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Volume VIII  
Part 1

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INTEGRATED INFORMATION SUPPORT SYSTEM (IISS)  
Volume VIII - User Interface Subsystem  
Part 1 - Terminal Operator's Guide

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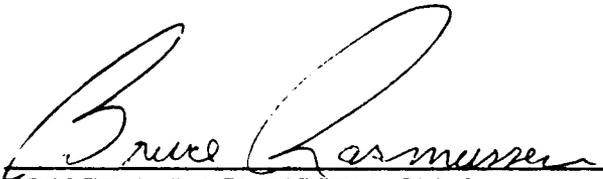
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FOREWORD

This technical report covers work performed under Air Force Contract F33600-87-C-0464, DAPro Project. This contract is sponsored by the Manufacturing Technology Directorate, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. It was administered under the technical direction of Mr. Bruce A. Rasmussen, Branch Chief, Integration Technology Division, Manufacturing Technology Directorate, through Mr. David L. Judson, Project Manager. The Prime Contractor was Integration Technology Services, Software Programs Division, of the Control Data Corporation, Dayton, Ohio, under the direction of Mr. W. A. Osborne. The DAPro Project Manager for Control Data Corporation was Mr. Jimmy P. Maxwell.

The DAPro project was created to continue the development, test, and demonstration of the Integrated Information Support System (IISS). The IISS technology work comprises enhancements to IISS software and the establishment and operation of IISS test bed hardware and communications for developers and users.

The following list names the Control Data Corporation subcontractors and their contributing activities:

SUBCONTRACTOR

ROLE

Control Data Corporation	Responsible for the overall Common Data Model design development and implementation, IISS integration and test, and technology transfer of IISS.
D. Appleton Company	Responsible for providing software information services for the Common Data Model and IDEF1X integration methodology.
ONTEK	Responsible for defining and testing a representative integrated system base in Artificial Intelligence techniques to establish fitness for use.
Simpact Corporation	Responsible for Communication development.
Structural Dynamics Research Corporation	Responsible for User Interfaces, Virtual Terminal Interface, and Network Transaction Manager design, development, implementation, and support.
Arizona State University	Responsible for test bed operations and support.

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SECTION 1  
INTRODUCTION

The UI provides a neutral view of interactive devices. This neutral view or IISS Terminal is an input/output device that uses a keyboard and screen to communicate with the computer. It has a set of functions that it can perform, a set of attributes that it supports, a set of commands for invoking functions, and a mode of operation. Communication between the user and the computer is achieved through electronic forms displayed on the screen. The application program displays and manipulates the forms through a set of routines called the Form Processor. The Form Processor is linked to the user's terminal via the Virtual Terminal Interface (VTI) and a specific Device Driver (DD). This removes terminal dependency so that applications may be run from a wide variety of terminals.

This manual describes how to operate the IISS Terminal when running an Integrated Information Support System (IISS) application program. It also describes the IISS end user environment. This includes function selection and how to use some predefined applications called User Interface Services (UIS).

1.1 How to Use This Manual

Expected users of this manual include:

- o Persons running application programs in the IISS environment
- o Programmers testing or debugging new application programs

Programmers may wish to use this document as the basis of the User's Manual for their applications software. Application specific information you may want to incorporate includes:

- o Documenting the application specific programmable function keys available in Application mode.
- o Replacing the generic function keys with the actual keys on the user's terminal. Include a diagram of the terminal keyboard.
- o Documenting which form fields are scrollable arrays using the function keys in Scroll/Page mode and identifying index items if they exist.

## SECTION 2

### DOCUMENTS

#### 2.1 Reference Documents

- [1] Structural Dynamics Research Corporation, User Interface Services Development Specification, DS 620344100, 31 May 1988.
- [2] Systran, ICAM Documentation Standards, ICAM Document IDS150120000C, 15 September 1983.

This manual is one of a set of user manuals that together describe how to operate in the IISS User Interface environment. The complete set consists of the following manuals listed here for reference:

- [1] Structural Dynamics Research Corporation, IISS Form Editor User Manual, UM 620344400, 31 May 1988.  
  
Explains how to define and maintain electronic forms. It is intended to be used by programmers writing application programs that use the Form Processor.
- [2] Structural Dynamics Research Corporation, IISS Form Processor User Manual, UM 620344200, 31 May 1988.  
  
Describes the set of callable execution time routines available to an application program to process electronic forms. It is intended to be used by programmers writing application programs for the IISS environment.
- [3] Structural Dynamics Research Corporation, IISS Terminal Operator Guide, OM 620344000, 31 May 1988.  
  
Explains how to operate the generic IISS terminal when running an IISS application program. The IISS end user environment, function selection and some predefined applications are also described.
- [4] Structural Dynamics Research Corporation, IISS Text Editor User Manual, UM 620344600, 31 May 1988.  
  
Explains how to use the file editing functions including: inserting, deleting, moving and replacing text.
- [5] Structural Dynamics Research Corporation, IISS Rapid Application Generator User Manual, UM 620344502, 31 March 1988.

Describes the Application Definition Language and the process used for translating textual definitions of interactive database applications into programs that

access selected data base information resident in the Common Data Model. This information is accessible through the IISS Neutral Data Manipulation Language.

- [6] Structural Dynamics Research Corporation, IISS Report Writer User Manual, UM 620344501, 31 May 1988.

Describes the Report Definition Language and the process of creating a hard copy report of selected data base information resident in the Common Data Model. This information is accessible through the IISS Neutral Data Manipulation Language.

- [7] Structural Dynamics Research Corporation, IISS Virtual Terminal User Manual, UM 620344300, 31 May 1988.

Explains the program callable interface to the IISS Virtual Terminal. The callable routines, Virtual Terminal commands and the implementation of additional terminals are described. It is intended for application and system programmers working in the IISS environment.

## 2.2 Terms and Abbreviations

Application Process: (AP), a cohesive unit of software that can be initiated as a unit to perform some function or functions.

Cursor Position: the position of the cursor after any command is issued.

Device Drivers: (DD), software modules written to handle I/O for a specific kind of terminal. The modules map terminal specific commands and data to a neutral format. Device Drivers are part of the UI Virtual Terminal.

Field: two dimensional space on a terminal screen.

Form: structured view which may be imposed on windows or other forms. A form is composed of fields. These fields may be defined as forms, items, and windows.

Form Processor: (FP), subset of the IISS User Interface that consists of a set of callable execution time routines available to an application program for form processing.

IISS Function Screen: the first screen that is displayed after logon. It allows the user to specify the function he wants to access and the device type and device name on which he is working.

Integrated Information Support System: (IISS), a computing environment used to investigate, demonstrate, test the concepts and produce application for information management and

information integration in the context of Aerospace Manufacturing. The IISS addresses the problems of integration of data resident on heterogeneous data bases supported by heterogeneous computers interconnected via a Local Area Network.

Item: non-decomposable area of a form in which hard-coded descriptive text may be placed and the only defined areas where user data may be input/output.

Logical Device: a conceptual device that identifies a top level window of an application. It is used to distinguish between multiple applications running simultaneously on a physical device. NOTE that a single application can have more than one logical device. To the end user this also appears as multiple applications running simultaneously.

Message: descriptive text which may be returned in the standard message line on the terminal screen. They are used to warn of errors or provide other user information.

Message Line: a line on the terminal screen that is used to display messages.

Network Transaction Manager: (NTM), IISS subsystem that performs the coordination, communication and housekeeping functions required to integrate the Application Processes and System Services resident on the various hosts into a cohesive system.

Page: instance of forms in windows that are created whenever a form is added to a window.

Paging and Scrolling: a method which allows a form to contain more data than can be displayed with provisions for viewing any portion of the data buffer.

Physical Device: a hardware terminal.

User Interface: (UI), IISS subsystem that controls the user's terminal and interfaces with the rest of the system. The UI consists of two major subsystems: the User Interface Development System (UIDS) and the User Interface Management System (UIMS).

User Interface Management System: (UIMS), the runtime UI. It consists of the Form Processor, Virtual Terminal, Application Interface, the User Interface Services and the Text Editor.

User Interface Services: (UIS), subset of the IISS User Interface that consists of a package of routines that aid users in controlling their environment. It includes message management, change password, and application definition services.

User Interface/Virtual Terminal Interface: (UI/VTI), another name for the User Interface.

Virtual Terminal: (VT), subset of the IISS User Interface that performs the interfacing between different terminals and the UI. This is done by defining a specific set of terminal features and protocols which must be supported by the UI software which constitutes the virtual terminal definition. Specific terminals are then mapped against the virtual terminal software by specific software modules written for each type of real terminal supported.

Virtual Terminal Interface: (VTI), the callable interface to the VT.

Window: dynamic area of a terminal screen on which predefined forms may be placed at run time.

Window Manager: a facility which allows the following to be manipulated: size and location of windows, the device on which an application is running, the position of a form within a window. It is part of the Form Processor.

## SECTION 3

### USING THE IISS TERMINAL

To understand the functions required, you need to understand how to communicate with the application software. You do this through forms that are displayed on the screen. You use the keyboard to enter information on the form and to send the completed form to the application software for processing. Information is also returned to you on a form on the screen. This information may include: the next form that you need to fill out, messages about how the process is proceeding, and help in filling out the form. You can use the keyboard functions to display the messages or help on the screen. If the information on the form is stacked in pages, or if it is partly obscured by other processes running simultaneously on the screen, you can use the keyboard to manipulate the display. This allows you to enter or to read information. Your part in this communication can be summarized as two kinds of tasks that you want to perform.

One task is entering and viewing information on the form. To assist you in this task, the keyboard operates in several modes which include: text edit, window manager, and scroll/page. You select the mode you want and the current mode is displayed in the lower right corner of the screen. Each mode contains several specialized functions for the more sophisticated manipulation of the screen. In addition, there are general functions for moving the cursor and changing input that are always available, regardless of which mode the keyboard is in.

The other task is instructing the application software to process the information, displaying help or messages, or returning to the previous step in the process without processing the form. These control functions are also always available regardless of the keyboard mode.

You perform the general functions using the standard keyboard keys available on most terminals. The control functions and the mode dependent functions use the programmable function keys. They are numbered PF0 through PF20 and also have a descriptive name, for example HELP or QUIT. The actual key (or key sequence) you press to perform the function on a specific terminal is shown in the terminal mapping charts in Appendix B. The actual keypad layouts for a VT100 terminal are given in Appendix C.

All the available functions are described in this section of the manual. The general functions are first, then the control functions and then the mode dependent functions.

#### 3.1 General Function Keys

This section describes the general function keys. You use the general functions when you are entering information on a form. They allow you to move the cursor around the form, change your input and refresh the screen.

All the keys described here are standard keyboard keys and are on all terminals unless otherwise noted.

### Move Cursor

to beginning of line	CR	Press the <RETURN> key to move the cursor to the left margin of the current line.
to next tab field	TAB	Press the <TAB> key to move the cursor to the next tab field.
to previous tab field	ESC TAB	Press the <ESC> key followed by the <TAB> key to move the cursor to the previous tab field.
to next character	UP	Press the <UP ARROW> key to move the cursor to the character above.
	DOWN	Press the <DOWN ARROW> key to move the cursor to the character below.
	LEFT	Press the <LEFT ARROW> key to move the cursor to the character to the left.
	RIGHT	Press the <RIGHT ARROW> key to move the cursor to the next character to the right.

### Change Input

Overstrike/ Insert Mode	ESC DEL	Press the <ESC> key followed by the <DEL> key to toggle between the overstrike and insert modes. In overstrike mode, the character in the cursor position is overwritten by any character that you type in. In insert mode, characters you type in are inserted at the cursor position and the existing character set is moved one space to the right.
Delete character	DELETE	Position the cursor on the character you want to delete and press the <DELETE> key.
Delete to end of field	ESC LF	Position the cursor on the first character you want to delete and press the <ESC> key followed by the <LINE FEED> key. This deletes all the characters from the cursor position to the end of the field.







- o scroll/page mode (mode field value is "scrl1/page")  
to scroll through arrays which contain more occurrences than are displayed. As each element of the array is visible on the screen, you can enter or simply view the information.
- o text editor mode (mode field value is "text edit")  
to move, copy, delete and substitute text within form items.

### 3.3.1 Application Mode

In this mode, the function keys PF5-PF20 operate as defined by the application software. The method of programming the keys is documented in the Form Processor User Manual. The specific application user manuals must document these function keys. To get into the Application mode, press the <MODE> key until "applcation" appears in the lower right corner of the screen.

### 3.3.2 Window Manager Mode

This section describes the functions that are only available in the Window Manager mode. Before describing these functions, the concept of windows is explained.

Your terminal screen can be thought of as a window in which electronic forms are displayed. When you are running a single application, a form is displayed in this window and probably fills the physical screen. This form may contain several other windows which in turn contain forms and so on. Thus, the windows contained in any given form are "stacked".

When you are running several applications simultaneously, each application contains an initial window for displaying its forms. The initial windows of the applications form a stack analogous to the window stack for a single application. The initial windows are stacked in the order in which the applications were started. The last application to be started is on top and is totally visible.

In either case, the Window Manager functions allow you to change the size and location of the top window in the stack and also scroll the information it contains. This is how you view the undisplayed portions of a form that is larger than the window it is displayed in. When there are several applications running simultaneously, this allows you to interact with and monitor any of the applications. One of the Window Manager functions allows you to change which window is on the top of the stack.

All of the following information on managing windows refers both to the initial window of an application and to windows that occur within an application.

### 3.3.2.1 Window Manager Keys

This section lists the keys with a brief description. A detailed description with examples of how to use them follows. The terminal mapping charts in Appendix B show you exactly how the keys on your terminal relate to the programmable function keys.

PF5	<SCROLL UP>	scrolls the form which is displayed in the window up.
PF6	<SCROLL DOWN>	scrolls the form which is displayed in the window down.
PF7	<SCROLL LEFT>	scrolls the form which is displayed in the window to the left.
PF8	<SCROLL RIGHT>	scrolls the form which is displayed in the window to the right.
PF9	<SIZE>	makes the selected window larger or smaller.
PF10	<LOCATION>	moves the selected window to a new location on the screen.
PF11	<SELECT>	makes a window the top window in the stack so that you can change its size and location and scroll the information it contains. This also allows you to view it completely.
PF12	<RESTORE>	returns the selected window to its previous position on the stack.
PF13	<FUNCTION>	displays the IISS Function Screen so you can run another application.
PF14	<APPLICATION>	makes an application the top application in the stack so that you can view and manipulate its initial window.
PF15	<HOME VIEW>	returns a form that you have previously scrolled to its original position in the window.

### 3.3.2.2 How to Use the Window Manager Mode

This section gives a detailed description with examples of how to use the Window Manager keys. To get into the Window Manager mode, press the <MODE> key until "window mgr" appears in the lower right corner of the screen as shown in Figure 3-1.

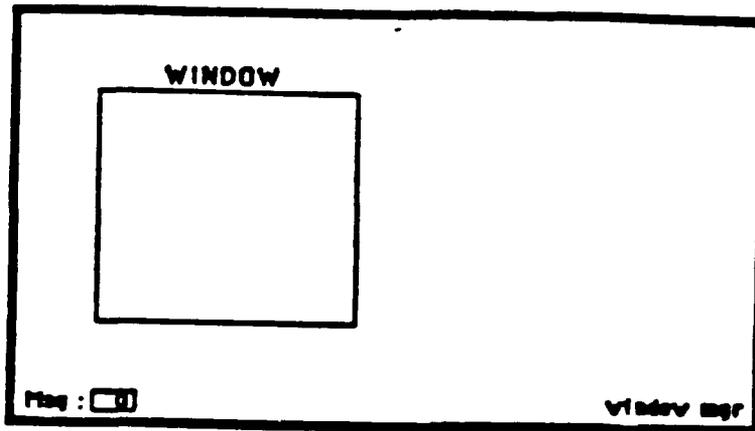


Figure 3-1 The Window Manager Mode

### Selecting a window

#### <SELECT> key

The Window Manager functions only operate on the selected window (i.e., the top window in the stack). To select a window, position the cursor in the desired window and press the <SELECT> key. Note that the current selected window permanently loses its original position in the stack if you select another window without pressing the <RESTORE> key first. When several applications are running simultaneously and you select a window of an application that is not on top, the application as well as the window moves to the top of the stack.

#### <RESTORE> key

When you press the <RESTORE> key, the selected window is moved from the top of the stack to its previous position in the stack.

#### <APPLICATION> key

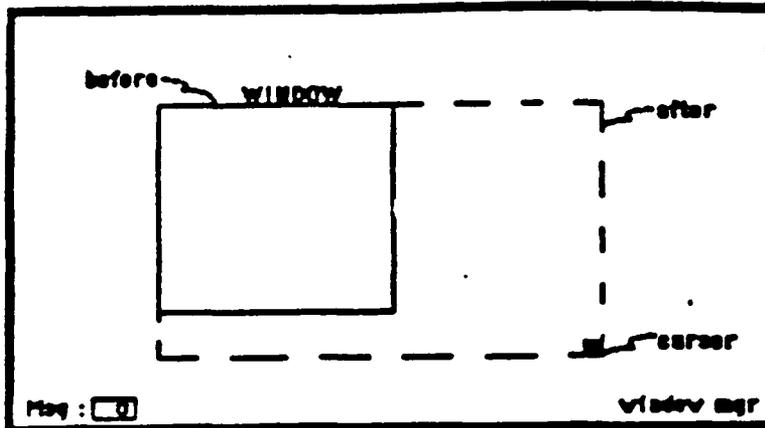
This function key is used when several applications are running simultaneously. It puts the initial window of an application on the top of the stack in the same way the <SELECT> key puts a window within an application on the top of the stack. This allows you to manipulate the initial window of an application so that you can see the initial window of the other applications that are running.

### Changing the window size

#### <SIZE>

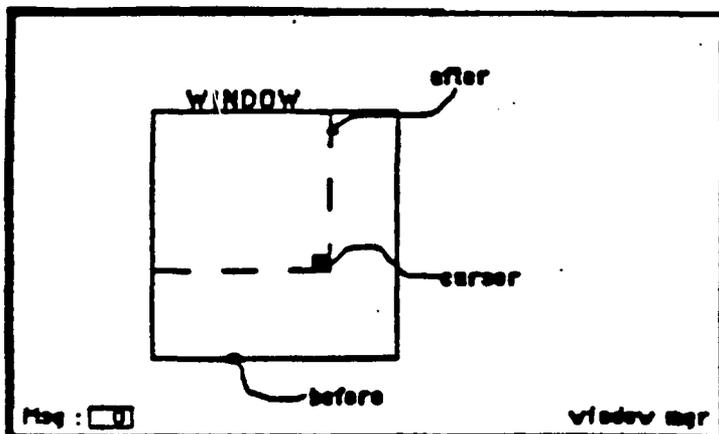
Before you can change the size of a window, you must select it using the <SELECT> or <APPLICATION> key. If it is one of a stack of windows, it is put on top so that you can see all of the window. This may be the initial window of an application or a window within an application. Position the cursor where you

want the lower right corner of the window to be and press the <SIZE> key. If you position the cursor above or to the left of the window, you will reduce the size of the window to zero and hide it completely. Remember that the size of a window can not be increased beyond the space on the screen that is occupied by its parent form or the form it contains.



Position the cursor where you want the lower right corner to be and press the <SIZE> key.

Figure 3-2 Increasing the window size



Position the cursor where you want the lower right corner to be and press the <SIZE> key.

Figure 3-3 Decreasing the Window Size

#### Hiding the window

Hiding the window removes it from the screen. In the case of simultaneous applications, the application represented by the window is still active but not displayed. This means that if information is being output to the screen while the window is hidden, you will not be aware of it.

NOTE: Because a hidden window has no dimension, you cannot select it. Thus, if you want to make it larger so you can see it, you must do so while it is still the selected window (i.e., before you select another window or before you restore the hidden window to its previous position on the stack). The only way you can restore visibility to a hidden window that is no longer the selected window is by using the Application Status Form in Status mode (see section 3.3.3.2).

To hide a window, position the cursor somewhere left of or above the window and press the <SIZE> key. This reduces the size to zero.

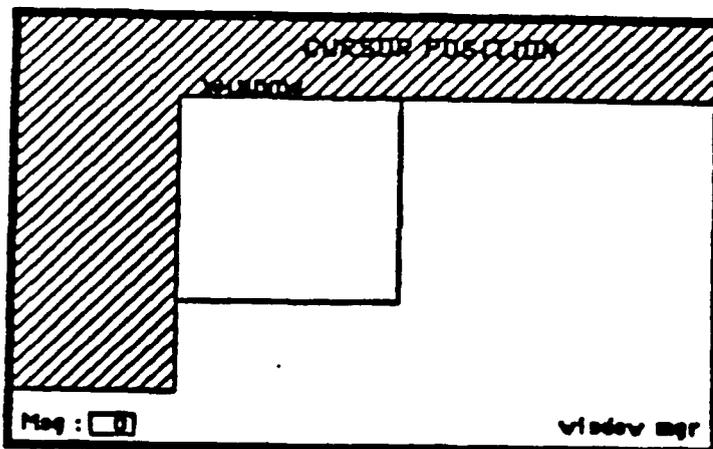


Figure 3-4 Hiding a Window

Scrolling the data entry form within the window

<SCROLL UP>  
<SCROLL DOWN>  
<SCROLL LEFT>  
<SCROLL RIGHT>  
<HOME VIEW>

The data are displayed on a surface that you view through the window. You can only see what is directly behind the window. If the display is larger than the window, parts of the data are not visible. Using the scroll keys, you can move the display surface around so that different parts of it are visible in the window.

You do this as shown in Figure 3-5. First you position the cursor on the data and press one of the <SCROLL> direction keys. That position on the data is then moved to the edge of the window in the direction indicated by the key. You can move the data up, down, left and right. After you press the key, the cursor remains in the same position relative to the window. If you want to repeatedly scroll the data up in blocks of five lines, put the cursor on the fifth line and press the <SCROLL UP> key every time you want a block of five lines to scroll up. When you come to the end of the available blocks, the data will only scroll sufficiently to display the last block. Press the <HOME VIEW> key to return the data to its original position.

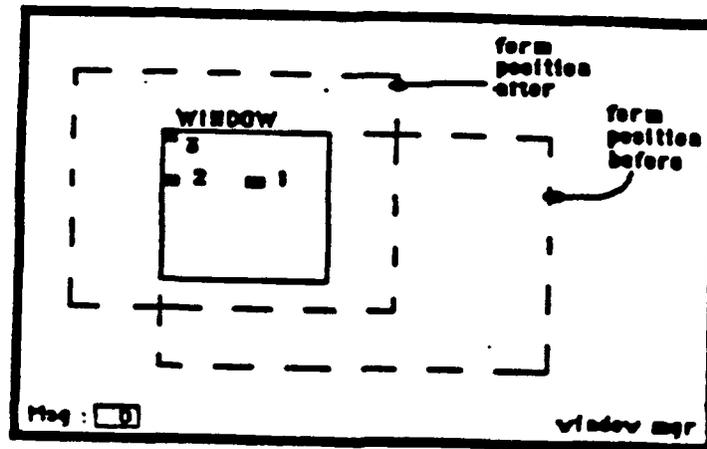
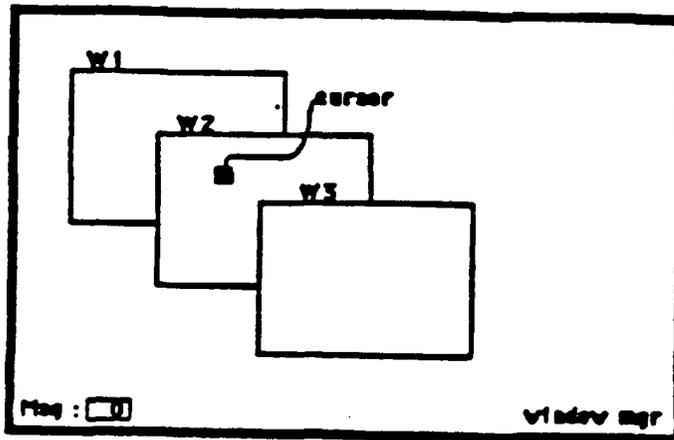


Figure 3-5 Scrolling the Display in the Window

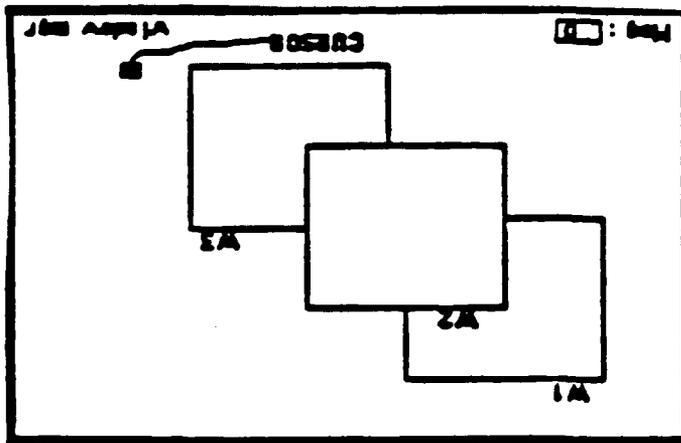
First, select the window. To move the data as shown above, put the cursor on position 1 and press the <SCROLL LEFT> key. The data surface moves from position 1 to position 2. Note that the cursor does not move. Move the cursor to position 2, press the <SCROLL UP> key and the data surface moves from position 2 to 3.

The following example illustrates changing the size of a window that is somewhere within the stack.



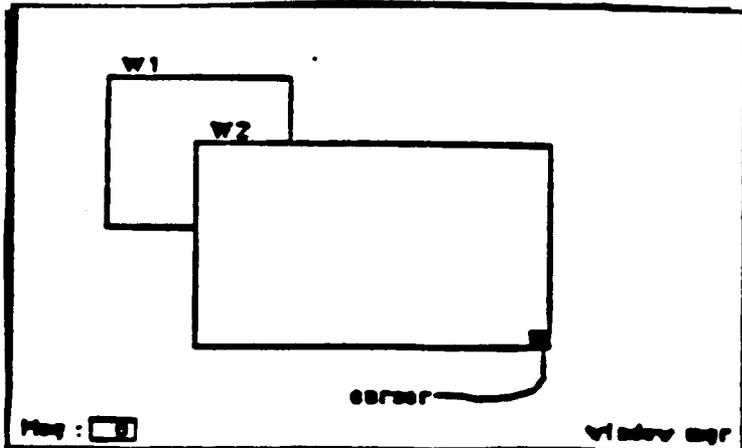
Position the cursor within the window and press the <SELECT> or <APPLICATION> key as appropriate.

Figure 3-6 Selecting a Window



Position the cursor where you want the lower right corner of the window to be and press the <SIZE> key.

Figure 3-7 Enlarging a Window



Leave the cursor in the same position and press the <RESTORE> key.

Figure 3-8 Returning a Window to its Position in the Stack

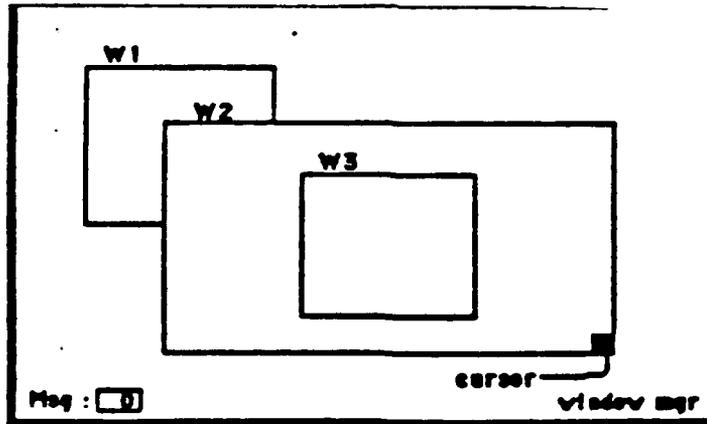


Figure 3-9 The Un-selected Window

Changing the window location

<LOCATION>

Before you can move a window, you must select it. To move the selected window, position the cursor where you want the upper left corner of the window to be and press the <LOCATION>

key. If the window no longer fits on the screen, the part that overlaps is lost. Moving the window back onto the screen restores the lost portion.

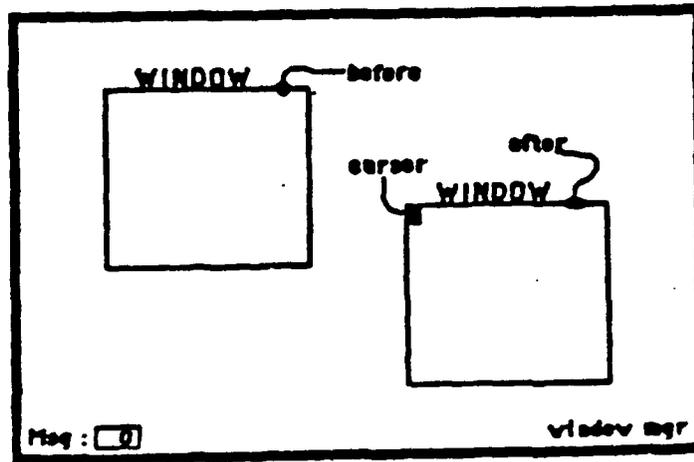


Figure 3-10 Changing a Window Location

Initiating an application

<FUNCTION> key

If you are running one IISS application and want to initiate another to run simultaneously, press the <FUNCTION> key to access the IISS Function Screen and enter the application name in the Function item as shown in Figure 3-11.

IISS TEST BED VERSION 2.0			
DATE:	<input type="text" value="9/20/85"/>	TIME:	<input type="text" value="11:59:01"/>
USER ID:	<input type="text" value="MORRIS"/>	ROLE:	<input type="text" value="MGR"/>
FUNCTION:	<input type="text"/>	DEVICE TYPE:	<input type="text"/>
		DEVICE NAME:	<input type="text"/>
Msg: <input type="text" value="0"/>			application

Figure 3-11 IISS Function Screen

### 3.3.3 Status Mode

This section describes the functions that are only available in Status Mode. These functions allow you to display and modify the status of the applications you are executing.

#### 3.3.3.1 Status Keys

This section lists the Status Mode function keys. The terminal mapping charts in Appendix B show you which key (or key sequence) you must press to perform the function on your specific terminal.

PF5 <DEBUG> - toggles Debug Mode ON/OFF.  
PF6 <APSTAT> - displays the Application Status Form.  
PF7 <SYSMSG> - displays the system message queue.  
PF8 <ABORT> - aborts an application

#### 3.3.3.2 How to Use the Status Mode

This section gives a detailed description with examples of how to use the Status Mode function keys. To activate these keys, press the <MODE> key until "status" appears in the lower right corner of the screen as shown in Figure 3-12.

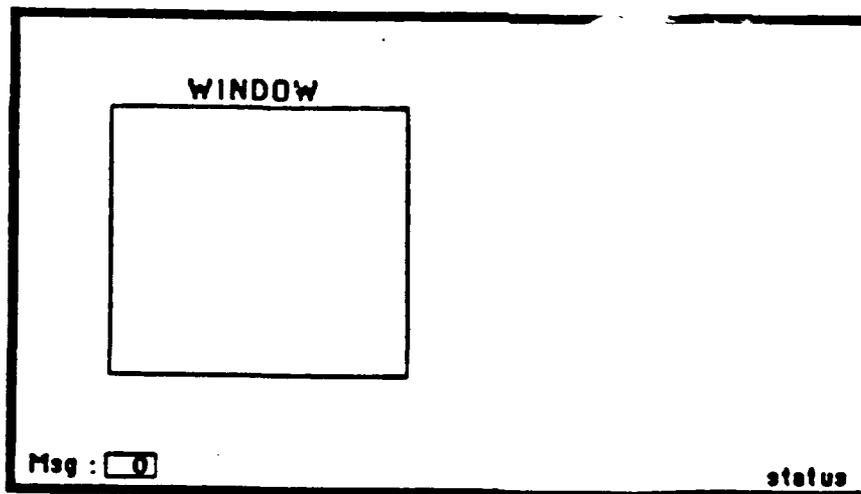


Figure 3-12 Status Mode

Toggling debug mode

<DEBUG> key

Debug mode is helpful to application programmers debugging new applications. When debug mode is on, system status and error messages are displayed in the terminal screen message line and recorded in the system message queue.

Displaying the Application Status Form

<APSTAT> key

Application Status											
Application	Device			Window Name	Location		Display Size		Viewport Offset		
	Type	Name	Pri		Row	Col	W	H	Row	Col	

msg  status

Figure 3-13 Application Status Form

Pressing the <APSTAT> key displays the Application Status form as shown in Figure 3-13. This form displays information about the status of the applications (top level windows) on the terminal screen and allows you to perform some operations on the windows that cannot be done in Window Manager Mode. In addition, all the functions that can be performed in Window Manager mode can also be performed using this form.

The following is an explanation of the items on this form.

- |             |   |
|-------------|---|
| application | The name of the application using the window. You cannot change this name.  |
| device type | The type of the device driver which the application is running. This device driver is a special application which allows the application to communicate with your terminal. Thus this name must be an application name recognized by the NTM you are using.                                     |
| device name | The name of the port for the physical device that the application is running on. It must agree with the device type named. If you change this value, the application is moved to the device at the new port that you name. Remember, you may need to change the value in the device type field. |
| priority    | The number that describes the level of the application initial window when several windows are stacked on the screen.   |
| window name | The name automatically given to the window at run time. You cannot change this name.  |

location row/col      The physical location on the screen of the upper left corner of the window relative to the upper left corner of the containing window.

display size  
width/depth          The physical size of the window on the screen expressed in terms of width and depth.

viewport offset  
row/col              The offset between the form in the window and the window expressed in rows and columns. If the offset is 0 0 then the upper left corner of the form is in the upper left corner of the window.

The functions you can perform using this form are:

review windows      the information displayed includes: the device on which the application is displayed, the order in which applications are stacked on the screen, and the location, size and viewport offset of the windows.

change device        the device name, as used and recognized by the NTM, of each application that is running on the terminal is displayed on the form. You can change this name and move the initial window (logical device) of any application to any other physical device that is hardwired to the system.

change window size    the size of all windows is displayed on the form. You can change the size of any window. This includes giving dimension to a window with 0,0 size that has been hidden and so restore its visibility.

change location      the location of the top left row and column of the window relative to the upper left corner of the parent window is displayed. You can change these values and so change the relative position of the window.

change priority      the order in which the windows are stacked on the screen is displayed on the form as the priority number of the window. Thus the last application to be initiated has a priority number of 1 and is on top of the stack of initial windows and is totally visible. You can change this number to give any application top priority. This has the same effect as selecting a window interactively using the <SELECT> key.

change viewport  
offset

the offset between the form in the window and the window expressed in rows and columns is displayed on the form. You can change these numbers to move the position of the form in the window.

abort application

you can abort an application by positioning the cursor anywhere in the appropriate row and pressing the <ABORT> key (PF8).

The following example illustrates a possible use of the Application Status form.

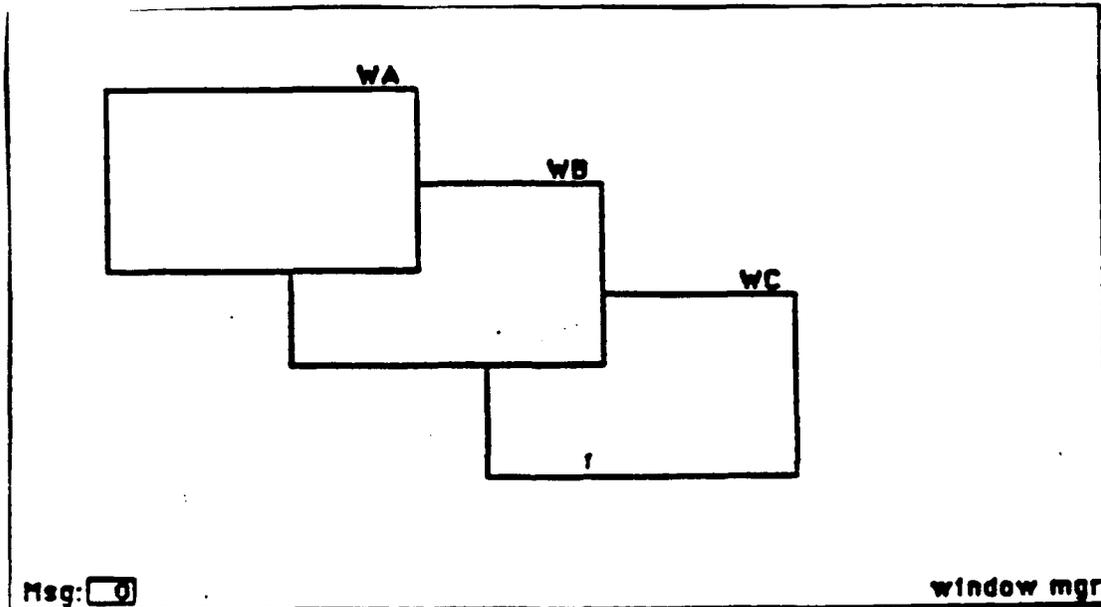


Figure 3-14 Initial Screen of the Window Manager Example

There is another window on this device that is hidden. You must use the Application Status form to make the window visible. Press the <MODE> key until "status" appears in the lower right corner of the screen. Then press the <APSTAT> key to display the Application Status form.

Application Status										
Application	Device			Window Name	Location		Display Size		Viewport Offset	
	Type	Name	Pri		Row	Col	W	H	Row	Col
A	SDVT100Z22	PORT 1	1	SCREEN	1	1	25	10	0	0
A				V2	1	1	25	23	0	0
B	SDVT100Z22	PORT 1	2	SCREEN	6	16	25	10	0	0
B				V2	1	1	25	23	0	0
B				V2	1	1	25	20	0	0
C	SDVT100Z22	PORT 1	3	SCREEN	11	31	25	10	0	0
C				V2	1	1	25	23	0	0
D	SDVT100Z22	PORT 1	4	SCREEN	13	34	0	0	0	0
D				V2	1	1	25	23	0	0

Msg:  status

Figure 3-15 Example Application Status Form

This form shows the status of all the windows that are being displayed on the device that you are using.

The initial window of application D is hidden because its size is 0,0. Also window D has priority level of 4 so it is overlaid by the other windows on the stack.

Application Status				Location		Display Size		Viewport Offset		
Application	Device		Prt	Window Name	Row	Col	W	H	Row	Col
	Type	Name								
A	SDVT100222	PORT 1	2	SCREEN	1	1	23	10	0	0
A				V2	1	1	80	23	0	0
B	SDVT100222	PORT 1	3	SCREEN	6	16	23	10	0	0
B				V2	1	1	80	23	0	0
B				V3	1	1	30	30	0	0
C	SDVT100222	PORT 1	4	SCREEN	11	31	23	10	0	0
C				V2	1	1	80	23	0	0
D	SDVT100222	PORT 1	1	SCREEN	13	36	23	10	0	0
D				V2	1	1	80	23	0	0

Figure 3-16 Changing the Window Priority

Enter a display size for window D and raise its priority number to 1. Then press the <ENTER> key to implement the changes and display the windows.

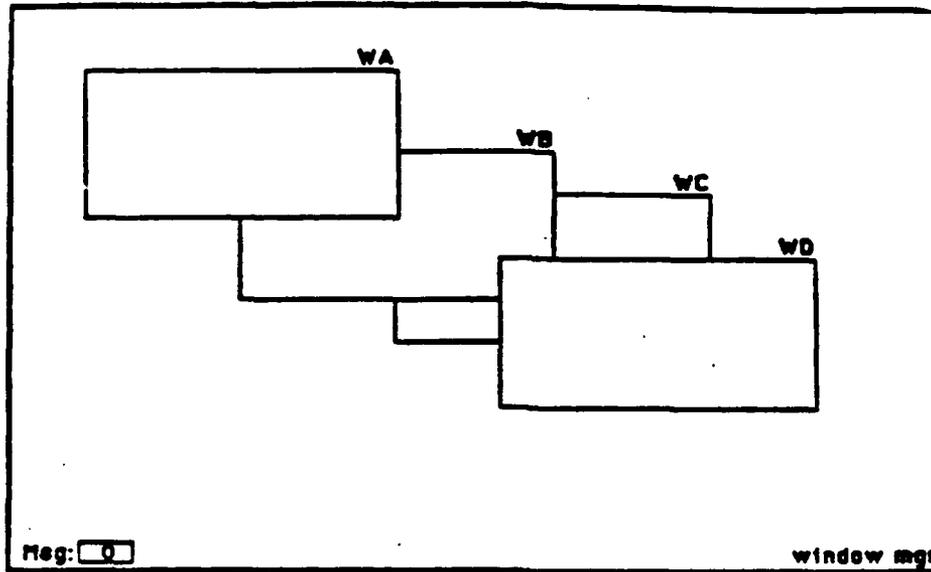


Figure 3-17 The Display of Windows after the Priority Change

Application Status										
Application	Device			Window Name	Location		Display Size		Viewport Offset	
	Type	Name	Pri		Row	Col	W	H	Row	Col
D D A A B B B C C	SDVT100222	PORT 1	1	SCREEN	13	36	0	0	0	0
				SCREEN	1	1	80	23	0	0
	SDVT100222	PORT 1	2	SCREEN	1	1	25	10	0	0
				V2	1	1	80	23	0	0
	SDVT100222	PORT 1	3	SCREEN	6	16	25	10	0	0
				V2	1	1	80	23	0	0
				V3	1	1	30	30	0	0
	SDVT100222	PORT 1	4	SCREEN	11	31	25	10	0	0
			SCREEN	1	1	80	23	0	0	

Msg:  status

Figure 3-18 The Application Status Form after the Priority Changes

To move application D to another terminal, change the device name to the new device and enter the appropriate device type. When you press the <ENTER> key, the window for application D is no longer displayed. The application should be displayed on the new device you specified and the screen would again appear as shown in Figure 3-14.

Application Status										
Application	Device			Window Name	Location		Display Size		Viewport Offset	
	Type	Name	Pri		Row	Col	W	H	Row	Col
D	SDVT100222	PORT 2		SCREEN	13	36	0	0	0	0
D	SDVT100222	PORT 1	1	SCREEN	1	1	80	23	0	0
A	SDVT100222	PORT 1	1	SCREEN	1	1	80	23	0	0
A	SDVT100222	PORT 1	2	V2	1	1	25	10	0	0
B	SDVT100222	PORT 1	2	V2	6	16	23	10	0	0
B	SDVT100222	PORT 1	3	V3	1	1	80	23	0	0
B	SDVT100222	PORT 1	3	V3	1	1	36	30	0	0
C	SDVT100222	PORT 1	3	V3	1	1	28	20	0	0
C	SDVT100222	PORT 1	3	SCREEN	11	31	23	10	0	0
				SCREEN	1	1	80	23	0	0

Msg:  status

Figure 3-19 The Application Status Form after Moving an Application

When you display the Application Status form after moving Application D, the windows are ordered in the order of the priority number of the window. Press the <ENTER> key to return to the original application.

#### Displaying the system message queue

<SYSMSG> key

The system message queue contains all the system generated messages. This includes the application termination messages, Window Manager messages (i.e., window is selected), and messages generated when debug mode is toggled on. You read the system message queue the same way you read the application message queue as described in section 3.2.1.

#### Aborting an application

<ABORT> key

In addition to aborting an application from the Application Status form, you can also use the <ABORT> key while applications are displayed on the screen. To do this, position the cursor anywhere in the window of the application you want to abort and press the <ABORT> key.

#### 3.3.4 Scroll/Page Mode

When a field contains more information than can be viewed in the display area at one time, this mode provides special functions which allow you to view any part of the data. You can only page or scroll a field that has been defined as a scrolling array. A scroll will advance/backup, by one element, the elements of an array that are displayed. A page will advance/backup a block of elements the same size as the display area.

##### 3.3.4.1 Scroll/Page Keys

This section lists the keys. The terminal mapping charts in Appendix B show you which key (or key sequence) you must press to perform the function on your specific terminal.

PF5 <SCROLL UP>  
PF6 <SCROLL DOWN>  
PF7 <SCROLL LEFT>  
PF8 <SCROLL RIGHT>  
PF9 <PAGE UP>  
PF10 <PAGE DOWN>  
PF11 <PAGE LEFT>  
PF12 <PAGE RIGHT>

##### 3.3.4.2 How to Use the Scroll/Page Mode

This section gives a detailed description with examples of how to use the functions that are only available in the Scroll/Page mode. To get into the Scroll/Page Mode, continue to press the <MODE> key until "scrl/page" appears in the lower

right corner of the screen. Then position the cursor within an element of the information that you want to move. This may be one item if you are scrolling an array of items or the background of a form if you are scrolling an array of forms. Press the appropriate key to get the size and direction of movement you want. The data is moved within the display window. The following examples show the Text Editor application used to edit a file.

### Scroll Up

The <SCROLL UP> key moves the displayed portion of the buffer up by one line. The top displayed line is pushed into the nondisplayed portion of the buffer and the line in the buffer which follows the current last displayed line is displayed.

The following two examples show how your screen appears before and after pressing the <SCROLL UP> key.

```
+-----+
| Line 1  
| Line 2  
| Line 3  
| Line 4  
| Line 5  
| Line 6  
| Line 7  
| Line 8  
| Line 9  
| Line 10<SCROLL UP>  
| >>  
| Msg:                                     scrll/page  
+-----+
```

```
+-----+
| Line 2  
| Line 3  
| Line 4  
| Line 5  
| Line 6  
| Line 7  
| Line 8  
| Line 9  
| Line 10  
| Line 11_  
| >>  
| Msg:                                     scrll/page  
+-----+
```

If the next line in the buffer is the bottom of file mark, the function is aborted and a message warning of the condition is issued.  
Scroll Down

The <SCROLL DOWN> key moves the displayed portion of the buffer down one line. The bottom displayed line is pushed into the nondisplayed portion of the buffer and the line in the buffer which precedes the current top displayed line is displayed.

The following two examples show how your screen appears before and after pressing the <SCROLL DOWN> key.

```
+-----+
| Line 2
| Line 3
| Line 4
| Line 5
| Line 6
| Line 7
| Line 8
| Line 9
| Line 10
| Line 11<SCROLL DOWN>
| >>
| Msg:                                     scrll/page
+-----+
```

```
+-----+
| Line 1
| Line 2
| Line 3
| Line 4
| Line 5
| Line 6
| Line 7
| Line 8
| Line 9
| Line 10_
| >>
| Msg:                                     scrll/page
+-----+
```

If the current display is at the top line of the file, the function is aborted and a warning message is issued.

## Page Up

The <PAGE UP> key is used to move the displayed portion of the buffer up by the display size (one page). For a VT100 terminal, the text displayed on lines 1 through 21 of the screen is pushed up into the nondisplayed portion of the buffer and line 22 becomes line 1. This line is then followed by the next 21 lines from the buffer or the remaining lines if there are less than 21. If you are already at the bottom of the file, the function is aborted and a warning message is issued.

The following two examples show how your terminal screen appears before and after pressing the <PAGE UP> key.

```
+-----+
| Line 1
| Line 2
| Line 3
| Line 4
| Line 5
| Line 6
| Line 7
| Line 8
| Line 9
| Line 10<PAGE UP>
| >>
| Msg:                                     scrll/page
+-----+
```

```
+-----+
| Line 10
| Line 11
| Line 12
| Line 13
| Line 14
| Line 15
| Line 16
| Line 17
| Line 18
| Line 19
| >>
| Msg:                                     scrll/page
+-----+
```

## Page Down

The <PAGE DOWN> key is used to move the displayed portion of the buffer down by the display size (one page). For a VT100 terminal, the text displayed on lines 2 through 22 of the screen is pushed down into the nondisplayed portion of the buffer and line 1 becomes the last displayed line. The lines displayed above this line are the preceding 21 lines of the nondisplayed portion of buffer or the remaining lines if there are less than 21. If you are already at the top of the file, the function is aborted and a warning message is issued.

The following two examples show how your terminal screen appears before and after pressing the <PAGE DOWN> key.

```
+-----+
| Line 10
| Line 11
| Line 12
| Line 13
| Line 14
| Line 15
| Line 16
| Line 17
| Line 18
| Line 19<PAGE DOWN>
| >>
| Msg:                                     scrll/page
+-----+
```

```
+-----+
| Line 1
| Line 2
| Line 3
| Line 4
| Line 5
| Line 6
| Line 7
| Line 8
| Line 9
| Line 10
| >>
| Msg:                                     scrll/page
+-----+
```

### 3.3.5 Text Editor Mode

This section describes the functions that are only available in the Text Editor mode. These special functions move, copy, delete and substitute text among item fields on a form. The general functions for moving the cursor, changing input, and refreshing the screen are always available regardless of mode and are described in a previous section of this manual. They can be used together with the item editing functions of this mode.

#### 3.3.5.1 Text Editor Mode Keys

This section briefly lists the keys. A detailed description with examples of how to use them follows. The terminal mapping charts in Appendix B show you exactly which key (or key sequence) you must press to perform the function on your specific terminal.

PF5	<SEARCH>	makes a forward or backward search for first occurrence of string you enter
PF6	<SEARCH NEXT>	continues a search for next occurrence of previously defined string
PF7	<REPLACE>	replaces first occurrence of search string with string you enter
PF8	<REPLACE NEXT>	replaces next occurrence of search string with previously defined new string
PF9	<INSERT LINE>	inserts blank line in text
PF10	<DELETE LINE>	deletes all or remainder of a line of text
PF11	<PASTE>	pastes in previously deleted text maintaining format
PF12	<FILL>	fills with previously deleted text reformatting according to the current fill margins
PF13	<MIDLINE BREAK>	breaks a line of text and moves it to the next line
PF14	<DELETE ITEM>	removes all the text from an item
PF15	<RESTORE>	replaces the original text in an item that you have edited
PF16	<REPEAT>	specifies a number of times to perform the action of the next Text Editor mode function key you press
PF17	<FILL MARGINS>	sets up margins to be used when the fill function is performed

### 3.3.5.2 How to Use the Text Editor Mode

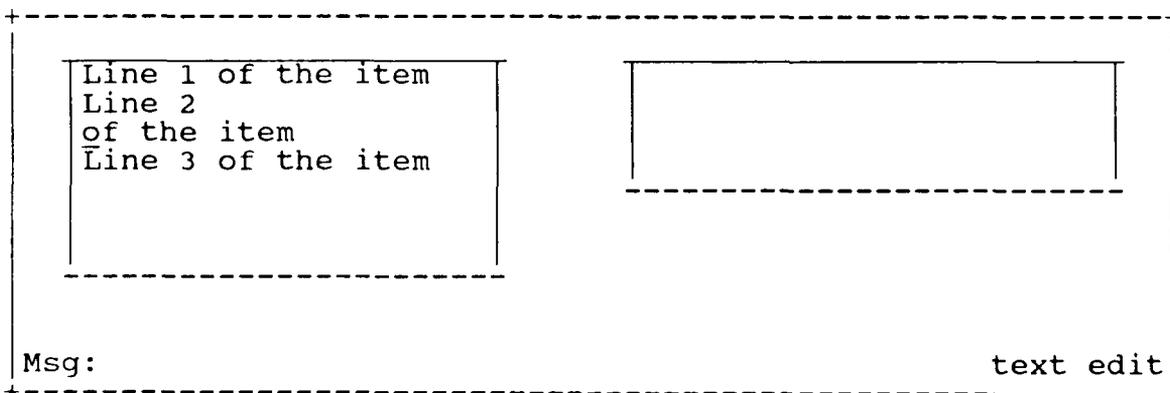
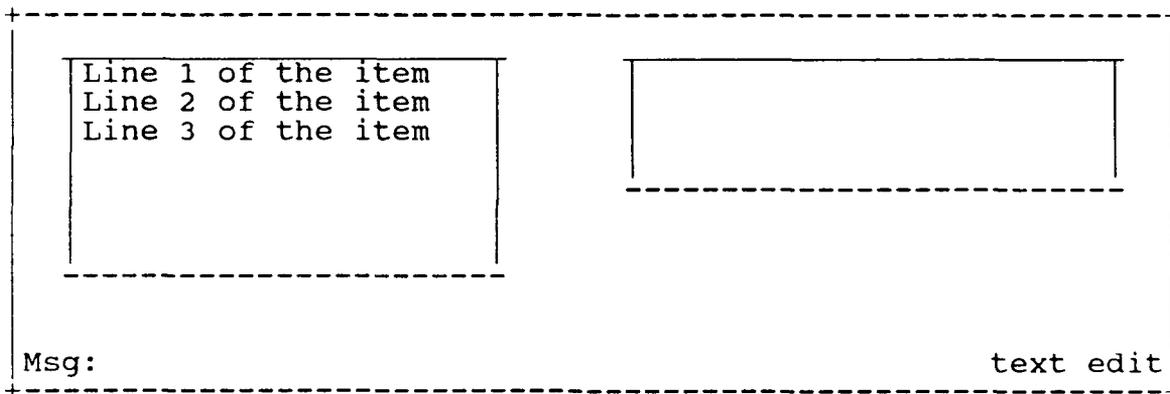
This section gives a detailed description with examples of how to use the Text Editor mode keys. To get into the Text Editor mode, continue to press the <MODE> key until "text edit" appears in the lower right corner of the screen.

Breaking text in the middle of a line

<MIDLINE BREAK>

Position the cursor on the character where you want to break the line and press the <MIDLINE BREAK> key. All the characters from the cursor position to the end of the line are removed and inserted at the beginning of a new line. The cursor remains at the beginning of this new line.

The next two examples show how an item appears before and after pressing the <MIDLINE BREAK> key from the cursor position shown.



Deleting a line of an item

<DELETE LINE>

Position the cursor on the first character that you want to delete. Press the <DELETE LINE> key and all the characters from the current cursor position to the end of the line are deleted. The cursor is moved to the start of the next line. If you deleted from the beginning of the line, all lines which follow are scrolled up one line. The deleted lines replace the contents of the cut and paste buffer.

The next two examples show how an item appears before and after pressing the <DELETE LINE> key from the cursor position shown.

Line 1 of the item Line 2 of the item Line 3 of the item	
Msg:	text edit

Line 1 of the item Line 2 Line 3 of the item	
Msg:	text edit

Inserting a blank line in an item

<INSERT LINE>

Position the cursor somewhere on the line that you want to follow the blank line and press the <INSERT LINE> key. The line containing the cursor and all following lines in the item are moved down one line leaving a line of blanks above it. The last line is removed from the item. If you positioned the cursor at the beginning of the line and pressed the <MIDLINE BREAK> key, you get the same result.

Deleting an entire item

<DELETE ITEM>

Position the cursor somewhere in the item that you want to delete and press the <DELETE ITEM> key. Blanks replace the deleted lines in the item field. The deleted lines replace the contents of the cut and paste buffer.

Moving text between items

<DELETE>      <DELETE ITEM>  
<PASTE>        <FILL>

A sequence of delete lines or one delete entire item function replaces the contents of the cut and paste buffer. The lines can then be inserted into an item field using the paste or fill function.

Using the paste key to insert text

<PASTE>

This key restores the deleted lines or item in the exact format they were in when deleted. This means that if the lines in the receiving item are shorter than the text, they will be truncated. If they are longer, they are padded on the right with blanks. If there are more lines in the cut and paste buffer than lines in the receiving item, the extra lines are ignored.

Using the fill key to insert text

<FILL>

This key reformats the deleted text as it replaces it. Each line of the receiving item is filled with as many whole words as possible. If a word is too wide to fit on a line of the receiving item field, it is wrapped. If the replacement text does not completely fill the receiving item field, it is padded on the right with blanks. If there is too much replacement text to fit into the receiving item, the extra words are ignored.

You can set the fill margins for the receiving item as explained in "Setting the fill margins".

The next two examples demonstrate the fill function. The first example shows how the form appears before deleting item 1 and executing the fill function in item 2. The second example shows how the text is reformatted when the lines of the receiving item are longer than the deleted lines. Note that the fill margins were not set for this example.

item_1 Line 1 of the item Line 2 of the item Line 3 of the item Line 4 of the item Line 5 of the item Line 6 of the item Line 7 of the item	item_2       
--	------------------------------------

Msg: text edit

item_1       	item_2 Line 1 of the item Line 2 of the item Line 3 of the item Line 4 of the item Line 5 of the item
------------------------------------	---

Msg: text edit

Restoring the previous contents of an item

<RESTORE>

Position the cursor in the item you want to restore and press the <RESTORE> key. The contents of the item are restored to what they were the last time you pressed the <ENTER> key. Whatever editing you did on this item since that time is ignored.







SECTION 4

WORKING IN THE IISS ENVIRONMENT

This section explains how to access the IISS environment, and how to start an application. The system allows both system supplied applications and user-written applications to be run.

4.1 Accessing the IISS Environment

Two terminals are needed to work in the IISS environment. One terminal serves as the NTM console and the other terminal is for running your applications.

The following scenario assumes you are using VT100 terminals on a VAX host computer.

Terminal	Procedure
Both	Log on the host computer \$SET DEF <directory containing NTM environment>
NTM	\$_UISETUP to define the User Interface logicals \$_IISS to bring up the NTM
User	\$_VT100 <scripting arguments> to activate the Device Driver for the terminal type.

The scripting arguments are optional. Your options are:

- w<scripting file name> to write a script file
- r<scripting file name> to read a script file
- s<save file name> to save the output from the session

You can run an application and write a script and also save the output from the session. For testing purposes you can then run the generated script also saving the output. You can then compare the two saved output files to determine the success or failure of the test.

#### 4.1.1 IISS Logon Screen

This is the first form that is displayed after you activate the Device Driver. The data you enter on this form determines whether or not you may work in the IISS environment.

USER ID: _____
PASSWORD: _____
ROLE: _____
Msg: 0
application

The fields on this form are:

- |          |   |
|----------|---|
| USER ID  | contains your logon user id. You must enter it.   |
| PASSWORD | contains your IISS password. You must enter it. (The characters will not show up on your terminal). |
| ROLE     | contains one of the roles assigned to your user id. You must enter it.                              |

After you have entered the data press the <ENTER> key to process the transaction. If the information you entered identifies you to IISS, the IISS Function Screen is displayed.

#### 4.1.2 IISS Function Screen

The IISS Function Screen is displayed after you successfully log on to IISS. The data you enter on this form determines what function or application you execute next.

```
-----+-----  
I I S S   T E S T   B E D   V E R S I O N   2.3  
-----+-----  
DATE:  _9/21/85  TIME:  11:13:08  USER ID:  LARRY__  ROLE:  SYSMGR_  
FUNCTION: _____  DEVICE TYPE: _____  DEVICE NAME: _____  
  
Msg:  0                                                                                               application
```

The fields on this form are:

- |          |   |
|----------|---|
| DATE     | contains the current date. You cannot change it.  |
| TIME     | contains the current time. You cannot change it.  |
| USER ID  | contains your logon user id. You cannot change it.  |
| ROLE     | contains one of the roles assigned to your user id. You can change it if you wish to change roles during a session. NOTE: Roles are assigned to user id's and applications when they are defined to IISS. A user id can have more than one role. See Section 5.2. |
| FUNCTION | contains the name of the function you wish to execute. It may be a User Interface Service or a "user-written" application. Help is available for this item as explained in section 4.1.3.   |

DEVICE TYPE       The type of the device driver on which you want the application to run. This device driver is a special application which allows the application to communicate with your terminal. An example of a valid type is SDPRINTERZ. This item is optional and defaults to the type you are using.

DEVICE NAME       The name of the port for the physical device on which you want the application to run. It must agree with the device type named. This item is optional and defaults to the device name you are using. See the system administrator for valid values for this item.

The function that you choose can be any IISS application or it may be an application developed to aid in application development. These applications are called the User Interface Services (UIS) and are described in Section 5. Section 5 also describes how to define an application to IISS.

When entering a function, it is only necessary to enter enough characters to uniquely identify the function. For example, if the functions that are available to you are:

APPL1  
APPL22  
AP3  
DEFINE  
EXIT  
PASSWORD

- (1) you need only specify P if you choose PASSWORD
- (2) you need only specify E if you choose EXIT
- (3) you need only specify D if you choose DEFINE
- (4) you must specify AP3 if you choose AP3
- (5) you must specify APPL2 if you choose APPL22
- (6) you must specify APPL1 if you choose APPL1

When you have correctly entered the ROLE and FUNCTION of your choice, press the <ENTER> key to process the transaction.

If you changed your role and the role you entered is not valid for your user id, you will receive a message indicating the change was not made. Otherwise, if you are authorized to run the application, the next display will be the first form for the application you chose. Section 5 describes how to define roles for user id's.

#### 4.1.2.1 Parameter Forms

The first form for an application may be a parameter form that allows you to enter information that is needed by an application that does not run interactively. For example, an application that generates a report on a line printer may require parameters to be entered in order to select the appropriate data for the report. If an application has a parameter form, it is displayed on the IISS Function Screen



I I S S   T E S T   B E D   V E R S I O N   2.3

Date:12/21/86   Time: 9:15:29   User ID:SYSMGR   Role:SYSMGR

Function:HELP   Device Type:   Device Name:  
SYSGEN   - User Interface System Generation Utility  
APPGENER   - Application Generator  
ARTEST   - Form Processor Test Application  
EXIT   - Exit from IISS  
FDPE   - Form Editor  
FLAN   - Forms Language Compiler  
HELP   - Function Screen Help  
MM   - Message Management  
PASSWORD   - Change Password Utility  
TE   - Text Editor  
MSG: 1 Use scrolling and paging keys   application

A description of each application is displayed to the right of the application name. If there are more applications than can be listed on the form, you can use the function keys in Scroll/Page mode to display the more of the applications.

When you are done viewing the function help, you can then enter the application you want to execute in the Function field and press the <ENTER> key. You may also press the <QUIT> key to remove the list of available applications from the IISS Function Screen.



VERIFICATION verifies your new password choice. You must enter it. This entry is not displayed for security reasons.

After you enter the OLD PASSWORD, NEW PASSWORD and VERIFICATION, press the <ENTER> key to implement the changes. You will receive the message that indicates whether or not the change has been made.

## 5.2 System Generation

The System Generation (SYSGEN) application is used to create and maintain the User Interface Database. This database contains:

- o information about each user of the IISS system,
- o information about each function which is available on IISS,
- o the roles that are valid for each user of the IISS system, and
- o the applications that are valid for each role.

SYSGEN may be invoked as a standalone application from the system prompt (see your system administrator for the name of the standalone executable) or as an integrated application by entering the function "SYSGEN" on the IISS Function Screen. In either case, the following initial screen is displayed:

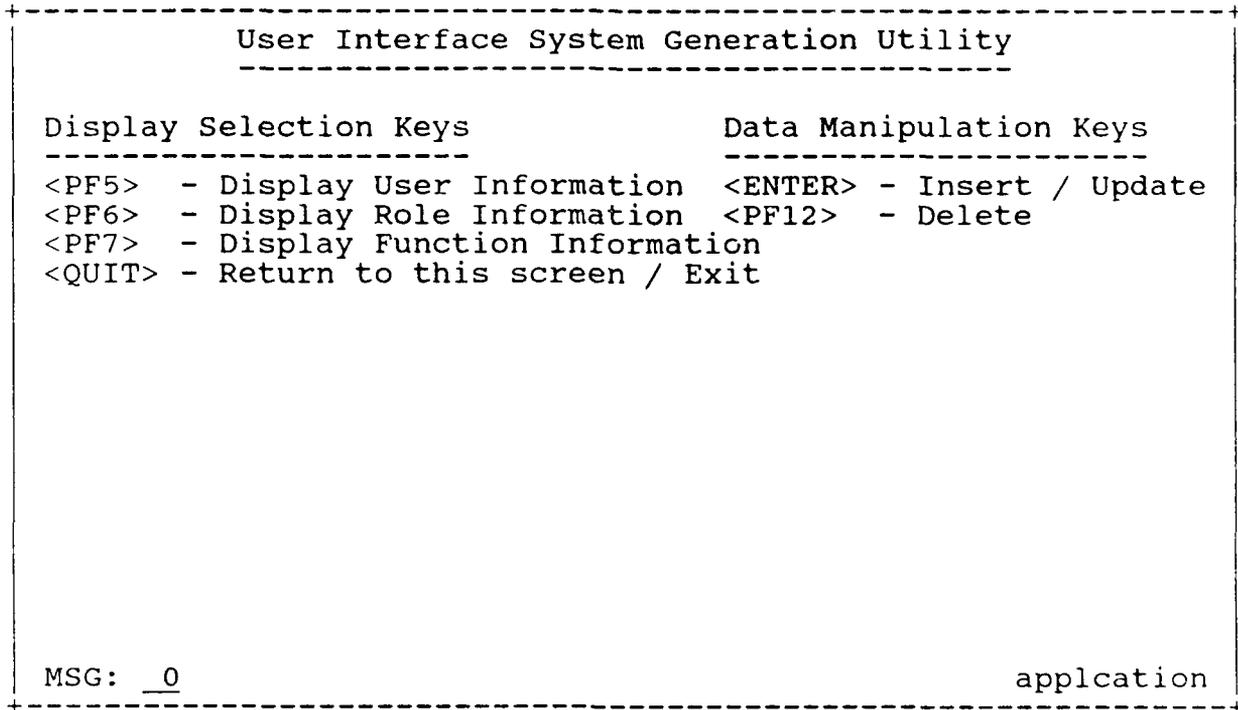


Figure 5-2 Initial SYSGEN Screen

This screen defines the SYSGEN function keys. Pressing one of the Display Selection Keys from this screen displays the appropriate database information or exits the application. The following sections explain how to maintain an existing UI Database from these displays.

#### 5.2.1 Maintaining User Information

Press <PF5> from the initial SYSGEN screen to display a list of all authorized IISS users.

```
-----+-----+
Users (use scroll/page keys to see more)
-----+-----+
MORENC - Test User
SYSMGR - System Manager
-----+-----+
MSG:  0                                     applcation
-----+-----+
```

Figure 5-3 List of Users

This list contains each User Id and the user name associated with it. The list of users is scrollable using the Scroll/Page mode function keys.

#### 5.2.1.1 Authorizing a New User

To authorize a new user, enter the new User Id (10 or fewer characters) in the blank field at the top of the list and press <PF5>. Note that if you have gone into Scroll/Page mode, you must return to Application mode to use the SYSGEN function keys. For example:





User Form and  
Source File  
Templates

These fields specify the location of user specific FD and FDL files (IISSULIB and IISSLIB) with "%s" where the name of the actual form is to go (e.g., on VMS these might be DISK:[DIRECTORY]%s.FD and DISK:[DIRECTORY]%s.FDL. On MVS they might be FDDDDNAME(%s) and FDLDDNAME(%s)).

When you have filled in the new user information, press the <ENTER> key. Note that the password information is not displayed on the screen.

User ID	User Name	Password Verification
NEWUSER	new IISS user	
User Form File Template		
User Source File Template		
Authorized Roles (use scroll/page keys to see more)		
MSG: 1 User inserted		
		application

Figure 5-6 Filled-in User Definition Screen



User ID	User Name	Password Verification
NEWUSER	new IISS user	
User Form File Template		
User Source File Template		
Authorized Roles (use scroll/page keys to see more)		
role2		
ROLE1	(Inserted)	
MSG: 0		application

Figure 5-8 Authorizing Role2

```
+-----+
| User ID  User Name                Password Verification |
| NEWUSER  new IISS user          _____             |
| User Form File Template          _____             |
| User Source File Template        _____             |
| Authorized Roles (use scroll/page keys to see more) |
| role3                               |
| ROLE1      (Inserted)              |
| ROLE2      (Inserted)              |
|
| MSG:  0                               application |
+-----+
```

Figure 5-9 Authorizing Role3

```
+-----+
| User ID   User Name                               Password Verification |
| NEWUSER  new IISS user                           _____ |
|
| User Form File Template                          _____ |
|
| User Source File Template                        _____ |
|
| Authorized Roles (use scroll/page keys to see more) |
| _____ |
| ROLE1    (Inserted)                             |
| ROLE2    (Inserted)                             |
| ROLE3    (Inserted)                             |
|
| MSG:  _0                                         application |
+-----+
```

Figure 5-10 Three Roles Authorized

At this time you can:

- o press the <QUIT> key to return to the initial SYSGEN screen.
- o press <PF6> with the cursor positioned on any of the roles listed to display a list of all roles defined for the system.
- o press <PF7> with the cursor positioned on any of the roles listed to display the list of functions that may be invoked by the selected role.
- o move the cursor out of the role listing and press <PF5> to display the list of authorized users and verify that NEWUSER appears on the list as shown in the next figure.



```
+-----+
| User ID   User Name           Password Verification |
| NEWUSER  new IISS user       _____ |
|
| User Form File Template |
| _____ |
|
| User Source File Template |
| _____ |
|
| Authorized Roles (use scroll/page keys to see more) |
| _____ |
| ROLE1 |
| ROLE2 |
| ROLE3 |
|
| MSG:  0 |
|
| application |
+-----+
```

Figure 5-12 NEWUSER Definition Screen

At this time you can update any of the field values and press the <ENTER> key (the message "User updated" is then displayed), enter a new role as previously described, or delete a role as shown in the next screen. Note that you cannot the User ID field value. However, a new User ID may be authorized with the same definition information as an existing user. The existing user may then be deleted (Section 5.2.1.3).

Delete ROLE3 by positioning the cursor on that role and pressing <PF12>.

User ID	User Name	Password Verification
NEWUSER	new IISS user	
User Form File Template		
User Source File Template		
Authorized Roles (use scroll/page keys to see more)		
<u>TESTROLE1</u>		
TESTROLE2		
TESTROLE3 (Deleted)		
MSG: <u>0</u>		application

Figure 5-13 Deleting a User Role

From here you can press the <QUIT> key to return to the initial SYSGEN screen or press <PF5> to display the list of users.

#### 5.2.1.3 Deleting an Existing User

To delete an existing user, position the cursor on the appropriate entry in the list of users and press <PF5>. This displays the filled in definition screen for the selected user. For this example, NEWUSER is used. Note that ROLE3 is deleted.

User ID	User Name	Password Verification
NEWUSER	new IISS user	
User Form File Template		
User Source File Template		
Authorized Roles (use scroll/page keys to see more)		
ROLE1		
ROLE2		
MSG: <u>0</u>		application

Figure 5-14 NEWUSER Definition Screen

You must now press <PF12> to delete the user and all roles authorized for it.

```
+-----+
| User ID  User Name                Password Verification |
| NEWUSER  new IISS user            _____ |
|
| User Form File Template          _____ |
|
| User Source File Template        _____ |
|
| Authorized Roles (use scroll/page keys to see more) |
|-----| (Deleted) |
| TESTROLE1 (Deleted) |
| TESTROLE2 (Deleted) |
|
| MSG:  1 User deleted                                     application |
+-----+
```

Figure 5-15 Deleting a User

You can re-enter the user (undo the delete) by pressing the <ENTER> key.

User ID	User Name	Password Verification
NEWUSER	new IISS user	
User Form File Template		
User Source File Template		
Authorized Roles (use scroll/page keys to see more)		
TESTROLE1	(Inserted)	
TESTROLE2	(Inserted)	
MSG: <u>1</u> User inserted		application

Figure 5-16 NEWUSER Re-entered

### 5.2.2 Maintaining Function Information

Press <PF7> from the initial SYSGEN screen to display a list of all functions defined to IISS. For example:

Functions (use scroll/page keys to see more)	
APPGENER	- Application Generator
ARTEST	- Form Processor Test Application
EXIT	- Exit from IISS
FDFE	- Form Editor
FLAN	- Forms Language Compiler
HELP	- Function Screen Help
MM	- Message Management
PASSWORD	- Change Password Utility
SYSGEN	- User Interface System Generation Utility
TE	- Text Editor

MSG: 0 application

Figure 5-17 List of Functions

This list contains each Function with its description. The list of functions is scrollable using the Scroll/Page mode function keys.

#### 5.2.2.1 Defining a New Function

To define a new function, enter the new Function in the blank field at the top of the list and press <PF5>. Note that if you have gone into Scroll/Page mode, you must return to Application mode to use the SYSGEN function keys. For example:

```
Functions (use scroll/page keys to see more)

testfunc -
APPGENER - Application Generator
ARTEST   - Form Processor Test Application
EXIT     - Exit from IISS
FDPE     - Form Editor
FLAN     - Forms Language Compiler
HELP     - Function Screen Help
MM       - Message Management
PASSWORD - Change Password Utility
SYSGEN   - User Interface System Generation Utility
TE       - Text Editor

MSG:  0                                     application
```

Figure 5-18 Defining a Function

This displays the function definition screen.



- AP Name is the name of the executable for the application. If you do not enter a value for this field it is assumed to be the same as the Function value.
- AP Type is either I or R to identify the application as internal to the User Interface or remote meaning that it is user written. The default value for this field is 'R'. 'I' should not be entered unless you are given specific instructions to do so.
- AP Message is a message that the NTM sends to the application upon startup. Up to 790 characters may be entered.

When you have filled in the new function information, press the <ENTER> key.

Function Description		
TESTFUNC unit test plan test function		
Parameter Form	AP Name	AP Type
_____	_____	<u>R</u>
AP Message (scroll for more)		
_____		
_____		
Authorized Roles (use scroll/page keys to see more)		
_____		
MSG: <u>1</u> Function inserted		application

Figure 5-20 Filled-in Function Definition Screen



Function Description		
TESTFUNC unit test plan test function		
Parameter Form	AP Name	AP Type
_____	_____	<u>R</u>
AP Message (scroll for more)		
_____		
_____		
Authorized Roles (use scroll/page keys to see more)		
<u>role2</u>		
ROLE1	(Inserted)	
MSG: <u>0</u>		application

Figure 5-22 Authorizing Role2

Function Description		
TESTFUNC unit test plan test function		
Parameter Form	AP Name	AP Type
		<u>R</u>
AP Message (scroll for more)		
Authorized Roles (use scroll/page keys to see more)		
<u>role3</u>		
ROLE1		(Inserted)
ROLE2		(Inserted)
MSG: <u>0</u>		application

Figure 5-23 Authorizing Role3

Function Description		
TESTFUNC unit test plan test function		
Parameter Form	AP Name	AP Type
		<u>R</u>
AP Message (scroll for more)		
Authorized Roles (use scroll/page keys to see more)		
TESTROLE1	(Inserted)	
TESTROLE2	(Inserted)	
TESTROLE3	(Inserted)	
MSG: <u>0</u>		application

Figure 5-24 Three Roles Authorized

At this time you can:

- o press the <QUIT> key to return to the initial SYSGEN screen.
- o press <PF6> with the cursor positioned on any of the roles listed to display a list of all roles defined for the system.
- o press <PF7> with the cursor positioned on any of the roles listed to display the list of functions that may be invoked by the selected role.
- o move the cursor out of the role listing and press <PF7> to display the list of authorized functions and verify that TESTFUNC appears on the list as shown in the next figure.

Functions (use scroll/page keys to see more)	
APPGENER	- Application Generator
ARTEST	- Form Processor Test Application
EXIT	- Exit from IISS
FDFE	- Form Editor
FLAN	- Forms Language Compiler
HELP	- Function Screen Help
MM	- Message Management
PASSWORD	- Change Password Utility
SYSGEN	- User Interface System Generation Utility
TE	- Text Editor
TESTFUNC	- unit test plan test function

MSG: 0 application

Figure 5-25 Updated List of Functions

#### 5.2.2.2 Updating Function Information

To update the information defining an existing function, position the cursor on the desired entry in the list of functions and press <PF7>. This displays the filled in function definition screen for the selected function. For this example, TESTFUNC is used.

```
-----+-----
Function Description
TESTFUNC unit test plan test function
-----+-----
Parameter Form      AP Name      AP Type
-----            -----            R
AP Message (scroll for more)
-----
-----
Authorized Roles (use scroll/page keys to see more)
-----
ROLE1
ROLE2
ROLE3
-----
MSG:  0                                     application
-----+-----
```

Figure 5-26 TESTFUNC Definition Screen

At this time you can update any of the field values and press the <ENTER> key (the message "Function updated" is then displayed), enter a new role as previously described, or delete a role as shown in the following screen.

Delete ROLE3 by positioning the cursor on that role and pressing <PF12>.

Function Description		
TESTFUNC <u>unit test plan test function</u>		
Parameter Form	AP Name	AP Type
_____	_____	<u>R</u>
AP Message (scroll for more)		
_____		
_____		
Authorized Roles (use scroll/page keys to see more)		
_____		
ROLE1		
ROLE2		
ROLE3 (Deleted)		
MSG: <u>0</u>		applcation

Figure 5-27 Deleting a Function Role

From here you can press the <QUIT> key to return to the initial SYSGEN screen or press <PF7> to display the list of functions.

### 5.2.2.3 Deleting an Existing Function

To delete an existing function, position the cursor on the appropriate entry in the list of functions and press <PF7>. This displays the filled in definition screen for the selected function. For this example, TESTFUNC is used. Note that ROLE3 is deleted.

Function Description		
TESTFUNC unit test plan test function		
Parameter Form	AP Name	AP Type
_____	_____	<u>R</u>
AP Message (scroll for more)		
_____		
_____		
Authorized Roles (use scroll/page keys to see more)		
_____		
ROLE1		
ROLE2		
MSG: <u>0</u>		application

Figure 5-28 TESTFUNC Definition Screen

You must now press <PF12> to delete the function and all roles authorized for it.

```
-----  
Function Description  
TESTFUNC unit test plan test function  
-----  
Parameter Form      AP Name      AP Type  
-----  
                    R  
AP Message (scroll for more)  
-----  
-----  
Authorized Roles (use scroll/page keys to see more)  
-----  
TESTROLE1 (Deleted)  
TESTROLE2 (Deleted)  
  
MSG:  1 Function deleted                                application  
-----
```

Figure 5-29 Deleting a Function

You can reenter the function (undo the delete) by pressing the <ENTER> key.

```
+-----+
| Function Description                                     |
| TESTFUNC unit test plan test function                 |
|-----|
| Parameter Form      AP Name      AP Type            |
|-----|-----|-----|
|                                     R                |
| AP Message (scroll for more)                         |
|-----|
| Authorized Roles (use scroll/page keys to see more)   |
|-----|
| TESTROLE1 (Inserted)                                 |
| TESTROLE2 (Inserted)                                 |
|-----|
| MSG:  1 Function inserted                               application |
+-----+
```

Figure 5-30 Undeleting a Function

5.2.3 Displaying Role Information

Press <PF6> from the initial SYSGEN screen to display a list of all authorized roles.

```
-----
Roles (use scroll/page keys to see more)

*          (No users)
MANAGER    (No functions)
SYSMGR
TESTROLE1
TESTROLE2
TESTROLE3

MSG:  0                                     application
```

Figure 5-31 List of Roles

This list contains all the authorized roles assigned to the users and functions in the system. If the role is not assigned to both a user and a function, this will be indicated as shown. This information serves as a cross reference to make sure you have the roles assigned properly. Note that the wild card role "\*" will always have no users.

If you position the cursor in a role and press <PF5>, the list of users having that authorized role is displayed. If you press <PF6>, the list of functions have that unauthorized role is displayed. A role cannot be deleted from this list. You can only delete roles from the user and function definition screens.

### 5.3 Rehosting the UI Database

When adding additional hosts to IISS, it may be necessary to move the UI Database to the new hosts. Two utilities, UDBEXP and IDBIMP, are available to assist in this task. These are standalone utilities which should be run only when IISS is shut down. UDBEXP creates a simple sequential file (UIDUMP) that contains all of the UI Database information. This file is then moved to the new host and UDBIMP is run to read it and recreate the UI Database.

### 5.4 Converting the UI Database

Effective with release 2.2.5 of IISS, the UI Database has been converted from a system dependent database manager (Oracle) to portable indexed sequential files. When upgrading from a previous release of IISS, it may be desirable to convert the existing Oracle database rather than create a new UI Database. The UDBCNV utility converts the Oracle database to a simple

sequential file (UIDUMP) of the same format as that created by UDBEXP (Section 5.3). This file is then read by UDBIMP (Section 5.3) to create the new UI Database. Following this conversion, standalone SYSGEN should be run to add the SYSGEN application to the new UI Database and verify that the other standard information is correct.

Two pieces of information from the Oracle database are changed during this conversion, but neither should cause any problems. First, the message which is sent to start an AP is truncated from 800 to 790 characters. This should not cause any problems since the DEFINEAP application originally used to populate the Oracle database only allowed 790 characters to be entered. Second, the AP Type is always set to "R" (remote application). This field was previously ignored since internal applications were not supported. Setting it to "R" insures that no existing applications will be misinterpreted as being internal.

An additional change that does not cause a loss of information is the function description field. It is expanded from 25 to 60 characters. You may want to check for cryptic descriptions and rewrite them in the expanded field.

#### 5.5 Message Management

Message Management (MM) is a predefined application in the IISS environment. It is used by programmers who are writing application software to run in the IISS environment. MM creates message code files to be used in conjunction with the Form Processor routine "PMSGLC", (Put Message Line Code). The files that are created are placed in the location defined by IISSMLIB and have names containing MSGXXX where XXX is the message base number.

### 5.5.1 Message Management Function Keys

This section describes the MM function keys. As an IISS application, MM uses the control keys PF0 through PF4 as described in Section 3.2 of this manual. MM also uses the function keys PF5 through PF8 for special functions when "application" is displayed in the mode field. These functions allow you to move to the next page, back up to the previous page, go all the way to the end of the file and back up to the beginning.

PF5	<PAGE FORWARD>	Displays the next screen of the current message file.
PF6	<PAGE BACK>	Displays the previous screen of the current message file.
PF7	<BEGINNING>	Displays the first screen of the current message file.
PF8	<END>	Displays the last screen of the current message file.

The terminal mapping charts in Appendix B show you exactly which key (or key sequence) you need to press on your specific type of terminal to perform the function.

### 5.5.2 Using MM

This section describes how to CREATE and UPDATE these message code files and how to generate the corresponding program include files. MM may be invoked as a standalone application from the system prompt (see your system administrator for the name of the standalone executable) or as an integrated application by entering the function "MM" on the IISS Function Screen. In either case, the following initial screen is displayed:

-----  
ERROR MESSAGE DEFINITION SCREEN  
-----

Message Base Number: \_\_\_\_\_

NUMBER	NAME	DESCRIPTION
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Msg: 0 application

Figure 5-32 Initial MM Screen

MESSAGE BASE NUMBER contains the first three (3) numbers of your message file. Any number from XXX00 to XXX99 is valid. XXX alone is also valid. If the message number you enter already exists, the current names and messages are displayed on the form. If you enter a new number, the form allows you to enter the new names and messages.

When you have entered the base number correctly, press the <ENTER> key to process the transaction.

### 5.5.2.1 Creating a New Message File

If you enter a new base number, the NUMBER item on the previous screen fills in as shown in the next screen. Note that these numbers are defined in the message include files you create using INCGEN (See Section 5.5.2.3).

```
-----  
                          ERROR MESSAGE DEFINITION SCREEN  
-----  
  
Message Base Number: 850__  
  
NUMBER   NAME           DESCRIPTION  
  
85000   _____  
85001   _____  
85002   _____  
85003   _____  
85004   _____  
85005   _____  
85006   _____  
85007   _____  
85008   _____  
85009   _____  
  
Msg: 0                                     application
```

Figure 5-33 New Base Number Entered

For each message you want to define, you then enter a NAME and DESCRIPTION where

NAME is the name used in the application software to identify the message. It can be a maximum of 8 printable characters.

DESCRIPTION is the message which is displayed in the message line when the application invokes PMSGCLC with the NUMBER. It can be a maximum of 60 characters.

When you have correctly entered the information, press the <ENTER> key to save the new message file. For example:

```
-----  
                          ERROR MESSAGE DEFINITION SCREEN  
-----  
  
Message Base Number: 850__  
  
NUMBER   NAME           DESCRIPTION  
85000    INVPOS          INVALID POSITION  
85001    IMPSEQ          IMPROPER SEQUENCE  
85002    SYNERR          SYNTAX ERROR  
85003    NVALCOM         NOT A VALID COMMAND  
85004    DUPFLD          DUPLICATE FIELD ENTRY  
85005    _____  
85006    _____  
85007    _____  
85008    _____  
85009    _____  
  
Msg: 0  
                                           application
```

Figure 5-34 New Message File

NOTE that this message code file contains only 5 lines. It is not necessary to fill the form, or you can fill as many lines/forms as needed to define all your messages.

#### 5.5.2.2 Updating an Existing Message File

If you enter the base number of an existing message file on the initial MM screen, the NAME and DESCRIPTION items for the messages in that file are displayed as shown in the next screen.

ERROR MESSAGE DEFINITION SCREEN		
Message Base Number: 70300		
NUMBER	NAME	DESCRIPTION
70300	FPMSG	FORM PROCESSOR MESSAGES
70301	INVPAG	INVALID PAGE NUMBER
70302	FNOTFND	FORM NOT FOUND
70303	FISOPEN	FORM IS ALREADY OPEN
70304	ALCERR	MEMORY ALLOCATION
70305	OPNERR	OPEN ERROR-UNABLE TO READ FORM DEF. FILE
70306	DALCERR	FIELD ALLOCATION ERROR
70307	AALCERR	ARRAY ALLOCATION ERROR
70308	UNKTYPE	UNKNOWN TYPE
70309	IALCERR	ITEM ALLOCATION ERROR
Msg: 0		application

Figure 5-35 Existing Message File

You can then change the NAME and DESCRIPTION items for the messages you want to update or blank out a NAME to delete a message. You can also go to the last page of the message file and enter new messages.

When you are satisfied with the information you have entered, press the <ENTER> key to transmit the form. The message "changes saved" is displayed in the message line of your terminal screen. You can change the message base number and press the <ENTER> key to define or update another message file or press the <QUIT> key to return to the IISS Function Screen.

### 5.5.3 Generating Include Files

INCGEN is a tool for generating include files from the message code files created using MM. These files have program variable declarations that correspond to the mnemonic names of the error codes. Every time you create a new message file or update an existing file, you must run this routine and recompile all application programs that use the generated include files. The following scenario describes how to run INCGEN.

<u>System Prompt</u>	<u>Your Response</u>
	Log on to the system
Your system prompt	Invoke INCGEN
Enter Language:	1

Available languages: 0 - C 1 - COBOL 2 - PL/I 3 - FORTRAN  
For this example we will use COBOL.

OUTPUT FILE: TEST.DAT (VAX specific file name)  
(generated include file) This name can be any name that is valid for your system. On the IBM, the file is placed in a partitioned dataset that is associated with the DDN of INC. The response to this question should be the appropriate member (i.e., TEST).

INPUT FILE: MSG850.MSG (VAX specific file name)  
It may be necessary to qualify this file name, depending on your system. On the IBM, the file is placed in the partitioned dataset that is associated with the DDN of IISSMLIB. The response to this question should be the appropriate member (i.e., MSG850).

INPUT FILE: <END OF FILE>

You can send more than one input file to the same output file, so you are prompted again for an input file. <END OF FILE> (normally Control/Z) will get you out after you have entered all the message files you want contained in this output file.

You have just generated an include file in the language you specified in your directory. If you want to view this file, you can use any available editor or file display command. The file generated in the above example would appear as follows:

```
01 INVPOS    PIC X(5) VALUE "85000".  
01 IMPSEQ    PIC X(5) VALUE "85001".  
01 SYNERR    PIC X(5) VALUE "85002".  
01 NVALCOM   PIC X(5) VALUE "85003".  
01 DUPFLD    PIC X(5) VALUE "85004".
```

This is your output (include) file in COBOL.

Note: MM creates a new version of the msgxxx file everytime you create a new message file and every time that you update an existing file. It is important to go to your directory and purge your message files so you don't have several versions of the same file.

## APPENDIX A

### EXPLANATION OF ERROR AND STATUS MESSAGES

Messages appear on the last line of each form. The content may vary from application to application. An explanation of messages sent by the UI follows. Errors and messages displayed while accessing IISS are described first. Errors and messages displayed while using the UI or the predefined functions are documented next.

#### ACCESS ERRORS AND MESSAGES

##### LOGON Messages

Invalid username/password - You have \_ tries left

You have entered a PASSWORD that is not valid for the USER ID you have entered. Try again. If you still have problems, contact your system administrator to be sure that your user entry exists in the data base.

Role not valid for username - Not changed

You have entered a ROLE that is not associated with the USER ID you have entered. Try again. If you still have problems, contact you system administrator to be sure that your user entry exists in the data base.

Field must be entered

You must enter a value in the field identified by the current cursor position.

Non-functional key

The function key you pressed is not defined for this form.

##### CHOOSE FUNCTION Messages

Function is not unique

You have not entered enough characters to uniquely identify a function. Re-enter FUNCTION and press the <ENTER> key.

Function not valid for role

The ROLE you are using is not authorized to execute the FUNCTION you have entered. Re-enter ROLE or FUNCTION and press the <ENTER> key.

Role not valid for username - Not changed

Your USER ID is not authorized to use the ROLE you have entered. Re-enter ROLE and press the <ENTER> key.

Non-functional key

The function key you pressed is not defined for this form.

FUNCTION HELP Messages

Press <ENTER> for more, <QUIT> to return

The list of functions available to you is continued on another screen. Press the <ENTER> key to continue viewing available functions.

Press <QUIT> to return, <ENTER> to start over

When the screen contains the end of the list of available functions, you can press the <ENTER> key to view the beginning of the list again.

UIS ERRORS AND MESSAGES

CHANGE PASSWORD Messages

Field must be entered

You must enter a value in the field identified by the current cursor position.

Old password not valid

You have entered an OLD PASSWORD which is not the logon password for your USER ID. Re-enter OLD PASSWORD and press the <ENTER> key.

New password does not match verification

The VERIFICATION value must be the same as the NEW PASSWORD value. Re-enter as appropriate and press the <ENTER> key.

Non-functional key

The function key you pressed is not defined for the current form.

SYSGEN Messages

Entry not found in User Database  
Found duplicate entry in User Database  
Unable to open User Database  
Unexpected error processing User Database  
Password/verification mismatch  
Can't insert roles for deleted user or function  
User or Function updated  
User or Function inserted  
User or Function deleted  
Non-functional key

The function key you pressed is not defined for the current form.

APPENDIX B  
TERMINAL MAPPING CHARTS

Key	Window Manager	Text Edit	Scroll/Page	Status
PF0	<ENTER>	<ENTER>	<ENTER>	
PF1	<MODE>	<MODE>	<MODE>	
PF2	<HELP>	<HELP>	<HELP>	
PF3	<MESSAGE QUEUE>	<MESSAGE QUEUE>	<MESSAGE QUEUE>	
PF4	<QUIT>	<QUIT>	<QUIT>	
PF5	<SCROLL UP>	<SEARCH>	<SCROLL UP>	<DEBUG>
PF6	<SCROLL DOWN>	<SEARCH NEXT>	<SCROLL DOWN>	<APSTAT>
PF7	<SCROLL LEFT>	<REPLACE>	<SCROLL LEFT>	<SYMSMSG>
PF8	<SCROLL RIGHT>	<REPLACE NEXT>	<SCROLL RIGHT>	<ABORT>
PF9	<SIZE>	<INSERT LINE>	<PAGE UP>	
PF10	<LOCATION>	<DELETE LINE>	<PAGE DOWN>	
PF11	<SELECT>	<PASTE>	<PAGE LEFT>	
PF12	<RESTORE>	<FILL>	<PAGE RIGHT>	
PF13	<FUNCTION>	<MIDLINE BREAK>		
PF14	<APPLICATION>	<DELETE ITEM>		
PF15	<HOME VIEW>	<RESTORE>		
PF16		<REPEAT>		
PF17		<FILL MARGINS>		
PF18				
PF19				
PF20				

Figure B-1 Key Mappings for the Keyboard Modes

Key	ADM3A key	
	option 1	option 2
PF0	<ESC><CR>	
PF1	<ESC> 1	
PF2	<ESC> 2	
PF3	<ESC> 3	
PF4	<ESC> 4	
PF5	<ESC> 5	
PF6	<ESC> 6	
PF7	<ESC> 7	
PF8	<ESC> 8	
PF9	<ESC> 9	
PF10	<ESC> 0	
PF11	<ESC> Q	<ESC> q
PF12	<ESC> W	<ESC> w
PF13	<ESC> E	<ESC> e
PF14	<ESC> R	<ESC> r
PF15	<ESC> T	<ESC> t
PF16	<ESC> Y	<ESC> y
PF17	<ESC> U	<ESC> u
PF18	<ESC> I	<ESC> i
PF19	<ESC> O	<ESC> o
PF20	<ESC> P	<ESC> p

Figure B-2 Terminal Mapping for the ADM3A

NOTE: You need to distinguish between O (alphabetic) and 0 (zero).  
 The two options show keys which perform an identical function. You can use whichever key is convenient to you.

Key	VIP key	
	option 1	option 2
PF0	<XMIT>	<ESC><CR>
PF1	<F1>	
PF2	<F2>	
PF3	<F3>	
PF4	<F4>	
PF5	<F5>	
PF6	<F6>	
PF7	<F7>	
PF8	<SHIFT>/<F1>	
PF9	<SHIFT>/<F2>	
PF10	<SHIFT>/<F3>	
PF11	<SHIFT>/<F4>	<ESC> Q
PF12	<SHIFT>/<F5>	<ESC> W
PF13	<SHIFT>/<F6>	<ESC> E
PF14	<SHIFT>/<F7>	<ESC> R
PF15		<ESC> T
PF16		<ESC> Y
PF17		<ESC> U
PF18		<ESC> I
PF19		<ESC> O
PF20		<ESC> P

Figure B-3 Terminal Mapping for the VIP

NOTE: You need to distinguish between O (alphabetic) and 0 (zero).  
Keys separated by a / are pressed simultaneously. The two options show keys which perform an identical function. You can use which ever key is convenient to you.

KEY	VT100 key	
	option 1	option 2
PF0	<ENTER>	<ESC><CR>
PF1	<PF1>	<ESC>1
PF2	<PF2>	<ESC>2
PF3	<PF3>	<ESC>3
PF4	<PF4>	<ESC>4
PF5	<7>	<ESC>5
PF6	<8>	<ESC>6
PF7	<9>	<ESC>7
PF8	<->	<ESC>8
PF9	<4>	<ESC>9
PF10	<5>	<ESC>0
PF11	<6>	<ESC>q
PF12	<,>	<ESC>w
PF13	<1>	<ESC>e
PF14	<2>	<ESC>r
PF15	<3>	<ESC>t
PF16	<0>	<ESC>y
PF17	<.>	<ESC>u
PF18		<ESC>i
PF19		<ESC>o
PF20		<ESC>p

Figure B-4 Terminal Mapping VT100

NOTE: You need to distinguish between O (alphabetic) and 0 (zero). Numbers in carrots refer to keypad keys. For example, 7 represents the keyboard key, <7> represents a keypad key. The two options show keys which perform an identical function. You can use whichever key is convenient to you.

Appendix C contains VT100 keypad layouts for each of the modes.

Key	IBM 3270 key	
	option 1	option 2
PF0	<ENTER>	
PF1	<PF1>	
PF2	<PF2>	
PF3	<PF3>	
PF4	<PF5>	
PF5	<PF5>	
PF6	<PF6>	
PF7	<PF7>	
PF8	<PF8>	
PF9	<PF9>	
PF10	<PF10>	
PF11	<PF11>	<PA1><PF1>
PF12	<PF12>	<PA1><PF2>
PF13	<PF13>	<PA1><PF3>
PF14	<PF14>	<PA1><PF4>
PF15	<PF15>	<PA1><PF5>
PF16	<PF16>	<PA1><PF6>
PF17	<PF17>	<PA1><PF7>
PF18	<PF18>	<PA1><PF8>
PF19	<PF19>	<PA1><PF9>
PF20	<PF20>	<PA1><PF10>

Figure B-5 Terminal Mapping for the IBM 3270

The two options show keys which perform an identical function. You can use whichever key is convenient to you.

APPENDIX C  
VT100 KEYPAD LAYOUTS

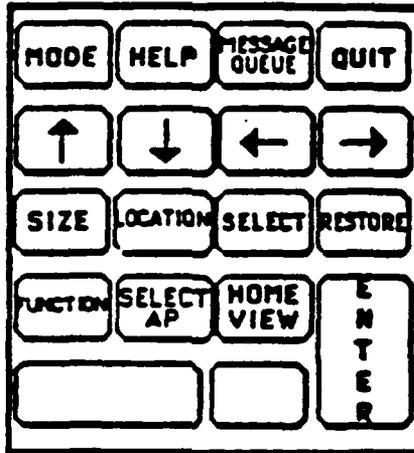


Figure C-1 Window Manager Mode

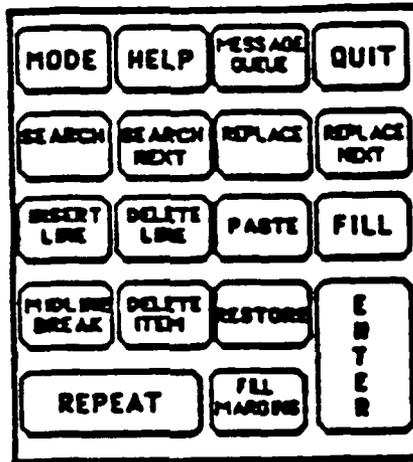


Figure C-2 Text Editor Mode

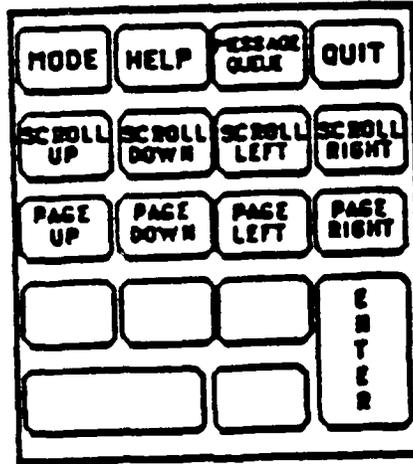


Figure C-3 Scroll/Page Mode

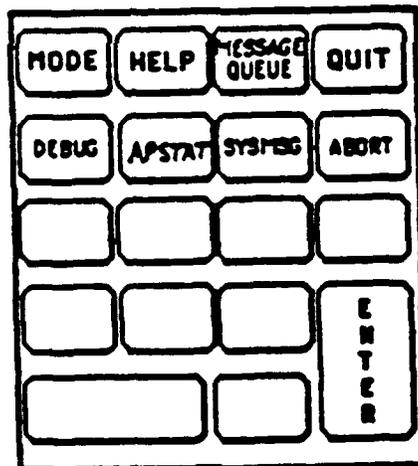


Figure C-4 Status Mode