

Program Logic

IBM System/360 Disk Operating System Introduction to System Control Programs

Program Number 360N-CL-453, Version 3

This reference publication is one of five program logic manuals that describe the internal logic of the IBM System/360 Disk Operating System system control programs:

1. IBM System/360 Disk Operating System, Introduction to System Control Programs, Form Y24-5017.
2. IBM System/360 Disk Operating System, IPL and Job Control Programs, Form Y24-5086.
3. IBM System/360 Disk Operating System, Supervisor and Physical and Logical Transients, Form Y24-5084.
4. IBM System/360 Disk Operating System, Librarian Maintenance and Service Programs, Form Y24-5079.
5. IBM System/360 Disk Operating System, Linkage Editor, Form Y24-5080.

These manuals are intended for persons who are involved in program maintenance and for system programmers who are altering the program design. Program logic information is not needed for normal use or operation of the system control program; therefore, distribution of these publications is limited to those with maintenance and alteration requirements.

These manuals are designed to be used as a supplement to the program listing. Their effective use requires an understanding of IBM System/360 operation and of IBM System/360 Disk Operating System control and service programs, macro instructions, and operating procedures. Reference publications for this information are listed in the Preface of this manual.

Restricted Distribution

RESTRICTED DISTRIBUTION: This publication is intended primarily for use by IBM personnel involved in program design and maintenance. It may not be made available to others without the approval of local IBM management.

Eighth Edition (September 1969)

This edition applies to Release 21 of IBM System/360 Disk Operating System and to all subsequent releases until otherwise indicated in new editions or Technical Newsletters. Changes are continually made to the specifications herein; before using this publication in connection with the operation of IBM systems, consult the latest System/360 SRL Newsletter, Form N20-0360, for the editions that are applicable and current.

This edition is a major revision of, and obsoletes, Y24-5017-6.

Summary of Amendments

This edition reflects the addition of information on Outboard Recorder (OBR), Statistical Data Recorder (SDR), and Machine Check Recording and Recovery (MCRR) records, plus updates to the Error Message Cross-Reference List, Microfiche Index Cross-Reference List, and the Master Index.

Changes are indicated by a vertical line to the left of affected text and to the left of affected parts of figures. A dot (•) next to a figure title or page number indicates that the entire figure or page should be reviewed.

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A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Laboratory, Publications Department, P.O. Box 24, Uithoorn, Netherlands.

This Program Logic Manual (PLM) is a general guide to the IBM System/360 Disk Operating System system control programs. It is to be used with the four other PLMs listed on the front cover.

Prerequisite and related publications that will aid in the use of these four manuals are:

- IBM System/360 Principles of Operation, Form A22-6821.
 - IBM System/360 Disk Operating System, System Control and Service Programs, Form C24-5036.
 - IBM System/360 Disk Operating System, Supervisor and Input/Output Macros, Form C24-5037.
 - IBM System/360 Disk Operating System, System Generation and Maintenance, Form C24-5033.
 - IBM System/360 Disk Operating System, Operating Guide, Form C24-5022.
 - IBM System/360 Disk Operating System, Data Management Concepts, Form C24-3427.
 - IBM System/360 Disk Operating System, Logical IOCS, Volume I: Introduction, Form Y24-5020.
- IBM System/360 Disk and Tape Operating Systems, Assembler Specifications, Form C24-3414.
 - IBM System/360 Disk Operating System, Basic Telecommunications Access Method PLM, Form Y30-5001.
 - IBM System/360 Disk Operating System, Queued Telecommunications Access Method PLM, Form Y30-5002.

Titles and abstracts of other related publications are listed in the IBM System/360 Bibliography, Form A22-6822.

This manual consists of seven major sections. The first section is a general description of the DOS system control programs. The second section describes system files on disk. The third section describes the organization of the system residence (SYSRES) and private libraries. The fourth, fifth, and sixth sections describe the operation of the control programs, linkage editor, and librarian, respectively. The seventh section of the manual consists of the appendixes, which contain error messages, microfiche cross-references, a master index to the five PLMs that describe the program logic of DOS system control, and a brief description of the Volume Table of Contents (VTOC).

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The IBM System/360 Disk Operating System (DOS) System Control Programs provide disk operating system capabilities for 16K and larger System/360 configurations. At least one IBM 2311 Disk Storage Drive or one IBM 2314 Direct Access Storage Facility is required.

Systems larger than 16K can benefit from this 16K package if they do not require the expanded functions of the larger disk operating system packages offered by IBM. The system is disk resident, using the IBM 2311 or 2314 for on-line storage of all programs. Depending on the requirements of the particular application, the system can be expanded to include all processing programs used to perform the various jobs of a particular installation, or it can be tailored to a minimum system to control a single program.

The operating system is composed of many components which include: CPU, input/output channels, input/output control units, input/output devices, microprogramming, system control programs, support programs, user programs, user data files, teleprocessing capability, and multiple programming capability. Only the system control programs are within the scope of this publication. Of the system control programs, the supervisor and physical IOCS are specifically designed for a user's configuration by means of a one-time assembly (generation time). They require re-assembly only if the user's configuration changes.

The supervisor and physical IOCS provide the required interface between the program being executed and the other components of the operating system. The program currently being executed is identified to the operating system as the current program (definition used with this manual). The last program interrupted is identified as the problem program. The problem program or the current program can be a system control program, a support program, or a user program at any given time.

MULTIPROGRAMMING

For those systems with main storage equal to or in excess of 24K, Disk Operating System offers multiprogramming support. This support is referred to as fixed partitioned multiprogramming, because the

number and size of the partitions are fixed, or defined, during system generation. The size of the partitions may be redefined by the console operator after system generation, to meet the needs of a specific program to be executed.

Multiprogramming has two types of problem programs: foreground and background. Foreground programs may operate in either the batched-job mode or the single-program mode. Background programs and batched-job foreground programs are initiated by Job Control from the batched-job input streams. Single-program foreground programs are initiated by the operator from the IBM 1052 Printer-Keyboard. When one is finished, the operator must explicitly initiate the next program.

Background and foreground programs initiate and terminate completely independent of each other.

The system is capable of concurrently operating one background program and one or two foreground programs. Priority for CPU processing is controlled by the supervisor, with foreground programs having priority over background programs. All programs operate with interrupts enabled. When an interrupt occurs, the supervisor gains control, processes the interrupt, and gives control to the highest priority program which is in a ready state.

Control is taken away from a high priority program when that program encounters a condition that prevents continuation of processing until a specified event has occurred. Control is taken away from a lower priority program at the completion of an event for which a higher priority program was waiting. When all programs in the system are simultaneously waiting (that is, no program can process), the system is placed in the wait state enabled for interruptions.

Interruptions are received and processed by the supervisor. When an interruption satisfies a wait condition of a program, that program becomes active and competes with other programs for CPU processing time.

In addition to at least 24K positions of main storage, multiprogramming support requires the storage-protection feature.

If the batched-job foreground option is selected when the system is generated, all types of programs may be run as foreground programs. (Specifying the option causes the generation of individual communication regions for each partition.) However, the linkage editor and the maintenance functions of the librarian are restricted to the background partition.

ASYNCHRONOUS PROCESSING

The asynchronous processing function, also known as multitasking, provides a multiprogramming facility within any or all of the partitions of an MPS supervisor. An asynchronous program to be run within a partition consists of two parts:

1. The main program (main task) that appears in the EXEC statement.
2. One or more subprograms (subtasks) that must be in main storage in the same partition as the main task.

The main task initiates execution of the subtask(s) via the ATTACH macro instruction. I/O overlap is facilitated because subtasks have higher priority than the main task for CPU time within the partition. The subtasks are assigned priority in the order they are attached. The first attached subtask has the highest priority and the last attached subtask has the lowest priority. The priorities of the partitions are unchanged.

Each subtask operates independently of the main task and has its own registers and save area. Communication and synchronization between subtasks is accomplished by use of the POST and WAIT/WAITM macro instructions. Protection of shared data areas (resources) is accomplished by the ENQ macro and the corresponding DEQ macro.

Because only one set of symbolic I/O units exists for each partition, I/O assignments for all tasks must be made before the EXEC statement of the main task.

TELECOMMUNICATIONS

Disk Operating System includes telecommunications capability. Two access methods are available: Basic Telecommunications Access Method (BTAM) and Queued Telecommunications Access Method (QTAM). BTAM requires at least 24K positions of main storage, but QTAM

requires a minimum main storage capacity of 32K.

A BTAM program can be run as either a foreground or a background program. Normally, it is run as a foreground-one program and thus has the highest priority of any program being executed at a particular time.

In a system operating under QTAM, the QTAM message control program must be run in the foreground-one partition. As many as two QTAM message processing programs may be run in either foreground or background partitions.

CONFIGURATION

This section presents the minimum configuration requirements, as well as the additional features and devices supported by the DOS system control. Presentation is in the following order:

1. Minimum requirements
2. Additional features
3. I/O devices
4. System I/O devices and system I/O flow

MINIMUM REQUIREMENTS

The minimum configuration required by the DOS system control is:

1. 16K bytes of main storage (see Additional Features section for minimum main storage requirements when certain options are specified).
2. Standard instruction set (language translators can require extended instruction sets).
3. One I/O channel, either multiplexor or selector. See Note 1.
4. One card reader (1442, 2501, 2520, or 2540). See Note 2.
5. One card punch (1442, 2520, or 2540). See Note 2.
6. One printer (1403, 1404, or 1443). See Note 2.
7. One IBM 1052 Printer-Keybaord.

8. One 2311 Disk Storage Drive, or one 2314 Direct Access Storage Facility.

Note 1: Telecommunications requires a multiplexor channel and at least one selector channel.

Magnetic ink character reader (MICR) processing requires at least two I/O channels. If MICR devices are attached to the multiplexor channel, no burst mode devices will be supported on the multiplexor channel. MICRs should be attached as the highest priority devices on the multiplexor channel. Single addressing 1412s or 1419s is supported on any selector channel, but device performance is maintained only if a selector channel is dedicated to a single MICR device. Also note that the dual address 1419 is not attachable to selector channels.

Also, MICR processing requires either the direct control feature or the external interrupt feature.

Note 2: One 2400-series magnetic tape unit (7- or 9-track) can be substituted for this device. The data-conversion feature is required if a 7-track tape unit is substituted for a card reader or a card punch. The data-conversion feature is not required if a 7-track tape unit is substituted for a printer.

A disk extent may be substituted for this device if 24K bytes of main storage are available.

ADDITIONAL FEATURES

Additional features supported by the DOS system control are:

1. Timer feature.
2. Simultaneous read-while-write tape control (2404 or 2804).
3. Any channel configuration up to one multiplexor channel and six selector channels.
4. Tape switching unit (2816).
5. Storage-protection feature (required for multiprogramming).
6. Universal character set.
7. Selective tape listing features (1403) for continuous paper tapes.
8. Dual address adapter (1419) to allow more stacker selection processing. Once processing with the dual address

adapter is established, 1412s and 1419s cannot be mixed.

9. Additional main storage up to 16,777,216 bytes.

A minimum of 24K bytes is required for multiprogramming, BTAM, 1412/1419 MICR document processing, and for assigning system I/O files to disk. The QTAM message control program requires a minimum of 32K bytes of main storage. The use of QTAM with two batched-job-foreground partitions requires a minimum of 64K bytes.

I/O DEVICES

IBM input/output devices supported by the DOS system control are:

1. 1442 Card Read Punch.
2. 2501 Card Reader.
3. 2520 Card Read Punch.
4. 2540 Card Read Punch.
5. 1403 Printer.
6. 1404 Printer (for continuous forms only).
7. 1443 Printer.
8. 1445 Printer.
9. 1052 Printer-Keyboard (used for operator communications).
10. 2671 Paper Tape Reader.
11. 1017 Paper Tape Reader with 2826 Paper Tape Control, Model 1.
12. 1018 Paper Tape Punch with 2826 Paper Tape Control, Model 1.
13. 2311 Disk Storage Drive.
14. 2314 Direct Access Storage Facility.
15. 2321 Data Cell Drive.
16. 2401, 2402, 2403, 2404, and 2415 Magnetic Tape Units.
17. 1285 Optical Reader (maximum of eight).
18. 1287 Optical Reader (maximum of eight).
19. 1288 Optical Reader (maximum of eight).

20. 1442 Magnetic Character Reader.
21. 1419 Magnetic Character Reader.
22. 1419P primary control unit address on 1419 dual address adapter.
23. 1419s secondary control unit address on 1419 dual address adapter.
24. Teleprocessing devices specified in the BTAM and QTAM publications referenced in the front of this manual.

selected as the primary printed output unit of the system.

- SYSPCH (System Punch): a card punch, magnetic tape unit, or disk extent selected as the primary punched output unit of the system. See Note 2.

Note 2: SYSOPT, of Basic Programming Support (BPS) and Basic Operating System (BOS), is equated to SYSPCH by macro generation in the DOS. SYSOUT is a name that must be used when SYSPCH and SYSLST are assigned to the same magnetic tape unit.

SYSTEM I/O DEVICES AND I/O FLOW

The I/O devices used to perform system input and output are called system units. The symbolic designations for the system units are:

- SYSRES (System Residence): an IBM 2311 Disk Storage Drive or an IBM 2314 Direct Access Storage Facility selected for system residence.
- SYSLOG (System Log): an IBM 1052 Printer-Keyboard or a printer selected for operator/system communication.
- SYSRDR (System Reader): a card reader, magnetic tape unit, or disk extent selected as the control-statement and foreground initiation input unit. See Note 1.
- SYSIPT (System Input): a card reader, magnetic tape unit, or disk extent selected as the primary system input unit. See Note 1.

Note 1: Optionally, SYSRDR and SYSIPT may both be assigned to the same DASD file. SYSIN is a name used when SYSRDR and SYSIPT are assigned to the same card reader or magnetic tape unit. This name must be used when SYSRDR and SYSIPT are assigned to the same disk extent.

- SYSLST (System List): a printer, magnetic tape unit, or disk extent

- SYSUSE: Logical unit block (LUB) used exclusively by system control to schedule all operator-initiated I/O unit manipulation.

- SYSLNK: a DASD device used primarily for I/O by the linkage editor program.

- SYSRLB: a DASD device (2311 or 2314) used for private relocatable libraries. See Note 3.

- SYSSLB: a DASD device (2311 or 2314) used for private source statement libraries. See Note 3.

Note 3: SYSRLB and SYSSLB, if used, must be assigned to the same type device as is SYSRES.

- SYSREC: A DASD device (2311 or 2314) used to store Outboard Recorder (OBR), Statistical Data Recorder (SDR), and Machine Check Recording and Recovery (MCRR) records. See Note 4.

Note 4: When the supervisor detects an error, an OBR, SDR, or MCRR record is written on SYSREC. The Environmental Record Editing and Printing (EREP) program edits this record and prints it on SYSLST.

These system units may be used by either background or batched-foreground partitions, except for SYSLNK, which is restricted to the background partition.

Figure 1 shows system I/O flow.

	SYSRDR	SYSIPT	SYSPCH	SYSLST	SYSLOG	SYSLNK	SYSRES	SYS SLB	SYSRLB	SYS000	SYS001	SYS002
MAINT		IN		OUT	OUT		IN	IN	IN			
MAINTA				OUT	OUT		I/O					
MAINTDR				OUT			I/O	I/O	I/O			
MAINTCN				OUT	OUT		I/O	I/O	I/O			
MAINR2		IN		OUT			I/O		I/O			
MAINTS2		IN		OUT			I/O	I/O				
\$LNKEDTC				OUT	OUT		I/O					
\$MAINEOJ				OUT			I/O					OUT*
MAINTEJP				OUT				IN	IN			
MAINTUP		IN		OUT			I/O	I/O				
CORGZ		IN		OUT			IN					
CORGZ1							IN	OUT	OUT			OUT
CORGZ2							IN	OUT	OUT	IN	IN	OUT
CORGZ3							I/O	I/O	I/O	IN	IN	I/O
CORGZ4									IN		IN	
CORGZ5								IN		IN		
DSERV		IN		OUT			IN	IN	IN			
CSERV		IN	OUT	OUT			IN					
RSERV		IN	OUT	OUT			IN		IN			
SSERV		IN	OUT	OUT			IN	IN				
LINKAGE EDITOR				OUT	OUT	IN	I/O		IN		I/O	
JOB CONTROL	IN	IN		OUT	I/O	OUT (BG only)						
I/O=INPUT and OUTPUT * If called by CORGZ												

Figure 1. System I/O Flow

SYSTEM COMPONENTS

The Disk Operating System is subdivided into the following functional components:

1. System residence
2. System control programs
3. Linkage editor program
4. Librarian programs
5. Processing programs

Figure 2 shows the relationship between the programs. Components 1-4 are discussed in the next four sections of this manual, with references to the PLMs that contain the detailed program logic information for the various programs in each component.

The processing programs use the functions of the control programs, as do all programs executed in the DCS environment. A minimum system residence may consist of only the system control programs and one or more user programs. A full system residence may consist of the following components:

1. System control programs
2. Linkage editor program
3. Librarian maintenance programs
4. Librarian organization programs
5. Librarian service programs
6. Processing programs
 - a. Language Translators
 - (1) Assembler
 - (2) COBOL
 - (3) FORTRAN
 - (4) RPG
 - (5) PL/I

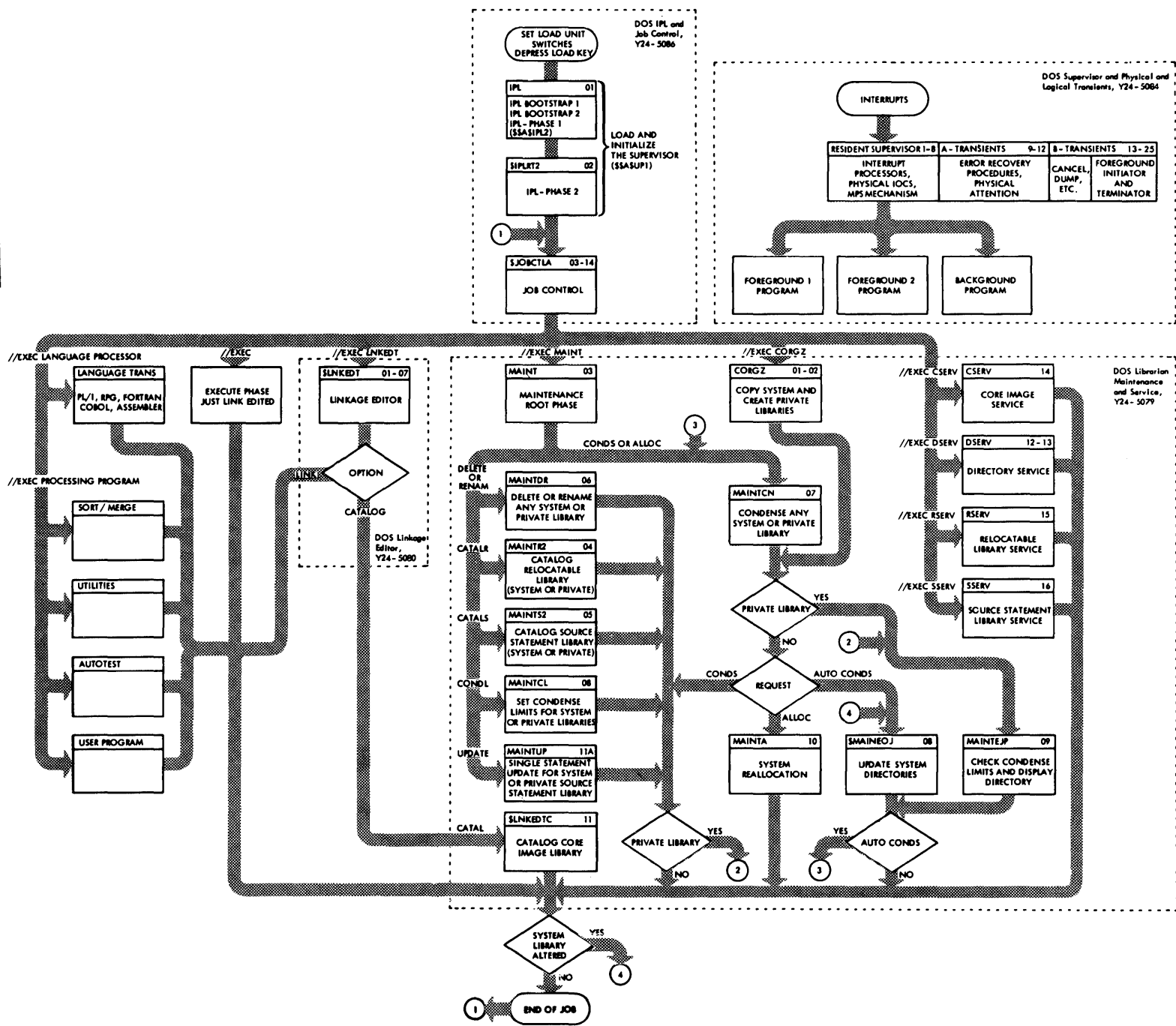
- b. Sort/Merge
- c. Utilities
- d. Autotest (2311 support only)
- e. User programs

VERSION AND MODIFICATION LEVEL

To help identify programs in main storage when a dump is being analyzed, most of the phases and modules of the programs described in the five system control PLMs have a 2-byte VM (version and modification level) number. The number may be in decimal or hexadecimal form in a core dump depending on the input format. It is in decimal form in a DSERV printout of the source statement or relocatable library. For example, version 3 modification level 0 appears as 0300 or F3F0 in a core dump and as 3.0 in a DSERV printout. The location of the VM number varies with the type of phase or module:

1. Transients. A- and B-transients contain, beginning at the load address, an eight-byte name, followed by a four-byte unconditional branch (B *+6), followed by the two-byte VM number. For the logical transients \$\$BATTNA - \$\$BATTNP, the VM appears in the specified location only in the root phase \$\$BATTNA which will be in core with any of these other transients at the time of a dump.
2. IPL, job control, librarian, and linkage editor. The modules in these programs contain, beginning at the load address, an eight-byte name followed by the two-byte VM number. For job control and linkage editor, the VM appears in the specified location only in \$JOBCTLA and \$LNKEDT, respectively. These two root phases will be in core with any other associated phases in their respective programs at the time of a dump.

Figure 2. System Program Flow



SYSTEM FILES ON DISK

In systems that have a supervisor with the SYSFIL option, the system logical units SYSRDR, SYSIPT, SYSIN, SYSLST and/or SYSPCH may be assigned to an extent on 2311 or 2314 disk storage device.

The system files on disk require the use of the job control statements ASSGN and CIOSE, and the supervisor channel scheduler routines.

When the parameters of the ASSGN statement are used, job control opens the file and initializes the disk information block (DIB) within the supervisor.

Each time a problem program requests I/O on a system logical unit, the supervisor checks the DIB table for a valid seek address. After each successful access to the file, the supervisor updates the current address field in the DIB for the particular symbolic device (SYSRDR, SYSIPT, etc.).

When a problem program issues an open to a system file that is currently assigned to disk, the LIOCS open routines transfer the extent information to the DTF table from the DIB instead of from the file label in the volume table of contents. This causes the current address field in the DIB to be used as the beginning extent for the DTF of the file being opened. When a problem program closes a system file that is assigned to disk, the LIOCS close routine posts the file closed but it will not alter the DIB. When the CLOSE statement is used, job control closes the system files on disk and deactivates the DIB.

Considerations when using system files on disk are:

- The system logical units of SYSIPT, SYSRDR, SYSIN, SYSPCH, and SYSLST can be assigned to disk for any batched job partition.
- The creation of files for use as system input, and the printing or punching of system output files is done by user-written programs and utility programs (utility macros are available to simplify this).
- Predefined symbolic file names are to be used for all system files assigned to disk.
- When SYSRDR and SYSIPT are both assigned to disk, they must reside in

the same extent and SYSIN must be used for the file name.

- SYSOUT cannot be assigned to disk. SYSLST and SYSPCH must be assigned to separate extents.

A residual capacity is established for SYSPCH and SYSLST files on disk at supervisor assembly time with the FOPT macro (SYSFIL parameter). These values can be changed after IPL by the job control command of SET (RCLST, RCPCH operands). Job control issues operator warning messages when the area assigned to disk is equal to or less than the specified value. This warning is given at the end of a job step; if the extent limits are exceeded before end-of-job, the job is terminated.

The assignment of system logical units to extents of disk storage must be permanent. The operator ASSGN command must be used instead of the programmer statement (// ASSGN). Temporary assignments (via the // ASSGN statement) to other device types are permitted. Thus, a job that is not in the input job stream on disk can be inserted in the stream by requesting a pause at the end of the current job, temporarily assigning SYSRDR to a card reader or a magnetic tape unit, and running the job. At completion, the assignment for SYSRDR reverts to the disk assignment.

PREDEFINED FILE NAMES

System input and output files are assigned to disk by providing a set of DLBL and EXTENT statements and then submitting a permanent ASSGN statement. The set of DLBL and EXTENT statements preceding the ASSGN statement may contain only one EXTENT statement.

The filename in the DLBL statement (which will be associated with the SYSxxx entry from the accompanying EXTENT statement) must be one of the following:

IJSYSIN for SYSRDR, SYSIPT, or the combined SYSRDR/SYSIPT file SYSIN

IJSYSPH for SYSPCH

IJSYSLS for SYSLST

Note that a combined SYSPCH/SYSLST file (SYSOUT) may not be assigned to disk.

In the DLBL statement, the "codes" operand must specify SD (or blank, which means SD) to indicate sequential DASD file type.

In the EXTENT statement, type may be 1 (data area, no split cylinder) or 8 (data area, split cylinder). There is no unique requirement for the remaining operands of the EXTENT statement.

The ASSGN statement must be one of the following:

1. ASSGN SYSIN,X'cuu' (for a combined SYSRDR/SYSIPT file).
2. ASSGN SYSRDR,X'cuu' (for SYSRDR only).
3. ASSGN SYSIPT,X'cuu' (for SYSIPT only).
4. ASSGN SYSPCH,X'cuu' (for SYSPCH).
5. ASSGN SYSLST,X'cuu' (for SYSLST).

Note that all must be permanent assignments (not preceded by //).

OPEN SYSTEM DISK FILES

Upon encountering a system input or output assignment to 2311 or 2314, job control performs the following functions:

1. Rejects the assignment if it is not permanent.
2. Rejects the assignment if a previous assignment to 2311 or 2314 for the same logical unit still exists (has not been closed).
3. Rejects the assignment if SYSRDR or SYSIPT are assigned to disk and a disk assignment already has been made for the other or both. (SYSRDR and SYSIPT must be a single combined file if both are on disk.)
4. OPENS the file. If input, the labels are checked. If output, DASD labels are written. Also, information is placed into the supervisor disk information block (DIB) for the program OPEN, and for monitoring of file operations by physical IOCS.
5. Unassigns the unit and requests further operator commands if the OPEN is unsuccessful.

CLOSE SYSTEM DISK FILES

System logical units assigned to disk must be closed by the operator. The operator CLOSE command must be used to specify a system input or output file which has been previously assigned to a 2311 or 2314. The optional second parameter (X'cuu') of the CLOSE command must be used (instead of an ASSGN command) to assign the system logical unit to a physical device. The system notifies the operator that a CLOSE is required when the limit of the file has been reached. If a program attempts to read or write beyond the limits of the file, the program will be terminated and the file must be closed.

The CLOSE function:

1. Writes a file mark if the file is an output file.
2. Resets the file's DIB in the supervisor by clearing the current address and setting the key and data length to zero.
3. Reassigns the logical unit to the value of the second operand of the CLOSE command.

SUPERVISOR FOPT MACRO PARAMETER

$$\text{SYSFIL} = \left\{ \begin{array}{l} \text{NO} \\ 2311 \\ 2314 \end{array} \right\} [i, n_1, n_2]$$

Specifies if system input and system output (SYSRDR, SYSIPT, SYSLST, SYSPCH) files may be assigned to a 2311 or 2314. Specification of either gives support for both. If MPS=BJF in SUPVR macro, support is given for foreground logical units when running in batched mode.

n_1 = residual capacity for beginning of operator notification when SYSLST is assigned to 2311 or 2314. $100 \leq n_1 \leq 65536$. If n_1 is omitted, 1000 is assumed.

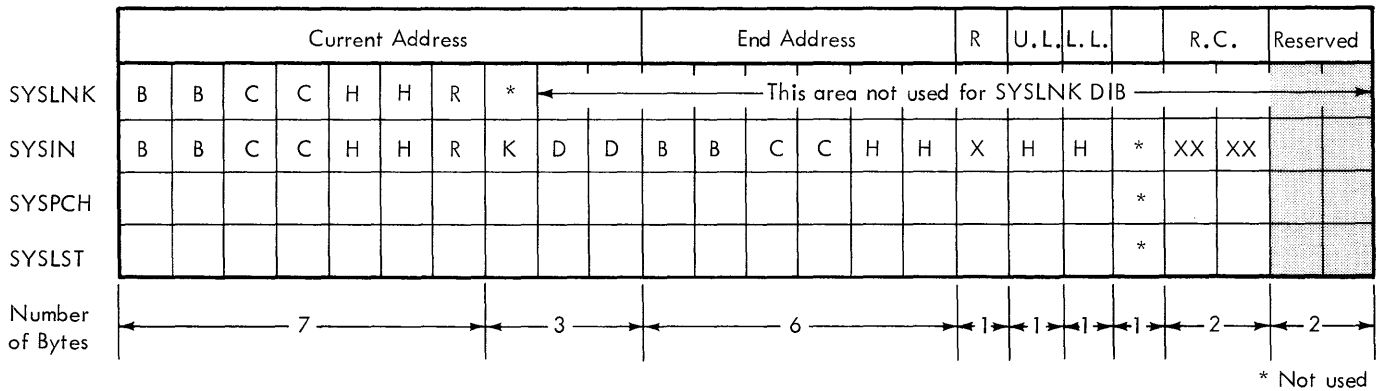
n_2 = residual capacity for beginning of operation notification when SYSPCH is assigned to 2311 or 2314. $100 \leq n_2 \leq 65536$. If n_2 is omitted, 1000 is assumed.

The job control command of SET with the RCLST and RCPCH operands, can change these values at any time after IPL.

DISK INFORMATION BLOCK (DIB)

The DIB illustrated in Figure 3 is built in the supervisor I/O table area at generation time if the SYSFIL option was selected. It performs a recordkeeping function on system

class units assigned to a DASD. The DIB contains the current seek address when the system is operating in a batched job environment. The block is initialized by job control with extent information and is updated by physical IOCS.



- KEY: Current Address: The next address to be used (for both input and output).
 End Address : The last address within the limits of the extent.
 R : Maximum number of records per track.
 U.L. : Upper head limit
 L.L. : Lower head limit
 R.C. : Record Count - residual capacity for beginning of operator notification. This is set at system generation time with the SYSFIL parameter, or after IPL with the SET statement (RCLST and/or RCPCH operands). A warning message is issued by job control after end-of-job step when the minimum number of remaining records has been reached or exceeded during the previous job.
 KDD : Key and data length for the symbolic device.

KDD for SYSIN = X'000050'
 KDD for SYSPCH = X'000051'
 KDD for SYSLST = X'000079'

Bytes 96 and 97 (X'60' - '61') of the communications region contain the address of the SYSLNK entry. Label DSKPOS identifies the first byte of the table.

Figure 3. Disk Information Block (DIB) Table

SYSTEM RESIDENCE ORGANIZATION AND PRIVATE LIBRARIES

This section presents the organization of a disk resident system as received from the Program Information Department (PID) and after system generation. The disk resident system may be on a 2311 or a 2314 disk pack, certain areas of which are predefined:

1. IPL. This area contains the IPL bootstrap program and the volume label.
2. System directory. This area contains the system master directory. It consists of records that show the status, location, description, and allocation of the core image library and its directory, and the starting addresses of the other directories in the system. This area also contains the IPL retrieval program (\$\$A\$IPL2).
3. System work area (Librarian area). This area is reserved for use as a system work area by the linkage editor, job control, and the librarian programs.
4. Transient directory. This area contains the directory of the transient routines in the core image library.
5. Open (LIOCS) directory. This area contains a directory of the phases of the logical input/output control section (LIOCS) OPEN function.
6. Library-routine directory. This area contains a directory of the system programs in the core image library.
7. Foreground program directory. This area contains a directory of the foreground program phases.
8. Phase directory. This area is reserved for the directory of phases of a problem program.
9. Core image directory. This area contains the directory of all the phases in the core image library.
10. Core image library. This area contains the following programs, in core image format:
 - a. System control programs
 - (1) IPL program (\$IPLRT2)
 - (2) Supervisor control program (\$\$A\$SUP1), includes PIOCS.
 - (3) Job control program (\$JOBCTLA)
 - b. Linkage editor program (\$LNKEDT)
 - c. Librarian programs
 - (1) Common library maintenance (MAINT)
 - (2) Core image library catalog (\$LNKEDTC)
 - (3) Relocatable library catalog (MAINTR2)
 - (4) Library delete and rename (MAINTDR)
 - (5) Source statement library catalog (MAINTS2)
 - (6) Transient and library-routine directory update program for SYSRES (\$MAINEOJ)
 - (7) Private library condense check and status report (MAINTEJP)
 - (8) Library condense (MAINTCN)
 - (9) Store condense limits (MAINCL)
 - (10) Library reallocation for 2311 (MAINTA)
 - (11) Copy system (CORGZ)
 - (12) Source statement library single statement update (MAINTUP)
 - (13) Directory service (DSERV)
 - (14) Core image library service (CSERV)
 - (15) Relocatable library service (RSERV)
 - (16) Source statement library service (SSERV)
 - d. Processing program: assembler
11. Relocatable library directory. This area contains the directory of all the modules in the relocatable library.
12. Relocatable library. This area contains programs in relocatable format (language translator output). All programs in the core image library, except the transients, are contained in this area. In addition, this area can contain the following programs:
 - a. COBOL
 - b. FORTRAN
 - c. RPG
 - d. PL/I
 - e. Sort/Merge
 - f. Utilities
 - g. Autotest
13. Source statement directory. This area contains the directory of all the books in the source statement library.
14. Source statement library. This area contains books in source-language format. The books supplied are macro definitions in the assembler

sub-library. Included are the supervisor macros and the logical IOCS macros.

- 15. Volume area. This file definition storage area (also referred to as the label cylinder) is on a separate cylinder. It contains standard and user labels for background and foreground partitions.

- System residence is contained in a contiguous area of the disk pack. The starting and ending addresses are:

	BB	CC	HH	R
Start	00	00	00	1
End	00	nn	tt	n

where:

nn = the cylinder assigned to the volume area. nn depends on the allocation specified by the user for the core image, relocatable, and source statement library-directory pairs.

tt = 09 for 2311 or 19 for 2314.

n = the last record of the last track of the volume area.

SYSTEM RESIDENCE ORGANIZATION AFTER GENERATION

Once system generation is completed, the user has a system residence specifically designed for his configuration and special features.

Certain areas of any system residence do not change. Figure 4 shows the organization of a full system residence.

- Items 1 through 10 and 15 in Figure 4 are required in any system residence.
- Items 1 through 9 have fixed locations.
- Items 10 through 16 have variable locations that are dependent on the existence and allocation (size) of preceding items.
- Items 11-14 and 16 are optional. If one or both of the optional libraries (items 12 and 14) are not allocated the associated directory is not allocated.
- The directory of each library-directory pair (items 9, 11, 13) starts on a new cylinder (CC) at track (HH) 00.
- The library of each library-directory pair starts on a new track (HH) and utilizes all of the last allocated cylinder (HH = 9).
- The volume area (item 15) requires a full cylinder.

IPL

Refer to IBM System/360 Disk Operating System, IPL and Job Control Programs, Program Logic Manual listed in the front of this manual, for information on IPL record formats.

VOLUME LABEL

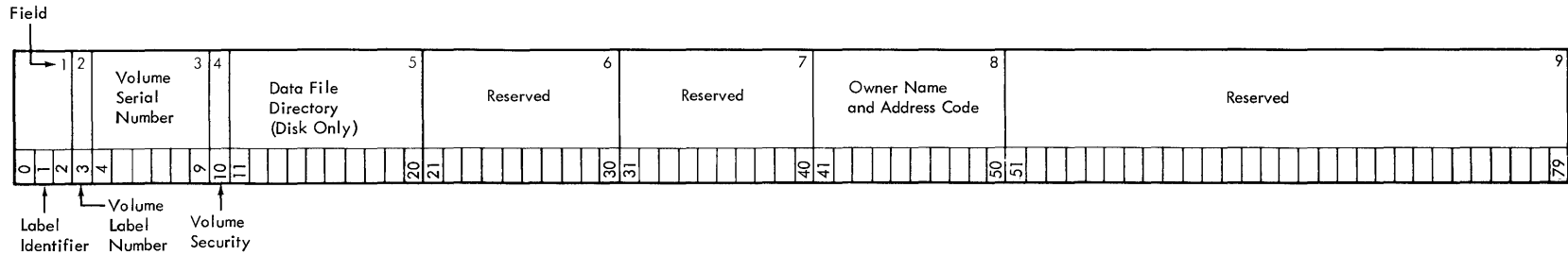
The volume label contains the address of the Volume Table of Contents (VTOC) established when the pack was initialized (see field 5 in Figure 5). A brief description of the VTOC appears in Appendix D.

NO.	COMPONENT		STARTING DISK ADDRESS				NUMBER OF TRACKS (Allocation)	R=REQUIRED O=OPTIONAL
			BB	CC	HH	R		
1	IPL Bootstrap Record 1 (\$A\$IPL1)		00	00	00	1	1	R
	IPL Bootstrap Record 2 (\$A\$IPLA)		00	00	00	2		R
	Volume Label		00	00	00	3		R
	User Volume Label		00	00	00	4		O
2	System Directory	Record 1	00	00	01	1	1	R
		Record 2	00	00	01	2		R
		Record 3	00	00	01	3		R
		Record 4	00	00	01	4		R
	IPL Retrieval Program (\$\$A\$IPL2)		00	00	01	5		R
3	System Work Area (Librarian Area)		00	00	02	1	3	R
4	Transient Directory (\$\$A and \$\$B Transients)		00	00	05	1	1	R
5	Open Directory (\$\$B0)		00	00	06	1	1	R
6	Library Routine Directory (\$ Phasenames)		00	00	07	1	1	R
7	Foreground Program Directory (FGP)		00	00	08	1	1	R
8	Phase Directory (For Problem Program Phases)		00	00	09	1	1	R
9	Core Image Library Directory		00	01 for 2311 00 for 2314	00 for 2311 10 for 2314	1	*	R
10	Core Image Library		00	End of CI Directory		1	*	R
				X	Y+1			
11	Relocatable Library Directory		00	End of CI Library		1	*	O
				Z+1	00			
12	Relocatable Library		00	End of RL Directory		1	*	O
				X	Y+1			
13	Source Statement Library Directory		00	End of RL Library		1	*	O
				Z+1	00			
14	Source Statement Library		00	End of SS Directory		1	*	O
				X	Y+1			
15	Volume Area File Definition Storage Area			End of SS Library		1	2311:10 2314:20	R
				Z+1	00			
16	User Area			End of Volume Area		1	*	O
				Z+2	00			

*Allocation Dependent On User Requirements
X=Ending CC of the Preceding Directory
Y=Ending HH of the Preceding Directory
Z=Ending CC of the Preceding Library

Figure 4. System Residence Organization

Figure 5. Standard Volume Label Data



Volume Label Format (80 bytes) for Tape or DASD.

FIELD	NAME AND LENGTH	DESCRIPTION	FIELD	NAME AND LENGTH	DESCRIPTION
1.	<u>LABEL IDENTIFIER</u> 3 bytes	Must contain VOL to indicate that this is a Volume Label.	5.	<u>DATA FILE DIRECTORY</u> 10 bytes	For DASD only. The first 5 bytes contain the starting address (CCHHR) of the VTOC. The last 5 bytes are blank. For tape files, this field is not used and should be recorded as blanks.
2.	<u>VOLUME LABEL NUMBER</u> 1 byte	Indicates the relative position (1 - 8) of a volume label within a group of volume labels.	6.	<u>RESERVED</u> 10 bytes	Reserved.
3.	<u>VOLUME SERIAL NUMBER</u> 6 bytes	A unique identification code which is assigned to a volume when it enters an installation. This code may also appear on the external surface of the volume for visual identification. It is normally a numeric field 000001 to 999999, however any or all of the 6 bytes may be alphameric.	7.	<u>RESERVED</u> 10 bytes	Reserved.
4.	<u>VOLUME SECURITY</u> 1 byte	Indicates security status of the volume: 0 = no further identification for each file of the volume is required. 1 = further identification for each file of the volume is required before processing.	8.	<u>OWNER NAME AND ADDRESS CODE</u> 10 bytes	Indicates a specific customer, installation and/or system to which the volume belongs. This field may be a standardized code, name, address, etc. } For display only when VTOC is displayed with DSDLYV.
		} Not used by DOS	9.	<u>RESERVED</u> 29 bytes	

Note 1: All reserved fields should contain blanks to facilitate their use in the future. Any information appearing in these fields at the present time will be ignored by the Disk Operating System programs as well as the Operating System/360 programs.

Note 2: This figure illustrates only the data field of the label; for DASD, a 4-byte key field precedes this data field.

SYSTEM DIRECTORY

Figure 6 shows the record formats of the system directory records.

This directory consists of five records that make up the system master directory. Records 1 through 4 are 80 bytes in length.

Record 1 contains information describing the core image library and directory. Records 2 and 3 contain the starting address of the relocatable library directory and the source statement library directory, respectively. Record 4 is not used. Record 5 is the IPL retrieval program (\$\$A\$IPL2).

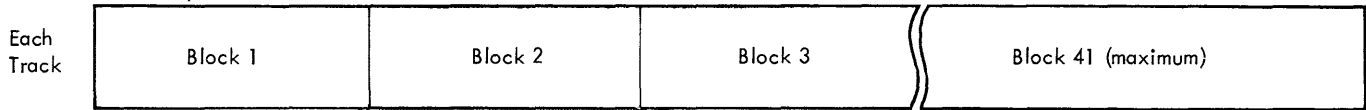
SYSTEM WORK AREA (LIBRARIAN AREA)

This 3-track area is reserved as a work area for the librarian programs and job control. The format of the records in the librarian area depends on the program using the area at a specific time. Figure 7 shows the record formats that may be found in the librarian area.

Format of records 1-3 (Record 1 contains core image directory and library information; record 2 contains the relocatable directory starting address; record 3 contains the source statement directory starting address.)																
0	7	15	23	30	37	44	48	52	56	60	64	66	68	70	78	79
BBCCHHR	BBCCHHRE	BBCCHHRE	BBCCHHR	BBCCHHR	BBCCHHR	XXXX	XXXX	XXXX	XXXX	XXXX	XX	CC	TT	RESERVED	C	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Fields (If no library is allocated, the first byte contains a blank and the remainder of the record contains zeros.)																
<ol style="list-style-type: none"> 1. Starting address of the directory. (This is the only field used in records 2 and 3.) 2. Address of the next available entry in the directory. 3. Ending address of the directory including last entry. 4. Starting address of the library. 5. Address of next available record in the library. 6. Ending address of the library. 7. Number of active entries in the directory. 8. Number of blocks allocated for the library. 9. Number of active blocks in the library. 10. Number of deleted blocks in the library. 11. Number of blocks available for additions. 12. Automatic condense limit. 13. Total number of cylinders for the directory and library. 14. Number of tracks for the directory. 15. Reserved. 16. Address of the file definition storage cylinder (label cylinder), C. 																
Record 4 (Not used; 80 bytes)																
Record 5 (IPL retrieval program - \$\$A\$IPL2)																

Figure 6. System Directory Record Formats

As used by Job Control

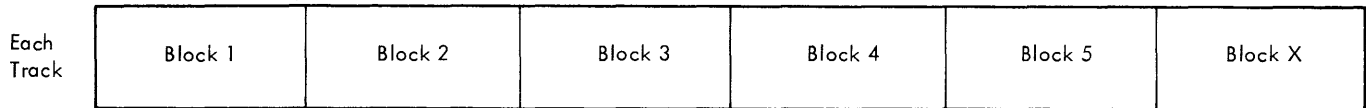


Block 2

1 Entry (20 Bytes)						
Phase Name	Load Address	No. of Blocks	Entry Address	CI Library Address (CHR)	Length of Last Block	
8	3	1	3	3	2	

Number of Bytes

As used by Linkage Editor (\$LNKEDTA phase; this phase changes the entries to Core Image Directory format before exiting to Job Control or \$LNKEDTC)



Unblocked Phase Entries (24 Bytes Each)

Phase Name	Entry Address	No. of Blocks	Length of Last Block	CI Library Address	Load Address
NNNNNNNN	EEEE	BB	LL	CHHR	LLLL
8	4	2	2	4	4

Number of Bytes

Note: This area is also used by the Reallocation Program (MAINTA) for temporary storage of the Volume Label.

Figure 7. System Work Area Record Formats

TRANSIENT DIRECTORY

This single track directory contains entries for the A and B transient routines, which are located in the core image library. The entries in this directory are taken from the core image library directory. A separate directory permits faster retrieval of the A and B transients.

The core image library phases that are referenced in this directory have a phase name prefixed by \$\$A (type A transients) or \$\$B (type B transients). This directory has a maximum capacity of 144 entries for the 2311, or 270 entries for the 2314. Track format is identical to the core image library directory (see Figure 8).

OPEN DIRECTORY

This single track directory contains entries for the LIOCS open phases located in the core image library. The entries in this directory are taken from the core image library directory. A separate directory permits faster retrieval of LIOCS open phases. The core image library phases referenced in this directory have phase names prefixed by the characters \$\$BO. This directory has a maximum capacity of 144 entries for the 2311, or 270 entries for the 2314. Track format is identical to the core image library directory (see Figure 8).

LIBRARY ROUTINE DIRECTORY

This single-track directory contains entries for frequently used core image library phases, such as job control, linkage editor, etc. The entries in this directory are taken from the core image library directory. A separate directory permits faster retrieval of these phases. The core image library phases that are placed in this directory have a phase name prefixed by a \$ (for example, \$LNKEDT). This entry has a maximum capacity of 144 entries for the 2311, or 270 entries for the 2314. Track format is identical to the core image library directory (see Figure 8).

FOREGROUND PROGRAM DIRECTORY

This single track directory contains entries for the foreground program phases located in the core image library. The entries in this directory are taken from the core image library directory. A separate directory permits faster retrieval of foreground program phases. The core image library phases referenced in this directory have phase names prefixed by the characters FGP. This directory has a maximum capacity of 144 entries for the 2311, or 270 entries for the 2314. Track format is identical to the core image library directory (see Figure 8).

PHASE DIRECTORY

This single track directory contains entries for the phases of the current BG problem program. The entries in this directory are constructed by job control before each job step is executed in the background partition only. They are taken from the core image library directory. A separate directory permits faster retrieval of the phases of a program.

The phase naming conventions used to permit the use of the phase directory are:

1. All program names must be unique in the first four characters.

2. The first four characters of the name of each phase of a program must be identical to the first four characters of the program name. All eight characters of the first phase name must be identical to the program name.

Example: WXYZPROG

WXYZPROG - phase 1

WXYZPH1 - phase 2

WXYZPH2 - phase 3

The maximum capacity of this directory is 144 entries for the 2311 or 270 entries for the 2314. Track format is identical to the core image library directory (see Figure 8).

CORE IMAGE LIBRARY DIRECTORY

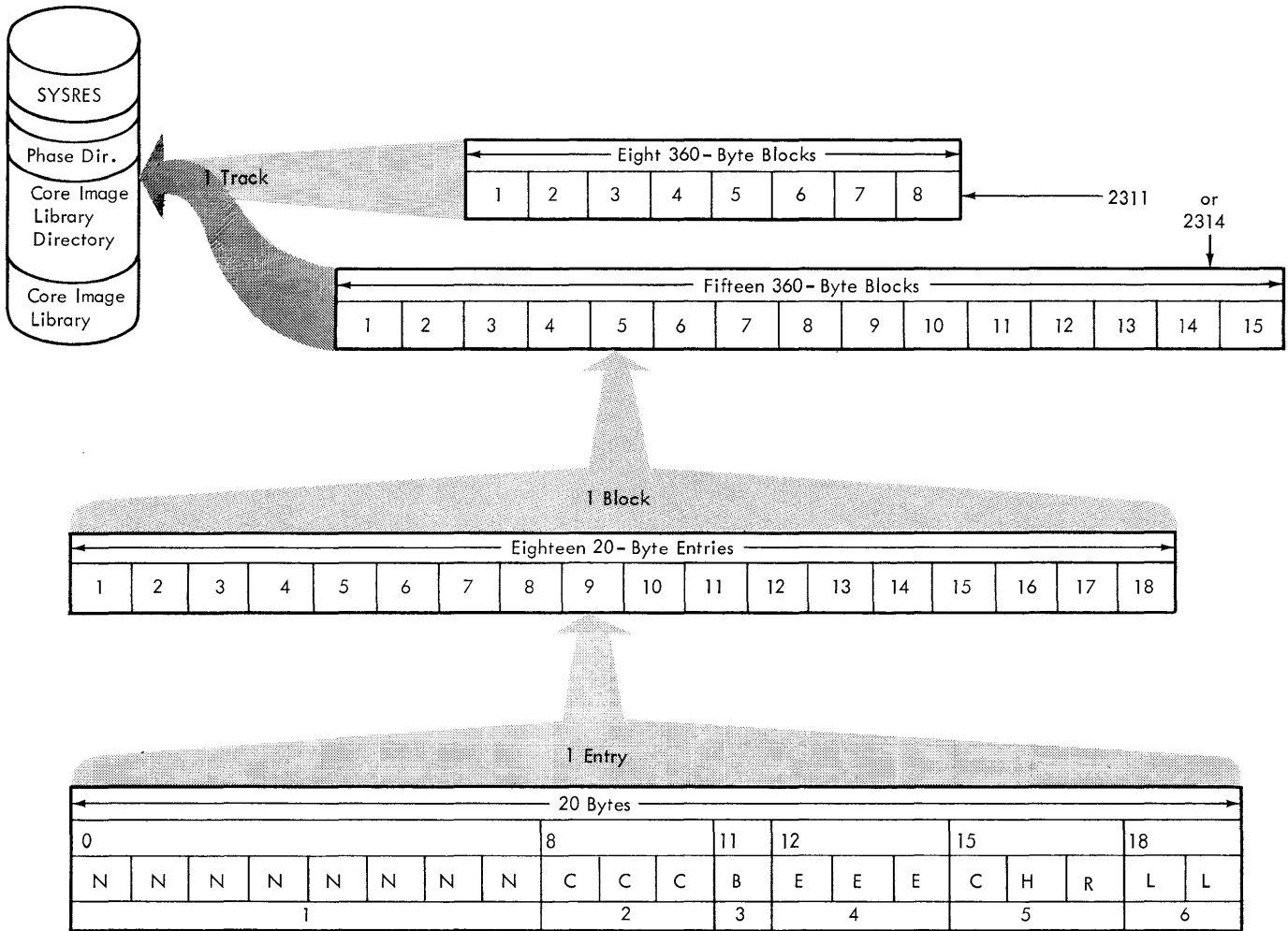
This directory consists of one or more tracks, depending on the allocation specified by the user. It contains one entry for each of the phases in the core image library.

Note: A phase is an overlay of a multiphase program or a complete program if not multiphase.

Each directory entry describes one phase in the core image library and contains:

- Phase name
- Loading address
- Number of blocks
- Entry point
- Starting disk address in the core image library
- Length of last block.

Figure 8 shows the track, block, and entry format of the core image library directory.



Field

- | | |
|--------------------------------------|--|
| 1. Phase Name | 8 characters from the PHASE card. (an * in the first byte indicates the logical end of the directory). |
| 2. Loading Address | 3-byte hexadecimal storage address provided at linkage edit time. (Can be overridden at object time). |
| 3. Number of Blocks | The number of physical records (blocks) required to contain the phase in the core image library. |
| 4. Entry Point | 3-byte hexadecimal storage address of the first instruction to be executed. Provided at linkage edit time (can be overridden at object time). |
| 5. Phase Address | Starting disk address of the first block of the phase in the core image library. The 3-byte address (CHR) is expanded to 5 bytes (0C0HR) by the using routine. |
| 6. Number of Bytes in the Last Block | Each block of a phase contains 1728 bytes of data (2311) or 1688 bytes of data (2314). Only the last block may contain fewer data bytes. |

Figure 8. Core Image Directory Format

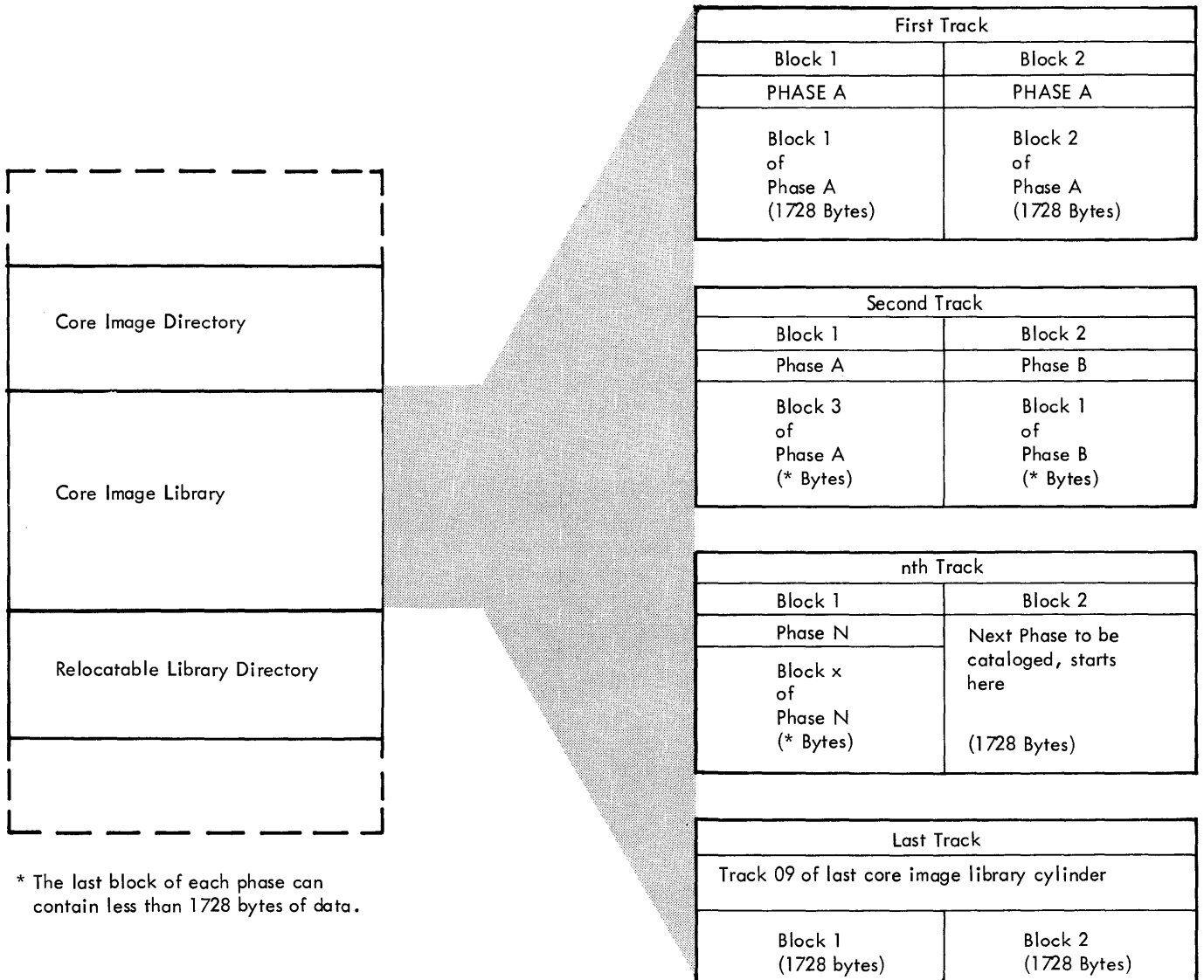
CORE IMAGE LIBRARY

The core image library consists of five or more tracks, depending on the allocation specified by the user. For the 2311, each track contains two blocks with a maximum capacity of 1728 bytes each. For the 2314, each track contains four blocks with a maximum capacity of 1688 bytes each. The number of programs (phases) and the size of each program to be contained in the core image library dictates the number of

cylinders that must be allocated. Each program starts with a new block and only the last block of a program can contain less than 1728 bytes of data for the 2311 or 1688 bytes of data for the 2314.

Note: A phase is an overlay of a multiphase program or a complete program if not multiphase.

Figures 9 and 10 show the organization of the core image library for the 2311 and the 2314, respectively.



* The last block of each phase can contain less than 1728 bytes of data.

Figure 9. Core Image Format for 2311

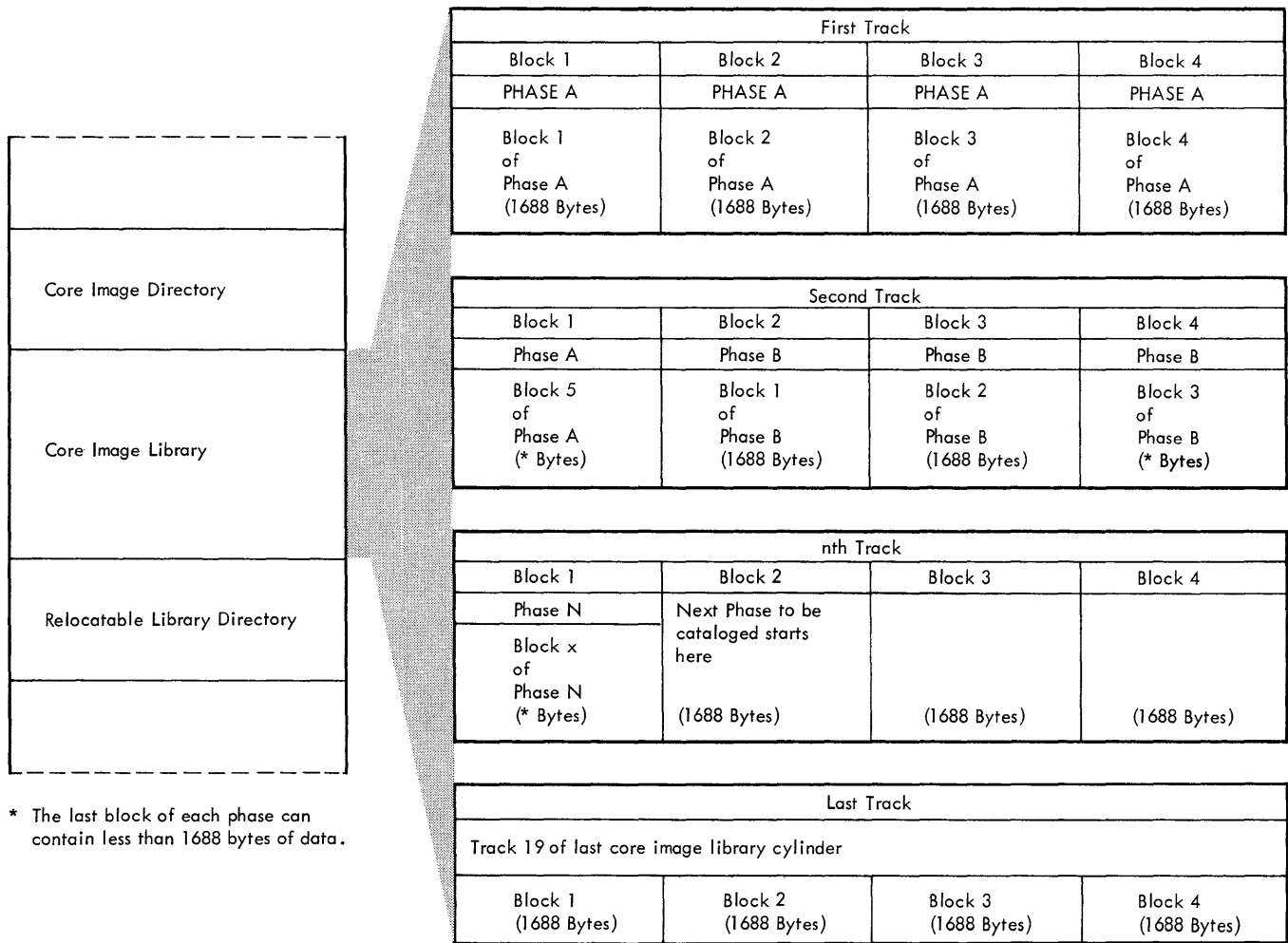


Figure 10. Core Image Library Format for 2314

RELOCATABLE LIBRARY DIRECTORY

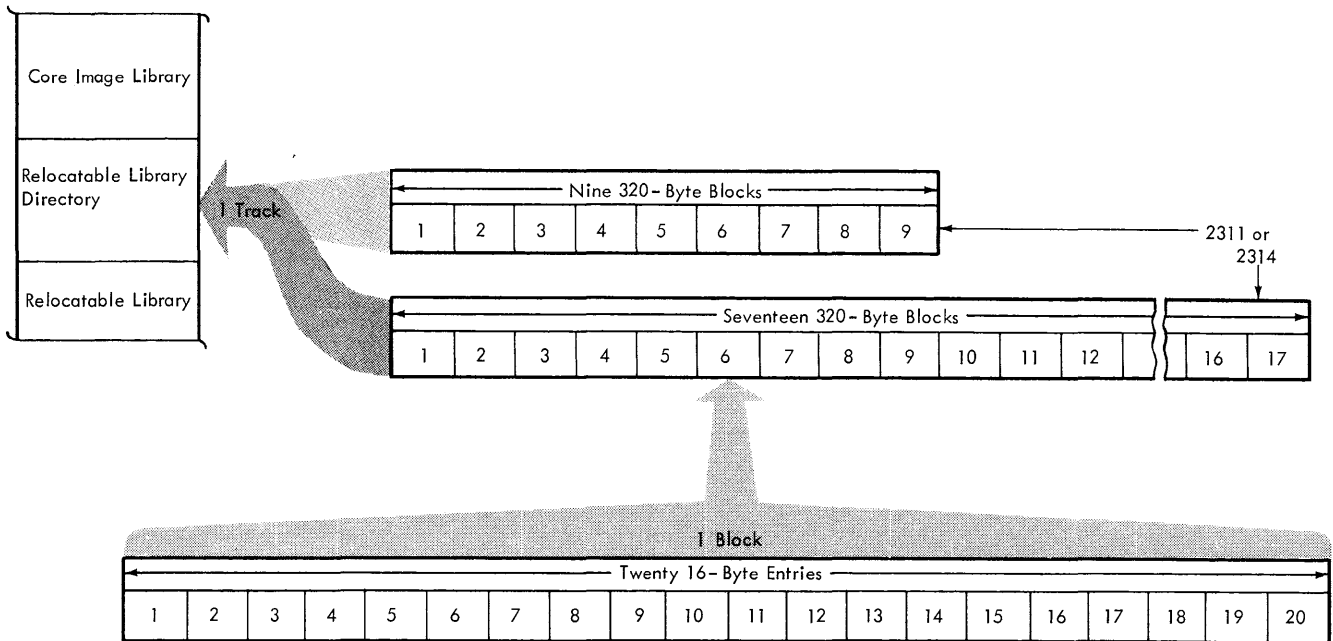
This directory consists of one or more tracks, depending on the allocation specified by the user. It contains two types of information:

1. System directory information for the relocatable directory and library. This information will occupy the first five entries of the first record in the relocatable directory.
2. An entry that describes each module in the relocatable library and contains:

- a. Module name (see Note)
- b. Total number of text-record blocks required to contain this module
- c. Starting disk address of the first text-record of this module
- d. Change level identification.

Note: A module is the output of a complete language translator run.

Figure 11 shows the track, block, and entry format of a single track in the relocatable library directory.



The first five entries of the first block contain the following information:

0	7	15	23	30	37	44	48	52	56	60	64	66	68	70	79
BBCCHHR	BBCCHHR	BBCCHHR	BBCCHHR	BBCCHHR	BBCCHHR	XXXX	XXXX	XXXX	XXXX	XXXX	XX	XX	XX	RESERVED	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Field

1. Starting address of the directory.
2. Address of the next available entry in the directory.
3. Ending address of the directory including last entry.
4. Starting address of the library.
5. Address of next available record in the library.
6. Ending address of the library.
7. Number of active entries in the directory.
8. Number of blocks allocated for the library.
9. Number of active blocks in the library.
10. Number of deleted blocks in the library.
11. Number of blocks available for additions.
12. Automatic condense limit for the library.
13. Total number of cylinders for the directory and library.
14. Number of tracks for the directory.
15. Reserved.

Entries numbered 6 through 20 of the first block and all entries of the remaining blocks have the following format:

16 Bytes															
0								8		10				14	
N	N	N	N	N	N	N	N	B	B	C	H	H	R	L	L
1								2		3				4	

Field

1. Module name 8 characters from the "CATALR" control statement. An * in the first character indicates the logical end of the directory.
2. Number of blocks Total number of text records (BLOCKS) required to contain this module.
3. Disk address Starting disk address of the first text record (BLOCK) of this module in the relocatable library.
4. Change level Module identification.

Figure 11. Relocatable Library Directory Format

RELOCATABLE LIBRARY

The relocatable library consists of five or more tracks, depending on the allocation specified by the user. The number of modules and the size of each module to be contained in this library dictates the number of tracks that must be allocated.

Each allocated track contains nine blocks (2311) or 16 blocks (2314), and each block has a fixed length of 322 bytes. Each module starts with a new block but not necessarily a new track.

Figures 12 and 13 show the organization of the relocatable library for the 2311 and the 2314, respectively.

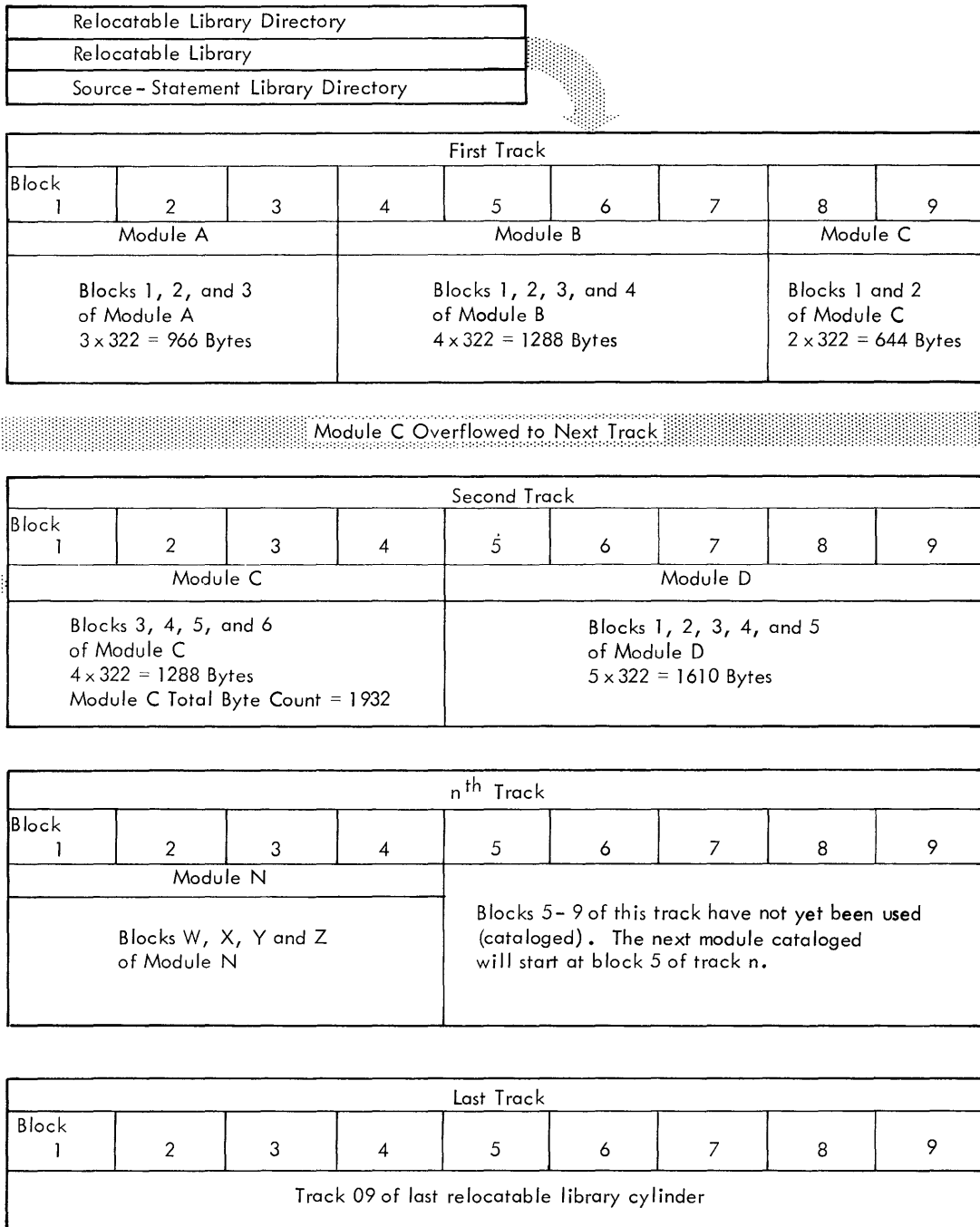


Figure 12. Relocatable Library Format for 2311

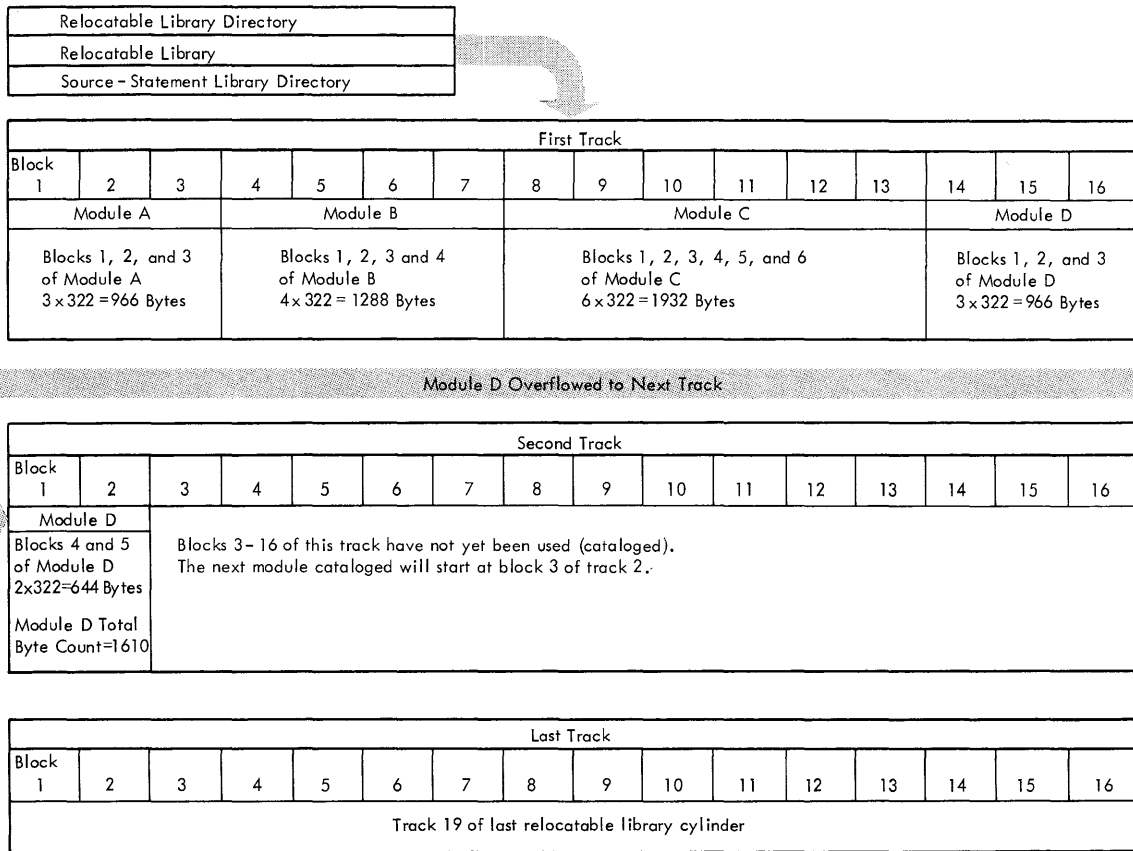


Figure 13. Relocatable Library Format for 2314

SOURCE STATEMENT LIBRARY DIRECTORY

This directory consists of one or more tracks, depending on the allocation specified by the user. It contains two types of information:

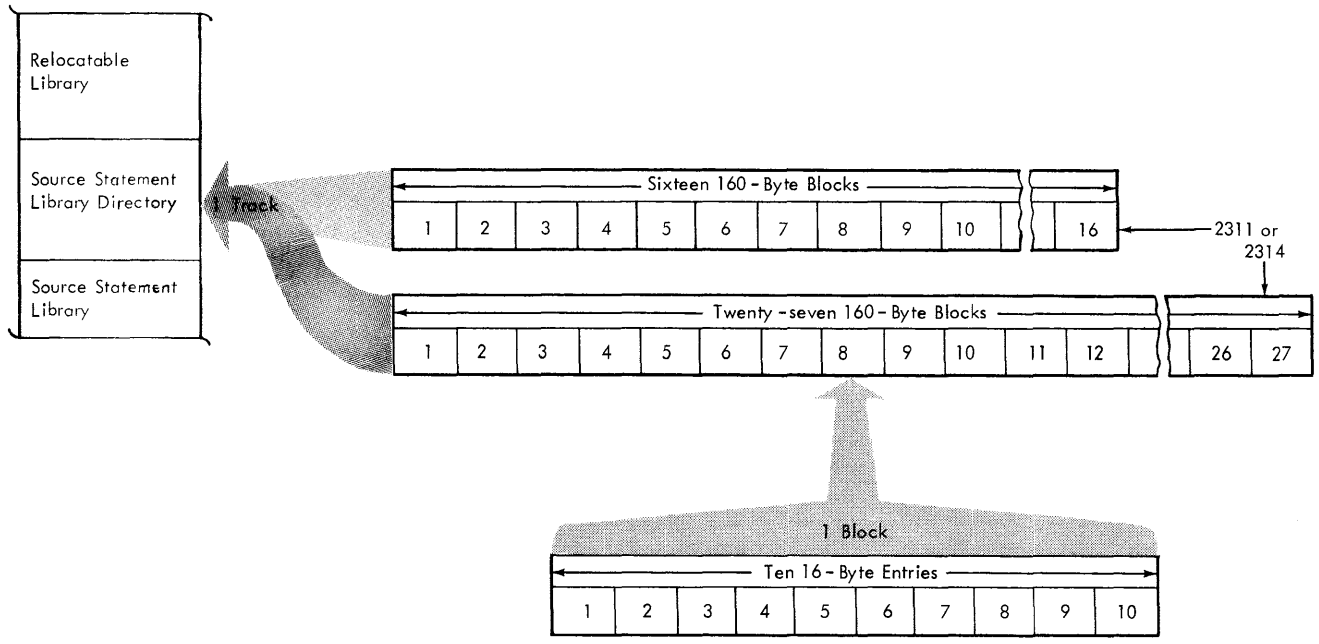
1. System directory information for the source-statement directory and library. This information occupies the first five entries of the first record in the source-statement directory.
2. An entry that describes each book (see Note 1) in the source statement library and contains:
 - a. A sublibrary prefix - any alphanumeric character, \$, #, or @, except A and C (see Note 2)
 - b. Book name
 - c. Starting disk address of the first

- d. Total number of blocks required to contain this book in the source statement library
- e. Change level identification.

Note 1: A book is a sequence of source language statements, in compressed card image format, accessed by a single name. See the figure entitled Compressed Format for Source Statement Library in the DOS Librarian PLM listed on the front cover of this manual.

Note 2: A and C are reserved for assembler and COBOL, respectively.

Figure 14 shows the track, block, and entry format of the source statement library directory.



The first five entries of the first block contain the following information:

0	7	15	23	30	37	44	48	52	56	60	64	66	68	70	79
BBCCHHR	BBCCHHRE	BBCCHHRE	BBCCHHR	BBCCHHR	BBCCHHR	XXXX	XXXX	XXXX	XXXX	XXXX	XX	XX	XX	RESERVED	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

Field

1. Starting address of the directory.
2. Address of the next available entry in the directory.
3. Ending address of the directory including last entry.
4. Starting Address of the library.
5. Address of next available record in the library.
6. Ending address of the library.
7. Number of active entries in the directory.
8. Number of blocks allocated for the library.
9. Number of active blocks in the library.
10. Number of deleted blocks in the library.
11. Number of blocks available for additions.
12. Automatic condense limit for the library.
13. Total number of cylinders for the directory and library.
14. Number of tracks for the directory.
15. Reserved.

Entries numbered 6 through 10 of the first block and all entries of the remaining blocks have the following format:

16 Bytes															
P	N	N	N	N	N	N	N	N	C	H	R	B	B	L	L
1	2						3			4		5			

Field

1. Sublibrary prefix Any alphanumeric character, \$, #, or @, except "A" for the assembler, and "C" for COBOL. An * in this field indicates the logical end of the directory.
2. Book name 8 characters from the "CATALS" control statement.
3. Disk address Starting disk address of the first block of this book.
4. Number of blocks The total number of blocks required to contain this book in the source statement library.
5. Change level Book identification.

Figure 14. Source Statement Library Directory Format

SOURCE STATEMENT LIBRARY

The source statement library consists of five or more tracks, depending on the allocation specified by the user. The number of books and the size of each book to be contained in this library dictates the number of tracks that must be allocated. Each track contains 16 blocks (2311) or 27 blocks (2314), and each block has a fixed length of 160 bytes. Each book

starts with a new block but not necessarily a new track. Each book in the source statement library contains compressed card-images of the source language input to the assembler or COBOL language translators. A compressed card image can overflow from one block to another.

Figures 15 and 16 show the organization of the source statement library for the 2311 and the 2314, respectively.

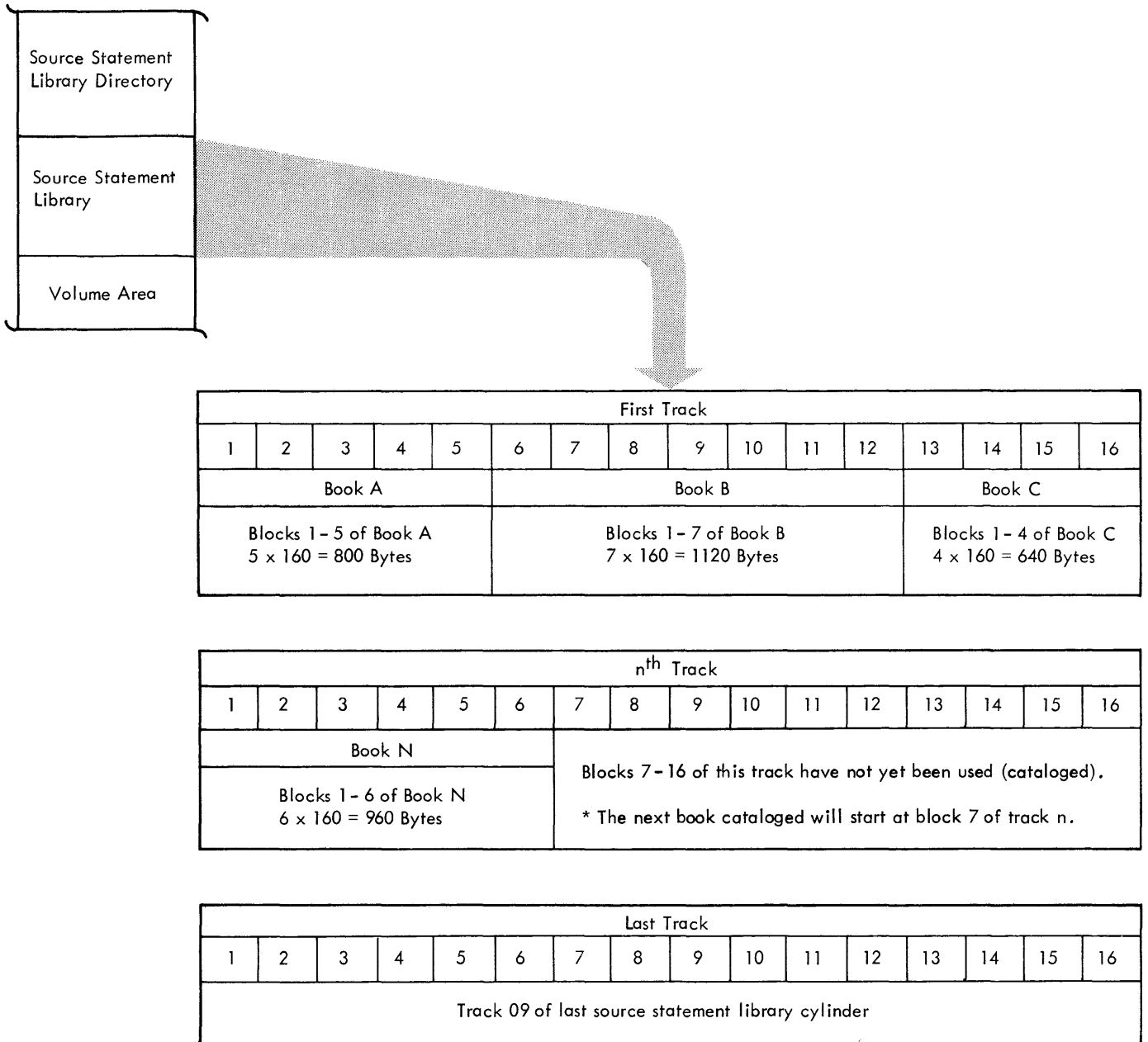


Figure 15. Source Statement Library Format for 2311

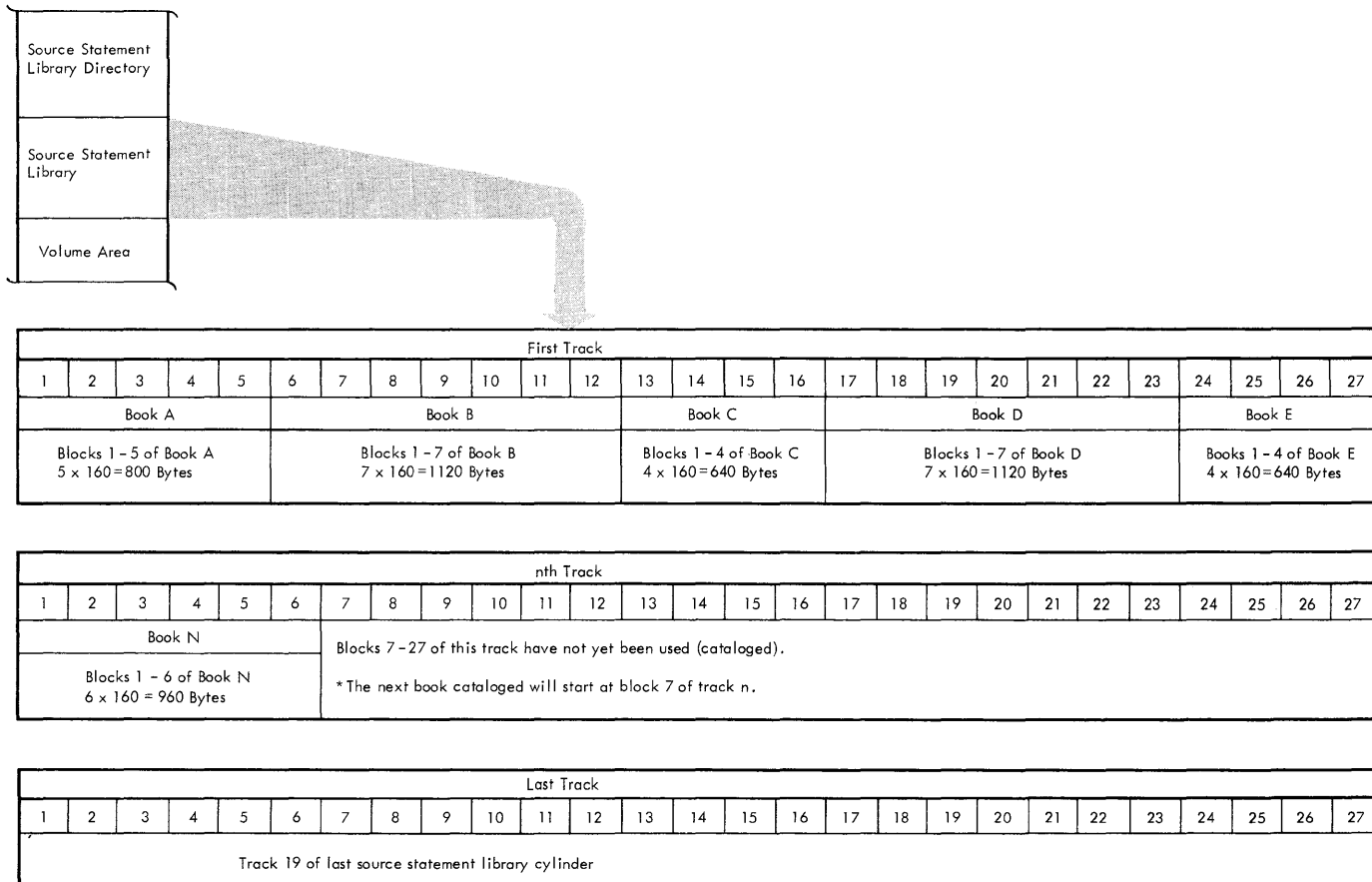


Figure 16. Source Statement Library Format for 2314

VOLUME AREA

The volume area consists of ten tracks (2311) or twenty tracks (2314) on a separate cylinder. It contains background and foreground user and standard label information.

Figure 17 shows the label cylinder format for both devices.

PRIVATE LIBRARIES

Two types of private directories and libraries are supported:

1. Private relocatable library directory and private relocatable library.
2. Private source statement library directory and private source statement library.

The private libraries may be on SYSRES; if not, they must be on the same type disk

pack (2311 or 2314) as the system residence pack.

Several private libraries may be on the same disk pack, but in such cases they must have different file identifications. For example, if two private source statement libraries have the same file name IJSYSSL, their file identifications could be ONEPRSL and TWOPRSL. The directory of each library-directory pair starts at the lower limit of the file and consists of the number of tracks specified in the ALLOC control card. The library of each library-directory pair starts on the track following the last track used by its directory and uses the rest of the cylinder(s) specified in the ALLOC control card. The library-directory pairs thus have the same format as the system libraries on SYSRES.

The contents and organization of the private directories and libraries are the same as that for SYSRES:

1. Private relocatable library directory - See Figure 11 and preceding text.

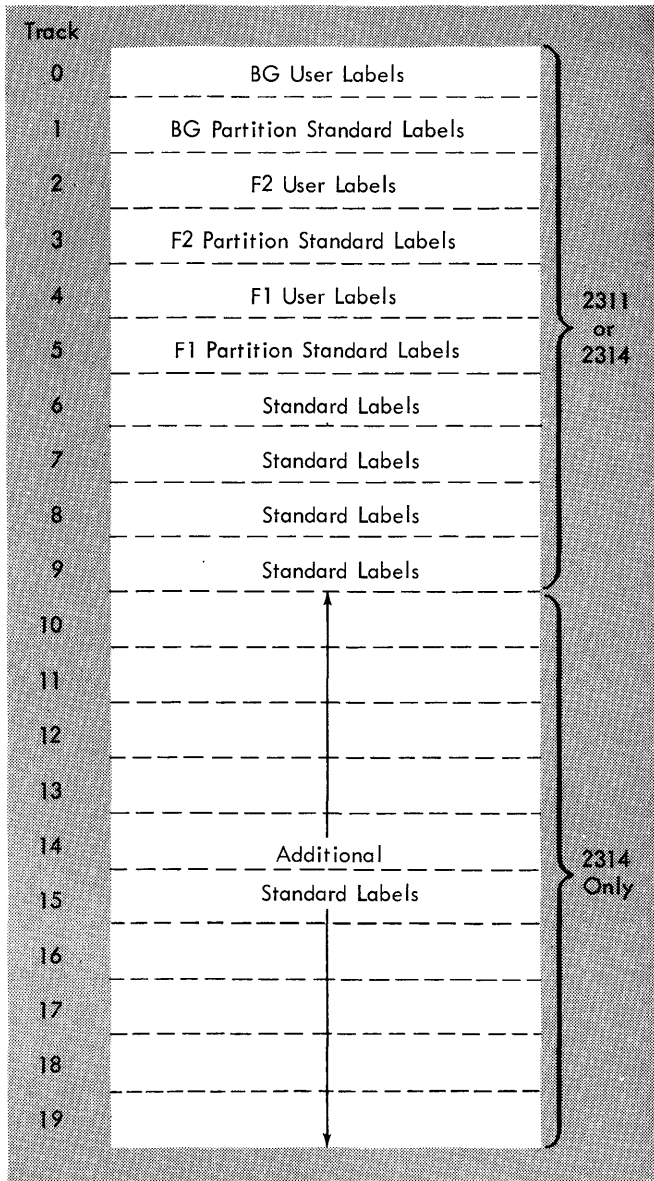


Figure 17. Label Cylinder (Volume Area) Track Allocation

2. Private relocatable library - See Figures 12 and 13 and preceding text.
3. Private source statement library directory - See Figure 14 and preceding text.
4. Private source statement library - See Figures 15 and 16 and preceding text.

Private libraries are created by the copy system program CORGZ (see Librarian Organization in Librarian Maintenance and Service Programs, Program Logic Manual listed on the front cover). The maintenance and service functions that may be performed on a private library are:

1. Maintenance
 - a. Catalog (MAINTR2, MAINTS2)
 - b. Delete (MAINTDR)
 - c. Rename (MAINTDR)
 - d. Condense (MAINTCN)
 - e. Set Condense Limits (MAINTCL)
 - f. Status Report (MAINTEJP)
 - g. Single Statement Update in Source Statement Library (MAINTUP)
2. Service
 - a. Relocatable Library Service (RSERV)
 - b. Source Statement Library Service (SSERV)
 - c. Directory Service (DSERV)

All these maintenance and service functions are the same for private libraries as they are for system libraries. Reference can be made to a private library only if SYSRLB and/or SYSSLB are assigned for relocatable and source statement libraries, respectively. When either of these assignments are made, the corresponding system library cannot be changed.

CONTROL PROGRAMS

INITIAL PROGRAM LOADER (IPL)

The IPL program must be executed each time it is necessary to load a new supervisor control program or to change the channel and unit assignment for SYSRES.

The IPL program:

1. Operates in the supervisor mode.
2. Loads supervisor into core from SYSRES.
3. Performs any ADDs and DELETes of devices to the supervisor PUB table.
4. Sets the date and time of day (if supported) into supervisor communications region.
5. Places the system in the problem mode.
6. Exits to EOJ when it is finished.

For detailed information and flowcharts, see the IPL and Job Control Program Logic Manual listed on the front cover.

JOB CONTROL PROGRAM

The job control program provides job-to-job transition for:

- Background programs
- Foreground programs if BJJ (batched-job-foreground) option is specified.

This program also prepares job steps for execution. (One or more programs can be executed within a single job. Each such execution is called a job step.)

For foreground programs operating in other than BJJ environment, job-control type functions are performed by the single program initiator.

Job control performs various functions on the basis of information provided in job control statements. These functions are:

- Preparing the system for execution of programs in a batched job environment.

- Assigning device address to symbolic units.
- Setting up fields in the communications region(s).
- Editing and storing volume and file label information.
- Preparing for restarting checkpointed programs.
- Clearing the problem program area to binary zero between job steps.

Job control is executed in the problem program area and is overlaid by the job step it is preparing to execute. For detailed information and flowcharts, see the IPL and Job Control Program Logic Manual listed in the front of this manual.

SUPERVISOR

The supervisor program operates with problem programs when job processing (problem program execution) occurs. The supervisor program is divided into two parts:

1. the resident part called the supervisor nucleus
2. the nonresident part called a supervisor transient.

The nucleus is loaded into main storage at IPL time and remains there throughout job processing. A transient (one of many) is loaded from the core image library of SYSRES on an as-needed basis. When a transient has finished performing its service, it can be overlaid by some other transient when some other type of service is required. This technique maximizes the use of main storage allotted to the supervisor. The basic functions performed by the supervisor are:

- Storage protection (required for multiprogramming)
- Interrupt handling
- Channel scheduling
- Device error recovery

- Operator communications
- Program retrieval (fetch or load)
- End-of-job processing
- Timer services (optional)
- Error logging and recovery (optional)

Each installation must generate its own tailor-made supervisor by means of a one-time assembly. Supervisor generation macros control the generation of the supervisor control program. Reassembly is required whenever the user wants to change the capability of the supervisor. An example of this is when the installation configuration changes.

All functions except certain interruption handling (SVC, I/O, and machine check) are available to the problem program by issuing macro instructions. The programmer is not concerned with machine interruption conditions, because these are handled automatically by the supervisor.

Error logging and recovery procedures are done by the I/O Error Logging (ERRLOG) and Machine Check Recording and Recovery (MCRR) routines. These routines collect information about the reliability of the hardware. The environment records produced facilitate diagnosis and repair of a system and thus reduce the occurrence of interruptions due to hardware failure. The system recovery portion of the MCRR function reduces the number of conditions that cause the system to enter an uninterruptable wait state. System recovery is accomplished by canceling all affected partitions.

The supervisor also contains a communication region for holding information useful to problem programs and to the Supervisor itself.

For detailed information and flowcharts, see the Supervisor and Physical and Logical Transients Program Logic Manual listed in the front of this manual.

LINKAGE EDITOR PROGRAM

All programs to be executed in the DOS environment must be linkage-edited and stored in the core image library before they can be executed. The linkage-edit function is accomplished by the linkage editor program operating in one of three modes:

1. Catalog mode. An object module is linkage-edited and permanently stored in the core image library. The core image and system directories are updated in this mode of operation.
2. Load and execute mode. An object module is linkage-edited for temporary storage in the core image library and is immediately executed.
3. Assemble and execute mode. A source module is assembled or compiled. The object module (output) is linkage-edited for temporary storage in the core image library and is immediately executed.

Note: When operating in modes 2 or 3, the core image and system directories are not updated.

The extent of the editing function performed depends on the structure of the input program. The simplest case is that of a single-module program. The linkage editor has only to edit the program, creating a single phase entry in the core image format. In more complex situations, the operation may involve linking together and relocating multiple-control sections from separate assemblies to produce a number of separate phases. The linkage editor resolves all linkages (symbolic reference) between segments of the program and relocates the phases to load at specified main-storage locations.

To facilitate writing and testing large programs, assembled program modules cataloged in the relocatable library can be combined with other modules from SYSIPT (card, tape, or disk).

The linkage editor program is called by job control when a // EXEC LNKEDT control statement is read. Control is always returned to job control when the linkage-edit function is completed.

The librarian programs organize, maintain, and service the system libraries and directories of the Disk Operating System and, when desired, create, maintain, and service private libraries and directories. These programs are collectively referred to as the librarian. The system residence (SYSRES) can contain three separate libraries, each with its own directory:

1. Core Image Library. All programs in the system (IBM-supplied and user programs) are loaded from this library by the system loader routine of the supervisor.
2. Relocatable Library. This library stores object modules which can be used for subsequent linkage with other program modules. A complete program of one or more modules can be placed in this library.
3. Source Statement Library. This library stores IBM-supplied macro definitions and user-defined source statements routines (such as macro definitions) in the resident pack built to provide extended program-assembly capability.

The core image library is required for each disk-resident system. The other two libraries are not required for operating a system.

Private relocatable libraries (SYSRLB) and private source statement libraries (SYSSLB), each with its own directory, are also supported. Private libraries are in the same format as the system libraries and may be on the same pack as SYSRES. If they are not on the SYSRES pack, they must be on a pack of the same type as SYSRES. Refer to System Residence Organization and Private Libraries in this manual.

The librarian is divided into three groups by major function:

1. Organization programs
2. Maintenance programs
3. Service programs

For detailed information and flowcharts, see the Librarian Maintenance and Service Programs Program Logic Manual listed in the frcnt of this manual.

ORGANIZATION PROGRAMS

The copy system program (CORGZ) is the only program in this category. It is fetched by job control when the // EXEC CORGZ control statement is read. CORGZ copies SYSRES either selectively or completely onto SYS002. It merges from one library to another, either selectively or completely, without the necessity of generating punched card output and recataloging. CORGZ also creates private files and copies SYSRES portions onto SYSRLB and/or SYSSLB. A complete copy onto SYS002 generates backup, a selective copy generates a reduced system that is to be used for a specific purpose.

The CORGZ program has the additional capability of performing the reallocation function.

Upon completion of the copy run onto SYS002, the CORGZ program fetches \$MAINEOJ to update the transient and library-routine directories on SYSRES and to print the system status report of the new SYSRES. If the copy was for private files, MAINTJJP is fetched to print the private status report.

The CORGZ program has six phases. CORGZ, the root phase, contains tables and switches necessary to interface between its related processing phases. CORGZ1 handles the control card scan (except MERGE) and creates directories in preparation for fetching CORGZ2 to build libraries. CORGZ3 processes the MERGE card and fetches either CORGZ4 or CORGZ5, which open files for merging relocatable or source statement libraries, respectively, and initialize the proper interfacing tables and switches.

MAINTENANCE PROGRAMS

These programs perform the functions that catalog, delete, rename, update, reallocate and condense the libraries:

1. Common library maintenance program (MAINT).
2. Core image library catalog program (\$LNKEDTC)
3. Relocatable library catalog program (MAINTR2).

- 4. Source statement library catalog program (MAINTS2).
- 5. Delete or rename program for all libraries (MAINTDR).
- 6. System reallocation program (MAINTA).
- 7. Set condense limits program (MAINTCL).
- 8. Library condense program (MAINTCN).
- 9. Update sub-directories and print status report program for SYSRES (\$MAINEOJ).
- 10. Private library condense check and status report program (MAINTEJP).
- 11. Source statement library single statement update program (MAINTUP).

- ALLOC Fetch MAINTCN.
 MAINT fetches MAINTCN when an ALLOC statement is read. MAINTCN performs the library condense function before fetching MAINTA to perform the reallocation function specified by the ALLOC control statement.
- RDRCTL This statement results in the same functions as a /* or /& statement:
 1. Fetch MAINTEJP if any private libraries were assigned.
 2. Cancel if a private status report was made.
 3. Fetch job control if no private library was assigned.

\$LNKEDTC is called by the linkage editor if the job control bit is on for the CATAL option.

COMMON LIBRARY MAINTENANCE PROGRAM (MAINT)

This program is in storage during the execution of all system maintenance functions except \$LNKEDTC and \$MAINEOJ. It is called by job control when a // EXEC MAINT control statement is read or by \$MAINEOJ if an automatic condense is required.

The primary function of MAINT is to fetch the correct maintenance program to perform a specific maintenance function. This is accomplished by reading and analyzing control statements from SYSIPT. The following is a list of control statements acceptable to MAINT:

- RENAMC)
- RENAMR)
- RENAMS)
- DELETC) Fetch MAINTDR
- DELETR)
- DELETS)
- CATALR Fetch MAINR2.
- CATALS Fetch MAINTS2.
- CONDL Fetch MAINTCL.
- UPDATE FETCH MAINTUP
- CONDS

CORE IMAGE LIBRARY CATALOG PROGRAM (\$LNKEDTC)

\$LNKEDTC is called by \$LNKEDTA when the option catalog bit is on (displacement 57 in the supervisor communications region). \$LNKEDTC catalogs the program to the core image library by adding an entry to the core image directory for each phase of the program being cataloged. The phase entries are built by a previous phase of the linkage editor in the system work area (also referred to as the librarian area). Refer to Figure 4 for the location of the system work area. If a phase being cataloged has the same name as a phase already in the directory, the phase in the directory is deleted by \$LNKEDTC.

Refer to Figure 6 for the format of system directory records, refer to Figure 7 for system work area record formats, and refer to Figure 8 for the format of the core image directory.

RELOCATABLE LIBRARY CATALOG PROGRAM (MAINR2)

This program is fetched by MAINT, when a CATALR statement is recognized, to catalog a module in the relocatable library on

SYSRES or on SYSRLB if it was assigned. When fetched, MAINTR2 shares the background problem program area with MAINT. When the catalog is completed, control is returned to MAINT to read another card.

SOURCE STATEMENT LIBRARY CATALOG PROGRAM (MAINTS2)

This program is fetched by MAINT when a CATALS statement has been read to catalog books to the source statement library on the system residence or private files. When fetched, MAINTS2 shares the problem program area with MAINT. Control is returned to MAINT when the catalog is completed.

DELETE AND RENAME FOR ALL LIBRARIES PROGRAM (MAINTDR)

MAINTDR is fetched by MAINT upon recognition of a DELET or RENAM statement. The delete function is performed by blanking the name area of the appropriate phase(s), module(s), or book(s). The rename function is performed by replacing the old name of the phase, module, or book with the specified new name. Upon completion of the specified deleting or renaming, control is returned to MAINT.

SOURCE STATEMENT LIBRARY SINGLE STATEMENT UPDATE PROGRAM (MAINTUP)

This program is fetched by MAINT when an UPDATE card is read to add, delete, and replace statements in books of the system residence or private source statement library. When fetched, MAINTUP shares the problem program area with MAINT. Provision is made for change level verification and for statement resequencing. Upon completion of this phase, control is returned to MAINT.

SYSTEM REALLOCATION PROGRAM (MAINTA)

MAINTA is fetched by MAINTCN when an ALLOC control statement is detected by MAINT. The reallocation function is used to redefine the sizes of the libraries and directories of the system residence file on the 2311 only.

MAINT detects the ALLOC control statement and fetches MAINTCN to condense all libraries (on 2311 or 2314) before fetching MAINTA. When fetched, MAINTA overlays MAINTCN and shares the problem program area with MAINT. If the disk drive is a 2314, MAINTA ignores the reallocation request and returns control to MAINT. If the disk drive is a 2311, the reallocation is performed and control is then returned to MAINT.

SET CONDENSE LIMITS PROGRAM (MAINTCL)

This program is fetched by MAINT when a CONDL statement is recognized. When executed, MAINTCL stores library condense information in the system directory of the system residence or private file. This stored information is used by \$MAINEOJ or MAINTEJP to determine if an automatic condense is required.

LIBRARY CONDENSE PROGRAM (MAINTCN)

This program is fetched by MAINT to perform the condense function for the system residence and private libraries. When fetched, MAINTCN shares the problem program area with MAINT.

The CONDS control statement specifies that one of the following condense functions must be performed and that control is returned to MAINT:

- Condense all libraries
- Condense selected libraries
- Condense a specific library

MAINTCN is also fetched by MAINT (via \$MAINEOJ for automatic condensing), by MAINTEJP for private library automatic condensing, or by MAINT when an ALLOC control statement is read. When the last condition exists, all SYSRES libraries are condensed and MAINTA is fetched when the condense is completed.

UPDATE SUB-DIRECTORIES PROGRAM (\$MAINEOJ)

This program may be fetched by MAINTCN (in the case of an automatic condense), by job control (via the MAINT phase), or by CORGZ. It updates the transient, foreground program, open, and library-routine directories, and it prints the SYSRES

system status report on SYSLST after the completion of any maintenance run for SYSRES or a copy system function to SYS002.

PRIVATE LIBRARY CONDENSE LIMIT CHECK AND STATUS REPORT PROGRAM (MAINTEJP)

This program may be fetched by CORGZ or MAINTCN, or by MAINT at the end-of-job-step where private libraries were assigned. If the program is fetched by MAINT or MAINTCN, MAINTEJP checks the condense limits and fetches MAINTCN if necessary. It also displays the private status report on SYSLST. If MAINTEJP is fetched by CORGZ, only the display function is performed.

SERVICE PROGRAMS

These programs perform the functions of:

1. Displaying and/or punching phases from the core image library, modules from the system residence and private relocatable libraries, and books from the system residence and private source statement libraries.
2. Displaying the contents of any or all of the directories of the system residence and private files.

DIRECTORY SERVICE PROGRAM (DSERV)

This program prints the system status report. If private libraries were

assigned, the program also prints private status report(s). The program then displays the contents of the specified system directories from SYSRES. If private libraries were assigned, the program also displays the directories from SYSRLB and/or SYSSLB. Any combination of directories can be displayed, depending on libraries assigned and operands specified.

CORE IMAGE LIBRARY SERVICE PROGRAM (CSERV)

This program displays and/or punches phases, programs, or the complete core image library.

RELOCATABLE LIBRARY SERVICE PROGRAM (RSERV)

This program displays and/or punches modules, programs, or the complete relocatable library of SYSRES or SYSRLB.

SOURCE STATEMENT LIBRARY SERVICE PROGRAM (SSERV)

This program displays and/or punches books, sublibraries, or the complete source statement library of SYSRES or SYSSLB.

APPENDIX A: ERROR MESSAGE CROSS-REFERENCE LIST

All error messages issued by the DOS system control programs are listed in this appendix with a reference to the PLM and chart in which the error is detected. For cause and action of each message, see the DOS operating guide or the system control and service programs publications listed in the Preface.

<u>Message</u>	<u>Phase</u>	<u>PLM Y24-</u>	<u>Chart</u>
0I00A	\$\$A\$IPL2	5086	AB
0I01A	\$\$A\$IPL2	5086	AD
0I10A	\$IPLRT2	5086	AJ
0I11I	\$IPLRT2	5086	AQ
0I12I	\$IPLRT2	5086	AN
0I13I	\$IPLRT2	5086	AM
0I14I	\$IPLRT2	5086	AV
0I15I	\$IPLRT2	5086	AM
0I16A	\$IPLRT2	5086	AL
0I17A	\$IPLRT2	5086	AL
0I18A	\$IPLRT2	5086	AJ
0I20I	\$IPLRT2	5086	AL
0I22I	\$IPLRT2	5086	AU
0I23I	\$IPLRT2	5086	AT
0I24A	\$IPLRT2	5086	AW
0P08	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERAI	5084	MZD
	\$\$ANERRA (Disk)	5084	LB
	\$\$ANERRF (Tape)	5084	LJ
	\$\$ANERRG (Data Cell)	5084	LN
	\$\$ANERRT (MICR)	5084	ME
	\$\$ANERRU (Unit Record)	5084	MG
	\$\$ANERRV (Unit Record)	5084	MH
	\$\$ANERRW (MICR)	5084	MK, ML
	\$\$ANERRX (Paper Tape)	5084	MN
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
	\$\$ANERR9 (Optical Reader)	5084	MX
0P09	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERAI	5084	MZD
	\$\$ANERAM (Tape)	5084	LLA
	\$\$ANERRA (Disk)	5084	LB
	\$\$ANERRF (Tape)	5084	LJ
	\$\$ANERRG (Data Cell)	5084	LN
	\$\$ANERRT (MICR)	5084	ME
	\$\$ANERRU (Unit Record)	5084	MG
	\$\$ANERRV (Unit Record)	5084	MJ
	\$\$ANERRW (MICR)	5084	MK, ML
	\$\$ANERRX (Paper Tape)	5084	MP
	\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
	\$\$ANERR9 (Optical Reader)	5084	MX
0P10	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERAI	5084	MZD
	\$\$ANERAM (Tape)	5084	LLA
	\$\$ANERRA (Disk)	5084	LA
	\$\$ANERRF (Tape)	5084	LH
	\$\$ANERRG (Data Cell)	5084	LM
	\$\$ANERRU (Unit Record)	5084	MG
	\$\$ANERRV (Unit Record)	5084	MH

	\$\$ANERRX (Paper Tape)	5084	MN
	\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
0P11	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERAJ	5084	MZE
	\$\$ANERAP (Tape)	5084	LLE
	\$\$ANERRE (Disk)	5084	LC
	\$\$ANERRK (Data Cell)	5084	LU
	\$\$ANERRV (Unit Record)	5084	MJ
	\$\$ANERRX (Paper Tape)	5084	MN
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
0P12	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRK (Data Cell)	5084	LU
0P13	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRK (Data Cell)	5084	LU
0P14	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRF (Tape)	5084	LH, LJ
	\$\$ANERRG (Data Cell)	5084	LN
	\$\$ANERRV (Unit Record)	5084	MJ
	\$\$ANERR9 (Optical Reader)	5084	MY
0P15	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERRA (Disk)	5084	LA
	\$\$ANERRJ (Data Cell)	5084	LS
0P16	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRK (Data Cell)	5084	LU
0P17	\$\$ANERAM (Tape)	5084	LLB
	\$\$ANERRE (Disk)	5084	LC
	\$\$ANERRG (Data Cell)	5084	LP
0P18	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERAI	5084	MZD
	\$\$ANERAM (Tape)	5084	LLB
	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRG (Data Cell)	5084	LP
	\$\$ANERRT (MICR)	5084	ME
	\$\$ANERRU (Unit Record)	5084	MG
	\$\$ANERRV (Unit Record)	5084	MJ
	\$\$ANERRW (MICR)	5084	MK, MM
	\$\$ANERRX (Paper Tape)	5084	MN
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
	\$\$ANERR9 (Optical Reader)	5084	MY
0P19	\$\$ANERAI	5084	MZD
	\$\$ANERAM (Tape)	5084	LLA
	\$\$ANERRB (Disk)	5084	LC
	\$\$ANERRF (Tape)	5084	LJ
	\$\$ANERRG (Data Cell)	5084	LP
	\$\$ANERRT (MICR)	5084	ME
	\$\$ANERRU (Unit Record)	5084	MF, MG
	\$\$ANERRV (Unit Record)	5084	MJ
	\$\$ANERRW (MICR)	5084	MK, ML
	\$\$ANERRX (Paper Tape)	5084	MN
	\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ
	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB

	Reader)			
	\$\$\$ANERR9 (Optical Reader)	5084	MY	
0P20	\$\$\$ASUP1 (Disk)	5084	DB, DF, GA, GB	
	\$\$\$ANERAI	5084	MZD	
	\$\$\$ANERAJ	5084	MZF	
	\$\$\$ANERAK (Tape)	5084	LLJ, LLK	
	\$\$\$ANERAL (Tape)	5084	LLM	
	\$\$\$ANERAM (Tape)	5084	LLB	
	\$\$\$ANERAN (Tape)	5084	LLC, LLD	
	\$\$\$ANERAQ (Tape)	5084	LLG	
	\$\$\$ANERRE (Tape)	5084	LG	
	\$\$\$ANERRF (Tape)	5084	LH	
	\$\$\$ANERRL (Tape)	5084	LK	
	\$\$\$ANERRH (Data Cell)	5084	LQ	
	\$\$\$ANERRI (Data Cell)	5084	LR	
	\$\$\$ANERRJ (Data Cell)	5084	LS	
	\$\$\$ANERR6 (Tape Cartridge Reader)	5084	MZA	
	\$\$\$ANERR8 (Tape Cartridge Reader)	5084	MZC	
0P21	\$\$\$ASUP1 (Disk)	5084	GA	
	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERRJ (Data Cell)	5084	LS	
0P22	\$\$\$ANERRG (Data Cell)	5084	LM	
0P23	\$\$\$ANERRJ (Data Cell)	5084	LS	
0P24	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ	
0P25	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ	
0P26	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERRG (Data Cell)	5084	LM	
0P27	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERRC	5084	LB	
	\$\$\$ANERRU (Unit Record)	5084	MF	
0P28	\$\$\$ASUP1 (Disk)	5084	GA	
	\$\$\$ANERAJ	5084	MZE	
	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERRF (Tape)	5084	LH	
	\$\$\$ANERRG (Data Cell)	5084	LM	
	\$\$\$ANERRT (MICR)	5084	ME	
	\$\$\$ANERRU (Unit Record)	5084	MF	
	\$\$\$ANERRW (MICR)	5084	MK, ML	
	\$\$\$ANERRX (Paper Tape)	5084	MN	
	\$\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ	
	\$\$\$ANERR9 (Optical Reader)	5084	MX	
0P29	\$\$\$ANERAM (Tape)	5084	LLA	
0P30	\$\$\$ANERAM (Tape)	5084	LLA	
0P31	\$\$\$ANERRA (Disk)	5084	LA	
	\$\$\$ANERRD (Tape)	5084	LD	
	\$\$\$ANERRF (Tape)	5084	LJ	
	\$\$\$ANERR6 (Tape Cartridge Reader)	5084	MZ	

0P32	\$\$ANERAM (Tape)	5084	LLA
0P33	\$\$ANERRV (Unit Record)	5084	MH
0P34	\$\$ANERRW (MICR)	5084	MM
0P35	\$\$ANERR9 (Optical Reader)	5084	MX
0P36	\$\$A\$SUP1 (Disk)	5084	GA
	\$\$ANERRA (Disk)	5084	LA
	\$\$ANERRJ (Data Cell)	5084	LS
0P37	\$\$ANERRT (MICR)	5084	ME
	\$\$ANERRW (MICR)	5084	MK
	\$\$ANERR9 (Optical Reader)	5084	MY
0P39	\$\$ANERR7 (Tape Cartridge Reader)	5084	MZB
0P40	\$\$ANERAI	5084	MZD
0P60D	\$\$ANERRY	5084	MR
0P70I	\$\$BEOJ2	5084	RG
0P71I	\$\$BEOJ2	5084	RG
0P72I	\$\$BEOJ2	5084	RG
0P73I	\$\$BEOJ2A	5084	RHA
0P74I	\$\$BEOJ2A	5084	RHA
0P75I	\$\$BEOJ2	5084	RG
0P76I	\$\$BEOJ2	5084	RG
0P77I	\$\$BEOJ2	5084	RG
0P78I	\$\$BEOJ2A	5084	RHA
0P79I	\$\$BEOJ2A	5084	RHA
0P81I	\$\$BEOJ2A	5084	RHA
0P82I	\$\$BEOJ2A	5084	RHA
0P83A	\$\$BEOJ2	5084	RG
0P83I	\$\$BEOJ2	5084	RG
0P84I	\$\$BEOJ2A	5084	RHA
0S00I	\$\$BPCHK	5084	RW
	\$\$BILSVC	5084	RR
0S01I	\$\$BEOJ2	5084	RG
0S02I	\$\$BEOJ2	5084	RG
0S03I	\$\$BPCHK	5084	RW
0S04I	\$\$BILSVC	5084	RR
0S05I	\$\$BILSVC	5084	RR
0S06I	\$\$BEOJ1	5084	RE

0S07I	\$\$EPSW	5084	RU
0S08I	\$\$BEOJ	5084	RA
0S09I	\$\$BEOJ1	5084	RE
0S10I	\$\$BTERM	5084	RM
0S11I	\$\$BEOJ1	5084	RE
0S12I	\$\$BEOJ2A	5084	RHA
0S13I	\$\$BEOJ2A	5084	RHA
0S14I	\$\$BEOJ2A	5084	RHA
0T00I	\$\$ANERAG	5084	KX
0T01I	\$\$ANERAF	5084	KV
0T02I	\$\$ANERAF	5084	KV
0T03I	\$\$ANERAF	5084	KV
0T04I	\$\$ANERAG	5084	KW
1A0ND	\$JCBCTLD	5086	CC, CD, CE, CG, CH
1A00D	\$\$PATNI	5084	NW
1A1ND	\$JCBCTLD	5086	CA, CB
1A10D	\$\$BATNI	5084	NV
	\$\$BATNP	5084	QM
1A2ND	\$JOBCTLD	5086	CA, CB, CH, CL, CR
	\$JCBCTLJ	5086	GB, GE
1A20D	\$\$BATNI	5084	NV, NW
	\$\$PATNM	5084	QC
	\$\$BATNP	5084	QM
	\$JOBCTLG	5086	FT
1A3ND	\$JOBCTLD	5086	CG, CT
1A30D	\$\$BATNI	5084	NW
1A4ND	\$JOBCTLD	5086	CA, CL, CH
	\$JCBCTLF	5086	ED, EF
1A40D	\$\$BATNI	5084	NX
	\$\$BATNK	5084	PN
	\$\$BATNM	5084	QC, QD
	\$JOBCTLJ	5086	GJ
1A5ND	\$JOBCTLD	5086	CR
1A50D	\$\$BATNI	5084	NY
	\$JCBCTLJ	5086	GJ
1A6ND	\$JCBCTLD	5086	CA, CM
1A60D	\$\$BATNI	5084	PD
1A7ND	\$JOBCTLD	5086	CA
	\$JOBCTLF	5086	EK

1A70D	\$\$BATTNI \$JCBCTIJ	5084 5086	NY GE
1A80D	\$JCBCTID	5086	CK
1A90D	\$JOBCTLD	5086	CE, CN
1C00A	\$JOBCTLA	5086	BL
1C10A	\$JOBCTLA	5086	BL
	\$JCBCTIG	5086	FT
	\$JOBCTLJ	5086	GD
1C20D	\$\$BATTNH	5084	NU
1C30A	\$\$BATTNM	5084	PY, QC
	\$JOBCTLG	5086	FL
	\$JCBCTLJ	5086	GB
1C40I	\$\$BATTNB	5084	NF
1C50I	\$\$BATTNB	5084	NF
1C60D	\$\$BATTNN	5084	QE
1C70D	\$JCBCTIA	5086	BE
1C80D	\$JCBCTIA	5086	BL
1C90A	\$MAINEOJ	5079	KF
1I20I	\$JCBCTIG	5086	FH
1I30D	\$\$BATTNC	5084	NG
1I32D	\$\$ANERRO	5084	MV
1I40D	\$\$ANERRO	5084	MU
1I50I	\$JCBCTLA	5086	BL
1I60A	\$\$BATTNA	5084	NA
1I80I	\$\$BTERM	5084	RM
1I82A	\$JOBCTLM	5086	JH
1I83A	\$JOBCTLM	5086	JB
1I84A	\$JCBCTLM	5086	JJ
1I85A	\$JOBCTLM	5086	JD
1I86A	\$JCBCTLM	5086	JD, JF, JG, JL, JM
1I87A	\$JOBCTLM	5086	JE
1I00D	\$\$BATTNI	5084	PS, PU, PV, PX
	\$\$BATTNO	5084	QG, QH, QJ, QK
	\$JOBCTIK	5086	HF, HG, HJ-HM
1I10D	\$\$BATTNK	5084	PR
	\$\$BATTNL	5084	PU
	\$\$BATTNM	5084	PZ
	\$\$BATTNO	5084	QF
	\$JCBCTIG	5086	FW
	\$JOBCTLK	5086	HG, HJ, HN

1P00D	\$\$BATTNF \$JOBCTLG	5084 5086	NP FB
1P10D	\$\$BATTNG	5084	NS
1S00A	\$JOBCTLA through \$JOBCTLK	5086	See BM-B1
1S00D	\$\$BATTNA	5084	NB, NC
	\$\$BATTNB	5084	NE
	\$\$BATTNC	5084	NG
	\$\$BATTNE	5084	NM, NN
	\$\$BATTNG	5084	NS
	\$\$BATTNI	5084	NV, NX, NY, PB, PC, PD
	\$\$BATTNJ	5084	PE
	\$\$BATTNK	5084	PK, PL, PM, PN, PP, PQ
	\$\$BATTNL	5084	PS, PT, PV
	\$\$BATTNM	5084	PY, QC, QD
	\$\$EATTNN	5084	QE
	\$\$BATTNO	5084	QF, QG, QH, QJ, QK, QL
	\$\$EATTNP	5084	QM, QN
	\$JCBCTLG	5086	FV
	\$JOBCTLM	5086	JH
1S01D	\$\$ANERRO	5084	MU
1S02D	\$\$ANERRO	5084	MV
1S10D	\$\$EATTNK	5084	PK, PL
	\$\$BATTNL	5084	PS, PU
	\$\$EATTNM	5084	PY
	\$\$BATTNO	5084	QF, QG
	\$JOBCTLG	5086	FJ, FR, FW
	\$JCBCTLJ	5086	GD
	\$JOBCTLK	5086	HA, HC, HF, HP
2100I	\$LNKEDT2	5080	CA
2101I	\$LNKEDT4	5080	DA
2102I	\$LNKEDT \$LNKEDT4	5080 5080	AF DD
2110I	\$LNKEDT4	5080	DA, DC, DD
2111I	\$LNKEDT4	5080	DE
2112I	\$LNKEDT \$LNKEDT4	5080 5080	AC, AN DE
2113I	\$LNKEDT2	5080	CC
2114I	\$LNKEDT4	5080	DE
2115I	\$LNKEDT4	5080	DD
2116I	\$LNKEDT4	5080	DA
2120I	\$LNKEDT6	5080	EA
2121I	\$LNKEDT6	5080	EA
2122I	\$LNKEDT6	5080	EB
2123I	\$LNKEDT6	5080	EC

2124I	\$LNKEDT6	5080	EC
2125I	\$LNKEDT4	5080	DC
2130I	\$LNKEDT6	5080	EE
2131I	\$LNKEDT6	5080	EE
2133I	\$LNKEDT4	5080	DB
2135I	\$LNKEDT	5080	AN, AP
2136I	\$LNKEDT	5080	AN
2140I	\$LNKEDT0	5080	BA, BC
2141I	\$LNKEDT0	5080	BE
2142I	\$LNKEDT0	5080	BA
2143I	\$LNKEDT0	5080	BC, BD
2144I	\$LNKEDT	5080	AE, AH
2145I	\$LNKEDT0	5080	BB
2146I	\$LNKEDT0	5080	BC
2147I	\$LNKEDT2	5080	CG
2150I	\$LNKEDT	5080	AM
2151I	\$LNKEDT2	5080	CC
2155I	\$LNKEDT2	5080	CD
2156I	\$LNKEDT2	5080	CE
2158I	\$LNKEDT2	5080	CG
2170I	\$LNKEDT2	5080	CB, CD, CF
2181I	\$LNKEDT6	5080	EC
2182I	\$LNKEDT6	5080	ED
2185I	\$LNKEDTA	5080	FC
2191I	\$LNKEDT	5080	AA, AB
	\$LNKEDT2	5080	CH
2192I	\$LNKEDT6	5080	ED
2193I	\$LNKEDT	5080	AM
	\$LNKEDT6	5080	ED
2194I	\$LNKEDT	5080	AJ
2197I	\$LNKEDT	5080	AJ
3C30I	CORGZ	5079	AB, AD
3C66I	CORGZ	5079	AE
	CORGZ4	5079	BX
	CORGZ5	5079	CB
3C67I	CORGZ	5079	AC
	CORGZ1	5079	AZ

	CORGZ4	5079	BU, BV
	CORGZ5	5079	BY, BZ
3M10I	CORGZ	5079	AA
	CORGZ1	5079	AL
	MAINT	5079	DA, DB
	DSERV	5079	RA
	CSERV	5079	SB
	RSERV	5079	TA
	SSERV	5079	UA
3M11I	MAINTR2	5079	GH
3M21I	CORGZ	5079	AF
	CORGZ1	5079	AH, AP, AW
	CORGZ3	5079	BG, BP, BR
	CORGZ4	5079	BW
	CORGZ5	5079	CA
	MAINTCL	5079	EA, EB
	MAINTDR	5079	FA, FB, FE
	MAINTR2	5079	GA
	MAINTA	5079	MA, MB
	DSERV	5079	RA
	CSERV	5079	SB
	RSERV	5079	TB
	SSERV	5079	UJ, UL
3M22I	\$LNKEDTC	5079	LA
3M23I	MAINTS2	5079	HD, HH, HJ, HK, HL
3M24I	MAINTS2	5079	HA, HB
3M25I	MAINTS2	5079	HC
3M26I	MAINTS2	5079	HG
3M27I	MAINTR2	5079	GA, GB
	MAINTS2	5079	HB, HM
3M28I	MAINTS2	5079	HG
3M33I	CORGZ1	5079	AR
	CORGZ3	5079	BQ
	MAINTDR	5079	FC, FF
	MAINTUP	5079	NF, NT
	CSERV	5079	SD
	RSERV	5079	TC
	SSERV	5079	UL
3M34I	MAINT	5079	DG
3M43I	CORGZ1	5079	AZ
	CORGZ3	5079	BJ
	CORGZ4	5079	BU
	CORGZ5	5079	BY
	MAINTCL	5079	EA
	MAINTDR	5079	FB
	MAINTR2	5079	GA
	MAINTS2	5079	HA
	MAINTUP	5079	NA
	DSERV	5079	RB, RC
	RSERV	5079	TA, TC
	SSERV	5079	UB
3M52I	CORGZ3	5079	BM
	MAINTR2	5079	GB
	MAINTS2	5079	HA

	MAINTUP	5079	NA
	ŠLNKEDTC	5079	LA
3M53I	CORGZ3	5079	BM
	MAINTR2	5079	GJ
	MAINTS2	5079	HA, HF, HM
	MAINTUP	5079	NA, NU
3M54I	MAINTDR	5079	FF
	MAINTUP	5079	NT
3M62I	CORGZ1	5079	AG, AJ, AK
	MAINTA	5079	MC
3M63I	CORGZ1	5079	AY, AZ
	MAINTA	5079	MD
3M64I	MAINTA	5079	MD
3M65I	CORGZ	5079	AC
	CORGZ1	5079	AG, AJ, AU
	MAINTA	5079	MF
3M66I	CORGZ1	5079	AG, AJ, AK
3M67I	MAINTA	5079	MA
3M68I	MAINTCN	5079	EB
	MAINTA	5079	MF
3M69I	MAINTCN	5079	EB
3M70I	MAINTCN	5079	EH
	MAINTA	5079	MC, MG, MH, MJ, MK
3M75I	MAINTCN	5079	EH
3M80I	MAINTCN	5079	EC
	MAINTEJP	5079	JA
	MAINTA	5079	MF
3M81I	MAINTCN	5079	EH
3U10I	MAINTUP	5079	NF, NG, NJ, NZ
3U11I	MAINTUP	5079	NE
3U20I	MAINTUP	5079	NF
3U21I	MAINTUP	5079	NB, ND, NM, NW
3U30I	MAINTUP	5079	NP
3U31I	MAINTUP	5079	NP

APPENDIX B: MICROFICHE INDEX CROSS-REFERENCE LIST

This list can be used to relate the names of core-image phases or of relocatable modules to the labels used as identification on microfiche. The names are grouped by program type such as System Control, Autotest, FORTRAN, etc.

In some cases the program or portion of program displayed on one microfiche card may have no core image phase name; in other cases, it may have no relocatable module name. In every case, the microfiche identification is given and the user can relate this identification to either a core image phase name or a relocatable module name, or both.

PROGRAM TYPE AND NUMBER

Assembler: 360N-AS-465
Autotest: 360N-PT-459

CE Serviceability Programs:

No program number

CCBOI: 360N-CB-452

Compiler I/O Modules: 360N-IO-476

FORTRAN IV (Basic): 360N-FO-451

FORTRAN IV: 360N-FO-479

FORTRAN IV Library Subprograms:
360N-LM-480

Logical IOCS:

CDMCD: 360N-CI-453

CPMOD: 360N-CI-453

DAMOD: 360N-IO-454

DIMOD: 360N-CI-457

DIFCN: 360N-CI-453

ISMOD: 360N-IO-457

MRMOD: 360N-IO-477

MTMOD: 360N-IO-456

ORMOD: 360N-IO-478

PRMOD: 360N-CL-453

PTMOD: 360N-IO-458

SDMOD: 360N-IO-455

OLTEP: 360N-DN-481

PL/I: 360N-PL-464

Report Program Generator
(RPG): 360N-RG-460

Sort/Merge (Disk): 360N-SM-450

Sort/Merge (Disk/Tape): 360N-SM-483

Sort/Merge (Tape): 360N-SM-400

System Control: 360N-CL-453

MICR ERP: 360N-IO-477

ORERP: 360N-IO-478

Telecommunications Access Methods:

BTAM: 360N-CQ-469

QTAM: 360N-CQ-470

Utilities:

Group 1--Unit Record and Disk
360N-UT-461

Group 2--Tape 360N-UT-462

Group 3--Data Cell 360N-UT-463

MPS 360N-UT-471

Vocabulary File 360N-UT-472

SYSTEM CONTROL

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>			
			\$\$BATNI	\$\$BATTNI	None
			\$\$BATNJ	\$\$BATTNJ	None
			\$\$BATNK	\$\$BATTNK	None
			\$\$BATNL	\$\$BATTNL	None
\$\$A\$IPL1	\$\$A\$IPL1	None	\$\$BATNM	\$\$BATTNM	None
\$\$A\$IPL2	\$\$A\$IPL1	None	\$\$BATNN	\$\$BATTNN	None
\$\$ANERAA	\$\$ANERAA	None	\$\$BATNO	\$\$BATTNO	None
\$\$ANERAB	\$\$ANERAB	None	\$\$BATNP	\$\$BATTNP	None
\$\$ANERAC	\$\$ANERAC	None			
\$\$ANERAD	\$\$ANERAD	None	\$\$BDUMP	\$\$BDUMP	None
\$\$ANERAE	\$\$ANERAE	None	\$\$BDUMPB	\$\$BDUMPB	None
\$\$ANERAF	\$\$ANERAF	None	\$\$BDUMPD	\$\$BDUMPD	None
\$\$ANERAG	\$\$ANERAG	None	\$\$BDUMPF	\$\$BDUMPF	None
\$\$ANERAI	\$\$ANERAI	None	\$\$BEOJ	\$\$BEOJ	None
			\$\$BEOJ1	\$\$BEOJ1	None
\$\$ANERAJ	\$\$ANERAJ	None	\$\$BEOJ2	\$\$BEOJ2	None
\$\$ANERAK	\$\$ANERAK	None	\$\$BEOJ2A	\$\$BEOJ2A	None
\$\$ANERAL	\$\$ANERAL	None	\$\$BEOJ3	\$\$BEOJ3	None
\$\$ANERAM	\$\$ANERAM	None	\$\$BEOJ4	\$\$BEOJ4	None
\$\$ANERAN	\$\$ANERAN	None			
\$\$ANERAP	\$\$ANERAP	None	\$\$BEOJ5	\$\$BEOJ5	None
\$\$ANERAQ	\$\$ANERAQ	None	\$\$BILSVC	\$\$BILSVC	None
\$\$ANERRA	\$\$ANERRA	None	\$\$BLSTIO	\$\$BLSTIO	None
\$\$ANERRB	\$\$ANERRA	None	\$\$BOPNLB	\$\$BOPNLB	None
\$\$ANERRC	\$\$ANERRA	None	\$\$BPCHK	\$\$BPCHK	None
			\$\$BPDUMP	\$\$BPDUMP	None
\$\$ANERRD	\$\$ANERRD	None	\$\$BPDUM1	\$\$BPDUM1	None
\$\$ANERRE	\$\$ANERRE	None	\$\$BPSW	\$\$BPSW	None
\$\$ANERRF	\$\$ANERRF	None	\$\$BSDRUP	\$\$BSDRUP	None
\$\$ANERRG	\$\$ANERRG	None	\$\$BSYSWR	\$\$BSYSWR	None
\$\$ANERRH	\$\$ANERRH	None	\$\$BTERM	\$\$BTERM	None
\$\$ANERRI	\$\$ANERRI	None			
\$\$ANERRJ	\$\$ANERRJ	None	\$\$IPLRT2	IJB IPL	IJB IPL
\$\$ANERRK	\$\$ANERRK	None			
\$\$ANERRL	\$\$ANERRL	None	\$\$JOBCTLA	IJB JC1	IJB JC1
\$\$ANERRM	\$\$ANERRM	None	\$\$JOBCTLD	IJB JC2	IJB JC2
			\$\$JOBCTLF	IJB JC5	IJB JC5
\$\$ANERRN	\$\$ANERRN	None	\$\$JOBCTLG	IJB JC3	IJB JC3
\$\$ANERRO	\$\$ANERRO	None	\$\$JOBCTLJ	IJB JC4	IJB JC4
\$\$ANERRP	\$\$ANERRP	None	\$\$JOBCTLK	IJB JC6	IJB JC6
\$\$ANERRQ	\$\$ANERRQ	None			
\$\$ANERRR	\$\$ANERRR	None	\$\$LNKEDT	IJB LE1	IJB LE1
\$\$ANERRS	\$\$ANERRS	None	\$\$LNKEDTA	IJB LE1	IJB LE1
\$\$ANERRT	\$\$ANERRT	None	\$\$LNKEDTC	IJB LBI	IJB LBI
\$\$ANERRU	\$\$ANERRU	None	\$\$LNKEDT0	IJB LE1	IJB LE1
\$\$ANERRV	\$\$ANERRV	None	\$\$LNKEDT2	IJB LE1	IJB LE1
\$\$ANERRW	\$\$ANERRW	None	\$\$LNKEDT4	IJB LE1	IJB LE1
			\$\$LNKEDT6	IJB LE1	IJB LE1
			\$\$LNKEDT8	IJB LE1	IJB LE1
\$\$ANERRX	\$\$ANERRX	None			
\$\$ANERRY	\$\$ANERRY	None			
\$\$ANERRZ	\$\$ANERRY	None	\$\$MAINEOJ	IJB LBH	IJB LBH
\$\$ANERR0	\$\$ANERRY	None			
\$\$ANERR1	\$\$ANERR1	None	CORGZ	IJB LBJ	IJB LBJ
\$\$ANERR6	\$\$ANERR6	None	CORGZ1	IJB LBS	IJB LBS
\$\$ANERR7	\$\$ANERR7	None	CORGZ2	IJB LBK	IJB LBK
\$\$ANERR8	\$\$ANERR8	None	CORGZ3	IJB LBT	IJB LBT
\$\$ANERR9	\$\$ANERR9	None	CORGZ4	IJB LBU	IJB LBU
			CORGZ5	IJB LBV	IJB LBV
\$\$BATNA	\$\$BATNA	None	CSERV	IJB LBP	IJB LBP
\$\$BATTB	\$\$BATTNA	None			
\$\$BATTNC	\$\$BATTNA	None	DSERV	IJB SL1	IJB SL1
\$\$BATTND	\$\$BATTNA	None			
\$\$BATTNE	\$\$BATTNA	None	EREP	EREP	None
\$\$BATTNF	\$\$BATTNA	None	EREPCLR	EREPCLR	None
\$\$BATTNG	\$\$BATTNA	None	EREPL0G1	EREPL0G1	None
\$\$BATTNH	\$\$BATTNA	None	EREPOI30	EREPOI30	None

MAINT	IJBLBA	IJBLBA	SSERV	IJBSL4	IJBSL4
MAINTA	IJBLBL	IJBLBL			
MAINTCL	IJBIBM	IJBIBM			
MAINTCN	IJBLBG	IJBLBG	None	IJBLBC	IJBLBC
MAINTDR	IJBLBD	IJBLBD	None	IJBMIN	IJBMIN
MAINTEJP	IJBLBZ	IJBLBZ	None	IJBMCS	IJBMCS
MAINTR2	IJBIBE	IJBIBE	None	IJBMDS	IJBMDS
MAINTS2	IJBLEF	IJBLEF	None	IJBMDU	IJBMDU
MAINTUP	IJBIBQ	IJBIBQ	None	IJBMIO	IJBMIO
			None	IJBMUP	IJBMUP
RSERV	IJBSL3	IJBSL3			

LOGICAL IOCS

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>			
			\$\$BOMR01	\$\$BOMR01	None
			\$\$BOMSG1	\$\$BOMSG1	None
			\$\$BOMSG2	\$\$BOMSG2	None
			\$\$BOMSG3	\$\$BOMSG3	None
			\$\$BOMSG4	\$\$BOMSG4	None
			\$\$BOMSG5	\$\$BOMSG5	None
			\$\$BOMSG6	\$\$BOMSG6	None
\$\$BCCPT1	\$\$BCCPT1	None	\$\$BOMT0M	\$\$BOMT0M	None
\$\$BCEOV1	\$\$BCEOV1	None	\$\$BOMT0W	\$\$BOMT0W	None
\$\$BCHKPD	\$\$BCHKPD	None	\$\$BOMT01	\$\$BOMT01	None
\$\$BCHKPE	\$\$BCHKPE	None	\$\$BOMT02	\$\$BOMT02	None
\$\$BCHKPF	\$\$BCHKPF	None	\$\$BOMT03	\$\$BOMT03	None
\$\$BCHKPT	\$\$BCHKPT	None	\$\$BOMT04	\$\$BOMT04	None
\$\$BCHKP2	\$\$BCHKP2	None	\$\$BOMT05	\$\$BOMT05	None
\$\$BCISOA	\$\$BCISOA	None	\$\$BOMT06	\$\$BOMT06	None
\$\$BCLOSE	\$\$BCLCSE	None	\$\$BOOR01	\$\$BOOR01	None
\$\$BCLOSP	\$\$BCLOSP	None			
\$\$BCLOS2	\$\$BCLCS2	None			
\$\$BCMR01	\$\$BCMR01	None	\$\$BOPEN	\$\$BOPEN	None
\$\$BCMT01	\$\$BCMT01	None	\$\$BOPENC	\$\$BOPENC	None
\$\$BCMT02	\$\$BCMT02	None	\$\$BOPENR	\$\$BOPENR	None
\$\$BCMT03	\$\$BCMT03	None	\$\$BOPEN2	\$\$BOPEN2	None
\$\$BCMT04	\$\$BCMT04	None	\$\$BOPIGN	\$\$BOPIGN	None
\$\$BCMT05	\$\$BCMT05	None	\$\$BOPNR2	\$\$BOPNR2	None
\$\$BCMT06	\$\$BCMT06	None	\$\$BORTV1	\$\$BORTV1	None
\$\$BCMT07	\$\$BCMT07	None	\$\$BORTV2	\$\$BORTV2	None
\$\$BDRSTR	\$\$BDRSTR	None			
			\$\$BOSDC1	\$\$BOSDC1	None
\$\$BENDFF	\$\$BENDFF	None	\$\$BOSDC2	\$\$BOSDC2	None
\$\$BENDFL	\$\$BENDFL	None	\$\$BOSDI1	\$\$BOSDI1	None
\$\$BERPTP	\$\$BERPTP	None	\$\$BOSDI2	\$\$BOSDI2	None
\$\$BERRTN	\$\$BERRTN	None	\$\$BOSDI3	\$\$BOSDI3	None
\$\$BINDEX	\$\$BINDEX	None	\$\$BOSDO1	\$\$BOSDO1	None
\$\$BJCOPT	\$\$BJCOPT	None	\$\$BOSDO2	\$\$BOSDO2	None
\$\$BMMR20	\$\$BMMR20	None	\$\$BOSDO3	\$\$BOSDO3	None
\$\$BMSGWR	\$\$BMSGWR	None	\$\$BOSDO4	\$\$BOSDO4	None
			\$\$BOSDO5	\$\$BOSDO5	None
\$\$BOCPM1	\$\$BOCPM1	None	\$\$BOSDO6	\$\$BOSDO6	None
\$\$BOCPM2	\$\$BOCPM2	None	\$\$BOSDO7	\$\$BOSDO7	None
\$\$BOCPT1	\$\$BOCPT1	None	\$\$BOSDO8	\$\$BOSDO8	None
\$\$BOCPT2	\$\$BOCPT2	None	\$\$BOSDR	\$\$BOSDR	None
\$\$BOCP01	\$\$BOCP01	None	\$\$BOSDW1	\$\$BOSDW1	None
\$\$BOCP02	\$\$BOCP02	None	\$\$BOSDW2	\$\$BOSDW2	None
\$\$BOCP11	\$\$BOCP11	None	\$\$BOSDW3	\$\$BOSDW3	None
\$\$BOCP12	\$\$BOCP12	None	\$\$BOSD00	\$\$BOSD00	None
\$\$BODAI1	\$\$BODAI1	None	\$\$BOSD01	\$\$BOSD01	None
\$\$BODAIL	\$\$BODAIL	None	\$\$BOSIGN	\$\$BOSIGN	None
\$\$BODAIN	\$\$BCDAIN	None	\$\$BOUR01	\$\$BOUR01	None
\$\$BODAO1	\$\$BODAO1	None	\$\$BOVDMP	\$\$BOVDMP	None
\$\$BODAO2	\$\$BODAO2	None	\$\$BRMSG1	\$\$BRMSG1	None
\$\$BODAO3	\$\$BODAO3	None	\$\$BRMSG2	\$\$BRMSG2	None
\$\$BODAO4	\$\$BODAO4	None	\$\$BRSTRB	\$\$BRSTRB	None
\$\$BODAU1	\$\$BODAU1	None	\$\$BRSTRT	\$\$BRSTRT	None
\$\$BODQUE	\$\$BODQUE	None	\$\$BRSTR2	\$\$BRSTR2	None
\$\$BODSPV	\$\$BODSPV	None	\$\$BRSTR3	\$\$BRSTR3	None
\$\$BODSPW	\$\$BODSPW	None	\$\$BRSTR4	\$\$BRSTR4	None
\$\$BOFLPT	\$\$BOFLPT	None	\$\$BSETFF	\$\$BSETFF	None
\$\$BOIS01	\$\$BOIS01	None	\$\$BSETFG	\$\$BSETFG	None
\$\$BOIS02	\$\$BCIS02	None	\$\$BSETFH	\$\$BSETFH	None
\$\$BOIS03	\$\$BOIS03	None	\$\$BSETFL	\$\$BSETFL	None
\$\$BOIS04	\$\$BCIS04	None	\$\$BSETL	\$\$BSETL	None
\$\$BOIS05	\$\$BOIS05	None	IJBRSTRT	IJBRSTRT	None
\$\$BOIS06	\$\$BOIS06	None			
\$\$BOIS07	\$\$BOIS07	None			
\$\$BOIS08	\$\$BOIS08	None			
\$\$BOIS09	\$\$BOIS09	None			
\$\$BOIS10	\$\$BOIS10	None			

ASSEMBLERAUTOTEST

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>	<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
ASSEMBLY	ASSEMBLY	IJQD0\$	\$\$BATST1	IJVSS1	IJVSS110
ASSEMBLY	ASSEMBLY	IJQD0A	\$\$BATST3	IJVSS3	IJVSS310
ASSEM00A	ASSEMBLY	IJQD0\$			
ASSEM00A	ASSEMBLY	IJQD0A			
ASSEM00B	ASSEMBLY	IJQD0\$	ATLECONT	IJVTA0	IJVTA010
ASSEM00B	ASSEMBLY	IJQD0A	ATLEDT	IJVLE	IJVLE
ASSEM02	ASSEM02	IJQD2\$	ATLEDT1A	IJVLE	IJVLE
ASSEM02A	ASSEM02A	IJQD2A	ATLEDT1B	IJVLE	IJVLE
ASSEM03	ASSEM03	IJQD3\$	ATLEDT1C	IJVLE	IJVLE
ASSEM03A	ASSEM03A	IJQD3A	ATLEDT10	IJVLE	IJVLE
ASSEM04	ASSEM04	IJQD4P	ATLEDT12	IJVLE	IJVLE
ASSEM04A	ASSEM04A	IJQD4M	ATLEDT14	IJVLE	IJVLE
ASSEM04B	ASSEM04B	IJQD4A	ATLEDT16	IJVLE	IJVLE
ASSEM05	ASSEM05	IJQD5P	ATLEDT18	IJVLE	IJVLE
ASSEM05A	ASSEM05A	IJQD5M	(See Note)*	IJVTAB	IJVTAB
ASSEM05B	ASSEM05B	IJQD5A			
ASSEM06	ASSEM06	IJQRTA			
			ATLEFC1	IJVTC1	IJVTC110
			ATLEFC2	IJVTC2	IJVTC210
ASSEN07	ASSEN07	IJQD7\$	ATLEFC3	INVTC3	IJVTC310
ASSEN07A	ASSEN07	IJQD7\$	ATLEFC4	IJVTC4	IJVTC410
ASSEN07B	ASSEN07	IJQD7\$	ATLEFC5	IJVTC5	IJVTC510
ASSEN07C	ASSEN07	IJQD7\$	ATLEFC7	IJVTC7	IJVTC710
ASSEN07I	ASSEN07	IJQD7I	ATLEFD1	IJVTD1	IJVTD110
ASSEN08	ASSEN08	IJQD8\$	ATLEFD2	IJVTD2	IJVTD210
ASSEN08A	ASSEN08	IJQD8\$	ATLEFE1	IJVTE1	IJVTE110
ASSEN08B	ASSEN08	IJQD8\$	ATLEFE2	IJVTE2	IJVTE210
ASSEN08C	ASSEN08	IJQD8\$	ATLEFF1	IJVTF1	IJVTF110
ASSEN088	ASSEN088	IJQRTB	ATLEFG1	IJV TG1	IJV TG110
ASSEN09	ASSEN09	IJQD9\$	ATLEFH2	IJVTH2	IJVTH210
ASSEN09I	ASSEN09I	IJQD9I	ATLEFH3	IJVTH3	IJVTH310
ASSEN10	ASSEN10	IJQ10\$	ATLEGO1	IJV TI1	IJV TI110
ASSEN10B	ASSEN10B	IJQ10B	ATLEJCTV	IJV TJ1	IJV TJ110
ASSEN11A	ASSEN11A	IJQ21A			
ASSEN11B	ASSEN11B	IJQ21B			
ASSEN11C	ASSEN11B	IJQ21B			
ASSEN11D	ASSEN11B	IJQ21B			
ASSEN11E	ASSEN11B	IJQ21B			
ASSEN12	ASSEN12	IJQDPP			
ASSEN13	ASSEN13	IJQDIA			
ASSEN14	ASSEN14	IJQABT			

 *Can be included as part of other Autotest phases as required.

COBOL

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>			
			COBOL007	IJSCBL11	IJSCBL11
			COBOL008	IJSCBL12	IJSCBL12
			COBOL009	IJSCBL13	IJSCBL13
			COBOL010	IJSCBL14	IJSCBL14
None	IHD00000	IHD00000			
None	IHD00100	IHD00100			
None	IHD00200	IHD00200			
None	IHD00300	IHD00300			
None	IHD00400	IHD00400			
None	IHD00500	IHD00500			
None	IHD00600	IHD00600			
None	IHD00700	IHD00700	COBOL021	IJSCBL25	IJSCBL25
None	IHD00800	IHD00800	COBOL022	IJSCBL26	IJSCBL26
None	IHD00900	IHD00900	COBOL023	IJSCBL27	IJSCBL27
			COBOL024	IJSCBL28	IJSCBL28
None	IHD01000	IHD01000	COBOL025	IJSCBL29	IJSCBL29
None	IHD01100	IHD01100	COBOL027	IJSCBL31	IJSCBL31
None	IHD01200	IHD01200	COBOL028	IJSCBL32	IJSCBL32
None	IHD01300	IHD01300	COBOL028	IJSCBL33	IJSCBL33
None	IHD01400	IHD01400	COBOL029	IJSCBL34	IJSCBL34
None	IHD01500	IHD01500	COBOL030	IJSCBL35	IJSCBL35
None	IHD01600	IHD01600			
None	IHD01700	IHD01700			
None	IHD01800	IHD01800	COBOL031	IJSCBL36	IJSCBL36
None	IHD01900	IHD01900	COBOL032	IJSCBL37	IJSCBL37
None	IHD02000	IHD02000	COBOL033	IJSCBL38	IJSCBL38
			COBOL034	IJSCBL39	IJSCBL39
None	IHD02100	IHD02100	COBOL035	IJSCBL40	IJSCBL40
None	IHD02200	IHD02200	COBOL036	IJSCBL41	IJSCBL41
None	IHD02300	IHD02300	COBOL037	IJSCBL42	IJSCBL42
None	IHD02400	IHD02400	COBOL038	IJSCBL43	IJSCBL43
None	IHD02500	IHD02500	COBOL039	IJSCBL44	IJSCBL44
None	IHD02600	IHD02600	COBOL040	IJSCBL45	IJSCBL45
None	IHD02700	IHD02700			
None	IHD02800	IHD02800			
None	IHD02900	IHD02900	COBOL041	IJSCBL46	IJSCBL46
None	IHD03000	IHD03000	COBOL042	IJSCBL47	IJSCBL47
			COBOL043	IJSCBL48	IJSCBL48
None	IHD03100	IHD03100	COBOL044	IJSCBL49	IJSCBL49
None	IHD03200	IHD03200	COBOL050	IJSCBL50	IJSCBL50
None	IHD03300	IHD03300	COBOL055	IJSCBL55	IJSCBL55
None	IHD03400	IHD03400	DEBUG	IJSCBL60	IJSCBL60
None	IHD03500	IHD03500			
None	IHD03600	IHD03600			
None	IHD03700	IHD03700			
None	IHD03800	IHD03800			
None	IHD03900	IHD03900			
None	IHD04000	IHD04000			
None	IHD04100	IHD04100			
COBOL	IJSCBL01	IJSCBL01			
COBCL000	IJSCBL02	IJSCBL02			
COBOL000	IJSCBL03	IJSCBL03			
COBOL001	IJSCBL04	IJSCBL04			
COBOL001	IJSCBL05	IJSCBL05			
COBOL002	IJSCBL06	IJSCBL06			
COBOL003	IJSCBL07	IJSCBL07			
COBOL004	IJSCBL08	IJSCBL08			
COBOL005	IJSCBL09	IJSCBL09			
COBOL006	IJSCBL10	IJSCBL10			

None	IJJCP2	IJJCP2	None	IJTLSQT	IJTLSQT
None	IJJCP3	IJJCP3	None	IJTILTAN	IJTILTAN
None	IJJCPDV	IJJCPDV	None	IJTLTNH	IJTLTNH
None	IJJCPD0	IJJCPD0	None	IJTMAXD	IJTMAXD
None	IJJCPD1	IJJCPD1	None	IJTMODI	IJTMODI
None	IJJCPD2	IJJCPD2			
None	IJJCPD3	IJJCPD3	None	IJTMODR	IJTMODR
None	IJJCPV1	IJJCPV1	None	IJTOVRF	IJTOVRF
None	IJJCPV2	IJJCPV2	None	IJTSINT	IJTSINT
None	IJJCP0N	IJJCP0N	None	IJTSLIT	IJTSLIT
None	IJJCP1N	IJJCP1N	None	IJTSLOG	IJTSLOG
None	IJJCPDV1	IJJCPDV1	None	IJTSMX0	IJTSMX0
None	IJJCPDV2	IJJCPDV2	None	IJTSMX1	IJTSMX1
None	IJJCPD0N	IJJCPD0N	None	IJTSSCN	IJTSSCN
None	IJJCPD1N	IJJCPD1N	None	IJTSSQT	IJTSSQT
None	IJJFCBID	IJJFCBID	None	IJTSTAN	IJTSTAN
None	IJJFCBZD	IJJFCBZD	None	IJTSTNH	IJTSTNH
None	IJJFCIID	IJJFCIID			
None	IJJFCIZD	IJJFCIZD			

None	IJLRC30	IJLRC30
None	IJLRC40	IJLRC40
None	IJLRC50	IJLRC50
None	IJLRC60	IJLRC60
None	IJLRC80	IJLRC80
None	IJLRF40	IJLRF40
None	IJLRF50	IJLRF50
None	IJLRSCI	IJLRSCI
None	IJLSASA	IJLSASA
None	IJLSCTW	IJLSCTW
None	IJLSCTI	IJLSCTI
None	IJLSCT2	IJLSCT2

FORTRAN IV

<u>Phase Name</u>	<u>Label</u>	<u>Module Name</u>
None	ILFACOM	ILFACOM
None	ILFADCON	ILFADCON
FFORT2	ILFALL	ILFALL
None	ILFDEBUG	ILFDEBUG
None	ILFDIOCS	ILFDIOCS
FFORT5	ILFEXT	ILFEXT
None	ILFFDUMP	ILFFDUMP
None	ILFFDVCH	ILFFDVCH
None	ILFFEXIT	ILFFEXIT
None	ILFFINT	ILFFINT
None	ILFFIOCS	ILFFIOCS
None	ILFFO	ILFFO
FFORTAN	ILFFORT	ILFFORT
None	ILFFOVER	ILFFOVER
None	ILFFSLIT	ILFFSLIT
FFORT4	ILFGEN	ILFGEN
None	ILFGHTAB	ILFGHTAB
None	ILFIBCOM	ILFIBCOM
None	ILFIBERR	ILFIBERR
None	ILFNAMEL	ILFNAMEL
FFORT1	ILFPAR	ILFPAR
FFORT9	ILFROL	ILFROL
FFORTRBK	ILFTRBK	ILFTRBK
FFORT3	ILFUNF	ILFUNF
None	ILFUNTAB	ILFUNTAB

FORTRAN IV (BASIC)

<u>Phase Name</u>	<u>Label</u>	<u>Module Name</u>
None	IJTAAFR	IJTAAFR
None	IJTACOM	IJTACOM
None	IJTACON	IJTACON
None	IJTADIR	IJTADIR
None	IJTADXD	IJTADXD
None	IJTADX1	IJTADX1
None	IJTAIXI	IJTAIXI
None	IJTAPST	IJTAPST
None	IJTARBE	IJTARBE
None	IJTARXI	IJTARXI
None	IJTARXR	IJTARXR
None	IJTDVCK	IJTDVCK
None	IJTEXPN	IJTEXPN
None	IJTFDMP	IJTFDMP
None	IJTFIOS	IJTFIOS

FORTRAN IV LIBRARY SUB-PROGRAMS

<u>Phase Name</u>	<u>Label</u>	<u>Module Name</u>
FORTRAN	IJTFO1	IJTFO1
FORTREL	IJTFC2	IJTFO2
FORTRGE	IJTFO3	IJTFO3
FORTRPU	IJTFO4	IJTFO4
None	IJTFXIT	IJRFXIT
None	IJTTHXC	IJTTHXC
None	IJTIFIX	IJTIFIX
None	IJTLEXP	IJTLEXP
None	IJTLLLOG	IJTLLLOG
None	IJTILSCN	IJTILSCN
None	ILFCLABS	ILFCLABS
None	ILFCLAS	ILFCLAS
None	ILFCLEXP	ILFCLEXP
None	ILFCLLOG	ILFCLLOG
None	ILFCLSCN	ILFCLSCN
None	ILFCLSQT	ILFCLSQT
None	ILFCSABS	ILFCSABS
None	ILFCSAS	ILFCSAS
None	ILFCSEXP	ILFCSEXP
None	ILFCSLOG	ILFCSLOG

			<u>PL/I</u>			
				<u>Core Image</u>	<u>Microfiche</u>	<u>Relocatable</u>
				<u>Phase Name</u>	<u>Label</u>	<u>Module Name</u>
None	ILFCSSCN	ILFCSSCN				
None	ILFCSSQT	ILFCSSQT				
None	ILFFCDXI	ILFFCDXI				
None	ILFFCXPI	ILFFCXPI				
None	ILFFDXPD	ILFFDXPD				
None	ILFFDXPI	ILFFDXPI				
None	ILFFIXPI	ILFFIXPI	None	IJKEXHC	IJKEXHC	IJKEXHC
None	ILFFMAXD	ILFFMAXD	None	IJKQALM	IJKQALM	IJKQALM
None	ILFFMAXI	ILFFMAXI	None	IJKQASM	IJKQASM	IJKQASM
None	ILFFMAXR	ILFFMAXR	None	IJKQBLA	IJKQBLA	IJKQBLA
None	ILFFRXPI	ILFFRXPI	None	IJKQBSA	IJKQBSA	IJKQBSA
None	ILFFRXPR	ILFFRXPR	None	IJKQCLA	IJKQCLA	IJKQCLA
None	ILFLASCN	ILFLASCN	None	IJKQCSA	IJKQCSA	IJKQCSA
None	ILFLATN2	ILFLATN2	None	IJKQDLA	IJKQDLA	IJKQDLA
None	ILFLERF	ILFLERF	None	IJKQDSA	IJKQDSA	IJKQDSA
None	ILFLEXP	ILFLEXP	None	IJKQLLA	IJKQLLA	IJKQLLA
None	ILFLGAMA	ILFLGAMA	None	IJKQLSA	IJKQLSA	IJKQLSA
None	ILFLLOG	ILFLLOG	None	IJKQNLD	IJKQNLD	IJKQNLD
None	ILFLSCN	ILFLSCN	None	IJKQNSD	IJKQNSD	IJKQNSD
None	ILFLSCNH	ILFLSCNH	None	IJKQQLM	IJKQQLM	IJKQQLM
None	ILFLSQRT	ILFLSQRT	None	IJKQQSM	IJKQQSM	IJKQQSM
None	ILFLTANH	ILFLTANH	None	IJKQRLB	IJKQRLB	IJKQRLB
None	ILFLTANCT	ILFLTANCT	None	IJKQRSB	IJKQRSB	IJKQRSB
None	ILFSASCN	ILFSASCN	None	IJKQSLD	IJKQSLD	IJKQSLD
None	ILFSATN2	ILFSATN2	None	IJKQSSD	IJKQSSD	IJKQSSD
None	ILFSERF	ILFSERF	None	IJKQTLB	IJKQTLB	IJKQTLB
None	ILFSEXP	ILFSEXP	None	IJKQTSB	IJKQTSB	IJKQTSB
None	ILFSGAMA	ILFSGAMA				
None	ILFSLOG	ILFSLOG	None	IJKRBBM	IJKRBBM	IJKRBBM
None	ILFSSCN	ILFSSCN	None	IJKRBIM	IJKRBIM	IJKRBIM
None	ILFSSCNH	ILFSSCNH	None	IJKRBKA	IJKRBKA	IJKRBKA
None	ILFSSQRT	ILFSSQRT	None	IJKREBM	IJKREBM	IJKREBM
None	ILFSTANH	ILFSTANH	None	IJKRELM	IJKRELM	IJKRELM
None	ILFSTNCT	ILFSTNCT	None	IJKREPM	IJKREPM	IJKREPM
			None	IJKRESM	IJKRESM	IJKRESM
			None	IJKRGIM	IJKRGIM	IJKRGIM
			None	IJKRGKM	IJKRGKM	IJKRGKM
			None	IJKRMBX	IJKRMBX	IJKRMBX
			None	IJKRMLX	IJKRMLX	IJKRMLX
			None	IJKRMPX	IJKRMPX	IJKRMPX
			None	IJKRMSX	IJKRMSX	IJKRMSX
			None	IJKRSBM	IJKRSBM	IJKRSBM
			None	IJKRSLM	IJKRSLM	IJKRSLM
			None	IJKRSPM	IJKRSPM	IJKRSPM
			None	IJKRSSM	IJKRSSM	IJKRSSM
			None	IJKRUBM	IJKRUBM	IJKRUBM
			None	IJKRUPM	IJKRUPM	IJKRUPM
			None	IJKRWBM	IJKRWBM	IJKRWBM
			None	IJKRWLM	IJKRWLM	IJKRWLM
			None	IJKRWPM	IJKRWPM	IJKRWPM
			None	IJKRWSM	IJKRWSM	IJKRWSM
			None	IJKRXLM	IJKRXLM	IJKRXLM
			None	IJKRXSA	IJKRXSA	IJKRXSA
None	IJZACEOM	IJZACEOM				
None	IJZACKPT	IJZACKPT	None	IJKSDMP	IJKSDMP	IJKSDMP
None	IJZACMNT	IJZACMNT	None	IJKSDTM	IJKSDTM	IJKSDTM
None	IJZACOMP	IJZACOMP	None	IJKSTMM	IJKSTMM	IJKSTMM
None	IJZACONV	IJZACONV	None	IJKSYSA	IJKSYSA	IJKSYSA
None	IJZADATA	IJZADATA	None	IJKSYSI	IJKSYSI	IJKSYSI
None	IJZADEVD	IJZADEVD	None	IJKSZBA	IJKSZBA	IJKSZBA
None	IJZADPRT	IJZADPRT	None	IJKSZCA	IJKSZCA	IJKSZCA
None	IJZAHEAD	IJZAHEAD	None	IJKSZLM	IJKSZLM	IJKSZLM
None	IJZAJCPT	IJZAJOPT				
None	IJZAOPTN	IJZAOPTN	None	IJKTCBM	IJKTCBM	IJKTCBM
None	IJZARATA	IJZARATA	None	IJKTCUM	IJKTCUM	IJKTCUM
None	IJZARSLT	IJZARSLT	None	IJKTDIM	IJKTDIM	IJKTDIM
None	IJZATEST	IJZATEST	None	IJKTDPD	IJKTDPD	IJKTDPD
None	IJZATIME	IJZATIME	None	IJKTFDM	IJKTFDM	IJKTFDM

OLTEP

Core Image Microfiche Relocatable
Phase Name Label Module Name

\$\$BSOPEN IJZAOPTN IJZAOPTN
IJZAAOLT IJZAAOLT IJZAAOLT
IJZAAOLT IJZAEXIC IJZAEXIC
IJZAAOLT IJZAOPUT IJZAOPUT
IJZAAOLT IJZAWAIT IJZAWAIT

None IJZACEOM IJZACEOM
None IJZACKPT IJZACKPT
None IJZACMNT IJZACMNT
None IJZACOMP IJZACOMP
None IJZACONV IJZACONV
None IJZADATA IJZADATA
None IJZADEVD IJZADEVD
None IJZADPRT IJZADPRT
None IJZAHEAD IJZAHEAD
None IJZAJCPT IJZAJOPT
None IJZAOPTN IJZAOPTN
None IJZARATA IJZARATA
None IJZARSLT IJZARSLT
None IJZATEST IJZATEST
None IJZATIME IJZATIME

PL/IG20	IJXG20	IJXG20	RPG10190	IJR190	IJR190
PL/IG25	IJXG25	IJXG25	RPG10190	IJR199	IJR199
PL/IG30	IJXG30	IJXG30	RPG10200	IJR200	IJR200
PL/IG31	IJXG31	IJXG31	RPG10200	IJR209	IJR209
PL/IG40	IJXG40	IJXG40			
PL/IG55	IJXG55	IJXG55	RPG10210	IJR210	IJR210
			RPG10210	IJR219	IJR219
\$\$\$BFLOSE	IJXPLOSE	IJXPLOSE	RPG10220	IJR220	IJR220
None	IJXSYSA	IJXSYSA	RPG10220	IJR229	IJR229
None	IJXSYSI	IJXSYSI	RPG10230	IJR230	IJR230
\$IJKS00	IJXS00	IJXS00	RPG10230	IJR239	IJR239
\$IJKS10	IJXS10	IJXS10	RPG10230	IJR240	IJR240
\$IJKS20	IJXS20	IJXS20	RPG10230	IJR241	IJR241
\$IJKS30	IJXS30	IJXS30	RPG10230	IJR242	IJR242
\$IJKS40	IJXS40	IJXS40	RPG10230	IJR243	IJR243
\$IJKS50	IJXS50	IJXS50	RPG10230	IJR244	IJR244
\$IJKS60	IJXS60	IJXS60	RPG10230	IJR245	IJR245
\$IJKS70	IJXS70	IJXS70	RPG10230	IJR246	IJR246
			RPG10230	IJR247	IJR247
			RPG10230	IJR249	IJR249

RPG

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
None	IJR000	IJR000
RPG10010	IJR010	IJR010
RPG10020	IJR020	IJR020
RPG10025	IJR025	IJR025
RPG10030	IJR030	IJR030
RPG10030	IJR039	IJR039
RPG10040	IJR040	IJR040
RPG10040	IJR049	IJR049
RPG10050	IJR050	IJR050
RPT10050	IJR059	IJR059
RPG10060	IJR060	IJR060
RPG10060	IJR069	IJR069
RPG10070	IJR070	IJR070
RPG10070	IJR079	IJR079
RPG10080	IJR080	IJR080
RPG10080	IJR089	IJR089
RPG10090	IJR090	IJR090
RPG10090	IJR099	IJR099
RPG10100	IJR100	IJR100
RPG10100	IJR109	IJR109
RPG10110	IJR110	IJR110
RPG10110	IJR119	IJR119
RPG10120	IJR120	IJR120
RPG10120	IJR129	IJR129
RPG10130	IJR130	IJR130
RPG10130	IJR139	IJR139
RPG10140	IJR140	IJR140
RPG10140	IJR149	IJR149
RPG10150	IJR150	IJR150
RPG10150	IJR159	IJR159
RPG10160	IJR160	IJR160
RPG10160	IJR169	IJR169
RPG10170	IJR170	IJR170
RPG10170	IJR179	IJR179
RPG1018A	IJR18A	IJR18A
RPG1018A	IJR18F	IJR18F
RPG1018A	IJR18G	IJR18G
RPG1018A	IJR18H	IJR18H
RPG10180	IJR180	IJR180
RPG10180	IJR189	IJR189

SORT/MERGE (DISK)

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
DSORT	IJOSM001	IJOSM001
DSORT002	IJOSM002	IJOSM002
DSORT003	IJOSM003	IJOSM003
DSORT004	IJOSM004	IJOSM004
DSORT005	IJOSM005	IJOSM005
DSORT006	IJOSM006	IJOSM006
DSORT007	IJOSM007	IJOSM007
DSORT008	IJOSM008	IJOSM008
DSORT009	IJOSM009	IJOSM009
DSORT010	IJOSM010	IJOSM010
DSORT101	IJOSM101	IJOSM101
DSORT102	IJOSM102	IJOSM102
DSORT103	IJOSM103	IJOSM103
DSORT104	IJOSM104	IJOSM104
DSORT105	IJOSM105	IJOSM105
DSORT201	IJOSM201	IJOSM201
DSORT202	IJOSM202	IJOSM202
DSORT203	IJOSM203	IJOSM203
DSORT204	IJOSM204	IJOSM204
DSORT301	IJOSM301	IJOSM301
DSORT302	IJOSM302	IJOSM302
DSORT303	IJOSM303	IJOSM303
DSORT304	IJOSM304	IJOSM304
DSORT401	IJOSM401	IJOSM401
DSORT402	IJOSM402	IJOSM402
DSORT501	IJOSM501	IJOSM501

SORT/MERGE (DISK/TAPE)

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
None	ILHSAAC	ILHSAAC
None	ILHSAAD	ILHSAAD
None	ILHSABF	ILHSABF

None	ILHSABG	ILHSABG	None	ILHSRGG	ILHSRGG
None	ILHSAGD	ILHSAGD	None	ILHSRGH	ILHSRGH
None	ILHSAGE	ILHSAGE	None	ILHSRMC	ILHSRMC
None	ILHSAGF	ILHSAGF	None	ILHSROA	ILHSROA
None	ILHSAGG	ILHSAGG	None	ILHSROB	ILHSROB
None	ILHSAGH	ILHSAGH	None	ILHSROC	ILHSROC
None	ILHSAOB	ILHSAOB	None	ILHSRPA	ILHSRPA
None	ILHSAOC	ILHSAOC	None	ILHSRPB	ILHSRPB
None	ILHSAPC	ILHSAPC	None	ILHSRPC	ILHSRPC
None	ILHSAPD	ILHSAPD	None	ILHSRPD	ILHSRPD
None	ILHSAPF	ILHSAPF	None	ILHSRPE	ILHSRPE
None	ILHSAPG	ILHSAPG	None	ILHSRSD	ILHSRSD
None	ILHSAPH	ILHSAPH	None	ILHSRSE	ILHSRSE
None	ILHSASA	ILHSASA	None	ILHSRSG	ILHSRSG
None	ILHSASF	ILHSASF	None	ILHSRSH	ILHSRSH
None	ILHSASG	ILHSASG	None	ILHSRSI	ILHSRSI
None	ILHSASK	ILHSASK	None	ILHSRSJ	ILHSRSJ
None	ILHSASL	ILHSASL	None	ILHSRSM	ILHSRSM
None	ILHSPPI	ILHSPPI	None	ILHSRSN	ILHSRSN
None	ILHSRAA	ILHSRAA	None	ILHSRTMG	ILHSRTMG
None	ILHSRAB	ILHSRAB			
None	ILHSRAC	ILHSRAC			
None	ILHSRAD	ILHSRAD			
None	ILHSREB	ILHSREB			
None	ILHSREB	ILHSREB			
None	ILHSREC	ILHSREB			
None	ILHSRED	ILHSREB			
None	ILHSREF	ILHSREB			
None	ILHSREG	ILHSREB			
None	ILHSRCA	ILHSRCA			
None	ILHSRCE	ILHSRCA			
None	ILHSRCC	ILHSRCA			
None	ILHSRCD	ILHSRCD			
None	ILHSRCE	ILHSRCE			
None	ILHSRCF	ILHSRCF			
None	ILHSRCH	ILHSRCH			
None	ILHSRCI	ILHSRCI			
None	ILHSRCJ	ILHSRCJ			
None	ILHSRCK	ILHSRCK			
None	ILHSRCL	ILHSRCL			
None	ILHSRCM	ILHSRCM			
None	ILHSRCN	ILHSRCN			
None	ILHSRDA	ILHSRDA			
None	ILHSRDB	ILHSRDB			
None	ILHSRDC	ILHSRDC			
None	ILHSRGA	ILHSRGA			
None	ILHSRGB	ILHSRGB			
None	ILHSRGD	ILHSRGD			
None	ILHSRGE	ILHSRGE			
None	ILHSRGF	ILHSRGF			

SORT/MERGE (TAPE)

<u>Core Image</u>	<u>Microfiche</u>	<u>Relocatable</u>
<u>Phase Name</u>	<u>Label</u>	<u>Module Name</u>
TSRTP001	TSRTP001	IJPSM001
TSRTP002	TSRTP001	IJPSM001
TSRTP003	TSRTP001	IJPSM001
TSRTP004	TSRTP001	IJPSM001
TSRTP005	TSRTP001	IJPSM001
TSRTP006	TSRTP001	IJPSM001
TSRTP007	TSRTP001	IJPSM001
TSRTP008	TSRTP001	IJPSM001
TSRTP101	TSRTP101	IJPSM002
TSRTP102	TSRTP101	IJPSM002
TSRTP103	TSRTP101	IJPSM002
TSRTP104	TSRTP101	IJPSM002
TSRTP105	TSRTP101	IJPSM002
TSRTP201	TSRTP201	IJPSM003
TSRTP202	TSRTP201	IJPSM003
TSRTP203	TSRTP201	IJPSM003
TSRTP204	TSRTP201	IJPSM003
TSRTP301	TSRTP301	IJPSM004
TSRTP302	TSRTP301	IJPSM004
TSRTP303	TSRTP301	IJPSM004

T/P-BTAM

<u>Core Image</u> <u>Phase Name</u>	<u>Microfiche</u> <u>Label</u>	<u>Relocatable</u> <u>Module Name</u>	IJLSD80 IJLSSCI	IJLSD80 IJLSSCI	None None
\$\$ANERP2	\$\$ANERP2	IJL0TMSG	IJLT2ALC	IJLT2ALC	None
\$\$ANERR2	\$\$ANERR2	None	IJLT2ROT	IJLT2ROT	None
\$\$ANERR3	\$\$ANERR3	None	IJLT2TLT	IJLT2TLT	None
\$\$ANERR4	\$\$ANERR4	None	IJLT2TWS	IJLT2TWS	None
\$\$ANERR5	\$\$ANERR5	None	IJLT3ALC	IJLT3ALC	None
\$\$BCTC01	\$\$BCTC01	None	IJLT3ROT	IJLT3ROT	None
\$\$BETPRT	\$\$BETPRT	None	IJLT3SLA	IJLT3SLA	None
\$\$BHDRCK	\$\$BHDRCK	None	IJLT3TLT	IJLT3TLT	None
\$\$BLEPRT	\$\$BLEPRT	None	IJLT3TWS	IJLT3TWS	None
\$\$BIOPEN	\$\$BIOPEN	None	IJLT5ALC	IJLT5ALC	None
\$\$BOTC01	\$\$BOTC01	None	IJLT5ROT	IJLT5ROT	None
\$\$BRESPL	\$\$BRESPL	IJLRSEPL	IJLT5SLA	IJLT5SLA	None
\$\$BTCNCL	\$\$BTCNCL	None	IJLT5TLT	IJLT5TLT	None
\$\$BTMEBG	\$\$BTMEBG	None	IJLT5TWS	IJLT5TWS	None
\$\$BT1030	\$\$BT1030	None	IJLT6ALC	IJLT6ALC	None
\$\$BT1050	\$\$BT1050	None	IJLT6ROT	IJLT6ROT	None
\$\$BT1060	\$\$BT1060	None	IJLT6SLA	IJLT6SLA	None
\$\$BT2260	\$\$BT2260	None	IJLT6TLT	IJLT6TLT	None
\$\$BT2740	\$\$BT2740	None	IJLT6TWS	IJLT6TWS	None
\$\$BT2848	\$\$BT2848	None	IJLWTZ	IJLWTZ	None
			IJL0EZ	IJL0EZ	None
			IJL1BZ	IJL1BZ	None
			IJL006Z	IJL006Z	None
IJLBOT02	IJLBOT02	IJLTEBCD	None	IJLASC	IJLASC
IJLBOT03	IJLBOT03	IJLTUSAC	None	IJLC2635	IJLC2635
IJLBOT04	IJLBOT04	IJLNTRAN	None	IJLEBD	IJLEBD
IJLBOT05	IJLBOT05	IJLNUSAC	None	IJLTCD	IJLTCD
IJLBOT06	IJLBOT06	IJLAUSAC			
IJLBOT07	IJLBOT07	IJLPUSAC	None	IJL0AY	IJL0AY
IJLBOT08	IJLBOT08	IJLPCASC	None	IJL0BA	IJL0BA
IJLBOT09	IJLBOT09	IJLPTRAN	None	IJL0BC	IJL0BC
IJLBOT10	IJLBOT10	IJLPCTRA	None	IJL0BE	IJL0BE
IJLBOT11	IJLBOT11	IJLMPTRR	None	IJL0BG	IJL0BG
IJLBOT12	IJLBOT12	IJLPREBD	None	IJL0BI	IJL0BI
IJLBOT13	IJLBOT13	IJLPCEBD	None	IJL0BK	IJL0BK
IJLBOT14	IJLBOT14	IJLALEBD	None	IJL0BM	IJL0BM
IJLBOT15	IJLBOT15	IJLWKPTD	None	IJL0BO	IJL0BO
IJLBOT16	IJLBOT16	IJLWKPTL	None	IJL0BQ	IJL0BQ
IJLBOT17	IJLBOT17	IJLTKWDL	None	IJL0BS	IJL0BS
IJLBOT18	IJLBOT18	IJLTKWLE	None	IJL0BU	IJL0BU
IJLBOT19	IJLBOT19	IJLDLESN	None	IJL0BW	IJL0BW
IJLC26	IJLC26	None	None	IJL0BY	IJL0BY
			None	IJL0BZ	IJL0BZ
IJLRASA	IJLRASA	None	None	IJL0B4	IJL0B4
IJLRCTW	IJLRCTW	None	None	IJL0B6	IJL0B6
IJLRCT1	IJLRCT1	None	None	IJL0B8	IJL0B8
IJLRCT2	IJLRCT2	None	None	IJL0CZ	IJL0CZ
IJLRCT3	IJLRCT3	None	None	IJL0CY	IJL0CY
IJLRC30	IJLRC30	None	None	IJL0DZ	IJL0DZ
IJLRC40	IJLRC40	None	None		
IJLRC50	IJLRC50	None	None		
IJLRC60	IJLRC60	None	None	IJL00Y	IJL00Y
IJLRC80	IJLRC80	None	None	IJL01J	IJL01J
IJLRF40	IJLRF40	None	None	IJL01Z	IJL01Z
IJLRF50	IJLRF50	None	None	IJL02J	IJL02J
IJLRSCI	IJLRSCI	None	None	IJL02Z	IJL02Z
IJLSASA	IJLSASA	None	None	IJL03Z	IJL03Z
IJLSCTW	IJLSCTW	None	None	IJL04Z	IJL04Z
IJLSCT1	IJLSCT1	None	None	IJL05Z	IJL05Z
IJLSCT2	IJLSCT2	None	None	IJL07J	IJL07J
IJLSCT3	IJLSCT3	None	None	IJL07Y	IJL07Y
IJLSD30	IJLSD30	None	None	IJL07Z	IJL07Z
IJLSD40	IJLSD40	None	None	IJL08H	IJL08H
IJLSD50	IJLSD50	None	None	IJL08M	IJL08M
IJLSD60	IJLSD60	None	None	IJL08P	IJL08P

None	IJL08Q	IJL08Q	None	IJLQGA	IJLQGA
None	IJL08R	IJL08R	None	IJLQGB	IJLQGB
None	IJL08U	IJL08U	None	IJLQGC	IJLQGC
None	IJL08X	IJL08X	None	IJLQGD	IJLQGD
None	IJL08Y	IJL08Y	None	IJLQGM	IJLQGM
None	IJL08Z	IJL08Z	None	IJLQGR	IJLQGR
None	IJL089	IJL089	None	IJLQGS	IJLQGS
None	IJL09Y	IJL09Y	None	IJLQIP	IJLQIP
None	IJL1CZ	IJL1CZ	None	IJLQIT	IJLQIT
None	IJL1DZ	IJL1DZ	None	IJLQLA	IJLQLA
None	IJL2DZ	IJL2DZ	None	IJLQLG	IJLQLG
			None	IJLQLK	IJLQLK
			None	IJLQLO	IJLQLO
			None	IJLQLP	IJLQLP

T/P-QTAM

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>			
			None	IJLQMC	IJLQMC
			None	IJLQMI	IJLQMI
			None	IJLQMM	IJLQMM
			None	IJLQMP	IJLQMP
\$\$BCQC01	\$\$BCQC01	None	None	IJLQMT	IJLQMT
\$\$BCQC02	\$\$BCQC02	None	None	IJLQMW	IJLQMW
\$\$BCQC03	\$\$BCQC03	None	None	IJLQM0	IJLQM0
\$\$BOQO01	\$\$BOQO01	None	None	IJLQM1	IJLQM1
\$\$BOQO02	\$\$BOQO02	None	None	IJLQM2	IJLQM2
\$\$BOQO03	\$\$BOQO03	None	None	IJLQM3	IJLQM3
\$\$BOQO04	\$\$BOQO04	None	None	IJLQM4	IJLQM4
\$\$BOQO07	\$\$BOQO07	None	None	IJLQM5	IJLQM5
\$\$BOQO08	\$\$BOQO08	None	None	IJLQM6	IJLQM6
			None	IJLQM8	IJLQM8
\$\$BQCNCI	\$\$BQCNCI	None	None	IJLQM9	IJLQM9
\$\$BQCNCM	\$\$BQCNCM	None	None	IJLQN0	IJLQN0
\$\$BQHDCK	\$\$BQHDCK	None	None	IJLQN1	IJLQN1
\$\$BQWTRA	\$\$BQWTRA	None	None	IJLQN2	IJLQN2
\$\$BQWTR1	\$\$BQWTR1	None	None	IJLQN3	IJLQN3
\$\$BQWTR2	\$\$BQWTR2	None	None	IJLQN4	IJLQN4
\$\$BQWTR3	\$\$BQWTR3	None	None	IJLQN5	IJLQN5
\$\$BQ1030	\$\$BQ1030	None	None	IJLQN6	IJLQN6
\$\$BQ1050	\$\$BQ1050	None	None	IJLQN7	IJLQN7
\$\$BQ1060	\$\$BQ1060	None	None	IJLQN8	IJLQN8
\$\$BQ2260	\$\$BQ2260	None	None	IJLQOA	IJLQOA
\$\$BQ2740	\$\$BQ2740	None	None	IJLQOC	IJLQOC
\$\$B00006	\$\$B00006	None			
			None	IJLQPA	IJLQPA
None	IJLQAA	IJLQAA	None	IJLQPL	IJLQPL
None	IJLQAD	IJLQAD	None	IJLQPM	IJLQPM
None	IJLQBO	IJLQBO	None	IJLQPR	IJLQPR
None	IJLQCK	IJLQCK	None	IJLQPS	IJLQPS
None	IJLQCL	IJLQCL	None	IJLQPZ	IJLQPZ
None	IJLQCM	IJLQCM	None	IJLQQT	IJLQQT
None	IJLQCP	IJLQCP	None	IJLQRA	IJLQRA
None	IJLQCR	IJLQCR	None	IJLQRB	IJLQRB
None	IJLQCT	IJLQCT	None	IJLQRC	IJLQRC
None	IJLQDA	IJLQDA	None	IJLQRD	IJLQRD
None	IJLQDC	IJLQDC	None	IJLQRG	IJLQRG
None	IJLQDE	IJLQDE	None	IJLQRM	IJLQRM
None	IJLQDL	IJLQDL	None	IJLQRR	IJLQRR
None	IJLQDP	IJLQDP	None	IJLQRS	IJLQRS
None	IJLQDQ	IJLQDQ	None	IJLQRW	IJLQRW
None	IJLQDT	IJLQDT	None	IJLQR1	IJLQR1
			None	IJLQR2	IJLQR2
None	IJLQEA	IJLQEA	None	IJLQR3	IJLQR3
None	IJLQEB	IJLQEB	None	IJLQR4	IJLQR4
None	IJLQEC	IJLQEC	None	IJLQR5	IJLQR5
None	IJLQEP	IJLQEP	None	IJLQR6	IJLQR6
None	IJLQER	IJLQER	None	IJLQR7	IJLQR7
None	IJLQEX	IJLQEX	None	IJLQR8	IJLQR8
None	IJLQFL	IJLQFL	None	IJLQR9	IJLQR9

None	IJLQSB	IJLQSB	DKDK	IJWDD1	IJWDD1
None	IJLQSC	IJLQSC	DKDK1	IJWGEN	IJWGEN
			DKDK2	IJWDD3	IJWDD3
None	IJLQSH	IJLQSH	DKDK3	IJWDD4	IJWDD4
None	IJLQSI	IJLQSI	DKDK4	IJWLAB	IJWLAB
None	IJLQSK	IJLQSK	DKDK5	IJWLAB	IJWLAB
None	IJLQSO	IJLQSO	DKPR	IJWDP1	IJWDP1
None	IJLQSR	IJLQSR	DKPR1	IJWGEN	IJWGEN
None	IJLQSS	IJLQSS	DKPR2	IJWDP3	IJWDP3
None	IJLQST	IJLQST	DKPR3	IJWDP4	IJWDP4
None	IJLQS1	IJLQS1	DKPR4	IJWLAB	IJWLAB
None	IJLQS2	IJLQS2	DKPR5	IJWLAB	IJWLAB
None	IJLQS4	IJLQS4			
None	IJLQS5	IJLQS5	INTD	IJWID1	IJWID1
None	IJLQS6	IJLQS6	INTD2	IJWID2	IJWID2
None	IJLQS7	IJLQS7	INTD3	IJWID3	IJWID3
None	IJLQS8	IJLQS8	INTD4	IJWID4	IJWID4
None	IJLQS9	IJLQS9	LISTVTOC	LISTVTOC	IJWLVI
None	IJLQTA	IJLQTA	LISTVTOC	LISTVTOC	IJWLVT
None	IJLQTR	IJLQTR	LISTVTOC	LISTVTOC	IJWLVB
None	IJLQTS	IJLQTS	LISTVTOC	LISTVTOC	IJWLVM
None	IJLQTT	IJLQTT			

UTILITIES GROUP 1 (UNIT RECORD AND DISK)

UTILITIES GROUP 2 (TAPE)

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
ATAD	IJWAD1	IJWAD1
ATAD2	IJWAD2	IJWAD2
ATAD3	IJWAD3	IJWAD3
ATAD4	IJWAD4	IJWAD4
None	IJWAD5	IJWAD5
\$\$BLISTV	\$\$BLISTV	IJWLVI
\$\$BLISTV	\$\$BLISTV	IJWLVT
\$\$BLISTV	\$\$BLISTV	IJWLVB
\$\$BLISTV	\$\$BLISTV	IJWLVM
CDDK	IJWCD1	IJWCD1
CDDK1	IJWGEN	IJWGEN
CDDK2	IJWCD3	IJWCD3
CDDK3	IJWCD4	IJWCD4
CDDK4	IJWLAB	IJWLAB
CDDK5	IJWLAB	IJWLAB
CDPP	IJWCP1	IJWCP1
CDPP1	IJWGEN	IJWGEN
CDPP2	IJWCP3	IJWCP3
CDPP3	IJWCP4	IJWCP4
CDPP4	IJWLAB	IJWLAB
CDPP5	IJWLAB	IJWLAB
CLRDSK	IJWCLD1	IJWCLD1
CLRD2	IJWCLD2	IJWCLD2
CLRD3	IJWCLD3	IJWCLD3
CRCD	IJWRC1	IJWRC1
CRDC	IJWKC1	IJWKC1
CRDC2	IJWKC2	IJWKC2
CRDD	IJWRD1	IJWRD1
CRDD2	IJWRD2	IJWRD2
DKCD	IJWDC1	IJWDC1
DKCD1	IJWGEN	IJWGEN
DKCD2	IJWDC3	IJWDC3
DKCD3	IJWDC4	IJWDC4
DKCD4	IJWLAB	IJWLAB
DKCD5	IJWLAB	IJWLAB

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
CDTP	IJWCT1	IJWCT1
CDTP1	IJWGEN	IJWGEN
CDTP2	IJWCT3	IJWCT3
CDTP3	IJWCT4	IJWCT4
CDTP4	IJWLAB	IJWLAB
CDTP5	IJWLAB	IJWLAB
CRDT	IJWKT1	IJWKT1
CRDT2	IJWKT2	IJWKT2
CRTD	IJWRT1	IJWRT1
DCTP	IJWMT1	IJWMT1
DCTP1	IJWGEN	IJWGEN
DKTP	IJWDT1	IJWDT1
DKTP1	IJWGEN	IJWGEN
DKTP2	IJWDT3	IJWDT3
DKTP3	IJWDT4	IJWDT4
DKTP4	IJWLAB	IJWLAB
DKTP5	IJWLAB	IJWLAB
TPCD	IJWTC1	IJWTC1
TPCD1	IJWGEN	IJWGEN
TPCD2	IJWTC3	IJWTC3
TPCD3	IJWTC4	IJWTC4
TPCD4	IJWLAB	IJWLAB
TPCD5	IJWLAB	IJWLAB
TPCP	IJWTCP	IJWTCP
TPCP2	IJWTCP2	IJWTCP2
TPCP3	IJWTCP3	IJWTCP3
TPDC	IJWTM1	IJWTM1
TPDC1	IJWGEN	IJWGEN
TPDK	IJWTD1	IJWTD1
TPDK1	IJWGEN	IJWGEN
TPDK2	IJWTD3	IJWTD3
TPDK3	IJWTD4	IJWTD4
TPDK4	IJWLAB	IJWLAB
TPDK5	IJWLAB	IJWLAB

TPPR	IJWT1	IJWT1
TPPR1	IJWGEN	IJWGEN
TPPR2	IJWT3	IJWT3
TPPR3	IJWT4	IJWT4
TPPR4	IJWLAB	IJWLAB
TPPR5	IJWLAB	IJWLAB
TPTP	IJWTT1	IJWTT1
TPTP1	IJWGEN	IJWGEN
TPTP2	IJWTT3	IJWTT3
TPTP3	IJWTT4	IJWTT4
TPTP4	IJWLAB	IJWLAB
TPTP5	IJWLAB	IJWLAB
None	IJWXIT	IJWXIT

UTILITIES - MPS

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
\$\$BMU100	\$\$BMU100	None
\$\$BMU200	\$\$BMU200	None
\$\$BMU300	\$\$BMU300	None

UTILITIES - VOCABULARY FILE

UTILITIES GROUP 3 (DATA CELL)

<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>	<u>Core Image Phase Name</u>	<u>Microfiche Label</u>	<u>Relocatable Module Name</u>
			None	IJNVBL	IJNVBL
			None	IJNVCT	IJNVCT
			None	IJNVER	IJNVER
CLDC	IJWCLM1	IJWCLM1	None	IJNVIO	IJNVIO
CLDC2	IJWGEN	IJWGEN	None	IJNVLI	IJNVLI
CLDC3	IJWDD3	IJWDD3	None	IJNVLO	IJNVLO
CLDC4	IJWDD4	IJWDD4	None	IJNVUP	IJNVUP
CLDC5	IJWLAB	IJWLAB			
DCDC	IJWMM1	IJWMM1			
DCDC2	IJWGEN	IJWGEN			
DCDC3	IJWDD3	IJWDD3			
DCDC4	IJWDD4	IJWDD4			
DCDC5	IJWLAB	IJWLAB			
DCDK	IJWMD1	IJWMD1			
DCDK2	IJWGEN	IJWGEN			
DCDK3	IJWDD3	IJWDD3			
DCDK4	IJWDD4	IJWDD4			
DCDK5	IJWLAB	IJWLAB			
DCPR	IJWMP1	IJWMP1			
DCPR2	IJWGEN	IJWGEN			
DCPR3	IJWDD3	IJWDD3			
DCPR4	IJWDD4	IJWDD4			
DCPR5	IJWLAB	IJWLAB			
DKDC	IJWDM1	IJWDM1			
DKDC2	IJWGEN	IJWGEN			
DKDC3	IJWDD3	IJWDD3			
DKDC4	IJWDD4	IJWDD4			
DKDC5	IJWLAB	IJWLAB			
None	IJWAM1	IJWAM1			
None	IJWAM2	IJWAM2			
None	IJWAM3	IJWAM3			
None	IJWAM4	IJWAM4			
None	IJWIM1	IJWIM1			
None	IJWIM2	IJWIM2			
None	IJWIM3	IJWIM3			
None	IJWIM4	IJWIM4			
None	IJWIM5	IJWIM5			

APPENDIX C: MASTER INDEX FOR DOS SYSTEM CONTROL PLMS

For the purpose of this master index, each of the five DOS System Control Program Logic Manuals has been assigned a key:

<u>Key</u>	<u>PLM</u>
1	DOS Introduction to System Control Programs, Form Y24-5017.
2	DOS IPL and Job Control Programs, Form Y24-5086.
3	DOS Supervisor and Physical and Logical Transients, Form Y24-5084.
4	DOS Librarian Maintenance and Service Programs, Form Y24-5079.
5	DOS Linkage Editor, Form Y24-5080.

The key following each item in this index indicates the PLM in which the information is to be found. The page number for the item is in the index of the referenced manual.

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APPENDIX D: VOLUME TABLE OF CONTENTS (VTOC)

All standard file labels are grouped together and stored in a specific area on a disk pack or data cell. This group of labels is essentially a directory of all data records on the volume because each file label contains file limits. Therefore, this group of labels is called the volume table of contents, or VTOC. Because the VTOC itself is a file of records containing one or more standard label records for each logical file, it is defined as such with its own file label (Figure 18).

The VTOC label is a format-4 label and is the first record on the VTOC. This label identifies the file as the VTOC and contains the file limits of the VTOC. When initializing a disk pack or a data cell, the location and length of the VTOC must be specified. These restrictions apply when the area is being assigned for the VTOC:

1. For the 2311 or 2314, it must be within cylinders 0-199. For the 2321, it must be within subcell 0, strip 0, cylinder 0 and subcell 19, strip 5, cylinder 4.
2. If the VTOC is to be located on the system residence pack (SYSRES), it must be outside the residence area.

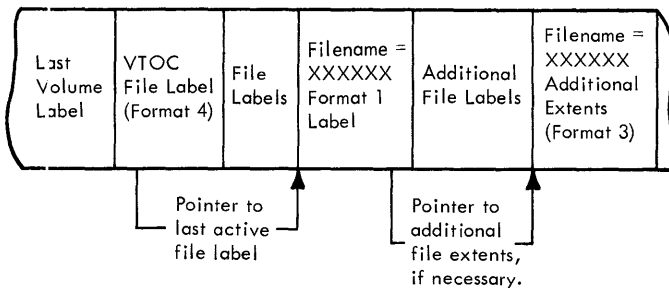


Figure 18. Volume Table of Contents (VTOC)

For a more detailed description of the VTOC, see the Logical IOCS publication listed in the Preface.

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