

UNISYS

**A Series Operations
for Experienced
Data Processing
Personnel**

Student Guide

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A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTRODUCTION

Audience

New A Series system operators who have substantial knowledge of and experience with computers, such as

- Microcomputer users familiar with system operations and hardware/software configuration
- B 1000, V Series, or other mainframe operators who understand basic computer operations

Objectives

Upon completion of this course, students should be able to

- Monitor system activity
- Bring a data communications network up and down
- Power the system on and off and perform a halt/load
- Monitor and modify system and peripheral status
- Maintain disk space
- Create backup tapes and follow backup procedures
- Initiate, terminate, and monitor jobs and tasks
- Respond to programs that require operator input
- Monitor and control printing
- Maintain system log files

Course Description

This course is designed to provide new operators of A Series systems with basic operational skills. It progresses at a pace and level appropriate to the user with substantial computer experience.

Course Length

Five days

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTRODUCTION

Topics

- A Series hardware/software
- System communication: Automatic Display Mode (ADM), railroad syntax, Menu-Assisted Resource Control (MARC)
- Peripheral control and maintenance
- LIBRARY/MAINTENANCE
- Program initiation and monitoring
- Print System (PRINTS), Remote Print System (REPRINTS)
- System log maintenance
- SYSTEM/DUMPALL
- Data communications initiation, termination, and message commands
- System initialization: auto initialization, halt/load

Course Prerequisites

- A thorough understanding of data processing terminology and concepts (such as CPU, input, output, program, hardware/software, operating system, application, terminal, memory, storage media, data, files, peripherals)
- Substantial computer experience as well as having information about the A Series model and peripherals that will be used by the student

Training Path

There are no courses beyond operations which are intended specifically for operators. However, you may want to consider courses intended for system administrators and programmers, depending on your individual job responsibilities, needs, and interests:

EP 4195 - Introduction to A Series Concepts
EP 6482 - A Series System Administration
EP 4386 - A Series Work Flow Language and Utilities

SECTION 1
SYSTEM HARDWARE AND SOFTWARE

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE AND SOFTWARE

SECTION 1 INTRODUCTION

Section Objectives

You should

- Relate basic computer hardware components to A Series system components
- Understand the function of each A Series subsystem
- Understand peripheral maintenance functions and procedures
- Recognize A Series software terminology

Purpose

You must be able to recognize basic system hardware and software components and their functions in order to perform system operations successfully and communicate with support personnel.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE AND SOFTWARE

SECTION 1
INTRODUCTION

Section Objectives

You should

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- Explain the purpose of the course
- Understand the objectives of the course
- Understand the importance of the course
- Understand the role of the course

Objectives

You must be able to explain the purpose of the course, understand the objectives of the course, understand the importance of the course, and understand the role of the course.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

SECTION 1

UNIT 1

SYSTEM HARDWARE

Unit Objective

After successful completion of this unit, you should be able to

- Identify the functions of A Series hardware components

Purpose

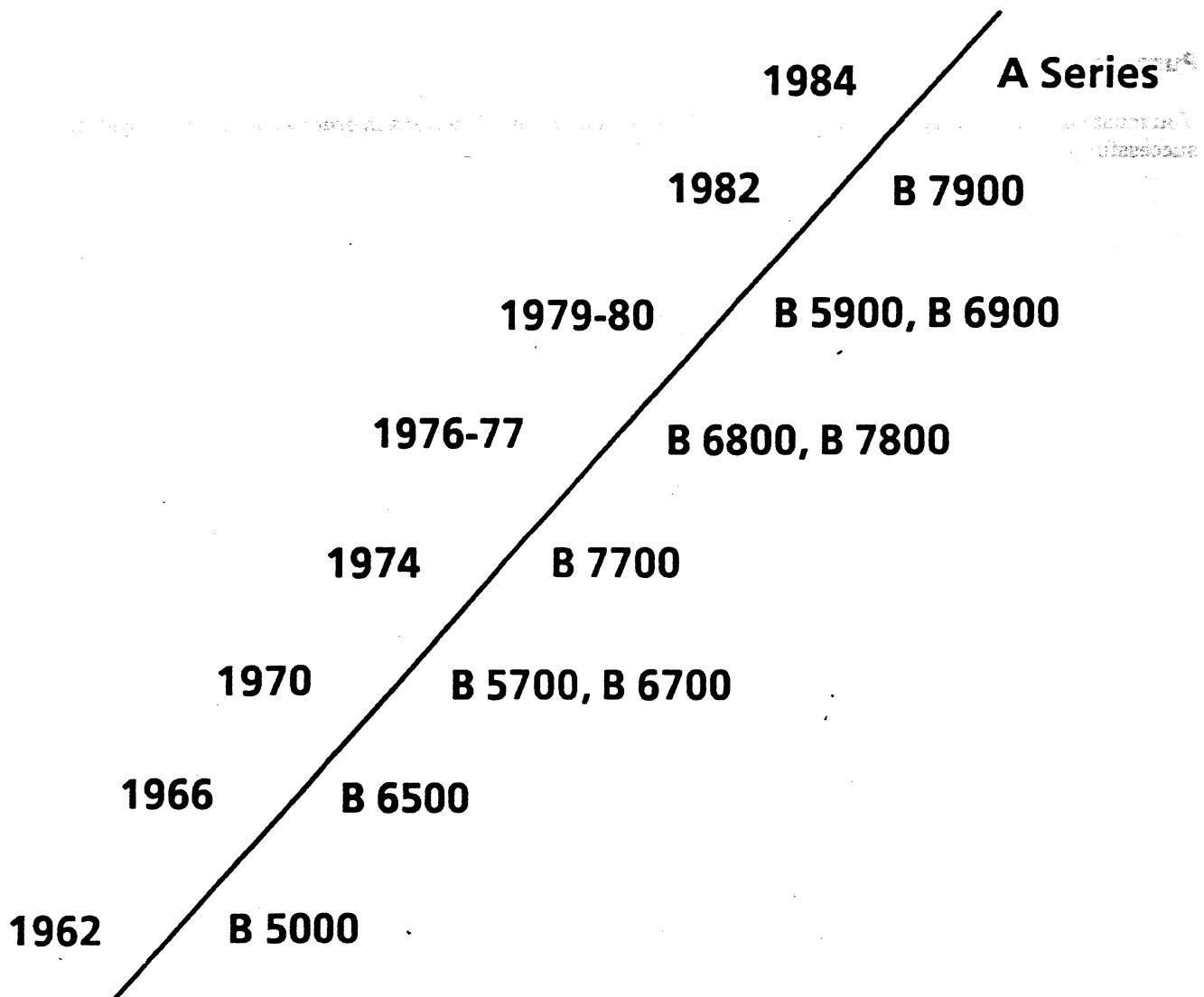
You must be able to recognize basic system components and their functions in order to operate the system successfully.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

Evolution to the A Series

The product line commonly known as large systems began with the release of the B 5000 in 1962. In 1966, B 6500 systems were introduced, and the line continued with the B 6700, B 6800, B 7700, and B 7800 models. The 900 series systems were introduced in 1979 and early 1980 with the B 5900 and B 6900. The B 7900 models, introduced in 1982, were the final B Series models before A Series systems were released in 1984.

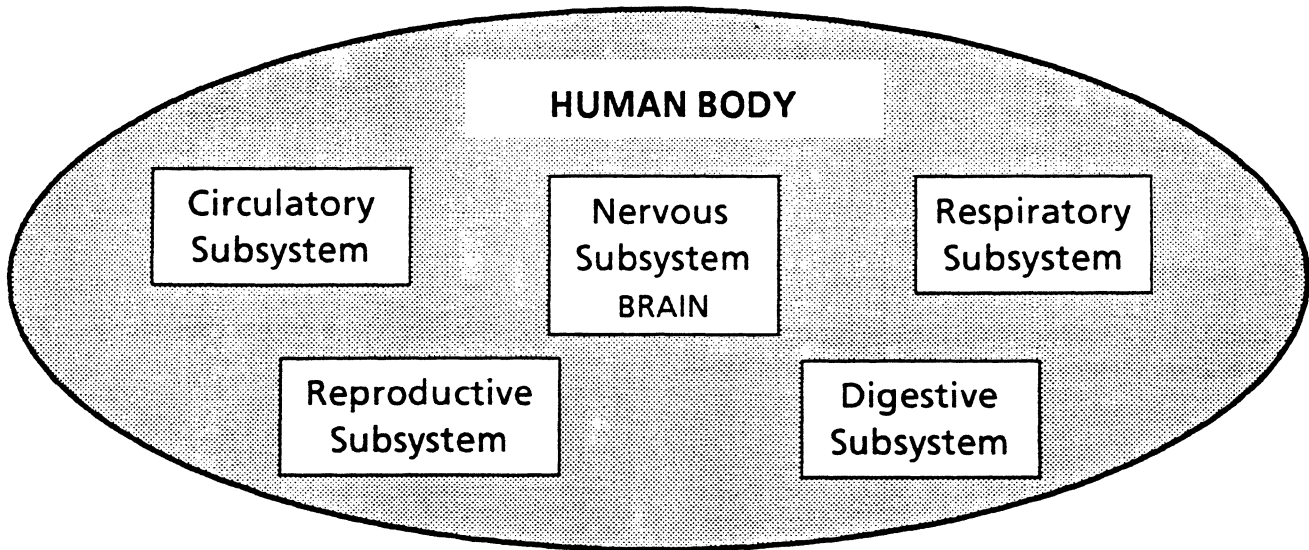
Currently, there are several levels of A Series systems including the Micro A, A 1, A 2, A 3, A 4, A 5, A 6, A 9, A 10, A 12, A 15, and A 17. Each level of A Series systems has several models to choose from, which vary in memory capacity, capability for attaching peripherals, and performance.



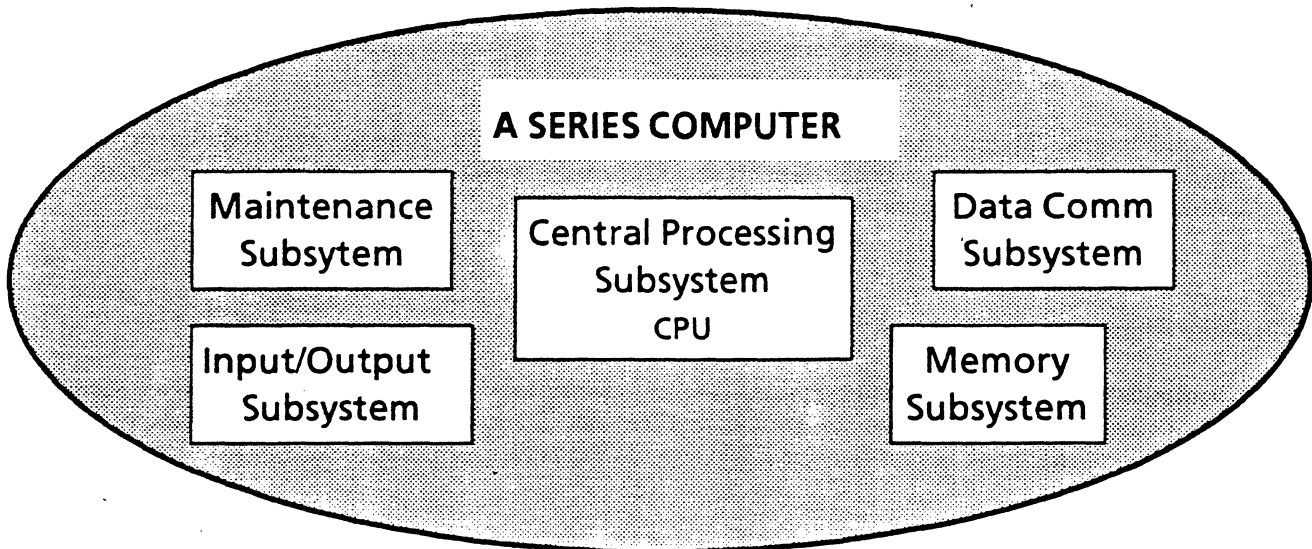
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

A **system** is a group of interrelated, interdependent elements that form a collective entity. A **subsystem** is a system within a system. A subsystem has its own interrelated parts which interact to serve the subsystem, and the subsystem in turn interacts with other subsystems to serve the total system.

For example, the circulatory, digestive, nervous, reproductive, and respiratory subsystems each have their own elements working together to make the subsystem work. These subsystems work together to keep the system (the human body) going. No single subsystem of the body must do all of the work; it is shared by all the subsystems, which are managed and controlled by the brain (a part of the nervous subsystem).



The A Series computer is similar to the human body in that it has many subsystems within a total system. Each subsystem has its own parts working together to perform a particular task, and the subsystems in turn work together to help the entire computer system function. The central processor of the computer acts as the manager and controller, much like the brain in the human body.



A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

A Series System Hardware

The A Series system consists of hardware subsystems which perform separate processing functions.

The subsystems include a processor subsystem, memory subsystem, maintenance subsystem, I/O subsystem, and data communications subsystem.

Central Processing Subsystem

The processing subsystem provides the hardware necessary for manipulating data, maintaining and controlling memory, and executing programs. The processor performs all the arithmetic and logic functions in the system, receives data from input peripherals, identifies the type of input received, processes the data, and outputs the results to an output peripheral.

Memory Subsystem

The memory subsystem stores data and program instructions during processing. The content of memory is always changing, depending on processing requirements.

Maintenance Subsystem

The maintenance subsystem has its own processor called the maintenance processor. This processor is required to initialize the system (bring the system to a state where the central processor can take control). The maintenance processor also allows for maintenance testing to diagnose system problems, either locally or from a remote Unisys support center.

Input/Output Subsystem

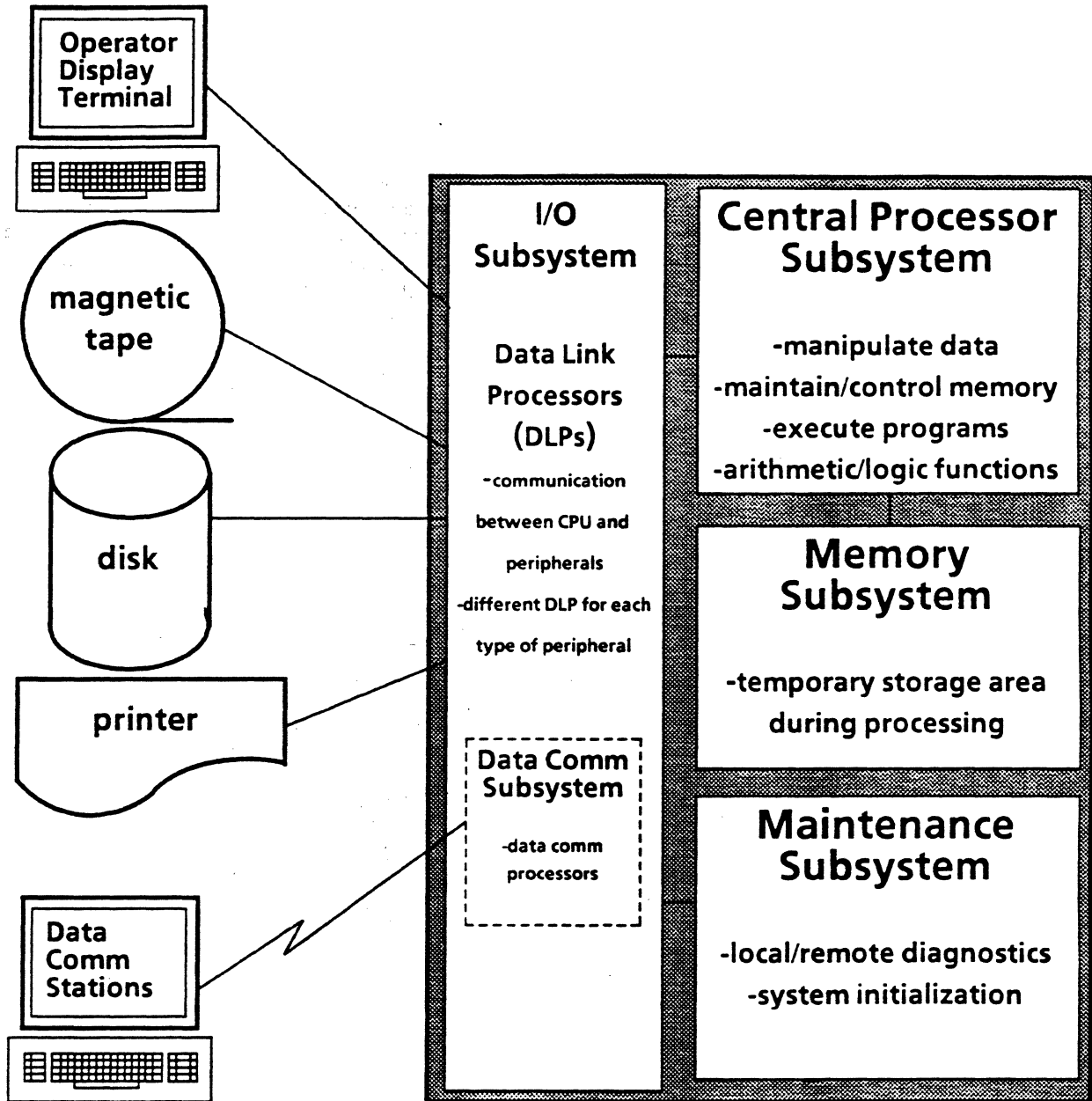
up to 8 DLP's
The I/O subsystem controls the communication between all the peripheral devices and the central processor. Each peripheral (or group of peripherals) is connected to a **Data Link Processor (DLP)** which is designed specifically to control the activity of that type of peripheral.

DLPs reside in I/O bases. Each I/O base can hold a maximum of eight DLPs. The I/O Base Modules are connected to an I/O processor, separate from the central processor, by the Message Level Interface. The I/O processor communicates with the central processor.

Data Communications Subsystem

The data communications (data comm) subsystem is the communications link between remote devices, such as the processors of other systems and system terminals, and the central processor. Data comm subsystem processors take some of the workload from the central processor and are specifically designed to control data comm.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
SYSTEM HARDWARE**



A Series Hardware Subsystems

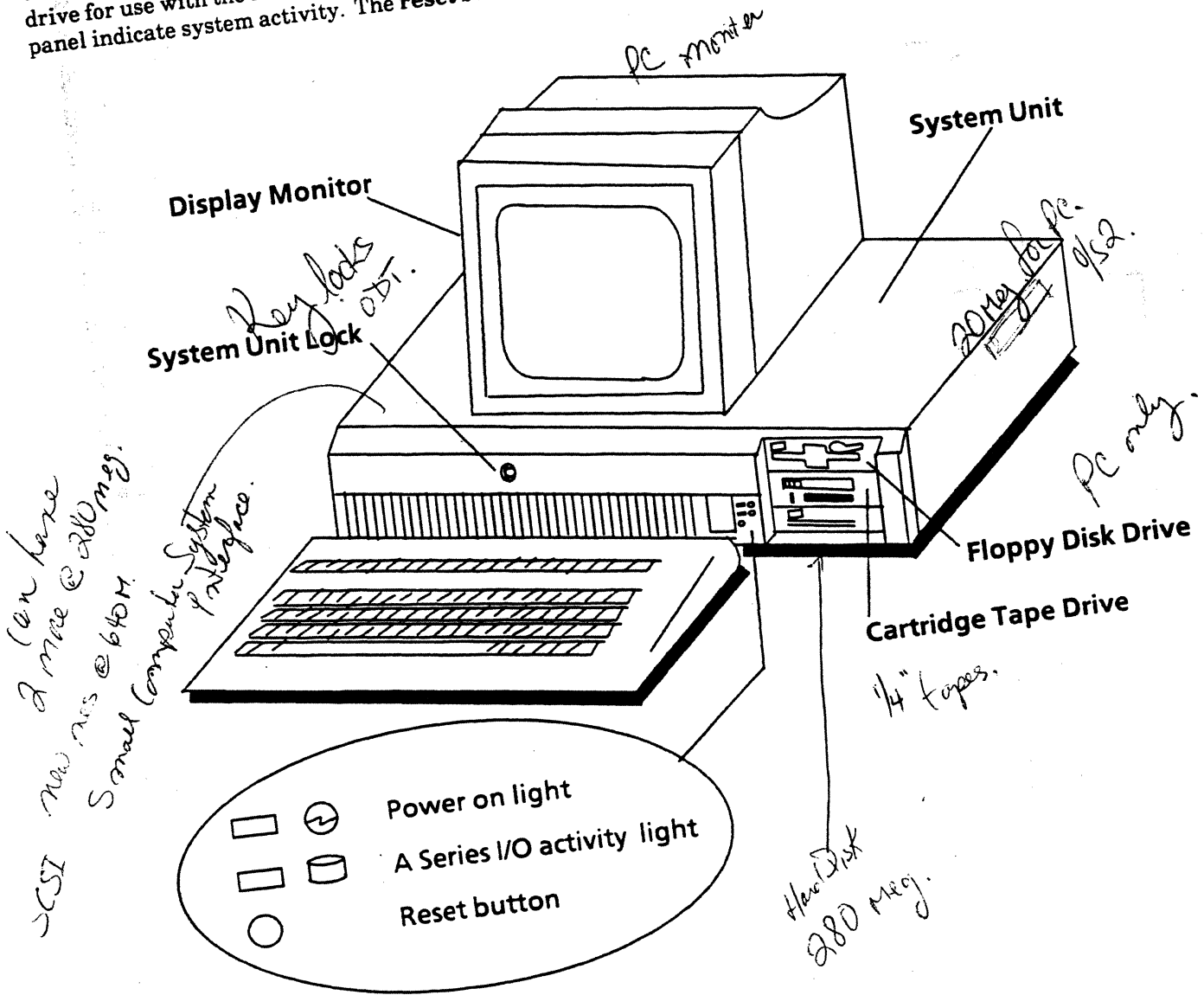
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

Outer Hardware

A Series

The Micro A

The Micro A consists of an A Series system built in a Personal Workstation² (PW2) Series 800 PC. The Micro A includes both PC and A Series hardware. The system display monitor serves as an Operator Display Terminal (ODT) for the A Series environment. The system unit includes a high-capacity hard disk drive and a cartridge tape drive for use with the A Series environment, and a hard disk drive and a floppy disk drive for use with the PC environment. A system unit keylock controls system access. Lights on the front panel indicate system activity. The reset button is used to restart the system without turning off power.

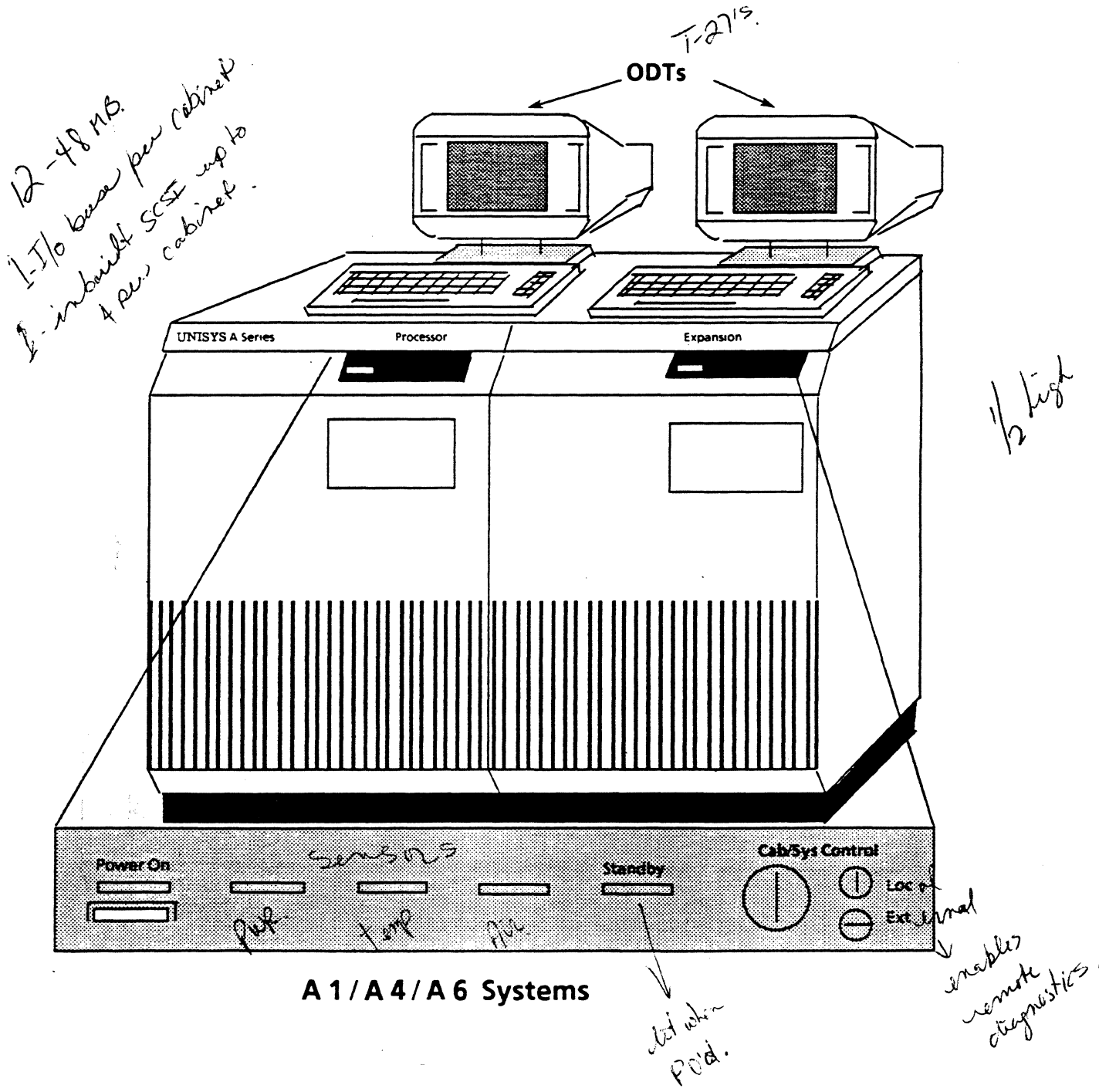


Micro A System

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

The A 1, A 4, and A 6

The A 1, A 4, and A 6 all have the same basic cabinets. A single-system cabinet houses the central processor, memory, maintenance, and I/O subsystems with up to four inbuilt disk drives, depending on the model. There may also be expansion cabinets for additional peripheral or data communications subsystem components. These models may have two Operator Display Terminals (ODTs). The system control panel has a button to power on the system and a Cabinet/System key switch to enable or disable a diagnostics link to a remote support center. A green light above the Power On button will be lit if the system is on and functioning. Power, temperature, air, and voltage indicators light up if there is a problem with these environmental conditions.

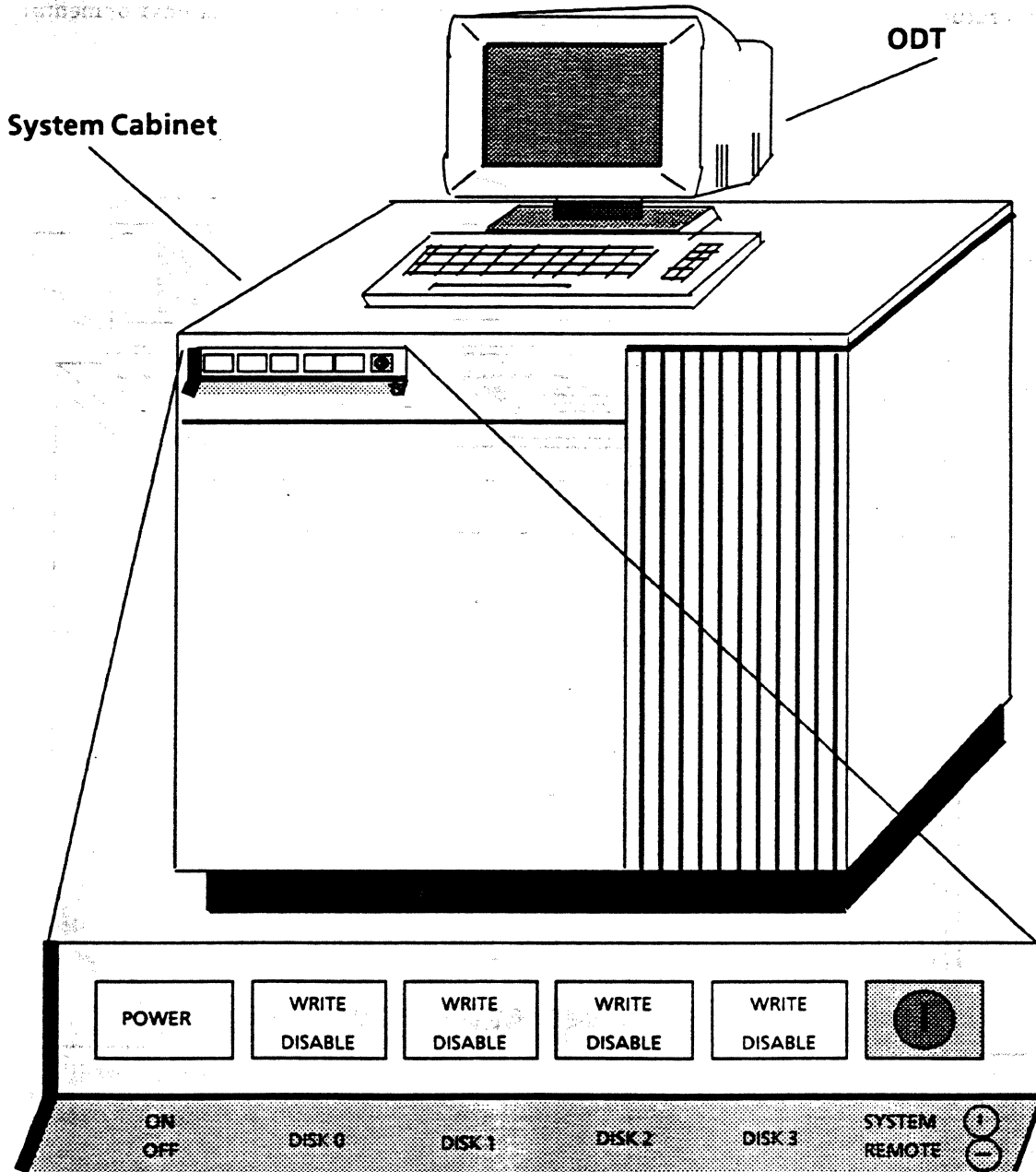


A 1 / A 4 / A 6 Systems

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

The A 2, A 3, and A 5

The A 2, A 3, and A 5 have the same basic system cabinet. They may each also have an expansion cabinet attached, which will make the system longer. These systems have one or more terminals used as Operator Display Terminals (ODTs). The system control panel on the front of the system cabinet has buttons to power the system on and off and operate the internal disk drives. There is also a key position which is used to invoke remote diagnostics capabilities.



A 2, A 3, A 5 Systems

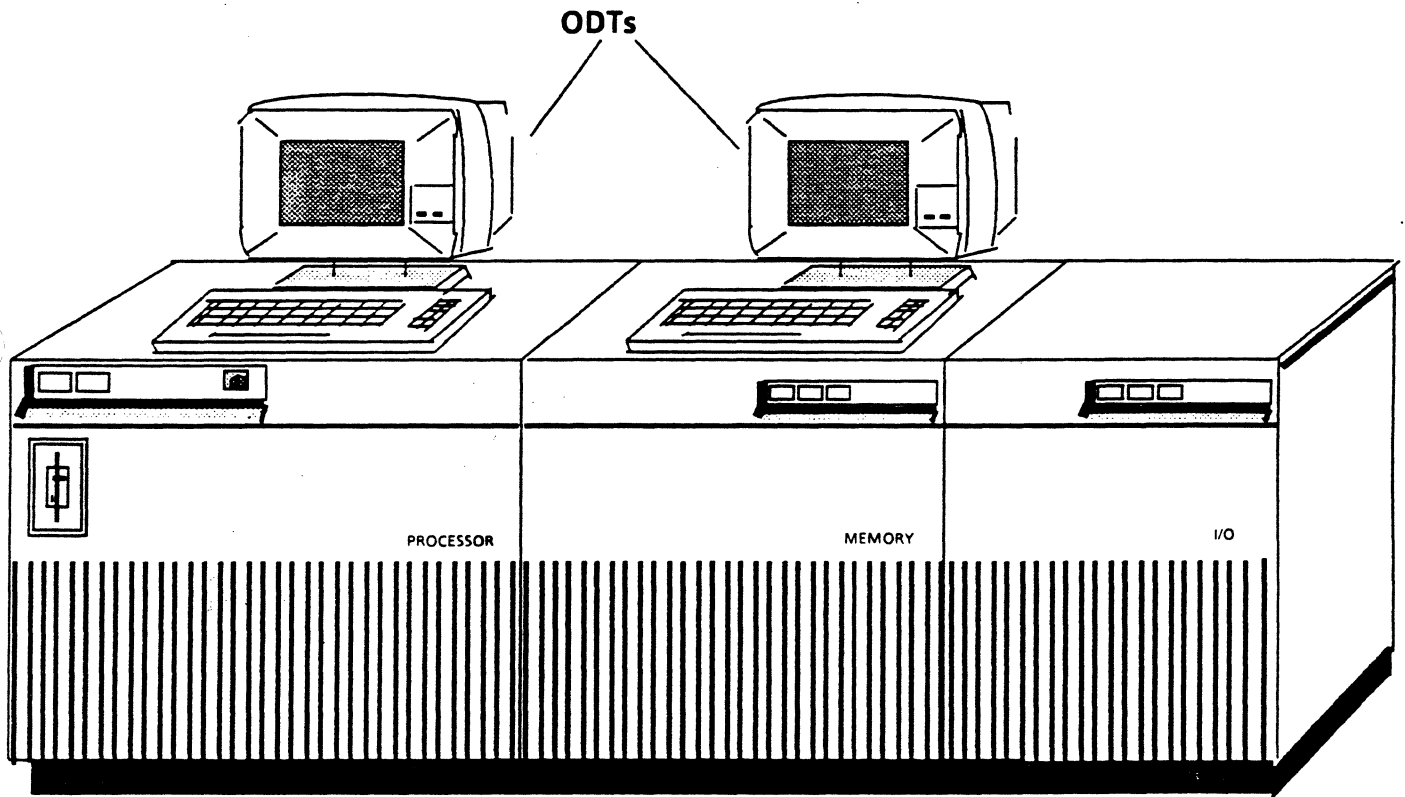
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

The A 9 and A 10

The A 9 and A 10 have the same basic cabinets. There is typically one **processor cabinet** and one **memory cabinet**. (Although the A 10 can be a dual processor system.) There are also one or more **Input/Output (I/O) cabinets**, depending on the system model and its capabilities. Two terminals are part of the basic system. They serve as ODTs and may also be used to communicate with the maintenance subsystem.

The system control panels on all the cabinets have buttons to power the system on and off, and indicator lights which warn of particular system problems. There is a key position to enable remote diagnostics.

The floppy disk drive is part of the maintenance subsystem and is used to load software.



A 9 / A 10 Systems

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

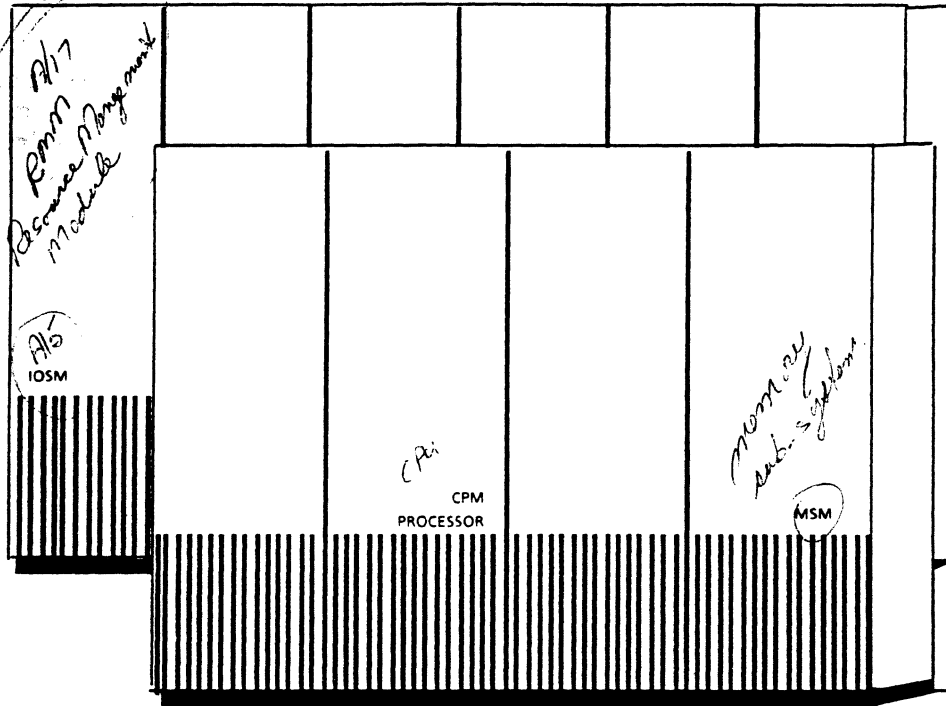
The A 12, A 15, and A 17

A 12, A 15, and A 17 hardware components look somewhat different than other models.

The A 15 and A 17 processor, memory, and input/output subsystems are in tall cabinets called the **Central Processor Module (CPM)** cabinet, the **Memory Subsystem Module (MSM)** cabinet, and the **Input/Output Subsystem Module (IOSM)** cabinet. The A 17 also has a **Resource Management Module**. There is a separate smaller cabinet, called the **System Maintenance Station (SMS)**, for the maintenance subsystem which has its own dedicated terminal. The terminals which serve as the system ODTs usually sit on a separate table. There is also a cabinet that provides a central location for power control called the **System Console Cabinet (SCC)**. There is no external system control panel.

The A 12 stores the processor and memory systems in tall cabinets referred to as the **Central Processor Module (CPM)** cabinet and the **Memory Subsystem Module (MSM)** cabinet. It also has the **SMS** component which has its own terminal. However, if this terminal is not needed for maintenance functions, it may be used as an additional system ODT. The A 12 does not have the **IOSM**, but uses **independent I/O** cabinets. They look like the I/O cabinet on the A 9 system. The basic system has two I/O cabinets, but there may be more. The system ODT sits on top of an I/O cabinet or on a separate table. There is no external system control panel on the A 12.

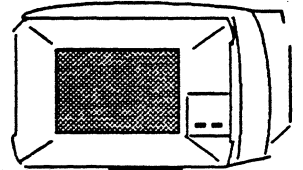
**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
SYSTEM HARDWARE**



6' tall

Maintenance Terminal

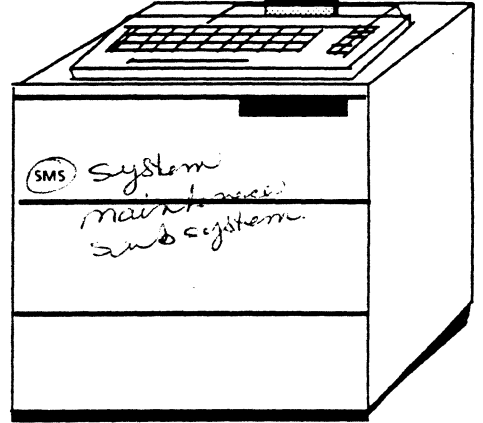
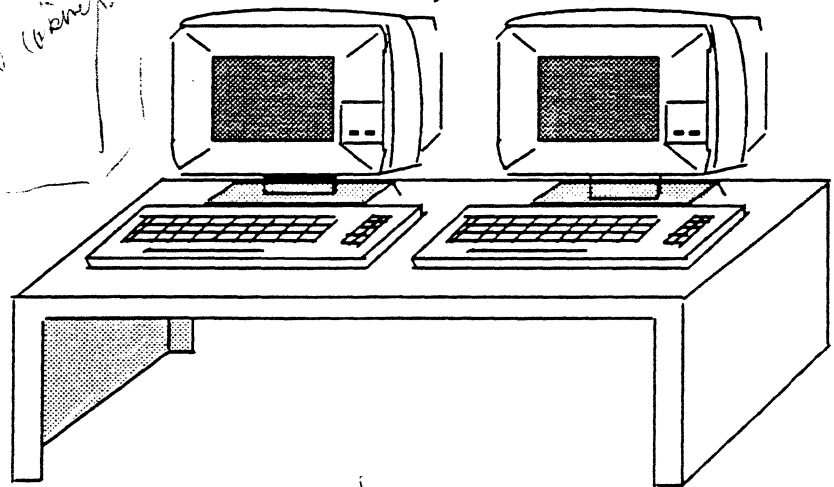
ET 2000/T27



*Independent
to console*

ET 2000 (P/C)

ODTs



Bring memory tray

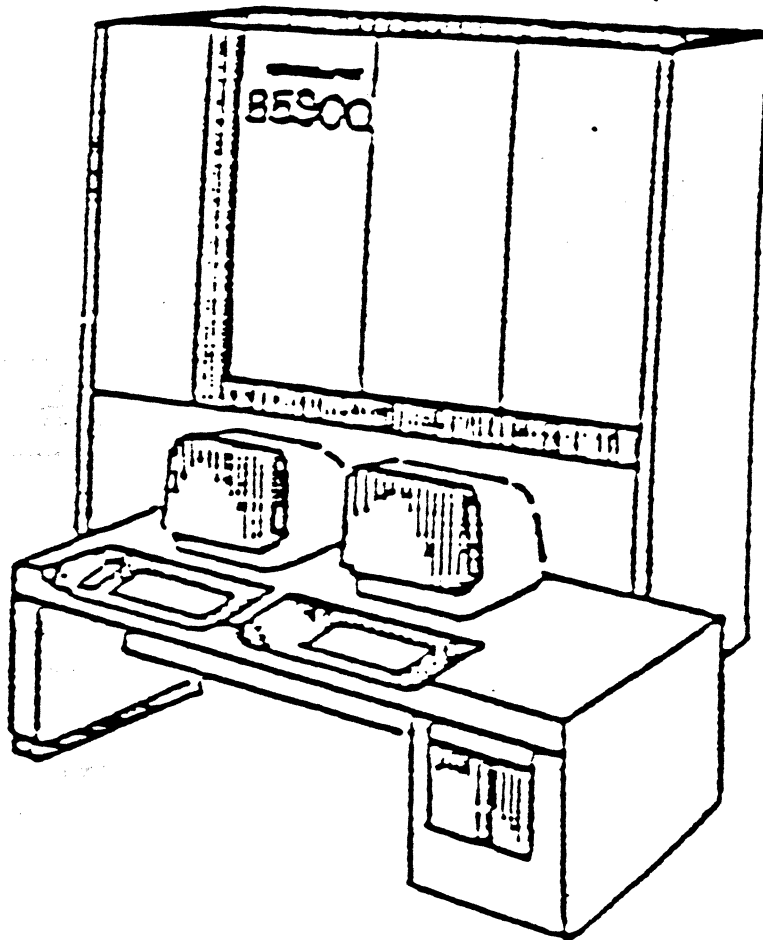
A 12/A 15/A 17 Systems

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

B X900 Series

The B 5900

The B 5900 houses the central processor, memory subsystem, I/O subsystem, and maintenance processor all in one cabinet called the **Central Processing Cabinet**. One or two ODTs sit on top of the cabinet. There may be an expansion cabinet attached which provides for more I/O devices on the system. **Two floppy disk drives** are part of the maintenance subsystem and serve in system diagnostic functions. The system control panel has buttons to power the system on and off and several indicator lights which help the operator monitor system activity.

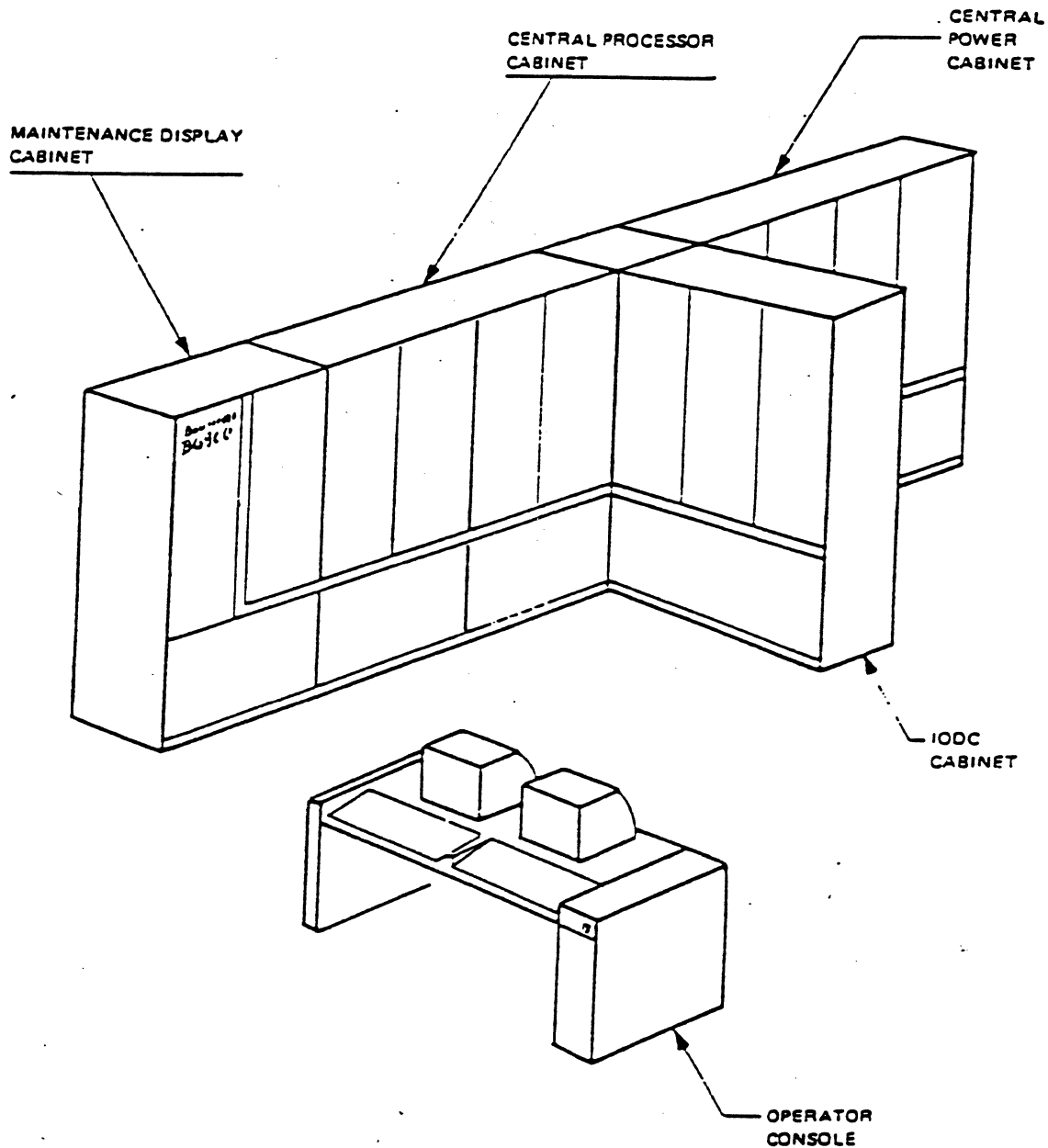


B 5920 System

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

The B 6900

The B 6900 has tall cabinets which house the central system power, central processor, maintenance subsystem, and I/O subsystem. The two system terminals sit on a separate table often called the **Operator Console**. They serve as ODTs and communicate with the maintenance subsystem. A **floppy disk drive** is used to load firmware into the maintenance processor. (Firmware is object code which controls the operation of a hardware device, in this case, the maintenance processor.) The system control panel includes buttons to power the system on and off, to halt the system, and to boot the system with varying degrees of manual input. There are also indicator lights to monitor system activity.



B 6930 System

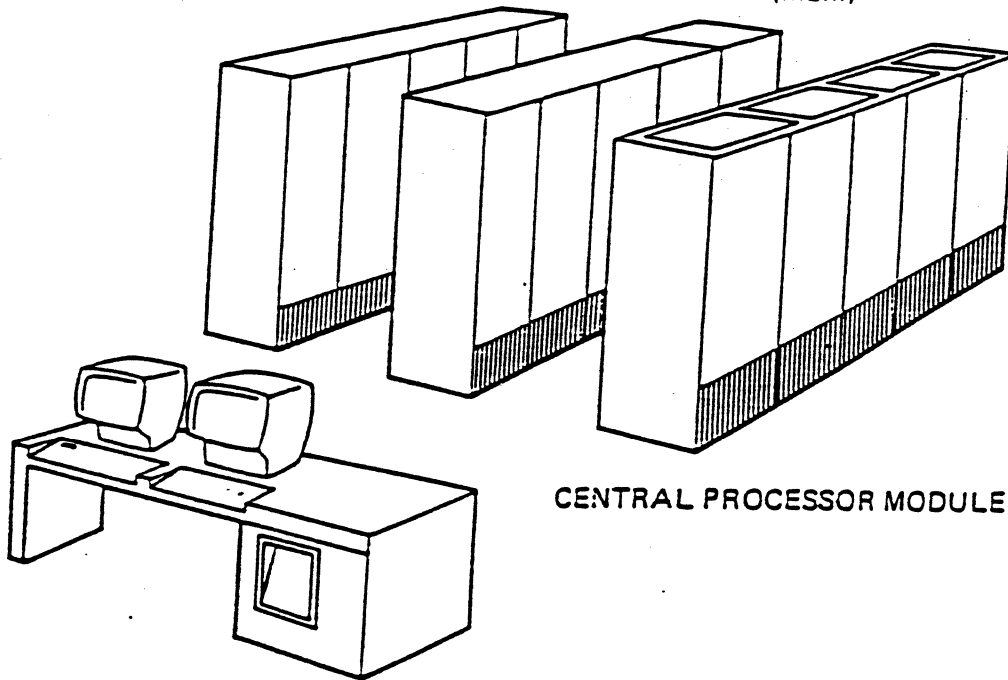
**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
SYSTEM HARDWARE**

The B 7900

The B 7900 is the largest of the B X900 Series systems and houses the various subsystems in several tall cabinets as shown below. The Auxiliary Processor is also used as the maintenance processor which interfaces with much of the maintenance subsystem housed in the System Console Cabinet (SCC). The floppy disk drives on the SCC serve the maintenance subsystem. Terminals on the SCC function as maintenance subsystem terminals and as the ODTs.

INPUT/OUTPUT SUBSYSTEM MODULE (IOSM)
houses the Host Data Unit (HDU)
and the Auxiliary Processor (AP)

MEMORY SUBSYSTEM MODULE (MSM)



SYSTEM CONSOLE

CENTRAL PROCESSOR MODULE (CPM)

B 7900 System

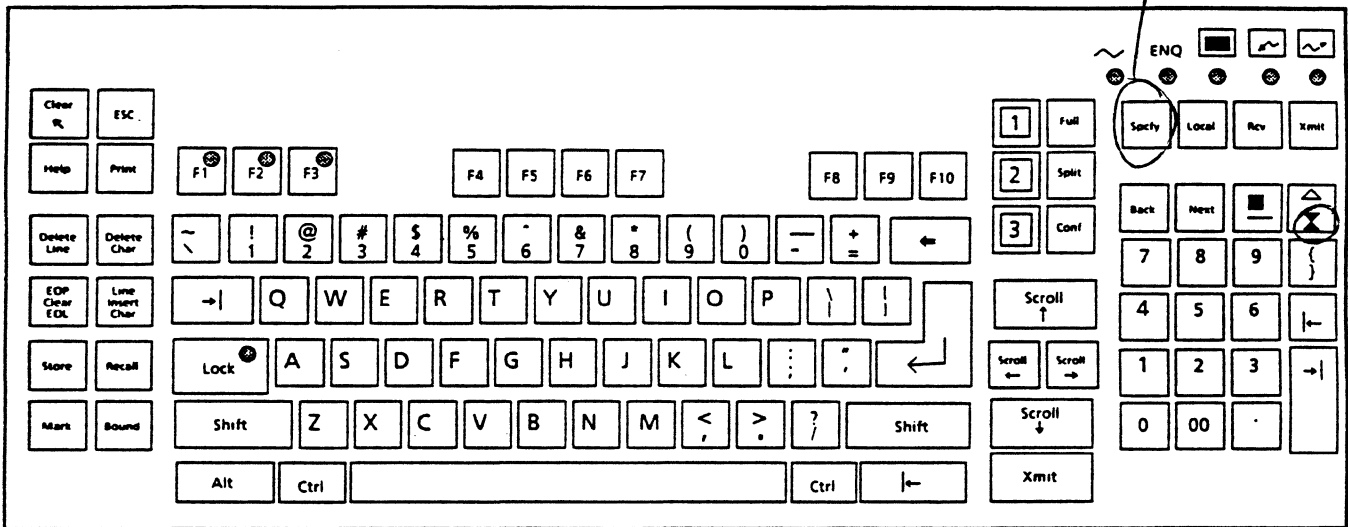
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM HARDWARE

Operator Display / Maintenance Terminals

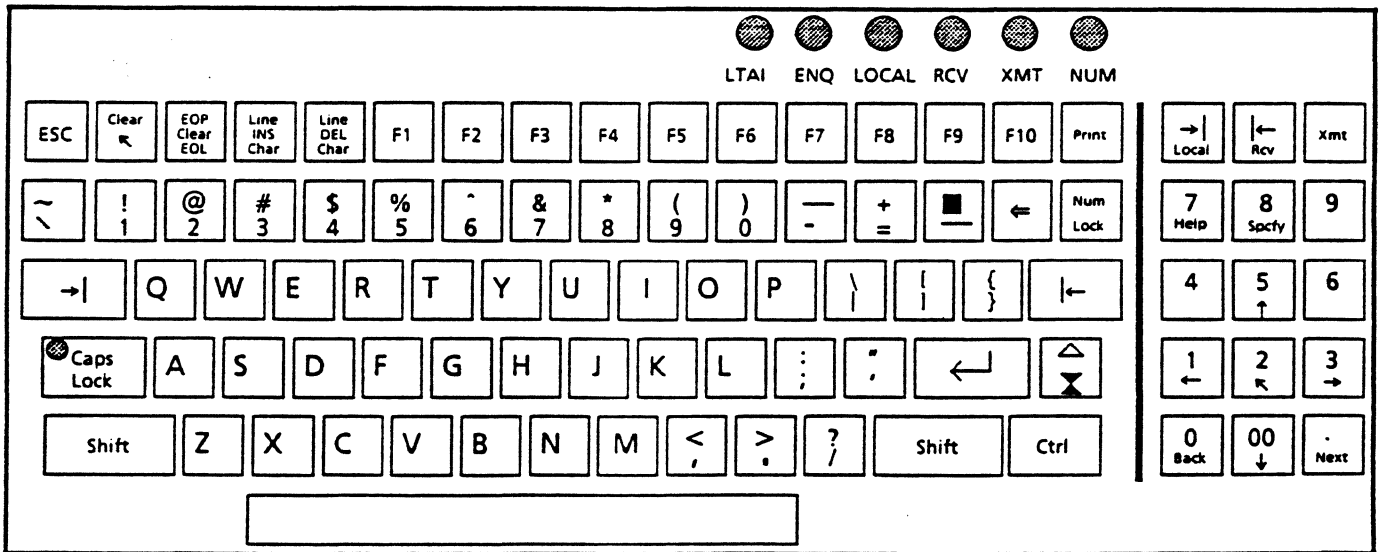
The Operator Display Terminal (ODT) is the operator's means of communicating with the system. Commands and messages are typed on the ODT keyboard and displayed on the screen. The operator communicates with the maintenance subsystem with the ODT or with a separate terminal for use only with the maintenance subsystem. Some systems have more than one ODT.

Various types of terminals may be used as ODTs. A Series systems primarily use T 27, ET 1100, and ET 2000 terminals. ET 2000s are used to communicate with the maintenance subsystem.

Examples of ODT keyboards are shown below.



T 27 Keyboard



ET 1100 Keyboard

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

SECTION 1

UNIT 2

PERIPHERAL HARDWARE

Unit Objectives

After successful completion of this unit, you should be able to

- Identify characteristics or functions of peripheral subsystem components (including disk, tape, and data communications)
- Match peripheral subsystem components to their proper functions
- Identify disk/tape storage formats
- Load tapes and printer forms

Purpose

To monitor the operating environment and take care of system problems, you must recognize basic system peripheral components, their functions, and related terminology.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Peripherals are input/output devices that support the main processing system. Terminals, disk drives, tape drives, printers, and plotters are some types of peripherals that might be part of a computer system.

Terminals

The same terminals used as ODTs may be used as user, or data comm, stations on A Series systems. They include:

T 27
ET 1100
ET 2000
MT 1500
BTOS workstation with terminal emulation
PC workstation with terminal emulation

User stations do not communicate directly with the system as the ODT does, but are connected and communicate through the data comm network. They are used by programmers, data entry personnel, and others using applications running on the system. System operations are not typically done from a data comm station, but most of them can be.

The keys on data comm terminals have primarily the same functions as on the ODTs.

Workstations and PCs may be used as emulators of a data comm terminal if they have the necessary software loaded. They will have different keys, but the same functions.

Printers

There are many types and models of printers which may be configured on an A Series or B X900 Series system. Among the models from Unisys are the following:

B 9246-6	650 lines per minute (lpm) band printer
B 9246-7	650 lpm band printer
B 9246-12	1250 lpm band printer
B 9246-21	2000 lpm train printer

The following models can be set up as remote printers connected via the data comm network:

AP 9208 laser printer
AP 9214 PostScript laser printer
AP 9215-1 laser printer

Parallel

The Micro A uses PC style printers.

Printer Maintenance

Operators usually have some responsibilities for maintaining system printers. This includes loading forms, changing ribbons or loading print cartridges, and cleaning around the printer. There should be an operations guide with each type of printer that explains and illustrates these procedures. Refer to this guide for appropriate instructions on procedures for the maintenance of the printer(s) at your site.

*Data Comm
Account
1st - 17th May*

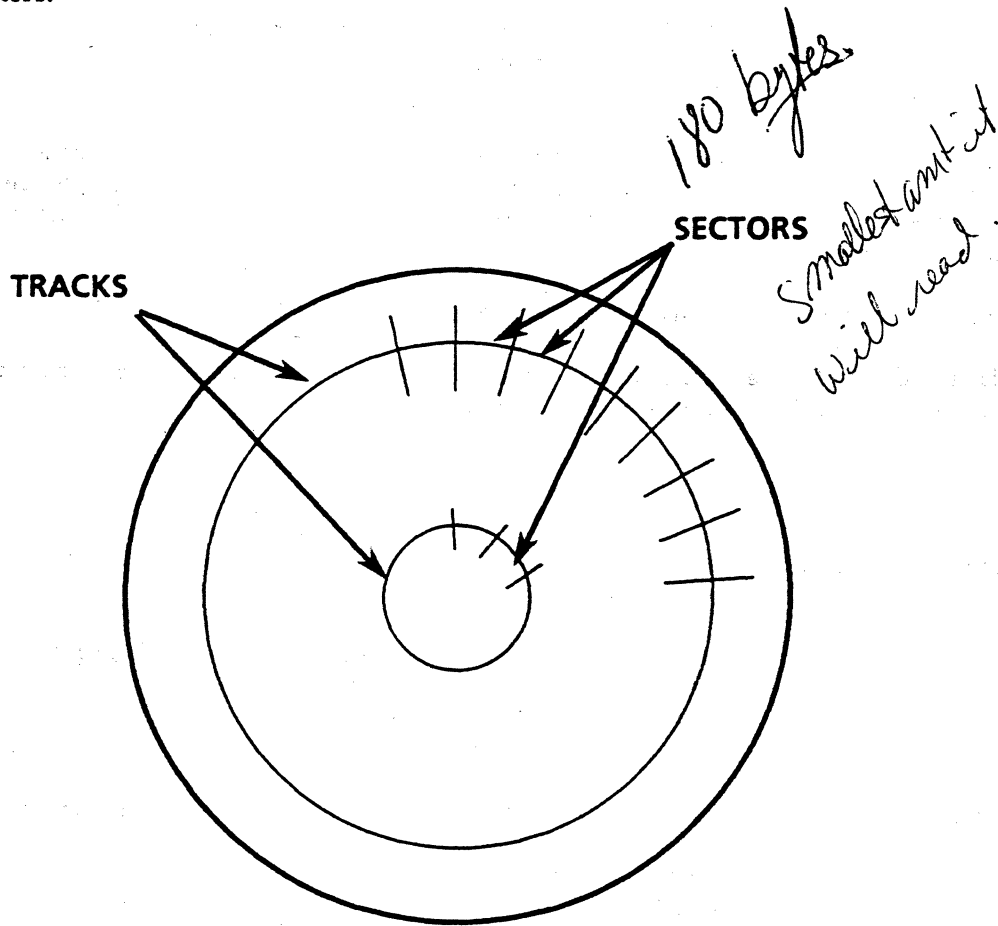
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Disk Subsystems

One of the most commonly used peripherals on any computer system is magnetic disk. It is a random, or direct, access peripheral which allows for fast access to data and code needed for processing by the system.

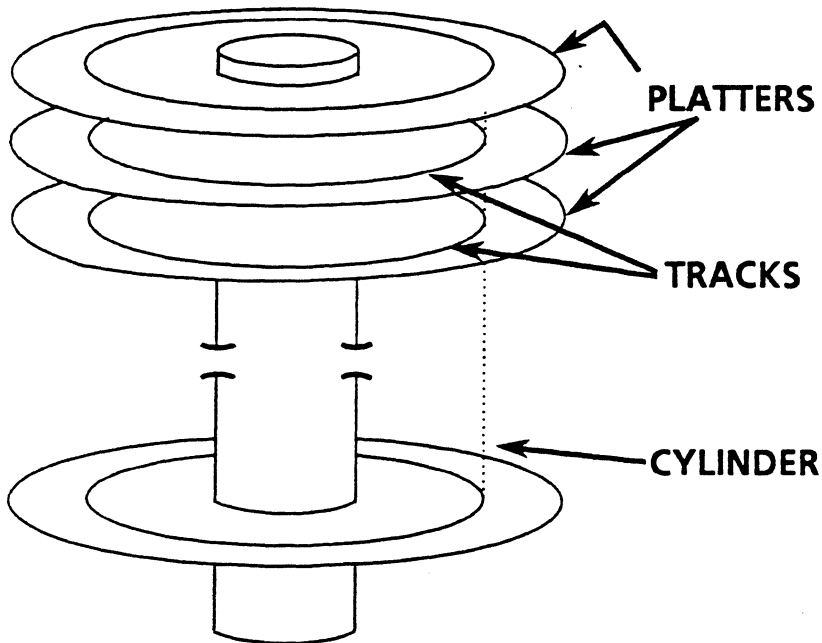
Disk Subsystem Components

Disks are either flexible (floppy) or hard platters. Each platter is formatted with thousands of concentric circles called tracks. These tracks are divided into sectors. An A Series sector is 30 words (180 bytes). Data and code are stored in disk sectors.



DISK PLATTER SURFACE

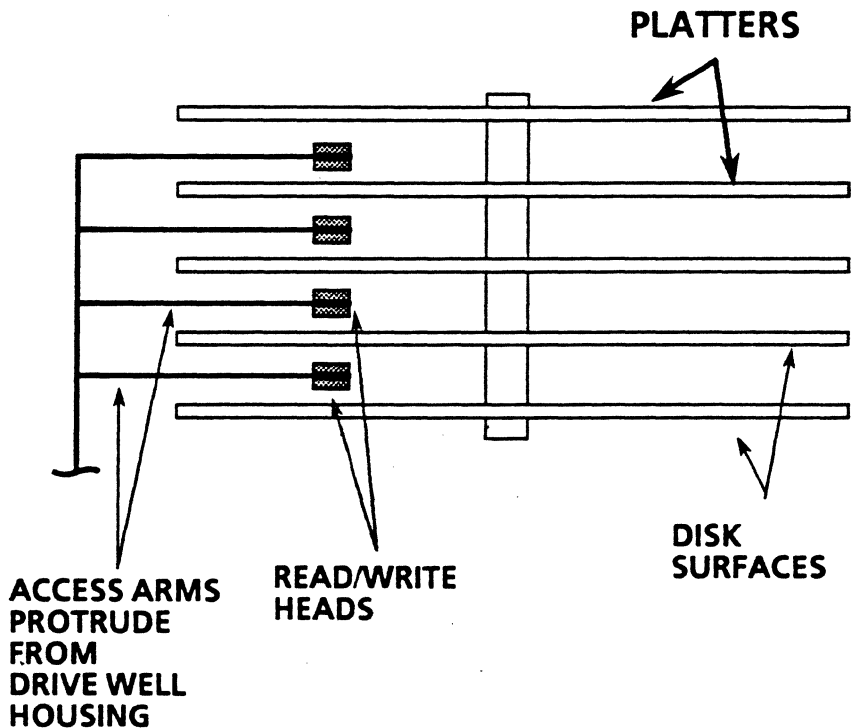
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE



Hard disks are usually referred to as **disks, packs, or disk packs**. They may also be called **spindles**. Each pack is made up of a number of disk platters. The number of platters in a disk pack depends on the type of disk drive.

A cylinder is comprised of the tracks which have the same radius on all the platters of a pack.

The surface of each platter is similar to a phonograph record. Information is written to or read from the disk by magnetic heads that appear to float over the surface of the platter. Information is recorded (written) onto the magnetized surface of the disk platter as it rotates in the disk drive. In order for anything to be written to disk, the disk must be write-enabled. Information can also be retrieved (read) from the disk.



A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Removable Hard Disk Drives

Some drives have disk packs that are **removable** while others have **fixed** (nonremovable) disks. Removable packs are often the type of pack used for backup purposes. Once data has been duplicated onto a backup pack, it can be removed from the drive for storage, creating more free online disk storage space.

The following are Unisys removable disk drives:

<u>STYLE</u>	<u>DESCRIPTION</u>	<u>FORMATTED CAPACITY</u>
B 9484-5	206 2 spindles	130 MB
B 9484-12	677 1 spindle	242/252 MB

Fixed Hard Disk Drives

Fixed disks generally have more storage capacity than removable ones because they have more platter surfaces.

The 3680 model uses a thin film technology that allows for greater density and therefore more data storage per square inch. The MD 4 and MD 8 are called multidisks. The MD 8 offers fast data transfer and access rates which improve overall system performance. The SMD inbuilt disks are built into the central system cabinet, eliminating the need for a separate disk cabinet.

The following are some of the Unisys fixed disk drive models:

<u>STYLE</u>	<u>DESCRIPTION</u>	<u>FORMATTED CAPACITY</u>
B 9494-4	207 2 spindles	402 MB
B 9494-10	659 2 spindles	962/1084 MB
B 9494-12	3680 1 spindle	868 MB
MD 4	2-4 mods	250-500 MB
MD 8	2-4 mods	500-1000 MB
SMD	Inbuilt	125 MB
*SCSI	Inbuilt	280 MB
M 9710 (SCSI)	12-20 spindles	674 MB each spindle
9399-H/B 9494-24 (A 17 only)	2 with actuators	5.0 GB (unformatted)

Misc-A

There are restrictions on which disk drive models can be used with each A Series system.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Disk Controller

Disk drives require a disk controller. Controllers manage disk drive activities and communication between the DLP and the drive units, and buffer information to and from the drives. The disk controller may be either a separate unit or in the drive itself, or the controller capability may be part of the DLP required for the disk.

Disk Exchange Cabinet

The disk subsystem may have an optional exchange cabinet which provides multiple paths of communication between disk controllers and disk drives. The number of paths determines the number of I/O operations that can occur simultaneously through the controller.

Floppy Disks

On some A Series and B X900 Series systems, floppy disks are used to load system initialization programs and perform maintenance tasks. Floppy disks are not used to back up files. Most systems that have floppy drives require 5¼-inch floppy disks.

Disk Pack Maintenance

Maintenance of physical disk packs is only necessary if there are removable packs which can be loaded and unloaded. Consult your disk drive manuals for instructions.



There is more detailed information on disk subsystems in the **Disk Subsystem Administration and Operations Guide**.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Tape Subsystems

Magnetic tape is used for archival storage, data transport, and file backup. System software files for initializing the system are generally released on tape as well. This media stores and accesses data sequentially and is generally thought of as offline storage.

As with disk, data may be written to or read from tape. In order to write to a tape, it must be write-enabled. Write-enable a tape by putting a write ring in a groove in the back of the tape reel.

Types of Tape Drives and Components

As with the other types of peripherals, there are many different types of tape drives which can be used with A Series and B X900 Series systems. Two commonly used Unisys tape systems are the B 9495 and BT 3200 models. They both support PE and GCR tape recording formats and use open reels of tape.

Phase Encoded (PE) - 1600 bytes per inch (bpi)

Group Coded Recording (GCR) - 6250 bpi

GCR drives can also write/read PE tapes. PE drives can write/read NRZ (Non-Return-to-Zero) tapes if they have the required options.

Tape Controllers

Tape drives also require a controller unit, either as a separate cabinet or in the DLP. The controller manages the communication of information between the DLP and the tape drives. This includes directing tape movement, selecting tape units, monitoring error status conditions, and serving as a buffer for data transfers.

Tape Streamers

The tape streamer is another type of tape subsystem. Unisys offers a special dual-purpose DLP that supports up to four B 9498 tape streamers and one buffered printer simultaneously. The B 9498 is a tabletop model.

The 5073/0899 tape streamer is a high-speed unit which uses tape cartridges. With an additional attachment, the drive will automatically load up to six tape cartridges sequentially from a stacker. It uses a GCR recording format, but with 37,871 bpi density.

*DLP - Bits per Inch
1600 - MPE Max Phase Encoded
6250 - GCR Group Coded
2,500 - QIC tapes*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Tape Maintenance

The following procedures are performed as necessary by the operator. The steps outlined are for the BT 3200 model, but would be similar for other models.

Loading a Tape on the Tape Drive

To load an open-reel tape on the tape drive, perform the following sequence of steps:

1. Press UNLOAD to open the window.
2. Mount the tape on the hub. (Be sure that a write-enable ring is installed on the tape if necessary.)
3. Rotate the reel so the beginning of the tape is between the two white marks on the threading chute.
4. Press LOAD/REWIND. The tape will automatically load and advance to the beginning-of-tape (BOT) marker, a silver reflecting strip used to mark the beginning and end of usable tape.
5. Press ONLINE.

If the tape fails to load because of a fold or tear in the tape, use a tape crimper to cut off the end of the tape or install a new tape leader.

If there is a problem in loading the tape, press RESET and rethread the tape. Then press LOAD/REWIND and ONLINE again.

Unloading the Tape

To unload tapes, perform the following steps:

1. Press RESET.
2. Press UNLOAD. The tape should rewind and unload from the tape path.
3. Remove the tape from the hub and place the protective collar around the tape.
4. Press RESET to close the tape window.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Rewinding the Tape

To rewind the tape to the BOT marker but not remove the tape from the tape path, press **RESET** and **REWIND**.

To prevent problems, the tape drives should be cleaned on a regular basis, such as each day or each shift. Other procedures, including installing BOT markers, are performed as necessary.

Cleaning the Tape Drive

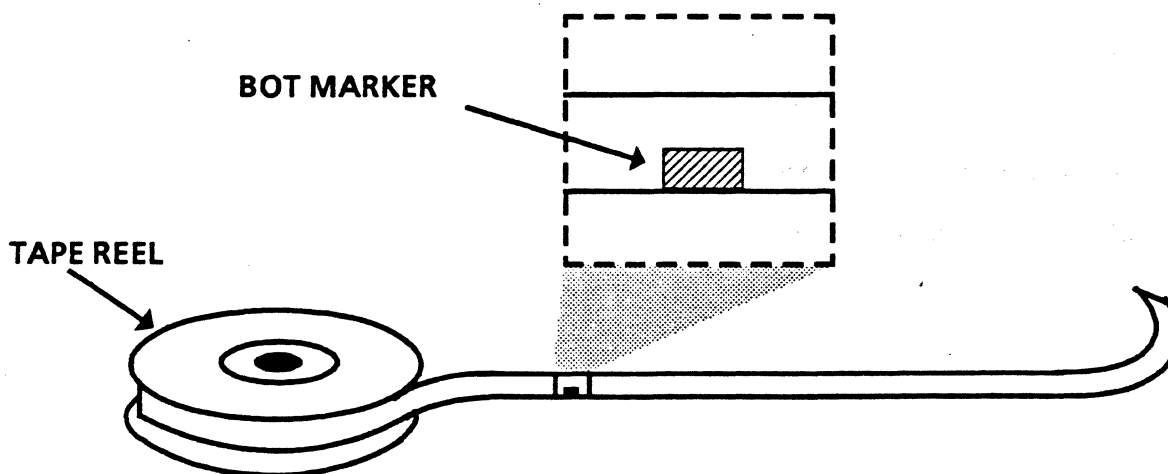
Using a lint-free cloth, cotton swabs, and tape path cleaner, clean the following tape drive components:

- Read/write head (cotton swab and tape path cleaner).
- Tape path, tape guide, and vacuum columns (lint-free cloth and tape path cleaner). Ensure that the light rails have cooled; otherwise, rapid evaporation of the tape path cleaner could crack them.
- Supply hub (lint-free cloth and tape path cleaner).

Installing a Beginning-of-Tape Marker

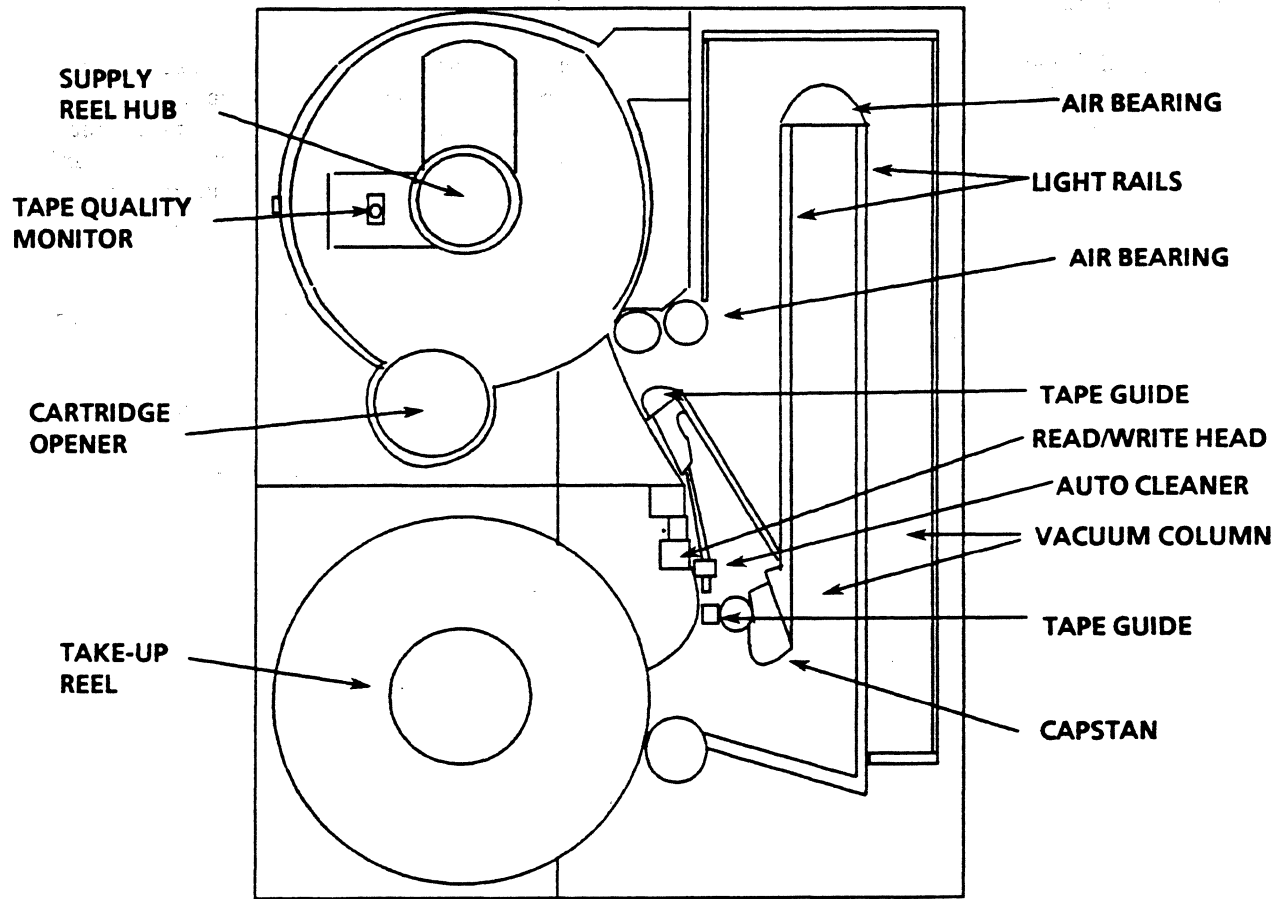
New tapes have a BOT marker and an end-of-tape (EOT) marker already installed. However, if the tape drive fails to detect the BOT marker, install a new one:

1. Hold the tape out in front of you.
2. Unroll 14 to 16 feet of tape.
3. Attach the reflecting strip lengthwise on the left half of the shiny side of the tape.



Installing a BOT Marker

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PERIPHERAL HARDWARE**



Tape Path on a Tape Drive

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Maintaining a Tape Library

Many hazards may affect the reliability of tapes. When maintaining a tape library or a collection of tapes, keep in mind the following rules for storage and backup.

- Magnets, liquids, food, moisture, dirt or dust, heat, skin oil, and improper handling may cause parity errors or unreliability of the data stored on tapes. Parity is a method of checking to ensure that the data is not corrupted. A parity error indicates that during the most recent transfer of data, something caused the data to become unreliable. When the system encounters a parity error, it keeps attempting to transfer the original data until it is transferred correctly. After a certain number of unsuccessful attempts, the system will stop trying to read (input to the system) or write (output from the system) that data. Be sure to avoid contaminating the tapes with any of the elements listed above.
- Store tapes vertically in approved containers away from tape drives. The heat of the drives, vibration of the motors, and weight of other tapes can damage the tapes or cause parity errors.
- Backup copies should be stored both onsite and offsite for use in case the original data is destroyed.
- File backup should be performed on a regularly scheduled basis. A procedure should be established for labeling, storing, and reusing tapes.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

Data Communications Subsystem

Data communications (data comm) is the transmission, reception, and validation of data between one location and another. This transmission may involve only one computer system or multiple systems communicating with one another. The data comm subsystem is the communications link between remote devices, such as terminals, and the central processor.

Data comm subsystem functions are distributed among a series of functional processors that remove the burden of managing data comm functions from the central processor. Various types of data comm processors are available on A Series systems. Knowledge of which data comm components are on the system will help operators communicate more effectively with support personnel.

Network Support Processors (NSP), Line Support Processors (LSP), Quad Line Adaptors (QLA)

These processors work together to manage system communications according to user-written program instructions which accommodate the site environment.

Data Communications Data Link Processors (DCDLP)

This processor manages data comm according to instructions that come with system software and therefore is less flexible than the NSP/LSP.

CP 2000

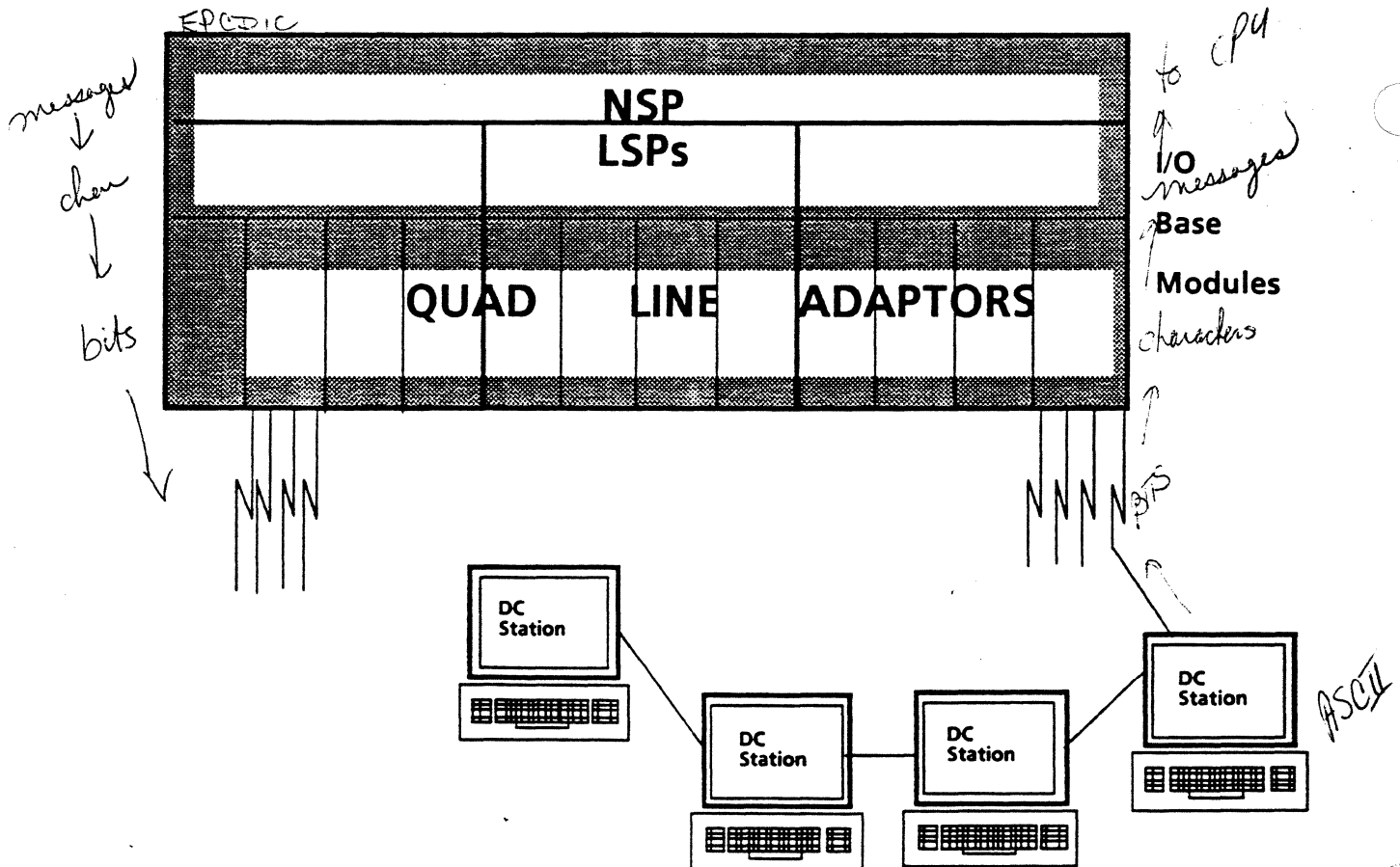
This processor can manage communication between systems which are not alike but need to communicate with one another, between a local system and systems at remote sites, and within a local system.

*Use
NDL II
to define stns, lines*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

NSP/LSP and QLAs

- NSP:** The NSP is responsible for subsystem control, link control, and line discipline control. It usually requires a dedicated I/O Base Module. (It is the only device accessing the central processor from that I/O base.) It is important that data comm I/O not be interrupted or held up. The NSP is flexible because it has its own memory and is programmed, using the Network Definition Language II (NDL II), to recognize system data comm components and facilitate the proper data comm environment for the site.
- LSP:** The LSP is a processor that controls the data comm lines attached to the QLA. It is the communications link between the QLAs and the NSP. It is responsible for controlling each line that transmits and receives data, assembling data characters into messages, and delivering the messages to and from the NSP. It also has its own memory and is programmed using the NDL II.
- QLA:** The QLA is a set of four line adaptors which are components of the LSP. A line adaptor controls the line attached to it. It is responsible for assembling data bits into characters, and translating them from one type of character format to another if required.

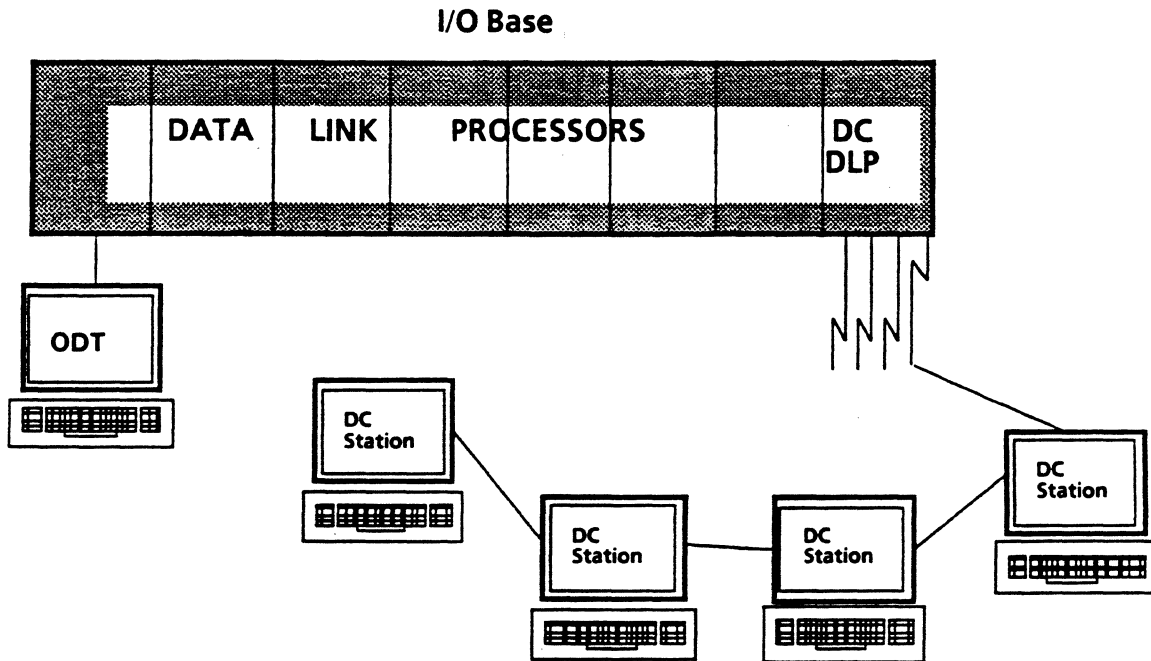


A Series Data Comm Subsystem with an NSP/LSP

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

DCDLP

The DCDLP is a special DLP that has a microcoded control program for handling data communications. That is, it comes with built-in data comm environmental specifications written by Unisys. It serves the same primary functions as the NSP/LSP and QLA, but is not as flexible because it cannot be user programmed to accommodate the site-desired data comm environment. It also cannot handle as many data comm lines.

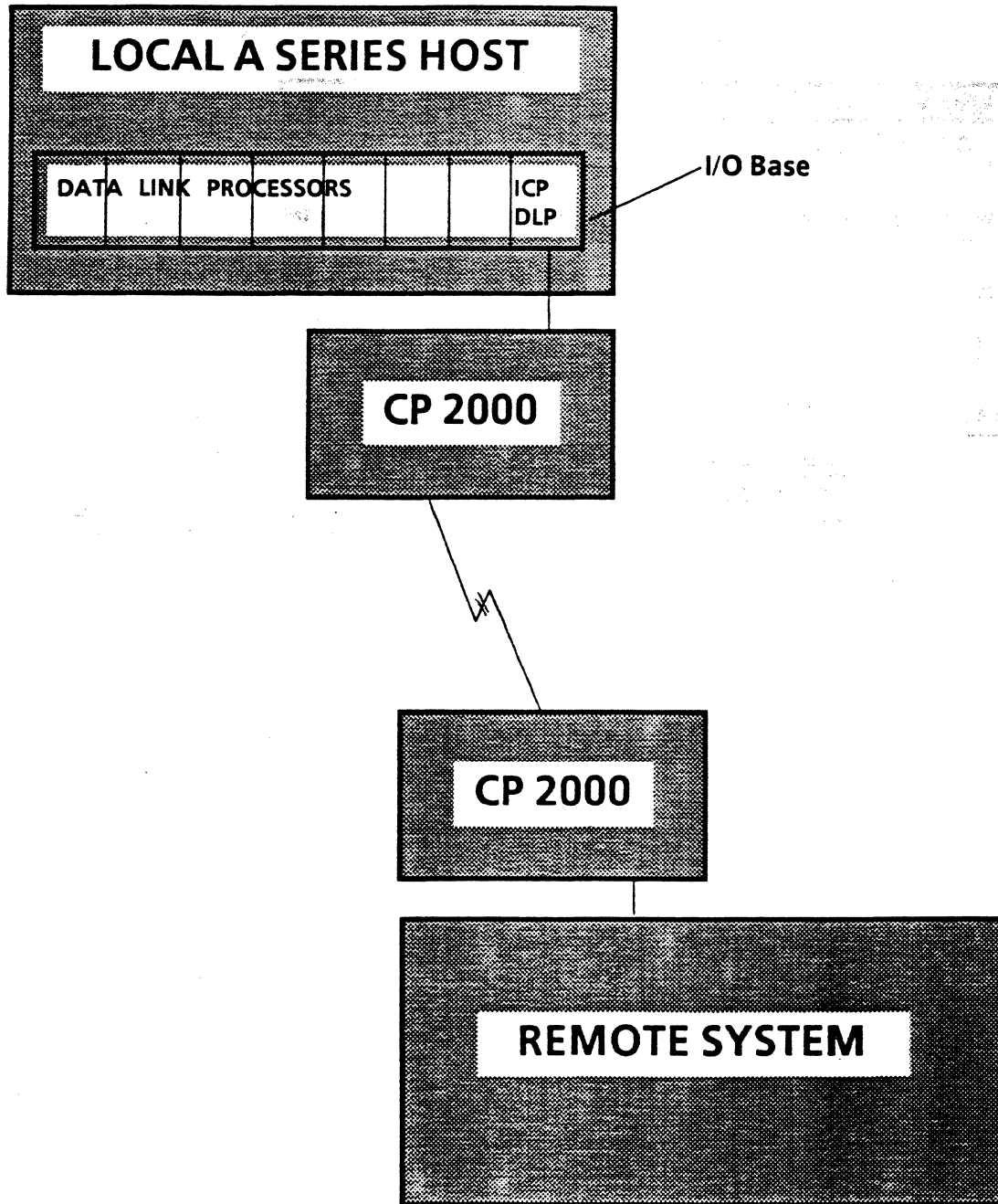


A Series Data Comm Subsystem with a DCDLP

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PERIPHERAL HARDWARE

CP 2000

The CP 2000 handles communication between a local host system and remote systems, including systems from other vendors. It can act as the controller for a number of terminals attached to different host systems. The CP 2000 communicates with the local host through an Integrated Communications Processor (ICP) DLP. One example of a CP 2000 configuration follows:



CP 2000 Network

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM SOFTWARE

SECTION 1

UNIT 3

SYSTEM SOFTWARE

Unit Objective

After successful completion of this unit, you should be able to

- Match the system software type to its appropriate function

Purpose

To effectively operate the system, you should know the functions and needs of different types of software. Knowledge of terminology is necessary to communicate with support personnel.

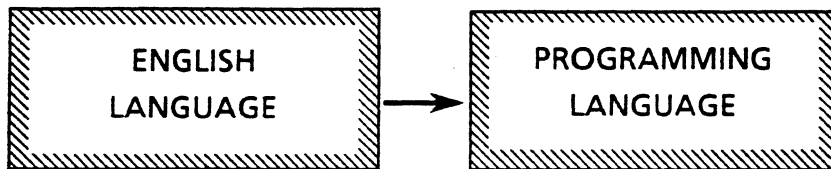
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM SOFTWARE

Software

Computers use software to direct and control the operations of the hardware. Software consists of programs. Programs are sets of instructions, written in one of a variety of programming languages, that outline the procedures to be followed in processing data.

Programming languages are a means of writing instructions to the computer in abbreviated form. There are several programming languages, including COBOL, ALGOL, BASIC, FORTRAN, and Pascal. The programmer chooses the language that best suits the purpose of the program.

A program written in a programming language is called **source code**.



"Ms. Computer, please display the word, 'HELLO', and then display the question, 'WHAT IS YOUR NAME?', five times."

```
10 PRINT 'HELLO'  
20 FOR A = 1 TO 5  
30 PRINT 'WHAT IS YOUR NAME?'  
40 NEXT A  
50 END
```

For the CPU to understand the instructions in a source code program, it must first be translated into instructions the computer can interpret and execute. Translated source code is known as **object code**, or machine language.



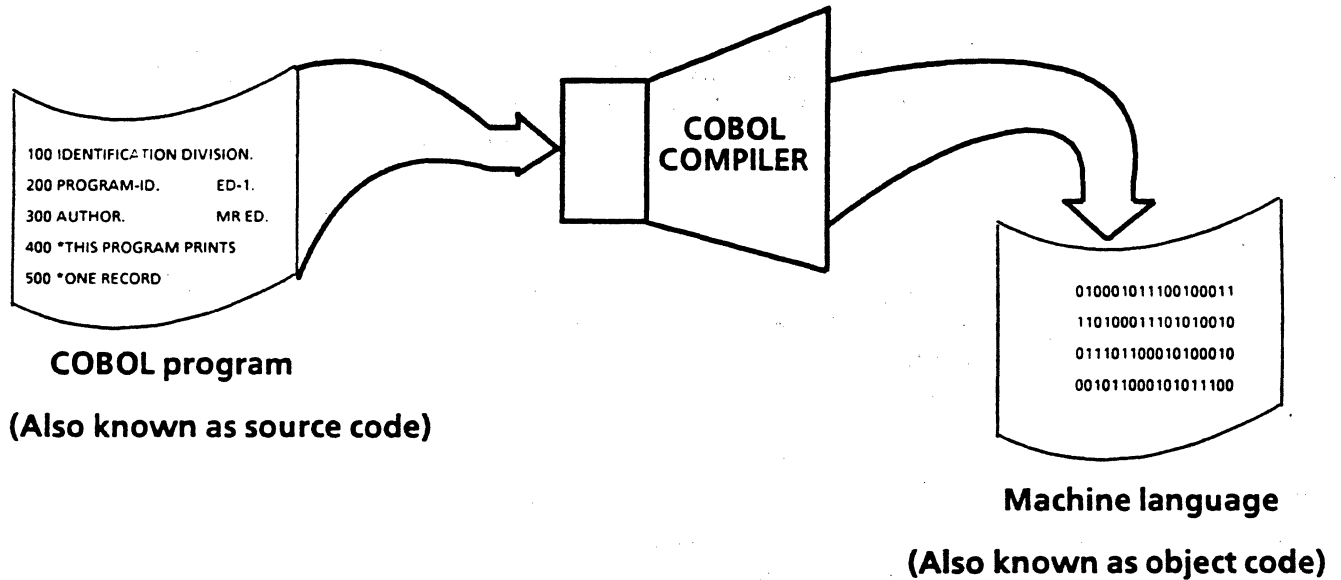
"Ms. Computer, please display the word, 'HELLO', and then display the question, 'WHAT IS YOUR NAME?', five times."

```
10 PRINT 'HELLO'  
20 FOR A = 1 TO 5  
30 PRINT 'WHAT IS YOUR NAME?'  
40 NEXT A  
50 END
```

```
01000111101011000101  
10110100011010101110  
01011101010100111001  
01010101000110111010  
01010110101111011101
```

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM SOFTWARE

To translate source code to object code, language compilers are used. There is a different compiler for each type of programming language. The compiler changes the instructions of the program into a format the CPU can understand. Then the program can be processed.



Software Categories

Three categories of A Series software are

- System Software
- Environmental, or Productivity, Software
- Application Software

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM SOFTWARE

System Software

System software programs perform overall system management and control functions. These programs include the operating system, system utility programs, and compilers.

Master Control Program (MCP)

The operating system is the main source of system control and management--overseeing and regulating system activity. The A Series operating system is called the **Master Control Program (MCP)** or **Master Control Program/Advanced Systems (MCP/AS)**. The MCP has authority and priority over all other programs on the system. It works with the system hardware to make optimum use of system resources within a multiprogramming, multiprocessing environment.

Utility Programs

A utility program is one that adds general support to the processing functions of the computer system by performing frequently required functions. There are utility programs to facilitate duplication of files between media, diagnose system performance, print memory and file dumps, create reports about files, create files for security purposes, and merge sorted files.

Compilers

A compiler is a program which translates the source code written by a programmer into machine-executable instructions called object code.

Environmental Software

Environmental software is also known as productivity software. This software includes many different kinds of programs that act as tools to aid system communications, information management, and programmer production. It frees application programmers from worrying about the environment in which their programs will run and how it may change, and allows them to concentrate on the central application program and the problem to be solved by it. Environmental software handles details such as network definition, database management, and transaction routing.

Message Control Systems (MCS), which will be discussed in more detail later, handle transactions between the system and terminals on data comm lines. They are considered environmental software programs.

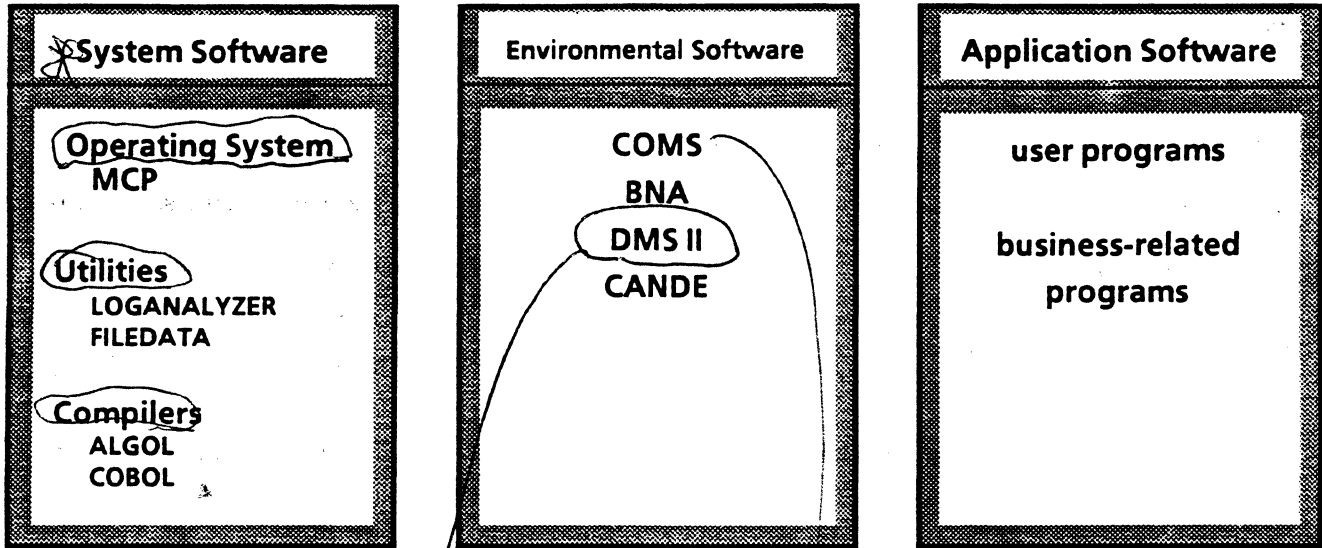
(AVDE
GEMLOS
COMS } MCS

Application Software

Application programs are created to serve specific user needs. They solve a specific problem or perform a specific task. For example, one application might be used for inventory control while another charts the progress of a patient in a hospital. Application programs used on A Series systems may be written by the user, by third-party vendors, or by Unisys.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM SOFTWARE

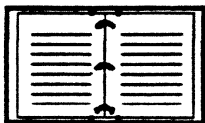
Examples of A Series software programs are shown in the following category charts.



These types of programs have different functions, but will work together to meet the processing needs of the system.

Data base's
handles files - auditing
- recovery
- manages Keys
- integrity

Communications
Message
Systems
(like Comos).



The A Series Systems Functional Overview Manual has more information on software.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 1

PRACTICE EXERCISES--SECTION 1

1. Magnetic disk is a random access peripheral. True False

2. Match the hardware component to its proper function.

B Maintenance subsystem

C Memory subsystem

D ODT

A Data communications subsystem

E Central processor

~~A.~~ Links terminals to the central processor *Data Comm*

~~B.~~ Has its own processor which is required to bring up the system *Maintenance*

~~C.~~ Stores data and program instructions during processing *Memory*

~~D.~~ Terminal used by the operator to communicate with the system *ODT*

~~E.~~ Performs all logic functions of the system *CPU*

3. What are two main uses for tape on computer systems?

Backups, archiving

4. Pack is another term for

A) Tape

B) Disk

C) Printer

D) Tape streamer

5. Match the ODT key/indicator to its proper function.

C XMT key

D LOCAL indicator

A Clear Home key

B XMT indicator

~~A.~~ Returns the cursor to the column 1, row 1 position *Home*

~~B.~~ Indicates that a message is being transferred to the system *Keyboard Light*

~~C.~~ Initiates the sending of a message to the system *Xmit*

~~D.~~ Indicates that keyboard input is permitted *local*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 1

PRACTICE EXERCISES--SECTION 1 (continued)

6. Which of the following statements is true?

C

- A) The ODT will always be a T 27; user stations are always ET 1100s.
- B) The ODT has the same keys as a user station, but all of the key functions are different.
- C) The ODT communicates with system software directly; user stations communicate through data comm.
- D) There can be only one ODT, but many user stations.

NO

7. What is the function of a data comm processor?

A

- A) To manage communications between remote peripherals and the central processor
- B) To initialize the system
- C) To control system functions
- D) To translate source programs into machine language

Date Comm

MCPs

Compiler

8. Match the software type to its appropriate function.

B Application

~~A~~. Controls system functions

MCP

C Utility

~~B~~. Serves specific user needs

Application

D Compiler

~~C~~. Supports central processing by performing commonly used functions

Utility

A MCP

~~D~~. Converts source code to object code

Compiler

E Environmental

~~E~~. Handles details such as database management and transaction routing

Environmental

9. Which of the following programs controls overall A Series system activity?

- A) COBOL
- B) NDL
- C) COMS
- D) MCP

90%

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 1**

LAB--SECTION 1

Your instructor will take you on a tour of the system and terminal rooms. Your instructor will review and point out details about system hardware components, and show examples of various types of data storage media, storage devices, and printers. You may be asked to participate in loading and unloading storage media or printer forms, or in demonstrating ODT key functions.

Computer-Assisted Training Exercises (CAT)

Use directions provided by the instructor to sign on to the system and bring up the CAT program. This program is designed to reinforce your knowledge of operations concepts. Complete the exercises at your own pace.

You may choose **module 1** for this lab.

OPS

PAS S

RUN

OBJECT / CAT

SECTION 2
DISK ORGANIZATION AND FILE NAMES

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

SECTION 2 **INTRODUCTION**

Section Objectives

You should

- Understand disk organization
- Understand file naming conventions

Purpose

To perform operations efficiently, you must know how disks are organized and how to interpret file names.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DISK ORGANIZATION AND FILE NAMES**

SECTION 2

UNIT 1

DISK ORGANIZATION AND FILE NAMES

Unit Objectives

After successful completion of this unit, you should be able to

- Identify characteristics of disk families
- Identify characteristics of file names
- Identify characteristics and show examples of the hierarchical structure of disk files

Purpose

You must understand the organization of disks and disk files so you can access information.

*peripherals.
Per PK -*

OL PK45

*↓
on line - label info*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

Disk Organization

Disk devices on A Series systems are grouped into families. A **family** consists of one or more disk packs that are considered one entity by the system. Each family is assigned a unique **family name**. A pack can belong to only one family.

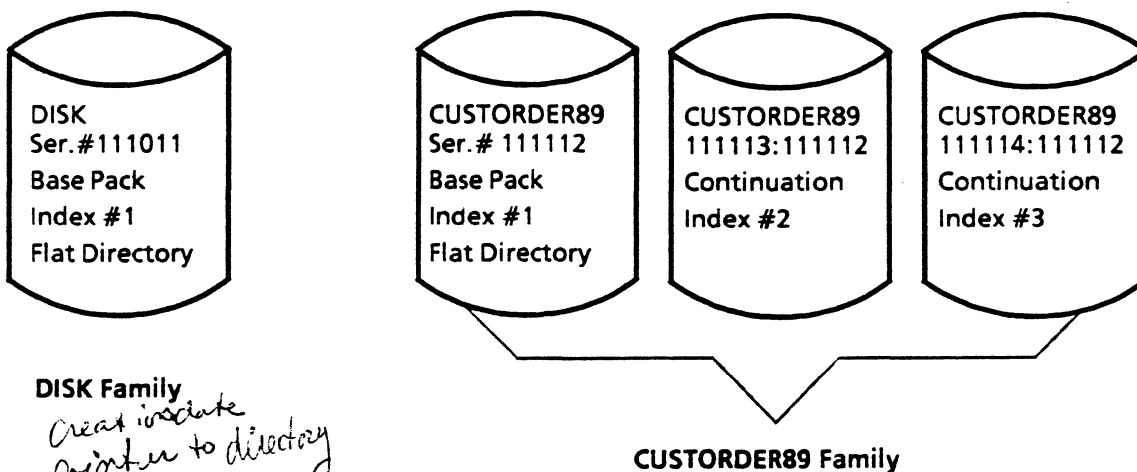
The name assigned to a family of disk packs should correspond to the type of information stored on the family or to those who will be using the family of packs. A family name can have a maximum of **17 alphanumeric characters**.

Since a family can have up to 255 disk packs with the same name, each physical pack is assigned a unique number known as the **family index**. To identify a particular pack in the family, use the family name and the family index number assigned to that pack.

Each family contains a file called a **flat directory**. This directory contains a list of all the file headers for every file stored on every member of the disk family. Each file header has information about the file, including the name, disk address location, and specific file characteristics. The MCP uses the information in the flat directory to locate files on disk.

The family member with the flat directory currently being used by the MCP is considered the **base pack**. Typically, the base pack will be index #1. All other family members are considered **continuation packs**.

Each disk pack in the family has a structure called a **label** which is stored on the first 28 sectors of the disk pack. The label contains information about the disk pack, including the family name, the serial number assigned to the pack (different from the family index number), and other disk characteristics. The **serial number** distinguishes the disks on the system from one another. For continuation packs, the system displays both the continuation pack serial number and the serial number of its associated base pack.



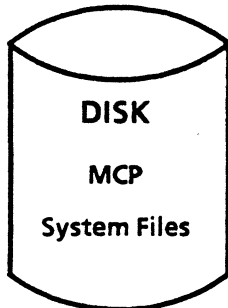
Note: See Appendix A of this guide for further information on file structure and access.

AVM - automatic volume recognition

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

DISK ORGANIZATION AND FILE NAMES

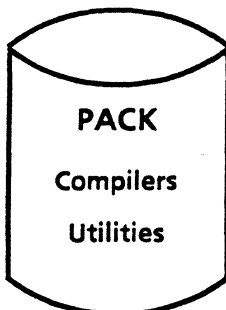
Most installations will have a family named **DISK** and some will have a family called **PACK**. The other pack families will be organized and named according to the needs of the site and the established naming conventions.



DISK Family

The **DISK** family is normally the family that will store the current **MCP** and associated files.

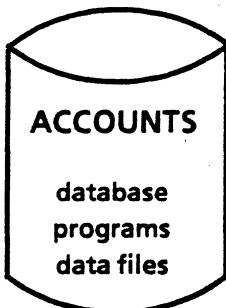
It may also be called the **halt/load unit** because the system gets the **MCP** file from here when the system is initialized or "halt/loaded". (Halt/loads will be discussed later.)



PACK Family

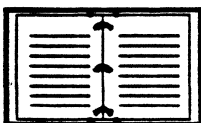
The **PACK** family usually has files which are accessed by many users on the system, like compilers and utilities.

These packs are also known as system resource packs.



User Families

Other pack families on the system have user files like databases, source code programs and their associated object code, data files, test files, and others. The actual files that exist and their organization on disk families will vary depending on the needs of the individual site and the number of disk packs available to the system.



For more detailed information on disk organization and structure see the **Disk Subsystem Administration and Operations Guide** and the **I/O Subsystem Reference Manual**.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

File-Naming Conventions

File names have particular characteristics and rules associated with them. It is necessary to specify the name of a file accurately in order to access or create it. Naming conventions are the same for disk and tape.

FORMAT: The name may have up to 12 identifiers, each of which must be separated by a slash (/). Identifiers are also commonly referred to as nodes.

NODE/NODE/NODE/NODE

17 char ea.

USERCODES Usercodes are names assigned to users of the system, to give them access to the system and to help segregate and identify their files. Users with usercodes will create and access files stored under their usercode. If there is a usercode associated with the file, it must come in front of the file name and be enclosed in parentheses. There is no slash after the usercode.

Files not associated with a specific user (nonusercoded) will have an asterisk (*) in the usercode position. The asterisk should not be in parentheses. If a file is specified at the ODT without a usercode or asterisk, the system assumes it to be a nonusercoded file.

(USERCODE)NODE/NODE/NODE

*NODE/NODE/NODE

IDENTIFIERS: Each identifier must begin with an uppercase letter or a digit and be no longer than 17 characters. The characters may be any uppercase letter A-Z, any digit 0-9, a hyphen, or an underscore. Other special characters may be used as well, but they require the identifier be enclosed in quotation marks.

(USER1)APRIL/PROJECTS/UPDATES

*APRIL/PROJECTS/UPDATES

(USER1)APR-86/PROJECTS/" + UPDATES"

**FILE
TITLES:**

A file title is the name of the file with its disk family location appended or assumed. Usercodes usually have a family location associated with them. The system will access and create files on the family assigned to the usercode used to sign on to the system. Then it is not necessary to specify the family location to access files. The operator does not normally sign on to the system at the ODT with a usercode; therefore it is necessary to use the family location when accessing a file from the ODT. If a file name is specified at the ODT with no family location appended, the system assumes the location to be the default family, which is DISK, and will search for the file there.

(USERCODE)NODE/NODE ON FAMILYNAME

(USER2)APRIL/PROJECTS/UPDATES ON ADMIN

(STUDENT)CLASS/MUSIC/2 ON EDUCATION

*SYSTEM/ACCESS (DISK family is assumed at the ODT.)

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

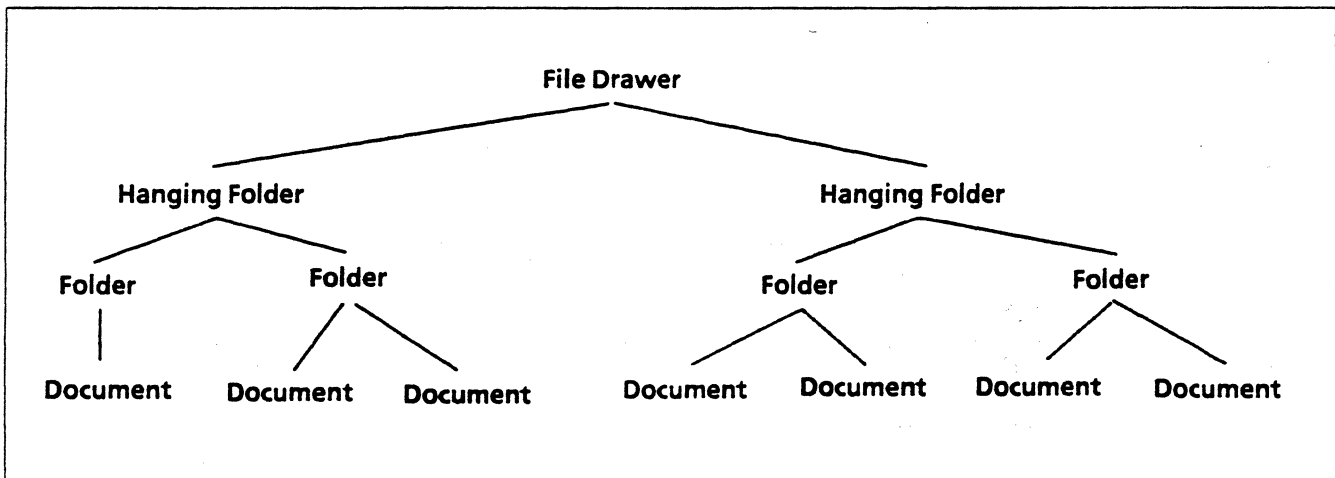
Tree Structure of Files

The organization of files is in a hierarchical, or tree, structure. The position of the node in a file specification signifies where in the file hierarchy that node falls. The leftmost node after the usercode is called a directory. Within that directory may be many subdirectories, and the subdirectories may have subdirectories. The lowest level of the hierarchy is the file name, which is the rightmost node. Directories and subdirectories, no matter what level, are all referred to as directories.

(USERCODE)	NODE	/	NODE	/	NODE	/	NODE
Usercode	Directory		Subdirectory		Subdirectory		File Name

File Specification

If you use the analogy of a file cabinet, you can see the relationship to the node hierarchy. The top of the tree structure for a file cabinet is the file drawer. The next level down would be the hanging file folders. The next level down would be the individual folders in the hanging folders. The lowest level in the organizational hierarchy would be the individual documents in the individual folders.



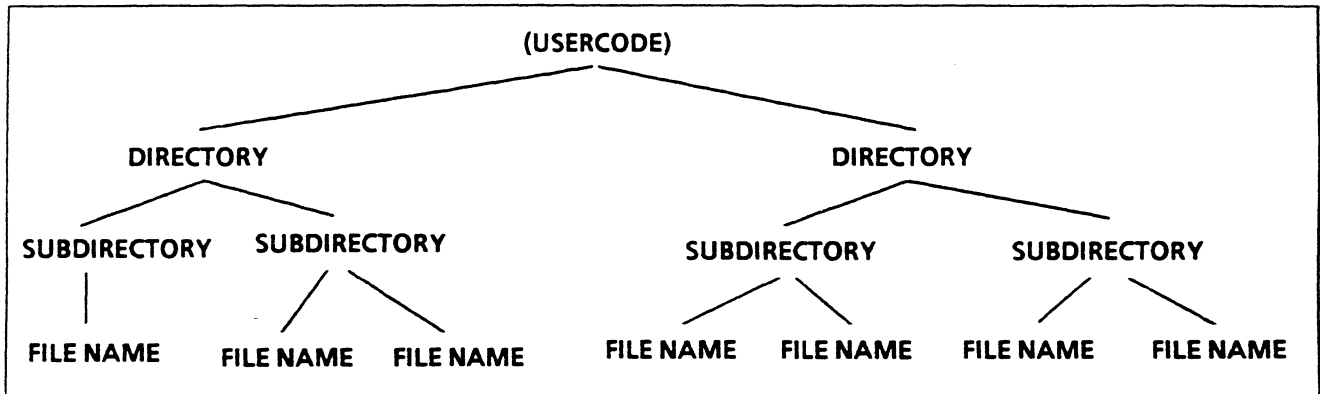
File Cabinet Tree Structure

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

If you compare the nodes in a file name to the file cabinet hierarchy, it would be as follows:

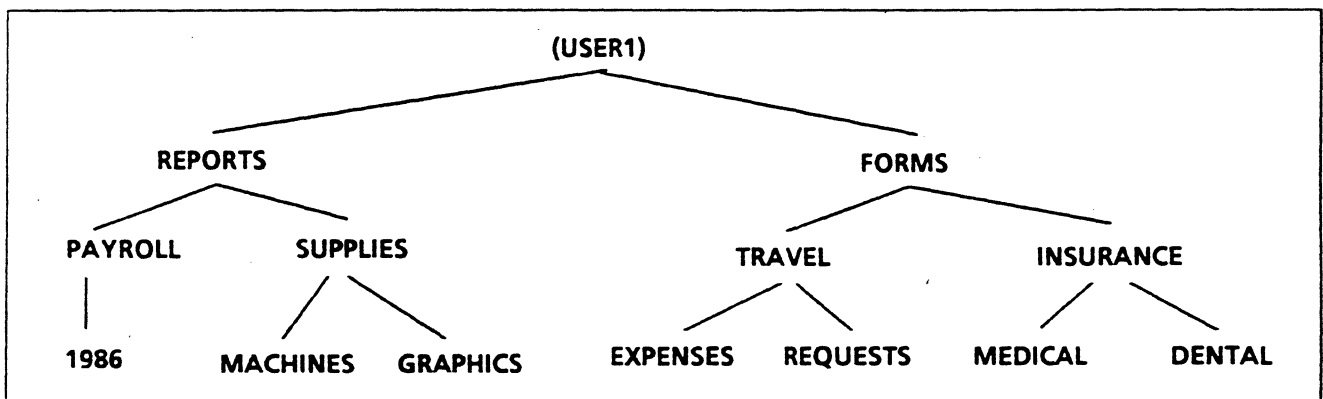
File Drawer	Hanging Folder	Folder	Document
(USERCODE)	DIRECTORY	/	SUBDIRECTORY / FILE NAME

The disk file tree structure would look like this:



Disk File Tree Structure

If you want to access a file, you must know the hierarchy, or tree structure, that it is in and specify it correctly.



Disk File Tree Structure

File names for the structure above include:

- (USER1)REPORTS/PAYROLL/1986
- (USER1)FORMS/TRAVEL/EXPENSES
- (USER1)FORMS/TRAVEL/REQUESTS
- (USER1)REPORTS/SUPPLIES/GRAPHICS

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK ORGANIZATION AND FILE NAMES

To access multiple levels or files under a particular node, an equal sign can be used after the slash for the node.

For example, to reference the directories and files under the directory REPORTS from the previous page, use the following file name specification:

(USER1)REPORTS/=

Other examples from that tree structure on the previous page would include

(USER1)REPORTS/SUPPLIES/=

(USER1)=

(USER1)FORMS/TRAVEL/=

(USER1)REP = not valid

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 2

PRACTICE EXERCISES--SECTION 2

1. Disk devices are grouped into Families on A Series systems.
2. Each of these groups is assigned a unique Family name.
3. Each member of a disk family is assigned a family index number for identification.
4. The MCP uses the flat directory file to locate files on a disk family.
5. If a disk is not used as the base pack for the family, then it is considered a continuation pack.
6. A family name can have up to 17 alphanumeric characters.
7. What is VACATION in the sample file specification below?

(BOB)VACATION/ACTIVITIES/GAMES/TENNIS

- A) Directory
B) Usercode
C) File name
D) Family name
8. Indicate two additional file name specifications that would be appropriate to access files in the hierarchy example at the bottom of page 2-9.

(USER1) Reports / = @ (USER1) FORMS/INSURANCE/DEPT.
(USER1) Reports / SUPPLIES / = @ MACHINES

If these files were located on the ACCOUNTS family, what file title would specify the location of (USER1)REPORTS/PAYROLL/1986?

(USER1) Reports/PAYROLL/1986 ON ACCOUNTS

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 2**

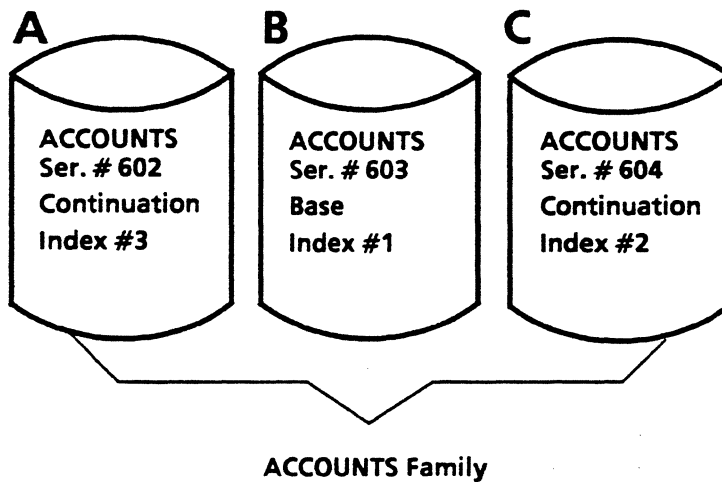
PRACTICE EXERCISES--SECTION 2 (continued)

9. The MCP would most likely be located on which family?

- A) DISK
- B) PACK
- C) USER
- D) TEST

10. Which pack on the ACCOUNTS family contains the flat directory currently being used by the MCP to locate files?

- A) Pack A
- B) Pack B
- C) Pack C



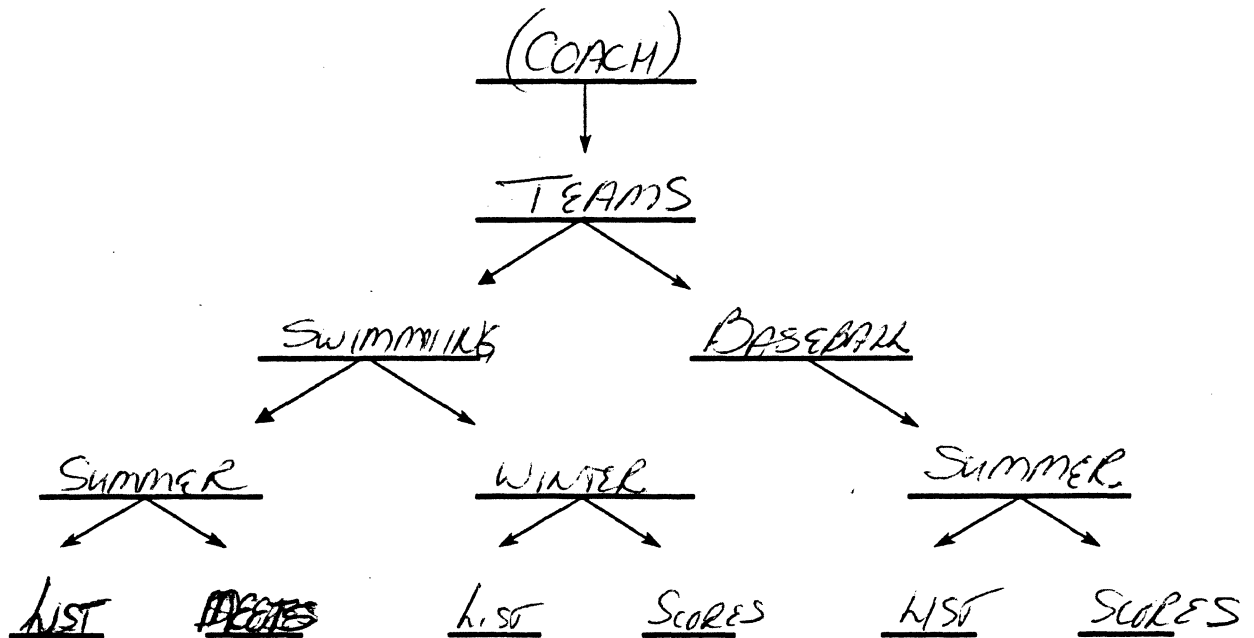
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 2

PRACTICE EXERCISES--SECTION 2 (continued)

11. Indicate the appropriate hierarchical structure for the file names below.

Usercode = (COACH)

Files = TEAMS/BASEBALL/SUMMER/LIST
TEAMS/SWIMMING/SUMMER/LIST
TEAMS/SWIMMING/WINTER/LIST
TEAMS/SWIMMING/SUMMER/MEETS
TEAMS/BASEBALL/SUMMER/SCORES
TEAMS/SWIMMING/WINTER/SCORES



**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 2**

PRACTICE EXERCISES--SECTION 2 (continued)

Computer-Assisted Training Exercises (CAT)

Use directions provided by the instructor to sign on to the system and bring up the CAT program. Do the exercises at your own pace.

You may choose from modules 1-2 for this lab.

TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING
TRANSFORMER WINDING

OPS PASS

RUN OBJECT/CAT

SECTION 3
SYSTEM COMMUNICATION

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM COMMUNICATION

SECTION 3 INTRODUCTION

Section Objectives

You should

- Understand the types of information presented on ADM screens
- Understand some basic characteristics of a data comm environment and recognize the function of a Message Control System (MCS)
- Understand how to read and input railroad syntax
- Know the basic procedures for using MARC
- Know the variety of methods to sign on to the system

Purpose

To operate the system effectively, you must understand and control system communication.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
AUTOMATIC DISPLAY MODE

SECTION 3

UNIT 1

AUTOMATIC DISPLAY MODE

Unit Objectives

After successful completion of this unit, you should be able to

- Interpret Automatic Display Mode (ADM) information
- Modify the ADM display
- Interpret railroad syntax

Purpose

To monitor the system, you must understand and control system status information, and use it to communicate with the system.

WJK

Begin job;
Priority = 55;
Run Payroll / Payjournal
Run Payroll / Paychecks
Run Copy Payroll/Checks - from Payroll (pack)
to Paylope. (Hope.)
End job..

Use Cardc
Make Payroll/job JOB

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

Automatic Display Mode (ADM)

When a new system is installed, it must be powered up and initialized. Software is loaded on the system, and information about how the total system is to be configured is entered. Once the system is ready for use, system messages and information are automatically displayed on the ODTs. This display is called **Automatic Display Mode (ADM)**. The ADM provides the operator with most of the system status information used to control operations. In order to use the ADM, the operator must understand the information that it provides.

NOTE: The ADM screen comes up automatically only on ODTs. It will not appear on data comm terminals when they are turned on.

1-99 → Programs - COMS defines priority
Job - priority statements
USER mode - PR
PR - default priority

```

---MIX-PRI--CPU TIME----- 13 ACTIVE ENTRIES-----
5153 80    1:47 JOB *SYSTEM/CANDE - OBS
5288 80    :08 *CANDE/STACK01 - INTERNA-
*5172 50    :02 *COMS/ODT/DRIVER - USING MARK ON ODT.
5137 80    12:05 *SYSTEM/PRINT/REMOTE/SERVER - Remote printing
5135 80    2:35 *SYSTEM/COMS - INC
5142 50    1:09 MARC - PROGRAMS
---MIX-PRI--ELAPSED----- 1 WAITING ENTRY -----
5222 50    :02 (DGREEN)OP/PROG/3 ON SYSTEMSED
NO FILE (DGREEN)OP/PROG/3/DATA ON DISK(DK)

---MIX-PRI--ELAPSED----- 1 SCHEDULED ENTRY -----
5190 50    2:43 JOB *SYSTEM/SCREENDESIGN/FORMATS
---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
* 5307/5307 10:59 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
* 5306/5306 10:59 EOJ JOB SERVER/LP20/R#878/J#5303
* 5303/5303 10:58 EOJ JOB (DGREEN)WFL/PROGRAM3
* 5303/5304 10:58 P-DS (DGREEN)OP/PROG/3 ON SYSTEMSED
---MIX-TIME----- long id ----- MESSAGES -----
* 5306 10:59 LP20: *BD/0005303/000SUMMARY ON DISK3 PRINTED REMOVED
* 5301 09:47 (DGREEN)OP/PRINT/PRACTICE COPIED FROM SYSTEMSED TO SYSTEMSED
* 5298 09:46 (DGREEN)OP/PRINT/PRACTICE/SRC COPIED FROM SYSTEMSED TO SYSTEMSED
    
```

Job/Task # Priority
Problem
file title
waiting for memory
EOT = end of Task
ODS = ODTs set.

Example of an ADM Screen Display

Printer Backup Files

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

ADM Information

Jobs and Tasks

Most of the information on ADM screens will be about the execution of programs or other processing activities of the MCP. When initiated, these activities become known as either system tasks or jobs.

A **task** is one single unit of work performed by the system. For example, compiling a program would be one task, executing the program would be another, and printing the program output yet another.

A **job** is one or more related tasks which are grouped together as one entity and processed in a particular order.

See the example shown on page 85 of the A Series System Functional Overview Manual.

* An A Series system has the capability of running more than one program at once and can even run multiple copies of the same program at once. In order to uniquely identify all of the programs that might be running at once, the system assigns numbers to programs when they are initiated. A job is assigned a job number. Each task within a job is assigned a task number. Together these numbers are referred to as **mix numbers**.

The **mix** is the collection of jobs/tasks that have been initiated on the system:

Active Mix: The jobs/tasks being processed.

Waiting Mix: The jobs/tasks which have begun processing, but are waiting for some event to occur before continuing, such as input from the operator or acquisition of a peripheral.

Scheduled : Jobs/tasks that are not currently being processed because system memory is not available. They will become active when sufficient memory is available.

Libraries: Programs that contain code which can be accessed and used by many other programs in the mix. Although they are in the mix, they do not appear in the active mix, but on a separate LIBS screen. (Libraries are covered in more detail in Section 6.)

Priority Numbers

The **priority number** associated with a job or task signifies its relative importance and is significant in determining how soon it will be considered for processing. Priority numbers from 0 to 99 may be assigned, with 99 being the highest priority.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

Types of ADMs

There are two types of ADMs:

Event-driven: Any time a new event occurs, the ADM is updated.

Time-driven: The ADM is updated at specified time intervals.

Formats of ADM Information

Examples of various ADM options are on the following pages. The operator has some flexibility in determining which options are displayed and how they are to be grouped on ADM screens, but the information displayed by each option is set and cannot be changed.

These are the most common, but only a few, of the options available for displaying system status. Others may be chosen and organized for display on additional ADM screens using system command syntax.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
AUTOMATIC DISPLAY MODE**

Active Mix

```

---MIX-PRI-CPU TIME----- 13 ACTIVE ENTRIES -----
 5153 80      1:47 JOB *SYSTEM/CANDE
 5288 80      :08 *CANDE/STACK01
*5172 50      :02 *COMS/ODT/DRIVER
    
```

MIX = the mix number for the job/task

PRI = the priority number of the job/task

CPU TIME = the amount of central processing time accumulated by the job/task, in 24-hour format

ACTIVE ENTRIES = the number of jobs/tasks in the mix and their titles

*** beside the mix number** = entry displayed for the first time on the ADM

Scheduled Mix

```

---MIX-PRI---ELAPSED----- 1 SCHEDULED ENTRY -----
 5504 50      6:00 JOB *SYSTEM/SCREENDSIGN/FORMATS
    
```

MIX = the mix number for the job/task

PRI = the priority number of the job/task

ELAPSED = the amount of time in the schedule in 24-hour format

SCHEDULED ENTRIES = the number of jobs/tasks waiting to go into the mix and their titles

Waiting Mix

```

---MIX-PRI---ELAPSED----- 1 WAITING ENTRY -----
 5189 50      :13 JOB (DGREEN)WFL/PROGRAMY
                NO FILE (DGREEN)OBJECT/OP/PROG/Y ON SYSTEMSED (DK)
    
```

MIX = the mix number for the job/task

PRI = the priority number of the job/task

ELAPSED = the amount of time in the waiting mix in 24-hour format

WAITING ENTRIES = the number of jobs/tasks waiting to continue processing and their titles

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
AUTOMATIC DISPLAY MODE**

Completed Entries

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
* 5307/5307 10:59 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
* 5306/5306 10:59 EOJ JOB SERVER/LP20/R#878/J#5303
* 5303/5303 10:58 EOJ JOB (DGREEN)WFL/PROGRAM3
* 5303/5304 10:58 P-DS (DGREEN)OP/PROG/3 ON SYSTEMSED

JOB/TASK = mix number with job and task represented

TIME = the time the job/task was completed in 24-hour format

HIST = reason for the termination of the job/task

COMPLETED ENTRIES = names of jobs/tasks completed

* beside the mix number = entry displayed for the first time on the ADM

Messages

---MIX-TIME----- MESSAGES -----
* 5306 10:59 LP20: *BD/0005303/000SUMMARY ON DISK3 PRINTED & REMOVED
* 5301 09:47 (DGREEN)OP/PRINT/PRACTICE COPIED FROM SYSTEMSED TO SYSTEMSED
* 5298 09:46 (DGREEN)OP/PRINT/PRACTICE/SRC COPIED FROM SYSTEMSED TO SYSTEMSED

MIX = mix number of the job/task which generated the message

TIME = the time the message was sent in 24-hour format

MESSAGES = the text of the messages

* beside the mix number = entry displayed for the first time on the ADM

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

Using Commands to Display ADM Information

The ADM constantly displays system activity, but usually only displays a few lines of each category (active, waiting, etc.) of information.

You can use ODT commands to display full screens of information for each ADM category:

- A** Active jobs and tasks
- W** Tasks waiting for operator intervention
- S** Tasks waiting for available memory
- C** The most recently completed jobs and tasks
- MSG** The most current system messages

ODT

no more - must know commands & syntax

no format

no help

ADM refreshing

- user friendly

- can use ODT commands in Action

- forms made in choice

- help - spary

- no ADM - separate commands for each function

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

System Command Format--Railroad Syntax

To set up and change the ADM screen, you must give commands to the system. The operator communicates with the system by entering commands. They must be in a particular format, or syntax, for the system to understand them.

The operator uses **railroad syntax** for commands. The documentation for A Series systems presents command syntax in **railroad syntax diagrams**. In order to understand and use this command syntax appropriately, you must know what the syntax components mean and how to read the syntax.

A complete explanation and examples of railroad diagrams are found in the **Operator Display Terminal System Commands Reference Manual, Section A - Understanding Railroad Diagrams**.

Where to Look for Command Syntax

Some commands used at the ODT are not covered in the ODT manual. In other cases, you may need to consult more than one manual. Appendix E of this student guide contains a brief summary of command categories and where to locate syntax.

Procedures to Input Commands at the ODT

To enter commands through the ODT, it must be in Local mode. On most terminals, there is an indicator light above the word Local on the upper right of the keyboard. Normally, the ODT goes into Local mode as soon as any key is pressed. If not, press the [LOCAL] key.

The cursor must be at the Home position, which is in the upper left corner of the screen. On most terminals, you move the cursor Home by pressing the [CLEAR ↵] or [CLEAR HOME] key. Press [SHIFT]/[CLEAR ↵] to move the cursor to the Home position and clear the screen.

The operator can then key in the desired command. Commands are transmitted to the MCP by pressing the [XMIT] key. All characters preceding the cursor will be transmitted, and the XMIT light will be illuminated. Once the system receives the message, the RECEIVE light lights up.

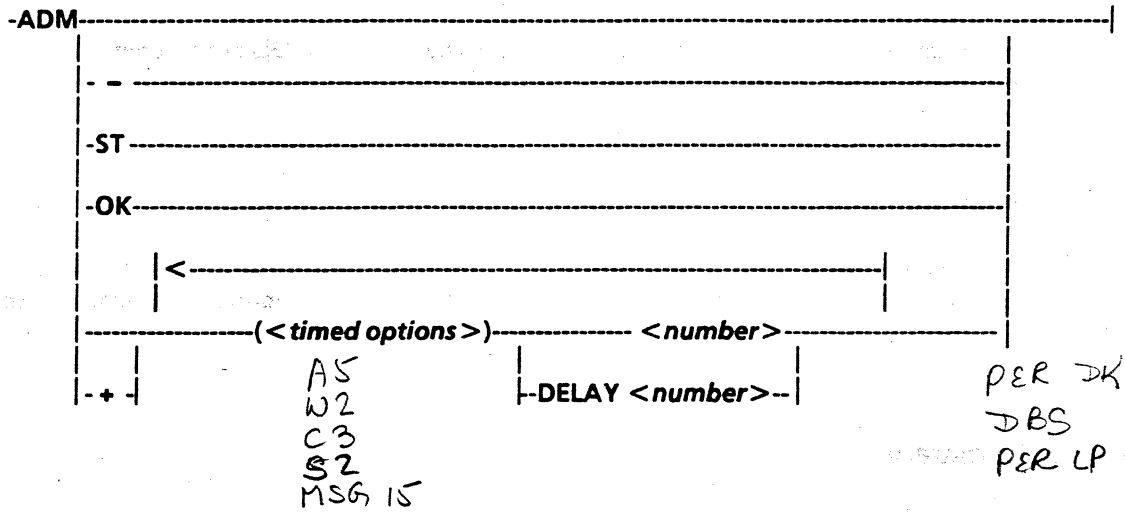
If the system response to a command fills more than one video screen, the ODT NS command appears in the upper left corner. Place the cursor after the NS and transmit to display the next screen. If there are no more screens, a message is returned indicating there are none.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

ADM Control and Modification

ADM Control

The operator can control and modify the ADM screen using the ADM ODT command:



- Syntax:
- ADM** Displays the current ADM options. If no options have been set up, this command displays an ADM screen with default options.
 - ADM-** Cancels current ADM instructions.
 - ADM ST** Stops current ADM instructions from executing.
 - ADM OK** Resumes current ADM instructions after use of ADM ST.

ADM OK
ADM ST
ADM

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

ADM Default Parameters

The default ADM screen has the following ADM command syntax:

ADM (A7, W3, S2, C5, MSG) DELAY 9

This syntax means that the default ADM screen displays 7 lines of active entries (1 header line and 6 entries), 3 lines of waiting entries, 2 lines of scheduled entries, 5 lines of completed entries, and the remaining lines with system messages. The display is refreshed every 9 seconds. All of this information is displayed on one ADM screen.

There will normally be blank lines (2 by default) for command input above the option groups on the ADM screen.

ADM (A7,W3,S2,C5,MSG) DELAY 9

---MIX-PRI--CPU TIME----- 11 ACTIVE ENTRIES -----

8179 80 :30 JOB *SYSTEM/CANDE
8216 80 :05 *CANDE/STACK01
8243 50 :02 (SYSADM) *SYSTEM/SIMPLEINSTALL
8154 80 1:00 *SYSTEM/COMS
8161 50 :45 MARC
8156 50 1:08 MARC

----- NO WAITING ENTRIES -----

8100 50 :02 (DGREEN)OP/PROG/3 ON SYSTEMSED
NO FILE (DGREEN)OP/PROG/3/DATA ON DISK(DK)

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----

8240/8240 08:15 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
8239/8239 08:15 EOJ JOB SERVER/LP20/R#1163/J#8232
8238/8238 18:10 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
8237/8237 18:10 EOJ JOB SERVER/LP20/R#1164/J#8215

---MIX-TIME----- MESSAGES -----

8243 09:14 ON 3.8, A NAME WITH HYPHENS OR UNDERSCORES WILL NO LONGER BE QUOTED
8239 08:15 LP20: *REMLP01/0008232/0008234/000OUTFILE ON DISK3 PRINTED & REMOVED
8239 08:15 LP20: *REMLP01/0008232/0008233/000OUTFILE ON DISK3 PRINTED & REMOVED

Default ADM Screen Display

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

ADM Modification

Using ADM syntax options, the ADM can be organized or modified to display a great deal of system status information. One example is shown below.

ADM + (<timed options>)

Adds the specified option or options to the currently displayed time-driven ADM specifications. The ADM may become a multiple-screen display with added options. The display of the the screens will alternate.

ADM + (PER MT5, PER PK5, PER LP5)9

Adds a display of the status of tape drives, disk packs, and line printers on the system. A delay of 9 seconds will occur before the first ADM screen is redisplayed.

ADM + (PER MT5, PER PK5, PER LP5)9

```
----- MT STATUS -----  
156 P [041688] 1600 #2 1:0 BESSIESAU041688  
157 P [051688] 1600 #1 1:0 BESSIESAU051688  
  
----- PK STATUS -----  
60*B [083388] #1 BESSIEPK (0)  
61*B [987654] #1 EDUCATION (0)  
62*B [112388] #1 SYSTEMSED (115)  
63*C [814114:083188:79] #2 LINC14 (0)  
  
----- LP STATUS -----  
20 (106) ABED SERVER/LP20/"R#4963"/"J#9146" EBCDIC64A
```

ADM Peripheral Status Screen Display



See the **Operator Display Terminal System Commands Operations Reference Manual** for more information on the ADM and railroad syntax.

CA - Clears Queue - ie if in local for long time,
gets rid of waiting ADM pages.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

Other Commands Associated with the ADM

The following commands are used for controlling the ADM display.

SUPRESS (Suppress Display)

The **SUPPRESS** command prevents active jobs/tasks from appearing in the active mix display. Jobs/tasks are eliminated from the Active entries display by using either a mix number with the **SUPPRESS** command or a code file name.

Syntax: <mix number list> **SUPPRESS**

2361 SUPPRESS

Syntax: **SUPPRESS** <file title>

SUPPRESS (USER)PROGRAM/UPDATE

The system will indicate that the entry is suppressed.

Use the **SUPPRESS** command and a minus sign (-) to end the suppression of an entry. The system indicates that the entry is restored.

2361 SUPPRESS -

SUPPRESS - (USER)PROGRAM/UPDATE

NOTE: You can display suppressed entries by using the **AA (Active All)** command instead of the **A(Active)** command.

*A = All
AA = active all
shows all even
invisible*

TERM (Terminal)

To change the format of the screens on the ODT, use the **TERM** command with options to control how many lines appear on the video screen, the character-length of lines, the number of lines reserved for operator input before the first line of the ADM display, and whether messages are truncated. Enter **TERM** to display the current settings.

TERM LINES 24 WIDTH 80 FIRST 2 TRUNCATE FALSE RESPONSE EXPANDED

This **TERM** syntax indicates the video will display 24 lines of text with 80 characters each. The first 2 lines of the video display will be blank for operator input--the ADM display begins on line 3. **TRUNCATE FALSE** means that system messages will be continued onto the next line if they do not fit on one line. The default setting is **TRUNCATE TRUE**--message lines would be truncated rather than continued. **RESPONSE EXPANDED** means that the system response to commands from the ODT will be displayed in full rather than not at all or abbreviated.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC DISPLAY MODE

System Messages Using LOG

The system displays all system messages that will fit on a screen, and they are only the most current ones. To review or scan earlier messages, use the LOG command.

The major components of LOG syntax will be considered later in the course. These examples reflect syntax to retrieve system messages from the current log only.

To retrieve messages from the current log for a particular time period:

LOG <beginning time> TO <end time> MSG UNSORTED

UNSORTED in the syntax means that the output generated will be in chronological order instead of being grouped by type and job, which is the default.

Output will go to the printer by default. Time is expressed in 24-hour format.

Enter the following to list all messages from the current log, in chronological order, from the beginning time specified to the current time:

LOG <beginning time> MSG UNSORTED

Enter the following to see all of the messages from the current log in chronological order for the hours 8:00 a.m. to 5:00 p.m.:

LOG 0800 TO 1700 MSG UNSORTED

↑

Enter the following to see all of the messages from the current log in chronological order from 2:00 p.m. to the current time:

LOG 1400 MSG UNSORTED

Enter LOG CON to display the output at the ODT:

= screen display
on ODT

LOG CON 1400 MSG UNSORTED



See the Operator Display Terminal System Commands Operations Reference Manual for more information on the ADM and railroad syntax.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 3, UNIT 1

PRACTICE EXERCISES--SECTION 3, UNIT 1

1. Why does a job/task go to the waiting mix? waiting for event - ie
input, peripheral operation in dependent on (no file).

2. Match the program characteristic to the phrase that best describes it.

- A. Job
- B. Task
- C. Priority

C Number that influences how soon a program will be considered for processing Priority
B Executed program that generally initiates one system activity Task
A Executed program that generally initiates several system activities Job.

3. What is the difference between a job in the active mix and a job that is scheduled? active =
working, scheduled = waiting for message.

4. Which command stops the ADM display without affecting ADM settings? D

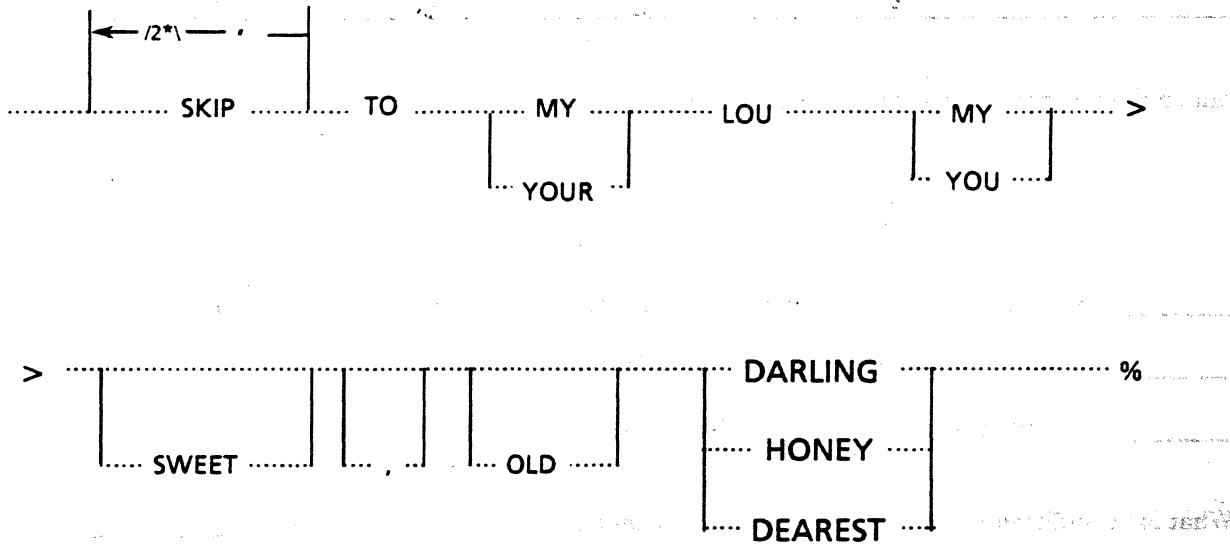
- A) ADM- - cancel
- B) ADM+ - add
- C) ADM OK - RESTART
- D) ADM ST - STOP

5. What will the following syntax do: LOG 1200 to 1500 MSG UNSORTED?

print messages from 12:00 pm to 3 pm in
chronological order

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 3, UNIT 1**

PRACTICE EXERCISES--SECTION 3, UNIT 1 (continued)



6. According to the railroad syntax above, mark the following statements true or false.

- T F The words SKIP and LOU must be in the command syntax.
- T F The word HONEY must be in the command syntax.
- T F The word SKIP may appear only twice in the command syntax.
- T F The words SWEET and OLD are optional choices for command syntax.
- T F SKIP TO MY LOU YOU SWEET, OLD DARLING DEAREST is correct command syntax.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 3, UNIT 1

WRU = TERM#

LAB--SECTION 3, UNIT 1

Usercode = OPS PASS Family = _____

Your instructor will provide instructions for signing on to the system, getting a remotespo screen, and displaying the ADM. Once you have done this, proceed with the instructions below.

ACTION ▷ REMOTESPO TERM# DON REM0001

F10

1. Display the current option settings of the ADM display and write them down. (Use the LOCAL key to keep the settings on the screen.)

(A7, W3, S2, C5, MSG) delay 9

Are they the default ADM settings? yes

2. Stop the display of the ADM. Syntax: ADM ST

What message does the system return? AUTO DISPLAY STOPPED

3. Resume the display of the ADM. Syntax: ADM OK

What is the system response? AUTO DISPLAY DISPLAYED → DISAPPEARS !! REAL QUICK !!

4. How many active entries are currently in the mix? 12

5. Are there any scheduled entries? NO

6. Look for *SYSTEM/COMS, *SYSTEM/COMS/KERNEL or *SYSTEM/COMS/ENTRY in the active mix and answer the following questions.

What is the mix number? 8082

What is the priority level? 50

How much CPU time is shown? 2:54:10

7. What is the mix number of the most recent completed entry in the current mix? 8235/8235

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 3, UNIT 1**

LAB 3--SECTION 3, UNIT 1 (continued)

8. Add a display of the status of system tape drives and disk packs to the ADM display. Each group should have 5 lines total, and the delay for this screen should be 6 seconds.

Syntax: ADM + (PER MTG PER PK 5) 6

9. Cancel the current ADM settings.

Syntax: ADM -

What is the system response? AUTO DISPLAY CANCELLED

10. Display the ADM again with default settings.

Syntax: ADM

Computer-Assisted Instruction Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-3 for this lab.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

SECTION 3

UNIT 2

MARC

Unit Objectives

After successful completion of this unit, you should be able to

- Sign on to MARC from the ODT
- Use MARC in menu or command mode to perform operations functions
- Bring up a REMOTESPO window and enter ODT commands
- Identify the function of MARC windows and dialogs
- Change between windows
- Match the function to the correct MARC command
- Identify the proper MARC screen field for a given type of input
- Identify differences between entering commands through REMOTESPO, MARC, and the ODT

Purpose

You may need to use different ways of issuing commands from the ODT and data comm stations.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

Menu-Assisted Resource Control (MARC)

MARC is a program which can be used, in menu mode or command mode, to perform system activities.

MARC Menu Mode

MARC provides menu screens that make it possible to perform activities on the system without having to know system command syntax. Choices are made from a series of MARC screens, which include prompts for input. Most operations activities can be done through MARC instead of by inputting commands. However, if you know the command syntax, it is faster than going through multiple MARC screens.

MARC Command Mode

In addition to using menus, you can input command syntax through MARC. However, some commands cannot be entered, and it is not possible to have an ADM screen displayed.

Getting to MARC from the ODT

Data comm stations generally display a MARC logon screen when the station is turned on, while the ODT has an ADM screen when it is turned on.

To use MARC from an ODT, the ODT must transfer to data comm mode. To do this, enter:

??MARC

= * COMS / ODT / DRIVER

default family = Disk.

It may be necessary to transmit a space so that the initial MARC logon screen is displayed. Then it is possible to log on and use MARC.

To return to the ADM display from MARC, control of the ODT must be returned to the MCP Controller. Enter the following:

??ODT

The following pages illustrate initial MARC screens and the use of MARC menus.

Note: Primitive commands are a subset of ODT commands that begin with a double question mark (??). For further information, see "Locating Command Syntax" in Appendix E of this guide.

*?? = PRIMITIVE
from Home*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

LOGON - Menu-Assisted Resource Control

02:03 PM

Welcome.

Please enter your user code []

...and your password []

Menu-Assisted Resource Control (MARC) Logon Screen

Unlike the ODT, where no logon is necessary, a usercode and password must be entered to log on to MARC unless the station has special system access rights.

Usercodes are assigned in different ways. Different levels of file access, system access, and command access can be associated with usercodes. Individual data comm stations can also be set up to further limit or expand access rights.

A station defined as a superuser station requires only an asterisk (*) to log on, rather than a usercode and password. At superuser stations, the option to enter only an asterisk usually appears on the MARC logon screen.

A usercode usually has an associated default family. Once you log on with a usercode, the system will look for files on this family, unless a different family is specified. Any files created will be stored under the usercode, on its associated family.

When an asterisk is used to log on, the default family is DISK, just as at the ODT. The system will search for and create files on DISK unless otherwise directed. Any files created will be nonusercoded.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

```
MARC - MENU-ASSISTED RESOURCE CONTROL          09:16 AM
Action: > any valid OS command
        H0me PRev GO PArEnt COmnd                (Press SPCFY for Help)

```

	Session<		Jobs and Tasks<		System Software<
TEACH	What is MARC?	IE	InfoExec	DUMPS	Dumps
NDT	News Date Time	TOOLS	Application Tools	LOG	Logging
BYE	Log Off	UTIL	System Utilities	MEM	Memory Management
CANDE	Cande Window	RUN	Run a Task	USERS	Usercode/Password
ON	Change Window	START	Start a WFL Job	PS	Printing System
SC	Session Control	JQ	Job Queues	SYS	System Control
		JD	Job Display		
		JC	Job Control		
					Hardware<
SEND	Send Messages			IO	I/O Devices
COMS	COMS Displays		Files<	PROC	Processors
CC	COMS Control	SP	Special Programs	HC	Host Control
BNA	BNA Commands	LIBS	System Libraries	OTHER	Other Devices
DC	DataComm Control	FILE	File Management	CONFIG	System Config

```
Choice: >

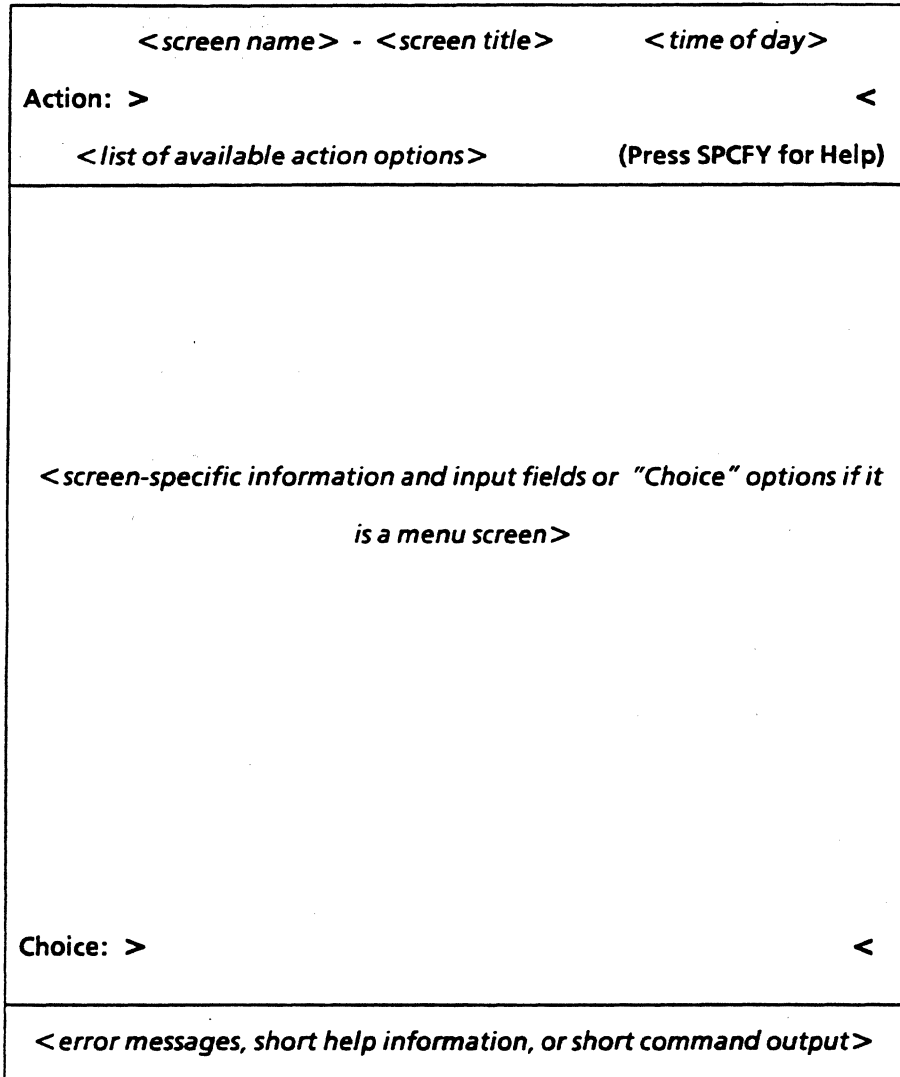
```

```
Unisys A6:6103 MARC 37.272.317 (COMS 37.505.9001) SED.
User = OPS; Session = 8536.
```

Menu-Assisted Resource Control (MARC) HOME Screen

Once you are logged on, the MARC HOME screen is displayed. The HOME screen differs depending on the type of user signed on. Again, limitations are specified in the definition of the usercode.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
MARC**



Enter an *Action* option to move from screen to screen, or enter syntax for a command if it will fit between the field delimiters.

Choose from among menu choices here if it is a menu screen. Other screens require information input in fields to complete a desired activity.

This field appears on menu screens. Enter a choice from among the menu options which appear on this menu screen.



Look for messages and system responses here below the rule line.

MARC Screen Layout

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

MARC Screen Format

On MARC screens, the **Action** line is used to enter specified **Action** options or to enter command syntax that will fit between the field delimiters. The line just below the **Action** line indicates the options available for the screen being displayed.

For the HOME screen, the **Action** options are

HOme	Returns the home menu that was displayed after logon.
PREv	Returns the screen that was last displayed.
PArent	Displays the menu that is the parent to the screen currently displayed. The parent screen is the menu that contained the selection that led to the currently displayed screen.
COmnd	Initiates MARC command mode. If command syntax will not fit between the delimiters of the Action line, CO will bring up a screen with a larger field so longer command syntax can be entered.

Actions on other screens may also include

GO <screen name>	Displays the requested screen.
REturn	Returns the screen that generated the last command.
KEys	Displays all the help key words available through MARC.
+	Scrolls forward through command output or help text.
-	Scrolls backward through command output or help text.

Help Keys

You can get online **help** by moving the cursor so that it is positioned over the item for which help is desired and pressing the [SPCFY] key. Short help text will be displayed on the two bottom lines of the screen. Press [SPCFY] again for more help information. Long help text will be displayed on your screen. If the help text is more than one page long, "+" will be displayed on the **Action** line. Transmit to see further information. At the end, use the **REturn** action to display the screen where you originally requested help information.

The **Choice** line appears only on menu screens. This field is used to enter the menu choice.

It may be necessary to enter choices on several menu screens, and complete information requested on parameter screens before MARC has enough information to perform the desired task.

When signed on to MARC, a station is in Forms mode. Input is accepted only if it is entered in the delimited fields. Nothing can be typed outside of these fields. Use the tab [→|] key and rtab [←|] key to move from one field to another (e.g., from the **Action** line to the **Choice** line). You can use the arrow keys to move the cursor outside delimited fields (e.g., to get help on a menu item) and to edit your input in delimited fields.

A terminal can be configured so that in Forms mode the system reads all characters in a field rather than just the characters from Home to the cursor.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
MARC**

```

MARC - MENU-ASSISTED RESOURCE CONTROL          09:16 AM
Action: >                                     <
      Home PRev GO PArEnt Comnd                (Press SPCFY for Help)
-----
      Session<                               Jobs and Tasks<           System Software<
TEACH What is MARC?       IE      InfoExec       DUMPS Dumps
NDT   News Date Time     TOOLS  Application Tools  LOG   Logging
BYE   Log Off            UTIL  System Utilities  MEM   Memory Management
CANDE Cande Window       RUN   Run a Task        USERS Usercode/Password
ON    Change Window      START Start a WFL Job   PS    Printing System
SC    Session Control    JQ    Job Queues     SYS   System Control
                                     JD    Job Display
                                     JC    Job Control
      Data Comm<                               Hardware<
SEND  Send Messages      IO    I/O Devices
COMS  COMS Displays      PROC  Processors
CC    COMS Control       SP    Special Programs  HC    Host Control
BNA   BNA Commands      LIBS  System Libraries  OTHER Other Devices
DC    DataComm Control   FILE  File Management   CONFIG System Config

Choice: >JD                                     <   ←
-----
Unisys A6:6103 MARC 37.272.702 (COMS 37.505.9001) SED.
User = OPS; Session = 5285.
  
```

Menu-Assisted Resource Control (MARC) HOME Screen

Using MARC Menu Mode

The following screens illustrate the use of MARC menus.

From the MARC HOME menu screen, you can display information about the status of jobs and tasks running on the system. Use the tab key to position the cursor on the Choice line, then enter the menu choice JD, for Job Display, and transmit.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
MARC**

```

JD - JOB AND TASK DISPLAYS          09:53 AM
Action: >                               <
      H0me PReV GO PAREnt COmnd      (Press SPCFY for Help)
-----
List<                                     From Active List:<
A   Active Jobs and Tasks                SUP  Suppress Task by Mix #
C   Completed Jobs and Tasks             US   Unsuppress Task by Mix #
J   Active Tasks in Job Structure         SUPT Suppress Task by Title
W   Waiting Tasks                        UST  Unsuppress Task by Title
S   Scheduled Tasks
MX  Active Jobs/Tasks w/ Displays
DBS Active Database Stacks               Y    Status of a Task
SELECT Selected Jobs & Tasks            TI   Time Accumulator for Task
                                         CU   Core Usage for Task
MSG  My Session Messages                 IB   Instruction Block
SMSG Recent System Messages              OT   Contents of Stack Cell
ALLMSG All System Messages               CO   Compiling Sequence Number
                                         BR   Task Checkpoint Control
                                         PF   FETCH Message of WFL Job

Choice: >A                               < ←
-----

```

MARC Job and Task Displays Screen

The Job and Task Displays menu screen is displayed, and you may choose the type of status information you wish to see from this menu.

To see the status of the active jobs and tasks in the mix, position the cursor on the Choice line and enter A, for Active Jobs and Tasks, then transmit.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
MARC**

ODT NS = next screen

```

                OUTPUT - MARC COMMAND OUTPUT                                09:55 AM
Action: >Return
        H0me GO REturn COmnd + -                                         <
                                                                    (Press SPCFY for Help)
-----
Response returned at 09:55 AM:

---Mix-Pri--CPU Time----- 13 ACTIVE ENTRIES -----
5153  80      1:45 JOB *SYSTEM/CANDE
5288  80      :08 *CANDE/STACK01
5172  50      :02 *COMS/ODT/DRIVER
5137  80     11:56 *SYSTEM/PRINT/REMOTE/SERVER
5135  80      2:33 *SYSTEM/COMS
5142  50      1:04 MARC
5138  50      1:25 MARC
5133  80      :01 COMS/TANK
5132  30      :00 COMS/INPUT
5128  80      7:30 JOB NSP108/00
4794  50      :30 JOB *SYSTEM/PRINT/ROUTER
4745  50      1:35 JOB *SYSTEM/GENERALSUPPORT
5271  75      :04 REMOTESPO
-----
A
how did get here.
```

MARC Output for Active Entries Inquiry

MARC displays the list of active jobs and tasks as they would be displayed on the ADM. If there are more entries than will fit on the screen, the "+" will appear on the Action line. Transmit to see the remaining entries.

The menu request for which output is shown is also displayed. See the A at the bottom of the screen display.

If the cursor was positioned after the RETURN on the Action line and transmitted, MARC would display the Job and Task Displays screen once again. If HO were entered on the Action line, MARC would return the HOME menu screen.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

Using MARC Command Mode

To accomplish the same task just illustrated using command mode instead of menu mode, enter appropriate command syntax on the Action line. In order to use this mode, you must know commands and how to input the syntax.

To display the list of active jobs and tasks, enter A on the Action line. The system returns a screen showing the current list of active jobs and tasks.

```
MARC - MENU-ASSISTED RESOURCE CONTROL          10:00 AM
Action: >A                                     <
      H0me PReV GO PArEnt COmnd                (Press SPCFY for Help)
-----
Session<           Jobs and Tasks<           System Software<
TEACH What is MARC?  IE  InfoExec           DUMPS Dumps
```

MARC Command Mode Input for Active Entries Inquiry

```
OUTPUT - MARC COMMAND OUTPUT                    10:00 AM
Action: >REturn                                 <
      H0me GO REturn COmnd                      (Press SPCFY for Help)
-----
Response returned at 10:00 AM:

---Mix-Pri--CPU Time----- 13 ACTIVE ENTRIES -----
5153 80      1:45 JOB *SYSTEM/CANDE
5288 80      :08 *CANDE/STACK01
5172 50      :02 *COMS/ODT/DRIVER
5137 80     11:56 *SYSTEM/PRINT/REMOTE/SERVER
5135 80      2:33 *SYSTEM/COMS
5142 50      1:04 MARC
5138 50      1:25 MARC
5133 80      :01 COMS/TANK
5132 80      :00 COMS/INPUT
5128 80      7:30 JOB NSP108/00
4794 50      :30 JOB *SYSTEM/PRINT/ROUTER
4745 50      1:35 JOB *SYSTEM/GENERAISUPPORT
5271 75      :04 REMOTESPO

A
```

MARC Output for Active Entries Inquiry

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

Commands can usually be entered directly, but if the command begins with a mix number or could be confused with one of the screen actions listed on line 3, it should be preceded by "COmnd" or the abbreviation, "CO". If the syntax you need to enter is longer than the Action line, you can enter CO on the Action line to display a Command screen. Enter the command syntax on this screen and transmit.

```
MARC - MENU-ASSISTED RESOURCE CONTROL          10:01 AM
Action: >CO                                     < ←
      HOme PReV GO PArEnt COmnd                (Press SPCFY for Help)
-----
  Session<          Jobs and Tasks<          System Software<
TEACH What is MARC?  IE  InfoExec          DUMPS Dumps
```

MARC Action Selection to Bring Up Command Input Screen

```
COMND - MARC COMMAND INPUT          10:01 AM
Action: >                                     <
      HOme GO REturn COmnd                (Press SPCFY for Help)
-----
Please enter a MARC command >
                                           <
-----
```

MARC Command Input Screen

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

When the MARC screen is used for command input, there is no constant display of system status like that available on the ADM screen at the ODT. To keep track of system status while in MARC, you can use the following ODT commands:

- A** Active jobs and tasks
- W** Tasks waiting for operator intervention
- S** Tasks waiting for available memory
- CO C** The most recently completed jobs and tasks *C/*
- MSG** Messages related to activity on the requesting station
- SMSG** The most current system messages

Using MARC in Command mode requires modification (CO C, SMSG) of some ODT commands you learned previously, but they generate basically the same output as at the ODT.

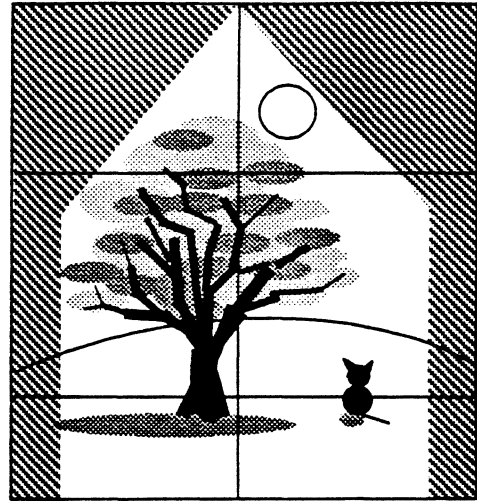
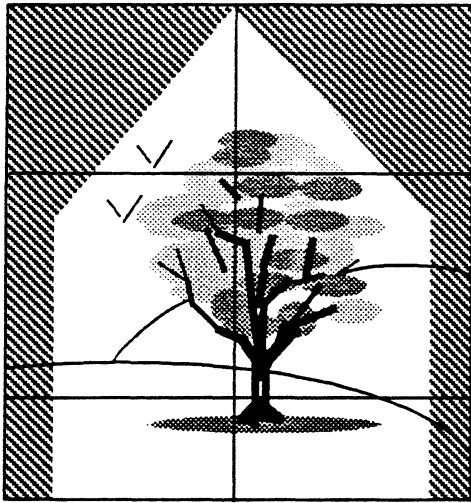
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

Windows and Dialogs

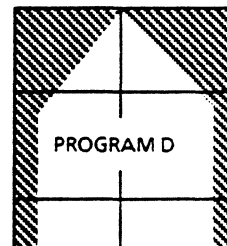
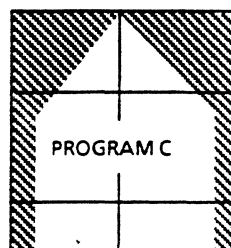
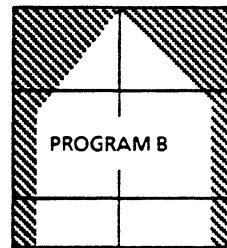
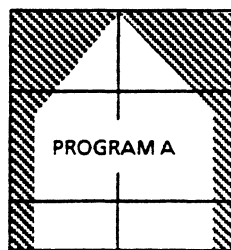
What is a Window?

The concept of a window is very similar to the concept of a real window.

When you look out of a window, you view only what can be seen from that window. If you go to a different window, you view something else.



Each window allows the user to view, or communicate, with a different program. Several programs can be accessed at the same station at the same time by going from window to window. You can monitor or perform several activities simultaneously, but only one window can be displayed at a time.

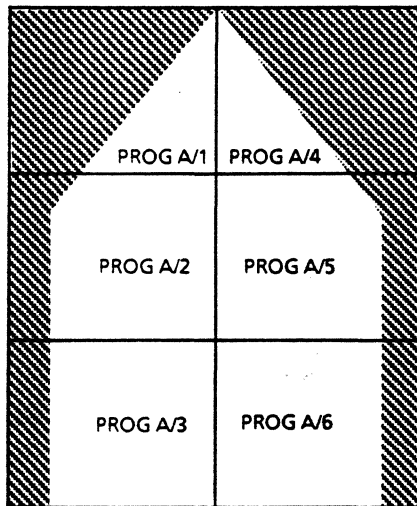


A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

In addition to being able to access several programs at once, you can have multiple views of the same window. Each view of the same window is called a **dialog**. For example, if you run a task through MARC dialog 1, you cannot run another task in that dialog while the initial task is running. However, you can use MARC dialog 2 to run another task.

To use the analogy of the real window, it would be like seeing a copy of what is being viewed through the window in each pane of the window.

Each window dialog is identified with a different number. Each window can have up to eight dialogs. Only one window dialog at a time can be displayed on the screen.



Several windows are defined when the system is initialized. If additional windows are desired, they must be defined. MARC is an example of one window that is defined when the system is initialized, and it is the default window.

Before you can access a window, it must be opened. Since the MARC window is the default window, the system automatically opens it when a data comm station is turned on. You can open other windows from the MARC window.

To open another window from MARC, enter the following on the Action line:

ON <window name>

From an open window, you can return to MARC or move to other windows or dialogs. Use the ON command with a question mark:

if not on Action line
?ON MARC

?ON <window name>

?ON <window name>/<dialog number>

To close a window, enter: **?CLOSE**

This will automatically return you to the MARC window.

1 PASS MARK

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

REMOTESPO Window

The windowing feature is much more likely to be used by programmers and other system users than by operators, but the following is an example of how the operator might use it. This process outlines yet another way commands may be entered.

Suppose the operator has a data comm station on his/her desk and wants to perform operations functions from that station rather than the ODT. The operator turns on the station, and signs on to the MARC logon screen. The operator is now on the MARC window.

To constantly monitor system activity, it is preferable to have an ADM screen, but this is not possible via the MARC program. However, another window, REMOTESPO, allows ADM display.

The operator must first establish the REMOTESPO window using MARC menu and parameter screens.

STEP 1: Enter OTHER on the Choice line and transmit.

The OTHER DEVICE SELECTIONS menu screen will be displayed.

```
MARC - MENU-ASSISTED RESOURCE CONTROL          09:16 AM
Action: >                                     <
      H0me PRev GO PArent COmnd                (Press SPCFY for Help)
-----
      Session<          Jobs and Tasks<      System Software<
TEACH What is MARC?    IE   InfoExec        DUMPS Dumps
NOT   News Date Time  TOOLS Application Tools LOG  Logging
BYE   Log Off         UTIL  System Utilities MEM  Memory Management
CANDE Cande Window    RUN   Run a Task      USERS Usercode/Password
ON    Change Window   START Start a WFL Job PS   Printing System
SC    Session Control JQ   Job Queues      SYS  System Control
      JD   Job Display
      JC   Job Control
Data Comm<
SEND  Send Messages   IO   I/O Devices
COMS  COMS Displays   Files<
CC    COMS Control    SP   Special Programs HC   Host Control
BNA   BNA Commands   LIBS System Libraries OTHER Other Devices
DC    DataComm Control FILE File Management CONFIG System Config

Choice: >OTHER                                     < ←
-----
Unisys A6:6103 MARC 37.272.317 (COMS 37.505.9001) LISLEA6A
User = OPS; Session = 5285.
```

Menu-Assisted Resource Control (MARC) HOME Screen

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

MOUSE Window

STEP 2: Enter REMSPO on the Choice line.

```
OTHER - OTHER DEVICE SELECTIONS          10:30 AM
Action: >                                <
      H0me PRev GO PArEnt COmnd          (Press SPCFY for Help)

-----
      Show Status                          Change Status (continued)
ALL  All Devices of All Types             URPK  Reserve Pack with Pathid
PER  In Use and Ready Devices            RSPK  Restore Pack with Pathid
PA   All Devices
OL   Label and Path Information          Miscellaneous
RF   Reliability Factor                 REMSPO Make Station an ODT
                                         DELSPO Delete ODT Designation

      Change Status
ACQ  Acquire Device
FREE Free Device from Active Group
CL   Clear Device
RY   Ready Device
SV   Save Device
UR   Reserve Device
RS   Restore Device

Choice: >REMSPO
```

MARC Other Device Selections Menu Screen

The REMSPO -- MAKE PSEUDO-STATION AN ODT parameter screen is displayed.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

STEP 3: Before the parameter screen can be completed, you must know your station name. To find out, move the cursor to the Action line, enter WRU, and transmit.

A screen of information about the station appears. The first line includes the station name with the station number in parentheses. Note the name.

In the following example, the station name is B2104.

Position the cursor after the RE on the ACTION line and transmit. You will be returned to the REMSPO -- MAKE PSEUDO-STATION AN ODT screen.

```
OUTPUT - MARC COMMAND OUTPUT                10:37 AM
Action: >Return                               <
      Home GO REturn COmnd + -                (Press SPCFY for Help)
```

Response returned at 10:37 AM:

```
(B2104(7))=0:0:5 READY, ENABLED, ATTACHED    ←
A6:6103 COMS 37.505.9001 (MARC 37.272.317) LISLEA6A; Window MARC/1
User = CINDY; MARC/1: Session = 8512.
```

WRU

MARC Response to WRU Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

STEP 4: Enter your station name as requested on this screen and transmit.

The system should respond with a message that says: "Your input has been accepted."

Now you can open the REMOTESPO window.

```
REMSPO - MAKE PSEUDO-STATION AN ODT 10:42 AM
Action: >Return
      Home PRev GO PArEnt COmnd (Press SPCFY for Help)
-----
Station Name: . . . . . >B2104
-----
Your input has been accepted.
>>> Message received on MARC/1 <<<
```

Station Name Input

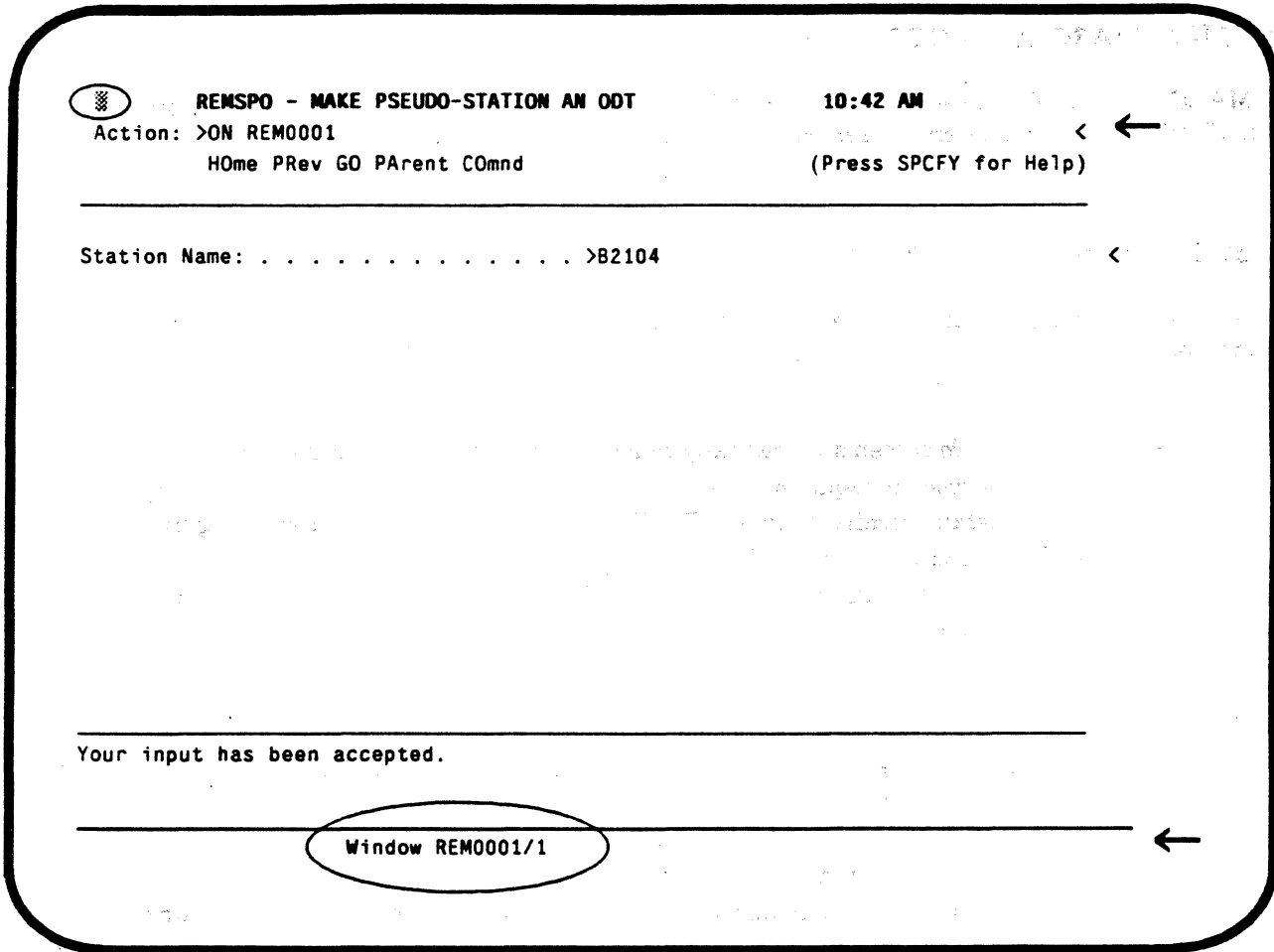
Note: Usually, the name of the REMOTESPO window is REM0001, but you can find out for sure. Notice that a message has been received on MARC/1. Enter MSG on the Action line to view the message, which will tell you the name of the REMOTESPO window just opened. The message will look something like the following example:

```
13:40 4424 Remote window REM0001 OPEN. INTNAME=RMT USER=. PROGRAM=*
      REMOTESPO.
```

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

STEP 5: Position the cursor on the Action line and enter: **ON REM0001**

The screen will not change much, except that a line near the bottom of the screen indicates you are now on Window REM001/1, and the cursor will appear in the HOME position.



MARC REM0001/1 Window

Do a [SHIFT]/[CLEAR HOME] to clear the screen and, in the HOME position, enter: **ADM**

An ADM screen will appear which looks like the one at the ODT. This screen can be used to monitor system activity, and commands can be entered on the screen just as they would be at the ODT. There are some commands that cannot be input from this screen, but most can.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL MARC

To return to the MARC window from the REMOTESPO window, enter: ?CLOSE

The system will respond with a message that indicates you are being transferred to MARC. A line near the bottom of the screen will indicate that you are on Window MARC/1, and you will be on the last MARC screen displayed before you opened the REMOTESPO window.

To return to the MARC logon screen, enter BYE on the Action line of the HOME screen.

Logging Off of MARC at the ODT

To log off MARC at the ODT, choose BYE from the HOME menu which will return the MARC logon screen. Then enter ??ODT on the "Please enter usercode" line, and the ADM will be displayed.

Review of Command Input Methods

Several methods of entering commands have been introduced in this section. The review list below will help distinguish between them.

ODT

- The ADM screen automatically comes up when the ODT is turned on.
- No usercode is required.
- The default family location of DISK applies when searching for/creating files.
- Command syntax is required.
- The system reads input from the HOME position to the cursor rather than only from delimited fields.

MARC

- It requires the use of a data comm station or transfer of ODT control to data comm.
- Logon can be either a usercode or an asterisk, if the station has superuser capability.
- If you log on with a usercode, its associated family location is used to search for/create files; if you log on with an asterisk, the default family location of DISK is used.
- It allows use of menus and parameter screens to indicate desired activity.
- It allows input of command syntax on the Action line or Command parameter screen; primitive commands cannot be entered.
- It requires that input be in delimited areas; the system does not recognize input outside of these areas.

REMOTESPO

- The user must be logged on to the station.
- It is opened through the MARC window.
- The default family location of DISK is used to search for/create files no matter how you log on to MARC.
- An ADM screen can be displayed.
- Command syntax is input as it would be at the ODT; some commands cannot be entered at a REMOTESPO (primitive commands).

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 3, UNIT 2**

PRACTICE EXERCISES--SECTION 3, UNIT 2

1. Give the syntax necessary to bring up a MARC logon screen at the ODT.

?? MARC

2. Match the MARC option/characteristic to the appropriate function.

- | | | |
|----------------------|--|--------|
| <u>D</u> HO | A. Field used to enter menu selections | CHOICE |
| <u>E</u> Action line | B. Scrolls output forward | + |
| <u>C</u> CO | C. Displays a parameter screen to enter command syntax | CO |
| <u>A</u> Choice line | D. Displays the home menu | HO |
| <u>B</u> + | E. Used to move between screens and input short command syntax | ACTION |
| | F. Returns the most recently displayed screen | PREV |

3. Windows allow C

- A) The user to log on to a workstation without a usercode
- B) Several users to log on to the same station at the same time
- C) The user to communicate with several programs at the same time from one station
- D) The user to see the activity of several programs on one screen at the same time

4. Choose the most appropriate MARC location (Action line, Choice field, or Parameter screen) to enter each of the following types of input:

Short command syntax ACTION

Command to return to a previous screen ACTION

Menu selection to bring up a parameter screen CHOICE

Command to display help key words ACTION

5. Underline each command input method to which the statement applies. You may underline more than one.

You must log on to the station with a usercode or asterisk.	ODT	<u>MARC</u>	<u>REMOTESPO</u>
You must enter input in delimited fields.	ODT	<u>MARC</u>	REMOTESPO
The ADM is automatically displayed.	<u>ODT</u>	MARC	REMOTESPO
You can choose to use menus or command syntax to initiate activities.	ODT	<u>MARC</u>	REMOTESPO

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 3, UNIT 2**

LAB--SECTION 3, UNIT 2

Usercode = _____

Family = _____

Sign on to the system as directed. At the MARC logon screen, use the usercode/password assigned by your instructor. Once you have the MARC HOME screen, proceed with the instructions.

1. With the cursor positioned between the delimiters of the **Choice** line, press [SPCFY] to get help information about the **Choice** line.

What does the help information indicate to enter on the **Choice** line?

any one of the menu selections

2. Display help information about the **Action** line.

What does the information indicate about how **Action** selections may be entered?

enter one of 40mc PLEX GD PAsent Command

3. Display help information for the menu choice **BYE**.

What does the information indicate this choice does?

ends current COMS session at this station
unless there is a queued output

Display more help information about **BYE**.

What message is displayed if there is output "tanked" for the station?

Window (window name) cannot be closed at this time
Tanked output exists. Pressing the resume or Bye,
with Range options.

Go on to the next screen of help information about **BYE**.

With the cursor positioned over the **R** in **REturn** on the **Action** line, transmit.

What screen appears? Home screen

4. Enter the correct menu choice on the **Choice** line to display the **JOB DISPLAY (JD)** screen.

Which is the correct choice? JD

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 3, UNIT 2

LAB--SECTION3, UNIT 2 (continued)

5. From the JD screen, enter the correct choice to display active jobs and tasks.

Which is the correct choice? A

How many active entries are there? 10

6. Return to the JD screen.

7. From the JD screen, enter the choice to display completed entries.

Which is the correct choice? C

8. Display the HOME screen once again.

9. From the **Action** line, enter the ODT command A to display active entries.

Is the response format the same as for the A menu choice on the JD screen? yes

From the **Action** line, enter the command to display completed entries. Syntax: CO C

Is the response format the same as for the C menu choice on the JD screen? yes

10. Enter the **Action** selection to get the Command Input screen.

Which is the correct choice? CO

11. Enter the A command as the correct parameter.

Is the response format the same as for the A command input from the **Action** line? yes

Enter the C command as the correct parameter. WRONG

Is the response format the same as for the CO C command input from the **Action** line? NO.

12. Display the HOME screen once again. ✓

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 3, UNIT 2**

LAB--SECTION 3, UNIT 2 (continued)

13. Perform the steps outlined in the unit to open the REMOTESPO window.

14. Once you have an ADM screen, display a full page of active entries.

Is the response format the same as for the MARC menu and command-mode inputs? YES

Display a full page of completed entries.

Is the response format the same as for the MARC menu and command-mode inputs? YES

15. Close the REMOTESPO window.

Syntax: BYE

16. Display the MARC HOME screen if it is not already displayed.

17. Log off of MARC. You should see the MARC logon screen.

Computer-Assisted Training Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-4 for this lab.

SECTION 4
SYSTEM AND PERIPHERAL
STATUS AND CONTROL

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING SYSTEM STATUS**

**SECTION 4
INTRODUCTION**

Section Objectives

You should

- Be able to monitor and change system and peripheral status.

Purpose

You should understand and be able to modify system and peripheral status so you can maintain the A Series environment.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING SYSTEM STATUS**

SECTION 4

UNIT 1

DETERMINING AND CHANGING SYSTEM STATUS

Unit Objectives

After successful completion of this unit, you should be able to

- Check the status of system environmental factors (time, date, and MCP level)
- Change the system time or date
- Change system option settings

Purpose

You may need to change system status to keep it current and provide the desired operating environment.

WM (What MCP) Command

This command is used to display information and options of the current MCP (Master Control Program or Operating System).

1) MCP: *SYSTEM/373/ASD/AMLIP/MCP 37.492.845 (MCP/AS)

- This is the file name of the current MCP.
- The actual file name could be any name.
- The current file name tells you the following:
 - 373 - 37 is the Mark Release, 3 is the major Release
 - ASD - (Actual Segment Descriptor) signifies that this version of the MCP supports A series systems with more than 6 MB (Mega bytes) without memory partitioning (called memory subsystems)
 - AMLIP - (A series Message Link Interface Processor) is the type of interface used by the A series to communicate to the I/O (input/output) subsystem.
 - This interface is used on newer systems such as A1/A4/A6/A15/A17.
 - 37.492.845 - is known as the object code release.
 - System software and environmental software is given object code release numbers.
 - The 37 signifies the Mark release.
 - The remainder (492 is the major release, 845 is the Minor or Patch release) are used by Unisys as internal identifiers.
 - MCP/AS - (MCP Advanced Systems) refers to the ASD feature where this A series can access greater than 6MB (Mega bytes) of memory without memory partitioning. (memory subsystems).

2) H/L UNIT: 45 PK 45

- This is the Halt/Load unit where the MCP file resides.
- It is the physical unit number of the disk.

3) COMPILED: 01/24/89 @ 13:04:23 (NEWP 37.492)

- This is the date and time the MCP was compiled.
- NEWP refers to the New Programming Language Compiler.
- MCP is written in NEWP which is the ALGOL language with some extensions.
- MCP can be tailored and recompiled by A series sites but this seldom is done (except for very large sites).

4) COMPILE TIME OPTIONS:

- There are various options that can be set when compiling the MCP.
- These options affect how the MCP operates:
 - e.g. LINEINFO - specifies that the line number of the MCP source file is displayed when the MCP fails.

5) H/L REASON:

- Explains what caused the last halt/load.

6) H/L TIME:

- The date and time that the last halt/load occurred.

7) GROUP ID:

- A group ID is a name given to a group of A series computers using BNA (Network Architecture) software.
- A group ID allows files to be sent to a group of computers.

8) HOSTNAME:

- This is the name given to the A series computer if using BNA (Network Architecture) software.
- A hostname allows files to be sent to a different computer, users to sign onto a different host from a terminal, etc..

9) SYSTEM SERIAL NO.:

- This is a unique number assigned when the A series was manufactured.

10) SYSTEM TYPE:

- This is the style of A series system.

11) CATALOGUE LEVEL:

- This indicates the number of levels of cataloguing back-ups you may have.
- The default of 3 is compiled into the MCP.
- To change the level requires recompilation of the MCP.
- Cataloguing is optional and most A series sites do not use.
- Cataloguing keeps track of previous versions of files and is implemented as a safeguard for accidental removal of files when creating new versions.

12) NEXT MCP:

- This specifies which MCP file to use at the next halt/load.
- This is set using the CM (Change MCP) command.

13) MCP BOUND LANGUAGE IS: ENGLISH

- This is the language for commands and messages.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING SYSTEM STATUS

System Environment

There are various ODT commands that allow the operator to determine and change the status of system environmental conditions. Status commands display information about such things as what level of MCP is running and the current system date and time.

After new system software is installed or the MCP file changed, it is a good idea to check what MCP is running to be sure it is the desired level. It is also important to check the time and date before any jobs are executed. Applications often use the system time and date to mark transactions, so they must be correct.

Determine Status

WM (What MCP)

This command displays information about the current MCP, including the name of the MCP code file, the release level, compile information, and other details. The screen display will vary somewhat, depending on the type of system.

Syntax: WM

```
WM

MCP: *SYSTEM/370/ASD/AMLIP/MCP 37.161.3321 (ASD MCP)
H/L UNIT: 46
COMPILED: 02/05/87 @ 15:51:33 (NEWP 37.160)
COMPILE TIME OPTIONS ARE:
  LINEINFO   READLOCK   READLOCKTIMEOUT
  RESTART    ASERIESMLIPONLY  FREEZEOUTTC
ASD
H/L REASON: OPERATIONS
H/L TIME: WEDNESDAY FEB 25, 1987 (87056) 1:37 PM
GROUP ID: DEFAULT
HOSTNAME: SED
SYSTEM SERIAL NO: 1612
SYSTEM TYPE: A3
CATALOG LEVEL: 0000
NEXT MCP: NOT SPECIFIED
MCP BOUND LANGUAGE IS : ENGLISH
CONTROLWARE TYPES SAVED: NONE
```

WM Response Display

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING SYSTEM STATUS

TD (Time and Date)

The TD command displays the system time and date. The date is displayed first as the calendar date then as the Julian date in parentheses. The time is in 24-hour format.

Syntax: TD

TD

DATE IS THURSDAY FEB 26, 1987 (87057) 11:41:12

8152 80 :02 COM5/TANK
8151 80 :00 COMS/INPUT
8137 50 :07 JOB *SYSTEM/PRINT/ROUTER
8132 80 2:21 JOB NSP108/00
8242 75 :29 REMOTESPO

----- NO WAITING ENTRIES -----

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----

8248/8249 11:34 EOT (SYSTEMSED) *SYSTEM/SIMPLEINSTALL
8246/8246 11:34 EOJ (SYSADM) JOB *SYSTEM/SIMPLEINSTALL/SCREENS
8314/8314 11:33 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
8313/8313 11:33 EOJ JOB SERVER/LP20/R#1167/J#8310

---MIX-TIME----- MESSAGES -----

8313 11:33 LP20: *BD/0008310/0008311/000LINE ON DISK3 PRINTED & REMOVED
8313 11:33 LP20: *BD/0008310/000SUMMARY ON DISK3 PRINTED & REMOVED

Example of TD Display

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING SYSTEM STATUS**

Change Status

TR (Time Reset)

The system time used by the MCP can be reset using the TR command. With proper syntax, the system date can also be changed with this command. In command syntax, the time is in 24-hour format, but may be entered in several different ways.

TR <hhmm> Changes time to the double-digit hour and minutes specified
TR 1330 Changes time to 1:30 p.m.

This format with no colons can only be used with 3 or 4 digits (hours and minutes).

TR <hh>:<mm> Changes time to hour and minutes specified
TR 13:30 Changes time to 1:30 p.m.

TR <hh>:<mm>:<ss> Changes time to the hour, minutes, and seconds specified
TR 13:30:45 Changes time to 1:30 p.m. and 45 seconds

To change the date and time to November 10, 1989, at 8:45:03 a.m., the syntax is as follows:

TR <hh>:<mm>:<ss> <day of week> <month> <day of month> <year>

TR 08:45:03 FRIDAY NOVEMBER 10 1989

If the time change is forward less than fifteen minutes, the change will be made immediately. If the change forward is more than fifteen minutes, or the change moves the time backward, procedures are more complicated. See the TR command in the ODT System Commands Operations Reference Manual.

To avoid corrupting data comm or causing system logging problems, changes to the time and date should be made with caution. Daylight savings time creates a typical situation where the operator may have to adjust the time.

*waiting message - det^u W^u
M^u# OK or DS*

DR (Date Reset)

To change the date only, use the DR command.

DR <day of week> <month> <day of month> <year>

DR FRIDAY NOVEMBER 10 1989

If the date change is for three days or less forward, the change will be immediate. Otherwise, procedures become more complicated. See the DR command in the ODT System Commands Reference Manual.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING SYSTEM STATUS

MCP System Options

The MCP provides optional features which can have a large impact on the performance and capabilities of the system. These options can be set (turned on) or reset (turned off). There are two types of system options. Compile-time options are set before the system software is released and are rarely ever changed. Run-time options are set when the MCP is running.

Run-time system options can be set/reset to achieve the desired operating environment, according to the needs of the site. If options are not configured appropriately, the system may not function as intended. MCP run-time options relevant to system operations are listed below. Each option has an option number which may be used in place of the option name when options are set/reset.

OP + 2 sets
OP - 2 re-sets.

OPTION 2 TERMINATE

SET Abnormal task terminations are processed normally.
RESET Abnormal task terminations cause a full memory dump.

This option would usually be set, since a memory dump is not desirable for every task which terminates abnormally.

OPTION 4 LBONLY

SET Print files are stored on a printer backup disk to wait for an available printer.
RESET Print files go directly to a printer.

This option would normally be set so that program execution is not interrupted. If it is reset, print files generated by programs go directly to a printer. If none is available, execution of the program will halt until the print file is printed. If set, the print file is sent to disk, and the program continues processing.

OPTION 5 AUTORM

SET Removes old file when duplicate files exist.
RESET Operator must resolve duplicate file conditions.

If this option is set, the MCP removes the old file when a new one is created with the same name. If reset, a command must be entered to indicate which file is needed.

RM for dup files
ONLY

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING SYSTEM STATUS**

OPTION 8 AUTORECOVERY

- SET** System attempts to halt/load after some types of system failure. If data comm processors were running before the halt/load, they are reinitialized automatically.
- RESET** No recovery actions occur. The mix limit of all queues is set to zero, so no jobs are automatically restarted.

*Where does it recover from??
What if in middle of an update & files are in different states?*

Setting this option will increase the efficiency of operations. If it is not set, jobs will have to be restarted by the operator.

OPTION 12 AUTODC

- SET** After a halt/load, data comm comes up automatically when an MCS is started.
- RESET** May require operator intervention to initiate data comm.

This option is normally set.

DOES NOT WORK ON MICRO A!

OPTION 16 CRUNCH

- SET** Code files and backup disk files are automatically crunched when they are closed.
- RESET** Files cannot be crunched, even when explicitly requested.

The CRUNCH option causes unused disk space from code and backup files to be returned to the system. Normally set, this option improves disk maintenance by making more disk space available to the system.

for objects & printer Backups.

printer files

OPTION 21 NOSUMMARY

- SET** Output of a job summary is suppressed unless a job produces backup files or terminates abnormally.
- RESET** A summary is printed unless suppressed by the job.

The choice of setting for this option depends on the individual site's need for job summary information, which includes tasks run by the job and whether they have completed successfully, messages related to the job, and job statistics.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING SYSTEM STATUS

OPTION 24 TIMEANDDATE SET Requires verification of TIME and DATE settings at halt/load time. Enter TIMEOK to verify displayed settings, or use DR or TR commands.

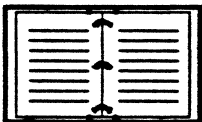
RESET The system uses stored time, even if it's not correct.

If your site depends on the accuracy of the system time and date, you will probably have this option set. However, it should be reset if your site is using the POWER SCHEDULE option, since it will cause auto initialization to stop and wait for a TIMEOK command.

OPTION 27 SERIALNUMBER SET Operator has to assign output to proper tape.

RESET Output is automatically assigned to the first available scratch tape.

Setting this option will give the operator more control over the tape subsystem, but may not be convenient if such control is not necessary.



For a complete list of MCP run-time options, refer to the **A Series ODT System Commands Operations Reference Manual**.

ou MTSO

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING SYSTEM STATUS

Checking and Setting MCP Options

MCP options will normally already be configured to provide the desired operating environment. If necessary, options can be changed with the ODT command **OP**. Some changes do not take effect until the next system restart.

- OP** Displays the current settings for all options. An asterisk (*) marks options that are set.
- OP+** Displays all options currently set.
- OP-** Displays all options currently reset.

OP <option numbers or names> displays the current state of the listed option(s).

Example: **OP 5** Displays the state of the AUTORM option.

OP+ <option numbers or names> sets the listed options.

Examples: **OP+ CRUNCH** Sets the CRUNCH option.

OP- <option numbers or names> resets the listed options.

Examples: **OP- 8 27** Resets the AUTORECOVERY and SERIALNUMBER options.

```
OP
---- OPTIONS ----
 1 OPEN                2*TERMINATE           3 NOCHECK             4 LPBDONLY
 5*AUTORM              6 DIAGNOSTICS         7 CDONLY              8*AUTORECOVERY
 9 DUPSUPERVISOR     10 DUPINTRINSICS     11 TRANSWARNINGS     12 AUTODC
13 NODUMP             14*CPBDONLY          15 AUTORUNNING       16 CRUNCH
17 BACKUPBYJOBNR     19 NOFETCH           20 RESOURCECHECK     21 *NOSUMMARY
22 DIRDEBUG          23 CATALOGING        24*OKTIMEANDDATE     25 NEWPERETRY
26 LOGPOSITIONING   27 SERIALNUMBER      28 ARCHIVING          29 OLDPRINTERSKIP
30 LOCKTRACE         31 IORANGECHECK      32 SWAPALLJOBS       33 KEYEDIOII
34 MIRRORING         35 DIAGNOSTICDUMP    36 AUDIT              37 FILESATURATION
38 EOTSTATISTICS    39 PATHBALANCING     40 BNARECOVERY       41 GMMDEBUG
42 ISCDEBUG          43 IODIAGNOSTICS     44 PORTDEBUG         45 USECATDEFAULT
46 CATTEST           47 MCPTEST
```

OP Response Display

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

SECTION 4

UNIT 2

DETERMINING AND CHANGING PERIPHERAL STATUS

Unit Objectives

After successful completion of this unit, you should be able to

- Check the status of peripherals
- Change peripheral status

Purpose

You must understand peripheral status information and how to change the status of peripherals so you can keep them available for use or make them unavailable when necessary.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

There will be several instances when you may need to check the status of peripherals on the system.

When the system is first brought up, check to be sure peripherals have come up all right and are ready for use.

If programs are having trouble accessing a peripheral, check the status of it. Also, if a controller, path, or unit has undergone maintenance, check the status of associated peripherals once the maintenance is finished.

Peripheral Mnemonics

When issuing commands related to peripherals, mnemonics are used to refer to them. An entire list of peripheral mnemonics is located in the *Basic Contracts* section of the **ODT System Commands Operations Reference Manual**. Mnemonics most commonly used by operators are listed below.

<u>Mnemonic</u>	<u>Peripheral</u>
PK	Pack
MT	Tape Drive
SC	ODT
IP	Image Printer
LP	Line Printer <i>1 layer connected</i>
DC	Data Comm <i>parallel</i>

Determine Status

PER (Peripheral Status)

The ODT **PER** command displays the status of the peripherals. With proper syntax, you can determine the status of all peripherals on the system, a particular type of peripheral, and even peripherals that are unlabeled or not available to the system.

The term **unit** refers to the actual physical peripheral device (drive, printer, etc.), and the **unit number** is the number the system uses to recognize the peripheral.

PER	Displays status of all units
PER <device>	Displays the status of all units of a specified device type
PER MT	Displays the status of all tape drives on the system
PER PK	Displays the status of all disk pack units on the system
PER =	Displays the status of all peripherals including unlabeled devices and those not available to the system

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING PERIPHERAL STATUS**

```
PER LP
-----LP STATUS-----
20 ABED  SCRATCH  EBCDIC64A
```

PER LP Response When Nothing is Being Printed

```
PER LP
-----LP STATUS-----
20 (531)  ABED  SERVER/LP20/"R#2604"/"J#0529"  EBCDIC64A
  |
  | MIX#
```

Example of PER LP Response When a File is Printing

The top example shows the system response to **PER LP** when nothing is printing on the printer.

The bottom example shows the system response when a print file is being printed. The printer unit number is 20. The number in parentheses is the mix number for the print job. The printer is designated **ABED** because it is a default printer--not assigned to any particular task. The middle information includes the printer unit that is printing, the print request number (the number assigned to the print request by the print system), and the number of the job that generated the print request. **EBCDIC64A** indicates the type of character set being used.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DETERMINING AND CHANGING PERIPHERAL STATUS**

The example below is for the PER PK command. It displays each disk unit with the type of pack (e.g., base or continuation pack), the pack serial number, family index number and name, and indicates how many files from the pack are currently open. The asterisk means the disk unit is write-enabled.

Note in the example below that LINCPACK Index #2 also shows the serial and unit numbers for its base pack.

PER PK

----- PK STATUS -----

44*B	[226044]	#1	DISK36	(0)
45*B	[226045]	#1	DISK37154	(0)
46*B	[110586]	#1	DISK	(43)
47*B	[226047]	#1	DISK3	(26)
60*B	[123456]	#1	LINCPACK	(0)
61*C	[432561:123456:60]	#2	LINCPACK	(0)
62*B	[323456]	#1	QA3	(1)
63*B	[423456]	#1	LOGS37	(0)
76*B	[050986]	#1	TOP50	(0)
77*B	[987654]	#1	SPARE	(0)
78*B	[012887]	#1	NEWDISK	(0)
79*B	[814114]	#1	SYSTEMSED	(1)

open files

Example of PER PK Response

PER NT

*50 * Q*
↓ ↓ ↓
write# write enable 1/4"

[Peter]
↓
ser#

(6250)
(1600)
1250
↓
density

#1
used #2

110
cycle#
version

for cataloging

Backup/ File 000
↓
Name

of 1st file

ie tape 2 = file 23
-1st file on tape 2

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

OL (Display Label and Paths)

The ODT OL command displays the same identification information as the PER command for an individual device unit, along with other detailed information about the communication path of the unit. The path details include the I/O base and DLP associated with the device as well as the status of the path—*not ready*, *offline*, *reserved*. The additional details displayed in response to the OL command will differ, depending on the type of I/O subsystem interface processor on the system.

OL <device> <unit number>

OL PK47

This displays identification and communication path information for disk pack drive unit 47.

OL PK 44

PK 44*B [131044] #1 DISK (56)
CREATED ON: 05/10/88 AT 00:02:34
HL FAMILY
SCSI/131 PACK

PATHID	HOST	MLIP PORT	LEM PORT	REL DLP	BASEID	FIRMWARE	IN USE	STATUS
01	1	0	0	4	0/1/0	00BC	*	READY

Example of OL PK Response

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

Change Status

If the status of a peripheral is not appropriate, there are several commands which can be used to change the status. A few of the most commonly used ones are described on the following pages.

SV (Save)

The SV ODT command is used primarily to make peripheral units unavailable to the system. If there is a problem with a particular device, it should be made unavailable.

Also, if the input/output of a particular task is to go to a particular unit, the unit can be saved, making it unavailable to other tasks. When the task requiring the saved device is ready, the device can be made ready.

Syntax:

SV <device> <unit number list>

SV MT 174

SV LP 28, 30

SV MT 174-176

RY (Ready)

If SV has been used to make a device unavailable to the system, the RY command can be used to make it available again.

Syntax:

RY <device> <unit number list>

RY MT 174

RY LP 20, 28

RY MT 174-176

CLOSE

The CLOSE command logically detaches a disk pack unit from the system. The CLOSE command can be used to prevent system use of a pack drive.

Syntax:

CLOSE PK <unit number list>

CLOSE PK 78

CLOSE PK 66, 67

CLOSE PK 60-65

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

CL (Clear)

The CL command clears input/output activity in progress or assigned to a peripheral. In some cases it also terminates the tasks using the unit.

Syntax:

CL <device> <unit number list>

CL LP 10

CL LP 10, 20

CL LP 10-20

UR (Unit Reserved)

The UR command reserves a unit to allow maintenance. The UR - command makes a previously reserved unit available. When reserved, a unit is not available to the system. Disk units must be closed before they can be reserved.

Syntax:

UR <device> <unit number list>
UR - <device> <unit number list>

UR PK 68, 69

UR - LP 20

MODE

The MODE command changes the write-enable status of disk packs and tape drives. The IN option prevents new files from being created on the unit, but does not prevent writes to the unit. Existing files can be updated or removed. The IO option returns the device to normal operations.

Syntax:

MODE PK <unit number> IN

MODE PK 45 IN

MODE PK <unit number> IO

MODE PK 45 IO

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DETERMINING AND CHANGING PERIPHERAL STATUS

FREE (Free Resource) / ACQUIRE (Acquire Resource)

If your site has more than one system sharing peripherals, you may need to use these commands.

The **FREE** command releases a resource from a system, so that it can be acquired for use by another system.

Syntax:

FREE <device> <unit number>

FREE MT 156

The **ACQUIRE** command acquires a peripheral for use by a system.

Syntax:

ACQUIRE <device> <unit number>

ACQUIRE MT 156

To check the status of shared peripherals, use the **OL** command. If a peripheral has been freed, a message will indicate that it is "NOT AVAILABLE TO GROUP".

RF (Reliability Factor)

The **RF** command provides information on the current reliability of a peripheral—whether performance is degraded. The system responds with a reliability factor percentage. A factor of 100% indicates that there is no degradation in performance.

Syntax:

RF <device> <unit number list>

RF MT 12



Syntax and details for the commands in this section are included the **ODT System Commands Operations Reference Manual**.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL A
PRACTICE EXERCISES--SECTION 4**

PRACTICE EXERCISES--SECTION 4

1. What is the proper syntax to display the current system time?

TD

2. What is the proper syntax to display only the status of available peripherals?

PER PR

3. What is the proper command to determine the current MCP file?

WM

4. What will the syntax below display?

PER MT

status of mag tape drives

5. Show the proper syntax to change the system time to 3:30 p.m. and 30 seconds.

TR 15:30:30

6. Give the appropriate syntax to set AUTORECOVERY.

OP+ AUTORECOVERY

7. What is the syntax to show the current state of all system options?

OP

8. Which peripheral status command displays the DLP and path status associated with the given peripheral?

OK & peripheral

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 4**

PRACTICE EXERCISES--SECTION 4 (continued)

10. If you wanted to prevent tape drive unit 156 from being used by a particular task, what command syntax would you use?

SV MT 156

To make it available again, what syntax would you use?

R/ MT 156

11. If you want to reserve disk pack 63, what should you do before reserving it?

Syntax: CLOSE PK 63

12. Why should you be careful when using the CL command?

could terminate task associated w/ peripheral.

13. If PK 63 is reserved, how can you make it available to the system?

UR - PK 63

14. To verify a system message that the performance of disk pack 61 is degraded, what command would you enter?

RF PK 61

15. To release LP 21 from System A and make it available to System B, what two commands would you use?

FREE LP 21

ACQUIRE LP 21

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB EXERCISES--SECTION 4**

LAB--SECTION 4

Sign on to the system and get a REMOTESPO window. Once you are on the window, proceed with the instructions below. (It is not necessary to have an ADM screen for this lab.)

1. What time and date are currently being used by the system? Syntax: TD

Thursday Oct 25, 1990 (90298) 8:30:27

2. What is the current MCP file? Syntax: WM

What is indicated in the command response information for the following?

Halt/load unit number 45

Halt/load time (of last halt/load) Monday Oct 15, 10:45

System type Minco A

3. Which MCP options are set? Syntax: OP+

2,4,5,6,7,8,11,12,13,14,15,16,17,20,21,27,37,39

4. Use the PER command to find out if there is anything printing on the system printer. Syntax: PER LP4
If so, indicate the print request numbers.

nil

5. What are the family names and device unit numbers of the packs on the system? Write down at least ³ ~~four~~ of them, including the family being used for labs.

Syntax: PER PK

DISK #45

PACK(#1) #47

PACK(#2) #48

6. Are there any continuation packs on the system other than for DISK? If so, write down the serial number and the base pack unit number for each.

Syntax: PER PK

380047,380047 - base pack 48

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB EXERCISES--SECTION 4

LAB--SECTION 4 (continued)

7. What is the number of the DLP associated with DISK (base pack)? Syntax: OL PK 45
0
What is the status of the communication path for this unit? 01
Did the command response indicate that this unit is in the halt/load family? YES
Are there any continuation packs in the halt/load family? Syntax: _____
If so, write down the unit numbers for those packs. 110.

8. What is the printer unit number? LP4
Save the printer unit. Syntax: SY LP4
Does the PER command response indicate the printer is saved? YES
Does the OL command response indicate the printer is saved? YES
9. Ready the printer unit. Syntax: RY LP4
10. What is the reliability factor for the halt/load unit? PF PK45 = 100%

Computer-Assisted Instruction Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-5 for this lab.

NOTES

This image shows a sheet of white paper with horizontal ruling lines. The word "NOTES" is printed at the top center in a large, bold, black font. On the left side of the page, there are three circular binder holes. The paper is otherwise blank, with no handwriting or other markings.

SECTION 5
FILE AND SPACE MAINTENANCE

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
FILE AND SPACE MAINTENANCE**

**SECTION 5
INTRODUCTION**

Section Objectives

You should

- Know how to inquire about files on disk and tape
- Be able to prepare tape media for file storage
- Understand the purpose and importance of file maintenance
- Know how to back up files and maintain disk space

Purpose

You must know procedures for preparing and maintaining storage of duplicate files that may be needed in case original files become corrupted or lost, and you must be able to maintain adequate disk space so that it is available when needed.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PREPARING TAPE MEDIA FOR FILE STORAGE**

SECTION 5

UNIT 1

PREPARING TAPE MEDIA FOR FILE STORAGE

Unit Objectives

After successful completion of this unit, you should be able to

- Purge a tape
- Assign a serial number to a tape
- Check the status of tape drives
- Make tape drives ready for use

Purpose

Before you can back up files, you must know how to prepare and maintain storage media.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PREPARING TAPE MEDIA FOR FILE STORAGE

Purpose for File Backup

In any data processing environment, there is always concern that equipment or software may fail or become corrupted, causing the loss of valuable data. It is wise to create and maintain current duplicate (backup) files of crucial data and code.

Up-to-date duplicates should be made for all system and application software. This need not be done daily, only as often as needed to keep backup copies current.

Users constantly create and change files, which should also be backed up as often as necessary to keep backup copies current (perhaps daily).

Another reason for backup is to help maintain maximum online storage space. The system creates files, such as logs, which contain valuable information. If you want to keep files that are not necessary for daily system activity, back them up to tape. This type of backup may need to be done on a daily basis.

Tape Media

Tape media is usually used to store backup files. It is portable, easy to store offline, and a large amount of information can be stored on a tape.

Some issues regarding file backup are as follows:

- What tapes will be used for file backup?
- How long will they be kept before they are used again and overwritten?
- How often should different types of files be backed up?
- What will the backup schedule be?
- How will tapes be externally labeled? The label should contain information such as the tape name, the type of tape drive it was produced on, the bpi number, the utility (and software level) used to create the tape, and the date.
- Where will tapes be stored? Both onsite and offsite storage are recommended. Tapes stored offsite can help in the recovery process when an entire system or building is affected by a problem such as a fire.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PREPARING TAPE MEDIA FOR FILE STORAGE

Preparing Backup Tapes

Preparing a backup tape for use involves a number of steps.

1. Identify the physical tape.

Normally, tapes are rotated and reused. You do not need a new tape for every backup. There should be a system to determine how long a tape should be stored before it can be reused. Label tapes with a record of the information stored on each tape and when it will be obsolete. To avoid using a tape containing information that should be retained, read the external tape label or take a tape from a storage area designated for reusable tapes.

2. Mount the tape.

Place a write ring in the tape and then load the tape on the tape drive. If your site has more than one tape drive, determine which tape drive is available and load the tape. Make sure the tape drive is online.

The tape is loaded on the tape reel, up to the BOT marker. New tapes from Unisys have BOT and EOT markers already installed. They indicate to the system the beginning and end of the usable portion of the tape.

If the BOT marker is missing, the tape will not load.

3. Check the tape status.

Use the **PER** command to check the status. It should indicate either the name presently on the tape label or that it is a scratch tape.

If the tape drive is saved, the word "SAVED" will be displayed, instead of the name of the tape mounted, in response to either the **OL** or **PER** command. Use the **RY** command to ready the tape drive.

```
PER MT
----- MT STATUS -----
156 P [LN2130] 1600 #1 1:0 LN2130/FILE000
```

PER MT Response When a Used Tape Is on the Drive

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PREPARING TAPE MEDIA FOR FILE STORAGE

"NO READY PATH" in response to **OL** or "NO ENTRIES" in response to **PER MT** may indicate that the tape drive is not online.

The **NO ENTRIES** message may also mean that the tape drive has been freed from the system. If it has been made unavailable to the system with the **FREE** command, you will see the message "NOT AVAILABLE TO GROUP" in response to the **OL** command. Use the **ACQUIRE** command to make it available.

If the tape drive has been reserved, the response to the **OL** command will indicate "RESERVED". Use the **UR** - command to make it available.

4. Purge the tape and assign a serial number.

The tape itself needs to be prepared to receive data. If it is a tape which has been used before, it needs to be purged--have the contents removed.

The tape must also have a serial number. A tape with a serial number can be left as it is or changed. If it is a new tape, a serial number must be assigned.

The **PG** and **SN** commands are used to prepare tapes.

PG (Purge)

The **PG** command will purge the information from a used tape. A purged tape is considered to be "scratch." A tape cannot be purged while it is in use, locked, not ready, or not write-enabled. Using the **PG** command does not remove the serial number which was previously assigned to the tape.

Using the **PGL** command will purge the tape and lock the drive it is on so that no task can automatically acquire the scratch tape.

PG MT <unit number list>

PGL MT <unit number list>

PG MT 156,157

PGL MT 174

SN (Serial Number)

To purge a tape and assign it a new serial number, use the **SN** command. This command is used with old and new tapes, and cannot be used with a tape that is locked, not ready, or not write-enabled.

The serial number does not have to be numeric. It can contain up to six alphanumeric characters. If less than six numeric characters are assigned, leading zeros are added. If less than six letters (or mixed letters and numbers) are used, trailing blanks are added. A serial number with special characters must be enclosed in quotation marks.

SN MT <unit number> <serial number>

SN MT 170 021689

Purges the tape on unit 170 and assigns a serial number that could represent the date of assignment

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PREPARING TAPE MEDIA FOR FILE STORAGE**

SN MT 147 DGBU01

Purges the tape on unit 147 and assigns a serial number which might represent a person's initials and identify the tape as backup tape number 1

SN MT 156 PROJ05, 157 PROJ03

Purges the tapes on units 101 and 102 and assigns the respective serial numbers

There is an SNL command that will lock the tape units after purging so that the tapes cannot be acquired as scratch tapes by jobs in the mix.

5. Check tape status again.

Once the tape has been purged and a serial number assigned, check the status again. The status should indicate that the tape is now a scratch tape with the serial number that was assigned in the command.

PER MT	----- MT STATUS -----		
156*P	[110188]	1600	SCRATCH

PER MT Response After SN

Now the tape is ready, and the backup process can begin.

*RW MT50
=rewind*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 5, UNIT 1

PRACTICE EXERCISES--SECTION 5, UNIT 1

1. List two reasons to back up files.

recover data lost by equipment failure
software

2. Why is tape a good media choice for backup files?

easy to store portable

3. Why is it important to check whether the tape to be used for backup should be used?

so you don't overwrite something you need to keep.

4. Before you mount a tape to be used to back up files, what should you check for and place on the reel if it is not there?

printed label (before & after purge, after copy)

5. Once a tape is mounted on the drive, when should you check the status of the tape?

right away

6. How can you tell if a tape drive has been freed from the system?

ppr ppr =

7. What command can you use to determine whether tape drive 176 is reserved? Syntax:

FSR=MT 176 OR OK MT 176

8. Give the syntax to find out the name of a tape on unit 177.

OK MT 177

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 5, UNIT 1**

PRACTICE EXERCISES--SECTION 5, UNIT 1 (continued)

9. Give the syntax to assign serial number JAN89 to the tape on unit 156.

SN MT 156 JAN 89

10. Give the syntax to create a scratch tapes on units 121 and 122 without changing the serial numbers.

PG MT 121 122

11. Give the syntax you would use to correct a situation where tape drive 177 is NOT AVAILABLE TO GROUP.

ACQUIRE MT 177

12. What syntax can you input so that you can use tape drive 157, which is SAVED"

RV MT 157

13. What command should you use to find out the name of a tape on drive 156?

OK MT 156

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
COPYING BACKUP FILES TO TAPE**

SECTION 5

UNIT 2

COPYING BACKUP FILES TO TAPE

Unit Objectives

After successful completion of this unit, you should be able to

- Distinguish between labeled and unlabeled tapes
- Back up disk files to tape
- Generate tape directory listings
- Rewind and unload tapes
- Recover disk files from tape

Purpose

You must know how to back up files to tape so duplicates are available in case originals are lost or corrupted.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL COPYING BACKUP FILES TO TAPE

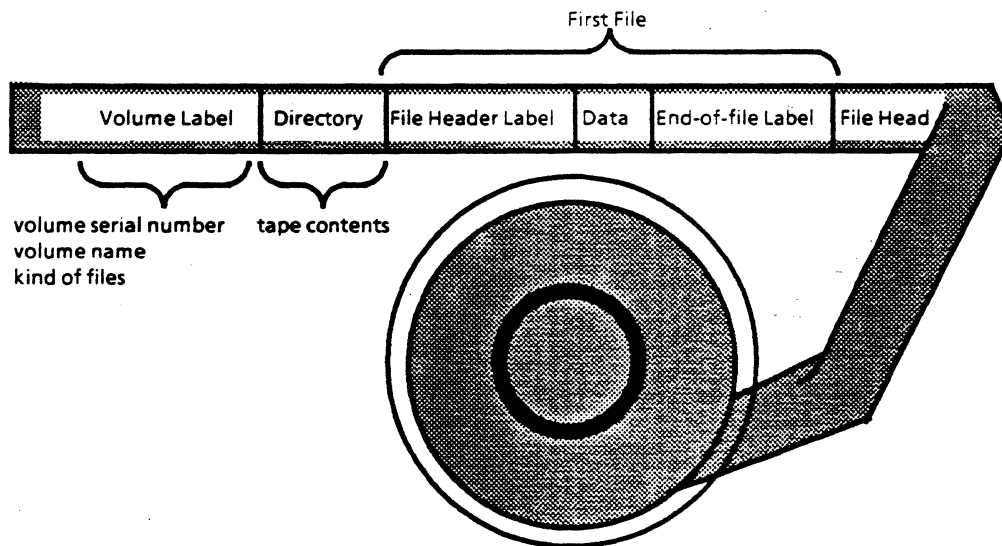
Tape Format

Once the tape media is prepared, continue the backup process by copying files to tape. Tapes may be labeled or unlabeled. Labeled tapes have identifying information, such as serial number and tape name, stored in a volume label record on the tape. Unlabeled tapes do not have label records.

Library Maintenance

An MCP program called LIBRARY/MAINTENANCE is used to copy files from one file storage media to another, most commonly for backup purposes, creating library media. Files copied from disk to tape, library tapes, are almost always multifile, labeled tapes.

In addition to the volume label, labeled tapes created by LIBRARY/MAINTENANCE have a directory of the contents of the tape, a header label at the beginning of each file, and an end-of-file label at the end of each file. These labels are used to search for particular files. At the end of the tape reel there is an end-of-volume label.



Multifile Labeled LIBRARY/MAINTENANCE Tape

1. Copy Files to Tape

LIBRARY/MAINTENANCE is initiated by the command statements that follow.

COPY

The COPY command statement is used to copy files from one media to another.

There are many syntax options with this statement. The basic syntax and examples are outlined on the following pages.

If the my comes up 4 days it is waiting for

msc # WOU W MT 50
5-12

Betty

BACKUP of Data Files

1. Put a tape in the tape drive - slide the lever to the right.
2. Under MT STATUS you will see the name of the tape or SCRATCH.
3. On the ODT enter:
 PG MT50 <Xmt> (+key on the numeric pad)
 MT STATUS will then show it as SCRATCH. *(Unlabelled if new)*
4. On the ODT enter:
 START (PROD)WFL/BACKUP DATA <Xmt> *AP ← Source Key in → SN MT50*
5. If under WAITING ENTRIES it shows that the procedure requires MT # 1, enter on the ODT - <Mix #> OU MT50 <Xmt> *sup 4 six digits - this becomes the label*

omit ~~When backup is completed enter on the ODT - RW MT50 <Xmt>~~

7. To obtain a directory of the tape - enter at the ODT -
 TDIR 50 <Xmt>
 This will print a tape directory of the tape.
 8. After the tape directory is complete - enter at the ODT -
 RW MT50
 9. After the tape rewinds, slide the lever to the left - the tape will pop out just a bit and then remove it.
- ** The name of the tape will be BACKDATAyymmdd.
 -where yymmdd is the computer system date.

ODT

START (PROD)WFL/BACKUP DATA

+ Source Tape from Files.

for Mary

~~OU Mix # MT50~~

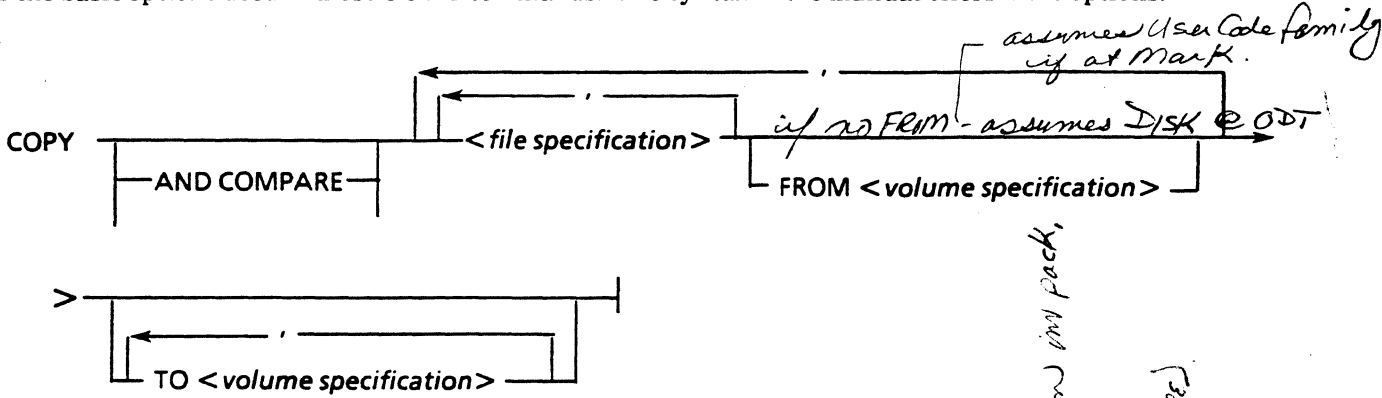
Mix # OU MT50

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
COPYING BACKUP FILES TO TAPE**

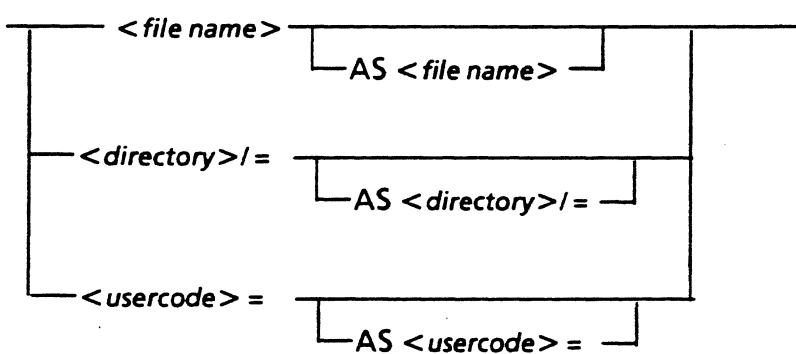
see the notes at the end

COPY Syntax Diagram

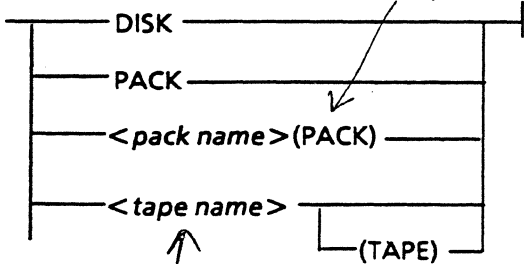
This diagram is not exactly as shown in the Work Flow Language (WFL) Programming Reference Manual, but outlines the basic options used in most COPY commands. The syntax in the manual offers more options.



< file specification >



< volume specification >



assumed TAPE if disk not named PACK or DISK.

making the name of the tape during copy statement.

COPY = FROM INVENTORY (PACK) TO INVENTORY BX (TAPE) - all files on im pack.

COPY NAME, NAME, NAME FROM FAMILY (PACK) TO TAPE NAME (TAPE)

COPY : FROM PACK TO TAPE

COPY = TO TAPENAME.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL COPYING BACKUP FILES TO TAPE

There are default device-types for COPY syntax.

If the FROM or TO *<volume specification>* is totally omitted from the syntax, DISK (or the family assigned to the usercode) is assumed.

If you attempt to omit both FROM and TO phrases from the syntax, the system will not usually accept it. It will be accepted if you use COPY with an AS phrase.

If a FROM or TO volume is specified by name, but no device type is given in parentheses (PACK or TAPE), tape is assumed.

Examples of COPY Syntax to Make Backup Tapes

COPY = FROM MYPACK (PACK) TO MYPACKBKUP

This command syntax will copy all the files on a pack called MYPACK to a scratch tape called MYPACKBKUP. (The default device-type of tape is assumed for MYPACKBKUP.)

COPY (DG)PROJ/= FROM USER(PACK) TO DGBKUP

This command copies all files under the (DG)PROJ directory from the USER pack to a tape called DGBKUP.

COPY (USER1) FILES/= FROM USER(PACK) TO USER1BKUP, TO USER2BKUP

This command copies all files under the (USER1)FILES directory from the USER pack to scratch tapes called USER1BKUP and USER2BKUP.

COPY (ADMIN1)FILE/001 TO SYSBKUP (SERIALNO = 012345)

This command copies file 001 under the (ADMIN1)FILE directory from DISK to a scratch tape called SYSBKUP. (When "FROM" is omitted, the default of DISK is assumed, and tape is assumed for SYSBKUP.)

The SERIALNO attribute added to the syntax indicates that the file is to be copied to a tape with the specified serial number.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL COPYING BACKUP FILES TO TAPE

An **AS** option can be added to the **COPY** syntax to alter the name of the files being duplicated.

COPY (DG)FILES/= AS (DG)PROJA/FILES/= FROM USER(PACK) TO DGPROJABKUP

This command copies all files under the (DG)FILES directory from the USER pack to the DGPROJABKUP tape with the new prefix (DG)PROJA/FILES.

COPY PROJA/WORK/= AS PROJA/FINAL/= FROM TEST(PACK) TO FINISHED(PACK)

This command copies all files under the PROJA/WORK directory on the TEST pack to the PROJA/FINAL directory on the FINISHED pack.

NOT ON MICROA

SIMULTANEOUSLY

COMPARE Option

If you use the **COMPARE** syntax option, the copied file will be compared to the original file after it is copied. If they do not correspond exactly, a message will indicate that the file needs to be recopied.

COPY & COMPARE (ADMIN1)= FROM ADMIN(PACK) TO ADMIN1BKUP

This command copies all files under the usercode ADMIN1 from the ADMIN pack to a tape called ADMIN1BKUP, comparing each tape file to the original on pack after it is copied.

COPY AND COMPARE SYSTEM/=, SYSADMIN/= TO SYSBKUP1, TO SYSBKUP2

This command copies all files under the SYSTEM and SYSADMIN directories on DISK to tapes called SYSBKUP1 and SYSBKUP2, comparing each copied file on each tape to the original file on DISK.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL COPYING BACKUP FILES TO TAPE

The following screen shows **COPY** command syntax input and the resulting system response messages as files are copied.

```
COPY AND COMPARE (DGREEN)OBJECT/OP/PROG/ = FROM SYSTEMSED(PACK) TO  
SPARE(PACK)
```

```
---MIX-PRI--CPU TIME----- 10 ACTIVE ENTRIES -----
```

```
6440 80    2:24 JOB *SYSTEM/CANDE  
6410 80    18:01 *SYSTEM/PRINT/REMOTE/SERVER  
6408 80    3:19 *SYSTEM/COMS  
6415 50    1:34 MARC  
6411 50    2:22 MARC  
6406 80    :11 COMS/TANK
```

```
----- NO WAITING ENTRIES -----
```

```
----- NO SCHEDULED ENTRIES -----
```

```
---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
```

```
* 6833/6833 12:31 EOJ JOB BEGIN JOB;COPY AN          ←  
* 6833/6834 12:31 EOT *LIBRARY/MAINTENANCE          ←  
6829/6829 11:39 EOJ JOB UTILITYPROGRAM  
6828/6828 11:30 EOJ JOB UTILITYPROGRAM
```

```
---MIX-TIME----- MESSAGES -----
```

```
* 6834 12:31 (DGREEN)OBJECT/OP/PROG/2 COPIED FROM SYSTEMSED TO SPARE ←  
* 6834 12:31 (DGREEN)OBJECT/OP/PROG/1 COPIED FROM SYSTEMSED TO SPARE ←  
6834 12:31 (DGREEN)OBJECT/OP/PROG/X COPIED FROM SYSTEMSED TO SPARE ←
```

Response from COPY Command



Details on the use of **COPY** are in the **Work Flow Language Programming Reference Manual**.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
COPYING BACKUP FILES TO TAPE**

Sample printer output for the **TDIR 173** command follows:

UNISYS A SERIES 1612 REPORT OF 03/06/87 AT 14:43:42. VERSION 37.160

**TAPE = SYSTEMAS/FILE000. ON UNIT 173
SERIAL # = 037161 -- CREATED 2/12/87.
9-TRACK (PE) 1600 BPI**

- 1 *SYSTEM/ASD/LOADER,
- 2 *SYSTEM/ASD/UTILoader,
- 3 *SYSTEM/ASD/BOOTSTRAP,
- 4 *SYSTEM/ASD/PRINTERDUMP,
- 5 *SYSTEM/ASD/AMLIP/MCP,
- 6 *SYSTEM/ASD/TR/MCP,
- 7 *SYSTEM/ASD/MCP/DIAGNOSTICS,

TAPEDIRECTORY INPUT WAS:

"TPDIR 173"

3. Rewind the tape.

After the tape directory listing has been generated, the tape can be rewound and unloaded. Use the **RW** command.

The **RW** command rewinds and unloads a tape, and locks the tape drive unit. It will only work if the tape is not in use. These functions can also be performed by pressing the appropriate buttons on the tape drive unit.

RW MT <unit number list>

RW MT 155,156

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL COPYING BACKUP FILES TO TAPE

4. Dismount the tape.

After the tape is rewound, it is ready to be dismounted.

5. Label and store the tape.

The backup tape must be labeled (external label) and stored. Be sure to update your tape library records concerning the information stored on this tape. Keep the printed tape directory with the tape.

Recovery

The backup tapes can be used to recover disk files that have been destroyed or lost. The files can be copied back to disk from the tapes using COPY syntax.

Using COPY to Recover Files

COPY (DG)= FROM DGFILE(TAPE) TO USER(PACK)

This command copies all files under the DG usercode on a tape called DGFILE to a pack called USER.

COPY (ACCT)CLOSED/YTD/89 FROM ACCTBKUP(TAPE) TO ACCOUNTS(PACK)

This command copies the specified file from the ACCTBKUP tape to the ACCOUNTS pack.

Using COPY & COMPARE to Recover Files

COPY & COMPARE = FROM PROJ(B)TAPE TO WORK(PACK)

This command will copy all files from the PROJ(B) tape to the WORK pack, comparing each pack file to the original tape file after it is copied.

COPY AND COMPARE = FROM SYSFILES

This command copies all files from a tape called SYSFILES to DISK and compares each file copied with the original on tape.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 5, UNIT 2**

PRACTICE EXERCISES--SECTION 5, UNIT 2

1. Show the proper syntax to create a library tape by copying all the files from the USER pack to the USERBKUP tape.

COPY = FROM USER(PACK) TO USERBKUP

2. Show the proper syntax to copy all the files under the usercode MYCODE on the USER pack, to a tape called MYTAPE.

COPY (MYCODE) = FROM USER(PACK) TO MYTAPE

3. Show the proper syntax to copy all files under the (ACCTS)NEW directory on the ACCOUNTS pack, to the ACCOUNTS pack with the new prefix of (ACCTS)NEW89.

COPY (ACCTS)NEW/ = AS (ACCTS)NEW89/ = FROM ACCOUNTS(PACK)
TO ACCOUNTS(PACK)

4. Show the proper syntax to copy all files under the SYSTEM directory on DISK, to a tapes called SYSBKUP1 and SYSBKUP2. The resulting files should be compared to the original files after they are copied.

COPY & COMPARE SYSTEM/ = TO SYSBKUP1, TO SYSBKUP2

5. Show the proper syntax to get a printout of the directory of the tape on unit 170.

TDIR 170

6. What are two ways to rewind a tape on unit 158?

RW MT 158

- Press rewind button

7. What is the preferred way to rewind a tape, and why?

use RW in case tape is in use

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 5, UNITS 1 and 2**

LAB--SECTION 5, UNITS 1 AND 2

This lab should be done from the ODT because it requires access to system tape drives.

1. Load a scratch tape on a tape drive unit and check the status of the tape. Syntax: DL MT 50

What is the serial number and name of the tape? [PETER.] BACKUP

2. Using one command, purge the tape and assign today's date as the serial number. Syntax: SN MT 50 901024

What is the serial number and name of the tape now? [901024] SCRATCH

3. Copy ~~and compare~~ everything under the (<usercode>)COPYLAB directory on <family> to the tape. Name the tape CLASTAPE <your initials>. Use the usercode and disk family assigned by your instructor.

Syntax: COPY (ORS) COPYLAB/ = FROM PACK (PACK) @
CLASTAPE (TAPE)

5. Check the status of the tape again. What is its name? CLASTAPE @P

6. List the directory of the tape at the ODT. (With the cursor in the space after QUIT, press [XMIT] to return to the ADM screen.)

Syntax: TPIR SPO 50 ↙ NO MT

7. Purge the tape and check its status. Syntax: PG MT 50

What is the serial number and name of the tape now? 901024

8. Rewind the tape from the ODT. Syntax: RW MT 50

Computer-Assisted Training Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from **modules 1-6** for this lab.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL A
DISK FILE MAINTENANCE - 2A1

SECTION 5

UNIT 3

DISK FILE MAINTENANCE

Unit Objectives

After successful completion of this unit, you should be able to

- Back up and remove unused files
- Check available disk space
- Consolidate disk space
- Check the contents of disks
- Recover disk files using backup tapes

Purpose

You should know how to maintain disk storage so you can provide disk space adequate to your processing needs.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

Purpose for Disk Maintenance

Disks that are up and running are considered online storage, which means that files on disk packs are always readily available. System performance is improved because the system can access files when necessary.

Disk is a random access, or direct access, form of storage, while tape is a sequential form of storage. On tape, the system must read through all the files preceding the desired file before it can access the file for processing. This is not the case with disks. The system can go directly to a specified area on disk to find a file and does not have to read through any other files on disk to access the file it needs. Direct access of files is faster than sequential access and improves system performance.

Because disk files are online all the time and can be accessed rapidly, most files used by the system will be kept on disk. Each disk pack can hold a large amount of data and code, but there is a limit. In addition to system files, applications, utilities, compilers, and environmental software on disk packs, users constantly create new files; database files grow as new data is entered or updated; and files are regularly generated by the system.

As files are created, less disk space is available. If space is unavailable when the system needs it, processing will stop until it is available.

Have a regular schedule of checking disk space and cleaning it up (archiving or deleting unused files) to maximize available disk space.

System log files are created continually. It may be desirable to keep them, but they need not be online. They can be backed up weekly, freeing disk space for new log files.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

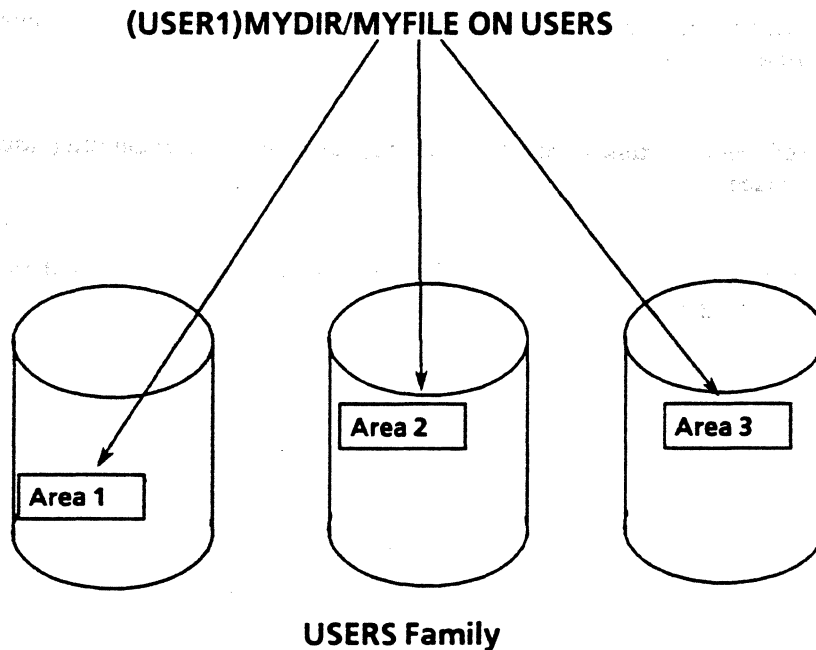
Understanding How Disk Space Is Used

Understanding how files are stored on disk will aid comprehension of

- Responses to commands used to monitor disk space
- Results of file removal commands

File Areas

When created, files are stored on disk packs. Files are broken into equal-sized parts, or areas, which are stored wherever there is room for them on the family. Areas of the same file may be stored on different packs within the same family, to speed file access. An exception to this storage method is the MCP file, which must be on a single pack.

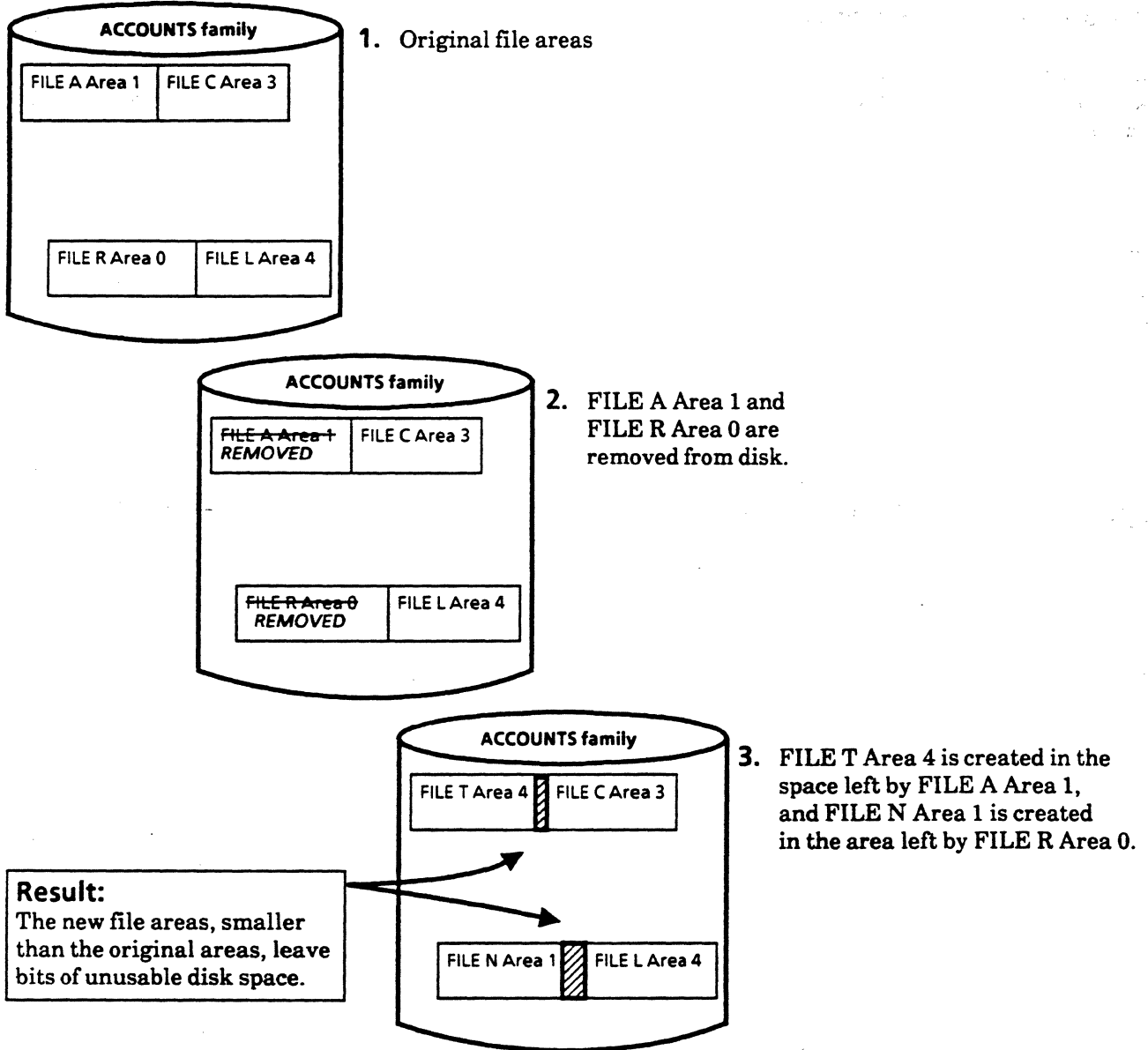


Checkerboarding

Areas of one file must be the same size, but areas of different files may be different sizes. When a file area is removed from disk, available space is created. If a new file area is allocated this space, and is smaller than the original file area, there will be extra space that may not be large enough to store another file area; it is unusable.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

Checkerboarding occurs when little spaces appear all over the disk as files are created and deleted. The following example shows how checkerboarding develops.



Example of Checkerboarding

Checkerboarding may cause a disk to appear full even when there are many small areas of unused disk space. Available disk space should be monitored, and checkerboarding eliminated when it becomes severe, so that unused space is consolidated into larger, usable areas.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

Maintaining Disk Space

1. Remove backed up files from disk.

In the previous unit, you learned how to back up disk files to tape. Once this has been done, you should remove backed up files that are not needed for daily operations. In addition, your system administrator may provide a schedule for regular backup and removal of files.

REMOVE

The **REMOVE WFL** command removes files from a disk pack. In response, the system indicates that files have been removed, from what device, and how many.

REMOVE <file name(s)> FROM <family name>

REMOVE PROJ B/WORK/= FROM WORK

Removes all the files in the PROJ B/WORK directory from the WORK family

REMOVE (USER2)= FROM USER

Removes all files under the USER2 usercode from the USER family

REMOVE PROGA/=, PROGAWK/= FROM PACK

Removes all files in the PROGA and PROGAWK directories from the PACK family

↑
if no
from assumes "DISK" @001.
OR Fam. sub @Mar.

21 duplicate files
may.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DISK FILE MAINTENANCE**

This example removes all files under the (DGREEN)OBJECT/OP/PROG directory from the SPARE family.

```
REMOVE (DGREEN)OBJECT/OP/PROG/= FROM SPARE(PACK)

---MIX-PRI-CPU TIME----- 10 ACTIVE ENTRIES -----
6405 80      :00 COMS/INPUT
6402 80      9:56 JOB NSP108/00
6059 50      :59 JOB *SYSTEM/PRINT/ROUTER
6831 75      :03 REMOTESPO

----- NO WAITING ENTRIES -----

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
6833/6833 12:31 EOJ JOB BEGIN JOB;COPY AN
6833/6834 12:31 EOT *LIBRARY/MAINTENANCE
6829/6829 11:39 EOJ JOB UTILITYPROGRAM
6828/6828 11:30 EOJ JOB UTILITYPROGRAM
---MIX-TIME----- MESSAGES -----
6836 12:38 PK77 3 FILES REMOVED IN (DGREEN)OBJECT/OP/PROG/= ON SPARE ←
6834 12:31 (DGREEN)OBJECT/OP/PROG/2 COPIED FROM SYSTEMSED TO SPARE
6834 12:31 (DGREEN)OBJECT/OP/PROG/1 COPIED FROM SYSTEMSED TO SPARE
6834 12:31 (DGREEN)OBJECT/OP/PROG/X COPIED FROM SYSTEMSED TO SPARE
```

Response from REMOVE Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

2. Check disk space utilization.

Have a regular schedule for checking disk space utilization. Guidelines should be in place to determine when disks are too full and need to be cleaned up.

DU (Disk Utilization)

The DU ODT command displays current disk space utilization. The total available sectors of space as well as the largest area of space, in sectors, is shown.

DU ON <family name>

There are two DU options which will provide more specific information. The option SIZE will display information according to the number specified as size. The FAMILY INDEX option will provide information only for the pack with the specified family index.

DU ON <family> (<index no.>)

DU ON USER(4)

Displays disk space usage for index 4 of the family USER

DU ON <family> <size>

DU ON USER 1000

Displays specific information on available disk areas relative to groups of 1000 sectors--less than 1000 sectors, more than 1000 sectors, and so on

Information from this command can be used to make decisions about which disks need maintenance, according to guidelines about when available space has dropped below desirable levels. System administration personnel should provide these guidelines so you can alert them about the need for disk maintenance, or perform necessary disk maintenance.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DISK FILE MAINTENANCE**

DU ON LINCPACK

= both if continuation

AVAILABLE = 703093, LARGEST AREA = 354483
5327 SECTORS IN 105 AREAS LESS THAN 504
697766 SECTORS IN 6 AREAS LARGER THAN 503
1382 ROWS OF 504 SEGMENTS COULD BE ALLOCATED

obj code size

DU ON LINCPACK 1000

single seg'd

AVAILABLE = 703093, LARGEST AREA = 354483
7371 SECTORS IN 108 AREAS LESS THAN 1000
695722 SECTORS IN 3 AREAS LARGER THAN 999
694 ROWS OF 1000 SEGMENTS COULD BE ALLOCATED

DU ON LINCPACK(2)

index#

AVAILABLE = 344644, LARGEST AREA = 339987
2851 SECTORS IN 52 AREAS LESS THAN 504
341793 SECTORS IN 3 AREAS LARGER THAN 503
677 ROWS OF 504 SEGMENTS COULD BE ALLOCATED

DU Command Response with Various Options

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

3. Consolidate available disk space.

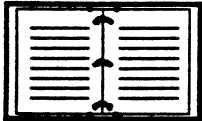
If there are disks that have less than the established minimum level of available space, then consolidate the space into larger usable areas.

SQUASH (Consolidate Disk Allocation)

The **SQUASH** command assists in disk maintenance by consolidating the fragmented, or checkerboarded, disk space created by files constantly being added and removed. Disks may be consolidated either by family or by family index number. It is a lengthy process, but can be completed while other processing activities are taking place.

SQUASH <family name>

SQUASH <family name> (<index number>)



There is a discussion of **SQUASH** in the **Disk Subsystem Administration and Operations Guide** under "Consolidating Disk Space" in the *Disk Initialization and Preparation* section.

If available space is still below desirable levels after consolidation, additional files need to be backed up and removed from the disk.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DISK FILE MAINTENANCE**

4. Check the contents of disks.

If it is necessary to remove files, you will need to check the contents of the disks to determine what should be removed.

PD (Print Directory)

on screen

The ODT PD command displays a list of the files in a disk directory, or information about a file. From the ODT, the disk family location name must be specified, otherwise the system assumes the default family, DISK.

PD <file name> ON <family name>

Displays information about the specified file including creation and editing dates, size, and access rights

PD (MYFILES) SALES/1989 ON DOCS

Displays information about the file called 1989 in the SALES directory on the DOCS disk family under the MYFILES usercode

PD <directory name> = ON <family name>

Displays a list of everything under the specified directory on the specified family

PD (USER1)FORMS/GRAPHICS/= ON DOCS

Displays a list of all the directories and/or files under the directory FORMS/GRAPHICS on the DOCS disk family under the USER1 usercode

PD (USER1)REPORTS/= ON USER

Displays a list of all directories and/or files under the REPORTS directory of the USER1 usercode

PD (USER1)=

Displays all the files under the USER1 usercode on DISK

PD= ON <family name>

Displays the first level of directory names in the disk directory for the specified family

PD=

Displays the first level directories on the DISK family

ODT

PD_n-4 (level direct) (ODT)

Mano = all the names.

PD = :4 on Disk (Mano)

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DISK FILE MAINTENANCE**

PD (USER1)= ON EDDEV

(USER1) (DIRECTORY)
 . WFL (DIRECTORY)
 . . COPY (JOBSYMBOL)
 . OBJECT (DIRECTORY)
 . . LOOPPROG (COBOL74CODE)
 . . TESTPROG (COBOL74CODE)
 . TESTJOB (JOBSYMBOL)
 . LOOPPROG (COBOL74SYMBOL)

PD Response for a Directory Listing

PD (USER1)TESTJOB ON EDDEV

FILE (USER1)TESTJOB ON EDDEV (JOBSYMBOL)
DATE AND TIME OF CREATION: FRIDAY MAR 17, 1989 (89076) AT 14:46:59
 . . LAST ACCESS: FRIDAY MAR 17, 1989 (89076) AT 14:51:46
 . . LAST ALTER: FRIDAY MAR 17, 1989 (89076) AT 14:46:59
SIZE IN SEGMENTS: 14
SECURITY: PUBLIC - USAGE: READ/WRITE

PD Response for a File

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

DIR (Directory)

= PRINT (like HP)

It is easier to look at a printout of a lengthy disk directory than to display several screens to see the directory listing.

The ODT **DIR** command causes the SYSTEM/FILEDATA utility to run and generate a printout. The **DIR** command can generate a variety of reports, but file lists will probably be the most frequently used. Below are examples of syntax that will generate file lists for a given usercode, directory, or disk family. The printouts list the hierarchy of directory and file names. The command does not generate any screen display.

NOTE: Do not use a slash equals (/ =) after a directory or usercode specification to get a listing of everything under it. If the slash equals sign is used, an error message will be issued.

DIR FILENAMES: DIRECTORY = <directory name> ON <family name>

DIR FILENAMES: DIRECTORY = (USER1)REPORTS/1986 ON USER

Prints a list of everything under the directory (USER1)REPORTS/1986 on the USER family.

DIR FILENAMES: DIRECTORY = <usercode> ON <family name>

DIR FILENAMES: DIRECTORY = (USER1) ON USER

Prints a list of everything under the usercode USER1 on the USER family.

DIR FILENAMES: FAMILYNAME = <family name>

DIR FILENAMES: FAMILYNAME = USER

Prints a list of all files on the USER family.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

5. Back up disk files.

Once you have determined which files are no longer needed on a disk pack they should be backed up to tape. Use the **COPY** command as described earlier.

6. Remove files from disk.

Once unused files have been backed up to tape, they can be removed. Refer to step 1 in this unit for examples of **REMOVE** syntax. Keep in mind that, because file areas are scattered across all packs in a family, removing a file may create only a little space on each pack in the family.

7. SQUASH

If a large number of disk files have been removed, you may need to **SQUASH** the disk again.

Recovering Disk Files

If disk files become corrupted or tape files are needed online, they can be copied to disk pack from backup tapes. This can be done using the **COPY** command or the **ADD** command.

ADD

To add files to an existing disk directory, use the **ADD WFL** command. It copies only files that do not already exist on the destination disk.

ADD *<file name(s)>* **FROM** *<source name>* (*<device type>*) **TO**
<destination name> (*<device type>*)

ADD = FROM PROJCFILES TO USER(PACK)

Copies only files which do not already exist on the **USER** pack, from the **PROJCFILES** tape to the **USER** pack

ADD PROGA/= FROM TEST(PACK) TO WORK(PACK)

Adds the files from the **PROGA** directory on the **TEST** pack, if they do not already exist on the **WORK** pack, to the **WORK** pack

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DISK FILE MAINTENANCE

CHANGE

If you want to copy or add a file to a disk pack which already contains a file with the same name, and keep both files, you will need to change the name of the existing file with the **CHANGE** command.

CHANGE <file title> **TO** <file name>

CHANGE <file name> **TO** <file name> **FROM** <family name>

CHANGE FILEA ^{FROM} ON PACK TO MYFILE

Changes the name of FILEA on the PACK family to MYFILE

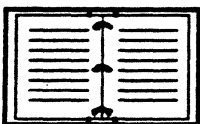
CHANGE FILEA TO MYFILE, FILEB TO YRFILE FROM PACK

Changes FILEA on the PACK family to MYFILE, and FILEB on the PACK family to YRFILE

CHANGE (USER3)PROJ1/ = ^{FROM} ON USER TO (USER3)PROJ1/ =

Changes the directory (USER3)PROJ1 on the USER family to (USER3)PROJ1

REMOVE, ADD, and CHANGE cannot be used with tape. Files are copied sequentially on tape, and there is no capability to open up or close space or change the directory on tape. Once a tape is made, it cannot be altered without recopying the entire tape.



Details on **LIBRARY/MAINTENANCE** commands (**REMOVE, ADD, CHANGE**) are in the **Work Flow Language Programming Reference Manual**.

Details on **DIR** are in the **FILEDATA** section of the **System Software Utilities Reference Manual**.

Details on **PD, DU, and SQUASH** are in the **ODT System Commands Operations Reference Manual**.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 5, UNIT 3**

PRACTICE EXERCISES--SECTION 5, UNIT 3

1. Match the command to its appropriate function.

- | | | |
|-----------------|--|--------|
| <u>E</u> PD | A. Display disk space usage | DU |
| <u>F</u> CHANGE | B. Consolidate disk space | SQUASH |
| <u>D</u> DIR | C. Delete files from disk | REMOVE |
| <u>A</u> DU | D. Generate a printed listing of disk contents | DIR |
| <u>B</u> SQUASH | E. Display the directory contents of a disk | PD |
| | F. Alter the name of a file | CHANGE |

2. Give the appropriate interpretation for each command below.

- PD = display 1st directory of all files on disk
- PD (ACCT1) = ON ACCTS display all files user ACCT1 on pack ACCTS.
- DIR FILENAMES: DIRECTORY = (MYFILES) ON MYPACK PRINT DIRECTORY
of all files user code (myfiles) on pack MYPACK.
- DIR FILENAMES: FAMILYNAME = USER Print list all files on
pack USER

3. Show the proper syntax to remove all of the files under the OLDACCTS directory on the ACCTS family.

REMOVE OLDACCTS/= FROM ACCTS.

4. Show the syntax to add the files that are not already on the MYPACK family from the TAPEA tape to MYPACK.

ADD = FROM TAPEA TO MYPACK (PACK)

5. Which one of the following commands will display the current available space on the PROGS family?

- A) SPACE PK PROGS
- B) SQUASH PROGS(3)
- C) DU ON PROGS
- D) PD ON PROGS

C

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 5, UNIT 3**

LAB--SECTION 5, UNIT 3

Sign on to the system and get a REMOTESPO window. It is not necessary to have an ADM screen.

*NS - Next
S order*

1. Display a listing of everything under the class usercode.

Syntax: PD (OPS) = ON PACK

2. Choose one directory under the class usercode and display all the files in that directory.

Syntax: PD (OPS) CAT/ANS = ON PACK

3. Display information about one file under the class usercode. *mod6*

What was the creation date? FRIDAY APRIL 7, 1989

What is the size? 28 segments

4. Display a directory listing of everything under the (<usercode>)COPYLAB directory. Be sure to indicate your family specification.

Syntax: PD (OPS) COPYLAB/ = ON PACK

5. Get disk usage information for the family you are using for lab. Syntax: DU ON PACK

How many sectors are available? 110 4404

What is the size of the largest area? 566384

How many rows (areas) can be allocated? 2167 of 504 ea

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 5, UNIT 3

LAB--SECTION 5, UNIT 3 (continued)

6. Copy (<usercode>)COPYLAB/= as (<usercode>)<your initials>/COPYLAB/=, to the same disk family.

Syntax: COPY (OPS) COPYLAB/= AS (OPS) DAG/COPYLAB/= FROM PACK TO PACK

If you don't have an ADM screen, check system messages to see if the copies are being made.

Syntax: MSG

7. Get disk usage information again for the family you are using for lab. Syntax: DU ON PACK

How many sectors are available now? 1104394

Is the size of the largest area the same as in #5? YES

Are there as many rows (areas) to be allocated now as in #5? YES

8. Verify that the file (<usercode>)<your initials>/COPYLAB/FILEC now exists on the family.

Syntax: PD (OPS) DAG/COPYLAB/FILEC ON PACK

9. Change the name of file (<usercode>)<your initials>/COPYLAB/FILEC to (<usercode>)<your initials>/NEWFILE.

Syntax: CHANGE (OPS) DAG/COPYLAB/FILEC ON PACK TO

What is the system response? ✓
(If you don't have an ADM screen check system messages.)

10. Remove (<usercode>)<your initials>/NEWFILE file from the family.

Syntax: Remove (OPS) DAG/NEWFILE FROM PACK

What is the system response? ✓
(If you don't have an ADM screen, check system messages.)

11. Verify that the file has been removed from the family. >

Syntax: PD

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 5, UNIT 3

LAB--SECTION 5, UNIT 3 (continued)

12. Print a directory listing of (<usercode>)<your initials>/COPYLAB/=.

Syntax: DIR FILENAMES: DIRECTORY = (OPS)JAG/CP/LAB/ ON PACK ✓
NO/=

13. Remove (<usercode>)<your initials>/COPYLAB/= from the family.

Syntax: REMOVE (OPS)JAG/CP/LAB/= FROM PACK

What is the system response? 3 FILES REMOVED ✓
(If you don't have an ADM screen, check system messages.)

14. Verify that the files under the (<usercode>)<your initials> directory have been removed from the family.

NO FILE

Computer-Assisted Training Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-7 for this lab.

CAT #4 Program AS c/b AD

NOTES

Pg 513

from Mac w/ user code Payroll = family DISK = Payroll
otherwise from

COPY = TO BACKUP = all files user code Payroll
on disk called Payroll
to tape called Backup.

if no TO assumes DISK @ ODT & user family @ MAC

COPY = FROM PAYBK(TAPE) = everything to DISK.
will overwrite if ~~AUTO~~ REMOVE option is set.

? Close = close window if
no Bye.

NOTES

① If a backup gets hung up waiting for a file

mix # \downarrow OF

(this means option of file)

② If the backup waits for the tape

Mix # \downarrow OU \downarrow MT50

message.

waiting for MT #1.

③ To do a backup of the data

START \downarrow (PROD)WFL/Backup/ALL.

④ A complete backup.

a) Copy = \$ file name (tape)

b) mix # \downarrow OU \downarrow MT50

⑤ To check on the status of a file - get onto
CANDE - at the top of the screen

LFILES \downarrow (PROD)XXXX \$
filename.

SECTION 6
PROGRAM INITIATION AND CONTROL

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PROGRAM INITIATION AND CONTROL**

**SECTION 6
INTRODUCTION**

Section Objectives

You should

- Give the correct command syntax to initiate and get information about a job or task
- Recognize the function of a Work Flow Language (WFL) program and a job queue
- Understand the basic route of a program into the mix when it is initialized
- Understand the purpose of a job summary
- Know how to change the status of a job or task
- Know basic troubleshooting procedures to handle program requests and problems

Purpose

To monitor and control system activity, you must be able to start jobs and tasks, respond to program problems and requests for information, and terminate jobs and tasks.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INITIATING A JOB OR TASK**

SECTION 6

UNIT 1

INITIATING A JOB OR TASK

Unit Objectives

After successful completion of this unit, you should be able to

- Give the functions of a WFL, job queue, or job summary
- Initiate WFL jobs using **START**
- Initiate tasks using **RUN**
- Interpret mix entries related to initiation of jobs/tasks

Purpose

The operator must be able to execute tasks and jobs in order to initiate system activity.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INITIATING A JOB OR TASK

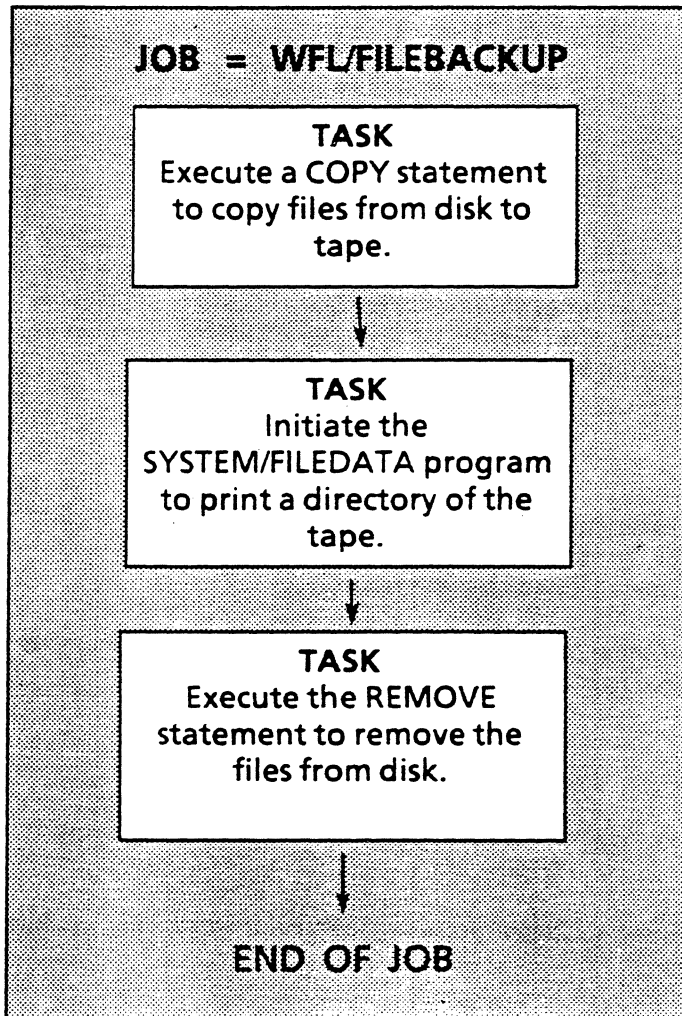
Work Flow Language (WFL)

The Work Flow Management System is a part of the MCP that controls and monitors the flow and execution of jobs and tasks. A high-level programming language, called the **Work Flow Language (WFL)**, is used to interface with this management system.

The primary purpose of a WFL job is to specify, through one program, the procedures for executing multiple related tasks, and enable the Work Flow Management System to control the flow and use of system resources by these tasks.

The sample WFL job shows how the execution of one WFL program generates the initiation of several tasks one after the other without operator intervention. It would still be necessary for the operator to hang required tapes and gather printed lists, but it is not necessary for the operator to run each task.

MIX NUMBERS



1325

1325/1334

TASK #

1325/1340

1325/1343

Sample Work Flow Job

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INITIATING A JOB OR TASK

WFL Functions

A WFL program, referred to as a WFL job, can include statements that do the following:

- Start jobs: A WFL job can be written to initiate other WFL jobs.
- Execute tasks: Tasks include executing WFL command statements and initiating programs.
- Control the flow of several tasks: Tasks can be processed one after the other or simultaneously.
- Assign attributes to tasks/jobs: For example, priority level or disk family location.
- Handle recovery after a system halt/load: Statements that will cause the programs in the WFL to recover after a halt/load can be inserted in WFL jobs.

Job Queues

When a job is initiated, it is put into a **job queue**--a waiting area from which the MCP selects jobs to enter the mix or the schedule. Job queues help regulate the number of jobs that can run at one time, and they can also enforce fair use of system resources. By default, there is one queue defined on the system, but others may be defined to provide greater control over jobs and system resources. There may be up to 100 defined job queues, each numbered for identification using any number from 0 to 1023.

Queue Assignment

The MCP places jobs in queues according to the queue assignment associated with the job. Certain job attributes, such as priority, must be within limits set for the queue. Jobs without an associated queue assignment are usually routed to the default queue, if one is defined on the system.

Within a queue, jobs are ordered by job priority. Jobs of equal priority are ordered according to how long they have been waiting in the queue; the oldest jobs are placed nearer to the head of the queue.

Job Selection

Job selection is influenced by queue attributes, such as a limit on the number of jobs which can be running simultaneously from a queue (mix limit).

Job selection is also influenced by the job itself. For example, if a job specifies a particular start time, it cannot be selected from the queue until that time.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INITIATING A JOB OR TASK

Initiating a WFL Job

Most of the programs initiated by the operator will be WFL jobs.

To initiate a WFL job, the WFL command **START** is used.

Syntax: **START** < *WFL source-file title* >

START WFL/MONTHLY/BILLING ON ACCOUNTS

Initiates a WFL job file called
WFL/MONTHLY/BILLING located on the
ACCOUNTS family

START WFL/BKUP

Initiates a WFL job file called WFL/BKUP
which is located on DISK. When not stated,
the default family DISK is assumed.

A WFL job is initiated using the **WFL source-code** file title. The source file (the program written in WFL statement syntax) is compiled into object code (which can be read by the system) every time it is executed with the **STRT** command. Most programs are not compiled every time they are run, but are compiled to produce an object code file. It is the **object-code** file title that is executed.

Once the WFL job has been compiled successfully:

- Special files are created with information about the WFL job. These files are used by the management system to control the job.
- The job is assigned a job number.
- If attributes of the job match actual job queue specifications, the job is inserted into a job queue.
- The job goes to **beginning-of-job (BOJ)**, and tasks from the job begin processing; each program initiated from the job is assigned a task number when it begins executing.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INITIATING A JOB OR TASK

The following example shows the initiation of the WFL job file called ALLSPO, which causes programs called SYSTEM/HARDCOPY and SYSTEM/PRINTCOPY to run. When the job is initiated, the task which comes first in the job file appears in the active mix. In this case it is SYSTEM/HARDCOPY.

START ALLSPO

```
---Mix---Pri---CPU Time-----31 ACTIVE ENTRIES-----  
5551 99 :00 *SYSTEM/HARDCOPY ←  
5211 80 :15 JOB *SYSTEM/CANDE  
5457 80 :01 *CANDE/STACK01  
5390 50 :00 UTILITYPROGRAM  
-----NO WAITING ENTRIES-----  
  
-----NO SCHEDULED ENTRIES-----
```

WFL Job Initiation

Unless a job includes programs which run simultaneously, you probably will not see a reference to the job in the mix--only entries for the tasks in the job. In the case of ALLSPO there is no entry for the job in the mix. In order to see what job SYSTEM/HARDCOPY is running in, use the ODT J command. This command displays a job entries list and shows the tasks running in each job.

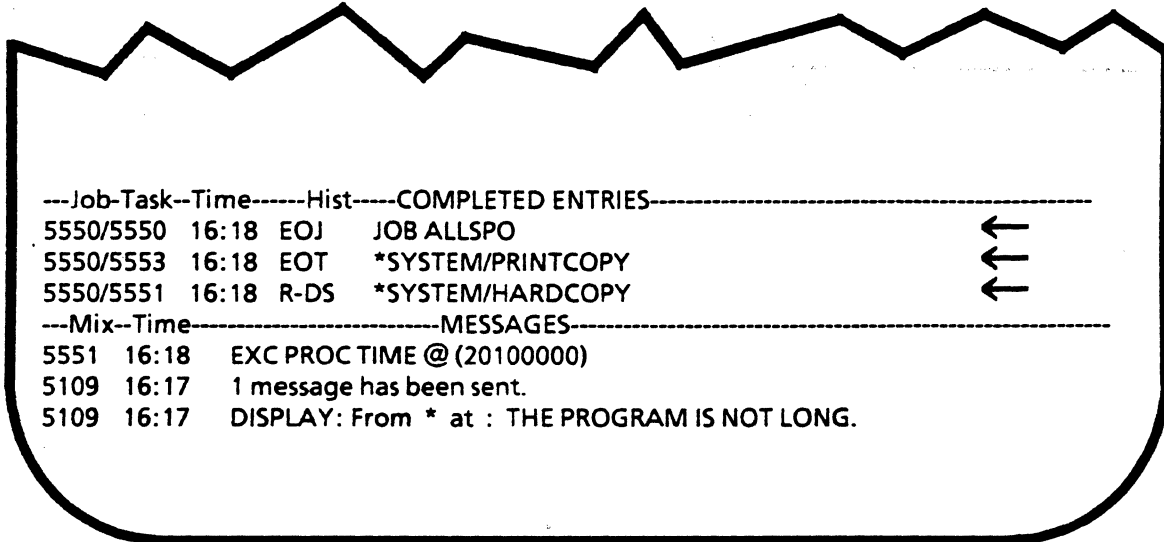
J

```
---Mix---Pri-----JOB ENTRIES-----  
5550 50 JOB ALLSPO ←  
5551 99 ..*SYSTEM/HARDCOPY ←  
5211 80 JOB *SYSTEM/CANDE  
5457 80 ..*CANDE/STACK01  
5390 50 ..UTILITYPROGRAM
```

Response to J Command

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INITIATING A JOB OR TASK**

Once they are completed, tasks appear as completed entries associated with their corresponding job number.

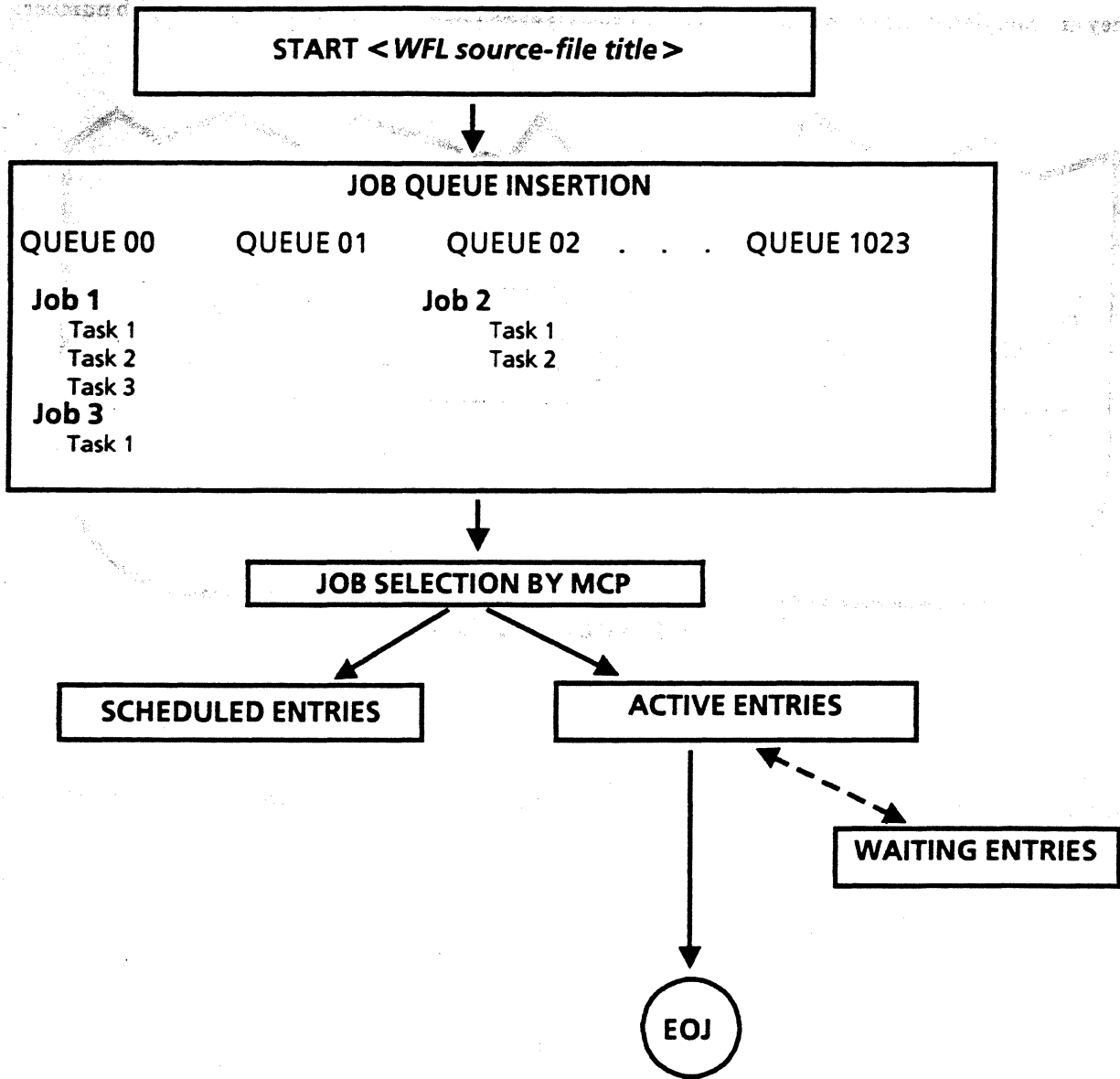


---Job-Task--Time-----Hist----	COMPLETED ENTRIES-----
5550/5550 16:18 EOJ	JOB ALLSPO ←
5550/5553 16:18 EOT	*SYSTEM/PRINTCOPY ←
5550/5551 16:18 R-DS	*SYSTEM/HARDCOPY ←
---Mix--Time-----	MESSAGES-----
5551 16:18	EXC PROC TIME @ (20100000)
5109 16:17	1 message has been sent.
5109 16:17	DISPLAY: From * at : THE PROGRAM IS NOT LONG.

Job with Associated Tasks

See the next page for an illustration of the flow of a WFL job from the time the **START** command is input to the **End-of-Job (EOJ)**.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INITIATING A JOB OR TASK**



Basic Flow of Job from the START Command to EOJ

Once a job is initiated, it goes to the appropriate job queue to wait for selection for processing. Jobs are selected based on priority and other significant attributes. They enter the scheduled entries or the active entries, depending on the availability of system resources. As soon as a job enters the active mix, tasks associated with that job begin processing. Each job is processed from BOJ to End-of-Job (EOJ), and each task from beginning-of-task (BOT) to end-of-task (EOT). If there are no errors or problems along the way, they terminate normally. Problems can cause tasks or entire jobs to terminate abnormally.

Depending on whether system option NOSUMMARY is set or reset, a job summary may be created after the job completes. The job summary file stores information about the activities of a job and its tasks, including how the job terminated.

If a job is initiated with incorrect syntax, the job summary provides details about syntax errors.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INITIATING A JOB OR TASK**

If the NOSUMMARY system option is set, a job summary is produced only for jobs and tasks which finish abnormally or with printed output, or when specified by the job. A sample job summary follows:

WORK FLOW STATEMENTS

```
00000100 BEGIN JOB TESTJOB;
00000200 RUN (CINDY)OBJECT/TESTPROG;
00000300 END JOB;
```

} actual WFL

J O B S U M M A R Y

MARCH 27, 1989

MINA

14:52:31 (BOJ) 3119 (TESTJOB) WFL NAME
 JOB ENTERED SYSTEM MAR 27, 1989 14:52:30 FROM WFL 37.272
 QUEUE: 0 LOG-SYN.#
 ORIGINATION LSN: (102) MCS: 6 *ie coms. different depending on command/plate*
 PRIORITY: 50
 USERCODE: CINDY.

14:52:31 3119 MESSAGE: STACK EXTENDED FROM 407 TO 602 WORDS.

14:52:31 BOT 3120 (CINDY)OBJECT/TESTPROG ON EDDEV.
 CODE COMPILED: MAR 27, 1989 BY COBOL74 37.272
 TASK TYPE: COROUTINE (CALL)
 PRIORITY: 50
 USERCODE: CINDY.

14:52:42 EOT 3120 (CINDY)OBJECT/TESTPROG ON EDDEV.
 PROCESSOR TIME: 00:00:09.411 USERCODE: CINDY.
 I/O TIME: 00:00:00.064 AVERAGE MEMORY USAGE: CODE = 93, DATA = 737
 - READYQ TIME: 00:00:00.855 MEMORY INTEGRAL: CODE = 0.884, DATA = 6.988
 INITPBIT TIME: 00:00:00.008 INITIAL PBITS: 6. *PIECES OF MEMORY*
 ELAPSED TIME: 00:00:10.371 MAXIMUM NUMBER OF ASDS USED: 4.
 MAXIMUM SAVE MEMORY USED: 792.-

14:52:42 EOJ 3119 TESTJOB.
 PROCESSOR TIME: 00:00:00.113 USERCODE: CINDY.
 I/O TIME: 00:00:00.234 AVERAGE MEMORY USAGE: CODE = 46, DATA = 1115
 READYQ TIME: 00:00:00.290 MEMORY INTEGRAL: CODE = 0.016, DATA = 0.387
 INITPBIT TIME: 00:00:00.025 INITIAL PBITS: 22.
 ELAPSED TIME: 00:00:11.218 MAXIMUM NUMBER OF ASDS USED: 12.
 MAXIMUM SAVE MEMORY USED: 1895.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INITIATING A JOB OR TASK

Initiating a Task

A WFL job can initiate, control and monitor tasks; when a WFL job is initiated, multiple tasks can be run. On the other hand, initiating a task means that generally only one program will execute.

WFL jobs are initiated with the **START** command, using the WFL source-code file title. The source code is compiled each time the job is executed. A task is initiated with the **WFL RUN** or **EXECUTE** command, using the object-code file title.

RUN *<object-code file title>* or **EXECUTE** *<object-code file title>*

These two statements are synonymous; **RUN** will be used exclusively in these materials.

RUN PROGA ON ADMIN

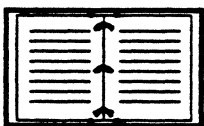
Initiates the program **PROGA** which is located on the **ADMIN** disk family.

RUN (USER2)PRINT/FORMS ON DOCS

Initiates the **PRINT/FORMS** program, located under the **USER2** usercode on the **DOCS** disk family.

RUN (AP)BACKUP/REPORTS

Initiates the **BACKUP/REPORTS** program, located under the **AP** usercode on the **DISK** family. When not stated, the default family of **DISK** is assumed.



Information on the **START** and **RUN** commands can be found in the **Work Flow Language Programming Reference Manual**.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INITIATING A JOB OR TASK**

If system memory resources are adequate when a task is initiated, it will go to the active mix as shown in the example.

```
RUN (DGREEN)OBJECT/OP/PROG/1 ON SYSTEMSED

---MIX-PRI--CPU TIME----- 14 ACTIVE ENTRIES -----
5181 50      :00 (DGREEN)OBJECT/OP/PROG/1 ON SYSTEMSED      ←
5138 50      :47 MARC
5133 80      :00 COMS/TANK
5132 80      :00 COMS/INPUT
5128 80      :21 JOB NSP108/00
4794 50      :21 JOB *SYSTEM/PRINT/ROUTER
----- NO WAITING ENTRIES -----

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
5170/5170 11:18 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
5169/5169 11:18 EOJ JOB SERVER/LP20/R#867/J#5168
---MIX-TIME----- MESSAGES -----
5150 11:33 PK45 *TANK/SYSTEM/COMS REMOVED ON DISK
5142 11:36 NO FAMILY EDUCATION
```

Task Initiated with a WFL RUN Command Statement

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 6, UNIT 1**

PRACTICE EXERCISES--SECTION 6, UNIT 1

1. The purpose of a task is generally to complete one type of work activity. What is the primary purpose of a WFL job?

run several tasks

2. List the proper syntax to initiate a WFL job called WFL/PROGA which is located on the JOBS family.

START WFL/PROGA ON JOBS

3. The purpose of job queues is to provide D
- A) The results of the execution of a job
 - B) Instructions for executing related tasks
 - C) Instructions for job recovery
 - D) Controls on the use of system resources by jobs

4. A job summary will show whether a job terminated abnormally or normally.

TRUE

FALSE

A job summary will show whether a task within a job terminated normally.

TRUE

FALSE

5. Write an interpretation of the following command syntax: RUN STATETAX/QTR ON PAYROLL

run each job (PROG)

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS**

SECTION 6

UNIT 2

INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

Unit Objectives

After successful completion of this unit, you should be able to

- Interrogate the status of a job/task
- Interrogate the use of system resources related to a job/task
- Change job and task status
- Terminate a job/task

Purpose

The operator must be able to get status information about a job or task in order to decide when to change job/task status or terminate a job/task.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

Status of the Mix

The **A**, **W**, **S**, **C**, and **MSG** commands discussed earlier display the status of each mix group and the most recent system messages.

For example, if you are on the **REMOTESPO** window without an **ADM** screen and you want to determine whether a job or task is waiting, use the **W** command to list waiting entries.

Status of a Job or Task

Several commands display information about the status of a job or task in the mix.

TI (Times)

The **TI** command displays the current values of elapsed, processor, and I/O time accumulated by a given task or job.

If a job/task seems to be running unusually long or system performance seems slow, the information provided may be useful in determining why.

```
5211 TI
```

```
TIMES FOR 5211
```

```
PROCESS = 0:00:35
```

```
IO      = 0:00:48
```

```
READYQ = 0:00:19
```

```
INITPBIT = 0:00:02 1315 OPERATIONS
```

```
ELAPSED = 31:15:04
```

Response to TI Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

WY or Y (Status Interrogation)

WY or Y displays information about the status of a given task or job.

<mix number> WY or <mix number> Y

This command is most useful to operators when there is a problem with a job/task, which will be illustrated in more detail later in the course.

It is also useful for getting information related to job priority and for finding out what job number a task is running under.

4891Y

STATUS OF TASK 4887/4891 AT 16:43:39
PRIORITY = 80
ORIGINATION: UNIT 0
STACK STATE: WAITING ON AN EVENT
PROGRAM NAME: *SYSTEM/COMS
DISPLAY: DISPLAY: OUTPUT ROUTER SELECTED TO MIX NUM 4890.

Example of WY/Y Display

Note: The "WAITING ON AN EVENT" stack state does not always mean that the task is in the waiting entries or that operator intervention is required.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

Status of System Resources

To check on system resources related to job and task execution, use the following commands.

U (Utilization)

The U command displays information about system utilization, including the percentage of processor time spent on user programs, LIBRARY/MAINTENANCE, and other user tasks (see "USER"). "TRUE IDLE" gives an indication of how busy the central processor is. A very low number indicates that system activity is high; as a result a job/task may run more slowly than is usual.

```
U
----- SYSTEM UTILIZATION -----
CPU:  USER      = 89 %  INITIAL PBIT = 0 %  MCP      = 4 %  TRUE IDLE = 7 %
      IO FINISH  = 0 %  OTHER PBIT  = 0 %  SEARCH  = 0 %  FALSE IDLE = 0 %
IO:   USER      = 0 IO/SEC (0 KB/SEC)
      MCP       = 0 IO/SEC (0 KB/SEC)
      DATACOM   = 1 IO/SEC (0 KB/SEC)
      TOTAL    = 1 IO/SEC (0 KB/SEC)
                                     1 IO-INTERRUPTS/SEC
```

Example of U Display

CU (Core Usage)

The CU command displays information about system memory usage. Guidelines provided by your system administrator will help you use this information.

```
CU
----- SYSTEM MEMORY USAGE -----
AS OF 13:30:38
AVAILABLE      1818112
NON SAVE      1517017
SAVE           859175
TOTAL         4194304
```

Example of CU Display

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS**

ML = nn to set total

ML (Mix Limit)

Each job queue can have an associated mix limit controlling how many jobs from the queue can enter the mix. If a job is not getting any processor time (check with the TI command), the mix limit for its queue may have been reached.

ML Displays active jobs/tasks, mix limit, and the number of jobs queued for each job queue. If there is a default queue, it is marked with a "D" at the left side of the display.

ML			
----- MIX LIMITS -----			
QUEUE	ACTIVE	LIMIT	QUEUED
<D> 0	0	80	0
1020	0	NONE	0
TOTAL	0	NONE	

Example of ML Display

There is also a **system** mix limit, which is the maximum number of jobs and tasks that can be initiated. Setting it does not change the job queue mix limits, but since the system mix limit may be lower than the sum of the job queue mix limits, a job can be held up because the system mix limit has been reached--the system mix limit is enforced regardless of job queue mix limits.

If the system mix limit is set to zero, no jobs will run. The current value for the system mix limit is shown on the ML display, on the "TOTAL" line in the "LIMIT" column. To set the system mix limit, use the following syntax:

ML = <number>

ML - cancels MIX limit total

DQ (Default Queue)

Displays the current default queue or assigns a default queue, where jobs may be placed if not otherwise assigned to a specific queue.

- DQ** Displays the current default queue
- DQ <number>** Assigns a new default queue
- DQ -** Cancels the current default queue specification

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL: INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

SQ (Show Queue)

This command displays information about the jobs in one or more job queues.

SQ Displays information about the first job in each job queue. Information includes the mix number, priority, queue entry time, start time (if it has one), and the job name.

SQ
QUEUE 1020
NO ENTRIES
QUEUE 0
7882 ?BEGIN JOB TAPECOPY;
QUEUED: 11/17/88 AT 11:11:40

Example of SQ Display

If you know what queue your job is running in, you can check the status of jobs in the queue.

SQ <queue number>

Displays information about the jobs in the given queue

SQ <queue number> <priority number>

Displays information about the jobs in the given queue with the given priority number

SQ28

QUEUE 28

2824 ?BEGIN JOB SORTFILES;

QUEUED: 11/17/88 AT 13:01:32

STARTTIME = 12:59:33

Example of SQ <queue number> Display

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

Changing Job or Task Status

The following commands are used to change the status of a job or task.

DS (Discontinue)

The **DS** command causes abnormal termination of a job or task. When a *task* is terminated, the job it's running can continue. However, terminating a *job* means that all tasks within the job will be terminated.

Jobs can be terminated by the operator, by a user, or by the system. If the system terminates a job, the **DS** system message will be **P-DS**, **R-DS**, or **S-DS**, among others. Descriptions for these messages are under the **C** command in the ODT manual. A job/task terminated by the operator has a message indicating it has been **O-DSed**. A job summary will be printed, indicating the type of **DS**.

Jobs/tasks can also be terminated if they are in the schedule or waiting mix.

Syntax: `<mix number list> DS`

```
5184 DS

-----JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
* 5183/5183 13:42 EOJ JOB BEGIN JOB;RUN (DG                               ←
* 5183/5184 13:42 O-DS (DGREEN)OBJECT/OP/PROG/1 ON SYSTEMSED           ←
  5180/5180 12:16 EOJ JOB BEGIN JOB;RUN (DG
  5180/5181 12:16 EOT (DGREEN)OBJECT/OP/PROG/1 ON SYSTEMSED
-----MIX-TIME----- MESSAGES -----
* 5184 13:42 OPERATOR DSED @ (00000200                                ←
  5142 13:02 13:02 MONITOR >>> NO MARC/1 FOR LSN 0
  5142 13:00 13:00 MONITOR >>> NO MARC/1 FOR LSN 0
  5142 13:00 13:00 MONITOR >>> NO MARC/1 FOR LSN 0
```

Example of DS Command

Under completed entries and messages, task 5184 is labeled as having been discontinued by the operator.

The system creates a WFL job for every WFL command entered. Since the task was discontinued, the WFL job (5183) created to execute the task goes to EOJ.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS**

When a job is discontinued with DS, the tasks running within the job are terminated, and a "DEATH IN THE FAMILY" message is displayed. In the following example, the job WEEKLY/PAYROLL is terminated by the operator, and its task PAYROLL/TAXES is terminated by the system.

```
4664 DS
---MIX-PRI--CPU TIME----- 14 ACTIVE ENTRIES -----
4625 50      :47          MARC
4618 80      :00          COMS/TANK
4615 80      :00          COMS/INPUT
4610 80      :30          JOB NSP108/00
4605 50      :21          JOB *SYSTEM/PRINT/ROUTER
----- NO WAITING ENTRIES -----

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
*4664/4664 13:42 O-DS (ACCT) JOB WEEKLY/PAYROLL           ←←
*4664/4665 13:42 P-DS (ACCT) PAYROLL/TAXES ON ACCOUNTS    ←←
4660/4660 12:16 EOJ  JOB BEGIN JOB;RUN (DG
4660/4661 12:16 EOT  (DGREEN)OBJECT/OP/PROG/1 ON SYSTEMSED
---MIX-TIME----- MESSAGES -----
*4665 13:42 DEATH IN THE FAMILY @ (001800)                ←←
*4664 13:42 OPERATOR DSED @ (00000300)                    ←←
4658 13:02 MONITOR >>> NO MARC/1 FOR LSN 0
4658 13:02 MONITOR >>> NO MARC/1 FOR LSN 0
```

Job Discontinued by DS

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS**

RUN (DGREEN)OBJECT/OP/PROG/Y ON SYSTEMSED

```
---MIX-PRI--CPU TIME----- 14 ACTIVE ENTRIES -----  
5142 50      :27      MARC  
5138 50      :47      MARC  
5133 80      :00      COMS/TANK  
5132 80      :00      COMS/INPUT  
5128 80      :30      JOB NSP108/00  
4794 50      :21      JOB *SYSTEM/PRINT/ROUTER  
----- NO WAITING ENTRIES -----
```

----- NO SCHEDULED ENTRIES -----

```
---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----  
5189/5189 13:45 P-DS JOB BEGIN JOB;RUN (DG ←  
5187/5187 13:42 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED  
5186/5186 13:42 EOJ JOB SERVER/LP20/R#868/J#5183  
5183/5183 13:42 EOJ JOB BEGIN JOB;RUN (DG
```

```
---MIX-TIME----- MESSAGES -----  
* 5190 13:46 LP20: *BD/0005189/000SUMMARY ON DISK3 PRINTED & REMOVED  
5189 13:45 MISSING CODE FILE @ 1065:0001:3 @ (00000200) ←  
5189 13:44 NO FILE (DGREEN)OBJECT/OP/PROG/Y ON SYSTEMSED (DK) ←  
5186 13:42 LP20: *BD/0005183/000SUMMARY ON DISK3 PRINTED & REMOVED
```

Task Discontinued by P-DS

In this example, a command was entered to run the program shown, creating job 5189. Then the system searches for the program file to initiate the task.

System messages indicate that there is no code file with the name given in the RUN command, so the task is never initiated.

The job created was DSed, and P-DS is listed in the completed entries history. P-DS means an invalid action was attempted--the specified file title does not exist.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

There may be times when the status of a job or task needs to be changed by the operator in order to bring about a change in the system environment. Terminating a job/task is one example. Others follow.

LP (Lock Program)

To protect a program from being terminated accidentally, it can be locked. The LP ODT command locks a program already in the mix so that it cannot be terminated with commands like DS.

The LP - command unlocks a program so that it can be terminated.

<mix number list> LP

<mix number list> LP -

removes lock

PR (Priority)

When jobs are in job queues, job priority is one factor in determining which will enter the active mix.

Once tasks are in the mix, the PR ODT command can be used to change their priority. This change will influence how soon and how often they have access to processing time. The change in priority will affect the task only until it finishes running.

The PR command can also be used to change the order of jobs in a job queue.

<mix number list> PR <priority number>

FS (Force Schedule)

If a job is waiting in a job queue to be selected or has been scheduled by the MCP, it can be forced into the active mix with the FS command, if sufficient memory is available.

<mix number list> FS

This command could be used to assure that a particular job will become active as soon as possible.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

HS (Hold Schedule)

To prevent jobs/tasks from entering the active mix, use the **HS** command.

- HS** Suspends selection of jobs/tasks for the active mix
- HS-** Resumes selection of jobs/tasks for the active mix
- HS?** Displays the current status of the schedule--whether or not it is on hold

ST (Stop)

Use this command to temporarily halt the execution of a job/task. The task will appear in the waiting entries with the message "STOPPED BY OPERATOR".

< mix number list > **ST**

OK (Reactivate)

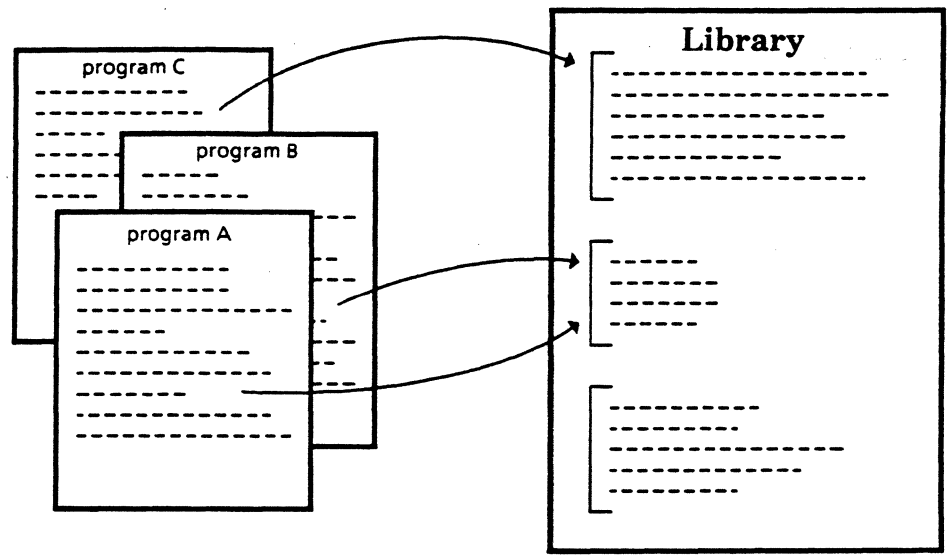
This command resumes processing of jobs/tasks suspended with the **ST** command.

< mix number list > **OK**

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS**

Libraries

A library is a program containing commonly used procedures, such as math functions, which can be shared by other programs. Instead of including the procedure in every program which uses it, the programs can access the library.



Library

LIBS

Libraries do not generally appear in the active mix entries. To display the list of libraries which are active in the mix, use the LIBS command to display temporarily and permanently frozen libraries.

A permanently frozen library stays in the mix regardless of whether there are any users. A temporarily frozen library stays in the mix only as long as it is in use.

```

LIBS
-----MIX--FRZ---SHR---USR----- 10 FROZEN LIBRARIES -----
4896 TEMP ALL 1 SL JOB *SYSTEM/HELP
4895 TEMP PRIV 1 JOB *SYSTEM/MARC/AGENDA/TDXXX
4887 PERM ALL 7 SL JOB *SYSTEM/COMS
4894 PERM RUN 2 *SYSTEM/MARC/COMMANDER
4892 PERM ALL 2 TPLIB/DCILIBRARY
4890 PERM ALL 6 COMS/ROUTER
4837 PERM ALL 1 SL JOB *SYSTEM/GENERALSUPPORT
4836 PERM ALL 0 SL JOB *SYSTEM/DATACOMSUPPORT
4839 PERM ALL 0 DATACOMSUPPORT/9
4793 PERM ALL 3 SL JOB *SYSTEM/PRINT/SUPPORT
    
```

Example of LIBS Display

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL INTERROGATING AND MANIPULATING THE STATUS OF JOBS AND TASKS

THAW (Thaw Frozen Library)

A permanently frozen library can be removed from the mix by discontinuing it with the **DS** command, but this is not recommended since it may disrupt users accessing the library.

You should not **DS** a library unless absolutely necessary, since all programs using the library will also be discontinued.

The **THAW** command changes a permanently frozen library into a temporarily frozen library, which will leave the mix as soon as all users have finished. Using the **THAW** command reduces the possibility of disrupting users.

< mix number list > **THAW**

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 6, UNIT 2

PRACTICE EXERCISES--SECTION 6, UNIT 2

1. Give the proper syntax to discontinue task 2367.

2367 DS

2. Give the proper syntax to change the priority of task 1387 from 75 to 90.

1387 PR 90

3. Match the command to its appropriate function.

D FS

C PR

F WY

A LP-

B DS

I U

K CU

H ML

G DQ

J SQ

A. Unlock a program so it can be discontinued

B. Discontinue a program

C. Assign a new priority level to a program

D. Force a job from the queue into the mix

E. Lock a program so it cannot be discontinued

F. Display the status of a job

G. Display the default job queue

H. Check the number of jobs allowed to enter the mix from a particular job queue

I. Determine how processor time is being used

J. Determine whether any jobs are queued in a particular queue

K. Check system memory usage

LP

DS

PR

FS

LP

WY

DQ

ML

U

SQ

CU

4. Which command will display the job number task 4321 is running under?

A) PR

B) DS

C) Y

D) LP

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 6, UNIT 2

PRACTICE EXERCISES--SECTION 6, UNIT 2 (continued)

5. What command will display the total time a task has been running in the mix? TI
6. What command will display the mix limit, number of active jobs/tasks, and number of jobs queued for job queue 85? SQ 85
7. What command will display the list of tasks in the waiting mix? W
8. The system can terminate a job.

TRUE

FALSE

9. If a task is terminated, the job it is running under always automatically terminates as well.

TRUE

FALSE

10. The THAW command will force a permanently frozen library out of the mix immediately, even if there are active users of the library.

TRUE

FALSE

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 6, UNITS 1 AND 2

LAB--SECTION 6, UNITS 1 and 2

Sign on to the system and get a REMOTESPO window. It is easier to do this lab from an ADM screen, but not absolutely necessary. Your instructor will assign you a letter to use to make your file titles unique.

Assigned letter = D

1. Using ODT commands, do each of the following:

Display the current list of active mix entries. Syntax: A

Is *SYSTEM/PRINT/ROUTER in the active mix? NO

Display the current list of waiting entries. Syntax: W If there are waiting entries, choose one and indicate the reason it is waiting.

* SYSTEM / ~~PRINT~~ / ROUTER operator stopped

Display the current list of completed entries. Syntax: C What are the job/task number, time, and history of the most recent entry?

8651/8666 @ 2.25pm DS'd - obj/cat

2. Execute a task using file (<usercode>)LAB2/<your letter> ON <family>. Use the usercode and family assigned by your instructor for previous labs.

Syntax: RUN (OPS) LAB2/D ON PACK

3. List active mix entries. Syntax: A

What is the mix number for your task? 8696

4. Determine the status of your task. Syntax: 8696 /

What is the priority level of your task? 40

What job number is the task running under? 8696

5. Determine the current values of system time used by your task. Syntax: T1 8696

How much processor time is shown? 0

How much I/O time is shown? 0

What is the elapsed time? 1:07

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 6, UNITS 1 AND 2

LAB--SECTION 6, UNITS 1 and 2 (continued)

6. Initiate the same task again, with a typing error:
(<usercode>)LAB22/ <your letter> ON <family>
7. See if your task is in the active entries. If so, indicate the mix number. NO
8. See if your task is in the waiting entries. If so, indicate the mix number and the reason it is waiting.
8701 - NO FILE
9. Discontinue your task. Syntax: 8701 DS
What type of DS is indicated in the completed entries? P-DS
What system message indicates the reason for the termination of the task?
MISSING CODE FILE
10. Initiate a job using file (<usercode>)WFL/LAB2/ <your letter> ON <family>.
Look for (<usercode>)LAB2/ <your letter> in the active mix.
What is the mix number? 8720
11. Lock the program. Syntax: 8720 LP
What message is returned? 8720 Program Locked.
12. Attempt to DS the program. Syntax: 8720 DS
What message is returned? Program is Locked.
13. Unlock the program. Syntax: 8720 LP -
What message is returned? 8720 not Locked

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 6, UNITS 1 AND 2**

LAB--SECTION 6, UNITS 1 and 2 (continued)

14. Attempt to DS the program.
Does the task complete? YES
What is the history entry for the task under the completed entries? 8719/8720 ODS.
15. Initiate a task using file (<usercode>)LAB7/<your letter>.
Is (<usercode>)LAB7/<your letter> in the active mix? YES
What is the mix number? 8829
Stop the task from processing. Syntax: 8829 ST
What message is returned? NONE
Is (<usercode>)LAB7/<your letter> in the active mix? ~~YES~~ NO
Resume processing of the task. Syntax: 8829 OK
Is (<usercode>)LAB7/<your letter> in the active mix? YES
Discontinue the task. Syntax: 8829 DS (OR) DS 8829
16. What percentage of CPU time is being spent on the following? User programs: 13%
MCP: 7% Syntax: U
17. How much memory is currently available to the system? 320722
Syntax: CU
18. Use a single command to determine the following:
What is the default job queue, if any, for the system? 0
What is the mix limit, if any, for the system? 30 For the default job queue? 10
Syntax: mh
19. Are any jobs queued? yes 1 Syntax: 88 (or mh)

Computer-Assisted Instruction Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace. You may choose modules 1-8 for this exercise.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
RESPONDING TO PROGRAM REQUESTS AND PROBLEMS**

SECTION 6

UNIT 3

RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

Unit Objectives

After successful completion of this unit, you should be able to

- Respond to program requests for information
- Respond to file problems

Purpose

You must be able to respond to information requests made by tasks and jobs, and resolve simple file problems.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

Once jobs/tasks are running in the mix, they must be monitored for problems and requests for information. Monitor them by observing the display of waiting entries and system messages. The operator can use various commands to respond to program requests and problems.

Responding to Requests for Information

AX (Accept)

Some programs expect additional input by the operator before they can proceed. At these points, an "ACCEPT" message will be displayed, and the task goes to the waiting mix as shown in the following example. In this case, the operator needs to enter a name.

```
RUN (DGREEN)OP/PRINT/PRACTICE ON SYSTEMSED

---MIX-PRI--CPU TIME----- 13 ACTIVE ENTRIES -----
5271 75      :31 REMOTESPO

---MIX-PRI---ELAPSED----- 1 WAITING ENTRY -----
* 5347 50   :06 (DGREEN)OP/PRINT/PRACTICE ON SYSTEMSED ←
ACCEPT:YOUR-NAME.
----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
5343/5343 14:56 EOJ JOB BEGIN JOB;RUN (DG
5343/5344 14:56 EOT (DGREEN)OP/PROG/3 ON SYSTEMSED
5340/5340 13:06 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
5339/5339 13:06 EOJ JOB SERVER/LP20/R#882/J#5337
---MIX-TIME----- MESSAGES -----
* 5347 14:58 ACCEPT:YOUR-NAME. ←
5344 14:53 NO FILE OP/PROG/3/DATA ON SYSTEMSED (PK)
5344 14:49 NO FILE INPUTT ON DISK (DK)
5341 13:23 SUCCESSFULLY FREED MT173
```

System "ACCEPT" Message Sends Task to Waiting Mix

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

The operator responds to the ACCEPT message using the AX ODT command. The programmer should supply the operator with the necessary format and information.

< mix number list > AX < necessary text >

5689 AX FEBRUARY 1989

The AX command supplies a name, the program is completed, and a report is printed.

5347 AX HOWDY DOODY

---MIX-PRI-CPU TIME----- 13 ACTIVE ENTRIES -----

5153	80	1:53	JOB *SYSTEM/CANDE
5288	80	:26	*CANDE/STACK01
5172	50	:02	*COMS/ODT/DRIVER
5137	80	12:34	*SYSTEM/PRINT/REMOTE/SERVER
5135	80	2:44	*SYSTEM/COMS
5142	50	1:13	MARC

----- NO WAITING ENTRIES -----

----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----

*	5350/5350	15:00	EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
*	5349/5349	15:00	EOJ JOB SERVER/LP20/R#883/J#5346
	5346/5346	15:00	EOJ JOB BEGIN JOB;RUN (DG) ←
	5346/5347	15:00	EOT (DGREEN)OP/PRINT/PRACTICE ON SYSTEMSED ←

---MIX-TIME----- MESSAGES -----

*	5349	15:00	LP20: *BD/0005346/0005347/000PRNT ON DISK3 PRINTED & REMOVED
	5349	15:00	LP20: *BD/0005346/000SUMMARY ON DISK3 PRINTED & REMOVED
	5347	14:58	ACCEPT:YOUR-NAME.
	5344	14:53	NO FILE OP/PROG/3/DATA ON SYSTEMSED (PK)

AX Command Supplies Information Needed, and the Task Continues

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

Responding to File Problems

Some simple problems encountered by programs can be handled with the following commands.

The use of the WY command is very helpful in situations where a task has been suspended or has stopped processing and requires some intervention by the operator.

As you recall, the WY command displays the status of a task. For a task that is not processing, it will indicate that it is waiting on an event. It will display an RSVP message which indicates why the task is not processing. It also displays a list of possible commands which can be used to respond to the situation.

The example below shows the status of a task suspended with the ST command. Processing had begun but was stopped by the operator. The task indicates that the operator can either discontinue the task with a DS or can resume the printing of the task with an OK.

3135Y

```
STATUS OF TASK 3135/3135 AT 15:15:56
CLASS = 0
PRIORITY = 50
ORIGINATION: UNIT 2
STACK STATE: WAITING ON AN EVENT
PROGRAM NAME: (USER)OBJECT/TESTPROG ON EDDEV
RSVP: OPERATOR STOPPED ←
REPLY: OK,DS ←
```

Response to the Y Command for a Task in the Waiting Mix

OK (Reactivate)

*<mix number list>*OK

The OK command reactivates a task that has been suspended.

Another instance of where the operator might use the OK command is when an error is encountered by the system while copying and comparing files from tape to disk. If an error is encountered, the system will often respond with a message indicating the problem and a request for an OK if the task is to continue with a retry of the copy.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

"NO FILE" Condition

There may be instances when a task is running and cannot find an input file. In cases like this, the system will display a "NO FILE" message indicating it cannot find the file it needs to continue processing the task.

One way to solve this problem is to copy the needed file from tape or from the family where it is currently located, to the location where it is needed. The **IL**, **FA**, **OF**, **UL** and **FR** commands are also commonly used to respond to NO FILE conditions.

IL (Ignore Label)

The **IL** ODT command designates the present location of a file when system messages indicate the file cannot be found where the program says it should be.

For example, suppose a file has been moved from one disk family to another. When the system looks for the file, it does not find it on the family identified in the program. **IL** can be used to tell the system the unit number of the pack where the file is currently located.

The following example illustrates a program which has gone to the waiting mix because it cannot find a file.

```
RUN (DGREEN)OP/PROG/3 ON SYSTEMSED
```

```
---MIX-PRI---CPU TIME----- 12 ACTIVE ENTRIES -----  
5133 80      :05 COMS/TANK  
5132 80      :00 COMS/INPUT  
5128 80     10:19 JOB NSP108/00  
4794 50      :40 JOB *SYSTEM/PRINT/ROUTER  
4745 50      1:59 JOB *SYSTEM/GENERALSUPPORT  
5505 75      :02 REMOTESPO  
---MIX-PRI---ELAPSED----- 1 WAITING ENTRY -----  
* 5521 50    :02 (DGREEN)OP/PROG/3 ON SYSTEMSED           ←  
  NO FILE (DGREEN)OP/PROG/3/DATA ON DISK (DK)           ←  
---MIX-PRI---ELAPSED----- 1 SCHEDULED ENTRY -----  
5504 50    18:43 JOB *SYSTEM/SCREENDSIGN/FORMATS  
---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----  
5518/5518 15:01 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED  
5517/5517 15:01 EOJ JOB SERVER/LP20/R#898/J#5498  
---MIX-TIME----- MESSAGES -----  
* 5521 15:08 NO FILE (DGREEN)OP/PROG/3/DATA ON DISK (DK) ←  
5517 15:01 LP20: *BD/0005498/000SUMMARY ON DISK3 PRINTED & REMOVED
```

RUN Command with System "NO FILE .." Message

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

To find out what commands may be used to respond to a waiting entry, use the WY command.

Although OK is given as an option, it does not apply in this situation. If an OK is issued, the program will look for the file again. It will fail to find the file and return to the waiting mix.

The IL command is also an option.

```
5521Y  
STATUS OF TASK 5520/5521 AT 15:15:56  
CLASS = 0  
PRIORITY = 50  
ORIGINATION: UNIT 2  
STACK STATE: WAITING ON AN EVENT  
PROGRAM NAME: (DGREEN)OP/PROG/3 ON SYSTEMSED  
RSVP: NO FILE (DGREEN)OP/PROG/3/DATA ON DISK (DK)  
REPLY: FAJULILOK,DS ←
```

Handwritten notes:
A line from the 'REPLY' field points to the following text:
~~FILE ATTRIBUTE~~ ~~UNLABELLED TAPE~~ IGNORE LABEL
IK PR 47
IK MTSD

Response to Y Command For a Task in the Waiting Mix

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
RESPONDING TO PROGRAM REQUESTS AND PROBLEMS**

In this example, the IL command was used to tell the system that the location of the file it needs is disk pack 79. The task returns to the active mix and processing continues.

<mix number list> IL <device> <unit number>

5521 IL PK 79

5521 IL PK 79

---MIX-PRI--CPU TIME----- 13 ACTIVE ENTRIES -----

5521 50 :01 (DGREEN)OP/PROG/3 ON SYSTEMSED ←
5133 80 :05 COMS/TANK
5132 80 :00 COMS/INPUT
5128 80 10:20 JOB NSP108/00
4794 50 :40 JOB *SYSTEM/PRINT/ROUTER
4745 50 1:59 JOB *SYSTEM/GENERALSUPPORT

----- NO WAITING ENTRIES -----

---MIX-PRI--ELAPSED----- 1 SCHEDULED ENTRY -----

5504 50 21:13 JOB *SYSTEM/SCREENDESIGN/FORMATS

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----

5518/5518 15:01 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
5517/5517 15:01 EOJ JOB SERVER/LP20/R#898/J#5498

---MIX-TIME----- MESSAGES -----

5521 15:08 NO FILE (DGREEN)OP/PROG/3/DATA ON DISK (DK)
5517 15:01 LP20: *BD/0005498/000SUMMARY ON DISK3 PRINTED & REMOVED
5138 15:00 PK47 1 FILES REMOVED IN *EMODE/= ON DISK3

IL Command Input Returns Task to the Active Mix

Note: IL is a temporary solution. NO FILE conditions will result in the future unless the file or files are copied to the location specified in the program, or the program is changed to reflect the current location of file or files.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

FA (File Attribute)

This command can be used to indicate the name or title of a file:

< mix number list > **FA FILENAME = (ACCOUNTS)PAYROLL/TAXES**
< mix number list > **FA TITLE = (ACCOUNTS)INVOICES ON ACCTPK**

For example, suppose a file name is spelled incorrectly. Task 6206 is looking for a file named PAYROLL/TAXES (the name specified in the program), but the actual file name (misspelled) is PAYROL/TAXES. Since there is no file named PAYROLL/TAXES, a NO FILE condition results. To respond enter the following:

6206 FA FILENAME = PAYROL/TAXES

To prevent this situation from recurring, use the WFL CHANGE command to correct the file name.

OF (Optional File)

In some NO FILE conditions, the input file may not be necessary for the task to continue processing. This situation occurs when the file is identified by the program as an optional file. The OF command may be used to respond to the condition so the task can continue processing.

If an attempt is made to use this command for a file that has not been designated as optional, the task will remain in the waiting mix.

< mix number list > **OF**

Note: The OF command is also useful while copying multiple files. If an error is encountered while copying a file, OF lets you by-pass that file but continue copying the others.

UL (Unlabeled) and FR (Final Reel)

For some NO FILE conditions, the system may not be able to find a file because it is on an unlabeled tape. UL tells the system to use the file located on the specified tape drive. The unlabeled tape must be loaded on that unit.

< mix number list > **UL < device > < unit number >**

4556 UL MT 165 Tells the system to use the file on the unlabeled tape loaded on tape drive 165

Unlabeled tape files do not have end-of-file marks and may extend over multiple reels of tape, so the system does not know when the end of the file is reached. A waiting entry (NO FILE) will appear after the system reads to the end of the information on the tape. If there are multiple reels, mount the next one, then use the UL command. Or, to indicate that the end of the file has been reached, use the FR command.

< mix number list > **FR**

4556 FR Tells the system that the current reel is the final reel

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL RESPONDING TO PROGRAM REQUESTS AND PROBLEMS

"DUPLICATE FILE" Condition

A "DUPLICATE FILE" condition may occur when a task attempts to create a new file with the same name as an existing file.

The **OF** command can resolve a DUPLICATE FILE condition. It causes the program to continue, retaining the old file instead of creating the new file.

RM (Remove)

The **RM** command does the opposite of **OF** in response to a DUPLICATE FILE condition. The system creates the new file and eliminates the old file. If the old file is to be retained, be sure that it is backed up before it is removed.

< mix number list > RM

Device Required

OU (Output Unit)

The **OU** command assigns or redirects the output of a task to a specified device or device type. For example, if a disk becomes full, files can be redirected to another disk device.

< mix number > OU < device > < unit number >

A common use of **OU** is to redirect output to a tape with a serial number different from that specified in the task program. This may be necessary if the **SERIALNUMBER** system option is set--no output can be sent to a tape unless it has the same serial number as specified in the task program.

If a tape drive is not available when needed, a message may be displayed indicating a device is required. The **OU** command redirects output to another device, as in the following example:

< mix number > OU MT < unit number >

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 6, UNIT 3

PRACTICE EXERCISES--SECTION 6, UNIT 3

1. Some programs are written to stop processing at various points and wait for input before proceeding. A message indicates that input is required. What command is used to provide the proper input to the program?

<mx# > AX (message.)

2. Task 2343 has gone to the waiting mix with a NO FILE condition because it cannot find a file on the ACCOUNTS family. What command syntax will direct the task to look for the file on disk pack unit 62?

2343 /62 PK 62

3. In a DUPLICATE FILE condition for task 6839, what command syntax should be used to remove the old file and create the new file?

6839 RM

4. Which command syntax will redirect a file to tape unit 172?

- A) 4589 RM
- B) 4589 OU MT 172
- C) 4589 AX TO MT 172
- D) 4589 OK

5. Task 3467 is in the waiting mix with a NO FILE condition. The file it needs is optional. What command syntax will tell the task to continue processing, bypassing the missing file?

3467 OF

6. Task 4466 is waiting on a file named (ACCT)DATA/AUG89 ON ACCOUNTS, but you have been informed that the correct file title is (ACCT)NEWDATA/AUG89 ON ACCOUNTS. What command syntax will give the task the correct file title?

4466 FA TITLE =

FILENAME =

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 6, UNIT 3

LAB--SECTION 6, UNIT 3

Sign on to the system and get a REMOTESPO window. Complete the lab as specified. It is preferable but not necessary to have an ADM screen.

1. Initiate a ^{Job} task using file (<usercode>) WFL/LAB4/<your letter> ON <family>.

Does the task go to the waiting entries with an ACCEPT message? yes

What is the mix number of your task? 8939

Respond to the ACCEPT message by specifying your name as the necessary text.

Syntax: 8939 AX DASMAB

Does the task go to EOT? yes

2. Initiate a task using file (<usercode>) LAB3/<your letter> ON <family>.

Does the task go to the waiting entries? yes

What is the mix number of your task? 8943 8954

Why is it waiting? no file LAB3/DATA on DISK

3. Can this file be bypassed as an optional file? Try the OF command and see. Syntax: 8954 OF

What system message is displayed? invalid reply

4. Check the task status and list the reply commands possible. Syntax: 8954 y

Commands FA, IL, IL, OK, DS

5. What is the unit number of the family assigned to you for labs? Syntax: PER PR

Family unit number 48

6. Respond to the NO FILE condition with the IL command. Syntax: _____

What does the task do? _____

Computer-Assisted Instruction Exercises (CAT)

Sign on to CAT as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-9 for this lab.

NOTES

WFL

%, QUEUE = 10

like ARCS

BEGIN JOB, STARTTIME = 2200;

PRIORITY = 25;

FAMILY% = PAYPACK OTHERWISE DISK;

RUN * PAYROLL/UPDATE;

PROCESS RUN * PAYROLL/PAYCHECKS;

PROCESS RUN * PAYROLL/JOURNAL;

COPI * PAYROLL/INTL to PAYBKUP;

START PERSONNEL/WFL;

END JOB;

ON CANDE

MAKE PAYROLL/WFL JOB < filetype

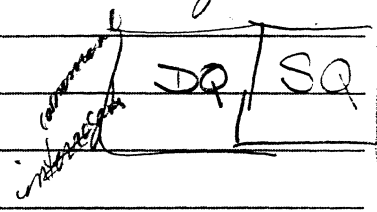
Synchronous = 1 at a time
Go on to next.

QUEUE

① if WFL has % start then job goes to that queue

② if user code is associated, then uses user code %

③ else goes to Default % = % %



④ if no default, system scans %s to find one with right attributes

NOTES

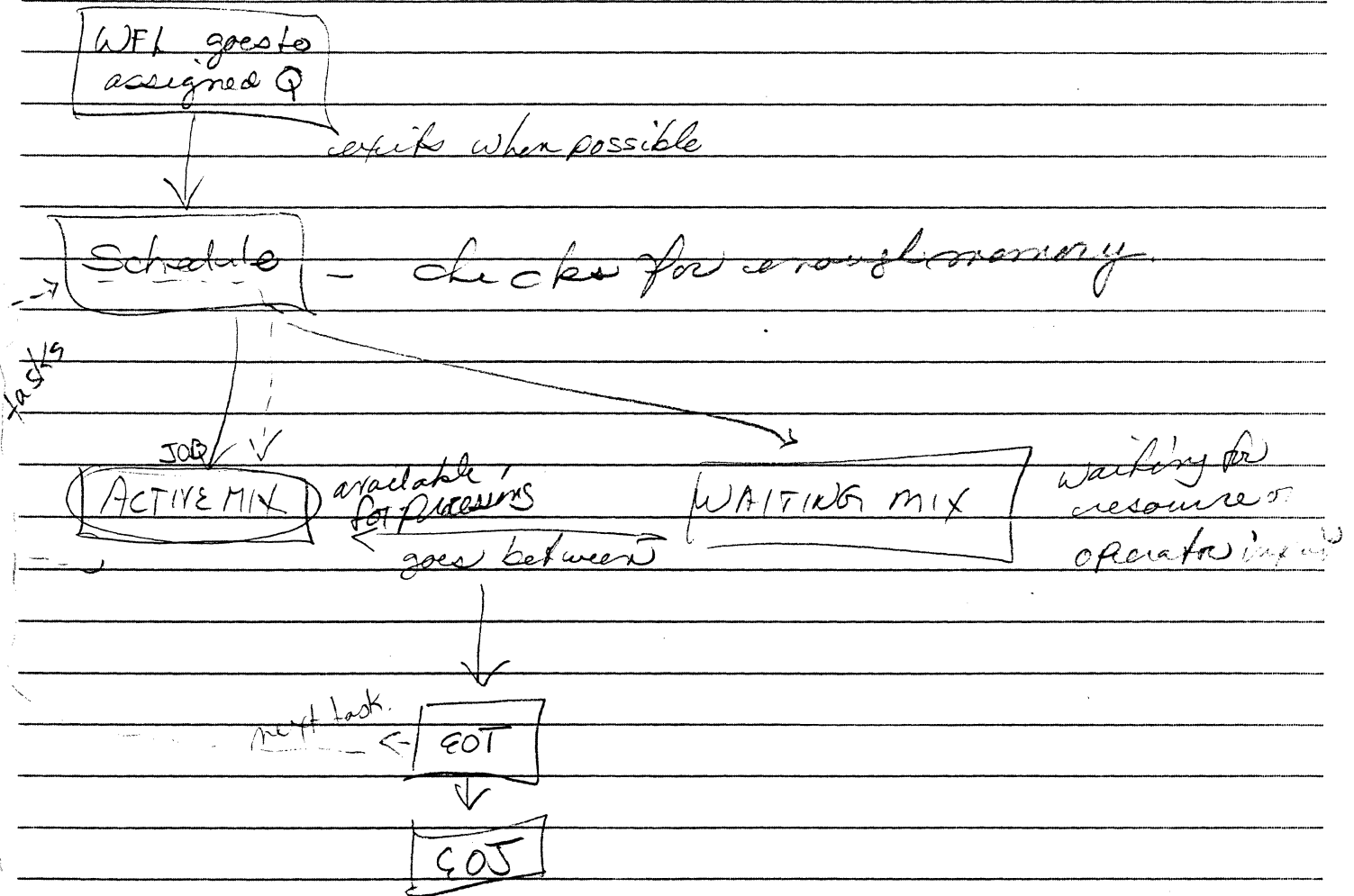
Q

ATTRIBUTES B

MIX LIMIT = ∞

PRIORITY = ∞

Basic Flow



SECTION 7
PRINTER BACKUP

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRINT SYSTEM**

**SECTION 7
INTRODUCTION**

Section Objectives

You should

- Understand the concept of printer backup
- Know the procedures for manipulating print requests, forms, and devices
- Know how to initiate print requests with varying attributes

Purpose

You must be able to initiate print requests and communicate with the Print System.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRINTING BACKUP FILES**

SECTION 7

UNIT 1

PRINTING BACKUP FILES

Unit Objectives

After successful completion of this unit, you should be able to

- Initiate a print request with/without attribute assignments
- Explain the difference between file backup and printer backup

Purpose

You must be able to control the mode of printing files, change printer backup file names, and print files manually when necessary.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PRINTING BACKUP FILES

Printer Backup Versus File Backup

Two types of backup are

- File Backup:** Duplicate files preserved as protection in case original files are corrupted or lost
- Printer Backup:** Print files stored on media and printed when a printer is available or when printing is initiated

On MCP level 3.7, printer backup is controlled and managed by the Print System (PrintS) and its extension, Remote Print System (ReprintS).

Direct Versus Indirect Printing

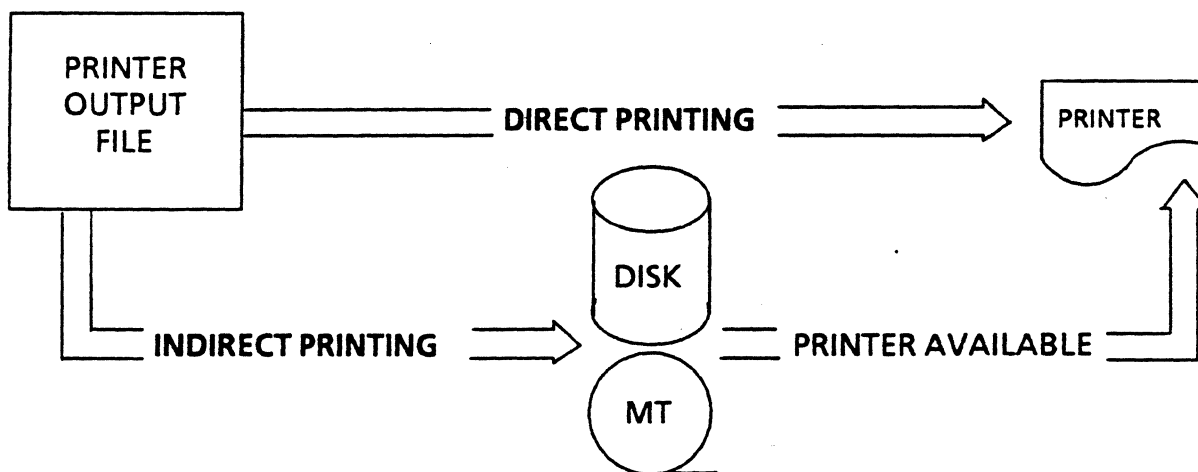
Many computers are capable of either direct or indirect printing.

If a computer is configured for direct printing, printer output generated by a program goes immediately to a printer. If none is available, the program must stop processing and wait. A printer assigned to a program is tied to the program until it finishes executing. The printer may sit idle waiting for printer output to be generated. Printer and processor time are not used efficiently, as programs must wait on slow I/O activity every time printer output is generated.

speed & flexibility

Using indirect, or spooled, printing means that printer output is written to a backup file on tape or disk and can be printed when a printer is available. It also means that the program does not have to sit and wait for printing to be completed before proceeding with execution.

Print files will be stored for later printing if the system option LPBDONLY is set, or if specified in the programs generating the print files.



Direct Versus Indirect Printing

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PRINTING BACKUP FILES

The Backup File

If the LPBDONLY option is set, backup files are created automatically. The system assigns default file titles when titles are not assigned to these files in programs. The default title always follows the naming convention below:

BD/<000job number>/<000task number>/<3digits + internal file name>

JOB
BD/0004596/0004604/001PRNOUT *prog name.*
blank if no job.

Printer backup files are often called BD files because of this default directory.

If a printer backup file has been assigned a default BD name, it will print automatically. Once it has been printed, the print file will be removed unless the application program causes it to be saved.

Alternate Backup File Names

The default BD name is not distinct enough to associate individual printouts with the programs that produced them. So, the programmer may assign a backup file name in the program. These files may not be in the BD directory and may not print automatically.

PRINT Command

Files that are not in the BD directory or do not print automatically must be printed using a WFL PRINT command issued either through a WFL program or as a separate task command.

The PRINT command can also be used to print additional copies of BD backup files that have been saved, without rerunning the program to get them.

There are numerous attributes and defaults which can be assigned or changed with the PRINT command.

PRINT <file title> (<print attribute phrase>); PRINTDEFAULTS = (<print defaults>)

PRINT (USER1)PROGA/BKUP1 *name*

This statement will print the file according to attributes specified when the file was created, or with defaults.

PRINT (USER1)PROGA/BKUP1 (DESTINATION = "LP52: 3")

This statement will print three copies of the given file, on local line printer unit 52 with other attributes as specified when the file was created.

PRINT (USER1)PROGA/MYPROJ/PRELIM/BKUP1 (PRINTCOPIES = 5)

This statement will print five copies of the given file, with other attributes and defaults as specified when the file was created.

Under Mark

use WFL PRINT

*Under Case
use PRINT*

*7-6
@ ODT need to
write WFL on fly.*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL PRINTING BACKUP FILES

Printing on Remote Devices

An optional software extension of PrintS, called ReprintS, may be available on your system. ReprintS allows print files to be sent to remote printers--printers on data comm lines.

To identify the destination of a file as a remote printer in the DESTINATION file attribute, the term STATION must be used along with the station name of the remote device.

PRINT (USER2)BKUP/FILE1 (DESTINATION = "STATION B20LASER5")

This command sends the print file to the remote printer with the station name "B20LASER5."

ie slow for Tony.

DL (Disk Location)

The DL ODT command displays the family location of specific groups of files. One of the groups displayed is printer backup files. This location would have to be included in PRINT syntax if the files are not located on DISK.

Syntax: DL

DL	
DISK LOCATION:	
IPFILES	ON DISK
SORT	ON BACKUP
CATALOG	ON DISK
JOBS	ON DISK
USERDATA	ON DISK
BACKUP	ON BACKUP
LOG	ON DISK
OVERLAY	ON BACKUP

Response from DL Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 7, UNIT 1

PRACTICE EXERCISES--SECTION 7, UNIT 1

1. Explain the difference between file backup and printer backup.

dup. file copy. for recovery
created print image for →

2. What command syntax will print the backup file called (USER1)U1BKUP/0003657/0003660/000LINE which is on the BACKUP family?

PRINT → ON BACKUP

3. What command syntax initiates a request to print 10 copies of the backup file (USER1)U1BKUP/0003657/0003660/000LINE which is on the BACKUP family?

PRINT ↗ ON BACKUP (PRINTCOPIES = 10)

4. What command syntax will print the backup file (USER1)U1BKUP/0004595/0004599/000LINE, which is on the BACKUP family, on a remote image printer called B20LASER?

PRINT ↗ ON BACKUP (DESTINATION = "STATION B20LASER")

5. Circle the default printer backup directory.

PD

PRINT

BD

LPBDONLY

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

SECTION 7

UNIT 2

USING PRINT SYSTEM OPTIONS

Unit Objectives

After successful completion of this unit, you should be able to

- Monitor print requests
- Monitor printers
- Alter print system configuration
- Manipulate print requests
- Start and stop the print system

Purpose

To ensure that printouts are produced accurately and in a timely fashion, you need to know how to control print requests and the print system.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

PS commands control and configure the Print System. Command options control how and where documents are printed. These materials concentrate on the options which might be used by operators.

Getting Print Information

PS SHOWREQUESTS

The PS SHOWREQUESTS command displays print request details, including the job and request numbers, the job name, the status of the request, and how much of the print job has been completed. Print requests may be displayed showing either all or part of the information available:

PS SHOWREQUESTS or PS SH	Information on all print requests in the Print System
PS SH <i><request number></i>	Details about the specified request number
PS SH USERCODE = <i><usercode></i>	The print requests for the specified usercode
PS SH EXCEPTIONS	The requests that have an exception--something unusual, like an error, which prevents the request from being completed
PS SH WAITING	Requests waiting on a resource
PS SH SCHEDULED	Requests scheduled to be printed at a later time
PS SH PRINTING	Requests currently being printed
PS SH COMPLETED	Requests that have been printed

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
USING PRINT SYSTEM OPTIONS**

The following screens show the response to: A) PS SH command, B) PS SH W command, C) PS SH P command.

PS SH *auto assigned*

PRINT REQUEST LIST

<u>JOB</u>	<u>REQUEST</u>	<u>AMT LEFT</u>	<u>DONE</u>	<u>(USER) JOB NAME</u>	<u>STATUS</u>
6332	966	61 LN	0%	"INSTALL_BOOT"	P: ON B20MTSTA0
6381	971	61 LN		"INSTALL_BOOT"	W: B20MTSTA06

(A)

PS SH W (This screen was generated when PS SERVERS = 0)

WAITING PRINT REQUESTS

<u>JOB</u>	<u>REQUEST</u>	<u>AMOUNT</u>	<u>(USER) JOB NAME</u>
6381	971	149 Ln	(OPS)WFL/PROG1 Waiting for a Line Printer with FORMID = "INVENTORY"
6421	999	129 Ln	"BEGIN JOB; RUN PR" Waiting for any Printer
6395	984	50 Ln	(RLS) "Session" Waiting for a Line Printer with FORMID = "TESTFORM"

(B)

PS SH P

CURRENTLY PRINTING REQUESTS

<u>JOB</u>	<u>REQUEST</u>	<u>AMT LEFT</u>	<u>DONE</u>	<u>(USER) JOB NAME</u>	<u>DEVICE</u>
6332	966	61 LN	0%	"INSTALL_BOOT"	B20MTSTA06
6392	973	96 LN	0%	"BEGIN JOB; RUN SYS"	LP20

PG = Page

(C)

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

Monitoring and Altering Print System Configuration

In order to manipulate print requests, you need to understand basic information about how the Print System is set up.

PS Devices

The **PS DEVICES** command displays information on the devices available to the Print System. It can also be used to add or delete default devices (printers used for tasks with no assigned destination).

PS DEV	Displays information about devices available to PrintS
PS DEV < <i>device name</i> >	Displays information about the designated device only
PS DEV + < <i>device name</i> >	Adds the specified device to the default pool
PS DEV - < <i>device name</i> >	Deletes the specified device from the default pool

PS DEVICES

LP20

DEVICE TYPE: LINE PRINTER
ACCESSIBILITY: IN DEFAULT POOL
REQUEST LIMITS: NONE
TRANSFORM: "UPPERCASE IN SL PRINTSUPPORT"

STATION B20LASER

DEVICE TYPE: REMOTE LINE PRINTER
ACCESSIBILITY: BY DESTINATION ONLY
REQUEST LIMITS: NONE
TRANSFORM: "AP9208 IN SL PRINTSUPPORT"

STATION B20FINAL

DEVICE TYPE: REMOTE LINE PRINTER
ACCESSIBILITY: BY DESTINATION ONLY
REQUEST LIMITS: NONE
TRANSFORM: "AP9208 IN SL PRINTSUPPORT"

STATION B20LASERB

DEVICE TYPE: REMOTE LINE PRINTER
ACCESSIBILITY: BY DESTINATION ONLY
REQUEST LIMITS: NONE
TRANSFORM: "AP9208 IN SL PRINTSUPPORT"

Response from PS DEVICES Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, USING PRINT SYSTEM OPTIONS

PS CONFIGURE

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The **PS CONFIGURE** command assigns characteristics to the print environment for the site. A common option used by operators is the **FORMID** option.

The **FORMID** option changes the configuration of a print device to match the needs of programs that require a special form for printing. The operator can load the special form on a printer and use the **FORMID** command to identify which printer has the special form.

The **FORMID** can be any word or phrase up to 100 characters long, and must be enclosed in quotation marks. It also must match the **FORMID** attribute specified in the program needing the form.

PS CONFIGURE <device name> FORMID = "<word(s) identifying the form>"

for degrees
il APds
PR of

PS CONFIGURE LP15 FORMID = "CUST ORDER SUMMARY"

This command tells the system that the line printer called LP15 has the **CUST ORDER SUMMARY** form loaded on it, and should be used to print output files for programs with that form identified by their **FORMID** attribute.

To remove a form association from a printer, use the following command:

PS CONFIGURE <device name> - FORMID

OR = " "

PS CONFIGURE IPFM1 - FORMID

This command removes the form association from the IPFM1 printer.

= program
> 0 = auto print

PS Servers

The **PS SERVERS** command can be used to display or alter the number of servers. Servers control the data sent to printing devices. The number of servers affects the use of system resources. If printers are added to or taken away from the system, it may be necessary to alter the number of servers.

If the server limit is set to zero, requests will not be automatically selected for printing. All print requests will be shown as waiting requests.

PS SERV

Displays the current number of print servers

PS SERV <server number>

Changes the number of print servers in use to the specified number

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

Manipulating Print Requests

Use information about print requests and the print system to manipulate print requests when necessary.

PS FORCE

The **PS FORCE** command forces a print request to print as soon as possible--on the next available printer with the correct configuration. The command can be used with either the request number or job number in the syntax.

This command can be used when the number of servers is set to zero. It forces the specified print request to print on the default printer.

PS FORCE <request number>

PS FORCE JOB <job number>

PS MODIFY

The **PS MODIFY** command changes attributes in a print request. In order to do this, identify the print request number obtained from the **PS SH** display. This command could be used to change a destination name when a printer is down or to retry print requests which have been marked as exceptions.

PS MODIFY <request number or range> <file attribute or print modifier phrase>

For example, all print requests may be marked with an exception and taken from the print queue if they have been directed to a printer that is not available to the system. **PS MODIFY** can redirect the requests to a different printer. Also, waiting print requests can be redirected to another printer using **PS MODIFY**.

PS MODIFY <request number or range> **DESTINATION** = "<device type> <device number>"

PS MODIFY ALL **EXCEPTIONS** **DESTINATION** = "STATION B20LASER"

This command will direct all print requests marked with exceptions to be printed on the remote printer B20LASER.

If a print request has been marked with an exception because the operator terminated the printing of the file using **PS SKIP** or **PS REQUEUE**, the print request can be retried using **PS MODIFY**.

PS MODIFY <request number or range>

PS MODIFY 13589

Removes the exception from print request 13589 and puts it in the queue to print again

PS MODIFY 13589-13600

Removes the exception indicated for each of the print requests in this range of numbers and queues them for printing again

Modify

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

PS SKIP

The **PS SKIP** command can be used to skip forward or backward a given number of lines, or to the end of a file (EOF) that is currently printing. It can also be used to skip all the remaining files of a print request. If entire files are skipped, or a file is skipped to EOF, then the file is marked as an exception and must be enabled for selection again using **PS FORCE** or **PS MODIFY**, or deleted with **PS DELETE**.

If the **RELEASE** option is used, the backup files will be purged unless attributes associated with the file cause them to be saved. Also, there is syntax which can be used to skip by pages instead of lines, if the printer is configured to allow it.

PS SKIP <device name> + <no. of lines>	Continues printing a file after it skips ahead the specified number of lines.
PS SKIP <device name> EOF	Skips to the end of the currently printing file and adds an exception to the request. It cannot be printed until a PS MODIFY or PS FORCE command is issued, but may be deleted with PS DELETE .
PS SKIP <device name> EOF RELEASE	Skips to the end of the file that is printing and purges the backup file from disk, if the file does not specify that it be saved.

PS REQUEUE

The **PS REQUEUE** command is used to stop a currently printing request and requeue it. If it is simply requeued, the entire file will be printed out when restarted. If it is requeued with the **CHECKPOINT** option, the file can be reprinted from where it was stopped. When a request is stopped, it is marked as an exception; a trailer page is printed, specifying the time it was stopped and how much of the request was printed.

PS REQUEUE <device name>	Immediately stops the printing of a file and requeues it. The entire file will print again when restarted.
PS REQ <device name> CHECKPOINT	Immediately stops the printing of a file and requeues it. When restarted, it will begin printing at the point where it stopped.
PS REQ <device name> AT PAGE	Stops printing at the next page break. The entire file will print again when restarted.

Because requeued print requests are marked with an exception, they cannot be selected to start again without either a **PS FORCE** command or a **PS MODIFY** command. The **PS MODIFY** command, with no options, reconsiders a print request and then will remove the exception status, allowing it to be selected for printing.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

PS DELETE

Print requests can be deleted with **PS DELETE**. If a request is deleted, the printer backup file is also deleted unless attributes associated with the file cause it to be saved.

- | | |
|--|---|
| PS DELETE <request number or range> | Deletes the specified request number |
| PS DELETE ALL | Deletes all print requests |
| PS DELETE ALL EXCEPTIONS | Deletes all requests marked as exceptions |

PS STOP

PS STOP can be used to stop a device from printing. The device can be stopped immediately or after it completes the printing of a file.

- | | |
|---|--|
| PS STOP <device name> | Stops the specified device immediately |
| PS STOP <device name> AT EOF | Stops the specified device at the end of the currently printing file |

PS OK

To resume printing stopped by **PS STOP**, use **PS OK**.

PS OK <device name>

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING PRINT SYSTEM OPTIONS

Starting and Stopping the Print System

PS QUIT

If the version of PrintS software needs to be changed, or the Print System appears to be hung, the **PS QUIT** command can be used to shut down the Print System without stopping the entire system. It will terminate actions by programs related to the print subsystem. Precautions that should be taken during this process are outlined in the **Print System Administration, Operations, and Programming Guide**.

PS QUIT

PS RESTART

The **PS RESTART** command reinitializes the Print System after it has been shut down by the **PS QUIT** command.

PS RESTART



See the **Print System Administration, Operations, and Programming Guide** for more information on print commands.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 7, UNIT 2**

PRACTICE EXERCISES--SECTION 7, UNIT 2

1. What command syntax will print the backup print file named BGB/00034/00040/000LINE on the BACKUP family?

- A) PS BGB/00034/00040/000LINE ON BACKUP
- B) BD BGB/00034/00040/000LINE ON BACKUP
- C) PRINT BGB/00034/00040/000LINE ON BACKUP
- D) PRINT BD/00034/00040/000LINE ON BACKUP

2. What is the proper syntax to display the print requests which have not completed because they have encountered some error in printing?

PS SH E

3. What syntax will cause print request 2666 to print as soon as a printer with the proper configuration is available?

- A) PS MODIFY 2666
- B) PS RESTART 2666
- C) PS FORCE 2666
- D) PS OK 2666

4. Which command syntax will delete only the print requests that have an error associated with them?

- A) PS SH E
- B) PS DELETE ALL E
- C) PS DELETE ALL
- D) PS STOP ALL

5. What is the command syntax to initiate a request to print 10 copies of the (MYCODE)BKUP/PROJ/TRIAL/01 backup file, changing the DESTINATION file attribute to local printer LP29?

- A) PS CONFIGURE DESTINATION = "LP29" PRINT COPIES = 10
- B) PRINT TO DESTINATION = LP29; PRINTCOPIES = 10
- C) PS MODIFY DESTINATION TO LP29; PRINTCOPIES = 10
- D) PRINT (MYCODE)BKUP/PROJ/TRIAL/01 (DESTINATION = "LP29:10")

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 7, UNIT 2**

PRACTICE EXERCISES--SECTION 7, UNIT 2 (continued)

6. Indicate the command syntax that will show print requests that are already printed.

PS SH C

7. Indicate the command syntax to add LP1 to the default printer pool.

PS DEV+ LP1

8. What is the syntax to configure printer device LP20 so that it will accept print requests requiring the form PAYCKS?

PS CONFIGURE LP20 FORMID = "PAYCKS"

9. Print request 13987 has been requeued by the operator. What PS MODIFY syntax will remove the exception from the request and queue it for printing again?

PS MODIFY 13987

10. What command syntax will stop a device from printing after it finishes the currently printing request?

PS STOP AT EOF

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 7**

2+S
scroll

LAB--SECTION 7

Sign on to the system and bring up a REMOTESPO window. You may use an ADM screen for this lab, but it is not necessary. Follow the instructions below.

Use the PS SERV command to see how many servers are currently allowed on the system. The number should be equal to zero for this lab. If not, check with your instructor.

1. List the printers that are in the default pool. Syntax: PS DEV

Printers: LP4

2. Give the name of one remote printer (if one exists). 0

3. Give the name of one printer that is accessible by destination only (if one exists). 0

4. Execute job file (<usercode>)WFL/PRINT/FORMID/<your letter> ON <family name>.

Syntax: _____

Watch the waiting mix and perform operations required for the task file FORMID<your letter>.

What is the job number? 9193/9202

(If the job has finished, look in the completed entries.)

What is the task number for the task initiated by the job? 9202

Use PS commands to do the following.

5. Indicate the print request number of a request that is currently printing (if any exist). _____

Syntax: _____

6. Indicate the print request number of a request that is marked with an exception (if any exist). _____

Syntax: _____

7. How many requests, if any, are listed for the usercode you have been using for class? _____

Syntax: _____

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 7**

LAB--SECTION 7 (continued)

8. Display the waiting print requests. Syntax: _____

List the request numbers for the print requests associated with the execution of your job.

What is the request number for the longest request from your job? _____

Why is it waiting? _____

(Normally, the correct form could be loaded onto the printer and PS CONFIGURE could be used to configure the device with the proper FORMID. That situation is not feasible in lab, but you can see the type of message associated with files that need special forms.)

9. Delete your request that is waiting for a line printer with FORMID = CHECKS.

Syntax: _____

10. Execute job file (<usercode>) WFL/PRINT/MODIFY/<your letter>ON
<family name>.

Syntax: _____

What is the job number for the job? _____

(If the job has finished, look in the completed entries.)

What is the task number for the task initiated by the job? _____

11. What is the request number for the print request generated by your execution of this job? _____

12. Use the following PS MODIFY syntax to modify your file.

PS MODIFY <your request number> REQUESTNOTE = "PRINT FOR <your initials>"

This will print a page with the message, PRINT FOR <your initials>, in front of your printout.

13. Use PS FORCE syntax to force your print request to be printed. Syntax: _____

This is necessary because PS SERVERS = 0, preventing requests from being printed automatically.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 7**

LAB--SECTION 7 (continued)

14. Execute job file (<usercode>) WFL/PRINT/FILE/<your letter> ON <family name>.

Syntax: _____

This program creates a printer backup file with a program assigned name instead of a BD name. It must be printed out using the **PRINT** command.

15. Find out from your instructor the name of the disk family which stores the printer backup files, or enter the **DL** command to find out.

Name = _____

16. Use **PD** to display a list of the files on this family under the usercode you have been using for class.

Your file should be there with the name **STU** <your letter>.

17. Use the following syntax to generate a print request:

BEGIN JOB # <your initials>; **PRINT** (<usercode>) **STU** <your letter> **ON** <family name>

18. Find the request number for your **PRINT** job, and use **PS FORCE** syntax to print the file.

Syntax: _____

Computer-Assisted Training Exercises (CAT)

Sign on to the **CAT** program as previously instructed. Do the exercises at your own pace.

You may choose from **modules 1-10** for this lab.

SECTION 8
SYSTEM LOGS

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM LOGS

SECTION 8 INTRODUCTION

Section Objectives

You should

- Recognize the purpose for maintaining system log files
- Use correct command syntax to perform log maintenance and analysis

Purpose

System logs are useful for troubleshooting system and job problems.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
SYSTEM LOG FILES**

SECTION 8

UNIT 1

SYSTEM LOG FILES

Unit Objectives

After successful completion of this unit, you should be able to

- Transfer the current log file
- Initiate a log analysis request

Purpose

To use the log effectively, you must know how to manipulate system log files.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM LOG FILES

What Are System Log Files?

To preserve a record of system activity, the system continuously gathers pertinent information about the system environment and stores it in protected files called SUMLOG files. The information in these files includes entries about MCP activity and completed jobs. This information is vital in troubleshooting system and job problems.

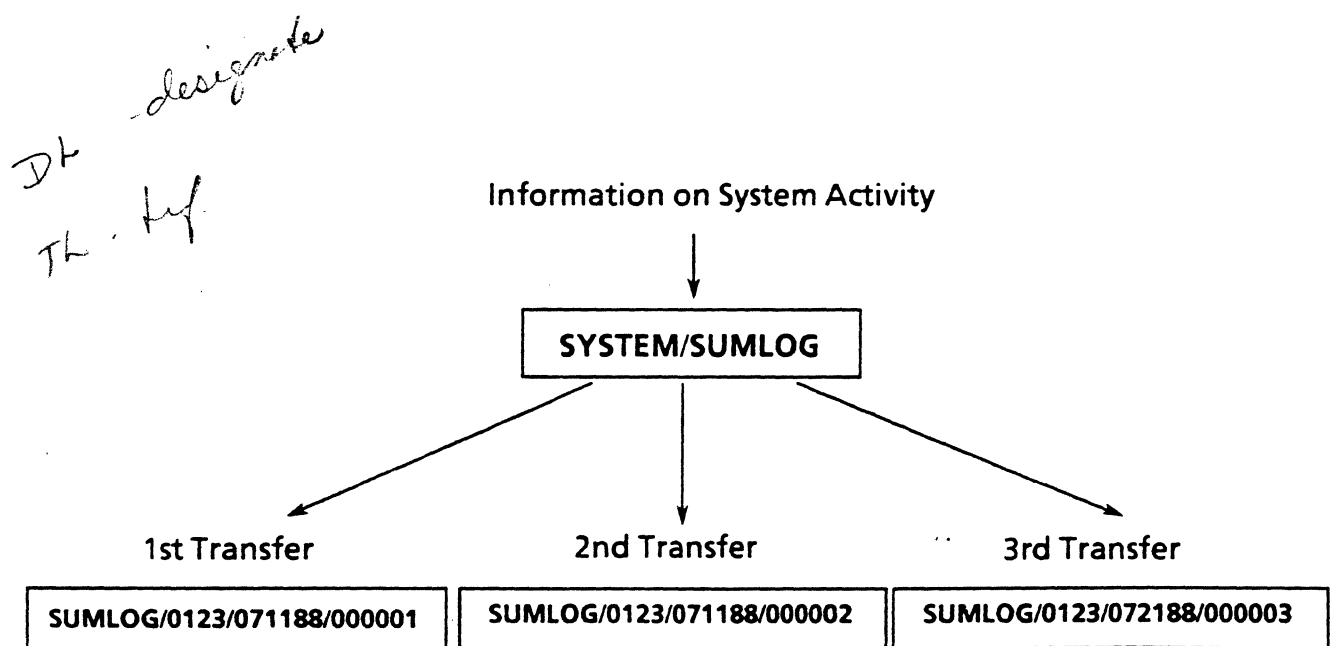
The name of the most current or active log file is always SYSTEM/SUMLOG. The active file has a maximum size (100,000 records). When the active file approaches 95% of the maximum size, the MCP transfers the contents to a new file which will be stored under a different name. Then information continues to be added to the SYSTEM/SUMLOG file as system activity proceeds.

SUMLOG files which have been transferred have names with the following syntax:

SUMLOG / <system serial number> / <date> / <six-digit number>

To differentiate between transferred files, the six-digit number is incremented by one each time the active file is transferred. When the system is totally reinitialized (including loading new software), the SUMLOG number returns to 000001 and the incrementation starts over.

SUMLOG files are stored on DISK unless a substitute location for these files has been designated by the system administrator.



A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM LOG FILES

Log-Related ODT Commands

There are several ODT commands that are associated with the SUMLOG file and the logging process. The most commonly used commands are TL and LOG.

TL (Transfer Log)

The operator can cause the contents of the active SUMLOG file to be transferred to a storage file using the TL command.

Syntax: TL

The system returns a message indicating the name of the transferred SUMLOG file.

With the log transferred, the entire log file can be printed. This may be necessary to track a variety of information: input or messages related to hardware, data comm, or system problems.

LOG (Analyze Log)

Earlier in this guide there was a discussion of the LOG command and how it can be used to bring up the current log of system messages. This command initiates a system utility program, SYSTEM/LOGANALYZER, to perform various analysis functions on the current log file or old log files. The analysis information is returned in a printout or can be sent to the ODT screen.

LOG	Prints an analysis of the entire current log file
LOG <options> <i>console</i>	Returns an analysis according to the options specified
LOG CON JOB 3275	Returns all current log information about job 3275 to the ODT screen - <i>Job Summary</i>
LOG TASK 2980	Prints all current log information about task 2980
LOG 1525 TO 1540 <u>MSG</u>	Prints system messages for the time period 3:25 to 3:40 p.m. for the current date <i>Sort by M#</i>
LOG 1100 03/27/89 TO 1115 03/27/89	Prints current log entries for the period from 11:00 to 11:15 a.m. on March 27, 1989
LOG MAINT	Prints all mainframe errors, peripheral errors, and hardware configuration log records
LOG OPERATOR	Prints all ODT entries from the current log
LOG OPERATOR DS	Prints all ODT log entries for the DS command
LOG ABORT	Prints records associated with programs terminated abnormally with DS
LOG "SUMLOG/1180/022087/000135"	Prints all information in the 000135 log file from February 20, 1987, for system serial number 1180

109 ODT info.
- IBM Support Ref Manual.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM LOG FILES

A sample log printout is shown below.

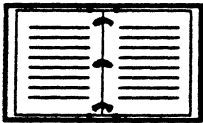
LOGANALYZER VERSION: 37.272.356, SDASUPPORT VERSION: 37.272.28
11/22/88 11:00:47, ANALYZING MCP: *SYSTEM/373/880624/ASD/AMLIP/MCP. 37.272 (MCP/AS) SYSTEM
SERIAL = 6103

REQUEST IS: 1045 TO 1055 MSG UNSORTED

SUMLOG #000015 CREATED BY A6 (SYSTEM SERIAL = 6103) ON NOV 22, 1988 09:58:45
TITLE = *SYSTEM/SUMLOG ON DISK (CURRENT SUMLOG).
FILE CONTAINS 2000 RECORDS FROM NOV 22, 1988 09:58 TO NOV 22, 1988 11:01

NOV 22, 1988

10:45:16 →0003 OPERATOR ENTERED: ADM ST
10:46:06 2061MSRDISP3:DISPLAY:INTERACTIVE IS (LINC14)LINC14SYS ON LINC14 - LINC14.
10:51:51 2088MSRDISP3:DISPLAY: SDASUPPORT VERSION 37.272.028 COMPILED 6/23/88 @ 20:47.
10:53:41 2386MSRPREFMT34:LP20: *BD/0002135/0002136/000LINE ON BACKUP PRINTED AND
REMOVED



Information on LOGANALYZER and complete LOG option specifications, along with illustrations of log analysis printouts, are in the **System Software Support Reference Manual**.

Maintaining Log Files

Log files are a useful and frequently implemented system feature. However, it is important that these files be monitored and maintained because they are constantly being generated. They could eventually fill disks.

Log files which have been transferred can be copied to tape and then removed from disk.

DL (Disk Location)

The DL ODT command displays the disk family name where log files are located.

System response to DL command:

DISK LOCATION:	
IPFILES	ON DISK
SORT	ON BACKUP
CATALOG	ON DISK
JOBS	ON DISK
USERDATA	ON DISK
BACKUP	ON BACKUP
LOG	ON DISK
OVERLAY	ON DISK

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 8**

PRACTICE EXERCISES--SECTION 8

1. Which command will cause a new SUMLOG file to be generated?
 - A) MSG
 - B) LOG
 - C) DS
 - D) TL

2. Which is the correct syntax to print the 000004 SUMLOG file for April 1, 1989, of system serial number 5888?
 - A) LOG 5888 TO 000004
 - B) LOG "SUMLOG/5888/040189/000004"
 - C) LOG CON 5888/000004/FOR 040189
 - D) LOG SUMLOG 000004 ON 040189

3. Why is it important to monitor log file generation?

4. What is the syntax to copy the sumlog file SUMLOG/1000/112289/000005 from DISK to a tape called LOG1189?

What is the syntax to remove it from DISK?

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 8

LAB--SECTION 8

Sign on to the system and get a REMOTESPO window. Complete the instructions below.

PS SERVERS should be set to zero for this lab. If not, check with your instructor.

For the LOG commands, preface the syntax with: **BEGIN JOB <your initials>**; This will enable you to find your job in the completed entries and the print request list.

For example: **BEGIN JOB DLG; LOG <log syntax>**

1. Using LOG command syntax, generate a printout of the operator DS command log entries in the current log.

Syntax: _____

Use PS FORCE to print your print request. Syntax: _____

2. Using LOG command syntax, generate a printout of the last 15 minutes of system messages.

Syntax: _____

Use PS FORCE to print your print request. Syntax: _____

3. On which disk family are log files stored? Syntax: _____

Computer-Assisted Training Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from **modules 1-11** for this lab.

SECTION 9
SYSTEM/DUMPALL

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
INTRODUCTION**

**SECTION 9
INTRODUCTION**

Section Objective

You should

- Recognize and use correct DUMPALL command syntax for file maintenance and conversion

Purpose

You may need to use the DUMPALL utility to accomplish file maintenance tasks which cannot be done with LIBRARY/MAINTENANCE.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
USING THE DUMPALL UTILITY**

SECTION 9

UNIT 1

USING THE DUMPALL UTILITY

Unit Objective

After successful completion of this unit, you should be able to

- Initiate tasks using **DUMPALL COPY, LIST, ATTRIBUTES, or CAT** commands

Purpose

You may use the **DUMPALL** utility for some maintenance tasks, printing of files, and other media conversion tasks.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING THE DUMPALL UTILITY

SYSTEM/DUMPALL is a utility program with many functions. Operators mainly use it to generate printouts of files. It may also be used to copy parts of files or copy files between computer systems.

DUMPALL Modes

There are three modes from which DUMPALL may be executed--Parameter, Card, and Interactive.

Parameter Mode

In Parameter mode, the DUMPALL program is executed with a RUN command statement. This is the mode most likely to be used by operators. Included in the RUN statement are the DUMPALL commands specifying what is to be done. The DUMPALL command specifications must be in quotation marks inside parentheses. Command specifications, also referred to as instruction strings, may not exceed 256 characters.

Each RUN statement can contain several DUMPALL commands separated by semicolons. Individual DUMPALL commands will be covered later in the unit.

RUN SYSTEM/DUMPALL ("DUMPALL command; DUMPALL command")

Card Mode

In Card mode, DUMPALL is executed through a RUN statement, but the DUMPALL commands are not specified in the RUN statement. Instead, they are specified in a separate file. The file title that contains the commands is used in the RUN statement.

RUN SYSTEM/DUMPALL ("CARD"); FILE CARD (<title of file that contains commands>)

Interactive Mode

Interactive mode is intended for execution of DUMPALL from remote terminals. DUMPALL commands are entered one at a time, without using a RUN statement.

from Mark

RUN SYSTEM / DUMPALL ("INTER")

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING THE DUMPALL UTILITY

DUMPALL Commands

The following explains how to enter DUMPALL commands in Parameter mode.

TEACH/HELP Command

The **TEACH** command (or **HELP**--they are synonymous) provides instructional assistance on DUMPALL commands. From the ODT, this command provides a printout which includes examples and an explanation of the purpose of the command.

RUN SYSTEM/DUMPALL ("TEACH <options>")

RUN SYSTEM/DUMPALL ("TEACH ALL")

This command provides instruction on all the DUMPALL commands.

RUN SYSTEM/DUMPALL ("TEACH COPY")

This command provides instruction for the DUMPALL COPY command only.

ATTRIBUTES/FILE Command

From the ODT, the **ATTRIBUTES** command (or **FILE** command--they are synonymous) prints the file attributes associated with a given file or with all the files in a given directory.

RUN SYSTEM/DUMPALL ("ATTRIBUTES <file or directory title>")

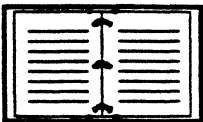
RUN SYSTEM/DUMPALL ("ATTRIBUTES (USER1)MYDIR/MYFILE1 ON USER")

This prints all the file attributes associated with (USER1)MYFILE1 on the USER family.

RUN SYSTEM/DUMPALL ("ATTRIBUTES (USER1)YRDIR/= ON USER")

This command prints the file attributes for all the files in the (USER1)YRDIR directory on the USER family.

*Same as
FILES
in Card*



DUMPALL syntax is in the System Software Utilities Operations Reference Manual.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING THE DUMPALL UTILITY

LIST Command

or MACC LIST

From the ODT, the LIST command generates a printout of the contents of a labeled or unlabeled file. There are numerous options available with this command. Some are shown below in the syntax examples.

- | | |
|------------|---|
| LIST | Prints file contents in EBCDIC characters |
| LISTAN/LAN | Prints file contents in EBCDIC characters with the hexadecimal equivalent |

RUN SYSTEM/DUMPALL ("LIST <file title> <options>")

RUN SYSTEM/DUMPALL ("LIST (USER1)MYDIR/MYPROG ON USER")

This command prints the EBCDIC character contents of the (USER1) MYPROG file on the USER family.

RUN SYSTEM/DUMPALL ("LAN (USER1)MYDIR/MYPROG ON USER")

This command prints EBCDIC characters and their hexadecimal equivalents, for the MYPROG file.

RUN SYSTEM/DUMPALL ("L U L E 80,800 CHAR")

This command prints the contents of an unlabeled tape file. The INTMODE, MAXRECSIZE, and BLOCKSIZE file attributes must be specified when listing an unlabeled file. This information should be provided on the tape label on the side of the reel or by a programmer. The operator should not be too concerned with what these attributes mean.

LIST UNLABELED EBCDIC RECORDS BLOCKSIZE

The task will go to the waiting mix and must be started with a UL or IL command.

The preceding example prints the contents of the unlabeled file with EBCDIC as the INTMODE, 80-byte records (MAXRECSIZE), and 10 records per block or 800 bytes per block (BLOCKSIZE). Blocks are the number of physically adjacent file records which are transferred to/from the file as a group.

Printout From a DUMPALL LIST Command

A3:1612 DUMPALL VERSION 37.160.029 WEDNESDAY, 03/04/87 08:45 AM.
L (OPS)LWT/TEST/JOB ON SYSTEMSED

FILE ATTRIBUTES FOR: FIN HOSTNAME = SED KIND = PACK INTMODE = EBCDIC EXTMODE = EBCDIC
FILETYPE = 0 MINRECSIZE = 0 MAXRECSIZE = 15 BLOCKSIZE = 420 FRAMESIZE = 48 MYUSE = IN BUFFERS = 2
TRANSLATE = FULLTRANS PROTECTION = SAVE POPULATION = 1 AREAS = 1 AREALENGTH = 15120 FELXIBLE
LASTRECORD = 2 ROWSINUSE = 1 CRUNCHED USERINFO = 000000000000 CREATIONDATE = 11/21/86(86325)
LASTACCESSDATE = 11/21/86(86325) CYCLE = 1 VERSION = 0 SAVEFACTOR = 30 SECURITYTYPE = PUBLIC
SECURITYUSE = IO PACKNAME = SYSTEMSED

1E! BEGIN JOB TESTPRINT;	00000100...90
2E! RUN SYSTEM/BACKUP(" ""TEST"" ");	00000200...90
3E! END JOB	00000300...90

EOF - FILE CONTAINS 3 RECORDS
3 RECORDS PROCESSED

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL USING THE DUMPALL UTILITY

COPY Command

The DUMPALL COPY command can be used to copy files from one medium to another. However, unlike the WFL COPY command, it will not create a directory on tape for multifile tapes. The files will be separated by file header and trailer records, but there is no directory.

The DUMPALL COPY command allows you to copy parts of files to new files. Copying can be done from multiple sources to multiple destinations.

COPY <source file> <options> **TO** <destination file> <options>

Source file options might include specifying the following:

- A range of records to copy
- A number of records to skip
- A number of tape marks to skip
- That copying is being done from a multifile tape
- That copying is being done from an unlabeled tape

Destination file options might include specifying:

- New file attributes to assign
- That the tape being copied to is multifile
- That the tape being copied to is unlabeled

RUN SYSTEM/DUMPALL ("COPY (USER1)FILEA ON USER REC 1 THRU 50 THEN REC 70 TO (USER1) FILEB ON USER")

This command copies records 1 through 50 and record 70 from (USER1)FILEA to a file called (USER1)FILEB on USER family.

RUN SYSTEM/DUMPALL ("COPY (USER1)FILEA ON USER SKIP + 20 THRU END TO (USER1) FILEB ON USER")

This command copies record 21 through the end of the file, (USER1)FILEA, to a file called (USER1)FILEB on the USER family.

RUN SYSTEM/DUMPALL ("COPY (USER1)FILEA ON USER TO PROJ3(TAPE), MULTIFILE THEN (USER1)FILEC ON USER TO PROJ3(TAPE), MULTIFILE THEN (USER1)FILEF ON USER TO PROJ3(TAPE)")

This command copies FILEA, FILEC, and FILEF to a multifile tape called PROJ3. The tape will not have a directory, but the files will be separated by headers and trailers. Once the task is done, a summary is printed to identify what files were copied.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
USING THE DUMPALL UTILITY**

E 90 EOD CHAR

RUN SYSTEM/DUMPALL ("COPY UL TO (USER1)DATA ON USER")

This command copies a file on an unlabeled tape to a file called (USER1)DATA on the USER family.

RUN SYSTEM/DUMPALL ("COPY (USER1)DATA ON USER TO UL")

This command copies the file (USER1)DATA on the USER family to an unlabeled tape.

*one file only if
record size etc
is different.*

Printout From a DUMPALL COPY Command

COPY (DGREEN)OP/PROG/1 ON SYSTEMSED(PACK) TO DMPALL(TAPE),MULTIFILE THEN
(DGREEN)OP/PROG/3/DATA ON SYSTEMSED(PACK) TO DMPALL(TAPE),MULTIFILE

FILE ATTRIBUTES FOR: FIN TITLE = (DGREEN)OP/PROG/1 ON SYSTEMSED HOSTNAME = SED KIND = PACK
INTMODE = EBCDIC EXTMODE = EBCDIC FILETYPE = 0 MINRECSIZE = 15 MAXRECSIZE = 15 BLOCKSIZE = 420
FRAMESIZE = 48 MYUSE = IN BUFFERS = 2 TRANSLATE = FULLTRANS PROTECTION = SAVE POPULATION = 1
AREAS = 1 AREALENGTH = 15120 FLEXIBLE LASTRECORD = 4 FILEKIND = ALGOLSYMBOL ROWINUSE = 1
CRUNCHED USERINFO = 000000000000 CREATIONDATE = 01/30/87(87030) LASTACCESSDATE = 2/18/87(87049)
CYCLE = 1 VERSION = 0 SAVEFACTOR = 30 SECURITYTYPE = PUBLIC SECURITYUSE = IO PACKNAME = SYSTEMSED

INPUT FILE CLOSED 5 RECORDS COPIED

FILE ATTRIBUTES FOR: FOT TITLE = DMPALL HOSTNAME = SED KIND = PETAPE INTMODE = EBCDIC
EXTMODE = EBCDIC FILETYPE = 0 MINRECSIZE = 15 MAXRECSIZE = 15 BLOCKSIZE = 420 FRAMESIZE = 48
MYUSE = OUT BUFFERS = 2 TRANSLATE = FULLTRANS LABELTYPE = STANDARD FILEKIND = B6700 USASI
DENSITY = 1600 BPI SAVEFACTOR = 30 REEL = 1 DATE = 02/19/87(87050) CYCLE = 1 VERSION = 0
SERIALNO = DGREEN PARITY = STANDARD DIRECTION = FORWARD PROTECTION = TEMPORARY

OUTPUT FILE CLOSED 5 RECORDS WRITTEN

FILE ATTRIBUTES FOR: FIN TITLE = (DGREEN)OP/PROG/3/DATA ON SYSTEMSED HOSTNAME = SED KIND = PACK
INTMODE = EBCDIC EXTMODE = EBCDIC FILETYPE = 0 MINRECSIZE = 0 MAXRECSIZE = 14 BLOCKSIZE = 420
FRAMESIZE = 48 MYUSE = IN BUFFERS = 2 TRANSLATED = FULLTRANS PROTECTION = SAVE POPULATION = 1
AREAS = 1 AREALENGTH = 15120 FLEXIBLE LASTRECORD = 4 FILEKIND = DATA ROWSINUSE = 1 CRUNCHED
USERINFO = 000000000000 CREATIONDATE = 08/20/82(82232) LASTACCESSDATE = 02/04/87(87035) CYCLE = 1
VERSION = 0 SAVEFACTOR = 30 SECURITYTYPE = PUBLIC SECURITYUSE = IO PACKNAME = SYSTEMSED

INPUT FILE CLOSED 5 RECORDS COPIED

FILE ATTRIBUTES FOR: FOT TITLE = DMPALL HOSTNAME = SED KIND = PETAPE INTMODE = EBCDIC
EXTMODE = EBCDIC FILETYPE = 0 MINRECSIZE = 0 MAXRECSIZE = 14 BLOCKSIZE = 420 FRAMESIZE = 48
MYUSE = OUT BUFFERS = 2 TRANSLATE = FULLTRANS LABELTYPE = STANDARD FILEKIND = B6700 USASI
DENSITY = 1600 BPI SAVEFACTOR = 30 REEL = 1 DATE = 02/19/87(87050) CYCLE = 1 VERSION = 0
SERIALNO = DGREEN PARITY = STANDARD DIRECTION = FORWARD PROTECTION = TEMPORARY

OUTPUT FILE CLOSED 5 RECORDS WRITTEN

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
USING THE DUMPALL UTILITY**

Copy Extending

CAT Command

The CAT DUMPALL command concatenates (chains together) two or more files to an existing file, or joins one or more files to produce one new file. Parts of files may also be specified to be concatenated.

CAT <file title> <options> TO <file title> <options>

CAT <file title> <options> GIVING <file title> <options>

Options for this command are similar to those available for COPY. The CAT statement with TO chains files to an existing file. With GIVING, the CAT statement chains files creating a new file.

RUN SYSTEM/DUMPALL ("CAT (USER1)FILEC ON USER THEN (USER1) FILED ON USER TO (USER1)FILEB ON USER")

This command concatenates FILEC and FILED to existing FILEB for the USER1 usercode on the USER family.

RUN SYSTEM/DUMPALL ("CAT (USER1)FILEA ON USER THEN (USER1) FILEB ON USER GIVING FILEC(TAPE)")

This command concatenates FILEA and FILEB for the USER1 usercode on the USER family creating a new tape file called FILEC.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 9**

PRACTICE EXERCISES--SECTION 9

For exercises 1-5, give the parameter-mode DUMPALL syntax you would enter at the ODT.

1. Print the attributes of all files in the (ACCOUNTS)DATA directory, on the ACCOUNTS family.

2. Print the contents of SORTED/FILE under the USER2 usercode on the USER family (in EBCDIC characters only).

3. Print the attributes of a file named (ACCT)PAYROLL on the ACCOUNTS family.

4. Copy records 45 through 72 from (ACCT)SUMMARY to (ACCT)CLOSED. All files reside on the ACCOUNTS family.

5. Chain (ACCT)FILE/JAN to (ACCT)FILE/FEB creating a new file, (ACCT)FILE/YEAR. All files reside on the ACCOUNTS family.

6. How is a tape created with the WFL COPY command different from one created with the DUMPALL COPY command?

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 9**

LAB--SECTION 9

Sign on to the system and get the REMOTESPO window, then proceed with the directions below.

1. Use DUMPALL to obtain a printout of the attributes associated with the file, (*<user code>*)LAB2/*<your letter>* ON *<family name>*.

Syntax: _____

2. According to the printout created in lab exercise 1, when was the file created? What type of file is it?

3. Use DUMPALL to obtain an alphanumeric listing of the file, (*<usercode>*)SRC/LAB7 ON *<family name>*.

Syntax: _____

4. According to the printout created in lab exercise 3, when was the file created? What type of file is it? How many records does the file contain?

Computer-Assisted Instruction Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-12 for this lab.

NOTES

A blank sheet of lined paper with three binder holes on the left side. The paper is ruled with horizontal lines, and the word "NOTES" is printed at the top center. The lines are evenly spaced and extend across the width of the page. The binder holes are located on the left edge, approximately one-third, two-thirds, and three-quarters of the way down the page.

SECTION 10
DATA COMM INITIALIZATION AND
TROUBLESHOOTING

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DATA COMM INITIALIZATION AND TROUBLESHOOTING**

**SECTION 10
INTRODUCTION**

Section Objective

You should

- Know how to bring data comm up and down

Purpose

You must maintain a data comm environment which enables users to communicate with the system from data comm stations.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DATA COMM INITIALIZATION AND TROUBLESHOOTING**

SECTION 10

UNIT 1

DATA COMM INITIALIZATION AND TROUBLESHOOTING

Unit Objectives

After successful completion of this unit, you should be able to

- Identify the function of an MCS
- Manually initialize data comm programs
- Bring up COMS
- Bring up stations attached to COMS
- Troubleshoot basic data comm problems
- Bring down data comm

Purpose

To enable users to communicate with the system, you may need to initialize or bring down data comm, verify that stations can communicate, and, if not, remedy the situation.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

Data Comm Subsystem

As discussed in Section 1 of this guide, data comm is the transmission, reception, and validation of data between one location and another. This communication may involve only one computer system or multiple computer systems. On A Series systems, the data comm subsystem provides the communications link between remote devices, such as user stations, and the central processor.

Data comm subsystem functions are accomplished by special data comm processors:

- NSP
- LSP
- DCDLP
- ICP
- CP 2000

These processors remove the burden of managing data comm functions from the central processor. (Data comm processors were discussed in detail in Section 1, Unit 2 - Peripheral Hardware.)

Data Comm Initialization

Data comm is a very important function of A Series systems. Other than the ODT, stations communicate with the system through the data comm subsystem.

When the system is powered on, the data comm processor programs (DCDLP or NSP) must be initiated either automatically or manually so stations can communicate with the system. If the AUTORECOVERY system option is turned on, these programs should run automatically. The MCS program should also come into the mix automatically when the system is brought up after a power loss or a halt/load.

ID (Initialize Data Communications)

If it is necessary to initialize data comm programs manually, use the ID command.

Syntax:

ID <DCDLP or NSP number>

ID 108

init the processor
like 1/2 MCSOBT

assigned by mfg.

get by PER DC

MX - JOB 115F 108

after running

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

Message Control System (MCS) Programs

While the ODT communicates directly with the MCP through a special DLP, user terminals, or data comm stations, are connected indirectly to the system through data comm processors (NSP, DCDLP) and lines. Communication between the MCP and the data comm subsystem is controlled by special **Message Control System (MCS)** programs.

An operator will almost always see references to MCS programs in the mix, and it is important to know how system operations can affect them.

There can be more than one MCS on a system. An MCS can be general enough to fit the characteristics of any data communications network, or it can be made more specific to the types of work done by groups of users. There are several MCSs which can be used on A Series and B X900 systems. Two of the most popular are **Command and Edit Language (CANDE)** and the **Communication Management System (COMS)**.

CANDE - CANDE provides an environment suitable for creating, editing, and managing programs.

- Some system operations are possible through use of CANDE control commands.

COMS - COMS is a general, modularized MCS which supports a variety of users with modules that may be selected based on user needs.

- COMS has a window feature that allows users to work in several program environments by switching from window to window.

- CANDE can be accessed through a COMS window.

For data comm stations to communicate with the system, the MCS program or programs must be running. If COMS or CANDE goes out of the active mix, the stations communicating through these programs are not able to communicate with the system.

If all users are having problems communicating with the system, check the status of the MCS programs in the mix.

Most A Series users communicate with the system through COMS.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

Bringing Up COMS

If the MCS program must be initiated manually, it can be started once the data comm processor programs are in the mix. Use the following syntax to bring up COMS at the ODT.

Syntax: ??RUN <COMS code file name>
 ??RUN SYSTEM/COMS

rest of MCSOBJ ID CC.

Note: The name of the COMS code file may be SYSTEM/COMS, SYSTEM/COMS/KERNEL, or SYSTEM/COMS/ENTRY.

Marc = menu subsystem of Comms.

Data Comm Problems

Once COMS is in the mix, users should be able to sign on to data comm stations. If there are problems with individual stations, or if many stations seem to be unable to communicate, but the proper programs are in the mix, it may be necessary to use COMS commands to control stations.

From the ODT, commands to a particular MCS are sent by using the mix number for the MCS and SM along with the desired MCS command. To pass commands to COMS use the following syntax.

<COMS mix number> SM <COMS command>

Address Station Control (5194)

5194 SM STATUS <station list>

This command displays the status of the station(s) indicated in the list. The list may be of station names or station numbers. Every data comm station has a name and number associated with it. In this example, the mix number for COMS is 5194.

5194 SM STATUS ET112

Displays the status of the station with the name ET112.

If the command is entered from the ODT or the REMOTESPO window, status information will be displayed in the system messages. In the MARC window, information will be displayed in the message area or on a command output screen, depending on the length of the response.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

The status of the station may indicate that it is not communicating because it is not attached, enabled, or ready. The following syntax can be used to correct these problems from the ODT.

5194 SM READY <station list>

This command will ready the stations indicated in the list. The list may be of station names or station numbers. To ready a station means the system will poll it for input.

5194 SM READY ET112

This command will make station ET112 ready to be polled by the system to see if it has any messages to send.

5194 SM ATTACH ET112

This command directs COMS to attach station ET112. Attaching a station means to put the station under the control of the COMS MCS.

5194 SM ENABLE ET112

This command directs COMS to enable a station with the name ET112. To enable a station means to make it capable of communication with COMS.

You can also use these commands with a range of station numbers.

5194 SM STATUS 5 - 50

5194 SM READY 5 - 50

5194 SM ATTACH 5 - 50

From the MARC Action line, use only the COMS command. Do not use the <mix number> SM prefix. Also, if you use the station name in these commands, include the word "STATION" before them.

STATUS 5 - 50

READY STATION ET112

ATTATCH 5 - 50

Note: Use the mix number for the library *SYSTEM/COMS to send messages to COMS if the mix number which appears in the active mix for *SYSTEM/COMS does not pass the message through. Use the LIBS command to get the mix number.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
DATA COMM INITIALIZATION AND TROUBLESHOOTING**

In the following example, the status of a station is checked, and system messages indicate that the station is not ready. It cannot communicate with the system.

```
5130 SM STATUS ET112

--MIX-PRI--CPU TIME----- 13 ACTIVE ENTRIES -----
5130 50 10:01 *SYSTEM/COMS ←
5133 80 :05 COMS/TANK
5132 80 :00 COMS/INPUT
5128 80 10:20 JOB NSP108/00
4794 50 :40 JOB *SYSTEM/PRINT/ROUTER
5210 50 1:59 MARC
----- NO WAITING ENTRIES -----

--MIX-PRI--ELAPSED----- NO SCHEDULED ENTRIES -----

--JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----
5518/5518 15:01 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
5517/5517 15:01 EOJ JOB SERVER/LP20/R#898/J#5498
--MIX-TIME----- MESSAGES -----
5210 15:10 Current window = MARC/1 (0 q'ed) ←
5210 15:10 ET112(32) = 2:3:11 UNREADY, ENABLED, ATTACHED ←
5517 15:01 LP20: *BD/0005498/000SUMMARY ON DISK3 PRINTED & REMOVED
5138 15:00 PK47 1 FILES REMOVED IN *EMODE/= ON DISK3
```

Status of Data Comm Station That Is Not Ready

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

The COMS READY command readies the station. A system message should indicate that the station has been readied, and communication from the station should now be possible.

5130 SM READY ET112

---MIX-PRI--CPU TIME----- 13 ACTIVE ENTRIES -----

5130 50 10:01 *SYSTEM/COMS
5133 80 :05 COMS/TANK
5132 80 :00 COMS/INPUT
5128 80 10:20 JOB NSP108/00
4794 50 :40 JOB *SYSTEM/PRINT/ROUTER
4745 50 1:59 JOB *SYSTEM/GENERALSUPPORT

----- NO WAITING ENTRIES -----

---MIX-PRI--ELAPSED----- NO SCHEDULED ENTRIES -----

---JOB-TASK-TIME--HIST----- COMPLETED ENTRIES -----

5518/5518 15:01 EOJ JOB (SYSTEMSED)PRINT/TRANSFORM/9208 ON SYSTEMSED
5517/5517 15:01 EOJ JOB SERVER/LP20/R#898/J#5498

---MIX-TIME----- MESSAGES -----

* 5210 15:12 Station ET112 readied. ←
5210 15:10 Current window = MARC/1 (0 q'ed)
5210 15:10 ET112(32) = 2:3:11 UNREADY, ENABLED, ATTACHED
5521 15:08 NO FILE (DGREEN)OP/PROG/3/DATA ON DISK (DK)
5517 15:01 LP20: *BD/0005498/000SUMMARY ON DISK3 PRINTED & REMOVED
5138 15:00 PK47 1 FILES REMOVED IN *EMODE/= ON DISK3

System Response to COMS READY Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

To Find Out Station Names

The data comm personnel at your site should provide a list of the station names and numbers for all of the data comm stations.

Another way to see a list of the names associated with COMS stations is to use the **COMS REPORT** command.

It would be best to list station names from MARC rather than on the ADM screen because you will see the entire list from MARC but probably not on the ADM screen.

On the Action line, enter the following:

REPORT ALL

This command displays a list of the names of all the COMS stations, the user signed on to each station, and the current window of each station.

If you are working at a data comm station from the REMOTESPO window, you can find out the name of the station by entering:

?WRU

From the MARC window Action line, enter: **WRU**

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

Bringing Down Data Comm

Bringing down data comm involves several steps:

- Warn users.
- Bring down programs running under COMS.
- Bring down COMS.
- Bring down data comm processor programs.

Warn Users

Send a message to users before bringing down data comm. Give them some warning, if possible, so they can complete what they are doing and close files.

SS (Send to Station)

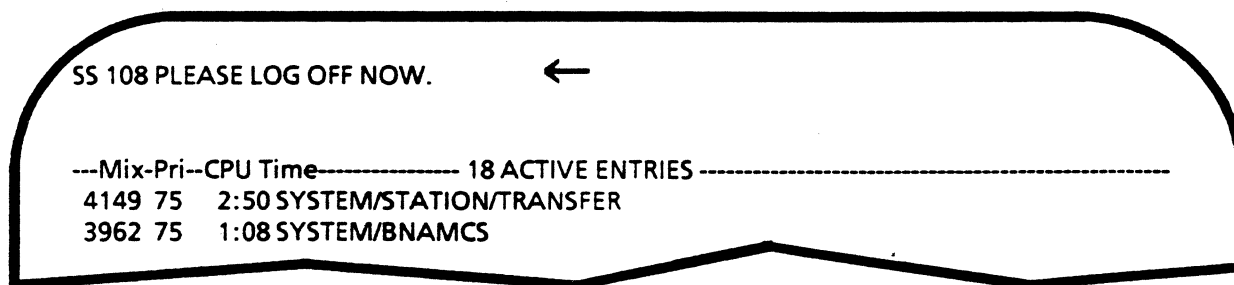
The SS ODT command can be used to send a message from the ODT or REMOTESPO to an individual station.

Syntax **SS <station name or LSN> <message text>**

SS 105 SYSTEM DOWN IN 30 MINUTES.

SS B2104 PLEASE LOG OFF NOW.

Note: No message will appear in the message area of the ADM to inform you that the message has been sent.



The message on the receiving station includes the time, source, and text of the message.

14:17 From ODT: PLEASE LOG OFF NOW.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

COMS commands

COMS commands can be used to send messages to individual stations or to all users signed on under COMS.

Use **TO ALL** to send a message to all users signed on under COMS.

Syntax: <COMS mix number> SM TO ALL <message text>

5927 SM TO ALL SYSTEM DOWN IN 15 MINUTES

Use **TO STATION** to send a message to an individual station.

Syntax: <COMS mix number> SM TO STATION <station name(s)> <message text>

5927 SM TO STATION ET115 PLEASE LOG OFF NOW

3895 SM TO ALL PLEASE LOG OFF NOW.

```
---Mix-Pri-CPU Time----- 18 ACTIVE ENTRIES -----  
4149 75 2:50 SYSTEM/STATION/TRANSFER  
3962 75 1:08 SYSTEM/BNAMCS  
3954 80 :39 JOB *SYSTEM/CANDE  
4296 50 :01 UTILITYPROGRAM  
3895 50 2:19 *SYSTEM/COMS  
3887 50 :09 JOB *SYSTEM/PRINT/ROUTER  
----- NO WAITING ENTRIES -----  
  
----- NO SCHEDULED ENTRIES -----  
  
---Job-Task-Time--Hist----- COMPLETED ENTRIES -----  
3954\4300 17:52 EOT *CANDE/STACK01  
3963\4294 16:28 EOT SYSTEM/STAXFER/DIALOGINIT/1  
4292\4292 16:17 EOJ JOB *SYSTEM/PRINT/REMOTE/SERVER  
3876\4261 16:17 EOT *SYSTEM/PRINT/REMOTE/LIB  
---Mix-Time----- MESSAGES -----  
* 3902 09:32 From * at : PLEASE LOG OFF NOW. ←  
* 3902 09:32 5 messages have been sent. ←  
4292 16:13 NO FILE *REMLP01/000426/000SUMMARY ON BACKUP.
```

Response to SM Command

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL DATA COMM INITIALIZATION AND TROUBLESHOOTING

Bring Down Programs Running under COMS

Procedures will vary according to how programs are running at a given site.

Bring Down COMS

Use the **QUIT COMS** command to bring COMS down.

Syntax: **<COMS mix number> SM QUIT COMS**

Brings down COMS after all pending messages are processed.

<COMS mix number> SM QUIT COMS NOW

Brings down COMS immediately. Since this will discontinue all programs running under COMS, it should be used with care.

Bring Down Data Comm

Use **ID** to bring down data comm processor programs. It is very important not to forget to use the colon in this syntax! If the colon is not there, this command will cause serious problems later.

Syntax: **ID: QUIT**

*colons MUST BE THERE
OR change ID of system to QUIT.*

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 10**

PRACTICE--SECTION 10

1. An MCS program

- A) Controls system operations
- B) Compiles source code
- C) Controls communication between the ODT and the MCP
- D) Controls communication between user stations and the MCP

2. Give the proper syntax to initialize communication through data comm processor NSP 112.

3. Give the proper syntax to ready COMS station ET110 at the ODT. (The COMS mix number is 3131.)

4. Give the appropriate syntax to send a message to all stations currently signed on to COMS to tell them the following: PRINTER 20 IS DOWN. (The COMS mix number is 3131.)

5. What is the syntax to bring up COMS?

6. Underline the COMS command which puts a station under the control of COMS.

READY

QUIT

ATTACH

ENABLE

7. Which command will bring down the data comm processors?

- A) ID QUIT
- B) ID: QUIT
- C) ID SM:QUIT
- D) ID QUIT NOW

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
LAB--SECTION 10**

LAB--SECTION 10

Do the following from a data comm station. Use the REMOTESPO window.

1. Ask your neighbor to find out his/her station name and tell you what it is. Use the station name to display the status of the station.

What is the mix number of SYSTEM/COMS? _____

What is the syntax to find the status? _____

(HINT: From the REMOTESPO window, enter MSG to see system messages after you transmit your command. You should see the system response with the details of the station status beginning with the current window of the station.)

What is the status? _____

2. Send your neighbor the following message: HELLO, I AM *<your name>*.

Syntax: _____

(HINT: From the REMOTESPO window, enter MSG to see system messages after you transmit your message. You should see the system message, "1 message has been sent.")

Ask your neighbor to verify that he/she received your message.

3. Send the following message to everyone signed on to COMS: *<your initials>* SAYS HELLO FROM A SERIES OPS!

Syntax: _____

(HINT: From the REMOTESPO window, enter MSG to see system messages after you transmit your message. You should see the message you sent along with an entry that tells you how many messages were sent. A message should have been sent to each person signed on to COMS.)

NOTES

This image shows a sheet of white paper with horizontal ruling lines. At the top center, the word "NOTES" is printed in a large, bold, black, sans-serif font. The page is otherwise blank, with no text or markings. On the left side of the page, there are three circular binder holes, evenly spaced vertically. The lines are thin and black, extending across the width of the page.

NOTES

Lined paper template with three binder holes on the left side.

NOTES

This image shows a sheet of white paper with horizontal ruling lines. The word "NOTES" is printed at the top center in a bold, black, sans-serif font. The paper has three binder holes punched along the left edge. The ruling lines are evenly spaced and extend across the width of the page. There is a small vertical mark on the right side of the page, near the bottom, which appears to be the number "1".

SECTION 11
SYSTEM INITIALIZATION

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL SYSTEM INITIALIZATION

SECTION 11 INTRODUCTION

Section Objective

You should

- Be able to initialize and bring down the system

Purpose

To operate the system effectively, you must be able to keep it available to users.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN**

SECTION 11

UNIT 1

AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

Unit Objectives

After successful completion of this unit, you should be able to

- Initialize the system with automatic initialization
- State when and how to halt/load
- Identify the significance of the halt/load unit
- Initialize a system with a halt/load
- Bring down the system

Purpose

You may need to start up the system, bring it down at the end of the day, or halt/load to remedy processing problems.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

What is System Initialization?

It is the process of bringing up a system to normal operating conditions, making it available for use.

When a system is first powered up, the process consists of

- Powering on the hardware, including the peripheral devices
- Loading the microcode, controlware, and firmware
- Loading the Master Control Program code file and other system software into memory
- Identifying all resources and initializing them
- Transferring control of the system to the MCP

These steps can be performed automatically by many A Series systems or manually by site personnel.

In other instances where system initialization is required, all of these steps may not be necessary. A system halt/load initialization can be used:

- To recover the system from a fatal system error
- To eliminate conditions that leave the system in a "hung" state

Automatic Initialization

Most A Series systems have some form of automatic initialization. System initialization for individual A Series systems is detailed in the **System Software Installation Guide** for the individual system. Automatic initialization details outlined here apply primarily to the A 1 to A 6 systems, but are similar to other systems with automatic initialization capabilities.

Although there are several ways to initiate auto initialization, the most common is by powering on the processor.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL, AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

When the central processor is powered on, the maintenance subsystem processor performs a set of self-test routines. When the self-test is completed, the following screen appears.

```
UNISYS A SERIES SYSTEM

Starting System Initialization (approximate time: 4 minutes)

Press <xmt> to manually input boot unit [      ]

STATUS (Auto Mode):  Disk initialization in progress . . . . . (xx seconds)
```

Automatic System Initialization

After the self-test, the maintenance processor searches the disk subsystem to locate a disk file (BOOTCODE file) containing the maintenance software, microcode software, and UTILoader software needed to boot the system and pass control to the MCP.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

The screen below appears once the system finds the BOOTCODE file. It is updated as system resources are established and initialization continues.

```
UNISYS A SERIES SYSTEM

Starting System Initialization (approximate time: 4 minutes)

Boot-dlp  xx  Boot-unit  xxx  Sector-address  xxxxxx

dlp=0  dlpadr=1  dlpsta=B42C
dlp=1  dlpadr=2  dlpsta=B42E
dlp=2  dlpadr=4  dlpsta=0000
dlp=3  dlpadr=8  dlpsta=0000  unit=15  unitsta=B403
dlp=4  dlpadr=16  dlpsta=0000
dlp=5  dlpadr=32  dlpsta=0000  unit=15  unitsta=B407  dirptr=B21F  prio=60  entry=0000

STATUS  (Auto Mode):  Building I/O configuration table  . . . . .
```

Resources Identified During System Initialization

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

When the maintenance software is loaded into the maintenance processor memory, the screen below is displayed and updated as microcode and UTILOADER software are loaded, the MCP is loaded, and the system prepares for the MCP to take control.

AUTO INITIALIZE		A SERIES UIP
XMIT TO ABORT []		
AUTO INITIALIZE	RUNNING	
MICRO CODE	LOADED	
UTILOADER	LOADING	

Software Loaded During System Initialization

When the MCP is in control of the system, the system sends a message indicating that the MCP is in an idle state and that system initialization has been completed.

If the OKTIMEANDDATE system option is set, the date and time must be verified. If it is reset, verification will not be requested.

If the date and time need to be verified, and they are correct, enter: **TIMEOK**.

Instructions for changing the time and date are in Section 4, Unit 1.

Many A Series models have an internal battery that provides power to maintain the time and date of the system in the event of a power loss. This usually eliminates the need to verify the time and date.

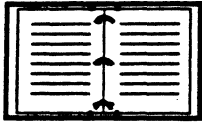
Once the date and time have been established, an ADM screen is displayed on the ODT.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

Manual Initialization

Manual initialization may have to be used if auto initialization is not successful. The same steps that are done automatically by the system can also be done manually using menus.

Larger A Series systems require some manual interaction to initialize the system.



Instructions for manual initialization are located in the **System Software Installation Guide** for individual systems, and the **Utiloader and Loader Operations Reference Manual**.

Automatic System Power Up

For A 1 through A 6 systems, there is an ODT command that allows automatic system initialization to be scheduled. The system can be scheduled to power itself down and up using the **POWER SCHEDULE** command and its options.

When using a power up schedule, the **OKTIMEANDDATE** system option should not be turned on. If it is, the automatic power up will stop and wait for the time and date to be verified before bringing the system the rest of the way up.

Syntax: **POWER SCHEDULE** <day of week> **THRU** <day of week> **ON** <time>
 POWER SCHEDULE <day of week> **THRU** <day of week> **OFF** <time>

Other **POWER** command options are available to bring the system up or down immediately or with a specified delay. Again, this applies to the A 1 through A 6 systems only.

For other A Series systems, the **POWER** command applies primarily to powering disk packs on and off.



See the **Operator Display Terminal (ODT) System Commands Operations Reference Manual**, for more information on **POWER SCHEDULE** options for A 2/A 3/A 5 and for information on the **POWER** command for other A Series systems.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

Halt/Load

Operators most commonly use a form of system initialization called a **halt/load**. It is not as extreme as a power-up initialization in that it does not go through all of the steps that a power up does.

A halt/load causes the following activities to occur.

- Halts the system, which means that system activity is halted and terminated. Information may be stored to automatically initiate recovery of many activities.
- Loads a new copy of the MCP into memory from the halt/load unit. The **halt/load unit** is the disk pack where the current MCP resides. It is also the default location for other files crucial to system initialization and recovery.
- Executes the MCP once again.

A halt/load may be necessary for several reasons.

- The system encounters fatal errors and cannot go on without being cleared.
- A software "bug" may cause the system to "crash."
- Data comm problems or other conditions can cause the system to "hang," or stop responding to commands.

Halt/Load Methods

There are several ways to perform a halt/load.

- **??PHL** This command, entered at the ODT, causes a simple halt/load and will probably be the method most frequently used by operators.
- **Power up the system** When the system is powered up, it goes through a complete initialization process that includes a halt/load.
- **Manual initialization** There are options for using manual initialization to halt/load the system. Depending on how your system is configured, you may be able to use the [F2] function key on the ODT to bring up manual initialization menus.

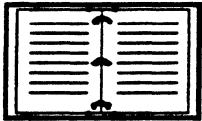
Manual initialization methods are often used only when there are problems using the other methods.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

Recovery

Information is stored on the system so that after a halt/load, most activity can begin again where it left off. System recovery activities depend on several factors--how programs and WFLs are written, system option settings, and the state of the system at the time of the halt/load.

If AUTORECOVERY and AUTODC are set, some recovery activities begin automatically, like restarting data comm processors and bringing programs into the mix again. If these options are reset, these activities must be performed manually.



Detailed instructions for performing a halt/load in a variety of circumstances are given in the **A Series System Software Installation Guide, Volume 2: System Initialization** and the **System Software Installation Volume 1** guides for various systems.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL AUTOMATIC INITIALIZATION, HALT/LOAD, AND POWER DOWN

Bringing Down the System

There are several steps involved in bringing the system down efficiently.

- Warn users that the system is going down.
- Bring down programs in the mix.
- Bring down data comm.
- Power down the system.

Warn Users

Use the ODT SS command or COMS commands to warn users.

Bring Down Programs

Use print system commands to bring down print utility programs.

All other programs remaining in the mix should be brought down using procedures specified for each program.

Bring Down Data Comm

Procedures for bringing down data comm are covered in Section 10 of this guide.

Power Down the System

A Series systems can be powered off by eliminating power to the cabinets--pressing power buttons off. It is also possible to use manual initialization menu choices to power off the system.

A 1 to A 6 systems can be powered off using POWER command syntax.

Syntax:

POWER OFF SYSTEM

Powers off the system after 20 minutes. There should not be any processing taking place. Messages are sent to users informing them of the impending power off.

POWER OFF SYSTEM DELAYOFF <delay time>

Powers off the system after the given delay time. Messages are sent to users informing them of the impending power off.

POWER OFF SYSTEM DELAYOFF 30

Powers off the system in 30 minutes.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
PRACTICE EXERCISES--SECTION 11**

PRACTICE EXERCISES--SECTION 11

1. What is the primary purpose of system initialization?

- A) To copy system programs
- B) To bring the system up to normal operating conditions
- C) To perform remote diagnostics
- D) To configure data comm

2. There is a problem with the A 1 system such that it is not responding to command input. Which of the following would you try first to get the system going again? Underline your answer.

halt/load

auto initialization

3. How would you first attempt to perform the activity you chose in answer to question 2?

If halt/load: ??PHL

Power on the system

Use manual menu options

If auto initialize: **Power on the system**

Use the POWER SCHEDULE command

4. The halt/load unit is where

- A) The halt/load takes place
- B) Data comm messages are controlled
- C) Power to the system is supplied in the event of power loss
- D) The MCP resides

5. Give proper **POWER** syntax to initiate power down of a system in 10 minutes.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

LAB--SECTION 11

LAB--SECTION 11

Do the following from the ODT.

This is a group activity. Your instructor will provide directions for performing a halt/load using at least one of the following methods:

- PHL
- System power up
- Manual menu choices

Computer-Assisted Instruction Exercises (CAT)

Sign on to the CAT program as previously instructed. Do the exercises at your own pace.

You may choose from modules 1-13 for this lab.

APPENDIX A
FILE STRUCTURE AND ORGANIZATION

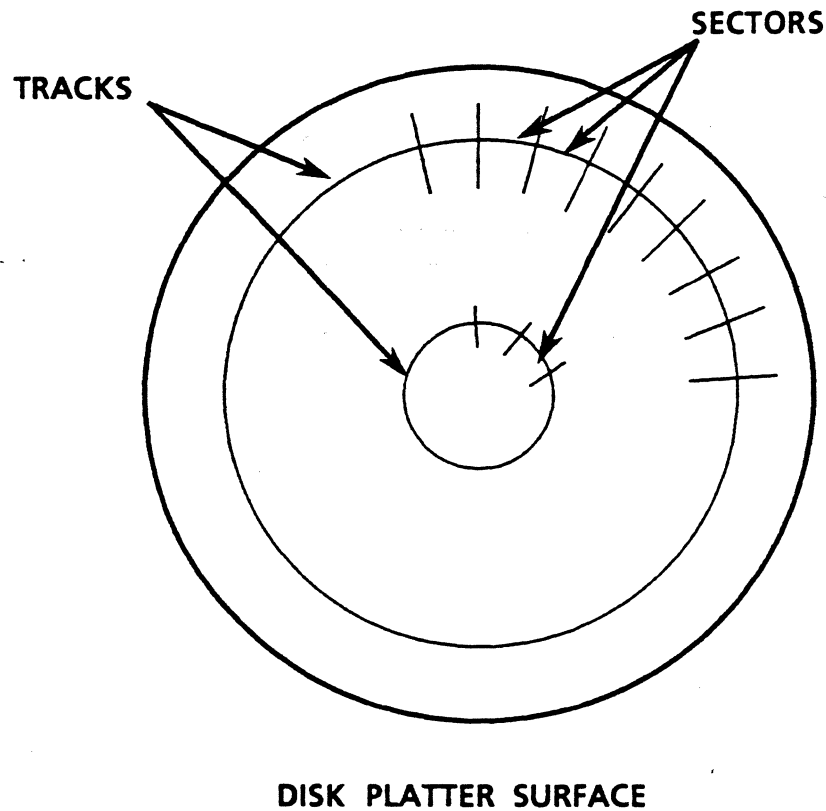
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL , APPENDIX A

Disk File Structure and Organization

File Structure

Disk platters are divided into thousands of concentric circles called tracks, which are further divided into portions known as sectors. Each sector stores 30 words (180 bytes). The sector is the smallest amount of data which can be read from or written to a disk at one time. Program or data files are stored in these disk sectors.

It is possible that one entire file is not stored in contiguous sectors on a disk. In fact, parts of a file may be scattered and stored on several disks within the same family. This is done to simplify future allocation of space. One exception to storing a file on several disks is the MCP file, which must remain on one disk.

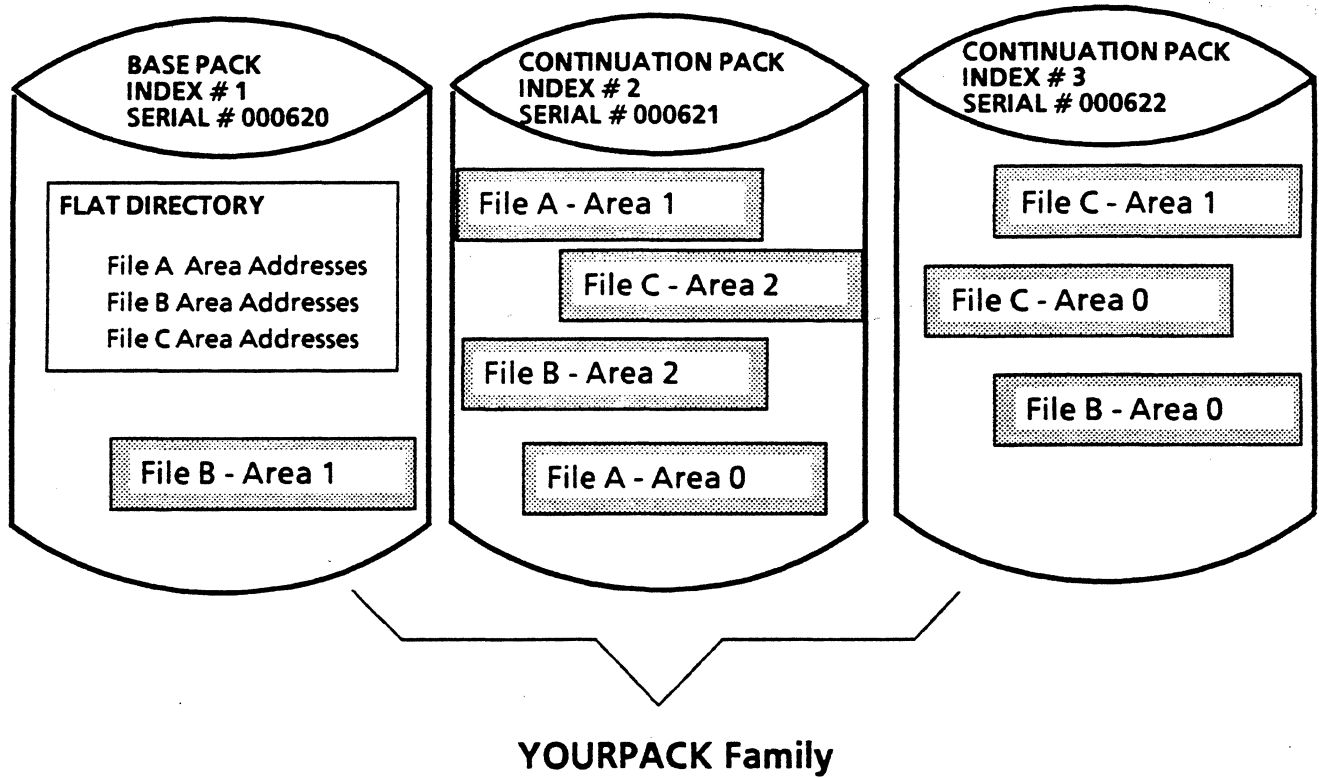


A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

APPENDIX A

When a file is broken up for disk storage, it is stored as sections called areas or disk rows. The terms are synonymous. Programs refer to the sections as "areas," while the MCP considers the sections as disk "rows" when processing. All the areas of one file will have the same row size, except perhaps the last area, which may be smaller.

When the system needs to access a file, it locates the file header in the flat directory, then uses the physical addresses in the header to access individual areas of the file. Areas are accessed in the correct order when the file is processed.



**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX A**

File Organization and Accessing

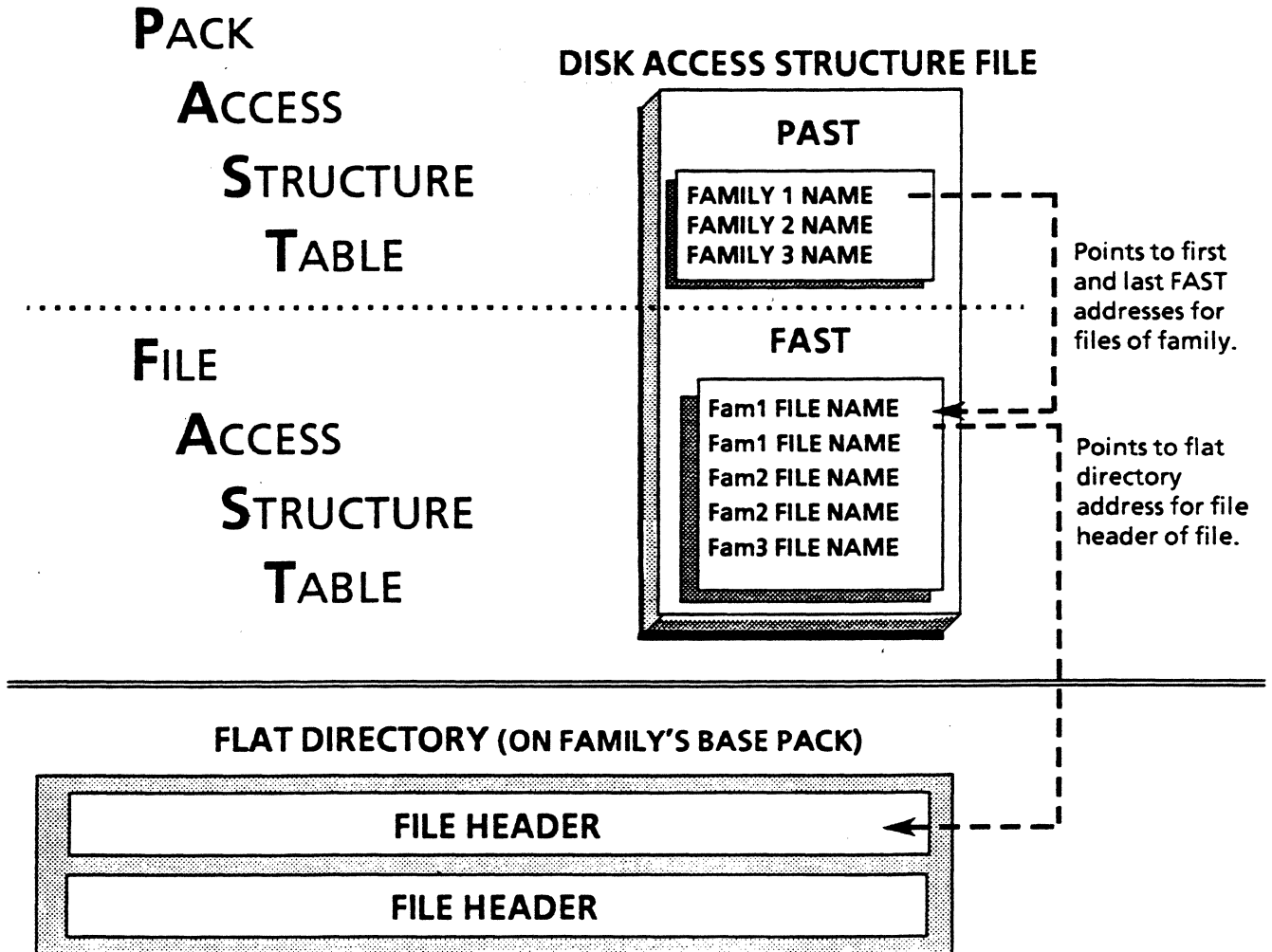
The MCP constructs a special file called the Disk Access Structure file the first time a system is initialized. This system file contains two tables of disk file organization information which enable the system to access files quickly and efficiently. The tables are called the Pack Access Structure Table (PAST) and the File Access Structure Table (FAST).

PAST (Pack Access Structure Table)

The PAST contains an entry for every family active on the system. Each entry contains the family name and a pointer into the FAST. The pointer consists of the first and last FAST addresses of file names for the family. The file names for a family are listed altogether in the FAST.

FAST (File Access Structure Table)

The FAST entries contain family file names and pointers to their file header addresses in the flat directory.



A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX A

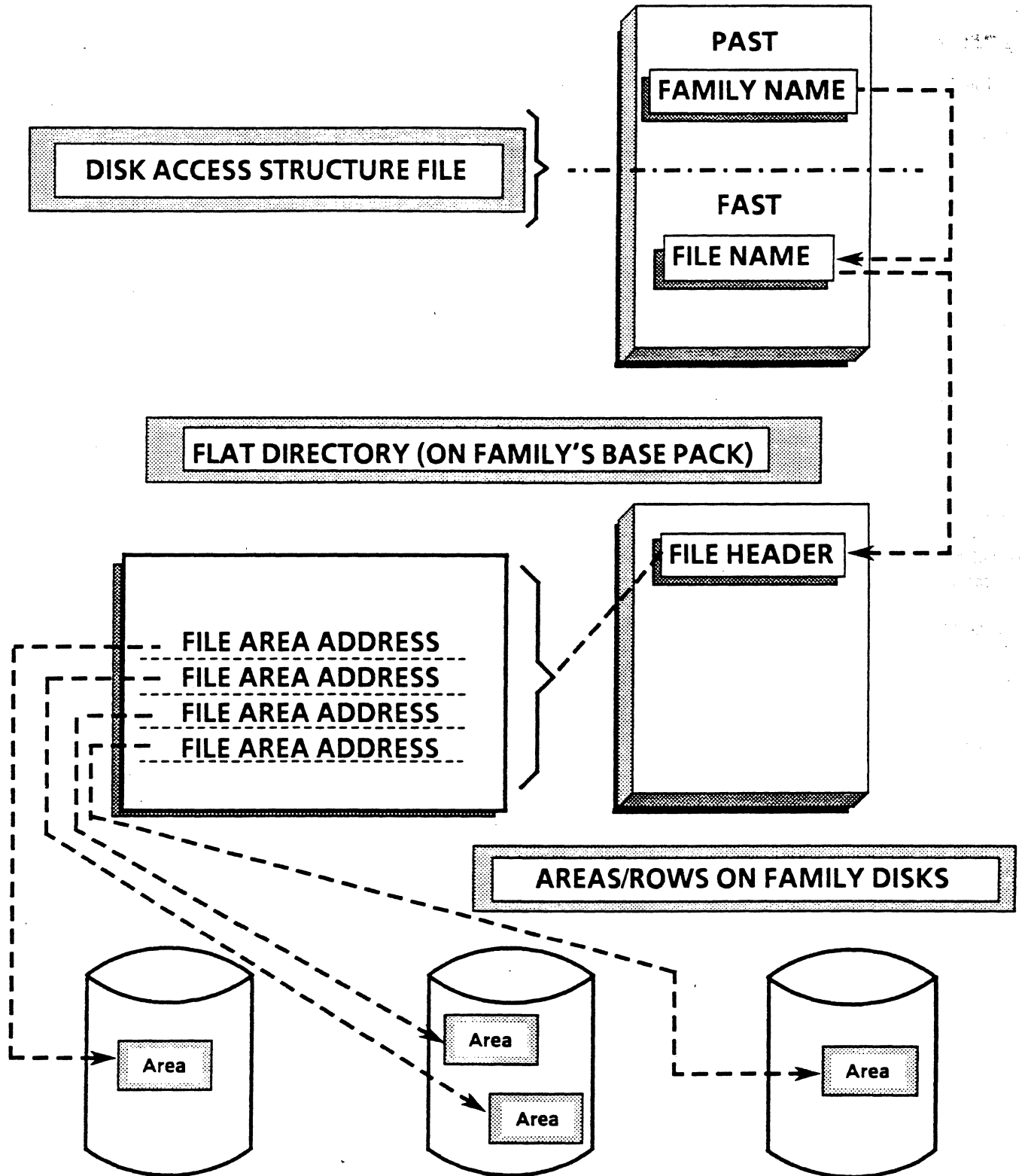
Entire MCP Process of Accessing a File

When a file is requested by file title (file name and family name), the MCP initiates the following steps to access the file. The flow of this process is illustrated on the next page.

- STEP 1:** The MCP uses the PAST to locate the proper family name and the FAST to look for the file name.
- STEP 2:** The MCP goes to the FAST address and reads through the file name entries for the family. It locates the file name and gets the family flat directory address to use to find the file header.
- STEP 3:** The MCP goes to the flat directory address and reads the disk file header.
- STEP 4:** From the header, the MCP obtains the physical disk addresses of the area or areas that contain the file.
- STEP 5:** The MCP goes to those physical disk addresses and reads the file data.

The PAST is not accessed each time a file is to be located. The MCP reads the PAST entries into a table in main memory when the system is initialized. When the PAST is updated, the MCP table is updated also. When a file is to be located, the MCP reads the table in memory to get the pointer to the FAST.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX A



MCP File Access Flow

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

APPENDIX A

Local Access Structure Table (LAST)

The LAST is a copy of the FAST and is written to the base pack of the family only.

The LAST eliminates the need to rebuild the FAST from scratch when a pack is brought on-line, by restoring the FAST. If the LAST is not present or an error occurs when attempting to copy the LAST, the MCP will rebuild the FAST.

Duplicating Disk Structures

DD (Directory Duplicate)

The DD ODT command duplicates the flat directory onto one or two continuation packs. When a halt/load occurs, any member of a disk family containing a flat directory can be used as the base pack. If the flat directory on the base pack becomes corrupted, the system automatically chooses a duplicate directory on one of the continuation packs, making it the new base pack. The remaining packs in the family are treated as continuation packs.

Any change to the base pack flat directory is also made to the duplicate copies, as long as the disks with duplicate directories are online.

A duplicate flat directory can be deleted with the DD- option

DD ON *<family name>* (*<family index>*)

AD (Access Duplicate)

The AD command creates a duplicate of the disk access structure (including the PAST and the FAST) on a continuation pack in the family which holds the systems file (halt/load family). The duplicate can be removed with the AD- option.

AD ON FAMILY (*<family index>*)

RB (Rebuild Access)

If the disk access structure for a family is lost, it can be rebuilt from the family flat directory, using the RB command.

RB ON *<family name to rebuild>*

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX A

MIRROR (Mirror Disk)

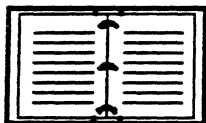
If your system has sufficient disk resources, you can use the **MIRROR** feature to duplicate disk packs. A mirrored set is a pair of disks configured to be exact copies of one another. Whenever one member of a mirrored set is altered or updated, the mirrored member is also changed. If something happens to one member, the other takes over immediately with no break in normal operations. A message will indicate the problem with the mirrored member.

Each of the disks must be of the same type, and system option 34 (MIRRORING) must be set.

The **MIRROR** ODT command includes several options for manipulating mirrored sets. **MIRROR CREATE** creates a mirrored set. **MIRROR RELEASE** releases a member of the set. The released member is taken offline, and its label becomes invalid. Some ODT commands do not allow action to a mirrored disk unless the mirrored member is released.

MIRROR CREATE PK <unit number> FROM PK <unit number>

MIRROR RELEASE PK <unit number>



See the **Disk Subsystem Administration and Operations Guide** for detailed information on disk mirroring.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

APPENDIX A

Maintaining Disk Media

RC (Reconfigure Disk)

To purge an old disk pack, use the **RC** command. When a pack is purged, all files on it are removed. This command, which can also be used with new packs, creates volume labels on the pack. Options which may be used with this command include specifying an owner name, a new family name, a serial number, a continuation pack association to a base pack, a family index number, and other details.

Safety features help prevent unintentional reconfiguring of a disk. The **RC** command must include an option with the old family name, or the task will go to waiting status until an **AX** response with the old name is entered. Also, the owner specification of the disk pack must be verified by the operator.

If no family name is specified for a pack being reconfigured, the old family name will be assigned.

RC PK <unit number> <options>

RC PK076 OLDNAME = USER4, BP = 066104, FAMILYINDEX = 3

This command reconfigures pack 76, which presently has the family name of **USER4**, so that it

- Maintains the family name **USER4**
- Is associated to the base pack with the serial number 066104
- Becomes a continuation pack with an index of 3

LB (Relabel Pack)

If you want to assign a new family name or serial number to a pack without removing the contents on the pack, use the **LB** command. The serial number of a pack in a multipack family cannot be changed. The old family name must be specified or the task will go to waiting status until the old family name is input.

LB <unit number> <options>

LB PK077 NAME = MYPACK, OLDNAME = USER1, OWNER = ME

This command changes the family name of the **USER1** pack to **MYPACK** without altering the contents of the pack. The operator would have to verify to the system that the change in owner is appropriate.

LB PK098 SR, OLDNAME = ADMIN, OWNER = SYSTEM

This command changes the **ADMIN** pack to a system resource pack. System resource packs are given the name **PACK** and are used for system-related files. The new owner, **SYSTEM**, would have to be verified by the operator.

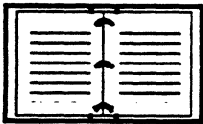
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX A

Memory Disk

Memory Disk allows the configuration of memory so it can be used like a disk unit, providing file access with a high data-transfer rate and relatively little access time. This feature is available on all A Series ASD systems and on A 15 and B 7900 ASN systems. Memory Disks can be used in the same way as any other disk, with some restrictions. A Memory Disk cannot be the halt/load unit, and it cannot be a member of a non-Memory Disk family.

Since memory is a volatile medium, vulnerable to power failure and memory reconfiguration, the files residing on Memory Disk should be carefully chosen. They will have to be reconstructed after any system event which results in corrupted or altered memory.

Note: ASD and ASN memory are discussed in the appendix on system memory.



See the **Disk Subsystem Administration and Operations Guide** for detailed information on Memory Disk.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

APPENDIX A

Tape Organization

Although tapes are not grouped into families as disk packs are, they may still be dependent on one another, depending on the information that is stored on the tape. There are several data storage alternatives for tape media, and each alternative determines whether tapes are independent.

Dependency between tapes means that more than one tape is required to restore a file to the system. This situation could occur when a file is split between two tapes; to copy the file from tape to disk, both tapes are required. A tape is independent if all files stored on it can be restored to the system without requiring any other tape.

- | | |
|--|--|
| One Tape Reel, One File: | All the information for one file is stored on one tape. There is no dependency between this tape and any other. |
| One Reel, Multiple Files: | If all the files are complete, the tape is independent. |
| Multiple Reels, One File: | All of the information from one file does not fit on one tape, so the file must be stored on multiple tapes. In order to restore this file to the system, all the tapes must be available to the system, so the tapes are dependent. |
| Multiple Reels, Multiple Files: | These tapes are dependent only if a file is split between two tapes. Otherwise, they may only be related, if for example, all the backup files for a particular time period are stored on a series of tapes. |

Tape Structure

Tape files may be recorded on tape in different densities (bytes per inch of tape). The user has some flexibility in choosing the density in which a tape file will be created, but the density must match one that is supported by the tape drives available on the system.

APPENDIX B
SYSTEM MEMORY

Memory Concepts

Main memory is a storage area for code and data that are being processed. When code and data are not required for processing, they are stored on disk or tape. The memory subsystem manages the retrieval and storage of the programs and data in main memory. The memory subsystem must get the program code and data from storage and put them in memory before they can be processed. So that the space in memory is used most efficiently, some data and portions of code required by an executing program may remain on peripheral storage until needed for processing. The memory subsystem retrieves the information when it is needed.

In order for the central processing subsystem to process programs, it must know how to locate the program code and data in memory. It locates portions of code and data using the memory addresses which are assigned to them when the information is brought into memory. The addresses are much the same as house addresses. They identify the memory storage location of the information.

The amount of information in memory at any one time is restricted by the architecture used to address information in memory and provide access for processing, as well as the actual physical size of memory on the system. Each type of memory addressing architecture has defined limits, expectations, and capabilities.

The MCP and MCP/AS have different addressing architectures. MCP/AS architecture allows the processor to access more information in memory at any given time than MCP architecture. The B X900 systems running MCP use an addressing architecture known as ASN (Address Space Number). The A Series systems running MCP/AS use an addressing architecture known as ASD (Actual Segment Descriptor).

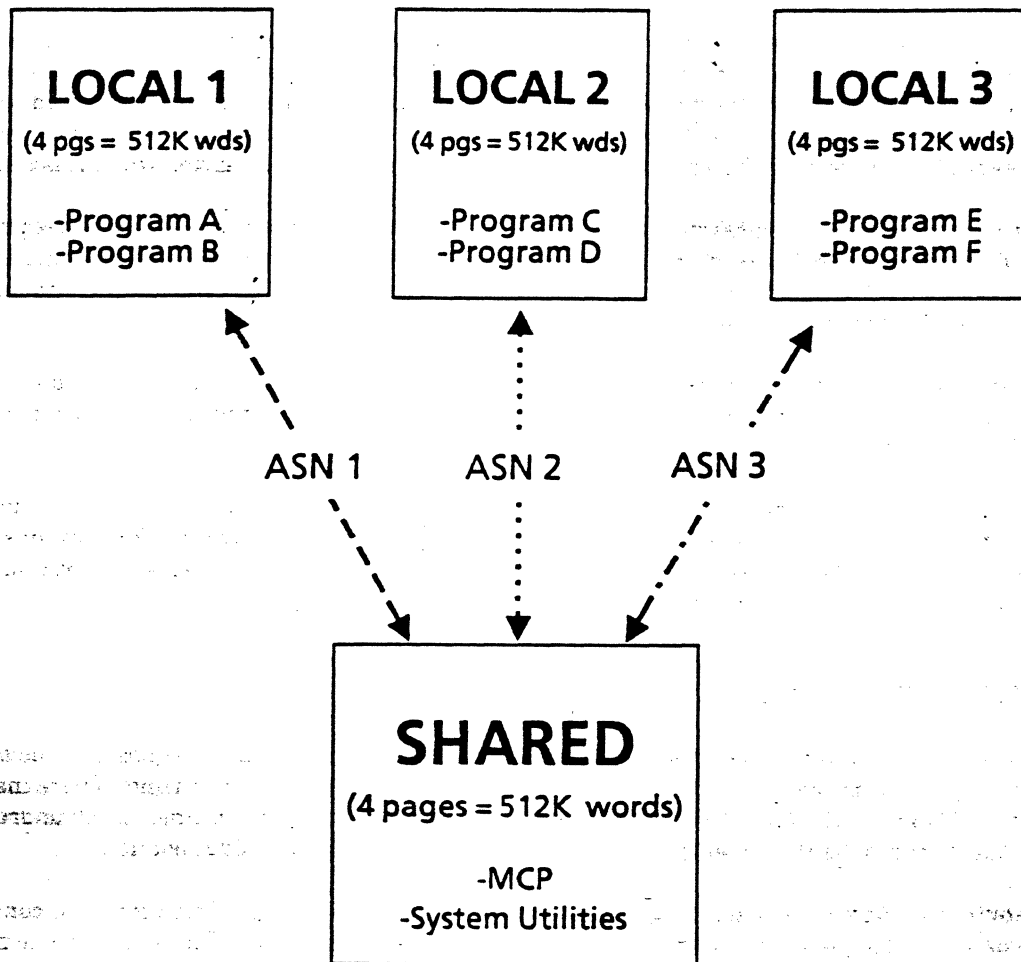
MCP ASN Memory Addressing

The ASN scheme uses the concept of **address spaces** to allocate memory. An address space is the area of memory which the central processor can "view," or access and process in, at any one time. There may be many address spaces in memory on a system, but the processor can only work in one at a time. Each address space consists of two major components of memory: a **shared** (global) portion and a **local** portion.

The **shared portion** of memory is memory that is available to all address spaces in memory. It contains programs and data that can be shared or must be available to all address spaces. There is only one shared portion in memory.

The **local portion** of an address space contains programs and data unique to that local component. There may be many local components which couple with the shared portion of memory to make up an address space. Each local component is assigned a number (ASN) by the MCP. The ASN refers not only to the local portion, but to the address space which is formed by coupling that local portion with the shared portion. Programs located in one ASN cannot access information or programs in another ASN. The number of local portions of memory will vary from system to system.

Memory is allocated to shared and local components in "**pages**"—each page being **128K words**. The size of the shared portion and local portions may vary, but cannot be any smaller than one page. The total memory occupied by an address space on a system cannot exceed **8 pages or 1024K words** (two million words on B 7900 and A 15 systems with certain options implemented).



Example of the Structure of ASN Memory with Three Address Spaces

The example above shows three address spaces in memory made up of the one shared component and three local components. Note that when the shared component is coupled with any one of the local components, the total memory does not exceed 1024K words.

Address space ASN 1 is made up of Local 1 and the shared portion, ASN 2 of Local 2 and the shared portion, and ASN 3 of Local 3 and the shared portion.

In this example, the MCP and the system utility programs are located in the shared portion of memory and can be accessed by all three address spaces. ASN 1 has programs A and B, ASN 2 programs C and D, and ASN 3 programs E and F. In processing program A in ASN 1, the central processor could also access program B which is in ASN 1, but could not access programs C, D, E, or F because they are in different address spaces.

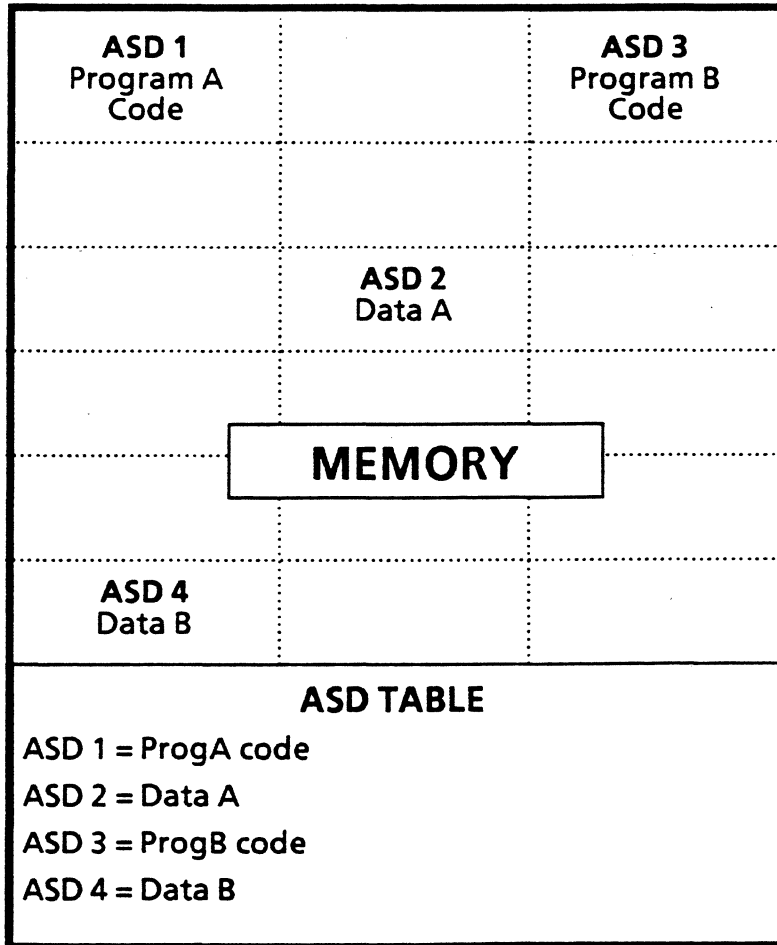
**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX B**

MCP/AS ASD Memory Addressing

It is possible for A Series systems to use the MCP operating system with ASN memory addressing. However, with the expanded memory capabilities of the A Series systems, a new memory addressing architecture, called ASD, was formulated and is more suited to these systems.

The ASD architecture has removed the limitation of the processor being able to "view" only 1024K words of memory at a time. Instead, the processor can view, or access, all of memory at one time—up to four billion words (24 billion bytes). Basically, this is possible because all memory areas allocated to programs and data are controlled and accessed through one central structure called an ASD table.

Each piece of data or program code which is to be executed is given an ASD, or segment descriptor, when it comes into memory. This ASD includes a memory address. A record of all of the ASDs assigned is kept in the ASD table. The ASD table is like a directory for the processor, telling the processor where in memory the program code or data is located. This allows the processor to locate the information quickly and efficiently, even though there may be billions of bytes of information in memory in no particular order.



The processor always goes to the ASD table to find where program code or data it needs is in memory.

Example of ASD Memory Addressing

APPENDIX C
SYSTEM COMMUNICATION

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

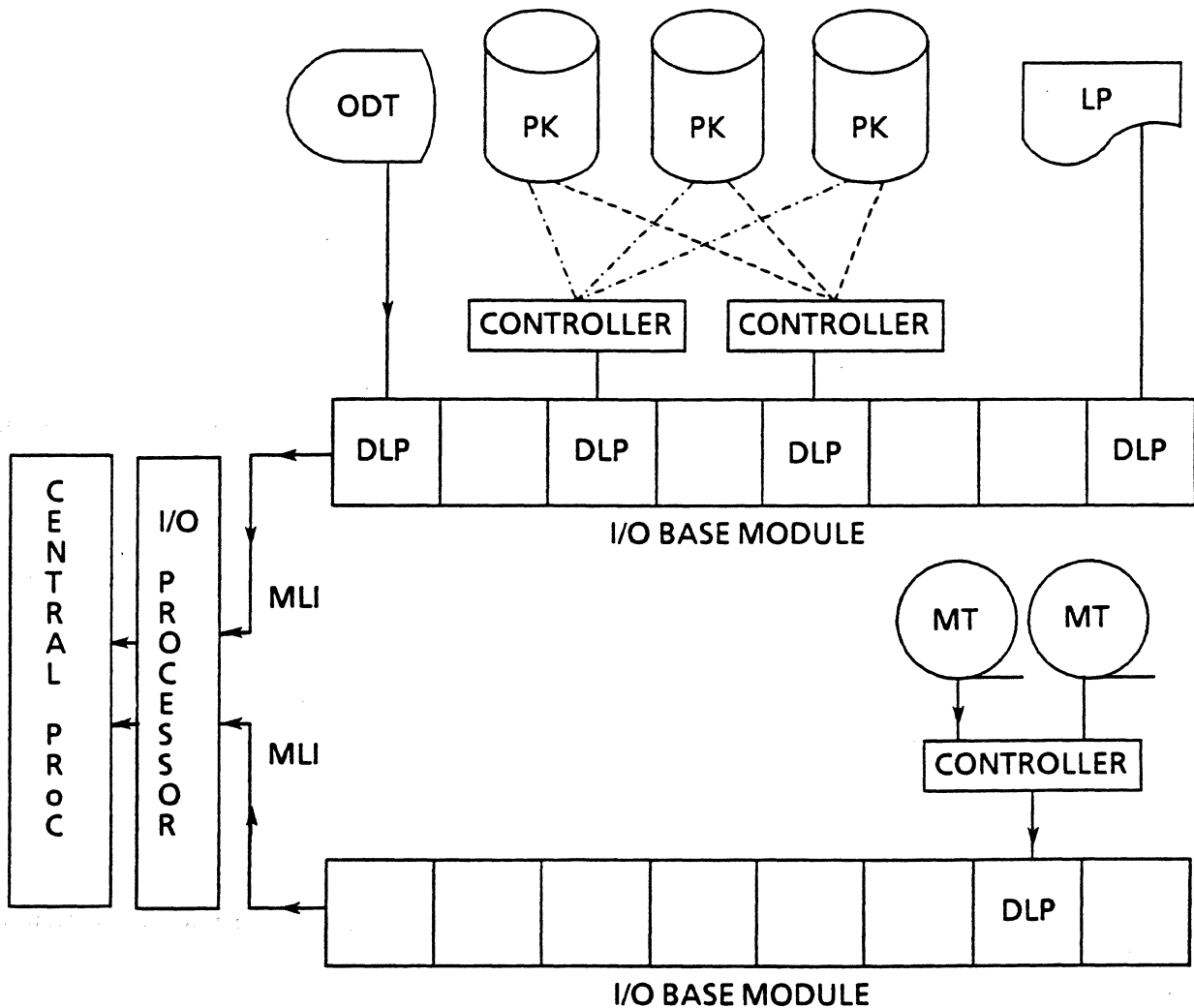
APPENDIX C

Communication Between the Central Processor and Peripherals

The Data Link Processor (DLP), an integral part of this I/O subsystem, was defined earlier in this guide. It is a processor especially designed to control a particular kind of peripheral. There may be one peripheral device attached to each DLP or a group of devices which access the DLP via a controller, or controller and exchange. Depending on the type of controller and exchange, the number of devices capable of being accessed by the DLP can become quite complex.

Although the names of the components may differ slightly, the flow of data between the central processing system and the peripherals follows a similar path on all A Series and B X900 Series computers.

Basically, data entered via an input device travels through the controller for the device to a DLP in an I/O base. Then it goes along a Message Level Interface (MLI) to an I/O processor, which is called by different names depending on the system. From the I/O processor, the data goes along to the central processor and memory. To return to an output device, the data would take the same route in reverse.



Communication Path Between Peripherals and Central Processing

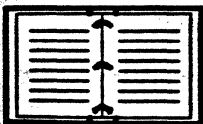
A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX C

The flow of data communications messages from a terminal to the central system follows the steps below.

1. The message is entered at a terminal. The message is a collection of characters made up of bits which are sent in a particular pattern across the data communications cable lines to the Quad Line Adaptor (QLA). There may be an electrical interface on the cable to alter the voltage level of the signals from the terminal to match what the cable line can accept.
2. The QLA assembles the bits into characters again and translates the character format if necessary. Then the characters are passed to the Line Support Processor (LSP).
3. The LSP assembles the characters into a complete message which is then passed on to the Network Support Processor (NSP).
4. The NSP edits the message to conform to requirements specified for the environment by the Network Definition Language (NDL) and passes the message on to central processing (via an MLI and an I/O processor).
5. The Central Processor processes the message, formulates a response, and sends a message back to the NSP.
6. Again the NSP edits the message and passes it back to the LSP.
7. The LSP disassembles the message into characters and sends one character at a time to the QLA.
8. The QLA translates the character if necessary and disassembles it into bits. The bits are sent to the terminal.
9. The bits pass through the cable and electrical interface and are received by the terminal.

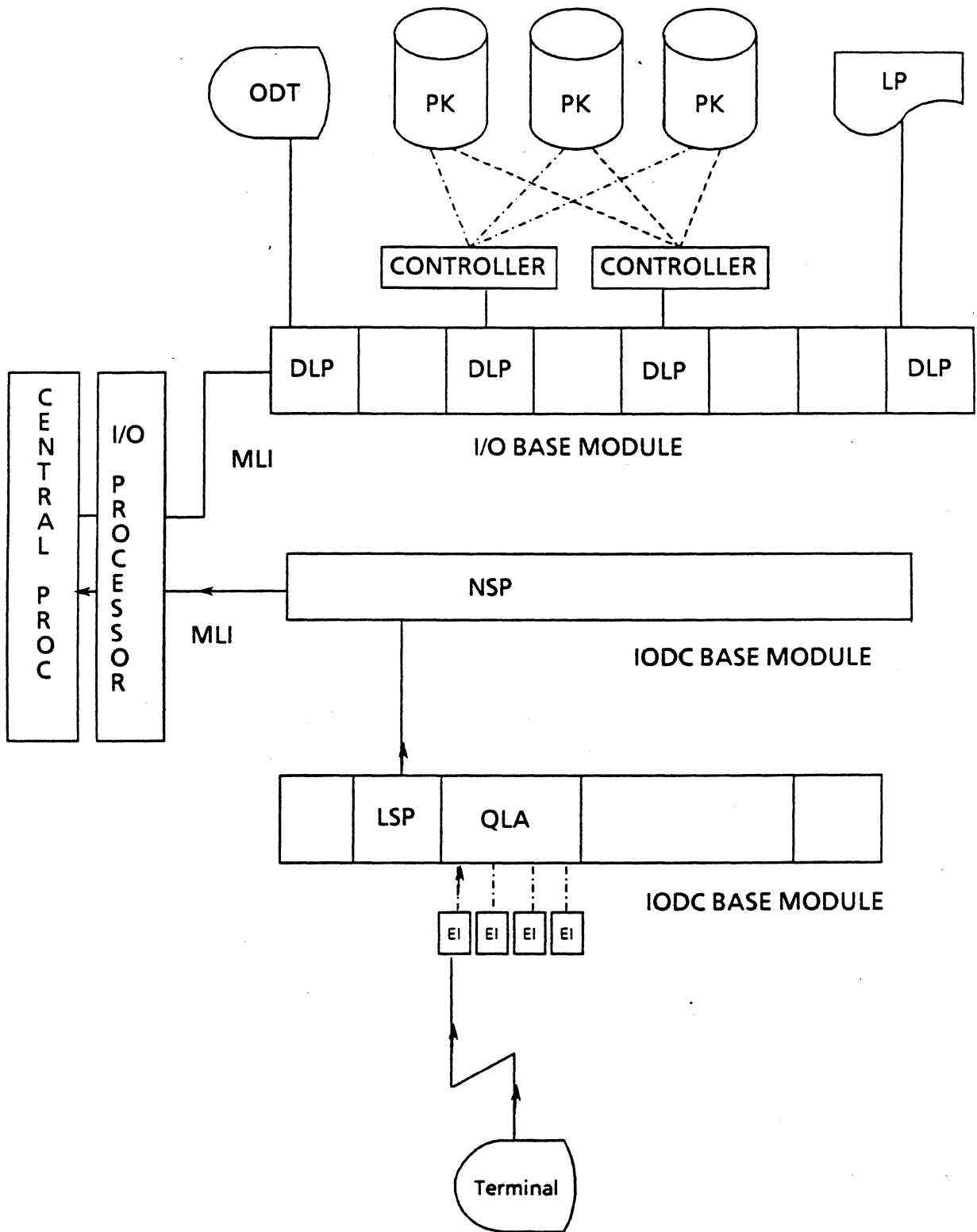
There are four QLA lines for each LSP and up to eight LSPs may be assigned to each NSP. The total number of each type of processor and line depends on the size and configuration of the system and overall network.

If the system has a DCDLP instead of NSP/LSP processors, the steps are the same, except that the DCDLP performs the functions of the NSP, LSP, and QLA.



The Systems Functional Overview Manual has more detailed information on data communications hardware and software.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX C**



Data Communications Message Path Between Terminal and Central Processing

APPENDIX D
ODT KEY FUNCTIONS

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL


APPENDIX D

ODT Key Functions

The following descriptions are for the most commonly used keys on the ODT. Although keys/lights may differ slightly from one terminal model to another, functions are the same.

Keyboard Indicator Lights

The lights are marked as indicated below.

Line Terminal Activity Indicator Light (LTAI on ET 1100,  on T 27)


Lit when the central computer system recognizes a terminal it can accept input from and send responses to.

Enquiry Indicator Light (ENQ)

Lit when the terminal is not in Receive mode and detects a system attempt to send it a message or data. An audible alarm may sound. Both the light and the alarm are turned off by pressing the [RCV] key.

Local Indicator Light (LOCAL on ET 1100,  on T 27)

Lit when the terminal permits keyboard entry (Local mode). The indicator light turns off when the terminal is switched to Transmit mode (by pressing the [XMT] key) or Receive mode (by pressing the [RCV] key).

Receive Indicator Light (RCV on ET 1100,  on T 27)

Lit when either the [RCV] key is pressed or the system has placed the terminal in receive mode (online) to send it a message. The terminal stays in receive mode until a key on the keyboard is pressed.

Transmit Indicator Light (XMT on ET 1100,  on T 27)

Lit when the [XMT] key is pressed indicating the terminal is to transfer the message or data on the screen to the system. The light automatically turns off when the system successfully receives the message.

The system does not see a message, data, or command keyed in by the operator until the terminal transmits the message (operator presses the [XMT] key).

Number Lock Indicator Light (NUM, ET 1100 only)

Lit when the [NUM LOCK] key is depressed. The numbers on the numeric key pad (right side of keyboard) work without using the [SHIFT] key.

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Special Screen Symbols

CURSOR

A symbol that marks the current position on the screen where data can be entered or corrected.

DELIMITERS

A set of two symbols (brackets or triangles) that indicate the beginning and end of a data entry field.

A terminal in **Forms mode** allows the cursor to move between delimited fields. Characters cannot be entered in any areas outside of delimited fields of the screen.

HOME

The top left-hand corner of the screen (column 1, row 1) is the terminal's Home position.

When the terminal transmits a message or data to the system, all characters starting at the Home position up to the cursor will be sent. This is not true if the terminal is configured to do something different.

Control Keys

Shift Key (Shift)

Causes capital letters or the upper symbol on a key to be displayed. For example, the key with the period (.) will display a "greater than" symbol (>) when the period key is pressed while holding the [SHIFT] key down.

Caps Lock Key (Caps Lock on ET 1100, Lock on T 27)

When lit, it causes only uppercase alphabet characters to be displayed.

Clear Home Key



When unshifted, this key causes the cursor to return to the Home position. Shifted, the key erases all information on the screen and then returns the cursor to the Home position. In **Forms mode**, shifted erases all data between delimiters and moves the cursor to the first data entry field, and unshifted repositions the cursor only.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX D

End-Of-Page Clear End-Of-Line Key (EOP Clear EOL)

When unshifted, data is erased from the cursor to the end of the line. Pressing the shifted key causes data to be erased from the cursor position to the end of the page. In forms mode, unshifted erases all data from the cursor to the right delimiter in a left-justified data entry field, or from the cursor to the left delimiter in a right-justified field. In Forms mode, shifted erases data entry fields from the cursor to the end of the page.

Line Insert Character (Line INS Char on ET 1100, Line Insert Char on T 27)

When unshifted, this allows insertion of characters at the cursor location. When the [Line INS Char] key is pressed, the character occupying the cursor location, and all succeeding characters on the line, are shifted one position to the right, and a space is inserted at the cursor location. The character in the last position of the line is lost. When the terminal is in forms mode, characters are shifted only within the data entry field. Characters not fitting in the data entry field are lost. Pressing any other cursor control key terminates the character insert function.

When shifted, all data lines below the cursor and the data line including the cursor are moved down one line. All data lines at the bottom line of the page are lost. The [Line INS Char] key does not operate when the terminal is in Forms mode.

Line Delete Character Key (Line DEL Char on ET 1100, Delete Line and Delete Char on T 27)

Removes the character in the cursor position, when unshifted. All characters to the right of the cursor are moved one position to the left. A space is added to the last line position. In Forms mode, characters are shifted only within the data entry field, and a space is inserted in the last position of the data entry field.

Pressing the [SHIFT] key causes the line containing the cursor to be erased. All data lines below the cursor are moved up one line. The [Line DEL] key does not operate when the terminal is in Forms mode.

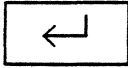
Numeric Lock Key (Num Lock, ET 1100 only)

Enables the numeric key pad and lights the NUM indicator. Numbers can be entered without using the [SHIFT] key.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL

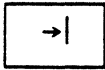
APPENDIX D

Carriage Return Key



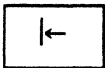
Moves the cursor from any position on the line to the first position on the following line. A cursor on the last line returns to the Home position. In Forms mode, the Carriage Return key brings the cursor to the first field on the next line.

Tab Key



When not in Forms mode, causes the cursor to advance to the next tab stop; in Forms mode, causes the cursor to advance to the next data entry field.

Reverse Tab Key



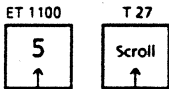
When not in Forms mode, the Reverse Tab key reverses the cursor to the previous tab stop; in Forms mode, the cursor returns to the previous data entry field.

Backspace Key



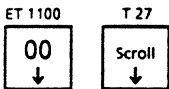
Moves the cursor one space to the left. A cursor in the first position of the line moves to the last position of the previous line. A cursor in the first position of the top line moves to the last position of the bottom line.

Up Arrow Key



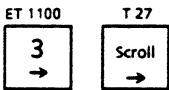
Causes the cursor to move vertically to the same position one line above its original position. A cursor on the top line moves to the same position on the bottom line.

Down Arrow Key



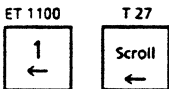
Causes the cursor to drop vertically to the same position one line below its original position. A cursor on the bottom line moves to the same position on the top line.

Right Arrow Key



Moves the cursor one position to the right. A cursor in the last position of a line moves to the first position of the next line. A cursor in the last position of the bottom line moves to the first position of the top line.

Left Arrow Key



Moves the cursor one space to the left. A cursor in the first position of a line moves to the last position of the previous line. A cursor in the first position of the top line moves to the last position of the bottom line.

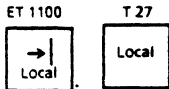
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Home Key (ET 1100 only)



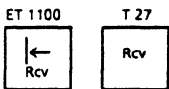
Moves the cursor to the first position of the top line, the Home position.

Local Key



Places the terminal into Local mode, enabling keyboard entry.

Receive Key



Places the terminal into Receive mode, allowing the system to send a message to the terminal.

Transmit Key



Causes the message entered on the terminal to be sent to the system.

ETX key



A 10 users and anyone using ET 2000s must use an end-of-text (ETX) character at the end of any input. The system transmits the characters between the cursor and the ETX character. On the key, the ETX character resembles an hour glass.

Function Keys (F1 - F10)



These keys can be programmed to perform different functions.

APPENDIX E
DOCUMENTATION AND
SUPPORT RESOURCES

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX E**

DOCUMENTATION LIST

A Series--MCP 3.7

Software Documents Master Index (#1170198)

Operator Display Terminal System Commands Operations Reference Manual (#1169612)

Systems Functional Overview Manual (# 1170057)

Work Flow Language Programming Reference Manual (#1169802)

Print System (PrintS) Administration, Operations, and Programming Guide (#1169919)

Disk Subsystem Administration and Operations Guide (#1169992)

I/O Subsystem Programming Reference Manual (#1169984)

System Software Support Reference Manual (#1170016)

System Software Utilities Operations Reference Manual (#1170024)

Memory Subsystem Administration and Operations Guide (#1169836)

CANDE Configurations Reference Manual (#1170065)

CANDE Operations Reference Manual (#1169869)

Communication Management System (COMS) Operations Guide (#1154523)

Menu-Assisted Resource Control (MARC) Operations Guide (#1169588)

Micro A System Installation Guide (#5044100)

System Software Installation Guide, Volume 1: A 2/A 3 (#1170081)

System Software Installation Guide, Volume 1: A 3 Advanced (#1170073)

System Software Installation Guide, Volume 1: A 3 Dual Processor (#1195096)

System Software Installation Guide, Volume 1: A 5 (#1195062)

System Software Installation Guide, Volume 1: A 9 (#1169695)

System Software Installation Guide, Volume 1: A 10 (#1169935)

System Software Installation Guide, Volume 2: System Initialization (#1170263)

Printing Utilities Operations Guide (#1169950)

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DOCUMENTATION LIST (continued)

A 12 System Operating Guide (#1203700)

A 15 System Operating Guide (#1203718)

B X900 Additional Documentation

B 7900 System Operator's Guide (#1166162)

B 7900 System Capabilities and Features Manual (#1166170)

B 6900 System Reference Manual (#5010986)

B 5900 System Reference Manual (#5011034)

Peripheral Documentation

B 9494-5 Fixed Disk Drive Operator's Manual (#1151891)

B 9494-2/4 Fixed Disk Drive Operator's Manual (#1128295)

B 9484-12 Disk Storage Drive Operator's Manual (#1152121)

B 9484 Disk-Pack Drive Operator's Manual (#2010807)

B 9494-10 Fixed Disk Drive Operator's Manual (#1152170)

B 9498 Magnetic Tape Streamer Unit Operator's Manual (#1137908)

B 9495 PE and NRZ Magnetic Tape Subsystem Operator's Manual (#1082567)

B 9495 PE and GCR Magnetic Tape Subsystem Operator's Manual (#1115516 and #1115748)

B 9247-14 Train Printer Operator's Manual (#1094802)

B 9246-10/13 Band Printer Operator's Guide (#1137106)

B 9246-3/6 Line Printer Operator's Guide (#1137221)

Intelligent Laser Printing System Operations and Programming Guide (#1169729)

Note: A more extensive list of documentation can be found in the **A Series System Functional Overview Manual**.

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Locating Command Syntax

Some command categories to become familiar with and use at the ODT follow:

- ODT:** Syntax for these commands is in the **Operator Display Terminal System Commands Operations Reference Manual**.
- Primitive:** Primitive commands are a subset of ODT commands that begin with double question marks (??). They are used to bypass the Controller, the MCP module that normally processes ODT commands. Primitive commands may be necessary if Controller software fails. Some apply only to certain systems. Syntax is in the **Operator Display Terminal System Commands Operations Reference Manual**.
- Work Flow (WFL):** Work Flow Language commands are used to initiate and control WFL jobs. Syntax is in the **Work Flow Language Programming Reference Manual**.
- Utility:** Syntax for commands related to utility programs is in the reference manual for the particular utility.
- CANDE Control:** Control commands can be initiated from a user terminal or from the ODT through the Command and Edit (CANDE) program. These commands are used to inquire into task and system status and to control tasks, but they are not typically used by operators. Syntax is in the **CANDE Configuration Reference Manual**.
- REMOTESPO:** A regular user workstation can be used as a remote ODT (REMOTESPO). ODT commands may be entered at the workstation, and the system will react as if the commands were entered at the ODT. Some ODT commands cannot be entered from a REMOTESPO, including all primitive commands.
- MARC:** Menu-Assisted Resource Control (MARC) allows both direct entry of commands and the use of menus to generate communications.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL APPENDIX E

SUPPORT RESOURCES

Hardware Problems

Report hardware problems to the local Unisys Respond center to be resolved by a Unisys Customer Service Engineer (CSE). The number for the Respond center should be supplied by the CSE when your system is installed.

Software Problems

Software problems are supported by Action Line telephone assistance. Assistance includes support in dealing with operational questions and errors involving software products.

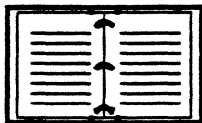
There is a different Action Line to support each category of software--system, application, and special products.

Your Unisys support representative should supply the numbers for the Action Lines appropriate to your needs.

Support Agreements

Various Software Support Plans (SSPs) are offered by Unisys. Each plan offers a different level of product support. Some support plans include onsite assistance at no additional cost, and some specify only telephone support with time and material fees for onsite support.

The type of SSP purchased by your site determines the level of support you can expect.



The **A Series Functional Overview Manual**, *Section 8: If There Is a Problem* provides more specific information about where to get help with individual problems.

NOTES

A sheet of white paper with horizontal ruling lines. The word "NOTES" is printed at the top center. On the left side, there are three circular binder holes. The paper is otherwise blank.

APPENDIX F
SYSTEM ERROR MESSAGES

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

A Series System Messages Related to Disk

See the A Series Disk Subsystem Administration and Operations Guide for a complete list of system messages related to disk.

1. Message: PK <unit number> BAD DISK HEADER ON TAPE <file name>

Cause: This error occurs during an attempt to copy a file from tape using **COPY**. The disk file header from the tape was corrupted or was the wrong size. No more files can be copied.

Solution: Move the tape volume to another tape unit and resubmit the **COPY** command.

2. Message: PK <unit number> CANNOT ALLOCATE <nnn> SEGS FOR JOB FILE ROLLOUT

Cause: There is not enough disk space on the JOBS disk family to start jobs. Each message indicates that a pending job has been discarded from the system.

Solution: Make space available on the JOBS family as soon as possible. Make sure all disks in the family are on-line and write-enabled. Remove files or use **SQUASH** to consolidate files.

3. Message: PK <unit number> COMPARE ERROR <file name>

Cause: This error occurs during an attempt to copy a file from disk. The data read from the given destination does not match the data read from the source. Although the compare error affects a particular destination, it is possible that the real problem was caused by a bad read from the source file. When copying a file from disk, it is possible that a program has changed the file while the copy was in progress. Note that the system logs the first mismatched word detected in the **SYSTEM/SUMLOG** file.

Solution: Make sure the input disk file is not being used by a program. Answer the recopy request as desired or try **COPY** again using a different unit.

4. Message: DIRECTORY SPACE REQUIRED: PK <unit number> <file name>

Cause: The system has run out of disk space in the flat directory of the family and a program tries to add a file entry to the flat directory. The program cannot proceed until space is available and waits for you to correct the problem.

Solution: Either remove files from the family with **REMOVE** or discontinue the program with **DS**.

5. Message: MT <unit number> DISK FILE HEADER COMPARE ERROR <file name>

Cause: This error occurs during an attempt to copy a file from tape to disk. The disk file header read from the destination does not match the disk file header record that was written to the destination.

Solution: Answer the recopy request as desired or try using the **COPY** command with a different unit.

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APPENDIX F**

6. Message: PK <unit number> DUP LIBRARY <FILE NAME> ON <family name>

Cause: This error occurs during an attempt by the system to put a file name into the directory of a disk family when there is already a permanent file on the disk with the same file name. This conflict can occur while trying to create or close a new permanent file, while trying to copy a file, or while trying to change the name of an existing file. This message appears only if the AUTORM option for the system or task is reset.

Solution: Do one of the following:

- | | |
|------------------------------|--|
| <mix number> DS | Terminates the program and does not replace the old file. The new file is removed unless the conflict was caused by a file name change, in which case the new file retains its original name. |
| <mix number> OF | Returns an error to the program and does not replace the old file. The new file is removed unless the conflict was caused by a file name change, in which case the new file retains its original name. |
| <mix number> RM | Removes the conflicting file and replaces it with the new file. If the destination file is a system file, use some other command. |
| <mix number> OK | Retries the operation. Use this response if the conflicting file has been removed or changed or if the AUTORM system option is set. |

7. Message: DUP FILE (SYSTEM FILE): PK <unit number> <family name>

Cause: This error occurs while replacing a special system file. A program is trying to replace a special system file, such as an MCP code file, with another file of the same name. The program waits for you to correct the problem.

Solution: Do one of the following:

Remove the conflicting file using REMOVE. Then reply with **<mix number> OK**. To remove an MCP code file that is marked as a system file, the CM (Change MCP) command must be entered first with syntax **CM- ON <family name>**.

Reply **<mix number> DS** to discontinue the program without replacing the old file.

Reply **<mix number> OF** to send the program an error indication without replacing the old file.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

8. Message: PK <unit number> ERROR CLOSING TAPE FILE <file name>

Cause: This error occurs during an attempt to do a COPY. The system CLOSE routine returned an error indication between the files. If the error occurs on a source tape, then no more files can be copied. If the error occurs on a destination tape, then no more files can be copied to the affected tape.

Solution: Repeat the copy with a different tape volume or tape drive.

9. Message: PK <unit number> ERROR OPENING TAPE FILE <file name>

Cause: This error occurs during an attempt to do a COPY. The system OPEN routine did not correctly locate an input tape file or did not correctly allocate an output tape. No more files can be copied.

Solution: Determine the cause of the OPEN error (see preceding messages) and resolve the problem. Resubmit the COPY command. Try using different tapes or tape drives.

10. Message: <unit ID> EXPECTED EOVI FILE BUT WORDS 1&2 OF RECORD = <hhh> <hhh>

Cause: This error occurs during an attempt to do a COPY. An end-of-file (EOF) was detected in the middle of the data portion of the input tape file. The library maintenance program expects a reel switch after a tape mark and checks for the presence of an end-of-volume (EOV) label. The label was missing. The affected file is not copied.

Solution: Find out whether the input tape was correctly created by examining the job log output generated by the COPY statement that originally created the tape. If the tape was correctly created, repeat the copy and use a different tape drive.

11. Message: <unit ID> EXPECTED HDR1 FILE <no> BUT WORDS 1&2 OF RECORD = <hhh> <hhh>

Cause: This error occurs during an attempt to do a COPY, while spacing up the tape to a file that was to be copied. Certain kinds of records are expected after each tape mark on a library tape. In this case, one of these records is wrong or out of place, a tape mark is missing, or an extra tape mark is on the input tape looking for the desired file. It is possible for the tape to run away if there are no more tape marks on the tape to stop the search.

These errors are likely to happen if the COPY command that created the tape did not finish correctly due to an error condition or a DS command.

Solution: If the message persists, the input tape is probably not usable and needs to be re-created.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

12. **Message:** PK *<unit number>* EXPECTED RECORD *<number>* BUT WORDS 1&2 OF RECORD =
<number> *<number>*
- Cause:** This error occurs during an attempt to do a COPY. The first word of every library tape block has a number. The wrong record number was read from the tape. The library maintenance program might issue a recopy request. Otherwise, no more files are copied to or from the given unit.
- Solution:** Answer the recopy request as desired or resubmit the COPY command using a different unit.
13. **Message:** FAMILY NOT PRESENT
- Cause:** Disk family specified in a SQUASH command is not online or not write-enabled. The SQUASH is ignored.
- Solution:** Check the family specified in the command. Write-enable or put the family online if necessary. Repeat the SQUASH command.
14. **Message:** FAULT ON PK *<unit number>* *<family name>*
- Cause:** This message appears after an MCP fault occurs during processing of a directory.
- Solution:** Note the error message and retrieve any memory dump or program dump the system provides.
15. **Message:** PK *<unit number>* FILE TITLE ERROR *<file name>*
- Cause:** This message appears after an error occurs during library maintenance. The file title of a disk file found at a selected spot on a tape is not the file title expected. No more files are copied.
- Solution:** Find out whether the input tape was correctly created by examining the job log output generated by the COPY that originally created the tape. If the tape was correctly created, reissue the COPY using a different tape drive.
16. **Message:** HEADER DAMAGED ON PK *<unit number>* *<file name>*
- Cause:** This error occurs during an attempt to do a COPY. The system has discovered that the file named has one or more incorrectly allocated areas or rows. The system marks these areas as unavailable for use. This error is the result of an internal system problem while handling a disk header.
- Solution:** Remove the file and load its most recent uncorrupted version.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

17. **Message:** PK <unit number> HEADER HAS DELETED ROWS <file name>

Cause: This error occurs after an attempt to do a COPY. A disk file was not copied because some rows (areas) were missing.

Solution: Remove the bad files and reissue the COPY.

18. **Message:** PK <unit number> IO ERROR DURING COPY <file name>

Cause: I/O error occurs during an attempt to copy to or from the unit specified. This message is usually followed by the message PK <unit number> RECOPY REQD <file name>.

Solution: Answer the RSVP for the recopy message or re-enter the COPY and indicate a different unit.

19. **Message:** PK <unit number> <file name> IS AN ILLEGAL FILE NAME ON <family name>

Cause: This error occurs during an attempt to create a disk file or catalog a tape file with the file name USERCODE or a file name with more than 14 levels. This message is also issued when an internal system error occurs in handling a file name. The program might continue, but the bad name is not entered into the directory.

Solution: Change the program to assign a valid file name.

20. **Message:** PK <unit number> NEED SPACE ON HL FAMILY TO SAVE TAPE DIRECTORY <file name>

Cause: This error occurs during an attempt to copy disk files to tape. The library maintenance program allocates a temporary disk file on the halt/load family to save a copy of the tape directory, but not enough space is available on the halt/load family to allocate the file. No files are copied.

Solution: Use REMOVE to remove some files from the halt/load family. Reissue the COPY command.

21. **Message:** NO FAMILY <family name>

Cause: This error occurs when you attempt to find a disk file, and the required disk family cannot be located. The family is not online, or a directory error occurred while the system was trying to locate the disk. The system might either wait for the file or continue the execution of the task without the requested file.

Solution: If the program is waiting for the file, do one of the following:

- Bring the family online.
- Use DS to discontinue the program.
- Use OF to continue the program.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

22. **Message:** PK *<unit number>* *<file name>* NOT CHANGED (NOT PRESENT) ON *<family name>*

Cause: This error occurs during an attempt to change a file name. The attempt failed because the file could not be found. The program receiving the error continues to execute.

Solution: If the change attempt was the result of a **CHANGE** command, check the spelling of the file name and resubmit.

23. **Message:** PK *<unit number>* *<file name>* NOT CHANGED (WRITE LOCK OUT) ON
<family name>

Cause: Message appears after a request to change a file name in a disk directory fails because the disk drive is not write-enabled. The program receiving the error is not terminated because of the error.

Solution: Write-enable the disk drive and resubmit the **CHANGE** command.

NOTE: A similar message is received if a file removal is attempted and the disk is not write-enabled. The same solution applies except the **REMOVE** command would be used.

24. **Message:** PK *<unit number>* RECOPY REQD *<file name>*

Cause: This RSVP is preceded by a library maintenance error message. Certain error conditions can be fixed by recopying the file. When such an error occurs, the library maintenance program issues an error message and then asks the operator whether a recopy should be attempted.

Solution: The *<unit number>* refers to a specific destination because files can be copied to several destinations at once. You can use any of the following:

- | | |
|-------------------------------------|---|
| <i><mix number></i> DS | Terminates the library maintenance program. Any files already copied remain, but the file in question and any other files to be copied are not copied. |
| <i><mix number></i> OF | Prevents the file from being recopied. The library maintenance program continues and copies the rest of the files. |
| <i><mix number></i> FR | Prevents other files from being copied to this destination (tape reel). If there are no other destinations, the library maintenance program terminates, otherwise it will continue to copy to the other destinations. |
| <i><mix number></i> OK | Allows the file to be recopied. If the error persists, the same error message will come back again. |

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

25. **Message:** REQUESTED FAMILYINDEX NOT ON LINE

Cause: The disk family specified in a SQUASH command is not online. The SQUASH is ignored.

Solution: Check the family index number used and resubmit the SQUASH.

26. **Message:** PK *<unit number>* *<number>* SECTORS REQUIRED ON *<family name>*

Cause: An attempt by the system to allocate or extend a disk file on the specified family fails. There is not enough room for the next file area. The file needs the number of contiguous sectors indicated by the variable *<number>*. The system waits for the requested number of sectors to become available or for the operator to discontinue the program.

Solution: Do the following:

1. *<mix number>* DS This stops the program execution.
2. Make sure the specified family is write-enabled.
3. Determine the amount of free space on the family using the DU command.
4. Either remove unnecessary files from the family or use SQUASH to consolidate small available areas on the disk into larger available areas. Use DU to check the areas again.
5. Run the program again.

27. **Message:** MT *<unit number>* TAPE DISKHEADER WRITE ERROR *<file name>*
MT *<unit number>* TAPE DISKHEADER READ ERROR *<file name>*

Cause: The WRITE error occurs during an attempt to write a file to tape. The READ error occurs while trying to read either the source file header or the destination file header in a compare. No more files are copied to the given destination.

Solution: Move the tape to another tape drive and try the COPY again.

28. **Message:** MT *<unit number>* TAPE FILE MISSING *<file name>*

Cause: This error occurs during an attempt to use COPY. No label for the given file can be found on the input tape. No more files are copied.

Solution: If the input tape was created incorrectly or has been damaged, the affected file cannot be copied. Try copying the file again using a different tape drive.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
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29. **Message:** MT <unit number> TAPE NOT LIBRARY TAPE <file name>

Cause: This error occurs during an attempt to copy a file from tape. The input tape does not have the proper label to be a tape created using the library maintenance program. No files are copied.

Solution: Check the input tape. If you are sure it is a library tape, try another tape drive.

30. **Message:** MT <unit number> TAPE POSITIONING ERROR <file name>

Cause: This error occurs during an attempt to copy a file to or from tape when forward-spacing the unit to try a recopy or compare. No more files are copied.

Solution: Try a different tape drive or tape volume and resubmit the COPY.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

A Series System Messages Related to COMS

See the A Series COMS Operations Guide for a complete list of COMS error messages.

1. **Message: ACCESS TO THE WINDOW IS DENIED TO YOU (INVALID USE).**

Cause: You are not authorized to access the window that you specified.

2. **Message: DIALOG 1 OF THE MARC WINDOW CANNOT BE CLOSED.**

Cause: Dialog 1 of the MARC window cannot be closed. It is available for access at all times.

3. **Message: NSP <NSP ID> IS NOT A VALID NSP.**

Cause: An incorrect NSP ID was given when a command to attach stations was entered.

4. **Message: STATION IS UNAVAILABLE (OR INVALID) = <station name or LSN>**

Cause: The station is not in a state that allows it to be affected by your command. The station ID is invalid for the command issued.

5. **Message: THE ACTION YOU HAVE REQUESTED CANNOT BE PERFORMED.**

Cause: You have requested an action that is not allowed for your usercode.

6. **Message: THE IDENTIFIER "<string>" CANNOT BE RECOGNIZED.**

Cause: You have entered information that is not recognized by COMS. Therefore, the action is not taken.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX F**

7. **Message:** THE NAME "*<program name>*" IS NOT A VALID PROGRAM NAME.

Cause: You have specified a program name that is not recognized by COMS.

8. **Message:** THE NAME "*<window name>*" IS NOT A VALID WINDOW NAME.

Cause: You have specified a window name that is not recognized by COMS.

9. **Message:** THE WINDOW *<window name>* IS CURRENTLY UNAVAILABLE (WINDOW IS FULL).

Cause: The window that you specified is being used by the maximum number of users who can use it.

10. **Message:** USE RESTRICTED TO CONTROL STATION OR CONTROL-CAPABLE USER.

Cause: The command entered is valid only if you are at a control station or the ODT, or if you are a control-capable user at any station.

11. **Message:** WINDOW *<window name>* IS NOT AVAILABLE (DISABLED).

Cause: The window specified is not available because it has been disabled.

12. **Message:** WINDOW *<window name>* IS NOT OPEN.

Cause: The window specified is closed. No action is taken.

13. **Message:** WINDOW *<window name>* / *<dialog number>* CANNOT BE CLOSED AT THIS TIME; TANKED OUTPUTS EXIST.

Cause: The window dialog indicated in the error message cannot be closed until you either view all the tanked messages from that dialog or purge them.

NOTES

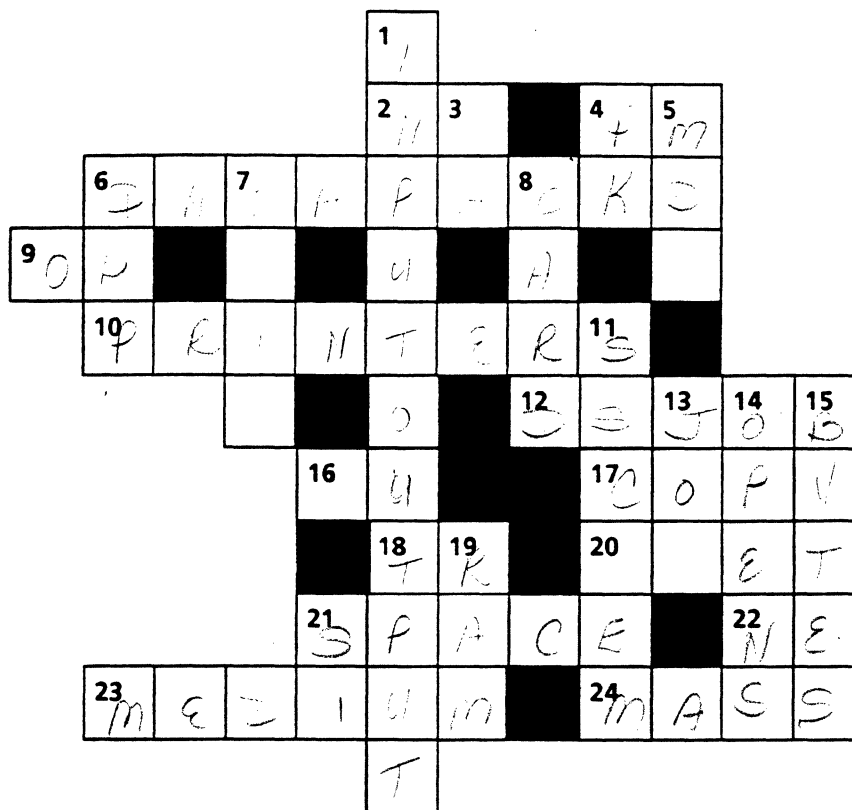
A blank sheet of lined paper with three binder holes on the left side. The word "NOTES" is printed at the top center. The page is ruled with horizontal lines, and there are three binder holes on the left edge.

NOTES

A sheet of white paper with horizontal ruling lines. The word "NOTES" is printed at the top center. On the left side, there are three circular binder holes. The paper is otherwise blank.

APPENDIX G
"EXTRA FOR EXPERTS"

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
APPENDIX G**



***"Extra for Experts"*
A Series Crossword Puzzle**

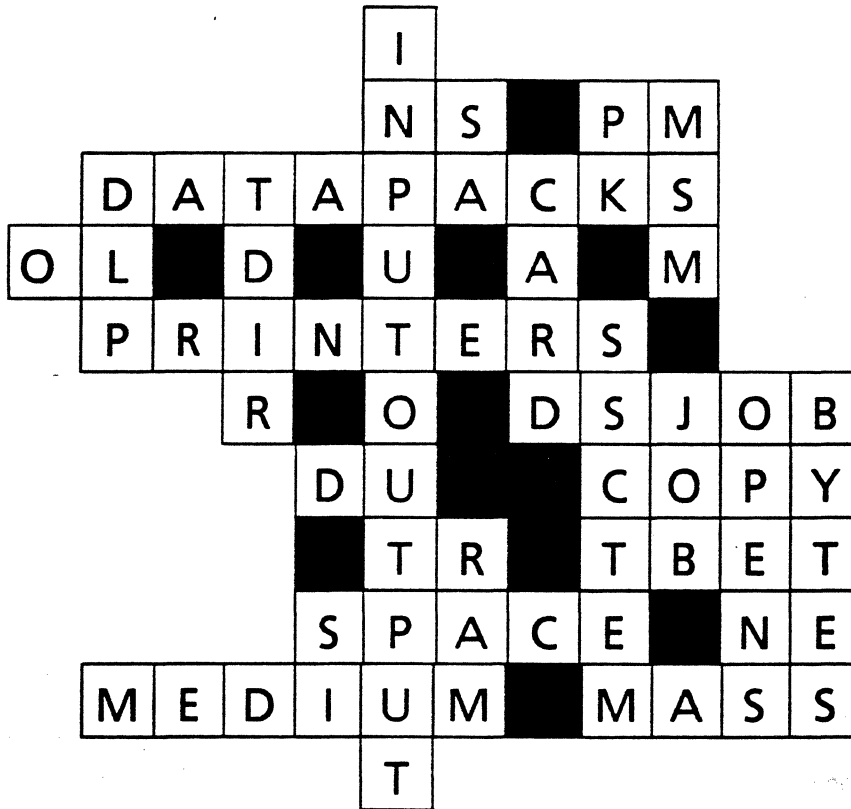
ACROSS

2. Command to display subsequent screens in a multiscreen display
4. Denotes afternoon and evening hours
6. Disk packs with data files could be called _____
9. Command to get information about peripherals
10. Output devices
12. To terminate all the tasks of a WFL, _____ the _____
16. Command to determine disk space
17. Command used in file backup
18. Command to change system time
20. *Why people go to horse races*
21. File backup insures adequate disk _____
22. *Maine is in this part of the U.S.*
23. Material on which data/code is recorded for storage
24. Disk is considered a _____ storage device

DOWN

1. What I/O stands for
3. Two of the mix status commands
4. Abbreviation for pack
5. Hardware component on an A 15
6. Processor used to communicate with peripherals
7. Command to get a printout of tape contents
8. Requires a keypunch machine
11. Command to send a message only to a station called CTEM
13. Initiated using START
14. Before a program creates/accesses a file, it _____ it.
15. They are made up of bits
19. Type of memory used for temporary storage of data
21. Abbreviation for Simple Install

Crossword Key



APPENDIX H
ASSESSMENTS

A Series Operations for Experienced Data Processing Personnel Prerequisite Check

Name _____ Date _____

This Prerequisite Check will help determine which course prerequisite terms and concepts you know and which may require some review.

For each item, circle the letter beside the best response.

1. The computer hardware component that performs arithmetic and logic functions is the
 - A) Input peripheral
 - B) Output peripheral
 - C) Central processing unit
 - D) Memory
2. A byte is
 - A) A group of bits which represent a data character
 - B) One field in a record
 - C) An input device
 - D) A collection of computer programs
3. To boot the operating system means to
 - A) Update the level of the operating system
 - B) Load the part of the operating system needed to get the computer started
 - C) Delete the operating system from memory
 - D) Write the operating system so that it terminates itself in the event of power loss
4. A set of instructions written to tell the computer how to perform a desired function is a
 - A) Program
 - B) Byte
 - C) Directory
 - D) Modem
5. Data which is processed by the computer to produce desired information is referred to as
 - A) Output
 - B) Storage
 - C) Media
 - D) Input
6. Memory is the
 - A) Software necessary to make the computer run
 - B) Main computer storage area where data is referenced and manipulated
 - C) Instructions written to perform a particular function
 - D) Component which performs logic and arithmetic functions
7. An example of an output peripheral would be
 - A) A central processing unit
 - B) A record
 - C) A printer
 - D) An operating system
8. On a computer system, disk packs are used to
 - A) Store data and programs
 - B) Supply power to the system
 - C) Monitor data communications on the system
 - D) Control peripheral communications

9. Another term for computer programs is

- A) Hardware
- B) Software
- C) Media
- D) Boots

10. An operating system is one or more programs that

- A) Solve a particular user problem
- B) Eliminate the need for human input to the system
- C) Control overall system operations
- D) Scan and read special codes on product labels

11. A file is

- A) A collection of related records
- B) A concentric circle on a disk pack
- C) A memory area used for permanent storage
- D) The type of code processed by the computer

12. The computer uses _____ to locate data or program instructions stored in memory.

- A) Code names
- B) Compilers
- C) Files
- D) Addresses

13. If a disk drive is write-enabled it means that

- A) Data can be recorded on the disk in the drive
- B) A disk must be loaded on to the drive
- C) The disk drive must be powered up immediately
- D) The disk drive is functioning properly

14. On a computer system, magnetic tape is often used to

- A) Produce and distribute reports
- B) Enter editorial changes to data files
- C) Store and reload backup files
- D) Read specially encoded forms

15. An application program is intended to

- A) Assist the operating system in controlling the system
- B) Help the user resolve some specific data processing need
- C) Compile source code
- D) Provide communication between peripherals and the central processing unit (CPU)

16. Compilers convert source code to

- A) Characters
- B) Random code
- C) Operating code
- D) Object code

17. Which device would be used to input data to the computer using a keyboard?

- A) Terminal
- B) Central processing unit (CPU)
- C) Printer
- D) Disk

18. Which device would be used to input data to the computer from online storage?

- A) Printer
- B) Disk
- C) Terminal
- D) Keyboard

A Series Operations for Experienced Data Processing Personnel Preassessment

Name _____

Date _____

This assessment will help you and the instructor determine how much you may already know about course concepts, and provides a course preview. You can compare your score to the postassessment at the end of class to see how much you have learned.

For each item, circle the letter beside the best response.

1. What is the correct command syntax to display the current ADM option settings?
 - A) ADM
 - B) AD DEF
 - C) ADM-
 - D) ADM OK
2. The W command will display the
 - A) System time and date
 - B) Tape peripherals on the system
 - C) List of waiting entries
 - D) WFL jobs that are running
3. Which command would you use to find out the response choices for a waiting entry?
 - A) WM
 - B) TR
 - C) A
 - D) WY
4. Which of the following commands might resolve a NO FILE condition?
 - A) Y
 - B) IL
 - C) TI
 - D) OL
5. In order for tapes to be purged, they must be
 - A) Write-enabled
 - B) Assigned a new serial number
 - C) At least one year old
 - D) Loaded automatically rather than manually
6. What is COMS?
 - A) A type of disk
 - B) A command used for file backup
 - C) A message control system program
 - D) The operating system
7. The active mix includes jobs that
 - A) Do not occupy memory
 - B) Are not running
 - C) Are running
 - D) Need more memory than is currently available
8. The operator can use the _____ to enter commands to the system.
 - A) ODT
 - B) MCS
 - C) NSP
 - D) DCDLP
9. A disk pack family is
 - A) A pack with more than one platter
 - B) One or more packs that all have the same name
 - C) Two disk drives connected to the same path
 - D) A pack with files that all have the same name
10. Log files are useful in that they
 - A) Transfer all interoffice communications
 - B) Report on user system time
 - C) Analyze system dumps
 - D) Record system activity

11. If a disk pack family has no storage space left, the best solution is to
- A) Use tape for storage instead
 - B) Add a new disk family to the system
 - C) Back up and remove unused files on the family
 - D) Add a new disk drive to the system

12. To assign a file to a particular user, it must contain a _____ in the file name.
- A) Node
 - B) Usercode
 - C) Subdirectory
 - D) Location

13. The system uses _____ to identify peripherals.
- A) Mnemonics and queue numbers
 - B) Queue numbers and priorities
 - C) Unit numbers and mnemonics
 - D) Priority levels and unit numbers

14. From the ODT, what will be displayed by the command syntax below?
- PD =
- A) A list of all first level directories on DISK
 - B) A list of the printer backup files
 - C) A list of all the packs on the system
 - D) A list of the programs that are running

15. If a duplicate file condition exists, which command can be used to eliminate the condition, allowing processing to continue?
- A) RF
 - B) RM
 - C) PG
 - D) ST

16. If a program issues an ACCEPT message, which command is used to respond?
- A) AA
 - B) IL
 - C) OF
 - D) AX

17. The MCP is the _____ on A Series computers.
- A) Message control system program
 - B) Data comm program
 - C) Print utility
 - D) Operating system

18. To initiate a program, the operator must use which command?
- A) EX
 - B) BOJ
 - C) DS
 - D) RUN

19. If one data comm station is not communicating, what is the first thing to try?
- A) ??PHL
 - B) COMS READY command
 - C) Power off the A Series system
 - D) ID:QUIT

20. Which command is used to display the list of currently queued printer backup files?
- A) PRINT
 - B) PD
 - C) SQ
 - D) PS

A Series Operations for Experienced Data Processing Personnel Postassessment

Name _____

Date _____

Compare your score on the postassessment with your score on the preassessment to see how much you have learned.

For each item, circle the letter beside the best response.

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- C) Subdirectory
- D) Location

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- B) Queue numbers and priorities
- C) Unit numbers and mnemonics
- D) Priority levels and unit numbers

14. From the ODT, what will be displayed by the command syntax below?

PD=

- A) A list of all first level directories on DISK
- B) A list of the printer backup files
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- B) RM
- C) PG
- D) ST

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- B) IL
- C) OF
- D) AX

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- B) Data comm program
- C) Print utility
- D) Operating system

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- A) EX
- B) BOJ
- C) DS
- D) RUN

19. If one data comm station is not communicating, what is the first thing to try?

- A) ??PHL
- B) COMS READY command
- C) Power off the A Series system
- D) ID:QUIT

20. Which command is used to display the list of currently queued printer backup files?

- A) PRINT
- B) PD
- C) SQ
- D) PS

GLOSSARY

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL GLOSSARY

A

access

To get data for processing.

action line

The MARC input area used to move from screen to screen and to enter short command input.

address

The number associated with a location in memory or on disk; used by the MCP for locating data or code.

ADM

Acronym for Automatic Display Mode; screens which display system activity.

ALGOL

Acronym for ALGOrithmic Language; programming language used in developing some systems programs on the A Series.

alphanumeric data

A combination of alphabetic and numeric data.

application program

A type of software that serves user needs for day-to-day functions such as PAYROLL.

area

A programmer-defined breakdown of a disk data file into portions, to avoid wasting unused disk space. *See file area.*

ASCII

Acronym for American Standard Code for Information Interchange; a coding system for data representation.

attribute

A characteristic such as processor priority; assigned at the file, task, or job level.

B

back up

To copy a file or files on more than one peripheral medium to ensure its availability. *See file backup, printer backup.*

base pack

The pack in a disk family which has the family flat directory; usually index #1.

BASIC

Acronym for Beginner's All-purpose Symbolic Instruction Code; considered among the easiest of programming languages to learn and master.

binary

Refers to the base 2 number system.

bit

The most basic unit of data representation, having two values, usually denoted as 0 and 1. *See byte.*

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blocking

To write records in groups (for example, on tape or disk) to save storage space or to speed processing.

boot

To load the programs necessary for the system to attain a running state.

buffer

A temporary data storage area which allows I/O activity to take place independent of processing.

bug

A malfunction or mistake.

byte

One character, equal to 8 bits.

C**CANDE**

Acronym for Command AND Edit language; used for online programming.

checkerboarded

Refers to an undesirable disk condition, where available space is scattered at numerous addresses.

choice field

The MARC field used to enter menu selections; appears only on menu screens.

COBOL

Acronym for COmmon Business Oriented Language; programming language commonly used in solving business data processing problems.

cold start

To load the MCP and basic system software to the system disk; creates new directory and tables.

command mode

The use of the MARC action line to enter command syntax.

command screen

The MARC screen displayed in response to the CO action; used to enter command syntax too long to fit on the action line.

compiler

A program that translates source code into object code.

computer

An electronic device capable of making calculations and logical decisions.

COMS

Acronym for COmmunications Management System; commonly used A Series message control system (MCS).

console/spo

Synonyms for the ODT.

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continuation packs

The additional packs, besides the base pack, of a multipack family.

controller

The hardware interface between the CPU and peripherals.

CP 2000

A data comm processor used to link networks.

CPU

Acronym for Central Processing Unit; a computer's processor and memory.

crash

A condition in which the system abruptly ceases processing.

crunch

To close a disk output file with the exact amount of disk needed; helps maximize available disk space.

cursor

A screen symbol which marks the current position for data entry.

cycle

Work measurement of a computer given in cycles per second.

cylinder

The tracks with the same radius across the platters of a disk.

D

database

A group of related files designed for efficient storage and access of data.

data comm

Abbreviation for data communications; input/output between a CPU and remote terminals.

data file

A set of related records.

default

A meaning or value that is assumed unless otherwise indicated.

delimiters

The symbols on the display screen which indicate the beginning and end of a data entry field.

dialog

A particular access to the system through a window.

direct access

Synonym for random access; the ability to enter or obtain data from storage based solely on its location. *See random access, sequential access.*

direct printing

The process of sending output files directly from a program to a peripheral. *See indirect printing.*

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disk

A peripheral composed of one or more platters coated for storage of magnetic-encoded data; storage device for system software; large-scale backup device.

disk directory (flat directory)

The directory table the MCP uses to locate files; located on the base pack of a disk family.

DMSII

Acronym for Data Management System II; Unisys database management system.

drive

The name given to disk and tape hardware units; e.g., a tape drive.

dump memory

To write the contents of memory to a disk file.

E

EBCDIC

Acronym for Extended Binary-Coded Decimal for Interchange Code; a coding system for data representation.

environmental software

Programs which aid system communication, information management, and programmer productivity.

execute

To run a program.

external file name

The name of a physical data file as listed in the disk directory.

F

family name

The name of a disk pack group.

field

A group of bytes that represents a logical piece of data; e.g., 050178 = a date. *See record and file.*

file

Either a data file or a code file; a group of related records. *See record and field.*

file area

A segment of a file; files are broken up into areas for storage purposes.

file backup

The process of making duplicate copies to ensure the availability of files.

file title

The file name with disk family location appended or assumed.

firmware

Microcode stored in a hardware device; used to control its operation.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL GLOSSARY

Forms mode

A data entry mode in which information must be entered in delimited fields.

FORTRAN

Acronym for FORMula TRANslation; a programming language most commonly used for scientific applications.

H

halt/load

A system initialization process which halts system activity and loads the MCP from disk to main memory.

hard copy

A file printed on paper.

hardware

The physical devices that are part of a computer; e.g., mainframe and peripherals.

hexadecimal

Refers to the base 16 numbering system using digit values of 0 to F.

Home

The column 1, row 1 position of the screen, from which command input is entered.

I

identifier

A node of a file name.

indirect printing

The process of writing printer output to disk storage to wait for printing. *See* spooling.

initialize

To make ready for use.

input/output (I/O)

Reference to (1) a peripheral, or (2) data going to and from the CPU and peripherals.

internal file name

A file name referenced in a program which may or may not be the same as the external physical file name.

interpreter

A program used to execute object code--dynamically translates object code into machine language.

interprogram communication

The passage of data from one program to another.

J

job

A program controlling a series of tasks; may include procedures and resources for processing.

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job queue

A stored list of compiled WFL programs waiting for initiation.

job summary

A report which includes information about the activities of a job and its tasks.

L**label**

The generalized information in the first record of a file; may include file name, date, number of records.

labeled tape

A tape with identifying information, such as serial number and tape name, stored in label records.

LIBRARY/MAINTENANCE

An MCP program used to copy files.

library program

Program code shared by many programs.

library tape

A tape produced using the WFL COPY command (contains a directory).

line

In data communications, a phone or direct connect line between the CPU and terminals.

log

MCP-recorded system activity placed in a file on disk.

logical station number

A unique integer assigned by NDII to each station defined for a network. *See* station name.

LSP

Acronym for Line Support Processor; a data comm processor which controls the input of messages to and the output of messages from data comm lines; assembles characters into messages and disassembles messages into characters.

LTAI

Acronym for Line Terminal Activity Indicator; terminal light that blinks when the terminal is communicating with the CPU.

M**machine language**

Synonym for machine code; language understood by a computer's processor.

magnetic tape

A reel of tape (or cartridge) used for large-scale storage of files; common backup medium.

MARC

Acronym for Menu-Assisted Resource Control; a menu-driven interface which can be used to operate A Series systems.

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GLOSSARY**

MCP

Acronym for Master Control Program--operating system software for the A Series.

MCS

Acronym for Message Control System program; a data communications program that allows a variety of terminal capabilities such as signing on to different programs and interterminal communication.

medium

A device used to store data; e.g., disk, tape.

memory

The area in the CPU where programs are stored while being executed.

Menu mode

The use of MARC menus to control system operations. *See* Command mode.

microcoded program

A program written in machine language.

mix

All the jobs that are currently running.

mix number

A unique four-digit number used to identify a process while it is running.

MODEM

Hardware for MOdulating/DEModulating the signal passed between computer equipment and phone lines (data communications).

multifile tape

A tape which is used to store more than one file.

multiprocessing

Multiprogramming with more than one processor active.

multiprogramming

Running several jobs concurrently with a single processor.

N

NDL

Acronym for Network Definition Language compiler; used to program the NSP and LSP.

NSP

Acronym for Network Support processor; data comm processor that sends messages to and receives them from central processing.

O

object code

Executable program code.

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GLOSSARY**

ODT

Acronym for Operator Display Terminal; terminal used for communicating with the MCP.

offline

Not connected to the CPU.

online

Connected to the CPU.

open file

A file being used by a program.

operating system

A complex set of programs that supervise the other programs running on a computer system; on the A Series, it is the MCP or MCP/AS.

P

pack

Synonym for disk.

parameter

A variable which is given a value when a program is executed.

parameter screen

Screen used to pass parameters to processes initiated through MARC.

parity bit

A bit used for hardware detection of errors.

peripheral

The hardware devices connected to the CPU and used for file storage that is external to memory; a terminal keyboard is an input peripheral, a printer is an output peripheral, and a disk is an I/O peripheral.

platters

The individual flat disks which make up a disk pack.

primitive commands

A set of commands which are processed directly by the MCP; must begin with double question marks (??).

printer backup

A print file written to disk or tape; printed when a printer becomes available; often used for printing multiple copies.

PRINTS

Acronym for PRINT System; controls printing of printer backup files on A Series systems. See REPRINTS.

program

A set of instructions that tell the computer what to do; can be written in a variety of programming languages.

A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL GLOSSARY

processor

The part of the CPU that performs calculations and logic control.

programming language

A language used to write the set of instructions that make up a computer program; e.g., COBOL, ALGOL, WFL.

PURGE

The command used to create a "scratch" tape or disk to be used for new output.

Q

QLA

Acronym for Quad Line Adaptor; set of four line adaptors; assembles bits into characters and disassembles characters into bits.

R

railroad diagram

A type of syntax diagram used for A Series commands.

random access

Synonym for direct access; ability to select a record in a disk file without searching sequentially through the file; provided by disk media.

read-write head

A disk or tape device that magnetically reads and writes data.

record

A set of related data fields.

REMOTESPO

A window available through MARC; allows data comm stations to emulate the ODT.

REPRINTS

Acronym for REremote PRINT System; controls printing of printer backup files at remote (data comm) locations.

S

schedule

The MCP area where jobs wait to be processed.

scratch

To make a disk or tape available for output use.

sector

A subdivision of a track on a disk; 180 bytes (30 words) long; smallest amount of data which may be read from/written to disk; also referred to as a segment.

sequential access

The storage and retrieval of items of information in a one-after-the-other fashion; tape is a sequential storage medium.

software

A program or set of programs.

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source code

A file containing instructions, in a particular programming language, that must be compiled to produce executable code (object code); also called a symbol file on the A Series.

spindle

Synonym for disk, disk pack, pack.

spooling

The process of indirectly sending output files to peripheral devices such as printers.

station

A terminal used to communicate with the system through a data comm network.

station name

A unique identifier chosen for each station in a data comm network. *See* logical station number.

syntax

The spelling and grammar rules for a programming or system control language, or for command input.

system disk

The disk which contains the MCP.

system options

Site-determined MCP settings that affect system operations.

system software

Unisys-supplied software including the operating system, utilities, compilers, etc.

T**table**

Set of like-sized data items for look-up by a program.

tape

See magnetic tape.

task

1) A dependent process. 2) A synonym for process. 3) A single complete unit of work performed by the system; may be initiated by a job, another task, or a user.

terminal

Screen and keyboard device used as a remote device or ODT.

track

One of the concentric circles on the surface of a disk; used to store data.

tree structure

The hierarchical structure in which file directories are organized on A Series systems.

U**unit**

An individual peripheral.

unit mnemonic

An abbreviation used to reference a peripheral; e.g., MT, IP, PK.

**A SERIES OPERATIONS FOR EXPERIENCED DATA PROCESSING PERSONNEL
GLOSSARY**

unlabeled tape

A tape without identifying label records.

update

To change fields in a record.

usercode

A name assigned to a user; used to sign on to the system and to identify user files.

utilities

The generalized Unisys programs that provide various common capabilities such as backup.

W

waiting mix

A list of jobs/tasks which have begun processing but are waiting on an event before they can continue.

WFL

Acronym for Work Flow Language; a Unisys programming language used to construct jobs which compile and run programs.

window

A view (access) into a program or environment.

word (1 word)

Equal to 6 bytes: 1 million words = 6 million bytes = 6 MB.

