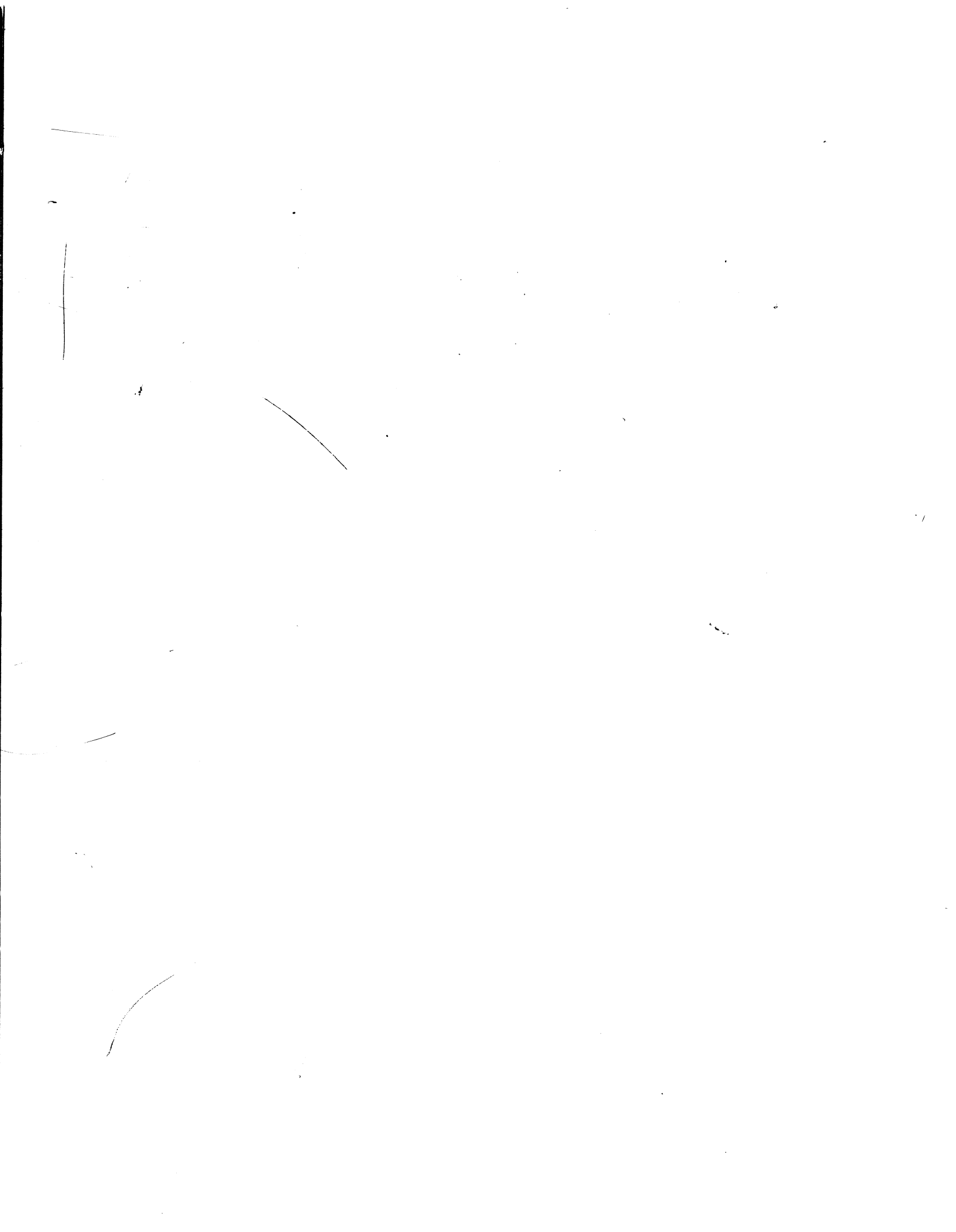




**FORTRAN IV-PLUS
Installation Guide**

Order No. DEC-11-LFPGB-C-D

digital



FORTRAN IV-PLUS
Installation Guide

Order No. DEC-11-LFPG-B-C-D

First Printing, March 1975
Revised: December 1975
January 1977

The information in this document is subject to change without notice and should not be construed as a commitment by Digital Equipment Corporation. Digital Equipment Corporation assumes no responsibility for any errors that may appear in this document.

The software described in this document is furnished under a license and may be used or copied only in accordance with the terms of such license.

Digital Equipment Corporation assumes no responsibility for the use or reliability of its software on equipment that is not supplied by DIGITAL.

Copyright © 1975, 1977 Digital Equipment Corporation

The postage prepaid READER'S COMMENTS form on the last page of this document requests the user's critical evaluation to assist us in preparing future documentation.

The following are trademarks of Digital Equipment Corporation:

DIGITAL	DECsystem-10	MASSBUS
DEC	DECTape	OMNIBUS
PDP	DIBOL	OS/8
DECUS	EDUSYSTEM	PHA
UNIBUS	FLIP CHIP	RSTS
COMPUTER LABS	FOCAL	RSX
COMTEX	INDAC	TYPESET-8
DDT	LAB-8	TYPESET-10
DECCOMM	DECsystem-20	TYPESET-11

CONTENTS

		Page
PREFACE		v
CHAPTER 1	INTRODUCTION TO FORTRAN IV-PLUS	1-1
1.1	SYSTEM REQUIREMENTS	1-2
1.1.1	RSX-11M	1-2
1.1.2	RSX-11D	1-2
1.1.3	IAS	1-2
1.2	DISTRIBUTION FILES	1-3
1.2.1	UFD [1,2]	1-3
1.2.2	UFD [11,36]	1-3
1.2.3	UFD [11,37]	1-3
1.2.4	UFD [11,40]	1-4
CHAPTER 2	INSTALLATION PLANNING	2-1
2.1	SELECTING THE "DEFAULT" FORTRAN	2-1
2.1.1	Selecting F4P as the Default FORTRAN	2-1
2.1.2	Selecting FOR as the Default FORTRAN	2-2
2.2	SELECTING F4P COMPILER OPTIONS	2-2
2.3	SELECTING F4P OTS OPTIONS	2-2
2.4	INSTALLATION PROCEDURES	2-2
2.4.1	RSX-11M	2-3
2.4.2	RSX-11D	2-3
2.4.3	IAS	2-3
CHAPTER 3	SYSTEM TAILORING	3-1
3.1	OPTIONS AFFECTING COMPILE-TIME PERFORMANCE	3-1
3.1.1	The Work File	3-1
3.1.2	Other Temporary Files	3-1
3.1.3	Experimental Data -- Compiler Performance	3-2
3.1.4	Dynamic Storage	3-4
3.1.5	RSX-11M Without Dynamic Memory	3-4
3.2	OTS OPTIONS	3-4
3.2.1	F4P11S	3-4
3.2.2	Short Error Text - RSX-11M Only	3-5
3.2.3	F4PMAP	3-5
3.2.4	F4PEIS	3-6
3.2.5	F4PCVF	3-6
3.2.6	F4PNER	3-7
3.2.7	F4PNIO	3-7
3.2.8	F4PRES	3-7
CHAPTER 4	RELEASE NOTES	4-1
4.1	RECOVERING LOST DISK SPACE	4-1
4.2	CAUTION CONCERNING COMPILER PATCH PROCEDURES	4-1
4.3	USING F4P WITH RSX-11D BATCH	4-1
4.4	OTS ASSEMBLY PARAMETER FILES	4-2
4.5	IMPROVED FORTRAN SUPPORT FOR ANSI MAGNETIC TAPE	4-2

CONTENTS (CONT.)

		Page
CHAPTER 5	RSX-11M INSTALLATION	5-1
5.1	INSTALLATION FROM MAGTAPE DISTRIBUTION	5-1
5.1.1	Preparations	5-1
5.1.2	Building the Compiler	5-1
5.1.3	Building the OTS	5-2
5.1.4	Copying the Message File	5-3
5.2	INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION	5-3
5.2.1	Preparations	5-3
5.2.2	Building the Compiler	5-3
5.2.3	Building the OTS	5-4
5.2.4	Copying the Message File	5-4
5.3	INSTALLING THE COMPILER	5-5
CHAPTER 6	RSX-11D INSTALLATION	6-1
6.1	INSTALLATION FROM MAGTAPE DISTRIBUTION	6-1
6.1.1	Preparations	6-1
6.1.2	Building the Compiler	6-1
6.1.3	Building the OTS	6-2
6.1.4	Copying the Message Files	6-2
6.2	INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION	6-3
6.2.1	Preparations	6-3
6.2.2	Building the Compiler	6-3
6.2.3	Building the OTS	6-4
6.2.4	Copying the Message Files	6-4
6.3	INSTALLING THE COMPILER	6-4
CHAPTER 7	IAS INSTALLATION	7-1
7.1	INSTALLATION FROM MAGTAPE DISTRIBUTION	7-1
7.1.1	Preparations	7-1
7.1.2	Building the Compiler	7-1
7.1.3	Building the OTS	7-2
7.1.4	Copying the Message Files	7-2
7.2	INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION	7-2
7.2.1	Preparations	7-3
7.2.2	Building the Compiler	7-3
7.2.3	Building the OTS	7-3
7.2.4	Copying the Message Files	7-4
7.3	INSTALLING THE COMPILER	7-4
CHAPTER 8	SYSTEM BUILD VERIFICATION	8-1
APPENDIX A	COMPILER BUILD FILES	A-1
A.1	RSX-11M COMPILER BUILD FILE (F4P11M.CMD)	A-1
A.2	RSX-11D COMPILER BUILD FILE (F4P11D.CMD)	A-4
A.3	IAS COMPILER BUILD FILE (F4PIAS.CMD)	A-6

FIGURES

FIGURE	1-1 How to Read the F4P Installation Guide	1-1
	3-1 Experimental Data: Compiler Performance	3-3

PREFACE

The FORTRAN IV-PLUS Installation Guide describes the procedures for installing the FORTRAN IV-PLUS system on the RSX-11M, RSX-11D and IAS operating systems from magtape and disk cartridge distribution kits. This manual also describes the minimal system requirements, the files distributed in the kits, options available for planning and tailoring the system to user needs, and release notes. A listing of the compiler build files for each system is presented in the appendix.

IT IS RECOMMENDED THAT THIS MANUAL BE READ COMPLETELY BEFORE ATTEMPTING TO INSTALL THE SYSTEM.

ASSOCIATED DOCUMENTS

For information on using the FORTRAN IV-PLUS system, consult the FORTRAN IV-PLUS User's Guide. For details on the FORTRAN language as implemented in FORTRAN IV-PLUS, consult the PDP-11 FORTRAN Language Reference Manual. For information on the Object Time System, consult the FORTRAN IV-PLUS OTS Reference Manual.

DOCUMENTATION CONVENTIONS

The following documentation conventions are used throughout this manual. However, it is assumed that this software will be installed by someone already familiar with the operating system and its operating conventions.

- | | | |
|---------------------|---------|--|
| \$ | ALTMODE | The symbol \$ represents the non-printing ALTMODE key. This key is pressed in place of the RETURN key when specified. Unless otherwise specified (i.e., with the \$), all commands terminate with a carriage return. |
| ^z | CTRL z | The notation z where z is an alphabetic character is accomplished by pressing the CTRL (control) key while simultaneously typing the appropriate letter. |
| UPPERCASE/lowercase | Text | printed in UPPERCASE characters indicates literal information that must be entered exactly as shown; text printed in lowercase characters indicates variable information that must be supplied by the user (e.g., DKn:). |



CHAPTER 1
INTRODUCTION TO FORTRAN IV-PLUS

This manual provides complete instructions for installing the FORTRAN IV-PLUS system on the RSX-11M, RSX-11D, and IAS operating systems. Read all the chapters relevant to your operating system, as shown in Figure 1-1, before attempting to install the FORTRAN IV-PLUS system.

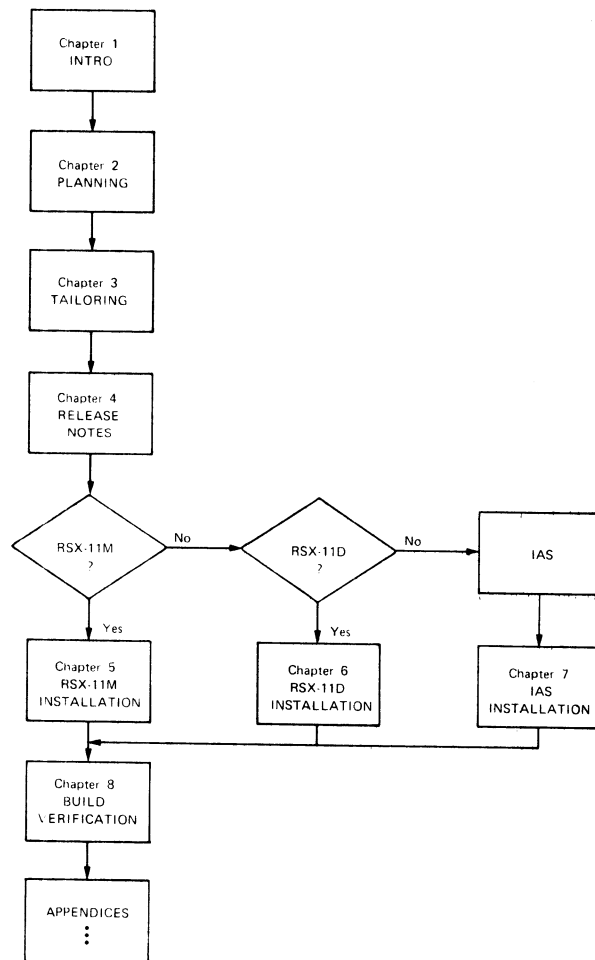


Figure 1-1 How to Read the F4P Installation Guide

INTRODUCTION TO FORTRAN IV-PLUS

1.1 SYSTEM REQUIREMENTS

1.1.1 RSX-11M

The software included in this distribution requires the following system components for normal use:

RSX-11M Operating System,

PDP-11/34, 11/45, 11/50, 11/55, or 11/70 with Floating Point Processor (FP11),

Minimum 18K partition for compilation,

Minimum 275 blocks of contiguous on-line disk storage for compiler task,

Minimum 150 blocks of on-line disk storage for Object Time System Library.

1.1.2 RSX-11D

The software included in this distribution requires the following system components for normal use:

RSX-11D Operating System,

PDP-11/34, 11/45, 11/50, 11/55, or 11/70 with Floating Point Processor (FP11),

17K partition for compilation if I/O services are provided via the standard RSX-11D shared library, SYSRES,

Minimum 275 blocks of contiguous on-line disk storage for compiler task,

Minimum 150 blocks of on-line disk storage for Object Time System Library.

1.1.3 IAS

The software included in this distribution requires the following system components for normal use:

IAS Operating System,

PDP-11/45, 11/50, or 11/70 with Floating Point Processor (FP11),

17K partition for compilation if I/O services are provided via the standard IAS shared library, SYSRES,

Minimum 275 blocks of contiguous on-line disk storage for compiler task,

Minimum 150 blocks of on-line disk storage for Object Time System Library.

INTRODUCTION TO FORTRAN IV-PLUS

1.2 DISTRIBUTION FILES

The FORTRAN IV-PLUS software is supplied on one RK05 DECpack or RK06 disk cartridge or one 9-track magnetic tape. The FORTRAN IV-PLUS distribution kits contain files which can be used to build a FORTRAN IV-PLUS system for RSX-11M, RSX-11D, or IAS.

The FORTRAN IV-PLUS distribution media contain the following files:

1.2.1 UFD [1,2]

F4PCOM.MSG	Compiler diagnostic messages file
F4POTS.MSG	OTS diagnostic messages file

1.2.2 UFD [11,36]

F4P.OLB	F4P compiler object module library
F4P11M.CMD F4P11M.ODL	F4P compiler build command files for RSX-11M
F4P11D.CMD F4P11D.ODL	F4P compiler build command files for RSX-11D
F4PIAS.CMD F4PIAS.ODL	F4P compiler build command files for IAS

1.2.3 UFD [11,37]

F4POTS.OBJ	Object Time System concatenated object modules
F4P11M.OBJ	Specific OTS modules for RSX-11M
F4P11D.OBJ	Specific OTS modules for RSX-11D
F4PIAS.OBJ	Specific OTS modules for IAS
F4P11S.OBJ	Specific OTS modules for RSX-11S subset
SHORT.OBJ	OTS short error text module for RSX-11M
F4PMAP.OBJ	PDF name-mapping concatenated object module
F4PCVF.OBJ	Optional OTS floating-point formatted output conversion routine
F4PEIS.OBJ	EIS replacements for OTS integer functions which make use of the FPP
F4PNIO.OBJ	Optional OTS modules without FORTRAN I/O capability
F4PNER.OBJ	Optional OTS error reporting module

INTRODUCTION TO FORTRAN IV-PLUS

1.2.4 UFD [11,40]

F4P.MAC	OTS assembly parameter files
FPP.MAC	
FPPDP.MAC	
ADEDEF.MAC	
RSXD.MAC	
RSXM.MAC	
RSXS.MAC	
NONIO.MAC	
F4PTST.FTN	System installation verification test program
F4PRES.MAC	OTS shared library source file

CHAPTER 2

INSTALLATION PLANNING

Various options are available for building the FORTRAN IV-PLUS (F4P) system and tailoring it to the particular needs of each installation. These options are described throughout this manual; this chapter discusses some of the alternatives which must be considered before the installation process is started.

2.1 SELECTING THE "DEFAULT" FORTRAN

Some installations may wish to run both FORTRAN IV (FOR) and FORTRAN IV-PLUS on the same system. If so, it must be determined whether FOR or F4P is to be the "default" FORTRAN. This decision must be made for two reasons:

1. When building a task, object modules produced by the FOR compiler or from the FOR OTS must not be combined with object modules produced by the F4P compiler or from the F4P OTS.
2. The F4P OTS and the FOR OTS cannot be in the same object module library.

Normally, "the" FORTRAN OTS is part of the system object module library, [1,1]SYSLIB.OLB. The Task Builder searches this library automatically when linking a task. Either the FOR OTS or the F4P OTS can be in this library.

If both FORTRAN systems are to be used at the same installation, a separate library must be built to contain one of the Object Time Systems. This library must be explicitly named in the Task Builder command line whenever it is to be used. The Task Builder searches the library specified in the command line before searching SYSLIB.

In making this choice for a given environment, consider which FORTRAN should be slightly easier to use -- probably the one which will be used most often. The system whose OTS is in SYSLIB will not require an explicit OTS library reference at task build time.

2.1.1 Selecting F4P as the Default FORTRAN

If F4P is selected as the default FORTRAN, use of the FOR OTS can be continued in one of two ways: build a separate library containing only FOR OTS modules, or rename the current SYSLIB.

INSTALLATION PLANNING

2.1.2 Selecting FOR as the Default FORTRAN

If FOR is to be used as the default FORTRAN, follow the FOR installation instructions for including the FOR OTS into SYSLIB. Then carry out the procedures, described later in this manual, to build a separate F4P OTS library.

2.2 SELECTING F4P COMPILER OPTIONS

A number of options are available when building the F4P compiler. They are:

1. Assignment of the compiler work file to a device other than the system device to enhance compiler performance.
2. Specifying the amount of memory for the resident work file pages with which the compiler is to function; a larger paging memory decreases work file paging activity and enhances compiler performance.
3. Specifying listing device lines-per-page and line width for installations using non-U.S.-standard paper stock.
4. Specification of compiler command switch default settings different from the DEC-provided defaults.

The compiler build file can be edited to select any of the above options. Documentation within the file describes the options available and any limitations on choices (see Appendix A). Chapter 3 describes the magnitude of the performance improvements attainable from various combinations of the first two options cited above.

2.3 SELECTING F4P OTS OPTIONS

The options available for building the Object Time System are effected after the basic system has been installed as described in Chapters 5, 6 and 7. These options are described in Section 3.2.

2.4 INSTALLATION PROCEDURES

If FORTRAN IV-PLUS is being installed to replace an earlier version of FORTRAN IV-PLUS, the following preliminary steps are required:

1. If the compiler is installed in the system, remove it:

```
REM ...F4P
```

2. Delete the following files from the system disk:

```
[1,2] F4PCOM.MSG  
[1,2] F4POTS.MSG      (RSX-11D or IAS)  
      F4P.TSK
```

3. Delete all files in the FORTRAN IV-PLUS reserved UFD's [11,36] and [11,37].

INSTALLATION PLANNING

4. If the F4P OTS is to be incorporated into SYSLIB.OLB, obtain a fresh copy of SYSLIB from the operating system distribution kit. OTS modules cannot be added to a library containing a previous version of the OTS.

2.4.1 RSX-11M

Use a privileged account (e.g. [1,1]) for all the operations used in building the FORTRAN IV-PLUS system.

Various RSX-11M utility programs are used in building the FORTRAN IV-PLUS system. All examples in this manual assume that the utilities are not installed; the RUN \$xxx command is shown, e.g.:

```
>RUN $PIP
```

When files are created during the build process, the program creating the file must be running under the UIC corresponding to the UFD in which the file is to be created. The SET command should be used to set the UIC as required.

2.4.2 RSX-11D

Use a privileged account (e.g. [1,1]) for all the operations used in building the FORTRAN IV-PLUS system.

When files are created during the build process, the program creating the file must be running under the UIC corresponding to the UFD in which the file is to be created. The SET command should be used to set the UIC as required.

2.4.3 IAS

Login as the system manager (i.e. [1,1]) for all the operations used in building the FORTRAN IV-PLUS system.



CHAPTER 3

SYSTEM TAILORING

This chapter describes various options for building the FORTRAN IV-PLUS system.

3.1 OPTIONS AFFECTING COMPILE-TIME PERFORMANCE

The FORTRAN IV-PLUS compiler uses external disk files for storing information during the compilation process. At least one external file, the "work file", is always required. One or two additional temporary files may be used, as specified by the /WF:n compiler switch.

3.1.1 The Work File

The work file contains information that is normally accessed on a random basis; e.g., the symbol table and constants table. An area within the compiler, called the dynamic storage area, is used for manipulating this information. Only part of the work file is in memory at any given time. Information is moved back and forth between the dynamic storage area and the work file using software "paging" techniques.

On operating systems supporting dynamic memory allocation, the paging memory used by the work file system is maintained in the dynamic memory area. In general, increasing the size of the dynamic storage area increases compilation speed by reducing the number of disk I/O operations. Similarly, speeding up the average disk I/O operation (for example, by placing the work file on a fixed head disk instead of a moving head disk) also improves the compilation rate.

3.1.2 Other Temporary Files

The compiler constructs internal representations of the optimized source program and of the PDP-11 code being produced. If the option /WF:1 is specified, this information is stored in the work file. If /WF:2 (or /WF:3) is specified, some (or all) of this information is stored in separate temporary files.

Using additional temporary files may slow the compilation process, but it increases the capacity of the compiler. The compiler, using three external files (/WF:3), can compile a program approximately three times as long as the maximum when a single external file (/WF:1) is used.

SYSTEM TAILORING

No significant change occurs in the compilation rate when the temporary files are placed on a fixed-head disk. This is because the temporary files are written and read sequentially.

3.1.3 Experimental Data -- Compiler Performance

Figure 3-1 illustrates the effects of dynamic memory size and disk type on compilation rate.

For this comparison, four different FORTRAN programs were selected. All measurements were made on a PDP-11/70 using the RSX-11D operating system. Each program was compiled with dynamic memory sizes varying from four pages to 26 pages, with the work file on the system moving-head disk (RP04) and /WF:2.

No listing output was produced.

Note that all measurements are in terms of statements compiled. Continuation and comment lines are not counted.

At the endpoint of each curve in the figure is shown the approximate compilation rate in statements per minute.

From the figure, the following observations can be made:

1. For a given program, the ratio of compilation rate with 26 pages of dynamic memory to that with 4 pages of dynamic memory is 3 to 1 or greater.
2. Optimal improvement in compilation speed is achieved by using 14 work file pages. Little additional improvement is obtained by building the compiler with more than 14 work file pages.

Other experiments indicate that placing the work file on a fixed head disk results in compilation-rate improvements on the order of 10 to 20 percent.

The device to which the work file is assigned can be changed in one of two ways:

1. Before building the compiler, change the assignment of unit (LUN) 6 in the compiler build command file.
2. After the compiler task is installed, use the REASSIGN command (RSX-11M or RSX-11D) or the ASSIGN command (IAS) to establish the new assignment.

SYSTEM TAILORING

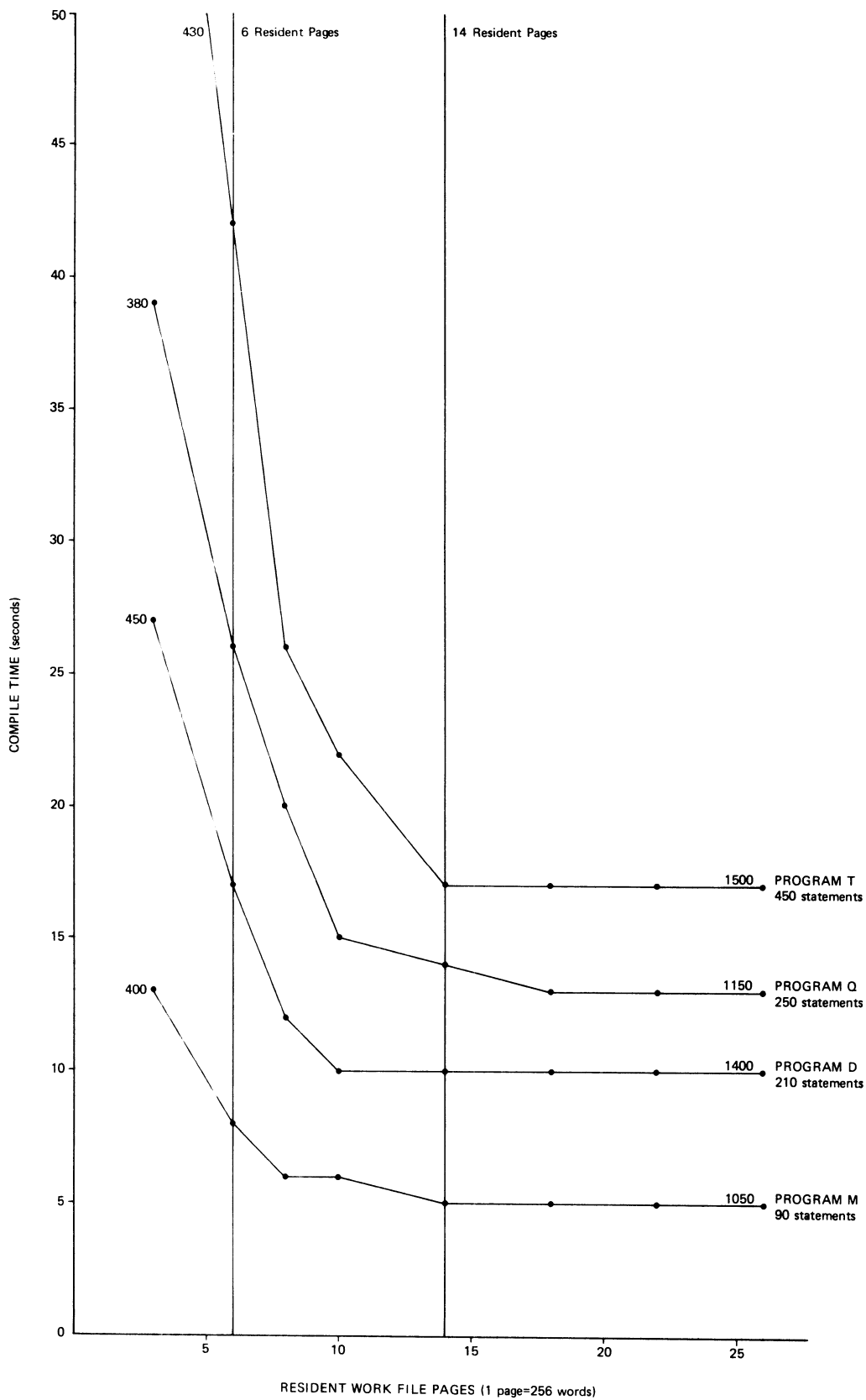


Figure 3-1 Experimental Data: Compiler Performance

SYSTEM TAILORING

3.1.4 Dynamic Storage

Under RSX-11D, IAS, or RSX-11M with dynamic memory, the size of the FORTRAN IV-PLUS compiler's dynamic storage area must be specified by use of the EXTTSK option in the task-build command file. The value specified by EXTTSK is the size of the dynamic storage area in decimal words. The size of the dynamic storage area is computed as:

$$256*(n+w+1)$$

where n is the number of resident work file pages and w is the value specified to the /WF:w switch.

The dynamic storage area specified by EXTTSK can be overridden at install time by means of the INC switch in the install task. The task extension size is specified in decimal words.

The following table may be useful in selecting appropriate values:

Work File Pages	INS/INC value EXTTSK=value	Size of Compiler Task	
		RSX-11D, IAS	RSX-11M
6	2048	17K	18K
10	3072	18K	19K
14	4096	19K	20K
18	5120	20K	21K

3.1.5 RSX-11M Without Dynamic Memory

On an RSX-11M system without dynamic memory allocation, the FORTRAN IV-PLUS compiler determines the size of the partition in which it is operating and uses all of the memory in that partition. The compiler should be installed in a partition large enough for the compiler to run with the desired number of work file pages.

3.2 OTS OPTIONS

A number of optional OTS modules are provided on the release media under UFD [11,37]. After the OTS library has been built, one or more of these optional modules can be added to the library as described in Sections 5.1.3 and 5.2.3 for RSX-11M, Sections 6.1.3 and 6.2.3 for RSX-11D and Sections 7.1.3 and 7.2.3 for IAS. Alternatively, these modules can be maintained separately and referred to only as needed.

None of the optional modules is required for normal use of the FORTRAN IV-PLUS system.

3.2.1 F4P11S

F4P11S.OBJ is a concatenated object module containing alternate versions of FORTRAN formatted and list-directed sequential I/O support. These modules are designed for use in the RSX-11S environment and provide formatted and list-directed sequential I/O to non-file structured devices (e.g. terminals, or non-spooled card readers, or line printers). These modules do not use the FCS file system but perform direct QIO operations. The modules reduce task size by approximately 2000 words.

SYSTEM TAILORING

F4P11S.OBJ may be utilized in two ways:

1. It may be included as an explicit object module at task build time, e.g.

```
TKB>MAIN/FP=MAIN,F4P11S.OBJ
```

2. A separate F4P OTS library for RSX-11S use may be built in addition to the host operating system's OTS library.

```
LBR>F4P11S.OLB/CR:150.=[11,37]F4POTS.OBJ,F4P11S.OBJ
```

This OTS library, rather than the host operating system's OTS library, is used when building tasks for RSX-11S, e.g.

```
TKB>MAIN/FP=MAIN,[1,1]F4P11S/LB
```

3.2.2 Short Error Text - RSX-11M Only

The FORTRAN IV-PLUS OTS refers to an error text module containing ASCII text for the OTS error messages. The complete error text module requires approximately 900 words of memory. An alternate version of the error text module is provided which requires only one word of memory (SHORT.OBJ).

If a task is built with the short error text module, complete error reports, except for the one-line English description of the error condition, are generated. The FORTRAN IV-PLUS User's Guide contains a complete list of OTS error numbers and message text.

The F4P OTS as built in the following chapters provides the long error text as the default. A task can be built using the short error text module by explicitly loading the module \$SHORT from the library. Thus, if the F4P OTS is part of SYSLIB:

```
TKB>MAIN/FP=MAIN,[1,1]SYSLIB/LB:$SHORT
```

Some installations may prefer to use the short error text as the system default. This is accomplished by reordering the steps in the F4P OTS build procedures (as described in Section 5.1.3) so that insertion of SHORT.OBJ into the library is the last, rather than the first, step. For example:

```
LBR>SYSLIB.OLB=FP:[11,37]F4POTS.OBJ,F4P11M.OBJ  
LBR>SYSLIB.OLB/DG:$ERTXT  
LBR>SYSLIB.OLB=FP:[11,37]SHORT.OBJ/RP
```

If the short error text is the system default, the complete error text can be used by explicitly loading the module \$ERTXT from the library. The following command loads the \$ERTXT module:

```
TKB>MAIN/FP=MAIN,[1,1]SYSLIB/LB:$ERTXT
```

3.2.3 F4PMAP

As discussed in the FORTRAN IV-PLUS User's Guide, the compiler transforms calls for Processor-Defined Functions (PDFs) into calls using internal names. If programs written in MACRO-11 attempt to reference a FORTRAN IV-PLUS PDF using the FORTRAN name, an unresolved reference will occur during task build.

SYSTEM TAILORING

The module F4PMAP.OBJ consists of a set of concatenated object modules for transforming the PDF names at task build time. For example, the name SIN is mapped by means of the following module:

```
SIN::      .TITLE      $MSIN
           JMP         $SIN
           .END
```

There is a similar object module for each PDF name.

An F4PMAP library can be built and made available for the few occasions when it may be needed or convenient.

An F4PMAP library is built as follows:

```
(RSX-11M or RSX-11D)
LBR>[1,1]F4PMAP.OLB/CR:40.=[11,37]F4PMAP.OBJ

(IAS)
PDS>LIBR      CREATE/SIZE:40  [1,1]F4PMAP      [11,37]F4PMAP
```

3.2.4 F4PEIS

F4PEIS.OBJ is a concatenated object module containing extended instruction set (EIS) versions of certain integer functions which normally use the floating point processor. This module allows FORTRAN programs which do not do floating point arithmetic to run on a machine which has the extended instruction set but not the floating point processor (FPP); the modules provided in the F4P OTS use the floating point processor for maximum efficiencies in certain INTEGER*4 computations. The following command replaces the normal modules with their EIS versions at task build time for the file INTEGER:

```
(RSX-11M or RSX-11D)
TKB>INTEGER/-FP=INTEGER,F4PEIS.OBJ

(IAS)
PDS>LINK/NOFLOATING      INTEGER,F4PEIS
```

3.2.5 F4PCVF

The object module F4PCVF.OBJ is an alternate module for performing formatted output of floating point values under control of the D, E, F, and G field specifiers. The normal module provided as part of the F4P OTS uses multiple precision fixed point integer techniques to maintain maximum accuracy during the conversion (FPP hardware is not used). The alternate module performs the same functions using the FPP hardware; it is approximately twice as fast, but in some cases slightly less accurate than the standard module.

The F4PCVF module can be substituted for the normal conversion module:

```
(RSX-11M or RSX-11D)
LBR>[1,1]SYSLIB=[11,37]F4PCVF/RP

(IAS)
PDS>LIBR      REPLACE      [1,1]SYSLIB      [11,37]F4PCVF
```

SYSTEM TAILORING

3.2.6 F4PNER

The object module F4PNER.OBJ is an alternate module for reporting run-time errors. If this module is used, the error message text report is suppressed. Error processing and calls to ERRSET, ERRSNS and ERRST continue to operate normally, only the logging of the message on the user's terminal is suppressed. STOP and PAUSE statement messages are also suppressed. This module reduces task size by about 375 words over the normal module.

3.2.7 F4PNIO

F4PNIO.OBJ is a concatenated object module containing alternate versions of certain OTS routines which are always present in the user task. These routines provide support for FORTRAN I/O operations. The alternate routines in F4PNIO.OBJ do not support FORTRAN I/O and reduce task size by approximately 1000 words for programs which do not require FORTRAN I/O (such as process control).

3.2.8 F4PRES

F4PRES.MAC is a MACRO-11 source file containing global references to all modules of the OTS. An OTS resident library (shared global area or SGA) is an option available to installations which have many FORTRAN programs and FORTRAN development. F4PRES contains the global references to the OTS and documentation on logical groups of OTS modules. This feature aids in the building of a FORTRAN IV-PLUS OTS resident library. F4PRES.MAC is located in UFD [11,40] on the distribution medium.

Consult the operating system's Task Builder Manual for the procedures required to build a FORTRAN OTS shareable library.



CHAPTER 4

RELEASE NOTES

4.1 RECOVERING LOST DISK SPACE

FORTRAN IV-PLUS temporary files are created by using "Open and Mark for Delete". If the compiler terminates abnormally, a temporary file will be automatically deleted. However, if the operating system crashes or is halted, such a file may not be deleted. Use the file system utility VERIFY (VFY) to retrieve and re-catalog the file so that it can be deleted.

4.2 CAUTION CONCERNING COMPILER PATCH PROCEDURES

The ZAP task-patching utility is used to correct serious errors in the FORTRAN IV-PLUS compiler. Use the compiler task build map to obtain patch values for ZAP commands. Take care to compute the octal patches correctly because incorrect values can cause the compiler to crash or to operate incorrectly.

The patch values computed from the compiler map represent the base address of a specific program section within a specific module. The proper program section is not necessarily the first program section declared in the module.

Be sure to verify both the module names and program section names before you proceed with the compiler patch.

4.3 USING F4P WITH RSX-11D BATCH

When using RSX-11D Batch, the FORTRAN IV-PLUS compiler can be invoked in one of two ways:

1. \$MCR F4P
This command invokes the task installed as ...F4P.
2. \$FORTRAN
This command invokes the task installed as ...FOR.

The FORTRAN IV-PLUS compiler can be installed twice: first using the normal name "...F4P"; and also by using the name required by the Batch \$FORTRAN command, "...FOR". The FORTRAN used by Batch must be the "default" FORTRAN. (See Section 2.1.)

The compiler still prompts with "F4P", regardless of the name under which it is installed.

RELEASE NOTES

4.4 OTS ASSEMBLY PARAMETER FILES

The files FPP.MAC, FPPDP.MAC, ADBDEF.MAC, RSXD.MAC, RSXM.MAC, RSXS.MAC, NONIO.MAC, and F4P.MAC are provided for field maintenance purposes only. If an OTS source file is published for correcting an OTS problem, these files will be referred to in the MACRO-11 command lines.

4.5 IMPROVED FORTRAN SUPPORT FOR ANSI MAGNETIC TAPE

Enhancements to the ANSI magtape implementation have eliminated most of the restrictions previously imposed on FORTRAN programs which use magnetic tape. The enhancements are included in RSX-11D V6.2 and RSX-11M V03.

The following FORTRAN I/O operations are now available to magtape files:

1. Any file can be read by using the default FORTRAN access modes. It is no longer necessary to specify READONLY to read a magtape file.
2. The REWIND and BACKSPACE statements are now available for magtape files.
3. A new file can be created at the end of the volume set.
4. The last file of the volume set can be opened for append access.
5. Any file of the volume set can be rewritten, but all succeeding files are lost.
6. Files may be rewritten from the beginning only. Truncation of magtape files is not permitted.

CHAPTER 5
RSX-11M INSTALLATION

This chapter describes the installation procedures required for RSX-11M. Section 5.1 describes the installation procedures for the 9-track magnetic tape distribution. Section 5.2 describes the installation procedures for the RK05 or RK06 disk cartridge distribution.

The basic installation procedure for FORTRAN IV-PLUS consists of:

1. Building the F4P compiler task from an object module library.
2. Building an F4P OTS library from object modules.
3. Copying the diagnostic message file from the distribution medium to the system disk.

Detailed procedures are discussed in the following sections.

5.1 INSTALLATION FROM MAGTAPE DISTRIBUTION

5.1.1 Preparations

The UFD [11,36] is used in building the FORTRAN IV-PLUS system and should be entered on the system device if not already present with the following command:

```
>UFD SY:[11,36]
```

Assign FP: as the logical name for the system device.

For example,

```
>ASN DP:=FP:
```

Place the distribution magtape on drive 0, write locked. Load the magtape handler if it is not already resident. (If the TU16 magtape drive is used, the mnemonic MM: must be used instead of MT:).

```
>LOA MT:
```

5.1.2 Building the Compiler

The compiler is built from an object module library supplied on the distribution media.

RSX-11M INSTALLATION

Set the UIC to [11,36] and copy the required files from the magtape to the system disk.

```
>SET /UIC=[11,36]
>RUN $FLX
FLX>SY:[11,36]=MT0:[11,36]F4P.OLB
FLX>SY:[11,36]=MT0:[11,36]F4P11M.*
```

At this point, the compiler task-build command file, [11,36]F4P11M.CMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

Set the UIC as follows:

RSX-11M Unmapped System	RSX-11M Mapped System
>SET /UIC=[1,50]	>SET /UIC=[1,54]

Build the compiler:

```
>RUN $TKB
TKB>@[11,36]F4P11M
```

The compiler object module library is no longer needed and can be deleted.

```
>SET /UIC=[11,36]
>RUN $PIP
PIP>[11,36]F4P.OLB;*/DE
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

5.1.3 Building the OTS

Set the UIC to [11,36] and copy the required OTS files from the magtape to the system disk:

```
>SET /UIC=[11,36]
>RUN $FLX
FLX>SY:[11,36]=MT0:[11,37]*.OBJ
```

There are two options for installing the F4P OTS.

1. The OTS concatenated object modules can be merged into an existing library.

Set the UIC to that of the target library file (e.g., [1,1] for SYSLIB.OLB) and invoke the LBR utility program:

```
LBR>SYSLIB.OLB=[11,36]SHORT.OBJ/RP
LBR>SYSLIB.OLB/DG:$ERTXT
LBR>SYSLIB.OLB=[11,36]F4POTS.OBJ,F4P11M.OBJ
```

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is built, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the FORTRAN IV-PLUS compiler.

RSX-11M INSTALLATION

Set the UIC to that of the new library, and invoke the LBR utility program:

```
LBR>F4POTS.OLB/CR:150.=[11,36]SHORT.OBJ
LBR>F4POTS.OLB/DG:$ERTXT
LBR>F4POTS.OLB=[11,36]F4POTS.OBJ,F4P11M.OBJ
```

5.1.4 Copying the Message File

Set the UIC to [1,2] and copy the F4P compiler message file to the system disk as follows:

```
>SET /UIC=[1,2]
>RUN $FLX
FLX>SY:[1,2]=MT0:[1,2]F4PCOM.MSG/IM:64./BL:12.
```

5.2 INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION

The following sections describe the installation procedures required for the RK05 or RK06 disk cartridge distribution. If the system disk is a device other than an RK05 or RK06, place the distribution disk in drive 0. If the system device is an RK05 or RK06, use drive 0 for the system disk and drive 1 for the distribution disk.

In the directions which follow, the logical unit assignment `DKn:=FP:` assigns the logical device name FP to the drive of the distribution disk. When making the assignment, use DK0 or DK1 for the RK05 distribution or use DM0 or DM1 for the RK06 distribution.

5.2.1 Preparations

The UFD [11,36] is used in building the FORTRAN IV-PLUS system and should be entered on the system disk if not already present.

```
>UFD SY:[11,36]
```

Load the disk handler if it is not already resident. Place the distribution disk cartridge in drive n (write-locked), make the logical assignment, and mount the volume:

```
>LOA DK: (not needed if the system device is DK0:)
>ASN DKn:=FP:
>MOU FP:F4PLUS
```

5.2.2 Building the Compiler

The compiler is built from an object module library on the distribution disk. Set the UIC to [11,36] and copy the compiler build files from the distribution disk to the system disk:

```
>SET /UIC=[11,36]
>RUN $PIP
>PIP SY:[11,36]=FP:[11,36]F4P11M.*
```

RSX-11M INSTALLATION

At this point, the compiler task-build command file, [11,36]F4P11M.COMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

Set the UIC as follows:

RSX-11M Unmapped System	RSX-11M Mapped System
>SET /UIC=[1,50]	>SET /UIC=[1,54]

Build the compiler:

```
>RUN $TKB
TKB>@[11,36]F4P11M
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

5.2.3 Building the OTS

There are two options for building the F4P OTS:

1. The OTS concatenated object modules can be merged into an existing library.

Set the UIC to that of the target library file (e.g., [1,1] for SYSLIB.OLB), and invoke the LBR utility program:

```
LBR>SYSLIB.OLB=FP:[11,37]SHORT.OBJ/RP
LBR>SYSLIB.OLB/DG:$ERTXT
LBR>SYSLIB.OLB=FP:[11,37]F4POTS.OBJ,F4P11M.OBJ
```

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is built, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the FORTRAN IV-PLUS compiler.

Set the UIC to that of the new library, and invoke the LBR utility program:

```
LBR>F4POTS.OLB/CR:150.=FP:[11,37]SHORT.OBJ
LBR>F4POTS.OLB/DG:$ERTXT
LBR>F4POTS.OLB=FP:[11,37]F4POTS.OBJ,F4P11M.OBJ
```

5.2.4 Copying the Message File

Set the UIC to [1,2] and copy the F4P compiler message file onto the system disk:

```
>SET /UIC=[1,2]
>RUN $PIP
>PIP SY:[1,2]=FP:[1,2]F4PCOM.MSG
```

RSX-11M INSTALLATION

5.3 INSTALLING THE COMPILER

The F4P compiler is invoked in one of two ways according to installation option.

1. If the compiler is installed as an MCR function:
>F4P
2. If the compiler is not installed:
>RUN \$F4P

The F4P compiler is installed as follows:

RSX-11M Unmapped System	RSX-11M Mapped System
>INS [1,50]F4P	>INS [1,54]F4P

The F4P compiler can be installed either in the saved system image or as part of system startup procedures. Include the appropriate INS command (above) in the system startup file, [1,2]STARTUP.CMD, to install F4P during system startup. Consult the RSX-11M Operator's Procedures Manual and RSX-11M System Generation Manual for the procedures required to install F4P in the saved system image.



CHAPTER 6

RSX-11D INSTALLATION

This chapter describes the installation procedures required for RSX-11D. Section 6.1 describes the installation procedures for the 9-track magnetic tape distribution. Section 6.2 describes the installation procedures for the RK05 or RK06 disk cartridge distribution.

The basic installation procedure for FORTRAN IV-PLUS consists of:

1. Building the F4P compiler task from an object module library,
2. Building an F4P OTS library from object modules, and
3. Copying the diagnostic message files from the distribution medium to the system disk.

Detailed procedures are discussed in the following sections.

6.1 INSTALLATION FROM MAGTAPE DISTRIBUTION

6.1.1 Preparations

The UFDs [11,36] and [11,37] are reserved for FORTRAN IV-PLUS and should be entered on the system device if not already present.

```
MCR>UFD SY:[11,36]
MCR>UFD SY:[11,37]
```

Place the distribution magtape on drive 0, write-locked. Load the magtape handler if not already resident and then mount the magtape using the following commands. (If the TU16 magtape drive is used, the mnemonic MM: must be used instead of MT:.)

```
MCR>LOA MT:
MCR>MOU MT0:/CHA=[FOR]
```

6.1.2 Building the Compiler

The F4P compiler is built from an object module library supplied on the distribution medium.

RSX-11D INSTALLATION

Set the UIC to [11,36] and copy required files from the magtape to the system disk:

```
MCR>SET /UIC=[11,36]
MCR>FLX SY:[11,36]=MT0:[11,36]F4P.OLB
MCR>FLX SY:[11,36]=MT0:[11,36]F4P11D.*
```

At this point, the compiler task-build command file, [11,36]F4P11D.COMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

Build the compiler:

```
MCR>SET /UIC=[11,1]
MCR>TKB @[11,36]F4P11D
```

The compiler object module library is no longer needed and can be deleted.

```
MCR>SET /UIC=[11,36]
MCR>PIP [11,36]F4P.OLB;*/DE
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

6.1.3 Building the OTS

Set the UIC to [11,37] and copy the required OTS files from the magtape to the system disk:

```
MCR>SET /UIC=[11,37]
MCR>FLX SY:[11,37]=MT0:[11,37]*.OBJ
```

There are two options for installing the F4P OTS.

1. The OTS concatenated object modules can be merged into an existing library.

Set the UIC to that of the target library file (e.g., [1,1] for SYSLIB.OLB).

```
MCR>SET /UIC=[1,1]
MCR>LBR SYSLIB.OLB=[11,37]F4POTS.OBJ,F4P11D.OBJ
```

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is built, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the FORTRAN IV-PLUS compiler.

Set the UIC to that of the new library.

```
MCR>LBR F4POTS.OLB/CR:150.=[11,37]F4POTS.OBJ,F4P11D.OBJ
```

6.1.4 Copying the Message Files

Set the UIC to [1,2] and copy the message files to the system disk:

```
MCR>SET /UIC=[1,2]
MCR>FLX SY:[1,2]=MT0:[1,2]F4PCOM.MSG/IM:64./BL:12.
MCR>FLX SY:[1,2]=MT0:[1,2]F4POTS.MSG/IM:64./BL:16.
```

RSX-11D INSTALLATION

6.2 INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION

The following sections describe the installation procedures required for the RK05 or RK06 disk cartridge distribution. If the system disk is a device other than an RK05 or RK06, place the distribution disk in drive 0. If the system disk is an RK05 or RK06, use drive 0 for the system disk and drive 1 for the distribution disk. Procedures for these two configurations are the same, except for the different unit assignments.

In the directions which follow, the designation "DKn" refers to the disk drive unit on which the F4P distribution pack is placed. For each step, use DK0 or DK1 for the RK05 distribution or use DM0 or DM1 for the RK06 distribution.

6.2.1 Preparations

The UFDs [11,36] and [11,37] are reserved for FORTRAN IV-PLUS and should be entered on the system device if not already present.

```
MCR>UFD SY:[11,36]
MCR>UFD SY:[11,37]
```

Load the disk handler if not already resident, place the distribution disk cartridge in drive n (write-locked), and mount the volume:

```
MCR>LOA DK:          (not needed if system drive is DK0)
MCR>MOU DKn:F4PLUS
```

6.2.2 Building the Compiler

The compiler is built from an object module library supplied on the distribution disk. Set the UIC to [11,36] and copy the compiler build files from the distribution disk to the system disk:

```
MCR>SET /UIC=[11,36]
MCR>PIP SY:[11,36]=DKn:[11,36]F4P11D.*
```

At this point, the compiler task-build command file, [11,36]F4P11D.CMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

The compiler overlay description file, [11,36]F4P11D.ODL, must be edited to specify the disk unit on which the distribution disk is mounted:

```
MCR>EDI SY:F4P11D.ODL
*PA/SY:/DKn:/
*EX
```

Build the compiler:

```
MCR>SET /UIC=[11,1]
MCR>TKB @[11,36]F4P11D
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

RSX-11D INSTALLATION

6.2.3 Building the OTS

There are two options for building the F4P OTS:

1. The OTS concatenated object file can be merged into an existing library.

Set the UIC to that of the target library file (e.g., [1,1] for SYSLIB.OLB).

```
MCR>SET /UIC=[1,1]
MCR>LBR SYSLIB.OLB=DKn:[11,37]F4POTS.OBJ,F4P11D.OBJ
```

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is built, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the FORTRAN IV-PLUS compiler.

Set the UIC to that of the new library.

```
MCR>LBR F4POTS.OLB/CR:150.=DKn:[11,37]F4POTS.OBJ,F4P11D.OBJ
```

6.2.4 Copying the Message Files

Set the UIC to [1,2] and copy the message files to the system disk as follows:

```
MCR>SET /UIC=[1,2]
MCR>PIP SY:[1,2]=DKn:[1,2]F4PCOM.MSG,F4POTS.MSG
```

6.3 INSTALLING THE COMPILER

The F4P compiler is installed as follows:

```
MCR>INS [11,1]F4P
```

If the RSX-11D Batch \$FORTRAN Command is to invoke FORTRAN IV-PLUS, install the F4P compiler as follows:

```
MCR>INS [11,1]F4P/TASK=...FOR
(see Section 4.3)
```

Consult the RSX-11D System Generation Manual for the procedures required to save the system image with F4P installed.

CHAPTER 7

IAS INSTALLATION

This chapter describes the installation procedures required for IAS. Section 7.1 describes the installation procedures for the 9-track magnetic tape distribution. Section 7.2 describes the installation procedures for the RK05 or RK06 disk cartridge distribution.

The basic installation procedure for FORTRAN IV-PLUS consists of:

1. Building the F4P compiler task from an object module library,
2. Building an F4P OTS library from object modules, and
3. Copying the diagnostic message files from the distribution medium to the system disk.

Detailed procedures are discussed in the following sections.

7.1 INSTALLATION FROM MAGTAPE DISTRIBUTION

7.1.1 Preparations

The UFDs [11,36] and [11,37] are reserved for FORTRAN IV-PLUS and should be entered on the system device if not already present.

```
PDS>CREATE/DIR [11,36]
PDS>CREATE/DIR [11,37]
```

Place the distribution magtape on drive 0, write-locked. Load the magtape handler if not already resident and then mount the magtape using the following commands. (If the TU16 magtape drive is used, the mnemonic MM: must be used instead of MT:.)

```
(SCI>RUN/HANDLER MT)

PDS>MOUNT/FOREIGN MT0: F4PLUS
```

7.1.2 Building the Compiler

The F4P compiler is built from an object module library supplied on the distribution medium.

Copy the needed files from the magtape to the system disk:

```
PDS>COPY MT0:[11,36]F4P.OLB/DO [11,36]*.*
PDS>COPY MT0:[11,36]F4PIAS.* /DO [11,36]*.*
```

IAS INSTALLATION

At this point, the compiler task-build command file, [11,36]F4PIAS.COMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

Build the compiler:

```
PDS>LINK @[11,36]F4PIAS
```

The compiler object module library is no longer needed and can be deleted.

```
PDS>DELETE [11,36]F4P.OLB;*
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

7.1.3 Building the OTS

Copy the required OTS files from the magtape to the system disk:

```
PDS>COPY MT0:[11,37]*.OBJ/DO [11,37]*.*
```

There are two options for installing the F4P OTS.

1. The OTS concatenated object modules can be merged into an existing library (e.g. [1,1]SYSLIB.OLB).

```
PDS>LIBR INSERT SYSLIB [11,37]F4POTS,[11,37]F4PIAS
```

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is built, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the FORTRAN IV-PLUS compiler.

```
PDS>LIBR CREATE/SIZE:150 F4POTS [11,37]F4POTS
```

```
PDS>LIBR INSERT F4POTS [11,37]F4PIAS
```

7.1.4 Copying the Message Files

Copy the message files to the system disk:

```
PDS>COPY/IMAGE:64 MT0:[1,2]F4PCOM.MSG/DO [1,2]*.*
```

```
PDS>COPY/IMAGE:64 MT0:[1,2]F4POTS.MSG/DO [1,2]*.*
```

7.2 INSTALLATION FROM DISK CARTRIDGE DISTRIBUTION

The following sections describe the installation procedures required for the RK05 or RK06 disk cartridge distribution. If the system disk is a device other than an RK05 or RK06, place the distribution disk in drive 0. If the system disk is an RK05 or RK06, use drive 0 for the system disk and drive 1 for the distribution disk. Procedures for the two configurations are the same, except for the different unit assignments.

IAS INSTALLATION

In the directions which follow, the designation "DKn" refers to the disk drive unit on which the F4P distribution disk is placed. For each step, use DK0 or DK1 for the RK05 distribution or use DM0 or DM1 for the RK06 distribution.

7.2.1 Preparations

The UFDs [11,36] and [11,37] are reserved for FORTRAN IV-PLUS and should be entered on the system device if not already present.

```
PDS>CREATE/DIR [11,36]
PDS>CREATE/DIR [11,37]
```

Load the disk handler if not already resident, place the distribution disk cartridge in drive n (write-locked), and mount the volume:

```
(SCI>RUN/HANDLER DK)

PDS>MOUNT DKn: F4PLUS
```

7.2.2 Building the Compiler

The compiler is built from an object module library supplied on the distribution disk. Copy the compiler build files from the distribution disk to the system disk:

```
PDS>COPY DKn:[11,36]F4PIAS.* [11,36]*.*
```

At this point, the compiler task-build command file, [11,36]F4PIAS.CMD, should be edited to select installation options as described in Section 2.2 and Appendix A.

The compiler overlay description file, [11,36]F4PIAS.ODL, must be edited to specify the disk unit on which the distribution disk is mounted:

```
PDS>EDIT [11,36]F4PIAS.ODL
*PA/SY:/DKn:/
*EX
```

Build the compiler:

```
PDS>LINK @[11,36]F4PIAS
```

The edited command files can be retained in [11,36] for future reference. The compiler map produced by the Task Builder should be kept for patching the compiler task image with ZAP.

7.2.3 Building the OTS

There are two options for building the F4P OTS:

1. The OTS concatenated object modules can be merged into an existing library (e.g. [1,1]SYSLIB.OLB)

```
PDS>LIBR INSERT SYSLIB DKn:[11,37]F4POTS,DKn:[11,37]F4PIAS
```

IAS INSTALLATION

2. A separate library can be generated using the OTS concatenated object modules. If a separate library is used, the file F4POTS.OLB must be explicitly designated when building a task from modules produced by the F4P compiler.

```
PDS>LIBR      CREATE/SIZE:150   F4POTS   DKn:[11,37]F4POTS
PDS>LIBR      INSERT           F4POTS   DKn:[11,37]F4PIAS
```

7.2.4 Copying the Message Files

Set the UIC to [1,2] and copy the message files to the system disk:

```
PDS>COPY DKn:[1,2]*.MSG [1,2]*.*
```

7.3 INSTALLING THE COMPILER

The F4P compiler is invoked in two ways:

1. The PDS FORTRAN Command invokes the system default FORTRAN compiler named ...FOR
2. The PDS FORTRAN/F4P Command invokes the F4P compiler directly.

The F4P compiler is installed as follows:

```
PDS>INSTALL [11,1]F4P
```

If FORTRAN IV-PLUS is the system default FORTRAN, install the F4P compiler as follows:

```
PDS>INSTALL/TASK:...FOR [11,1]F4P
```

Consult the IAS System Release Notes and IAS System Generation Guide for the procedures required to save the system image with F4P installed.

CHAPTER 8

SYSTEM BUILD VERIFICATION

A simple test program is supplied with the FORTRAN IV-PLUS distribution to verify that the system is correctly installed and ready for use.

The program, F4PTST, contains two intentional non-fatal errors: one during compilation and one during execution.

Copy the file F4PTST.FTN to the system disk from UFD [11,40] of the distribution medium. Compile, link and execute the test program:

(RSX-11M or RSX-11D)

```
Compile: >F4P F4PTST,LP:=F4PTST/TR:ALL
Link: >TKB F4PTST=F4PTST
```

or, if a separate library is used,

```
Execute: >TKB F4PTST=F4PTST,[1,1]F4POTS/LB
>RUN F4PTST
```

(IAS)

```
Compile: PDS>FORT/LIST/SWIT:(/TR:ALL) F4PTST
Link: PDS>LINK F4PTST
```

or, if a separate library is used,

```
Execute: PDS>LINK F4PTST [1,1]F4POTS/LIBRARY
PDS>RUN F4PTST
```

During compilation, an overflow error should occur on source line 6. During execution, a floating zero divide error should be reported at line 8.

The preceding verification procedure can fail if the FORTRAN IV-PLUS system is incorrectly installed. Possible failure modes include:

1. The F4P compiler produces the message:

```
F4P -- FATAL 08 * COMPILER DYNAMIC MEMORY OVERFLOW
```

This message indicates that dynamic memory for the compiler was not correctly allocated by means of EXTTSK or INS/INC (Section 3.1.4). Remove and re-install the compiler with a correct INC value specified.

SYSTEM BUILD VERIFICATION

2. If the compiler message file [1,2]F4PCOM.MSG has not been transferred correctly, the F4P compiler will treat the compile-time overflow in F4PTST as a fatal error. The compiler will not create the object module F4PTST.OBJ.
3. For RSX-11D and IAS, if the OTS message file [1,2]F4POTS.MSG has not been transferred correctly or the MO message-output task is not loaded, run-time subroutine traceback information will not be produced.

APPENDIX A
COMPILER BUILD FILES

A.1 RSX-11M COMPILER BUILD FILE (F4P11M.CMD)

```
F4P/CP/--FP,F4P/SP=[11,36]F4P11M.ODL/MP
#
# FORTRAN IV-PLUS COMPILER TASK BUILD FILE
#
# FORTRAN IV-PLUS VERSION 2.5, RSX-11M VERSIONS 2, 3
#
# SUMMARY OF SYSTEM PARAMETERS:
#   REFERENCES PARTITION "GEN"
#   18K COMPILER TASK
#   512 WORD STACK
#   32 FRAMES IN EXPRESSION ANALYZER STACK
#   10 FRAMES IN DO STATEMENT STACK
#   45 COMMON BLOCKS, MAXIMUM
#   6 RESIDENT PAGES FOR WORKFILE SYSTEM
#
#
# OPTION INPUT
#
TASK      =...F4P

# BUILD FOR PARTITION "GEN", MAPPED 11M SYSTEM
# PARTITION MUST BE AT LEAST 18K
#
PAR       =GEN

# SP STACK OF 512 WORDS
# STACK MUST NEVER BE LESS THAN 384 WORDS
#
STACK     =512

# F4P COMPILER LOGICAL UNIT ASSIGNMENTS
#
#   1 COMMAND INPUT
#   2 COMMAND OUTPUT
#   3 .OBJ OUTPUT
#   4 .LST OUTPUT
#   5 .FTN INPUT
#
#   6 COMPILER WORKFILE (RANDOM ACCESS)
#   CAN BE REASSIGNED TO SWAPPING DISK IF AVAILABLE
#   DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
#   BUT THE WORKFILE DOES NOT REQUIRE A UFD ON THE VOLUME.
#
#   7 COMPILER TEMP FILES (SEQUENTIAL ACCESS)
#   8 DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
#   BUT THE TEMP FILES DO NOT REQUIRE A UFD ON THE VOLUME.
#
#   9 COMPILER MESSAGE TEXT FILE
```

COMPILER BUILD FILES

```

;
UNITS      =9
ASG       =TI:1, TI:2
ASG       =SY0:6, SY0:7, SY0:8

; RESIDENT MEMORY FOR WORKFILE VIRTUAL MEMORY SYSTEM
;
; UNDER RSX-11M WORKFILE RESIDENT MEMORY IS DYNAMICALLY DETERMINED.
; IF THE OPERATING SYSTEM SUPPORTS DYNAMIC MEMORY ALLOCATION,
; THE SIZE OF THE COMPILER DYNAMIC STORAGE IS DETERMINED BY "EXTTSK".
; OTHERWISE, THE COMPILER WILL USE ALL MEMORY AVAILABLE IN THE PARTITION.
;
; INCREASING THE NUMBER OF RESIDENT WORKFILE PAGES WILL MAKE THE COMPILER
; RUN FASTER BY REDUCING PAGING I/O, BUT IT DOES NOT AFFECT THE SIZE
; OF THE MAXIMUM SOURCE PROGRAM WHICH CAN BE COMPILED.
;
EXTTSK    =2048

; F4P USES CONTROL SECTION "STACK1" FOR:
;     EXPRESSION ANALYZER STACK DURING PASS 1
;     NAMED COMMON BLOCK DEFINITIONS IN LATER PASSES
;
; AS DEFINED BELOW, STACK1 IS 256(10) WORDS, PROVIDING:
;     256/8   = 32 EXPRESSION ANALYZER STACK FRAMES
;     256/5   = 51 CONTROL SECTIONS
;             UP TO 6 CONTROL SECTIONS MAY BE USED FOR
;             COMPILER-GENERATED CODE AND DATA, LEAVING 45 COMMON BLOCKS.
;
EXTSCT    =STACK1:1000

; F4P USES CONTROL SECTION "DOSTK1" FOR:
;     DO STATEMENT NESTING STACK DURING PASS 1
;
; AS DEFINED BELOW, DOSTK1 IS 30(10) WORDS, PROVIDING:
;     30/3    = 10 NESTED DO STATEMENTS
;
EXTSCT    =DOSTK1:74

; DEFINE PRINTER WIDTH AND NUMBER OF SOURCE LINES PER LISTING PAGE
; F4P DEFAULT VALUES ARE:
;     55 SOURCE LINES PER PAGE (PLUS 3 LINES OF HEADING)
;     132 COLUMN LINE PRINTER
; NOTE:
;     55(10) = 67(8)
;     80(10) = 120(8)           132(10) = 204(8)
;
GBLPAT    =FORTRN:LPLINE:67
GBLPAT    =FORTRN:LPWIDTH:204

; DEFINITION OF COMPILER SWITCH OPTION VALUES
;
; A COMPLETE DESCRIPTION OF THE EFFECTS OF THE COMPILER OPTION SWITCHES
; IS CONTAINED IN SECTION 1.2 OF THE FORTRAN IV-PLUS USER'S GUIDE.
;
; SWITCH          SWITCH          VALUE TO GBLPAT
; NAME           SETTING         -----
; -----
; CK             /-CK             0
;               /CK              1           ARRAY SUBSCRIPT BOUNDS CHECKING
;
; CO             /CO:5            5           NUMBER OF CONTINUATION LINES
;               /CO:N.           N           (OCTAL VALUE)
;

```

COMPILER BUILD FILES

```

; DE          /-DE          0
;             /DE           1      INCLUDE DEBUG LINES
;
; I4          /-I4          0      DEFAULT INTEGER*2
;             /I4           1      DEFAULT INTEGER*4
;
; LA          /-LA          0      REINITIALIZE SWITCHES
;             /LA           1
;
; LI          /LI:0         0
;             /LI:1         1      SOURCE
;             /LI:2         2      SOURCE, MAP
;             /LI:3         3      SOURCE, MAP, GENERATED CODE
;
; RO          /-RO          0      R/W CODE SECTIONS
;             /RO           1      R/O CODE SECTIONS
;
; SP          /-SP          0      NO SPOOLING
;             /SP           1      SPOOLING
;
; TR          /-TR          0
;             /TR:NONE      0
;             /TR:NAMES     1
;             /TR:BLOCKS    3
;             /TR:ALL       7
;             /TR           7
;
; WF          /WF:2         2      NUMBER OF TEMPORARY FILES
;             /WF:N         1,2,3
;
; WR          /-WR          0      NO OPTIONAL WARNINGS
;             /WR           1

```

; THE FOLLOWING "GBLPAT" DEFINITIONS EFFECT DEFAULTS OF:

; /-CK/CO:5/-DE/-I4/-LA/LI:2/-RO/SP/TR:BLOCKS/WF:2/WR

; DEFAULT VALUES FOR SWITCH "XX" ARE DEFINED
; BY A "GBLPAT" TO GLOBAL VARIABLE "XX000".

```

GBLPAT =FORTRN:LA000:0
GBLPAT =COMAND:CK000:0
GBLPAT =COMAND:CO000:5
GBLPAT =COMAND:DE000:0
GBLPAT =COMAND:I4000:0
GBLPAT =COMAND:LI000:2
GBLPAT =COMAND:RO000:0
GBLPAT =COMAND:SP000:1
GBLPAT =COMAND:TR000:3
GBLPAT =COMAND:WF000:2
GBLPAT =COMAND:WR000:1
/

```

COMPILER BUILD FILES

A.2 RSX-11D COMPILER BUILD FILE (F4P11D.CMD)

```

F4P/CP/-FP/MU,F4P/SP=[11,36]F4P11D.ODL/MP
;
; FORTRAN IV-PLUS COMPILER TASK BUILD FILE
;
; FORTRAN IV-PLUS VERSION 2.5, RSX-11D VERSION 6
;
; SUMMARY OF SYSTEM PARAMETERS:
;     USES SYSTEM RESIDENT LIBRARY "SYSRES"
;     17K COMPILER TASK
;     512 WORD STACK
;     32 FRAMES IN EXPRESSION ANALYZER STACK
;     10 FRAMES IN DO STATEMENT STACK
;     45 COMMON BLOCKS, MAXIMUM
;     6   RESIDENT PAGES FOR WORKFILE SYSTEM
;
;
; OPTION INPUT
;
TASK      =...F4P
LIBR      =SYSRES:RO
POOL      =100

; SP STACK OF 512 WORDS
; STACK MUST NEVER BE LESS THAN 384 WORDS
;
STACK     =512

; F4P COMPILER LOGICAL UNIT ASSIGNMENTS
;     1  COMMAND INPUT
;     2  COMMAND OUTPUT
;     3  .OBJ OUTPUT
;     4  .LST OUTPUT
;     5  .FTN INPUT
;
;     6  COMPILER WORKFILE      (RANDOM ACCESS)
;     CAN BE REASSIGNED TO SWAPPING DISK IF AVAILABLE
;     DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
;     BUT THE WORKFILE DOES NOT REQUIRE A UFD ON THE VOLUME.
;
;     7  COMPILER TEMP FILES (SEQUENTIAL ACCESS)
;     8  DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
;     BUT THE TEMP FILES DO NOT REQUIRE A UFD ON THE VOLUME.
;
;     9  COMPILER MESSAGE TEXT FILE
;
UNITS     =9
ASG       =TI:1,TI:2
ASG       =SY0:6,SY0:7,SY0:8

; RESIDENT MEMORY FOR WORKFILE VIRTUAL MEMORY SYSTEM
;
; UNDER RSX-11D AND IAS WORKFILE RESIDENT MEMORY IS DYNAMICALLY ALLOCATED
; BY THE COMPILER BASED ON A PARAMETER SPECIFIED BY "EXTTSK".
; THIS VALUE MAY BE OVERRIDDEN AT INSTALL BY "INSTALL F4P/INC=NNNN".
;
; INCREASING THE NUMBER OF RESIDENT WORKFILE PAGES WILL MAKE THE COMPILER
; RUN FASTER BY REDUCING PAGING I/O, BUT IT DOES NOT AFFECT THE SIZE
; OF THE MAXIMUM SOURCE PROGRAM WHICH CAN BE COMPILED.
;
EXTTSK    =2048
    
```

COMPILER BUILD FILES

```

; F4P USES CONTROL SECTION "STACK1" FOR:
;   EXPRESSION ANALYZER STACK DURING PASS 1
;   NAMED COMMON BLOCK DEFINITIONS IN LATER PASSES
;
; AS DEFINED BELOW, STACK1 IS 256(10) WORDS, PROVIDING:
;   256/8   = 32 EXPRESSION ANALYZER STACK FRAMES
;   256/5   = 51 CONTROL SECTIONS
;           UP TO 6 CONTROL SECTIONS MAY BE USED FOR
;           COMPILER-GENERATED CODE AND DATA, LEAVING 45 COMMON BLOCKS.
;
EXTSCT  =STACK1:1000

```

```

; F4P USES CONTROL SECTION "DOSTK1" FOR:
;   DO STATEMENT NESTING STACK DURING PASS 1
;
; AS DEFINED BELOW, DOSTK1 IS 30(10) WORDS, PROVIDING:
;   30/3    = 10 NESTED DO STATEMENTS
;
EXTSCT  =DOSTK1:74

```

```

; DEFINE PRINTER WIDTH AND NUMBER OF SOURCE LINES PER LISTING PAGE
; F4P DEFAULT VALUES ARE:
;   55 SOURCE LINES PER PAGE (PLUS 3 LINES OF HEADING)
;   132 COLUMN LINE PRINTER
; NOTE:
;   55(10) = 67(8)
;   80(10) = 120(8)      132(10) = 204(8)
;

```

```

GBLPAT  =FORTRN:LPLINE:67
GBLPAT  =FORTRN:LPWIDTH:204

```

```

; DEFINITION OF COMPILER SWITCH OPTION VALUES
;
; A COMPLETE DESCRIPTION OF THE EFFECTS OF THE COMPILER OPTION SWITCHES
; IS CONTAINED IN SECTION 1.2 OF THE FORTRAN IV-PLUS USER'S GUIDE.
;

```

SWITCH NAME	SWITCH SETTING	VALUE TO GBLPAT	
-----	-----	-----	
CK	/-CK	0	
	/CK	1	ARRAY SUBSCRIPT BOUNDS CHECKING
CO	/CO:5	5	NUMBER OF CONTINUATION LINES
	/CO:N.	N	(OCTAL VALUE)
DE	/-DE	0	
	/DE	1	INCLUDE DEBUG LINES
I4	/-I4	0	DEFAULT INTEGER*2
	/I4	1	DEFAULT INTEGER*4
LA	/-LA	0	REINITIALIZE SWITCHES
	/LA	1	
LI	/LI:0	0	
	/LI:1	1	SOURCE
	/LI:2	2	SOURCE, MAP
	/LI:3	3	SOURCE, MAP, GENERATED CODE
RO	/-RO	0	R/W CODE SECTIONS
	/RO	1	R/O CODE SECTIONS

COMPILER BUILD FILES

```

#
# SP          /-SP          0          NO SPOOLING
#             /SP           1          SPOOLING
#
# TR          /-TR          0
#             /TR:NONE      0
#             /TR:NAMES     1
#             /TR:BLOCKS    3
#             /TR:ALL       7
#             /TR           7
#
# WF          /WF:2         2          NUMBER OF TEMPORARY FILES
#             /WF:N         1,2,3
#
# WR          /-WR          0          NO OPTIONAL WARNINGS
#             /WR           1
#
# THE FOLLOWING 'GBLPAT' DEFINITIONS EFFECT DEFAULTS OF:
#
# /-CK/CO:5/-DE/-I4/-LA/LI:2/-RO/SP/TR:BLOCKS/WF:2/WR
#
# DEFAULT VALUES FOR SWITCH "XX" ARE DEFINED
# BY A "GBLPAT" TO GLOBAL VARIABLE "XX000".

GBLPAT  =FORTRN:LA000:0
GBLPAT  =COMAND:CK000:0
GBLPAT  =COMAND:CO000:5
GBLPAT  =COMAND:DE000:0
GBLPAT  =COMAND:I4000:0
GBLPAT  =COMAND:LI000:2
GBLPAT  =COMAND:RO000:0
GBLPAT  =COMAND:SP000:1
GBLPAT  =COMAND:TR000:3
GBLPAT  =COMAND:WF000:2
GBLPAT  =COMAND:WR000:1
/

```

A.3 IAS COMPILER BUILD FILE (F4PIAS.CMD)

```

/TASK:[11,1]F4P/MAP:[11,36]F4P/OVERLAY:[11,36]F4PIAS-
/OPTIONS/MULTIUSER/NOFLOATING
!
! FORTRAN IV-PLUS COMPILER TASK BUILD FILE
!
! FORTRAN IV-PLUS VERSION 2.5, IAS VERSION 1.1
!
! SUMMARY OF SYSTEM PARAMETERS:
!   USES SYSTEM RESIDENT LIBRARY 'SYSRES'
!   17K COMPILER TASK
!   512 WORD STACK
!   32 FRAMES IN EXPRESSION ANALYZER STACK
!   10 FRAMES IN DO STATEMENT STACK
!   45 COMMON BLOCKS, MAXIMUM
!   6 RESIDENT PAGES FOR WORKFILE SYSTEM
!
! OPTION INPUT
!
TASK    =...F4P
LIBR    =SYSRES:RO
POOL    =100
!

```

COMPILER BUILD FILES

| SP STACK OF 512 WORDS
 | STACK MUST NEVER BE LESS THAN 384 WORDS

| STACK =512

| F4P COMPILER LOGICAL UNIT ASSIGNMENTS

- | 1 COMMAND INPUT
- | 2 COMMAND OUTPUT
- | 3 .OBJ OUTPUT
- | 4 .LST OUTPUT
- | 5 .FTN INPUT
- | 6 COMPILER WORKFILE (RANDOM ACCESS)
 | CAN BE REASSIGNED TO SWAPPING DISK IF AVAILABLE
 | DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
 | BUT THE WORKFILE DOES NOT REQUIRE A UFD ON THE VOLUME.
- | 7 COMPILER TEMP FILES (SEQUENTIAL ACCESS)
- | 8 DISK MUST BE MOUNTED AS WRITABLE FILES-11 VOLUME,
 | BUT THE TEMP FILES DO NOT REQUIRE A UFD ON THE VOLUME.
- | 9 COMPILER MESSAGE TEXT FILE

| UNITS =9

| ASG =TI:1, TI:2

| ASG =SP0:6, SP0:7, SP0:8

| RESIDENT MEMORY FOR WORKFILE VIRTUAL MEMORY SYSTEM

| UNDER IAS WORKFILE RESIDENT MEMORY IS DYNAMICALLY ALLOCATED
 | BY THE COMPILER BASED ON A PARAMETER SPECIFIED BY 'EXTTSK'.
 | THIS VALUE MAY BE OVERRIDDEN AT INSTALL BY 'INSTALL/INC:NNNN [11,1]F4P'.

| INCREASING THE NUMBER OF RESIDENT WORKFILE PAGES WILL MAKE THE COMPILER
 | RUN FASTER BY REDUCING PAGING I/O, BUT IT DOES NOT AFFECT THE SIZE
 | OF THE MAXIMUM SOURCE PROGRAM WHICH CAN BE COMPILED.

| EXTTSK =2048

| F4P USES CONTROL SECTION 'STACK1' FOR:
 | EXPRESSION ANALYZER STACK DURING PASS 1
 | NAMED COMMON BLOCK DEFINITIONS IN LATER PASSES

| AS DEFINED BELOW, STACK1 IS 256(10) WORDS, PROVIDING:
 | 256/8 = 32 EXPRESSION ANALYZER STACK FRAMES
 | 256/5 = 51 CONTROL SECTIONS
 | UP TO 6 CONTROL SECTIONS MAY BE USED FOR
 | COMPILER-GENERATED CODE AND DATA, LEAVING 45 COMMON BLOCKS.

| EXTSTC =STACK1:1000

| F4P USES CONTROL SECTION 'DOSTK1' FOR:
 | DO STATEMENT NESTING STACK DURING PASS 1

| AS DEFINED BELOW, DOSTK1 IS 30(10) WORDS, PROVIDING:
 | 30/3 = 10 NESTED DO STATEMENTS

| EXTSTC =DOSTK1:74

| DEFINE PRINTER WIDTH AND NUMBER OF SOURCE LINES PER LISTING PAGE
 | F4P DEFAULT VALUES ARE:
 | 55 SOURCE LINES PER PAGE (PLUS 3 LINES OF HEADING)
 | 132 COLUMN LINE PRINTER

COMPILER BUILD FILES

NOTE:

55(10) = 67(8)
 80(10) = 120(8) 132(10) = 204(8)

GBLPAT =FORTRN:LPLINE:67
 GBLPAT =FORTRN:LPWIDTH:204

DEFINITION OF COMPILER SWITCH OPTION VALUES

A COMPLETE DESCRIPTION OF THE EFFECTS OF THE COMPILER OPTION SWITCHES IS CONTAINED IN SECTION 1.2 OF THE FORTRAN IV-PLUS USER'S GUIDE.

SWITCH NAME	SWITCH SETTING	VALUE TO GBLPAT	
CK	/-CK	0	
	/CK	1	ARRAY SUBSCRIPT BOUNDS CHECKING
CO	/CO:5	5	NUMBER OF CONTINUATION LINES
	/CO:N.	N	(OCTAL VALUE)
DE	/-DE	0	
	/DE	1	INCLUDE DEBUG LINES
I4	/-I4	0	DEFAULT INTEGER*2
	/I4	1	DEFAULT INTEGER*4
LA	/-LA	0	REINITIALIZE SWITCHES
	/LA	1	
LI	/LI:0	0	
	/LI:1	1	SOURCE
	/LI:2	2	SOURCE, MAP
	/LI:3	3	SOURCE, MAP, GENERATED CODE
RO	/-RO	0	R/W CODE SECTIONS
	/RO	1	R/O CODE SECTIONS
SP	/-SP	0	NO SPOOLING
	/SP	1	SPOOLING
TR	/-TR	0	
	/TR:NONE	0	
	/TR:NAMES	1	
	/TR:BLOCKS	3	
	/TR:ALL	7	
	/TR	7	
WF	/WF:2	2	NUMBER OF TEMPORARY FILES
	/WF:N	1,2,3	
WR	/-WR	0	NO OPTIONAL WARNINGS
	/WR	1	

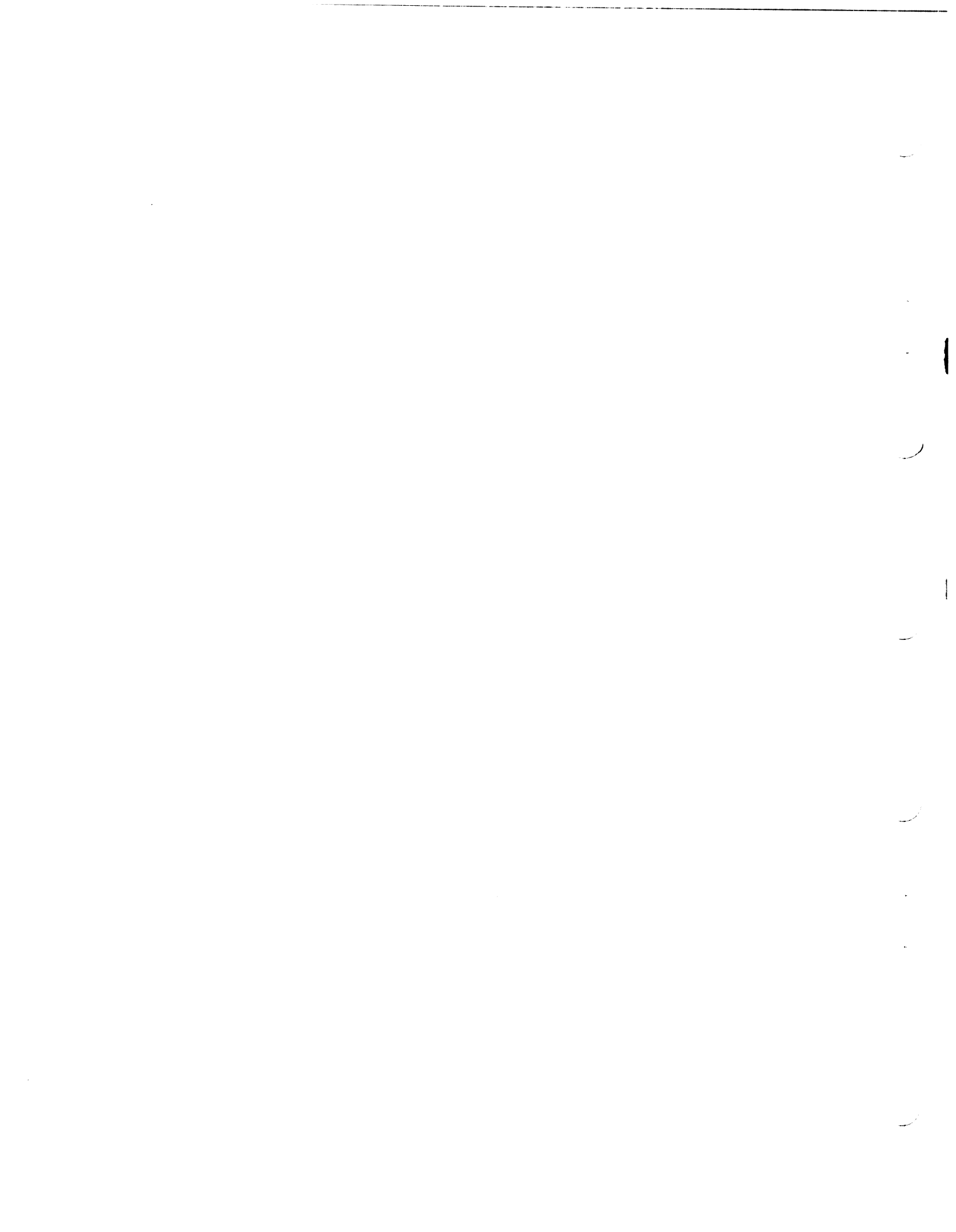
THE FOLLOWING 'GBLPAT' DEFINITIONS EFFECT DEFAULTS OF:

/-CK/CO:5/-DE/-I4/-LA/LI:2/-RO/SP/TR:BLOCKS/WF:2/WR

DEFAULT VALUES FOR SWITCH 'XX' ARE DEFINED BY A 'GBLPAT' TO GLOBAL VARIABLE 'XX000'.

COMPILER BUILD FILES

GBLPAT =FORTRN:LA000:0
GBLPAT =COMAND:CK000:0
GBLPAT =COMAND:CD000:5
GBLPAT =COMAND:DE000:0
GBLPAT =COMAND:I4000:0
GBLPAT =COMAND:LI000:2
GBLPAT =COMAND:RO000:0
GBLPAT =COMAND:SP000:1
GBLPAT =COMAND:TR000:3
GBLPAT =COMAND:WF000:2
GBLPAT =COMAND:WR000:1
/



INDEX

- Absence of run-time subroutine
 traceback information, 8-2
- ANSI magtape, improved FORTRAN
 support, 4-2
- Area, dynamic storage, 3-1
- Associated documents, v

- Batch, using F4P with RSX-11D,
 4-1
- Building the F4P OTS, options
 for, 5-4, 6-4

- Command switch default settings,
 compiler, 2-2
- Compilation, minimum partitions
 for, 1-2
- Compilation rate, effects of
 dynamic memory size and
 disk type on, 3-2
- Compilation speed, improving,
 3-1
- Compiler
 - command switch default
 settings, 2-2
 - options, selecting F4P, 2-2
 - performance, enhancing, 2-2
 - performance, experimental
 data, 3-3
 - task image, patching the, 5-2
 - task, minimum disk storage
 blocks for, 1-2
 - work file, 2-2
- Compiler build file,
 - (F4PIAS.CMD), IAS, A-6
 - (F4P11D.CMD), RSX-11D, A-4
 - (F4P11M.CMD), RSX-11M, A-1
- Computing the size of the
 dynamic storage area, 3-4
- Conventions, documentation, v

- Decreasing work file paging
 activity, 2-2
- Default FORTRAN,
 - selecting F4P as the, 2-1
 - selecting FOR as the, 2-2
- Default settings, compiler
 command switch, 2-2
- Disk Cartridge installation,
 - IAS, 7-2
 - RSX-11D, 6-3
 - RSX-11M, 5-3
- Disk space recovery, lost, 4-1
- Disk storage blocks for compiler
 task, minimum, 1-2
- Distribution files, 1-2
- Distribution media, files on the,
 1-2
- Documentation conventions, v
- Documents, associated, v
- Dynamic memory, RSX-11M without,
 3-4
- Dynamic storage area, 3-1
 - computing the size of the, 3-4

- Effects of dynamic memory size
 and disk type on compilation
 rate, 3-2
- Enhancing compiler performance,
 2-2
- Error message text suppression,
 3-7
- Error text as the system default,
 short, 3-5
- Error text, short, 3-4
- Errors, reporting run-time, 3-6
- \$ERTXT module, 3-5
- Experimental data: compiler
 performance, 3-3
- Extended Instruction Set (EIS),
 3-6
- EXTTSK option, 3-4

- Failure of the verification
 procedure, 8-1
- F4PCVF.OBJ module, 3-6
- F4PEIS.OBJ module, 3-6
- F4PIAS.CMD (IAS compiler build
 file), A-6
- F4PMAP library, 3-5
- F4PMAP.OBJ module, 3-5
- F4PNER.OBJ module, 3-7
- F4PNIO.OBJ module, 3-7
- F4PRES.MAC (OTS library build
 file), 3-7
- F4P11D.CMD (RSX-11D compiler
 build file), A-4
- F4P11M.CMD (RSX-11M compiler
 build file), A-1
- F4P11S.OBJ module, 3-4
- F4P OTS,
 - options for building, 6-4
 - options for installing, 5-2,
 6-2
 - options, selecting, 2-2

INDEX (CONT.)

- F4PTST.FTN, file, 8-1
- File, compiler work, 2-2, 3-1
- Files,
 - FORTTRAN IV-PLUS temporary, 4-1
 - OTS assembly parameter, 4-2
- Files on the distribution media, 1-2
- Files, compiler temporary, 2-2, 3-1
- FORTTRAN,
 - selecting F4P as the default, 2-1
 - selecting FOR as the default, 2-2
- FORTTRAN IV-PLUS
 - distribution kits, 1-2
 - OTS, 2-1
 - temporary files, 4-1
- Functions (PDFs), processor-defined, 3-5

- How to read the F4P Installation Guide, 1-1

- IAS
 - disk cartridge installation, 7-2
 - magtape installation, 7-1
 - system requirements, 1-2
- Improving compilation speed, 3-1
- Installation,
 - IAS disk cartridge, 7-2
 - IAS magtape, 7-1
 - RSX-11D disk cartridge, 6-3
 - RSX-11D magtape, 6-1
 - RSX-11M disk cartridge, 5-3
 - RSX-11M magtape, 5-1
- Installation Guide, how to read the F4P, 1-1
- Installation planning, 2-1
- Installing the compiler, 5-5, 6-4, 7-4
- Installing the F4P OTS, options for, 5-2, 6-2

- Library, F4PMAP, 3-5
 - object module, 2-1
- Library searches, task builder, 2-1
- Library storage, Object Time System, 1-2
- Loading the module \$SHORT from the library, 3-5

- Magtape, ANSI, improved FORTRAN support, 4-2
- Magtape installation,
 - IAS, 7-1
 - RSX-11D, 6-1
 - RSX-11M, 5-1
- Media, files on the distribution, 1-2
- Memory, RSX-11M without dynamic, 3-4
- Message text, suppressing error, 3-6
- Minimum disk storage blocks for compiler task, 1-2
- Minimum partitions for compilation, 1-2

- Object module library, 2-1
- Object Time System Library
 - storage, 1-2
- Options for
 - building the F4P OTS, 5-4, 6-4
 - installing the F4P OTS, 5-2, 6-2
 - selecting F4P compiler, 2-2
 - selecting F4P OTS, 2-2
- OTS,
 - assembly parameter files, 4-2
 - FORTTRAN IV, 2-1
 - FORTTRAN IV-PLUS, 2-1
 - modules, 2-2
 - options, 3-4
 - options, selecting F4P, 2-2
 - resident library build file, 3-7
- OTS, options for
 - building, 5-4, 6-4
 - installing the F4P, 5-2, 6-2
- Overriding the dynamic storage area, 3-4

- Pages, resident work file, 3-4
- Paging activity, decreasing work file, 2-2
- Paging memory, 2-2
- Parameter files, OTS assembly, 4-2
- Partitions, 3-4
- Partitions for compilation,
 - minimum, 1-2
- Patching the compiler task image, 5-2
- Performance, enhancing compiler, 2-2
- Processor-defined functions (PDFs), 3-5

INDEX (CONT.)

- Recovering lost disk space, 4-1
- Reducing task size, 3-6
- Release notes, 4-1
- Replacing previous versions of F4P, 2-3
- Reporting run-time errors, 3-6
- Resident work file pages, 3-4
- RSX-11D
 - Batch, using F4P with, 4-1
 - Compiler build file (F4P11D.COMD), A-4
 - disk cartridge installation, 6-3
 - magtape installation, 6-1
 - procedure for deleting temporary files, 4-1
 - system requirements, 1-2
- RSX-11M,
 - Compiler build file (F4P11M.COMD), A-1
 - disk cartridge installation, 5-3
 - magtape installation, 5-1
 - procedure for deleting temporary files, 4-1
 - system requirements, 1-2
 - without dynamic memory, 3-4
- Run-time errors, reporting, 3-6

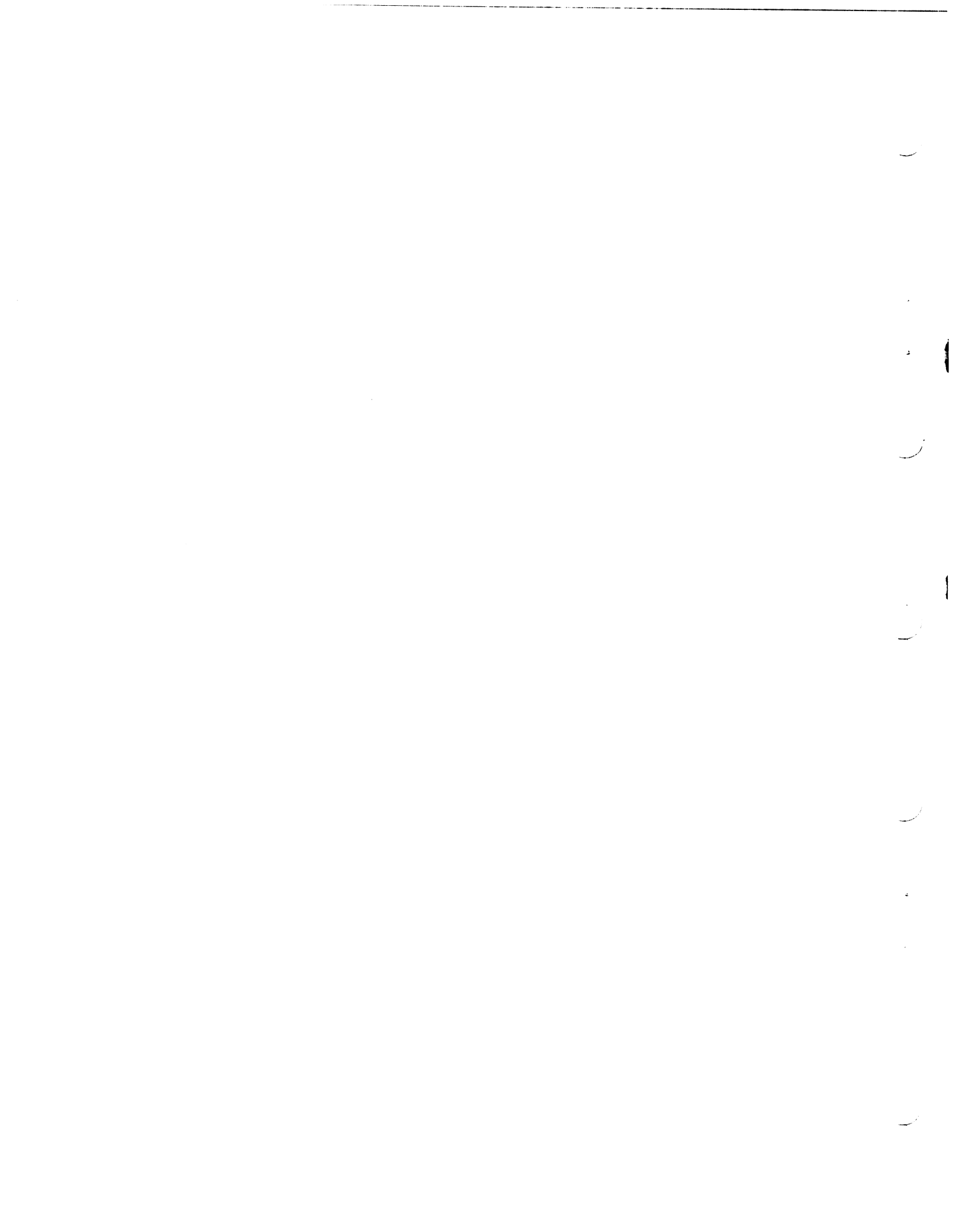
- Selecting F4P as the default FORTRAN, 2-1
 - F4P Compiler options, 2-2
 - F4P OTS options, 2-2
 - FOR as the default FORTRAN, 2-2
- Short error text, 3-4
 - as the system default, 3-5
- \$\$SHORT, 3-5
- SHORT.OBJ, 3-4
- Size of the dynamic storage area,
 - computing the, 3-4
- Storage, Object Time System library, 1-2
- Storage area,
 - computing the size of the dynamic, 3-4
 - dynamic, 3-1
 - overriding the dynamic, 3-4
- Subroutine traceback information,
 - absence of run-time, 8-2
- Suppressing error message text, 3-6
- Switch default settings, compiler command, 2-2
- SYSLIB, 2-1
- System build verification, 8-1
- System default, short error text as the, 3-5
- System requirements,
 - IAS, 1-2
 - RSX-11D, 1-2
 - RSX-11M, 1-2
- System tailoring, 3-1

- Task build, transforming PDF names at, 3-5
- Task Builder library searches, 2-1
- Task image, patching the compiler, 5-2
- Temporary files,
 - procedure for deleting, 4-1
- Test program, system build, 8-1
- Text, short error, 3-4
- Transforming PDF names at task build, 3-5

- UFD files,
 - [1,2], 1-3
 - [11,36], 1-3
 - [11,37], 1-3
 - [11,40], 1-4
- Using F4P with RSX-11D Batch, 4-1

- Verification procedure, 8-1

- Work file, 2-2, 3-1
- Work file pages, resident, 3-4
- Work file paging activity,
 - decreasing, 2-2



READER'S COMMENTS

NOTE: This form is for document comments only. DIGITAL will use comments submitted on this form at the company's discretion. Problems with software should be reported on a Software Performance Report (SPR) form. If you require a written reply and are eligible to receive one under SPR service, submit your comments on an SPR form.

Did you find errors in this manual? If so, specify by page.

Did you find this manual understandable, usable, and well-organized? Please make suggestions for improvement.

Is there sufficient documentation on associated system programs required for use of the software described in this manual? If not, what material is missing and where should it be placed?

Please indicate the type of user/reader that you most nearly represent.

- Assembly language programmer
- Higher-level language programmer
- Occasional programmer (experienced)
- User with little programming experience
- Student programmer
- Non-programmer interested in computer concepts and capabilities

Name _____ Date _____

Organization _____

Street _____

City _____ State _____ Zip Code _____

or
Country

along this line.

Please

-----**Fold Here**-----

-----**Do Not Tear - Fold Here and Staple**-----

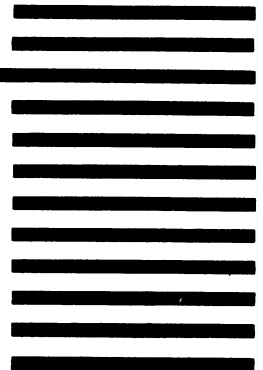
FIRST CLASS
PERMIT NO. 33
MAYNARD, MASS.

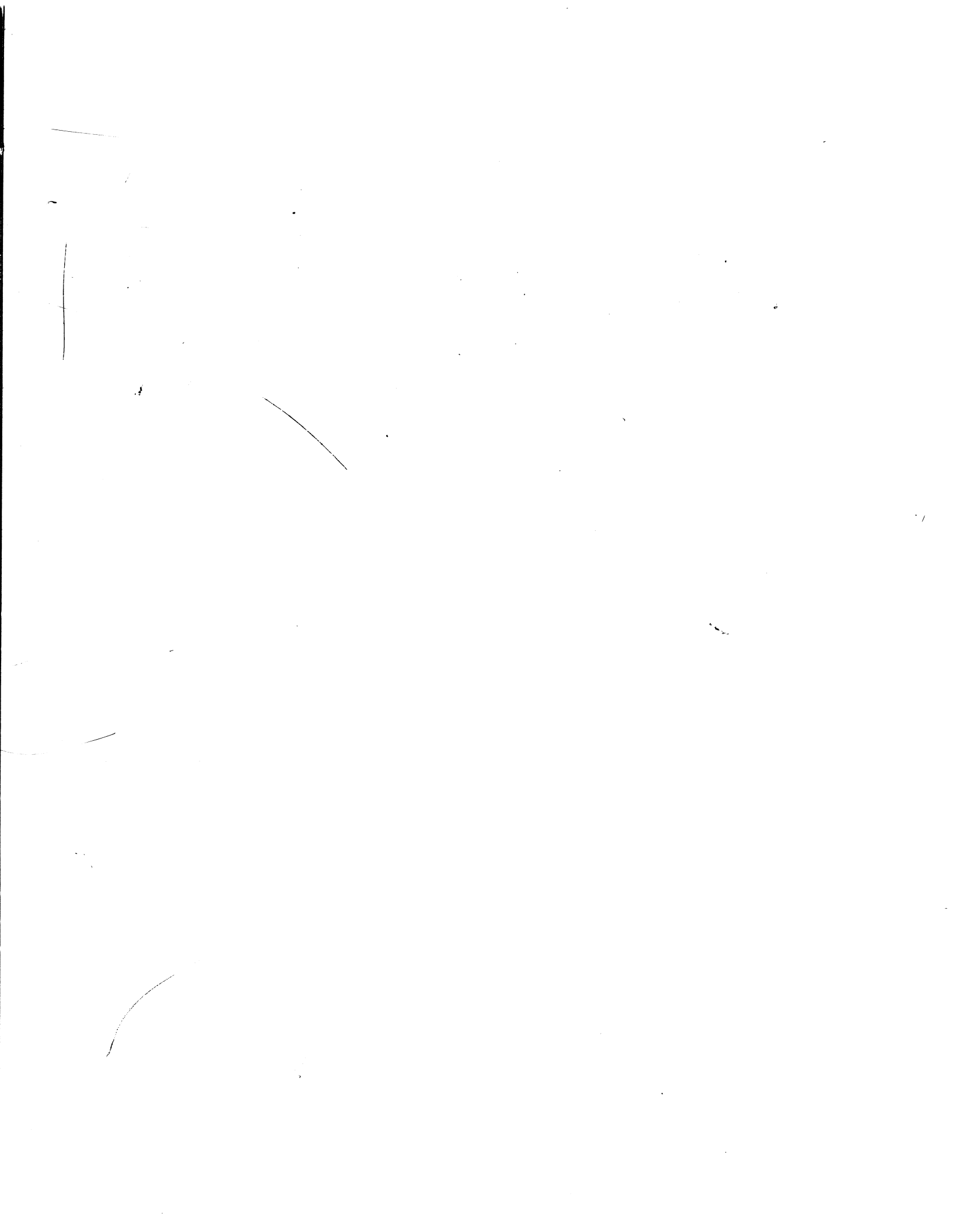
BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Postage will be paid by:

digital

Software Documentation
146 Main Street ML5-5/E39
Maynard, Massachusetts 01754





digital

digital equipment corporation