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TECHNICAL MANUAL

MAINTENANCE INSTRUCTIONS
OPEN PRINCIPAL USER PROCESSOR (OPUP)
SMALL

DOPPLER METEOROLOGICAL RADAR
WSR-88D

OFFICE OF PRIMARY RESPONSIBILITY:
NATIONAL WEATHER SERVICE RADAR OPERATIONS CENTER

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FOREWORD

This manual provides the information and procedures that enable a user to exercise all capabilities and functions required to maintain and replace OPUP hardware and software. The title and a brief description of the manual chapters are provided below. It consists of seven chapters, an index, and a glossary.

Chapter 1, General Information - Describes the purpose of this manual and provides an introduction to WSR-88D information, operating concepts, and general purpose reference information.

Chapter 2, Hardware Group - Provides detailed description of OPUP hardware, Controls and Indicators, and reference data.

Chapter 3, Software Description - Provides a brief description of the OPUP software suite, Sun Microsystems keyboard/mouse set, OPUP Operating System and Applications Software, software installation/recovery procedures, and a description of UNIX terminology that Administrators may encounter in their duties as OPUP System Administrators.

Chapter 4, System Security - Describes OPUP system security procedures. This chapter ensures that each OPUP operating environment does not violate any security integrity posture required by DoD regulations.

Chapter 5, System Administration - Provides an overview of the software menu items found within the OPUP Manager Main Menu. This chapter provides a detailed outlined of the procedures used to control various OPUP functions through the use of administration tools and security software.

Chapter 6, Maintenance - Provides the specific guidelines to be used in determining fault isolation, LRU removal/replacement, and setup of each assembly/sub-assembly found within the OPUP Hardware Group.

Chapter 7, Illustrated Parts Breakdown (IPB) - Provides an Illustrated Parts Breakdown (IPB) list which describes the items necessary to support on-site Line Replaceable Unit (LRU) repair.

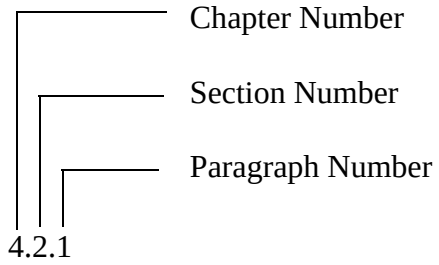
Index

Glossary

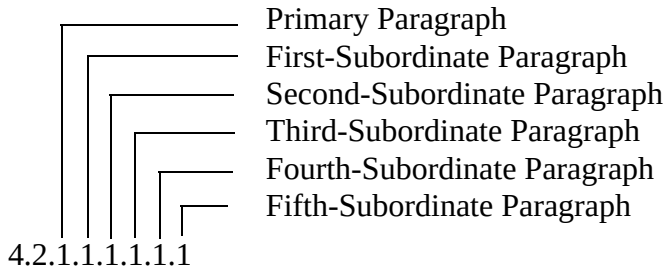
This manual is one of a family of technical manuals which provide various levels of description, operation, maintenance, and logistics information on the WSR-88D. Refer to TO 31-1-141, Basic Electronic Technology and Testing Practices, for any basic electronic technology or testing practice that is not fully described in these documents. The WSR-88D technical manual family is defined and discussed in Chapter 1 of NWS EHB 6-500, System Manual.

The format of this technical manual is as follows:

- Since sections represent the major content divisions of the chapter, they are formatted as standalone elements that are physically separate.
- Sections are numbered as subdivisions of the chapter or appendix. The section numbering system consists of two digits separated by a decimal. The first digit indicates the chapter, the second digit indicates the section. Thus, Section 3.2 represents the second section of Chapter 3.
- Paragraph numbering is by section rather than by chapter. The basic numbering system consists of three digits, where the first two digits identify the chapter and section.



- A decimal paragraph number system is used to identify paragraph subordination.



- Pages, tables, and figures are numbered by chapter. The number consists of two digits separated by a hyphen. The first digit identifies the chapter. The second digit identifies the table or figure.

SAFETY SUMMARY

1. GENERAL SAFETY INSTRUCTIONS.

This manual describes physical and chemical processes which may cause injury or death to personnel, or damage to equipment if not properly followed. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety and protection of equipment. Prior to performing any task, the WARNINGs, CAUTIONs, and NOTEs included in that task shall be reviewed and understood.

2. WARNINGS, CAUTIONS, AND NOTES.

WARNINGs and CAUTIONs are used in this manual to highlight operating or maintenance procedures, practices, conditions, or statements which are considered essential to protection of personnel (WARNING) or equipment (CAUTION). WARNINGs and CAUTIONs immediately precede the step or procedure to which they apply. WARNINGs and CAUTIONs consist of four parts: heading (WARNING or CAUTION), a statement of the hazard, minimum precautions, and possible result if disregarded. NOTEs are used in this manual to highlight operating or maintenance procedures, practices, conditions, or statements which are not essential to protection of personnel or equipment. NOTEs may precede or follow the step or procedure, depending upon the information to be highlighted. The headings used and their definitions are as follows.

WARNING

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

CAUTION

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

Highlights an essential operating or maintenance procedure, condition, or statement.

3. GENERAL SAFETY PRECAUTIONS.

The following safety precautions shall be observed while performing procedures in this manual.

- ELECTRICAL

  Dangerous voltages are present at system connectors. Ensure power is OFF prior to connecting or disconnecting cables.

- ELECTRONIC

  Do not wear metal frame glasses, rings, watches, or other metal jewelry while working on electronic equipment.

- ELECTRICAL SHOCK HAZARDS

  Prime power voltages and high voltages within cabinets can cause **DEATH** or severe injury. These voltages are contained in the generator area, the Radar Data Acquisition (RDA) area, and Antenna area. Warning signs and labels are located on the guards and barriers to alert personnel of the potential hazard. DO NOT DISREGARD THESE WARNINGS. Ensure that safety interlocks, barriers and guards are not bypassed.

- KEEP AWAY FROM LIVE CIRCUITS

  Maintenance personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the high voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position due to charges retained by capacitors. To avoid casualties, always remove power, discharge and ground circuit before touching it.

- DO NOT SERVICE OR ADJUST ALONE

  Under no circumstances should any person reach into or enter an enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

- RESUSCITATION

  Personnel working with or near high voltage should be familiar with modern methods of CPR. Such information may be obtained from the Red Cross or Heart Association. This knowledge may save a life.

- DO NOT WEAR JEWELRY

  Personnel performing maintenance on equipment are not to wear metal frame glasses, watches, rings, necklaces, bracelets, or other jewelry at any time. Electrical arcing can occur when metallic objects are in the proximity of voltage potentials. Jewelry can become entangled or otherwise restrict movement causing severe personal injury.

- CLEANING SOLVENTS (GENERAL)

  Wear protective clothing, safety goggles, and gloves when using toxic cleaning solvents. Repeated and prolonged contact may cause skin and eye irritation. Flush skin and eyes with water. Remove clothing saturated with cleaning solvent.

- CLEANING SOLVENTS (INHALATION)

  Use cleaning solvents only in a well-ventilated area. Avoid inhalation of cleaning solvents. Asphyxiation or **DEATH** may occur from prolonged exposure to fumes.

- FLAMMABLE AND/OR TOXIC MATERIALS

  Some cleaning materials specified herein are flammable and/or toxic. Keep away from open flame or other ignition sources. Provide adequate ventilation and avoid skin/eye exposure.

- 0365 ELECTRON AEROSOL, CLEANING COMPOUND

  Follow all safety precautions listed in the Material Safety Data Sheets for 0365 Electron Aerosol, Cleaning Compound. 0365 Electron Aerosol is flammable and releases flammable vapors. Do not use near an open flame or other sources of ignition. The use of 0365 Electron Aerosol in a closed area poses a health hazard. 0365 Electron Aerosol is toxic to skin and eyes. Use skin and eye protection. Failure to comply with all safety precautions listed in the Material Safety Data Sheets for 0365 Electron Aerosol Wipe Solvent may cause serious injury or **DEATH**. Dispose of contaminated 0365 Electron Aerosol in accordance with applicable federal, state, and local regulations.

- PERFORM WORK EFFICIENTLY

  When working in areas designated as hazardous, perform work using the proper safety procedures. Be thoroughly familiar with the procedures required for the task before entering the area.

- SECURE ALL MATERIAL WHEN NOT IN USE

  Secure all tools, chassis, and covers before operating equipment.

- DO NOT USE METAL TOOLS NEAR EXPOSED PARTS

  Do not use brushes, brooms, or other tools that have exposed metal parts within four feet of any electrical equipment having exposed current-carrying parts.

- COMPRESSED AIR

  Cleaning with compressed air can create airborne particles that may enter eyes or penetrate skin. Pressure shall not exceed 30 psig. Wear goggles. Do not direct compressed air against skin.

- REMOVAL OF TOOLS

  Remove all tools and dropped hardware such as locknuts, washers, screws, etc., from equipment prior to restoring power to any WSR-88D equipment.

4. SPECIFIC SAFETY PRECAUTIONS.

- GROUNDING

  Equipment grounds must remain connected at all times while operating the WSR-88D equipment. The equipment is grounded through multiple paths and with grounds connected, the standing current on the safety ground poses no safety hazard. However, operation of the equipment with a ground disconnected may pose a potential hazard. For example, if a voltage were to short to an ungrounded chassis, personnel touching the chassis could provide a ground path for the voltage and this could result in injury or **DEATH**. Ensure that the grounds have been reconnected and that all cabinet to cabinet voltages are less than 1 volt after performing any maintenance procedure that disconnects grounds. A ground and power survey conducted by the Air Force 1839th Engineering and Installation Group and Lincoln Labs concludes that for current at the equipment "the ground currents consist of frequencies greater than 60 Hz" and that "the currents found on the ground system pose no threat to the safety of personnel working on or about the site."

- MAJOR EQUIPMENT DAMAGE

  Mismating electrical connectors on the RDA, RPG, or PUP can cause major equipment damage. Therefore, ensure that the connector keys/color coding is followed when reconnecting connectors during maintenance.

CHAPTER 1
GENERAL INFORMATION

Section 1.1. INTRODUCTION

1.1.1 General.

The Small Open Principal User Processor (OPUP) Equipment Group UD86 is the baseline computer system developed for use by the Department of Defense (DoD) to display and manipulate WSR-88D (Weather Surveillance Radar - 1988 Doppler) products and message data. This system enables weather forecast sites to display WSR-88D products and message data in a multi-user and multi-radar environment. The OPUP system has been developed to utilize specific hardware that provides a scaled down, cost-effective, operating display system environment. The communication suite used with the Small OPUP consists of equipment that is either configured in an "isolated" or "non-isolated" networked based system. An isolated network employs the attributes of network connectivity to ingest and transmit data within the OPUP communication suite. Isolated systems contain routers and switches which provide critical connectivity for systems which request data but do not transmit this data to outside sources such as a site LAN Network and/or Internet/Intra-Net server systems. A non-isolated system incorporates the same equipment as an isolated system, however, transmits data to a switch or server that is connected to outside sources.

In addition to isolated or non-isolated based systems, the OPUP will also have the capability to add an additional secondary monitor display (repeats the exact image from the primary monitor), one additional dedicated modem (to connect to an additional dedicated RPG of interest), and/or a printer device. OPUP systems that employ isolated communication suites will be able to utilize the printer device to print products and message data if a printer device is connected to the OPUP's switch. However, non-isolated communication suites with compatible printer devices will be able to access and print WSR-88D products and message data if the associated printer device's IP-address is provided.

The Small OPUP hardware/software architecture is based upon a server/client based operating system which displays data on a single monitor display using one central processing unit (CPU). This means that the OPUP hardware group is basically comprised of a single CPU, primary/secondary hard drive, and a single monitor display (dual monitor at designated sites), and has server Operating Software (OS) attributes which provide Graphical User Interfaces (GUIs) to support an OPUP specific Operational Applications GUI Suite.

The overall control of the OPUP operating system is maintained by a server OS. The server OS operates processes in the background while all other external processes are operated in the foreground (i.e. operator application GUIs). All administrative functions are controlled by an HyperText Markup Language (HTML) based manager GUI called the `OPUP Manager Main Menu`. The `OPUP Manager Main Menu` provides each site the ability to perform OPUP specific administrative functions such as server OS start/stop/restart (includes Operational Applications), view processes, control OPUP operators (users), monitor system security, maintain adaptable parameters, and manage peripherals, to name a few. All WSR-88D product and message data dis-

play and manipulation functions will be processed using the OPUP Operational Application GUI Suite called the Operational Applications Front Panel. The Operational Applications Front Panel is comprised of up to four base application GUI displays called the Product Display Graphic Users Interface (PDGUI), Status and Control GUI, Archive PDGUI, and Archive Status Log. Operational Applications will normally be accessed by OPUP operators and the `OPUP Manager Main Menu` will normally be accessed by personnel given OPUP System Administrative/Maintenance duties.

1.1.2 Chapter Organization.

Chapter 1 is organized into the following three sections:

- Section 1.1 INTRODUCTION - Provides a general overview of the Small Open Principal User Processor (OPUP) Equipment Group UD86.
- Section 1.2 SCOPE - Provides scope, purpose, and organization of this manual.
- Section 1.3 HARDWARE MAINTENANCE OVERVIEW - Provides an introduction to the Small Open Principal User Processor (OPUP) Group maintenance concept.

1.1.2.1 OPUP Program Development Organization. The WSR-88D radar program is designed, managed, and operated by three agencies of the Federal Government. These three agencies are the Department of Commerce (DOC), the Department of Transportation (DOT), and the Department of Defense (DoD). These agencies are represented by the National Weather Service (NWS), the Federal Aviation Administration (FAA), and Air Force Weather (AFW). Additionally, AFW provides WSR-88D program level representation for the Navy and Marine Corps.

The WSR-88D system is comprised of three major hardware groups. These are the Radar Data Acquisition (RDA), the Radar Product Generator (RPG), and the product display workstation group called the Open Principal User Processor. The OPUP was developed solely by the DoD for DoD sites. Further information concerning the relationship between the RDA/RPG and OPUP is covered in FMH-11, Part A.

1.1.2.2 WSR-88D Data Distribution Overview. Each principal user agency has a common requirement for weather radar data that is produced on a continuous basis. This means that each member of the tri-agency will ensure that any RDA/RPG system will provide radar weather data to more than one principal user agency on a 24 hours a day, 7 days a week basis. In addition, specific predefined scanning modes and data sets which have been approved by each agency, will be produced.

The principal users define the modes of operation of the WSR-88D system. These operational modes are a function of the weather conditions, seasons, and location of the radar. During operations, the antenna is controlled by automatic scanning programs. Different volume coverage patterns, which are matched to the operational mode, are available to optimize the product generation for the particular type of weather situation. The use of different volume coverage patterns and meteorological algorithm grouping is governed by strict interagency protocol whenever two or

more agencies are using the weather information generated by the site (in the case of the DoD, interagency agreements are established for each site). For any operational mode, radar scanning is continuos in time, to support the various needs of the users. Any exceptions to continuos scanning requires the concurrence of all principal users.

Each principal user is informed of the scanning mode through the use of the systems status monitoring program and product header data. Currently, there are two defined operational modes used to acquire the meteorological data necessary to display weather on the radar and develop the results into WSR-88D products. These are the Clear Air and Precipitation Modes. The Clear Air Mode can only be manually selected. The Precipitation Mode can be manually or automatically selected at any time whenever the system detects precipitation (based on pre-determined values and area coverage of precipitation-like returns from the radar.) Specific internal product distribution and display characteristics associated with the OPUP server OS and Operational Applications Front Panel is described in detail in Chapter 3, Software Description.

Section 1.2. SCOPE

1.2.1 Purpose.

The purpose of this manual is to provide the user with the following:

1. A description of the Small Open Principal User Processor (OPUP) Equipment Group UD86 configuration, controls and indicators, and applicable reference information.

2. An extensive overview of the OPUP software, installation theory and procedures, and recovery instructions.

3. OPUP maintenance concepts, to include:

   - System security procedures.
   - Procedures required to perform specific system administrative tasks.
   - Hardware fault isolation and restore procedures.
   - Logistic information associated with OPUP Illustrated Parts Breakdown (IPB).

Section 1.3. HARDWARE MAINTENANCE OVERVIEW

1.3.1 Hardware Maintenance Overview.

The Small Open Principal User Processor (OPUP) Group hardware has been developed to function with little or no separate hardware maintenance requirements. The majority of the equipment assemblies and sub-assemblies are made up of Commercial-Off-The-Shelf (COTS) computer and peripheral equipment. To reduce the amount of down time that may be associated with this type of equipment, numerous built in test and/or on-line statuses have been made available that provide monitoring capability to assist with the determination for the requirement of equipment replacement and/or adjustment.

1.3.1.1 Maintenance Responsibility. Each site will be responsible to provide the overall administration of the OPUP server OS and Operational Applications Front Panel GUI Suite. In addition, each site will be required to perform software installation/re-installation procedures and to troubleshoot, isolate hardware, and isolate software faults to the Line Replaceable Unit (LRU) level. The central point of contact for all maintenance will normally be associated with the individual(s) assigned administrative duties. However, specific hardware/software logistical responsibilities are site dependant.

1.3.1.2 Hardware/Software Repair/Recovery Overview. Each site is encouraged to follow the troubleshooting, fault isolation guidance, and associated flowcharts provided in this manual. The troubleshooting guidance provided can rapidly assist in determining the required level of repair, removal, and/or replacement procedure to be used. Applicable troubleshooting, hardware LRU removal/replacement, and configuration setup procedure(s) are covered in full in Chapter 6, Maintenance. This chapter provides several sets of fault isolation guidance and associated flowcharts that can be used to quickly isolate specific faults and provide repair of each associated hardware item to the LRU level.

1.3.1.2.1 Software Fault Recovery. If a software fault has occurred, each site is encouraged to attempt to recover the software fault when operations allow by using the appropriate available controls (normally via the `OPUP Manager Main Menu`). However, if any software fault cannot be cleared and hardware is not a causal factor, sites should either call the ROC Hotline for further information/assistance or if the situation warrants, immediately perform a full OPUP server OS installation procedure. Software load procedures are provided in full in Chapter 3, Software Description.

1.3.1.2.2 Hardware Fault Recovery. If a hardware fault has occurred, each site is encouraged to immediately consult the troubleshooting guidance provided in Chapter 6, Maintenance. All faults attributed to an LRU should be removed/replaced as soon as possible using the logistical information provided in Chapter 7, Illustrated Parts Breakdown (IPB) list and applicable field level equipment replacement procedures.

CHAPTER 2
HARDWARE GROUP

Section 2.1. INTRODUCTION

2.1.1 General.

The information provided in this chapter presents a description of the equipment used within the Small OPUP Equipment Group, designated UD86. This group includes a general system layout and overview of how each equipment item is connected in accordance with the designed system configuration.

2.1.2 Chapter Organization.

Chapter 2 is organized into the following three sections:

- Section 2.1 INTRODUCTION - Provides a brief description of each section in Chapter 2.
- Section 2.2 EQUIPMENT - Provides a detailed OPUP hardware description and equipment theory of operation.
- Section 2.3 CONTROLS AND INDICATORS - Provides a schematic description of each LRU equipment item (to include applicable tables, figures, and indexes) that assist in the location and identification of all applicable Small OPUP equipment controls and indicators.
- Section 2.4 REFERENCE DATA - Provides a brief overview of any applicable references.

Section 2.2. EQUIPMENT

2.2.1 Introduction.

NOTES

> The OPUP Server OS encompasses an administrative OPUP Manager GUI and Operational Applications Front Panel. Both administrative and operational functions are contained within in one system. Accessing the OPUP Manager and Operational Applications Front Panel GUIs are performed separately. Only one display OPUP Manager GUI or Operational Applications Front Panel can be accessed at one time.
>
> For clarity purposes, the Small OPUP Central Processing Unit (CPU) UD86A2 will be referred to as the **Server** throughout the rest of this manual.

The Small OPUP Equipment Group UD86 primarily consists of a server, monitor, communication, and associated peripheral equipment. The server is comprised of a single Sun Microsystems Sun Blade CPU configured as a desktop for ease of use and placement within the majority of operational work environments. The OPUP server executes the OS which also includes a server administration management GUI called the `OPUP Manager Main Menu`. In relation to server/client processes, the server provides server functionality. The `OPUP Manager Main Menu` has been developed to allow each site the ability to perform administrative server functions utilizing an easy to use format. This format is the Netscape Hyper-Text Markup Language (HTML) web-based GUI. The OPUP OS contains a sub-set of client software called Operational Applications Front Panel. The Operational Applications Front Panel is used by operators to display and manipulate WSR-88D products and message data. The `OPUP Manager Main Menu` and the Operational Applications Front Panel are accessed using normal login routines available on the same system. Only one menu may be accessed and displayed at one time.

The Small OPUP configuration has been developed to operate within a minimum equipment configuration. Each configuration will, at a minimum, consist of one 21-inch Monitor UD86A1, Server UD86A2, Switch UD86A5, External Dedicated Modem UD86A6, Archive IV Device UD86A7, Communication Router UD86A8, and an Uninterruptible Power Supply (UPS) UD86A10. The Small OPUP is also broken down into two types of hardware configurations which are dependant upon the application of communications and optional equipment at each site. The first type is an “isolated” based configuration. Isolated based configurations employ a router and switch to provide critical connectivity for systems that require data from the OPUP Server OS, but will not transmit this data to an outside source. An outside source would be a site’s LAN Network or Intra-LAN Network switch. The second type is a “non-isolated” based configuration. A non-isolated communication configuration employes the same communication equipment as an isolated system; however, this system is connected to a site’s LAN Network or Intra-LAN Network switch. The majority of Small OPUP systems will be configured to utilize “isolated” based communications. Non-isolated systems will only be used under special circumstances.

Each OPUP system may also consist of additional equipment such as a second Monitor UD86A11 and Video Splitter UD86A9, a second External Dedicated Modem UD86A13, and/or a Printer UD86A12. The addition of extra equipment is dependant upon the operational needs of each site.

In all, there are three OPUP hardware configurations. These are the Large and Medium OPUP which are designated by the UD80 Hardware Equipment Group and the Small OPUP which is designated by the UD86 Hardware Equipment Group. This manual will only discuss the Small OPUP Equipment Group UD86. The Large and Medium OPUP Equipment Group UD80 is presented in NWS EHB 6-537 and should be referenced when addressing these systems.

2.2.2 Theory of Operation.

This section provides a description of OPUP functions which outline the theory of operation.

2.2.2.1 Functionality. The OPUP system receives WSR-88D product and message data via dedicated or dial narrowband circuits from an RPG of interest. Once product and message data are received, they are processed internally and then manipulated/displayed using the Operational Applications Front Panel.

NOTE

> Both the `OPUP Manager Main Menu` and Operational Applications Front Panel are accessed using one display terminal. In depth Operational Applications Front Panel functionality is discussed in detail in NWS EHB 6-536, OPUP Operator's Instructions. The design and layout of the `OPUP Manager Main Menu` is discussed in detail in Chapter 3, Software Description and its use is discussed in detail in Chapter 5, OPUP System Administration.

The functional equipment areas for the Small OPUP consists of a 21-inch monitor, server, keyboard, and mouse. These areas are used by personnel given administrative and operational duties to access and display the `OPUP Manager Main Menu` and manipulate products via the Operational Applications Front Panel GUI Suite. Operators will only have access to the Operational Applications Front Panel. System Administrators will have automatic access to the `OPUP Manager Main Menu` as their primary concern, but will also be able to access Operational Applications functions using the "host terminal" or "console" terminal via the CDE Front Panel.

2.2.2.2 Narrowband Communications. Narrowband communications are associated with specific data circuit links which are used to provide both dedicated and dial WSR-88D products and message data between the OPUP Server OS and an RPG of interest. Table 2-1 provides an illustration of the different types of OPUP narrowband links.

Table 2-1. OPUP Narrowband Communication Interface Parameters

External Connection	Associated User	Non-Associated User
Line Class	1	2
Line Type	Dedicated	Dial-in
Timing	Async	Async
Duplex Type	Full	Full
Data Rate (BPS)	4800/14400	4800/14400
Data Link	CCITT V.32	Modular Analog
Physical	RS-232	RS-232
Line	4-Wire Leased	2-Wire

2.2.2.2.1 OPUP Communication Circuits. Each Small OPUP site will use similar data circuits to provide dedicated and dial circuit connectivity. Two types of communication architectures will be used to determine where specific WSR-88D products and message data will be transmitted and displayed. These are isolated and non-isolated communication based Small OPUP systems.

A non-isolated based Small OPUP configuration utilizes a communication router, LAN switch, and modems to provide dedicated and dial connectivity between the Small OPUP and an RPG of interest. One additional circuit/CAT5 cable will be required to provide connectivity from the Small OPUP's LAN switch to a site's LAN Network or Intra-LAN Network DMZ switch. At this time, non-isolated Small OPUP systems will be used only during special circumstances.

NOTE

Sites must not arbitrarily connect Small OPUP communication equipment to the LAN Network or Intra-LAN Network without proper authorization. Connecting the Small OPUP to the network requires special security requirements/authorization.

An isolated based Small OPUP configuration will employ the same communication equipment as the non-isolated Small OPUP configurations, however, it will not be connected to a site's LAN Network or Intra-LAN Network switch.

The following paragraph outlines the specific communication circuit application associated with an isolated Small OPUP Configuration. The hardware used to provide circuit connectivity is described in paragraph 2.2.3, Hardware Equipment Description.

2.2.2.2.2 Communication Circuit Description and Layout. Figure 2-1, Small OPUP Isolated Based Circuit Diagram, illustrates the circuit connectivity architecture associated with an isolated based OPUP configuration.

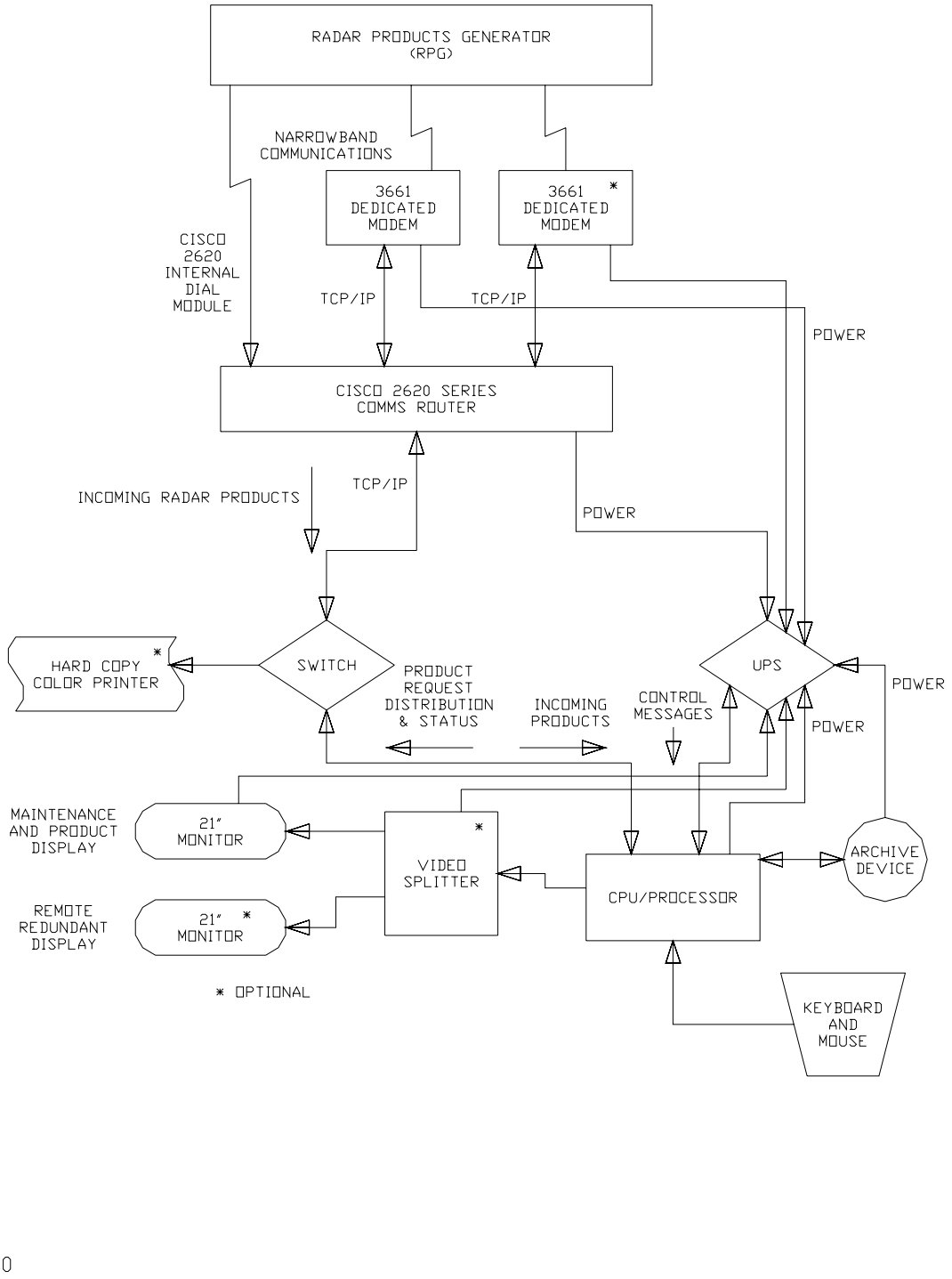


Figure 2-1. Small OPUP Isolated Based Circuit Diagram

Referring to Figure 2-1, all incoming dedicated circuits are routed to each Small OPUP site via a designated communication circuit demarc box. Also, all incoming dial circuits will use available TELCO circuits. Each circuit is then routed to two input/output jacks (RJ-45 for dedicated and RJ-11 for dial) which are installed adjacent to each OPUP installation site. From the adjacent input/output jacks, each incoming dedicated circuit(s) are routed (via CAT5 cable) from to the Lease Line port within the External Dedicated Modem(s) UD86A6/A13. Dial circuits are routed from the input/output jack to the RJ-11 TELCO port, position 7, of the Communication Router UD86A8 dial module UD86A8A1A1. Dedicated circuit data enters the Communication Router UD86A8 via a DTE cable from the external dedicated modem through the WAN Interface Serial 0 port UD86A8A1W0. All outgoing data leaves the communication router through the 10/100 Ethernet 0/0 port and enters the Switch UD86A5 port 1. The data then leaves the switch through port 2 and enters the rear panel of the Server UD86A2 twisted pair/ethernet network port.

If a non-isolated configuration is installed, one extra circuit/CAT5 cable will be required in order to connect the Small OPUP LAN Switch UD86A5 to the site's LAN Network or Intra-LAN Network DMZ Switch.

2.2.2.3 OPUP Group Equipment. Table 2-2 lists each OPUP equipment group by reference designation.

Table 2-2. Major OPUP Group Reference Designations

Reference Designation	Nomenclature/Common Name	Remarks
UD80	OPUP Large Server/Cabinet	Includes a two-bay cabinet designated as Communication and Processor cabinet.
UD80	OPUP Medium Server/Cabinet	Includes a two-bay cabinet designated as Communication and Processor cabinet.
UD86	OPUP Small Server	Includes server (CPU/processor), monitor, communication, and peripheral equipment in a desktop format.

2.2.2.4 Leading Particulars. The following tables list the leading particulars associated with equipment used by Small OPUP Equipment Group UD86:

- OPUP Group Physical Dimensions - Table 2-3
- OPUP Group Power Requirements - Table 2-4
- OPUP Capability and Characteristics - Table 2-5

Table 2-3. OPUP Group Physical Dimensions

Equipment Nomenclature	Height (Inches)	Width (Inches)	Depth (Inches)	Weight (Pounds)
Monitor UD86A1	20	20	21	68
Server UD86A2*	4.6	17.5	18.3	34
Keyboard USB UD86A3	1	13	8	<1
Mouse USB UD86A4	-	-	-	-
Switch UD86A5	1.1	6.2	4.1	1
External Dedicated Modem UD86A6	2.5	6.7	12	3
Archive IV Device UD86A7	2.25	7.1	12.1	6
Communication Router UD86A8	1.7	17.5	12	11
Video Splitter UD86A9**	1.2	6	3	<1
UPS UD86A10	8.5	6.7	17.3	42
Monitor UD86A11**	20	20	21	68
Printer UD86A12**	15.3	17	23.5	79
External Dedicated Modem UD86A13**	2.5	6.7	12	3

* Desktop design for best ergonomic placement/max footprint dimensions

** Optional Equipment

Table 2-4. OPUP Group Power Requirements

Equipment Nomenclature	Voltage (Vac)	Hertz	Phase	Power (Watts)
Monitor UD86A1	120	60	1	103.05
Server UD86A2*	120	60	1	76.95
Keyboard USB UD86A3*	N/A	N/A	N/A	N/A
Mouse USB UD86A4*	N/A	N/A	N/A	N/A
Switch UD86A5	7.5Vdc	60	1	6.75
External Dedicated Modem UD86A6	120	60	1	2.25
Archive IV Device UD86A7	120	60	1	6.5
Communication Router UD86A8	120	60	1	32.85
Video Splitter UD86A9**	9.0Vdc	60	1	2.75
UPS UD86A10	120	60	1	670
Monitor UD86A11**	120	60	1	103.05
Printer UD86A12**	120	60	1	175
External Dedicated Modem UD86A13**	120	60	1	2.25
* Desktop design for best ergonomic placement/max footprint dimensions ** Optional Equipment				

Table 2-5. OPUP Group Capability and Characteristics

Parameter/Feature	Capability/Characteristic
Monitor UD86A1/A11*	Display features: Screen resolution of .24 dot pitch, maximum resolution of 2048 X 1536 at 85 MHz, display dimensions are 19.6 X 19.2. Utilizes internal adjustable display settings called On Screen Display (OSD) Menu.

Table 2-5. OPUP Group Capability and Characteristics - Continued

Parameter/Feature	Capability/Characteristic
Server UD86A2	Desktop Server (CPU/Processor), one 550 MHz UltraSparc-IIii or IIie CPU, 256 KB On-Chip L2 Cache, 1 GB DIMM Memory, two 40 GB 7200 RPM hard drives, standard internal CD player unit, floppy drive/controller unit, 10/100 Mbps Ethernet card, two IEEE 1394 ports, and two USB ports. Motherboard incorporates one "On-Board" 24-bit Sun PGX64 2-D graphic card for video output.
Switch UD86A5	10/100 Mbps, five port, self-sensing smart switch functionality. (Requires seperate 7.5 VDC power supply)
External Dedicated Modem UD86A6/A13*	Motorola 3261 CODEX external fast modem model. Contains 4-wire lease line port, 14,400 baud transmission rate, and provides LCD display for internal menu adaptable parameters.
Archive IV Device UD86A7	External SCSI CD-R/RW recordable unit with up to 40 write, 12 re-write, and 40 read. Can use high/low speed CD-R/RW 650/700 MB disks. Utilizes built in power supply. Selectable SCSI ID switch.
Communication Router UD86A8	Provides up to 4 slots for combination of analog dial modules, Ethernet, IEEE, TCP/IP routing capability between modems, LAN switch, and CPU/Processor. Utilizes 32 MB SDRAM, 16 MB Flash RAM, 100 MHz RISC Architecture and one internal 8 dial module (NM-8AM).
Video Splitter UD86A9*	One video input and 4 video output display splitter. (Requires separate 9 VDC power supply.)
UPS UD86A10	Provides backup power capability. Has eight three-pronged outlets (NEMA 5-15R), two sealed GEL batteries (depleted lead acid based), and 459 joule surge protection. Floor standing footprint format model.
Printer UD86A12*	High performance, USB/parallel interface, 64 MB RAM, TCP/IP/Ethernet ready, wax transfer technology, laser color printer.
Operating System (Base Server OS)	32 bit Open System Architecture. Provides multi-tasking/multi-user/multi-environment software display system.
Application Software (Incorporated within the Server OS)	Displays WSR-88D product and message data.
* Optional Equipment	

2.2.3 Hardware Equipment Description.

This section provides a detailed description of each equipment assembly item associated with the Small OPUP Equipment Group UD86. Figure 2-3 through Figure 2-7 illustrate the assemblies/ sub-assemblies associated with the Small OPUP Equipment Group UD86 configuration. Figure 2-3 illustrates the overall assemblies/sub-assemblies common to each site. Figure 2-4 through Figure 2-7 illustrates the Interconnect Diagram (ICD) associated with each specific OPUP configuration. Discussion of each ICD begins with paragraph 2.2.3.2.

Each specific OPUP configuration is depicted by a "-" dash number. This dash number has been assigned to each specific configuration associated with the Small OPUP Equipment Group UD86 by the ROC Configuration Management (CM) Branch in order to track and ensure control of each OPUP configuration placed in the field. Figure 2-3 illustrates the overall equipment provided with a Small OPUP system. The following information lists the equipment provided in each configuration:

- -301. This configuration designation applies to all sites:
  - Monitor UD86A1
  - Server UD86A2
  - Keyboard USB UD86A3
  - Mouse USB UD86A4
  - Switch UD86A5
  - External Dedicated Modem UD86A6
  - Archive IV Device UD86A7
  - Communication Router UD86A8
  - UPS UD86A10
- -302. This designation includes all equipment provided by -301 and the following:
  - Video Splitter UD86A9
  - Secondary Monitor UD86A11 (Repeats same image as UD86A1)
  - Printer UD86A12
- -303. This designation includes all equipment provided by -301 and the following:
  - Printer UD86A12
- -304. This designation includes all equipment provided by -301 and the following:
  - Printer UD86A12
  - External Dedicated Modem UD86A13

NOTE

All furniture depicted within Figure 2-3 is used for illustration purposes only. Furniture is not included with the Small OPUP Equipment Group UD86.

2.2.3.1 Small OPUP Equipment Group UD86 Discussion. The Small OPUP Equipment Group UD86 contains all of the equipment necessary to communicate and process WSR-88D product and message data for display. The following paragraphs discuss the equipment provided with the Small OPUP Equipment Group UD86.

2.2.3.1.1 Monitor(s) UD86A1/A11. Each Small OPUP configuration provides one primary Monitor UD86A1 to display data. A Secondary Monitor UD86A11 may be used as optional equipment in order to provide a repeat of all images displayed on the primary monitor, in a remote location.

This monitor utilizes multiscan FD Trinitron color technology with a flat aperture grille screen that has approximately 19.6 inch viewable area. The minimum resolution of this monitor is 1152 by 990 at 66 MHz and up to 2048 by 1536 at 85 MHz (default). The recommended optimal screen resolution for both monitors is 1280 by 1024. If a secondary monitor is used, both the primary and secondary monitors will be connected through a Video Splitter UD86A9.

2.2.3.1.2 Server UD86A2. The Small OPUP server is comprised of a COTS desktop computer system. The server uses a single 550 MHz (or greater) CPU with 256 Kbyte L2 Cache, 1GB DIMM Memory, and two internal 40 GB, 7200 RPM EIDE hard drives. The system's motherboard houses an "on-board" video processing chip set that supplies the video output to the monitor(s). The two hard drives supplied with the system are used as a primary and secondary drive. The primary hard drive houses the overall OPUP Server OS and Operational Applications GUI Suite. The second hard drive stores all WSR-88D product and message data as they are received, processed, and sent to and from the OPUP Server OS.

2.2.3.1.3 Keyboard UD86A3/Mouse UD86A4. Each Small OPUP will be supplied with a Sun Microsystems version Universal Serial Bus (USB) type keyboard and mouse. The keyboard consists of a type "6", 101 AT "any key" keyboard. The mouse is configured as a three button position type mouse pointer. The input cables for both the keyboard and mouse are connected to the CPU rear panel USB ports. Figure 2-2 depicts an example of a USB type connector.

Figure 2-2. USB Connector

2.2.3.1.4 Switch UD86A5. The switch provides Fast Ethernet, 10/100 Mbs inter-communication data routing capability between the OPUP server and the communication router. The switch is also used to provide Post Script network printer connectivity. The switch has up to 5 individual input/output ports which auto select between 10 or 100 Mbps transmisstion rate. Each port is configured with CAT5 RJ-45 type jack slots and has a seperate power supply adapter with no user serviceable parts.

2.2.3.1.5 External Dedicated Modem(s) UD86A6/A13. The external dedicated modem is used by the Small OPUP to ingest TCP/IP dedicated circuit data and route it to the communication router. Once the circuit data is routed to the communication router the data is then ported to the OPUP server OS to be processed for display. Any messages or status information required for transmission to a dedicated RPG will then in turn be transmitted back through the communication router, external modem, and associated dedicated circuits. The modem has two associated cables. One cable (CAT5/RJ-45) is connected from the circuit point of ingest (an adjacent RJ-45 input/output jack) to the 4-wire lease line input of the modem. The second cable (RS-232MT 25 pin (DTE) to 60 pin) will then be connected from the rear of the modem to the Serial 0/1 connector located near the rear top of the communication router. Each site will be provided with one External Dedicated Modem UD86A6. Sites designated as a -304 configuration will have one additional external dedicated modem installed in order to facilitate dedicated communications with one additional RPG of interest.

NOTES

All dial communications are handled by the internal communication router dial modules. Refer to paragraph 2.2.3.1.7 for further information.

The external dedicated modem has built-in test capability and user selectable Liquid Crystal Display (LCD) menus. Indicators on the front panel of the modem includes Receive Data (RD), Transmit Data (TD), Carrier Detect (CD), Data Terminal Ready (TR), Remote Control/Network Control (RC/NC), Ring Indicator/Off-Hook (RI/OH), Modem A-Modem B selected (A/B) where applicable, and Alarm or Test in Progress (ALM). These indicators can assist each maintainer with troubleshooting communication circuits and are covered in detail in Chapter 6, Maintenance.

2.2.3.1.6 Archive IV Device UD86A7. A recording device is required in order to backup and store Archive Level IV WSR-88D product and message data designated by the operators for data archival. The recording device used for this purpose will be a 40X record, 12X re-write, and 40X read (40/12/40) external CD-R/W recorder/player. This unit can utilize either CD Recordable (CD-R) write once or CD Recordable Write (CD-RW) write many times type disks. The recording device can write to CD-R disk media up to 40X speed and high-speed CD-RW disk media up to 12X speed and read data at a speed of 40X.

Data located on CD-RW disks may be erased as many times as desired; however, individual CD-RW disk performance in terms of data storage and playback decreases with each erase procedure. It is recommended that data be erased no more than 10 times per disk in order to ensure data stor-

age reliability. Data located on CD-R disks cannot be erased. In addition, data can only be written to these disks once. Once data is written to either a CD-R/CD-RW disk using the archive device, additional data cannot be appended to them.

2.2.3.1.7 Communication Router UD86A8. All dedicated and dial communications associated with the Small OPUP Equipment Group UD86 will require the use of a communication router to accept and transfer incoming and outgoing WSR-88D product and message data to/from an RPG of interest. This router provides the capability to ingest TCP/IP protocol transmission data between the external dedicated modem and OPUP Server OS. Each dedicated and dial port are set to transfer data at 14,400 bits per second (14.4 Kbps). All communication router configurations are set during each initial software installation. The communication router does not require any re-configuration procedures unless there has been an equipment repair/replacement or configuration change.

2.2.3.1.8 Internal Dial Module UD86A8A1A1. The communication router includes one internal 8-port micro communication dial module to provide all dial circuit connectivity. This module is located near the rear left slot of the communication router and has eight RJ-11 connector ports labeled starting from the rear left, 7 through 0. Each Small OPUP configuration is setup initially to access dial port 7 first. If additional dial lines are installed, the OPUP OS will access dial port 7 first, then 6 second, and etc.

2.2.3.1.9 Video Splitter UD86A9. The Small OPUP Equipment Group UD86 provides selected sites with the ability to utilize a secondary Monitor UD86A11 in order to repeat the image displayed on the primary Monitor UD86A1 in a remote location. If a secondary monitor is used, a 4-port video splitter, video input/output cable, and separate DC power supply adapter will be required. The video splitter has one video input port for connection to the rear panel of the Server UD86A2. The first output port of the video splitter is used for the primary monitor and the second output video port is used with the second monitor. The video splitter is self-contained, requires a 9 VDC adapter, and has no user serviceable parts.

2.2.3.1.10 Uninterruptible Power Supply (UPS) UD86A10. The Small OPUP Equipment Group UD86 provides an uninterruptible power supply in order to ensure that each configuration is protected from power outages and spikes. The UPS provides eight conditioned AC power outlets with 1000 Volt Amps or 670 Watts of electrical power with a nominal 120 VAC output. The run time when loss of power is detected is 20.6 minutes (335 Watts) at half load and 6.1 minutes (670 Watts) at full load.

NOTES

The OPUP equipment layout was designed using a space balanced and power loading approach. The UPS provided with the Small OPUP Equipment Group UD86 is to be used with OPUP equipment only. Care must be taken to ensure that each piece of Small OPUP equipment and designated external peripherals are connected in accordance with the appropriate system configuration (-301 through -304). Overloading the UPS may shorten the unit's life span or cause it to fail.

The only OPUP equipment that will not be connected to the UPS are the secondary Monitor UD86A11 and the Printer UD86A12. Due to space and power limitations, these systems require site utility power.

The Small OPUP uses an UPS to provide adequate protection against brownouts, blackouts, sags, and surges in power reaching the associated equipment. The UPS has the ability to filter out dirty facility power and small utility line fluctuations, isolate connected electrical equipment from large power disturbances (power fluctuations) that can cause software fluctuations, resets, and corruptions associated with these occurrences. For monitoring purposes, the UPS is connected via a serial cable from the rear of the UPS unit to the serial input port on the OPUP server rear panel.

The UPS unit includes power monitoring software that provides power outage and system interruption monitoring capability. This software, called PowerChute, is incorporated into the OPUP Server OS which runs in the background while the OPUP Server OS is operating. The PowerChute OS does not come with a display GUI. When a loss of power is detected, the software is designed to switch the UPS to battery backup power. The PowerChute OS will then operate the UPS at the allotted rate of backup power until 30 seconds are left. When 30 seconds are left, the PowerChute OS will send a signal to the OPUP Server OS which orders it to perform a graceful server OS shutdown procedure. When the OPUP Server OS shutdown sequence is complete, the OPUP server will then be in the power off position.

NOTE

The PowerChute software suite can only interact with the OPUP Server OS and only has the capability to shutdown the OPUP server. All external equipment connected to the UPS will continue to run until the UPS battery runs down. It is advised, that in the event of a power loss, all external OPUP equipment be powered down immediately per procedures outlined in paragraph 5.2.2.2.

The UPS uses two connected GEL batteries for internal backup (located behind the front cover). Spade connectors are used to connect the leads to the batteries. Removal and replacement of the battery is covered in detail in paragraph 6.5.16.

2.2.3.1.11 Printer UD86A12. The Small OPUP Equipment Group UD86 provides the capability to connect and configure a Post Script (PS) capable color printer in order to provide color printouts of WSR-88D products, messages, and security log data. The default printer designated for this use is a network interface Post Script wax transfer color printer. The printer is a high performance printer which can print color images up to 10 pages per minute (ppm) in full fast color or 16 ppm in plain black and white. The printer has the following specifications:

- Employs four solid color wax transfer ink sticks
- Produces up to 1200 dpi resolution in “Photo Mode”
- 64 Mbyte RAM

- 300 MHz processor chip
- Bi-Directional Parallel, USB modes
- 1200 sheet capacity paper tray
- Special paper not required
- Can use Xerox transparencies

The printer does not use toner technology. Instead, wax transfer color chalk inserts are used to transfer each image to paper. Each wax transfer color chalk (one for black, magenta, cyan, and yellow) are inserted through the top of the unit into specially shape-coded slots. Each color chalk is considered be a consumable item. Part numbers associated with each color chalk are provided in Chapter 7, Illustrated Parts Breakdown (IPB). Setup, configuration, and maintenance guidance is covered in detail in Chapter 6, Maintenance.

2.2.3.1.12 Printer Setup/Connectivity Overview. Each printer device for use with the OPUP Server OS is setup and connected via the `OPUP Manager Main Menu`, `OPUP Printer Menu`. The `OPUP Printer Menu` provides a setup interface and utilities that are required in order to add or remove any printer device to/from the OPUP server. Operators will be able to print WSR-88D product and message data via the OPUP Product Display Graphic User's Interface (PDGUI). OPUP Security Log information may be printed using the `OPUP Manager Main Menu`, `Security Logs Menu`. When a product, message, or log is selected for printing, the data is sent (spooled) to a designated directory within the OPUP Server OS print directory. The data is then sent to the printer. The printer is physically connected to the OPUP server using a CAT5 cable between the printer's network ethernet port and a port of Switch UD86A5. Discussion of the menu items found within the `OPUP Printer Menu` begins with paragraph 3.3.3.4.11.

2.2.3.2 Configuration Drawings. Figure 2-4 through Figure 2-7 are provided as support for each equipment configuration described in previous paragraphs and to provide a visual illustration of each power and communication cable associated with each Small OPUP Equipment Group UD86 configuration described in the following paragraphs.

2.2.3.2.1 Small OPUP Configurations (All Sites). The overall equipment associated with each Small OPUP configuration is illustrated in Figure 2-3. As discussed in paragraph 2.2.3, Hardware Equipment Description, each Small OPUP configuration is denoted by using a "-" dash number (i.e. -301 through -304). The following paragraphs describe each power and communication cable presented in Figure 2-4 through Figure 2-7.

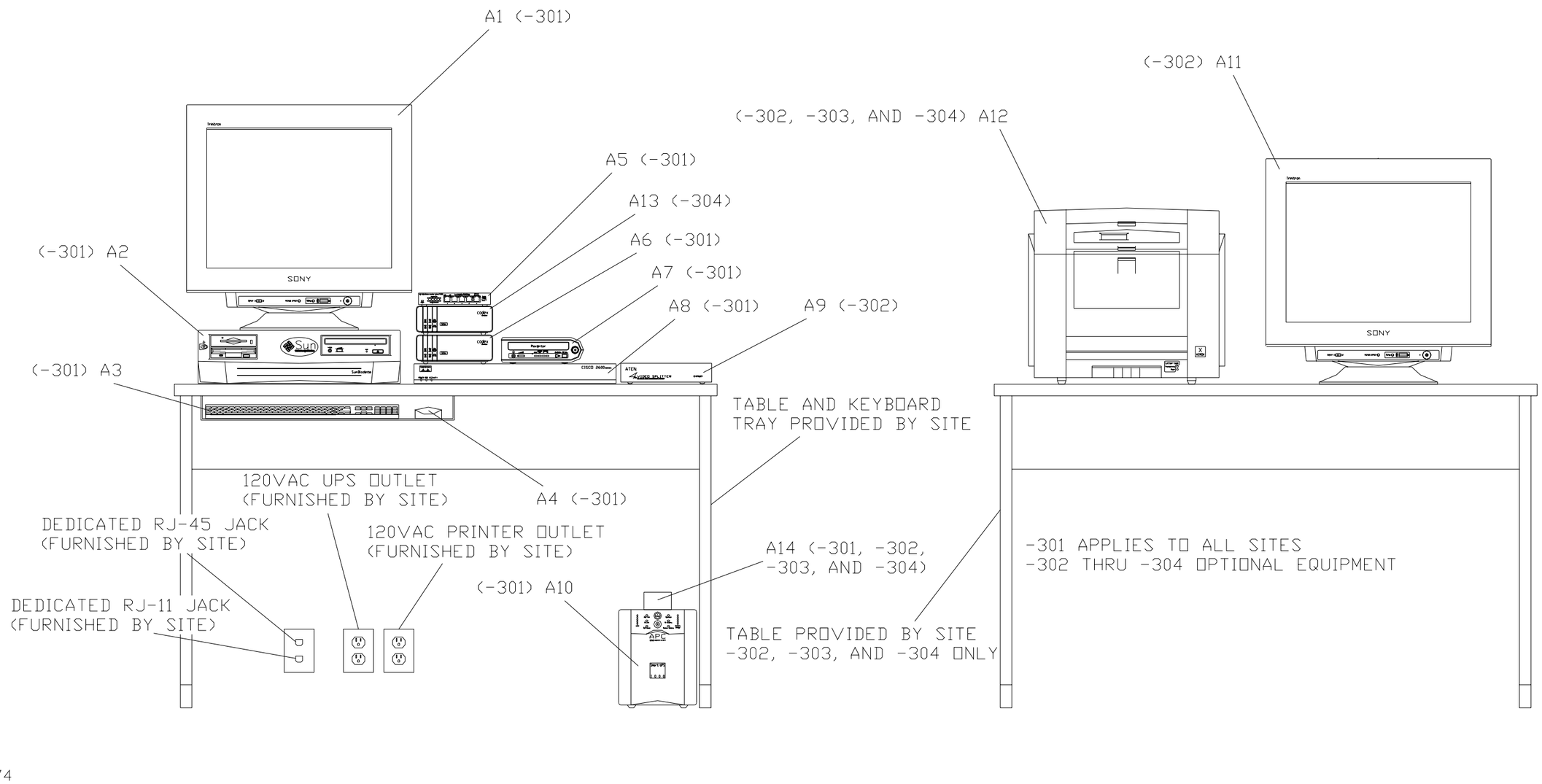


Figure 2-3. Small OPUP Equipment Group UD86

2.2.3.2.2 Small OPUP Interconnect Diagram -301 Configuration. The following paragraphs describe each major power and communication circuit distribution path illustrated within Figure 2-4. (Refer to the appropriate paragraph of Section 2.3, Controls and Indicators, for the exact location of each control and indicator described below.)

2.2.3.2.2.1 AC Power Supply. All AC power is supplied via site utility electrical power. Each site must have a minimum of one single phase, 120 Volt, 60 Hz circuit standard UL plug outlet. The Small OPUP Equipment Group UD86 hardware should be connected to the site's utility power outlet via the UPS UD86A10 assembly supplied with the system. A Power Strip UD86A14 will be used (noted below) with the Switch UD86A5 due to the size of the DC adapter plug. The power strip will be connected to any available AC plug on the UPS. The UPS will provide AC line conditioning and backup power using designated AC cables connected in the following configuration:

- Cable 86W50: Used with the Monitor UD86A1. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the monitor.
- Cable 86W51: Used with the Server UD86A2. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the server.
- Cable 86W52: Used with the Switch UD86A5. Requires one 120 VAC-to-7.5 VDC conversion transformer type plug. P1 is connected to the Power Strip UD86A14. P2 is connected to the 7.5 VDC jack of the switch.
- Cable 86W53: Used with the External Dedicated Modem UD86A6. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the external dedicated modem.
- Cable 86W54: Used with the Archive IV Device UD86A7. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the archive device.
- Cable 86W55: Used with the Communication Router UD86A8. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the communication router.

2.2.3.2.2.2 Peripheral/Telco Cables. Each OPUP peripheral requires specific input/output cables in order to transmit data. Each peripheral device is connected as follows:

- Cable 86W1: Used with the External Dedicated Modem UD86A6. This is a 60-pin to 25-pin DTE type cable. P1 is connected to the Communication Router UD86A8A1W0 Serial 0 port. P2 is connected to the DTE port of the external dedicated modem.
- Cable 86W2: Used with the Display Monitor UD86A1. P1 is connected to the input/output video port of the Server UD86A2. P2 is connected to the SCREEN-1 port of the monitor.

- Cable 86W3: Used with the Archive IV Device UD86A7. P1 is connected to the PCI-1 port of the Server UD86A2. P2 is connected to the SCSI-IN port of the archive device.

- Cable 86W4: Used with the UPS UD86A10. P1 is connected to the SERIAL port of the Server UD86A2. P2 is connected to the serial port of the UPS.

- Cable 86W10: Used with the Communication Router UD86A8. Utilizes a CAT5 RJ-11 type cable. P1 is connected to the Communication Router Internal Modem Network Module UD86A8A1A1 port 7. P2 is connected to a RJ-11 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W11: Used with the External Dedicated Modem UD86A6. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the External Dedicated Modem UD86A6 LEASE LINE port. P2 is connected to the RJ-45 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W12: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Communication Router UD86A8 10/100 ETHERNET 0/0 port. P2 is connected to the switch port 1.

- Cable 86W13: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Server UD86A2 < ... > NETWORK port. P2 is connected to the switch port 2.

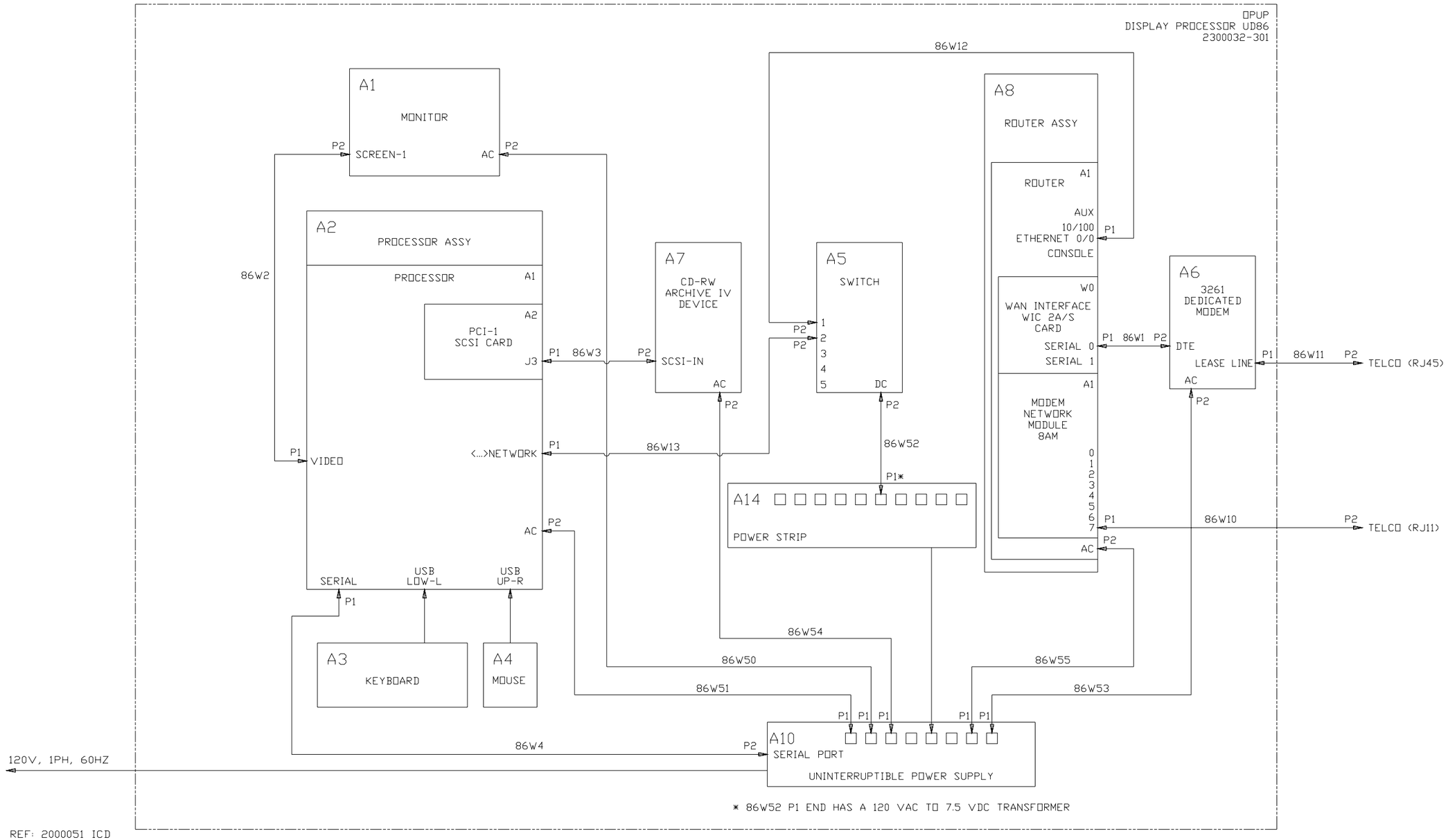


Figure 2-4. Small OPUP ICD -301 Configuration

2.2.3.2.3 Small OPUP Interconnect Diagram -302 Configuration. The following paragraphs describe each major power and communication circuit distribution path illustrated within Figure 2-5. (Refer to the appropriate paragraph of Section 2.3, Controls and Indicators, for the exact location of each control and indicator described below.)

2.2.3.2.3.1 AC Power Supply. All AC power is supplied via site utility electrical power. Each site must have a minimum of one single phase, 120 Volt, 60 Hz circuit standard UL plug outlet. The Small OPUP Equipment Group UD86 hardware should be connected to the site's utility power outlet via the UPS UD86A10 assembly supplied with the system. A Power Strip UD86A14 will be used (noted below) with the Switch UD86A5 due to the size of the DC adapter plug. The power strip will be connected to any available AC plug on the UPS. The UPS will provide AC line conditioning and backup power using designated AC cables connected in the following configuration:

- Cable 86W50: Used with the primary Monitor UD86A1. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the monitor.
- Cable 86W51: Used with the Server UD86A2. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the server.
- Cable 86W52: Used with the Switch UD86A5. Requires a 120 VAC-to-7.5 VDC conversion transformer type plug. P1 is connected to the Power Strip UD86A14. P2 is connected to the 7.5 VDC jack of the switch.
- Cable 86W53: Used with the External Dedicated Modem UD86A6. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the external dedicated modem.
- Cable 86W54: Used with the Archive IV Device UD86A7. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the archive device.
- Cable 86W55: Used with the Communication Router UD86A8. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the communication router.
- Cable 86W56: Used with the Video Splitter UD86A9. Requires a 120 VAC-to-9 VDC conversion transformer type plug. P1 is connected to the Power Strip UD86A14. P2 is connected to the 9 VDC jack of the video splitter.
- Cable 86W57: Used with the secondary Monitor UD86A11. P1 is connected to any available AC power source where the secondary monitor is used. A UPS will not be supplied with this assembly. P2 is connected to the AC input of the secondary monitor.
- Cable 86W58: Used with the Printer UD86A12. P1 is connected to any available AC power source where the printer is used. A UPS will not be supplied with this assembly. P2 is connected to the AC input of the printer.

2.2.3.2.3.2 Peripheral/Telco Cables. Each OPUP peripheral requires specific input/output cables in order to transmit data. Each peripheral device is connected as follows:

- Cable 86W1: Used with the External Dedicated Modem UD86A6. This is a 60-pin to 25-pin DTE type cable. P1 is connected to the Communication Router UD86A8A1W0 Serial 0 port. P2 is connected to the DTE port of the external dedicated modem.

- Cable 86W3: Used with the Archive IV Device UD86A7. P1 is connected to the PCI-1 port of the Server UD86A2. P2 is connected to the SCSI-IN port of the archive device.

- Cable 86W4: Used with the UPS UD86A10. P1 is connected to the SERIAL port of the Server UD86A2. P2 is connected to the serial port of the UPS.

- Cable 86W5: Used with the Video Splitter UD86A9. P1 is connected to the video port of the Server UD86A2. P2 is connected to VIDEO-IN port of the video splitter.

- Cable 86W6: Used with the Video Splitter UD86A9. P1 is connected to the VIDEO OUT-1 port of the video splitter. P2 is connected to the SCREEN-1 video port of the primary Monitor UD86A1.

- Cable 86W7: Used with the Video Splitter UD86A9. P1 is connected to the VIDEO OUT-2 port of the video splitter. P2 is connected to the SCREEN-1 video port of the secondary Monitor UD86A11.

- Cable 86W10: Used with the Communication Router UD86A8. Utilizes a CAT5 RJ-11 type cable. P1 is connected to the Communication Router Internal Modem Network Module UD86A8A1A1 port 7. P2 is connected to the RJ-11 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W11: Used with the External Dedicated Modem UD86A6. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the External Dedicated Modem UD86A6 LEASE LINE port. P2 is connected to the RJ-45 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W12: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Communication Router UD86A8 10/100 ETHERNET 0/0 port. P2 is connected to the switch port 1.

- Cable 86W13: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Server UD86A2 < ... > NETWORK port. P2 is connected to the switch port 2.

- Cable 86W14: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Printer UD86A12 ETHERNET port. P2 is connected to the switch port 3.

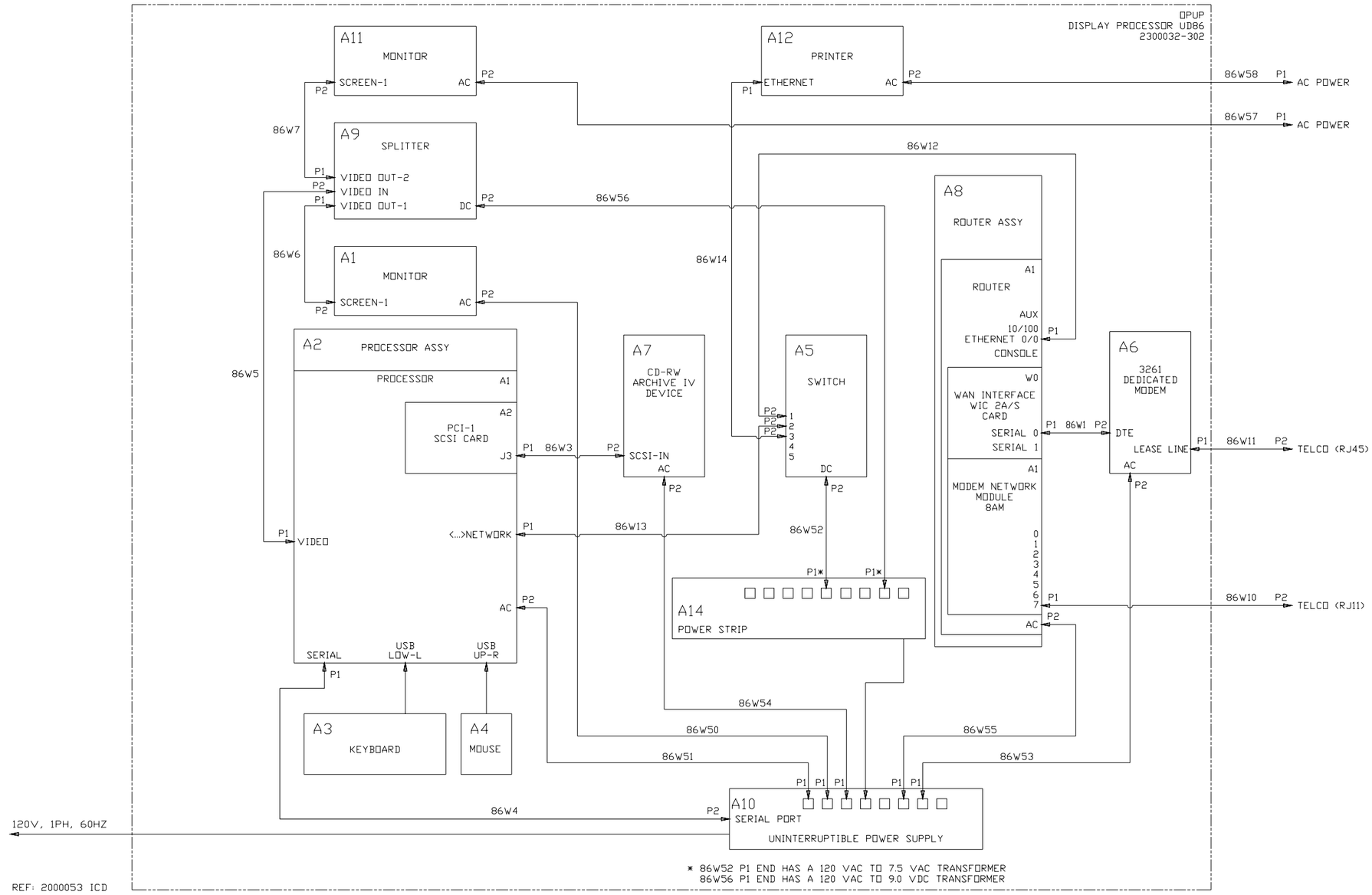


Figure 2-5 Small OPUP ICD -302 Configuration

2.2.3.2.4 Small OPUP Interconnect Diagram -303 Configuration. The following paragraphs describe each major power and communication circuit distribution path illustrated within Figure 2-6. (Refer to the appropriate paragraph of Section 2.3, Controls and Indicators, for the exact location of each control and indicator described below.)

2.2.3.2.4.1 AC Power Supply. All AC power is supplied via site utility electrical power. Each site must have a minimum of one single phase, 120 Volt, 60 Hz circuit standard UL plug outlet. The Small OPUP Equipment Group UD86 hardware should be connected to the site's utility power outlet via the UPS UD86A10 assembly supplied with the system. A Power Strip UD86A14 will be used (noted below) with the Switch UD86A5 due to the size of the DC adapter plug. The power strip will be connected to any available AC plug on the UPS. The UPS will provide AC line conditioning and backup power using designated AC cables connected in the following configuration:

- Cable 86W50: Used with the Monitor UD86A1. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the monitor.
- Cable 86W51: Used with the Server UD86A2. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the server.
- Cable 86W52: Used with the Switch UD86A5. Requires a 120 VAC-to-7.5 VDC conversion transformer type plug. P1 is connected to the Power Strip UD86A14. P2 is connected to the 7.5 VDC jack of the switch.
- Cable 86W53: Used with the External Dedicated Modem UD86A6. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the external dedicated modem.
- Cable 86W54: Used with the Archive IV Device UD86A7. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the archive device.
- Cable 86W55: Used with the Communication Router UD86A8. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the communication router.
- Cable 86W58: Used with the Printer UD86A12. P1 is connected to any available AC power source where the printer is used. A UPS will not be supplied with this assembly. P2 is connected to the AC input of the printer.

2.2.3.2.4.2 Peripheral/Telco Cables. Each OPUP peripheral requires specific input/output cables in order to transmit data. Each peripheral device is connected as follows:

- Cable 86W1: Used with the External Dedicated Modem UD86A6. This is a 60-pin to 25-pin DTE type cable. P1 is connected to the Communication Router UD86A8A1W0 Serial 0 port. P2 is connected to the DTE port of the external dedicated modem.

- Cable 86W2: Used with the Monitor UD86A1. P1 is connected to the video port of the Server UD86A2. P2 is connected to the SCREEN-1 port of the monitor.

- Cable 86W3: Used with the Archive IV Device UD86A7. P1 is connected to the PCI-1 port of the Server UD86A2. P2 is connected to the SCSI-IN port of the archive device.

- Cable 86W4: Used with the UPS UD86A10. P1 is connected to the SERIAL port of the Server UD86A2. P2 is connected to the serial port of the UPS.

- Cable 86W10: Used with the Communication Router UD86A8. Utilizes a CAT5 RJ-11 type cable. P1 is connected to the Communication Router Internal Modem Network Module UD86A8A1A1 port 7. P2 is connected to the RJ-11 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W11: Used with the External Dedicated Modem UD86A6. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the External Dedicated Modem LEASE LINE port. P2 is connected to the RJ-45 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W12: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Communication Router UD86A8 10/100 ETHERNET 0/0 port. P2 is connected to the switch port 1.

- Cable 86W13: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Server UD86A2 < ... > NETWORK port. P2 is connected to the switch port 2.

- Cable 86W14: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Printer UD86A12 ETHERNET port. P2 is connected to the switch port 3.

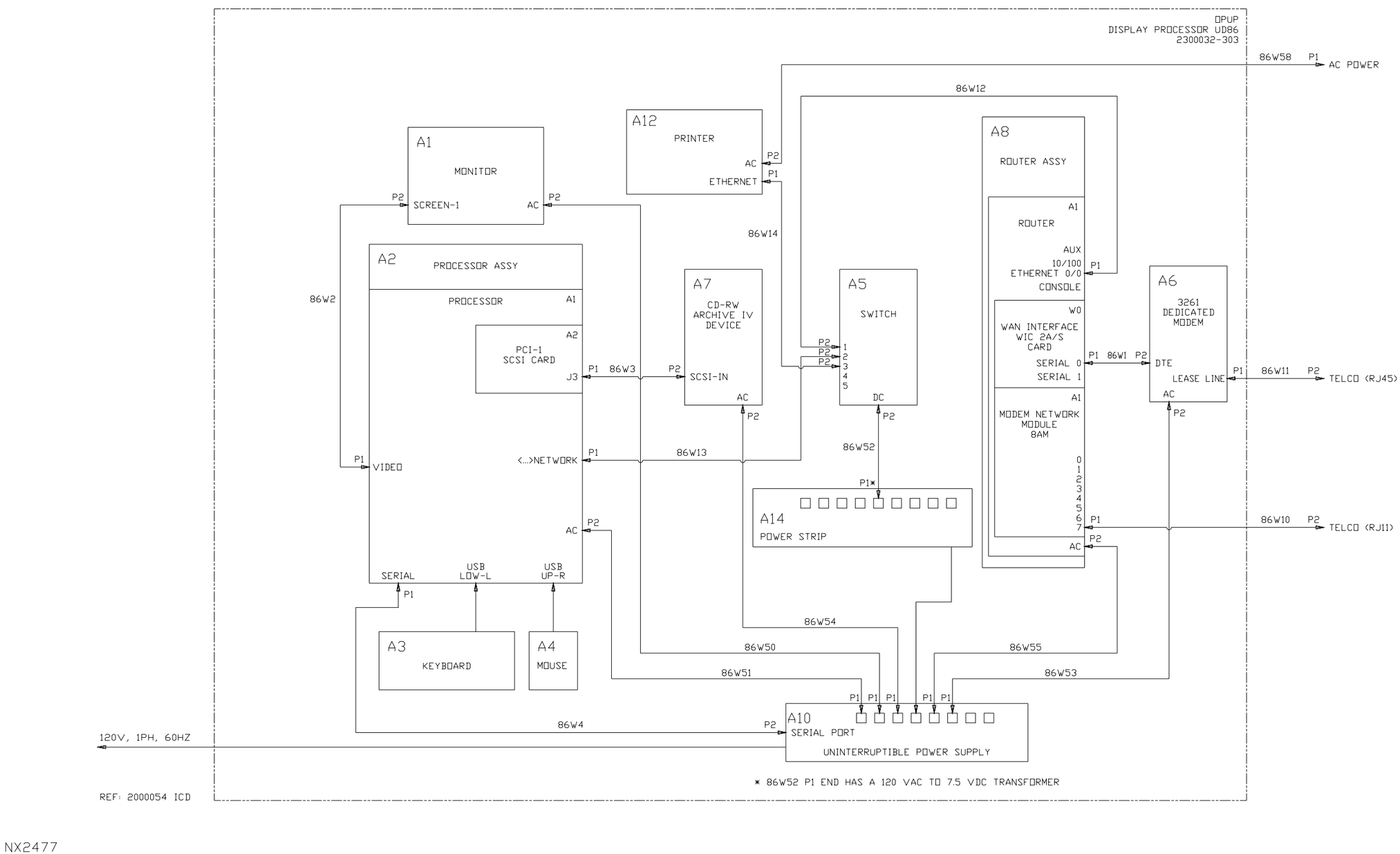


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Figure 2-6 Small OPUP ICD -303 Configuration

2.2.3.2.5 Small OPUP Interconnect Diagram -304 Configuration. The following paragraphs describe each major power and communication circuit distribution path illustrated within Figure 2-7. (Refer to the appropriate paragraph of Section 2.3, Controls and Indicators, for the exact location of each control and indicator described below.)

2.2.3.2.5.1 AC Power Supply. All AC power is supplied via site utility electrical power. Each site must have a minimum of one single phase, 120 Volt, 60 Hz circuit standard UL plug outlet. The Small OPUP Equipment Group UD86 hardware should be connected to the site's utility power outlet via the UPS UD86A10 assembly supplied with the system. A Power Strip UD86A14 will be used (noted below) with the Switch UD86A5 due to the size of the DC adapter plug. The power strip will be connected to any available AC plug on the UPS. The UPS will provide AC line conditioning and backup power using designated AC cables connected in the following configuration:

- Cable 86W50: Used with the Monitor UD86A1. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the monitor.
- Cable 86W51: Used with the Server UD86A2. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the server.
- Cable 86W52: Used with the Switch UD86A5. Requires a 120 VAC-to-7.5 VDC conversion transformer type plug. P1 is connected to the Power Strip UD86A14. P2 is connected to the 7.5 VDC jack of the switch.
- Cable 86W53: Used with the External Dedicated Modem UD86A6. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the external dedicated modem.
- Cable 86W54: Used with the Archive IV Device UD86A7. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the archive device.
- Cable 86W55: Used with the Communication Router UD86A8. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the communication router.
- Cable 86W58: Used with the Printer UD86A12. P1 is connected to any available AC power source where the printer is used. An UPS will not be supplied with this assembly. P2 is connected to the AC input of the printer.
- Cable 86W59: Used with the External Dedicated Modem UD86A13. P1 is connected to any available AC plug outlet of the UPS UD86A10. P2 is connected to the AC input of the external dedicated modem.

2.2.3.2.5.2 Peripheral/Telco Cables. Each OPUP peripheral requires specific input/output cables in order to transmit data. Each peripheral device is connected as follows:

- Cable 86W1: Used with the External Dedicated Modem UD86A6. This is a 60-pin to 25-pin DTE type cable. P1 is connected to the Communication Router UD86A8A1W0 Serial 0 port. P2 is connected to the DTE port of the external dedicated modem.

- Cable 86W2: Used with the Monitor UD86A1. P1 is connected to the video port of the Server UD86A2. P2 is connected to the SCREEN-1 port of the monitor.

- Cable 86W3: Used with the Archive IV Device UD86A7. P1 is connected to the PCI-1 port of the Server UD86A2. P2 is connected to the SCSI-IN port of the archive device.

- Cable 86W4: Used with the UPS UD86A10. P1 is connected to the SERIAL port of the Server UD86A2. P2 is connected to the serial port of the UPS.

- Cable 86W8: Used with the External Dedicated Modem UD86A13. This is a 60-pin to 25-pin DTE type cable. P1 is connected to the Communication Router UD86A8A1W0 Serial 1 port. P2 is connected to the DTE port of the external dedicated modem.

- Cable 86W10: Used with the Communication Router UD86A8. Utilizes a CAT5 RJ-11 type cable. P1 is connected to the Communication Router Internal Network Modem Module UD86A8A1A1 port 7. P2 is connected to the RJ-11 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W11: Used with the External Dedicated Modem UD86A6. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the External Dedicated Modem UD86A6 LEASE LINE port. P2 is connected to the RJ-45 TELCO jack installed adjacent to the Small OPUP.

- Cable 86W12: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Communication Router UD86A8 10/100 ETHERNET 0/0 port. P2 is connected to the switch port 1.

- Cable 86W13: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Server UD86A2 < ... > NETWORK port. P2 is connected to the switch port 2.

- Cable 86W14: Used with the Switch UD86A5. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the Printer UD86A12 ETHERNET port. P2 is connected to the switch port 3.

- Cable 86W15: Used with the External Dedicated Modem UD86A13. Utilizes a CAT5 RJ-45 type cable. P1 is connected to the External Dedicated Modem LEASE LINE port. P2 is connected to the RJ-45 TELCO jack installed adjacent to the Small OPUP.

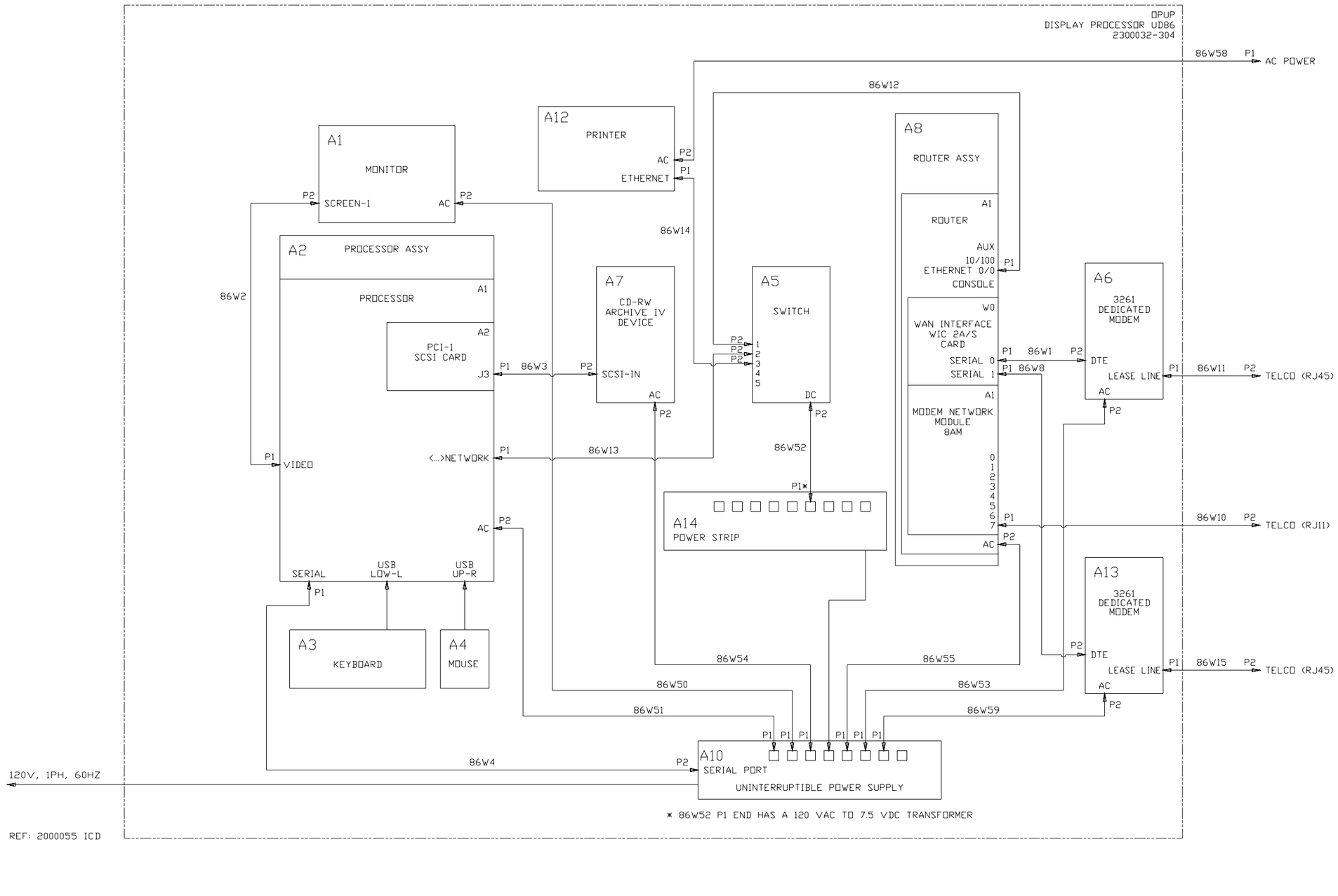

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Figure 2-7. Small OPUP ICD -304 Configuration

Section 2.3. CONTROLS AND INDICATORS

2.3.1 General.

This section will assist each site with the identification of the specific controls and indicators associated with Small OPUP Equipment Group UD86 hardware. The following paragraphs in this section will reference the applicable table and/or associated figure that illustrates each indicator and control feature(s). If a control and/or indicator is not available, it will be stated as “N/A”. Each table will provide the following specific information:

- Figure and Index Number - refers to a certain control/indicator in that figure.
- Name/Type - refers to the actual name and type outlined by standard system documentation for that indicator/control.
- Function - describes the function or purpose of the control/indicator.
- Operating Position/State - describes the operational impact and normal operating position/ state while the system is energized.

2.3.2 Small OPUP Equipment Group UD86.

The following assembly/subassembly controls and indicators will be described:

- Monitor(s) UD86A1/A11
- Server UD86A2
- Keyboard/Mouse USB Set UD86A3/A4
- Switch UD86A5
- External Dedicated Modem(s) UD86A6/A13
- Archive IV Device UD86A7
- Communication Router UD86A8
- Video Splitter UD86A9
- UPS UD86A10
- Printer UD86A12

2.3.2.1 Monitor UD86A1/A11. Refer to Figure 2-8 and Table 2-6 for the location and description of all controls and indicators associated with each Monitor UD86A1/A11 used within the OPUP Hardware Group.

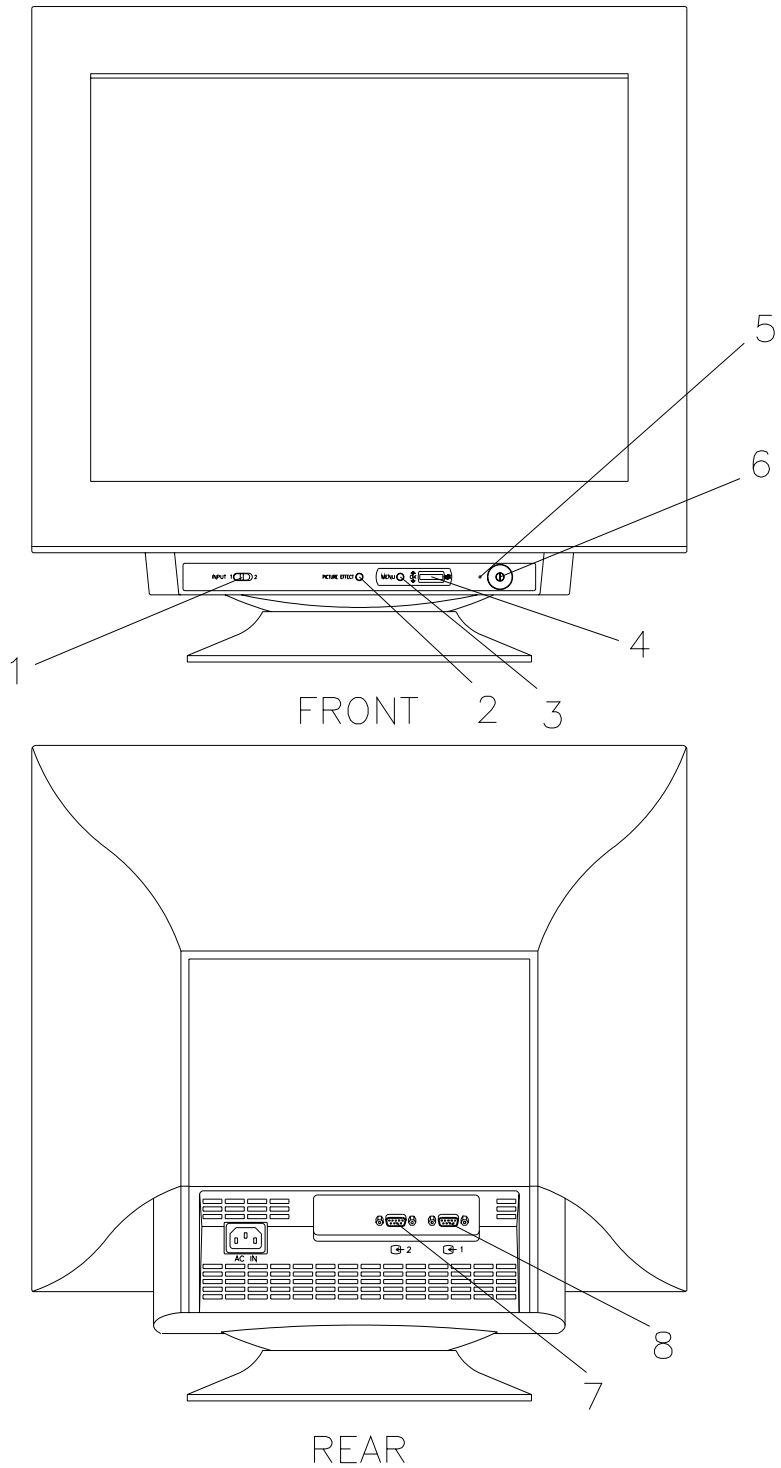

Figure 2-8. Monitor Front/Rear Panel

Table 2-6. Monitor Controls and Indicators

Figure 2-8 Index#	Name	Function	Operating Position/ State
1	Input Switch	Allows video input 1 or 2	Position 1
2	Picture Effect Button	Changes pre-set video effect	Default mode
3	Menu Button	Allows access to On Screen Display (OSD) Menu	Off
4	Control Button	Toggles between OSD Menu and screens.	Center
5	Indicator LED	Displays power indication	On (steady green)
6	Power Switch	Engages/Disengages power	None
7	Input 2 Port	Accepts monitor input	N/A
8	Input 1 Port	Accepts monitor input	Cable Connected

2.3.2.1.1 Monitor Abnormal Indicators. The following controls and indicators are provided by the monitor to display abnormal operations:

- **Power LED**: The power LED will indicate a steady orange if there is either a disruption in the video signal or the server is disrupted (Application Software induced power suspension or OS fault.)

- **Abnormal image display**: Abnormal image displays can result from faulty signal generation, selection of a video input port with no cable connected, no signal generated from the source, or over-adjustment of the On Screen Display (OSD).

2.3.2.2 Server UD86A2. The Server provides specific external markings and labels that assist with the proper identification of the appropriate LED/button selection and cable/port connections. The server case front panel also provides one basic green indicator light used to indicate when power is supplied or data is being accessed. Refer to Figure 2-9 and Table 2-7 for all controls and indicators associated with the Server UD86A2.

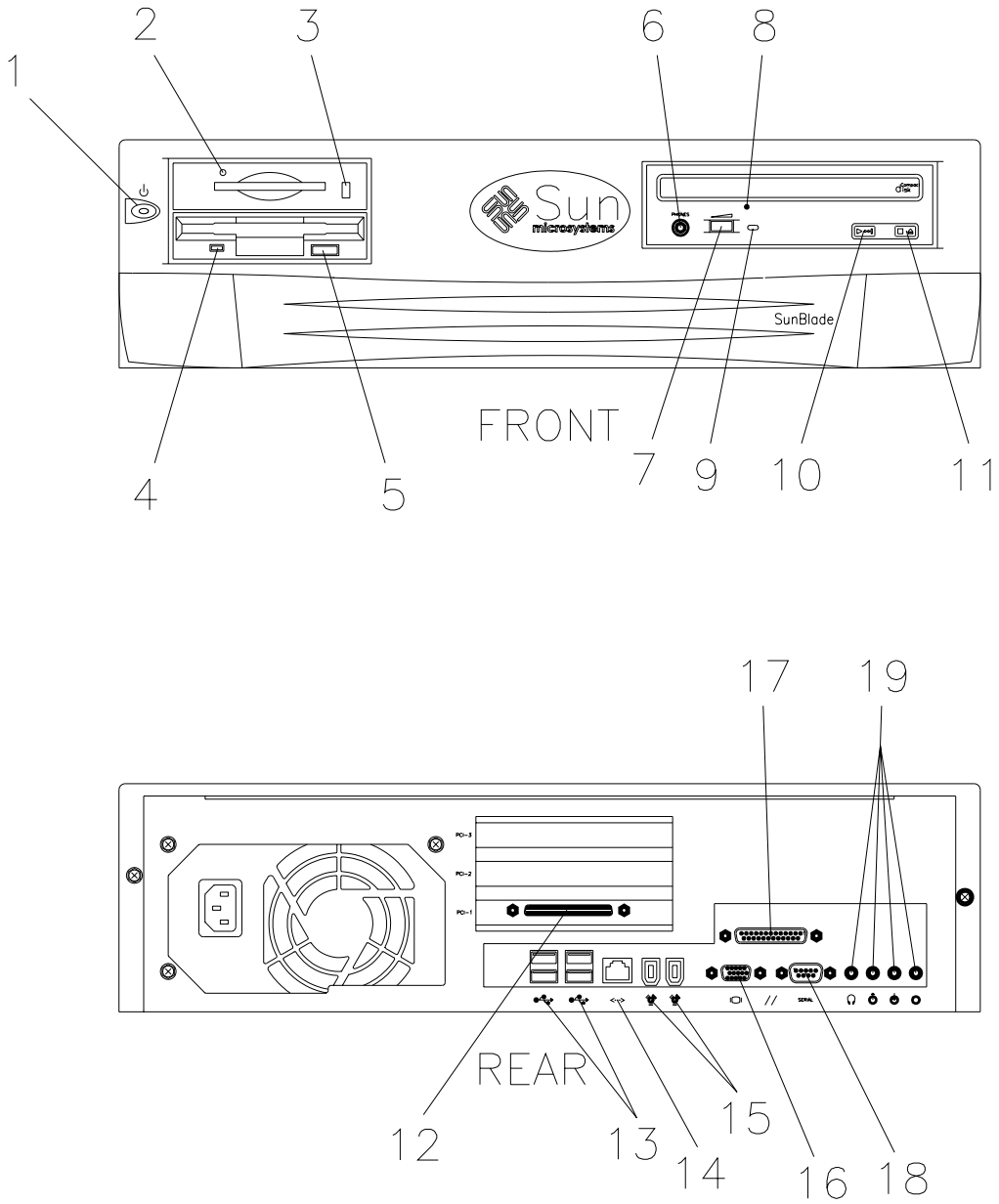

Figure 2-9. OPUP Server Front/Rear Panels

Table 2-7. Server Control and Indicators

Figure 2-9 Index#	Name	Function	Operating Position/ State
1	Main Power Switch	Engages/Disengages power	On
2	Smart Card Status LED	Displays read/write status	*
3	Smart Card Eject Button	Ejects Smart Card	*
4	Floppy Drive Status LED	Displays read/write status	*
5	Eject Button	Ejects Floppy Disk	N/A
6	Headphone Jack	Provides audio	N/A
7	Volume Wheel	Provides CD-ROM Player audio volume adjustment	N/A
8	Eject Pin	Emergency mechanical eject	N/A
9	CD-ROM Status LED	Displays read/write status	On
10	Play-Fast Forward Button	Provides play initiation and forward capability for audio	N/A
11	Stop-Replay Button	Provides stop-termination and replay capability for audio	N/A
12	PCI-1 Connector	SCSI Device Connectivity	Cable connected

* Not used and/or disabled

Table 2-7. Server Control and Indicators - Continued

Figure 2-9 Index#	Name	Function	Operating Position/ State
13	Universal Serial Bus (USB) Port	Four ports. One used for Keyboard and one used for Mouse USB connectivity	Connected (Auto-negotiation with input device when connected)
14	Twisted-Pair Ethernet Port	Communication connectivity	On (Auto-negotiation with communication router and/or LAN Switch when connected)
15	IEEE 1394 (Firewire) Port	Connectivity with special external peripherals	*
16	Video Output Port	Connectivity with monitor	N/A
17	Parallel Connector Port //	Local connectivity with external parallel configured peripherals	*
18	Serial Connector Port	Labeled **SERIAL**. Provides local connectivity with external serial configured peripherals (i.e. UPS or Communication Router input TIP cable)	UPS Serial cable connected
19	Audio Input-Output/ports	Provides speaker left-right, headphone, and microphone connectors	*
* Not used and/or disabled			

2.3.2.2.1 Server Abnormal Indicators. The following controls and indicators are provided by the server to display abnormal operations:

- **Main Server Power LED**: When the server is first powered on it will take approximately 5 to 15 seconds before a "blinking" LED is displayed. It will then indicate a steady green light to indicate normal operation. The LED will display a "blinking" LED again during normal OS shutdown routines. The LED will also indicate a steady orange if the initial OS Power-On-Self-Test (POST) procedure is not successful, a critical OS process fails, an internal peripheral hardware item becomes faulty or fails, or if the OS power suspense parameter is engaged and the system does not recover.

- **Floppy Drive LED**: The floppy drive LED indicator will briefly display blinking green LED light during the server's initial OS POST procedure. It will then remain in the off position if the floppy drive successfully passes the POST procedure. The LED indicator will display steady green if the floppy drive fails.

- **CD-ROM LED**: The CD-ROM drive LED indicator will briefly display blinking green LED light during the server's initial OS POST procedure. It will then remain in the off position if the floppy drive successfully passes the POST procedure. The LED indicator will display steady green if the floppy drive fails.

2.3.2.3 Keyboard/Mouse USB UD86A3/A4. See Figure 2-10 and Table 2-8 for the location and description of all controls and indicators associated with the Keyboard and Mouse set UD86A3/A4.

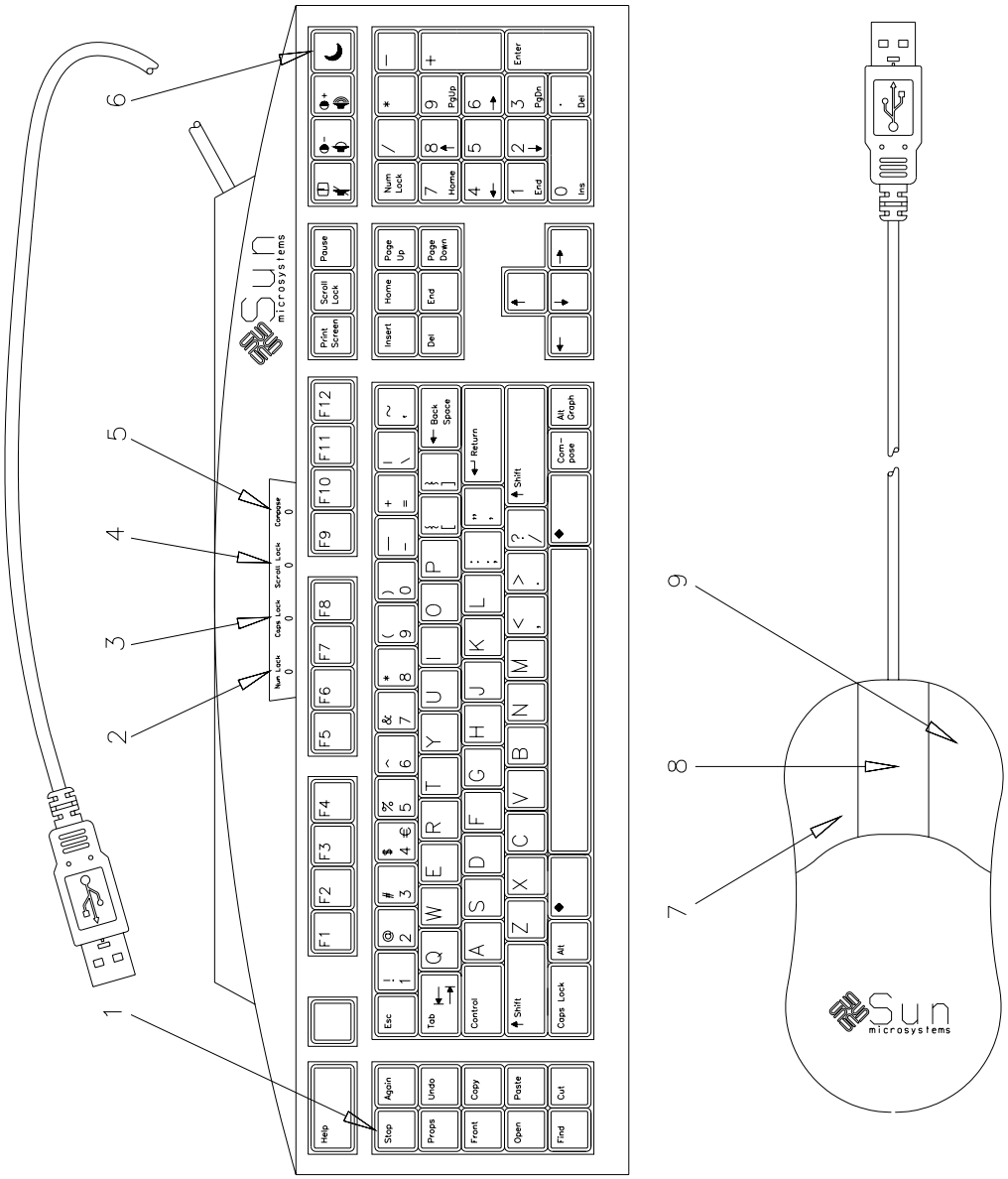

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Figure 2-10. Keyboard and Mouse Set

Table 2-8. Keyboard/Mouse Control and Indicators

Figure 2-10 Index#	Name	Function	Operating Position/ State
1	Stop Key	Used simultaneously with other keys to perform a specific function	N/A
2	Num Lock LED	Enables numeric keypad	On
3	Caps Lock LED	Enables uppercase lock selection	Off
4	Scroll Lock LED	None with OPUP	*
5	Compose LED	None with OPUP	*
6	Power Key	None with OPUP	*
7	Left Mouse Button	Text marking, item selection, and cursor placement	N/A
8	Middle Mouse Button	Paste and pre-determined GUI responses to specific application manipulation	N/A
9	Right Mouse Button	Menu selection within specific GUIs and/or CDE Login screens depending upon mouse placement	N/A
* Not Used			

2.3.2.3.1 Keyboard/Mouse Abnormal Indicators. The following controls and indicators are provided by the keyboard/mouse set to display abnormal operations:

- **Num, Caps, Scroll Locks, and Compose LEDs**: These keys will simultaneously display a blinking green LED during the OPUP OS POST procedure. These keys will display a steady green LED simultaneously during keyboard POST portion of the OS boot system test if a fault has been detected.

2.3.2.4 Switch UD86A5. See Figure 2-11 and Table 2-9 for the location and description of all controls and indicators associated with the Switch UD86A5.

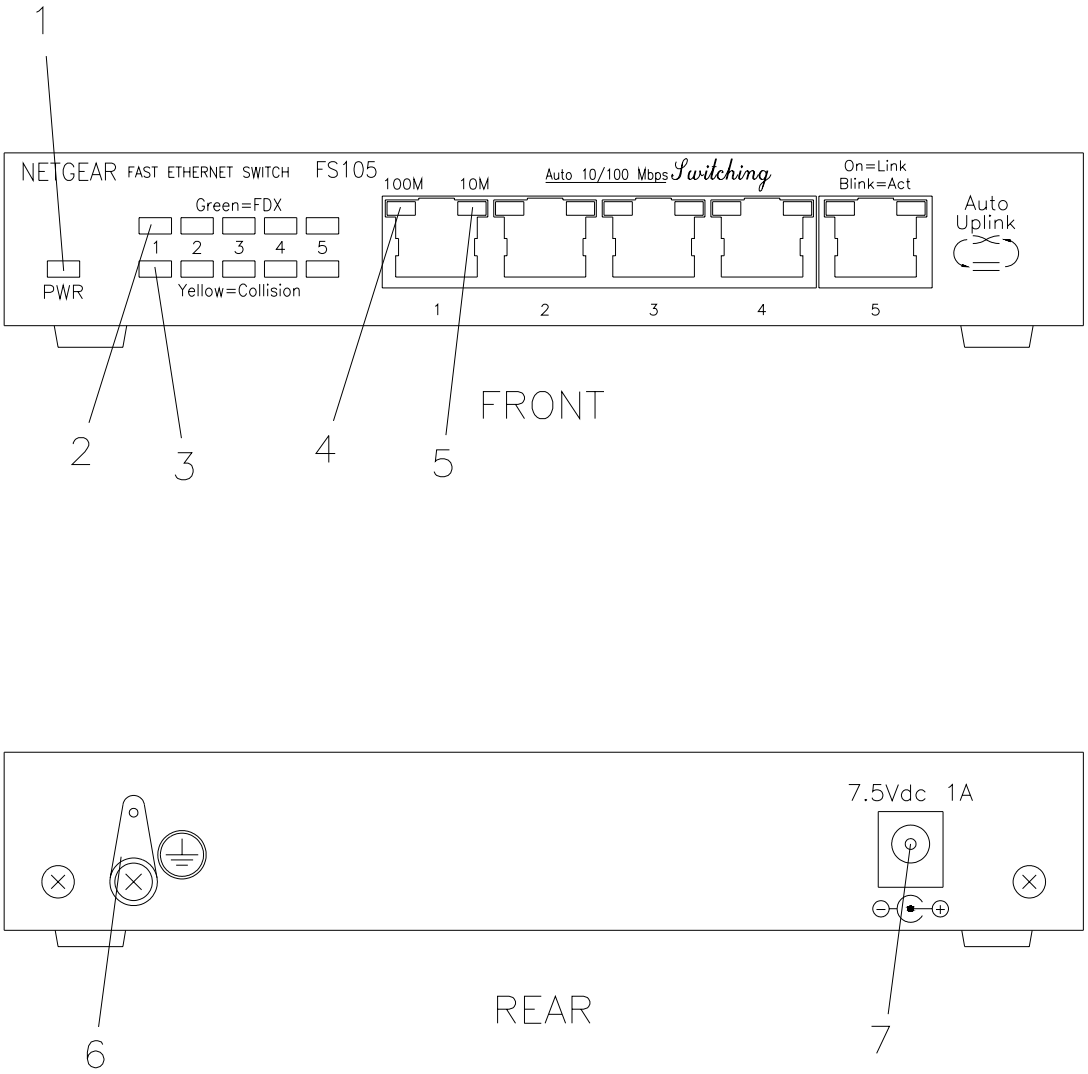

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Figure 2-11. Switch Front/Rear Panels

Table 2-9. Switch Controls and Indicators

Figure 2-11 Index#	Name	Function	Operating Position/ State
1	Pwr LED	Indicates whether the system is receiving power	On
2	FDX (Full duplex) LED	Indicates whether a particular port is operating in full duplex. (If LED is off, port is operating in half duplex)	On or blinking green
3	Collision LED	Indicates whether data collision is detected or if the port is not forwarding data (yellow blinking)	Off
4	100 Mbps transmission LED	Indicates whether the port is operating at 100 Mbps transmission rate	On or blinking
5	10 Mbps transmission LED	Indicates whether the port is operating at 10 Mbps transmission rate	Off
6	Grounding Tab connector	Used to provide ground for Switch.	N/A
7	7.5 Vdc input jack	Connects 7.5 VDC input power from transformer plug	Connected

2.3.2.4.1 Switch Abnormal Indicators. The following controls and indicators are provided by the switch to display abnormal operations:

- **Power LED**: The Power LED will be off if there is no power.
- **Full Duplex LEDs**: The Full Duplex LED will be off if it is not selected as the mode of data transmission.
- **Half Duplex LEDs**: The Half Duplex LED will be off if it is not selected as the mode of data transmission. If being used, will display steady yellow if a data collision is detected or if the port is not forwarding data.
- **Collision LEDs**: A steady yellow LED will be displayed if data collision is detected or if the port is not forwarding data.

2.3.2.5 External Dedicated External Modem UD86A6/A13. See Figure 2-12 and Table 2-10 for the location and description of all controls and indicators associated with the External Dedicated Modem(s) UD86A6/A13.

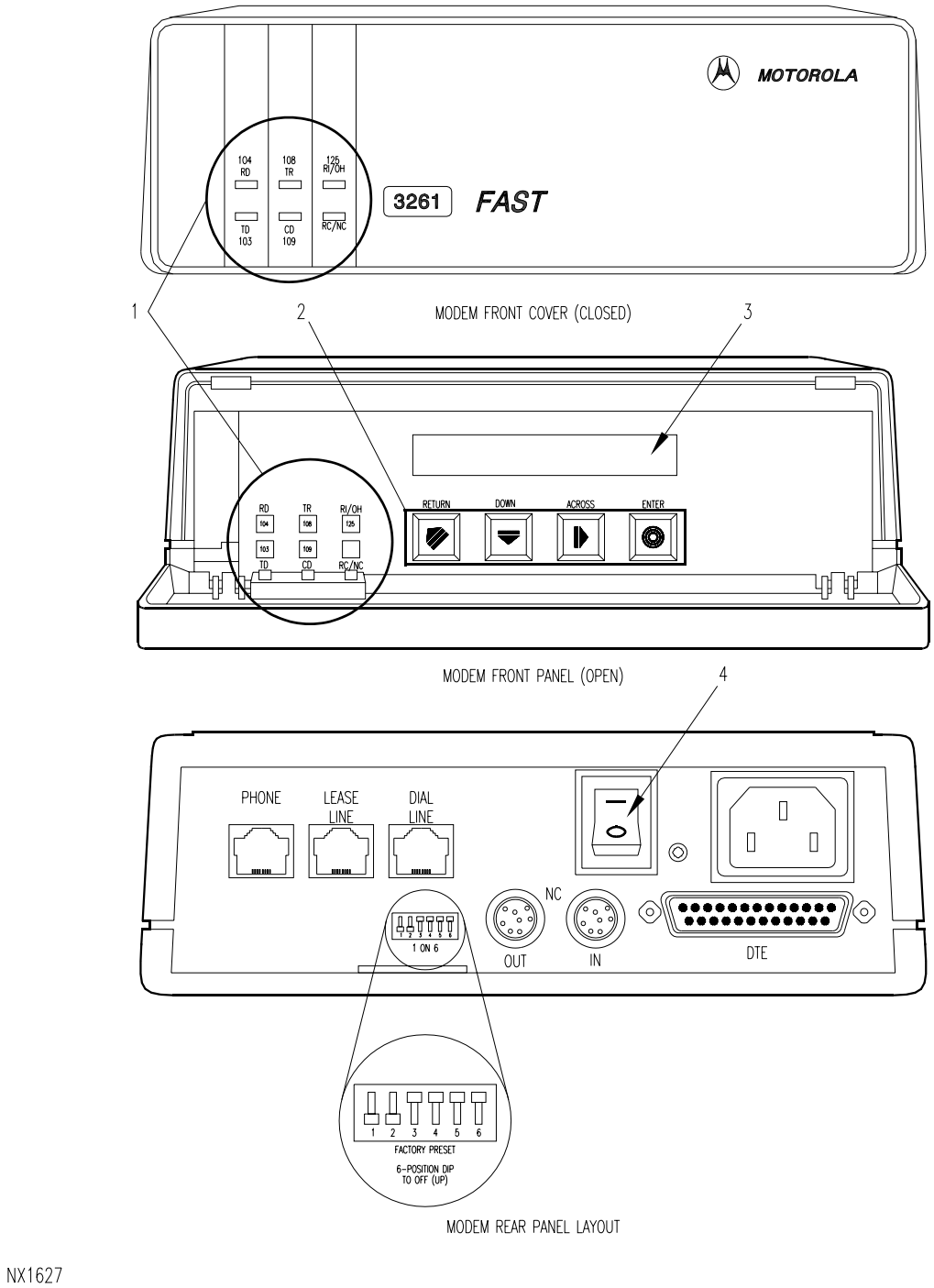

Figure 2-12. External Dedicated Modem Front/Rear Panels

Table 2-10. Dedicated External Modem Controls and Indicators

Figure 2-12 Index#	Name	Function	Operating Position/ State
1	RD LED	Flashes when modem passes data received to the local terminal	N/A
	TR LED	Flashes when modem accepts data to be transmitted from local terminal	N/A
	RI-OH LED	Illuminates when an incoming call is ringing. Also illuminates when the modem is off-hook and connected to the dial line	N/A
	TD LED	Illuminates when a DTR signal from an attached terminal is detected.	N/A
	CD LED	Illuminates when the local modem is receiving a carrier signal (as defined by the modulation mode currently being used) from the remote modem	N/A
	RC-NC LED	Flashes to indicate that the modem is under remote configuration (from a front panel or AT ACU).	N/A
2	Return Key	Used with setting up the modem configuration parameters and to view settings	N/A
	Down Key	Used with setting up the modem configuration parameters and to view settings	N/A
	Across Key	Used with setting up the modem configuration parameters and to view settings	N/A
	Enter Key	Used to view and select programming options	N/A

Table 2-10. Dedicated External Modem Controls and Indicators - Continued

Figure 2-12 Index#	Name	Function	Operating Position/ State
3	Status LCD	Used to display messages and to indicate modem status	N/A
4	Power Switch	Turns power ON/OFF for the modem	On

2.3.2.5.1 External Dedicated Modem Abnormal Indicators. The following controls and indicators are provided by the external dedicated modem to display abnormal operations:

- **RI/OH LED:** Illuminates when an OFF HOOK condition is detected.
- **TD LED**: Does not illuminate when command generation sequence from local modem to remote sequence not successful.
- **LCD Front Panel Display**: Will display numerous error codes. Main POST sequence will display “3261 Ready” if POST procedure is successful, otherwise there should be an error code, if not.

2.3.2.6 Archive IV Device UD86A7. See Figure 2-13 and Table 2-11 for the location and description of all controls and indicators associated with the Archive IV Device UD86A7.

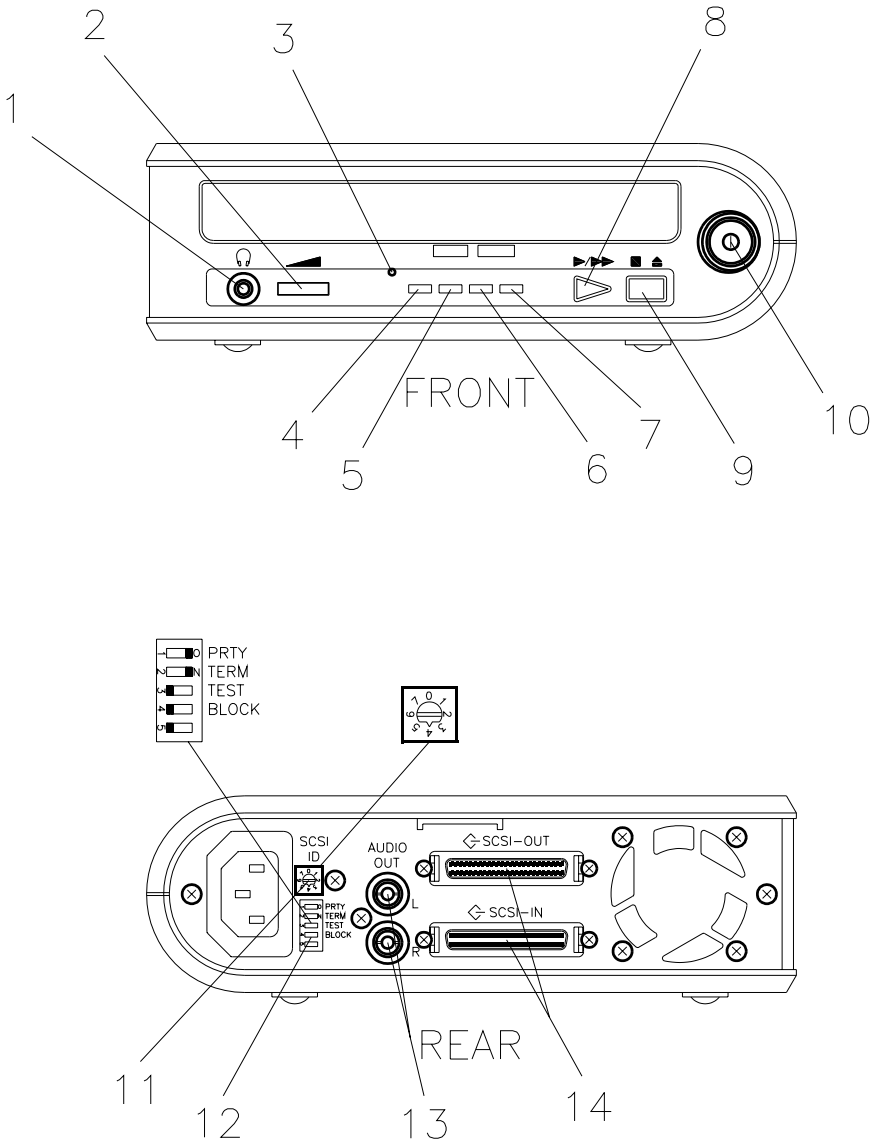

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Figure 2-13. Archive IV Device Front/Rear Panels

Table 2-11. Archive IV Device Controls and Indicators

Figure 2-13 Index#	Name	Function	Operating Position/ State
1	Head Phone Jack Connector	Provides input for audio headphones	N/A
2	Volume Control Wheel	Used to adjust the audio volume	N/A
3	Emergency Eject (inset) Release tab	Used to eject disk when electronic eject or mechanical eject button does not operate	N/A
4	DISC LED	Steady or flashing indicates the drive is accessing the CD-ROM	Green when a disk is in the drive and power is on.
5	READ ON LED	Steady or flashing indicates the drive is accessing the CD-ROM	Green when power is on and disk is being accessed.
6	WRITE L LED	Used to indicate low speed CD-ROM usage	Orange when recording CD-R disk at 1X,4X, or 8X or low speed CD-RW disks at 2X/4X speed.
7	WRITE H LED	Used to indicate high speed CD-ROM usage	Orange when recording CD-R disks at 12X. Both WRITE L and H LEDs will be illuminated Orange when high speed CD-RW disks at 4X, 8X, and 12X speed.
8	CD Audio Play-Skip Forward Button	Used for audio disks only	N/A
9	Stop-Eject Button	Used to electronically/mechanically eject disk from tray	Push once to stop play. Push twice to eject disk from tray.

Table 2-11. Archive IV Device Controls and Indicators - Continued

Figure 2-13 Index#	Name	Function	Operating Position/ State
10	Power Switch	Turns the drive On/Off (1/0)	On (1)
11	SCSI ID Dial Switch	Used to pre-designate SCSI ID channel numbers	Variable. (Factory set for default setting.)
12	Dip Selections Switch	Used to select parity, SCSI termination, and/or block size	Factory set positions. 1: On, 2: On, 3 through 5 Off.
13	Audio Output Connectors (2)	Provides external output for audio capability (Left/Right)	N/A
14	SCSI OUT/ IN Connectors	SCSI IN connects unit to SCSI Interface. SCSI OUT connects system to another recording unit	SCSI IN connected/ SCSI OUT not connected.

2.3.2.6.1 Archive IV Device Abnormal Indicators. The following controls and indicators are provided by the archive device to display abnormal operations:

- **DISC and WRITE L/H LEDs**: Simultaneous DISC, WRITE L and H LED illumination indicates data write and/or device driver corruption.
- **DISC Eject**: If a disk that was placed within the archive device media tray will not eject, either the software that controls the archive device is in a wait state or the disk media tray is jammed.

2.3.2.7 Communication Router UD86A8. See Figure 2-14 and Table 2-12 for the location and description of all controls and indicators associated with the Communication Router UD86A8.

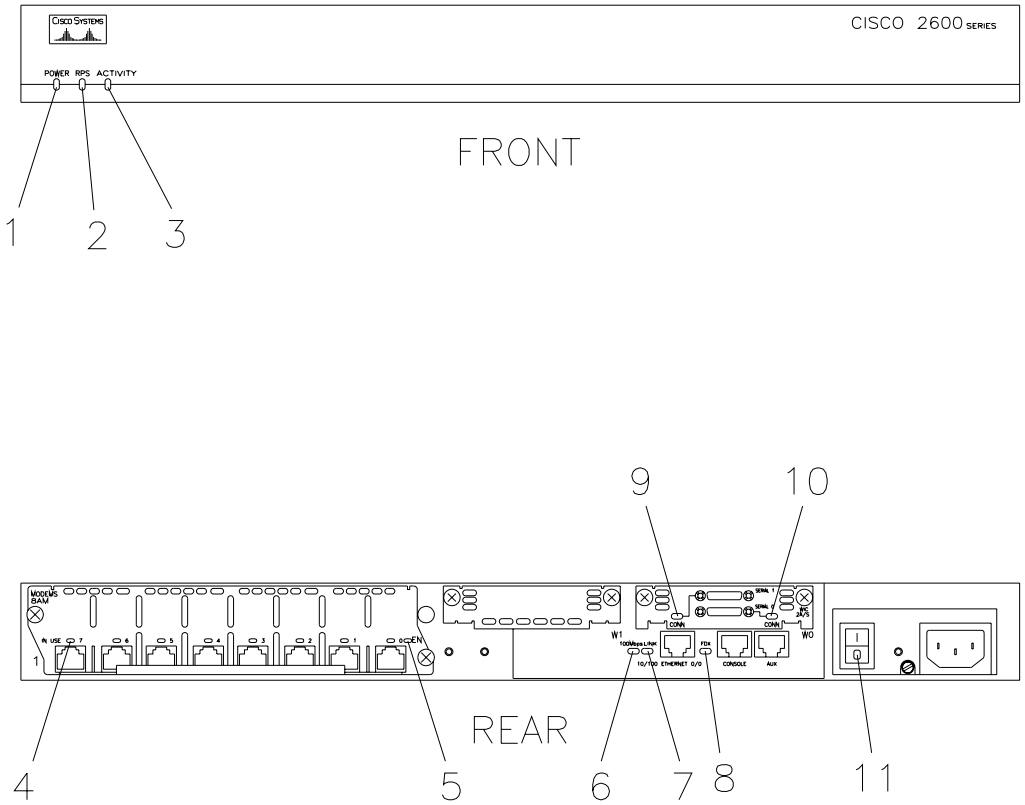

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Figure 2-14. Communication Router Front/Rear Panels

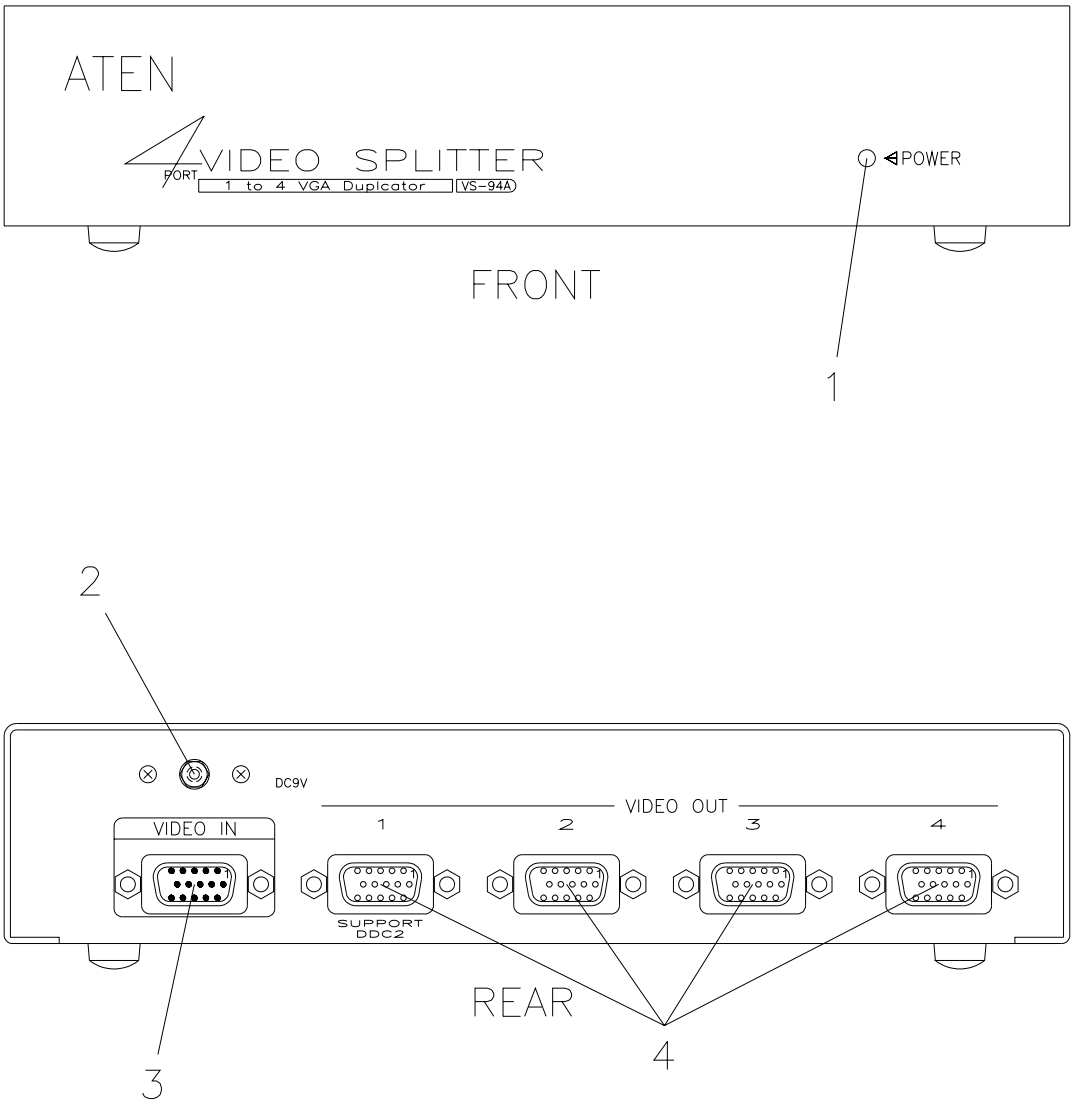
Table 2-12. Communication Router Controls and Indicators

Figure 2-14 Index#	Name	Function	Operating Position/ State
1	Power LED	Indicates the Router has power supplied	On
2	RPS LED	Indicates RPS status	Off
3	Activity LED	Indicates Network activity	Various (on or blinking.)
4	In Use LED	Indicates port status	On only when in use (labeled left to right, 7 through 0)
5	EN (Enable) LED	Indicates module status	On
6	100 Mbs LED	Indicates speed of interface (10/100 Mbps) for Ethernet 0/0 link	On
7	Link LED	Indicates Ethernet link status for Ethernet 0/0 link	On
8	FDX LED	Indicates full-duplex enabled status for Ethernet 0/0 link	On
9	CONN LED	Serial 1 connectivity status	Off
10	CONN LED	Serial 0 connectivity status	On
11	Power Switch	Turns power on/off (1/0) to Router	On (1)

2.3.2.7.1 Communication Router Abnormal Indicators. The following controls and indicators are provided by the communication router to display abnormal operations:

- **RPS LED**: If RPS is on, an RPS mode is enabled. This feature should be in the off position. If blinking, RPS has been corrupted or has failed.
- **Activity LED**: If off, not activity detected or no network connectivity detected.
- **EN (Enable) LED**: If off, module enable feature turned off or module faulty.

2.3.2.8 Video Splitter UD86A9. See Figure 2-15 and Table 2-13 for the location and description of all controls and indicators associated with the Video Splitter UD86A9.



NX2433

Figure 2-15. Video Splitter Front/Rear Panels

Table 2-13. Video Splitter Controls and Indicators

Figure 2-15 Index#	Name	Function	Operating Position/ State
1	Power LED	Indicates unit power status	On (Green)
2	9 VDC power input jack	Connects 9 VDC input power from power transformer plug	Connected
3	Video In Connector	Provides video input from OPUP Server UD86A2	Connected
4	Video Out Connector	Port 1 provides video output to Monitor UD86A1 and port 2 provides video output to Monitor UD86A11	Ports 1 and 2: Connected. Ports 3 and 4: Not connected.

2.3.2.8.1 Video Splitter Abnormal Indicators. The following controls and indicators are provided by the video splitter to display abnormal operations:

- **Power LED**: If off, power has been disrupted or faulty power supply.

2.3.2.9 UPS UD86A10. See Figure 2-16 and Table 2-14 for the location and description of controls and indicators associated with the UPS UD86A10:

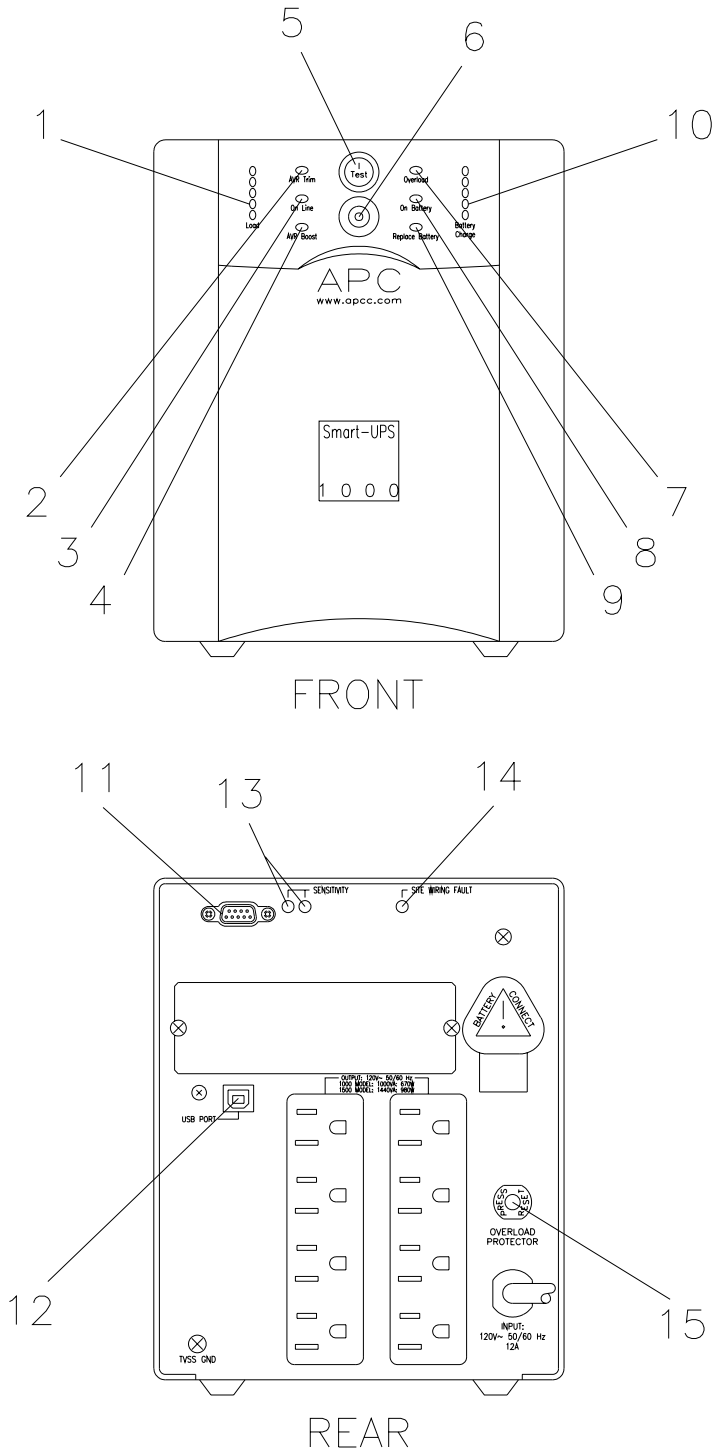


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Figure 2-16. UPS Front/Rear Panels

Table 2-14. UPS Controls and Indicators

Figure 2-16 Index#	Name/Type	Function	Operating Position/ State
1	Load Bar Graph LEDs	Indicates power draw of the load being placed upon the UPS	Variable
2	AVR Trim LED	Indicates UPS compensating for high voltage	Off
3	On Line LED	Indicates UPS is supplying power to the loads	On
4	AVR Boost LED	Indicates UPS compensating for low voltage	Off
5	1-Test Button	Used to power on the UPS and start UPS self-test	N/A
6	0 Button	Switches the utility power to the UPS to the Off (0) position, switching the UPS off	N/A
7	Overload LED	Indicates load attached to UPS has exceeded maximum capacity (accompanied by an audible alarm)	Off
8	On Battery LED	Indicates UPS is supplying battery power to all connected loads	Off
9	Replace Battery LED	Indicates battery failure	Off
10	Battery Charge Bar Graph LEDs	Indicates status of battery in terms of percentage power capacity	Variable
11	Serial Port Connector	Provides serial port connectivity for external monitoring purposes	Cable 86W4 connected
12	USB Port Connector	Provides Universal Serial Bus (USB) port connectivity for external monitoring purposes	N/A
13	Sensitivity LED	Indicates UPS sensitivity to voltage distortion	On (Bright Green)

Table 2-14. UPS Controls and Indicators - Continued

Figure 2-16 Index#	Name/Type	Function	Operating Position/ State
14	Site Wiring Fault LED	Indicates improperly wired 120 VAC outlet	Off
15	Overload Protector/ Circuit Breaker Button	Allows the UPS to be reset, if it pops-out	In

2.3.2.9.1 UPS Abnormal Indicators. The following controls and indicators are provided by the UPS to display abnormal operations:

- **Load Bar Graph LEDs**: If the UPS is on and no LEDs are lit, the UPS is faulty or all loads are disconnected and/or off.
- **Replace Battery LED:** If on, UPS failed battery test (accompanied by 1 minute of audible short beeps, repeated every 5 hours.)
- **On Battery LED**: If on, UPS supplying power to loads via backup batteries (accompanied an audible tone of 4 beeps every 30 seconds.)
- **Overload LED**: If on, power loads connected to UPS exceeds rated capacity.
- **Site Wiring Fault LED**: If on, external wiring fault detected.
- **Sensitivity LED**: If on and dim green, setting is reduced. If off, setting is low.
- **Overload Protector Circuit Breaker Button**: If popped out, circuit has been tripped due to either overload and/or circuit fault detected.

2.3.2.10 Printer UD86A12. See Figure 2-17 and Table 2-15 for the location and description of controls and indicators associated with the Printer UD86A12:

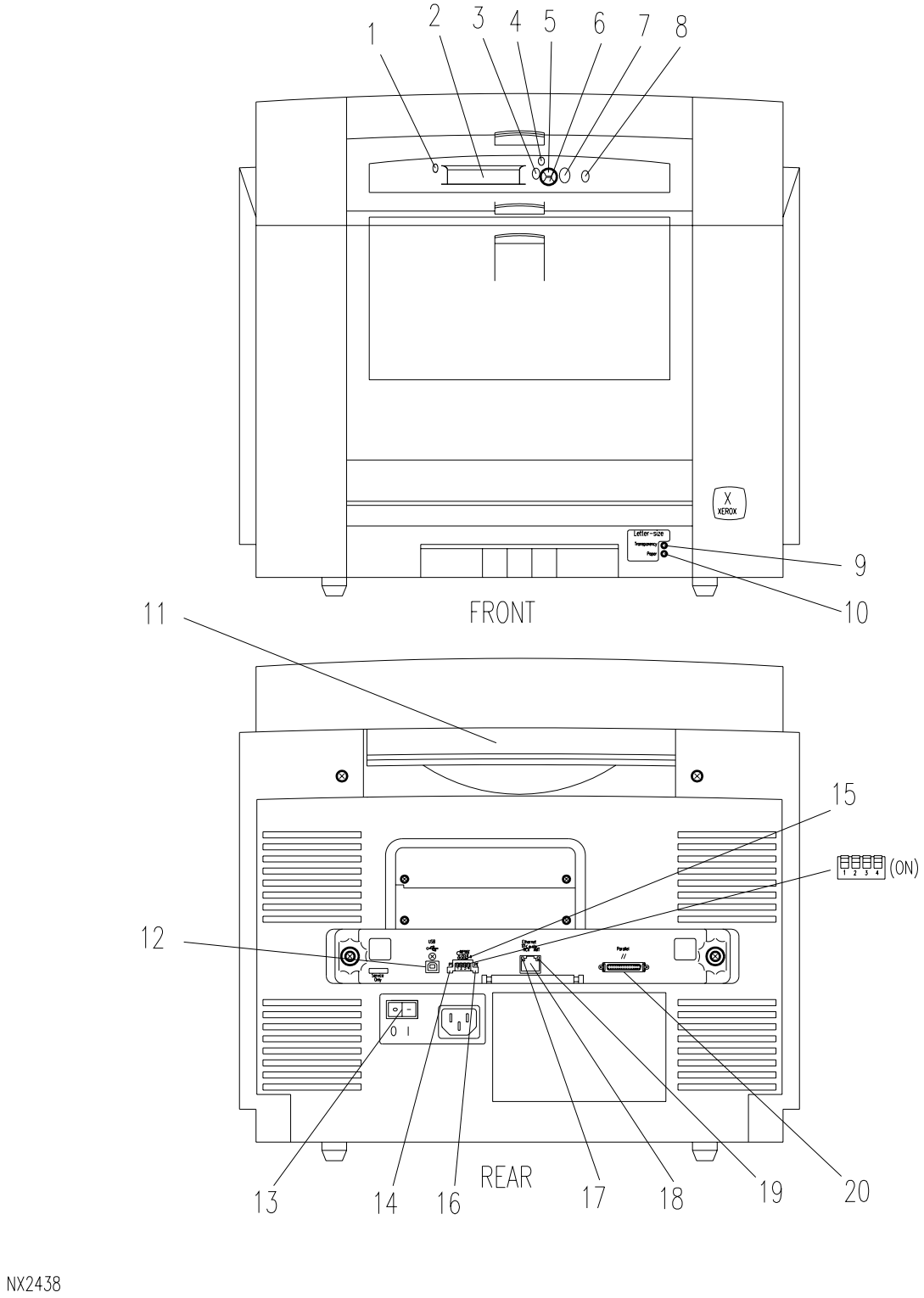

Figure 2-17. Printer Front/Rear Panels

Table 2-15. Printer Controls and Indicators

Figure 2-17 Index#	Name	Function	Operating Position/ State
1	Power, Print, and Menu Status LED	Indicates status of system power, print ready, and menu selection	On or blinking (bright green)
2	Menu LCD Display	Displays numerous user interactive menu selections	8 selectable menu headings
3	Back Button	Used in association with menu LCD and/or print status	N/A
4	Cancel Button	Used in association with menu LCD and/or print status	N/A
5	Scroll Up Button	Used in association with menu LCD and/or print status	N/A
6	Scroll Down Button	Used in association with menu LCD and/or print status	N/A
7	OK Button	Used to accept input from LCD Menu	N/A
8	Information (**i**) Button	Used to display additional information on a message, error code, and/ or menu depicted within the LCD-menu display	N/A
9	Transparency LED	Indicates transparency status	Off
10	Paper LED	Indicates paper availability status	Off
11	Wax Transfer Chalk Access Latch	When opened, suspends printer functions to allow access to wax chalk slots	Closed
12	USB Connector	Provides USB connectivity	N/A
13	Power Switch	Turns power On/Off (1/0) to printer	On (1)

Table 2-15. Printer Controls and Indicators - Continued

Figure 2-17 Index#	Name	Function	Operating Position/ State
14	PS LED	-	Blinking green
15	DIP Switch	Factory pre-set 4-position DIP	All in UP position
16	PE LED	-	Blinking green
17	ETHER-NET TCP/ IP RCV LED	Print connectivity status	Blinking green
18	Ethernet Port	Provides Ethernet TCP/IP connec-tivity	N/A
19	ETHER-NET TCP/ IP XMT LED	Indicates status of transmitted mes-sages from printer	Blinking green
20	Parallel Connector	Provides SCSI connectivity	N/A

2.3.2.10.1 Printer Abnormal Indicators. The following controls and indicators are provided by the printer to display abnormal operations:

- **Power, Print, and Menu Status/LED**: Steady orange or blank indicates error code detected and/or power disruption/loss.
- **Transparency LED**: If on, transparencies are being used. If steady orange, transparency malfunction (will be accompanied by a displayed error code and/or message within LCD menu display.)
- **Paper LED**: If steady orange paper low or out (will be accompanied by a displayed error code and/or message within the LCD menu display.)
- **PS/PE LEDs**: If continuous green or orange, transmission fault or data collision has been detected.
- **Transmit/Receive LEDs**: If continuous green or orange, transmission fault or data collision has been detected.

Section 2.4. REFERENCE DATA

2.4.1 General.

This section covers all applicable Small OPUP Equipment Group UD86 reference documentation and data listings. General OPUP group data is presented in Table 2-16.

2.4.2 Glossary of Terms.

Refer to the Glossary of Terms contained in the System Manual NWS EHB 6-500 for all terms not provided by this manual.

2.4.3 Equipment Supplied.

All equipment that composes the Small OPUP Equipment Group UD86 is considered to be Commercial-Off-The Shelf equipment. A breakdown of each LRU and consumable items are provided in Chapter 7, Illustrated Parts Breakdown (IPB). The following sections outline specific identification and guidelines not covered elsewhere within this manual.

2.4.3.1 Commercial-Off-The-Shelf (COTS) Equipment. Commercial-Off-The-Shelf (COTS) equipment associated with the Small OPUP Equipment Group UD86 can either be considered LRU or consumable for repair purposes. Whenever possible, warranties will apply to their fullest extent with the exception of planned consumable module upgrades or replacements (i.e. toner replacement). The determination of LRU versus consumable is further outlined in the IPB.

2.4.3.2 Legacy Equipment. There is no legacy equipment associated with the Small OPUP Equipment Group UD86.

2.4.4 Documentation and Tools.

The documentation and standard tools listed in the following paragraphs are provided to assist each site in determining specific documentation used as reference material for this manual. This section also contains a recommend list of tools required to perform all applicable planned maintenance of the Small OPUP Equipment Group UD86.

2.4.4.1 Applicable Reference Material. The small OPUP equipment group reference material is listed in Table 2-16.

Table 2-16. OPUP Group Reference Publications

Title	Manufacturer	Document No.
326X Series Modem Reference and Applications Guide	Motorola	09738, Rev B

Table 2-16. OPUP Group Reference Publications - Continued

Title	Manufacturer	Document No.
CISCO 2600 Series Routers Software Configuration Guide	CISCO	DOC-2600SW-ICG Part Number: 78-5173-04
CISCO 2600 Series Network Module Routers Hardware Installation Guide	CISCO	DOC-785047 Part Number: 78-5047-07
Sun Blade 150 Desktop Service Manual	Sun Microsystems	806-3415-11, April 2002, Rev B
Solaris 8 7/01 Operating Environment Supplement	Sun Microsystems	825-5733-02, August 2002, Rev B
Sun Blade 150 Desktop Setup Guide	Sun Microsystems	806-3414-10, November 2002, Rev A
Sun Blade 150 Desktop Product Notes	Sun Microsystems	816-1796-11, August 2002, Rev B
Sun Blade 150 Desktop CD-ROM	Sun Microsystems	704-7016-11, December 2002, Rev B
Sony 21-Inch Monitor	Sony CPD-G520P	4-086-318-11 (1), Generic, Rev 2001
Sun Keyboard and Mouse Manual	Sun Microsystems	805-7171-10, February 1999, Rev A
Sun Workstation Ergonomics	Sun Microsystems	805-7161-10, February 1999, Rev A
ATEN Video Splitter	ATEN	PAPE-1183-200 Copyright 2000
Netgear FS-105 Switch	Netgear, Inc.	M-FS105NA-3 Copyright 2001
APC Smart UPS 1000 Uninterruptible Power Supply User’s Manual	APC	990-1062, May 2001, Rev 1.0
Plextor CD-R/W Owner’s Manual	PLEXTOR	SW Ver 1.3, December 2001, Third Addition

Table 2-17. OPUP Hardware Group Recommended Tools/Supplies

Nomenclature	Description	Mfg./Part Number
Cleaner, Vacuum	Standard Shop Style	HVU/NWN7910-00-267-1215 or equivalent
Lint free cloth	Generic, no lint	Order local means
Compressed Air	Generic, 12 oz	Order local means
Brush, soft bristle	Wood handle, 2 inch	Order local means
Cleaner, Glass	Generic	Order local means
Wipes, Alcohol	Presoaked alcohol (90% isopropyl)	Order local means
Screwdriver box set	Generic	Order local means

CHAPTER 3
SOFTWARE DESCRIPTION

Section 3.1. INTRODUCTION

3.1.1 General.

This chapter provides a description of the overall OPUP Server OS suite, applicable installation instructions, and Host Terminal command line entries that may be required in order to provide system administration, maintenance, and display of products on the Small OPUP system. The Small OPUP software suite is comprised of an OPUP Server OS, a sub-set of management software called the `OPUP Manager Main Menu`, and the Operational Applications Front Panel. The Operational Applications Front Panel contains a sub-set of applications called the Electronic Performance Support System (EPSS), Product Display Graphic Users Interface (PDGUI), Status and Control GUI, Archive Product Display GUI, and Archive Status Log GUI. The Operational Applications Front Panel is normally be accessed by operations personnel. The Manager GUI, `OPUP Manager Main Menu`, will normally be accessed by personnel given OPUP administrative duties.

This chapter will primarily concentrate on an overview of the OPUP Server Operating System (OS) used within the Small OPUP Equipment Group UD86. Specific software installation and configuration guidelines will be presented which address both the initial and re-installation of the OPUP Server OS. This chapter will discuss the use of UNIX within the overall OPUP Server OS, access to and use of the “Host/Console” terminals, and the common use of applicable UNIX command line scripts.

NOTES

The discussion of and use of OPUP applications and associated GUIs in this chapter is not meant to replace the specific guidelines outlined in Chapter 5, System Administration, and operational functions provided in NWS EHB 6-536, Operations Instructions. Refer to Chapter 5 for all OPUP administrative duties and NWS EHB 6-536 for specific WSR-88D product and message operational guidelines.

Command entries and mouse selections are shown in this section in **bold** type. Variable names are normally shown with a unique font (e.g. *`variable_name`*). Within a specified command string that must be entered, the variable placeholders are not bold type; however, all portions of the command that are entered exactly as shown are in bold type. The variable placeholder within the command string must be replaced with a name, address, etc. unique to each system and the user is told how to formulate the entry, or directed to where to find this information. Unless stated otherwise, each command line shown must be “entered” to be processed. Also, directory names/paths shown outside of a command example

are *italicized* for clarity purposes. This section will discuss some graphical manipulations using a mouse. The word **click** indicates a standard **left mouse click**. When a **right, middle** or **double** click is required, it is specifically indicated.

3.1.2 Chapter Organization.

Chapter 3 is organized into the following seven sections:

- Section 3.1 INTRODUCTION - Provides a brief description of each section in this chapter.
- Section 3.2 KEYBOARD AND MOUSE FUNCTIONS - Provides a detailed description of the Sun Microsystems keyboard layout.
- Section 3.3 OPUP SOFTWARE DESCRIPTION - Provides a general overview of the OPUP Server OS, System Administration Manager GUI, Sun Microsystems Common Desktop Environment (CDE). A brief overview of the Operational Applications used by the operators will be presented, as well.
- Section 3.4 OPUP SOFTWARE BACKGROUND PROCESS DESCRIPTION - Provides an in-depth discussion of the background processes and UNIX functions incorporated within the OPUP Server OS.
- Section 3.5 OPUP SOFTWARE INSTALLATION PROCEDURES - Addresses the information and steps required to perform an initial installation or re-installation of the Small OPUP Equipment Group UD86 Server OS.
- Section 3.6 OPUP SOFTWARE DEVELOPMENT BACKGROUND - Provides a brief overview of the use of UNIX Solaris software, command line scripts, and associated utilities in association with the OPUP Server OS.

Section 3.2. KEYBOARD AND MOUSE FUNCTIONS

3.2.1 Sun Microsystems Keyboard/Mouse Layout Features.

The OPUP Manager GUI and Operational Applications have been developed to assist each user with the performance of WSR-88D operation functions and administrative duties through the use of the common keyboard and three-position mouse set. The Keyboard UD86A3 and Mouse UD86A4 software functionality has been incorporated throughout each Small OPUP configuration through the use of the Common Desktop Environment (CDE) display, OPUP Manager GUI, and Operational Applications (i.e. PDGUI, Status & Control GUI, Archive PDGUI, and Archive Status Log GUI). The following paragraphs concentrate on the layout and use of specific keyboard and mouse functionality.

3.2.1.1 Keyboard UD86A3 Functions. The alphanumeric keyboard has a number of different key functions that can be used to enter and/or manipulate data on the OPUP Server OS and Operational Applications Suite. Several keys described in the next few paragraphs have the auto-repeat feature. When a character is depressed for at least one second, the terminal will generate a stream of that character at a rate of 15 characters per second until the key is released.

3.2.1.2 Alphanumeric Key Layout. The alphanumeric keys can have a specific relationship with the mouse buttons depending on where the cursor is located within each display GUI. For example, when the cursor is positioned within an unprotected field in a GUI, pressing an alphanumeric key will cause the corresponding character to replace any character currently at that location. The cursor will then automatically reposition itself at the next unprotected character on the display. To move the cursor to the next sub field, either press the **<Tab>** key or move the mouse/cursor to the new desired sub field. The keyboard contains two **<Shift>** keys, each key operates the same. The number keys each contain two symbols. The lower symbol is the number displayed by simply pressing the key. The upper symbol is displayed by pressing **<Shift>** and the number key simultaneously. To facilitate entering a string of uppercase characters, use the **<Caps Lock>** key. Table 3-1 describes the rest of the keyboard layout and functions.

Table 3-1. Keyboard Features

Key	Function	Remarks
<Space Bar>	Moves the cursor one space at a time to the right producing a blank character which replaces whatever was at the cursor location. If the mouse/cursor is placed over an inactive area, this key activates the window/unprotected area.	For skipping over data in a non-destructive manner, use the mouse or cursor control keys.
<Back Space>	Moves the cursor one space at a time to the left producing a blank character which replaces whatever was at the cursor location.	Can be used to delete any entry currently displayed in each space.

Table 3-1. Keyboard Features - Continued

Key	Function	Remarks
Cursor Control	Moves of the cursor without altering the window contents. These keys consist of four **<Arrow>** keys, **<Tab>**, **<Home>**, **<End>**, **<Page Up>**, and **<Page Down>**.	The **<Home>** key does not have auto repeat functionality.
Four **<Arrow>** keys	Facilitates the cursor movement throughout the various unprotected display areas. The **<Arrow>** keys allow for 90 degree cursor movement each either up, down, left, or right.	The arrangement of the unprotected areas may prevent vertical moves.
<Tab>	Moves the cursor forward to the next unprotected area until there are no more unprotected areas. When pressed simultaneously with a **<Shift>** key, moves the cursor backward to the previous unprotected area. If the cursor is in the first unprotected area, it will wrap around to the last unprotected area.	When using columns, the cursor moves from one column to another then moves down a line. It does not move to the next unprotected area.
<Home>	Moves the cursor to the left most position of the first unprotected window area.	This does not function on every GUI window.
<End>	Moves the cursor to the right most position of the unprotected window area.	This does not function on every GUI window.
<Page Down> **<Page Up>**	Used to display multiple pages of information. One complete page at a time is scrolled forward (down) or backward (up).	Will not function when only one page of information is available.
<Return> or **<Enter>**	Causes the command currently displayed to be processed. When pressed, all data will be interpreted by the CPU and acted upon.	Prior to pressing this key, the command and/ or data can be edited/ formatted by using other keys in any unprotected window area.
<Insert>	When off, allows data entry by overwriting the existing data. When on, each keystroke is inserted non-destructively into the existing data.	Acts as a toggle on or off.
<Delete>	Deletes the character to the right of the cursor or a series of characters that has been highlighted with the mouse within any unprotected field.	Has the auto repeat feature.
<Shift>	Each keyboard has two of these. Used in conjunction with other keys to perform a function.	Do nothing by themselves.

3.2.1.3 Numeric Keypad. The numeric keypad is located in the lower right portion of the keyboard and consists of a full set of number keys along with the **<Enter>**, **<Num Lock>**, **<Ins>**, **<Del>**, **<End>**, **<Home>**, **<Pg Up>**, **<Pg Dn>**, four **<Arrow>** keys as well as **< * >** (multiply), **< / >** (divide), **< + >** (add), **< - >** (subtract), and **< . >** (decimal) keys. The numeric keypad is provided to allow users to enter numeric data and programming information more efficiently. The number keys on this keypad work the same way the unshifted number keys do at the top of the alphanumeric keyboard. The multiply, divide, add and subtract keys work by pressing them. The **<Num Lock>** key must be pressed in order to use the numeric keypad, and has an associated light indicator located at the top center of the keyboard. When the light is on, the **<Num Lock>** key is engaged. All of the keys on the numeric keypad have the auto repeat feature.

3.2.1.4 Miscellaneous Keys. The keyboard set provides other keys and functionality that may or may not be required. Keys located on the Keyboard UD86A3 not mentioned in the previous sections will not normally be required for use during the normal operation of the OPUP system. In some cases, it will be advised that certain keys not be used do to their impact on OPUP Server OS functions. The following paragraphs outline the limitations of these keys.

3.2.1.4.1 Caps Lock Key. This key is used to perform continuous uppercase typing and has the auto repeat feature. This key acts as a on/off toggle and has an associated light indicator located at the top center of the keyboard. When the light is on, the **<Caps Lock>** key is engaged. This function is normally left in the Off position.

CAUTION

Do not press the **<Power>** key while the OPUP Server OS is running. This key, if used, may cause the system to pause, hang up, and become unstable and/or corrupted. Normally, performing a server reboot procedure will allow the system to recover from pressing this key.

3.2.1.4.2 Power Key. This key is in the extreme upper right-hand corner of the keyboard and is labeled with an image of a half moon. The **<Power>** key acts as a power switch on some Sun Microsystem computers to power on/off the system when it is pressed. This key requires both software and hardware support. Although, the **<Power>** key has some functionality, the **<Power>** key feature has NOT been fully incorporated into the Small OPUP Equipment Group UD86 Server OS functionality and does not work properly, if used.

3.2.1.5 Mouse. The main cursor control/command selection device for the OPUP is the three button mouse which tracks and responds like a standard PC-type mouse, with the exception of the third (middle) button. The following paragraphs describe the functionality of each mouse button.

3.2.1.5.1 Left Mouse Button. This is the command selection button. With the cursor over an icon/selection, clicking the left button once executes that selection. The word click indicates a

standard left click. When a **right**, **middle**, or **double-click** is required, it is specifically indicated.

3.2.1.5.2 Middle Mouse Button. The seldom used middle button may be used as a command selection button just like the left button in some applications.

3.2.1.5.3 Right Mouse Button. This button is used to display application specific menus like the pop-up menu of window property attributes used to change the OPUP PDGUI. The user can then change background map depiction information, overlays, looping, etc.

Section 3.3. OPUP SOFTWARE DESCRIPTION

3.3.1 Introduction.

NOTE

> The design of the OPUP Server OS was developed to provide comprehensive administrative control over the majority of OPUP functions and controls. The Operational Applications GUI Suite (EPSS, PDGUI, Status & Control GUI, Archive PDGUI, and Archive Status Log GUI) were developed to provide operators the capability to access only the applications and processes required to perform operational display and analysis of WSR-88D products and message data. The OPUP Server OS will NOT allow operators to manipulate and display the full functionality of the CDE Front Panel (except to temporarily delete icons or rename the workspace buttons). If an icon or application becomes unresponsive or missing within the OPUP Operational Applications Front Panel, simply perform a CDE logout and login procedure. The OPUP Server OS will automatically recover the display features, attributes, and/or application GUI icon(s).

The OPUP Server Operating Software (OS) incorporates Sun Microsystems' Solaris version of the UNIX operating system within the overall software suite. One advantage of using a UNIX based OS is its multi-task and multi-processing capability. The multi-task process capability allows the OPUP Server OS to perform a wide variety of tasks simultaneously. The OPUP Server OS and Operational Applications GUI Suite incorporates Sun Microsystems Solaris Common Desktop Environment (CDE) format found on most UNIX based systems and uses the CDE Front Panel as its base Human Control Interface (HCI) or GUI. Also, both the OPUP Server OS and Operational Applications utilize the CDE login functionality, X window GUI interface, and various icons found with the standard Sun Solaris CDE Front Panel. Although full CDE Front Panel utilities are incorporated in the OPUP Server OS, only OPUP Administrators will be given full CDE Front Panel functionality. Specifically, this means that administrators accessing the CDE Front Panel to display the `OPUP Manager Main Menu` will be able to access and use either the Host or Console terminal windows (and all other Sun Microsystems Solaris utilities, if desired). Terminal windows allow for specific administrative duties and/or recovery procedures that require command line entry to execute. The Operational Applications Front Panel, in contrast, have some CDE Front Panel functionality. However, the Operational Applications Front Panel only provides access to the functions required to display and manipulate WSR-88D products and message data by OPUP Operators. The following paragraphs will primarily concentrate on the features and functions associated with OPUP System Administration; however, functions provided by the Operational Applications Front Panel will briefly be discussed, as well.

3.3.2 Common Desktop Environment.

The Common Desktop Environment (CDE) is provided as part of the overall design of the OPUP Server OS. The CDE Front Panel incorporates the various Solaris and UNIX functionality in a easy to use format. The application of CDE functionality is further broken down into two parts.

The first part involves the CDE Front Panel, Figure 3-1, for use as an access point of entry for OPUP System Administrative functions. The CDE Front Panel contains basic UNIX interface functionality such as, windows, workspaces, controls, and menus.

Each time the OPUP hardware is powered on, the CDE login process is automatically started upon initial boot up sequence of the OPUP Server OS. When administrators login through the CDE Login screen, the CDE Front Panel will be displayed. Once displayed, a second login procedure will be required in order to display the `OPUP Manager Main Menu`. The second login prompt is selected by clicking on the OPUP Manager GUI (Netscape "World") icon located near the bottom left of the CDE Front Panel. Once selected, a Netscape HTML web page interface will appear. Clicking anywhere within the gray area of the interface will automatically display a `Netscape: Password` window. The OPUP Manager GUI operates separate from the CDE Front Panel. This means that OPUP System Administrators will be required to click on this icon in order to display a password prompt window.

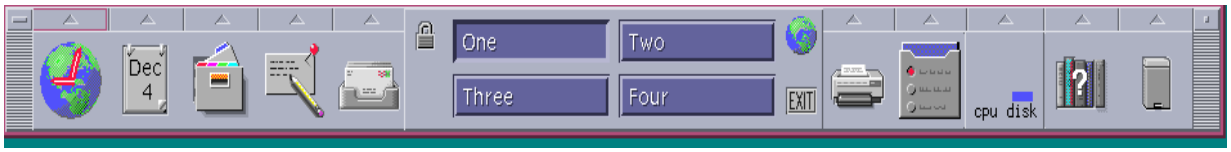

Figure 3-1. CDE Front Panel

The second part involves the use of the Operational Applications Front Panel, Figure 3-2. The Operational Applications Front Panel is used by operators to display the individual icons associated with each WSR-88D Operational Application (PDGUI, Status & Control, Archive PDGUI, and Archive Status Log GUIs).

Figure 3-2. Operational Applications Front Panel

Specific login procedures are covered in full in paragraph 3.3.3.2.

3.3.2.1 Common CDE and Operational Applications Front Panel GUI Functions. The following paragraphs provide a breakdown of the common features found within the CDE Front Panel and Operational Applications GUI functions.

3.3.2.1.1 Windows. Windows contain software applications and are framed with controls that allow the user to move, re-size, or place them in other workspaces.

3.3.2.1.2 Workspaces. A workspace is a display area where a user can place and interact with terminal and application supplied windows. The OPUP provides four separate workspaces that are accessible on the CDE and Operational Applications Front Panels.

3.3.2.1.3 Controls. Controls enable the user to manipulate windows in several ways. A list of all controls can be seen by clicking on the button in the upper left-hand corner of a window. Not all of these controls are available in every OPUP window, and some of them are imbedded within the window frame and are accessible with the mouse. Window controls appearing greyed-out are not currently available and only become so under certain conditions. The complete list of controls includes Restore, Move, Size, Minimize, Maximize, Lower, Occupy Workspace..., Occupy All Workspaces, Unoccupy Workspace, and Close. Changes made to windows with these controls are temporary and only last until the window is closed. Any time a window is opened, it uses default control settings that are programmed into the software.

3.3.2.1.4 Menus. Menus provide access to commands that an operator can use to manage windows and invoke and control applications.

3.3.2.1.5 CDE and Operational Applications Front Panel Icon Overview. A general overview of the icons found on both the CDE and Operational Applications Front Panels are provided in Table 3-2. Normal administrative duties and interaction with the OPUP Manager GUI begins with first performing a CDE Login procedure (discussed in paragraph 3.3.3.2). Once logged in, the `OPUP Manager Main Menu` is accessed by clicking on the OPUP Manager GUI icon located near the left of the CDE Front Panel, Figure 3-1. (A second UserID/Password procedure is also required.)

Operator interaction with Operational Applications begins with first logging in through the CDE Login screen as an OPUP Operator. Each operator must use a valid UserID/Password in order to access the Operational Applications Front Panel. Valid UserID/Passwords are entered on the OPUP server using the `OPUP Users Menu` within the `OPUP Manager Main Menu`. Once the operator performs a CDE Login procedure, the Operational Applications Front Panel, Figure 3-2, will be displayed. (Refer to NWS EHB 6-536, Operations Instructions, for further information concerning in-depth Operational Application functions.)

Table 3-2. CDE and Operational Applications Front Panel Icons

Icon	Where Used	Purpose
 OPUP Manager GUI	CDE Front Panel	Provides access to the OPUP Manager GUI, `OPUP Manager Main Menu` using Netscape's HTML web page format functionality and UserID/Password login. (This icon also incorporates a time display tool tip). **NOTE** This icon does not provide access to the internet.

Table 3-2. CDE and Operational Applications Front Panel Icons - Continued

Icon	Where Used	Purpose
4-Panel Work-space Switch	CDE and Operational Applications Front Panel	Allows the user to switch between four CDE workspaces by default. (Can be renamed on the CDE Front Panel, Figure 3-1, only!)
Exit	CDE and Operational Applications Front Panel	Provides the user the ability to exit the CDE Front Panel or Operational Applications Front Panel and log the display out to the CDE Login screen. The “exit” icon can be used at anytime and will not affect any currently running software processes.
cpu/disk	CDE and Operational Applications Front Panel	Primarily used as an indicator of system performance. However, it is used throughout NWS EHBs 6-536 and 6-538 as a location indicator for access to the Terminal/ Console X-Windows.
This Host	CDE Front Panel	Available by clicking on the **Up Arrow** above the cpu/ disk icon. Used to open a new UNIX Terminal window. Described in paragraph 3.3.3.3.1.
Console	CDE Front Panel	Available by clicking on the **Up Arrow** above the cpu/ disk icon. Used to open a new UNIX Console window. Described in paragraph 3.3.3.3.1.
Up/Down Arrows	CDE Front Panel	The **Up/Down Arrow** alternately occupy the same space on the CDE Front Panel which is directly above each icon on the OPUP server. Once an **Up Arrow** is clicked on it becomes a **Down Arrow** and once a **Down Arrow** is clicked on it becomes an **Up Arrow**. These arrows alternately open (Up) and close (Down) sub-menus associated with the icons directly below them.
Product Display	Operational Applications Front Panel	Used to start the Product Display GUI.

Table 3-2. CDE and Operational Applications Front Panel Icons - Continued

Icon	Where Used	Purpose
Status & Control	Operational Applications Front Panel	Used to start the Status & Control GUI.
Archive Product Display	Operational Applications Front Panel	Used to start the Archive Product Display GUI.
Archive Status Log	Operational Applications Front Panel	Used to start the Archive Status Log GUI.
Clock	CDE and Operational Applications Front Panel	Displays the current time reported by the OPUP Server OS.
PadLock	CDE and Operational Applications Front Panel	Locks the display screen when clicked. The OPUP OS/AS displays a `Solaris Common Desktop Environment` password entry window containing the User Name that what used to login to CDE. To unlock the display screen, the user must then re-enter the exact same password that was used to login to CDE. **NOTE** Do not lock the display screen if some other user is currently logged in.
	Operational Applications Front Panel	Electronic Performance Support System (EPSS). Assists each operator with keyword identification and explanation of Operational Applications functions.

3.3.3 OPUP Software.

NOTE

> The actual procedure(s) used to perform specific OPUP Server OS system administrative functions are addressed in Chapter 5, OPUP System Administration. The procedures used to access and manipulate the OPUP Operational Applications Front Panel are addressed in Chapters 2 and 3 of NWS EHB 6-536, Operations Instructions.

The Small OPUP Equipment Group UD86 Server OS incorporates various functionality associated with Sun Microsystems Solaris UNIX based Server/Client Operating System (OS). The overall server/client relationship employed by the OPUP Server OS specifically allows for a separate display of either the OPUP Manager GUI or Operational Applications Front Panel with only one displayed at any one time. Some OPUP configurations may employ the use of a second Monitor UD86A11 for remote display purposes. The secondary monitor in these cases will only repeat the data displayed on the primary Monitor UD86A1. In either case, only one User ID/Password can be logged in at one time (either the CDE Front Panel or the Operational Applications Front Panel). The following paragraphs will briefly discuss each of the features provided by the OPUP Manager GUI and Operational Applications Front Panel GUI Suite.

3.3.3.1 OPUP Manager GUI Functionality/Operational Concepts. The OPUP Manager GUI utilizes Netscape HTML web page functionality as it's user interface. Use of HTML functionality allows each user to move through the OPUP Manager GUI in a highly efficient manner. HTML functionality includes the use of common HTML web page functions such as the address access window, forward, backward, and refresh buttons, etc. All other web page functionality, although visible and functional, will not allow the user to access and manipulate information from the World Wide Web (WWW).

Logging into the OPUP Manager GUI involves both primary and secondary User ID and Password login functions. These login functions are specific to the OPUP Server OS and OPUP Manager GUI. The primary login process is accomplished using the Sun Microsystems CDE Login screen. This screen automatically provides separate User ID and Password edit fields. The secondary login process is comprised of a `Netscape: Password` window built into the Netscape web page background display. The second login function acts as a second layer of security, developed in order to ensure that only system administrators have access to the OPUP Manager GUI.

NOTE

> The use of Netscape HTML functionality within the OPUP Server OS does not allow any user access to and/or display images and data from the internet!

To access the OPUP Manager GUI, system administrators will be required to initially login through the CDE Login screen. Once the CDE Login screen function is performed successfully, the CDE Front Panel will be displayed. Upon displaying the CDE Front Panel, the Netscape

HTML web page background will automatically appear and a `Netscape: Password` window will be initiated as shown in Figure 3-3 and Figure 3-4, respectively. If the Netscape: Password function does not automatically display the `Netscape: Password` window, the system administrator will then be required to click on the OPUP Manager GUI icon (Netscape "World") located on the left of the CDE Front Panel working bar. (Refer to Figure 3-1 for a depiction of the CDE Front Panel and location of the OPUP Manager GUI icon.) Once the system administrator has logged in through the `Netscape: Password` window, the `OPUP Manager Main Menu` will be displayed.

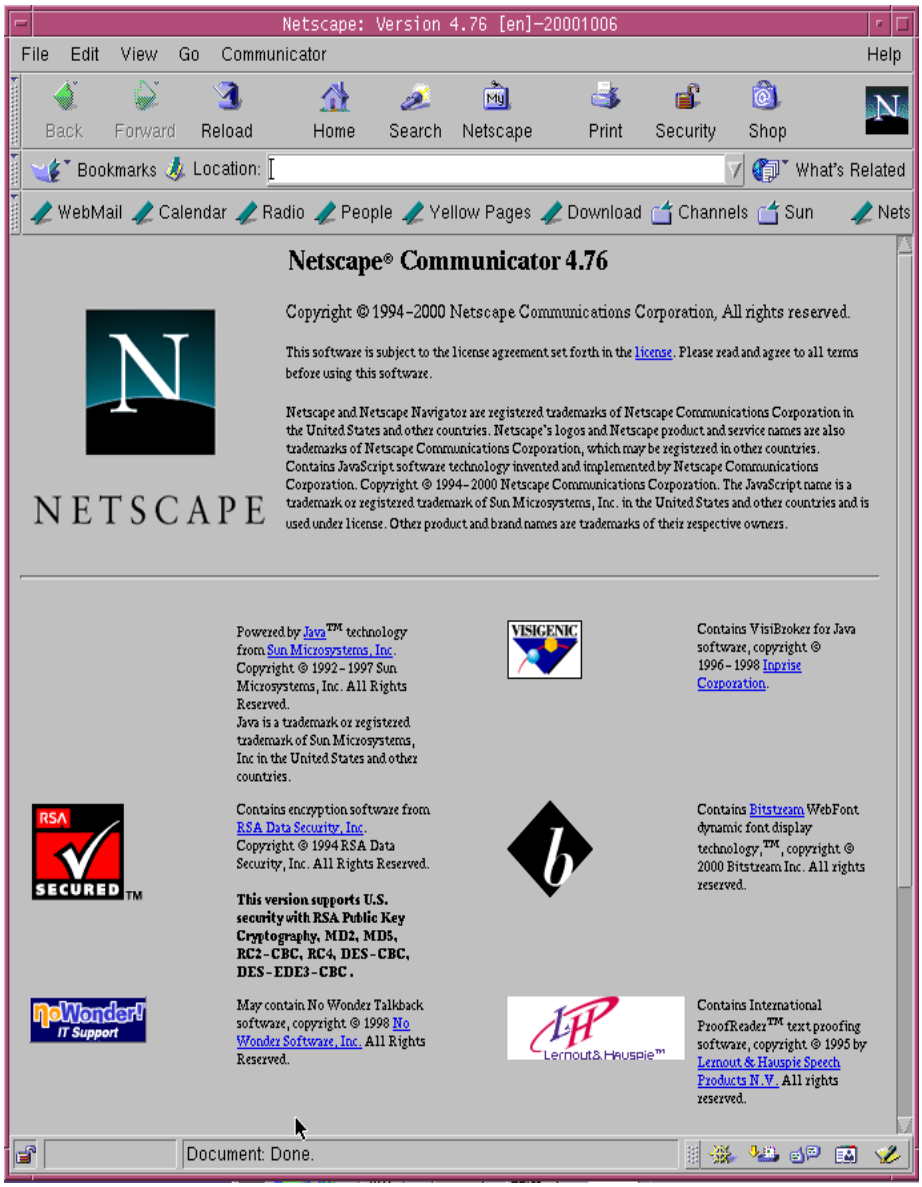

Figure 3-3. Netscape Web Page Background GUI

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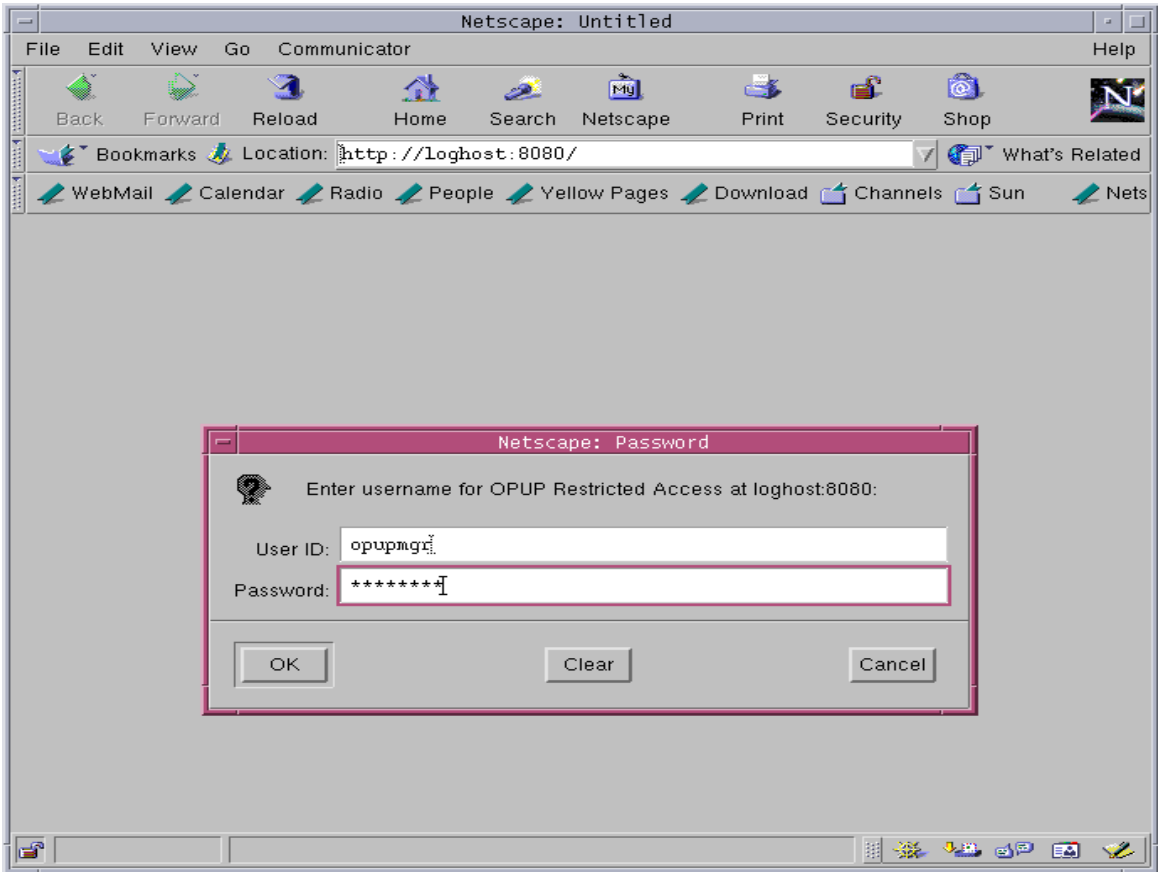


Figure 3-4. Netscape: Password GUI

The login process used to log into the Operational Applications Front Panel only involves logging in one time through the CDE Login screen. User IDs and Passwords must first be granted by the system administrator via the `OPUP Manager Main Menu`, `OPUP Users Menu`.

The OPUP Server OS provides a screen and terminal lockout security feature that applies to both the CDE Front Panel and the Operational Applications Front Panel displays. The screen and terminal lockout function provides the ability to temporarily remove the current image from the Monitor UD86A1 (and if installed, Monitor UD86A11) display(s) or lockout access to the associated terminal until the User ID and Password have been re-entered in order to gain access to the last displayed image. The screen and terminal lockout features are set at the `OPUP Manager Main Menu` ‹ `OPUP Server Control Menu` ‹ `Screen Configuration` function.

The screen and terminal lockout function can be activated in three possible modes. The recovery function is dependent on the mode of activation.

The first mode of activation is a function of inactivity time since last user interaction with the system. If the user does not interact with the system for longer than 15 minutes but less than 30 min-

utes (these times can be changed by the system administrator using the `OPUP Manager Main Menu` window), the screen saver/terminal lockout function will initiate a screen saver mode and temporarily remove the current screen display. The recovery method is to move the mouse or press any key on the keyboard and the screen presentation will reappear.

The second mode of activation is also a function of inactivity time since last user interaction with the system. If the user does not interact with the system for greater than 30 minutes (again, the time can be changed by the system administrator), the screen saver/terminal lockout function will initiate a screen saver mode and lockout the terminal. The recovery method is to move the mouse or press any key on the keyboard to display a `Solaris Password` window. Once the password has been entered by the user or system administrator, the screen presentation will reappear.

The third mode of activation can be initiated by the user or system administrator to manually activate the terminal lockout function. The user or system administrator can click on the **padlock** icon located on the CDE Front Panel or the Operational Applications Front Panel to immediately initiate the terminal lockout feature. The recovery method is to move the mouse or press any key on the keyboard to display a `Solaris Password` window. Once the password has been entered by the user or system administrator, the screen presentation will reappear.

3.3.3.2 Login Procedures (All). The following paragraphs provide the procedures required in order to activate the screen saver, login to the OPUP Manager GUI and/or Operational Applications Suite.

3.3.3.2.1 Screen Saver/Terminal Lockout Activation and Recovery. Prerequisite: Notify the current user (OPUP operator and/or system administrator, if required) that the terminal is to be reactivated. The current User ID password may be required in order to successfully accomplish the tasks outlined in this paragraph.

1. To manually activate the terminal lockout feature, at the Monitor UD86A1, click on the **padlock** icon located on the CDE Front Panel or the Operational Applications Front Panel.

NOTE

> The screen lockout function will only temporarily remove the current image after a minimum amount of interaction from the user. The terminal lockout function will initiate a `Solaris Password` window when the time threshold for this function has been met. The OPUP Server OS Screen Configuration function will initiate a screen lockout function first, then a terminal lockout function second. The user can manually activate the terminal lockout function by clicking on the **padlock** icon located on the CDE Front Panel or Operational Applications Front Panel.

2. To recover from the screen saver/terminal lockout feature, move the mouse or press any key on the keyboard. If an image is immediately displayed, stop here. If a `Solaris Password` window is displayed, go to the next step.

3. At the `Solaris Password` window that displays the message, `Display locked by user` *`user_name`*`. Enter password to unlock.,` enter the password of the user or the opupmgr and press the **<RETURN>** key. The last displayed image will appear.

3.3.3.2.2 CDE Front Panel Login Procedures. Prerequisite: The `OPUP Manager Main Menu` is not currently displayed. (Disregard these steps if the `OPUP Manager Main Menu` is already displayed.)

NOTE

If the Operational Applications Front Panel is displayed, exit out by clicking on the **EXIT** icon near the bottom center of the Operational Applications Front Panel then the **OK** button in the `Logout Confirmation` window.

1. Locate the Monitor UD86A1, Keyboard UD86A3, and Mouse UD86A4. (If the Screen or Terminal Lockout feature is currently engaged, refer to paragraph 3.3.3.2.1 for screen recovery procedures.) The CDE Login screen should be displayed on the Monitor UD86A1. When finished, go to the next step.
2. At the CDE Login screen, in the `Please enter your user name` edit box, enter: **opupmgr<Return>**. A `Please enter your password` edit box will be displayed.
3. At the CDE Login screen, in the `Please enter your password` edit box, enter: *opupmgr_password* **<Return>**. The CDE Login process will then perform a login sequence. When the CDE login sequence is finished, a Netscape HTML web page background, along with a `Netscape: Password` window will be displayed.

NOTE

If the Netscape HTML web page interface does not display, locate and click on the OPUP Manager GUI (Netscape "World") icon near the left of the CDE Front Panel. Refer to Figure 3-1 and Table 3-2 for further information concerning the location and depiction of the OPUP Manager GUI (Netscape "World") icon. If the Netscape HTML web page interface is displayed and the `Netscape: Password` window does not display, click anywhere within the gray background of the Netscape HTML web page. The `Netscape: Password` window will then be displayed.

4. At the `Netscape: Password` window, click within the `User ID:` edit field and enter: **opupmgr<Return>**. The cursor will then be displayed in the `Password:` edit field.
5. In the `Password:` edit field, enter: *opupmgr_password***<Return>**. The `OPUP Manager Main Menu` will be displayed.

3.3.3.2.3 Operational Applications Login Procedures. Prerequisite: The OPUP Operational Application Suite is not currently displayed. (Disregard these steps if the OPUP Operational Application Suite is already displayed).

NOTE

If the `OPUP Manager Main Menu` is displayed, exit out by clicking on the **EXIT** icon at the bottom center of the CDE Front Panel then the **OK** button in the `Logout Confirmation` window. The CDE Login screen will be displayed..

1. Locate the Monitor UD86A1, Keyboard UD86A3, and Mouse UD86A4. (If the Screen or Terminal Lockout feature is currently engaged, refer to paragraph 3.3.3.2.1 for screen recovery procedures.) The CDE Login screen should be displayed on the Monitor UD86A1. When finished, go to the next step.
2. At the CDE Login screen, in the `Please enter your user name` edit box, enter: *User ID***<Return>**. A `Please enter your password` edit box will be displayed.
3. At the CDE Login screen, in the `Please enter your password` edit box, enter: *user_password***<Return>**. The Operational Applications Front Panel will be displayed.

3.3.3.3 OPUP Manager Main Menu and Sub-Menu GUI Features. The `OPUP Manager Main Menu`, as shown in Figure 3-5, is the primary graphic user interface used to access all OPUP Server OS administrative functions. This menu is broken down into six separate sections or areas of functionality. These areas are the OPUP Software, Users, Security Logs, Workstations, Archive, and Server Control functions. The `OPUP Manager Main Menu` has been organized to provide each user the ability to rapidly pin-point functional areas in support of administrative duties.

Each sub-menu of the `OPUP Manager Main Menu` will normally be manipulated/accessed by the use of the Mouse UD86A4. However, basic attributes of the **<Tab>**, **<Return>**, **<Up>**, **<Down>**, **<Left>**, and **<Right>** keys on the Keyboard UD86A3 may be used as well. In addition, referring to Figure 3-5, clicking on any button located on the Netscape HTML web page will forward the user to either another menu, edit, or warning GUI/window. If an edit field is provided within a GUI or window, a selection list and/or menu will be provided. If a list or menu is not provided, then manual entries may be required from the keyboard. Warning GUIs/windows will for the most part, contain a **Yes** or **No** selection choice. A **No** selection cancels the edits or commands and a **Yes** selection executes the command or accepts the edits and returns the user to the `OPUP Manager Main Menu`, if applicable. Other HTML functionality includes the **Forward** and **Back** arrow buttons located near the top left of the Netscape web page browser which allow the user to move seamlessly forwards/backwards within the OPUP Manager sub-menus. However, these buttons are limited to the function of the web page itself. For example, the **Forward** button will only be activated if the **Back** button has been used first to return to the previous page or if a new web page is opened over the initial selection.

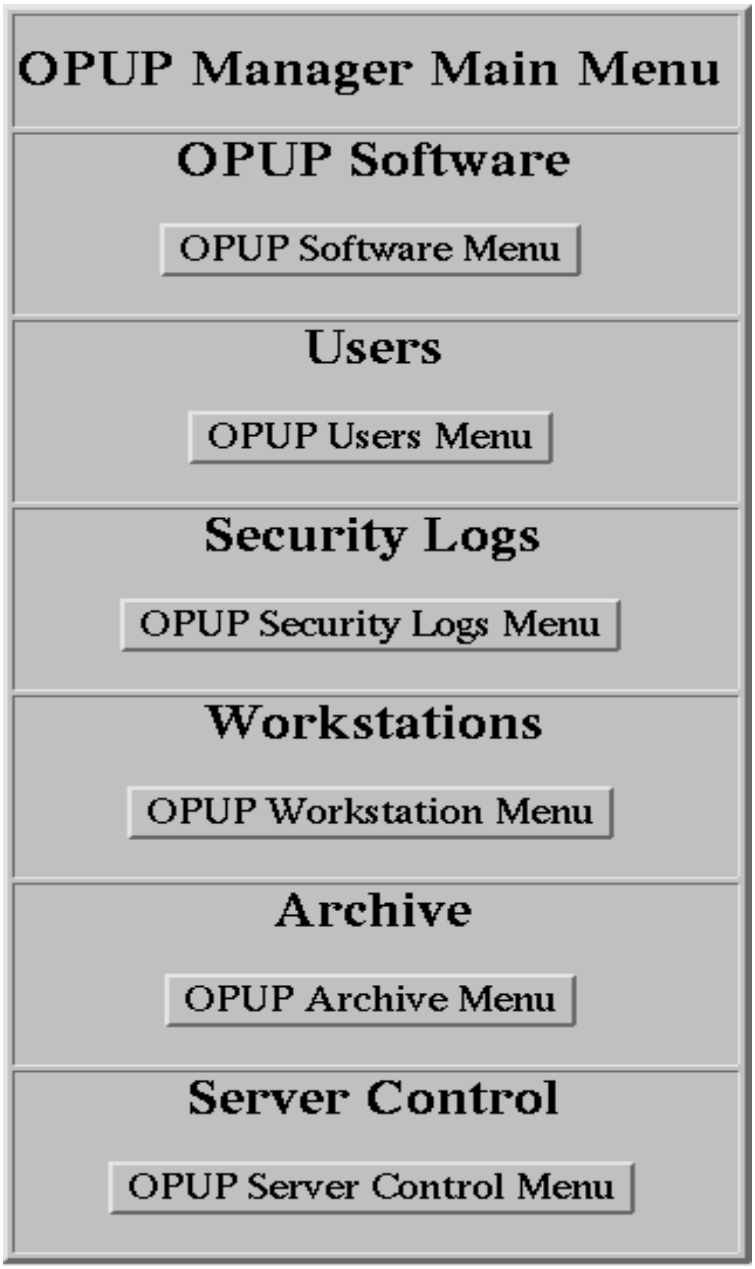


Figure 3-5. OPUP Manager Main Menu

3.3.3.3.1 Terminal Window Access. The CDE Front Panel provides a method to access either the directory and/or root level control of the OPUP Server OS through the use of a Terminal window. A Terminal window is accessed and displayed by clicking on the **Up Arrow** just above the **cpu disk** icon located on the CDE Front Panel. Once selected, a `Hosts` pop-up menu will be displayed. Either **This Host** or **Console** menu items may be used. (Refer to Figure 3-1 for exact location of the **cpu disk** icon.)

NOTE

Operators will not be given access to either the This Host or Console Terminal windows. Although the Console Terminal window can be used, all required command line entries, fault isolation guidance, and troubleshooting procedures will reference the use of a Host Terminal. The Host Terminal window provides specific feedback information for which the Console Terminal window does not.

3.3.3.3.2 Common Command Buttons. Some common command/action buttons are available on multiple GUI windows and are activated by clicking on the appropriately named button. These buttons include **Save**, **Reset Form**, **Next**, **Return to Last Screen**, and **Return to Main Menu**.

3.3.3.3.2.1 Save. The **Save** button is used to write (save) the currently displayed editable data/values/parameters to the appropriate configuration file for implementation by the OPUP application and/or background software tasks.

3.3.3.3.2.2 Reset Form. The **Reset Form** button is used to erase the current entries in the window edit fields. This cancels entries and starts the editing process over without exiting the window.

3.3.3.3.2.3 Next. The **Next** button is used to move forward to the next window of a process.

3.3.3.3.2.4 Return to Last Screen. The **Return to Last Screen** button is used to close the current window and redisplay the previous window.

3.3.3.3.2.5 Return to Main Menu. The **Return to Main Menu** button is used to close the current window and redisplay the `OPUP Manager Main Menu`. If any edits are pending, they will be cancelled. To save changes first, click on **Save** before clicking on **Return to Main Menu**.

3.3.3.4 OPUP Software Menu. The OPUP Software Menu functionality provides the ability to start/stop/restart the OPUP Server OS, monitor background processes, edit adaptation data, view and edit communication configurations, display the current software version, available products in the OPUP database, and purge product data. Selecting the **OPUP Software Menu** button will open the `OPUP Software Menu` window as shown in Figure 3-6.

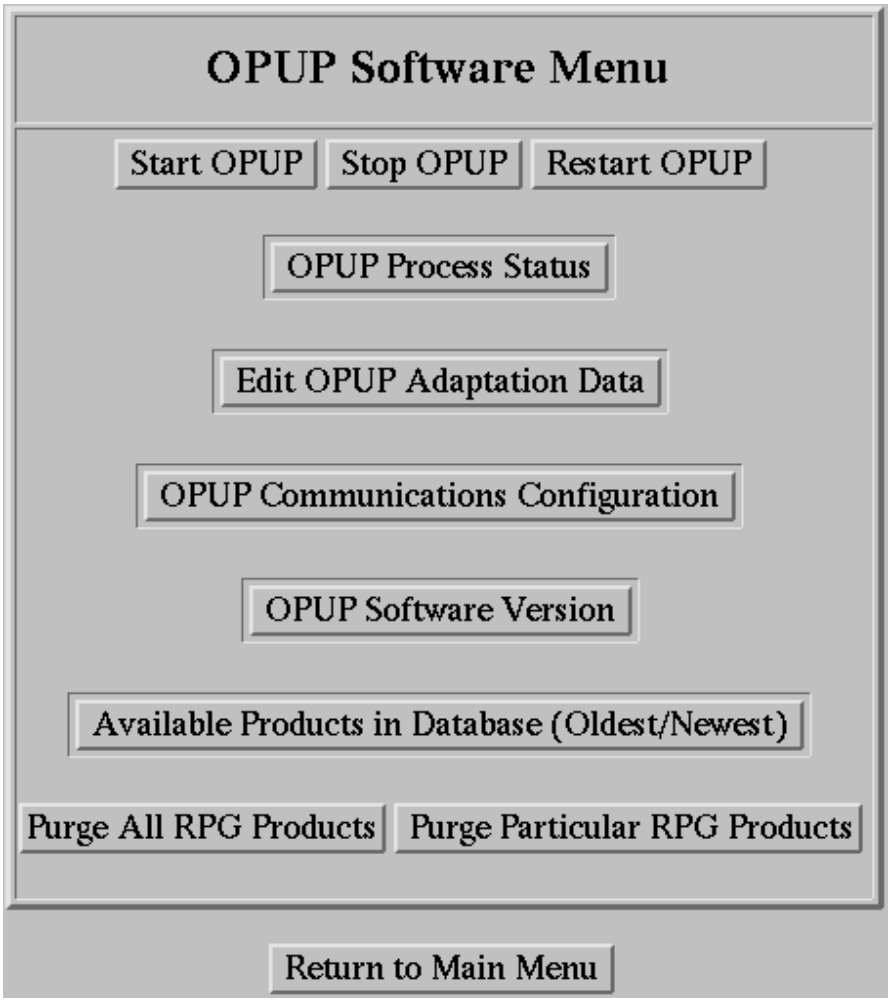


Figure 3-6. OPUP Software Menu

3.3.3.4.1 Start OPUP. The **Start OPUP** button is used to launch a script that loads into memory and starts all applicable background processes.

3.3.3.4.2 Stop OPUP. The **Stop OPUP** button is used to launch a script that stops and removes all applicable background processes from memory.

3.3.3.4.3 Restart OPUP. The **Restart OPUP** button is used to launch a script that stops and removes all applicable background processes from memory, reloads it back into memory, and then restarts all applicable background processes. This simplifies the job of restartingany applicable background processes in the effort to correct operational faults caused by either hardware or software problems.

3.3.3.4.4 OPUP Process Status. The **OPUP Process Status** button is used to open the `OPUP Process Status` window. This window provides a display of most current state of

each software task/process relevant to the OPUP processes. This window is mainly used to ensure that each task is within normal operating parameters. If not, this window provides useful troubleshooting information. Discussion of each process displayed within this window is covered in full in Section 3.4, OPUP Software Background Process Description.

3.3.3.4.5 Edit OPUP Adaptation Data. The Edit OPUP Adaptation Data function provides the ability to edit dial adaptation data. When the **Edit OPUP Adaptation Data** button is selected, an `Edit RPG Information from list for Dial Radars for` *RPG of Interest* window will be displayed as shown in Figure 3-7. This window provides a list of each dial radar from which each site can access and receive data. Dial access *radars of interest* are edited/updated by selecting the *radar of interest* and clicking on the **Edit** button located near the bottom center of the window.

NOTE

The procedures used to update/edit dial communication adaptation information can only be used to change or add additional **Dial** access for an *RPG(s) of interest*. This means that Dial access information for a given RPG(s) **cannot** be arbitrarily changed without prior coordination between the respective DOC and the DoD agencies. This coordination is accomplished by gaining authorization from either/or the AFW and Navy/MC communication circuit coordinator (as appropriate) and/or the ROC Hotline NBComms Database Manager. The ROC Hotline will notify each individual site by ROC Hotline NBComm Facsimile when routine changes are to be made.

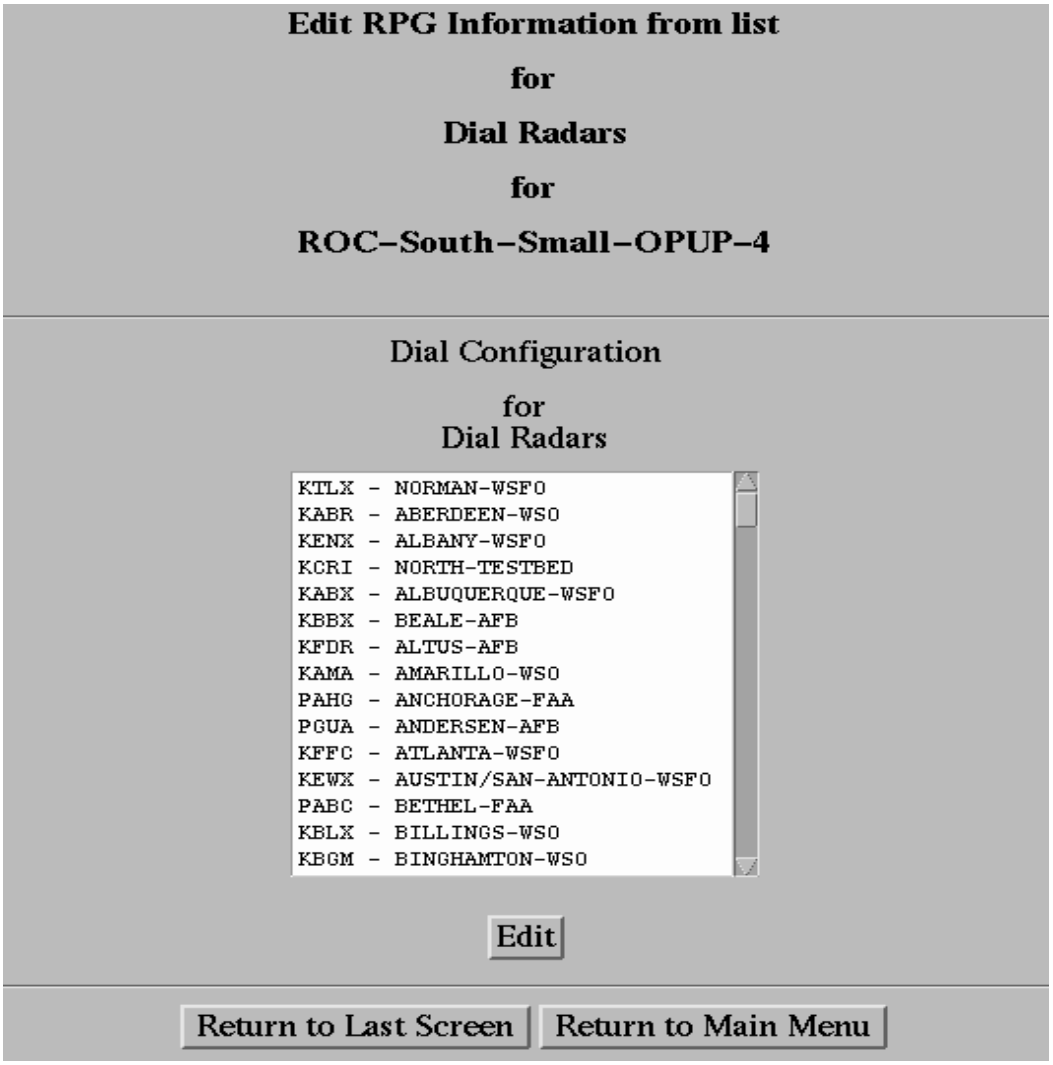


Figure 3-7. Edit RPG Information for Dial Radars for *RPG of Interest* Window

Once an *RPG of Interest* is selected (highlighted) and the **Edit** button is clicked, an `OPUP Manager Edit RPG Information For` *RPG of Interest* window will be displayed as shown in Figure 3-8. This window provides the editable fields required to update the information necessary in order to establish a dial circuit connection to the dial access radar of interest. The parameters required to configure or reconfigure each site's OPUP dial in access to an RPG of interest are, the RPG dial-in line number and User and Port Passwords. Chapter 5, OPUP System Administration, provides the steps necessary to edit the fields depicted in Figure 3-8.

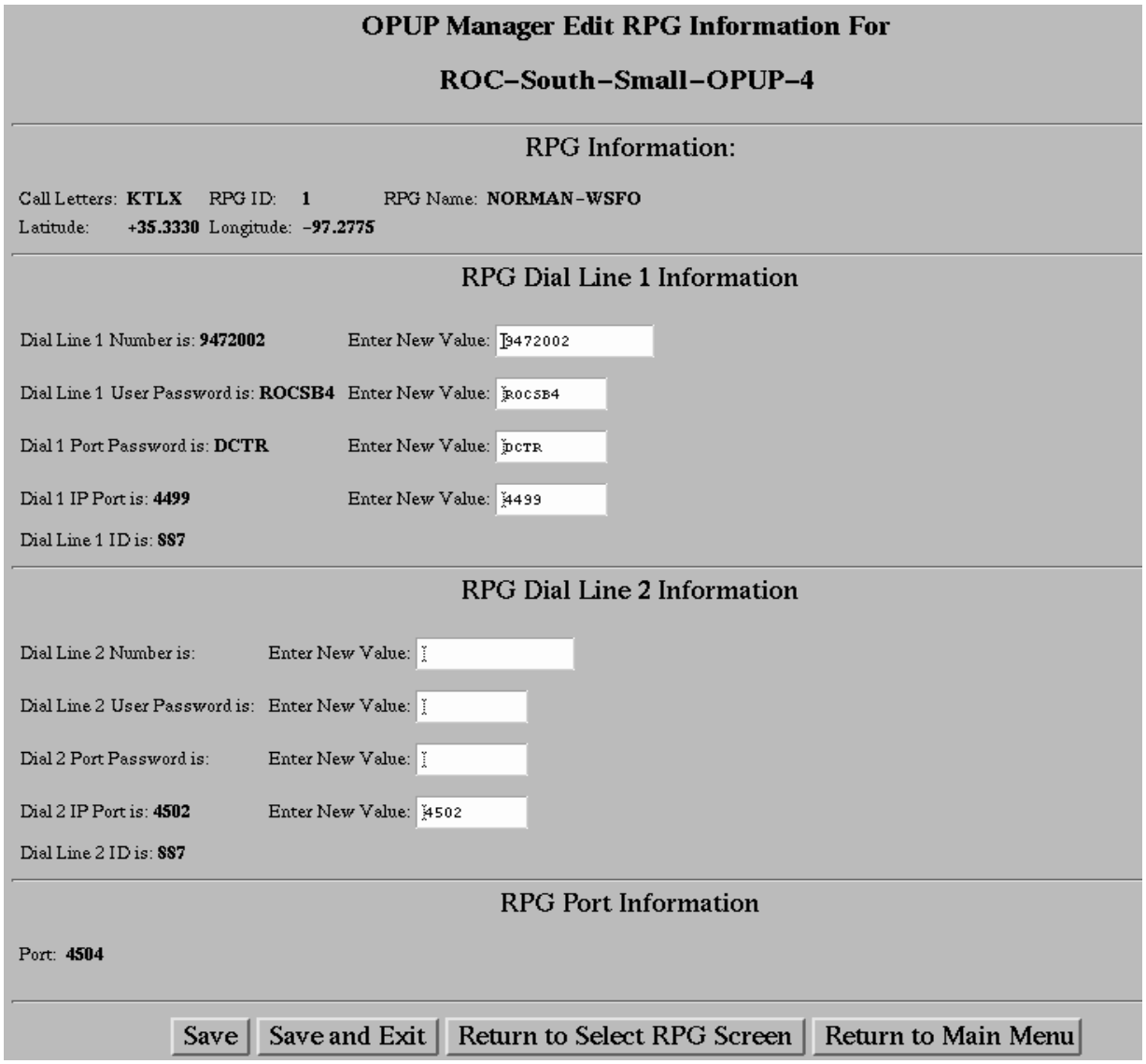


Figure 3-8. OPUP Manager Edit RPG Information For *RPG of Interest* Window

3.3.3.4.5.1 OPUP Communication Configuration. The OPUP Communication Configuration function provides the ability to edit or change dedicated RPG connectivity configuration data at each site. When the **OPUP Communications Configuration** button is clicked, an `OPUP Communications Configuration Window` will be displayed as shown in Figure 3-9.

The following information is provided within this window:

- Link: The position that the Radar Name is assigned within the OPUP database.

- Radar Name: The four letter ICAO designation for each dedicated radar (not used for dial communications).
- Radar Desc: The actual location of the radar site and its designation, if applicable.
- CM No.: The Intelligent Communications Processor (ICP) board location for each dedicated/dial radar (dial not shown) as it pertains to the Communications Server hardware slot number. Each line is set by NWS ROC Configuration Management (CM) Branch guidelines.
- PUP Id: Identification of the current OPUP site for RPG/OPUP software identification purposes.

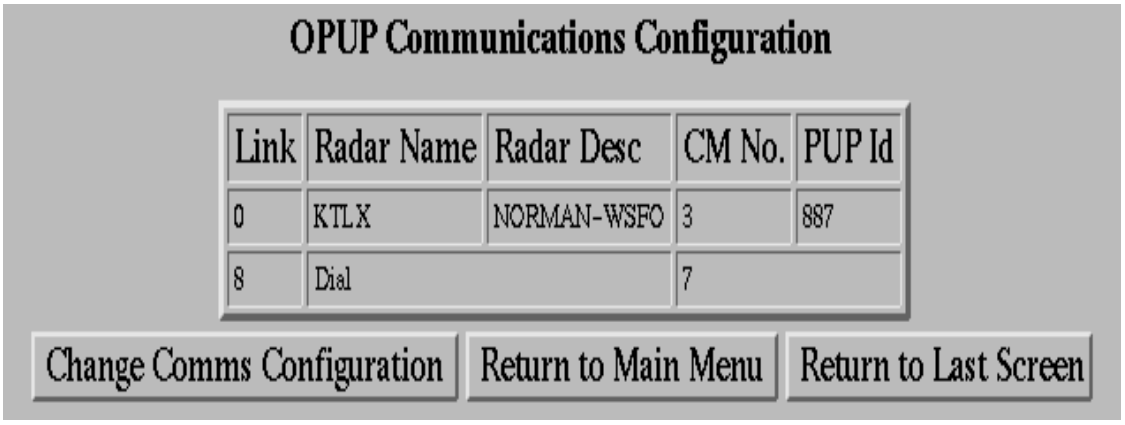


Figure 3-9. OPUP Communications Configuration Window

NOTE

Except for specifically identified sites, each Small OPUP site is initially configured for one dedicated RPG connection. Each site must be careful to only add, delete, or update dedicated RPG information that is coordinated by the NBComms Database Manager located at the ROC Hotline. Additional dedicated RPGs cannot be arbitrarily added to the Small OPUP due to the strict coordination and resource costs required in order to provide a complete dedicated RPG connection. Changing or adding dedicated RPG information not coordinated through proper channels will cause the OPUP system to become unstable or behave erratically.

Once the **Change Comms Configuration** button is selected, a pop-up window will prompt the user to select **Yes** to change site dedicated communication configuration or to select **No** to return to the `OPUP Manager Main Menu`. If the **Yes** button is selected, an `OPUP Change Ded Communications Configuration` window will be displayed as shown in Figure 3-

10. This window provides the ability to either reconfigure or add a dedicated radar. Chapter 5, OPUP System Administration, provides the detailed procedures required to update this information.

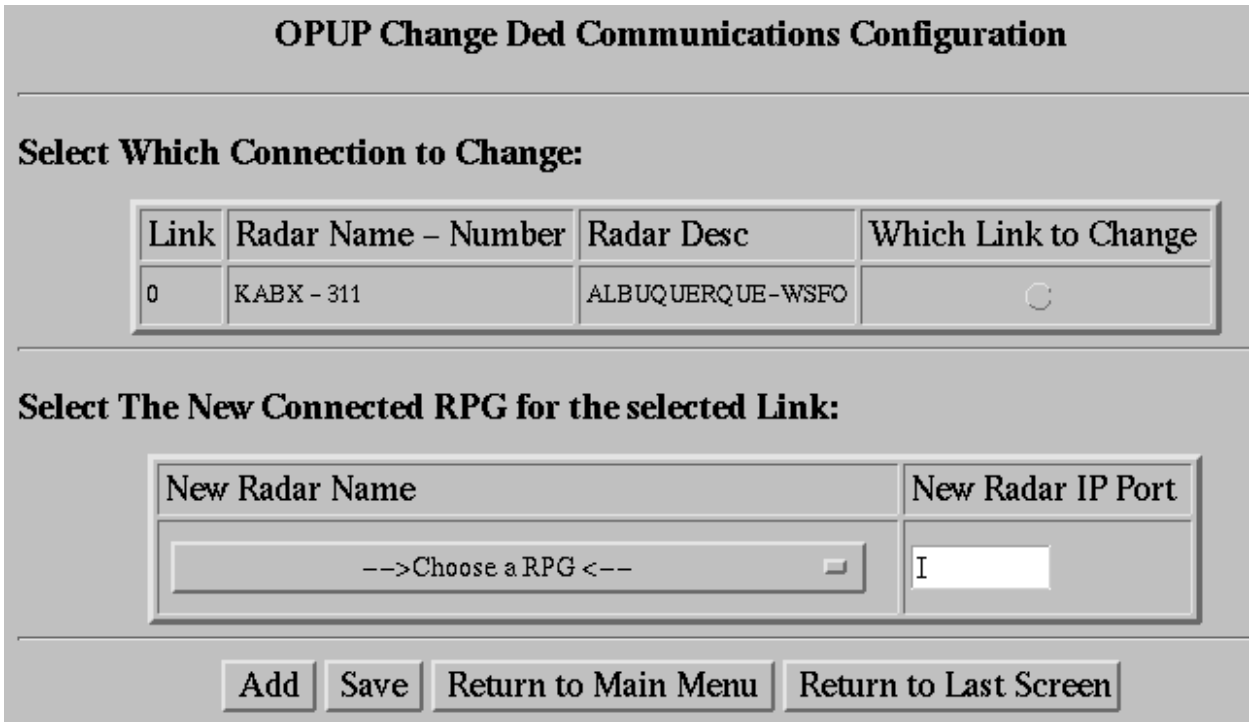


Figure 3-10. OPUP Change Ded Communications Configuration Window

3.3.3.4.5.2 OPUP Software Version. The OPUP Software Version function provides the ability to view specific information related to the current set of software installed on the OPUP Server UD86A2. When the **OPUP Software Version** button is clicked, an `OPUP Software Release` window will be displayed as shown in Figure 3-11. The OPUP Software Version function provides a useful method in determining and controlling the latest software release installed at at each site. The following information is provided within the `OPUP Software Release` window.

- Release Number: Overall software control version number.
- Applications Thread: Operational Applications control version number.
- OS Version: OPUP Operating Software control version number.
- Tools Version: OPUP Manager GUI (`OPUP Manager Main Menu`) control version number.
- Updated on: Date of the current software release number.

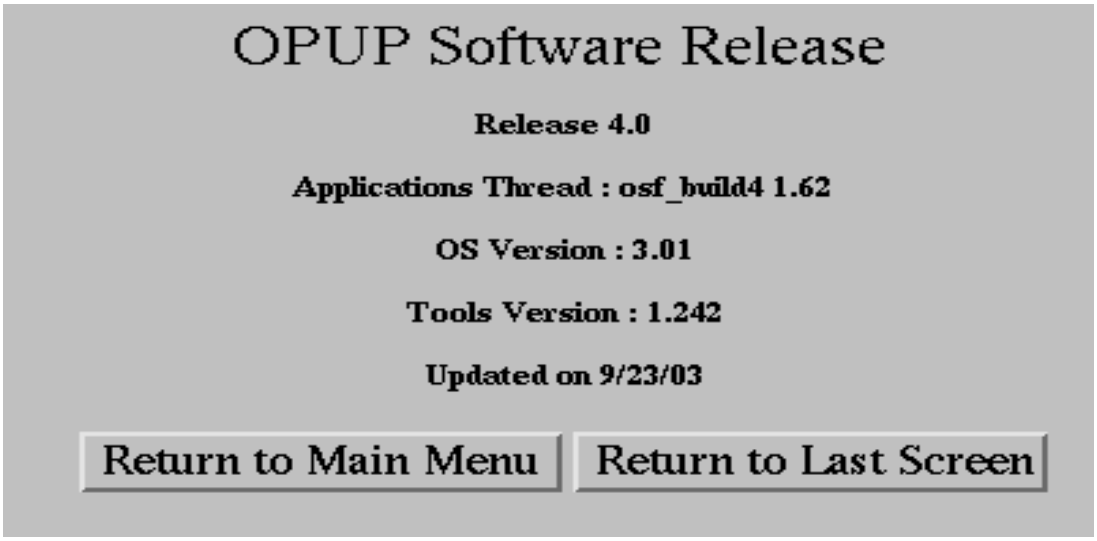


Figure 3-11. OPUP Software Release Window

3.3.3.4.5.3 Available Products in Database (Oldest/Newest). The Available Products in Database (Oldest/Newest) function provides the ability to display the latest available WSR-88D products and message data associated with each *RPG(s) of interest* found within the OPUP Server OS database. When the **Available Products in Database (Oldest/Newest)** button is clicked, an `Available Products in Database (Oldest/Newest)` window will be displayed as shown in Figure 3-12. The data in this window is listed by `RPG ID`, `Oldest Product`, and `Newest Product`. The RPG ID lists each *RPG of interest* by four letter identifier. The Oldest and Newest Product information is listed by date time group.

Figure 3-12. Available Products in Database (Oldest/Newest) Window

3.3.3.4.5.4 Purge All RPG Products. The Purge All RPG Products function is used to purge all WSR-88D product and message data associated with all *RPGs of interest* found within the OPUP Server OS database. When the **Purge All RPG Products** button is clicked, a `Purge RPG`

`Product Database Warning` window will be displayed as shown in Figure 3-13. When the **Yes** button is clicked, the Purge All function selects all RPG product and message data and removes them from the OPUP OS product database. (The Purge All function will perform a clean removal of all WSR-88D product and message data located in the OPUP OS product database.) When the **No** button is clicked, the Purge All RPG Products function immediately cancels the Purge All RPG Products procedure.

NOTE

Care must be taken when selecting the Purge All RPG Products button. Once the **Yes** button within the `Purge RPG Product Database Warning!` window is clicked, all products and message data located within the OPUP Server OS database directory will be permanently removed. These products **cannot** be recovered.

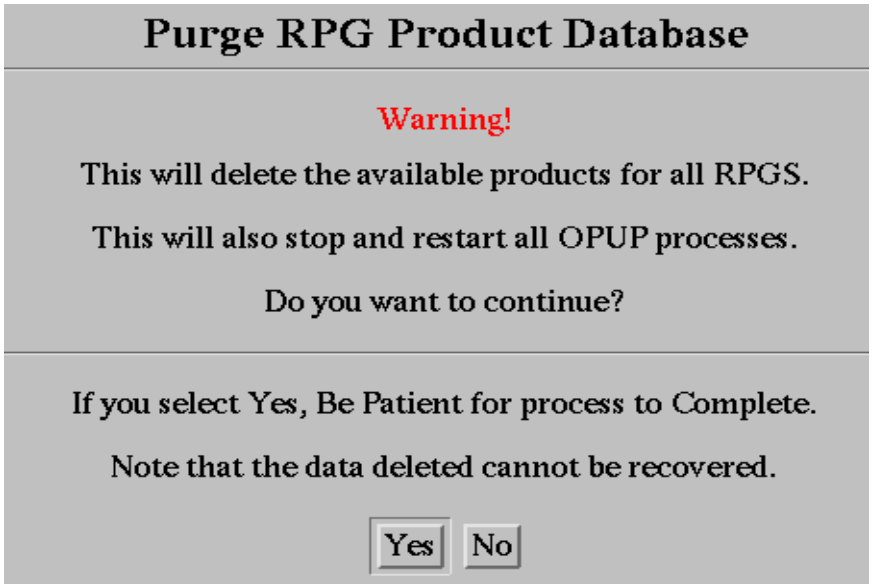


Figure 3-13. Purge RPG Product Database Window

When the Purge All RPG Products function is completed, an `Available Products in Database` window will be displayed as shown in Figure 3-14.

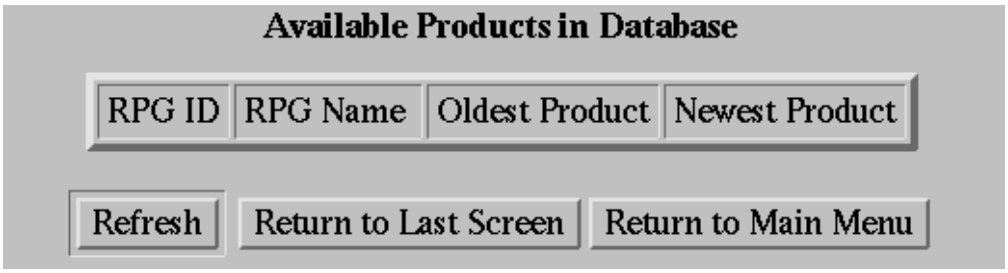


Figure 3-14. Available Products in Database Window

3.3.3.4.5.5 Purge Particular RPG Products. The Purge Particular RPG Products function provides each site the ability to select specific *RPG of interest* product and message data and remove them from the OPUP OS Product database. When the **Purge Particular RPG Products** button is selected, a `Please Select RPG to Purge from Available Products in Database` window will be displayed as shown in Figure 3-15.

Figure 3-15. Please Select RPG to Purge from Available Products in Database Window

The `Please Select RPG to Purge from Available Products in Database` window contains the following information:

- RPG ID: Displays the RPG identifier assigned to the particular RPG listed by the ROC Configuration Management Branch.
- RPG Name: Provides the four letter ICAO designation for each dedicated radar (not used for dial communications.)

- Oldest/Newest Product: Displays the oldest to the newest date of each data set stored within the OPUP Server OS database for the RPG of interest.

- Select RPG to Purge: Provides a radio button for each RPG listed. The associated data can only be purged if the corresponding radial button is selected.

Each WSR-88D products and message data are selected to be purged from the OPUP Server OS database by clicking the associated radio button for an *RPG of interest* within the `Select RPG to Purge` column of the `Please Select RPG to Purge from Available Products in Database` window. When the **Next** button is clicked, the Purge Particular RPG Products function will display a `Purge RPG Product Database Warning` window similar to Figure 3-13.

NOTE

> Care must be taken when selecting the Purge Particular RPG Products button. Once the **Yes** button within the `Purge Particular RPG Product from Database` window is clicked, all products and message data located within the OPUP Server OS database directory for the selected RPG of interest will be permanently removed. These products **cannot** be recovered.

When the **Yes** button is clicked, the Purge Particular RPG Products function will remove the selected *RPG of Interest* product set from the OPUP OS product database. (The Purge Particular RPG Products function will perform a clean removal of the selected data set.) If the **No** button is clicked, the Purge Particular Products function immediately cancels the Purge Particular Products procedure.

When the Purge Particular RPG Products function is completed, an `Available Products in Database` window will be displayed as shown in Figure 3-14.

3.3.3.4.6 OPUP Users Menu. The OPUP User Menu function provides the ability to add, delete, change passwords, and view all users (operators, etc.) granted access to the Operational Applications Front Panel. Only users that have been assigned by the OPUP System Administrator can access the Operational Applications Front Panel. When the **OPUP Users Menu** button is clicked within the Users section of the `OPUP Manager Main Menu`, an `OPUP Users Menu` will be displayed as shown in Figure 3-16.

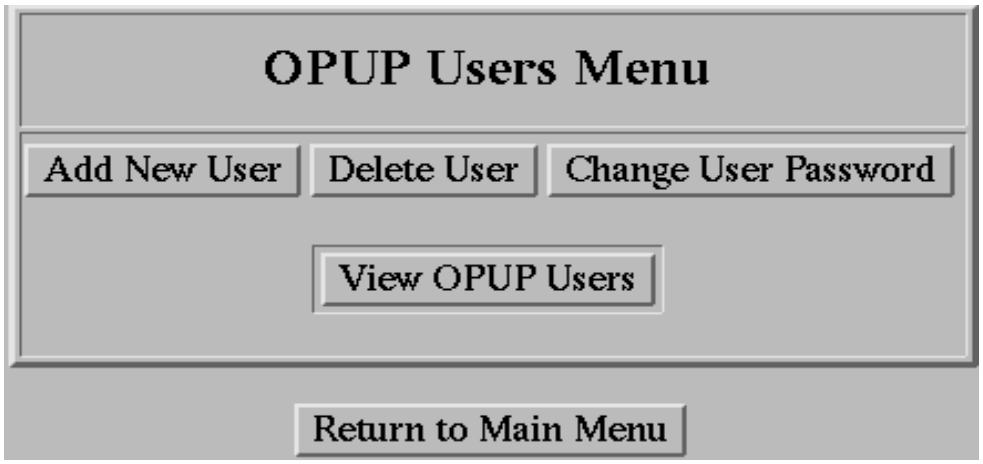


Figure 3-16. OPUP Users Menu

3.3.3.4.6.1 User Name and Password Composition. The use of user names and passwords are required in order to access both the CDE and Operational Applications Front Panel. The composition of user names and passwords are discussed in paragraph 4.4.2.2.1 and paragraph 4.4.2.2.3. The information presented in this paragraph is provided as a general overview for issuing both user names and passwords. Consult the above mentioned paragraphs for a complete discussion of the security policy for issuing and removing user names and passwords. Each user name, once removed/deleted from the OPUP Server OS must not be reassigned to another person for up to one year.

NOTE

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

Each user name must meet the following minimum composition requirements:

- Be at least a minimum of three characters in length.
- Contain at least two alpha characters (A through Z or a through z).
- Contain at least one number (0 through 9) or one of the following special characters (!, @, %, -, +, _, {, [, #, or =).

Each password must meet the following minimum composition requirements:

- Be at least a minimum of eight characters in length.
- Contain at least one UPPERCASE character (A through Z).

- Contain at least one lowercase character (a through z).
- Contain at least one number (0 through 9).
- Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.

3.3.3.4.6.2 Add New User. The Add New User function is used to grant access to the Operational Applications Front Panel. When the **Add New User** button is clicked, an `OPUP Manager Add New User` window will be displayed. This window provides three edit fields titled, `User Name:`, `Password:`, and `Reenter password:`. The User Name field requires a unique user name (User ID). The Password field requires a unique combination of characters, numbers, and special characters that will be used in association with a User ID. Refer to paragraph 3.3.3.4.6.1 for minimum user name and password composition requirements. The Reenter password field is used to ensure that the password assigned to the User ID is correct.

NOTE

The Add New User function cannot be used to change Super User (su)/root level access. Terminal/Console window access and CDE environmental change privileges are not granted to operators. OPUP Operators can only access the Operational Applications Front Panel GUI displays.

When the **Save** button is clicked within the `Add New Users` window, an `OPUP User` *`User_Name`* `- Successfully Created` window will be displayed. If the information placed within the `Password`: and `Reenter password`: fields do not exactly match, an `OPUP User cannot be created` window will then be displayed as shown in Figure 3-17. If this window is displayed, click on the **Return to Last Screen** button and reenter the information in the `Password:` and `Reenter password:` fields. Ensure that these fields match each other exactly.

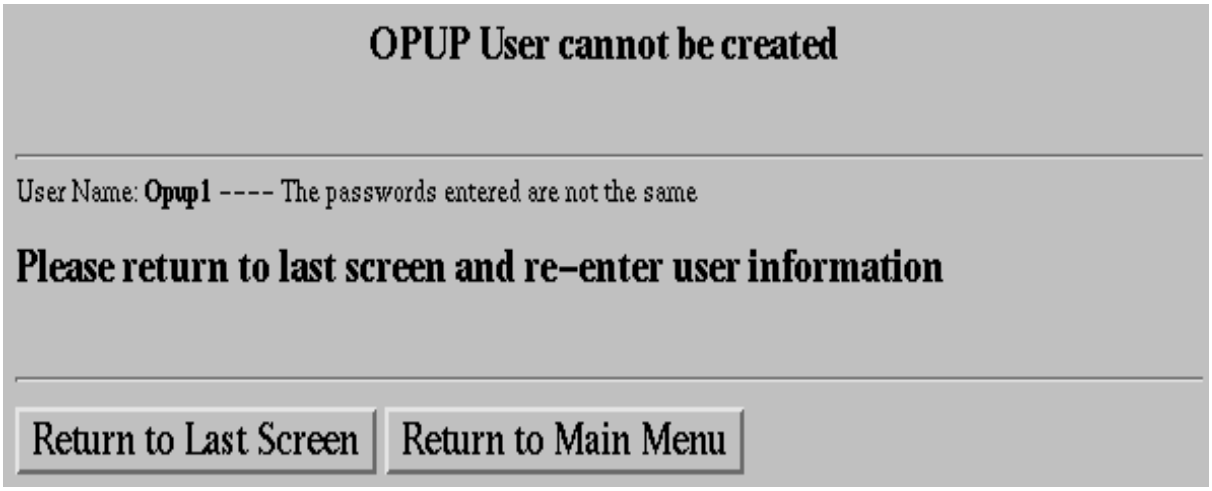


Figure 3-17. OPUP User Cannot Be Created Window

3.3.3.4.6.3 Delete User. The Delete User function is used to remove User IDs from the OPUP Server OS database. When the **Delete User** button is clicked, an `OPUP Manager Delete User` window will be displayed. This window only contains a `User Name:` edit field. To remove a User ID, simply enter the desired User ID within the `User Name:` field and click on the **Delete** button. The OPUP Manager Delete User function will then remove the User ID from the OPUP Server OS database. When the OPUP Manager Delete User function is finished, an `OPUP User` *User_Name* `has been deleted` window will be displayed.

3.3.3.4.6.4 Change User Password. The Change User Password function is used to change the password associated with a specific User Name (User ID) that is located within the OPUP Server OS database. When the **Change User Password** button is clicked, an `OPUP Manager Change User Password` window will be displayed as shown in Figure 3-18. This window contains, within the `User Information:` area, three edit fields: `User Name:`, `Password:`, and `Reenter password:` To change a password, the User Name (User ID) of interest and a new password must be placed in the respective edit fields. The old password is not required because the OPUP Manager Change User Password function only assigns a new password for each User Name when this function is used.

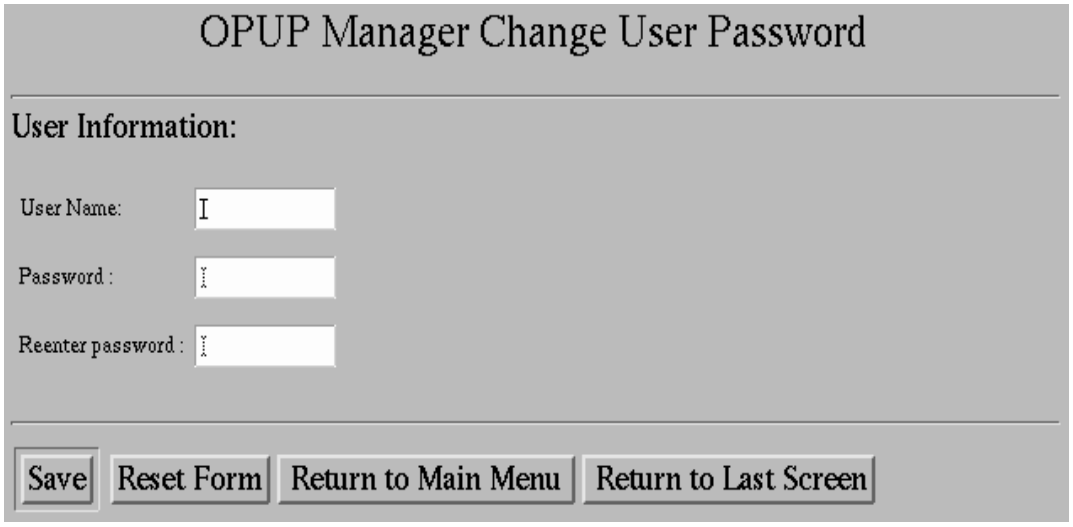


Figure 3-18. OPUP Manager Change User Password Window

3.3.3.4.6.5 User Menu Limitation. The OPUP Server OS has no function or utility that will allow passwords to be recovered if they are lost. For security purposes each password is encrypted at the root access level. To facilitate not having to remember the old User Name (User ID) password, the OPUP Manager Change User Password function will allow any User Name (User ID) password to be changed by simply entering a new password as described in paragraph 3.3.3.4.6.4. The OPUP Manager Change User Password function will ensure that no user attributes will be lost, if only the password is to be changed.

There may be situations in which the User Name (User ID) must be deleted from the OPUP Server OS database in order to reset or refresh user display attributes associated with Operational

Applications Front Panel functions. The OPUP Manager Delete User function will allow administrators to remove a User Name (User ID) and reenter it in order to reset all corrupted attributes associated with it. However, all user configured display attributes associated with the Operational Applications Front Panel will be lost for that User Name (User ID).

If a User Name was deleted by accident, the User Name can be restored using the restore procedures described in paragraph 3.3.3.4.10.2.

3.3.3.4.6.6 View OPUP Users. The View OPUP Users function is used to display all user names assigned within the OPUP Server OS database. When the **View OPUP Users** button is clicked, an `OPUP Users` window will displayed as shown in Figure 3-19.

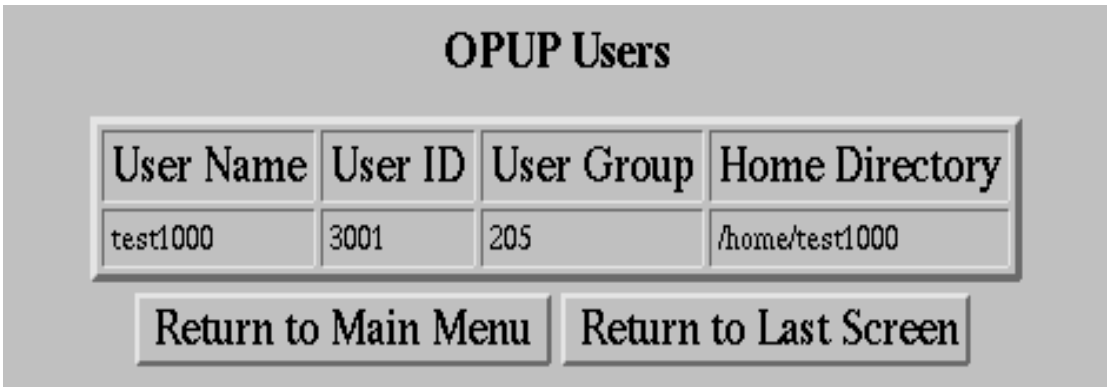


Figure 3-19. OPUP Users Window

The OPUP Users function provides the ability to quickly open and view all OPUP User Names (User IDs) that are present within the OPUP Server OS Users database. The `OPUP Users` window provides the following information:

- User Name: An assigned User Name (User ID) granted by the OPUP System Administrator.
- User ID: The assigned UNIX Administrative User ID for use with the UNIX Admintool function.
- User Group: The assigned User Group number used by the UNIX Admintool GUI.
- Home Directory: The directory where the User Name (User ID) is stored within the OPUP Server OS database.

3.3.3.4.7 OPUP Security Logs Menu. The OPUP Security Logs Menu function provides the ability to observer, detect, record, and manage user access to the OPUP Server OS. When the **OPUP Security Logs Menu** button is clicked, an `OPUP Security Logs Menu` window is displayed as shown in Figure 3-20. The `OPUP Security Logs Menu` enables each site to start and stop log functions, view failed login attempts, view access logs, view failed log-

ins, and view access activity to root level directories (SU access activity). This menu also provides the ability to print access and log records for security record purposes. The OPUP Security Logs Menu function also provides an internal audit mechanism which assists with the enforcement of DoD security directives in terms of monitoring system security and the ability to provide access log records. These measures are vital to ensure the OPUP Server OS communications and network security have not been circumvented and/or compromised. If unauthorized activity has been detected, the OPUP System Administrator can provide a record of the activity to higher authorities.

Figure 3-20. OPUP Security Logs Menu

Each view log function provided by the OPUP Security Logs Menu may contain the following information:

- Username: All of the logs (except the View SU Logs) will record the Username of the login attempt. It is normally the first item to be recorded.
- TTY Device: This information is only recorded on the OPUP Server Failed-Login Log and displays the port path that the Username attempted to login from.
- Device: This information is recorded on all other logs and displays the name of the device (Console/Terminal/Remote Terminal [Telnet/FTP]), port, and port Identifier of the Username that logged in.
- IP Address: This is the IP Address of the Username that logged in unless the OPUP Server login terminal was used. However, the IP Address will be recorded anytime the system administrator performs a remote login procedure (Telnet/FTP).
- Status: Used on the View SU Logs only, the information provided in this log depicts when a user has switch to root level access. This log allows each site to determine whether the attempt to change to root was successful, unsuccessful, and which device made the attempt (i.e. host or console terminal).
- Login/Logout Time: Used on the `OPUP Server Last Successful Logins` window only, displays the date and time that the Username logged in and logged out.

3.3.3.4.7.1 Start/Stop Logging of Failed-Logins. The Start or Stop Logging of Failed-Logins function is used to start or stop the logging of failed logins by users attempting to gain access to the OPUP Server OS. When the **Start Logging of Failed-Logins** button is clicked, an `OPUP Manager Start Failed-Login Logs` warning window will be displayed. Clicking on the **Yes** button will display an `OPUP Manager Start Failed-Login Logs Logging of Failed-Login attempts have been started` window. All security log functions will then be started. This window will remain displayed until the **Return to OPUP Security Logs Menu** button is clicked. When this button is clicked, the `OPUP Security Logs Menu` will be displayed. If the **No** button is clicked, the `OPUP Security Logs Menu` will immediately be displayed.

NOTE

> The OPUP Security Log function will not start until the **Start Logging of Failed-Logins** button is clicked. In the event that the OPUP Server OS is rebooted and/or shutdown, the Start Logging of Failed-Logins function must be started manually. Failed logins will not be recorded unless the procedure to Start Logging of Failed-Logins is completed.

When the **Stop Logging of Failed-Logins** button is clicked, an `OPUP Manager Stop Failed-Login Logs` warning window will be displayed. Clicking the **Yes** button will dis-

play an `OPUP Manager Stop Failed-Login Logs Logging of Failed-Login attempts have been stopped` window. All security log functions will then be stopped. This window will remain displayed until the **Return to OPUP Security Logs Menu** button is clicked. When this button is clicked, the `OPUP Security Logs Menu` will be displayed. If the **No** button is clicked, the `OPUP Security Logs Menu` will be displayed.

3.3.3.4.7.2 View Failed-Login Attempts. The View Failed-Login Attempts function provides the ability to list all failed login attempts made while attempting to log into the OPUP Server OS. The information displayed in this window includes all failed attempts to log into the OPUP Server OS and any attempt(s) to use Telnet or File Transfer Protocol (FTP) functions. When the **View Failed-Login Attempts** button is clicked, an `OPUP Server Failed-Login Log` window will be displayed as shown in Figure 3-21. The window also provides a Print Log function. When the **Print Log** button is clicked, all of the information listed within the `OPUP Server Failed-Login Log` window will be sent to the OPUP Printer UD86A12.

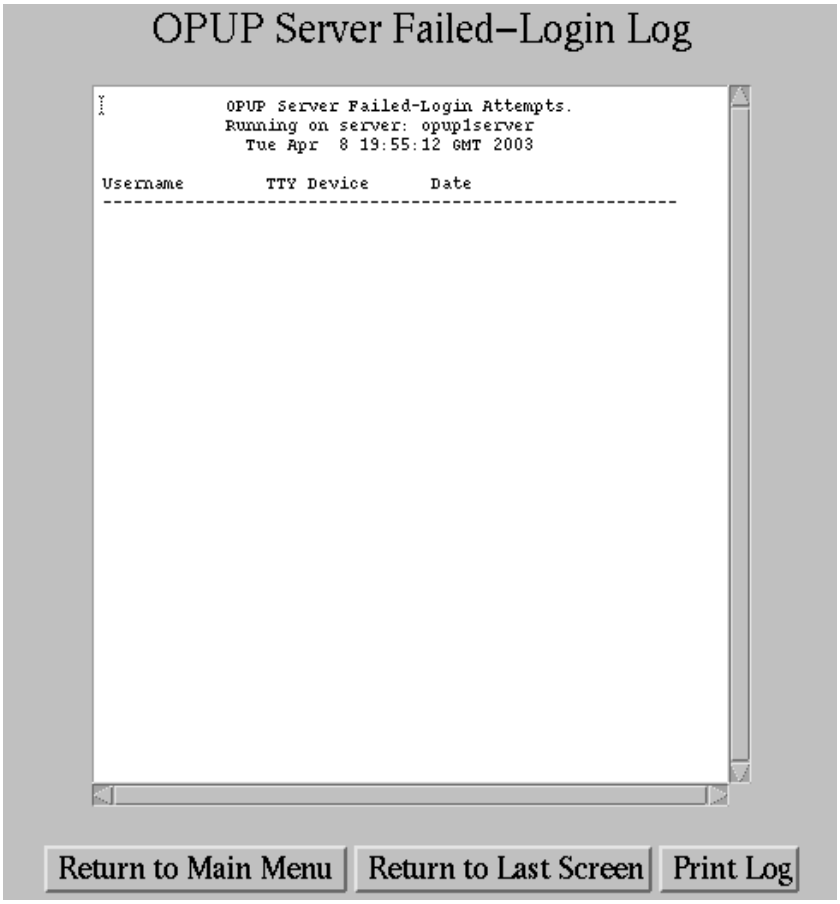


Figure 3-21. OPUP Server Failed-Login Log Window

3.3.3.4.7.3 View Access Logs. The View Access Logs function enables a system administrator to view all User Names (User IDs) currently logged into the OPUP Server OS. All users logging

into the OPUP Server OS whether at the CDE or Operational Applications Front Panel login screen will be recorded by the View Access Logs function. When the **View Access Logs** button is clicked, an `OPUP Server Access Log` window will be displayed as shown in Figure 3-22. The window also provides a Print Log function. When the **Print Log** button is clicked, all of the information listed within the `OPUP Server Access Log` window will be sent to the OPUP Printer UD86A12.

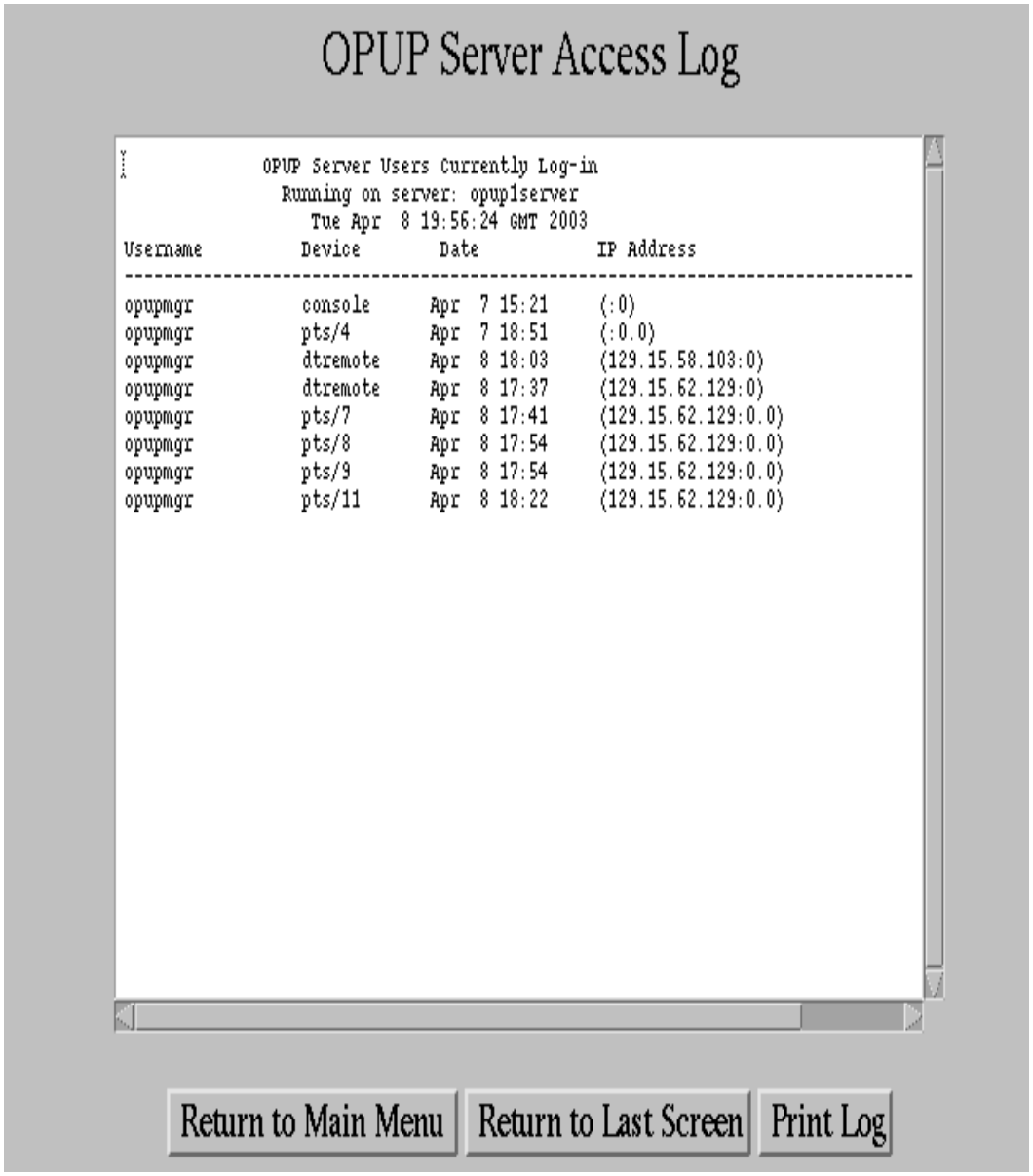


Figure 3-22. OPUP Server Access Log Window

3.3.3.4.7.4 <u>View Last Logins</u>. The View Last Logins function enables a system administrator to view all User Names (User IDs) that have successfully gained access to the OPUP Server OS. In addition, the last login attempts made by associated OPUP Server OS functions are recorded, as

well. This includes the use of Switch User (SU), Telnet, and FTP functionality. When the **View Last Logins** button is clicked, an `OPUP Server Last Successful Logins` window will be displayed as shown in Figure 3-23. The window also provides a Print Log function. When the **Print Log** button is clicked, all of the information listed within the `OPUP Server Last Successful Logins` window will be sent to the OPUP Printer UD86A12.

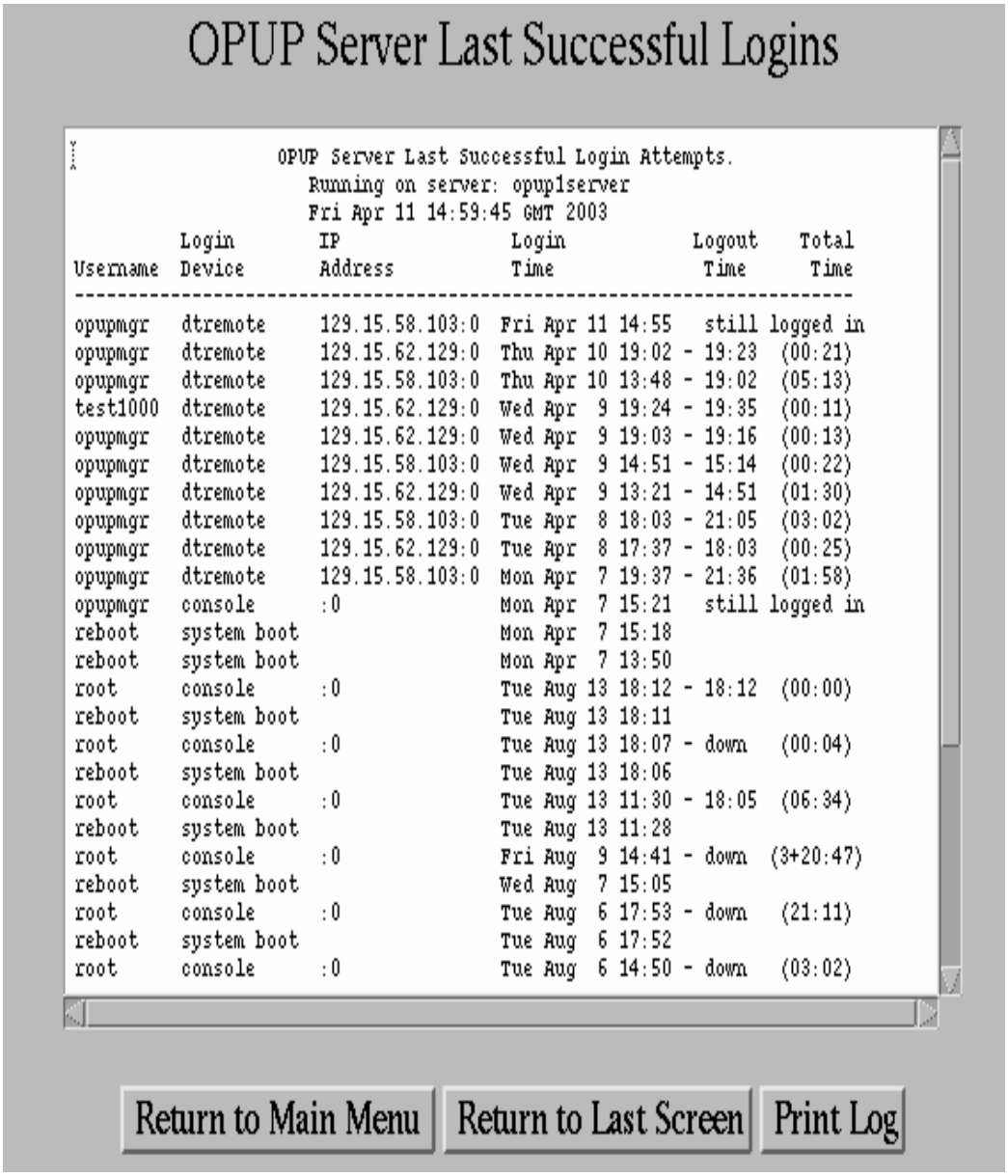


Figure 3-23. OPUP Server Last Successful Logins Window

3.3.3.4.7.5 <u>View SU Logs</u>. The View SU Logs function provides the ability to view all root level directory and file access activity attempted within the OPUP Server OS. When the **View SU Logs** button is clicked, an `OPUP Server SU Command Log` window will be displayed as

shown in Figure 3-24. The window also provides a Print Log function. When the **Print Log** button is clicked, all of the information listed within the `OPUP Server SU Command Log` window will be sent to the OPUP Printer UD86A12.

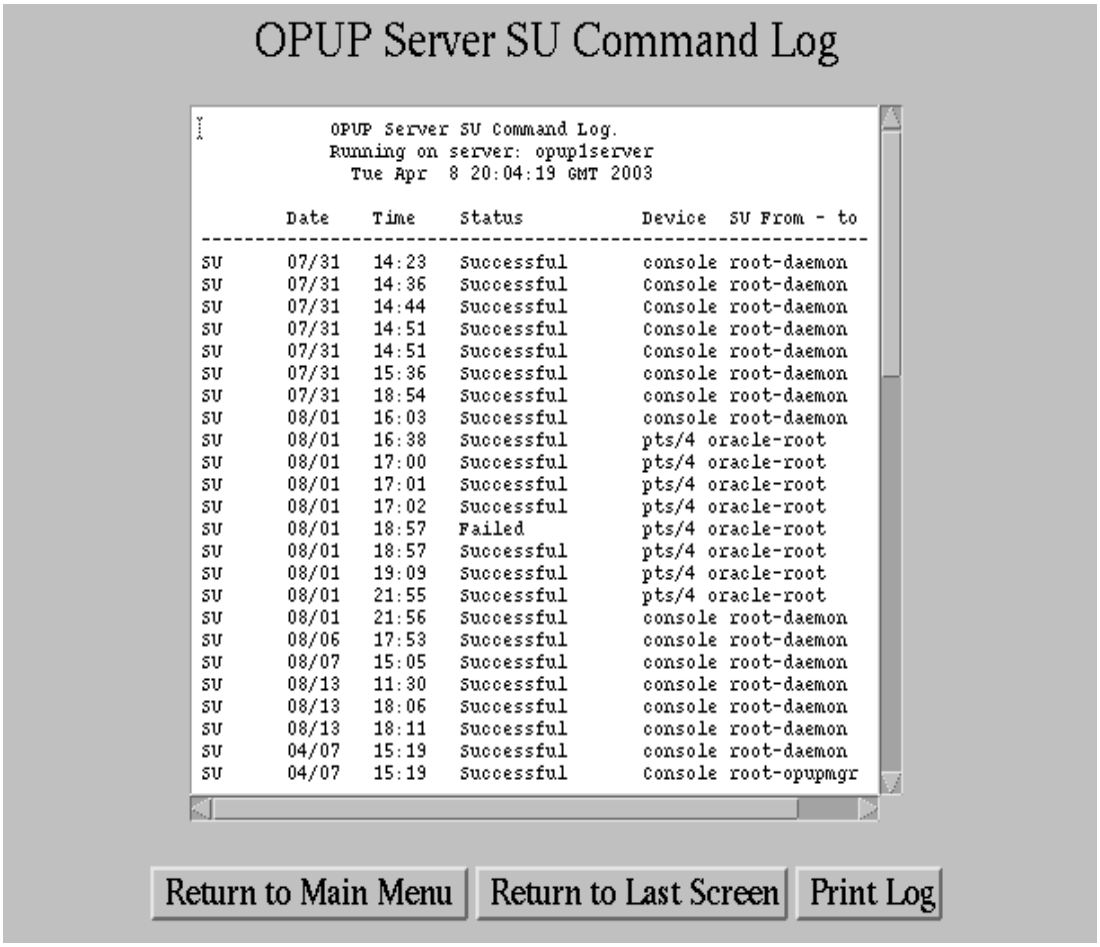


Figure 3-24. OPUP Server SU Command Log Window

3.3.3.4.8 OPUP Workstation Functionality. The OPUP Workstation Menu functions are not used with the Small OPUP Equipment Group UD86. Workstations will only be associated with the Large/Medium OPUP UD80 configurations. No further discussion of OPUP Workstation functionality or the associated menu structure will be provided in this manual.

3.3.3.4.9 OPUP Archive Menu. The OPUP Archive Menu function provides the ability to backup and restore selected WSR-88D product and message data from/to a CD-ROM disk. When the **OPUP Archive Menu** button is clicked, an `OPUP Archive Menu` will be displayed as shown in Figure 3-25. The OPUP Archive Menu function also includes the ability to check, create, restore, and erase environmental data placed within the OPUP Server OS database directory. The `OPUP Archive Menu` provides the ability to erase the contents of a CD-RW disk, if

desired. (Information cannot be erased from CD-R type disks.) The Check Content of CD-ROM function is used to read any CD-ROM disk (CD-RW/CD-R) placed within the Archive IV Device UD86A7 media tray.

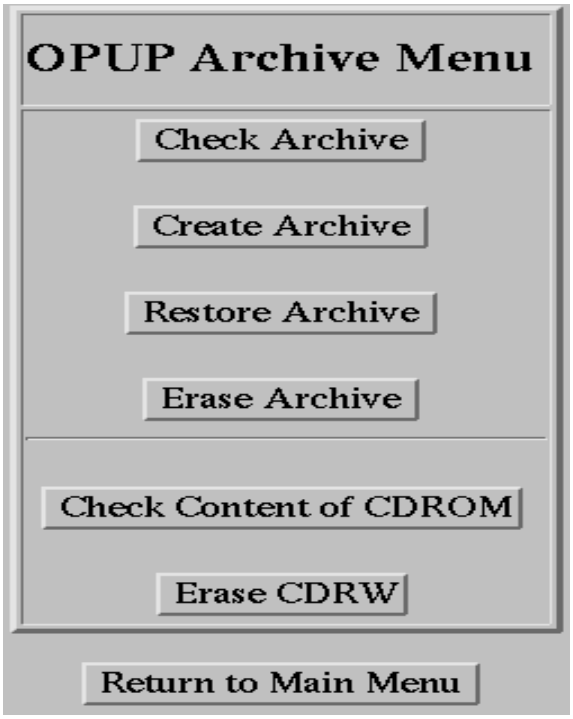


Figure 3-25. OPUP Archive Menu

3.3.3.4.9.1 OPUP Archive Menu Function Limitations. The archival of WSR-88D products and message data begins with the operator selecting a specific set of data associated with an *RPG of interest* at the Operational Applications Front Panel. The operator assigns a unique descriptive file name for each data set and stores the file within the OPUP Archive database directory by clicking on the **Create Archive** button within the `OPUP Archive Menu`. All operator interaction with selecting and storing archive data will be performed using the `Archive` menu located within the Status & Control GUI of the Operational Applications Front Panel.

Once the archive data is stored, the system administrator will be able to display each associated filename(s) at the `OPUP Manager Main Menu ‹ OPUP Archive Menu ‹ Check Archive` window.

The Operational Applications Front Panel ‹ Status & Control GUI ‹ Archive menu function is designed to allow operators to select and create archive data sets which can only hold up to 700 Mbytes each. This limitation is based upon the size of each CD-ROM disk which are capable of holding up to 700 Mbytes of data. Conversely, the number of data files that may be designated for

archive storage within the OPUP Archive database directory is limited to the size of the secondary hard drive (which is 20 Gbytes). This means that numerous data files may be created and designated for archival within the OPUP Archive database directory. Because each archive file may only contain up to 700 Mbytes, only **one** file will be allowed to be written to each CD-ROM. If there is more than one file listed within the OPUP Archive database directory, a separate CD-ROM will be required for each file.

NOTE

> There are 650 Mbyte CD-RW disks available which will work in the Archive IV Device UD86A7. If a file that is greater than 650 Mbytes is encountered by the Create Archive function, a warning message will be displayed. If a warning message is displayed, simply remove the 650 Mbyte disk and replace it with a 700 Mbyte disk. However, 650 Mbyte CD-ROM disks will work with archive files that are 650 Mbytes in size or less.

Two types of CD-ROM may be used. If a CD-R type disk is used, it is recommended that only high speed CD-R type disks (12X or higher) are selected. CD-R disks are inexpensive, have increased recording efficiency, and provide a permanent archive record (once data is written on them, the data cannot be erased.) If a CD-RW type disk is used, it is recommended that only high speed CD-RW disks (4x or higher) are selected. Low Speed CD-RW disks perform poorly and often report multiple errors during use.

3.3.3.4.9.2 Check Archive. The Check Archive function is used to view data placed on any CD-ROM disk within the Archive IV Device UD86A7 media tray. When the **Check Archive** button is clicked, `The Existing Archives on Server is as follows:` window will be displayed as shown in Figure 3-26. All archive files created by operators will be displayed within this window.

Figure 3-26. The Existing Archives On Server Window

3.3.3.4.9.3 Create Archive. The Create Archive function is used to select and write specific archive data files located within the OPUP Archive database directory to a CD-ROM disk. When the **Create Archive** button is selected, a `Please Select Archive Case to Create to CDROM` window will be displayed as shown in Figure 3-27. All archive files created by operators will be displayed within this window.

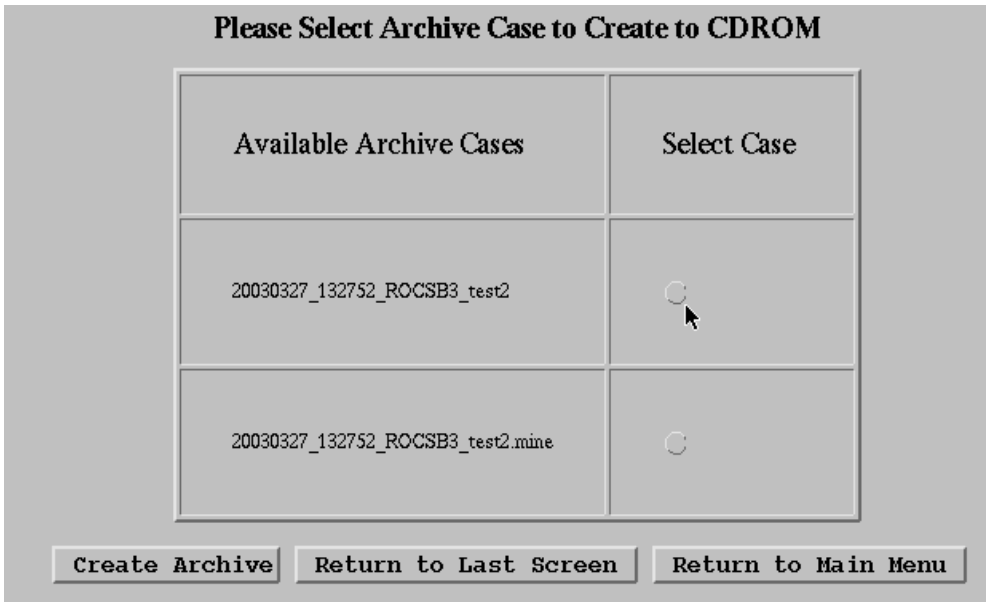


Figure 3-27. Please Select Archive Case to Create to CDROM Window

NOTE

System administrators may need to routinely, or upon request, select and archive designated archive file(s) located in the OPUP Archive database directory and save them to a CD-ROM disk(s). The decision to archive data is site dependant.

Each archive data file located within the OPUP Archive database directory is selected for archival by selecting the file within the `Select Case` area of the `Please Select Archive Case to Create to CDROM` window as shown in Figure 3-27. Once selected (highlighted), the **Create Archive** button is clicked. The Create Archive function will transfer and record the selected file to the CD-ROM disk located within the Archive Device UD86A7 media tray.

3.3.3.4.9.4 Restore Archive. The Restore Archive function is used to view, select, and restore WSR-88D product and message data from a CD-ROM disk to the OPUP Archive database directory. When the **Restore Archive** button is clicked, the Restore Archive function accesses the CD-ROM located within the archive device media tray and displays each file name within `The content of the inserted CDROM is as follows:` window. Each archive file is then placed within the OPUP Archive database directory by clicking on the **Restore Archive** button located near the bottom left of the window.

3.3.3.4.9.5 Erase Archive. The Erase Archive function allows each site to select one or all archived product and message data files previously placed in the Archive database directory of the OPUP Server OS. When the **Erase Archive** button is selected, an `OPUP Manager Erase Archive` window will be displayed as shown in Figure 3-28.

Figure 3-28. OPUP Manager Erase Archive Window

NOTE

Any archive file selected within the `Available Archive Cases` column will be permanently erased from the OPUP Archive database directory when the **Erase Archive** button is clicked. Once this data is erased, there will be no way to restore the data unless the file was saved to a CD-ROM disk.

The `OPUP Manager Erase Archive` window also displays the following message: `Warning! This will Erase any selected Archive from Server. Do you want to Continue?` This message is used as a reminder that the data selected will be removed from the OPUP Archive database directory. When the **Yes** button is selected, a `Please select archive case to erase from server` window will be displayed as shown in Figure 3-29. Each archive file is then erased by selecting the radio button of the archive *file of interest* within the `Select Case` column and clicking on the **Erase Archive** button near the bottom left of the window. The designated Available Archive Cases file will then be permanently erased from the OPUP Archive database directory.

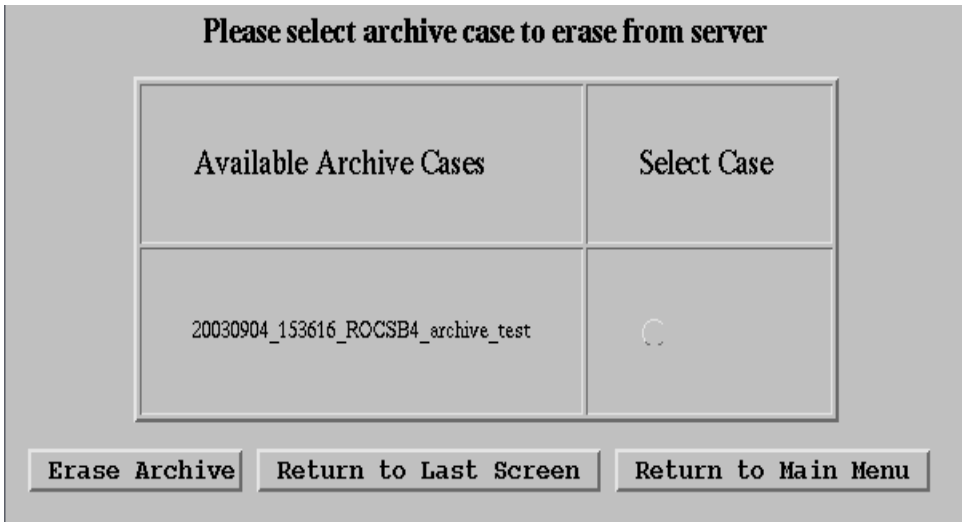


Figure 3-29. Please Select Archive Case to Erase from Server Window

3.3.3.4.9.6 Check Content of CD-ROM. The Check Content of CD-ROM function provides the ability to access and display the contents of a CD-ROM disk located within the Archive IV Device UD86A7 media tray. When the **Check Content of CDROM** button is clicked, `The Content of the inserted CDROM is as follows:` window will be displayed as shown in Figure 3-30.

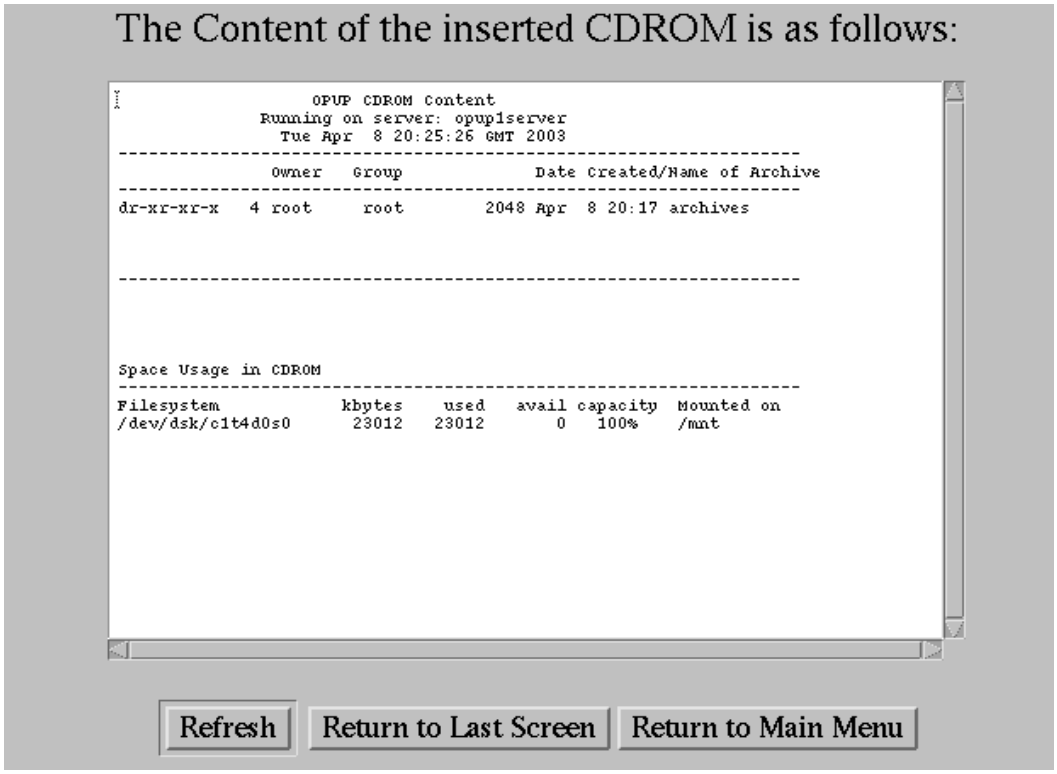


Figure 3-30. Contents of CDROM Display Window

The information provided in `The Content of the inserted CDROM is as follows:` window is provided below:

- Filesystem: The archive data file pathname.
- kbytes: The total amount of disk space in kbytes the archive file is allowed to use.
- used: The amount of disk space that the archive file is currently using.
- avail: The amount of disk space that is still available for the archive file to use.
- capacity: The percentage of allowable disk space the archive file is currently using.
- Mounted on: The directory name that the archive data is currently mounted on.

`The Content of the inserted CDROM is as follows:` window does automatically refresh the window when new data is available for display. The **Refresh** button, located near the bottom left of the window is provided for this purpose. When the **Refresh** button is clicked, `The Content of the inserted CDROM is as follows:` window will access the disk located in the Archive IV Device media tray and redisplay the new data.

3.3.3.4.9.7 Erase CD-RW. The Erase CD-RW function is provided to access and erase all data contained on a CD-RW disk that located in the Archive Device UD86A7 media tray. When the **Erase CDRW** button is selected, an `OPUP Manager Erase CDRW` window will be displayed as shown in Figure 3-31. When the **Yes** button is clicked, the Erase CD-RW function will immediately access the CD-ROM disk located in the archive device media tray and erase all data found. When the Erase CD-RW function is finished erasing the data, it will then prepare the CD-RW disk for further data storage. If the **No** button is selected, the Erase CD-RW function will redisplay the `OPUP Archive Menu`. The `OPUP Manager Erase CDRW` window also provides a **Check Content of CDROM** button. When the **Check Content of CDROM** button is clicked, `The Content of the inserted CDROM is as follows:` window will be displayed similar to what is shown in Figure 3-30.

NOTE

The **Check Content of CDROM** button is provided in order to view the contents of each disk placed within the Archive IV Device UD86A7 media tray before any data is erased from the disk. It is recommended the Check Content of CDROM function be used to view the contents of each disk before attempting to erase data. Once the **Yes** button is clicked within the `OPUP Manager Erase CDRW` window as shown in Figure 3-31, the Erase function cannot be canceled. All data will be permanently erased.

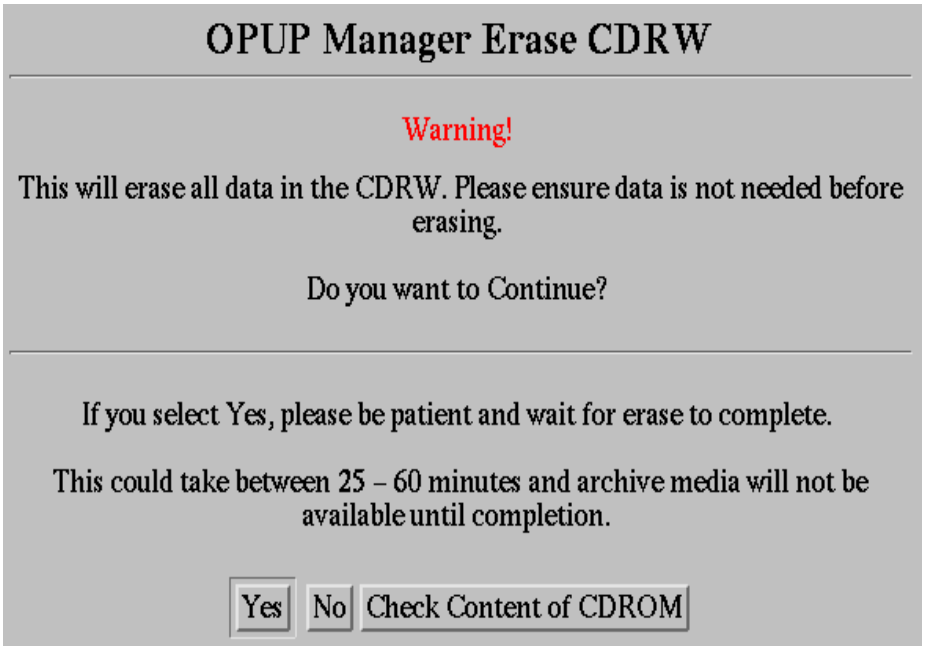


Figure 3-31. OPUP Manager Erase CDRW Window

3.3.3.4.10 OPUP Server Control Menu. The OPUP Server Control function provides the ability to display disk usage, backup/restore configuration data, view/set screen and terminal lock out parameters, configure printer devices, manage the Communication Router UD86A8, edit Oracle database tables, define a default IP address route, start and view a diagnostic GUI (VTS), restart and shutdown the OPUP server. Clicking on the **OPUP Server Control Menu** button at the `OPUP Manager Main Menu` will display the `OPUP Server Control Menu` as shown in Figure 3-32.

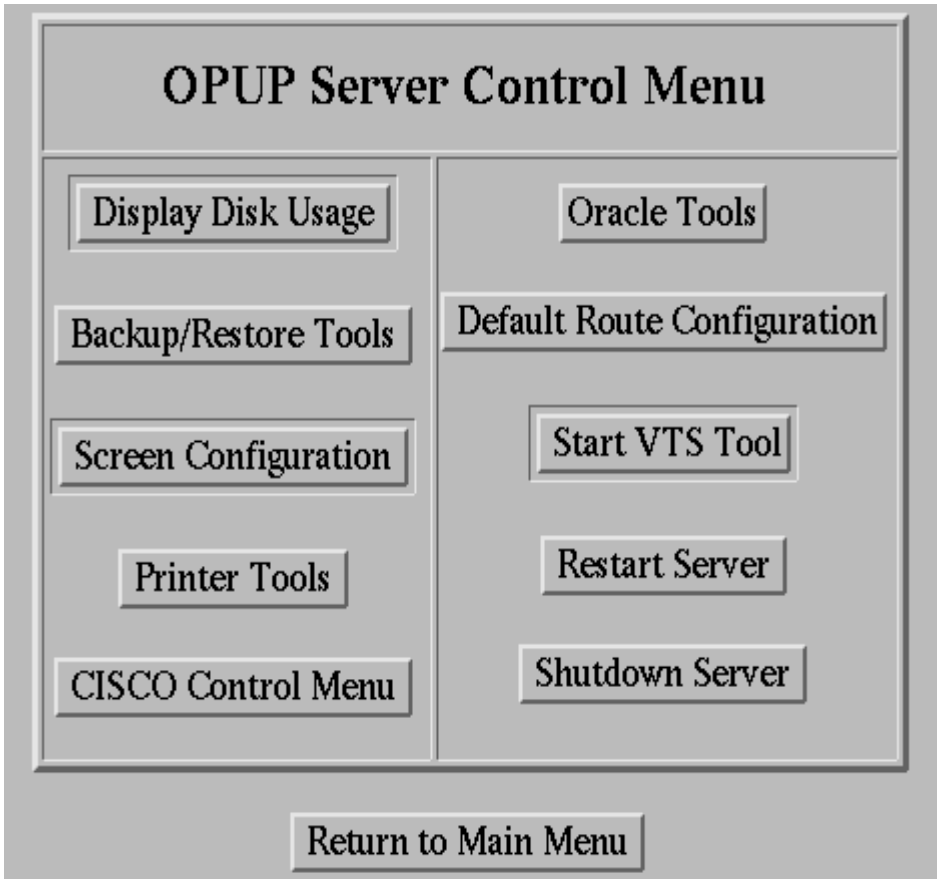


Figure 3-32. OPUP Server Control Menu

3.3.3.4.10.1 Display Disk Usage. The Display Disk Usage function provides the ability to view the amount of space that is currently being taken up on the primary hard drive. When the **Display Disk Usage** button is clicked, an `OPUP Disk Usage` window will be displayed as shown in Figure 3-33. The information provided in this window is based upon the percentage of space used by each OPUP Server OS directory slice. The following information is provided in the `OPUP Disk Usage` window:

- Filesystem: The absolute file pathname.
- kbytes: The total amount of disk space in kbytes that file is allowed to use.
- used: The amount of disk space that file is currently using.
- avail: The amount of disk space that is still available for that file to use.
- capacity: The percentage of allowable disk space that file is currently using.
- Mounted on: The directory name that the file is currently mounted on.

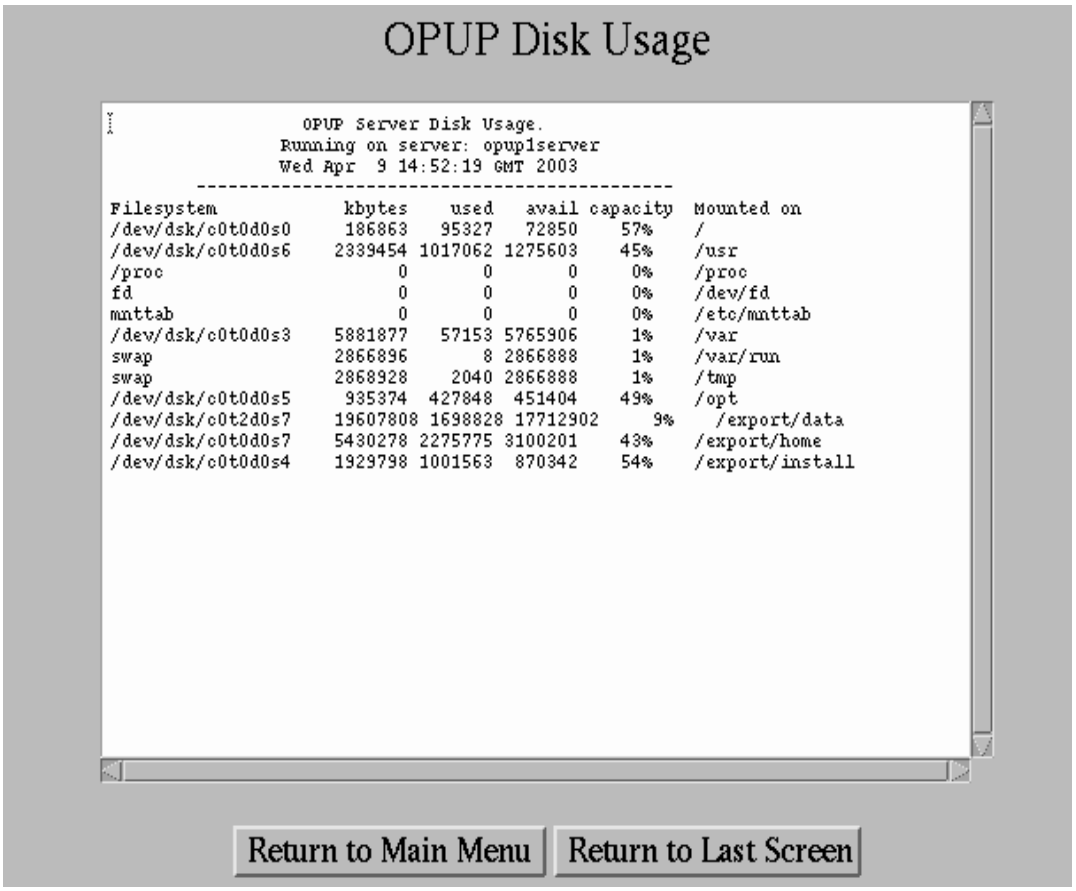


Figure 3-33. Disk Usage Display

3.3.3.4.10.2 Backup/Restore Tools. The Backup/Restore Tools function provides each site the ability to select and save current OPUP Server OS configuration, adaptation, or both configuration/adaptation data to a CD-ROM disk located within the Archive IV Device UD86A7 media tray. When the **Backup/Restore Tools** button is clicked, an `OPUP Manager Backup/Restore Main Menu` will be displayed as shown in Figure 3-34.

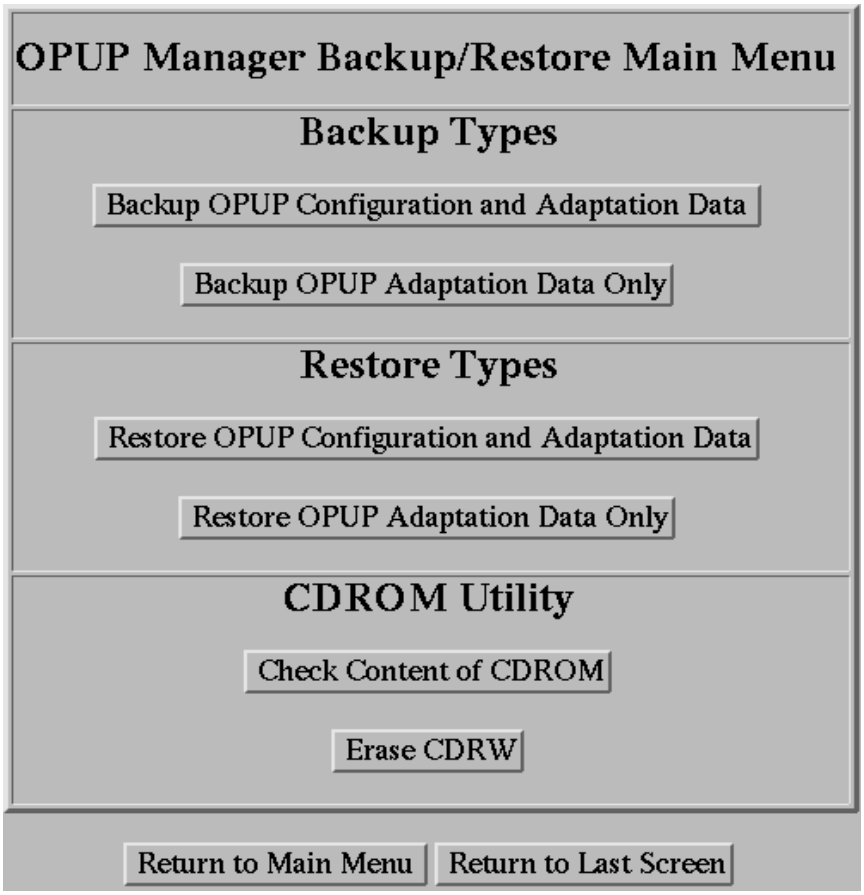


Figure 3-34. OPUP Manager Backup/Restore Main Menu

3.3.3.4.10.3 Backup/Restore Tools Menu Limitations. The `OPUP Manager Backup/Restore Main Menu` is divided into three sub-menus. The Backup Types section provides two methods to backup OPUP Server OS configuration and/or adaptation data. When the **Backup OPUP Configuration and Adaptation Data** button is clicked, the Backup function creates a temporary backup file, scans the OPUP Server OS database for the specific files associated with both configuration and adaptation data, and lists this data in the backup file. If the **Backup OPUP Adaptation Data Only** button is selected, only the files associated with adaptation data will be placed within the temporary backup file. When the Backup function has collected all of the files required, all data listed within the temporary backup file will be written to the CD-ROM disk within the Archive IV Device UD86A7 media tray using a Tape Archive (TAR) command.

The Restore Types section provides two methods to restore OPUP Server OS configuration and/or adaptation data. When the **Restore OPUP Configuration and Adaptation Data** button is clicked, the Restore function will scan the CD-ROM located within the Archive IV Device UD86A7 and replace all of the information associated with configuration and adaptation data into the corresponding files within the OPUP Server OS database directories. If the **Restore OPUP**

Adaptation Data Only button is clicked, only the information associated with adaptation data will be replaced within the OPUP Server OS database directory.

Examples of configuration data include; system wide passwords, root key data, user names, and user passwords. Examples of adaptation data include; overlays, maps, display and FTP data, product distribution lists, user color schemes, alerts, autodial, product requests, and PDGUI window adaptation data. Backing up or restoring either configuration or adaptation data depends upon the specific requirement for the data. If the OPUP Backup Configuration and Adaptation Data function is used, the OPUP Restore Configuration and Adaptation Data function must be used in order to restore configuration and adaptation data. However, if only the OPUP Backup Adaptation Data Only function is used, then only the OPUP Restore Adaptation Data Only function can be used.

Both types of backups may be made immediately one after the other (this is to ensure that no configuration/adaptation data changes are made between backup types). If only configuration data is desired to be restored, perform an OPUP Restore Configuration and Adaptation Data function first and then perform an OPUP Restore Adaptation Data only function second. This way the latest configuration and adaptation data will be available within the respective OPUP Server OS configuration and adaptation data files.

The CDROM Utility section provides the processes similar to the functions described in paragraph 3.3.3.4.9.6, Check Content of CD-ROM, and paragraph 3.3.3.4.9.7, Erase CD-RW, respectively.

3.3.3.4.10.4 Screen Configuration. The Screen Configuration function provides the ability to adjust both the Saver and Lock Timeout functions associated with the Monitor UD86A1/11. When the **Screen Configuration** button is clicked, a `Screen Configuration Parameters` window will be displayed as shown in Figure 3-35.

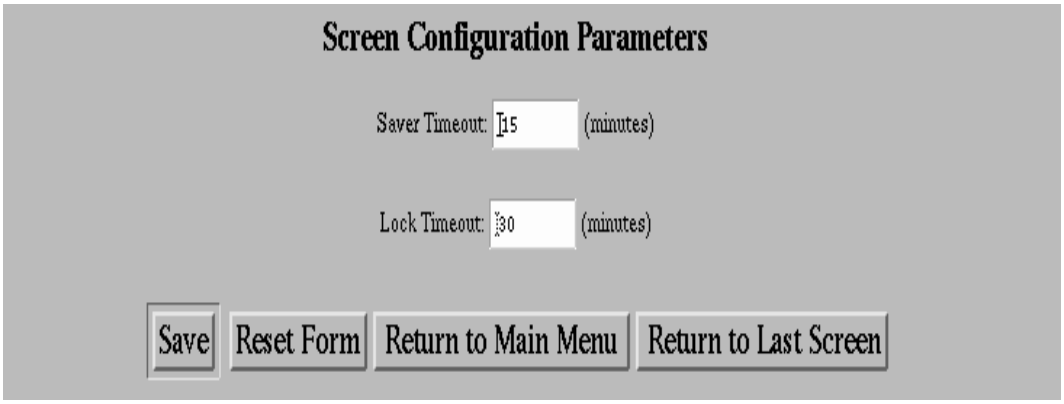


Figure 3-35. Screen Configuration Parameters Window

The Screen Configuration Parameters function has two adjustable parameters. These are the Saver Timeout and the Lock Timeout. The Saver Timeout function will temporarily remove the current image displayed on the Monitor UD86A1/11 when the time set within the Saver Timeout edit field has been met. The Lock Timeout function will lock the Keyboard UD86A3 and Mouse UD86A4 after the time set within the Lock Timeout edit field has been met. When the Lock Timeout time threshold has been met, a `Solaris Password` window will be displayed anytime the keyboard or mouse is activated. This will require the *user_password* of the last user in order to redisplay an image on the monitor screen. The minimum time that can be set for the Saver Timeout is 15 minutes and 30 minutes for the Lock Timeout function (shown in Figure 3-35.) For these reasons, the Saver Timeout function will be invoked first.

3.3.3.4.11 Printer Tools. The Printer Tools function provides the ability to configure the OPUP Printer UD86A12 for use with the OPUP Operational Application GUIs. When the **Printer Tools** button is clicked, an `OPUP Printer Menu` will be displayed as shown in Figure 3-36.

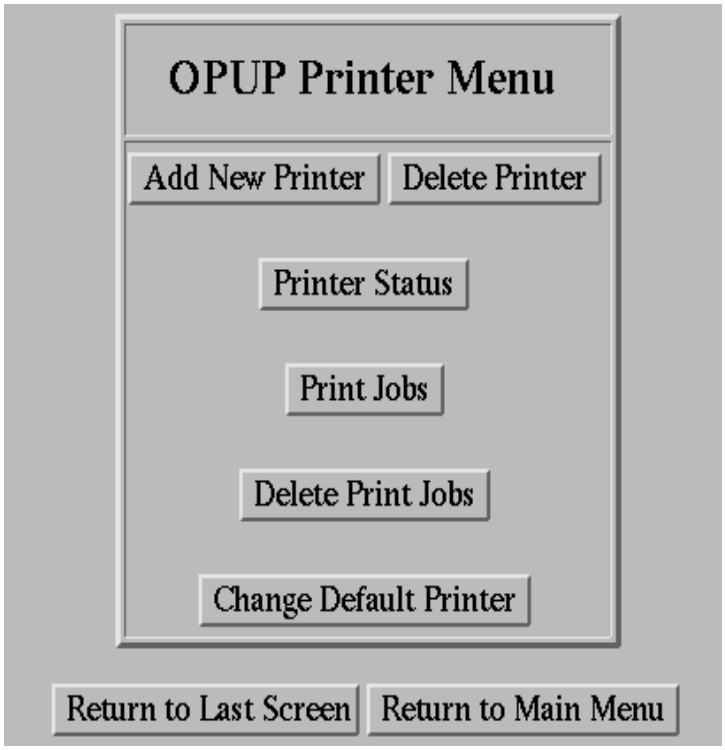


Figure 3-36. OPUP Printer Menu

The OPUP Printer Menu function provides the ability to add/delete a printer device, view a printer status and print jobs sent to the printer device, delete print jobs, and change the default printer. The Small OPUP Equipment Group UD86 will primarily use the Printer UD86A12. Specific printer connectivity issues are discussed in detail in paragraph 2.2.3.1.12. The Small OPUP may

utilize a different local printer, if authorized, as long as the printer device meets PostScript (PS) and Network (Ethernet) capability standards.

The capability to select and print WSR-88D product and message data is built into both the Product Display Graphic Users Interface (PDGUI) and Archive PDGUI functions. Once a product or message is selected to be printed, the associated data is sent (spooled) to the printer device via the OPUP Server Print Spool directory. To utilize any printer, the associated drivers must first be configured within the `OPUP Printer Menu`.

3.3.3.4.11.1 Add New Printer. The Add New Printer function provides each site the ability to add a new printer device to the OPUP Server OS. When the **Add New Printer** button is clicked, an `OPUP Manager Add New Printer` window will be displayed as shown in Figure 3-37.

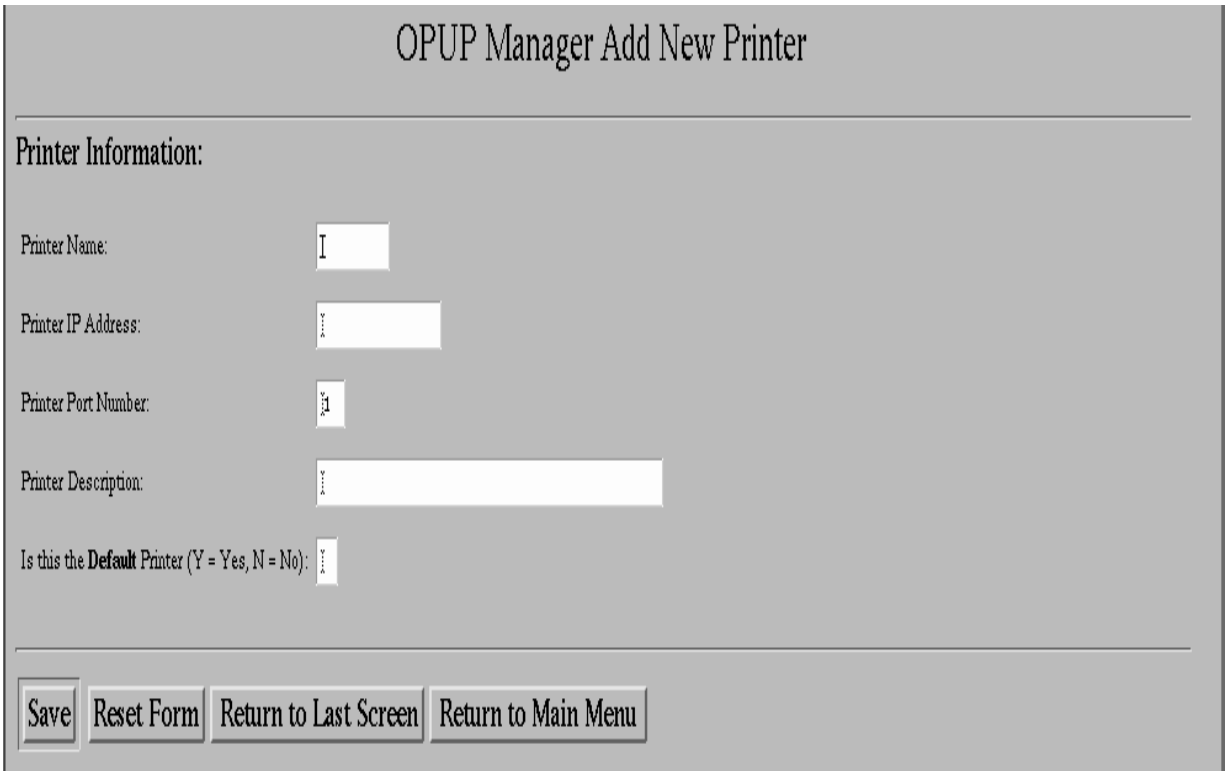


Figure 3-37. OPUP Manager Add New Printer Window

The `OPUP Manager Add New Printer` window provides an edit field for the following information:

- Printer Name: Assigned device name, can be the actual brand name of the device or a unique name supplied by each site.

- Printer IP Address: IP Address of the printer device. This IP Address is site dependant.
- Printer Port Number: Corresponds to an available serial port associated with the OPUP Server. This number is normally defaulted to port 1.
- Printer Description: Plain language description of the attached printer device.
- Is This The **Default** Printer (Y=Yes, N=No): This function designates the new printer device as the default if `Y` (yes) is selected.

The system administrator must first enter the appropriate information in the edit fields for the Printer Name (brand name), Printer IP Address, Printer Port Number, Printer Description, and Printer **Default** Status. Clicking on the **Save** button near the lower left corner of the window completes the new printer add function.

3.3.3.4.11.2 Delete Printer. The Delete Printer function allows for the removal of a specific printer that was previously added to the OPUP Server OS. When the **Delete Printer** button is clicked, an `OPUP Manager Delete Printer` window will be displayed. This window only displays the `Printer Name`: editable field. The only information required in this field is the name of the printer. When the **Delete** button is clicked within the `OPUP Manager Delete Printer` window, the Delete Printer function will remove all associated printer driver information from the OPUP Server OS.

3.3.3.4.11.3 Printer Status. The Printer Status function is provided in order to view and determine the current status of the default printer configured within the OPUP Server OS. When the **Printer Status** button is clicked, an `OPUP Printer Status Current Default Printer is:` window will be displayed. The information provided in this window will be associated with a plain language status of the default printer. Clicking on the **Refresh** button will update the window with any new printer status information that may have changed since the window was initially opened.

3.3.3.4.11.4 Printer Jobs. The Print Jobs function is provided in order to display a plain language list of any pending print jobs that have been sent to the OPUP Server OS Printer Spool directory. When the **Print Jobs** button is clicked, an `OPUP Printer Pending Jobs` window will be displayed. (If there are no print jobs pending, the window will be empty.) Clicking on the **Refresh** button will update the list with any new pending print jobs that may have been requested since the window was initially opened.

3.3.3.4.11.5 Delete Print Jobs. The Delete Print Jobs function is provided to display a plain language list of all available pending print jobs sent to the OPUP Server OS Printer Spool directory. When the **Delete Print Jobs** button is clicked, a `Please select job to delete from available jobs` window will be displayed. Print jobs that are to be deleted can be selected from the `Available Print Jobs` column within the window. If there are no print jobs pending, then the `Available Print Jobs` column will be empty. To cancel/delete print jobs no longer required, click on the radio button in the `Select Job to Delete` column corresponding to the desired print job. Once the desired print job has been selected, click on the

Delete Job button. The print job will then be deleted from the OPUP Server OS Printer Spool directory. Clicking on the **Refresh** button will update the `Available Print Jobs` column with any new pending print jobs that may have been requested since the window was initially opened. The Refresh function will also indicate or confirm that each job has been successfully deleted.

3.3.3.4.11.6 Change Default Printer. The Change Default Printer function provides the ability to select and change the default printer device. When the **Change Default Printer** button is selected, a `Please Select New Default Printer from Available Printers Current Default Printer is:` window will be displayed. This window will display both the default printer device along with all of the added/configured printer devices available to the OPUP Server OS. Only one default printer may be selected at any time. To change the default printer configuration, click on the radio button in the `Select Default Printer` column corresponding to the new desired default printer. Once the desired printer has been selected, click on the **Set as Default** button. The selected default printer device will be configured as the default printer device.

3.3.3.4.12 CISCO Control Menu. The CISCO Control function provides the ability to restart the Communication Router UD86A8 and manage all associated communication router (CISCO) passwords. When the **CISCO Control Menu** button is clicked, a `CISCO Control Menu` will be displayed as shown in Figure 3-38. This menu provides the interface required to either change the passwords associated with the communication router or perform a communication router Interactive Operating System (IOS) software restart function. In the event of a successive software build upgrade or a communication router password compromise, each site will be tasked with changing the associated IOS passwords.

Figure 3-38. CISCO Control Menu

3.3.3.4.12.1 Change CISCO Password. The Change CISCO Passwords function allows each site to reconfigure the current CISCO communication router and enable passwords. These passwords provide two levels of internal communication router IOS access security. When the **Change CISCO Passwords** button is clicked, an `OPUP Manager Change CISCO Password` window will be displayed as shown in Figure 3-39. Each site will be required to input the current router and current enable passwords before the communication router will accept any configuration inputs. CISCO passwords are normally constructed and recorded while installing OPUP software.

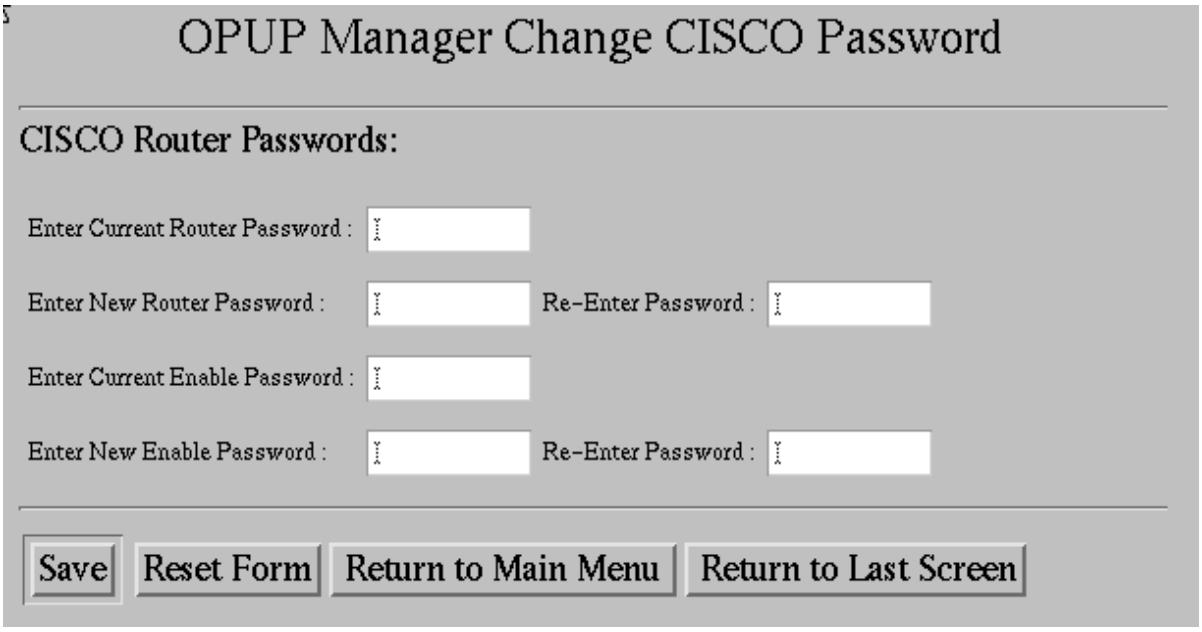


Figure 3-39. OPUP Manager Change CISCO Password Window

3.3.3.4.12.2 Restart CISCO. The Restart CISCO function provides each site the ability to perform a manual restart function with the communication router internal IOS in the event that the communication router does not respond to either software inputs from the Server UD86A2 during normal operations or during an OPUP Server OS/hardware upgrade. When the **Restart CISCO** button is clicked, an `OPUP Manager Re-Start CISCO` warning window will be displayed as shown in Figure 3-40. Clicking on the **Yes** button will initiate an OPUP Manager Re-Start CISCO function. If the **No** button is clicked, the `CISCO Control Menu` will be redisplayed.

Figure 3-40. OPUP Manager Re-Start CISCO Window

3.3.3.4.13 Oracle Tools. The Oracle Tools function provides each site the ability to recreate the Oracle Database Tables which are used to control/process incoming data, act as a access point in controlling applications configuration privileges, and change Operational Applications security level passwords. When the **Oracle Tools** button is clicked, an `OPUP Manager Oracle Tools Menu` will be displayed as shown in Figure 3-41.

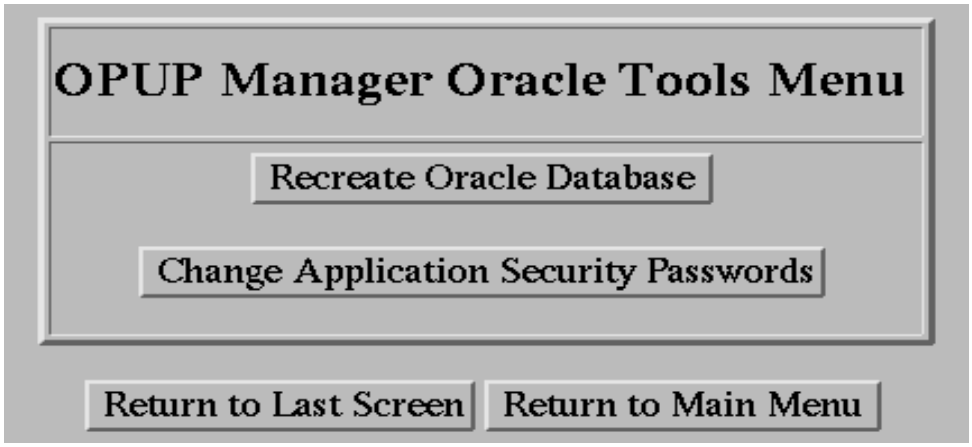


Figure 3-41. OPUP Manager Oracle Tools Menu

3.3.3.4.13.1 Recreate Oracle Database. The Recreate Oracle Database function provides the ability to delete the current information found within the Oracle Database Table and reconfigure it to accept new input data. Specific Oracle Database Table scripts are used within the OPUP Server OS in order to monitor and control specific database table handling functionality for WSR-88D products and message data, alerts, and linear buffers (LBs). (Linear buffers provide the control and destination of OPUP Products and Alerts, as well as, the monitoring/status of circuit connectivity.) If any function provided by the Oracle Database Tables should become corrupted, each site will then be able to delete the corrupted data held in the OPUP Server OS Oracle Database

Table and recreate each applicable directory contained within. When the **Recreate Oracle Database** button is clicked, an `OPUP Manager Recreate Oracle Tables Warning` window will be displayed as shown in Figure 3-42.

Figure 3-42. OPUP Manager Recreate Oracle Tables Window

If the **Yes** button is clicked, all data within the OPUP Server OS Oracle Table database will be deleted. When the Recreate Oracle Tables function is finished deleting the data, it will then prepare the Oracle Database Table to accept new data. When finished, an `OPUP Manager Recreate Oracle Tables` window will display the following message: `OPUP Oracle Tables has been recreated.`

If the **No** button is clicked within the `OPUP Manager Recreate Oracle Tables Warning` window, Figure 3-42, the `OPUP Manager Oracle Tools Menu` will be redisplayed.

The `OPUP Manager Recreate Oracle Tables` window will remain displayed until the **Return to Last Screen** button is clicked.

3.3.3.4.13.2 Change Application Security Passwords. The Change Application Security Passwords function is used to change each password associated with each OPUP Operational Applications Front Panel GUIs. When the **Change Application Security Passwords** button is clicked, an `OPUP Manager Change Application Security Passwords` warning window will be displayed. If the **Yes** button is clicked, an `OPUP Manager Application Security Passwords` window will be displayed as shown in Figure 3-43. If the **No** button is clicked, the `OPUP Manager Oracle Tools Menu` will be redisplayed.

The `OPUP Manager Application Security Passwords` window provides an access point of control for changing each Operational Application Security Level Passwords (i.e. Security Level Passwords 1, 2, and 3). The Security Level Passwords are associated with permission change level of access located within the Operational Application GUIs, PDGUI, AT, Archive PDGUI, and Archive Status Log. (Refer to NWS EHB 6-536, Operations Instructions, for further information concerning the application of each level of security access associated with Operational Applications Front Panel GUIs.)

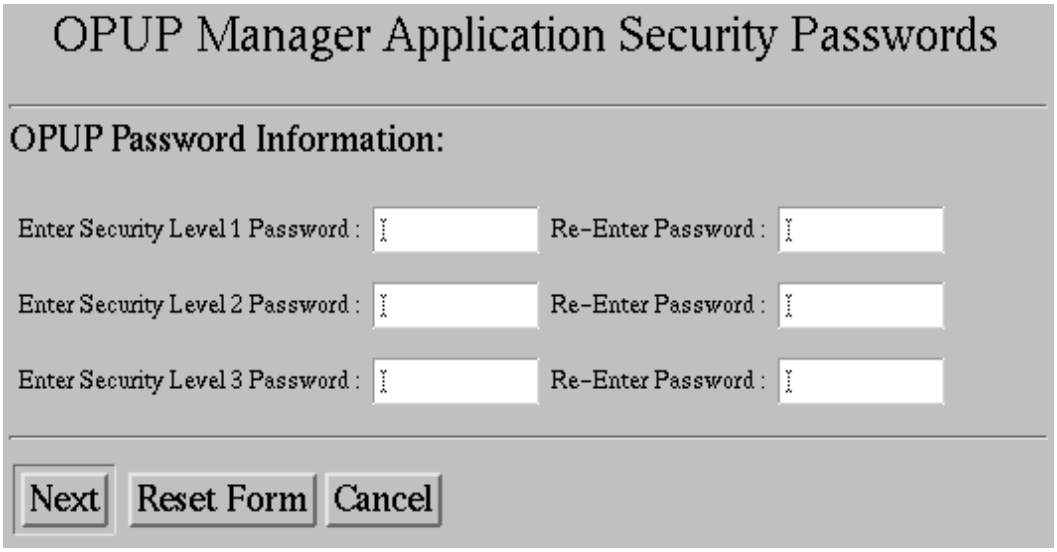


Figure 3-43. OPUP Manager Application Security Passwords Window

3.3.3.4.14 Default Route Configuration. The Default Route Configuration function provides the ability to add, remove, or view a default IP address configuration route to or from the OPUP Server OS. When the **Default Route Configuration** button is clicked, an `OPUP Manager Default Route Menu` will be displayed as shown in Figure 3-44. A default IP address route is used as an alternative method to connect to and access the OPUP server from a remote switch and/or communication router located within a different IP address sub-net.

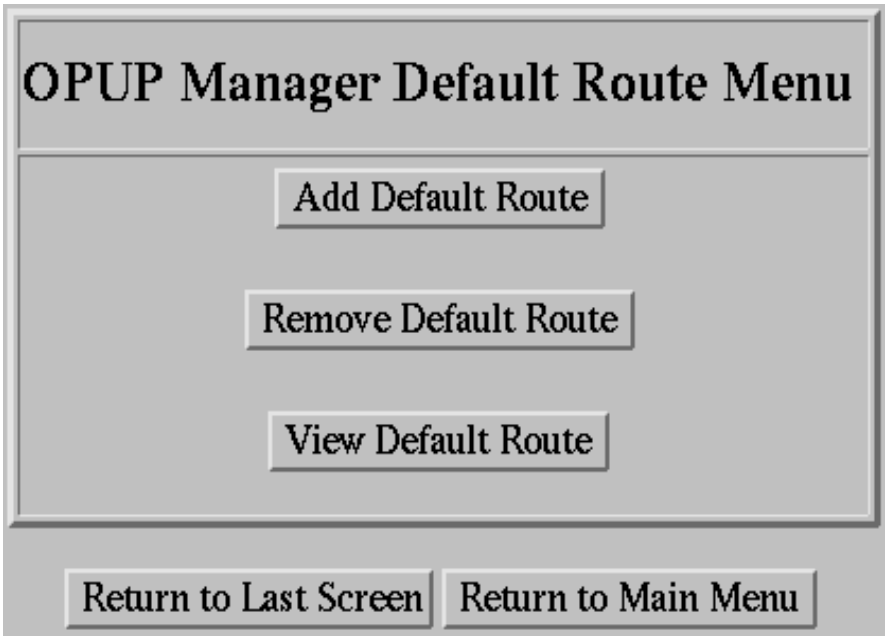


Figure 3-44. OPUP Manager Default Route Menu

3.3.3.4.14.1 Add/Remove Default Route. The Add and Remove Default Route functions provide the ability to add or remove a default route IP address. When the **Add Default Route** button is clicked, an `OPUP Manager Add Default Route` window will be displayed as shown in Figure 3-45. To add a default route IP Address, a valid IP address associated with the perspective default route must be placed in the `Route IP Address:` edit field. When finished, the **Save** button located near the bottom left of the `OPUP Manager Add Default Route` window must be clicked to save the IP address in the OPUP Server OS Default Route database directory.

NOTE

Only one default route IP address may be used at a time.

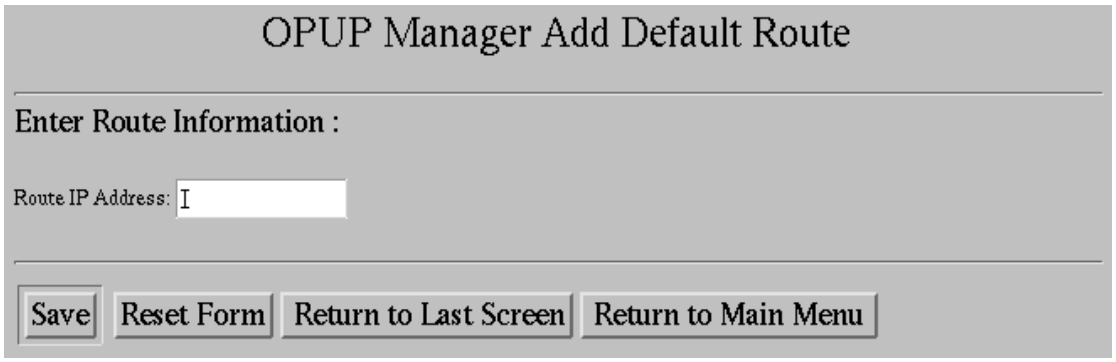


Figure 3-45. OPUP Manager Add Default Route Window

When the **Remove Default Route** button is clicked, an `OPUP Manager Delete Default Route` warning window will be displayed. Clicking the **Yes** button will immediately delete the current default route IP address from the OPUP Server OS Default Route database directory. When the Remove Default Route function is finished, a `Default Route Deleted` window will be displayed as shown in Figure 3-46. Clicking the **No** button will redisplay the `OPUP Manager Default Route Menu`.

Figure 3-46. Default Route Deleted Display

3.3.3.4.14.2 View Default Route. The View Default Route function allows each site to view the current default route IP address assigned within the OPUP Server OS Default Route database directory. When the **View Default Route** button is clicked, an `OPUP Server Default Route` window will be displayed. The current assigned default route IP address will be displayed within this window.

NOTE

> The OPUP VTS Tools function interrogates and performs diagnostic tasks that involve many internal process functions which can significantly slow down other internal processes normally accessed by the OPUP Server OS. Each site should only use the VTS Tool functions when required to investigate either system performance or to mitigate faults.

3.3.3.4.15 Validation Test Suite (VTS) Tools. The Sun Microsystems Validation Test Suite (VTS) Tools GUI embodies a set of system applications and functions which allow each site to perform various hardware diagnostic tests within the Server UD86A2. Each diagnostic test used within the VTS may assist with the determination of OPUP server hardware performance and/or help to mitigate system faults. Starting the VTS tool menu is accomplished by clicking on the **Start VTS Tool** button which will display a temporary information window titled, `OPUP Start VTS Tool`. After a few seconds, the `OPUP Start VTS Tool` window will disappear and the `SunVTS Diagnostic` window will be displayed as shown in Figure 3-47.

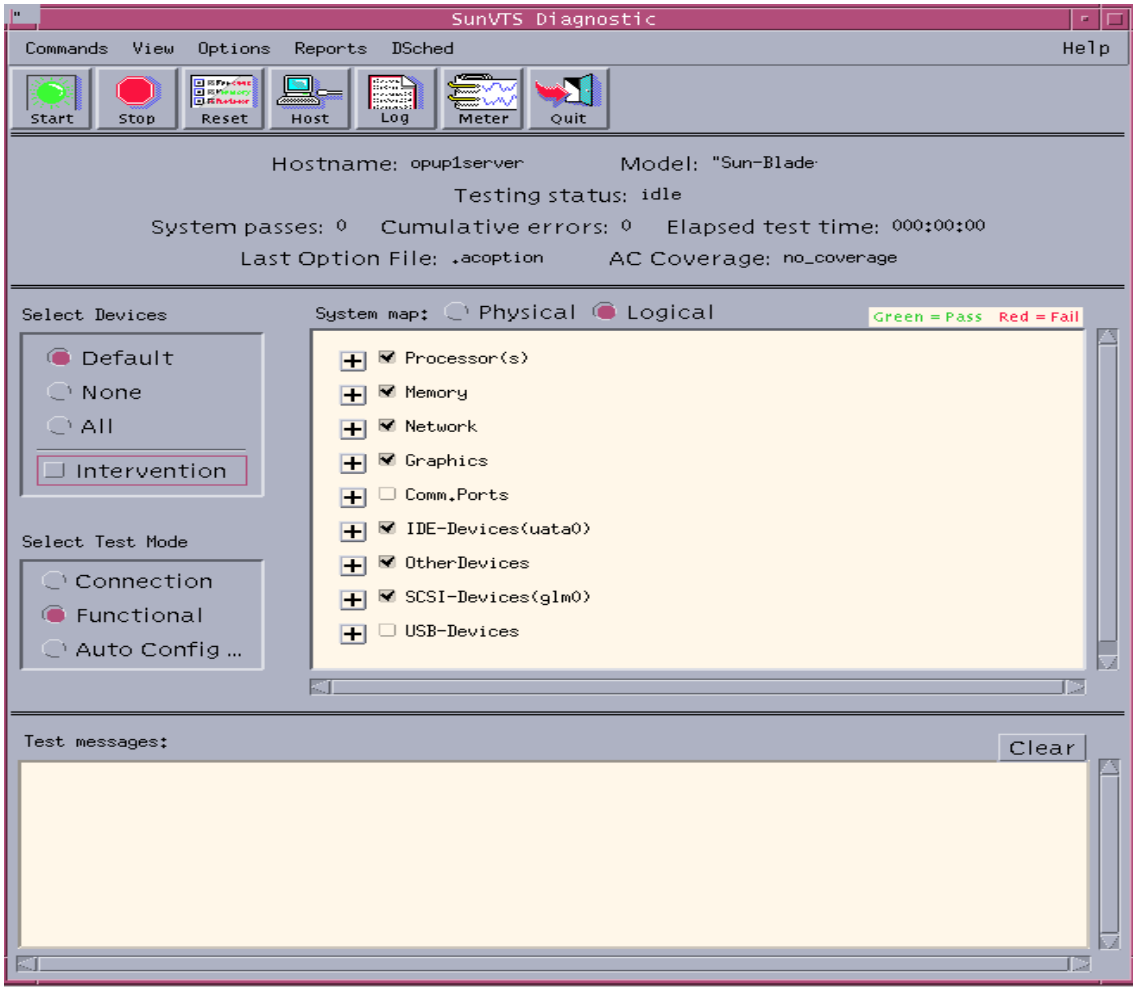


Figure 3-47. SunVTS Diagnostic Window

The `SunVTS Diagnostic` window is the default display when the VTS is initially started during each session. The `SunVTS Diagnostic` window will display either logically or physically connected components internal to the Server UD86A2. Logical components are devices and associated software drivers that report internally to the OPUP Server OS using the SUN Operational Diagnostic Bus (ODB). (Processor will be displayed vice Server.) Physical components are hardware peripherals and physical internal components that are actually connected to an internal communication hardware bridge or bus. The VTS diagnostic functionality can provide either a logical or physical diagnostic analysis (basic or intricate) of the inter-connected devices (graphic card, SCSI/IDE connectors, memory, floppy and CD-ROM drives, etc.), as well as, internal subassembly monitoring and performance data.

3.3.3.4.15.1 <u>SunVTS Diagnostic Window Description</u>. The following information is a breakdown of the buttons, menus, sections, and tests available within the OPUP VTS Tool GUI:

- **Quick Access Buttons**: Includes **Start**, **Stop**, **Reset**, **Host**, **Log**, **Meter**, and **Quit**. The following amplifying information applies:

  - **Start**/**Stop**/**Restart**: Used to start/stop and restart the VTS functions.
  - **Host**: Provides a method to perform remote VTS hardware diagnostics.
  - **Log**: Provides a log file for any VTS kernel errors or UNIX messages.
  - **Meter**: Provides a graphic representation of the current diagnostic test(s) being conducted on OPUP hardware.
  - **Quit**: Used to exit the VTS window.

- **Status Panel**: Displays Hostname, Model description of hardware where the VTS software is installed, Testing status, number of System tests, Cumulative errors found, and Elapsed time of test. (Last Option File and AC Coverage: N/A.) Each Testing status function is described below:

  - Testing status:
    - idle - No current test.
    - testing - Test in session.
    - suspend - Test Paused.
    - replay - Displaying a previously recorded test.
    - stopping - Test stopped.

- **Select Devices Panel**: Used to select equipment to test. Each selection is described below:

  - Default: When VTS is initially started it selects a default list of internal devices for testing.
  - None: Deselects all equipment.
  - All: Selects all equipment.
  - Intervention: Used to prepare specific devices (CD-ROM, DVD players, floppy drives, card readers, SCSI peripherals) for testing. These devices usually have prepared disks, cards, or tapes inserted to exercise the intended drive. Normally not selected unless the associated peripheral is suspect.

- **Select Test Mode Panel**: Used to select level of diagnostic test. Each test mode is described below:

  - Connection: Tests internal communication/connectivity of the selected device(s). If the `System map:` **Logical** radio button is selected, all internal software drivers will be tested. If the **Physical** radio button is selected, all software drivers and peripheral connectors will be tested. The Connection test mode is non-intrusive.
  - Functional: Same internal test functionality as Connection. However, Functional tests are more intrusive. Performs Peripheral Firmware POST tests,

assumes all other applications are not running.

•• Auto Config...: Used in conjunction with Deterministic Scheduler.

NOTE

The Function type test in VTS Tool will only divide resources to conduct this type of test if other applications are running. It will not corrupt or cause the OPUP Server OS to stop operating. It will only cause it to slow down significantly while system resources are re-distributed to run the Functional Test.

- **System map**: Used to select which devices, either Physical or Logical, to be displayed in the `System map` area. Each device has a map directory correlation box and a selection check box. A plus sign next to the device indicates that the device map is collapsed. A minus sign indicates that the device directory is currently being shown. A check in the check box indicates that the device is selected. The `System map` display area also has two test status indicators. If a test passes the VTS diagnostic test, the directory will be displayed in green. If the test fails, the device, directory, and device driver and/or associated connector will be displayed in red.

- **Test Message Display Area**: Any or all response messages associated with the actual operational status of the test is displayed in this area. All test messages, however, are displayed within the VTS Test Message Logs. Test message logs are accessed via the **`Log`** icon located near the top middle of the `SunVTS Diagnostic` window.

3.3.3.4.16 Shutdown/Restart Server. The Shutdown and Restart Server functions provide the ability to either shutdown or restart the OPUP Server OS. These functions have a higher operational impact on all OPUP Server OS processes than the Start, Stop, and Restart functions. (Refer to paragraph 3.3.3.4.1 through paragraph 3.3.3.4.3 for a discussion on start/stop/restart functions.)

CAUTION

The Shutdown Server function should **always** be used when powering the Server UD86A2 hardware down to the Off (0) position. However, in the event of an emergency, the Shutdown Server function may be bypassed by pressing the power button found near the center left of the OPUP server front panel until the power is removed. Be advised that bypassing the Shutdown Server function can have dire consequences which could affect the OPUP Server OS. These consequences will depend upon which OPUP Server OS processes are running when they are interrupted. Use of the OPUP server power button is considered to be an abnormal power off procedure. Contact the ROC Hotline if the OPUP Server OS will not boot up after an abnormal server shutdown procedure.

When the **Shutdown Server** button is clicked, an `OPUP Manager Shutdown Server` warning window will be displayed. If the **Yes** button is clicked, an `OPUP Manager Shutdown Server(s)` window will be displayed. The Shutdown Server function will then terminate all OPUP Server OS operations and power the OPUP server hardware down to the power Off (0) position. The Server UD86A2 will remain in the off position until the power button is pressed, again. If the **No** button is clicked, the `OPUP Server Control Menu` will be redisplayed.

When the **Restart Server** button is clicked, an `OPUP Manager Restart Server` warning window will be displayed. If the **Yes** button is clicked, an `OPUP Manager Restart Server(s)` window will be displayed. The Restart Server function will then terminate all OPUP Server OS operations, remove each OS process from memory, and perform a Power-On-Self-Test (POST) and Sun Microsystems Object Diagnostic Boot (ODB) procedure. When the ODB process is complete, the CDE Login screen will be displayed. If the **No** button is clicked the `OPUP Server Control Menu` will be redisplayed.

3.3.3.5 Operational Applications Front Panel GUIs. The Graphic User Interfaces (GUIs) provided by the OPUP Operational Applications Front Panel are the Product Display, Status & Control, Archive Product Display, and Archive Status Log GUIs. These GUIs provide the functionality to display and manipulate WSR-88D product and message data, determine circuit connectivity status(s), perform One Time Request (OTR) dial request for products, send RPS Lists, and Alert Requests, etc. In addition to the functionality provided by these programs, there are several adaptation and configuration functions/processes which allow users and maintainers to configure specific GUI process behavior and/or to change display attributes which enhance the use of these GUI applications for use by OPUP operators.

The OPUP Operational Applications Front Panel is normally accessed and manipulated by OPUP operations personnel. However, maintenance personnel may be required to access and manipulate specific OPUP applications in order to perform troubleshooting and fault isolation procedures as the need arises. In addition to the GUIs provided within the front panel, an OPUP Electronic Performance Support System (EPSS) GUI is provided in order to assist each operator with various help information concerning the use of each front panel GUI functionality.

The following paragraphs provide a brief discussion of the use and application of the various functions associated with the Operational Applications Front Panel GUIs. Refer to NWS EHB 6-536, Operations Instructions, for further information concerning the use and application of each Operational Applications Front Panel GUI process not covered in this manual.

3.3.3.5.1 Product Display Graphic Users Interface (PDGUI). The Product Display Graphic Users Interface (PDGUI) is used to display all WSR-88D products and message data received by the OPUP. The PDGUI includes a sub-set of 12 windows which independently incorporate buttons, toggles, menus, and adaptable parameters to control the display of WSR-88D products and message data within each window. When the **Product Display** icon is clicked, a `Product Display` window with a sub-set of 12 windows will be displayed. In addition to the `Product Display` window, a `ToolBox, Alert Registration, Alert Database Empty!` window will be displayed.

Upon exiting the `Product Display` GUI, the OPUP records the current display configuration in a User Profile. The User Profile maintains:

- Placement and size of each display window.
- Displayed window contents (product type, origin radar and elevation (if applicable).
- The Auto Update flag for each window, maps and overlays displayed with each product.
- Active color pallet selected by that user (if it still exists, if not the colors will revert to the default color scheme).

The next time that user launches a Product Display GUI instance, the User Profile is read and the `Product Display` window is presented in the same configuration as it was prior to the exit.

3.3.3.5.1.1 Toolbox Window. The Toolbox function provides configuration tools and status indicators. The `Toolbox` window is automatically opened (launched) when the Product Display GUI is started. The `Toolbox` window hosts the server processor clock, window configuration control, alert registration, link cursor and background map version control, printer selection, auto dial, and a background map version status button. An **Exit** (double red arrow) icon function is provided to allow the user to close the `Product Display` window.

3.3.3.5.1.2 Alert Registration Window. The Alert Registration function is used to register for specific alert criteria and receive notification when a specific weather event has occurred. The `Alert Registration` window is also automatically opened (launched) when the Product Display GUI is started. If the `Alert Registration` window is not displayed automatically, it can be accessed by clicking on the **Specify Interested Alerts** icon located within the `Toolbox` window.

The `Alert Registration` window will display all of the available alerts for a particular *RPG of interest* located within the OPUP Server OS Alert Registration Table database. The Alert Registration Table provides the host RPGID (RPG), Alert Area number (Area), Group, Category, threshold value including units (Threshold), and the Alert Paired Product (PairProd) status for each available alert. The Alert Registration function is used in tandem between the OPUP Server OS and a dedicated *RPG(s) of interest*. All alert criteria, thresholds, and areas that are to be monitored are setup within the Alert Request GUI of the Operational Applications Front Panel, Status & Control GUI.

Each operator can register for alerts by using the `Alert Registration` window. To register for an alert, the *RPG(s) of interest* and the specific alert criteria threshold(s) are selected within the `Alert Registration` window and then the **Register Selected** button must be clicked. Once the alert function is activated and a specific weather event occurs within the area of responsibility of the *RPG of interest*, the *RPG of interest* will send a notice to the OPUP and an `Alert Banner` window will be displayed for the User Name (User ID) of the user that registered for that alert. (A WSR-88D product may also be sent, if configured to do so, if the alert criteria has been met.) Alert Banners provide specific information concerning the alert such as the date/time (volume scan time) of occurrence, RPGID, alert area, group, category, and exceeding

value. When the Alert Banner is displayed, it must be acknowledged before any other process can be performed. When an `Alert Banner` window is acknowledged, the Alert function will close and post an alert acknowledgement flag to the Alert Flag database directory. The `Alert Registration` window provides the functionality to allow the user to set or clear all alerts for each or all associated RPG(s) and display which alert threshold has been set per *RPG of interest*.

3.3.3.5.2 Status & Control GUI. The Status & Control GUI is used to support WSR-88D operations by providing a single application interface for system status monitoring, communications, alerts, and product acquisition control for the OPUP Server OS. When the **Status & Control** icon is clicked, a `Status and Control-OPUP X.X` GUI (where X.X is the current version of software) will be displayed. This GUI is divided into three areas: the launch bar, the tab display area, and the status area. The launch bar contains buttons which launch other OPUP applications. These areas are Product and Alert Requests, OPUP Control, Map Edit, Adaptation, Autodial, Archive, and Restore. These functions are described in the next few paragraphs.

The `Status and Control - OPUP X.X` GUI contains six control tabs. These are called the Network Map, System Status, RPG Status, GSM Summary, Free Text, and Alerts tabs. Each tab contains information that applies to recent system status(s) for these functional areas. The following list describes the functionality provided by each of the control tabs.

- Network Map: This displays a contiguous map of the United States, or in the event of an overseas site, a map of an overseas OPUP configuration. The Network Map displays the connectivity status of each dedicated RPG, connectivity status of each dial attempt, and the ability to connect and/or disconnect communications to associated RPGs.

- System Status: This displays all of the operational OPUP status messages output by the OPUP Server OS. When the **System Status** tab is clicked, a window that display specific OPUP Server OS functional status will be displayed. The status information displayed in this window will consist of the *process of interest's* associated date time group, severity, *application of interest*, user identification, and any message assigned to the status by the OPUP Server OS. This window also provides pin-point filter capability that can filter messages through the use of the Filter tool. Clicking on the **Status Message Filter** icon in the upper right hand corner of the window opens a `Status Message Filter` window. This allows the selection of the date, process name/ID, message, and severity criteria to aid in the search of information that will assist in mitigating solutions to software problems or provide general information on the occurrence of a specific event or process.

- RPG Status: This displays a graphic that represents the last known Associated RPG status encountered by the OPUP Server OS. This window displays static information and can not be manipulated.

- GSM Summary: This displays tabular information concerning the last known associated RPG communication connectivity status encountered by the OPUP Server OS. This window displays static information and can not be manipulated.

- Free Text: This displays all incoming free text messages promulgated from any of the associated RPG sites. This window specifically displays the Date, Associated RPG, and contents of each free text message received by the OPUP.

- Alerts: This displays all of the operational OPUP systems alert messages input received by all of the associated RPGs and output by the OPUP Server OS. Once selected, the Alerts tab window displays RPG, acknowledgement, active, group, category, area, date, threshold values, location, cell identification information encountered by the OPUP OS. In addition, the Alerts tab window provides pin-point Alert Filter tool by clicking on the **Alert Filter** icon in the upper right hand corner. The `Alert Filter` window provides the ability to filter the date, alert area, categories, acknowledgement, and active status of all alerts received by the OPUP based on the associated RPG of interest.

In addition to the control tabs, the `Status & Control` window also contains several configuration functional control menus that allow the user to provide the functionality outlined below.

NOTE

A security level password will be required to save edited and/or send modified information to associated RPGs in the following paragraphs.

3.3.3.5.2.1 Product Requests GUI. The Product Request GUI is provided in order for operators to access and display Routine Product Set (RPS) list definitions and to perform a One-Time Request (OTR) dial procedure for products from either an associated or non-associated *RPG of interest*. When the **Product Requests** button is clicked, a `Product Request - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. This GUI provides the operator the ability to designate a default RPS list (Clear-Air or Storm Mode) or designate a canned RPS list that the user constructs that will request a specific product set from one or more dedicated *RPGs of interest*.

An RPS list is a list of product types and associated parameters, except date and time, which tell the associated Radar Product Generator (RPG) which specific products to generate and send routinely over the dedicated RPG-to-OPUP communications line. An RPS list may contain up to 50 separate product definitions. The OPUP will support up to 50 independent RPS list definitions. Each RPS list must have a unique name, although there is no such restriction on its contents. The RPS list name can be any letter or letter/number combination. To ensure a particular default RPS list is defined for Weather Modes A and B, an RPS list must be named storm and clear, respectively.

The Product Request GUI function also provides the ability to send a one-time request (OTR) of each product to either a dedicated RPG, an RPG located within the site's area of responsibility, or an RPG outside the AOR (called All Dialup RPGs.) OTRs can be sent individually or as one request to one or more RPGs at a time. Any request for a product or set of products outside of the RPS list is termed a one-time request (OTR). All product requests to non-associated RPGs, as well as all product requests to the associated RPG over the dial-up line, are also one-time product requests. In addition, OTRs can be made to the associated RPG over the dedicated line. The pur-

pose of an OTR over the dedicated RPG circuit is to supplement the routine product set routinely received from that RPG.

3.3.3.5.2.2 Alert Requests GUI. The purpose of the alerting function is to assist in the metwatch process by drawing attention to a particular radar when the selected radar-identified alert criteria are met or exceeded. The WSR-88D alerting function is designed to automatically search data fields and algorithm output data to identify operator-selected, radar-identified phenomena. The WSR-88D alerting function identifies phenomena selected as an alert category threshold within the area designated by any associated user (OPUP, AWIPS, etc.,). When it detects an alert category threshold has been met or exceeded within a specified area, the alerting function notifies the affected associated user(s) and, if specified, will generate and automatically distribute an alert-paired product. When the **Alert Requests** button is clicked, an `Alert Request - OPUP X.X` GUI (where X.X is the current version of software) will be displayed.

The Alert Request function provides the ability for each operator to define two alert areas with up to 10 alert categories for each area per associated RPG. Alert thresholds and associated criteria are defined in the `Edit Category` area of the `Alert Request - OPUP X.X` GUI and placed in the `Alert Categories` area for selection. Once selected, each definition will be to the *RPG(s) of interest*. Alert threshold areas are defined in the `Edit Alert Area Boxes` area. Once defined, each area box is sent to the RPG of interest along with any alert criteria/ threshold data placed in the `Alert Categories` area. Once sent, this information is placed within the Associated RPG database and a software flag is set to send a message back to the OPUP OS Alert database when the associated alert threshold criteria is met. When sent to the OPUP Server OS for display, a warning banner will be sent (along with a specific product, if configured to do so by the operator).

3.3.3.5.2.3 OPUP Control Window. The OPUP Control function provides the ability to change passwords or restart the OPUP Server OS from the Operational Applications Front Panel without having to login to the `OPUP Manager Main Menu`. When the **OPUP Control** button is clicked, an `OPUP Control` window is displayed. The two functions provided within this window are located in the `Tasks` area. Before the functions listed within the `Tasks` area can be accessed, the appropriate security level password will be required.

3.3.3.5.2.4 Background Map Description. Background display maps are used by the operator to provide a reference overlay for WSR-88D products, display specific resolution data, and to meet the varied OPUP users warning and forecast location reference requirements. Background maps are broken down into two map versions and three types. These are either the low and high detail versions which can be viewed as default, custom, or edited type maps.

The low detail version contains a limited number of specific locations or only a few large-scale reference locations to constrain the clutter present on the screen (e.g. major cities, interstate highways, etc.) As the zoom level increases, the relative area coverage of the screen decreases, allowing more map data to be displayed without cluttering the screen display. The high detail maps are only displayed when the displayed product radius is less than 32.4 nm. As the product is zoomed the OPUP automatically displays the high detail map version when the zoom level results in the displayed product radius is less than 32.4 nm.

The default map set consists of the original maps maintained by the ROC Configuration Management (CM) Branch. These maps are not modifiable by the OPUP Server OS. These maps are protected so that baseline maps are always available in the event an inadvertent modification is made to an edited map. The OPUP Server OS provides the ability to create up to 5 custom maps. These maps can be created from scratch (starting with a blank screen) or may use any other map as a template. Once created and named, the custom maps are available for display in the Product Display GUI and are treated as any other background map. Background maps may be modified by adding (or deleting) various shapes, line segments, symbols, and/or identifying text. When modifications are made to a background map, they are always saved as the Edited type of the map. The previous modified version of the map is lost and the original version remains unchanged.

3.3.3.5.2.5 Map Editor GUI. The Map Editor function provides for the modification of predefined background maps as well as the creation of up to five locally built custom maps. When the **Map Edit** button is clicked, a `Map Edit - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The `Map Edit - OPUP X.X` GUI is divided into three major sections. The area on the left side of the GUI contains the map edit tools, the center portion of the GUI hosts the Map Editor Work Area Display and the right side the GUI is used to select the particular map to edit and provides for the display of additional maps to be used as reference while in the editing process. To edit/create a background map the user must first gain permission by accessing the appropriate security level and then select the *RPG background map of interest*. Then, the **New Custom Map** icon near the top left of the window. Once selected, the Map Editor opens a `New Custom Map` pop-up window and the user must enter a new filename. When the **Save Map** icon is clicked, the Map Editor function will save the file in the Map Editor database and the background map of interest is placed in the Edit Mode in the `Map Editor Work Area Display` area. The Map Editor uses standard editing tools which provide similar drawing, text, and save features used in most graphic editing programs.

The saved edited background map will be available for use within the PDGUI when the operator designates the map by checking/unchecking the **Use edited maps** box in the PDGUI `Toolbox` window. To use the desired background map with the actual product display, the user must ensure that the check box associated with the map of interest is highlighted in the Maps properties area. To use the original default background map file, the user must uncheck the `Use edited maps` box in the PDGUI `Toolbox` window.

3.3.3.5.2.6 Adaptation GUI. The Adaptation GUI provides the functionality necessary to allow each operator to customize the display and behavior of the data and products displayed within the Operational Applications Front Panel GUIs. Many of the processes controlled by the Adaptation GUI are used to support the operational and communication requirements of individual operators and offices. All display and product data behavior modified by the Adaptation GUI functionality is specifically designed to be part of the Archive Menu backup functions provided within the `OPUP Archive Menu` of the `OPUP Manager Main Menu`. Backing up this data facilitates a rapid recovery of these files following a software upgrade or major hardware failure which may force a reload of OPUP software. When the **Adaptation** button is clicked, an `Adaptation - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The following information is a list of tabs that are controlled by the Adaptation GUI functionality:

- Display: This tab opens a window that allows the user to modify the display attributes used to define the input parameters used to display the Storm Cell Identification and Tracking (SCIT), Hail Detection Algorithm (HDA), and Tornadic Vortex Signature (TVS) products in the PDGUI. This window can also be used to select the number of storms cells to display, the threshold display of Probability of Hail (POH) and Probability of Severe Hail (POSH), and whether or not to display Elevated TVSs.

- Maps: This tab opens a window that allows the user to modify the display attributes used to associate any of the products in the OPUP database with specific maps. The user can chose to have a Base Reflectivity, .54 nm resolution, 16 data level product automatically include a county map each time this product is selected in the PDGUI.

- Overlays: This tab opens a window that allows the user to modify overlay attributes used to define which overlay products will automatically be associated with any of the products in the OPUP OS database. For example, the user can chose to have a Storm Track Information (STI) overlay automatically display when a Base Reflectivity, .54 nm resolution, 16 data level product is selected in the PDGUI.

- Colors: This tab opens a window that allows the user to modify display colors of any product in the OPUP database. The OPUP OS is initially installed with default product colors assigned, but the user can open the default product color list, assign new colors to products/overlays, and save them as a new filename. The new colors can then be assigned using the color assignment icon in the PDGUI `Toolbox` pop-up window. If desired, the user can revert back to the original colors or define another color scheme.

- FTP Dist: This tab opens a window that allows the system administrator to manage the flow of WSR-88D product data to designated FTP IP Addresses. The data flow managed in this window includes National Image Transfer Format (NITF), NEXRAD, and Portable Network GIF (PNG) or graphics sent in raw format from the RPG. This data is used for after processing purposes such as inclusion in data display applications of all sorts (web pages, display web sites, end display systems). This window controls flow of information to specific IP addresses designated in the different editable fields of this window. Information required in the FTP Dist window includes IP addresses, Username/passwords, and the directory path that the data will be deposited in.

- NITF Dist: This tab opens a window that allows the system administrator to select all or a specific number/type of NITF formatted WSR-88D products in the OPUP database for transmission to a NITF FTP IP address in the FTP Dist window. All or specific products are selected from the All Products list and placed into the Products to Distribute area. To ensure that these products are selected for distribution, the system administrator must access the correct security level, click on the **Save Changes** icon, and place a check in the `Enable NITF Distribution` check box.

- NEXRAD Dist: This tab opens a window that allows the system administrator to select all or a specific number/type of NEXRAD formatted WSR-88D products in the OPUP database for transmission to the NEXRAD FTP IP address in the FTP Dist window. All or specific products are selected from the All Products list and placed into the Products to Distribute

area. To ensure that these products are selected for distribution, the system administrator must access the correct security level, click on the **Save Changes** icon, and place a check in the `Enable NEXRAD Distribution` check box.

- PNG Dist: This tab opens a window that allows the system administrator to select all or a specific number/type of PNG formatted WSR-88D products in the OPUP database for transmission to the PNG FTP IP address in the FTP Dist window. All or specific products are selected from the All Products list and placed into the Products to Distribute area. To ensure that these products are selected for distribution, the system administrator must access the correct security level, click on the **Save Changes** icon, and place a check in the `Enable PNG Distribution` check box.

3.3.3.5.2.7 Autodial GUI. The Autodial GUI functionality is used to automate the process of obtaining products from non-associated RPGs. The OPUP Auto-Dial feature is designed to repeatedly dial-out and request a predefined product set from one or more non-associated RPG(s). When activated, the OPUP Autodial feature will automatically dial into the specified RPG, request the predefined product set, disconnect, wait for the user-specified time period, then re-initiate the dial-request sequence. This dial - request - disconnect - wait sequence will repeat until canceled by operator command. When the **Autodial** GUI is clicked, an `Autodial - OPUP X.X` GUI (where X.X is the current version of software) will be displayed.

The OPUP Autodial functionality will store up to 20 product sets of 10 products each for dial request processing. Level 1 password access is required to save, modify, rename, and delete an autodial product set. Level 1 access is also required to initiate an autodial instance. Any operator (no special access) may stop an autodial instance and may view a saved or active autodial request list. To initiate an automated dial sequence, select the desired product list, identify the target RPG and specify the desired wait interval, between 5 and 300 minutes. These selections define an autodial instance. The OPUP software will support up to 25 simultaneous, active autodial instances.

3.3.3.5.2.8 Archive GUI. The Archive GUI functionality is used to record product and status messages on a durable, exportable media for permanent, local retention. This permanent record supports the requirement to collect and retain data pertaining to any rare or catastrophic event that may affect a covered asset. These data can be read back into the OPUP for investigative support or further analysis. Additionally, event and/or phenomena-based data sets made be recorded to support local training objectives.

NOTE

The functions provided by the Archive GUI should not be confused with the `OPUP Manager Main Menu`, `OPUP Archive Menu`. The Archive GUI functions located within the Operational Applications Front Panel are used to select specific files for archival by OPUP Operators. The `OPUP Archive Menu` located within the `OPUP Manager Main Menu` provide the functions necessary to place this data on a CD-ROM or restore the data to the OPUP Server OS Archive database.

When the **Archive** GUI button is clicked, an `Archive - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The functions provided within the Archive GUI consists of four inter-related, yet independent processes. Two of these processes, Archive data set definition (Archive) and Archive data base creation (Restore), are operator GUI operations; while the other two, copy Archive data sets to and from CD-ROM, are administrative GUI operations (found within the `OPUP Archive Menu` of the `OPUP Manager Main Menu`).

The Archive GUI supports the specification of a data set based on source RPG(s), date/time span, and product type(s). Once the desired data set is defined, the Archive function copies the data from the operational data base to a reserved Archive directory structure on the OPUP server hard drive. The Archive directory structure serves two purposes. First, the data stored in this directory structure is available for restoration into the Archive database which enables the data to be accessed for display via the Archive Product Display and Status Log GUIs. Second, the Archive directory structure maintains all the data and housekeeping information required to create an Archive CD-ROM.

3.3.3.5.2.9 Restore GUI. The Restore GUI functionality provides the ability to select and restore specific archive files for display within the OPUP Archive PDGUI. These archive files will normally be located within the OPUP Server OS Archive database. Archive files may be restored from a CD-ROM or from files left within the Archive database.

When the **Restore** GUI is clicked, a `Restore - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The Restore Archive function populates the Archive database with the product and status data contained in the Archive data set. Once populated into the database, these data are available for display via the Archive display GUIs. The operational **Product Display** and **Status and Control GUIs** only access the operational data base, while the Archive Product Display and Archive Status Log GUIs only have access to the Archive database. This precludes old data being displayed along with current information on the operational or Archive OPUP display GUIs.

NOTE

> The Archive database is separate from the operational product database and is not automatically purged.

3.3.3.5.3 Archive Product Display GUI. The Archive Product Display GUI (Archive PDGUI) is used to display and manipulate archived WSR-88D products/messages that were previously recorded on Archive IV media. When the **Archive Product Display** icon is clicked, an `Archive - Product Display - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The Archive PDGUI functionality is similar to the main PDGUI display. However, the data that is accessed and displayed within this GUI is strictly archived data recalled from the OPUP Archive product database. Users can recall any archived data that is currently within the OPUP Server OS Archive database. This data is primarily used to support weather forecast interpretation/training.

3.3.3.5.4 Archive Status Log Terminal GUI. The Archive Status Log function is used to display archived status information similar to the system status display information that can be accessed within the Status & Control GUI. When the **Archive Status Log** icon is clicked, an `Archive Status Log Terminal - OPUP X.X` GUI (where X.X is the current version of software) will be displayed. The information provided within this GUI provides a record display of all associated information that was available during the time a specific event was originally recorded. This information will also include all available archive alert status messages.

Section 3.4. OPUP SOFTWARE BACKGROUND PROCESS DESCRIPTION

3.4.1 Introduction.

The OPUP Server Operating System (OS) software is designed to receive and display WSR-88D product data. It is also designed to send and receive system status messages which report response information internally to the OPUP Server OS, Associated RPG, and externally to both the OPUP Manager GUI and AS GUI Suite. The OPUP displays product data via the AS GUI Suite and reports system and software statuses, and message data via the OPUP Manager GUI and many status windows provided to operators via the Status & Control GUI.

In the past, the Legacy PUP used a closed software architecture method that only provided for product and data reception for local display. The PUP sent and received status messaging information both internally and externally between two systems. These systems were connected via one dedicated phone line (and/or dial lines, when used). The new Open Systems architecture greatly enhances and simplifies all product display and message reporting among several systems using a server/client configuration in which these systems are connected by a Switch UD86A5. Since the OPUP Server OS communications are spread through a “network” type system, the OPUP can distribute both product and message data internally and externally to either one or many clients. These clients can be attached systems (physical hardware connected to designated OPUP workstations) and/or systems that access the OPUP Server OS via a Switch (to workstations that have many services other than to display OPUP data).

NOTE

> Each Small OPUP configuration was developed to act as an isolated display system. There are no workstations configured for use with the Small OPUP system.

3.4.2 OPUP Server OS Infrastructure.

The OPUP OS infrastructure is utilized through all OPUP hardware configurations to facilitate various software programs and scripts (Open Architecture Software Modules). These programs and scripts monitor (listen), access a file(s), store data (provide a database), execute a program(s) (i.e., open a program and execute a script), and to send a response(s) (send results to a distribution node). These processes are controlled by utilizing Linear Buffers and Background Processes.

3.4.2.1 Linear Buffers (LBs). Linear Buffers are used to distribute product data, message information, and other system information. Linear Buffers provide programmers the ability to develop Internet/WEB like formatted software scripts and applications that help to store and distribute messages in an open format that can be conveniently accessed by programs and monitoring hardware devices system wide.

A LB is used in software programming to allocate an area of storage space, a file, or a segment of shared memory and assign it with an easy to identify file descriptor (i.e, a well known name). Messages are stored in and retrieved from LBs via a linear buffer program function call. Most lin-

ear buffers have the letters LB within each script or file they are associated with. These functions, in addition to reading/writing messages, maintain control information in the LB for message management/background processes, and provide access control and data integrity protection. The processes governed by LBs are critical in supporting reliable applications in an unreliable networked workstation environment. The LB provides the following specific support in OPUP Architecture programming:

- Multiple simultaneous read and write capability by multiple programs/scripts.
- Highly reliable message passing capability.
- Automatic message storage space management.
- Transparent access across many hosts in a networked environment.
- Highly efficient message storage and retrieval tool.
- Distributed message infrastructures that send/receive large amounts of data.

3.4.2.2 Background Processes Status Information. The OPUP Server OS utilizes many processes that run in the background (transparent to the user). Background processes can be duplicated many times and assigned individual Process Identification numbers (PIDs), as required. All background processes are monitored by the `OPUP Manager Main Menu`, `OPUP Software Menu`, `OPUP Process Status` window. The `OPUP Process Status` window is divided into two parts. The top half of the display, `OPUP Applications and Tasks`, is illustrated in Figure 3-48.

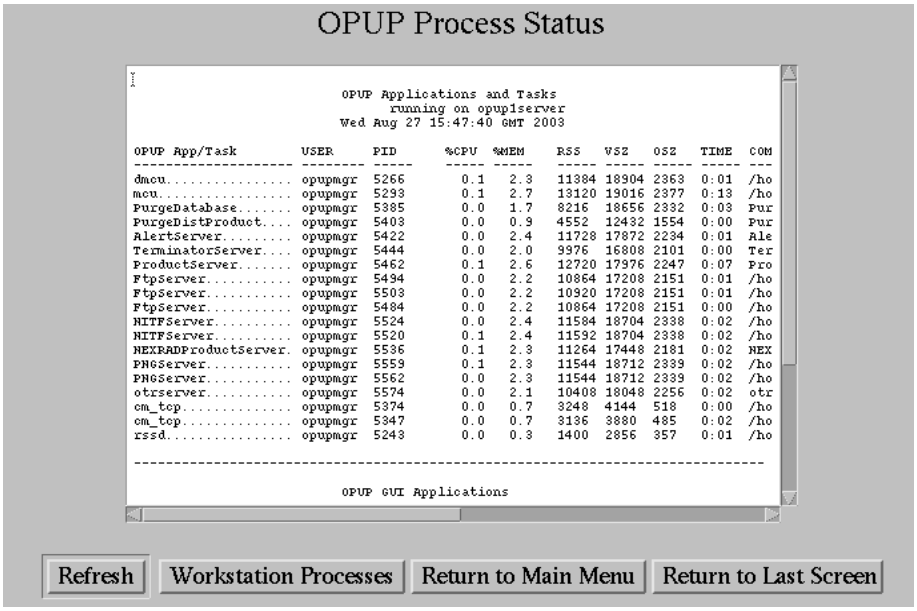
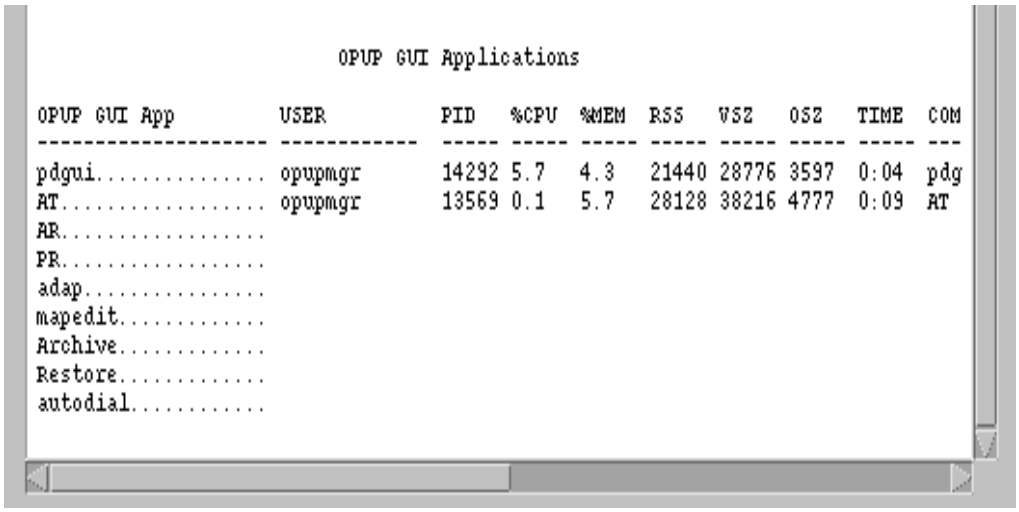


Figure 3-48. OPUP OS Process Status Window (Top Half)

The bottom half of the display, `OPUP GUI Applications`, is illustrated in Figure 3-49. The information displayed in both of these windows provide each site the means to monitor and troubleshoot specific OPUP Server OS operating and communications background processes. It displays process identifying information and the names of each background process.



OPUP GUI Applications

OPUP GUI App	USER	PID	%CPU	%MEM	RSS	VSZ	OSZ	TIME	COM
pdgui.....	opupmgr	14292	5.7	4.3	21440	28776	3597	0:04	pdg
AT.....	opupmgr	13569	0.1	5.7	28128	38216	4777	0:09	AT
AR.....									
PR.....									
adap.....									
mapedit.....									
Archive.....									
Restore.....									
autodial.....									

Figure 3-49. OPUP OS Process Status Window (Bottom Half)

The following is a breakdown of each columns of information that is displayed within the Process Status Window:

- OPUP App/Task: The name of the process(s) used by the OPUP Server OS.
- OPUP GUI App: The name of the process(s) accessed by OPUP Operators.
- USER: The name of the user directory that has process control.
- PID: The Process Identification number automatically assigned by the OS to the individual process.
- %CPU: The percentage of CPU time that the individual process is currently utilizing.
- %MEM: The percentage of Memory that the individual process is currently utilizing.
- RSS: The PID number automatically assigned by the OS to the Remote System Services sub-background process.
- VSZ: The total process size in kilobytes of virtual memory.

- OSZ: The total process size in pages of virtual memory.
- TIME: The amount of CPU time (Clock Cycle Minutes/Seconds) that the individual process took to perform its function(s).
- COMMAND: The absolute pathname of the executable file used to perform the individual process.

The following paragraphs provide an overview of each process displayed in the `OPUP Process Status` window.

3.4.2.2.1 Message Control Unit (MCU)/Dial MCU (DMCU). All WSR-88D data is pre-formatted to be in a TCP/IP data packet format for transfer to/from a dedicated or dial RPG of interest. The Message Control Unit (MCU) and Dial Message Control Unit (DMCU) processes provide the functionality required to ingest products from each RPG. These processes also provide the capability to send system status messages as well. A separate instance of an MCU is required for each dedicated connection to an RPG. Each instance of an MCU operates independently of another and may be started or terminated without affecting any other MCU. The DMCU only requires one instance of a DMCU per dial line. Since each site only has one dial line provided for each OPUP system, normally only one DMCU will be displayed.

The MCU will send the current/last RPG message upon initial connection with an RPG. The MCU retrieves the appropriate RPS list for the specified connection based upon the information contained in the MCU database. If the radar operational mode has changed, the MCU will send the default RPS list for the current operational mode. The message code of each RPG message is determined by the MCU and is dealt with accordingly. Messages received from each RPG include the general RPG status, alert adaptation parameters, request response(s), and OPUP status request messages. Received messages are written to the appropriate LB in the OPUP Server OS as determined by the configuration file assigned to that background process. An event is posted with the receipt of each message, as needed. Products received from an RPG are stored in an LB. When products are received, an event notification is broadcast across the system with a message containing a product description header.

The MCU also responds to events from other OPUP applications (or users that are requesting to send a message to an RPG). These events include user requests to send an RPS list, a one-time product request, or an alert request.

3.4.2.2.2 Purge Database/Purge Distribution Products. The Purge function monitors data being stored in the OPUP Server OS database and purges any data/messages more than 6 hours old. This ensures that the database does not fill to 100% capacity. If the database were allowed to be filled to 100% capacity, communication/product storage load shedding will be the result within the OPUP Server OS.

The Purge Database function ensures that all incoming WSR-88D products and message data stored within the OPUP Server OS database directory are purged within 6 hours after they are received. The Purge Distribution Products function ensures that all products designated for trans-

fer to a distribution site, stored within the OPUP OS Distribution directory does not fill to 100% capacity. When the Purge Distribution Products function detects a specific threshold capacity, the purge functions removes the required files so that the directory does not fill to 100%.

3.4.2.2.3 Alert Server. This function monitors all network event traffic and stores any event messages that contain alert information. It then updates the OPUP alert database (alertdb) with the alert description information.

3.4.2.2.4 Terminator Server. This monitors all network event traffic designated to transferred to a designated IP Address by the OPUP Server OS for product distribution. It stores each designated product and messages that contain product information. It then updates the OPUP Terminator database (terminatordb) with the product description information.

3.4.2.2.5 Product Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (productdb) with the product description information.

3.4.2.2.6 FTP Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (FTPserver) with the product description information.

3.4.2.2.7 NITF Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (NITFserver) with the product description information.

3.4.2.2.8 NEXRAD Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (NEXRADserver) with the product description information.

3.4.2.2.9 PNG Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (pngserver) with the product description information.

3.4.2.2.10 OTR Server. This monitors all network event traffic and stores any event messages that contain product information. It then updates the OPUP product database (productdb) with the product description information.

3.4.2.2.11 Communications Manger (cm_tcp). The Communications Manager routes messages throughout the OPUP communications equipment. The cm_tcp process monitors and routes data communications packets between the OPUP Communications Server, Smart Switch, and OPUP Server OS communications process modules.

3.4.2.2.12 Remote System Services Daemon. The RSSD provides system wide access to communication services that may reside internally on the OPUP Server OS and remotely on other Workstations that are physically connected to the OPUP server system. There will be one RSSD

per physically connected system. If there are no physically connected systems (e.g., all users are accessing the OPUP Server OS via the Switch) then there will only be one RSSD displayed.

3.4.2.2.13 OPUP Operational Application GUI Processes. The following list is a breakdown of GUI functions depicted in Figure 3-49:

- Product Display Graphic Users Interface (PDGUI): Displays all processes associated with the display of WSR-88D Products and Message data.
- Applications Terminal (AT): Displays all processes associated with the functions of the Status&Control GUI.
- Alert Request (AR): Displays all processes associated with the Alert Request GUI and associated functions.
- Product Request (PR): Displays all processes associated with the Product Request GUI and associated functions.
- Adaptation (adap): Displays all processes associated with the Adaptation GUI and associated functions.
- Map Editor (mapedit): Displays all processes associated with the Map Editor GUI and associated functions.
- Archive (Archive): Displays all processes associated with the Archive GUI and associated functions.
- Restore (Restore): Displays all process associated with the Restore GUI and associated functions.
- Autodial (autodial): Displays all process associated with the Autodial GUI and associated functions.

Section 3.5. OPUP SOFTWARE INSTALLATION PROCEDURES

3.5.1 Introduction.

This section outlines the information and procedures required to perform an initial installation or re-installation of the Small OPUP Operating Software (OS) and associated Operational Applications GUI Suite.

3.5.2 Basic Software Installation Theory.

The software installation process will involve the use of a series of installation scripts contained on four CD-ROMs. These disks are required to either initially install or re-install the OPUP Server OS and Operational Applications Front Panel GUI Suite. The software installation process used to install the OPUP Server OS has been developed to utilize specific procedures and configuration input to successfully complete each installation process. A successful software installation process is indicated by each Small OPUP system successfully connecting to and displaying WSR-88D product and message data on the primary Monitor UD86A1 (and secondary Monitor UD86A11, if installed).

NOTES

> The software installation instructions provided in Table 3-7 contains the steps and information necessary to successfully install and configure each Small OPUP system. The configuration input data required in Step 2 is site dependant. This information will need to be addressed before beginning with Step 3 of the software installation procedures. Each site must ensure that all assumptions, equipment, and configuration input data is present in order for a successful installation to occur.
>
> There are two CD-ROM devices that are supplied with the Small OPUP Equipment Group UD86. These devices are the Archive IV Device UD86A7 and the internal CD-ROM player provided with the Server UD86A2. The software installation process requires the use of the internal CD-ROM player of the OPUP Server. The archive device cannot be used for software installations.

The software installation process begins by placing the first installation disk within the internal CD-ROM media tray of the Server UD86A2 and ensuring that the `ok` prompt is displayed on the Monitor UD86A1. Once the software initiation command is entered, each CD-ROM disk will prompt for the next successive disk until the load process is complete. The software load process will take approximately 3 hours to install (installation times may vary depending upon system performance).

3.5.2.1 Software Installation Assumptions. The following assumptions apply:

- The software installation will be a full software load process.

- The individual performing the software installation is either the system administrator, system maintainer, or one who has sufficient experience in performing software installations.
- All of the hardware provided with the Small OPUP Equipment Group UD86 configuration is present, operational, and all required software and configuration input data is present.

If any of these assumptions are not correct, call the ROC Hotline for further assistance BEFORE beginning the software installation process.

3.5.3 Software Installation Requirements.

The OPUP Software installation routine has been developed to prompt the installer to select the correct hardware configuration at the beginning of the installation process. Each set of CD-ROM disks issued by the ROC Configuration Management (CM) Branch contains software that can be loaded on any OPUP configuration with the understanding that sites will need to ensure that the correct configuration input data and site are selected. If any data or configuration input data is entered incorrectly, the installation process allows the installer to deselect the incorrect configuration and begin the installation process over again.

NOTES

It is extremely important that each site only select the correct information and configuration input data associated with the specific hardware/configuration installed at their site. If an incorrect software load configuration is chosen, both the OPUP hardware/software group will not function properly.

It is also important to perform the software installation procedure beginning with CD-ROM disk 1 and then follow the prompts until CD-ROM disk 4 is completely finished. Any action other than what is outlined by the OPUP software installation procedure will result in having to perform the complete software installation procedure over again from the beginning.

3.5.3.1 Hard Drive Utilization. The Server UD86A2 is configured to utilize two internal hard drives. The primary hard drive is used to load and run the OPUP Server OS and Operational Applications Front Panel GUI Suite. The secondary hard drive is used to store WSR-88D product and message data for display and/or retrieval.

3.5.3.1.1 Hard Drive Slice Allocation. When the software installation/re-installation process is initiated, each hard drive is automatically re-formatted and configured in a specific UNIX file system software slice configuration. During each software installation/re-installation procedure, new filesystems are created and setup to allow the primary hard drive to load and operate the OPUP

Server OS and the secondary hard drive to receive, display, and retrieve data. Table 3-3 and Table 3-4 illustrate slice allocations made on the primary and secondary hard drives.

Table 3-3. OPUP Server Primary Hard Drive Slice Allocations

Slice	Tag	Minimum Size (bytes)	Percentage Size
0	/	85899345	1%
1	/var	1288490188	15%
2	backup	8589934592	100%
3	swap	1030792151	12%
4	install	858993459	10%
5	/opt	171798691	2%
6	/usr	858993459	10%
7	home	4294967296	50%

Table 3-4. OPUP Server Secondary Hard Drive Slice Allocations

Slice	Tag	Minimum Size (bytes)	Percentage Size
0	Unassigned	0	0%
1	Unassigned	0	0%
2	backup	17179869184	100%
3	Unassigned	0	0%
4	Unassigned	0	0%
5	Unassigned	0	0%
6	Unassigned	0	0%
7	data	17179869184	100%

3.5.3.2 Required Software. Each site will be required to have the latest set of software installation media issued by the ROC Configuration Management (CM) Branch. The following is a list of the software required, where X.X is the current version of software:

- Disk 1 of 4: OPUP LOAD MEDIA Version X.X Disk 1.
- Disk 2 of 4: OPUP LOAD MEDIA Version X.X Disk 2.

- Disk 3 of 4: OPUP LOAD MEDIA Version X.X Disk 3.
- Disk 4 of 4: OPUP LOAD MEDIA Version X.X Disk 4.

The contents of each disk is listed in Table 3-5, Software Installation Disk Contents. This table illustrates the information and/or programs that are loaded/configured within both hard drives of the Server UD86A2 during the software installation process.

Table 3-5. Software Installation Disk Contents

Disk Number	Contents	Remarks
1 of 4	Solaris OS, Netscape, NIS+, Apache, Jumpstart, Kernel, MSMail, PWRChute, Oracle, and numerous image files.	Base image files from Solaris and third party software are copied to the hard drives as follows: Primary hard drive (0): - */root*, slice 0 - */var*, slice 1 - */var*, *var/run*, */tmp*, slice 3 - */opt*, slice 5 - */usr*, */proc*, */dev/fd*, slice 6 - */export/home*, slice 7 Secondary hard drive (1): - */export/data*, slice 7
2 of 4	OPUP Install Scripts	Uses Solaris to setup hardware for OS/AS installation and puts all install scripts in */export/install* on drive 0, slice 4.
3 of 4	OPUP Server OS and Operational Applications (AS) Front Panel GUI Suite files	Sets up and installs OS/AS and places all third party software in */export/home*, on drive 0 slice 7.
4 of 4	All OPUP background maps (169)	Install script places map files in */export/data/map* on drive 1, slice 7.

3.5.3.3 Required Software Input Parameters and Input Cable. Each software installation requires specific input parameters that are unique to the Small OPUP Equipment Group UD86 software installation configuration process. The software load process will prompt the installer for all of the applicable information outlined in Table 3-6. However, not all parameters may be required. The use of each parameter is dependant upon the circumstances for each software installation procedure.

One input cable is required in order to properly configure the Communication Router UD86A8 during a complete installation of the OPUP Server OS. The use of the communication router input cable is covered in paragraph 6.6.4.3. The input cable is not required during successive OPUP Server OS re-installations. The input cable may be required in the event that either the

server and/or communication router IP address changes or when either the server and/or the communication router hardware is replaced.

NOTE

When installing OPUP software, all communication router input failures will be indicated after Table 3-7, Step 46 of the software installation instructions. When communication router input failures are encountered, follow the instructions provided by the software installation instructions. For all other instances, consult the troubleshooting procedures provided in Chapter 6, Maintenance.

The following information lists the required input cable:

- CISCO communication router input access cable (CISCO cable number 72-3383-01).

Table 3-6. Software Installation Input Parameters

Input Parameter	Remarks
Root_Password	Plain Language password format. (i.e. Sh1roc!x). Used in association with UNIX root level access.
opupmgr_Password	Plain Language password format. (i.e. Sh1roc!x). Used in association with administrative level access only.
Operations Permission Security Level Passwords	Plain Language password format. (i.e. Sh1roc!x). Requires three passwords. Used in association with specific AS GUI Suite adaptation data change permission level access. Applies to security levels 1, 2, and 3.
Number of Dial Phone Lines	Telco phone numbers. Pre-determined during initial hardware installation.
Dial Line Point of Contact	Plain Language. Either full name of weather office or individual responsible for reception of NITF, NEXRAD, and PNG data.
Dial Line Phone Number	Point of contact phone number.
Current Router Password	Assigned during the initial Communication Router setup.
New Router Password	Used to change the password associated with the initial Communication Router setup.
Current Enable Password	Assigned during the initial Communication Router root level password setup.

Table 3-6. Software Installation Input Parameters - Continued

Input Parameter	Remarks
New Enable Password	Used to change the Communication Router root level password.
User Name	Plain Language format. (i.e. Westzone1). Used to allow Operator access.
User Password	Plain Language password format. (i.e. Sh1roc!x). Used in conjunction with User Name.

The parameters listed in Table 3-6 will be provided during the initial OPUP hardware and software group installation at each site. The parameters outlined in this table are provided in accordance with established automated data processing equipment implementation and operational guidelines which are determined at each installation site. Successive software installations/re-installations will require that sites ensure this information is complete and up-to-date. Additional information concerning OPUP software input parameters apply:

- Each user name must meet the following minimum composition requirements:

  - Be at least a minimum of three characters in length.

  - Contain at least two alpha characters (A through Z or a through z).

  - Contain at least one number (0 through 9) or one of the following special characters (!, @, %, -, +, _, {, [, or =).

  Each character's case is important when defining the user name. Future access to this account will require the exact case for each letter as entered in the `User Name:` field.

- Passwords: Each password must meet the following minimum composition requirements:

  - Be at least a minimum of eight characters in length.

  - Contain at least one UPPERCASE character (A through Z).

  - Contain at least one lowercase character (a through z).

  - Contain at least one number (0 through 9).

  - Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.

NOTE

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

- Passwords must not be the same as the user name or constructed from words straight out of the dictionary (spelled forwards, backwards, or split with a number or special character) or be constructed using a user's personal identity, history, or environment. Generic passwords must also be prohibited (e.g. a system having "welcome" as the password for all newly created user names). When passwords expire, users must not reuse the current password or use any of the last nine passwords assigned to that user name.

- Operations Permission Security Level Passwords: See "Passwords" remarks listed above. These passwords provide specific levels of control for the utilization of OPUP adaptable parameters associated with the Application Software GUI Suite.

- The NITF, NEXRAD, and PNG point of contact can either be a full name or weather office title. If this parameter is not used, type in "N/A" in the edit field. If the phone number is also not used, type in 123-4567 for the phone number.

3.5.4 OPUP Software Installation Procedure.

The following paragraphs provide the information and steps required to install OPUP Server OS software.

3.5.4.1 Software Installation Prerequisites/Preconditions. The following prerequisite/preconditions must be met in order to ensure a successful software installation on the OPUP Server UD86A2:

- It is important that the adaptable parameter and configuration information is captured prior to loading the software. RELEASE NOTES are provided with the latest software build to provide work-arounds to overcome any known problems. Please take a few minutes to review the RELEASE NOTES provided with the latest software build prior to starting the software load procedure.

- Ensure that all software input information described in Table 3-6 is obtained **before** beginning with the Software Load Procedure. A software input parameter fill-in/checklist is provided in Step 2 of Table 3-7 for this purpose. Fill in the data outlined on this sheet and keep this information for future use. Safeguard all IP-addresses and passwords used to complete the following software load procedure.

- All equipment referenced in Table 3-7 will be described by both the nomenclature (i.e. Server) and unit identifier UD86A2. Specific unit identification information for each equip-

ment item can be found in both Chapter 2, Hardware, and Chapter 7, Illustrated Parts Breakdown (IPB). Chapter 2 provides all controls and indicators for each equipment item that individual software installers may need to refer to before a step can be completed. Chapter 7 provides parts information that can be used to correctly identify specific hardware in case the need arises.

- Refer to Table 3-8 item number 5, for any Communication Router UD86A8 configuration failures that may be encountered during each software installation.

- The software installation process ends with checking and/or updating (if required) the Small OPUP system time. All time inputs are to be entered in GMT (UTC) format. Ensure that an accurate time source is available during these steps (recommended source: WWV at 303-499-7111).

- In the following procedures, when **<Return>** is printed in command lines, it means to press the **<Return>** or **<Enter>** key whichever is appropriate.

- Use the **<Delete>** key to correct typographical errors.

3.5.4.2 Small OPUP Software Load Procedure. The procedures required to perform a full software load on the Server UD86A2 are outlined in the steps provided in Table 3-7.

Table 3-7. Small OPUP Software Load Procedure

Step	Action/Procedure	Response/Comments
1.	Obtain the following items: - Record any adaptation parameter data (AOR, Alert Thresholds, RPS lists, color palate, etc.) previously setup. - Record any configuration data (user names and passwords) previously loaded. - OPUP LOAD MEDIA disks (4) outlined in paragraph 3.5.3.2 and the software input configuration parameters outlined in paragraph 3.5.3.3 and Table 3-6 and record them in Step 2. - OPUP PAM + XMODEM FILE UPDATES Disk - Cisco Configuration Cable (P/N 72-3383-01)	All adaptation parameter data and configuration data currently loaded on the Server UD86A2 hard drive will be erased during the software load process.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
2.	Fill in the input parameter data listed below: root_password:_____ opupmgr_password:_____ Security Level 1 Password:_____ Security Level 2 Password:_____ Security Level 3 Password:_____ Number of Dial Phone Lines:_____ Point of Contact Name:_____ Point of Contact Phone Number:_____ Current Router Password:_____ New Router Password:_____ Current Enable Password:_____ New Enable Password:_____ User_Name:_____ User_Password:_____ ---------- The following information will be displayed and is to be recorded during the software installation: System Type:_____ Site Name:_____ Network:_____ OPUP Dataserver IP address:_____ Cisco Router IP address:_____ OPUP Base to Install: _____ Select Base Installation: _____	Make a copy of this page before parameters are filled in. This page will be referred to often and should be stored in a safe location upon completion as password information will be recorded. Refer to paragraph 3.3.3.4.6.1 Refer to paragraph 3.3.3.4.6.1

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
3.	At the Server UD86A2, push and hold the power button located near the front left center until the power LED turns off.	This takes approximately 5 to 10 seconds.
4.	Ensure the following peripheral devices are connected and powered on: - Monitor UD86A1 - Switch UD86A5 - External Dedicated Modem UD86A6 - Archive IV Device UD86A7 - Communication Router UD86A8 - Video Splitter UD86A9* - UPS UD86A10 - Printer UD86A12* - External Dedicated Modem UD86A13*	* If used.
5.	At the rear of the Server UD86A2, disconnect the UPS Serial Cable 86W4 from the server port labeled SERIAL.	
6.	At the rear of the Server UD86A2, connect the 9-pin connector end of the Cisco configuration cable (part number 72-3383-01) to the server port labeled SERIAL.	
7.	At the rear of the Communication Router UD86A8, connect the other end of the Cisco configuration cable into the CONSOLE port.	
	NOTES Prior to continuing to the next two steps, locate on the keyboard, the **<Stop>** key (far upper left side of keyboard) and the **<A>** key. These keys will be utilized to interrupt the boot process. If the system proceeds through the initial boot process before it is stopped, the software load process must be restarted from Step 3. If a prompt, other than the `ok` is displayed, press the **<Return>** key until the `ok` prompt is displayed.	
8.	At the Server UD86A2, turn **on** the server by pressing the power button located near the front left center.	This applies power to the OPUP Server. This takes approximately 5 seconds.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
9.	When the system starts to boot, denoted by a spinning pin-wheel icon displayed on the monitor screen, press and hold the **<Stop>** key and simultaneously press the **<A>** key.	This stops the Server boot sequence and displays an `ok` prompt. This takes approximately 1 minute.
10.	At the Server UD86A2, open the CD-ROM drive door and place the first CD-ROM disk, labeled OPUP LOAD MEDIA Version X.X Disk 1, in the tray. Close the CD-ROM drive door.	Version X.X is the most current version of software.
11.	At the `ok` prompt, enter: **boot cdrom<Return>**	When the **<Return>** key is pressed the boot process will begin. The boot process will take approximately 3 to 4 minutes. **NOTE** If an `ok` prompt reappears, press **<Return>**, then repeat Step 11.

12.	When the following message will appears:
	
	`Choose OPUP Site to Load:`
	
	`1 Air_Force`
	`2 Navy`
	`3 Testbed`
	`4 Overseas`
	`5 Other`
	
	`Enter Numeric Selection from Above, q to Quit, or ? for Help: [?,??,q]:`
	
	*applicable # from above***<Return>**	

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
13.	When the following message appears: `Please enter the OPUP site system ID (type ‘help' for list):` Enter: **help<Return>** Locate your six-letter OPUP site system ID and record it here. _____ Once located: If `-more-` is displayed at the bottom of the Site System ID list, press **q** to exit out of the help mode and proceed to the next step. If the above message is displayed, proceed to next step.	
14.	When the following message appears: `Please enter the OPUP site system ID (type ‘help’ for list):` Enter: *SITEID***<Return>**	Ensure the OPUP site system ID is entered in UPPERCASE. If the site system ID is entered incorrectly, you will be prompted to repeat this step.

NOTE

The following information displayed in Step 15 is an example of what a site may see during the OPUP software installation process. The actual system type, site name, and IP-address information for each site will be different. The third IP-address octet (i.e. 10.5.**7**.1) is site specific.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments

15.	When a message similar to the following appears:
	
	`System Type is: Air_Force`
	`Site Name is: LTSBWS`
	`Network is: 10.5.7.0`
	`----------`
	`OPUP Dataserver IP address is: 10.5.7.1`
	`Cisco Router IP address is: 10.5.7.2`
	
	Record the System Type, Site Name, and each IP-address displayed on the screen in the space provided in Step 2. When finished, go to the next step.	

16.	When the following message appears:
	
	`Please Enter Password for root:`
	`Enter Password:`
	
	Enter:
	*Root_password***<Return>**
		Entries will not be shown. Use assigned password from Step 2.

17.	When the following message appears: `Re-Enter Password:` Enter: *Root_password***<Return>**	Password must be verified by entering the same password twice. If the password entries do not match or are not valid, the request for a password will be made again.

18.	When the following message appears:
	
	`Please Enter Password for opupmgr:`
	`Enter Password:`
	
	Enter:
	*opupmgr_password***<Return>**
		Entries will not be shown. Use assigned password from Step 2.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
19.	When the following message appears: `Re-Enter Password:` Enter: *opupmgr_password***<Return>**	Password must be verified by entering the same password twice. If the password entries do not match or are not valid, the request for a password will be made again.
	NOTE In the next step, if **y<Return>** is performed, and the information is wrong, go back to Step 3 and repeat the procedure.	
20.	When the following message appears: `Do you want to continue installation with selection? Yes or No [y,n,?,q]` If the inputs are correct, enter: **y<Return>** If any information is incorrect, enter: **n<Return>** The software load process will go back to Step 12.	It is critical that all input information displayed in Step 15 is recorded and accurate. Examine the inputs and ensure all entries are correct before proceeding to the next step.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments

21.	The software installation process will now display the following information:
	
	`Starting Installation.`
	
	`Beginning Installation Phase 1.....`
		Additional information will continue to scroll on the display monitor. The software load process will take approximately 20 to 30 minutes before the information in the next step is displayed.
		
		The following message will be displayed:
		
		`Extracting /export/ install Files.....`
		
		Any information displayed after the string of periods indicate a defective disk. Call the ROC Hotline for assistance.

22.	When the following message appears:
	
	`Installation Phase 1 complete.`
	
	`Press Return to reboot and start Phase 2.`
	
	Press the **<Return>** key.
		Initially the screen will go blank for about 30 seconds. The software load process will take approximately 3 to 4 minutes before the information in the next step is displayed.

NOTE If the incorrect CD-ROM disk is inserted, the load process will display the message `Incorrect Disk. No default media available`. The software load process will then prompt for the correct CD-ROM.		

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments

23.	When the following message appears:
	
	`Beginning Installation Phase 2...`
	
	`Please Insert OPUP Installation Disk #2, and press Return.`
	
	- Open the CD-ROM drive door.
	- Remove Disk #1 and place it in its protective sleeve.
	- Place Disk #2 into the tray.
	- Close the CD-ROM drive door.
	- Press the **<Return>** key.
		The system installs the software from Disk 2, OPUP LOAD MEDIA Version X.X.
		
		This takes approximately 20 to 30 minutes.
		
		The following message will be displayed:
		
		`Extracting /export/ install Files.....`
		
		Any information displayed after the string of periods indicate a defective disk. Call the ROC Hot-line for assistance.

24.	When the following message appears: `Please Insert OPUP Installation Disk #3, and press Return.` - Open the CD-ROM drive door. - Remove Disk #2 and place it in its protective sleeve. - Place Disk #3 into the tray. - Close the CD-ROM drive door. - Press the **<Return>** key.	The system installs the software from Disk 3, OPUP LOAD MEDIA Version X.X. This takes approximately 5 to 15 minutes. The following message will be displayed: `Extracting /opt Files.....` Any information displayed after the string of periods indicate a defective disk. Call the ROC Hot-line for assistance.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
25.	When the following message appears: `Please Insert OPUP Installation Disk #4, and press Return.` - Open the CD-ROM drive door. - Remove Disk #3 and place it in its protective sleeve. - Place Disk #4 into the tray. - Close the CD-ROM drive door. - Press the **<Return>** key.	The system installs the software from Disk 4, OPUP LOAD MEDIA Version X.X. This takes approximately 3 to 5 minutes. The following message will be displayed: `Extracting /Map Files.....` Any information displayed after the string of periods indicate a defective disk. Call the ROC Hotline for assistance.

26.	When the following message appears:
	
	`OPUP Installation Disk #4 Finished Loading.`
	
	`Please Remove OPUP Installation Disk #4, and press Return.`
	
	- Open the CD-ROM drive door.
	- Remove Disk #4 and place it in its protective sleeve.
	- Close the CD-ROM drive door.
	- Place the disks in a safe location for future use.
	- Press the **<Return>** key.
	
	The following message appears:
	
	`Configure Third Party Software...`
		Once the system is finished loading Disk 4, various amounts of information will scroll through the display monitor.
		
		Additional messages will be displayed for the next 5 to 10 minutes.
		
		The software load process continues and will reboot and return to the CDE Login screen.

27.	At the CDE Login screen, in the `Please enter your user name` edit box, enter: **opupmgr<Return>**	

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
28.	At the CDE Login screen, in the `Please enter your password` edit box, enter: *opupmgr_password***<Return>**	The opupmgr password must be exactly the same password that was assigned in Step 2. The system will advance past the login point to the CDE Front Panel when this step is completed.
29.	When the `Netscape: License Agreement` window appears: Click on the **Accept** button.	
30.	In the `Netscape: Password` window, in the `User ID`: edit box, enter: **opupmgr<Return>**	The cursor will move to the `Password:` box.
31.	In the `Password:` edit box, enter: *opupmgr_password***<Return>**	The opupmgr password must be exactly the same password that was assigned in Step 2.
32.	When the `Netscape: OPUP Manager Start OPUP` window appears: Click on the **Next** button.	The login process will go to the next prompt.
33.	When the `Netscape: OPUP Manager Add New Workstation` window appears: Scroll to the bottom of the page and click on the **Save** button.	The Small configuration does not utilize workstations. Do <u>not</u> enter any information on this page.
34.	When the `Netscape: Security Warning` window will appears: Click on the **Show this Alert Next Time** check box to uncheck it. Click on the **Continue Submission** button.	
35.	When the `Netscape: Workstation Information Complete` window appears: Click on the **Next** button.	A `Netscape: OPUP Manager Add PUP Information` window will appear.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
	NOTE Refer to the software input parameters recorded in Step 2 for the steps that follow.	
36.	In the `OPUP Password Information:` block, click in the first password field,enter: *Security_Level_1_password* **<Tab>** Using the **<Tab>** key, move through the rest of the fields. Enter all appropriate passwords and password confirmations, as required, for all three security levels.	Each security level must have a unique password.
37.	At the `OPUP Size and Dial Line Information:` block, in the `Enter OPUP Size Configuration (1 for Large, 2 for Medium, 3 for Small):` edit box, enter: **3<Tab>** In the `Enter # of Available Dial Lines(from 1 to 8):` edit box, enter: **1<Tab>**	This step selects a Small OPUP configuration. The Small OPUP configuration will typically use one dial line. Ensure this is correct for this configuration
38.	At the `OPUP Product Distribution Information:` block, in the `Enter OPUP Distribution Contact Name:` edit box, perform the following: - Delete the current entry. Enter: *site_specific_contact_name***<Tab>** In the `Enter OPUP Distribution Contact Phone Number:` edit box, enter: *phone_number***<Tab>**	This is the POC information for NITF data. Enter the Name of the Office (i.e. Tinker Base Weather) and the telephone number. DO NOT use dashes and include an area code. DO NOT leave these fields blank!

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
39.	At the `Cisco Router Passwords:` block, in the `Enter Current Router Password:` edit box, enter: *Current Router Password*, then Click in the `Enter New Router Password:` edit box, and enter: *New Router Password***<Tab>** In the `Re-Enter Password:` edit box, enter: *New Router Password***<Tab>** In the `Enter Current Enable Password:` edit box, enter: *Current Enable Password***<Tab>** In the `Enter New Enable Password:` edit box, enter: *New Enable Password***<Tab>** In the `Re-Enter Password:` edit box, enter: *New Enable Password* Click on the **Next** button.	**NOTE** If the current router password is entered incorrectly, the Router configuration will fail in later steps.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments

40.	When the following message appears at the `Netscape: PUP Information Entered` window:
	
	`PUP Information - has been Created`
	
	Click on the **Next** button and continue to next step.
	
	Otherwise, if the following message appears:
	
	`PUP Information not Correct`
	
	- Determine which information is incorrect.
	- Click on the **Return to Last Screen** button.
	- Make the necessary corrections.
	- Restart this step.
		If the information in Step 39 was correct, the configuration process will go to the next step. If not, this step will need to be repeated after all input information has been verified to be correct.

41.	At the `Netscape: OPUP Select Base Information` window, click on the appropriate button.	Record in the space provided in Step 2.
42.	At the `Netscape: Select Base Installation` window, in the `Select Base` block, highlight the applicable base name by clicking on it. (If necessary, use the scroll bar to locate the base name.) When the select base is highlighted, click on the **Next** button.	Record in the space provided in Step 2. The configuration process will go to the next step.
43.	At the `Netscape: OPUP Manager Create New RPG Information` warning window, verify your base is correctly displayed in the middle of the window. If the base is correct, click on the **Yes** button. If the base is incorrect, click on the **Return to Last Screen** button to return to the `Netscape: OPUP Manager Create New RPG Information` warning window and select the correct base.	The configuration process will go to the next step.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
44.	At the `Netscape: Add RPG Information from list` window: Click on the **Next** button.	Each site's dial and dedicated RPGs will be configured. If more dial sites are needed after installation, contact ROC Hotline.
45.	At the `Netscape: RPG Information Entered` window, click on the **Next** button.	The configuration process will go to the next step.
46.	At the `Netscape: OPUP Manager Configure OPUP` window, click on the **Configure OPUP** button and then click on the **Yes** button to confirm.	When finished, the `Netscape: OPUP Manager Configure OPUP` window will display the `OPUP has been Configured` message.
	NOTE If the following message appears: `OPUP has been Configured But.....Final Cisco Router Configuration Failed. Before OPUP could be operational you must manually configure Router. Please follow the instructions, to manually configure Cisco Router.` proceed to Table 3-8 and consult the Communication Router UD86A8 recovery procedure outlined in item number 5. Return to Step 47, when finished.	
47.	At the `Netscape: OPUP Manager Configure OPUP` window: Click on the **Return to Last Screen** button. Click on the **OPUP Manager Main Menu** button.	The `OPUP Manager Main Menu` will be displayed.
48.	At the `OPUP Manager Main Menu` window, click on the **File** selection near the top left corner of the window. When the pull down menu opens, click on the **Exit** selection at the bottom of the menu.	The `OPUP Manager Main Menu` closes. It is important to close this window prior to continuing to the next step in order to refresh the data supplied to this window.
49.	When the following message appears at the `Netscape: Question` window: `Close all windows and exit Netscape?` Click on the **OK** button.	The configuration process will go to the next step.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
50.	At the rear of the Server UD86A2, disconnect the Cisco configuration cable from the SERIAL port.	
51.	Reconnect the UPS Serial Cable 86W4 to the Server UD86A2 SERIAL port.	
52.	At the rear of the Communications Router UD86A8, disconnect the other end of the Cisco cable from the CONSOLE port.	
53.	At the CDE Front Panel, near the bottom of the screen, click on the **up arrow** located just above the **cpu disk** usage icon. When the `Hosts` pop-up menu opens, click on the **This Host** icon selection.	A Terminal window opens and the `/export/home/opupmgr>` prompt displays.
54.	Within the `Terminal` window, at the `/export/home/opupmgr` prompt, enter: **su<Return>** When the `Password:` prompt appears, enter: *root_password***<Return>**	This step performs a switch to Super User function. The root_password used in this step was assigned in Step 2. A # prompt will be displayed.
55.	At the # prompt, enter: **cd /usr/lib/powerchute<Return>**	This changes the opupmgr working directory to /usr/lib/powerchute.
56.	At the # prompt, enter: **pwd<Return>** Verify that the feedback for the current directory is `/usr/lib/powerchute`. If not, repeat Step 55, again.	`/usr/lib/powerchute` will be displayed.
57.	At the # prompt, enter: **vi powerchute.ini<Return>**	The UPS Powerchute script opens. This scripts directs which port the emergency shutdown data will be sent from the OPUP Server OS.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
58.	Visually locate the `[Ups]` entries (near the top of the file text) and locate the following entry: `PortName = /dev/ttyb`	
59.	Using the arrow keys on the keyboard, move the cursor over the **b** in the `/dev/ttyb` to highlight the **b** character.	Cursor is repositioned and the letter b is highlighted.
60.	Press **<Esc>** once.	Pressing the Escape key toggles the UNIX Text Editor VI edit mode on and off. Be sure to only press this once!
61.	Enter the following: **ra** The letter a appears immediately following /dev/tty so it now reads /dev/ttya The following applies: - If the above information is verified to be correct, skip to Step 63. - If an error has been made, go to the next step.	The r is an edit command (replace) and will replace the b with the next character entered. The a is written to the script.
62.	Perform the following, if a mistake has been made: - Press **<Esc>** once. - Using the keyboard, hold down the **<Shift>** key and press the colon **" : "** key, simultaneously. - Enter: **q!<Return>** - Return to Step 57 and repeat the VI editting process, again.	This series of key strokes will exit the script and the VI editor without saving any changes. Pressing the **<Esc>** key toggles on and off the edit mode of the VI editor. Entering a **<Shift>:** (colon), simultaneously exits the edit mode and moves the curser to the bottom of the screen next to a **:** (colon). The **q!<Return>** command exits the VI editor without saving.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
63.	Press **<Esc>** once. Using the keyboard, hold down the **<Shift>** key and press the colon **" : "** key, simultaneously. At the "**:**" prompt, enter: **wq<Return>**	This series of key strokes will exit the VI editor and save the script changes made. Pressing the **<Esc>** key toggles on and off the edit mode of the VI editor. Entering a **<Shift>:** (colon), exits the edit mode and moves the curser to the bottom of the screen next to a **:** (colon). The **wq<Return>** quits the VI editor and saves changes.
64.	At the # prompt, enter: **head -10 powerchute.ini<Return>**	The first 10 lines of the powerchute.ini file will now be displayed.
65.	Ensure the edited PortName entry in the `[Ups]` section reads as follows: `PortName = /dev/ttya`	If the `PortName = /dev/ttya` statement displays anything else than an `a` after the "tty", go back to Step 57 and begin again.
66.	At the Server UD86A2, open the CD-ROM drive door and place the CD-ROM disk, labeled OPUP PAM + XMODEM FILE UPDATES, in the tray. Close the CD-ROM drive door.	
67.	At the # prompt, enter: **mount -F hsfs -r /dev/dsk/cØt1dØs2 /mnt <Return>**	
68.	At the # prompt, enter: **cd /mnt<Return>**	
69.	At the # prompt, enter: **./install<Return>**	The # prompt will appear after approximately 10 seconds.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
70.	At the # prompt, enter: **cd / <Return>**	
71.	At the # prompt, enter: **umount /mnt<Return>**	
72.	At the Server UD86A2, open the CD-ROM drive door and remove the CD-ROM disk. - Close the CD-ROM drive door. - Place the disk in the protective sleeve. - Place the disk in a safe location for future use.	
73.	At the # prompt, enter: **reboot -- -r<Return>**	**NOTE** Be sure to place a space between the reboot, "--" and "-r" entry. The system will perform a reboot and configure the UPS as a recognizable device attached to the Server UD86A2. The software installation process will take approximately 3 to 4 minutes to complete this procedure.
74.	When the CDE Login screen appears, in the `Please enter your user name` edit box, enter: **opupmgr<Return>**	The system will advance past the login point to the CDE Front Panel.
75.	At the CDE Login screen, in the `Please enter your password` edit box, enter: *opupmgr_password***<Return>**	The opupmgr password must be the same password assigned in Step 2.
76.	Click on the **Netscape World** icon on the far left side of the CDE Front Panel to start Netscape.	A Netscape window opens. This takes approximately 20 to 30 seconds.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
77.	Click anywhere on the **gray background** area of the `Netscape` window to get the `Netscape: Password` window to display.	`Netscape: Password` window opens.
78.	In the `Netscape: Password` window, in the `User ID:` edit box, enter: **opupmgr<Return>**	
79.	In the `Password:` edit box, enter: *opupmgr_password***<Return>**	The opupmgr password must be the same password assigned in Step 2. The `OPUP Manager Main Menu` should be displayed.
80.	When the `OPUP Manager Main Menu` appears, perform the following: - Click on the **OPUP Software Menu** button. - Click on the **Start OPUP** button within the `OPUP Software Menu`. - Click on the **Yes** button at the confirmation window.	These procedures start the OPUP software. The OPUP processes will take 1 to 2 minutes to start.
81.	At the `Netscape: OPUP Manager Start OPUP` window: Click on the **Return to OPUP Software Menu** button.	
82.	Click on the **OPUP Process Status** button. An `OPUP Process Status` window will appear. Wait 1 to 2 minutes for the OPUP Processes to start. Click on the **Refresh** button as needed until all processes have started. When all the `OPUP App/Task` processes are started, go to the next step.	Each process listed in the OPUP Application and Tasks section will have a PID (Process Identification) number assigned to each task when the process has been successfully loaded and started.
83.	Click on the **Return to Main Menu** button.	`OPUP Manager Main Menu` will be displayed.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
84.	At the `OPUP Manager Main Menu` window, click on the **OPUP Users Menu** button.	This menu will be used to enter a unique User Name and Password. An `OPUP Users Menu` will be displayed.
	NOTE Case is important for both User Name and Passwords when they are defined. Future access to both will require the exact case for each letter as entered here. Each user name must meet the following minimum composition requirements: - Be at least a minimum of <u>three</u> characters in length. - Contain at least <u>two</u> alpha characters (A through Z or a through z). - Contain at least <u>one</u> number (0 through 9) or one of the following special characters (!, @, %, -, +, _, {, [, #, or =).	
85.	Click on the **Add New User** button. Then click in the `User Name:` edit box to activate the field for text entry. Enter any combination of letters and numbers to define a unique user name. Enter a user name that meets the requirements in the note above. Record the User Name in the space provided in Step 2.	A unique User Name should now be entered, verified, and recorded in the space provided in Step 2 of this table.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
	NOTE Each password must meet the following minimum composition requirements: - Be at least a minimum of eight characters in length. - Contain at least one UPPERCASE character (A through Z). - Contain at least one lowercase character (a through z). - Contain at least one number (0 through 9). - Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.	
86.	Click in the `Password:` edit window to activate the window field for text entry. Enter a password that meets the requirements in the previous note. Click in the `Reenter password:` edit window to activate the window field for text entry and then reenter the password exactly as entered above. Record the password exactly as entered in this step in the space provided in Step 2	This step ensures that the Password and/or the User Name was not mistyped/misspelled. It should also be recorded in the space provided in Step 2 of this table. If the password doesn't meet the security requirements, follow the on-screen instructions.
87.	Click on the **Save** button. When the `Netscape: Display User Info Entered` window and `OPUP User` *`user_name`* `- Successfully Created` message is displayed, click on the **Return to Main Menu** button.	The User Name is displayed as part of the window title. These steps will return to the `OPUP Manager Main Menu`.
88.	At the CDE Front Panel, move the mouse cursor over the **Netscape World** icon.	The current day, date, and time in GMT should be displayed.
89.	While leaving the mouse cursor over the **Netscape World** icon, inspect the day, date, and time. If the time is off by more than 1 minute, go to the next step. Otherwise, go to Step 101.	If the day, date, and time information will not display, go to the next step.
90.	At the CDE Front Panel, click on the **up** arrow located just above the **cpu disk** usage icon.	A `Hosts` pop-up menu will be displayed.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
91.	Click on the **This Host** icon.	A Terminal window opens with an `/export/home/opupmgr>` prompt.
92.	At the `/export/home/opupmgr>` prompt, enter: **su<Return>**	A `Password:` prompt will be displayed.
93.	At the `Password:` prompt, enter: *root_password***<Return>**	A # prompt will be displayed.
94.	At the # prompt, enter: **date<Return>**	The current day of the week, month, day, GMT time (hh:mm:ss), year should now be displayed.
95.	Verify that the time reported is correct using an accurate time source.	If the day and year are incorrect and/or the time is more than 1 minute off, go to the next step. Otherwise, this procedure is complete.
96.	Obtain an accurate time source (e.g. WWV 303-499-7111). At the # prompt, enter: ***date mmddHHMM[cc][yy][.ss]*** (Do Not press the **<Return>** key, yet). Use GMT time.	Everything after the minutes entry (“MM”) is optional. However, the most accurate method to update the time is to, at a minimum, enter the HHMM.ss parameters. The following information applies: mm= Month dd= Day HH= GMT Hour MM=Minute Optional entries (normally not entered): cc= Century minus 1 yy= Year ss= Seconds
97.	Using the chosen time source, press **<Return>** exactly at the moment that the above entered time occurs.	

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
98.	At the # prompt enter: **date<Return>**	Verify the OPUP System Time was updated.
99.	At the # prompt, enter: **exit<Return>**	An `/export/home/opupmgr>` prompt will be displayed.
100.	At the `/export/home/opupmgr>` prompt, enter: **exit<Return>**	The Terminal window closes.
101.	At the `OPUP Manager Main Menu` window, click the **File** selection near the top left corner of the window. When the pull down menu opens, click the **Exit** selection at the bottom of the menu.	The `OPUP Manager Main Menu` closes. It is important to close this window prior to continuing to the next step in order to refresh the data supplied to this window.
102.	When the following message appears at the `Netscape: Question` window: `Close all windows and exit Netscape?` Click on the **OK** button.	The configuration process will go to the next step.
103.	Click on the **EXIT** button on the CDE Front Panel and then click the **OK** button in the `Logout Confirmation` window.	This procedure exits the installer from the `OPUP Manager Main Menu` and displays the CDE Login screen.
104.	At the CDE Login screen, in the `Please enter your user name` edit box, enter: *User_name***<Return>**	Use the User Name (User ID) created in Step 85. The Login screen will go to the next step.
105.	At the CDE Login screen, in the `Please enter your password` edit box, enter: *User_password***<Return>**	The User ID password must be exactly the same password that was entered in Step 86. The system will advance past the login point and a choice of icons will be displayed at the Operational Applications Front Panel.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
106.	Click on the **Status & Control** icon located near the lower left corner of the Operational Applications Front Panel.	A `Status and Control-OPUP X.X` (where X.X is the most current software version) window will be displayed showing a map of the United States. For those sites in the Pacific, it will show a map of the Pacific region. For the Azores, it will show an Atlantic region map. This will take approximately 15 to 20 seconds from the map to appear.
107.	At the `Status and Control-OPUP X.X` window, verify a green dot is present on the map for your location. If multiple RPGs are shown, ensure at least one RPG location is communicating with the OPUP as indicated by a green dot for that location.	If a green dot is present, the OPUP is communicating with the DoD RPG. If a green dot is not present, a communication failure exists between the RPG and the OPUP.
108.	If a green dot is present, close the `Status and Control-OPUP X.X` window by clicking on the **Double Red Arrows** in the upper right corner.	
109.	At the front panel, click on the **Product Display** icon (PDGUI) located near the lower left corner of the Operational Applications Front Panel.	The PDGUI will have 12 individual display windows that can be selected in the next step. This will take approximately 15 to 20 seconds to load.
110.	In the `Alert Registration` window, click on the **Register Selected** button. For any `Alert Database Empty!` windows that may appear, click on the **OK** button to acknowledge and close.	These steps close all unnecessary display windows at this time.
111.	Choose any one of the 12 GUI windows displayed. Click on the **Open Product Selection Dialog** bar (green button located near the top center of the chosen GUI window).	A `Product Selection` pop-up window will now be displayed.

Table 3-7. Small OPUP Software Load Procedure - Continued

Step	Action/Procedure	Response/Comments
112.	Click on the **Category** button. Click on a WSR-88D product listed within the Drop Down Product List box. Click on a desired product parameter (elevation and resolution) and RPGID, then click on the **Apply** button. A product should now be displayed within the chosen PDGUI window.	The procedures within this step allows the user to select and display a specific product within the chosen display GUI window.
113.	Store any copies of Step 2 that were used to record password and IP-address information in a safe location.	Entries in Step 2 contain password information that must be kept from being compromised.
114.	If a Printer UD86A12 is installed, refer to paragraph 6.6.6 to add and configure the printer.	The IP-address stored in the Server UD86A2 was erased when the software was loaded.
115.	Refer to paragraph 5.2.5 to add additional user information.	All user names and passwords were erased when the software was loaded.

NOTES

If a product is not displayed after completing Step 112, repeat Step 112 and select a different product. If products are being received, stop here. Place the OPUP in a normal operating position.

If the associated RPG is not connected, the product may not display at this time.

If the Small OPUP Server OS is not functioning and/or the software load procedure was not successful, immediately contact the ROC Hotline at 1-800-643-3363.

3.5.4.3 Software Installation Recovery. The information provided in the following paragraphs outline the procedures that may be used when a software load failure or error occurs.

3.5.4.3.1 Recovery Determination. An immediate assessment is required in order to determine the level of recovery needed in order to complete each software load procedure. Table 3-8 is provided to assist with the most common recovery process. The steps provided by the Small OPUP Software Load Procedure have been developed to allow some of the steps to be repeated in the event an input error or CD-ROM disk read error occurs. However, it may be necessary to begin the software process over from the beginning.

Consult the following table for all other software recovery determinations.

Table 3-8. Software Installation Recovery Procedures

Item	Problem/Error	Recovery Method
1.	The software installation process freezes and will not go past a certain point in the installation process, or input errors require that the installation process begin again from Step 1 in Table 3-7. (Refer to Figure 2-9, Index 1 for identification of the Server UD86A2 Power Switch.)	Method # 1: Note all error messages displayed on the monitor. If any error message displays a `Continue y,n?` option, enter **<N>** at the prompts and then start the software load procedure over again from Step 1 of Table 3-7. If there are no options, go to Method # 2. Method # 2: Locate the OPUP Server Power Switch and place the Server in the power **Off** (0) position. When the Server is completely powered Off, place the Server in the **On** (1) position. When data reappears on the display monitor, immediately press the **<Stop>** key and **<A>** key simultaneously. When the `ok` prompt is displayed begin again at Step 1 of Table 3-7.

Table 3-8. Software Installation Recovery Procedures - Continued

Item	Problem/Error	Recovery Method

2.	The system displays one of the following messages:
	
	`Error Reading Target Source Address "XXXXX" attempting to retry....`
	
	`Error! Destination Target Corruption! Attempting to retry....`
	
	(Refer to Figure 2-9, Index 1 for identification of the Server UD86A2 Power Switch.)
		These errors can occur due to missing installation files and/or scripts, corrupted CD-ROM disk or a faulty CD-ROM player. These can also occur if the CD-ROM player drive system and/or installation disks are dirty.
		
		If any error message displays a `Continue y,n?` option, enter **<N>** at the prompts and then start the software installation procedure over again.
		
		If an `ok` prompt is currently being displayed, return to Step 1 of Table 3-7 and begin the software installation procedure again.
		
		If an `ok` prompt will not display, locate the OPUP Server Power Switch and place the Server in the power **Off** (0) position. When the Server is completely powered Off, place the Server in the **On** (1) position. When data reappears on the display monitor, immediately press the **<Stop>** key and **<A>** key simultaneously. When the `ok` prompt is displayed, begin again at Step 1 of Table 3-7.
		
		If the error occurs again, or an `ok` prompt will not display, consult the applicable troubleshooting guidelines provided in Chapter 6, Maintenance.

Table 3-8. Software Installation Recovery Procedures - Continued

Item	Problem/Error	Recovery Method
3.	The CD-ROM player drive does not respond to the following command: **boot cdrom<Return>**	Method # 1: Note any/all error messages. If the error message gives a `Continue y,n?` option, enter **<N>** and start the software installation procedure over again from the first input prompt. If there is no option, go to Method # 2. Method # 2: Locate the OPUP Server Power Switch and place the Server in the power **Off** (0) position. When the Server is completely powered Off, place the Server in the **On** (1) position. When data reappears on the display monitor, immediately press the **<Stop>** key and **<A>** key simultaneously. When the `ok` prompt is displayed begin again at Step 7 of Table 3-7. If the error occurs again, or an `ok` prompt will not display, consult the applicable troubleshooting guidelines provided in Chapter 6, Maintenance.
4.	Missing installation disks and/or required cables.	Contact the ROC Hotline, 1-800-643-3363 for immediate software CD-ROM disk(s) replacement.
5.	Isolated based configuration Communication Router UD86A8 displays a failed or not configured message.	Go to paragraph 6.6.4 to perform a communication router setup procedure.
6.	UPS UD86A10 does not respond to system POST during OPUP Server OS boot/re-boot sequences or UPS does not perform backup functions correctly.	Method # 1: Conduct UPS loss of power test. If the system is performing properly stop here. If not, consult Chapter 6, Maintenance. Method # 2: Ensure that the UPS UD86A10 serial input/output cable (86W4) is firmly/securely connected to port A of the rear panel of the Server UD86A2. Method # 3: Review Steps 53 through 65 and 73 of Table 3-7. Repeat these steps if required.

Section 3.6. OPUP SOFTWARE DEVELOPMENT BACKGROUND

3.6.1 Introduction.

The Sun Microsystems Solaris Operating System (OS) is incorporated within the OPUP OS. The Solaris OS was chosen for its open architecture software environment application, as well as, its adherence to a 64-bit Portable Operating System Interface for Computer Environments (POSIX). POSIX is an IEEE Public Standard 1003.1-1998 compliant platform. This section provides a brief overview of the Solaris OS and accompanying Computer Desktop Environment (CDE), OPUP OS (which includes Operational Application Suite, and any applicable UNIX commands and scripts that may be used within the OPUP Manager Main Menu and/or host terminal windows).

3.6.2 Open System Architecture.

An open system architecture computer and programming environment is defined as a process which implements widely adopted public specifications for interfaces, services, and supporting formats that enable properly engineered applications software to be ported across a wide range of systems with minimal changes. Open architecture design attempts integrate other applications on a local and remote scale. They also strive to interact with users in a style of protocols, interfaces, and services in order to enable users and applications to receive transparent access to data, resources, and other services across wide network application.

The upgrade and transition of the OPUP Server OS and Operational Application Suite to an open architecture has involved the development of suitable operating software that utilizes a myriad of standard applications. For example, the conversion of the Legacy PUP OS to an open architecture, which has led to a server/client environment. This environment encapsulates general purpose Workstations using front-end loaded server/client access to the OPUP OS and Operational Application Suite. This type of access allows other systems on various local and remote LAN switches, communications nodes, and associated equipment to run either the OPUP OS and/or Operational Application GUIs.

3.6.3 OPUP Development Standards.

The OPUP development program adheres to POSIX IEEE Public standard 1003.1-1998 standards. These standards provide developers the ability contribute application development and programming codes from prior application development and re-use it for future development teams. These standards also ensure that all applications developed using POSIX will be portable to other applications, reduce software development maintenance, and meet testing requirements.

In addition to the POSIX standard, the OPUP base OS incorporates the SUN Solaris OS 5.8 release and all applicable software patches, as well as, the Common Desktop Environment (CDE). The Solaris OS will run on all Sun Microsystems compatibly platforms (which include all systems employed by the OPUP program). Solaris conforms to all active “X” - Open Systems Environment standards. Sun Solaris also complies with common criteria requirements for certification at the C2 level.

The primary programming development code used in the OPUP OS and AS Suite is the C programming language (FIPS 160 C, ANSI/ISO 9899:1992). C is a high-level programming language that provides a base code designed for use in all levels of software development. Fortran (FIPS 69-1, ISO 1539:1980, ANSI X3.9-1978) is also used by the OPUP product display system. This programming code is used as a high-level language used primarily in scientific applications/ algorithms.

3.6.3.1 OPUP Product Display GUIs/Active X Windows. All OPUP administration and maintenance will interact with the OPUP OS through the OPUP Manager GUI. The `OPUP Manager Main Menu` can be accessed through CDE login routines via the same display monitor used by operators. Each OPUP GUI has been built upon Active X window functionality to provide the necessary functionality to easily access and manipulate all Operational Applications. Each GUI has been developed using the standard user's interlace development tool kit called Motif. The Motif window development standard ensures that all window formats adhere to the same standards as they are developed in the Open Systems Environment

3.6.4 OPUP UNIX OS.

NOTE

> The OPUP Server OS and Operational Application Suite were developed to allow for minimal understanding of UNIX and any programming language. This section is only intended to provide a brief introduction to some of the UNIX concepts concerning programming, files systems, command, and scripts that may be used to assist with OPUP administrative duties and maintenance.

When the OPUP server power button is initially pressed, the OPUP Server OS automatically performs a boot sequence. A software boot sequence will also be initiated if the system detects a reboot or re-initialization signal/command, either automatically by an applications design or manually by a user. The boot sequence is performed in four phases. These are the Boot PROM (Programmable Read Only Memory), Boot Programs, Kernel Initialization, and INIT phase. The boot sequence checks/initializes all hardware, mounts necessary file systems, starts support services (printing, network functions, internal logging, etc.) and brings the system to a normal operating level. When the boot process is finished, the Government authorization monitoring banner and CDE Login screen will be displayed.

3.6.4.1 UNIX Boot Sequence. The OPUP server utilizes firmware associated with the Sun Microsystems to initiate and perform a boot sequence. The boot sequence uses the Boot PROM and NVRAM (Non Volatile Random Access Memory) functionality before any binary machine instructions/commands are sent to the OPUP Server. This function in turn will begin to execute the various programs directed by NVRAM. Figure 3-50 is provided to assist with the description of Sun Microsystems UNIX boot sequence.

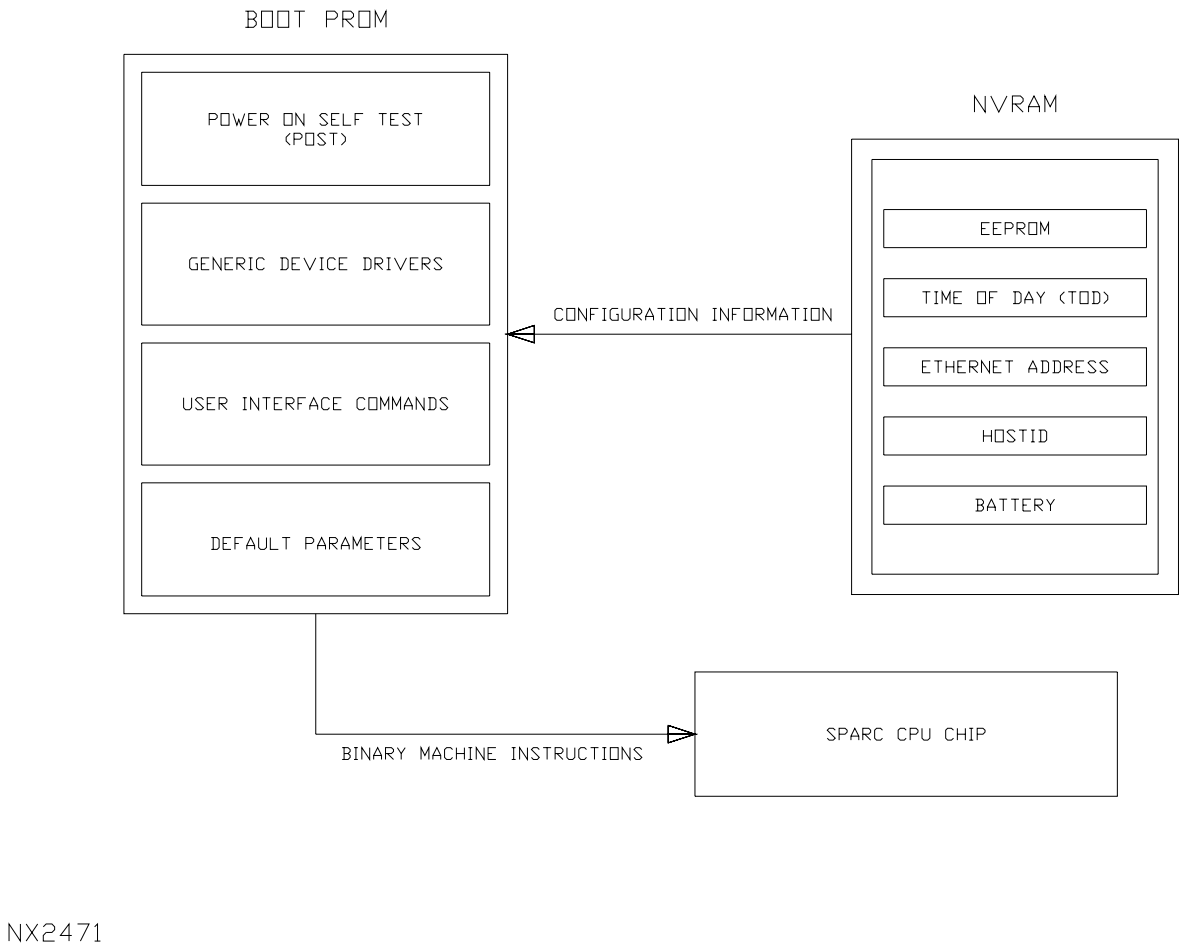


Figure 3-50. Basic Elements of the Boot PROM/NVRAM

3.6.4.1.1 Boot PROM. The Boot PROM is an 8-bit chip on each systems motherboard that tests system hardware and boots the OS. This chip contains firmware that provides a standard set of commands that force the hardware to perform certain operations before UNIX software is loaded.

3.6.4.1.1.1 NVRAM. Another important part of the boot sequence is the use of an 8-bit chip called the NVRAM. This memory chip is located on the motherboard and is unpluggable, or replaceable. NVRAM stores the Ethernet Address, host ID, and the time-of-day clock. A lithium battery provides backup for the NVRAM/TOD clock. The NVRAM contains the Electronic Erasable PROM (EEPROM) for storage of user-configurable parameters from the Boot PROM's default parameter settings. NVRAM gives programmers/system administrators the flexibility to force each system to behave in a specific manner. All user-interface commands (at the Sun Solaris base UNIX OS level) and device aliases are stored in the NVRAM, as well.

NOTE

The NVRAM chip has a yellow sticker placed on top of it that is labeled with a bar code containing the software package/license based on the original host ID and Ethernet Address shipped with each system. For the most part, this will be transparent to the OPUP System Administrator. This is due to the base Sun Solaris 5.8 OS being incorporated in the OPUP software development process. If this chip fails or the information contained within the chip becomes corrupted, either the NVRAM chip default parameters will need to be restored or the chip will need to be replaced. If this is in fact the case, Chapter 6, Maintenance, will outline the procedure for OPUP Server replacement, restoral, and configuration.

3.6.4.1.1.2 Power-On-Self-Test (POST). When the system is first powered on, a low-level self test is initiated. The POST code is stored in the Boot PROM and is designed to test the systems hardware basic functions. At the completion of a successful POST sequence, the Boot PROM takes control of the boot process and initiates the following hardware and system processes:

- Initialize the system
- Probes memory and the CPU
- Probes bus devices, interprets each driver, and builds a device tree
- Installs the console (user interfaces/default parameters)

The overall goal of the POST is to test, initialize, determine what system hardware is installed, boot the OS, provide debugging facilities, and enable third party devices (if attached/installed).

3.6.4.1.2 Boot Programs (PROM (OPENBoot) User Commands). Each Sun Microsystems system has the ability to access Boot PROM functions via the OPENBoot interface at the conclusion of the POST sequence. However, maintainers can only access these features after the POST sequence is interrupted and before the CDE Login window is displayed. To interrupt the POST sequence, press the **<Stop>** key (near top left of the keyboard) simultaneously with the **<A>** key during the power on sequence. The system will display an `ok` prompt. This indicates that the OpenBoot Monitor Console is being displayed and that Solaris is NOT running. The OpenBoot Monitor Console provides a user interface for entering OPENBoot commands. These commands can be used to probe the SCSI bus (used to detect attached/installed devices), set default parameters, display the system banner, and various other Boot PROM commands used to assist in troubleshooting hardware. Table 3-9 lists some commands that system administrators may need to be familiar with in case these diagnostics are required.

NOTE

Use of the **<Stop>** and **<A>** keys simultaneously or issuing a halt command will place the OS in the OPEN Boot diagnostic command prompt

level which may cause the OPUP OS to behave erratically if a probe command is used immediately afterwards. Be sure to enter a reset-all command before entering any probe commands. If a probe command causes the system to hang, power the system off using the power on/off switch located near the front left of the Small OPUP CPU or as a last resort, the rocker switch on the rear panel. The system should default to the auto boot sequence when powered back on.

Table 3-9. Boot PROM (OPENBoot) Commands

Command	Function	Remarks
banner	Displays the Sun Solaris banner information during the system's initial power on. **NOTE** This banner is different from the Government consent to monitor banner displayed in the CDE Login window.	Contains several lines of useful system information (i.e. model name, memory installed, host ID, Ethernet Address, and Boot PROM version number).
boot	Used to start the OS from the `ok` prompt.	Has several switches that can be used: -s (single user mode) -r (performs re-configuration boot) -v (verbose mode, displays <u>all</u> messages during boot sequence).
help	Used to obtain help on the main categories contained in the OPENBoot firmware.	Enter **help** *keyword***<Return>** to use (**help diag<Return>**). Entering **help<Return>** displays a list of help commands that can be used.
printenv	Used to list all NVRAM commands stored in memory.	Displays only, changes nothing.
setenv	Used to invoke and change NVRAM configuration data.	Used with the reset command to invoke and set the changes.
reset	Used to halt, clear all buffers, initialize registers, and reboot the system.	Auto boot (default) must be set to true. Redisplays the `ok` prompt if set to false.
set-defaults	Used to reset all parameters used in the OPENBoot firmware to their default values.	Mainly used for diagnostic purposes.

Table 3-9. Boot PROM (OPENBoot) Commands - Continued

Command	Function	Remarks
probe-ide	Invokes a system-wide probe for all IDE hardware connected/attached to the IDE portion of the SCSI bus.	Mainly used for diagnostic purposes.
probe-scsi	Invokes a system-wide probe for all SCSI hardware connected/attached to the SCSI bus.	Mainly used for diagnostic purposes.
probe-scsi-all	Probes all SCSI, PCI, IDE, and devices connected or attached to the SCSI bus	Mainly used for diagnostic purposes.
halt	Writes all data in memory to the hard drive and then stops the CPU from processing.	Must have root privileges to use.

3.6.4.1.2.1 OPENBoot Device Tree File System. Sun Microsystems uses the UNIX device tree example, Figure 3-51, to configure and organize devices that are connected/attached to the system's SCSI bus. The OPENBoot PROM firmware builds this device tree from information gathered during the POST sequence. The device tree is then loaded into memory which can be used by the kernel during the boot sequence to identify all configured devices. This portion of the UNIX device tree feature can only be used at the `ok` prompt. Nodes with other devices attached represent an actual bus and the associated controllers. A full device path begins with a forward slash (/), representing the root (node) of the tree. A node name is formatted as *name@address:arguments*. To view a device, enter the list command **ls<Return>**, print working directory command **pwd<Return>**, then the change directory command **cd<Return>** to change to the directory of the device of interest. Once in the directory, enter **ls<Return>** again. Several devices and associated SCSI bus locations or paths will be listed in the device directory. As an example, **/pci@1f,0/pci@1/isptwo@4/sd@3,0** can be broken down as follows:

- Beginning of the root (node) **pci** device path: the **@** symbols indicates that two Bus Devices and one Controller address start here.
- **sd@3**: Device type. (In this case, sd@3 means: SCSI disk (sd) and target address 3.
- **0**: (located on the very end of the path right after the sd@3) means the target address.

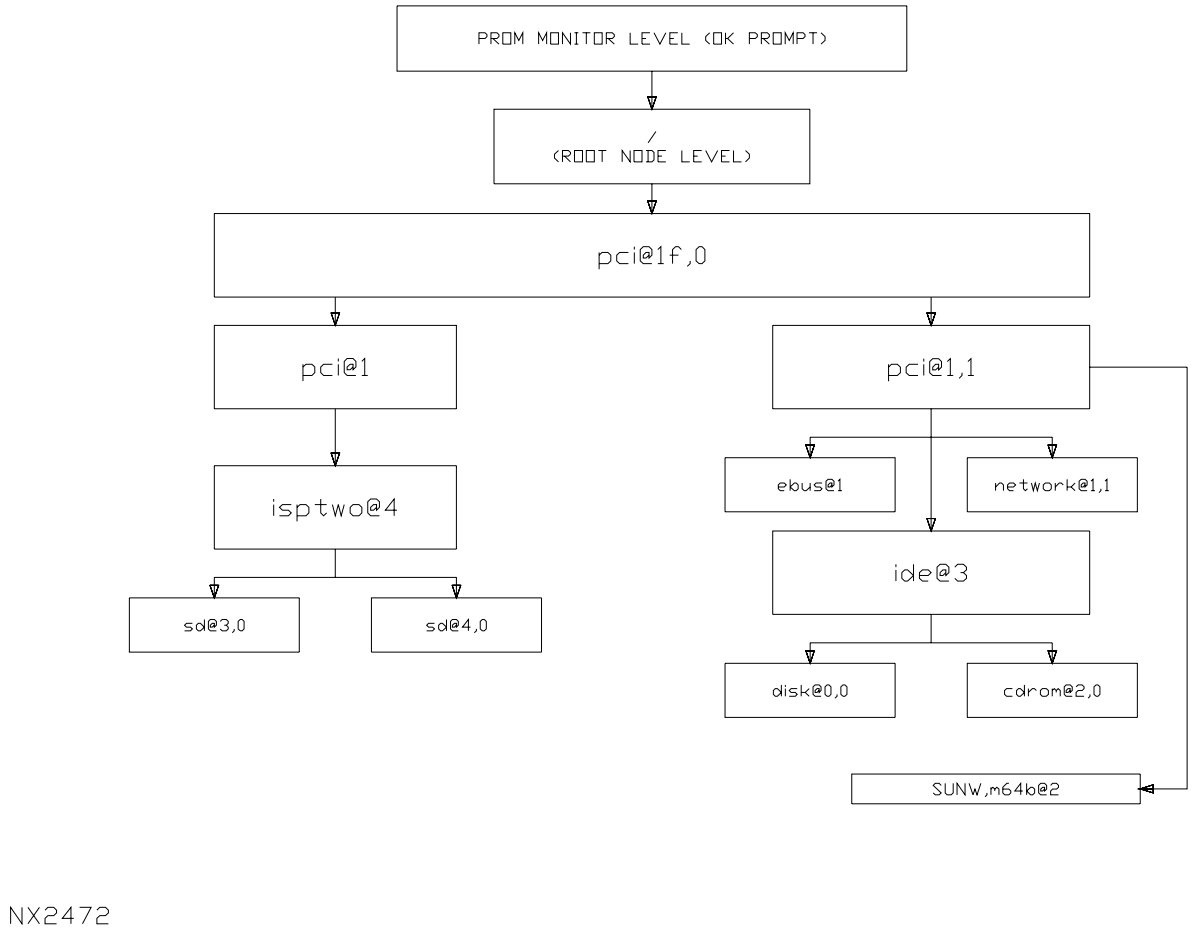


Figure 3-51. UNIX Device Tree Example

3.6.4.1.3 Kernel Initialization. The UNIX Kernel is the core of the Solaris OS. It is an executable file that is loaded into memory after the Boot PROM, POST, and Boot Programs are loaded. The kernel manages devices, memory, addresses, controls the transmission of information (between systems program utility and hardware), and manages swap space, daemons, file systems, and various other functions (as configured by specific programming unique to the system).

3.6.4.1.3.1 UNIX Shell. The UNIX Kernal also sets up the Solaris OS to accept an interpreter or translator between the user and the kernel known as a shell. A shell accepts commands issued by the user, interprets these commands, and executes the appropriate program(s). UNIX and the Sun OS commonly use the following tree shells. (There are many others that can be used with UNIX):

- Bourne: The default shell for Solaris. It was developed for AT&T and is denoted by a $ prompt, # for superuser. This shell has no aliasing or history capability.

- Korn: A superset of the Bourne shell, it has many of the same features, plus aliasing and history, and is denoted by a $ prompt. This shell is the industry standard.

- C: Based on the C programming language. This shell contains all of the features of the other shells and is denoted by a % prompt.

3.6.4.1.3.2 UNIX File System. Solaris uses a standard UNIX file system hierarchy of directories, subdirectories, and files that are grouped together for specific purposes. The file system is integrated with the kernel to provide an organizational structure to store data and quickly access executable programs. Solaris uses two types of files, the plain ASCII (American Standard Code for Information Interchange), and executable (i.e. applications, databases, and spreadsheets). Common file systems and their uses are found in Table 3-10.

Table 3-10. UNIX File System Organization

File System	Contains
/	Top most directory, called root.
/usr	Executable commands, system administration utilities, library routines.
/opt	Sun unbundled software applications.
/dev	Logical device names for physical devices. Used to access I/O devices like disk slices and disk drives, to tapes, keyboards, monitors, etc.
/etc	System Administration Files (e.g., passwd and hosts).
/export/home	Default home directory for users. Home directories may also be in */home*.
/kernel	Contains kernel files for the local platform architecture.
/var	Miscellaneous files. Also used to store System Administration Files/Logs.

3.6.4.1.3.3 File Naming Conventions. UNIX filenames can be up to 255 characters long. They can be any combination of upper or lower case letters, numbers, . (periods/dots), - (dashes), or _ (underscores). Be aware that UNIX, unlike MS-DOS, is case sensitive. Special characters/symbols can be used in filenames, however, some symbols should not be used (*, <, >, \, /, ?, or |) because they have special meaning (i.e. executable files) or they can be used as wild cards for retrieving files.

3.6.4.1.3.4 Absolute and Relative Paths. When referring to a subdirectory or file, it can be done with an absolute path name starting at the root (/) directory, or a path name relative to the current directory. For example, assume that the current directory is */export/home* and the desired subdirectory is under */export/home*. To change to the desired subdirectory using an absolute pathname, enter **cd/export/home** *directory_name***<Return>**. To change to the desired subdirectory using the relative pathname, enter **cd** *directory_name***<Return>**.

3.6.4.1.4 The Final Init Phase. The boot sequence final stage is governed by the */etc/init* directory and is called the init phase. This starts the run control (rc) scripts which govern other processes. These scripts execute programs that run configuration files for other processes, including specific init scripts. Once the rc scripts are finished, the CDE Login screen is displayed.

3.6.4.1.4.1 Boot Initialization Display Sequence. Each OPUP system has been pre-configured to conduct an initial boot sequence. System administrators will not be allowed to re-configure this sequence. The following information is an example of the information that is displayed during a normal Small OPUP boot sequence:

```
Sun Blade 150 (1 X UltraSPARC-III 990MHz), No Keyboard

OpenBoot 3.23, 1024 MB memory installed, Serial #12894376.

Ethernet address 8:0:20:c4:c0:a8, Host ID: 80c4c0a8.

Rebooting with command: boot

Boot device: disk  File and args:

SunOS Release 5.8 Version Generic_106541-08 64-bit [UNIX(R) Sys-
tem V Release 4.0]

Copyright (c) 1983-1999, Sun Microsystems, Inc.

configuring network interfaces: hme0.

Hostname: opup1server

The system is coming up.  Please wait.

checking ufs filesystems

/dev/rdsk/c0t0d0s5: is stable.

/dev/rdsk/c0t0d0s4: is stable.

/dev/rdsk/c0t1d0s7: is stable.

/dev/rdsk/c0t0d0s7: is stable.

starting ppp: ipdptp0.

NIS domainname is OPUP2.osf.noaa.gov.
```

```
machine is a router.

starting rpc services: rpcbind keyserv nis_cachemgr rpc.nisd
done.

Setting netmask of hme0 to 255.255.255.0

Setting netmask of ipdptp0 to 255.255.255.0

Setting default IP 4 interface for multicast: add net 224.0.0.0:
gateway osf opup1server

syslog service starting.

Print services started.

Feb 5 22:09:52 osf opup1server unix: TSI: gfxp0 is GFX8P @
1152x900

bdconfig: no serial device configured.  Run bdconfig interac-
tively (no args).

Feb 5 22:09:55 osf opup1server upsd[282]: Unable to communicate
with UPS



PowerChute Plus for Unix, v4.2.3: Copyright 1998, American Power
Conversion



/usr/local/apache/bin/apachectl start: httpd started

starting audit daemon

Configured 229 kernel events.

The system is ready.
```

```
         **WARNING**WARNING**WARNING**WARNING**WARNING**
“This is a Department of Defense (DoD) computer system.  This com-
puter system, including all related equipment, networks, and net-
```

work devices (specifically including Internet access), are provided only for authorized U.S. Government use. DoD computer systems may be monitored for all lawful purposes, including to ensure that their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify security procedures, survivability and operational security. Monitoring includes active attacks by authorized DoD entities to test or verify the security of this system. During monitoring, information may be examined, recorded, copied and used for authorized purposes. All information, including personal information, placed on or sent over this system may be monitored.

Use of this DoD computer system, authorized or unauthorized, constitutes consent to monitoring of this system. Unauthorized users may be subject to criminal prosecution. Evidence of unauthorized use collected during monitoring may be used for administrative, criminal, or other adverse action. Use of this system constitutes consent to monitoring for these purposes."

WARNINGWARNING**WARNING**WARNING**WARNING**

---

opup1server console login:

```
*****************************************************************
* Starting Desktop Login on display:0...
*
* Wait for the Desktop Login screen before logging in.
*
*****************************************************************
```

3.6.4.1.5 Solaris OS INIT Levels. Table 3-11 lists the INIT run levels used by the Solaris OS.

Table 3-11. INIT Level Definitions

Run Level	Definition
0	Firmware (PROM Monitor) boot level.
1	Administrative state-level. Same as Single-User mode. No users can login, but all file systems are mounted and are accessible by the system administrator.
2	Multi-User level, no resources shared, no network support.
3	Multi-User level, all resources shared, network support provided, OPUP default.
4	No longer used.
5	Shuts down the OS to the `ok` prompt and then powers off the system.
6	Shuts down the OS to the `ok` prompt and then boots it back up to run level 3.
S (or s)	Administrative state-level. Same as Run Level 1 and Single-User mode. No users can login, and the terminal used to execute this command becomes the console. All file systems are mounted, but all multi-user modes are disabled.

The OPUP default is run level 3 when first powered on or rebooted. This configuration is found in the */etc/inittab* file which is read during the boot sequence final stages, the initial phase. The */etc/inittab* file provides the following functions:

- Initializes the STREAMS modules.
- Configures the socket transport providers.
- Initializes the file systems.
- Defines the default run level.
- Describes the power fail/shutdown procedures.
- Defines the run level modes (all of them).
- Defines the procedures used to transit to firmware, power-off, and reboot.
- Initializes the Active Access Controller(s).
- Initializes the console.

3.6.5 System Administrative Tools.

The Sun Solaris OS contains all of the administrative tools used in the UNIX OS and applicable interactive operating shells. The OPUP Manager Main Menu was developed to allow each system administrator the ability to manage each administrative function(s) that may be encountered using a Netscape HTML formatted GUI menu structure. This means that administrative functions should not routinely involve access to the CDE Front Panel Terminal/Console window(s) in order to enter and execute a command line script. However, there will be some situations where this may be required (i.e. communication router configuration procedure.) The following paragraphs are provided in case there is a need to use command line entries in order to assist in entering configuration data or to diagnose and troubleshoot programming, file, and/or communication problems as they arise.

3.6.5.1 Operating System User Modes. The Sun Solaris OS normally uses three different OS user modes. They are Command Line Login, CDE Login, and Remote Login (rlogin). However, Command Line Login it is not permitted in the OPUP Server OS and will not be discussed in this manual.

3.6.5.1.1 Common Desktop Environment Logins. The CDE Login screen is the primary login process used by the OPUP. The system administrator must also use this type of login to access the `OPUP Manager Main Menu`. To login to the CDE, start at the CDE Login screen and enter a valid *`User Name`* in the `Please enter your user name` box, then click on the **OK** button or press **<Return>**. A CDE password entry window will appear with the `User Name` that was just entered displayed at the top. Enter the appropriate, case sensitive *`password`* in the `Please enter your password` box, and click on the **OK** button or press **<Return>** (the actual password is not displayed for security reasons). The user is then logged in to the CDE. From there, the system administrator has full access to the CDE Front Panel and selection of all graphical user applications including the `OPUP Manager Main Menu`, and the Terminal/Console windows (which provide access to the OPUP command line).

3.6.5.1.2 Remote Login. In many cases, access can be gained to any given UNIX system remotely (assuming the user has a valid user account on that system). From a remote UNIX system or possibly a Laptop computer, a remote session may be initiated by using the rlogin (remote login) command. This procedure is also commonly called a telnet session. When a remote login is successful, the remote user can interact with the OPUP at the OS level. Remote logins are system dependant and vary upon network structuring from site to site. To achieve remote access to the OPUP, the following assumptions must be true:

- The OPUP server has a Network Interface Card, an assigned IP Address, and is connected to a LAN switch or has Internet access.
- The remote system also has a NIC, IP Address, and connectivity to a LAN/Internet system.
- The two systems have a stable TCP/IP path between them. Both systems are either connected to the same LAN (and thus addressed within the same subnet), have Internet access,

or have a networking infrastructure in place (routers, bridges, etc.) which allows TCP/IP communications between systems that are addressed on different subnets.

- The user is authorized remote access.

NOTE

The above paragraph discusses a remote login interface provided internally by UNIX, Solaris, and/or the OPUP Server OS. If some type of remote, third party X-Windows emulator (e.g., Exceed, WRQ) is used, then access to the CDE and Workstation AS GUIs may be available just as though the user were sitting at the normal direct (locally) connected monitor.

3.6.5.2 Operating System Prompts. In addition to the default prompts employed by Solaris and the OPUP OS, unique prompts can be developed at the command line after opening a Terminal/ Console window. For example, the system administrator can substitute the $ prompt (Bourne/ Korn Shell) or # prompt (C Shell) with a User Name, command line counter, and or present working directory. In order to do this, a unique definition would have to be placed into the user's *.kshrc* (Bourne/Korn Shell) or *.cshrc* (C Shell) file. Further discussion on how to perform these functions requires advanced knowledge of UNIX which is beyond the scope of this manual.

3.6.5.3 Control Keys. There are only two control keys which have global significance when using command line programs. These are the **<Ctrl>D** and **<Ctrl>C** keys. **<Ctrl>D** is used to signal the conclusion of text entries within a program and to stop any script log capture programs. **<Ctrl>C** is used to abort any program running in the foreground.

3.6.5.4 Help Utilities. Help and the Sun Solaris OS AnswerBook2 are the two graphical-based help utilities provided by Solaris. There is also command line support, called the man (manual) pages which reside at the UNIX level.

3.6.5.4.1 Sun Solaris OS Help and AnswerBook2. The help utility is started by clicking on the **?** icon on the CDE Front Panel. After the Help Viewer window is opened, the system administrator can use the global search features for various Solaris and UNIX functions.

AnswerBook2 is a Netscape browser-based utility which provides an all-encompassing help program. This utility includes all information concerning the aspects of the Sun Solaris operating platform (which includes UNIX). AnswerBook2 is started by clicking on the **up arrow** above the **?** icon on the CDE Front Panel and then clicking on the **AnswerBook2** icon.

3.6.5.4.2 Command Line Help Utility MAN Pages. The man pages, provide help/assistance at the command line with the use of UNIX commands and their syntax structure. Syntax error messages are also displayed if any syntax and associated switches are missing when a command is issued. The following example illustrates the use of the man command syntax:

man help<Return>

Command availability, name, synopsis, description, options, attributes, warnings, and notes are returned for almost all UNIX commands used in the Sun Solaris and OPUP OS. When viewing man pages, press the **<Space Bar>** key to continue to the next page and/or press the **<q>** key to quit and return to the command line prompt.

3.6.5.5 The vi Editor. The Visual Interactive (vi) display editor is used to create and/or modify text files. It is the only full screen editor that can modify critical system files. There are many versions of vi in existence; however, OPUP only provides a basic editor version. It uses the monitor for display, but there is no mouse driver support. Users can only access and exit vi from the keyboard. All edits are done in a memory buffer and then either written to disk or discarded.

It is possible that the system administrator could be called upon to use vi to inspect and provide diagnostic information based upon the contents of certain critical OPUP operating files.

3.6.5.5.1 Operational Modes of vi. The most commonly used operational modes of vi on the OPUP are the command, insert, append, and last-line modes. When a file is initially opened with vi it is automatically placed in the command mode. In this mode, the user can use positioning and editing commands to perform functions on the file. Users can also perform advanced editing by pressing the **<:>** (colon) key, which places the cursor at the bottom line of the display. From the command mode, pressing the **<i>** key causes vi to change to the insert mode. The insert mode non-destructively inserts text at the cursor position. From the command mode, pressing the **<a>** key causes vi to change to the append mode. The append mode moves the cursor one position to the right and then non-destructively appends text from that position. From the insert or append modes, pressing the **<Esc>** (escape) key causes vi to change back to the command mode.

3.6.5.5.2 Using the vi Editor to Create or Modify a File. The vi editor will automatically create or locate and open the filename listed directly after the vi command and place it in its own window on the monitor. To create or modify a file using the vi editor, perform the following:

NOTE

> From any operational mode, pressing the **<Esc>** key always causes vi to change back to the command mode. This is very useful if the user looses track of what mode vi is in while editing a file, especially critical executable files. If the escape key is pressed while still in command mode, a beep will sound to let the user know that the system is already in command mode. So, if the user is unsure of what mode vi is presently in, is a good practice to press the **<Esc>** key twice and listen for the beep to ensure that vi is in the command mode.

- Enter **vi** *filename***<Return>** to edit or create a file.
- Once the file is opened, press the **<i>** key to insert text, or the **<a>** key to append text.

- Press the **<Esc>** key to change to the command mode.
- Enter: **wq<Return>** (write/quit) to save the file and exit the vi program.

3.6.5.5.3 vi Editor Command Table. Table 3-12 contains a list of the most helpful and commonly used vi commands while creating and/or modifying system files.

Table 3-12. vi Editor Commands

Command	Function
vi *filename***<Return>**	If the *filename* already exists, that file is opened and it's first page is displayed. If not, a new file is created with that name and a blank window is opened for the user to begin entering text.
vi<Return>	Creates a new file to be named later.
vi -r *filename***<Return>**	Used to recover a existing crashed file.
a	Append text after the cursor.
A	Append text at the end of the current line.
i	Insert text before the cursor.
I	Insert text at the end of the current line.
o	Open a new line below the current line.
O	Open a new line above the current line.
h or **left arrow**	Move the cursor to the left one space.
j or **down arrow**	Move the cursor down one line.
k or **up arrow**	Move the cursor up one line.
l or **right arrow**	Move the cursor to the right one space.
Space Bar	Move the cursor and everything to the right of it right one space.
0 (zero) or **^**	Move the cursor to the beginning of the current line.
Return	Move the cursor down to the beginning of the next line.
x	Delete the character at the cursor position.
X	Delete the character to left of the cursor.
D	Delete the rest of the line to the right of the cursor.
:w	Save the file.

Table 3-12. vi Editor Commands - Continued

Command	Function
:w *filename*	Save the file as a new filename.
:wq	Save the file and quit vi.
ZZ	Save the file and quit vi.
:q	Quit vi without saving the file.
:wq!	Save the file and quit vi. The **!** character will override read only permission, if necessary.
:set nu	Show the line numbers with the file.
:set nonu	Hide the line numbers.
:set showmode	Display the current mode of operation.
:set noshowmode	Hide the current mode of operation.
:set	Display all vi variables that are set.
:set all	Display all possible variables and their meanings.

3.6.6 Common UNIX Commands. Table 3-13 lists some of the more commonly used UNIX commands and their functions that OPUP system administrators may need to use on occasion. Consult other documentation concerning any expanded description of UNIX commands.

Table 3-13. Common UNIX Commands

Command	Function	Remarks or Example
which	Provides absolute path name of an available command.	**which tar<Return>** (The result would be */usr/sbin/tar.*)
man	Displays manual page information on a selected subject.	**man help<Return>** (The result would be a man page of info about the help command.)
h or **history**	The h alias can be used to display a history of (n) number of commands defined in the history environment variable.	**history 10<Return>** (The result would be a list of the last 10 commands entered.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
!	Used to recall and execute a prior command.	**!p<Return>** (The result would be to repeat the last command that began with the letter p.) This can be used to repeat a command from a history list. So, **!78<Return>** would repeat the command on line 78 of the history list.
cd	Used to change to another directory/subdirectory.	**cd /export/home/dan1<Return>** (The result would be to change to the absolute path directory of */export/home/dan1*. **cd .<Return>** would change to the parent directory. **cd /<Return>** would change to the root directory. **cd<Return>** would change to the user's home directory.)
pwd	Used to display the user's present working directory.	**pwd<Return>** (The result would be the directory name that the user is currently in.)
find	Used to search for files meeting specific criteria,	**find . -name "dan1.?" -print<Return>** (The result would be a list of all file/s and the path/s from the root directory downward named *dan1* with the wildcard extension character *?* displayed on the monitor. See the man page for the numerous ways the find command can be used.)
grep	Means global regular expression print. Used to search for files or a pattern and displays all lines that contain that file or pattern.	**grep -i 'T' dan1<Return>** (The result would be to display each line that contained the letter T in the *dan1* file regardless of the case.) Some other switches that can be used are as follows: **-n** = display the line number **-h** = display several files that have the desired alphanumeric expression **-v** = display all of the lines that do NOT match the desired pattern **-l** = display all of the filenames that match the desired expression **-c** = count the number of lines and display the result on the monitor

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
ls	Used to list the current directory contents.	**ls<Return>** (The result would be a list of all files in the current directory.) The following switches can be used to gain more information: **-a** = also display all hidden files **-l** = display the files in a long list format **-t** = display the files sorted by time stamp **-r** = display the files in reverse order
cat	Used to display the contents of a file.	**cat dan1<Return>** (The result would be to display the entire contents of *dan1* on the monitor.)
more	Used to display the contents of a file one page at a time.	**more dan1<Return>** (The result would be to list display the first page of the *dan1* file on the monitor, if the file is longer than one page. The **<Return>** key forwards the file one line at a time, and the **<Space Bar>** key forwards the file one page at a time.) This can be used with other commands to alter the display method. So, **ls -l | more<Return>** would display a long list of files in the current directory one page at a time.
diff or **sdiff**	diff is used to compare the contents of two files. A < precedes the lines of *file1* and a > precedes the lines of *file2*. sdiff is used to compare two files side by side. A < precedes the lines that are different in *file1* and a > precedes the lines that are different in *file2*.	**diff dan1 dan2<Return>** (The result would be to display the difference between the *dan1* file and the *dan2* file.) **sdiff dan1 dan2<Return>** (The result would be to display the *dan1* and *dan2* files side by side showing the difference between the two files.)
mkdir	Used to make a new directory.	**mkdir dan1<Return>** (The result would be to make a new directory named *dan1* at the user's current location.) Can be used with absolute path names to make a directory at a specific location. (i.e. **mkdir /etc/temp/dan1<Return>**.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
touch	Used to create a new file if it does not already exist. If the file does already exists, then it updates the date/time stamp of that file.	**touch dan1<Return>** (The result would be to create the new file named *dan1* at the user's current location.) If a file named *dan1* already exists at that location then the date/time stamp of the existing *dan1* file would be updated.
cp	Used to copy the contents of one file to another file.	**cp dan1 /export/home/dan2<Return>** (The result would be to copy the contents of the *dan1* file and place them into the *dan2* file located at the */export/home* directory.) **NOTE** The cp command will completely overwrite the contents of a previously existing file without warning. So, after the command was issued in the example above, if a file named *dan2* already existed in the */export/home* directory, the previous contents of the *dan2* file would be completely gone and it would now only contain whatever was in the *dan1* file. Using the **-i** switch, as described below in the mv command will inform the user before the command is executed.
mv	Used to move the contents of one file to another file. If the target file does not already exist, it will be created which is essentially like renaming the source file.	**mv -i dan1 dan2.log<Return>** (The result would be to move the contents of the *dan1* file to the *dan2.log* file, and inform the user of the move before executing the task.) **NOTE** The mv command, just like the cp command mentioned above will completely overwrite the contents of a previously existing file without warning if the **-i** switch is not used. Attempt to use the **-i** switch at all times.
alias	Used to display command shortcuts built-in to the system.	**alias<Return>** (The result would be a list of all pre-defined aliases.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
who	Used to display the name, line found in /dev, login time, and PID for each current user.	**who<Return>** (The result would be to display information about all of the current users.)
uname	Used to display the name of the current operating system.	**uname<Return>** (The result would be SunOS.) Can also be used with the following switches: **-a** = displays basic system information **-i** = displays the name of the system hardware **-n** = displays the nodename **-r** = displays the OS release level
df	Used to display the amount of disk space occupied by the mounted or unmounted file systems.	**df<Return>** (The result would be to display all files, slices, number of blocks, and amount of files contained in those blocks.) Can also be used with the following switches: **-k** = shows total amount of space used, and space available on the disk in kbytes **-b** = shows total number of kbytes available
du	Used to display the amount of disk space used by the current directory including all subdirectories.	**du<Return>** (The result would be to display all of the files in the current directory and the total amount of space used in kbytes.) Can also be used with the following switches: **-k** = displays the amount of space in kybtes **-s** = displays only the total disk space used **file** = displays the absolute path name of the file or directory whose size is to be displayed
mount	Used to display a list of currently mounted file systems, their mount points, and the time they were mounted.	**mount<Return>** (The result would be a list of mounted file systems, their mount points, and the time they were mounted.)
mountall	Used to mount all of the file systems specified in the file system table located in the */etc/vfstab* system table.	**mountall<Return>** (The result would be to mount all of the file systems that are located in the */etc/vsftab* table.)
chmod	Used to change read, write, and execute permissions of a file. Permissions can only be changed by the owner of the file or the system administrator.	**chmod 555 dan1<Return>** (The result would give read and execute permissions to *dan1*. **chmod +rx dan1<Return>** (The result would be the same as above, however it is done in symbolic rather than absolute mode.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
chown	Used to change the owner of a file. Must be the current owner or system administrator.	**chown ob1 /dan1<Return>** (The result change the ownership of */dan1* to *ob1*.)
lp and **lpstat**	lp is used to a request a print and lpstat is used to display the status of requested print jobs. **NOTE** **cancel***filename* **<Return>** kills a request still in the que.	**lb -o nobanner dan1<Return>** (The result would be to print the *dan1* file without a banner page.) The following can also be used: **width** = page width to use **cpi** = character/pitch per inch used for output **lpstat<Return>** (The result would be to display the status of all print requests.)
eject	Used to unmount and eject media that does not have a manual eject button.	**eject floppy<Return>** (The result would be to unmount the floppy disk and eject the floppy diskette from the drive.) However, if the floppy drive has a manual eject button, it would wait for the eject button to be pushed.
tar	Used to create a tape archive file. Can create a single file containing a subset of files or to display a list of archived directories/subdirectories, and files.	**tar -tvf /dev/rmt/dan1.tar<Return>** (The result would be to access the tape drive and display a list of all of the files contained on the tape.)
ufsdump	Used to backup designated files individually for each file system. These files can then be restored exactly as they were recorded or one file at a time.	**ufsdump 0ucf /dev/rmt/0 /<Return>** (The result would be to perform a level 0 data dump of the root (/) directory and write it to the tape drive located at */dev/rmt*.) The following switches can be also used: **0-9** = Dump level used (the lower the number the more complete the dump) **c** = sets the default for tape cartridge used **u** = update the dump record **f dump_file** = use a designated file vice the *dev/rmt/0* default designation **files to dump** = names certain files to dump
ufsre-store	Used to restore files from backup media created with the ufsdump command.	**ufsrestore rvf /dev/rmt/0<Return>** (The result would be to display files and recursively restore them from the *dev/rmt/0* device to a mounted device (normally the root directory.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
telnet	Used to remotely login to another system.	**telnet 123.45.67.255 <Return>** (The result would be a connection to the noted IP-address and an open remote terminal display.)
rlogin	Used to establish a remote login session from a local system to a remote system. A user must have an account on the remote system.	**rlogin -l dhoff OPUP4<Return>** (The result would be to login to the remote OPUP4 system as the user *dhoff*.)
ping	Used to send an ICMP Echo Request packet(s) to a host. If the packet returns, then the connection is good.	**ping OPUP4<Return>** (The result would be to send a data packet out to the OPUP4 system. If the data returns, the system displays the message `OPUP4 is alive`.) The following switches can also be used: **-s** = send out one packet per second and show a line of information for each returned packet. **packetsize** = size of packet to send, in bytes.
passwd	Used to change a user or root password. Must have root privileges.	**passwd dhoff<Return>** (The result would be for the system to display the `Enter login (NIS+) password:` prompt. First enter the *old password***<Return>**. Then, at the `New password:` prompt, enter the desired *new password***<Return>**. Then at the `Re-enter new password:` prompt, enter the exact same *new password***<Return>** again to confirm a successful password change.)
su	Used to switch from one user to another without logging out.	**su dhoff<Return>** (The result would be for the system to switch from the current user to the user *dhoff*. The user must know the password for *dhoff* to successfully complete the switch.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
boot	Used to start the system from the from the `ok` prompt.	**boot<Return>** (The result would be for the system to load the OS into memory, and perform a level 0 init of the software. The following switches can also be used: **-s** = boot up to single user mode **-r** = re-configuration boot, forces the system to probe for any new devices and load the appropriate drivers as well as create new necessary files in the */devices* and */dev* directories **-v** = verbose, all boot messages displayed **net** = boot from network based executable **net - install** = invoke Sun Solaris Jumpstart software from the network executable assigned for this purpose **cdrom** = boot from the CD-ROM device
reboot	Used alone with no options, performs a level 6 init of the system. Behaves differently when used with specific options.	**reboot -- -r<Return>** (The result would be to ignore any previous boot options, take the system all the way down to the `ok` prompt, and then force the system to probe for any new devices and load the appropriate drivers as well as create new necessary files in the */devices* and */dev* directories, and then boot it back up to run level 3.) **reboot<Return>** (The result would be to take the system all the way down to the `ok` prompt and boot it back up to run level 3.)
halt	Used to stop the processor. Normally only used by the root user.	**halt<Return>** (The result would be to instruct the processor to stop all processes. The system can then possibly be shut down. **This should only be used as a last resort.**)
sync	Used to immediately write all data stored in memory to disk.	**sync<Return>** (The result would be to cause the system to write all data stored in memory to the appropriate files on the disk.)

Table 3-13. Common UNIX Commands - Continued

Command	Function	Remarks or Example
rm	Used to permanently remove files and directories. **NOTE** The rm command will delete a file or directory permanently. Recommend using the **-i** switch at all times to mitigate any potential disasters that may occur.	**rm dan1<Return>** (The result would be to quickly, silently, and permanently remove the *dan1* file). **rm -i dan1<Return>** (The result would be to provide a confirmation prompt before deleting the *dan1* file. The following switches can also be used: **-i** = provide an inquiry statement **-r** = recursive (highly dangerous)

CHAPTER 4
OPUP SYSTEM SECURITY

Section 4.1. INTRODUCTION

4.1.1 General.

Security features include physical (gates, locks, guards, etc.), administrative (personnel screening), and technical (hardware, software, and firmware) attributes sufficient to protect the data stored, processed, or transmitted within the system.

4.1.2 Chapter Organization.

Chapter 4 is organized into the following four sections:

- Section 4.1 INTRODUCTION - Provides a brief description of each section in Chapter 4.
- Section 4.2 SYSTEM SECURITY - Provides a brief description of OPUP system security and defines several security terms.
- Section 4.3 THREATS AND VULNERABILITIES - Provides insight into identifying threats and managing system security.
- Section 4.4 SYSTEM SECURITY POLICY - Defines policy for implementing and maintaining system security.

Section 4.2. SYSTEM SECURITY

4.2.1 Overview.

The security features for the OPUP Server OS are specific to UNIX as implemented by Sun Solaris. The system administrator requires an administrative knowledge of UNIX. Security implementation is based on a preventive approach emphasizing site security, discretionary access control mechanisms, the need-to-know, accountability of users for their actions, auditing, resource isolation, and configuration management. Properly implemented and monitored, this becomes the first line of defense against intrusion into and system misuse. The system security configuration, as designed, uses a combination of automated features and requires the system administrator to enforce and maintain both system features and manual instructions.

4.2.2 Definition of Terms and Services.

The following sections define terms and services used in providing system security.

4.2.2.1 Accountability and Audit. Accountability is the state of the system that enables violators or attempted violators of system security to be identified and held accountable for their actions. Review of system records and activities (audit) test the adequacy of the system controls to ensure compliance with established policy and operational procedures.

4.2.2.2 Discretionary Access Control (DAC). Discretionary Access Control (DAC) is a way to restrict access to objects based on the identity of subjects or groups to which they belong. The user determines who (owner, group, or world) is allowed to read, write, or execute a given file or directory. Authorized users will only have access to system files granted by DAC mechanisms. Improperly controlled file access can allow unauthorized users access to information that they do not have the need-to-know which can potentially compromise system security. DAC should not be confused with classification or category designations that are assigned to system information and data.

4.2.2.3 Trusted Facility Operations (TFO). Trusted Facility Operations (TFO) refers to the procedures and functions that enforce system security within a Trusted Facility. The ultimate objective of TFO is to support system security during daily operations. It is the responsibility of designated personnel (i.e. system administrators) to enforce TFO security procedures. However, anyone who enters a Trusted Facility is responsible to ensure that security measures are enforced for all systems located within the facility. This responsibility extends to systems that are either physically accessed or accessed by other means (FTP, Telnet, etc.) Everyone, particularly all system users, must be made aware of what constitutes normal operations and what may be misuse of system resources or suspicious/abnormal operations.

4.2.2.4 Identification and Authentication (I&A). Identification and authentication ensures that only authorized users gain access to system resources and are held individually accountable for their actions. Users identify themselves with a unique user name, which requires authentication by presenting a valid password before permission is given to access system resources or data.

4.2.2.5 Files, Directories, and Permissions. The system administrator monitors workstations and servers to verify and maintain system security. Users must not attempt to load unauthorized software without permission or change file permissions unless it is within the scope of their job, required for the mission, and they have received proper authorization.

Section 4.3. THREATS AND VULNERABILITIES

4.3.1 Overview.

Threats to the OPUP may be in two forms, natural and intended. Natural threats include fire, power failure, environmental failure, etc. Standard safety checks and recovery procedures are established to react to natural threats. Intended threats are human-perpetrated, may occur at any time, and are significantly more difficult to detect. It is important to report suspected or detected misuse, in-progress attacks, or other abnormal system activity to the system administrator or security staff immediately to prevent further compromise or damage to the system. Users must be aware that the failure of a single site to ensure security puts all sites at risk.

4.3.2 Countermeasures.

Local procedures are in place for dealing with natural threats. To counter intended threats, the OPUP has safeguards such as identification and authentication, discretionary access control, accountability, redundancy, auditing, and physical security rules. All sites shall develop countermeasures to follow when misuse or system attacks are suspected/detected. When a suspected or actual security incident occurs that compromises the OPUP security, it must be reported to the ROC immediately. Misuse of an OPUP is illegal and protected by federal and local laws.

4.3.3 Assumptions.

The fundamental system administrator or security staff responsibilities are:

- Understand the system security policy, the certified security configuration requirements, and the security architecture for the OPUP System.
- Maintain system security configuration and security services.
- Monitor system activities using audit and security services.
- Identify, investigate, and report abnormal system activities.
- Establish and manage user and group accounts.

4.3.4 Separation of Administrative Roles.

Only those personnel specifically responsible for system administrator and security functions have access to system administrator accounts. Given the limitations of the OPUP site manning, the same individual may perform both the system administrator and the security functions.

4.3.4.1 User Requirements. Users are the OPUP operators, administrators, and maintainers who establish the system requirements and support the WSR-88D mission. Users must be familiar with the OPUP security policy, the sensitivity and criticality of the data provided by the OPUP

system, the need for keeping login information private, and to whom they report suspected system anomalies. All users shall comply with OPUP security policies and report security problems.

4.3.4.2 Administrator Requirements. The system administrator has the primary responsibility of ensuring that the site complies with the security policy, and maintains the system security posture. The security policy shall be applied at all sites regardless of size, staffing, or other qualifiers.

Section 4.4. SYSTEM SECURITY POLICY

4.4.1 Overview.

This section outlines the OPUP system security policy. It gives the system administrator policy guidance in maintaining system security, system operational controls, life cycle security responsibilities, and documentation. Compliance with the OPUP security policy and higher level security policies is required in order to ensure the system integrity.

4.4.2 Protection Mechanisms Available to Users.

All personnel allowed access to the system or allowed possession of its data must have the need-to-know for the information. Users must be aware that they are responsible for their actions on the OPUP system. Users should notify the system administrator of any security related issues, misuse, or system compromises.

4.4.2.1 System Access. Using the Operational Applications Front Panel login functions cause the OPUP Server OS to create an active session that is tailored to the user identified during the login process. The initial session reflects a default set of account, group, and profile attributes that are assigned by the system administrator. These attributes determine what the user may access while connected to the system. The following user account attributes will be assigned to each user:

- User Identification
- User Number
- Password
- Default Profile
- Group Membership

NOTE

During login, a valid user name and password must be entered at the user name and password prompts. After entering the user name and pressing the **<Return>** key, the user should wait until the password prompt appears. If the password is entered too quickly after the user name, some of the password characters may be echoed onto the terminal compromising the user's password security.

4.4.2.2 User Name and Password Security. OPUP operators can only gain access to the Operational Applications Front Panel GUIs after they are assigned a unique user name and password by the OPUP system administrator. (Refer to paragraph 5.2.5.1 for further information.) The system

administrator will be responsible to ensure that the following general user name and password security requirements are enforced:

- Users are responsible for protecting their passwords against loss or disclosure and will be held liable for any improper password use.
- Users must protect their password at a minimum as For Official Use Only (FOUO).

4.4.2.2.1 Password Composition. Each password must meet the following minimum composition requirements:

- Be at least a minimum of eight characters in length.
- Contain at least one UPPERCASE character (A through Z).
- Contain at least one lowercase character (a through z).
- Contain at least one number (0 through 9).
- Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.

NOTE

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

Passwords must not be the same as the user name or constructed from words straight out of the dictionary (spelled forwards, backwards, or split with a number or special character) or be constructed using a user's personal identity, history, or environment. Generic passwords must also be prohibited (e.g. a system having "welcome" as the password for all newly created user names). Lastly, when passwords expire, users must not reuse the current password or use any of the last nine passwords assigned to that user name.

4.4.2.2.2 Password Aging and Management. Each password must, at a minimum, be changed every 90 days. The Sun Microsystems Solaris OS Password function within the OPUP Server OS will monitor and prompt each user name to change the associated password every 90 days after the initial password was assigned.

NOTE

The system administrator will be responsible to ensure that each password is constructed as discussed in paragraph 4.4.2.2.1. Password aging applies to both the root and opupmgr passwords. It is advised that system administrators closely monitor the dates when these passwords are to expire.

> When the Sun Microsystems password change prompt is displayed for both the root and opupmgr passwords, system administrators should immediately reassign new passwords at the `OPUP Manager Main Menu`, `OPUP Users Menu`, `Change User Password` function. This will ensure that the passwords assigned to these user names are properly synchronized between the OPUP Manager GUI and the Sun Microsystems Solaris OS password database.

4.4.2.2.3 Username Uniqueness. Each operator must be assigned a unique user name in order to issue a password and provide individual accountability while using the OPUP Operational Applications Front Panel GUIs. User names may be constructed using at least three characters and any combination of upper/lowercase letters and containing at least one number or special character as desired. Each user name, once removed/deleted from the OPUP Server OS must not be reassigned to another person for up to one year. In the case of high operational personnel turnover situations, system administrators may substitute reusable generic user names (i.e. $OPup1). If generic user names are used, a log sheet must be implemented in order to track and delete both the generic user name and password when they are no longer required.

4.4.2.3 Warning Banner (Consent to Monitoring). System access warning banners are used to notify each user that, by accessing a federal computer system, their actions are subject to review and that they expressly consent to authorized monitoring. The system displays the Consent to Monitoring warning banner each time the system boots up and at each login session. Users logging into the OPUP system should take the time to read and understand the information displayed on the Consent to Monitoring warning banner. The banner describes the secure nature of the environment, proper behavior while operating in this environment, and the security guidelines defining its operation. The OPUP requires a user's physical action (pressing the **<Return>** key after the banner is displayed - to continue) acknowledging and accepting the consent to authorize monitoring of all actions attributable to the user. Inappropriate behavior will result in administrative, criminal, or other adverse action against the user.

4.4.2.4 Incident Response. OPUP system misuse is illegal and protected under federal and local statutes. The users are responsible for abiding by applicable policies, guidelines, and directives to ensure they understand what constitutes system misuse. The primary reason for preventing misuse is to ensure that the system configuration complies with security configuration requirements defined in this document. The system administrator or security staff can provide specific guidance on security issues that are of concern to the users.

4.4.2.5 Monitor Display Security Features. The Monitor(s) UD86A1/A11 used with the OPUP Equipment Group UD86 employ up to three types of display security features. These are the Screen Lock (Padlock) icon, Screen Time-out, and Terminal time-out functions.

The Screen Lock (Padlock) icon function is located near the center of both the CDE and Operational Applications Front Panel. This function is used to lock the display and prevent unauthorized usage when a user must leave the area unattended for a short period of time while an OPUP application is still active or processing. Clicking on the **padlock** icon causes the OPUP to display a window containing the user name that is currently logged in along with a password entry

prompt. The user is not logged out of the application, but must reenter the exact same password that was used to login to unlock the display.

The Screen and Terminal Time-out functions are used to either remove the image temporarily or lock the current display out to a `Password:` login window when a specific time threshold has been met. Both the Screen and Terminal Time-out functions are set within the `OPUP Manager Main Menu`, `OPUP Server Control Menu`, `Screen Configuration` function. If the Screen Time-out function is engaged, the user is only required to move the mouse or press any key on the keyboard to redisplay the current image on the monitor. If the Terminal Time-out function is engaged, the user is not logged out of the application, however the user must reenter the exact same password that was used to login in order to unlock the display.

NOTE

> Be sure that the user password is known before the Screen Lock (Padlock) icon or the Terminal Time-out function engages. If these functions are engaged and the password is not known or will not unlock the screen, the system administrator will be required to unlock the display and reissue a lost password as discussed in paragraph 5.2.5.5.

4.4.3 Protection Mechanisms Available to Administrators.

The system administrator should refer to the overview guidelines contained in Chapter 3 for detailed information of what each security display looks like on the OPUP system. The OPUP system administrator account shall not be used to accomplish daily mission work. Each user with system administrator duties must have a uniquely identifiable normal user account so that any system administrator work can be traced back to that individual. The root account is reserved for system maintenance, and certain system security-relevant functions. The root privilege must be controlled tightly and given only to the system administrator who requires the privilege to accomplish their duties and responsibilities. Standard procedure should be to login as a normal user and then switch to the root account (**su<Return>**).

4.4.3.1 Identification and Authentication Functions. All OPUP users, including the system administrator, must enter a valid user name and password in the login dialog box to gain access to the system resources. The OPUP system employs an interactive, local login (the user account database is stored on the operating site's OPUP Server). When the user enters a unique user name and password in the login dialog box, the information is verified against the user account database.

4.4.3.2 Audit. User account auditing is enabled and controlled by the system administrator. The system administrator may use the `OPUP Manager Main Menu`, `OPUP Security Logs Menu`, paragraph 3.3.3.4.7 to start, stop, or restart the security log functions, view failed login attempts, and administrative activity information. The OPUP Manager GUI provides system wide security access monitoring, login verification, and access activity records. Detailed descriptions for each `OPUP Manager Main Menu` window is contained in Chapter 3, Section 3.3, OPUP Software Description.

4.4.3.3 Routine Operations. The following sections outline OPUP routine security operations.

4.4.3.3.1 Accounts. User accounts are established by the system administrator for each user. The system administrator may use the OPUP Users Menu to add, delete, change passwords, and view assigned users. See paragraph 3.3.3.4.6 for further information concerning the OPUP Users Menu function. Lastly, terminal/console control access and environmental changes in privileges are to be performed only by the system administrator.

4.4.3.3.2 Security Relevant Files and Directories. Several directory hierarchies are considered critical to the OPUP system and security administration. These hierarchies must be monitored and maintained to ensure that the general user community can neither accidentally or maliciously cause damage to the system operation by manipulating the key configuration files within them. The following directories are included:

- The */*(root) directory is the home directory for the root user and the parent for all hierarchies in the file system.
- The */etc* directory is the primary administrative and security directory on the file system.
- Audit Logs and Online Archives must be protected from unauthorized access or manipulation.

4.4.3.3.3 Default User Permissions. Each system administrator must ensure that user permissions set on home directories conform to the least privilege concept. That is, permissions on objects or files created may restrict access exclusively to the owner/creator of that object or file. Sharing objects or files within the user's home directory requires that permissions on the directory allow another user access to the specific objects.

There are three types of permissions associated with a user's files and directories as follows:

- r - read the file or directory.
- w - write to the file or directory.
- x - execute the file or search the directory.

These permissions can be set for the following three types of users:

- o - the file(s) owner.
- g - the members of the group to which the owner belongs.
- w - all other users.

NOTE

Users assigning read permission for files to another individual allow that individual the ability to copy the files. This in turn **allows** that individual to modify and allow all other users access.

4.4.3.3.4 Backup and System Recovery. The system administrator may backup/restore both the OPUP configuration data and products. See paragraph 3.3.3.4.10.2 for further information. Backup media should be stored in a secure container.

4.4.3.3.5 System Shutdown. The system administrator may power the system down to the off position by using the **Shutdown Server** button located on the `OPUP Server Control Menu` as described in paragraph 3.3.3.4.16. Using the OPUP Server Control Menu will provide for a quick but orderly (safe) shutdown process which terminates the OPUP OS and powers the Server UD86A2 down to the off position.

4.4.4 Configuration Management Policy.

The OPUP operates within a controlled software and hardware environment, meaning that only authorized software and hardware may be installed and operated within the OPUP environment. Installing or executing non-authorized software or hardware poses an extreme risk to the OPUP operations and integrity. It is the system administrator and security staff responsibilities to maintain the most recent versions of software and site specific adaptation data.

4.4.5 Software Security Patches.

The ROC will be responsible for subscribing to Air Force Computer Emergency Response Team (AFCERT) advisory distribution lists and implementing relevant system patches as appropriate. The system administrator will NOT install patches on the OPUP system.

4.4.6 Incident Handling.

All sites shall develop procedures to follow when misuse or system attacks are suspected or detected. When a suspected or actual security incident occurs that compromises the OPUP security, it must be reported to the ROC immediately. Misuse of an OPUP is illegal and protected by federal and local laws.

4.4.6.1 Incident Definition. An incident may be an event of unauthorized entry, or attempted entry, to the system or network. This can include browsing; viruses; disruption or denial of service; altered or destroyed input, processing, storage, or output of information.

4.4.6.2 Response. The system administrator or security staff should immediately:

- Identify the account under which misuse or an attack has been perpetrated.
- Identify the damage done or component/information compromised.
- Document the occurrence and save the evidence defining the misuse or attack.
- Follow local procedures for reporting system misuse.
- If the incident involves vulnerabilities with the system or network, report the incident to the ROC immediately.

4.4.7 Physical Resource Protection.

Physical resource protection refers to the procedures and functions that enforce system security procedures and practices. Physical resource protection is the responsibility of all personnel who enter the facility, physically or logically. Therefore, everyone, particularly system users, should be aware of what constitutes normal operations and what constitutes misuse of system resources or suspicious or abnormal operating conditions.

4.4.7.1 UPS Protection. A UPS will be used for all designated hardware per an ICD associated with the Small OPUP Equipment Group UD86 authorized by the ROC Configuration Branch (CM). The equipment depicted by this ICD must be on an UPS in order to allow for uninterrupted operations for a limited time period after a power failure. Mission critical power shall have a conditioning/surge protection device connected to its power sources.

4.4.8 Maintenance Remote Access.

Maintenance and diagnostic privileges are supported through dial-in modem communications and permit access only to those services and data required by the remote users to perform their functions. Security requirements (e.g., I&A, DAC, etc.) of the system also apply to systems allowed remote access. Dial-in hardware and software will disconnect sessions after fifteen (15) minutes of inactivity. The system administrator should control and regulate the amount of users permitted to access the system through dial-in access. Local and remote modem telephone numbers and IP addresses must be protected from publication and should be treated as sensitive information. Personally owned computers shall not be used for maintenance or be allowed to perform diagnostic procedures on the system in a remote fashion.

CHAPTER 5
OPUP SYSTEM ADMINISTRATION

Section 5.1. INTRODUCTION

5.1.1 General.

This chapter provides the procedures that may be required to support minimum system administration duties associated with the OPUP Server Operating Software (OS) and associated Operational Applications. These procedures at a minimum include, system-wide power on/off functions, starting, stopping, and restarting OPUP software. Other administrative procedures include; changing/updating OPUP adaptation data, adding/removing account assignments, password and security management, archive procedures, adding a printer, etc.

The procedures presented in this chapter may also be used in conjunction with the fault isolation guidance provided in Chapter 6, Maintenance. Abnormal procedures will be presented as applicable. However, specific description of each administrative GUI is found in Chapter 3, Software Description, and all troubleshooting and fault isolation guidance must immediately be referred to the appropriate section/paragraph located in Chapter 6.

5.1.2 Chapter Organization.

This chapter is organized into two sections as follows:

- Section 5.1 INTRODUCTION - Provides a brief description of the information found in Chapter 5.
- Section 5.2 OPUP SYSTEM ADMINISTRATION - Provides step-by-step OPUP administrative procedures which include, system-wide power on/off procedures, starting, stopping, and restarting OPUP software. Other administrative procedures include, changing/updating OPUP adaptation data, adding/removing account assignments, password and security management, archive procedures, adding a printer, etc.

Section 5.2. OPUP SYSTEM ADMINISTRATION

5.2.1 Introduction.

NOTES

OPUP operators will be identified as **operators** and personnel given OPUP system administration/maintenance duties will be identified as **system administrators** from herein throughout this chapter.

The Operational Applications Suite (EPSS, PDGUI, Status & Control, Archive PDGUI, and Archive Status Log GUIs) involve those applications processed on the OPUP OS in which Operators are given access to in order to display WSR-88D product and message data. Operators access the Operational Applications through the use of an individual UserID/Password that is granted/set-up by system administrator via the `OPUP Manager Main Menu‹OPUP Users Menu`.

The OPUP Software Group incorporates a Manager GUI called the `OPUP Manager Main Menu`. This menu has been developed to provide each site the ability to perform rapid administrative functions associated with normal OPUP administrative duties. These duties include stop/start/restart of the OPUP OS, add/remove users, archive/back-up configurations, add peripherals, monitor system security and personnel access to files/functions, etc. All administrative functions and procedures will be performed using the `OPUP Manager Main Menu`. The specific guidelines used to mitigate trouble faults must be referred to Chapter 6, Maintenance.

The following paragraphs provide the information and procedures necessary to accomplish the minimum required OPUP OS administrative tasks.

5.2.2 OPUP Hardware Power On/Off Procedures.

Prerequisites: An understanding of the OPUP hardware layout, controls, and indicators provided in Chapter 2, Hardware Description, and the functional use of the OPUP Manager Main Menu, outlined in Section 3.3, of Chapter 3, Software Description.

The following paragraphs outline the procedures used to energize/de-energize the assembly and sub-assemblies associated with the Small OPUP Equipment Group UD86.

5.2.2.1 Power On Procedure. The following procedure assumes that all OPUP equipment is currently in the powered Off position. Disregard these steps if the OPUP is currently powered in the On position.

NOTE

The exact location of each equipment power button, toggle, switch, and rocker switch can be found in Chapter 2, OPUP Hardware, Section 2.3,

Control and Indicators. Specific power and communication cable connections can be found in paragraph 2.2.3.2 and Figure 2-3 through Figure 2-7.

1. Locate and place the following equipment in the power On (1) position, using the following order (wait for each individual equipment item to fully energize before going on to the next one):

   a. Non-isolated Systems.

      UPS UD86A10

      Communication Router UD86A8

      External Dedicated Modem UD86A6

      Archive IV Device UD86A7

      Monitor UD86A1

   b. Isolated Systems.

      UPS UD86A10

      Communication Router UD86A8

      Switch UD86A5

      External Dedicated Modem UD86A6

      External Dedicated Modem UD86A13*

      Archive IV Device UD86A7

      Video Splitter UD86A9 *

      Monitor UD86A1

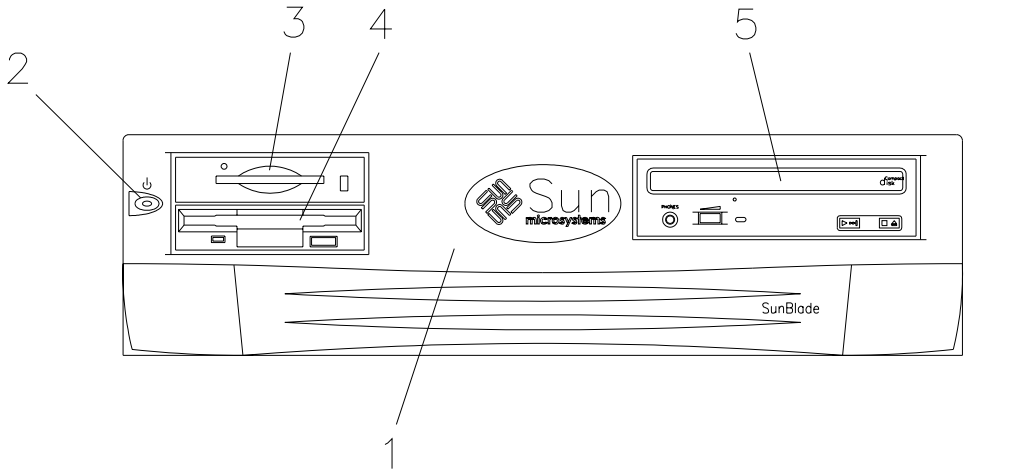
      Monitor UD86A11*

      Printer UD86A12

      * Selected Navy/MC sites only.

NOTE

The switch and video splitter do not have a power switch. These systems are powered by a separate AC-to-DC power converter supply. Ensure that the power cord is securely connected and that the unit indicates that power is being supplied before continuing to the next step.



NX2473

Figure 5-1. Small OPUP Server Front Panel Illustration

2. At the Server UD86A2 front panel, locate the power button (located near the left center of the front panel (Figure 5-1, index 2). Depress the power button until a beep signal is sounded. The OPUP server will then initiate an internal Power-On-Self-Test (POST) procedure (which should take approximately 30 seconds to complete). While the POST procedure is running, information will be displayed on the Monitor UD86A1. When the POST and software start-up sequence is finished, a CDE Login screen will be displayed.

5.2.2.2 Power Off Procedure. Prerequisite: The `OPUP Manager Main Menu` must be displayed on the primary Monitor UD86A1. (Refer to paragraph 5.2.3.3 for screen activation/recovery procedures, if the Screen or Lock Timeout function has been activated.) Disregard these steps if all of the OPUP equipment is in the Off position.

1. At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button. The `OPUP Server Control Menu` window will be displayed.

2. At the `OPUP Server Control Menu`, click on the **Shutdown Server** button. This will display the window illustrated in Figure 5-2.

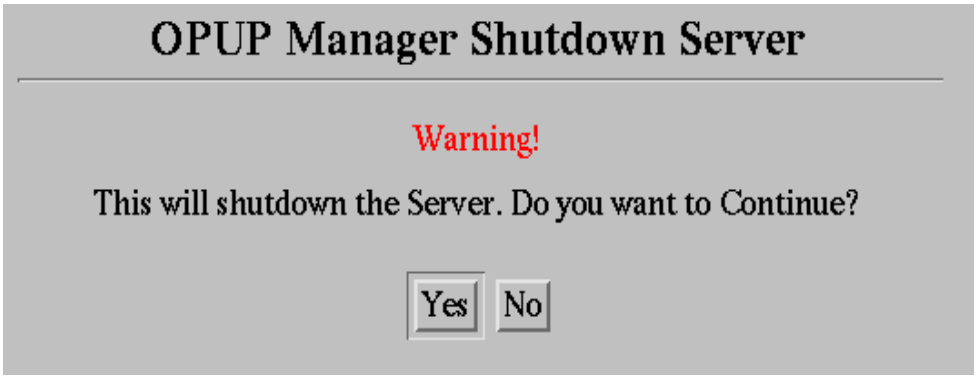


Figure 5-2. OPUP Manager Shutdown Server Warning Window

NOTE

If you do not wish to shutdown the OPUP Server OS, click on the **No** button. Selecting the **No** button will cancel the shutdown server process and re-display the `OPUP Server Control Menu`.

3. At the `OPUP Manager Shutdown Server` window, click on the **Yes** button. The OPUP Server OS will perform a full software shutdown sequence of all operations in an orderly and safe manner. When the OPUP Server OS is finished with its portion of the software shutdown sequence, the OPUP Server OS will send a signal to the OPUP server's internal firmware and perform a complete hardware shutdown procedure which will place the OPUP server in the Off position.

5.2.3 Login Procedures (CDE Front Panel, Operational Applications, and Screen Activation).

The following paragraphs provide the procedures required to login and display the OPUP Manager GUI CDE Front Panel, Operational Applications Front Panel, and/or re-activate (if necessary) the terminal and/or display lockout features.

5.2.3.1 OPUP Manager GUI Login Procedure. Prerequisites: All equipment associated with the Small OPUP Equipment Group UD86 is in the powered On (1) position. The OPUP Manager GUI is currently not being displayed. (Disregard these steps if the OPUP Manager GUI is already displayed).

1. Locate the Monitor UD86A1, Keyboard UD86A3, and Mouse UD86A4. (Refer to paragraph 5.2.3.3 for screen recovery procedures if the terminal/display lock-out function has been activated.)

NOTE

If the Operational Applications Front Panel is displayed, exit out by clicking on the **EXIT** icon at the bottom center of the Operational Applications Front Panel then the **OK** button in the `Logout Confirmation` window. The CDE Login screen will be displayed.

2. At the CDE Login screen, in the `Please enter your user name` edit box, enter:

   opupmgr<Return>.

3. At the CDE Login screen, in the `Please enter your password` edit box, enter:

   opupmgr_password **<Return>**.

   The CDE login function will then initiate a login sequence. When the CDE login function is finished, a Netscape HTML web page interface GUI will automatically be displayed. If the Netscape HTML web page interface GUI does not automatically display, click on the OPUP Manager GUI (Netscape "**World**") icon located near the left of the CDE Front Panel. (Refer to Figure 3-1 and Table 3-2 for further information concerning the location and description of the OPUP Manager GUI.)

4. At the Netscape HTML web page window, click **anywhere on the gray background**. A `Netscape: Password` login window will be displayed.

5. In the `Netscape: Password` window, in the `UserID:` edit box, enter:

   opupmgr<Return>.

6. In the `Netscape: Password` window, in the `Password:` edit box, enter:

   *opupmgr_password***<Return>**.

   Once the password is entered and the **<Return>** key is pressed, the Netscape login function will display the `OPUP Manager Main Menu`.

5.2.3.2 Operational Applications Front Panel Login Procedure. Prerequisites: The OPUP Operational Applications Suite is currently not being displayed. (Disregard these steps if the OPUP Operational Applications Front Panel is currently being displayed).

1. Locate the Monitor UD86A1, Keyboard UD86A3, and Mouse UD86A4. (Refer to paragraph 5.2.3.3 for screen recovery procedures if the terminal/display lock-out feature has been activated.)

NOTE

If the `OPUP Manager Main Menu` is displayed, exit out by clicking on the **EXIT** icon at the bottom center of the CDE Front Panel then the **OK** button in the `Logout Confirmation` window. The CDE Login screen will be displayed.

2. At the CDE Login screen, in the `Please enter your user name` edit box, enter:

   *user_name***<Return>**

3. At the CDE Login screen, in the `Please enter your password` edit box, enter:

   *user_password***<Return>**

   Once the password is entered and the **<Return>** key is pressed, the CDE Login function will display the OPUP Operational Applications Front Panel.

NOTE

If the *user name* entered in Step 2 has logged into the Operational Applications Front Panel before, the Operational Applications display attribute functionality will attempt to re-display the user name's display attributes/ settings used during the last login session.

5.2.3.3 Screen Saver/Terminal Lockout Activation and Recovery. Prerequisite: Notify the current user (either the operator and/or system administrator), if required, that this procedure is to be performed. The current User ID password may be required in order to successfully accomplish this procedure.

NOTE

The screen lockout function will only temporarily remove the current image after a minimum amount of interaction from the user. The terminal lockout function will initiate a `Solaris Password` window when the time threshold for this function has been met. The OPUP Server OS Screen Configuration function will initiate a screen lockout function first, then a terminal lockout function second. The user can manually activate the terminal lockout function by clicking on the **padlock** icon located on the CDE Front Panel or Operational Applications Front Panel.

1. To manually activate the terminal lockout feature, at the Monitor UD86A1, click on the **padlock** icon located on the CDE Front Panel or the Operational Applications Front Panel.

2. To recover from the screen saver/terminal lockout feature, move the mouse or press any key on the keyboard. If an image is immediately displayed, stop here. If a `Solaris Password` window is displayed, go to the next step.

3. At the `Solaris Password` window that displays the message, `Display locked by user` *`user_name`*`. Enter password to unlock.,` enter the password of the user or the opupmgr and press the **<RETURN>** key. The last displayed image will appear.

5.2.3.4 System Time Check Procedure. Prerequisites: The CDE Front Panel must be displayed. The `OPUP Manager Main Menu` should be minimized to provide easier access to the CDE Front Panel. (If necessary, refer to paragraph 5.2.3.1 for the procedure to log into the OPUP Manager GUI and then minimize the display).

1. At the CDE Front Panel, click on the **Up arrow** located just above the cpu/disk icon. A `Hosts` pop-up menu will then be displayed.

2. At the `Hosts` pop-up menu, click on the **This Host** selection. A Terminal window will be displayed with an `/export/home/opupmgr>` prompt

3. Using the keyboard, type the following at the `/export/home/opupmgr>` prompt: **su<Return>**.

   Feedback: A `Password:` prompt will be displayed.

4. At the `Password:` prompt, enter: *`root_password`***<Return>**.

   Feedback: A # prompt will be displayed.

5. At the # prompt, type: **date<Return>**.

   Feedback: The current date prompt which displays the day, month, date, time (hh:mm:ss), GMT, year will be displayed (i.e. Tue Jul 22 14:33:21 GMT 2003). When the date function is finished, a # prompt will be displayed.

6. At the # prompt, verify that the time displayed is correct by using an accurate time source.

NOTE

A good source to consult for an accurate time display is WWV and can be obtained at 303-499-7111.

If the day and year are correct and/or the time is within one minute of the correct time, stop here. This procedure is complete. Otherwise, go to the next step.

7. At the # prompt, using an accurate time source, enter: **date mmddHHMM[cc][yy][.ss]** for a time parameter that will occur in the near future (Do Not press the **<Return>** key, yet).

NOTE

In the above step, if the desired date is Tuesday, 22 July 2003, 14:55:00 GMT, the minimum date parameter that must be entered is **date 07221455.00**. The date function will update the day, month, hour, and minutes. All selections/entries made after the **minutes** parameter ("MM") are optional. The following date parameter breakdown applies:

mm= Month

dd= Day

HH= GMT Hour

MM=Minute

Optional entries (normally not entered):

cc= Century minus 1

yy= Year

ss= Seconds

8. Using the chosen time source, press the **<Return>** key exactly at the same moment for the time parameters that were entered in Step 7.

   Feedback: The date update function will display an output of the information entered in Step 7, followed by a # prompt.

9. At the # prompt type: **date<Return>**

   Feedback: The data parameter should display the correct time.

10. At the # prompt, type: **exit<Return>**

    Feedback: An `/export/home/opupmgr>` prompt will be displayed.

11. At the `/export/home/opupmgr>` prompt, type: **exit<Return>**

    Feedback: The Terminal window will close.

5.2.4 OPUP Software Menu Functions.

The following paragraphs outline the steps and procedures required to Start/Stop/Restart the OPUP Server OS, Edit OPUP Adaptation Data (Update Dial Communications), and OPUP Communications Configuration (Update Dedicated Communications). The procedures to view the OPUP Software Version and determine Available Products in Database (Oldest/Newest) are covered sufficiently in Chapter 3, beginning with paragraph 3.3.3.4.

Prerequisite: The `OPUP Software Menu` must be displayed as shown in Figure 5-3.

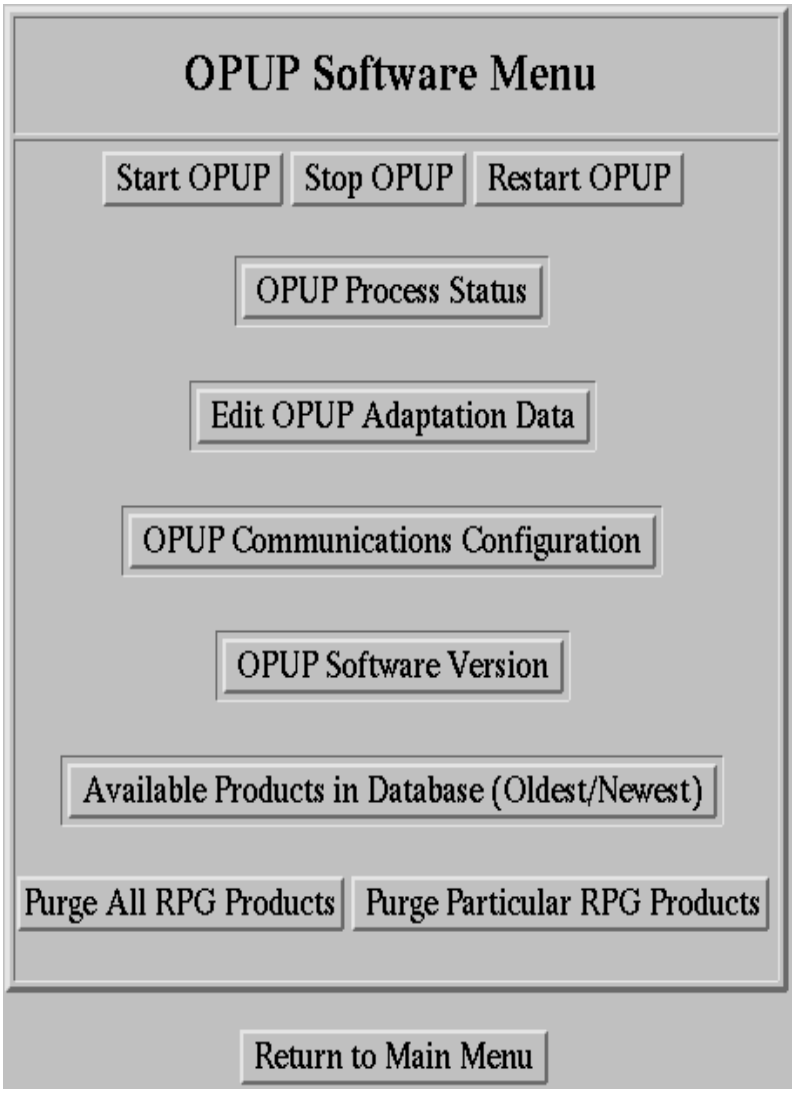


Figure 5-3. OPUP Software Menu

5.2.4.1 Start OPUP Software. Prerequisite: The `OPUP Software Menu` is displayed and the OPUP Server OS processes have not been previously started. (Disregard this procedure if all of the OPUP Server OS processes are running and operating properly.)

1. At the `OPUP Software Menu`, click on the **Start OPUP** button. An `OPUP Manager Start OPUP` window will be displayed. This window will also display the message: `Warning! This will start the OPUP Software. Do you want to Continue?`

NOTES

If you ***do not*** wish to start the OPUP background processes, click on the **No** button. The **No** selection will cancel the OPUP startup script and return to the `OPUP Software Menu` window.

Once the OPUP Manager Start OPUP function begins to load and start the OPUP server software, the OPUP Manager Start OPUP function will display the message: `Please wait 1 to 2 minutes for the Server Processes to start`.

2. At the `OPUP Manager Start OPUP` window, click on the **Yes** button.

3. At the `OPUP Manager Start OPUP` window, click on the **Return to OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

4. At the `OPUP Software Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

To check the state/status of the OPUP processes, refer to paragraph 5.2.4.4.

5.2.4.2 Stop OPUP Software. Prerequisite: The `OPUP Software Menu` is displayed and the OPUP Server OS processes have been previously started. (Disregard this procedure if the OPUP Server OS processes have already been placed in the stop position.)

1. At the `OPUP Software Menu`, click on the **Stop OPUP** button. An `OPUP Manager Stop OPUP` window will be displayed. This window will also display the message: `Warning! This will stop the OPUP Software. Do you want to Continue?`

NOTE

If you ***do not*** wish to stop the OPUP background processes, click the **No** button. The **No** selection will cancel the OPUP Manager Stop script and

return to the `OPUP Software Menu`. Also, if the **No** button is not clicked within 1 to 2 minutes, the OPUP Manager Stop OPUP function will automatically stop all OPUP Server OS background processes and display the message: `All OPUP Server Software has been Stopped`.

2. At the `OPUP Manager Stop OPUP` window, click on the **Yes** button. The OPUP Manager Stop OPUP function will stop all associated background processes and remove them from memory. When the OPUP Manager Stop OPUP function is finished, the OPUP Manager Stop OPUP function will display the message: `All OPUP Server Software has been Stopped`.

3. At the `OPUP Manager Stop OPUP` window, click on the **Return to OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

4. At the `OPUP Software Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

To check the state/status of OPUP processes, refer to paragraph 5.2.4.4.

5.2.4.3 Restart OPUP Software. Prerequisite: The `OPUP Software Menu` is displayed and the OPUP Server OS processes have been previously started. (Disregard this procedure if all of the OPUP Server OS processes are currently running and operating properly.)

1. At the `OPUP Software Menu`, click on the **Restart OPUP** button. An `OPUP Manager ReStart OPUP` window will be displayed. This window will also display the message: `Warning! This will restart the OPUP Software. Do you want to Continue?`

NOTE

If you ***do not*** wish to restart the OPUP background processes, click on the **No** button. The **No** selection will cancel the OPUP restart script and return to the `OPUP Software Menu` window.

2. At the `OPUP Manager Restart OPUP` window, click the **Yes** button. This window will display the message: `All OPUP Server Software has been Restarted. Please wait 1 to 2 minutes for the Server Processes to start.`

The OPUP Restart script will first kill the active OPUP processes and then reload and restart them in the correct order. Once the OPUP restart process is complete, the following message will be displayed: `All OPUP Server Software has been ReStarted.` (You may review the status entries for errors, if you wish.)

3. At the `OPUP Manager Restart OPUP` window, click on the **Return to OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

4. At the `OPUP Software Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

To check the state/status of the OPUP processes, refer to paragraph 5.2.4.4.

5.2.4.4 View OPUP Software Process Status. Prerequisite: Review the information presented in Chapter 3, Software Description, Section 3.4, OS Background Process Description, for further information concerning the data displayed within the `OPUP Software Process Status` window. The `OPUP Software Menu` must be displayed.

1. At the `OPUP Software Menu`, click on the **OPUP Process Status** button. An `OPUP Process Status` window will be displayed as shown in Figure 5-4.

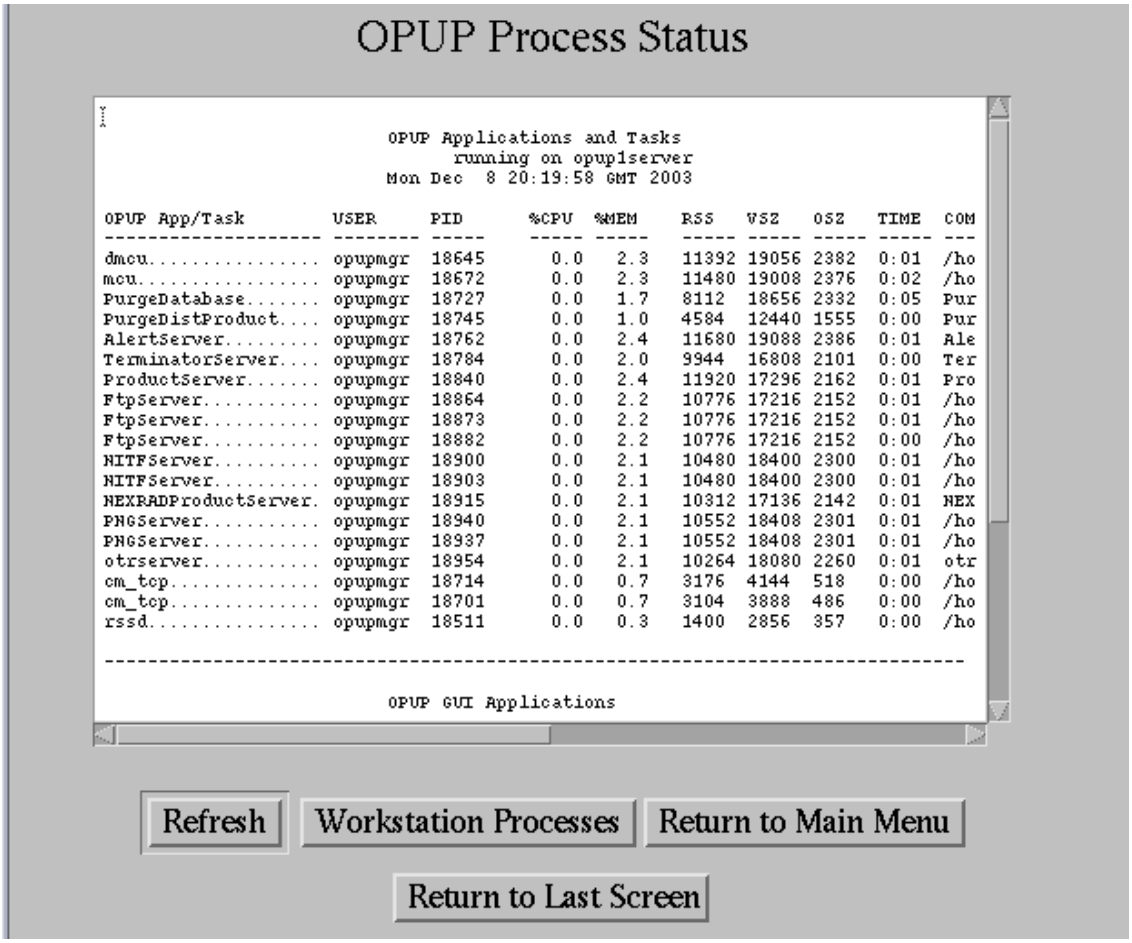


Figure 5-4. OPUP Process Status Window

NOTES

The OPUP Process Status function does not automatically re-display information to this screen once it is initially displayed. If the OPUP Process Status function is being used in conjunction with software start, stop, and restart functions, users will need to use the **Refresh** button near the bottom left of the display, Figure 5-4, to re-display updated process status information. Also, users can either exit the `OPUP Process Status` window and then re-enter it or click the Netscape HTML web page Reload (Refresh) button to obtain updated information.

The `OPUP Process Status` window will only display the processes associated with specific OPUP Server OS background functions (mcu, dmcu, cm_tcp, etc.) which have been specifically configured in order to be displayed in this window. The OPUP Server OS will attempt to indicate which processes listed are currently running or not (which may have failed or become unresponsive) by listing each process with a series of dots listed to the right of it, followed by a blank space. The `OPUP Process Status` window is not intended to indicate the actual status of received/sent messages generated by another operator(s) or pre-defined processes (i.e. RPS lists, OTR's, etc.) Refer to the **System Status** tab located within the Status and Control GUI for system messages and associated code feedback indicators. If any of the processes listed above should fail, attempt to restart the OPUP software. If a restart procedure does not recover any or all of the OPUP Server OS processes listed within the `OPUP Process Status` window, attempt to stop and then start the OPUP OS to attempt to recover the processes. If the processes do not start up in a reasonable amount of time, consult the appropriate troubleshooting procedure provided in Chapter 6, Maintenance.

The Workstation Processes functionality is not used with the Small OPUP configuration.

2. At the `OPUP Process Status` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu` or the **Return to Last Screen** button to return to the `OPUP Software Menu`.

5.2.4.5 Edit OPUP Adaptation Data (Dial Communications). Prerequisites: This procedure assumes that any changes made to the site's dial configuration has been coordinated with the ROC Hotline NBComms Database Manager. The `OPUP Software Menu` must be displayed.

NOTES

The procedure outlined to update/change dial communication adaptation information allows each OPUP site to edit existing or add additional Dial access RPGs. Dial access information **cannot** be arbitrarily changed with-

out prior coordination between the respective DOC and the DoD agencies. This is accomplished by gaining authorization from either/or the AFW/ Navy communication circuit coordinator (as appropriate) and/or the ROC Hotline NBComms Database Manager. The ROC Hotline will notify each individual site by ROC Hotline NBComm Facsimile when routine changes are to be made.

For this procedure, an "RPG of interest" is the RPG that is chosen to be edited or added to the site's dial access RPG list.

1. Ensure the latest NBComms dial communication information is currently available. Contact the ROC Hotline and obtain latest dial phones numbers and port information, if necessary.

2. At the `OPUP Software Menu`, click on the **Edit OPUP Adaptation Data** button. An `Edit RPG Information from list for Dial Radars for RPG` *`of interest`* window will be displayed as shown in Figure 5-5.

3. At the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window, move the mouse cursor over the *RPG of interest* located within the `Dial Configuration for Dial Radars` edit box and click on the *RPG of interest* to highlight it. The *RPG of interest* should now be selected.

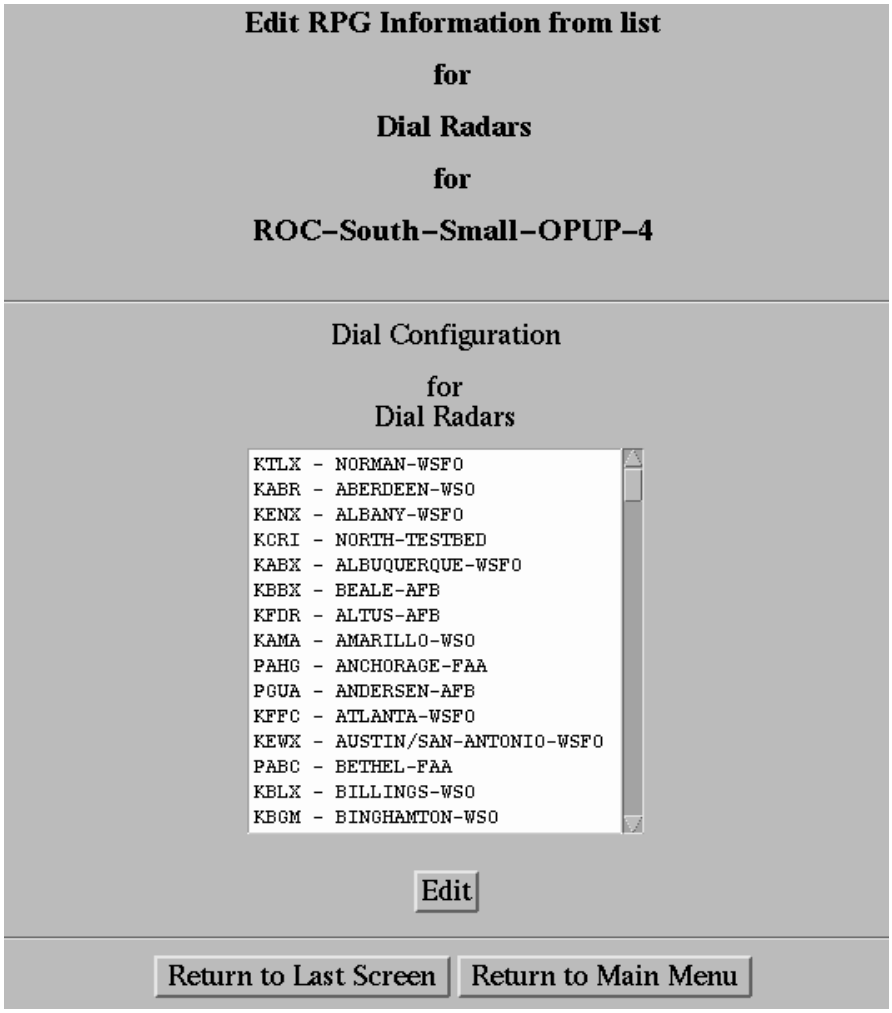


Figure 5-5. Edit RPG Information for Dial Radars for *RPG of Interest* Window

4. At the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window, click on the **Edit** button. An `OPUP Manager Edit RPG Information For` *`RPG of interest`* window will display as shown in Figure 5-6.

NOTE

The `OPUP Manager Edit RPG Information For` *`RPG of interest`* window, Figure 5-6, allows the system administrator to edit dial configuration information for a radar(s) located within the site's area of responsibility (AOR) or a radar(s) outside their AOR. The `OPUP Manager Edit RPG Information For` *`RPG of interest`* window automatically displays prior values that were entered during the last Dial RPG of interest update. Each text edit window may be updated independently of each other.

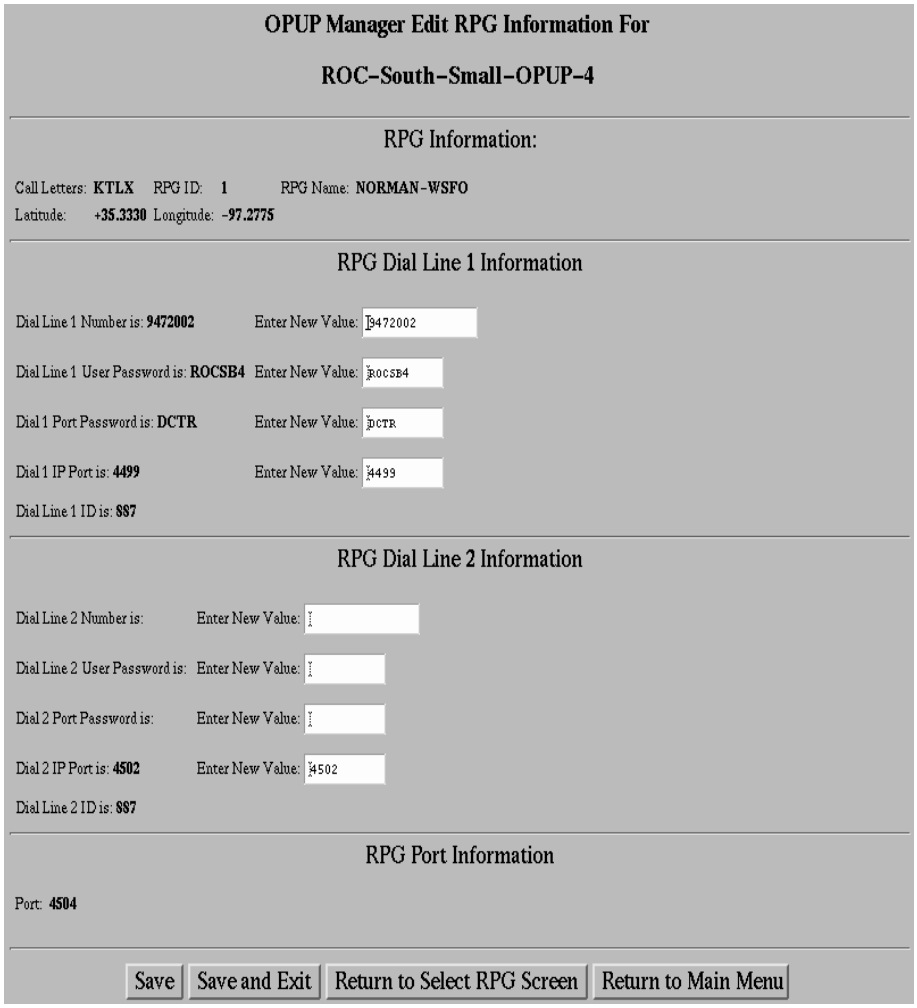


Figure 5-6. OPUP Manager Edit RPG Information For RPG of Interest Window

5. At the `OPUP Manager Edit RPG Information For` *`RPG of interest`* window, Figure 5-6, click within the first edit box (located near the top center of the window) to activate the field for text entry. When finished, use the **<Tab>** key on the keyboard to move to the next eight edit fields. Be sure to update all fields with the latest information.

6. At the `OPUP Manager Edit RPG Information For` *`RPG of interest`* window, Figure 5-6, click on the **Save** button. The `OPUP Manager Edit RPG Information` *`For RPG of interest`* window will save the information updated within each edit field. Once the information has been saved, the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window will display as shown in Figure 5-5.

7. At the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window, move the mouse cursor over the RPG of interest that was selected in Step 4, and click to highlight the Dial RPG of interest. The RPG of interest should now be selected.

8. At the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window, Figure 5-5, click on the **Edit** button. An `OPUP Manager Edit RPG Information For` *`RPG of interest`* window will display as shown in Figure 5-6. When this window is displayed, verify that all of the information entered in Step 5 is correct.

NOTE

The `OPUP Manager Edit RPG Information For` *`RPG of interest`* window also contains a **Return to Select RPG Screen** button. This function allows the user to return to the `Edit RPG Information from list for Dial Radars for` *`RPG of interest`* window, Figure 5-5, in order to provide additional Dial RPG of interest updates, if desired.

9. At the `OPUP Manager Edit RPG Information For` *`RPG of interest`* window, click on the **Save and Exit** button. The `OPUP Manager Edit RPG Information` window will once again save the information displayed. Once the information has been saved, the window exists and displays an `OPUP Manager Edit Adapt Configuration Restart OPUP` window. This window will also display the message: `Please Wait 1 to 2 minutes for the Server Processes to start`.

10. At the `OPUP Manager Edit Adapt Configuration Restart OPUP` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5.2.4.6 Display OPUP Communications Configuration (Dedicated Communications). Prerequisites: This procedure assumes that any changes made to the site's dedicated RPG configuration has been coordinated with the ROC Hotline NBComms Database Manager. The `OPUP Software Menu` must be displayed

NOTES

For this procedure an "RPG of interest" is the RPG that is chosen to be edited or added to the site's dedicated access RPG list

The information provided in this procedure allow each site to change the existing dedicated RPG(s) adaptation data or add a new specific **dedicated** RPG(s) of interest. Dedicated RPG access information **cannot** be arbitrarily changed without prior coordination between the respective DOC and the DoD agencies. This is accomplished by obtaining authorization

from either/or the AFW/Navy communication circuit coordinator (as appropriate) and/or the ROC Hotline NBComms Database Manager. The ROC Hotline will notify each site by ROC Hotline NBComm Facsimile when routine changes are to be made.

The OPUP Communication Configuration function **cannot** delete an RPG of interest once it has been added to the OPUP Communication Configuration database. Sites that are only configured for one dedicated RPG must take care to not add another dedicated RPG unless a second external dedicated modem has been installed at their site. **If a Dedicated RPG is arbritarily or accidentally added, immediately contact the ROC Hotline for recovery procedures!**

Sites that are configured for up to two dedicated RPGs will be able to change either dedicated RPG of interest, if required. The Small OPUP system can only be configured for up to two Dedicated RPGs. If more than two Dedicated RPG are selected, the Add Dedicated RPG Configuration function will display a warning message and immediately return to the last screen.

1. Ensure the latest NBComms Dedicated RPG communication information is currently available. Contact the ROC Hotline and obtain latest dedicated circuit and port numbers, if necessary.

2. At the `OPUP Software Menu`, click on the **OPUP Communications Configuration** button. An `OPUP Communications Configuration` window will display as shown in Figure 5-7.

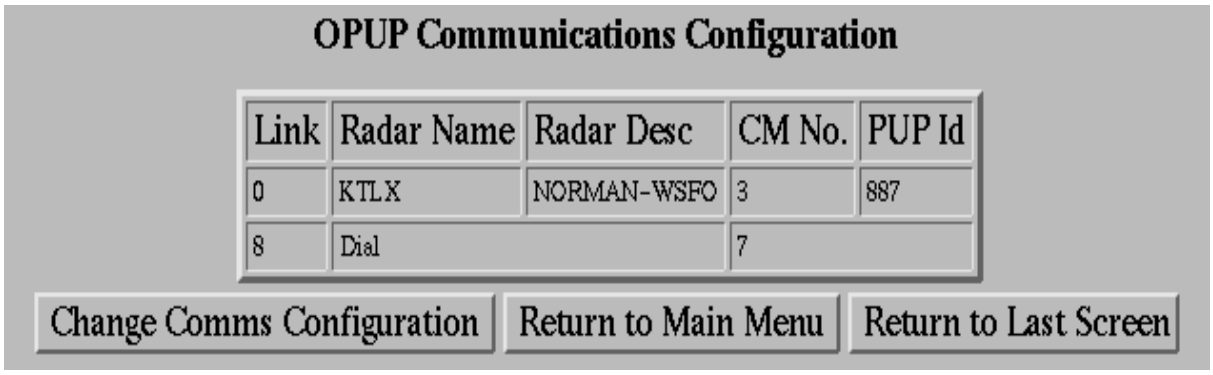


Figure 5-7. OPUP Communications Configuration Window

NOTE

The `OPUP Communications Configuration` window shown in Figure 5-7, allows each site to view and edit (if required), any or all of the

dedicated *RPG(s) of interest* located within the OPUP Server OS communication database.

3. To change adaptation data for a Dedicated *RPG of interest*, go to paragraph 5.2.4.6.1. To add a Dedicated *RPG of interest*, go to paragraph 5.2.4.6.2. To return to the `OPUP Software Menu`, click on the **Return to Last Screen** button. Otherwise, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.4.6.1 Change Existing Dedicated RPG Adaptation Data. Prerequisites: The `OPUP Communications Configuration` window must be displayed. (The procedure provided in paragraph 5.2.4.6 has been performed and the `OPUP Communications Configuration` window as shown in Figure 5-7 is currently displayed.)

1. At the `OPUP Communication Configuration` window, click on the **Change Comms Configuration** button. A `Configure OPUP Ded Comms` window will be displayed as shown in Figure 5-8. This window will also display the message: `Warning! This will Create a New OPUP Ded Comms Configuration. Do you want to Continue?`

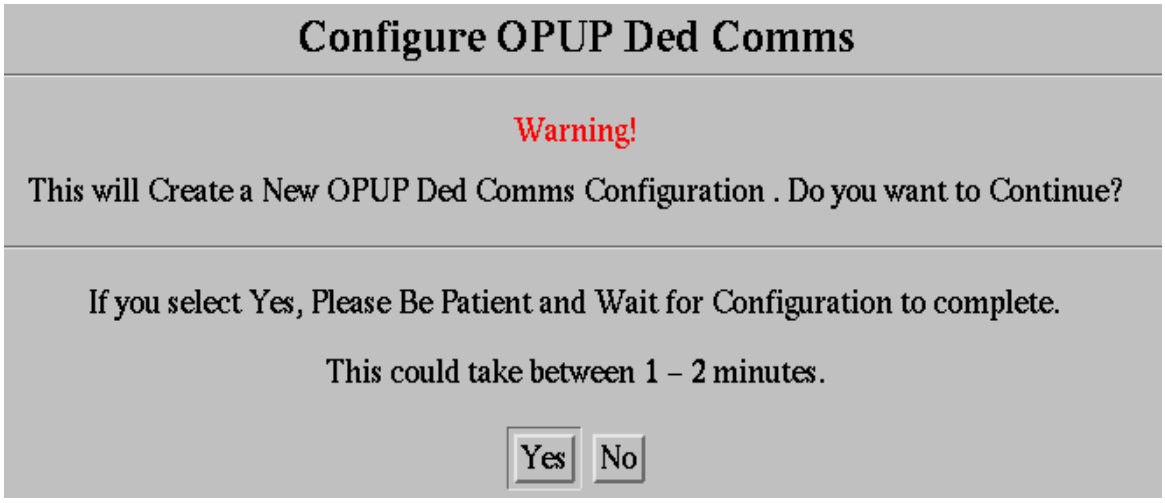


Figure 5-8. Configure OPUP Ded Comms Warning Window

NOTE

The `Configure OPUP Ded Comms` warning window is used to ensure that an actual change to dedicated communications are to be made. If the **Yes** button is selected, the Configure OPUP Ded Comms function will go to the next screen. If the **No** button is selected, the Configure OPUP Ded Comms function will automatically display the `OPUP Manager Main Menu`.

2. At the `Configure OPUP Ded Comms` window, click on the **Yes** button. An `OPUP Change Ded Communications Configuration` window will be displayed as shown in Figure 5-9.

NOTE

Except for specifically identified sites, each Small OPUP configuration is initially configured for one dedicated RPG connection. Each site must be careful to only change or add a Dedicated RPG information which has been coordinated with the NBComms Database Manager located at the ROC Hotline. Additional dedicated RPGs **cannot** arbitrarily added to the Small OPUP due to the strict coordination and resource costs required in order to provide a complete dedicated RPG connection. Changing or adding dedicated RPG information not coordinated through proper channels can cause the OPUP Server OS to become unstable or behave erratically.

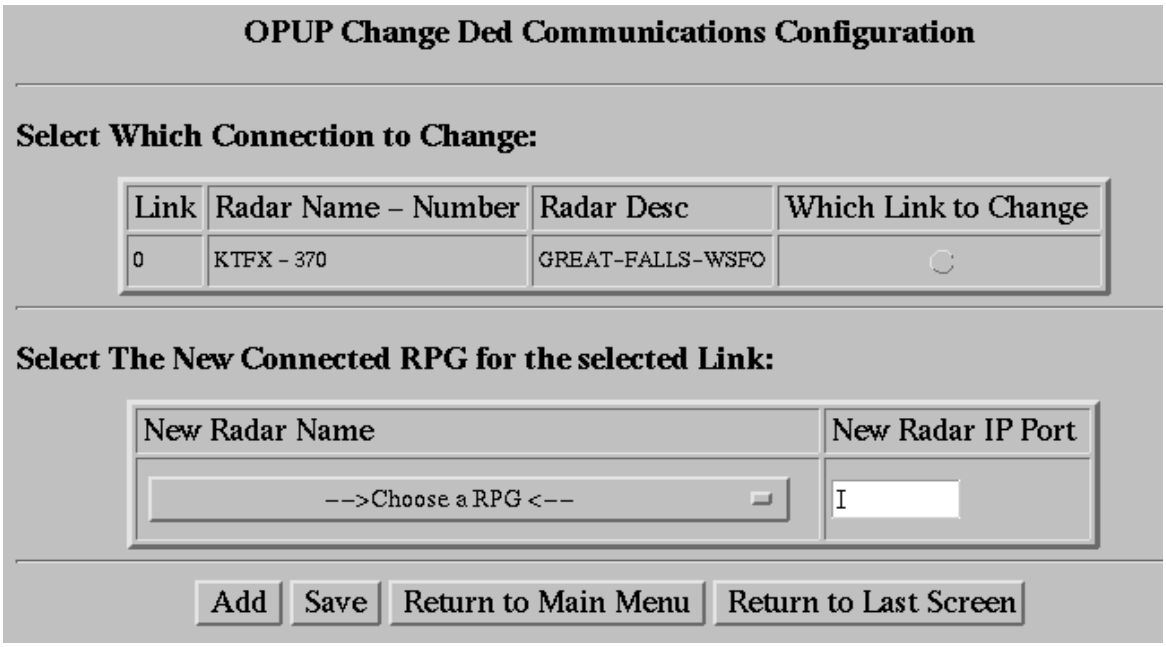


Figure 5-9. OPUP Change Ded Communications Configuration Window

3. At the `OPUP Change Ded Communications Configuration` window, click on the **Which Link to Change** radio button. The dedicated RPG of interest radio button will be highlighted within the `Which Link to Change` column.

NOTE

If there are two Dedicated RPGs displayed in this window, ensure only the Dedicated RPG of interest that is to be changed is selected.

4. At the `OPUP Change Ded Communications Configuration` window, within the `Select The New Connected RPG for the selected Link:, New Radar Name` selection box, click on the **--->Choose a RPG<----** pull-down selection bar. A `-->Choose a RPG<--` vertical pop-up window will be displayed.

5. At the `-->Choose a RPG<--` pop-up window, move the mouse cursor over an RPG of interest and click. The new *RPG of interest's* RPGID will be displayed within the title area of the `New Radar Name` selection bar.

6. At the `OPUP Change Ded Communications Configuration` window, within the `Select The New Connected RPG for the selected Link:, New Radar Name` selection bar, click within the `New Radar IP Port` edit field and enter: *New_Radar_IP _Port address*.

NOTE

Be sure that the **Add** button is **not** selected at this time! The OPUP Change Ded Communication Configuration function **cannot** delete an *RPG of interest* once it has been added to the OPUP Communication Configuration database. Sites that are only configured for one dedicated RPG must take care to **not** add another dedicated RPG unless a second external dedicated modem has been installed at their site. **If a Dedicated RPG is arbitarily or accidentally added, immediately contact the ROC Hotline for recovery procedures!**

7. At the `OPUP Change Ded Communications Configuration` window, click on the **Save** button. An `OPUP Save New Comm Configuration` window will be displayed as shown in Figure 5-10.

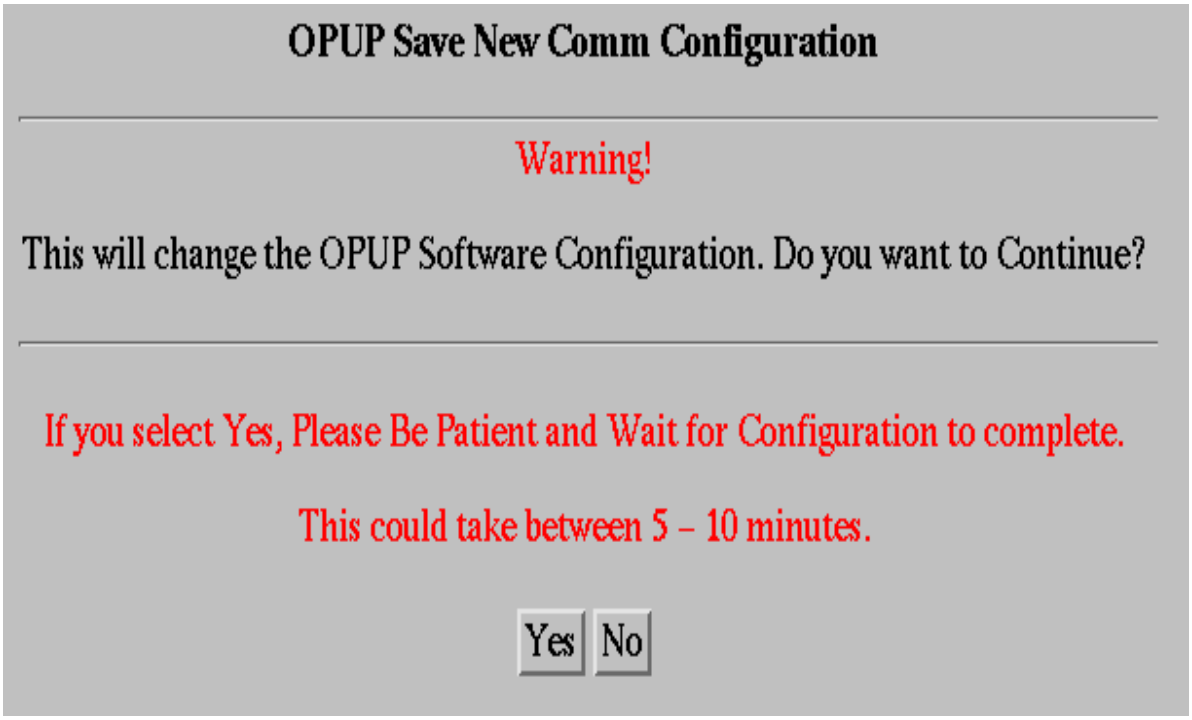


Figure 5-10. Save New Comm Configuration Window

NOTE

If you do not wish to update any information BEFORE the **Yes** button is selected, click the **No** button. The OPUP Save New Comm Configuration function will return the user to the `OPUP Manager Main Menu`.

8. At the `OPUP Save New Comm Configuration` window, click on the **Yes** button. The Save New Comm Configuration function will perform a dedicated RPG reconfiguration function which will designate the selected *RPG of interest* as the new dedicated RPG and then stop all OPUP Server OS processes as shown in Figure 5-11.

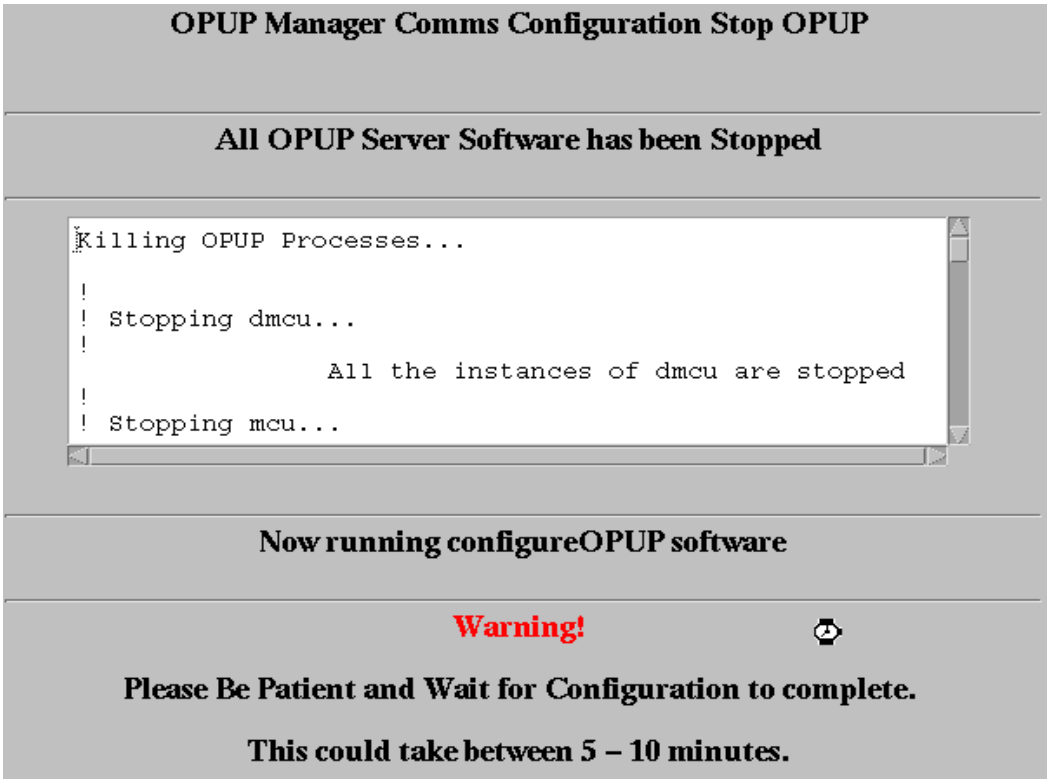


Figure 5-11. OPUP Manager Comms Configuration Stop OPUP Window

Once these processes are finished, the Save New Comm Configuration function will start all OPUP Server OS processes as shown in Figure 5-12. All of these functions will take approximately 5 to 10 minutes to perform. When the Save New Comm Configuration function is finished, the `OPUP Manager Comms Configuration Start OPUP` window, Figure 5-12, will remain displayed.

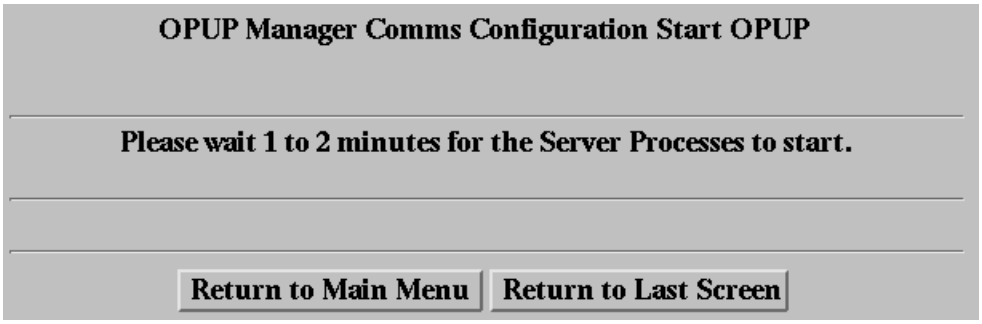


Figure 5-12. OPUP Manager Comms Configuration Start OPUP Window

9. At the `OPUP Manager Comms Configuration Start OPUP` window, click on the **Return to Last Screen** button to return to the `OPUP Change Ded Communications Configuration` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

If the **Return to Last Screen** or **Return to Main Menu** button has been clicked and an `OPUP has been Configured But` warning window as shown in Figure 5-13 is displayed, the Save Change Ded Communications Configuration procedure performed in Steps 1 through 5 have not been successful. Return to Step 1 of this procedure and attempt to save the Dedicated RPG of interest adaptation data, again. If the `OPUP has been Configured But` warning message is displayed again, consult the Communication Router UD86A8 recovery procedure provided in Section 6.6 of Chapter 6, Maintenance. The recovery procedure will restore the communication router to a normal operating position with the intended RPG of interest configured.

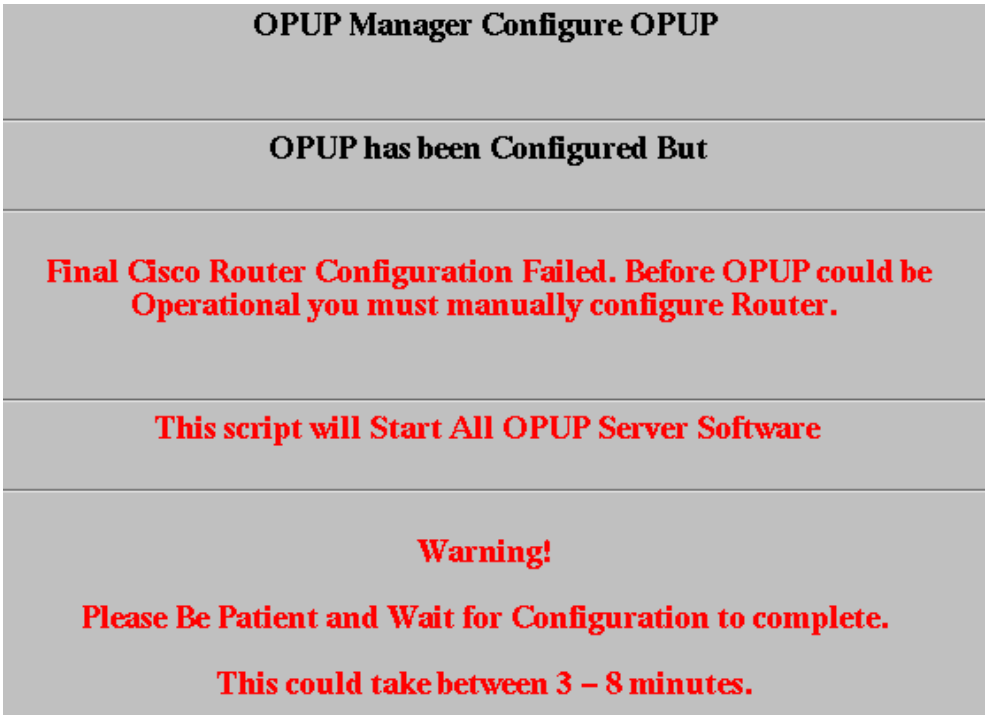


Figure 5-13. CISCO Router Failed Message Window

5.2.4.6.2 Add Dedicated RPG Adaptation Configuration Data. Prerequisites: The `OPUP Communications Configuration` window must be displayed. (The procedure provided in

paragraph 5.2.4.6 has been performed and the `OPUP Communications Configuration` window is displayed as shown in Figure 5-7.)

NOTE

The OPUP Server OS currently **cannot** delete an RPG once it has been added to the OPUP Communication Configuration database. Sites that are only configured for one dedicated RPG must take care to not add another dedicated RPG unless a second external dedicated modem has been installed at their site. **If a dedicated RPG is added by accident, immediately contact the ROC Hotline for recovery procedures!**

1. At the `OPUP Communication Configuration` window, click on the **Change Comms Configuration** button. A `Configure OPUP Ded Comms` window will be displayed as shown in Figure 5-8. This window also displays the message: `Warning! This will Create a New OPUP Ded Comms Configuration. Do you want to Continue?`

2. Click on the **Yes** button. An `OPUP Change Ded Communications Configuration` window will be displayed as shown in Figure 5-9. This window confirms that a change of a Dedicated RPG Communication connection is to be made.

3. At the `OPUP Change Ded Communications Configuration` window, click on the **Add** button. An `OPUP Add New Ded Communications Configuration` window will be displayed.

4. At the `OPUP Add New Ded Communications Configuration` window, within the `New Radar Name` selection box, click on the --->**Choose a RPG**<---- pull-down selection bar. A `-->Choose a RPG<--` vertical pop-up window will then be displayed.

5. Click on a RPG of interest. The `New Radar Name` selection bar will now have the *RPG of interest* RPGID displayed within the title area of the bar as displayed in Figure 5-14.

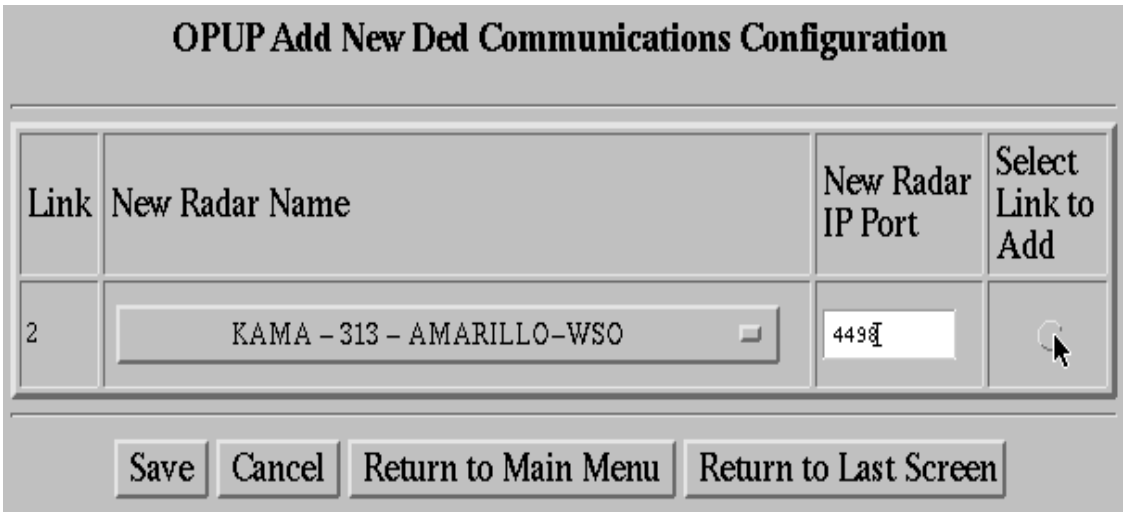


Figure 5-14. OPUP Add New Ded Communications Configuration Window

6. At the `OPUP Add New Ded Communications Configuration` window, click on the edit field of the `New Radar IP Port` and enter the *New_Radar_IP_Port address*.

7. At the `OPUP Add New Ded Communications Configuration` window, click on the **Select Link to Add** radio button.

8. At the `OPUP Add New Ded Communications Configuration` window, click on the **Save** button. An `OPUP Save New Comm Configuration` window will be displayed as shown in Figure 5-10.

NOTE

If you do not wish to update any information BEFORE the **Yes** button is selected, immediately click the **No** button. The OPUP Save New Comm Configuration function will return the user to the `OPUP Manager Main Menu`.

9. At the `OPUP Save New Comm Configuration` window, click on the **Yes** button. The Save New Comm Configuration function will perform an add dedicated RPG reconfiguration process to designate the selected RPG of interest as a new dedicated RPG, stop all OPUP Server OS processes as shown in Figure 5-11, and then start all OPUP Server OS processes as shown in Figure 5-12. This will take approximately 5 to 10 minutes to perform these functions. When the Save New Comm Configuration function is finished, the `OPUP Manager Comms Configuration Start OPUP` window, Figure 5-12, will remain displayed.

10. At the `Save Ded Communications Configuration` window, click on the **Return to Last Screen** button to return to the `OPUP Change Ded Communications Configuration` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

If the **Return to Last Screen** or **Return to Main Menu** button has been clicked and an `OPUP has been Configured But` warning window as shown in Figure 5-13 is displayed, the Save Change Ded Communications Configuration procedure performed in Steps 1 through 5 have not been successful. Return to Step 1 of this procedure and attempt to save the Dedicated RPG of interest adaptation data, again. If the `OPUP has been Configured But` warning message is displayed again, consult the Communication Router UD86A8 recovery procedure provided in Chapter 6, Maintenance. The recovery procedure will restore the communication router to a normal operating position with the intended RPG of interest configured.

5.2.4.7 OPUP Software Version. Prerequisite: The `OPUP Software Menu` must be displayed as shown in Figure 5-3.

1. At the `OPUP Software Menu`, click on the **OPUP Software Version** button. An `OPUP Software Release` window will be displayed.

NOTE

The `OPUP Software Release` window displays the latest OPUP Software Release information. This information will assist each site in determining the latest OS release, version, and the date the OS was last updated.

2. At the `OPUP Software Release` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5.2.4.8 Available Products in Database (Oldest/Newest). Prerequisite: The `OPUP Software Menu` must be displayed as shown in Figure 5-3.

1. At the `OPUP Software Menu`, click on the **Available Products in Database (Oldest/Newest)** button. An `Available Products in Database (Oldest/Newest)` window will be displayed.

NOTE

The `Available Products in Database (Oldest/Newest)` window displays the availability of WSR-88D products and message data received from each dedicated or dial RPG of interest.

2. At the `Available Products in Database (Oldest/Newest)` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.4.9 Purge All/Particular RPG Products Procedure. The Purge All or Purge Particular RPG Products function provides each site the ability to select WSR-88D products and message data from one *RPG of interest* or several *RPGs of interest*. Only an RPG or RPGs that have WSR-88D product and message data associated with them will be displayed during the use of either of these functions. Once an *RPG of interest* is selected and the **Yes** button is clicked, the products and message data associated with the selected *RPG of interest* will be removed from the OPUP Server OS database directory. The procedures provided in paragraph 5.2.4.9.1 and paragraph 5.2.4.9.2 outline the steps to either select and remove products and message data from all RPGs or one specific RPG's found within the OPUP Server OS database.

NOTE

The Purge All/Purge Particular RPG Product functions permanently delete products and message data from the OPUP OS database directory. Unless there is no desire to backup and restore the selected data, you must ensure that all products that are designed to be archived for later display and analysis are archived before beginning with Step 1 of either procedure. There will be no way to restore any products that are deleted before they are archived.

5.2.4.9.1 Purge All RPG Products. Prerequisite: The `OPUP Software Menu` must be displayed as shown in Figure 5-3.

1. At the `OPUP Software Menu`, click on the **Purge All RPG Products** button. A `Purge RPG Product Database Warning` window will be displayed.

2. At the `Purge RPG Product Database Warning` window, click on the **Yes** button. The Purge All RPG Products function will then proceed to delete all products from the OPUP Server OS database. When finished, the program will display an `Available Products in Database` window.

NOTE

The `Available Products in Database` window does not automatically re-display information on this screen once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the win-

dow to re-display the status of available products in the OPUP Server OS database. If products are listed in the `Available Products in Database` window after the Refresh button is selected, and purging products from the OPUP Server OS database is desired once again, click on the **Return to Last Screen** button and perform Step 2.

3. At the `Available Products in Database` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.4.9.2 Purge Particular RPG Products. Prerequisite: The `OPUP Software Menu` must be displayed as shown in Figure 5-3.

1. At the `OPUP Software Menu`, click on the **Purge Particular RPG Products** button. A `Please Select RPG to Purge From Available Products in Database` window will be displayed.

2. At the `Please Select RPG to Purge From Available Products in Database` window, within the `Select RPG to Purge` area, click on the *RPG of interest* for which products are to be purged.

3. At the `Please Select RPG to Purge From Available Products in Database` window, click on the **Next** button. A `Purge RPG Product Database` window will be displayed.

4. At the `Purge RPG Product Database` window, click on the **Yes** button. The Purge Particular RPG Products function will then proceed to delete the products from the selected *RPG of interest*. When finished, the program will display an `Available Products in Database` window.

NOTE

The `Available Products in Database` window does not automatically re-display information on this screen once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the window to re-display the status of available products in the OPUP Server OS database. If products are listed in the `Available Products in Database` window after the **Refresh** button is selected, and purging products from the OPUP Server OS database is desired once again, click on the **Return to Last Screen** button and perform Step 2.

5. At the `Available Products in Database` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.5 OPUP Users Menu Functions.

The OPUP Users Menu function provides each site the ability to add, delete, view OPUP users, or change user passwords.

1. At the `OPUP Manager Main Menu`, click on the **OPUP Users Menu** button. An `OPUP Users Menu` will be displayed as shown in Figure 5-15.

2. At the `OPUP Users Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

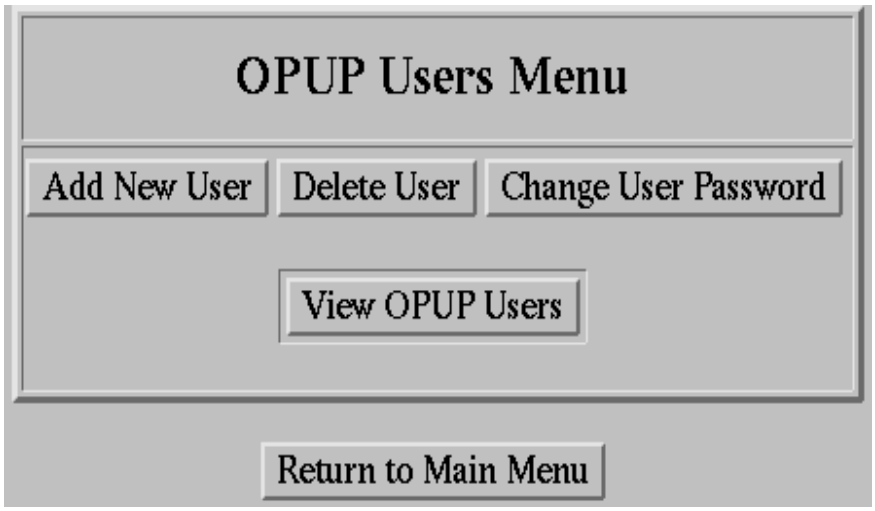


Figure 5-15. OPUP Users Menu

5.2.5.1 Add New User. Prerequisite: The `OPUP Users Menu` must be displayed as shown in Figure 5-15.

1. At the `OPUP Users Menu`, click on the **Add New User** button. An `OPUP Manager Add New User` window will be displayed.

NOTE

Each operator must be assigned a unique user name in order to issue a password and provide individual accountability while using the OPUP Operational Applications Front Panel GUIs. **User names may be constructed using at least three characters and any combination of upper/lower-case letters and containing at least one number or special character.** Each user name, once removed/deleted from the OPUP Server OS must not be reassigned to another person for up to one year. In the case of high operational personnel turnover situations, system administrators may substitute reusable generic user names (i.e. $OPup1). If generic user names are used,

a log sheet must be implemented in order to track and delete both the generic user name and password when they are no longer required.

2. At the `OPUP Manager Add New User` window, within the `User Information:` area, click on the `User Name:` edit field to activate the field for text entry.

NOTES

Each user name must meet the following minimum composition requirements:

- Be at least a minimum of <u>three</u> characters in length.
- Contain at least two alpha characters (A through Z or a through z).
- Contain at least one number (0 through 9) or one of the following special characters (!, @, %, -, +, _, {, [, or =).

Each character's case is important when defining the user name. Future access to this account will require the exact case for each letter as entered in the `User Name:` field.

3. At the `User Name:` edit field, enter: *User_Name***<Return>**

4. At the `OPUP Manager Add New User` window, within the `User Information:` area, click on the `Password:` edit field to activate the field for text entry.

NOTES

Each password must meet the following minimum composition requirements:

- Be at least a minimum of <u>eight</u> characters in length.
- Contain at least one UPPERCASE character (A through Z).
- Contain at least one lowercase character (a through z).
- Contain at least one number (0 through 9).
- Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries <u>must</u> be within the first 8 characters.

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

Passwords must not be the same as the user name or constructed from words straight out of the dictionary (spelled forwards, backwards, or split with a number or special character) or be constructed using a user's personal identity, history, or environment. Generic passwords must also be prohibited (e.g. a system having "welcome" as the password for all newly created user names). When passwords expire, users must not reuse the current password or use any of the last nine passwords assigned to that user name.

5. At the `Password:` edit field, enter: *user_password***<Return>**. (This is the password that is associated with the user name entered in Step 3.)

6. At the `OPUP Add User Name` window, within the `User Information:` area, click on the `Reenter password:` edit field and reenter the password entered in Step 5.

NOTES

You may edit any field at any time if you notice an error. Also, reentering the password in the `Reenter password:` edit field ensures that the password entered in Step 5 was not mistyped/misspelled.

The OPUP Manager Add New User function provides the ability to start the Add New User process from the beginning, exit and display the `OPUP Manager Main Menu`, or return to the `OPUP Users Menu`. To start at the beginning of this procedure, click the **Reset Form** button to clear each edit field, and then begin with Step 2 of this procedure. To exit, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`. To go back to the `OPUP Users Menu`, click the **Return to Last Screen** button.

7. At the `OPUP Manager Add New User` window, click on the **Save** button. The OPUP Manager Add New User function will add the User Name entered in Step 3 to the OPUP User Name database. When the OPUP Manager Add New User function is finished, an `OPUP User` *`user_name`* `- Successfully Created` window will be displayed as shown in Figure 5-16.

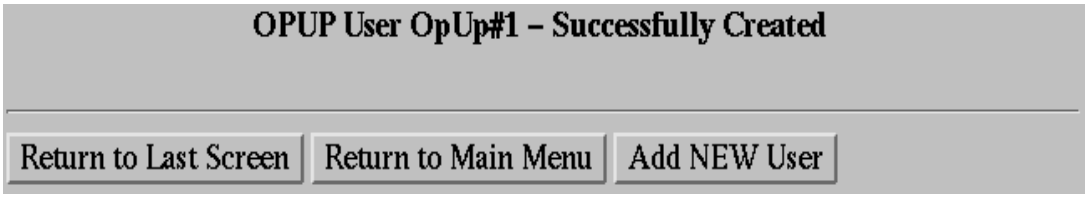


Figure 5-16. Add New User Confirmation Window

NOTES

The User Name will be displayed as part of the confirmation message displayed within the window. In the example shown in Figure 5-16, the system administrator has entered **OpUp#1** as the new account name. When the OPUP Manager Add New User function is finished, an `OPUP User OpUp#1 - Successfully Created` message will be displayed. This window confirms that the User Name OpUp#1 has been saved in the OPUP User Name database.

Also, this window provides the ability to add another user name by clicking on the **Add NEW User** button. When this button is clicked the `OPUP Manager Add New User` window will be displayed. To add another User Name, perform Steps 2 through 7 again.

8. At the `OPUP User` *`user_name`* `- Successfully Created` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.5.2 Delete OPUP User. Prerequisites: A User Name previously added to the OPUP User Name database must be available to be deleted. (Refer to paragraph 5.2.5.4 to view OPUP User Names located within the OPUP User Name database.) The `OPUP Users Menu` must be displayed as shown in Figure 5-15.

1. At the `OPUP Users Menu`, click on the **Delete User** button. An `OPUP Manager Delete User` window will be displayed.

2. At the `OPUP Manager Delete User` window, within the `User Information:` area, click on the `User Name:` edit field to activate the field for text entry.

3. At the `OPUP Manager Delete User` window, within the `User Information:` area, enter the User Name to be deleted. The User Name must be entered exactly as displayed within the `View OPUP Users` window.

4. At the `OPUP Manager Delete User` window, click on the **Delete** button. The OPUP Manager Delete User function will delete the User Name entered in Step 3 from the OPUP User Name database. When the OPUP Manager Delete User function is finished, an `OPUP User user_name has been deleted` window will be displayed.

NOTE

The User Name will be displayed as part of the confirmation message displayed within the window. In the example shown in Figure 5-17, the system administrator entered **OpUp#1** as the User Name to be deleted in Step 3. When the OPUP Manager Delete User function is finished, an `OPUP User OpUp#1 has been deleted` message will be dis-

played. This window confirms that the User Name OpUp#1 has been deleted from the OPUP User Name database.

Figure 5-17. Delete User Window

5. At the `OPUP User` *user_name* `has been deleted` window, click on the **Return to Last Screen** button to return to the `OPUP Manager Delete User` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.5.3 Change User Password. Prerequisites: A User Name must have been previously added to the OPUP User Name database. (Refer to paragraph 5.2.5.4 to view OPUP Users located within the OPUP User Name database.) The `OPUP Users Menu` must be displayed as shown in Figure 5-15.

NOTE

The Change User Password function is used to change a password associated with a specific User Name and not the User Name itself. The only way to change a User Name is to delete the User Name (paragraph 5.2.5.2 and enter a new User Name paragraph 5.2.5.1).

1. At the `OPUP Users Menu`, click on the **Change User Password** button. An `OPUP Manager Change User Password` window will be displayed as shown in Figure 5-18.

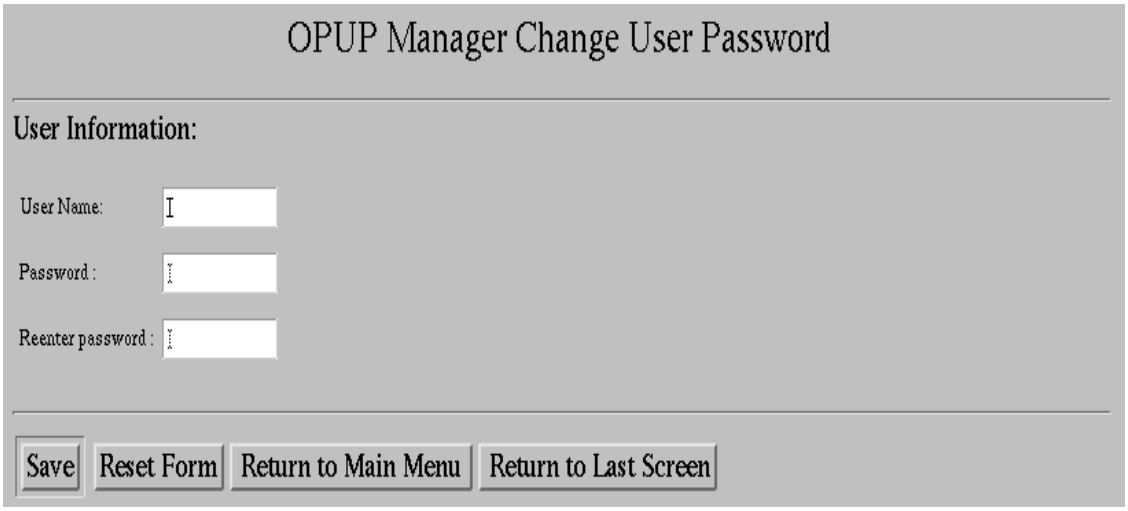


Figure 5-18. OPUP Manager Change User Password Window

2. At the `OPUP Manager Change User Password` window, within the `User Information:` area, click on the `User Name:` edit field to activate the field for text entry.

3. At the `OPUP Manager Change User Password` window, within the `User Information:` area, enter the User Name in the `User Name:` edit field for which the associated password is to be changed.

NOTE

The OPUP Manager Change User Password function is case sensitive. In order for the Change Password function to be successful, be sure to type in the User Name exactly as initially entered in the User Names database located within the OPUP Server OS.

4. At the `OPUP Manager Change User Password` window, within the `User Information:` area, click on the `Password:` edit window to activate the field for text entry.

5. At the `OPUP Manager Change User Password` window, enter any combination of letters and numbers to define a new unique password for the User Name entered in Step 3.

NOTES

Each password must meet the following minimum composition requirements:

- Be at least a minimum of <u>eight</u> characters in length.

- Contain at least one UPPERCASE character (A through Z).
- Contain at least one lowercase character (a through z).
- Contain at least one number (0 through 9).
- Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

Passwords must not be the same as the user name or constructed from words straight out of the dictionary (spelled forwards, backwards, or split with a number or special character) or be constructed using a user's personal identity, history, or environment. Generic passwords must also be prohibited (e.g. a system having "welcome" as the password for all newly created user names). When passwords expire, users must not reuse the current password or use any of the last nine passwords assigned to that user name.

6. At the `OPUP Manager Change User Password` window, within the `User Information:` area, click on the `Reenter password:` edit window to activate the window field for text entry.

7. Reenter the password exactly as entered in Step 5. This step ensures that the password was not mistyped/misspelled.

NOTE

You may edit any field at any time if you notice an error. Additionally, you may restart this procedure from the beginning by selecting the **Reset Form** button to erase all entries on the window and going to Step 2.

8. At the `OPUP Manager Change User Password` window, click on the **Save** button. An `OPUP User` *`user_name`* `- Password has been changed` window will be displayed.

NOTE

The User Name will be displayed as part of the confirmation message displayed within the window. This window confirms that the password for the User Name entered in Step 2, has been changed in the OPUP User Name database.

9. At the `OPUP User user_name - Password has been changed` window, click on the **Return to Last Screen** button to return to the `OPUP Manager Change User Password` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.5.4 View OPUP Users. Prerequisite: The `OPUP Users Menu` must be displayed as shown in Figure 5-15.

1. At the `OPUP Users Menu`, click on the **View OPUP Users** button. An `OPUP Users` window will be displayed.

NOTE

The `OPUP Users` window displays a list of all defined OPUP User Names that have been previously added/entered into the OPUP User Name database.

2. At the `OPUP Users` window, click on the **Return to Last Screen** button to return to the `OPUP Users Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.5.5 Lost Passwords. Specific User Names and passwords are used throughout the various applications provided by the OPUP Manager GUI and Operational Applications Front Panel GUIs. The following paragraphs discuss the methods that will be required in order to recover from lost or timed out passwords. Each lost password recovery procedure assumes that the OPUP Server OS root password is known.

NOTE

Refer to Chapter 4, Section 4.4, System Security Policy, for further information concerning the issuance of User Passwords. If a User Name is removed from the OPUP Server OS database, all display attributes associated with that User Name will be lost.

5.2.5.5.1 User Name Password Recovery. Prerequisites: The OPUP Server OS root password must be known, the OPUP Manager GUI is **not** currently being displayed, and the Lock Timeout function or the Lockout icon (padlock) function has been engaged at the OPUP Operational Applications Front Panel. (If the `OPUP Manager Main Menu` is displayed, passwords associated with a specific User Name can be changed by referring to paragraph 5.2.5.3.)

1. At the `Display locked by user` *`User Name`*`. Enter password to unlock.` window, within the `Password:` edit field, enter the *root_password* for the OPUP Server OS and press the **<Return>** key.

Feedback: The Operational Applications Front Panel will be displayed.

2. At the Operational Applications Front Panel, click on the **EXIT** icon located near the center of the Front Panel.

   Feedback: A `Logout Confirmation` window will be displayed.

3. At the `Logout Confirmation` window, click the **OK** button.

   Feedback: The CDE Login screen will then be displayed.

4. At the CDE Login screen, login as **opupmgr**. (Refer to paragraph 5.2.3.1, if required.)

5. Change the User Password per the procedure outlined in paragraph 5.2.5.3.

6. When finished, return the OPUP server to the normal operating position.

5.2.5.5.2 OPUPMGR Password Recovery. Prerequisites: The OPUP Server OS root password must be known.

NOTE

> The User Name opupmgr, used in association with the OPUP Manager GUI, may be changed using the procedure provided in paragraph 5.2.5.3, if the `OPUP Manager Main Menu` **was displayed** before the Lock Time-out function or the Lockout icon (padlock) function was engaged. If only the CDE Front Panel was displayed before the Lock Timeout function or the Lockout icon (padlock) function was engaged, there will be no way to recover the opupmgr password. The OPUP Server OS will have to be reinstalled using the procedure provided in paragraph 3.5.4.2.

1. At the `Display locked by user opupmgr. Enter password to unlock.` window, within the `Password:` edit field, enter the *root_password* for the OPUP Server OS and press the **<Return>** key.

   Feedback: The `OPUP Manager Main Menu` will be displayed.

2. Go to paragraph 5.2.5.3 and assign a new password for **opupmgr**.

3. When finished, return the OPUP server to the normal operating position.

5.2.5.5.3 Root Password Recovery. There will be no way to recover the OPUP Server OS root password. The OPUP Server OS will have to be reinstalled using the procedure provided in paragraph 3.5.4.2.

5.2.6 OPUP Security Log Functions.

The OPUP Security Logs Menu function provides each OPUP site the ability to detect, record, and manage user and administrative access to the OPUP Server OS.

1. At the `OPUP Manager Main Menu`, click on the **OPUP Security Logs Menu** button. An `OPUP Security Logs Menu` will be displayed as shown in Figure 5-19.

2. At the `OPUP Security Logs Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

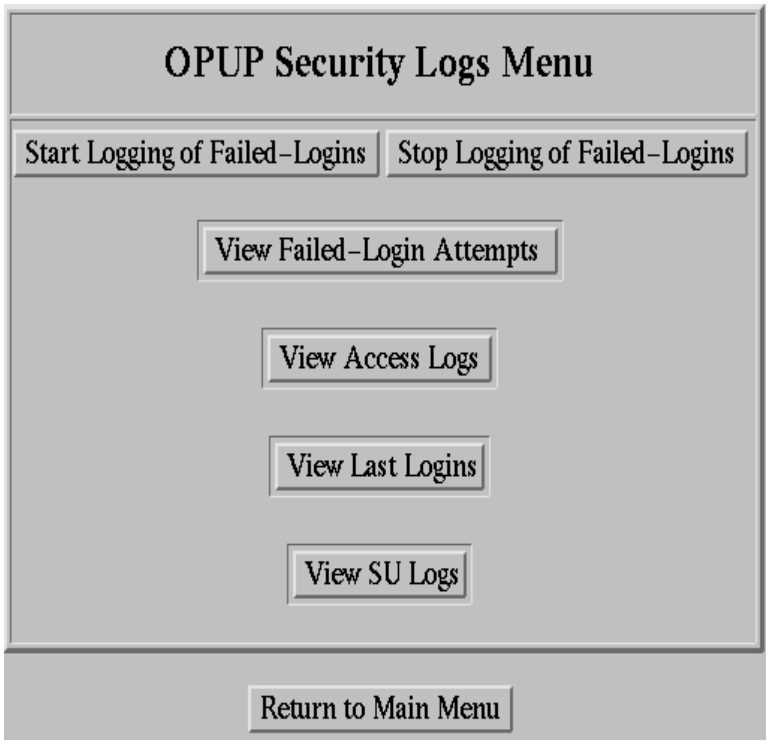


Figure 5-19. OPUP Security Logs Menu

NOTE

This section does not replace the OPUP system security guidance set forth in Chapter 4, OPUP System Security.

5.2.6.1 Start or Stop Logging of Failed-Logins. Prerequisite: The `OPUP Security Logs Menu` must be displayed as shown in Figure 5-19. The following procedure can be applied to either the Start or Stop Logging of Failed-Logins functions.

1. At the `OPUP Security Logs Menu`, click on the **Start** or **Stop Logging of Failed-Logins** button, as applicable. An `OPUP Manager Start (`*or Stop if Stop*

was selected) `Failed-Login Logs` window will be displayed. This window also will display the following message: `Warning! This will Start (`*or Stop if Stop was selected*)`the Logging of Failed-login Attempts. Do you want to Continue?`

2. At the `OPUP Manager Start or Stop Failed Logins Logs` window, click on the **Yes** button. An `OPUP Manager Start` *(or Stop if Stop was selected)* `Failed-Login Logs` window will be displayed. This window will also display the following message: `Logging of Failed-Login Attempts have been started` (*or stopped if Stop was selected)*.

3. At the `OPUP Manager Start` *(or Stop if Stop was selected)* `Failed-Login Logs` window, click on the **Return to OPUP Security Logs Menu** button. The `OPUP Security Logs Menu` will be displayed.

5.2.6.2 Security Logs Menu View Functions. Prerequisite: The `OPUP Security Logs Menu` must be displayed as shown in Figure 5-19. This procedure can be applied to all OPUP Security Logs Menu View Log functions.

1. At the `OPUP Security Logs Menu`, click on the **View** button of interest (i.e. View Failed-Login Attempts, View Access Logs, View Last Logins, or View SU Logs).

2. The View function will display a window of the desired log.

3. At the `View` *window of interest*, click on either the **Return to Last Screen** button to return to the `OPUP Security Logs Menu` or the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

Each `View` *window of interest* has a Print Log function. Click on the **Print Log** button and the information displayed within the `View` *window of interest* will be sent to the Printer UD86A12.

5.2.7 OPUP Workstation Menu.

The procedures to connect, configure, and/or remove a physically connected display workstations will not be covered in this chapter. All Small OPUP configurations will not utilize attached workstations. Although the `Workstation Menu` will continue to be displayed and the system administrator will have access to this menu, it will not be used with the Small OPUP Equipment Group UD86.

5.2.8 OPUP Archive Menu.

The OPUP Archive Menu function provides each site to have the ability to identify and store specific WSR-88D products and message data on CD-ROM disks (CD-R/CD-RW). OPUP Archive

functions include, checking, creating, restoring, and erasing WSR-88D products and message data placed in a specific archive data directory by operators. In addition, Archive functionality provides a method to check the contents each CD-R/CD-RW disk and to erase any data written to CD-RW disks.

The selection of WSR-88D products and message data for archival begins with the operator. The Operational Applications Front Panel, Status & Control GUI, contains an **Archive** menu tab that has associated functionality that provides the interface necessary to operators to select specific or all products and message data contained within the OPUP OS database for archival. Once data is selected, it is placed into a designated archive directory using a filename selected by the operator. System administrators will then be tasked (determined locally at each site) to backup these files via the `OPUP Archive Menu` to either a CD-R or CD-RW disk. The `OPUP Archive Menu` allows each site to view, select, archive, restore, or erase each archived WSR-88D products and message file as desired. In addition, each site will have the capability to check all data stored on an archive media (CD-R/RW) disk by using the Check Archive function located within the `OPUP Archive Menu`.

1. At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button. An `OPUP Archive Menu` window will be displayed as shown in Figure 5-20.

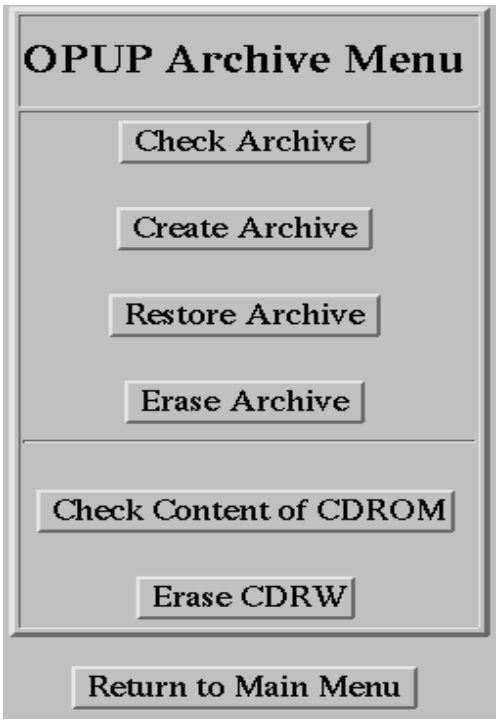


Figure 5-20. OPUP Archive Menu

2. At the `OPUP Archive Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.8.1 Archive IV Limitations. WSR-88D products and message data, when designated for archival, are either permanently or temporarily stored on the Server UD86A2 secondary hard drive (which has up to 20 Gbytes of disk space). Operators may create as many archive data files as desired and designate them for archival as the secondary hard drive will allow. In addition to each archive file being stored on the secondary hard drive, archive files may be stored on CD-R/ CD-RW CD-ROM disks. Each CD-ROM disk has a storage limit of 650 to 700 Mbytes. Because of this storage limit, the Operational Applications Front Panel, Status & Control GUI, Archive Menu function will only allow 700 Mbytes or less of archive data to be written per archive file; however, there are some CD-ROM disks (CD-RWs) that will only allow up to 650 Mbytes of data to be written to them. If these disks are used, each site must ensure that 650 Mbytes or less of archive data is written per archive file.

The Archive function will only allow one data file to be written to each CD-R/CD-RW disk at a time. This means that if there are several data files (regardless of maximum size), only one file can be written to each disk. CD-RW disks may be re-used if prior data has been erased from the disk before it is used again. This also means that archive files cannot be appended to any CD-ROM disk that currently has data on it.

NOTE

If an attempt is made to append additional data to a CD-ROM that has data already written on it, the OPUP Manager Backup OPUP function will display the message: `Warning! CDROM not writable. CDROM probably contains data. Please insert a new CDROM and try again.` as shown in Figure 5-21.

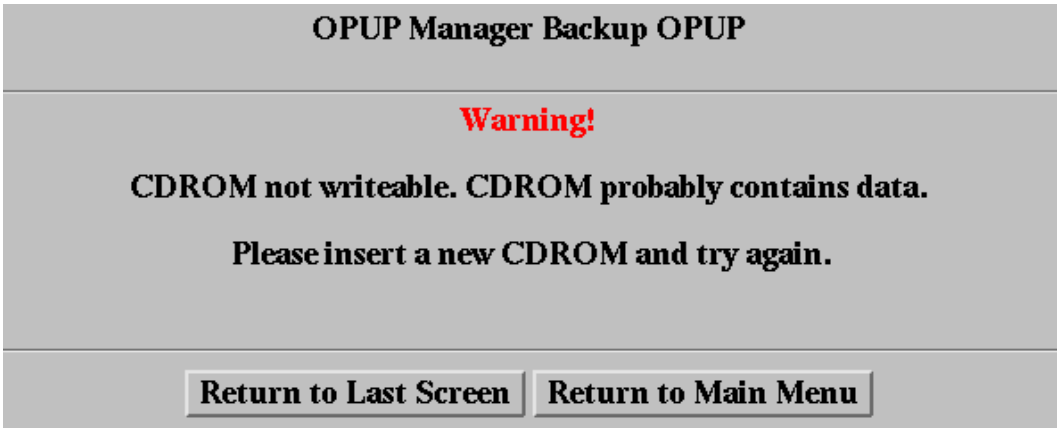


Figure 5-21. Archive Backup Warning Window

5.2.8.2 Check Archive. Prerequisite: The `OPUP Archive Menu` must be displayed as shown in Figure 5-20.

1. At the `OPUP Archive Menu`, click on the **Check Archive** button. A `The Existing Archives on Server is as follows:` window will be displayed as shown in Figure 5-22.

NOTES

`The Existing Archives on Server is as follows:` window will display all existing archive data files located within the OPUP OS database directory. Each archive data file will be stored in the `Owner/Group/Date Created/Name of Archive` area of the display. If this area is blank, no archive data file has been designated for archival by an operator.

Also, this window does not automatically re-display information once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the window to re-display updates to this window.

Figure 5-22. The Existing Archives On Server Window

2. At `The Existing Archives on Server is as follows:` window, click on either the **Return to Last Screen** button to return to the `OPUP Archive Menu` or the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.8.3 Create Archive. Prerequisite: The `OPUP Archive Menu` must be displayed as shown in Figure 5-20. A **blank** CD-ROM disk must be placed within the Archive IV Device UD86A7 media tray.

1. At the `OPUP Archive Menu`, click on the **Create Archive** button. A `Please Select Archive Case to Create to CDROM` window will be displayed as shown in Figure 5-23. The Create Archive function will search the OPUP Server OS Archive directory and display all available archived data previously designated for archival.

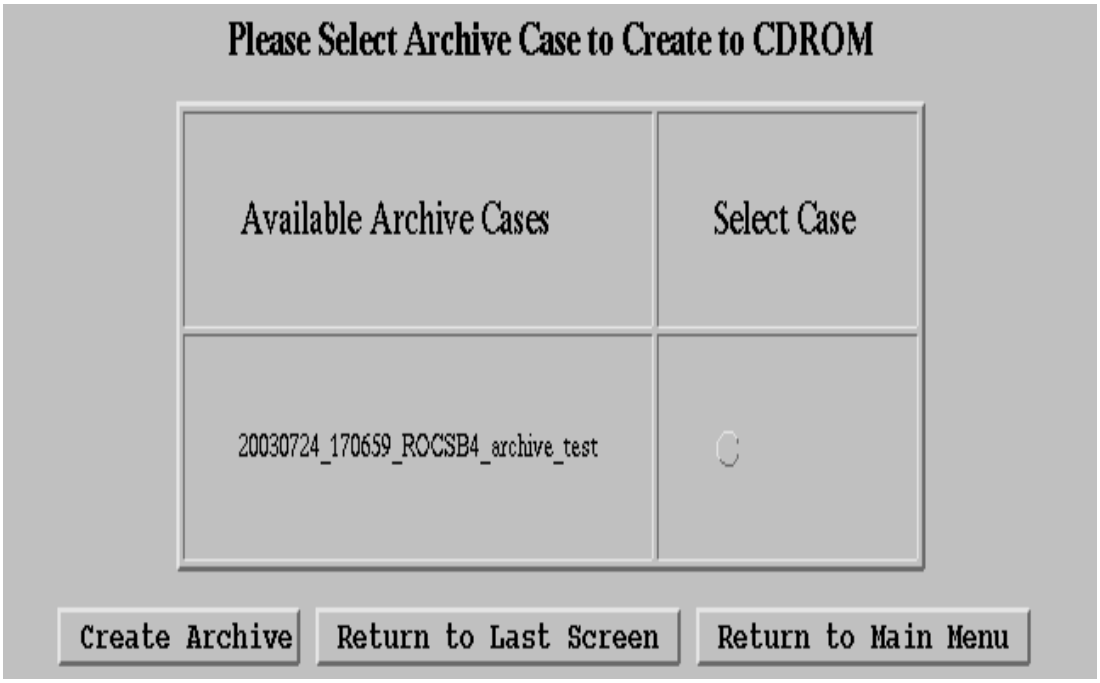


Figure 5-23. Please Select Archive Case to Create to CDROM Window

2. At the `Please Select Archive Case to Create to CDROM` window, within the `Select Case` column, click on the **Select Case** radio button associated with the archive file of interest located in the `Available Archive Cases` column. The archive data file of interest radio button will be highlighted.

3. At the `Please Select Archive Case to Create to CDROM` window, click on the **Create Archive** button. The Create Archive function will then prepare and transfer the selected archive data file to the CD-ROM located within the archive device media tray. When the Archive Create function is finished, `The Archive for` *`filename`* `has been created to CDROM.` window will be displayed as shown in Figure 5-24.

NOTE

A warning window will be displayed if a CD-ROM that cannot be written to is in the archive device. Replace the CD-ROM with a blank disk.

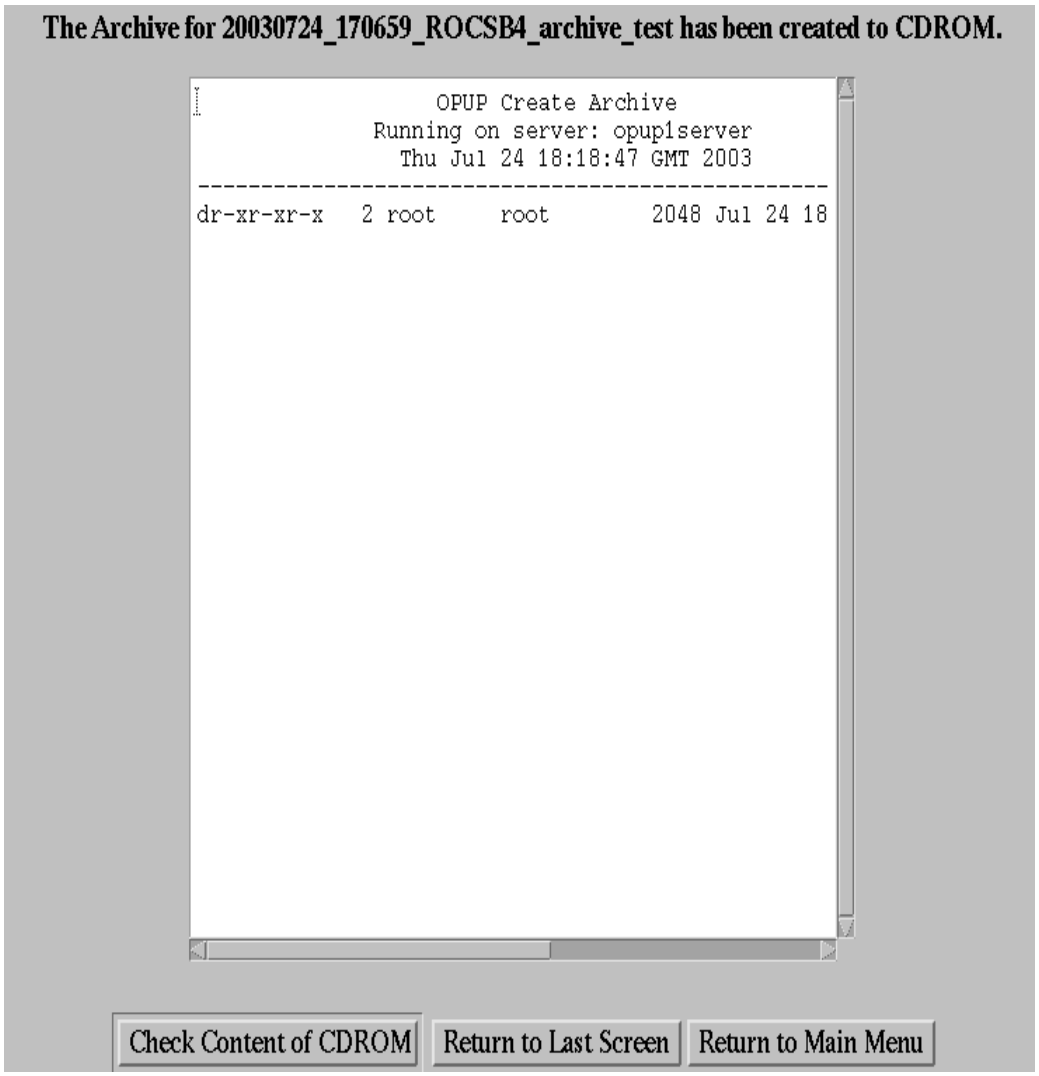


Figure 5-24. The Archive for *Filename* Has Been Created to CDROM Window

4. At `The Archive` *`for filename`* `has been created to CDROM` window, click on the **Check Content of CDROM** button. `The Content of the inserted CDROM is as follows:` window will be displayed as shown in Figure 5-25.

NOTE

`The Content of the inserted CDROM is as follows:` window will display the archive data file located on the CD-ROM in the

Owner/Group/Date Created/Name of Archive area within the window. If this area is blank, the archive data file did not transfer to the CD-ROM. Also, this `window` does not automatically re-display information once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the window to re-display updates to this window.

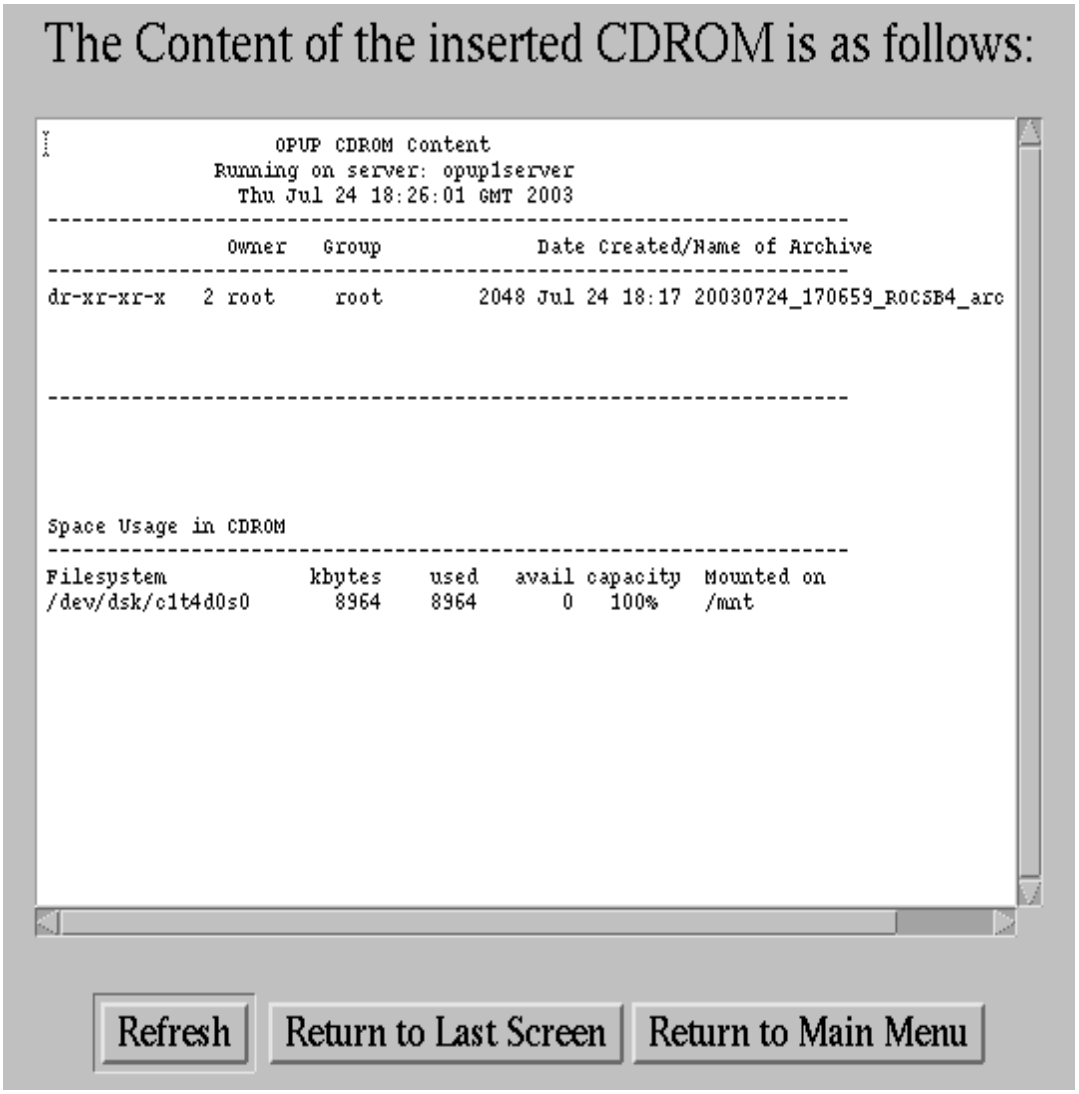


Figure 5-25. The Content of the inserted CDROM is as follows Window

5. At `The Content of the inserted CDROM is as follows:` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

6. At the Archive IV Device UD86A7, push the eject button to open the media tray door. Remove the CD-ROM and push the eject button again to close the media tray door.

5.2.8.4 Restore Archive. Prerequisite: The `OPUP Archive Menu` must be displayed as shown in Figure 5-20. A CD-ROM disk with data on it must be placed within the Archive IV Device UD86A7 media tray.

1. At the `OPUP Archive Menu`, click on the **Restore Archive** button. `The content of the inserted CDROM is as follows:` window will be displayed as shown in Figure 5-26.

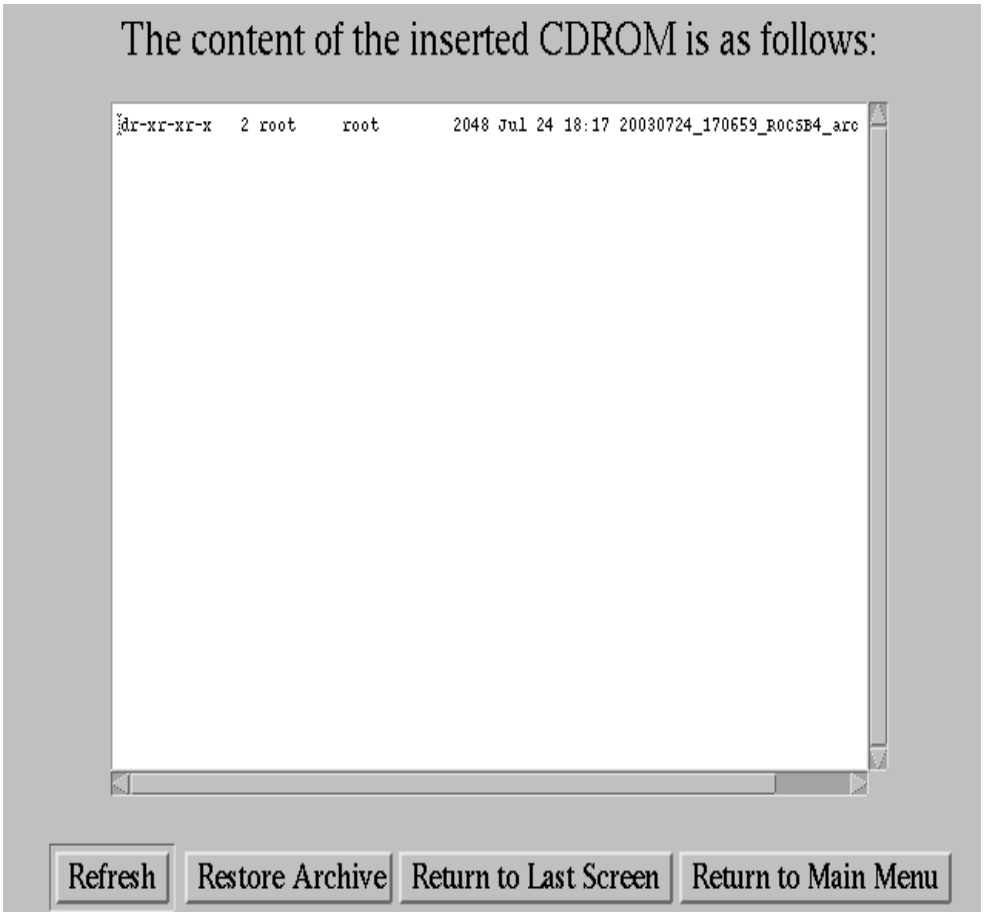


Figure 5-26. The content of the inserted CDROM is as follows Window

NOTE

If `The content of the inserted CDROM is as follows:` window is blank, the CD-ROM does not have data on it. Also, this window does not automatically re-display information once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the window to re-display updates to this window.

2. At `The content of the inserted CDROM is as follows:` window, inspect the *archive file of interest* displayed within the window. If the desired file is displayed, click the **Restore Archive** button. When the Restore Archive function is finished, `The Archive` *`file_name`* `has been restored from CDROM` window will be displayed as shown in Figure 5-27.

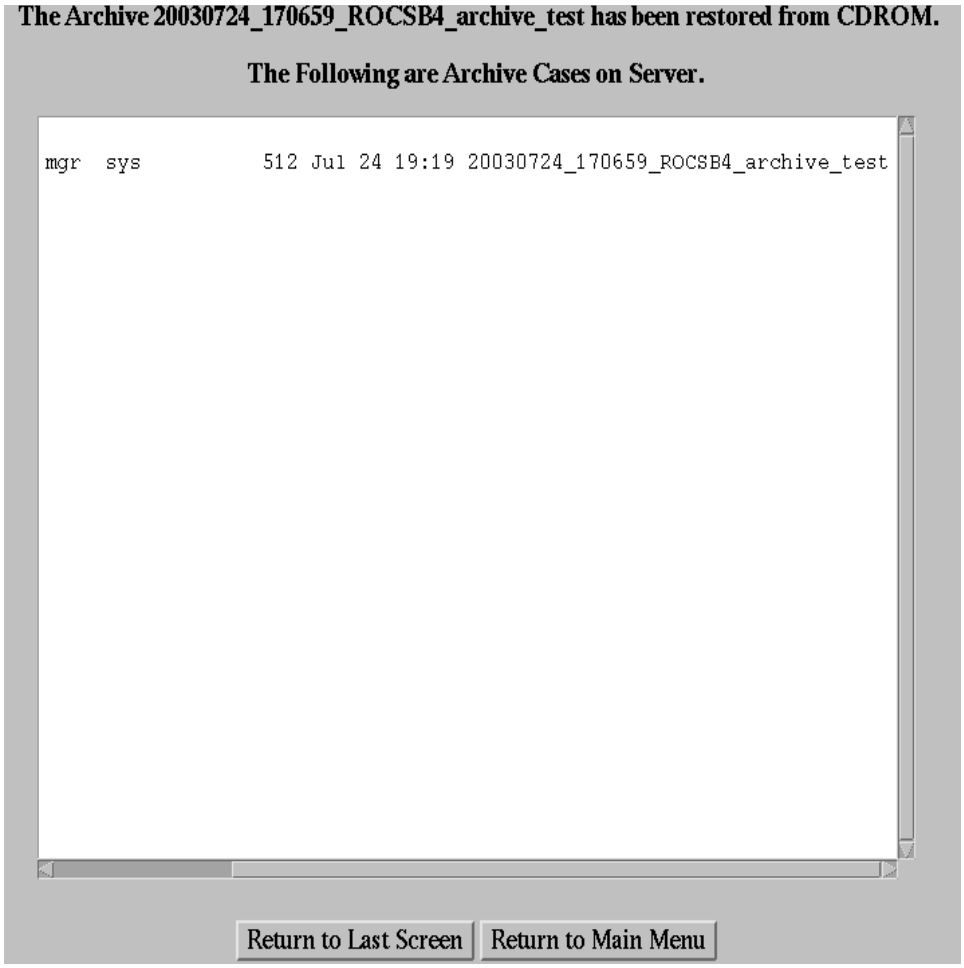


Figure 5-27. Archive IV Data File Restored

3. At `The Archive` *`file_name`* `has been restored from CDROM` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

4. At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button. The `OPUP Archive Menu` will be displayed.

5. At the `OPUP Archive Menu`, click on the **Check Archive** button. `The Existing Archives on Server is as follows:` window will be displayed as shown in Figure 5-22.

NOTE

`The Existing Archives on Server is as follows:` window will display all existing archive data files located within the OPUP Server OS Archive database directory. Each archive data file will be stored in the `Owner/Group/Date Created/Name of Archive` area of the display. If this area is blank, no archive data file(s) have been designated for archival by an operator. This area may also be blank if attempts to transfer the archive data file from a CD-ROM to the OPUP Server OS Archive database directory was unsuccessful.

6. At `The Archive` *`file_name`* `has been restored from CDROM` window, Figure 5-27, if the *archive file of interest* is displayed within the window, go to the next step. If the file is not displayed within the window, it has not been restored. Return to Step 1 and perform Steps 1 through 5, again.

7. At `The Archive` *`file_name`* `has been restored from CDROM` window, click on the **Return to Main Menu** button. The OPUP Manager Main Menu will be displayed.

NOTE

If an archive data file of interest located on a CD-ROM has the same file name as an archive data file on the OPUP Server OS Archive database, the Restore Archive function will display the following message as shown in Figure 5-28: `The Archive for` *file_name* `already exist on Server.` If the archive data file on the OPUP Server OS Archive database is to be overwritten, click on the **Replace** button. The Restore Archive Replace function will then overwrite the current file on the OPUP Server OS Archive database. If the archive file located within the OPUP Server OS Archive database directory is not to be overwritten, click on either the **Return to Last Screen** button to go back to the last screen or the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

Figure 5-28. Archive Case File Overwrite Message Window

5.2.8.5 Erase Archive. The `OPUP Archive Menu` must be displayed as shown in Figure 5-20.

1. At the `OPUP Archive Menu`, click on the **Erase Archive** button. An `OPUP Manager Erase Archive` window will be displayed as shown in Figure 5-29. This window will also display the following message: `Warning! This will Erase any selected Archive from Server. Do You want to Continue?`

Figure 5-29. OPUP Manager Erase Archive Window

2. If an *archive data file of interest* is to be erased from the OPUP Server OS Archive database directory, click on the **Yes** button. A `Please Select Archive Case to Erase from Server` window will be displayed as shown in Figure 5-30. Otherwise, click on the **No** button to exit and return to the `OPUP Archive Menu`.

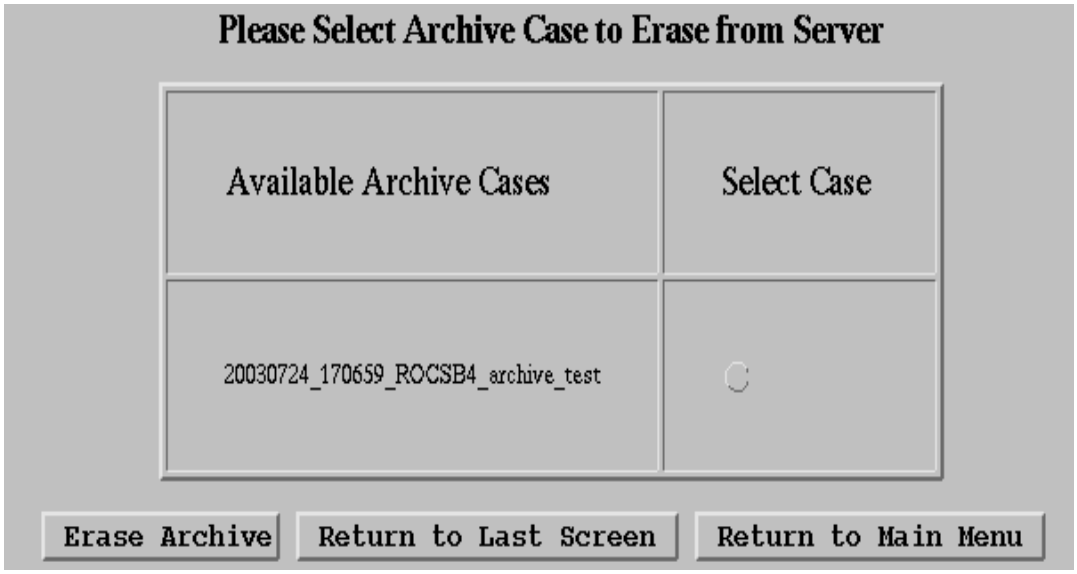


Figure 5-30. Please Select Archive Case to Erase from Server Window

3. At the `Please Select Archive Case to Erase from Server` window, within the `Select Case` column, click on the **radio** button of the *archive data file of interest* in the `Available Archive Cases` column. The *archive data file of interest* radio button will be highlighted.

4. At the `Please Select Archive Case to Erase from Server` window, click on the **Erase Archive** button. The Erase Archive function will then immediately erase the selected *archive data file of interest* from the OPUP Server OS Archive database directory and display `The Archive for` *`file_name`* `has been Erased from Server` window as shown in Figure 5-31.

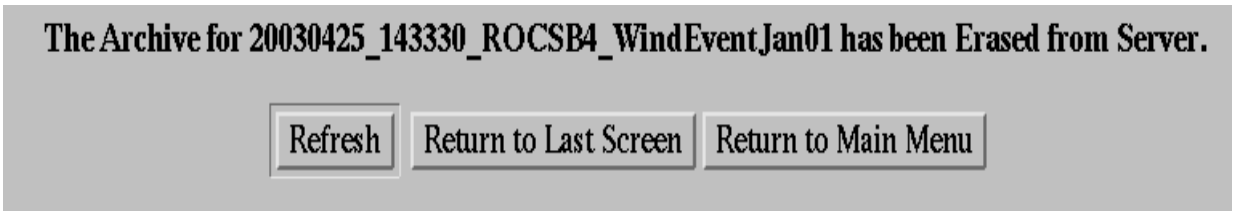


Figure 5-31. Erase Archive Confirmation Window

5. At `The Archive for` *`file_name`* `has been Erased from Server` window, click on the **Return to Last Screen** button to return to the `Please Select Archive Case to Erase from Server` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

6. At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button. The `OPUP Archive Menu` will be displayed.

7. At the `OPUP Archive Menu`, click on the **Check Archive** button. `The Existing Archives on Server is as follows:` window will be displayed as shown in Figure 5-22.

NOTE

> `The Existing Archives on Server is as follows:` window will display all existing archive data files located within the OPUP Server OS Archive database directory. Each archive data file will be stored in the `Owner/Group/Date Created/Name of Archive` area of the display. If this area is blank, no archive data file(s) have been designated for archival by an operator. This area may also be blank if attempts to transfer the archive data file from a CD-ROM to the OPUP Server OS Archive database directory was unsuccessful.

8. If the *archive file of interest* is not displayed within the `The Existing Archives on Server is as follows:` window, Figure 5-22, the file has been erased. Go to the

next step. If the archive file of interest is displayed within the window, return to Step 1 and perform Steps 1 through 7, again.

9. At `The Existing Archives on Server is as follows:` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5.2.8.6 Check Content of CD-ROM. Prerequisite: The `OPUP Archive Menu` must be displayed as shown in Figure 5-20. A CD-ROM disk must be placed within the Archive IV Device UD86A7 media tray.

1. At the `OPUP Archive Menu`, click on the **Check Content of CDROM** button. `The Content of the inserted CDROM is as follows:` window will be displayed as shown in Figure 5-25.

NOTES

`The Content of the inserted CDROM is as follows:` window will display the *archive data file of interest* located on the CD-ROM in the `Owner/Group/Date Created/Name of Archive` area of the display. If the CD-ROM contains no data, the Check Content of CD-ROM function will display an `OPUP Manager Backup OPUP` window with the following message as shown in Figure 5-21: `Warning! CDROM not writable. CDROM probably contains data. Please insert a new CDROM and try again.`

Also, `The Content of the inserted CDROM is as follows:` window does not automatically re-display information once it is initially displayed. Users will need to use the **Refresh** button near the bottom left of the window to re-display updates to this window.

2. At `The Content of the inserted CDROM is as follows:` window, click on the **Return to Last Screen** button to return to the `OPUP Archive Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.8.7 Erase CD-RW. Prerequisite: The `OPUP Archive Menu` must be displayed as shown in Figure 5-20. A CD-RW disk that contains data must be placed within the Archive IV Device UD86A7 media tray.

NOTE

The Erase CD-RW function will check to ensure that a compatible CD-ROM (CD-RW) has been placed within the archive device media tray. If the drive is empty or a CD-R disk has been placed within the device media tray, a warning window will be displayed. If the warning window is

encountered, replace the disk with a compatible CD-RW disk or select the **No** button to cancel the Erase CD-RW function.

Performing the Erase CD-RW function is permanent! There is no way to recover any erased data once the **Yes** button is selected.

1. At the `OPUP Archive Menu`, click on the **Erase CDRW** button. An `OPUP Manager Erase CDRW` window will be displayed.

NOTE

A **Check Content of CDROM** button is provided with the `OPUP Manager Erase CDRW` window. Sites are encouraged to check the CD-ROM one last time **before the Yes button is selected**. This will help to ensure that the data located on the disk is actually to be erased. There will be no way for the data to be recovered once the data is erased.

2. At the `OPUP Manager Erase CDRW` window, click on the **Yes** button. The OPUP Manager Erase CD-RW function will then access the CD-ROM disk and erase all of the contents. When finished, the Erase CD-RW function will return to the `OPUP Archive Menu`.

3. At the `OPUP Archive Menu`, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5.2.9 OPUP Server Control.

The OPUP Server Control Menu function provides each site the ability to monitor the overall hard drive disk usage (storage/percentage of use), backup/restore product/user configuration data, implement window/terminal lockout functions, add/delete/designate default printers, reboot the communication router, reset/re-issue CISCO/Oracle/Application Security Level passwords, implement a Default Route IP Address, perform system diagnostics (VTS Tools), and shutdown or restart the OPUP Server OS.

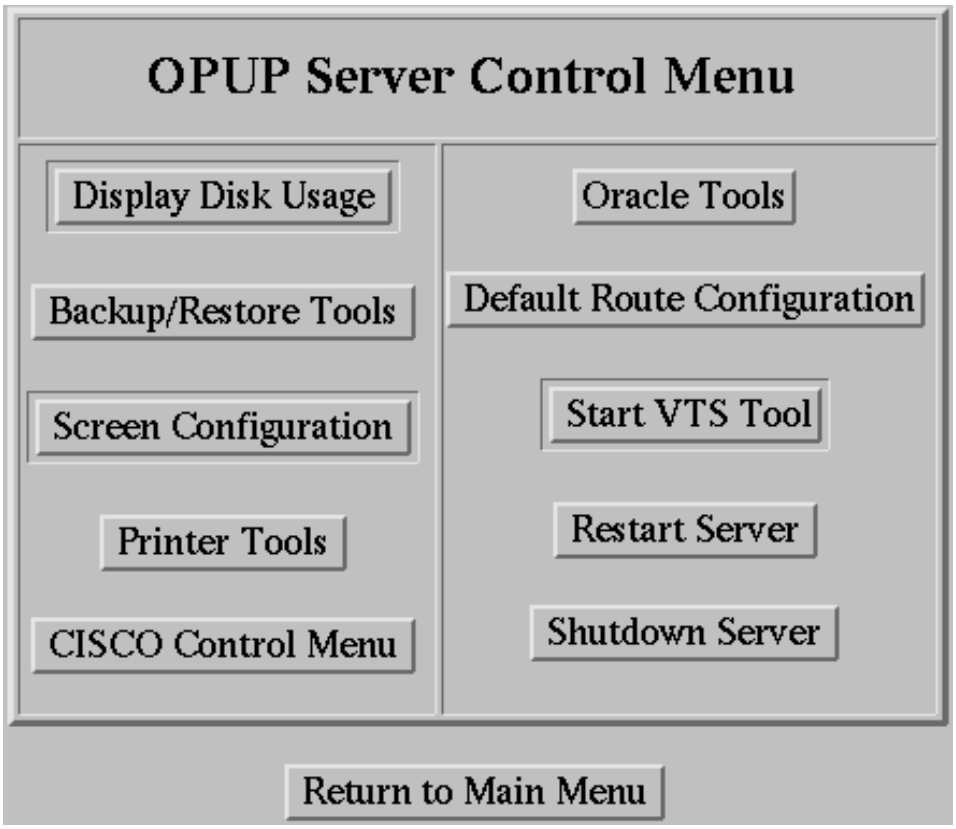


Figure 5-32. OPUP Server Control Menu

1. At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button. An `OPUP Server Control Menu` window will be displayed as shown in Figure 5-32.

2. At the `OPUP Server Control Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.1 Display Disk Usage. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Display Disk Usage** button. An `OPUP Disk Usage` window will be displayed.

NOTE

The `OPUP Disk Usage` window displays the current Server UD86A2 file and slice assignments used by the hard drives. The OPUP Disk Usage

function provides the ability for each site to make a quick assessment concerning file maintenance.

2. At the `OPUP Disk Usage` window, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or click on the **Return to Main Menu** button to return to the `OPUP Main Manager Menu`.

5.2.9.2 Backup/Restore Tools Menu. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Backup/Restore Tools** button. An `OPUP Manager Backup/Restore Main Menu` will be displayed as shown in Figure 5-33.

NOTES

The `OPUP Manager Backup/Restore Tools Menu` provides the ability to perform a full backup and/or restoral of each site's OPUP configuration and adaptation data. This menu includes the ability to backup/restore OPUP adaptation data separately. The `OPUP Manager Backup/Restore Tools Main Menu` includes the Check Content of CD-ROM and Erase CD-RW functions in order to assist with the management of each CD-ROM disk, if needed.

The procedures provided in the following paragraphs will only cover Backup and Restore of OPUP configuration and adaptation data. The procedures to perform separate adaptation data backup/restore functions will be similar.

2. At the `OPUP Manager Backup/Restore Main Menu`, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or click on the **Return to Main Menu** button to return to the `OPUP Main Manager Menu`.

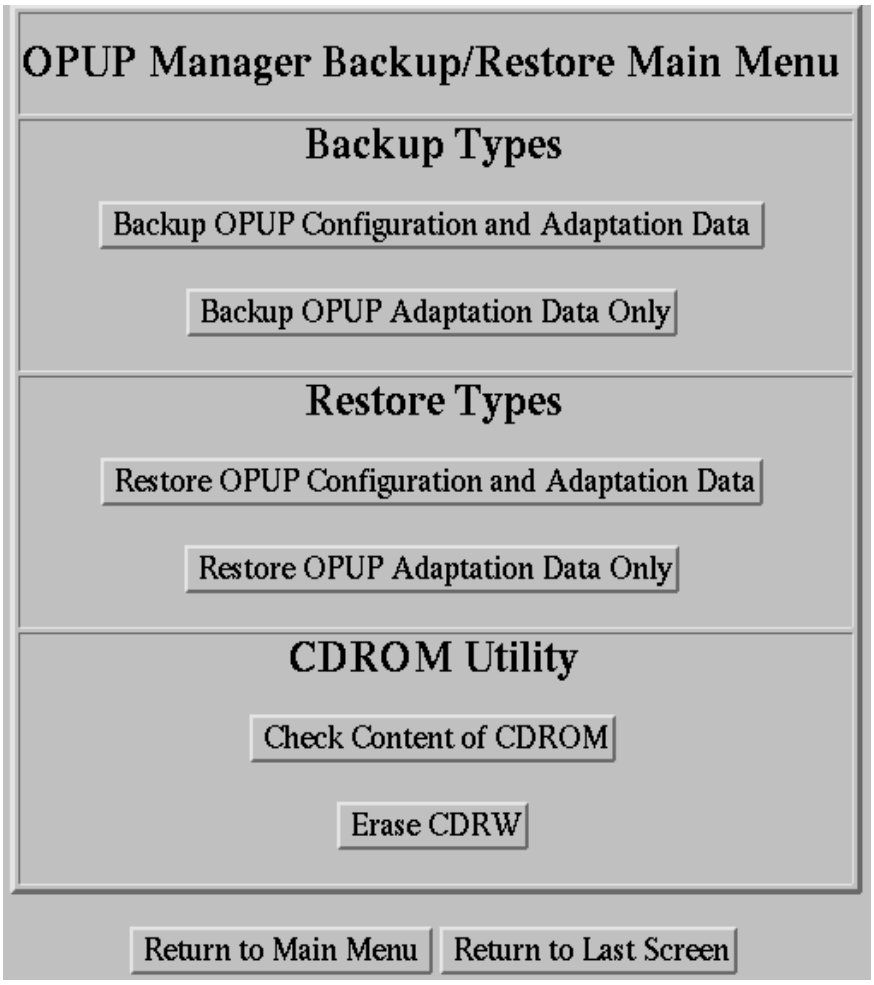


Figure 5-33. OPUP Manager Backup/Restore Main Menu

NOTE

The OPUP Server OS processes must be stopped before beginning with Step 1 of this procedure.

5.2.9.2.1 Backup OPUP Configuration and Adaptation Data. Prerequisites: The OPUP Server OS processes must be stopped per paragraph 5.2.4.2. A blank CD-R or CD-RW CD-ROM disk must be placed on the Archive IV Device UD86A7 media tray.

1. Starting at the `OPUP Manager Main Menu`, click on the following menu buttons: **OPUP Server Control Menu ‹Backup/Restore Tools** to display the `OPUP Manager Backup/Restore Main Menu`.

2. At the `OPUP Manager Backup/Restore Main Menu`, click on the **Backup OPUP Configuration and Adaptation Data** button. An `OPUP Manager Backup OPUP` warning window will be displayed as shown in Figure 5-34.

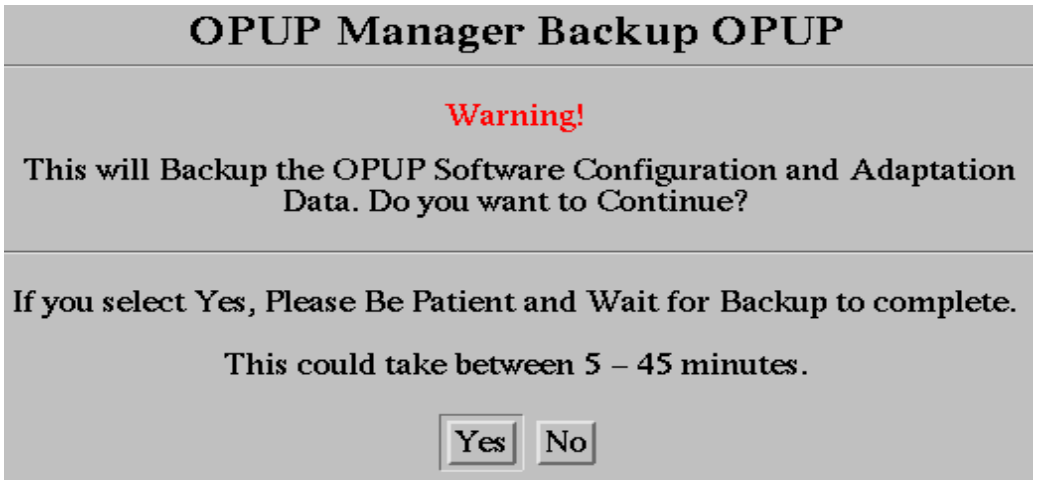


Figure 5-34. OPUP Manager Backup OPUP Warning Window

3. At the `OPUP Manager Backup OPUP` warning window, click on the **Yes** button. When the OPUP Manager Backup OPUP function is finished, an `OPUP Manager Backup OPUP`, `OPUP Software Configuration is Complete` window will be displayed as shown in Figure 5-35.

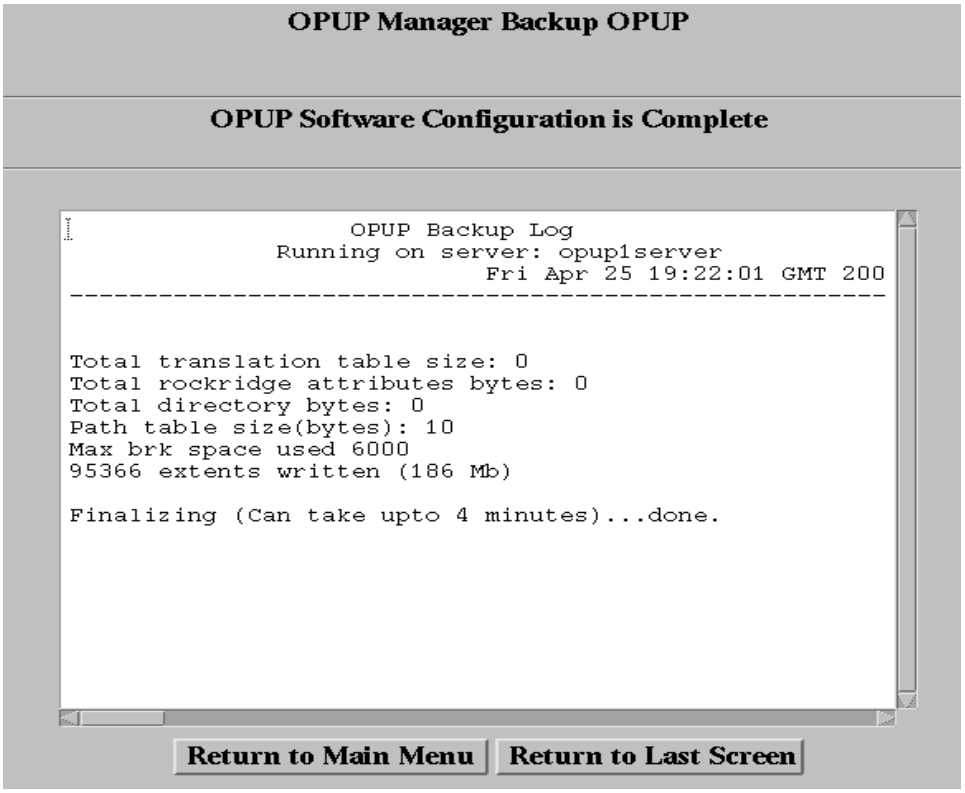


Figure 5-35. OPUP Manager Backup OPUP Software Configuration Complete Window

4. At the `OPUP Manager Backup OPUP`, `OPUP Software Configuration is Complete` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5. At the `OPUP Manager Main Menu`, click on the **OPUP Server Control** button. The `OPUP Server Control Menu` will be displayed.

6. At the `OPUP Server Control Menu`, click on the **Backup/Restore Tools** button. The `OPUP Manager Backup/Restore Main Menu` will be displayed.

NOTE

Ensure that a blank CD-ROM (CD-R/CD-RW) disk is used each time the Backup OPUP Configuration and Adaptation Data function is used. The OPUP Manager Backup OPUP function cannot append data to CD-ROM disks that contains data. If the OPUP Manager Backup OPUP function detects data on the disk it will display the following message as shown in Figure 5-36: `Warning! OPUP Software Backup Failed. CDROM not writeable. CDROM probably contain data. Please insert a new CDROM and try again.` If this mes-

sage is displayed, simply remove the current CD-ROM disk and replace it with a blank disk.

7. At the `OPUP Manager Backup/Restore Main Menu`, click on the **Check Content of CDROM** button. `The Content of the inserted CDROM is as follows:` window will be displayed as shown in Figure 5-25.

8. At `The Content of the inserted CDROM is as follows:` window, ensure that a **Backup.tar** file is present. Ensure that this file has the latest date and time associated with it. If the Backup.tar file is present and has the latest date/time associated with it, go to the next step. If this file is not present and/or the date/time was not updated, return to Step 1 and perform Steps 1 through 7.

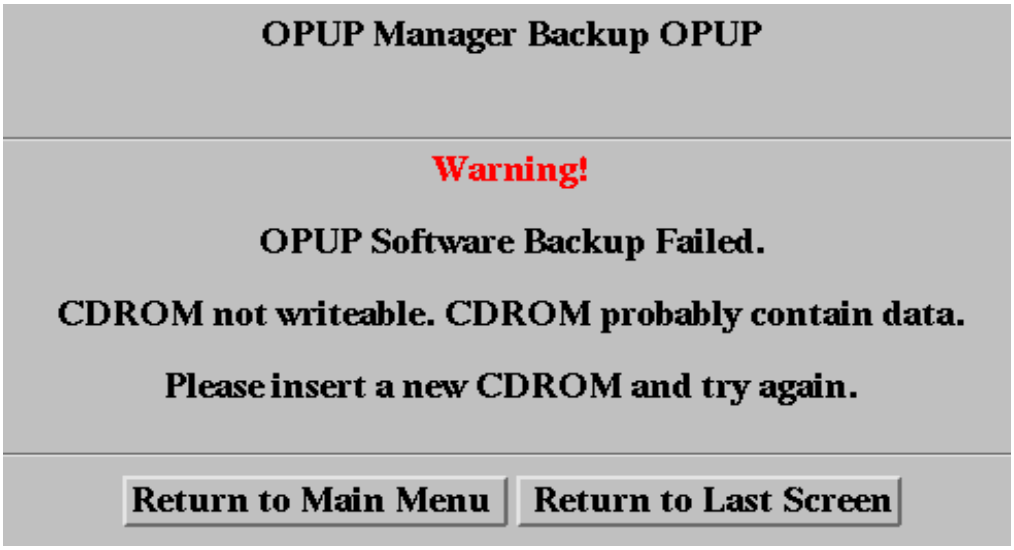


Figure 5-36. OPUP Manager Backup OPUP Software Backup Failed Window

9. Click on the **Return to the Main Menu** button to return to the `OPUP Manager Main Menu`.

10. At the `OPUP Manager Main Menu`, click on the **OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

11. Ensure that all OPUP Processes have been started and are operating normally. Perform the procedures outlined in paragraph 5.2.4.4 and paragraph 5.2.4.1, if necessary. When finished, click on the **Return to the Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

The OPUP Server OS processes must be stopped before beginning with Step 1 of this procedure.

5.2.9.2.2 Restore OPUP Configuration and Adaptation Data. Prerequisites: The OPUP Server process must be stopped per paragraph 5.2.4.2. A CD-ROM disk that contains Backup/Restore data must be placed on the Archive IV Device UD86A7 media tray.

1. Starting at the `OPUP Manager Main Menu`, click on the following menu buttons: **OPUP Server Control Menu ‹Backup/Restore Tools** to display the `OPUP Manager Backup/Restore Main Menu`.

2. At the OPUP Manager Backup/Restore Main Menu, click on the **Restore OPUP Configuration and Adaptation Data** button. An `OPUP Manager Restore OPUP` window will be displayed similar to what is shown in Figure 5-34.

3. At the `OPUP Manager Restore OPUP` window, click the **Yes** button. When the OPUP Manager Restore OPUP function is finished, an `OPUP Manager Restore OPUP` window will be displayed similar to what is shown in Figure 5-35. This window will also display the following message: `OPUP Software Restore Configuration is Complete.`

4. At the `OPUP Manager Restore OPUP` window, click on the **Return to the Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5. At the `OPUP Manager Main Menu`, click on the **OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

6. Ensure that all OPUP Processes have been started and are operating normally. Perform the procedures outlined in paragraph 5.2.4.4 and paragraph 5.2.4.1. When finished, click on the **Return to the Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.3 Screen Configuration. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Screen Configuration** button. A `Screen Configuration Parameters` window will be displayed.

2. At the `Screen Configuration Parameters` window, click within the `Saver Timeout:` edit field and enter the time (in minutes) when the Saver Timeout function is to remove the current image that is displayed on the Monitor UD86A1. When finished, press the **<Tab>** key, once. The cursor will then be located in the `Lock Timeout:` edit field. (The default time for the Saver Timeout function is 15 minutes.)

3. At the `Lock Timeout:` edit field, enter the time (in minutes) when the OPUP Server OS terminal Lock Timeout function is to remove the current image from the Monitor UD86A1 display and invoke the Password Entry login function. (The default time for the Lock Timeout function is 30 minutes.)

4. At the `Screen Configuration Parameters` window, click on the **Save** button. A `Screen Configuration Changed` window will be displayed as shown in Figure 5-37.

NOTE

The `Screen Configuration Changed` window will re-display the Saver and Lock Timeout parameters that were entered in Steps 2 and 3. In order for these parameters to take affect, the OPUP Server OS must be rebooted. A **Reboot Server** button is provided near the bottom left of this window for this purpose. The OPUP Server will take approximately 2 to 3 minutes to fully reboot.

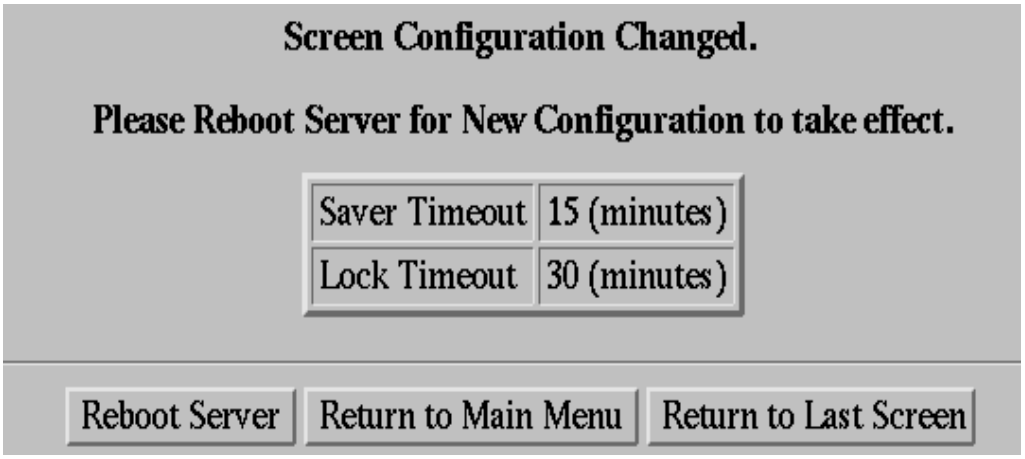


Figure 5-37. Screen Configuration Changed Window

5. At the `Screen Configuration Changed` window, click on the **Reboot Server** button. An `OPUP Manager Restart Server` window will be displayed as shown in Figure 5-38.

Figure 5-38. OPUP Manager Restart Server Window

6. At the `OPUP Manager Restart Server` window, click on the **Yes** button. An `OPUP Manager Restart Server(s)` confirmation window will be displayed. The Restart Server function will then automatically reboot the OPUP Server OS. This will take approximately 2 to 3 minutes to complete. When the Reboot Server function is finished, the `CDE Login` screen will be displayed.

7. At the CDE Login screen, in the `Please enter your user name` edit box, enter:

   opupmgr<Return>

8. At the CDE Login screen, in the `Please enter your password` edit box, enter:

   opupmgr_password **<Return>**

   The CDE login function will initiate a login sequence. When the CDE login function is finished, a Netscape HTML web page interface GUI will automatically be displayed. If the Netscape HTML web page interface GUI does not automatically display, click on the OPUP Manager GUI (Netscape "**World**") icon located near the left of the CDE Front Panel. (Refer to Figure 3-1 and Table 3-2 for further information concerning the location and description of the OPUP Manager GUI.)

9. At the Netscape HTML web page window, click **anywhere on the gray background**. A `Netscape: Password` login window will be displayed.

10. In the `Netscape: Password` window, in the `User ID:` edit box, enter:

    opupmgr<Return>

11. In the `Netscape: Password` window, in the `Password:` edit box, enter:

*opupmgr_password***<Return>**

12. Once the password is entered and the **<Return>** key is pressed, the Netscape login function will display the `OPUP Manager Main Menu`.

13. At the `OPUP Manager Main Menu`, click on the **OPUP Sever Control Menu** button. An `OPUP Server Control Menu` window will be displayed as shown in Figure 5-32.

14. At the `OPUP Server Control Menu`, click on the **Screen Configuration** button. A `Screen Configuration Parameters` window will be displayed. Verify that the parameters entered in Steps 2 and 3 are correct. If they are correct, go to the next step. If they are not correct, return to Step 2 and repeat the procedure.

15. At the `Screen Configuration Parameters` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.4 Printer Tools. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Printer Tools** button. An `OPUP Printer Menu` will be displayed as shown in Figure 5-39.

NOTE

Each site will have the ability to add, delete, determine status of a printer device, view/delete print jobs, and change the default printer device for printers assigned to the OPUP Server OS via the `OPUP Printer Menu`. The steps provided in this procedure may be applied to any printer device that is network/Post Script (PS) compatible. The Printer Tools procedure(s) only address the Printer UD86A12 discussed in Chapter 2, OPUP Hardware and are not intended for any other printer device. Refer to the following paragraph concerning OPUP printer limitations.

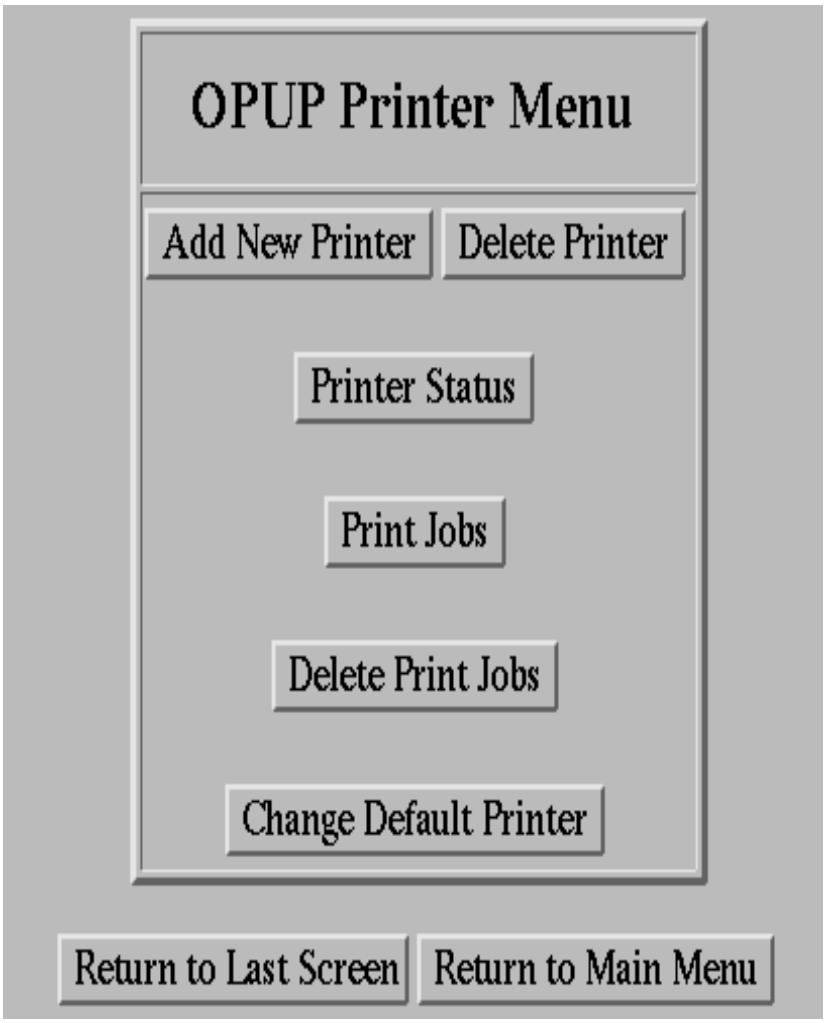


Figure 5-39. OPUP Printer Menu

2. At the `OPUP Printer Menu`, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or click on the **Return to Main Menu** button to return to the `OPUP Main Manager Menu`.

5.2.9.4.1 OPUP Printer Limitations. The Printer Tools function has been developed to make use of the majority of printers that are network and Post Script (PS) compatible. In order for any PS compatible printer to be connected to the OPUP server, it must have a Ethernet Network Interface card installed and a dedicated IP address assigned to the printer. Each printer must have color PS capability in order to perform the PS functions required to properly printout color copies of WSR-88D product and message data.

5.2.9.4.2 Add New Printer. The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Add New Printer** button. An `OPUP Manager Add New Printer` window will be displayed as shown in Figure 5-40.

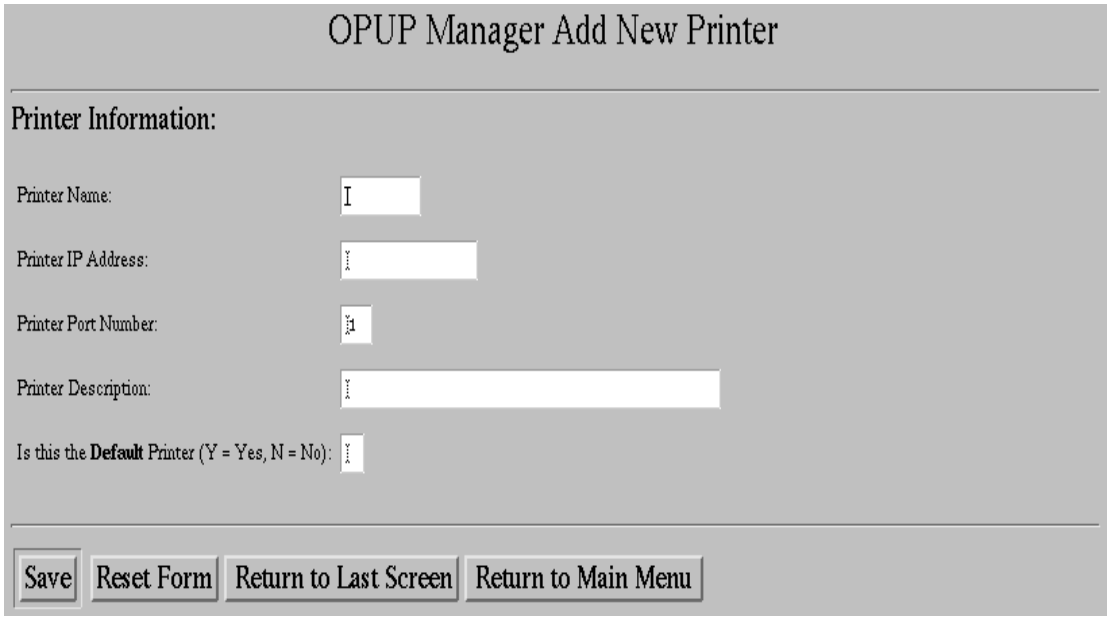


Figure 5-40. OPUP Manager Add New Printer Window

The following information is a breakdown of the data required within the `OPUP Manager Add New Printer` window:

- **Printer Name:** Any eight character length plain language name (i.e. 8200N)
- **Printer IP Address:** A separate IP address that can be used for the OPUP Printer only.
- **Printer Port Number:** This number is used by the OPUP Server OS to identify the parallel port address for which data will pass through to the printer device. This number is normally defaulted to 1. If other devices are connected to the OPUP parallel port, the next available port number will be used.
- **Printer Description:** Any 45 character length plain language that identifies the printer use (i.e. OPUP Printer Device). This parameter is optional.
- **Is this the Default Printer (Y=Yes, N=No):** Placing a Y in this edit field will cause the current Printer Device to be the default printer device to be used when printing WSR-88D product and message data. A **Y** will normally be placed in this field.

2. At the `OPUP Manager Add New Printer` window, within the `Printer Information:` area, click on the `Printer Name:` edit field and enter an 8 character length printer name.

NOTE

When finished with the `Printer Name:` edit field, use the **<Tab>** key to go through the rest of the edit fields and enter the required data. When finished, go to the next step.

3. At the `OPUP Manager Add New Printer` window, click on the **Save** button. An `OPUP Printer` *`printer_name`* `- has been created` window will be displayed.

NOTE

The `OPUP Printer` *`printer_name`* `- has been created` window provides the ability to add another printer device by clicking on the **Add NEW Printer** button. When this button is clicked an `OPUP Manager Add New Printer` window will be displayed as shown in Figure 5-40.

4. At the `OPUP Printer` *`printer_name`* `- has been created` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.4.3 Delete Printer. Prerequisite: The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Delete Printer** button. An `OPUP Manager Delete Printer` window will be displayed as shown in Figure 5-41.

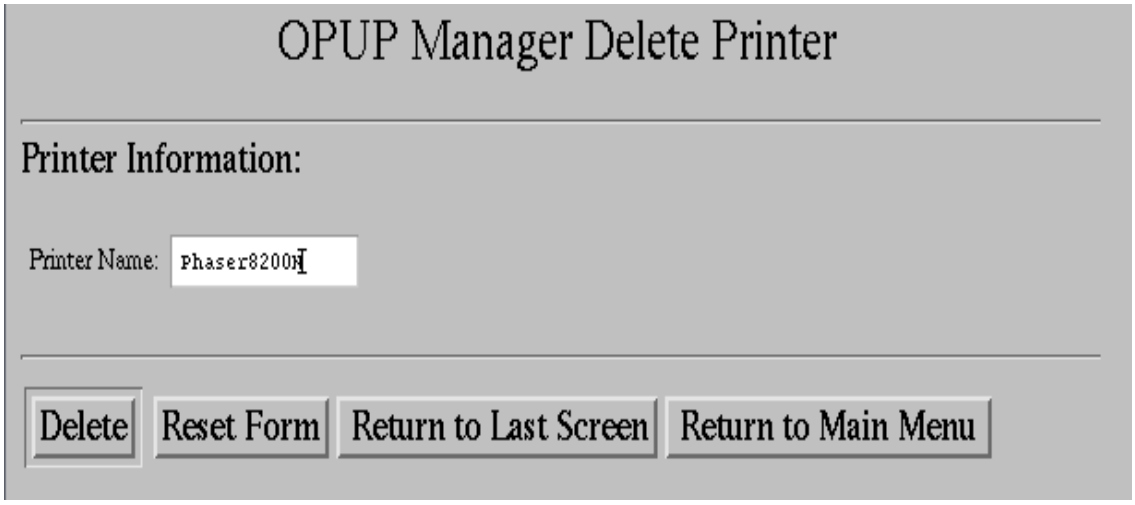


Figure 5-41. OPUP Manager Delete Printer Window

2. At the `OPUP Manager Delete Printer` window, within the `Printer Information:` area, click within the `Printer Name:` edit field and enter the name of the printer device that is to be deleted from the OPUP Server OS Printer database.

3. At the `OPUP Manager Delete Printer` window, click on the **Delete** button. When the OPUP Manager Delete Printer function is finished, an `OPUP Printer` *`printer_name`* `- has been Deleted` window will be displayed.

NOTE

The `OPUP Printer` *`printer_name`* `- has been Deleted` window contains a **Delete Another Printer** button. The Delete Another Printer function provides each site the ability to select another printer to be deleted from the OPUP Server OS printer database. When this button is clicked, an `OPUP Manager Delete Printer` window will be displayed as shown in Figure 5-41. If used, follow the procedures provided in Steps 2 and 3. When finished, go to the next step.

4. At the `OPUP Printer` *`printer_name`* `- has been Deleted` window, click on the **Return to Last Screen** button to return to the `OPUP Printer Menu` or the **Return to Main Menu** button to return to `OPUP Manager Main Menu`.

5.2.9.4.4 Printer Status. Prerequisite: The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Printer Status** button. An `OPUP Printer Status` window will be displayed as shown in Figure 5-42.

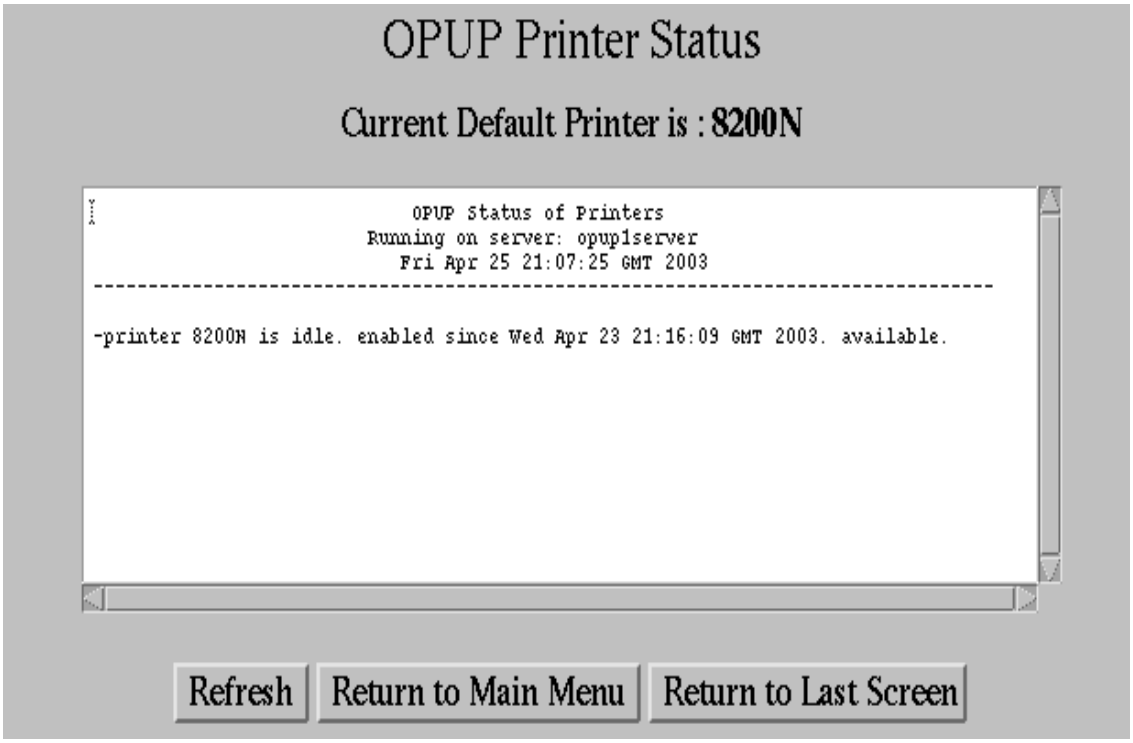


Figure 5-42. OPUP Printer Status Window

NOTE

The `OPUP Printer Status` window is a static display. The information provided by the OPUP Printer Status function is the most current printer information located within the OPUP Server OS printer database at the time the **Printer Status** button was clicked. In order to re-display the most current data in this window, click on the **Refresh** button located near the bottom left of the window. Also, it is possible to use the **Return to Last Screen** button or the Netscape **Refresh** button to update information to this screen.

2. At the `OPUP Printer Status` window, click on the **Return to Last Screen** button to return to the `OPUP Printer Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.4.5 Print Jobs. Prerequisite: The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Print Jobs** button. An `OPUP Printer Pending Jobs` window will be displayed as shown in Figure 5-43.

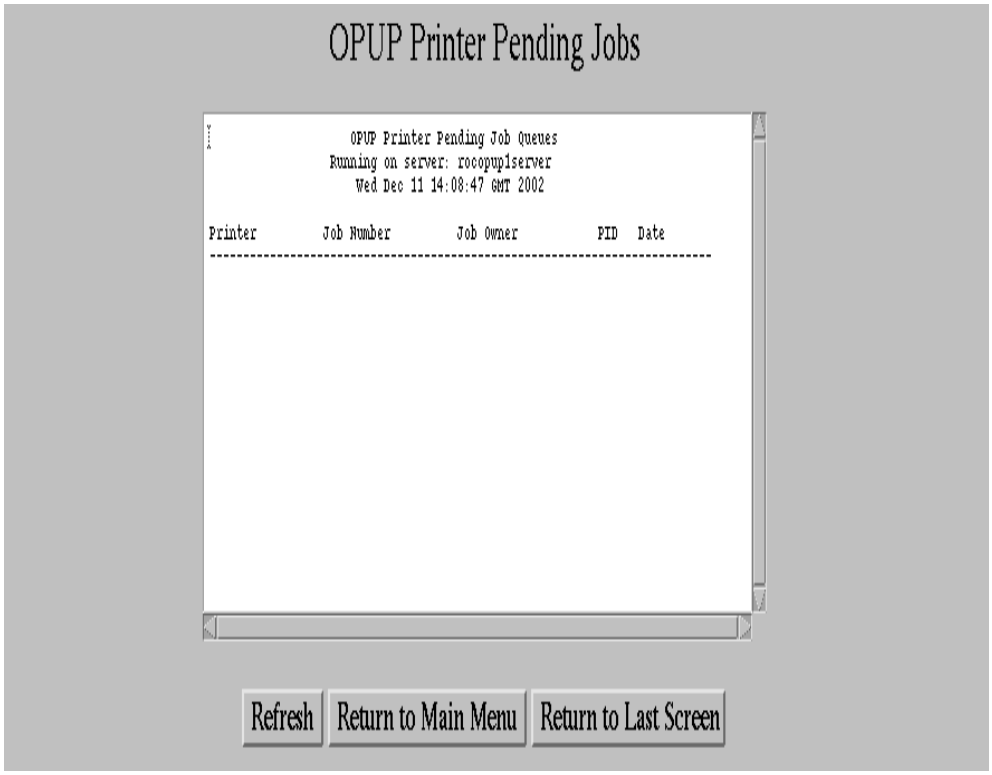


Figure 5-43. OPUP Printer Pending Jobs Window

NOTE

The `OPUP Printer Pending Jobs` window is a static display. The information provided by the OPUP Printer Pending Jobs function is the most current printer jobs information located within the OPUP Server OS printer database at the time the **Print Jobs** button was clicked. In order to re-display the most current data in this window, click on the **Refresh** button located near the bottom left of the window.

2. At the `OPUP Printer Pending Jobs` window, click on the **Return to Last Screen** button to return to the `OPUP Printer Menu` or click on the **Return to Main Menu** to return to the `OPUP Manager Main Menu`.

5.2.9.4.6 Delete Print Jobs. Prerequisite: The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Delete Print Jobs** button. A `Please Select Job to Delete from Available Jobs` window will be displayed as shown in Figure 5-44.

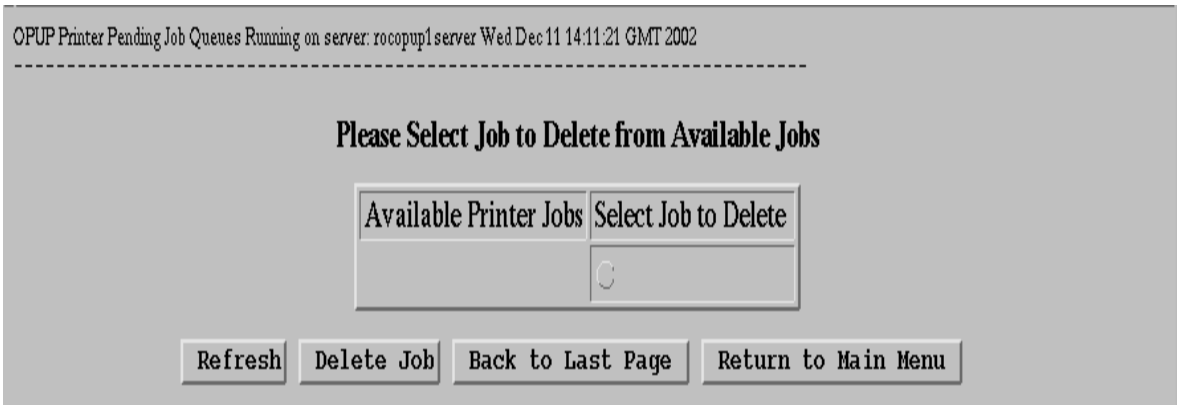


Figure 5-44. Delete Print Jobs Selection Window

NOTE

The `Please Select Job to Delete from Available Jobs` window, is a static display of the most current print jobs information located within the OPUP Server OS printer database at the time the **Delete Print Jobs** button was clicked. In order to re-display the most current data in this window, click on the **Refresh** button located near the bottom left of the window.

2. At The `Please Select Job to Delete from Available Jobs` window, within the `Select Job to Delete` column, click on the radio button associated with the print job of interest to select it.

3. At The `Please Select Job to Delete from Available Jobs` window, click on the **Delete Job** button. An `OPUP Print Job Deleted` confirmation window will be displayed.

4. At the `OPUP Print Job Deleted` confirmation window, click on the **Yes** button. The OPUP Print Job Deleted function will then remove the selected print job from the OPUP Server OS print database. When finished, the OPUP Print Job Delete function will display the `OPUP Printer Menu`.

5. At the `OPUP Printer Menu`, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.4.7 Change Default Printer. Prerequisite: The `OPUP Printer Menu` must be displayed as shown in Figure 5-39.

1. At the `OPUP Printer Menu`, click on the **Change Default Printer** button. A `Please Select New Default Printer from Available Printers` window will be displayed as shown in Figure 5-45.

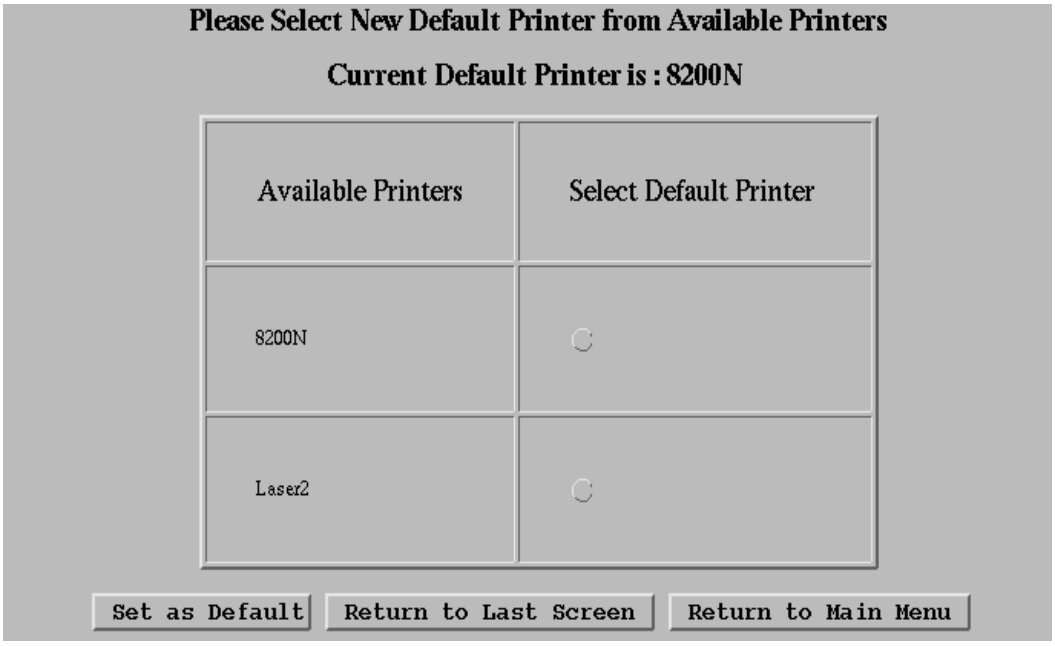


Figure 5-45. Please Select New Default Printer From Available Printers Window

NOTE

The `Please Select New Default Printer from Available Printers` window will display the current default printer within the `Current Default Printer is: default_printer` area.

2. At the `Please Select New Default Printer from Available Printers` window, within the `Select Default Printer` column, click on the radio button of the desired default printer. The *default printer of interest* radio button will be highlighted.

3. At the `Please Select New Default Printer from Available Printers` window, click on the **Set as Default** button. When the Set as Default function is finished, a `Default Printer has been changed to printer_name` window will be displayed.

4. At the `Default Printer has been changed to printer_name` window, click on the **Return to Last Screen** button to return to the `Please Select New Default Printer from Available Printers` window or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.5 CISCO Control Menu. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **CISCO Control Menu** button. A `CISCO Control Menu` will be displayed as shown in Figure 5-46.

NOTE

The CISCO Control Menu provides each site the ability to either change specific communication router passwords or restart CISCO Interactive Operating System (IOS) software in the event that the communication router IOS stops responding to OPUP Server OS program commands and/or the IOS becomes corrupted.

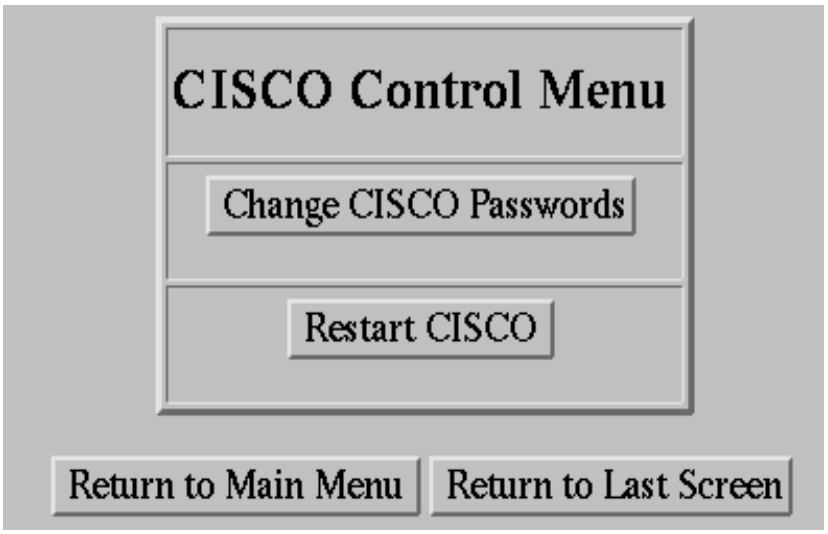


Figure 5-46. CISCO Control Menu

2. At the `CISCO Control Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu` or the **Return to Last Screen** button to return to the `OPUP Server Control Menu`.

5.2.9.5.1 Change CISCO Password. Prerequisite: The `CISCO Control Menu` must be displayed as shown in Figure 5-46.

1. At the `CISCO Control Menu`, click on the **Change CISCO Passwords** button. An `OPUP Manager Change CISCO Password` window will be displayed as shown in Figure 5-47.

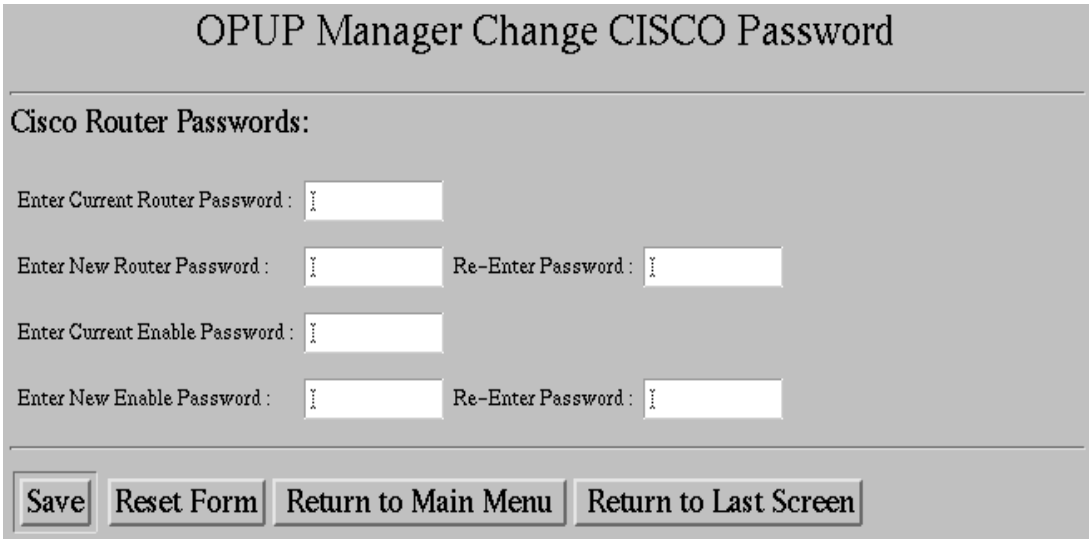


Figure 5-47. OPUP Manager Change CISCO Password Window

NOTE

The following step requires the current router and enable passwords associated with the Communication Router UD86A8. Obtain these passwords before continuing to the next step.

2. At the `OPUP Manager Change CISCO Password` window, click within the `Enter Current Router Password:` edit field and enter the current router password. When finished, press the **<Tab>** key.

NOTE

Use the **<Tab>** key to move through each edit field. Place the appropriate information in each field.

3. At the `OPUP Manager Change CISCO Password` window, click on the **Save** button. When the OPUP Manager Change CISCO Password function is finished, a `CISCO Passwords - have been changed` window will be displayed.

NOTE

The `Re-Enter Password:` edit field is provided in order to ensure that the information placed in the `Enter New Router Password:` and/or `Enter New Enable Password:` edit fields are correct. If any information in the `Re-Enter Password`: field(s) do not exactly match the information in the corresponding edit field(s), a `Password Information Not Correct` window will be displayed. If this window is displayed, click on the **Return to Last Screen** button to return to the `OPUP Manager Change CISCO Password` window and begin again at Step 1.

4. At the `CISCO Passwords - have been changed` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.5.2 Restart Communication Router UD86A8. Prerequisite: The `CISCO Control Menu` must be displayed as shown in Figure 5-46.

1. At the `CISCO Control Menu`, click on the **Restart CISCO** button. An `OPUP Manager Re-Start CISCO` window will be displayed as shown in Figure 5-48.

Figure 5-48. OPUP Manager Re-Start CISCO Warning Window

2. At the `OPUP Manager Re-Start CISCO` window, click on the **Yes** button. The OPUP Manager Re-Start CISCO function will display the message: `CISCO is Re-Starting  Please wait for 1-2 minutes for the CISCO to re-start`.

3. At the `OPUP Manager Re-Start CISCO` window, click on the **Return to Last Screen** button to return to the `CISCO Control Menu`.

4. At the `CISCO Control Menu`, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.6 Oracle Tools Menu. Prerequisites: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Oracle Tools** button. An `OPUP Manager Oracle Tools Menu` will be displayed as shown in Figure 5-49.

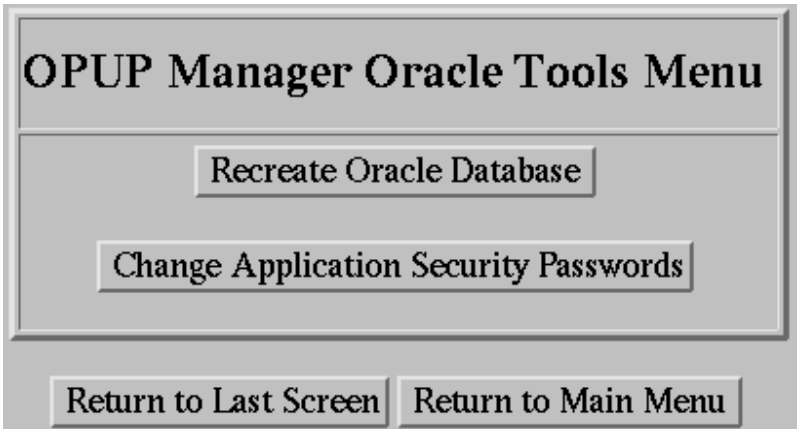


Figure 5-49. OPUP Manager Oracle Tools Menu

NOTE

The OPUP Manager Oracle Tools Menu function provides each site the ability to recreate the Oracle Database control table or change/edit the Security Level Passwords used throughout each Operational Application Software Suite. The following paragraphs outline the procedures required to re-create the Oracle Database tables and/or change security level passwords associated with the Operational Application GUI Suite.

2. At the `OPUP Manager Oracle Tools Menu`, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.6.1 Recreate Oracle Database. Prerequisite: The `OPUP Manager Oracle Tools Menu` must be displayed as shown in Figure 5-49.

1. At the `OPUP Manager Oracle Tools Menu`, click on the **Recreate Oracle Database** button. An `OPUP Manager Recreate Oracle Tables` warning window will be displayed as shown in Figure 5-50.

Figure 5-50. OPUP Manager Recreate Oracle Tables Warning Window

2. At the `OPUP Manager Recreate Oracle Tables` warning window, click on the **Yes** button. The OPUP Manager Recreate Oracle Table function will access the appropriate tables, delete all information found, and re-establish a new Oracle database table. When this function is complete, an `OPUP Manager Recreate Oracle Tables` confirmation window will be displayed as shown in Figure 5-51. This window will also display the following message: `OPUP Oracle Tables have been recreated. Please wait 1 to 2 minutes for the Server Processes to start.`

Figure 5-51. OPUP Manager Recreate Oracle Tables Confirmation Window

3. At the `OPUP Manager Recreate Oracle Tables` confirmation window, click on the **Return to Last Screen** button to return to the `OPUP Manager Oracle Tools Menu`.

5.2.9.6.2 Change Application Security Passwords. Prerequisite: The `OPUP Manager Oracle Tools Menu` must be displayed as shown in Figure 5-49.

1. At the `OPUP Manager Oracle Tools Menu`, click on the **Change Application Security Passwords** button. An `OPUP Manager Change Application Security Passwords` warning window will be displayed as shown in Figure 5-52. This window will also display the following message: `Warning! This will change Application Security Passwords. Do you want to Continue?`

NOTE

The Change Application Security Passwords function requires the current passwords assigned to Security Levels 1 through 3 which are used to access specific adaptation information contained in the various windows and GUIs associated with the Operational Applications Front Panel. Be sure to obtain these passwords before continuing on to Step 2.

Figure 5-52. OPUP Manager Change Application Security Passwords Warning Window

2. At the `OPUP Manager Change Application Security Passwords` warning window, click on the **Yes** button. An `OPUP Manager Application Security Passwords` window will be displayed as shown in Figure 5-53.

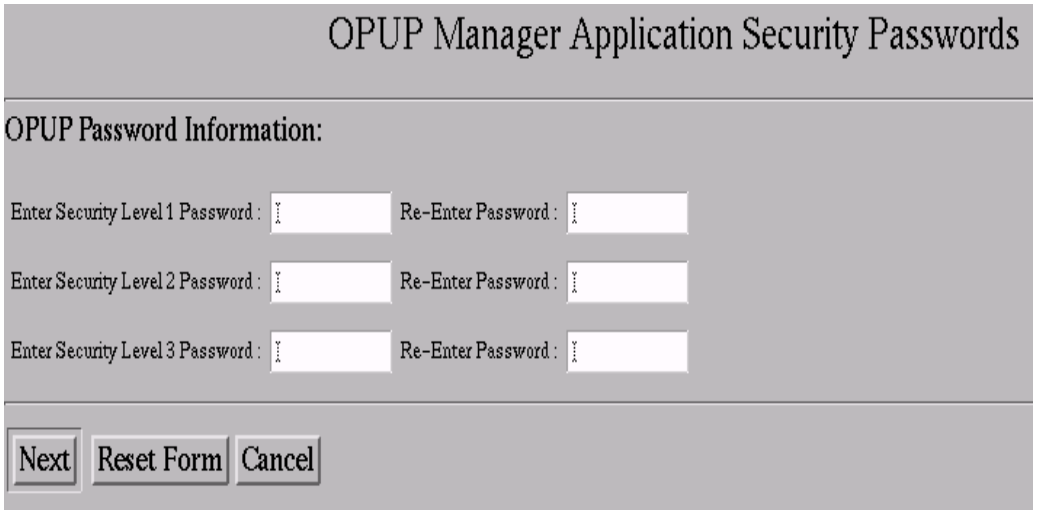


Figure 5-53. OPUP Manager Application Security Passwords Window

NOTE

The `OPUP Manager Application Security Passwords` window has two additional button along with the **Next** button. These are the **Reset Form** and **Cancel** button. Use the **Reset Form** button to clear all edit fields located within this window anytime to begin the edit field input process over. Use the **Cancel** button to immediately stop the OPUP Manager Application Security Password change function and display the `OPUP Manager Main Menu`.

3. At the `OPUP Manager Application Security Passwords` window, within the `OPUP Password Information:` area, click within the `Enter Security Level 1 Password:` edit field and enter the Security Level 1 Password. When finished, use the **<Tab>** key to go to the `Re-Enter Password:` edit field.

NOTE

Each password must meet the following minimum composition requirements:

- Be at least a minimum of eight characters in length.
- Contain at least one UPPERCASE character (A through Z).
- Contain at least one lowercase character (a through z).
- Contain at least one number (0 through 9).
- Contain at least one special character (!, @, %, (, -, +, {, [, #, =, &, *). All "special" entries must be within the first 8 characters.

Do not use the ^, ~, /, or . special characters because they are used in association with specific OPUP Server OS processes and applications. Also, UNIX passwords are case-sensitive, users must always enter their password exactly the same way they created it. If a user forgets their password, the system administrator must then assign a new password for the user.

Passwords must not be the same as the user name or constructed from words straight out of the dictionary (spelled forwards, backwards, or split with a number or special character) or be constructed using a user's personal identity, history, or environment. Generic passwords must also be prohibited (e.g. a system having "welcome" as the password for all newly created user names). When passwords expire, users must not reuse the current password or use any of the last nine passwords assigned to that user name.

4. At the `OPUP Manager Application Security Passwords` window, within the `OPUP Password Information:` area, at the `Re-Enter Password:` edit field, re-enter the Level 1 Password. Use the **<Tab>** key to move through the rest of the edit fields and enter/re-enter the Security Level 2 and Security Level 3 Passwords.

5. At the `OPUP Manager Application Security Passwords` window, click on the **Next** button. A `PUP Information Entered` window will be displayed as shown in Figure 5-54.

Figure 5-54. PUP Information Entered Window

6. At the `PUP Information Entered` window, click on the **Return to Oracle Tools Menu** button to return to the `OPUP Oracle Tools Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.7 Default Route Configuration Menu. Prerequisite: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Default Route Configuration** button. An `OPUP Manager Default Route Menu` will be displayed as shown in Figure 5-55.

.

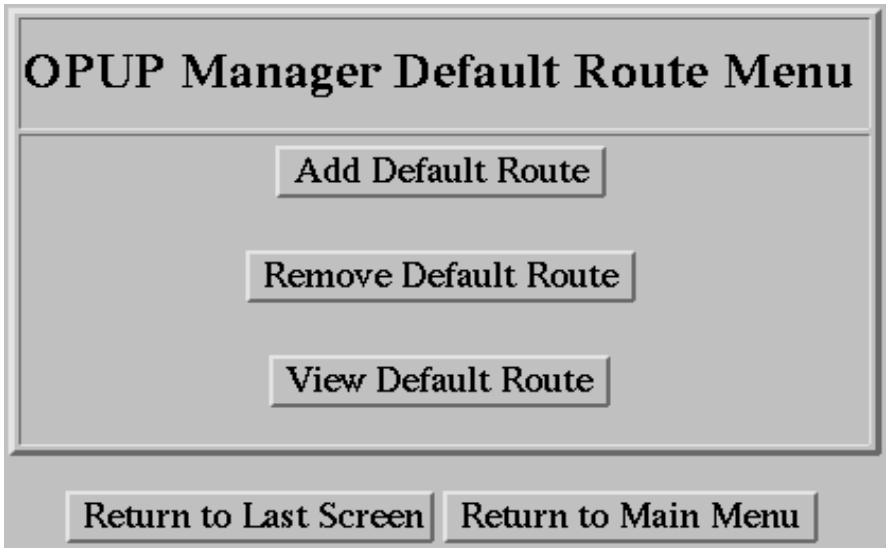


Figure 5-55. OPUP Manager Default Route Menu

NOTE

The OPUP Manager Default Route Menu function provides the functions necessary to add, remove, or view the current Default Route IP address that is set within the OPUP Server OS communication database. A Default Route IP address is used to provide an alternative method to connect and access OPUP server communications from a remote terminal located within a different IP address sub-net not associated with the OPUP server IP subnet.

2. At the `OPUP Manager Default Route Menu`, click on the **Return to Last Screen** button to return to the `OPUP Server Control Menu` or the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.7.1 Add Default Route. Prerequisite: The `OPUP Manager Default Route Menu` must be displayed as shown in Figure 5-55.

1. At the `OPUP Manager Default Route Menu`, click on the **Add Default Route** button. An `OPUP Manager Add Default Route` window will be displayed as shown in Figure 5-56.

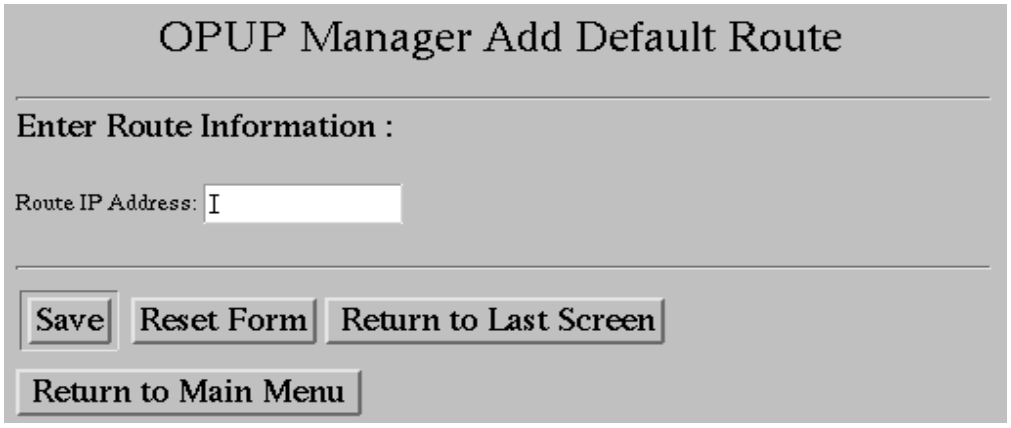


Figure 5-56. OPUP Manager Add Default Route Window

2. At the `OPUP Manager Add Default Route` window, within the `Enter Route Information:` area, click within the `Route IP Address:` edit field and enter the default route IP address.

NOTE

If the data entered within the `Route IP Address:` edit field has an error, click on the **Reset Form** button to clear the edit field and re-enter the information before clicking on the **Save** button.

3. At the `OPUP Manager Add Default Route` window, click on the **Save** button. A `New Default Route Added for IP Address: ip_address` window will be displayed as shown in Figure 5-57.

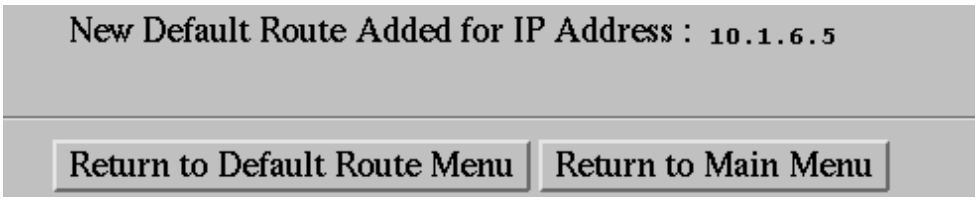


Figure 5-57. New Default Route Added for IP Address: Window

4. At the `New Default Route Added for IP Address: ip_address` window, click on the **Return to Default Route Menu** button to return to the `OPUP Manager Default Route Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

NOTE

If the OPUP Manager Default Route function detects either a duplicate IP address and/or the Switch UD86A5 connection to a site's Intra-LAN cannot be detected by the OPUP Server OS, the Default Route function will display the following message as shown in Figure 5-58: `Could not add default route due to unreachable network or bad network IP address. Please check Route IP Address and try again.` If this message is displayed, wait 1 minute and then click on the **Return to Last Screen** button to return to the `OPUP Manager Add Default Route Menu`. When finished, repeat Step 1 of this procedure.

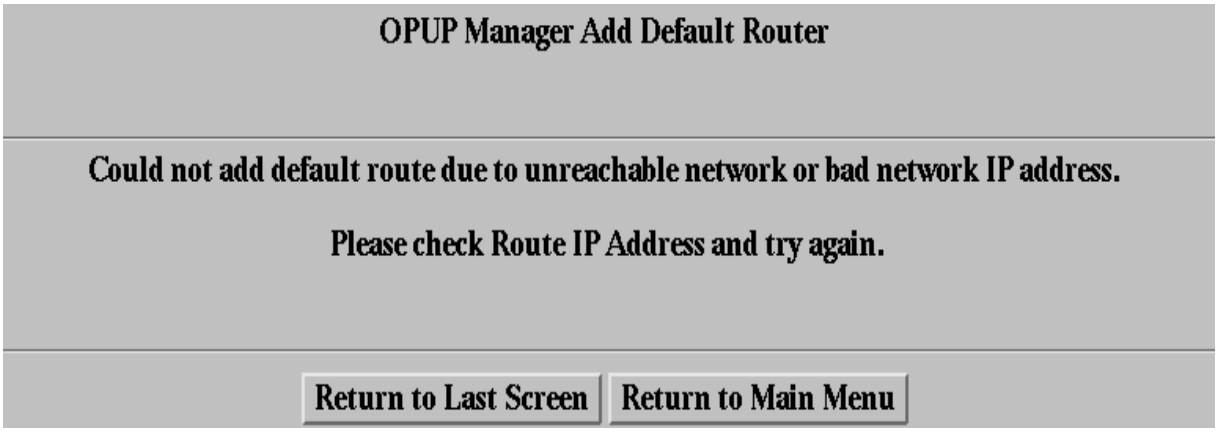


Figure 5-58. OPUP Manager Add Default Route (Unreachable) Window

5.2.9.7.2 Remove Default Route. Prerequisite: The `OPUP Manager Default Route Menu` must be displayed as shown in Figure 5-55.

1. At the `OPUP Manager Default Route Menu`, click on the **Remove Default Route** button. An `OPUP Manager Delete Default Route` window will be displayed as shown in Figure 5-59.

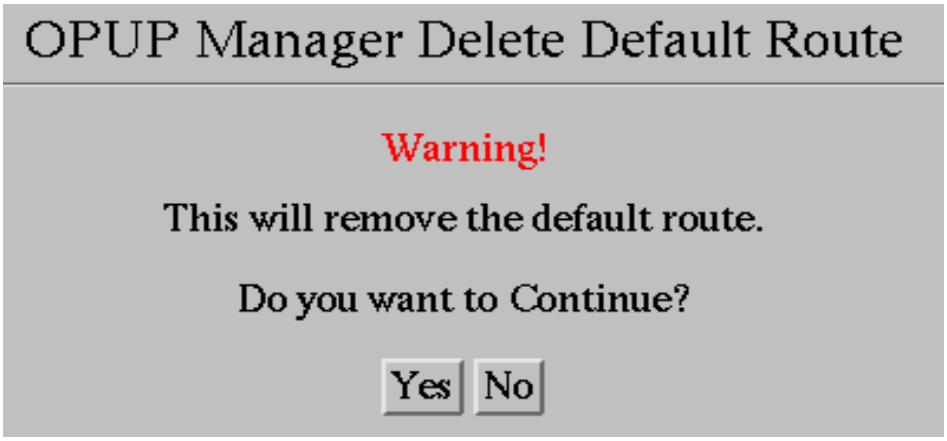


Figure 5-59. OPUP Manager Delete Default Route Window

2. At the `OPUP Manager Delete Default Route` window, click on the **Yes** button. A `Default Route Deleted` window will be displayed as shown in Figure 5-60.

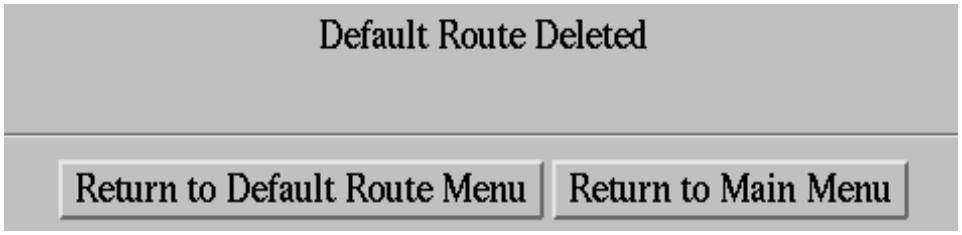


Figure 5-60. Default Route Deleted Window

3. At the `Default Route Deleted` window, click on the **Return to Default Route Menu** button to return to the `OPUP Manager Default Route Menu` or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.7.3 View Default Route. Prerequisite: The `OPUP Manager Default Route Menu` must be displayed as shown in Figure 5-55.

1. At the `OPUP Manager Default Route Menu`, click on the **View Default Route** button. An `OPUP Server Default Route` window will be displayed as shown in Figure 5-61.

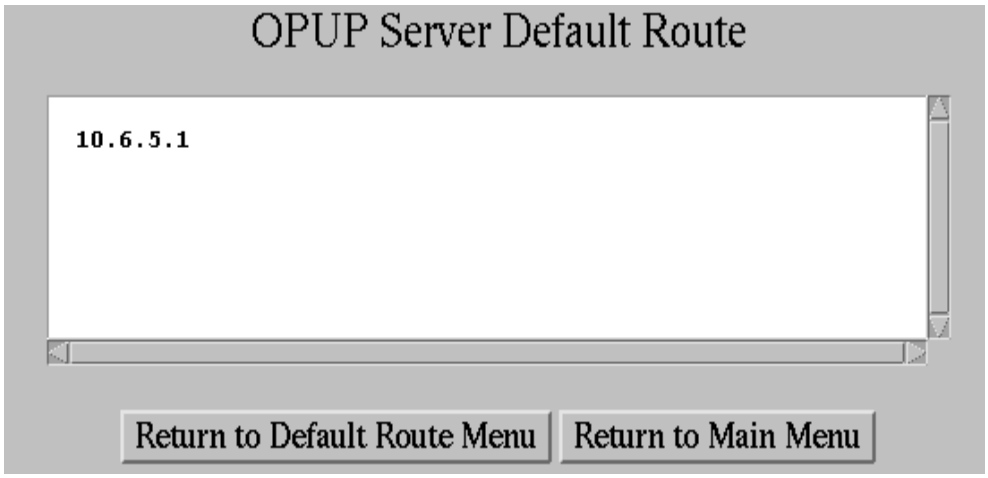


Figure 5-61. OPUP Server Default Route Window

2. To go back to the `OPUP Manager Default Route Menu`, click on the **Return to Default Route Menu** button or click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

5.2.9.8 Validation Test Suite (VTS). The OPUP Manager GUI (via the `OPUP Server Control Menu`) provides a method to monitor system hardware performance via an interactive program called the Validation Test Suite (VTS) developed by Sun Microsystems. The VTS program embodies a set of system applications and functions which provide a GUI that allows a user to detect the status of the OPUP Server OS and perform basic hardware diagnostic tests. These tests can assist with the determination of system hardware performance and/or help to mitigate system faults.

NOTES

The OPUP VTS Tools function interrogates all applicable internal OPUP server components and performs specific diagnostic tasks that involve many internal evaluative processes. These processes can significantly slow down the Server OS. Each site should only use the VTS Tool function when required to investigate either system performance or to mitigate faults.

The following procedures outline how to start and display the VTS Graphics User Interface. These procedures will also include one example of using VTS to determine operational status of an internal hardware item

associated with the Server UD86A2. These steps can then be used to interrogate other internally connected hardware items, if selected.

5.2.9.8.1 Start VTS Tool. Prerequisite: The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Start VTS Tool** button. An `OPUP Start VTS Tool` window will be temporarily displayed as shown in Figure 5-62.

Figure 5-62. Start VTS Tool Information Window

NOTE

The OPUP Start VTS Tool function will display the `OPUP Start VTS Tool` window for only a few seconds. When this window disappears, a SunVTS Diagnostic GUI will be displayed as shown in Figure 5-63.

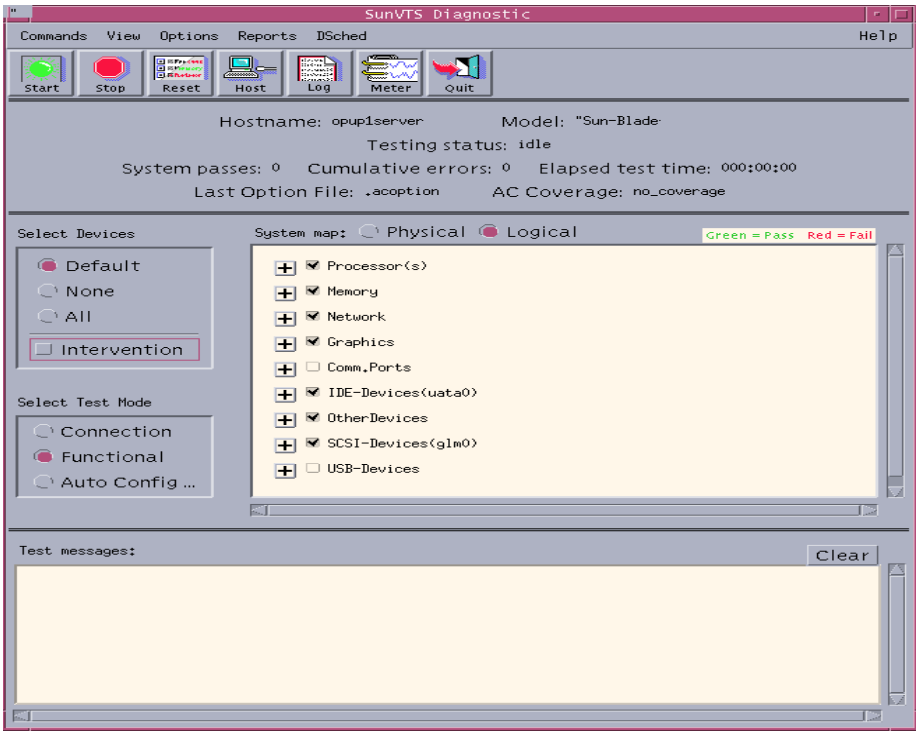


Figure 5-63. SunVTS Diagnostic GUI

NOTES

Once the **Start** button is click within the SunVTS Diagnostic GUI, the VTS program will initially perform a system-wide check of the most current operational state of internal Server UD86A2 hardware. This information will then be reported internally to the VTS program database. No diagnostic information based upon this database will be made available until the user selects specific processes and/or hardware for VTS evaluation.

To cancel the OPUP Start VTS Tool function before the SunVTS Diagnostic GUI is displayed, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu` or click on the **Return to Last Screen** button within 5 seconds after the Start VTS Tool button is selected at the `OPUP Server Control Menu`.

2. At the SunVTS Diagnostic GUI, click on the **Stop** button located near the top left of the GUI. The SunVTS Diagnostic function will stop all OPUP hardware diagnostic functions.

3. At the SunVTS Diagnostic GUI, click on the **Quit** button. The `OPUP Start VTS Tool` window will then be displayed.

4. At the `OPUP Start VTS Tool` window, click on the **Return to Main Menu** button. The `OPUP Manager Main Menu` will be displayed.

5.2.9.8.2 Perform A VTS Diagnostic Function. Prerequisites: The SunVTS Diagnostic GUI must be displayed as shown in Figure 5-63. (Refer to paragraph 5.2.9.8.1 for Start VTS Tool procedures.)

NOTE

This procedure incorporates one example which demonstrates how to configure the SunVTS Diagnostic GUI to perform a hardware diagnostic procedure on one internal hardware item within the OPUP Server UD86A2. (More than one hardware item may be evaluated by clicking the **ALL** selection within the `Select Devices` selection area. For demonstration purposes, only one item will be selected at this. More than one may be selected in future diagnostic evaluations, if desired.)

1. At the `Select Devices` selection area, click on the **None** radio button. All hardware items listed in the `Select Devices` area will be deselected.

2. At the `Select Test Mode` selection area, click on the **Functional** radio button. The **Functional** radio button will be highlighted.

3. At the `System map:` selection area, click on the **Logical** radio button.

4. At the `System map:` selection area, click within the **checkbox of the Processor(s)** only. (Do not check any other boxes at this time.) The `Processor(s)` check box along with an asterisk (*) will be displayed as shown in Figure 5-64.

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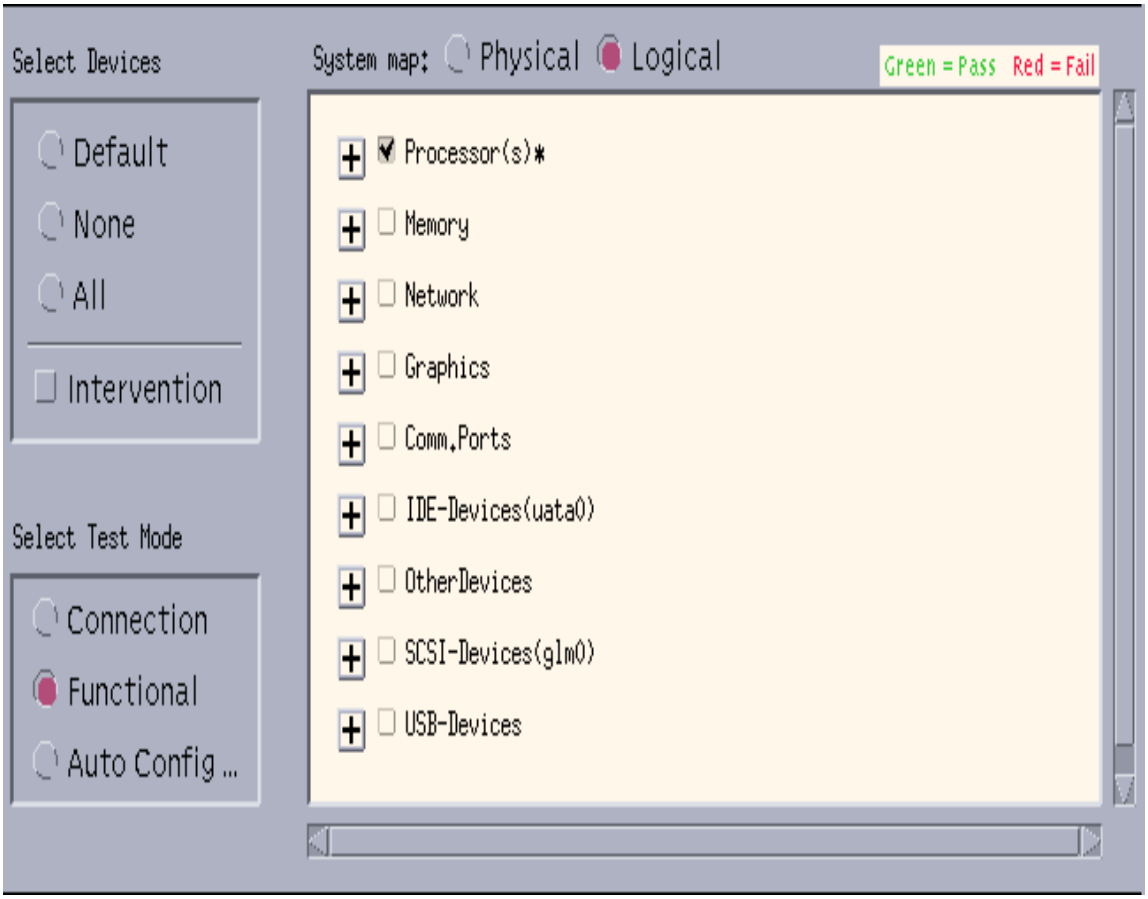


Figure 5-64. VTS Diagnostic Example

5. At the SunVTS Diagnostic GUI, click on the **Start** button located near the top left of the GUI. The SunVTS Diagnostic function will then interrogate the hardware item selected in Step 4. Wait for one minute before going to the next step.

6. At the SunVTS Diagnostic GUI, click on the **Stop** button located near the top left of the GUI. The SunVTS Diagnostic function will then stop processing any diagnostic functions.

7. At the SunVTS Diagnostic GUI, click on the **Log** button located near the top center of the GUI. A `Log Files` pull down menu will be displayed as shown in Figure 5-65.

8. At the `Log File:` pull down menu, click on the `Information` selection bar. A `Log Files` window will be displayed as shown in Figure 5-65.

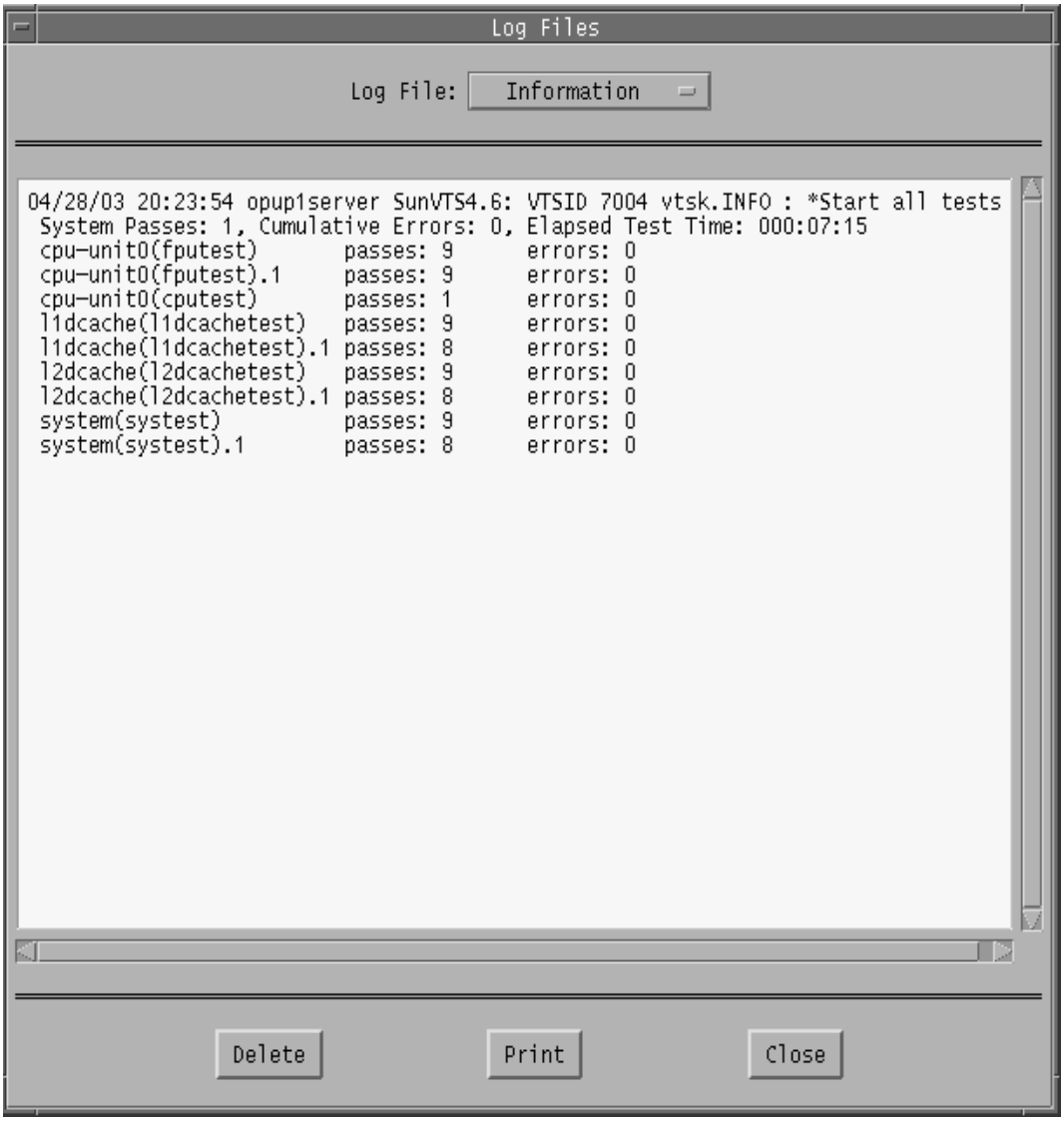


Figure 5-65. Log Files Window

NOTE

The `Log Files` window provides feedback information generated by the SunVTS Diagnostic program. This information may be used as an indicator of system performance and/or to display specific fault/error detection information. If necessary, all errors found should be noted for use while performing troubleshooting procedures in Chapter 6, Maintenance.

9. At the `Log Files` window, click on the **Close** button. The SunVTS Diagnostic GUI will be displayed as shown in Figure 5-63.

10. At the SunVTS Diagnostic GUI, click on the **Quit** button located near the top center of the GUI. The `OPUP Server Control Menu` will then be displayed.

11. At the `OPUP Server Control Menu`, click on the **Return to Main Menu** button to return to `OPUP Manager Main Menu`.

5.2.9.9 Restart Server. The Restart Server function is provided to allow the OPUP Server OS to perform a complete reboot of all OPUP server processes. When selected, the Restart Server function performs a higher level of software re-initialization that is more intrusive than the OPUP Server OS Stop/Start, or Restart functions. When initiated, the Restart Server function will stop all OPUP OS processes, remove each process from memory, perform a Sun Microsystems Open Diagnostic Boot (ODB) process Initiation Level 5 command (which brings the system to the ok prompt), a full firmware/Power-On-Self-Test (POST) procedure, and then display the CDE Login screen.

All processes that were previously in operation before the Restart Server function was initiated will be returned to their last known state of operation. The last known operational state is routinely recorded by the OPUP Server OS before the system was interrupted, brought down, and then restarted.

5.2.9.9.1 OPUP Restart Server Procedures. The `OPUP Server Control Menu` must be displayed as shown in Figure 5-32.

1. At the `OPUP Server Control Menu`, click on the **Restart Server** button. An `OPUP Manager Restart Server` warning window will be displayed.

2. At the `OPUP Manager Restart Server` warning window, click on the **Yes** button.

NOTE

> The Restart Server function will stop all OPUP Server OS functions and remove all processes from memory. An `OPUP Manager Restart Server(s)` window will then be displayed. Once the **Yes** button is clicked, the Restart Server function will bring the OPUP system down to the `ok` prompt. After approximately 2 to 3 minutes, the CDE Login screen will be displayed.

3. At the CDE Login screen, within the `Please enter your user name` edit box, enter: **opupmgr<Return>**

   Feedback: A `Please enter your password` edit box will be displayed.

4. At the CDE Login screen, within the `Please enter your password` edit box, enter: *opupmgr_password***<Return>**

Feedback: The CDE Front Panel will initially be displayed. After a few seconds, the Netscape HTML web page interface will then display.

NOTE

If the Netscape HTML web page interface does not automatically display, click on the **OPUP Manager GUI "World"** icon located near the left of the CDE Front Panel. When the Netscape HTML web page interface appears, click **anywhere within the gray area** to initiate the `Netscape: Password` window.

5. At the `Netscape: Password` window, click within the `User ID:` edit box and enter: **opupmgr<Return>**

6. At the `Netscape: Password` window, click within the `Password:` edit box and enter: *opupmgr_password***<Return>**. The `OPUP Manager Main Menu` will be displayed.

7. At the `OPUP Manager Main Menu`, click on the **OPUP Software Menu** button. The `OPUP Software Menu` will be displayed.

8. At the `OPUP Software Menu`, click on the **OPUP Process Status** button. An `OPUP Process Status` window will be displayed.

NOTES

The OPUP Process Status function does not automatically re-display information to this screen once it is initially displayed. If the OPUP Process Status function is being used in conjunction with software start, stop, and restart functions, users will need to use the **Refresh** button near the bottom left of the display, Figure 5-4, `OPUP Process Status` window, to re-display updated process status information. Also, users can either exit the `OPUP Process Status` window and then re-enter it or click the Netscape HTML web page **Reload** (Refresh) button to obtain updated information, as well.

The `OPUP Process Status` window will only display the processes associated with specific OPUP Server OS background functions (mcu, dmcu, cm_tcp, etc.) which have been specifically setup to display in this window. The OPUP Server OS will attempt to indicate which processes listed are currently running or not (which may have failed or become unresponsive) by listing each process with a series of dots listed to the right of it, followed by a blank space. The `OPUP Process Status` window is not intended to indicate the actual status of received/sent messages generated by another operator(s) or pre-defined processes (i.e. RPS lists, OTR's, etc.) Refer to the **System Status** tab located within the Status and Control GUI for system messages and associated code feedback indicators. In

addition, if any of the processes listed above should fail, attempt to restart the OPUP software. If a restart procedure does not recover any or all of the OPUP OS processes listed within the `OPUP Process Status` window, attempt to stop and then start the OPUP Server OS to attempt to recover the processes. If the processes do not start up in a reasonable amount of time, consult the appropriate troubleshooting procedure provided in Chapter 6, Maintenance.

9. At the `OPUP Process Status` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu` or the **Return to Last Screen** button to return to the `OPUP Software Menu`.

5.2.9.10 Shutdown Server. The procedures to perform a Shutdown Server are incorporated within the OPUP Power-Off procedures listed in paragraph 5.2.2.2.

CHAPTER 6
MAINTENANCE

Section 6.1. INTRODUCTION

6.1.1 General.

This Chapter provides the information and guidance necessary to support maintenance actions associated with the on-site repair and replacement of equipment associated with the Small OPUP Equipment Group UD86. This support will consist of rapid identification and location of each hardware item, associated maintenance repair/replacement procedure(s), and troubleshooting procedure(s). The following sections apply:

- Section 6.1 INTRODUCTION - Provides chapter organization, introduces the Small OPUP UD86 Maintenance Concept, and reference to applicable Preventive Maintenance Instructions (PMI), as well as, an overall discussion of the repair, replacement, and fault isolation guidance used to support Small OPUP Hardware.
- Section 6.2 PREVENTIVE MAINTENANCE - Provides Small OPUP Preventive Maintenance Instruction guidelines.
- Section 6.3 PRIMARY FAULT ISOLATION - Provides the guidelines necessary for the mitigation of primary equipment faults.
- Section 6.4 SECONDARY FAULT ISOLATION - Provides the guidelines necessary for the mitigation of secondary equipment faults.
- Section 6.5 REMOVE AND REPLACE PROCEDURES - Provides the steps required to remove, replace, and setup the equipment associated with the OPUP hardware group.
- Section 6.6 SETUP PROCEDURES - Provides the steps required to perform software setup and/or parameter re-configuration(s) that are necessary to provide complete power up and placement of the associated OPUP equipment to a full operational state.

6.1.1.1 Maintenance Concept. The Small OPUP Equipment Group UD86 has been developed to function with little or no separate hardware maintenance requirements. The majority of OPUP systems and sub-systems consist of Commercial-Off-The-Shelf (COTS) computer and peripheral equipment. To reduce the amount of down time that may be associated with this type of equipment, numerous built-in-test and/or on-line statuses have been made available which can act as monitor and system fault indicators to assist with the determination of the need for equipment replacement and/or adjustment. The following general maintenance concept guidelines apply:

- General Maintenance: The general maintenance approach will be to simply monitor system performance. This will be accomplished by using either available controls and indicators, as well as, specific on-line status utility programs or functions built into applicable display GUIs. If the indicative operational status of a specific equipment item is suspect or becomes

susceptible to an internal equipment or software fault, sites will be responsible for the level repair action outlined by the applicable SMR repair code provided in Chapter 7, Illustrated Parts Breakdown (IPB).

- On-Site Maintenance: On-site maintenance will consist primarily of removal and replacement of failed LRU's. An LRU is defined as a self-contained unit/module assembly to which a fault can be isolated so that system fault isolation, removal, and replacement can all take place within the LRU maintainability requirements.

- On-Equipment Maintenance: The Small OPUP Equipment Group UD86 maintenance concept is basically restricted to removal and replacement of LRUs. However, if directed by higher authority (i.e. Depot Level) only qualified personnel should be assigned in the case of procedures that necessitate the removal, replacement, and setup of specific sub-component/ assemblies such as hard drives, power supplies, and any other associated OPUP equipment modules. Please note that these procedures are outside the scope of this manual and will not be discussed or provided. There are no restrictions concerning simple repairs such as cables and connectors, etc.

6.1.1.2 On-Line Status and Performance Monitoring. The Small OPUP Equipment Group UD86 provides the capability for monitoring equipment operational status and system performance through the use of controls and indicators. Chapter 2, Hardware Group, Section 2.3, Controls and Indicators, specifically outlines each control and indicator for the hardware found within the Small OPUP Equipment Group UD86. This section also discusses basic abnormal indicators as well. In addition, operational status indicators are built into specific features of many OPUP Operational Application GUIs. Personnel can readily monitor each equipment assembly or sub-assembly control and indicator as the need arises to determine operational equipment status. Also, specific program functionality of the OPUP server OS and Operational Application software suite allow for direct observation (i.e. Status and Control "Network Map" GUI or OPUP Manager Main Menu VTS program) which can be used to determine current program operational status.

6.1.1.3 Recovery Procedures. Error messages and alarms are generally presented to the operator when a fault occurs. When a fault is associated with a temporary condition such as a keyboard lockup or communication link disruption, the operator should analyze the message(s) and/or indicator(s) and perform a quick-check and/or recovery procedure(s) provided by the primary fault isolation flow charts presented in Section 6.3, Primary Fault Isolation. Each site should attempt to restore each fault and place the system to a full operational position. When a fault is more serious, the message/error condition will serve as the starting point for the fault isolation chart provided in this chapter.

6.1.2 Preventive Maintenance Procedures.

The Small OPUP Equipment Group UD86 preventive maintenance procedures are provided to support the continuing operational availability of the system by minimizing the effects of ambient environmental conditions and detecting and correcting for the effects of continued operational use wear and tear. Preventive maintenance tasks are scheduled for performance on a periodic basis

and consist primarily of routine inspections, cleaning, servicing, and operational checks. The Small OPUP Equipment Group UD86 automated performance monitoring function minimizes the need for periodic system and parameter checks. Most Small OPUP components require a minimal level of preventive maintenance.

6.1.3 Primary Fault Isolation and Operational Checks.

Upon detection of an abnormal condition, the maintenance technician should verify the existence of a problem by observing system performance and/or performing an operational check provided by the first two sheets of the primary isolation flowchart, Section 6.3, Primary Fault Isolation. Once the existence of a problem is confirmed, the rest of the fault isolation flowchart can lead to the most likely repair/replacement solution. The fault isolation flowchart uses both on-line and off-line diagnostic techniques to isolate the faulty LRU. On-line diagnostics use the system status changes and specific system alarms. Off-line diagnostic programs are specified from the fault isolation flowcharts as required.

6.1.4 Secondary Fault Isolation.

There is no secondary fault isolation guidance associated with the Small OPUP Equipment Group UD86.

6.1.5 Corrective Maintenance.

Corrective maintenance procedures consist of LRU or piece part replacement and any associated adjustments and alignments. Section 6.5, Remove and Replace Procedures, contains removal and replacement procedures for each specific OPUP hardware item which require specific steps to be performed in order to successfully replace each associated assemblies/sub-assemblies. Section 6.6, Setup Procedures, contains specific setup/re-configuration procedures that outline exact software and/or adaptable parameter restoral guidelines for each associated OPUP equipment item (i.e. server, communication router, modem, etc.) These guidelines must be strictly adhered to in order to safely shutdown, startup, and/or to recover specific OPUP hardware back to a known operational state. These guidelines may include program termination, stop/start/restart, and/or re-installation of adaptable parameters or operating software. If replacement of an assembly/sub-assembly fails to correct the problem(s), an interconnection or wiring problem may be indicated. Sites are encouraged to consult the specific OPUP site Interconnect Diagram (ICD) (provided in Chapter 2, Hardware, beginning with paragraph 2.2.3.2, Configuration Drawings) to assist with mitigation of faulty interconnecting cables and/or power distribution. When a fault occurs in a sub-assembly, all reasonable attempts should be made to isolate/identify the fault. When a reasonable amount of time has passed, each assembly/sub-assembly should be replaced in accordance with Section 6.5, Remove and Replace Procedures and the logistical information contained in Chapter 7, Illustrated Parts Breakdown (IPB).

6.1.6 Alignments and Adjustments.

Some assemblies will require adjustment or alignment following their replacement. Section 6.6, Setup Procedures, contains an index which identifies these sub-assemblies. Reference to any

related adjustment/alignment procedures is also provided in the specific component replacement instructions in Section 6.5, Remove and Replace Procedures.

6.1.7 Component Location and Identification.

Chapter 7, Illustrated Parts Breakdown (IPB), provides an indexed illustration which may be used for identification and location of all site-replaceable assembly/sub-assemblies. The IPB also contains complete parts ordering data, and a reference designation index. Supplemental pictorial data is provided in this chapter or related commercial manuals as required to support specific maintenance procedures. All related commercial manuals associated with the Small OPUP Equipment Group UD86 is listed at the end of Chapter 2. The following sections provide specific information concerning use of commercial manuals, need for specific maintenance tools, and required consumable.

6.1.7.1 Use of Commercial Manuals. The commercial manuals listed in Chapter 2 are provided as supplemental reference material in this manual for selected equipment and peripheral devices. These manuals contain useful reference and descriptive information, but should not be used in place of information contained in this chapter.

6.1.7.2 Maintenance Tools and Consumables. The tools and consumable items required for each maintenance procedure are specified near the beginning of each procedure. A complete listing of all required tools and consumables are listed in Chapter 2.

6.1.8 System Startup and Shutdown Procedures.

WARNING

Ensure primary power supplied by the UPS unit is removed prior to replacing any LRU item or performing internal or external cleaning activities. Failure to comply with this warning can result in damage to equipment and/or serious injury or death to personnel.

Chapter 5 contains the startup and shutdown procedures which should be used for initial power-up, complete site shutdown, and base server OS system startup after a complete shutdown has been performed. The individual sections of this maintenance chapter provide specific instructions for partial or limited shutdown which is required for each preventive or corrective maintenance action.

6.1.9 Diagnostic Test Program Procedures.

This chapter will contain all diagnostic test routines and applicable built-in self diagnostic programs that will be used in connection with each Small OPUP Equipment Group UD86 LRU fault isolation procedure. This chapter will also contain the procedure(s) for loading, initializing and running any specific diagnostic routine outlined within the fault isolation guideline. These procedures are not intended to be performed on a impromptu basis unless otherwise directed. Correct

results from the use of these programs can only be obtained when the test programs are executed in accordance with the instructions provided in Section 6.3, Primary Fault Isolation. This is because the flowchart and associated note sheets establish the correct conditions for invoking the test and interpreting the results in an orderly sequence to ensure meaningful results.

Section 6.2. PREVENTIVE MAINTENANCE

6.2.1 Small OPUP UD86 Preventive Maintenance.

The requirements for accomplishing scheduled preventive maintenance tasks on Small OPUP Equipment Group UD86 are contained within the Inspection, Lubrication, and Maintenance Requirements Manual, NWS EHB 6-503 and Preventive Maintenance Inspection Work Cards, NWS EHB 6-503-1. Since all preventive maintenance instructions are contained in these documents, this information will not be presented in this manual. Consult NWS EHB 6-503 and NWS EHB 6-503-1 for all guidance concerning Small OPUP Preventive Maintenance information.

Section 6.3. PRIMARY FAULT ISOLATION

6.3.1 Introduction.

This section contains the instructions and procedures necessary to perform primary fault isolation associated with the equipment contained in the Small OPUP Equipment Group UD86. This includes a fault isolation flowchart with associated flowchart notes to aid in the fault isolation process.

6.3.2 Fault Isolation Flowchart.

The main resource in fault isolation guidance for the Small OPUP Equipment Group UD86 is the Primary Isolation Fault flowchart beginning with Figure 6-1, Small OPUP Fault Isolation Flowchart (Operational Check) (Sheet 1 of 10). This flowchart makes use of all applicable controls, indicators, and program induced status messages to detect and isolate faults on-line as well as off-line to a single LRU. The flowchart is broken down into three parts. These are: Operational Checks, Quick Reference, and System Fault Isolation. The following paragraphs provide information concerning flowchart use with the Small OPUP System.

6.3.2.1 Operational Check. Operational Checks are presented in the first two flowchart sheets. An operational check is designed to completely check and exercise each OPUP assembly/sub-assembly while it remains powered and on-line. These checks will often be the entry point for fault isolation. The operational check is indicated as a thick line, called the “no-fault” line. Any time the direction requires abandoning the heavy “no-fault” line as indicated by a narrow line, fault isolation is being undertaken. If the “no-fault” line is never departed and the operation check is completed, the OPUP system/sub-assembly is fully functional and no further fault isolation will be necessary.

6.3.2.2 Quick Reference Sheet. There may be many instances where a fault may give such an obvious symptom that an operability test is unnecessary. Figure 6-1, Sheet 3, contains a list of the most obvious OPUP faults and can quickly direct personnel to the appropriate area to begin fault isolation. The purpose of the Quick Reference Sheet is to reduce repair time to a minimum. An area where it is also very useful is when cross-referencing between functional areas is required. An example of the need to cross reference may be when troubleshooting narrowband communication faults. Not all starting points can be determined using the Quick Reference Sheet. If an isolation fault starting point cannot immediately be determined, return to Figure 6-1, Small OPUP Fault Isolation Flowchart (Operational Check) (Sheet 1 of 10), and begin the troubleshooting process from there.

6.3.2.3 System Fault Isolation. The System Fault Isolation flowcharts, Figure 6-1, Sheets 4 through 10, provide system level fault isolation guidance. These flowcharts are designed to ensure that personnel perform fault isolation in the correct functional area.

6.3.2.4 Flowchart Layout. Each flowchart sheet used to isolate and mitigate system faults will entail the following:

- Comments: Various comments may be included on each flowchart sheet. These comments appear in lighter (narrower) type and are included to aid the technician during the fault isolation process. Due to the complexity of the flowchart and the need to cross-reference information contained on each sheet, comments assist each technician with troubleshooting guidance that been established in prior sheet. In addition, each technician may be able to determine what the next step may be in the fault isolation process.

- Flowchart Notes: Included with each flowchart are cross-referenced information associated with flowchart notes. These notes give specific instructions in performing diagnostic procedures and/or provide definitions that assist technicians with the understanding of a required process or step. Some of the procedures encountered are included elsewhere in the manual; if this is the case, the flowchart note will simply reference the technician to another part of the manual.

- Symbol Convention: All circled letters on the flowcharts indicate a reference to another part of the flowchart. All circled numbers are references to the appropriate flowchart note that must be performed before proceeding to the next step. Examples are illustrated below:

  - A : Reference to another part of flowchart.

  - e : Reference to notesheets.

The flowchart is arranged so that all actions that must be performed are in boxes and all questions are in diamonds.

6.3.3 Primary Fault Isolation Flowchart.

The following paragraphs provide the flowchart notes associated with the fault isolation guidance beginning with Figure 6-1, Small OPUP Fault Isolation Flowchart (Operational Check) (Sheet 1 of 10). Each fault isolation flowchart may have repeated notes or no flowchart notes associated with them.

6.3.3.1 Flowchart Note Index. A list of each isolation flowchart note referenced in Figure 6-1 is provided in Table 6-1, Flowchart Note Index.

Table 6-1. Flowchart Note Index

Note Number	Description
1	Display OPUP Manager Main Menu
2	Check System Time
3	Open Status and Control GUI
4	Archive IV Device UD86A7 Check

Table 6-1. Flowchart Note Index - Continued

Note Number	Description
5	Exercise Printer UD86A12
6	Display Product(s).
7	Exercise Dial-Out (One Time Request (OTR)) Functions
8	Video Splitter Check UD86A9
9	Test Display Monitor UD86A1
10	Reboot Server Operating Software (OS)
11	Install OPUP Software
12	Check Switch UD86A5
13	Stop/Start Operational Applications Software
14	Shutdown OPUP Server
15	OPUP Server Power-up and Reconfiguration Boot Process
16	Dedicated Modem Self-Test UD86A6/A13
17	Dedicated Modem Remote Digital Loopback Pattern Test
18	Dedicated Modem Local Analog Loopback Pattern Test
19	Check OPUP System Status Messages
20	RPG Status Check
21	Print Printer Configuration Pages
22	Check Printer IP Address in Server Software
23	Switch/Video Splitter Power Adapter Voltage Check

6.3.3.2 Flowchart Notes.

NOTE

Command entries and mouse selections are shown in this section in **bold** type. Variable names are normally shown with a unique font (e.g. *variable_name*). Within a specified command string entry, a variable placeholder is not in bold type; however, all portions of the command that are entered exactly as shown are in **bold**. A variable placeholder in a command string must be replaced by a site specific name, address, etc. The user is told how to formulate the entry, or directed to where to find this information. The keyboard may have either an **<Enter>** or a **<Return>**

key. Unless stated otherwise, each command line shown must be "entered" to be processed. Also, directory names/paths shown outside of a command example are *italicized* for clarity purposes. For mouse selections, the word "click" indicates a standard, single click of the left mouse button. When a right, middle, or double-click is required, it is specifically indicated. The symbol ‹ is used to indicate subsequent left clicks through sub-menu selections.

q DISPLAY OPUP MANAGER MAIN MENU.

This note addresses the OPUP's ability to display the OPUP Manager GUI. The 21-inch Monitor UD86A1 is used for both administration (OPUP Manager GUI) and Operational Applications (PDGUI, Status & Control, Archive PDGUI, and Status Log GUI). In order for the following steps to be completed, the `OPUP Manager Main Menu` must be displayed.

Step	Operator Action	System Response/Comments
1	If the CDE Login screen is already displayed, skip to Step 3. If any Operational Application GUI is currently displayed (PDGUI, Status and Control, etc.), click on the **EXIT** icon near the center of the Operational Applications Front Panel.	A `Logout Confirmation` window will be displayed.
2	Click on the **OK** button in the `Logout Confirmation` window.	A CDE Login window will be displayed.
3	At the CDE Login screen, at the `Please enter your user name` prompt, enter: **opupmgr<Return>**	A CDE Password Entry window will be displayed.
4	At the CDE Login screen, at the `Please enter your password` prompt, enter: *`opupmgr_password`***<Return>**	The CDE Front Panel will be displayed. A `Netscape: Password` window may display temporarily.
5	If the `Netscape: Password` prompt is displayed, go to Step 8. If not, start the Netscape login password screen by clicking on the **Netscape "World"** icon on the CDE Front Panel.	A Netscape login screen should be displayed. A `Netscape Question` pop-up window may appear.

Step	Operator Action	System Response/Comments
6	If a `Netscape "Continue? Yes/No"` prompt is displayed, click on the **Yes** button.	
7	If the `Netscape: Password` window is not displayed, click **anywhere within the gray background area** of the Netscape display window.	A `Netscape: Password` window should be displayed.
8	At the `Netscape: User ID:` prompt, enter: **opupmgr <Return>**.	The cursor moves to the `Password:` prompt.
9	At the `Netscape: Password:` prompt, enter the site specific *opupmgr_password* **<Return>** that was used in Step 4.	The `OPUP Manager Main Menu` should be displayed.

W CHECK SYSTEM TIME.

This note addresses the steps required to determine the current OPUP system time. System time can be observed using either the supplied system clock display or by accessing and typing the appropriate command at a host or console window terminal from the `CDE Front Panel`.

Prerequisites: The `OPUP Manager Main Menu` must be displayed. An accurate time source should be made available (i.e. WWV, 303-499-7111) before Step 6 is attempted. GMT time (UTC) is entered for these entries. The information entered in Step 6 should be for a time period that will occur in the future. Wait to press the **<Return>** key until the chosen time period has occurred.

Step	Operator Action	System Response/Comments
1	At the CDE Front Panel, move the mouse cursor over the Netscape **'World"** icon. If the day, date, and time will not display or if the time is displayed and it is off by more than 1 minute, go to the next step. Otherwise, this procedure is complete.	The current day, date, and time in GMT should now be displayed.
2	At the CDE Front Panel, click on the **up arrow** located just above the **cpu/disk** icon.	A `Hosts` pop-up menu will be displayed.
3	Click on the **This Host** icon.	A `Terminal` window opens with an `/export/home/opupmgr>`prompt.

Step	Operator Action	System Response/Comments
4	At the `/export/home/opupmgr>` prompt, enter: **su<Return>**	A `Password:` prompt will be displayed.
5	At the `Password:` prompt, enter the SU *root_password* *`root_password`***<Return>**	A # prompt will be displayed.
6	At the # prompt, type: **date<Return>**	The current day of the week, month, day, time (hh:mm:ss), GMT, year should be displayed.
7	Verify that the time reported is correct using an accurate time source.	If the day and year are incorrect and/or the time is more than 1 minute off, go to the next step. Otherwise, this procedure is complete.
8	Obtain an accurate time source (i.e. WWV 303-499-7111). At the # prompt, type: **date mmddHHMM[cc][yy][.SS]** (Do not press the **<Return>** key, yet).	Everything after the minutes entry ("MM") is optional. However, the most accurate method to update the time is to, at a minimum, enter the HHMM.ss parameters, where: mm= Month dd= Day HH= GMT Hour MM=Minute Optional entries (normally not entered): cc= Century minus 1. yy= Last two digits of the year. SS= Seconds. If no century or year are entered, then the currently set values are applied. If no seconds are entered, then the value of 0 is applied.

9	Using the chosen time source, press **<Return>** at the precise moment that the time entered above occurs.	Sets the OPUP system time to the time entered above.
10	At the # prompt type: **date<Return>**	Displays the new OPUP system time. Ensure that the correct date and time are displayed.
11	At the # prompt, type: **exit<Return>**	An `/export/home/opup-mgr>`prompt is displayed.
12	At the `/export/home/opupmgr>`prompt, type: **exit<Return>**	This closes the Terminal window and the CDE Front Panel should be displayed.

e OPEN STATUS AND CONTROL GUI.

This note addresses the OPUP's ability to access and display the Status & Control GUI of the Operational Applications Front Panel. This note will also be used in conjunction with Flowchart Note 6, Display Products. The Monitor UD86A1 is used for both system administration and Operational Applications Front Panel GUI display. In order for the steps in this procedure to be completed, the Status & Control GUI of the Operational Applications Front Panel must be displayed.

Step	Operator Action	System Response/Comments
1	If the CDE Front Panel is displayed, locate and click on the **EXIT** icon located near the bottom center of the panel. If the `CDE Login` window is displayed, skip to Step 3, otherwise, continue.	A `Logout Confirmation` window will be displayed.
2	Click on the **OK** button within the Logout Confirmation window display.	The CDE Login screen will be displayed.
3	At the `Please enter your user name` prompt, enter an *Operations_User_ID* and press the **<Return>** key.	The `CDE Password` entry window is displayed.
4	At the `Please enter your password` prompt, enter a *`User_ID_password`***<Return>**	The Operational Applications Front Panel will be displayed.
5	At the Operational Applications Front Panel display, locate and click on **Status & Control** icon.	The `Status and Control - OPUP X.X` window (where X.X is the most current version of software) will be displayed.

r ARCHIVE IV DEVICE UD86A7 CHECK

This note addresses the OPUP Server's ability to access and operate the Archive IV Device UD86A7. The steps provided in this flowchart note require the use of an archived WSR-88D product and message file saved in the OPUP Server OS Archive Database directory via the Operational Application, Archive Menu.

NOTES

Step 26 of this procedure directs the user to delete a test file (archive_test) used to exercise the archive device. It is possible that important archive data files are listed in the directory along with the test file. Be sure that the associated radio button of the archive file(s) that need to be saved are not selected for those files. Once an archive file is deleted from the OPUP Server OS Archive Database directory, it **cannot** be retrieved.

This note is divided into four parts. The first part involves identifying, selecting, and saving data to be archived to the OPUP Archive Directory on the servers internal hard drive as an operator. The second part involves copying the selected data from the Archive Directory to a CD-ROM using the archive device via the OPUP Manager GUI. The third part involves erasing the data from the Archive Directory that was copied to the CD-ROM and then restoring the data from the CD-ROM back to the Archive Directory. The fourth part involves reading the data in the Operational Application Archive PDGUI as an operator.

Prerequisite: The Operational Applications Front Panel should be displayed. (Refer to Note 3, Open Status and Control GUI, if required). Ensure that a blank CD-R or CD-RW CD-ROM disk is available for this procedure.

Step	Operator Action	System Response/Comments
	Part I - Saving Data for Archive	
1	At the Operational Applications Front Panel, click on the **Status & Control** icon.	A `Status and Control - OPUP X.X` window (where X.X is the most current version of software) will be displayed.
2	At the Status and Control GUI, click on the **Archive** selection located near the top right of the GUI.	An `Archive` window should now be displayed.

Step	Operator Action	System Response/Comments
3	At the `Archive` window, `Step 1: Select Archive RPG and Products, then Calculate Space Needed` area, perform the following steps:	
	a. Ensure `Dedicated` is selected in the pull-down selection menu directly above the RPG list title bar.	If `Dedicated` is not displayed within the RPG Type Label, click the button and select **Dedicated** as the RPG Type.
	b. At the RPG list, click on a 4-letter *RPG ID of interest*.	Only one RPG is required for this procedure. The RPG ID of interest should now be highlighted.
	c. At the `Select/Deselect All products` area, click on the **Select All Products** button.	All products associated with the RPG ID of interest chosen in Step 3.b will be highlighted.
	d. At the `Space Needed:` area, click on the **Space Needed calculation** button.	The Space Needed: Calculation function will calculate the space needed to store the product(s) selected in Step 5. This may take up to 1 minute to complete. Once completed, this function will provide a feed back message (i.e. `xx.xx Megs Needed`) that states how much storage space is needed to store the associated data. No more than 700 Mbytes of data can be selected.

Step	Operator Action	System Response/Comments
4	At the `Archive` window, `Step 2: Save Archive by Name` area, perform the following steps:	
	a. Click within the `Archive Name:` edit field to activate the field and enter: **archive_test**	The Archive function will then create an archive file named, "archive_test" and display the results within the `Step 2: Save Archive by Name` area. When finished, an `Archive Complete` message will be displayed.
	b. Click on the **Create Archive** button located under the `Create Archive:` label. c. At the `Archive Complete` notice window, click the **OK** button.	The archive test file is stored in the servers archive database directory.
	NOTE Step 4 does not copy the archive product data set from the OPUP Server Archive directory to the CD-ROM disk. Copying data to a CD-ROM located in the archive device media tray can only be accomplished via the `OPUP Manager Main Menu`, `OPUP Archive Menu`.	
5	Click the **double red arrows** icon located near the bottom right of the Archive Menu window to exit the Archive Menu.	The `Archive` window will close.
6	Log out of the Operational Applications Front Panel as follows: a. Click on the **EXIT** icon located near the bottom center of the CDE Front Panel. b. In the `Logout Confirmation` pop-up window, click on the **OK** button to get to the CDE Login screen.	The CDE Login screen will be displayed.

Part II - Writing the Saved Archive File from the OPUP Archive Directory to the Archive IV Device UD86A7.

7	At the CDE Login screen, at the `Please enter your user name` prompt, enter: **opupmgr<Return>**	The CDE Password entry window is displayed.

Step	Operator Action	System Response/Comments
8	At the CDE Login screen, at the `Please enter your password` prompt, enter: *`opupmgr_password`***<Return>**	
9	If the `Netscape: Password` window is displayed, go to Step 12. If not, start the Netscape login password window by locating and clicking on the **Netscape "World"** Icon located near the bottom left of the CDE Front Panel.	A `Netscape: Password` window will be displayed.
10	If a `Netscape "Continue? Yes/No"` prompt is displayed, click on the **Yes** button, to continue.	No response.
11	If the `Netscape: Password` window is not displayed, click anywhere within the gray area of the Netscape display window.	A `Netscape: Password` window will be displayed.
12	At the Netscape `User ID:` and `Password` prompts, enter **opupmgr** in the `User ID:` field and then the site specific *opupmgr_password* in the `Password:` field. When finished, press the **<Return>** key.	The `OPUP Manager Main Menu` will be displayed.
13	At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button.	The `OPUP Archive Menu` will be displayed.
14	At the `OPUP Archive Menu`, click on the **Check Archive** button.	A `Netscape: Check Archive` window will be displayed. This menu will also display the following message: `The Existing Archives on Server is as follows:`
15	At the `Netscape: Check Archive` window, check to ensure that the archive_test file created in Step 4 is present. The horizontal scroll bar may have to be used in order to display text to the right.	If the file created in Step 4 is not listed in the `Netscape: Check Archive` window, stop here and begin with Step 1 of this note, again.
16	When finished, click on the **Return To Last Screen** button.	The `OPUP Archive Menu` will be displayed.

Step	Operator Action	System Response/Comments
17	At the Archive IV Device UD86A7, perform the following steps: a. Press the **open/close** button. When the door opens, place the CD-ROM disk onto the tray. b. Press the **open/close** button to close the door.	A blank CD-ROM should now be in the archive device. (A CD-R or CD-RW disk may be used for this procedure.)
18	At the `OPUP Archive Menu`, click on the **Create Archive** button.	A `Netscape: Create Archive` window will be displayed. This window will also display the following message: `Please select archive case to create to CDROM.`
19	At the `Netscape: Create Archive` window, click the radio button in the `Select Case` column associated with the **archive_test** file.	The radio button of the **archive_test** file will be highlighted.
20	Click on the **Create Archive** button.	The cursor will change to a "watch icon" to indicate that the Create Archive function has been started. Also, the write L/H LEDs on the archive device will be illuminated. When the Create Archive function is completed, a `Netscape: Create Archive` window will be displayed.
21	At the `Netscape: Create Archive` window, click on the **Check Content of CDROM** button located near the bottom left of the window.	The file selected in Step 19 should now be displayed within the `Netscape: Check Content of CDROM` window. If there is no file present, perform Steps 18 through 20, again.
22	Click on the **Return to Main Menu** button.	The `OPUP Manager Main Menu` will be displayed.
23	At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button.	The `OPUP Archive Menu` will be displayed.

Part III - Erase The Original archive_test file from the OPUP Archive Directory

Step	Operator Action	System Response/Comments
24	At the `OPUP Archive Menu`, click on the **Erase Archive** button.	A `Netscape: OPUP Manager Erase Archive` window will be displayed.
25	At the `Netscape: OPUP Manager Erase Archive` window, click on the **Yes** button to acknowledge the warning message and continue the erase process.	A `Netscape: Available Archives on OPUP Server` window will be displayed. This window will also display the following message: `Please select archive case to erase from server.`
26	At the `Netscape: Available Archives on OPUP Server` window, click the radio button in the `Select Case` column associated with the **archive_test** file.	The radio button of the **archive_test** file will be highlighted.

NOTE

Be sure that only the **archive_test** file is selected. Do not select any other file that may be listed.

27	Click on the **Erase Archive** button.	The cursor will change to a "watch icon" to indicate that the Erase Archive function has been started. When the Erase Archive function is completed, a `Netscape: Erase Archive` window will be displayed. This window will also display the following message: `The archive for` *`yeardate_time`*`_Server_archive_test have been erased from server.`
28	Click on the **Return to Main Menu** button.	The `OPUP Manager Main Menu` will be displayed.
29	At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button.	The `OPUP Archive Menu` will be displayed.

Step	Operator Action	System Response/Comments
30	At the `OPUP Archive Menu`, click on the **Check Archive** button.	A `Netscape: Check Archive` window will be displayed.
31	At the `Netscape: Check Archive` window, check to ensure that the **archive_test** file has been erased.	If the archive_test file has not been erase, perform Steps 24 through 30 again.
32	When finished, click on the **Return to Last Screen** button.	The `OPUP Archive Menu` will be displayed.
33	At the `OPUP Archive Menu`, click on the **Restore Archive** button.	A `Netscape: Restore Archive` window will be displayed. This window will also display the following message: `The content of the inserted CDROM is as follows`:
34	At the `Netscape: Restore Archive` window, click on the **Restore Archive** button.	The cursor will change to a "watch icon" to indicate that the Restore Archive function has been started. When the Restore Archive function is completed, a `Netscape: Restore Archive` window will be displayed. This window will also display the following message: `The archive for` *`yeardate_time`*`_Server_archive_test have been restored from CDROM. The following are archive cases on server.`
35	Click on the **Return to Main Menu** button.	The `OPUP Manager Main Menu` will be displayed.
36	At the `OPUP Manager Main Menu`, click on the **OPUP Archive Menu** button.	The `OPUP Archive Menu` will be displayed.
37	At the `OPUP Archive Menu`, click on the **Check Archive** button.	A `Netscape: Check Archive` window will be displayed.

Step	Operator Action	System Response/Comments
38	At the `Netscape: Check Archive` window, check to ensure that the archive_test file has been restored.	If the archive_test file has not been restored, perform Steps 33 through 37 again.
39	Click on the **Return to Main Menu** button.	The `OPUP Manager Main Menu` will be displayed.
40	Log out of the OPUP Manager GUI as follows: a. Click on the **EXIT** icon located near the bottom center of the CDE Front Panel. b. In the `Logout Confirmation` pop-up window, click on the **OK** button to get to the CDE Login screen.	The CDE Login screen will be displayed.

Part IV - Read the restored archive_test data file using Archive PDGUI.

41	At the CDE Login screen, `Please enter your user name` prompt, enter an *Operations_User_ID* and press the **<Return>** key.	The CDE Password entry window is displayed.
42	At the CDE Login screen, `Please enter your password` prompt, enter a *`User_ID_password`***<Return>**	The Operational Applications Front Panel will be displayed.
43	At the Operational Applications Front Panel display, locate and click on **Status & Control** icon.	The `Status and Control - OPUP X.X` window (where X.X is the current version of software) will be displayed.
44	At the Status and Control GUI, click on the **Restore** menu selection.	A `Restore` window will be displayed.
45	At the `Restore` window, locate the `Existing Archive` column and click on the **archive_test** file.	The archive_test file will be highlighted
46	Click on the **Restore Archive** ("Meshed Gears") icon.	When the Restore Archive function is finished, a `Success` pop-up window will be displayed.
47	Click the **OK** button located within the `Success` pop-up window.	
48	Click on the **double red arrows** icon located near the bottom right of the `Restore` window	The `Restore` window will be closed.

Step	Operator Action	System Response/Comments
49	Click on the **double red arrows** icon located near the upper right of the `Status and Control - OPUP X.X` window.	The `Status and Control - OPUP X.X` window will be closed.

NOTE

The following steps are provided to ensure that the archive_test file has been in fact restored and that all products can be displayed. This will require that the Archive PDGUI be opened and displayed. Only one type of PDGUI display can be displayed per logged in UserID/Password. Close the PDGUI display **before** attempting to open the Archive PDGUI.

50	Click on the **Archive Product Display** icon located near the right of the Operational Applications Front Panel.	The Archive Product Display GUI will be displayed.
51	At the Archive Product Display GUI, using any one of the twelve display windows, click on the **Open Product Selection Dialog** button (located near the top left of the window).	A `Product Selection` window will be displayed.
52	At the `Product Selection` window, click on the **Apply** button.	The first product associated with the default product attributes will then be displayed within the window. This verifies if the archive device functions are working.
53	At the Archive Product Display GUI, click on the **double red arrows** in the Toolbox window.	The Archive Product Display GUI will be closed.
54	Return the OPUP to the normal operating position.	

t EXCERCISE PRINTER UD86A12.

This note addresses the OPUP's ability to access and operate the Printer UD86A12. These steps do not apply to any other printer that may be connected to the OPUP Operating system.

Prerequisite: Ensure that the Product Display GUI located within the Operational Applications Front Panel is displayed. Ensure that the Printer UD86A12 is powered on, connected to the Switch UD86A5, and has been added as a default printer device in accordance with the procedure outlined in paragraph 5.2.9.4.

Step	Operator Action	System Response/Comments
1	At the Product Display GUI, using the mouse, right click within any one of the product windows.	A Product Display Manipulation Menu will be displayed.
2	At the Product Display Manipulation Menu, left click on the **Print** selection.	The product located within the display window will be sent to the printer.

y DISPLAY PRODUCT(S).

This note addresses the OPUP's ability to display a WSR-88D product or message data within the Operational Applications GUI, Product Display Graphic Users Interface (PDGUI).

Prerequisite: Consult flowchart Note 3, if assistance is required to open an Operational Applications Front Panel. The Operational Applications Front Panel ‘ Product Display GUI must be displayed before Step 1 of this procedure.

Step	Operator Action	System Response/Comments
1	At the Operational Application Front Panel display, click on the **Product Display GUI (PDGUI)** icon located near the left of the panel.	The Product Display GUI will be displayed.
2	At the Product Display GUI, using any one of the twelve display windows, click on the green **Open Product Selection Dialog** button (located near the top center of the window).	A `Product Selection` window will be displayed.
3	At the `Product Selection` window, click on the **Apply** button.	A current product will be displayed within the window.

u EXERCISE DIAL-OUT (ONE TIME REQUEST (OTR)) FUNCTIONS.

This note addresses the OPUP's ability to exercise the One Time Request (OTR) for a product function by dialing into an *RPG of interest*.

Prerequisite: The steps outlined in this flowchart note assume that the product will be requested from a Non-Associated RPG of interest. The Operational Applications Product Display GUI should already be displayed before beginning with Step 1.

Step	Operator Action	System Response/Comments
1	Position the cursor in any display window within the PDGUI display, click on the green **Open Product Selection Dialog** button (located near the top center of the window).	A `Product Selection` window will be displayed.
2	At the `Product Section` window, click on the **RPG Type** button.	A pull down menu that displays `Dedicated, AOR, and All (Others)` will be displayed.
3	Click on the **AOR** selection.	
4	At `Product Selection` window, click on an **RPG** button.	A pull down menu will be displayed that lists RPG IDs that each site is allowed to select.
5	At the RPG ID list, click on an *RPG of interest*.	The RPG ID list will close.
6	At the `Product Selection` window, click on the **Category** button.	A list of WSR-88D products will be displayed.
7	Position the cursor over the **Base Reflectivity** product and click.	The Base Reflectivity product will be selected and displayed on the `Category` button label display.
8	At the bottom of the `Product Selection` window, click on the **OTR** button.	A `PDOTRDialog` window will be displayed.
9	At the `PDOTRDialog` window, click on the **Send/Clear** button.	The OTR Send/Clear function will remove the current product displayed within the `Product Display` window.
10	If a product is displayed within the window, stop here. Process complete. If a product is not displayed within a reasonable amount of time, repeat Steps 4 through 8 again.	It may take some time for a product to display within the product window (this is dependant upon communication line traffic).

i VIDEO SPLITTER CHECK UD86A9.

This note addresses the operational status of the Video Splitter UD86A9. Designated Small OPUP configurations (Small OPUP Configuration -302) use the video splitter to send a dependant image to a secondary Monitor UD86A11. If the primary Monitor UD86A1 and/or the secondary monitor do not display an image, the operational status of the video splitter must be known. This note outlines the procedure to first disconnect the video output cable from the rear of the Server UD86A2, disconnect the primary Monitor UD86A1 video cable from the video splitter Video Out-1 connector, and then re-connect it to the video output connector of the OPUP server. If an image is displayed, then a similar procedure is applied to the secondary Monitor UD86A11, using the Video Out-2 cable. The video splitter is bad if an image will display on each monitor while connected directly to the OPUP server.

Prerequisite: Refer to Figure 2-8 and Table 2-6 for all controls and indicators associated with the Monitor UD86A1/A11. Refer to Figure 2-15 and Table 2-13 for all controls and indicators associated with the Video Splitter UD86A9.

NOTE

If both monitors do not have a display, proceed with the following steps using either monitor as a test. If only one monitor doesn't have a display, proceed with the following steps using the monitor without a display.

Step	Operator Action	System Response/Comments
1	At the monitor with a display (either UD86A1 or UD86A11), press the power switch button to place the monitor in the powered off position.	The monitor will power to the off position.
2	At the rear of the Video Splitter UD86A9, disconnect the cable from the monitor without a display (either cable 86W6 or 86W7) that connects to VIDEO OUT-1 or VIDEO OUT-2.	
3	At the rear of the Server UD86A2, disconnect the video output cable 86W5.	The other end of 86W5 is connected to the video splitter VIDEO IN jack.
4	Connect the monitor video cable that was disconnected in Step 2 to the Server UD86A2 video out jack.	
5	At the front of the monitor, press the power switch button.	

O TEST DISPLAY MONITOR UD86A1.

This note addresses the operational status of the Monitor UD86A1.

NOTE

Refer to Note 8, Video Splitter Check, for Small OPUP configurations that employ a second Monitor UD86A11.

This procedure must use a second computer system that can display an image in order to test the primary Monitor UD86A1.

Prerequisite: Refer to Figure 2-8 and Table 2-6 for all controls and indicators associated with the Monitor UD86A1/A11. Refer to paragraph 2.2.3.2.1 for a discussion of all specific cable designations and connector locations.

Step	Operator Action	System Response/Comments
1	At the Monitor UD86A1, press the power on/off button.	The monitor will be placed in the powered off position.
2	At the rear panel of the Server UD86A2, disconnect the monitor video cable.	Refer to Figure 2-9, index 16, for location of video cable port.
3	At the rear of the monitor unplug the AC power cord.	
4	Using a second computer system, place the CPU in the power off (0) position. When the CPU is powered off, disconnect the video and power cable associated with the monitor (follow procedures similar to Steps 1 through 3 of this procedure).	
5	Connect the Monitor UD86A1 AC power cord to an available power source and the video connector to the second computer system.	
6	At the Monitor UD86A1, press the power on/off button.	The monitor will be powered to the on position.

1) REBOOT SERVER OPERATING SOFTWARE (OS).

This note addresses the OPUP's ability to stop all OPUP Server OS processes, display the `ok` prompt, and then place the system back to a normal operating position.

Step	Operator Action	System Response/Comments
1	If the `OPUP Manager Main Menu` cannot be displayed go to Step 2. If the `OPUP Manager Main Menu` can be displayed go to Step 4.	
2	At the front of the Server UD86A2, press and hold the power button for 5 seconds until the power LED button turns off.	The server will power down to the off position.
3	At the front of the Server UD86A2, press and release the power button. The power button LED will come back on after a few seconds. When finished, go to Step 7.	The server will perform a power on and boot up sequence.
4	At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button.	An `OPUP Server Control Menu` will be displayed.
5	At the `OPUP Server Control Menu`, click on the **Restart Server** button.	An `OPUP Manager Restart Server` window will be displayed.
6	At the `OPUP Manager Restart Server` window, click on the **Yes** button.	The Restart Server function will stop all OPUP OS functions and remove all processes from memory. An `OPUP Manager Restart Server(s)` window will be displayed. Once the **Yes** button is clicked, the Restart Server function will bring the OPUP system down to the `ok` prompt. After approximately 2 to 3 minutes the CDE Login screen will be displayed.
7	At the CDE Login screen, at the `Please enter your user name` prompt, enter: **opupmgr<Return>**	The CDE Login screen Password entry window will be displayed.
8	At the CDE Login screen, at the `Please enter your password` prompt, enter: *`opupmgr_password`***<Return>**	

9	If the `Netscape: Password` window is displayed, go to Step 10. If not, start the Netscape login password window by locating and clicking on the **Netscape "World"** Icon located near the bottom left of the CDE Front Panel.	A `Netscape: Password` window will be displayed.
10	If a `Netscape "Continue? Yes/No"` prompt is displayed, click on the **Yes** button, to continue.	No response.
11	If the `Netscape: Password` window is not displayed, click anywhere within the gray area of the Netscape display window.	A `Netscape: Password` window will be displayed.
12	At the Netscape `User ID:` and `Password` prompts, enter **opupmgr** in the `User ID:` field and then the site specific *opupmgr_password* in the `Password:` field. When finished, press the **<Return>** key.	The `OPUP Manager Main Menu` will be displayed.
13	At the `OPUP Manager Main Menu`, click on the **OPUP Software Menu** button.	The `OPUP Software Menu` will be displayed.
14	At the `OPUP Software Menu`, click on the **OPUP Process Status** button.	An `OPUP Process Status` window will be displayed. It may take up to 1 to 2 minutes for all process to be re-started!
15	At the `OPUP Process Status` window, ensure that all processes located within this window have data listed to the right of the ellipses associated with each OPUP Server OS function.	You may have to click on the **Refresh** button several times while the OPUP Server OS is re-initializing associated processes. When all processes have been started (all processes have data to the right of each associated ellipses), this check is complete.

1! INSTALL OPUP SOFTWARE.

This note addresses the procedures to re-install the OPUP Server OS. Refer to paragraph 3.5.4.1 and Table 3-7 for the OPUP Software installation procedure.

1@ CHECK SWITCH UD86A5.

This note addresses the operational status of the Switch. (Refer to Figure 2-11 and Table 2-9 for all controls and indicators associated with the Switch UD86A5.)

Step	Operator Action	System Response/Comments
1	At the front of the switch, inspect all LED indicators.	Each LED is outlined in Table 2-9.
2	Ensure that each LED is exhibiting the following behavior: Pwr: On. FDX: On/solid for ports 1-3; Off for ports 4 and 5. Collision: Off for all ports. 100M/10M: On/blinking for ports 1-3; Off for ports 4 and 5.	

1# STOP/START OPERATIONAL APPLICATIONS SOFTWARE.

This note provides the steps to stop and then re-start the OPUP Operational Application software suite.

Prerequisite: The `OPUP Manager Main Menu` must be displayed. Refer to flowchart Note 1, Display OPUP Manager Main Menu, if required.

Step	Operator Action	System Response/Comments
1	At the `OPUP Manager Main Menu`, click on the **OPUP Software Menu** button.	An `OPUP Software Menu` will be displayed.
2	At `OPUP Software Menu`, click on the **Stop OPUP** button.	An `OPUP Manager Stop OPUP` warning window will be displayed.
3	At `OPUP Manager Stop OPUP` warning window, click on the **Yes** button.	The OPUP Stop OS function will then stop all associated OPUP Server OS functions.

4	When the following message is displayed within the `OPUP Manager Stop OPUP` window: `All OPUP Server Software has been Stopped` Click on the **Return to OPUP Software Menu** button.	
5	At the `OPUP Software Menu` window, click on the **Start OPUP** button.	An `OPUP Manager Start OPUP` window will be displayed.
6	At the `OPUP Manager Start OPUP` warning window, click on the **Yes** button.	The OPUP Start OS function will then start all associated OPUP Server OS functions.
7	When the following message is displayed within the `OPUP Manager Start OPUP` window: `Please wait 1 to 2 minutes for the Server Processes to start.` Click on the **Return to OPUP Software Menu** button.	An `OPUP Software Menu` window will be displayed.
8	At the `OPUP Software Menu`, click on the **OPUP Process Status** button.	An `OPUP Process Status` window will be displayed.
9	At the `OPUP Process Status` window, ensure that all processes located within the `OPUP App/Task` column have data to the right of each task.	This window does not automatically update, click on the **Refresh** button several times while the OPUP Server OS is re-initializing associated processes to update the `OPUP Process Status` window. When all processes have been started (all processes have data to the right of each associated task), this procedure is complete.

1$ SHUTDOWN OPUP SERVER.

This note addresses the OPUP's ability to command a shut down to off position of the OPUP Server OS and Server UD86A2. Once initiated, the Server UD86A2 will be in the power off position.

Prerequisite: The `OPUP Manager Main Menu` must be displayed. Refer to flowchart Note 1, Display OPUP Manager Main Menu, if required.

Step	Operator Action	System Response/Comments
1	At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button.	An `OPUP Server Control Menu` window will be displayed.
2	At `OPUP Server Control Menu`, click on the **Shutdown Server** button.	A `OPUP Manager Shutdown Server` warning window will be displayed.
3	At the `OPUP Manager Shutdown Server` warning window, click on the **Yes** button.	A `OPUP Manager Shutdown Server(s)` window will be displayed. The Shutdown Server function will then stop all OPUP Server OS processes, remove them from memory, and command the Server UD86A2 to power off all internal hardware. When finished, the Server UD86A2 will be in the powered off (0) position.

1% OPUP SERVER POWER-UP AND RECONFIGURATION BOOT PROCESS.

This note addresses the Server's UD86A2 ability to initially power on, perform a POST, place all applicable OPUP Server OS functions into memory, and display the CDE Login screen.

Prerequisites: Refer to Figure 2-9 and Table 2-7 for all applicable controls and indicators associated with the Server UD86A2.

Step	Operator Action	System Response/Comments
1	At the front of the Server UD86A2, press and release the power button. The power button LED will illuminate after a few seconds.	Pressing the Power LED button applies power to the server. A beep sound will accompany the pressing of the LED button. This indicates that power has been applied.
2	When the system begins the boot sequence, denoted by a spinning pin-wheel icon displayed on the Monitor UD86A1, press and hold the **<Stop>** and **<A>** keys.	This stops the server's boot sequence and displays an `ok` prompt. This will take approximately 2 minutes.

Step	Operator Action	System Response/Comments
3	At the `ok` prompt, enter: **boot -r<Return>**	The **boot -r** command causes the OPUP server to initiate a reconfiguration procedure. The OPUP server will perform an internal Power-On-Self-Test (POST) procedure. Various amounts of information will be displayed on the monitor display to indicate that a POST procedure is currently being performed. When completed, an CDE Login screen will be displayed.

1^ DEDICATED MODEM SELF-TEST UD86A6/A13.

This note addresses the External Dedicated Modem's UD86A6/A13 ability to perform a self-test procedures and indicate the status of the test in the LCD readout located near the front center of the modem. The steps provided in this flowchart note apply to any Secondary External Dedicated Modem UD86A13 that may be installed.

Prerequisites: Refer to Figure 2-12 and Table 2-10 for all applicable controls and indicators associated with the External Dedicated Modem UD86A6/A13.

Step	Operator Action	System Response/Comments
1	At the front of the External Dedicated Modem UD86A6/A13, press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).
2	Press the **Across** button until the following message is displayed: `Save Changes = 1`	
3	Press the **Enter** button and wait until the display reads the following: `Save Completed!`	This procedure saves the current settings within the modem.

Step	Operator Action	System Response/Comments
4	Press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).
5	At the rear of the modem, place the rocker power switch in the Off (0) position.	All LCD information in the display window will go blank.
6	While at the rear of the modem, place the rocker power switch in the On (1) position.	The LCD should read `Self Test` initially, then `3261 Fast Ready` when the modem's self test procedure is completed.

1& DEDICATED MODEM REMOTE DIGITAL LOOPBACK PATTERN TEST.

This note addresses the External Dedicated Modem's ability to perform a Digital Loopback Pattern Test. The Remote Digital Loopback Pattern Test (RDL Pat) uses an internal pattern generator to provide test data that is designed to examine the transmit and receive circuitry of the local OPUP Dedicated Modem, the remote RPG Dedicated Modem, and the interconnecting telephone line. The steps provided in this flowchart note apply to any secondary External Dedicated Modem UD86A13 that may be installed.

The test pattern is first transmitted by the local OPUP dedicated modem over the telephone line to the remote RPG dedicated modem and then looped back over the telephone line back to the local OPUP dedicated modem. Data bit errors and block errors are counted throughout the duration of the test and the total error count is displayed in the LCD readout of the modem front panel at the completion of the test.

Prerequisites: Refer to Figure 2-12 and Table 2-10 for all applicable controls and indicators associated with the External Dedicated Modem UD86A6/A13.

Step	Operator Action	System Response/Comments
1	At the front of the External Dedicated Modem UD86A6/A13, press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).

Step	Operator Action	System Response/Comments
2	Press the **Across** button until the following message is displayed: `Save Changes = 1`	
3	Press the **Enter** button and wait until the display reads the following: `Save Completed!`	This procedure saves the current settings within the modem.
4	Press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D?` or `V32b 14.4 T/D?`).
5	Press the **Down** button.	`TEST OPT's` will be displayed in the LCD front panel.
6	Press the **Across** button.	`Test = End Test` will be displayed.
7	Press the **Down** button six times.	`Test : RDL Pat` will be displayed.
8	Press the **Enter** button.	`Test = RDL Pat` will be displayed.
9	Allow this test to run at least 5 minutes and then go to the next step. If the test is not successful the following message will then be displayed: `Test Denied` If the above message is displayed check the Dedicated RPG Circuit in question and return to Step 1 of this note.	The Test Denied message is usually the result of both the Remote RPG modem and the modem at the OPUP end is not connected. This indicates that the associated circuit has been disrupted, such as with a problem associated with a demark punch down block.
10	Press the **Down** button three times.	`Test : End Test` will be displayed.

Step	Operator Action	System Response/Comments
11	Press the **Enter** button.	The Enter button will stop the test from running and displays the message: `Bit = X  Blk = X` "X" represents the number of Bit or Block errors that occurred during the test. (It would be ideal for both Bit and Block to be "0".
12	Press the **Return** button three times.	This returns the modem to the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).

1* DEDICATED MODEM LOCAL ANALOG LOOPBACK PATTERN TEST.

This note addresses the External Dedicated Modem's ability to perform a Local Analog Loopback Pattern Test. This test uses an internal pattern generator to provide test data that is designed to examine the transmit and receive circuitry of the local OPUP dedicated modem. The steps provided in this flowchart note apply to any secondary External Dedicated Modem UD86A13.

The test pattern is internally looped back from the local OPUP dedicated modem from the modem's transmitter directly back to the modem's receiver. Data bit errors and block errors are counted throughout the duration of the test and the total error count is displayed in the LCD readout of the modem front panel at the completion of the test.

Prerequisites: Refer to Figure 2-12 and Table 2-10 for all applicable controls and indicators associated with the External Dedicated Modem UD86A6/A13.

Step	Operator Action	System Response/Comments
1	At the front of the External Dedicated Modem UD86A6/A13, press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).

Step	Operator Action	System Response/Comments
2	Press the **Across** button until the following message is displayed: `Save Changes = 1`	
3	Press the **Enter** button and wait until the display reads the following: `Save Completed!`	This procedure saves the current settings within the modem.
4	Press the **Return** button twice.	Pressing the **Return** button twice ensures that the modem is in the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).
5	Press the **Down** button.	`TEST OPT's` will be displayed in the LCD front panel.
6	Press the **Across** button.	`Test = End Test` will be displayed.
7	Press the **Down** button five times.	`Test : LAL Pat` will be displayed.
8	Press the **Enter** button.	`Test = LAL Pat` will the displayed.
9	Press the **Down** button four times.	`Test: End Test` will be displayed.
10	Press the **Enter** button.	The Enter button will stop the test from running and displays the message: `Bit = X  Blk = X` "X" represents the number of Bit or Block errors that where found during the test. (It would be ideal for both Bit and Block to be "0".)
11	Press the **Return** button three times.	This returns the modem to the "Home" position within the modem parameter directory structure (`DATA 14.4 T/D? or V32b 14.4 T/D?`).

1(CHECK OPUP SYSTEM STATUS MESSAGES.

This note addresses the OPUP's ability to display associated status messages located within the Operational Applications Front Panel‘Status & Control‘System Status Tab window.

Prerequisites: The `Status and Control - OPUP X.X` window (where X.X is the current version of software) must be displayed. (Refer to flowchart Note 3, Open Status and Control GUI, if required.)

Step	Operator Action	System Response/Comments
1	At the `Status and Control - OPUP X.X` window, click on the **System Status** button.	A `System Status` window with associated status messages will be displayed.
2	At the `System Status` window, click on the **Status Message Filter** icon located within the top right of the `System Status` window.	A `Status Message Filter` window will be displayed.
3	At the `Status Message Filter` window, click on the `Process Name:` box to select the `Process Name:` filter selection.	The `Process Name:` indicator box will then be highlighted. The `Process Name:` filter area will then go from grayed out to normal, as well.
4	At the `Process Name:` filter area, click on the process most closely related to the process of interest.	The process name will be outlined and a check placed within it's box.
5	Click on the **Apply** button.	The `System Status Process Name:` Filter function will then search the OPUP Server OS database logs for all reportable information associated with the selected processes). This data will then replace the previous data that was displayed within the `System Status Message` window display.
6	At the `System Status Message` window, click the **Done** button.	If found, the desired message will be displayed.

2) RPG STATUS CHECK.

The steps provided in this flowchart note have the OPUP Operator check the status of the RPG connection displayed within the `Status and Control - OPUP X.X`, (where X.X is the current version of software), `Network Map`. The status of RPG to OPUP connectivity will be indicated by a green dot located at the RPG of interest within the Network Map window. This flowchart note will also check the RPG Status window for overall system connectivity.

Prerequisites: The Operational Applications Front Panel ‘`Status and Control - OPUP X.X` window must be displayed. (Refer to flowchart Note 3, Open Status and Control GUI, if needed.)

Step	Operator Action	System Response/Comments
1	Log out of the Operational Applications Front Panel as follows: a. Click on the **EXIT** icon located near the bottom center of the CDE Front Panel. b. In the `Logout Confirmation` pop-up window, click the **OK** button to get to the CDE Login window.	The CDE Login screen will be displayed.
2	At the `Please enter your user name` prompt, enter an *Operations_User_ID* and press the **<Return>** key.	The CDE Password entry window is displayed.
3	At the `Please enter your password` prompt, enter a *`User_ID_password`***<Return>**	The Operational Applications Front Panel will be displayed.
4	At the Operational Applications Front Panel display, locate and click on **Status & Control** icon.	The `Status and Control - OPUP X.X` window will be displayed.
5	At the `Status and Control - OPUP X.X` window, ensure that the `Network Map` window is displayed. If the `Network Map` window is not displayed, click on the **Network Map** tab.	The `Network Map` window is displayed.
6	At the `Network Map` window, click on the **RPG Status** dot of the *RPG of interest*.	A yellow circle will be displayed around the dot of the *RPG of interest.*
7	At the `Status and Control - OPUP X.X` window, click on the **RPG Status** tab.	An `RPG Status` window will be displayed.

2! PRINT PRINTER CONFIGURATION PAGES.

This flowchart note addresses the Printer's UD86A12 ability to access and print for display the configuration information associated with the printer. The steps provided in this flowchart note have the operator print the configuration pages provided via the printer menu structure found within the printer's front panel. The printer configuration data is printed to determine if the printer will perform a local print procedure. In addition, the IP address can also be verified to be accurate. The printer IP address must match the IP address used to initially setup and configure the printer at the Server UD86A2, using `OPUP Manager Main Menu‹OPUP Server Control Menu‹Printer Tools‹Add New Printer`. Refer to note 22 to obtain printer IP address loaded in the OPUP Server OS.

Prerequisites: The Printer UD86A12 must have AC power supplied, powered to the on position, and have the network Ethernet cable connected between the printer and the Switch UD86A5.

Step	Operator Action	System Response/Comments
1	At the Printer UD86A12 front panel, press the **OK** button (refer to Figure 2-17, Index 7 for location). When the printer is finished warming up go to the next step.	This will cause the printer to start the printer warm-up sequence and display the following message: `PHASER 8200N WARMING UP, PLEASE WAIT. XX% COMPLETE`.
2	At the printer front panel, ensure that the `Menus` selection is displayed and highlighted. If the `Menus` selection is not highlighted, use the **Up arrow** button to select and highlight it.	
3	At the printer front panel, press the **OK** button.	The `Menus` selection screen will be displayed.
4	At the printer front panel, press the **Down arrow** twice to highlight the Network Setup Menu selection.	
5	At the printer front panel, press the **OK** button.	The `Network Setup Menu` selection screen will be displayed.
6	At the printer front panel, press the **Down arrow** twice to highlight the `Print Configuration Pages` selection.	

Step	Operator Action	System Response/Comments
7	At the printer front panel, press the **OK** button.	Two configuration pages will be printed.

2@ CHECK PRINTER IP ADDRESS IN SERVER SOFTWARE.

This flowchart note addresses the Server's UD86A2 ability to display the configuration information associated with the printer's IP address. The steps provided in this flowchart note have the operator check the OPUP Server OS for the Printer UD86A12 IP address located within a specific OPUP Server OS directory.

Prerequisite: The OPUP Manager CDE Front Panel must be displayed. Refer to flowchart Note 1 if the CDE Front Panel is not displayed.

Step	Operator Action	System Response/Comments
1	At the OPUP Manager CDE Front Panel, click on the **Up arrow** located above the cpu disk icon.	A `Hosts` pop-up window will be displayed.
2	At the `Hosts` window, click on the **This Host** icon.	A `Terminal` window will be displayed. This window will also have a `/export/home/opupmgr>` prompt displayed.
3	At the `/export/home/opupmgr>` prompt, enter the following: **more temp/printerinfofile<Return>**	The contents of the Printer UD86A12 Info File will be displayed.

2# SWITCH/VIDEO ADAPTER POWER ADAPTER VOLTAGE CHECK.

This flowchart note addresses whether the power adapters associated with either the Switch UD86A5 or Video Splitter UD86A9 are functioning properly. The steps provided in this flowchart note have the operator check the DC voltage output from the adapter.

Prerequisite: A digital multimeter must be present. The adapter must be connected to a power source (either the UPS UD86A10 or a power strip that is plugged into the UPS.

Step	Operator Action	System Response/Comments
1	At the Switch UD86A5 or the Video Splitter UD86A9, unplug the DC power connector.	
2	Using the digital multimeter set to measure DC voltage, measure the DC voltage at the plug as follows: • Place the black lead probe tip to the outside metal portion of the plug. • Place the red lead probe tip to the enter of the plug.	If the probe tip does not make contact with the metal inner portion of the plug, insert a paper clip in the center connector and place the red probe tip on the paper clip. The DC voltage will be displayed on the multimeter LCD screen.
3	The measured voltage for each device should be as follows: • Switch: 7.5 to 11.0 Vdc +/-.5 • Video Splitter: 9 Vdc +/-.5	

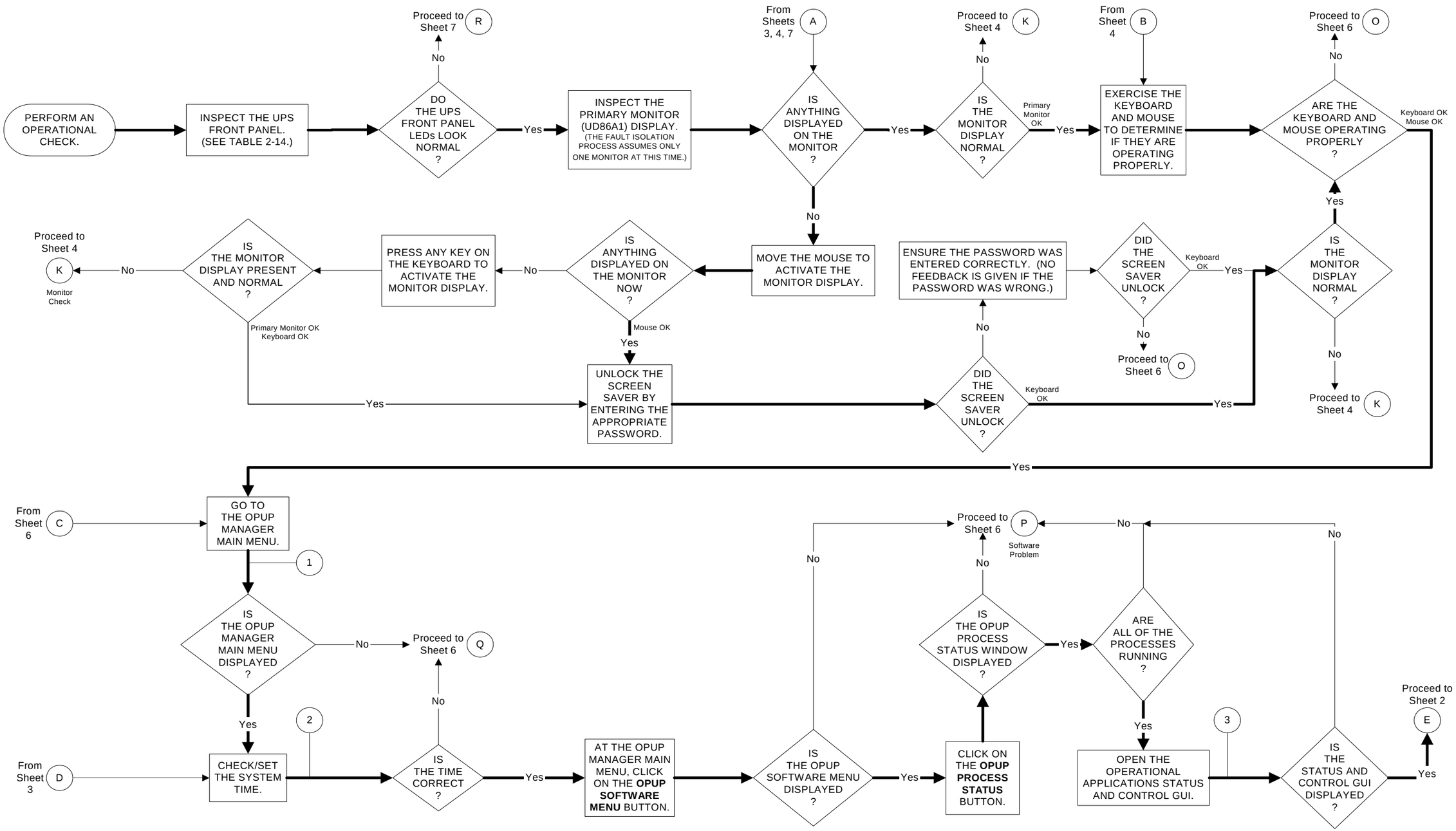


Figure 6-1. Small OPUP Fault Isolation Flowchart (Operational Check) (Sheet 1 of 10)

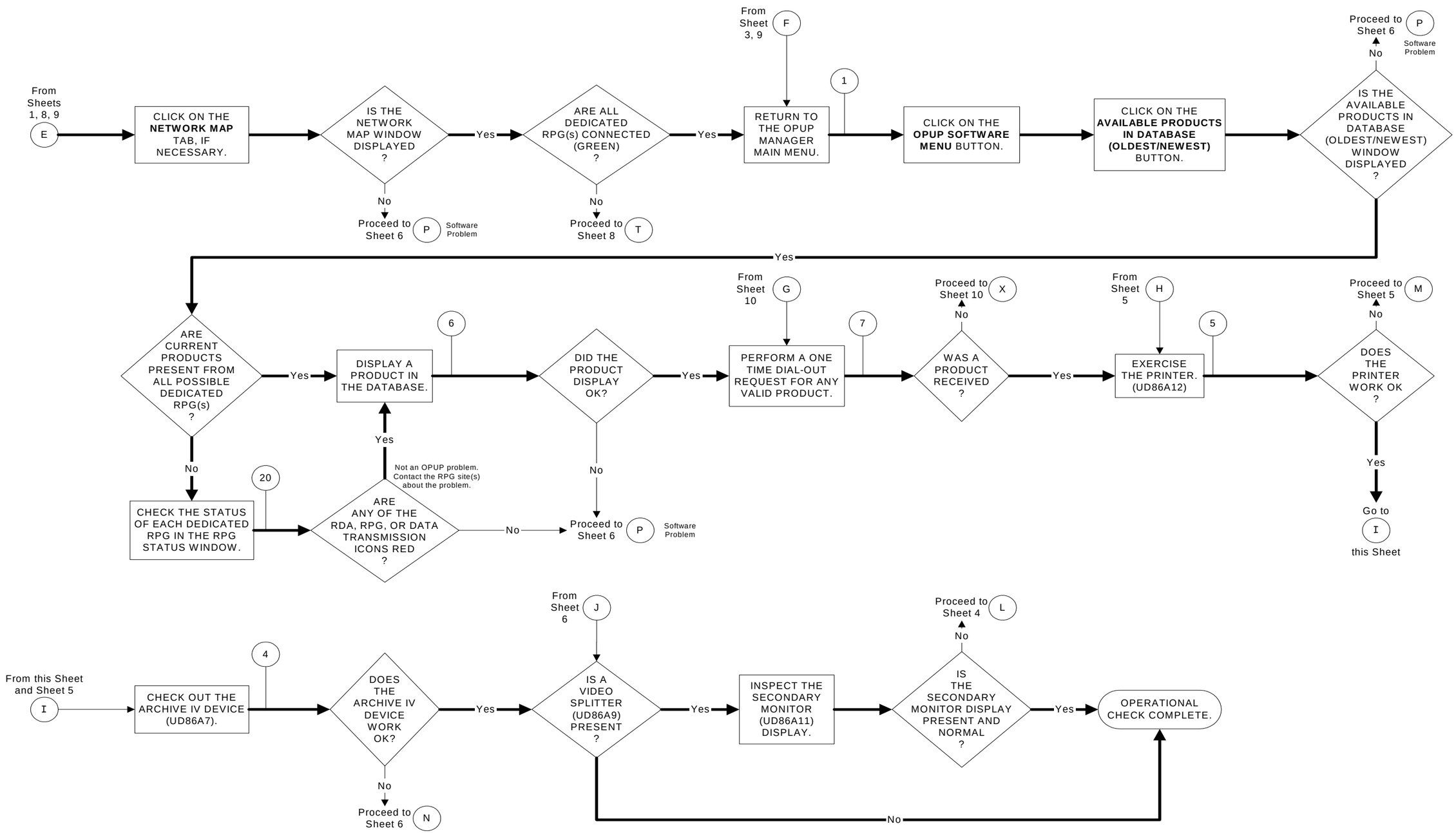


Figure 6-1. Small OPUP Fault Isolation Flowchart (Operational Check) (Sheet 2 of 10)

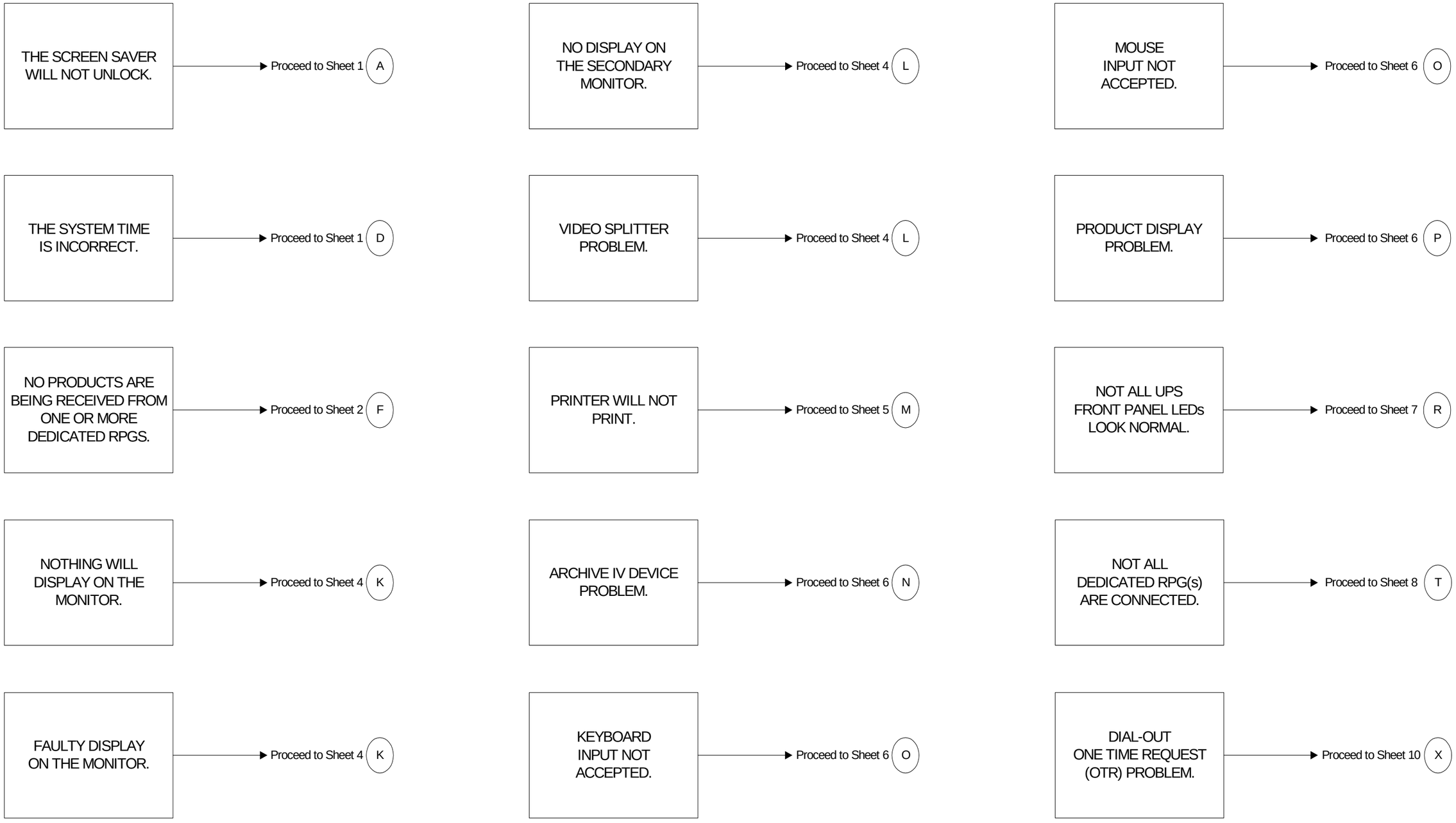


Figure 6-1. Small OPUP Fault Isolation Flowchart (Quick Reference Chart) (Sheet 3 of 10)

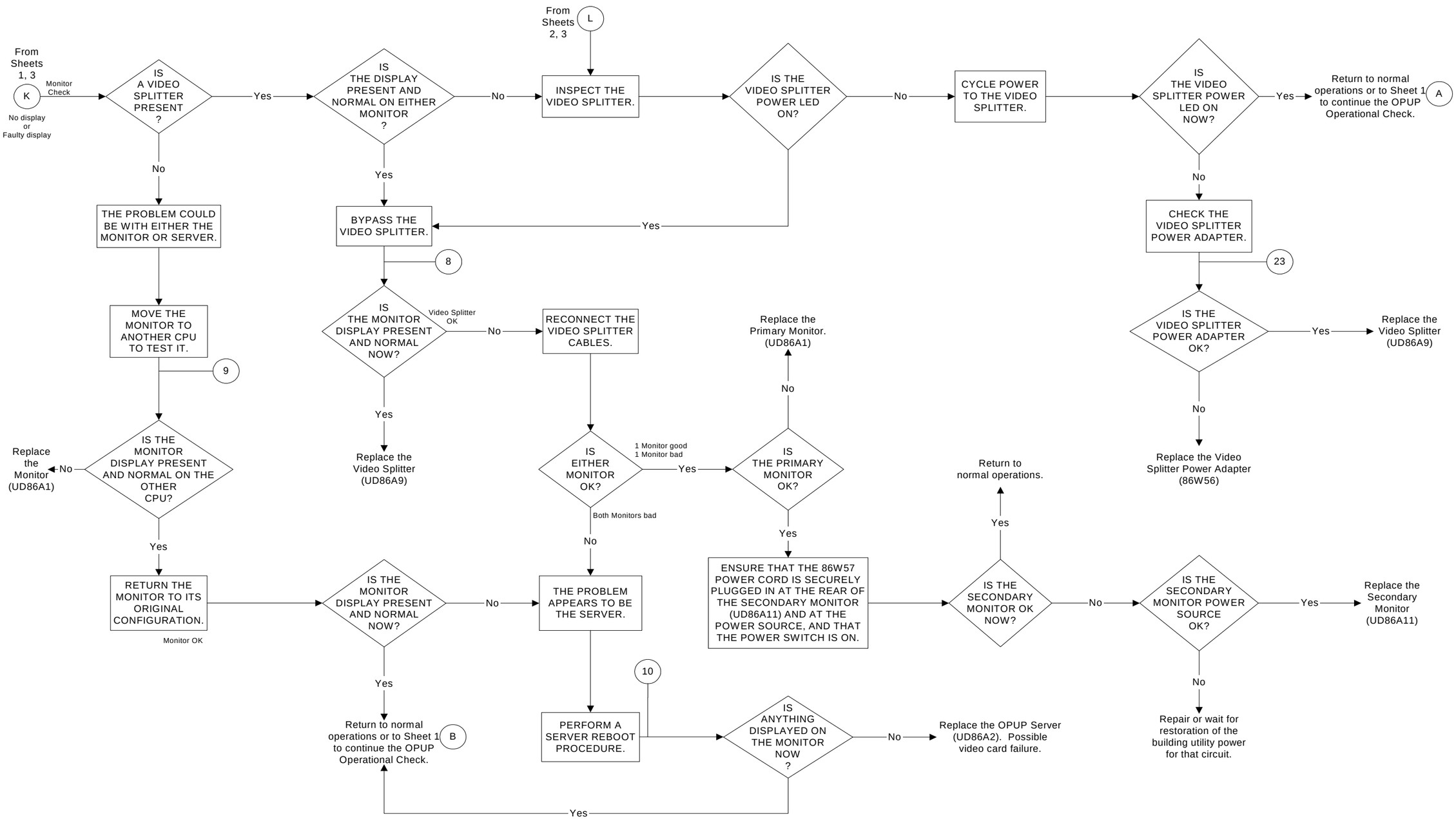


Figure 6-1. Small OPUP Fault Isolation Flowchart (Monitor/Video Splitter) (Sheet 4 of 10)

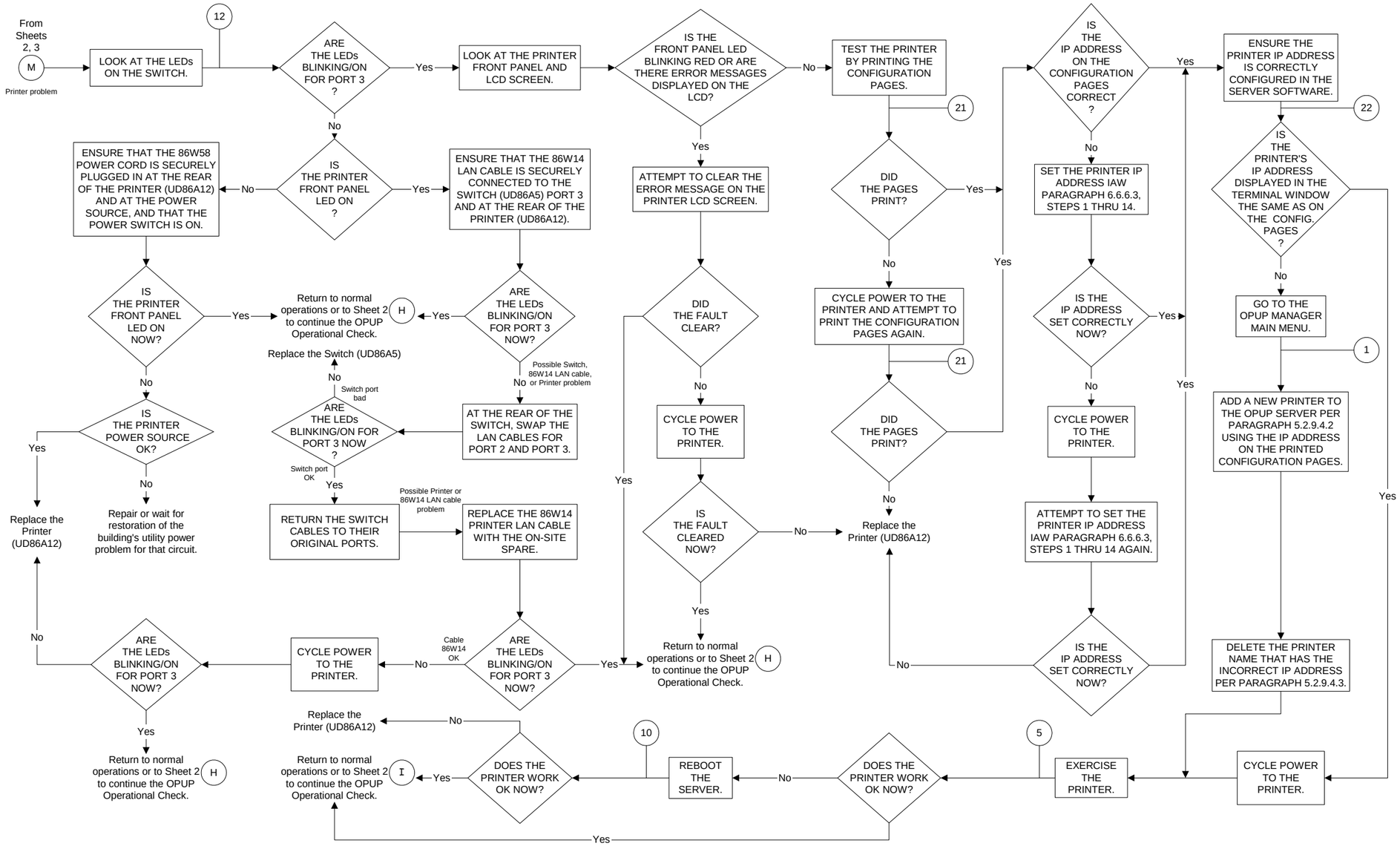


Figure 6-1. Small OPUP Fault Isolation Flowchart (Printer) (Sheet 5 of 10)

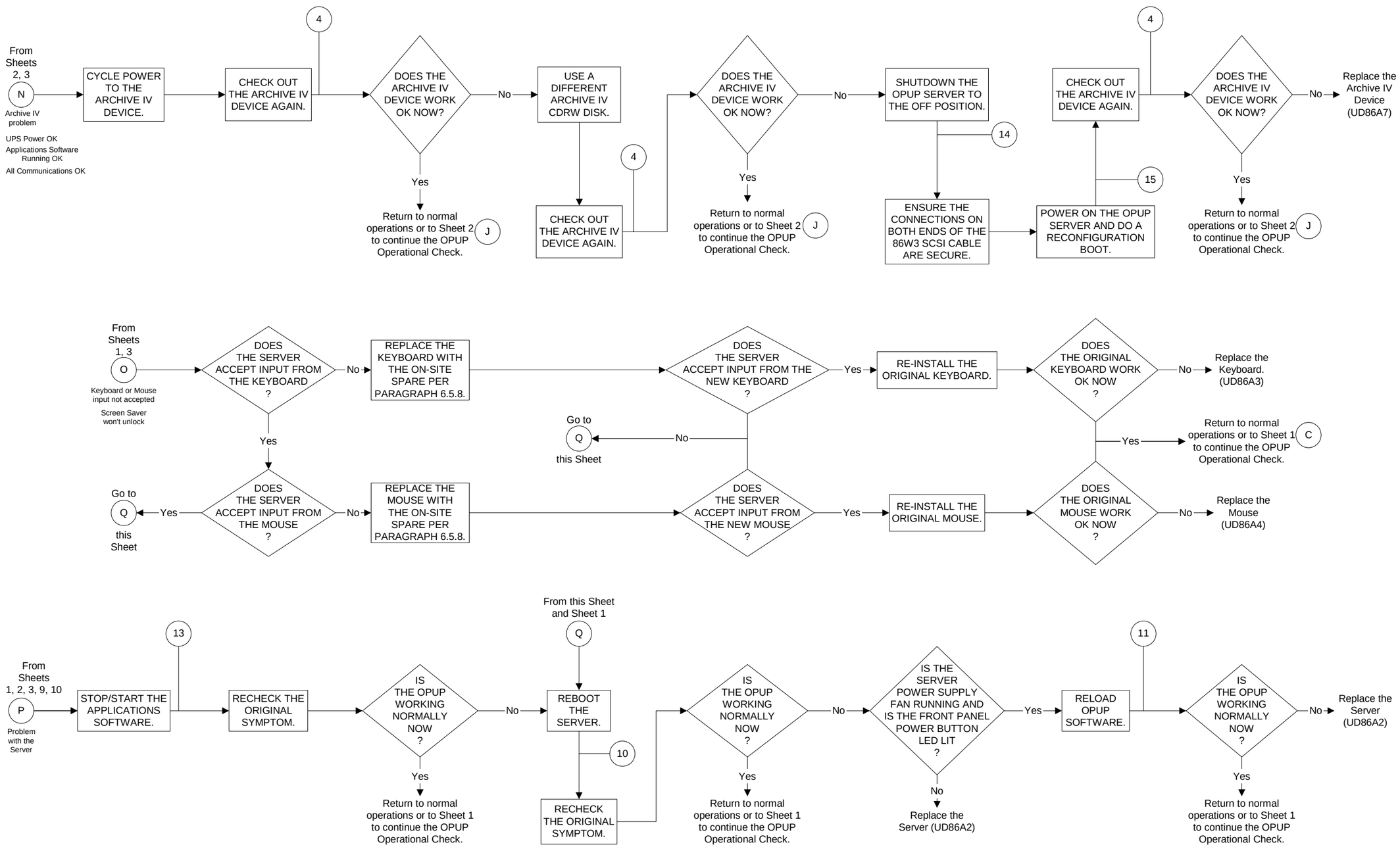


Figure 6-1. Small OPUP Fault Isolation Flowchart (Archive IV Device/Keyboard/Mouse or Server) (Sheet 6 of 10)

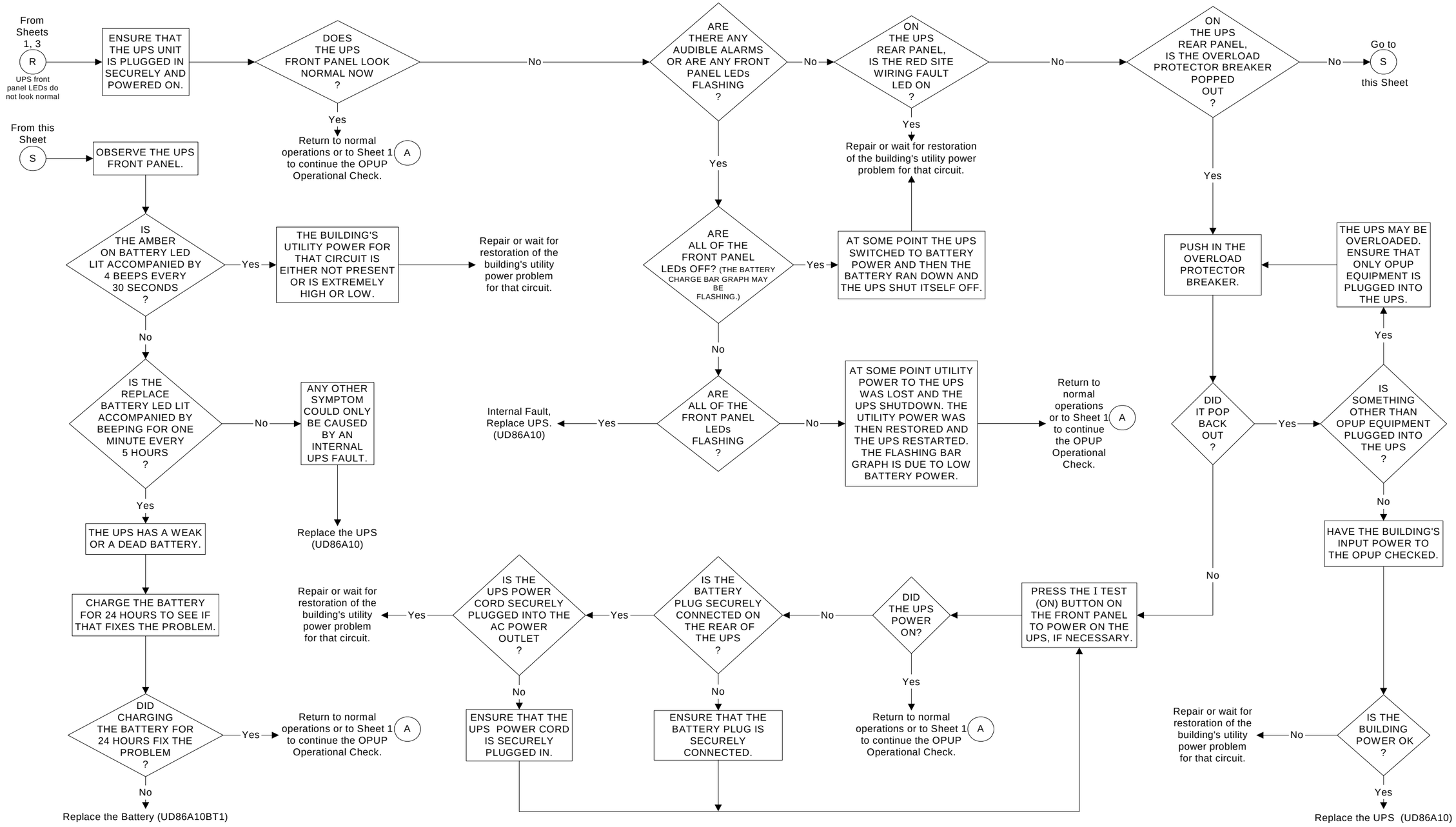


Figure 6-1. Small OPUP Fault Isolation Flowchart (UPS) (Sheet 7 of 10)

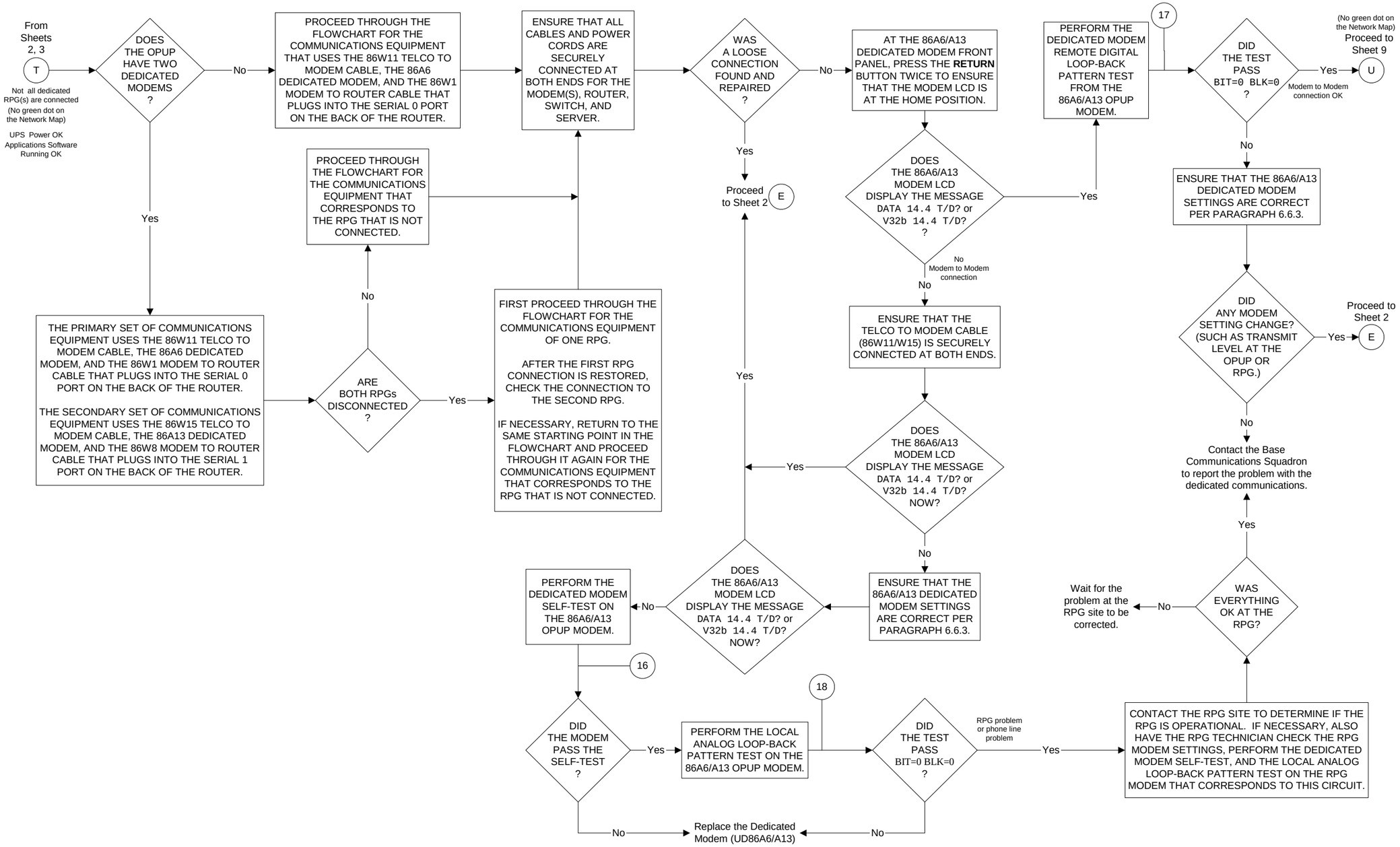


Figure 6-1. Small OPUP Fault Isolation Flowchart (Dedicated Communications) (Sheet 8 of 10)

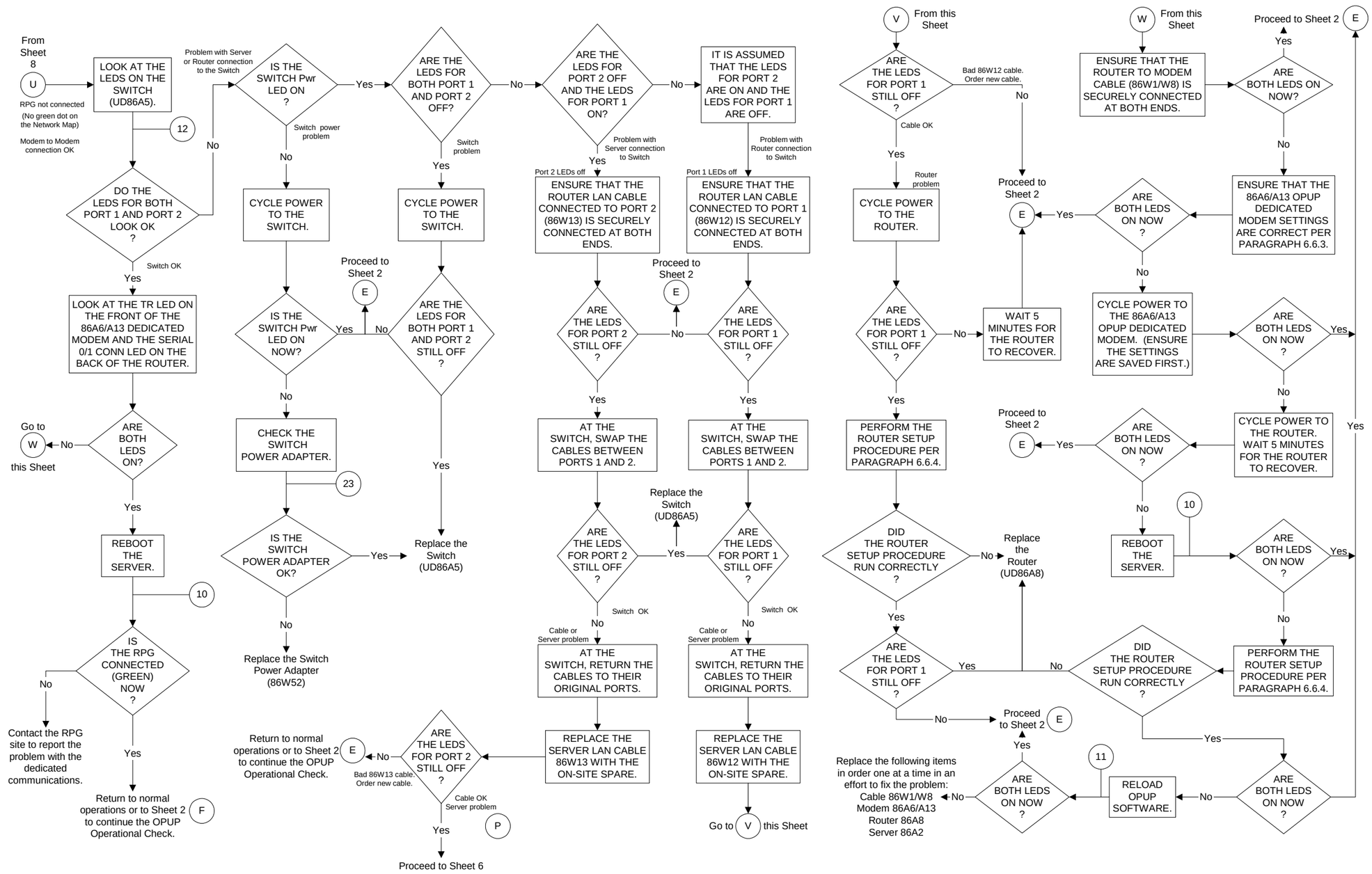


Figure 6-1. Small OPUP Fault Isolation Flowchart (Dedicated Communications) (Sheet 9 of 10)

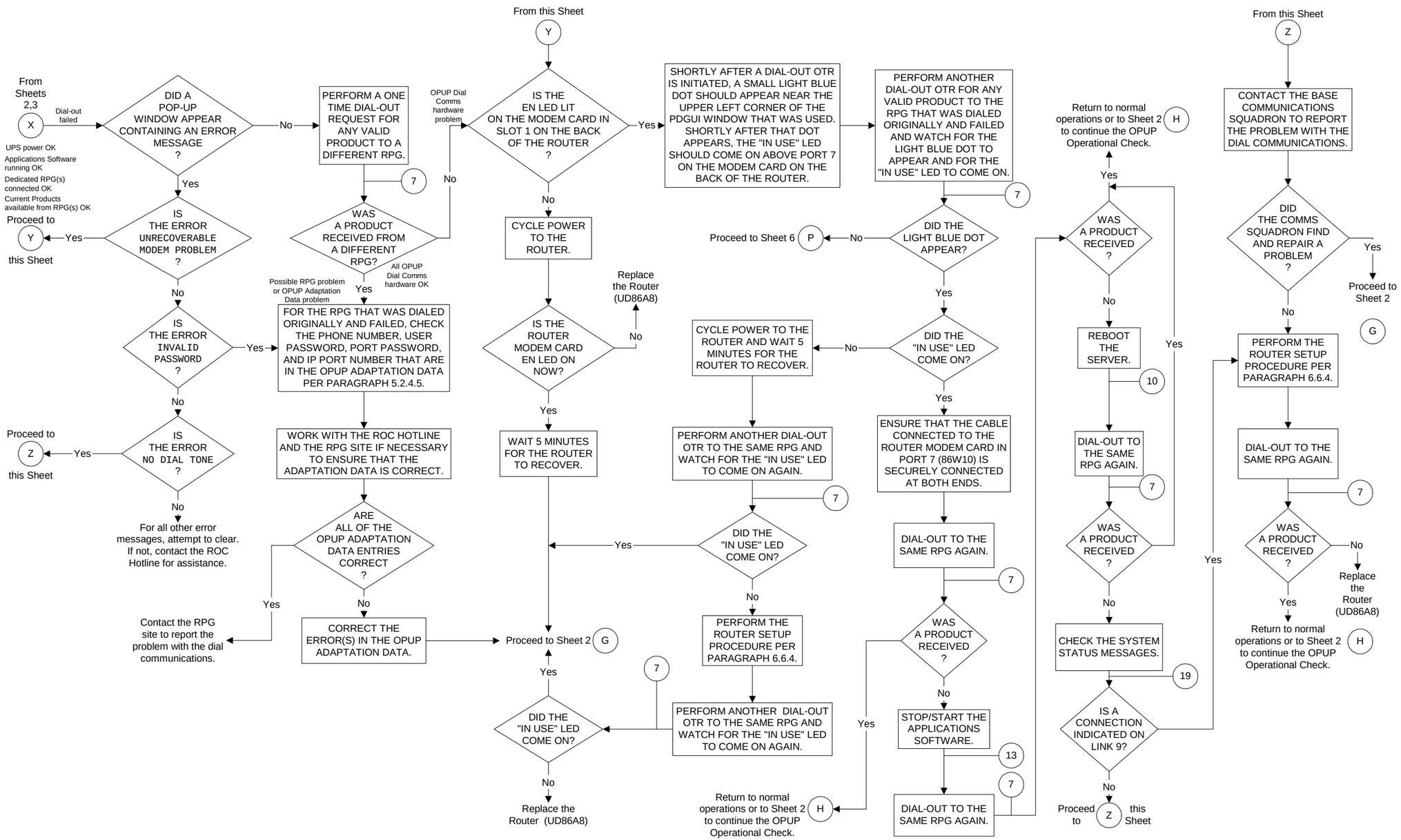


Figure 6-1. Small OPUP Fault Isolation Flowchart (Dial Communications) (Sheet 10 of 10)

Section 6.4. SECONDARY FAULT ISOLATION

6.4.1 Introduction.

The Small OPUP configuration does not require secondary fault isolation guidance.

Section 6.5. REMOVE AND REPLACE PROCEDURES

6.5.1 Introduction.

This section provides the instructions necessary to remove and replace an assembly or sub-assembly associated with the Line Replaceable Unit (LRU) found within the Small OPUP Equipment Group UD86. Each procedure provided with these instructions are organized by reference designation number types. The information provided in Table 6-2 provides a quick method to identify the paragraph that corresponds to the equipment item that is to be removed and replaced. In addition to Table 6-2, Figure 2-3 through Figure 2-7 can be used, as required, to quickly locate each assembly item and associated cables while performing each remove and replace procedure. Most of the OPUP LRU's can act as stand-alone sub-assembly or are incorporated along side the Server UD86A2 and do not require special replacement instructions. However, standard remove/replace procedures are provided in this section in case any questions should arise.

Visual inspection and reference to equipment layout/interconnection drawings used to determine access requirements, cable connections, and fastening hardware should suffice for most of the OPUP assemblies. There are three types of assemblies for which special procedures are required. These include certain electro-mechanical assemblies, printed circuit cards, and peripheral communications devices. Each of these types is defined in the following paragraphs. For exact parts location identification and part number ordering data, refer to Chapter 7, IPB. Lastly, all setup and configuration instructions are provided in Section 6.6, Setup Procedures.

6.5.1.1 DIP Switches/Jumpers. The only equipment items that may require adjustment of integrated jumpers or miniature built-in switches before they are installed will be the External Dedicated Modem UD86A6/A13 or the Archive IV Device UD86A7. The DIP switches associated with these LRUs are either in the form of a rotary, rocker, or DIP type switch. The reason for this requirement is that many of these devices are standard off-the-shelf assemblies which can function in several different modes or configurations. They must be configured for their specific application at the time of installation. This section provides tables for determining the proper switch/jumper setting for each unique device application and includes card layout figure for positive identification of each DIP switch.

NOTE

All straps not defined in this section must be left in the original configuration as received from the factory/spares depot.

6.5.2 LRU Replacement Index. The following index is provided to outline each available remove and replace procedure associated with all of the equipment associated with the Small OPUP Equipment Group UD86.

Table 6-2. LRU Replacement Procedure Index

Reference Designation	Description/Name	Paragraph Number
UD86A1	21-Inch Monitor	6.5.4
UD86A1*	21-Inch Monitor	6.5.5
UD86A11*	21-Inch Monitor	6.5.6
UD86A2	Server (CPU/Processor)	6.5.7
UD86A3/A4	Keyboard/Mouse Set	6.5.8
UD86A5**	Switch	6.5.9
UD86A6	Primary External Dedicated Modem	6.5.10
UD86A13***	Secondary External Dedicated Modem	6.5.11
UD86A7	Archive IV Device	6.5.12
UD86A8	Communication Router	6.5.13
UD86A9*	Video Splitter	6.5.14
UD86A10	UPS	6.5.15
UD86A10BT1	UPS Battery Module	6.5.16
UD86A12**	Printer	6.5.17
* -302 sites only ** -302 through -304 sites *** -304 sites only		

6.5.3 Other LRU Replacement Guidelines. The following paragraphs cover additional LRU equipment replacement guidelines. These guidelines should be considered before any Small OPUP Equipment Group UD86 LRU hardware item is removed or replaced.

6.5.3.1 Safety. Always read the text and procedures and note the safety warnings or cautions provided. Do not attempt to bypass or circumvent instructions and features provided for the safety of personnel or the protection of the equipment.

6.5.3.2 Software Shutdown Procedures. A software shutdown is applicable when it is necessary to stop the application software prior to a removal and replacement procedure. When a software shutdown is necessary, it is included in the initial conditions/preliminary setup paragraph of the removal and replacement procedure.

6.5.3.3 Power Turn-Off Procedures. To protect and prolong the life of the equipment, most LRUs must be powered OFF before connecting/disconnecting, or removing/installing components. Always follow the initial conditions/preliminary setup paragraph included in the replacement procedure for each piece of equipment. If no software shutdown or Server power off procedure is necessary prior to replacing a specific LRU, then that LRU is considered to be hot-swappable.

6.5.3.4 Labeling. When a cable is to be removed and replaced, note the old cable's label information. When a new cable is ordered, it will require that the appropriate label be attached using the label kit supplied with each new cable. More than one label kit may accompany each new cable, ensure that the correct label information is applied by comparing both the appropriate Inter-Connect Drawing (ICD) and the old cable before attaching the label information.

6.5.3.5 Inspection. When a new or replacement part is to be installed, first verify that it is the correct part by checking part numbers against the parts list found in Chapter 7, IPB. The IPB provides specific information that can be compared to the drawing provided in that chapter. Once each part is identified, inspect it for physical damage. Attempting to install an incorrect part (or the correct part into the wrong location), can cause equipment damage.

6.5.3.6 Related Procedures. The replacement of certain components require a setup procedure or initialization to be done. When necessary, the associated setup procedure is referenced near the end of the replacement procedure.

6.5.4 21-inch Monitor UD86A1 Replacement Procedure.

NOTE

For Navy/MC sites configured with two monitors refer to paragraph 6.5.5 for Monitor UD86A1 or paragraph 6.5.6 for Monitor UD86A11.

Two technicians are required for this procedure.

6.5.4.1 Equipment and Tools Required.

None

6.5.4.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-8 and Table 2-6 for the location and description of each Monitor UD86A1 control and indicator.

None

6.5.4.3 Replacement Procedure.

1. At the front of the monitor, press the power button to turn the power Off.

2. At the rear of the monitor, locate and remove the monitor AC power cord 86W50.

3. At the rear of the monitor, locate and disconnect the monitor video cable 86W2 from the Screen-1 video jack.

CAUTION

The weight of the monitor is approximately 68 pounds. Two technicians are required to lift the monitor during removal and replacement.

4. With help from the second technician, remove the monitor. Set the monitor aside.

5. Set the new monitor in place.

6. At the rear of the monitor, connect the monitor video cable 86W2 to the Screen-1 video jack. Secure the connector by finger-tightening the connector screws.

7. At the rear of the monitor, plug the monitor AC power cord 86W50 into the AC IN jack.

8. At the front of the monitor, ensure the INPUT 1/2 slide switch is set to the INPUT 1 position.

9. At the front of the monitor, press the power button to turn the power On.

6.5.5 21-Inch Monitor UD86A1 (-302 Configured Navy/MC Sites Only) Replacement Procedure .

Two technicians are required for this procedure.

6.5.5.1 Equipment and Tools Required.

None

6.5.5.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-8 and Table 2-6 for the location and description of each Monitor UD86A1 control and indicator.

None

6.5.5.3 Replacement Procedure.

NOTES

The Monitor UD86A1 associated with -302 configured Navy/MC sites will be connected to a video splitter for use with a second Monitor UD86A11.

All Navy/MC sites that use only Monitor UD86A1 for display must use the procedures outlined in paragraph 6.5.4.

The video splitter does not require the power to be removed during this procedure.

1. At the front of the monitor, press the power button to turn the power Off.

2. At the rear of the monitor, locate and remove the monitor AC power cord 86W50.

3. At the rear of the monitor, locate and disconnect the monitor video cable 86W6 from the Screen-1 video jack.

CAUTION

The weight of the monitor is approximately 68 pounds. Two technicians are required to lift the monitor during removal and replacement.

4. With help from the second technician, remove the monitor. Set the monitor aside.

5. Set the new monitor in place.

6. At the rear of the monitor, connect the monitor video cable 86W6 to the Screen-1 video jack. Secure the connector by finger-tightening the connector screws.

7. At the rear of the monitor, plug the monitor AC power cord 86W50 into the AC IN jack.

8. At the front of the monitor, ensure the INPUT 1/2 slide switch is set to the INPUT 1 position.

9. At the front of the monitor, press the power button to turn the power On.

6.5.6 21-inch Monitor UD86A11 Replacement Procedure.

Two technicians are required for this procedure.

6.5.6.1 Equipment and Tools Required.

None

6.5.6.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-8 and Table 2-6 for the location and description of each Monitor UD86A11 control and indicator.

None

6.5.6.3 Replacement Procedure.

NOTE

The location of the Monitor UD86A11 is per Navy/MC site preference. A Video Splitter UD86A9 is used to provide connectivity for a second monitor. Both of these items need to be located before this procedure can be completed. The video splitter does not require the power to be removed during this procedure.

1. At the front of the monitor, press the power button to turn the power Off.

2. At the rear of the monitor, locate and remove the monitor AC power cord 86W57.

3. At the rear of the monitor, locate and disconnect the monitor video cable 86W7 form the Screen-1 video jack.

CAUTION

The weight of the monitor is approximately 68 pounds. Two technicians are required to lift the monitor during removal and replacement.

4. With help from the second technician, remove the monitor. Set the monitor aside.

5. Set the new monitor in place.

6. At the rear of the monitor, connect the monitor video cable 86W7 to the Screen-1 video jack. Secure the connector by finger-tightening the connector screws.

7. At the rear of the monitor, plug the monitor AC power cord 86W57 plug into the AC IN jack.

8. At the front of the monitor, ensure the INPUT 1/2 slide switch is se to the INPUT 1 position.

9. At the front of the monitor, press the power button to turn the power On.

6.5.7 Server UD86A2 Replacement Procedure.

Two technicians are required for this procedure.

6.5.7.1 Equipment and Tools Required.

None

6.5.7.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-9 and Table 2-7 for the location and description of each Server UD86A2 control and indicator.

CAUTION

Failure to perform the applicable shutdown procedures in the following steps could cause serious damage to the Server.

1. At the CDE Login screen, login as **opupmgr** in accordance with paragraph 5.2.3.1. If the server is not responding to any mouse/keyboard input(s), press and hold the power button located near the top left of the server front panel until the server power supply shuts completely off. Otherwise, go to the next step.

2. Perform the system power off procedures outlined in paragraph 5.2.2.2 to bring the OPUP server to the power Off position.

NOTE

Once the **Yes** button in the `OPUP Manager Shutdown Server` window is clicked, the server may take another 20 to 50 seconds to automatically shutdown to the off position. If the server is not responding to the Server Shutdown command, immediately press and hold the power button located near the top left of the server until the server power supply shuts completely off.

3. At the Monitor UD86A1 (second Monitor UD86A11, if installed), press the power button to turn the power Off.

4. At the Archive IV Device UD86A7, press the power button to turn the power Off.

6.5.7.3 Replacement Procedure.

1. At the rear of the Server UD86A2, disconnect the following peripheral and associated cables. Each peripheral listed below applies to all sites, except where noted):

   a. Keyboard UD86A3 USB cable ((LOW-L), Figure 2-9, Index 13)

   b. Mouse UD86A4 USB cable ((UP-R) Figure 2-9, Index 13)

   c. Video cable 86W2 ((sites with single monitor) Figure 2-9, Index 16)

   d. Video cable 86W5 ((sites with two monitors), Figure 2-9, Index 16)

e. Network communication cable 86W13 (Figure 2-9, Index 14)

f. UPS UD86A10 serial cable 86W4 (Figure 2-9, Index 18)

g. Archive IV Device UD86A7 SCSI cable 86W3, (Figure 2-9, Index 17)

h. Server AC power cable 86W51

CAUTION

The weight of the monitor is approximately 68 pounds. Two technicians are required to lift the monitor during removal and replacement.

2. Remove the Monitor UD86A1 from resting on top of the server as follows:

   a. At the rear of the monitor, disconnect the video cable 86W2 (or 86W6 at sites with two monitors) from the Screen-1 jack.

   b. At the rear of the monitor, remove the monitor AC power cord 86W50.

   c. Lift and set the monitor aside.

3. Remove the defective server and set it aside.

4. Set the new server in place.

5. Set the monitor back in place on top of the server.

6. At the rear of the monitor, reconnect the following cables:

   a. Connect video cable 86W2 (or 86W6 at sites with two monitors) to the Screen-1 jack. Secure connector by finger-tightening connector screws.

   b. Plug AC power cord 86W50 into the AC IN jack.

7. At the rear of the server, connect the following cables:

   a. Keyboard USB cable to the lower left USB port.

   b. Mouse USB cable to the upper right USB port.

   c. Video cable 86W2 (or 86W5 for sites with two monitors) to the video output jack. Secure connector by finger-tightening connector screws.

   d. Network communication cable 86W13 to the Network <...> port.

e. UPS serial cable 86W4 to the SERIAL input jack. Secure connector by finger-tightening the connector screws.

f. Archive IV Device SCSI cable 86W3 to the PCI-1 jack. Secure connector by finger-tightening the connector screws.

g. Plug the server AC power cord 86W51 into the AC input jack.

8. At the front of the monitor, press the power button to turn power On.

9. At the front of the archive device, press the power button to turn power On.

NOTE

Do not power on the server at this time.

10. Perform the server setup procedures provided in paragraph 6.6.2.

6.5.8 Keyboard/Mouse UD86A3/A4 Replacement Procedure.

One technician is required for this procedure. The keyboard/mouse is hot-swappable.

6.5.8.1 Equipment and Tools Required.

None

6.5.8.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-10 and Table 2-8 for the location and description of the Keyboard UD86A3 and Mouse UD86A4 controls and indicators.

None

6.5.8.3 Replacement Procedure.

1. The following steps apply to the Keyboard UD86A3:

   a. At the rear of the Server UD86A2, locate and disconnect the keyboard cable from the LOW-L USB port. (Refer to Figure 2-9, Index 13, for the location of this cable.)

   b. Set the defective keyboard aside.

   c. Set the new keyboard in place.

   d. Connect the keyboard cable to the keyboard USB port, used previously at the rear of the server.

2. The following steps apply to the Mouse UD86A4:

   a. At the rear of the Server UD86A2, locate and disconnect the mouse cable from the UP-R USB port. (Refer to Figure 2-9, Index 13, for the location of this cable.)

   b. Set the defective mouse aside.

   c. Set the new mouse in place.

   d. Connect the new mouse cable to the mouse USB port, used previously at the rear of the server.

6.5.9 Switch UD86A5 Replacement Procedure.

One technician is required for this procedure.

6.5.9.1 Equipment and Tools Required.

None

6.5.9.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-11 and Table 2-9 for the location and description of each Switch UD86A5 control and indicator.

None

6.5.9.3 Replacement Procedure.

1. Locate and remove the switch DC power supply cord 86W52 from the rear of the switch.

2. Disconnect cable 86W12 from Port 1 on the switch.

3. Disconnect cable 86W13 from Port 2 on the switch.

4. Disconnect cable 86W14 from Port 3 on the switch (only at sites with Printer UD86A12).

5. Remove the defective switch and set aside.

6. Set the new switch in the proper location.

7. Connect cable 86W12 to Port 1 on the switch.

8. Connect cable 86W13 to Port 2 on the switch.

9. Connect cable 86W14 to Port 3 on the switch for those sites with Printer UD86A12.

10. Plug the DC power cord 86W52 to the 7.5 Vdc 1A jack on the rear of the switch.

11. Verify the LEDs are lit as described in Table 2-9.

6.5.10 External Dedicated Modem CODEX 3261 UD86A6 Replacement Procedure.

One technician is required for this procedure. For sites that employ a second External Dedicated Modem UD86A13, refer to paragraph 6.5.11, External Dedicated Modem CODEX 3261 UD86A13 Replacement Procedure.

6.5.10.1 Equipment and Tools Required.

Screwdriver set, Jewelers

6.5.10.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-12 and Table 2-10 for the location and description of each External Dedicated Modem UD86A6 control and indicator.

None

6.5.10.3 Replacement Procedure.

1. At the rear of the modem, place the power rocker switch in the Off (0) position.

2. Remove the AC power cord 86W53 from the back of the modem.

3. Disconnect cable 86W11 from the LEASE LINE port on back of the modem.

4. Disconnect cable 86W1 from the DTE port on the back of the modem.

5. Remove defective modem and set aside.

6. Inspect the new modem. Ensure that DIP switches 1 and 2 at the back of the new modem are in the On (down) position. DIP switches 3 through 6 are in the Off (up) position.

7. Set the new modem in the proper location.

8. Connect cable 86W11 to the LEASE LINE port on the back of the modem.

9. Connect cable 86W1 to the DTE port on the back of the modem. Secure connector by finger-tightening connector screws.

10. Plug the AC power cord 86W53 into the back of the modem.

11. At the rear of the modem, place the power rocker switch in the On (1) position.

12. Perform the modem setup procedure per paragraph 6.6.3 External Dedicated Modem UD86A6/A13 Setup Procedure.

13. To verify the new modem is communicating with the dedicated RPG site, perform the following steps:

    a. If the Operational Applications Front Panel is not displayed, close any open windows.

    b. At the Operational Applications Front Panel, click on the **Status & Control** icon at the bottom left of the front panel. A `Status and Control - OPUP X.X Network Map` (where X.X is the current version of software) window will be displayed.

    c. Ensure a green dot is displayed at the location of the dedicated RPG site.

6.5.11 External Dedicated Modem CODEX 3261 UD86A13 Replacement Procedure.

One technician is required for this procedure.

6.5.11.1 Equipment and Tools Required.

Screwdriver set, Jewelers

6.5.11.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-12 and Table 2-10 for the location and description of each External Dedicated Modem UD86A13 control and indicator.

None

6.5.11.3 Replacement Procedure.

NOTE

Some selected Navy/MC sites will employ a second External Dedicated Modem UD86A13. Care must be taken to ensure that only the cables for the defective modem are removed and replaced.

1. At the rear of the modem, place the power rocker switch in the Off (0) position.

2. Remove the AC power cord 86W59 from the back of the modem.

3. Disconnect cable 86W15 from the LEASE LINE port on back of the modem.

4. Disconnect cable 86W8 from the DTE port on the back of the modem.

5. Remove defective modem and set aside.

6. Inspect the new modem. Ensure that DIP switches 1 and 2 at the back of the new modem are in the On (down) position. DIP switches 3 through 6 are in the Off (up) position.

7. Set the new modem in the proper location.

8. Connect cable 86W15 ot the LEASE LINE port on the back of the modem.

9. Connect cable 86W8 to the DTE port on the back of the modem. Secure connector by finger-tightening connector screws.

10. Plug the AC power cord 86W59 into the back of the modem.

11. At the rear of the modem, place the power rocker switch in the On (1) position.

12. Perform the modem setup procedure per paragraph 6.6.3, External Dedicated Modem UD86A6/A13 Setup Procedure.

13. To verify the new modem is communicating with the dedicated RPG site, perform the following steps:

    a. If the Operational Applications Front Panel is not displayed, close any open windows.

    b. At the Operational Applications Front Panel, click on the **Status & Control** icon at the bottom left of the front panel. A `Status and Control - OPUP X.X Network Map` window will be displayed.

    c. Ensure a green dot is displayed at the location of the dedicated RPG site.

6.5.12 Archive IV Device UD86A7 Replacement Procedure.

One technician is required for this procedure.

6.5.12.1 Equipment and Tools Required.

Scribe

6.5.12.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-13 and Table 2-11 for the location and description of each Archive IV Device UD86A7 control and indicator.

1. Remove any disk that may be in the unit's drive by pressing the eject button (see Figure 2-13 and Table 2-11 for exact location of the button). Be sure the archive device door is closed.

CAUTION

Failure to perform the applicable shutdown procedures in Steps 3 through 6 could cause serious damage to the Server.

2. Logout any operator currently in use at this time.

3. At the CDE Login screen, login as **opupmgr** in accordance with paragraph 5.2.3.1.

4. Perform the system power off procedures outlined in paragraph 5.2.2.2 to bring the OPUP server to the power Off position. When the server is completely powered off, go to the next step.

NOTE

Once the **Yes** button in `OPUP Manager Shutdown Server` window is clicked, the server may take another 20 to 50 seconds to automatically shutdown to the off position. If the server is not responding to the Server Shutdown command, immediately press and hold the power button located near the top left of the server until the server power supply shuts completely off.

6.5.12.3 Replacement Procedure.

1. At the front of the archive device, press the power button to turn the power Off. The archive device front panel power LED will be Off.

2. Locate and remove the AC power cord 86W54 from the defective device.

3. Disconnect the SCSI cable 86W3 from the SCSI-IN (bottom SCSI jack) located at the rear of the device. Squeeze the two connector tabs and pull the connector backwards.

4. Set the defective device aside.

NOTE

Do not adjust the SCSI ID switch. Use the factory default setting for this switch.

5. At the rear of the new archive device, locate the DIP switches and ensure that switches 1 and 2 are in the On position (to the right) and all other switches are in the Off position (to the left). Use the scribe to set the DIP switches, if required.

6. Set the new archive device in the proper location.

7. Connect the SCSI cable 86W3 to the SCSI-IN (bottom SCSI jack) at the rear of the device. Squeeze the connector tabs and carefully push the connector onto the jack and then release the tabs.

8. Plug the AC power cord 86W54 into the AC jack.

9. Press the button to turn the device On. The archive device front panel power LED will be On.

10. If a CD-ROM disk was in the archive device at the beginning of this procedure, insert it into the new drive.

11. At the server, press the power button on the left side of the server.

12. When the server is fully powered On, at the CDE Login screen, login as **opupmgr** in accordance with paragraph 5.2.3.1.

13. Verify that the archive device is operating normally using the procedures outlined in paragraph 6.3.3.2, Flowchart Notes, Note 4.

6.5.13 Communication Router UD86A8 Replacement Procedure.

One technician is required for this procedure.

6.5.13.1 Equipment and Tools Required.

None

6.5.13.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-14 and Table 2-12 for the location and description of each Communication Router UD86A8 control and indicator.

CAUTION

Failure to perform the applicable shutdown procedure in Step 2 could cause serious damage to the communication router.

1. At the monitor, ensure the `OPUP Manager Main Menu` is displayed. If the `OPUP Manager Main Menu` is not displayed, exit out of the current display (**EXIT ‘ OK**) to the CDE Login screen and login as **opupmgr** using the procedure outlined in paragraph 5.2.3.1.

2. At the `OPUP Manager Main Menu`, stop the OPUP Server OS by performing the procedure outlined in paragraph 5.2.4.2.

6.5.13.3 Replacement Procedure.

1. At the rear of the Communication Router UD86A8, place the rocker power switch in the power Off (0) position.

2. At the rear of the Communication Router UD86A8, disconnect the following cables:

   a. AC power cord 86W55 from the AC power jack.

   b. Ethernet cable 86W12 from the 10/100 ETHERNET 0/0 port.

   c. External Dedicated Modem DTE cable 86W1 from the WIC 2A/S WAN module SERIAL 0 port.

   d. External Dedicated Modem DTE cable 86W8 from the WIC 2A/S WAN module SERIAL 1 port (-304 designated sites only.)

   e. Dial circuit cable 86W10 from the MODEMS 8AM Module UD86A8A1A1 port 7 jack.

3. Remove any components that may be sitting on top of the communication router. Be careful when moving these items so as not to damage any of the cables.

4. Remove the defective communication router and set aside.

5. Set the new communication router in the proper location.

6. At the rear of the Communication Router UD86A8, connect the following cables:

   a. Dial circuit cable 86W10 to the MODEMS 8AM Module UD86A8A1A1 port 7 jack.

NOTE

Some selected Navy/MC sites will employ a second External Dedicated Modem UD86A13. Be sure to reconnect the dedicated DTE cable to the correct Communication Router input port. Connecting the second External Modem DTE cable to the correct port is critical ensure that each communication cable is providing the correct products to the appropriate product and message data directory located within the OPUP Server OS.

   b. External Dedicated Modem DTE cable 86W1 to the WIC 2A/S WAN module SERIAL 0 port.

   c. External Dedicated Modem DTE cable 86W8 to the WIC 2A/S WAN module SERIAL 1 port (-304 designated sites only).

   d. Ethernet cable 86W12 to the 10/100 ETHERNET 0/0 port.

e. Plug AC power cord 86W55 into AC jack.

7. Set the components that were sitting on top of the communication router back in the proper location. Check each cable connection on all the devices to make sure they are securely connected.

8. At the rear of the communication router, place the rocker power switch in the power on (1) position.

9. At the `OPUP Manager Main Menu`, start the OPUP Server OS by performing the procedure outlined in paragraph 5.2.4.1. When the OPUP Server OS reports all software processes have been started, go to the next step.

10. Perform the communication router setup procedure outlined in paragraph 6.6.4, Communication Router UD86A8 Setup Procedure.

6.5.14 Video Splitter UD86A9 Replacement Procedure.

One technician is required for this procedure.

6.5.14.1 Equipment and Tools Required.

None

6.5.14.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-15 and Table 2-13 for the location and description of each Video Splitter UD86A9 control and indicator.

None

6.5.14.3 Replacement Procedure.

1. At the front of each Monitor UD86A1/A11, press the power button to turn the power Off.

2. Remove the DC power cord 86W56 from the back of the video splitter.

3. Disconnect video cable 86W5 from the video splitter VIDEO IN port.

4. Disconnect video cable 86W6 from the video splitter VIDEO OUT-1 port.

5. Disconnect video cable 86W7 from the video splitter VIDEO OUT-2 port.

6. Remove the defective video splitter and set it aside.

7. Set the new video splitter in the proper location.

8. At the back of the Video Splitter UD86A9, connect the following cables:

   a. Connect the server output video cable 86W5 to the VIDEO IN port.

   b. Connect Monitor UD86A1 video cable 86W6 to the VIDEO OUT-1 port.

   c. Connect Monitor UD86A11 video cable 86W7 to the VIDEO OUT-2 port.

   d. Plug the DC power cord 86W56 into the 9 Vdc jack.

9. At the front of each monitor, press the power button to turn the power On.

6.5.15 UPS UD86A10 Replacement Procedure.

One technician is required for this procedure.

6.5.15.1 Equipment and Tools Required.

Screwdriver set, Phillips-tip

6.5.15.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-16 and Table 2-14 for the location and description of each UPS UD86A10 control and indicator.

NOTE

Skip Steps 1 and 2 if the UPS UD86A10 is currently in the Off position (i.e., total UPS unit failure.)

CAUTION

Failure to perform the applicable shutdown procedures could cause serious damage to the Server.

1. At the monitor, ensure the `OPUP Manager Main Menu` is displayed. If the `OPUP Manager Main Menu` is not displayed, exit out of the current display (**EXIT ‘ OK**) to the CDE Login screen and login as **opupmgr** using the procedure outlined in paragraph 5.2.3.1.

2. At the `OPUP Manager Main Menu`, shutdown the Server by performing the procedure outlined in paragraph 5.2.2.2. When the server is completely powered off, go to the next step.

NOTE

Once the **Yes** button in the `OPUP Manager Shutdown Server` window is clicked, the server may take another 20 to 50 seconds to automatically shutdown to the off position. If the server is not responding to the Server Shutdown command, immediately press and hold the power button located near the top left of the server until the server power supply shuts completely off.

3. At the front of the Monitor UD86A1, press the power button to turn the power Off.

4. At the front of the Archive IV Device UD86A7, press the power button to turn the power Off.

5. At the rear of the External Dedicated Modem UD86A6, place the rocker power switch in the Off (0) position.

6. At the rear of the External Dedicated Modem UD86A13 (-304 configured sites only), place the rocker power switch in the Off (0) position.

7. At the rear of the Communication Router UD86A8, place the rocker power switch in the Off (0) position.

8. At the front of the UPS UD86A10, press the Off (0) button to turn the power Off.

6.5.15.3 Replacement Procedure.

1. Disconnect the UPS UD86A10 AC power cord from the power source.

2. At the rear of the UPS, remove all of the AC power cords. The following components are the only authorized items to be plugged into the UPS:

   a. AC cable 86W50 (Monitor UD86A1).

   b. AC cable 86W51 (Server UD86A2).

   c. AC cable 86W53 (External Dedicated Modem UD86A6).

   d. AC cable 86W59 (External Dedicated Modem UD86A13) (Navy/MC sites only).

   e. AC cable 86W54 (Archive IV Device UD86A7).

   f. AC cable 86W55 (Communication Router UD86A8).

   g. AC power cord for Power Strip UD86A14 (will have Switch UD86A5 AC power adapter 86W52 and Video Splitter UD86A9 AC power adapter 86W56 plugged into Power Strip).

3. At the rear of the UPS, disconnect Serial cable 86W4 (Server to UPS) from the Serial port near the top left rear corner.

4. Remove the defective UPS and set it aside.

5. Set the new UPS in the appropriate location.

6. At the rear of the UPS, plug only the AC power cords of the Small OPUP Equipment Group UD86 items listed in Step 2 into the AC power jacks. Balance the load between the eight AC power outlets.

7. At the rear of the UPS, connect serial cable 86W4 to the serial jack in the upper left corner. Secure the connector by finger-tightening the connector screws.

8. Connect the UPS AC power cord to the power source.

9. At the front of the UPS display panel, press the power 1/Test button to turn the power On.

NOTE

The UPS will emit a beeping signal and the Replace Battery LED will then flash repeatedly. This is a normal indicator.

10. At the front of the Monitor UD86A1, press the power button to turn the power On.

11. At the front of the Archive IV Device UD86A7, press the power button to turn the power On.

12. At the rear of the External Dedicated Modem UD86A6, place the rocker power switch in the On (1) position.

13. At the rear of the External Dedicated Modem UD86A13 (Navy/MC sites only), place the rocker power switch in the On (1) position.

14. At the rear of the Communication Router UD86A8, place the power rocker switch in the On (1) position.

15. At the front of the Server UD86A2, momentarily press the power button. After a few seconds, the power button LED will be lit. When the CDE Login display is displayed, return the server to the last known operating position.

6.5.16 <u>UPS Battery Module UD86A10BT1 Replacement Procedure</u>.

One technician is required for this procedure. The battery module is hot-swappable.

6.5.16.1 Equipment and Tools.

Screwdriver set, flat-tip

6.5.16.2 Initial Conditions/Preliminary Setup.

None

6.5.16.3 Replacement Procedure.

NOTE

The UPS battery access cover (bezel) is attached to the front of the UPS via two inside bottom connect tabs and four plastic snap tabs. To ensure the cover (bezel) is not lost, it is permanently attached to the top underside of the front of the UPS by a ribbon cable. Be careful to not place a great amount of force on this cable.

1. At the front of the UPS, remove the front cover panel by gently pulling it outward and up. It may help to lift the front part of the UPS off the floor/resting surface.

2. Place the front cover on top of the UPS unit.

3. Remove the 2 screws that secure the top corners of the face plate to the UPS battery module compartment. Place both screws aside for later use.

4. Open the face plate to access the UPS battery module compartment.

5. Remove the battery module by grasping the large plastic tab near the bottom of the battery module and gently pull the battery forward until the rear of the module is flush with the front of the UPS battery compartment opening.

6. Facing the front of the UPS, locate the battery cables inside the battery compartment.

7. Disconnect the red (positive) cable from the (+) terminal.

NOTE

The UPS will emit a beeping signal and the replace battery LED will then flash repeatedly. This is a normal indicator.

8. Disconnect the black (negative) cable from the (-) terminal.

9. Remove defective battery and set aside.

10. Place the new battery flush with the front battery compartment opening with the negative (-) terminal towards the back.

11. Connect the black (negative) battery lead to the (-) terminal.

12. Connect the red (positive) battery lead to the (+) terminal.

NOTE

The UPS may continue to emit a beeping signal for several seconds after the two terminal lugs are connected.

13. Push the battery module to the rear of the battery compartment.

14. Lift the face plate up into position and secure with the screws removed in Step 3.

15. Lift the front of the UPS assembly off the floor/resting surface and place the handle of the screwdriver under the UPS to keep the front of the UPS off the floor/resting surface.

16. Place the bottom edge of the front cover under the two metal tabs at the bottom of the face plate.

17. Slowly tilt the front cover towards the UPS and ensure the two lower plastic tabs on the inside of the front cover are aligned with the two lower slots in the metal face plate.

18. Continue tilting the front cover until the tabs on the inside of the front cover snap into place.

19. Lift the UPS and remove the screwdriver and set the UPS on the floor/resting surface.

20. Ensure the Replace Battery LED changes back to a normal status. (See Figure 2-16 and Table 2-14 for all controls and indicators associated with the UPS UD86A10).

6.5.17 Printer UD86A12 Replacement Procedure.

Two technicians are required for this procedure.

6.5.17.1 Equipment and Tools Required.

Scissors

6.5.17.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-17 and Table 2-15 for the location and description of each Printer UD86A12 control and indicator.

None

6.5.17.3 Replacement Procedure.

1. At the rear panel of the printer, place the power rocker switch in the Off (0) position.

2. Locate and remove the printer AC power cord 86W58 from its AC power source.

3. Remove the AC power cord 86W58 from the printer; set power cord aside.

4. Disconnect the Ethernet cable 86W14 from the back of the printer.

5. Inspect the front of the printer. Ensure all paper guides and/or paper trays are fully inserted and/or closed.

CAUTION

The weight of the printer is approximately 79 pounds. Two technicians are required to lift the printer during removal and replacement.

6. With the help of a second technician, remove the defective printer and set it aside.

NOTE

Save all packing material in case moving or subsequent shipment is necessary.

7. Perform the following initial printer setup procedure:

   a. Open the shipping container box of the new printer, (the instructions are on the box), by removing the 4 plastic guards near the bottom. Lift the entire top of the box off of the printer's support pallet.

   b. Unpack the printer accessories and take inventory. The materials that accompany each new printer normally consists of one set of documentation, one AC power cord, one initial set of wax color chalks, and one media sampler.

   c. Remove the plastic cover protection bag from the printer and then pull down the bottom portion of the plastic bag to expose the rest of the printer.

CAUTION

The weight of the printer is approximately 79 pounds. Two technicians are required to lift the printer during removal and replacement.

   d. With the help of a second technician, lift the printer from its shipping box and place it in the location of the old printer.

8. Remove any adhesive tape that may be on the new printer.

9. Install each wax chalk insert by performing the following steps: (See Figure 6-2 for reference):

   a. Remove each color wax chalk from it's packaging. Ensure there is no debris on any of the color chalk inserts.

   b. At the top center of the printer, locate the color wax chalk access door.

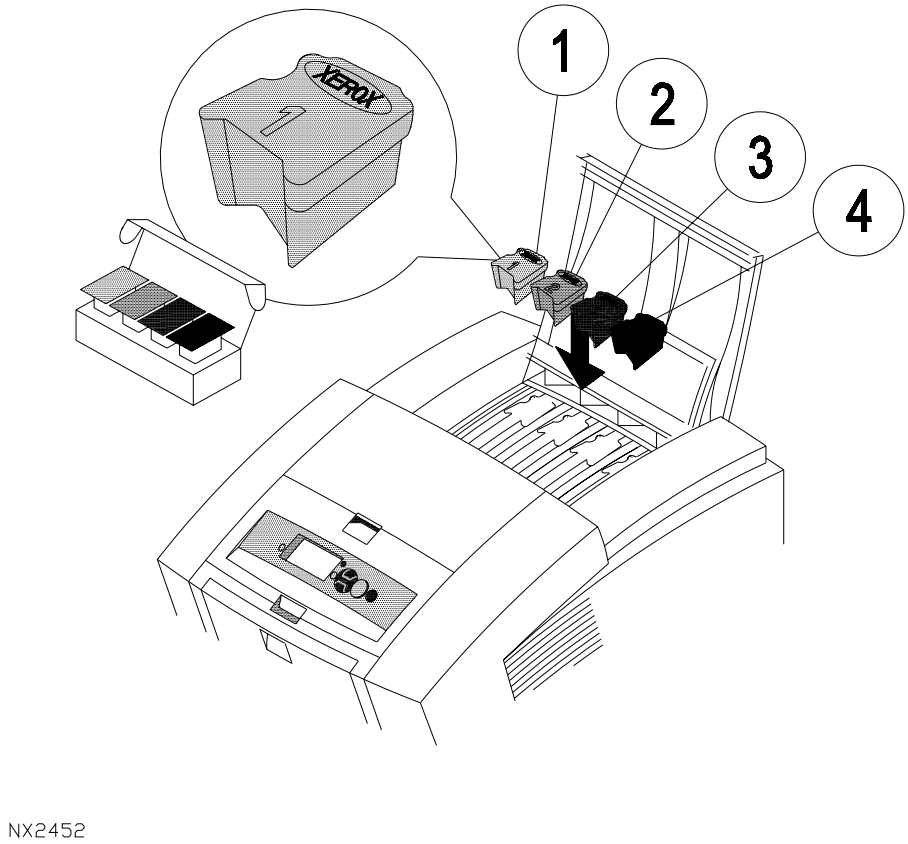


Figure 6-2. Printer UD86A12 Wax Chalk Inserts

   c. At the color wax chalk access door, locate the access door tab. Using the tab, gently lift the door straight upwards. A chalk press lever and four chalk access ports will then be exposed.

   d. Install each wax chalk into the appropriate shaped slot. Each slot is also color coded and labeled to assist with the correct chalk insertion.

   e. When finished, close the color wax chalk access door.

10. Add paper to the paper tray as follows:

    a. Locate the paper tray, near the bottom front of the printer, and pull the paper tray outwards.

    b. Remove any packing material from inside the tray, if applicable.

    c. Fan the paper. Place the paper within the paper tray (tray capacity is 500 sheets).

    d. At the right side of the paper tray, ensure that the Paper/Transparency switch is in the paper position by pushing the switch forward (towards the front of the tray) until it stops.

    e. Return the paper tray to the paper tray slot.

11. Connect the Ethernet cable 86W14 to the port labeled Ethernet at the back of the printer.

12. Plug the original AC power cord 86W58 to the back of the printer.

CAUTION

To protect the printer from a power surge, make sure the printer power switch is in the Off position before plugging in the cord to the AC power source.

13. At the rear of the printer, ensure the power switch is in the Off (0) position.

14. Plug the other end of the printer AC power cord 86W58 into the AC power source.

15. Wait for approximately 10 seconds, then place the printer power rocker switch in the On (1) position to turn on the power.

16. The printer will perform a Power-On-Self-Test (POST) which can take up to 10 minutes to perform. When the POST is finished, the printer will print a test page.

17. When the printer displays a `ready` message within the LCD readout window and the power indicator is a steady green, perform the setup procedure outlined in paragraph 6.6.6, Printer UD86A12 Setup Procedure.

Section 6.6. SETUP PROCEDURES

6.6.1 Introduction.

This section contains the procedures to be used to enable the proper setup/alignment of a Small OPUP LRU following the replacement of a faulty unit. Table 6-3 lists the LRUs for which a setup procedure is required and identifies the paragraph number for the required procedure. Each procedure identifies the personnel, time, and materials necessary to perform the procedure. Additionally, some procedures provide reference information such as the complete menus for software initialized devices. If no procedure is listed, then the LRU has been preset prior to being issued, or has no site alignment or adjustment requirements. On completion of the procedure, repeat the initiating performance check and then return to normal operation.

Table 6-3. LRU Setup Procedure Index

Reference Designation	Description/Name	Setup Procedure Paragraph
UD86A2	Server	6.6.2
UD86A6/A13	External Dedicated Modem	6.6.3
UD86A8	Communication Router	6.6.4
UD86A10	UPS	6.6.5
UD86A12	Printer	6.6.6

NOTES

This section discusses some graphical manipulations using a mouse. The word “click” indicates a standard left mouse click. The symbol ‘ is used to indicate subsequent left clicks through submenu selections. When a right click or double-click is required, it is specifically indicated. The keyboard may have either an **Enter** key or a **Return**. Unless told otherwise, each shown command line in the examples must be “entered” to be processed.

Mandatory commands, computer feedback and prompts, and variable commands are each presented in a distinctive font.

Mandatory commands entered by the user are in a bold type font and must be typed exactly as shown. `Computer feedback and prompts`, are a distinctive type key font, which signifies the name of an information block or prompt. Either way, the system is awaiting feedback from the user.

Variable commands represent a command variable that is distinctive for each terminal. These commands must be entered by the user and are site specific. An italic font defines these command variables. This variable placeholder is replaced with a name, address, etc. unique to each system and the user is told how to formulate, or directed to where to find, this information.

6.6.2 Server UD86A2 Setup Procedure.

This procedure requires one technician, will take approximately 3 hours to complete, and is normally used after a replacement of the Server UD86A2, Communication Router UD86A8, and/or to change the OPUP server/communication router IP-address in conjunction with the installation of the OPUP Server OS.

6.6.2.1 Equipment and Tools Required.

NOTE

Software input parameters and load installation procedures are located in Chapter 3, Software Description, Section 3.5, OPUP Software Installation Procedures. It will be assumed that each site will perform a complete OPUP Server OS software installation procedure after replacing either the OPUP server or communication router.

1. System software distribution CD-ROM disks (installation disks 1 through 4).

2. If required, communication router configuration cable described in paragraph 3.5.3.3.

3. All back-up configuration data CD-ROM disks, if available.

4. Screwdriver, flat-tip

6.6.2.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-9 and Table 2-7 for the location and description of each Server UD86A2 control and indicator. If required, refer to Figure 2-4 through Figure 2-7 for your sites applicable equipment configuration ICD.

1. All associated peripheral cables are connected and required utility power is available.

2. Obtain all applicable software input parameters outlined in paragraph 3.5.4 and Table 3-7, Step 2.

6.6.2.3 Procedure.

1. Using the input parameters, communication router input cable (if required), and applicable system software distribution CD-ROMs, perform a complete Small OPUP Full Software Load procedure outlined in Table 3-7 beginning at Step 4.

2. When the software load procedure is successfully completed, obtain all applicable backup configuration and adaptation CD-ROM disks. Perform an applicable configuration and adaptation restore procedure outlined in paragraph 5.2.9.2.2.

3. Place the server in the normal operating position.

6.6.3 External Dedicated Modem UD86A6/A13 Setup Procedure.

This procedure requires one technician and takes 0.5 hours.

6.6.3.1 Equipment and Tools Required.

Screwdriver set, flat-tip, Jewelers

6.6.3.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-12 and Table 2-10 for the location and description of each External Dedicated Modem UD86A6/A13 control and indicator.

1. At the rear of the modem, ensure that all DIP switches are set as follows:

   - 1 and 2 to On (down).

   - 3 through 6 to Off (up).

2. Ensure the Server UD86A2 is powered On and operating normally.

3. Ensure the External Dedicated Modem UD86A6/A13 is powered On.

4. The following information applies to the keypad functionality:

Button	Definition
▶	**RETURN** - when pressed within a branch of the menu, it returns to the top of the branch or branch title (e.g., `TERMINAL OPT'S`). When pressed at a branch title, it returns to the home position (e.g., `DATA 14.4 T/D? or V32b 14.4 T/D?`).
▼	**DOWN** - moves down from branch title to branch title from the home position and selects individual options within a branch.

Button	Definition
|▶	**ACROSS** - moves across the top of branches in the Modem menu tree. It also moves the cursor across data entry menus one digit (character) at a time (`S-Reg` menus).
	ENTER - makes the item on the display the current setting (if the display showed an = sign, it was already the current setting), or it initiates an action (as in Reinit Memory).

NOTE

Due to differences in modem models, some default settings may vary between sites. Each site should carefully note the desired modem settings and follow the procedure until those settings are achieved. (Example 1: Some modems default to a DTE Rate of 14.4 and others to 33.6. If a modem defaults to 33.6, and 14.4 is desired, follow the key sequence until the display reading is 14.4. Example 2: While following procedures for the S-Reg reading, the modem may begin with S-Reg = 130 or it may default to some other value. If the desired reading is S-Reg = 180, perform the key sequence until this reading is achieved.)

A complete modem menu is provided in the setup procedures that follow. If no entry for a particular option is given, then that option is either not required by the OPUP or adjustment of that option is not required. Upon completing the procedure, repeat the initiating performance check, then return each modem to normal operation. This procedure can and should be used to validate or return modems to the proper configuration following repair, replacement, or loss of configuration.

The configuration procedures use settings for TCP/IP. The procedure used in prior modems involved settings for the X.25 transmission protocol. Be careful to only use the TCP/IP procedure when configuring or re-configuring modem(s).

6.6.3.3 Procedure.

1.	Press the	▶//	**<RETURN>** button twice (ensures starting at the home position).

2.	Press the	▶	**<ACROSS>** button until the display reads `Reinit Memory?`
3.	Press the	◎	**<ENTER>** button once. The display reads `Reinit All Mem?`
4.	Press the	◎	**<ENTER>** button. The display reads `3261 Fast Init`
5.	Press the	◤	**<RETURN>** button. The display reads `Disconnect T/D?`
6.	Press the	▶	**<ACROSS>** button until the display reads `Power Up In=Old`
7.	Press the	▼	**<DOWN>** button. The display reads `Power Up In : 1`
8.	Press the	◎	**<ENTER>** button. The display reads `Power Up In=1`
9.	Press the	◤	**<RETURN>** button. The display reads `Disconnect T/D?`
10.	Press the	▼	**<DOWN>** button until the display reads `MODULATION OPT'S`
11.	Press the	▶	**<ACROSS>** button. The display reads `Line = Dial`
12.	Press the	▼	**<DOWN>** button until the display reads `Line : 4W Lease`
13.	Press the	◎	**<ENTER>** button. The display reads `Line = 4W Lease`
14.	Press the	▶	**<ACROSS>** button. The display reads `Mod = V.34 Auto`
15.	Press the	▼	**<DOWN>** button until the display reads `Mod: V32bis Auto`

16.	Press the		**<ENTER>** button. The display reads `Mod = V32bis Auto`
17.	Press the		**<ACROSS>** button until the display reads `Min Rate = 300`
18.	Press the		**<DOWN>** button until the display reads `Min Rate : 4800`
19.	Press the		**<ENTER>** button. The display reads `Min Rate = 4800`
20.	Press the		**<ACROSS>** button until the display reads `PSTN = On`
21.	Press the		**<DOWN>** button. The display reads `PSTN : Off`
22.	Press the		**<ENTER>** button. The display reads `PSTN = Off`
23.	Press the		**<RETURN>** button. The display reads `MODULATION OPT'S`
24.	Press the		**<DOWN>** button until the display reads `EC/DC OPT'S`
25.	Press the		**<ACROSS>** button until the display reads `Modem Flow = On`
26.	Press the		**<DOWN>** button. The display reads `Modem Flow : Off`
27.	Press the		**<ENTER>** button. The display reads `Modem Flow = Off`
28.	Press the		**<RETURN>** button. The display reads `EC/DC OPT'S`
29.	Press the		**<DOWN>** button. The display reads `ACU OPT'S`

30.	Press the	▶|	**<ACROSS>** button. The display reads `ACU Select = AT`
31.	Press the	▼	**<DOWN>** button until the display reads `ACU Select : None`
32.	Press the	◎	**<ENTER>** button. The display reads `ACU Select = None`
33.	Press the	◤	**<RETURN>** button. The display reads `ACU OPT'S`
34.	Press the	▼	**<DOWN>** button. The display reads `TERMINAL OPT'S`
35.	Press the	▶|	**<ACROSS>** button. The display reads `DTE Rate = Auto`
36.	Press the	▼	**<DOWN>** button until the display reads `DTE Rate : 38.4`
37.	Press the	◎	**<ENTER>** button. The display reads `DTE Rate = 38.4`
38.	Press the	▶|	**<ACROSS>** button. The display reads `Flow = XON/XOFF`
39.	Press the	▼	**<DOWN>** button until the display reads `Flow : RTS/CTS`
40.	Press the	◎	**<ENTER>** button. The display reads `Flow = RTS/CTS`
41.	Press the	▶|	**<ACROSS>** button until the display reads `DTR = High`
42.	Press the	▼	**<DOWN>** button until the display reads `DTR : 108.1`
43.	Press the	◎	**<ENTER>** button. The display reads `DTR = 108.1`
44.	Press the	▶|	**<ACROSS>** button. The display reads `RTS = High`

45.	Press the	▼	**<DOWN>** button. The display reads `RTS : Normal`
46.	Press the	◎	**<ENTER>** button. The display reads `RTS = Normal`
47.	Press the	|▶	**<ACROSS>** button. The display reads `CTS = AsynSync`
48.	Press the	▼	**<DOWN>** button until the display reads `CTS : Normal`
49.	Press the	◎	**<ENTER>** button. The display reads `CTS = Normal`
50.	Press the	|▶	**<ACROSS>** button until the display reads `DCD = High`
51.	Press the	▼	**<DOWN>** button. The display reads `DCD : Normal`
52.	Press the	◎	**<ENTER>** button. The display reads `DCD = Normal`
53.	Press the	|▶	**<ACROSS>** button until the display reads `DSR = High`
54.	Press the	▼	**<DOWN>** button. The display reads `DSR : Normal`
55.	Press the	◎	**<ENTER>** button. The display reads `DSR = Normal`
56.	Press the	▶//	**<RETURN>** button. The display reads `TERMINAL OPT'S`
57.	Press the	▼	**<DOWN>** button. The display reads `TELCO OPT'S`
58.	Press the	|▶	**<ACROSS>** button until the display reads `LL Tx Level = 0`

NOTE

This item should be set to -15 dBm when the modem being set is connected to a leased line provided by the local telephone company, if so, skip to Step 61. Otherwise, continue with this note.

For zero-loss circuits, direct wire applications, and any dedicated modems without circuits connected to them, the transmit level should be set initially to -15 dBm. Use the ▼ shift down button and the enter button to work towards 0 dBm in order to obtain a level that yields a received power level of -16 dBm +/- 1 dBm into 600 Ohms at the remote RPG modem. This power level may be checked with the AM-48 test set. If the test set is not available, utilize the following (less accurate) procedure performed at the remote RPG modem by personnel at the remote RPG site:

a.	Press the	▶//	**<RETURN>** button twice (ensures starting at the home position).
b.	Press the	|▶	**<ACROSS>** button until the display reads `PhaseJitter = ____ dg`
c.	Press the	▼	**<DOWN>** button until the display reads `Rx Level = ____ dBm`
d.	Press the	◎	**<ENTER>** button. The display still reads `Rx Level = ____ dBm`

NOTE

This sets the RX Level as the top item of this menu. If, during the setting procedure, the modem returns to the home position (e.g., `DATA 14.4 T/D?`) pressing the **<ACROSS>** |▶ button twice will move the display to Rx Level. This may be consulted to determine if the received signal is strong enough. This value should be between -16 dBm and -13 dBm (this takes into account cumulative errors of measurement and display). The possible range of values that may be set in the `LL Tx Level = 0` menu is 0 to -15 dBm, in 1 dBm increments. If needed, alter the transmit level at the OPUP site as follows, or skip to Step 61.

59.	Press the	▼	**<DOWN>** button until the display reads `LL Tx Level: X` (Where X equals the current transmit level setting.)

60.	Press the		**<ENTER>** button. Wait until the display reads `LL Tx Level = X` (Where X equals the current transmit level setting.) Have the RPG technician repeat steps 58.a through 58.c at the remote RPG end to check that the modem RX level is between -16 dBm to -13 dBm. If the RPG modem RX level is within range, the OPUP modem TX level is correctly set. Proceed to Step 61. If the RPG modem RX level is not within range, repeat Steps 59 and 60 at the OPUP modem and Steps 58.a through 58.c at the RPG modem until it is within range.
NOTE To ensure the modems at both ends are correctly setup, the RX level at the OPUP modem should also be checked to ensure the RPG modem TX level is correctly set. The following steps basically reverse Steps 58 through 60 that established the correct OPUP TX level to the RPG. The OPUP modem RX level will be checked to see if the RPG modem TX level is set to provide an OPUP modem RX level that is within the -16 dBm to -13 dBm range. If it is not, the RPG technician should adjust the RPG modem TX level until the OPUP RX level is within range.			
61.	Press the		**<RETURN>** button twice (ensures starting at the home position).
62.	Press the		**<ACROSS>** button until the display reads `Phasejitter = _____dg`

63.	Press the	▼	**<DOWN>** button until the display reads `RX Level = _____dBm` If the OPUP modem RX level is within the -16 dBm to -13 dBm range, the RPG modem TX level is correctly set. Proceed to Step 64. If the OPUP modem RX level is not within range, have the RPG technician repeat steps similar to Steps 59 and 60 at the RPG modem to reset the TX power level. Repeat Steps 61 through 64 at the OPUP modem until it is within range.
64.	Press the	◎	**<ENTER>** button. The display still reads `Rx Level = ____ dBm`
65.	Press the	◤	**<RETURN>** button twice (to return to the home position).
66.	Press the	|▶	**<ACROSS>** button until the display reads `Save Changes = 1` (Where X equals the current transmit level setting.)
67.	Press the	◎	**<ENTER>** button. Wait until the display reads `Save Completed!`
68.	Press the	◤	**<RETURN>** button twice (to return to the home position).

2. The following information is a Menu Listing of the steps performed above.

NOTE

On the following pages are the settings listed by branch option menu. The experienced technician may find this quicker to use than the preceding procedure. The listing may also be used as a quick reference for verifying that the modems are set up correctly. All settings that are changed from the default values from Option Set 1 are underlined.

TEST OPTIONS

Test = End Test (unless test is running)

Accept RDL = On

LAL Busy Out=Off

MODULATION OPTIONS

Line = 4W Lease

Mod = V32bis Auto

Auto Type = CCITT

Low Speed = Bell

Max Rate = 14.4

Min Rate = 4800

Fast Call = Off

Adaptive Rate = On

Mode = Originate

Clock = Internal

Retrain = High BER

Longspace = Off

PSTN = Off

Guard Tone = Off

RESTORAL OPTIONS

Rest = Off

L to D = Low/Fast

D to L = Manual

HoldDialine = Off

Ans Rest = LL Fail

EC/DC OPTIONS

Mode = Auto Rel

Buffers = Regular*

EC = V.42

DC = Enabled

Data Form = NRZ*

Break = Destruct

Modem Flow = Off

Delay = Off

EC ID = Default

ACU OPTIONS

ACU Select=None

AT Form=Async

V25Form=Bitsync

NOACU Form=Aync

Default Dial=Off

Answer=Using S0

Async Echo=On

Char Length=10

V25 Char=ASCII

Sync Idle=Char

V25Resp=V25bis

Parity=V.25bis

AT Msg=Before CD

RsltCode=Enable

RsltForm=Verbose

Con Msg=DTE Rate*

Rel Msg=Off*

LPDA2 Addr=FF

LPDA2 ID=32326x

LPDA2 Det=Enab

Call Progress=4

TERMINAL OPTIONS

DTE Rate=38.4

Flow=RTS/CTS

Speed Conver=On

DTR=108.1

RTS=Normal

CTS=Normal

RtsCts Delay=0

DCD=Normal

RemRTS/DCD=Codex

DCD Loss Dis=S10

DSR=Normal

Overspeed=1%

DTR Delay=S25

DTE Ct 140=Off

DTE Ct 141=Off

DTE Pin 25=Test*

Ext Select=Off

Ext Cntrl=Pin 14

Inactivity=S30

TELCO OPTIONS

Telco = RJ11C

LL Tx Level = 0 or -15

Line Compen = Off*

Speaker = Dialing

Volume = Medium

Netwrk Comp = Off*

DIALING OPTIONS

Pause Delay = 3

Dial Wait = 2

Dial = Tone

Call Timeout = 60

Blind Dial = S6

Pulse Cycle = 40%

Tone Length = 72

FP SECURITY OPTIONS

Enter Password?

Password = Disable

Set Protection?

Change Password?

ACCESS SECURITY OPTIONS

PW Verify = Dis

Callback = Off

Rmt Num Rqrd = Off

Enter Group PW?

Group PW = Disable

Tone = None

Sim Ring = Disable

DialRstrct = Off

NETWORK CONTROL OPTIONS

OverrideMode=Off

NC Address=000

NC PortRate=75

Pass Thru=Opt 1

NC Line Disk=Off*

REMOTE CONFIGURATION OPTIONS

Init Rmt Cnfg?

Rmt Acc=Enable

SET REMOTE LEASED LINE ADDRESS

New Address=000

Rmt Ser#=000000

RmtNestModem=No

‘Enter To Set’

SEARCH REMOTE LL ADDRESS

RmtSer#=000000

RmtNestModem=No

‘Enter To Srch’

* - Item may not appear on all modems due to differences in firmware revision level.

6.6.4 Communication Router UD86A8 Setup Procedure.

The following paragraphs provide the procedures necessary to setup or re-install configuration parameters associated with the Communication Router UD86A8. This procedure assumes that a full setup and/or re-installation of the communication router Interactive Operating Software (IOS) is required. This procedure takes one technician and approximately .75 hours to complete.

NOTE

This setup procedure is designed to initially setup or recover the communication router from an unknown operational or Interactive Operation Software (IOS) state.

6.6.4.1 Equipment and Tools Required.

Cisco configuration cable (Part Number 72-3383-01) outlined in paragraph 3.5.3.3.

6.6.4.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-14 and Table 2-12 for the location and description of each Communication Router UD86A8 control and indicator.

1. Ensure the router is installed per paragraph 6.5.13.3.

2. At the monitor, ensure that the `OPUP Manager Main Menu` is displayed. Ensure the OPUP Server OS is currently operating normally (all processes have been started and running).

NOTE

If this procedure is being performed as a result of the OPUP Server OS software being installed/re-installed and the communication router reported that the configuration process has failed (after Step 46 of Table 3-7) continue on to the next step. Otherwise ensure that all OPUP Server OS processes are functioning before continuing.

3. Obtain the following IP addresses:

   - Communication Router IP address.
   - OPUP Server IP address.
   - Default Gateway IP address.

- Cisco Router Password.
- Cisco Enable Password.

4. Prepare and setup the Server UD86A2 Serial Port and Host Terminal as follows:

   a. At the rear of the server, disconnect the UPS serial cable 86W4 from the server port labeled SERIAL (refer to Figure 2-9 and Table 2-7, Index 18).

   b. At the rear of the server, connect the 9-pin connector end of the Cisco configuration cable (Part Number 72-3383-01) to the server port labeled SERIAL. Finger-tighten connector screws.

   c. At the rear of the Communication Router UD86A8, insert the other end of the CISCO configuration cable into the CONSOLE port.

   d. At the server, open two Host Terminal windows as follows (Do not use the Console window option):

      1. At the CDE Front Panel, click on the **Up arrow** located above the **cpu disk** icon. A `Hosts` pop-up window will be displayed.

      2. At the `Hosts` window, click on the **This Host** icon. A Terminal window will be displayed with an `/export/home/opupmgr>` prompt.

      3. Repeat Steps 4.d.1 and 4.d.2 to open a second Terminal window.

   e. In the first Terminal window, at the /`export/home/opupmgr>` prompt, enter: **su<Return>**

      Feedback: `Password:` prompt appears.

   f. At the `Password:` prompt, enter: *root_password***<Return>**

      Feedback: # prompt appears.

   g. At the # prompt, enter: **ps -ef | grep ups<Return>**

      Feedback:
      ```
      root 354 1 0 13:47::08? 0:23          ./_upsd
      root 17377 17207 0 19:38:31 pts/4 0:00  grep ups
      ```

   h. Look for the UPS Process Identification (UPS_PID) number located in the second column as shown in the feedback of Step g (i.e. 354), associated with the line containing `./_upsd`.

      When found, enter: **kill -9** *ups_pid***<Return>**

i. Repeat the command in Step g. to ensure that the UPS process, `./_upsd`, was stopped.

   Feedback: `root` *`17377 17207`* `0 19:38:31 pts/4 0:00 grep ups`

j. At the # prompt, enter: **tip -9600 /dev/cua/a <Return>**

   Feedback: `connected`

k. At the rear of the communication router, place the power switch in the Off (0) position.

NOTES

Prior to performing the next step, locate the ~ (tilde) key and the # key. The keystroke command of **<Shift>~#** must be entered during a narrow window approximately 10 seconds after the communication router power switch is turned on. Once the message `c2600 platform with 32768 Kbytes of main memory` is displayed, immediately enter **<Shift>~#**. If the command is entered prior to this message or after the message starting with `program load complete, entry point:....`, the router will display `rommon 1>` prompt as normal. However, when the **tftpdnld** command is entered during the router configuration procedure in the next paragraph, the tftp file will not download and a reset router message will be displayed and the entire procedure will have to be restarted.

If the Terminal window should become unresponsive or the communication router # prompt should not respond to commands from the keyboard, press **<Shift>~**. and then press the **<Ctrl>** and **C** key to get to a # prompt. If the Terminal window still does not respond, close the Terminal and begin again from Step 4.j.

l. At the rear of the communication router, place the power switch in the On (1) position. When the message `c2600 platform with 32768 Kbytes of main memory` is displayed in the Terminal window, immediately enter: **<Shift>~#**

   Feedback: `monitor: command "boot" aborted due to user interrupt`

   `rommon 1>`

   If the `rommon>1` prompt appears, proceed to the next paragraph, 6.6.4.3. Otherwise go to the next step.

m. If the terminal displays a `Reset the router in order to use this command` message, enter: **<Shift>~.** to exit the tip session. Then repeat Steps 4.j, 4.k, and 4.l.

6.6.4.3 Procedure.

1. At the Server UD86A2, click within the second Terminal window to activate the window.

2. At the `/export/home/opupmgr>` prompt, enter: **su<Return>**

   Feedback: `Password:` prompt appears.

3. At the `Password:` prompt, enter: *root_password***<Return>**

   Feedback: # prompt appears.

4. At the # prompt, enter: **chmod o+r /tftpboot/c2600.bin<Return>**

NOTE

In the following step, the `rommon 1>` prompt will be the initial prompt displayed in the Terminal window. As each of the following entries are entered, the rommon *n*> prompt will increment by one every time the **<Return>** key is pressed.

5. At the first Terminal window, click within the window to activate it, and enter the following at the `rommon` *n*> prompts:

NOTE

The *communication router IP address* and *OPUP Server IP address* are site dependent.

IP_ADDRESS=*communication router IP Address***<Return>**

IP_SUBNET_MASK=255.255.255.0<Return>

DEFAULT_GATEWAY=*OPUP Server IP Address***<Return>**

TFTP_SERVER=*OPUP Server IP Address***<Return>**

TFTP_FILE=c2600.bin<Return>

NOTE

The following step will enter the TFTP download (**tftpdnld**) command to transfer the router configuration file from the server to the communication router. If the **<Shift>~#** command was entered properly per the preliminary setup paragraph 6.6.4.2, Step 4.l and the accompanying Note, then the

feedback will display the IP addresses as entered above in Step 5. If the feedback is the following message, `Please reset before executing this command`, then the preliminary setup paragraph 6.6.4.2, Step 4.l was not performed at the proper time. This means that the entire procedure must be started again in order for the communication router to accept the **tftpdnld** command properly.

6. At the `rommon` *`n>`* prompt, enter: **tftpdnld<Return>**

   The following information should then be displayed:

```
IP_ADDRESS: communication router IP Address

IP_SUBNET_MASK: 255.255.255.0

DEFAULT_GATEWAY: OPUP Server IP Address

TFTP_SERVER: OPUP Server IP Address

TFTP_FILE: c2600.bin

Invoke this command for disaster recovery only.

WARNING: all existing data in all partitions on flash will be
       lost!

Do you wish to continue? y/n: [n]
```

NOTE

If the message, `Please reset before executing this command` is displayed, then the download procedure failed. Return to the preliminary setup paragraph 6.6.4.2, Step 4.k, and repeat all of the steps up to this point again.

7. If any information displayed in Step 6 is incorrect, enter **n<Return>** at the `Do you wish to continue? y/n: [n]` prompt: and repeat Steps 5 and 6.

   If the information displayed in Step 6 is correct, enter **y<Return>** at the `Do you wish to continue? y/n: [n]` prompt. The following information should be displayed at the Terminal window:

```
Receiving c2600.bin from tftp_server IP Address (a series of
!!!!!...!!!!!!!!!! will then be displayed)

File reception completed.
```

`Copying file c2600.bin to flash.`

`Erasing flash at 0x607c0000`

`program flash location 0x604f0000.`

When the `rommon` *n*> prompt re-appears, proceed to the next step.

If an `Interface link did not come up. Timed out. TFTP: Operation terminated, or TFTP not found` message is displayed, press the **<Return>** key and then enter: **<Shift>~.** (hold the **<Shift>** key, and press the **~** (tilde) and the **.** key. When finished, return to paragraph 6.6.4.2 and begin again from Steps 4.j and when finished, begin again from Step 1 of this procedure.

8. At the second Terminal window, enter the following at the # prompt:

   chmod o-r /tftpboot/c2600.bin<Return>

9. At the first Terminal window, enter the following at the `rommon` *n*> prompt:

   confreg Øx2142<Return>

10. When the following message `You must reset or power cycle for new config to take effect` is displayed, enter the following at the `rommon n>` prompt: **reset<Return>**. The communication router will begin a reboot and reload procedure. This may take approximately 90 seconds.

11. When the `Would you like to enter the initial configuration dialog? [yes/no]:` message appears, enter:

    no<Return>

12. When the `Press RETURN to get started!` message appears, press the **<Return>** key. A `Router>` prompt should be displayed.

13. At the `Router>` prompt, enter: **enable<Return>**

    Feedback: A `Router#` prompt will be displayed.

14. At the `Router#` prompt, enter: **conf t<Return>**

    Feedback: A `Router(config)#` prompt will be displayed.

15. At the `Router` (`config)#` prompt, enter:

    no logg mon<Return>

no logg con<Return>

int fØ/Ø<Return>

Feedback: A `Router(config-if)#` prompt will be displayed.

16. At the `Router(config-if)#` prompt, enter the following:

ip address *communication router IP Address* **255.255.255.0<Return>**

no shutdown<Return>

exit<Return>

Feedback: `Router(config)#` prompt is displayed.

17. At the `Router(config)#` prompt, enter: **exit<Return>**

Feedback: `Router#` prompt appears.

18. At the second Terminal window, enter the following at the # prompt:

chmod o+r /tftpboot/puprtrs<Return>

19. At the first Terminal window, enter the following at the `Router#` prompt:

copy tftp start<Return>

Feedback: An `Address or name of remote host []?` message appears.

20. At the `Address or name of remote host []?` prompt, enter:

*Server IP Address***<Return>**

Feedback: A `Source filename []?` message appears.

21. At the `Source filename []?` prompt, enter: **puprtrs<Return>**

Feedback**:** A `Destination filename [startup-config]?` message appears.

22. At the `Destination filename [startup-config]?` prompt, press the **<Return>** key. The following messages will be displayed:

`Accessing tftp://`*`Server IP Address`*`/puprtrs . . .`

```
Loading puprtrs from Server IP Address (via FastEthernet0/0:
!!!!!)

[OK - 23159/46080 bytes]

[OK]

23159 bytes copied in 9.516 secs (2573 bytes/sec)

Router#
```

23. At the second Terminal window and enter the following at the # prompt:

    chmod o-r /tftpboot/puprtrs<Return>

24. At the first Terminal window, enter the following at the `Router#` prompt:

    conf t<Return>

    Feedback: A `Router(config)#` prompt should be displayed**.**

25. At the `Router(config)#` prompts, enter:

    config-register Øx21Ø2<Return>
    exit<Return>

    Feedback: A `Router#` prompt will be displayed**.**

26. At the `Router#` prompt, enter:

    reload<Return>

    Feedback: A `System configuration has been modified. Save? [yes/no]:` message appears**.**

27. At the `System configuration has been modified. Save? [yes/no]:` prompt, enter:

    no<Return>

    Feedback: A `Proceed with reload? [confirm]` message appears.

NOTE

Ensure that the **no<Return>** option is selected for Step 27. Selecting **no<Return>** will ensure that a **new** configuration will be saved vice the old configuration. If yes is selected during this option, the old configura-

tion will be reinstalled. If yes was selected, stop here. At the `Proceed with reload? [confirm]` prompt, enter: **no<Return>**, **exit<Return>**, **exit<Return>**, and go to paragraph 6.6.4.2, Steps 4.j and 4.k to begin the communication router setup process again.

28. At the `Proceed with reload? [confirm]` prompt, press the **<Return>** key to start the communication router reload process. The router will reboot. This will take approximately 90 seconds.

29. When the DoD security warning message appears, press the **<Return>** key to display the `Password:` prompt.

30. At the `Password:` prompt, enter: *Cisco Router Password***<Return>**

    Feedback: `puprtr>` prompt will be displayed.

31. At the `puprtr>` prompt, press the **<Shift>~** and then **.** keys (hold the **<Shift>** key and press the **~** (tilde) and **.** (dot) keys.)

    Feedback: An `[EOT]` message will appear and then a # prompt.

32. At the # prompt, enter: **exit<Return>**

    Feedback: An `/export/home/opupmgr>` prompt will be displayed.

33. At the `/export/home/opupmgr>` prompt, enter: **exit<Return>**

    Feedback: This will close the first Terminal window.

34. At the second Terminal, enter the following at the # prompt: **exit<Return>**

    Feedback: An `/export/home/opupmgr>` prompt should be displayed.

35. At the `/export/home/opupmgr>` prompt, enter: **exit<Return>**

    Feedback: This will close the second Terminal window.

36. At the rear of the Server UD86A2, disconnect the CISCO configuration cable from the SERIAL port and reconnect the UPS serial cable 86W4 to the Server's SERIAL port.

37. At the rear of the Communication Router UD86A8, disconnect the other end of the CISCO configuration cable from the CONSOLE port.

38. At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button.

39. At the `OPUP Server Control Menu`, click on the **Restart Server** button. An `OPUP Manager Restart Server` warning window will appear. Then click on the **Yes** button. The server will reboot and the CDE Login screen will be displayed. Return the server to the normal operating position.

6.6.5 UPS UD86A10 Setup Procedure.

This procedure is to be accomplished only if, for some reason, either the terminal values located in the **/usr/lib/powerchute** file directory located within the OPUP Server OS are reset back to default settings. This procedure requires one technician and takes 0.5 hours.

6.6.5.1 Equipment and Tools Required.

1. UPS serial cable

2. Screwdriver, flat-tip

6.6.5.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-16 and Table 2-14 for the location and description of each UPS UD86A10 control and indicator.

1. Ensure the Server OS UD86A2 is operating normally.

2. Ensure the UPS UD86A10 is operating normally.

3. Ensure one end of the UPS serial cable 86W4 is connected to the SERIAL port on the rear panel of the OPUP server.

4. Ensure the other end of the cable is connected to the SERIAL port at the back of the UPS.

5. Ensure the `OPUP Manager Main Menu` is displayed. (If required, refer to paragraph 5.2.3.1 to login as **opupmgr**.)

6.6.5.3 Procedure.

1. At the CDE Front Panel, near the bottom of the screen, perform the following:

   a. Click on the **Up arrow** located just above the **cpu disk** icon. A `Hosts` pop-up menu will be displayed.

   b. At the `Hosts` menu, click on the **This Host** icon selection. A Terminal window will be displayed with an `/export/home/opupmgr>` prompt.

2. At the `/export/home/opupmgr>` prompt, enter: **su<Return>**

   Feedback: A `Password:` prompt appears.

3. At the `Password:` prompt, enter: *`root_password`***<Return>**

   Feedback: A # prompt will appear.

4. At the # prompt, enter: **cd /usr/lib/powerchute<Return>**

5. At the # prompt, enter: **pwd<Return>**

   Feedback: A `/usr/lib/powerchute` prompt appears. Verify that the feedback for the current directory is /usr/lib/powerchute. If not, repeat Step 4, again.

6. At the # prompt, enter: **vi powerchute.ini<Return>**

7. Visually locate the [Ups] entries (near the top of the file text) and locate the following entry:

   ```
   PortName = /dev/ttyb
   ```

8. Using the arrow keys on the keyboard, move the cursor over the **b** in the **/dev/ttyb** to highlight the **b** character.

9. Press **<Esc>** once. (Pressing the Escape key toggles the UNIX Text Editor VI edit mode on and off. Be sure to only press this once!)

10. At the keyboard, enter: **ra<Return>**

    Feedback: The letter **a** appears immediately following the **/dev/tty** line so that it now reads `/dev/ttya`

NOTE

The **r** is an edit command (replace) and will replace the **b** with the next character entered. The **a** is written to the script.

11. If the above information is verified to be correct, skip to Step 12. If an error has been made, perform the following steps:

    a. Press **<Esc>** once.

    b. Using the keyboard, hold down the **<Shift>** key and press the colon **" : "** key, simultaneously.

    c. Enter **q!<Return>**

    d. Repeat Steps 6 through 10.

12. To save the changes made, perform the following:

    a. Press **<Esc>** once.

    b. Using the keyboard, hold down the **<Shift>** key and press the colon **" : "** key, simultaneously.

    c. Enter **wq<Return>**

NOTE

This series of key strokes will exit the VI editor and save the script changes made. Pressing the **<Esc>** key toggles on and off the edit mode of the VI editor. Entering a **<Shift>:** (colon), exits the edit mode and moves the cursor to the bottom of the screen next to a **:** (colon). The **wq<Return>** quits the VI editor and saves changes.

13. At the # prompt, enter: **head -10 powerchute.ini<Return>**

    The first 10 lines of the powerchute.ini file will be displayed.

14. Ensure the edited PortName entry in the `[Ups]` section reads as follows:

    ```
    PortName = /dev/ttya
    ```

15. At the # prompt, enter**: reboot -- -r<Return>**

NOTE

Be sure to place a space between the reboot, "--" and "-r" entry. The system will perform a reboot procedure and configure the UPS as a recognizable device attached to the OPUP server. The software installation process will take approximately 3 to 4 minutes to complete this procedure.

16. At the CDE Login screen, login as an operator.

6.6.6 Printer UD86A12 Setup Procedure.

This procedure requires one technician and takes 0.5 hours.

6.6.6.1 Equipment and Tools Required.

Copy of local processor Hosts File

6.6.6.2 Initial Conditions/Preliminary Setup. Refer to Figure 2-3 for the location of the equipment associated with the Small OPUP Equipment Group UD86. Refer to Figure 2-17 and Table 2-15 for the location and description of each Printer UD86A12 control and indicator.

1. At the printer, print out a Menu Map to provide a guide to the front panel menus structure. Keep a copy by the printer for easy reference. To do this:

   a. On the printer's front LCD display, press the **OK** button. If the printer is in stand-by mode, a `PHASER 8200N Warming Up, PLEASE WAIT. %xx COMPLETED` message will then appear. If not, go to the next step.

   b. Ensure the **Menus** selection is highlighted and press the **OK** button.

   c. Ensure the **Print Menu Map** selection is highlighted and press the **OK** button. A Menu Map will then be printed.

   d. When finished, press the printer **Return** button (curved arrow icon) to return to the printer's Main Menu.

2. The following information is required when adding the printer to the OPUP Manager Main Menu:

   - Printer Name.
   - Printer IP-Address.
   - Printer Description.

   Ensure the above information is obtained before beginning the printer setup procedures.

6.6.6.3 Procedure.

1. At the `Menus` selection screen, press the **Down arrow** button twice to highlight the `Network Setup Menu` selection.

2. Press the **OK** button. The `Network Setup Menu` selection screen will be displayed.

3. Press the **Down arrow** button twice to highlight the `TCP/IP Address: 0.0.0.0` selection. (If the printer's IP address has been previously loaded, it will display that address instead of the four zeros.)

NOTE

The following steps involve the display and configuration of the TCP/IP address that is associated with the Printer UD86A12. An IP address con-

tains 4 sets of three numbers, each separated by a period (i.e. 255.255.255.255).

4. Press the **OK** button. The `TCP/IP Address` window will be displayed with the first set of three numbers highlighted.

5. Use the **Up/Down arrow** buttons to set the first three numbers of the site specific TCP/IP address, then press the **OK** button. This will set the first set and moves the highlight cursor to the second set of the three numbers.

6. Use the **Up/Down arrow** buttons to set the second set of three numbers of the site specific TCP/IP address, then press the **OK** button. This sets the second set and moves the highlight cursor to the third set.

7. Use the **Up/Down arrow** buttons to set the third set of three numbers of the site specific TCP/IP address, then press the **OK** button. This sets the third set and moves the highlight cursor to the fourth/last set.

8. Use the **Up/Down arrow** buttons to set the fourth set of three numbers of the site specific TCP/IP address, then press the **OK** button. This sets the fourth set and temporarily displays a `Testing for duplicate IP address ...` message. When finished, the `Network Setup Menu` will be displayed.

9. At the `Network Setup Menu`, ensure that the highlighted `TCP/IP Address:` *`IP_address`* displays the correct IP address entered in Steps 5 through 8.

10. At the `Network Setup Menu`, press the **Down arrow** button to highlight `TCP/IP Network Mask: 255.0.0.0` (if previously loaded, the address will be different), then press the **OK** button.

11. Using the **Up/Down arrow** and **OK** buttons (as performed in Steps 5 through 8 to set the TCP/IP address), set the TCP/IP Network Mask address to **255.255.255.0**. Press the **OK** button to display the `Network Setup Menu`. Ensure the TCP/IP Network Mask address is correct before proceeding.

12. Press the **Return** button (curved arrow). The following message will be displayed: `Changes take effect only after reset`. The message `Reset Printer Now` will then be highlighted.

13. With `Reset Printer Now` highlighted, press the **OK** button. The printer will go through a Power-On-Self-Test (POST) and perform a reboot procedure. The process is complete when the printer prints out a Phaser 8200N Color Printer Startup page.

14. At the Server UD86A2, login as **opupmgr** and proceed to the `OPUP Manager Main Menu`.

15. At the `OPUP Manager Main Menu`, click on the **OPUP Server Control Menu** button.

16. At the `OPUP Server Control Menu`, click on the **Printer Tools** button.

17. At the `OPUP Printer Menu`, click on the **Add New Printer** button.

18. At the `OPUP Manager Add New Printer` window, click within the `Printer Name:` edit field and enter the following data in the edit fields and use **<Tab>** key to move from each edit field:

    a. `Printer Name:`, enter: **Phaser8200N<Tab>**

    b. `Printer IP Address:`, enter: *IP address of the printer***<Tab><Tab>**

    NOTE

    The `Printer Port Number:` edit field will have a **1** as the default port number. If any other number is displayed, enter a 1 in the edit field and press the **<Tab>** key.

    c. `Printer Description:`, enter:

    *Any plain language identification as desired***<Tab>**

    NOTE

    The `Printer Description` field may be left blank. It is used only for external printer identification purposes only.

    d. `Is this the` **`Default`** `Printer (Y=Yes, N=No):`, enter **y<Return>**

19. At the bottom of the `OPUP Manager Add New Printer` window, click on the **Save** button. An `OPUP Printer Phaser8200N - has been created` message will then be displayed.

20. At the `Netscape: Display Printer Info Entered` window, click on the **Return to Main Menu** button to return to the `OPUP Manager Main Menu`.

CHAPTER 7
ILLUSTRATED PARTS BREAKDOWN

Section 7.1. INTRODUCTION

7.1.1 General.

This chapter provides an Illustrated Parts Breakdown (IPB) list and scale drawings associated with the Small OPUP Equipment Group UD86. The IPB lists, describes, and illustrates the items necessary to support on-site field-level maintenance of the Doppler Meteorological Radar WSR-88D Open Principal Users Processor (OPUP). The information contained in this manual is to be used for parts requisitioning, storing, issuing, identification, and for illustrating connection and disconnecting cable relationships, assigning repair level responsibility, and disposition of specific OPUP hardware.

7.1.2 Chapter Organization.

Chapter 7 is organized into two sections as follows:

- Section 7.1. INTRODUCTION - Provides a brief description of the information found in Chapter 7.

- Section 7.2. OPUP ILLUSTRATED PARTS BREAKDOWN (IPB) LIST - Contains an explanation on how to use the information found in this section. In addition, this section provides the Cable Assemblies Table, Maintenance Parts List (MPL), and applicable illustrated Lowest Replaceable Unit (LRU) scale drawings associated with the Small OPUP Equipment Group UD86.

Section 7.2. OPUP ILLUSTRATED PARTS BREAKDOWN (IPB) LIST

7.2.1 Overview.

This section illustrates the items necessary to support Line Replaceable Unit (LRU) hardware identification and procurement requirements using a Cable Assemblies Table and Maintenance Parts List (MPL). It is assumed that no depot level illustrations or piece part level replacement information will be provided in this document. This chapter presents information that should be taken into consideration when making decisions regarding logistical parts identification, assembly, and replacement procedures. OPUP system administrators and maintainers should not assume that this IBP is intended to provide any breakdown of OPUP hardware configuration items at the Depot repair level.

7.2.2 Arrangement.

The information presented in this section will be divided into two parts. The first part contains a Cable Assemblies Table that can be used by each Small OPUP site to ensure that the correctly identified specific cable is connected in accordance with the designed configuration management of each assembly and sub-assembly. The second part provides a complete listing of each applicable part associated with the Small OPUP Equipment Group UD86. This list is called the Maintenance Parts List (MPL). The MPL provides the information necessary to correctly identify, procure, and replace failed or suspect Small OPUP parts. The MPL will also contain associated LRU level illustrations that are to be used to identify, disassemble, re-assemble, specific parts and cables associated with the Small OPUP configuration that sites are authorized to replace.

7.2.3 Definition of Terms and Services.

This section provides detailed break down of the information provided in both the Cable Assemblies and MPL tables.

7.2.3.1 OPUP Configuration Description. The overall description and associated parts breakdown is provided by the Small OPUP Equipment Group UD86. However, the Small OPUP Hardware Configuration is further broken down into four dash “-” number versions (-301 through -304) which has been developed for application at specific DoD operational sites. These versions are designated by ICD 2300032-301 through 2300032-304.

7.2.3.2 Drawing Break Down. Typically, each OPUP configuration will have approximately 3 LRU expanded scale drawings. Each drawing will either be associated with each major assembly or be designated as a sub-assembly. Reference “find” numbers will be used on each drawing as appropriate.

7.2.3.3 Cable Assemblies/Maintenance Parts List Tables. A Cable Assemblies and Maintenance Parts List (MPL) table will be provided for each OPUP configuration scale assembly and/or sub-assembly. The CAL and MPL will be broken down into two lists each. The first reference list for each reference will encompass all of the reference parts associated with the OPUP Hardware

Group as a whole. A second list(s) will directly follow each assembly scale drawings. The following paragraphs describe the information contained in each reference list.

7.2.3.3.1 Cable Assemblies Table. The following paragraphs provide a breakdown of the information provided in Table 7-1.

7.2.3.3.1.1 Index Number. The Index Number (Index No.) column lists the numbers that key all significant parts of the cables that are associated with the MPL to the related scale drawings.

7.2.3.3.1.2 Reference Designators (REF DES). This column lists the reference designations shown on assembly drawings, schematics, and wiring diagrams pertaining to the system. An asterisk (*) in this column indicates a special feature of the part with explanations presented at the bottom of the page. The note "Replace as a Set" indicates that the parts noted must be replaced as a set. "Not Shown" indicates that the part is not shown on the illustration. (Where possible, callouts on illustrations for parts in this category will be indicated in the general area location or with an item that it is associated with.)

7.2.3.3.1.3 From/To. The "From" and "To" columns indicate where the associated cable and/or wire attachment begins (from) and where it is attached (to). The P1 code associated with each cable will address where the cable attachment begins and the P2 code will address where the cable is attached to.

7.2.3.3.1.4 Usable On Code. This column contains the codes required to indicate the configuration of the end item to the which the assemblies and parts apply.

7.2.3.3.2 Maintenance Part List (MPL). The following paragraphs provide a breakdown of the information provided in Table 7-2.

7.2.3.3.2.1 Figure and Index Number (Figure and Index No.). The Figure and Index Number (Index No.) column lists the numbers that key all significant parts that are associated with the MPL to the related scale drawings.

7.2.3.3.2.2 Reference Designators (REF DES). This column lists the reference designations shown on assembly drawings, schematics, and wiring diagrams pertaining to the system. An asterisk (*) in this column indicates a special feature of the part with explanations presented at the bottom of the page. The note "Replace as a Set" indicates that the parts noted must be replaced as a set. "Not Shown" indicates that the part is not shown on the illustration. (Where possible, callouts on illustrations for parts in this category will be indicated in the general area location or with an item that it is associated with.)

7.2.3.3.2.3 Part Number. Part numbers used in this column are selected according to the following order of preferences:

- Government Standards
- Industry Standards
- Original Manufacturers number
- Commercial Manufacturers number
- Prime Manufacturers number

As applicable, alternate vendor part numbers are shown in the description column. The dash number is site dependant and reference should be made to site System Allocation Document (SAD) for complete part number.

7.2.3.3.2.4 Indent. The indentation number indicates the relationship of a part to the next higher assembly. For example: a part shown with an indenture of 3 indicates that it is a part of the immediately proceeding next higher assembly shown with an indenture of 2, excluding attaching parts.

7.2.3.3.2.5 Description. The description column contains the nomenclature appearing in the title block of the drawing to which the part was manufactured. The following applies:

- For NHA See Fig ... : Indicates the next higher assembly.
- For Breakdown See Fig ... : Indicates the location of the breakdown for the assembly in the MPL.

Alternative vendor part numbers are listed and identified following the description of the parts to which they apply. (A five digit CAGE code precedes its respective part number or drawing number.

7.2.3.3.2.6 CAGE Code. The appropriate CAGE Code (Commercial and Government entity) code, published in current issues of Cataloging Handbook (H4/H8), is listed in this column directly opposite each part, model, and type number listed in the part number column.

7.2.3.3.2.7 Quantity Per Assembly (QTY PER ASSY). The Quantity Per Assembly information shown in this column represents the units required for one next higher assembly or sub-assembly.

7.2.3.3.2.8 Source Maintenance and Recovery (SMR) Code. This column contains the five-digit Joint Military Service Uniform SMR code assigned by the Government. The SMR code is provided in Figure 7-1.

7.2.3.3.2.9 Usable On Code. This column contains codes to indicate the configuration of the end item to which the listed assemblies and parts apply. The meaning of usable on codes are located at the end of each figure. When a part applies to all configurations, the column is blank.

7.2.4 Use of the IPB. A breakdown of the IPB is presented in Figure 7-2 and Figure 7-3. They both provide an illustration of the MPL, List of Illustrations (LOI), and the methods used to find specific graphic images associated with various equipment.

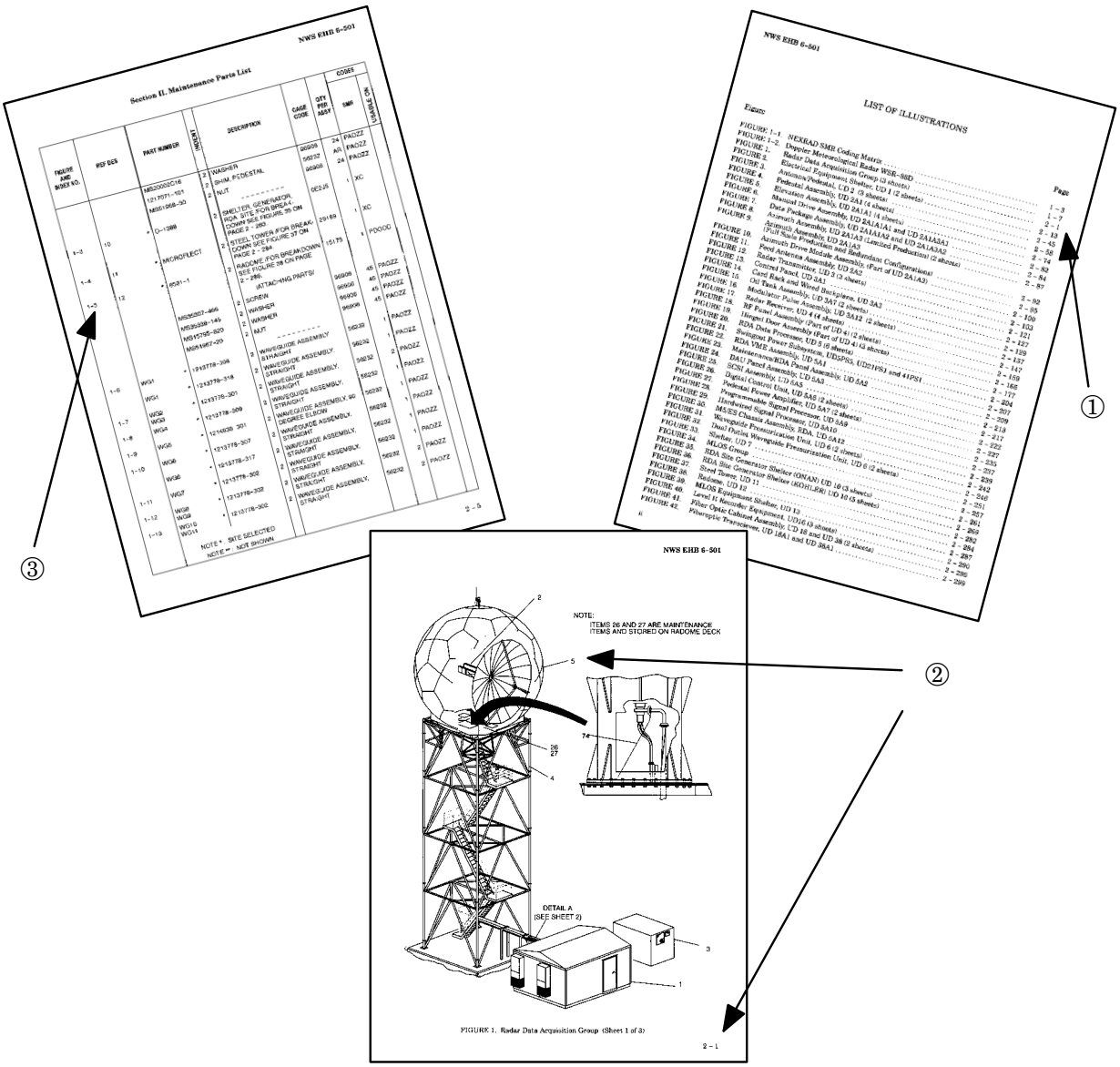
MAINTENANCE									
SOURCE				USE		REPAIR		RECOVERABILITY	
1st Position		2nd Position		3rd Position		4th Position		5th Position	
P	Procurable	A	Stocked	O	Remove/Replace by Organizational level	Z	No Repair	Z	Nonreparable Condemn by 3rd Position Level
		B	Insurance						
		C	Deteriorative						
		D	Depot						
		E	Support Equipment, Stocked			B	Recondition		
		F	Support Equipment, Nonstocked					O	Reparable Condemn by Organizational (or Field or Depot)
		G	Life of System Support						
K	Component of a Repair Kit	F	Intermediate Kit	F	Remove/Replace by Intermediate Level (Note 1)	O	Repair by Organizational	F	Reparable Condemn by Intermediate (or Depot)
		D	Depot Kit						
		B	In Both Kits			F	Repair by Intermediate		
M	Manufacture	O	Organization						
		F	Intermediate						
		D	Depot	D	Remove/Replace by Depot Level	D	Limited Repair by O or F Level	D	Reparable Condemn by Depot Only (Note 2)
A	Assemble	O	Organizational						
		F	Intermediate						
		D	Depot				Overhaul by Depot		
X	Nonprocured	A	Requisition NHA			L	Repair by Depot		
		B	Reclamation or Requisition by Part Number					A	Special Handling
		C	Mfg Drawings						

NOTE. Recoverability Code "L" is no longer valid. When this code is encountered in existing TOs, apply this definition: Reparable item, Condemn and Dispose of at Depot Level only.

1. Organizational level maintenance activities operating under the two–level maintenance concept may perform limited intermediate level maintenance when the proper test equipment, trained personnel, and current technical data are available.
2. Items with a recoverability code of "D" can be condemned at field level if the item is damaged or worn totally beyond repair, directed condemned, nonlisted in USAF Federal Supply Catalog, coded "DSP" or normal source of supply is local purchase or local manufacture.

Figure 7-1. SMR Code (Example)

How to Use the Illustrated Parts Breakdown

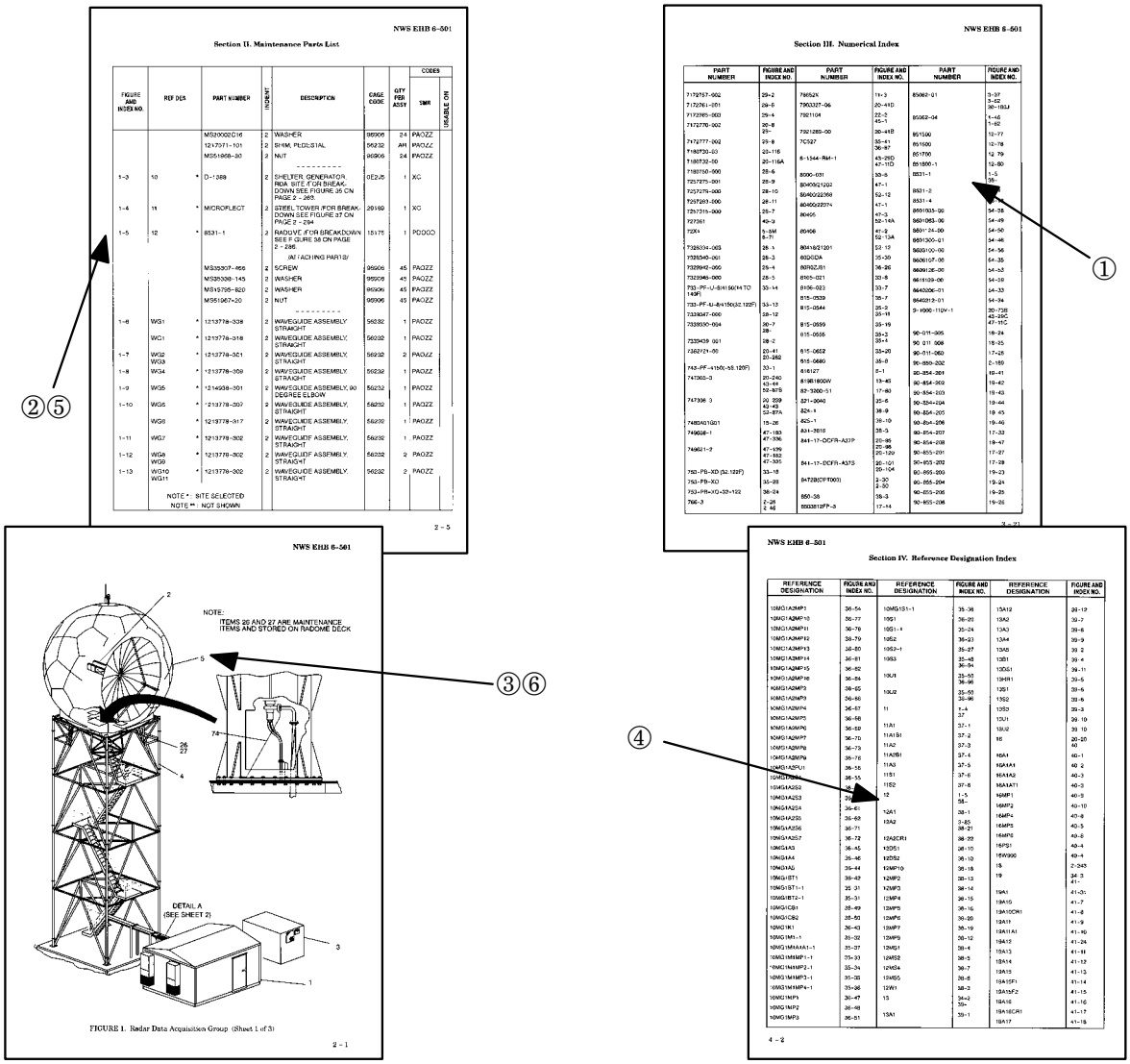


WHEN THE PART NUMBER IS NOT KNOWN

1. Determine the function and application of the part required. Turn to the List of Illustrations and select the most appropriate title. Note the illustration page number.
2. Turn to the page indicated and locate the desired part on the illustration.
3. From the illustration, obtain the index number assigned the part desired. Refer to the accompanying description specific information regarding the part.

Figure 7-2. How To Use IBP (Example 1)

How to Use the Illustrated Parts Breakdown



WHEN THE PART NUMBER OR REFERENCE DESIGNATION IS KNOWN

1. When the part number is known, refer to Section III Numerical Index. Locate the part number assigned to the part number.
2. Turn to the figure number indicated and locate the index number referenced in the Numerical Index.
3. If a pictorial representation of the part, or its location is desired, refer to the same index number on the accompanying illustration.
4. When the reference designation is known, refer to Secti IV Reference Designation Index. Locate the reference designation and note the figure and index number and t part number assigned.
5. Turn to the figure indicated and locate the index numbe referenced in the Reference Designation Index.
6. If a pictorial representation of the part, or its location is desired, refer to the same index number on the accompanying illustration.

Figure 7-3. How To Use IBP (Example 2)

7.2.5 Consolidated Logistics System URL.

Each MPL will have a consolidated logistic system URL listed near the top center of each page. While the URL is only text in the hard copy, it is a hot link in the electronic copy of this document. This feature was included to assist with an expedite means of procuring Small OPUP Equipment Group UD86 parts and/or information. The hardcopy and the CDROM version of this manual will be made available at each OPUP site. A technician who is using the CDROM version can click on the URL located near the top center of each page (if access to the internet is currently being provided) will launch the screen to the NLSC, Consolidated Logistics System website.

The following steps apply:

1. Enter the site address: **www.casc.noaa.gov**
2. Select **NLSC**.
3. Select **Consolidated Logistics System**
4. Select **Milstrip NEXRAD/ASOS Products**.
5. If the NSN is known, type in the **NSN** information in the editable field provided and then select **Submit query**. If the NSN is not known, select the ASN option, enter the ASN (using the **R400-** prefix), and then select **Submit query**.
6. Use the **Show Image** selection to view the associated image
7. Log off when finished

NOTE

There may not be information for some parts. NLSC may be in the process of entering this data.

If the hard copy of this document is being used, the URL can be reached by accessing the internet and entering the designated internet address location provided in the Step 1. Once the CASC home page is displayed, select the indicated sequence of choices shown in Steps 2 through 4 in order to arrive at the URL address specified in the IPB (Step 5).

7.2.6 Small OPUP Equipment Group UD86.

The following paragraphs provide the information required to identify each assembly and sub-assembly associated with the Small OPUP Equipment Group UD86.

7.2.6.1 OPUP Assembly Illustration Overview. An overview of the OPUP assembly is provided in Figure 7-4, Small OPUP Assembly Illustration. This illustration depicts the overall hardware items associated with all configurable versions of the Small OPUP Equipment Group UD86.

Each configuration provided under the UD86 designation is controlled by the ROC Configuration Management (CM) Branch under dash numbers 301 through 304.

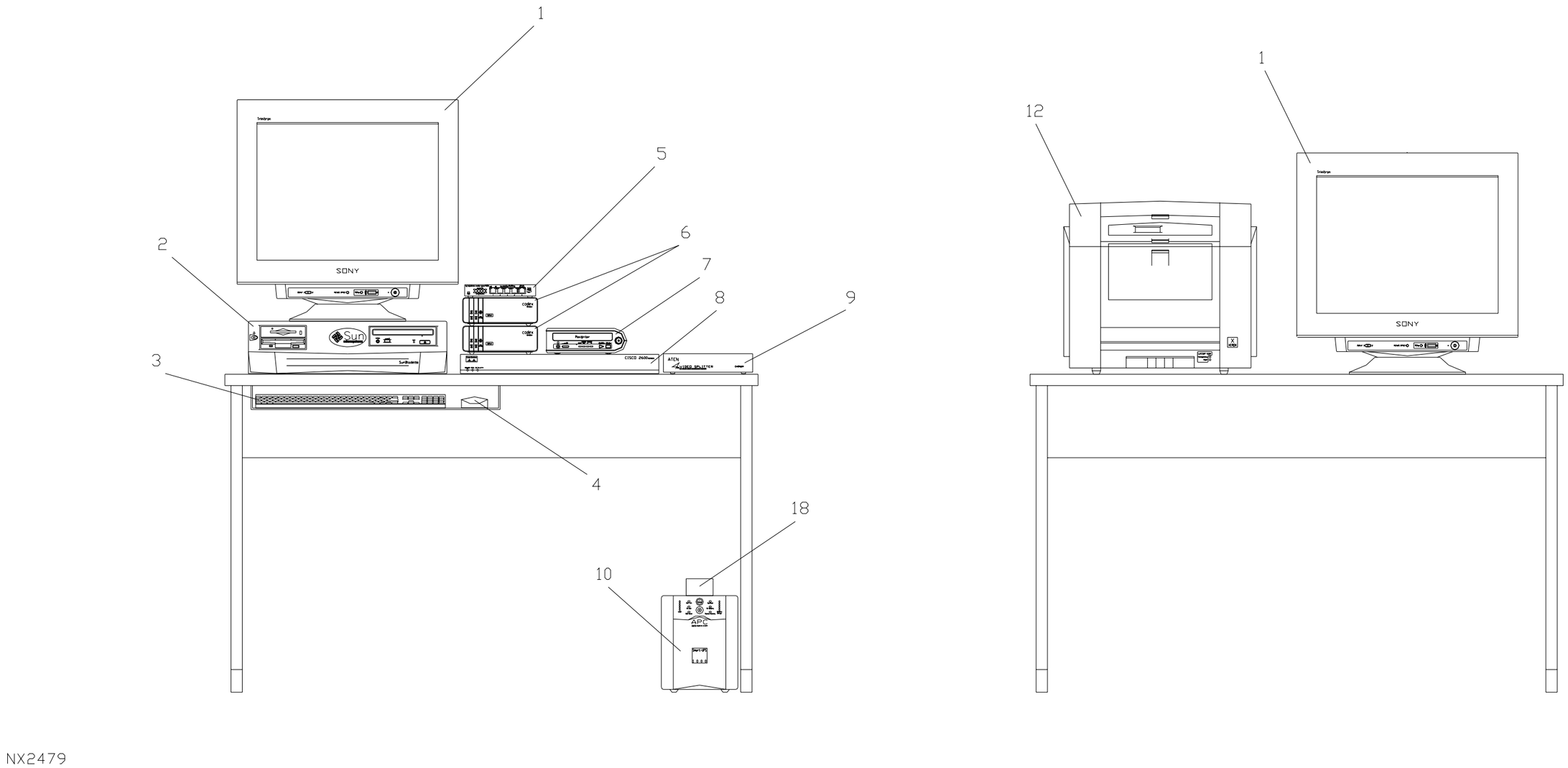


Figure 7-4. Small OPUP Assembly Illustration, UD86

Table 7-1. Cable Assemblies (Not Shown)

INDEX NO.	REF DES	FROM	TO	USABLE ON CODE
7-4/19	86W1	P1(A8A1W0SERIAL0)	P2(A6DTE)	
7-4/20	86W2	P1(A2A1VIDEO)	P2(A1SCREEN-1)	A,C,D
7-4/21	86W3	P1(A2A1A2PCI-1)	P2(A7SCSI-IN)	
7-4/22	86W4	P1(A2A1SERIAL)	P2(A10SERIAL PORT)	
7-4/23	86W5	P1(A2A1VIDEO)	P2(A9VIDEO-IN)	B
7-4/24	86W6	P1(A9VIDEO OUT-1)	P2(A1SCREEN-1)	B
7-4/25	86W7-305	P1(A9VIDEO OUT-2)	P2(A11SCREEN-1)	*
7-4/26	86W7-306	P1(A9VIDEO OUT-2)	P2(A11SCREEN-1)	*
7-4/27	86W7-307	P1(A9VIDEO OUT-2)	P2(A11SCREEN-1)	*
7-4/28	86W7-308	P1(A9VIDEO OUT-2)	P2(A11SCREEN-1)	*
7-4/29	86W8	P1(A8A1W0SERIAL1)	P2(A13DTE)	D
7-4/30	86W10	P1(A8A1A1PORT7)	P2(TELCO)	
7-4/31	86W11	P1(A6LEASELINE)	P2(TELCO)	
7-4/32	86W12	P1(A8A1ETHERNET 0/0)	P2(A5PORT1)	B,C,D
7-4/33	86W13	P1(A2A1NETWORK)	P2(A5PORT2)	B,C,D
7-4/34	86W14	P1(A12ETHERNET)	P2(A5PORT3)	B,C,D
7-4/35	86W15	P1(A13LEASELINE)	P2(TELCO)	D
7-4/36	86W50	P1(A10)	P2(A1ACIN)	
7-4/37	86W51	P1(A10)	P2(A2AC)	
7-4/38	86W52	P1(A10)	P2(A5DC)	B,C,D
7-4/39	86W53	P1(A10)	P2(A6AC)	B,C,D
7-4/40	86W54	P1(A10)	P2(A7AC)	
7-4/41	86W55	P1(A10)	P2(A8A1AC)	B,C,D
7-4/42	86W56	P1(A10)	P2(A9DC)	B
7-4/43	86W57	P1(ACPOWER)	P2(A11AC)	B
7-4/44	86W58	P1(ACPOWER)	P2(A12AC)	B,C,D
7-4/45	86W59	P1(A10)	P2(A13AC)	D

USABLE ON CODES

A - BASIC CONFIGURATION (-301)
B - BASIC CONFIGURATION WITH TWO MONITORS AND PRINTER (-302)
C - BASIC CONFIGURATION WITH PRINTER (-303)
D - BASIC CONFIGURATION WITH TWO MODEMS AND PRINTER (-304)

Table 7-2. Maintenance Parts List (MPL)

OPUP Maintenance Parts List (2300032-301 through 304) NOTE: * NOT SHOWN								
FIGURE AND INDEX NO.	REF DES.	PART NUMBER	INDENT	DESCRIPTION	CAGE CODE	QTY PER ASSY	CODES	
							SMR	USABLE ON
7-4	86	2300032	1	PROCESSOR, SMALL OPUP	0WY55	1	XC	
7-4/1	86A1	2200118-201	2	MONITOR, 21-INCH FLAT SCREEN	0WY55	1	PAOLD	
	86A11	2200118-201	2	MONITOR, 21-INCH FLAT SCREEN	0WY55	1	PAOLD	B
7-4/2	86A2	2300040-301	2	PROCESSOR	0WY55	1	PAOLD	
7-4/3	86A3	320-1273	2	KEYBOARD, TYPE 6, USB (0WY55) (spec dwq 2210045-202)	7X430	1	PAOZZ	
7-4/4	86A4	370-3632	2	MOUSE, TYPE 6, USB (0WY55) (sped dwg 2210045-203)	7X430	1	PAOZZ	
7-4/5	86A5	2200120-201	2	SWITCH, LAN	0WY55	1	PAOZZ	
7-4/6	86A6	42701	2	DATA MODEM, STAND-ALONE, (0WY55) (spec dwg 1219739-211)	25420	1	PAOLD	
	86A13	42701	2	DATA MODEM, STAND-ALONE, (0WY55) (spec dwg 1219739-211)	25420	1	PAOLD	D
7-4/7	86A7	2200121-201	2	CD-R/RW DEVICE, EXTERNAL SCSI W/O PWR CORD	0WY55	1	PAOLD	
7-4/8	86A8	2300033-301	2	ROUTER ASSY, CISCO 2620	0WY55	1	PAOLD	
7-4/9	86A9	2200119-203	2	VIDEO SPLITTER, 4-PORT, 250MHZ	0WY55	1	PA0ZZ	B
7-4/10	86A10	2210053-201	2	UPS ASSEMBLY	0WY55	1	PAODD	

Table 7-2. Maintenance Parts List (MPL) - Continued

OPUP Maintenance Parts List (2300032-301 through 304) NOTE: * NOT SHOWN								
FIGURE AND INDEX NO.	REF DES.	PART NUMBER	INDENT	DESCRIPTION	CAGE CODE	QTY PER ASSY	CODES	
							SMR	USABLE ON
7-4/11	86A10BT1 *	RBC6	3	BATTERY MODULE, UPS (0WY55)(spec dwg 2210053-203)	75421	1	PCOZZ	
7-4/12	86A12	2210055-201	2	PRINTER, COLOR	0WY55	1	PAODD	B,C, D
7-4/13	86A12C01 *	016-2040-00	3	PRINTER, COLORSTIX, BLACK (0WY55)(spec dwg 2210055-202)	02DH1	1	PAOZZ	B,C, D
7-4/14	86A12C02 *	016-2045-00	3	PRINTER, COLORSTIX, CYAN (0WY55)(spec dwg 2210055-204)	02DH1	1	PAOZZ	B,C, D
7-4/15	86A12C03 *	016-2046-00	3	PRINTER, COLORSTIX, MAGENTA (0WY55)(spec dwg 2210055-203)	02DH1	1	PAOZZ	B,C, D
7-4/16	86A12C04 *	016-2047-00	3	PRINTER, COLORSTIX, YELLOW(0WY55) (spec dwg 2210055-205)	02DH1	1	PAOZZ	B,C, D
7-4/17	86A12MP1 *	436-0409-00	3	PRINTER, PAPER TRAY(0WY55)(spec dwg 2210055-206)	02DH1	1	PAOZZ	B,C, D,
7-4/17A	86A12MP2	016-1933-00	3	MAINTENANCE KIT, PRINTER (0WY59) (spec dwg 2210055-207)	02DH1	1	PAOZZ	B,C, D
7-4/18	86A14	1213828-201	2	POWER STRIP	0WY55	1	PAOZZ	
7-4/19	86W1 *	2320091-301	2	CABLE ASSY KIT, HD26/RS232 DTE	0WY55	1	PAOZZ	
7-4/20	86W2 *	2320081-303	2	CABLE ASSY KIT, 10FT, M/M	0WY55	1	PAOZZ	
7-4/21	86W3 *	2320092-301	2	CABLE ASSY KIT, SCSI	0WY55	1	PAOZZ	

Table 7-2. Maintenance Parts List (MPL) - Continued

OPUP Maintenance Parts List (2300032-301 through 304) NOTE: * NOT SHOWN								
FIGURE AND INDEX NO.	REF DES.	PART NUMBER	INDENT	DESCRIPTION	CAGE CODE	QTY PER ASSY	CODES	
							SMR	USABLE ON
7-4/22	86W4 *	2320024-306	2	CABLE ASSY KIT, SMART UPS	0WY55	1	PAOZZ	
7-4/23	86W5 *	2320081-304	2	CABLE ASSY KIT, 10FT, M/M	0WY55	1	PAOZZ	B
7-4/24	86W6 *	2320081-303	2	CABLE ASSY KIT, 10FT, M/M	0WY55	1	PAOZZ	B
7-4/25	86W7-305 *	2320081-305	2	CABLE ASSY KIT, 50FT, M/M	0WY55	1	PAOZZ	B
7-4/26	86W7-306 *	2320081-306	2	CABLE ASSY KIT, 100FT, M/M	0WY55	1	PAOZZ	B
7-4/27	86W7-307 *	2320081-307	2	CABLE ASSY KIT, 150FT, M/M	0WY55	1	PAOZZ	B
7-4/28	86W7-308 *	2320081-308	2	CABLE ASSY KIT, 200FT, M/M	0WY55	1	PAOZZ	B
7-4/29	86W8 *	2320091-301	2	CABLE ASSY KIT, HD26, RS/232	0WY55	1	PAOZZ	D
7-4/30	86W10 *	2320090-301	2	CABLE ASSY KIT, MODULAR, RJ-11	0WY55	1	PAOZZ	
7-4/31	86W11 *	2320022-302	2	CABLE ASSY KIT, CAT5, 10FT	0WY55	1	PAOZZ	
7-4/32	86W12 *	2320022-302	2	CABLE ASSY KIT, CAT5, 10FT	0WY55	1	PAOZZ	
7-4/33	86W13 *	2320022-302	2	CABLE ASSY KIT, CAT5, 10FT	0WY55	1	PAOZZ	
7-4/34	86W14 *	2320022-307	2	CABLE ASSY KIT, CAT5, 50FT	0WY55	1	PAOZZ	B,C, D
7-4/35	86W15 *	2320022-302	2	CABLE ASSY KIT, CAT5, 10FT	0WY55	1	PAOZZ	D
7-4/36	86W50 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	
7-4/37	86W51 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	

Table 7-2. Maintenance Parts List (MPL) - Continued

OPUP Maintenance Parts List (2300032-301 through 304)
NOTE: * NOT SHOWN

FIGURE AND INDEX NO.	REF DES.	PART NUMBER	INDENT	DESCRIPTION	CAGE CODE	QTY PER ASSY	CODES	
							SMR	USABLE ON
7-4/38	86W52 *	2320089-302	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	B,C, D
7-4/39	86W53 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	
7-4/40	86W54 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	
7-4/41	86W55 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	
7-4/42	86W56 *	2320089-303	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	B
7-4/43	86W57 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	B
7-4/44	86W58 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	B,C, D
7-4/45	86W59 *	2320089-301	2	CABLE ASSY KIT, AC POWER	0WY55	1	PAOZZ	D

USABLE ON CODES

A - BASIC CONFIGURATION (-301)
B - BASIC CONFIGURATION WITH TWO MONITORS AND PRINTER (-302)
C - BASIC CONFIGURATION WITH PRINTER (-303)
D - BASIC CONFIGURATION WITH TWO MODEMS AND PRINTER (-304)

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GLOSSARY

Acronym or Non-Standard Term	Definition
A	
A/B	Modem-A/Modem-B
AC	Alternating Current
AFW	Air Force Weather
AFWA	Air Force Weather Agency
ALM	Alarm
AOR	Area of Responsibility
AS	Application Software
B	
BNCC	Base Network Control Center
bps	Bits Per Second
C	
CD	Compact Disk, Carrier Detect
CDE	Common Desktop Environment
CD-R	Compact Disk - Recordable
CR-ROM	Compact Disk - Read Only Memory
CD-RW	Compact Disk - Recordable Writeable

GLOSSARY

Acronym or Non-Standard Term	Definition

C
-CONTINUED-

CM	Configuration Management
CM	Combined Moment
COTS	Commercial-off-the-Shelf
CPCI	Computer Program Configuration Item
CPU	Central Processing Unit
CTS	Clear to Send

D

DAC	Discretionary Access Control
DC	Direct Current
DCD	Data Carrier Detect
DED	Dedicated
DIMM	Dual In-Line Memory
DIP	Dual In-Line Package
DMCU	Dial Message Control Unit
DOC	Department of Commerce
DoD	Department of Defense

GLOSSARY

Acronym or Non-Standard Term	Definition

D
-CONTINUED-

DOT	Department of Transportation
DSR	Data Set Ready

E

EEPROM	Electronic Eraseable Programmable Read Only Memory
EHB	Engineering Handbook
EOT	End of Task
EPSS	Electronic Performance Support System
ESD	Electrostatic Discharge

F

FAA	Federal Aviation Administration
FDX	Full Duplex
FOUO	For Official Use Only

G

GB	Gigabyte

GLOSSARY

Acronym or Non-Standard Term	Definition
G -CONTINUED-	
GHz	Gigahertz
GMT	Greenwich Mean Time (Same as UTC)
GUI	Graphical User Interfaces
H	
HTML	Hypertext Markup Language
Hz	Hertz
I	
I&A	Identification and Authorization
ICD	Interconnection Cabling Diagram
IEEE	Institute of Electrical and Electronic Engineers
INIT	Initialization
IP	Internet Protocol
IPB	Illustrated Parts Breakdown
K	
KB	Kilobyte

GLOSSARY

Acronym or Non-Standard Term	Definition
L	
LAN	Local Area Network
LB	Linear Buffer
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LRU	Line Replaceable Unit
M	
MB	Megabyte
Mbps	Megabits Per Second
MC	Marine Corps
MCU	Message Control Unit
MHz	Megahertz
MODEM	MOdulator/DEModulator
N	
NB	Narrowband
NEXRAD	Next Generation Weather Radar
NITF	National Image Transfer Format
NVRAM	Non-Volatile Random Access Memory

GLOSSARY

Acronym or Non-Standard Term	Definition
N -CONTINUED-	
NWS	National Weather Service
O	
OPUP	Open System Principal User Processor
OS	Operating System
OSD	On Screen Display
OTR	One Time Request
P	
PDGUI	Product Display Graphical User Interface
PID	Process Identification
POSIX	Portable Operating System Interface for Computer Environments
POST	Power-On-Self-Test
PROM	Programmable Read Only Memory
PS	Post Script
PUP	Principal User Processor
PWR	Power

GLOSSARY

Acronym or Non-Standard Term	Definition
R	
RAM	Random Access Memory
RC/NC	Remote Control/Network Control
RD	Receiver Data
RDA	Radar Data Acquisition
RI/OH	Ring Indicator/Off Hook
ROC	Radar Operations Center
ROM	Read Only Memory
RPG	Radar Product Generator
RSSD	Remote System Services Daemon
RTS	Request to Send
S	
SCSI	Small Computer System Interface
SMR	Source, Maintenance, and Recoverability
SU	Switch User
T	
TCP/IP	Transmission Control Protocol/Internet Protocol

GLOSSARY

Acronym or Non-Standard Term	Definition

T
-CONTINUED-

TCTO	Technical Compliane Technical Order
TD	Transmitter Data
TELCO	Telephone Company
TFO	Trusted Facility Operations
TO	Technical Order
TR	Terminal Ready

U

UD	Unit Designator
UNIX	Workstation Operating System
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus
UTC	Coordinated Universal Time (Same as GMT)

V

Vac	Volts Alternating Current
Vdc	Volts Direct Current
vi	Visual Interactive

GLOSSARY

Acronym or Non-Standard Term	Definition

V
-CONTINUED-

VTS	Validation Test Suite

W

WAN	Wide Area Network