

Burroughs



PUBLICATION CHANGE NOTICE

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Description:

This PCN is relative to Mark 12.0 and describes new features for the B 1000 SYSTEM/PACKCOPY program and the usage of B 1990 systems with a console diskette drive.

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PREFACE

The B 1000 Systems System Software Operation Guide (SOG), in two volumes, describes the operator interface to Burroughs B 1000 computer systems.

Volume 1 (form 1169000) provides an introduction to the B 1000 system. It includes an overview of the system control instructions (program control instructions and system commands) that are recognized by the Master Control Program II (MCP II). Also included is information on initializing the system, network controller operations, output messages, and halts. Appendixes to the manual provide background information on memory management, performance monitoring, disk file access, and file security.

Volume 2 (form 1169091) is devoted to the system utility programs that are available to system users, and includes an overview as well as detailed descriptions and operating instructions for these programs. The overview is presented in section 1 (Introduction) and the programs are described individually in the sections that follow. The sequence of the sections is alphabetical, according to the following list of program names.

CASSETTE/MAKER	SSLOAD/MAKCAS
CLEAR/START	STANDALONE/DISK-DUMP
CODE/ANALYZER	SYSTEM/BACKUP
COLDSTART/DISK	SYSTEM/BUILDTRAIN
COLDSTART/TAPE	SYSTEM/COMPARE
CONVERT/BACKUP	SYSTEM/COPY
CREATE/ISAM	SYSTEM/DISK-DUMP
CREATE/TABLE	SYSTEM/DISK-INIT
DC/AUDIT	SYSTEM/ELOGOUT
DISK/ALLOCATOR	SYSTEM/FILE-INIT
DISK/DUMP	SYSTEM/ICMD-INIT
DISKETTE/COPY	SYSTEM/IS-MAINT
DISKPACK/INTERCHANG	SYSTEM/ISVERIFY
DMPALL	SYSTEM/LDCONTRL
DUMP/ANALYZER	SYSTEM/LOAD-CAS
FOREIGN/TAPECOPY	SYSTEM/LOGOUT
INITIALIZE/ANALYZER	SYSTEM/MAKEUSER
LOGCONVERT	SYSTEM/MARK-SEGS
PACK/INIT	SYSTEM/ODT
QUIKLOG	SYSTEM/ODTLOGOUT
RD	SYSTEM/PACKCOPY
REMOTE/LISTER	SYSTEM/PANDA
REMOTE/PRINT	SYSTEM/SQUASH
SDL/SSC	TAPECOPY
SDL2INTRIN/REMOVER	

Volume 2 also includes three appendixes:

Appendix A, Disk Device Characteristics, provides physical characteristics and initialization information on disk cartridge and disk pack units.

Appendix B, Syntax Conventions, provides a definitive description of the use of railroad syntax.

Appendix C, Backup File Format, provides details on the format of backup files produced by the MCP.

RELATED DOCUMENTS

The following documents are referenced in this document:

B 1000 Software Manuals

B 1000 Systems System Software Operation Guide, Volume 1, form number 1169000.

B 1000 Systems Time Analysis and Billing System (TABS) Reference Manual, form number 1090669.

B 1000 Systems Network Definition Language (NDL) Language Manual, form number 1152014.

B 1000 Systems SMCS Installation, Operation and Functional Description Manual, form number 5016488.

B 1000 Systems Work Flow Language (WFL) Language Manual, form number 1168994.

SECTION 4

CLEAR/START AND MEMORY DUMP PROCEDURE

The CLEAR/START program is a stand-alone utility that is used to bring a B 1000 system to an operable state. The process has three parts: (1) bootstrapping: loading the CLEAR/START program from the cassette into system memory, (2) clear/starting, performed by the CLEAR/START program itself, and (3) system initialization, performed by the SYSTEM/INIT program. This program is brought into memory from disk at the appropriate time by the CLEAR/START program.

Execution of the CLEAR/START program is required after any of the following events:

- Execution of the COLDSTART/DISK or COLDSTART/TAPE programs.
- A system power-up; to start a day, for example.
- A system failure that results in an irrecoverable system loop or system halt.
- Execution of another stand-alone program such as PACK/INIT, DISK/DUMP, or STANDALONE/DISK-DUMP.
- Certain of the system software changes that can be specified by the CM system command.
- Setting or resetting of any of the following options: BRGR, FLMP, MPRI, LOG, RFAC, THR, TOUT, VLCP, VLIO.
- A change in the size of the Interpreter Dictionary specified by the IC system command.

CLEAR START FUNCTIONS

The CLEAR/START program performs the following functions:

1. Dumps a copy of main memory to the disk file SYSTEM/DUMPFIL when a memory dump is requested.
2. Clears main memory, writing zeros and correct parity throughout.
3. Scans the I/O subsystem to locate the system disk.
4. Saves certain registers and toggles that specify temporary environment changes for the SYSTEM/INIT (system initializer) program.
5. Loads the SYSTEM/INIT program into memory from the system disk.
6. Turns control over to the SYSTEM/INIT program.

SYSTEM INITIALIZATION FUNCTIONS

After receiving control from the CLEAR/START program, the SYSTEM/INIT program performs the following functions:

1. Supplements the information in SYSTEM/DUMPFIL, when a memory dump is requested, by adding (copying) certain MCP II structures such as the Name Table and the ODT Queue.
2. Allocates space for the initial structures in memory required for MCP operation, such as the Interpreter Dictionary and the MCP Stacks.
3. Loads the GISMO program into memory from the system disk, builds the Interpreter Dictionary entry for GISMO, and discards all GISMO segments not required because of the system hardware configuration, or because certain MCP options (such as MPRI) are not set.
4. Loads segment zero (non-overlayable) and segment one (overlayable initialization routines) of the MCP II into memory from the system disk, and sets up the initial memory link structures required.
5. Loads segment zero of the SDL2 Interpreter into memory from the system disk and builds the required Interpreter Dictionary entry.
6. Turns control over to the MCP.

MCP FUNCTIONS

When the MCP receives control from the SYSTEM/INIT program, a number of operations are performed before the system is actually ready to begin program execution. The MCP performs the following routines as part of system initialization:

1. Tests the I/O subsystem to determine the system configuration. The Input/Output Assignment Table (IOAT), constructed from this information, contains entries that describe the characteristics of all peripheral units present on the system.
2. Constructs the initial chain of DISK I/O descriptors, as well as TEST I/O descriptors for all other peripheral units present on the system.
3. Restores entries in the Temporary Disk Available Table to the Working Available Table.
4. Reads the disk directory and every disk file header (DFH) present on the system disk, clearing the user count in any DFH that was in use prior to the CLEAR/START. Disk files marked as TEMPORARY (such as compile and go code files) are removed from the disk directory.
5. Places entries identifying the CLEAR/START in the SYSTEM/LOG (if the LOG option is set) and the SYSTEM/ELOG.
6. Initiates the SYSTEM/ODT program and, if the AMCS option is set, the MCS program.
7. Displays the CLEAR/START message on the operator display terminal (ODT), and then makes the system available for use.

CLEAR/START OPERATING INSTRUCTIONS

Three sets of procedures for performing the CLEAR/START operation follow. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Clear-starting -- B 1990 System with a Console Cassette Drive

To perform a clear/start for a B 1990 system with a console cassette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the CLEAR/START cassette into the cassette reader and observe that the tape rewinds to BOT. (Blue light on the drive unit comes on; BOT appears on the ODT. If rewind does not complete, enter REWIND [XMT] from the keyboard.
3. Enter any temporary environment changes (such as a memory dump request) with the appropriate TEXT Soft Panel command. For details, refer to the subsection titled Temporary Environment Changes.
4. Enter MTR GO [XMT]

The clear/start operation automatically rewinds the cassette on B 1990 systems.

Clear-starting -- B 1990 System with a Console Diskette Drive

To perform a clear/start for a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the CLRSTART program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter any temporary environment changes (such as a memory dump request) with the appropriate TEXT Soft Panel command. For details, refer to the subsection titled Temporary Environment Changes.
5. Enter MTR "CLRSTART" GO [XMT]

Clear-starting -- Other B 1000 Systems

To begin a clear/start for all other B 1000 systems:

1. Halt the system by entering the HALT system command if the MCP is running. If the MCP is not running, halt the system by using the INTRPT push button or the console INTERRUPT switch. If the INTERRUPT switch is used, return it to its initial position following the halt. If the system continues to run, press the HALT push button. If the system still continues to run, press the HALT and CLEAR push buttons simultaneously. For dual-processor systems be sure both processors are halted.
2. Place the CLEAR/START cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button.
4. After the bootstrap loader is read from the cassette tape, the processor halts. The L register must contain @AAAAAA@ at this time; if not, the cassette must be rewound and the procedure restarted from step 3, above.
5. Any temporary environment changes to be made (such as a memory dump request) must now be entered into the appropriate registers. For details, refer to the subsection titled Temporary Environment Changes.
6. Press the MODE push button to enter the NORMAL mode; then press the START push button. Reading of the cassette resumes. When the CLEAR/START program is completely loaded, it takes control and executes through the system initialization procedure to completion.
7. Rewind the cassette tape by pressing REWIND. (Rewind is automatic in B 1900 systems.)

DESCRIPTION OF THE NAME TABLE

The Name Table is a structure that is initialized on a system disk by the COLDSTART/TAPE or COLDSTART/DISK programs. The Name Table contains entries identifying the names of system firmware and software available for use in the operational environment of the system. Name Table functions are shown in table 4-1.

Software and firmware routines are selected by the CLEAR/START and SYSTEM/INIT programs from entries in the Name Table. This is based on the system's hardware configuration as well as on certain optional specifications that can be entered by the system operator. Normally, it is unnecessary for the system operator to enter any specifications for the CLEAR/START program. Changes to the default selections are usually made only by Burroughs software development and support personnel in the course of system design and debugging, and are not required during normal system operation.

The Name Table design allows certain system software or firmware routines to be identified as "experimental" without affecting those routines identified as "standard". This permits a CLEAR/START to be performed with non-standard or untested routines by Burroughs software development personnel without the danger of not being able to recover to the "standard" software in an irrecoverable failure occurs in an experimental routine. Such a design also has application in a normal operating environment: backup copies of system software or firmware can be created and identified as experimental in the Name Table to enable recovery in the event the standard routines are corrupted.

The Name Table itself consists of 19 entries, each identified by an entry number and a mnemonic. The entry number is used by the CLEAR/START and SYSTEM/INIT programs and the mnemonic is used by the MCP and the system operator. Each entry contains the file identifier of the code file on the system disk. Each Name Table entry also has a specific defined function (for example, MCP or GISMO) and a condition (standard or experimental) for its selection by the CLEAR/START routine. These are shown in table 4-1.

Table 4-1. Name Table Functions, Entries, and Mnemonics

Name Table Item	Type	Entry #	Mnemonic
System Initializer	– Standard	0	N
System Initializer	– Experimental	1	NX
GISMO	– Standard	2	G
GISMO	– Experimental	3	GX
SDL2 Interpreter	– Standard	4	I
SDL2 Interpreter	– Experimental	5	IX
MCPII	– Standard	6	M
MCPII	– Experimental	7	MX
Micro-MCP	– Standard	8	MM
Micro-MCP	– Experimental	9	MMX
Network Controller	– Standard	10	C
Network Controller	– Experimental	11	CX
MCS Program	– Standard	12	MCS
MCS Program	– Experimental	13	MCX
SYSTEM/ODT Program	– Standard	14	ODT
SYSTEM/ODT Program	– Experimental	15	ODX
SYSTEM/COPY Program	– –	16	CPY
Usercode/Password File	– –	17	US
SYSTEM/PANDA Program	– –	18	PAN

SECTION 6

COLDSTART/DISK

The term "coldstart" refers to the process of loading the basic system software and firmware from a disk or a library tape to a disk that is to become the system disk. This section describes COLDSTART/DISK, a utility program that is used when the input software and firmware are on either a disk pack or a head-per-track disk. Section 7 describes COLDSTART/TAPE, a similar program that is used when the input software and firmware are on a library tape.

COLDSTART/DISK PROGRAM OVERVIEW

COLDSTART/DISK is a stand-alone program that loads the basic B 1000 system software and firmware from an existing disk to another disk that is to become the system disk. The program is furnished on a cassette tape or diskette and loaded through the console cassette or console diskette drive.

The COLDSTART/DISK program performs the following functions:

1. Displays prompts requesting initial information.
2. Builds and initializes the disk directory and available tables on the new system disk.
3. Loads the system software and firmware files.
4. Builds the name table and makes the appropriate system software and firmware entries.
5. Builds the coldstart variables.
6. Builds the SYSTEM/ODT-QUEUE file and the hardware maintenance log (ELOG).
7. If requested, loads additional files and compares data.
8. Displays error messages as required during program execution.
9. Displays a CLEAR/START request following program execution.

Input and Output Disks

The input disk, which contains the system software and firmware and, possibly, additional files, may be a head-per-track disk unit (DKA) or any single disk pack (DP<letter or number>). The program does not accept input from multiple packs.

The output disk, which is to become the system disk, may be either a head-per-track disk unit (DKA) or DPA, the disk pack on drive 0 of a disk pack subsystem.

If the input disk is DKA, the output disk must be DPA. If the input disk is DPA, the output disk must be DKA. If the input disk is any pack except DPA, the output disk must be DKA if there is one on the system or DPA if there is no DKA.

The COLDSTART/DISK program clears and initializes the existing directory of the target disk. Therefore, all files that were in that directory are lost.

System Software Files

The COLDSTART/DISK program must find the following standard system software code files on the input disk:

MCPII
MCPII/MICRO-MCP
GISMO2 or GISMO3
SDL2/INTERP3M
SDL2INTRIN/AGGREGATE
SYSTEM/ODT
SYSTEM/INIT
SYSTEM/COPY
SYSTEM/CONTROLLER
SYSTEM/PANDA
SYSTEM/LOAD-CAS *

* Needed if the system has no magnetic tape capability.

If any of these names cannot be located, the program requests that alternate code file names representing acceptable substitute files be entered from the ODT.

During program execution, the system code file headers are modified to mark the files as protected. This is done to prevent certain MCPII commands (for example, REMOVE) from affecting these files.

Program Options

Two program options may be invoked in response to prompts that are provided by the program.

The first option is called COMPLETE COPY. When invoked, the COMPLETE COPY option causes any additional files on the input disk to be copied to the new system disk after the system software and firmware files have been successfully copied. Thus, these additional files can be copied during the coldstart process rather than after the subsequent CLEAR/START. This is an important capability if the additional files are not available on other media.

The following files are not copied:

SYSTEM/ELOG
SYSTEM/LOG
SYSTEM/DUMPFIL
SYSTEM/ODT-QUEUE

The COMPLETE COPY option must not be used if there are more files on the input disk than can be contained on the output disk.

The second program option is called DATA COMPARE. When invoked, the DATA COMPARE option causes the input and output data to be compared and provides the following advisory message for each file in which a copying error occurred:

COMPARISON ERROR <filename>

OPERATING INSTRUCTIONS

The coldstart process is done in two steps. First, the COLDSTART/DISK program is loaded to system memory from the console cassette tape or console diskette. Then, the program loads the system software and firmware from the input disk to the output disk. At the start of the second step, the program displays prompts on the ODT to request information identifying the disks and specifying options. During program execution, error and advisory messages are also displayed on the ODT.

Before beginning the actual program-loading steps, the disk media are mounted as follows (HPT = head-per-track = DKA):

1. Pack to pack: The pack on drive 0 (DPA) is the output disk pack; the input disk pack can be mounted on any drive except DPA.
2. Pack to HPT: The HPT is the output disk (DKA); the input disk pack may be mounted on any drive (DP <letter or number>).
3. HPT to pack: The pack on drive 0 (DPA) is the output disk pack; the input disk is the HPT (DKA).

NOTE

The new system disk will function only on a disk unit that is addressed by the same port, channel, and unit numbers that addressed the unit where it was coldstarted.

Three program-loading sequences are provided. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Program Loading -- B 1990 System with a Console Cassette Drive

To load the COLDSTART/DISK program to a B 1990 system with a console cassette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor system. Both RUN A and RUN B go out in a dual-processor system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the COLDSTART/DISK cassette into the cassette reader and ensure that the tape rewinds to BOT.
3. If the output disk is DPA but drive 0 is not operating, then a TEXT DD entry must be made. The following example makes drive 5 addressable as DPA:

TEXT DD 51234067 [XMT]

4. Enter MTR GO [XMT]

Program Loading -- B 1990 System with a Console Diskette Drive

To load the COLDSTART/DISK program to a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the COLDDISK program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter MTR "COLDDISK" GO [XMT]

Program Loading -- All Other B 1000 Systems

To load the COLDSTART/DISK program on other B 1000 systems:

1. Halt the system by entering the HALT system command if the MCP is running. If the MCP is not running, halt the system by using the INTRPT push button or the console INTERRUPT switch. If the INTERRUPT switch is used, return it to its initial position following the halt. If the system continues to run, press the HALT push button. If the system still continues to run, press the HALT and CLEAR push buttons simultaneously. For dual-processor systems be sure both processors are halted.
2. Place the COLDSTART/DISK cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button.
4. After the bootstrap loader is read from the cassette tape, the processor halts. The L register must contain @AAAAAA@ at this time; if not, the cassette must be rewound and the procedure restarted from step 3.
5. Press the MODE push button to return to the NORMAL mode, then press the START push button. Reading of the cassette resumes. Loading is complete when the STATE light goes on.

NOTES

If the tape does not automatically rewind when it is inserted into the console cassette drive, press REWIND. If the tape is wound completely onto the right spool, remove the cassette and manually rewind it until the clear leader is no longer at the read gap.

If the system halts with @000004@ or @0D0053@ in the L register or with the PERP register equal to 1, a cassette error during program loading is indicated. Restart the procedure from step 1.

Program Execution

COLDSTART/DISK program execution now begins, and the following prompts appear in turn on the ODT display:

```
COLDSTART/DISK - <mark-level>.<patch-level> <compile-date-time>  
-- PLEASE PUSH SPCFY IF YOU SEE AN ETX ON THIS SCREEN--  
ENTER OUTPUT DRIVE - <DPA OR DKA>
```

If there is an ETX character on the screen, press the SPCFY key once. This is required because of the variety of ODT device types and firmware settings available on the B 1000 family of computer systems.

A valid response to ENTER OUTPUT DRIVE causes the next message to be displayed.

```
ENTER INPUT DRIVE - <DP? OR DKA>
```

A valid response causes the next message to be displayed.

SECTION 7

COLDSTART/TAPE

The term "coldstart" refers to the process of loading the basic system software and firmware from a user disk or a library tape to a disk that is to become the system disk. This section describes COLDSTART/TAPE, a utility program that is used when the input software and firmware are on a magnetic tape. Section 6 describes COLDSTART/DISK, a similar program that is used when the input software and firmware are on disk.

PROGRAM OVERVIEW

COLDSTART/TAPE is a stand-alone program that loads the basic B 1000 system software and firmware from a library tape labeled SYSTEM to a head-per-track disk unit or a disk pack, thus creating a system (S) disk. The program is furnished on a cassette tape or diskette and loaded through the console cassette or console diskette drive. The library tape may be mounted on any available tape drive; the program locates the tape automatically.

The COLDSTART/TAPE program performs the following functions:

1. Builds and initializes the disk directory and available tables on the new system disk.
2. Loads the system software and firmware files.
3. Builds the name table and makes the appropriate system software and firmware entries.
4. Builds the coldstart variables.
5. Builds the SYSTEM/ODT-QUEUE file.
6. Builds the hardware maintenance log (ELOG).
7. Uses the L register to signal errors and halts and the T register to define them.

Input and Output Media

The input medium is a single reel library tape labeled SYSTEM that contains the system software and firmware files. This tape may be mounted on any available drive; the COLDSTART/TAPE program locates it automatically.

The output medium is the head-per-track disk unit (DKA) if there is one on the system; otherwise, it is the pack on drive 0 (DPA) of the disk pack subsystem. In either case, the target disk must have been initialized as a system disk. (Refer to section 20, PACK/INIT, and/or section 33, SYSTEM/DISK-INIT in this manual for information on disk initialization.)

The system disk created by the COLDSTART/TAPE program is a single system pack configuration that contains no system logfiles except the ELOG. Once the system is running under MCP II control, the number of system drives can be increased with the SD system command and the LOG and ODTL MCP options can be set with the SL system command.

CAUTION

The COLDSTART/TAPE program clears and initializes the existing directory of the target disk. Therefore, all files in that directory are lost following the coldstart.

System Software Files

The COLDSTART/TAPE program must find the following standard system software code files on the input tape:

MCPII
MCPII/MICRO-MCP
GISMO2 or GISMO3
SDL2/INTERP3M
SDL2INTRIN/AGGREGATE
SYSTEM/ODT
SYSTEM/INIT
SYSTEM/COPY
SYSTEM/CONTROLLER
SYSTEM/PANDA

NOTE

If the system tape is larger than a single reel, it is imperative that all the required system software code files reside on the first reel. The COLDSTART/TAPE program only accepts input from a single reel.

Program Options

No options are included in the COLDSTART/TAPE program.

OPERATING INSTRUCTIONS

Coldstart is a two-step process. First, the COLDSTART/TAPE program is loaded to system memory from the console cassette tape or console diskette. Then, the program loads the system software and firmware from the input tape to the output disk. During program execution, the L register specifies the occurrence of errors and halts, and the specific condition causing the problem is indicated by the contents of the T register.

Three program-loading sequences are provided. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Program Loading -- B 1990 System with a Console Cassette Drive

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the COLDSTART/TAPE cassette into the cassette reader and ensure that the tape rewinds to BOT.
3. If the output disk is DPA, but drive 0 is not operating, then a TEXT DD entry must be made. The following example makes drive 5 addressable as DPA:

TEXT DD 51234067 [XMT]

4. Enter MTR GO [XMT]

Program Loading -- B 1990 System with a Console Diskette Drive

To load the COLDSTART/TAPE program to a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the COLDTAPE program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter MTR "COLDTAPE" GO [XMT]

Program Loading -- All Other B 1000 Systems

1. Halt the system by entering the HALT system command if the MCP is running. If the MCP is not running, halt the system by using the INTRPT push button or the console INTERRUPT switch. If the INTERRUPT switch is used, return it to its initial position following the halt. If the system continues to run, press the HALT push button. If the system still continues to run, press the HALT and CLEAR push buttons simultaneously. For dual-processor systems be sure both processors are halted.
2. Place the COLDSTART/TAPE cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button. This causes the bootstrap loader to be read from the cassette into system memory. The system halts with @AAAAAA@ in the L register. If this does not occur, rewind the tape and try again from step 3. (Also, see NOTE 2, following.)
4. Press MODE to return to NORMAL mode, then press START. Cassette reading resumes. Loading is complete when the STATE light goes on.
5. Go to the next subsection (Program Execution).

NOTES

If the tape does not automatically rewind when it is loaded into the cassette, press REWIND. (B 1990: transmit keyword REWIND.) If the tape is wound completely onto the right spindle, remove the cassette and manually rewind it until the clear leader is no longer at the read gap.

A system halt with @000004@ or @0D0053@ in the L register or with a 1 in the PERP register, signifies a cassette error during loading of the program. Restart the procedure from step 1.

Program Execution

After the COLDSTART/TAPE program is loaded from the cassette, program execution begins and continues until it is complete or until a halt occurs. The program finds and loads the nine standard software files (listed previously), which may be in any sequence on the SYSTEM tape. The program also performs all the functions listed earlier. Successful completion is signalled by a halt with the following register values displayed:

L = @000011@
T = @AAAAAA@

The SYSTEM tape may also contain other files. These may be loaded following a CLEAR/START operation after the COLDSTART/TAPE operation successfully completes. The following control message is used:

ADD & COMPARE =/= FROM SYSTEM (KIND=TAPE)

HALTS

A halt or the completion of execution of the COLDSTART/TAPE program is signalled by @000011@ in the L register. The specific condition is denoted by the contents of the T register, as specified in the following paragraphs.

NOTE

On a B 1990 system, type GO and push the TRANSMIT key whenever the following instructions signal to press the START button.

@AAAAAA@

Normal end-of-job. CLEAR/START required.

@0C0001@

Disk I/O error. Press START once to obtain a display of the result descriptor value in the T register. (B 1990: transmit RUN or GO.)

@0C0002@

Tape I/O error. Press START once to obtain a display of the result descriptor value in the T register. (B 1990: transmit RUN or GO.)

@0C0003@

Unexpected data or result descriptor from tape I/O.

@0C0004@

No magnetic tape control found on system.

@0C0005@

No disk (pack or head-per-track) control found on system.

@0C0006@

Disk not initialized in the proper format.

@0C0007@

Attempted to coldstart a disk unit that has not been initialized as a system (S) disk.

@0C0008@

Could not locate tape labeled SYSTEM. Make tape ready and press START. (B 1990: transmit RUN or GO.)

@0C0009@

One or more of the required files is missing from the SYSTEM tape. Pressing START (B 1990: transmitting RUN or GO) causes the T register display to change. The rightmost byte now contains a number that stands for one of the files in the following list. Pressing the START push button repeatedly produces additional numbers if more than one file is missing. When all the missing files have been indicated, the T register display returns to @0C0009@.

SECTION 13

DISK/DUMP

The DISK/DUMP program is a stand-alone utility program that copies data sector-by-sector from one disk to another. The dump is a sequential copy of the entire input disk. System and user disk packs as well as user disk cartridges are allowed to be copied, but the output disk is required to be of the same or larger capacity as the input disk. System disk cartridges are not allowed.

The DISK/DUMP program first checks the pack labels for validity and then performs a sector-by-sector copy of the data. Neither disk may have any removed (XDed) sectors. The user may instead wish to use one of the other full disk copy programs such as SYSTEM/DISK-DUMP or STANDALONE/DISK-DUMP, which perform a file-by-file copy. These programs produce a "squashed" output pack and can recover more of a corrupted pack. The SYSTEM/DISK-DUMP program can also perform a sector-by-sector full disk copy under MCP control allowing other programs to execute in a multi-programming environment.

All program operation instructions are entered from the Operator Display Terminal (ODT).

PROGRAM LOADING INSTRUCTIONS

Three program-loading sequences are provided. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Program Loading -- B 1990 System with a Console Cassette Drive

To load the program on a B 1990 system with a console cassette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented in either of the following forms:

Transmit <keyword-1> <keyword-2> ...

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the cassette into the cassette reader and ensure that the tape rewinds to BOT.
3. Enter MTR GO [XMT]

The cassette automatically rewinds on B 1990 systems.

Program Loading -- B 1990 System with a Console Diskette Drive

To load the DISK/DUMP program to a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the DISKDUMP program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter MTR "DISKDUMP" GO [XMT]

Program Loading -- Other B 1000 Systems

To load the program on all other B 1000 systems:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor system. Both RUN A and RUN B go out in a dual-processor system.
2. Place the cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button.
4. After the bootstrap loader is read from the cassette tape, the processor halts. The L register must contain @AAAAAA@ at this time; if not, the cassette must be rewound and the procedure restarted from step 3, preceding.
5. Press the MODE push button to return to the RUN mode, then press the START push button. Reading of the cassette resumes. When the program is completely loaded, program operation begins.
6. Rewind the cassette tape by pressing REWIND. (Rewind is automatic on B 1900 systems.)

NOTES

If the tape does not automatically rewind when it is loaded into the cassette drive, press the REWIND push button. If the tape is wound completely onto the right spindle, remove the cassette and manually rewind it until the clear leader is no longer at the read gap.

A system halt with @000004@ or @0D0053@ in the L register or with a 1 in the PERP register, signifies a cassette error during program loading. Restart the procedure from step 1.

OPERATING INSTRUCTIONS

After the program is loaded, the following messages are displayed on the Operator Display Terminal (ODT):

```
DISK DUMP - <mark-and-patch-level> <compile-date/time>  
ENTER INPUT DRIVE - <DC? or DP?>
```

After a valid response, the following messages are displayed in sequence:

```
ENTER OUTPUT DRIVE - <DC? or DP?>  
IS VERIFICATION REQUIRED? - <YES or NO>
```

After valid responses, the dump begins. Unrecoverable read or write errors will result in the termination of the dump. After the copy phase is complete and if verification has been requested, a compare phase will start with the message:

```
VERIFICATION BEGINS
```

After successful completion, the following message is displayed:

```
DUMP COMPLETE <input drive> <serial number>  
TO <output drive> <serial number>  
ENTER INPUT DRIVE - <DC? or DP?>
```

At this point additional disks may be copied without reloading the program from the cassette or, if a blank is entered, the DISK/DUMP program terminates and the following message is displayed:

```
END DISK/DUMP
```

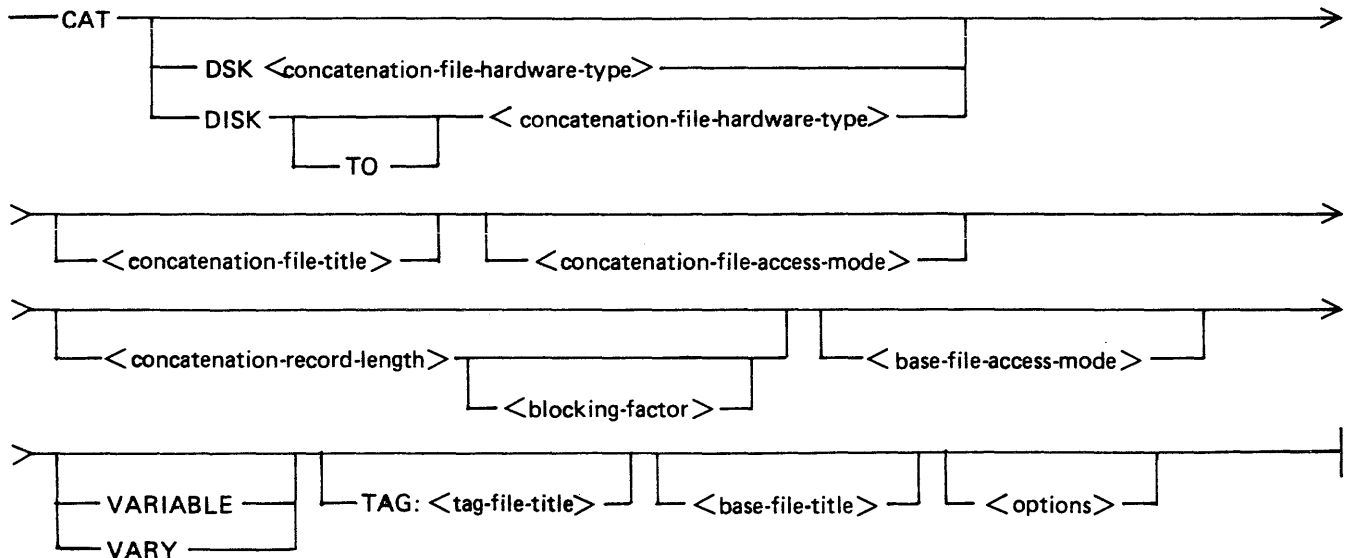

COMMANDS

The DMPALL program commands are CAT (concatenation), COPY (or PERFORM), LIST, and PD (print directory). These commands and their functions are described in detail in the following pages. The various specifications referred to in the command semantics are all grouped under Specifications, following the PD command.

CAT (Concatenation) Command

The CAT command concatenates files. Records from any card, magnetic tape, paper tape, or disk file can be copied to the end of a specified disk file, called the base file. The base file is opened, and the specified concatenation file records are added to the base file; when the base file is closed, the end-of-file (EOF) pointer is updated to include the new records. If the concatenated file size exceeds the size limit of the base file, and if both the concatenation and the base files are disk files, then the DMPALL program copies the base file, enlarging it, and then adds the concatenation file. Likewise, if the base file is crunched, the DMPALL program copies the base file before performing the concatenation. If both files are not disk files, the operator must ensure that the concatenated file does not exceed the file size limit of the base file. The CAT command is not allowed with ISAM data files.

Syntax:



Semantics:

base-file-title

This specifies the name of the file (base file) to append the <concatenation-file-title> file. Refer to <file-title> Specification for the syntax and semantics of <base-file-title>.

blocking-factor

This field specifies the number of records per block for the file and must be numeric. If <blocking-factor> is not specified, it defaults to 1. For disk and labeled B 1000/B 6000/B 7000 tape files, when both <concatenation-record-length> and <blocking> are not specified, the value of <blocking-factor> defaults to the value contained in the label record.

concatenation-file-access-mode

This field specifies the recording mode of the concatenation file. Refer to <access-mode> Specification for the syntax and semantics.

concatenation-file-hardware-type

This field specifies the hardware type of the concatenation file. Refer to <hardware-type> Specification for the syntax and semantics.

concatenation-record-length

This field specifies the size of each record, in bytes, and must be numeric. If <concatenation-record-length> is not specified, it defaults to 80 bytes, except for disk and labeled B 1000/B 6000/B 7000 tape files, where <concatenation-record-length> defaults to the record size of the file in the label record.

concatenation-file-title

This field specifies the name of file i1 which to append to the end of the <base-file-title> file. Refer to <file-title> Specification for the syntax and semantics of <concatenation-file-title>.

DISK

The DISK keyword specifies that the hardware type of the input file is a disk file.

DSK

The DSK key symbol specifies that the hardware type of the input input is a disk file. If DSK is specified, then there can be no blank character between the DSK key symbol and the <concatenation-file -hardware-type> specification.

options

Refer to <options> Specification for the syntax and semantics.

TAG:

The TAG: key symbol specifies that the file to be listed is the tag file of <tag-file-title>. This applies to the B 1000 ANSI 68 COBOL RPGII index (\$ TAG) files. The tag file must be created with the B 1000 ANSI 68 COBOL or RPGII naming conventions. The tag file specified is read sequentially, and the key field of each tag record is used to access the associated indexed file record.

tag-file-title

Refer to <file-title> Specification for the syntax and semantics.

TO

The TO keyword is optional and specifies that the <concatenation-file -hardware-type> specification follows.

VARIABLE

The VARIABLE keyword specifies that the input file is a variable-length record file.

VARY

The VARY keyword specifies that the input file is a variable-length record file.

Pragmatics:

When concatenating files, the base file must be a disk file. The concatenation file can have any input hardware device; LIST (printer) is not a valid input device.

The <concatenation-record-length> and <blocking-factor> options are specified in the same manner as the <record-size> and <blocking> options in the LIST command. If the record length of the concatenation file is larger than the record length of the base file, then the concatenation file records are truncated when they are added to the base file. The <base-file-title> file must name an existing disk file.

A record size and blocking factor cannot be specified for the base file. These values are taken from the disk file header of the base file.

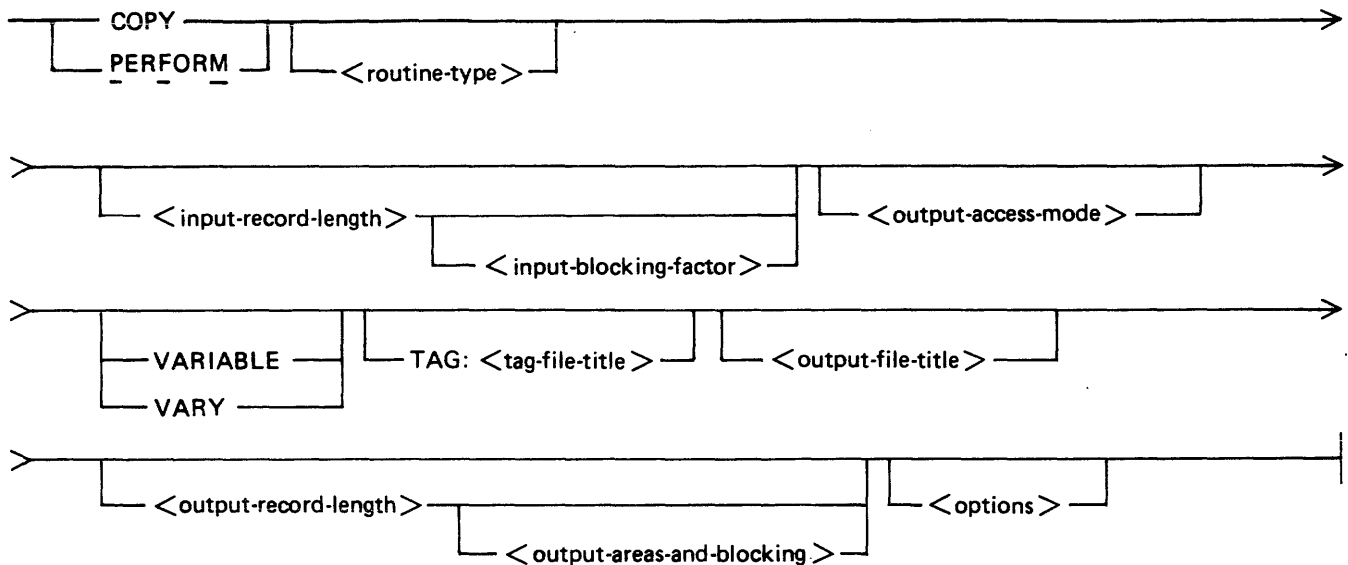
Examples:

```
CAT DSKDSK HISTADDS 180 1 HISTORY
CAT DISK TO TAPE APPENDIX 90 20 MANUAL SKIP 4
```

COPY (or PERFORM) Command

Records can be copied from any card, magnetic tape, paper tape, or disk file to any output file desired. Various file attributes, including record sizes, blocking factors, and file-identifiers can be changed during the copy process. It is also possible to select certain records from the input file to be copied, based on specified conditions. The COPY command is not allowed with ISAM data files.

Syntax:



Semantics:

"NONE"

The "NONE" keyword specifies that the file to list is an unlabeled tape file. The double quotation mark (") characters are required.

input-access-mode

This field specifies the recording mode of the input file. Refer to <access-mode> Specification for the syntax and semantics.

input-blocking-factor

This field specifies the number of records per block for the file and must be numeric. If <input-blocking-factor> is not specified, it defaults to 1. For disk and labeled B 1000/B 6000/B 7000 tape files, when both <input-record-length> and <input-blocking-factor> are not specified, the value of <blocking-factor> defaults to the value contained in the label record.

input-file-title

This field specifies the name of the input file to copy. Refer to <file-title> Specification for the syntax and semantics.

input-record-length

This field specifies the size of each record, in bytes, and must be numeric. If <input-record-length> is not specified, it defaults to 80 bytes, except for disk and labeled B 1000/B 6000/B 7000 tape files, where <input-record-length> defaults to the record size of the input file in the label record.

options

This field specifies the DMPALL options to skip or include records, to exclude, search, or select records based on specified conditions, or specify that the input file is a variable-length record file. Refer to the <options> Specification for the syntax and semantics.

output-access-mode

This field specifies the recording mode of the output file. Refer to <access-mode> Specification for the syntax and semantics.

output-areas-and-blocking

This field specifies the blocking factor, blocks per area, and number of areas for the output file. Refer <output-areas-and-blocking> Specification for the syntax and semantics.

output-file-title

This field specifies the name of the output file. Refer to <file-title> Specification for the syntax and semantics.

output-record-length

This field specifies the length in bytes for the output file. If omitted, the record length defaults to 80 bytes, unless both the input and output files are either disk files or labeled B 1000/B 6000/B 7000 tape files. In this case, <output-record-length> is assumed to be the same as the <input-record-length>.

<output-file-title> FILE NOT ON DISK

The output file was not on disk, please load and re-enter.

<file-title> IS TOO LONG FOR FILE-NAME

The file title specified was too long, please re-enter.

PACK: <input-disk-name> NOT FOUND

The disk pack specified is not on-line, put on-line and re-enter.

DISK DIRECTORY READ PROBLEMS

An error was encountered while reading the disk directory. The SYSTEM/PANDA utility may be used to check the integrity of the disk pack.

MISSING HOSTNAME

The name of the host system was not specified in the HOST option.

<hostname> : TOO LONG FOR HOST_NAME

The value entered for <hostname> was greater than 17 characters. Please correct and re-enter.

EQUAL SIGN NOT ALLOWED IN FILE-ID FOR HOST FILES

The LIST command does not allow listing of a family of files from a remote host system. Please list one at a time.

HOSTNAME NOT ALLOWED ON OUT-FILE FOR "CAT" OPTION

The HOST option is not allowed for output file when the CAT command is specified.

PLEASE USE SYSTEM/COPY TO TRANSFER NON-DATA FILES ON BNA HOST

The DMPALL program does not transfer non-data files to a remote BNA system. Use the SYSTEM/COPY program with the HOSTNAME option.

NUMBER OF AREAS MUST BE 1 FOR CODE, INTERPRETER OR INTRINSIC FILES

The COPY command specified more than one area for the output file when the input file was a code, interpreter, or intrinsic file. This is a restriction on B 1000 operation.

CODE, INTERPRETER OR INTRINSIC FILES MUST HAVE A RECORD SIZE OF 180 BYTES

The COPY command specified a different value than 180 for the record length of the output file when the input file was a code, interpreter, or intrinsic file. This is a B 1000 operating system restriction.

OUTPUT BLOCKS PER AREA TOO SMALL

The value specified for <blocks-per-area> was too small; please increase and re-enter.

SKIP, INCLUDE AND OTHER OPTIONS NOT ALLOWED WITH CODE, INTERPRETER, OR INTRINSIC FILES

<options> cannot be specified for code, interpreter, or intrinsic files. This is a B 1000 operating system restriction.

INCOMPLETE FILE TITLE

The file title entered was not complete; please re-enter.

HOSTNAME NOT ALLOWED WITH TAG OR PUNCH FILENAMES

The HOST option does not allow the TAG option or output files of <hardware-type> CARD.

INVALID FILE TITLE

The file title entered was not correct; please re-enter.

INCONSISTENT FILE TITLES

The output file name syntax must be the same as the input file name syntax.

<input-file-title> IS AN ISAM DATA FILE AND CANNOT BE USED WITH COPY, PERFORM OR CAT.

DMPALL does not copy ISAM data files. Use the ISAM utility program SYSTEM/IS-MAINT to copy ISAM data files.

SECTION 20

PACK/INIT

The PACK/INIT program is a stand-alone utility program that labels, initializes, verifies, or reconfigures disk packs (but not cartridges) for use on B 1000 systems. The PACK/INIT program also relocates bad sectors on the B 9494-5, B 9494-10, and B 9484-12 disks without the loss of data. The resulting pack types are System (S) or User (U). The PACK/INIT program is a stand-alone program and requires exclusive use of the system. This program is very similar to the SYSTEM/DISK-INIT system utility program, which is an on-line, normal-state program that does not require the exclusive use of the entire system. The SYSTEM/DISK-INIT program also offers more extensive debugging capabilities.

All disks must be initialized before they can be used with the B 1000 System Software. Fixed disks such as the B 9499-6, B 9494-5, and B 9494-10 are initialized during the manufacturing process. A B 9499-6 disk should not need more than a cylinder zero initialization on site. The B 9494-5 and B 9494-10 disk need only an "FC" Factory Convert. Whenever a factory initialized disk must be initialized on site, the "CI" Cylinder Initialize or "RI" Re-initialize actions should be used, if possible, to preserve the factory determined relocation of bad sectors.

During initialization, the PACK/INIT program formats each sector by writing addresses, sync bits, data patterns, and error protection codes, and then reads the addresses and data to check for errors.

If five or fewer sectors in any cylinder are bad, they are relocated to one of the 5 spare sectors in that cylinder. If more than five sectors in a cylinder are bad and the REMOVE option is set, the first five are relocated to the spare sectors, and the remainder are removed (by the equivalent of XD) from the Master Available Table on the disk. The REMOVE option is set by default for B 9499-6, B 9494-5, and B 9494-10 disks and for the RC, RI and CI actions.

If more than five of the first 64 sectors in cylinder zero are defective, that disk cannot be used with the B 1000 System Software.

The program individually processes each cylinder of a disk to verify its integrity. The actual number of read and write operations performed on each cylinder is based on the characteristics of the disk device being processed. Cylinder zero, the outermost cylinder of the disk, is initialized first. The Master Available Table and the Relocate Table are constructed in cylinder zero to store information on relocated and removed sectors. A printed analysis of these tables can be obtained by executing the normal-state utility program INITIALIZE/ANALYZER. Label information and the remainder of the MCP structures are built into cylinder zero at the end of the initialization process.

Disk device characteristics and initialization characteristics are documented in appendix A of this volume.

PROGRAM LOADING INSTRUCTIONS

Three program-loading sequences are provided. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Program Loading -- B 1990 System with a Console Cassette Drive

To load the program on a B 1990 system with a console cassette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented in either of the following forms:

Transmit <keyword-1> <keyword-2> ...

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the cassette into the cassette reader and ensure that the tape rewinds to BOT.
3. Enter MTR GO [XMT]

The cassette automatically rewinds on B 1990 systems.

Program Loading -- B 1990 System with a Console Diskette Drive

To load the PACK/INIT program to a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the PACKINIT program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter MTR "PACKINIT" GO [XMT]

Program Loading -- All Other B 1000 Systems

To load the program on all other B 1000 systems:

1. Halt the system by entering the HALT system command if the MCP is running. If the MCP is not running, halt the system by using the INTRPT push button or the console INTERRUPT switch. If the INTERRUPT switch is used, return it to its initial position following the halt. If the system continues to run, press the HALT push button. If the system still continues to run, press the HALT and CLEAR push buttons simultaneously. For dual-processor systems be sure both processors are halted.
2. Place the cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button.
4. After the bootstrap loader is read from the cassette tape, the processor halts. The L register must contain @AAAAAA@ at this time; if not, the cassette must be rewound and the procedure re-started from step 3.
5. Press the MODE push button to enter NORMAL mode, then push the START push button. Reading of the cassette resumes. When the program is completely loaded, program operation begins.
6. Rewind the cassette tape by pressing the REWIND button. (Rewind is automatic on B 1900 systems.)

NOTES

If the tape does not automatically rewind when it is inserted into the console cassette drive, press the REWIND button. If the tape is wound completely onto the right spool, remove the cassette and manually rewind it until the clear leader is no longer at the read gap.

If the system halts with @000004@ or @0D0053@ in the L register or the PERP register equal to 1, a cassette error during program loading is indicated. Restart the procedure from step 1.

PROGRAM OPERATING INSTRUCTIONS

After the program is loaded from the cassette, the following messages are displayed on the Operator Display Terminal (ODT):

```
DISK PACK INITIALIZER <mark-and-patch-level> (<compile-date/time>) --PLEASE PUSH  
SPCFY IF YOU SEE AN ETX ON THIS SCREEN--
```

If an ETX character appears on the screen, press the SPCFY key once. This is required because of the variety of ODT device types and firmware settings available on B 1000 systems.

If the system contains a card reader control, the following message is also displayed:

```
IS CARD INPUT DESIRED? <YES OR NO>
```

Initialization specifications are then entered, either through the ODT or through a card reader. Several disks may be processed consecutively during one program execution. When input specifications are entered through a card reader, a set of input specifications is entered for each disk to be processed. The program continues to read the specifications until it reaches the end of file (a blank card) when card input is used.

ODT Operation

Under ODT operation, the program prompts the operator for all disk initialization specifications.

At the beginning of the program, and after processing each disk, the program begins the prompt sequence again with the following message:

ENTER UNIT MNEMONIC <DP? OR BLANK FOR EOJ>

A blank input response terminates the program with the message:

END OF INITIALIZER

Card Reader Operation

When the response to the IS CARD INPUT DESIRED prompt is YES, the program accepts the disk initialization specifications from cards. The initialization specifications are not contained in a data deck; therefore, neither a ?DATA nor a ?END card is used.

The user interface information is in free-form format (up to 96 columns) and the specifications are separated by one or more spaces.

The specification card format follows the same order as the prompt sequence. The syntax is described below. The semantics of the commands are described in the User Interface Information subsection.

Syntax (Initialization):

— < drive > I < sn > < id > < type > _____
└───┬───┘ └───┬───┘
< date > < name >

Syntax (Verification):

— < drive > V _____

Syntax (Reconfiguration):

— < drive > R < type > _____

Syntax (Reinitialization):

— < drive > RI < sn > < id > < type > _____
└───┬───┘ └───┬───┘
< date > < name >

Terminal Requirements

The output of the RD program is especially designed for use on the MT 983/MT 985 and TD 830 terminals with a 1920-character screen (24 lines by 80 characters). The RD program utilizes the cursor positioning, line insert, line delete, clear-to-end-of-page, and clear-to-end-of-line capabilities of these terminals.

The TD 820 terminal can also be used with the RD program. However, that terminal does not have all the features of the other terminals, so all the RD program features are not available on the TD 820 terminals. Limitations occur mostly in the job information commands such as JOBS and MX and are noted in the command descriptions.

In batch mode, the RD program requires only a line printer device for output.

Software Requirements

The following software elements are required:

- Operating System (MCP)
- Network Controller
- Supervisory Message Control System (SMCS)
- SYSTEM/MAKEUSER Program

INSTALLATION PROCEDURES

The following steps are performed before the RD program is executed. (Step 2 is required; the others are optional.)

1. Create the (SYSTEM)/USERCODE file.
2. (Required) Compile the network controller, unless the RD program is to be used only in a batch environment.
3. Initialize the MCP Program Table.
4. Create the SMCS JOBS file when running with the SMCS (optional).
5. Assign the RD program priorities (optional).
6. Set the RD program switches (optional).

Creating the (SYSTEM)/USERCODE File

The file security system implemented on the B 1000 system requires that a file labeled (SYSTEM)/USERCODE be in the system disk directory. The (SYSTEM)/USERCODE file contains a list of all valid usercode/password combinations and can be created or updated with the SYSTEM/MAKEUSER program.

Compiling the Network Controller

Before executing the RD program, the user must generate the desired network controller program for the RD program. The network controller program is compiled using the NDL compiler. Refer to the *B 1000 Systems Network Definition Language (NDL) Language Manual* for more information on generating the network controller program.

Initializing the MCP Name Table

In order for the network controller program to be automatically executed by the MCP, the name of the network controller program must be given to the MCP. This is done by placing the name of the network controller program into the C slot of the MCP Name Table. To accomplish this, enter the following MCP command:

```
CM C <network controller program name>
```

The MCP responds with the following message:

```
NETWORK CONTROLLER CHANGED FROM "" TO  
"<network controller program name>"
```

To verify that the C slot in the MCP Name Table contains the correct network controller program name, enter the following MCP command:

```
WW C
```

The MCP responds with the following message:

```
C = "<network controller program name>"
```

Creating the SMCS Jobs File

If the RD program is to be executed in conjunction with the SMCS program, placing the RD program in the SMCS JOBS file causes the SMCS program to automatically execute the RD program (1) when the SMCS program goes to beginning of job, or (2) when an SMCS user enters the PASS RD <command>, or (3) when the user signs on to the RD program while it is not in the mix.

The SMCS JOBS file is an optional file containing information about other programs to be run in conjunction with the SMCS program. If the SMCS JOBS file exists, the SMCS program checks it at BOJ as well as when a program SIGN ON or program PASS operation occurs. For a detailed explanation of the SMCS JOBS file and its creation, refer to the *B 1000 Systems Supervisory Message Control System (SMCS) Reference Manual*.

The name of the RD program in the SMCS JOBS file must be RD in order for the MX, WY, and JOBS commands to be automatically forwarded to the RD program by the SMCS program. In addition, when the RD program builds a continuation pass string, the name of the RD program in the SMCS JOBS file is assumed to be RD.

The following is an example entry in the SMCS JOBS file for the RD program:

```
$RD          AUTO-START EXCEPT LOG-ON NO-EOF;  
EXECUTE RD;  
FILE RMT PTL = 2;  
PRIORITY 13;  
CHARGE = 99999;  
SW = @040A00010F@;
```


Execution Of The RD Program (With SMCS)

When the RD program is executed in conjunction with the SMCS program, the RD program can be automatically executed by the SMCS through the SMCS job-spawning facility. This can occur when the first terminal user signs on or passes to the RD program from a local terminal or when the AUTO-START option is specified in the SMCS JOBS file. In either case, the RD program does not have to be executed through the system ODT.

The remote file for RD program is labeled RMT and uses PROTOCOL TYPE 2 as defined by the SMCS program. PROTOCOL TYPE 2 provides the RD program with the usercode, password, usercode index, and station signal character for a user at a terminal when the user passes commands to the RD program by way of the SMCS program.

Any PASS input command through the SMCS program to the RD program causes the RD program to apply the usercode/password to file identifiers unless the asterisk (*) character convention is used to override the usercode. Therefore, if a user is logged on to the SMCS program, a PASS RD of any directory-search command, such as PD, KA, BF, or DF for a single-name file that is not under the usercode of the user must be preceded with an asterisk (*) character. For example, entering PASS RD PD MCPII causes the RD program to search the disk directory for a file labeled (usercode)/MCPII, but entering PASS RD PD *MCPII causes the RD program to search the system disk directory for MCPII. If the usercode has a default family name, the RD program searches that disk for the file identifier.

Termination Of The RD Program

When the RD program is running, the BYE or EOJ command can be used to bring the RD program to an orderly termination.

The BYE command sends the RD program to end of job if there are no other users signed on to the RD program and if program switch 9 is equal to 0.

The EOJ command sends the RD program to end of job if the EOJ command is entered from one of the following sources:

1. The only station signed on to the RD program.
2. A station that uses the PASS RD EOJ command by way of the SMCS program, if there are no other stations signed on to the RD program.
3. The system ODT, by means of the MCP ACCEPT mechanism; for example, by entering <RD mix number>AX EOJ

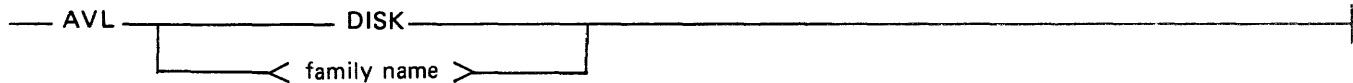
TERMINAL COMMANDS

The RD program commands that are entered from remote terminals are described in this section. Syntax diagrams are included for all commands except those that consist of a single term only.

AVL (Available Disk)

The AVL command causes the RD program to display the available disk areas on the specified disk. If a family name of DISK is specified, the system disk is searched for available disk areas.

Syntax:



Example input:

```
AVL DISK
```

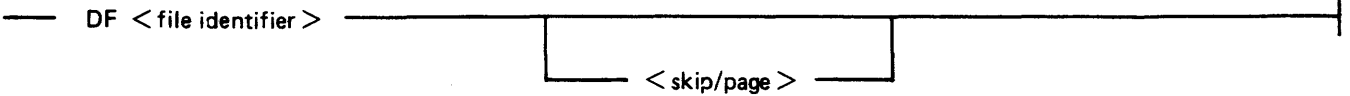
Example output:

```
AVAILABLE DISK SUMMARY:
NUMBER OF CHUNKS      44
LARGEST CHUNK         89842
TOTAL SPACE           127138
TEMPORARY AREAS SUMMARY:
NUMBER OF CHUNKS      76
LARGEST CHUNK         3060
```

DF (Date of File)

The DF command causes the RD program to list the creation date and the compile date of a file or files. The dates are given in MM/DD/YY format, where MM is the month, DD is the day, and YY is the year. A maximum of 22 files are displayed per page of output.

Syntax:



Example input:

```
DF USERPACK/(USER)/=  
DF (USER)/L?  
DF (USER)/?RD  
DF SYSTEM/= PAGE 2  
DF MASTER/M? SKIP 7  
DF *DMPALL
```

Example output:

"SYSTEM/INIT"	COMPILED ON 05/31/79 AT 18:40:20.9
"SYSTEM/ARCH"	COMPILED ON 06/19/79 AT 10:09:41.8
"SYSTEM/ARCHVDUMP"	COMPILED ON 06/25/79 AT 09:43:55.4
"SYSTEM/BUILDTRAIN"	COMPILED ON 10/24/78 AT 08:36:40.8
"SYSTEM/DISK.DUMP"	COMPILED ON 08/16/79 AT 15:55:54.3

Example input:

```
DF USERPACK/(USER)/=  
DF (USER)/L?  
DF (USER)/?RD  
DF SYSTEM/= PAGE 2  
DF MASTER/M? SKIP 7  
DF *DMPALL
```

Example output:

"SYSTEM/INIT"	COMPILED ON 05/31/79 AT 18:40:20.9
"SYSTEM/ARCH"	COMPILED ON 06/19/79 AT 10:09:41.8
"SYSTEM/ARCHVDUMP"	COMPILED ON 06/25/79 AT 09:43:55.4
"SYSTEM/BUILDTRAIN"	COMPILED ON 10/24/78 AT 08:36:40.8
"SYSTEM/DISK.DUMP"	COMPILED ON 08/16/79 AT 15:55:54.3

DIR (Directory)

The DIR command causes the RD program to display all directory names for a specified disk. Names of directories with no subdirectories are prefixed with asterisk (*) characters.

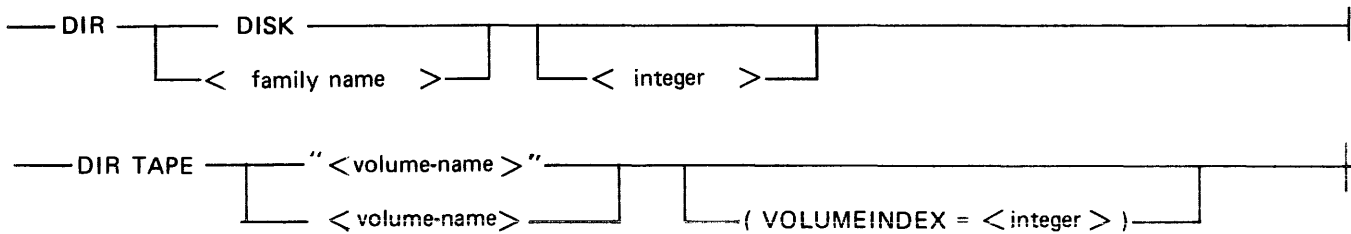
Specifying DISK as the family name causes the RD program to search the system disk for directory names.

The main disk directory is maintained in 16 disk segments. If an integer between 0 and 15, inclusive, follows the family name in the DIR command, the RD program begins listing the directory names at the integer segment specified.

Specifying TAPE <tape-id> causes the RD program to display the directory of a library (SYSTEM/COPY) tape. The response of the RD program is returned to the requesting terminal in the same format as the response returned by the SYSTEM/COPY program to the DIR TAPE command.

A hard copy of the tape directory can still be obtained from a remote display by ZIPPING the DIR TAPE command.

Syntax:



Semantics:

DISK

Specifies the system disk for the disk directory search.

<integer>

Specifies the segment offset in which to begin the disk directory search. The integer must be between 0 and 15, inclusive.

<volume-name>

Specifies the Label name of the library tape. The <volume-name> may consist of from one to ten characters and may optionally be enclosed in quotation marks.

VOLUMEINDEX Attribute

If the reel sought is the only reel or the first reel of a multireel volume, the VOLUMEINDEX attribute is not needed. If it is any reel except the first in a multireel volume, it must be specified.

Example input and output:

Input	Output
DIR DISK	*DMPALL
DIR USER	MASTERFILE
DIR DISK 7	(USER)
	*A
	UPDATE
DIR TAPE SYSTAPE	Please refer to figure 31-2 in the SYSTEM/COPY section of this manual for an example of the output from the DIR TAPE command.

EOJ (End of Job)

The EOJ command causes the RD program to terminate. The EOJ command can only be entered from (1) the only station signed on to the RD program, (2) a station that passes to the RD program by way of the SMCS program when there are no other stations signed on to the RD program, or (3) the system ODT by means of the MCP ACCEPT mechanism.

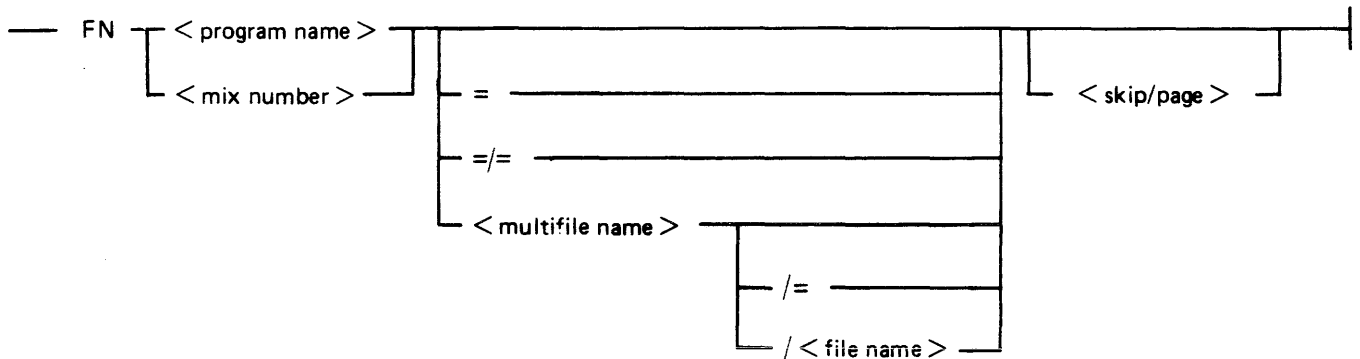
FN (File Name)

The FN command causes the RD program to display internal and external file identifiers of a codefile or a running job. The external name(s) and the corresponding internal file name(s) are listed in relative file number order beginning with 0.

If all of the requested file identifiers are not displayed on the first output screen, the RD program provides the necessary input to continue the FN command.

A maximum of 22 internal and external file identifiers are displayed per page of output.

Syntax:



Example input:

```
FN RD =/=
FN PROGRAM/USER =/= SKIP 7
FN DMPALL = SKIP 5
FN CANDE = PAGE 3
```

Example output (displayed if "FN RD =/=" is entered):

```
0 = RMT      "RMT"
1 = DSK      "DSK"
2 = LINE     "LINE"
3 = CARDS    "CARDS"
END FN.
```

FRZ (Freeze)

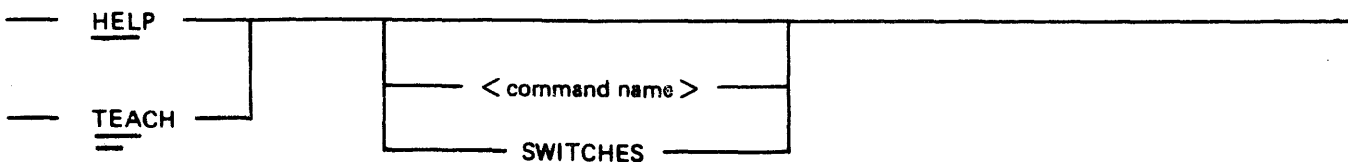
The FRZ command causes the RD program to remain in the system mix. This command is useful only when the RD program is scheduled to terminate if no input is processed after a time period specified by program switch 9

Example input and output:

Input	Output
FRZ	FRZ SET
	FRZ RESET

HELP (or TEACH)

The HELP (or TEACH) command causes the RD program to display all the valid RD commands. If the command is followed by a valid RD command, the RD program displays the syntax and a brief description of the RD command.



Semantics:

<command name>

The <command name> specifies a valid RD program command.

SWITCHES

If HELP SWITCHES (or TEACH SWITCHES) is entered, the RD program displays the current switch settings and the description of each switch.

Example output:

If HELP KA (or TEACH KA) is entered, the following is displayed:

```
PD KA <FILE NAME> <FAMILY>/= [SUM(MARY)]
[SKIP <SKIP-COUNT> PAGE <PAGE #> :
LISTS FILE(S) (AND ATTRIBUTES IF 7KA7; FILE ID 7DSKAVL7
LISTS AVAILABLE DISK SPACE)
```

If HELP FN (or TEACH FN) is entered, the following is displayed.

```
FN <PROGRAM-NAME> <JOB NUMBER> [<EXTERNAL-FILE-NAME>]
[SKIP PAGE <#>] : LIST ASSOCIATED INTERNAL AND EXTERNAL
FILE NAME(S) DECLARED IN <PROGRAM> OR <JOB>
```

ID (Identification)

The ID command causes the RD program to display the version, release level, compile date, compile time of the RD program, and the NDL Logical Station Number (LSN) of the station entering the ID command.

Example input and output:

Input	Output
ID	RD 10.0.7 OF 02/21/81 09:29, LSN 009

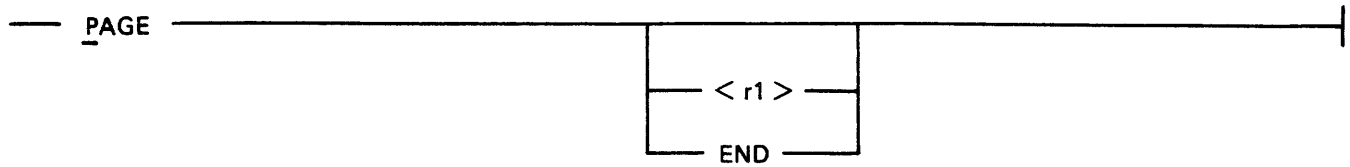
PAGE

The PAGE (or LIST) command causes the REMOTE/LISTER program to begin the display of a file at the record specified or at the first record if no record is specified, and to initiate a NEXT function.

If the PAGE END option is used, the REMOTE/LISTER program causes the last page of the file to be displayed and initiates a BACK function.

The PAGE command only may be specified if a workfile is present.

Syntax:



Semantics:

<r1>

This integer value causes the display to begin at record <r1>. (Note that r1 is not a sequence number.)

END

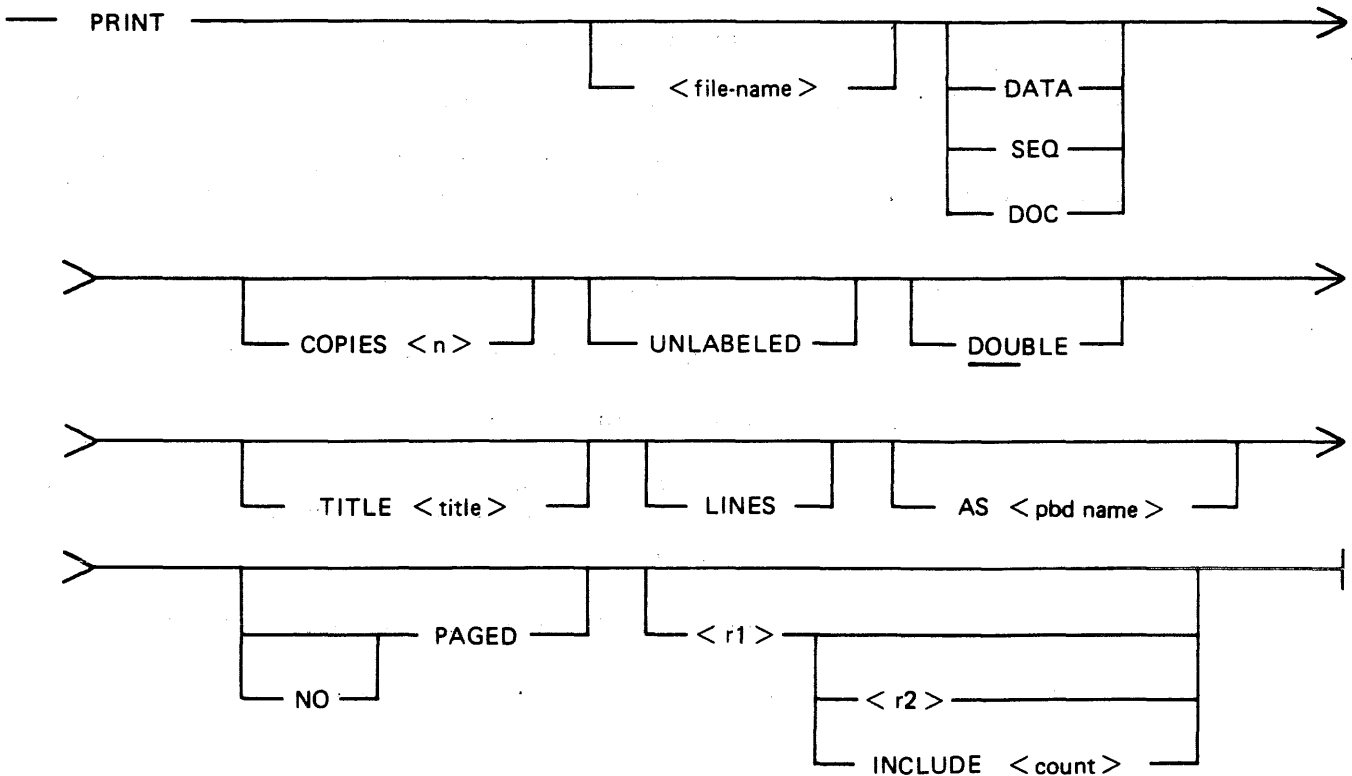
This option causes the last page to be displayed.

PRINT

The PRINT command causes the current input file or a specified file to be printed on a line printer.

If the HEX option is on, the PRINT command causes the file to be printed in hexadecimal format.

Syntax:



Semantics:

<file-name>

The `<file-name>` option specifies the file name to be printed. If it is not specified, the current input file is printed. The `<file-name>` option may be specified only when there is no current input file. The options `DATA`, `SEQ`, and `DOC` may not be used if the `<file-name>` specifies a printer backup file.

DATA

The `DATA` option causes the file to be printed in the following format: 6-digit record number, blanks, 100 characters of data, blanks, and the 10-character file id.

SEQ

The `SEQ` option causes the file to be printed in the following format: 6-digit record number, blanks, 80 characters of data, 10-character patch id, blanks, and the 10-character file id.

SECTION 24

REMOTE/PRINT

The REMOTE/PRINT program reads a B 1000 printer backup file and converts the records to a format that is acceptable to any of a number of types of remote printers as well as the system line printer. The printer backup files must have been created by the Mark 9.0 or later System Software release.

The following documents provide information on the applicable printers.

AP 300 Equipment (Data Communications Interface) Reference Manual, form number 1119153.

Model 630 Printer/Terminals, HPR05 Interface, form number, 901441-01, Rev A. (The Model 630 is the Diablo® version of the AP 1301. This document is available from Diablo Systems, Inc., Box 5003, Hayward, California 94545).

AP 1340 Equipment Capabilities and Features, form number 1137684.

AP 1340 Installation, Operation, and Maintenance Guide, form number 2030268.

B 9246-3/6 Line Printer Operator's Guide, form number 1137221.

B 9949-10 Remote Printer Interface Reference Manual, form number 1136884. (The B 9949 Interface Kit is used to convert the B 9246 system line printer into a remote printer.

The following documents provide information on B 1000 software:

B 1000 Systems System Software Operation Guide, Volume 1, form number 1169000.

B 1000 Work Flow Language (WFL) Language Manual, form number 1168994.

OVERVIEW AND FEATURES

The REMOTE/PRINT program can interface with the following remote printer types:

AP 310, AP 1301, AP 1340, B 9246-3/6.

(B 9246-3/6 is a series of band printers, referred to as B 9246 throughout this document.)

The program can also interface with any other remote printer that appears functionally identical to any of the above-listed printers. It also interfaces with system (non-remote) line printers.

Program Command Summary

Program commands are entered by means of the MCP ACCEPT mechanism or through the Work Flow Language (WFL) compiler.

Program commands are summarized next. Syntax and details are presented in Program Commands.

DEBUG	Provides debug facilities.
DEVICES	Queries status of program and printers.
DUMP	Produces a program dump.
EOJ	Terminates the program.
HELP	Provides current information, including explanations and syntax.
OK	Resumes printing after a STOP.
PRINT	Initiates printing. (See Print Option Summary.)
SKIP	Allows selection of record sequence for printing.
STATUS	Queries for status of current print request.
STOP	Suspends printing.
TEST	Tests printer functions; prints test pattern.
WHAT	Identical to STATUS.

Backup File Names

The REMOTE/PRINT program uses standard file naming conventions for usercoded files. In standard file names, the slash (/) character does not follow the usercode: For example:

(USER)FILE not (USER)/FILE

If the file name entered is numeric and seven characters or less in length, the REMOTE/PRINT program assumes that it is a system-created backup file of the format: BACKUP/PRT<n>, where <n> is the backup number. The REMOTE/PRINT program searches the backup designated disk (BD) for system-created backup files unless a family name is explicitly entered.

If the REMOTE/PRINT program is executed with a usercode or if a usercode is specified using the USER option and a numeric file name is entered, the REMOTE/PRINT assumes that the file is a system-created backup file of the format: (<usercode>)PRT<n>.

If a usercode is specified in the print request and a family name is not specified, the MCP attempts to open the file on the default user disk assigned to the usercode.

If the file name is not a system-created backup file, any valid file name is accepted.

File Security Considerations

If the REMOTE/PRINT program is executed with a usercode, files are accessed in the default directory for that usercode. A different usercode and password can be specified with the USER option, overriding the usercode and password that REMOTE/PRINT was executed with.

Examples:

EX REMOTE/PRINT;AX PRINT BACKUP

The file, "BACKUP", is on the system disk as *BACKUP.

USER A/B EX REMOTE/PRINT;AX PRINT BACKUP

EX REMOTE/PRINT;AX PRINT BACKUP USER A/B

The file, "BACKUP", is on user A's default pack as (A)BACKUP. The two examples are functionally identical.

USER A/B EX REMOTE/PRINT;AX PRINT BACKUP USER C/D

The file, "BACKUP", is on user C's default pack as (C)BACKUP.

Remote Printer Control Characters

Table 24-1 lists, for each remote printer, the control characters that are used to invoke pertinent control functions. Any remote printer for use with the REMOTE/PRINTER program must be installed by the Burroughs Field Engineer to use the options listed.

In the table, the term User RP implies a remote printer that is functionally identical to an AP 1301, but to which reset, cancel, and format control codes are not sent.

Table 24-1. Remote Printer Control Characters

Printer	Line Feed	Overprint	Channel Skip	New Page	Reset
B 9246	CRLF	CR	VT <chan >	FF CR	none
AP 310	VT <nn >	VT00	n/a	FF	CAN
AP 1301	CRLF	CR	n/a	FF	ESC CR P
AP 1340	LF	CR	n/a	FF	CAN
User RP	CRLF	CR	n/a	FF	none

NOTES

CAN	@18@	cancel
CR	@0D@	carriage return
ESC	@27@	escape
FF	@0C@	form feed
LF	@25@	line feed
VT	@0B@	vertical tab

<nn >	Number of lines to be skipped. (Unpacked numeric format.)
<chan >	Channel number: ASCII @21@ - @2C@
n/a	Not available.

Printer Buffer Sizes

Table 24-2 shows the maximum buffer sizes (suggested network controller buffer size) for printers of interest.

Table 24-2. Printer and Network Controller Buffer Sizes

Printer	Buffer Size	Notes
AP 310 DL/1	256	AP 310 DL/1 has 512-character buffer, but only 256 characters can be sent at once.
AP 310 DL/2	2048	
AP 1301	2688	A maximum of 2100 characters is supported by the REMOTE/PRINT program.
AP 1340	2048	
B 9246	950	
User RP	2100	

Channel Skips

Because the AP 300, AP 1301, and AP 1340 remote printers have no carriage control format ribbons, a skip to channel <n>, where <n> is greater than channel 1 (top of form), is converted to a one-line skip.

For the B 9246 remote printer, all channel skips except a skip to channel 12 are performed. When the REMOTE/PRINT program encounters a skip to channel 12 for one of these printers, a one-line skip is performed instead.

NETWORK CONTROLLER INSTALLATION

In order to use a remote printer on a B 1000 system, the network controller must be set up correctly. The installation of a network controller for use with the various remote printers is described next, under the headings Declaration, Terminal, Station, Line, and File. Following these is an example that will compile and execute as a network controller but is primarily intended to be added to an existing network controller.

The variable names used throughout this material are based on an AP 310 remote printer.

Declaration Section

No special declarations need to be made in the Declaration section.

Terminal Section

The standard CANDEPOLTD and CANDESELTD request procedures are used. The CANDEFSLTD output request procedure can be used in place of the CANDESELTD request procedure. Both input and output request procedures must be declared or a network controller run error (180) can occur.

Although transmission numbers are not required, their use is recommended to minimize transmission errors, especially on switched lines, leased lines, or lines of poor quality.

NOTE

The standard CANDE request and control procedures use alternating 0 and 1 transmission numbers for remote printer devices. (In previous releases, modulo 10 transmission numbers were used.)

The terminal types are set as follows:

Remote Printer	Terminal Type
B 9246	70
AP 310	71
AP 1301	72
AP 1340	73
User RP	79

If the output to the remote printer is to be blocked, the BUFFERSIZE parameter must be declared equal to the maximum buffer size in which the messages are to be blocked, plus 50 characters for the message header. Table 24-2, earlier, provides buffer sizes for these printers.

Example:

TERMINAL AP310:

```
TRANSMISSION = 1.  
ADDRESS      = 2.  
TYPE         = 71.  
BUFFERSIZE   = 2000.  
REQUEST      = CANDEPOLTD: RECEIVE,  
              CANDESELTD: TRANSMIT.
```


DEFAULT OPTIONS (ATTRIBUTES AND SWITCHES)

Various program defaults are controlled by modifying the file attributes of the the REMOTE/PRINT files BACKUP and PRINTER and by the setting of program switches. In the text that follows, control card attribute names are used. (The Burroughs standard attribute name is included in parentheses with the first use of a control card name.)

Output Message Blocking

The blocking of output messages to the remote printer is controlled by program switch 1 (SW1) and the RECORD.SIZE (MAXRECSIZE) file attribute of the REMOTE/PRINT file PRINTER. Blocking of output messages is not valid for the system line printer.

The desirability of blocking the output messages depends on various factors, including remote printer type, line type, line speed, and number of terminals on the line. Blocking can be advantageous. for example, if the remote printer is on a line that is used by other terminals.

If program switch 1 is reset (SW1 = 0), output messages are blocked in a buffer equal to the MAXRECSIZE file attribute for the file PRINTER plus 50 characters for the message header, as follows:

$$\text{MAXRECSIZE} = \text{printer buffer size} - 50;$$

For example, if MAXRECSIZE = is 1950 characters, the printer buffer size must be 2000 characters.

If program switch 1 is set (SW1 = 1), output messages are not blocked.

Examples:

```
WFL MODIFY REMOTE/PRINT SW1 = FALSE;  
MODIFY REMOTE/PRINT FILE PRINTER (MAXRECSIZE=1950);  
Output messages are blocked in a 2000-character buffer.
```

```
WFL MODIFY REMOTE/PRINT SW1 = TRUE;  
Output message blocking is disabled.
```

Notes

If the specified printer buffer size is too large for a given type of remote printer or for the network controller buffer size for the remote printer, a warning message is displayed and the buffer size is changed to an acceptable value.

The REMOTE/PRINT program cannot differentiate between an AP 310 DL/1 with a maximum buffer size of 256 and an AP 310 DL/2 with a maximum buffer size of 2048. Consequently, specifying a printer buffer size greater than 256 for an AP 310 DL/1 results in a REMOTE/PRINT timeout exception.

Banners

The REMOTE/PRINT program can cause the printing of banner pages with the file name and creation date of the backup file in block letters (10 characters by 10 characters). One banner page precedes and another follows the printer output text. Banner printing is suppressed if the printer does not have a default page width of 132.

The printing of banners is controlled by the setting of the LABEL (LABEL.TYPE) file attribute for the REMOTE/PRINT file BACKUP. If LABEL is set to STANDARD, banners are printed by default on all printer types that have a default page width of 132. If the LABEL file attribute is set to OMITTED, no banner pages are printed.

Banner printing can also be specified with the PRINT command option BANNERS.

Examples:

```
WFL MODIFY REMOTE/PRINT FILE BACKUP (LABEL = OMITTED);  
Banner printing is suppressed.
```

```
WFL MODIFY REMOTE/PRINT FILE BACKUP (LABEL = STANDARD);  
Banner printing takes place if page width is 132.
```

Page Width

The page width is controlled by the RECORD.SIZE (MAXRECSIZE) file attribute for the REMOTE/PRINT file BACKUP.

Page width is specified in tenths of an inch and is used to calculate the number of characters per inch to use when printing on an AP 310, AP 1301, or AP 1340 remote printer. The default page width is 85 characters for the AP 310 and 132 characters for all other printer types.

Examples:

```
WFL MODIFY REMOTE/PRINT FILE BACKUP (MAXRECSIZE = 85);  
Specifies a default page width of 85.
```

```
WFL MODIFY REMOTE/PRINT FILE BACKUP (MAXRECSIZE = 120);  
Specifies a default page width of 120.
```

SECTION 27

STANDALONE/DISK-DUMP

The STANDALONE/DISK-DUMP program copies data file-by-file from one disk cartridge or disk pack to another of the same or greater capacity. The program can also copy a larger system or user disk pack to multiple smaller user disk packs, provided that no single file is larger than the capacity of a single output disk pack. The input disk pack may be a single system disk (type S) that is not a continuation part of a multiple system pack, or it may be a user disk pack (type U). Disk cartridges, however, may be user disks (type U) only.

The entire input disk is copied file-by-file to produce a squashed output disk. The original type (S or U) of the output disk does not matter, it will be forced to the same type as that of the input disk with the following exceptions:

1. When the capacity of the input disk is greater than that of the output disk, the output disk is always a type U (user) disk.
2. When the input disk is a fixed (non-removable) type S system disk that does not have a greater capacity than the output disk, the operator is given a choice of a type U or S output disk.

A system disk that has not been CLEAR/STARTed is not allowed as input. Multi-pack files are copied only if the input and output disk serial numbers are the same.

The STANDALONE/DISK-DUMP program corrects certain errors that it detects. This capability can be used to try to recover some types of corrupted disks. An irrecoverable error in a disk directory or file header causes the associated file or files to be skipped, but the other files on the disk are copied. Any missing disk areas on the input disk are ignored when writing to the output disk. Thus, the output disk is fully usable. When copying a system disk, some checking and correction of the disk label and MCP structures is done; however, this should be regarded as a partial fix, not as a replacement for a full COLDSTART.

A STANDALONE/DISK-DUMP program option compares the output disk file-by-file to the input disk so that comparison errors can be identified.

NOTE

When copying a system disk, AB (Auto Backup) coldstart variables are not duplicated on the output disk. A newly copied disk may be taken to another system with different port and channel values for line printers; therefore, the user may want to enter the new values after the CLEAR/START of the newly copied system disk.

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PROGRAM LOADING INSTRUCTIONS

Three program-loading sequences are provided. The first procedure is for B 1990 systems with a console cassette drive. The second procedure is for B 1990 systems with a console diskette drive. The third procedure is for all other B 1000 systems.

Program Loading -- B 1990 System with a Console Cassette Drive

To load the program on a B 1990 system with a console cassette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented in either of the following forms:

Transmit <keyword-1> <keyword-2> ...

<keyword-1> <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Place the cassette into the cassette reader and ensure that the tape rewinds to BOT.
3. Enter MTR GO [XMT]

The cassette automatically rewinds on B 1990 systems.

Program Loading -- B 1990 System with a Console Diskette Drive

To load the STANDALONE/DISK program to a B 1990 system with a console diskette drive:

1. Halt the system by entering the HALT system command. The RUN A light goes out in a single-processor (B 1990SP) system. Both RUN A and RUN B go out in a dual-processor (B 1990DP) system.

NOTE

Instructions for using the B 1990 Soft Panel in this fashion are hereafter presented as follows:

<keyword-1> ["<file-id>"] <keyword-2> ... [XMT]

A looping condition could deny access to the ODT. In such cases, press the INTRPT push button. If the system still does not halt, press the HALT/RUN push button.

2. Insert the diskette, which contains the SADKDUMP program, into the console diskette drive. Follow the illustration located above the console diskette drive.
3. Close the latch on the front of the drive.
4. Enter MTR "SADKDUMP" GO [XMT]

Program Loading -- All Other B 1000 Systems

To load the program on all other B 1000 systems:

1. Halt the system by entering the HALT system command if the MCP is running. If the MCP is not running, halt the system by using the INTRPT push button or the console INTERRUPT switch. If the INTERRUPT switch is used, return it to its initial position following the halt. If the system continues to run, press the HALT push button. If the system still continues to run, press the HALT and CLEAR push buttons simultaneously. For dual-processor systems be sure both processors are halted.
2. Place the cassette into the cassette drive and ensure that the tape rewinds to BOT.
3. Press (1) the CLEAR push button, (2) the MODE push button to obtain the MTR mode, and (3) the START push button.
4. After the bootstrap loader is read from the cassette tape, the processor halts. The L register must contain @AAAAAA@ at this time; if not, the cassette must be rewound and the procedure restarted from step 3, above.
5. Press the MODE push button to enter NORMAL mode, then press the START push button. Reading of the cassette resumes. When the program is completely loaded, program operation begins.
6. Rewind the cassette tape by pressing the REWIND button. (Rewind is automatic on B 1900 systems.)

NOTES

If the tape does not automatically rewind when it is inserted into the console cassette drive, press the REWIND button. If the tape is wound completely onto the right spool, remove the cassette and manually rewind it until the clear leader is no longer at the read gap.

If the system halts with @000004@ or @0D0053@ in the L register and with the PERP register equal to 1, a cassette error during program loading is indicated. Restart the procedure from step 1.

PROGRAM OPERATING INSTRUCTIONS

After the program is loaded, the following messages are displayed on the Operator Display Terminal (ODT):

```
STANDALONE/DISK-DUMP - <mark-and-patch-level> (<compile-date/time>)  
-- PLEASE PUSH SPCFY IF YOU SEE AN ETX ON THIS SCREEN --  
ENTER INPUT DRIVE - <DC? OR DP? OR BLANK FOR EOJ>
```

If there is an ETX character anywhere on the screen, press the SPCFY key once. This is required because of the variety of ODT device types and firmware settings available on the B 1000 family.

After a valid response to ENTER INPUT DRIVE, the input drive <pack-id>, serial number, and type are read from the specified disk and displayed, followed by the message:

```
ENTER OUTPUT DRIVE - <DC? OR DP?>
```

After a valid response, the output drive <pack-id>, serial number, and type are read from the specified disk and displayed, followed by the message:

```
TO VERIFY - IS COPY OF <input-drive> TO <output-drive> DESIRED?
```

A NO response causes the prompt sequence to begin again. A YES response results in one of the following messages or message sequences when the input disk capacity is not greater than the output disk capacity:

1. When the input disk is a user disk:

```
USER PACK WILL BE CREATED
```

2. the input disk is a removable system disk:

```
SYSTEM PACK WILL BE CREATED
```

3. When the input disk is a fixed (non-removable) system disk:

```
DO YOU WANT THE OUTPUT PACK TO BE A 7USER7 PACK? <YES OR NO>
```

A YES response elicits USER PACK WILL BE CREATED, while a NO response results in SYSTEM PACK WILL BE CREATED.

A YES response to the TO VERIFY ... question when the input capacity is greater than the output disk capacity results in one of the following message sequences:

1. When the input disk is a user disk:

```
WARNING: <input-drive> INPUT DISK HAS A GREATER  
CAPACITY THAN OUTPUT DISK ON <output-drive>  
USER PACK WILL BE CREATED
```

2. When the input disk is a system disk:

WARNING: <input-drive> INPUT DISK HAS A GREATER
CAPACITY THAN OUTPUT DISK ON <output-drive>
USER PACK WILL BE CREATED - IS THIS DESIRED?
<YES OR NO>

A YES response elicits USER PACK WILL BE CREATED, while a NO response causes the entire prompt sequence to begin again.

Later, while the dump is being performed, the following messages are displayed when a smaller output disk pack is filled:

NOT ENOUGH OUTPUT DISK ON <output-drive> TO COPY <file-name>
ENTER OUTPUT DRIVE - <DC? OR DP?>

To continue, the operator must make another output disk pack available and answer the prompt with its drive mnemonic.

The prompt sequence now returns to its main path with the following question:

IS DATA COMPARISON DESIRED? <YES OR NO>

A NO response results in a dump with no comparison of output data to input data. A YES response causes the output data to be read after being written and then compared to the input data buffer still in memory. Only data comparisons are made; disk structures such as the directory or file headers are not compared when this option is requested. The following message is displayed following the comparison question:

IS DOUBLE CHECK COMPARISON DESIRED? <YES OR NO>

A YES response causes the input data to be read again and then compared to the output data. This ensures that the correct sector was read when the data was copied. A NO response causes the dump to begin without this function. The following message is displayed and the copy process begins:

DUMPING FILES FROM <input-drive> TO <output-drive>

Upon dump completion without errors, the following messages are displayed:

DUMP COMPLETE <input-drive> TO <output-drive>
ENTER INPUT DRIVE - <DC? OR DP? OR BLANK FOR EOJ>

At this time, the entire prompt sequence can be repeated. Entering a blank input message causes the STANDALONE/DISK-DUMP program to end with the following message:

END STANDALONE/DISK-DUMP

STATUS Command

Once the copy process begins, the operator can interrogate the program status by entering STATUS or ST from the ODT. In response the program displays a message that describes the file currently being copied and the percentage of the disk dumped at that point. The format of this message is as follows:

CURRENT FILE: <file-name> APPROX: <percentage> % COMPLETE

Output Options

Details of the output options are provided in the discussion of the PB command in section 5 of Volume 1 of the B 1000 Systems System Software Operation Guide. Also see Options in this section.

AB System Command

The AB (Auto Backup) system command invokes the MCP autoprint mechanism. This causes a backup file, upon release, to be routed automatically to a line printer. An individual copy of the SYSTEM/BACKUP program is put into execution for each line printer that is assigned to the autoprint facility. Thus, if four printers are assigned, four copies of the SYSTEM/BACKUP program may be in the mix.

The names of the existing printer backup files are entered into a queue file labeled AUTOPRINT. Processing is the same as with a PB system command. The backup files are removed after printing.

The autoprint mechanism can be overridden when a particular backup file is created or whenever it is open by specifying

```
FILE <file-name> NO AUTOPRINT (or NO ATP)
```

A backup file that was created with NO ATP may be printed by means of the AP (Auto Print) system command, or, if a line printer is available that is not assigned to the autoprint facility, by a PB system command.

OPTIONS

Execution-time options for the SYSTEM/BACKUP program include the program switches and the output options available with the PB system command. These options may be preset to take effect when execution begins. Certain other options may be invoked through the entry of AX (or AC) commands during program execution. These are called the run-time control options. The program switches and the run-time control options are described below. The output options are described with the PB system command in section 5 of Volume 1 of the *B 1000 Systems System Software Operation Guide*.

The following example shows the structure of a PB command that includes an output option (COPIES) and a program switch setting:

```
PB <backup= file> COPIES 4; SWITCH 3 = 1
```

Program switches also may be set or reset by modifying the object code of the SYSTEM/BACKUP program as follows:

```
MODIFY SYSTEM/BACKUP SWITCH 3 = 1;
```

Program Switches

The SYSTEM/BACKUP program recognizes program switches 1, 2, 3, 5, 6, 7, and 8. Reset (0) is the default. The options are described in table 28-1.

Table 28-1. SYSTEM/BACKUP Program Switches

Switch	Value	Meaning
1	0	Carriage control information in the backup file is recognized.
1	1	Single spacing overrides any carriage control in the backup file.
2	0	User-named backup files are not removed after they are printed or punched.
2	1-15	User-named backup files are removed after they are printed or punched.
3	0	All backup files are removed after printing or punching.
3	1-15	All files are saved.
5	0	Lower-case character printing is enabled. The UPPER option of the PB command overrides this setting.
5	1-15	Lower-case character printing is disabled.
6	0	A simple page-skip is performed when end of page is reached while printing the file.
6	1-15	The end-of-file action specified for the file is performed when end of page is reached.
7	0	When autoprint (AB) is set, SYSTEM/BACKUP goes to EOJ as soon as all backup files in the autoprint queue are printed.
7	1-14	When autoprint (AB) is set, SYSTEM/BACKUP waits up to five minutes for a new backup file to be released before going to EOJ. If a new file is released, the waiting period is reset to five minutes. After five consecutive minutes pass without a new file release, the program goes to EOJ.
7	15	When autoprint (AB) is set, the SYSTEM/BACKUP program waits indefinitely for a new backup file to be released.
8	0	Banners are omitted.
8	1-15	Banners are printed if the file is labeled and the FORM option is not set. The banner includes the usercode (if present) under which the program was executed, the external file name in the creating program, and the actual file name on disk, if different from the external file name.

<usercode>

A **<usercode>** is a name assigned to a user to secure system and file access. When a **<usercode>** in parentheses is the first part of a **<file-identifier>**, the file belongs to that user. When the command string is executed under the usercode (no parenthesis), all file-identifiers in the string are assumed to belong to that user. The **<usercode>** consists of one to eight characters. Characters accepted by the SYSTEM/COPY program are A-Z, 0-9, and the hyphen (-).

=/=

=/= specifies every file that carries the first name or usercode specified in the first field. **=/=** specifies every file under the family name or volume name specified in a FROM clause. (See FROM Clause, TO Clause later in this section.) Expansion of the last equals sign (**=**) yields **second=names**. Expansion of the first equals sign yields **first-names** or **usercodes**.

<standard-format-identifier>

Identifiers of files on tape must conform to the Burroughs standard format: one to thirteen fields of up to seventeen characters each. Characters accepted by the SYSTEM/COPY program are A-Z, 0-9, and the hyphen (-) when program switch 2 is set (1), but all special characters are accepted when switch 2 is reset (0). Each field is separated from the next by a virgule (/). The field following the last virgule may consist of a lone equals sign.

When any file is copied from tape to disk, the file-identifier format of the copied file must conform to the disk file-identifier format depicted in the upper part of the syntax diagram and described in the preceding semantics paragraphs. The AS Option is used to create a conforming identifier. (See AS **<file-id-2>** option under File Specifications.)

SYSTEM and User Disks

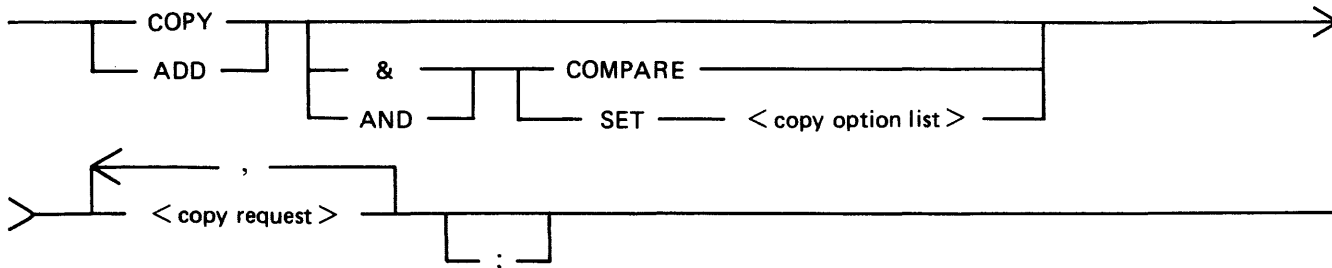
The term "system disk" refers to a disk (either disk pack or head-per-track) that has been initialized for system (MCP) purposes. A system disk may not be removed during system operation. (Refer to the PACK/INIT or SYSTEM/DISK-INIT utility programs in this volume for a complete description of the initialization of a disk pack or system disk.) The system disk is the default disk for unsecured files.

The term "user disk" refers to a disk (usually a disk pack or disk cartridge) that has been initialized for user (rather than system) purposes. A user disk may be removed during system operation; that is, it need not be present for the MCP to function. The default disk for a secured file is the user disk assigned to the usercode.

SYSTEM/COPY PROGRAM COMMANDS

The four basic SYSTEM/COPY program commands are ADD, COPY, COMPARE, and DIR. The syntax and semantics for ADD, COPY, and COMPARE, including the options clause, the file specifications clause, and the FROM and TO clauses are described next. The DIR command is described last.

ADD Command



The ADD command directs the SYSTEM/COPY program to copy files from tape to disk or from disk to disk. (ADD does not copy to tape.) The files are identified through one or more <file-specifications> statements. Copy sequence is as specified for the COPY command (next subsection). File identifiers that have duplicates on the destination disk are skipped. All other files specified are copied.

The AND COMPARE (or & COMPARE) phrase sets the COMPARE option to TRUE. For more information about the COMPARE option, refer to <options> Clause under Command String Clauses in this section.

Examples:

(Only tape sources are shown; disk sources may be substituted to create additional examples.)

ADD A FROM T1 (KIND=TAPE) TO D1;

Copies file A from tape T1 to disk D1 if there is no file A on D1.

ADD A, B FROM T1 TO D1;

Copies files A and B from tape T1 to disk D1 if they are not on D1.

ADD /= FROM T1 (KIND=TAPE) TO D1;

Copies all the files from tape T1 to disk D1. File names that already exist on D1 are not copied.

ADD /= FROM T1(KIND=TAPE), A FROM T2(KIND=TAPE) TO D1, TO D2;

Copies all the files from tape T1 plus file A from from tape T2 to disks D1 and D2. File names that exist on either disk are not copied to that disk.

SECTION 47

SYSTEM/PACKCOPY

SYSTEM/PACKCOPY is a normal-state utility program that is used to drive a B 9498 PE tape unit in the 100 ips mode for fast backup of User and online System disks.

OVERVIEW

Two programs are actually involved in the copy process: SYSTEM/PACKCOPY for the disk I/O operations and communication with the operator, and SYSTEM/PACKCOPY-T for the tape I/O. The programs use extensive buffering and a direct I/O capability. Direct I/O eliminates the open and close operations normally associated with reading and writing files.

Synopsis of Program Operation

An operator uses syntax similar to that of the SYSTEM/COPY program to specify the copy parameters. The result is a dump of some or all of the files on the output disk to tape. The disk is copied in a file-by-file manner; therefore, no penalty is incurred in dumping packs with unused capacity. If the COPY command with the COMPARE option is selected, the SYSTEM/PACKCOPY program copies and compares the input disk files to the output tape files (including the tape directory file) in a reel-by-reel fashion. The program writes a reel of tape, rewinds the tape, compares that reel of tape to disk, and then proceeds in the same manner with additional tape reels until all files on the user disk are copied and compared. Because the output tape is written in the SYSTEM/COPY format, any or all of its files may be retrieved by means of the SYSTEM/COPY program.

Restrictions

The SYSTEM/PACKCOPY program is not a substitute for the SYSTEM/COPY program, and does not include all of the options or extensive capabilities of that program. It also is not designed to copy multipack files or to copy from tape to disk.

For effective use, the SYSTEM/PACKCOPY program should be the only job in a mix except for SYSTEM/ODT.

Other Considerations

The SYSTEM/PACKCOPY and SYSTEM/PACKCOPY-T programs use approximately 260K bytes of memory including approximately 218K bytes of dynamic memory for data buffers.

A User pack that is being copied is not available through the MCP for any other purpose. If the SYSTEM/PACKCOPY program terminates abnormally when copying a User pack, the pack must be readied before it can be accessed by the MCP. Abnormal termination of the SYSTEM/PACKCOPY program results in termination of the SYSTEM/PACKCOPY-T program.

A System disk that is being copied is not available for most other purposes, especially library and file maintenance functions. While a System disk is being copied, the MCP will stop all jobs other than SYSTEM/PACKCOPY, SYSTEM/PACKCOPY-T and SYSTEM/ODT. None of the stopped jobs can be resumed until the copy of the System disk is finished or SYSTEM/PACKCOPY is aborted.

This program will not copy any file with a usercode of "(SYSTEM)" because a file of this type could not be retrieved by SYSTEM/COPY. Files that are open output and the SYSTEM/LOG, SYSTEM/ELOG, SYSTEM/ODTLOG and SYSTEM/ODT_QUEUE files cannot be copied from a System disk.

OPERATING INSTRUCTIONS

The command input accepted by SYSTEM/PACKCOPY is a proper subset, except for the addition of the <terminate command>, of the B 1000 SYSTEM/COPY syntax (see SYSTEM/PACKCOPY Command Syntax in this section). This input may originate from the ODT, using the AC and AX system commands, or from the COMMAND file.

Command input must consist of one or more complete commands, each separated by a semicolon character (;). Each command is completely parsed and executed before the next one is processed.

ODT Command Input

When command input originates from the ODT, the maximum size of a single input is 800 characters (10 lines). Please note that the <mix-number> AC system command, rather than AX, must be used if more than one command is entered at a time, so that the separating semicolon (;) may be used. For an explanation of the AC and AX system commands, please refer to the B 1000 Systems System Software Operation Guide, Volume 1, section 5.

If no errors that call for additional command input are encountered, and the AUTO__EOJ switch is set to its default setting (SW1 = 0), SYSTEM/PACKCOPY automatically goes to end of job (EOJ) after all of the commands in the first ODT command input string have been processed. If the AUTO__EOJ switch is set to not invoke AUTO__EOJ (SW1 = 1), then the program remains in the mix, requesting additional command input, and must be explicitly terminated with a <terminate command>. Note that the setting of the AUTO__EOJ switch has no effect when command input originates from the COMMAND file.

COMMAND File Input

Command input originates from the ODT unless a FILE or MODIFY program control instruction is used to change the title of the COMMAND file from COMMAND to some other title. An example of the kind of FILE instruction required is as follows:

```
FILE COMMAND TITLE PACKCOPY/COMMANDS ON MYDISK;
```

When command input originates from the COMMAND file, commands cannot be entered from the ODT. The ODT, however, is still used to communicate with the operator.

The MAXRECSIZE of the COMMAND file is 800 characters; however, it is opened with DEPENDENTSPECS = TRUE, so that the actual record size may be anything up to 800 characters.

The format of the COMMAND file is completely free-form, except that an individual token may not cross a record boundary. A command is allowed to cross a record boundary, and each command must be separated from the next command by a semicolon (;). A percent sign (%) appearing anywhere in a record specifies that everything in that record that follows the percent sign is commentary only.

The input from the COMMAND file is terminated by either a <terminate command> or by end of file (EOF), whichever occurs first. The program automatically goes to EOJ when the COMMAND file input is terminated.

Execution Examples

The following ODT entry requests that all of the files on the User pack named MYPACK be copied and compared to a tape named MYTAPE:

```
EX SYSTEM/PACKCOPY;AC COPY AND COMPARE = FROM MYPACK TO
MYTAPE (KIND=TAPE);BYE
```

The following is an example of the ODT communications that might take place for a copy of all of the files from a User pack named MYPACK to a tape named MYTAPE:

```
EX SYSTEM/PACKCOPY

SYSTEM/PACKCOPY =7771 BOJ. PP=4, MP=4 TIME = 16:07:26.0
% SYSTEM/PACKCOPY =7771 ENTER THE NEXT COMMAND, PLEASE.
SYSTEM/PACKCOPY =7771 ACCEPT.

7771AC COPY = FROM MYPACK (KIND = DISK) TO MYTAPE (KIND=TAPE)

SYSTEM/PACKCOPY-T =7772 BOJ. TIME = 16:07:57.8
% SYSTEM/PACKCOPY =7771 BEGIN: COPY 134 FILES FROM MYPACK (SERIALNO=
588301) TO MYTAPE (KIND=TAPE)
SYSTEM/PACKCOPY-T =7772 EOJ. TIME = 16:13:46.5
% SYSTEM/PACKCOPY =7771 END: COPY 134 FILES FROM MYPACK TO MYTAPE
(KIND=TAPE)
SYSTEM/PACKCOPY =7771 EOJ. TIME = 16:14:46.8
```

The following ODT entry, together with the COMMAND file example that follows it, requests that some of the files on the System disk be copied and compared to a tape named MYTAPE1, and that all of the files on a User disk named MYPACK be copied and compared to a tape named MYTAPE2:

```
EX SYSTEM/PACKCOPY;FI COMMAND TITLE ARCHIVE/SYS-DISK ON DISK;

COMMAND file example:

COPY AND SET (COMPARE,
              DATE = 11/11/84 TO 11/17/84
              )
              (USERCODE) =
              , MYFILES/=
              , OTHERFILE/ONE
              , LASTFILE FROM DISK TO MYTAPE1 (KIND=TAPE);

COPY AND COMPARE = FROM MYPACK TO MYTAPE2 (KIND=TAPE)

COPY AND SET (COMPARE,
```

Syntax Errors

A syntax error encountered while parsing a command causes an error message to be displayed. If the command input is coming from the ODT, any pending command input is discarded and the operator is asked to enter the next command. When the command input originates from the COMMAND file, the operator is prompted to enter NEXT to skip to the next command in the file or EOJ to go to end of job.

A syntax error is displayed on the ODT as follows:

```
- - - - > SYNTAX ERROR : <error message>
```


Example:

```
EX SYSTEM/PACKCOPY

SYSTEM/PACKCOPY =114 BOJ. PP=4, MP=4 TIME = 08:18:48.8
% SYSTEM/PACKCOPY =114 ENTER THE NEXT COMMAND, PLEASE
SYSTEM/PACKCOPY =114 ACCEPT.

114AC COPY AND COMPARE = FROM MYDISK TO MYTAPE (KIND=DISK)

% SYSTEM/PACKCOPY =114 ----> SYNTAX ERROR : "TO" <TAPE NAME>
" (KIND=TAPE)" REQUIRED
% SYSTEM/PACKCOPY =114 ENTER THE NEXT COMMAND, PLEASE
SYSTEM/PACKCOPY =114 ACCEPT.

114AC COPY AND COMPARE = FROM MYDISK TO MYTAPE (KIND=TAPE)

SYSTEM/PACKCOPY-T =115 BOJ. PP=5, MP=5 TIME = 08:19:07.6
% SYSTEM/PACKCOPY =114 BEGIN: COPY AND COMPARE 134 FILES FROM
MYDISK (SERIALNO=140012) TO MYTAPE (KIND=TAPE)
```

Execution Errors

If a problem that can be corrected by the operator is encountered (e.g., PACK CANNOT BE FOUND) during the execution of a command, the operator is requested to enter OK, NEXT or NEW if the command input is from the ODT. If the command input originates from the COMMAND file, the operator is requested to enter OK, NEXT or EOJ.

OK is used after the problem is corrected. The program makes another attempt to execute the command.

NEXT causes the program to skip to the next command if more than one command was originally entered from the ODT or the COMMAND file.

NEW causes all pending command input to be discarded. The program returns a request for new command entry. This entry is prompted only when commands are being entered from the ODT.

EOJ causes the program to go to end of job. This entry is prompted only when the command input originates from the COMMAND file.

Example:

```
114AC COPY = FROM MYDISK TO MYTAPE (KIND=TAPE)

% SYSTEM/PACKCOPY =114 PACK "MYDISK" CANNOT BE FOUND
% SYSTEM/PACKCOPY =114 ENTER "OK" IF PROBLEM FIXED, "NEXT" TO
PROCESS NEXT COMMAND IN INPUT STRING OR "NEW" TO ENTER
NEW COMMAND(S)

RY DPC

SYSTEM/PACKCOPY =114 ACCEPT.

114AC OK
```

I/O Errors

The MCP automatically tries to recover from tape errors. It tries up to 10 times to write a given block, moving the tape ahead after each try. If the data block cannot be written on tape after 10 tries, a write-parity-error-on-tape message is given. The name of the file that was being written at the time of the error is also displayed. The SYSTEM/PACKCOPY program then requests the operator to enter NEXT or EOJ.

NEXT causes the program to skip to the next command if more than one command was entered from the ODT or the COMMAND file. If not, the program goes to EOJ. EOJ forces the program to end of job. There is no recovery of the current copy process from this error.

Example:

```
SYSTEM/PACKCOPY-T =7772 ENCOUNTERED A PARITY ERROR ON MTA ON WRITE
% SYSTEM/PACKCOPY-T =7772 ** FATAL TAPE ERROR (DATA ERROR) ,
  RESULT = @D00080@
% SYSTEM/PACKCOPY-T =7772 CURRENT FILE IS DIRECTORY/FILENAME
% SYSTEM/PACKCOPY =7771 ENTER "NEXT" TO PROCESS NEXT COMMAND IN
  INPUT STRING OR "EOJ"
SYSTEM/PACKCOPY =7771 ACCEPT.
```

```
7771AX EOJ
% SYSTEM/PACKCOPY =7771 CURRENT COPY TERMINATED
SYSTEM/PACKCOPY-T =7772 EOJ. TIME = 14:43:25.1
% SYSTEM/PACKCOPY =7771 END: COPY 23 OF 134 FILES FROM SB TO
  SBT(KIND=TAPE)
SYSTEM/PACKCOPY =7771 EOJ. TIME = 14:43:27.0
```

The MCP automatically tries to recover from disk errors also. If the disk error is irrecoverable, however, the SYSTEM/PACKCOPY program requests entry of CONTINUE, QUIT, NEXT, or EOJ.

If the error occurs while reading user-file data, entering CONTINUE instructs the program to ignore the bad data. The current data block is marked as unreliable and copying continues with the writing of the remaining blocks of the file to tape.

If the error occurs while reading a disk directory sector, CONTINUE instructs the program to skip to the next directory sector. Copying continues with the next available file in the next directory sector.

If the error occurs while reading a disk file header, CONTINUE causes the program to skip the associated file. No part of the file will be copied.

A QUIT response is requested only for errors in user-file data. QUIT instructs the program to abandon the file. A file-abort indication is written to tape and copying continues with the next file in the directory.

A NEXT response instructs the program to skip to the next command, if one exists in the current ODT input or COMMAND file.

An EOJ response instructs the program to go to end of job.

Example:

```
% SYSTEM/PACKCOPY =125 IRRECOVERABLE DISK READ ERROR IN FILE
  DIRECTORY/FILENAME ON MYPACK, SECTORS @01FADE@ THROUGH @01FAFB@
% SYSTEM/PACKCOPY =125 ENTER "CONTINUE" TO IGNORE THE ERROR,
  "QUIT" TO ABANDON THE CURRENT FILE, "NEXT" TO PROCESS NEXT
  COMMAND IN INPUT STRING OR "EOJ"
SYSTEM/PACKCOPY =125 ACCEPT.

125AX CONTINUE

SYSTEM/PACKCOPY-T =126 EOJ. TIME 23:55:34.7
% SYSTEM/PACKCOPY =125 END: COPY 10 FILES FROM MYPACK TO
  MYTAPE (KIND=TAPE)
SYSTEM/PACKCOPY =125 EOJ. TIME 23:55:40.2
```

Comparison Errors

When the COMPARE option is specified, SYSTEM/PACKCOPY compares the input disk files to the output tape files in a reel-by-reel manner. In the event of a comparison error, a listing is produced indicating the name and hardware type of both the source (FROM) and copy (TO) volumes, the name of the file currently being compared, the type of tape records being compared, and the contents of those records.

Comparison errors occurring in user-file data records or tape directory entry records are not fatal errors and cause the program to request the operator to enter the SKIP, NEXT, or EOJ response. Comparison errors occurring in more critical kinds of records, such as tape header records or tape end-of-file records, are fatal and the operator is only given a choice of the NEXT or EOJ response.

The SKIP response, when entered in response to a user-file data comparison error, stops the compare process until the end of the current tape file is reached, or in the case of a file that crosses reel boundaries, the end of the reel. The compare process resumes with the start of the next file, or in the case of a file that crosses reel boundaries, the start of the next reel. If the comparison error occurred in a tape directory entry record, the SKIP response instructs the program to continue the compare process with the next entry.

A NEXT response instructs the program to skip to the next command, if one exists in the current ODT input or COMMAND file.

The EOJ response causes the program to go to end of job (EOJ).

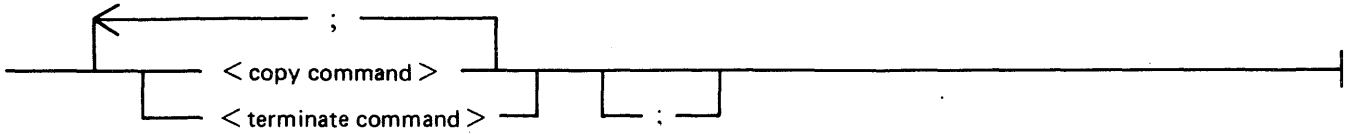
Example:

```
% SYSTEM/PACKCOPY-T =298 ** COMPARISON ERROR IN FILE
  DIRECTORY/FILENAME
% SYSTEM/PACKCOPY =297 ENTER "SKIP" TO SKIP THE CURRENT FILE,
  "NEXT" TO PROCESS NEXT COMMAND IN INPUT STRING OR "EOJ"
SYSTEM/PACKCOPY =297 ACCEPT.

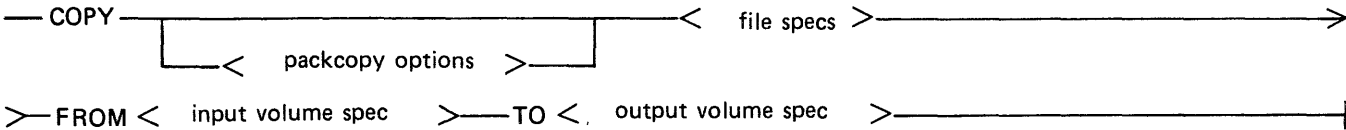
297AX SKIP
```

SYSTEM/PACKCOPY COMMAND SYNTAX

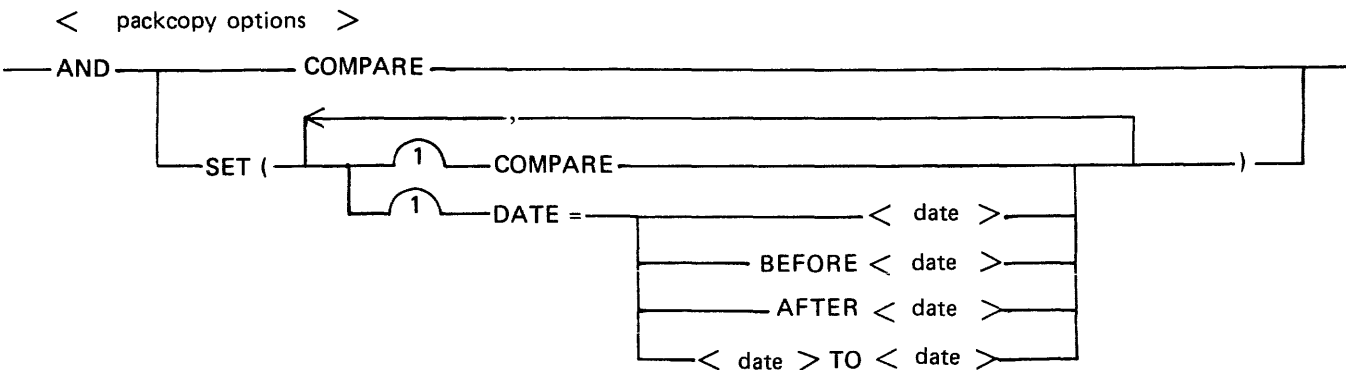
Syntax:



<copy command>



<packcopy options>



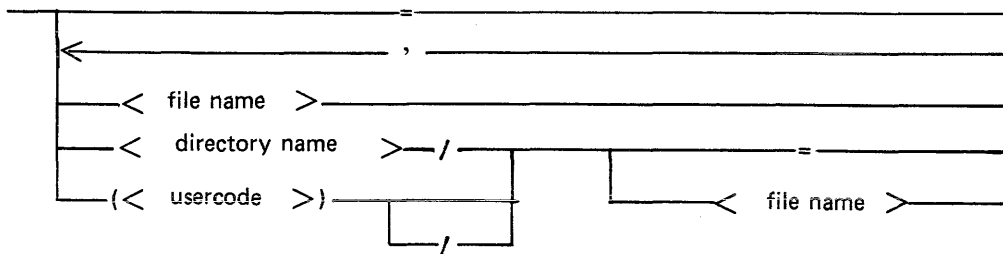
The DATE option specifies that a file is to be selected for copying only when its update date fulfills the conditions specified by the DATE option. Only one DATE option is allowed for each command, and it applies to all of the files selected by the following <file specs>. A <date> must be in the form mm/dd/yy, and the following values may be specified:

Value	Files Selected
<date>	Files updated on the specified date.
BEFORE <date>	Files updated before the specified date.
AFTER <date>	Files updated after the date.
<date> TO <date>	Files updated between (inclusive of) the specified dates.

Example:

```
COPY AND SET(COMPARE, DATE = AFTER 12/3/84) A/= FROM MYDISK TO MYTAPE
(KIND = TAPE);
```

< file specs >

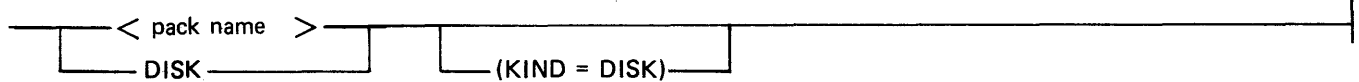


A < file name > or < directory name > may be any valid MCP file identifier of 10 or fewer characters that does not contain any of the following characters, which function as token delimiters:

- () left and right parentheses
- = equal sign
- ; semicolon
- , comma
- / slash
- % percent sign
- blank

A < usercode > has the same restrictions and is additionally limited to eight or fewer characters.

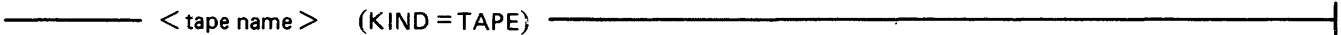
< input volume spec >



The reserved < pack name > of DISK means the System disk. Note that a missing < pack name > is a syntax error, rather than a default to System disk. This requirement is enforced because the default would not be the same as B 1000 SYSTEM/COPY when it is run under a usercode.

The < pack name > may be any valid MCP pack name of 10 or fewer characters, subject to the same allowable character restrictions as those given previously for a < file name >.

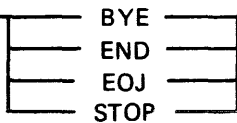
< output volume spec >



The < tape name > is composed of 10 or fewer characters, consisting of:

- A-Z (upper-case letters),
- 0-9 (numbers),
- (hyphen),
- _ (underscore).

<terminate command>



Note that the SYSTEM/PACKCOPY program automatically goes to end-of -job (EOJ) after all commands have been processed. This means that under normal circumstances a <terminate command> is not required. However, if the AUTO EOJ switch is set to not invoke AUTO__EOJ (SW1 = 1) and command input is coming from the ODT, SYSTEM/PACKCOPY remains in the mix, requesting additional command input, and must be explicitly terminated with a <terminate command>.

APPENDIX A DISK DEVICE CHARACTERISTICS

DISK CARTRIDGE CHARACTERISTICS

Physical Characteristics

	B 9480-12	B 9481-12	B 9482-32
Bytes-per-sector	180	180	180
Sectors-per-track	32	32	64
Tracks-per-cylinder	2	2	2
Cylinders-per-cartridge	203	406	406
Sectors-per-cartridge	12,992	25,984	51,968
Bytes-per-cartridge	2,338,560	4,677,120	9,354,240
Transfer Rate (MBITS/SEC)	1.55	1.55	3.10
Rotational Speed (RPM)	1,500	1,500	1,500

Initialization Error Limits

Errors-per-cartridge	406	812	812
----------------------	-----	-----	-----

Initialization Characteristics

All three types:

Initialize with @6363@ pattern
Read/Verify one pass

B 9484 (205 AND 206) DISK PACK CHARACTERISTICS

Physical Characteristics

	205 B 9484-25	206 B 9484-55
Bytes-per-sector	180	180
Sectors-per-track	90	90
Tracks-per-cylinder	5	5
Usable sectors-per-cylinder	445	445
Cylinders-per-pack	408	815
Usable cylinders-per-pack	407	814
Sectors-per-pack	183,600	366,700
Usable sectors-per-pack	181,115	362,230
Bytes-per-pack	33,048,000	66,015,000
Usable bytes-per-pack	32,600,700	65,201,400
Spare sectors-per-cylinder	5	5
Spare Sectors-per-pack	2,040	4,075
Usable spare sectors-per-pack	2,035	4,070
Transfer Rate (MBITS/SEC)	9.86	9.86
Nominal Rotational Speed (RPM)	3,672	3,672

Initialization Error Limits

Errors-per-cylinder	5	5
Errors-per-pack	2,035	4,070

Initialization Characteristics

Both types:

- Initialize with @6363@ pattern
- Read/Verify three passes (0, +, -)
- Write @9C9C@ pattern
- Read/Verify three passes (0, +, -)

NOTE

The preceding 0, +, and - refer to verification with no offset (0), offset in (+), and offset out (-).

B 9499 (223, 225 AND 207) DISK PACK CHARACTERISTICS

Physical Characteristics

	223 B 9499-8	225 B 9499-7	207 B 9499-6
Bytes-per-sector	180	180	180
Sectors-per-track	60	60	90
Tracks-per-cylinder	20	20	8
Usable sectors-per-cylinder	1195	1195	715
Cylinders-per-pack	203	406	1,564
Usable cylinders-per-pack	203	406	1,563
Sectors-per-pack	243,600	487,200	1,126,080
Usable sectors-per-pack	242,585	485,170	1,117,545
Bytes-per-pack	43,848,000	87,696,000	202,694,400
Usable bytes-per-pack	43,665,300	87,330,600	201,158,100
Spare sectors-per-cylinder	5	5	5
Spare sectors-per-pack	1,015	2,030	7,820
Usable spare secs-per-pack	1,015	2,030	7,815
Transfer Rate (MBITS/SEC)	5	5	10.71
Nominal RPM	2,400	2,400	3,672

Initialization Error Limits

Errors-per-cylinder	5	5	715
Errors-per-pack	1,015	2,030	7,815

Initialization Characteristics

B 9499-8/7

- Initialize with @6DB6@ pattern
- Read/Verify three passes (0, +, -)
- Write @6363@ pattern
- Read/Verify three passes (0, +, -)

B 9499-6

- Initialize with @0000@ pattern
- Read/Verify three passes (+, -, 0), pattern @6DB@
- Read/Verify three passes (+, -, 0), pattern @DB6@
- Read/Verify three passes (+, -, 0), pattern @B6D@

NOTE

The preceding 0, +, and - refer to verification with no offset (0), offset in (+), and offset out (-) for the B 9499-8/7 (223, 225); and to normal (0), high (+) and low (-) threshold settings for the B 9499-6 (207).

B 9484-12, B 9494-5, AND B 9494-10 DISK PACK CHARACTERISTICS

Physical Characteristics

	677 B 9484-12	659 B 9494-10 B 9494-5
Bytes-per-sector	180	180
Sectors-per-track	90	90
Tracks-per-cylinder	19	15
Usable sectors-per-cylinder	1705	1345
Cylinders-per-pack	823	2242
Usable cylinders-per-pack	822	2240
Sectors-per-pack	1,403,215	3,014,145
Usable sectors-per-pack	1,401,510	3,012,800
Bytes-per-pack	252,578,700	542,546,100
Usable bytes-per-pack	252,271,800	542,304,000
Spare sectors-per-cylinder	5	5
Spare Sectors-per-pack	4,115	11,210
Usable spare sectors-per-pack	4,110	11,200
Transfer Rate (MBITS/SEC)	9.87	9.87
Nominal Rotational Speed (RPM)	3,672	3,672

Initialization Error Limits

Maximum removed sectors	100	1,600
Maximum transients per cylinder	20	20
Maximum transients per disk	1,000	1,000

Initialization Characteristics

Both types:

Initialize with @6DB0@ pattern
Write @6DB@ pattern
Read/Verify and compare three passes (+, -, 0)
Write @DB6@ pattern
Read/Verify three passes (+, -, 0)
Write @B6D@ pattern
Read/Verify three passes(+, -, 0)

NOTE

The preceding 0, +, and - refer to verification with no offset (0), offset in (+), and offset out (-).

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