IRIS R9

System Configuration Manual

POINT 4
DATA CORPORATION

IRIS R9
SYSTEM CONFIGURATION MANUAL

Revision C

NOTICE

Every attempt has been made to make this manual complete, accurate and up-to-date. However, all information herein is subject to change due to updates. All inquiries concerning this manual should be directed to POINT 4 Data Corporation.

Document Order Number: ITP0029

POINT 4 Data Corporation
15442 Del Amo Avenue
Tustin, CA 92680
(714) 259-0777

REVISION RECORD

PUBLICATION NUMBER: SM-030-0029

Revision	Description	Date
A	Initial customer release; corresponds to IRIS 9.0	02/16/87
B	Update package incorporating changes for IRIS 9.1	06/26/87
C	Update package incorporating changes for IRIS 9.2	08/19/88

LIST OF EFFECTIVE PAGES

Changes, additions, and deletions to information in this manual are indicated by vertical bars in the margins or by a dot near the page number if the entire page is affected. A vertical bar by the page number indicates pagination rather than content has changed. The effective revision for each page is shown below.

Page	Rev
Cover	-
Title thru vii	C
viii	B
ix	C
x thru xii	B
1-1 thru 1-3	A
1-4, 1-5	C
1-6	B
1-7	A
1-8 thru 1-10	C
1-11 thru 1-17	A
1-18 thru 1-21	C
2-1, 2-2	A
2-3	C
2-4 thru 2-8	A
2-9	B
2-10	A
2-11	C
2-12	B
2-13 thru 2-15	A
2-16	B
2-17, 2-18	C
2-19 thru 2-22	A
2-23	B
2-24 thru 2-31	A
3-1 thru 3-3	A
3-4	B
3-5 thru 3-7	A
3-8	B
4-1 thru 4-3	A
4-4	C
4-5, 4-6	A
4-7 thru 4-10	C
4-11, 4-12	B
4-13, 4-14	C
4-15, 4-16	A
4-17 thru 4-21	C
4-22	B
4-23 thru 4-35	C
4-36 thru 4-40	A
4-41	C
4-42 thru 4-50	A
5-1, 5-2	A
5-3, 5-4	C
5-5 thru 5-7	A
6-1 thru 6-3	A
7-1	B
7-2 thru 7-10	A
7-11	B
7-12	C
7-13	B
7-14	A
7-15	C
7-16	B
7-17 thru 7-20	A
7-21 thru 7-24	C
7-25 thru 7-31	A
7-32	B
7-33, 7-34	A
8-1	A
8-2	C
8-3 thru 8-17	A
Appendix Title	-
A-1	A
A-2	C
A-3 thru A-6	A
A-7	B
B-1 thru B-4	A
C-1 thru C-8	A
D-1, D-2	A
D-3 thru D-5	C
E-1	A
E-2 thru E-8	B
F-1, F-2	A
G-1	B
G-2 thru G-6	A
H-1	B
Index-1 thru Index-3	C
Comment Sheet	C
Mailer	-
Back Cover	-

PREFACE

The IRIS R9 System Configuration Manual documents the use of SETUP to configure an IRIS system. It covers topics the user needs to understand in order to change a configuration including memory organization, disk organization, timesharing, port definitions, discsubs, and the IPL process.

This manual is designed for people with a fairly extensive knowledge of IRIS from an operational point of view. They should be able to log on to the manager account, back up the system, stream on, shut down, etc. They should have some background with operating systems and understand the needs of their applications, as well as the scope and capability of their hardware.

Related Documents

For related information, refer to the following:

Title	Document Order No.
IRIS R9 BASIC Manual	ITP0027
IRIS R9 System Manager Manual	ITP0030
IRIS R9 Peripherals Handbook	ITP0032
IRIS R9 Release Notes	ITP0033
IRIS R9 User Reference Manual	ITP0034
LOTUS DISCUTILITY Manual	ITP0018
MARK 2/4 DISCUTILITY Document	ITP0026
SMbasic R2 Configuration Manual	JTP0039
Mighty Mux User Manual	HTP0015
MARK 2/3 Peripherals Interface Manual	HTP0027

CONTENTS

APPENDICES

FIGURES

TABLES

Section 1
INTRODUCTION

IRIS is a high-performance, modular, and open-ended operating system designed to support a variety of tasks simultaneously. It provides the interface between tasks, the CPU, and peripheral devices such as printers and terminals.

The definition of the components of IRIS are not fixed, although an IRIS system is shipped with a standard set of configured characteristics. These may be changed to meet the requirements of the user and to improve system performance.

To get maximum performance requires an understanding of the relationship between the various components that make up an IRIS system, then choosing a configuration best suited to the needs of a particular installation. Changing one component of IRIS for maximum performance often has an effect on the performance of other elements.

There are several things to consider when configuring the system, including the following:

- Memory organization, including uses of the Lotus Cache Memory (LCM), extended memory, and mapped memory
- Disk partitioning
- Printer and terminal requirements
- Timesharing optimization
- The applications to be used

Once the system has been configured, the various components are activated by reloading IRIS using the Initial Program Load (IPL) procedures.

1.1 MEMORY ORGANIZATION

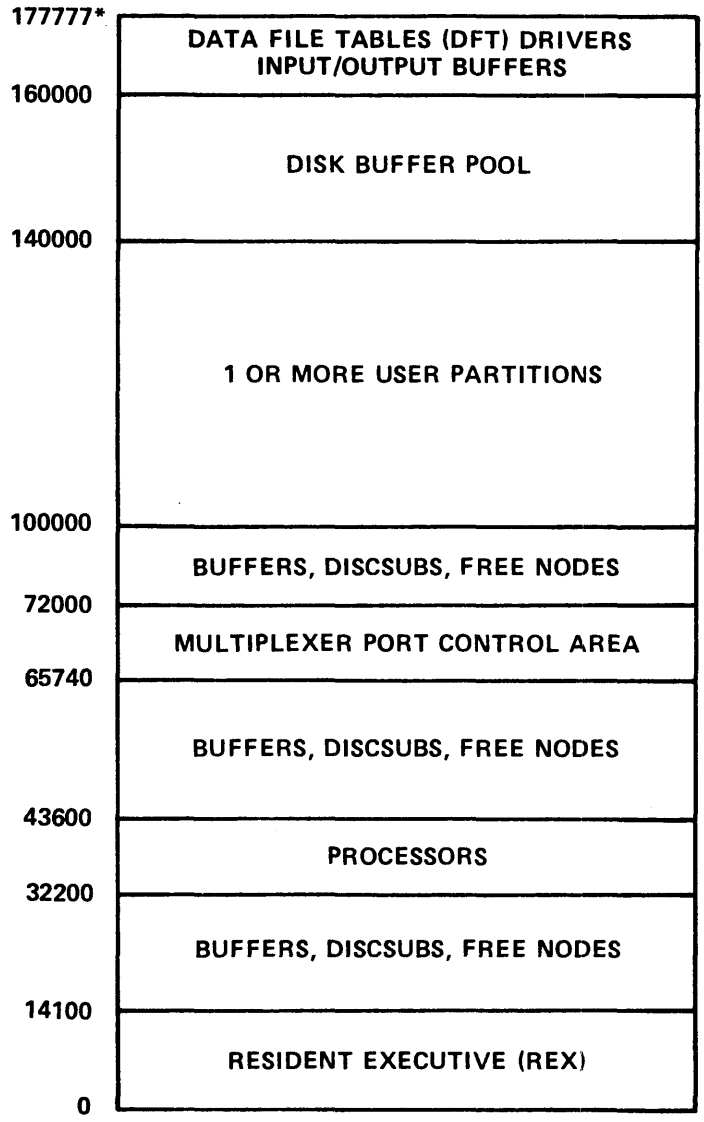
IRIS uses memory for a variety of purposes, including

- System software routines such as processors, drivers, and subroutines
- System tables such as the data file table (DFT), which contains information about file access, and the port control area, which contains peripheral device specifications
- Buffer areas that interface with the disks (buffer pool) or with peripheral devices (Input/Output Buffers (IOBs) and type-ahead or Intermediate Input Buffers (IIBs))
- User program areas (called user partitions)

All IRIS 9.0 and later systems support a basic 128KB main processor memory. The main processor memory is organized into two sections: lower memory, which contains most of the operating system routines, and upper memory, which contains the user partitions and additional system area, including the buffer areas and system drivers. Any space not explicitly assigned for other purposes is used by IRIS as disk buffers. Figure 1-1 shows a typical memory layout for a 128KB system. After the system configuration has been updated, the utility COREMAP may be used to display the actual layout of main processor memory.

In addition, on many of the systems optional memory may be added to the basic 128KB. The memory may be of the following form, depending on the system:

- Mapped memory systems with up to 2MB of memory
- Extended memory systems with up to 16MB of additional memory
- Lotus Cache Memory (LCM) boards, each with up to 4MB of additional memory



*LOCATIONS GIVEN IN OCTAL WORDS. STARTING LOCATIONS MAY VARY DEPENDING ON CONFIGURATION.

030-06

Figure 1-1. Memory Layout for 128KB System

As more users are added to a system, more space in main processor memory must be reserved for the added components needed to handle them. This leaves less space for system areas in main processor memory. On systems with more than 128KB memory, it is possible to configure many of the system areas into the additional memory, thus making room available in main processor memory for more users. For example, the additional memory may be used for user partitions and an extension of the buffer pool; also, the user may specify that the IIBs, IOBs, and the system subroutines **(discsubs)** are to be placed in this area. Table 1-1 shows the list of components that may be placed in the additional memory.

NOTE

An appropriate Pico-N is required to be able to place these components in the additional memory.

TABLE 1-1. COMPONENTS OF IRIS THAT MAY BE PLACED IN ADDITIONAL MEMORY

Component	Type of Memory		
	LCM	Mapped	Extended
Discsubs	X	X	X
Input/Output Buffers			X
Type-Ahead Buffers			X
Data File Table			X
User Partitions		X	

1.1.1 Buffer Pool

Disk buffers are areas of memory that are used to hold data that is being processed. Each buffer contains 1000 octal (512 decimal) bytes. The collection of disk buffers is called the **buffer pool.** After IRIS allocates the memory required for its various components, all memory that remains is designated as the buffer pool. Thus, the more items that are placed in memory by the user, the fewer disk buffers that are available.

The purpose of the buffer pool is to improve system performance by reducing the number of disk accesses resulting from disk reads or writes. When a block of data is read from a file for the first time, it is placed in a buffer. It remains there until the system is shut down or until the buffer is needed for a more recently accessed disk block. Subsequent reads need only access the buffer, not the disk. Since memory access is measured in nanoseconds and disk access is measured in milliseconds, buffer pools can have a significant impact on system performance.

If the data is changed during processing, it is the data in the buffer that is updated. Once data in the buffer is changed, the buffer is called a **dirty page.** A dirty page is any block in the buffer pool that has been updated in memory but has not been written to disk. Once the data has been written to disk, the disk and buffer contain the same information, and the buffer is no longer a dirty page.

If a system halt occurs on a system without a buffer pool, only the current transaction is lost. If a halt occurs on a system with a buffer pool, the amount of data lost depends on the discrepancy between the buffers and the disk. The more frequently dirty pages are written back to the disk, the less data that is lost, but also the slower the system performs.

A system with a buffer pool that immediately writes the dirty page to disk has the same integrity as a system without a buffer pool. In the event of a system halt, probably only the last transaction will be lost. System performance is still increased somewhat because the data still exists in the buffer pool, which cuts down the number of reads from the disk.

The best system performance comes from writing the dirty pages to disk only when the system is shut down or is idle, or when the buffer pool is full and the buffer must be reused. However, if a system halt occurs, an indeterminate number of updates are lost.

A compromise between waiting to write the dirty page and writing it immediately is to write the data back to disk at the end of each user's time slice. This feature is called **efficient dirty pages.** The data that can potentially be lost is kept to a minimum, but system performance is increased somewhat because the number of reads and writes to the disk is reduced.

The point at which the dirty page is written back to the disk is configurable and depends on settings in the System Information

Table. (To configure the settings, see Section 4.2, Configuring the System Information Table.)

Table 1-2 summarizes the effects of buffers and dirty pages.

TABLE 1-2. EFFECT OF DIRTY PAGES ON BUFFER POOLS

State of Buffer Pool	Data Integrity	System Performance
None	Disk is always up-to-date	Must always access disk for reads and writes
No dirty pages	Disk always reflects data in memory	Extraneous reads eliminated
Efficient dirty pages	Disk reflects data in memory at end of last time slice	Extraneous reads eliminated; writes during time slice also eliminated
Dirty pages	Disk and data in memory may differ significantly until system is shut down or is idle	Most extraneous reads and writes eliminated

1.1.2 User Partitions

The more buffers available, the more efficient the system. However, the size of the buffer pool is limited by the amount of space used by other components of IRIS, including the size and number of **user partitions.**

A user partition is an area of memory that holds a user program during the user's time slice. If the number of user partitions is equal to or greater than the number of users, all users' programs can remain in memory. If there are more users than partitions, there may be no empty user partitions when the next user needs one. In that case, a program that has finished its time slice and is waiting for a future time slice is placed in the user's **active file,** on the LCM or extended memory, if available, or on disk. The next user's program is placed in the freed user partition; when the time slice is finished, the program in the user partition may be placed in the user's active file and the next program brought in. This process is called **swapping.** (Each interactive port on the system has an associated active file that holds the user's current program while it is swapped out.)

The time used for swaps to the disk is measured in milliseconds, whereas memory and LCM access times are measured in nanoseconds. Thus, swapping can be a significant factor in system performance.

The size of the user partition is dependent on the largest program on the system. To determine program size, see Appendix A.1, Minimum User Partition Size.

The number of user partitions that should be defined is dependent on the amount of memory that is available and the amount of swapping that is acceptable. The more user partitions there are, the less swapping that is required. However, if too much room is reserved for user partitions, there may not be enough buffers for the buffer pool to operate effectively, or if there is very little memory left, it may not even be possible to load IRIS into memory.

Systems that have an LCM or extended memory installed usually need to have only a single user partition defined in main processor memory if the active files are placed on the LCM. (To configure the LCM and extended memory, see Section 8, LCM Configuration.)

Systems with mapped memory usually have sufficient memory available to allow several user partitions to be defined. To determine the maximum number of user partitions that can be defined on a mapped system, see Appendix A.2.

1.1.3 Memory Mapping

Memory mapping is a technique by which the amount of memory available is effectively increased by redirecting the CPU to different areas of physical memory. These areas are called **pages.** Under IRIS, a map page contains 2KB of memory.

IRIS uses mapped memory as follows:

- User partitions - One user partition is automatically set up by the system in main processor memory. The remaining partitions are set up in mapped memory (the area beyond the first 128KB of memory). When a partition residing in mapped memory is to be allocated to a user, the system maps the physical memory containing that partition into the logical address space allocated to the partition in the first 128KB.

  The size and total number of user partitions to be set up in memory are specified via SETUP in the System Information Table.

- Non-memory-resident Discsubs - If so configured using SETUP, the discsubs that are not specifically placed in processor memory are loaded into mapped memory. Upon demand, they are mapped into processor memory and executed. Performance is essentially the same as making all discsubs memory resident.

- Dynamic Buffer Pool - Mapped memory that is not allocated to user partitions or discsubs is used to extend the processor-resident buffer pool. The buffer pool holds the most-recently-used disk blocks (disk pages). Disk pages that are pushed out of the processor-resident buffer pool are written to the dynamic buffer pool. If the page contained in the processor-resident buffer pool is dirty, the action taken is based on the setting of the dynamic buffer pool write-caching field of the System Information Table topic of SETUP (see Section 4.2).

  - If dynamic buffer pool write-caching is enabled, the dirty page is moved into the dynamic buffer pool without being written to disk. The disk copy of the page is updated at a later time when there is no user activity on the system.

  - If dynamic buffer pool write-caching is disabled, the dirty page is written to disk at the same time it is written to the dynamic buffer pool. In this case, the dynamic buffer pool never contains dirty pages.

The use of mapped memory for user partitions and the buffer pool extension reduces swapping and disk transfers, thus increasing overall system performance.

Under IRIS, a mapped system consists of three software components:

- SYSMAP - The system map driver
- MAPACTIVATE - A BASIC program used to activate the SYSMAP driver
- MAPCHECK - A BASIC program used to read out and display the configuration and activity of the SYSMAP driver

1.1.4 Lotus Cache Memory/Extended Memory

Both the Lotus Cache Memory (LCM), available on MARK 5 through MARK 12 systems, and extended memory, available on MARK 6 and MARK 12 systems, are solid state memory devices that are used for storage of commonly used disk blocks and for an extension of the memory-resident buffer pool, thus eliminating or significantly reducing swapping and disk transfers. By placing frequently required disk blocks on the LCM or extended memory, overall system performance can be increased, particularly on a system which supports a large number of users.

Components that can be placed on the LCM and extended memory include processors, programs, files, and active files for interactive ports. In addition, the IIBs, IOBs, DFTs, and non-memory-resident discsubs can be placed in extended memory.

For non-mapped systems, configure active files for as many interactive ports and phantom ports as possible on the LCM. To configure a mapped system with an LCM, see Section 1.1.5, Using LCM with a Mapped System.

Components to be placed on the LCM or extended memory are specified using the utility LCMC. LCMC places the names of the components in a file that is applied to the system only when specifically requested by the utility LCMACTIVATE. LCMACTIVATE places the list of components in a table in the LCM driver as a series of ranges of disk blocks. This is referred to as the **LCM Range Table.** The information in the disk blocks is then placed on the LCM. For an illustration of the LCM Range Table format and explanations of its fields, see Appendix B, LCM Range Table Format.

LCM and extended memory use two methods of allocating space to improve system performance, static and dynamic:

- Static allocation - Space reserved for components specified by using LCMC.
- Dynamic allocation - LCM blocks that are not statically allocated are dynamically allocated as needed as part of the buffer pool extension. This buffer pool extension operates exactly the same as the dynamic buffer pool described in Section 1.1.3.

Apart from the obvious throughput enhancement, the LCM buffer pool approach is completely transparent to the user. Once the Range Table is set up for static usage, the remaining LCM buffer pool is automatically managed by a Least Recently Used (LRU) algorithm.

When a disk transfer request is received by IRIS, the system conducts up to three searches in the following sequence:

1. Searches the memory-resident buffer pool

2. Searches the Range Table

3. Searches the LCM-resident buffer pool

If the disk block is found on the LCM, it is transferred from the LCM to main memory and a disk transfer is saved. The time used for the three search operations is negligible compared to the disk access time saved.

To configure the LCM or extended memory, see Section 8, LCM Configuration.

1.1.5 Using Lotus Cache Memory (LCM) with a Mapped System

Performance on a mapped system such as the MARK 9 can be enhanced even more by adding a Lotus Cache Memory (LCM). (LCMs can be added only to MARK 5 through MARK 12 systems.) When an LCM is installed on a mapped system, the software allocates all user partitions to the mapped memory and uses the LCM for static allocation and as a buffer pool extension. There are several reasons for this arrangement:

- The method used by the map to switch user partitions is more efficient than the method used by the LCM.
- The method used by the LCM for buffer pool access is more efficient than the method used by the map.
- If the buffer pool extension were in both the MARK 9 mapped memory and in the LCM, two separate searches would have to be made. The resulting overhead would become counterproductive.

A mapped system equipped with an LCM should have the following configuration:

- The number of user partitions should be equal to the number of interactive ports.

  If more user partitions are defined than will fit in memory, the system automatically allocates only the number that actually fits.

- If the number of user partitions equals the number of interactive ports, no active files should be specified for the LCM.
- If the number of user partitions is less than the number of interactive ports and the system has a large LCM, the LCM can be used for active files as well as for static allocation and as a dynamic buffer pool. In this case, the map reduces most of the swapping overhead and the LCM can be used to handle the rest. This is only advantageous in the largest systems where all the ports are in use all the time.

To configure the LCM, refer to Section 8, LCM Configuration.

1.2 DISK CONFIGURATION

IRIS can support a variety of disk drive units, including

- Removable disk packs or cartridges
- Fixed disks
- Removable and fixed in combination
- Floppy diskettes

The specifications for the disk drive units supported by IRIS are listed in the IRIS R9 Peripherals Handbook.

A disk controller, such as the LOTUS 730, is the interface between the disk drive and the central processor. There may be several disk drives on one controller and several controllers on one CPU.

1.2.1 Controllers

Under IRIS, one physical disk controller may be configured as one or more **logical controllers.** The number of logical controllers for a physical controller depends on the number and type of disk drives installed.

Each disk drive has an associated software disk **driver.** The same driver may be used by several disk drives. On a physical controller, if all the disk drives use the same driver, then they are considered to be on the same logical controller and only one logical controller needs to be defined. If the disk drives require different drivers, then a logical controller needs to be defined for each different driver.

Disk drives have the same driver if the disk driver address specified in the IRIS R9 Peripherals Handbook is the same.

Figure 1-2 shows the relationship between controllers and disk drives.

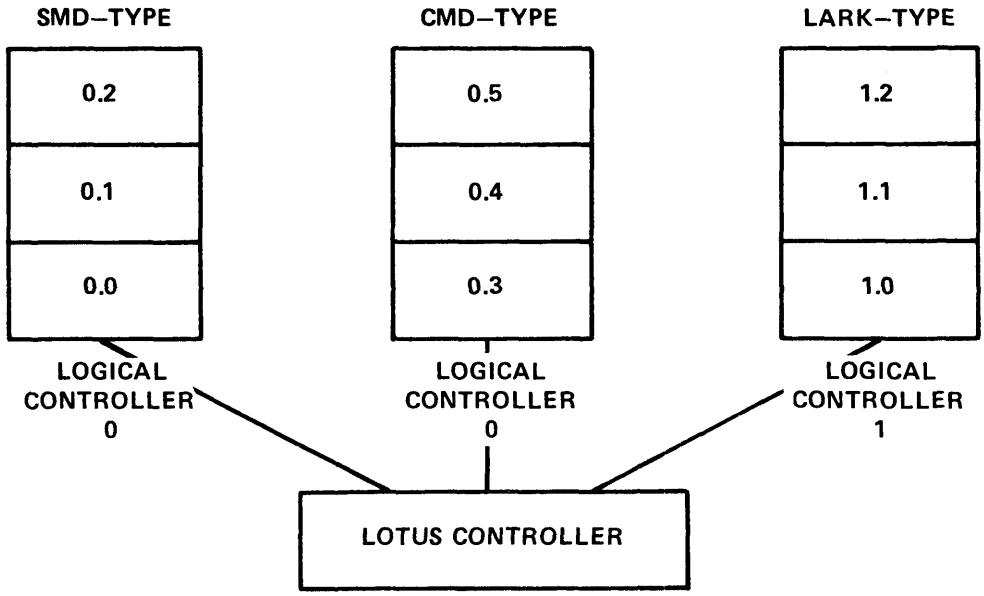


Figure 1-2. Controller/Disk Drive Relationship

1.2.2 Disk Partitioning

Under IRIS, each disk is divided into a series of partitions, each containing up to 200000 octal (65,536 decimal) blocks. The blocks are allocated as a series of contiguous cylinders to minimize head movement.

Once the partitions have been configured, they can be assigned **logical unit numbers** by the INSTALL processor. Files are referenced by these logical unit numbers. (For more information on installing logical units, see the IRIS R9 User Reference Manual.)

The size of disk partitions is configurable and usually depends on the software to be placed on them. Some considerations for the size of the partitions include the following:

- Size of the application files - very large files will need a large logical unit, hence a large disk partition should be configured for it
- Number of files - the names of all files on a logical unit are kept in one block; the number of entries is limited to 10000 octal (4096 decimal) file names
- Operational ease - small partitions facilitate selective backups and organization of data

The first partition of the first controller contains the system logical unit, logical unit 0. The second partition contains the utilities and applications logical unit, logical unit 5. The size of these partitions is given in the IRIS R9 Peripherals Handbook and should not be changed.

To minimize head travel, it is recommended that data files be placed in partitions close to logical units 0 and 5, that programs be near by, and that infrequently used files be placed at the more extreme locations. Figure 1-3 shows a sample disk partition/logical unit layout.

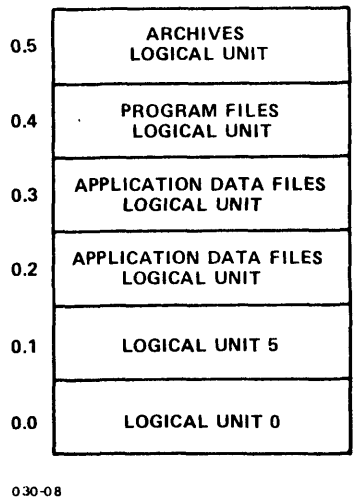


Figure 1-3. Sample Disk Partition/Logical Unit

1.2.3 Memory-Based Logical Units

Just as disks may be partitioned and logical units assigned to the partitions, all memory except main processor memory may be partitioned and logical units assigned to the memory-based partitions.

Memory-based logical units are intended to be used as temporary storage for scratch files or BASIC program libraries. Access time is very fast, since it is memory to memory. However, unlike data in disk-based logical units, data in memory-based logical units is not preserved when the system is shut down.

Partitions for memory-based logical units are configured in the same manner as partitions for disk-based logical units and the logical units are installed in the same manner as disk-based logical units. Partitions for memory-based logical units require their own controller, device code, and entry numbers, which are listed in the IRIS R9 Peripherals Handbook.

To configure partitions for memory-based logical units, see Section 4.5, Configuring the Disk Driver Table.

CAUTION

It is not possible to load a streamer tape to a memory-based partition.

1.2.4 Foreign Units

IRIS has a driver, called FOREIGN, that provides the capability to read or write a specified sector on any disk, regardless of the file structure. This allows access to disks not generated on IRIS systems. The only restriction is that the disk must have a format compatible with POINT 4-supported hardware.

The sector to be read or written must be set up as a partition on the disk and assigned a number. This partition is referred to as a **foreign unit.**

In order to read or write a foreign unit, the following must be done:

1. If the foreign unit is on a diskette, the characteristics of the diskette must be entered into the Disk Specification File.

2. The information about the foreign unit must be entered into the Disk Driver Table.

3. The foreign unit must be installed using the INSTALL processor.

4. The driver, FOREIGN, must be enabled by the user.

It is the responsibility of the user to interpret the foreign unit's file structure, including the file header and index.

For more information, see Appendix C, FOREIGN Driver.

1.3 PERIPHERAL DEVICES

IRIS can support a variety of peripheral devices. Each peripheral device must run through a physical connector (port) on a multiplexer unit. The multiplexer transmits data between the CPU and the peripheral device. For more information on the multiplexer, see the MIGHTY MUX User Manual or the MARK 2/3 Peripherals Interface Manual.

In addition to the multiplexer ports for the peripheral devices, two other types of ports must be configured: phantom ports and REX port 0. Phantom ports are used by programs that do not need a terminal for input or output. REX port 0 is used by the system before the multiplexer driver is available, and may be used on systems without POINT 4 multiplexers.

The type of peripheral device on each port must be defined. The definable characteristics include the following:

- Printer and terminal type and, for printer ports, printer name
- Input/output buffer size
- Active file size
- Port control word which defines parity, length, number of data and stop bits, and baud rate

Specification sheets for terminals and printers supported by IRIS are listed in the IRIS R9 Peripherals Handbook.

1.4 TIMESHARING

Timesharing is a method of CPU allocation that allows numerous users and tasks to be served seemingly simultaneously by one system. IRIS allocates time to the tasks and uses parameters set by the system configuration and account and program priority to determine which user to run next.

There is an inherent conflict in any timesharing system between efficient use of system resources and quick response to users. Each time a user is given a turn, the information used by the previous user must be saved, then everything needed by the current user must be brought into memory. This process is called **swapping** (see Section 1.1.2, User Partitions). Note that the term "swapping" does not always imply swapping to disk. Users may also be swapped to cache memory, mapped memory, extended memory, etc.

The term **apparent response time** is used to describe the time it takes for the system to respond to a user. The term **throughput** is used to describe the amount of useful work that the system performs. The overall system goal is to maximize throughput and minimize response time. Frequently, setting the parameters to increase throughput adversely affect apparent response time and vice versa. The timesharing driver, $SCHEDULER, is designed to heuristically find the best compromise between response and throughput.

$SCHEDULER is the timesharing control program on the IRIS system; it determines the order in which users run and how long a timeslice they are given. $SCHEDULER has the following features:

- Adjusts automatically to the current mix of jobs, providing the best possible system responsiveness
- Permits adjustment of account and program priorities allowing differentiation of jobs by their importance
- Provides true background status for batch programs
- Keeps track of user time in hundredths of a second
- Maintains user and swapping statistics, which may be displayed by the RETRY program
- Heuristically adjusts length of timeslice for better apparent responsiveness
- Maximizes system responsiveness to interactive programs
- Prevents system from bogging down when many users are running

$SCHEDULER allocates CPU tasks based on priorities. A task is assigned an initial priority based on account priority and program priority. Account priority, in the range of 1 (low) to 7 (high), is set using ACCOUNTUTILITY (see the IRIS R9 User Reference Manual). Program priority, in the range of 1 (low) to 7 (high) is automatically set to 5 by the system each time a program is saved; it can be adjusted by the CHANGE utility (see the IRIS R9 User Reference Manual).

Programs may operate in one of two modes determined by program priority: **background** or **foreground.**

A program in background mode is given a timeslice only when there is no foreground task waiting for a timeslice. A program priority of 1 or 2 places the program in background mode. All other priorities place the program in foreground mode.

A high priority task is assigned more frequent timeslices than a low priority task. Therefore, the high priority task receives a higher percentage of CPU time. If a task chains to another program, a new priority, based on the new program priority, is calculated.

A task is also assigned a higher priority when it first begins an "interaction." An interation is usually initiated under one of the following conditions:

- <RETURN> is pressed at an INPUT statement (or an INPUT LEN or INPUT TIM completes)
- <ESC> is pressed
- Terminal output is completed
- SIGNAL pause is completed

When one of these conditions occurs, the task is given an increased priority. This increase is provided to give a better apparent response time. The interaction continues through one or more timeslices until the task starts a new input, output, or pause. If input, output, or pause is active, the user is idle, i.e., in a wait state. When all users are idle, the system goes into an idle state. If an interaction continues for a long time, the user is said to be "compute bound."

1.5 APPLICATION REQUIREMENTS

In order for the performance of IRIS to be as efficient as possible for a given installation, the types of applications on the system should be considered in the configuration process. The size of the disk partitions and the location of the applications should be configured to minimize potential head movement by the disk drive when accessing files.

To configure a system to run as efficiently as possible, follow these hints:

- Enable only the necessary driver files (this also saves memory space).
- Set the active file size equal to the user partition size.
- Experiment with the buffer size in the Port Definition Table; 207 (octal) is a minimum size. Applications that require a lot of screen painting may find that larger values give better apparent response time.
- If unused terminals are configured, disconnect them from the multiplexer (at the multiplexer end), then reconfigure all unused multiplexer ports as dummy ports (active file and buffer sizes set to 0).
- On basic systems with 128KB of memory, experiment with 1, 2, and 3 user partitions.
- Assign files to specific logical units in ways that minimize head travel time; for example, on drive 0, put frequently accessed data files on logical units near logical units 0 and 5; on other drives, put frequently accessed files near the middle of the disk. Put archive files and other infrequently accessed files, including BASIC programs that are not involved in CHAINing, on logical units away from the frequently accessed logical units.
- Design files so that the record size in bytes divides evenly into 512, since a disk block contains 512 bytes; for example, a record size of 64, 128, or 256 bytes ensures that each record can be read or written with one block transfer.

1.6 INITIAL PROGRAM LOAD (IPL)

All IRIS systems are shipped with the same components on them. Each time IRIS is loaded into memory, through the procedure called Initial Program Load (IPL), the components needed by a particular installation are brought into memory. Many of these are standard for all systems. For example, all systems need the System Initialization Routine (SIR) and the Resident Executive (REX). These are always placed in memory. An area is also reserved for system processors and user partitions.

Another system area, the **Port Control Area,** is reserved for information about each port on the multiplexer or phantom driver and is kept in **Port Control Blocks.** The size of the Port Control Area is dependent on the number of multiplexer ports plus phantom ports. If more ports have been defined than will fit in available memory, the IPL will fail.

The definition of the device connected to each port on the multiplexer includes the characteristics of the device, the size of the input/output buffer, and the size of the active file area reserved for the user on that port. The definitions are kept in the Port Definition Table.

Other components are brought into memory during IPL only if there is an explicit indication that they should be. These include the software components that drive the various hardware components **(drivers)** and the discsubs.

A driver that is to be brought into memory must have its name prefaced with a dollar sign ($) character. The $ is placed on system drivers by the auto-initialization process; it is placed on printer and terminal drivers by the update function of SETUP; other drivers, such as magnetic tape drivers, need to have the $ added by the user. (For a list of drivers and how they are enabled, see Appendix D, IRIS Driver Files).

The system subroutines (discsubs) are placed in memory only if they have been placed in the list of discsubs that should be memory-resident. The list of memory-resident discsubs is specified using SETUP and should include discsubs that are used frequently. If there is not enough room for all the listed discsubs, IRIS will automatically truncate the list.

For information on IPLing a system, see the IRIS R9 System Manager Manual.

Section 2
GETTING STARTED

Each revision of the IRIS operating system is delivered on streamer tape or cassette tape in two parts: a universal template with all available components on it that will be used to produce logical unit 0, and a utilities logical unit (logical unit 5) that contains utility programs such as SETUP, ABASIC, and GUARD. For a list of the components on the IRIS template and the utilities logical unit, see the IRIS R9 System Manager Manual.

The IRIS template is not executable as delivered. It must be copied to disk, then the appropriate information for the specific system on which IRIS is to run must be placed in it on the disk. This process is referred to as **system generation** and it generates an executable IRIS operating system on logical unit 0.

There are also programs delivered with IRIS that can be used to generate an IRIS logical unit 0 for use on another hardware configuration.

The procedure to use to get started with a new IRIS operating system depends on several factors:

- If the hardware system is new, use the procedure to generate IRIS discussed in Section 2.1.

- If there is an existing IRIS operating system already installed, the configuration information should be saved before generating a new IRIS; after IRIS has been generated, the configuration information can be restored; see Sections 2.2 through 2.5.

  Once logical unit 0 has been generated, IRIS can be IPLed and the system configured according to the needs of the particular installation. Application software can then be upgraded as necessary; see Section 2.6.

- If the generated IRIS is to be transported to another configuration using the current disk as an intermediate device, follow the procedure in Section 2.7 to produce a transportable logical unit 0 for any system.

2.1 GENERATING A NEW IRIS SYSTEM

Generating a new IRIS system consists of providing IRIS with basic information about the hardware to be used. This includes determining the addresses of the system drivers for the specified disk and controller and building several tables, which are then placed on logical unit 0. Once logical unit 0 has been produced, the individual components can be configured using SETUP.

NOTE

Before placing any software on a new hardware system, the appropriate hardware diagnostics should be run. For more information, see the appropriate hardware documentation.

Figure 2-1 summarizes the steps required to generate a new IRIS system.

1. Format the disk.
2. Place the IRIS template on disk.
3. Load System Generator from tape into memory and run it.
4. Place the utilities logical unit on disk.
5. IPL the system; the IPL invokes the auto-initialization procedure, which in turn invokes SETUP.
6. Use SETUP to configure and update the system.
7. Use LCMC to configure the LCM or extended memory, if appropriate.
8. Use ACCOUNTUTILITY to create user accounts, INSTALL to activate logical units, LCMACTIVATE to activate the LCM, MAPACTIVATE to activate the map.

Figure 2-1. System Generation Summary

2.1.1 System Generation Requirements

The following items are required to produce a new logical unit 0 from an IRIS template:

- IRIS template
- For streamer tape installation, DISCUTILITY tape and appropriate DISCUTILITY manual
- For cassette tape installation, CTUTILITY tape and IRIS R9 System Manager Manual
- System Generator tape: separate streamer tape; included on cassette if using CTUTILITY
- IRIS R9 Peripherals Handbook Disk Specification sheets for appropriate disk drive and controller units
- For MARK 2E/4/4E systems, the hardware must have the 100 Hz clock rate option (Trap 144 on IPL indicates option is missing)

To configure the new system, a tape that contains the utilities logical unit (logical unit 5) is also required.

2.1.2 Aborting System Generation

The <ESC> key may be pressed at any prompt during system generation to abort the procedure.

If <ESC> is pressed, the following is displayed:

```
!!!!! ABORT REQUESTED VIA ESC KEY.
PLEASE ENTER ! TO CONFIRM OR X TO CANCEL THIS ABORT REQUEST:
```

If an ! (exclamation point) is entered, the system generation procedure returns to the TYPE OPTION NO. prompt as displayed in step 4 of the System Generation procedure in Section 2.1.3.

If an X is entered, the system generation procedure displays the following message:

```
ABORT CANCELLED.
NOW RESUMING PROGRAM AS THOUGH NO <ESC> HAD BEEN INPUT.
```

The system generation procedure returns to the prompt at which the <ESC> had been pressed.

2.1.3 System Generation Procedure

The following procedure is used to generate a new logical unit 0:

1. If the disk is new, it must be formatted. Formatting the disk may take an hour or longer, depending on the size of the disk.

2. Place the IRIS template on the disk, starting at cylinder 0.

3. After the IRIS template is placed on the disk, load the System Generator from tape into memory, using the appropriate procedure for loading stand-alone programs. For information on loading stand-alone programs, see the IRIS R9 System Manager Manual.

4. After the System Generator is loaded, a menu similar to the following is displayed:

```
POINT 4  SYSTEM DISK GENERATION PROGRAM
dd mon yy        REVISION n


   OPTION        PROGRAM

      1          GENERATE LU 0 FOR CURRENT DISK

      2          GENERATE LU 0 USING CURRENT DISK
                 AS AN INTERMEDIATE DEVICE


PRESS ESCAPE AT ANY PROMPT TO RESTART PROGRAM.

TYPE OPTION NO: _
```

5. Select option 1 to generate logical unit 0 for the current disk.

6. The following prompts are displayed:

```
LOCATE CURRENT DISK ENTRY IN THE PERIPHERALS HANDBOOK

ENTER ENTRY NO:
ENTER DEVICE CODE:
CALCULATE AND ENTER PHYU:
ENTRIES CORRECT ? (Y/N)


USING DISK SPECIFICATION ENTRY NO: nnn

ENTER NO. CYLS IN LU 0:
ENTER LRC:
ENTER NPTC:
ENTER DFLG:
ENTER NTRS:
ENTRIES CORRECT ? (Y/N)
```

Enter the appropriate information from the Disk Specification sheet for the specified entry number.

7. The following prompt is displayed:

```
PRESS 'S' TO START SYSTEM GENERATION: _
```

Press the <S> key to start system generation; it is not necessary to press <RETURN>. The system drivers for the specified disk and controller are placed in logical unit 0 and tables for logical unit 0 are built.

If a key other than S is pressed, the process waits until the S key is pressed.

8. When the process is finished, the System Generator loads the appropriate DISCUTILITY.

9. To configure the system, place the utilities logical unit (logical unit 5) on the disk starting with the first cylinder after logical unit 0. The number of cylinders for logical unit 5 is shown on the Disk Specification sheet.

10. IPL the system, which invokes the auto-initialization procedure. See Section 2.3, Initializing the System.

2.2 UPGRADING AN EXISTING SYSTEM

The upgrade procedure is a series of programs that preserve existing user information while the operating system is being replaced. Once the new operating system is in place, the preserved information is restored.

The upgrade procedure saves the following information from logical unit 0:

- All files on logical unit 0 (except polyfiles) that have names that do not correspond to any IRIS component names on the new system template
- ACCOUNTS file
- USERID file
- Processor passwords

The upgrade procedure replaces the SETUP databases on logical unit 0; any user modifications to these databases are not saved by the upgrade procedure. (The SETUP databases contain the disk, terminal, and printer specifications.) In addition, the upgrade procedure does not save the configurable information for the following drivers: MTAS, MTAn, FOREIGN. For more information on information not saved, see the IRIS R9 Release Notes.

CAUTION

> Polyfiles on logical unit 0 cannot be handled by the upgrade procedure. If polyfiles are encountered on logical unit 0, the upgrade is aborted.

Once the files on logical unit 0 are saved, the utilities logical unit is updated by the upgrade program. The update is accomplished by copying the new versions of the utility files to the utilities logical unit. The upgrade program assumes the logical unit on which it finds SETUP is the utilities logical unit.

The upgrade program first checks logical unit 5 for SETUP. If SETUP is on logical unit 5, it is upgraded automatically.

If SETUP is not on logical unit 5, the upgrade program checks all installed logical units, except logical unit 0 and the scratch logical unit, for SETUP. If SETUP is found, the upgrade program requests confirmation that the logical unit is to be the utilities logical unit. If SETUP is not on any installed logical unit, the upgrade program requests the logical unit number for the utilities logical unit.

After the utilities logical unit is updated, the new IRIS template can be placed on the disk and the system configuration restored by using a combination of IRIS features, including the system generation and auto-initialization procedures and SETUP.

Once the system configuration has been restored, POINT 4 software, such as SMbasic, can be updated by the upgrade procedure. To upgrade these software packages, see Section 2.6, Upgrading Other Software.

Figure 2-2 summarizes the procedure to upgrade an existing system.

1. Back up the system.
2. Place the new utilities logical unit (logical unit 5) on a scratch logical unit.
3. Save the existing configuration information on logical unit 0 by running the program on the scratch logical unit called SAVELU0. SAVELU0 also upgrades the utilities on logical unit 5.
4. Place the IRIS template on logical unit 0.
5. Load the System Generator from tape into memory and run it.
6. IPL the system; the IPL invokes the auto-initialization procedure, which in turn invokes SETUP.
7. Use SETUP to configure and update the system. If there is an existing SETUP control file, it can be used to update the system configuration.
8. Restore the configuration information on logical unit 0 by running the program on the scratch logical unit called RESTORELU0.
9. If there is additional software to upgrade, place the software on the scratch logical unit and run the program on logical unit 5 called UPGRADE.

Figure 2-2. Upgrade Summary

2.2.1 Upgrade Requirements

The following items are required to upgrade a system:

- Upgrade package, which consists of the latest version of the IRIS template and the utilities logical unit (logical unit 5); there must be separate tapes for the IRIS template and logical unit 5
- For streamer tape installation, DISCUTILITY tape and appropriate DISCUTILITY manual
- For cassette tape installation, CTUTILITY tape and IRIS R9 System Manager Manual
- System Generator tape
- IRIS R9 Peripherals Handbook Disk Specification sheets for appropriate disk drive and controller units
- System configured with at least three logical units:
  - logical unit 0
  - utilites logical unit; generally this is logical unit 5
  - scratch logical unit of at least 10,000 (decimal) blocks; the scratch logical unit number must not be 5
- Starting cylinder and number of cylinders for the three required logical units (If SETUP has been used to configure the system, these values can be determined by listing the Disk Driver Table in the configuration control file before proceeding with the upgrade.)
- User partition size of at least 20000 (octal) words
- Terminal that supports clear screen and PRINT @x,y mnemonics

The utilities logical unit on the upgrade package contains the software to save the existing configuration information on logical unit 0 and to upgrade the utilities on logical unit 5. The software includes two programs to be run by the user, SAVELU0 and RESTORELU0, as well as files containing lists of software to upgrade.

2.2.2 Saving Current Configuration

The following procedure is used to save the current configuration and other information on logical unit 0; it assumes that logical unit 5 is the utilities logical unit. The steps in this procedure must be performed from the IRIS manager account.

1. Back up the entire system.

2. If the system has been configured previously using SETUP and the SETUP control file is on logical unit 0, copy the control file from logical unit 0 to logical unit 5 by entering a command similar to the following at the IRIS system prompt (#):

```
COPY 5/ctlfile = 0/ctlfile
```

3. If the program IRIS.START.IPL exists on logical unit 0, change its name to a temporary name such as IRIS.START.OLD. Enter the following at the IRIS system prompt (#):

```
CHANGE IRIS.START.IPL
```

   The following prompt is displayed:

```
IF NO CHANGE, PRESS RETURN.
NEW NAME?
```

   Enter the temporary name.

4. Users that have an upgrade procedure for their own software components can have their procedure included by creating a program on logical unit 0 called UPG.CHAIN. At the conclusion of the POINT 4 upgrade procedure, UPG.CHAIN is invoked if it exists.

5. Using the method appropriate to the media, load the new version of the utilities logical unit on to the scratch logical unit.

6. IPL the system, then sign on to the IRIS manager account.

7. INSTALL current logical unit 5 by entering the following at the IRIS system prompt (#):

```
INSTALL 0.1
```

   If logical unit 5 is not on partition 0.1, enter the appropriate values.

8. Messages similar to the following are displayed:

```
LOGICAL UNIT NUMBER = 5
INSTALL (Y/N) ? _
```

Enter Y.

9. INSTALL the scratch logical unit by entering the following at the IRIS system prompt (#):

```
INSTALL 0.p
```

where
p - the partition number for the scratch logical unit

10. A prompt similar to the following is displayed:

```
LOGICAL UNIT NUMBER = 5
INSTALL (Y/N) ? _
```

Enter N, then enter the number of the scratch logical unit, for example 99, when prompted.

11. To save the information on logical unit 0, enter the following at the IRIS system prompt (#):

```
99/SAVELU0
```

where
99 - scratch logical unit

NOTE

SAVELU0 may be aborted at any point by pressing <ESC>. If it is aborted, the system must be backed down.

12. A screen similar to the following is displayed:

```
SAVE LU #0 USER FILES                                SAVELU0  nnn


     THIS PROGRAM SAVES ALL THE USER FILES, THE ACCOUNTS
     INFORMATION  AND THE PROCESSOR PASSWORDS FROM LU #0
     TO THE SCRATCH LU #99.

     AFTER  SUCCESSFUL EXECUTION, A NEW OPERATING SYSTEM
     MUST BE PLACED.


     IRIS REVISION BEING UPGRADED: _
```

Enter the revision number of the existing system.

For an R9 system, enter the current major, minor or subminor release; it is not necessary to enter the maintenance level letter (i.e., to upgrade from 9.1.2A to 9.1.2B or 9.2, enter 9.1.2).

For an R8 system, enter the full current revision level (i.e., if the current system is 8.3C, enter 8.3C).

If a revision of IRIS that is not supported for the current upgrade procedure is entered in Step 12, a message similar to the following is displayed:

```
REVISION n.n is NOT SUPPORTED BY THIS UPGRADE
```

The cursor returns to the prompt to enter the revision.

13. The following prompt is displayed:

```
COMMENT: HAS SYSTEM BEEN BACKED UP? (Y/N)
COMMAND: _
MESSAGE:
```

If the system has been backed up, enter Y.

If the system has not been backed up, enter N; a message SYSTEM MUST BE BACKED UP - PROCESS ABORTED is displayed and the IRIS system prompt is displayed. Back up the system as described in Step 1. Continue the procedure from that point.

14. The following prompt is displayed:

```
COMMENT: IF THIS PROCESS IS ABORTED OR FAILS IN ANYWAY, BACKDOWN !
COMMAND:
MESSAGE: PRESS <RETURN> TO CONTINUE
```

The program then copies to the scratch logical unit any file on logical unit 0 that has a name that is not on the list of IRIS components. It also copies the ACCOUNTS file, the USERID file, and the processor passwords.

15. When all logical unit 0 files have been copied, logical unit 5 is upgraded by copying the new versions of files from the scratch logical unit to logical unit 5. A prompt similar to the following is displayed:

```
ENTER UTILITIES LOGICAL UNIT NUMBER: _
```

The default, if displayed, is the logical unit on which SETUP was found, or if SETUP was not found and logical unit 5 is active, 5 is displayed as the default. To accept the default, press <RETURN>; otherwise, enter the number for the utilities logical unit.

16. After the utilities have been upgraded, a message similar to the following is displayed:

```
PROCESS COMPLETED SUCCESSFULLY

REPLACE LU0 WITH THE NEW OPERATING SYSTEM
```

The IRIS system prompt (#) is displayed. The new version of IRIS must be placed on the disk and the system generation procedure run. See Section 2.2.3, Generating Logical Unit 0.

2.2.3 Generating Logical Unit 0

The following procedure is used to generate logical unit 0:

1. Place the IRIS template on the disk, starting at cylinder 0 using DISCUTILITY or CTUTILITY as appropriate.

2. After the IRIS template is placed on the disk, change tapes, then load the System Generator tape into memory, using the appropriate procedure for loading stand-alone programs. For information on loading stand-alone programs, see the IRIS R9 System Manager Manual.

3. After the System Generator is loaded, a menu similar to the following is displayed:

```
POINT 4  SYSTEM DISK GENERATION PROGRAM
dd mon yy        REVISION n


   OPTION        PROGRAM

     1           GENERATE LU 0 FOR CURRENT DISK

     2           GENERATE LU 0 USING CURRENT DISK
                 AS AN INTERMEDIATE DEVICE


PRESS ESCAPE AT ANY PROMPT TO RESTART PROGRAM.

TYPE OPTION NO: _
```

4. Select option 1 to generate logical unit 0 for the current disk.

NOTE

To abort the procedure, see Section 2.1.2, Aborting System Generation.

5. The following prompts are displayed:

```
LOCATE CURRENT DISK ENTRY IN THE PERIPHERALS HANDBOOK

ENTER ENTRY NO:
ENTER DEVICE CODE:
CALCULATE AND ENTER PHYU:
ENTRIES CORRECT ? (Y/N)


USING DISK SPECIFICATION ENTRY NO: nnn

ENTER NO. CYLS IN LU 0:
ENTER LRC:
ENTER NPTC:
ENTER DFLG:
ENTER NTRS:
ENTRIES CORRECT ? (Y/N)
```

Enter the appropriate information from the Disk Specification sheet for the specified entry number.

6. The following prompt is displayed:

```
PRESS 'S' TO START SYSTEM GENERATION:
```

Press the <S> key to start system generation; it is not necessary to press <RETURN>. The system drivers for the specified disk and controller are placed in IRIS and the tables for logical unit 0 are built.

If a key other than S is pressed, the program waits until the S key is pressed.

7. When the process is finished, the System Generator looks for the appropriate DISCUTILITY and loads it.

To continue with the upgrade, IPL the system, which invokes the auto-initialization procedure. See Section 2.3, Initializing the System.

2.3 INITIALIZING THE SYSTEM

After logical unit 0 has been generated, several system features are automatically initialized the first time IRIS is IPLed after system generation. This automatic initialization is referred to as the **auto-initialization process.**

The auto-initialization process performs the following functions:

- Checks the hardware configuration and enables the appropriate drivers for the hardware and the operating system; Appendix D, IRIS Driver Files, lists the drivers that are enabled by the auto-initialization process

- Determines the appropriate utility to copy as DISCUTILITY; on a MARK 5 through MARK 12, DU.LOTUS is copied; on a MARK 2/4, DU.WDI is copied; and on a MARK 3, DU.M3 is copied

- Configures the first multiplexer port as an interactive port and all other ports as noninteractive

- Configures two disk partitions: 0.0, which contains the IRIS system logical unit (logical unit 0); and 0.1, which usually contains the IRIS utilities logical unit (logical unit 5)

- Automatically invokes SETUP, if found, to allow the user to configure the rest of the system to meet the needs of a particular installation

A program, IRIS.START.IPL, which invokes the auto-initialization process at the first IPL after system generation, is included on the IRIS template. After it is executed, a new IRIS.START.IPL is designated on logical unit 0 that bypasses the auto-initialization process.

The auto-initialization procedure requires that the appropriate terminal translation module be enabled. If a terminal other than WS100 or TV950 is used, the correct translation module must be enabled. See Section 2.3.2, Enabling Terminal Translation Modules.

NOTE

The auto-initialization process sets up the utilities logical unit on partition 0.1 and installs it as logical unit 5. This is the recommended configuration.

2.3.1 Auto-Initialization Procedure

The following procedure is used to accomplish the auto-initialization process:

1. After logical unit 0 has been generated and logical unit 5 placed on the disk, IPL the system to invoke this procedure; it may also be invoked by any IPL if it has been aborted previously and the file IRIS.START.IPL has not been changed.

CAUTION

Do not press <ESC> during the auto-initialization process.

2. Press <RETURN> and enter the date and time when prompted.

3. After the date and time has been entered, the following screen is displayed:

```
IRIS.START.IPL              INITIALIZE CONFIGURATION              mm/dd/yy


THE IRIS INITIALIZATION PROCESS CONFIGURES THE OPERATING SYSTEM ACCORDING
TO THE HARDWARE ON WHICH IT IS BEING EXECUTED. IT ENABLES THE APPROPRIATE
SYSTEM DRIVERS AND PERFORMS A NUMBER OF IPL SEQUENCES.

THE IRIS INITIALIZATION CONFIGURES THE FIRST MULTIPLEXER PORT AS AN
INTERACTIVE PORT AND ALL OTHER PORTS AS NONINTERACTIVE.  IT CONFIGURES
TWO DISK PARTITIONS:  0.0, WHICH CONTAINS THE OPERATING SYSTEM, AND 0.1,
WHICH CONTAINS THE UTILITIES PACKAGE. SETUP UTILITY IS THEN AUTOMATICALLY
INVOKED TO ALLOW THE USER TO CONFIGURE THE SYSTEM TO MEET THE NEEDS OF A
PARTICULAR INSTALLATION.

THE IRIS INITIALIZATION PROCESS MAY BE EXECUTED ONLY ONCE.

IF THIS CRT IS NOT WS100 OR TV950, THE APPROPRIATE TERMS DRIVER MUST BE
ENABLED FIRST.


START INITIALIZATION? (Y/N) _
```

To continue the procedure, enter Y, then proceed to Step 5.

4. If the appropriate terminal translation module needs to be enabled, or the system needs to be initialized manually, enter N and the program terminates. The following message is displayed:

```
INITIALIZATION DECLINED AT USER'S REQUEST !
```

The IRIS system prompt (#) is displayed.

To enable the appropriate terminal translation module, see Section 2.3.2.

5. After the appropriate drivers are initialized, the system automatically shuts down and IPLs; the following message is displayed:

```
#SHUTDOWN :IRIS.IPL
PRESS RETURN
```

6. Press <RETURN>. The IRIS copyright message is displayed.

7. At the prompt ENTER YEAR,MONTH,DAY,HOUR,MINUTE, press <RUBOUT> or <DELETE>. An exclamation mark is displayed at the date prompt.

8. After the IPL is completed, the program checks for the presence of an SMbasic Pico-N. If this is not an SMbasic system, continue with Step 11. If this is an SMbasic system, the following prompt is displayed:

```
COMMENT: SYSTEM MAY BE CONFIGURED FOR SMBASIC. CONFIGURE FOR SMBASIC? (Y/N)
COMMAND: _
MESSAGE:
```

If the system is not to be configured for SMbasic, enter N and continue with Step 11; if it is to be configured for SMbasic, enter Y.

9. The following prompt is displayed:

```
COMMENT: ARE YOU UPGRADING THE OPERATING SYSTEM? (Y/N)
COMMAND: _
MESSAGE:
```

If SMbasic has been configured for this system previously and the procedure is being used to upgrade the operating system, enter Y; if this is the initial installation of SMbasic on this system, enter N.

10. The following is displayed:

```
DISK CAPACITY IN MEGABYTES:     ___

SUPPORTED DISK CAPACITIES ARE:  xx
                                yy
```

where
xx, yy - available disk capacities in megabytes

Enter the disk capacity for the disk on drive 0.

If the operating system is being upgraded, the procedure continues at Step 16.

If this is an initial installation, the auto-initialization procedure configures the system for SMbasic. First, a SETUP configuration control file, called DFSMSUCTRL, is created for SMbasic, then the system configuration is automatically initialized using that control file. The SMbasic Utilities Menu is then displayed. For information on SMbasic, see the SMbasic Manual.

If SMbasic is to be upgraded, refer to Section 2.6, Upgrading Other Software.

11. The following screen is displayed following Step 8 if the system is not to be configured as an SMbasic system:

```
IRIS.INITA n.n          INITIALIZE CONFIGURATION          mm/dd/yy


    PERIPHERALS HANDBOOK DISK ENTRY NUMBER: _


    COMMENT:
    COMMAND:
    MESSAGE:
```

Enter the Disk Specification sheet entry number for the disk on drive 0.

CAUTION

The program checks that the IRIS R9 Peripherals Handbook Disk Entry Number is a valid number; however, for MARK 2 through MARK 4 systems, it does not verify that the entry number is valid for the specific CPU type and will accept any valid entry number between 200 and 499.

12. The following message and prompt are displayed:

```
THIS PROGRAM ASSUMES A STANDARD LU #5 WHICH
PHYSICALLY FOLLOWS LU #0. HAVE YOU MODIFIED THIS
CONFIGURATION IN ANY WAY? (Y/N): N
```

A standard logical unit 5 (utilities logical unit) has the following characteristics:

- It immediately follows logical unit 0
- It is placed on partition 0.1
- It contains the number of cylinders listed in the Disk Specification sheet

If the system has a standard logical unit 5, press <RETURN> to accept the default. Continue with Step 16.

If the system cannot be configured for a standard logical unit 5, enter Y.

13. If the configuration has been modified (for example, logical unit 0 and logical unit 5 are not contiguous, or there is no logical unit 5), enter Y. The following prompt is displayed:

```
SIZE OF LU #5 IN CYLINDERS (IN OCTAL): nnnnn
```

where
nnnnn - default number of cylinders (in octal)

To accept the default, press <RETURN>. To change the default, enter the number of cylinders required for logical unit 5. (Logical unit 5 requires at least 10,000 decimal blocks.) The number of cylinders varies depending on the type of disk controller/disk drive combination on the system. For a procedure to determine the number of cylinders, see Appendix A.3, Calculating Cylinders.

To move back to the previous prompt, press <ESC>.

If there is to be no utilities logical unit, enter 0 (zero); partition 0.1 is not installed and the procedure is terminated. Initialization must continue manually.

If the number of cylinders entered is less than the default, the following prompt is displayed:

```
COMMENT: ARE YOU SURE? (Y/N)
COMMAND: _
MESSAGE: STANDARD LU #5 SIZE IS nnnnn
```

To accept the nonstandard size for logical unit 5, enter Y. Entering a size smaller than the actual size of logical unit 5 may cause sizing problems.

14. The following prompt is displayed:

```
FIRST CYLINDER FOR LOGICAL UNIT 5:     cc
```

where
cc - first cylinder after logical unit 0

If logical unit 5 has been placed on the disk immediately following logical unit 0, press <RETURN> to accept the default.

If logical unit 5 does not immediately follow logical unit 0, enter the appropriate cylinder number in octal.

To move back to the previous prompt, press <ESC>.

15. The following prompt is then displayed:

```
PHYU FOR LOGICAL UNIT NUMBER 5:     mm
```

where
mm - PHYU of LU 0

Check the value given for PHYU in the appropriate Disk Specification sheet. If it corresponds to the default displayed, press <RETURN>. If a different value is given in the Disk Specification sheet, enter that value.

16. The system automatically shuts down and IPLs; the following message is displayed:

```
#SHUTDOWN :IRIS.IPL
PRESS RETURN
```

Press <RETURN>.

The IRIS copyright message may be displayed more than once.

17. At the prompt ENTER YEAR,MONTH,DAY,HOUR,MINUTE, press <RUBOUT> or <DELETE>. A final IPL is performed automatically and no further operator input is required.

18. Partition 0.1 is automatically installed. Messages similar to the following are displayed:

```
#INSTALL .1
LOGICAL UNIT NUMBER = 5
INSTALL (Y/N) ? Y
LOGICAL UNIT ADJUSTMENT IN PROGRESS . . .
BAD BLOCK ?
LOGICAL UNIT NOW ACTIVE !
```

19. Upon completion of the logical unit installation process, the program invokes the SETUP utility to allow configuration of the system (see Section 2.4).

2.3.2 Enabling Terminal Translation Modules

The terminal translation modules contain the specific information about terminal characteristics, such as the sequences used by the clear screen feature. The translation module is defined by the terminal type as shown in the Terminal Specification sheets in the IRIS R9 Peripherals Handbook.

The translation modules are usually enabled by SETUP. However, the auto-initialization procedure requires the use of the terminal characteristics for Port 0 before SETUP is invoked. After the system has been IPLed, the following procedure can be used to enable the appropriate terminal translation module for Port 0:

1. Enter the following at the IRIS system prompt (#):

```
5/IRIS.SETTERM
```

   where
   5 - utilities logical unit

2. A screen similar to the following is displayed:

```
THIS PROGRAM SETS THE TERMINAL TYPE OF PORT
ZERO  FOR THE IRIS INITIALIZATION  PROCESS.
ENTER '?'  OR  'H'  TO DISPLAY HELP SCREEN.

ENTER TERMINAL TYPE: _
```

   Enter the terminal type for the desired terminal.

   To view the terminal types, enter H or ? at the ENTER TERMINAL TYPE prompt. A screen similar to the following is displayed:

TERMINAL TYPE	TRANSLATION MODULE	TERMINAL DESCRIPTION
4	TERM.TV950	TELEVIDEO 950
20	TERM.WS100	POINT 4 WS100
25	TERM.WY50	WYSE 50
.		
.		
.		

   To return to the ENTER TERMINAL TYPE prompt, press <ESC>.

3. After the terminal type is entered, the system is shutdown, an IPL is performed, and the auto-initialization procedure is resumed.

2.4 CONFIGURING THE SYSTEM

After the system has been upgraded and the auto-initialization procedure performed, SETUP should be run to update the system configuration.

If the SETUP databases have been modified to include custom information, that information must be reentered before the Update option is executed.

If there is an existing configuration control file that was copied to logical unit 5, it can be used with the Update option of the upgraded version of SETUP. However, the current version of SETUP requires several new entries; unless new values are specified in the control file, SETUP will use the default values for the update. To display the current values in the control file, including the defaults set by SETUP, use the List option of SETUP.

To create a configuration control file, or to modify an existing control file, use the SETUP option Create/Modify Configuration Control File, followed by the Update option.

After SETUP updates the system configuration, it automatically performs an IPL. Once the system has been IPLed, log on to the IRIS manager account, install all logical units, then run the IRIS utility REHASH. This is necessary because IRIS R9 uses a different hashing algorithm; see the IRIS R9 Release Notes for more information.

Systems on which SAVELU0 was run can use RESTORELU0 to restore the files saved earlier; see Section 2.5, Restoring Configuration Information. Then, if necessary, use CHANGE to change the file IRIS.START.OLD back to IRIS.START.IPL.

For information on upgrading specific releases of IRIS, see the IRIS R9 Release Notes.

2.5 RESTORING CONFIGURATION INFORMATION

The configuration information that was saved using SAVELU0 can be restored by running the program RESTORELU0 as follows:

1. At the IRIS system prompt (#), enter the following:

```
99/RESTORELU0
```

   where
   99 - scratch logical unit

2. A screen similar to the following is displayed:

```
RESTORE LU #0 USER FILES                          RESTORELU0 nnn


    THIS PROGRAM RESTORES THE USER FILES, THE ACCOUNTS
    INFORMATION, AND THE PROCESSOR PASSWORDS THAT WERE
    SAVED BY SAVELU0.

    IF THIS  PROCESS IS  ABORTED  OR  FAILS IN ANY WAY,
                 B A C K   D O W N !



    COMMENT:
    COMMAND:
    MESSAGE:
```

   All the files that were placed on the scratch logical unit by SAVELU0 are copied back to logical unit 0. If a file that was saved has the same name as a new file on logical unit 0, its name may be changed, or the file deleted. See Section 2.5.1, Handling Duplicate Filenames.

3. When all the files are copied successfully, the versions that were saved on the scratch logical unit are deleted, then the following message is displayed:

```
COMMENT: USER FILES RESTORED ON LU 0 SUCCESSFULLY
COMMAND:
MESSAGE:
```

4. If UPG.CHAIN has been placed on logical unit 0, it is automatically run at the end of RESTORELU0. If UPG.CHAIN is not found, the IRIS system prompt is displayed.

2.5.1 Handling Duplicate Filenames

If a file is encountered on the scratch logical unit with the same name as a file on the new logical unit 0, a message similar to the following is displayed:

```
FILENAME filename ALREADY EXISTS ON THE NEW OPERATING SYSTEM.

THE FILE MAY BE COPIED TO LU #0 USING A NEW NAME OR IT MAY BE
DELETED.

TO COPY   - ENTER NEW NAME
TO DELETE - PRESS <RETURN>


COMMENT: ENTER NEW NAME
COMMAND: _
MESSAGE:
```

If a name is entered, the system checks that the name is unique; if it is, the file is copied with that name. If no name is entered, the file is deleted from the system.

The process then continues.

2.6 UPGRADING OTHER SOFTWARE

Once the IRIS configuration has been restored, other POINT 4 software, such as SMbasic, may be upgraded.

The following items are required to upgrade additional software:

- For streamer tape installation, DISCUTILITY tape and appropriate DISCUTILITY manual
- For cassette tape installation, CTUTILITY tape and IRIS R9 System Manager Manual
- IRIS R9 Peripherals Handbook Disk Specification sheets for appropriate disk drive and controller units
- Starting cylinder and number of cylinders for the scratch logical unit
- Upgraded IRIS system
- New software package on streamer or cassette tape, as appropriate

2.6.1 Software Upgrade Procedure

The following procedure is used to upgrade software:

1. Using the method appropriate to the media, load the new software package on to the scratch logical unit.

2. IPL the system. Sign on to the IRIS manager account.

3. Enter the following at the IRIS system prompt(#):

```
5/UPGRADE
```

   where
   5 - utilities logical unit

4. A screen similar to the following is displayed:

```
SOFTWARE UPGRADE                                    UPGRADE n.n

                SOFTWARE  TO UPGRADE: _

                NEW SOFTWARE RELEASE:

                SCRATCH LOGICAL UNIT:


COMMENT:
COMMAND:
MESSAGE:
```

   Enter the name of the software to be upgraded, the software release, and the number of the scratch logical unit.

   The specified software is upgraded by copying the new version to the utilities logical unit.

5. When the upgrade is completed, the following is displayed:

```
COMMENT: UPGRADING software COMPLETE, ANY MORE? (Y/N)
COMMAND: _
MESSAGE:
```

   If there is additional software on the scratch logical unit, enter Y. The software name is then requested, as described in Step 4.

   If all software has been upgraded, enter N. The IRIS system prompt is displayed.

2.7 GENERATING A LOGICAL UNIT 0 TO BE INSTALLED ON ANOTHER SYSTEM

It is sometimes desirable to be able to create an IRIS logical unit 0 on one system, then transport it to other systems. If the systems are compatible and have similar disk drives and controllers, a backup copy of logical unit 0 can be used. However, if the systems do not have similar disk drives and controllers, backup copies cannot be used to transport logical unit 0.

To create a logical unit 0 that can be transported between incompatible systems, an IRIS template and the System Generator procedure can be used to create a logical unit 0 that can be used on the destination system.

The following items are required to generate a new system:

- IRIS template
- For streamer tape installations, System Generator tape, DISCUTILITY tape, and appropriate DISCUTILITY manual
- For cassette tape installations, System Generator tape, CTUTILTITY tape and IRIS R9 System Manager Manual
- IRIS R9 Peripherals Handbook Disk Specification sheets for both the current disk drive and controller units and the destination disk drive and controller units

CAUTION

Once a system has been IPLed, it is not possible to use that system's logical unit 0 to generate a new logical unit 0. Only an IRIS template can be used to generate logical unit 0s.

A transportable logical unit 0 is generated as follows:

1. Back up the current system.

2. Place the IRIS template on disk, starting at cylinder 0.

3. After the IRIS template is placed on the disk, load the System Generator tape into memory, using the appropriate procedure for loading stand-alone programs. For information on loading stand-alone programs, see the IRIS R9 System Manager Manual.

4. After the System Generator is loaded, a menu similar to the following is displayed:

```
POINT 4  SYSTEM DISK GENERATION PROGRAM
dd mon yy        REVISION n

    OPTION       PROGRAM

       1         GENERATE LU 0 FOR CURRENT DISK

       2         GENERATE LU 0 USING CURRENT DISK
                 AS AN INTERMEDIATE DEVICE


PRESS ESCAPE AT ANY PROMPT TO RESTART PROGRAM

TYPE OPTION NO: _
```

5. Select option 2 to generate a logical unit 0 for another system.

NOTE

To abort the procedure, see Section 2.1.2, Aborting System Generation.

6. The following prompts are displayed, requesting information for the current disk:

```
LOCATE CURRENT DISK ENTRY IN THE PERIPHERALS HANDBOOK

ENTER ENTRY NO:
ENTER DEVICE CODE:
CALCULATE AND ENTER PHYU:
ENTRIES CORRECT ? (Y/N)
```

Enter the information from the Disk Specification sheet for the current disk.

7. The four prompts are repeated for the disk for which the system is being generated, similar to the following:

```
LOCATE DESTINATION DISK ENTRY IN THE PERIPHERALS HANDBOOK


ENTER ENTRY NO:
ENTER DEVICE CODE:
CALCULATE AND ENTER PHYU:
ENTRIES CORRECT ? (Y/N)
```

Enter the information from the Disk Specification sheet for the destination disk.

8. The following prompts are displayed, requesting information for the disk for which the system is being generated:

```
USING DISK SPECIFICATION ENTRY NO: nnn

ENTER NO. CYLS IN LU 0:
ENTER LRC:
ENTER NPTC:
ENTER DFLG:
ENTER NTRS:
ENTRIES CORRECT ? (Y/N)
```

Enter the information from the Disk Specification sheet for the destination disk.

9. The following prompt is displayed:

```
PRESS 'S' TO START SYSTEM GENERATION
```

Press the <S> key to start system generation; it is not necessary to press <RETURN>. The system drivers for the specified disk and controller are placed in IRIS and the tables for logical unit 0 are built.

If a key other than S is pressed, the program waits until the S key is pressed.

10. When the process is finished, the following is displayed:

```
SYSTEM GENERATION COMPLETE
```

If the procedure is running on a MARK 2 through MARK 4 system, DISCUTILITY is loaded.

If the procedure is running on a MARK 5 through MARK 12 system that does not have a LOTUS controller, a message, PROGRAM TERMINATED, is displayed and the system halts.

If the procedure is running on a MARK 5 through MARK 12 system that has a LOTUS controller, the following prompt is displayed:

```
DO YOU WISH TO COPY TO DESTINATION CONTROLLER ? (Y/N) _
```

If the destination controller is not connected to the current system, enter N. A message, PROGRAM TERMINATED, is displayed and the system halts.

11. If the destination controller is connected to the current system, logical unit 0 can be copied to the destination disk by entering Y.

The following prompt is displayed:

```
ENTER STARTING CYL FOR DESTINATION DISK: _
```

Enter the appropriate cylinder number. The system then places the IRIS system logical unit on the destination disk.

When the process is finished, the system loads the appropriate DISCUTILITY if available. If it is not available, a message, PROGRAM TERMINATED, is displayed and the system halts.

Section 3
SETUP OVERVIEW

SETUP is an interactive utility that can be used to configure systems for the IRIS operating system. Terminals, printers, disk organization, memory organization, system subroutines (discsubs) that can be made memory-resident, and backup procedures can all be defined using the SETUP utility.

SETUP allows you to specify the configuration of each major area of the system independently. These areas include

- General system information
- Multiplexer port definitions
- Memory-resident discsub list
- Disk drivers
- Backup parameters

The information specifying a system configuration is kept in a series of tables that are stored in a file that is called the **configuration control file** or more commonly, the **control file.** The control file may be modified at any time using SETUP. More than one control file may exist on a system at a time; if desired, a control file may be maintained on one system, then transferred to a second system.

As the control file is created, SETUP checks that each entry is valid; however, it does not check that the overall configuration is valid.

The actual configuration on a system is not affected by the information contained in a control file until the update option of SETUP is invoked. If more than one control file exists on a system, only the one that is specified during the update option affects the system.

SETUP can also be used to list all or just a section of a control file and to maintain the databases that contain the information about printers, terminals, and disk drive units that SETUP requires.

3.1 PROCEDURE TO UPDATE SYSTEM CONFIGURATION

The following procedure outlines the steps needed to use SETUP to update the system configuration:

1. Back up the system.

2. Change the configuration tables in the appropriate SETUP control file. (See Section 4, Create/Modify SETUP Control File.)

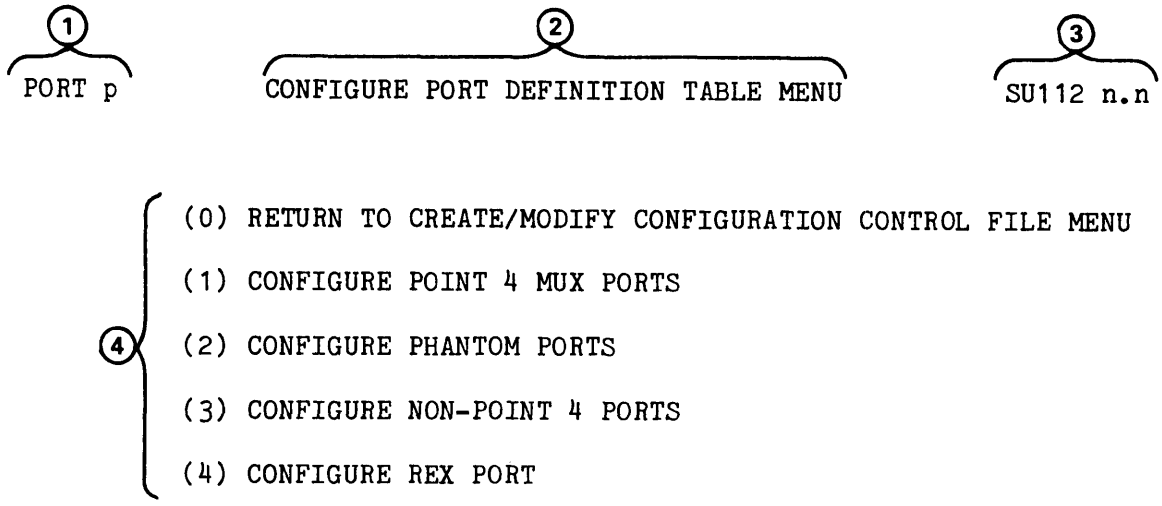
3. Select the update option from the System Configuration Menu. (See Section 6, Updating the System.) All other users must be logged off.

4. SETUP updates the system and invokes the installation's normal IPL sequence.

5. The new configuration is in place.

3.2 MENUS

Options are accessed in SETUP by means of menus. A menu display is similar to the following:



The circled numbers identify the following areas of the screen:

1. Number of the port currently being used
2. Name of the current option
3. Module number and revision number of the current option
4. Options available from this menu
5. SETUP prompts
6. Responses to prompts on COMMENT line
7. SETUP messages that do not require a response

NOTE

Option 0 always returns to the previous menu (or, at the first menu, exits SETUP).

3.2.1 Special Functions of <ESC>

In SETUP, the <ESC> key can be used to control moving back to the previous menu or entry field as follows:

- From the System Configuration Menu, exits SETUP and returns to the IRIS system prompt (#)
- From all other menus, returns to the previous menu
- From an entry field, moves the cursor back to the previous entry
- From the first entry field on a screen, returns to the previous menu

3.2.2 Defaults

Many of the data entries are displayed with a default. Defaults may be accepted by pressing <RETURN> or changed by overtyping with the appropriate information.

3.2.3 Error Messages

If a data entry or menu option is answered incorrectly, SETUP displays an appropriate error message. For example, if a value is entered that is outside the specified range, the terminal bell sounds and a message similar to the following is displayed:

```
COMMENT:
COMMAND: _
MESSAGE: ENTRY MUST RANGE FROM 1-410
```

In these cases, the cursor returns to the prompt to allow the correct data to be entered.

Appendix E contains a list of error messages.

3.2.4 Numeric Entries

SETUP is the successor to the Disk Service Processor (DSP) method of configuring systems. To accommodate users familiar with DSP, the numeric entries are made in octal unless specifically stated otherwise; numeric entries may also be entered in decimal by placing a decimal point after the digits. For example, if the number to be entered is 20 octal (16 decimal), it could be entered in octal as 20 or in decimal as 16. (16 followed by a decimal point).

Appendix F contains tables for octal-decimal and decimal-octal conversions.

3.3 GETTING TO SETUP

SETUP can be invoked from the IRIS manager account by entering the word SETUP at the IRIS system prompt (#). It is also automatically invoked at the end of the auto-initialization process.

When SETUP is invoked, the main menu, System Configuration Menu, is displayed, similar to the following:

```
PORT p              SYSTEM CONFIGURATION MENU                SETUP n.n

                (0) EXIT THE SYSTEM CONFIGURATION

                (1) CREATE/MODIFY CONFIGURATION CONTROL FILE MENU

                (2) LIST CONFIGURATION CONTROL FILE MENU

                (3) UPDATE SYSTEM CONFIGURATION

                (4) LIST/MAINTAIN SETUP'S DATABASE MENU


COMMENT:  ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND:  _
MESSAGE:
```

To create a new configuration control file or modify an existing control file (Option 1), see Section 4, Create/Modify SETUP Control File.

To list an existing configuration control file (Option 2), see Section 5, List SETUP Control Files.

To update the system configuration using parameters in an existing configuration control file (Option 3), see Section 6, Updating the System.

To display and maintain the list of hardware specifications (Option 4), see Section 7, List/Maintain SETUP's Database.

Select the desired option.

NOTE

To specify a control file, see Section 3.4, Control File Selection.

3.4 CONTROL FILE SELECTION

If option 1, 2, or 3 is selected, the control file name is requested in a screen similar to the following:

```
PORT p                    title of selected option                SU1 n.n


                        CONTROL FILE NAME: _




COMMENT:
COMMAND:
MESSAGE:
```

To select a control file that has been created previously, enter the name of the control file. If the file is found, it is opened and SETUP proceeds with the selected option.

If the control file is not found, and if option 2 or 3 has been selected from the System Configuration Menu, an appropriate error message is displayed.

If the file is not found, and if option 1 has been selected, SETUP creates a new file. A prompt similar to the following is displayed under the new control filename:

```
                        CONTROL FILE NAME: newfilename

      CONTROL FILE TO COPY, OR PRESS RETURN: _
```

To copy an existing file into the new file, enter the name of the existing file. SETUP then proceeds to option 1. See Section 4, Create/Modify SETUP Control File.

NOTE

> If an existing file is copied, the CPU type for the new control file must be the same as for the existing file.

To create an entirely new file, press <RETURN>. SETUP then prompts for the CPU type.

A screen similar to the following is displayed:

```
PORT p        CREATE/MODIFY CONFIGURATION CONTROL FILE          SU1 n.n

                        CONTROL FILE NAME: newfilename    VALID TYPES
 CONTROL FILE TO COPY, OR PRESS RETURN:                   ----------
                           COMPUTER TYPE: _               1 = MARK 2
                                                          2 = MARK 2E
                                                          3 = MARK 3
                                                          4 = MARK 3T
                                                          5 = MARK 4
                                                          6 = MARK 4E
                                                          7 = MARK 5
                                                          8 = MARK 6
                                                          9 = MARK 8
                                                         10 = MARK 9
                                                         11 = MARK 12


COMMENT:
COMMAND:
MESSAGE:
```

Enter the number of the computer type for which the control file is being built.

After creating the file, SETUP proceeds to the Create/Modify Configuration Control File Menu.

Section 4
CREATE/MODIFY SETUP CONTROL FILE

The SETUP control files must be modified in order to change a system configuration. The components in IRIS that are configurable with SETUP include

- System information table
- Terminal and printer port definition tables
- System subroutines (discsubs) that are to be memory-resident
- Disk organization
- Backup procedures

The configuration for each of these components can be specified independently from the others and in any order.

4.1 CREATE/MODIFY CONFIGURATION CONTROL FILE MENU

To configure components, select the Create/Modify Configuration Control File Menu option from the System Configuration Menu. After a control file is selected or created (see Section 3.4), a screen similar to the following is displayed:

```
PORT p      CREATE/MODIFY CONFIGURATION CONTROL FILE MENU      SU11 n.n


          (0) RETURN TO SYSTEM CONFIGURATION MENU

          (1) CONFIGURE SYSTEM INFORMATION TABLE

          (2) CONFIGURE PORT DEFINITION TABLE MENU

          (3) CONFIGURE DISCSUB TABLE

          (4) CONFIGURE DISK DRIVER TABLE

          (5) CONFIGURE SYSTEM BACK-UP TABLE


COMMENT:  ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND:  _
MESSAGE:
```

Select the desired option. The appropriate files are initialized, then SETUP proceeds with the selected option.

To configure the System Information Table (Option 1), see Section 4.2.

To configure the Port Definition Table (Option 2), see Section 4.3.

To configure the Discsub Table (Option 3), see Section 4.4.

To configure the Disk Driver Table (Option 4), see Section 4.5.

To configure the System Back-Up Table (Option 5), see Section 4.6.

4.2 CONFIGURING THE SYSTEM INFORMATION TABLE

The System Information Table contains the values that the system uses to allocate system resources.

To configure the System Information Table, select Option 1 from the Create/Modify Configuration Control File Menu. A screen similar to the following is displayed:

```
PORT p          CONFIGURE SYSTEM INFORMATION TABLE          SU111 n.n


                    USER PARTITION SIZE: 20000
                NUMBER OF USER PARTITIONS: 2
             INPUT/OUTPUT BUFFER LOCATION: P
          SIZE OF EACH TYPE-AHEAD BUFFER: 120
              TYPE-AHEAD BUFFER LOCATION: P
                DATA FILE TABLE LOCATION: P
     NON-CORE-RESIDENT DISCSUBS LOCATION: P
       PORT NUMBER TO RUN IRIS.START.IPL: 1
   ACCOUNT NUMBER TO RUN IRIS.START.IPL: 140001
                     AVERAGE CPU SPEED: @
      MAXIMUM NUMBER OF INSTALLED LU'S: @
               NUMBER OF DATA CHANNELS: 12


COMMENT:  ALL ENTRIES ARE IN OCTAL. DECIMAL INPUT MUST BE FOLLOWED BY .
COMMAND:
MESSAGE:
```

Each entry in the System Information Table displays a default. The defaults in the example are for a MARK 5 system; each system has defaults appropriate for that system. To accept the default, press <RETURN>; to change a default, enter the appropriate data.

An entry is skipped if it is not applicable to the system for which the table is being configured.

After the entries on the first screen have been processed, the following prompt is displayed:

```
COMMENT:  PRESS <RETURN> FOR MORE ENTRIES
```

When <RETURN> is pressed, additional system information is displayed similar to the following:

```
PORT p          CONFIGURE SYSTEM INFORMATION TABLE          SU111 n.n


        ALLOW EFFICIENT DIRTY PAGES (Y/N): N
                  ALLOW DIRTY PAGES (Y/N): Y
     DYNAM BUFFER POOL WRITE-CACHING (Y/N): N
       DISPLAY BASIC ERROR MESSAGES (Y/N): Y
              EOS 12-HR CLOCK MODE (Y/N): N
                            MEMORY SIZE: 128
                  AUXILIARY BUFFER SIZE: 1004
            HIGHEST USER DISCSUB NUMBER: 0
      NUMBER OF EXTRA CHAR QUEUE NODES: 4
          MINIMUM NUMBER OF FREE NODES: 40
        NUMBER OF SIGNAL BUFFER NODES: 30
  NUMBER OF BLOCKS IN LARGEST PROCESSOR: 23
           LONG TIME SLICE PARAMETER: 50
          SHORT TIME SLICE PARAMETER: 3
               DEFAULT LOGICAL UNIT: 5
    PSEUDO-DEVICE LINKAGE TABLE SIZE: 13


COMMENT:
COMMAND:
MESSAGE:
```

A description of each entry for the System Information Table follows.

USER PARTITION SIZE (PSIZ)

In IRIS, the area used by BASIC programs is referred to as the user partition. All user partitions are the same size, which should be the size of the largest user program on the system. For IRIS Business BASIC systems, the minimum recommended size is 20000 octal words (8192 decimal words). For SMbasic systems, the minimum recommended size is 30000 octal words (12,288 decimal words). For information on determining program size, see Appendix A.1.

The default size is 20000 octal words. To change the default, enter the desired size. The minimum size is 10000 octal words; the maximum size is 100000 octal words.

NUMBER OF USER PARTITIONS

The number of user partitions on a system will vary according to the hardware available. For example, if the system includes a Lotus Cache Memory (LCM), then only one user partition needs to be assigned if the active files have been configured on the LCM. (To configure the LCM, see Section 8.) If the system has mapped memory, then several partitions may be defined. For a procedure to calculate the maximum number of user partitions on the map, see Appendix A.2.

If an LCM is not available or if it is available but the active files have not been placed on it, the optimum number of user partitions is the maximum number of users that will be active at one time. Because of memory constraints and IRIS considerations, this is usually not practical.

For more information, see Section 1.1.2, User Partitions.

The default number of partitions varies according to the system. For mapped systems and extended memory systems, it is 1; for all others, it is 2. To change the default, enter the desired number. The minimum is 1; the maximum is dependent on the memory size and partition size; see Table 4-1. (Configuring the maximum number of partitions may not leave enough room in memory for other IRIS components.)

TABLE 4-1. MAXIMUM NUMBER OF USER PARTITIONS BY MEMORY AND PARTITION SIZE

Memory Size	Maximum Number of Partitions (in octal)	
	PSIZ=20000	PSIZ=30000
128KB	4	2
512KB	34	22
1024KB	77	52
2048KB	177	125

INPUT/OUTPUT BUFFER LOCATION

The input/output buffers (IOBs) hold the data that is sent to and received from the various ports on the system. The size is specified as part of the Port Definition Table (see Section 4.3, Configuring the Port Definition Table).

The IOBs are located in lower memory. To free this area to allow more ports to be defined, the IOBs may be configured in locations in extended memory on systems with this feature. The COMMENT line displays the available options.

SIZE OF EACH TYPE-AHEAD BUFFER

The type-ahead buffer (also called the Intermediate Input Buffer or IIB) is used to store characters that the system is not ready to process. Commands contained in IRIS Business BASIC CHAIN statements are also stored in the type-ahead buffer. Thus, the size of the type-ahead buffer determines the maximum number of characters in a CHAIN statement. (See the IRIS R9 Business BASIC Manual for more information on CHAIN.)

The default is 120 octal characters (80 decimal). Enter the desired size, or press <RETURN> to accept the default. The maximum value that can be entered is 77777 octal (32767 decimal).

TYPE-AHEAD BUFFER LOCATION

The type-ahead buffers are located in main processor memory. To free this area to allow more ports to be defined, the buffers may be configured in locations in extended memory on systems with this feature. The COMMENT line displays the available options.

DATA FILE TABLE LOCATION

The Data File Table (DFT) contains information the system uses to access files. There is one table defined for each active port and each table contains as many 8-word entries as there are possible data channels.

The DFT is located in main processor memory. To free this area to allow more ports to be defined, the DFT may be configured in locations in extended memory on systems with this feature. The COMMENT line displays the available options.

NON-CORE-RESIDENT DISCSUBS LOCATION

Frequently used subroutines should be made memory-resident (see Section 4.4, Configuring the Discsub Table). The remaining subroutines can be placed in the map or extended memory, if available. If selected, both DISCSUBS and DISCSUBS.USER files are loaded into the map or extended memory. If not selected, the rest of the subroutines remain on the disk. The COMMENT line displays the available options.

NOTE

If non-memory-resident discsubs are placed in map or extended memory by selecting this feature, then discsubs should **not** be placed in the LCM static area through LCMC (see Section 8.1).

PORT NUMBER TO RUN IRIS.START.IPL

After each IPL, the program IRIS.START.IPL is run. The version of IRIS.START.IPL shipped by POINT 4 can be modified by the user to include any functions that the system should perform after an IPL. For example, IRIS.START.IPL could INSTALL logical units; it could prompt for the system time; or any other functions.

The messages and prompts that IRIS.START.IPL generates are displayed on the port specified by this entry. The default is port 1. Enter the desired port, or press <RETURN> to accept the default.

ACCOUNT NUMBER TO RUN IRIS.START.IPL

This specifies the account that IRIS is to log on to following an IPL to run the program IRIS.START.IPL.

An account number consists of the values of the user's privilege level, and group and user numbers, expressed as an octal word.

The account number can be entered in any of the following formats:

- Privilege, group, user (the commas are necessary); SETUP then calculates the account number and displays it in octal
- As a decimal value, calculated as follows:

  (16384*privilege) + (64*group) + user
- As an octal word, where bits 0-5 give the user number, bits 6-13 give the group number, and bits 14-15 give the privilege number

The default is 140001, which is the IRIS manager account number (privilege 3, group 0, user 1) in octal. Enter the desired account number or press <RETURN> to accept the default.

AVERAGE CPU SPEED

Each POINT 4 system has an identified average CPU speed that indicates the average number of instructions that are executed in one second. This speed is used to determine delays and timing loops in some hardware-dependent routines. Table 4-2 lists these average CPU speeds.

The default is the @ character. This indicates that IRIS will determine the average CPU speed when the system is IPLed. To change the default, enter the desired speed. The minimum value is 0; the maximum value is 177777 octal (65535 decimal).

The value entered may have an impact on the performance of a system. If a value is entered that is too small (indicating a speed that is slower than the actual speed), occasional random errors may result. If a value is entered that is too large (indicating a speed that is faster than the actual speed), the delay may slow down the system.

Press <RETURN> to accept the default to allow the system to determine the speed; otherwise, enter the desired speed value.

TABLE 4-2. AVERAGE CPU SPEEDS
(Average Number of Instructions per Second)

CPU	Speed*	
	Decimal	Octal
MARK 12	9800	23000
MARK 9	2020	4000
MARK 6	3900	7200
MARK 5E	3900	7200
MARK 5**	1600	3100
MARK 4	2300	4400
MARK 2E	2300	4400
MARK 2/3	1000	2000
NOVA 4**	920	1600
NOVA 2/3, D-116H	650	1200
NOVA 800**	800	1400
NOVA 1200, D-116	540	1000
NOVA**	260	400

*All values have been rounded.

**IRIS is not able to differentiate between these CPUs. If the default @ is used, the CPU speed will be set to the MARK 5 value.

MAXIMUM NUMBER OF INSTALLED LUs

This is the maximum number of logical units that can be installed at one time on the system being configured.

The default is the @ character. This indicates that SETUP is to determine the maximum number at update time, basing its calculation on the number of disk partitions that have been configured in the disk driver table. If the disk driver table has not been configured when the system is updated and there is an @ in this entry, no calculation is made and the entry is not updated on the system. (To configure disk partitions, see Section 4.5, Configuring the Disk Driver Table.)

Press <RETURN> to accept the default, or enter the appropriate value. The minimum value that may be entered is 1; the maximum is 200 octal (128 decimal).

NUMBER OF DATA CHANNELS

The number of data channels must be at least as one greater than the largest channel number used in any program. The default is 12 octal (10 decimal) and should not be decreased. For SMbasic systems, the number of data channels should be set to 22 octal (18 decimal).

Press <RETURN> to accept the default, or enter the appropriate value. The minimum number is 2 and the maximum is 144 octal (100 decimal).

ALLOW EFFICIENT DIRTY PAGES/
ALLOW DIRTY PAGES/
DYNAMic BUFFER POOL WRITE-CACHING

These entries are related.

A **dirty page** results whenever information is updated for a file. Under IRIS, the information is not written directly to disk; it is written into a buffer. This results in information on the disk that is not the same as the information in the corresponding buffer. When this happens, the buffer is said to contain a **dirty page.**

The conditions under which the dirty page is written to disk vary, depending on the settings of the dirty page entries.

Efficient Dirty Pages write data from the processor-resident buffers to the disk and to the dynamic buffer pool at the end of a user's time slice. If Allow Efficient Dirty Pages is set to Y, Allow Dirty Pages is automatically set to N/A and Dynamic Buffer Pool Write-Caching is set to N. If Allow Efficient Dirty Pages is set to N, the cursor moves to the Allow Dirty Pages prompt.

If Allow Efficient Dirty Pages is set to Y, then data will be written to the disk only when the processor-resident buffer is needed for new data, when the system is idle, or when the system is shut down. If the next prompt, Dynamic Buffer Pool Write-Caching, is set to Y, then the dirty pages may be written from the processor-resident buffers to the dynamic buffer pool without being written to disk first. (This setup provides the best system performance, but has the highest risk of data loss.) If Dynamic Buffer Pool Write-Caching is set to N, data will be written to the disk at the same time that it is moved from the procesor-resident buffer to the dynamic buffer pool. The processor-resident buffers may contain dirty pages, but the dynamic buffers have the same contents as the disk.

If both Allow Efficient Dirty Pages and Allow Dirty Pages are set to N, Dynamic Buffer Pool Write-Caching is automatically set to N. These settings cause information to be written to the disk as soon as it has been changed in the buffer; the following cautionary message is displayed:

```
NOT ALLOWING DIRTY PAGES MAY DECREASE SYSTEM EFFICIENCY
```

For a discussion on the use of buffers and the effects of the dirty page options on system performance, see Section 1.1.1, Buffer Pool.

DISPLAY BASIC ERROR MESSAGES

IRIS Business BASIC displays both an error number and an error message. For example, if an attempt is made to give a file a name that is already in use, the following message will be displayed:

```
Error #67:  FILENAME IN USE AND NO "!" SUPPLIED
```

The default Y causes all error messages to be displayed. To suppress the error message and have only the error number displayed, enter N.

EOS 12-HOUR CLOCK MODE

Time may be displayed in the POINT 4 Electronic Office System (EOS) in two formats: 24-hour mode (00:00 to 23:59) or 12-hour mode (12:00A to 11:59A, 12:00P to 11:59P). If EOS is installed and it is desired to display time in 12-hour mode, enter Y. To display time in 24-hour mode, enter N.

MEMORY SIZE

The valid entries are displayed in the COMMENT line in kilobytes (decimal). Table 4-3 lists the memory sizes for the various POINT 4 systems.

The default varies according to the system.

TABLE 4-3. CPU MEMORY SIZE (in Kilobytes)

CPU	Memory Size					
	64KB	128KB	256KB	512KB	1024KB	2048KB
MARK 2	*	*				
MARK 2E			*	*	*	*
MARK 3, MARK 3T	*	*				
MARK 4, MARK 4E			*	*	*	*
MARK 5	*	*				
MARK 6		*				
MARK 8	*	*				
MARK 9				*		
MARK 12		*				

AUXILIARY BUFFER SIZE

This buffer is used by the system to process IRIS indexed files. The default is 1004 octal and must not be changed if indexed files are used. If indexed files are never used, 0 may be entered.

HIGHEST USER DISCSUB NUMBER

This entry is used by the system during IPL to reserve room for pointers to user-written discsubs. If such discsubs are to be used, this entry must **be one greater** than the highest user discsub number currently present on the system; this is not a count of the discsubs. The valid range is 0-777 octal (0-511 decimal).

NUMBER OF EXTRA CHAR QUEUE NODES

The character queue holds incoming characters that need to be processed by the operating system. With a POINT 4 multiplexer, these are the ASCII control characters such as <ESC>.

Two nodes per port are automatically allocated for the character queue; this entry allows extra nodes to be reserved. The default is 4. It should be changed only under conditions specified by POINT 4.

MINIMUM NUMBER OF FREE NODES

Free nodes are used by the system in its internal processing. The default is 40 and should be changed only under conditions specified by POINT 4.

NUMBER OF SIGNAL BUFFER NODES

This number reflects the maximum number of signals that can be waiting. Usually a number equal to the number of ports on the system is sufficient. However, in applications that make use of input timeouts and other signal functions, it may be necessary to increase the number of signal buffer nodes.

When the signal buffers are full under IRIS BASIC, an error 62 is generated. Depending on the circumstances, this may indicate a need to increase the number of signal buffer nodes.

The default is 30. The range of valid entries is 2-310 octal (2-200 decimal).

NUMBER OF BLOCKS IN LARGEST PROCESSOR

The system needs to reserve room in the processor overlay area for the largest processor. The default is 23 octal (19 decimal) blocks and assumes that the largest processor to be used is the RUN processor for IRIS Business BASIC. If SMbasic, which uses a larger processor, is to be used, this number should be changed to 51 octal (41 decimal) blocks.

If the user has written a processor that is larger, then the size of that processor must be entered.

LONG TIME SLICE PARAMETER/
SHORT TIME SLICE PARAMETER

These parameters, given in tenths of a second, are used by IRIS to determine the maximum and minimum amount of time in a single time slice.

The long time slice parameter is the maximum time allowed. The default assumes a time slice of 50 octal (40 decimal) tenths of a second (4 seconds). This value does not need to be modified.

The short time slice parameter is the minimum time given to any user. The default assumes a time slice of 3 tenths of a second. Use the statistics printed by the RETRY program to set this value optimally.

The values for each entry must be between 0 and 377 octal (255 decimal).

DEFAULT LOGICAL UNIT

The default logical unit is used by IRIS when searching for files. When a file is specified, unless the logical unit is specified as part of the filename, the system searches for it in the following order:

(1) System logical unit (logical unit 0)
(2) User's assigned logical unit
(3) Default logical unit

If a file is specified as part of a CHAIN, the system searches for it on the same logical units, but in the following order:

(1) User's assigned logical unit
(2) Default logical unit
(3) System logical unit (logical unit 0)

These are the only logical units that are searched.

At the first IPL, the auto-initialization process assigns logical unit 5 as the default logical unit. As configured by POINT 4, logical unit 5 contains IRIS utilities and stand-alone diagnostic programs.

The default is 5; press <RETURN> to accept the default, or enter the appropriate logical unit number. The logical unit number may range between 0 and 177 octal (127 decimal). If there is no application logical unit, enter NONE.

PSEUDO-DEVICE LINKAGE TABLE SIZE

The pseudo-device linkage table reflects the number of devices for which there is no actual hardware interface. For example, a non-interactive serial device on the multiplexer, such as the line printer driver, is considered a pseudo-device.

The default is 13 octal (11 decimal) and should not be decreased. This size is required to support POINT 4-supplied software. If additional pseudo-devices are required, the table size must be increased to the value of the largest number assigned to a pseudo-device plus one.

4.2.1 Saving the System Information Table

When the last entry has been placed in the System Information Table, a prompt similar to the following is displayed:

```
COMMENT: ARE THE ABOVE ENTRIES CORRECT
COMMAND: _
MESSAGE:
```

If all the entries are correct, enter Y. The System Information Table is saved and SETUP returns to the Create/Modify Configuration Control File Menu.

To change an entry, enter N (press <RETURN>), then press <ESC> to move back to the appropriate line.

4.3 CONFIGURING THE PORT DEFINITION TABLE

The specifications for the peripheral device on each port must be placed in the appropriate Port Definition Table (PDT). The IRIS R9 Peripherals Handbook contains specification sheets for terminals and printers supported by IRIS.

To configure the Port Definition Tables, select Option 2 from the Create/Modify Configuration Control File Menu. A menu similar to the following is displayed:

```
PORT p          CONFIGURE PORT DEFINITION TABLE MENU          SU112 n.n


          (0) RETURN TO CREATE/MODIFY CONFIGURATION CONTROL FILE MENU

          (1) CONFIGURE POINT 4 MUX PORTS

          (2) CONFIGURE PHANTOM PORTS

          (3) CONFIGURE NON-POINT 4 MUX PORTS

          (4) CONFIGURE REX PORT 0


COMMENT:  ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND:  _
MESSAGE:
```

Select the desired option.

To configure the PDT for either the POINT 4 Mighty Mux or the POINT 4 PIB multiplexer (Option 1), see Section 4.3.2.

To configure the PDT for phantom ports (Option 2), see Section 4.3.3.

To configure the PDT for a non-POINT 4 multiplexer (Option 3), see Section 4.3.4.

To configure the PDT for port 0, used by the Resident Executive (REX) before IRIS is available (Option 4), see Section 4.3.5.

4.3.1 Saving the Port Definition Table

After all the ports for a table have been defined, the following is displayed:

```
COMMENT: (M)ODIFY, (D)ISPLAY, OR (S)AVE
COMMAND: D
MESSAGE:
```

To display the entire table, press <RETURN> to accept the default. As the table is displayed, it is rearranged, if necessary, so that adjacent ports that have been configured the same are shown as ranges. The (M)ODIFY, (D)ISPLAY, OR (S)AVE prompt is redisplayed.

To modify an entry, enter M. The following prompt is displayed:

```
COMMENT: ENTER PORT NUMBER?
COMMAND: _
MESSAGE:
```

Enter the port number or the range of port numbers to be changed. The table is redisplayed up to the port to be changed. Change the appropriate field; press <RETURN> to leave the information unchanged. When the last field for the port has been entered, the (M)ODIFY, (D)ISPLAY, OR (S)AVE prompt is redisplayed.

When the entries are correct, enter S to save the table. SETUP saves the control file, then returns to the Configure Port Definition Table Menu.

4.3.2 Configuring POINT 4 Mux Ports

To configure ports on a POINT 4 multiplexer (Mux), select Option 1 from the Configure Port Definition Table Menu. A screen similar to the following is displayed:

```
PORT p              CONFIGURE POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME:  $MMUX ________
TOTAL NUMBER OF PORTS:
                                    LPT/
 PORT          ENABLE  IOB    TERM    ACTIVE     PRINTER
NUMBER   PCW    PDS    SIZE   TYPE  FILE SIZE    NAME
-------------------------------------------------------
 (1)     (5)    (4)     (6)    (3)     (2)        (4)



COMMENT: ENTER TOTAL NUMBER OF PORTS TO CONFIGURE
COMMAND:
MESSAGE:
```

If an entry displays a default, it can be accepted by pressing <RETURN>; to change a default, enter the appropriate data.

The numbers in parentheses in the screen example above indicate the order in which the port definition information is entered.

DRIVER FILE NAME

This is the name of the software that drives the multiplexer; for POINT 4 multiplexers, the default driver name is $MMUX.

TOTAL NUMBER OF PORTS

This is the total number of connectors (ports) in decimal on the multiplexer. Up to 128 ports may be configured.

To delete an already defined driver from the configuration control file, enter 0 as the total number of ports. The following prompt is displayed:

```
COMMENT: DELETE THIS DRIVER?
COMMAND: N
MESSAGE:
```

To delete the driver, enter Y. To retain the driver, press <RETURN> to accept the default.

PORT NUMBER

This is the physical connector on the multiplexer, expressed as a decimal number. The following is displayed:

```
PORT p              CONFIGURE POINT 4 MUX PORTS              SU112A  n.n

     DRIVER FILE NAME:  $MMUX
TOTAL NUMBER OF PORTS:  16
                                LPT/
 PORT          ENABLE  IOB     TERM    ACTIVE     PRINTER
NUMBER   PCW    PDS    SIZE    TYPE  FILE SIZE    NAME
-------------------------------------------------------
  _

COMMENT: ENTER PORT NUMBER.  ENTER CONSECUTIVE PORTS IN FORM M-N.
COMMAND:
MESSAGE:
```

The port numbers should be entered in order. Up to 128 ports may be configured. If several consecutive port numbers are to be configured for the same terminal type, a range of numbers may be entered, separated by a hyphen (-). For example, to configure ports 3 through 7 with the same terminal parameters, 3-7 may be entered. Printers must be configured one at a time.

ACTIVE FILE SIZE

The active file is space on logical unit 0 that contains the program running on the port when the port is swapped out; the active file should have enough blocks to ensure that the largest program will fit. If not enough blocks are allocated, IRIS assigns additional blocks as needed, but as they may not be contiguous, this can affect system performance.

The following is displayed:

```
PORT p              CONFIGURE POINT 4 MUX PORTS              SU112A  n.n

     DRIVER FILE NAME:  $MMUX
TOTAL NUMBER OF PORTS:  16
                                 LPT/
 PORT          ENABLE  IOB      TERM    ACTIVE     PRINTER
NUMBER   PCW    PDS    SIZE     TYPE  FILE SIZE    NAME
-------------------------------------------------------
  3                                      40_


COMMENT: ENTER '0' IF NON-INTERACTIVE, OR ENTER ACTIVE FILE SIZE IN OCTAL
COMMAND:
MESSAGE:
```

The displayed default is based on the user partition size specified in the System Information Table; the default is the number of octal blocks required to hold the partition. If the table has not yet been defined, the default size is 0 (for information on the System Information Table, see Section 4.2).

If the port is being defined for an interactive or port-device, enter the desired active file size in (octal) blocks, unless the system has an LCM, map, or extended memory. To indicate to SETUP that the active files are to be on the LCM, map, or extended memory, enter 1 as the active file size.

If a port will be used exclusively as a port-device, set its active file size to 1 to avoid wasting disk blocks.

Systems with a large number of ports may not have enough room for all the active files on logical unit 0. In that case, the active files can be placed on the LCM or extended memory by using the program LCMC described in Section 8.

If the port is being defined for a printer or other non-interactive device, enter 0 as the active file size. The following is displayed:

```
COMMENT: IS NON-INTERACTIVE DEVICE A PRINTER?
COMMAND: Y
MESSAGE:
```

If a printer port is being configured, press <RETURN> to accept the default of Y; otherwise, enter N.

LPT/TERM TYPE

This identifies the type of printer or terminal connected to the port. If the device is not a printer, the list of terminal translation modules and terminal type codes is displayed, similar to the following:

```
PORT p                  CONFIGURE POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME:  $MMUX                        NO TRANSLATION  -  0
TOTAL NUMBER OF PORTS:  nn
                                 LPT/                          TERM.ADDS      17
 PORT          ENABLE  IOB      TERM    ACTIVE      PRINTER    TERM.ADDS25    27
NUMBER   PCW    PDS    SIZE     TYPE  FILE SIZE     NAME      TERM.ADM1       1
-------------------------------------------------------------  TERM.B100      12
  3              4               0       40                   TERM.B4        22
                                                              TERM.DGC       13
                                                              TERM.H1500     14
                                                              TERM.H2000     11
                                                              TERM.TV912     16
                                                              TERM.TV950      4
                                                              TERM.VT100     10
                                                              TERM.WS100     20
                                                              TERM.WY50      25

COMMENT:
COMMAND:
MESSAGE:
```

Enter the appropriate terminal type code from the righthand column. See Section 7.1.3, Terminal Specification File Maintenance.

If the device is a printer, a screen similar to the following is displayed:

```
PORT p              CONFIGURE POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME:  $MMUX                          NO TRANSLATION 0
TOTAL NUMBER OF PORTS:  16
                                LPT/                    PRTR.NEC5515  1
 PORT          ENABLE  IOB      TERM    ACTIVE    PRINTER PRTR.P300     2
NUMBER   PCW    PDS    SIZE     TYPE  FILE SIZE    NAME
-------------------------------------------------------
   1                             -       0

COMMENT:
COMMAND:
MESSAGE:
```

Enter the printer type code from the list. See Section 7.1.4, Printer Specification File Maintenance.

PRINTER NAME

If the port is being defined for a printer, the number to be used as the line printer (LPT) identifier is requested. This entry then becomes the IRIS device name. For example, if 2 is entered, the printer's name under IRIS on this port is $LPT2.

Each printer must have a unique identifier.

To define the printer, enter a decimal number in the range 1 to 7998. To define the printer as $LPT (no number), press <RETURN> without entering a number.

ENABLE PDS

If the port is being defined for an interactive device, enter Y to enable the port-device driver for this port. If enabled, a BASIC or SMbasic program may use $PDn or Tn, respectively, to communicate with a device attached to this port. The default is N.

PCW

The PCW (Port Control Word) is used to define the characteristics of the device on the port. Each terminal or printer has a default PCW that is based on switch and cable settings shown in the IRIS R9 Peripherals Handbook. The default is specified in the Terminal or Printer Specification file; for further information, see Section 7.1.3 for terminals and Section 7.1.4 for printers.

A list of values showing the most commonly used entries for each character in the PCW is displayed on the righthand side of the screen (the values in the list vary depending on the system being configured). When configuring MARK 2 through MARK 4 systems, additional help is available by entering ? at the PCW prompt. The help consists of a series of prompts requesting the characteristics of the device on the port; the PCW is then automatically calculated by SETUP, based on the answers to the prompts.

For a list of values on MARK 2 through MARK 4 systems, see Table 4-4; for the most commonly used values on MARK 5 through MARK 12 systems, see Table 4-5.

TABLE 4-4. VALUES TO DETERMINE PCW FOR MARK 2 THROUGH MARK 4 SYSTEMS

Digits	Setting	Definition
1st thru 3rd	140	110 Baud
	144	150 Baud
	150	300 Baud
	154	19200 Baud
	160	1200 Baud
	164	2400 Baud
	170	4800 Baud
	174	9600 Baud
		Available only on MARK 4E
4th	2	Device Control Low
	3	Device Control High
5th thru 6th	01	7 Bits, 2 Stop, Even Parity
	05	7 Bits, 2 Stop, Odd Parity
	11	7 Bits, 1 Stop, Even Parity
	15	7 Bits, 1 Stop, Odd Parity
	21	8 Bits, 2 Stop, No Parity
	25	8 Bits, 1 Stop, No Parity
	31	8 Bits, 1 Stop, Even Parity
	35	8 Bits, 1 Stop, Odd Parity

TABLE 4-5. VALUES TO DETERMINE PCW FOR MARK 5 THROUGH MARK 12 SYSTEMS

Digit	Setting	Definition
1st	5	POINT 4 multiplexer
	1	Other multiplexer
2nd	4	Printer Port
	2	Phantom Port
	0	CRT Port
3rd	3	No parity, 2 Stop Bits
	2	No parity, 1 Stop Bit
	1	Parity, 2 Stop Bits
	0	Parity, 1 Stop Bit
4th	7	8-bit character, Even Parity
	6	8-bit character, Odd Parity
	5	7-bit character, Even Parity
	4	7-bit character, Odd Parity
5th	7	9600 Baud
	6	4800 Baud
	5	2400 Baud
	4	1200 Baud
	3	600/19200* Baud
	2	300 Baud
	1	150 Baud
	0	110 Baud

*If the 19200 baud option is installed on the multiplexer board, entering 3 sets the baud rate to 19200; if the 19200 option is not installed, entering 3 sets the baud rate to 600.

IOB SIZE

This defines the input/output buffer (IOB) size.

The default size for the IOB for terminals is 207 octal (135 decimal) characters. For printers, it is 764 octal (500 decimal) characters. The maximum size allowed by SETUP is 40000 octal.

Press <RETURN> to accept the default, or enter the appropriate size.

4.3.3 Configuring Phantom Ports

To configure phantom ports, select Option 2 from the Configure Port Definition Table Menu. A screen similar to the following is displayed:

```
PORT p                CONFIGURE PHANTOM PORTS                SU112A n.n

     DRIVER FILE NAME:  $PHA _________
TOTAL NUMBER OF PORTS:

 PORT                    IOB    TERM    ACTIVE
NUMBER    PCW           SIZE   TYPE   FILE SIZE
-------------------------------------------------
 (1)                     (3)             (2)



COMMENT:
COMMAND:
MESSAGE:
```

If an entry displays a default, it can be accepted by pressing <RETURN>; to change a default, enter the appropriate data.

The numbers in parentheses in the screen example above indicate the order in which the port definition information is entered.

DRIVER FILE NAME

This is the name of the software that drives the phantom ports. For phantom ports, the default driver name is $PHA.

TOTAL NUMBER OF PORTS

Enter the total number of phantom ports (in decimal) that are required. A maximum of 128 may be defined.

To delete an already defined driver from the configuration control file, enter 0 as the total number of ports. The following prompt is displayed:

```
COMMENT: DELETE THIS DRIVER?
COMMAND: N
MESSAGE:
```

To delete the driver, enter Y. (The driver is not disabled; to disable the driver, see Appendix D.2.) To retain the driver, press <RETURN> to accept the default.

PORT NUMBER

Enter the number of ports to be defined as phantom ports as a range of numbers (in decimal). For example, to define two phantom ports, enter 1-2. The actual phantom port numbers are assigned by IRIS when the system is IPLed.

ACTIVE FILE SIZE

The active file size for phantom ports should be the same as the active file size for interactive ports. The default is based on the number of blocks corresponding to the user partition size in the System Information Table. If the System Information Table has not been defined, the default is 0.

TERMINAL TYPE CODE

The terminal type code for phantom ports is always 0. This entry may not be changed.

PCW

The PCW (Port Control Word) for phantom ports is always 2000. This entry may not be changed.

IOB SIZE

This is the size of the input/output buffer and may be used by IRIS as a work area. It should be the same size as the buffers for the interactive multiplexer ports.

4.3.4 Configuring Non-POINT 4 Mux Ports

To configure ports on a non-POINT 4 multiplexer (Mux), select Option 3 from the Configure Port Definition Table Menu. A screen similar to the following is displayed:

```
PORT p          CONFIGURE NON-POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME: _____________
TOTAL NUMBER OF PORTS:

 PORT                    IOB    TERM    ACTIVE
NUMBER    PCW           SIZE   TYPE   FILE SIZE
-------------------------------------------------
 (1)      (4)            (5)    (3)      (2)




COMMENT:
COMMAND:
MESSAGE:
```

The numbers in parentheses in the screen example above indicate the order in which the port definition information is entered.

DRIVER FILE NAME

This is the name of the multiplexer driver being configured.

TOTAL NUMBER OF PORTS

This is the total number of connectors (ports) in decimal on the multiplexer.

To delete an already defined driver from the configuration control file, enter 0 as the total number of ports. The following prompt is displayed:

```
COMMENT: DELETE THIS DRIVER?
COMMAND: N
MESSAGE:
```

To delete the driver, enter Y. To retain the driver, press <RETURN> to accept the default. (The driver is not disabled; to disable the driver, See Appendix D.2, IRIS Driver Files.)

PORT NUMBER

This is the physical connector on the multiplexer, expressed as a decimal number. The port numbers should be entered in order. If several consecutive port numbers are to be configured for the same terminal type, a range of numbers may be entered, separated by a hyphen (-). For example, to configure ports 3 through 7 with the same parameters, 3-7 may be entered.

ACTIVE FILE SIZE

The active file contains the program that is being run on this port and should contain enough blocks to ensure that the largest program will fit. The displayed default is based on the user partition size specified in the System Information Table; the default is the number of octal blocks required to hold the partition. If the table has not been defined yet, the default size is 0 (for more information, see Section 4.2, Configuring the System Information Table).

If not enough blocks are allocated, IRIS assigns additional blocks as needed, but as they may not be contiguous, this may affect system performance.

The following is displayed:

```
PORT p          CONFIGURE NON-POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME:  muxname
TOTAL NUMBER OF PORTS:  nn

 PORT                  IOB   TERM   ACTIVE
NUMBER   PCW           SIZE  TYPE  FILE SIZE
-----------------------------------------
  x                           -



COMMENT: ENTER '0' IF NON-INTERACTIVE, OR ENTER ACTIVE FILE SIZE IN OCTAL.
COMMAND:
MESSAGE:
```

If the port is being defined for an interactive device, enter the desired active file size in (octal) blocks.

If the port is being defined for a non-interactive device, enter 0 as the active file size.

TERMINAL TYPE

This indicates the type of terminal connected to the port. The list of terminal translation modules and terminal type codes is displayed, similar to the following:

```
PORT p              CONFIGURE NON-POINT 4 MUX PORTS              SU112A n.n

     DRIVER FILE NAME:  muxname                      NO TRANSLATION  -  0
TOTAL NUMBER OF PORTS:  nn

 PORT                    IOB    TERM    ACTIVE          TERM.ADDS       17
NUMBER    PCW           SIZE   TYPE   FILE SIZE        TERM.ADDS25     27
-----------------------------------------------        TERM.ADM1        1
  x                             -       40             TERM.B100       12
                                                       TERM.B4         22
                                                       TERM.DGC        13
                                                       TERM.H1500      14
                                                       TERM.H2000      11
                                                       TERM.TV912      16
                                                       TERM.TV950       4
                                                       TERM.VT100      10
                                                       TERM.WS100      20
                                                       TERM.WY50       25


COMMENT:
COMMAND:
MESSAGE:
```

Enter the appropriate terminal type code from the right-hand column or enter 0 if no translation module is to be assigned to the port.

PCW

The PCW (Port Control Word) is used to define the characteristics of the device on the port being defined. The values on the righthand side of the screen show the the most commonly used entries for the POINT 4 multiplexers. See Tables 4-4 and 4-5 for the lists.

Enter the appropriate PCW.

IOB SIZE

The default size for the input/output buffer for terminals is 207 octal (135 decimal) characters. The maximum buffer size is 40000 octal (16384 decimal).

Press <RETURN> to accept the default or enter the appropriate value.

4.3.5 Configuring REX Port 0

The Port Definition Table used by the IPL sequence before IRIS is installed is stored in REX and is called REX Port 0.

To configure REX Port 0, select Option 4 from the Configure Port Definition Table Menu. A screen similar to the following is displayed:

```
PORT p              CONFIGURE REX PORT 0                    SU112A n.n


     DRIVER FILE NAME:  REX
TOTAL NUMBER OF PORTS:  1

 PORT                    IOB   TERM   ACTIVE
NUMBER   PCW             SIZE  TYPE  FILE SIZE
-----------------------------------------------
 0       (3)             (4)    (2)     (1)




COMMENT: ENTER '0' IF NON-INTERACTIVE, OR ENTER ACTIVE FILE SIZE IN OCTAL.
COMMAND:
MESSAGE:
```

The numbers in parentheses in the screen example above indicate the order in which the port definition information is entered.

DRIVER FILE NAME, TOTAL NUMBER OF PORTS, and PORT NUMBER are not configurable for REX Port 0.

ACTIVE FILE SIZE

This should be the same size as the active file defined for ports on the multiplexer.

TERMINAL TYPE

The terminal translation modules and terminal type codes are displayed similar to the following:

```
PORT p                    CONFIGURE REX PORT 0              SU112A n.n

     DRIVER FILE NAME:  REX                          NO TRANSLATION - 0
TOTAL NUMBER OF PORTS:  _
                                                       TERM.ADDS      17
 PORT                    IOB   TERM   ACTIVE          TERM.ADDS25    27
NUMBER   PCW            SIZE  TYPE  FILE SIZE         TERM.ADM1       1
-------------------------------------------           TERM.B100      12
  0      235             207   _       40             TERM.B4        22
                                                       TERM.DGC       13
                                                       TERM.H1500     14
                                                       TERM.H2000     11
                                                       TERM.TV912     16
                                                       TERM.TV950      4
                                                       TERM.VT100     10
                                                       TERM.WS100     20
                                                       TERM.WY50      25


COMMENT:
COMMAND:
MESSAGE:
```

Enter the appropriate terminal type code from the list.

PCW

The PCW (Port Control Word) is used to define the characteristics of the device on the port being defined. A list of values showing the most commonly used entries for each character in the PCW is displayed on the righthand side of the screen. The values in the list depend on the system being configured.

The PCW for REX port 0 is similar to the PCW for ports on the POINT 4 multiplexers, except that only the three rightmost digits are used for MARK 2 through MARK 4 systems and only the rightmost digit for MARK 5 through MARK 12 systems. See Tables 4-6 and 4-7.

Press <RETURN> to accept the default or enter the appropriate PCW.

IOB SIZE

The default size for the input/output buffer for terminals is 207 octal (135 decimal) characters.

Press <RETURN> to accept the default, or enter the appropriate value.

TABLE 4-6. VALUES TO DETERMINE PCW FOR REX PORT 0 ON MARK 5 THROUGH MARK 12 SYSTEMS

Digit	Setting	Definition
1st	0	
2nd	0	
3rd	0	
4th	0	
5th	7 6 5 4 3 2 1 0	9600 Baud 4800 Baud 2400 Baud 1200 Baud 600/19200 Baud* 300 Baud 150 Baud 110 Baud

*If the 19200 baud option is installed on the multiplexer board, entering 3 sets the baud rate to 19200; if the 19200 option is not installed, entering 3 sets the baud rate to 600.

TABLE 4-7. VALUES TO DETERMINE PCW FOR REX PORT 0 ON MARK 2 THROUGH MARK 4 SYSTEMS

PCW	Character Length	Parity	Stop Bits
201	7	EVEN	2
205	7	ODD	2
211	7	EVEN	1
215	7	ODD	1
221	8	INHIBITED	2
225	8	INHIBITED	1
231	8	EVEN	1
235	8	ODD	1

4.4 CONFIGURING THE DISCSUB TABLE

The Discsub Table contains the discsubs that are made memory-resident during IPL. Usually, these are the most frequently used discsubs.

To specify the discsubs that should be memory resident, select Option 3 from the Create/Modify Configuration Control File Menu. A screen similar to the following is displayed:

```
PORT n                    CONFIGURE DISCSUB TABLE                    SU113  n.n

NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME
===  =  ============      ===  =  ============      ===  =  ============
01.     GETRR = 30  (!)   13.     CHARG = 47        25.     DALLC = 2
02.     LINK  = 100 (!)   14.     TIP01 = 160       26.     EXTEN = 4
03.     LOADP = 101 (!)   15.     TIP05 = 164       27.     ALCON = 5
04.     SEARC = 61        16.     TIP06 = 165       28.     CIA   = 7
05.     AFSET = 67        17.     READC = 36        29.     CSTR  = 10
06.     FFILE = 3         18.     SHUFF = 62        30.     PASSC = 11
07.     PFNAM = 207       19.     DEKEY = 63        31.     ERROR = 12
08.     ACNTL = 15        20.     CLEAR = 27        32.     MESSA = 13
09.     OPEN  = 22        21.     FOFIL = 6         33.     BREAK = 14
10.     CLOSE = 26        22.     SPECI = 46        34.     DELET = 16
11.     READI = 33        23.     SIGPA = 57        35.     BUILD = 20
12.     ALLOC = 1         24.     OPENM = 41        36.     LOCK  = 32

COMMENT: A=ALL, nn=SEQ NO., P=PAGE, R=RESTART, U=UPDATE, W=WRAP, ?=HELP
COMMAND: _
MESSAGE:
```

The complete set of IRIS discsubs is displayed, one page at a time, each time the table is configured. An asterisk in the asterisk column marks those discsubs that are currently in the table.

The normal functioning of IRIS requires that the discsubs with an exclamation point (!) following their name be memory-resident; these discsubs cannot be removed from the table.

The available options are displayed on the COMMENT line.

The list of discsubs is divided into pages. On each page, those discsubs that are not to be made memory-resident must be erased from the page.

To erase all discsubs from a page, enter the letter A on the COMMAND line.

To erase selected discsubs from a page, enter the sequence number or range of sequence numbers. More than one sequence may be erased at a time. When listing more than one sequence, the sequences must be separated by a space or a comma. For example, if the four mandatory discsubs, the polyfile discsub 207, and the three EOS discsubs are to be made memory-resident, sequence numbers 5, 6, 8 through 13, and 17 through 36 need to be erased. The sequence numbers could be entered as follows:

```
COMMENT: A=ALL, nn=SEQ NO., P=PAGE, R=RESTART, U=UPDATE, W=WRAP, ?=HELP
COMMAND: 5 6 8-13,17-36
MESSAGE:
```

The specified sequences are erased and a screen similar to the following is displayed:

```
PORT n                    CONFIGURE DISCSUB TABLE                    SU113  n.n

NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME
===  =  ============      ===  =  ============      ===  =  ============
01.     GETRR = 30  (!)
02.     LINK  = 100 (!)   14.     TIP01 = 160
03.     LOADP = 101 (!)   15.     TIP05 = 164
04.     SEARC = 61        16.     TIP06 = 165


07.     PFNAM = 207




COMMENT: A=ALL, nn=SEQ NO., P=PAGE, R=RESTART, U=UPDATE, W=WRAP, ?=HELP
COMMAND: _
MESSAGE:
```

To save the specified entries in a temporary file and display the next page, enter P.

To redisplay the current page from the beginning with all erased items restored, enter R.

To display all the entries that have been saved in the temporary file plus the entries on the current screen, enter W. The entries are renumbered and displayed in order with no blank lines between them, similar to the following:

```
PORT n                    CONFIGURE DISCSUB TABLE                    SU113  n.n

NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME      NO.  *  DISCSUB NAME
===  =  ============      ===  =  ============      ===  =  ============
01.     GETRR = 30  (!)
02.     LINK  = 100 (!)
03.     LOADP = 101 (!)
04.     SEARC = 61
05.     PFNAM = 207
06.     TIP01 = 160
07.     TIP05 = 164
08.     TIP06 = 165


COMMENT: A=ALL, nn=SEQ NO., P=PAGE, R=RESTART, U=UPDATE, W=WRAP, ?=HELP
COMMAND: _
MESSAGE:
```

CAUTION

Once the Wrap option has been selected, it is not possible to add any additional items to the list.

4.4.1 Saving the Discsub Table

To save all the selected entries to the control file, enter U. All the entries that have been placed in the temporary file or that are currently on the screen are placed in the Discsub Table in the control file. SETUP then returns to the Create/Modify Configuration Control File Menu.

4.4.2 Help Modules

To view the help modules, enter the character ? (question mark). A screen listing the discsubs used by various IRIS software is displayed as follows:

```
PORT n                CONFIGURE DISCSUB TABLE                SU113  n.n

SOFTWARE   ASSOCIATED DISCSUB NUMBERS
--------   -------------------------
  SYSTEM:  30, 100, 101, 3, 207, 61, 67, 15, 22, 26, 33, 1, 47, 36, 62
           63, 27, 6, 46, 57, 114

    TAPE:  72, 76, 231, 77, 74, 75, 71, 73, 232

POLYFILE:  122, 142, 133, 134, 136, 123, 127, 130, 132, 124, 125, 126
           140, 135, 137, 121, 120, 144, 146

     EOS:  160, 164, 165, 171, 162, 161, 163

 SMBASIC:  214, 215, 216, 217, 220, 222, 226, 230, 233, 234

  STYLUS:  105, 107, 151, 152, 153, 154, 155, 156, 157

COMMENT: PRESS <RETURN> TO CONTINUE
COMMAND: _
MESSAGE:
```

It is strongly recommended that the following discsubs be made memory-resident if the related software is to be used:

SYSTEM - 30, 100, and 101 must be included. The remaining subroutines should be included for optimum performance.

TAPE - 72, 76, 231, 77, 74, 75, 71, 73, 232

POLYFILE - 122, 142, 133, 134, 136, 123, 127, 130, 132, 124, 125 126

EOS - 160, 164, 165

SMbasic - 214, 215, 216, 217, 220, 222, 226, 230, 233, 234

STYLUS - 105, 107

These are the most commonly used discsubs. System performance can be improved significantly by placing as many of these in memory as can fit. (On systems with more than 128KB of memory, the discsubs that are not made memory-resident may be placed in added memory; see Section 4.2, Configuring the System Information Table.) Other discsubs that are included in the table are used less frequently and have less of an impact on performance.

To view the summary of the commands available for configuring discsubs, press <RETURN>; to return to discsub table configuration, press <ESC>.

If <RETURN> is pressed at the first help screen, a screen similar to the following is displayed:

```
PORT n                  CONFIGURE DISCSUB TABLE                  SU113  n.n

THE USER MAY NOW REVIEW AND MODIFY THE INFORMATION APPEARING ON THE SCREEN SO
AS TO GET A FINAL LIST OF DISCSUBS WHICH MAY THEN BECOME MEMORY RESIDENT.

COMMANDS:

A -  'ALL' ERASES ALL NAMES ON THE CURRENT SCREEN, (I.E. NONE OF THE DISCSUBS
     NAMES ON THIS SCREEN SHOULD BE SELECTED).

nn - 'nn' ERASES SEQUENCE 'nn' FROM THE SCREEN (I.E., IT WILL NOT BE MEMORY
     RESIDENT).  TWO NUMBERS SEPARATED BY A HYPHEN ERASES A RANGE OF NAMES.
     SEVERAL NUMBERS MAY BE ENTERED AT ONCE IF THEY ARE SEPARATED BY COMMAS
     AND/OR SPACES,  "1, 7-9 25" WILL ERASE SEQUENCE NUMBERS 1,7,8,9, AND 25.

P-   'PAGE' STORES THE NAMES LEFT ON THE SCREEN FOR LATER CHANGING, AND THEN
     DISPLAYS THE NEXT 36 SELECTED NAMES, IF PRESENT.

R -  'RESTART' REDISPLAYS THE CURRENT SCREEN AS IT WAS BEFORE ANY ERASURES.

U -  'UPDATE' INITIATES THE UPDATING OF THE CONTROL FILE WITH ALL DISCSUBS
     DISPLAYED SO FAR IN THIS PASS, WHICH HAVE NOT BEEN ERASED.

W -  'WRAP' STORES THE NAMES LEFT ON THE SCREEN FOR LATER CHANGING, AND
     RESTARTS THE SELECTION PROCESS WITH THE FIRST 36 REMAINING NAMES.


COMMENT: PRESS <RETURN> TO CONTINUE
COMMAND: _
MESSAGE:
```

To return to discsub table configuration, press <RETURN>.

4.5 CONFIGURING THE DISK DRIVER TABLE

The Disk Driver Table contains the information about the disk controllers, disk drive units, and disk partition size. It is organized by logical disk controllers.

To configure the Disk Driver Table, select Option 4 on the Create/Modify Configuration Control File Menu. A screen similar to the following is displayed:

```
PORT p                  CONFIGURE DISK DRIVER TABLE                SU114  n.n

        TOTAL NUMBER OF LOGICAL CONTROLLERS: _
LOGICAL CONTROLLER NO:
         DEVICE CODE:
    NO. OF PARTITIONS:

PARTN  DRV  ENTRY  FUN  BLK   EXT  INIT  LU   FIX/  PLT/  CYLS  FIRST  NO.
 NO.   NO.   NO.   NO.  ACTG  MEM   LU   NO.  REM   SURF  LEFT   CYL   CYLS
-------------------------------------------------------------------------------

COMMENT:
COMMAND:
MESSAGE:
```

If the entry contains a default, the default can be accepted by pressing <RETURN>. If there is no default, or to change the default, enter the appropriate information.

The following pages describe each of the entries.

TOTAL NUMBER OF LOGICAL CONTROLLERS

This entry specifies the total number of logical disk controllers, expressed as a decimal number, that is to be configured.

The number of logical controllers on a physical controller depends on the number and type of disk drives installed. For example, if several disk drives have been installed on the same physical controller and they are all the same type, then only one logical controller has to be defined.

If several types of disk drives have been installed on the same physical controller and their disk driver addresses are the same, then again, only one logical controller needs to be defined. However, if disk drives have been installed with unlike sets of disk driver addresses, then one logical controller needs to be defined for each different set of disk driver addresses. (Disk driver addresses are listed on the IRIS R9 Peripherals Handbook Disk Specification sheets.)

If the Disk Driver Table currently exists, the default is the number of controllers previously configured. The entry can be modified as follows:

- To modify the current table, press <RETURN> to accept the default; see Section 4.5.2, Modifying a Logical Controller.
- To delete the configuration for a controller, decrease the total number of logical controllers; see Section 4.5.3, Deleting a Logical Controller.
- To add a controller, increase this number; the cursor then moves to the LOGICAL CONTROLLER NO. prompt.

The maximum number of controllers that can be defined is 47.

LOGICAL CONTROLLER NO.

Each logical controller on the system has a separate table with a number assigned by SETUP. The first controller that is defined is the primary controller and SETUP assumes that the system logical unit (logical unit 0) has been placed in the first partition of the first disk drive on that controller.

It is not possible to modify this entry.

DEVICE CODE

The device code refers to the particular controller/driver combination being configured as specified in the Disk Specification File (see Section 7.1.2).

If the table currently exists, the default is the device code that has been specified previously for this controller.

Press <RETURN> to accept the default, or enter the appropriate device code.

NO. OF PARTITIONS

This is the number of partitions, expressed as a decimal number, that is to be configured for this logical controller. If the primary logical controller is being configured, include the system partition, 0.0, in the count, even though it cannot be configured by the user.

The maximum number of partitions allowed depends on the number of controllers defined. The combination of number of logical controllers and number of partition may not exceed 95.

PARTN NO.

Partition numbers (PARTN NO.) are given in the form d.p, where d is the logical disk controller number and p is the partition number. The first partition of the first disk controller is numbered 0.0 and is automatically configured.

PARTN NO. is determined by SETUP and cannot be modified.

When the last entry for a partition has been entered, SETUP displays the partition number for the next partition and the cursor returns to the DRIVE NO. entry. The responses that were previously entered are displayed as defaults.

DRIVE NO.

This is the drive unit number for the current disk. On an IRIS system, this number may be in the range 0-7.

If this is not the first entry, the default is the drive number that has been specified previously for this disk.

ENTRY NO.

This is the entry number as specified in the IRIS R9 Peripherals Handbook for this particular controller/drive combination. SETUP uses this number to determine various characteristics of the drive, such as the total number of cylinders on the disk, the number of cylinders that can be configured for each partition, and the number of cylinders that are reserved for partition 0.0.

FUN NO.

The Foreign Unit Number (FUN NO.) identifies partitions that contain data in a format other than that of an IRIS logical unit. This data must be read/written using the $FOREIGN driver. (For more information on foreign units and the FOREIGN driver, see Section 1.2.4 and Appendix C.)

If this partition is not foreign, enter 0; otherwise, enter the foreign unit number that will be used by the INSTALL processor. The FUN NO. may be in the range 1-17 octal (1-15 decimal).

If a foreign unit number is specified, the next four entries are skipped and the entry of data continues with the FIX/REM entry (or the next applicable entry following FIX/REM).

BLK ACTG

This entry refers to the block accounting performed by the system that keeps track of how many blocks are being used by the account.

The number of blocks allocated to a user on a logical unit is specified using ACCOUNTUTILITY. When the limit is reached, the user is not permitted to create additional files on that logical unit. Each time the user logs off, the number of blocks remaining on the account is noted.

If block accounting is turned off for this partition, any user may create files on the logical unit. No check is made of how many blocks are used by an individual user; the user does not even need to have an account on the logical unit. The overall block usage is still maintained. Turning off block accounting is intended to be done primarily for memory-based logical units.

To retain block accounting, enter Y; to turn off block accounting, enter N.

EXT MEM

This entry refers to the use of the disk buffer pool extension. When the extension is not available, blocks must be accessed from the logical unit rather than the extended buffer pool. If the logical unit is disk-based, access is a relatively slow process. However, if the logical unit is memory-based, access from the logical unit is as fast as it would be from the disk buffer pool.

The option of not using the buffer pool extension is intended primarily for memory-based logical units.

To use the buffer pool extension with this partition, enter Y; to not use it, enter N.

INIT LU

This entry refers to the initial installation of a logical unit on this partition. If a logical unit has never been installed on the partition, the logical unit number must be specified the first time the logical unit is installed. Once the logical unit number has been specified, it does not need to be entered again, unless the partition has been cleared.

The logical unit number does not often have to be specified for disk-based logical units. However, all memory-based logical units are automatically cleared each time the system is IPLed and the logical unit number must always be specified after every IPL.

This entry can be used to specify that the logical unit number be automatically specified whenever this partition is installed. If the logical unit number is to be automatically specified, the number to use must be specified in the next entry.

To have the logical unit number automatically specified, enter Y. To require manual entry of the logical unit number, enter N.

LU NO.

This entry specifies that the logical unit number, expressed as a decimal number, be used if the partition is to be automatically installed. The number may be in the range 1 to 127.

This entry is skipped if the INIT LU response is N.

FIX/REM

This entry refers to fixed and removable units and is applicable only to those drives whose entry number indicates that the drive has both fixed and removable media. It is skipped if it is not applicable.

If the partition currently being described is to be on the fixed unit, enter F; if it is to be on the removable unit, enter R.

PLT/SURF

This entry requests the number of the surface (in some cases called platter) being configured. It is skipped if it is not applicable.

Enter the number of the surface on which the current partition is to reside. The first surface is 0.

CYLS LEFT

This entry displays the number of cylinders remaining on the disk. It is not possible to modify this entry.

FIRST CYL

This entry specifies the number of the first available cylinder. If this is the first partition on this logical controller (d.0), then the default is 0; otherwise, it is the cylinder that follows the last defined cylinder.

To create a gap between partitions, enter a number greater than the default. It is not possible to enter a number less than the default.

NO. CYL

This entry specifies the number of cylinders this partition is to contain. (For a procedure to calculate the number of cylinders for a given number of blocks, see Appendix A.3, Calculating Cylinders.) The maximum cylinders per partition are given in the IRIS R9 Peripherals Handbook.

4.5.1 Saving the Partition Entries

After all partitions that have been specified for this logical controller have been defined, the following prompt is displayed:

```
COMMENT: (M)ODIFY, (D)ISPLAY, OR (S)AVE
COMMAND: D
MESSAGE:
```

To redisplay the partitions for the current controller, press <RETURN> to accept the default.

To modify an entry, enter M. The screen clears and the following prompt is displayed:

```
COMMENT: ENTER PARTITION NUMBER
COMMAND: _
MESSAGE:
```

Enter the partition number to modify. All entries are redisplayed and the cursor moves to the drive number field for the specified partition number. Enter the modifications. If the modifications cause the partitions to overlap (for example, the modified number of cylinders causes the last cylinder to be greater than the starting cylinder of the next partition), a message similar to the following is displayed:

```
OVERLAPPING PARTITIONS
```

After the modifications for the specified partition have been entered, SETUP returns to the (M)ODIFY, (D)ISPLAY, OR (S)AVE prompt.

To save the current definition for this controller, enter S. The entries for the current controller are saved in a temporary file until all controllers have been configured and their tables saved.

After saving the partitions for a logical controller, SETUP displays the next logical controller number, if additional logical controllers are to be configured, and the cursor returns to the DEVICE CODE prompt.

After the partitions for all specified logical controllers have been configured and saved, SETUP proceeds as described in Section 4.5.2, Modifying a Logical Controller.

4.5.2 Modifying a Logical Controller

When all new controllers have been configured, or if the default number of total controllers has been accepted when first entering this module, the following prompt is displayed:

```
COMMENT:  LOGICAL CONTROLLER TO MODIFY, OR <RETURN> WHEN DONE
COMMAND:  _
MESSAGE:
```

To modify a logical controller, enter its number (the first controller is 0). The cursor then returns to the entry for DEVICE CODE.

To save the current logical controller and disk partition information, press <RETURN>. The information is saved, then SETUP returns to the Create/Modify Configuration Control File Menu.

4.5.3 Deleting a Logical Controller

To delete a logical controller, decrease the number of controllers specified in the TOTAL NUMBER OF LOGICAL CONTROLLERS prompt.

A screen similar to the following is displayed:

```
PORT n                  CONFIGURE DISK DRIVER TABLE              SU114A  n.n


        LOGICAL          DEVICE          NUMBER OF
       CONTROLLER         CODE          PARTITIONS

            0              27               3
            1              40               2
            2              27               1



COMMENT: ENTER CONTROLLER NUMBER TO DELETE
COMMAND: _
MESSAGE:
```

Enter the number of the controller to be deleted. The specified controller and all associated partition entries are deleted, the control file is saved, then SETUP returns to the Create/Modify Configuration Control File Menu.

4.6 CONFIGURING THE SYSTEM BACK-UP TABLE

The System Back-Up Table contains all the information necessary to perform system save and restore operations. The information in the table is used by the P4BACKUP module on SMbasic systems.

The System Back-Up Table is arranged by action numbers. Each action number contains the following entries for both the source and destination media, as appropriate, for one complete save or restore operation:

- Drive type
- Drive unit
- Surfaces (specifies whether all or just a portion of the disk is to be used)
- Beginning and ending cylinders
- Mount message (internal label for tapes)

The entries in the table are based on requirements of the POINT 4 DISCUTILITY programs.

To configure the System Back-up Table, select Option 5 from the Create/Modify Configuration Control File Menu.

4.6.1 Specifying a Back-Up Action

A screen similar to the following is displayed:

```
PORT p              CONFIGURE SYSTEM BACK-UP TABLE          SU115 n.n

          ACTION #: _          OPERATION:          VERIFY:



COMMENT:
COMMAND:
MESSAGE:
```

ACTION #

This identifies one operation for the back-up table.

To modify or delete an existing action, enter its action number, then see Section 4.6.4, Saving the Back-Up Table.

To add an action, enter a unique number. Action numbers do not have to be defined in sequence. A maximum of 777 octal (511 decimal) actions may be defined.

OPERATION

This defines the type of operation. The options are SAVE and RESTORE. SAVE takes information from a specified disk or portion of disk and copies it onto a tape. RESTORE takes information that is on a tape and copies it onto a specified disk or portion of disk.

If the operation being defined is to save information, enter S or SAVE. If the operation being defined is to restore information, enter R or RESTORE.

VERIFY

When information is transferred from one source to another, some of the information may not be transferred correctly. For example, there may be a mechanical problem on one drive that causes some data to be lost. To ensure that data was transferred correctly, the two copies can be verified against each other. For SAVE and RESTORE operations, when verify is requested, checksums are generated for both the tape and the disk copy, then compared and printed.

To request verification, enter Y. To skip verification, enter N.

4.6.2 Specifying the Back-Up Media

After the action number, operation, and verify options have been entered, a screen similar to the following is displayed:

```
PORT p              CONFIGURE SYSTEM BACK-UP TABLE          SU115 n.n

          ACTION #: n          OPERATION: name      VERIFY: Y

            DRIVE      DRIVE                  STARTING      NUMBER OF
            TYPE       UNIT       SURFACE     CYLINDER      CYLINDERS
            =====      =====      =======     ========      =========
source entry _

destination

-----------------------------MOUNT MESSAGE-----------------------------

SRCE. MEDIA:    LABEL:                              ON DRV:     OVRRDE:

DEST. MEDIA:    LABEL:                              ON DRV:     OVRRDE:


COMMENT:
COMMAND:
MESSAGE:
```

The source entry describes the media from which the information is to be retrieved. The destination entry describes the media on which the information is to be placed. During a SAVE operation, the source is a disk and the destination is either streamer tape or floppy disk. During a RESTORE operation, the source is a streamer tape or floppy disk, and the destination is a disk.

The following descriptions apply to source and destination entries for both SAVE and RESTORE operations.

DRIVE TYPE

For disk drives, the drive type is obtained from the IRIS R9 Peripherals Handbook. Enter the appropriate number or mnemonic for the disk and controller being described.

If a streamer tape is being described, enter the word TAPE.

DRIVE UNIT

Enter the number of the drive unit.

SURFACE

The surface entry specifies the portion of the disk that is to be accessed. The responses depend on the disk controller and drive type. Valid responses are displayed on the COMMENT line. For more information, see the appropriate DISCUTILITY manual.

For streamer tapes and floppy disks, SETUP enters NA.

STARTING CYLINDER

This specifies the first cylinder that is to be accessed. If the surface prompt determined that ALL surfaces are to be used, SETUP enters 0.

For streamer tapes, SETUP enters NA.

NUMBER OF CYLINDERS

This specifies the total number of cylinders to be accessed. If the surface prompt determined that ALL surfaces are to be used, SETUP enters the total number of cylinders on the specified disk.

For streamer tapes, SETUP enters NA.

4.6.3 Specifying a Mount Message

Mount messages are placed on streamer tape or floppy disk by a SAVE operation and identify the contents. When a RESTORE operation is specified, the mount message in the System Back-Up Table is checked against the mount message on the streamer tape or floppy disk. The action to take if the two messages do not match is also specified in the mount message.

SETUP requests source or destination labels corresponding to the function that uses streamer tape or floppy.

MEDIA LABEL

Any message, up to 30 characters, may be entered.

ON DRV

The ON DRV (on drive unit) entry specifies the drive unit number on which the streamer or floppy disk is to be mounted. This number will be displayed as part of the mount message when the system backup is performed.

The default is the drive unit previously specified for the streamer tape or floppy disk.

OVRRDE

The OVRRDE (override) entry specifies whether to proceed with an operation when the internal label of the streamer tape or floppy disk and the mount message specified in the System Back-Up Table do not match.

If the labels do not match and OVRRDE is set to N, the system waits until the correct tape or disk is mounted. If the labels do not match and OVRRDE is set to Y, the user is given the option to continue with the operation.

4.6.4 Saving the Back-Up Table

When an existing ACTION # is specified, or after all the items of a new action have been entered, a screen similar to the following is displayed:

```
PORT p              CONFIGURE SYSTEM BACK-UP TABLE              SU115 n.n

          ACTION #: 1          OPERATION: SAVE      VERIFY: Y

                DRIVE      DRIVE                    STARTING     NUMBER OF
                TYPE       UNIT       SURFACE       CYLINDER     CYLINDERS
                =====      =====      =======       ========     =========
SOURCE DISK      12          0          ALL            0            500

DEST.           TAPE         0          NA            NA            NA

-----------------------------MOUNT MESSAGE-----------------------------

SRCE. MEDIA:     LABEL:                                  ON DRV:     OVRRDE:

DEST. MEDIA: 1   LABEL:  MONDAY BACKUPS                  ON DRV:0    OVRRDE:N


COMMENT: (M)ODIFY, (D)ELETE, OR (S)AVE
COMMAND: _
MESSAGE:
```

The COMMENT line lists the available options.

To modify the action number, enter M. The cursor moves to the VERIFY entry. Each of the entries is then available to change. If there is no change, press <RETURN> to move to the next item.

To delete the action number, enter D; the item is deleted.

To save the action number, enter S. The item is saved on a temporary work file.

After either a save or delete, the screen is cleared and the cursor returns to the ACTION # prompt. To save all the entries from the temporary work file, press <ESC>. The entries are saved to the control file and SETUP returns to the Create/Maintain Configuration Control File Menu.

Section 5
LIST SETUP CONTROL FILES

Each of the tables in the control file may be displayed on the terminal screen or printed on the printer.

To list a table, select Option 2 from the System Configuration Menu. The control file name is requested, as described in Section 3.4, then the following menu is displayed:

```
PORT p          LIST CONFIGURATION CONTROL FILE MENU          SU2  n.n


                (0) RETURN TO SYSTEM CONFIGURATION MENU

                (1) LIST SYSTEM INFORMATION TABLE

                (2) LIST PORT DEFINITION TABLE MENU

                (3) LIST DISCSUB TABLE

                (4) LIST DISK DRIVER TABLE

                (5) LIST SYSTEM BACK-UP TABLE


COMMENT:  ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND:  _
MESSAGE:
```

Select the desired option. The display device is requested, then the specified table is displayed.

For a description of each of the items in the list, see the corresponding table in Section 4.

5.1 SELECTING THE DISPLAY DEVICE

The following is displayed on the COMMENT line:

```
COMMENT: (P)RINTER OR (S)CREEN
COMMAND: S
MESSAGE:
```

The default display device is the terminal screen. To accept the default, press <RETURN>.

5.1.1 Screen Display

When the table is listed on the screen, the top line of all screens displays the date and time the listing was created, the name of the control file and the logical unit it resides on, the system type for which the control file was created, and the current page number.

The COMMENT line displays the options to view the next screen or return to the control file name prompt:

```
COMMENT: PRESS <RETURN> TO CONTINUE, <ESC> TO EXIT
COMMAND: _
MESSAGE:
```

To view the next page, press <RETURN>. If there is no more data, <RETURN> goes to the prompt to enter the control file name.

<ESC> returns to the prompt to enter the control file name.

5.1.2 Printer Display

To print the table, enter P. The name of the printer is requested:

```
COMMENT: ENTER DEVICE NAME
COMMAND: $LPT _________
MESSAGE:
```

The default is $LPT. Press <RETURN> to accept the default, or enter the name of the desired printer. After the table has been printed, SETUP returns to the System Configuration Menu.

5.2 LISTING THE SYSTEM INFORMATION TABLE

When Option 1 is selected from the List Configuration Control File Menu, a listing similar to the following is displayed or printed:

```
NOV 15, 1986  08:15        lu/filename - MARK 4                PAGE 1

                      SYSTEM INFORMATION TABLE
                      ------------------------

                    USER PARTITION SIZE = 20000
              NUMBER OF USER PARTITIONS = 5
       INPUT/OUTPUT BUFFER MEMORY TYPE = P
        SIZE OF EACH TYPE-AHEAD BUFFER = 120
         TYPE-AHEAD BUFFER MEMORY TYPE = P
           DATA FILE TABLE MEMORY TYPE = P
NON-CORE-RESIDENT DISCSUBS MEMORY TYPE = P
     PORT NUMBER TO RUN IRIS.START.IPL = 1
  ACCOUNT NUMBER TO RUN IRIS.START.IPL = 140001
                    AVERAGE CPU SPEED = @
      MAXIMUM NUMBER OF INSTALLED LU'S = @
              NUMBER OF DATA CHANNELS = 12
    ALLOW EFFICIENT DIRTY PAGES (Y/N) = N
              ALLOW DIRTY PAGES (Y/N) = Y
 DYNAM BUFFER POOL WRITE-CACHING (Y/N) = N
   DISPLAY BASIC ERROR MESSAGES (Y/N) = Y
           EOS 12-HR CLOCK MODE (Y/N) = N
                     MEMORY SIZE (KB) = 2048
                AUXILIARY BUFFER SIZE = 1004
              NUMBER OF USER DISCSUBS = 0
     NUMBER OF EXTRA CHAR QUEUE NODES = 4
         MINIMUM NUMBER OF FREE NODES = 40
        NUMBER OF SIGNAL BUFFER NODES = 30
NUMBER OF BLOCKS IN LARGEST PROCESSOR = 23
            LONG TIME SLICE PARAMETER = 50
           SHORT TIME SLICE PARAMETER = 1
                 DEFAULT LOGICAL UNIT = 5
     PSEUDO-DEVICE LINKAGE TABLE SIZE = 10
```

5.3 LISTING THE PORT DEFINITION TABLE

When Option 2 is selected from the List Configuration Control File Menu, a listing similar to the following is displayed or printed:

NOV 15, 1986 08:30 lu/filename MARK 4 PAGE 1

PORT DEFINITION TABLE

DRIVER FILE NAME	TOTAL PORTS	PORT NO.	PCW	ENABLE PDS	IOB SIZE	LPT/ TERM TYPE	ACTIVE FILE SIZE	PRINTER NAME
$PHA	2	1-2	2000		141	20	40	
$MMUX	8	1-2	140225	Y	207	4	40	
		3	140211	N	400	1	0	$LPT1
		4	140225	N	764	2	0	$LPT2
		5-8	140225	Y	207	20	40	
REX	1	0	225		207	4	40	

*** END OF DATA ***

5.4 LISTING THE DISCSUB TABLE

When Option 3 is selected from the List Configuration Control File Menu, a listing similar to the following is displayed or printed:

```
NOV 15, 1986  08:45        lu/filename  MARK 4                PAGE 1

                          DISCSUB TABLE
                          -------------

  30      61      100     101       3       67      207      15
  22      26       33       1      47      160      164     165
  36      62       63      27       6       46       57      41
 122     142      133     134     136      123      127     130
 132     124      125     126

                      *** END OF DATA ***
```

5.5 LISTING THE DISK DRIVER TABLE

When Option 4 is selected from the List Configuration Control File Menu, a listing similar to the following is displayed or printed:

NOV 15, 1986 09:00 lu/filename MARK 4 PAGE 1

DISK DRIVER TABLE

DEV CODE	PARTN NO.	DRV NO.	ENTRY NO.	FUN NO.	BLK ACTG	EXT MEM	INIT LU	LU NO.	FIX REM	PLT SURF	FIRST CYL	NO. CYL
52	0.1	0	401		Y	Y	N				22	100
	0.2	0	401		Y	Y	N				122	300
52	1.0	1	201		Y	Y	N				0	1200
2	2.0	0	197		N	N	Y	113			0	3777

*** END OF DATA ***

5.6 LISTING THE SYSTEM BACK-UP TABLE

When Option 5 is selected from the List Configuration Control File Menu, a listing similar to the following is displayed or printed:

```
NOV 15, 1986  09:15        lu/filename  MARK 4                PAGE 1

                        SYSTEM BACKUP PARAMETER FILE
                        ----------------------------

            ACTION #: 1              OPERATION: SAVE      VERIFY: Y

                 DRIVE      DRIVE                    STARTING      NUMBER OF
                 TYPE       UNIT        SURFACE      CYLINDER      CYLINDERS
                 =====      =====       =======      ========      =========
SOURCE DISK       12          0           ALL           0             500

DEST.             TAPE        0           NA            NA            NA

------------------------------MOUNT MESSAGE-----------------------------

SRCE. MEDIA:     LABEL:                                  ON DRV:      OVRRDE:

DEST. MEDIA: 1   LABEL:  MONDAY BACKUPS                  ON DRV:0     OVRRDE:N
```

Section 6
UPDATING THE SYSTEM

The UPDATE function of SETUP changes the system configuration according to the entries in the control file, then IPLs the system. No changes are made to the system configuration until the UPDATE function of SETUP is executed.

This option should be run from the manager account on the master port, since the IPL prompts and messages are displayed on the master port, regardless of the originating port. If the IPL is run from another port, the IPL will be carried out using the system defaults even though the prompts have not been answered. This is because there is a timeout feature in the IPL process that causes the default to be accepted if there is no user input within 30 seconds.

Three requirements should be met before executing the UPDATE function:

- Check the control file to ensure that all the entries are correct and up-to-date.
- Back up the current system. The update function changes the actual system configuration and an error in the control file may make it impossible to access the system.
- All other users must be logged off.

CAUTION

As entries are made to the control file, SETUP verifies that the individual entries are valid; however, no check is made that the overall system as specified in the control file is valid. This check can be made only as the system is actually being updated. Therefore, never run the update option unless the system has been backed up recently.

To update the system, select Option 3 from the System Configuration Menu. The following prompt is displayed:

```
COMMENT: HAS THE SYSTEM BEEN BACKED UP?
COMMAND: N
MESSAGE:
```

If the system has not been backed up, press <RETURN> to accept the default. The following message is displayed:

```
COMMENT: ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND: _
MESSAGE: SYSTEM MUST BE BACKED UP BEFORE UPDATING
```

Exit SETUP to perform the required back up.

If the system has been backed up, enter Y. SETUP then checks to determine if other users are active.

If there are active users, the following message is displayed:

```
COMMENT: ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND: _
MESSAGE: CANNOT UPDATE.  OTHER USER(S) LOGGED ON
```

Have all users log off before continuing.

SETUP asks for the name of the control file to be used:

```
PORT n                UPDATE SYSTEM CONFIGURATION          SU3  n.n

                      CONTROL FILE NAME: _____________
```

```
COMMENT:
COMMAND:
MESSAGE:
```

Enter the appropriate control file name.

SETUP then updates the system. As each table is updated, a message flashes briefly on the screen, noting the function. If a table has not been included in the specified control file, that table is not updated on the system, and a message similar to the following is displayed:

```
COMMENT: tablename IS NOT DEFINED
```

The update process continues.

When the update has been completed, the screen clears and SETUP performs a SHUTDOWN and IPL. The following prompt is displayed:

```
SHUTDOWN :0/IRIS.IPL
PRESS RETURN
```

Press <RETURN>.

NOTE

The file IRIS.IPL is created by the auto-initialization process. If the file has been deleted, or if auto-initialization has never been used, SETUP does a simple SHUTDOWN and the system halts.

The copyright message is displayed several times as the IPL process adjusts the TNAP (Total Number of Active Ports) value. The system then prompts for the date:

```
ENTER YEAR,MONTH,DAY,HOUR,MINUTE _
```

Enter the date in the format yy,mm,dd,hh,mi. The hour is entered in 24-hour mode. (Note: do not press <ESC> at this point.)

The IPL is then complete.

If, for any reason, the IPL is not successful, use the backup copy to restore the system. Check the entries in the control file and change them as necessary.

Section 7
LIST/MAINTAIN SETUP'S DATABASE

The information SETUP needs to configure terminals, printers, disks, and back-up entries are kept in a series of database files that are provided with SETUP. The information in these files is the same information that is provided in the IRIS R9 Peripherals Handbook.

The database files include

- DISCUTILITY Information (used for Back-Up Tables)
- Disk Specifications
- Terminal Specifications
- Printer Specifications
- Printer Driver Table

The information in each of the databases may be listed or changed as needed. For example, when POINT 4 adds software to support an additional disk, the information required by SETUP must be entered into the DISCUTILITY Information File and the Disk Specification File. Additional information on setting up printer specification files and printer driver tables can be found in Appendix G.

To list or maintain any of the databases, select Option 4 from the System Configuration Menu. A menu similar to the following is displayed:

```
PORT n          LIST/MAINTAIN SETUP'S DATABASE MENU          SU4 n.n


              (0) RETURN TO SYSTEM CONFIGURATION MENU

              (1) FILE MAINTENANCE MENU

              (2) DISPLAY FILE MENU



     COMMENT: ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
     COMMAND:
     MESSAGE:
```

To change one of the database files, select Option 1. To display the current files, select Option 2.

7.1 MAINTAINING THE DATABASE FILES

If Option 1 is selected from the List/Maintain Setup's Database Menu, a screen similar to the following is displayed:

```
PORT p                    FILE MAINTENANCE MENU                    SU4 n.n

                (0) LIST MAINTAIN SETUP'S DATABASE MENU

                (1) DISCUTILITY INFORMATION FILE MAINTENANCE

                (2) DISK SPECIFICATION FILE MAINTENANCE

                (3) TERMINAL SPECIFICATION FILE MAINTENANCE

                (4) PRINTER SPECIFICATION FILE MAINTENANCE

                (5) PRINTER DRIVER TABLE FILE MAINTENANCE


COMMENT: ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND: _
MESSAGE:
```

The DISCUTILITY Information File contains the disk driver information required by the Back-Up Table; see Section 7.1.1.

The Disk Specification File contains the information IRIS needs to access disks; see Section 7.1.2.

The Terminal Specification File contains the information IRIS needs to interact with each terminal; see Section 7.1.3.

The Printer Specification File contains the information IRIS needs to access the printers; see Section 7.1.4

The Printer Driver Table contains the specific codes and mnemonics used by each printer; see Section 7.1.5.

7.1.1 DISCUTILITY Information File Maintenance

When Option 1 is selected from the File Maintenance Menu, a screen similar to the following is displayed:

```
PORT n        DISCUTILITY INFORMATION FILE MAINTENANCE        SU43 n.n


                    DISCUTILITY TYPE:

                         (1) DU.LOTUS

                         (2) DU.M3

                         (3) DU.WDI




COMMENT:  ENTER THE DISCUTILITY
COMMAND:  _
MESSAGE:
```

Enter the name of the DISCUTILITY that indicates the disk controller on the system being configured. In general, MARK 5 through MARK 12 systems use DU.LOTUS, MARK 3 systems use DU.M3, and MARK 2 and MARK 4 systems use DU.WDI.

A screen similar to the following is displayed:

```
PORT n        DISCUTILITY INFORMATION FILE MAINTENANCE        SU43 n.n

                          DRIVE TYPE: _ (6)
                            MNEMONIC:  (5)
                          MEDIA CLASS:
                NO. OF TRACKS PER CYLINDER:  (17)
                    TOTAL NO. OF CYLINDERS:  (12)


COMMENT:
COMMAND:
MESSAGE:
```

030-17

The information for each of these entries comes from the IRIS R9 Peripherals Handbook Disk Specification sheet for the disk and disk controller to be maintained. The circled numbers refer to the corresponding numbers on the Disk Specification form shown in Figure 7-1.

NOTE

All numeric values are in octal.

The cursor is at the DRIVE TYPE prompt. Enter the type for the desired disk entry; to return to the DISCUTILITY Type Menu, press <ESC>.

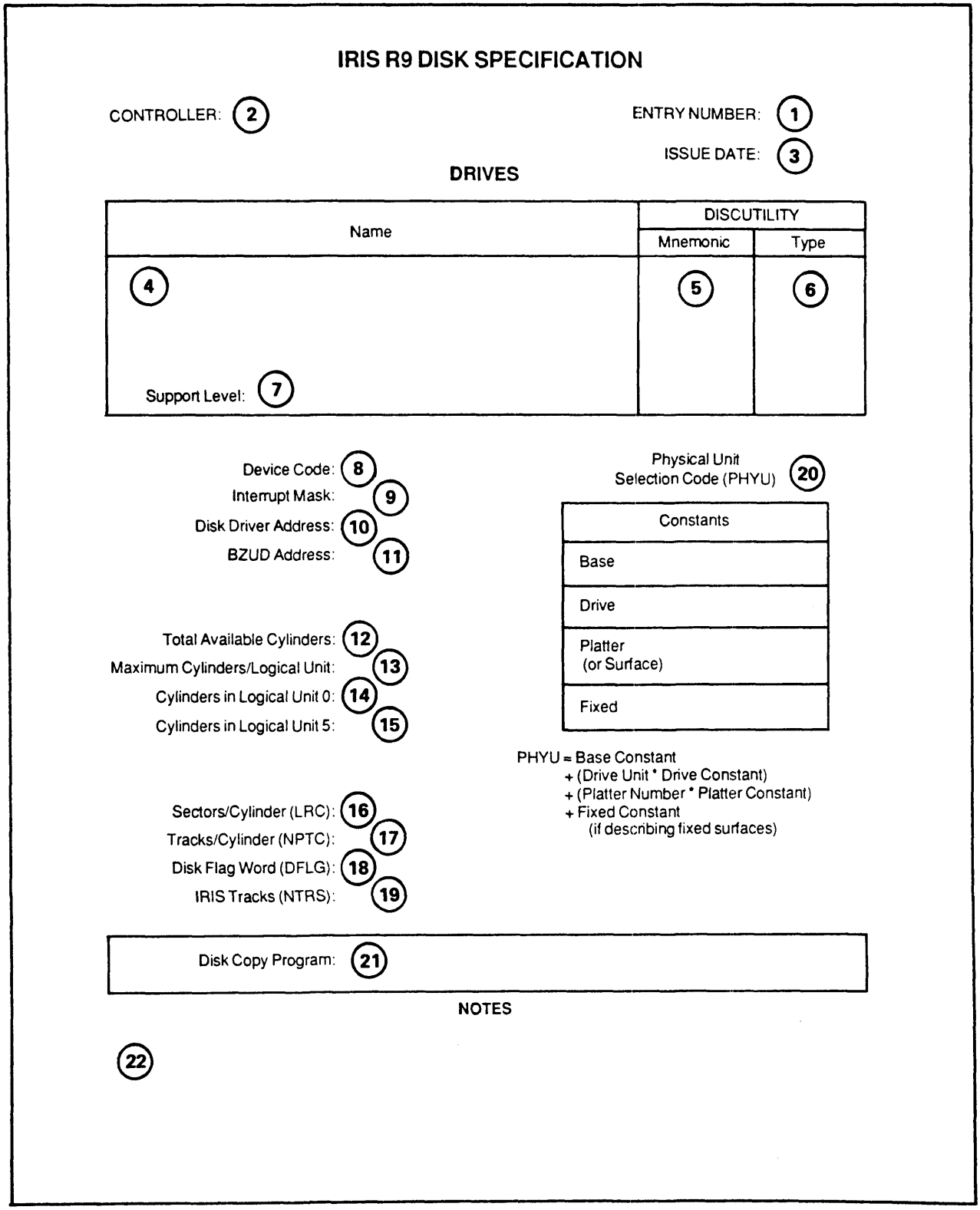


Figure 7-1. Disk Specification Form

7.1.1.1 DISCUTILITY INFORMATION ENTRIES

The following is a description of each of the entries in the DISCUTILITY Information File.

DRIVE TYPE

This is the drive type number as specified for the appropriate DISCUTILITY.

To select a drive type, enter its drive type number. If the entry currently exists, the information in the DISCUTILITY Information File is displayed as the default for each item, and the following prompt is displayed:

```
COMMENT: DELETE THIS RECORD?
COMMAND: _
MESSAGE:
```

To delete the record, enter Y. The record is deleted from the DISCUTILITY Information File and the cursor returns to the DRIVE TYPE prompt.

To modify the record, enter N. Each of the items may be accepted by pressing <RETURN> or changed as needed.

If the drive type is not currently in the DISCUTILITY Information File, the record may be added.

MNEMONIC

This is the drive type mnemonic as specified for the appropriate DISCUTILITY.

MEDIA CLASS

This is the drive class. The valid entries are

CMD - any CDC 9448-type drive (32, 64, or 96MB)
LMU - any CDC 9455- or 9457-type drive (16 or 50MB)
WIN - any Winchester drive
SMD - any other drive

NO. OF TRACKS PER CYLINDER

This is the number of physical tracks per cylinder for this drive type.

TOTAL NO. OF CYLINDERS

This is the total number of available cylinders on the disk.

7.1.1.2 CONCLUSION OF DISCUTILITY ENTRIES

After entering the total number of cylinders, SETUP returns to the DISCUTILITY TYPE prompt.

7.1.2 Disk Specification File Maintenance

When Option 2 is selected from the File Maintenance Menu, a screen similar to the following is displayed:

```
PORT n          DISK SPECIFICATION FILE MAINTENANCE          SU41 n.n


                                        ENTRY NO.:  (1)
                                    DEVICE CODE:(8)
                          NO. OF CYLINDERS IN LU 0:  (14)
                           TOTAL CYLINDERS ON DISK:(12)
NUMBER OF PHYSICAL TRACKS PER CYLINDER (NPTC):  (17)
                              DISK FLAG WORD (DFLG):(18)
                        NUMBER OF IRIS TRACKS (NTRS):  (19)
                                     BASE CONSTANT:
                                     DRIVE CONSTANT:  (20)
                          PLATTER/SURFACE CONSTANT:
                                     FIXED CONSTANT:


COMMENT:
COMMAND:
MESSAGE:
```

030-18

The information for each of these entries comes from the IRIS R9 Peripherals Handbook Disk Specification sheet for the disk and disk controller to be maintained. The circled numbers refer to the corresponding numbers on the Disk Specification form shown in Figure 7-1.

NOTE

All values are in octal.

The cursor is at the ENTRY NO. prompt. Enter the number for the desired disk entry; to return to the File Maintenance Menu, press <ESC>.

7.1.2.1 DISK DRIVE SPECIFICATION ENTRIES

The following is a description of each of the entries in the Disk Specification File.

ENTRY NO.

This is the entry number as given on the Disk Specification sheet; it identifies the drive type and disk controller combination.

To select a disk entry, enter its entry number from the Disk Specification sheet. If the entry number currently exists, the information in the Disk Specification File is displayed as the default for each item, and the following prompt is displayed:

```
COMMENT: DELETE THIS RECORD? (Y/N)
COMMAND: N
MESSAGE:
```

To delete the record, enter Y. The record is deleted from the Disk Drive Entry File and the cursor returns to the ENTRY NO. prompt.

To change the record, press <RETURN> to accept the default. Each of the items may be accepted by pressing <RETURN> or changed as needed.

To return to the File Maintenance Menu, press <ESC>.

If the entry number is not currently in the Disk Specification File, the record may be added.

DEVICE CODE

This is the device code for the disk controller connected to this drive.

NO. OF CYLINDERS IN LU 0

This is the actual number of cylinders needed to install logical unit 0 on this disk type.

TOTAL CYLINDERS ON DISK

This is the total number of available cylinders on the disk.

NUMBER OF PHYSICAL TRACKS PER CYLINDER (NPTC)

The NPTC value is effectively the number of heads on the drive.

DISK FLAG WORD (DFLG)

This value is used by IRIS to govern disk transfers.

NUMBER OF IRIS TRACKS (NTRS)

An IRIS track may or may not be the same as a physical track. This value is given in the form **hhss** where hh is the number of heads and ss is the number of IRIS sectors per track.

BASE CONSTANT
DRIVE CONSTANT
PLATTER/SURFACE CONSTANT
FIXED CONSTANT

These four constants are used by SETUP to make up the Physical Unit Selection (PHYU) word that the disk drivers use to access the physical driver.

7.1.2.2 CONCLUSION OF DISK SPECIFICATION ENTRIES

After all the information has been changed or added, the following prompt is displayed:

```
COMMENT: ARE THE ABOVE ENTRIES CORRECT?
COMMAND: Y
MESSAGE:
```

If all the items are correct, press <RETURN> to accept the default. The disk specification is saved and SETUP returns to the ENTRY NO. prompt.

To change an entry, enter N, then press <ESC> to move back to the appropriate line.

7.1.3 Terminal Specification File Maintenance

When Option 3 is selected from the File Maintenance Menu, a screen similar to the following is displayed:

```
PORT n        TERMINAL SPECIFICATION FILE MAINTENANCE        SU45  n.n

                                                          DEFAULT   DEFAULT
TERMINAL   TRANSLATION                                  MIGHTY MUX PIB MUX
  TYPE       MODULE      NAME OF TERMINAL/DESCRIPTOR       PCW       PCW
-------------------------------------------------------------------------
   (8)         (6)                  (3)                    (10)      (11)



COMMENT: ENTER TYPE CODE FROM PERIPHERALS HANDBOOK
COMMAND:
MESSAGE:
030-19
```

The information for each of these entries comes from the Terminal Specification sheet in the IRIS R9 Peripherals Handbook. The circled numbers refer to the corresponding numbers on the Terminal Specification form shown in Figure 7-2.

The cursor is at the TERMINAL TYPE prompt. Enter the number for the desired terminal; to return to the File Maintenance Menu, press <ESC>.

IRIS R9 TERMINAL SPECIFICATION

NAME, MODEL: (3)
PROM Rev.: (4)
SHEET NUMBER: (1)
Meets requirements for following software: (5)
ISSUE DATE: (2)

Translation Module	Terminal Type (octal)	Port Type (decimal)	MIGHTY MUX PCW*	PIB MUX PCW*
(6) Driver Support Level: (7)	(8)	(9)	(10)	(11)

*PCW based on the following terminal settings: (12)

Baud Rate:
Parity:
Stop Bits:
Character Length:
Device Control:
Device Ready:
Auto-Frequency Scan:
Auto-Logoff:

MNEMONICS (13)

Description	IRIS BASIC	Description	IRIS BASIC
Position cursor at column x, row y	@x,y	Cursor mode 0 (off)	'K0'
Move home	'MH'	Cursor mode 1 (blinking block)	'K1'
Move left	'ML'	Cursor mode 2 (steady block)	'K2'
Move right	'MR'	Cursor mode 3 (blinking underline)	'K3'
Move down	'MD'	Cursor mode 4 (steady underline)	'K4'
Move up	'MU'	Delete character	'DC'
Ring bell	'RB'	Delete line	'DL'
Line feed	'LF'	End blink	'EB'
Vertical tab	'VT'	End dimming	'ED'
Form feed	'FF'	End expanded print	'EX'
Carriage return (includes line feed)	'CR'	End format mode (disable write protect)	'FX'
Carriage return (without linefeed)	'BK'	End nontransparent output to printer	'EO'
Begin blink	'BB'	End reverse video	'ER'
Begin dimming	'BD'	End transparent output to printer	'EA'
Begin expanded print	'BX'	End underline	'EU'
Begin nontransparent output to printer	'BO'	End write protect	'EP'
Begin reverse video	'BR'	End write status line	'ES'
Begin transparent output to printer	'BA'	Enter format mode (enable write protect)	'FM'
Begin underline	'BU'	Insert character	'IC'
Begin write protect	'BP'	Insert line	'IL'
Clear screen	'CS'	Lock keyboard	'LK'
Clear to end of line (unprotected)	'CL'	Set narrow characters (132 column)	'NR'
Clear to end of screen (unprotected)	'CE'	Set wide characters (80 column)	'WD'
Clear unprotected	'CU'	Status line off	'SF'
		Unlock keyboard	'UK'
		Write status	'WS'

030-13

Figure 7-2. Terminal Specification Form

7.1.3.1 TERMINAL SPECIFICATION ENTRIES

The following is a description of each of the entries in the Terminal Specification File:

TERMINAL TYPE

This is the octal number from the Terminal Specification sheet.

To select a terminal, enter its terminal type. If the terminal type currently exists, the information in the Terminal Specification File is displayed as the default for each item, and the following prompt is displayed:

```
COMMENT: DELETE THIS RECORD? (Y/N)
COMMAND: N
MESSAGE:
```

To delete the record, enter Y. The record is deleted from the file and the cursor returns to the TERMINAL TYPE prompt.

To change the record, press <RETURN> to accept the default. Each of the items may be accepted by pressing <RETURN> or changed as needed.

If the terminal type is not currently in the Terminal Specification File, the record may be added by supplying the requested information.

TRANSLATION MODULE

This is the name of the translation module for this terminal type in the form TERM.xx where xx is the identifier. SETUP will enable the module by adding a $ character as the first character in its name if necessary.

NAME OF TERMINAL/DESCRIPTOR

The name may contain up to 32 characters.

DEFAULT MIGHTY MUX PCW/
DEFAULT PIB MUX PCW

These two entries contain information about the way data should be transmitted to and from the terminal through the Mighty Mux multiplexer if using a MARK 5 through MARK 12 system, or through the PIB multiplexer if using a MARK 2 through MARK 4 system.

The defaults listed on the Terminal Specification sheet should be used only if the terminal switches are set as indicated on the sheet.

To determine the PCW if the switches are not set according to the handbook, see Figure 7-3 for the Mighty Mux multiplexer; see Figure 7-4 for the PIB multiplexer.

NOTE

PCW stands for Port Control Word.

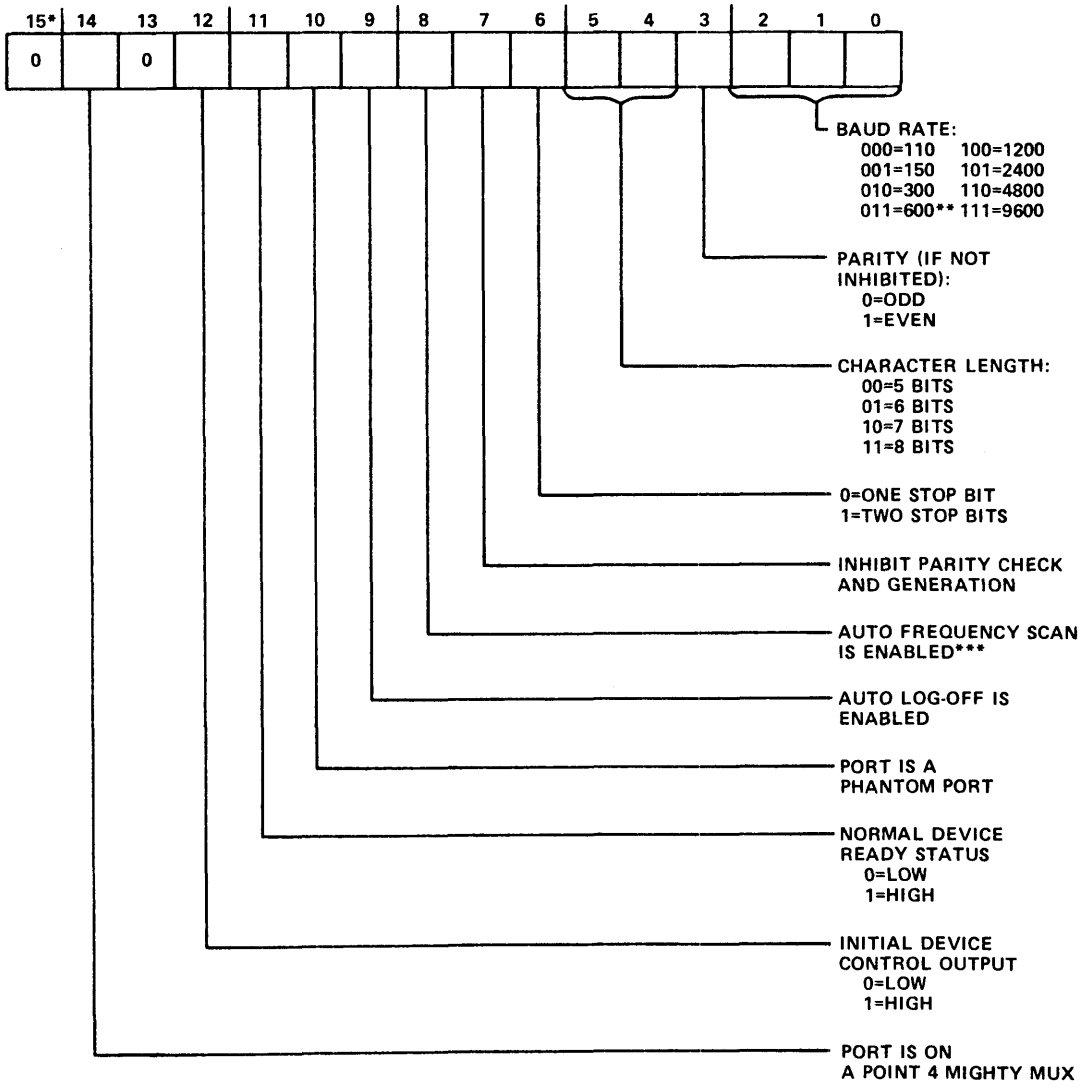
7.1.3.2 CONCLUSION OF TERMINAL SPECIFICATION ENTRIES

After the PCW has been entered, the following prompt is displayed:

```
COMMENT: ARE THE ABOVE ENTRIES CORRECT?
COMMAND: _
MESSAGE:
```

If all the items are correct, enter Y. The terminal specification is saved and SETUP returns to the TERMINAL TYPE prompt. To return to the menu, press <ESC>.

To change an entry, enter N, then press <ESC> to move back to the appropriate line. Make the correction, then press <RETURN> to accept the other entries.



*BIT 15 IS THE MOST SIGNIFICANT BIT

**ON A POINT 4 MUX WITH THE 19200 BAUD OPTION, 3=19200, NOT 600

***WHEN ENABLED, ALLOWS USE OF <ESC><BREAK> SEQUENCE TO CYCLE BAUD RATE FROM 110 THROUGH 2400 BAUD. THE CYCLE IS REPEATABLE.

030-10

Figure 7-3. Port Control Word Format for Mighty Mux

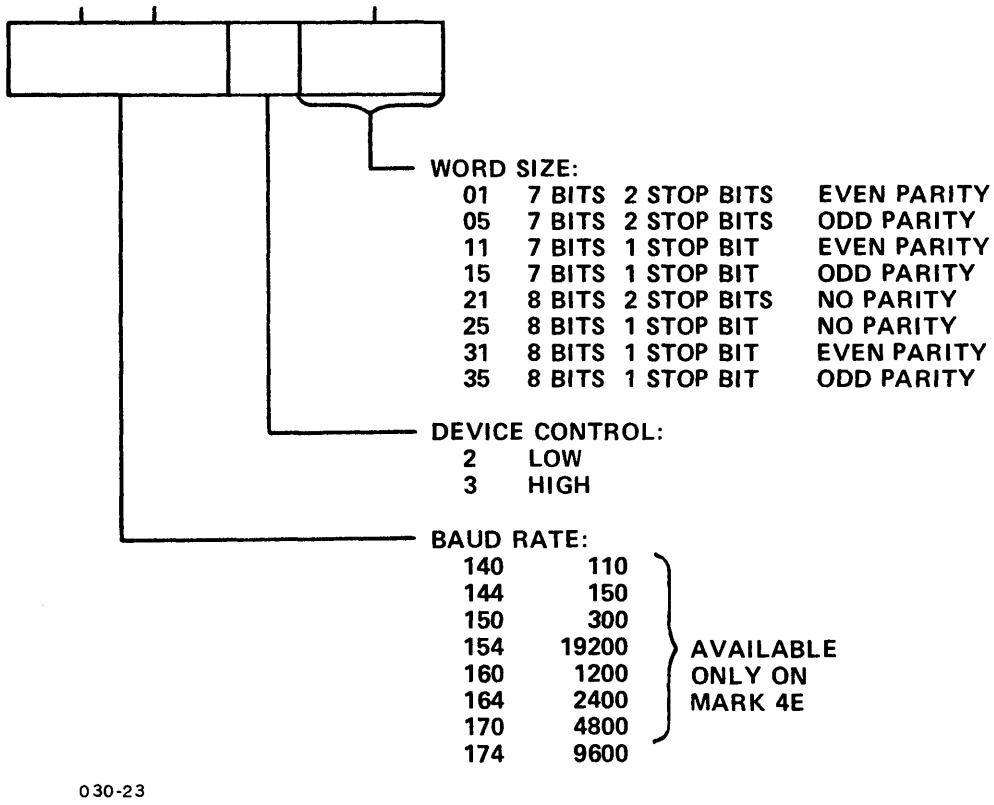


Figure 7-4. Port Control Word Format for PIB Mux

7.1.4 Printer Specification File Maintenance

When Option 4 is selected from the File Maintenance Menu, a screen similar to the following is displayed:

```
PORT n          PRINTER SPECIFICATION FILE MAINTENANCE          SU45  n.n

PRINTER    PRINTER                                    DEFAULT    DEFAULT
  TYPE       I.D.      NAME OF PRINTER/DESCRIPTOR   MIGHTY MUX PIB MUX
                                                        PCW        PCW
-------------------------------------------------------------------------
  (2)        (1)                 (4)                    (5)        (6)
  _

COMMENT: ENTER TYPE CODE FROM PERIPHERALS HANDBOOK
COMMAND:
MESSAGE:
```

030-20

The information required for the Printer Specification File comes from the Printer Specification sheet in the IRIS R9 Peripherals Handbook. The circled numbers refer to the corresponding numbers on the Printer Specification form shown in Figure 7-5.

The cursor is at the PRINTER TYPE prompt. Enter the number for the desired printer; to return to the File Maintenance Menu, press <ESC>.

IRIS R9 PRINTER SPECIFICATION

PRINTER I.D.: (1)

PRINTER TYPE: (2)

ISSUE DATE: (3)

PRINTERS

Name of Printer/Descriptor	MIGHTY MUX PCW*	PIB MUX PCW*	DTR Protocol	XON/ XOFF
(4)	(5)	(6)	(7)	(8)

OPEN sequence (9)
CLOSE sequence
Carriage return (10)

PRINTER FEATURES (11)

Description	Mnemonic Value	ASCII Sequence	Description	Mnemonic Value	ASCII Sequence
Backward space			Print 12 chars/inch	\113\	
Forward space			Print 16 char/inch	\114\	
Ring bell	\007\		Print 6 lines/inch	\106\	
Horizontal tab	\011\		Print 8 lines/inch	\107\	
Line feed	\012\		Print 10 lines/inch	\111\	
Vertical tab	\013\		Proportional - begin	\121\	
Form feed	\014\		Slew to channel 2	\046\	
Bold print - begin	\117\		Slew to channel 3	\047\	
Draft mode - compressed	\124\		Slew to channel 4	\050\	
Draft mode - normal	\125\		Slew to channel 5	\051\	
Expanded print - begin	\072\		Slew to channel 6	\054\	
Expanded print - end	\073\		Slew to channel 7	\055\	
Graphics print - begin	\115\		Slew to channel 8	\056\	
Graphics print - end	\116\		Superscript line	\130\	
Letter quality mode - compressed	\126\		Subscript line	\131\	
Letter quality mode - normal	\127\		Underline - begin	\122\	
Normal print - begin	\120\		VFU load - begin	\133\	
Overprint line	\132\		VFU load - end	\134\	
Plot mode - begin	\123\		Reset to power-on parameters	\152\	
Print 10 chars/inch	\112\				

*PCW based on the following printer settings:

BAUD RATE:	DEVICE CONTROL:
PARITY:	DEVICE READY:
STOP BITS:	AUTO-FREQUENCY SCAN:
CHARACTER LENGTH:	AUTO-LOGOFF:

030-14

Figure 7-5. Printer Specification Form

7.1.4.1 PRINTER SPECIFICATION ENTRIES

The following is a description of each of the entries in the Printer Specification File:

PRINTER TYPE

This is the printer type as given on the Printer Specification sheet.

To select a printer type, enter the printer type number from the Printer Specification sheet (the number must be in the range 1-37 octal). If the printer type is currently defined, the information in the Printer Specification File is displayed as the default for each entry, and the following is displayed on the COMMENT line:

```
COMMENT: DELETE THIS RECORD? (Y/N)
COMMAND: N
MESSAGE:
```

To delete the record, enter Y. The record is deleted from the Printer Driver Entry File and the cursor returns to the PRINTER TYPE prompt.

To change the record, press <RETURN> to accept the default. Each of the items may be accepted by pressing <RETURN> or changed as needed.

If the printer type is not currently in the Printer Specification File, the record may be added.

PRINTER I.D.

This is the Printer I.D. from the IRIS R9 Peripherals Handbook, in the form PRTR.xx where xx is the identifier and may contain up to nine characters.

NAME OF PRINTER/DESCRIPTOR

The name may contain up to 32 characters.

DEFAULT MIGHTY MUX PCW/
DEFAULT PIB MUX PCW

These two entries contain information about the way data should be transmitted to the printer through the Mighty Mux multiplexer if using a MARK 5 through MARK 12 system, or through the PIB multiplexer if using a MARK 2 through MARK 4 system.

The defaults listed on the Printer Specification sheet should be used only if the printer switches and cables are set as indicated on the sheet.

To determine the PCW if the switches are not set according to the handbook, see Figures 7-3 and 7-4.

NOTE

PCW stands for Port Control Word.

7.1.4.2 CONCLUSION OF PRINTER SPECIFICATION ENTRIES

After the PCW has been entered, the following prompt is displayed:

```
COMMENT: ARE THE ABOVE ENTRIES CORRECT?
COMMAND: _
MESSAGE:
```

If all the items are correct, enter Y. The terminal specification is saved and SETUP returns to the TERMINAL TYPE prompt. To return to the File Maintenance Menu, press <ESC>.

To change an entry, enter N, then press <ESC> to move back to the appropriate line. Make the correction, then press <RETURN> to accept the other entries.

7.1.5 Printer Driver Table File Maintenance

The Printer Driver Table contains the information that tells the system how to respond when the printer is opened or closed, and what the tab and return characters are; it also contains the definitions for the printer's features, such as bold print and underline.

When Option 5 is selected from the File Maintenance Menu, a screen similar to the following is displayed:

```
PORT n          PRINTER DRIVER TABLE FILE MAINTENANCE          SU46  n.n


     PRINTER TYPE: __(2)
  OVER-PRINT MODE:
     DTR PROTOCOL:(7)
XON/XOFF PROTOCOL:
        XON VALUE:  )(8)
       XOFF VALUE:  )
    OPEN SEQUENCE:  )(9)
   CLOSE SEQUENCE:  )
  CARRIAGE RETURN:(10)
        BACKSPACE:  )(11)
    FORWARD SPACE:  )
PRINTER TYPES CURRENTLY DEFINED:
  1: NEC5515
  2: P300


COMMENT: ENTER PRINTER TYPE
COMMAND:
MESSAGE:
030-21
```

The information for the Printer Driver Table comes from the Printer Specification sheet in the IRIS R9 Peripherals Handbook, the manufacturer's reference material, and the requirements of a particular installation. The circled numbers refer to the corresponding numbers on the Printer Specification form shown in Figure 7-5.

Numeric entries may entered in octal, decimal, or hexadecimal representation as follows:

- Octal - each entry requires a backslash (\) followed by the three-digit octal code and a second backslash
- Decimal - requires a period (.) followed by three-digit decimal codes separated by commas, followed by a second period
- Hexadecimal - requires a dollar sign ($) followed by two-digit hexadecimal codes and a second dollar sign

The cursor is at PRINTER TYPE. Enter the number for the desired printer; to return to the File Maintenance Menu, press <ESC>.

7.1.5.1 PRINTER DRIVER TABLE ENTRIES

The following is a description of each of the entries in the Printer Driver Table File.

PRINTER TYPE

This is the printer type as given on the Printer Specification sheet. The value may be between 1 and 37 (octal).

To select a printer type, enter its printer type number. If the printer is not currently defined, it may be added by entering the appropriate information.

If the printer type is currently defined, the information in the Printer Driver Table File is displayed similar to the following:

```
PORT n          PRINTER DRIVER TABLE FILE MAINTENANCE          SU46  n.n


        PRINTER TYPE: 1      PRTR.NEC5515
     OVER-PRINT MODE: N
        DTR PROTOCOL: Y
  XON/XOFF PROTOCOL: Y
          XON VALUE: \021\
         XOFF VALUE: \023\
      OPEN SEQUENCE: NONE
     CLOSE SEQUENCE: \014\
    CARRIAGE RETURN: \015\
          BACKSPACE: \010\
      FORWARD SPACE: \040\

  MNEMONICS DEFINED:
  \007\  \010\  \011\  \012\  \013\  \014\  \115\  \116\  \130\  \131\


COMMENT: (M)ODIFY, (D)ELETE, OR (S)AVE?
COMMAND: M
MESSAGE:
```

To delete the record, enter D. The record is deleted from the Printer Driver Table File and the cursor returns to the PRINTER TYPE prompt.

To change the record, enter M. The cursor moves to the PRINTER TYPE prompt. Each of the items may be accepted by pressing <RETURN> or changed as needed.

To save the record as displayed, enter S. The record is saved and the cursor returns to the PRINTER TYPE prompt.

OVER-PRINT MODE

This entry allows selection of overprint (overstrike) or replacement print mode. The choice is dependent on the capabilities and configuration of the particular printer and on the application requirements.

If N, normal overprint mode, is selected, characters used to reposition the print carriage for tabbing operations are appended to the data stream. For example, a string of characters is underlined by first printing the characters, repositioning the carriage to the beginning of the string, and then printing underline characters.

If R, replacement mode, is selected, characters are replaced in the buffer before printing is initiated. For example, for check printing, amounts are to be surrounded by asterisks. In the buffer, the entire field is filled with asterisks, the carriage is repositioned, and the amount output. When the line is sent to the printer, asterisks are replaced by amount characters.

DTR PROTOCOL

If DTR protocol is supported, enter Y; if it is not, enter N.

XON/XOFF PROTOCOL

If XON/XOFF protocol is supported by the printer, enter Y; the cursor moves to the next prompt. If XON/XOFF protocol is not supported, enter N; the cursor skips to the OPEN SEQUENCE prompt.

XON VALUE

Enter the XON value for the printer; the default is octal \021\.

XOFF VALUE

Enter the XOFF value for the printer; the default is octal \023\.

OPEN SEQUENCE

Enter the string of commands that the printer is to perform when opened. Up to 60 characters may be entered. The commands may be entered in octal, decimal, hexadecimal, or as a literal string.

For example, if the printer is to perform a formfeed, carriage return when opened, the string could be entered as any of the following:

```
octal          - \014\\015\
decimal        - .012,013.
hexadecimal    - $0C0D$
```

In addition, a literal message could be included:

literal string - "message to print when printer is opened"

If no character is to be sent, enter NONE.

CLOSE SEQUENCE

Enter the string of commands that the printer is to perform when the printer is closed. Up to 60 characters may be entered. The commands may be entered in octal, decimal, hexadecimal, or as a literal string.

The default is formfeed, carriage return, displayed in octal as \014\\015\.

If no character is to be sent, enter NONE.

CARRIAGE RETURN

Enter the string of codes that the printer is to perform for a carriage return. For example, if the printer does not perform a linefeed with each carriage return, then carriage return and linefeed codes could be specified. The codes may be entered in octal, decimal, hexadecimal, or as a literal string.

The default is carriage return, displayed as octal \015\.

If no character is to be sent, enter NONE.

BACKSPACE

This code is used by the printer driver when a PRINT @ instruction requires the printer to be positioned to the left of its current position.

If the printer supports the code \010\ as the backspace character, accept the default \010\. If the printer does not support \010\, enter the code or codes for a carriage return without linefeed.

The driver uses this character to calculate the location and position the printer appropriately.

If no character is to be sent, enter NONE.

FORWARD SPACE

This code is used by the printer driver when a PRINT @ instruction requires the printer to be positioned to the right of its current position.

Enter the code for the space character; the default is displayed as octal \040\.

If no character is to be sent, enter NONE.

7.1.5.2 ADDITIONAL PRINTER MNEMONICS

After the forward space character is entered, the following prompt is displayed:

```
COMMENT: 'Y'=PRINTER COMPLETE, 'N'=ANOTHER MNEMONIC
COMMAND: Y
MESSAGE:
```

If the printer specification is complete and there are no further mnemonics to modify or add, press <RETURN> to accept the default Y. The specifications for the printer type are saved and the cursor returns to the PRINTER TYPE prompt.

To add or modify mnemonic values for the printer, enter N. The currently defined codes are displayed, similar to the following:

```
          MNEMONIC: _____
MNEMONICS DEFINED:
\007\  \010\  \011\  \012\  \013\  \014\  \115\  \116\  \130\  \131\


COMMENT: ENTER MNEMONIC VALUE (1-159 DECIMAL)
COMMAND:
MESSAGE:
```

To select an existing mnemonic, enter its value. If the mnemonic value currently exists, its value is displayed and the following prompt is displayed:

```
COMMENT: (M)ODIFY, (D)ELETE, OR (S)AVE
COMMAND: M
MESSAGE:
```

To save the mnemonic as currently defined, enter S. To delete the mnemonic, enter D. The mnemonic is saved or deleted as specified, then the cursor returns to the PRINTER COMPLETE prompt.

To modify the mnemonic, enter M. The cursor moves to the first position of the current definition. Modify the definition as desired, then press <RETURN>. The modified definition is saved, then the cursor returns to the PRINTER COMPLETE prompt.

If the specified mnemonic value is not currently defined, the definition is requested, similar to the following:

```
MNEMONIC: \117\
          ____________________________________________________
          ____________________________________________________
          ____________________________________________________
          ____________________________________________________

COMMENT: ENTER STRING CHARACTERS TO OUTPUT
COMMAND:
MESSAGE:
```

Enter the definition. The definition may contain up to 254 keystrokes.

For example, to set up the code for bold print on a NEC5515 printer, first enter the suggested mnemonic value for bold print, which in octal is \117\. The cursor moves to the line under the mnemonic value. Enter the specific code for bold print, <ESC> O, which in octal is \033\\117\.

The defined mnemonic value for bold print on a NEC5515 is similar to the following:

```
MNEMONIC: \117\
 \033\\117\
```

The prompt asking if the printer specification is complete is redisplayed. Enter N to continue to enter mnemonic values. Up to 159 (decimal) values may be defined.

7.1.5.3 CONCLUSION OF PRINTER DRIVER TABLE ENTRIES

To save the current file, the cursor must be at the PRINTER TYPE prompt. When the cursor is at the PRINTER TYPE prompt, press <ESC>. The following is then displayed:

```
COMMENT: (S)AVE CHANGES OR (A)BORT
COMMAND: S
MESSAGE:
```

To save the updated Printer Driver Table File, press <RETURN> to accept the default; to abort the changes, enter A.

SETUP then returns to the File Maintenance Menu.

7.2 LISTING THE DATABASE FILES

If Option 2 is selected from the List/Maintain SETUP's Database Menu, a screen similar to the following is displayed:

```
PORT p                    DISPLAY FILE MENU                    SU4 n.n

                (0) LIST MAINTAIN SETUP'S DATABASE MENU

                (1) LIST DISCUTILITY INFORMATION FILE

                (2) LIST DISK SPECIFICATIONS FILE

                (3) LIST TERMINAL SPECIFICATIONS FILE

                (4) LIST PRINTER SPECIFICATIONS FILE

                (5) LIST PRINTER DRIVER TABLE FILE


COMMENT: ENTER THE NUMBER OF THE FUNCTION TO EXECUTE
COMMAND: _
MESSAGE:
```

To display any of the database files, select the appropriate option from the Display File Menu. The following prompt is displayed:

```
COMMENT: OUTPUT REPORT TO (P)RINTER OR (S)CREEN
COMMAND: S
MESSAGE:
```

To display the file at the terminal, press <RETURN> to accept the default.

To return to the Display File Menu while the file is being displayed, press <ESC>. At the end of the file, SETUP automatically returns to the Display File Menu.

To output the file to a printer, enter P at the command line. The following prompt is displayed:

```
COMMENT: ENTER DEVICE NAME
COMMAND:
MESSAGE:
```

The default is the first printer specified in the Port Definition Table (see Section 4.3, Configuring the Port Definition Table). To print the file, press <RETURN>; otherwise, specify the appropriate device name.

When printing is completed, the Display File Menu is displayed.

The following pages display each of the files.

7.2.1 DISCUTILITY Information File

When Option 1 is selected from the Display File Menu, the listing device is requested, then a listing similar to the following is displayed or printed:

```
mon dd, 19yy  hh:mm      DISK TYPE ENTRY FILE                PAGE  n

                                                    NO. OF
                DRIVE                    MEDIA    TRACKS/CYL  TOT NO.
DISCUTILITY     TYPE     MNEMONIC        CLASS      HEADS      OF CYLS
===========     =====    ========        =====    ==========   =======

DU.LOTUS          1      CDC32           CMD          2          1462
                  2      LARK            LMU          4           311
                  3      CDC64           CMD          4          1462
                  4      CDC96           CMD          6          1462
                  5      CDC40           SMD          5           626
                  .
                  .
                  .

DU.M3             1      CDC32           CMD          2          1462
                  2      LARK            LMU          4           311
                  3      CDC64           CMD          4          1462
                  4      CDC96           CMD          6          1462
                  5      CDC40           SMD          5           626
                  .
                  .
                  .

DU.WDI            1      ATI20           WIN         60          1205
                  2      ATI46           WIN          7          1205
                  3      CMI19           WIN          6           461
                  4      CMI12           WIN          4           461
                  5      FUJ86           WIN         13          1361
                  .
                  .
                  .
```

7.2.2 Disk Specification File

When Option 2 is selected from the Display File Menu, the listing device is requested, then a listing similar to the following is displayed or printed:

mon dd, 19yy hh:mm R9 DISK SPECIFICATION PAGE n

ENTRY NO.	DEV. CODE	CYLS LU 0	TOT. CYLS	NPTC	DFLG	NTRS	-CONSTANTS- BASE	DRIVE	PLT/SF	FIXED
1	33	200	626	2	100500	214	0	40000	1000	0
2	40	200	630	2	100500	214	100	410	100000	0
3	27	24	626	5	40500	1220	20024	1	0	0
4	27	24	1452	5	40500	1220	20024	1	0	0
5	30	200	626	2	104500	214	0	20000	0	0
6	36	34	1457	5	40500	1213	100000	1	10000	0
7	36	34	626	5	40500	1213	100000	1	0	0
8	36	24	1457	5	40500	1220	100000	1	0	0
9	36	10	1457	23	40500	4613	100000	1	0	0
10	36	5	1457	23	40500	4620	100000	1	0	0
11	40	156	626	2	100500	216	40000	1000	10000	0
12	36	22	633	5	40500	1713	100000	1	0	0

7.2.3 Terminal Specification File

When Option 3 is selected from the Display File Menu, the listing device is requested, then a listing similar to the following is displayed or printed:

```
mon dd, 19yy  hh:mm      R9 TERMINAL SPECIFICATION                PAGE  n

                                                          DEFAULT   DEFAULT
TERMINAL  TRANSLATION                                   MIGHTY MUX PIB MUX
  TYPE      MODULE      NAME OF TERMINAL/DESCRIPTOR         PCW       PCW
-------------------------------------------------------------------------

   1      TERM.ADM1     LS ADM-1A&ADM-31, SOROQ IQ120    50277     140225
   4      TERM.TV950    TELEVIDEO 950                    50277     140225
  10      TERM.VT100    DIGITAL VT100                    50277     140225
  11      TERM.H2000    HAZELTINE 2000                   50277     140225
  12      TERM.B100     BEEHIVE 100                      50277     140225
  14      TERM.H1500    HAZELTINE 1500                   50277     140225
  16      TERM.TV912    TELEVIDEO 912, 920               50277     140225
  17      TERM.ADDS     ADDS REGENT 20, 40, 60           50277     140225
  20      TERM.WS100    POINT 4 WS100                    50277     140225
  22      TERM.B4       MAI MODEL 7270                   50277     140225
  25      TERM.WY50     WYSE WY-50                       50277     140225
  27      TERM.ADDS25   ADDS REGENT 25,VIEWPOINT        50277     140225
```

7.2.4 Printer Specification File

When Option 4 is selected from the Display File Menu, the listing device is requested, then a listing similar to the following is displayed or printed:

mon dd, 19yy hh:mm R9 PRINTER SPECIFICATION PAGE 1

PRINTER TYPE	PRINTER I.D.	NAME OF PRINTER/DESCRIPTOR	DEFAULT MIGHTY MUX PCW	DEFAULT PIB MUX PCW
1	PRTR.NEC5515	NEC 5515	54054	140211
2	PRTR.P300	PRINTRONIX P-300	54277	140225

7.2.5 Printer Driver Table File

When Option 5 is selected from the Display File Menu, the listing device is requested, then a listing similar to the following is displayed or printed:

```
mon dd, 19yy  hh:mm        R9 PRINTER DRIVER TABLE FILE        PAGE  1


      PRINTER TYPE: 1      PRTR.NEC5515
     DTR PROTOCOL: Y
XON/XOFF PROTOCOL: Y
        XON VALUE: \021\
       XOFF VALUE: \023\
    OPEN SEQUENCE: NONE
   CLOSE SEQUENCE: \014\
  CARRIAGE RETURN: \015\
       BACKSPACE: \010\
    FORWARD SPACE: \040\
         MNEMONIC: \007\ = \007\
         MNEMONIC: \010\ = \010\
         MNEMONIC: \011\ = \011\
         MNEMONIC: \012\ = \012\
         MNEMONIC: \013\ = \013\
         MNEMONIC: \014\ = \014\
         MNEMONIC: \115\ = \033\,"3"
             .           .
             .           .
             .           .


     PRINTER TYPE:  2 PRTR.P300
     DTR PROTOCOL: Y
XON/XOFF PROTOCOL: Y
        XON VALUE: \021\
       XOFF VALUE: \023\
    OPEN SEQUENCE: \014\\000\\000\
   CLOSE SEQUENCE: \015\\000\
  CARRIAGE RETURN: \015\\000\\012\\000\
       BACKSPACE: \015\
    FORWARD SPACE: \040\
         MNEMONIC: \007\ = \007\
         MNEMONIC: \012\ = \012\
         MNEMONIC: \013\ = \013\
```

Section 8
LCM CONFIGURATION

To obtain maximum efficiency from the LCM and extended memory, the software must be tailored for the specific system's requirements. This configuration of the software must be done by the user when the LCM or extended memory system is initially installed and whenever the system requirements change.

The LCM software consists of the following components:

- LCM.LCM - LCM I/O driver
- LCM.XM - extended memory driver
- LCMC - BASIC program for configuring the LCM driver; it uses three modules (LCMC.1, LCMC.2, and LCMC.3) to store configuration information in a formatted file (LCMRESIDENT)
- LCMACTIVATE - processor that uses the LCMRESIDENT file to allocate and build the LCM Range Table; it initializes the LCM
- LCMCHECK - program that reads and displays the configuration and activity of the LCM/extended memory driver

The LCM driver is shipped as LCM.LCM; the extended memory driver is shipped as LCM.XM. The auto-initialization routine determines the appropriate driver and renames it $LCM. A system can have either an LCM or extended memory, but not both.

The program, LCMC, is provided to configure both the LCM and the extended memory. LCMC places the configuration parameters in a control file called LCMRESIDENT. The information is not applied to IRIS until the program LCMACTIVATE is used.

When LCMACTIVATE is run, it determines the first and last block address (the range) of each parameter specified in the LCMRESIDENT file and places the block addresses into a table in the driver called the **range table.** LCMACTIVATE then moves the blocks specified in the range table to the LCM.

To view the configuration, a program LCMCHECK has been provided. This shows the block addresses of each parameter, the number of errors, and the number of times it has been called.

LCMC may be used to configure a system at one site for use at another site. However, an accurate picture of block assignments will not be available until the system is IPLed, the LCM is activated, and LCMCHECK is run at the destination site after the software has been in use.

8.1 CONFIGURING THE LCM/EXTENDED MEMORY

Recommendations of items to configure on the LCM or extended memory include

- Active Files - For non-mapped systems, specify all interactive ports, if possible. For most mapped systems, it is not necessary to specify any ports (for exceptions, see Section 1.1.5, Using Lotus Cache Memory (LCM) with a Mapped System).

- Processors - Specify RUN for all systems. Specify BASIC in an applications environment where programs are frequently edited and saved. Specify SCOPE if the programs do long CHAINs frequently. Specify other processors (such as ASM or EDIT) if they are used frequently. For an SMbasic system, specify SMBASIC, SMRUN, and SMRUN.OL, as well as BASIC and RUN.

- Programs - Specify only those programs that are frequently CHAINed to during the day.

- Data Files - For all systems, specify DISCSUBS, unless non-memory-resident discsubs have already been allocated to map or to extended memory via SETUP. For any logical unit where files are frequently opened, created, or deleted, specify its logical unit INDEX.

  Specifying scratch files that are to be used for such purposes as sorting or accumulating totals can provide better performance. To keep a scratch file in the LCM, it must be reused rather than killed and rebuilt upon each use.

- Absolute LU/RDAs - This option is used only rarely. It is provided for special purpose applications.

Items that are configured on the LCM are termed **statically allocated.** Any LCM space not statically allocated is allocated to the dynamic LCM-resident buffer pool.

It is important to keep a balance between static and dynamic allocation for optimum performance. Use the LCMCHECK static allocation transfer count (see LCMCHECK in the IRIS R9 User Reference Manual) to determine the usefulness of each range. Remove from static allocation any file with a relatively low transfer count to allow that space to be used for dynamic allocation.

8.2 USING THE LCMC PROGRAM

The LCMC program displays two menus. The first menu, LCM Configure Menu, gives a choice of functions. The second menu, Record Type Selection Menu, lists the items on which the function may be performed. Subsequent screens contain prompts for the input of variable information particular to each item.

Each menu and screen has three lines at the bottom: COMMENT, COMMAND, and MESSAGE. The first line is used by the program to display comments to aid the user. When the cursor is at the second line, it may be used to enter a command. The third line is used by the program to display error messages.

After the last record for a particular item is displayed, the program returns to the Record Type Selection Menu. If a change of function is desired, press <ESC> to return to the LCM Configure Menu.

<ESC> may be used for a number of purposes:

- Abort the program and return to the IRIS system prompt (#)
- Move the cursor to a previous prompt in a display
- Return to a previous menu

If <ESC> is pressed after partial entry of variables for a particular item, that information is not entered and the cursor is returned to the previous prompt. If the cursor is at the first prompt in a display, the program returns to the previous menu.

After entry of a command or variable requested by a prompt, <RETURN> must be pressed. To accept a default where a default entry is available, press <RETURN>.

Entering an invalid filename or character, or pressing <RETURN> when a default is not available, will produce an appropriate error message.

8.2.1 LCM Configure Menu

The LCMC program must be run from the IRIS manager account. To invoke the LCMC program, enter the following at the IRIS system prompt (#):

```
LCMC
```

If the LCMRESIDENT file does not exist, the following message is displayed:

```
FILE NOT FOUND, BUILD NEW 'LCMRESIDENT' ? ('Y' OR 'N')
```

If N is entered, the program terminates and the IRIS system prompt (#) is displayed. To build a new LCMRESIDENT file, enter Y.

The LCM Configure Menu screen is displayed as follows:

```
PORT #                  LCM CONFIGURE MENU                    LCMC     n.n


                    (0) EXIT
                    ---------------
                    (1) ADD
                    (2) MODIFY
                    (3) DELETE
                    (4) INQUIRE
                    ---------------
                    (5) PRINT LCM CONFIGURE


COMMENT: ENTER THE NUMBER OF THE FUNCTION YOU WISH TO EXECUTE
COMMAND:
MESSAGE:
```

The following subsections discuss each of these functions.

8.2.1.1 EXIT (SELECTION 0)

Selection 0 or <ESC> terminates the program and the system command prompt (#) is displayed.

8.2.1.2 ADD (SELECTION 1)

When 1 is selected, the Record Type Selection Menu is displayed (see Section 8.2.2) and the add program module is invoked. Additions may be made to any or all items displayed by the Record Type Selection Menu.

The cursor waits at the first prompt of the selected item subscreen for input. If the input is not valid, the prompt is redisplayed with an appropriate message at the COMMENT line. If the input is valid, the cursor moves to the next prompt.

After the variable information has been entered, the cursor moves to the COMMAND line and the program asks:

```
IS ALL THE ABOVE CORRECT ?
```

A Y response enters the new record into the file.

An N response returns the cursor to the last input position and any input entered previously may be corrected. Pressing <ESC> moves the cursor to the previous input position. <RETURN> may be used to move the cursor to the next prompt.

8.2.1.3 MODIFY (SELECTION 2)

When 2 is selected, the Record Type Selection Menu is displayed and the modification module invoked. Modifications may be made to any or all items displayed by the Record Type Selection Menu.

In this mode, the records for the selected item are displayed one at a time. As each record is displayed the program asks:

```
MODIFY THIS RECORD ?
```

Enter N to display the next record or enter Y to modify the record. To move to the next input position, press <RETURN>. To back up to the previous input position, press <ESC>.

When input for a record is completed, the program asks:

```
IS ALL THE ABOVE CORRECT ?
```

A Y response enters the modified information into the LCMRESIDENT file.

After displaying the last record type selected, the following message is displayed:

```
NO MORE RECORDS FOR '<record type number>'
```

The program returns to the Record Type Selection Menu.

8.2.1.4 DELETE (SELECTION 3)

When 3 is selected, the Record Type Selection Menu is displayed and the delete module is invoked. Records for any or all items displayed in the Record Type Selection Menu may be deleted before returning to the LCM Configure Menu to select another function.

In this mode, the records for the selected item are displayed one at a time. As each record is displayed, the program asks:

```
DELETE THIS RECORD ?
```

Enter N to display the next record. A Y response deletes that record from the file and the next record is displayed. When the last record has been processed, the program displays:

```
NO MORE RECORDS FOR '<record type number>'
```

The program returns to the Record Type Selection Menu.

8.2.1.5 INQUIRE (SELECTION 4)

When 4 is selected, the Record Type Selection Menu is displayed and the query module invoked. Any or all items listed in the Record Type Selection Menu may be queried.

In this mode, the records for the selected item are displayed one at a time. As each record is displayed, the program prompts:

```
PRESS 'RETURN' TO CONTINUE
```

After <RETURN> is pressed the next available record is displayed until all records have been viewed. The program then displays the following message:

```
NO MORE RECORDS FOR '<record type number>'
```

The program returns to the Record Type Selection Menu.

8.2.1.6 PRINT (SELECTION 5)

When 5 is selected, the user may display or print all records currently in the LCMRESIDENT file.

The program asks:

```
DO YOU WISH TO LIST ON THE LINE PRINTER ?
```

To display the records on the terminal, enter N. The records are displayed, one screen at a time; press <RETURN> to continue the display. After the last record is displayed, the program returns to the LCM Configure Menu. The display may be terminated by pressing <ESC>.

To print the data contained in the LCMRESIDENT file, enter Y. The program displays the following:

```
DO YOU HAVE PAPER IN THE PRINTER AND IS IT ON LINE ?
```

Enter Y to indicate the printer is ready. Enter N to return to the LCM Configure Menu.

An example of an LCMRESIDENT file listing is given in Figure 8-1.

In this example, the active file of each port is classified as (U) and all other ranges as (C). These designations should be ignored for now. A future revision of the LCM software will allow dirty pages and the designations (C), (U), and (N) will be defined.

```
DEC 17, 1982  16:41      POINT 4 DATA CORPORATION                PAGE -  1

                          LCM  CONFIGURE  LIST
                          ====================

                                  I T E M    N U M B E R
-------------------------------------------------------------------------------
 0 (REC-TYPE)      1           2           3           4                   5
-------------------------------------------------------------------------------
 0   PORT #       FIRST       LAST                                    (C)opy thru
 1   PROCESSOR                                      O/PROCESSOR-NAME        or
 2   PROGRAM                                    LU/PROGRAM-NAME       (U)pdate
 3   DATA FILE   #-OF-BLKs                      LU/DATA-FILE-NAME           or
 4   RDA           LU-#      1ST-RDA     LAST-RDA                      (N)o load
-------------------------------------------------------------------------------


 0   PORT #       FIRST       LAST
 ------------    -----       ----
                      1          2                                        (U)
                      3          5                                        (U)
                    111        127                                        (U)
                      6          9                                        (U)

 1   PROCESSOR                                  O/PROCESSOR-NAME
 ------------                                   ----------------
                                                    O/P1                (C)
                                                    O/P2                (C)
                                                    O/P3                (C)
                                                    O/P4                (C)
                                                    O/P5                (C)
                                                    O/P6                (C)
                                                    O/P7                (C)
                                                    O/P8                (C)
                                                    O/P9                (C)

 2   PROGRAM                                    LU/PROGRAM-NAME
 ------------                                   ---------------
                                                    1/AAA               (C)
                                                    1/BBB               (C)
                                                    1/CCC               (C)
                                                    1/DDD               (C)
                                                    1/EEE               (C)
                                                    1/FFF               (C)
                                                    3/GGG               (C)
                                                    3/HHH               (C)
                                                    9/III               (C)
                                                    3/JJJ               (C)
                                                    2/KKK               (C)
                                                    1/LLL               (C)
                                                    9/MMM               (C)
                                                    9/NNN               (C)
                                                    3/OOO               (C)
                                                    2/PPP               (C)
                                                    2/QQ                (C)
```

Figure 8-1. Sample LCMRESIDENT File Listing (1 of 2)

```
DEC 17, 1982  16:42      POINT 4 DATA CORPORATION                PAGE -  2

                         LCM  CONFIGURE  LIST
                         ====================

                                I T E M    N U M B E R
-------------------------------------------------------------------------------
  0 (REC-TYPE)      1            2            3          4                5
-------------------------------------------------------------------------------
  0 : PORT #      FIRST          LAST                                (C)opy thru
  1 : PROCESSOR                                      0/PROCESSOR-NAME     or
  2 : PROGRAM                                    LU/PROGRAM-NAME      (U)pdate
  3 : DATA FILE   #-OF-BLKs                      LU/DATA-FILE-NAME        or
  4 : RDA           LU-#       1ST-RDA     LAST-RDA                    (N)o load
-------------------------------------------------------------------------------

  2   PROGRAM                                    LU/PROGRAM-NAME
  -------------                                  ---------------
                                                      4/RRR          (C)
                                                      5/SSS          (C)
                                                      2/UUU          (C)
                                                      3/VVV          (C)
                                                      3/WWW          (C)
                                                      3/XXX          (C)
                                                      3/YYY          (C)
                                                      2/ZZ           (C)

  3   DATA FILE   #-OF-BLKs                      LU/DATA-FILE-NAME
  -------------   ---------                      -----------------
                      ALL                             2/DF1          (C)
                       22                             2/DF2          (C)
                      323                             3/DF3          (C)
                       65                             4/DF11         (C)
                      124                             3/DF12         (C)
                       44                             4/DF22         (C)

  4   RDA           LU-#       1ST-RDA     LAST-RDA
  -------------     ----       -------     --------
                       0             2           55                 (C)
                       0            33          122                 (C)
                       5             9           12                 (C)
```

Figure 8-1. Sample LCMRESIDENT File Listing (2 of 2)

8.2.2 Record Type Selection Menu

Selection of any function 1 through 4 on the LCM Configure Menu displays the Record Type Selection Menu; the selected function may be performed on any or all of the items listed in this menu before another function is selected. After a record type is chosen, an appropriate screen is displayed for that item. After all the records for that item have been processed, the program returns to the Record Type Selection Menu. Another item may then be selected for the same function. Press <ESC> to return to the LCM Configure Menu.

Record Type Menu selections are as follows:

```
PORT #          RECORD TYPE SELECTION TO <function>     LCMC       n.n

                (1) INTERACTIVE PORTS

                (2) PROCESSORS

                (3) PROGRAMS

                (4) DATA FILES

                (5) ABSOLUTE LU/RDA's


COMMENT: ENTER THE RECORD TYPE NUMBER TO <function>.
COMMAND:
MESSAGE:
```

The following sections describe the screens displayed for each selection.

8.2.2.1 INTERACTIVE PORTS (Selection 1)

The active file for any interactive port, including multiplexer (MUX) ports, phantom ports, or any other interactive port, can be configured on the LCM using this option. An interactive port is one that has a nonzero active file size set up in the Port Definition Table of the appropriate driver file (see Section 4.3 for a description of the Port Definition Table). Line printer ports are not interactive. When 1 is selected, the program displays

```
PORT #                  <function> - PORTS                  LCMC.1    n.n


                        1ST  PORT : ___

                        LAST PORT : ___


COMMENT:
COMMAND:
MESSAGE:
```

Enter the range of logical port numbers to be configured. (The number displayed on the CRT when a user logs on is the logical port number assigned by the system. It is not necessarily the same as the physical multiplexer port number.)

Port numbers may be specified as a range. For example, entry of 5 for the first port and 10 for the last port would result in ports 5, 6, 7, 8, 9, and 10 being added or deleted, etc., depending on the function chosen. If numbers 8 and 13 are then entered when the prompts are repeated, only ports 11 to 13 are actually processed, since 8, 9, and 10 were processed earlier; the duplication is ignored.

8.2.2.2 PROCESSORS (SELECTION 2)

Depending on the function previously selected, processors may be added to, or deleted from the LCM Range Table. When 2 is selected, the program displays

```
PORT #              <function> - PROCESSOR              LCMC.2      n.n


                    PROCESSOR NAME : _____________


COMMENT:
COMMAND:
MESSAGE:
```

Enter the name of a processor. If the name entered is not a valid IRIS name, the program displays an error message and redisplays the prompt.

8.2.2.3 PROGRAMS (SELECTION 3)

Frequently run programs may be added to or deleted from the LCM Range Table, depending on the function previously selected. When 3 is selected, the program displays

```
PORT #              <function> - PROGRAM              LCMC.2    n.n


                    PROGRAM NAME : _____________
                    LOGICAL UNIT : ______


COMMENT:
COMMAND:
MESSAGE:
```

Enter a valid IRIS filename, and the number of the logical unit on which the program resides. A <RETURN> at the logical unit field defaults to logical unit 0.

8.2.2.4 DATA FILES (SELECTION 4)

The beginning portion of a data file or the complete file may be included in the LCM Range Table. Depending on the function selected, these may be added to, deleted, modified, etc. When 4 is selected, the program displays

```
PORT #              <function> - DATA FILE                LCMC.2    n.n


                    DATA FILE NAME : _____________
                      LOGICAL UNIT : ________
                # OF BLKs TO RESIDENT : ALL



COMMENT:
COMMAND:
MESSAGE:
```

The following is an explanation of each entry:

DATA FILE NAME

Enter a valid IRIS filename; if the name is not valid, the program displays an appropriate error message and repeats the prompt. A specific volume of a polyfile may be entered by giving the filename[volume number]. For example, entry of CUSTFILE[2] specifies volume 2 of the polyfile named CUSTFILE.

LOGICAL UNIT

Enter the number of the logical unit on which the file resides; no default is allowed.

 # OF BLKs TO RESIDENT

Press <RETURN> to accept the default of ALL. To include specific blocks, enter the desired number.

If only the beginning portion of a file is to be made LCM resident (e.g., the directory section of an indexed file), the exact number of blocks for that portion of the file must be given. The number of blocks used by the directory section of an indexed file (i.e., all directories plus header) can be calculated as follows:

$$1+\text{INT}\ \frac{\text{FRDR} * \text{WPR}}{256\text{(decimal)}}$$

where
FRDR - first real data record number (mode 1, d=0, v2=0)
WPR - number of words per record

8.2.2.5 ABSOLUTE LU/RDAs (SELECTION 5)

This option may be used if a small logical unit is to be made LCM resident in its entirety or if the previous four selections do not meet a user's needs. Generally, this option is not used for IRIS systems. When 5 is selected, the program displays

```
PORT #              <function> - ABSOLUTE LU/RDA's          LCMC.1   n.n


                          LOGICAL UNIT : _________

                              1ST  RDA : _________
                             LAST RDA : _________


COMMENT:
COMMAND:
MESSAGE:
```

Enter the number of the logical unit (1 to 127); a default is not allowed.

Enter the range of RDAs (must be entered in decimal).

APPENDICES

Appendix A
DETERMINING SIZE

This appendix describes procedures for determining sizes for various IRIS components, including partition size, number of partitions, cylinder size, and determining available cylinders for mapped memory, LCM and extended memory.

A.1 MINIMUM USER PARTITION SIZE

The minimum user partition size required for a system is determined by the size of the largest BASIC program.

The following procedure can be used to determine the size of an IRIS BASIC program.

1. Run the BASIC program so that all strings and arrays are dimensioned.

2. After all the DIM statements have been executed, stop the program.

3. While in BASIC, enter the command

   SIZE

   The program size (in decimal words) is displayed.

4. Add 30 (decimal) to the size generated in step 3 to adjust for the work space required by some BASIC statements during runtime.

After the size of the largest BASIC program has been determined, an appropriate user partition size can be selected. Table A-1 lists corresponding octal values for user partition sizes.

NOTE

For mapped systems, adjust the partition size upward to a size divisible by 2000 octal. For example, if the desired size is 9679 decimal (22717 octal), select a size of 24000 octal.

TABLE A-1. USER PARTITION SIZE SELECTION TABLE

Partition Size (Octal)	BASIC Program Size (Decimal)	Partition Size (Octal)	BASIC Program Size (Decimal)
10000*	3791	24400	10191
10400	4047	25000	10447
11000	4303	25400	10703
11400	4559	26000	10959
12000	4815	26400	11215
12400	5071	27000	11471
13000	5327	27400	11727
13400	5583	30000	11983
14000	5839	30400	12239
14400	6095	31000	12495
15000	6351	31400	12751
15400	6607	32000	13007
16000	6863	32400	13263
16400	7119	33000	13519
17000	7375	33400	13775
17400	7631	34000	14031
20000	7887	34400	14287
20400	8143	35000	14543
21000	8399	35400	14799
21400	8655	36000	15055
22000	8911	36400	15311
22400	9167	37000	15567
23000	9423	37400	15823
23400	9679	40000	16079
24000	9935		

*Minimum value of PSIZ

A.2 NUMBER OF PARTITIONS

To calculate the maximum number of user partitions on the map, the following steps may be used:

1. Determine the minimum number of blocks that should be in the buffer pool, then calculate the number of bytes this represents by multiplying by 512.

2. Subtract the buffer pool size and main memory size (128KB) from the total memory.

3. Determine the size of each user partition. In an IRIS Business BASIC environment, the recommended size is 16KB (20000 octal words).

4. Divide the amount of memory from step 2 by the partition size from step 3. Truncate any fractional result.

For example, if 60 blocks are needed on a 512KB system with a partition size of 16KB, the calculations are as follows:

1. 60 blocks contain 60*512 bytes or approximately 30KB.

2. Subtract 30KB and 128KB from 512KB. The result is 354KB.

3. Divide 354KB by 16KB and truncate the fraction. The result is 22.

Thus the maximum number of 16KB partitions in a 512KB system with 60 buffers is 22.

A.3 CALCULATING CYLINDERS

The number of blocks in a cylinder varies according to the number of heads on the disk drive and the number of sectors on a track. To calculate the number of cylinders required for a given number of blocks, use the logical-to-real conversion (LRC) factor given in the IRIS R9 Peripherals Handbook for the controller/disk drive combination being configured. For example, to calculate the number of cylinders required for 10,000 decimal blocks, find the appropriate Disk Specification sheet, look up the LRC factor (it is given in octal), convert it to decimal (if the calculations are to be done in decimal), then divide this value into the number of blocks. Round up to the next whole number. The result may be reconverted to octal if it is in decimal.

On a LOTUS 710 with a Fujitsu M2312K (84MB) disk drive, the LRC is 340 and the calculation is as follows:

1. $340_8 = 224_{10}$!Convert LRC to decimal
2. 10000/224 = 44.6 !Divide blocks by LRC
3. 44.6 = 45 !Round up
4. $45_{10} = 55_8$!Convert result to octal

Thus, 10,000 decimal blocks are equivalent to 55 octal cylinders on a Fujitsu 84MB disk drive. (Because of the rounding, there are actually more than 10,000 blocks in 55 cylinders.)

To determine cylinders for memory-based logical units, see Section A.4, Mapped Memory, and A.5, LCM and Extended Memory.

A.4 DETERMINING TOTAL AVAILABLE CYLINDERS FOR MAPPED MEMORY

The total available cylinders on a mapped memory system depends on the size of the map and the number of user partitions that have been configured. The cylinders are placed in the dynamic area that is usually used for buffers.

The following steps outline the procedure for determining total available cylinders:

1. Configure the system without specifying any memory-based logical units.

2. Run MAPCHECK to get the total number of blocks in the dynamic area. This is the maximum number of blocks available.

3. Determine the LRC (number of blocks per cylinder) value. The LRC is given (in octal) under the Sectors/Cylinder on the appropriate Disk Specification sheet in the IRIS R9 Peripherals Handbook; for the mapped entry, see Disk Specification entry number 198. Convert the octal value (40) to decimal (32).

4. Divide the decimal LRC value into the number of blocks available on the map. Truncate any decimal portion. The result is the total available cylinders (in decimal).

5. The following example demonstrates this procedure on a system with 2048KB mapped memory:

a.	Total number of blocks in dynamic area	1664
b.	Total available cylinders - 1664/32	52
c.	Convert to octal	64

In this example, up to 64 (octal) cylinders can be configured for memory-based logical units.

CAUTION

It is recommended that not all the available space be used.

A.5 DETERMINING TOTAL AVAILABLE CYLINDERS FOR LCM AND EXTENDED MEMORY

The total available cylinders on the LCM or extended memory depends on the size of the memory board and the number of components that have been configured on it. The cylinders are placed in the dynamic area that is usually used for buffers.

The following steps outline the procedure for determining total available cylinders:

1. Configure the system without specifying any memory-based logical units.

2. Run LCMCHECK to get the total number of blocks in the dynamic area. This is the maximum number of blocks available.

3. Determine the LRC (number of blocks per cylinder) value. The LRC is given (in octal) under the Sectors/Cylinder on the appropriate Disk Specification sheet in the IRIS R9 Peripherals Handbook; for the LCM entry, see Disk Specification entry number 199; for the extended memory entry, see Disk Specification entry number 197. Convert the octal value (40) to decimal (32).

4. Divide the decimal LRC value into the number of blocks available on the map. Truncate any decimal portion. The result is the total available cylinders (in decimal).

5. The following example demonstrates this procedure on a system with 4MB LCM:

a.	Total number of blocks in dynamic area	6234
b.	Total available cylinders - 6234/32	194
c.	Convert to octal	302

In this example, up to 302 (octal) cylinders can be configured for memory-based logical units.

CAUTION

It is recommended that not all the available space be used.

Appendix B
LCM RANGE TABLE FORMAT

The LCM range table is set up by the program LCMACTIVATE based on the configuration specified using LCMC. Figure B-1 shows the LCM range table format. Table B-1 contains the definition for each entry in the range table.

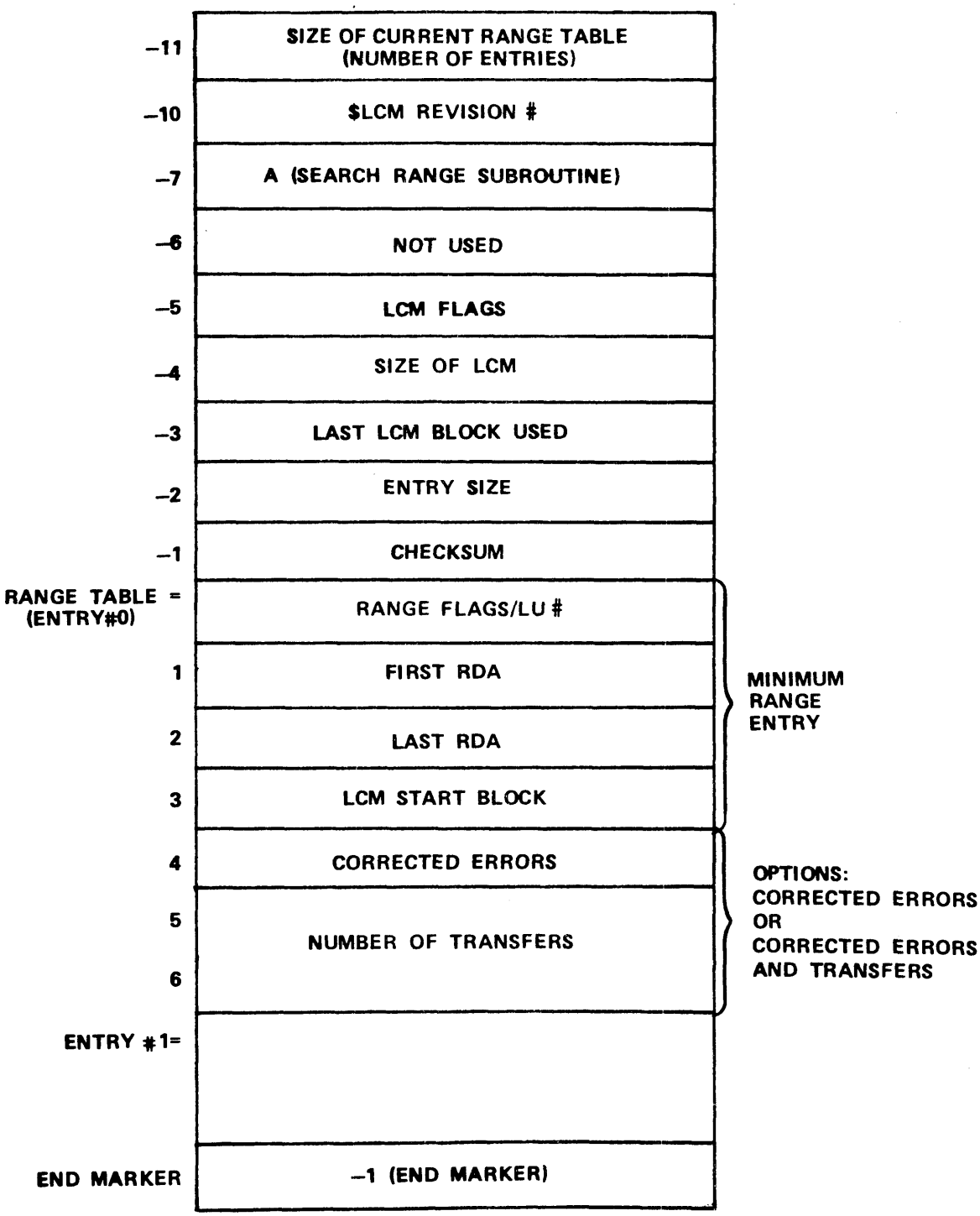


Figure B-1. LCM Range Table Format

TABLE B-1. DEFINITION OF LCM RANGE TABLE ENTRIES (1 of 2)

Field	Definition
Size of Range Table	Size of current range table (number of entries)
$LCM Revision #	$LCM driver assembly parameter
A (Search Range Sub-routine)	Address of search range subroutine in memory
Date Last Configured	Not used
LCM Flags	Bit Mask (octal) 1 - Hamming enabled 2 - Battery Backup installed 4 - $LCM active 10 - Battery Backup functional 20 - $LCM did not survive power-fail 100 - $LCM driver initialized
Size of LCM	Set by $LCM at initialization; measured in blocks
Last LCM Block Used For Range Table	Set by LCMACTIVATE; the difference between this value and Size of LCM equals the number of LCM blocks available for other use
Entry Size	Specifies size of each entry in range table; Size = 7 indicates that both access count and corrected error count are recorded
Checksum	Not used

TABLE B-1. DEFINITION OF LCM RANGE TABLE ENTRIES (2 of 2)

Field	Definition
	NOTE: The following fields are repeated for each range table entry.
Range Flags	Bit Mask (octal) 200 - This range is inactive 400 - Copy all writes to disk 2000 - Don't write disk block to LCM on startup
LU#	Number of logical unit for this range
First RDA	First real disk address included in this range
Last RDA	Last real disk address included in this range
LCM Start	Indicates the first LCM block in this range
Corrected Error Count	Incremented each time a corrected error is detected (optional field as determined by entry-size parameter)
Number of Transfers	Records the total number of accesses to this range - this field can be used to determine the most beneficial ranges to optimize system operation (optional field as determined by entry-size parameter)

Appendix C
FOREIGN DRIVER

The driver, $FOREIGN, provides the capability to read/write a specified sector from/to any disk (regardless of file structure) if the disks have a format compatible with POINT 4-supported hardware. This allows access to disks not generated on IRIS systems.

It remains the responsibility of the programmer to interpret the "foreign" file structure (e.g., the structure and location of file headers, index, etc). In order to configure the foreign unit in the CONFIG driver table, the programmer must know the characteristics of the foreign media.

C.1 INSTALLATION AND SETUP PROCEDURES

The driver, FOREIGN, allows access to non-IRIS files and is shipped as part of the standard IRIS Operating System. The procedure for activating the driver and making it available for use requires the following:

- Enabling the driver
- Defining the foreign units
- Installing the foreign units

The following sections describe these procedures.

C.1.1 Enabling the Driver

The driver file is supplied as a standard system component named FOREIGN. To enable the driver, use the CHANGE processor to change its name from FOREIGN to $FOREIGN.

C.1.2 Defining Foreign Units

To perform input/output operations, $FOREIGN requires that a foreign unit be set up. A foreign unit is a partition on a disk drive and is similar to a logical unit. Any disk controller and drive combination supported by IRIS can be defined as a foreign unit.

A foreign unit is defined in the Disk Driver Table (see Section 4.5, Configuring Disk Driver Table). Each foreign unit must have a unique number, which is then used by an application program to access that unit.

Once the partition entries have been made in the Disk Driver Table, use the update option of SETUP to activate the partition.

C.1.3 Installing a Foreign Unit

A foreign unit may be installed using INSTALL as follows:

```
INSTALL d.p
```

where

d - number of logical controller on which the foreign unit is defined

p - partition number

Foreign units cannot be removed by use of the REMOVE processor.

C.2 SETTING PHYU WORD FOR FOREIGN DISKETTES ON MARK 2 THROUGH MARK 4 SYSTEMS

A foreign diskette is one generated under an operating system other than IRIS. IRIS can access such a diskette on POINT 4 MARK 2/3/4 systems, provided its format is identified by the base constant in the Disk Specification File. To add an entry to the Disk Specification File, see Section 7.1.2.

The base constant for a foreign diskette can be built for MARK 2 and MARK 4 systems as shown in Figure C-1; for MARK 3 systems as shown in Figure C-2.

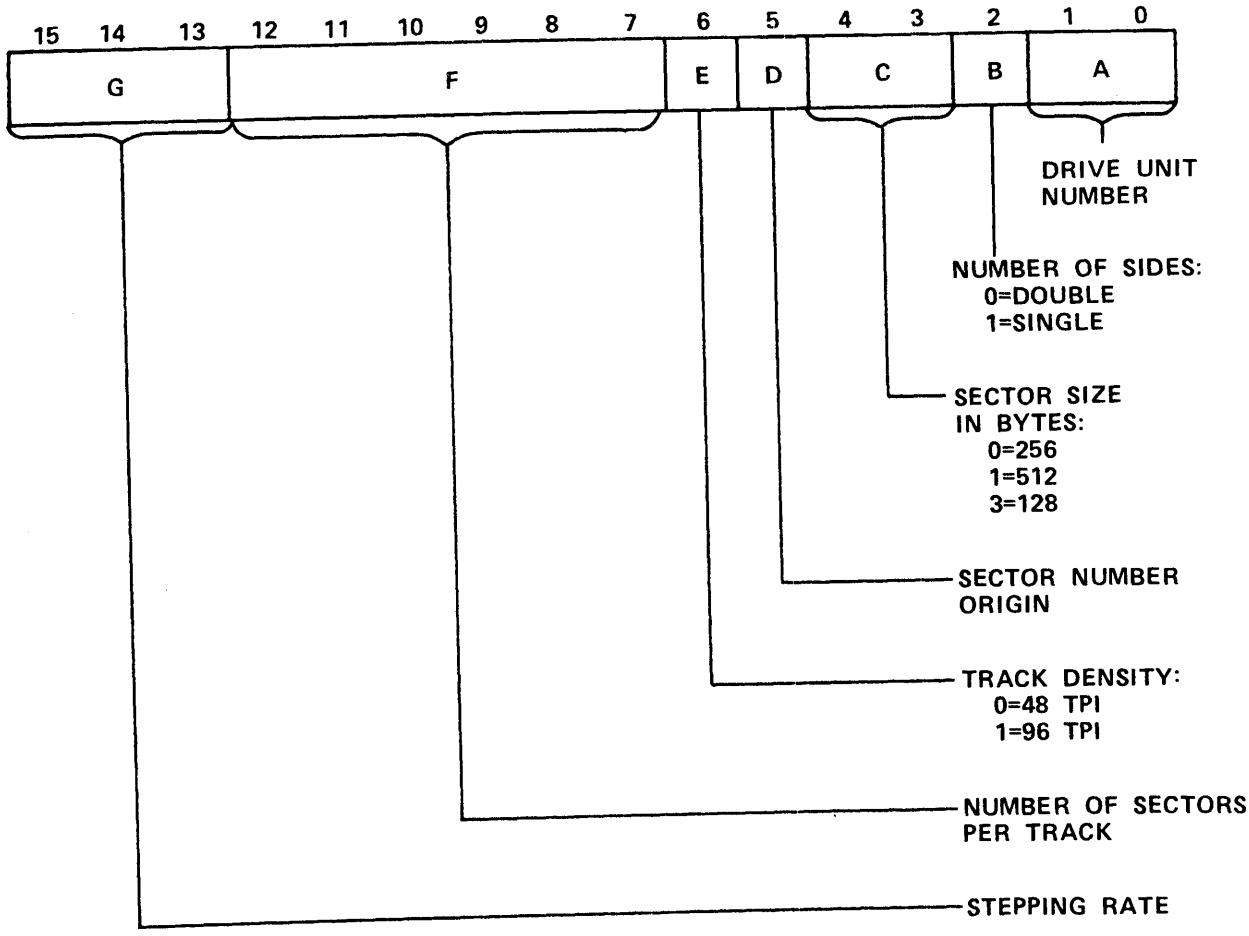


Figure C-1. Base Constant for a Foreign Diskette on a MARK 2 or MARK 4 System

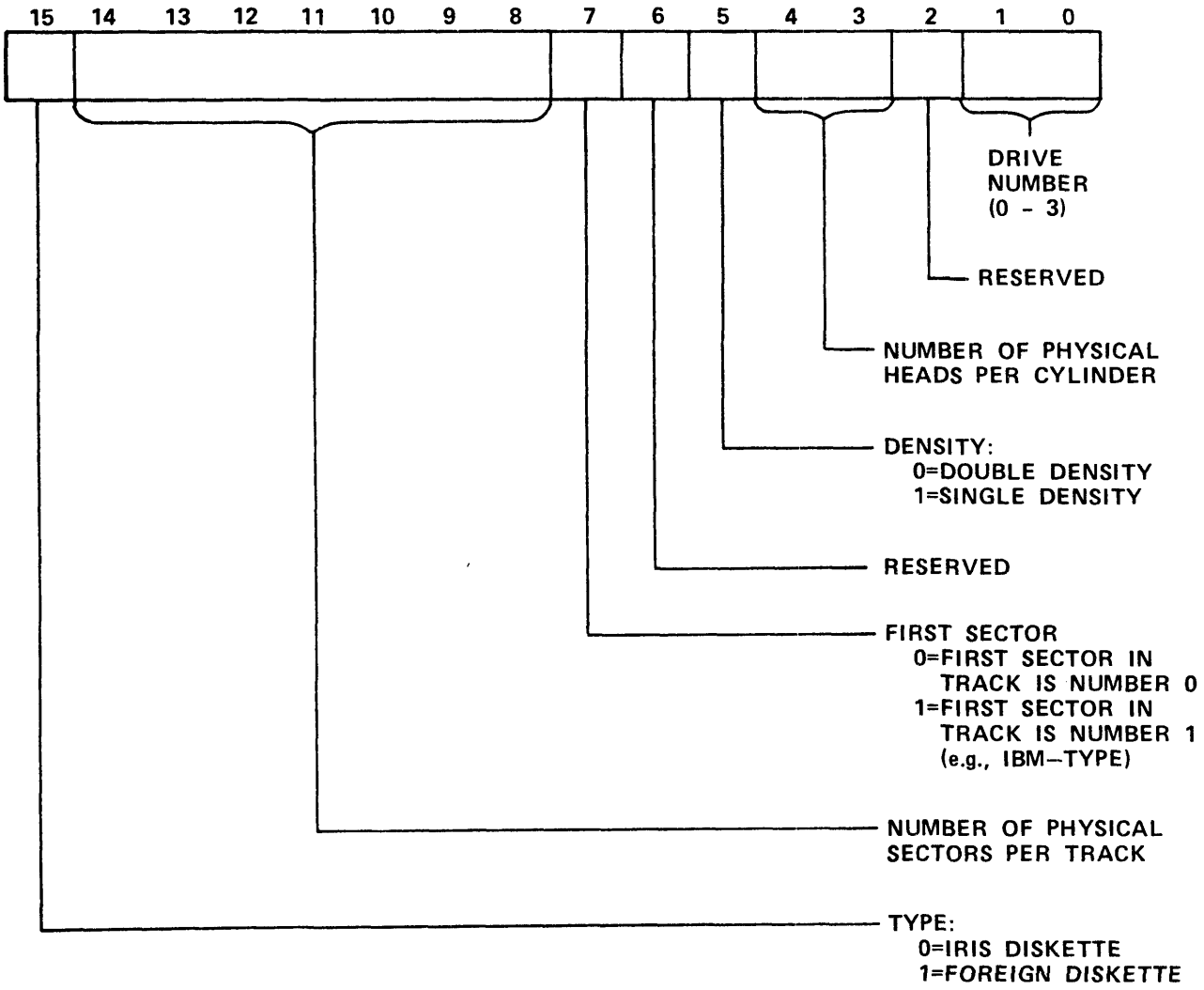


Figure C-2. Base Constant for a Foreign Diskette on a MARK 3 System

C.3 ACCESSING A FOREIGN UNIT

Before the foreign unit can be used, the $FOREIGN driver must be opened, then a special WRITE command issued to allow the foreign unit to be accessed. The data is read or written by specifying the physical location on the foreign unit.

$FOREIGN is opened as follows:

```
OPEN #c,"$FOREIGN"
```

where
c - any channel not currently open

After $FOREIGN is opened, the following WRITE command must be issued to allow access to the foreign unit:

```
WRITE #c,65533;{fu}
```

where
fu - foreign unit number to be accessed

The foreign unit number is optional. If it is not specified, the foreign unit number specified in the Disk Driver Table is used as the default.

The current unit number may be found by entering

```
READ #c,65533;cu
```

where
c - channel number currently open

cu - a numeric variable to receive the current unit number

To read or write data to or from a foreign unit, use one of the following statements, as appropriate:

```
READ #c,blockno,{blockoff};string

WRITE #c,blockno,{blockoff};string
```

where

blockno - physical block number of the foreign unit to be accessed

blockoff - optional offset into a block where access is to begin

string - string variable to receive data from the read or provide a source of data to be written

Data is in a pure binary form with all eight bits being used; it may contain embedded null (binary zero) bytes. Only a single physical block is accessed at a time, with all transfers terminating on either the physical end of a block or end of the string.

C.4 BASIC ERRORS

The following BASIC errors may be generated by $FOREIGN:

Error Number	Description
26	LOGICAL UNIT NOT ACTIVE Generated by a data READ or WRITE when the current foreign unit has not been installed.
51	ILLEGAL RECORD NUMBER Generated by a data READ or WRITE when the block number is not less than the current foreign unit's first unused disk address.
53	ILLEGAL ITEM NUMBER Generated by a data READ or WRITE when the block offset is greater than 511.
54	ITEM TYPES DON'T MATCH Generated by any READ or WRITE statement where the variable type of the argument is a string and should be numeric or vice versa.
70	DATA READ ERROR Generated by a data READ or WRITE returning an error from the disk driver (for more information, see Section C.4.1, Exception Handling).
72	DEVICE NOT ACCESSIBLE Generated by a data READ or WRITE when the current foreign unit number is out of range (the range is 1 through 15 decimal).
76	FILE OR DEVICE IS OPEN ELSEWHERE Generated by an OPEN when $FOREIGN is already in use.
80	LU OUT OF FREE BLOCKS Generated by an OPEN when the system has no private buffers available.

C.4.1 Exception Handling

Any input or output disk operation that produces an error is retried five times. If all tries are unsuccessful, a BASIC error 70 is returned by the disk driver. To read the disk driver status for the last READ or WRITE, enter

```
READ #c,65533,1;status
```

where

status - numeric variable that will receive the disk driver status word

If the last operation completed without error, a zero status value is returned. For other status information, refer to the documentation on the disk driver defined for the specified foreign unit.

Appendix D
IRIS DRIVER FILES

Driver files contain software that interface with the various hardware components. All drivers are shipped with every IRIS system, but when the system is IPLed, only those drivers that have been enabled (that is, those with a $ as the first character of their name) are loaded into memory.

The driver may be enabled in several ways:

- By POINT 4 before shipment
- By the auto-initialization procedure
- By SETUP
- By the user

Table D-1 lists all the drivers shipped by POINT 4 and indicates the usual procedure by which they are enabled. Section D.1 lists the procedure to enable a driver; Section D.2 lists the procedure to disable a driver.

D.1 ENABLING DRIVERS

Most of the drivers that are needed are enabled by the auto-initialization procedure or through the use of SETUP. These are described in Table D-1.

Some drivers, such as MTA0 and MTAS, must be enabled specifically by the user.

To enable a driver, enter the following at the IRIS system prompt (#):

```
CHANGE drivername
```

The system displays

```
IF NO CHANGE, PRESS RETURN.

NEW NAME?
```

Enter the driver name preceded by $, then press <ESC>. The IRIS system prompt is displayed.

D.2 DISABLING DRIVERS

SETUP does not disable a driver that is removed from a configuration control file table. The driver must be disabled manually.

To disable a driver manually, use the CHANGE processor to remove the $ character.

TABLE D-1. ANNOTATED LIST OF DRIVERS (1 of 3)

Name	File Type	Remarks
CALLTBL	77001	System driver for IRIS BASIC CALL statements; shipped enabled
CTR	77036	For use by POINT 4 with the MONITOR program (a diagnostic tool)
DEC	77001	System driver for decimal arithmetic; shipped enabled[1]
EIS	77001	System driver for extended instruction set; enabled by the auto-initialization procedure[1]
FOREIGN	77036	Driver for reading/writing non-IRIS-generated disks and diskettes; user must enable
LCM.LCM	77001	Lotus Cache Memory driver; copied as LCM, then enabled by the auto-initialization procedure
LCM.XM	77001	Extended memory driver; copied as LCM, then enabled by the auto-initialization procedure
LPTN	36	Printer driver for use with the printer system driver LPTS; SETUP copies as LPTn, then enables
LPTS	77001	Printer system driver; enabled by SETUP
MK12	77001	Driver for MARK 12 CPU; enabled by the auto-initialization procedure
MMUXM3	77001	Driver for POINT 4 Multiplexer on MARK 2 and MARK 3 systems; enabled by the auto-initialization procedure
MMUXM4	77001	Driver for POINT 4 Multiplexer on MARK 4 systems; enabled by the auto-initialization procedure

[1] All IRIS systems are shipped with DEC enabled. For a MARK 9 CPU or a MARK 5 with extended instruction set, the auto-initialization procedure disables DEC, then enables EIS.

TABLE D-1. ANNOTATED LIST OF DRIVERS (2 of 3)

Name	File Type	Remarks
MMUXM5	77001	Driver for POINT 4 Multiplexer on MARK 5 through MARK 12 systems; enabled by the auto-initialization procedure
MTA0	36	Driver for magnetic tape unit; user must enable
MTAS	77001	System driver for magnetic tape unit; user must enable
PDN	77036	Driver for port device; enabled by SETUP
PDS	77001	System driver for port device; enabled by SETUP
PHA	77001	Driver for phantom ports; enabled by SETUP
QICM5	36	Driver for 1/4-inch streamer tape; user must enable by first copying to "QIC"
RTC	77001	Driver for real-time clock; if a multiplexer without real-time clock is used, user must enable
SCHEDULER	77001	System driver for timesharing scheduler; shipped enabled
SYSMAP	77001	Driver for mapped memory; shipped enabled
TERM.ADDS	77001	Adds Regent 20, 40 and 60
TERM.ADDS25	77001	Adds Regent 25 and Viewpoint
TERM.ADM1	77001	Lear Siegler ADM-1A, ADM-31 and Soroc IQ 120
TERM.B100	77001	Beehive 100
TERM.B4	77001	Terminal translation module for MAI 7270 terminal; enabled by SETUP
TERM.DGC	77001	Data General 6052 and 6053

TABLE D-1. ANNOTATED LIST OF DRIVERS (3 of 3)

Name	File Type	Remarks
TERM.H1500	77001	Hazeltine 1500
TERM.H2000	77001	Hazeltine 2000
TERM.TV912	77001	Televideo 912 and 920
TERM.TV950	77001	Terminal translation module for Televideo 950 and POINT 4 WS300 terminals; enabled by SETUP
TERM.VT100	77001	Digital VT100
TERM.WS100	77001	Terminal translation module for POINT 4 WS100 terminal; shipped enabled
TERM.WY50	77001	Terminal translation module for WYSE 50 terminal; enabled by SETUP
TERMS	77001	System driver for terminal translation system; shipped enabled

Appendix E
SETUP MESSAGES

The following contains the annotated list of messages produced by SETUP:

A HYPHEN MUST BE FOLLOWED BY A NUMBER
A HYPHEN MUST BE PRECEDED BY A NUMBER
A HYPHENATED PAIR OF NUMBERS MUST BE SEPARATED
    A range of numbers must be entered in the format m-n where m is the minimum and n is the maximum value.

ALL ENTRIES ARE IN OCTAL. DECIMAL INPUT MUST BE FOLLOWED BY .
    All numbers on the current screen are displayed in octal, regardless of whether they were entered in octal or decimal.

ALPHANUMERIC DATA EXPECTED ONLY.
    The only valid characters at the current prompt are letters and numbers.

ARE THE ABOVE ENTRIES CORRECT?
    This is used at the end of tables to verify the entries before saving them into the control file.

BAD FILE? NO TERMINATOR (177777 OR -1). VERIFY USING DSP
    A system file has been corrupted; restore the system from a backup copy.

BAD WORKFILE
    A file used by SETUP has been corrupted; try rerunning the module - if the problem persists, restore the system from a backup copy.

CANNOT CONFIGURE DRIVER drivername NOT ON LU 0
    A driver filename was requested that is not on the IRIS system logical unit 0.

CANNOT CREATE filename, ERROR number
    An IRIS Business BASIC error was encountered while trying to create the control file whose name is represented by filename; see the IRIS Business BASIC Manual for a list of BASIC errors.

CANNOT ENABLE filename
    A filename was specified that is not a driver file.

CANNOT OPEN filename, ERROR number
    An IRIS Business BASIC error was encountered while trying to open a file whose name is represented by filename; see the IRIS Business BASIC Manual for a list of BASIC errors.

CANNOT OPEN 'filename', UPDATE ABORTED!
The update module could not find a required file. Press <ESC> to return to the menu. Restore the system from the last known good backup copy.

CANNOT UPDATE. OTHER USER(S) LOGGED ON.
No other users may be logged on when the update option is executed; have everyone log off, then retry.

CANNOT REMOVE MANDATORY DISCSUBS (!)
Discsub names followed by an exclamation mark (!) are mandatory and must be memory resident. SETUP does not allow the user to remove such a discsub.

character IS NOT ALLOWED IN THE COMMAND
An invalid character for the current prompt was entered.

COMMAND MUST BE ENTERED
<RETURN> was pressed without entering any response.

CONTROL KEY YOU PRESSED HAS BEEN DISABLED
A function key or other control key was pressed that is unavailable under SETUP.

COULD NOT ENABLE filename
Same as CANNOT ENABLE filename.

DECIMAL INPUT MUST BE FOLLOWED BY .
Reminder to include a decimal point when entering numbers in decimal.

DECIMAL CONTROL VALUE CANNOT EXCEED .159.
A control value for the printer driver table was entered that was greater than 159 decimal.

DELETE ALL MEMORY RESIDENT DISCSUBS?
A warning message - there are no discsubs in the memory-resident discsub list.

DISCSUB TABLE HAS BEEN UPDATED
A progress message that is displayed in the update module.

DISCSUB TABLE IS NOT DEFINED
A warning message - the update module was unable to update the system's list of memory-resident discsubs as there is no table in the specified control file.

DISK ADDRESS AND BZUD MUST BE THE SAME AS THE PREVIOUS PARTITION
All disks on a logical controller must have the same disk driver and BZUD address. The current disk entry number has disk driver and BZUD addresses that are different from the entry number specified for the previous partition.

DISK DRIVER TABLE HAS BEEN UPDATED
A progress message that is displayed in the update module.

DISK DRIVER TABLE IS NOT DEFINED
A warning message - the update module was unable to update the system's disk driver table as there is no table in the specified control file.

DRIVE TYPE NOT SUPPORTED UNDER rev
A drive type was specified in the System Back-Up table that is not in the list of supported drives in the SU.DU file.

ENTRIES IN DISK DRIVER TABLE EXCEED 95. CANNOT CONFIGURE
The sum of the number of logical controllers and disk partitions may not exceed 95. More than 95 have been specified.

ENTRY xxx NOT CURRENTLY ASSIGNED
The specified entry is not in the appropriate data base.

ENTRY IS REDISPLAYED IN OCTAL
A number has been converted from decimal to octal and the entry is redisplayed with the octal value.

ENTRY MAY NOT EXCEED n CHARACTERS
ENTRY MAY NOT EXCEED n DIGITS
The entry exceeded the maximum length allowed.

ENTRY MAY NOT EXCEED n
The entry exceeded the maximum value.

ENTRY MUST BE A POSITIVE INTEGER
The entry was something other than a positive integer.

ENTRY MUST RANGE FROM m-n
The entry was outside the allowable range.

ENTRY NOT A VALID MNEMONIC
The entry specified as a printer mnemonic is not a valid code.

ERROR number AT STATEMENT line number
An IRIS Business BASIC error was encountered; this may have happened because multiple <ESC>s were pressed too quickly for the system to process; press <ESC> and retry the procedure.

ERROR BUILDING filename
An unspecified error was encountered while trying to create the file whose name is represented by filename.

ERROR INITIALIZING filename
An unspecified error was encountered while trying to initialize the file whose name is represented by filename.

EXPRESSION CONTAINS ILLEGAL CHARACTER
An invalid character was entered as an ASCII character.

EXPRESSION DELIMITED BY '\' CANNOT EXCEED 377 OCTAL (255 DECIMAL)
The delimiter \ indicates an ASCII code; the maximum ASCII value in octal is 377.

EXPRESSION MUST START AND TERMINATE WITH DELIMITERS (. $ \ )
When defining ASCII codes, the codes must be enclosed within appropriate delimiters: decimal entries require decimal points (.), hexadecimal codes require $ characters; and octal codes require backslashes (\).

FILE INITIALIZATION IN PROGRESS, DO NOT DISTURB
Progress message while opening file.

filename IS AN ILLEGAL FILENAME
Under IRIS a filename can contain only letters, numbers, and periods.

filename IS MISSING, CONSULT DOCUMENTATION
The program was unable to find the file whose name is represented by filename.

filename IS MISSING, PROGRAM ABORTED
The update module could not find a required file; try rerunning the update; if the problem continues, restore the system from the last known good backup copy.

filename IS NOT ACCESSIBLE
The requested file is not on the default logical unit, the system logical unit, nor the user's assigned logical unit.

filename IS NOT ACCESSIBLE, PROGRAM ABORTED
The update module could not find a required file on the default logical unit, the system logical unit, or the user's assigned logical unit.

FUNCTION MUST BE ENTERED
SETUP requires a response at the current prompt.

FUNCTION SELECTED IS NOT SYSTEM-RESIDENT
A requested SETUP program is not available; restore the system from a backup copy.

HAS THE SYSTEM BEEN BACKED UP
Before configuration is updated (Main Menu option 3), a backup should be performed. If N is entered at this prompt, SETUP terminates with a reminder to do an update.

HEX CONTROL VALUE CANNOT EXCEED $9F$
A control value for the printer driver table was entered in hexadecimal that was greater than $9F$.

HEX EXPRESSION DELIMITED BY '$' CANNOT EXCEED FF
The delimiter $ indicates an ASCII code; the maximum ASCII value in hexadecimal is FF.

HEX EXPRESSION LENGTH MUST BE EVEN
Each number in hexadecimal requires two digits; therefore, all values must have an even number of digits.

INFO TABLE IS NOT DEFINED
A warning message - the update module was unable to update the system's System Information Table as there is no table in the specified control file.

INITIALIZING DISK ENTRY FILE, ONE MOMENT PLEASE...
Progress message.

INITIALIZING WORK FILES, ONE MOMENT PLEASE...
Progress message.

INVALID CHARACTER FOR FILE NAME
The expression entered violates the rules associated with IRIS file naming conventions.

INVALID DEVICE NAME
The name requested as the listing device is not a valid listing device.

INVALID ENTRY
The data just entered is invalid for an unspecified reason.

INVALID LOGICAL CONTROLLER NUMBER
The controller number is out of the specified range.

INVALID RANGE OF NUMBERS
This entry allows a range of numbers (e.g., 1-7), and the entry (e.g., 1-10) is not valid.

INVALID TYPE
No longer used.

IRIS REVISION NOT CORRECT FOR SETUP n.n CANNOT UPDATE
The version of SETUP and the version of IRIS to be updated must correspond.

LOGICAL CONTROLLER 0 ONLY MAY BE MODIFIED
A logical controller number other than 0 was specified; however, only logical controller 0 has been configured.

MNEMONIC IS USED BY ANOTHER DRIVE TYPE
The drive type mnemonic is assigned to another drive type.

n IS THE MAXIMUM ALLOWED
n IS THE MINIMUM ALLOWED
n IS THE MINIMUM DECIMAL ALLOWED
n IS THE MINIMUM OCTAL ALLOWED
n OCTAL IS THE MAXIMUM ALLOWED
n OCTAL OR m DECIMAL IS THE MAXIMUM ALLOWED
Minimum and maximum checking is performed for all numeric inputs. An appropriate message is displayed if the input does not fit into the minimum or maximum range.

NO DISCSUB NAMES LISTED
There are no discsubs in the table.

NO FILES PAST THIS PAGE
The last names in the DISCSUB list have been displayed.

NO SYSTEM BACKUP PARAMETERS IN *filename* CONTROL FILE
A warning message - the update module was unable to update the backup parameters as there is no backup table in the specified control file.

NO. OF CYLS EXCEED MAX CYLS ALLOWED.
NO. OF CYLS EXCEEDS MAX CYLS PER LU.
An attempt has been made to configure a disk partition with more than the maximum allowable cylinders.

NOT ALLOWING DIRTY PAGES MAY DECREASE SYSTEM EFFICIENCY
Warning message.

NUMBER OF GROUPS OF PORTS, m EXCEEDS MAXIMUM ALLOWED, n
The Port Definition Table has room for n entries; m entries have been configured.

OCTAL CONTROL VALUE CANNOT EXCEED \217\
A control value for the printer driver table was entered in octal that was greater than \217\.

ONE MOMENT PLEASE...
Progress message.

OVERLAPPING PARTITIONS
The beginning of the current partition overlaps the end of the previous partition.

PARTITION 0.0 MAY NOT BE MODIFIED
Partition 0.0 contains the system logical unit and may not be modified (this message is also displayed if a partition is specified that is outside the range of specified partitions).

PARTITION MUST RANGE m-n
The specified partition is not in the range of configured disk partitions.

PORT DEFINITION TABLE HAS BEEN UPDATED
A progress message that is displayed in the update module.

PORT DEFINITION TABLE IS NOT DEFINED
A warning message - the update module was unable to update the system's port definition as there is no table in the specified control file.

PORTS MUST BE CONFIGURED IN SEQUENTIAL ORDER
Entry of port configuration information must be done in ascending order. Once ports are configured, they can be modified in any order, but their order in the table cannot be changed.

PRINTER IS BUSY, PLEASE STAND BY...
    Printer is currently in use by another task; SETUP keeps checking until it is free.

PRINTING...
    Progress message.

QUESTION MUST BE ANSWERED
    SETUP requires a response for the current prompt.

RETRIEVING PORT DEFINITION TABLE, ONE MOMENT PLEASE...
    Progress message.

SAVING filename DO NOT DISTURB
    Progress message.

SEARCH ERROR s
    Error generated by a SETUP module while searching an indexed or polyfile.

SYSTEM MUST BE BACKED UP BEFORE UPDATING
    As no backup exists for the current configuration, SETUP will not proceed with the requested update.

UNABLE TO CREATE filename
    Unspecified error in trying to create the file whose name is represented by filename.

UNABLE TO UPDATE REX PORT 0. USE DSP
    The system has been corrupted; restore from a backup copy.

UPDATING filename, DO NOT DISTURB
    Progress message.

UPDATING DISCSUB TABLE IN 'CONFIG' FILE, DO NOT DISTURB
    Progress message.

UPDATING DISK DRIVER TABLE IN 'CONFIG' FILE, DO NOT DISTURB
    Progress message.

UPDATING PORT DEFINITION TABLE IN 'CONFIG' FILE, DO NOT DISTURB
    Progress message.

UPDATING SYSTEM INFO TABLE IN 'CONFIG' FILE, DO NOT DISTURB
    Progress message.

UPDATING WORK FILE, ONE MOMENT PLEASE...
    Progress message.

VALID ENTRIES ARE list
    The only valid responses for the current entry are contained in the list.

WARNING: REMAINING CYLINDERS = 0
    There are no cylinders on the current disk for the remaining disk partitions.

WARNING: DIRECTORY 1 FOR WORKFILE IS FULL
WARNING: WORKFILE IS FULL
    There is no available workspace for the system.

WRITING SELECTED NAMES...
    Progress message.

XON/XOFF VALUES CANNOT EXCEED ONE CHARACTER
    Only one ASCII character may be used to define the XON and XOFF values in the printer driver table.

Appendix F
OCTAL-DECIMAL CONVERSIONS

Table F-1 gives the decimal equivalents for given octal values; Table F-2 gives the octal equivalents for given decimal values.

TABLE F-1. OCTAL-TO-DECIMAL CONVERSION

Octal	Decimal	Octal	Decimal	Octal	Decimal
1	1				
2	2	100	64	10000	4096
3	3	200	128	20000	8192
4	4	300	192	30000	12288
5	5	400	256	40000	16384
6	6	500	320	50000	20480
7	7	600	384	60000	24576
		700	448	70000	28672
10	8				
20	16	1000	512	100000	32768
30	24	2000	1024	177777	65535
40	32	3000	1536		
50	40	4000	2048		
60	48	5000	2560		
70	56	6000	3072		
		7000	3584		

TABLE F-2. *DECIMAL-TO-OCTAL CONVERSION*

Decimal	Octal	Decimal	Octal	Decimal	Octal
1	1				
2	2	100	144	10000	23420
3	3	200	310	20000	47040
4	4	300	454	30000	72460
5	5	400	620		
6	6	500	764		
7	7	600	1130		
8	10	700	1274		
9	11	800	1440		
		900	1604		
10	12				
20	24	1000	1750		
30	36	2000	3720		
40	50	3000	5670		
50	62	4000	7640		
60	74	5000	11610		
70	106	6000	13560		
80	120	7000	15530		
90	132	8000	17500		
		9000	21450		

Appendix G
GLOSSARY

Account Number - an octal word that consists of account privilege level in bits 14 and 15, the group number in bits 6 through 13 and the user number in bits 0 through 5. (Bit 15 is the most significant bit.)

ACCOUNTUTILITY - a utility used by the IRIS system manager to maintain user accounts.

Active File - an area that holds the contents of the user's partition while that user is swapped out. Each interactive port has an associated active file.

Apparent Response Time - the time, as perceived by the user, that it takes for the system to respond to a user request.

Auto-Initialization - the procedure that initially configures the system; the procedure sets up the correct multiplexer driver, DISCUTILITY, system drivers, and logical unit functions.

Auxiliary Buffer - buffer used by the system to process IRIS indexed files.

Backdown - the process of restoring the system using a previously saved backup version.

Backup - the process of saving the system or portion of the system on to a storage media such as streamer tape.

Block - an IRIS block contains 1000 octal or 512 decimal bytes.

Block Accounting - the record of block usage by individual accounts.

Block Two Utility Program (BTUP) - used by the IPL process to load IRIS; it is stored on disk block 2 on logical unit 0.

Block Zero Utility Driver (BZUD) - simple disk driver used in the IPL process and by stand-alone modules, a copy resides on block zero of each logical unit.

BTUP - Block Two Utility Program.

Buffer - an area of memory, used by the system to hold data.

Buffer Pool - the collection of disk buffers.

BZUD - Block Zero Utility Driver.

Character Queue - buffer that holds incoming characters that need to be processed by the operating system.

Configuration Control File - designation for file used by SETUP to hold the configuration parameters.

Control File - another name for configuration control file.

CTUTILITY - a stand-alone utility that is used to save and restore information between disk and cassette tapes.

Cylinder - a set of tracks on a disk unit that can be accessed without moving the read/write heads.

Data Channel - hardware path between an I/O device and memory through which data is transferred without software intervention.

Data File Table - contains information about attributes of an open file. This table is used by the system to access files.

Dirty Page - a disk buffer that contains data that has been modified since the block was accessed and therefore differs from the disk.

Discsubs - system subroutines used by IRIS that normally reside on disk.

DISCUTILITY - stand-alone utility that is used to save and restore systems from disk and/or streamer tape.

Disk Buffer - an area of memory that holds one block of disk information.

Disk Controller - physical device that controls access between disk and memory.

Disk Driver Table - table that contains information about the disk controller, disk drive, and disk partitioning.

Disk Partition - logical subdivision of a physical disk.

Disk Service Processor (DSP) - machine language editor used to make changes to components in memory and on disk.

Driver - software that provides access to peripheral devices.

DSP - Disk Service Processor.

DTR - Data Terminal Ready; used by the system to determine the availability of certain peripheral devices, such as printers.

Dynamic Allocation - space allocated for components as needed during runtime.

Efficient Dirty Page - a flag that indicates that dirty pages are to be written to disk at the end of each time slice.

Foreign Unit - sectors of a disk that contain files not generated by IRIS.

Free Nodes - segments of memory that have not been allocated to any system or user function, and are therefore available.

IIB - Intermediate Input Buffer (also called type-ahead buffer).

Initial Program Load (IPL) - the process of loading IRIS into memory.

Input/Output Buffer (IOB) - buffers used to hold information as it is input or output.

Intermediate Input Buffer (IIB) - buffer used to hold information that has been entered at the keyboard but which the system is not yet ready to process.

IOB - Input/Output Buffer.

IPL - Initial Program Load.

IRIS - Interactive Real-time Information System. This is the name of the operating system written and licensed by POINT 4 Data Corporation.

IRIS.START - program that is invoked each time a user logs on.

IRIS.START.IPL - program that is invoked by IRIS at the end of IPL.

Kilobyte (KB) - 1024 bytes.

LCM - Lotus Cache Memory.

LCMACTIVATE - utility to activate the LCM driver.

LCMCHECK - utility used to check the status of the LCM.

Logical Controller - a software designation for that portion of a disk controller used by common disk types.

Logical Unit - designation used to refer to software on a disk or memory-based partition.

Logical Unit 0 - contains the IRIS system software.

Long Time Slice - time slice used when there are no interactive users on the system; provides better throughput.

Lotus Cache Memory (LCM) - a solid state device used to provide additional memory capability. Manufactured by POINT 4.

MAPACTIVATE - utility to activate the map driver.

MAPCHECK - utility used to check the status of the map.

Mapped Memory - hardware architecture used to increase the memory available to the system by redirecting the CPU to different areas of physical memory.

Megabyte (MB) - 1024 kilobytes or 1,048,576 bytes.

Multiplexer - a device that handles data transmission to and from low-speed devices such as terminals.

Octal - base 8 number system used by IRIS.

Parity - describes the number of bits expected. If the system requires a parity check, then all bytes must have either an even or an odd number of bits set.

Partitions - subdivisions of memory (user partition) or of disk (disk partitions).

PCW - Port Control Word.

PDT - Port Definition Table.

Phantom Port - logical port that can receive input and simulate output, but does not require a physical port.

Physical Unit Selection Word (PHYU) - contains the information needed by the disk driver to access the physical disk drive unit.

PHYU - Physical Unit Selection word.

Pico-N - POINT 4 encoded proprietary device, prevents unauthorized use of IRIS, application packages, etc.

Platter - describes one physical storage component of a disk drive.

Port Control Word (PCW) - contains the logical characteristics of the device connected to a multiplexer port.

Port Definition Table (PDT) - contains the information needed by the multiplexer driver to access the devices on the multiplexer.

Processor - an assembly language program written for IRIS.

Pseudo-Device - logical device which does not have a hardware interface.

Resident Executive (REX) - memory-resident portion of IRIS.

REX - Resident Executive.

Sector - subdivision of a track, contains 512 bytes; also used to denote the pre-shaped section of disk. See Figure G-1.

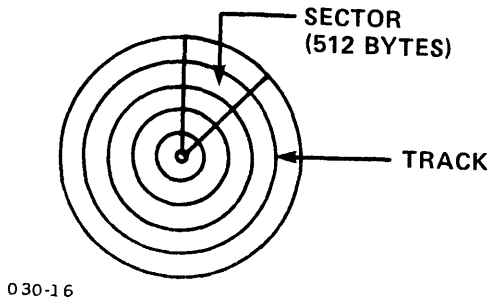


Figure G-1. Disk Drive Surface Showing Surface and Track

Short Time Slice - time slice used when there are interactive users on the system; provides better apparent response time.

Signal Buffer - buffer that holds signals sent from one port to another that have not yet been processed.

SIR - System Initialization Routine.

Static Allocation - space that has been allocated through the configuration process and is fixed in size, but not necessarily location.

Surface - one side of a platter.

Swapping - process of moving the current user's information from memory to disk, then bringing in the next user's information from disk to memory.

System Generation - process of creating an IRIS system that can be IPLed on a given hardware configuration.

System Information Table - contains information used by IRIS.

System Initialization Routine (SIR) - initializes the system at IPL time.

Terminal Translation Module - contains the information needed by the terminal driver to interface with the terminal capabilities, such as codes for clear screen, reverse video, etc.

Throughput - the actual amount of work performed by the system.

Time Slice - the interval of CPU time allotted to each user.

Timesharing - the use of one system by numerous users and jobs at one time and seemingly simultaneously.

Track - area on disk accessed by one read/write head in one revolution. See Figure G-1.

Type-Ahead Buffer - Intermediate Input Buffer.

User Partition - subdivisions of memory that hold user programs.

XON/XOFF Protocol - codes that can enable/disable output from/to peripheral devices.

Appendix H
HINTS ON CREATING PRINTER ENTRIES

IRIS 9.0 and later revisions can support several different types of printers on one system. Each printer can be configured independently of the others.

In order to configure a printer, the printer specifications must be entered into the two SETUP printer databases, Printer Specification File and Printer Driver Table File. The Printer Specification File contains the printer name, type, and default PCWs. The Printer Driver Table File contains the printer type, open, close, DTR or XON protocol, and the supported mnemonics.

As shipped, the printer databases contain two entries, one for a NEC5515 letter quality printer, the second for a Printronix P300 printer. To list the existing entries, use the List/Maintain SETUP's Databases option; for more information, see Section 7.

If a new printer being configured uses the same values for the open, close, and DTR or XON protocol as one of the printers already in the database, and the supported mnemonics are the same, then that printer type can be used.

If the only difference is the Port Control Word (PCW), that printer type can be used but the PCW must be changed when configuring the Port Definition Table.

Otherwise, it is necessary to define a new entry. Assign your own printer types beginning at 37 (the highest valid printer type number) and work backward. This will help to ensure that POINT 4-supplied printer types do not conflict with user-supplied printer types.

The printer type must have an entry in the Printer Specification File before the port for the printer can be configured in the Port Definition Table.

The printer type does not have to be in the Printer Driver File when the port is configured, but must be in the file before the update option of SETUP is used.

INDEX

INDEX

COMMENT SHEET

MANUAL TITLE: IRIS R9 System Configuration Manual

PUBLICATION NO. SM-030-0029 REVISION C

FROM: NAME/COMPANY: _____

BUSINESS ADDRESS: _____

CITY/STATE/ZIP: _____

COMMENTS: Your evaluation of this manual will be appreciated by POINT 4 Data Corporation. Notation of any errors, suggested additions or deletions, or general comments may be made below. Please include page number references where appropriate.

NO POSTAGE NECESSARY IF MAILED IN U.S.A.
Fold on Dotted Lines and Tape

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1458 TUSTIN, CA

POSTAGE WILL BE PAID BY ADDRESSEE

POINT 4 Data Corporation
PUBLICATIONS DEPARTMENT
15442 Del Amo Avenue
Tustin, CA 92680

CUT ON THIS LINE

15442 Del Amo Avenue
Tustin, CA 92680
(714) 259-0777