Honeywell

TACPAC User's Reference Manual

TACPAC
USER'S REFERENCE MANUAL

SUBJECT

Offline T&V Programs that Provide Enhanced Diagnostic Capabilities by Permitting Verification of the System and Peripheral Devices with Minimum Operator Intervention

SPECIAL INSTRUCTIONS

This manual has been revised to the -200 level. It supersedes all previous issues.

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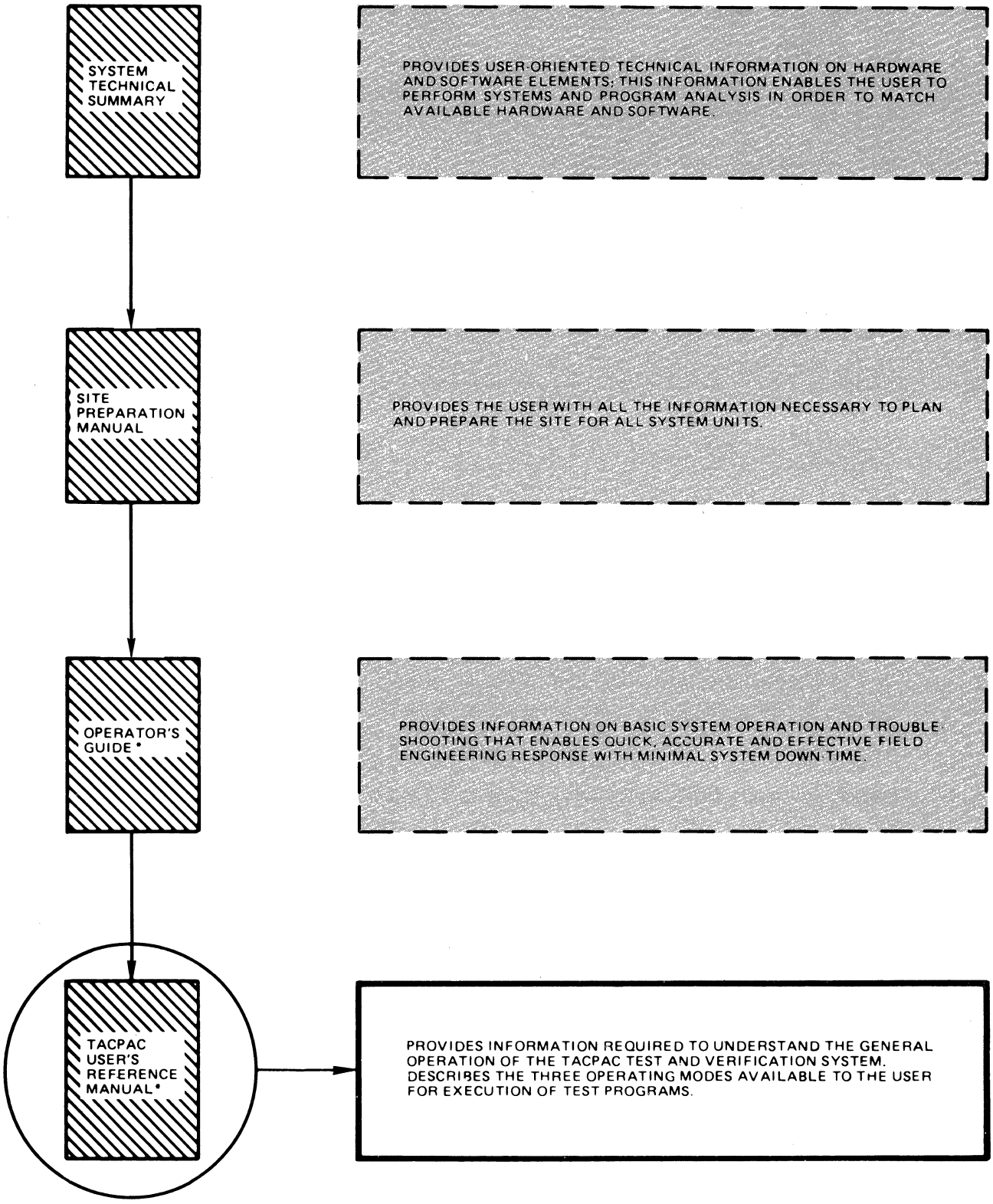

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Section 1
INTRODUCTION

The offline Test and Verification (T&V) programs enhance the system diagnostic capabilities by permitting verification of system and peripheral device performance with minimal operator intervention. One or more T&V programs are available for testing each system unit, controller, or peripheral device that can be configured on any given system.

These T&V programs are designed to run under and in conjunction with the TACPAC* software system. TACPAC, (Technical Assistance Center Product Assurance Check), hereafter referred to as T&V System, loads, controls, and provides services to the T&V programs.

Key features of T&V System include the following:

- Complete verification of system hardware
- Prompted dialog and help information for ease of use
- Minimum operator intervention
- Automatic operating modes
- Single button load and execute
- Quick fault isolation.

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1.1 T&V PROGRAMS

The T&V programs should be run to verify system hardware operation or when an error condition is encountered. If a fault does exist, the T&V programs help the operator to isolate the channel that failed, or provide sufficient information to the Service Center so that a service representative can provide the proper spare part.

1.1.1. Fault Symptoms and Corrective Action

T&V System has three modes of operation that can be run. The mode of operation selected depends upon the type of fault encountered during normal operation. By referencing the appropriate fault symptom in Table 1-1, the operator can select the correct action and procedure to remedy or isolate the fault.

Table 1-1 Fault Symptoms and Corrective Action

FAULT SYMPTOM	ACTION	PROCEDURE
Obvious peripheral device failure.	Call the Service Center.	Refer to the subsection 1.6
Suspected faulty unit.	Run the appropriate T&V programs in Individual Program mode.	Refer to subsection 2.1
Unknown system failure.	Run System Test Short mode.	Refer to the Operator's Guide.
NOTE In addition to the above, the operator can run an extended system verification test.		
Extended system verification test required.	Run System Test Extended mode.	Refer to subsection 2.2.

1.1.2 Use of T&V System

Before a T&V program can be run, the operator must load T&V System. To accomplish this, the operator should load the disk media (e.g., diskette, cartridge disk, etc.) into the appropriate device and then start the system. Internal self-tests, called Quality Logic Tests (QLTs), are automatically run first to verify the basic system so that the subsequent execution of T&V programs can be performed with confidence. After the QLTs are successfully completed, additional testing (Hardcore test) is performed to verify the load path.

When the Hardcore testing has been successfully completed, the T&Vs are automatically loaded and executed one after another in a specific sequence, using the System Test Short mode (refer to subsection 3.1.1). This mode does not necessarily test the full functionality of each channel configured on the system, but does provide a quick check of system performance.

At conclusion of the System Test run, a summary of detected errors is displayed on the console. The name of the program that contains the error and the channel number that failed are displayed. Channel(s) not fully tested and program(s) not found or run (refer to subsection 1.3) are also displayed. If errors are displayed, the operator can contact the Service Center or run the applicable program in Individual Program mode. If there are no errors displayed and a problem is still suspected, the operator can contact the Service Center or run the System Test Extended mode. When there are no errors displayed and no other problems are suspected, the operator should resume normal operation.

1.1.3 Distribution

The T&V programs are supplied on media as one or more diskette volumes, cartridge disks, or cartridge or storage module packs, which contain all the T&V programs identified by standard T&V member names. Labels are used to identify the program on each media.

NOTE

If using diskettes, always run the diskette labelled No. 1 first.

1.2 HELP MESSAGES

T&V System supports Help files for individual T&V programs. In answer to any question by a T&V program, the operator can respond with a Control H, that is press and hold down the CTL (Control) key on the console and then press the H key, to obtain additional information about the question. Also, a T&V program may display the following message:

HELP (Y OR N) ?:

If the operator responds with a Y, an initial Help file is displayed that describes the T&V operating instructions and the error reporting format.

1.3 MULTIPLE DISKETTES FOR SYSTEM TEST MODES

SYSTST (System Test) operations may require loading more than one diskette. For systems using multiple diskettes, the operator is prompted to load the additional diskettes at the proper time. If the required T&V program(s) is not contained on the diskette currently in use, T&V System displays the following message:

PROGRAM NOT FOUND

This message is not an error indication. It means that the required T&V programs are contained on one or more additional diskettes which the operator must load when prompted by the system.

1.4 FILE SECURITY

T&V System does provide file security; however, the operator should be aware of the remote possibility that a system failure can inadvertently destroy data unless customer packs are removed from the equipment being tested.

1.5 ERROR REPORTING

T&V System sets an error count limit when executing T&V programs under the SYSTST modes or Individual Program mode. If this error count is exceeded by any T&V program, or if the program encounters an error from which it cannot recover, the program terminates the test for the associated channel.

When a T&V program encounters an error condition, it displays the address of the failing channel if applicable. In the SYSTST modes (refer to subsections 3.1.1 or 3.1.2), after all programs are executed, an Error Summary is displayed.

1.6 NOTIFYING THE SERVICE CENTER

When an error condition is encountered, supply the following information to the Service Center:

- System number
- Company name and address
- Your name
- Your telephone number and extension
- Symptom or malfunction
- Equipment type
- Any Quality Logic Test (QLT) indicators that are on
- Error message(s) displayed on the console.

Section 2
T&V OPERATING PROCEDURES

The QLTs, Hardcore diagnostic, and T&V programs are a systematic approach to equipment verification designed to notify the operator of any error or equipment failure. The operating procedures vary according to the system load path and system console. All required parameters are entered via the system console. When a T&V program is completed successfully, there is a clear indication of success.

Before attempting to load and execute a T&V program, the system must be initialized (Starting the System) and the QLTs plus the Hardcore tests (TACPAC Load and Go) must be executed. Initialization varies according to the type of control panel. Refer to the Operator's Guide for the Starting the System, QLTs, and TACPAC Load and Go instructions.

The following subsections provide the procedures required to run a T&V program in Individual Program mode or in System Test (SYSTST) modes.

2.1 INDIVIDUAL PROGRAM MODE

To run a T&V program in Individual Program mode, perform the following steps:

1. Execute the TACPAC Load and Go Procedure in the Operator's Guide until the list of available system resources is displayed (see Figure 2-1 for sample display).

2. When the following message:

   SYSTEM TEST SYSTST -S

   appears at the end of the system resource display, press the Break (BRK) key. The T&V system now enters command mode as indicated by the C? message.

3. If the operator knows the channel number of the suspected faulty hardware, refer to the system resources display, select the corresponding T&V program name (from the 1ST/2ND TEST columns) and go to step 5. If the channel number is not known, go to step 4.

4. Refer to Table 3-1 and select the appropriate T&V program.

5. Refer to the appropriate T&V procedure in Section 3 for instructions on running the selected T&V program.

2.2 SYSTEM TEST MODES

There are two System Test modes; System Test Short mode and System Test Extended mode.

System Test Short Mode

To run System Test Short mode (reference subsection 3.1.1), execute the TACPAC Load and Go Procedure in the Operator's Guide.

System Test Extended Mode

To run System Test Extended mode (reference subsection 3.1.2), perform the following steps:

1. Execute the TACPAC Load and Go Procedure in the Operator's Guide until the list of available system resources is displayed (see Figure 2-1 for sample display).

```
DIAGNOSTIC TEST REV No.

ENTER "ABCD"C/R:  ABCD
**HARDCORE COMPLETE**



RESOURCE PROCESSOR REV No.
RESOURCE DEF REV No.
SYSTEM FILE REV No.
COMM FILE REV No.
LOADER REV No.

MEDIA CONFIGURED FOR POWER FREQUENCY OF 60 HZ
SAF
CHAN  DEVICE        1ST   2ND   FIRMWARE
NUM   TYPE     ID   TEST  TEST    REV

-------------------------------------------

0000  CPU      6/23  CPST3 ----  0000
----  RTC      ----  CPFX1 ----  ----
----  WDT      ----  CPFX1 ----  ----
----  MMEM     ----  CMMX1 ----  ----
0400  DSKT     2010  DIMX4 ----  0009
0480  DSKT     2010  DIMX4 ----  0009
0500  CONS     201A  KCMX3 ----  0012
0580  CONS     201B  KCMX3 ----  0012
0800  DSKC     2381  MSUX2 CMDX2 003C
0C00  CDR      2008  CRMX4 ----  0000
0C80  LPT      2003  PRMX3 ----  0008
1200  DSKT     2011  DIMX4 ----  0009
1280  DSKT     2011  DIMX4 ----  0009
1380  LPT      2001  PRMX3 ----  0013
2C00  ACLA     3118  DLCX1 DLCX2 0001
2C80  ACLA     3118  DLCX1 DLCX1 0001
AC00  SCLA     3158  DLCX1 DLCX2 0001
AC80  ACLA     3118  DLCX1 DLCX2 0001
MEMORY HIGH 0000FFFF   64K
  SYSTEM TEST SYSTST -S
```

Figure 2-1 Sample System Resources Display

NOTE

The list of system resources is displayed only during the load sequence. The list can be obtained by entering PR to any C? message and pressing the RETURN key. The list is not displayed during Individual Program mode.

2. When the following message:

SYSTEM TEST SYSTST -S

appears at the end of the system resources display, press the Break (BRK) key. The T&V system now enters command mode as indicated by the C? message.

3. In response to the C? message, enter the following:

SYSTST -A

and press the RETURN key.

Section 3
T&V PROGRAMS

Each T&V program is loaded and started by the T&V software system described in Section 1. This section describes:

- Modes of operation available
- T&V operator console dialog
- Keyboard correction procedure
- Error reporting process
- Methods of invoking T&V programs
- Individual T&V programs.

3.1 MODES OF OPERATION

For flexible use of the T&V programs, T&V System provides a set of simplified operating modes. These modes are:

- System Test Short mode (SYSTST -S)
- System Test Extended mode (SYSTST -A)
- Individual Program mode (Program -A), where Program represents the name of the program.

Each of these modes can be run by executing the appropriate procedure provided in Section 2.

SYSTST modes enable execution of T&V programs in a chained sequence. In chaining, a T&V program is loaded and remains in memory until testing is completed for all system units being tested by the program. When the T&V program is completed, the next program in the chained sequence is loaded. T&V System auto-

matically tests all system equipment with the exception of devices connected to a communications controller. Each of these devices must be tested by running the applicable T&V program in Individual Program mode (Program -A).

During Program -A mode, a single program is invoked to verify the operation of a particular unit. For specific instructions on this operating mode, refer to subsection 3.1.3.

3.1.1 System Test Short Mode (SYSTST -S)

SYSTST -S loads and executes T&V programs in a short chained sequence for all units configured on the system. This mode is invoked when the operator performs the TACPAC Load and Go instructions in the Operator's Guide. The operator can also invoke SYSTST -S in response to a C? message by entering SYSTST -S and pressing the RETURN key. Since this mode is an abbreviated check of system equipment, the operator may want to invoke the SYSTST -A mode (refer to subsection 3.1.2) for a more thorough check of the system hardware.

The following text summarizes the characteristics of SYSTST -S operations:

T&V Reporting Features

Each program runs for approximately one minute per channel tested and displays its particular message(s). After all the programs on a given disk or diskette are executed, T&V System displays a summary of the channels in error, channels not fully tested, and programs not found.

If diskette media is being used and one or more T&V programs cannot be found, the operator is prompted to mount the next diskette and press the RETURN key to continue testing.

Operator Intervention

The operator can interrupt testing at any time by pressing the Break (BRK) key on the console. The *ATTN-KEY* message is displayed on the console along with a program done message (e.g., CPST3 : DONE), and the T&V program currently being executed is terminated. T&V System then displays the following message:

```
DETERMINE BREAK ACTION
ENTER C TO CONTINUE WITH NEXT PROGRAM OR T TO TERMINATE SYSTEM TEST ?:
```

If the operator enters T and presses the RETURN key, T&V System displays a summary of all the channels in error, channels not fully tested, and any T&V programs not found or which still need to be run. All software indicators are then cleared and T&V System displays the C? message on the console. At this point, the operator can either select one of the available system commands or resume testing in another operating mode (refer to subsection 3.5).

If the operator enters C and presses the RETURN key, the break action is cleared and execution continues in the current mode of operation with the next program in the chained sequence.

Error Detection

If an error is detected, an error message is displayed and program execution continues. After one to five errors are detected and displayed, the program immediately advances to the next channel to be tested, or T&V System proceeds to the next program in the sequence.

3.1.2 System Test Extended Mode (SYSTST -A)

This mode provides the operator with a chained sequence which checks all system equipment to a greater degree than the SYSTST -S mode. The operator can invoke this mode in response to the C? message by entering SYSTST -A and pressing the RETURN key. Refer to subsection 2.2 for procedure on displaying C? message.

The following text summarizes the characteristics of SYSTST -A operations.

T&V Reporting Features

Each program runs for approximately 3 to 5 minutes per channel tested and displays its particular message(s). After all the T&V programs on a given disk or diskette are executed, T&V System displays a summary of channels in error, channels not fully tested, and programs not found.

If diskette media is being used and one or more T&V programs cannot be found, the operator is prompted to mount the next diskette and press the RETURN key to resume testing.

Operator Intervention

The operator can interrupt testing at any time by pressing the Break (BRK) key on the console. The *ATTN-KEY* message is displayed on the console along with a program done message (e.g., CPST3 : DONE), and the T&V program currently being executed is terminated. T&V System then displays the following message:

```
DETERMINE BREAK ACTION
ENTER C TO CONTINUE WITH NEXT PROGRAM OR T TO TERMINATE SYSTEM TEST ?:
```

If the operator enters T and presses the RETURN key, T&V System displays a summary of all the channels in error, channels not fully tested, and any T&V programs not found or which still need to be run. All software indicators are then cleared and T&V System displays the C? message on the console. At this point the operator can either select one of the available system commands or resume testing in another operating mode (refer to subsection 3.5).

If the operator enters C and presses the RETURN key, the break action is cleared and execution continues in the current mode of operation with the next program in the chained sequence.

Error Detection

If an error is detected, an error message is displayed and program execution continues. After one to five errors are detected and displayed, the program immediately advances to the next channel to be tested, or T&V System proceeds to the next program in the sequence.

3.1.3 Individual Program Mode (Program -A)

This mode permits execution of a single program to verify operation of a possibly defective system unit. The operator normally performs this mode only after the suspected system unit was identified during execution of either one of the System Test modes or at the recommendation of the Service Center. The operator can invoke the Individual Program mode by entering the Program name -A (e.g., PRUX1 -A) and pressing the RETURN key in response to the C? message. Refer to subsection 2.1 for the procedure to display the C? message.

Table 3-1 lists the T&V programs used to test possibly defective equipment. The individual procedures for each T&V program are contained in subsection 3.6.

NOTE

Some T&V programs are unique and can only be run on a particular system. Refer to the system resources display to determine the appropriate T&V programs that can be run on the system.

The following text summarizes the characteristics of Program -A operations:

T&V Reporting Features

After testing a channel, an end-of-pass message is displayed and the program continues to the next channel or pass. The end-of-pass message appears after each successful pass through the program for single or multiple channels, depending on the type of equipment being tested. Execution of the program continues indefinitely until the operator intervenes by pressing the Break (BRK) key.

Operator Intervention

The operator can interrupt testing at any time by pressing the Break (BRK) key on the console. The *ATTN-KEY* message is displayed on the console along with a program done message (e.g., PRUX1 : DONE), and the T&V program currently being executed is terminated. Program control returns to T&V System which displays the C? message on the console. At this point, the operator can select one of the available system commands or resume testing in another operating mode (refer to subsection 3.5).

Error Detection

If an error is detected, an error message is displayed and program execution continues. After one to five errors are detected and displayed, the program immediately advances to the next channel to be tested.

3.2 T&V OPERATOR CONSOLE DIALOG

The operator can communicate with the T&V program through the system console. Parameters are entered as responses to program messages that request specific information.

The console dialog is as follows:

1. A message that solicits a response from the operator is terminated with the following:

   ?:

2. The operator enters the appropriate response and terminates the entry with a carriage return. Multiple individual entries are separated by commas.

NOTES

1. C/R is the abbreviation for carriage return. It is obtained by pressing the RETURN key on the console keyboard, and is required after completing every entry whether it is a response, a command, or a program name.

2. The Control H command is used to list the available executive commands or obtain assistance in responding to a question from a particular T&V program. This command is executed by pressing and holding down the CTL (Control) key on the console, and then pressing the H key.

3.3 KEYBOARD CORRECTIONS

Typing errors on the console may be corrected by using one of the following procedures:

1. If one or more characters are typed incorrectly:

   a. Press the @ key to delete the preceding character. Each pressing of the @ key deletes one character, starting from right to left.

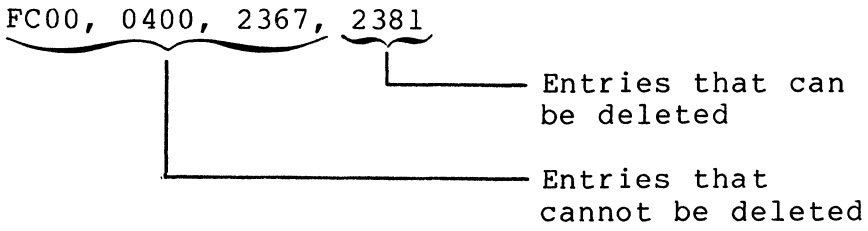
   b. Enter the correct character(s).

2. To delete an entire entry:

   a. Press and hold down the CTL key and then press the X key. This deletes the entire entry.

   b. Enter the correct data.

An entry cannot be deleted prior to the last comma as shown in the following sample entry.



3.4 ERROR REPORTING

The T&V programs have an error reporting feature, which presumes that a console is available. The console displays a specific message preceded by ERR as shown in the following format:

ERR ERROR MESSAGE

Various T&V programs display error message information in a format appropriate to the unit under test. The T&V programs may also report up to five errors, either the same error or different errors. In any case, all error messages should be reported to the Service Center exactly as displayed.

3.5 RESPONSES TO CONSOLE MESSAGE C?

T&V System displays the C? message upon completion of a System Test mode operation, or whenever the Break (BRK) key is pressed during Individual Program mode. In response to the C? message, the operator can enter an operating mode or a system command. The operating mode responses are SYSTST -S (refer to subsection 3.1.1), SYSTST -A (refer to subsection 3.1.2), or Program -A (refer to subsection 3.1.3).

The system command responses available to the operator are:

- PR Print available system resources.
- AP XXXX Attach printer to obtain hard copy. The channel number of the console message is specified by XXXX.

NOTE

Additional commands are used in the selection of an alternate console for the present T&V System execution (refer to Appendix C).

3.6 T&V PROGRAM DESCRIPTIONS

THE T&V programs permit verification of system and peripheral device performance in an offline environment. The programs can be used to verify overall performance, or to verify specific features of the unit under test. The remainder of this subsection provides the operating instructions necessary to invoke and run each test in the Individual Program (Program -A) mode. Table 3-1 lists the equipment supported by each T&V program. Table 3-2 lists the order number of additional T&V procedure manuals for those programs not listed in Table 3-1.

NOTE

Memory addresses and channel numbers shown in the following T&V procedures are only sample numbers and vary from one installation to another depending on equipment configuration.

If diskette media is being used and the PROGRAM NOT FOUND message is displayed when a T&V program is invoked, the operator is probably using the wrong diskette. Check the label on the diskette to verify diskette selection.

Table 3-1 Equipment Supported by T&V Programs (Sheet 1 of 4)
(Refer to Note on Sheet 4)

PROGRAM NAME	EQUIPMENT SUPPORTED
CDUX2	Cartridge Disk Controller Cartridge Disk Adapter 1.25 M Word, 100-TPI Cartridge Disk Only 2.50 M Word, 200-TPI Cartridge Disk Only 2.50 M Word, 100-TPI Cartridge and Fixed Disk 5.00 M Word, 200-TPI Cartridge and Fixed Disk 2.50 M Word, 100-TPI Cartridge and Fixed Disk 5.00 M Word, 200-TPI Cartridge and Fixed Disk
CMCX1	Cache Memory
CMMX1	Controller with Parity, Single-Fetch Board Controller with EDAC, Single-Fetch Board Controller with Parity, 128K Words Controller with EDAC, 128K Words Array-Pac, 8K Words for Parity Array-Pac, 8K Words for EDAC Controller with EDAC, Double-Fetch Board Controller with Parity, Double-Fetch Board Array-Pac, 32K Words for Parity Array-Pac, 32K Words for EDAC 32 K Word Memory Board 16 K Word Memory Board
CMMX2	Main Memory PROM Option
CPFX1	Real-Time Clock (RTC)/Watchdog Timer (WDT)
CPFX2	Scientific Instruction Processor (SIP)
CPFX3	Commercial Instruction Processor (CIP)
CPFX7	Commercial Instruction Processor (CIP)
CPST3	CPU Test
CPSX1	CPU Test
CPSX7	CPU Test
CRMX4	Device-Pac for Card Reader Device-Pac for Card Reader/Card Punch or Card Punch only 300 CPM Card Reader (Punched Cards) 300 CPM Card Reader (Punched and Mark Sense Cards) 500 CPM Card Reader (Punched Cards) 500 CPM Card Reader (Punched and Mark Sense Cards) 300 CPM Card Reader

Table 3-1 Equipment Supported by T&V Programs (Sheet 2 of 4)
(Refer to Note on Sheet 4)

PROGRAM NAME	EQUIPMENT SUPPORTED
CRMX4 (cont)	300 CPM Card Reader (with IBM Mark Sense) 300 CPM Card Reader (with HIS Mark Sense) 500 CPM Card Reader (with IBM Mark Sense) 500 CPM Card Reader (with HIS Mark Sense) 100 CPM Card Punch 400 CPM Card Punch 1050 CPM Card Reader
DCFX1	FEP Coupler Test
DCMX1	Dual Asynchronous Adapter Single Asynchronous Adapter Dual Synchronous Adapter Single Synchronous Adapter Single Wideband Current Mode Synchronous Adapter Single Wideband Balanced Line Synchronous Adapter Single Synchronous Adapter Single Current Loop Asynchronous Adapter Dual Current Loop Asynchronous Adapter Single Wideband Synchronous Adater Dual Synchronous Adapter
DCMX2	MLCP Controller HDLC Adapter (RS-232-C) HDLC Adapter (MIL-STD-188C)
DCMX3	MLCP Controller Broadband HDLC Communications Line Adapter
DIMX4	Diskette (Single Sided and Double Sided)
DLCX1	Dual Asynchronous Communications Processor Single Asynchronous Communications Processor Dual Synchronous Communications Processor
DLCX2	Dual Asynchronous Communications Processor Single Asynchronous Communications Processor Dual Synchronous Communications Processor Synchronous/Asynchronous Communications Processor
KCMX3	CRT Keyboard Console, 64-Character Set CRT Keyboard Console, 96-Character Set Device Adapter Board Single Console Controller Dual Console Controller Multiple Device Controller Hard Copy Console, 64-Character Set Hard Copy Console, 96-Character Set

Table 3-1 Equipment Supported by T&V Programs (Sheet 3 of 4)
(Refer to Note on Sheet 4)

PROGRAM NAME	EQUIPMENT SUPPORTED
MLCX1	Multiline Communications Processor
MSUX2	Storage Controller for Cartridge Module Disk and Mass Storage Units 16-Megabyte Cartridge Module Drive 32-Megabyte Cartridge Module Drive 64-Megabyte Cartridge Module Drive 96-Megabyte Cartridge Module Drive 16-Megabyte Cartridge Module Drive (1/2 Density) 37-Megabyte Storage Module Drive 75-Megabyte Storage Module Drive 150-Megabyte Storage Module Drive 300-Megabyte Storage Module Drive
MTUX2	Magnetic Tape Controller 7-Track NRZI Adapter 7-Track, 45-IPS Drive 7-Track, 75-IPS Drive
MTUX3	Magnetic Tape Controller 9-Track Controller and Adapter 9-Track NRZI Adapter 9-Track, 45-IPS, 800-BPI NRZI Drive 9-Track, 75-IPS, 800-BPI NRZI Drive 9-Track, 45-IPS, 800-BPI NRZI/1600-BPI PE Drive 9-Track, 75-IPS, 800-BPI NRZI/1600-BPI PE Drive 9-Track, 45-IPS, 1600-BPI PE Drive 9-Track, 75-IPS, 1600-BPI PE Drive
PRMX3	12-Channel Vertical Format Unit for Line Printer Printer Adapter Printer Controller 60-LPM Serial Printer, 64-Character Set 60-LPM Serial Printer, 96-Character Set 240-LPM Line Printer, 96-Character Set 300-LPM Line Printer, 64-Character Set 480-LPM Line Printer, 96-Character Set 600-LPM Line Printer, 64-Character Set 660-LPM Line Printer, 96-Character Set 900-LPM Line Printer, 64-Character Set 40-LPM Serial Printer, 96-Character Set 65-LPM Serial Printer, 96-Character Set
PRUX1	30-CPS Serial Printer 10-, 20-, 30-CPS Serial Printer 120-CPS Serial Printer Letter Quality Printer Buffered Printer Adapter

Table 3-1 Equipment Supported by T&V Programs (Sheet 4 of 4)
(Refer to Note on Sheet 4)

PROGRAM NAME	EQUIPMENT SUPPORTED
PSSX1	Memory Save Power Supply Memory Save for up to 64K Words with Autorestart Tabletop Unit Memory Save for up to 64K Words with Autorestart - Rack-Mountable Unit
SYSX1	Tests all equipment configured on the system
TCSX1	Dual Asynchronous Adapter Single Asynchronous Adapter Single MIL-STD-188C Synchronous Adapter Dual Autocall Unit Single Current Loop Asynchronous Adapter Dual Current Loop Asynchronous Adapter Eight Line Asynchronous Adapter Six Asynchronous and One Synchronous Line Adapter with Current Loop Interface Eight Line Asynchronous Adapter with Current Loop Adapter Dual Asynchronous Adapter Single Synchronous Adapter Dual Synchronous Adapter Single Synchronous and Single Asynchronous Adapter 30-CPS Serial Printer 10-, 20-, 30-CPS Serial Printer 120-CPS Serial Printer Display Terminal (Asynchronous)
VIPX4	Display Terminal, Synchronous (VIP/WST 7800 Series)
VIPX8	Display Terminal, Asynchronous (VIP/WST 7800 Series)

NOTE

Some T&V programs are unique and can only be run on a particular system. Refer to the system resources display to determine the appropriate T&V programs that can be run on the system.

Table 3-2 Additional T&V Procedure Manuals

TITLE	ORDER NUMBER
Central System T&V Procedure - CPU Execution Times (CPSS2/CPSL2)	CD59
Central System Option T&V Procedure - WCS (CPFS4/CPFL4)	CD65
Interface Option T&V Procedure - Intersystem Link (GISS2/GISL2)	CD66
Interface Option T&V Procedure - GPI (GISS1/GISL1)	CD67
Peripheral Device T&D Procedure - Cartridge Module Disk (CMDS2/CMDL2)	CJ46
Peripheral Device T&D Procedure - Storage Module (SMDS2/SMDL2)	CD72
Communications T&V Procedure - Broadband HDLC Line Adapter (DCMS3/DCML3)	CD80
Communications T&V Procedure - Direct Connect Link (DCMVA)	CE13
Communications T&V Procedure - Bootstrap Adapter (DCMS4/DCML4)	CE14
Communications T&V Procedure - Asynchronous Communication Adapter (DCMS5)	FY72

CDUX2
Cartridge Disk T&V Procedure

This program verifies the proper operation of the cartridge disk options. It is intended to provide diagnosis when failures are detected (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CDUX2 -A
```

All channels configured on the system are tested one after another, 3 minutes per channel. The program runs one pass on both fixed and removable media for each channel with a device attached. Each subsequent pass runs on removable media only, and until the Break (BRK) key is pressed. After pressing the Break (BRK) key the following message is displayed on the console:

```
CDUX2 DONE
```

OPERATOR INTERVENTION

The operator may terminate testing by pressing the console Break (BRK) key.

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

```
     C?
---> CDUX2 -A
     CARTRIDGE DISK TEST CDUX2 REV No. Date
     ZV$LIB REV No.
     MEMORY LOW 00005DA2
     CARTRIDGE DISK CONTROLLER FIRMWARE REV No.
     CHANNEL (1400) READY 200 TPI FIXED DISK PRESENT
     CHANNEL (1400)F HAS A SCRATCH PACK MOUNTED
     MODE Q(1400)F MAY CONTRIBUTE UP TO 4 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2 CHANNEL Q(1400)F PASS 1       0 ERRORS THIS PASS, 0 TOTAL ERRORS
     CHANNEL (1400)R HAS A SCRATCH PACK MOUNTED
     MODE Q(1400)R MAY CONTRIBUTE UP TO 4 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2 CHANNEL Q(1400)R PASS 1   0 ERRORS THIS PASS 0 TOTAL ERRORS
     CARTRIDGE DISK CONTROLLER FIRMWARE REV. No.
     CHANNEL(1480) NOT READY
     MODE T(1480) MAY CONTRIBUTE UP TO 0.5 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2  CHANNEL T(1480) PASS 1   0 ERRORS THIS PASS  0 TOTAL ERRORS
     CARTRIDGE DISK CONTROLLER FIRMWARE REV. No.
     CHANNEL (1500) NOT READY
     MODE T(1500) MAY CONTRIBUTE UP TO 0.5 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2 CHANNEL T(1500) PASS 1    0 ERRORS THIS PASS, 0 TOTAL ERRORS
     CARTRIDGE DISK CONTROLLER FIRMWARE REV. No.
     CHANNEL (1800) NOT READY
     MODE T(1800) MAY CONTRIBUTE UP TO 0.5 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2 CHANNEL T(1800) PASS 1   0 ERRORS THIS PASS, 0 TOTAL ERRORS
     CARTRIDGE DISK CONTROLLER FIRMWARE REV. No.
     CHANNEL (1880) NOT READY
     MODE T(1880) MAY CONTRIBUTE UP TO 0.5 MINUTE(S) TO TOTAL PASS TIME
--->  CDUX2 CHANNEL T(1880) PASS 1    0 ERRORS THIS PASS, 0 TOTAL ERRORS
     CARTRIDGE DISK CONTROLLER FIRMWARE REV. No.
     CHANNEL (1400)R READY 200 TPI FIXED DISK PRESENT
     *ATTN-KEY*

     CDUX2 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CDUX2 Console Display

CMCX1
Cache Memory T&V Procedure

This T&V program verifies the proper operation of the cache memory subsystem. The program executes a series of tests without operator intervention (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CMCX1 -A
```

NOTE

In display messages, CMCX1 may appear as CMCS1 or CMCL1, where:

- CMCS1 is the short address form.
- CMCL1 is the long address form.

Once the program is invoked, testing proceeds without further operator intervention. After each pass of the program, the console displays:

```
CMCS1 :  PASS No.      No. TOTAL ERRORS
                  or
CMCL1 :  PASS No.      No. TOTAL ERRORS
```

One complete pass of the program requires approximately 19 seconds per 64K words of main memory.

```
     C?
---> CMCX1 -A
     6/53 AND 6/57 CACHE MEMORY TEST CMCS1 REV No. Date
     ZV$LIB  REV No.
     MEMORY LOW  00002CFE
     LOAD, LAF AND CHECK INDICATORS WILL LIGHT DURING THIS TEST
     CACHE PRESENT
     MEMORY GREATER THAN 64K.
     THIS TEST WILL TEST ONLY 64K OF ADDRESS SPACE.
     SET TO LAF MODE AND USE CMCL1 FOR COMPLETE TESTING
     PROGRAM MAY RUN UP TO     15 SECONDS BEFORE REPORTING
     CACHE SIZE IS 4K
-->  CMCS1 :  PASS    1      0  TOTAL ERRORS
     CMCS1 :  PASS    2      0  TOTAL ERRORS
     *ATTN-KEY*
     CMCS1 :  DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CMCX1 Console Display

NOTE

If CMCS1 is run on a system with a memory size greater than 64K words, the program will prompt the user to set the system to Long Address Form (LAF) mode and run CMCL1 for complete testing. CMCS1 tests only the first 64K words of addressable memory.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. Detection of an error does not cause immediate termination of the test. Unless the operator interrupts the program, testing continues for the remainder of the pass, at which time the program displays the pass and error count followed by the program done messages:

```
CMCS1 :  DONE
   or
CMCL1 :  DONE
```

To immediately terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CMCS1 : CACHE DISABLED *****
CMCS1 : DONE
        or
CMCL1 : CACHE DISABLED *****
CMCL1 : DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CMMX1
Main Memory T&V Procedure

This T&V program verifies the proper operation and integrity of the main memory subsystem. Two addressing modes are used, depending upon the memory size: short address form for memories up to 64K words and long address form for memories over 64K words (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CMMX1 -A
```

NOTE

In display messages, CMMX1 may appear as CMMS1 or CMML1, where:

- CMMS1 is the short address form.
- CMML1 is the long address form.

The program automatically begins execution and, after each successful pass through the program, a pass message is displayed on the console.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CMMS1 : DONE
   or
CMML1 : DONE
```

```
     C?
--->CMMX1 -A


     MEMORY TEST CMMS1 REV No. Date
     ZV$LIB REV No.
     MEMORY LOW 00004671
     MEMORY GREATER THAN 64K, CHANGE TO CMML1,
       SET TO LAF MODE.  OTHERWISE WILL
       ONLY TEST UP TO 64K LOCATIONS!
     TOTAL NO. OF 32K(OR LESS) MODULES IS     2

     THE 1ST ERROR MESSAGE SHOULD ALWAYS BE
     CONSIDERED 1ST.  SUBSEQUENT ERROR
     MESSAGES COULD BE CAUSED BY PREVIOUS ERRORS


     BREAK WILL TAKE UP TO 15 SECONDS TO RESPOND
     PROGRAM WILL RUN UP TO     1 MINUTE(S) BEFORE REPORTING

-->  CMMS1 PASS      1      0 TOTAL ERRS
     CMMS1 PASS      2      0 TOTAL ERRS
     CMMS1 PASS      3      0 TOTAL ERRS
     CMMS1 PASS      4      0 TOTAL ERRS
     *ATTN-KEY*

     CMMS1 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CMMX1 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed. After the first error message, the following console message is displayed:

*** NOTE ERROR MESSAGE***

PAUSE ON SUBSEQUENT ERRORS(ANSWER Y OR N) C/R ? :

where:

- A response of Y (Yes) causes the program to pause if an additional error is detected. For system applications that use a video display console, the pause allows time for the operator to record the error message.

- A response of N (No) causes the program to continue and report any subsequent errors without pauses.

CMMX2
Main Memory PROM Option
T&V Procedure

This T&V program verifies proper operation and integrity of the Main Memory PROM Option. It provides diagnosis of failures and facilities to support extensive problem investigations (see Figure 1).

OPERATING PROCEDURE

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CMMX2 -A
```

The program automatically begins execution and, after each successful pass through the program, a pass message is displayed on the console.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CMMX2 DONE
```

```
    C?
--> CMMX2 -A


    MAIN MEMORY PROM TEST  CMMX2   Date    REV No.
    ZV$LIB  REV No.
    MEMORY LOW  00003275
    PROGRAM WILL RUN UP TO 10 SEC. BEFORE REPORTING
    PROM PRESENT
--> CMMX2 PASS            1
       CHANNEL      =  0800
       TOTAL ERRS   =     0
    CMMX2 PASS            2
       CHANNEL      =  0800
       TOTAL ERRS   =     0
    *ATTN-KEY*

    CMMX2 DONE
```

--> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CMMX2 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CPFX1
RTC/WDT T&V Procedure

This T&V program verifies proper operation of the Real-Time Clock (RTC) and Watchdog Timer (WDT). If no watchdog timer is present, the time-of-day test will be executed only for the real-time clock (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPFX1 -A
```

NOTE

In display messages, CPFX1 may appear as CPFS1 or CPFL1, where:

- CPFS1 is the short address form.
- CPFL1 is the long address form.

After the program runs for approximately 2 minutes, the TIME-OF-DAY TEST and START TIMING messages are displayed. The program reports the time-of-day at 1 minute intervals. A test of 1 minute is acceptable; however, the operator should perform a test of at least 1 hour to fully verify proper operation of the real-time clock and watchdog timer (if present).

OPERATOR INTERVENTION

The program continues to loop until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPFS1 : DONE
     or
CPFL1 : DONE
```

```
     C?
---->CPFX1 -A


     LEVEL 6 RTC/WDT TEST          CPFS1 REV No. Date

     ZV$LIB  REV No.
     MEMORY LOW  00001F40
     PROGRAM WILL RUN UP TO 2 MINUTES BEFORE REPORTING


     TIME-OF-DAY TEST
     START TIMING


       RTC           WDT
-->  00:01         00:01:00:0
     00:02         00:02:00:0
     00:03         00:03:00:0
     00:04         00:04:00:0
     *ATTN-KEY*


     CPFS1:  DONE
```

----> indicates operator entry.

--> indicates successful completion of a single pass through the program.

NOTE

WDT messages are only displayed if the watchdog timer is present.

Figure 1 Sample CPFX1 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CPFX2
SIP T&V Procedure

This T&V procedure verifies proper operation of the Scientific Instruction Processor (SIP). The program executes a series of tests without operator intervention (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPFX2 -A
```

NOTE

In display messages, CPFX2 may appear as CPFS2 or CPFL2, where:

- CPFS2 is the short address form.
- CPFL2 is the long address form.

Testing proceeds without operator intervention. Approximately 5 minutes is required for a complete series of subtests to be performed. Every 45 seconds a subtest pass message is displayed on the console. At the end of six such subtests, the test concludes with:

```
CPFS2:  FULL PASS     1 COMPLETED
                or
CPFL2:  FULL PASS     1 COMPLETED
                and
        TEST RESTARTING
```

```
    C?
--> CPFX2 -A
    4X/5X S.I.P. TEST CPFS2 REV No. Date
    ZV$LIB REV No.
    MEMORY LOW  00003AF1
    CPFS2: SIP TEST MAY RUN UP TO 45 SECONDS BEFORE REPORTING
    WAIT FOR DONE OR FULL PASS COMPLETED MESSAGE
    CPFS2: SUBTEST      1 PASSED
    CPFS2: SUBTEST      2 PASSED
    CPFS2: SUBTEST      3 PASSED
    CPFS2: SUBTEST      4 PASSED
    CPFS2: SUBTEST      5 PASSED
    CPFS2: SUBTEST      6 PASSED
--> CPFS2: FULL PASS      1 COMPLETED
          TEST RESTARTING
    CPFS2: SUBTEST      1 PASSED
    CPFS2: SUBTEST      2 PASSED
    *ATTN-KEY*


    CPFS2: DONE
```

--> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CPFX2 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPFS2 : DONE
    or
CPFL2 : DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CPFX3
CIP T&V Procedure

This T&V program verifies proper operation of the Commercial Instruction Processor (CIP). The program executes a series of tests without operator intervention (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPFX3 -A
```

After the program is invoked, testing proceeds without operator intervention. Approximately 3 minutes is required for a complete series to be performed. Every 10 seconds a pass message is displayed on the console. At the end of 25 such passes the test concludes with:

```
CPFX3: SUBTEST-25   PASSED
CPFX3: FULL PASS  1 COMPLETE, TEST RESTARTING
```

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPFX3 : DONE
```

```
     C?
---> CPFX3 -A
     6/47, 6/57 CIP TEST  CPFX3  REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  XXXXXXXX
     PROGRAM MAY RUN UP TO 30 SECONDS BEFORE REPORTING
     WAIT FOR DONE OR FULL PASS COMPLETE MESSAGE
     CPFX3  : SUBTEST-1  PASSED
       .          .          .
       .          .          .
       .          .          .
     CPFX3 : SUBTEST-25 PASSED
---> CPFX3 : FULL PASS      1   COMPLETE, TEST RESTARTING

     *ATTN-KEY*

     CPFX3 : DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CPFX3 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CPFX7
CIP T&V Procedure

This T&V program verifies proper operation of the Commercial Instruction Processor (CIP). The program executes a series of tests without operator intervention.

OPERATING PROCEDURE

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPFX7 -A
```

After the program is invoked, testing proceeds without operator intervention. Approximately 8 minutes are required for a complete series of subtests to be performed. Every 20 seconds a subtest pass message is displayed on the console (see Figure 1). At the end of 25 such tests, the test concludes with:

```
CPFX7:  SUBTEST-25 PASS
CPFX7:  FULL PASS 1 COMPLETE, TEST RESTARTING
```

OPERATOR INTERVENTION

The program continues to loop and display pass messages until interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPFX7:  DONE
```

```
    C?
--> CPFX7 -A
    6/37 CIP TEST CPFX7 REV No. Date
    ZV$LIB  REV No.
    MEMORY LOW  XXXXXXXX
    PROGRAM MAY RUN UP TO 30 SECONDS BEFORE REPORTING
    WAIT FOR DONE OR FULL PASS COMPLETE MESSAGE
    CPFX7:  SUBTEST-1 PASSED
      .         .         .
      .         .         .
      .         .         .

    CPFX7 : SUBTEST-25 PASSED
--> CPFX7 : FULL PASS      1 COMPLETE, TEST RESTARTING

    *ATTN-KEY*

    CPFX7 : DONE
```

--> indicates operator entry.

---> indicates successful completion of a single pass through the program.

Figure 1 Sample CPFX7 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CPST3
CPU T&V Procedure

This T&V progam verifies proper operation of the instruction set and overall functional capabilities of the Central Processor Units (CPUs). This program runs for 1 minute and requires a minimum of 32K words of memory (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPST3 -A
```

After the program is invoked, testing proceeds without operator intervention. If the test is successful, a pass message is displayed within 5 seconds.

```
    C?
--->CPST3 -A
    6/20, 6/30 CPU TEST, CPST3 REV No. Date
    ZV$LIB  REV No.
    MEMORY LOW   000035DD
    CPST3 : IF NO MESSAGE WITHIN 5 SECS, TEST HAS FAILED
    CPST3 : PASS MESSAGE SHOULD BE DISPLAYED EVERY MINUTE
-->CPST3 : PASS 1
    *ATTN-KEY*

    CPST3 : DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CPST3 Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPST3 : DONE
```

ERROR REPORTING

If a pass message is not displayed on the console within 5 seconds after the program is invoked, the test failed and the operator should attempt a retry. Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

CPSX1
CPU T&V Procedure

This T&V program verifies proper operation of the Central Processor Units (CPUs) with or without cache memory. The program executes a series of tests without operator intervention (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPSX1 -A
```

NOTE

In display messages, CPSX1 may appear as CPSS1 or CPSL1, where:

- CPSS1 is the short address form.
- CPSL1 is the long address form.

After the program is invoked, testing proceeds without operator intervention. Depending upon whether a cache memory is configured into the system, two operating modes are possible, one for systems without a cache memory and another for systems with a cache memory. For systems without a cache memory, the pass messages are displayed once every minute. For systems with cache memory, pass messages are displayed twice each minute, once with the cache disabled and again with the cache enabled.

NOTE

The CHECK indicator on the control panel remains on when the cache is disabled.

```
    C?
--->CPSX1 -A
    6-4X AND 6-5X CPU TEST  CPSS1  REV No.  Date
    ZV$LIB  REV No.
    MEMORY LOW XXXXXXXX
    CPSS1 : CACHE DISABLED
    CPSS1 : IF NO MESSAGE IN 5 SECONDS, TEST HAS FAILED
    CPSS1 : PASS MESSAGE SHOULD BE DISPLAYED APPROXIMATELY EVERY
            30 SECONDS
-->CPSS1 : PASS     1
    CPSS1 : CACHE ENABLED

    CPSS1 : PASS     2
    CPSS1 : CACHE DISABLED

    CPSS1 : PASS     3
    CPSS1 : CACHE ENABLED

    CPSS1 : PASS     4
    CPSS1 : CACHE DISABLED

    *ATTN-KEY*

    CPSS1 : DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CPSX1 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPSS1 : DONE
    or
CPSL1 : DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error mesage to the Service Center exactly as displayed. Along with the error message, the console displays:

CPSS1 : MODE (I, E, C, X, H, OR "CONTROL H" FOR HELP) ? :

The operator should enter I and a carriage return to restart the program, or X and a carriage return to exit the program.

CPSX7
CPU T&V Procedure

This T&V program verifies proper operation of the Central Processor Units (CPUs). The program executes a series of tests without operator intervention (see Figure 1).

OPERATING PROCEDURE

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CPSX7 -A
```

NOTE

In display messages, CPSX7 may appear as CPSS7 or CPSL7, where:

- CPSS7 is the short address form
- CPSL7 is the long address form.

After the program is invoked, testing proceeds without operator intervention. Pass messages are displayed once every minute.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CPSS7:  DONE
     or
CPSL7:  DONE
```

```
     C?
---> CPSX7 -A
     6-37 CPU TEST  CPSS7  REV No.  Date
     ZV$LIB REV No.
     MEMORY LOW  0000571B
     CPSS7:  IF NO MESSAGE IN 5 SECONDS, TEST HAS FAILED
     CPSS7:  PASS MESSAGE SHOULD BE DISPLAYED APPROXIMATELY EVERY MINUTE
-->  CPSS7:  PASS      1
     CPSS7:  PASS      2
     CPSS7:  PASS      3
     *ATTN-KEY*

     CPSS7:  DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample CPSX7 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

CRMX4
Card Equipment T&V Procedure

This T&V procedure verifies proper operation of the card reader/punch equipment. The first procedure tests the card punch and the card/reader punch; the second procedure tests the card reader only (see Figure 1).

OPERATING PROCEDURES

Card Reader/Punch Procedure

Turn on the power for the device. Press the STOP and RUNOUT buttons to clear the transport. To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
CRMX4 -A
```

Depending upon the device to be tested, the console displays one of the following messages:

```
CHANNEL XXXX, CARD READER IS  YY
CHANNEL XXXX, CARD READER/PUNCH IS  YY
CHANNEL XXXX, HIGH SPEED READER IS  YY
CHANNEL XXXX, CARD PUNCH IS  YY
```

where:

XXXX = The channel number of the device to be tested.

YY = READY or NOT READY, depending upon the state of the device.

Make sure that the device is in the offline mode before starting the test. Begin testing with the punching of a standard 5-card ASCII test deck. Load a minimum of seven blank cards into the input hopper, make the device ready, and press the console RETURN key.

```
    C?
--->CRMX4 -A
    CARD UNIT TEST CRMX4 REV No. Date
    ZV$LIB REV No.
    MEMORY LOW  000060D1
    FIRMWARE REVISION No.
    CHANNEL 1300, CARD READER IS READY
--->MARK SENSE (Y OR N) ?: N
    TURN DEVICE OFF-LINE
    PROGRAM MAY RUN UP TO 2 MINUTES BEFORE REPORTING
--->HAVE ASCII TEST DECK (Y OR N)?: N
    CLEAR INPUT HOPPER
    LOAD THE ASCII TEST DECK
    PUSH START
    DEPRESS CARRIAGE RETURN ON CONSOLE
--->HAVE THE 100 CARD TEST DECK (Y OR N)?: Y
--->RANDOM PICK DELAY (Y OR N)?: Y
    CLEAR INPUT HOPPER
    LOAD 100 CARD TEST DECK FOR READ
    PUSH START
    DEPRESS CARRIAGE RETURN ON CONSOLE
    TESTING DONE ON CHANNEL    1300
-->CRMX4 PASS      1  TOTAL ERRORS        0

    FIRMWARE REVISION No.
    CHANNEL 1300, CARD READER IS READY
    MARK SENSE (Y OR N)?:
    *ATTN-KEY*

    CRMX4  DONE
```

--->indicates operator entry.

-->indicates successful completion of a single pass through the program.

Figure 1 Sample CRMX4 Console Display for Card Reader

At the conclusion of punching, reload the ASCII test deck into the input hopper. These cards are now read. When prompted by the program, make the device ready and press the RETURN key. When reading begins, verify that the first and second cards are offset stacked. Respond to the questions displayed on the console followed by a carriage return, and then press the STOP and RUNOUT buttons on the device. In the next part of the procedure, load at least 102 blank cards into the input hopper, make the device ready, and press the RETURN key. The cards are punched with specific and random codes. Verify that 100 cards are punched. Reload the cards into the input hopper.

The console then displays:

RANDOM PICK DELAY (Y OR N) ?:

The operator should respond with N followed by a carriage return.

The console then displays:

VALUE IN MILLISECS (0-9999) ?:

The operator should respond with a number between 0 and 9999, followed by a carriage return. This number determines how long the device waits between transporting each card. The lower the number the faster the cards are transported.

Card Reader Procedure

This procedure requires the use of a standard ASCII test deck. If a test deck is not available, one can be made up on a keypunch using the format listed in Table 1. Make the device ready and respond to the MARK SENSE (Y OR N) ?: question. Turn the device offline and load the test deck into the input hopper. When prompted by the program, make the device ready, and press the carriage return key.

The cards are then read and compared to verify correct reading. If no errors are detected, the console then displays:

HAVE 100 CARD TEST DECK (Y OR N) ?:

If a 100-card test deck is available, load it into the input hopper and respond with Y to the question, followed by a carriage return; otherwise, respond with N and continue with the random pick delay test which follows, by loading 100 blank cards.

The console then displays:

```
RANDOM PICK DELAY (Y OR N) ?:
```

The operator should respond with Y followed by a carriage return. Press the carriage return key again, and verify that the cards are transported at a random rate by responding to the VERIFY (Y OR N) ?: question. This completes the testing of the card reader.

OPERATOR INTERVENTION

The program continues to loop, prompting the operator for input and displaying pass messages on the console. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
CRMX4 : DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

Table 1 ASCII Test Deck (Sheet 1 of 2)

CARD	COLUMN	PUNCH	GRAPHIC	HEXADECIMAL
First	1	0	0	30
	2	1	1	31
	3	2	2	32
	4	3	3	33
	5	4	4	34
	6	5	5	35
	7	6	6	36
	8	7	7	37
	9	8	8	38
	10	9	9	39
	11	12-1	A	41
	12	12-2	B	42
	13	12-3	C	43
	14	12-4	D	44
	15	12-5	E	45
	16	12-6	F	46
	17	12-7	G	47
	18	12-8	H	48
	19	12-9	I	49
	20	11-1	J	4A
	21	11-2	K	4B
	22	11-3	L	4C
	23	11-4	M	4D
	24	11-5	N	4E
	25	11-6	O	4F
	26	11-7	P	50
	27	11-8	Q	51
	28	11-9	R	52
	29	0-2	S	53
	30	0-3	T	54
	31	0-4	U	55
	32	0-5	V	56
	33	0-6	W	57
	34	0-7	X	58
	35	0-8	Y	59
	36	0-9	Z	5A
	37	8-2	:	3A
	38	8-3	#	23
	39	8-4	@	40
	40	8-5	'	27
	41	8-6	=	3D
	42	8-7	"	22
	43	Blank	Space	20
	44	0-1	/	2F
	45	0-8-2	\	5C
	46	0-8-3	,	2C
	47	0-8-4	%	25
	48	0-8-5	-	5F

Table 1 ASCII Test Deck (Sheet 2 of 2)

CARD	COLUMN	PUNCH	GRAPHIC	HEXADECIMAL
First (cont)	49	0-8-6	>	3E
	50	0-8-7	?	3F
	51	11	-	2D
	52	11-8-2	]	5D
	53	11-8-3	$	24
	54	11-8-4	*	2A
	55	11-8-5	)	29
	56	11-8-7	^	5E
	57	12	&	26
	58	12-8-2	[	5B
	59	12-8-3	.	2E
	60	12-8-4	<	3C
	61	12-8-5	(	28
	62	12-8-6	+	2B
	63	12-8-7	!	21
	63	11-0	}	7D
	65	12-0	{	7B
	66-80	None	Space	20
Second	1	11-8-6	;	-
	2	1-2	None (Illegal)	-
	3-80	Blank	Space	-
Third	The third card is blank			
Fourth	The fourth card is blank			
Fifth	The fifth card is blank			

DCFX1
Front End Processor Coupler
T&V Procedure

This T&V program verifies the proper operation of the Front End Processor (FEP) coupler subsystem. The program requires at least 16K words of main memory. A minimum satisfactory test for normal operation may be obtained by running one pass of the program (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
DCFX1 -A
```

NOTE

In display messages, DCFX1 may appear as DCFS1 or DCFL1, where:

- DCFS1 is the short address form.
- DCFL1 is the long address form.

Once the program is invoked, testing proceeds without further operator intervention. After each pass of the program, the console displays:

```
DCFS1 PASS No.
      or
DCFL1 PASS No.
CHANNEL(S) No.
No. TOTAL ERRORS
```

```
     C?
---> DCFS1 -A


     FEP COUPLER TEST   DCFS1 REV No. Date
     ZV$LIB  REV No.
     MEMORY LOW  00005145
     FEP CHANNELS =      800
     TESTING STARTS-ADD=    800 FIRMWARE REV =   0004
     THIS PROGRAM WILL RUN UP TO 3 MINUTES BEFORE REPORTING
     L66 MAILBOX AT   00000580 (HEX) =  00002600 (OCTAL)

---> DCFS1 PASS     1
     CHANNEL(S) =  800
     TOTAL ERRS =    0
     DCFS1 PASS     2
     CHANNEL(S) =  800
     TOTAL ERRS =    0
     *ATTN-KEY*

     DCFS1 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample DCFX1 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays the following message:

DCFS1 DONE
or
DCFL1 DONE

ERROR REPORTING

Errors detected by the program are displayed using the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

DCMX1
Communications Line Adapter
T&V Procedure

This T&V program verifies proper operation of the Communication Line Adapters (CLAs). The program tests the functional capabilities of the CLA without operator intervention. A minimum satisfactory test for normal operation is demonstrated with one successful pass of the program (see Figure 1).

OPERATING PROCEDURES

T&V program MLCX1 should be run before this program to ensure that the controller is functioning properly. To invoke this program, enter the program name, space, -A, and a carriage return as follows:

```
DCMX1 -A
```

NOTE

In display messages, DCMX1 may appear as DCMS1 or DCML1, where:

- DCMS1 is the short address form.
- DCML1 is the long address form.

After the program is invoked, testing proceeds without operator intervention. Testing starts with the lowest channel and proceeds to the next highest channel until all line adapter channels are tested. Approximately 1 minute (per channel) after testing beings, a pass message is displayed on the console.

```
     C?
---> DCMX1 -A


     CLA TEST  DCML1,  REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  000054EF
     RUN CONTROLLER TEST MLCL1 PRIOR TO THIS TEST
     CHANNEL(S)TA  0C00  0D00  0D80  0E00  0F00  1C00  1C80  1D00
                   1D80  1E00  1F00  1F80
     PROGRAM WILL RUN UP TO 1 MINUTE PER CHANNEL TESTED BEFORE REPORTING

     TESTING STARTS MLCP ADDRESS =  0C00  0D00  0D80  0E00  0F00

     FIRMWARE REV. No.
     SYNCHRONOUS LINE     6 SPEED IS  9617
     SYNCHRONOUS LINE     4 SPEED IS  9617
     SYNCHRONOUS LINE     0 SPEED IS  9617
-->   DCML1 PASS      1
      CHANNEL(S)   0C00  0D00  0D80  0E00  0F00
      ERR TOTAL       0     0     0     0     0
     PROGRAM WILL RUN UP TO 1 MINUTE PER CHANNEL TESTED BEFORE REPORTING

     TESTING STARTS MLCP ADDRESS =  1C00  1C80  1D00  1D80  1E00  1F00  1F80

     FIRMWARE REV. No.
     SYNCHRONOUS LINE     2 SPEED IS  9617
     SYNCHRONOUS LINE     3 SPEED IS  9617
     SYNCHRONOUS LINE     4 SPEED IS  9617
-->   DCML1 PASS     1
      CHANNEL(S)  1C00  1C80  1D00  1D80  1E00  1F00  1F80
      ERR TOTAL      0     0     0     0     0     0     0
     PROGRAM WILL RUN UP TO 1 MINUTE PER CHANNEL TESTED BEFORE REPORTING

     TESTING STARTS MLCP ADDRESS =  0C00  0D00  0D80  0E00  0F00

     FIRMWARE REV. No.
     *ATTN-KEY*

     DCML1 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample DCMX1 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
DCMS1 DONE
    or
DCML1 DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

DCMX2
Medium Speed HDLC
Communications Line Adapter
T&V Procedure

This T&V procedure verifies proper operation of the High Level Data Link Controller (HDLC) adapter subsystem, providing a first level of diagnosis when failures are detected. The performance of the entire subsystem can be demonstrated successfully with one pass of the program (see Figure 1).

OPERATING PROCEDURES

T&V program MLCX1 should be run before this program to ensure that the controller is functioning properly.

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
DCMX2 -A
```

NOTE

In display messages, DCMX2 may appear as DCMS2 or DCML2, where:

- DMCS2 is the short address form.
- DCML2 is the long address form.

The program automatically begins execution and, after each successful pass through the program, a pass message is displayed on the console.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
DCMS2 : DONE
   or
DCML2 : DONE
```

```
     C?
-->  DCMX2 -A
     HCLA TEST    DCMS2,   REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  00002B2D
     RUN CONTROLLER TEST MLCS1 PRIOR TO THIS TEST
     PROGRAM WILL RUN UP TO 3 MINUTES BEFORE REPORTING
     MLCP  FW REV    No.
     TESTING STARTS  HCLA ADD = XXXX
     HCLA LINE       No. FW REV    No.
     DATA SET STATUS =   XXXX
     BITS/SEC =   XXXX
-->  DCMS2 PASS  1
     CHANNEL(S) =   XXXX
     TOTAL ERRS =      0
     *ATTN-KEY*
     DCMS2 : DONE
```

--> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample DCMX2 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

DCMX3
Communications Line Adapter
T&V Procedure

This T&V program verifies proper operation of the Multiline Communications Processor (MLCP) Broadband HDLC Communications Line Adapter (see Figure 1).

OPERATING PROCEDURES

T&V program MLCX1 should be run before this program to ensure that the controller is functioning properly.

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
DCMX3 -A
```

NOTE

In display messages, DCMX3 may appear as DCMS3 or DCML3, where:

- DCMS3 is the short address form.
- DCML3 is the long address form.

The program automatically begins execution and, after each successful pass through the program, a pass message is displayed on the console.

OPERATOR INTERVENTION

The program continues to loop and display pass messges until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
DCMS3 : DONE
     or
DCML3 : DONE
```

```
     C?
---->DCMX3 -A
     BHCLA TEST DCMS3  REV No. Date
     ZV$LIB  REV No.
     MEMORY LOW  000044FA
     RUN CONTROLLER TEST MLCS1 PRIOR TO THIS TEST
     PROGRAM WILL RUN UP TO 3 MINUTES BEFORE REPORTING
     MLCP   FW REV    No.
     TESTING STARTS BHCLA ADD =  EC00
     LINE      0 ID =   21F6
     BHCLA    FW REV RCV =      1 TRANSMIT =      1
     DATA SET STATUS =  0000
     BITS/SEC =   57930
     TESTING STARTS BHCLA ADD = F000
     LINE      0 ID =   21F6
     BHCLA    FW REV RCV =      1 TRANSMIT =      1
     DATA SET STATUS =  0000
     BITS/SEC =    9590
---->DCMS3 PASS      1
     CHANNEL(S) =  EC00  F000
     TOTAL ERRS =     0     0
     TESTING STARTS BHCLA ADD = EC00
     LINE      0 ID =   21F6
     *ATTN-KEY*

     DCMS2 DONE
```

---->indicates operator entry.

--->indicates successful completion of a single pass through the program.

Figure 1 Sample DCMS3 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

DIMX4
Diskette Subsystem T&V Procedure

This T&V program verifies the proper operation of the diskette subsystems in single or double sided configurations and both single or dual density configurations. The performance of the entire subsystem can be demonstrated successfully with one pass of the program (see Figure 1).

OPERATING PROCEDURES

All devices to be tested (except the one used for loading T&V System) must have scratch diskettes mounted prior to invoking the program. To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
DIMX4 -A
```

NOTE

In display messages, DIMX4 may appear as DIMS4 or DIML4, where:

- DIMS4 is the short address form.
- DIML4 is the long address form.

The console first displays the status of the drives and diskette to be tested. Depending upon the status of the diskette mounted in the drive with the lowest channel number, the console displays one of the following messages:

```
CHANNEL  (XXXX) HAS A SCRATCH PACK MOUNTED
```

or

```
UNRECOGNIZABLE PACK ON CHANNEL (XXXX),
OK TO WRITE ON PACK (Y OR N) ?:
```

or

```
CHANNEL  (XXXX) VOLUME NAME IS "XXXX",
OK TO WRITE ON PACK (Y OR N) ?:
```

```
    C?
--> DIMX4 -A
    DISKETTE TEST DIML4 REV No.  Date
    ZV$LIB  REV No.
    MEMORY LOW  00006564

    SINGLE DENSITY,  BDC1 FIRMWARE REV No.
       CHANNEL (1200), TWO HEADED DRIVE HAS ONE SIDED DISKETTE
       CHANNEL (1280), TWO HEADED DRIVE HAS ONE SIDED DISKETTE
--> CHANNEL (0400) VOLUME NAME IS "DIAGS", OK TO WRITE ON PACK (Y OR N)?: N
--> WANT TO RUN READ-ONLY TEST (Y OR N)?: N
--> IS A SCRATCH PACK AVAILABLE (Y OR N)?: Y
--> MOUNT SCRATCH PACK.  TYPE "GO" WHEN READY. GO
    CHANNEL (0400) HAS A SCRATCH PACK MOUNTED

    TEST A(0400) WILL CONTRIBUTE 3 MINUTE(S) TO TOTAL RUN TIME PER PASS.

---> DIML4 CHANNEL A(0400)  PASS  1,     0 TOTAL ERR(S)
    DIML4 DONE.
```

--> indicates operator entry.

---> indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample DIMX4 Console Display

If the drive on the channel in question contains the T&V System diskette, respond with N followed by a carriage return.

The console then displays:

WANT TO RUN READ-ONLY TEST (Y OR N) ?:

The operator should respond with N followed by a carriage return.

The console then displays:

IS A SCRATCH PACK AVAILABLE (Y OR N)?:

The operator should respond with Y followed by a carriage return.

The console then displays the following message:

MOUNT SCRATCH PACK. TYPE "GO" WHEN READY.

CAUTION

The operator should remove the T&V System diskette and replace it with a scratch diskette; then type GO followed by a carriage return.

The console then displays:

CHANNEL (XXXX) HAS A SCRATCH PACK MOUNTED

TEST A(XXXX) WILL CONTRIBUTE 3 MINUTE(S) TO TOTAL RUN TIME PER PASS.

When prompted by the program, repeat the previous steps for the remaining drives to be tested. From this point, the test is automatically run on all drives present. As each unit completes its test sequence, a pass message is displayed:

DIMX4 CHANNEL A(XXXX) PASS X, X TOTAL ERR(S)

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

ATTN-KEY
DIMS4 DONE
or
DIML4 DONE

The operator should remove the scratch diskette, and replace it with the T&V System diskette before attempting to run another T&V program.

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

DLCX1
Dual Line Communications Processor T&V Procedure

This T&V program verifies proper operation of all active channels on the Dual Line Communications Processor (DLCP). The currently active channels are automatically determined by the T&V program. The program requires a minimum of 32K words of main memory and includes tests for the DLCP memory and instruction set (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
DLCX1 -A
```

NOTE

> In display messages, DLCX1 may appear as DLCS1 where DLCS1 is the short address form.

The program runs for approximately 1 minute and then displays the DLCP hardware model and firmware revision numbers. One complete pass through the program takes from 3 to 5 minutes, depending on the number of active channels per controller.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
DLCS1 DONE
```

```
     C?
---> DLCX1 -A
     DLCP/DHLC TEST DLCS1 REV No.  Date
     ZV$LIB REV No.
     MEMORY LOW 0000459B
     DLCP/DHLC BASE CHANNEL ADDRESS(ES) = 1C00  2C00


     TESTING STARTS DLCP ADRESS = 1C00
     PROGRAM MAY RUN UP TO FIVE MINUTES BEFORE REPORTING
      FIRMWARE REV       No.
      HARDWARE MODEL     0


--->DLCS1 PASS:    1
     CHANNELS     =  1C00 1C80
     TOTAL ERRS   =     0    0


     TESTING STARTS DLCP ADDRESS = 2C00
     PROGRAM MAY RUN UP TO FIVE MINUTES BEFORE REPORTING
      FIRMWARE REV       No.
      HARDWARE MODEL     0


--->DLCS1 PASS:    1
     CHANNELS   =    2C00  2C80
     TOTAL ERR  =       0     0


     TESTING STARTS DLCP ADDRESS = 1C00
     PROGRAM MAY RUN UP TO FIVE MINUTES BEFORE REPORTING
     *ATTN-KEY*


     DLCS1 DONE
```

---> indicates operator entry.

---> indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample DLCX1 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

DLCX2
Communications Line Interface
T&V Procedure

This T&V program verifies proper operation and the functional capabilities of the communications line interface. To ensure the integrity of the Dual Line Communications Processor (DLCP), the operator should run program DLCX1 before attempting to run this T&V program (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

DLCX2 -A

NOTE

In display messages, DLCX2 may appear as DLCS2 where DLCS2 is the short address form.

Once the program is invoked, testing proceeds without further operator intervention. Testing begins with a console display that identifies the DLCP channels to be tested. The program runs for about 1 minute before displaying:

FIRMWARE REV/HARDWARE MODEL XX/YY

where:

- XX specifies the firmware revision number.
- YY specifies the hardware model number.

A single pass through the program takes approximately 2 minutes per controller.

```
     C?
---->DLCX2 -A
     DLCP TEST DLCS2 REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  00004F0B
     RUN CONTROLLER TEST DLCS1 PRIOR TO THIS TEST
     CHANNEL(S) 1C00  1C80  2C00  2C80

     PROGRAM WILL RUN UP TO 2 MINUTES BEFORE REPORTING

     TESTING STARTS DLCP ADD = 1C00  1C80

     FIRMWARE REV/HARDWARE MODEL No.
     SYNCHRONOUS LINE     0 SPEED IS 1200
     SYNCHRONOUS LINE     1 SPEED IS 1200
--->  DLCS2 PASS      1
      CHANNEL(S)    1C00  1C80
      ERR TOTAL        0     0
     PROGRAM WILL RUN UP TO 2 MINUTES BEFORE REPORTING

     TESTING STARTS DLCP ADD = 2C00  2C80

     FIRMWARE REV/HARDWARE MODEL No.
--->  DLCS2 PASS      1
      CHANNEL(S)    2C00  2C80
      ERR TOTAL        0     0
     PROGRAM WILL RUN UP TO 2 MINUTES BEFORE REPORTING

     TESTING STARTS DLCP ADD = 1C00  1C80
     *ATTN-KEY*

     DLCS2 DONE
```

---->indicates operator entry.

--->indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample DLCX2 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
DLCS2 DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

KCMX3
Console T&V Procedure

This T&V program verifies proper operation of the console subsystems. It provides a first level of diagnosis when failures are detected. The performance of the entire subsystem can be successfully demonstrated with one pass through the test (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
KCMX3 -A
```

NOTE

In display messages, KCMX3 may appear as KCMS3 or KCML3, where:

- KCMS3 is the short address form.
- KCML3 is the long address form.

The console displays the program name, report date, program revision number, and the system memory size.

The program then enters TEST 1, which consists of the controller/adapter functions test, loopback test, and interrupt test. No operator intervention is required for these three tests. When prompted by the program, the operator should enter the letter A from the console keyboard. The letter entered is displayed on the console.

The console then displays:

```
TEST 2  PRINT TEST
VERIFY LEFT AND RIGHT MARGINS AND THE OVERALL APPEARANCE
```

The operator should refer to Figure 2 and verify that the expected characters are present, slanting alignment is neat and orderly, left and right margins are even, and overall appearance is satisfactory.

```
    C?
--->KCMX3 -A
    CONSOLE TEST  KCMS3  REV No.  Date
    ZV$LIB  REV No.
    MEMORY LOW  00004933

    TEST 1  CONTROLLER/ADAPTER FUNCTIONS TEST
    LOOPBACK TEST
    INTERRUPT TEST (APPROX. 30 SEC.)
    DO NOT HIT "BREAK" OR ANY OTHER KEYS DURING THIS TEST
    VERIFY FOLLOWING CONSOLE PARAMETERS
             CHANNEL :    500
        FIRMWARE REV :     XX
          CONSOLE ID :   201A
           BAUD RATE :   1200
       CHAR PER LINE :     80
    EXPECTED CONSOLE ID:
      CRT = 201A     HISI = 201C
      ASR33 = 2019   KSR33 = 2018
    BAUD RATE MAY VARY +/- 2% OF THE ACTUAL VALUE
    ERROR(S) WILL BE DISPLAYED ON CONSOLE  580
    RESPOND TO ALL REQUESTS WITHIN 30 SECONDS
    TYPE LETTER A
--->A
      IT WAS A
    TEST 2  PRINT TEST
    VERIFY LEFT AND RIGHT MARGINS AND THE OVERALL APPEARANCE
                          (see Figure 2 for sample display)

    TEST 3, INPUT ANY CHARACTER(S)  (MAX. 132) WITHIN 2 MINUTES
    THEN HIT RETURN
--->ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
    ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
    CHAR COUNT = 0036

    TEST 4  ANSWER BACK
    ANSWER BACK FEATURE NOT PRESENT
    n
    IGNORE THE ABOVE CHARACTER

    TEST 6 NULL BYTES FOLLOW DONE
    OBSERVE ONE SPACE BETWEEN "FOLLOW" AND "DONE"
      END OF TEST
-->KCMS3    CHANNEL =     500     PASS =     1        0 ERROR(S)
    *ATTN-KEY*
    KCMS3 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample KCMX3 Console Display

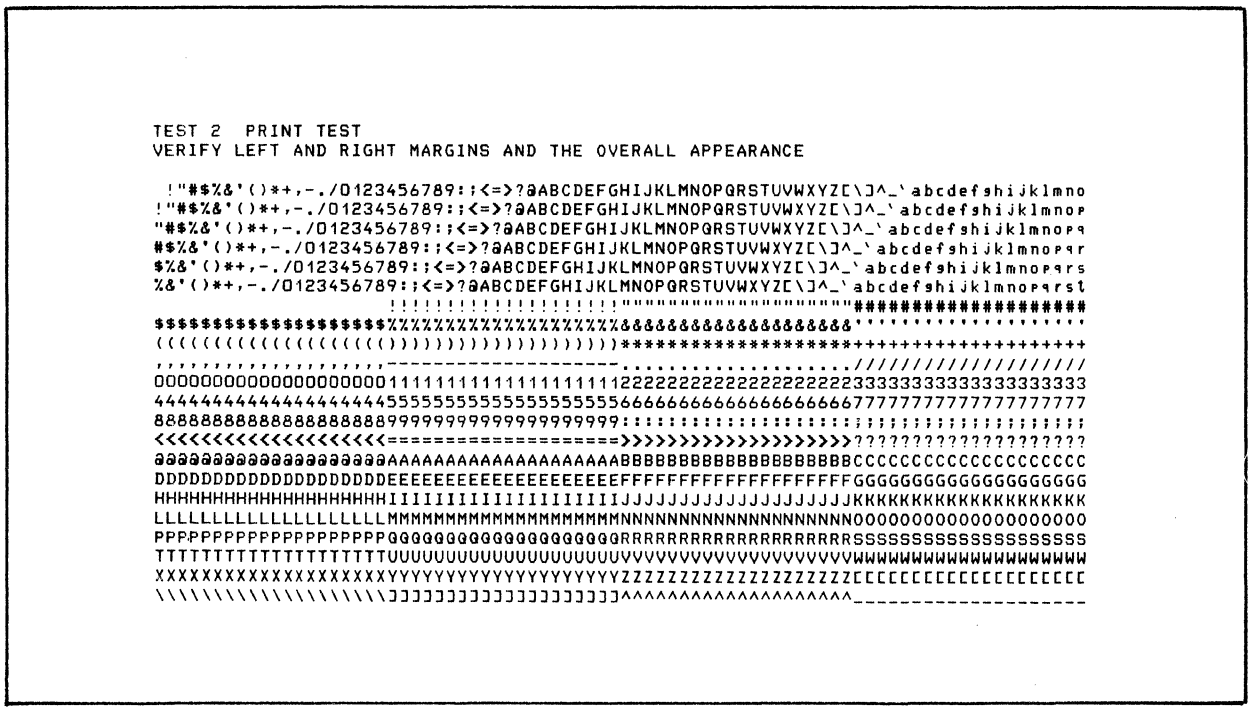


Figure 2 Sample KCMX3 Print Test Display

The next part of the program begins with the following console display:

TEST 3, INPUT ANY CHARACTER(S) (MAX. 132) WITHIN 2 MINUTES
THEN HIT RETURN

The operator enters:

ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890

followed by a carriage return. Verify that the line is repeated exactly as entered and that the character count is correct. The console then displays the status of the Answer Back feature. Just after the Answer Back status is displayed, the operator should observe that the character n is displayed.

In the next test (TEST 6), verify that exactly one space exists between the words FOLLOW and DONE.

The test now concludes with the following console display:

KCMX3 CHANNEL = XXX PASS = X X ERROR(S)

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
KCMS3 DONE
    or
KCML3 DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

MLCX1
Multiline Communications Processor T&V Procedure

This T&V program verifies the proper operation of the Multiline Communication Processor (MLCP). The program can test up to 20 MLCP units configured into any one system. Minimum operator intervention is required to execute this program (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
MLCX1 -A
```

NOTE

In display messages, MLCX1 may appear as MLCS1 or MLCL1, where:

- MLCS1 is the short address form.
- MLCL1 is the long address form.

Testing begins with the console display showing the program revision level, its report date, and system memory size. The MLCP on the lowest channel is tested first. Testing continues from here to the next higher channel until all the MLCPs are tested. At the end of testing, a pass message is displayed on the console.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays the following messages:

```
*ATTN-KEY*
MLCS1 DONE
    or
MLCL1 DONE
```

```
     C?
--->MLCX1 -A
     MLCP TEST MLCS1  REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW      00003F0A
     MLCP BASE CHANNEL ADDRESS(ES)  0C00  1C00
     TESTING STARTS MLCP ADD = 0C00
     PROGRAM MAY RUN UP TO FIVE MINUTES BEFORE REPORTING
     FIRMWARE REV No.
-->MLCS1 PASS:  1
     CHANNELS   = C00  E00  E80  F0C  F80
     TOTAL ERRS =   0    0    0    0    0
     *ATTN-KEY*
     MLCS1 DONE
```

--->indicates operator entry.

-->indicates successful completion of a single pass through the program.

Figure 1 Sample MLCX1 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

MSUX2
Mass Storage Unit
T&V Procedure

This program tests the mass storage controller options and device adapters (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
MSUX2 -A
```

The program begins testing without further operator intervention. Each mass storage device is tested in turn, starting with the lowest channel. Upon completion of each pass, the program displays one of the following messages:

```
MSUX2 CHANNEL T(XXXX)S   PASS   Y  Z  TOTAL ERRORS
MSUX2 CHANNEL Q(XXXX)F   PASS   Y  Z  TOTAL ERRORS
MSUX2 CHANNEL R(XXXX)R   PASS   Y  Z  TOTAL ERRORS
```

where:

XXXX = channel of device under test.
Y = number of passes completed.
Z = number of errors detected.
T, Q, and R are test modes.
S, F, and R are device media types.

A Summary Report is also displayed after all the devices in the system are tested.

OPERATOR INTERVENTION

The program continues to loop and display pass messages until it is interrupted by the operator. The test can be terminated at any time by pressing the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
MSUX2 DONE
```

```
     C?
---> MSUX2 -A
     SMD/CMD TEST MSUX2 REV No.  Date
     ZV$LIB REV No.
     MEMORY LOW  0000608B
     CHANNEL(S) (   1000  1080  1800  1880 )
     FIRMWARE REV:  No.
      CHANNEL (1000) NOT READY
     MODE T(1000)S MAY CONTRIBUTE UP TO    1 MINUTE(S) TO TOTAL PASS TIME
---> MSUX2 CHANNEL T(1000)S   PASS     1     0  TOTAL ERRORS
     FIRMWARE REV:  No.
      CHANNEL (1080) CARTRIDGE (FIXED PRESENT) MODULE
     MODE Q(1080)F MAY CONTRIBUTE UP TO     4 MINUTE(S) TO TOTAL PASS TIME
      CHANNEL (1080)F SCRATCH PACK MOUNTED
---> MSUX2 CHANNEL Q(1080)F   PASS     1     0 TOTAL ERRORS DONE
     MODE Q(1080)R MAY CONTRIBUTE UP TO     4 MINUTE(S) TO TOTAL PASS TIME
      CHANNEL (1080)R DIAGNOSTIC PACK MOUNTED
---> MSUX2 CHANNEL Q(1080)R   PASS     1     0  TOTAL ERRORS
     FIRMWARE REV:  No.
      MODE T(1800)S MAY CONTRIBUTE UP TO    1 MINUTE(S) TO TOTAL PASS TIME
---> MSUX2 CHANNEL T(1800)S   PASS     1     0  TOTAL ERRORS
     FIRMWARE REV:  No.
      CHANNEL (1880) STORAGE MODULE WRITE PROTECTED
     MODE R(1800)S MAY CONTRIBUTE UP TO     1 MINUTE(S) TO TOTAL PASS TIME
      CHANNEL (1800)S SCRATCH PACK MOUNTED
     MSUX2 CHANNEL R(1800)S   PASS     1     0  TOTAL ERRORS
     MSUX2 CHANNEL T(1000)S   PASS     2     0  TOTAL ERRORS
     MSUX2 CHANNEL Q(1080)R   PASS     2     0  TOTAL ERRORS
     MSUX2 CHANNEL R(1880)S   PASS     2     0  TOTAL ERRORS
     *ATTN-KEY*

     MSUX2 DONE
```

---> indicates operator entry.

---> indicates successful completion of a single pass through the program.

Figure 1 Sample MSUX2 Console Display

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

MTUX2
7-Track Magnetic Tape Unit
T&V Procedure

This program verifies the proper operation of the 7-Track NRXI (Non-return to Zero Inverted) magnetic tape subsystem (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
MTUX2 -A
```

The program next runs mode Q (Quick mode). Quick mode tests all the magnetic tape drives that are available for testing and that have a tape label of VOL1MTUX2 or VOL1DIAGS. The tests consist of the following:

- Controller Test
- Rewind Test
- Backspace Record Test
- Forward Space Record Test
- Backspace File Test
- Forward Space File Test
- Write File Over Previous File
- Interrupt Logic and Polling Test
- Status Word Test
- Read/Write Tests.

The following message is displayed on the console before testing begins:

```
TESTS SELECTED MAY RUN UP TO XX MINUTES PER
PASS
```

The following end-of-pass message is displayed on the console when the test is completed:

```
MTUX2 CHANNEL Q (1680)  PASS 1  0 TOTAL ERROR(s)   10 HEX FILES
```

```
     C?
---->MTUX2 -A
     7-TRK NRZI MAG TAPE TEST  MTUX2  REV No.   Date
     ZV$LIB  REV. No.
     MEMORY LOW  00009438
     MTU FIRMWARE REV     No.
     CHANNEL  2000  IS READY
     CHANNEL  2080  IS NOT READY
     UNRECOGNIZABLE TAPE ON CHANNEL  2000, OK TO WRITE ON TAPE (Y OR N) ?: Y
     CHANNEL  2080  IS NOT READY.  CAN ONLY TEST CONTROLLER
     WANT TO RUN MODE T (Y OR N) ?: N
     TESTS SELECTED MAY RUN UP TO      5 MINUTES PER PASS.
-->MTUX2 CHANNEL T (2080)  PASS     1     0 ERR(S)

-->MTUX2 CHANNEL Q (2000)   PASS     1     0 ERR(S)     10 HEX FILES

     *ATTN-KEY*

     MTUX2 CHANNEL Q (2000)   PASS     2     0 ERR(S)      0 HEX FILES
     MTUX2 DONE
```

----> indicates operator entry.

--> indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample MTUX2 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
MTUX2 DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

MTUX3
9-Track Magnetic Tape Unit
T&V Procedure

This program verifies the proper operation of the 9-track NRZI (Non-return to Zero Inverted) magnetic tape subsystem (see Figure 1).

OPERATING PROCEDURE

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
MTUX3 -A
```

The program next runs mode Q (Quick mode). Quick mode tests all the magnetic tape drives that are available for testing and that have a tape label of VOL1MTUX3 or VOL1DIAGS. The tests consist of the following:

- Controller Test
- Rewind Test
- Backspace Record Test
- Forward Space Record Test
- Backspace File Test
- Forward Space File Test
- Write File Over Previous File
- Interrupt Logic and Polling Test
- Status Word Test
- Read/Write Tests.

The following message is displayed on the console before testing begins:

```
TESTS SELECTED MAY RUN UP TO XX MINUTES PER
PASS
```

The following end-of-pass message is displayed on the console when the test is completed.

```
MTUX3 CHANNEL Q (1600)  PASS 1   0 TOTAL ERROR(s)   10 HEX FILES
```

```
     C?
---> MTUX3 -A
     9-TRK PE/NRZI MAG TAPE TEST  MTUX3  REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  00007894
     BDC2  FIRMWARE REV    No.
     NRZI  DRIVE ON CHANNEL  1600   IS READY
     NRZI  DRIVE ON CHANNEL  1680   IS NOT READY
     NRZI  DRIVE ON CHANNEL  1700   IS NOT READY
     NRZI  DRIVE ON CHANNEL  1780   IS NOT READY
     CHANNEL 1600  HAS A SCRATCH TAPE MOUNTED.
     CHANNEL 1680  IS NOT READY.  CAN ONLY TEST CONTROLLER
---> WANT TO RUN MODE T (Y OR N) ?: Y
     CHANNEL 1700  IS NOT READY.  CAN ONLY TEST CONTROLLER
---> WANT TO RUN MODE T (Y OR N) ?: Y
     TESTS SELECTED MAY RUN UP TO      5  MINUTES PER PASS
-->  MTUX3 CHANNEL T(1680)  PASS      1     0 ERR(S)

-->  MTUX3 CHANNEL T(1700)   PASS     1     0 ERR(S)

---- MTUX3 CHANNEL T(1780)   PASS     1     0 ERR(S)

--->  MTUX3 CHANNEL T(1600)   PASS     1     0 ERR(S)    10 HEX FILES

     *ATTN-KEY*

     MTUX3 CHANNEL Q(1600)   PASS     2     0 ERR(S)     0 HEX FILES
     MTUX3 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program for the channel being tested.

Figure 1 Sample MTUX3 Console Display

OPERATOR INTERVENTION

The program continues to loop and display pass messages until it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*
MTUX3 DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

PRMX3
Line/Serial Printer
T&V Procedure

This program automatically verifies proper operation of the printer subsystems. The use of obvious data patterns and clear text allows the operator to easily verify the test results. The operator may also request a line of data to be printed.

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
PRMX3 -A
```

NOTE

In display messages, PRMX3 may appear as PRMS3 or PRML3, where:

- PRMS3 is the short address form.
- PRML3 is the long address form.

When the program is invoked, testing begins without operator intervention, performing the following tests automatically:

- Electronic Test
- Ripple Pattern Test
- VFU Test (if VFU printer)
- Line Advance Test
- Clear Message Test
- Print all E's Test
- Print One Line Each Character
- Print Column Number Test
- Print Parallelogram
- Residual Space Test
- Speed Test.

After one pass is completed, the console displays the following message (see Figure 1):

```
PRMX3  CHANNEL = XXXX   PASS YY   ZZ TOTAL ERRORS
```

where:

- XXXX specifies the channel number.
- YY specifies the number of passes made.
- ZZ specifies the total number of errors in the program.

```
    C?
--> PRMX3 -A
    PRINTER TEST PRMS3 REV No. Date
    ZV$LIB REV No.
    MEMORY LOW  00003CEB
    FIRMWARE REVISION  No.
    CHANNEL 1780      PRINTER READY
    NO VFU TEST FOR NON-VFU PRINTER
         1 CHAR,   401 LPM
        36 CHAR,   340 LPM    Speed Test
        96 CHAR,   326 LPM
       136 CHAR,   323 LPM
---> PRMS3 CHANNEL -  1780   PASS      1      0  TOTAL ERRORS
    *ATTN-KEY*

    PRMS3 DONE
```

--> indicates operator entry.

---> indicates successful completion of a single pass through the program.

Figure 1 Sample PRMX3 Console Display

TEST DESCRIPTIONS

The printer performs the following tests:

Ripple Pattern Test

When printing the Ripple Pattern Test, line 1 starts with a space and proceeds up to 96 characters. Each of the remaining lines is shifted one position to the left of the previous line (see Figure 2).

Line Advance Test

For each pass of the Line Advance Test, the printer advances the paper a specified number of lines (up to 15 lines). The test begins by slewing the paper to head-of-form, printing the head-of-form message, and advancing the paper to the number of lines specified (see Figure 3).

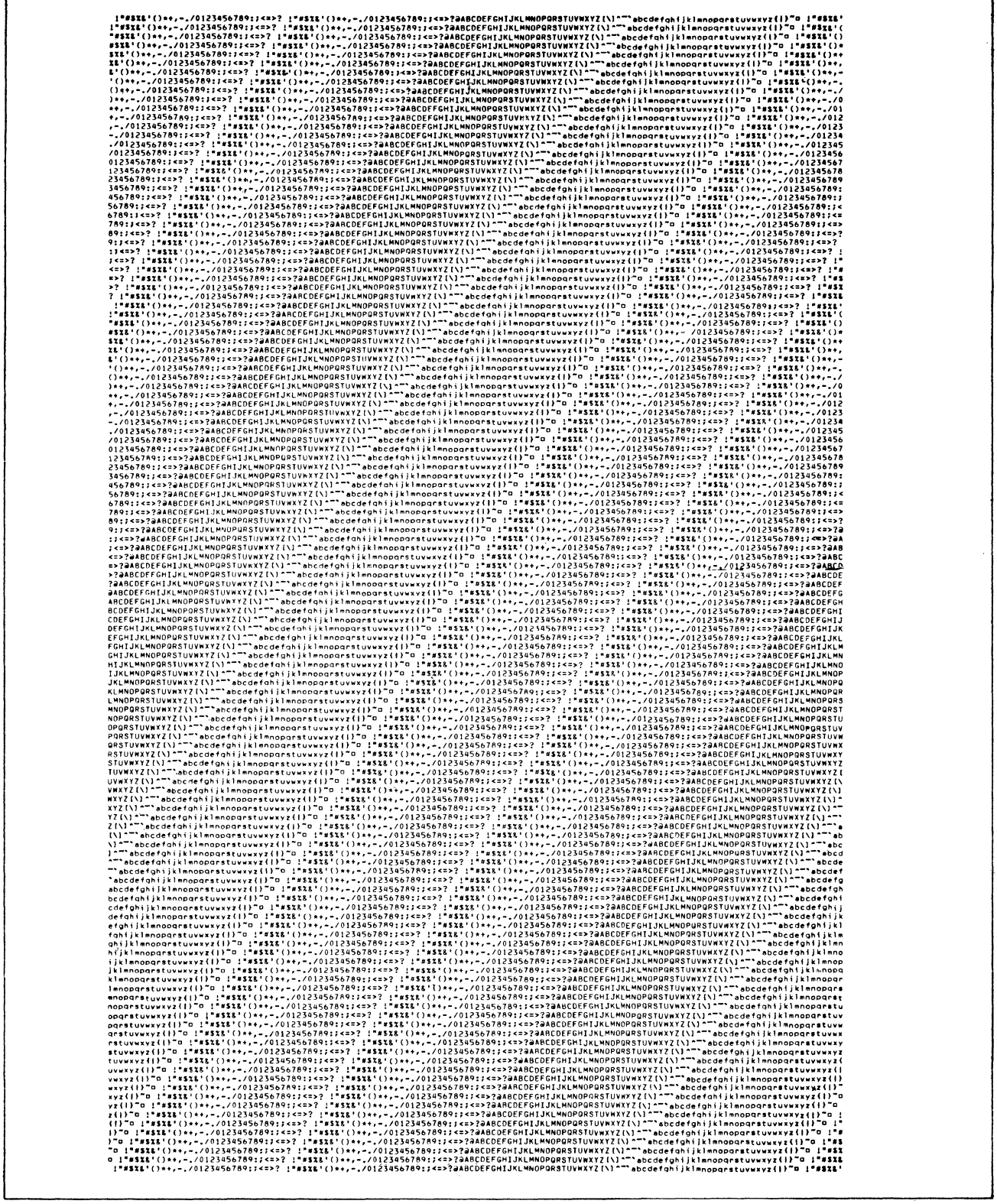


Figure 2 Sample of Ripple Pattern Test

```
HEAD-OF-FORM FOR LINES ADVANCE
 ADVANCED  1
ADVANCED  2

ADVANCED  3

ADVANCED  4

ADVANCED  5

ADVANCED  6

ADVANCED  7

ADVANCED  8

ADVANCED  9

ADVANCED 10

ADVANCED 11     END-OF-FORM

ADVANCED 12

ADVANCED 13

ADVANCED 14

ADVANCED 15
```

Figure 3 Sample of Line Advance Test

Clear Message Test

For each pass of the Clear Message Test, a canned or designated message is displayed as shown in Figure 4.

```
GO PLACIDLY AMID THE NOISE AND HASTE, AND REMEMBER WHAT PEACE THERE MAY BE IN SILENCE. AS
FAR AS POSSIBLE WITHOUT SURRENDER BE ON GOOD TERMS WITH ALL PERSONS. SPEAK YOUR TRUTH QUIETLY
AND CLEARLY! AND LISTEN TO OTHERS, EVEN THE DULL AND IGNORANT! THEY DO HAVE THEIR STORY.

GO PLACIDLY AMID THE NOISE AND HASTE, AND REMEMBER WHAT PEACE THERE MAY BE IN SILENCE. AS
FAR AS POSSIBLE WITHOUT SURRENDER BE ON GOOD TERMS WITH ALL PERSONS. SPEAK YOUR TRUTH QUIETLY
AND CLEARLY! AND LISTEN TO OTHERS, EVEN THE DULL AND IGNORANT! THEY DO HAVE THEIR STORY.

GO PLACIDLY AMID THE NOISE AND HASTE, AND REMEMBER WHAT PEACE THERE MAY BE IN SILENCE. AS
FAR AS POSSIBLE WITHOUT SURRENDER BE ON GOOD TERMS WITH ALL PERSONS. SPEAK YOUR TRUTH QUIETLY
AND CLEARLY! AND LISTEN TO OTHERS, EVEN THE DULL AND IGNORANT! THEY DO HAVE THEIR STORY.

GO PLACIDLY AMID THE NOISE AND HASTE, AND REMEMBER WHAT PEACE THERE MAY BE IN SILENCE. AS
FAR AS POSSIBLE WITHOUT SURRENDER BE ON GOOD TERMS WITH ALL PERSONS. SPEAK YOUR TRUTH QUIETLY
AND CLEARLY! AND LISTEN TO OTHERS, EVEN THE DULL AND IGNORANT! THEY DO HAVE THEIR STORY.

GO PLACIDLY AMID THE NOISE AND HASTE, AND REMEMBER WHAT PEACE THERE MAY BE IN SILENCE. AS
FAR AS POSSIBLE WITHOUT SURRENDER BE ON GOOD TERMS WITH ALL PERSONS. SPEAK YOUR TRUTH QUIETLY
AND CLEARLY! AND LISTEN TO OTHERS, EVEN THE DULL AND IGNORANT! THEY DO HAVE THEIR STORY.
```

Figure 4 Sample of Clear Message Test

Print All E's Test

For each pass of the Print All E's Test, a line of E's is printed for a total of 128 lines (see Figure 5).

```
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
```

Figure 5 Sample of Print All E's Test

Print One Line of Each Character Test

For each pass of the Print One Line of Each Character Test, a line that consists entirely of the same character is printed for all of the possible printable characters (see Figure 6).

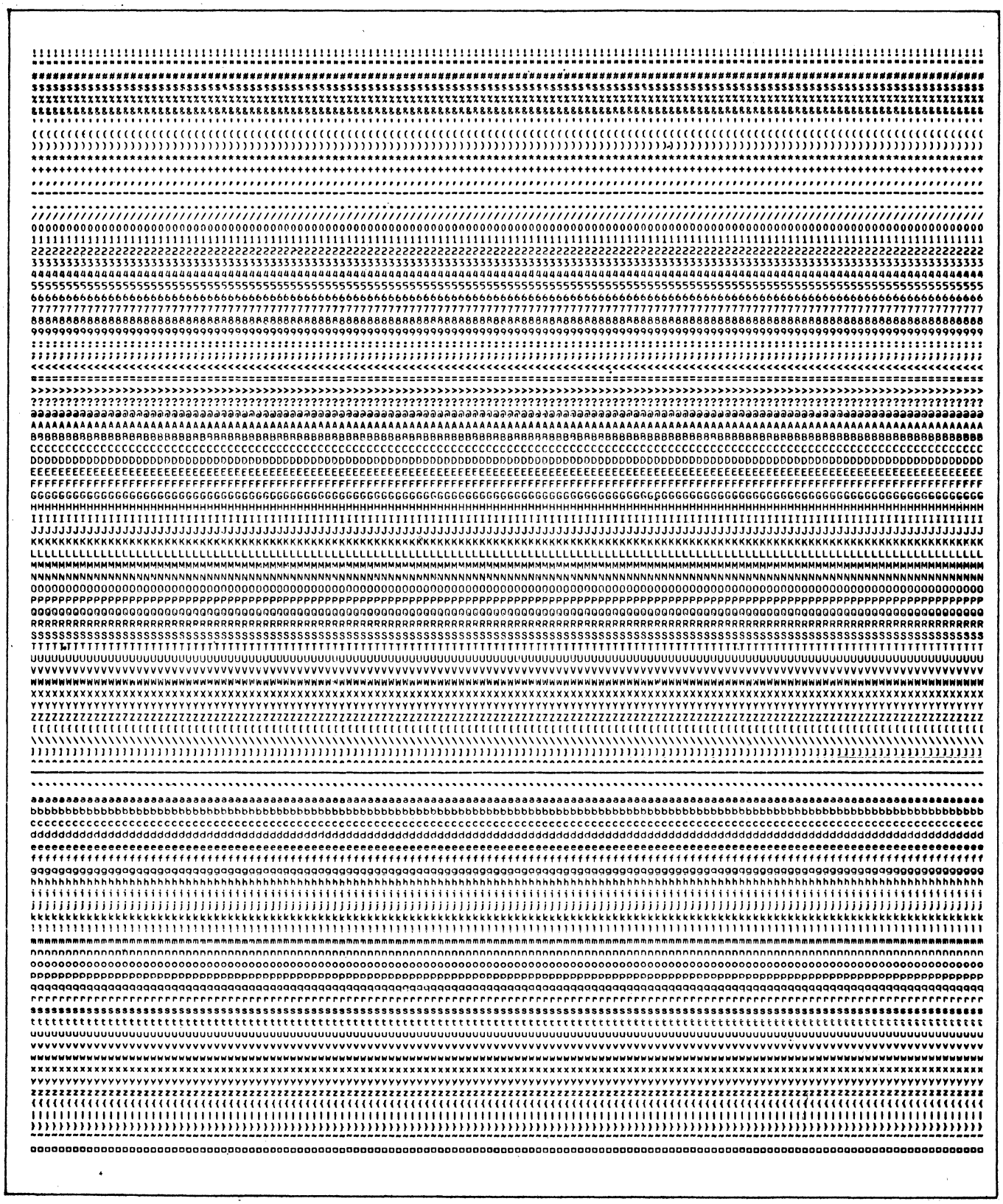


Figure 6 Sample of One Line of Each Character Test

Print Column Number Test

For each pass of the Print Column Number Test, the column numbers are printed across the page in three consecutive lines. Reading vertically, the numbers should start with 001 and end with 132 or 136, depending upon printer style (see Figure 7).

```
0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456

0000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001111111111111111111111111111111111111
0000000001111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111111122222222223333333
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456
```

Figure 7 Sample of Print Column Number Test

Print Parallelogram Test

For each pass of the Print Parallelogram Test, the printer displays a parallelogram of asterisks down the page, starting with a line of blanks and one trailing asterisk. The second line consists of blanks and two trailing asterisks and so on, until the middle line, which is a solid line of asterisks. After the middle line, the pattern is reversed as shown in Figure 8.

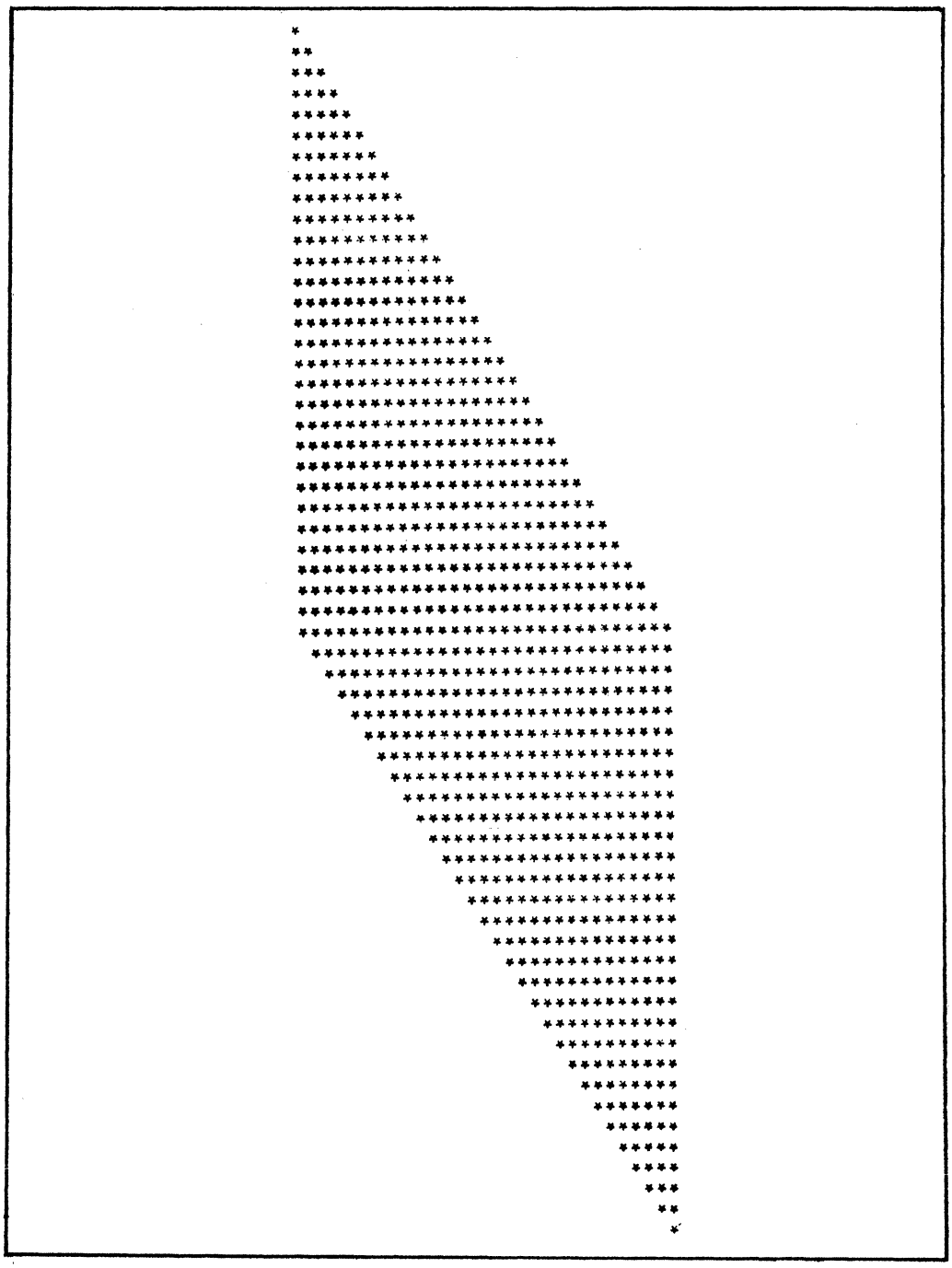


Figure 8 Sample of Print Parallelogram Test

Residual Space Test

For each pass of the Residual Space Test, the printer skips 15 lines. The operator should verify that there are 14 blank lines between the two messages as shown in Figure 9.

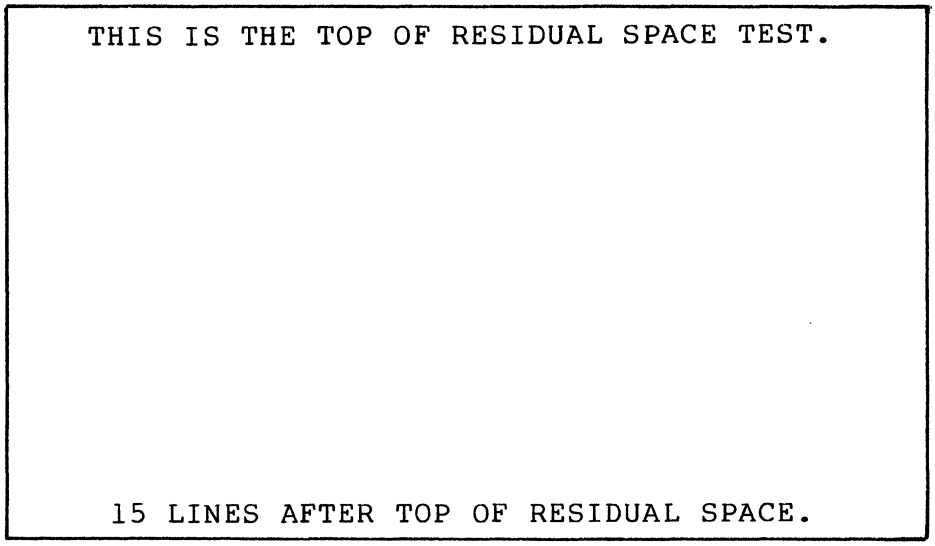


Figure 9 Sample of Residual Space Test

Speed Test

For each pass of the Speed Test, the printing rate in lines per minute is determined by the time required to print 20 lines each of a single character, 36 alpha and numeric characters, all 96 possible characters, and an entire line of characters (see Figure 10).

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays the following messages:

ATTN-KEY
PRMS3 DONE
or
PRML3 DONE

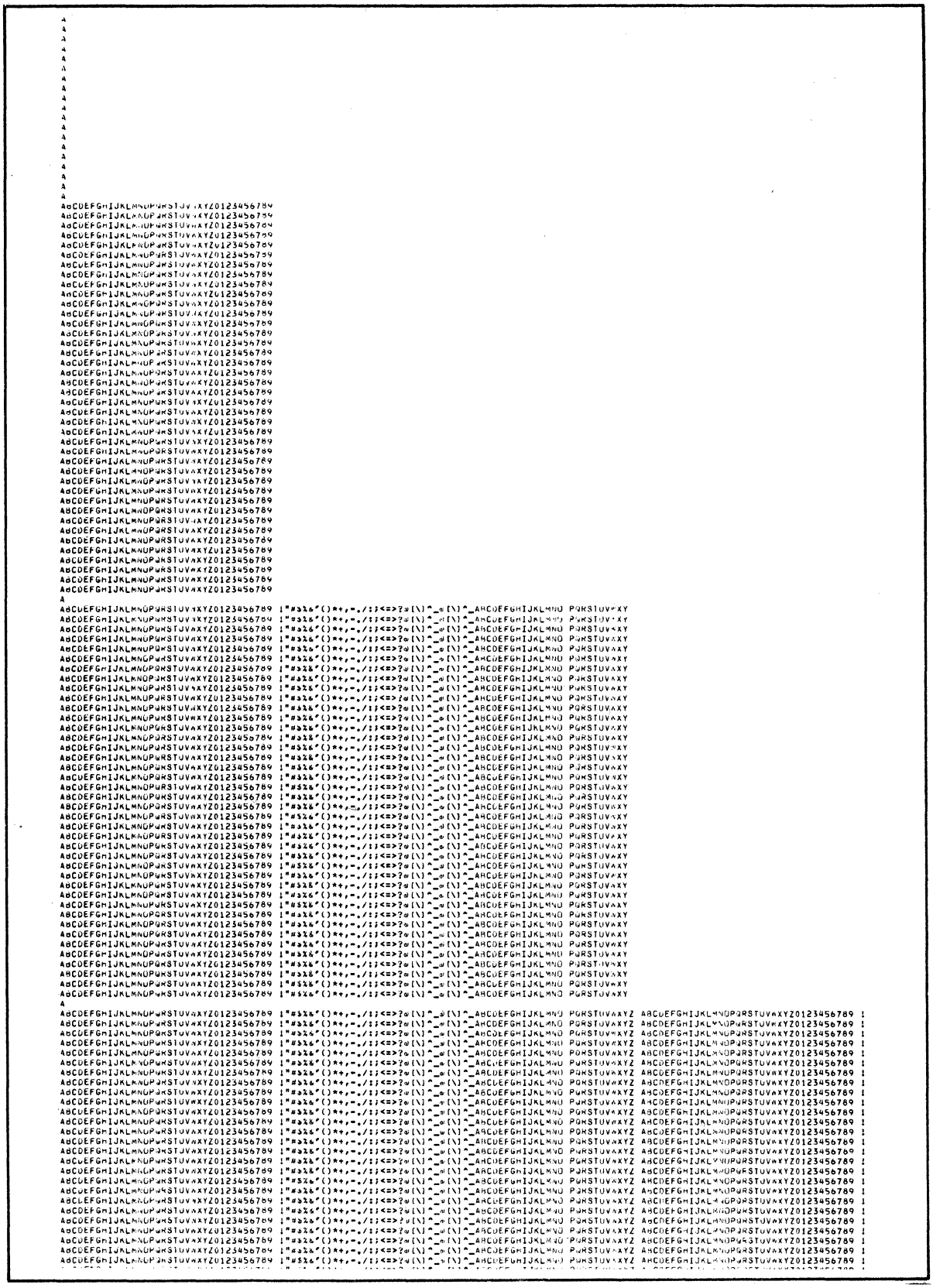


Figure 10 Sample of Speed Test

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

PRUX1
Communication Printer
T&V Procedure

This program verifies proper operation of a printer when connected to the Multiline Communications Line Controller (MLCP) or the Dual Line Communications Processor (DLCP). The printer must be connected to either of the above by an Asynchronous Communications Line Adapter (ACLA) or a Synchronous Communications Line Adapter (SCLA). See Figure 1 for a sample console display of the messages in asynchronous operation.

OPERATING PROCEDURES

The appropriate T&V programs (refer to Table 3-1) should be run before this program to ensure that the controller is functioning properly.

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
PRUX1 -A
```

The console displays:

```
CHANNEL NUMBER ?:
```

The operator should enter the channel number of the printer, followed by a carriage return.

For asynchronous operation only, the console dispays:

```
TERM BAUD RATE (1200) ?:
PARITY (E) ?:
```

The operator should enter the four digit hexadecimal baud rate, followed by a carriage return.

The operator should enter an O (odd) or an E (even) to the parity question, followed by a carriage return.

```
     C?
---->PRUX1 -A
     COMMUNICATIONS LINE PRINTERS T&V  PRUX1 REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  00006726
---->HELP (Y FOR YES; N FOR NO HELP)?:  N
     RUN CONTROLLER TEST DLCS1 AND ADAPTER TEST DLCS2 PRIOR TO THIS TEST
---->CHANNEL NUMBER    ?:  FF00
---->TERM BAUD RATE (1200) ?:1200
---->PARITY (E)        ?:E

     SELECT ONE OF THE FOLLOWING PRINTER TYPES

     TYPE    FOR
      1      PRU/TWU 1003/05
      2      VIP 7714/16/17
      3      PRU/TWU 1007
      4      PRU 9001/02
      5      PRU/TWO 1001
      6      OTHER MODEL
      7      VIP7800 SERIES BUFFERED PRINTER

---->PRINTER TYPE ?:5

      T1   PRINT 10 LINES OF RIPPLE PATTERN

      T2   PRINT 10 LINES OF ALL E'S

      T3   PRINT ONE LINE OF EACH %&'()*+,-.

      T4   PRINT A PARALLELOGRAM

      T5   PRINT A MESSAGE THREE TIMES

     BASIC TESTS COMPLETED

-->-->PRUX1  PASS     1 CHANNEL = FF00
     *ATTN-KEY*
     PRUX1 DONE
```

---->indicates operator entry.

-->-->indicates successful completion of a single pass through the program.

Figure 1 Sample PRUX1 Console Display (Synchronous Operation)

For synchronous operation only, the following messages are displayed instead of the baud rate and parity messages:

```
TERM POLL (0 TO 31) ?:
MODEM (Y OR N) ?:
```

The operator should enter the poll address, followed by a carriage return and then enter Y if a modem is present or N if not present, followed again by a carriage return.

The following messages are displayed next on the console (nonbuffered printer only):

```
SELECT ONE OF THE FOLLOWING PRINTER TYPES

TYPE                    FOR

 1     PRU/TWU 1003/05
 2     VIP 7714/16/17
 3     PRU/TWU 1007
 4     PRU 9001/02
 5     PRU/TWU 1001
 6     OTHER MODEL
 7     VIP7800 SERIES BUFFERED PRINTER

 PRINTER TYPE?
```

The operator should enter the printer type followed by a carriage return. See the console screen for verification instructions.

OPERATOR INTERVENTION

The following message is displayed upon completion of each pass of the program:

```
PRUX1 PASS # CHANNEL = XXXX
```

where:

- # specifies the number of passes executed.
- XXXX specifies the channel number of the printer.

NOTE

The program can be terminated only from the console. The operator may press the Break (BRK) key to interrupt testing. The following message is displayed:

```
*ATTN-KEY*
PRUX1 DONE
```

ERROR REPORTING

Errors detected during the program may be displayed in various forms. One example of an error message is as follows:

```
PRINTER BREAK DETECTED
```

Another type of error message is displayed in the following format:

```
EM  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

PSSX1
Power Failure T&V Procedure

This T&V program verifies the proper operation of the power supply and the memory save subsystem with regard to the power failure interrupt and auto-restart features. The real-time clock interrupt is also tested. A memory save option is required to execute the T&V program. Two addressing modes are used, depending upon memory size; i.e., short address form for memories up to 64K words and long address form for memories over 64K words (see Figure 1).

OPERATING PROCEDURES

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
PSSX1 -A
```

NOTE

In display mesages, PSSX1 may appear as PSSS1 or PSSL1, where:

- PSSS1 is the short address form.
- PSSL1 is the long address form.

The console then displays the program name, report date, program revision number, and the system memory size.

The console then displays:

```
HELP (Y or N) ?:
```

```
    C?
--->PSSS1 -A

    BBU TEST  PSSS1 REV No. Date
    ZV$LIB  REV No.
    MEMORY LOW  00003B04
--->HELP (Y OR N) ?: N

                * OPERATING INSTRUCTIONS *
    THE PROGRAM IS READY FOR THE USER TO PROVIDE A
    POWER SHUTOFF BY EXECUTING THE FOLLOWING STEPS:

    1.  IF A CONTROL PANEL SECURITY KEY IS PRESENT, IT MUST BE
        TURNED (COUNTER CLOCKWISE) TO THE OFF POSITION.
        IF IT IS NOT IN THE LOCKED POSITION, THE AUTO-RESTART
        FEATURE IS DISABLED AND THE PROGRAM WILL HALT AT
        LOCATION ZERO.  THE MINI CONTROL PANEL HAS NO KEY
        AND IS CONSIDERED TO ALWAYS BE IN THE LOCKED POSITION.
--->PRINT MORE (Y, N OR R-REST) ?: R
    2.  SWITCH THE CONTROL PANEL SWITCH TO THE OFF POSITION.
        POWER MAY BE RESTORED IMMEDIATELY.
        THE CONSOLE WILL THEN DISPLAY:
        "PSSX1:  PASS **01"
        "READY FOR THE NEXT POWER SHUTOFF"
        THIS SIGNIFIES THAT A SINGLE PASS HAS BEEN EXECUTED
        SUCCESSFULLY AND THAT ANOTHER PASS IS READY TO BE EXECUTED.
        TO EXECUTE THE NEXT PASS, REPEAT STEPS 1 AND 2.
        MULTIPLE PASSES SHOULD BE EXECUTED TO TEST THOROUGHLY.

    TO EXIT THE TESTING LOOP, DEPRESS THE BREAK KEY.
    THE CONSOLE WILL THEN DISPLAY:
    "*ATTN-KEY*"
    "ACTION (X = EXIT, I = RESTART, C = CONTINUE) ? :
    TYPE "X" AND A CARRIAGE RETURN.
    MESSAGE "PSSX1: DONE" WILL BE DISPLAYED
    AND CONTROL RETURNED TO THE SYSTEM.

    YOU ARE NOW READY FOR A POWER SHUTOFF.

-->PSSS1 : PASS **01
     READY FOR THE NEXT POWER SHUTOFF

    PSSS1 : PASS **02
     READY FOR THE NEXT POWER SHUTOFF

    PSSS1 : PASS **03
     READY FOR THE NEXT POWER SHUTOFF

    *ATTN-KEY*

    ACTION (X = EXIT, I = RESTART, C = CONTINUE) ?:X
    PSSS1 : DONE
```

--->indicates operator entry.

-->indicates successful completion of a single pass through the program.

Figure 1 Sample PSSX1 Console Display

The operator should respond with N followed by a carriage return.

The console then displays step 1 of the Operating Instructions followed by this message:

PRINT MORE (Y, N, OR R-REST) ?:

The operator should respond by executing step 1 of the Operating Instructions. Then the operator should enter R, followed by a carriage return.

The console then displays step 2 of the Operating Instructions, terminated by the following message:

YOU ARE NOW READY FOR A POWER SHUTOFF

The operator should respond by executing step 2 of the Operating Instructions.

When a single pass of the test is completed, the following message is displayed:

```
PSSX1 : PASS **01
 READY FOR THE NEXT POWER SHUTOFF
```

OPERATOR INTERVENTION

The program continues to loop and display pass messages until either an error is detected or it is interrupted by the operator. To terminate testing, press the console Break (BRK) key. The console then displays:

```
*ATTN-KEY*

ACTION (X = EXIT, I = RESTART, C = CONTINUE) ?:
```

The operator should enter X followed by a carriage return. The following message is displayed:

```
PSSS1 : DONE
   or
PSSL1 : DONE
```

ERROR REPORTING

Errors detected by the program are displayed in the following format:

ERR ERROR MESSAGE

Report the entire message to the Service Center exactly as displayed.

SYSX1
Bus Exerciser T&V Procedure

The Bus Exerciser was developed for use as a tool to test the interaction of all the controllers on a given system by simultaneously running all units. If a problem exists that the T&Vs did not find, the Bus Exerciser can be invoked. Testing is automatic and minimum operator intervention is required.

OPERATING PROCEDURES

Before invoking the program, the user should prepare the system as follows:

- If a printer is present, make it ready.
- If a card reader is present, load any size deck of blank cards followed by an End Of File (EOF) card and make it ready.
- When two or more diskette devices are present, make only one device ready (this may be the DIAG diskette or any formatted diskette).
- When two or more types of disk devices are present, (i.e., cartridge, cartridge module, and storage module), make any one device ready (this may be the DIAG pack or any formatted pack).

Once the test begins, a message is displayed that identifies any devices which were not made ready; these devices will not be exercised (see Figure 1).

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
SYSX1 -A
```

At console message:

TEST STARTED

The Exerciser simultaneously tests all hardware controllers present in the system configuration. Approximately 2 minutes is required for one pass of the Exerciser. If errors are not detected, the console displays:

TEST COMPLETE

and the program returns to system control.

```
     C?
---->SYSX1 -A
     SYSTEM EXERCISER REV No.  Date
     WARNING:  CONSULT MODE H HELP FILE BEFORE REPLACING BOARDS
     THIS MODE PERFORMS READ ONLY TESTS
     CARD READER TEST DECK IS ALL BLANKS FOLLOWED BY EOF
     FORMATTED DISK MEDIA ARE REQUIRED
     TEST STARTED
     WARNING:  THE FOLLOWING ARE NOT READY AND WILL NOT BE EXERCISED
        1280   FF00
---->TEST COMPLETE
```

----> indicates operator entry.

---> indicates successful completion of a single pass through the program.

Figure 1 Sample SYSX1 Console Display

OPERATOR INTERVENTION

Pressing the Break (BRK) key during testing results in the following console display:

```
*ATTN-KEY*
TYPE PI, SR, OR UW
```

where one of the following entries may be made followed by a carriage return:

- PI - Program goes to error report phase.
- SR - Resumes test.
- UW - Terminates test and returns to C?.

ERROR REPORTING

Errors detected by the program are displayed in the following format:

```
ERR  ERROR MESSAGE
```

Report the entire error message to the Service Center exactly as displayed.

TCSX1
Terminal T&V Procedure

This T&V program verifies proper operation of terminals connected through the Multiline Communications Processor (MLCP), or the Dual Line Communications Processor (DLCP), and the Asynchronous Multiline Communications Controller (AMLC). The program checks proper operation of the Dual Autocall unit and requires a minimum of 32K words of main memory (see Figure 1). The operator should run controller test MLCX1 and the adapter test DCMX1 prior to this test.

OPERATING PROCEDURE

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
TCSX1 -A
```

NOTE

In display messages, TCSX1 may appear as TCSS1 or TCSL1, where:

- TCSS1 is the short address form.
- TCSL1 is the long address form.

The console next displays:

```
CHANNEL ?:
```

The operator should enter the channel number of the terminal.

The next six messages displayed on the console request parameter values for the terminal under test. At each request, the operator should enter the appropriate response and press the carriage return key.

```
     C
--->TCSX1 -A
     TERMINALS TEST   TCSS1 REV No.  Date
     ***  DO NOT REMOVE LOAD MEDIA DURING THIS TEST  ***
     ZV$LIB REV No.
     MEMORY LOW  00007BFB

     TYPE "CNTRL H" FOR HELP TO ANY QUESTION

--->CHANNEL ?: FE80
     LOADING TCSSM
     RUN CONTROLLER TEST MLCS1 AND ADAPTER TEST DCMS1 PRIOR TO THIS TEST
--->TERMINAL TYPE(7100) ?: TWU1
--->D=DIRECT CONNECT or M=MODEM ?: D
--->CHAR SIZE(5,6,7,8) ?: 8
--->BAUD RATE ?: 300
--->STOP BITS(1 OR 2) ?: 1
--->PARITY(E=EVEN,O=ODD,N=NONE) ?: E

     TEST TT (Transmit to terminal)

     TT: test comp. channel  FE80
-->       1 pass(es)      0 error(s)

     MESSAGE WAS TRANSMITTED - CHECK FOR

     THE QUICK BROWN FOX JUMPS  OVER A LAZY DOG
     the quick brown fox jumps  over a lazy dog
     !"#$%&'()*+,-./0123456789:;(=)?@[\]^_`{|}~

     TEST RT(Receive from terminal)
     TYPE ANY MESSAGE ON TERMINAL AND HIT C/R (Async term)
      or TRANSMIT (Sync term)

     recd:      46 (hex) char. (including C/R or EOT)
     now is the time for all good men to come to the aid of their country
     RT: test comp. channel  FE80
--->      1 pass(es)      0 error(s)

     VERIFY MESSAGE
     THIS MESSAGE IN HEXADECIMAL IS:
       6E6F  7720  6973  2074  6085  2074  696D  7625  2066  7072
       2061  6C6C  2067  7070  6420  6D65  6E20  746F  2063  6F6D
       6520  746F  2074  6865  2041  4944  204F  4620  5448  4549
       5220  4350  4F4E  5452  590D
     Answer question on terminal or hit C/R on console to continue

     *ATTN-KEY*

     TCSS1 DONE
```

---> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample TCSX1 Console Display

The terminal test now begins and displays:

```
TT:  test comp. channel    FE80
     1 pass (es)     0  error(s)
```

At the terminal, verify the correct display as shown in Figure 1.

OPERATOR INTERVENTION

If the operator presses the console Break (BRK) key during testing, the console displays:

```
*ATTN-KEY*
TCSS1 DONE
    or
TCSS1 DONE
```

ERROR REPORTING

If invalid data is entered, the console displays the following error message:

```
ILLEGAL INPUT, RE-ENTER
```

If the operator enters data and does not receive a response within a reasonable period of time, the console displays:

```
TIME OUT ERROR
```

Report the entire error message to the Service Center exactly as displayed.

VIPX4
Display Terminals T&V Procedure

This program verifies operation of synchronous display terminals (VIP/WST 7800 series) when connected to the Multi/Dual Line Communications Processor (MLCP/DLCP) and a Synchronous Communications Line Adapter (SCLA). The program requires a minimum of 32K words of main memory (see Figure 1).

OPERATING PROCEDURES

The appropriate T&V programs (refer to Tabel 3-1) should be run before this program to ensure that the controller and adapter are functioning properly.

NOTE

> Ensure that the display terminal is powered up and online (LOCAL key on keyboard is not in the down position).

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
VIPX4 -A
```

After invoking the program, the following console message is displayed:

```
HELP (Y for YES; N for NO HELP) ?:
```

The operator should enter N followed by a carriage return, unless additional information from the Help file is required.

The console then displays:

```
CHANNEL NUM(FF00) ?:
```

If the displayed default value of the channel number is valid, the operator should enter a carriage return. If not valid, enter the correct channel number prior to a carriage return.

The console next displays:

TERM POLL (0 to 31) ?:

The operator should enter the terminal poll address followed by a carriage return.

The following message is displayed at the console:

MODEM (Y OR N) ?:

If a modem connection is present, the operator should enter Y followed by a carriage return.

If a modem connection is not present, the operator should enter N followed by a carriage return.

NOTE

For modem connections, a warning error message is displayed on the console until the modem link is established.

Testing starts with the following message:

BEGIN DATA_LINK AND TERMINAL TEST

The following message is then displayed:

DATA LINK PASSED BASIC TESTS.

At the terminal screen, verify the following:

- Three lines appear as:

  CHARACTER GENERATOR TEST:

  THE QUICK BROWN FOX JUMPS OVER A LAZY DOG
  the quick brown fox jumps over a lazy dog
  !"#$%&'()*+,-./0123456789:;<=>?@[\]^_`{|}~

- Video attribute line appears as a gray band with a black line near the bottom edge.

- All line graphic symbols are displayed in groups with the first group displayed in normal intensity, the second group in low intensity, and the third group in blinking normal intensity.

The remaining portions of the program are fully prompted for the operator and need not be detailed here.

```
     C?
---->VIPX4
     VIP7804 T&D VIPX4  REV No.  Date
     ZV$LIB  REV No.
     MEMORY LOW  00004B72
---->HELP (Y for YES; N for NO HELP)?: N
     RUN CONTROLLER TEST DLCS1 AND ADAPTER TEST DLCS2 PRIOR TO THIS TEST.
---->CHANNEL NUM(FF00) ?:  0C00
---->TERM POLL(0 TO 31)?: 1
---->MODEM (Y OR N)    ?: N
     BEGIN DATA_LINK AND TERMINAL TEST

     DATA LINK PASSED BASIC TESTS.
     BEGIN WORST WORD PATTERN TEST
     CHARACTER GENERATOR TEST:
     VIDEO ATTRIBUTE TEST:
     LINE GRAPHICS TEST:
     WAITING FOR TERMINAL KBD RESPONSE.
     BASIC KEYBOARD TEST:


     KEYBOARD ECHO TEST

-->VIPX4 PASS      1 CHANNEL =  0C00
     WAITING FOR TERMINAL INPUT - HIT BREAK KEY TO ESCAPE
     *ATTN-KEY*
     VIPX4 DONE
```

---->indicates operator entry.

-->indicates successful completion of a single pass through the program.

*Default channel - Enter carriage return or enter another channel prior to the carriage return.

Figure 1 Sample VIPX4 Console Display - Nonbuffered Printer

OPERATOR INTERVENTION

The following console message is displayed upon completion of one pass of the program:

```
VIPX4 PASS    1 CHANNEL =  0C00
```

The program can be terminated only from the console. The program can be restarted only from the terminal under test.

If the operator presses the Break (BRK) key, the following message is displayed:

```
*ATTN-KEY*
VIPX4 DONE
```

To restart the program, press the RESET key on the terminal under test in response to the following message:

WAITING FOR TERMINAL INPUT - HIT BREAK KEY TO ESCAPE

If, at any time during the Keyboard Echo Test, INVALID COMMAND remains displayed on line 25 of the terminal under test, press the RESET key to resume testing.

ERROR REPORTING

Errors detected by the program are displayed in the following format:

EM ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

VIPX8
Display Terminals T&V Procedure

This T&V program verifies proper operation of the asynchronous display terminals (VIP/WST 7800 series) and options. The program executes a series of tests that require minimum operator intervention (see Figure 1). The results of these tests are displayed on both the system console and the terminal under test.

OPERATING PROCEDURES

The appropriate T&V programs (refer to Table 3-1) should be run before this program to ensure that the controller and adapter are functioning properly.

NOTE

> Ensure that the display terminal is powered up and online (LOCAL key on keyboard is not in the down position).

To invoke the program, enter the program name, space, -A, and a carriage return as follows:

```
VIPX8 -A
```

After invoking the program, the following console message is displayed:

```
HELP (Y for YES; N for NO HELP) ?.
```

The operator should enter N followed by a carriage return, unless additional information from the Help file is required.

The console then displays:

```
CHANNEL NUMBER    ?:
```

The operator should enter the channel number followed by a carriage return.

The console next displays:

```
TERM BAUD RATE (1200) ?:
```

If the displayed default value of the terminal baud rate is valid, the operator should enter a carriage return. If not valid, enter the correct channel number prior to a carriage return.

NOTE

For modem connections, a warning error message is displayed on the console until the modem link is established.

The console then displays:

```
PARITY (E)        ?:
```

If the displayed default value for parity type (E for Even) is valid, the operator should enter a carriage return. If not valid, enter the correct parity type (O for Odd, M for Mark, or S for Space) prior to a carriage return.

```
    C?
--> VIPX8 -A
    7801 T&V  VIPX8  REV No.  Date
    ZV$LIB  REV. No.
    MEMORY LOW  00006796
--> HELP  (Y FOR YES; N FOR NO HELP)?: N
    RUN CONTROLLER TEST DLCS1 AND ADAPTER TEST DLCS2 PRIOR TO THIS TEST.
--> CHANNEL NUMBER    ?:  38C0
--> TERM BAUD RATE (1200)   ?:9600
--> PARITY (E)        ?: E
    BEGIN DATA LINK AND TERMINAL TEST
    WAITING FOR TERMINAL KBD RESPONSE.
--> VIPX8 PASS     1   CHAN =  3C80
    WAITING FOR TERMINAL INPUT - HIT BREAK KEY TO ESCAPE
    *ATTN-KEY*

    VIPX8 DONE
```

--> indicates operator entry.

--> indicates successful completion of a single pass through the program.

Figure 1 Sample VIPX8 Console Display

Testing starts with the following message:

BEGIN DATA_LINK AND TERMINAL TEST

The same message is displayed on the terminal screen with one audible tone. This test runs without operator intervention until the console displays the following message:

WAITING FOR TERMINAL KBD RESPONSE.

At the terminal screen, verify the following:

- Three lines appear as:

```
THE QUICK BROWN FOX JUMPS OVER A LAZY DOG
the quick brown fox jumps over a lazy dog
!"#$%&'()*+,-/-123456789:;<=>?@[\]^_`{¦}~
```

- Video attribute line appears as a gray band with a black line near the bottom edge.

- All line graphic symbols are displayed in groups with the first group displayed in normal intensity, the second group in low intensity, and the third group in blinking normal intensity.

The remaining portions of the program are fully prompted for the operator and need not be detailed here.

OPERATOR INTERVENTION

The program can be terminated only from the console. The program can be restarted only from the terminal under test.

To terminate testing, press the console Break (BRK) key in response to the following message:

WAITING FOR TERMINAL INPUT - HIT BREAK KEY TO ESCAPE

The console then displays:

ATTN-KEY

VIPX8 DONE

To restart the program, press the RESET key on the terminal under test in response to the following message:

WAITING FOR TERMINAL INPUT - HIT BREAK KEY TO ESCAPE

If, at any time during the Keyboard Echo Mode Test, INVALID COMMAND remains displayed on line 25 of the terminal under test, put the terminal in LOCAL mode. Then press the RESET key and take the terminal out of LOCAL mode to resume testing.

ERROR REPORTING

Errors detected by the test are displayed on the console using the following format:

EM ERROR MESSAGE

Report the entire error message to the Service Center exactly as displayed.

Appendix A
PROCEDURE FOR EXAMINING LOGIC CARD INDICATORS

Many of the logic cards in the systems have indicators on them. When a particular type of error occurs (e.g., QLT error), it may be necessary for the operator to observe these indicators and determine which logic card failed. The operator can then report this information to the Service Center.

On some systems, the logic cards are behind the system control panel; on others they are behind the cabinet front door. This appendix instructs the operator how to safely access the logic card area behind the system control panel or behind the cabinet front door.

When attempting to access the logic area, it is the operator's responsibility to determine (according to the type of system present) whether the system control panel or the cabinet front door must be opened. Subsections A.1 and A.2 describe the correct methods for opening the control panel or the cabinet front door.

A.1 OPENING SYSTEM CONTROL PANEL

Rack-Mounted System (Figure A-1)

WARNING

To avoid serious bodily injury, do not touch or permit tools to make contact with the logic cards when swinging open the control panel. It is mandatory that jewelry not be worn when performing this operation. The only reason for opening the system control panel is to observe the indicators that are located on the logic cards.

To open the system control panel, proceed as follows:

1. Swing open the top and bottom cabinet doors.

2. Locate the release latch assembly on the right-hand side of the system control panel.

3. Insert a thin tool (e.g., a 4-mm allen key) into the opening on the latch and press inward. The control panel release latch disengages, opening the panel.

4. Remove the tool and swing out the control panel from right to left until all logic cards are visible.

5. Observe and record any indicators that are illuminated.

To close the system control panel, swing the panel from left to right until the release latch engages.

To close the cabinet doors, swing each door from left to right until secure.

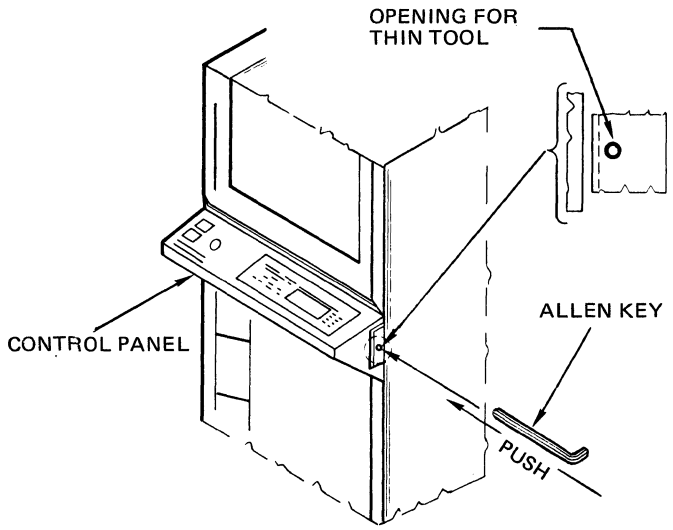


Figure A-1 Rack-Mounted System

Office Package System

WARNING

To avoid serious bodily injury, do not touch or permit tools to make contact with the logic cards when swinging open the control panel. It is mandatory that jewelry not be worn when performing this operation. The only reason for opening the system control panel is to observe the indicators that are located on the logic cards.

For the office package system, proceed as follows:

1. Using a screwdriver, turn the captive screw at the right side of the control panel a half turn to the left. The control panel swings open to the left.

2. Observe and record any indicators that are illuminated.

NOTE

If the system has the control panel in the desk top, swing open the cabinet door to observe the indicators on the logic cards.

To close the control panel, engage the captive screw in the cabinet fitting and, using a screwdriver, turn the screw a half turn to the right.

Tabletop System (Figure A-2)

WARNING

To avoid serious bodily injury, do not touch or permit tools to make contact with the logic cards when swinging open the control panel. It is mandatory that jewelry not be worn when performing this operation. The only reason for opening the system control panel is to observe the indicators that are located on the logic cards.

The cover of the tabletop system is held secure by two captive screws, one on each side of the system.

CAUTION

Perform the following procedure with great care so that no damage is done to the system.

To raise the cover, proceed as follows:

1. Position the system so that the captive screws can be accessed. Using a screwdriver, turn each screw a half turn to the left.

2. Raise the cover from the front until the support braces snap into place.

3. Observe and record any indicators that are illuminated.

To close the cover, proceed as follows:

1. Lift the cover until the support braces can slide back into the closed position; slowly lower the cover.

2. Engage and tighten the captive screw on each side of the cabinet.

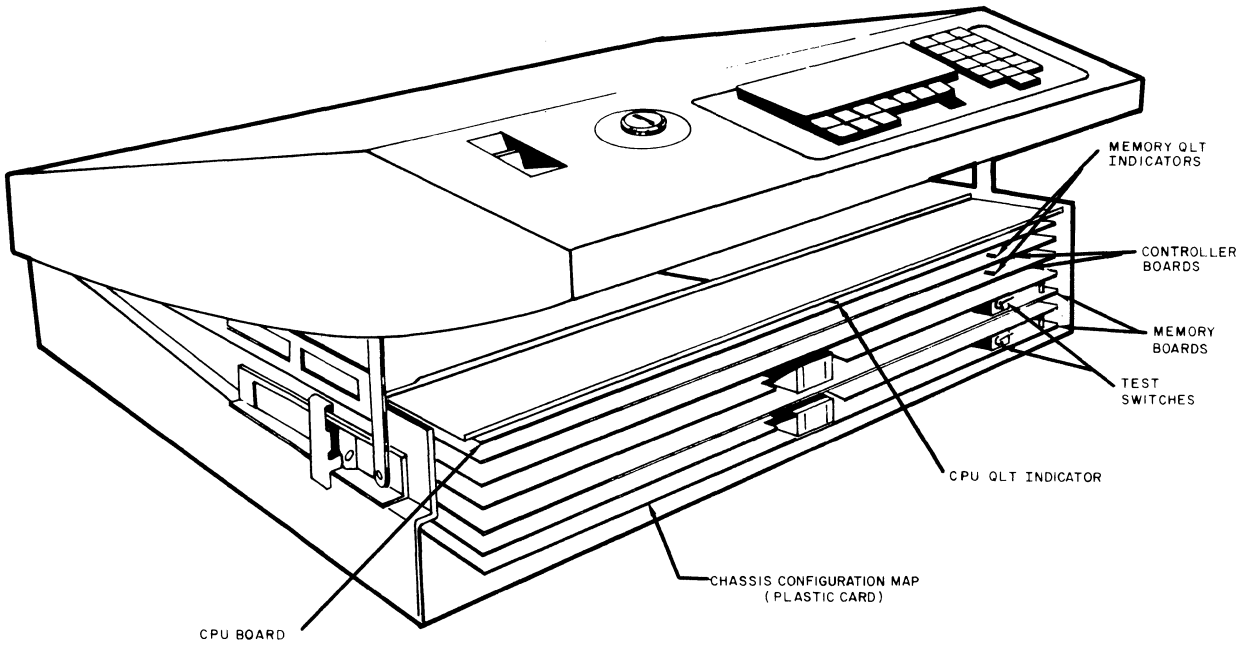


Figure A-2 Tabletop System with Cover Raised

A.2 OPENING CABINET FRONT DOOR

Cabinet with Two Front Doors (Figure A-3)

WARNING

To avoid serious bodily injury, do not touch or permit tools to make contact with the logic cards when swinging open the front doors. It is mandatory that jewelry not be worn when performing this operation. The only reason for opening the front doors is to observe the indicators that are located on the logic cards.

To open the cabinet with two front doors, proceed as follows:

1. Grasp the right side edge of the top front door.
2. Swing open the top front door from right to left.
3. Grasp the right side edge of the bottom front door.
4. Swing open the bottom front door from right to left.
5. Observe and record any indicators that are illuminated.

To close the top and bottom front doors, swing each door from left to right until secure.

Cabinet with One Front Door (Figure A-4)

WARNING

To avoid serious bodily injury, do not touch or permit tools to make contact with the logic cards when swinging open the front door. It is mandatory that jewelry not be worn when performing this operation. The only reason for opening the front door is to observe the indicators that are located on the logic cards.

To open the cabinet with one front door, proceed as follows:

1. Grasp the right side edge of the front door.
2. Swing open the front door from right to left.
3. Observe and record any indicators that are illuminated.

To close the front door, swing the door from left to right until secure.

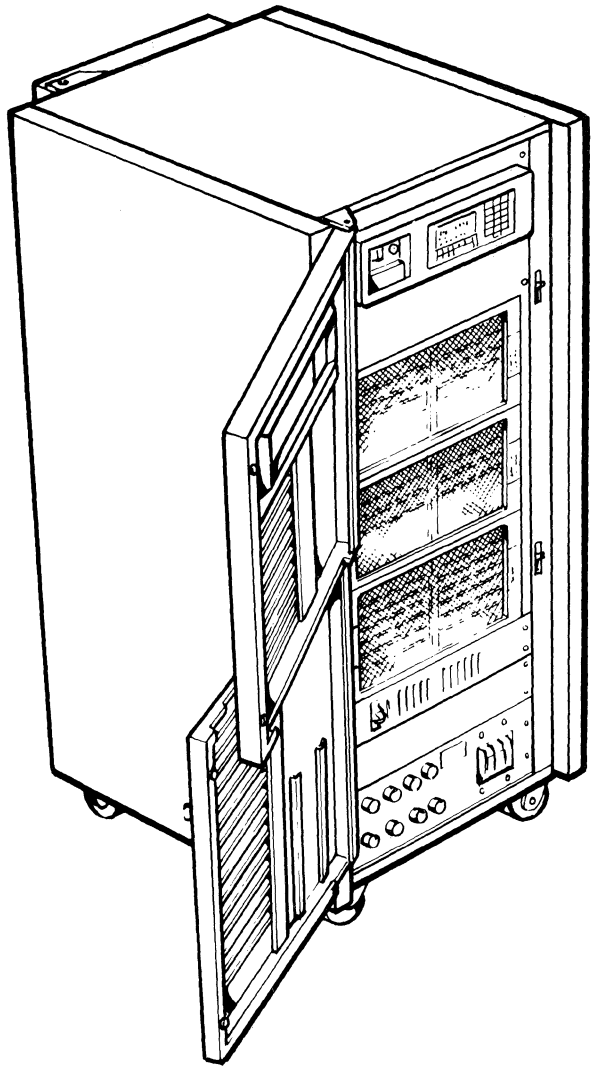


Figure A-3 Cabinet with Two Front Doors

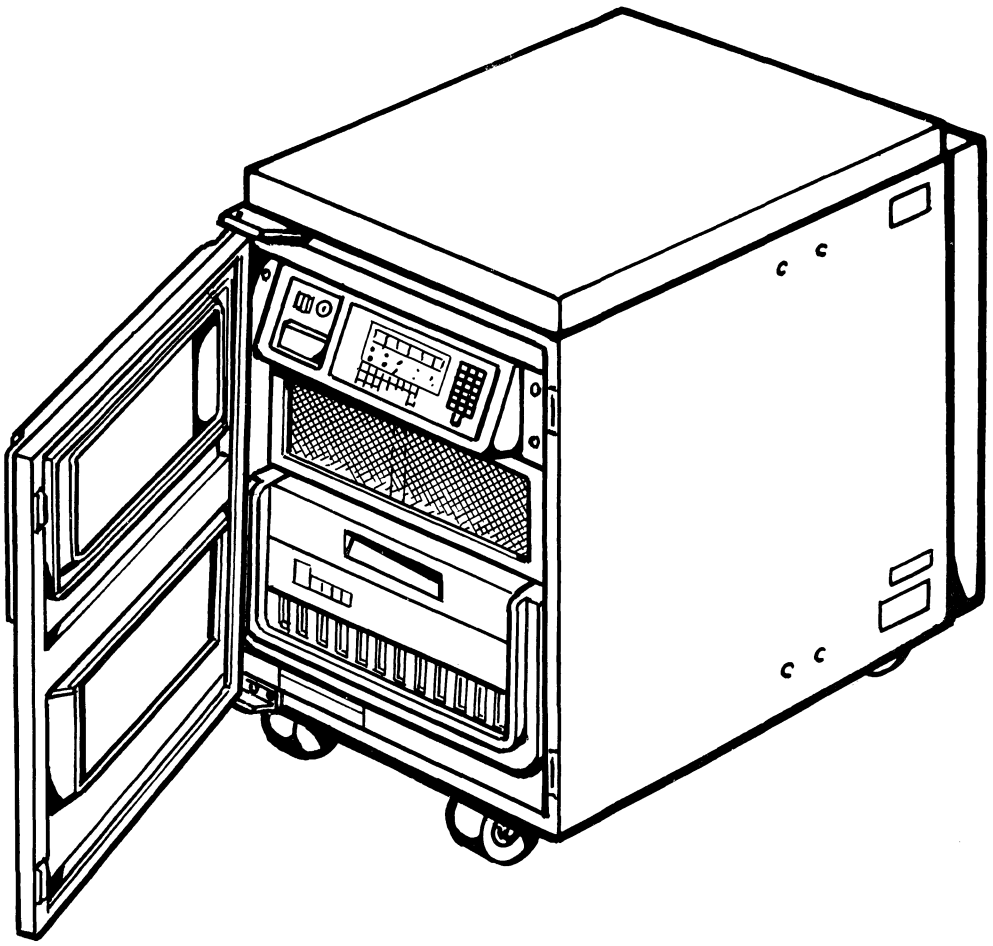


Figure A-4 Cabinet with One Front Door

Appendix B
CONTROL PANEL OPERATION

This appendix describes the indicators and controls for the following types of control panels:

- Full control panel
- Basic control panel
- Minicontrol panel.

The procedures for control panel operations are also provided.

B.1 FULL CONTROL PANEL

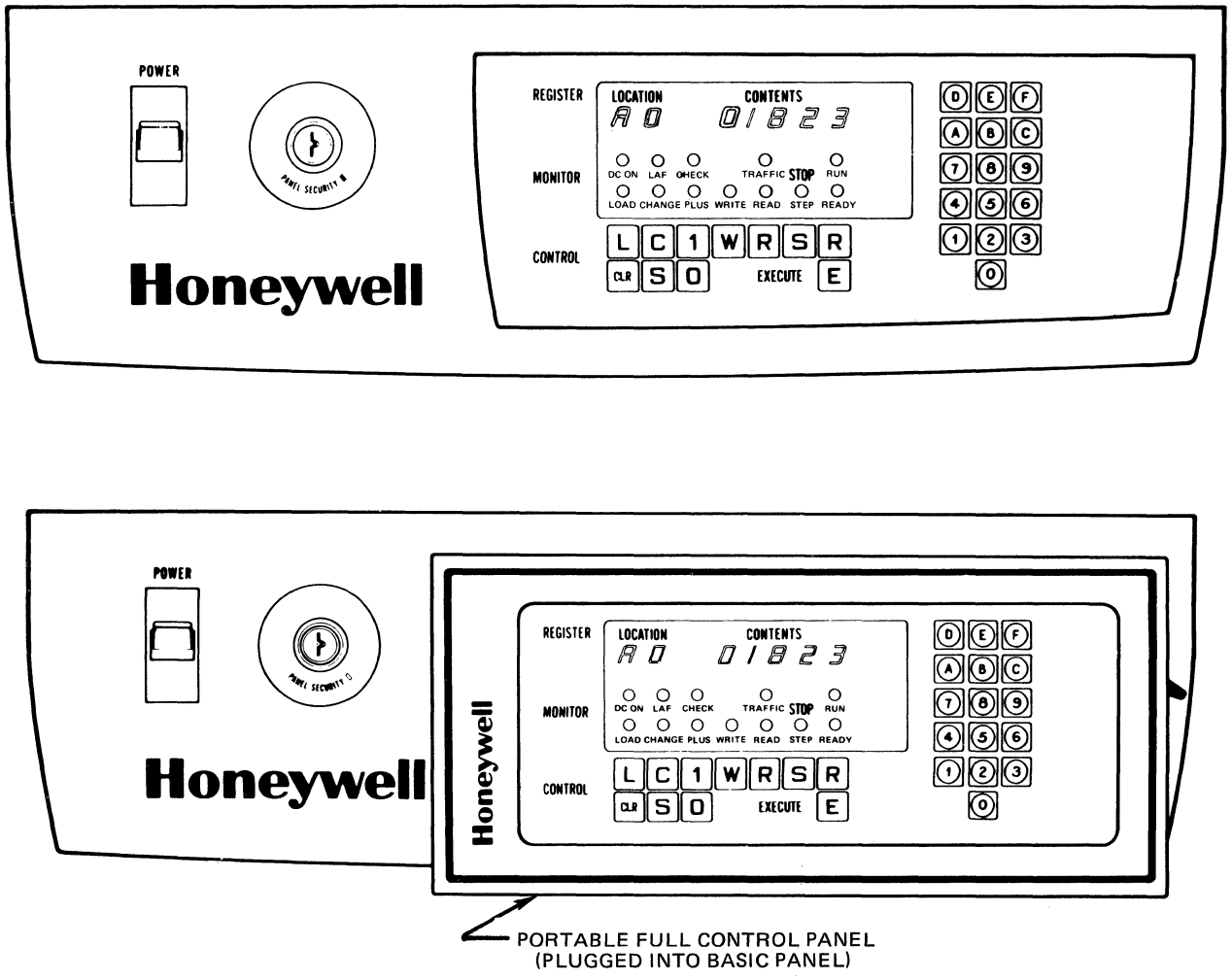
Figure B-1 illustrates three types of full control panels. Table B-1 defines the controls and indicators on the full control panels.

NOTE

The description of the full control panels and procedures for operation apply to all types of full control panels.

The following operator functions can be performed with a full control panel:

- Dislay memory
- Change memory
- Display registers
- Change registers
- Stop program execution
- Execute single instruction(s)
- Restart programs
- Master clear.



PORTABLE FULL CONTROL PANEL
(PLUGGED INTO BASIC PANEL)

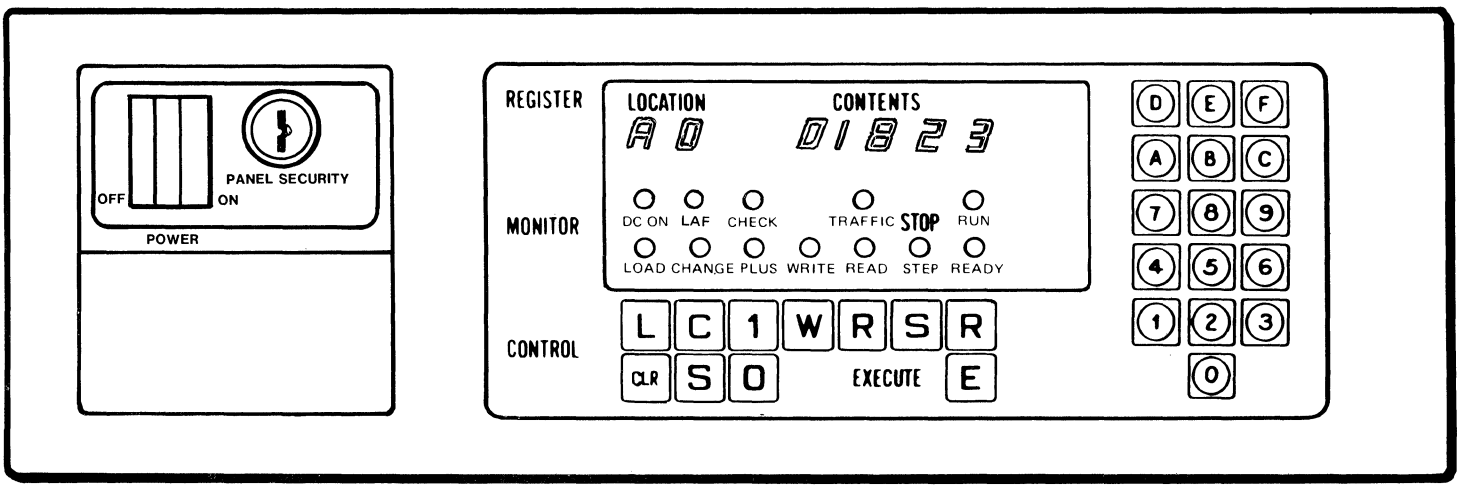


Figure B-1 Full Control Panels

Table B-1 Full Panel Controls and Indicators (Sheet 1 of 4)

CONTROL/INDICATOR	DESCRIPTION
POWER (switch)	On some full control panels, up for power on; down for power off. On other full control panels, rocker switch right for power on, left for power off.
PANEL SECURITY (switch)	Left (locked) position disables panel switches (except for POWER), buttons, and register display (not lit); right (unlocked) position enables panel switches, buttons, and displays.
DC ON (indicator)	Indicates dc power is applied to CPU.
CHECK (indicator)	Indicates that an individual unit (CPU, controller, etc.) is executing QLTs or an error was encountered during QLT execution.
TRAFFIC (indicator)	Indicates CPU is executing instructions other than a Halt.
RUN (indicator)	Indicates CPU is executing an instruction, including a Halt. If TRAFFIC is off and RUN is on, CPU is continually executing a Halt.
LOAD (indicator)	Indicates CPU is in bootload mode.
CHANGE (indicator)	Indicates control panel is in change mode; i.e., capable of modifying register contents.
PLUS (indicator)	Indicates CPU is in increment memory address mode. When off, memory address register is not modified during memory read or write mode.
WRITE (indicator)	Indicates control panel is in memory write mode.
READ (indicator)	Indicates control panel is in memory read mode.
STOP/STEP (indicator)	Indicates CPU is in single instruction mode.
READY (indicator)	Indicates CPU is in ready mode. Pressing EXECUTE button causes CPU to enter run mode.

Table B-1 Full Panel Controls and Indicators (Sheet 2 of 4)

CONTROL/INDICATOR	DESCRIPTION
LAF (Long Address Form indicator)*	Indicates CPU is operating in Long Address Form (i.e., 20-bit main memory addressing). LAF indicator is also on during system load independent of setting of LAF switch. If LAF indicator is not on, CPU is operating in Short Address Form (i.e., 16-bit main memory addressing).
L (Load button)	Places CPU in load mode, lights CHECK indicator, activates QLTs, and allows bootstrapping of bootstrap record into memory. Used in conjunction with EXECUTE so that when EXECUTE button is pressed next, the QLTs should be executed. Upon subsequent pressing of EXECUTE button, bootstrapping is actually performed.
C (Change button)	Places CPU in change mode. In this mode, CPU is ready to accept modifications to contents of selected register from the control panel. Not all visible registers can be modified.
1 (Plus 1 button)	Places CPU in plus 1 mode. In this mode, CPU is ready to increment its address register before reading or writing successive memory locations from the control panel. This condition is initiated only after setting CPU to either read or write mode. When in plus 1 mode, each pressing of EXECUTE button causes memory address register (A0) to be incremented by 1, prior to its being used.
W (Memory Write button)	Places CPU in stop mode (if not already in stop mode); resets plus 1 mode (if in plus 1 mode); resets load mode (if in load mode); and places CPU in write mode. In this mode, CPU writes the contents of register B0 into the location addressed by the memory address register (A0) when EXECUTE button is pressed. If A0 is selected, contents of B0 are written.
R (Memory Read button)	Places CPU in stop mode (if not already in stop mode); resets plus 1 mode (if in plus 1 mode); and places CPU in read mode. In this mode, CPU reads the contents of the location addressed by the memory address register (A0) into the register when EXECUTE button B0 pressed. If A0 is selected, the contents are read into B0.

*Not applicable to all systems.

Table B-1 Full Panel Controls and Indicators (Sheet 3 of 4)

CONTROL/INDICATOR	DESCRIPTION
S (Stop button)	Stops instruction execution and places CPU in stop mode. When CPU is in stop mode, a variety of operating procedures are possible from the control panel. When in stop mode, CPU is automatically in step mode. In this mode, one instruction is executed each time EXECUTE button is pressed, thus permitting single stepping through a program.
R (Ready button)	Places CPU in ready mode. In this mode, CPU is ready to execute a series of instructions constituting a program. If EXECUTE button is pressed, CPU enters run mode and commences execution of the program.
CLR (Master Clear button)	Initiated by pressing CLR button, but is only effective while in stop mode. Pressing CLR button invokes a number of clearing and initializing functions: • Clears and sets to 0 the P register, M1 register (M2-M7), and instruction register; does not clear to 0, but changes P register and SI registers within the Scientific Instruction Processor (SIP). Modifies the scientific accumulators. • Clears all pending interrupts. • Resets Real-Time Clock (RTC) and Watchdog Timer (WDT). • Sets ring number to 0 and interrupt priority level to 0. • Starts Quality Logic Test (QLT) in each controller, cache memory, CIP, and SIP.
S (Select button)	Places CPU in select mode. In this mode, the register that is to be displayed or operated on is selected by keying in the proper selection code from the hex keys. The select mode may be initiated in any state.
0 (Plus Zero button)	Resets plus 1 mode. In this mode, memory address register is not modified during memory read or write operation.

Table B-1 Full Panel Controls and Indicators (Sheet 4 of 4)

CONTROL/INDICATOR	DESCRIPTION
E (EXECUTE button)	Performs various execution functions, depending on mode that CPU is in prior to pressing EXECUTE button. • In ready mode, pressing EXECUTE button places CPU in run mode, allowing it to execute instructions starting with the instructions in the instruction register. If the instruction register contains a 0, execution begins at the address specified in the P register. Execution continues until a Halt instruction is encountered or Stop, Read, or Write button is pressed. • In step mode, pressing EXECUTE button causes execution of a single instruction. The CPU returns to stop mode after each single instruction is executed. • In read or write mode, pressing EXECUTE button at appropriate time causes selected memory location to be displayed or changed. • In load mode, pressing EXECUTE button causes initiation of a bootstrap operation.
Hexadecimal Keys	The set of 16 hexadecimal (hex) keys located in the right part of the control panel provides access to the user-visible registers. In select mode, a hex key-in selects the register to be operated on, and the entered digits appear in the LOCATION display. In change mode, a hex key-in changes the contents of the selected register, and the entered digits appear in the CONTENTS display. Each keystroke shifts and loads the selected hex digit into the least significant hex position of the selected register; all other digits are shifted to the left.
Configuration Switches	Four miniature rocker switches on the control panel circuit board supply configuration information to CPU.

The following operator functions may be performed with a full control panel:

Display Memory

Any memory location may be accessed and displayed on the control panel. However, memory can be displayed only when the CPU is in stop mode. The memory address register (A0) is the only visible register that can be used to access memory locations from the control panel. Register B0 is used for reading (or displaying) memory data.

The following procedure describes a method for displaying the contents of one memory location and, as an option, displaying the contents of subsequent memory locations.

1. Press the R (Read) button. The STOP/STEP indicator comes on if not already on.

2. Press the S (Select) button. This step is not necessary unless the CHANGE indicator is on.

3. Press A key, then 0 key. Digits A and 0 will appear in the LOCATION display.

4. Press the C (Change) button. The CHANGE indicator comes on.

5. Enter, via the hex keys, the four- or five-digit hex value that represents the address of the memory location to be read. This address will appear in the CONTENTS display.

6. Press the S (Select) button. The CHANGE indicator goes off.

7. Press the B key to enter the first digit of the two-digit selection code for the memory data register. The second digit need not be entered again because the hex character 0 is still actively engaged from step 3. Digits B and 0 appear in the LOCATION display.

8. Press the E (EXECUTE) button. The data contents of the selected memory location will be loaded into the selected register (B0) and displayed in the CONTENTS display.

9. If successive memory locations are to be displayed using the current address of the memory address register as a base, press the 1 (Plus) button. The PLUS indicator will illuminate.

10. Press the E (EXECUTE) button. When this action is taken, the memory address register is incremented by 1 and memory data of the succeeding memory location appears in the CONTENTS display.

11. Repeat step 10 for each sequential memory location to be displayed.

Change Memory

Any memory location may be accessed and changed from the control panel. However, memory can be changed only when the CPU is in stop mode. As mentioned previously, the memory address register (A0) is the only visible register that can be used to access memory locations from the control panel. Register B0 is used for writing (or changing) memory data.

The following procedure describes a method of changing the contents of one memory location and, as an option, changing the contents of subsequent memory locations.

1. Press the W (Write) button. The WRITE indicator comes on.

2. Press the S (Select) button. This step is not necessary unless the CHANGE indicator is on.

3. Press the A key, then the 0 key to enter the two-digit selection code for the memory address register. Digits A and 0 appear in the LOCATION display.

4. Press the C (Change) button. The CHANGE indicator comes on.

5. Enter, via the hex keys, the four- or five-digit value that represents the address of the memory location to be changed. This address will appear in the CONTENTS display.

6. Press the S (Select) button. The CHANGE indicator goes off.

7. Press the B key to enter the first digit of the two-digit selection code for the memory data register. The second digit need not be entered again because character 0 is still actively engaged from step. 3. Digits B and 0 appear in the LOCATION display.

8. Press the C (Change) button. The CHANGE indicator comes on.

9. Enter, via the hex keys, the four-digit hex value that represents new data that is to be entered into the memory location to be changed. The data entered will appear in the CONTENTS display.

10. Press the E (EXECUTE) button. The new data contents are loaded into the selected memory location.

11. If successive memory locations are to be changed using the current address of the memory address register as a base, press the 1 (PLUS) button. The PLUS indicator comes on.

12. Repeat steps 9 and 10 for each sequential memory location to be changed. Note that while in plus 1 mode (PLUS indicator on), each pressing of the E (EXECUTE) key causes the memory address register to be incremented by 1 before new data contents are loaded into the new incremented memory location.

Display Registers

The contents of any one of the 21 visible registers may be displayed on the control panel. A register may be displayed when the processor is in any state.

The following procedure describes a method for displaying the contents of one register. The same procedure applies regardless of the processor state.

1. Press the S (Select) button.

2. Enter, via the hex keys, the two-digit selection code for the desired register to be displayed. The selection code appears in the LOCATION display. When the desired location code is entered, the contents of the selected register appears in the CONTENTS display.

Change Registers

The contents of the visible registers may be changed from the control panel. The M1, I, and S registers cannot be modified from the control panel. A register may be changed only when the processor is in stop mode. The following procedure describes a ethod for changing the contents of one register.

1. Press the S (Stop) button. The STOP/STEP indicator comes on.

2. Press the S (Select) button.

3. Enter, via the hex keys, the two-digit selection code for the desired register to be changed. The selection code appears in the LOCATION display. When the desired selection code is keyed in, the current contents of the selected register appears in the CONTENTS display.

4. Press the C (Change) button. The CHANGE indicator comes on.

5. Enter, via the hex keys, the hex value that represents the new data that is to be entered into the selected register. The data entered appears in the CONTENTS display and is loaded into the selected register.

Stop Program Execution

Stop program execution at any time by pressing the S (Stop) button. The STOP/STEP indicator comes on and the RUN, READY, and TRAFFIC indicators go off.

NOTE

When a program is running and a halt instruction is encountered (RUN indicator remains on, but TRAFFIC indicator goes off), the CPU does not enter the stop mode but rather enters an idle state. In this state, the halt instruction is continuously reexecuting and the CPU is subject to external interrupts, etc. Press the S (Stop) button to place the CPU in stop mode.

Execute Single Instruction(s)

To stop processing and single step through one or more instructions, proceed as follows:

1. Press the S (Stop) button.

2. Determine whether the CPU has stopped at an address from which instruction execution can begin. Display and view the contents of the P register (E0), using the procedure previously described for displaying registers. The P register (E0) contains an address incremented by 1 from the address of the instruction to be executed next. If this address is one more than the desired starting point for executing single instructions, proceed to step 8. However, if a new starting point is desired, continue to the next step.

3. Press the CLR button.

NOTE

In an online environment, do not press the CLR button. Instead, select the instruction register (D0) and change its contents to 0000 so as not to affect peripherals.

4. Press the S (Select) button.

5. Press hex keys E and 0 to enter the two digit selection code for the P register. Digits E and 0 appear in the LOCATION display.

6. Press the C (Change) button. The CHANGE indicator comes on.

7. Enter, via the hex keys, the four- or five-digit hex value that represents the address of the next instruction to be executed. This address is entered in the P register and appears in the CONTENTS display.

8. Press the E (EXECUTE) button.

9. Repeat step 8 for each successive instruction to be executed singly. To reenter run mode at any time after executing a single instruction, refer to the following procedure on restarting programs.

Restarting Programs

A program may be restarted from the control panel at any time and at any point after it is stopped during execution. However, when restarting a program, it is the operator's responsibility to ensure that:

- No I/O was pending at the time the machine was halted.
- All registers are stored to the context the program requires.

The restart procedure is as follows:

1. Determine whether the current start address is the point at which a program is to be restarted. Display the contents of the P register (E0), using the procedure previously described for displaying registers. The P register contains an address incremented by 1 from the address of instruction to be executed next. If this address is one more than the desired starting point for restarting a program, then proceed to step 7. However, if a new starting point is desired, continue to the next step.

2. Press S (Stop/Step) button.

3. Press the CLR button.

4. Press the S (Select) button.

5. Press hex keys E and 0 to enter a two-digit selection code for the P register. Digits E and 0 appear in the LOCATION display.

6. Press the C (Change) button. The CHANGE indicator comes on.

7. Enter, via the hex keys, the four- or five-digit hex value that represents the restart address. This address is entered into the E0 register and appears in the CONTENTS display.

8. Press the R (Ready) button. The READY indicator comes on and the STOP indicator goes off.

9. Press the E (EXECUTE) button. The RUN and TRAFFIC indicators illuminate. Program execution continues until a software halt is encountered or the S (Stop), R (Read), or W (Write) button is pressed.

Master Clear

The master clear procedure is used to set or restore the CPU to a standard initialized state such as a bootstrap procedure. The following procedure indicates the master clearing operation:

1. Press the S (Stop/Step) button. The STOP/STEP indicator comes on.

2. Press the CLR button.

B.2 BASIC CONTROL PANEL AND MINICONTROL PANEL

Figure B-2 shows the basic control panel and Figure B-3 illustrates the minicontrol panel. Table B-2 defines the controls and indicators on the basic panel.

NOTE

The description of the basic control panel controls and indicators also applies to the minicontrol panel.

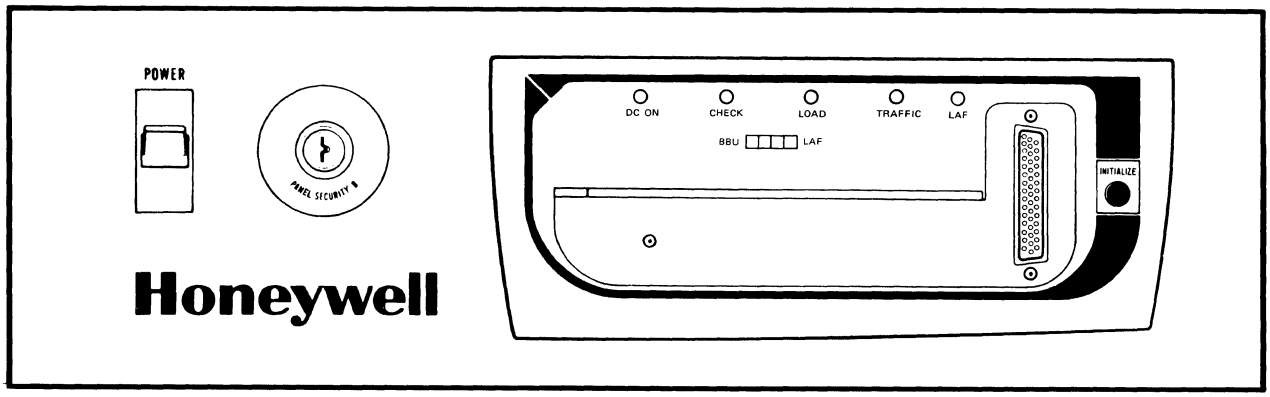
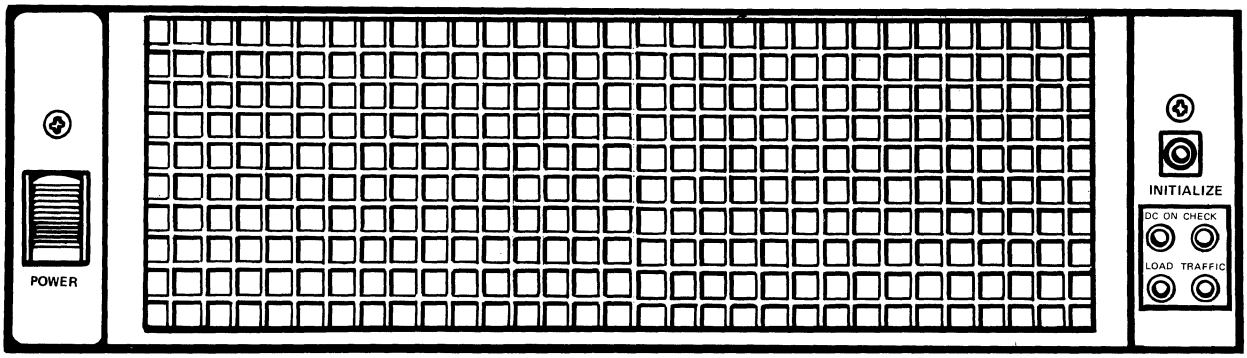
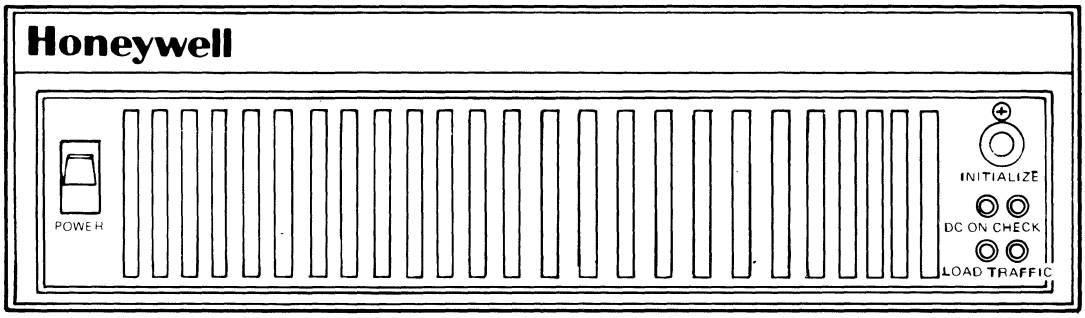


Figure B-2 Basic Control Panel



(A) MINICONTROL PANEL (WITH SCREEN)



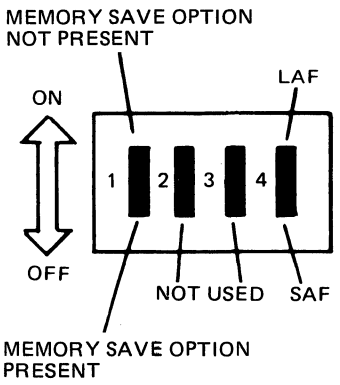
(B) MINICONTROL PANEL

Figure B-3 Minicontrol Panels

Table B-2 Basic Panel Controls and Indicators (Sheet 1 of 2)

CONTROL/INDICATOR	DESCRIPTION
POWER (switch)	Up for power on; down for power off.
PANEL SECURITY (switch)	Left (locked) position disables panel except for POWER; right (unlocked) position enables panel.
LOAD (indicator)	Indicates CPU is in bootload mode.
DC ON (indicator)	Indicates dc power is applied to the system.
CHECK (indicator)	Indicates CPU is executing QLTs or an error was encountered during QLT execution.
TRAFFIC (indicator)	Indicates CPU is executing instructions other than a Halt.
INITIALIZE (button)	When pressed and panel is unlocked, the following sequence occurs: • DC clear of system • QLTs are initiated and run • Bootload is performed over hex channel 0400 into hex location 0100. • CPU begins instruction execution at location 0100.
LAF* (indicator)	Indicates CPU is operating in the Long Address Form (LAF).

Table B-2 Basic Panel Controls and Indicators (Sheet 2 of 2)

CONTROL/INDICATOR	DESCRIPTION
Configuration Switches*	Four tiny rocker switches, located behind a sliding door on the front of the panel, supply configuration information to the CPU. NOTE If the portable plug-in panel is inserted (see Figure B-1), it must be removed to access these switches. • If switch 1 is in the ON position when power is applied, CPU performs an automatic boot operation (i.e., the memory save option is not present). If switch 1 is in the OFF position when power is applied, the CPU performs an automatic restart operation (i.e., the memory save option is present). • Switches 2 and 3 are not used. • If switch 4 is in the ON position, pressing the INITIALIZE button places CPU in Long Address Form (LAF). If switch 4 is in the OFF position, pressing the INITIALIZE button places the CPU in Short Address Form (SAF). 

*Not applicable to all systems.

Appendix C
PROCEDURE FOR SELECTION OF AN ALTERNATE CONSOLE

The selection of an alternate console becomes necessary if, for example, the system console fails and its functions must be assigned to another device. Subsection C.1 provides steps for selecting an alternate console during Hardcore testing (full panel systems only). Subsection C.2 provides steps for selecting an alternate console after T&V System is loaded via the system console, regardless of the type control panel being used.

C.1 SELECTING ALTERNATE CONSOLE DURING HARDCORE TEST USING FULL CONTROL PANEL

To select an alternate console during the Hardcore test, perform the following steps (system console is not required):

1. Load the T&V media and ensure that the input device is ready.

2. Run the system QLTs as described in the Operator's Guide.

3. Press the S (Stop/Step) and C (Change) buttons.

4. Load register D1 with a value of 0402 (hexadecimal).

5. Press the R (Run) and E (EXECUTE) buttons.

6. At the next halt, register D1 contains a value of 1602 (hexadecimal). Load registers D3 and D4 (refer to subsection B.1 - Change Registers) as follows:

    - D3 = hexadecimal code for alternate console baud rate (refer to Table C-1).

    - D4 = alternate console channel number.

Table C-1 Hexadecimal Coded Baud Rates

HEX CODE	BAUD RATE
8000	50
8001	75
8002	110
8003	134
8004	150
8005	200
8006	300
8007	600
8008	900
8009	1050
800A	1200
800B	1800
800C	2000
800D	2400
800E	3600
800F	4800
8010	7200
8011	9600
8012	19200

7. Press the R (Run) button.

8. Press the E (EXECUTE) button.

9. The next display that appears on the alternate console is the Hardcore test dialog followed by a list of system resources. Figure C-1 shows a sample alternate console display.

10. After the list of system resources is displayed, the alternate console selection procedure is completed, and the T&V programs begin loading and executing one after another without operator intervention.

```
DIAGNOSTIC TEST REV No.

ENTER "ABCD"C/R:  ABCD
** HARDCORE COMPLETE **



RESOURCE PROCESSOR REV No.
RESOURCE DEF REV No.
SYSTEM FILE REV No.
COMM FILE REV No.
LOADER REV No.

MEDIA CONFIGURED FOR POWER FREQUENCY OF 60 HZ
SAF
CHAN  DEVICE        1ST     2ND     FIRMWARE
NUM   TYPE     ID   TEST    TEST      REV


-------------------------------------------

0000  CPU      6/23  CPST3   ----      0000
----  RTC      ----  CPFX1   ----      ----
----  WDT      ----  CPFX1   ----      ----
----  MMEM     ----  CMMX1   ----      ----
0400  DSKT     2010  DIMX4   ----      0009
0480  DSKT     2010  DIMX4   ----      0009
0500  CONS     201A  KCMX3   ----      0012
0580  CONS     201B  KCMX3   ----      0012
0800  DSKC     2381  MSUX2   CMDX2     003C
0C00  CDR      2008  CRMX4   ----      0000
0C80  LPT      2003  PRMX3   ----      0008
1200  DSKT     2011  DIMX4   ----      0009
1280  DSKT     2011  DIMX4   ----      0009
1380  LPT      2001  PRMX3   ----      0013
2C00  ACLA     3118  DLCX1   DLCX2     0001
2C80  ACLA     3118  DLCX1   DLCX1     0001
AC00  SCLA     3158  DLCX1   DLCX2     0001
AC80  ACLA     3118  DLCX1   DLCX2     0001
MEMORY HIGH 0000FFFF   64K
  SYSTEM TEST SYSTST -S
```

Figure C-1 Sample Alternate Console Display

C.2 SELECTING ALTERNATE CONSOLE AFTER T&V SYSTEM IS LOADED

To select an alternate console after T&V System is loaded, perform the following steps.

NOTE

In order to perform a carriage return, press the RETURN key.

1. The system console displays the following message:

   C?

2. Enter NC, a space, the alternate console channel number (including the duplex mode), followed by a carriage return.

   An example of the entry for full duplex is:

   NC FC00

   An example of the entry for half duplex is:

   NC FC01

3. The system console displays the following message.

   C?

4. If the alternate console is attached to a communications adapter and the baud rate is 1200, proceed to step 5; otherwise, enter NB, a space, and the alternate console's actual baud rate followed by a carriage return. For example:

   NB 1050

   The actual baud rates are:

50	1050
75	1200
110	1800
134	2000
150	2400
200	3600
300	4800
600	7200
900	9600
	19200

5. Enter GN followed by a carriage return.

6. Information is now displayed on the selected console and terminated with the C? message.

NOTES

1. Enter PN followed by a carriage return to display the selected console's parameters.

2. Enter QT followed by a carriage return to get back to the original console.

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URM-2

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THANK YOU

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   ☐ YES ☐ NO (explain)_____

2. Does this document contain all the information required by you?
   ☐ YES ☐ NO (explain)_____

3. How easy are the operating procedures to use?
   ☐ VERY EASY ☐ FAIRLY EASY ☐ SOMEWHAT DIFFICULT*
   (explain)_____

4. Are the operating procedures complete?
   ☐ YES ☐ NO (explain)_____

5. Are the illustrations easy to relate to your system?
   ☐ YES ☐ NO (explain)_____

6. Did you find it easy to relate the illustrations to the text?
   ☐ YES ☐ NO (explain)_____

7. Are the instructions for reporting problems to the service center:
   ☐ VERY GOOD ☐ GOOD ☐ FAIR* ☐ POOR*
   (explain)_____

8. How easy are the programs to locate?
   ☐ VERY EASY ☐ FAIRLY EASY ☐ SOMEWHAT DIFFICULT*
   (explain)_____

9. Did you find the explanations of program messages:
   ☐ GOOD ☐ FAIR* ☐ POOR*
   (explain)_____

10. Did you find the prompting messages from the terminal:
    ☐ EASY TO USE? ☐ ADEQUATE? ☐ NEEDS MORE EXPLANATION?

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*Indicates explanation is desired.

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