

TECHNICAL MANUAL
OPERATIONS INSTRUCTIONS
PRINCIPAL USER PROCESSOR (PUP) GROUP
DOPPLER METEOROLOGICAL RADAR
WSR-88D



UNISYS CORPORATION
CONTRACT 50-DMNW-8-00032

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FOREWORD

This technical manual provides operators with an overview of Doppler Meteorological Radar WSR-88D PUP Group. It describes the purpose, structure, and functions of the PUP and discusses the operating concepts. This manual was prepared in accordance with the content requirements of MIL-M-38798B and the format requirements of MIL-M-38784B, as amended by TMCR AF TM-86-01/NEXRAD (June 1987). It consists of three chapters, an appendix, a glossary, and an index.

Chapter 1 General Information. This chapter describes the purpose, structure, capabilities, and itemization of the PUP.

Chapter 2 Operation. This chapter describes the PUP Group operations, procedures, controls and indicators.

Chapter 3 Operational Considerations. This chapter provides reference information for the PUP operator.

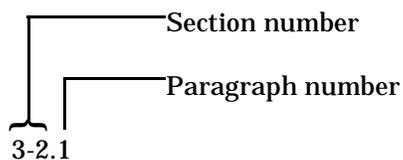
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Glossary

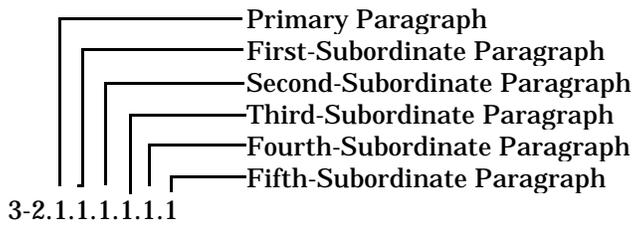
This manual is one of a family of technical manuals which provide various levels of description, operation, maintenance, and logistics information on the WSR-88D. Refer to TO 31-1-141, Basic Electronic Technology and Testing Practices, for any basic electronic technology or testing practice that is not fully described in these documents. The WSR-88D technical manual family is defined and discussed in the System Manual, NWS EHB 6_500, Section 1-4.

The format of this technical manual is as follows:

- Since sections represent the major content divisions of the chapter, they are formatted as physically-separate standalone elements.
- Sections are numbered as subdivisions of the chapter or appendix. The section numbering system consists of two digits separated by a hyphen. 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 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 page, table, or figure.

SAFETY SUMMARY

GENERAL SAFETY

The following are general safety precautions that are not related to specific procedures, and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating 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 and discharge by grounding a 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 some one who is capable of rendering aid.

RESUSCITATION

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

PERFORM WORK RAPIDLY

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

MICROWAVE RADIATION PRECAUTIONS

Radiant energy, which exists within the waveguides and which is emitted in the radar beam, is known as microwave radiation. A maximum radiation intensity of 5 milliwatts per square centimeter (5 mW/cm^2) for one hour of exposure, or 1 milliwatt per square centimeter (1 mW/cm^2) for continuous exposure, is considered permissible by present standards.

DIRECT ANTENNAS INTO OPEN AREA WHEN TRANSMITTING

When it is necessary to perform maintenance with power radiating from the antennas, take the necessary steps to keep the antenna directed into open area whenever possible.

SECURE ALL MATERIAL WHEN NOT IN USE

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

RESTORE ALL INTERLOCKS

Restore all interlock switches to normal operating condition immediately upon completion of work on the unit involved.

NWS EHB6-531

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.

DO NOT USE FERROUS TOOLS OR INSTRUMENTS NEAR KLYSTRONS

Do not use steel or iron tools near klystrons. Such tools may be pulled from the technician's grasp and may cause damage to the tube.

ELECTRICAL SHOCK HAZARDS

Prime power voltages and high voltages within cabinets can cause death or severe injury. These voltages are contained in the generator, RPG, RDA, Antenna, and PUP areas. 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.

Extremely high voltages are present in the PUP CRT that can cause death or severe injury. Warning labels and interlocks are present to prevent electrical shock. Do not bypass interlocks.

Chapter 1

GENERAL INFORMATION

Section: 1-1 Introduction

The Principal User Processing (PUP) Group ([Figure 1-1. PUP Group Equipment](#)) comprises the hardware and software that support the request, receipt, processing, local storage and control, display, annotation, distribution and archiving of WSR-88D weather products. The PUP equipment provides the communications, storage, display, and data entry resources to support applicable computer program configuration items to which other WSR-88D system functions are allocated. It also provides the communications interfacing capability for other subsystems in the WSR-88D.

1-1.1 Purpose Of Manual.

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

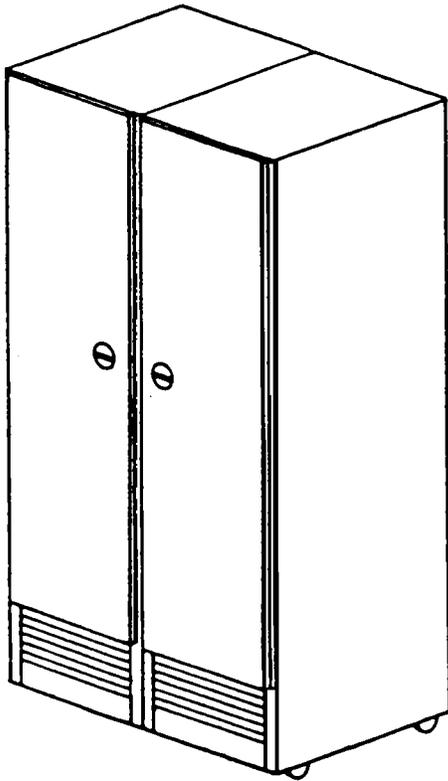
1. An overview of the PUP operation (as generally outlined in paragraph 1-1), equipment site, and associated communications.
2. Readily accessible information on the meaning of specific status and alarm messages including recommended operator action.
3. Detailed procedural actions that may at times be required to maintain the PUP operational integrity.

Included in this manual are, therefore:

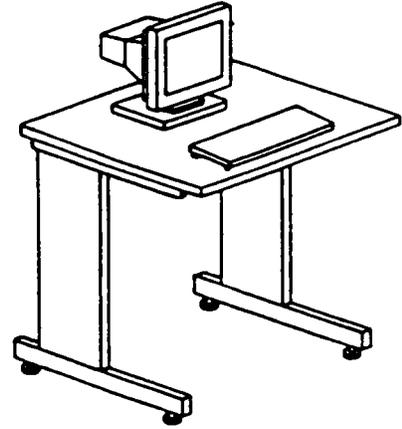
- PUP Group hardware configurations
- Turn-on, shutdown, initialization and recovery procedures for the PUP Group equipment
- Relevant operations-oriented system terminal functions
- Definitive step-by-step instructions leading to product acquisition, display, and manipulation, using both the Graphics Tablet and Application Terminal for:
 - RPS List
 - Auto Display Mode
 - User Functions
 - Alert - Paired Products
 - One-Time Product Requests.
- Major operational considerations impacting product selection
- Display processing algorithms.

1-1.2 Scope Of Manual.

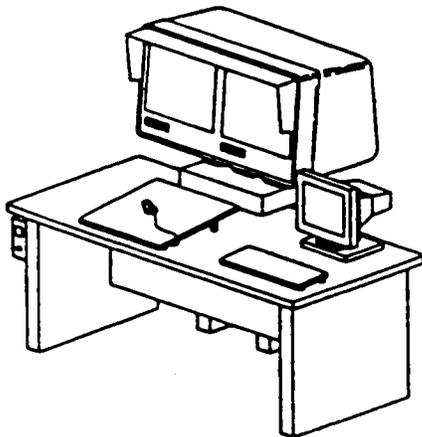
This manual provides the information and procedures to enable the user to exercise all capabilities and functions of the PUP Group equipment in support of a WSR-88D facility. It is divided into three chapters and an appendix which are listed below and provide the user with:



DATA PROCESSOR



SYSTEM TERMINAL



PUP WORKSTATION

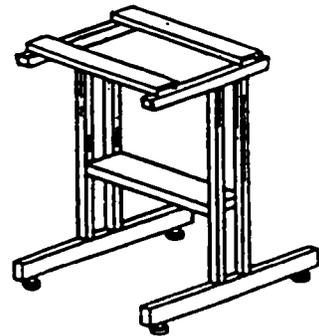
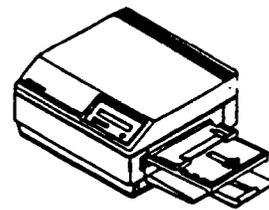


Figure 1-1. PUP Group Equipment

- **Chapter 1 GENERAL INFORMATION**- PUP general information, operating concepts, equipment descriptions and reference data
- **Chapter 2 OPERATION**- Operations, Startup, operating, shutdown, recovery procedures, controls, and indicators for PUP equipments
- **Chapter 3 OPERATIONAL CONSIDERATIONS**- Operational considerations, product request processing, load control and load shedding, RPS list formation, user functions, and display processing

Section: 1-2 PUP Operating Concepts

The basic function of the PUP is to provide the user with the capability to acquire, display, and manipulate WSR-88D products that will satisfy the operational requirement for information on the unfolding hydrometeorological situation. This contributes to an accurate and timely response through the user's warning/forecast/ advisory service programs. There is a significantly large amount of data (up to 14 evaluation angles, cycled as frequently as every 5 minutes) from which the user has to make a selection that will provide answers to the hydrometeorological situation of the day. To minimize overwhelming the user with the large data base, the PUP operating concept is to maximize automated procedures for product acquisition and display. The major automated features include:

- Routine Product Set (RPS) lists
- One-Time Product Requests
- Auto Display Mode
 - Automatic Product Display
 - Time Lapse Sequences
 - Alerts and Alert - Paired Products
 - User Functions
- Default Parameter Usage.

1-2.1 Routine Product Set (RPS) Lists.

The RPG automatically transmits to the PUP a set of products at each volume scan, as defined on the Product Set (RPS) List, which is prepared by the PUP operator and transmitted to the RPG. The RPS also contains the Auto Display List: a subset of the products on the RPS List which are selected for automatic display when requested. Similarly, selected products on the RPS list are designated for automatic archiving when the auto archive function is invoked by the PUP operator. The RPS list contains the product type and identifying parameters for each product selected for generation by the RPG.

1-2.2 One-time Product Requests.

Depending on the meteorological situation and/or operational requirement at the time, the user may request a product that is not routinely generated at the RPG or distributed to the PUP. Similarly, the user can archive a product that is not designated for archiving on the RPS List. One-time product request procedures require the same type of information as that for RPS lists. The product is first identified and product parameters are specified. The one-time request is then automatically sent to the Radar Product Generation (RPG) for processing after the operator commands: Send RPG Request.

1-2.3 Auto Display Mode.

There are two ways that a product can be automatically displayed on a graphic screen:

- Automatic product display via the Auto Display Mode
- Time lapse, where the user invokes a predefined time lapse sequence.

1-2.3.1 Automatic Product Display.

In the auto display mode, products are displayed as specified on the RPS List until the operator takes action to interrupt the automatic sequencing, such as auto display halt or making a manual display request or a screen manipulation request, other commands are resume, speed up, slow down. Different RPS lists are available for each meteorological mode and are automatically invoked in some circumstances as the operational mode changes or by operator selection. Operator additions and deletions to those lists are permitted in either an on-line or off-line mode. The auto display mode operates with a minimum of operator interaction, requiring only a start or halt command.

Auto Display Graphic is separately defined via the application terminal Routine Product Set Menu and Edit Screen. On the menu, the left and right graphic display rates are independently set to the number of seconds each product assigned to that screen is to be displayed. The edit screen determines which graphic products that are part of the routine product set are to be displayed in auto display and on which screen.

Alphanumeric products are less frequent than graphic products and arrive on a less periodic and predictable basis. The auto display alphanumeric function will put the application terminal in a mode where any alphanumeric product will be displayed immediately upon receipt from the RPG.

1-2.3.2 Time Lapse Sequences.

From the users' view there are two basic time lapse functions: building a time lapse sequence and executing a time lapse sequence.

Building a time lapse sequence is done either from current products residing in the PUP data base or from new products as they are received. The operator has the capability to predefine a product time lapse sequence that can be built subsequently as products are received from the RPG. After the time lapse sequence is built, a feedback message on the Application Terminal informs the user of the available frames and the sequence becomes available for execution. The user has the capability to examine the product and parameters that define any time lapse sequence without having to execute the time lapse and the requested number of frames.

Once invoked by the user, the time lapse display is automated and sequences the selected products existing in the PUP data base. Time lapse **sequence defaults to continuous loop** or can be halted manually by the operator. While the sequence is halted, the user may step backward or forward through the sequence. When displaying a time lapse sequence, the operator may specify the frame duration on the screen and the desired screen for display.

1-2.3.3 Alerts and Alert - Paired Products.

Weather alerts are indicated at the PUP by the alert display lines and the alert status display when received. When a graphic product arrives during Auto Display because it is associated with a weather alert condition, it will be displayed automatically and will halt auto display. The alert areas and alert categories for triggering an alert can be defined by the operator.

1-2.3.4 User Functions.

User function operations provide a way for the operator to predefine up to 31 normal PUP operator selections into a single user function. Upon subsequent selection of a user function for execution, each of its predefined selections is performed in sequence, as though they had been individually selected by the operator. This feature is particularly useful for function sequences that are time consuming and frequently performed.

User functions may be linked to other user functions in any sequence, or into a loop, so that they may run continuously until canceled. Time delays may be built into user functions to allow time for correct execution, operator observations, or prescheduled sequences, in the case of long time delays.

1-2.4 Default Parameter Usage.

Explicit definition of many parameters for defaults of values defining the frequently used operations are provided in adaptation data. A user may also specify non-default parameter values for a product. In this case, the product must be explicitly specified. Some of the system adaptation data is linked with the default concept. The system has default values readily at its disposal via a two-level default/adaptation data structure.

1-2.4.1 Level I.

Level I is the adaptation data relevant to the user interface, which are the standard sets of parameter defaults and the standard default automated lists. The default parameters are used to identify frequently-used product types without explicitly specifying all of the identifying parameters. The default automated lists represent the normally expected routine activities for each mode.

Level II data are the "currently effective" data. The operational mode determines which of the default lists is in use by the system at any one time. There is a current RPS list which includes products designated for Auto Display and Auto-Archive. The current list may be a copy of an adaptation data standard list or it may have been edited or constructed by the PUP operator. Default parameters are applied at execution time, not at definition time. The default parameters used for an automated list for one operational mode are applied when the PUP receives notification.

1-2.5 Communication Control Capability.

Communication with associated RPGs, non-associated RPGs, PUES and other users can be accomplished at the PUP workstation. The associated RPG can be accessed through a dedicated or dial-up communication link. The dial-up capability exists to establish communications to non-associated RPGs. The references to procedures to establish communications are as follows:

- Product Request Procedures - (Paragraph [2-2.5.1.3.11 Product Request Procedures.](#)) includes a brief description of graphic tablet function keys associated with communication links and procedures to assign graphic tablet functions to non-associated RPGs.
- Communication Control Edit Procedures - (Paragraph [2-2.5.2.5 Functional Operations.](#)) includes extended adaptation menu selection procedures for Narrowband Line Definition Edit Procedures, RPG List Edit Procedures, and Distribution Control Edit Procedure for other users.

Section: 1-3 PUP Equipment Description

The major components of the PUP Group are the PUP Data Processor (Figure 1-2. PUP Data Processor UD41, Cabinet Layout (Front View) and Figure 1-3. PUP Data Processor UD41, Cabinet Layout (Rear View)), the Alphanumeric Terminal (Figure 1-4. Alphanumeric Terminal, UD42/UD43), and the PUP Workstation (Figure 1-5. PUP Workstation Component Layout (Sheet 1 of 3)). The PUP Group equipment consoles and cabinets are of modular design and constructed so that, to the maximum extent possible, repair can be achieved by replacement of modules. Table 1-1: PUP Group Major Components Reference Designations gives the reference designations, nomenclatures, and common names of the major components. Hereafter, only the common names of the major components are used.

1-3.1 Data Processor.

The Data Processor is a two-bay cabinet that contains the dedicated hardware and software required for graphics processing, local control, status monitoring, local annotation, and product archiving. The cabinet also contains the narrowband communication links used between the PUP and its associated RPG for internal product requests and distribution, and for external product requests and distribution from non-associated RPGs. Configurations for the remote PUP and the collocated PUP are shown in Figure 1-2. PUP Data Processor UD41, Cabinet Layout (Front View) and Figure 1-3. PUP Data Processor UD41, Cabinet Layout (Rear View). The left bay of the cabinet contains the Graphics Processor and the narrowband communications equipment. The right bay contains the Display Processor, the Control Panel, and the Small Computer System Interface (SCSI) assembly in which the data storage devices reside. A dedicated power system with a battery backup auto-recovery feature for short-term power interruptions is provided for the Display Processor. All primary input power to the cabinet is line-filtered for transient surges and interference protection. Blowers are provided for full cabinet and assembly cooling. The System Terminal and the equipment at the workstation are peripherals to the Display Processor and the Graphics Processor.

Table 1-1: PUP Group Major Components Reference Designations

| Reference Designation | Nomenclature | Common Name |
|-----------------------|--------------------------------|------------------------|
| UD41 | PUP Data Processor | Data Processor |
| UD42 | Alphanumeric Terminal | System Console |
| | PUP Workstation: | Workstation |
| UD43 | Alphanumeric Terminal | Application Terminal |
| UD44 | Graphics Tablet | Graphics Tablet |
| UD45 | Graphics Display Assembly | Color Monitor |
| *UD45A3-A5 | Limited Distance Modem | LDM |
| UD46 | Audible Alarm Chassis Assembly | Audio Alarm |
| UD47 | Color Graphics Printer | Color Graphics Printer |
| *UD48/UD51 | RGBS Line Driver/Equalizer | Line Equalizer |

*PUP Workstation Extension only (Distance > 100 ft.)

1-3.1.1 Display Processor.

The Display Processor receives the base product and derived data from the RPG and sends requests, status, and control signals to the RPG through narrowband communications and a VMEbus subsystem. The Display Processor stores the received data in Composite Memory Modules until it is processed by the M3200 Central Processing Unit (CPU). It processes the data and distributes it to mass storage, archive IV, and the Graphics Processor. The Display Processor provides a visual alert message and audio alert when required, sends status display information when requested, interfaces with the System Console and Application Terminal, and responds to their action requests. It also provides automatic restart after a power loss and monitors the status of the Graphics Processor, communication link, RDA, RPG, and weather modes. The Display Processor equipment consists of a 32-bit general-purpose digital computer housed in a 16-slot CPU assembly and an 8-slot I/O assembly. The CPU assembly contains all memory, timing and peripheral interface cards, while the I/O assembly contains the control and interface cards for the narrowband communications links. The peripheral devices of the Display Processor are located in the SCSI assembly. The devices include a 180 Mb or 600 Mb fixed disk drive unit for mass storage of fixed data and operational programs; a 60 Mb or 150 Mb 1/4-inch streaming tape drive unit that accepts cartridge-mounted tapes used for initial program loading, update, and special diagnostic programs; and a 654 Mb optical disk drive which provides the PUP archive IV capability for permanent recording of up to 168 hours of continuous full-load products. The optical disk drive is also cartridge-mounted, and can be replaced without the loss of any archive-designated product records. The operations of the Display Processor and the Graphics Processor are linked by a high-speed RS-232 digital link in which the Display Processor is the master unit and the Graphics Processor is a peripheral device.

1-3.1.2 Graphics Processor.

The Graphics Processor receives commands and products from the Display Processor and receives operator commands from the cursor position controlled by the Graphics Tablet puck. It hosts the graphics display program, and contains the graphics processing, memory, and video circuit cards. The graphics display program performs the functions necessary to control the graphics 1000

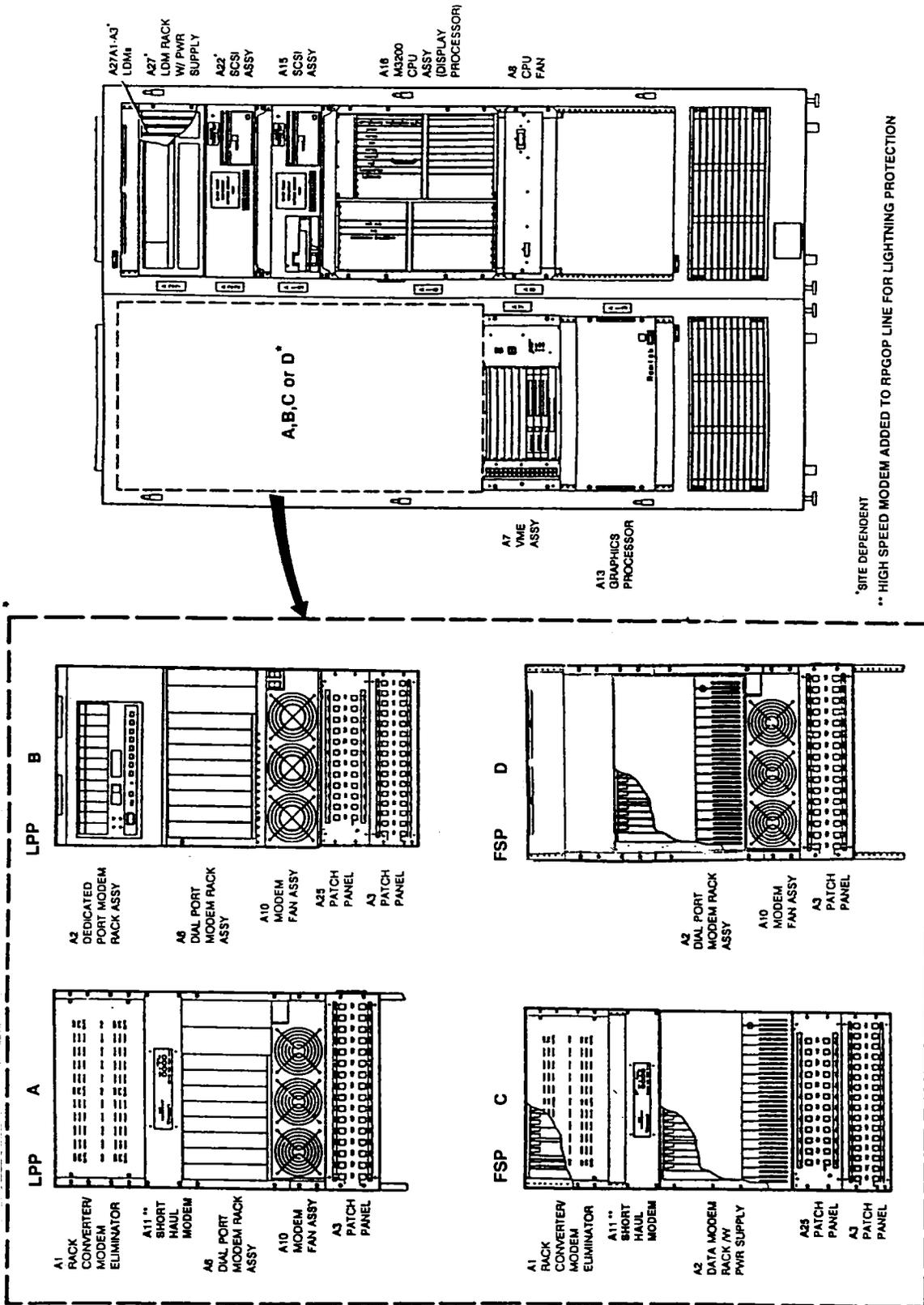


Figure 1-2. PUP Data Processor UD41, Cabinet Layout (Front View)

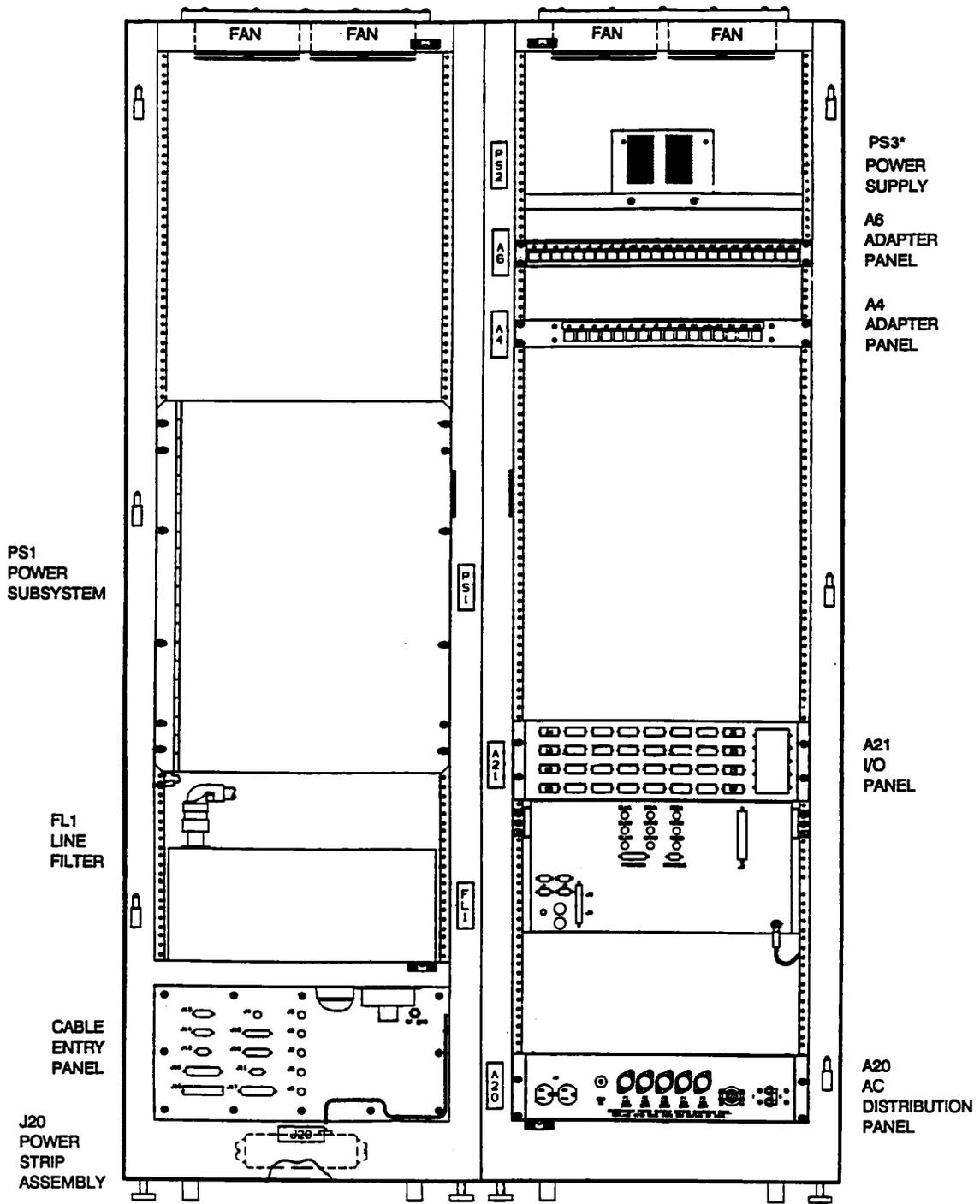
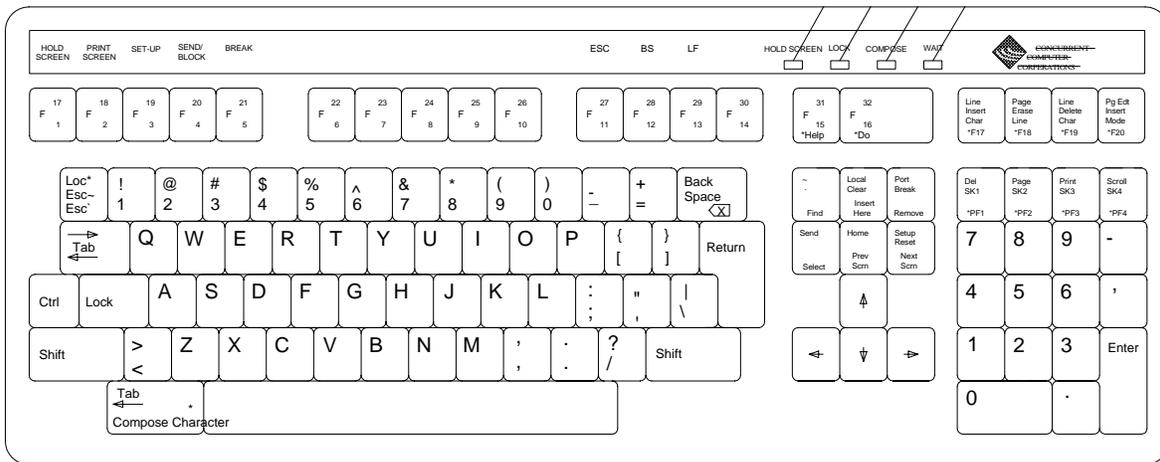
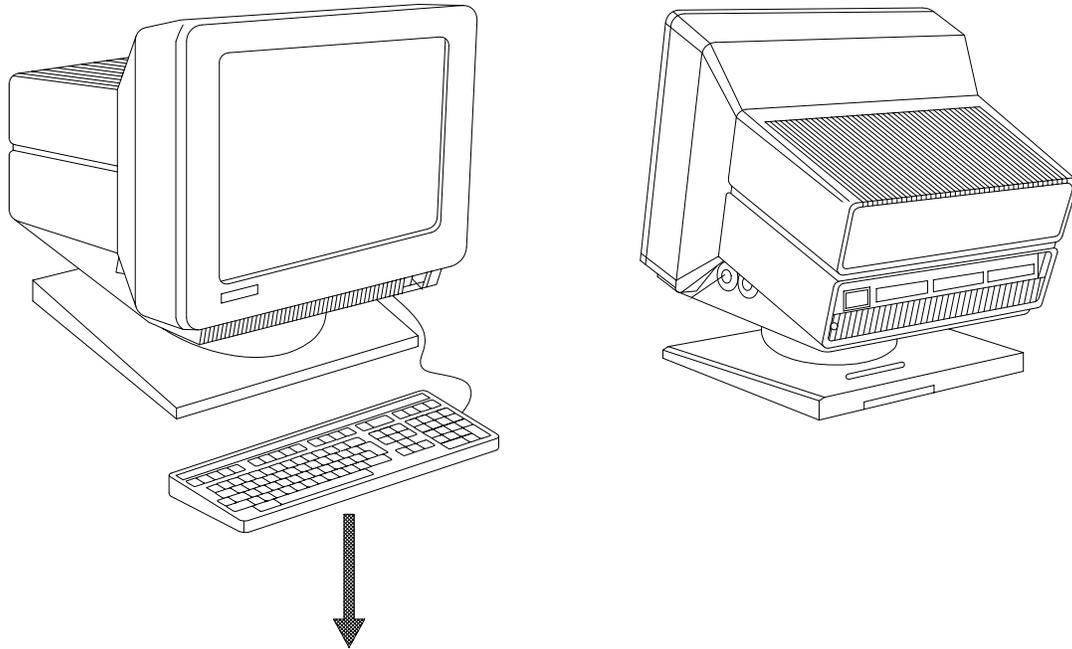


Figure 1-3. PUP Data Processor UD41, Cabinet Layout (Rear View)



*Label appears on front of key.

Figure 1-4. Alphanumeric Terminal, UD42/UD43

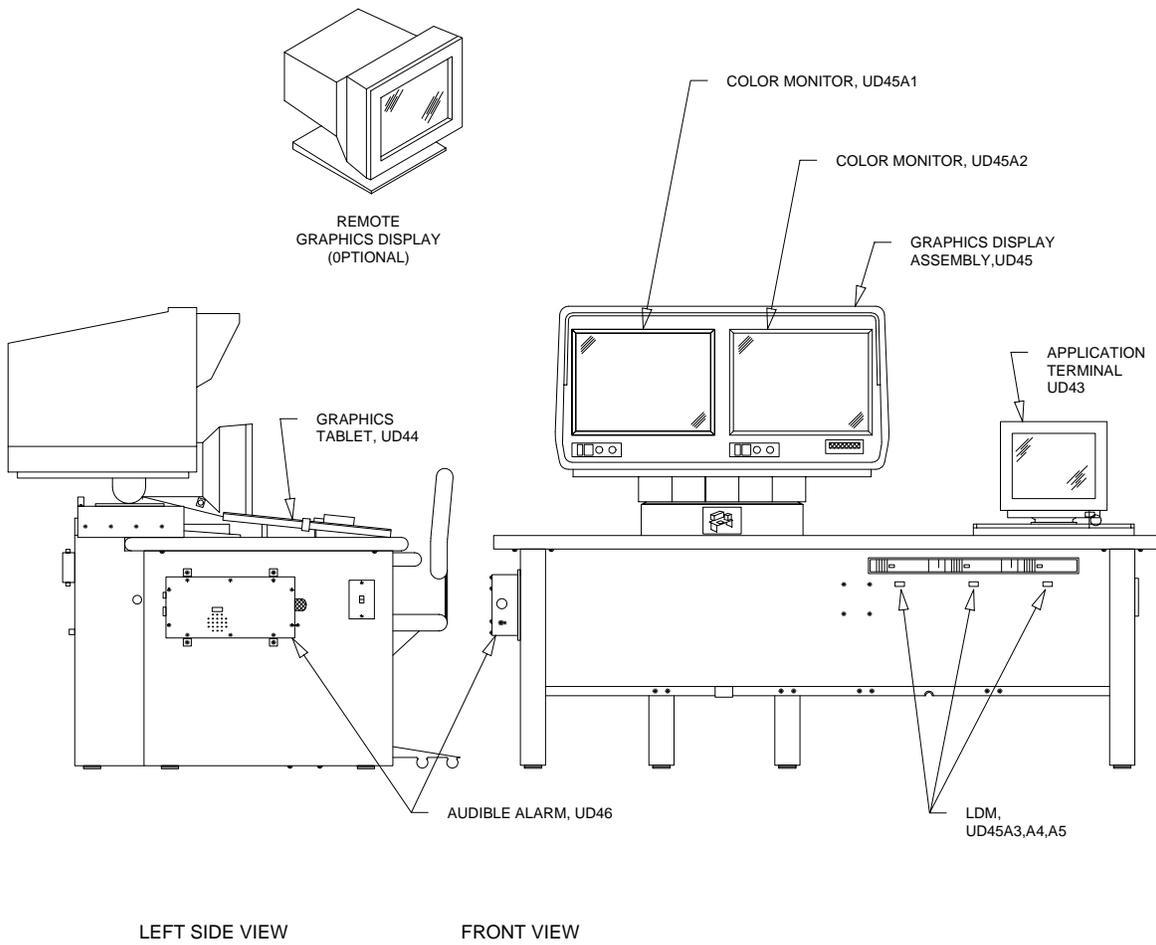
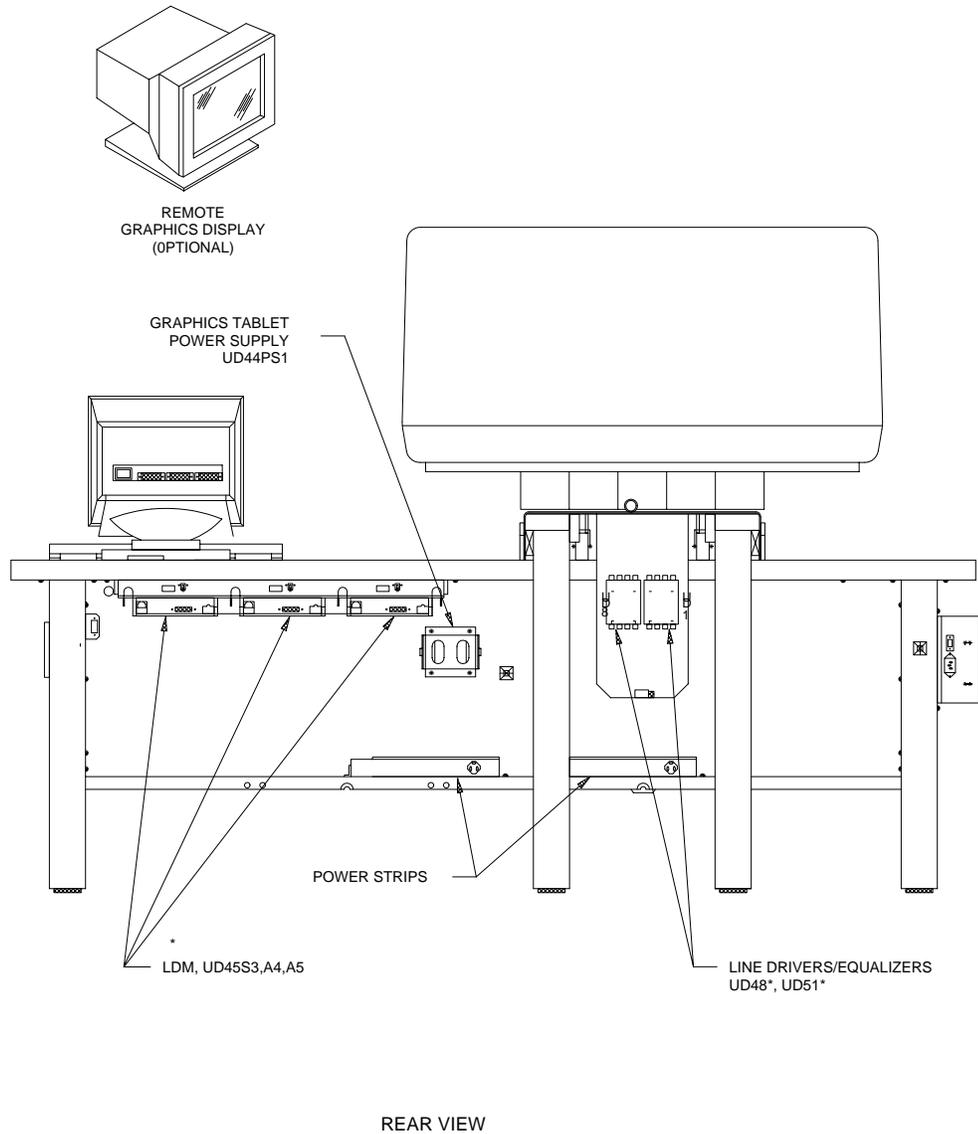
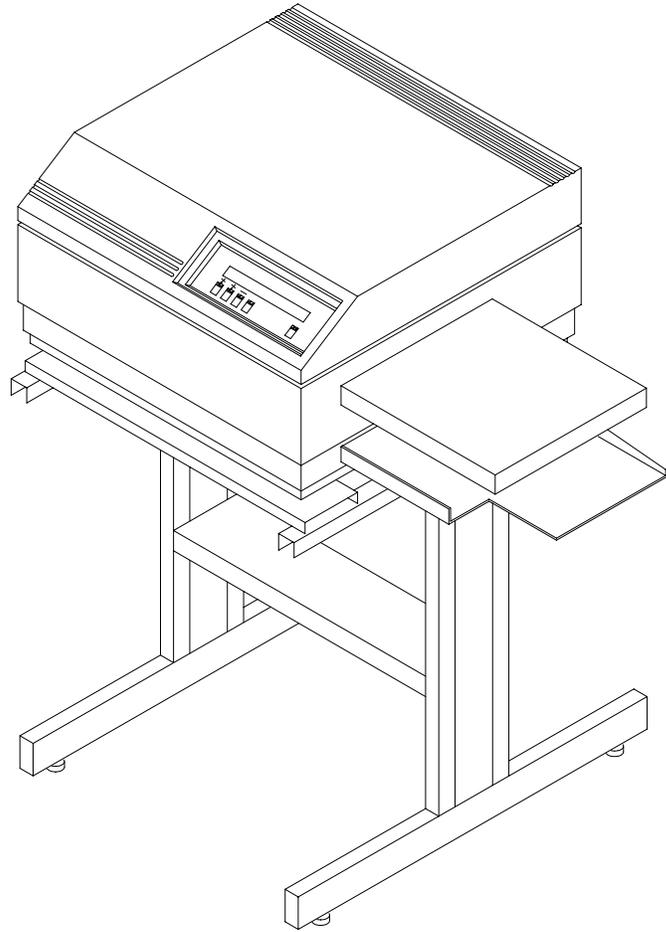


Figure 1-5. PUP Workstation Component Layout (Sheet 1 of 3)



* EQUIPMENT USED ONLY IF WORKSTATION IS MORE THAN 100 FEET FROM THE PUP CABINET.

. Figure 1-5. PUP Workstation Component Layout (Sheet 2 of 3)



COLOR GRAPHICS PRINTER UD47 AND STAND

Figure 1-5. PUP Workstation Component Layout (Sheet 3 of 3)

system, including the drawing of the images and graphics, the cursor-symbols, and the control of the display screens. Drawings of the graphics include vectors, text, and color; drawing of radar images includes coordinate transformation, pixel fill, cursor handling, and support of the function key feature of the Graphics Tablet. The outputs of the Graphics Processor are sent to the Color Monitor and to the Color Graphics Printer for printing screen displays.

1-3.1.3 Narrowband Communications.

The communications equipment consists of converters, modem eliminators, short haul modems, communication modems, and display interface modules. All communications modems have a test capability which includes local and remote loopback checks. Indicators are provided for test mode carrier on receive data, transmit data, clear to send, data terminal ready and A or B modem selected. Rack-mounted Codex 3263 or Fujitsu M1921L modems (Type I) modems provide leased-line service for dedicated ports such as the associated RPG and PUES interfaces. Rack-mounted Codex 2260, 2264, or 3262 (Type II) modems provide dial-line service to the switched lines for other users and non-associated RPGs. In the collocated PUP, modem eliminator modules and RS-232/422 converters are provided for the associated RPG interface; a Codex 3263 leased modem is not required.

1-3.2 System Console.

The System Console is an alphanumeric terminal consisting of a keyboard and 14-inch Cathode Ray Tube (CRT) screen. (It is identical to Application Terminal, UD43, shown in [Figure 1-4. Alphanumeric Terminal, UD42/UD43](#)) The keyboard has a standard typewriter layout including cursor control keys, a numeric keypad, and 16 programmable function keys (shiftable to 32). The System Console is an interactive peripheral device connected to the Display Processor and used to enter commands and receive status displays and error responses directly related to the control and functioning of the Operating System (OS) software. The capabilities provided by the System Console include system initialization and startup, control of disk/tape operations, loading and execution of processor diagnostic programs, and start and stop of system application software (operating programs).

1-3.3 Workstation.

The workstation ([Figure 1-5. PUP Workstation Component Layout \(Sheet 1 of 3\)](#)) is the primary operational position for the WSR-88D. It provides the PUP operator with the capability to request, display, and manipulate weather products generated by the RPG. The workstation consists of a table structure with operator work space and support provisions for the Application Terminal (UD43), Graphics Tablet (UD44), Color Monitor (UD45), Audio Alarm (UD46), RGS Line Drivers/Equalizers (UD48/UD51) and Limited Distance Modems (UD45A3-A5). The RGS Line Drivers/Equalizers and the LDMs are used for the PUP workstation Extension. A separate support for the Color Graphics Printer (UD47) is also provided and can be positioned up to 50 feet from the workstation table. The Color Monitor is housed in an enclosure which is mounted to a device on the workstation table. The device permits the enclosure to be swiveled about the vertical axis and positioned at a variable tilt angle.

1-3.3.1 Application Terminal.

The Application Terminal is an alphanumeric terminal consisting of a keyboard and CRT display. (It is identical to the System Terminal.) It has the capability to communicate with the Data Processor via two RS-232 ports. One port is connected to the Graphics Processor to enable the operator to monitor the operation of the Graphics Processor or to load and monitor processor diagnostics. The other port is connected to the Display Processor and provides the main WSR-88D man-machine interface, via the PUP application program. When connected to the Display Processor, the Application Terminal is menu-driven for control of the application software, thus allowing the operator to perform interfacing functions. Man-machine interface functions not performed by the Graphics Tablet are exercised by means of the Application Terminal, which is used to operate and interface the Display Processor during normal meteorological operations. Functions such as PUP control, operator definitions, archive control, status requests, adaptation data modifications, detailed help, free text message generation and distribution, and alphanumeric product displays are initiated at the Application Ter-

minal. Additionally, a limited amount of graphic screen control that duplicates some of the functions found in the Graphics Tablet is available at the Application Terminal. Requests for graphic product display on the color monitor may be entered on both the graphics tablet or the applications terminal. However, all A/N tabular products display (such as TVS, MESO, STORM TRACK INFORMATION, etc) may only be requested at and displayed on the applications terminal and monitor, respectively.

1-3.3.2 Graphics Tablet.

The Graphics Tablet is an 18 x 18-inch electromagnetic induction tablet with a puck control device. The tablet has a 15 x 15-inch active area that is under software control by the Graphics Processor. It uses the puck to send control requests to the Graphics Processor by converting the puck's position on the active area into digital format. The Graphics Tablet provides the operator with the capability to select display functions, product overlays, maps, products, and parameters as well as permits Color Monitor cursor control, special character and symbol selection, and graphics annotation/editing.

1-3.3.3 Color Monitor.

The Color Monitor comprises two identical, high-resolution 19-inch diagonal CRT color monitors. It is used for the display of weather products selected at the Graphics Tablet or Application Terminal. Each monitor receives inputs from the Graphics Processor and is capable of displaying a full screen image or four quarter screen images simultaneously on either or both screens. Each product (either full screen or quarter screen) may be individually updated and manipulated without affecting the others.

1-3.3.4 Audio Alarm.

The Audio Alarm consists of a volume adjustable tone generator and audio transducer. It provides an audio alert for specific, designated weather phenomena to the operator when the selected phenomena reaches or surpasses their alert threshold. The Audio Alarm is driven by the Graphics Processor.

1-3.3.5 Color Graphics Printer.

The hardcopy is generated by a color printer. The color printer is a thermal-wax transfer color output device featuring fast high quality printing. The printer has a print engine and interface. The thermal-wax printing mechanism is called the print engine. The printer resident interface between the print engine and the host is called the interface module. The bottom half of the printer is the prime engine and the top half of the printer is the interface module.

To make printed copies, the print engine sequentially transfers primary color images by melting dots of colored wax from a ribbon onto the paper. It provides a high printing resolution and fast printing.

1-3.3.6 Limited Distance Modems.

Limited Distance Modems (LDM) are provided to PUP Cabinets and PUP Workstations which are separated by a distance greater than 100 ft. There are a total of six LDMs; three at the PUP Cabinet and three at the PUP Workstation. The modems drive the graphics tablet and the Application and Diagnostic Ports of the Application Terminal.

1-3.3.7 RGS Line Driver/Equalizer.

The Graphics Processor sends three video signals to each PUP Workstation Color Monitor. For PUP Workstation extensions, where the cables between the Graphic Processor and the Color Monitors are greater than 100 feet in length, the signals are amplified by RGS Line Driver/Equalizers. RGS represents red, green, blue and sync. The sync input and output are not used. One Line Driver/Equalizer is required for each color monitor.

Section: 1-4 PUP Reference Data

This paragraph contains reference data for the PUP Group. The reference data listed below are described in paragraphs 1-4.1 through 1-4.7.

- Related Technical Manuals
- Leading Particulars
- Equipment Supplied
- PUP Narrowband Communications Interface
- Alarm Messages
- Operating System OS/32 Messages
- Acronyms and Abbreviations.

1-4.1 **Related Technical Manuals.**

The WSR-88D related technical manuals are listed in Table 1-2. The reference publications provide detailed operation and maintenance information for the various equipment in the PUP functional area.

Table 1 - 2: WSR-88D Related Technical Manuals

| EHB | |
|---------|--|
| Number | Title |
| 6-500 | WSR-88D Doppler Meteorological Radar System Manual |
| 6-521 | WSR-88D Unit Control Position Operator's Manual |
| 6-521-1 | WSR-88D Unit Control Position User's Guide |
| 6-523 | MMP-200 Multi-Mode Printer Installation |
| 6-530 | WSR-88D PUP Group Equipment Maintenance Manual |
| 6-531-1 | WSR-88D PUP/RPGOP User's Guide |
| 6-532 | 4693D Color Image Printer User Manual |

1-4.2 **Leading Particulars.**

The PUP Group general characteristics are listed in [Table 1 - 3: PUP Group Characteristics](#). Refer to the WSR-88D System Manual NWS EHB 6-500 for information about PUP Group equipment physical dimensions and weights, transportability, and cabling requirements.

1-4.3 **Equipment Supplied.**

The PUP Group major components, their purpose as well as the assemblies that make up the Data Processor, are identified in Table 1-4. The equipment supplied for the PUP Group consists of the following major components:

- Data Processor UD41
- System Terminal UD42
- Workstation:

- Application Terminal UD43
- Graphics Tablet UD44
- Color Monitor UD45
- Audio Alarm UD46
- RGBS Line Driver/Equalizer UD48 and UD51*
- Color Graphics Printer UD47.
- Limited Distance Modem UD45A3, A4 and A5*

*For PUP Workstation Extension Only.

1-4.4 PUP Narrowband Communications Interface.

[Table 1 - 5: PUP Narrowband Communications Interface](#) lists the Narrowband communications interface used in the PUP.

1-4.5 Alarm Messages.

Alarm messages displayed at the PUP workstation notify the operator that problems exist in designated areas of the RPG and the RDA. The messages are included in the system status information that appears when the WSR-88D Unit Status is displayed on the Color Monitor screens and when the WSR-88D Unit Status Screen is displayed on the Application Terminal screen. The RPG and RDA alarm messages that can be displayed are listed and described in [Table 1 - 6: RPG Alarm Messages](#) and [Table 1 - 7: RDA Alarm Messages](#), respectively.

1-4.6 Operating System OS/32 Messages.

Two types of messages can occur within the operating system (OS/32) environment: error messages and system messages. These messages are described in the following subparagraphs.

Table 1 - 3: PUP Group Characteristics

| Feature | Characteristics |
|--|--|
| 1. PUP Site Equipment Voltage Requirements | |
| Display Processor | 208V±10%, 60Hz±3, 3 Phase 4 Wire |
| Graphics Processor | 208V±10%, 60Hz±3, 1 Phase |
| Color Monitors (Qty. 2) | 120V±10%, 60Hz±3, 1 Phase |
| Display Color Terminal (Qty. 2) | 120V±10%, 60Hz±3, 1 Phase |
| Color Graphics Printer | 120V±10%, 60Hz±3, 1 Phase |
| Graphics Tablet | 120V±10%, 60Hz±3, 1 Phase |
| Narrowband Modems | 120V±10%, 60Hz±3, 1 Phase |
| 2. Equipment Hardware Components: | |
| Communications Equipment | Up to 5 9600/4800, 2 wire, dial-up modems Up to 3 9600/4800, 4 wire, dedicated modems RS422/RS232 converters |
| Operating System (OS/32) | Multitasking, multi-environment operating system |
| Display Processor (M3200) | General purpose computer with 32-bit architecture |
| Graphics Processor | <ul style="list-style-type: none"> - Fixed point, 32 bit architecture general-purpose digital computer - 12-bit main lookup table - Separate overlay lookup table - Refresh memory-to-video multiplexer - Windowing - Terminal Emulation - Coordinate transformation |
| Alphanumeric Terminals UD43 | <ul style="list-style-type: none"> - Tilt and swivel display with 14" green phosphor screen - Detachable lightweight keyboard - 2 pages of 24 x 80-line memory display - User programmable function keys - Split screen display - 128 ASCII character with 32 character graphics set |
| Mass Storage Device | <ul style="list-style-type: none"> - SCSI Disk Drive: 180 Mb or 600 Mb formatted hard disk device. - SCSI Tape Drive: 60 Mb or 150 Mb 1/4-inch streaming tape drive unit for initial program loading, diagnostic operations and updates |
| Archive IV Storage Device | SCSI Optical Disk Drive: 654 Mb, 5.25 inch optical disk for up to 168 hours of product storage |
| Graphics Tablet UD44 | Software-controlled electronic tablet with active push-control device |
| Resolution | 1000 LPI maximum |

Table 1 - 3: PUP Group Characteristics

| Feature | Characteristics |
|------------------------------|--|
| Color Monitor UD45 | Dual CRT high-resolution color graphics video monitors |
| Resolution | 1,280 x 1,024 pixels, each CRT |
| Video Interface | Remote monitor drive |
| Audible Alarm UD46 | Volume adjustable audio tone |
| Color Graphics Printer UD47 | A thermal wax print engine and a high speed digital color data communications interface |
| | Print image resolution of 300 dots per inch |
| | Matches printed colors to terminal screen resolution |
| | Complete image data offload from source devices in less than three seconds |
| Image processing time | 0-63 seconds |
| Parallel Line Extender*- | Amplifies signals to Color Printer to extend workstation 300 feet from Graphics Processor (extends centronix interface to 300 ft.) |
| RGBS Line Driver/Equalizer*- | Amplifies signal to Color Monitor to extend workstation 300 feet from Graphics Processor. |
| Limited Distance Modems* | Drives Application Terminal and Graphics Tablet RS232 ports to extend workstation 300 feet for the Display and Graphics Processor |

*PUP Workstation Extension only.

Table 1 - 4: Equipment Supplied

| Reference Designation | Official Nomenclature | Common Name | Purpose |
|-----------------------|---|------------------------------------|--|
| UD41, | PUP Data Processor | Data Processor | Contains the Display Processor associated data storage assemblies, Graphics Processor, and narrowband communications equipment. |
| UD41A1 | Converter Rack Assembly | Converter Rack | Used in collocated PUP. Contains RS232/RS422 converter and modem eliminator. The converter supports communication with RPG over RS232/RS422 link without modems. The modem eliminator replaces two modems and allows point-to-point communication over RS232 data link. |
| UD41A2 | Modem Rack w/Power Supply (Codex 3263/3262) | Dedicated/Dial Modem Rack Assembly | Contains up to 9 modems which support communications with RPGs, PUES, and other users-via 4-wire or 2-wire telephone lines. |
| UD41A2 | Dedicated Port Modem (Fujitsu M1921L) | | Supports communications with RPGs, PUES, and other users-via 4 wire telephone lines. |
| UD41A3 | Telephone Patch Panel | Telephone Patch Panel | Supports testing of 16 2-wire dial telephone lines. |
| UD41A4 | Adapter Communication Panel | Adapter Communication Panel | Used to connect dial-up line modems to telephone patch panel. |
| UD41A5 | CDS Patch Panel | CDS Patch Panel | Interface board used for interconnecting the CDS system's master microprocessor and the system console for conveying CDS and operating system related communications. Converts RS-232C serial communications from system console to RS-422 to CDS master microprocessor and vice versa. It is also capable of converting the electrical characteristics of RS-232C to/from RS-422. |
| UD41A6 | Dial Port Modem (Codex 226x) | | Supports communications with RPGs, PUES, and other users-via 2 wire telephone lines. |
| UD41A7 | VME Chassis Assembly | VME | The VME Chassis contains the industry-standard VMEbus which interfaces the processor with the wideband and/or narrowband communications. |

Table 1 - 4: Equipment Supplied

| Reference Designation | Official Nomenclature | Common Name | Purpose |
|-----------------------|------------------------------|--------------------------|--|
| | | | The VMEbus interface function contains two VCI boards. One board VCI-C is housed in the M3200 Processor Chassis and the other board VCI-V is housed in the VME Chassis. |
| UD41A13 | Graphics Processor | Graphics Processor | Receives product inputs from the Display Processor, formats and stores the data, and sends formatted data to the Color Monitor on request. |
| UD41A14 | Control Panel | Control Panel | Provides control switches and status indicators for the Display Processor. |
| UD41A15 | SCSI Assembly | SCSI | Contains a 140Mb magnetic disk drive, a 60Mb 1/4-inch streaming tape drive, and a 654Mb optical disk drive for Data Processor data storage. |
| UD41A16 | CPU M3200 Processor Assembly | M3200 | M3200 Processor Assembly contains the CPU (M3200), RAM (with expansion capability), timing, and peripheral (Graphics Processor, VME narrowband communication, and Data Storage Assembly) interface cards of the Display Processor. |
| UD41A20 | Power Distribution Panel | Power Distribution Panel | Provides connections for power distribution within the Data Processor. |
| UD41A21 | I/O Connector Panel | I/O Connector Panel | Provides for Data Processor input and output signal connections. |
| UD41A22 | SCSI Assembly | SCSI | Contains a 182Mb magnetic disk drive for Data Processor data storage. |
| UD41A25 | Telephone Patch Panel | Telephone Patch Panel | Supports testing of 12 4-wire leased telephone lines. |
| UD41A27 | Nest Rack w/Power Supply | LDM Rack Assembly | Contains LDM's and Power supply. |
| UD41A28* | Parallel Line Extender | Parallel Line Extender | Amplifies signals to color printer to extend workstation 300 feet from Graphics Processor. |
| UD41PS1 | Swing-Out Power Sub-system | SOPS | Contains an AC power Module, a DC Power Module, a CDS Master Module and a fan assembly. |
| UD42 | Alphanumeric Terminal | System Terminal | Interfaces with Display Processor and performs system functions such as initialization, rebooting, Display Processor diagnostics, and various disk/tape operations. |

Table 1 - 4: Equipment Supplied

| Reference Designation | Official Nomenclature | Common Name | Purpose |
|-----------------------|--------------------------------|----------------------------|---|
| UD43 | Alphanumeric Terminal | Application Terminal | Permits operator to control PUP operations, via application program software, and perform man-machine interfacing functions. |
| UD44 | Graphics Tablet | Graphics Tablet | Permits operator to request weather products from Graphics Processor for display on Color Monitor. |
| UD45 | Graphics Display Assembly | Color Monitor | Used for display of weather products requested at Graphics Tablet. |
| *UD45A3-A5 | Limited Distance Modem | LDM | Drives Application Terminal and Graphics Tablet RS232 parts to extend workstation 300 feet from the Display and Graphics Processor. |
| UD46 | Audible Alarm Chassis Assembly | Audio Alarm | Provides an audio alert at the workstation when selected weather phenomena reaches or exceeds their alert threshold. |
| UD47 | Color Image Printer | Color Image Printer | Provides color graphics hardcopies of selected designated weather products. |
| UD48/UD51 | RGBS Line Driver/Equalizer | RGBS Line Driver/Equalizer | Amplifies signal to Color Monitor to extend workstation 300 feet from Graphics Processor. |

*PUP Workstation Extension only.

Table 1 - 5: PUP Narrowband Communications Interface

| Equipment Type | PUP | Collocated PUP | PUP | PUP | PUP |
|---------------------|---------------|----------------|-----------------|---------------|-----------------|
| Line Class | 1 | 1 | 2 | 3 | 4 |
| External Connection | Assoc RPG | Assoc RPG | Dial-up RPG | PUES | Other users |
| Minimum Number | 0 | 0 | 1 | 0 | 0 |
| Maximum Number | 1 | 1 | 1 | 1 | 1 |
| Expanded Number | 2 | 1 | 4 | 1 | 1 |
| Line Type | 4-wire Leased | 2-wire | 2-wire Switched | 4-wire Leased | 2-wire Switched |
| Link Type | Dedicated | Dial-up | Dial-up | Dedicated | Dial-up |
| Timing | Sync | Sync | Sync | Sync | Sync |
| Duplex Type | Full | Full | Full | Full | Full |
| Rate (bps x 100) | 96/48 | 560 | 96/48 | 96/48 | 96/48 |
| Data Link Layer | CCITT | CCITT | CCITT | CCITT | CCITT |
| DTE Physical Layer | RS-449 | RS-449 | RS-449 | RS-449 | RS-449 |
| DCE Physical Layer | RS-232 | RS-232 | RS-232 | RS-232 | RS-232 |

Table 1 - 6: RPG Alarm Messages

| Alarm Message | Problem |
|----------------------|--|
| MAINT REQ | |
| Streamer Tape | -The cassette tape or drive used to load the system and monitor performance data has experienced hardware problem. |
| User Site | -The wideband communications equipment used to send base data to a Use Site has failed. Indicates communications hardware fault. |
| Narrow Band | -Equipment for one or more of the communications lines used to distribute products has experienced hardware fault. |
| Archive III | -Equipment used to archive products indicates hardware fault with optical disk drive unit. |
| Base Data Disk | -Equipment used to store base data indicates hardware fault. The RPG cannot generate products. |
| Task Failure | -Software failure indicated. Restart of software may restore task. |
| RPG Link Fail | -Communication between systems has failed (redundant configuration only). |
| Red Chan Error | -Error detected in the redundant system (redundant configuration only). |
| MAIN MAND | |
| Product Disk | -Equipment used to store products has experienced hardware fault. RPG is rendered inoperable if the failure occurs. |
| RDA Wide Band | -Communications equipment used to receive base data and status and to transmit control commands to the RDA has experienced hardware fault. |
| LOAD SHED | |
| Memory | -Insufficient high speed storage for intermediate data |
| CPU | -Insufficient projected CPU for current load |
| Prod Storage | -Insufficient disk space to retain all selected products |
| Input Buffer | -Base data is backing up typically due to excessive load (peak or sustained). |
| Narrowband | -Narrowband load shedding is occurring. |

Table 1 - 7: RDA Alarm Messages

| Alarm Message | Problem |
|----------------------|--|
| TOW | - Indicates an alarm condition in the tower building. |
| PED | - Indicates a problem with the Pedestal. |
| XMTR | - Indicates a problem with the transmitter. |
| RCVR | - Indicates a problem with the receiver. |
| RDA | - Indicates a problem with the RDA. The RDA alarm is set when data or status messages are not received within an arbitrary 30 second timeout. |
| WID | - Indicates a problem with the wideband link. The WID alarm is set internally in the RPG, if the wideband line receives an unsolicited disconnect. |
| USER | - Indicates a problem with the User Communication Line. |
| ARCH | - Indicates a problem with Archive II. |

1-4.6.1 OS/32 Command Format and Error Messages.

[Table 1 - 8: OS/32 Command Format and Error Responses](#) contains the OS/32 commands that an operator or a maintenance technician would use. The commands are listed in alphabetical order. Each command is followed by a brief description of its general usage within the system. This is followed by a detailed depiction of its format (abridged for use by the operator or maintenance technician) that shows its minimum abbreviation (underscored), optional parameters (bracketed), mandatory parameters (in braces) and defaults (in bold). Each parameter is described in the next group of paragraphs; followed by all the error messages associated with that command. [Table 1 - 9: OS/32 Operator Command Error Messages](#), contains an alphabetical listing of OS/32 command error messages with a detailed explanation for each.

1-4.6.2 OS/32 System Messages.

Different types of system messages are displayed to the System Terminal. Some system messages are issued on behalf of a specific user task (u-task) and are preceded with the taskid. They signal the presence of error or fault conditions which must be addressed before the task can proceed. Other system messages are more general in nature and inform the operator of system-wide conditions.

A list of system messages and their descriptions are given in [Table 1 - 10: System Information Messages](#). System-wide condition messages are sent in the event of software or hardware faults (including power failures). As a general rule, the longer the system has been running, the more likely a system message will be displayed because of a hardware fault. A list of these messages is given in [Table 1 - 11: System Fault Messages](#).

1-4.7 Acronyms, Terms And Abbreviations.

A list of acronyms, terms and abbreviations can be found in the Glossary.

1-4.8 Unambiguous Range/velocities.

There are five WSR-88D Delta Pulse Repetition Intervals (PRI) listed in [Table 1 - 12: WSR-88D Delta Pulse Repetition Intervals](#). The Delta PRI for a particular radar has been chosen to prevent interference with other nearby radars. The Delta PRI for a site is displayed at the Unit Control Position (UCP) on the RDA Control screen. It is located in the top right portion of the screen in the status area. The eight Pulse Repetition Frequency (PRF) numbers within each Delta PRI vary slightly between the five Delta PRI numbers. This will change slightly the unambiguous range and velocity for a particular PRF number from one Delta PRI to the next. For example: The unambiguous range

for PRF #5 in Delta PRI #1 is 78 nm (refer to [Table 1 - 12: WSR-88D Delta Pulse Repetition Intervals](#)). For PRF #5 in Delta PRI #5, the range is 80 nm.

The four current Volume Coverage Patterns (VCP) are shown in [Table 1 - 13: Volume Coverage Pattern 11 \(Scan Strategy 1, Short Pulse\)](#) through [Table 1 - 16: Volume Coverage Pattern 31 \(Scan Strategy 3, Long Pulse\)](#). For a given VCP, the PRF number for the surveillance cuts are fixed and can not be changed. Depending on the elevation angle for the particular VCP, the PRF number for surveillance cuts will be 1, 2, or 3.

The PRF number, for a given VCP, is variable for the Doppler cuts. These PRF numbers can be 5, 6, 7, or 8. In [Table 1 - 13: Volume Coverage Pattern 11 \(Scan Strategy 1, Short Pulse\)](#) through [Table 1 - 16: Volume Coverage Pattern 31 \(Scan Strategy 3, Long Pulse\)](#), the underlined number gives the default PRF for that particular Doppler cut. These PRF numbers can be changed by the operator at the UCP or by the RPG when in Auto PRF mode.

To obtain the unambiguous range and corresponding velocity, locate the PRF used for the VCP and elevation angle of interest (see [Table 1 - 13: Volume Coverage Pattern 11 \(Scan Strategy 1, Short Pulse\)](#) through [Table 1 - 16: Volume Coverage Pattern 31 \(Scan Strategy 3, Long Pulse\)](#)). Then use [Table 1 - 12: WSR-88D Delta Pulse Repetition Intervals](#), for the Delta PRI number of your WSR-88D, to find the unambiguous range (Ra) and unambiguous velocity (Vn).

Table 1 - 8: OS/32 Command Format and Error Responses

ALLOCATE

The **ALLOCATE** command is used to create a direct access file.

Command Format

$$\text{ALLOCATE fd, } \left\{ \begin{array}{l} \text{CONTIGUOUS, fsize } [, \{ \text{keys} \}_{0000}] \\ \text{INDEX} [[\{ \text{1rec1} \}_{126}] [/ \text{bsize}] [/ \text{isize}] [/ \{ \text{keys} \}_{0000}]] \end{array} \right\}$$

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| fd | Is the file descriptor of the device or file to be allocated. |
| CONTIGUOUS | Specifies that the file type to be allocated is contiguous, all one continuous block of information. |
| fsize | Is a decimal number indicating file size. It is required for contiguous files. It specifies the total allocation size in 256-byte sectors. This size may be any value up to the number of contiguous free sectors existing on the specified volume at the time the command is entered. |
| keys | Specifies the write and read protection keys for the file. These keys are in the form of a hexadecimal halfword with the most significant byte signifying the write key and the least significant byte the read key. If this parameter is omitted, both keys default to 0. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| | |
|-------|--|
| INDEX | Specifies that the file type to be allocated is indexed. Allows the software disk manager to fragment the file and store pieces of it in different places. |
| 1rec1 | Is a decimal number specifying the logical record length of an indexed or non-buffered indexed file, or a data communications device. It cannot exceed 65,535 bytes. The default for indexed and nonbuffered indexed files is 126. It may optionally be followed by a slash (/) which delimits 1 rec 1 from bsize. |

Error Messages

ALLO-ERR TYPE=NAME
 ALLO-ERR TYPE=SIZE
 ALLO-ERR TYPE=TYPE
 ALLO-ERR TYPE=VOL
 FD-ERR
 NOPR-ERR
 PARM-ERR

ASSIGN

The **ASSIGN** command gives an alias or label (in the form of a number) called a logical unit to a device, file, or data communication device so that a task can access or send data to that place. Logical units are assigned for specific tasks (another task can have a different logical unit for the place in question).

Command Format

ASSIGN lu,fd

ParametersDescription

| | |
|----|---|
| lu | Is a decimal number specifying the logical unit number to which a device or file is to be assigned. |
| fd | Is the file descriptor of the device or file to be assigned. |

Error Messages

| | |
|--------------------|--------------------|
| ASGN-ERR | FD-ERR |
| ASGN-ERR TYPE=BUFF | PARM-ERR |
| ASGN-ERR TYPE=LU | ASSN-ERR TYPE=SPAC |
| ASGN-ERR TYPE=NAME | ASSN-ERR TYPE=TGD |
| ASGN-ERR TYPE=PRIV | PRIV-ERR |
| ASGN-ERR TYPE=SIZE | SEQ-ERR |
| ASGN-ERR TYPE=VOL | SPAC-ERR |
| NOPR-ERR | TASK-ERR |

Table 1-8: OS/32 Command Format and Error Responses - Cont.**BIAS**

The **BIAS** command is used to set a bias address for the EXAMINE and MODIFY commands. A bias address is the course or rough address (a block of addresses) in RAM (shared memory).

Command Format

$$\underline{\text{BIAS}} \left\{ \begin{array}{l} \text{address} \\ * \\ *\text{taskid} \end{array} \right\}$$
ParametersDescription

| | |
|---------|--|
| address | Is a hexadecimal bias to be added to the address given in any subsequent EXAMINE or MODIFY command. If address is omitted, all addresses specified in subsequent EXAMINE and MODIFY commands are treated as unbiased; they are assumed to be absolute physical addresses. |
| * | Specifies that the bias is set to be the physical address of the first location of the currently selected task. If the currently selected task is rollable, specification of * results in an error. A rollable task is one that allows the software memory manager to take it out of RAM, when there is not enough room to let another task enter shared memory. The software memory manager will subsequently roll the task back into memory at a later time. |
| *taskid | Specifies that the bias is set to be the physical address of the first location of taskid. If this task is rollable, specification of the BIAS *taskid results in an error. The currently selected task is not changed. |

Error Messages

```
ROLL-ERR    DELE-ERR TYPE=PROT
PARM-ERR    DELE-ERR TYPE=TYPE
TASK-ERR    DELE-ERR TYPE=VOL
DELE-ERR TYPE=PRIV
```

CANCEL

The **CANCEL** command terminates the task and stops it from running. If the task is non-resident, issuing CANCEL will remove it from RAM. Non-resident specifies that the task is to be removed from memory at its end. Non-resident is also a parameter of the OPTIONS command.

Command Format

CANCEL taskid

ParametersDescription

| | |
|--------|---|
| taskid | The operand taskid is a one- to eight-character alphanumeric string of characters in which the first character must be alphabetic, unless it is |
|--------|---|

Table 1-8: OS/32 Command Format and Error Responses - Cont.

a system task. Taskid is a required parameter.

Error Messages

PARM-ERR
 SEQ-ERR
 TASK-ERR

CLOSE

The **CLOSE** command unassigns (or closes) one or more files or devices to the currently selected tasks' logical units.

Command Format

$$\underline{\text{CLOSE}} \left\{ 1u_1 \left[\begin{array}{c} 1u_2, \dots, 1u_n \\ \underline{\text{ALL}} \end{array} \right] \right\}$$

Parameters

Description

ALL

Specifies that all logical units of the currently selected task are to be closed.

Error Messages

PARM-ERR
 SEQ-ERR
 TASK-ERR
 CLOS-ERR TYPE=LU
 CLOS-ERR TYPE=BUF

CONTINUE

The **CONTINUE** command causes a task that executed a PAUSE, or that was paused by the operator, to resume operation on the task's logical processor. The logical processor is the CPU execution time for the task in question.

Command Format

CONTINUE [address]

Parameters

Description

address

Is a hexadecimal number that specifies where the task is to resume operation. If this parameter is not specified, the task resumes at the next sequential instruction following the pause.

Error Messages

PARM-ERR
 SEQ-ERR
 TASK-ERR

Table 1-8: OS/32 Command Format and Error Responses - Cont.**DELETE**

The **DELETE** command deletes direct access files, providing its protection keys have not been set by the REPROTECT command.

Command Format

```
DELETE fd1[,fd2,...,fd3]
```

| <u>Parameters</u> | <u>Description</u> |
|-------------------|------------------------------------|
| fd | Identifies the file to be deleted. |

Error Messages

```
NOPR-ERR
FD-ERR
PRIV-ERR
DELE-ERR TYPE=ASGN
DELE-ERR TYPE=BUFF
FD-ERR/PARM-ERR
SPAC-ERR
NO ACTIVE TASK(S) FOUND
NOAC-ERR
IO-ERR
FORM-ERR
```

DISPLAY ACCOUNTING

The **DISPLAY ACCOUNTING** command displays to the specified fd all accounting information for the specified task. The accounting information shows hardware usage allocated to that task in terms of time.

Command Format

```
DISPLAY ACCOUNTING [ { taskid } ] [ , { fd } ]
```

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| taskid | Is the task name for which accounting information is to be displayed. If this parameter is omitted, accounting information is logged for all tasks. |
| fd | Is the device or file to which accounting information is displayed. If this parameter is omitted, the accounting information is displayed at the System Console. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.Error Messages

ASGN-ERR TYPE=BUFF/
 ASGN-ERR TYPE=LU/
 ASGN-ERR TYPE=NAME/
 ASGN-ERR TYPE=NAME/
 ASGN-ERR TYPE=PRIV/
 ASGN-ERR TYPE=SPAC
 ASGN-ERR TYPE=VOL
 ASGN-ERR TYPE=SIZE

DISPLAY DEVICES

The **DISPLAY DEVICES** command allows the operator to determine the physical address, keys, on-line/off-line state and volume name (for on-line direct access devices) of all devices in the system. This command also determines the state of error recording for those devices supporting the error recording function.

Command Format

DISPLAY DEVICES [[{ ^{fd} **system console** }] [,DCB]]

ParametersDescription

| | |
|-----|---|
| fd | Is the file descriptor specifying the file or device to which the display is routed. If fd is omitted, the display is output to the System Console. |
| DCB | Is used to display the Device Control Block address (the bias address) of each device. |

Error Messages

ASGN-ERR
 FD-ERR
 IO-ERR
 FORM-ERR
 PARM-ERR

DISPLAY ERRORS

The **DISPLAY ERRORS** command displays to the user-specified fd a list of errors that the hardware error logger has detected and the following additional error recording status:

- Status of the error recording function (on or off)
- Date when error recording was turned on (month, day, year)
- Time (hour, minutes, seconds)
- Setting of the error log read-out time period (minutes)

Table 1-8: OS/32 Command Format and Error Responses - Cont.Command Format**DISPLAY ERRORS**

$$\left\{ , \left[\begin{array}{c} \text{fd} \\ \text{system console} \end{array} \right] \right\}$$
Parameters

fd

Description

Is an optional file descriptor specifying the file or device that receives the summary of the hardware logged errors. If fd is omitted, the summary is displayed to the System Console.

Error Messages

| | |
|----------|----------|
| ASGN-ERR | IO-ERR |
| FD-ERR | PARM-ERR |
| FORM-ERR | |

DISPLAY FILES

The **DISPLAY FILES** command permits information from the directory of one or more direct access files to be output to the system console or, optionally, to a named file or device.

Command Format

$$\text{DISPLAY FILES } \left[/ \left[\left\{ \begin{array}{c} \text{voln:} \\ : \\ \text{default sys vol} \end{array} \right\} \right] \left[\left\{ \begin{array}{c} \text{filename} \\ * \\ - \end{array} \right\} \right] \left[\left\{ \begin{array}{c} \text{ext} \\ - \end{array} \right\} \right] \right]$$

$$\left[/ \left\{ \begin{array}{c} \text{acctno} \\ 0 \\ S \end{array} \right\} \right] \left[, \left\{ \begin{array}{c} \text{fd} \\ \text{sys console} \end{array} \right\} \right]$$
Parameters

voln:

Description

Name of a disk volume. If voln is omitted, the default system volume is assumed.

:

Specifies that all files on the system account be displayed regardless of the volume on which they reside.

acctno

The account number field may be omitted, in which case system files (account 0) are displayed.

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| fd | Is a logical file descriptor specifying the file or device on which the assigned logical units are to be displayed. If fd is omitted, the display is output to the System Console. |

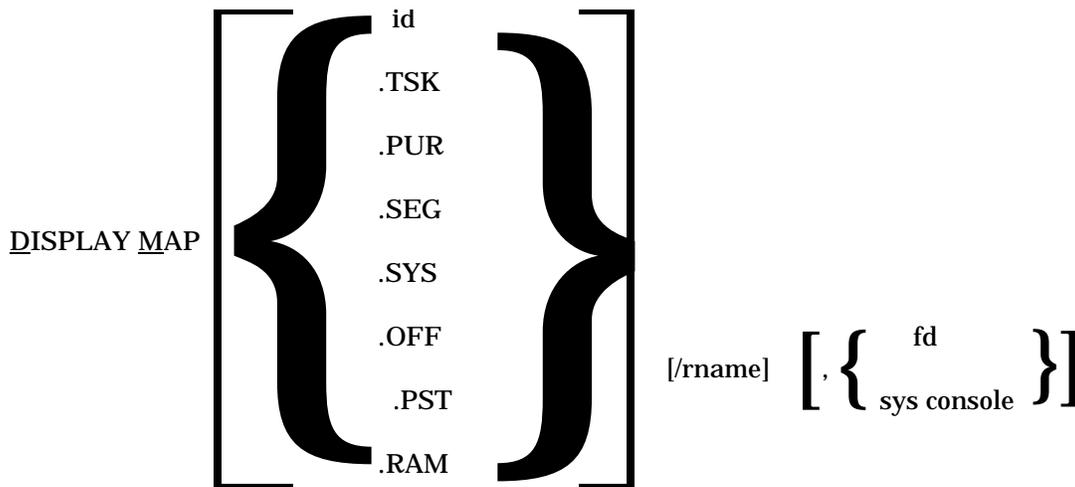
Error Messages

- ASGN-ERR
- FD-ERR
- FORM-ERR
- IO-ERR
- PARM-ERR
- TASK-ERR

DISPLAY MAP

The **DISPLAY MAP** command causes a memory map to be output to the console or to a specified file or device. The display map can be of the entire RAM memory or of a particular task in memory, pure, library or task common segment, system space, pseudotask, or marked off memory.

Command Format



| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| id | Can be either <code>.BG</code> to refer to the background task or the name associated with a task. |
| <code>.TSK</code> | Requests display of task segments. |
| <code>.PUR</code> | Requests display of PUR segments. |
| <code>.SEG</code> | Requests display of library and task common segments. |
| <code>.SYS</code> | Requests display of dynamic system space. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

FD-ERR
 FORM-ERR
 PARM-ERR
 NOPR-ERR

DISPLAY TASKS

The **DISPLAY TASKS** command outputs status information for all tasks in the system or for a single specified task.

Command Format

```
DISPLAY TASKS [task-id] , [ { fd
                             sys console } ]
```

ParametersDescription

| | |
|---------|---|
| task-id | Specifies the task for which status information is to be displayed. If this parameter is omitted, status information for all tasks in the system is displayed. |
| fd | Specifies the destination for the output generated by this command. The destination may be a file with account number 0 or another character handling device. If fd is omitted, the output is directed to the System Console. |

Error Messages

| | |
|----------|-------------------|
| ASGN-ERR | PARM-ERR |
| FD-ERR | IO-ERR |
| FORM-ERR | TASK(S) NOT FOUND |

DISPLAY TIME

The **DISPLAY TIME** command causes the current date and time to be output to the System Console, or to a specified file or device.

Command Format

```
DISPLAY TIME [ , { fd
               system console } ]
```

ParametersDescription

| | |
|----|---|
| fd | Specifies the file or device to which the display is to be output. If fd is omitted, the display is output to the System Console. |
|----|---|

Table 1-8: OS/32 Command Format and Error Responses - Cont.

Error Messages

ASGN-ERR
 FD-ERR
 IO-ERR
 PARM-ERR

DISPLAY VOLUME

The **DISPLAY VOLUME** command displays to the specified fd the state of the specified disk volume. The 'state' is the amount of files, percent of space used to hold those files, and percent of free space on the volume (the largest extent of the volume space used, beginning to end, including any free space in the middle). This command is supported only on disk devices that support error recording.

Command Format

DISPLAY VOLUME ,voln [' { ^{fd} system console }]

Parameters

Description

| | |
|------|---|
| voln | Is the volume name of the disk for which status is displayed. |
| fd | Is an optional file descriptor specifying the file or device to which the specified disk volume's status is displayed. If fd is omitted, the display is output to the System Console. |

Error Messages

ASGN-ERR
 DEVICE NOT A DISK
 FD-ERR
 FORM-ERR
 IO-ERR
 NODA-ERR
 NOPR-ERR
 PARM-ERR

ERROR LOG

The **ERROR LOG** command turns on or off the error recording function which copies the errors from the error logger to the disk. This command controls general error and memory error recording for all 3200 Processors.

Command Format

ERROR LOG , { ON [, [fd] [,INIT]] }
 OFF

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| <u>Parameters</u> | <u>Description</u> |
|-------------------|---|
| OFF | Dumps the internal error record buffer to disk and closes the error recording files. Internally, since errors are still stored but not written to disk, error data is lost, if the internal buffer overflows. |
| ON | Turns on the error recording function. |
| fd | Specifies the contiguous file to be used for error recording. If this parameter is omitted, the file specified at sysgen is the default. If the user-specified fd does not currently exist, the file is automatically allocated and assigned. |
| INIT | Initializes the error recording file so that new error records can be added to the beginning of the file. If this parameter is omitted, subsequent error records are added following the last records written to the file. |

Error Messages

CLOS-ERR TYPE=BUFF
 DATE-ERR
 NOPR-ERR
 OFF-ERR
 ON-ERR
 PARM-ERR
 PRESS-ERR

ERROR PERIOD

The **ERROR PERIOD** command sets the memory error log readout period to a user-specified number of minutes. The initial value is specified at sysgen time. This command can be used only with Series 3200 Processors.

Command Format

ERROR PERIOD [, { minutes } *]

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| minutes | Is a decimal number from 1 to 1440 specifying the number of minutes between error log read-outs. If this parameter is omitted, the time period is reset to the initial sysgen value. |
| * | Specifies that the memory error logger performs a readout immediately. The previously set readout period is not affected. |

Error Messages

INIT-ERR
 NOPR-ERR

Table 1-8: OS/32 Command Format and Error Responses - Cont.

PARM-ERR
 PERD-ERR
 SPAC-ERR

EXAMINE

The **EXAMINE** command is used to examine the contents of local or shared memory.
Command Format

$$\text{EXAMINE address}_1 \left[\left\{ \begin{array}{c} ,n \\ /address_2 \\ ,1 \end{array} \right\} \right] \left[, \left\{ \begin{array}{c} fd \\ \text{sys console} \end{array} \right\} \right]$$

| <u>Parameters</u> | <u>Description</u> |
|-------------------|---|
| address | Indicates the starting and ending addresses in memory whose contents are to be displayed in hexadecimal. All addresses specified are rounded down to halfword boundaries by the operating system. |
| n | Is a decimal number specifying the number of halfwords to be displayed. If n is omitted, one halfword is displayed. |
| fd | Is the file descriptor specifying the file or device to which the contents of memory are displayed; if omitted, the display is output to the System Console. |

Error Messages

| | |
|----------|----------|
| ASGN-ERR | IO-ERR |
| FD-ERR | NOPR-ERR |
| FORM-ERR | PARM-ERR |

FFILE

The **FFILE** command forward spaces to the next filemark on magnetic tapes, cassettes and direct access files

Command Format

FFILE fd (Used for magnetic tapes and cassettes only.)
FFILE fd,[lu] (Used for disk devices only.)

| <u>Parameters</u> | <u>Description</u> |
|-------------------|---|
| fd | Is the file descriptor of the device or file that is to be forward-spaced one filemark. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

lu Is the logical unit to which the file is assigned.

Error Messages

FD-ERR
 IO-ERR
 LU-ERR
 NOBC-ERR
 NOPR-ERR
 TASK-ERR
 ASGN-ERR
 ASGN-ERR TYPE=BUFF
 ASGN-ERR TYPE=LU
 ASGN-ERR TYPE=NAME
 ASGN-ERR TYPE=PRIV
 ASGN-ERR TYPE=PROT
 ASGN-ERR TYPE=SIZE
 ASGN-ERR TYPE=SPAC
 ASGN-ERR TYPE=TGD
 ASGN-ERR TYPE=VOL

FRECORD

The **FRECORD** command forward spaces one record on magnetic tapes, cassettes, and direct access files.

Command Format

FRECORD fd (Used for magnetic tapes and cassettes only.)

FRECORD[fd,]lu (Used for disk devices only.)

ParametersDescription

fd Is the file descriptor of the device or file to be forward-spaced one record.

lu Is the logical unit to which the device or file is assigned.

Error Messages

FD-ERR
 IO-ERR
 LU-ERR
 NOBC-ERR
 NOPR-ERR
 TASK-ERR
 ASGN-ERR TYPE=BUFF
 ASGN-ERR TYPE=LU
 ASGN-ERR TYPE=NAME
 ASGN-ERR TYPE=PRIV
 ASGN-ERR TYPE=PROT
 ASGN-ERR TYPE=SIZE
 ASGN-ERR TYPE=SPAC

Table 1-8: OS/32 Command Format and Error Responses - Cont.

ASGN-ERR
 ASGN-ERR TYPE=TGD
 ASGN-ERR TYPE=VOL

LOAD

The **LOAD** command loads background tasks, foreground tasks, system tasks, task common segments, and library segments into memory. If this command is entered at the System Console (not via a CSS), the system automatically tasks to the program just loaded.

Command Format

LOAD { fd [,segsz increment]
 taskid [,fd] [,segsz increment]]
 sysid,fd [,segsz increment]
 .BG,fd[,segsz increment] }

Parameters

Description

| | |
|-----------------|---|
| taskid | Specifies the name of the task after it is loaded into the foreground segment in memory. The default extension for fd is .TSK. |
| sysid | Specifies the taskid of a system task. The taskid for the Spooler is .SPL; the taskid for the multi-terminal monitor is .MTM. |
| .BG | Specifies that a background task is to be loaded into memory with intertask communication control and capabilities disabled. |
| fd | Is the filename used as the taskid or the fd of the established task, library, or preinitialized task common segment to be loaded into memory. If this parameter is omitted, the default is taskid.TSK for foreground tasks. This parameter is required for system tasks, background tasks and task common, and library segments. However, if the extension of the fd is omitted, the default extension is fd.SEG for task common and library segments, and fd.TSK for foreground and background tasks. |
| segsz increment | Is a decimal number (in kilobytes) specifying the amount of get storage area in the task's impure memory segment. If specified, this value over-rides the OPTION WORK= values used when the task was linked. |

Error Messages

FD-ERR
 FORM-ERR
 NOPR-ERR
 PARM-ERR
 LOAD-ERR TYPE=IO
 LOAD-ERR TYPE=LIB

LOAD-ERR TYPE=MTCB
 LOAD-ERR TYPE=LOPT
 LOAD-ERR TYPE=MAP
 LOAD-ERR TYPE=MEM
 LOAD-ERR TYPE=NAME
 LOAD-ERR TYPE=NOFP
 LOAD-ERR TYPE=ODT
 LOAD-ERR TYPE=OPT
 LOAD-ERR TYPE=PRES
 LOAD-ERR TYPE=PURE
 LOAD-ERR TYPE=REL
 LOAD-ERR TYPE=ROIO
 LOAD-ERR TYPE=RVOL
 LOAD-ERR TYPE=SEG
 LOAD-ERR TYPE=SPAC
 LOAD-ERR TYPE=SYS
 LOAD-ERR TYPE=TKID
 LOAD-ERR TYPE=USE

MARK

The **MARK** command takes a device off-line or brings on-line a device that was previously off-line. For directory devices, the size of a volume's secondary directory and the expansion size can also be specified with the MARK command.

Command Format

$$\text{MARK dev}_1; \left\{ \begin{array}{l} \text{OFF [only]} \\ \text{ON [,PROTECTED]} \\ \text{[,CDIRECTORY = [ALL]} \end{array} \right\}$$

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| dev ₁ | Is the device is mnemonic. |
| OFF | Marks a device off-line. |
| ONLY | Marks off one of a pair of mirrored disks. |
| ON | Marks a device on-line. |
| PROTECTED | Marks a device write-protected. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

CDIRECTORY=ALL Specifies that the disk is to be marked on-line with a secondary directory large enough to maintain all directory slots in memory (i.e., bsize=SLOTS;¹ exp=0 and PAGES²=1). If enough memory space is available, it is suggested that the ALL parameter be used.

Error Messages

| | |
|----------|--|
| BPAC-ERR | PARAM-ERR |
| DEV-ERR | READ-ERR |
| DUPL-ERR | STAT-ERR |
| FORM-ERR | WRIT-ERR |
| NOFF-ERR | I/O ERROR MARKING OFF DISK; PLEASE CHECK |

OPTIONS

The **OPTIONS** command is used to specify or change certain options of the currently selected task. An OPTIONS command can be entered if the referenced task is dormant or paused.

Command Format

OPTIONS [{ RESIDENT }]
 [{ NONRESIDENT }]

Parameters

Description

| | |
|-------------|--|
| RESIDENT | Specifies that the task is memory resident. |
| NONRESIDENT | Specifies that the task is to be removed from memory at end of task. |

Error Messages

FORM-ERR
 NROL-ERR
 OPT-ERR
 PARAM-ERR
 SEQ-ERR
 TASK-ERR

PAUSE

The **PAUSE** command causes the currently selected task to pause.

Command Format

PAUSE

¹SLOTS is the number of directory slots on the disk (i.e., the total number of active files and the current number of free directory slots currently on the disk).

²PAGES is the number of pages of secondary directory pages in SYSTEM.DIR. Only one page of SYSTEM.DIR is maintained in the in-memory buffer at a time.

Table 1-8: OS/32 Command Format and Error Responses - Cont.Error Messages

FORM-ERR
 SEQ-ERR
 TASK-ERR

RENAME

The **RENAME** command is used to change the name of an unassigned direct access file or device.

Command Format

RENAME oldfd,newfd

ParametersDescription

| | |
|-------|---|
| oldfd | Is the current file descriptor of the file or device to be renamed. |
| newfd | Is the new file descriptor to which the file or device is renamed. |

Error Messages

| | |
|----------|----------------------|
| ASGN-ERR | TYPE=PRIV POS=REN |
| ASGN-ERR | TYPE=PROT POS=fd |
| FD-ERR | |
| FORM-ERR | |
| NOPR-ERR | |
| NULL-ERR | |
| PARM-ERR | |
| RENM-ERR | TYPE=BUFF POS=fd |
| RENM-ERR | TYPE=NAME POS=REN |
| RENM-ERR | TYPE=NAME POS=fd |

REPROTECT

The **REPROTECT** command permits the operator to modify the protection keys of an unassigned direct access file or device.

Command Format

REPROTECT fd,new keys

ParameterDescription

| | |
|----|---|
| fd | Is the file descriptor of the file or device to be reprotected. |
|----|---|

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| | |
|----------|---|
| new keys | Is a hexadecimal halfword whose most significant byte signifies the new write keys and whose least significant byte signifies the new read key. |
|----------|---|

Error Messages

- FORM-ERR
- PARM-ERR
- PRIV-ERR
- FD-ERR
- ASGN-ERR
- ASGN-ERR TYPE=BUFF
- ASGN-ERR TYPE=LU
- ASGN-ERR TYPE=NAME
- ASGN-ERR TYPE=PRIV
- ASGN-ERR TYPE=PROT
- ASGN-ERR TYPE=SIZE
- ASGN-ERR TYPE=SPAC
- ASGN-ERR TYPE=TGT
- ASGN-ERR TYPE=VOL
- ASGN-ERR TYPE=ASGN

SEND

The **SEND** command is used to send a message to the currently selected task.

Command Format

SEND message [;]

Parameter

Description

| | |
|---------|---|
| message | Is a variable length string of 1 to 64 alphanumeric characters. |
|---------|---|

Error Messages

- ARGS-ERR
- NOPR-ERR
- SEQ-ERR
- SVC6-ERR
- TASK-ERR

SET LOG

The **SET LOG** command is used to specify the system log device. The system log device receives all System Console I/O. This includes:

Table 1-8: OS/32 Command Format and Error Responses - Cont.

- all command lines entered from the console or from the CSS,
- all responses to these commands (other than prompts), and
- all messages logged by tasks.

Command Format

$$\underline{\text{SET LOG}} \left[\text{fd} \left[\left\{ \begin{array}{c} \underline{\text{COPY}} \\ \underline{\text{NOCOPY}} \end{array} \right\} \right] \left[\left\{ \begin{array}{c} \text{n} \\ 15 \end{array} \right\} \right] \right]$$

Parameters

Description

| | |
|--------|---|
| fd | Is the file descriptor of the log device. If fd is not specified, logging is terminated. |
| COPY | Specifies that a copy of all System Console I/O is to be sent to the System Console device, as well as to the log device. |
| NOCOPY | Specifies that the System Console is not to receive a copy of the I/O. If COPY is not specified, the system defaults to NOCOPY. |
| n | Is a decimal number from 0 to 65,535 specifying the number of lines after which the system log file is to be checkpointed. If this parameter is omitted, the default is 15 lines. |

Error Messages

ASGN-ERR
 FD-ERR
 IO-ERR
 PARM-ERR

SET TIME

The **SET TIME** command sets the current date and time of day.

Command Format

$$\underline{\text{SET TIME}} \left\{ \begin{array}{l} [\text{mm/dd/yy}] ,\text{hh:nn:ss} \\ \underline{\text{OFF}} \\ 0 \end{array} \right\}$$

Parameters

Description

| | |
|----|---|
| mm | Is a decimal number from 01 to 12 specifying the month. |
| dd | Is a decimal number from 01 to 31 specifying the day. |
| yy | Is a decimal number from 00 to 99 specifying the year. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| | |
|-----|---|
| hh | Is a decimal number from 00 to 23 specifying the hour. |
| nn | Is a decimal number from 00 to 59 specifying the minutes. |
| ss | Is a decimal number from 00 to 59 specifying the seconds. |
| OFF | Turns off the clock for system debugging. |
| 0 | Turns off the clock for system debugging. |
| ON | Is a parameter valid only with the M3200 System. If ON is specified, the current date and time of day maintained by the Control Diagnostic System (CDS) is used to set the operating system date and time of day. |

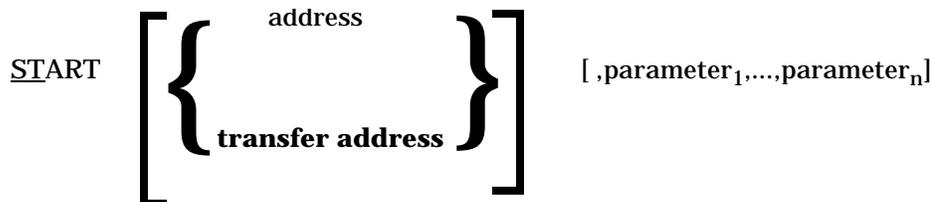
Error Messages

FORM-ERR
 NOPR-ERR
 PARM-ERR

START

The **START** command is used to initiate task execution. The currently selected task is started only if it is dormant; otherwise, the command is rejected.

Command Format



Parameters

Description

| | |
|-----------|---|
| address | Specifies the address at which task execution is to begin. For u-tasks, this is not a physical address, but is an address within the task's own logical address space. If address is omitted, the currently selected task is started at the transfer address specified when the task was established. |
| parameter | Specifies optional parameters to be passed to the task for its own decoding and processing. Parameters must be separated by a comma. If there is not enough memory to pass all the characters, the call is rejected with an ARGS-ERR. |

Error Messages

FORM-ERR
 PARM-ERR

Table 1-8: OS/32 Command Format and Error Responses - Cont.

SEQ-ERR
 SVC6-ERR TYPE=ARGS
 SVC6-ERR TYPE=DORM
 TASK-ERR

TASK

The **TASK** command is used to specify the current foreground, background, or system tasks.

Command Format

TASK [taskid]
 _ { .BGround } _

Parameters

Description

| | |
|--------|--|
| taskid | Is the name of a foreground task, background task(.BG), or system task (.MTM or .SPL). If taskid is not specified, the taskid of the currently selected task is displayed on the console device. |
|--------|--|

Error Messages

PARAM-ERR
 TASK-ERR

VOLUME

The **VOLUME** command is used to set or change the name of the system, task, roll, spool, or temporary volume. Alternatively, it is used to interrogate the system for the current names associated with these volumes.

Command Format

VOLUME [voln / { SYSTEM
TASK
TEMPORARY
SPL
ROLL }]]

current voln names

Parameters

Description

| | |
|--------|---|
| voln | Is a 4-character volume identifier. If all parameters are omitted, all current system, task, roll, spool, and temporary volume names are displayed. |
| SYSTEM | Specifies the system volume which is the default value. |

Table 1-8: OS/32 Command Format and Error Responses - Cont.

| | |
|-----------|---|
| TASK | Specifies the task volume of the currently selected task. |
| TEMPORARY | Specifies the temporary volume. |
| SPL | Specifies the spool volume. |
| ROLL | Specifies the roll volume. |

Error Messages

PARM-ERR
TASK-ERR

WFILE

The **WFILE** command writes a filemark on magnetic tapes, cassettes, and direct access files. A filemark indicates the end of one file and the beginning of the next file.

Command Format

WFILE fd (Used for magnetic tapes and cassettes only.)

WFILE[fd,]lu (Used for disk devices only.)

ParametersDescription

| | |
|----|--|
| fd | Is the file descriptor of the file or device to which a filemark is to be written. |
| lu | Is the logical unit to which the device or file is assigned. |

Error Messages

FD-ERR
FORM-ERR
IO-ERR
LU-ERR
NOPR-ERR
PARM-ERR
TASK-ERR
ASGN-ERR
ASGN-ERR TYPE=BUFF
ASGN-ERR TYPE=LU
ASGN-ERR TYPE=NAME
ASGN-ERR TYPE=PRIV
ASGN-ERR TYPE=PROT
ASGN-ERR TYPE=SIZE
ASGN-ERR TYPE=SPAC
ASGN-ERR TYPE=TGT
ASGN-ERR TYPE=VOL

Table 1-8: OS/32 Command Format and Error Responses - Cont.**XALLOCATE**

The **XALLOCATE** command deletes an existing file and allocates a file with the same name.

Command Format

$$\text{XALLOCATE fd, } \left\{ \text{INDEX } \left[\left[\left\{ \text{lrecl} \right\} \right] \left[\left[\text{bsize} \right] \left[\left\{ \text{keys} \right\} \right] \right] \right\}$$
ParametersDescription

| | |
|---------------------|---|
| fd | Is the file to be deleted and the name of the new file to be allocated. |
| CONTIGUOUS fsize | Specifies that the file type to be allocated is contiguous. Is a decimal number indicating file size, which is required for contiguous files. It specifies the total allocation size in 256-byte sectors. This size may be any value up to the number of contiguous free sectors existing on the specified volume at the time the command is entered. |
| keys | Specify the write and read protection keys for the file. These keys are in the form of a hexadecimal halfword with the most significant byte signifying the write key and the least significant byte the read key. If this parameter is omitted, both keys default to 0. |
| EC | Specifies that the file type to be allocated is extendable contiguous. |
| bsize | Is a decimal number specifying the physical block size to be used for buffering and debuffering and debuffing operations on the index file or data communications device and for the data blocks used for indexed, nonbuffered indexed and extendable contiguous files. When INDEX, EC or NB is specified, bsize represents the block size in sectors of the physical data blocks containing the file. When ITAM is specified, bsize represents the buffer size in bytes. For INDEX files and ITAM buffers, if this parameter exceeds the maximum block size established during sysgen or by the operator, the maximum is used. For EC and NB files, this parameters can be any value between 1 and 255, inclusive. If bsize is omitted, the default established at sysgen or by the operator is used for INDEX and NB files. For EC and LR files, the default is 64 sectors. |
| INDEX | Specifies that the file type to be allocated is buffered indexed. |
| lrecl | Is a decimal number specifying the logical record length on an indexed or nonbuffered indexed file, or a data communications device. It cannot exceed 65,535 bytes. Its default is 126 bytes. It may optionally be followed by a slash (/), which delimits lrecl from bsize. |

Error Messages

ALLO-ERR TYPE=NAME
ALLO-ERR TYPE=SIZE

Table 1-8: OS/32 Command Format and Error Responses - Cont.

ALLO-ERR TYPE=TYPE
 ALLO-ERR TYPE=VOL
 DELE-ERR
 FD-ERR
 NOPR-ERR
 PARM-ERR

XDELETE

The **XDELETE** command is used to delete one or more files. If the file does not exist, no error is generated.

Command Format

XDELETE fd₁ [,fd₂,...,fd_n]

| <u>Parameters</u> | <u>Description</u> |
|-------------------|--|
| fd | Is the file description to be deleted. |

Error Messages

DELE-ERR TYPE=ASGN
 DELE-ERR TYPE=BUFF
 DELE-ERR TYPE=NAME
 DELE-ERR TYPE=PRIV
 DELE-ERR TYPE=PROT
 DELE-ERR TYPE=TYPE
 DELE-ERR TYPE=VOL
 FD-ERR
 NOPR-ERR

Table 1 - 9: OS/32 Operator Command Error Messages

| Error Message | Indication |
|----------------------|--|
| ALLO-ERR TYPE=NAME | Indicates desired filename currently exists on the specified volume. |
| ALLO-ERR TYPE=SIZE | Indicates that not enough room is on the disk to allocate the file. The block size of indexed file exceeds the limit established at sysgen. For an indexed file, a zero logical record length or block size was specified. |
| ALLO-ERR TYPE=TYPE | Indicates the volume specified is not a direct access device. Ensure that the specified volume is the disk volume name, not its device name. |
| ALLO-ERR TYPE=VOL | Indicates that the volume name specified or the default volume is not the name of any disk currently on-line. Ensure that the desired disk is on-line. |
| ASGN-ERR | Indicates the optional file descriptor (fd) or disk device of voln could not be assigned; e.g., fd or disk is assigned for exclusive use only. |
| ASGN-ERR TYPE=BUFF | Indicates an attempt was made to assign a file when there was insufficient system space available to accommodate the file control block (FCB). Close any currently assigned files that are no longer required, or increase the size of system space with a SET SYS command. |
| ASGN-ERR TYPE=LU | Indicates an attempt was made to assign a logical unit (lu) that is greater than the maxlu number specified at Link time. |
| ASGN-ERR TYPE=NAME | Indicates an assignment was directed to a nonexistent file. |
| ASGN-ERR TYPE=PRIV | Indicates a file that is currently assigned to an lu with a given privilege could not be assigned to another lu because the access privileges were in conflict. Request a compatible access privilege on second assignment or change the access privileges currently associated with the file. |
| ASGN-ERR TYPE=PROT | Indicates the file assigned is unconditionally protected or the read/write keys specified in the assign statement do not correspond to those associated with the file. |
| ASGN-ERR TYPE=SIZE | Indicates an indexed file was assigned and there is not enough room on the disk to allocate a physical block. Ensure sufficient space is on the disk by deleting old file or reducing the block size of the file. Alternatively, compress the disk using the Backup Utility. |
| ASGN-ERR TYPE=SPAC | Indicates an attempt was made to assign a file that required buffer space exceeding the task maximum system space allotment. |
| ASGN-ERR TYPE=TGD | Indicates an attempt was made to assign a trap-generating device that does not support such assignment. |
| ASGN-ERR TYPE=VOL | Indicates the volume name specified or default volume is not the name of any disk currently on-line |
| BPAC-ERR | Indicates the disk was not ready or was not readable. If the disk is ready and not write-protected, reinitialize it using the FASTCHEK Utility. |

Table 1 - 9: OS/32 Operator Command Error Messages

| Error Message | Indication |
|----------------------|--|
| CLOS-ERR TYPE=LU | Indicates the lu number is greater than maxlu specified at Link time. |
| CLOS-ERR TYPE=BUFF | Indicates system space has become corrupted and buffers and/or FCBs cannot be returned to the free system space. |
| DATE-ERR | Indicates an ERROR LOG command was entered with the ON parameter specified, but the date and time parameters on the SET TIME command were not specified. |
| DELE-ERR | Indicates an error occurred while trying to delete a file. |
| DELE-ERR TYPE=ASGN | Indicates an attempt was made to delete a file that is currently assigned. |
| DELE-ERR TYPE=PRIV | Indicates that the file is currently assigned to a task. |
| DELE-ERR TYPE=PROT | Indicates the read/write protection keys are not 0. |
| DELE-ERR TYPE=TYPE | Indicates the volume name specified or default volume is not a direct access device. |
| DELE-ERR TYPE= VOL | Indicates the specified volume is not mounted, the volume was not marked on, or the incorrect volume name was given. |
| DEV-ERR | Indicates an attempt was made to mark a nonexistent or a pseudodevice on or off; or an attempt was made to modify the attributes of a nonexistent device or bulk storage device. |
| DEVICE NOT A DISK | Indicates the specified device with volume number is not a bulk device. |
| DUPL-ERR | Indicates that when marking a direct access device on, the volume name associated with the device was an existing device or volume name. Run the FASTCHEK Utility to change the disk volume name, or mark the other disk off-line. |
| FD-ERR | Indicates the fd was syntactically incorrect; or a program on the disk was being loaded and there was not enough system space for the load operation. |
| FILE NOT FOUND | Indicates that the specified file was not found. |
| FORM-ERR | Indicates the command format was syntactically incorrect. |
| I/O-ERR | Indicates a device accessed by the command processor returned a nonzero I/O status. The following type fields can be displayed: |
| TYPE=PRTY | Parity or other recoverable error occurred. Retry the operation with another unit, if possible. |
| TYPE=UNRV | An unrecoverable error occurred. |
| TYPE=EOF,EOM | The device reached EOF or EOM before completing the operation. |
| TYPE=DU | The device is unavailable. Ensure that the device is on-line and ready. |

Table 1 - 9: OS/32 Operator Command Error Messages

| Error Message | Indication |
|----------------------|---|
| TYPE=FUNC | An invalid operation is being directed toward a device; e.g., attempting to write to a read-only device. |
| TYPE=LU | The lu is illegal or unassigned. Close and reassign a proper lu. |
| INIT-ERR | Indicates memory error recording was initialized, but it had already been specified and was in progress. |
| LOAD-ERR TYPE=IO | Indicates an I/O error was generated during the load operation. Retry the load operation. If the same condition results, verify the status of the medium from which the task is being loaded. |
| LOAD-ERR TYPE=LIB | Indicates the data in the loader information block (LIB) was invalid. This error most frequently occurs when an attempt is made to load a task that was not established with Link. |
| LOAD-ERR TYPE=LOPT | Indicates a conflict between the load options requested and those specified at Link time. |
| LOAD-ERR TYPE=MAP | Indicates that while loading a task, an attempt was made to automatically load a sharable segment, but fd could not be found or the shared segment table overflowed. |
| LOAD-ERR TYPE=MEM | Indicates a load was attempted when no memory area large enough was available. Change priorities or rollability of current tasks to allow a roll operation to occur, or cancel one or more current tasks. |
| LOAD-ERR TYPE=MTCB | Indicates an attempt was made to load more tasks than the system permits. |
| LOAD-ERR TYPE=NAME | Indicates that the fd was not found or cannot be assigned. |
| LOAD-ERR TYPE=NOFP | Indicates an attempt was made to load a task requiring floating point support and the required floating point option is not supported in the system. |
| LOAD-ERR TYPE=ODT | Indicates that data in the overlay descriptor table (ODT) of a tree structure overlay is invalid. |
| LOAD-ERR TYPE=OPT | Indicates that the task was not established as a system task. |
| LOAD-ERR TYPE=PRES | Indicates the specified taskid is already present in the system. |
| LOAD-ERR TYPE=PURE | Indicates a duplicate pure segment name. |
| LOAD-ERR TYPE=REL | Indicates that the relocation table within a relocatable e-task was invalid. An address in the relocation table was either on an odd-byte boundary or was pointing outside the program's task space. |
| LOAD-ERR TYPE=ROIO | Indicates an I/O error encountered in writing a roll file. Retry the load operation. If the same error occurs, verify the status of the roll volume. |
| LOAD-ERR TYPE=RVOL | Indicates an allocation or assignment error on the roll file. Ensure that the roll volume is on-line and write enabled. Retry the load operation. |

Table 1 - 9: OS/32 Operator Command Error Messages

| Error Message | Indication |
|----------------------------|--|
| LOAD-ERR TYPE=SEG | Indicates an attempt was made to load a task requiring the run-time library (RTL) or a TCOM prior to establishing an RTL or TCOM segment. |
| LOAD-ERR TYPE=SPAC | Indicates there was not enough system space for the loader. |
| LOAD-ERR TYPE=SYS | Indicates that there was not enough system space for the segment descriptor entry. |
| LOAD-ERR TYPE=TKID | Indicates invalid taskid syntax. |
| LOAD-ERR TYPE=USE | Indicates an attempt to load a task with one of the same name that is presently in use. |
| LU-ERR | Indicates an invalid lu number or lu assignment was attempted, an invalid fd was encountered, or a nonzero account number was specified. |
| NOAC-ERR | Indicates that accounting is not supported for this system. |
| NO ACTIVE TASK(S) FOUND | Indicates no active tasks were found in the system. |
| NOBC-ERR | Indicates a BFILE, BRECORDER, FFILE or FRECORER command was entered and bulk file command support is not included in the operating system. |
| NODA-ERR | Indicates a direct access support was not included in the operating system. |
| NOFF-ERR | Indicates an attempt was made to mark on a disk device when the integrity of the data on the disk was questionable. Run the FASTCHEK Utility on the disk. The disk can be marked On-Protected. |
| NOPR-ERR | Indicates a command was entered that required more parameters than specified in the command line. |
| NO SYSTEM LOG ASSIGNED | Indicates that no system log has been set. |
| NROL-ERR | Indicates an OPTIONS ROLL command was directed to a non-rollable task. |
| NUL-ERR | Indicates an attempt was made to rename the null device. |
| OFF-ERR | Indicates an ERROR LOG command specified the OFF parameter, but the error recording function was already off. |
| ON-ERR | Indicates an ERROR LOG command was entered twice with the ON parameter specified. |
| OPT-ERR | Indicates a conflict exists between requested options and options specified at Link time. |
| PARM-ERR | Indicates a command was entered with invalid parameters. |
| PERD-ERR | Indicates the number of minutes specified for the error log read-out period was not a number from 1 to 1440. |

Table 1 - 9: OS/32 Operator Command Error Messages

| Error Message | Indication |
|---------------------------|--|
| PRIV-ERR | Indicates the access privilege mnemonic was syntactically incorrect. |
| READ-ERR | Attempt was made to mark a disk ON that is not hardware-enabled for write, or that returns an I/O error when it is accessed. |
| RENM-ERR TYPE=BUFF | Indicates that an error occurred when closing an lu for a RENAME or the system space control blocks are corrupted. |
| RENM-ERR TYPE=NAME | Indicates the new filename already exists in the volume directory, or the new device name already exists within the DMT. |
| ROLL-ERR | Indicates a BIAS * command was entered and the currently selected task is rollable, or BIAS * taskid was entered and taskid is a rollable task. |
| SEGMENT REQUEST NOT FOUND | Indicates a DISPLAY MAP command was entered and the requested segment mask was not found, or no tasks exist in memory. |
| SEQ-ERR | Indicates a command was entered out of sequence when: <ul style="list-style-type: none"> • attempting to pause a task when none was active • assigning a currently assigned lu while a task was active • entering an OPTION command for an active task • attempting to continue a task that was not paused |
| SPAC-ERR | Indicates an assign on behalf of a task was refused because system space available for task use was exceeded. Re-establish the task with a larger maximum system space. |
| STAT-ERR | Indicates an attempt was made to mark a device on or off while an lu was assigned to it. |
| SVC6-ERR TYPE=ARGS | Indicates insufficient memory exists between UTOP and CTOP to pass all parameters. |
| SVC6-ERR TYPE=DORM | Indicates an attempt was made to issue an SVC6 to a task that was in the dormant state. |
| TASK-ERR | Indicates a task-related command was entered and there was no currently selected task. |
| TASK(S) NOT FOUND | Indicates the specified task was not found in the system; no tasks found in the system. |
| WRIT-ERR | Indicates an attempt was made to mark a device on that is hardware-protected without the PROTECT option. Use the PROTECT option in the MARK command. |

Table 1 - 10: System Information Messages

| System Message | Explanation |
|--|---|
| CDIR FULL-devn | Indicates the secondary directory on disk devn is full. See the MARK command description for required action. |
| FLOATING POINT HARDWARE NOT PRESENT | Is a warning message that occurs if the operating system is sysgened with hardware floating point support, but at loading time, the operating system is loaded on a machine that does not support hardware floating point. In this case, the operating system will run, but it cannot successfully run programs requiring floating point support. |
| I/O ERROR ON voln MARK OFF AND CHECK BIT MAP ERROR ON voln; MARK OFF AND CHECK | <p>Indicates an I/O error on voln, the disk volume name. An I/O error is reported to the system when reading or writing a directory block, bit map sector or volume descriptor (sector 0). A bit map error is reported to the System Console in the event of a bit map error; i.e., attempting to allocate an already allocated sector or volume, or attempting to release an already released sector.</p> <p>When either of these errors occurs, any operations that require bit map changes are rejected with device unavailable status. This action permits read and write of preallocated contiguous files and read-only of the preallocated index files. An attempt to allocate or delete a file is rejected with device unavailable status. The operator is advised to run a disk check on that disk.</p> |
| OS/32 MTrr-uu | Is printed after system initialization. The release level is rr; uu is the update level. |
| PIC NOT ACTIVE AT ADDRESS XX | When the operating system is generated, the precision internal clock (PIC) address is specified. At operating system START time, the operating system checks to see if the PIC is operational at the address. If not, the above message is displayed. The operating system continues to run, but without the PIC. |
| POWER RESTORE RESET PERIPHERALS | Indicates that a power fail restore sequence has taken place; no operator response is required. |
| POWER RESTORE RESET PERIPHERALS AND ENTER GO | Indicates that a power fail restore sequence has taken place; perform any manual intervention required at the peripheral device(s) and then type GO (CR) to complete the power recovery. |
| ACCESS LEVEL ADDRESS ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS = xxxxxx (YYYYYY) | Indicates that when memory access was attempted by the current program, the memory access level of the program status word (PSW) (bits 10-11) contained a lesser value than the access level field of the appropriate segment table entry (STE). The program address is xxxxxx and the physical address is YYYYYY. The memory fault address is given on Series 3200 Processors. |

Table 1 - 11: System Fault Messages

| Fault Message | Indication |
|---|---|
| ACCESS PRIVILEGE ADDRESS AT RRxxxx (YYYYYY) MEMORY FAULT ADDRESS = xxxxxx (YYYYYY) | Indicates that the user program tried to store into a write-protected segment, execute instructions from an execute-protected segment, or load from a read-protected segment. The program address is RRxxxx, the segmentation register is RR and the physical address is YYYYYY. The memory fault address is given on Series 3200 Processors. |
| ADDRESS FAULT IN SVC at xxxxxx (YYYYYY) | Indicates that the address of supervisor call (SVC) parameter block or an address parameter in the parameter block points to a data structure that is outside the task taskid memory allocation or does not point to a data structure that is properly aligned. |
| ALIGNMENT FAULT INSTRUCTION AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS = xxxxxx (YYYYYY) | Indicates that the data instruction is not properly aligned to specific fields for fullword or halfword alignment. The program address is xxxxxx and the physical address is YYYYYY. The memory fault address is the memory location that is not properly aligned and is given on Series 3200 Processors. |
| ARITHMETIC FAULT AT xxxxxx (YYYYYY) | Indicates that a fixed or floating point error is detected at location xxxxxx in the taskid address space (physical address yyyyyy) or an attempt was made to divide by zero. This fault occurs only on 7/32 and 8/32 Processors. |
| DECIMAL OVERFLOW LPB ERROR AT xxxxxx (YYYYYY) NEXT INSTRU- CTION AT xxxxxx (YYYYYY) | Indicates that the result of a load packed decimal string as binary instruction was too large to be stored as a binary number. The program address of the LPB instruction is xxxxxx; the physical address is YYYYYY. The instruction aborts and the next instruction is at xxxxxx. This fault occurs only on the Series 3200 Processors. |
| END OF TASK n | Indicates that the task taskid has ended. The end of task code in decimal is n. |
| EXECUTE PRIVILEGE ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS = xxxxxx (YYYYYY) | Indicates that an attempt was made by the current program to execute instructions for a segment that is execute-protected. The memory fault address is given on Series 3200 Processors only. |
| FIXED POINT-ZERO DIVIDE ERROR AT xxxxxx (YYYYYY) NEXT INSTRU- CTION AT xxxxxx (YYYYYY) | Indicates that an attempt was made to divide by zero at location xxxxxx in the taskid address space (physical address YYYYYY). The current instruction is aborted and the next instruction is at location xxxxxx in the taskid address space (physical address YYYYYY). This error can occur only on the Series 3200 Processors. |
| FIXED POINT-ZERO OVER- FLOW ERROR AT xxxxxx (YYYYYY) NEXT INSTRU- CTION AT xxxxxx (YYYYYY) | Indicates that a fixed point arithmetic result, at location xxxxxx in the taskid address space (physical address YYYYYY), is too large to be represented. The instruction aborts and the next instruction is at location xxxxxx in the taskid address space (physical address YYYYYY). This error can occur only on the Series 3200 Processors. |

Table 1 - 11: System Fault Messages

| Fault Message | Indication |
|---|---|
| FLOATING POINT FUNCTION RANGE ERROR AT xxxxxx System. | Indicates that a task-related arithmetic fault has occurred because a floating point instruction operand at address xxxxxx is not within the valid range for the function. This message applies only to the 3280 |
| FLOATING POINT UNDERFLOW ERROR AT xxxxxx (YYYYYY) NEXT INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that the result of a floating point operation is too small to be represented at location xxxxxx in the taskid address space (physical address YYYYYY). The instruction is at location xxxxxx in the taskid address space (physical address YYYYYY). This error can occur only on the Series 3200 Processors. |
| FLOATING POINT OVERFLOW ERROR AT xxxxxx (YYYYYY) NEXT INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that the result of a floating point arithmetic operation is too large to be represented at location xxxxxx in the taskid address space (physical address YYYYYY). The instruction aborts and the next instruction is at location xxxxxx in the taskid address space (physical address YYYYYY). This error can occur only on the Series 3200 Processors. |
| FLOATING POINT ZERO DIVIDE ERROR AT xxxxxx (YYYYYY) NEXT INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that an attempt was made to perform a floating point divide by zero at location xxxxxx in the taskid address space (physical address YYYYYY). The instruction aborts and the next instruction is at location xxxxxx in the taskid address space (physical address YYYYYY). This error can occur only on the Series 3200 Processors. |
| ILLEGAL INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that an illegal instruction fault is detected at location xxxxxx in the taskid address space (physical address YYYYYY). |
| ILLEGAL SVC INSTRUCTION AT xxxxxx (YYYYYY) SVC PARAMETER BLOCK AT xxxxxx (YYYYYY) | Indicates that an illegal SVC call was attempted at location xxxxxx in the taskid address space (physical address YYYYYY). The SVC parameter block is located at location xxxxxx in the taskid address space (physical address YYYYYY). |
| INTERNAL REGISTER PARITY FAULT, INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that a parity error machine malfunction is detected at location xxxxxx (physical address YYYYYY). This is an unrecoverable hardware-generated fault possibly due to faulty registers external (REX). This fault occurs only on Model 3203 and 3205 Processors. |
| INVALID SEGMENT ADDRESS ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS = xxxxxx (YYYYYY) | Indicates that the task tried to address a segment outside the address space of the program. The program address is xxxxxx and the physical address is YYYYYY. The memory fault address is given on Series 3200 Processors only. |
| I/O-ERR TYPE=xxxx SEG-NAME=YYYY SEG-TYPE=2222 | Indicates that an input/output (I/O) error type xxxx was encountered while trying to write the segment named YYYY to the roll volume. Task space is needed to load or roll in task taskid. Segment YYYY is set as nonrollable and the write error flag is set in the segment descriptor entry (SDE). To insure full integrity of the segment, reload the pertinent module(s). |

Table 1 - 11: System Fault Messages

| Fault Message | Indication |
|---|--|
| MAT PARITY FAULT, INSTRUCTION AT xxxxxx (YYYYYY) | Indicates that a memory address translator (MAT) parity error machine malfunction is detected at location xxxxxx (physical address YYYYYY). This is an unrecoverable hardware-generated fault possibly due to faulty MAT circuitry or a bad chip. This fault occurs only on Model 3203 and 3205 Processors. |
| MEMORY ERROR ON DATA FETCH AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that an attempt was made to retrieve or to load data from a failing memory area. If affected memory is within task space and the operating system has memory diagnostic support, the affected page is automatically marked off and the following message is displayed: AFFECTED MEMORY PAGE MARKED OFF AT xxxxxx (YYYYYY) |
| MEMORY ERROR ON INSTRUCTION FETCH AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that an attempt was made to execute an instruction from a failing memory area on Series 3200 Processors. If affected memory is within task space and the operating system has memory diagnostic support, the affected page is automatically marked off and the following message is displayed: AFFECTED MEMORY PAGE MARKED OFF AT xxxxxx (YYYYYY) |
| MEMORY PARITY ERROR AT xxxxxx (YYYYYY) | Indicates that a parity machine malfunction is detected at location xxxxxx of the taskid address space (physical address YYYYYY) on Model 7/32 and 8/32 Processors. This is an unrecoverable hardware-generated fault which is possibly due to bad memory circuitry. |
| NON EXISTENT SEGMENT ERROR (PST) AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates an attempt was made to access a memory location greater than the maximum valid program address; i.e., an attempt to access a memory location outside of task space. The program address is xxxxxx and the physical address is YYYYYY. The memory fault address is given on Series 3200 Processors. |
| NON EXISTENT SEGMENT ERROR (SST) AT xxxxxx (YYYYYY) MEMORY FAULT- ADDRESS=xxxxxx (YYYYYY) | Indicates that the current program has made reference to a non-existent segment in the shared segment table (SST). The program address that caused the fault is xxxxxx; the physical address is YYYYYY. If the nonexistent segment is loaded, the instruction that caused the fault can be reexecuted. The memory fault address appears on the Series 3200 Processors. |
| PACKED FORMAT-SIGN ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS= xxxxxx (YYYYYY) | Indicates that an illegal sign digit was detected in a packed decimal number at location xxxxxx in the taskid address space (physical address YYYYYY) for Series 3200 Processors. |
| PACKED FORMAT-DATA ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS= xxxxxx (YYYYYY) | Indicates that a data error was detected in a packed decimal number at location xxxxxx in the taskid address space (physical address YYYYYY) for Series 3200 Processors. |

Table 1 - 11: System Fault Messages

| Fault Message | Indication |
|---|---|
| READ PRIVILEGE ADDRESS ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that an attempt was made by the current program to read from a segment that is read-protected. The memory fault address is given for Series 3200 Processors. |
| SEGMENT LIMIT ADDRESS ERROR AT RRxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that the task attempted to access an address outside allowable limits for one of its segments. The program address is RRxxxx, segmentation register is RR and physical address is YYYYYY. The memory fault address is given on Series 3200 Processors only. |
| SVC ADDRESS ERROR INSTRUCTION AT SVC xxxxxx (YYYYYY) SVC PARAMETER BLOCK AT xxxxxx (YYYYYY) | Indicates that the address of the SVC parameter block at xxxxxx in the taskid address space (physical address YYYYYY) was incorrect. The parameter block must be on a fullword boundary. |
| TASK PAUSED | Indicates that the task taskid paused. The pause results from an SVC2 code 1 or the operator PAUSE command. |
| UNDEFINED DATA FOR- MAT FAULT AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that an undefined data format or alignment fault was detected at location xxxxxx in the taskid address space (physical address YYYYYY) for Series 3200 Processors. |
| WRITE PRIVILEGE ADDRESS ERROR AT xxxxxx (YYYYYY) MEMORY FAULT ADDRESS=xxxxxx (YYYYYY) | Indicates that an attempt was made by the current program to write to a segment that is write-protected. The memory fault address is given for Series 3200 Processors. |
| taskid> | Indicates an SVC1 read request to terminal device from task taskid. Data should be entered immediately to avoid blocking the terminal. |

Table 1 - 12: WSR-88D Delta Pulse Repetition Intervals

| PRF # | Period μSec. | PRF | Ra NM | Vn Kts |
|---------------------|-------------------------|------------|------------------|-------------------|
| DELTA PRI #1 | | | | |
| 1 | 3066.7 | 326.09 | 248 | 15.7 |
| 2 | 2213.3 | 451.81 | 179 | 21.7 |
| 3 | 1533.3 | 652.17 | 124 | 31.3 |
| 4 | 1153.3 | 867.05 | 93 | 41.6 |
| 5 | 973.3 | 1027.40 | 78 | 49.3 |
| 6 | 900.0 | 1111.11 | 72 | 53.4 |
| 7 | 833.3 | 1200.00 | 67 | 57.7 |
| 8 | 766.7 | 1304.35 | 62 | 62.8 |
| DELTA PRI #2 | | | | |
| 1 | 3086.7 | 323.97 | 250 | 15.6 |
| 2 | 2226.7 | 449.10 | 180 | 21.5 |
| 3 | 1546.7 | 646.55 | 125 | 31.1 |
| 4 | 1160.0 | 862.07 | 94 | 41.4 |
| 5 | 980.0 | 1020.41 | 79 | 49.0 |
| 6 | 906.7 | 1102.94 | 73 | 53.2 |
| 7 | 840.0 | 1190.48 | 68 | 57.2 |
| 8 | 773.3 | 1293.10 | 62 | 62.1 |
| DELTA PRI #3 | | | | |
| 1 | 3106.7 | 321.89 | 251 | 15.5 |
| 2 | 2240.0 | 446.43 | 181 | 21.3 |
| 3 | 1553.3 | 643.78 | 126 | 30.9 |
| 4 | 1166.7 | 857.14 | 94 | 41.1 |
| 5 | 986.7 | 1013.51 | 79 | 48.7 |
| 6 | 913.3 | 1094.89 | 73 | 52.6 |
| 7 | 846.7 | 1181.10 | 68 | 56.8 |
| 8 | 780.0 | 1282.05 | 63 | 61.6 |

Table 1 - 12: WSR-88D Delta Pulse Repetition Intervals

| PRF # | Period μ Sec. | PRF | Ra NM | Vn Kts |
|---------------------|--------------------------|------------|------------------|-------------------|
| DELTA PRI #4 | | | | |
| 1 | 3120.0 | 320.51 | 252 | 15.4 |
| 2 | 2253.3 | 443.79 | 182 | 21.3 |
| 3 | 1560.0 | 641.03 | 126 | 30.8 |
| 4 | 1173.3 | 852.27 | 95 | 40.9 |
| 5 | 993.3 | 1006.71 | 80 | 48.4 |
| 6 | 920.0 | 1086.96 | 74 | 52.2 |
| 7 | 853.3 | 1171.88 | 69 | 55.6 |
| 8 | 786.7 | 1271.19 | 64 | 61.1 |
| DELTA PRI #5 | | | | |
| 1 | 3140.0 | 318.47 | 252 | 15.3 |
| 2 | 2266.7 | 441.18 | 183 | 21.2 |
| 3 | 1573.3 | 635.59 | 127 | 30.5 |
| 4 | 1180.0 | 847.46 | 95 | 40.7 |
| 5 | 1000.0 | 1000.0 | 80 | 48.0 |
| 6 | 926.7 | 1079.14 | 74 | 51.9 |
| 7 | 860.0 | 1162.79 | 69 | 55.1 |
| 8 | 793.3 | 1260.50 | 64 | 58.6 |

Table 1 - 13: Volume Coverage Pattern 11 (Scan Strategy 1, Short Pulse)

| Scan | | | | Surveillance | | Doppler PRF No.* | | | |
|-----------------|-------------------|--------------|---------|--------------|------------|------------------|--------------|--------------|--------------|
| Elevation (deg) | AZ Rate (deg/sec) | Period (sec) | WF type | PRF No. | No. pulses | 5 No. pulses | 6 No. pulses | 7 No. pulses | 8 No. pulses |
| 0.5 | 18.675 | 19.38 | CS | 1 | 17 | - | - | - | - |
| 0.5 | 19.224 | 18.83 | CD | - | - | 52 | 56 | 61 | 66 |
| 1.45 | 19.844 | 18.24 | CS | 1 | 16 | - | - | - | - |
| 1.45 | 19.225 | 18.83 | CD | - | - | 52 | 56 | 61 | 66 |
| 2.4 | 16.116 | 22.46 | B | 1 | 6 | 41 | 43 | 46 | 50 |
| 3.35 | 17.893 | 20.23 | B | 2 | 6 | 41 | 43 | 46 | 50 |
| 4.3 | 17.898 | 20.23 | B | 2 | 6 | 41 | 43 | 46 | 50 |
| 5.25 | 17.459 | 20.73 | B | 3 | 10 | 41 | 43 | 46 | 50 |
| 6.2 | 17.466 | 20.73 | B | 3 | 10 | 41 | 43 | 46 | 50 |
| 7.5 | 25.168 | 14.38 | CD | - | - | 41 | 43 | 46 | 50 |
| 8.7 | 25.398 | 14.25 | CD | - | - | 41 | 43 | 46 | 50 |
| 10.0 | 25.421 | 14.24 | CD | - | - | 41 | 43 | 46 | 50 |
| 12.0 | 25.464 | 14.22 | CD | - | - | 41 | 43 | 46 | 50 |
| 14.0 | 25.515 | 14.19 | CD | - | - | 41 | 43 | 46 | 50 |
| 16.7 | 25.596 | 14.14 | CD | - | - | 41 | 43 | 46 | 50 |
| 19.5 | 25.696 | 14.09 | CD | - | - | 41 | 43 | 46 | 50 |

*Default Doppler PRF numbers are underscored.

Table 1 - 14: Volume Coverage Pattern 21 (Scan Strategy 2, Short Pulse)

| Scan | | | | Surveillance | | Doppler PRF No.* | | | |
|-----------------|-------------------|--------------|---------|--------------|------------|------------------|--------------|--------------|--------------|
| Elevation (deg) | AZ Rate (deg/sec) | Period (sec) | WF type | PRF No. | No. pulses | 5 No. pulses | 6 No. pulses | 7 No. pulses | 8 No. pulses |
| 0.5 | 11.339 | 31.92 | CS | 1 | 28 | - | - | - | - |
| 0.5 | 11.360 | 31.87 | CD | - | - | 88 | 95 | 103 | 111 |
| 1.45 | 11.339 | 31.92 | CS | 1 | 28 | - | - | - | - |
| 1.45 | 11.360 | 31.86 | CD | - | - | 88 | 95 | 103 | 111 |
| 2.4 | 11.180 | 32.38 | B | 2 | 8 | 70 | 76 | 82 | 88 |
| 3.35 | 11.182 | 32.37 | B | 2 | 8 | 70 | 76 | 82 | 88 |
| 4.3 | 11.185 | 32.36 | B | 2 | 8 | 70 | 76 | 82 | 88 |
| 6.0 | 11.189 | 32.35 | B | 3 | 12 | 70 | 76 | 82 | 88 |
| 9.9 | 14.260 | 25.39 | CD | - | - | 70 | 76 | 82 | 88 |
| 14.6 | 14.322 | 25.27 | CD | - | - | 70 | 76 | 82 | 88 |
| 19.5 | 14.415 | 25.11 | CD | - | - | 70 | 76 | 82 | 88 |

*Default Doppler PRF numbers are underscored.

Table 1 - 15: Volume Coverage Pattern 32 (Scan Strategy 3, Short Pulse)

| Scan | | | | Surveillance | | Doppler PRF No.* | | | |
|-----------------|-------------------|--------------|---------|--------------|------------|------------------|--------------|--------------|--------------|
| Elevation (deg) | AZ Rate (deg/sec) | Period (sec) | WF type | PRF No. | No. pulses | 5 No. pulses | 6 No. pulses | 7 No. pulses | 8 No. pulses |
| 0.50 | 4.961 | 72.97 | CS | 1 | 64 | - | - | - | - |
| 0.50 | 4.544 | 79.66 | CD | - | - | 220 | 238 | 256 | 278 |
| 1.50 | 4.961 | 72.96 | CS | 1 | 64 | - | - | - | - |
| 1.50 | 4.544 | 79.66 | CD | - | - | 220 | 238 | 256 | 278 |
| 2.50 | 4.060 | 89.15 | B | 2 | 11 | 220 | 238 | 256 | 278 |
| 3.50 | 4.061 | 89.13 | B | 2 | 11 | 220 | 238 | 256 | 278 |
| 4.50 | 4.063 | 89.10 | B | 2 | 11 | 220 | 238 | 256 | 278 |

*Default Doppler PRF numbers are underscored.

Table 1 - 16: Volume Coverage Pattern 31 (Scan Strategy 3, Long Pulse)

| Scan | | | WF type | PRF No. | No. Pulses |
|------------------------|-------------------|---------------------|--------------------|--------------------|-----------------------|
| Elevation (deg) | Rate (RPM) | Period (sec) | | | |
| 0.50 | 5.039 | 71.83 | CS | 1 | 63 |
| 0.50 | 5.061 | 71.52 | CD | 2 | 87 |
| 1.50 | 5.040 | 71.82 | CS | 1 | 63 |
| 1.50 | 5.062 | 71.52 | CD | 2 | 87 |
| 2.50 | 5.041 | 71.81 | CS | 1 | 63 |
| 2.50 | 5.062 | 71.50 | CD | 2 | 87 |
| 3.50 | 5.063 | 71.49 | CD | 2 | 87 |
| 4.50 | 5.065 | 71.47 | CD | 2 | 87 |

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Chapter 2

OPERATION

Section: 2-1 Introduction

2-1.1 **General.**

This chapter is organized into the following sections:

- [Section: 2-1 Introduction](#)
- [Section: 2-2 Operating Procedures](#)
- [Section: 2-3 Controls and Indicators](#)

Section 2-1 describes briefly the contents of Chapter 2. Section 2-2 contains the information, instructions and procedures to operate the Principal User Processing (PUP) Group equipment in support of the WSR-88D system. Section 2-3 provides detailed information on the individual controls and indicators of the PUP Group equipment.

2-1.2 **System Operation.**

The major operations that are performed and conducted at the PUP Group equipment are outlined and discussed in the following paragraphs and are found in [Section: 2-2 Operating Procedures](#).

2-1.2.1 Terminal Setup and Configuration.

Terminal setup and configuration includes checking the terminal connections, powering up the terminal, performing a configuration check, performing an operational check and performing a setup configuration of the Application Terminal and System Console. These procedures and instructions are found in paragraph [2-2.2 Terminal Setup and Configuration Procedures](#).

2-1.2.2 PUP Startup/Shutdown.

Paragraph [2-2.3 PUP Startup/Shutdown Procedures](#). contains the preoperational, startup, and shutdown procedures for the PUP Group equipment.

2-1.2.3 System Console Operations.

Paragraph [2-2.4 System Console Operations](#). contains the operations and procedures that are performed using the System Console. Included are the miscellaneous disk/tape operations the user needs when tape loading, backup, and other tasks are required.

2-1.2.4 PUP Operations.

Paragraph [2-2.5 PUP Operations](#). contains the operations performed at the workstation and includes both the Graphic Tablet and Applications Terminal usage and procedures.

2-1.2.5 Recovery Operations.

Included in paragraph [2-2.6 Recovery Operations](#). are the procedures and information to recover from hangups and minor problem conditions that may occur.

Section: 2-2 Operating Procedures

2-2.1 Arrangement of This Section.

This section contains the PUP Group equipment operations and procedures that are performed at the workstation and System Console. Included are terminal setup configuration procedures, turn-on/shutdown procedures, miscellaneous disk/tape operations and recovery operations. The information contained in this section is discussed in the following paragraphs:

- [2-2.1 Arrangement of This Section.](#)
- [2-2.2 Terminal Setup and Configuration Procedures.](#)
- [2-2.3 PUP Startup/Shutdown Procedures.](#)
- [2-2.4 System Console Operations.](#)
- [2-2.5 PUP Operations.](#)
- [2-2.6 Recovery Operations.](#)

2-2.2 Terminal Setup and Configuration Procedures.

The following paragraphs contain preoperational instructions and setup configuration procedures for both alphanumeric terminals (System Console UD42 and Application Terminal UD43). In these paragraphs, the term terminal is used to designate the System Console and the Application Terminal, unless otherwise noted.

2-2.2.1 Checking Terminal Connections.

To ensure that the terminal power and signal connections are in order, check the following:

1. The AC power cord at the rear of the monitor is plugged into a standard 3-pronged (grounded) 115 vac power outlet.
2. The RS232C cable(s) at the rear of the monitor is connected securely to the connector or port.
3. The keyboard-to-monitor cable connection is secure.

2-2.2.2 Turn-On.

The instructions to turn on the System Console and Application Terminal is given in [Table 2 - 1 Application Terminal/System Console Turn-On Procedure.](#)

2-2.2.3 Configuration Check.

Before the terminal can function, it must be configured to be either a System Console or an Application Terminal. This is done at installation or replacement, but the configuration options should be checked prior to performing a startup procedure. The configuration options are checked as follows.

1. Turn on the terminal as described in [Table 2 - 1 Application Terminal/System Console Turn-On Procedure.](#)
2. At the terminal, press the Reset and shift keys simultaneously to enter the setup configuration mode. Observe that the Main Setup Menu appears on the screen. The Main Setup Menu with default parameter options chosen is shown in [Figure 2-1. Main Setup Menu.](#)
3. Depending on the configuration of the terminal (System Console or Application Terminal) being checked, ensure that the parameter options displayed on the screen are the same as those in the System Console Port A Value column or the Application Terminal Port A Value and Port B Value columns in [Table 2 - 2: Application Terminal/System Console Parameter Options.](#) To shift to other port, press the Setup/Reset key and then the Shift Port/Break key. Press the Shift and Setup/Reset key to enter the

setup configuration mode.

4. For special function characters in the terminator parameter field, use the following table:

| Special Function Character | Press CTRL Key and |
|----------------------------|--------------------|
| E _x | C |
| C _n | X |
| G _s |] |
| C _r | M |
| L _f | J |
| E _c | [|
| D ₃ | S |
| D ₁ | Q |

Table 2 - 1 Application Terminal/System Console Turn-On Procedure

| Step | Procedure/Action | Response |
|------|---|---|
| 1 | Set POWER switch on base of terminal to ON. | POWER switch lights and terminal self-test is initiated. Terminal beeps after 1 second to indicate that self-test passed. |

NOTE

A Failure Status Screen is displayed if the self-test fails. If this occurs, continue with step 2. If failure status screen doesn't occur, terminal should reconfigure and return to normal operation.

| | | |
|---|--|--|
| 2 | At terminal: a.Press any key. b.Set POWER switch to OFF then ON. | Exit from Failure Status Screen display. Failure Status Screen does not reappear. |
|---|--|--|

NOTE

If Failure Status Screen reappears continue with step 3.

| | | |
|---|--|--|
| 3 | At terminal, press any key and perform the on-line power down reset procedure in Table 2-28. | |
|---|--|--|

Table 2 - 2: Application Terminal/System Console Parameter Options

| Parameter | Default Value | System Console | Application Terminal | |
|-----------------------------|---------------|----------------|----------------------|--------------|
| | | Port A Value | Port A Value | Port B Value |
| <u>Kbd Cntrl Parameters</u> | | | | |
| Esc | N | N | N | N |
| Cursor, edit kys | N | N | N | N |
| Tab backtab | N | N | N | N |
| Cr,lf | N | N | N | N |
| F01-F04 | N | Y | N | N |
| F05-F08 | N | Y | N | N |
| F09-F12 | N | Y | N | N |
| F13-F16 | N | Y | N | N |
| Kbd Lock Parameters | | | | |
| Esc | N | N | N | N |
| Cursor, edit kys | N | N | N | N |
| Tab backtab | N | N | N | N |
| Cr,lf | N | N | N | N |
| F01-F04 | N | N | N | N |
| F05-F08 | N | N | N | N |
| F09-F12 | N | N | N | N |
| F13-F16 | N | N | N | N |
| <u>Mode Parameters</u> | | | | |
| Scroll | Y | Y | Y | Y |
| Auto line feed | N | N | N | N |
| Auto tab | Y | Y | Y | Y |
| New line | Y | Y | Y | Y |
| *Upper case | N | Y | Y | Y |
| *Inverse video | N | N | N | N |
| *Blink cursor | Y | Y | Y | Y |

* The values picked for these parameters are not necessary for system operation, nor are they downloaded by the processor to the applications port.

Table 2 - 2: Application Terminal/System Console Parameter Options

| Parameter | Default Value | System Console | | Application Terminal | |
|--------------------|---------------|----------------|--------------|----------------------|--------------|
| | | Port A Value | Port A Value | Port A Value | Port B Value |
| *Block cursor | Y | Y | Y | Y | Y |
| *Key click | N | N | N | N | N |
| *Screen save | Y | N | Y | Y | Y |
| *Smooth scroll | N | N | N | N | N |
| *Backtab | N | N | N | N | N |
| System Parameters | | | | | |
| Send stat line | Y | Y | N | N | Y |
| Dsplay stat ln | Y | Y | N | N | Y |
| Pwr up on line | Y | Y | Y | Y | Y |
| Return=send | Y | Y | Y | Y | Y |
| Clear to spaces | Y | N | Y | Y | N |
| Send crsr, edit | Y | Y | N | N | Y |
| Send clear all | N | N | N | N | N |
| Comm Parameters | | | | | |
| Block | N | N | N | N | N |
| *Polled | N | N | N | N | N |
| One Stop Bit | N | N | Y | Y | Y |
| Half duplex | N | N | N | N | N |
| Null supp unfor | N | N | N | N | N |
| Null supp for | Y | N | N | N | N |
| Xon/off | N | N | Y | Y | N |
| 113J | N | N | N | N | N |
| Printer Parameters | | | | | |
| Line drawing | Y | Y | N | N | Y |
| Ready () | N | Y | Y | Y | N |

* The values picked for these parameters are not necessary for system operation, nor are they downloaded by the processor to the applications port.

Table 2 - 2: Application Terminal/System Console Parameter Options

| Parameter | Default Value | System Console | | Application Terminal | |
|---------------------------|----------------|----------------|----------------|----------------------|----------------|
| | | Port A Value | Port A Value | Port A Value | Port B Value |
| One Stop Bit | N | Y | Y | Y | Y |
| Comm Parameters | | | | | |
| Com mode | Line | Page | Page | Page | Page |
| Parity | Even | Even | Even | Even | SPC |
| Baud | 9600 | 9600 | 9600 | 9600 | 9600 |
| Printer Parameters | | | | | |
| Prt mode | Page | Page | Line | Page | Page |
| Parity | Space | Space | Space | Space | Space |
| Baud | 300 | 300 | 9600 | 9600 | 9600 |
| Screen Display Parameters | | | | | |
| *Cols | 80 | 80 | 80 | 80 | 80 |
| *Lines | 24 | 24 | 24 | 24 | 24 |
| *Bell vol | 1 | 1 | 1 | 1 | 1 |
| *Pound char | Hash | Hash | Hash | Hash | Hash |
| Comm Parameters | | | | | |
| Emulation | 6312 | 6312 | 6312 | 6312 | 6312 |
| Active host port | A | A | A | A | B |
| *Virtual terminal | Off | Off | On | On | On |
| Language | US | US | US | US | US |
| Terminator Parameters | | | | | |
| Send line | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn |
| Field | Gs cn Cn cn | Gs cn Cn cn | Gs cn Cn cn | Gs cn Cn cn | Gs cn Cn cn |

 * The values picked for these parameters are not necessary for system operation, nor are they downloaded by the processor to the applications port.

Table 2 - 2: Application Terminal/System Console Parameter Options

| Parameter | Default Value | System Console | Application Terminal | |
|---------------------------|-------------------|-------------------|----------------------|-------------------|
| | | Port A Value | Port A Value | Port B Value |
| Unformat line | Cn cn Cn cn | Cn cn Cn cn | Cn cn Cn cn | Cn cn Cn cn |
| Unformat pg | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn |
| Format pg | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn | Ex cn Cn cn |
| Req to send | Cn cn Cn cn | Cn cn Cn cn | Cn cn Cn cn | Cn cn Cn cn |
| Print line | Cr 1f cn Cn cn | Cr 1f cn Cn cn | Cr 1f cn Cn cn | Cr 1f cn Cn cn |
| Spec Char Parameters | | | | |
| Multicode char | Ec | Ec | Ec | Ec |
| Poll char | A | A | A | A |
| Pause char | D3 | D3 | D3 | D3 |
| Resume char | D1 | D1 | D1 | D1 |
| Bell vol | 1 | 1 | 1 | 1 |
| Ring bell | 080 | 080 | 080 | 080 |
| Comm Parameters | | | | |
| Transmit delay | None | None | None | None |
| Screen Display Parameters | | | | |
| Attribute effect | Delayed | Delayed | Delayed | Delayed |

* The values picked for these parameters are not necessary for system operation, nor are they downloaded by the processor to the applications port.

2-2.2.4 Operational Check.

The following procedure is used to perform a functional check of the terminal.

1. Set the terminal POWER switch to the ON position. Allow a minute for the terminal to warm up.
2. Press SHIFT and RESET keys simultaneously to enter setup configuration mode.
3. Adjust the screen contrast (impacts low intensity fields) and brightness as desired,

using the setup configuration mode. The screen brightness may also be adjusted by simultaneously pressing the CTRL, SHIFT, and up or down cursor keys.

4. While the terminal is in setup configuration mode, ensure that the terminal is off-line by typing an "N" (no) in the PWR UP ON LINE option in setup configuration.
5. Press each key from 1 to 0 on the top row and each key on the numeric pad on the right in sequence, verifying the correct display of the selected character. Continue this procedure with the alphabetic keys (A-Z), both shifted and unshifted, and the punctuation characters.
6. Use the HOME key to move the cursor to the top left of the screen. Press each of the other cursor keys to verify correct option.
7. Enter transparent mode by simultaneously pressing the CTRL and P keys, and then simultaneously pressing the CTRL and B keys. If the screen displays null characters, i.e., an "n" and a "U", hold the Space bar down to enter space characters on the top line of the screen and press the HOME key once more.
8. Simultaneously press the CTRL and @ (SHIFTED 2) keys and then simultaneously press CTRL key and the alphabetic keys A through P, P again, Q through Z, and the following punctuation keys:

[] _

The screen should display the following characters:

```

NSSEEEABBLVFCSSDDDDDNSECESEGU
UHXXTOKLSTFTFR OIL 1 2 3 4 KYBNMBCSS

```

9. Exit the transparent mode by simultaneously pressing the CTRL and P keys, and then simultaneously pressing the CTRL and C keys.
10. Press the CLEAR key to clear the screen.
11. Enter the setup configuration mode by pressing SHIFT and RESET/SETUP keys and enter a "Y" (yes) in the PWR UP ON LINE option in setup configuration to bring the terminal back on-line. Press the Setup/Reset key to exit and return to normal operation.

2-2.2.5 Terminal Setup Configuration Procedure.

NOTE

The operation of the terminal is controlled by the configuration options selected in the setup configuration mode. The System Console must be configured to function as a System Console on the system port (Port A). The Application Terminal must be configured to function as Application Terminal on Port A and as diagnostics terminal on auxiliary port (Port B) for Graphics Processor. The configuration parameters listed in [Table 2 - 2: Application Terminal/System Console Parameter Options](#) should be checked or set prior to doing a startup procedure after installation or replacement of the terminal.

1. Press the SHIFT and RESET keys simultaneously to enter setup configuration and display main setup menu. Refer to [Figure 2-1. Main Setup Menu](#). If the Main Setup Menu does not appear perform step 2, otherwise skip to step 3.

NOTE

The main setup menu contains all available options for the configuration of the terminal. Check or set the parameters according to those listed in Figure 2-1. and Table 2 - 2.

2. If pressing the SHIFT and SETUP/RESET keys simultaneously does not result in the display of the Main Setup Menu the terminal may not be setup to emulate a 6312. Press the <F3> key then press the <F20> key to display the Main Setup Menu. If the Main Setup Menu is not displayed on the screen, press the <CTRL> and <F3> keys simultaneously then press the <F20> key.
3. Tab cursor to parameter fields and enter data in the following manner:
 - a. Press spacebar until desired parameter is displayed.
 - b. Refer to paragraph 2-2.2.3 step 4 for special function characters.

IO55-3

| | | | | |
|----------------|-----------------|------------------|----------------------|--------------------------|
| KBD CTRL | ESC | CURSOR, EDIT KYS | TAB BACKTAB | CR, LF |
| | F01-F04 | F05-F08 | F09-F12 | F13-F16 |
| KBD LOCK | ESC | CURSOR KYS | TAB BACKTAB | CR, LF |
| | F01-F04 | F05-F08 | F09-F12 | F13-F16 |
| MODE | SCROLL | AUTO LINE FEED | AUTO TAB | NEW LINE |
| | UPPER CASE | INVERSE VIDEO | BLINK CURSOR | BLOCK CURSOR |
| SYSTEM | KEY CLICK | SCREEN SAVE | SMOOTH SCROLL | BACKTAB KEY |
| | SEND STAT LINE | DSPLAY STAT LN | PWR UP ON LINE | RETURN = SEND |
| COMM. | EXPERT | CLEAR TO SPACES | SEND CRSR EDIT | SEND CLEAR ALL |
| | BLOCK | POLLED | ONE STOP BIT | HALF DUPLEX |
| PRINTER | NULL SUPP UNFOR | NULL SUPP FORMT | XON/XOFF | 113J |
| | LINE DRAWING | READY(-) | ONE STOP BIT | |
| COMM: | PAGE MODE | EVEN PARITY | 9600 BAUD | A ACTIVE HOST/PRNT |
| PRNT: | PAGE MODE | EVEN PARITY | 300 BAUD | |
| GNRL: | 6312 EMULATION | US LANGUAGE | OFF VIRTUAL TERMINAL | 24 LINES |
| | HASH POUND CHAR | 1 BELL VOL | 050 RING BELL | 80 COLUMNS |
| TERM: | SEND LINE | FIELD | UNFORMAT LINE | |
| | UNFORMAT PG | FORMAT PAGE | REQ TO SEND | PRINT LN |
| SPCL CHAR: | MULTICODE CHAR | POLL CHAR | PAUSE CHAR | RESUME CHAR |
| FUNCTION KEYS: | HERE IS = | TRANSMIT DELAY | NONE | ATTRIBUTE EFFECT DELAYED |

Depress SPACE to select value
 Depress ARROWS, or TAB to select item
 Depress RESET to exit Depress F1 for GENERAL setup
 Position Cursor to this field for function key definitions

↑
FUNCTION KEY DEFINITION AREA

Figure 2-1. Main Setup Menu

NOTES

Parameters may be entered on category configuration menus instead of Main Setup Menu. For information about these menus, refer to the COTS Manual Guide to Installing and Using the CDT-100, Chapter 10.

Use function key F6 to exit these menus and display main setup menu. All parameter entries are saved when the F6 key is pressed.

If PUP System Console is the terminal being configured, do not perform steps 4 through 7. If the Applications Terminal is the terminal being configured, complete steps 4 through 7 for auxiliary port (Port B). Ensure parity is set to SPC in these steps.

4. Press the SETUP/RESET key "SAVE ALL? (Y/N)" is displayed in the lower right area of the screen. To save configuration and exit setup configuration press the Y key.
5. Press the SHIFT and PORT keys to shift to applications mode screen.
6. Press the SHIFT and RESET keys to enter setup configuration.
7. Repeat steps 1 through 4 for the configuration of the Application Terminal port. For Port B, ensure parity is set to SPC.

2-2.3 PUP Startup/Shutdown Procedures.

This paragraph contains the PUP Group pre-operational setup procedure, PUP Group startup procedure, and the PUP Group shutdown procedure. These procedures are to be used only when the entire PUP Group is to be shutdown for an extended period of time (more than 24 hours) or to restore the PUP Group to an operational state after an extended shutdown period. For pre-operational setup, perform the procedures in [Table 2 - 3: PUP Group Preoperational Setup](#) and [Table 2 - 4: PUP Workstation Pre-operational Setup](#). For startup perform the procedures in [Table 2 - 5: PUP Workstation Startup Procedure](#) and [Table 2 - 6: PUP Group Startup Procedure](#). For shutdown, perform the procedures in [Table 2 - 7: PUP Workstation Shutdown Procedure](#) and [Table 2 - 8: PUP Group Shutdown Procedure](#).

WARNING

Lethal voltages (from commercial power, Cathode Ray Tube (CRT), high-voltage power supplies, and low-voltage high current power supplies) exist in many PUP Group equipments. Observe appropriate safety precautions at all times to ensure personnel safety.

2-2.3.1 Pre-operational Setup Procedures.

This paragraph contains two pre-operational setup procedures. [Table 2 - 3: PUP Group Preoperational Setup](#) is a pre-operational setup procedure for the equipment in the PUP Data Processor (PUPDP) cabinet. [Table 2 - 4: PUP Workstation Pre-operational Setup](#) is a pre-operational setup procedure for the workstation.

[Table 2 - 3: PUP Group Preoperational Setup](#) may or may not reflect the exact communications configuration of every PUPDP cabinet. [Table 2 - 3: PUP Group Preoperational Setup](#) does contain all of the communications equipment setup procedures necessary to setup any PUPDP cabinet, but the reference designations may change due to the arrangement of the communications equipment and whether or not the PUP is collocated with an Radar Product Generation (RPG) or remotely located from an RPG. Procedures needed for non-standard configurations will differ.

2-2.3.2 Startup Procedures.

This section contains two startup procedures. [Table 2 - 5: PUP Workstation Startup Procedure](#), and [Table 2 - 6: PUP Group Startup Procedure](#). [Table 2 - 5: PUP Workstation Startup Procedure](#) should be performed before [Table 2 - 6: PUP Group Startup Procedure](#), but it is not absolutely necessary that they be done in that order. [Table 2 - 6: PUP Group Startup Procedure](#), may or may not reflect the exact communications configuration of every PUPDP cabinet. [Table 2 - 6: PUP Group Startup Procedure](#) contains all of the communications equipment startup procedures necessary to startup any PUPDP cabinet, but the reference designations may change due to the arrangement of the communications equipment and whether or not the PUP is collocated with an RPG or remotely located from an RPG. Some steps may need to be performed twice and some steps may not need to be performed at all depending on each individual PUPDP cabinet.

Refer to the special considerations below before proceeding with PUP startup procedures:

- The group startup procedure assumes all required operational program software is loaded on the Small Computer Serial Interface (SCSI) disk mass storage device and available for automatic or manual booting into processor memory.
- All system terminals are in direct communication with their respective processors via the mux bus structure. Deenergizing any terminal/console while the application programs are on-line may result in a communications lock-up to the mux bus or contaminate programs or product data in memory. Do not deenergize any terminal unless the tasks in the associated application software have been properly terminated.
- Narrowband communication equipment indicates faults and/or disconnect conditions whenever equipment at either end of the link is deenergized or inoperative. In addition, connection and data transfer will usually be disabled if the controlling program in the PUP processor is not initialized (running).

2-2.3.3 Shutdown Procedures.

This section contains two shutdown procedures. [Table 2 - 7: PUP Workstation Shutdown Procedure](#) and [Table 2 - 8: PUP Group Shutdown Procedure](#).

[Table 2 - 8: PUP Group Shutdown Procedure](#) may or may not reflect the exact communications configuration of every PUPDP cabinet. [Table 2 - 8: PUP Group Shutdown Procedure](#) does contain all of the communications equipment shutdown procedures necessary to shutdown any PUPDP cabinet, but the reference designations may change due to the arrangement of the communications equipment and whether or not the PUP is collocated with an RPG or remotely located from an RPG. Procedures needed for non-standard configuration will differ.

Table 2 - 3: PUP Group Preoperational Setup

| Step | CB/Switch | Set To | Function |
|--|--|--------------------|---|
| NOTE | | | |
| For location of these controls see Figures 2-7 and 2-8 using reference designations numbers (UDs). | | | |
| 1 | Power Distribution Panel UD41A20 Power Circuit Breaker CB1 | Off (0) | Removes power to the PUPDP cabinet. |
| 2 | Display Processor Power Subsystem UD41PS1 AC Module Main Circuit Breaker CB1-3 | Off | Removes power to the display processor. |
| 3** | Dedicated Port Modem (Fujitsu M1921L) UD41A2 Power Switch (inside front panel) | Off (0) | Removes power to the modem rack. |
| 4** | Dedicated Port Modem (Fujitsu M1921L) UD41A2 Power Switch (front panel) | Off (0) | Removes power to the front panel and modem cards. |
| NOTE | | | |
| If Dial Port Modem Assembly does not have Power Switches, skip step 5. | | | |
| 5** | Dial Port Modem Assembly (Codex 226X) Power Switches UD41A6S1/S2 | Both to Off (0) | Removes power to the modem rackas- sembly. |
| NOTE | | | |
| If Dial Port Modem Assembly has Power Switches and step 5 has been performed, skip step 6. | | | |
| 6** | Dial Port Modem Assembly (Codex 226X) Power Cord | Discon- nected | Removes power to the modem rack assembly. |
| 7** | Dial/Dedicated Modem Rack (Codex 326X) UD41A2 Power Plug (rear of unit) | Discon- nected | Removes power to modem rack assem- bly. |
| 8 | Graphics Processor UD41A13 Power Switch | Off (0) | Removes power to the Graphics Proces- sor. |
| 9* | Power Supply UD41PS3 (for the modem eliminator/ converter rack assembly Power Switch | Off | Removes power to the modem elimina- tor/converter rack assembly. |
| 10 | System Console UD42 Power Switch | Off (0) | Removes power to the System Console. |
| 11** | LDM Rack UD41A27A1-A3 Power Cord | Discon- nected | Removes power to modemrack assembly. |
| 12** | LDM UD45A3-A5 Power Cord | Discon- nected | Removes power to modemassembly. |

*For collocated PUPs

**Site dependent

Table 2 - 4: PUP Workstation Pre-operational Setup

| Step | CB/Switch | Set To | Function |
|-------------|---|---------------|--|
| 1 | Application Terminal UD43 Power Switch | Off (0) | Secures power to the application terminal. |
| 2 | Color Monitors UD45A1 and UD45A2 Power Switches | Off (0) | Secures power to the color monitors. |
| 3 | Color Graphics Printer UD47 Power Switch | Off (0) | Secures power to the color graphics printer. |
| 4 | Audible Alarm UD46 | Off (0) | Secures power to the Audible Alarm |
| 5** | LDM UD45A3-A5 Power Cord | Disconnected | Removes power to modem assembly. |

**Site Dependent

Table 2 - 5: PUP Workstation Startup Procedure

| Step | Equipment/Location | Action/Procedure | Indication/Reference |
|---|--------------------------------------|---|--|
| NOTE | | | |
| Ensure that any facility electrical panel circuit breakers are set to ON. | | | |
| 1 | PUP Power Distribution Panel UD41A20 | Set all PUP circuit breakers ON (1). | Applies power to the PUPDP cabinet. |
| 2 | Application Terminal UD43 | Set Power switch to ON (1) | Observe power LED lit on keyboard. |
| 3 | Color Monitors UD45A1 and UD45A2 | a. Set Power switches to ON (1). b. Push Degauss switches to ON and release. | |
| 4 | Color Graphics Printer UD47 | Set Power switch to ON (1). | Observe "IDLE" message appears in LCD display after printer self-test is complete. |
| 5 | Audible Alarm UD46 | Set power switch to ON (1). | Applies power to the audible alarm. |
| 6** | LDM UD45A3-A5 | Connect Power Plug into rear of unit | Power LED turns on. |

**Site Dependent

Table 2 - 6: PUP Group Startup Procedure

| Step | Equipment/Location | Action/Procedure | Indication/Reference |
|---|---|---|--|
| NOTES | | | |
| Ensure that any facility electrical panel circuit breakers are set to ON. | | | |
| For location of these controls refer to Figures 2-7 and 2-8 using reference designations numbers (UDs). | | | |
| Ensure that the optical disk is loaded in the optical disk drive before applying power to the system console. | | | |
| 1 | PUP Power Distribution Panel (UD41A20) | Set all PUP circuit breakers ON (1). | Applies power to the PUPDP cabinet. |
| 2 | System Console UD42 Power Switch | Set to ON (1). | Applies power to the system console. |
| 3** | Power Supply UD41PS3 (for the modem eliminator/converter rack assembly) Power Switch | Set to ON. | Applies power to the modem eliminator/converter rack assembly. |
| 4** | Dedicated Port Modem (Fujitsu M1921L) UD41A2 Power Switch (inside front panel) | Set to ON (1) | Applies power to the modem rack. |
| 5** | Dedicated Port Modem (Fujitsu M1921L) UD41A2 Power Switch (front panel) | Set to ON (1) | Applies power to the front panel and modem cards. |
| NOTE | | | |
| If Dial Port Modem Assembly does not have Power Switches, skip step 6. | | | |
| 6** | Dial Port Modem Assembly (Codex 226X) Power Switches UD41A6S1/S2 | Set to ON (1) | Applies power to the modem rack assembly. |
| NOTE | | | |
| If Dial Port Modem Assembly has Power Switches and step 6A has been performed, skip step 7. | | | |
| 7** | Dial Port Modem Assembly (Codex 226X) Power Cord | Connect | Applies power to the modem rack assembly. |
| 8** | Dial/Dedicated Modem Rack (Codex 326X) UD41A2 Power Plug (rear of unit) | Connect power plug into rear of back panel. | Power LED illuminates. |
| 9 | Graphics Processor UD41A13 Power Switch | Set to ON (1). | Applies power to the Graphics processor. |

*Collocated PUPs only

**Site dependent

Table 2 - 6: PUP Group Startup Procedure

| Step | Equipment/Location | Action/Procedure | Indication/Reference |
|--|---|---|---|
| 10 | Display Processor Power Subsystem UD41PS1 circuit breaker CB1 | Set to ON | Applies power to the Display Processor Cabinet |
| 11 | PUP System Console UD42 | a. Simultaneously press the CTRL and V keys twice and then <return> to enter CDS mode. b. Enter KEY 1 <password> c. Enter PO ON d. Enter SE LOG e. Simultaneously press the CTRL and V keys twice and then <return> to enter CDS mode. f. Enter TI U, XXX, XX/XX/XX, XX:XX | CDS prompt appears on screen Applies power to the processor boards. The PUP processor boots up. The application terminal displays the main menu. |
| <p>NOTE</p> <p>The first set of Xs represents the first three letters of the day (e.g., Tuesday is represented as TUE). The second set of Xs represents the month, day, year. The last set of Xs represents the hour and minute.</p> | | | |
| | | g. Enter CON and press <return> twice. h. At "*" prompt, enter SE TI ON | "*" prompt appears on screen |
| 12** | LDM Rack UD41A27A1-A3 | Connect Power Plug into rear back panel. | Power LED turns on. |
| 13** | LDM UD45A3-A5 | Connect Power Plug into rear back panel. | Power LED turns on. |

**Site dependent

Table 2 - 7: PUP Workstation Shutdown Procedure

| Step | Equipment/Location | Action/Procedure | Indication/Reference |
|-------------|--|--|--|
| 1 | Color Graphics Printer UD47 | Set Power switch to OFF (0). | Secures power to the printer. |
| 2 | Color Monitors UD45A1 and UD45A2 | Set power switches to OFF (0). | Secures power to the color monitors. |
| 3 | Application Terminal UD43 | Set power switch to OFF (0). | Secures power to the Application Terminal. |
| 4 | Audible Alarm UD46 | Set power switch to OFF | Removes power to the Audible Alarm. |
| 5 | PUP Equipment Power Distribution Panel | Set only the PUP workstation circuit breakers to OFF (0)*. | Secures power to the workstation. |
| 6** | LDM UD45A3-A5 | Disconnect Power Cord. | Power LED goes off. |

*If PUP workstation is not on a dedicated circuit breaker or switch, then unplug PUP workstation power strip.

**Site Dependent

Table 2 - 8: PUP Group Shutdown Procedure

| Step | Equipment/Location | Action/Procedure | Indication/Reference |
|-------------|--|--|---|
| 1 | At System Console UD42 | a. Enter PUPDOWN | Terminates application program. |
| | | b. Enter ERR LOG, OFF | Turns off error logger. |
| | | c. Enter MA DSC0:,OFF | Marks off disk. |
| | | d. Enter D D | Device list displays DSC0 is marked off. |
| 2 | PUP System Console UD42 | a. Simultaneously press the CTRL and V keys twice and then press <return> to enter CDS mode. | CDS prompt appears on screen |
| | | b. Enter HALT | Halts CPU |
| | | c. Enter PO OFF | Removes power to Display Processor Board |
| 3 | Display Processor Power Subsystem UD41PS1 circuit breaker CB1 | Turn to OFF | Removes power to the Display Processor Cabinet |
| 4 | System Console UD42 Power Switch | Set to OFF (0). | Removes power to the system console. |
| 5* | Power Supply UD41PS3 (for the modem eliminator/converter rack assembly) Power Switch | Set to OFF. | Removes power to the modem eliminator/ converter rack assembly. |
| 6 | Graphics Processor UD41A13 Power Switch | Set to OFF (0). | Removes power to the Graphics Processor. |
| 7 | Power Distribution Panel Circuit Breaker UD41A20CB1 | Set to OFF. | Removes power to the PUPDP cabinet. |
| 8** | LDM Rack UD41A27A1-A3 | Disconnect backpanel Power Cord | Power LED goes off. |
| 9** | LDM UD45A3-A5 | Disconnect Power Cord | Power LED goes off. |

*Collocated PUPs only

**Site Dependent

2-2.4 System Console Operations.

System console operations enable the user to interface with the host computer and perform functions such as initialization, rebooting, startup of system software, and various disk/tape operations. A System Console is used with each processor in the WSR-88D. The operating procedures covered in this paragraph discuss the System Console and the particular operations performed at this position. The following operations and topics are covered in this paragraph.

- System Console Command Summary — paragraph [2-2.4.1](#)
- Operating System OS/32 Loading Procedure — paragraph [2-2.4.2](#)
- System Software Startup/Shutdown Procedures — paragraph [2-2.4.3](#)
- Disk/Tape Operations — paragraph [2-2.4.4](#)
- Clock Time Set Procedure — paragraph [2-2.4.5](#)
- Software Installation Procedure — paragraph [2-2.4.6](#)
- Optical Disk Initialization Procedure — paragraph [2-2.4.7](#)

2-2.4.1 System Console Command Summary.

[Table 2 - 9: System Console Summary](#) contains commands that are primarily used for a check of the system configuration and status. The commands provide a tool for the operator to obtain an overall picture of the status of the WSR-88D system at the PUP functional area. Refer to [Chapter 1](#) for a detailed description of all OS/32 commands and format.

2-2.4.2 Operating System OS/32 Loading Procedure.

[Table 2 - 10: Operating System OS/32 Loading Procedure](#) contains OS/32 loading procedures. When the PUP Data Processor is first turned on, no operating system software program is loaded. The hardware requires an operating system to run and control communication with peripheral devices. Operating System 32 (OS/32) is the operating system for the PUPDP. OS/32 resides on an SCSI hard disk and must be loaded from the disk into memory. In the PUP, the Multiperipheral Controller (MPC) card contains the Initial Program Loader (IPL) program, which provides the instructions to load OS/32 into memory. The procedure in [Table 2 - 10: Operating System OS/32 Loading Procedure](#) is performed to load OS/32 in the Data Processor via the System Terminal.

Table 2 - 9: System Console Summary

| Command | Type at System Console | Description |
|---|-------------------------------------|--|
| NOTE | | |
| Examples for each system console command are contained in this table. | | |
| Cancel | CA (Task ID) <return> | Cancels task ID specified. |
| Display accounting | D A <return> | Displays accounting data such as CPU time, APU time, WAIT time, etc. for tasks. |
| Display devices | D D <return> | Displays list of devices such as disks, etc. |
| Display errors | D ER <return> | Displays error record and status report. |
| Display files | D F <return> . . . or D F, -.-/- | Displays listing of files of system. (Use wild cards "-" or "*", or specify filename, as required.) |
| Display log | D LO <return> | Displays system log, if assigned. |
| Display logical unit | D L <return> | Displays status of logical unit such as magnetic tape when backup is being performed. |
| Display map | D M <return> | Displays memory map of tasks running in memory in STATUS column, where A = Active, D = Deactive, P = Paused. |
| Display status | D S <return> | Displays system status. |
| Display time | D T <return> | Displays time and date. |
| Display tasks | D TA <return> | Displays tasks, size, and status. |
| Display volume | D V <return> | Displays directory information, freespace, and disk usage. |

SYSTEM CONSOLE COMMAND EXAMPLES

1. Cancel (CA)
 CA VILPROD <return> to cancel VIL Product task
 CA B <return> to cancel backup

Table 2 - 9: System Console Summary

| Command | Type at System Console | Description |
|---------|------------------------|-------------|
|---------|------------------------|-------------|

2. Display Accounting (DA)

| TASK NAME | CPUTIME | APUTIME | SVCTIME | WAITTIME | ROLLS | I/O |
|-----------|---------|---------|---------|------------|-------|-------|
| S309M1 | 1:10.2 | 0.0 | 0.5 | 46:19:53.4 | 0 | 8 |
| STATMON | 11.2 | 0.0 | 2.3 | 46:21:27.4 | 0 | 6268 |
| RPGMON | 0.1 | 0.0 | 0.0 | 46:21:44.4 | 0 | 0 |
| VCP | 3:09.7 | 0.0 | 4.2 | 46:18:14.9 | 0 | 20985 |
| PREPRDAT | 4:06.1 | 0.0 | 43.5 | 46:15:51.6 | 0 | 693 |
| RADRERUN | 0.0 | 0.0 | 0.0 | 46:21:42.3 | 0 | 12 |
| POWERMON | 0.0 | 0.0 | 0.0 | 46:21:43.2 | 0 | 0 |
| REDUNDNT | 0.0 | 0.0 | 0.0 | 46:21:43.2 | 0 | 0 |
| SHIPPING | 0.0 | 0.0 | 0.0 | 46:21:43.2 | 0 | 2 |
| RECEIVING | 0.0 | 0.0 | 0.0 | 46:21:43.1 | 0 | 6 |
| ARCHIVE | 0.0 | 0.0 | 0.0 | 46:21:43.1 | 0 | 7 |
| RGAGEDAQ | 0.0 | 0.0 | 0.0 | 46:21:43.0 | 0 | 13 |
| PERFMON | 2.2 | 0.0 | 1.0 | 46:21:38.5 | 0 | 0 |
| UTILMON | 2:12.0 | 0.0 | 2:51.8 | 46:22:02.7 | 0 | 6 |
| BASRFLCT | 29.2 | 0.0 | 0.1 | 46:20:12.7 | 0 | 0 |

3. Display Devices (D D)

| NAME | DN | KEYS | | | |
|------|-----|------|------|------|-----|
| NULL | 0 | 0000 | | | |
| RAM | 0 | 0000 | OFF | | |
| WO2 | 380 | 0000 | ITAM | | |
| W01 | 280 | 0000 | ITAM | | |
| N100 | 126 | 0000 | ITAM | | |
| N101 | 128 | 0000 | ITAM | | |
| CON | 10 | 0000 | | | |
| T11 | 14 | 0000 | ITAM | | |
| ACU1 | 16 | 0000 | ITAM | | |
| ACU2 | 18 | 0000 | ITAM | | |
| DSC0 | D9 | 0000 | SYS0 | | |
| DSC2 | E9 | 0000 | OFF | CDIR | ERC |
| OPTO | DA | 0000 | OFF | ERC | |
| STO | DE | 0000 | | | |
| LPO | 12 | 0000 | ITAM | | |
| DIOS | 100 | 0000 | | | |
| D101 | 140 | 0000 | | | |

4. Display Errors (D ER)

| | |
|----------------------------------|-----|
| ERROR RECORDING STATUS REPORT: | |
| RECORDING STATUS: | OFF |
| DISC ERRORS RECORDED: | 0 |
| FILE MANAGER ERRORS RECORDED: | 0 |
| CDS UNSOLICITED ERRORS RECORDED: | 0 |
| SYSTEM DETECTED ERRORS RECORDED: | 0 |
| SYSTEM MILESTONES RECORDED: | 0 |
| MEMORY ERRORS RECORDED: | 0 |
| MEMORY ERRORLOG READOUT PERIOD: | 2 |

Table 2 - 9: System Console Summary

| Command | Type at System Console | | Description | | | | | | |
|-------------------------------|------------------------|------|-------------|---------|--------------|-------|----------------|-------|------|
| <u>5. Display Files (D F)</u> | | | | | | | | | |
| VOLUME=SYSO | | | | | | | | | |
| FILENAME | TY | DBS/ | RECL. | RECORDS | CREATED..... | | LAST WRITTEN.. | | KEYS |
| | | IBS | | | | | | | |
| PACKINFO ,DIR/00000 | CO | | | 9 | 7/12/90 | 17:03 | 7/30/90 | 18:04 | FF00 |
| SYSTEM ,DIR/00000 | CO | | | 100 | 7/12/90 | 17:17 | 7/26/90 | 11:14 | 0000 |
| FASTCHEK ,TSK/00000 | CO | | | 161 | 11/08/88 | 15:03 | 11/08/88 | 15:03 | 0000 |
| BACKUP ,TSK/00000 | CO | | | 193 | 11/08/88 | 15:04 | 11/08/88 | 15:04 | 0000 |
| BACKUP ,HLP/00000 | IN | 4/1 | 80 | 759 | 11/08/88 | 15:04 | 11/08/88 | 15:04 | 0000 |
| EDIT32 ,TSK/00000 | CO | | | 49 | 11/08/88 | 15:05 | 11/08/88 | 15:05 | 0000 |
| EDIT32 ,HLP/00000 | IN | 4/1 | 80 | 419 | 11/08/88 | 15:06 | 11/08/88 | 15:06 | 0000 |
| EDITRO82 ,SEG/00000 | CO | | | 144 | 11/08/88 | 15:06 | 11/08/88 | 15:06 | 0000 |
| HELPRO82 ,SEG/00000 | CO | | | 9 | 11/08/88 | 15:07 | 11/08/88 | 15:07 | 0000 |
| OCOPY ,TSK/00000 | CO | | | 553 | 12/02/88 | 13:52 | 1/20/89 | 15:28 | 0000 |
| OPTINIT ,TSK/00000 | CO | | | 49 | 9/30/88 | 02:05 | 9/30/88 | 02:05 | 0000 |
| A3CD70 ,DAT/00000 | CO | | | 424 | 7/26/90 | 07:48 | 7/26/90 | 07:48 | 0000 |
| HYSECTRS ,DAT/00000 | CO | | | 1171 | 7/23/90 | 18:19 | 7/23/90 | 18:31 | 0000 |
| HYOCCULT ,DAT/00000 | CO | | | 338 | 7/23/90 | 18:15 | 7/23/90 | 18:19 | 0000 |
| RPGUP ,RUN/00000 | IN | 8/1 | 80 | 217 | 7/24/90 | 09:17 | 7/24/90 | 09:17 | 0000 |
| RPGUP ,CSS/00000 | IN | 8/1 | 80 | 36 | 7/25/90 | 09:06 | 7/25/90 | 09:06 | 0000 |

6. Display Log (D LO)

NO SYSTEM LOG ASSIGNED

7. Display Logical Unit (D L)

| LU | FILE/DEVICE | RECORD | THRU |
|----|--------------------------|--------|--------|
| 1 | SYS0:DSC1FIL1,DAT/O,SREW | 23473 | 64.7% |
| 2 | SYS0:DSC1FIL2,DAT/O,SREW | 20867 | 57.5% |
| 3 | SYS0:DSC1FIL3.DAT/O,SREW | 25473 | 70.2% |
| 4 | SYS0:DSC1FIL4,DAT/O,SREW | 0 | 0.0% |
| 5 | SYS0:INDEXXX1,TAB/O,SREW | 274 | 100.0% |
| 6 | SYS0:MAPPPPP1,TAB/O,SREW | 57 | 100.0% |
| 7 | SYS0:SUMMARY1,TAB/O,SREW | 7 | 100.0% |
| 8 | SYS0:FLAGGGG1,TAB/O,SREW | 0 | 0.0% |
| 14 | NULL:,SRW | | |

Table 2 - 9: System Console Summary

| Command | Type at System Console | | Description | | | | |
|------------------------------------|------------------------|---------|-------------|-------|-----------|------|-----|
| 8. <u>Display Map (D M)</u> | | | | | | | |
| NAME | TYPE | START | SIZE | SEG | SYS | STAT | PRI |
| TASK MEMORY | | | 116000 | | 19272.00 | | |
| RAM DISK | .RAM | 13E8000 | 96.00 | | | | |
| SYSOA307M1 | TSK | .PUR | 13CA000 | 24.00 | 2 | | |
| SYSOA307M3 | TSK | .PUR | 13BC000 | 24.00 | 2 | | |
| SYSOA307M2 | TSK | .PUR | 13AE000 | 24.00 | 2 | | |
| SYSOA307M7 | TSK | .PUR | 1396000 | 32.00 | 2 | | |
| SYSOA318M2 | TSK | .PUR | 137B000 | 28.00 | 2 | | |
| SYSOA316M2 | TSK | .PUR | 12BA000 | 32.00 | 2 | | |
| COMSHRC2 | .TSK | FC0000 | 20.00 | 8 | 1.30 RES | A | 7 |
| COMBSHR | .TSK | FB3000 | 52.00 | 9 | 1.30 RES | A | 7 |
| COMBSHR2 | .TSK | FA6000 | 52.00 | 9 | 1.30 RES | A | 7 |
| STORAGE | .TSK | E9B000 | 108.00 | 8 | 11.86 RES | A | 3 |
| TRANSFRM | .TSK | EB6000 | 120.00 | 9 | 2.67 RES | A | 7 |
| DISTRIB | .TSK | ED4000 | 168.00 | 9 | 6.67 RES | A | 3 |
| CPUVACO | .TSK | EFE000 | 8.00 | 3 | 1.41 | A | 24 |
| SYSTEM SPACE | | 5A000 | 752.00 | | 347.66 | | 46 |

9. Display Status (D S)

VOLUME= SYSO
 SYSTEM TEMP VOLUME
 CORE DIRECTORY
 NUMBER OF LOGICAL UNITS ASSIGNED:
 S309M1: 1 STATMON: 2 UCP: 3 PREPRDAT: 6
 RADRERUN: 6 RECEIVING: 1 ARCHIVE: 4 RGAGEDAQ: 1
 PRCPTAC: 1 PRCPADJU: 1 PRCPPROD: 2 STORAGE: 8
 TRANSFRM: 4 DISTRIB: 5
 TASKS ASSIGNED FOR ROLLING OR OVERLAYING:
 NONE

10. Display Tasks (D TA)

| TASK-ID | SIZE | SHD | SYS | PRI | LPU# | STATUS | TRAP |
|-----------|---------|-----|-------|-----|------|---------|------|
| S309M1 | 1677.75 | 2 | 14.91 | 23 | 0 | WAITING | TRAP |
| STATMON | 9655.50 | 9 | 4.89 | 34 | 0 | WAITING | TRAP |
| RPGMON | 9473.25 | 9 | 1.41 | 30 | 0 | WAITING | TRAP |
| VCP | 9991.25 | 9 | 6.30 | 50 | 0 | WAITING | TRAP |
| PREPRDAT | 0904.00 | 12 | 6.56 | 15 | 0 | WAITING | TRAP |
| RADRERUN | 9682.00 | 8 | 3.44 | 70 | 0 | WAITING | TRAP |
| POWERMON | 9344.00 | 6 | 1.30 | 15 | 0 | WAITING | TRAP |
| REDUNDNT | 9502.00 | 7 | 1.53 | 30 | 0 | WAITING | TRAP |
| SHIPPING | 9422.25 | 8 | 1.72 | 30 | 0 | WAITING | TRAP |
| RECEIVING | 9426.25 | 8 | 1.64 | 30 | 0 | WAITING | TRAP |
| ARCHIVE | 9495.50 | 8 | 2.88 | 70 | 0 | WAITING | TRAP |
| RGAGEDAQ | 9523.25 | 8 | 1.72 | 70 | 0 | WAITING | TRAP |
| PERFMON | 9344.00 | 6 | 1.33 | 50 | 0 | WAITING | TRAP |

11. Display Time (D T)

08/09/90 09:15:16

Table 2 - 9: System Console Summary

| Command | Type at System Console | | Description |
|--------------------------------|------------------------|--------------|--------------------------|
| <u>12.Display Volume (D V)</u> | | | |
| VOLUME=SYSO | | | |
| DIRECTORY = | 207 | FILES 2000 | SLOTS 10.35% OF TOTAL |
| FREESPACE = | 17006 | SECTORS 25 | EXTENTS 3.05% OF TOTAL |
| REQUESTS = | 34100 | READ 20643 | WRITTEN 54743 TOTAL |
| SECTORS = | 482390 | READ 1207110 | WRITTEN 1689500 TOTAL |
| LARGEST EXTENT: | 15087 SECTORS | | FLBA: 84051 LLBA: 87B3F |
| AVERAGE LATENCY: | 0.000 SEEK/REQ | | 0 ROTATION (SECTORS/REQ) |

Table 2 - 10: Operating System OS/32 Loading Procedure

| Step | Procedure/Action | Response |
|--|---|---|
| 1 | At the System Console, set POWER switch to ON | The terminal beeps within one second after power-up to indicate that the self-test passed. |
| NOTE | | |
| A Failure Status Screen will be displayed if the self-test detects a failure. If this occurs, proceed to step 2. If it doesn't occur, proceed to step 4. | | |
| If the self-test fails upon power-up: | | |
| | a. Press any key | Failure Status Screen is not displayed. |
| | b. Set POWER switch to OFF and then ON | Failure Status Screen is not displayed. |
| 3 | At the PUP Data Processor, set the AUTO/ENBL/DSBL switch to ENBL and set the LOCK/ON/SDBY switch to ON. | |
| NOTE | | |
| If reinitializing the processor does not return the system to normal operation, refer to fault isolation procedures in EHB 6-550, section 6-3. | | |
| 4 | At the PUP Data Processor, press the INIT switch on the Control Panel. | The IPL program starts, causing it to load the OS/32. At the PUP Data Processor, these actions are enough to start the CSS programs that will load the PUP application programs (or tasks) from the disk into shared memory, and subsequently start them. |

2-2.4.3 System Software Startup/Shutdown Procedures.

System software startup and shutdown procedures are performed at the System Console and pertain to the Display Processor. The software that controls peripheral devices (such as the SCSI Assembly), loads other programs, and interprets other programs commands is the operating system. Included with the operating system program are support utility programs that provide the user with support functions (such as copying files from one peripheral device to another device). The programs that are loaded and manipulated by the operating system are application programs, which make the processor perform calculations on input data to generate solutions or displays. System software startup and shutdown procedures are used by the operator, depending upon the task to be performed. The procedure in [Table 2 - 11: System Software Startup/Shutdown Procedures](#) is used to shutdown and startup the software.

Table 2 - 11: System Software Startup/Shutdown Procedures

| Function | Procedure/Action | Response |
|---|---|--|
| Shutdown | At System Console, type PUPDOWN <return> | Observe message on System Console screen that PUP software is stopped. |
| NOTE | | |
| The CSS commands in this table only affect the application programs but not the operating system. | | |
| Startup | At System Console, type PUPUP <return> | Observe message PUP SOFTWARE IS LOADED AND STARTED. PUP Main Menu is displayed on Application Terminal screen. |

NOTE

When a memory configuration error is detected at system startup, the following message is displayed on the System Terminal:

```
MEMORY CONFIGURATION ERROR xx BLOCK yy

MEMORY ERROR RECORDING DISABLED
```

YY specifies the memory block where the error was detected. If XX is a 01, 02, or 03, it is most likely a hardware problem. If this error message occurs, contact appropriate maintenance personnel.

2-2.4.4 Disk/Tape Operations.

Disk/tape operations performed at the system console include the following:

- Disk/tape backup
- Fastchek
- Display File Names

2-2.4.4.1 Disk/Tape Backup Procedure.

The BACKUP utility is used to transfer data files from a disk to a tape cartridge for backup of information stored on the disk. The transfer of data can also be made from tape to disk. Perform the procedure in [Table 2 - 12: Disk/Tape Backup Procedure](#) at the System Console for disk/tape backup. Refer to [Table 2 - 13: Backup Format Options](#) for additional options used in the backup procedure.

Table 2 - 12: Disk/Tape Backup Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|---|---|
| NOTE For disk backup, insert blank cartridge tape and ensure the write protect is off. For downloading files from a tape, insert the proper cartridge tape, with the write protect set to SAFE. | | |
| 1 | At the SCSI tape unit insert cartridge tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it. *dependent upon type of SCSI tape drive that is installed. | Ensure tape is secured in SCSI tape drive. If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2. If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2. |
| 2 | At the Applications Terminal, enter: S,A<return> to ensure archive is idle. | "ARCHIVE NOT ACTIVE" appears. If archive is active, enter: A,C,A<return> |
| 3 | At the System Console, at the "*" prompt, enter: PUPDOWN<return> | Terminates application software. |
| 4 | At the "*" prompt, enter: D TA<return> | "TASK(S) NOT FOUND" appears, proceed to step 6. If there are tasks in memory, proceed to step 5. |
| 5 | At the "*" prompt, enter: CA [taskid]<return> | Cancels task. |
| 6 | At "*" prompt, enter: SE LO<return | Cancels all system console logs. |
| 7 | At "*" prompt, enter: ERR LOG,OFF<return> | "*" appears. Error logger is stopped. |
| 8 | To backup SELECTED FILES FROM DISK TO TAPE PROCEED TO STEP 9. To make a tape backup of the APPLICATIONS SOFTWARE AND OPERATING SYSTEM SOFTWARE PROCEED TO STEP 11. To backup SELECTED FILES FROM TAPE TO DISK PROCEED TO STEP 13. To download ALL FILES ON THE TAPE TO DISK, PROCEED TO STEP 15. | |

Table 2 - 12: Disk/Tape Backup Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|--|--|
| 9 | <p>To backup SELECTED FILES FROM DISK TO TAPE, at "*" prompt, enter:</p> <p>LO BACKUP,500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=DSC0:<return> OUT=ST0:<return> SEL=CON:<return> LI=CON:<return> SIZ=250<return> VER<return> END<return></p> <p>Wait for BACKUP> prompt to appear.</p> <p>Enter the file name(s) to copy (e.g., ADAPT.DAT<return> UFFILE.DAT<return>)</p> <p>Proceed to step 10.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>Tape may be rewinding.</p> |
| 10 | <p>To start the copy process, enter: ./<return>.</p> <p>Proceed to step 16.</p> | <p>"END OF TASK 0" is displayed when the backup is complete.</p> <p>If the backup requires more than one tape, insert an additional tape cartridge and enter the following:</p> <p>T BACKUP <return> to task the BACKUP program.</p> <p>CO <return> to continue the BACKUP program</p> |

Table 2 - 12: Disk/Tape Backup Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|---|--|
| 11 | <p>To make a tape backup of the APPLICATIONS SOFTWARE AND OPERATING SYSTEM SOFTWARE, at "*" prompt, enter:</p> <p>LO BACKUP,500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=DSC0:<return> OUT=ST0:<return> SEL=CON:<return> LI=CON:<return> SIZ=250<return> VER<return> END<return></p> <p>Wait for BACKUP> prompt to appear.</p> <p>Enter: .-.<return> !EXCLUDE PROD.-.<return> !EXCLUDE TL.-.<return></p> <p>Proceed to step 12.</p> | <p>It is not necessary to backup the PRODUCT and TIME LAPSE files. If the PRODUCT and TIME LAPSE files are backed up more than one tape will be required.</p> <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind. Tape may be rewinding.</p> |
| 12 | <p>To start the copy process, enter: ./<return></p> <p>Proceed to step 16.</p> | <p>"END OF TASK 0" is displayed when the backup is complete.</p> <p>If the backup requires more than one tape, insert an additional tape cartridge and enter the following:</p> <p>T BACKUP <return> to task the BACKUP program. CO <return> to continue the BACKUP program.</p> |

Table 2 - 12: Disk/Tape Backup Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|--|---|
| 13 | <p>To backup SELECTED FILES FROM TAPE TO DISK at "*" prompt, enter:</p> <p>LO BACKUP, 500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=ST0:<return> OUT=DSC0:<return> SEL=CON:<return> LI=CON:<return> DEL/NOD<return> VER<return> END<return></p> <p>Wait for BACKUP> prompt to appear.</p> <p>Enter the file name(s) to copy (e.g., ADAPT.DAT<return> UFFILE.DAT<return>)</p> <p>Proceed to step 14.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>Tape may be rewinding.</p> |
| 14 | <p>To start the copy process, enter: ./<return></p> <p>Proceed to step 16.</p> | <p>"END OF TASK 0" is displayed when the backup is complete.</p> <p>If the backup requires more than one tape, insert an additional tape cartridge and enter the following:</p> <p>T BACKUP <return> to task the BACKUP program.</p> <p>CO <return> to continue the BACKUP program.</p> |

Table 2 - 12: Disk/Tape Backup Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|---|---|
| 15 | <p>To DOWNLOAD ALL FILES ON THE TAPE, at "*" prompt, enter:</p> <p>LO BACKUP, 500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=ST0:<return> OUT=DSC0:<return> LI=CON:<return> DEL/NOD<return> VER<return> END<return></p> <p>Proceed to step 16.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>"END OF TASK 0" is displayed when the backup is complete.</p> <p>If the backup requires more than one tape, insert an additional tape cartridge and enter the following:</p> <p>T BACKUP <return> to task the BACKUP program.</p> <p>CO <return> to continue the BACKUP program.</p> |
| 16 | <p>When backup is completed, remove the tape and enter:</p> <p>PUPUP<return></p> | <p>Returns PUP to normal operation.</p> |
| 17 | <p>At "*" prompt, enter:</p> <p>ERR LOG,ON<return></p> | <p>"*" appears.</p> |

Table 2 - 13: Backup Format Options

*The [DEL], [DEL/NOD], and [SKIP] options permit defining a criteria for selecting files to be copied such as all or most recent.

where ST = Start command

IN = Input (source tape or disk)

OUT = Output (target tape or disk)

LI = List device

SIZ = Size of space for transferred data in kilobytes

SEL = Select option (used to select files for backup, normally console is selected (SEL=CON:))

ACC = Account option where # is destination account number if it is different from source account number.

*DEL = Delete option (If input newer than output, delete OUT, restore IN to OUT)

*DEL/NOD = Delete/no date option (unconditional, delete OUT, restore IN to OUT)

*SKIP = Skip option (unconditional, do not restore IN to OUT)

VER = Verify option

dev = Device (tape, disk, console, printer)

where tape = STØ:

disk = DSCØ:

console = CON:

printer = LPØ:

NOTE

When select option (SEL) is used, the console screen will display the "BACKUP>" prompt. At this time the select options can be entered prior to execution of backup. The select options allow for complete or partial backup.

Entering Select Options (Examples)

At "BACKUP>" prompt, enter one of the following:

- | | |
|--------------------------|---|
| -. /Ø<return> | All files on account Ø |
| -.FTN/1Ø6<return> | All FTN files on account 1Ø6 |
| DSC -. /-<return> | All files starting with DSC in all accounts |
| !Exclude -.DAT/Ø<return> | Omit files with DAT extension on account Ø |
| ./<return> | End Input. |

NOTE

When ./ is entered, the program will execute.

Backup Examples

Table 2 - 13: Backup Format Options

1. Backup of a file (PROD.DAT) from disk to tape and verifying backup:
LO BACKUP,500<return>
ST<return>
IN=DSC0:<return>
OUT=ST0:<return>
LI=CON:<return>
SEL=CON:<return>
SIZ=250<return>
VER<return>
END<return>
At "BACKUP>" prompt, enter:
PROD.DAT<return>
./<return>
2. Backup of entire disk to tape and verify backup:
LO BACKUP,500<return>
ST<return>
IN=DSC0:<return>
OUT=ST0:<return>
LI=CON:<return>
SIZ=250<return>
VER<return>
END<return>
3. Loading all files to disk into account 0 from a full backup tape without verifying:
LO BACKUP,500<return>
ST<return>
IN=ST0:<return>
OUT=DSC0:<return>
LI=CON:<return>
DEL/NOD<return>
ACC=0<return>
END<return>

2-2.4.4.2 Fastchek Procedure.

The Fastchek procedure is used to troubleshoot the hard disk. Perform the procedures in Table 2-14 for Fastchek.

Table 2 - 14: Fastchek Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|--|---|--|
| 1 | At the Applications Terminal, press: F1 function key, then enter: S,A <return> to ensure archive is idle. | "ARCHIVE NOT ACTIVE" appears. If archive is active, enter: A,C,A<return> |
| NOTE Perform the remaining steps at the PUP System Console. | | |
| 2 | At the "*" prompt, enter: PUPDOWN<return> | Terminates application software. |
| 3 | At "*" prompt, enter: D TA<return> | "TASK(S) NOT FOUND" appears, proceed to step 5. If there are tasks in memory, proceed to step 4. |
| 4 | At "*" prompt, enter: CA [taskid]<return> | Terminates applications tasks. |
| 5 | At "*" prompt, enter: SE LO<return> | Cancels all system console logs. |
| 6 | At "*" prompt, enter: ERR LOG,OFF<return> | "*" appears. Error logger is stopped. |
| 7 | At "*" prompt, enter: MA DSCØ:,OFF<return> | "*" appears. Disk is marked off. |
| 8 | At "*" prompt, enter: MA DSCØ:,ON,P<return> | "DSCØ: SYSØ PROT" appears. Disk is marked on in the protect mode. |
| 9 | At "*" prompt, enter: LO FASTCHEK, 2ØØ<return> | "TASKID = FASTCHEK" appears. Loads FASTCHEK program. |
| 10 | At "*" prompt, enter: MA DSCØ:,OFF<return> | "*" appears. Disk is marked off. |
| 11 | At "*" prompt, enter: ST<return> | Starts fastchek. "FASTCHEK: Concurrent Computer Corp OS/ 32 FASTCHEK Ø3-344 RØ8-Ø3.1" appears, followed by "FASTCHEK:Function (INITial- ize, CHeck or REName) Devn:?". *FASTCHEK> prompt appears. |
| 12 | At *FASTCHEK> prompt, enter: CH DSCØ:<return> | "FASTCHEK:Mode (#CLOse, CLOSEOnly, NOReadcheck or READcheck)?" appears. Checks disk under test. |
| 13 | At *FASTCHEK> prompt, enter: REA<return> | "FASTCHEK: Extend Index Files (#No or Yes)?" appears. Enters readcheck mode. |

Table 2 - 14: Fastchek Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|---|--|
| 14 | At *FASTCHEK> prompt, enter: a carriage return for every option after REA until "OK TO RUN" (Yes or No?) appears. | "OK TO RUN" (Yes or No?) appears. |
| 15 | At *FASTCHEK> prompt, enter: Y<return> | When "*" prompt appears, FASTCHEK is running. Test takes about 5 minutes to complete. If disk passes, "END OF TASK Ø" message appears. |
| 16 | At "*" prompt, enter: MA DSCØ:,ON,,CD=AL<return> | "*" appears. Disk is marked on. |
| 17 | At "*" prompt, enter: ERR LOG,ON<return> | "*" appears. |
| 18 | At "*" prompt, enter: PUPUP<return> | Returns PUP to normal operation. |

2-2.4.4.3 Display File Names Procedure.

Perform the procedure in [Table 2 - 15: Display File Names Procedure](#) to display the file names on a cartridge tape.

Table 2 - 15: Display File Names Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|--|--|
| <p>NOTE</p> <p>This procedure will work only on cartridge tapes that have a backup file on them. Set the the write protect to SAFE.</p> | | |
| 1 | <p>At the SCSI tape unit insert insert tape to be read in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2.</p> |
| 2 | <p>At the Applications Terminal, press: F1 function key, then enter: S,A <return> to ensure archive is idle.</p> | <p>"ARCHIVE NOT ACTIVE" appears. If archive is active, enter: A,C,A<return></p> |
| 3 | <p>At the System Console, at the "*" prompt, enter: PUPDOWN<return></p> | <p>Terminates application software.</p> |
| 4 | <p>At the "*" prompt, enter: D TA<return></p> | <p>"TASK(S) NOT FOUND" appears, proceed to step 6. If there are tasks in memory, proceed to step 5.</p> |
| 5 | <p>At the "*" prompt, enter: CA [taskid]<return></p> | <p>Cancels task.</p> |
| 6 | <p>To DISPLAY THE FILE NAMES OF ALL FILES ON THE TAPE PROCEED TO STEP 7.</p> <p>To DISPLAY THE FILE NAMES OF SELECTED FILES ON THE TAPE PROCEED TO STEP 8.</p> | |

Table 2 - 15: Display File Names Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|--|---|
| 7 | <p>At "*" prompt, (in system console mode), enter:</p> <p>LO BACKUP,500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=ST0:<return> LI=CON:<return> REP<return> END<return></p> <p>Proceed to step 10.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>Observe files displayed on screen. Use CTRL S to stop scrolling of screen and CTRL Q to continue scrolling. "END OF TASK 0" is displayed when the tape read is complete.</p> |
| 8 | <p>At "*" prompt, (in system console mode), enter:</p> <p>LO BACKUP,500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=ST0:<return> LI=CON:<return> SEL=CON:<return> REP<return> END<return></p> <p>Wait for BACKUP> prompt to appear.</p> <p>Enter the file name(s) to read(e.g., ADAPT.DAT<return> UFFILE.DAT<return>)</p> <p>Proceed to step 9.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>Tape may be rewinding.</p> |
| 9 | <p>To begin the display of files, enter: ./<return></p> <p>Proceed to step 10.</p> | <p>Observe files displayed on screen. Use CTRL S to stop scrolling of screen and CTRL Q to continue scrolling. "END OF TASK 0" is displayed when the tape read is complete.</p> |
| 10 | <p>At SCSI tape unit, remove tape from SCSI tape drive.</p> | |
| 11 | <p>Enter: PUPUP<return>.</p> | <p>Returns PUP to normal operation.</p> |

2-2.4.5 Set And Synchronize The Pup System And Display Clocks.

Perform the procedure in Table 2-16 to set and synchronize the PUP system and display clocks to Coordinated Universal Time (UTC). One source of time is the Naval Observatory at (202) 653-1800. If local time of day service is used, be sure to convert time to UTC. Always enter time as UTC at the top of the minute (0 seconds). ZULU and GMT are other terms used for UTC.

Table 2 - 16: PUP Data Processor Clock Time Set Procedure

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|--|--|
| 1 | At the PUP System Console, following the "*" prompt, hold down the CTRL key and press the V key twice , then press<return> until CDS> prompt appears. | CDS> prompt appears. |
| 2 | At the CDS> prompt, enter: KEY 1,[password]<return> | [password] default is PUP. |
| <p>NOTE</p> <p>Must set CDS time to UTC time to synchronize the PUP Data Processor Clock to UTC. One accurate source of time is the Naval Observatory at (202) 653-1800. If local time of day service is used, be sure to convert local time to UTC prior to input.</p> | | |
| 3 | At CDS> prompt, enter: TI U,DAY,MM/DD/YY, hh:mm,P<return> | <p>DAY = First three letters (e.g. TUE) MM = 2 digit month (01 - 12) DD = 2 digit day (01 - 31) YY = 2 digit year (e.g. 95) hh = UTC hour (00 - 23) mm = 2 digit minute (00 - 59)</p> <p>Be sure to enter UTC time.</p> |
| 4 | At the tone from the time source corresponding to the time entered in step 3, press<return> | Sets the time entered. |
| 5 | At CDS> prompt, enter: TI<return> | Verify CDS clock time and date are correct. If date and time are incorrect return to step 3. |
| 6 | At CDS> prompt, enter: CON and press <return> until the "*" prompt appears. | "*" prompt appears. |
| 7 | At "*" prompt, enter: SE TI ON<return> | Synchronizes the display clock to the CDS clock. |
| 8 | At "*" prompt, enter: D TI<return> | Verify that the display clock time is correct. If date and time are incorrect return to step 1. |

2-2.4.6 Software Installation Tape Loading Procedure.

If a disk is replaced due to maintenance actions, new software needs to be loaded, or if the software is loaded at a new site, the installation tape loading procedure must be used to place the system into an operating condition. The procedure in Table 2-17 will load the operating system software and the associated software.

Table 2 - 17: Software Installation Tape Loading Procedures

CAUTION

This procedure will erase all existing files from the disk prior to the introduction of the new software. Disk backups must be made before performing this procedure.

NOTE

All processors in the system should be set to the same UTC date and time. This can be accomplished during processor initialization.

I. SOFTWARE TAPES REQUIRED.

A. The following tapes are required to complete the software installation tape loading procedure:

1. PUP Dead System
2. PUP Operating System
3. PUP Applications Software
4. PUP Adaptation Data
5. PUP Background Map

II. LOAD SOFTWARE TAPES.

A. INITIALIZE PUP

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|--|---|--|
| 1 | At the Applications Terminal, press: F1 function key, then enter: S,A <return> to ensure archive is idle. | "ARCHIVE NOT ACTIVE" appears. If archive is active, enter: A,C,A<return> |
| NOTE | | |
| Perform the remaining steps at the PUP System Console. | | |
| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
| 2 | At the "*" prompt, enter: PUPDOWN<return> | Terminates application software. |
| 3 | Perform the PUP Data Processor Clock Time Set Procedure in Table 2-16. Proceed to step 4. | |
| 4 | At the "*" prompt, enter: D TA<return> | "TASK(S) NOT FOUND" appears, proceed to step 6. If there are tasks in memory, proceed to step 5. |
| 5 | At the "*" prompt, enter: CA [taskid]<return> | Cancels task. |

Table 2 - 17: Software Installation Tape Loading Procedures

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|--|--|
| <p>NOTE</p> <p>Ensure the write protect switch on the Dead System tape is set to SAFE.</p> | | |
| 6 | <p>At the SCSI tape unit insert the Dead System tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 7.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 7.</p> |
| <p>CAUTION</p> <p>The following steps will erase all existing files from the disk prior to the introduction of the new software. Disk backups of data files must be made before performing the following steps.</p> | | |
| 7 | <p>At "*" prompt, enter: SE LO<return></p> | <p>Cancels all system console logs.</p> |
| 8 | <p>At the "*" prompt, enter: ERR LOG,OFF<return></p> | <p>"*" appears. Error logger is stopped.</p> |
| 9 | <p>At the "*" prompt, enter: MA DSCØ:,OFF<return></p> | <p>"*" appears. Disk is marked off.</p> |
| 10 | <p>At the "*" prompt, enter: D D/D<return></p> | <p>"DSCØ D9 ØØØØ OFF" appears.</p> |
| 11 | <p>At the "*" prompt, while depressing the CTRL key press the V key twice, then press <return> until CDS> prompt appears.</p> | <p>CDS> prompt appears.</p> |
| 12 | <p>At the CDS> prompt, enter: KEY 1,[password]<return></p> | <p>[password] default is PUP.</p> |
| 13 | <p>At the CDS> prompt, enter: HALT<return></p> | <p>CPU halted.</p> |
| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
| 14 | <p>At the CDS> prompt, enter: PO OFF<return></p> | <p>Turns off DC power supplies.</p> |
| <p>NOTE</p> <p>After the execution of step 15 the PUP will start its initial bootup. The message "Basic Confidence Test Complete" will appear approximately 60 seconds after the execution of step 15 and the IPC countdown will begin. Press the <BREAK> key as soon as the IPC countdown begins to prevent the system from booting from the disk.</p> <p>If the <BREAK> key is not pressed before the system starts booting from the disk, allow the boot process to complete and return to step 2.</p> | | |

Table 2 - 17: Software Installation Tape Loading Procedures

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|--|--|---|
| 15 | At the CDS> prompt, enter: PO ON<return> | Turns on DC power supplies. PUP starts initial bootup. In approximately 60 seconds the message "BASIC CONFIDENCE TEST COMPLETE" appears and IPC countdown begins. |
| 16 | At the CDS> prompt, press the <BREAK> key as soon as the IPC countdown begins . | "Entry=" appears |
| 17 | At the Entry= prompt, enter: 1<return> | "Update CDS configuration table? (Y or N)" appears. |
| 18 | At the "Update CDS configuration table? (Y or N)" prompt, enter: N<return> | "FILEMARKS=" appears. |
| 19 | At the FILEMARKS= prompt, enter: Ø<return> | Tape will begin loading. It will take approximately 1 minute to complete the load. When loading is complete, prompt to enter time appears. |
| 20 | At the "*" prompt, enter: SE TI MM/DD/YY, hh:mm<return> | Use the following format for date and time entries: (Use UTC date and time, the Naval Observatory at 202-653-1800 is one source for time.) MM = 2 digit month (01-12) DD = 2 digit date (01-31) YY = 2 digit year (95) hh = UTC hour (00-23) mm = 2 digit minute (00-59) |
| 21 | At the "*" prompt, enter: \$CON<return> | If "TASK PAUSED" is displayed along with a message to adjust time, enter the following with the corrected time and date: a. Enter: SE TI MM/DD/YY, hh:mm<return> b. Enter: T .BG<return> c. Enter: \$CON<return> |
| <p>NOTE</p> <p>Tape will continue loading for approximately 14 minutes. When the tape is loaded the following will appear on the system console:</p> <p>***** (1) REMOVE DEAD SYSTEM TAPE FROM STØ: ***** ***** (2) MOUNT SYSTEM TAPE IN STØ: ***** ***** (3) UNPACK SYSTEM TAPE BY ENTERING UNPACK *****</p> | | |
| 22 | At the SCSI tape unit, remove Dead System tape from SCSI tape drive. | |

Table 2 - 17: Software Installation Tape Loading Procedures

B. LOAD PUP OPERATING SYSTEM TAPE

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|---|--|
| <p>NOTE</p> <p>Ensure the write protect switch on the PUP Operating System tape is set to SAFE.</p> | | |
| 1 | <p>At the SCSI tape unit insert the PUP Operating System tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2.</p> |
| 2 | <p>At the "*" prompt, enter: UNPACK<return></p> | <p>The system takes approximately 3 minutes to load and verify data.</p> <p>If "TASK PAUSED" is displayed, cancel BACKUP TASK by entering: CA BACKUP<return> and enter: UNPACK<return>.</p> <p>When system load is complete, "TAPE UNPACK PROCESS COMPLETED" appears.</p> |
| 3 | <p>At the SCSI tape unit, remove tape from SCSI tape drive.</p> | |

Table 2 - 17: Software Installation Tape Loading Procedures

C. LOAD PUP APPLICATIONS SOFTWARE TAPE

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|--|--|--|
| <p>NOTE</p> <p>Ensure the write protect switch on the PUP Applications Software tape is set to safe.</p> | | |
| 1 | <p>At the SCSI tape unit insert the PUP Applications Software tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2.</p> |
| 2 | <p>At the "*" prompt, enter: UNPACK<return></p> | <p>The system takes approximately 5 minutes to load and verify data.</p> <p>If "TASK PAUSED" is displayed, cancel BACKUP TASK by entering: CA BACKUP<return> and enter: UNPACK<return>.</p> <p>When system load is complete, "TAPE UNPACK PROCESS COMPLETED" appears.</p> |
| 3 | <p>At the SCSI tape unit, remove tape from SCSI tape drive.</p> | |

D. LOAD PUP ADAPTATION DATA TAPE

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|--|------------------|-------------------|
| <p>NOTE</p> <p>Ensure the write protect switch on the PUP Adaptation Data tape is set to safe.</p> | | |

Table 2 - 17: Software Installation Tape Loading Procedures

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|--|--|
| 1 | <p>At the SCSI tape unit insert the PUP Adaptation Data tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2.</p> |
| 2 | <p>At the "*" prompt, enter: UNPACK<return></p> | <p>The system takes approximately 10 seconds to load and verify data.</p> <p>If "TASK PAUSED" is displayed, cancel BACKUP TASK by entering: CA BACKUP<return> and enter: UNPACK<return>.</p> <p>When system load is complete, "TAPE UNPACK PROCESS COMPLETED" appears.</p> |
| 3 | <p>At the SCSI tape unit, remove tape from SCSI tape drive.</p> | |

Table 2 - 17: Software Installation Tape Loading Procedures

E. LOAD PUP BACKGROUND MAP TAPE

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|---|---|--|
| <p>NOTE</p> <p>Ensure the write protect switch on the PUP Background Map tape is set to safe.</p> | | |
| 1 | <p>At the SCSI tape unit insert the PUP Background Map tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it.</p> <p>*dependent upon type of SCSI tape drive that is installed.</p> | <p>Ensure tape is secured in SCSI tape drive.</p> <p>If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2.</p> <p>If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2.</p> |
| 2 | <p>At the "*" prompt, enter: UNPACK<return></p> | <p>The system takes approximately 2 minutes to load and verify data.</p> <p>If "TASK PAUSED" is displayed, cancel BACKUP TASK by entering: CA BACKUP<return> and enter: UNPACK<return>.</p> <p>When system load is complete, "TAPE UNPACK PROCESS COMPLETED" appears.</p> |
| 3 | <p>At the SCSI tape unit, remove tape from SCSI tape drive.</p> | |

F. REBOOT PUP

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|------|---|------------------------------------|
| 1 | <p>At the "*" prompt, enter: MA DSCØ:,OFF<return></p> | <p>Disk is marked off.</p> |
| 2 | <p>At the "*" prompt, enter: D D/D<return></p> | <p>"DSCØ D9 ØØØØ OFF" appears.</p> |
| 3 | <p>At the "*" prompt, while depressing the CTRL key press the V key twice, then press <return> until CDS> prompt appears.</p> | <p>CDS> prompt appears.</p> |
| 4 | <p>At the CDS> prompt, enter: KEY 1,[password]<return></p> | <p>[password] default is PUP.</p> |

Table 2 - 17: Software Installation Tape Loading Procedures

| 5 | At the CDS> prompt, enter: HALT<return> | CPU halted. |
|--|--|---|
| 6 | At the CDS> prompt, enter: PO OFF<return> | Turns off DC power supplies. |
| 7 | At the CDS> prompt, enter: PO ON<return> | Turns on DC power supplies. PUP starts initial bootup. It will take approximately 2 minutes for the OS to reboot. The PUP is now ready for operations. |
| III. LOAD SITE SPECIFIC DATA FILES FROM BACKUP TAPES TO DISK. | | |
| NOTE | | |
| This procedure applies only to upward compatible adaptation data. | | |
| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
| 1 | At the SCSI tape unit, place the locally produced PUP SCSI Backup tape in SCSI tape drive and slide the lever to the right (*or turn the lever to the vertical position) to secure it. *dependent upon type of SCSI tape drive that is installed. | Ensure tape is secured in SCSI tape drive. If the SCSI tape unit has a lever that is rotated to secure the tape in the tape drive, the tape will begin to rewind if necessary. Proceed to step 2. If the SCSI tape unit has a lever that slides to secure the tape in the tape drive, the tape will begin to rewind, if necessary, during subsequent steps in the procedure. Proceed to step 2. |
| 2 | At the "*" prompt, enter: PUPDOWN<return> | Terminates application software. |
| 3 | At "*" prompt, (in system console mode), enter: D TA<return> | "TASK(S) NOT FOUND" appears, proceed to step 5. If there are tasks in memory, proceed to step 4. |
| 4 | At "*" prompt, enter: CA [taskid]<return> | Terminates applications tasks. |

Table 2 - 17: Software Installation Tape Loading Procedures**III. LOAD SITE SPECIFIC DATA FILES FROM BACKUP TAPES TO DISK - Cont.**

| STEP | ACTION/PROCEDURE | RESPONSE/COMMENTS |
|-------------|---|---|
| 5 | <p>At "*" prompt, enter:</p> <p>LO BACKUP,500<return> ST<return></p> <p>At BACKUP> prompt, enter:</p> <p>IN=ST0:<return> OUT=DSC0:<return> SEL=CON:<return> LI=CON:<return> DEL/NOD<return> VER<return> END<return></p> <p>Wait for BACKUP> prompt to appear.</p> | <p>TSKID = BACKUP BACKUP> prompt appears.</p> <p>If needed, tape will begin to rewind.</p> <p>Tape may be rewinding.</p> |
| 6 | <p>At BACKUP> prompt, enter the file name(s) to copy e.g.</p> <p>ADAPT.DAT<return> BACKGRND.DAT<return> EBMFILE.DAT<return> UFFILE.DAT<return></p> <p>Proceed to step 7.</p> | |
| 7 | <p>To start the copy process, enter:</p> <p>./<return></p> | <p>Copy process begins. When transfer of files is complete, "END OF TASK 0" appears.</p> |
| 8 | <p>At the SCSI tape unit, remove tape from SCSI tape drive.</p> | |
| 9 | <p>Enter:</p> <p>PUPUP<return></p> | <p>Returns PUP to normal operation.</p> |
| | | |

2-2.4.7 Optical Disk Initialization Procedure.

Before an optical disk can be used for archiving, it must first be initialized using the optical disk utility "OPTINIT". The optical disk initialization procedure is given below. The initialization process takes approximately 12-15 minutes to complete.

1. Insert optical disk to be initialized into optical disk drive and lock in place.
2. Press the START/STOP pushbutton on front of drive.

NOTE

The green light on front of drive will blink on and off. After the disk has reached the proper speed, the light will stay on steady.

3. At system console enter L OPTINIT <return> to load disk utility.
4. Enter ST <return> to start. The prompt OPTINIT> is displayed.
5. Enter OPT0: <return> when prompted to enter optical device mnemonic.
6. Enter Y <return> when prompted ((Y/N)?) to initialize as Data Disk.
7. Press <return> when prompted to enter the LLBA in decimal to select default.
8. Enter XXXX: <return> when prompted to enter optical volume mnemonic where XXXX, for example, could be ARC3, ARC4, etc.
9. Enter up to 40 characters <return> when prompted to describe data on disk. Data and types of products serve as examples.
10. Enter N <RETURN> when prompted ((Y/N)?) to make any changes.

NOTE

If Y is entered at step 10, the program will start at the beginning. At end of initialization, the program will display END OF TASK = 0

2-2.5 PUP Operations.

This paragraph contains information pertaining to PUP operations at the workstation. It describes the use of the Graphics Tablet and the Application Terminal, and provides the procedures for performing PUP Group operational functions. The following major operator-machine interface components are discussed:

- Graphics Tablet Operations
- Application Terminal Operations.

2-2.5.1 Graphics Tablet Operations.

The Graphics Tablet has two main uses: product acquisition, display, and manipulation via function selection, and cursor control for both color graphic screens. The Graphics Tablet is divided into two main areas as follows (see [Figure 2-2. Graphics Tablet Layout](#)):

- Image Tracking Area (A1 and A2, [Figure 2-2. Graphics Tablet Layout](#))
- Function Selection area (Remainder, [Figure 2-2. Graphics Tablet Layout](#)).

Graphics Tablet selections are activated by using the four-button puck provided for the purpose of accessing individual functions and cursor control. Function selection is made by positioning the puck cross-hairs sight anywhere within the desired Graphics Tablet function box and pressing one of the four buttons on the puck. The two left/top buttons control the left graphic screen and the two right/bottom buttons control the right graphic screen. The two buttons for each screen operate identically, with the extra button provided solely as a backup in case of button contact failure.

Cursor control for both screens is provided by positioning the puck cross-hairs sight in the image tracking area (A1) of the tablet. Sliding the puck around in this area of the tablet will result in the same relative motion of the cursor on the screen. When the puck is moved outside the image tracking area of the tablet, the cursor will remain somewhere on the screen. If the puck were "slid" off the edge of the tracking area, the cursor would remain at the edge of the master cursor screen or quadrant. If the puck is lifted vertically off the tablet before moving it outside the image tracking area, the cursor will remain at the location where the puck was lifted off. Puck usage and cursor control functions, including cursor link/unlink, cursor coordinate display, and cursor home are fully described in para-

graph 1.1 of the EHB 6-531-1 PUP User's Guide, Appendix A.

2-2.5.1.1 Image Tracking Area.

This area is sub-divided into two parts, Product Display Area (A1) and Product Annotation/Status Area (A2) and is used to position the cursor(s) on the selected screen(s).

2-2.5.1.2 Function Selection Areas.

These areas consist of ten groups of boxes, each group colored differently for easy reference. The boxes in each group are used to define related functions. Color coding and stratification assist the operation in terms of quick orientation for efficient product acquisition and display. Selection of a function is made by positioning the puck cross hairs over the desired function box and pressing the appropriate puck button. The two left buttons control the left screen and the two right buttons control the right screen. Notable exceptions to the left/right button control rule are user functions, auto resume/halt, and cursor coordinate display, all of which are button-independent.

The capabilities provided by the function selection areas are briefly described below. A detailed description of the capabilities are given in EHB 6-531-1 PUP User's Guide, Appendix A.

- **Product Select Area (dark blue section).** Products are selectable for display from the PUP database or the Product Select Area may be used to initiate a one-time request from the RPG. When the selection is accomplished, an attempt will be made to display the latest available product of this type, regardless of the parameter setting. The ability to retrieve and delete products from the queue, transfer products from one graphic screen to another, turn products off and on, display the previous or next version of a product, and determine the status of the WSR-88D Unit are also contained in this area.
- **Product Parameters Select Area (light blue section).** The parameters of a previously selected product may be changed by selections from this section so that a different version of that product may be displayed from the PUP data base or, if not in the data base, requested from the RPG. Blank time and date returns a requested products time and date to being unspecified. The SEND RPG REQ function in this area will send the request for a specific product to the specified RPG.
- **Editing Commands Area (beige section).** Functions to control product annotation, alert area editing, background map editing, and RCM editing are contained here. Entry into the edit mode will lock out many other Graphics Tablet functions.
- **Keyboard Area (light yellow section).** This is a standard ASCII keyboard and operates similarly to a typewriter except action is through the puck. It is used in product parameter selection and editing modes. Parameter selection from the keyboard is only provided for products selected from the Graphics Tablet. Product parameter selections on the ASCII keyboard area must be followed by selection of <return> before they are accepted.
- **User Functions Selection Area (light green section).** User Functions, which are defined at the Application Terminal, may be selected for execution from this area. There are 60 possible user functions, but only the first 30 are selectable from the Graphics Tablet. The remaining 30, and the 30 listed on the Graphics Tablet, are all selectable at the Application Terminal.
- **Graphics Display Functions Area (dark green section).** The main display functions of the PUP are contained in this area. These include time lapse control, graphic auto display, full/quarter screen selection, all/one quadrant recenter/magnification, color/gray scale selection, cursor control, hard copy, and acknowledge alert.
- **Overlay Area (orange section).** Product overlays such as hail, storm track, meso, and Tornado Vortex Signature (TVS) are available for selection individually or in combination. The ability to turn overlays off/on, erase overlays, and delete overlays/maps, is also contained in this area.
- **Background Map Area (gray section).** From this area, background maps are selectable for display by themselves or with products; maps may be displayed individually or in combination, turned on or off, placed in the foreground or background, and erased.

Cancel/Help and Ack Alert Areas (brown squares). By selecting Cancel/Help function, the Graphics Tablet will be returned to the normal operational mode and dis

- play a help screen based on the operational mode at the time of selection. The Ack Alert function shuts off the audible alarm and displays the unacknowledged alert or acknowledged on the Color Monitor.
- Special Graphics Symbols Area (dark yellow section). Sixty-four special graphic symbols are provided in this area. Thirty-two symbols operate in connection with the shift keys in the keyboard area. These symbols are agency-defined.

2-2.5.1.3 Functional Operations.

Operations performed at the PUP Graphics Tablet involve making selections in the function selection area and also performing select functions in the image tracking area. The operations discussed in this paragraph are listed as follows:

- Product Selection
- Use of Product Parameters
- Editing
- Use of Keyboard
- User Functions
- Graphic Display Functions
- Background Maps
- Overlay Display Functions
- Cancel/Help
- Graphic Symbols
- Product Request Procedures.

The following paragraphs discuss the operations performed in grouped areas of the tablet, i.e., Product Select area.

2-2.5.1.3.1 Product Selection.

Individual products are selected by placing the puck over the desired product in the product select area and pressing the appropriate buttons for display on either the left or right screens. The product will be immediately displayed if available in the data base. The most recent product of the type selected, without regard to parameter, will be displayed. If the product is unavailable in the data base, then it may be requested from the RPG.

Other functions in the product select area are available to display or manipulate products. These are:

- DISPLAY QUEUED PRODUCT
- ACKNOWLEDGE PRODUCT
- PRODUCT BACK
- PRODUCT FORWARD
- TRANSFER SCREEN PRODUCT
- CLEAR QUEUE
- REDISPLAY LAST PRODUCT
- PRODUCT OFF/ON.

NOTE

NEXRAD UNIT STATUS selection box is also contained in the product selection area. Making this selection will cause the NEXRAD unit status to be displayed on the graphic screen.

DISPLAY QUEUED PRODUCT — The oldest product remaining on the queue, which holds 15 products, is the one which will be displayed, via this function, onto the selected screen. When it is displayed, its name is deleted from the queue and the next oldest product on the queue becomes the one displayed the next time this function is selected. The products, regardless of queue status, are stored in the PUP data base and can be displayed by normal display procedures.

ACKNOWLEDGE PRODUCT — This function will remove the name of the oldest product on the graphic product queue (the Next Queued Graphic Product) without displaying it. When this is done, the next oldest product on the queue becomes the Next Queued Graphic Product, which is listed on the Product Queue Status line of both graphic screens. This function selection may be repeated as many times as desired until the queue is empty. Even though this function removes the product from the queue, the products are not deleted from the data base and are still displayed by normal display selection procedures.

PRODUCT BACK — This function will search the data base for the next older product containing the same parameters of the product currently displayed on the selected screen. If the new product is

available, it is displayed. If not, the screen will clear, and an indication (the Pick-A-Product screen is displayed) that the product is not available is displayed.

PRODUCT FORWARD — This function will take the product type, RPG, and Slice Product parameters for the product currently displayed on the selected screen, and search the data base for the next newer product with those same parameters. If the new product is available, it is displayed. If not, the screen will clear, and an indication (the Pick-A-Product screen is displayed) that the product is not available is displayed.

TRANSFER SCREEN PRODUCT — This function will display onto the currently selected graphic screen the same product that is currently displayed on the other (donor) graphic screen (the screen NOT being selected). The product will be displayed in its default state; that is, without any screen manipulations, such as magnification, filtering, etc., which may be currently in effect on the other screen. This function will not affect the donor screen in any way.

CLEAR QUEUE — This function will clear the graphic product queue of all graphic products listed on the queue. Although the queue is cleared, all products removed are still available for display by normal product display selection methods until they are overwritten in the data base when the product storage area is full.

REDISPLAY LAST PRODUCT — Excluding time lapse displays, this function will redisplay the product which was previously displayed on the selected screen. If no product is currently displayed (blank screen or test pattern), the last product which was displayed will be redisplayed. If there is currently a product displayed when this function is selected, the product which was most recently displayed prior to the current one will be redisplayed, if it is still available.

PRODUCT OFF/ON — This function will change the colors of the main product on the selected screen to transparent. The product data will disappear and any background map data previously obscured by the product will appear. This is a toggle function which will alternate between "product on" and "product off" with each subsequent selection. When selected, the new state of this function will be indicated as a feedback message on the selected screen.

2-2.5.1.3.2 Use of Product Parameters.

The Product Parameters area contains product parameters, transmission parameters, and display parameters applicable to various product types. A set of parameters exists which uniquely specifies each version of the product stored in the PUP data base. Each version of the product to be obtained from an RPG and transmitted to the PUP is also specified by product parameters.

Included in the discussion on product parameters in this paragraph are the following topics:

- Parameter Select Mode
- Parameter Select Mode Entry
- MATCH PARAMETERS
- DEFAULT PARAMETERS
- AZRAN SELECT
- CROSS SECTION SELECT.

Product parameters for product display or RPG requests are selected from the Product Parameter Area on the lower left side of the Graphics Tablet, or from the edit screens obtained from the Display menu of the alphanumeric terminal.

Table 2-18, Product Parameters, describes the parameters in the product parameters area.

Table 2 - 18: Product Parameters

| Product Parameter | Meaning |
|--------------------------|--|
| NO. DATA LEVELS | Number of individual data thresholds associated with a product. |
| RESOLUTION | The resolution, in each of the X and Y directions, of the product data, in nautical miles. |
| ELEVATION (angle) | Angle of the radar, in degrees above the horizontal, at which a product with this parameter is generated. |
| LAYER | For Layer Composite products this indicates the altitude layer, above mean sea level, of the product. The altitudes are determined by RPG adaptation data. |
| ALTITUDE | Number indicating thousands of feet above mean sea level that the product data has been gathered. This parameter is currently used only for the Velocity Azimuth Display product. |
| END HOUR | Number indicating the ending hour of a precipitation accumulation. Value must be a clock hour, i.e. 12 for noon. |
| DURATION | Number of hours for a precipitation accumulation. |
| CENTER AZIMUTH | Angle in degrees, clockwise from the north along the earth's surface, of the center of the product from the radar. |
| CENTER RANGE | Distance from the radar, in nautical miles, of the center of the product. |
| STORM SPEED | Rate, in positive knots, of the storm, for selection of the storm relative motion. |
| STORM DIRECTION | Direction, in degrees clockwise from the north along the earth's surface, that the storm is coming from for selection of the storm relative motion. |
| CONTOUR INTERVAL | Interval, in thousands of feet, between data levels associated with the Echo Tops Contour product. |
| END PT. 1 AZIMUTH/RANGE | This is the beginning azimuth and range point for a vertical cross section product. It is defined by placing the cursor, in the image area of the graphic tablet, at the desired locations and pressing the button. |
| END PT. 2 AZIMUTH/RANGE | This is the ending azimuth and range point for a vertical cross section product. It is defined as indicated in END PT. 1 AZIMUTH/RANGE above. The two points thus defined are connected to form the line along which the vertical cross section will be generated. |
| TIME | The time of day associated with the specific date, to determine the particular volume scan version of the product. Normally, the time need not be specified exactly; anywhere within a volume scan or within a few minutes is acceptable. |
| DATE | The product generation date. |
| RPG | A four-letter mnemonic used to determine the product RPG origin. If no RPG is specified, the default is the associated RPG. |

Table 2 - 18: Product Parameters

| Product Parameter | Meaning |
|--|---|
| Transmission Parameters: | |
| The following three parameters (with the exception of REQUEST PRIORITY) apply to one-time requests only, and not to routine product set entries. | |
| REQUEST PRIORITY | Designation of low priority means that if a narrowband overload condition exists, higher priority products will be transmitted in preference to low priority products. |
| REPEAT COUNT | Normally set at 1 (send one product only), this count may be increased up to 9 for the dedicated associated RPG communication line only (if RPG field is left blank). This is the total number of volume scans to send the same product, starting at the present. Thus, for every volume scan (e.g., every 5 or 6 minutes) a new version of the same product will automatically be sent by the RPG without having to make additional one-time requests, for up to 9 volume scan periods. |
| REQUEST MAPS | Since a PUP has permanent storage of background maps only for its WSR-88D Unit Coverage area, it must obtain all but the POLAR GRID, RANGE RING and RDA background maps, along with products, from other RPGs. The above three maps are created by the PUP for any WSR-88D Unit and cannot be requested. Each RPG has adaptation data |
| REQUEST MAPS (CONT) | Which specifies what set of background maps are to be sent, with a one-time product request, for storage at the PUP. As long as these maps remain stored, they will be displayable with any product from that particular RPG. The maps are stored in the product data base and eventually will be overwritten at the same time as the product they were received with. Since one set of maps from another RPG will be retained and available for a minimum of 6 hours, it is not a good idea to request them too frequently, as one transmission of a set of maps over a dial-up line could take up to several minutes. For this reason the REQUEST MAPS parameter is always defaulted to N (no). |

Parameter Select Mode — This mode does not become active until the MATCH PARAMETERS function, the DEFAULT PARAMETERS function, or an applicable parameter for a displayed product (or one selected for display but not available) is selected from the left side of the Graphics Tablet. The mode remains in effect through subsequent parameter selections until DISPLAY PRODUCT or SEND RPG REQUEST is selected. Any other valid selection for that screen will cancel parameter select mode and ignore any parameter changes just made.

When Parameter Select mode is first entered, the graphic product display area will display the Pick-A-Product Menu listing available products of that type in the PUP data base. The current set of applicable product parameter values are listed on the right side of the screen (or within the selected quadrant in quarter screen mode). When an applicable parameter value is selected from the lower left area of the tablet, the selected value will replace the previous value next to the parameter name on the graphic screen. When a parameter name (excluding AZRAN SELECT and CROSS SECTION SELECT) is selected from the area immediately to the left of the cursor tracking area, the parameter name is displayed in the preview area below the list of current parameters. The actual value associated with the parameter name must then be entered, using the tablet keyboard area at the top of the Graphics Tablet, one character (or numeric) at a time, followed by RET when the selection is completed for each parameter. If return is not selected following parameter entry from the keyboard area, the entry will be ignored and the original value left unchanged.

Once all product parameters have the desired values, selection of DISPLAY PRODUCT will attempt to display the desired product as well as update appropriate default parameter values at that time. Alternately, SEND RPG REQUEST will send the request directly to the indicated RPG, as well as

update appropriate default parameters. If, upon selection of DISPLAY PRODUCT, the product with the new set of parameters is not in the data base, then the parameter list is redisplayed, along with the Pick-A-Product Menu, but the screen is no longer in Parameter Select Mode and a feedback message "SEND RPG REQUEST" appears on the screen.

Parameter Select Mode Entry - When parameter select mode is entered with the selection of DEFAULT PARAMETERS, MATCH PARAMETERS, or with the direct selection of an applicable parameter function, the Pick-a-Product menu is displayed and the current set of applicable parameter values is displayed on the right side of the screen (or within the selected quadrant in quarter screen mode). This is true whether the screen was just displaying a product or whether the previously selected product was not found.

Below the current parameter values a "Current Parameter" selection line is displayed. If the parameter selected is a Single Action type, where no additional information needs to be entered, then the value just selected will appear only on the line on which the particular parameter is listed. If the parameter selected is of the Multiple Action type, this means that subsequent to the parameter function selection, a numerical or alphabetic value must be entered. When such a parameter function is selected, the keyboard area at the top of the Graphics Tablet is activated for subsequent entry of the numerical or alphabetic value. At the same time, the "Current Parameter" line will list this parameter by name and blank the rest of the line. As the digits or letters are then selected via the keyboard area functions, they will appear on the right side of the "Current Parameter" line. Each previous entry will be moved to the left as a new character is selected. When the parameter has been entered, the RET function on the Graphics Tablet Keyboard area must then be selected to indicate completion and deactivation of the keyboard. At this time, the entered parameter value is checked for validity and, if valid, replaces the value listed on the line for that particular parameter.

MATCH PARAMETERS — When a graphic product is displayed and this function is selected, the Parameter Select mode will be entered with all the product parameters matching identically those of the displayed product (including time and date).

If MATCH PARAMETERS is not selected, and a product parameter function is selected, e.g., ELEVATION DOWN, then the parameters listed will be the default parameters and the ELEVATION DOWN function will operate on the default elevation angle which may not be the angle of the displayed product. If it is desired to change the angle of the displayed product, then MATCH PARAMETERS should be selected first, followed by ELEVATION DOWN. The procedure operates similarly with other parameters.

MATCH PARAMETERS can also be used to display a product of a different type than the one currently on the graphic screen with all common parameters matching. Parameters which the new product type has, but the current one does not have, will use defaults. For example, if a Base Reflectivity product is on the display and it is desired to display a Base Velocity Product with the same time, date, RPG, elevation angle, number of color levels and resolution, then use of this function is the easiest way to get the matching Base Velocity Product displayed. Perform the following sequence to display matching products of a different type:

1. When the original product is on the graphic screen (on selected quadrant), select the MATCH PARAMETERS function;
2. Without any other intervening selections for that screen, select the new product name on the tablet. In this case, the matching product will be searched for and displayed (if available) rather than the most recently received version of that product.

DEFAULT PARAMETERS — Default product parameters are the values assigned to a product type when the product type is selected. Once the default assignments are identified to the operator, any or all parameter assignments may be changed before the product is selected for display. Default assignments reduce the need for the operator to alter the parameters to obtain the desired product.

AZRAN SELECT — This function will save the last (previously) selected geographic cursor coordinate as the "default" parameters for Azimuth Angle and Center Range from the RDA for any product type, subsequently requested, which uses one or both of these default parameters.

The last selected geographic cursor coordinate is always the geographic location, Azimuth and Range referenced to the RDA, where the cursor was positioned when the puck button was last depressed. A

geographic product or background map must be concurrently displayed on the screen when a cursor coordinate is selected. This occurs regardless of the state or screen on which the "cursor coordinate display" was displayed.

To request a product from the RPG (or PUP data base), which has a product center definition (a "window" product) or azimuth angle parameter, perform the following steps:

1. Place the cursor at the desired geographic location (e.g., a storm center) on any geographic product and depress the puck button for that screen.
2. Select AZRAN SELECT on the Graphics Tablet using any puck button. Default Azimuth and Range product parameters are now changed to the selected location.
3. Select the desired product name on the Graphics Tablet. This will display the latest received product of that category or the default parameters if none are in the PUP data base.
4. Select DEFAULT PARAMETERS on the Graphics Tablet (unless they are already displayed). The azimuth and range, if applicable, just selected with the cursor (step 1) will be indicated and the current date/time (indicated by blanks) will be set.
5. After verifying and changing, if desired, any of the remaining parameters, select SEND RPG REQUEST to send the one-time request to the RPG for generation.

To change the azimuth and range via cursor position selection while the screen is in parameter select mode, the operator may perform step 1 with a geographic product on the other screen and step 2 using the puck button for the screen with the parameters listed. This will update the default azimuth and range parameters listed. These parameters may also be modified via the Azimuth Angle and CENTER RANGE individual parameter selections and keyboard area entries.

CROSS SECTION SELECT — This function is used in conjunction with the vertical cross section products to specify the geographic end points when requesting one or more of these products. The last two selected geographic cursor positions prior to the selection of this function are used to define the two end points of the cross section (that is, the last two selected by depressing the puck button on a geographic display). This may be accomplished prior to entering parameter select mode for a cross section product or during parameter select mode for a cross section product. This defines the default cross section end points, and those will not change unless this function is reselected or unless a new cross section is defined on the alphanumeric terminal when selecting a cross section product via the Display Graphic Product Edit Screen at the Application Terminal. Subsequent selections of cursor positions without reselecting this function, or when used in conjunction with the AZRAN SELECT function or CURSOR HOME DEFINE function, will not change the default cross section.

This function is most useful when defining a cross section for selection of one or more cross section products from the RPG, either via a one-time request or from a Routine Product Set (RPS) list. It would be of very limited use for selecting cross section products already stored in the PUP data base for display, unless the cross section had not changed since the RPG request was made. This is due to the large number of variations of cross sections possible. The Pick-A-Product screen or some other means would be far more convenient for that purpose. When a cross section product is added or modified, on an RPS list, it will always assign the default cross section defined at that time to the cross section product. The cross section end points are NOT definable on the RPS list edit screen because that would require more room than is available on that display. What is displayed (but cannot be edited) on that screen for cross section products is the western most cross section end point (or northernmost if both points are the same longitude) in azimuth/range from the RDA.

When this function is selected, there is a limits check which takes place to verify that neither cross section end point is more than 124 nm. from the radar and that the cross section line between the two points is between .54 nm. and 124 nm. (230 km) long. If this is not the case, an error message is reported and the previous default cross section end points remain unchanged.

The CURSOR HOME and PRESET CENTER functions, when selected, position the cursor to the respective, previously defined position. Selection of a cursor position on a non-geographic display does not define a cursor position.

The CURSOR HOME DEFINE function will set the last selected cursor coordinates or in some cases fixed screen coordinates to be the current HOME position.

The current cross section only (the current default setting) may be displayed, at any time, on any geographic product or map display, by selecting the Current Cross Section overlay. This will display a straight cyan blue line, as an overlay, connecting the two cross section end points. If the cross section is redefined, then the Current Cross Section overlay must be reselected to display the change.

Having the CURSOR AUTO/MANUAL mode in manual when selecting the two cursor positions, prior to the selection of the CROSS SECTION SELECT function, will facilitate being able to use the cursor position readout to note what the selected end points are.

A cross section product is identified in the PUP product data base by a unique set of parameters (i.e., those listed on the Pick-A-Product screen for a specific product). Only the westernmost point (or northernmost, if both points are equally west) of the cross section is used as a unique, product-identifying parameter for the purpose of selection out of the data base. When the product is displayed, however, both ends of the cross section are identified in the product identification information on the screen.

When a cross section product is identified on the Time Lapse Define Edit Screen and the Archive (write or read) One Product Edit screens, only the westernmost point of the cross section is identified as parameters 1 (Azimuth) and 2 (Range), and the easternmost point is ignored.

2-2.5.1.3.3 Editing.

The Edit Commands area of the Graphics Tablet are used to perform the following editing functions:

- Edit RCM (applicable only to designated PUP)
- Edit Product Annotations
- Edit Background Maps
- Edit Alert Areas.

Edit Radar Coded Message (RCM) — The Intermediate Graphics RCM product is a geographic product similar to the Composite Reflectivity product but the main difference is that for the Intermediate Graphics RCM each color level box fits exactly within the 1/16 LFM grid for the area of coverage. The area from the Radar location out to 124 nmi radius has seven color levels including the background color, and the area between 124 and 228 nmi radius has three color levels including the background color (nine colors total). This graphic product may be manipulated, e.g., recentered, magnified, filtered, have maps added etc., as any other geographic product.

During the RCM editing procedure on the graphic screen, the intermediate graphic product is displayed in a window in the product display area, surrounded by an area at the top to display a portion of the alphanumeric pre-edit RCM product, and an area to the left and bottom containing an RCM Graphic Edit Menu (of which there are seven). On the right is the normal product ID and status line display area. The intermediate graphic portion of the RCM is also displayed (not on a screen currently being used for RCM editing) without the surrounding top left and bottom information, in the full product display or quarter screen area, as any other graphic product. In this case, the latest received (or any previously stored) version still in the data base is displayed by selecting RCM in the product (dark blue) area of the Graphics Tablet and optionally using the PRODUCT BACK function or Pick-A-Product screen selection. This may be most useful while the RCM editing is being performed on the other graphics screen for comparison purposes. Previous (as opposed to the latest received) versions of this intermediate graphic product available in the data base will always be the post-graphic-edited version if it was sent back to the RPG, or the original pre-edited version if it was not. Refer to [Table 2 - 19: RCM Access](#), and [Table 2 - 20: RCM Edit Selections](#), for a description of RCM inspection and access and editing commands.

Edit Product Annotations — To generate or edit a graphic product's annotations, select the product to be annotated on either the left or right screen in either full or quarter screen mode. If recentering or magnification is desired, then perform the recenter/magnification before selecting EDIT ANNOT. Once the product to be annotated is displayed as desired, select the EDIT ANNOT function located on the upper left corner of the Graphics Tablet.

The editing of the product annotations is performed by using the graphic editing commands, the graphic keyboard area, and the graphics special symbols, all of which are located on the upper part of the Graphics Tablet. The following subsections describe how these parts of the Graphics Tablet are used and how text, special symbols, and lines are added and deleted.

- Adding Text and Special Symbols. To add text or special symbols while in edit mode, select the cursor location on the product annotation area where the text or special symbols are to begin. Then, select either a text character from the graphics keyboard or a special symbol from the graphic symbol area. The selected text character or special symbol appears at the selected location on the graphic screen.
- Graphic Keyboard Usage While Editing. The graphic keyboard area of the Graphics Tablet is used to enter text while editing. All characters on this keyboard area except for RET (which is not used in edit mode) may be selected in edit mode. To access shifted characters, depress the UPPER SHIFT function key before choosing desired characters. The LOWER SHIFT function key should be used to reaccess non-shifted characters.
- Graphic Symbols. There are 64 adaptation-data-definable special graphics symbols which can be used for product annotation and background map editing. These special symbols are numbered S1 through S64 and are located on the upper part of the Graphics Tablet to the right of the graphic keyboard. Using the UPPER SHIFT on the graphics keyboard accesses the symbols S33 through S64. Conversely, LOWER SHIFT accesses the symbols S1 through S32.
- Deleting Text, Special Symbols, and Lines. The entities that can be deleted while in edit mode are text, special symbols, and lines. Deletion takes place by getting into delete mode and selecting the entity to be deleted via the Graphics Tablet.

Table 2 - 19: RCM Access

| RCM Part | Portion | Selection To Access For Inspection/Edit |
|-----------------|--|---|
| A | Intensity | EDIT RCM PT A on Graphics Tablet. |
| | Max Top | EDIT RCM PT A on Graphics Tablet followed by EDIT MAX-TOP on the Graphic Screen Menu. |
| | Centroids | EDIT RCM PT A on Graphics Tablet followed by EDIT CENTROIDS on the Graphic Screen Menu. |
| B | VAD Winds* | (G)EN AND DISTRIBUTE PRODUCTS, (R)CM, (E)DIT, (B) or G,R,E,B for short, on the alphanumeric terminal. |
| C | TVS/MESO | EDIT RCM PT C on the Graphics Tablet. |
| | Centroids | EDIT RCM PT C on the Graphics Tablet followed by EDIT CENTROIDS on the Graphic Screen Menu. |
| | Precip. | EDIT RCM PT C on the Graphics Tablet followed by |
| | Type/Trend | EDIT PCTR on the Graphic Screen Menu. |
| | LEWP thru | EDIT RCM PT C on the Graphics Tablet followed by |
| | MLTLVL | EDIT LEWP ETC. on the Graphic Screen Menu. |
| | Hurric./* | (G)EN AND DISTRIBUTE PRODUCTS, (R)CM, (E)DIT, (C) |
| | Trop.Storm | or G,R,E,C for short on the alphanumeric terminal. Move cursor to position following /EYE and /CNTR to edit. |
| | Remarks* | (G)EN AND DISTRIBUTE PRODUCTS, (R)CM, (E)DIT, (C) or G,R,E,C for short, on the alphanumeric terminal. Move cursor down to position following /REM: to edit. |
| | Editor* | (G)EN AND DISTRIBUTE PRODUCTS, (R)CM, (E)DIT, (C) |
| Initials | or G,R,E,C for short, on the alphanumeric terminal. Move cursor down to position following /EDITED: to edit. | |

NOTES:

*Access only from Application Terminal

Any Graphic Screen Menu can be directly accessed from any other within the same part (A or C).

The Intermediate Graphic Product will be displayed along with each Graphic Screen Menu.

Table 2 - 20: RCM Edit Selections

| Graphic Screen Common Menu Selections | | |
|--|------------------------|--|
| 1 | SAVE CHANGE | This applies to the current portion (menu) being edited. It will save all completed edit data to the disk. It is useful during lengthy edit so that CANCEL CHANGE may be used to get rid of mistakes made since the last SAVE CHANGE. |
| 2 | CANCEL CHANGE | This applies to the current portion (menu) being edited. It will cancel all edits made since the last save to the disk. It will automatically redisplay the version that was last saved to the disk and will remain in edit mode. |
| 3 | CANCEL ALL | This function must be picked twice in succession to work. The first selection will display a warning message so that it is not executed inadvertently. This will quite literally cancel ALL edits made to this RCM product, including those previously saved to the disk. Only the original is accessible following this action, and applies to the entire RCM product. This function will automatically redisplay the original version of the selected portion and will remain in edit mode. |
| 4 | END/SAVE PART A or C | This will save the edits performed on this part (except those previously canceled), will exit the RCM edit mode, and will clear the graphics screen menus. This should be selected prior to editing on the alphanumeric screen, even if it is for the same part, i.e., C. If it is desired to exit edit but not save the data to disk, select one of the cancel selections first. |
| 5 | DISPLAY ORIGINAL | This will first save the completed, edited data to disk, then display the original pre-edited version for review only; it cannot be edited in this case. To return to the edited version, select RESUME EDITING. The only menu functions which are active immediately subsequent to this selection are those on the bottom, except SAVE CHANGE and CANCEL CHANGE. |
| 6 | RESUME EDITING | This is only active immediately subsequent to the selection of DISPLAY ORIGINAL. This will redisplay the version which was saved to disk when DISPLAY ORIGINAL was selected and will re-enable all the edit menu selections. |
| 7 | EDIT... | These list the other portions of the same RCM part for editing. If any completed edits have been made (and not canceled) to the current portion, they will be saved to disk prior to exit of this portion. The newly selected menu and the data portion of the RCM which goes with it will be displayed available for editing. |
| | • <u>Adding Lines.</u> | To add a line while in edit mode, select the START LINE function located on the upper left part of the Graphics Tablet. Once this is selected, the only functions that can be selected are END LINE, CANCEL EDIT, EXIT EDIT & SAVE, and CANCEL HELP. A line is drawn on the graphic screen by selecting its starting and ending points via the screen tracking area of the Graphics Tablet. Select the desired starting location of the line and a point will appear at that location on the graphic screen. Select the ending location of the line and the straight |

line will appear.

To enter delete mode, select the START ERASE function located on the upper left part of the Graphics Tablet. Once this is selected, only the END ERASE, CANCEL EDIT, EXIT EDIT & SAVE, and CANCEL/HELP functions are legal. An entity is then deleted by simply placing the cursor position somewhere on it and depressing the pushbutton. The deleted entity changes color to red for product annotations or gray for background maps. Product annotations all appear as white so changing them to red to indicate deletion allows the operator to easily differentiate what has been deleted.

To terminate the delete function select the END ERASE function located to the right of START ERASE.

- Canceling Edit. To cancel the edit without modifying the previous version, select the CANCEL EDIT function on the upper left part of the Graphics Tablet. A feedback message is displayed directing the user to select CANCEL EDIT a second time to cancel edit mode. When CANCEL EDIT is selected a second time, an "EDIT CANCELED" feedback message is displayed and edit mode is exited.
- Saving Edit. To save the edit, select the EXIT EDIT & SAVE function on the upper left part of the Graphics Tablet. Feedback is displayed directing the user to select EXIT EDIT & SAVE a second time to save the editing and exit edit mode. When this function is selected a second time, an "EDIT SAVED" feedback message is displayed and edit mode is exited.

Edit Background Maps — In order to enable the editing of background maps, the System Option Command <PASSWORD>, (E)DIT MAPS, (E)NABLE must have been selected previously (since the last PUP restart). Otherwise, the message "EDITING DISABLED" will appear on the feedback link when editing maps is requested.

To begin editing whichever map version was last specified, select the EDIT MAP function located on the upper left part of the Graphics Tablet. This action activates edit mode and prompts for the background map to be edited. Select the background map from the maps on the bottom right of the Graphics Tablet. At this point, the low detail version is displayed regardless of subsequent magnification selections. The high detail version may now be selected for editing by selecting the HIGH DETAIL function located to the right of the EDIT MAP function. Prior to selecting this, the desired display center should be selected with the cursor. Once high detail is selected, only the high detail map can be edited. Whether editing the low or high detail map, at this point the center and magnification of the map may be manipulated as desired until some editing function is selected, after which recentering and magnification will not be possible without leaving and reentering edit mode.

Editing of the displayed background map is performed exactly as products are annotated.

Edit Alert Areas — The editing of alert areas is always enabled. To edit an alert area, select the EDIT ALERT AREAS function located on the upper left part of the Graphics Tablet. The entire product display portion of the screen will clear at this point and enter full screen mode if it was not already in effect. This action activates edit mode. The message "PLEASE DISPLAY ALERT GRID" is displayed as a prompt for selection of the alert area overlay to be edited. Select either ALERT AREA 1 or ALERT AREA 2 located in the overlay area in the middle right part of the Graphics Tablet. Once the desired alert area is selected, the alert area grid is displayed in red, and the currently defined alert boxes are displayed in yellow for Alert Area 1 and cyan blue for Alert Area 2. At this point, select any background maps if required for geographic referencing to be displayed with the alert grid.

- Adding Alert Boxes. To add alert boxes anywhere on the alert grid, select the ADD ALERT BOX function located on the upper left part of the Graphics Tablet. Then, select the grid square(s) individually where alert boxes are to be added. This is accomplished by placing the cursor within the desired square and depressing the correct screen puck button. When an alert box is newly added, its color is the opposite (yellow or cyan blue) color from the normal alert area outline color to distinguish newly added boxes. When later displayed as an overlay, all box out-

lines will be the normal color.

- Deleting Alert Boxes. To delete alert boxes from the alert grid while in edit mode, first select the DELETE ALERT BOX function located on the upper left part of the Graphics Tablet. Then, select the alert box(es) to be deleted (similar in manner to adding boxes as described above). When an alert box is selected for deletion, its yellow or cyan blue outline is changed back to the black background color and only the red alert grid remains in that area.
- Adding Alert Rectangles. To add large contiguous areas to the alert area, use this function. This will add any rectangular area (containing from one to all 3364 alert boxes) merely by selecting the function ADD RCTL, followed by the selection of the two opposite corners of the rectangular. This is accomplished by placing the cursor within the box to be located, defining the first corner, and depressing the appropriate puck button. This is followed by a similar selection of the box defining the diagonally opposite corner of the rectangle area.
- Deleting Alert Rectangles. Just as rectangular areas can be added, they can also be deleted. To delete alert boxes inside a rectangle, select the DEL RCTL function location on the upper part of the Graphics Tablet. Then select a corner grid of the rectangular area to be deleted, followed by the selection of the diagonally opposite corner of the rectangle on the grid. All the alert boxes inside this rectangle will now be deleted.
- Canceling Edit. Canceling edit when editing an alert area is exactly the same as canceling edit when editing either product annotations or background maps.
- Saving Edit. Saving edit when editing an alert area is exactly the same as saving edit when editing either product annotations or background maps.

2-2.5.1.3.4 Use of Graphics Tablet Keyboard Area.

The keyboard area on the Graphics Tablet is used for parameter selection and editing. To use the keyboard, place the puck on the desired keyboard selection and press the button. When each parameter has been entered, the RET selection must be made to record the action.

2-2.5.1.3.5 User Functions

User function definitions may be made from the Graphics Tablet with certain exceptions. The following selections and commands are not available for use in a user function at the Graphics Tablet:

- UF1 through UF30 (light green area)
- Cancel UF (light green area)
- All product parameter selections (light blue area)
- All edit functions (beige area) excluding keyboard and special symbols.

All other Graphics Tablet functions may be included in the definition. The begin User Function definition can only be executed at the Application Terminal by the command:

```
(U)SER FUNCTION, (D)EFINE, <UF#>, <title>
```

After the begin definition command, the Graphics Tablet and the Application Terminal may be used for definition selection. After the USER function has been defined, the END USER function definition is made at the Application Terminal.

2-2.5.1.3.6 Graphic Display Functions.

The graphic display area on the Graphics Tablet provides the functions that enhance and control the display of graphics on the screen. The graphic display discussion in this paragraph includes the following:

- Cursor Control Functions
- Time Lapse Functions
- Quarter Screen/Quadrant Select Function
- FULL SCREEN Function
- Recenter, Magnify Functions
- CLEAR SCREEN/QUAD Function
- FILTER Function
- Combine Functions
- GRAY/COLOR SCALE Function
- RESTORE DISPLAYED PRODUCT Function
- PRESET CENTER Function
- Auto Display Functions
- BLINK COLOR LEVEL Function
- Acknowledge Alert Function
- Hardcopy Function.

Cursor Control Functions — The cursor control functions in the graphics display area are CURSOR LINK/UNLINK, Cursor Coordinate Display (AZRAN R/LAT, LON/AZRAN H), CURSOR HOME and CURSOR AUTO/MANUAL, as discussed below:

- CURSOR LINK/UNLINK. This is a toggle function which alternates between linking and unlinking the cursors with each subsequent selection. If both screens are in full screen mode at the time of selection of LINK, a cursor will appear on both graphic screens. The movement of the puck along the Graphics Tablet image area will track the movement of the cursor on the screen selected with the LINK function. This is the "master" cursor. If there are geographically-oriented products displayed on either screen, linked cursors will track together at the same screen coordinates. If there are geographically-oriented products displayed on both screens and the cursors are linked, then the master cursor will track the tablet image area while the cursor on the other screen will "geographically" track the master cursor, regardless of any difference in geographic display centers and scales. If the geographic position of the master cursor is outside the display area of the product (or background map) on the other screen, then the other screen's cursor will remain somewhere at the extreme edge of the display area.

The following link/unlink combinations may be observed.

- In full screen, with cursors linked, a single cursor will appear on each screen.
 - All four cursors are linked at the same geographical location on quarter screen display. If both screens are in quarter screen display and cursors are linked, a total of four cursors will appear on the master screen only.
 - Cursors may be linked between full and quarter screen (total of five cursors).
 - When unlink is selected, only one cursor will remain, regardless of how many there were previously.
- AZRAN R/LAT, LON/AZRAN H. This is a three-way function which toggles between AZRAN (RDA or Home) and LAT/LON (latitude/longitude) and displays the cursor coordinate position. When active, the cursor geographic coordinates are displayed in the status area on the right side of the display. If the cursors are linked, this information will appear only on the master cursor screen. The cursor height is displayed in feet above sea level when the graphic displayed is an eleva-

- tion-angle-based product. Note that only geographically-based products respond to this function. The last selected cursor coordinate is remembered as screen-independent parameter. This provides a single coordinate for recenter and magnify or any product selection for display in generation.
- CURSOR HOME DEFINE. Selection of this function defines the "last selected cursor coordinate" as the Home position. This original position is defined in adaptation data as the Cursor Home Location of a particular geographic position in latitude, longitude coordinates. It may be defined at the Graphics Tablet using the CURSOR HOME DEFINE function as follows:
 - Place the puck at the desired location on the image area and press the appropriate button.
 - Then, place the puck over the CURSOR HOME DEFINE function and again press the same button. This will cause the last selected cursor coordinate position to set to the Home position.
 - If there is no geographic display on the selected screen when the CURSOR HOME DEFINE function is selected, the cursor will move to a fixed screen coordinate.
 - CURSOR AUTO/MANUAL. When the cursor coordinate display is in AUTO, the cursor coordinates in the cursor coordinate display will automatically update, at a rate of once per second, to the current cursor display position. This occurs without depressing the puck button. When in this mode, and the puck button is depressed to define the last selected cursor position, the information is displayed on the Graphics Tablet feedback line (until replaced by another selection), but not retained on the cursor coordinate display line. When the cursor coordinate display is in MANUAL, the cursor coordinates in the cursor coordinate display are updated only when the puck button is depressed. This constantly displays the Last Selected Cursor Position in the cursor coordinates' display.

TIME LAPSE Functions — The time lapse functions on the Graphics Tablet are TIME LAPSE RES/HLT, Time Lapse Display Selection, FRAME FORWARD, FRAME BACK, SPEED UP and SPEED DOWN. The time lapse function is first defined on the Application Terminal using the (T)IME LAPSE, (DE)FINE, <time lapse no>, <product mnemonic> command. After the time lapse is defined, the execution functions on the Graphics Tablet may be used.

The following functions on the Graphics Tablet are discussed for time lapse using the Graphics Tablet.

- TIME LAPSE 1/TIME LAPSE 2/TIME LAPSE 3. The Time Lapse Display functions will cause the selected, predefined time lapse loop to sequence on the selected graphic screen, starting always with the first defined frame. The display will sequence at the selected rate until it **is halted by the operator**.
- TIME LAPSE RES/HLT. The Time Lapse Resume/Halt function is a toggle function. If the time lapse is halted, selecting the TIME LAPSE RES/HLT function will cause the Time Lapse to resume. Selecting the function again will halt the time lapse if it is running.
- FRAME FORWARD. This function will cause a time lapse loop sequence, which has stopped sequencing, to display the next loop frame in the sequence. If the last frame of the loop was displayed, this function will display the first frame of the loop.
- FRAME BACK. This function will cause a time lapse loop sequence, which has stopped on any frame except the first one, to display the previous loop frame in time in the sequence. If the loop was previously halted on the first frame, this function will display the last frame in the loop.

- **SPEED UP AND SPEED DOWN.** These functions (which may be selected even when sequencing) will alter the display sequence rate of a time lapse loop. If the rate is between .3 second per frame and one second per frame, it will speed up (or slow down) by .35 second increments per function selection. If the rate is between one and 10 seconds per frame, the increment will be one second per selection. After each selection, the new display rate will be indicated on the Time Lapse Display Rate status line on the active graphics screen of the loop.

QUARTER SCREEN/QUADRANT SELECT Function — The functions on the Graphics Tablet for the quarter screen/quadrant select functions are QUAD 1, QUAD 2, QUAD 3, and QUAD 4. When selection is made from the Graphics Tablet, this function simultaneously places the selected graphic screen into quarter screen mode and selects a particular quadrant (selected quadrant) to be used for subsequent product display selections. If the screen was previously in full screen mode, the screen will clear and a quarter screen outline will be displayed with the selected quadrant outlined in a green color. If a different quadrant is subsequently selected, then the green color outline will move to that quadrant. The green outlined quadrant is the active quadrant. Any product selected will be displayed in the active quadrant.

FULL SCREEN Function — This function will cause graphic product displays for the selected graphic screen to be displayed in full screen mode. If it is selected on the Graphics Tablet, it will be used for subsequent product display selections. It will also clear any quarter screen displays on that screen. The full screen display mode will remain until a quadrant selection is made to enter quarter screen mode.

RECENTER, MAGNIFY Functions — The recenter, magnification factors are 1x, 2x, 4x and 8x. Prior to the selection of one of these four magnification factor functions, the recenter coordinate must have been specified. The recenter coordinate will always be the last selected cursor coordinate. The last selected cursor coordinate can be set with the CURSOR HOME, PRESET CENTER functions, in addition to selection on the Graphics Tablet image area in conjunction with a geographically-oriented product displayed on the screen.

CLEAR SCREEN/QUAD Function — This will clear the selected graphic screen except for the lower right corner, which contains non-product related status information, and the date and time at the top right. If the screen is in quarter screen mode, only the currently selected quadrant will clear. In this case, if clearing all four quadrants is desired, select the FULL SCREEN function.

FILTER Function — The filter function is used to filter out lower data levels on the screen. The filtered levels become transparent and any background map information they covered will appear. Prior to the selection of this function, the filter color level must be selected. This is done by positioning the cursor directly over the desired color bar or color level text next to the color scale and depressing the puck button for that screen. The selected color level will momentarily be outlined in yellow. All colors at the selected data level and lower data levels will be filtered out; with velocity products, all positive and negative velocity data levels at the selected level and lower data levels will be filtered out.

The product filtered color levels may be restored by selecting the threshold data level, pressing the puck button, and then selecting the filter function or, alternatively, selecting RESTORE DISPLAYED PRODUCT. Note that the alternative will display the product in its default state.

COMBINE Functions — Whenever a graphic product with multiple color or contour line levels is displayed, the levels may be combined together by factors of 2, 3, 4, or 5 (every 2, 3, 4, or 5 levels combined together into a single level). When combining takes place for colors, all levels combined will be left as the color of the highest intensity of each combined color group. When combining takes place for contour lines, every other line is removed; in the case of combine 2, 2 out of 3 lines are removed (from the original); in the case of combine 3, etc. Note that when switching from one combine level to another (either up or down), some colors or contour lines which were previously removed will reappear. To perform combine, the COMBINE UP function should be selected, repeatedly, until the desired combine level is reached. It will start at 2, then go to 3, etc., and stop at 5. The current combine level is always displayed in the status area next to the magnification factor and filter level on the selected screen.

The COMBINE DOWN function is only operable after the COMBINE UP function has been used to combine levels. COMBINE DOWN will sequentially decrease the combine level with each repeated

selection, and cease to have an effect when the combine level reaches 1 (no combine).

Whenever a product is displayed or redisplayed, it will revert to its default, non-combined state.

GRAY/COLOR SCALE Function — When a color graphic product is selected for display, it is always displayed in its full color scale (default). This screen manipulation function may be selected to turn all the product colors to varying shades of gray. These shades normally have intensities corresponding to the intensities of the colors they represent. The product may be returned to its color scale by reselecting this toggle function or by selecting the RESTORE DISPLAYED PRODUCT function. The state of this function will be retained for recentering, magnification, filtering, combining, or any other screen manipulation of the current product.

RESTORE DISPLAYED PRODUCT Function — This function will restore the currently displayed geographic product (the same product parameters) on the selected screen to its original default display state. All screen manipulation functions will be reset to the following set of defaults: preset center, 1x magnification, no filter, no combine, color scale product, default background maps and default overlays, maps on, overlays on, product on, and no blink. Default maps and overlays are determined by adaptation data. Any combination of these functions may be active, and any that are will be reset when this function is selected.

PRESET CENTER Function — This function will redisplay the presently displayed geographic product on the selected screen at the present magnification, centered at a specific geographic location. This location is contained in adaptation data as a latitude, longitude coordinate which would normally be set at the radar location. It could also be set at the PUP or other geographic location, but that use is not recommended.

Auto Display Functions — The graphic Auto Display is separately defined in the Routine Product Set Menu available at the Application Terminal. The left and right graphic display rates are independently set to the number of seconds each product assigned to that screen is to be displayed. The Routine Product Set edit screen is used to select those products which are to be displayed in Auto Display.

When Resume Auto Display (AUTO RES/HLT) is selected from the Graphics Tablet (assuming that manual mode is in effect), the display cycle will resume at exactly the point at which it was halted. If the definition of the Display sequence has been edited since it was last halted, the Resume Auto Display will start at the beginning of the sequence defined in the Routine Product Set rather than the point at which it was halted.

Halt Auto Display (AUTO RES/HLT) will stop the Auto Display sequencing and will remember at which point it left off for the Resume function. Whenever a product in Auto Display is manually manipulated (i.e., recentered, magnified, filtered, combined, gray scale or had maps or overlays altered), this action will automatically halt Auto Display. Auto Display is automatically halted when any other functions or product is selected.

SPEED UP and SPEED DOWN functions may be selected to change the product display rate.

In a time lapse display, if the time between frame changes is less than 2 seconds, the only item listed on the right side of the screen which will change is the date and time. For example, the maximum dBz or max velocity will be displayed for the first frame and then will change for the last frame only.

BLINK COLOR LEVEL Function — Prior to the selection of this function, the color level designed to blink must be selected. This is done by positioning the cursor directly over the desired color bar or color level text next to the color scale and depressing the puck button for that screen. The selected color level will momentarily be outlined in yellow to provide a visual feedback of the selection. When the blink color level selection is made, the color on the imagery will blink. Only one color level will blink at a time. To stop blinking, select the STOP BLINK function in the overlay area of the tablet.

Acknowledge Alert Function — Alerts are acknowledged by selecting the ACK ALERT function on the Graphics Tablet. This will result in the removal of the alert in the unacknowledged area; then, the alert will be placed in the acknowledged area, the blinking will stop, and the audible alarm will be silenced.

Hardcopy Function — Selecting of the HARD COPY function on the Graphics Tablet will cause a hard copy printout, on the color graphics printer, of the product on the selected screen.

In order to enable the making of hard copies, the System Option Menu command (H)ARDCOPY, (E)NABLE on the application terminal may have to be executed first. This is the case if the feedback message HARDCOPY DISABLED is reported when selecting this function. The System Option Menu command (H)ARDCOPY, (D)ISABLE will disable the making of hard copies. The following screen manipulations are retained in the hard copy: Recenter, Magnify, Change Maps, Change Overlays, Page Attributes, Filter, Combine, Gray Scale, Product Off/On, Maps Off/On, and Overlays Off/On.

Hard Copy Stop is performed with the SYSTEM RESET (rightmost) button on the color printer. This may be selected anytime the printer is in "Imaging" or "Printing" mode as indicated on its display. The printer display will return to "Idle" when the reset is completed.

HARD COPY may be selected during a time lapse display. If the resolution of the time lapse has been reduced, due to high speed display, it will be reduced on the copy. In this case, it is suggested that the display rate be reduced below one frame a second, prior to making a copy, to increase resolution. It is suggested that the time lapse be frozen prior to making the copy, so it is known which frame will be copied. If overlays exist and are to be included, select the product separately, rather than use a time lapse frame for hard copy, since the latter cannot contain overlays and the former could.

HARD COPY may be selected in quarter screen mode. The printer will copy all four quadrants on a single print just as they appear on the screen.

When HARD COPY is selected, it will freeze the screen for three seconds while the data is transferred to the printer. After that, however, there will be no effect on display timing from the print being made, or vice versa.

2-2.5.1.3.7 Background Maps.

All background map display functions are contained in the background map area of the Graphics Tablet (lower right corner). The top row of this area, along with the MAP OVERLAY DELETE function in the overlay area, contains the map manipulation functions. All boxes below these list individual maps for selection.

Selected maps will always match the particular WSR-88D Unit coverage area Radar Data Acquisition (RDA) from which a displayed product originated. Maps from the local WSR-88D unit area are locally stored at the PUP and are always available. Maps from other RPGs must be obtained along with at least one product from that RPG. Those maps are only stored temporarily in the PUP data base. The non-associated RPG sends only a predefined subset of maps with a given product.

Certain maps are not stored in the PUP data base but are created whenever selected; these are: RDA (site), RANGE RING, and POLAR GRID. The RDA map is a single small circle at the associated RDA location.

2-2.5.1.3.8 Overlay Display Functions.

All overlay display functions are contained in the overlay area of the Graphics Tablet. The overlays are products requested and obtained separately from the products that they can be overlaid on. In order to be overlaid onto another product, the RPG, generation date, and volume scan time must match. There is no way to overlay products for which these three parameters do not match. When one of the overlays is selected, the overlay is added to the display.

2-2.5.1.3.9 Cancel/Help.

The Cancel/Help function cancels the product parameter select mode or edit mode and provides help text for that mode.

2-2.5.1.3.10 Graphics Symbols.

Special graphics symbols can be defined and used for product annotation and background map editing.

2-2.5.1.3.11 Product Request Procedures.

All product requests to non-associated RPGs, as well as all product requests to the associated RPG over the dial-up line, must be one-time product requests. In addition, one-time requests can be made to the associated RPG over the dedicated line. A one-time product request is a product request performed apart from the products listed on the Routine Product Set List which the RPG sends on a con-

tinual basis when they are available.

A single one-time product request may actually be for up to nine sequential volume scan versions, if the request is to the associated RPG over a dedicated communication line. For any dial-up line, the request is valid only for a single volume scan version. In this case, once the request is honored, assuming no additional requests are made to the same RPG while the line is connected, the PUP will automatically disconnect the line when transmission is complete.

For dial-up line connections, these connections and disconnections are all performed automatically. There is a table of RPG phone numbers in adaptation data which are automatically used based on the RPG indicated in the request.

The graphic tablet functions used for dial-up are as follows:

- DIAL UP ASSOC RPG
- RPG 1
- RPG 2
- RPG 3

The DIAL UP ASSOC RPG, when selected, causes the dial up communication link to be established with the associated RPG. RPG 1, RPG 2, and RPG 3 are functions associated with the dial-up functions of non-associated RPGs.

Products, both graphic and alphanumeric, may be requested from any non-associated RPG whose identification number, mnemonic, and telephone number are listed in the PUP's adaptation data RPG Directory. The operator only has to change the one-time product request parameter "RPG" from blank (which means associated RPG over the dedicated communications link) to the desired RPG mnemonic. This applies both to the graphic tablet parameter select mode and the alphanumeric one-time product requests. Then, simply make the request like any other one-time product request. The PUP does everything else. First, it waits for the dial-out communications line to become free. When it is, the PUP looks up the telephone number, dials the number, waits for the RPG to answer, sends the request, waits for the response (the product or a product not available message), files the product into the PUP data base (if received), disconnects the line, and notifies the operator of the response.

The following procedure assigns the RPG dial up functions on the Graphic Tablet.

NOTE

Prior to performing this procedure, ensure that the PUP's adaptation data contains the required data. Refer to Communication Control Edit Procedures in paragraph [2-2.5.2.5.13 Communication Control Edit Procedures](#).

1. At PUP Graphic Tablet place puck over RPG and make selection.
2. Enter desired non-associated RPG mnemonic in graphics tablet keyboard area.
3. Select RET on Graphic Tablet keyboard area.

NOTE

RPG is now assigned to the RPG selected for dial up.

The following procedure selects RPG 1, RPG 2, or RPG 3 for dial-up.

1. Place puck over RPG 1 and make selection. This results in placement of mnemonic as determined by adaptation data in parameter field on the Pick-a-Product screen.
2. Repeat above step for RPG 2 and RPG 3.

2-2.5.1.4 Graphics Tablet Operational Modes.

The Graphics Tablet has three basic modes of operation: normal mode, edit mode, and product parameter select mode. Except for the edit map (background map) function in the edit mode, the operating modes are screen-independent; i.e., separate for each Color Monitor screen. The operating modes are fully described in the EHB 6-531-1 PUP User's Guide, Appendix A, paragraph 1.3. Operational features of the modes are as follows:

- Normal Mode
 - Most non-edit functions are active.
 - Overlays may be added only if a geographic product is being displayed.
 - Low resolution background maps may be displayed on a blank screen.
 - Help screen for mode is displayed when Cancel Help function is selected.
- Edit Mode
 - Mode is active after one of the following four functions has been selected: Edit Annotations, Edit Map (Background Map), Edit Alert Areas, or Edit RCM (part A or C).
 - When Background Map Edit function is selected, all functions for the other screen, except Acknowledge Alert, are disabled.
 - When Edit Annotations and Edit Alert functions are selected, all functions for the other screen are enabled, except Edit Annotations, Edit Alert Areas, and Auto Display.
- Product Parameter Select Mode
 - When mode is active for one screen, functions for the other screen can be in any mode, except Edit Map.
 - Mode becomes active when MATCH PARAMETERS function, DEFAULT PARAMETERS function, or an applicable parameter for a displayed product (or product selected for display but not available) is selected from Parameters Area.
 - Pick-A-Product Menu ([Figure 2-3. Pick-A-Product Display Menu](#)), which lists available similar products in PUP data base, is displayed when mode is initially entered.
 - Selection of another display function such as PRODUCT FORWARD, time lapse, auto display, a new product name, or a Pick-A-Product Menu selection will cancel the mode and return the screen to the normal mode.

2-2.5.2 Application Terminal Operations.

The Application Terminal provides the operator with the capability to give commands to the PUP and view alphanumeric displays on the CRT screen. At the Application Terminal, the operator can use the available menus and commands to perform the following additional major functions:

- Monitor system status
- Inspect and/or change PUP operational parameters
- Communicate with users.

The screen on the alphanumeric terminal is used to display text which has been requested by the operator, automatically generated based on conditions detected internally by the PUP, or sent by the RPG. The operator requests are for the display of menus, help text (for information on how to use the PUP), status lists, and alphanumeric products. Several sections of the screen are dedicated to notifying the operator of internally detected conditions: feedback for operator commands, active weather alerts generated by the associated RPG, alphanumeric product queue status, NEXRAD system status, and status of RPG communications. The terminal is also used to perform Graphics Processor diagnostics if maintenance is to be performed.

09/12/89 23:00
 BASE REFLECTIVITY
 R 19
 DATA LEVELS: 16
 RESOLUTION: 54
 NM
 ELEVATION:

PAGE BACK 20 5 1 1 5 20 PAGE FWD PAGE 1 OF 28
 SCREEN L R
 TIME ID LVL RES SLICE CENT AZ CENT RAN RPG
 00:01 01/01/86 16 8 54 50.0 KIVY

17 8 1.1

RPG: KIVY
 TIME: KIVY
 DATE: KIVY
 PRIORITY: H KIVY
 REPEAT COUNT: 1 KIVY
 REQUEST MAPS: N KIVY

A/R (RDA)
 QUEUE EMPTY
 CONNECTION
 PENDING
 DED. RPG LINE 1
 06/0800 OTHER
 USER
 LINE ENABLED

| | | | | | | | |
|-------|----------|----|----|-----|------|--|------|
| 08:58 | 05/04/89 | 18 | 8 | 2.2 | 10.0 | | KIVY |
| 08:53 | 05/04/89 | 18 | 8 | 2.2 | 10.0 | | KIVY |
| 08:47 | 05/04/89 | 18 | 8 | 2.2 | 10.0 | | KIVY |
| 08:42 | 05/04/89 | 18 | 8 | 2.2 | 10.0 | | KIVY |
| 08:37 | 05/04/89 | 18 | 8 | 2.2 | 10.0 | | KIVY |
| <hr/> | | | | | | | |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 1.5 | | KOUN |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 0.5 | | KOUN |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 19.5 | | KOUN |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 14.6 | | KOUN |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 9.9 | | KOUN |
| 22:53 | 9/12/89 | 19 | 16 | .54 | 6.0 | | KOUN |
| <hr/> | | | | | | | |
| 08:58 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KIVY |
| 08:58 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KOUN |
| 08:53 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KOUN |
| 08:47 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KIVY |
| 08:47 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KOUN |
| 08:42 | 05/04/89 | 20 | 16 | 1.1 | 3.4 | | KIVY |
| <hr/> | | | | | | | |
| 08:58 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KIVY |
| 08:58 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KOUN |
| 08:53 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KOUN |
| 08:47 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KIVY |
| 08:47 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KOUN |
| 08:42 | 05/04/89 | 21 | 16 | 2.2 | 6.2 | | KIVY |

Figure 2-3. Pick-A-Product Display Menu

2-2.5.2.1 Screen Format.

The PUP terminal screen is used to display text requested by the operator or automatically generated based on conditions detected internally by the PUP or sent from the RPG. The screen is also used to display the menus for operator editing and review, and to perform the operations/maintenance tasks.

The screen is divided into ten areas, each used for the display of particular types of information. See [Figure 2-4. Screen Format](#) for the screen locations of the areas. The areas are further subdivided into unprotected and protected sections. When the cursor is located in an unprotected section of an area, the depression of an alphanumeric character key will cause the corresponding character to appear on the screen at the location of the cursor. On the other hand, when the cursor is located in a protected area, depression of an alphanumeric character key will not change the character currently displayed at the cursor location. The terminal utilizes protection of screen areas to prevent the operator from accidentally destroying displays and instructions. Refer to EHB 6-531-1 PUP User's Guide Appendix A for a description of the terminal screen areas.

| | |
|------|--|
| LINE | |
| 1 | TITLE LINE |
| 2 | COMMAND LINE |
| 3 | FEEDBACK LINE |
| 4 | Not currently used |
| 5 | ALPHANUMERIC DISPLAY AREA |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | UNACKNOWLEDGED ALERT LINE |
| 23 | ACKNOWLEDGED ALERT LINE ALPHANUMERIC PRODUCT QUEUE INDICATOR |
| 24 | SYSTEM STATUS LINE RPG PRODUCT REQUEST STATUS LINE |
| 25 | CRT STATUS LINE (Normally Blank) |

Figure 2-4. Screen Format

2-2.5.2.2 Keyboard.

The Application Terminal has the standard ASCII keyboard that is used in data acquisition/communications systems. Refer to [Figure 2-5. Keyboard Layout](#) for the keyboard layout. PUP commands are entered either by typing in a valid command string or by depressing one of the 16 function keys. These commands provide the operator with a wide variety of actions, including capabilities to manipulate the display on the alphanumeric terminal screen, control PUP operation, display graphic and alphanumeric products, control request of products from the RPG, define time lapse loops, perform

archive functions, define and execute user functions, change adaptation data, and request help text. Refer to [Table 2 - 21: PUP Application Terminal Function Keys](#) for a description of the function keys and EHB 6-531-1 PUP User's Guide, Appendix A, paragraph 2.2 for a detailed description of the terminal keys.

2-2.5.2.3 Command Language and Entry.

The command language and associated menus allow quick and efficient operation of PUP functions. Commands consist of a series of subcommands and/or parameters. Every subcommand has an abbreviated form, usually the first letter or two of a word or phrase. With experience, the operator will easily remember and access some of the more frequently used commands with little or no reference to menus. After a command string has been entered, the return key must be pressed in order for the command to be executed. No more than three menu levels need to be accessed in order to accomplish any command. When entering a command, spaces in the entry are ignored. Parameters are entered in commands to specify such things as date, time, product name, display rate, etc. Parameters are displayed on menus by enclosing a short description of the parameter in < >. If the parameter is optional and default values are available, the parameter description is shown in lower case. If the parameter is required and there are no default values, the parameter description is shown in upper case. For details of the command language, refer to EHB 6-531-1 PUP User's Guide, Appendix A, paragraph 2.3.

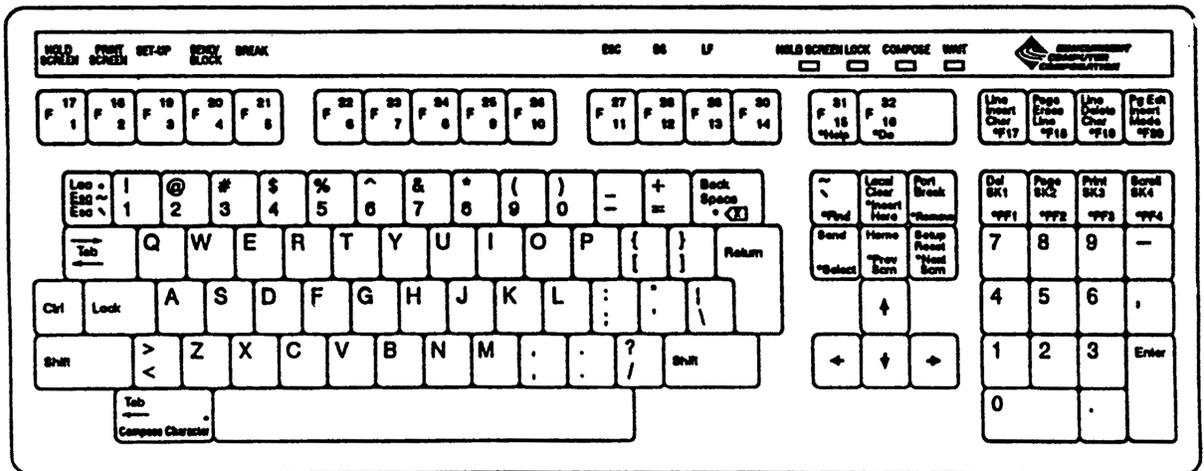
2-2.5.2.4 Menu Usage.

Menus are available for use by the operator at the Application Terminal. A menu is a text display that appears in the alphanumeric display area of the screen and describes the specific formats for a set of commands. There are a total of 12 menus covering virtually every alphanumeric command. The menus are organized in a hierarchial structure, with the Main Menu at the top of the hierarchy. Refer to EHB 6-531-1 PUP User's Guide, Appendix A, paragraph 2.3.3 for details on menu usage.

2-2.5.2.5 Functional Operations.

Functional operations at the Application Terminal involve the use of the PUP menus. The Main Menu consists of the following operational functions which are discussed in this paragraph:

- Control
- Status
- Display
- Routine Product Set
- Generate and Distribute Products
- Time Lapse
- Archive
- User Function
- Adaptation Data
- Monitor Performance
- Help
- System Option.



*Label appears on front of key.

Figure 2-5. Keyboard Layout

Table 2 - 21: PUP Application Terminal Function Keys

| Function Key | Description |
|---------------------|---|
| F1 | Displays Main Menu |
| F2 | Displays previous menu |
| F3 | Cancels alphanumeric selection and redisplay screen |
| F4 | Restores most recently executed command on the command line |
| F5 | Displays help screens |
| F5 and SHIFT KEY | Displays product IDs and mnemonics |
| F6 | Pages back |
| F7 | Pages forward |
| F8 | Starts auto display |
| F9 | Halts auto display |
| F10 | Sends RPG request |
| F11 | Prints alphanumeric screen on printer |
| F12 | Redisplay last alphanumeric product |
| F13 | Displays latest received alphanumeric product |
| F14 | Displays queued alphanumeric product |
| F15 | Acknowledges alphanumeric product |
| F16 | Acknowledges alert |

2-2.5.2.5.1 Control.

PUP control operations are performed using the Control Menu. The commands and functions used in the control operations are discussed in the order of appearance on the Control Menu.

- Reinitialize Graphics (C; or C,REI; or C,REI,G). This function is used to reinitialize the system under any condition which causes the Graphics Processor to "hang". Symptoms of this condition occur when the alphanumeric terminal is operational, and neither the Graphics Tablet (with the exception of cursor movement) nor the graphic displays respond. Usually this is accompanied by one of the following System Status Messages on the alphanumeric terminal: "GRAPHIC SYSTEM TIME OUT", "GRAPHICS UNABLE TO RESET", or "GRAPHIC SYS UNAVAILABLE". Reinitializing normally takes ten to fifteen seconds.
- Restart PUP (C,RES). The restart function brings the PUP system from a shutdown to a running initialized state. In conjunction with the shutdown function, this function affords the user the ability to bring the system to an initialized state. Following a shutdown, the screen will automatically display the Restart Menu for operator prompt to restart the PUP.

- Shutdown PUP (C,S,N or C,S,I). This function allows the operator to shutdown the PUP system. A "normal" (C,S,N) shutdown will notify PUES and other users, and allow five minutes for completion of transmission and for disconnection of communication lines before the actual shutdown occurs. An "immediate" (C,S,I) shutdown will instantly shut down the system.
- Control Communication Line (C,C,C,<line #> or C,C,D,<line #>). This function allows the operator to connect or disconnect communications lines. When a connection request is made, the line is enabled and the connection is pending until the actual hardware connection is made. Whether a hardware connection is made is dependent upon whether the physical line is there and the other system to be connected on the other end is able to make the connection. A disconnection request may also be made for a connected communication line. The disconnection will be immediate if the line to be disconnected is in fact connected. The communications status display will then indicate that the line is disabled.
- Training Mode (C,T,C or C,T,D or C,T,R). Training Mode Start with the RPG connected (C,T,C) will read products, in simulated real time, from optical disk into the PUP database. All products, with the exception of alert issuances, normally sent by the RPG to the PUP, will not be transmitted during the training mode. During disconnected (C,T,D) RPG training mode, nothing will be received from the RPG. The normal recommended procedure is to train with the RPG connected. Training Mode Resume (C,T,R) will restart the training mode operations at the point it was halted to insert a new optical disk in the drive, which contains a continuation of the training data. Training Mode End will end the training mode and automatically reconnect all communications lines.
- Background Map Version (C,B). This function allows the user to select the version (original or modified) of each type of background map to be displayed with each product. When this function is selected, the Background Map Version edit screen appears on the alphanumeric terminal with the cursor positioned under map number 1. (The map titles are listed on the screen with associated numbers.) Placing an "O" under a map number will cause the original version of that map to appear whenever that map is displayed. Placing an "M" under a map number will cause the modified version of that map to appear whenever that map is displayed. Placement of any other letter under a map number will result in an error. Once the user is finished with the edit screen, the RET key must be depressed to save the map version indications.
- WER Plane Assignment (C,W). The Weak Echo Region (WER) product is a special case because it not only has time, date, RPG, center azimuth, center range, but also eight elevation angle-to-plane assignments as product request parameters (13 parameters total). The time, date, RPG, center azimuth and center range parameter are all entered on the Graphics Tablet and alphanumeric terminal, for RPG requests, the same as for other products with those parameters. Refer to EHB 6-531-1 PUP User's Guide, Appendix A, Section 4 for a detailed description of the WER plane Assignment.

NOTE

The WER plane assignment may be made from either the Application Terminal or Graphics Tablet.

- Audible Alarm Test (C,A). This causes the PUP Audible Alarm, which is used for weather alerts, to sound for ten seconds. First, the normal tone sounds for five seconds; then, a second warbling tone sounds for five seconds, and lastly, following an alert acknowledgment, the audible alarm will automatically be silenced and placed back into active service for weather alerts. If no tone is heard, check the ON/OFF switch and volume control first before contacting a hardware technician. This test may be repeated as often as necessary.

NOTE

The audible alarm is activated immediately when a TVS or MESO is alerted. For all other alert phenomena, the audible alarm will activate following a 30 second wait period, if the operator fails to acknowledge an alert.

2-2.5.2.5.2 Status.

The status menu contains the commands used to monitor the status of equipment, unit, system, alerts, communications, and product information. Products in the database can also be displayed using this menu. The status functions are discussed in the following paragraphs.

- NEXRAD Unit Status (S,N). This function, when selected, displays the status of the WSR-88D unit. When the status changes, the WSR-88D status display will automatically be placed on the left graphic screen, regardless of what is being displayed at the time.
- Communications (S,C). The communications line status screen reflects the current connect/disconnect status of each of the lines.
- Types of Products Available in PUP Data Base (S,T). When this function is selected, a list of all the different product types, product ID numbers, data levels, and resolutions are displayed.
- Products in PUP Database (S,P,<product ID>). A list of all products in the data base for the specific product number is displayed. Any product on the list can be displayed or deleted from the data base. When products are deleted, the list will not be updated until it is redisplayed.
- Earliest Time in the Database (S,E). A list by product name and associated parameters for the oldest product in the data base is displayed.
- RPG Products Available (S,R,D or S,R,R). A listing of products available from an associated RPG are displayed by product ID numbers, mnemonics, and associated parameters. The Request New List option requests a new listing of the products available.
- System (S,S). A listing of the system status file is displayed that contains information about system changes and events that have been previously displayed on the system status line. The data is displayed in descending order with the most recent data first.
- Archive (S,A). The instantaneous status of the archive function is displayed. The status will appear on the terminal feedback line as active or not active.
- Alerts (S,AL). A listing of all outstanding weather alerts are displayed along with descriptive information.
- Cancel Alerts (S,CA). Alerts can be canceled by line number or all alerts canceled by the (A)ll option.

2-2.5.2.5.3 Display.

The Display Menu is used to select products from the PUP data base for display on the selected screen. Control of products can also be exercised through the auto display function. Test patterns can also be displayed for maintenance purposes and checking graphic display hardware. Certain graphic products, when requested and received from the RPG, have alphanumeric products paired with them and are stored in the PUP data base. These products are available for display as separate products or as paired together.

- Alphanumeric Product (D,A,<product name>). Alphanumeric products are displayed for the specified name. If the requested product is not available, it can be requested from the RPG by pressing function key 10.
- Graphic Product (D,G,<product name>). A graphic product is displayed for the specified name. If the product is not available, it can be requested from the RPG

- by pressing function key 10.
- Graphic and Paired Alpha (D,GP,<product name>). The simultaneous display of the selected paired graphic and alphanumeric product is displayed if both products are available.
 - Paired Alphanumeric Product (D,P,<screen>). The purpose of this function is to identify on which graphic screen a product is located in order to display page 1 of a paired alphanumeric product.
 - Next Queued (D,N,A or D,N,G,<screen>). The oldest alphanumeric or graphic product in the queue is displayed when selected. Identification of the next queued product is listed in the graphic screen status area.
 - Clear Queue (D,C,A or D,C,G). The graphic queue holds 15 products and the alphanumeric queue holds 10 products. The queue for each can be canceled individually when the command is entered. The products remain in the data base when the queue is canceled.
 - Auto Display (D,AU,A or D,AU,G). This function will cause the auto display to restart at the beginning of the defined auto display list in the Routine Product Set Menu for either the alphanumeric or graphic products selected. Function key 9 halts alphanumeric auto display.
 - Halt Auto Display Graphics (D,H). Halts auto display for the graphic products.
 - Test Pattern (D,T,<ID #>,<screen>). There are 13 graphic test patterns that can be displayed on either screen. The test patterns can be used to verify screen linearity and check graphic subsystem hardware.

2-2.5.2.5.4 Routine Product Set.

The (R)OUTINE Product Set, (E)DIT (R,E) command is used to specify which products are to be sent routinely and repeatedly over the dedicated communications lines for display. Up to **31** separate products may be placed on the RPS list. **The RPS list of an RPGOP can contain up to 50 products.** Parameters are entered on the routine product edit screen for individual products. Screen designations, frequency of display, and request priority can also be entered.

- Edit Routine Product Set (R,E). Editing of the currently active RPS list is available for temporary list changes until the operational mode changes. Even if the RPG is disconnected, and then reconnects the dedicated communications line, this temporary list will remain in effect.
- Replace RPS with Adaptation Version (R,RE). When the R,RE,<rps ID> command is selected, the old current RPS list will be completely eliminated, including any editing which may have been performed on it. If the dedicated communications link to the RPG is connected, this new list will immediately be sent to the RPG. If it is not connected, it will be sent when the line is connected. Until that time, however, the new auto display and product distribution list definitions are effective. If the dedicated link does connect, and the RPG indicates that the operational mode has changed since the last effective mode (selected automatically or manually), this list will be replaced automatically with the weather mode list. R,R,L<seconds> or R,R,R<seconds> will set the auto display rates for the left and right screens, respectively.

2-2.5.2.5.5 Generate and Distribute Products.

The generate and distribute products commands are used to edit and send RCM (Radar Coded Messages). The RCM can only be edited by the designated RPGOP or PUP. In addition, the commands are used to generate and distribute free text messages to the RPG, PUES and other users, and to edit and send product annotations to the RPG. The commands are issued from the Generate and Distributed Products Menu.

- RCM EDIT (G,R,E). Editing of radar-coded messages is allowed for parts B and C. When this command is issued, an edit screen is displayed for the part selected

for editing.

- RCM Display (G,R,D). Radar-coded messages are displayed when this command is entered. Parts A, B and C can be specified for display.
- Generate Message (G,G). A free text message can be generated for distribution to users and to the RPG. When this command is entered, a screen is displayed for generating the message desired. Two pages of 80 columns and 17 lines are available for the message.
- Distribute Message (G,D,<destination>).

NOTE

Destination is:

(P)UES,<time>,<date>
 (R)PG,<time>,<date>,
 (E)NABLE other user,<time>,<date>
 (D)ISABLE other user

After the message is generated using the G,G command, the distribute message command is used to send the message to the specified destination.

- SEND Annotations (G,S,A,<product name>). The product annotations are sent to the RPG using this command. When generated, each annotation is associated with only one specific version of a product.
- Send RCM (G,S,RCM). The SEND RCM is used to send the radar-coded message to the RPG.

2-2.5.2.5.6 Time Lapse.

Time lapse sequences are first defined at the Application Terminal, using the Time Lapse Define command. There are three time lapse loops that may be defined for display for any product type. Each of the time lapse loops may be displayed (one at a time) on either screen. The commands to define, display, halt and resume time lapse loops are issued from the Time Lapse Menu.

- Display (T,DI,<TL#>,<screen>,<rate>). This function causes the selected, pre-defined, time lapse loop to sequence on the selected graphic screen.
- Define (T,DE,<TL#>,<product name>). A time lapse loop is defined for a specific product using this command. The time lapse loop is defined using an edit screen.
- Define and Display (T,DD,<screen>,<rate>,<TL#>,<product name>). This function combines the Time Lapse Define and the Time Lapse Display functions. Following solution and execution, the function will build the loop, then automatically begin displaying it.
- Halt (T,H). Time Lapse Halt causes the currently cycling time lapse sequence to halt at the next or current frame.
- Resume (T,R). Time Lapse Resume causes the currently halted time lapse loop to begin sequencing at the frame on which it stopped.

Frame Forward, Frame Back, and Speed Up/Speed Down are also time lapse functions but are selected on the Graphics Tablet only and are briefly described as follows:

- Frame Forward — Causes a time lapse loop sequence, which has stopped sequencing, to display the next loop frame in the sequence.
- Frame Back — Causes a time lapse loop sequence, which has stopped on any but the first frame, to display the previous loop frame. If stopped on the first frame,

this function will display the last frame in the loop.

- Speed Up/Speed Down — These functions alter the display sequence rate of a time lapse loop.

2-2.5.2.5.7 Archive.

Archiving is performed at the Application Terminal using the commands in the Archive Menu. Only one non-auto archive function may be performed at a time per archive device. Archiving is accomplished using the optical disk or a streamer tape (used mainly for archiving monitor performance file data). Archiving single products, received background maps, auxiliary background maps, status messages, and the data base may be selected. Continuous archiving or archiving by time span can also be selected. Reading an archived disk for products, status files, etc., can also be performed at the Application Terminal.

Before archiving can take place, the formatted optical disk must first be loaded in the optical disk drive. The following steps will load the optical disk:

1. Ensure that Read/Write and Protect settings are correct.
2. Insert the optical disk into the optical disk drive at the PUP.
3. Place the lever on front of drive to the UP (LOCK) position.
4. Press the START/STOP pushbutton switch on front of drive.

NOTE

The green light on front of drive will blink on and off. After the disk has reached the proper speed, the light will stay on steady.

After the optical disk is loaded, the commands listed below may be used:

- Append Data Base (A,A,D). This function allows the operator to archive the entire PUP product data base capacity.
- Append Products (A,A,P,<start time>,<start date>,<end time>,<end date>). This function records to an optical disk all products in the PUP data base that were generated between the specified start and end time/date. If the time/date parameters are not entered, the entire data base will be archived. To archive products generated at a single time/date, enter the same time/date start and end period.
- Append One Product (A,A,O<product name>). Selection of this function displays the Archive One Product edit screen. The products selected must be edited to reflect the specific product to be archived.
- Append Auto Archive (A,A,A,<I,I> or < I,N> or < N>). Continuous archiving of products with or without received background maps takes place with options to (I,I) include one time products and include received background maps associated with a one-time product request; or (I,N) include one time products and not include received background maps associated with a one-time product request; or (N) not include one time products. Auto archive of RPS products will not take place unless the product has been designated with a Y in auto archive column of RPS list.
- Append Received Background Maps (A,A,R,<rpg>). Selecting this function archives the last received or read in set of background maps in the PUP product database for the selected RPG.
- Append Background Map File (A,A,B,<file no>). File number (1-21) which specifies the background map file. File numbers 2 - 21 specify auxiliary map files. File number 1 specifies the background map file for the associated RPG.

The current identifying contents of the background map file can be viewed by entering the fol-

lowing command: (A)RCHIVE, (A)PPEND, (B)ACKGROUND MAP FILE or the command: (S)TATUS, (B)ACKGROUND MAP FILES . The RPG ID mnemonics of the auxiliary map files and the associated RPG map file are displayed. When no maps reside in a file then asterisks (i.e., ****) are displayed in place of the four character RPG ID.

- Continuous archive of status messages (A,A,A,S). This function will record to an optical disk system status messages. Writing to the optical disk will begin at the current end-of-data position on the optical disk. This allows the user to perform multiple archive functions on one disk. Archive of status messages is prohibited if the optical disk was created at another PUP or at an RPG site. Status messages written to the optical disk can be retrieved using the Read Status Index function.
- Resume (A,RES). When the disk has reached its logical or physical end, this function will enable the operator to continue the last requested archive function following the insertion of the next optical disk. To ensure no disruption or gaps in archiving, the insertion of the next disk and the resume command must occur within twelve (12) minutes. This function is also active when a Read PUP Product Data base Capacity command has completed execution. Also active when auto archive function(s) are paused due to previous selection of the pause auto archive function.
- Cancel (A,C,<A or P or S>). Selecting this function cancels any currently active archive function for the selected device only. The "A" option cancels all archive functions, the "P" option cancels the product and map auto archive functions, and the "S" option cancels the status message auto archive function.
- Pause Auto Archive (A,P). The Pause Auto Archive function is used to temporarily suspend any active auto archive function(s). The operator is given 12 minutes to resume the paused function(s) before those functions are automatically canceled.
- Read Data Base (A,R,D). The entire archived product list is read into the data base from the optical disk.
- Read Products (A,R,P,<start time>, <start date>, <end time>, <end date>). This function will read from the disk all products which fall between the specified time/date start and end parameters.
- Read One Product (A,R,O,<product name>). The Archive One Product edit screen is displayed for editing the product for archiving when this function is selected.
- Read Background Maps (A,R,R, <rpg>). Selecting this function reads from disk the background maps from the specified RPG. These maps are read into the PUP product database. Background maps are written to optical disk using the Archive Received Background Maps function.
- Read Background Map File (A,R,B,<rpg>,<file no.>). The Read Background Map File function reads from an optical disk a set of background maps for the specified RPG and installs the map data into the selected auxiliary map or associated RPG map file.

The file number (1-21) specifies the background map file. Maps from any RPG can be read into the auxiliary map files 2 to 21. Only maps from the associated RPG can be read into the first (associated RPG) file. A check is made to ensure that the selected RPG ID matches the associated RPG ID when the first map file is specified.

The current identifying contents of the map files can be viewed by entering the following command: (A)RCHIVE, (R)EAD, (B)ACKGROUND MAP FILE, <RPG> or the command: (S)TATUS, (B)ACKGROUND MAP FILES. The RPG ID mnemonics of the auxiliary map files and the associated RPG map file are displayed. When no maps reside in a file then asterisks (i.e., ****) are displayed in place of the four character RPG ID.

- Read Status Index and Messages (A,R,S,<start-time>,<start-date>). The Read Status Index and Messages function will read from an optical disk the archive status index and initiate the reading of archived status messages. The message "STATUS INDEX NOT FOUND" is displayed on the feedback and system status lines if

no status indices are found on the optical disk for the requested time span.

When the Archive Status Index appears after 10 to 70 seconds, the operator is able to select up to 10 blocks of archived status messages for display by entering the start block number (1-32).

The archived status messages will appear after 10 to 70 seconds. The messages may be paged absolutely (P,10) or relatively (F6,F7). The message "STATUS MESSAGES NOT FOUND" is displayed on the feedback and system status lines if no status messages are found on the optical disk associated with the specified block number. The status index can be redisplayed by selecting F2. When the status index is redisplayed via F2, the optical disk is not interrogated since the archive status index is retained until the function is terminated.

The "ARCHIVE UNIT X READ DONE" message is displayed on the feedback and system status lines when retrieval of the status indexes and status messages from the optical disk is completed. Selection of F1 or F2 when the status message indexes are displayed terminates the function. Also, selection of F1 when the status messages are displayed terminates the function.

- Select Archive Device (A,S,<device-number>). The Select Archive Device function is used to select the archive device 1 or 2 for which all subsequent archive functions apply (except the Archive Monitor Performance File function). It is not necessary to select this prior to each archive function; once selected, it stays in effect until it is changed. The Hardware Implementation Category in Protected Adaptation data indicates the number of archive devices available, 1, 2, or none. For those PUPs configured with two archive devices, it is possible to execute any two valid archive functions simultaneously.
- Automatic Archive of Background Map Files. Automatic Archive of the associated background maps and the first three auxiliary background maps (file numbers 2-4) is initiated by selection of any of the auto archive functions, selection of archive resume function, or completion of any of the non-auto archive write functions when no background maps exist on the current optical disk.

Automatic archive of the background map files(s) function records to optical disk up to four background map files, depending on the existence of these maps in the Associated background map file and the first three auxiliary map files (file numbers 2-4).

- Monitor Performance (A,M). This entire monitor performance file is recorded to streamer tape by selection of this junction. Normally this function is performed by maintenance personnel.

2-2.5.2.5.8 User Function.

Frequently performed function sequences can be combined into a single user function to save time and minimize selections by the operator. The user function is first defined at the Application Terminal, using the User Function Define command. The User Function End command is used after completing the definition. The user function commands are issued using the User Function Menu.

The following selections and commands are not available for use in a user function at the Application Terminal:

- Function keys 1 through 7
- All commands from the Control Menu
- (S)TATUS, (P)RODUCTS, (D)ISPLAY, <LINE #>
- (S)TATUS, (P)RODUCTS, (D)ELETE, <LINE #>
- (R)OUTINE PRODUCT SET, (E)DIT
- All commands from the Generate and Distribute Products Menu

- All commands from the Archive Menu
- All commands from the User Function Menu except (W)AIT and (EXA)MINE
- All commands from the Help Menu
- All commands from the Adaptation Menu
- All commands from the Monitor Performance Menu except (D)ISPLAY
- All commands from the System Options Menu
- All commands from the Extended Adaptation Data Menu.

The user function commands issued from the User Function Menu are listed as follows:

- Execute (U,E,<UF#>; or U,E,<UF#>,<rpg>). A predefined user function is executed when this function is selected. Two user functions may be selected for execution at a time.
- Cancel Execution (U,C). This function is selected to stop the execution of a user function. Once a user function is canceled, it cannot be resumed. The execute command must be used to restart the user function.
- Define (U,D,<UF#>,<title>). Selecting this function prompts the operator with a feedback message on all screens to begin user function definitions. Legal functional commands are stored in the order selected. A maximum of 31 functions can be stored in any one user function.
- End Define and Examine (U,EN,E or U,EN,<UF#>). The selection of this function terminates user function definition and displays the commands and parameters of the newly created user function in the order of execution. If less than 31 functions are defined, the (E)nd command must be entered.
- Wait (U,W,<seconds>). Selection of this function places a delay of between 1 and 3600 seconds between functions within a user function. The wait function has applications for AZRAN SELECT and Product display time for elevation. The wait function starts at the beginning of the previous command.
- Examine (U,EXA,T or U,EXA,<UF#>). The title option displays four pages of available user functions and titles. The <UF#> option lists the current title and definition for the selected user function number.

2-2.5.2.5.9 Adaptation Data.

Adaptation data may be changed to suit the needs of current situations. These situations range from site-specific data to communications and alerts, etc. The adaptation data categories are grouped into the following three classes:

- Regular Adaptation Data
- Extended Adaptation Data
- Numerically Edited (Protected Adaptation Data).

Refer to [Table 2 - 22: Adaptation Data Categories Editing Accessibility](#) for editing accessibility of the 29 categories.

Regular Adaptation Data — The most frequently changed adaptation data made by the operator are Routine Product Set lists, alert processing, background map associations, overlay associations, monitor performance periods, and cursor home location. These are contained on the Adaptation Data Menu.

Extended Adaptation Data — The extended adaptation data categories are not changed very often and are password-protected. Precedence of overlays, product colors, change password, RCM parameters, dial-in port control, other user lists, RPG list, and narrowband line definitions fall into the extended adaptation data list. Accidental modification by unauthorized personnel of this data could have a detrimental effect on PUP operations.

Protected Adaptation Data — Entry into the protected adaptation data categories are double-protected. This data should only be changed by supervisory or authorized personnel. Radar location, geographic preset center location, PUP/RPG OP flag, PUP and associated RPG identification numbers, task priorities, distribution product priorities, maps to color mix pairings, special character font definitions, function assignments, overlay colors, thresholds for overload warnings, and maps to PUES and other users fall into this category.

The regular adaptation data menu functions are discussed as follows. Refer to EHB 6-531-1 PUP User's Guide, Appendix A, Section 13 for a more detailed explanation of adaptation data.

- Routine Product Sets (AD,R,<rps ID>,E). The <rps ID> option is used to determine which RPS list (A-J) is to be edited. The selection of this function enters the edit screen for the specified RPS list. The commands for left and right display rates with time options are entered if the operator desires to view or change the display rate when auto display mode is active. The command for this function is AD,R,<rps ID>,L or R,<seconds>. To replace the current routine product set with another, use the AD,R,<rps ID>,RE,<rps ID> command.
- Alert Processing (AD,A,<alert area> or T). Alert processing of alert areas or threshold values are allowed when this function is selected. The alert processing edit screen is displayed. The operator may select the types of alerts and associated thresholds for which alerts are required when deleted. Alert groups or categories available for alerting are:
 - Grid Group
 - Volume Group
 - Forecast Group.

The alert threshold values are defined at the UCP and are the only values that may be used by the PUP operator for alert processing.

- Background Map Associations (AD,B,<product ID #>). Selection of this function enters the Background Map Associations edit screen and allows the operator to select background maps which will be automatically displayed with specific products.
- Overlay Associations (AD,O,<product ID #>). Selection of this function enters the Overlay Associations edit screen and allows the operator to select overlays which will be automatically displayed with specific products.
- Cursor Home Location (AD,C,<latitude>,<longitude>). If the latitude and longitude parameters are not entered, the current location setting of the cursor is displayed. Entering the latitude and longitude as part of the command allows the operator to set a location to which the cursor will move when the CURSOR HOME graphic function is selected. Cursor home may be the PUP location or any designated point of operational significance (e.g.,

Table 2 - 22: Adaptation Data Categories Editing Accessibility

| Adaptation Data Category Number | Category Name | Adaptation Data Menu Access | | |
|--|--|-----------------------------|------------------|-----------------------|
| | | Regular | Extended Menu | Numerically Edited |
| 1 | Radar Location | | | X |
| 2 | Edit Radar Coded Message Flag | | X | |
| 3 | Geographic Cursor Home Location | X | | |
| 4 | Geographic Preset Center Location | | | X |
| 5 | PUP/RPG OP Flag | | | X |
| 6 | PUP/Associated RPG Identification Numbers | | | X |
| 7 | Monitor Performance Update Period | X | | |
| 8 | Task Priorities | | | X |
| 9 | Hardware Implementation | | | X |
| 10 | Narrowband Line Definitions | | X | |
| 11 | RPG List (Directory) | | X | |
| 12 | PUES Distribution Product Priorities | | | X |
| 13 | Product to Background Map/Overlay Associa- tions | X | | |
| 14 | Product to Color Mix Pairings | | X | |
| 15 | Maps to Color Mix Pairings | | | X |
| 16 | Special Character Font Definitions | | | X |
| 17 | Graphics Tablet Selection to Function Assign- ments | | | X |
| 18 | Overlay Colors | | | X |
| 19 | Routine Product Sets | X | | |
| 20 | Password | | X | |
| 21 | Alert Processing | X | | |
| 22 | Overlay Precedences | | X | |
| 23 | Preselected RPGs | | | X |
| 24 | Overload Warning Thresholds | | | X |
| 25 | Maps to PUES and Other Users | | | X |
| 26 | RCM Edit Warning Times | | X | |
| 27 | Dial-In Port Control | | X | |
| 28 | Other Users List | | X | |
| 29 | SCIT, HDA and TVS Parameters | | X | |

airbase, airport, etc.). The AZRAN of any meteorological phenomena can be read relative to the cursor home.

- <Password> (AD,<password>). When the password is entered, the Extended Adaptation Data Menu is displayed. The protected data categories should not be altered except by authorized personnel.

2-2.5.2.5.10 Monitor Performance.

Sampling time, CPU utilization, disk sectors used, communication line usage, channel information, number of products received, number of products transmitted, PUES and RPG loadshed information is displayed when the monitor performance function is turned on. This function should only be turned on when it is needed because it slows down PUP operations.

The commands with the monitor performance function are:

- Display (M,D). When this function is selected, the monitor performance data on communication line usage, CPU utilization, channel information, product received/transmitted, response time and other data is displayed. Use of this function could determine if the system requires some modifications or how well the system is working.
- Begin Monitoring (M,B). When this function is selected, the performance monitoring is started.
- End Monitoring (M,E). When this function is selected, the performance monitoring is halted.
- Period (M,P,<minutes>). The period of monitoring in minutes are specified when this function is selected.

2-2.5.2.5.11 Help.

Extensive help is provided at the Application Terminal by function key 5, function key 21, or by issuing a help command. The appropriate help screen is displayed for a specific function when selected. The help commands that are issued from the Application Terminal are listed below:

- (H)ELP, (AD)APTATION DATA
- (H)ELP, (AL)ERTS
- (H)ELP, (ALP)HANUMERIC DISPLAY
- (H)ELP, (AN)NOTATE PRODUCTS
- (H)ELP, (A)RCHIVE
- (H)ELP, (B)ACKGROUND MAP EDIT
- (H)ELP, (COM)MUNICATIONS LINES
- (H)ELP, (C)ONTROL
- (H)ELP, (D)ISPLAY
- (H)ELP, (E)DIT ALERT AREAS
- (H)ELP, (F)UNCTION KEYS ALPHA
- (H)ELP, (G)RAPHICS TABLET
- (H)ELP, (HA)RDCOPY COLORS PRINT
- (H)ELP, (H)ELP
- (H)ELP, (M)ENU USAGE
- (H)ELP, (MO)NITOR PERFORMANCE
- (H)ELP, (O)PTICAL DISK
- (H)ELP, (PA)RAMS AND IDS OF PRODS
- (H)ELP, (P)ROD NAMES AND IDS
- (H)ELP, (RA)MTEK HARDWARE
- (H)ELP, (R)OUTINE PRODUCT SET
- (H)ELP, (S)TATUS
- (H)ELP, (SC)REEN COLORS, <screen>
- (H)ELP, (TA)PE DRIVE
- (H)ELP, (TE)ST PATTERN
- (H)ELP, (T)IME LAPSE
- (H)ELP, (TR)AINING MODE
- (H)ELP, (U)SER FUNCTIONS
- (H)ELP, (W)EATHER OP MODE/VCP.

Graphics Tablet help consists of five screens of information. Help text is available for normal, edit, and parameter select modes.

Application Terminal help consists of forty-seven help screens.

2-2.5.2.5.12 System Option.

The System Option Menu is password-protected and is not listed on the Main Menu. The System Option Menu is selected by entering only the password on the command line and pressing return. The following paragraphs briefly discuss the functions that can be selected from the System Option Menu.

- Hardcopy Enable/Disable (H,E or H,D). Before a hardcopy request can be honored, the enable function must be active. These commands will allow or disallow

- hardcopies to be made when hardcopy is selected.
- Hardcopy Full Screen (H,F). This function allows a hardcopy printout of a full screen when selected.
 - Hardcopy Products Only (H,P). This selection results in a hardcopy, when requested, of the A/N product displayed less the status, command, and feedback area.
 - Screen Draw/Blank (S,D or S,B). When the draw option is selected, products appear on the graphic screen as though they are being drawn beginning at the screen top (0°) and continuing to draw clockwise to 359°.

The blank option blanks the screen until the screen is drawn into graphic memory, at which time it is switched on and displayed.

- Edit Maps Disable/Enable (E,D or E,E). Selection of these functions allows or disallows the editing of background maps. If edit maps is disabled and a map edit request is made, a feedback message will indicate "EDITING DISABLED".
- Clear Product File (CLEAR). When this function is selected, all products in the database will be deleted.

2-2.5.2.5.13 Communication Control Edit Procedures.

The communication control edit procedures discussed in this paragraph are:

- Narrowband Line Definition Procedures
- RPG List Edit Procedures
- Distribution Control Edit Procedures

These procedures require access to the Extended Adaptation Data Menu which is password protected. The narrowband line definition edit screen defines the hardware implementation and intended use of the communication lines at the PUP. The RPG list edit screen defines the use of the dial-out phone lines to non-associated RPGs including the associated RPG. Distribution control of products by the PUP are through the Dial In Port Control Edit Screen and the Other User List Edit Screen. The Dial In Port Edit Screen defines the distribution of RPS list products to other user and line connection time. The Other User List Edit Screen defines the PUP Other Users.

The procedures for communication control editing are listed as follows:

Narrowband Line Definition Procedures

1. At Application Terminal main menu enter AD <return> to display Adaptation Menu
2. Enter <password> <return> to display Extended Adaptation Menu
3. Enter N <return> to display Narrowband Line Definition Edit Screen

NOTE

Up to eight communication lines are provided to each PUP. These lines are system generated into the operating system (OS/32). The fields are Line Name, Auto Call Unit Name, Line Class and Baud Rate. The Auto Call Unit Name must be defined for all Dial-Out to RPG Communication Lines. Only modifications are allowed on the edit screen.

4. Enter M, <line #> <return> to modify communication line.

NOTE

Changes can now be made to define Narrowband Line. The Line Classes are as follows:

- 0 = Nonexistent Line
- 1 = Dedicated RPG
- 2 = Dial Out to RPG
- 3 = PUES Dedicated
- 4 = Dial In From Other Users

When Line Class 2 is specified ensure Auto Call Unit Name is entered. The Band Rates are 0, 1200, 2400, 4800, 9600 or 56000. No other numbers are accepted.

5. After modifications are entered, press the F1 or F2 function keys to exit and save all changes.

RPG List Edit Procedures

1. At Application Terminal Main Menu enter AD <return> to display Adaptation Menu.
2. Enter <password> <return> to display Extended Adaptation Menu
3. Enter R <return> to display RPG List Edit Screen

NOTE

Modifications, Insertions and deletions can be made from the RPG List Edit Screen. Up to 200 RPGs may be specified on the RPG list.

4. Enter M, <line #> <return> to modify a line number, I, <line #> <return> to insert a new line or D, <line #> <return> to delete a line.

NOTE

The fields for entering data are listed as follows:

- RPG ID # — 1 to 4 decimal digits. The ID # must match the RPG ID # the RPG has in its adaptation data.
 - RPG PORT Password — Up to 6 characters (spaces are allowed) that must match exactly the Port Password associated with the specified telephone number the RPG has in its adaptation data.
 - RPG User Password — Up to 6 characters (spaces are allowed) that must match the password the RPG has in its adaptation data for this PUP.
 - RPG Mnemonic — 4 characters that identify the RPG ID.
 - Phone # — Up to 12 digits can be entered. Local phone numbers (7 digits) can be entered directly. Phone numbers with area codes must be preceded by a 1.
 - Override Disconnect — Has no meaning for the PUP, but is a requirement for all RPG Dial-In Users. Place a Y or N in this field.
5. After modifications or insertions are entered, press the F1 or F2 function keys to exit and save all changes.

Distribution Control Edit Procedures

The Dial-In Port Control Edit Screen contains 3 parameters which define information for Other Users. The procedure is listed as follows:

1. At Application Terminal Main Menu, enter AD <return> to display Adaptation Menu.
2. Enter <password> <return> to display Extended Adaptation Menu

3. Enter D <return> to display Dial In Port Control Edit Screen.

NOTE

At this time, the parameters of Port Password, Distribution Mode, and Max Connect time can be edited. Do not press <return> until completion of editing.

4. Enter Port Password parameter which is the 4 character password that must be sent by another user to the PUP before distribution of products are allowed.

5. Enter distribution mode parameter as follows:

- 1 = Other User RPS Subset sent once
- 2 = Other User RPS Subset sent until timeout
- 3 = Product requested by User from RPS Subset

6. Enter Max Connect Minutes parameter which is a value between 1 and 999.

7. Press <return> to complete editing.

The Other User List Edit Screen is used to specify up to 50 Other Users. Only one user at a time can receive products from a PUP. The procedures to edit the Other User List Edit Screen are as follows:

1. At Application Terminal Main Menu, enter AD <return> to display Adaptation Menu.
2. Enter <password> <return> to display Extended Adaptation Edit Screen.
3. Enter 0 <return> to display Other User List Edit Screen.

NOTE

Modifications, Insertions, and Deletions can be made on this screen. The parameters entered are Other User ID, Other User Password, and Disconnect Override Privileges.

4. Enter M, <line #> <return> to modify a line, I, <line #> <return> to insert a new line or D, <line #> <return> to delete a line.

NOTE

The Parameter fields for modification or insertion are listed as follows:

- Other User ID # — Up to 4 decimal digits that identify other user.
 - Other User Password — Up to 6 characters which specify other user's password.
 - Disconnect Override Privileges — Enter a Y or N.
5. Press the F1 or F2 function keys when editing is completed to exit and save all changes.

2-2.6 Recovery Operations.

This paragraph provides the information necessary to resume normal operation of the PUP Group in the event of a hardware or software malfunction, or after maintenance has been performed and power is restored. The information includes recovery procedures and basic user troubleshooting for the alphanumeric terminals.

When the power is restored after a power failure, the PUP Group will start-up and the narrowband communications equipment will be automatically reconnected to the RPG Group. If the Display Processor, Graphics Processor, System Terminal, or Application Terminal does not reinitialize, a recov-

ery procedure is the recommended action. If the recovery procedure does not solve the problem, fault isolation should be performed by maintenance personnel.

The procedures provided in this paragraph are:

- Application Terminal/System Console Recovery Procedure — Table 2-23
- Graphics Processor Recovery Procedure — Table 2-24
- Paused Task Recovery Procedure — Table 2-25
- PUP Processor Restart (Reboot) Procedure — Table 2-26
- Communication Recovery Procedure — Table 2-27
- Application Terminal On-Line Power Down Reset Procedure — Table 2-28
- Application Terminal/System Console Basic User Troubleshooting — Table 2-29.

Table 2 - 23: Application Terminal/System Console Recovery Procedure

NOTES

If the Application Terminal or the System Console will not respond to keystrokes or appears to be in a locked state, perform the procedure in this table.

All steps are performed at the malfunctioning terminal.

| Step | Procedure/Action | Response |
|-------------|--|---|
| 1 | Press Shift and Setup/Reset keys simultaneously. | Main Setup Menu (Figure 2-1) is displayed. |
| 2 | a. Verify that settings on Main Setup Menu match the applicable values in Table 2-2. b. Refer to paragraph 2-2.2.3 and change settings as required. | |
| 3 | a. Press the Setup/Reset key b. If terminal function is restored, skip remaining steps and return to normal operation; otherwise proceed to step 4. | The Application Terminal displays the Main Menu; the System Console displays the system prompt "*". |
| 4 | a. Press Shift, Ctrl, and Local keys simultaneously. b. If terminal function is restored, repeat steps 1, 2, and 3; otherwise proceed to step 5. | The Application Terminal displays the Main Menu; the System Console displays the system prompt "*". |
| 5 | Place power switch on terminal to OFF position and wait 15 seconds. | Terminal power is off. |
| 6 | Place power switch on terminal to ON position | The application Terminal displays the Main Menu; the System Console displays the system prompt "*". |
| 7 | If terminal function is still not restored, check connections and request assistance from maintenance personnel. | |

Table 2 - 24: Graphics Processor Recovery Procedure**NOTE**

The procedure in this table should be performed if the Graphics Processor requires reinitialization or the graphics system will not respond when products for display from the Graphics Tablet or Application Terminal are selected.

| Step | Procedure/Action | Response |
|-------------|---|---|
| 1 | At Application Terminal, enter C, REI, G or C; <return>. | Terminal will respond with GRAPHICS RESET. After a few seconds, the Color Monitors should reinitialize. |
| 2 | <ul style="list-style-type: none"> a. If the Color Monitors reinitialize, skip the remaining steps and return to normal operation. b. If the Color Monitors do not reinitialize, press the black pushbutton switch on front panel of Graphics Processor. c. At application Terminal, enter C, REI, G or C; <return> | Graphics system attempts hardware reset. |
| 3 | <ul style="list-style-type: none"> a. If graphics system resets, skip remaining steps and return to normal operation. b. If graphics system does not reset, place the power switch at the Graphics Processor to 0 (OFF) position and wait 15 seconds. c. Place power switch to 1 (ON) position. d. At Application Terminal, enter C, REI, G or C; <return>. | Graphics Processor power is off. Graphics Processor power is applied. |
| 4 | <ul style="list-style-type: none"> a. If Graphics Processor reinitializes, return to normal operation. b. If Graphics Processor does not reinitialize, request assistance from maintenance personnel. | |

Table 2 - 25: Paused Task Recovery Procedure

| NOTE | | |
|--|--|---|
| The procedure in this table should be performed if a task has paused during normal operation. | | |
| Step | Procedure/Action | Response |
| NOTE | | |
| All entries are made and all responses occur at the System Console unless otherwise indicated. | | |
| 1 | <ul style="list-style-type: none"> a. Enter D M. b. Verify whether any tasks are paused (indicated by a "P" in 7th column (STAT FIELD)). | Memory map of tasks is displayed. |
| 2 | <ul style="list-style-type: none"> a. Enter T <Task ID>. (Task ID is the name of paused task.) b. Enter CO to restart task. | |
| 3 | <ul style="list-style-type: none"> a. Enter D M. b. Verify that paused task is no longer paused. | Memory map of tasks is displayed. |
| 4 | If task is no longer paused, skip remaining steps and return to normal operation; otherwise proceed to Step 5. | |
| 5 | <ul style="list-style-type: none"> a. Enter PUPDOWN b. Enter PUPUP. | <p>Message that PUP software is displayed.</p> <p>PUP SOFTWARE IS LOADED AND STARTED" is displayed at System Console, and PUP Main Menu is displayed at Application Terminal.</p> |
| 6 | Repeat step 3. | |
| 7 | If task is no longer paused, skip remaining steps and return to normal operation; otherwise, proceed to step 8. | |
| 8 | Enter PUPDOWN | System Console indicates that software tasks are canceled. |
| 9 | <ul style="list-style-type: none"> a. Enter ERR LOG, OFF to turn off error logger. b. Enter MA DSC0:, OFF to mark disk off. | |

Table 2 - 25: Paused Task Recovery Procedure

| Step | Procedure/Action | Response |
|-------------|---|--|
| 10 | <p>If disk will not mark off, perform the following steps:</p> <ul style="list-style-type: none"> a. Enter D M. b. Verify that all tasks (except time) are cancelled. (Time should be the only task with an A in the STAT field.) c. If any task is not cancelled, enter CA <task name>. | |
| 11 | <p>At PUP System Console:</p> <ul style="list-style-type: none"> a. Simultaneously press the CTRL and V keys twice, then press <return> to enter the CDS mode. b. Enter HALT c. Enter PO OFF d. Enter PO ON | <p>System Console displays that software is initializing; Application Terminal displays Main Menu.</p> |
| 12 | <p>If task is still paused, request assistance from maintenance personnel.</p> | |

Table 2 - 26: PUP Processor Restart (Reboot) Procedure

| Step | Procedure/Action | Response |
|-------------|---|---|
| 1 | At PUP System Console, type PUPDOWN <return>. | Observe software tasks are cancelled on System Console. (Time should be the only task with an A in the TASK field.) |
| 2 | At PUP System Console, type: | |
| | a. ERR Log, OFF <return>. | Turns off error logger. |
| | b. MA DSC0:, OFF <return>. | Marks off disk. |
| | c. D D <return>. | Status at DSC0 should read DSC0 09 0000 OFF. |

NOTE

If any disk will not mark off, type D M <return> and verify that all tasks are cancelled. If any task is not cancelled (except time), type CA (task name) <return> to cancel.

- 3 At PUP System Console
 - a. Simultaneously press the CTRL and V keys twice then press <return> to enter the CDS mode.
 - b. Enter HALT
 - c. Enter PO OFF
 - d. Enter PO ON

NOTE

The operating system is initialized and the main menu should appear on applications terminal after the processor has completed its software startup. Refer to fault isolation procedure in NWS EHB 6-530, Chapter 6, if the processor failed to reboot.

Table 2 - 27: Communication Recovery Procedure

| Step | Procedure/Action | Response |
|-------------|-------------------------|-----------------|
|-------------|-------------------------|-----------------|

Communication errors, task pausing, or other conditions may result in narrowband line failure. To restore the system to normal operation, perform the following steps:

1. At Application Terminal,
 - a. Enter C,C,D, <line #> <return> to disconnect communications line.
 - b. Enter C,C,C <line #> <return> to attempt reconnection of failed line.

NOTE

If line is restored to normal operation, continue with operations. If line failed to connect, continue with step 2.

2. At System Console,
 - a. Enter D M/S309M1 <return> and check status of S309M1 task (A=active, P=paused)
 - b. If task is paused, enter CA S309M1 <return> to cancel task.
 - c. Enter PUPDOWN <return> to terminate application software.
 - d. Enter PUPUP <return> to start application software.
 - e. Enter D M/S309M1 <return> and check status of S309M1 task.

NOTE

If task is active, return to normal operations. If task is still paused, consult a maintenance technician.

Table 2 - 28: Application Terminal On-Line Power Down Reset Procedure

Introduction. The power down reset function clears the screen, performs power-up self tests, and transfers the Electrically Alterable Read Only Memory (EAROM) parameters to working RAM.

| Step | Procedure/Action | Response |
|------|---|---|
| 1 | At Application Terminal, press Ctrl, Shift and Setup/Reset keys simultaneously. | Failure Status screen is not displayed. |
| 2 | <ul style="list-style-type: none"> <li>a. If terminal function is restored, skip remaining steps and return to normal operation. <li>b. If Failure Status screen is displayed again, press Ctrl, Shift, and clear keys simultaneously. <li>c. If Failure Status screen is displayed again, request appropriate maintenance assistance. | Failure Status screen is not displayed. |

Table 2 - 29: Application Terminal/System Console Basic User Troubleshooting

| Symptom | Possible Cause | Solution |
|--|---|---|
| No power | No AC power input | Verify that AC power cord is plugged into terminal and power outlet. Verify that power outlet is good. |
| System memory | Bad RAM or EAROM | Power down terminal and power up self-test fails again. If problem persists, contact maintenance personnel. |
| No keyboard response | Keyboard not connected | <ul style="list-style-type: none"> a. Verify that keyboard cable is plugged into terminal base. b. Disconnect and then reconnect keyboard cable. |
| Cursor does not | Cursor set to OFF | Enter setup configuration mode and appear on screen set cursor to ON. |
| No characters appear on screen when key is depressed | Incorrect setup configuration | <ul style="list-style-type: none"> a. Check to see that screen brightness is set to greater than 1. b. Verify that the setup configuration matches your host computer (baud rate, data bits, parity, etc). c. Verify that the host port is the main port in Setup Configuration Menu. d. Ensure that the terminal is not in transparent print or printer controller mode. Remove the terminal from transparent mode by simultaneously pressing the Ctrl and P keys, then simultaneously press the Ctrl and C keys. e. Ensure that the host computer is transmitting. |
| Terminal not communicating with the host computer, or text received is garbled, incorrect, or incomplete | Terminal not configured correctly | <ul style="list-style-type: none"> a. Enter setup configuration mode and verify that the baud rate, data bits, stop bits, and parity match the host computer. |
| Parity errors appear in status line | | <ul style="list-style-type: none"> b. Ensure that the terminal is in full duplex mode. |
| Two characters appear on screen when key is depressed | Terminal set to communicate in half duplex mode | Enter setup configuration mode and change setting to full duplex mode. |

Table 2 - 29: Application Terminal/System Console Basic User Troubleshooting

| Symptom | Possible Cause | Solution |
|---|--|--|
| All letters are capitalized | a. Cap lock key depressed. | Release the cap lock key. |
| | b. UPPER CASE option enabled in setup configuration. | Disable UPPER CASE option in setup configuration. |
| Control codes from the keyboard do not work | Incorrect key sequence | Ensure that the Ctrl key is held down while the next key is depressed. |

2-2.6.1 Manual Cartridge Release.

In the event of a power failure or drive fault, the drive may lock the cartridge into the operating position. If necessary, the cartridge may be released manually by using a thin, stiff tool (such as a letter opener or screwdriver) and performing the following procedure. (see [Figure 2-6. Manual Cartridge Release](#)).

1. Rotate the knob clockwise, to the MEDIA ENGAGED position until it stops.
2. With the tool in one hand, gently press inward on the center of the knob with the other hand to depress the shock amounts.
3. Look into the drive, between the front bezel and the cartridge retaining tray, locate the small white post protruding from the interlocking slide. With the drive locked, the slide can be seen approximately 2 cm (0.8 in.) to the right of the knob.
4. Insert the tool between the bezel and the tray and gently move the slide to the right until it stops (approximately 1 cm (0.4 in.)).
5. Rotate the knob counterclockwise 90 degrees until it detents into the REMOVE/INSERT position.
6. Remove the tool which releases the slide.
7. Rotate the knob counterclockwise to the CARTRIDGE RELEASE position and release the media from the drive.

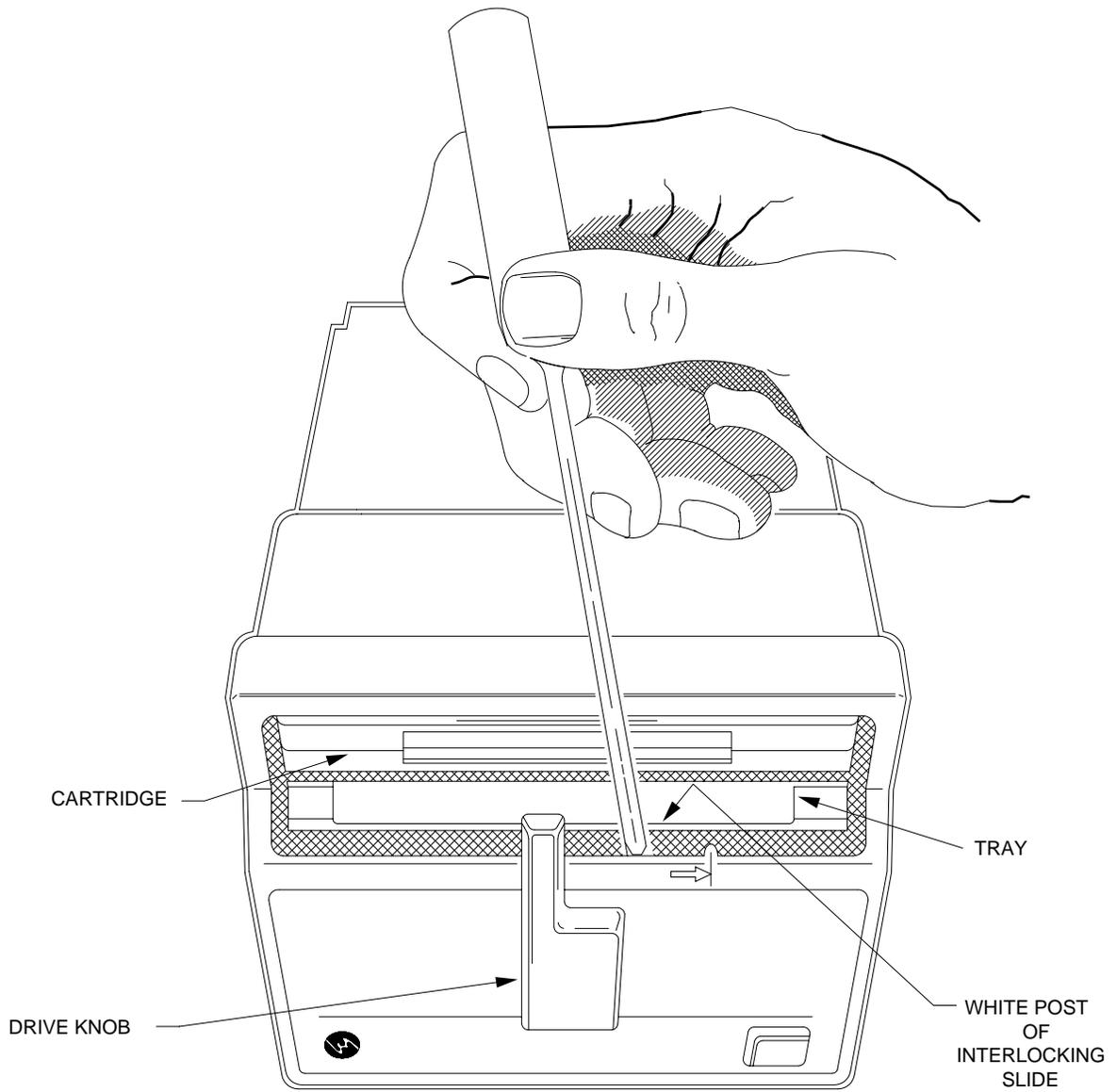


Figure 2-6. Manual Cartridge Release

Section: 2-3 Controls and Indicators

2-3.1 General.

All of the external controls and indicators for PUP Data Processor cabinet and the PUP workstation are identified, located, and described in this section.

Figures and tables are provided for locating and identifying the controls and indicators. The tables contain the following information:

- Fig. and Index No. column ó the numbers refer to the specific controls or indicators called out in the designated figure
- Control/Indicator Nomenclature (Type) column ó lists panel nomenclature of the controls or indicators and their type
- Function column ó describes the purpose of each control or indicator
- Normal Position/State column ó lists the normal position/state of each control or indicator.

2-3.2 PUP Data Processor UD41.

The controls and indicators for the PUPDP UD41, remote and collocated ([Figure 2-7. PUP Data Processor UD41, Cabinet Layout \(Front View\)](#) and [Figure 2-8. PUP Data Processor UD41, Cabinet Layout \(Rear View\)](#)) are located on the following equipment:

- RS232/RS422 Converter UD41A1A1
- Modem Eliminator UD41A1A2
- Dedicated/Dial Modem Rack Assembly (Codex 3262) UD41A2
- Dedicated Port Modem (Codex 3263) UD41A2A1-A3 and Dial Port Modem (Codex 3262) UD41A2A4-A5
- Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2
- Dial Port Modem Assembly (Codex 226X) UD41A6
- Graphics Processor UD41A13
- SCSI Assembly UD41A15 and UD41A22
- Power Distribution Panel UD41A20
- Swing-Out Power Subsystem UD41PS1
- Alphanumeric Display Terminal UD42 and UD43.
- Limited Distance Modem UD41A27A1-A3 and UD45A3-A5 (for PUP Workstation Extension only).
- VME Chassis UD41A7
- VME Narrowband Board UD41A7A2-A9
- VMEbus to Concurrent I/O Bus Interface Board (VCI-V) UD41A7A1
- VMEbus to Concurrent I/O Bus Interface Board (VCI-C) UD41A16A19
- CDS Master Module UD41PS1A3

2-3.2.1 RS232/RS422 Converter UD41A1A1 Controls and Indicators.

See [Figure 2-9. RS232/RS422 Converter UD41A1A1 \(Rack-Mounted\)](#) and refer to [Table 2 - 30: RS232/RS422 Converter UD41A1A1 Indicators](#) for description of the rack-mounted RS232/RS422 converter controls and indicators.

2-3.2.2 Modem Eliminator UD41A1A2 Controls and Indicators.

See [Figure 2-10. Modem Eliminator UD41A1A2 \(Rack-Mounted\)](#) and refer to [Table 2 - 31: Modem Eliminator UD41A1A2 Indicators](#) for a description of the rack-mounted modem eliminator controls and indicators.

2-3.2.3 Dedicated/Dial Modem Rack Assembly (Codex 326X) UD41A2 Controls and Indicators.

See [Figure 2-11. Dedicated/Dial Modem Rack Assembly \(Codex 326X\) UD41A2](#) and refer to [Table 2 - 32: Dedicated/Dial Modem Rack Assembly \(Codex 326X\) UD41A2 Controls and Indicators](#) for a description of the Dedicated/Dial Modem Rack Assembly controls and indicators. See [Figure 2-12. Dedicated/Dial Modem Rack Assembly \(Codex 326X\) with 9-Slot Backplane \(Rear View\)](#) for rack assembly rear view.

2-3.2.4 Dedicated Port Modem (Codex 3263) UD41A2A1-A3 and Dial Port Modem (Codex 3262) UD41A2A4-A5 Controls and Indicators.

See [Figure 2-13. Rack-Mounted Dial \(Codex 3262\) \(UD41A2A4-A5\) and Dedicated \(Codex 3263\) \(UD41A2A1-A3\) Port Modems Controls and Indicators](#) and refer to [Table 2 - 33: Rack-Mounted Dial \(Codex 3262\) \(UD41A2A4-A5\) and Dedicated \(Codex 3263\) \(UD41A2A1-A3\) Port Modems Controls and Indicators](#) for a description of the Dedicated and Dial Port Modem controls and indicators.

2-3.2.5 Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2 Controls and Indicators.

See [Figure 2-14. Dedicated Port Modem Assembly \(Fujitsu M1921L\) UD41A2 Controls and Indicators](#) and refer to [Table 2 - 34: Dedicated Port Modem Assembly \(Fujitsu M1921L\) UD41A2, Controls and Indicators](#) for a description of the Dedicated Port Modem Assembly controls and indicators.

2-3.2.6 Dial Port Modem Assembly (Codex 226X) UD41A6 Controls and Indicators.

See [Figure 2-15. Dial Port Modem Assembly \(Codex 226X\) UD41A6 and Fan Assembly Controls and Indicators.](#) and refer to [Table 2 - 35: Dial Port Modem Assembly \(Codex 226X\) UD41A6A1-A8, Controls and Indicators](#) for a description of the Dial Port Modem Assembly controls and indicators.

2-3.2.7 Graphics Processor UD41A13 Controls and Indicators.

See [Figure 2-16. Graphics Processor UD41A13, \(Sheet 1 of 3\)](#) and refer to [Table 2 - 36: Graphics Processor UD41A13, Controls and Indicators](#) for a description of the graphics processor controls and indicators.

2-3.2.8 SCSI Assembly UD41A15 and A22 Controls and Indicators.

See [Figure 2-17. SCSI Assembly UD41A15/A22](#) and refer to [Table 2 - 37: SCSI Assembly UD41A15, Controls and Indicators](#) for a description of the SCSI assembly controls and indicators.

2-3.2.9 Power Distribution Panel UD41A20 Controls and Indicators.

See [Figure 2-18. Power Distribution Panel UD41A20](#) and refer to [Table 2 - 38: Power Distribution Panel UD41A20, Controls and Indicators](#) for a description of the power distribution panel controls and indicators.

2-3.2.10 Swing-Out Power Subsystem UD41PS1 Controls and Indicators.

See [Figure 2-19. Swing-Out Power Subsystem UD41PS1](#) and refer to [Table 2 - 39: Swing-Out Power Subsystem UD41PS1, Controls and Indicators](#) for a description of the display processor power supply controls and indicators.

2-3.2.11 Alphanumeric Display Terminal UD42/UD43 Controls and Indicators.

The System Console (UD42) and Applications Terminal (UD43) are both alphanumeric display terminals. See [Figure 2-20. Alphanumeric Display Terminal UD42/UD43](#) and [Table 2 - 40: Alphanumeric Display Terminal UD42/UD43, Controls and Indicators](#) for a description of the alphanumeric display terminal.

2-3.2.12 Limited Distance Modems UD41A27A1-A3 Controls and Indicators.

See [Figure 2-21. Limited Distance Modem \(LDM\) Rack UD41A27](#) and [Figure 2-22. Limited Distance Modem \(LDM\) UD41A27A1-A3 and UD45A3-A5](#) and refer to [Table 2 - 41: Limited Distance Modems UD41A27A1-A3 and UD45A3-A5 Controls and Indicators](#) for a description of the LDM controls and indicators.

To open the front door of the LDM Rack, gently place the blade of a flat-tip screwdriver in the slot as shown in [Figure 2-27. CDS Master Module UD41PS1A3 Controls and Indicators.](#) Gently push handle down with one hand and slide catch to the left with the other hand. Remove screwdriver then release catch; the catch will stay in the open position (to the left). To close the catch once the door is in the closed position, reinsert the screwdriver and press down with one hand then slide catch to the

right with the other hand.

The front cover of the standalone LDM is removed by pulling out and down on the top of both sides of the cover.

2-3.2.13 VME Chassis UD41A7 Controls and Indicators.

See [Figure 2-23. VME Chassis UD41A7](#) and refer to [Table 2 - 42: VME Chassis UD41A7 Controls and Indicators](#) for a description of the VME Chassis controls and indicators.

2-3.2.14 VME Narrowband Board UD41A7A2-A9 Controls and Indicators.

See [Figure 2-24. VME Narrowband Board UD41A7A2-A9](#) and refer to [Table 2 - 43: VME Narrowband Board UD41A7A2-A9 Controls and Indicators](#) for a description of the VME Narrowband Board controls and indicators.

2-3.2.15 VMEbus to Concurrent I/O Bus Interface Board (VCI-V) UD41A7A1 Controls and Indicators.

See [Figure 2-25. VMEbus to Concurrent I/O Bus Interface Board \(VCI-V\) UD41A7A1](#) and refer to [Table 2 - 44: VMEbus to Concurrent I/O Bus Interface Board \(VCI-V\) UD41A7A1, Controls and Indicators](#) for a description of the VCI-V board controls and indicators.

2-3.2.16 VMEbus to Concurrent I/O Bus Interface Board (VCI-C) UD41A16A19 Controls and Indicators.

See [Figure 2-26. VMEbus to Concurrent I/O Bus Interface Board \(VCI-C\) UD41A16A19 Controls and Indicators](#) and refer to [Table 2 - 45: VMEbus to Concurrent I/O Bus Interface Board \(VCI-C\) UD41A16A19, Controls and Indicators](#) for a description of the VCI-C board controls and indicators.

2-3.2.17 CDS Master Module UD41PS1A3 Controls and Indicators.

See [Figure 2-27. CDS Master Module UD41PS1A3 Controls and Indicators](#) and refer to [Table 2 - 46: CDS Master Module UD41PS1A3 Controls and Indicators](#) and [Table 2 - 47: CDS Master Module LED Status](#) for a description of the VCI-C board controls and indicators.

2-3.3 PUP Workstation.

The controls and indicators for the PUP workstation ([Figure 2-28. PUP Workstation Component Layout \(1 of 3\)](#)) are located on the following equipment:

- Alphanumeric Display terminal UD43
- Graphics Tablet and Puck UD44
- Color Monitor UD45A1-A2
- Limited Distance Modems UD45A3-A5
- Audible Alarm UD46
- Color Graphics Printer UD47.

2-3.3.1 Alphanumeric Display Terminal UD43 Controls and Indicators.

See [Figure 2-20. Alphanumeric Display Terminal UD42/UD43](#) and refer to [Table 2 - 40: Alphanumeric Display Terminal UD42/UD43, Controls and Indicators](#) for a description of the alphanumeric display terminal.

2-3.3.2 Graphics Tablet and Puck UD44 Controls and Indicators.

See [Figures Figure 2-29. Graphics Tablet UD44](#) and [Figure 2-30. Graphics Tablet Puck](#) and [Tables Table 2 - 48: Graphics Tablet, Controls and Indicators](#) and [Table 2 - 49: Graphics Tablet Puck, Controls and Indicators](#) for a description of the graphics tablet and puck controls and indicators.

2-3.3.3 Color Monitor UD45A1-A2 Controls and Indicators.

See [Figure Figure 2-31. Color Monitors UD45A1/UD45A2](#) and refer to [Table 2 - 50: Color Monitor UD45A1/UD45A2, Controls and Indicators](#) for a description of the color monitors.

2-3.3.4 Limited Distance Modems UD45A3-A5 Controls and Indicators.

The PUP workstation uses the same type of LDMs as the PUP cabinet. Refer to paragraph [2-3.2.12](#)

[Limited Distance Modems UD41A27A1-A3 Controls and Indicators..](#)

2-3.3.5 [Audible Alarm UD46 Controls.](#)

See [Figure 2-32. Audible Alarm UD46](#) and refer to [Table 2 - 51: Audible Alarm UD46, Controls and Indicators](#) for a description of the audible alarm controls.

2-3.3.6 [Color Graphics Printer UD47 Controls and Indicators.](#)

See [Figure 2-33. Color Graphics Printer UD47](#) and refer to [Table 2 - 52: Color Graphics Printer UD47, Controls and Indicators](#) for a description of the color graphics printer controls and indicators.

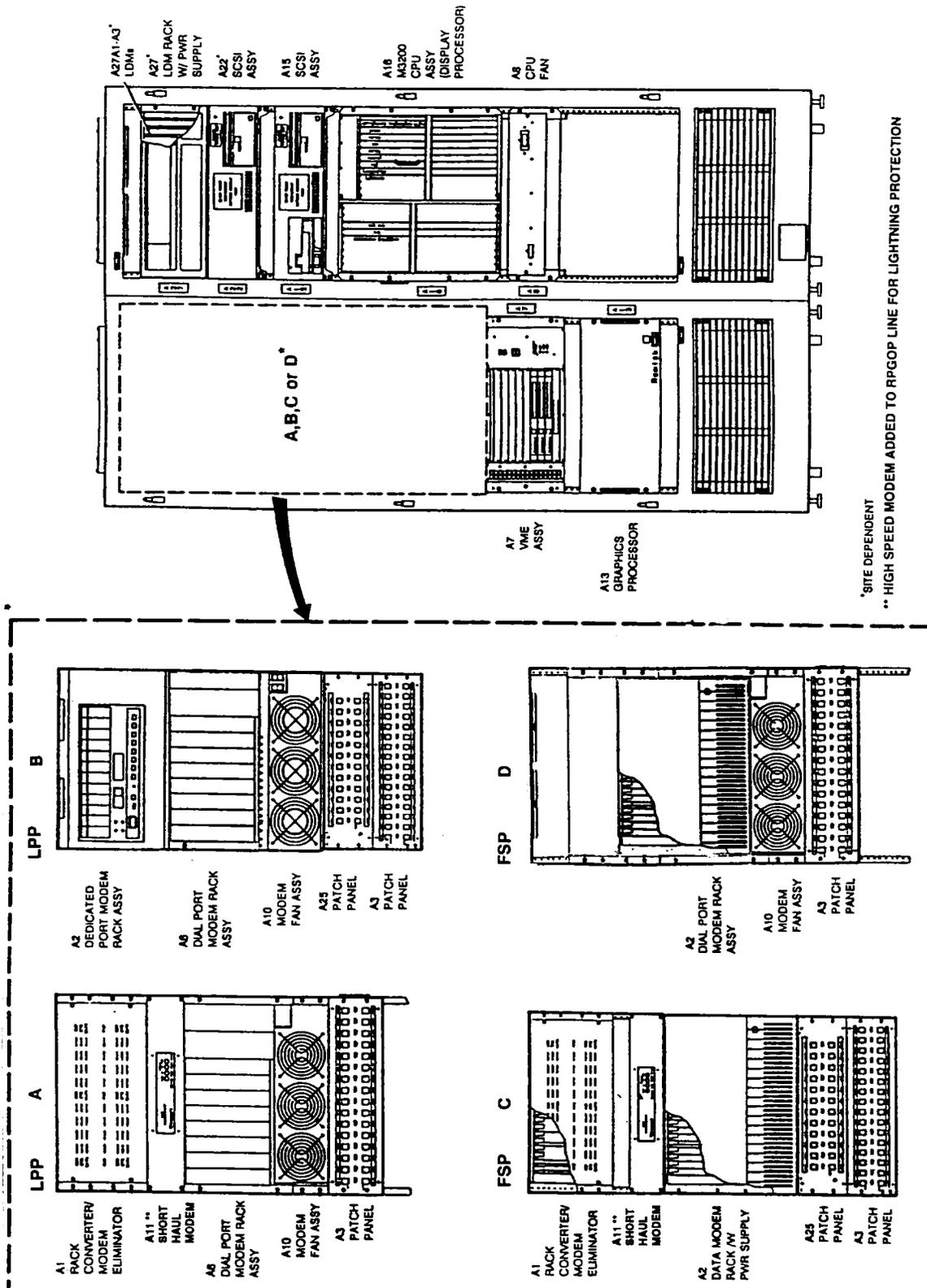


Figure 2-7. PUP Data Processor UD41, Cabinet Layout (Front View)

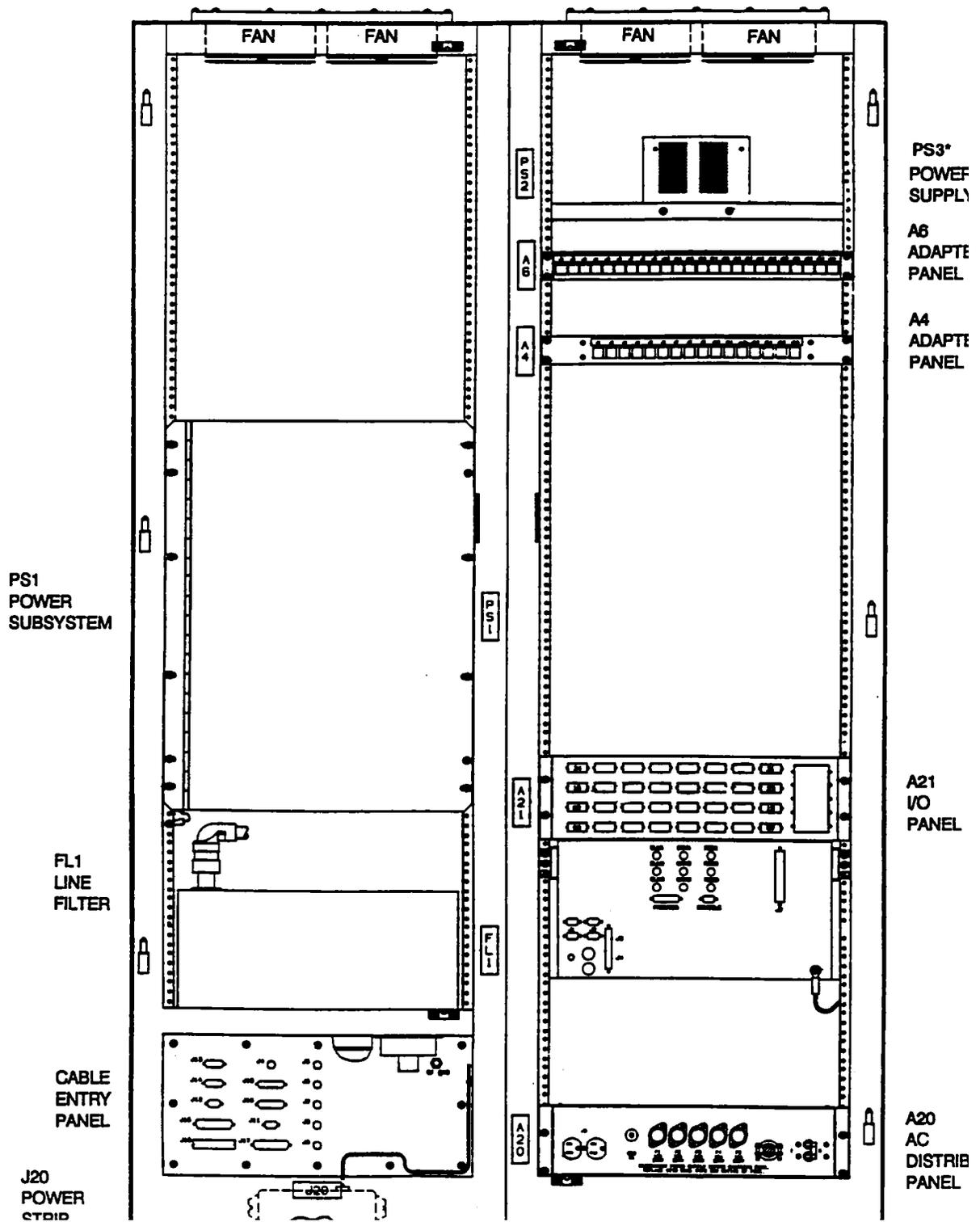


Figure 2-8. PUP Data Processor UD41, Cabinet Layout (Rear View)

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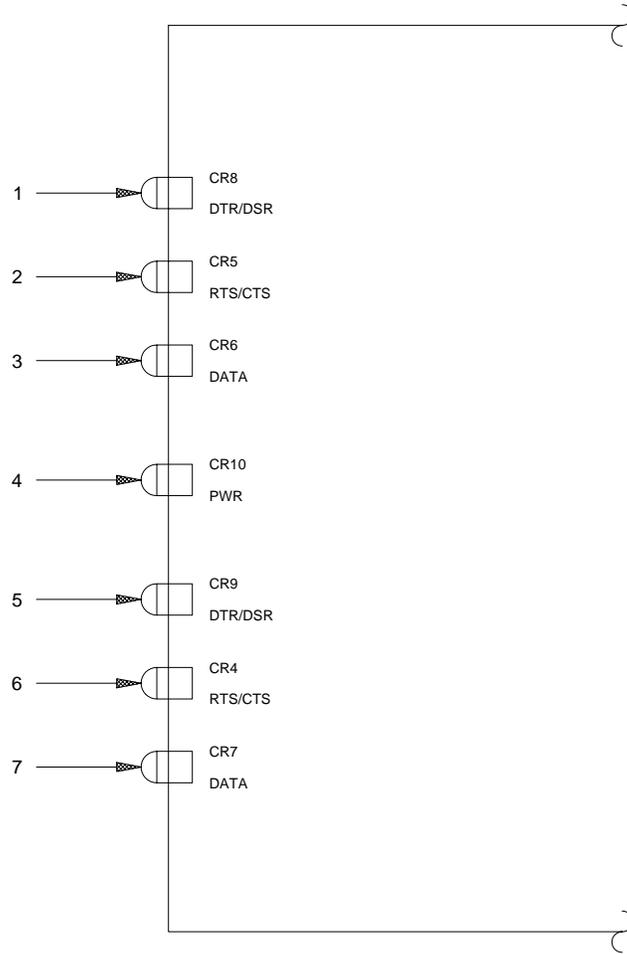


Figure 2-9. RS232/RS422 Converter UD41A1A1 (Rack-Mounted)

Table 2 - 30: RS232/RS422 Converter UD41A1A1 Indicators

| Fig. 2-9 Index No. | Control/ Nomenclature (Type) | Function | Normal Position State |
|-------------------------------|---|--|--------------------------------------|
| 1 | CR8 DTR/DSR (indicator) | Data terminal ready/data set ready indicator is lit to show condition on the RS422 interface J1. | N/A |
| 2 | CR5 RTS/CTS (indicator) | Indicates data can be sent over RS422 interface J1. | N/A |
| 3 | CR6 DATA (indicator) | Indicates data being sent on RS422 interface connector J1. | N/A |
| 4 | CR10 PWR (indicator) | Indicates power is applied to unit. | Lit |
| 5 | CR9 DTR/DSR (indicator) | Data terminal ready/data set ready indicator is lit to show condition of the RS232 interface connector J2. | N/A |
| 6 | CR4 RTS/CTS(indicator) | Indicates data can be sent on RS232 interface connector J2. | N/A |
| 7 | CR7 DATA (indicator) | Indicates data being sent on RS232 interface connector J2. | N/A |

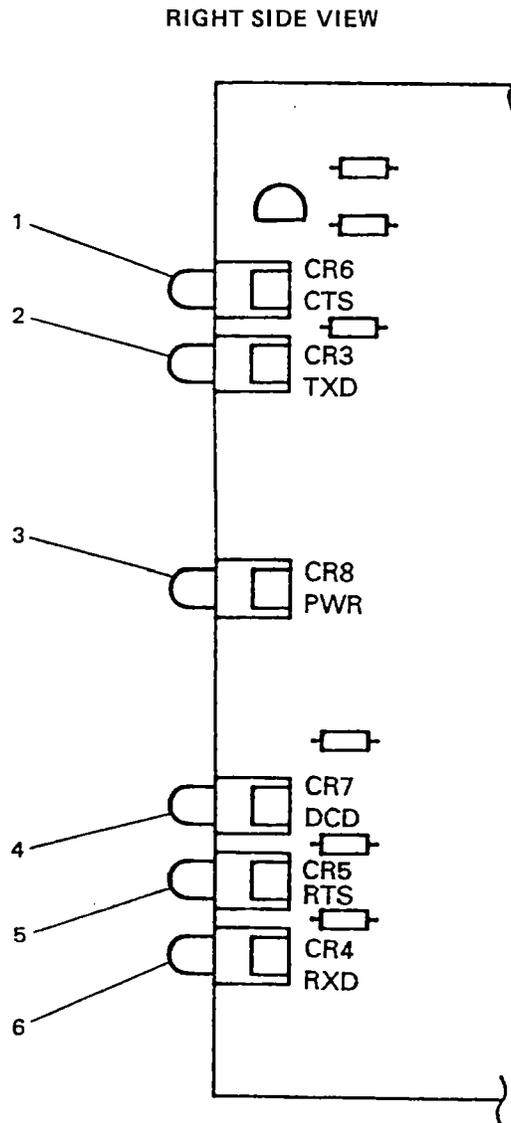


Figure 2-10. Modem Eliminator UD41A1A2 (Rack-Mounted)

Table 2 - 31: Modem Eliminator UD41A1A2 Indicators

| Figure 2-10. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position State |
|-----------------------------------|---|---|--------------------------------------|
| 1 | CTS (indicator) | Indicates when J1 is clear to send | N/A |
| 2 | TXD (indicator) | Indicates when terminal connected to J1 is sending data | N/A |
| 3 | PWR (indicator) | Indicates when power is applied to unit | Lit |
| 4 | DCD (indicator) | Indicates when the terminal connected to J2 raises RTS | N/A |
| 5 | RTS (indicator) | Indicates when the terminal connected to J1 raises RTS | N/A |
| 6 | RXD (indicator) | Indicates when the terminal connected to J1 is receiving data | N/A |

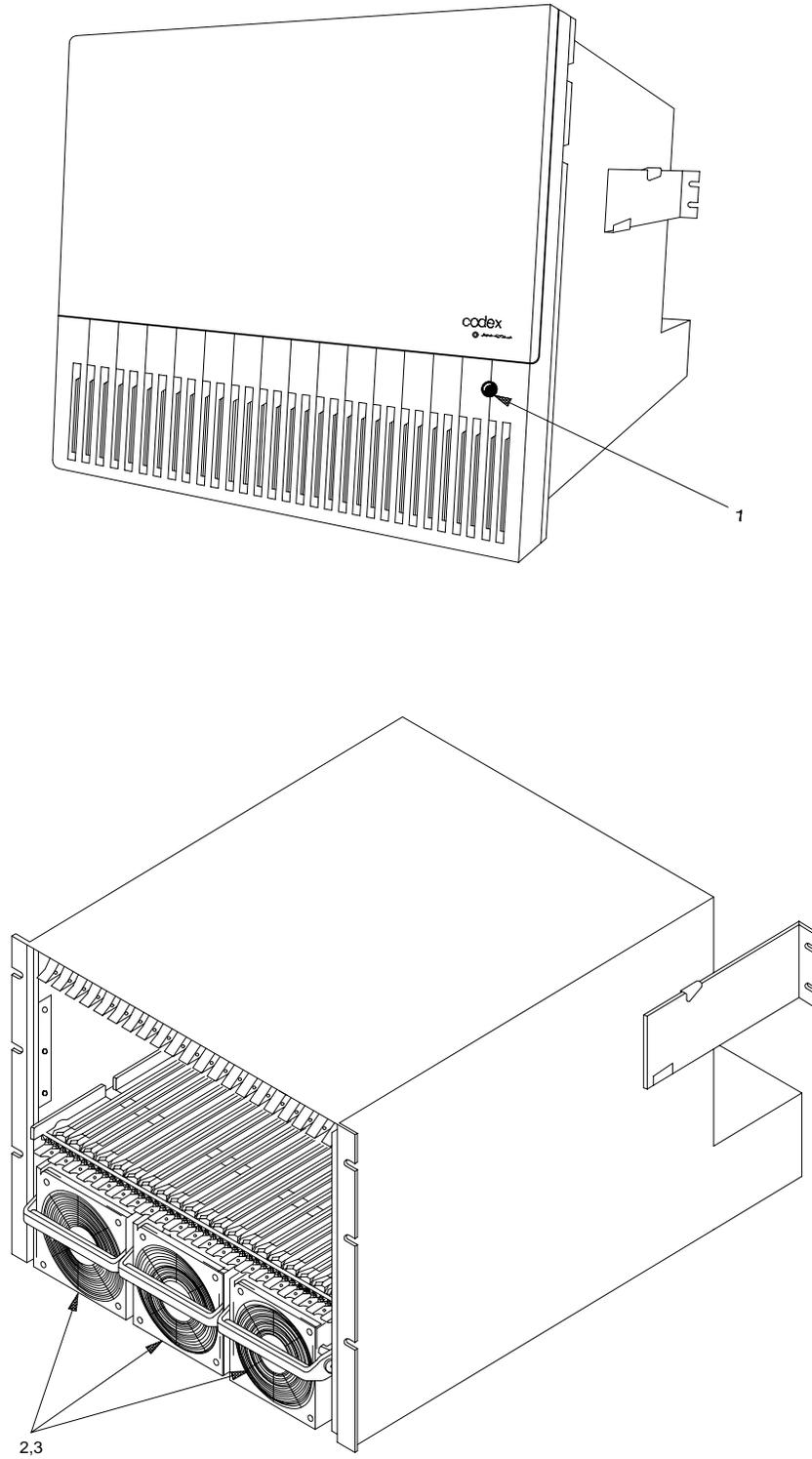


Figure 2-11. Dedicated/Dial Modem Rack Assembly (Codex 326X) UD41A2

Table 2 - 32: Dedicated/Dial Modem Rack Assembly (Codex 326X) UD41A2 Controls and Indicators

| Figure 2-11. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | Front Door Lock | Locks door; prevents unwanted tampering. | N/A |
| 2 | Power Supply Module (Right side behind fan) | | |
| | a. Upper (Green LED) | Indicates the fan is functioning properly. | ON |
| | b. Lower (Green LED) | Indicates the power supply is functioning properly. | ON |
| 3 | Fan Module (Right side behind fan) Green LED | Indicates the fan is functioning properly. | ON |

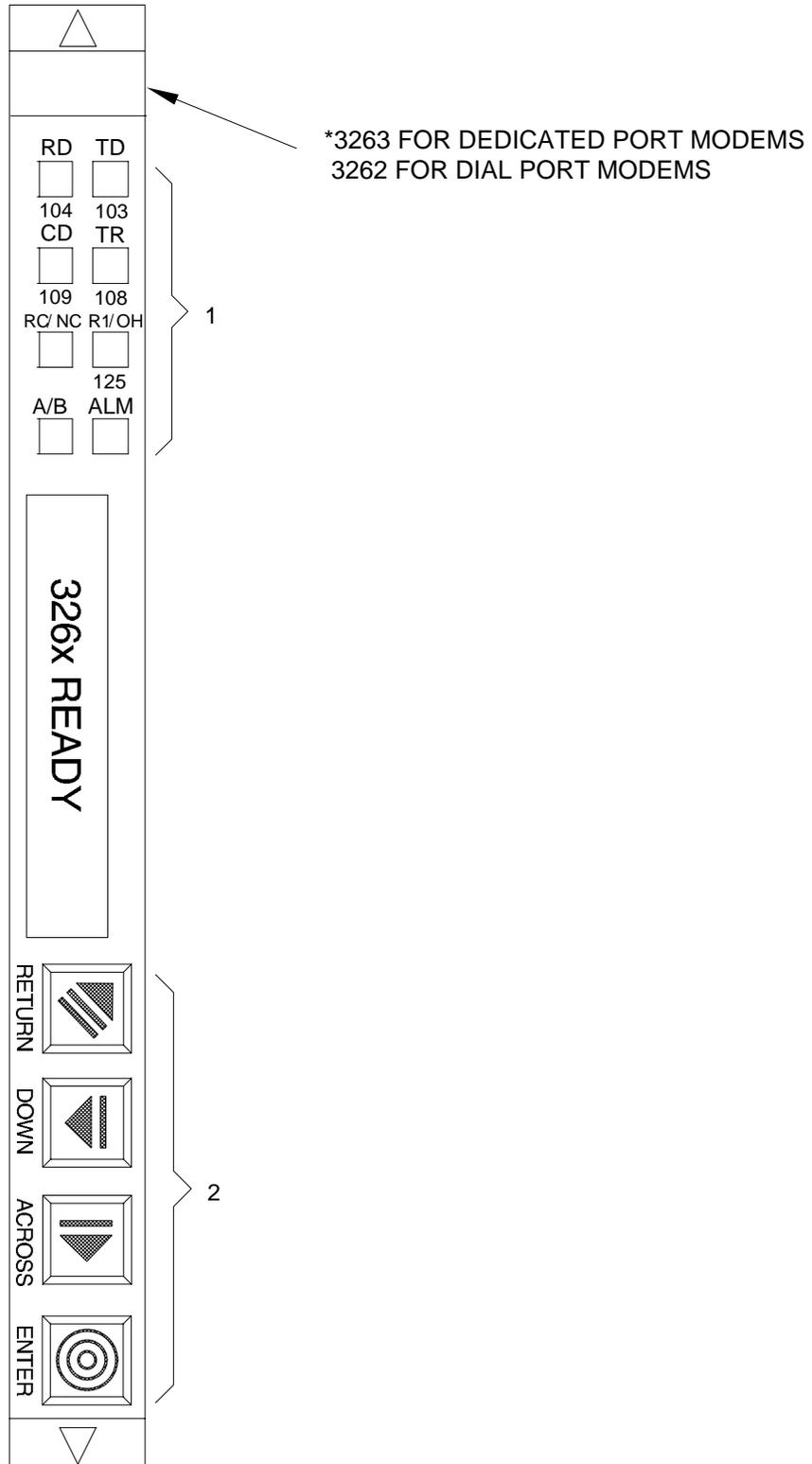


Figure 2-13. Rack-Mounted Dial (Codex 3262) (UD41A2A4-A5) and Dedicated (Codex 3263) (UD41A2A1-A3) Port Modems Controls and Indicators

Table 2 - 33: Rack-Mounted Dial (Codex 3262) (UD41A2A4-A5) and Dedicated (Codex 3263) (UD41A2A1-A3) Port Modems Controls and Indicators

| Figure 2-13. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | TD (indicator) | Flashes when the modem accepts data to be transmitted from the local terminal. | N/A |
| | RD (indicator) | Flashes when the modem passes received data to the local terminal. | N/A |
| | RI/OH (indicator) | Illuminates when an incoming call is ringing. Also illuminates when the modem is off-hook and connected to the dial line. | N/A |
| | CD (indicator) | Illuminates when the local modem is receiving a carrier signal (as defined by the modulation mode currently being used) from another modem or when the DCD is set to High, for test purposes, using the front panel controls. | N/A |
| | TR (indicator) | Illuminates when a DTR signal from an attached terminal is detected. | N/A |
| | RC/NC (indicator) | Flashes to indicate that the modem is under remote configuration (via front panel or AT ACU). Illuminated when under narrowband configuration. | N/A |
| | A/B (A or B) | Rack-mounted dial port modem cards contain two modems. For the distinction of cables and front panel indicators, one is referred to as "A" and the other "B". Holding RETURN and ENTER keys down together toggles between "A" and "B". | N/A |
| | | The A/B LED is illuminated when modem "A" front panel information is displayed. It is extinguished when modem "B" information is displayed. | |

Table 2 - 33: Rack-Mounted Dial (Codex 3262) (UD41A2A4-A5) and Dedicated (Codex 3263) (UD41A2A1-A3) Port Modems Controls and Indicators

| Figure 2-13. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| | ALM (Alarm) | Illuminated when a test is in progress as a modem failure occurs. For the dial port modems, if one modem fails, the ALM LED illuminates and remains illuminated regardless of which modem front panel is being viewed. | OFF |
| 2 | (RETURN) | Steps back up through the menu tree from options and menus to the Home display. (for menu tree, see Figure FO6-1 in NWS EHB 6-530). | N/A |
| | (ACROSS) | Steps across the options in each branch of the menu tree. | N/A |
| | (DOWN) | Steps down through the menu tree to menus, options, and settings. | N/A |
| | (ENTER) | Selects a setting and/or initiates an action chosen. This key also serves as a Talk/Data "softkey" when at the Home display. | |

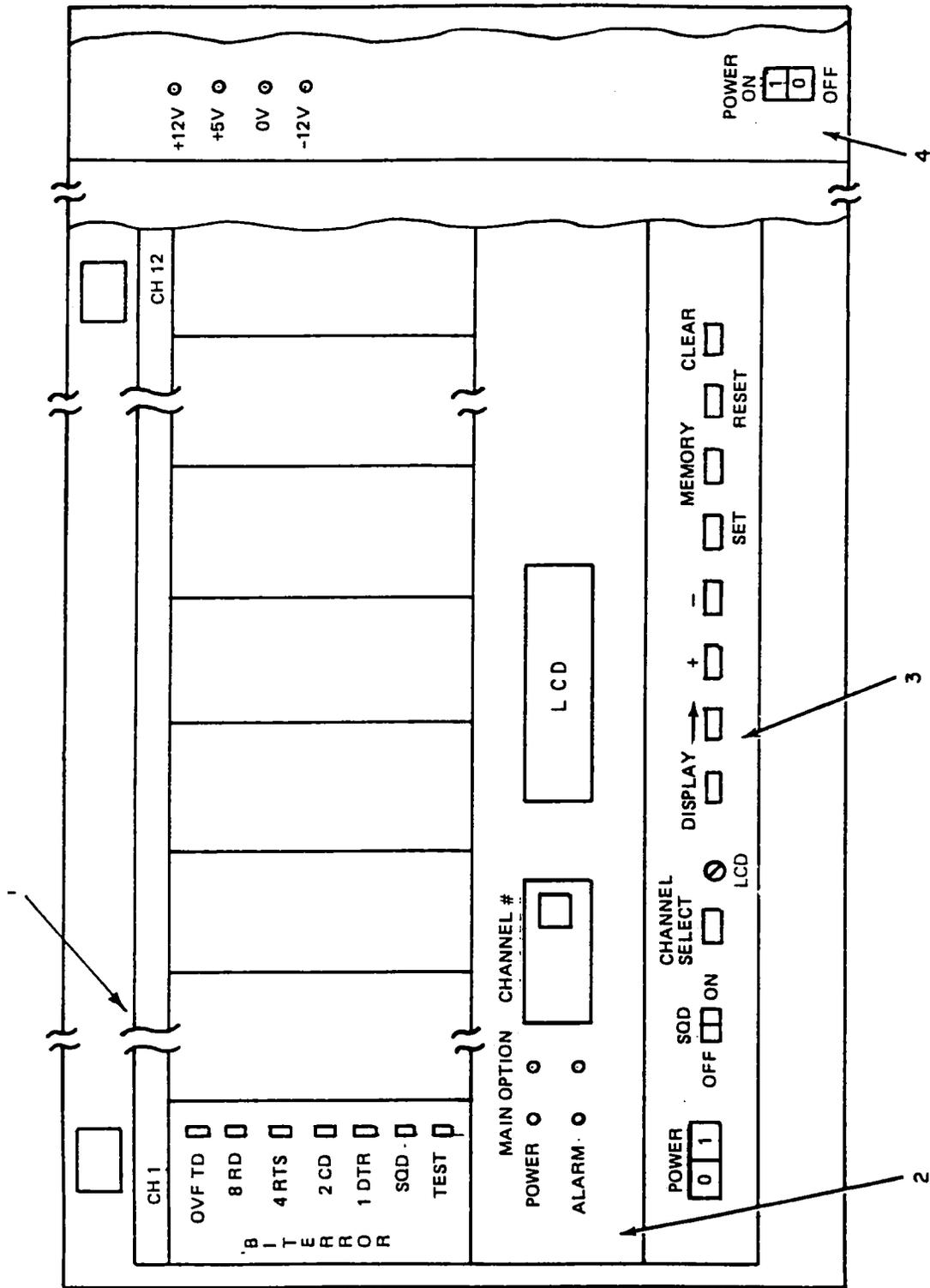


Figure 2-14. Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2 Controls and Indicators

Table 2 - 34: Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2, Controls and Indicators

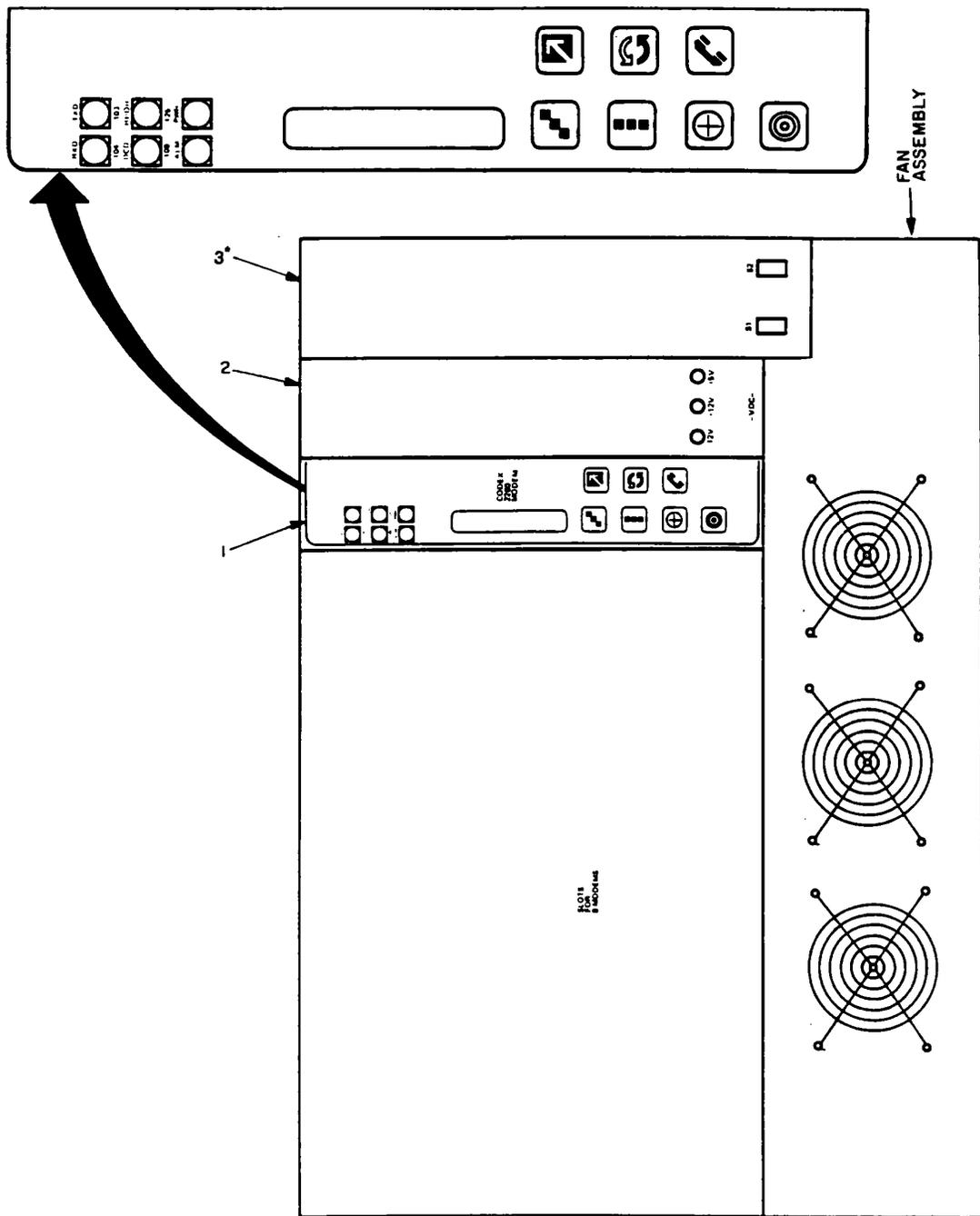
| Figure 2-14. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|--|---|---------------------------------------|
| 1 | Modem Card Front Panel Status Indicator Channel Panels: | | |
| | OVF TD (indicator, green) | Indicates spacing (0) condition of transmitter data in stream or port selected. | N/A |
| | 8 RD (indicator, green) | Indicates spacing (0) condition of receiver data in stream or port selected. | N/A |
| | 4 RTS (indicator, green) | Indicates "Request to Send" from DTE of port selected. | N/A |
| | 2 CD (indicator, green) | Indicates when a line signal (carrier detect) is received on analog line. | N/A |
| | 1 DTR (indicator, green) | Indicates when DTE on port selected has raised its DTR signal. | N/A |
| | SQD (indicator, green) | Indicates when "Signal Quality Select" status of BER = 1×10^5 or better. | N/A |
| | TEST (indicator, green) | Indicates when a loopback is in effect on any port or total data. | OFF |
| 2 | Modem Rack Front Panel Status Display Panel: | | |
| | MAIN POWER (indicator) | Indicates main power is applied. | Lit |
| | MAIN ALARM (indicator) | Indicates when main power has fault. | Off |
| | OPTION POWER (indicator) | Indicates when option power is applied. | Off |
| | OPTION ALARM (indicator) | Indicates when option power has fault. | Off |
| | CHANNEL # (indicator window) | Window displays channel selected by CHANNEL SELECT button. | N/A |
| | LCD (display) | Displays operational status messages or menus. | N/A |

Table 2 - 34: Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2, Controls and Indicators

| Figure 2-14. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|---|---|---|---------------------------------------|
| NOTE | | | |
| On initial power-up, the LCD displays operational status modes. The DISPLAY pushbutton is used to select menus in sequence. | | | |
| 3 | Modem Front Panel Controls: | | |
| | POWER (switch) | Provides power for front panel and cards when "1" is pressed. | "1" |
| | SQD (switch) | In ON position, signal quality on selected channel is shown on LCD display. | OFF |
| | CHANNEL SELECT (pushbutton switch) | Allows selection of each channel (slot) to be tested or configured. | N/A |
| | LCD (potentiometer) | Provides contrast control for LCD display screen. | Desired Contrast |
| | DISPLAY (pushbutton switch) | Selects five menus in sequence when pressed. | N/A |
| | (pushbutton switch) | Moves a cursor one position to the right on each menu or submenu when pressed | N/A |
| | + (pushbutton switch) | Moves up through submenus and lists of options on menu when pressed. | N/A |
| | (pushbutton switch) | Moves down through submenus and lists of options of menus when pressed. | N/A |
| | SET (pushbutton switch) | Used to transmit commands to remote modem and also acts as a security unlock command to cause option changes. | N/A |
| | MEMORY (pushbutton switch) | Loads options permanently into EEPROM when pressed. | N/A |
| | RESET (pushbutton switch) | Removes temporary memory condition when pressed. | N/A |
| | CLEAR (pushbutton switch) | Used to clear error accumulating registers and displays when modem is in error counting test mode. | N/A |

Table 2 - 34: Dedicated Port Modem Assembly (Fujitsu M1921L) UD41A2, Controls and Indicators

| Figure 2-14. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--------------------------------|---------------------------------------|
| 4 | Modem rack power supply panel (behind front panel): | | |
| | POWER (switch) | Provides power for 1929L rack. | N/A |
| | +12V (test jack) | Checks for +12V. | N/A |
| | +5V (test jack) | Checks for +5V. | N/A |
| | 0V (test jack) | Checks for 0V (ground). | N/A |
| | 12V (test jack) | Checks for 12V. | N/A |



*SWITCHES S1 AND S2 ARE OPTIONAL.

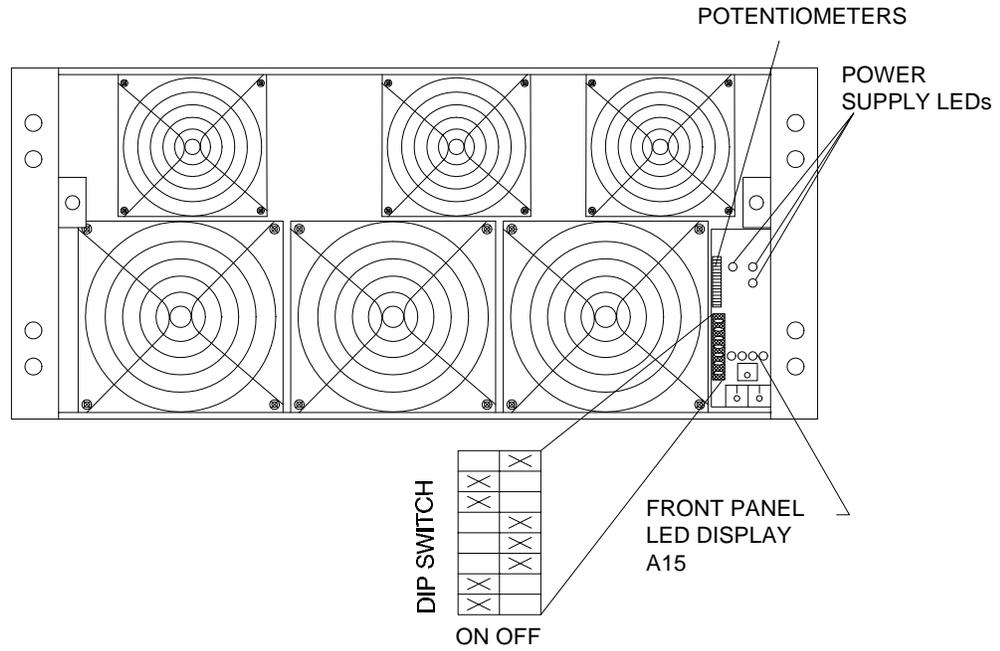
Figure 2-15. Dial Port Modem Assembly (Codex 226X) UD41A6 and Fan Assembly Controls and Indicators.

Table 2 - 35: Dial Port Modem Assembly (Codex 226X) UD41A6A1-A8, Controls and Indicators

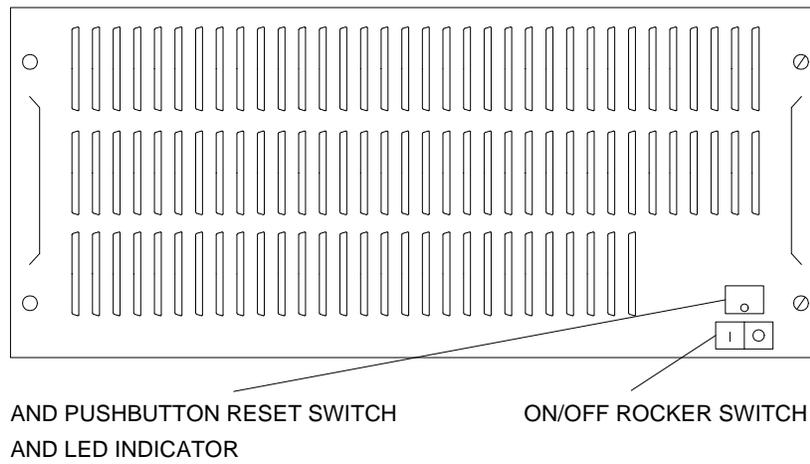
| Figure 2-15. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|--|--|---------------------------------------|
| 1 | RXD (indicator) | Indicates that received data is being passed to local terminal. | N/A |
| | TXD (indicator) | Indicates that data is being accepted to be transmitted from local terminal. | N/A |
| | DCD (indicator) | Indicates that local modem is receiving carrier signal from remote modem. | N/A |
| | RI/OH (indicator) | Flashes to indicate an incoming call. Remains lit to indicate modem is connected to dial telephone line. | |
| | ALM (indicator) | Indicates that modem is operating properly when off Flashes rapidly to indicate modem fault. Flashes sporadically to indicate poor signal quality. Stays lit during testing. | Off |
| | PWR (indicator) | Indicates power is applied when lit. | Lit |
| |  key (pushbutton) | Steps down front panel display tree and escapes from numeric entry. | N/A |
| |  key (pushbutton) | Steps across front. panel display tree and character string. | N/A |
| |  key (pushbutton) | Steps through options and increments numbers. | N/A |
| |  key (pushbutton) | Enters an option or telephone number. | N/A |
| |  key (pushbutton) | Returns to Select Option display at top of tree. | N/A |

Table 2 - 35: Dial Port Modem Assembly (Codex 226X) UD41A6A1-A8, Controls and Indicators

| Figure 2-15. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|--|--|---|------------------------------|
| 1 Cont. |  key (pushbutton) | Reverses function of  ,  , and  keys on following key stroke | N/A |
| |  key (pushbutton) | Switches modem between talk and data modes (also leased line dial restoral). In talk mode, telephone is reserved for talking and modem is disconnected from telephone line. In data mode, modem is connected to telephone line. | N/A |
| 2 | 12V (indicator) | Indicates 12V is being supplied. | Lit |
| | +12V (indicator) | Indicates +12V is being supplied. | Lit |
| | +5V (indicator) | Indicates +5V is being supplied. | Lit |
| NOTE | | | |
| Dial Port Modem Rack Power Switches S1 and S2 are optional; some units do not have switches. | | | |
| 3 | S1 (switch) | Applies power to power supply. | On |
| | S2 (switch) | Applies power to additional power supply if used. | N/A |



INTERIOR FRONT VIEW



FRONT PANEL

Figure 2-16. Graphics Processor UD41A13, (Sheet 1 of 3)

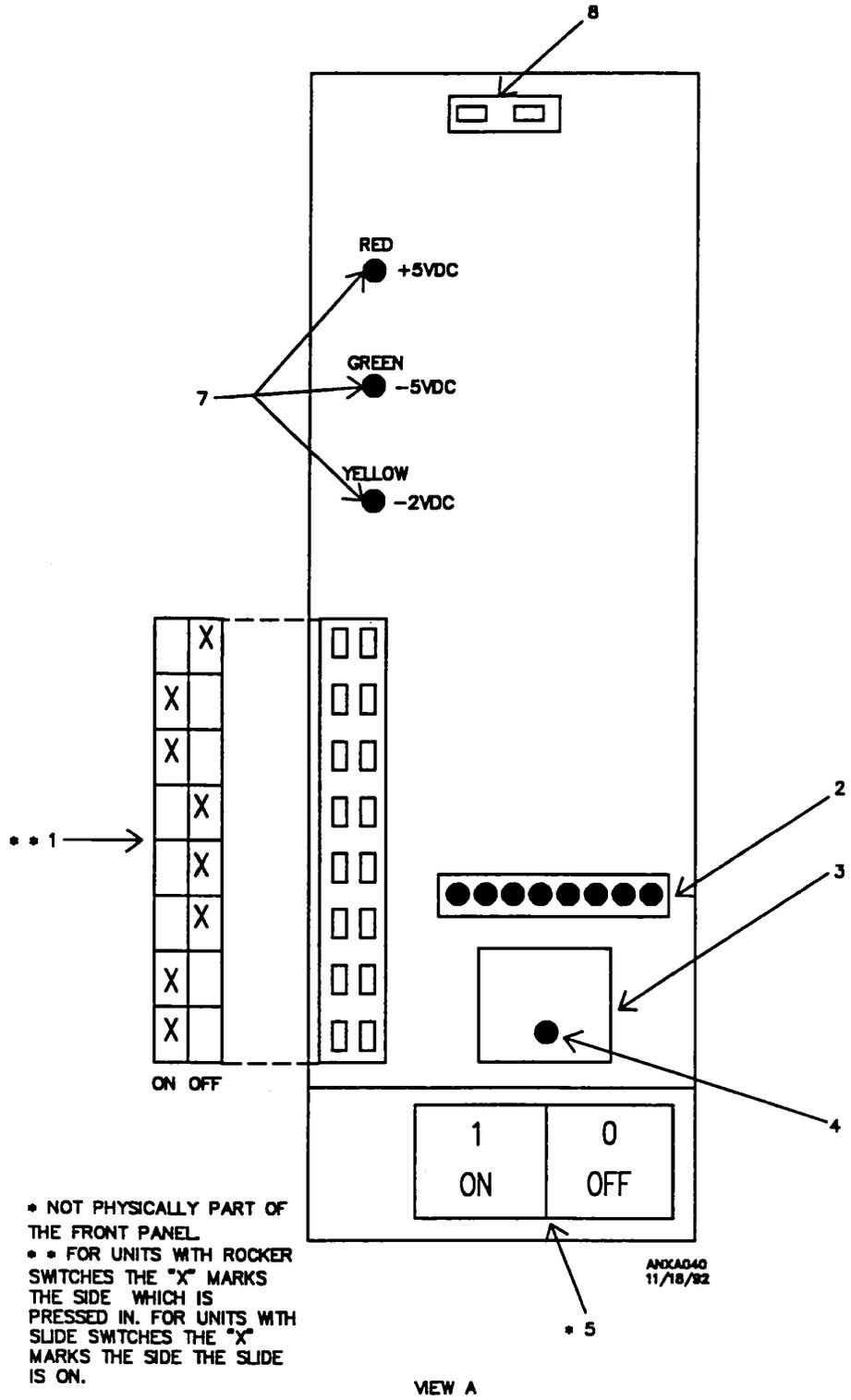


Figure 2-16. Graphics Processor UD41A13 (Sheet 2 of 3)

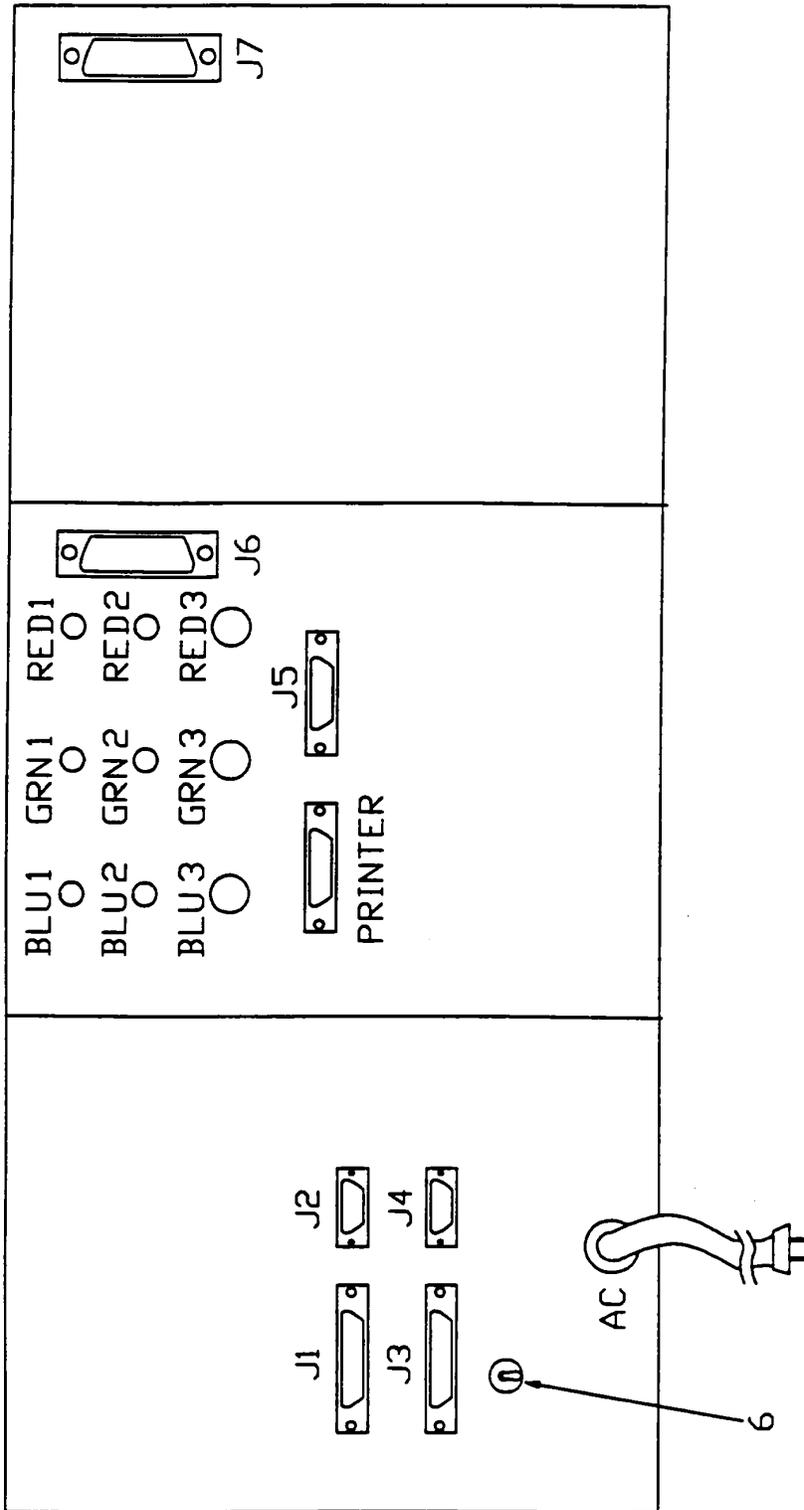


Figure 2-16. Graphics Processor UD41A13, (Sheet 3 of 3)

Table 2 - 36: Graphics Processor UD41A13, Controls and Indicators

| Figure 2-16. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | Mode (DIP switches) | Eight switches used for normal operations or diagnostics. | 1-2,6-7 ON 3-5, 8 OFF |
| 2 | LED Display (8 indicators) | Indicates equipment status and is used for diagnostics. | Scrolling Message |
| 3 | Reset (pushbutton switch) | Resets graphics processor. | N/A |
| 4 | On/Off (indicator) | Indicates power is applied to graphics processor. | Lit |
| 5 | Power (switch) | Applies power to graphics processor when placed in "1" position. | "1" |
| 6* | Circuit Breaker | Provides circuit protection. | N/A |
| 7 | Power Supply LEDs (Qty 3) | When lit indicates PS1 and PS2 are functional. | Lit |
| 8 | Potentiometer (Qty 6) | Adjusts power supply voltage. | N/A |

* Circuit breaker is found on sheet 3.

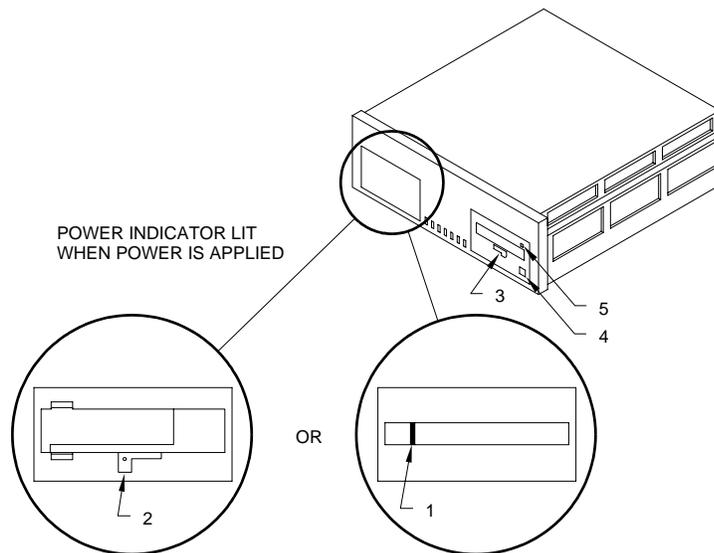


Figure 2-17. SCSI Assembly UD41A15/A22

Table 2 - 37: SCSI Assembly UD41A15, Controls and Indicators

| Figure 2-17. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|--|---|---------------------------------------|
| 1 | Tape Drive (indicator, green) | Indicates that tape is in motion. | N/A |
| 2 | Tape Drive Lever | Vertical position secures tape in tape drive. Horizontal position allows insertion or removal of tape. | N/A |
| 3 | Optical Disk Lever | Vertical position secures disk cassette in disk drive. Horizontal position allows insertion or removal of disk cassette. | N/A |
| 4 | Optical Disk Drive (pushbutton power switch and indicator) | Depressed applies spin-up power for disk. Lit indicates disk is spun up. Off indicates disk is not in motion. Flashing indicates disk is either spinning up or spinning down. | N/A |
| 5 | Power (indicator) | Indicates that power subsystem is providing 5 Vdc. | ON |

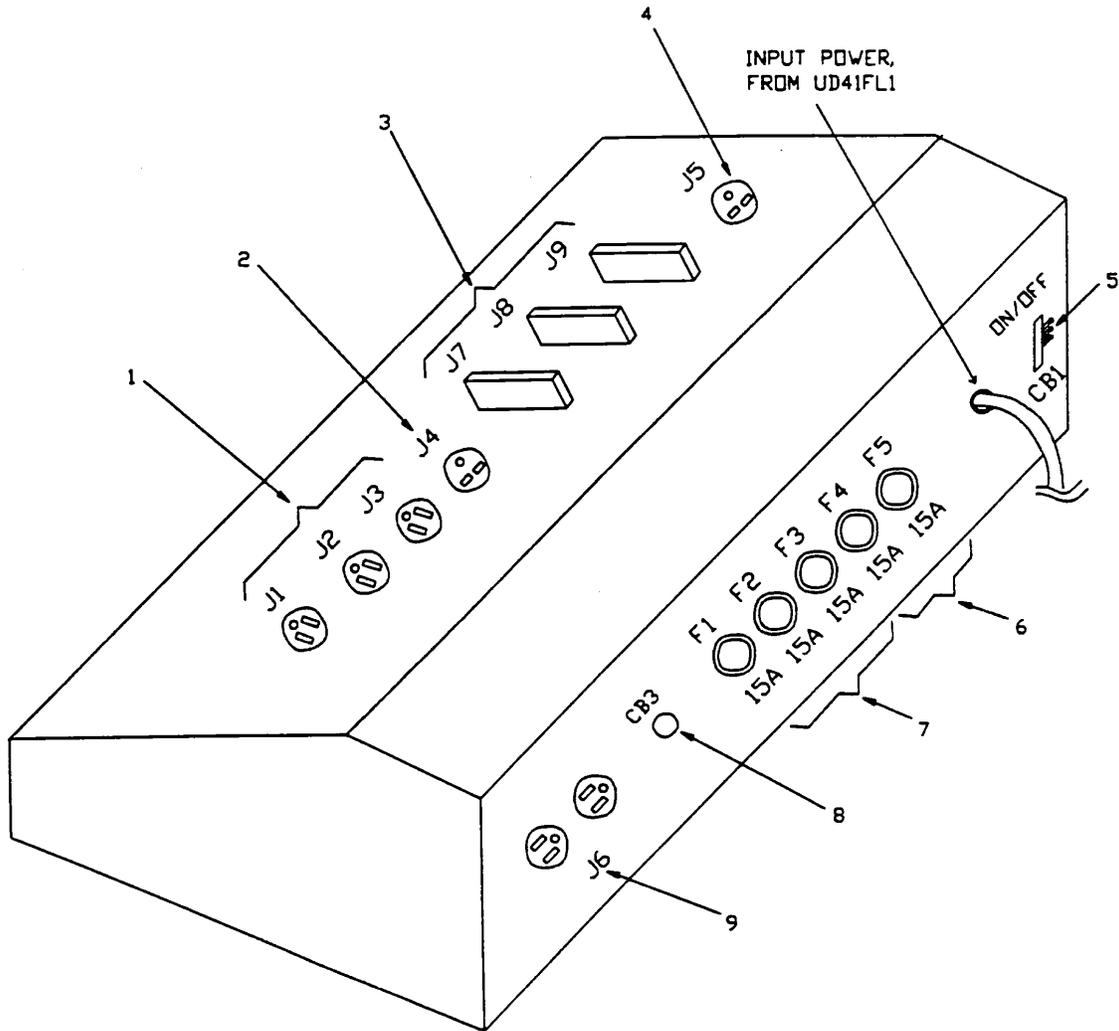


Figure 2-18. Power Distribution Panel UD41A20

Table 2 - 38: Power Distribution Panel UD41A20, Controls and Indicators

| Figure 2-18. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | J1, J2, and J3 (power outlets) | Supply 120 Vac power. | N/A |
| 2 | J4 (power outlet) | Supplies 208 Vac power. | N/A |
| 3 | J7, J8, and J9 (power outlets) | Supply 120 Vac power. | N/A |
| 4 | J5 (power outlet) | Supplies 208 Vac power. | N/A |
| 5 | CB1 (circuit breaker) | Power on/off for power distribution panel. | ON |
| 6 | F4, F5 (fuses) | 300V, 15 amp fuses (spare) | N/A |
| 7 | F1, F2, and F3 (fuses) | 300V, 15 amp fuses | N/A |
| 8 | CB3 (pushbutton circuit breaker) | Resets power panel. | N/A |
| 9 | J6 (power outlets (Qty 2)) | Supply 120 Vac power. | N/A |

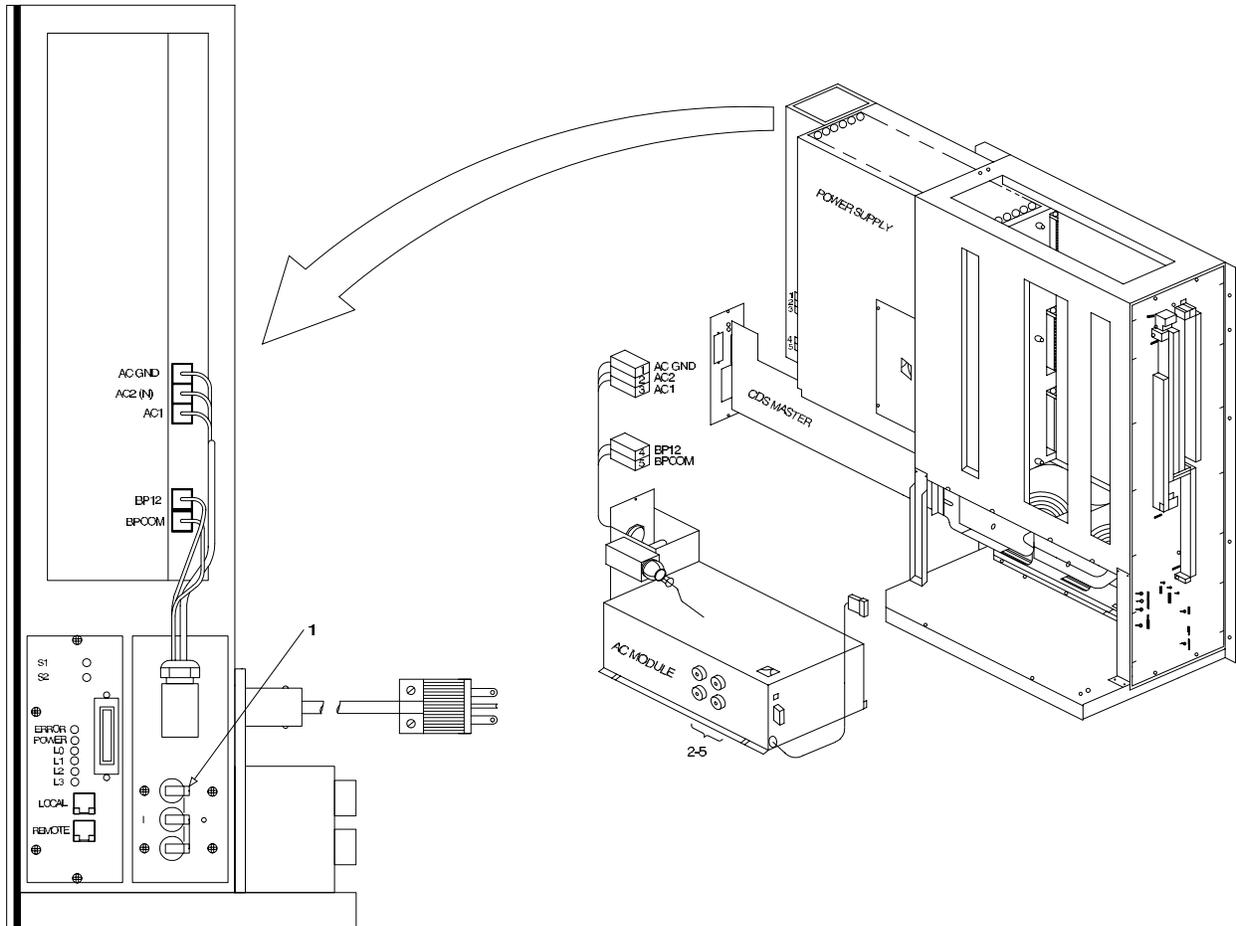
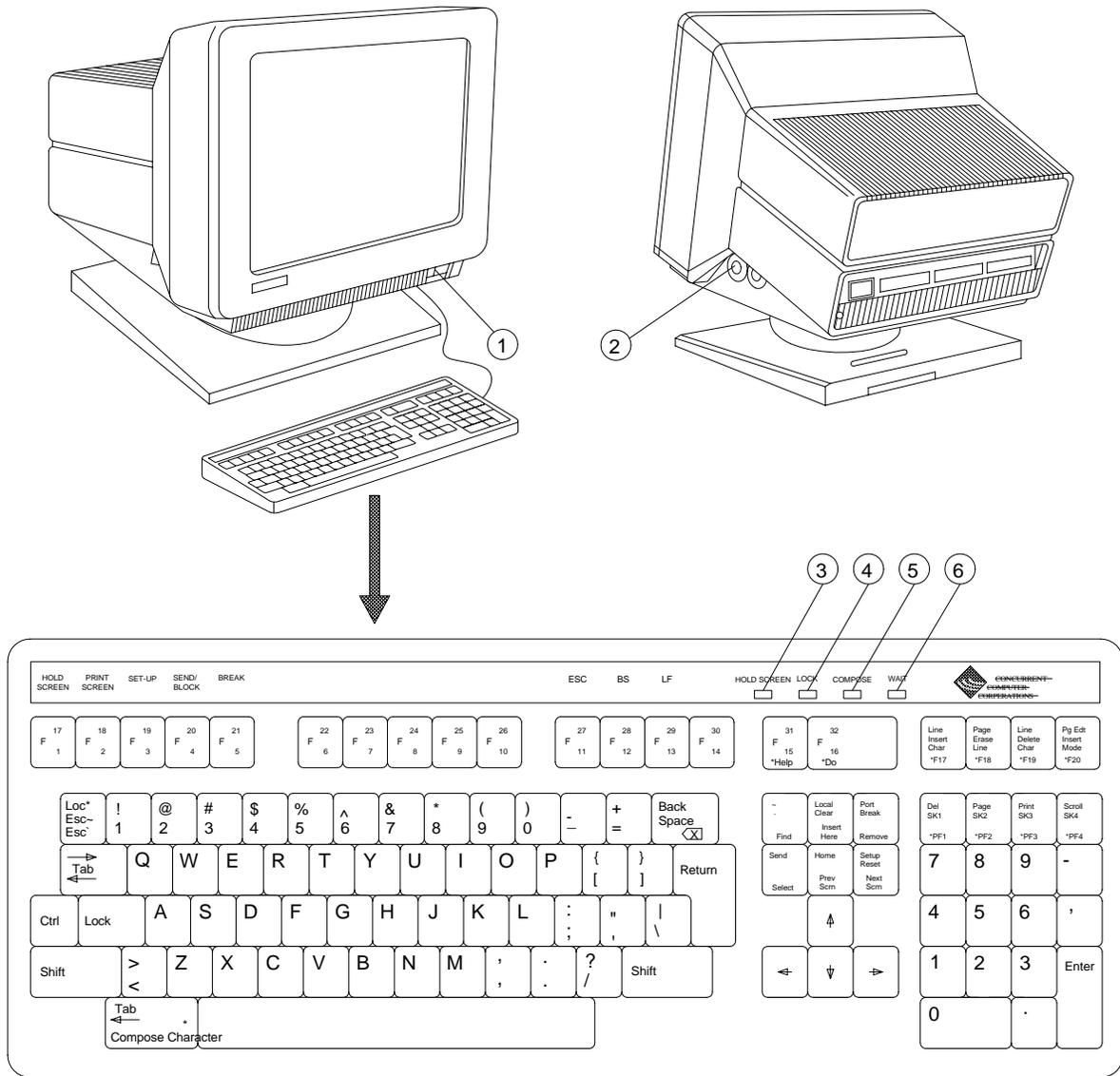


Figure 2-19. Swing-Out Power Subsystem UD41PS1

Table 2 - 39: Swing-Out Power Subsystem UD41PS1, Controls and Indicators

| Figure 2-19. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--------------------------------|---------------------------------------|
| 1 | CB1 - CB3 (ganged circuit breakers) | Supplies main power (20 amp) | ON(1) |
| 2 | CB4 (circuit breaker) | 208 Vac Phase A to CDS Module | Depressed |
| 3 | CB5 (circuit breaker) | 208 Vac Phase B to CDS Module | Depressed |
| 4 | CB6 (circuit breaker) | 208 Vac Phase A to AC fan assy | Depressed |
| 5 | CB7 (circuit breaker) | 208 Vac Phase B to AC fan assy | Depressed |

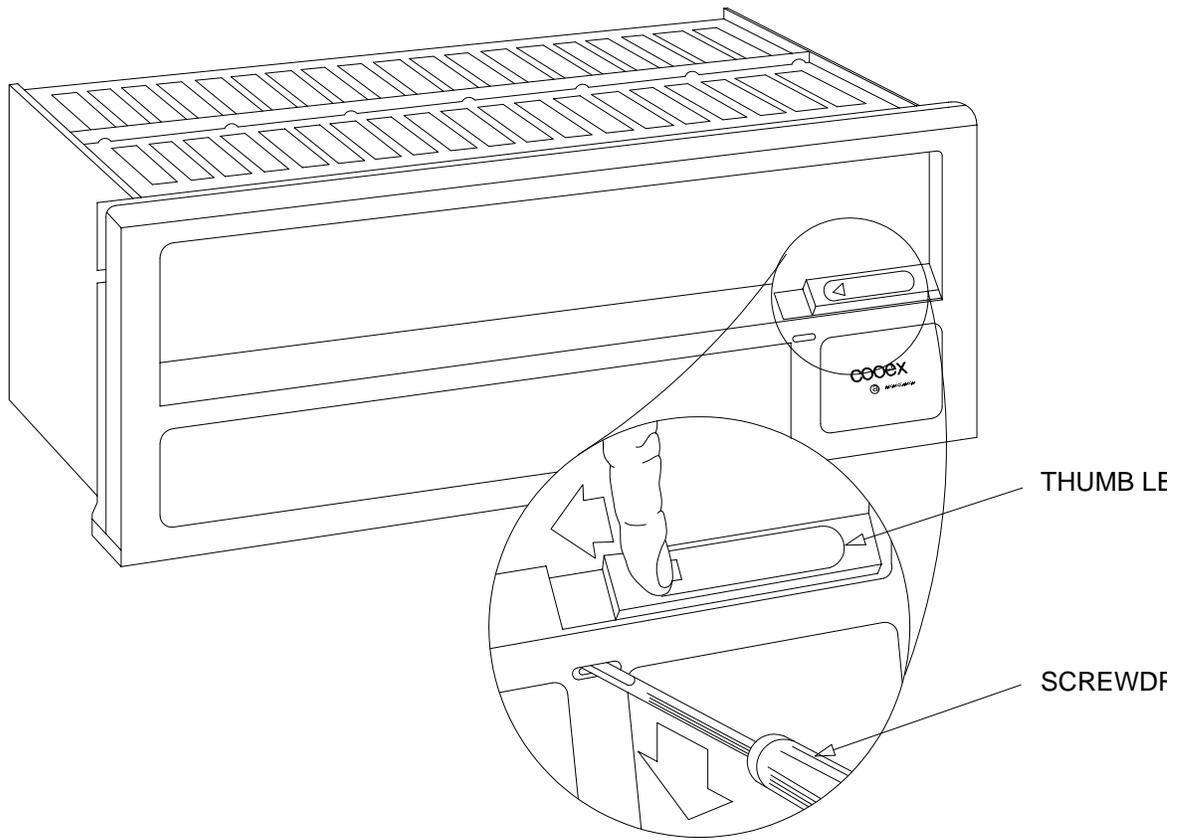


*Label appears on front of key.

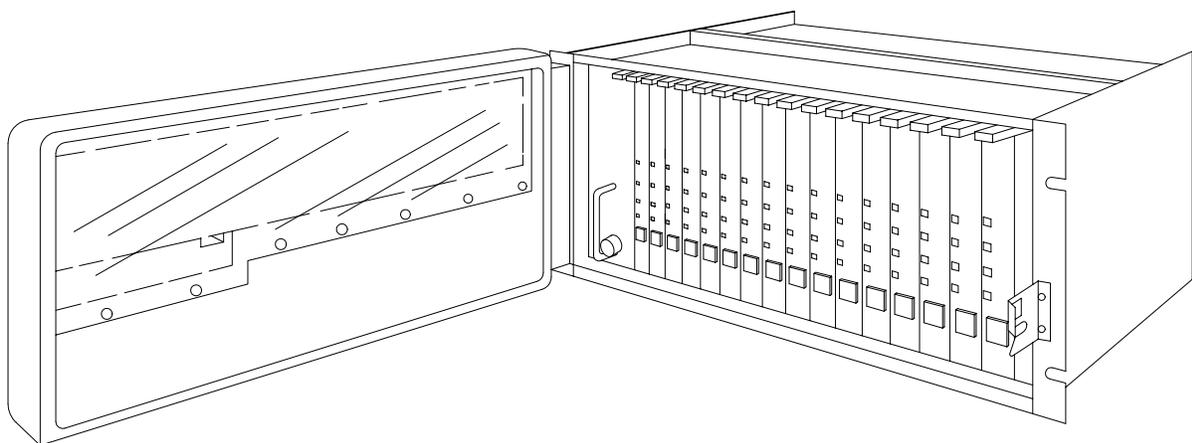
Figure 2-20. Alphanumeric Display Terminal UD42/UD43

Table 2 - 40: Alphanumeric Display Terminal UD42/UD43, Controls and Indicators

| Figure 2-20. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | Power ON/OFF switch | Provides power to terminal | ON |
| 2 | Contrast and Brightness Control Dials | Adjusts the contrast and overall screen brightness | N/A |
| 3 | HOLD SCREEN (indicator) | When lit, indicates that the screen is "frozen". Press SHIFT and SCROLL keys simultaneously to unfreeze screen display. | OFF |
| 4 | LOCK (indicator) | When lit, indicates that CAP LOCK key has been pressed Press CAP LOCK key to release CAP LOCK function. | Lit |
| 5 | COMPOSE (indicator) | Not used in WSR-88D system. | N/A |
| 6 | WAIT (indicator) | Not used in WSR-88D system. | N/A |

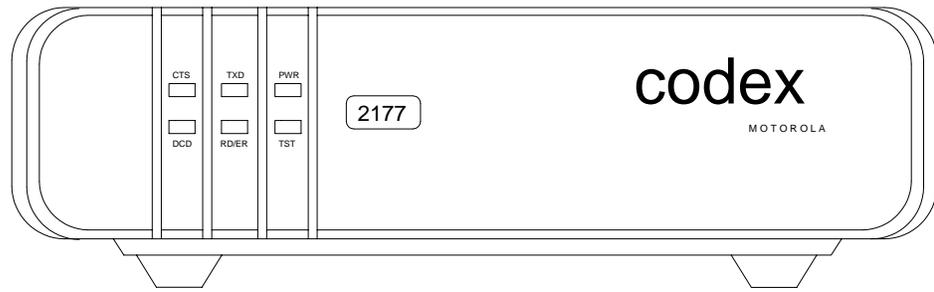


OPENING FRONT DOOR

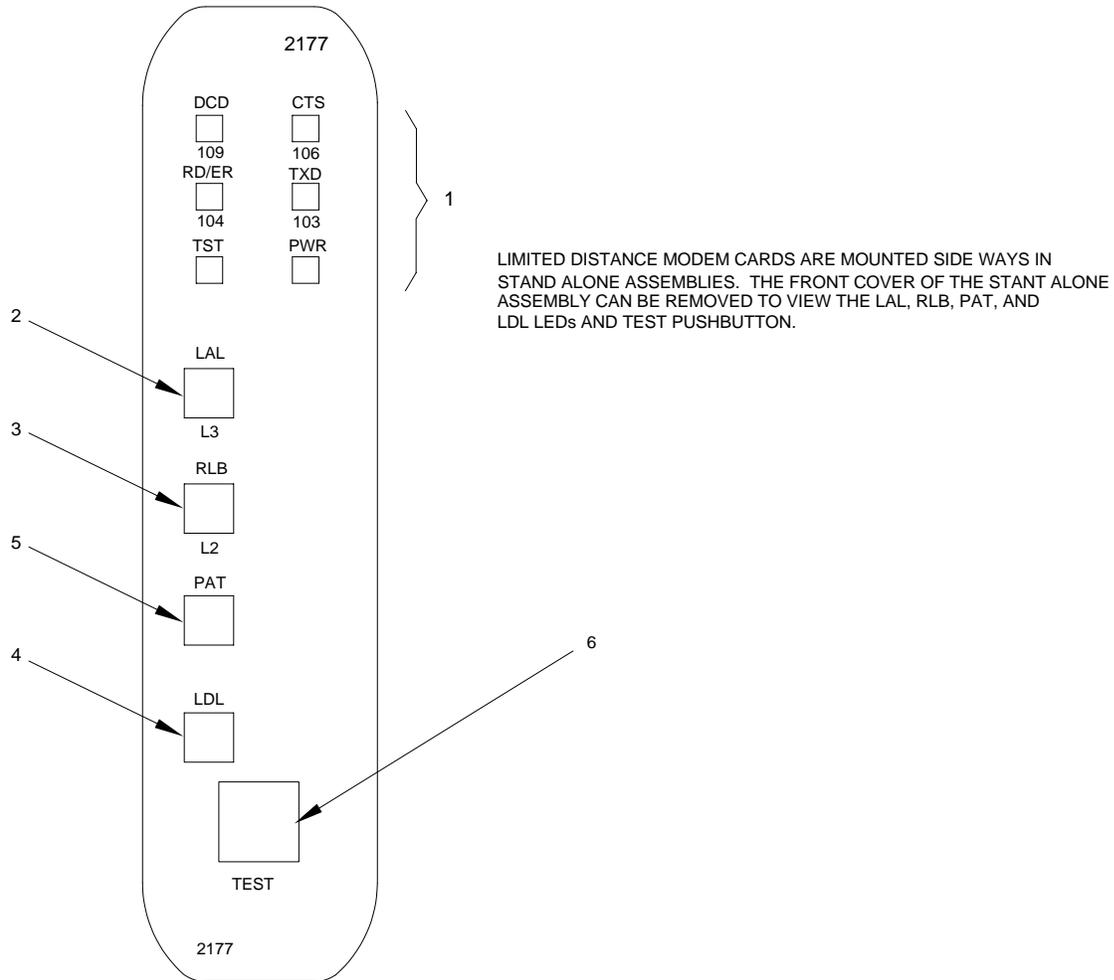


LDM RACK WITH FRONT DOOR OPEN

Figure 2-21. Limited Distance Modem (LDM) Rack UD41A27



FRONT COVER OF STAND ALONE LDM
UD34A1-A3



RACK MOUNTED LDM UD22A5A1-A3

Figure 2-22. Limited Distance Modem (LDM) UD41A27A1-A3 and UD45A3-A5

Table 2 - 41: Limited Distance Modems UD41A27A1-A3 and UD45A3-A5 Controls and Indicators

| Figure 2-22. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | CTS (Green) (Clear to Send) | On: Ready to accept data from local DTE in response to Request To Send. | N/A |
| | | Off: <ul style="list-style-type: none"> • Request To Send is OFF. • LDM is receiving Remote • Loopback • Anti-Streamer timed out • LDM sending test pattern (PAT LED is ON). | N/A |
| | | Flash: Accepting data from local to be transmitted. | N/A |
| | TXD (Yellow) (Transmit Data) | On: <ul style="list-style-type: none"> • Accepting SPACES. • In RLB with PAT diagnostic test mode, if transmit path is inverted. | N/A |
| | | Flash: Receiving data from local or remote LDM. <ul style="list-style-type: none"> • Receiving SPACES. • During PAT test mode the RD/ER LED indicates errors in the received data. • In RLB with PAT diagnostic test mode, if the transmit path is inverted. | N/A |
| | DCD (Green) (Received Line Signal Detect) | On: Receiving acceptable signal from remote LDM. | N/A |
| | TST (Test) | On: For all manual, Loop 2, and Loop 3 tests generated by the DCE. | N/A |
| PWR (Power) | On: During operation. | ON | |
| 2 | LAL/L3 (Red) (Loop 3) | On: Local Analog Loopback (LAL/L3) manually activated. | OFF |
| | | Flash: LAL/L3 activated by DTE pin | OFF |
| 3 | RLB/L2 (Red) (Loop 2) | On: Remote Loopback (RLB/L2) activated manually. | OFF |
| | | Flash: RLB/L2 activated by DTE pin 21. | |

Table 2 - 41: Limited Distance Modems UD41A27A1-A3 and UD45A3-A5 Controls and Indicators

| Figure 2-22. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 4 | LDL (Red) (Local Digital Loopback) | On: Local Digital Loopback (LDL) activated. | OFF |
| 5 | PAT (Red) Test Pattern) | On: Test Pattern (PAT) activated. | OFF |
| 6 | TEST (momentary pushbutton switch) | To start test: Press and hold the test switch until test indicator LAL/L3, RLB/L2, LDL or PAT illuminate indicating the test to be run, then release the test switch. To end test: Momentarily press the test switch; all test LEDs will extinguish. | N/A |

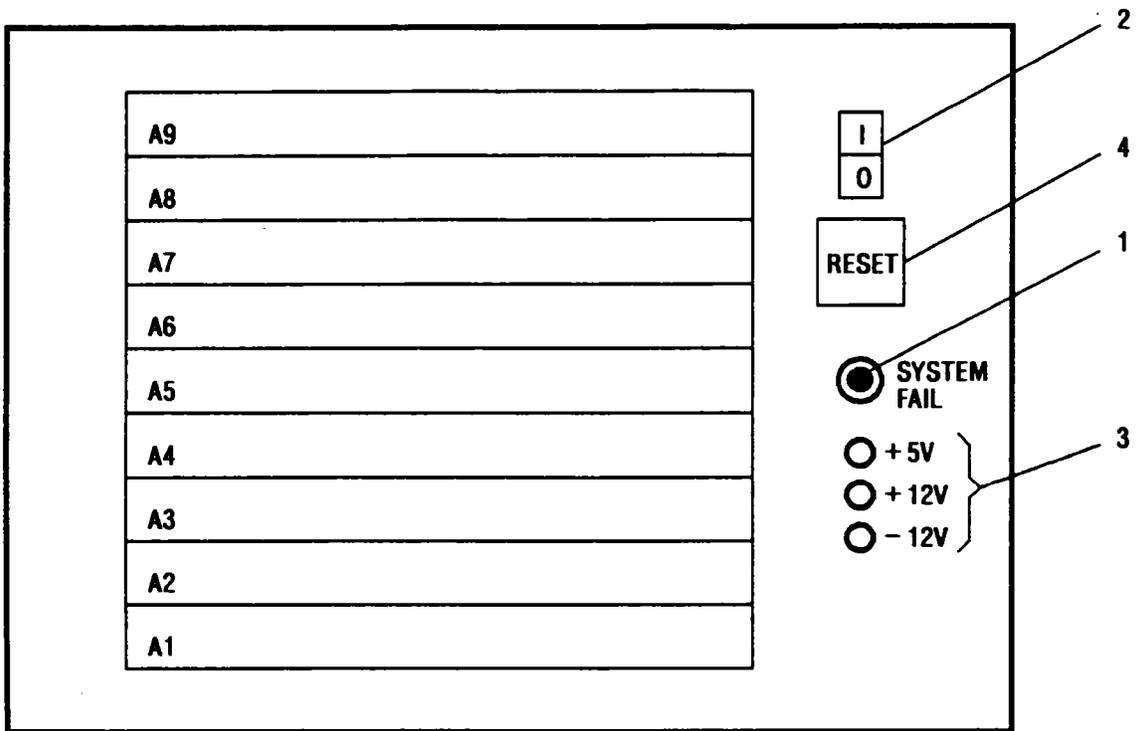


Figure 2-23. VME Chassis UD41A7

Table 2 - 42: VME Chassis UD41A7 Controls and Indicators

| Figure 2-23. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | SYSTEM FAIL (indicator red LED) | When red LED is illuminated, the system fail signal is activated | OFF |
| 2 | ON/OFF (switch) | Supplies power to VME Chassis when in 1 (ON) position. No power when in 0 (OFF) position | ON |
| 3 | +5V +12V -12V (indicators, green LEDs) | Indicates voltage is present. | ON ON ON |
| 4 | RESET (pushbutton switch) | Resets VME Chassis and causes the boards in chassis to reinitiate self-test (depress button and release to reset) | N/A |

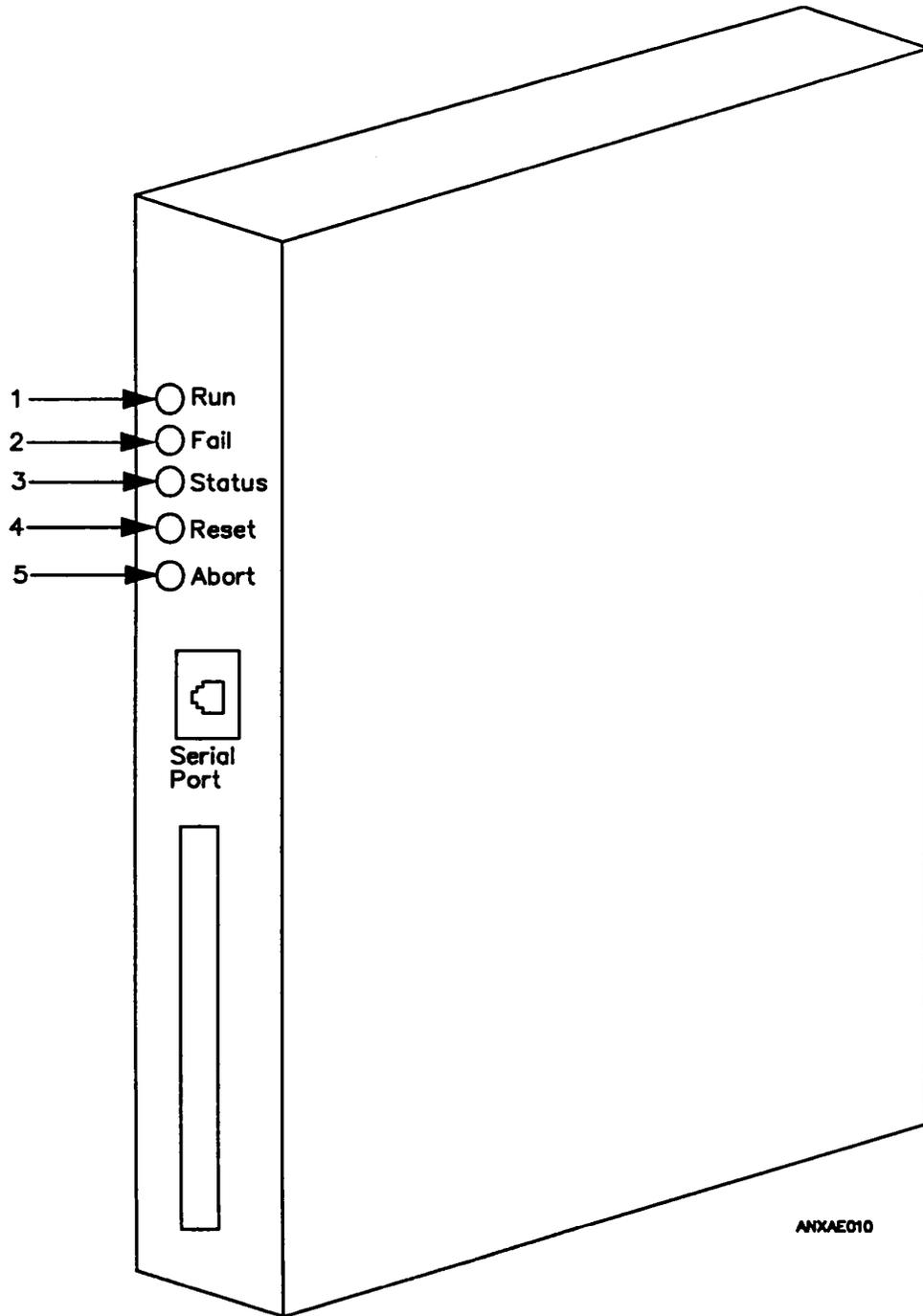


Figure 2-24. VME Narrowband Board UD41A7A2-A9

Table 2 - 43: VME Narrowband Board UD41A7A2-A9 Controls and Indicators

| Figure 2-24. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | Run (indicator, green LED) | Illuminates when the on-board power-on confidence tests are complete. Blinks during POCs | ON |
| 2 | Fail (indicator, red LED) | When illuminated, indicates that the on-board power-on confidence tests have not yet completed (or failed) or that a bus error is asserted on the FV5300. This LED indicates the assertion of SYSFAIL on the VMEbus | OFF |
| 3 | Status (indicator, yellow LED) | This LED is controlled by an attached Expansion Bus Mezzanine Card. When no card is attached, the LED will remain off. | N/A |
| 4 | Reset (pushbutton switch) | Resets the VME Narrowband Board. Board reinitiates POC tests. (depress button and release to reset) | N/A |
| 5 | Abort (pushbutton switch) | Causes interrupt to be generated to the on-board processor (depress and release button to generate abort) | N/A |

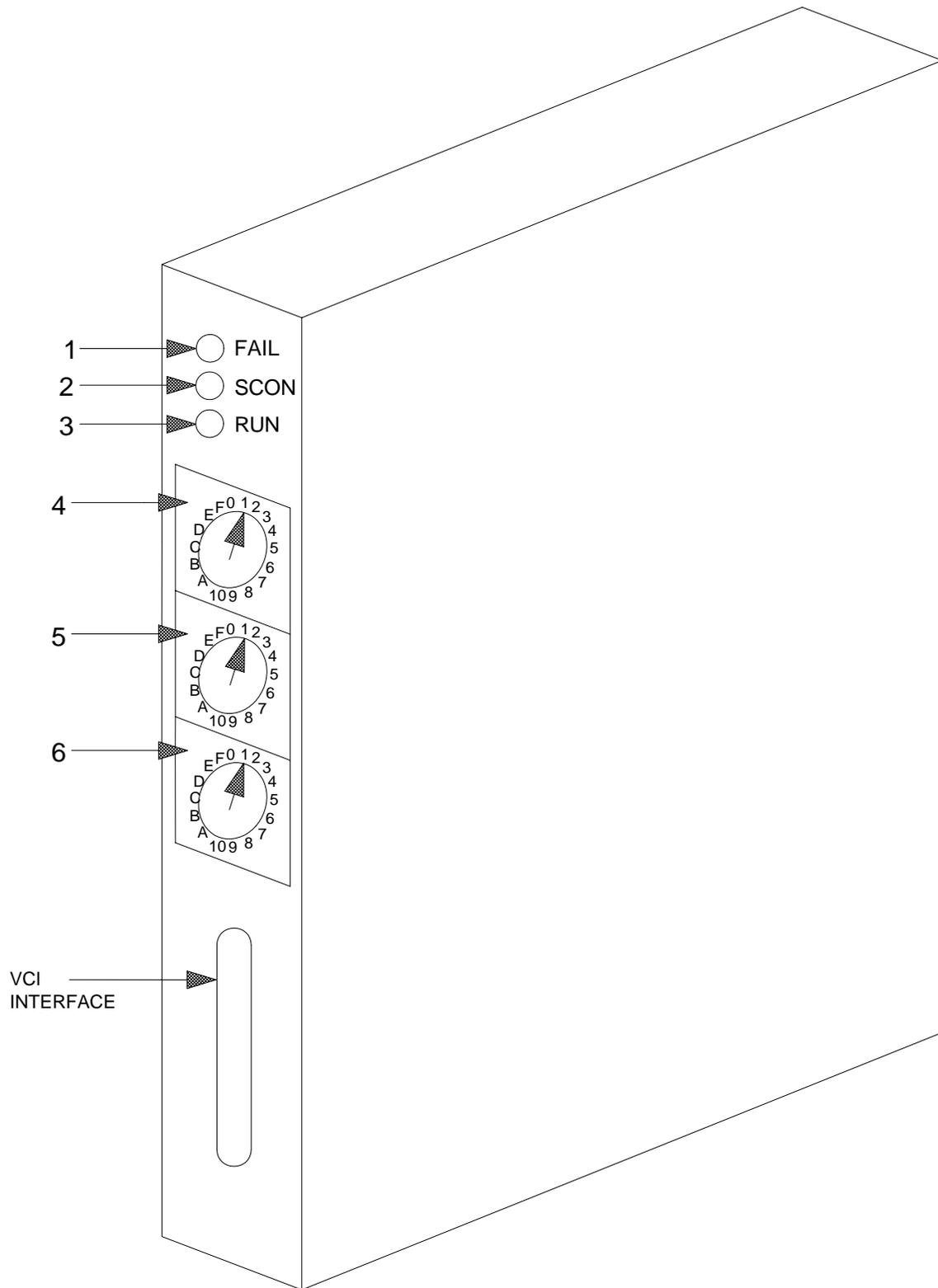


Figure 2-25. VMEbus to Concurrent I/O Bus Interface Board (VCI-V) UD41A7A1

Table 2 - 44: VMEbus to Concurrent I/O Bus Interface Board (VCI-V) UD41A7A1, Controls and Indicators

| Figure 2-25. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | FAIL (indicator, red LED) | When LED is lit, System FAIL signal is activated | OFF |
| 2 | SCON (indicator, yellow LED) | System Controller (SCON) LED is lit while the VCI-V is the system controller | ON |
| 3 | RUN (indicator, green LED) | LED is lit when the RESET is not activated on the VMEbus backplane | ON |
| 4 | Board ID2 (switch SW1) | Top nibble (4 bits) of the VMEbus A32 address (A28 - A21) | |
| 5 | Board ID1 (switch SW2) | Next nibble (4 bits) of the VMEbus A32 address (A24 - A27) | |
| 6 | MEM size (switch SW3) | Memory size of the card, where 0 = 1 Mbyte of VMEbus memory used 1 = 2 Mbytes of VMEbus memory used . . . 15 = 16 Mbytes of VMEbus memory used | |

TABLE A

| | |
|------|----|
| DS1 | T1 |
| DS2 | T2 |
| DS3 | LE |
| DS4 | LC |
| DS5 | ML |
| DS6 | MC |
| DS7 | CE |
| DS8 | CL |
| DS9 | TP |
| DS10 | DL |

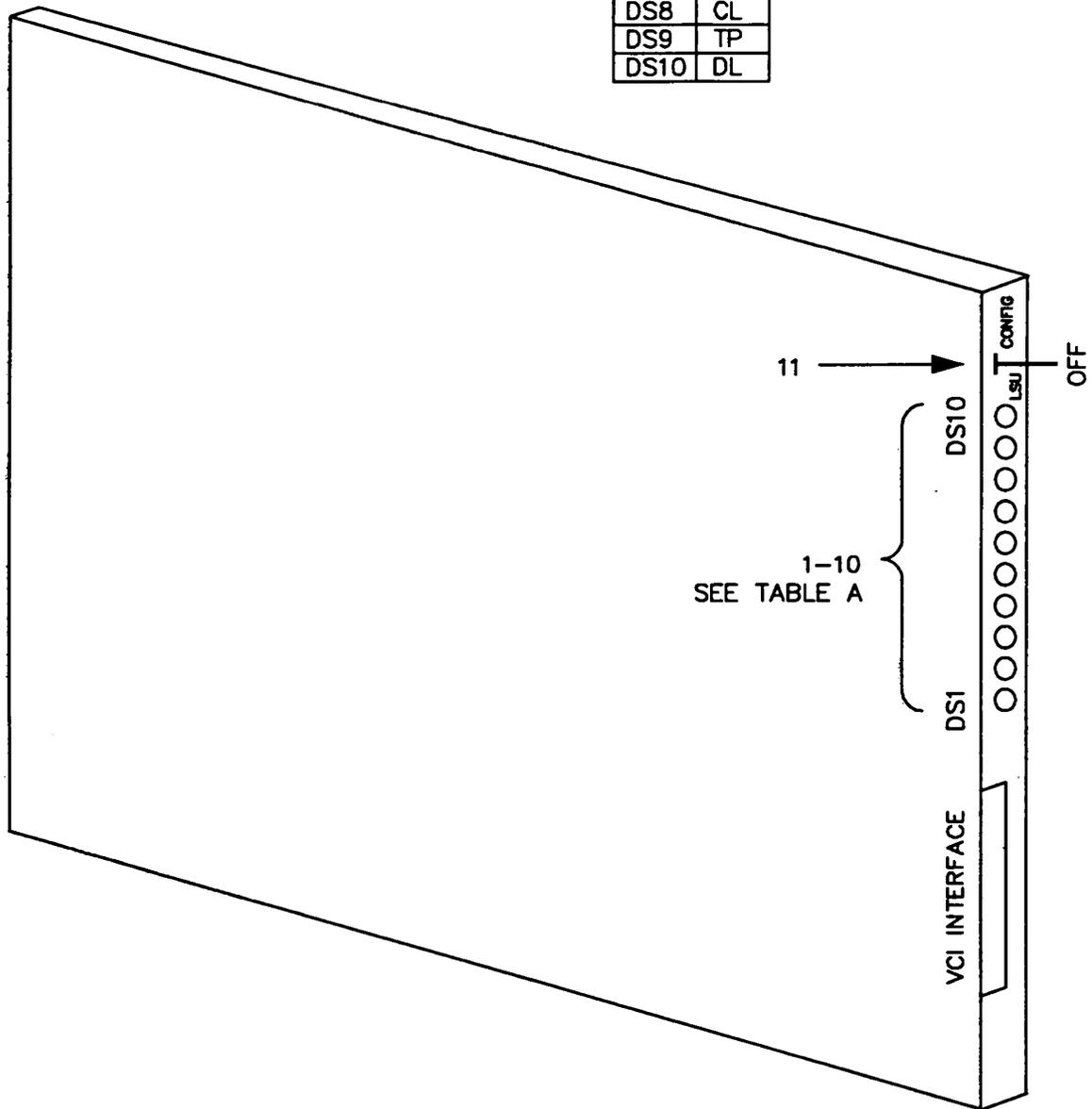


Figure 2-26. VMEbus to Concurrent I/O Bus Interface Board (VCI-C) UD41A16A19 Controls and Indicators

Table 2 - 45: VMEbus to Concurrent I/O Bus Interface Board (VCI-C) UD41A16A19, Controls and Indicators

| Figure 2-26. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|---------------------------------------|
| 1 | T1 (indicator) | Power On Test Status | ON* |
| 2 | T2 (indicator) | Power On Test Status | ON* |
| 3 | LE (indicator) | Local CPU to EDMA Bus Access | |
| 4 | LC (indicator) | Local CPU to cable SWS Access | |
| 5 | ML (indicator) | Mux bus to Local CPU Bus Access | |
| 6 | MC (indicator) | Mux bus to Cable Bus Access | |
| 7 | LE (indicator) | Cable bus to EDMA Bus Access | |
| 8 | CL (indicator) | Cable bus to Local CPU Bus Access | |
| 9 | TP (indicator) | Indicates TP1 is at 0 VDC when lit (ON), and 5 VDC when extinguished (OFF) | OFF |
| 10 | DL (indicator) | Deadlock of Cable Bus/VIC | |
| 11 | LSU/OFF/CONFIG (switch) | Allows loading of diagnostic and configuration programs | OFF |

*NOTE:
 T1 OFF during the power up process
 T2 blinks at about 1.5 MHz until the VMEbus is up
 Both LEDs will be on after power-up test is complete
 T2 will blink if VMEbus is in an ACFAIL condition.

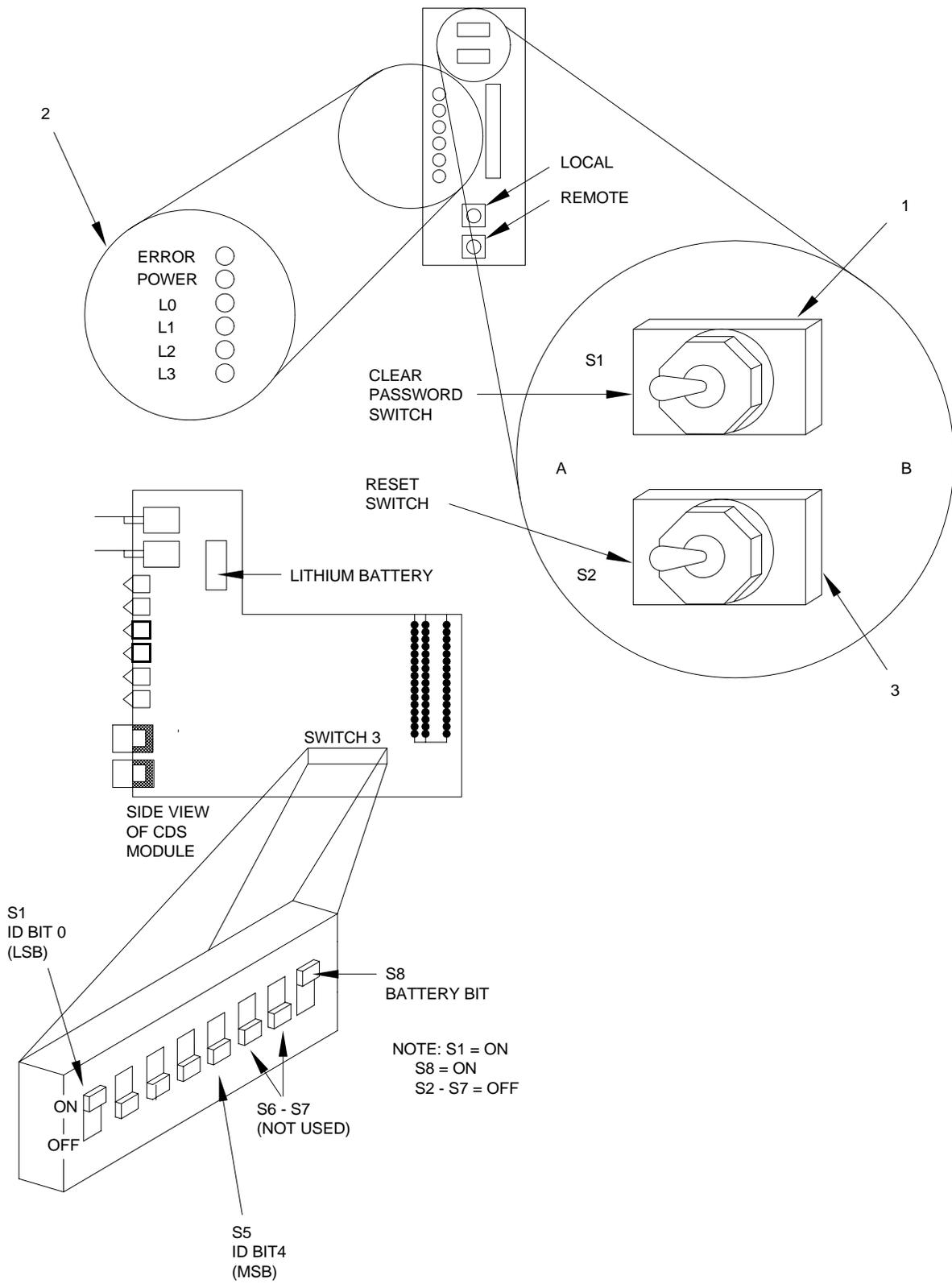


Figure 2-27. CDS Master Module UD41PS1A3 Controls and Indicators

Table 2 - 46: CDS Master Module UD41PS1A3 Controls and Indicators

| Figure 2-27. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|--|--|
| 1 | S1 (3-position switch) | S1, the Clear Password Switch, allows the operator to void the current password and, via the PASSWORD command, to define a new password. To clear the current password, flip switch S1 to either the left or right position and then back to center. | Center |
| 2 | Indicators (LEDs) | These six indicators are used for troubleshooting. Refer to Section 6-3 and 6-4 for function | ERROR OFF POWER LIT L0 OFF L1 LIT L2 OFF L3 OFF |
| 3 | S2 (3-position switch) | S2, the Reset Switch, allows the operator to manually reset the system (including system memory) during system operation. | Center |

Table 2 - 47: CDS Master Module LED Status

| ERROR | POWER | L0 | L1 | L2 | L3 | CDS Master Module Status |
|--------------|--------------|-----------|-----------|-----------|-----------|--|
| Lit | | | Lit | | | CDS Master Module is operating . |
| Lit | | | | Lit | Lit | Insufficient on-board RAM. |
| Lit | | Lit | | Lit | Lit | CDS configuration tables are corrupted. |
| Lit | | Lit | Lit | Lit | Lit | CDS Master Module failed. |
| Lit | | | | | | CDS Master Module has power. Cycle reset switch S2 |

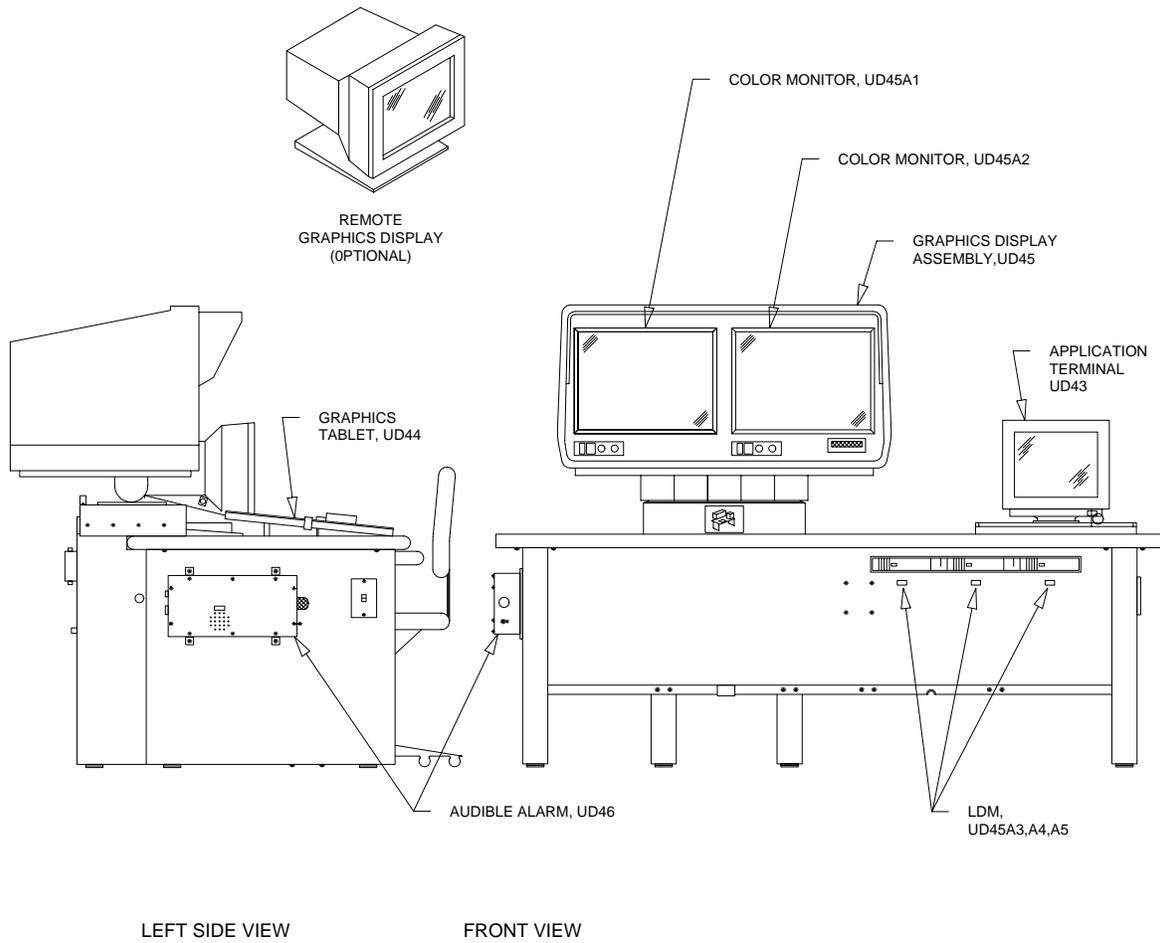
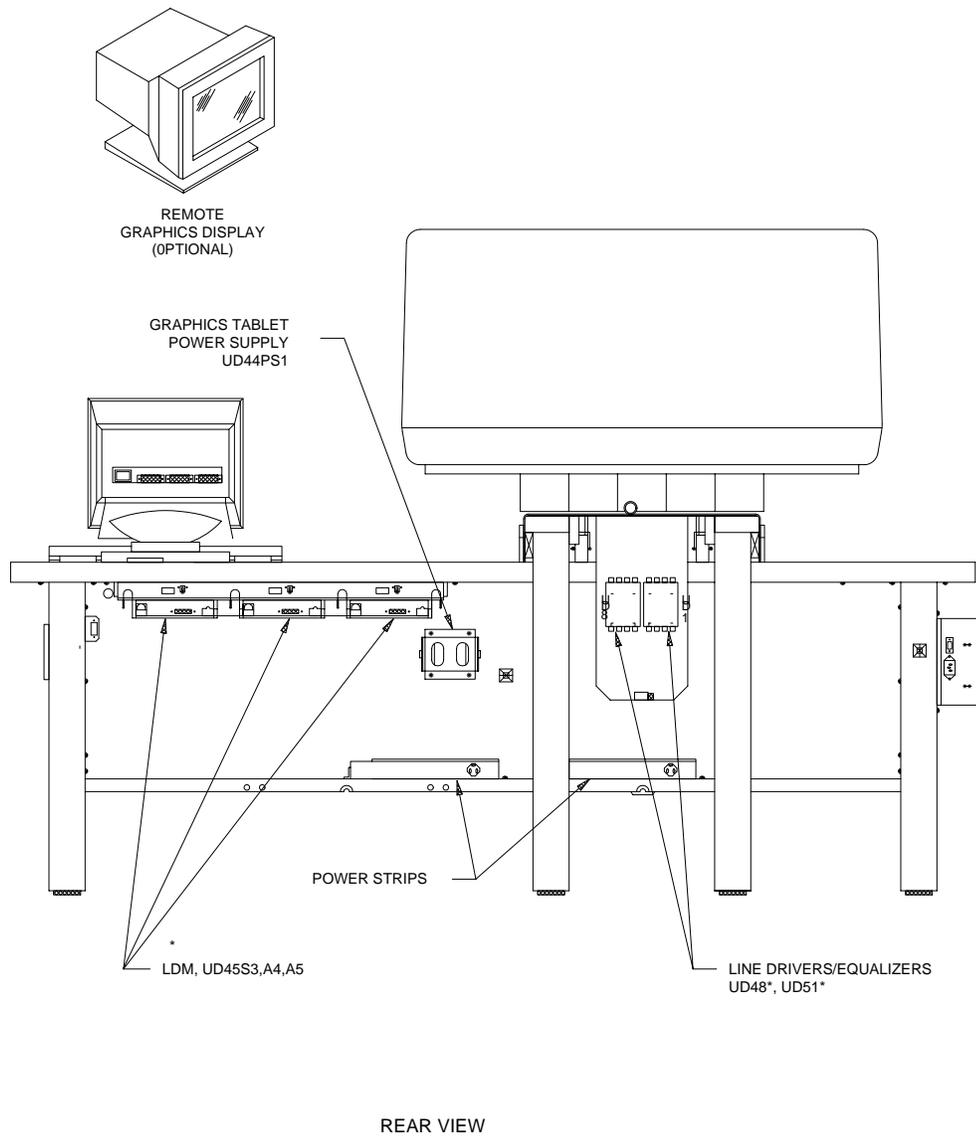
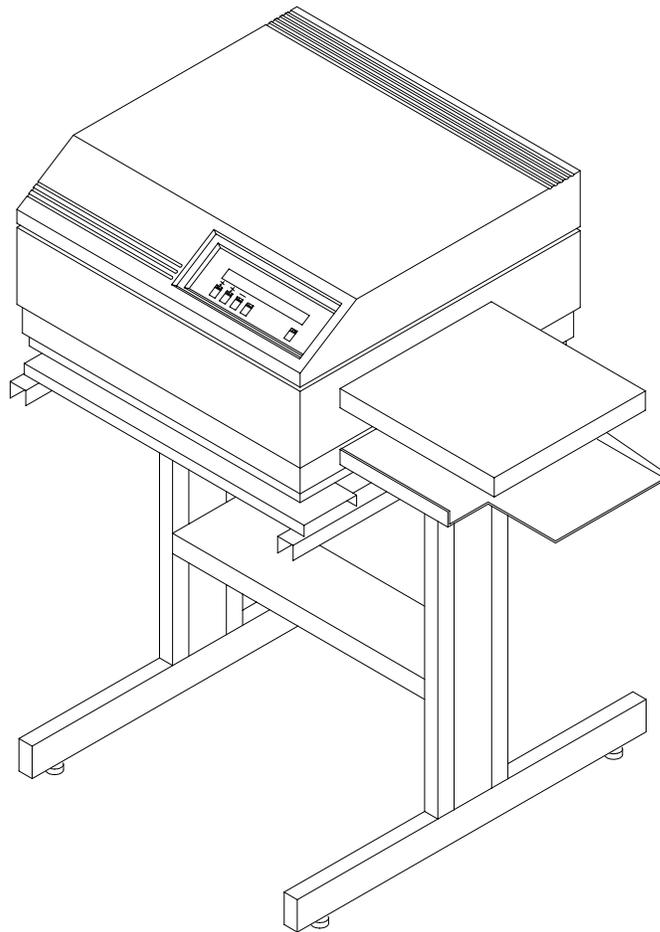


Figure 2-28. PUP Workstation Component Layout (1 of 3)



* EQUIPMENT USED ONLY IF WORKSTATION IS MORE THAN 100 FEET FROM THE PUP CABINET.

Figure 2-28. PUP Workstation Component Layout (2 of 3)



COLOR GRAPHICS PRINTER UD47 AND STAND

Figure 2-28. PUP Workstation Component Layout (3 of 3)

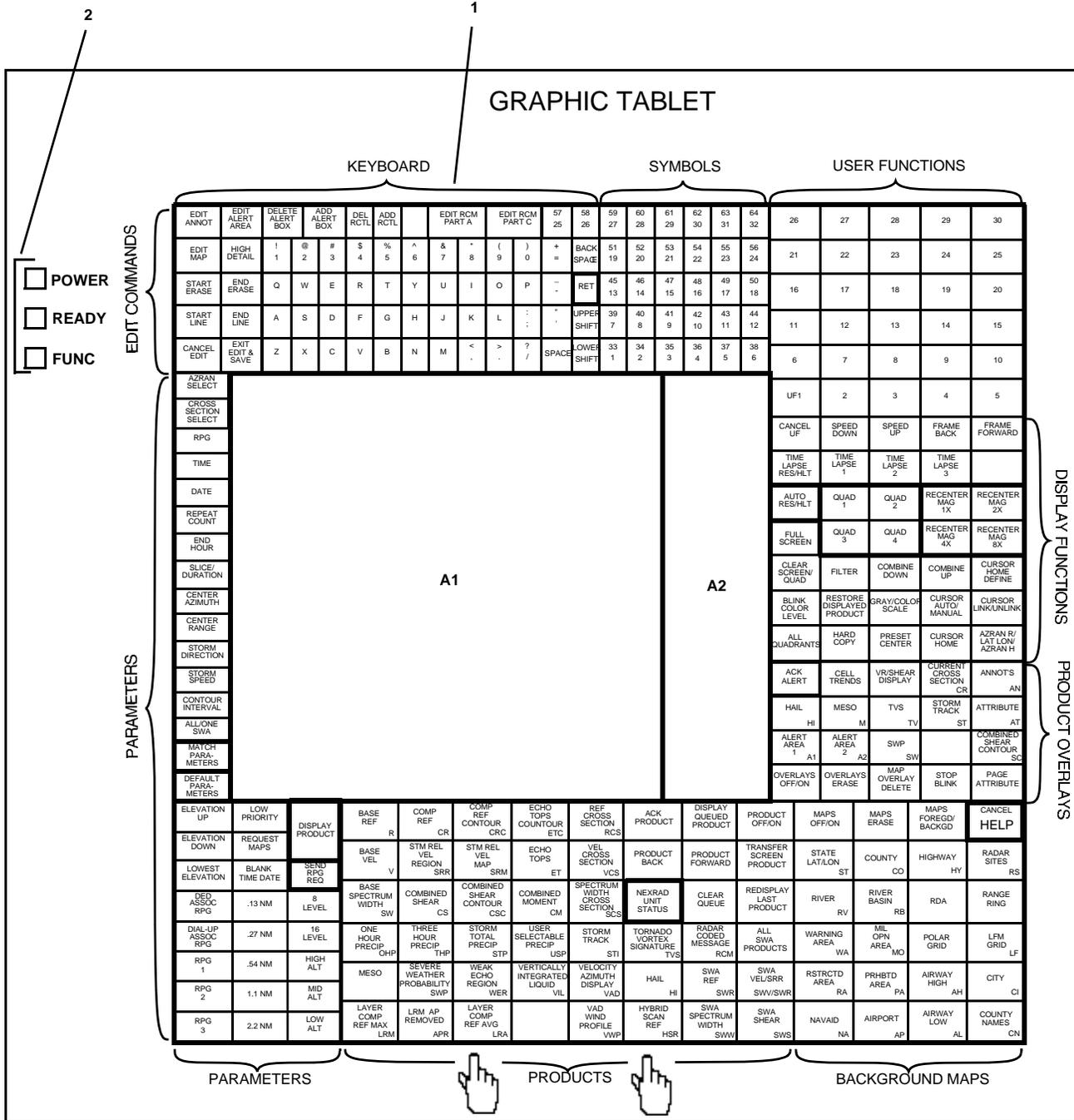


Figure 2-29. Graphics Tablet UD44

Table 2 - 48: Graphics Tablet, Controls and Indicators

| Figure 2-29. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | TABLET AREA CONTROLS | | |
| | EDIT COMMANDS | Allows operator to add or delete manual annotations, lines, alert area boxes, and make changes to background maps. | N/A |
| | KEYBOARD | Used in tandem with editing to add alphanumeric annotations on displayed products and with the parameters area to specify numerical values for selected parameters. | N/A |
| | SYMBOLS | Used to symbolize weather conditions and special conditions that the operator can annotate products being viewed. | N/A |
| | USER FUNCTIONS | Sequence of commands programmed and specified by PUP operator. | N/A |
| | DISPLAY FUNCTIONS | Enables the operator to manipulate the products being displayed. | N/A |
| | PRODUCT OVERLAYS | Are generated as a result of algorithm output, predetermined alert areas, and combined attribute area. | N/A |
| | MAPS | Are background map selections for the operator to overlay on the product being viewed. | N/A |
| | PRODUCTS | Listing of all required products which can be individually displayed on either monitor. | N/A |
| | PARAMETERS | Are specifications of range, resolution, priority, time/date, elevation, etc., of products listed in product area. | N/A |
| 2 | POWER | Indicates whether power is being supplied to the tablet. | Lit |
| | READY | Indicates when tablet is in the ready state. | Lit |
| | FUNCTION | Is turned ON and OFF via a command as required by the application program. | OFF |

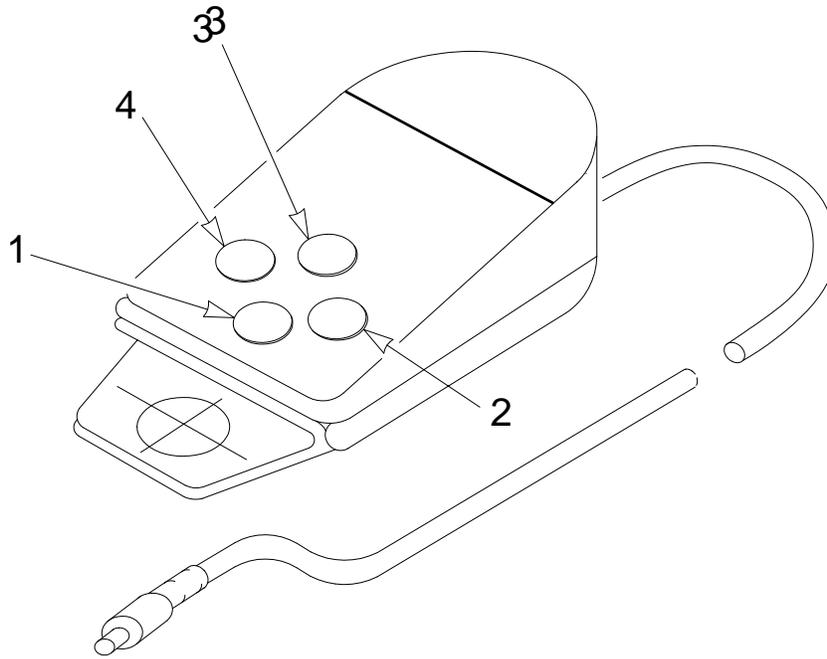
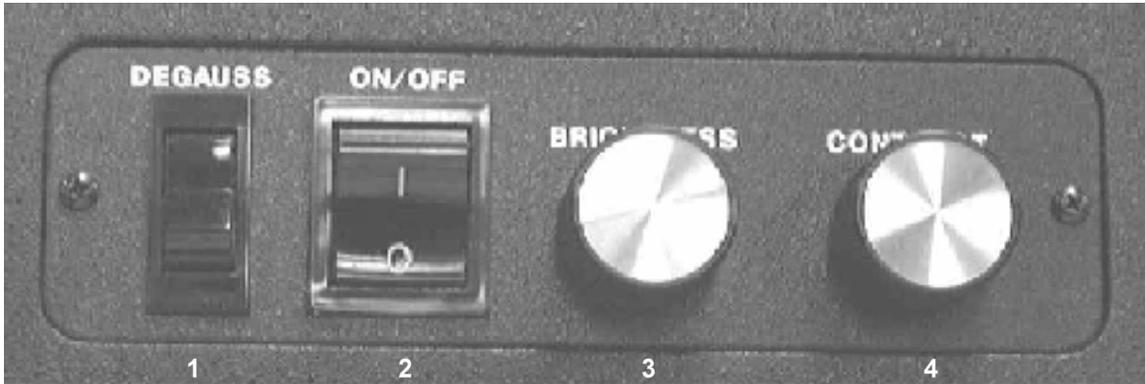


Figure 2-30. Graphics Tablet Puck

Table 2 - 49: Graphics Tablet Puck, Controls and Indicators

| Figure 2-30. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|-----------------------|---------------------------------------|
| 1 | Switch 1 | Selects left screen. | N/A |
| 2 | Switch 2 | Selects left screen. | N/A |
| 3 | Switch 3 | Selects right screen. | N/A |
| 4 | Switch 4 | Selects right screen. | N/A |



View of Operator Control Panel for Model 4119 and Model 4319 (Round Knobs)



View of Operator Control Panel for Model 4520 (Push-button Controls)



Figure 2-31. Color Monitors UD45A1/UD45A2

Table 2 - 50: Color Monitor UD45A1/UD45A2, Controls and Indicators

| Figure 2-31. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | DEGAUSS ON/OFF (momentary contact switch) | Activates degaussing circuit to settle white uniformity. | OFF |
| 2 | POWER ON/OFF (switch) | Applies power to monitor. | ON |
| 3 | BRIGHTNESS | Adjusts raster brightness. | N/A |
| 4 | CONTRAST | Adjusts the contrast ratio of picture to raster luminance. | N/A |
| 5* | AC INPUT 110V/220V (switch) | Selects AC input range | 110V |

*On inside rear panel

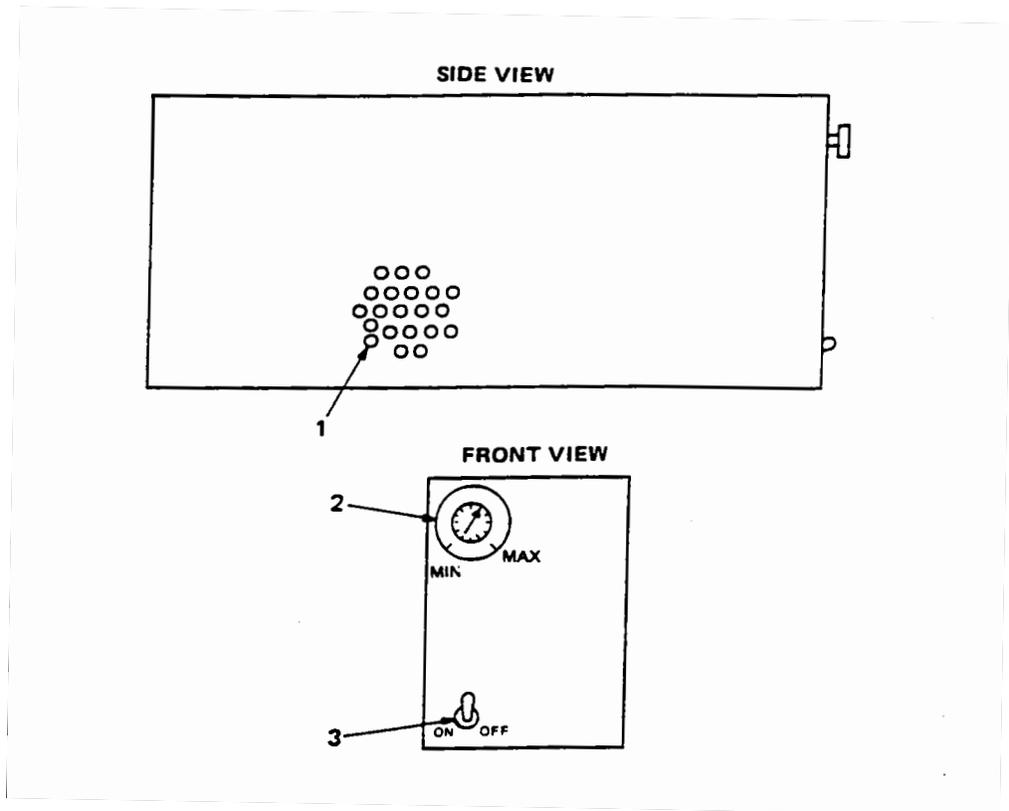


Figure 2-32. Audible Alarm UD46

Table 2 - 51: Audible Alarm UD46, Controls and Indicators

| Figure 2-32. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | Speaker | Sounds when weather alert has occurred. | N/A |
| 2 | Potentiometer | Adjusts loudness of audible alarm. | N/A |
| 3 | ON/OFF (switch) | Applies power for audible alarm. | ON |

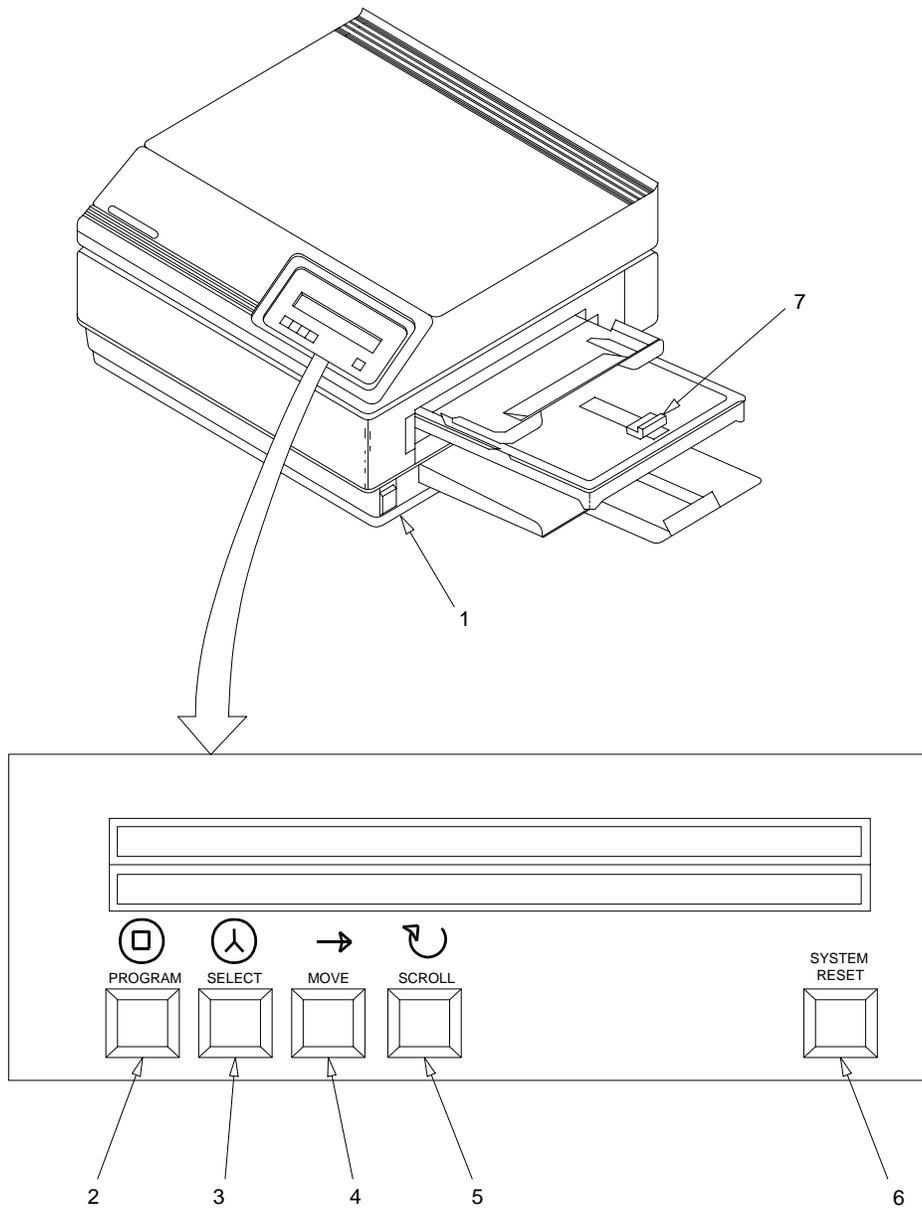


Figure 2-33. Color Graphics Printer UD47

Table 2 - 52: Color Graphics Printer UD47, Controls and Indicators

| Figure 2-33. Index No. | Control/ Indicator Nomenclature (Type) | Function | Normal Position/ State |
|-----------------------------------|---|---|---------------------------------------|
| 1 | POWER ON/OFF (switch) | Applies power to unit. | ON |
| 2 | PROGRAM (pushbutton key) | Enters interactive mode and programs printer. Press a second time to exit out of interactive mode. | N/A |
| 3 | SELECT (pushbutton key) | Saves currently displayed selection in printer memory. | N/A |
| 4 | MOVE (pushbutton key) | Moves cursor from present field to next field. | N/A |
| 5 | SCROLL (pushbutton key) | Cycles the list of choices at the current field. | N/A |
| 6 | SYSTEM RESET (pushbutton key) | Has the same effect as powering down the printer and resetting the unit. | N/A |
| 7 | Media identification | Selects either paper or transparency. | N/A |

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Chapter 3

OPERATIONAL CONSIDERATIONS

Section: 3-1 Introduction

3-1.1 Scope of Operational Considerations Chapter.

This chapter provides reference information for the Principal User Processing (PUP) operator. The chapter is divided into the following sections:

- [Section: 3-1 Introduction](#)
- [Section: 3-2 Product Request Processing and Transmission Times](#)
- [Section: 3-3 Load Control and Load Shedding](#)
- [Section: 3-4 Routine Product Set List Formulation](#)
- [Section: 3-5 User Function Application](#)

A brief explanation of the purpose of each section is provided in the introduction to each section.

Section: 3-2 Product Request Processing and Transmission Times

3-2.1 Introduction.

This section briefly explains the limitations on the number of product requests and their transmission times.

The limitation on the number of requests with user-supplied parameters affects only the products in [Table 3 - 1: List of Products Affected by One-Time Product Request Limitations](#). The limitation is summarized as follows:

- No more than a total of 10 of each of the products listed in [Table 3 - 1: List of Products Affected by One-Time Product Request Limitations](#) may be generated concurrently, subject to the limitations listed below.
- No more than a total of 40 requests for the products listed in [Table 3 - 1: List of Products Affected by One-Time Product Request Limitations](#) may be generated concurrently.
- The above limits apply to one-time and routine requests separately (i.e., 40 routine and 40 one-time).

It should be noted that when a product request exceeds the above limits, a product response is immediately distributed to the user system which issued the request, indicating that the product will not be generated.

Product requests originate from users, alerting, and the Unit Control Position (UCP) product generation list ([Figure 3-1 Product Requests Flow Diagram](#)). Users can request products on a routine or one-time basis. Requests originating from the UCP are always routine. When a product request is received, it is put in one of two request pools, depending on whether the product is to be generated from the real-time ([Figure 3-2. Real-Time Request Pool Flow Diagram](#)) or the replay data stream ([Figure 3-3. Replay Request Pool Flow Diagram](#)). The real-time and replay request pools hold 1400 and 100 product requests, respectively. All one-time requests received from associated PUP or generated by alerting, which can be generated from the replay data stream, are entered into the replay request pool (Q1 time). All other requests are entered into the real-time request pool (req_lists). An exception is that, if a product is found in the product data base which satisfies a one-time request, the request is not put in a request pool; rather, the product is immediately queued for transmission. Product requests are removed from these pools when one-time requests are satisfied, new routine product requests are received, and when the narrowband line disconnects.

At the beginning of each volume scan the real-time product request pool is processed. The tasks and data types required to produce these products are set up for execution during the current volume scan. There are 15 products which require extra customizing data for generation. At the beginning of the volume, up to 40 customized product requests are set up in a customized data table. [Table 3 - 1: List of Products Affected by One-Time Product Request Limitations](#) contains the first 10 unique product requests for a specific product (e.g., storm relative region) per elevation or volume (depending on whether the product is elevation or volume based). A request response message (Product Not Generated) is sent to users for any request that does not fit in the customized data table. For example, up to 40 storm relative region products can be generated in a single volume scan and up to 10 can be generated for any one elevation cut. Once the task, data type, and customized data tables are set up, the volume scan proceeds, product tasks are executed, products are completed and then are stored and queued for narrowband transmission. Eventually, the volume scan ends and the cycle begins again.

Table 3 - 1: List of Products Affected by One-Time Product Request Limitations

| Product |
|--|
| Echo Tops Contour |
| Severe Weather Analysis - Reflectivity |
| Severe Weather Analysis - Velocity |
| Severe Weather Analysis - Spectrum Width |
| Severe Weather Analysis - Radial Shear |
| VAD - Wind Data Analysis |
| Combined Moment |
| Vertical Cross Section - Reflectivity (16-Level) |
| Vertical Cross Section - Reflectivity (8-Level) |
| Vertical Cross Section - Velocity (16-Level) |
| Vertical Cross Section - Velocity (8-Level) |
| Vertical Cross Section - Spectrum Width |
| Weak Echo Region |
| Storm Relative Mean Radial Velocity - Region |
| Storm Relative Mean Radial Velocity - Map |

The following cycle for product generation, using base data stored on disk, occurs while there are requests present in the replay request pool. A subset of the requests in the replay request pool are moved to a second replay request pool. The second pool contains all request which are for the same elevation cut as the first request (oldest) in the original replay request pool. (Volume based products are moved only with other volume based products.) All of the product requests in this second pool are set up for generation during the next replay run. A replay run is defined as the time it takes for the product-generating tasks to get all of the required base data and generate the products. Several product-generating tasks can receive the replayed base data simultaneously. In order to generate the products, the required tasks and data types are set up in generation control tables. Also, customized data is set up in a table for those products that require it. This table contains data for the first 10 unique product requests for each product (up to 40 total in a replay run). A request response message (Product Not Generated) is sent to users for any request that does not fit the customized data table. Once these three tables (task, data type, customized data) are set up, the replay of base data begins. As products are completed, they are removed from the second request pool and are queued for transmission. After the replay of data stops and the products being generated are completed and queued for transmission, the cycle begins again.

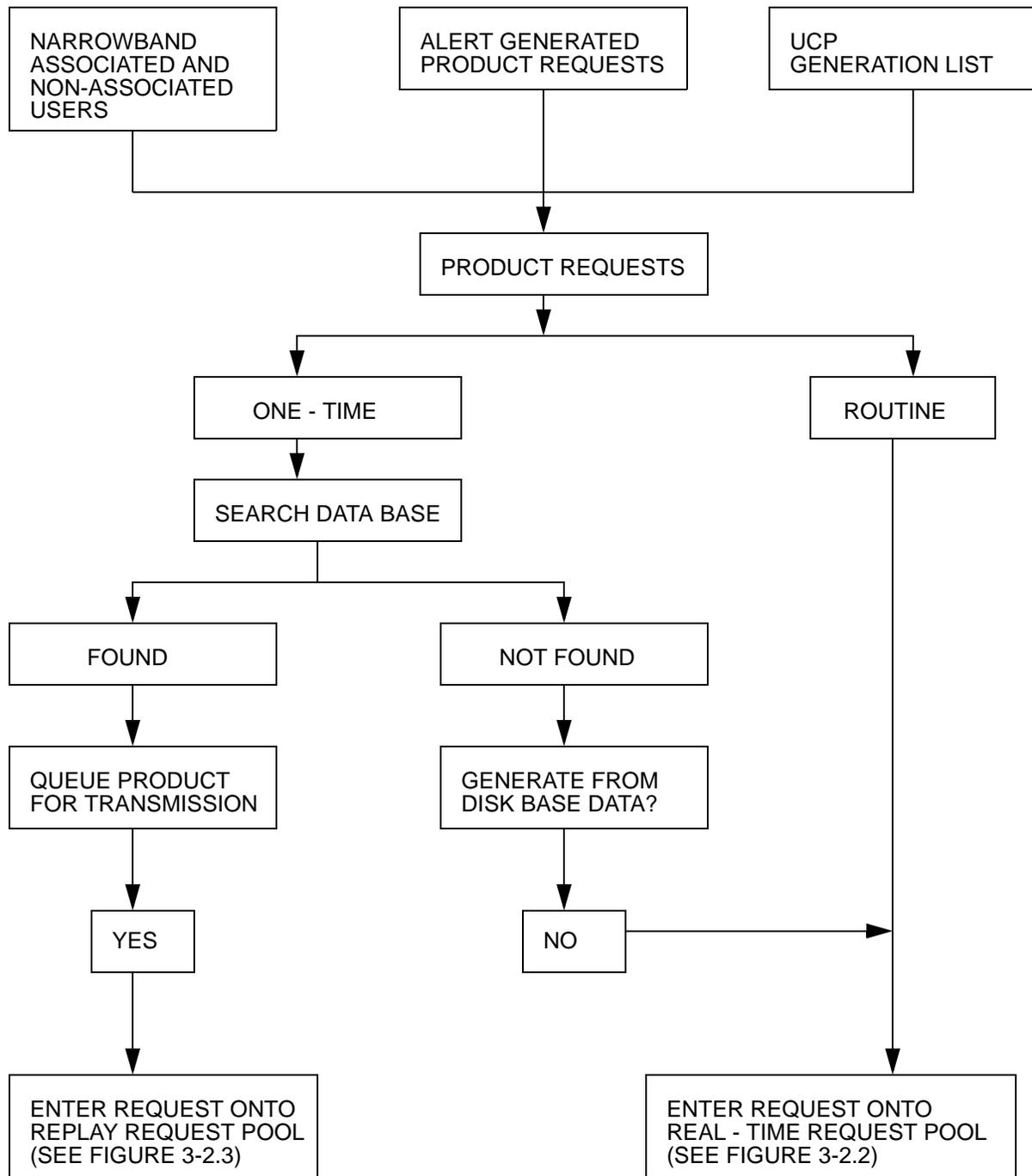


Figure 3-1 Product Requests Flow Diagram

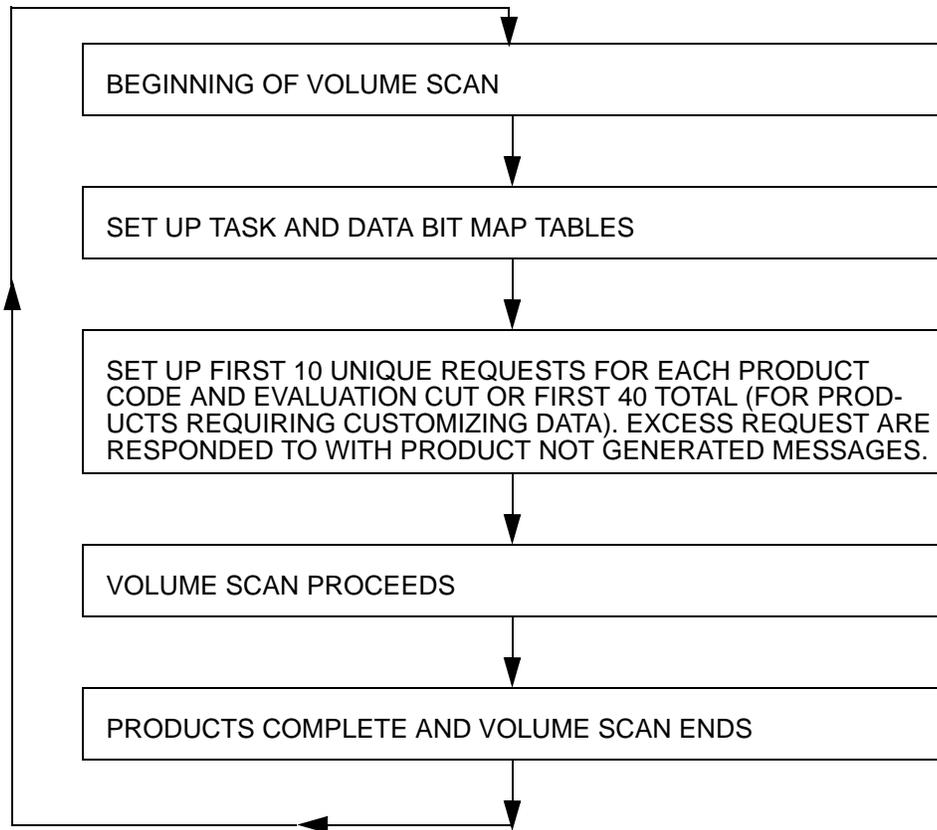


Figure 3-2. Real-Time Request Pool Flow Diagram

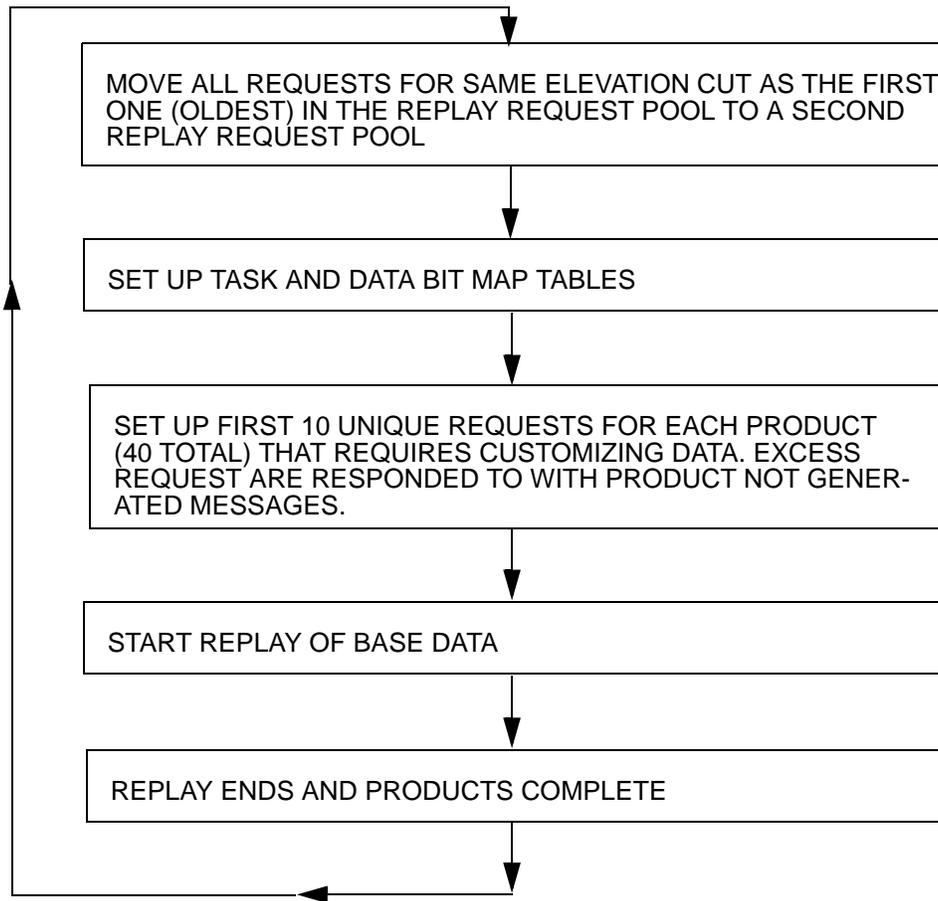


Figure 3-3. Replay Request Pool Flow Diagram

3-2.2 Product Data RPG-to-PUP Transmission Time.

The data in [Table 3 - 2: Product Data RPG -to - PUP Transmission Times](#) is derived from actual test data accumulated at a test facility. Where a range in values is shown (usually base products), it is a reflection of weather being detected. The greater the intensity of weather and the greater the area coverage, the larger the transmission time. This data is a useful aid in developing RPS lists which satisfy the requirements for products and the available transmission time for volume scan.

Table 3 - 2: Product Data RPG -to - PUP Transmission Times

| Product | Approximate Transmission Time (in seconds at 9600 bps) |
|-------------------------------------|---|
| Velocity | 9 - 25 |
| Spectrum Width | 12 - 28 |
| Combined Shear | < 20 |
| Combined Shear Contour | < 10 |
| Composite Reflectivity | 15 - 30 |
| Composite Reflectivity Contour | < 10 |
| Echo Tops | < 5 |
| Echo Tops Contour | < 5 |
| Severe Weather Analysis Display | < 6 per component |
| Severe Weather Probability | < 3 |
| Velocity Azimuth Display Winds | |
| Wind Profile | < 5 |
| VAD | < 5 |
| Combined Moment | < 18 |
| Cross-Section | < 5 |
| Weak Echo Region | 5 - 10 |
| Storm Relative Mean Radial Velocity | |
| Region | < 5 |
| Map | < 5 |
| Vertically Integrated Liquid | < 5 |
| Storm Tracking Information | < 10 |
| Hail Index | < 6 |
| Mesocyclone | < 6 |
| Tornado Vortex Signature | < 6 |
| Storm Structure | < 6 |
| Layer Composite Reflectivity | < 5 |
| Layer Composite Turbulence | < 5 |
| User Alert Messages | < 1 |

Table 3 - 2: Product Data RPG -to - PUP Transmission Times

| | |
|------------------------------------|------|
| Radar Coded Messages (RCM) | < 5 |
| Free Text Message | < 5 |
| Surface Rainfall Accumulation | < 20 |
| Storm Total Rainfall Accumulation | < 20 |
| Hourly Digital Precipitation Array | < 2 |
| Supplemental Precipitation Data | < 2 |

NOTES

1. The Approximate Transmission Time is a function of the product size in bytes, product data compaction technique, the number of product bytes per transmitted frame, transmitted frame size, link quality, and other design-dependent factors. They are given here only for guidance. Product transmission times affect throughput times most critically.
2. Product resolution affects product size and, therefore, transmission time. Multiple resolution products are shown with transmission time ranges.
3. The transmission time for radar coded messages (RCM) is estimated based on the alphanumeric portion above. Conformance to throughput time requirements should be based on this time. Adding the image product transmission time will cause the requirements to be exceeded.

Section: 3-3 Load Control and Load Shedding

3-3.1 Introduction.

The following paragraphs explain how Load Control and Load Shedding is accomplished. For details procedures, refer to the applicable UCP Operator's Manual.

The Radar Product Generation (RPG) software is designed to handle a larger load than a standard hardware configuration would support normally. Also, the software is designed to prevent an overloaded condition. The categories for which the operator can, to some extent via UCP, control load include:

- CPU
- Input Buffer
- Memory
- Narrowband Communications Line
- Disk
- Archive III.

There are two direct types of UCP control for overload product priorities and category utilization. Product prioritization is applied only to the Computer Processing Unit (CPU), input buffer, and narrowband communications line. Additionally, product prioritization is applied differently across each of these three categories. Category utilization is applied to the CPU, input buffer, narrowband communications line and the disk. Indirect controls are available primarily through product request and generation selection. Load control is tailored for each of the categories in a different manner, as described in the following paragraphs. Product generation includes routinely generated products through the UCP product generation and distribution list, associated PUPs and collocated PUP routine product set lists, one-time requests from associated PUPs and collocated PUP, and products selected for alert-based generation.

3-3.2 CPU Load Control.

CPU load control is applied as product requests are scheduled for generation. Products scheduled for routine generation are generated in a product priority order. Products may be prioritized at the UCP on a product type-by-product type basis as indicated on the Load Shed Products menu. An example of this menu is shown in [Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#). Table 3-3. is for illustrative purposes and contains two columns of data (Range and Mnemonic) which are not present on the operational Load Shed Products menu ([Figure 3-4. Load Shed Products Menu, Sample](#)).

3-3.2.1 Product Prioritization.

For an example of product prioritization, the 0.54 nm resolution reflectivity products ([Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#)) are used. The 16 data level, 0.54 nm resolution reflectivity products may have one priority assigned while the 8 data level, 0.54 nm resolution reflectivity products may have another priority. If the 8 data level version has a higher priority as it does in this case, it will be scheduled in preference to the 16 data level version.

The product prioritization defined on the RPG product generations and distribution list determines the product type generation schedule. For example, the highest priority (shown in [Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#)) is assigned to Reflectivity products 16-20 (80, 80, 79, 78 and 77); these are scheduled, in the order indicated, for early generation. Following this, the velocity products 22-27 (76, 75, 74, 73, 72, 71) are next scheduled for generation, followed by the ET, ETC and VIL products (65, 64, 63).

Table 3 - 3: Load Shed Products Menu Sample (Expanded Version)

| Product | Resolution (nm) | Data Level | Range (nm) | Mnemonic | Priority (unitless) |
|----------------|------------------------|-------------------|-------------------|-----------------|----------------------------|
| R | 1.1 | 8 | 248 | BREF17 | 80 |
| R | 2.2 | 8 | 248 | BREF18 | 79 |
| R | 0.54 | 16 | 124 | BREF19 | 78 |
| R | 1.1 | 16 | 248 | BREF20 | 77 |
| R | 2.2 | 16 | 248 | BREF21 | 50 |
| V | 0.13 | 8 | 32 | BVEL22 | 76 |
| V | 0.27 | 8 | 62 | BVEL23 | 75 |
| V | 0.54 | 8 | 124 | BVEL24 | 74 |
| V | 0.13 | 16 | 32 | BVEL25 | 73 |
| V | 0.27 | 16 | 62 | BVEL26 | 72 |
| V | 0.54 | 16 | 124 | BVEL27 | 71 |
| ET | 2.2 | | 124 | ETPRODD | 65 |
| ETC | | | 124 | ETCPROD | 64 |
| VIL | 2.2 | | 124 | VILPROD | 63 |

COMMAND: AD,*****,L,P,A,
 FEEDBACK:

(M)odify, (LINE #) (E)nd (C)ancel (P)age, (N PAGES)

| N | Prod | Dta Lvl | Res | Priority |
|---|------|---------|-----|----------|
| 1 | R | 8 | 1.0 | 80 |
| 2 | R | 8 | 2.0 | 80 |
| 3 | R | 8 | 4.0 | 80 |
| 4 | R | 16 | 1.0 | 80 |
| 5 | R | 16 | 2.0 | 80 |
| 6 | R | 16 | 4.0 | 80 |
| 7 | V | 8 | .25 | 65 |
| 8 | V | 8 | .5 | 65 |

Figure 3-4. Load Shed Products Menu, Sample

The reflectivity product 21 with a priority of 50 will not be generated until all other product types with higher prioritization numbers are generated. The reflectivity task is rerun at that time to accommodate this product.

Replay products (e.g., products generated from data stored within the last two volume scans in response to one time requests) scheduled in groups from one-time requests are treated in a similar manner. As products are scheduled for generation in priority order, the projected loading is accumulated until the utilization for the CPU category is exceeded. When this occurs, scheduling of product requests for generation is terminated and any products remaining to be generated are CPU load shed. From volume scan to volume scan the CPU utilization is measured and updated.

Direct UCP controls are product load shed priorities on the Load Shed Products menu ([Figure 3-4. Load Shed Products Menu, Sample](#)) where lower priority number corresponds to lower priority product generation. Refer to FMH-11, Part C for information on product size and priority.

Indirect controls include selection of background loading on the RPG, through product generation and selection of products for distribution to PUES and RFC's as selected on the Adaptation Generation and Distribution Control menu ([Figure 3-5. Adaptation Generation and Distribution Control Menu, Sample](#)).

3-3.3 Input Buffer Load Control.

Input buffer overload occurs when the loading on the RPG causes base data to back up in the RPG input buffers. When this backup is projected to exceed an alarm threshold set at the UCP, products are shed in priority order to avoid loss of base data. This prioritization is applied on a product grouping basis as explained below.

The RPG software consists of a number of processing tasks. Some of these tasks directly produce products from base data while others produce intermediate output which is ultimately used to produce products. Some examples of this are shown in [Figure 3-6. Processing Tasks \(Sheet 1 of 2\)](#). Figure 3-6, sheet 1 illustrates three processing tasks that produce base products.

Consider, for example, BASRFLCT and BASVLCTY ([Figure 3-6. Processing Tasks \(Sheet 1 of 2\)](#), sheet 1), each of which produces six outputs. BASRFLCT is the processing task which produces base reflectivity products while BASVLCTY produces base velocity products.

The six outputs correspond to the six versions of the base Products which differ in range, resolution, and data level. If the input buffer utilization level exceeds the alarm level, shedding will occur to alleviate an input buffer overload. Product priorities at the UCP Load Shed Products menu ([Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#)) will be used to select products for shedding until all outputs of a given task are shed and the task is shed. An example of this type of situation follows, using the sample priorities set in Table 3-3.

Referring to [Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#) the BREF21 product is selected first for potential shedding. The BASRFLCT task itself is not shed yet because not all the products have been shed. Next VIL, ETC, & ET product types are selected for shedding. Assuming algorithm output is not required for SWP or alerting, this is adequate to shed the VILETALG task which does consume base data. The downstream tasks, ETPROD, VILPROD, & ECOTPCNT are also terminated. Since VILETALG is a task which produces volume-based output, processing is terminated for this task for the entire volume scan. If this shedding is adequate to lower the projected input buffer utilization below the warning level, no more shedding occurs. In this case, note that BREF21 will be produced since the BASRFLCT task was not shed.

If projected utilization is not reduced below the warning level, BVEL27 through BVEL22 are selected for shedding in the order which the BASVLCTY task is shed. Since this is a task which produces ele-

vation-based output, the task is shed only for that elevation angle at which it is projected that the input buffers will overload. All the base velocity products in that specific elevation angle (products 22 through 27) are load shed and will not be generated. If this shedding is adequate to lower the projected input buffer utilization below the warning level, no more shedding occurs. In this case, BREF21 will be produced since the BASRFLCT task was not shed.

COMMAND: AD,***** ,G,A
 FEEDBACK:

(M)odify, (LINE#), (PROD ID) (E)nd (C)ancel
 (A)ppend, (PROD ID) (P)age, (N PAGES) (D)elete, (LINE #)

| Line | Code | Prod Id | Prod Res | Data Lvl | El Ang Low - High | Gen | Aut Arc | Aut Sto | Sto Tim | NA PUP | PUES | RFC | Oth USR |
|------|------|---------|----------|----------|-------------------|-----|---------|---------|---------|--------|------|-----|---------|
| 1 | 17 | R | 1.0 | 16 | 10.0 - 14.0 | 1 | 1 | 1 | 90 | Y | 0 | 0 | 0 |
| 1 | 18 | R | 0.0 | 0 | 0.0 - 0.0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| 2 | 23 | V | 0.25 | 16 | 1.0 - 1.0 | 1 | 1 | 1 | 30 | | 0 | 0 | 0 |

Figure 3-5. Adaptation Generation and Distribution Control Menu, Sample

A parameter in the startup file for the RPG is available to increase the amount of buffer space available for input buffers. The primary tradeoff is between input buffer and memory load shedding. As more space is reserved for input buffers, less space is available for product generation. It should be noted that expanding the buffer space can degrade throughput because, as the base data backs up, processing is delayed which leads to degraded throughput. The probability of memory load shed can be reduced through increased utilization of memory reserve and expansion.

Direct controls are product load shed priorities at the Load Shed Products menu (Figure 3-4. Load Shed Products Menu, Sample) and selection of warning and alarm levels at the Load Shed Categories menu (Figure 3-7. Load Shed Categories Menu, Sample) by the UCP operator.

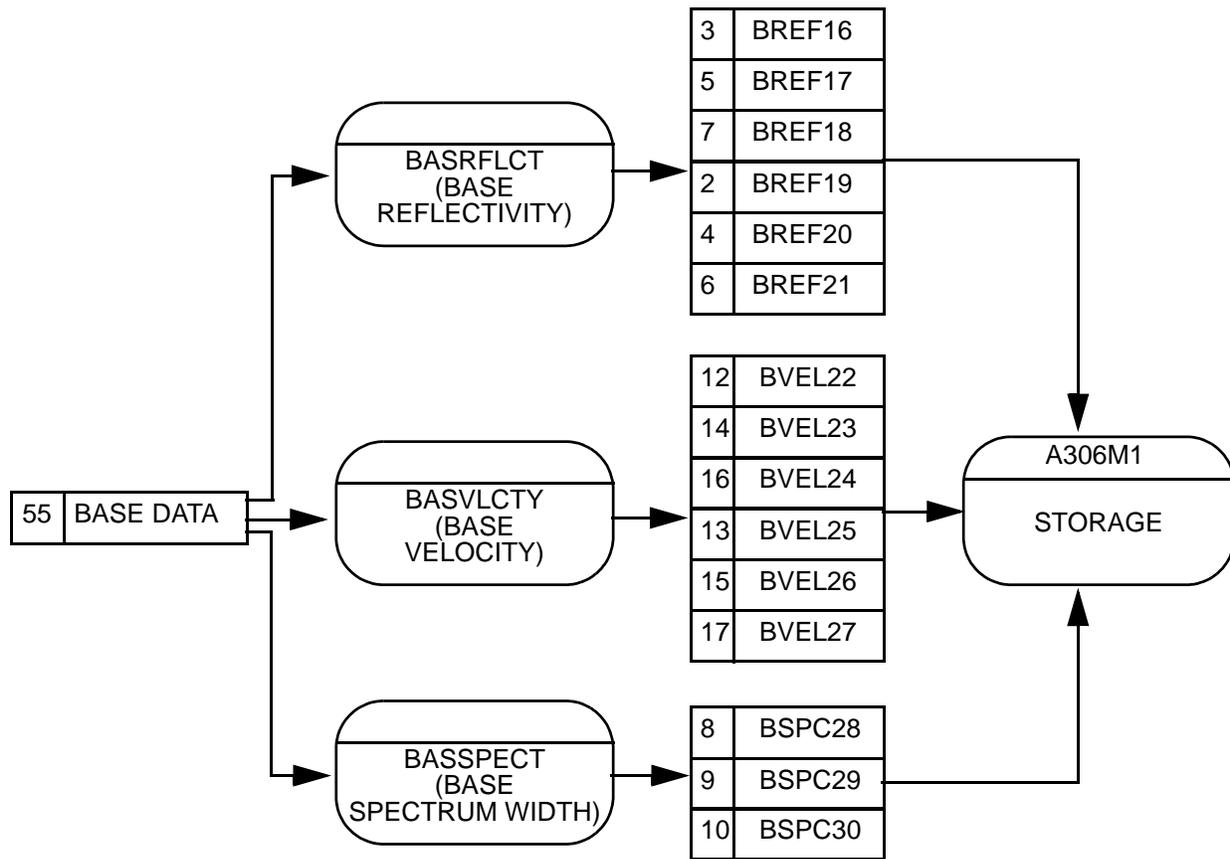
For purposes of input buffer load control it makes sense to group product priorities on a task basis. Assigning lower priorities at the UCP to heavy processing task products (e.g., shear contour and layer composite turbulence) provides for more effective load control.

Indirect controls for input buffer load shed include routine product generation as selected at the UCP, associated PUP, Radar Product Generation Operational Position (RPGOP), and to a lesser extent, one-time product generation selected at the UCP through alert product pairing and at the associated PUP through direct requests, alert product selection, and selection of products for distribution to Principal User External System (PUES) and RFCs at the UCP. Additionally, volume coverage pattern (VCP) selection impacts input buffer utilization. A higher data rate (e.g., VCP 11 which is 14 elevations in 5 minutes) increases the probability of load shedding.

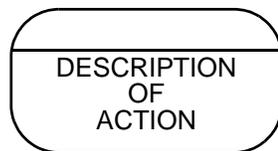
3-3.4 Memory Load Control.

Memory load control is applied when there is insufficient dynamic memory space to allocate for RPG and software execution. There is no direct control over this type of load shedding.

Typical observations where this type of load shedding are seen is for products whose generation is dependent on the acquisition of large contiguous buffers. Typical products which require large contiguous buffers are higher resolution composite reflectivity products and combined shear contour products, both of which require large cartesian grids for processing. If the contiguous space is not available, these products are memory load shed.



LEGEND:



defines transformation of incoming data into outgoing data



defines time-delayed storage of data

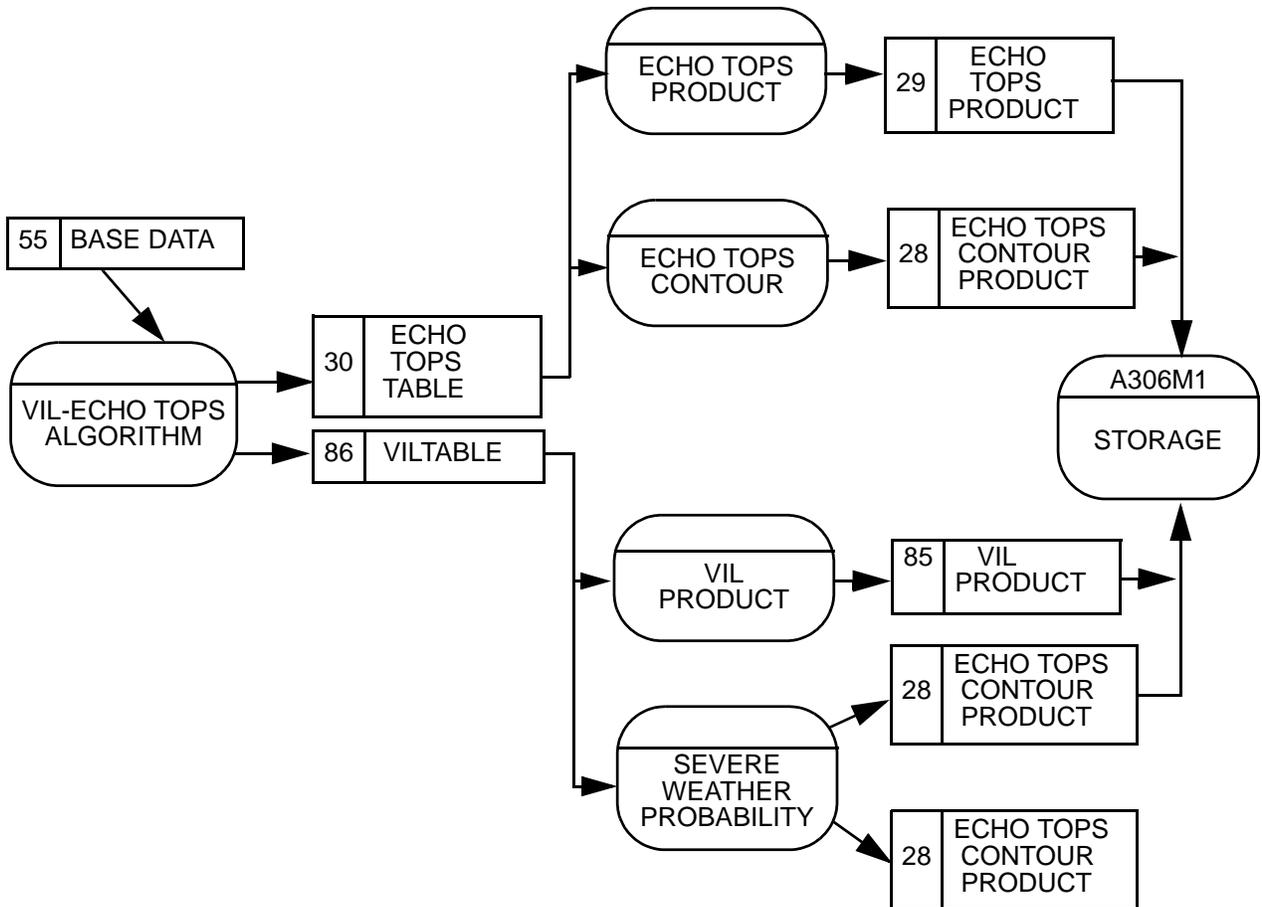
VECTOR ID



defines path of data flow. Direction is toward arrowhead.

SOME TASKS THAT PRODUCE BASE PRODUCTS

Figure 3-6. Processing Tasks (Sheet 1 of 2)



SOME TASKS THAT PRODUCE IMMEDIATE OUTPUT

Figure 3-6. Processing Tasks (Sheet 2 of 2)

COMMAND: AD,***** ,L,C,A,
 FEEDBACK:

| (M)odify, (LINE#) | | (E)nd | (C)ancel |
|-------------------|--------------|-------|----------|
| N | Category | Warn* | Alarm* |
| 1 | CPU | 60 | 80 |
| 2 | MEMORY | 95 | 100 |
| 3 | DISTRIBUTION | 70 | 90 |
| 4 | STORAGE | 70 | 90 |
| 5 | INPUT BUFFER | 60 | 80 |
| 6 | ARCHIVE III | 100 | 100 |

*The numbers in these two columns are for illustrative purposes only.

Figure 3-7. Load Shed Categories Menu, Sample

3-3.5 Narrowband Load Control.

Narrowband or distribution load control is applied to prevent an excessive backup of products on a user communications line. This load control is applied not only on a product priority basis as defined in [Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#), but also takes into account the prioritization of message types as well as the projected line utilization. The line utilization is based on product size as well as line data (baud) rate. Product priorities are applied on a product-by-product basis as described for CPU load control above. As products are generated, they are queued for transmission to users. The amount of backup on the communications line is determined based on product size and baud rate, and an estimated utilization is determined over a fixed interval of time (e.g., volume scan duration). When utilization exceeds that selected at the UCP, products are removed from the transmission queue on a user line-by-user line basis.

The first message types to be shed are routine products and low priority one-time product requests. These products from volume scans previous to the volume scan currently being processed are removed from the transmission queue. Next highest priority one-time requests and UAM products are load shed based on product priorities as selected by the UCP operator in the Load Shed Products menu ([Figure 3-4. Load Shed Products Menu, Sample](#)). Weather alert messages and status messages are not load shed.

Direct controls are the product priorities for load shedding as well as load shed warning and alarm levels at the UCP as mentioned above.

Indirect controls are user selection of products. Image products such as R, SW, and higher resolution CR products tend to be larger and so require more of the narrowband resource. Also, (refer to [Table 3-3](#)) 16 data level products tend to be larger than 8 data level products. Additionally, the number and type of products on the RPS list affect the probability of load shedding. Although product sizes can vary considerably with weather conditions and radar parameter settings (e.g., thresholds), typical image product sizes range from 8Kb to 35Kb. Approximately 1 second is required to transmit 1Kb. Derived products typically range in size from 1Kb to 10Kb.

As an example of product priorities, refer to [Table 3 - 3: Load Shed Products Menu Sample \(Expanded Version\)](#). In this sample with priority settings according to [Table 3-3](#), products will be distributed in the following order:

- BREF16-20
- BVEL22-27
- ETPRODD
- ETCPROD
- VILPROD
- BREF21

Assuming products are all routine high priority products if the narrowband utilization is projected to be exceeded after queuing of the ETPRODD, the ETCPROD, VILPROD, and the BREF21 products will not be queued for transmission to the user generation.

Note that the low and high priority values assigned to RPS products do not specifically enter into the narrowband load control. The RPS assigned priorities determine which queued products will be transmitted first. As long as a high priority product is on the queue it will have precedence over any low priority product.

3-3.6 Disk Load Control.

Load control is provided for disk storage for the product database. This database is used to store products generated by the RPG. Since the disk space is dynamically allocated for product storage, this type of load control is needed to provide some control over the utilization of the product database. The amount of disk space allocated for product storage is fixed. However, individual product space is not specifically reserved. Thus, whatever disk space a product requires, dependent upon its size, will be accommodated. The controls available for this type of load shedding are limited to selections on the Load Shed Categories menu ([Figure 3-7. Load Shed Categories Menu, Sample](#)). These selections are warning and alarm percentage utilization.

All radar products are stored in the product database and retained for a period of approximately two volume scans. Further, a retention time can be specified at the UCP, on the Adaptation Generation and Distribution Control menu ([Figure 3-5. Adaptation Generation and Distribution Control Menu, Sample](#)), ranging up to six hours. When the amount of data in the product database exceeds the warning level as specified on the Load shed Categories menu ([Figure 3-6. Processing Tasks \(Sheet 1 of 2\)](#)), a warning message is issued. When the amount of data exceeds the alarm level, a load shedding procedure is automatically activated. The procedure involves deleting the oldest products in the database until the amount of data goes below the warning level. Once this occurs, the procedure is terminated.

3-3.7 ARCHIVE III Load Control.

Archive III load control is provided for systems with two Archive III devices. Load control is straight forward. When one device becomes full, the archiving process switches over to the second device.

The only control through the UCP is to reduce the number of products being archived. This is accomplished through the Product Generation and Distribution Control menu. Basically the only load control for archive Level III is to limit the archiving of products to those products that are needed for operational/administrative purposes as opposed to those that would be nice to have. Load Control may be accomplished by:

- a. Limiting the number of products selected for auto archive on the Generation and Distribution Control Edit Screen.
- b. Use of the Pause/Resume Command on the Archive Menu.

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When Auto Archive is executing, if the operator notes (by accessing the (S)tatus, (L)oadsheeding screen) that the disk is getting close to being filled (~98.99%), then the (P)ause command may be exercised. This will stop the archive functions and allow the operator twelve minutes to load a new disk. Then with the (R)esume command (provided the tape loading was accomplished and the command given within the 12 minute limitation) the archive will continue where it left off and none of the products selected for archiving are lost. If the time taken to accomplish the reloading exceeded twelve minutes, all products received during that period are not archived with this command.

If the disk reaches its physical end before the operator has the opportunity to (P)ause the archive, the Auto Archive function will pause automatically. The operator then has twelve minutes to load the new disk and (R)esume auto archive.

Section: 3-4 Routine Product Set List Formulation

3-4.1 Introduction.

The Routine Product Set (RPS) is a list of products prepared at the PUP and transmitted to the RPG for routine generation and distribution to the requesting PUP. There are several operational issues that should be considered in developing the active and adaptable RPS lists. A discussion of each issue follows in the paragraphs below.

3-4.2 RPS - System Coordination.

The RPS should be coordinated with the system weather mode (clear air or precipitation), VCP, current system resident user functions (UF) and any required or relied on time lapse (TL) loops. For example, in clear air sampling using VCP 31 or 32, only five low-level elevation scans are made and certain products, e.g., hail, are not appropriate. Additionally, VCP 11, which samples 14 elevation scans, includes a scan at 7.5° whereas VCP 21 (9 elevation cuts) does not. Therefore, base products for 7.5° would be included only in an RPS designed for use with VCP 11. The majority of UFs are designed for manipulation of PUP resident products. Thus, the RPS should include products intended for use with currently defined appropriate UFs. Similarly, meaningful TL loops are built using products that are received regularly such as those included in the RPS list.

It is imperative to maintain properly tailored RPSs in adaptable lists A (precipitation) and B (clear air). Whenever there is a change in weather mode the system automatically invokes the appropriate list. When switching from clear air scanning (VCP 31 or 32) to the precipitation mode (VCP 11 or 21), RPS list A replaces the formerly active list B. Conversely, when switching from precipitation to clear air, RPS B replaces the previous list A. It should be noted, however, that the VCP change from precipitation to clear air mode is a manual operation. Neither of these lists should ever be null (blank) since the result would be the reception of only one time product (OT) requests or alert-paired products and nothing routinely.

3-4.3 Expected Weather Types And Threats.

Anticipated weather types (e.g., convective, stratiform or embedded convective precipitation) and threats (e.g., heavy rain, hail, etc.) play an important part in adaptable RPS composition. Since there are ten adaptable lists, A through J, various weather situations in which they would be involved can be planned far in advance.

3-4.4 Ranges To Storms.

Another important influence, particularly in base product elevation choices and resolutions, is the expected range to the weather types or threats. In some cases it may be possible to know in advance that convective storms will be confined to the fringes of the radar coverage umbrella or area of responsibility (> 100 nm). In that case only the lowest three or four consecutive elevation angles would be chosen for base products. Also product resolutions would be limited to perhaps ≥ 0.54 nm. In other cases convection may be anticipated and confined very near the Radar Data Acquisition (RDA), thus dictating high resolution and higher elevation angles for base products. During many weather patterns, convection may occur at all ranges demanding "generic" or mixed RPS base product entries.

3-4.5 RPS Appropriate Product Types.

Certain product types are not appropriate for inclusion in the RPS, while others are most appropriate for OT requests. In general, those products not requiring operator positioning are most suitable, e.g., base, composite, and most derived products. Others, such as all window products and vertical cross sections necessitating the choice of or a default center position or azimuth, are not typically used in an RPS. Exceptions do occur. A fixed geographical location may require continuous high resolution monitoring, permitting, for example, location of the Severe Weather (Analysis) Reflectivity or Reflectivity Cross Section products at that location every volume scan. This then allows inclusion of those "positioned" products on an RPS list. Most often those same positioned products can be generated via the OT request and sequentially for up to nine volume scans using the OT repeat count option if needed.

3-4.6 Frequency Of Request.

The tendency to leave the RPS menu default Request Frequency (REQ FRQ column) set at one should be avoided. Consider the purpose for which the product is included and the probability for significant change in the product from one volume scan to the next. For example, the VWP product most often undergoes only slight and gradual changes as compared to volume scan periods (5 to 10 minutes). This permits request frequencies of 2 or 3, once every other or once every third volume scan respectively, with little loss of information. Another example includes the coarse resolution, long range surveillance reflectivity or composite reflectivity products. The affected ranges are generally beyond the primary area of responsibility and changes not of immediate consequence. Thus, generation frequencies of 2 or 3 are also reasonable.

3-4.7 Narrowband Communications Loading.

At certain times and under certain conditions (e.g., VCP 11 use and extensive echo variability), narrowband load shedding may be induced. This is especially true when up to 20 RPS products are included, many of which may be large and significant, and OT or alert requested products are also included. Those products with typically the largest data volumes are Spectrum Width and 16 data level, 0.54 nm Composite Reflectivity products. Each may involve 30,000 bytes or more and require up to one minute for narrowband transmission. If heavy loading of the system is anticipated, request frequencies, base product entries, number of data levels, and total number of RPS products may all be reduced. Base data resolutions and requests for high data volume products may also be reduced. These steps will lead to minimizing narrowband load shedding probability and therefore maximize product availability.

3-4.8 Request Priority.

A final and important step in maximizing product availability, especially for those truly critical RPS products, is adjustment of Request Priority (REQ PRI). This is the narrowband transmission priority and should not be confused with RPG generation priority. If Request Priority is changed from the default high (H) to low (L), then those products so marked will be the first to be shed during narrowband load shedding situations.

3-4.9 Real-time RPS Updating.

While RPS list generation or design should be done as is practical during quiescent periods, changes in real-time can be made. In other words, any list including the active list may be edited at any time, even during active weather. Therefore, as the weather dictates, products may be deleted or added or the entire active RPS list replaced with an adaptable list in real-time. An example of four types of edit screens are shown in [Figure 3-8. Adaptation Data RPS Edit Screen \(Sheet 1 of 4\)](#), sheets 1 through 4. They are examples only and do not necessarily represent standard operational lists.

COMMAND:

FEEDBACK: EXECUTED - F11: ALPHANUMERIC HARDCOPY

(M)ODIFY, <LINE#>, <PROD-NAME> (D)ELETE, <LINE#>

(I)NSERT, <LINE#>, <PROD-NAME> (C)ANCEL ALL

PRESS FUNCTION KEY F1 OR F2 TO EXIT AND TO SAVE ALL CHANGES

| LN | PROD NAME | DTA LVL | RES | SLICE | PARAM 1 | PARAM 2 | AUT DSP | REQ FRQ | REQ PRI | OTH USR | PUES DIST | AUT ARC |
|----|-----------|---------|-----|-------|---------|---------|---------|---------|---------|---------|-----------|---------|
| 1 | R | 8 | 1.1 | 0.5 | | | L | 2 | L | Y | Y | N |
| 2 | R | 16 | .54 | 0.5 | | | R | 1 | H | Y | Y | Y |
| 3 | V | 16 | .54 | 0.5 | | | L | 1 | H | Y | Y | Y |
| 4 | SW | 8 | .54 | 0.5 | | | R | 1 | L | N | N | Y |
| 5 | R | 16 | .54 | 1.5 | | | L | 1 | L | N | N | N |
| 6 | V | 16 | .54 | 1.5 | | | R | 1 | L | N | N | N |
| 7 | R | 16 | .54 | 3.3 | | | L | 1 | H | N | N | N |
| 8 | V | 16 | .54 | 3.3 | | | R | 1 | H | N | N | Y |
| 9 | R | 16 | .54 | 6.0 | | | L | 1 | H | N | N | Y |
| 10 | V | 16 | .54 | 6.0 | | | R | 1 | H | N | N | N |
| 11 | SW | 8 | .54 | 6.0 | | | L | 2 | L | N | N | N |
| 12 | R | 16 | .54 | 9.9 | | | R | 1 | L | N | N | Y |
| 13 | V | 16 | .27 | 9.9 | | | L | 1 | L | N | N | Y |
| 14 | CR | 16 | .54 | | | | R | 1 | H | Y | Y | Y |
| 15 | ET | | | | | | L | 1 | H | Y | Y | Y |
| 16 | VAD | | | | | | R | 3 | L | Y | Y | Y |
| 17 | VIL | | | | | | L | 1 | H | N | Y | Y |
| 18 | STI | | | | | | R | 1 | H | Y | Y | Y |
| 19 | OHP | | | | | | L | 3 | H | Y | Y | Y |
| 20 | HI | | | | | | R | 1 | H | N | N | Y |

14/2026 LINE 1 UNREQUESTED DSCNCT

Q10 RCM KOUN 1804

CONNECTION PENDING DED. RPG LINE 1

Figure 3-8. Adaptation Data RPS Edit Screen (Sheet 1 of 4)

NWS EHB 6-531

COMMAND:

FEEDBACK: EXECUTED - F11: ALPHANUMERIC HARDCOPY

(M)ODIFY, <LINE#>, <PROD-NAME> (D)ELETE, <LINE#>

(I)NSERT, <LINE#>, <PROD-NAME> (C)ANCEL ALL

PRESS FUNCTION KEY F1 OR F2 TO EXIT AND TO SAVE ALL CHANGES

| LN | PROD NAME | DTA LVL | RES | SLICE | PARAM 1 | PARAM 2 | AUT DSP | REQ FRQ | REQ PRI | OTH USR | PUES DIST | AUT ARC |
|----|-----------|---------|-----|-------|---------|---------|---------|---------|---------|---------|-----------|---------|
| 1 | R | 8 | 1.1 | 0.5 | | | R | 3 | L | N | Y | N |
| 2 | R | 16 | .54 | 0.5 | | | L | 1 | H | N | Y | Y |
| 3 | V | 16 | .54 | 0.5 | | | R | 1 | H | N | Y | Y |
| 4 | SW | 8 | .54 | 0.5 | | | L | 1 | H | N | Y | Y |
| 5 | R | 16 | .54 | 1.5 | | | R | 1 | L | N | Y | N |
| 6 | V | 16 | .54 | 1.5 | | | L | 1 | L | N | Y | N |
| 7 | SW | 8 | .54 | 1.5 | | | R | 2 | L | N | Y | N |
| 8 | R | 16 | .54 | 2.5 | | | L | 1 | H | N | Y | Y |
| 9 | V | 16 | .27 | 2.5 | | | R | 1 | H | N | Y | Y |
| 10 | SW | 8 | .27 | 2.5 | | | L | 3 | H | N | Y | Y |
| 11 | R | 16 | .54 | 3.5 | | | R | 1 | L | N | Y | N |
| 12 | V | 16 | .27 | 3.5 | | | L | 1 | L | N | Y | N |
| 13 | SW | 8 | .27 | 3.5 | | | R | 1 | L | N | Y | N |
| 14 | R | 16 | .54 | 4.5 | | | L | 1 | H | N | Y | Y |
| 15 | V | 16 | .27 | 4.5 | | | R | 1 | H | N | Y | Y |
| 16 | SW | 8 | .27 | 4.5 | | | L | 2 | L | N | Y | N |
| 17 | CR | 8 | 2.2 | | | | R | 2 | L | N | Y | N |
| 18 | CR | 16 | .54 | | | | L | 1 | H | N | Y | Y |
| 19 | VAD | | | | | | R | 1 | H | N | Y | Y |
| 20 | ET | | | | | | L | 2 | H | N | Y | Y |

14/019 OTHER USER LINE ENABLED QUEUE EMPTY

Figure 3-8 Adaptation Data RPS Edit Screen (Sheet 2 of 4)

COMMAND:

FEEDBACK: EXECUTED - F11: ALPHANUMERIC HARDCOPY

(M)ODIFY, <LINE#>, <PROD-NAME> (D)ELETE, <LINE#>

(I)NSERT, <LINE#>, <PROD-NAME> (C)ANCEL ALL

PRESS FUNCTION KEY F1 OR F2 TO EXIT AND TO SAVE ALL CHANGES

| LN | PROD NAME | DTA LVL | RES | SLICE | PARAM 1 | PARAM 2 | AUT DSP | REQ FRQ | REQ PRI | OTH USR | PUES DIST | AUT ARC |
|----|-----------|---------|-----|-------|---------|---------|---------|---------|---------|---------|-----------|---------|
| 1 | R | 16 | 1.1 | 0.5 | | | L | 3 | L | Y | Y | Y |
| 2 | R | 16 | .54 | 0.5 | | | R | 1 | H | Y | Y | Y |
| 3 | V | 16 | .54 | 0.5 | | | L | 1 | H | Y | Y | Y |
| 4 | SW | 8 | .54 | 0.5 | | | R | 2 | L | N | N | N |
| 5 | R | 16 | .54 | 1.5 | | | L | 1 | H | N | N | N |
| 6 | V | 16 | .54 | 1.5 | | | R | 1 | H | N | N | N |
| 7 | R | 16 | .54 | 3.4 | | | L | 1 | L | N | N | Y |
| 8 | V | 16 | .54 | 3.4 | | | R | 1 | L | N | N | Y |
| 9 | R | 16 | .54 | 6.0 | | | R | 2 | H | N | N | Y |
| 10 | V | 16 | .27 | 6.0 | | | L | 2 | H | N | N | Y |
| 11 | SW | 8 | .27 | 6.0 | | | R | 2 | H | N | N | N |
| 12 | R | 16 | .54 | 9.9 | | | L | 1 | L | N | N | Y |
| 13 | V | 16 | .13 | 9.9 | | | R | 1 | H | N | N | Y |
| 14 | CR | 16 | .54 | | | | L | 1 | H | Y | Y | Y |
| 15 | OHP | | | | | | R | 2 | H | Y | Y | Y |
| 16 | THP | | | | | | L | 6 | H | Y | Y | Y |
| 17 | STP | | | | | | R | 1 | H | Y | Y | Y |
| 18 | STI | | | | | | L | 1 | H | Y | Y | Y |
| 19 | VWP | | | | | | R | 3 | H | Y | Y | Y |
| 20 | HI | | | | | | R | 1 | H | N | N | Y |

15/1129 BASE DATA = NONE

Q 4 UAM KOUN 2140

3 RPS PRODUCTS OVERDUE

PROD OVERDUE: V KOUN RPS 1.0 1.5

Figure 3-8. Adaptation Data RPS Edit Screen (Sheet 3 of 4)

NWS EHB 6-531

COMMAND:

FEEDBACK: EXECUTED - F11: ALPHANUMERIC HARDCOPY

(M)ODIFY, <LINE#>, <PROD-NAME>(D)ELETE, <LINE#>

(I)NSERT, <LINE#>, <PROD-NAME>(C)ANCEL ALL

PRESS FUNCTION KEY F1 OR F2 TO EXIT AND TO SAVE ALL CHANGES

| LN | PROD NAME | DTA LVL | RES | SLICE | PARAM 1 | PARAM 2 | AUT DSP | REQ FRQ | REQ PRI | OTH USR | PUES DIST | AUT ARC |
|----|-----------|---------|-----|-------|---------|---------|---------|---------|---------|---------|-----------|---------|
| 1 | R | 16 | 1.1 | 0.5 | | | L | 1 | L | N | Y | N |
| 2 | R | 16 | .54 | 0.5 | | | R | 1 | H | N | Y | Y |
| 3 | V | 16 | .54 | 0.5 | | | L | 1 | H | N | Y | Y |
| 4 | SW | 8 | .54 | 0.5 | | | R | 2 | H | N | Y | Y |
| 5 | R | 16 | .54 | 1.5 | | | L | 1 | L | N | N | N |
| 6 | V | 16 | .54 | 1.5 | | | R | 1 | L | N | N | N |
| 7 | SW | 8 | .54 | 1.5 | | | L | 1 | L | N | N | N |
| 8 | R | 16 | .54 | 2.4 | | | R | 1 | H | N | N | Y |
| 9 | V | 16 | .54 | 2.4 | | | L | 1 | H | N | N | Y |
| 10 | R | 16 | .54 | 3.4 | | | R | 1 | L | N | N | N |
| 11 | V | 16 | .54 | 3.4 | | | L | 1 | L | N | N | N |
| 12 | R | 16 | .54 | 4.5 | | | R | 1 | H | N | N | Y |
| 13 | V | 16 | .54 | 4.5 | | | L | 1 | H | N | N | Y |
| 14 | CR | 16 | 2.2 | | | | R | 1 | H | N | Y | Y |
| 15 | ET | | | | | | L | 1 | H | N | Y | Y |
| 16 | VAD | | | | | | R | 3 | H | N | Y | Y |
| 17 | VIL | | | | | | L | 1 | H | N | Y | Y |
| 18 | STI | | | | | | R | 1 | H | N | Y | Y |
| 19 | HI | | | | | | L | 1 | H | N | Y | Y |
| 20 | M | | | | | | R | 1 | H | N | Y | Y |

14/1019 OTHER USER LINE ENABLED QUEUE EMPTY

Figure 3-8. Adaptation Data RPS Edit Screen (Sheet 4 of 4)

Section: 3-5 User Function Application

3-5.1 Introduction.

The user function provides the operator with the capability to pre-define up to 31 normal PUP operator selections (at the Graphics Tablet and the Application Terminal) into a single user function. Upon subsequent selection of a pre-defined user function, each of the embedded selections are performed in sequence, as though they had been individually selected by the operator. This feature is particularly useful for function sequences that are time consuming, frequently performed, and serve specific operational purposes.

Each user function will accommodate up to 31 individual selections. There are 60 user functions available for definition. If a user function requires more than the 31 selections available in a single user function, it may be linked with as many other user functions as required to complete the definition. It is, however, highly unlikely that more than two user functions would be linked at any time.

3-5.2 Generic Operational Applications.

Usually a user function is designed to obtain products (not typically on the RPS lists) which are logically linked together to aid the meteorologist/operator in analyzing a specific hydrometeorological situation. Examples of operational scenarios which lend themselves to user function application in satisfying operational requirements follow.

3-5.2.1 Protection of Specific Air Routes and Sites.

In this application, there may be a non-recurring requirement for continuous surveillance of weather along an air route (e.g., Air Force missions, special operation, etc.) for a short period of time. For these conditions, a user function can be defined that would ensure automatic generation and distribution of a set of cross-section products (e.g., reflectivity, velocity and spectrum width) for the duration of the mission.

In some situations, it may be desirable to display products centered on a specific site in order to more easily determine the position and movement of hazardous weather relative to the site. Rather than call up and recenter each required product individually, a user function can pre-define both the products desired and the center point location for automatic display.

3-5.2.2 Detailed Analysis of Storms/Storm Structure.

The analysis of storms and their internal structure may require the use of window products (dimensions 27 x 27 nmi and 13.5 x 13.5 nmi) which are rarely, if ever, available through the RPS list.

The reason for storm structure analysis through the use of window products may be to:

- validate algorithms output of vertical circulations (e.g., mesocyclones)
- determine the existence of a weak echo region which is associated with storm sever
- determine the areal distribution of velocity, reflectivity and spectrum width at several elevation angles at the same coordinate center
- generally obtain more detailed information on the storm structure and validation of perhaps questionable algorithm output.

The user function may be defined so as to obtain those relevant products that would serve to answer the question on hand regarding the storm structure.

3-5.2.3 One-Time Product Requests.

Generally, the applications discussed in paragraphs 3-5.2.1 through 3-5.2.3, are for the most part one-time product requests. User function may be used for one-time product requests in those cases

where severe products are requested and/or for a protected period of time. This is in contrast to a one-time product request for a single product.

The user function would be invoked as an alternative to going through a possible time-consuming procedure of one-time product requests for many individual products.

3-5.3 Example of An Operational Application.

User functions have many operational applications limited only by the initiative and imagination of the operator. An example of storm structure analysis is provided to illustrate the user function application in real time scenarios.

There are a significant number of products and product combinations that may be used to determine the structure and severity of storms. The Severe Weather Analysis Display product, which consists of a combination of window products (in quarter screen), reflectivity, velocity spectrum width and radial velocity shear, is available as a routine product. There are other possible combinations that may be defined through a user function. One possibility is a product set consisting of:

- Storm Relative Mean Radial Velocity (SRR)
- Weak Echo Region (WER)
- Combined Moment (CM).

This set of products centered on the storms coordinate locations could be a useful combination in determining the attributes and structure of the storm being analyzed. Each of these products are discussed in the following paragraphs.

3-5.3.1 Storm Relative Mean Radial Velocity (SRR).

This product would be useful to determine whether a vortical flow exists in the storms if it is suspected that a mesocyclone is embedded in the storm's circulation. If there is a vortical flow and the storm is moving rapidly (strong environmental winds), the vortical circulation may be masked. The environmental flow will distort the vortical circulation by increasing the wind on one side and decreasing it on the other side. The SRR is generated from the velocity product by subtracting the radial component of the environmental wind from the velocity field. This then leaves only the vortical circulation and the rotational signature becomes more clearly delineated. This product is memory intensive within 30 nautical miles of the RDA and may result in load shedding during active weather conditions.

3-5.3.2 Weak Echo Region (WER).

The WER product displays a three-dimensional view of the storm reflectivity field. The existence of a weak echo region is often associated with a severe storm or, as a minimum, contains hail and in some cases mesocyclones. Thus, this product serves to support and/or provide corroborative evidence of severe storm potential indicated by the vortical circulation (if any) noted in the SRR.

3-5.3.3 Combined Moment (CM).

The Combined Moment product combines into one product the three moments-reflectivity, velocity and spectrum width. While this product is somewhat more difficult to interpret, it does provide information on one product that normally requires three products. Used with the previous products (in paragraphs 3-5.3.1 and 3-5.3.2), this again provides further detailed information of the storm.

These three products (in paragraphs 3-5.3.1 thru 3-5.3.3) predefined in a user function may be applied by the meteorologist in evaluating the severity of a storm and validating a vertical circulation.

3-5.3.4 User Function Selections.

The user function defines selections to obtain the products outlined in paragraphs [3-5.3.1 Storm Relative Mean Radial Velocity \(SRR\)](#), and [3-5.3.2 Weak Echo Region \(WER\)](#), above, including:

- SRR
- AZRAN SELECT
- DEFAULT PARAMETERS
- SEND RPG REQ
- U, W, 4
- WER
- DEFAULT PARAMETERS
- SEND RPG REQ
- U, W, 4
- CM
- DEFAULT PARAMETERS
- SEND RPG REQ
- U, W, 4
- U, EN, E.

The procedure for user function definition is discussed in paragraph [Section: 3-3 Load Control and Load Shedding](#). Prior to invoking this particular user function, the operator must select, using the cursor, the storm coordinate. This coordinate becomes the default AZRAN when the user function is selected following the coordinate selection.

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GLOSSARY

| <u>Acronym or Non-Standard Term</u> | <u>Definition</u> |
|---|---|
| ACC | Account |
| ACU | Arithmetic Control Unit, Automatic Call Unit |
| ADCCP | Advanced Data Communications and Control Procedures |
| ANNOT | Annotated |
| AUT | Authorized |
| AZ | Azimuth |
| BASRFLCT | Processing task which produces base of velocity products |
| BASVLCY | Processing task which produces base velocity products |
| BG | Background |
| BGLSETU | Load Set Time |
| BGLSTART | Start Time of Day |
| CA | Computer Accelerator |
| CCITT | International Telegraph and Telephone Consultative Committee |
| CD | Contiguous Doppler, Carrier Detect |
| CDS | Control Diagnostic System |
| CH | Check |
| CM | Combined Moment |
| CMM | Composite Memory Module |
| CO | Continue |
| CPU | Computer Processing Unit |
| CR | Carriage Return |
| CS | Contiguous Surveillance |
| CSS | Command Substitution System |
| CSU | Channel Service Unit |
| DA | Display Accounting |
| DAT | Data |
| dB | Decibels |
| DCB | Device Control Block |
| DCD | Data Carrier Detect |
| DCE (See also DTE) | Data Circuit-Terminating Equipment, Data Communications Equipment |

GLOSSARY - (cont)

Acronym or
Non-Standard Term

Definition

| | |
|---------------------|--|
| DEADSYS | Deadsystem |
| DED | Dedicated |
| DEL | Delete |
| DELE | Delete |
| DEV | Device |
| DIOS | Digital Input/Output System |
| DIST | Distribution |
| DSP | Display |
| DSR | Data Set Ready |
| DTA | Data |
| DTE (see also DCE) | Data Terminal Equipment, Data Transfer Engine |
| EC | Extendable Contiguous |
| EEPROM | Electronically Erasable Read Only Memory |
| EHB | Engineering Handbook |
| EOF | End of File |
| EOV | End of Volume |
| FCB | File Control Block |
| FD | Doppler Frequency, File Designator |
| FMH | Federal Meteorological Handbook |
| FRQ | Frequency |
| Halfword | A nonbroken sequence of BITS or characters that make up half a computer word and that can be addresses as a unit. |
| Hydrometeorological | Components (such as temperature, pressure, humidity, wind, rainfall and cloudiness) which determine the state of the weather. |
| I/O | Input/Output |
| INIT | Initialize |
| IPL | Initial Program Leader |
| Klystron | An electronic tube used as a low-power oscillator or a high-power amplifier at ultra high frequencies. Noted for exceptional stability over long period of transmission. |
| LCD | Liquid Crystal Diode |
| LCM | Line Conditioner Module |

GLOSSARY - (cont)

| <u>Acronym or Non-Standard Term</u> | <u>Definition</u> |
|---|--|
| LDM | Limited Distance Modem |
| LFM | Limited Area Fire Mesh |
| LIB | Loader Information Block |
| LPI | Lines per inch |
| LR | Link Register |
| LVL | Level |
| Meso | Center |
| Meteorological | A 3-dimensional region in a storm that rotates (usually cyclonically) and is closely correlated with severe weather. |
| MMP | Multi-Mode Printer |
| MPC | Multiple Peripheral Control |
| MTM | Multi-terminal Monitor |
| NA | Not Available |
| NB | Narrowband |
| NEXRAD | Next Generation Weather Radar |
| NWS | National Weather Service |
| ODG | Overlay Descriptor Table |
| OP | Operation Code |
| OPTINIT | Optical Disk Initialization |
| OTH | OTHER |
| PIC | Precision Interval Clock |
| PND | Percent Next Digit |
| PRF | Pulse Repetition Frequency |
| PRI | Pulse Repetition Interval |
| PST | Process Segment Table |
| PSW | Program Status Word |
| PUES | Principal User External System |
| PUP | Principal User Processing |
| PUPDP | Principal User Processing Data Processor |
| Ra | Unambiguous Range |
| RCM | Radar Coded Message |

GLOSSARY - (cont)

Acronym or
Non-Standard Term

Definition

| | |
|---------|---|
| RD | Receiver Data |
| RDA | Radar Data Acquisition |
| REQ | Request |
| RFC | River Forecast Center |
| RGBS | Red, Green, Blue, Sync |
| RPG | Radar Product Generation |
| RPGOP | Radar Product Generation Operational Position |
| RPS | Routine Product Set |
| RR | Segment Register |
| RTL | Run Time Library |
| RTS | Request to Send |
| RXD | Received Data |
| SDE | Segment Descriptor Entry |
| segsize | Segment Size |
| SOPS | Swing-Out Power Subsystem |
| SPL | Spooler |
| SQD | Signal Quality Detector |
| SRR | Storm Relative Mean Radial Velocity |
| ST | Start |
| STE | Segment Table Entry |
| SVC | Supervisor Call |
| SWP | Severe Weather Probability |
| sysgen | system generation |
| sysid | system identification |
| taskid | task identification |
| TCOM | Task Common |
| TD | Transmitter Data |
| TVS | Tornado Vortex Signature |
| TXD | Transmitting Data |
| UCP | Unit Control Position |

GLOSSARY - (cont)Acronym or
Non-Standard TermDefinition

UD

Unit Designator

UF

User Function

USR

USER

UTC

Coordinated Universal Time

VAD

Velocity Azimuth Display

VCI

VMEbus to Concurrent I/O Bus Interface

VCP

Volume Coverage Pattern

GLOSSARY - (cont)

Acronym or
Non-Standard Term

Definition

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