to verify all the necessary devices are operational.

(2) Coordinate proposed certification actions with ATC.

(3) At the system console, bring ODL offline by typing:

"STOP SYSTEM"

(4) When system is in stopped status, refer to TI 6110.15, section 7.3.2.7 for detailed requirements and operating procedures.

(5) When testing is completed, restart system using normal start-up procedures.

525. ODL SERVICE LEVEL CERTIFICATION.

a. Object. The service level certification procedures are used to verify that the ODL system is capable of performing its intended OLC function.

b. Discussion. Communications actions can be performed with minimal interference to the on-going ATC operations. This service level certification should be performed during periods of low traffic activity, and with the approval of the ATC staff on duty. This procedural guidance is general in nature, yet specific enough to support certification of this service.

c. Test Equipment Required. None.

d. Conditions. None.

e. Detailed Procedure.

(1) Observe the System Console display to verify all the necessary devices are operational.

(2) Coordinate proposed certification actions with ATC.

(3) At the system console, run the ODL OLC program by typing:

"LINKTEST"

in the message composition window. Refer also to TI 6110.15, section 7.3.2.8.

(4) Evaluate the results and enter the certification status in the facility maintenance log.

526. CHECK ODL SERVER SWITCHOVER OPERATION.

a. Object. This task is to verify that the ODL Server can perform a successful switchover operation.

b. Discussion. The replace functionality procedures are found in NASP - 7214, section 3.2.7.1.

c. Test Equipment Required. None.

d. Conditions. Redundant ODL Server available in standby.

e. Detailed Procedure.

(1) Replace the operational ODL Server by typing at the ODL System Console:

REPL <ENTER>

(The command response to the REPL command is command accepted, followed by serverx taking over, and the final message is serverx is now operational.)

(2) Observe the status at the System Console, the previous redundant server has become the operational server and the previous operational server is now in redundant status.

527. CHECK ODL LAN SWITCHOVER OPERATION.

a. Object. This task is to verify that the ODL LAN can perform a successful switchover operation.

b. Discussion. To perform a switchover of the LAN, the STOP command is issued. The redundant LAN will become operational and the former operational LAN becomes redundant. These procedures are found in NASP - 7214, appendix B, Table B - 2, Status Messages. The name given to the LAN is an adaptable parameter and will be used in this procedure.

c. Test Equipment Required. None.

d. Conditions. Redundant LAN available in standby.

e. Detailed Procedure.

(1) At the ODL System Console enter the command:

STOP "parameter name" <ENTER>

(2) Observe the LAN switch took place correctly.

528. SYMMETRIX 5630 M&C MAINTENANCE PROCEDURES.

a. Swap Active and Standby Servers.

(1) Archive the Event Log file for the primary server on CD before demoting it.

(2) Insert a CD into the drive on the H80 I/O processor (M&C rack front).

(3) From the primary server, select **File** option from the Topology Map menu bar.

(4) Select **Archive** command from the pull-down menu.

(5) Observe two entries in the Events List: one states that the archive has started and the other states that the archive has completed.

(6) Determine which M&C server is primary by observing the M&C Events List title bar and M&C icons in the map view.

(7) Select the server icon that is to become primary.

(8) Right trackball click on the icon.

(9) Select **Configuration → Server Actions → Promote to Primary**.

(10) Ensure that the Thin Clients are logged into the primary M&C server by observing which M&C server is logged into on Events List on the Title bar.

(11) If primary server is not logged into from the Thin Client, then log off the non-primary server, then log in again to primary server.

(12) Ensure at least one trunk port or M&C server port remain enabled on the switch (the trunk port or M&C server port icon remains green).

b. Verifying Fibre Channel Connectivity.

(1) User must be logged on as **root** or **sys admin** for this procedure.

(a) From CDE Toolbar, left trackball click on the **text editor** icon.

(b) Left trackball click on **terminal**.

(2) From the AIX command line, execute the **inq** command which will display inquiry information for all SCSI devices. The output fields are as follows:

(a) DEVICE — This holds the UNIX device name for the SCSI device.

(b) VEND — Contains data corresponding to the vendor information. This will be **EMC** for a Symmetrix.

(c) PROD — Contains data corresponding to the product name. This will be **SYMMETRIX** for a Symmetrix.

(d) REV — Contains data corresponding to the revision number. On a Symmetrix this is the micro code version number.

(e) SER NUM — Contains data corresponding to the serial number. This field is used then creating sym device files.

(f) CAP — Contains the size of the device in KBs.

(3) View above output for device information.

(4) Press **Alt F4** to close the terminal session.

529. EMC 5630 DISK DRIVE/POWER SUPPLY REPLACEMENT VALIDATION.

a. Objective. After a call has been placed for a Hot Swap Disk Drive Replacement or Hot Replacement of Power Supply, verification is needed to ensure there are no errors associated with the new component, in order to recertify the 5630 DASD component of ODAPS after repair. These two items are the most likely to need replacement during normal usage of the unit. Although the POST satisfies this requirement, an unnecessary loss of redundancy of Host, VM/ Standby and/or shutdown will be needed due to the powering down while in use. This procedure explains the steps needed to copy the data, which shows the results of the diagnostics after repair, while keeping the system running.

b. EMC Customer Engineer (CE) Procedures.

(1) Use the **Symmwin → Procedures → Hot Replacement Utilities → Replace Disk Drive** Script for disk drive replacement and procedure completes with **Green Box** or uses **current** Customer Service Procedure (e.g., SYM - CSP - 01/L, **Symmetrix Power Subsystem Hot Replacement**).

(2) Verify all logical volumes affected by hot replacement are in a fully resynched status using **A7,C** (to display invalid tracks) inlines command.

(3) Verify no environmental alarms are present using **Symmwin → Procedures → Statistics → Display Environmental Faults → Display Errors**. Then quit.

(4) Use the **Symmwin → Tools → View Logfiles → open logall.log** for viewing.

(5) From Log Browser tool bar select **File → save as plain text → use logall.txt** as the file name to save to the default **c:\symmwin\logs** directory. Exit Log Browser.

(6) Use the **Symmwin → Tools → View Logfiles → open env.log** for viewing.

(7) From Log Browser tool bar select **File → save as plain text → use env.txt** as the file name to save to the default **c:\symmwin\logs** directory. Exit Log Browser.

(8) Logout of Symmwin.

c. FAA Maintenance Personnel Procedures.

(1) Copy the **env.txt** and **logall.txt** file onto to a site provided diskette as follows:

(a) On Symmetrix service processor right click on **MS Start** button.

(b) Select: **Explore All Users**.

(c) From Folders select: **c:\symmwin\logs** directory.

(d) Insert blank floppy diskette into service processor diskette drive.

(e) Right click on **env.txt**.

(f) Select: **Send To → Floppy Drive (a)**.

(g) Right click on l**ogall.txt**.

(h) Select: **Send To → Floppy Drive (a)**.

(i) Close Explorer window and remove diskette from Service Processor.

(2) If validating the replacement action for a **Disk Drive**, browse the **logall.txt** file from any PC using any MS browser application (e.g., MS Word, Notepad, etc.). Reference Figure 5 - 2, Success Criteria for Disk Drive Replacement (logall.log), Figure 5 - 3, Indication for Disk Drive Resynchronization in Progress (logall.log), and Figure 5 - 4, Success Criteria for Disk Drive Resynchronization Complete (logall.log), for validation criteria.

(3) If validating the replacement action for a **Power Supply**, browse the **env.txt** file from any PC using any MS browser application (e.g., MS Word, Notepad, etc.). Reference Figure 5 - 5, Environmental Log File with No Errors Present (env.log) and Figure 5 - 6, Environmental Log File with Example Error Present (env.log) for validation criteria.

530. - 549. RESERVED.

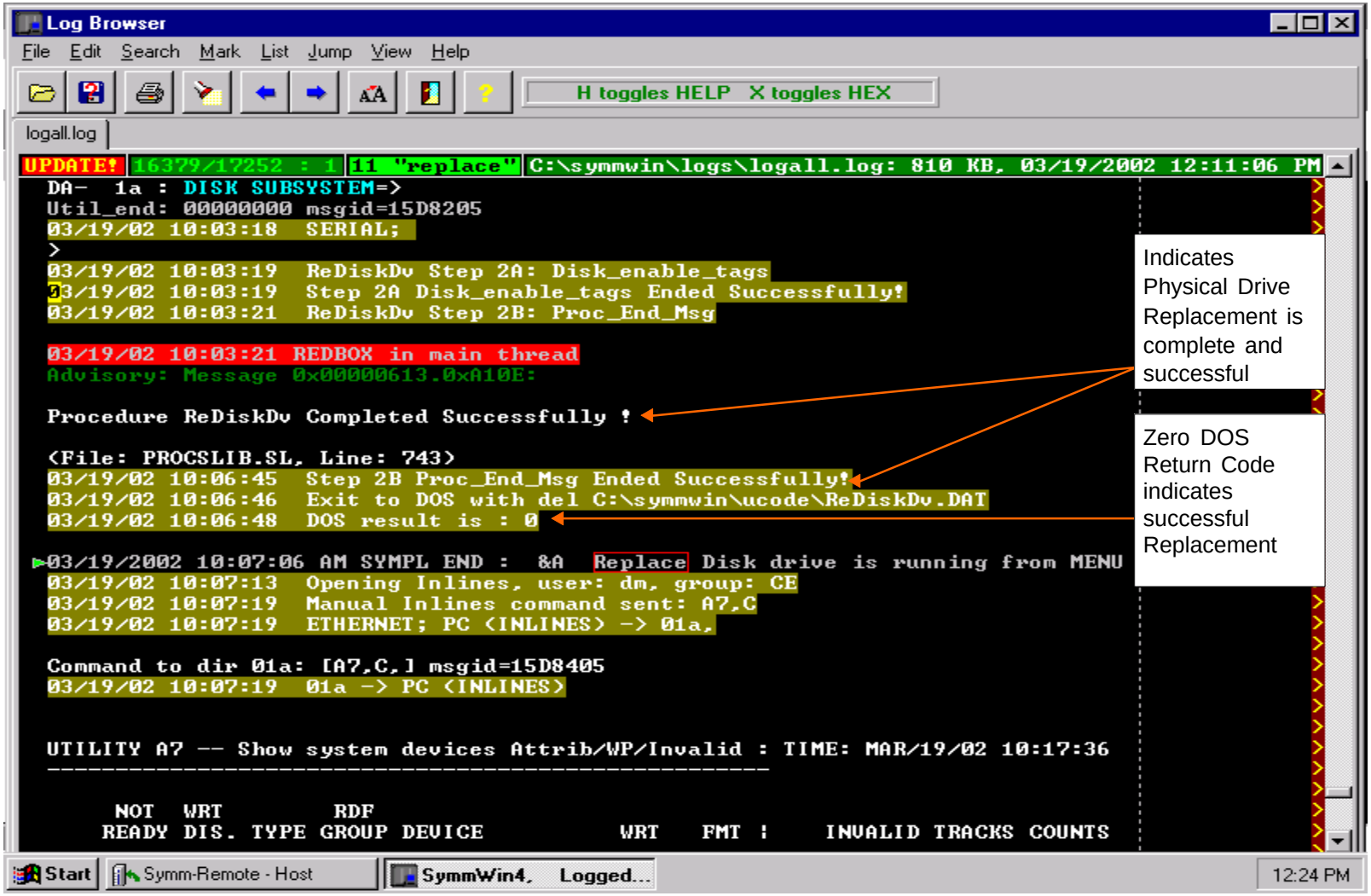
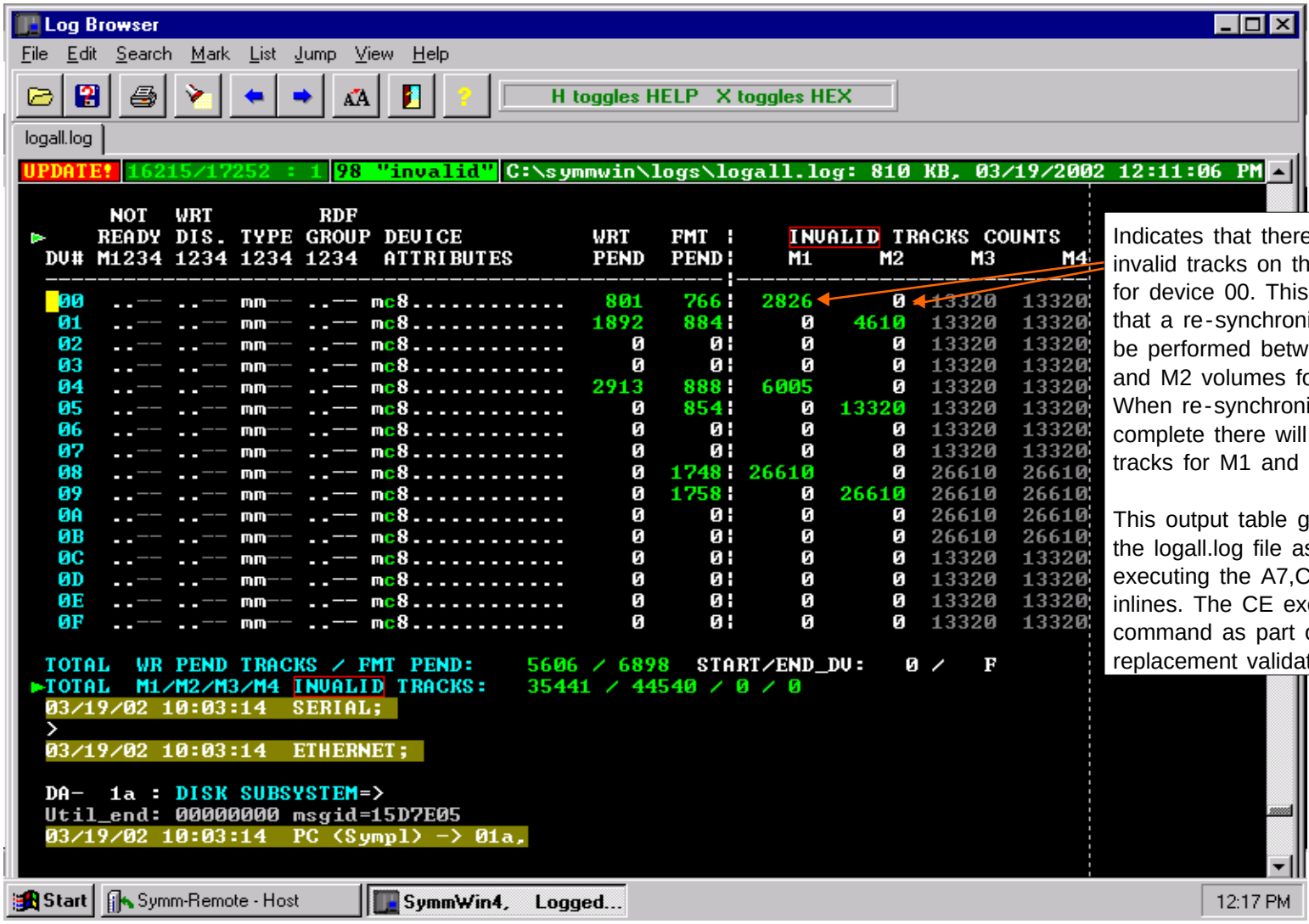


FIGURE 5 - 2. SUCCESS CRITERIA FOR DISK DRIVE REPLACEMENT (logall.log)



Indicates that there exist 2826 invalid tracks on the M1 volume for device 00. This indicates that a re-synchronization must be performed between the M1 and M2 volumes for device 00. When re-synchronization is complete there will be 0 invalid tracks for M1 and M2.

This output table gets written to the logall.log file as a result of executing the A7,C command in inlines. The CE executes this command as part of the drive replacement validation.

FIGURE 5 - 3. INDICATION FOR DISK DRIVE RESYNCHRONIZATION IN PROGRESS (logall.log)

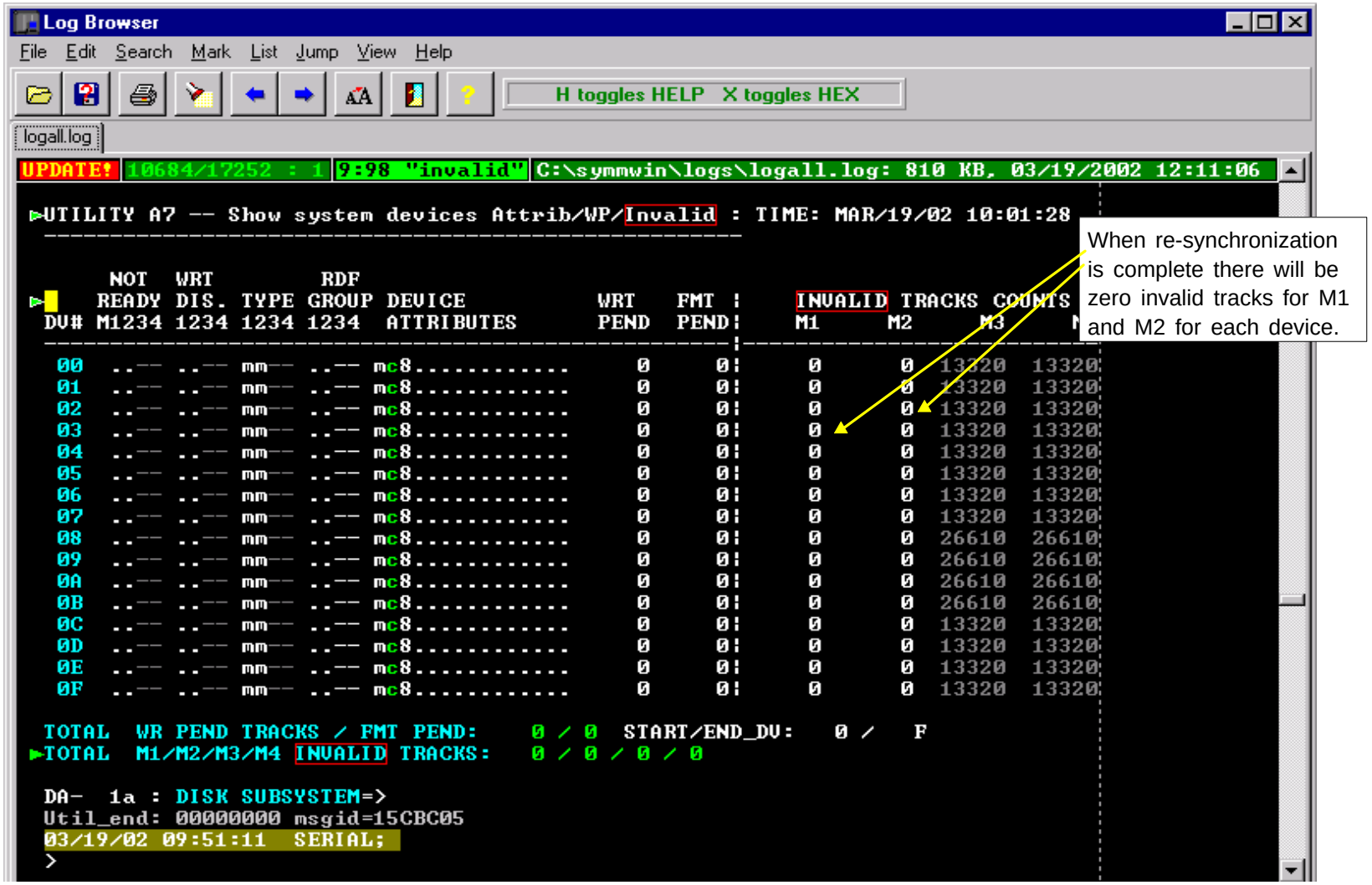


FIGURE 5 - 4. SUCCESS CRITERIA FOR DISK DRIVE RESYNCHRONIZATION COMPLETE (logall.log)

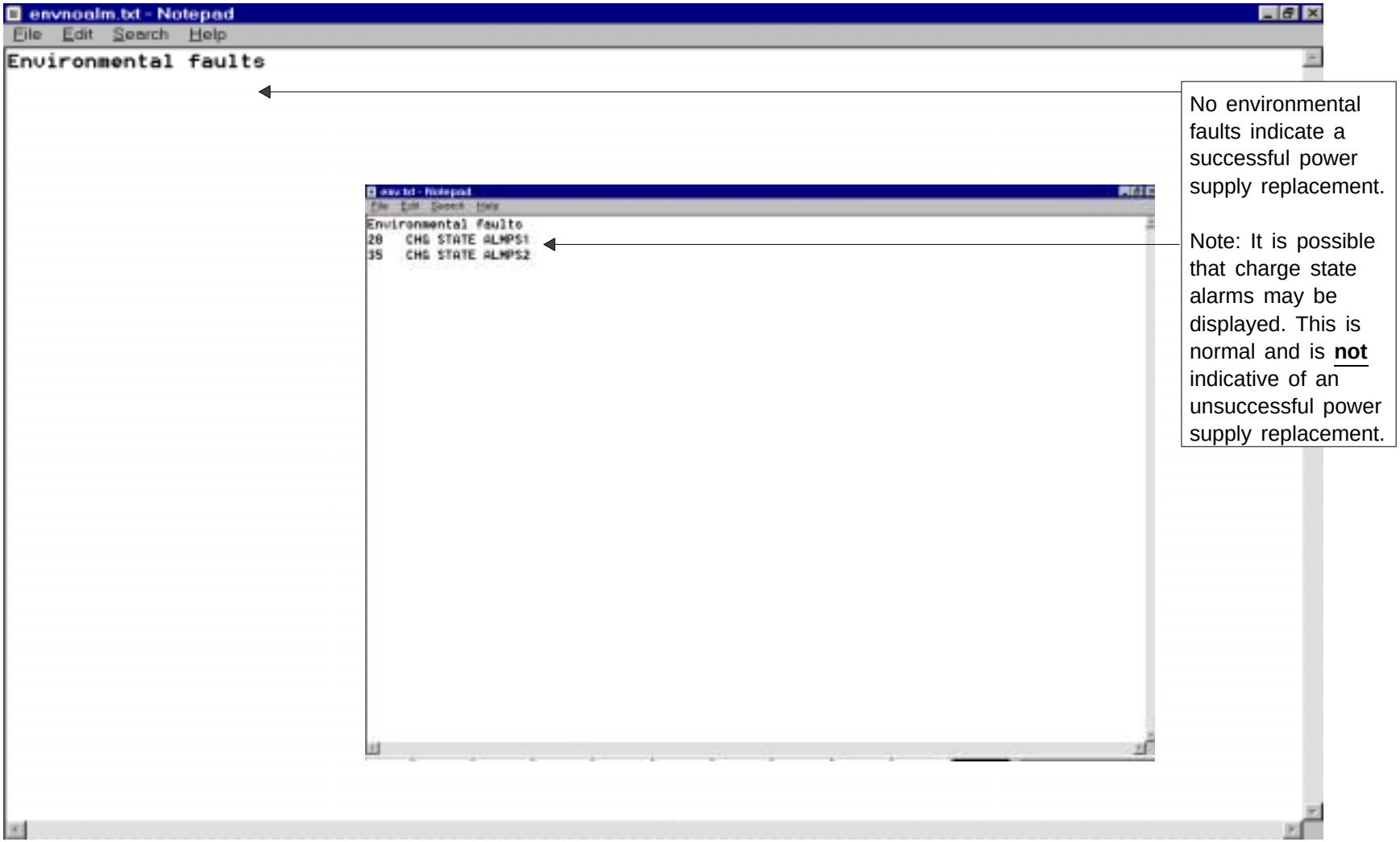


FIGURE 5 - 5. ENVIRONMENTAL LOG FILE WITH NO ERRORS PRESENT (env.log)

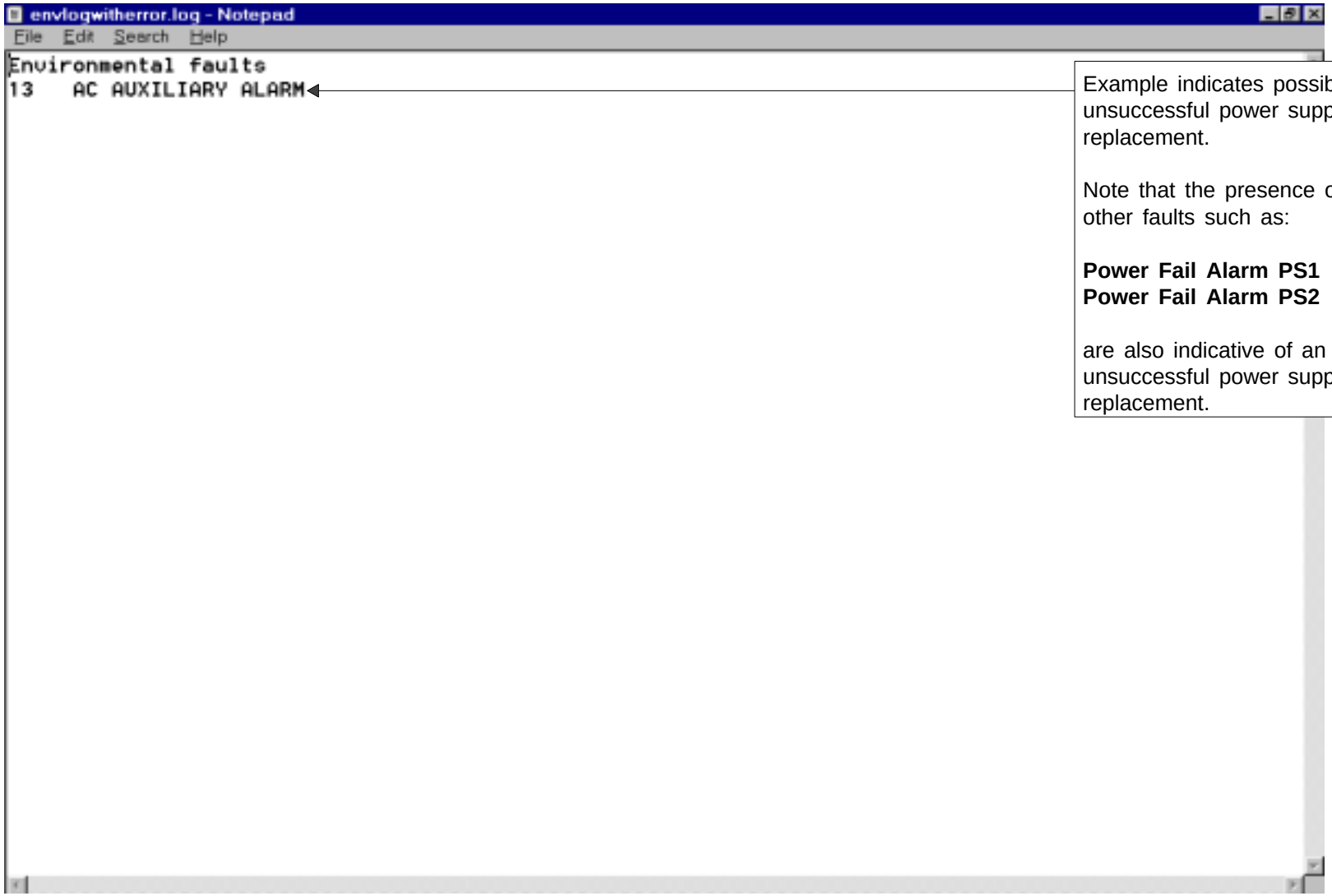


FIGURE 5 - 6. ENVIRONMENTAL LOG FILE WITH EXAMPLE ERROR PRESENT (env.log)

Section 2. OTHER MAINTENANCE TASKS PROCEDURES

550. CLEAN PRINTER.

a. Object. This task is performed so that dirt and debris will not jam the printer.

b. Discussion. None.

c. Equipment Required. A vacuum cleaner with a small flexible crevice attachment.

d. Conditions. The cleaning shall be performed with the printer power OFF.

e. Detailed Procedure. Vacuum out all dust and paper pieces from the paper handling areas.

551. CLEAN TAPE DRIVE.

a. Object. This task is performed so that dust and dirt will not degrade the read/write operation of the tape drive.

b. Discussion. None.

c. Equipment Required. A tape drive cleaning tape.

d. Conditions. The IBM 3480 Model B22 MTU cleaning is required semiannually or as required when **CLEAN** is displayed on the message display panel. The IBM 7208 tape drive cleaning is required weekly.

e. Detailed Procedure. Insert the cleaning tape into the drive. The message UNLOADING will display on the message display panel while the cleaning tape is in the drive. The tape will eject from the drive when finished.

552. CLEAN AND INSPECT CABINET.

a. Object. This task is performed so that dust and dirt will not degrade the operation of the enclosed equipment and so that unscheduled interruptions of service will be avoided by detecting pending mechanical failure.

b. Discussion. None.

c. Equipment Required.

(1) A vacuum cleaner with a small flexible crevice attachment.

(2) Hand tools.

d. Conditions. The cleaning shall be performed with the equipment power OFF.

e. Detailed Procedure.

(1) Vacuum accumulated dust and debris.

(2) Check cable and Printed Circuit Board (PCB) connections.

(3) Check for stressed components.

(4) Lubricate as necessary.

553. CLEAN AIR FILTER.

a. Object. This task is performed so that dust and dirt will not clog the filter.

b. Discussion. This procedure only applies to non-fiberglass filters. Fiberglass filters should be replaced instead of cleaned.

c. Equipment Required. Hand tools.

d. Conditions. The cleaning shall be performed with the power OFF.

e. Detailed Procedure.

(1) Remove the air filter from unit.

(2) Clean air filter.

554. FAN OPERATIONAL CHECK.

a. Object. This check is performed in order to avoid equipment overheating due to fan failure.

b. Discussion. Fan failure usually occurs as a result of bearing failure or winding failure.

(1) Bearings may seize due to lack of lubrication or the accumulation of dirt. This condition can be detected by feeling for overheating while the fan is operating. On ac fans, this can also be detected by manually checking for excessive drag while the fan is stopped. Bearings may get too sloppy due to wear. This condition can be anticipated by listening for excessive noise while the fan is operating or by manually checking for excessive play while the fan is stopped.

(2) Windings may short or open circuit due to continued overheating. This condition can be anticipated by feeling and looking for any signs of overheating while the fan is operating.

c. Equipment Required. None.

d. Conditions. The operating checks shall be performed while the fan is under a typical operational thermal and acoustic load.

e. Detailed Procedure. See the manufacturer's instruction book for the procedure to access the fan or fans. Then perform the following checks:

(1) While the fan is operating, look and feel for evidence of overheating and listen for excessive bearing noise.

(2) On equipment which may be powered down, while the fan is stopped, feel for excessive bearing drag or wear.

555. CLEAN AND INSPECT EQUIPMENT.

a. Object. This task is performed so that dust and dirt will not degrade the operation of the equipment and so that unscheduled interruptions of service will be avoided by detecting pending mechanical failure.

b. Discussion. None.

c. Equipment Required.

(1) A damp cloth.

(2) A non-toxic cleanser.

d. Conditions. The cleaning shall be performed with the equipment power OFF.

e. Detailed Procedure.

(1) Remove dirt, grease, and oil with a damp cloth and a non-toxic cleanser or soap.

(2) Wipe off residue with a water-damped cloth.

556. - 574. RESERVED.

Section 3. SPECIAL MAINTENANCE PROCEDURES

575. ONLINE CERTIFICATION DATA REQUIREMENTS.

a. Object. This paragraph defines the minimum data requirements for the OLC program simulation files.

b. General. The OLC program provides the NOM/NAS with a highly flexible, online means of verifying the certification parameters of the system. The certification files used for OLC are generated using the SIMulation (SIM) program, followed by use of the verification post processor program. These files are identical to the files generated by the simulation program, except for the block of data added to the end of the header record. These files include the data necessary to assist the system engineer in verification of the certification parameters specified.

c. Detailed Procedure. The data file requirements for ODAPS certification consist of the input messages necessary to verify the flight data processing and the I/O capability of the system. The minimum requirements are listed below.

(1) Input at least five flight plans to demonstrate that the FDBs thereby generated are correctly displayed upon the ISD OCs. One FDB shall be generated at the point of tangency, and the next four FDBs at the four points farthest from the point of tangency. The flight plans should be input from KVDTs or TP workstations, and their combined routes shall penetrate all adapted sectors that have airspace. The flight shall represent overflights or traffic originating or landing within a sector's airspace. The simulated flight plans shall be such that strip printing is initiated.

(2) Test all KVDTs using the GI and TD messages addressed to each KVDT. The GI messages shall include the position identification (C1, E1, etc.), LDN (200, 204, etc.), and device addresses (8D, 3F, etc.).

(3) Use TD messages to cause display of the workstation monitor test pattern at all sector positions. Invalid messages shall be included that cause the sector number, LDN, and FDIO address to be written on the workstation monitor.

(4) Exercise all ODAPS TFSPs using the TD message.

(5) Use TR or MIS messages to elicit response from all the adjacent NAS facilities or FIRs. If certification is performed when the adjacent facility or FIR is not operational, a normal response will not be received from that facility or the FIR.

576. - 599. RESERVED.

CHAPTER 6. FLIGHT INSPECTION

600. - 699. RESERVED.

CHAPTER 7. MISCELLANEOUS

700. ABBREVIATIONS AND ACRONYMS.

The following acronyms, abbreviations, and units are used in this document.

ac	alternating current
AF	Airway Facility
AFTN	Aeronautical Fixed Telecommunications Network
AIDCS	ATS Interfacility Data Communications System
AMCC	ARTCC Maintenance Control Center
AOS	Operational Support Service
APC	American Power Conversion
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Terminal System
ASCII	American Standard Code for Information Interchange
ASM	Application Status Message
ATC	Air Traffic Control
ATO	Air Traffic Operations
ATS	Air Traffic Service
ATSS	Airway Transportation System Specialist
BAT	Basic Acceptance Test
CCC	Central Computer Complex
CCD	Configuration Control Decision
CCCH	Central Computer Complex Host
CCK	Common Console Keyboard
CCW	Channel Command Word
CD - ROM	Compact Disc-Read Only Memory
CDRL	Contract Data Requirements List
CE	Customer Engineer
CHPID	CHannel Path IDentifier
CKD	Count Key Data
CMOS	Complimentary Metal Oxide Semiconductor
CO	Computer Operator
COMM	COMMunications
CP	Central Processor
CPC	Central Processing Complex
CPDLC	Controller/Pilot Data Link Communications
CPU	Central Processing Unit
CRT	Cathode Ray Tube
CSOM	Computer System Operation Manual
CTC	Channel To Channel
CTS	Coded Time Source
DASD	Direct Access Storage Device
DCX	Display Controller for X-Windows
DDS	Digital Data Storage
DR&A	Data Reduction & Analysis
DT	Data Test
DUG	Diagnostic User's Guide
E - MAIL	Electronic Mail
ED	Early Drop
ESA	Enterprise System Architecture

ESAFP	En Route Surveillance Automated Flight Plan
ESCON	Enterprise System CONnection
ETMS	Enhanced Traffic Management System
FAA	Federal Aviation Administration
FAALC	FAA Logistics Center
FAC	FACility
FBA	Fixed-Block Architecture
FDB	Full Data Block
FDIO	Flight Data Input/Output
FDPS	Flight Data Processing Subsystem
FIR	Flight Information Region
G3	Generation 3
GB	Gigabyte
GI	General Information
GUI	Graphical User's Interface
HD	Hardware Design Data
HDD	Hardware Design Document
HDR	Hardware Discrepancy Report
HF	High Frequency
HIMM	Hardware Installation and Maintenance Manual
HMC	Hardware Management Console
HOCSR	Host and Oceanic Computer System Replacement
HP	Hewlett Packard
HSI	High Speed Interface
Hz	Hertz
IBM	International Business Machines, Inc.
ICAO	International Civil Aviation Organization
ICDA	Integrated Cached Disk Array
ICKDSF	IBM Device Support Facilities
IEEE	Institute of Electrical and Electronic Engineers
IML	Initial Machine Load
I/O	Input/Output
ISD	Interim Situation Display
Kpbs	Kilobytes per Second
KPR	KVDT Printer Replacement
KVDT	Keyboard Video Display Terminal
LAM	Logical Acknowledgement Message
LAN	Local Area Network
LDDA	Logical Disk Device Address
LDN	Logical Device Number
LED	Light Emitting Diode
LIC	Licensed Internal Code
LRU	Lowest Replaceable Unit
MAU	Multi-station Access Unit
MB	Megabyte
M&C	Monitor and Control
MCC	Monitor and Control Center
MCCU	Multi-system Channel Communications Unit
MCM	Multiple Chip Module
MIPS	Million Instructions Per Second
MIS	MIScellaneous
MMS	Maintenance Management System
ms	millisecond
MTCU	Magnetic Tape Control Unit
MTS	Magnetic Tape Subsystem
MTU	Magnetic Tape Unit
MUX	MUltipleX

mV	milliVolt
MVS	Multiple Virtual Storage
NADIN	National Airspace Data Interchange Network
NAS	National Airspace System
NCD	Network Computing Device
NCP	NAS Change Proposal
NEC	Nippon Electronics Co.
NOM	NAS Operational Manager
NORAD	North American Air Defense Command
NOTAM	NOtice To AirMen
NPIO	No oPerational Input/Output
NSN	National Stock Number
OC	Oceanic Console
OCS	ODAPS Communications Subsystem
ODAPS	Oceanic Display And Planning System
ODC	ODAPS Display Channel
ODL	Oceanic Data Link
ODT	Offline S1R Diagnostic Test
OLC	OnLine Certification
OLT	OnLine Test
OMTIM	Operational and Maintenance Technical Instruction Manual
OPIO	OPerational Input/Output
OS/2	Operating System/2
PAM	Peripheral Adapter Module
PC	Personal Computer
PCB	Printed Circuit Board
PCCA	PCI Bus to Channel Adapter
PDU	Power Distribution Unit
POR	Power On Reset
POST	Power On Self Test
PSA	Pack Scan-A
PSB	Pack Scan-B
PU	Processing Unit
RAID	Redundant Array of Independent Disks
RAM	Random Access Memory
RD	Receive Data
RDP	Radar Data Processing
RIRO	Ring In/Ring Out
RISC	Reduced Instruction Set Computer
RO	Radio Operator
ROC	Read/Write Optical Cartridge
ROCC	Regional Operations Control Center
RSF	Remote Support Facility
S1R	Series/1 Replacement
S1RPAM	Series/1 Replacement Peripheral Adapter Module
SAP	System Assist Processor
SC	System Console
SCU	Storage Control Unit
SE	Support Element
SFS	Surveillance Flight Plan System
SIM	SIMulation
SNMP	Simple Network Management Protocol
SP	Service Processor
SPS	Surveillance Processing System
SS	System Specialist
SSM	System Support Modification

SUM	Software Users Manual
SVGA	Super Video Graphics Adapter
TD	Test Device or Transmit Data
TFSP	Thermal Flight Strip Printer
TP	Telecommunications Processor
TPR	Technical Performance Record
TR	Test Message
UPC	Universal Processor Controller
UPS	Universal Power Supply
V	Volt
Vac	Volts alternating current
VM	Virtual Memory

701. - 799. RESERVED.

APPENDIX 1. CERTIFICATION REQUIREMENTS

1. GENERAL.

This chapter contains certification requirements for surveillance automated fight plan services provided in the en route oceanic ATC environment, and certification requirements for constituent systems used to provide these services. Refer to Order 6000.15 for general guidance on the certification of services and systems.

2. SERVICES.

Surveillance services provide a means for ATC personnel to determine aircraft position, course, and identification during aircraft operations. This service is certified as ESAFP Service in accordance with tables included in this appendix. ESAFP is a mutually dependent surveillance service, relying on a combination of ATC systems, to provide ATC personnel with a means to determine aircraft identification over the oceans. The service enhances ATC capabilities by linking real-time flight data with flight plan data, and therefore automating the handling of surveillance data to appropriate ATC sectors. It depends on systems used to provide similar services for the En Route environment and on systems used to file, route, update, and terminate flight plans.

3. SYSTEMS.

Centralized, distributed, or back-up surveillance processing systems, and surveillance flight planning systems are utilized to provide these services. Each system is certified as SPS, or SFS, in accordance with this appendix.

4. EXCEPTIONS.

Order 6000.15 permits certification with exceptions where a system provides somewhat less than its full functional benefit but is still useable; e.g., one processor is taken out of service, yet other processors are still contributing to the en route surveillance service. Outstanding exceptions may be certified in accordance with the following tables for the specific purpose of removing the exceptions.

5. FUTURE SYSTEMS.

For future planning purposes, systems that provide the above services or are used for testing or prototyping shall be certified in accordance with Order 6000.15.

TABLE 1. EN ROUTE SURVEILLANCE AUTOMATED FLIGHT PLAN (ESAFP) SERVICE

Service	*Certification Parameter*	*Reference Paragraph*
ESAFP	Knowledge that all constituent systems are certified.	None (go/no go)
	Normal indications on Monitor and Control.	None (go/no go)
	Satisfactory flight data processing and display.	301a and 401a(1)
	Satisfactory KVDT message input and display.	301b and 401a(2)
	Satisfactory Flight Data Entry and Display message input.	301c and 401a(3)
	Satisfactory flight strip printer.	301d and 401a(4)
	Satisfactory interfacility data transfer.	301e, 308f, 308g, and 401a(5)
	Successful execution of the ODL linktest command.	309c and 401c

NORMAL CERTIFICATION INTERVAL: Daily.

MAXIMUM CERTIFICATION INTERVAL: 36 hours.

ALLOWABLE EXCEPTIONS: None.

PERSON RESPONSIBLE FOR CERTIFICATION: NOM/NAS

CERTIFICATION ENTRIES IN MAINTENANCE MANAGEMENT SYSTEM (MMS): ESAFP certified.

TABLE 2. SURVEILLANCE FLIGHT PLAN SYSTEM (SFS)

Advertised Service	*Certification Parameter*	*Reference Paragraph*
Switchover Operation.	Successful switchover.	G3 301f and 402a TP 307c and 402b(1) ISD 306d and 402c(1) ODL 309d and 402f(1)
S1RPAM Replacement Operation.	Successful replace.	S1RPAM 305c and 402d

NORMAL CERTIFICATION INTERVAL: Weekly.

MAXIMUM CERTIFICATION INTERVAL: 14 days.

ALLOWABLE EXCEPTIONS: Back-up processor, positions.

PERSON RESPONSIBLE FOR CERTIFICATION: NOM/NAS

CERTIFICATION ENTRIES IN MAINTENANCE MANAGEMENT SYSTEM (MMS):

Without Exception:
SFS certified.

With Exception:
SFS certified except (designation) back-up processor.

Removing Exception:
SFS (designation) back-up processor certified.

TABLE 3. SURVEILLANCE PROCESSING SYSTEM (SPS)

Advertised Service	*Certification Parameter*	*Reference Paragraph*
Processing Capability.	Processor test.	G3 302a(1) and 404a(3)(a) S1RPAM 305a(1) and 404d(2) TP 307a, 404f(1), 404f(2), and 404f(3) ISD 306a, 404e(1), 404e(2), and 404e(3) AIDCS 308a and 404g(1) ODL 309g and 404h(1) 5630 M&C 310a and 404i(1)
Storage Capability.	Data retrieval test.	DASD 303a and 404b(1), 303c(1) and 404b(3) MTU 304b and 404c(2)
Control Capability.	Verification test.	HMC 302a(3) and 404a(3)(c) SE 302a(2) and 404a(3)(b) TCU 302d and 404a(1) SCU 303b and 404b(2) MTCU 304a and 404c(1)
Connectivity Capability.	External interface wrap test. Interface cards, printer, and coded time source.	S1RPAM 305a(3) and 404d(3)(b) S1RPAM 305a(2) and 404d(3)(a)

NORMAL CERTIFICATION INTERVAL: Quarterly.

MAXIMUM CERTIFICATION INTERVAL: 120 days.

ALLOWABLE EXCEPTIONS: Back-up processor, positions.

PERSON RESPONSIBLE FOR CERTIFICATION: ATSS with certification authority.

CERTIFICATION ENTRIES IN MAINTENANCE MANAGEMENT SYSTEM (MMS):

Without Exception:
SPS certified.

With Exception:
SPS certified except (designation) back-up processor.

Removing Exception:
SPS (designation) back-up device certified.

CASE FILE/ NAS CHANGE PROPOSAL

(P;EASE TYPE OR PRINT NEATLY)

Page 1 of _____

1. Case File Number

2. For CM Use — Case File Received Date | NCP Issuance Date | NCP Number

3. Scope of Change

☐ Local ☐ National
☐ Test

4. Reason For Change

☐ Safety ☐ Technical Upgrade ☐ Systems Interface
☐ Requirements Change ☐ Design Error ☐ Parts Unavailability
☐ Baseline ☐ Other

5. Priority

☐ Normal
☐ Time-Critical
☐ Urgent

6. Justification of Time Critical/Urgent Priority

7. Supplemental Change Form

☐ ECR/ECP ☐ TES ☐ N/A

7a. Supplemental Change No. _____

7b. Supplemental Change Initiation Date _____

8. Case File Originator

9. Originator's Organization

10. Telephone Number

11. Case File Initiation Date

12. Type of Document Affected

☐ CPFS ☐ SPEC ☐ MTBK ☐ _____
☐ TI ☐ DWG ☐ IRD/ICD

13. Baseline Document Number(s)

14. CI Subsystem Designator

15. FA Type

16. CI Component Designator

17. Facility Identifier (FACID)

18. Facility Code (FACCODE)

19. Cost Center Code

20. Software System Version

21. Title

22. Description: (a) identification of problem, (b) proposed change, (c) interface impact, (d) cost estimate (e) funding source (f) benefits/risks, (g) Schedule (h) Other (e.g. logistics, quality, etc.)

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

Blocks 1 through 22 are to be completed by originator and/or the NCP coordinator. If a block is not applicable, write n/a. Attach additional sheets if necessary. See current revision of NAS-MD-001 for detailed completion instructions.

Case File Number	NCP Number	Page 2 of ___

23. Name and Title of Originator's Immediate Supervisor (Type/Print Clearly)	Signature	Date

24. Facility/SMO Review (AT/AF)

Name	Routing Symbol	Date	Concur	Non-Concur

Routing Symbol	Signature
Date	
Routing Symbol	Signature
Date	

24a. Comments

(Attach additional sheets if necessary)

25. Regional Review

Name	Routing Symbol	Date	Concur	Non-Concur

☐ **Recommend Approval** (Enter into CM/STAT. Forward to Prescreening)

☐ **Disapprove** (Return to Originator)

Routing Symbol	Signature
Date	
Routing Symbol	Signature
Date	
Routing Symbol	Signature/Configuration Mgr/NCP Coordinator/ Reg Exec Sec
Date	

25a. Comments

(Attach additional sheets if necessary)

26.

PRESCREENING

Prescreening Office _____

Prescreening Comments:

(Attach additional sheets if necessary)

Reviewers	Routing Symbol	Date	Concur	Non-Concur

Recommended Must Evaluators

☐ **Recommend Approval**

☐ **New Requirement**

☐ **Recommend Disapproval** (Return original to originating office through the Regional NCP Coordinator)

Routing Symbol	Signature
Date	

27. For Internal Configuration Management Use Only