

# Burroughs



# PUBLICATION CHANGE NOTICE

---

PCN No.: 1169091-002 Date: April 1986  
Publication Title: B 1000 Systems System Software Operations Guide, Volume 2 (February 1985)  
Other Affected Publications: None  
Supersedes: N/A

---

Description: This PCN describes new features for the B 1000 SYSTEM/PACKCOPY program and the CREATE/ISAM program.

### Replace these pages

iii  
v thru vii  
xix  
4-1  
9-1  
9-3 thru 9-7  
11-7  
11-13  
16-5 thru 16-7  
16-21 thru 16-23  
20-7  
22-9  
22-21  
24-9  
33-5  
34-5 thru 34-7  
43-9 thru 43-11  
47-1 thru 47-5  
9

### Add this page

9-2A

## LIST OF EFFECTIVE PAGES

Page	Issue	Page	Issue
Title	Original	22-10	PCN-002
ii	Original	22-11 thru 22-15	Original
iii thru iv	PCN-001	22-16	PCN-001
v thru viii	PCN-002	22-16A	PCN-001
ix thru xviii	PCN-001	22-16B	Blank
xix	PCN-002	22-17 thru 22-18	PCN-001
xx thru xxii	PCN-001	22-19 thru 22-20	Original
xxiii	Original	22-21	PCN-002
xxiv	PCN-001	22-22 thru 22-51	Original
1-1 thru 1-9	Original	22-52	Blank
1-10	Blank	23-1 thru 23-11	Original
2-1 thru 2-2	Original	23-12	PCN-001
3-1	Original	23-13 thru 23-18	Original
3-2	Blank	24-1	PCN-001
4-1	PCN-002	24-2 thru 24-5	Original
4-2 thru 4-4	PCN-001	24-6 thru 24-7	PCN-001
4-4A	PCN-001	24-8 thru 24-9	Original
4-4B	Blank	24-10	PCN-002
5-1	Original	24-11	PCN-001
5-2	Blank	24-12 thru 24-37	Original
6-1	PCN-001	24-38	Blank
6-2	Original	25-1 thru 25-3	Original
6-3 thru 6-4	PCN-001	25-4	Blank
6-4A	PCN-001	25A-1	Original
6-4B	Blank	25A-2	Blank
6-5 thru 6-8	Original	26-1 thru 26-5	Original
7-1 thru 7-3	PCN-001	26-6	Blank
7-4	Blank	27-1	Original
7-4A	PCN-001	27-2	PCN-001
7-4B	Blank	27-2A	PCN-001
7-5	Original	27-2B	Blank
7-6	Blank	27-3	PCN-001
8-1 thru 8-2	Original	27-4 thru 27-8	Original
9-1 thru 9-2	PCN-002	28-1 thru 28-3	Original
9-2A	PCN-002	28-4	PCN-001
9-2B	Blank	28-5 thru 28-7	Original
9-3	Original	28-8	Blank
9-4 thru 9-7	PCN-002	29-1 thru 29-6	Original
9-8	Blank	30-1 thru 30-8	Original
10-1 thru 10-6	Original	31-1 thru 31-2	Original
11-1 thru 11-6	Original	31-3	PCN-001
11-7 thru 11-8	PCN-002	31-4 thru 31-36	Original
11-9 thru 11-12	Original	32-1 thru 32-4	Original
11-13	PCN-002	33-1 thru 33-5	Original
11-14 thru 11-17	Original	33-6	PCN-002
11-18	Blank	33-7 thru 33-15	Original
12-1 thru 12-3	Original	33-16	Blank
12-4	Blank	34-1 thru 34-5	Original
13-1 thru 13-2	Original	34-6 thru 34-7	PCN-002
13-2A	PCN-001	34-8	Blank
13-2B	Blank	35-1 thru 35-4	Original
14-1 thru 14-9	Original	36-1 thru 36-2	Original
14-10	Blank	37-1 thru 37-8	Original
15-1 thru 15-2	Original	38-1 thru 38-4	Original
16-1 thru 16-4	Original	39-1 thru 39-3	Original
16-5	PCN-001	39-4	Blank
16-6 thru 16-7	PCN-002	40-1 thru 40-2	Original
16-8 thru 16-20	Original	41-1	Original
16-21	PCN-002	41-2	Blank
16-22 thru 16-23	Original	42-1 thru 42-3	Original
16-24	PCN-002	42-4	Blank
16-25 thru 16-29	Original	43-1 thru 43-9	Original
16-30	PCN-001	43-10 thru 43-11	PCN-002
17-1 thru 17-14	Original	43-12 thru 43-15	Original
18-1	Original	43-16	Blank
18-2	Blank	44-1 thru 44-2	Original
19-1 thru 19-26	Original	45-1 thru 45-2	Original
20-1 thru 20-3	PCN-001	46-1 thru 46-3	Original
20-4 thru 20-7	Original	46-4	Blank
20-8	PCN-002	47-1	PCN-002
20-9 thru 20-14	Original	47-2	Original
21-1 thru 21-6	Original	47-2A thru 47-2B	PCN-002
22-1 thru 22-4	Original	47-3	PCN-001
22-5	PCN-001	47-4 thru 47-5	PCN-002
22-6 thru 22-9	Original	47-6	PCN-001

## LIST OF EFFECTIVE PAGES (Cont)

Page	Issue
47-6A thru 47-6B	PCN-001
48-1 thru 48-10	Original
49-1 thru 49-6	Original
50-1 thru 50-3	Original
50-4	Blank
A-1 thru A-3	PCN-001
A-4	Blank
B-1 thru B-3	Original
B-4	Blank
C-1 thru C-4	Original
1 thru 9	PCN-001
10	PCN-002
11	PCN-001
12	Blank

## TABLE OF CONTENTS

Section	Title	Page
	PREFACE . . . . .	xxiii
	Related Documents . . . . .	xxiv
	B 1000 Software Manuals . . . . .	xxiv
1	INTRODUCTION . . . . .	1-1
	Categories of Utility Programs . . . . .	1-1
	General Description of Utility Programs . . . . .	1-3
	System Start-Up Programs . . . . .	1-3
	Copy/File Copy Programs . . . . .	1-3
	Disk File Copy . . . . .	1-4
	Tape File Copy . . . . .	1-5
	Printer Listings . . . . .	1-5
	Cassette File Copy . . . . .	1-6
	Card File Copy . . . . .	1-6
	Diskette File Copy . . . . .	1-6
	File Initializer Program . . . . .	1-7
	Disk Initializer Programs . . . . .	1-7
	General Maintenance Programs . . . . .	1-7
	Log Analysis Programs . . . . .	1-9
2	CASSETTE/MAKER . . . . .	2-1
	Operating Instructions . . . . .	2-1
	Input Specifications . . . . .	2-1
	Sample Execution Commands . . . . .	2-1
	Program Output . . . . .	2-1
	Files Created . . . . .	2-1
	Informative Messages . . . . .	2-2
	Error Messages . . . . .	2-2
3	CHECK/LOAD-DUMP . . . . .	3-1
	Program Product No Longer Supported . . . . .	3-1
4	CLEAR/START AND MEMORY DUMP PROCEDURE . . . . .	4-1
	Clear Start Functions . . . . .	4-1
	System Initialization Functions . . . . .	4-2
	MCP Functions . . . . .	4-2
	CLEAR/START Operating Instructions . . . . .	4-2
	Clear-starting -- B 1990 System with a Console Cassette Drive . . . . .	4-3
	Clear-starting -- B 1990 System with a Console Diskette Drive . . . . .	4-3
	Clear-starting -- Other B 1000 Systems . . . . .	4-4
	Description of the Name Table . . . . .	4-4A
	Temporary Environment Changes . . . . .	4-5
	B 1990 Systems . . . . .	4-5
	Other B 1000 Systems . . . . .	4-7
	System Disk Channel Selection Override . . . . .	4-8
	I/O Channel Deletion . . . . .	4-8
	Pseudo-Memory Size Specification . . . . .	4-9
	Disk Drive Unit Order Selection . . . . .	4-10
	Disk Cache Disable Function . . . . .	4-11
	Supplementary Information Required with a Memory Dump . . . . .	4-11

## TABLE OF CONTENTS (Cont)

Section	Title	Page
5	CODE/ANALYZER . . . . .	5-1
	Operating Instructions . . . . .	5-1
	Program Switches . . . . .	5-1
6	COLDSTART/DISK . . . . .	6-1
	COLDSTART/DISK Program Overview . . . . .	6-1
	Input and Output Disks . . . . .	6-1
	System Software Files . . . . .	6-2
	Program Options . . . . .	6-2
	Operating Instructions . . . . .	6-3
	Program Loading -- B 1990 System with a Console Cassette Drive . . . . .	6-3
	Program Loading -- B 1990 System with a Console Diskette Drive . . . . .	6-4
	Program Loading -- All Other B 1000 Systems . . . . .	6-4
	Program Execution . . . . .	6-4A
	Halts . . . . .	6-6
	Error and Advisory Messages to the ODT . . . . .	6-6
7	COLDSTART/TAPE . . . . .	7-1
	Program Overview . . . . .	7-1
	Input and Output Media . . . . .	7-1
	System Software Files . . . . .	7-2
	Program Options . . . . .	7-2
	Operating Instructions . . . . .	7-2
	Program Loading -- B 1990 System with a Console Cassette Drive . . . . .	7-2
	Program Loading -- B 1990 System with a Console Diskette Drive . . . . .	7-3
	Program Loading -- All Other B 1000 Systems . . . . .	7-3
	Program Execution . . . . .	7-4
	Halts . . . . .	7-4A
8	CONVERT/BACKUP . . . . .	8-1
	Operating Instructions . . . . .	8-1
	Error Messages . . . . .	8-2
9	CREATE/ISAM . . . . .	9-1
	Operating Instructions . . . . .	9-1
	Terminal Interface . . . . .	9-2
	File Screen Semantics . . . . .	9-2A
	Key Screen Semantics . . . . .	9-3
	ODT Interface . . . . .	9-4
	ODT Interface Sample Executions . . . . .	9-6
	Card Interface . . . . .	9-6
	Tape Output . . . . .	9-6
	Output Messages . . . . .	9-6
	Terminal Interface Messages . . . . .	9-6
	ODT Interface Messages . . . . .	9-7
	Error Conditions . . . . .	9-7
10	CREATE/TABLE . . . . .	10-1
	Translation Table . . . . .	10-1
	Translate Header Format . . . . .	10-1

## TABLE OF CONTENTS (Cont)

Section	Title	Page
10 (Cont)	Operating Instructions . . . . .	10-2
	Program Input . . . . .	10-2
	Option Summary . . . . .	10-3
	Syntax . . . . .	10-3
	Semantics . . . . .	10-4
	Error Messages . . . . .	10-5
	Internal Files . . . . .	10-6
11	DC/AUDIT . . . . .	11-1
	Overview . . . . .	11-1
	The AUDIT Capability . . . . .	11-1
	Writing The Audit File . . . . .	11-1
	Restrictions . . . . .	11-1
	Structure of the Audit File . . . . .	11-1
	Audit File Blocking . . . . .	11-2
	Audit File Buffering . . . . .	11-2
	DC/AUDIT Operating Procedures . . . . .	11-2
	Parameter Entry Alternatives . . . . .	11-2
	Parameter Entry Format . . . . .	11-3
	Parameter Entry Error Message . . . . .	11-3
	Processing . . . . .	11-4
	ODT Messages . . . . .	11-4
	Termination . . . . .	11-5
	Input Commands . . . . .	11-5
	Parameters . . . . .	11-5
	Printer Output Formats . . . . .	11-11
	Output Format 1 . . . . .	11-12
	Output Format 2 . . . . .	11-13
	Output Format 3 . . . . .	11-14
Output Format 4 . . . . .	11-15	
I/O Completions . . . . .	11-15	
DC/AUDIT Mnemonic Characters . . . . .	11-17	
12	DISK/ALLOCATOR . . . . .	12-1
	Operating Instructions . . . . .	12-1
	Execution . . . . .	12-1
	Command Specifications . . . . .	12-1
	Allocated File Structure . . . . .	12-2
	Sample Execution . . . . .	12-2
	Error Messages . . . . .	12-3
13	DISK/DUMP . . . . .	13-1
	Program Loading Instructions . . . . .	13-1
	Program Loading -- B 1990 System with a Console Cassette Drive . . . . .	13-1
	Program Loading -- B 1990 System with a Console Diskette Drive . . . . .	13-2
	Program Loading -- Other B 1000 Systems . . . . .	13-2
	Operating Instructions . . . . .	13-2A
	Status Command . . . . .	13-3
Error Messages . . . . .	13-3	

## TABLE OF CONTENTS (Cont)

Section	Title	Page
14	DISKETTE/COPY . . . . .	14-1
	Operating Instructions . . . . .	14-1
	Program Switches . . . . .	14-1
	Input Specifications . . . . .	14-1
	AUTOLOAD Facility . . . . .	14-2
	COPY Command . . . . .	14-2
	Routine Type Specifier . . . . .	14-3
	Input File Specifications . . . . .	14-3
	Output File Specifications . . . . .	14-4
	BYPASS Option . . . . .	14-4
	PSEUDO Option . . . . .	14-4
	KA Command . . . . .	14-4
	PURGE Command . . . . .	14-6
	RELABEL Command . . . . .	14-6
	Sample Input Specifications . . . . .	14-6
	Error Messages . . . . .	14-7
15	DISKPACK/INTERCHANG . . . . .	15-1
	Operating Instructions . . . . .	15-1
	Error Messages . . . . .	15-1
16	DMPALL . . . . .	16-1
	Operating Instructions . . . . .	16-1
	Program Switches . . . . .	16-2
	Input to the DMPALL Program . . . . .	16-3
	Sample Input Specification Strings . . . . .	16-3
	Sample Executions . . . . .	16-4
	Tape Parity Modifications . . . . .	16-4
	Commands . . . . .	16-5
	CAT (Concatenation) Command . . . . .	16-5
	COPY (or PERFORM) Command . . . . .	16-7
	LIST Command . . . . .	16-10
	PD (Print Directory) Command . . . . .	16-12
	Specifications . . . . .	16-13
	<access-mode> Specification . . . . .	16-13
	<file-id> Specification . . . . .	16-14
	<file-title> Specification . . . . .	16-15
	<file-name> Specification . . . . .	16-16
	<hardware-type> Specification . . . . .	16-17
	<options> Specification . . . . .	16-18
	<output-areas-and-blocking> Specification . . . . .	16-21
	<routine-type> Specification . . . . .	16-22
	Files . . . . .	16-25
	Output Files . . . . .	16-25
	Disk Files . . . . .	16-25
	Tape Files . . . . .	16-25
	Printer Listings . . . . .	16-25

## TABLE OF CONTENTS (Cont)

Section	Title	Page
47 (Cont)	Operating Instructions . . . . .	47-2
	ODT Command Input . . . . .	47-2
	COMMAND File Input . . . . .	47-2
	Execution Examples . . . . .	47-2A
	STATUS Request . . . . .	47-2A
	Syntax Errors . . . . .	47-2B
	Execution Errors . . . . .	47-3
	Tape I/O Errors . . . . .	47-4
	Disk I/O Errors . . . . .	47-4
	Comparison Errors . . . . .	47-5
	SYSTEM/PACKCOPY Command Syntax . . . . .	47-6
	<copy command> . . . . .	47-6
	<packcopy options> . . . . .	47-6
	<file specs> . . . . .	47-6A
	<input volume spec> . . . . .	47-6A
	<output volume spec> . . . . .	47-6A
	<terminate command> . . . . .	47-6B
Special Operational Considerations . . . . .	47-7	
48	SYSTEM/PANDA . . . . .	48-1
	Required System File . . . . .	48-1
	Options Keyword Glossary . . . . .	48-1
	Operating Instructions . . . . .	48-2
	Program Switches . . . . .	48-3
	Program Execution . . . . .	48-4
	Error and Advisory Messages . . . . .	48-4
	MAP and CHECK Related Messages . . . . .	48-4
	Other Advisory and Error Messages . . . . .	48-6
	Notes On Save Option File . . . . .	48-7
	User File Heading . . . . .	48-10
49	SYSTEM/SQUASH . . . . .	49-1
	Operating Instructions . . . . .	49-1
	Program Switches . . . . .	49-2
	Switch 1 . . . . .	49-2
	Switch 2 . . . . .	49-2
	Integrity Check . . . . .	49-2
	Run-Time Options . . . . .	49-3
	Trace Functions . . . . .	49-3
	Program Output . . . . .	49-4
	Summary Listing . . . . .	49-4
	Squashed Disk . . . . .	49-4
	Error Recovery . . . . .	49-4
	Error Messages . . . . .	49-5
	Nonfatal errors . . . . .	49-5
	Fatal Errors . . . . .	49-6



## TABLE OF CONTENTS (Cont)

Section	Title	Page
50	TAPECOPY . . . . .	50-1
	Operating Instructions . . . . .	50-1
	Input Specifications . . . . .	50-1
	Program Switches . . . . .	50-3
A	DISK DEVICE CHARACTERISTICS . . . . .	A-1
	Disk Cartridge Characteristics . . . . .	A-1
	Physical Characteristics . . . . .	A-1
	Initialization Error Limits . . . . .	A-1
	Initialization Characteristics . . . . .	A-1
	B 9484 (205 and 206) Disk Pack Characteristics . . . . .	A-1
	Physical Characteristics . . . . .	A-1
	Initialization Error Limits . . . . .	A-2
	Initialization Characteristics . . . . .	A-2
	B 9499 (223, 225 and 207) Disk Pack Characteristics . . . . .	A-2
	Physical Characteristics . . . . .	A-2
	Initialization Error Limits . . . . .	A-3
	Initialization Characteristics . . . . .	A-3
	B 9484-12, B 9494-5, and B 9494-10 Disk Pack Characteristics . . . . .	A-3
	Physical Characteristics . . . . .	A-3
	Initialization Error Limits . . . . .	A-4
	Initialization Characteristics . . . . .	A-4
B	SYNTAX CONVENTIONS . . . . .	B-1
	Required Items . . . . .	B-2
	Optional Items . . . . .	B-2
	Loops . . . . .	B-2
	Bridges . . . . .	B-3
C	BACKUP FILE FORMAT . . . . .	C-1
	Control Information . . . . .	C-1
	File Parameter Block (FPB) . . . . .	C-2
	Label . . . . .	C-2
	Data Record . . . . .	C-2
	Carriage Control Field . . . . .	C-2
INDEX	. . . . .	1

## 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: FLMP, MPRI, LOG, THR, 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.

## SECTION 9 CREATE/ISAM

The CREATE/ISAM program creates and recovers COBOL74-type ISAM data files as well as converts COBOL74-type ISAM files to standard data files.

An ISAM file can be created from a standard data file.

Using an existing ISAM file as the input file, the data portion of that file can often be recovered. New GLOBAL and KEY files are produced and records marked for deletion in the existing ISAM file are removed in the output file.

The data portion of an ISAM file can be converted to a standard data file.

The output file attributes for disk (MAXRECSIZE, RECORDS.PER.BLOCK, BLOCKS.PER.AREA and AREAS) are the same as for the input file. (Refer to Tape Output for tape attributes.)

### Operating Instructions

The CREATE/ISAM program accepts file specifications from cards, the ODT, or remote terminals. Program switches 2 and 3 are used to specify the input interface.

Program Switch:	2	3	input
	0	0	terminal (default)
	0	1*	ODT
	1*	0	cards
	1*	1*	cards

1\* means any setting except 0.

Setting switch 5 to a non-zero value allows the output data file (ISAM or standard) to grow to 105 areas (the system maximum). When switch 5 is set to 0 (zero), the maximum number of areas is the same as that of the input file or 25, whichever is greater.

The following input string is used to initiate execution:

EXECUTE CREATE/ISAM

The switch settings may be entered with the SWITCH control attribute or after the job has gone to BOJ, by means of the SW system command. (See *B 1000 Systems System Software Operation Guide, Volume 1.*)

## Terminal Interface

Unless the default settings for program switches 2 and 3 have been changed to request other than the remote terminal interface, the file screen shown in figure 9-1 is displayed at the terminal following the BOJ message.

```
INPUT FILE SPECIFICATIONS
  NAME - PACK ID      [    ] EMPTY IF FILE IS ON DEFAULT PACK
  MULTI-FILE ID      [    ]
  FILE ID            [    ]
  DATA FILE PACK ID [    ] EMPTY IF DATA FILE SPECIFIED ABOVE
                        OR DATA FILE IS ON DEFAULT PACK

OUTPUT FILE SPECIFICATIONS
  NAME - PACK ID      [    ] EMPTY IF FILE IS ON DEFAULT PACK
  MULTI-FILE ID      [    ]
  FILE ID            [    ]
  I/S DATA FILE PACK ID [    ] EMPTY IF FILE IS ON DEFAULT PACK
NON-ISAM (DATA) FILE OUTPUT [ ]

EOJ [ ]
```

Figure 9-1. File Screen

## File Screen Semantics

The file screen is used to enter the desired input and output file names and their locations. The input file must be on disk but can reference one of the following sources:

1. The global (cluster) file of an existing COBOL74-type ISAM file.
2. The data portion of an existing COBOL74-type ISAM file.
3. A sequential file of type data (except when the NON-ISAM option is specified).

DEFAULT PACK refers to (1) the System pack or (2), if the program is under a user code, to the default pack for that user code or (3), if the multi-file-id is a user code, to the default pack for that user code.

When an ISAM file is being created (the NON-ISAM option is not specified), the newly created ISAM output file must be directed to disk and adhere to the following naming conventions:

1. The specified OUTPUT FILE ID becomes the name for the new global file.
2. The data and index files are assigned names as follows:

FILE ID [MYFILENAME]

global file name	MYFILENAME
data file name	00MYFILENA
primary key index file name	01MYFILENA
1st alternate key index file name	02MYFILENA
•	•
•	•
•	•
19th alternate key index file name	20MYFILENA

3. The output ISAM data file must not have the same name as the explicitly or implicitly specified input data file.
4. DISK may be used in the PACK ID fields to mean the system disk. This will override any default packs.

If the information entered through the file screen contains errors, the file screen display reappears with error messages. If no errors occur and the NON-ISAM (DATA) FILE OUTPUT field is not marked, the key screen (figure 9-2) is displayed.

```

KEY DESCRIPTION(S)

          START LOCATION      LENGTH  DUPS    PRIME    PACK
          [   ]              (BYTES) ALLOWED KEY     ID
01.      [   ]              [   ]   [ ]     [ ] [   ]
02.      [   ]              [   ]   [ ]     [ ] [   ]
03.      [   ]              [   ]   [ ]     [ ] [   ]
04.      [   ]              [   ]   [ ]     [ ] [   ]
05.      [   ]              [   ]   [ ]     [ ] [   ]

MORE KEY DESCRIPTIONS REQUIRED [ ]

                                FILE [ ] KEY [ ] EOJ [ ]
    
```

Figure 9-2. Key Screen

### Key Screen Semantics

The key screen is used to enter the access key specifications for the resulting ISAM file.

Entries for START LOCATION and LENGTH fields are right-justified. When entering data in these fields, SKIP TAB is used to position the cursor into successive fields. START LOCATION refers to the location of the first byte of the key field in the record description. The sum of the START LOCATION and LENGTH entries must be less than or equal to the data file record size. If both START LOCATION and LENGTH are blank, the program assumes that all keys have been entered.

Entering a non-blank character in the DUPS ALLOWED field specifies that duplicates are allowed for the key. Any alternate key may have duplicates.

Entering a non-blank character in the PRIME KEY field specifies that the key is the prime access path. Any key can be the prime key but the prime key must not contain duplicates.

The access key files may be located on any pack. The entry "DISK" in the PACK ID fields is assumed to mean the System disk. This overrides any default packs.

Each file screen allows five keys to be entered. If more keys are required, enter a non-blank character in the MORE KEY DESCRIPTIONS REQUIRED box. A total of 20 keys (1 prime, 19 alternate) are allowed.

The functions specified by the entries at the bottom of the screen (FILE, KEY, EOJ) are activated by the entry of a non-blank character.

- FILE Return to file screen. All file names and keys must be re-entered.
- KEY Return to key screen. All keys previously entered are cleared and must be re-entered.
- EOJ Terminate the program.

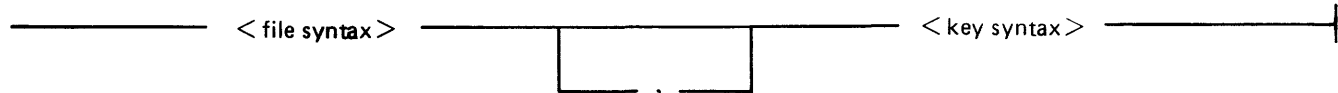
## ODT Interface

The ODT interface allows the user to enter the program specifications as AC or AX commands in response to the MCP ACCEPT mechanism. This interface is activated when program switch 3 is set (non-zero).

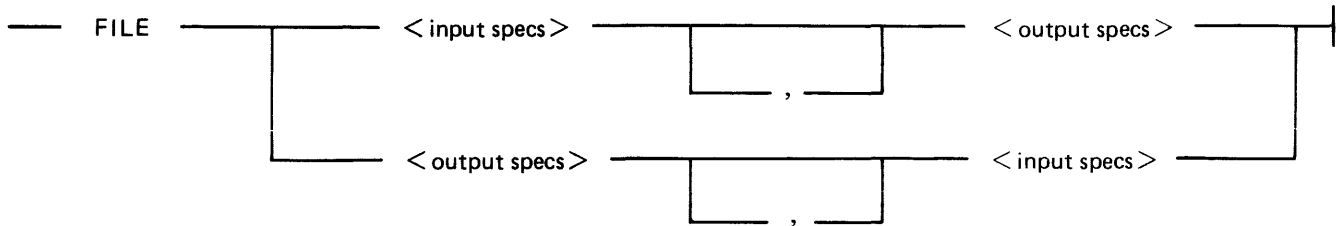
Specifications are entered in a free-field format. The program accepts commands until a blank or a null string is entered with an AC or AX command. The program accepts a maximum of 160 characters per command. One ISAM file or standard data file is created with each execution of the CREATE/ISAM program. KEY specifications are not valid if the NON-ISAM option is specified for the output file. All limits described in the terminal interface apply to the ODT interface.

Syntax (ODT Interface):

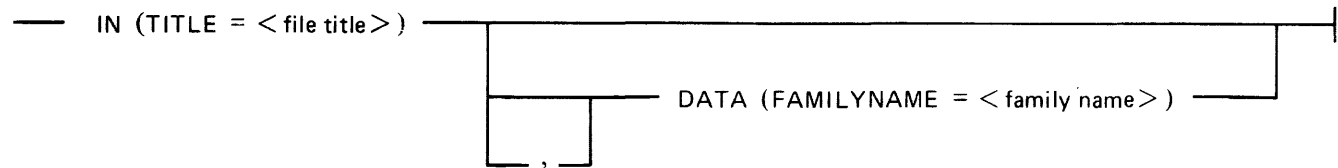
<ODT interface>



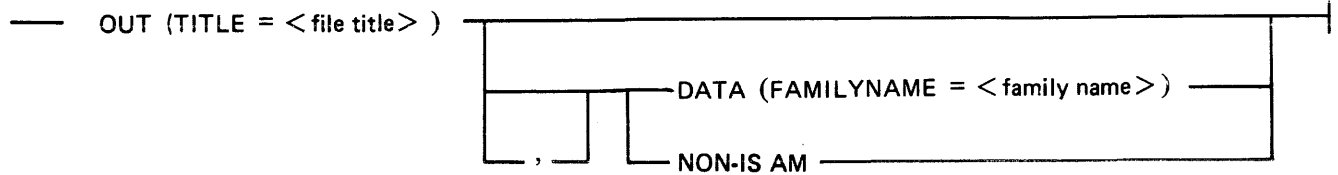
<file syntax>



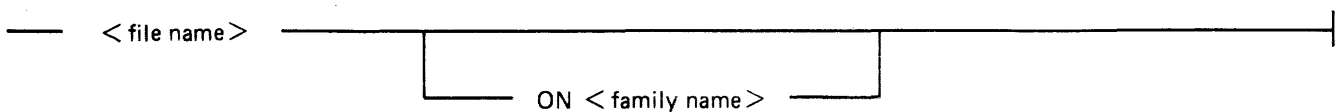
<input specs>



<output specs>

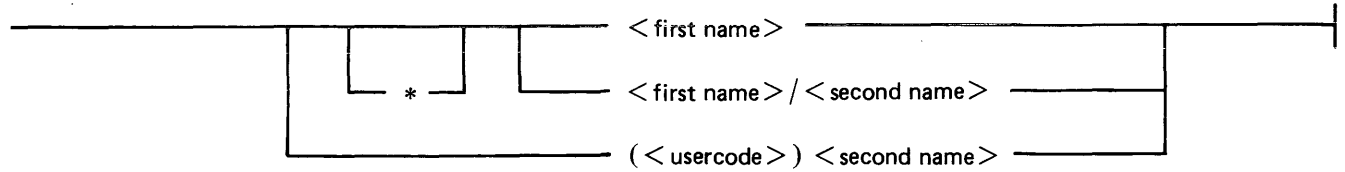


<file title>





<file-name>



Semantics (ODT Interface):

The characters usable in the preceding syntax are upper-case letters, numbers, underscores, and hyphens.

<file-name>

Used to reference a file without regard to its medium.

<family name>

One to ten characters. Name of disk or pack. The name DISK can be used to specify the System disk and overrides the default pack associated with a usercode.

<first name>

One to ten characters. When the asterisk syntax is used, the asterisk character counts as one of the ten characters in the < first name>.

<second name>

One to ten characters.

<usercode>

One to eight characters.

\* (asterisk)

Used in a <file-name> to override the default usercode and the default pack <family name> associated with that usercode. It is only necessary to use an asterisk in a <file-name> when the program accessing the file is run under a usercode and the < file-name> consists of a <first name> only. Use a <family name> of DISK to override the default pack.

DATA

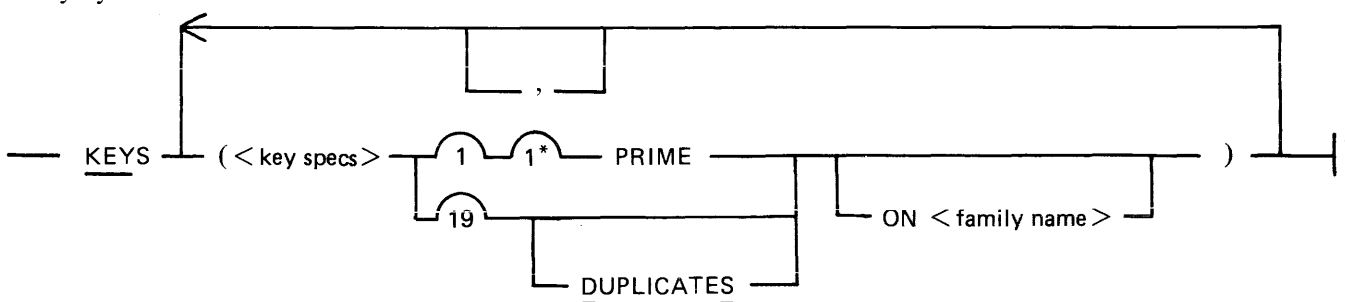
Indicates that the following family name is that of the pack for the ISAM file.

NON-ISAM

Specifies that the output file is a standard data file.

Syntax (<key syntax>):

<key syntax>



<key specs>



Semantics (<key syntax>):

<key syntax>

This item is not used when the NON-ISAM option is specified.

<offset>

Refers to the relative displacement from zero of the first character of the key in bytes.

<length>

Refers to the length of the key in bytes.

**NOTE**

Keys are alphanumeric; each character is one byte.

## ODT Interface Sample Executions

Two sample program control instructions follow:

```
EX CREATE/ISAM SW3 1
```

```
  <mix-number>AX FILE IN (TITLE=ACCOUNTS/PAYABLE ON USER),  
    OUT (TITLE=ACCOUNTS/PAYABLEX), DATA (FAMILYNAME = USER),  
    KEYS (4 5 PRIME) (20 10 DUPS) (32 5 ON USER2)
```

```
EX CREATE/ISAM;AX FILE IN (TITLE=(usercode) MASTER ON PACKX)  
    OUT (TITLE=(usercode) NEWMASTER)  
    KEY ( 1 10 PRIME)
```

## Card Interface

The card interface allows the user to enter the program specifications through the card reader. This interface is activated when program switch 2 is set (non-zero).

Specifications entered in this interface are free field and the program can accept up to eighty (80) characters of data per card.

All limits described in the terminal interface and the ODT interface apply in the card interface.

The syntax for the card interface is identical to that given for the ODT interface.

## Tape Output

When the NON-ISAM option is specified, a standard data file is created which can be file equated to tape. The output MAXRECSIZE and RECORDS.PER.BLOCK are acquired from the input file. The file equate is as follows:

```
EX CREATE/ISAM FILE DATAOUT TAPE
```

where DATAOUT is the standard data output file in the CREATE/ISAM program.

The tape label is either <multi-file id> /<file id> or just <file id> (if no multi-file id is entered). The data tape can be read by the A Series SYSTEM/DUMPALL and B 1000 DMPALL programs.

## Output Messages

Error messages and informative procedural messages are displayed by the CREATE/ISAM program. When these messages appear is slightly different depending on which interface is being used to enter the input specifications.

## Terminal Interface Messages

When all specifications have been accepted by the CREATE/ISAM program, the following message is displayed:

```
BEGIN COPY OF <input-file name> TO <file type> <output-file name>
```

where <file type> is ISAM FILE or DATA FILE.

The following message is displayed every 1000 records and when the copy is complete:

```
<number> RECORDS COPIED
```

If errors occur during the copy operation, a message is displayed. Depending on the nature of the error, program execution may be continued or terminated.

## ODT Interface Messages

If errors occur in the syntax of the <ODT interface> entries, error messages are displayed after each AC or AX command entry. A blank AC or AX command must be entered before the errors can be corrected. Two successive blank AC or AX commands cause the program to terminate.

The copy operation does not begin until after the syntax is error-free and one blank AC or AX command has been transmitted. Errors that occur during the copy operation are displayed as they occur, with appropriate messages.

## Error Conditions

Errors associated with the file screen or the key screen cause the screen to be re-displayed with the user's input in place and self-explanatory error messages displayed at the bottom of the screen.

Errors during the file copy are displayed when they occur. Depending on the error, the program may continue or terminate. For error conditions in this category, the messages displayed, the causes, and the actions to take are as follows:

\*\*\* WRITE ERROR 1 – UNEXPECTED END OF FILE, RECORD NUMBER N.

The MCP returned an end-of-file condition which indicates a system failure of some type. The program terminates.

\*\*\* WRITE ERROR 2 – DUPLICATE KEY, RECORD NUMBER N, ENTER "OK" TO IGNORE RECORD AND CONTINUE.

This condition is typically caused by a duplicate key in a field where duplicates are not allowed. If the error is entered with an AC or AX command, the program hangs, but resumes if AX OK is entered. Otherwise, the program terminates.

\*\*\* WRITE ERROR 6 – REQUESTED AREA IS GREATER THAN FILE ALLOWS, RECORD NUMBER N.

This condition indicates the failure of the program to correctly generate output file specifications. The program terminates.

Semantics:

**ADDRESS**

Causes printing of the port, channel, and adapter numbers to which the data communications I/O descriptor was dispatched.

This is a default parameter. (NO.ADDRESS is the negation.)

**ALL.LINES**

Causes printing of all audit file records from all data communications lines.

This is a default parameter. (LINE permits selection; DEL.LINE permits dynamic deletion.)

**BDLC**

Causes printing of the text data and the result descriptors that are associated with the data communications I/O descriptor. Printing is in hexadecimal format for easy interpretation by BNA and SNA users.

Default: Do not print in hexadecimal format.

**BUFFERS**

Causes printing of the text data that is associated with the data communications I/O descriptor.

This is a default parameter. (NO.BUFFER is the negation)

**DEL.LINE = <pp:cc:aa,pp:cc:aa,...>**

This parameter may be entered while the DC/AUDIT program is executing to stop the monitoring of selected lines. Entries are made in the same way as is shown for the LINE parameter later in this list.

Default: Not applicable.

**DISPATCH.BIT**

Causes the output to specify which of the following two ways was used to dispatch an operation: (1) by network controller dispatch of the I/O descriptor, or (2) by resetting the operation-complete bit of the data communications I/O descriptor.

Default: NO.DISPATCH

**DOUBLE**

Causes double spacing of the records in the output listing.

Default: SINGLE

**ERROR = <n>**

The value given to <n> specifies the way records that contain indications of data communications errors are printed. (Note that there are no spaces between the parameter name, the equal sign, and the value.)

ERROR=1 causes printing of all audit records in the audit file. (This is the default condition.)

ERROR=2 causes printing of only the audit records that completed without exceptions.

ERROR=3 causes printing of only the audit records that completed with exceptions.

ERROR = aaaaaa provides a hexadecimal mask (aaaaaa) to use for searching result descriptors for records to print. The mask is converted to a 24-bit binary representation that is used to specify the operation to monitor. The bits are numbered 0 through 23 (high order to low order). If the bit that matches a list item is reset (0), the corresponding operation is not monitored; if the bit is set (1), operation is monitored.

Bit	Description
0	Operation complete.
1	Exception.
2	Reserved.
3	Parity error on read.
4	Memory access error on read.
5	Memory access error on write.
6	Timeout.
7	Break received during a write.
8	No ending control character received.
9	Linking terminated.
10	Reserved.
11	Loss of data set ready.
12	Loss of carrier.
13-24	Reserved.

Default: ERROR = 1.

#### HEADER

Causes column headings to be printed at the top of each page.

This is a default parameter. (NO.HEADER is the negation.)

#### IO.DESC = <n>

The value given to <n> specifies the printing format of the data communications I/O descriptor field. (Note that there are no spaces between the parameter name, the equal sign, and the value.)

IO.DESC=1 causes the descriptor to be printed in hexadecimal format with a blank between each of its fields.

IO.DESC=2 causes the descriptor result field to be interpreted as a mnemonic and printed. If more than one exception condition has occurred, only the first exception is printed.

Default: IO.DESC = 2

#### LENGTH = <n>

<n> signifies a decimal number one to four characters long. The value given to <n> specifies the printing of the length of the buffer in bytes. (Note that there are no spaces between the parameter name, the equal sign, and the value.)

Example: LENGTH = 400.

Default: Length is the entire buffer.

aaaaaaa

Type of I/O operation.

data

Data written or read. If OUTPUT=A, data consists of graphics, special line control characters with their names enclosed in broken brackets (<>), and non-graphics with each 4-bit group in hexadecimal representation enclosed in brackets ([]). The characters "[" and "]" are treated as non-graphics.

Example: <STX>[EC]ABC12<ETX>

If OUTPUT=H, then each 4-bit group of data is in hexadecimal representation.

Example: 01ECC1C2C3F1F2203

pp:cc:aa

Port, channel, and adapter to which the I/O descriptor was issued. (Included if ADDRESS parameter is set.)

bbbbbb

Appears if the DISPATCH.BIT parameter is set. If I/O was initiated by resetting the I/O complete bit, RESET is printed. If I/O was initiated by a dispatch communicate to the MCP, DISPATCH is printed.

LENGTH=nnnn

The length of the data read or written.

cccc

The mnemonic interpretation of the manner in which the I/O operation completed. Refer to the subsection of this manual titled I/O Completions for a complete description of the completions.

## Output Format 2

Output format 2 is generated when default parameters IO.DESC=2 and NO.BUFFERS are both specified. If the HEADER parameter is specified, the header format of each page is as shown in the upper part of figure 11-2. Records from the audit file are printed in the format shown in the lower part of figure 11-2.

The field descriptions given for output format 1 are valid for output format 2.

\*\*\*\*\* B 1000 DC/AUDIT <date and time> \*\*\*\*\*

TIME OP RESULTS

Header Format

hh:mm:ss.t aaaaaaa pp:cc:aa bbbbb LENGTH=nnnn ccccc

Record Format

Figure 11-2. Header and Record Formats, Output Format 2

### Output Format 3

Output format 3 is generated when the parameters IO.DESC=1 and BUFFERS are both specified. If the HEADER parameter is specified, the header format of each page is as shown in the upper part of figure 11-3. Records from the audit file are printed in the format shown in the lower part of figure 11-3.

Field descriptions for output format 3 follow the figure.

```
***** B 1000 DC/AUDIT <date time> *****  
TIME    OP      BUFFER          DESCRIPTOR  
  
      Header Format  
  
hh:mm:ss.t  aaaaa data AE=xxxxxxx RS=xxxxxxx LK=xxxxxxx OP=xxxxxxx SA=xxxxx  
              EA=xxxxxxx MS=xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xx  
              LENGTH=nnnn  
              --->hexadecimal representation of I/O descriptor<--  
  
      Record Format
```

**Figure 11-3. Header and Record Formats, Output Format 3**

Each item or field is described as follows:

hh:mm:ss.t

Time in hours, minutes, seconds, and tenths. For a read, time represents read completion time; for all other operations, time represents start time.

aaaaaaa

Type of I/O operation.

data

Data written or read. If OUTPUT=A, data consists of graphics, special line control characters with their names enclosed in broken brackets (<>), and non-graphics with each 4-bit group in hexadecimal representation enclosed in brackets ([]). The characters "[" and "]" are treated as non-graphics.

AE

The actual ending address of the descriptor.

RS

The result descriptor.

LK

The link address to the next descriptor.

OP

The operation code.

SA

The start address of the descriptor.

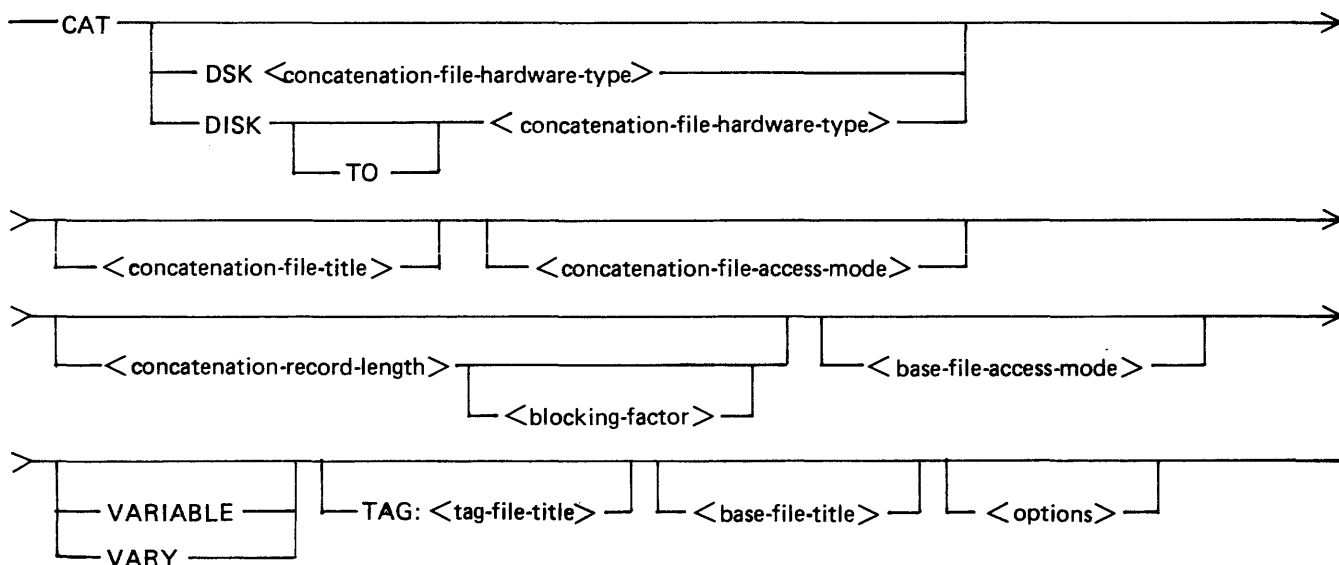
## COMMANDS

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 in 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.

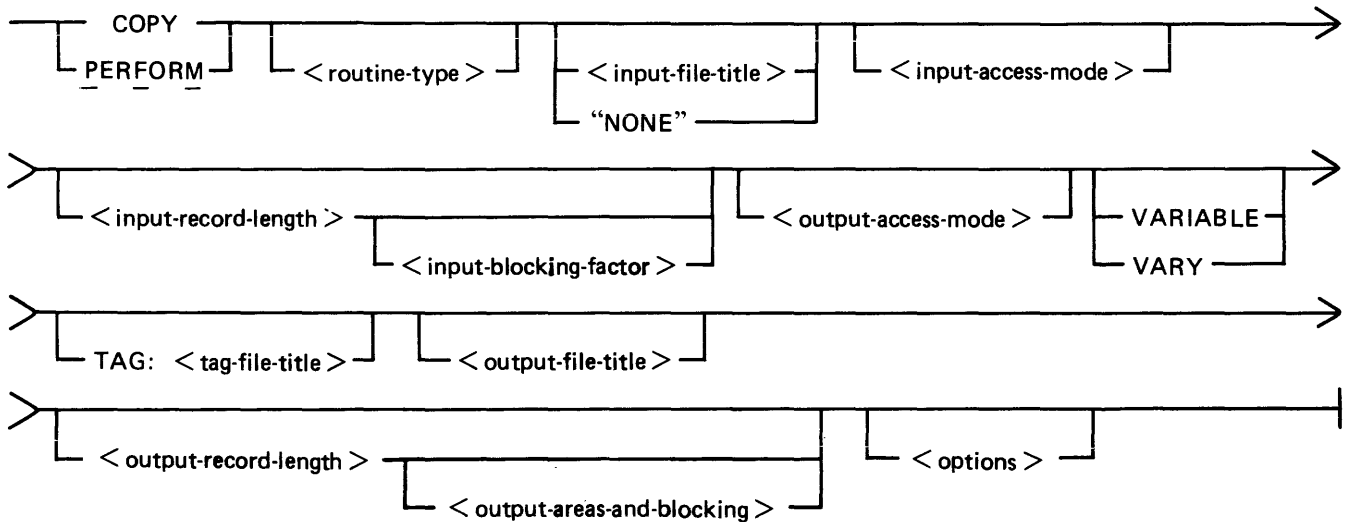
**Examples:**

```
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.

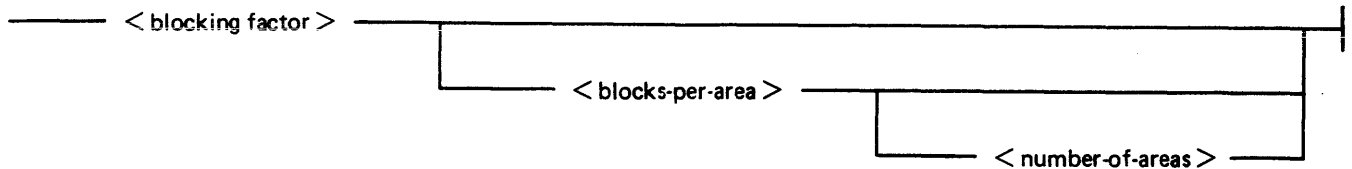
output-record-length

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-areas-and-blocking > Specification

The < output-areas-and-blocking > Specification describes the blocking factor, blocks per area, and the number of areas for the output file.

Syntax:



Semantics:

#### blocking-factor

This field specifies the number of records per block for the file. If omitted, a blocking factor of one is assumed. If both the input and output files are either disk files or labeled B 1000/B 6000/B 7000 tape files and the < output-record-size > is omitted, the < output-blocking-factor > is assumed to be the same as the < input-blocking-factor >.

#### blocks-per-area

This field specifies the number of blocks per area for disk files only. If omitted, 100 blocks per area is assumed. If both the input and output files are disk files and both the < output-record-length > and < output-blocking-factor > are omitted, the < blocks-per-area > is assumed to be the same as the blocks per area of the input file.

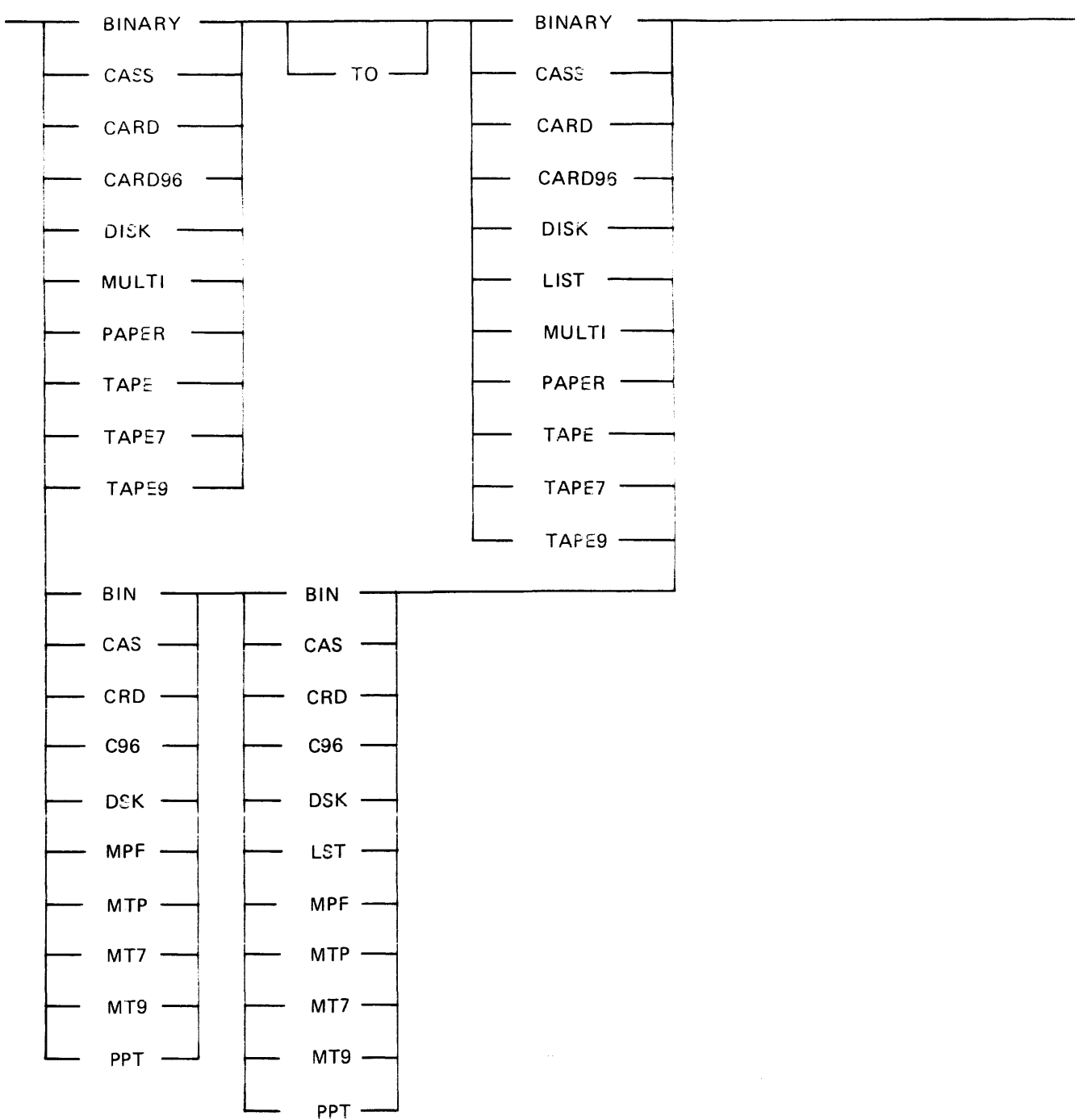
#### number-of-areas

This field specifies the number of disk areas for disk files only. If omitted, < number-of-areas > defaults to 25. If both the input and output files are disk files and the < output-record-length >, < output-blocking-factor >, and < blocks-per-area > are omitted, < number-of-areas > is assumed to be the same as the number of areas assigned to the input file.

**<routine-type> Specification**

The media types for the input and output files for the COPY (PERFORM) command are selected from the <routine-type> Specification. The medium specified first in the string pertains to the input file; the second pertains to the output file.

Syntax:



Semantics:

BIN	The BIN (or BINARY) keyword specifies that the hardware type is a binary card file. The card file is assumed to be 80-column and a card with END-OF-DECK punched in columns 1 through 11 must be the last card in the deck.
BINARY	See BIN.
CAS, CASS	The CAS (or CASS) keyword specifies that the hardware type is a cassette file.
CASS	See CAS.
CARD	The CARD (or CRD) keyword specifies that the hardware type is a card reader file.
CARD96	The CARD96 (or CRD96) keyword specifies that the hardware type is a 96-column card reader file.
CRD	See CARD.
CRD96	See CARD96.
DISK	The DISK (or DSK) keyword specifies that the hardware type is a disk file.
DSK	See DISK.
LIST	The LIST (or LST) keyword may be specified for an output. It causes the file, without heading or record numbers, to be listed on the line printer.
LST	See LIST.
MPF	The MPF (or MULTI) keyword specifies that the hardware type is a multi-pack disk file.
MTP	The MTP (or TAPE ) keyword specifies that the hardware type is a magnetic tape file.
MT7	The MT7 (or TAPE7) keyword specifies that the hardware type is a 7-track magnetic tape file.
MT9	The MT9 (or TAPE9) keyword specifies that the hardware type is a 9-track magnetic tape file.
MULTI	See MPF.
PAPER	The PAPER (or PPT) keyword specifies that the hardware type is a paper tape file.
PPT	See PAPER.
TAPE	See MTP.
TAPE7	See MT7.
TAPE9	See MT9.

**Pragmatics:**

Notice that all keywords for <routine-type> are of two forms, a three-character short form and a greater-than-three-character long form.

The short form must be entered in concatenated pairs only (no spaces). Examples:

CRDMTP  
DSKMTP

The long forms must be entered as pairs either separated by at least one space, or by the word TO with at least one space before and after it.

**Examples:**

CARD TO TAPE  
CARD TAPE  
DISK TO TAPE9  
DISK DISK

If the <routine-type> option is omitted, both media (input and output) are assumed to be DISK.

Text deleted by PCN-002

If all of the necessary structures on the disk are found to be valid and the previous initialization did not abort before it initialized the entire disk, the following prompt is displayed on the ODT:

IS A PURGE DESIRED? <YES OR NO>

A YES response causes the PACK/INIT program to prompt for SERIAL NUMBER, PACK ID, PACK TYPE, OWNER'S NAME and OPTIONS. The PACK/INIT program then does an initialization of cylinder zero, thus rendering inaccessible all data previously on the disk. Any further initialization is performed in response to CYLINDER NUMBER prompts. A NO response results in the initialization of cylinders specified in response to CYLINDER NUMBER prompts. The disk is not purged, and the program does not initialize any cylinder or range of cylinders that is in use (not entirely available).

CV = Cylinder Verification

Verify only those cylinders specified in answer to the CYLINDER NUMBER prompts, except cylinder zero, which is automatically verified.

RR = Relocate and Reallocate

This action is only offered for B 9494-5, B 9494-10, and B 9484-12 disks. It is used to relocate or reallocate (the reverse or undoing of a relocate) a single sector at a time. The sector may be in use and its data is retained, whenever possible. When this action is requested, the following prompt sequence ensues:

Prompt: A SECTOR CAN BE RELOCATED TO A  
SPARE OR  
REALLOCATED FROM A SPARE  
ENTER <SECTOR ADDRESS> TO  
RELOCATE, " - "  
<SECTOR ADDRESS> TO  
REALLOCATE  
WHICH SECTOR (BLANK TO QUIT)?

Response examples:

```
1000
@0003E8@
-1000
-@0003E8@
```

The first two examples cause sector 1000 to be relocated; the next two cause it to be reallocated, if it is found to be relocated. Entering a blank input terminates the RR action.



FC = Factory Convert

This action is only offered for B 9494-5 and B 9494-10 fixed disks that are in the interlaced format written by the factory. It converts the factory Interchange format to the B 1000 native mode format and is used only once when the disk is first installed. The prompt sequence asks for the PACK TYPE and OWNER'S NAME. This action cannot be selected and is not offered for a disk that is not of the correct type, is formatted as a sequential disk, has an unreadable or invalid label, or has already had an FC performed on it.

#### NOTE

The actions RR, RC, RI, CI, and CV are valid only when processing a disk that has previously been initialized with the Mark 8.0 or later version of the SYSTEM/DISK-INIT or PACK/INIT programs and the disk label, Master Available Tables, and Relocate Table are intact and valid.

## SERIAL NUMBER

The SERIAL NUMBER message requests a six-digit decimal number to be used on a new or purged pack to identify the disk. This number must be non-zero and should be unique to avoid confusion. Note that the MCP does not allow two User disks with the same serial number to be on-line at the same time.

Prompt: ENTER 6 DIGIT SERIAL NUMBER

## PACK ID

The PACK ID message requests a name that is assigned to the disk, using 10 characters or less and containing no embedded blank characters. The system uses this name to reference the disk. When input specifications are entered from cards, omitting this entry causes an error for pack-type. If the disk is a User disk, the reserved name DISK is not allowed.

Prompt: ENTER PACK ID

## PACK TYPE

The PACK TYPE message requests the type of use this disk will be dedicated to until the next initialization. The type is specified by a one-letter abbreviation of the allowable pack types, which are User (U) or System (S).

Prompt: ENTER PACK TYPE - <U OR S>

## DATE

The DATE message requests the current date in Julian date format. A Julian date is a five-digit field, with two digits for the year followed by three digits for the absolute day of the year, for example; 84256.

Prompt: ENTER 5 DIGIT JULIAN DATE (YYDDD)

## OWNER'S NAME

The OWNER'S NAME message requests an optional 14-character field available to identify the person responsible for maintaining the disk. The system does not reference this field.

Prompt: ENTER OWNER'S NAME

## 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 MCP II causes the RD program to search the disk directory for a file labeled (usercode)/MCP II, but entering PASS RD PD \*MCP II causes the RD program to search the system disk directory for MCP II. 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

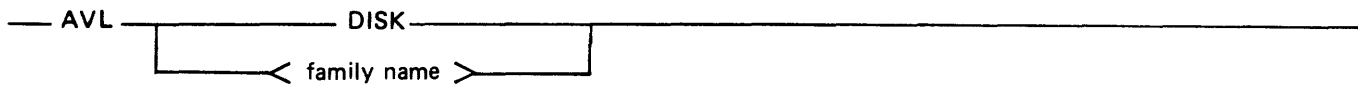
The RD program commands that are entered from remote terminals are described in this section. Syntax diagrams are included for all commands except those that consist of a single term only.

Commands that produce screen outputs greater than 22 lines provide SKIP prompts on the first line to view the next screen. These prompts are only provided while operating in the PASS mode. The prompts are not required when the user is signed on to the RD program.

### 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:



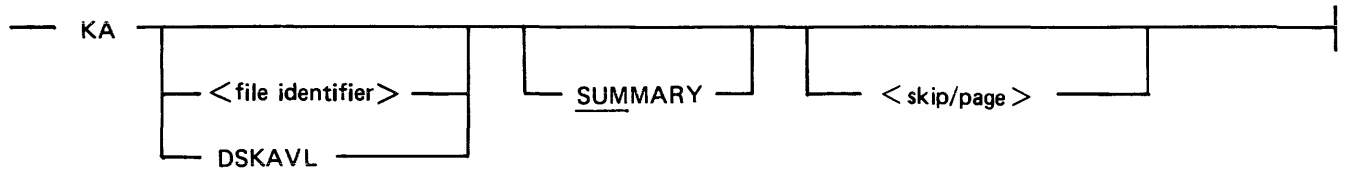
Example input:

```
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
```

Syntax:



Semantics:

#### DSKAVL

Displays the available disk space on the specified disk in two categories: available disk space and space that is in use temporarily. The summary for each category includes the number of areas, the size of largest area, and the total space available or in temporary use.

To obtain these statistics while logged on to the SMCS program and/or the RD program, an asterisk (\*) must prefix the DSKAVL option.

Examples:

```
KA *DSKAVL
KA USERPACK/*DSKAVL/
```

#### SUMMARY

Displays the total number of files, the largest file, the total number of segments, records, and bytes and the average number of segments, records, and bytes for a family of files.

```
KA = SUMMARY
```

If logged on to the SMCS program and/or the RD program, the equal sign (=) character is valid and causes the RD program to give a summary of all the files for the usercode logged on.

```
KA USERPACK/MASTER/= SUMMARY
```

Produces a summary of all the files with a file name USERCODE/MASTER/<file-name>.

Example inputs:

```
KA SYSTEM/F?
KA USERPACK/(USER)/= PAGE 2
KA DSKAVL
KA MASTERFILE
KA MASTERFILE/I?
KA MASTERFILE/?I
KA *DMPALL
KA *MASTER/= SUMMARY
```

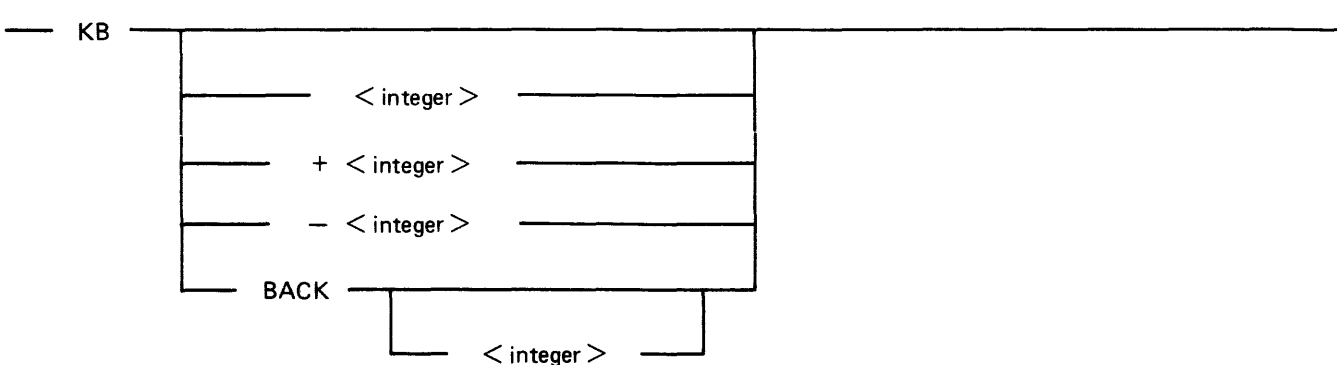
Example output:

** NAME **	TYPE	RSZ	R.B	B.A	S.A	AREAS	EOF	CREATN	UPDATE
ODT.QUEUE	DATA	180	1	200	200	1/ 1	200	NODATE	NODATE
TRAINABLE	DATA	360	1	37	74	1/ 1	37	012679	120980
BUILDTRAIN	CODE	180	1	28	28	1/ 1	28	102478	120980
INIT.OLD	INTP	180	1	59	59	1/ 1	59	081380	021381
ODT	CODE	180	1	209	209	1/ 1	209	021781	031081
ELOG	LOG	180	1	100	100	7/ 25	700	032781	032781
CONTROLLER	CODE	180	1	423	423	1/ 1	423	031781	033081
NIF	DATA	90	4	3	6	1/ 1	9	031781	033081
BACKUP	CODE	180	1	103	103	1/ 1	103	031181	033081
COMPARE	CODE	180	1	107	107	1/ 1	107	031281	033081
FILE.INIT	CODE	180	1	37	37	1/ 1	37	091879	120980

### KB (ODT Queue)

The KB command causes the RD program to display the system ODT queue. Various KB command parameters can be specified for paging through the system ODT queue.

Syntax:



Semantics:

<integer>

Causes the RD program to start listing the ODT queue from the segment number specified by <integer>. Valid entries for <integer> range from 0 to 1023, inclusive.

+ <integer>

Causes the RD program to start listing the ODT queue from the (current + <integer>) segment.

- <integer>

Causes the RD program to start listing the ODT queue from the (current - <integer>) segment.

BACK

Causes the RD program to display one screen page back from the most recently displayed page of the ODT queue. The station must be signed on the RD program in order to use the BACK option.

## Station Section

The NDL MYUSE attribute must be set to INPUT, OUTPUT. The address is set to the address of the remote printer.

Example:

```
STATION APTERYX:
TERMINAL      = AP310.
RETRY         = 10.
FREQUENCY     = 0,0.
MYUSE        = INPUT, OUTPUT.
ADDRESS       = "AP".
```

## Line Section

The remote printer can be declared on a line with other terminals using the same line discipline. The line address is set to the address of the line containing the remote printer.

Example:

```
LINE APLINE:
ADDRESS       = 2:0:2.
CONTROL      = CANDETDCTL.
STATION      = APTERYX.
```

## File Section

The remote file for the remote printer must be declared separately from the SMCS remote file, MCSREMOTE. Only one remote printer can be declared per remote file.

The TITLE attribute of the REMOTE/PRINT file PRINTER should be modified to have the title of the remote file declared in the network controller.

Example:

```
FILE APFILE:
FAMILY       = APTERYX.
```

### Example Network Controller

#### TERMINAL AP310:

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

#### STATION APTERYX:

TERMINAL = AP310.  
RETRY = 10.  
FREQUENCY = 0,0.  
MYUSE = INPUT, OUTPUT.  
ADDRESS = "AP".

#### LINE APLINE:

ADDRESS = 2:0:2.  
CONTROL = CANDETDCTL.  
STATION = APTERYX.

Text deleted by PCN-002

#### FILE APFILE1:

FAMILY = APTERYX.

Text deleted by PCN-002

If the disk has a bad label, Master Available Table or Working Available Table, or the operator specifies that the disk is to be purged, then cylinder 0 will automatically be initialized, thus purging the disk.

If all of the necessary structures on the disk are found to be valid and the previous initialization did not abort before it initialized the entire disk, the following prompt is displayed on the ODT:

IS A PURGE DESIRED? <YES OR NO>

A YES response causes the SYSTEM/DISK-INIT program to prompt for SERIAL NUMBER, PACK ID, PACK TYPE, OWNER'S NAME and OPTIONS. It will then automatically initialize cylinder 0, thus rendering inaccessible all data previously on the disk. Any further initialization will be performed in response to CYLINDER NUMBER prompts.

On a NO response, only those cylinders that were specified in response to CYLINDER NUMBER prompts are initialized. The disk is not purged. Cylinders or ranges of cylinders that are in use (not entirely available) are not initialized.

CV = Cylinder Verification

Verify only those cylinders specified in answer to the CYLINDER NUMBER prompts, except that cylinder 0 is always verified.

RR = Relocate and Reallocate

This action is only available for B 9494-5, B 9494-10, and B 9484-12 disks. It is used to relocate or reallocate (the reverse or undoing of a relocate) a single sector at a time. The sector may be in use and its data will be retained intact, whenever possible. When this action is requested, the following prompt sequence ensues:

A SECTOR CAN BE RELOCATED TO A SPARE OR  
REALLOCATED FROM A SPARE

ENTER <SECTOR ADDRESS> TO RELOCATE, "-"  
<SECTOR ADDRESS> TO REALLOCATE

WHICH SECTOR (BLANK TO QUIT)?

Response examples:

```
1000
@0003E8@
- 1000
- @0003E8@
```

The first two examples cause sector 1000 to be relocated; the next two cause it to be reallocated if it is found to be relocated. Entering a blank or null input will terminate the RR action and the program, unless program switch 2 = 1, which indicates that the program should not automatically terminate.



**FC = Factory Convert**

This action is available only for B 9494-5 and B 9494-10 fixed disks that are in the interlaced format written by the factory. The FC function converts the factory Interchange format to the B 1000 native-mode format and is used only once when the disk is first installed. The prompt sequence will ask for the PACK TYPE and OWNER'S NAME. This action cannot be selected and is not offered for a disk that is not of the correct type, is formatted as a sequential disk, has an unreadable or invalid label, or has already had an FC performed on it.

**NOTE**

The actions RR, RC, RI, CI, and CV are valid only when processing a disk that has previously been initialized with the Mark 8.0 (or later) version of the SYSTEM/DISK-INIT or PACK/INIT programs and the disk label, available tables, and Relocate Table are intact and valid.

**Initialization Messages**

**SERIAL NUMBER**

The SERIAL NUMBER message requests a six-digit decimal number to be used on a new or purged pack to identify the disk. This number must be non-zero and must be unique to avoid confusion. Note that the MCP does not allow two User disks with the same serial number to be on-line at the same time.

Prompt: ENTER 6 DIGIT SERIAL NUMBER

**PACK ID**

The PACK ID message requests a name that is assigned to the disk using 10 or fewer characters and containing no embedded blank characters. The system uses this name to reference the disk. When input specifications are entered from cards, omitting this entry causes an error for pack-type. If the disk is a User disk, the reserved name DISK will not be allowed.

Prompt: ENTER PACK ID

**PACK TYPE**

The PACK TYPE message requests the type of use that this disk will be dedicated to until the next initialization. The type is specified by a one-letter abbreviation of the allowable pack types, which are User (U), System (S), or Interchange (I). Only removable disk packs are allowed to be initialized as Interchange packs; therefore, the prompt message varies according to the type of disk being initialized.

Prompt: ENTER PACK TYPE - <U OR S>  
(for fixed, non-removable disks)

Prompt: ENTER PACK TYPE - <U, I OR S>  
(for removable disk packs)

**OWNER'S NAME**

The OWNER'S NAME message requests an optional 14-character field available to identify the person responsible for maintaining the disk. The system does not reference this field.

Prompt: ENTER OWNER'S NAME

#### EXTENDED RESULT

The extended result descriptor (for disk packs only). If an extended result descriptor is present, it is shown in hexadecimal on the next line of the Unit Error Report. On the immediately following lines, the extended result descriptor is decoded to provide salient information (CYL, HEAD, SEC, OP, VXYZ, UNIT, error types).

Cylinder addresses in the extended result descriptor can appear to be incorrect when TEST operations are being performed to a disk drive. This is because a TEST operation has no associated cylinder address and the old address does not change. If an exception condition occurs during a TEST operation, the exception condition is logged into the SYSTEM/ELOG file when the next READ or WRITE operation is initiated. To correctly identify which operation was contained in the extended result descriptor, examine the OP column of the line that gives the extended result descriptor.

#### REEL

For tape units only, this column gives the reel number on which the error occurred.

#### BLOCK

For tape units only, this column gives the block in which the error occurred.

### **Result Descriptor Analysis**

Following the Unit Error Report is the Result Descriptor Analysis. This shows the descriptors in both hexadecimal and binary format and provides a brief description of the error. Each result descriptor is listed once in this report, regardless of the number of times it appears in the Unit Error Report.

### **Disk Error Address Analysis**

For disk devices, this follows the Result Descriptor Analysis. Here, the errors are grouped by disk address, sorted in ascending order, and summarized by address and actual data transfer length (in sectors). Each line represents the errors for a particular disk address and actual length pair, giving the total number of retries (retry counts shown as zero in the chronological listing are counted as one retry), and decoding the beginning and ending disk addresses involved in the operation into their actual hardware locations. This decoding can enable the Burroughs field engineer to locate not only the source of the failure, but also to make reasonable inferences as to errors that can be caused by a single read/write head, even though the addresses can be widely scattered across an entire disk surface.

## Power On/Off Error Rate Report

This report gives snapshots of the error count information logged when a disk is powered on or off. Historic and recent information by unit and pack is given. The total number of input/output (I/O) operations as counted by GISMO and the number of I/O errors as recorded by the MCP are reported. The I/O error count is incremented by one for each user I/O that has a problem, no matter how many retries are done.

See the ER command in the *B 1000 Systems System Software Operation Guide, Volume 1*, for information on error rates and on resetting the unit and pack error rate information.

Following are the meanings of the various fields for the Power On/Off Error Rate Report.

### PWR

Indicates whether a power ON or OFF caused the line to be generated.

### SERIAL NUMBER

Serial number of pack at time of power ON or OFF.

### UNIT HISTORIC RESET DATE

Date the unit was last reset or coldstarted.

### UNIT HISTORIC IO COUNT

Number of unit I/Os as counted by GISMO since the last unit reset or coldstart.

### UNIT HISTORIC ERROR COUNT

Number of unit I/O errors as recorded by the MCP since the last unit reset or coldstart.

### UNIT RECENT RESET DATE

Date the unit was last reset or clear/started.

### UNIT RECENT IO COUNT

Number of unit I/Os as counted by GISMO since the last unit reset or clear/start.

### UNIT RECENT ERROR COUNT

Number of unit I/O errors as recorded by the MCP since the last unit reset or clear/start.

### PACK HISTORIC RESET DATE

Date the pack was last reset or initialized.

### PACK HISTORIC IO COUNT

Number of pack I/Os as counted by GISMO since the last pack reset or pack initialize.

### PACK HISTORIC ERROR COUNT

Number of pack I/O errors as recorded by the MCP since the last pack reset or pack initialize.

### PACK RECENT RESET DATE

Date the pack was last reset or powered ON.

### PACK RECENT IO COUNT

Number of pack I/Os as counted by GISMO since the last pack reset or pack power ON.

### PACK RECENT ERROR COUNT

Number of pack I/O errors as recorded by MCP since the last pack reset or pack power ON.

## Configuration Disk Unit Error Rate Report

This report gives snapshots of the historic error information by unit based upon information obtained at clear/start or when the log is transferred. The I/O operations are counted by GISMO and the I/O error count is recorded by the MCP. The I/O error count is incremented by one for each user I/O that has a problem, no matter how many retries are done.

See the ER command in the *B 1000 Systems System Software Operation Guide, Volume 1*, for information on error rates and on resetting the unit and pack error rate information.

The meaning of the various fields for the CONFIGURATION DISK UNIT ERROR RATE REPORT follows:

### PORT

Hardware port number.

### CHANNEL

Hardware channel number.

### UNIT

Hardware unit number.

### CLEARSTART/LOGXFER DATE

Date of clear/start or log transfer.

### CLEARSTART/LOGXFER TIME

Approximate time of clear/start or log transfer.

### UNIT HISTORIC RESET DATE

Date of last reset or coldstart.

### UNIT HISTORIC IO COUNT

Number of unit I/Os as counted by GISMO since the last unit reset or coldstart.

### UNIT HISTORIC ERROR COUNT

Number of unit I/O errors as recorded by the MCP since the last reset or coldstart.

## Unit Error Summary

This report is a summary of the peripheral unit errors listed in the Unit Error Reports. Here, totals are given for each unit-mnemonic and, if applicable, for each hardware address. For each device listed, counts of input errors (read and space operations), output errors (write operations), and memory access errors are presented in tabular form.

The Unit Error Summary also includes cassette error and main memory error counts.

Examples of input records in the card file CARD follow:

```
US=USERA PW=X CHG=123456 PRI=4 PACK=USERPACK *PRIV
CHG=1000 PRI=8 US=USERB PW=ME
US=USERA PW="" PACK=USERPACK
US=SITE PW="" CHG=999999 PRI=15 *PRIV PUBLIC
US=USERB PW=PW3 PACK=""
```

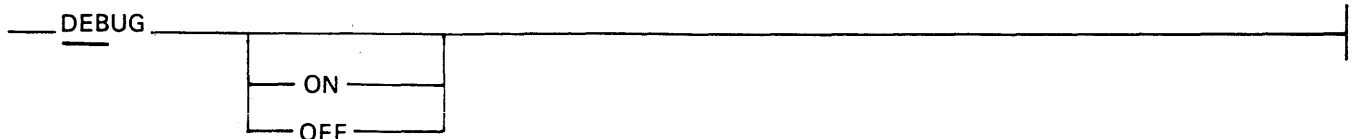
Examples of ODT input commands:

```
1AXCREATE
1AX CREATE CARDFILE
1AXCRE USERDISK/USER/CODEFILE DISK
1AX CREATE "" %CREATES DEFAULT USERCODE FILE
```

## DEBUG Command

The DEBUG command controls listing of debugging output on the line printer. The command is intended for system software development and debugging and should not be used in normal operation.

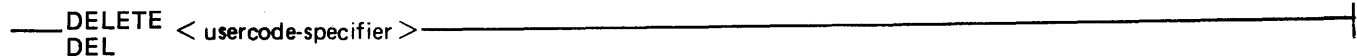
Syntax:



## DELETE Command

The DELETE command allows removal of existing entries from the (SYSTEM)/USERCODE file.

Syntax:



The usercode-specifier is specified in the same manner as is shown for the CHANGE command. The "=" option deletes all entries with the specified <usercode>.

### WARNING

In rare cases, deleting an active usercode can cause the system to halt. Be sure that no programs are scheduled or running when deleting a usercode/password.

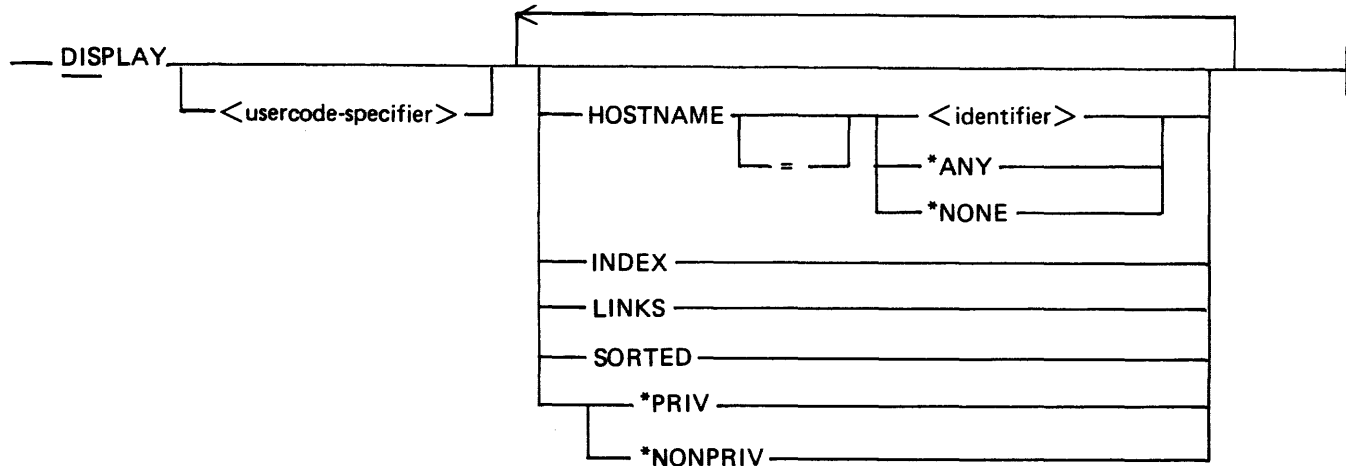
Examples:

```
1AXDELETE USER1/PASS1
1AX DEL USER2/=
1AXDEL USER3/""
```

## DISPLAY Command

The DISPLAY command displays the existing (SYSTEM)/USERCODE file on the ODT.

Syntax:



If no options are specified, the DISPLAY command causes the entire file to be displayed. If the <usercode-specifier> is entered, only the specified usercodes are displayed. The use of the \*PRIV option allows the display of only privileged usercodes. The HOSTNAME option allows usercodes on the specified BNA host to be displayed. If the LINKS option is specified, the usercode file is displayed on the ODT by usercode index. The SORTED option causes the usercode file to be displayed in alphabetical order with the link fields. If the INDEX option is specified, the usercode index is displayed on the ODT. The user's pack name is shown within brackets if the pack override bit is set. The display may be interrupted by supplying the SYSTEM/MAKEUSER program with another AC or AX system command.

Example:

```

DISPLAY HARRY/= *NONPRIV      %Display those usercode/password
                               %pairs of HARRY which are
                               %nonprivileged.

DISPLAY *PRIV HOSTNAME *ANY   %Display only those entries
                               %which are privileged and valid
                               %from the remote host.

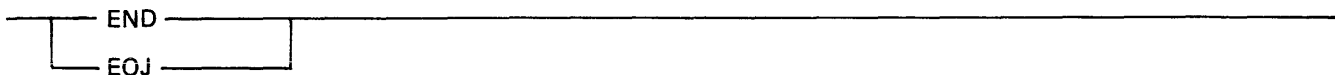
DIS LINKS SORTED              %Display the entire usercode file
                               %in alphabetical order with the
                               %link fields.

                               %nonprivileged.
    
```

## END/EOJ Command

The END/EOJ command causes the SYSTEM/MAKEUSER program to go to end of job.

Syntax:



Example:

2AX END % THIS IS THE SAME AS "EOJ"

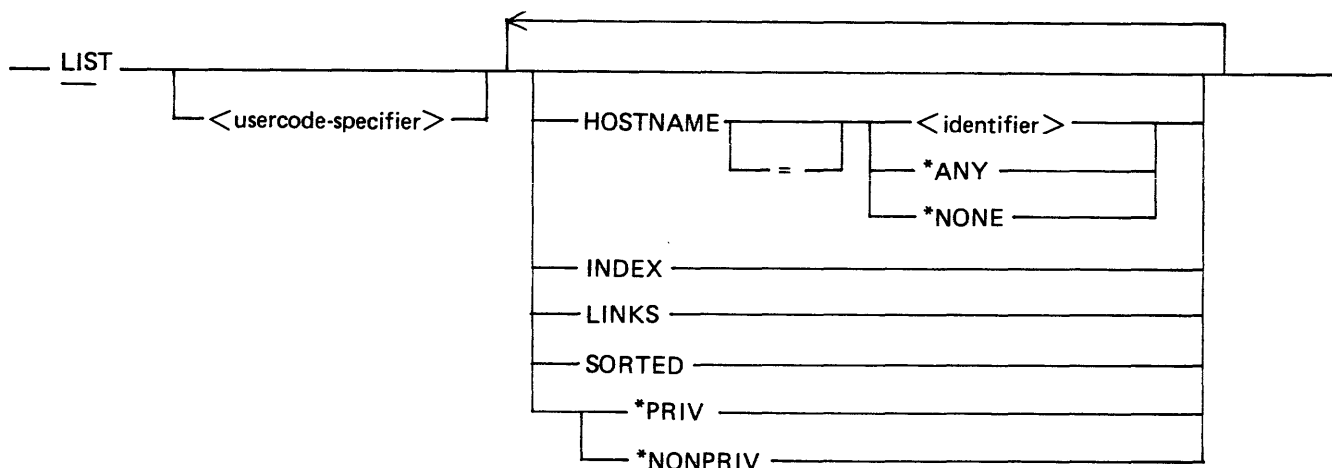
## HELP Command

Displays the list of commands, followed by a list of keywords.

## LIST Command

The LIST command allows listing of all or part of the existing (SYSTEM)/USERCODE file on the line printer.

Syntax:



If no option is specified with the LIST command, the (SYSTEM)/USERCODE file is sorted by usercode and the entire file is listed on the line printer. The <usercode-specifier> option allows the listing of only the designated entries. If the LINKS option is specified, the usercode file is listed on the line printer by usercode index. The SORTED option causes the usercode file to be listed on the line printer in alphabetical order with the link fields. If \*PRIV is specified, only the entries for usercodes marked as PRIVILEGED are listed. Specifying \*NONPRIV causes only those usercodes marked NONPRIVILEGED to be listed on the line printer. If a usercode family is specified in the LIST command, the usercode family can be listed only by usercode index. If INDEX is specified, the actual usercode index is listed. The user's pack name is shown within brackets if the pack override bit is set.

The pack-id listed for all usercodes which have the default pack assignment of the system disk is \*SYS DISK\*.

Examples:

1AX LIST

1AX LIS USER1/=

1AXLIST SITE/PRIV

1AX LIS USERA/""

1AXLIST \*PRIV

1AX LIST HOSTNAME HUB

% Lists only the entries which are  
% valid from the remote host called  
% HUB.

1AX LIST REX/= HOST SA1

% Lists only those entries of REX  
% which are valid from the remote  
% host SA1.

1AX LIST \*NONPRIV HOSTNAME USER3

% Lists only those entries which are  
% nonprivileged and which are valid  
% from remote BNA host USER3.

% HUB.



## 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 copy of some or all of the files from the input 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 selected from the input 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)
```

## STATUS Request

The status of an executing COPY command is displayed on the ODT when the STATUS command is entered.

Example:

```
122AX STATUS  
% SYSTEM/PACKCOPY =122 STATUS: COPY AND COMPARE 100  
FILES FROM MYPACK TO MYTAPE (KIND=TAPE)--APPROX. 75%  
COMPLETE--COMPARING FILE #50: A/B ON MYPACK - REEL #3
```

## 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
```

## Tape 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 displays a list of the allowable error recovery options, which may include RETRY, RESTART, NEXT and EOJ.

If the RETRY option is selected the SYSTEM/PACKCOPY program performs the failing I/O operation one more time. It is not offered for most I/O errors because the MCP has already performed extensive recovery procedures. When the RETRY option is offered, it is offered continuously by the SYSTEM/PACKCOPY program until the I/O operation is successfully completed or until something other than the RETRY option is selected.

If the RESTART option is selected the SYSTEM/PACKCOPY program rewinds, purges, and locks the current tape reel. The following message then appears: ENTER "OK" WHEN A SCRATCH TAPE IS READY FOR RESTART. The first ready scratch tape (lowest channel, lowest unit number) is used to RESTART the current COPY command at the beginning of the current reel.

If the NEXT option is selected the SYSTEM/PACKCOPY program aborts the current COPY command. If another command is available from the ODT input or the COMMAND file, then that command is performed; otherwise, the program automatically goes to end of job.

If the EOJ option is selected the SYSTEM/PACKCOPY program forces the program to an immediate end of job.

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 "RESTART" TO REWRITE
THE CURRENT REEL, "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
```

## Disk I/O Errors

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 permitted 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.

The NEXT and EOJ responses have the same meanings as previously described under Tape I/O Errors.

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.

The RESTART, NEXT, and EOJ responses have the same meanings as previously described under Tape I/O Errors.

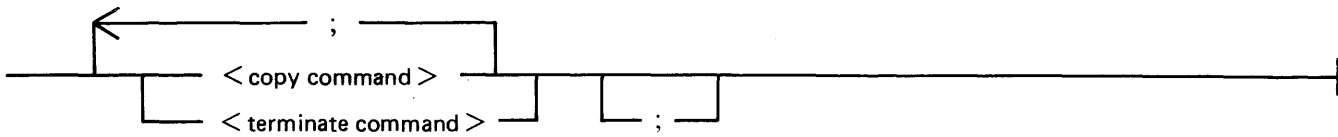
Example:

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

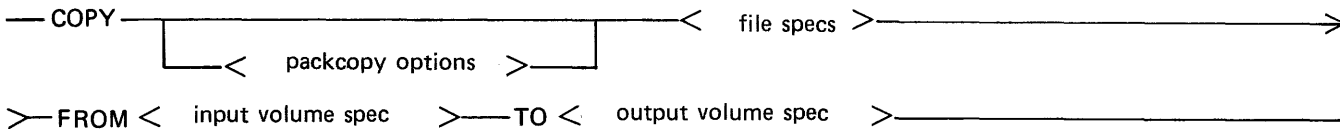
```
297AX SKIP
```

## SYSTEM/PACKCOPY COMMAND SYNTAX

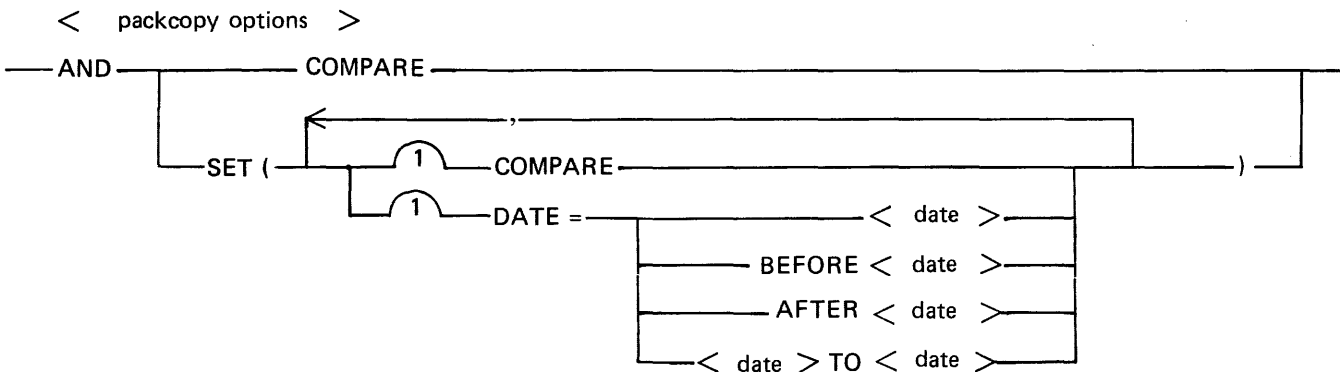
Syntax:



### <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);
```



## INDEX (Cont)

Card Reader Operation 33-3  
 Dollar Sign Option 33-8  
 Error Messages 33-13  
 Informative Messages 33-10  
 Initialization Integrity Protection 33-7  
 Initialization Messages 33-6  
 Initialization Options 33-7  
 Initialization Specifications 33-4  
 LIMIT Option 33-8  
 Marginal Sectors Option 33-8  
 ODT Operation 33-2  
 Program Operation Instructions 33-2  
 Program Output 33-10  
 Program Switch Settings 33-2  
 REMOVE Option 33-8  
 STATUS Command 33-3  
 Summary Listing 33-10  
 User Interface Information 33-4  
 SYSTEM/ELOGOUT  
   Cassette Error Report 34-3  
   Configuration Disk Unit Error Rate  
     Report 34-7  
   Disk Cache Error Report 34-3  
   Disk Error Address Analysis 34-5  
   Error Message 34-2  
   Memory Error Report 34-3  
   Operating Instructions 34-1  
   Operator Message Report 34-2  
   Output Reports 34-2  
   Power On/Off Error Rate Report 34-6  
   Program Switches 34-1  
   Result Code Definitions 34-4  
   Result Descriptor Analysis 34-5  
   System Information Report 34-2  
   Unit Error Reports 34-4  
     Unit Error Summary 34-7  
 SYSTEM/FILE-INIT  
   Error Messages 35-3  
   Examples 35-3  
   Initialization 35-1  
   Program Execution 35-2  
   Relative Files 35-1  
 SYSTEM/ICMD-INIT  
   Error Messages 36-2  
   Operating Instructions 36-1  
 SYSTEM/IS-MAINT  
   Commands 37-2  
   ERROR Messages 37-6  
   Error Messages (ERRORs and WARNINGs) 37-6  
   Input from a Data File 37-1  
   Input from the ODT 37-1  
   Internal Files 37-8  
   Operating Instructions 37-1  
   Sample Execution 37-5  
   WARNING Messages 37-6  
 SYSTEM/ISVERIFY  
   Operating Instructions 38-1  
   Program Output 38-1  
   Program Switch Setting 38-1  
   Sample File Output 38-2  
 SYSTEM/LDCONTRL  
   General Rules 39-3  
   Operating Instructions 39-2

## INDEX (Cont)

SYSTEM/LOAD-CAS  
   Error Messages 40-2  
 SYSTEM/LOAD-DUMP  
   Program Product No Longer Supported 41-1  
 SYSTEM/LOGOUT  
   CLEAR/START Records 42-1  
   Comment Records 42-3  
   DMS Information 42-2  
   File Information Records 42-3  
   Job Information Records 42-2  
   Operating Instructions 42-1  
   Program Output 42-1  
 SYSTEM/MAKEUSER  
   ADD Command 43-4  
   CHANGE Command 43-6  
   Commands 43-4  
   COPY Command 43-7  
   CREATE Command 43-8  
   DEBUG Command 43-9  
   DELETE Command 43-9  
   DISPLAY Command 43-10  
   END/EOJ Command 43-11  
   Error Messages 43-14  
   File Security Attributes 43-2  
   HELP Command 43-11  
   LIST Command 43-11  
   Operating Instructions 43-1  
   PUNCH Command 43-13  
   The PURGE Command 43-13  
 SYSTEM/MARK-SEGS  
   Input Specifications 44-1  
   Operating Instructions 44-1  
   Program Output 44-2  
 SYSTEM/ODT  
   Files (Reference Information) 45-1  
   KB System Command 45-1  
   Memory Requirements 45-2  
   NDL Handler (B 1990 Systems) 45-1  
   Operating Instructions 45-1  
 SYSTEM/ODTLOGOUT  
   Error Messages 46-2  
   Internal Files 46-3  
   ODTLOG File Layout 46-3  
   Operating Instructions 46-1  
   Switch Settings 46-2  
 SYSTEM/PACKCOPY  
   COMMAND File Input 47-2  
   Comparison Errors 47-5  
   Execution Errors 47-3  
   Execution Examples 47-2A  
   I/O Errors 47-4  
   ODT Command Input 47-2  
   Operating Instructions 47-2  
   Other Considerations 47-1  
   Overview 47-1  
   Restrictions 47-1  
   Special Operational Considerations 47-7  
   Status Request 47-2A  
   Synopsis of Program Operation 47-1  
   Syntax Errors 47-2B  
   SYSTEM/PACKCOPY Command Syntax 47-6  
 SYSTEM/PANDA  
   Error and Advisory Messages 48-4  
   MAP and CHECK Related Messages 48-4  
   Notes on SAVE Option File 48-7  
   Operating Instructions 48-2